

2017 ACCESSORIES & EQUIPMENT

Fixed and Moveable Windows - CT6

SPECIFICATIONS

FASTENER SPECIFICATIONS

Reusable Threaded Fastener Tightening Specifications

NOTE:

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

Application	Specification
	Metric (English)
Front Side Door Window Channel Retainer Bolt	9 N.m (80 lb in)
Front Side Door Window Frame Inner Upper Screw	1.5 N.m (13 lb in)
Front Side Door Window Frame Rear Applique Outer Screw	1.5 N.m (13 lb in)
Front Side Door Window Regulator Motor Screw	10 N.m (89 lb in)
Front Side Door Window Regulator Nut	10 N.m (89 lb in)
Rear Side Door Window Channel Bolt	10 N.m (89 lb in)
Rear Side Door Window Frame Applique Screw	1.5 N.m (13 lb in)
Rear Side Door Window Frame Rear Applique Screw	1.5 N.m (13 lb in)
Rear Side Door Window Regulator Motor Screw	10 N.m (89 lb in)
Rear Side Door Window Regulator Nut	10 N.m (89 lb in)

SCHEMATIC WIRING DIAGRAMS

MOVEABLE WINDOW WIRING SCHEMATICS

Driver

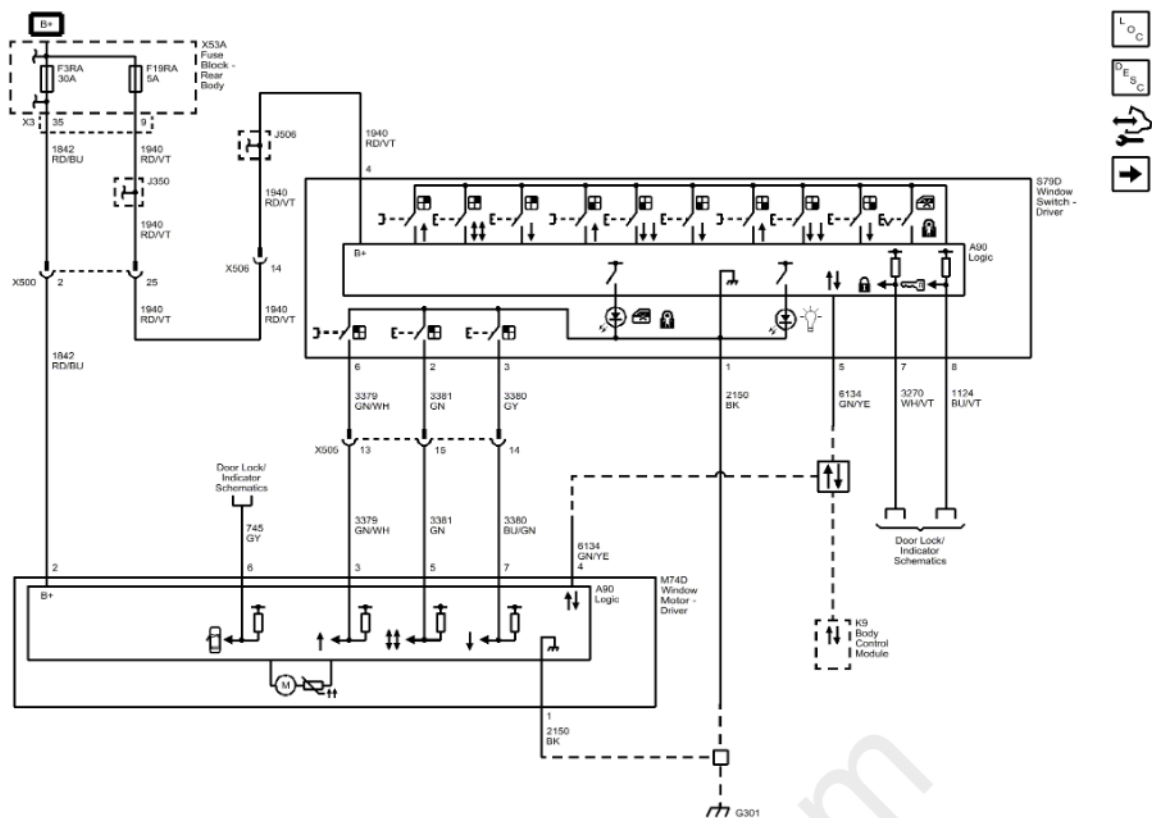


Fig. 1: Driver
Courtesy of GENERAL MOTORS COMPANY

Passenger

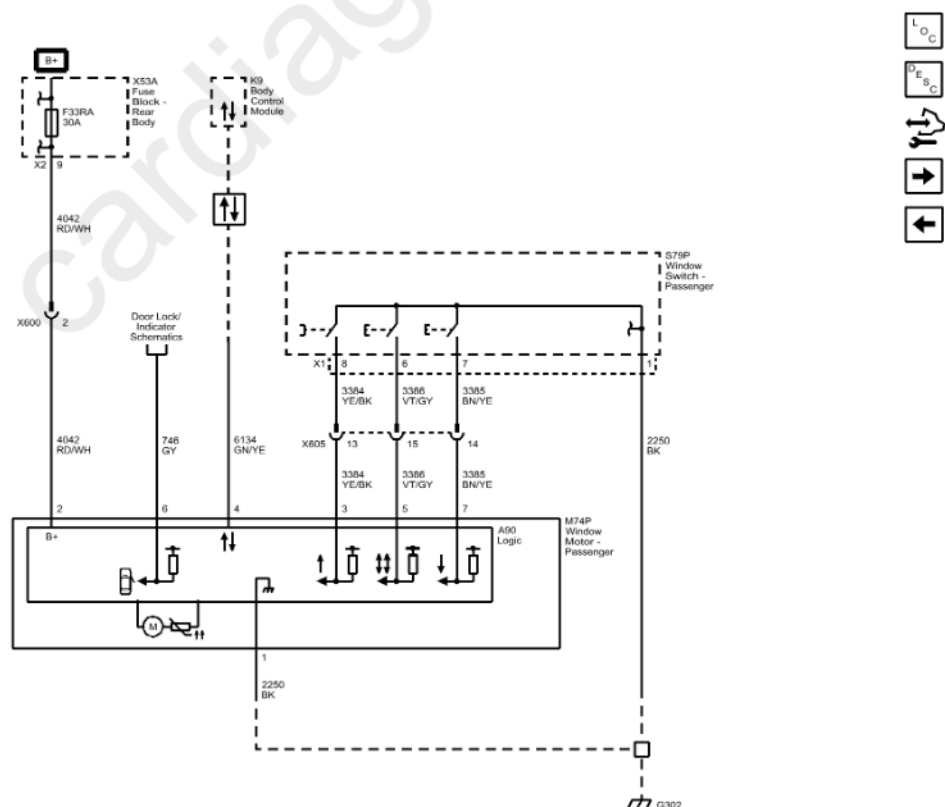


Fig. 2: Passenger
Courtesy of GENERAL MOTORS COMPANY

Rear

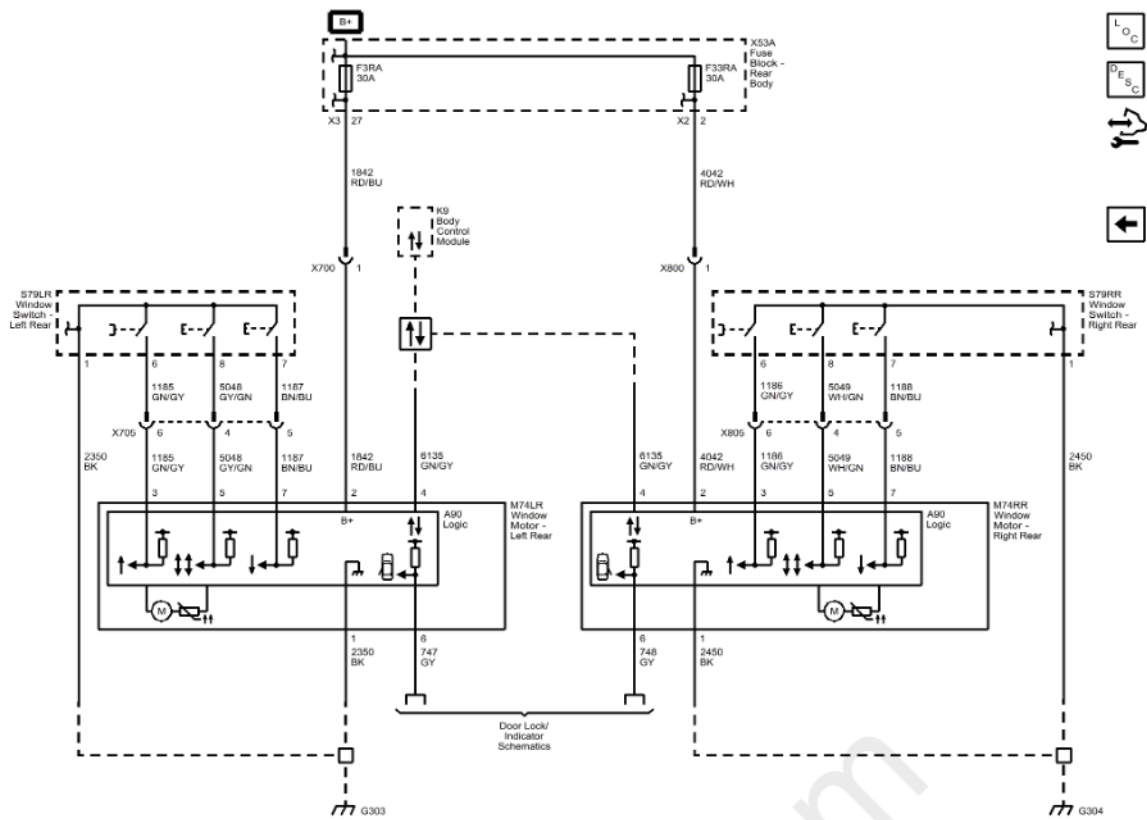


Fig. 3: Rear

Courtesy of GENERAL MOTORS COMPANY

DEFOGGER WIRING SCHEMATICS

Defogger

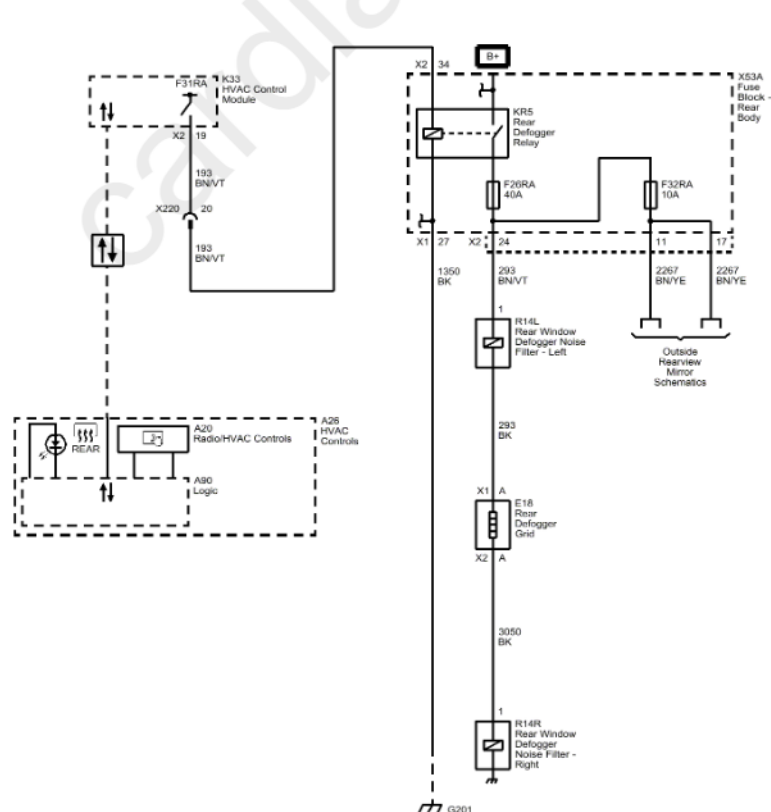


Fig. 4: Defogger

Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

DTC B0283: REAR DEFOGGER CIRCUIT

Diagnostic Instructions

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

DTC Description

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

DTC B0283

Rear Defogger Circuit

Symptom Byte Information: [Symptom Byte List](#)

Diagnostic Fault Information

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

Circuit/System Description

For an overview of the component/system, refer to [Rear Window Defogger Description and Operation](#)

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

Component	Description
X53A Fuse Block - Rear Body	The fuse block houses various fuses and relays.
E18 Rear Defogger Grid	Window defoggers are parallel resistive conductors in or on the glass that heat up when electric power is applied.
K33 HVAC Control Module	The control module controls a series of actuators to ensure optimal heating, ventilation and air conditioning of the passenger compartment. The control module does this by reading values from a variety of sensors and interprets the data and adjusts the actuators accordingly.
A26 HVAC Controls	This device is the user interface to control the HVAC system. Some buttons and indicators are hardwired, some functions use serial data communication.

Conditions for Running the DTC

Ignition ⤵ On / Vehicle ⤵ In Service Mode

Conditions for Setting the DTC

- B0283 02 Control Circuit=Short to Ground

- B0283 05 Control Circuit=Open or Short to Battery

Actions Taken When the DTC Sets

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

Conditions for Clearing the DTC

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

Reference Information

Schematic Reference

Defogger Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Component View Reference

Luggage Compartment/Rear of Vehicle Component Views

Electrical Information Reference

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

Scan Tool Reference

Control Module References

Circuit/System Verification

1. IgnitionÂ» On / VehicleÂ» In Service Mode
2. Perform the scan tool control function: Rear DefoggerÂ» On and Off

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

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

Refer to Circuit/System Testing

- **If the component turns On and Off**

3. All OK.

Circuit/System Testing

1. Ignition/Vehicle & All vehicle systems Â» Off

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

2. Disconnect the electrical connector: X1 @ X53A Fuse Block - Rear Body

3. Test for less than 10 Ω between the test points: Ground circuit terminal 27 & Ground

- **If 10 Ω or greater**

1. Ground Connection» Disconnect

2. Test for less than 2 Ω between the test points: Ground circuit terminal 27 X1 & Ground Connection

- If 2 Ω or greater» Repair the open/high resistance in the circuit.

- If less than 2 Ω » Repair the open/high resistance in the ground connection.

- **If less than 10 Ω**

4. Connect the electrical connector: X1 @ X53A Fuse Block - Rear Body

5. Disconnect the electrical connector: X2 @ K33 HVAC Control Module

6. Ignition» On / Vehicle» In Service Mode

7. Momentarily connect a 3 A fused jumper wire between the test points: Control circuit terminal 19 X2 & B+

Verify the component turns On and Off when connecting and disconnecting the jumper wire: E18 Rear Defogger Grid

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

1. Ignition/Vehicle» Off & Remove» Jumper wire(s)

2. Disconnect the electrical connector: X2 @ X53A Fuse Block - Rear Body

3. Ignition» On / Vehicle» In Service Mode

4. Test for less than 1 V between the test points: Control circuit terminal 19 X2 @ Control module harness & Ground

- If 1 V or greater » Repair the short to voltage on the circuit.

- If less than 1 V

5. Ignition/Vehicle » Off

6. Test for infinite resistance between the test points: Control circuit terminal 19 X2 @ Control module harness & Ground

- If less than infinite resistance » Repair the short to ground on the circuit.

- If infinite resistance

7. Test for less than 2 Ω between the test points: Control circuit terminal 19 X2 @ Control module harness & Terminal 34 X2 @ Fuse Block Harness

- If 2 Ω or greater» Repair the open/high resistance in the circuit.

- If less than 2 Ω » Test or replace the component: X53A Fuse Block - Rear Body

- **If the component turns On and Off**

8. Replace the component: K33 HVAC Control Module

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: [Diagnostic Repair Verification](#)

- [Body Wiring Harness Junction Block Replacement](#)

- For control module replacement, programming and setup, refer to [Control Module References](#)

DTC B316B: DRIVER WINDOW SWITCH

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: [Diagnostic System Check - Vehicle](#) .

- Review the description of Strategy Based Diagnosis: [Strategy Based Diagnosis](#) .

- An overview of each diagnostic category can be found here: [Diagnostic Procedure Instructions](#) .

DTC Descriptors

DTC B316B

Symptom Byte Information: [Symptom Byte List](#) .**Diagnostic Fault Information**

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Power Window Switch Driver Down Signal	B316B 02	1	1	B316B 39
Power Window Switch Driver Up Signal	B316B 02	2	2	B316B 39
Power Window Switch Driver Express Signal	B316B 02	3	3	B316B 39
1. Driver Left Front Window SwitchÂ» Down=Inoperative 2. Driver Left Front Window SwitchÂ» Up=Inoperative 3. Driver Left Front Window SwitchÂ» Express=Inoperative				

Circuit/System Description

For an overview of the component/system, refer to [Power Windows Description and Operation](#)

Circuit	Description
B+-M74D Window Motor - Driver	Supplied from a fuse.
B+-S79D Window Switch - Driver	Supplied from a fuse.
Power Window Switch Driver Up Signal	The output circuit is switched to ground to activate the component.
Power Window Switch Driver Down Signal	The output circuit is switched to ground to activate the component.
Power Window Switch Driver Express Signal	The output circuit is switched to ground to activate the component.
Ground	Chassis Ground

S79D Window Switch - Driver	The S79D sends a serial data message to the K9 indicating the M74 function that has been requested.
M74D Window Motor - Driver	- Power Window Control - The control module also reads various switches and sensors and makes their values available via serial data.
K9 Body Control Module	The module controls various vehicle functions like lighting, central door locking, power windows, etc.

Conditions for Running the DTC

Ignition Â» On / Vehicle Â» In Service Mode

Conditions for Setting the DTC**B316B 00**

- S79D Window Switch - DriverÂ» Right Front Window Switch=Switch Stuck-For greater than 60 s
- S79D Window Switch - DriverÂ» Left Rear Window Switch=Switch Stuck-For greater than 60 s
- S79D Window Switch - DriverÂ» Right Rear Window Switch=Switch Stuck-For greater than 60 s

B316B 02

- Power Window Switch Driver Express Signal=Short to Ground-For greater than 60 s
- Power Window Switch Driver Down Signal=Short to Ground-For greater than 60 s
- Power Window Switch Driver Up Signal=Short to Ground-For greater than 60 s

B316B 39

S79D Window Switch - Driver=Signal Erratic

Action Taken When the DTC Sets

S79D Window Switch - Driver-Malfunction

Conditions for Clearing the DTC

B316B 00, B316B02

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

B316B 39

If set as a current DTC» Replace the component: S79D Window Switch - Driver

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Windows Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition» On / Vehicle» In Service Mode
2. S79D Window Switch - Driver» Driver Left Front Window Switch-Not Pressed

Verify the scan tool parameter:

- Driver Window Main Control Down Switch=Inactive
 - Driver Window Main Control Up Switch=Inactive
 - Driver Window Main Control Express Switch=Inactive
 - **If not the specified state**
 - **If the specified state**
3. S79D Window Switch - Driver» No Button Pressed

Verify the scan tool parameter:

- Left Rear Window Main Control Down Switch = Inactive
- Left Rear Window Main Control Express Switch = Inactive
- Left Rear Window Main Control Up Switch = Inactive
- Right Rear Window Main Control Down Switch = Inactive
- Right Rear Window Main Control Express Switch = Inactive
- Right Rear Window Main Control Up Switch = Inactive
- Front Passenger Main Control Down Switch = Inactive
- Front Passenger Main Control Express Switch = Inactive
- Front Passenger Main Control Up Switch = Inactive
- **If not the specified state**

Test or replace the component: S79D Window Switch - Driver

- **If the specified state**

4. Operate the component: S79D Window Switch - Driver » Driver Left Front Window Switch-Pressed & Pulled

Verify the scan tool parameter:

- Driver Window Main Control Down Switch = Active
- Driver Window Main Control Up Switch = Active
- Driver Window Main Control Express Switch = Active
- **If not the specified state**

Refer to Circuit/System Testing

- **If the specified state**

5. Operate the component: S79D Window Switch - Driver » Left Rear Window Switch-Pressed & Pulled

Verify the scan tool parameter:

- Left Rear Window Main Control Down Switch=Active
- Left Rear Window Main Control Express Switch=Active
- Left Rear Window Main Control Up Switch=Active
- **If not the specified state**

Test or replace the component: S79D Window Switch - Driver

- **If the specified state**

6. Operate the component: S79D Window Switch - Driver » Right Rear Window Switch-Pressed & Pulled

Verify the scan tool parameter:

- Right Rear Window Main Control Down Switch=Active
- Right Rear Window Main Control Express Switch=Active
- Right Rear Window Main Control Up Switch=Active
- **If not the specified state**

Test or replace the component: S79D Window Switch - Driver

- **If the specified state**

7. Operate the component: S79D Window Switch - Driver » Right Front Window Switch-Pressed & Pulled

Verify the scan tool parameter:

- Front Passenger Window Main Control Down Switch=Active
- Front Passenger Window Main Control Express Switch=Active
- Front Passenger Window Main Control Up Switch=Active
- **If not the specified state**

Test or replace the component: S79D Window Switch - Driver

- **If the specified state**

8. All OK.

Circuit/System Testing

1. Ignition/Vehicle & All vehicle systems Off

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

2. Disconnect the electrical connector: S79D Window Switch - Driver

3. Test for less than 10 Ω between the test points: Ground circuit terminal 1 & Ground

- **If 10 Ω or greater**

1. Ground Connection Off Disconnect

2. Test for less than 2 Ω between the test points: Ground circuit terminal 1 @ Component harness & Ground Connection

- If 2 Ω or greater Off Repair the open/high resistance in the circuit.
- If less than 2 Ω Off Repair the open/high resistance in the ground connection.

- **If less than 10 Ω**

4. Ignition On / Vehicle In Service Mode

5. Verify a test lamp turns On between the test points: B+ circuit terminal 4 & Ground

- **If the test lamp does not turn On and the circuit fuse is OK**

1. Ignition/Vehicle Off & Remove Test lamp

- If 2 Ω or greater Off Repair the open/high resistance in the circuit.
- If less than 2 Ω Off Verify the fuse is OK and there is voltage at the fuse.

- **If the test lamp does not turn On and the circuit fuse is open**

1. Ignition/Vehicle Off & Remove Test lamp

2. Test for infinite resistance between the test points: B+ circuit terminal 4 & Ground

- If less than infinite resistance Off Repair the short to ground on the circuit.
- If infinite resistance Off Replace the component: S79D Window Switch - Driver

- **If the test lamp turns On**

6. Verify the scan tool parameter: Driver Window Main Control Down Switch=Inactive

- **If not the specified state**

1. Ignition/Vehicle Off

2. Disconnect the electrical connector: M74D Window Motor - Driver

3. Test for infinite resistance between the test points: Signal circuit terminal 3 @ Component harness & Ground

- If less than infinite resistance Off Repair the short to ground on the circuit.
- If infinite resistance Off Replace the component: M74D Window Motor - Driver

- **If the specified state**

7. Momentarily connect a 3A fused jumper wire between the test points: Signal circuit terminal 3 & Ground circuit terminal 1

Verify the scan tool parameter: Driver Window Main Control Down Switch=Active

- **If not the specified state**

1. Ignition/Vehicle » Off & Remove » Jumper wire(s)
2. Disconnect the electrical connector: M74D Window Motor - Driver
3. Ignition » On / Vehicle » In Service Mode
4. Test for less than 1 V between the test points: Signal circuit terminal 3 @ Component harness & Ground
 - If 1 V or greater » Repair the short to voltage on the circuit.
 - If less than 1 V
5. Ignition/Vehicle » Off
6. Test for less than 2 Ω between the test points: Signal circuit terminal 3 @ Component harness & Signal circuit terminal 7 @ M74D Window Motor - Driver
 - If 2 Ω or greater » Repair the open/high resistance in the circuit.
 - If less than 2 Ω » Replace the component: M74D Window Motor - Driver

- **If the specified state**

8. Verify the scan tool parameter: Driver Window Main Control Up Switch=Inactive

- **If not the specified state**

1. Ignition/Vehicle » Off
2. Disconnect the electrical connector: M74D Window Motor - Driver
3. Test for infinite resistance between the test points: Signal circuit terminal 6 @ Component harness & Ground
 - If less than infinite resistance » Repair the short to ground on the circuit.
 - If infinite resistance » Replace the component: M74D Window Motor - Driver

- **If the specified state**

9. Momentarily connect a 3 A fused jumper wire between the test points: Signal circuit terminal 6 & Ground circuit terminal 1

Verify the scan tool parameter: Driver Window Main Control Up Switch=Active

- **If not the specified state**

1. Ignition/Vehicle » Off & Remove » Jumper wire(s)
2. Disconnect the electrical connector: M74D Window Motor - Driver
3. Ignition » On / Vehicle » In Service Mode
4. Test for less than 1 V between the test points: Signal circuit terminal 6 @ Component harness & Ground
 - If 1 V or greater » Repair the short to voltage on the circuit.
 - If less than 1 V
5. Ignition/Vehicle » Off
6. Test for less than 2 Ω between the test points: Signal circuit terminal 6 @ Component harness & Signal circuit terminal 3 @ M74D Window Motor - Driver
 - If 2 Ω or greater » Repair the open/high resistance in the circuit.
 - If less than 2 Ω » Replace the component: M74D Window Motor - Driver

- **If the specified state**

10. Verify the scan tool parameter: Driver Window Main Control Express Switch=Inactive

- **If not the specified state**

1. Ignition/Vehicle » Off
2. Disconnect the electrical connector: M74D Window Motor - Driver
3. Test for infinite resistance between the test points: Signal circuit terminal 2 @ Component harness & Ground
 - If less than infinite resistance » Repair the short to ground on the circuit.
 - If infinite resistance » Replace the component: M74D Window Motor - Driver

- **If the specified state**

11. Momentarily connect a 3 A fused jumper wire between the test points: Signal circuit terminal 2 & Ground circuit terminal 1

Verify the scan tool parameter: Driver Window Main Control Express Switch=Active

- **If not the specified state**

1. Ignition/Vehicle» Off & Remove» Jumper wire(s)
2. Disconnect the electrical connector: M74D Window Motor - Driver
3. Ignition» On / Vehicle» In Service Mode
4. Test for less than 1 V between the test points: Signal circuit terminal 2 @ Component harness & Ground
 - If 1 V or greater» Repair the short to voltage on the circuit.
 - If less than 1 V
5. Ignition/Vehicle» Off
6. Test for less than 2 Ω between the test points: Signal circuit terminal 2 @ Component harness & Signal circuit terminal 5 @ M74D Window Motor - Driver
 - If 2 Ω or greater» Repair the open/high resistance in the circuit.
 - If less than 2 Ω » Replace the component: M74D Window Motor - Driver

- **If the specified state**

12. Test or replace the component: S79D Window Switch - Driver

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: [Diagnostic Repair Verification](#) .

- [Front Side Door Window Control Switch Replacement](#)
- [Front Side Door Window Regulator Motor Replacement](#)

DTC B3205, B3210, B3215 OR B3220: WINDOW MOTOR

Diagnostic Instructions

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

DTC Descriptor

DTC B3205

Driver Window Motor

DTC B3210

Passenger Window Motor

DTC B3215

Left Rear Window Motor

DTC B3220

Right Rear Window Motor

Symptom Byte Information: [Symptom Byte List](#)

Circuit/System Description

For an overview of the component/system, refer to [Power Windows Description and Operation](#)

Circuit	Description
B+ - M74D Window Motor - Driver	Supplied from a fuse.
B+ - M74P Window Motor - Passenger	Supplied from a fuse.
B+ - M74LR Window Motor - Left Rear	Supplied from a fuse.
B+ - M74RR Window Motor - Right Rear	Supplied from a fuse.
Ground	Chassis Ground

Component	Description
M74D Window Motor - Driver	• Power Window Control • The control module and the DC motor are one assembly.
M74P Window Motor - Passenger	• Power Window Control • The control module and the DC motor are one assembly.
M74LR Window Motor - Left Rear	• Power Window Control • The control module and the DC motor are one assembly.
M74RR Window Motor - Right Rear	• Power Window Control • The control module and the DC motor are one assembly.

Conditions for Running the DTC

Ignition Â» On / Vehicle Â» In Service Mode

Conditions for Setting the DTC

B3205 00

M74D Window Motor - Driver=Incompatible Hardware or Equipment

B3210 00

M74P Window Motor - Passenger=Incompatible Hardware or Equipment

B3215 00

M74LR Window Motor - Left Rear=Incompatible Hardware or Equipment

B3220 00

M74RR Window Motor - Right Rear=Incompatible Hardware or Equipment

B3205 39

M74D Window Motor - Driver=Internal Malfunction

B3210 39

M74P Window Motor - Passenger=Internal Malfunction

B3215 39

M74LR Window Motor - Left Rear=Internal Malfunction

B3220 39

M74RR Window Motor - Right Rear=Internal Malfunction

B3205 42, B3210 42, B3215 42, B3220 42

Calibration Update=Failed

B3205 4B, B3210 4B, B3215 4B, B3220 4B

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

Actions Taken When the DTC Sets

B3205 00, B3205 39, B3205 42

M74D Window Motor - Driver=Inoperative

B3210 00, B3210 39, B3210 42

M74P Window Motor - Passenger=Inoperative

B3215 00, B3215 39, B3215 42

M74LR Window Motor - Left Rear=Inoperative

B3220 00, B3220 39, B3220 42

M74RR Window Motor - Right Rear=Inoperative

B3205 4B

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

B3210 4B, B3215 4B, B3220 4B

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

Conditions for Clearing the DTC

B3205 00, B3210 00

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

B3205 39, B3205 42

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

B3210 39, B3210 42

M74P Window Motor - Passenger» Replaced - A current DTC can be cleared after the procedure is performed.

B3215 39, B3215 42

M74LR Window Motor - Left Rear» Replaced - A current DTC can be cleared after the procedure is performed.

B3220 39, B3220 42

M74RR Window Motor - Right Rear» Replaced - A current DTC can be cleared after the procedure is performed.

B3205 4B

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

B3210 4B

M74P Window Motor - Passenger» Normalized - A current DTC can be cleared after the procedure is performed.

B3215 4B

M74LR Window Motor - Left Rear» Normalized - A current DTC can be cleared after the procedure is performed.

B3220 4B

M74RR Window Motor - Right Rear» Normalized - A current DTC can be cleared after the procedure is performed.

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Component View Reference

Door Component Views

Electrical Information Reference

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

Scan Tool Reference

Control Module References

Circuit/System Verification

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

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

- **If not the specified state**

Test or replace the component: M74D Window Motor - Driver

- **If the specified state**

3. Perform the scan tool control function: Driver Window Motor» Down
4. Operate the component: S79D Window Switch - Driver-Pulled=Up & Release

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

- **If not the specified state**

Use the following procedure: [Window Motor Programming - Express Function](#)

- **If the specified state**

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

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

- **If not the specified state**

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

- **If the specified state**

9. Perform the scan tool control function: Passenger Window Motor» Up & Down

Verify the component works as specified: M74P Window Motor - Passenger =Up & Down

- **If not the specified state**

Test or replace the component: M74P Window Motor - Passenger.

- **If the specified state**

10. Perform the scan tool control function: Passenger Window Motor»Down
11. Operate the component: S79P Window Switch - Passenger-Pulled=Up & Release

Verify the component works as specified: M74P Window Motor - Passenger =Express Up

- **If not the specified state**

Use the following procedure: [Window Motor Programming - Express Function](#)

- **If the specified state**

12. Ignition/Vehicle & All vehicle systems» Off-For greater than 2 min
13. Ignition» On / Vehicle» In Service Mode
14. Perform the scan tool control function: Passenger Window Motor»Down
15. Operate the component: S79P Window Switch - Passenger-Pulled=Up & Release

Verify the component works as specified: M74P Window Motor - Passenger = Express Up

- **If not the specified state**

Test or replace the component: M74P Window Motor - Passenger

- **If the specified state**

16. Perform the scan tool control function: Left Rear Window Motor» Up & Down

Verify the component works as specified: M74LR Window Motor - Left Rear=Up & Down

- **If not the specified state**

Test or replace the component: M74LR Window Motor - Left Rear

- **If the specified state**

17. Perform the scan tool control function: Left Rear Window MotorÂ»Down

18. Operate the component: S79LR Window Switch - Left Rear-Pulled=Up & Release

Verify the component works as specified: M74LR Window Motor - Left Rear =Express Up

- **If not the specified state**

Use the following procedure: [Window Motor Programming - Express Function.](#)

- **If the specified state**

19. Ignition/Vehicle & All vehicle systems Â» Off-For greater than 2 min

20. Ignition Â» On / VehicleÂ» In Service Mode

21. Perform the scan tool control function: Left Rear Window MotorÂ»Down

22. Operate the component: S79LR Window Switch - Left Rear-Pulled=Up & Release

Verify the component works as specified: M74LR Window Motor - Left Rear =Express Up

- **If not the specified state**

Test or replace the component: M74LR Window Motor - Left Rear.

- **If the specified state**

23. Perform the scan tool control function: Right Rear Window MotorÂ» Up & Down

Verify the component works as specified: M74RR Window Motor - Right Rear =Up & Down

- **If not the specified state**

Test or replace the component: M74RR Window Motor - Right Rear.

- **If the specified state**

24. Perform the scan tool control function: Right Rear Window MotorÂ»Down

25. Operate the component: S79RR Window Switch - Right Rear-Pulled=Up & Release

Verify the component works as specified: M74RR Window Motor - Right Rear=Express Up

- **If not the specified state**

Use the following procedure: [Window Motor Programming - Express Function.](#)

- **If the specified state**

26. Ignition/Vehicle & All vehicle systemsÂ» Off-For greater than 2 min

27. IgnitionÂ» On / VehicleÂ» In Service Mode

28. Perform the scan tool control function: Right Rear Window MotorÂ» Down

29. Operate the component: S79RR Window Switch - Right Rear-Pulled=Up & Release

Verify the component works as specified: M74RR Window Motor - Right Rear =Express Up

- **If not the specified state**

Test or replace the component: M74RR Window Motor - Right Rear

- **If the specified state**

30. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: [Diagnostic Repair Verification](#)

- **[Front Side Door Window Regulator Motor Replacement](#)**

- [Rear Side Door Window Regulator Motor Replacement](#)

SYMPTOMS - FIXED AND MOVEABLE WINDOWS

Important Preliminary Checks Before Starting

1. Perform the [Diagnostic System Check - Vehicle](#) before using the symptom tables in order to verify that all of the following are true:
 - There are no DTCs set.
 - The control modules can communicate via the serial data link.
2. Review the power window system operation or rear window defogger system operation in order to familiarize yourself with the system functions. Refer to the following:
 - [Rear Window Defogger Description and Operation](#)
 - [Power Windows Description and Operation](#)

Visual/Physical Inspection

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

Intermittent

NOTE:

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

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

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

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

Symptom List

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

- [Rear Window Defogger Malfunction](#)
- [Power Windows Malfunction](#)

REAR WINDOW DEFOGGER MALFUNCTION

Diagnostic Instructions

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

Diagnostic Fault Information

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

Circuit/System Description

Battery positive voltage is supplied through a 40A fuse in the rear body fuse block, to the rear defogger relay switched input. When the rear window defogger switch is pressed, The HVAC control module commands the rear window defogger system by supplying voltage to the rear defogger relay coil. The rear defogger relay is energized and the defogger indicator is illuminated. With the relay energized, battery positive voltage is allowed from the relay switched input through the switch contacts and out the relay switched output to the rear window defogger grid.

Reference Information

Schematic Reference

Defogger Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Rear Window Defogger Description and Operation

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

1. Ignition $\hat{A}$ » On / Vehicle $\hat{A}$ » In Service Mode
2. Operate the component: Rear Defogger Switch $\hat{A}$ » Pressed

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

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

Refer to Circuit/System Testing

- **If the component turns On and Off**

3. Perform the scan tool control function: Illuminate All Indicators» On and Off

Verify the component turns On and Off: Rear Defogger Indicator

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

Replace the component: A26 HVAC Controls

- **If the component turns On and Off**

4. All OK.

Circuit/System Testing

1. Ignition/Vehicle & All vehicle systems» Off

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

2. Disconnect the electrical connector: X1 & X2 @ E18 Rear Defogger Grid

3. Test for less than 10 Ω between the test points: Ground circuit terminal 1 X2 & Ground

- **If 10 Ω or greater**

1. Ground Connection» Disconnect

2. Test for less than 2 Ω between the test points: Ground circuit terminal 1 X2 @ Component harness & Ground Connection

- If 2 Ω or greater» Repair the open/high resistance in the circuit.
- If less than 2 Ω » Repair the open/high resistance in the ground connection.

- **If less than 10 Ω**

4. Verify the fuse is not open: F26RA Fuse/F28RA Fuse

- **If the fuse is open**

1. Replace the component: F26RA Fuse/F28RA Fuse

2. Verify the fuse does not open.

- If the fuse opens» Test or replace the component: X53A Fuse Block - Rear Body
- If the fuse does not open, go to the next step.

- **If the fuse is not open**

5. Connect a test lamp between the test points: Control circuit terminal 1 X1 & Ground circuit terminal 1 X2

6. Ignition» On / Vehicle» In Service Mode

7. Operate the component: Rear Defogger Switch» Pressed

Verify the test lamp does not turn On and Off.

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

Test or replace the component: E18 Rear Defogger Grid

- **If the test lamp does not turn On and Off**

8. Ignition/Vehicle» Off

9. Connect the electrical connector: X1 & X2 @ E18 Rear Defogger Grid

10. Disconnect the electrical connector: X2 @ X53A Fuse Block - Rear Body

11. Ignition» On / Vehicle» In Service Mode
12. Momentarily connect a 40 A fused jumper wire between the test points:
 - {Without UKL} Control circuit terminal 24 X2 & B+
 - {With UKL} Control circuit terminal 22 X2 & B+
13. Verify the component turns On and Off when connecting and disconnecting the jumper wire: E18 Rear Defogger Grid
 - **If the component does not turn On and Off**
 1. Ignition/Vehicle» Off & Remove» Jumper wire(s)
 2. Disconnect the electrical connector: X1 @ E18 Rear Defogger Grid
 3. Ignition» On / Vehicle» In Service Mode
 4. Test for less than 1 V between the test points: Control circuit terminal 1 X1 @ Component harness & Ground
 - If 1 V or greater, repair the open/high resistance in the circuit.
 - If less than 1 V.
 5. Ignition/Vehicle» Off
 6. Test for infinite resistance between the test points: Control circuit terminal 1 X1 @ Component harness & Ground
 - If less than infinite resistance» Repair the short to ground on the circuit.
 - If infinite resistance
 7. Test for less than 2 Ω between the test points:
 - {Without UKL} Control circuit terminal 1 X1 @ Component harness & Control circuit terminal 24 X2 @ Fuse Block Harness
 - {With UKL} Control circuit terminal 1 X1 @ Component harness & Control circuit terminal 22 X2 @ Fuse Block Harness
 - If 2 Ω or greater» Repair the open/high resistance in the circuit.
 - If less than 2 Ω » Test or replace the component: E18 Rear Defogger Grid
 - **If the component turns On and Off**
14. Ignition/Vehicle & All vehicle systems» Off
15. Verify the fuse is not open: F26RA Fuse/F28RA Fuse
 - **If the fuse is open**

Test or replace the component: X53A Fuse Block - Rear Body
 - **If the fuse is not open**
16. Disconnect the electrical connector: X1 @ X53A Fuse Block - Rear Body
17. Test for less than 10 Ω between the test points: Ground circuit terminal 27 X1 & Ground
 - **If 10 Ω or greater**
 1. Ground Connection» Disconnect
 2. Test for less than 2 Ω between the test points: Ground circuit terminal 27 X1 & Ground Connection
 - If 2 Ω or greater» Repair the open/high resistance in the circuit.
 - If less than 2 Ω » Repair the open/high resistance in the ground connection.
 - **If less than 10 Ω**
18. Connect the electrical connector: X1 & X2 @ X53A Fuse Block - Rear Body
19. Disconnect the electrical connector: X2 @ K33 HVAC Control Module
20. Ignition» On / Vehicle» In Service Mode
21. Momentarily connect a 3 A fused jumper wire between the test points: Control circuit terminal 19 X2 & B+

Verify the component turns On and Off when connecting and disconnecting the jumper wire: E18 Rear Defogger Grid

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

1. Ignition/Vehicle $\hat{A}$ » Off & Remove $\hat{A}$ » Jumper wire(s)
2. Disconnect the electrical connector: X2 @ X53A Fuse Block - Rear Body
3. Ignition $\hat{A}$ » On / Vehicle $\hat{A}$ » In Service Mode
4. Test for less than 1 V between the test points: Control circuit terminal 19 X2 @ Control module harness & Ground
 - If 1 V or greater $\hat{A}$ » Repair the short to voltage on the circuit.
 - If less than 1 V
5. Ignition/Vehicle $\hat{A}$ » Off
6. Test for infinite resistance between the test points: Control circuit terminal 19 X2 @ Control module harness & Ground
 - If less than infinite resistance $\hat{A}$ » Repair the short to ground on the circuit.
 - If infinite resistance
7. Test for less than 2 Ω between the test points:
 - {Without UKL} Control circuit terminal 19 X2 @ Control module harness & Terminal 34 X2 @ Fuse Block Harness
 - {With UKL} Control circuit terminal 19 X2 @ Control module harness & Terminal 15 X2 @ Fuse Block Harness
 - If 2 Ω or greater $\hat{A}$ » Repair the open/high resistance in the circuit.
 - If less than 2 Ω $\hat{A}$ » Test or replace the component: X53A Fuse Block - Rear Body

- **If the component turns On and Off**

22. Replace the K33 HVAC Control Module.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Rear Window Replacement](#)
- [Body Wiring Harness Junction Block Replacement](#)
- [Control Module References](#) for HVAC control module and HVAC controls replacement, programming and setup.

POWER WINDOWS MALFUNCTION

Diagnostic Instructions

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+ - S79D Window Switch - Driver	U1538 00	U1538 00	-	-
Serial Data - S79D Window Switch - Driver	U1534 00, U1538 00, U153A 00	U1538 00	U1538 00	-
Ground - S79D Window Switch - Driver	-	U1538 00	-	-
B+ - M74D Window Motor - Driver	U1530 00, U1534 00	U1534 00	-	-
Serial Data - M74D Window Motor - Driver	U1530 00, U1534 00	U1534 00	U1534 00	-

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Power Window Switch Driver Up Signal	B316B 02	1	1	-
Power Window Switch Driver Down Signal	B316B 02	1	1	-
Power Window Switch Driver Express Signal	B316B 02	1	1	-
Ground - M74D Window Motor - Driver	-	U1534 00	-	-
B+ - M74P Window Motor - Passenger	U1530 00, U1534 00	U1534 00	-	-
Serial Data - M74P Window Motor - Passenger	U1530 00, U1534 00	U1534 00	U1534 00	-
Power Window Switch Passenger Up Signal	2	2	2	-
Power Window Switch Passenger Down Signal	2	2	2	-
Power Window Switch Passenger Express Signal	2	2	2	-
Ground - M74P Window Motor - Passenger	-	U153A 00	-	-
Ground - S79P Window Switch - Passenger	-	U153A 00	-	-
B+ - M74LR Window Motor - Left Rear	U1530 00, U1534 00	U1534 00	-	-
Serial Data - M74LR Window Motor - Left Rear	U1530 00, U1534 00	U1534 00	U1534 00	-
Power Window Switch Left Rear Down Signal	3	3	3	-
Power Window Switch Left Rear Express Signal	3	3	3	-
Power Window Switch Left Rear Up Signal	3	3	3	-
Ground - S79LR Window Switch - Left Rear	-	3	-	-
Ground - M74LR Window Motor - Left Rear	-	U1530 00	-	-
B+ - M74RR Window Motor - Right Rear	U1530 00, U1534 00	U1534 00	-	-
Serial Data - M74RR Window Motor - Right Rear	U1530 00, U1534 00	U1534 00	U1534 00	-
RPower Window Switch Right Rear Down Signal	4	4	4	-
Power Window Switch Right Rear Express Signal	4	4	4	-
Power Window Switch Right Rear Up Signal	4	4	4	-
Ground - S79RR Window Switch - Right Rear	-	4	-	-

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ground - M74RR Window Motor - Right Rear	-	U1530 00	-	-
1. M74D Window Motor - Driver=Inoperative 2. M74P Window Motor - Passenger=Inoperative 3. M74LR Window Motor - Left Rear=Inoperative 4. M74RR Window Motor - Right Rear=Inoperative				

Circuit/System Description

For an overview of the component/system, refer to [Power Windows Description and Operation](#)

Circuit	Description
B+ - M74D Window Motor - Driver	Supplied from a fuse.
B+ - M74P Window Motor - Passenger	Supplied from a fuse.
B+ - M74LR Window Motor - Left Rear	Supplied from a fuse.
B+ - M74RR Window Motor - Right Rear	Supplied from a fuse.
Power Window Switch Driver Down Signal	The output circuit is switched to ground to activate the component.
Power Window Switch Driver Express Signal	The output circuit is switched to ground to activate the component.
Power Window Switch Driver Up Signal	The output circuit is switched to ground to activate the component.
Power Window Switch Passenger Down Signal	The output circuit is switched to ground to activate the component.
Power Window Switch Passenger Express Signal	The output circuit is switched to ground to activate the component.
Power Window Switch Passenger Up Signal	The output circuit is switched to ground to activate the component.
Power Window Switch Left Rear Down Signal	The output circuit is switched to ground to activate the component.
Power Window Switch Left Rear Express Signal	The output circuit is switched to ground to activate the component.
Power Window Switch Left Rear Up Signal	The output circuit is switched to ground to activate the component.
Power Window Switch Right Rear Down Signal	The output circuit is switched to ground to activate the component.
Power Window Switch Right Rear Express Signal	The output circuit is switched to ground to activate the component.
Power Window Switch Right Rear Up Signal	The output circuit is switched to ground to activate the component.
Ground	Chassis Ground

Component	Description
S79D Window Switch - Driver	The switch has a normally open contact.
M74D Window Motor - Driver	- Power Window Control - The control module and the DC motor are one assembly.
S79P Window Switch - Passenger	The switch has a normally open contact.

Component	Description
M74P Window Motor - Passenger	• Power Window Control • The control module and the DC motor are one assembly.
S79LR Window Switch - Left Rear	The switch has a normally open contact.
M74LR Window Motor - Left Rear	• Power Window Control • The control module and the DC motor are one assembly.
S79RR Window Switch - Right Rear	The switch has a normally open contact.
M74RR Window Motor - Right Rear	• Power Window Control • The control module and the DC motor are one assembly.

Diagnostic Aids

M74 Window Motor - Window Express Up System Not Initialized

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

M74 Window Motor Normalized - [Window Motor Programming - Express Function](#)

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Component View Reference

Door Component Views

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

Control Module References

Circuit/System Verification

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

Verify the component operates in both directions: M74D Window Motor - Driver

- **If not the specified state**

Refer to Circuit/System Testing - Test 1

- **If the specified state**

3. S79D Window Switch - Driver's Not Pressed

Verify the scan tool parameter:

- Left Rear Window Main Control Down Switch=Inactive
- Left Rear Window Main Control Express Switch=Inactive
- Left Rear Window Main Control Up Switch=Inactive
- Right Rear Window Main Control Down Switch=Inactive
- Right Rear Window Main Control Express Switch=Inactive
- Right Rear Window Main Control Up Switch=Inactive
- Front Passenger Window Main Control Down Switch=Inactive
- Front Passenger Window Main Control Express Switch=Inactive
- Front Passenger Window Main Control Up Switch=Inactive
- **If not the specified state**

Replace the component: S79D Window Switch - Driver

- **If the specified state**

4. Operate the component: Driver Left Front Window Switch - Pulled=Up & Release

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

- **If not the specified state**

Use the following procedure: [Window Motor Programming - Express Function](#).

1. Operate the component: Driver Left Front Window Switch - Test all positions of the switch and verify that all according functions work properly.
- M74D Window Motor - Driver =Up
 - M74D Window Motor - Driver =Express Up
 - M74D Window Motor - Driver =Down
 - M74D Window Motor - Driver =Express Down
 - **If not the specified state**

Refer to: Circuit/System Testing - Test 2

- **If the specified state**

5. Operate the component: S79D Window Switch - Driver's Left Rear Window Switch - Pressed & Pulled

Verify the scan tool parameter:

- Left Rear Window Main Control Down Switch=Active
- Left Rear Window Main Control Express Switch=Active
- Left Rear Window Main Control Up Switch=Active
- **If not the specified state**

Replace the component: S79D Window Switch - Driver

- **If the specified state**

6. Operate the component: S79D Window Switch - Driver's Right Rear Window Switch - Pressed & Pulled

Verify the scan tool parameter:

- Right Rear Window Main Control Down Switch=Active
- Right Rear Window Main Control Express Switch=Active
- Right Rear Window Main Control Up Switch=Active
- **If not the specified state**

Replace the component: S79D Window Switch - Driver

- **If the specified state**

7. Operate the component: S79D Window Switch - Driver » Right Front Window Switch - Pressed & Pulled

Verify the scan tool parameter:

- Front Passenger Window Main Control Down Switch=Active
- Front Passenger Window Main Control Express Switch=Active
- Front Passenger Window Main Control Up Switch=Active
- **If not the specified state**

Replace the component: S79D Window Switch - Driver

- **If the specified state**

8. Perform the scan tool control function: Passenger Window Motor » Up & Down

Verify the component operates in both directions: M74P Window Motor - Passenger

- **If not the specified state**

Refer to Circuit/System Testing - Test 1

- **If the specified state**

9. Operate the component: S79P Window Switch - Passenger - Pulled=Up & Release

Verify the component works as specified: M74P Window Motor - Passenger =Express Up

- **If not the specified state**

Use the following procedure: [**Window Motor Programming - Express Function.**](#)

1. Operate the component: S79P Window Switch - Passenger-Pressed & Pulled

Verify the component works as specified:

- M74P Window Motor - Passenger =Up
- M74P Window Motor - Passenger =Express Up
- M74P Window Motor - Passenger =Down
- M74P Window Motor - Passenger =Express Down
- **If not the specified state**

Refer to: Circuit/System Testing - Test 3

- **If the specified state**

10. Perform the scan tool control function: Left Rear Window Motor » Up & Down

Verify the component operates in both directions: M74LR Window Motor - Left Rear

- **If not the specified state**

Refer to Circuit/System Testing - Test 1

- **If the specified state**

11. Operate the component: S79LR Window Switch - Left Rear - Pulled=Up & Release

Verify the component works as specified: M74LR Window Motor - Left Rear=Express Up

- **If not the specified state**

Use the following procedure: [Window Motor Programming - Express Function.](#)

1. Operate the component: S79LR Window Switch - Left Rear-Pressed & Pulled

Verify the component works as specified:

- M74LR Window Motor - Left Rear =Up
- M74LR Window Motor - Left Rear =Express Up
- M74LR Window Motor - Left Rear =Down
- M74LR Window Motor - Left Rear =Express Down

- **If not the specified state**

Refer to Circuit/System Testing - Test 1

- **If the specified state**

12. Perform the scan tool control function: Right Rear Window Motor» Up & Down

Verify the component operates in both directions: M74RR Window Motor - Right Rear

- **If not the specified state**

Refer to: Circuit/System Testing - Test 1

- **If the specified state**

13. Operate the component: S79RR Window Switch - Right Rear - Pulled=Up & Release

Verify the component works as specified: M74RR Window Motor - Right Rear = Express Up

- **If not the specified state**

Use the following procedure: [Window Motor Programming - Express Function.](#)

1. Operate the component: S79RR Window Switch - Right Rear - Test all positions of the switch and verify that all according functions work properly.

- M74RR Window Motor - Right Rear =Up
- M74RR Window Motor - Right Rear =Express Up
- M74RR Window Motor - Right Rear =Down
- M74RR Window Motor - Right Rear =Express Down

- **If not the specified state**

Refer to Circuit/System Testing - Test 5

- **If the specified state**

14. All OK.

Circuit/System Testing

Test 1

1. Ignition/Vehicle & All vehicle systems» Off

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

2. Disconnect the appropriate electrical connector:
 - M74D Window Motor - Driver
 - M74P Window Motor - Passenger
 - M74LR Window Motor - Left Rear
 - M74RR Window Motor - Right Rear
3. Test for less than 10 Ω between the test points: Ground circuit terminal 1 & Ground
 - **If 10 Ω or greater**
 1. Ground Connection » Disconnect
 2. Test for less than 2 Ω between the test points: M74 Window Motor Ground circuit terminal 1 @ Component harness & Ground Connection
 - If 2 Ω or greater » Repair the open/high resistance in the circuit.
 - If less than 2 Ω » Repair the open/high resistance in the ground connection.
 - **If less than 10 Ω**
4. Ignition » On / Vehicle » In Service Mode
5. Verify a test lamp turns On between the test points: B+ circuit terminal 2 & Ground
 - **If the test lamp does not turn On and the circuit fuse is OK**
 1. Ignition/Vehicle » Off & Remove » Test lamp
 2. Test for less than 2 Ω between the test points: M74 Window Motor B+ circuit terminal 2 @ Output terminal & Fuse
 - If 2 Ω or greater » Repair the open/high resistance in the circuit.
 - If less than 2 Ω » Verify the fuse is OK and there is voltage at the fuse.
 - **If the test lamp does not turn On and the circuit fuse is open**
 1. Ignition/Vehicle » Off & Remove » Test lamp
 2. Test for infinite resistance between the test points: B+ circuit terminal 2 & Ground
 - If less than infinite resistance » Repair the short to ground on the circuit.
 - If infinite resistance » Replace the component: M74 Window Motor
 - **If the test lamp turns On**
6. Test or replace the component: M74 Window Motor

Test 2

1. Ignition/Vehicle & All vehicle systems » Off

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

2. Disconnect the electrical connector: S79D Window Switch - Driver
3. Test for less than 10 Ω between the test points: Ground circuit terminal 1 & Ground
 - **If 10 Ω or greater**
 1. Ground Connection » Disconnect
 2. Test for less than 2 Ω between the test points: Ground circuit terminal 1 @ Component harness & Ground Connection
 - If 2 Ω or greater » Repair the open/high resistance in the circuit.
 - If less than 2 Ω » Repair the open/high resistance in the ground connection.
 - **If less than 10 Ω**
4. Ignition » On / Vehicle » In Service Mode
5. Verify a test lamp turns On between the test points: B+ circuit terminal 4 & Ground
 - **If the test lamp does not turn On and the circuit fuse is OK**
 1. Ignition/Vehicle » Off & Remove » Test lamp
 - If 2 Ω or greater » Repair the open/high resistance in the circuit.
 - If less than 2 Ω » Verify the fuse is OK and there is voltage at the fuse.

- **If the test lamp does not turn On and the circuit fuse is open**

1. Ignition/Vehicle $\hat{\mathbf{A}}$ » Off & Remove $\hat{\mathbf{A}}$ » Test lamp
2. Test for infinite resistance between the test points: B+ circuit terminal 4 & Ground
 - If less than infinite resistance $\hat{\mathbf{A}}$ » Repair the short to ground on the circuit.
 - If infinite resistance $\hat{\mathbf{A}}$ » Replace the component: S79D Window Switch - Driver

- **If the test lamp turns On**

6. Verify the scan tool parameter: Driver Window Main Control Down Switch=Inactive

- **If not the specified state**

1. Ignition/Vehicle $\hat{\mathbf{A}}$ » Off
2. Disconnect the electrical connector: M74D Window Motor - Driver
3. Test for infinite resistance between the test points: Signal circuit terminal 3 @ Component harness & Ground
 - If less than infinite resistance $\hat{\mathbf{A}}$ » Repair the short to ground on the circuit.
 - If infinite resistance $\hat{\mathbf{A}}$ » Replace the component: M74D Window Motor - Driver

- **If the specified state**

7. Momentarily connect a 3 A fused jumper wire between the test points: Signal circuit terminal 3 & Ground circuit terminal 1

Verify the scan tool parameter: Driver Window Main Control Down Switch=Active

- **If not the specified state**

1. Ignition/Vehicle $\hat{\mathbf{A}}$ » Off & Remove $\hat{\mathbf{A}}$ » Jumper wire(s)
2. Disconnect the electrical connector: M74D Window Motor - Driver
3. Ignition $\hat{\mathbf{A}}$ » On / Vehicle $\hat{\mathbf{A}}$ » In Service Mode
4. Test for less than 1 V between the test points: Signal circuit terminal 3 @ Component harness & Ground
 - If 1 V or greater $\hat{\mathbf{A}}$ » Repair the short to voltage on the circuit.
 - If less than 1 V
5. Ignition/Vehicle $\hat{\mathbf{A}}$ » Off
6. Test for less than 2 Ω between the test points: Signal circuit terminal 3 @ Component harness & Terminal 7 @ M74D Window Motor - Driver
 - If 2 Ω or greater $\hat{\mathbf{A}}$ » Repair the open/high resistance in the circuit.
 - If less than 2 Ω $\hat{\mathbf{A}}$ » Replace the component: M74D Window Motor - Driver

- **If the specified state**

8. Verify the scan tool parameter: Driver Window Main Control Up Switch=Inactive

- **If not the specified state**

1. Ignition/Vehicle $\hat{\mathbf{A}}$ » Off
2. Disconnect the electrical connector: M74D Window Motor - Driver
3. Test for infinite resistance between the test points: Signal circuit terminal 6 @ Component harness & Ground
 - If less than infinite resistance $\hat{\mathbf{A}}$ » Repair the short to ground on the circuit.
 - If infinite resistance $\hat{\mathbf{A}}$ » Replace the component: M74D Window Motor - Driver

- **If the specified state**

9. Momentarily connect a 3 A fused jumper wire between the test points: Signal circuit terminal 6 & Ground circuit terminal 1

Verify the scan tool parameter: Driver Window Main Control Up Switch=Active

- **If not the specified state**

1. Ignition/Vehicle $\hat{\mathbf{A}}$ » Off & Remove $\hat{\mathbf{A}}$ » Jumper wire(s)
2. Disconnect the electrical connector: M74D Window Motor - Driver
3. Ignition $\hat{\mathbf{A}}$ » On / Vehicle $\hat{\mathbf{A}}$ » In Service Mode

4. Test for less than 1 V between the test points: Signal circuit terminal 6 @ Component harness & Ground

- If 1 V or greater» Repair the short to voltage on the circuit.
- If less than 1 V

5. Ignition/Vehicle» Off

6. Test for less than 2 Ω between the test points: Signal circuit terminal 6 @ Component harness & Terminal 3 @ M74D Window Motor - Driver

- If 2 Ω or greater» Repair the open/high resistance in the circuit.
- If less than 2 Ω » Replace the component: M74D Window Motor - Driver

• **If the specified state**

10. Verify the scan tool parameter: Driver Window Main Control Express Switch=Inactive

• **If not the specified state**

1. Ignition/Vehicle» Off

2. Disconnect the electrical connector: M74D Window Motor - Driver

3. Test for infinite resistance between the test points: Signal circuit terminal 2 @ Component harness & Ground

- If less than infinite resistance» Repair the short to ground on the circuit.
- If infinite resistance» Replace the component: M74D Window Motor - Driver

• **If the specified state**

11. Momentarily connect a 3A fused jumper wire between the test points: Signal circuit terminal 2 & Ground circuit terminal 1

Verify the scan tool parameter: Driver Window Main Control Express Switch=Active

• **If not the specified state**

1. Ignition/Vehicle» Off & Remove» Jumper wire(s)

2. Disconnect the electrical connector: M74D Window Motor - Driver

3. Ignition» On / Vehicle» In Service Mode

4. Test for less than 1 V between the test points: Signal circuit terminal 2 @ Component harness & Ground

- If 1 V or greater» Repair the short to voltage on the circuit.
- If less than 1 V

5. Ignition/Vehicle» Off

6. Test for less than 2 Ω between the test points: Signal circuit terminal 2 @ Component harness & Terminal 5 @ M74D Window Motor - Driver

- If 2 Ω or greater» Repair the open/high resistance in the circuit.
- If less than 2 Ω » Replace the component: M74D Window Motor - Driver

• **If the specified state**

12. Test or replace the component: S79D Window Switch - Driver

Test 3

1. Ignition/Vehicle & All vehicle systems» Off

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

2. Disconnect the electrical connector: S79P Window Switch - Passenger

3. Test for less than 10 Ω between the test points: Ground circuit terminal 1 & Ground

• **If 10 Ω or greater**

1. Ground Connection» Disconnect

2. Test for less than 2 Ω between the test points: Ground circuit terminal 1 @ Component harness & Ground Connection
 - If 2 Ω or greaterÂ» Repair the open/high resistance in the circuit.
 - If less than 2 Ω Â» Repair the open/high resistance in the ground connection.
- **If less than 10 Ω**
4. Ignition Â» On / Vehicle Â» In Service Mode
5. Verify the scan tool parameter: Passenger Window Switch at Door=Inactive
 - **If not the specified state**
 1. Ignition/VehicleÂ» Off
 2. Disconnect the electrical connector: M74P Window Motor - Passenger
 3. Test for infinite resistance between the test points:
 - Signal circuit terminal 7 @ Component harness & Ground
 - Signal circuit terminal 8 @ Component harness & Ground
 - If less than infinite resistanceÂ» Repair the short to ground on the circuit.
 - If infinite resistanceÂ» Replace the component: M74P Window Motor - Passenger
 - **If the specified state**
6. Momentarily connect a 3 A fused jumper wire between the test points: Signal circuit terminal 8 @ Component harness & Ground
7. Verify the scan tool parameter: Passenger Window Switch at Door=Up
 - **If not the specified state**
 1. Ignition/VehicleÂ» Off & RemoveÂ» Jumper wire(s)
 2. Disconnect the electrical connector: M74P Window Motor - Passenger
 3. IgnitionÂ» On / VehicleÂ» In Service Mode
 4. Test for less than 1 V between the test points: Signal circuit terminal 8 @ Component harness & Ground
 - If 1 V or greaterÂ» Repair the short to voltage on the circuit.
 - If less than 1 V
 5. Ignition/VehicleÂ» Off
 6. Test for less than 2 Ω between the test points: Signal circuit terminal 8 @ Component harness & Terminal 3 @ M74P Window Motor - Passenger
 - If 2 Ω or greaterÂ» Repair the open/high resistance in the circuit.
 - If less than 2 Ω Â» Replace the component: M74P Window Motor - Passenger
 - **If the specified state**
8. Momentarily connect a 3 A fused jumper wire between the test points: Signal circuit terminal 7 @ Component harness & Ground
9. Verify the scan tool parameter: Passenger Window Switch at Door=Down
 - **If not the specified state**
 1. Ignition/VehicleÂ» Off & RemoveÂ» Jumper wire(s)
 2. Disconnect the electrical connector: M74P Window Motor - Passenger
 3. IgnitionÂ» On / VehicleÂ» In Service Mode
 4. Test for less than 1 V between the test points: Signal circuit terminal 7 @ Component harness & Ground
 - If 1 V or greaterÂ» Repair the short to voltage on the circuit.
 - If less than 1 V
 5. Ignition/Vehicle Â» Off
 6. Test for less than 2 Ω between the test points: Signal circuit terminal 8 @ Component harness & Terminal 3 @ M74P Window Motor - Passenger
 - If 2 Ω or greaterÂ» Repair the open/high resistance in the circuit.
 - If less than 2 Ω Â» Replace the component: M74P Window Motor - Passenger
 - **If the specified state**

10. Test for greater than 10 V between the test points: Signal circuit terminal 6 @ Component harness & Ground
 - **If 10 V or less**
 1. Ignition/Vehicle $\hat{A}$ » Off
 2. Disconnect the electrical connector: M74P Window Motor - Passenger
 3. Test for infinite resistance between the test points: Signal circuit terminal 6 @ Component harness & Ground
 - If less than infinite resistance $\hat{A}$ » Repair the short to ground on the circuit.
 - If less than infinite resistance
 1. Ignition/Vehicle $\hat{A}$ » Off
 2. Test for less than 2 Ω between the test points: Signal circuit terminal 6 @ Component harness & Signal circuit terminal 5 @ M74P Window Motor - Passenger
 - If 2 Ω or greater $\hat{A}$ » Repair the open/high resistance in the circuit.
 - If less than 2 Ω $\hat{A}$ » Replace the component: M74P Window Motor - Passenger
 - **If the specified state**
11. Test or replace the component: S79P Window Switch - Passenger

Test 4

1. Ignition/Vehicle & All vehicle systems $\hat{A}$ » Off

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

2. Disconnect the electrical connector: S79LR Window Switch - Left Rear
3. Test for less than 10 Ω between the test points: Ground circuit terminal 1 & Ground
 - **If 10 Ω or greater**
 1. Ground Connection $\hat{A}$ » Disconnect
 2. Test for less than 2 Ω between the test points: Ground circuit terminal 1 @ Component harness & Ground Connection
 - If 2 Ω or greater $\hat{A}$ » Repair the open/high resistance in the circuit.
 - If less than 2 Ω $\hat{A}$ » Repair the open/high resistance in the ground connection.
 - **If less than 10 Ω**
4. Ignition $\hat{A}$ » On / Vehicle $\hat{A}$ » In Service Mode
5. Verify the scan tool parameter: Left Rear Window Switch at Door=Inactive
 - **If not the specified state**
 1. Ignition/Vehicle $\hat{A}$ » Off
 2. Disconnect the electrical connector: M74LR Window Motor - Left Rear
 3. Test for infinite resistance between the test points:
 - Signal circuit terminal 6 @ Component harness & Ground
 - Signal circuit terminal 7 @ Component harness & Ground
 - If less than infinite resistance $\hat{A}$ » Repair the short to ground on the circuit.
 - If infinite resistance $\hat{A}$ » Replace the component: M74LR Window Motor - Left Rear
 - **If the specified state**
6. Momentarily connect a 3 A fused jumper wire between the test points: Signal circuit terminal 6 @ Component harness & Ground
7. Verify the scan tool parameter: Left Rear Window Switch at Door=Up
 - **If not the specified state**
 1. Ignition/Vehicle $\hat{A}$ » Off & Remove $\hat{A}$ » Jumper wire(s)
 2. Disconnect the electrical connector: M74LR Window Motor - Left Rear
 3. Ignition $\hat{A}$ » On / Vehicle $\hat{A}$ » In Service Mode

4. Test for less than 1 V between the test points: Signal circuit terminal 6 @ Component harness & Ground
 - If 1 V or greater» Repair the short to voltage on the circuit.
 - If less than 1 V
5. Ignition/Vehicle» Off
6. Test for less than 2 Ω between the test points: Signal circuit terminal 6 @ Component harness & Terminal 3 @ M74LR Window Motor - Left Rear
 - If 2 Ω or greater» Repair the open/high resistance in the circuit.
 - If less than 2 Ω » Replace the component: M74LR Window Motor - Left Rear
- **If the specified state**
8. Momentarily connect a 3A fused jumper wire between the test points: Signal circuit terminal 7 @ Component harness & Ground
9. Verify the scan tool parameter: Left Rear Window Switch at Door=Down
 - **If not the specified state**
 1. Ignition/Vehicle» Off & Remove» Jumper wire(s)
 2. Disconnect the electrical connector: M74LR Window Motor - Left Rear
 3. Ignition » On / Vehicle » In Service Mode
 4. Test for less than 1 V between the test points: Signal circuit terminal 7 @ Component harness & Ground
 - If 1 V or greater» Repair the short to voltage on the circuit.
 - If less than 1 V
 5. Ignition/Vehicle » Off
 6. Test for less than 2 Ω between the test points: Signal circuit terminal 7 @ Component harness & Terminal 7 @ M74LR Window Motor - Left Rear
 - If 2 Ω or greater» Repair the open/high resistance in the circuit.
 - If less than 2 Ω » Replace the component: M74LR Window Motor - Left Rear
 - **If the specified state**
10. Test for greater than 10 V between the test points: Signal circuit terminal 8 @ Component harness & Ground
 - **If 10 V or less**
 1. Ignition/Vehicle» Off
 2. Disconnect the electrical connector: M74LR Window Motor - Left Rear
 3. Test for infinite resistance between the test points: Signal circuit terminal 8 @ Component harness & Ground
 - If less than infinite resistance» Repair the short to ground on the circuit.
 - If less than infinite resistance
 1. Ignition/Vehicle » Off
 2. Test for less than 2 Ω between the test points: Signal circuit terminal 8 @ Component harness & Signal circuit terminal 5 @ M74LR Window Motor - Left Rear
 - If 2 Ω or greater» Repair the open/high resistance in the circuit.
 - If less than 2 Ω » Replace the component: M74LR Window Motor - Left Rear
 - **If the specified state**
11. Test or replace the component: S79LR Window Switch - Left Rear

Test 5

1. Ignition/Vehicle & All vehicle systems» Off

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

2. Disconnect the electrical connector: S79RR Window Switch - Right Rear

3. Test for less than 10 Ω between the test points: Ground circuit terminal 1 & Ground

- **If 10 Ω or greater**

1. Ground Connection» Disconnect

2. Test for less than 2 Ω between the test points: Ground circuit terminal 1 @ Component harness & Ground Connection

- If 2 Ω or greater» Repair the open/high resistance in the circuit.
- If less than 2 Ω » Repair the open/high resistance in the ground connection.

- **If less than 10 Ω**

4. Ignition » On / Vehicle » In Service Mode

5. Verify the scan tool parameter: Right Rear Window Switch at Door=Inactive

- **If not the specified state**

1. Ignition/Vehicle» Off

2. Disconnect the electrical connector: M74RR Window Motor - Right Rear

3. Test for infinite resistance between the test points:

- Signal circuit terminal 6 @ Component harness & Ground
- Signal circuit terminal 7 @ Component harness & Ground
- If less than infinite resistance» Repair the short to ground on the circuit.
- If infinite resistance» Replace the component: M74RR Window Motor - Right Rear

- **If the specified state**

6. Momentarily connect a 3 A fused jumper wire between the test points: Signal circuit terminal 6 @ Component harness & Ground

7. Verify the scan tool parameter: Right Rear Window Switch at Door=Up

- **If not the specified state**

1. Ignition/Vehicle» Off & Remove» Jumper wire(s)

2. Disconnect the electrical connector: M74RR Window Motor - Right Rear

3. Ignition » On / Vehicle » In Service Mode

4. Test for less than 1 V between the test points: Signal circuit terminal 6 @ Component harness & Ground

- If 1 V or greater» Repair the short to voltage on the circuit.
- If less than 1 V

5. Ignition/Vehicle » Off

6. Test for less than 2 Ω between the test points: Signal circuit terminal 6 @ Component harness & Terminal 3 @ M74RR Window Motor - Right Rear

- If 2 Ω or greater» Repair the open/high resistance in the circuit.
- If less than 2 Ω » Replace the component: M74RR Window Motor - Right Rear

- **If the specified state**

8. Momentarily connect a 3A fused jumper wire between the test points: Signal circuit terminal 7 @ Component harness & Ground

9. Verify the scan tool parameter: Right Rear Window Switch at Door=Down

- **If not the specified state**

1. Ignition/Vehicle» Off & Remove» Jumper wire(s)

2. Disconnect the electrical connector: M74RR Window Motor - Right Rear

3. Ignition» On / Vehicle» In Service Mode

4. Test for less than 1 V between the test points: Signal circuit terminal 7 @ Component harness & Ground

- If 1 V or greater» Repair the short to voltage on the circuit.
- If less than 1 V

5. Ignition/Vehicle » Off

6. Test for less than 2 Ω between the test points: Signal circuit terminal 7 @ Component harness & Terminal 7 @ M74RR Window Motor - Right Rear

- If 2 Ω or greater $\hat{A}$ » Repair the open/high resistance in the circuit.
 - If less than 2 $\Omega \hat{A}$ » Replace the component: M74RR Window Motor - Right Rear
- **If the specified state**
10. Test for greater than 10 V between the test points: Signal circuit terminal 8 @ Component harness & Ground
 - **If 10 V or less**
 1. Ignition/Vehicle $\hat{A}$ » Off
 2. Disconnect the electrical connector: M74RR Window Motor - Right Rear
 3. Test for infinite resistance between the test points: Signal circuit terminal 8 @ Component harness & Ground
 - If less than infinite resistance $\hat{A}$ » Repair the short to ground on the circuit.
 - If less than infinite resistance
 - 1. Ignition/Vehicle $\hat{A}$ » Off
 - 2. Test for less than 2 Ω between the test points: Signal circuit terminal 8 @ Component harness & Terminal 5 @ M74RR Window Motor - Right Rear
 - If 2 Ω or greater $\hat{A}$ » Repair the open/high resistance in the circuit.
 - If less than 2 $\Omega \hat{A}$ » Replace the component: M74RR Window Motor - Right Rear
- **If the specified state**
11. Test or replace the component: S79RR Window Switch - Right Rear

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: [Diagnostic Repair Verification](#)

- [Front Side Door Window Switch Replacement - Right Side](#)
- [Front Side Door Window Control Switch Replacement](#)
- [Rear Side Door Window Switch Replacement](#)
- [Front Side Door Window Regulator Motor Replacement](#)
- [Rear Side Door Window Regulator Motor Replacement](#)

SIDE DOOR WINDOW MECHANICAL DIAGNOSIS

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

Cause	Correction
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 or equivalent in order to remove the window.
- Use a urethane adhesive systems which meet GM Specification GM 3651G

Equivalent regional tools: [Special Tools](#)

Removal Procedure

1. Open the hood.

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.

2. [Windshield Wiper Arm Replacement](#) Â» Remove
3. [Air Inlet Grille Panel Replacement](#) Â» Remove
4. [Inside Rearview Mirror Replacement](#) Â» Remove
5. [Front View Camera Replacement](#) Â» Remove
6. [Windshield Outside Moisture/Ambient Light and Humidity Sensor Replacement](#) Â» Remove
7. Cover to protect the following parts from broken glass:

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

- Upper Dash Pad
 - The defroster outlets and A/C outlets
 - The seats and carpeting
8. Remove the lower windshield supports from the cowl panel, if equipped.
 9. Using the appropriate tool, carefully cut around the lace (1), start in the center working from side to side of the window to access the urethane adhesive bead, if equipped.

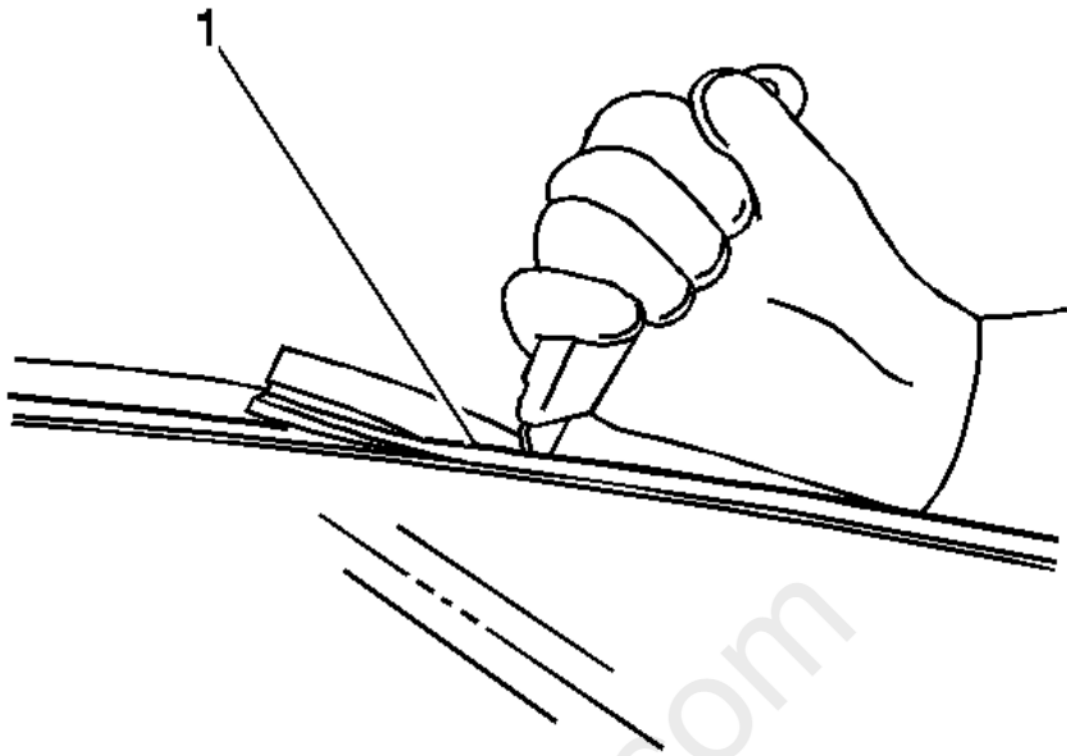


Fig. 5: Using Utility Knife To Remove Reveal Molding
Courtesy of GENERAL MOTORS COMPANY

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

10. This will allow the urethane adhesive to be separated from the windshield.

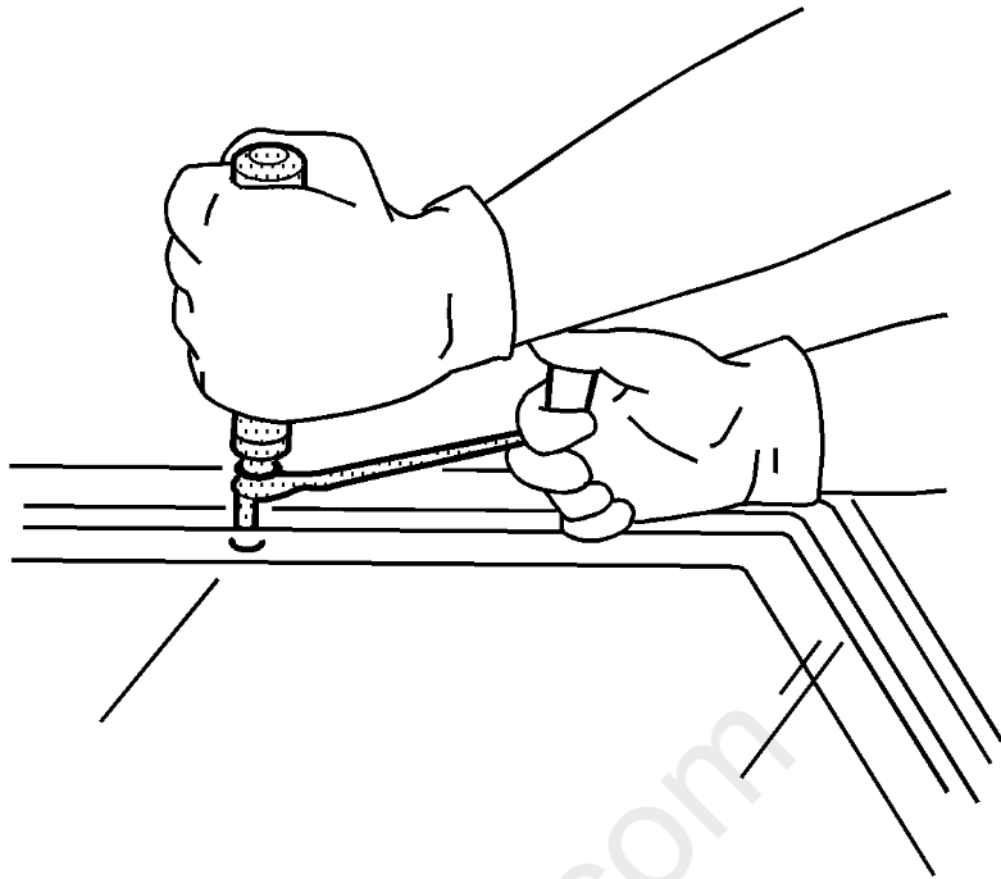
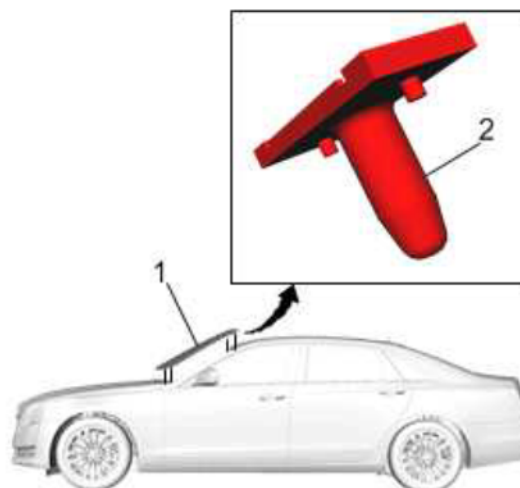


Fig. 6: Separating Urethane Adhesive From Window
 Courtesy of GENERAL MOTORS COMPANY

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

- Leave a base of urethane on the pinchweld flange.
- The only suitable lubrication is clear water.
- **BO-24402-A** Glass Sealant Remover (Cold Knife).
- **BO-39032** Stationary Glass Removal Tool or equivalent in order to remove the window.

11. With the aid of an assistant, remove the windshield (1) and locating pin (2) from the vehicle.



Installation Procedure

1. **Adhesive Installation of Windshields** Â» Install
2. **Windshield Outside Moisture/Ambient Light and Humidity Sensor Replacement** Â» Install
3. **Front View Camera Replacement** Â» Install
4. **Inside Rearview Mirror Replacement** Â» Install
5. **Air Inlet Grille Panel Replacement** Â» Install
6. **Windshield Wiper Arm Replacement** Â» Install
7. Close the hood.
8. Remove the double layer of masking tape around the perimeter of the painted surfaces.

FRONT SIDE DOOR WINDOW ADJUSTMENT

Causes of Slow Moving Window

1. Listed below are conditions that may cause a slow moving window.

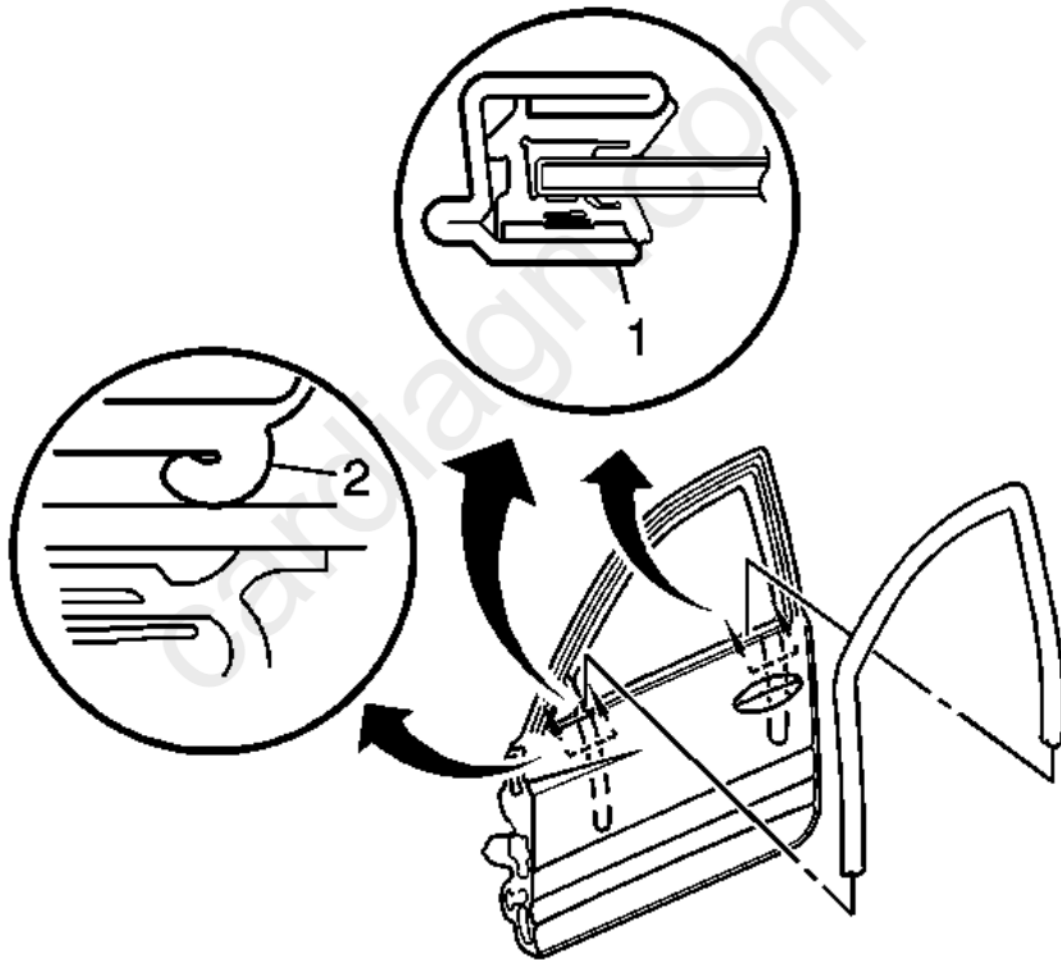


Fig. 8: Internal Detail For Front Door Window Adjustment
Courtesy of GENERAL MOTORS COMPANY

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

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

- The window run channel outboard lip at the rear of door frame (2).
 - The window is not seated in the run channel.
 - The window is misaligned in the opening.
 - The regulator is misaligned causing misalignment of the window.
 - Inspect the power window motor for being loose.
2. After inspecting the conditions above, do the following:

Remove the front door trim panel.

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

Adjustment Procedure

1. Inspect for the following conditions before making adjustments.
 - Using a flat-bladed tool, straighten the run channel lip by pulling it out to its correct position.
 - Use a flat-bladed tool to push the run channel rearward to seat it in the door frame.
 - Inspect the window guide retainer to window for the proper alignment to the slots in the window.
 - Inspect the window to be straight up and down position.
 - Loosen the nuts that attach the window regulator (1) to the inner door panel, in the specified sequence (2, 3, 4).

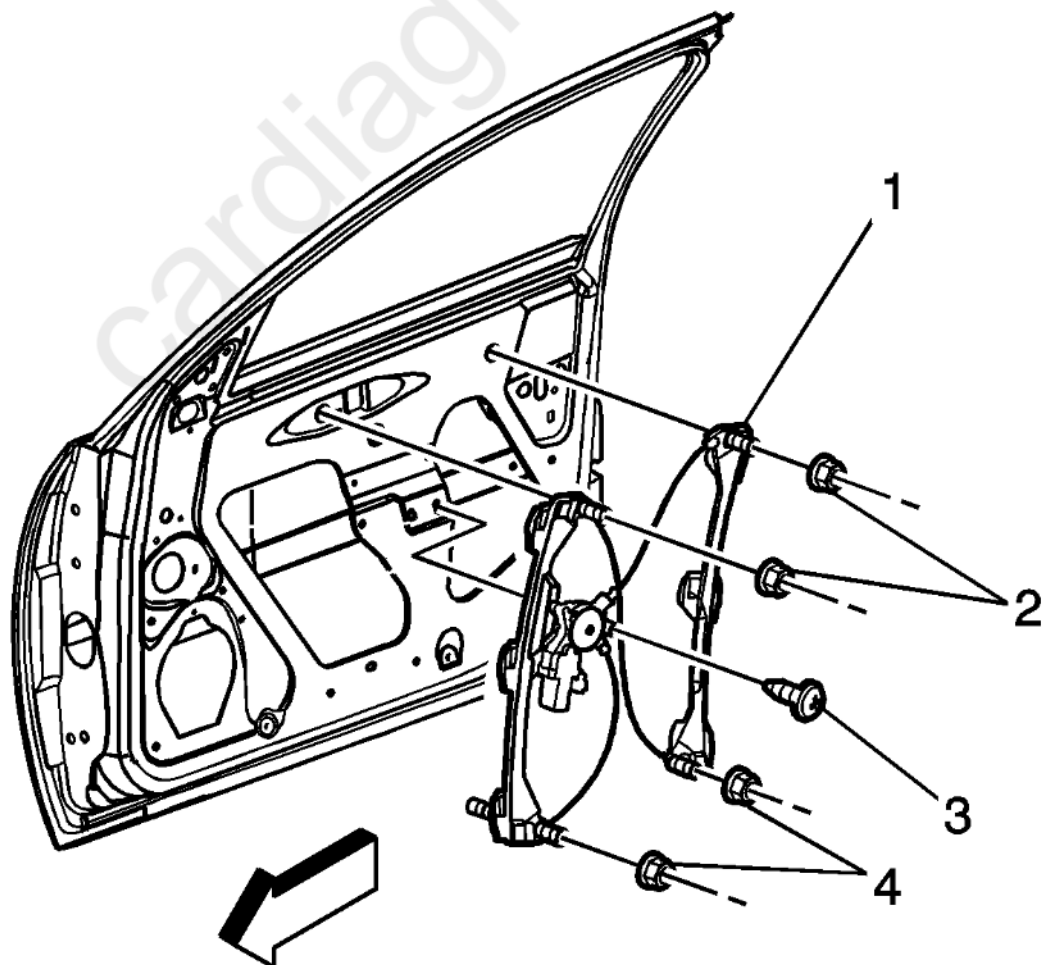


Fig. 9: Window Regulator

Courtesy of GENERAL MOTORS COMPANY

2. Tighten the nuts that attach the front side door window regulator (1) to the inner door panel in the specified sequence (2, 3, 4) to 10 N.m (89 lb in).

CAUTION: Refer to [Fastener Caution](#) .

3. Inspect the window for proper operation.
4. Install the water deflector.
5. Install the front door trim panel.

FRONT SIDE DOOR WINDOW REPLACEMENT

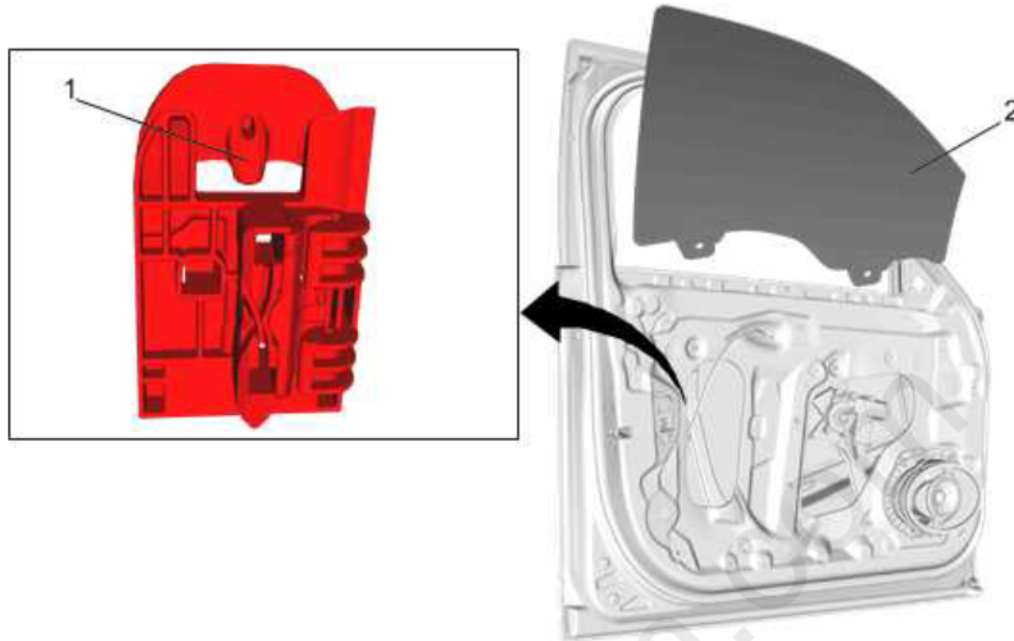


Fig. 10: Front Side Door Window

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning .	
WARNING: Disconnect the power window switch when working inside the door. When operated, the Express Up/Down Feature allows the door window to move very quickly, without stopping, which could cause personal injury.	
CAUTION: Refer to Paint Damage Caution .	
Preliminary Procedures 1. Front Side Door Armrest Bracket Replacement 2. Front Side Door Window Garnish Molding Replacement 3. Front Side Door Window Inner Sealing Strip Replacement 4. Remove the water deflector. 5. Front Side Door Window Channel Retainer Replacement	

Callout	Component Name
1	Front Side Door Window Retainer [2x] Procedure 1. Use masking tape to tape the window in the full up position to the door frame. 2. Using the proper tool release the window regulator guide from the window. 3. Lower the window regulator full down. 4. Remove the masking tape from the window. 5. Tilt the window downward in the front, pull up on the back of the window and pull it out from the door frame.
2	Front Side Door Window Inspect the window for proper operation before installing the door trim panel.

REAR SIDE DOOR WINDOW ADJUSTMENT

Causes of Slow Moving Window

1. Listed below are conditions that may cause a slow moving window:

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

- The window run channel outboard lip at the rear of door frame.
 - The window is not seated in the run channel.
 - The window is misaligned in the opening.
 - The regulator is misaligned causing misalignment of the window.
2. After inspecting the conditions above, do the following:
 1. Remove the rear door trim panel.
 2. Remove the water deflector.
 3. Ensure that the window guide is fully seated and clipped.

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

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

Adjustment Procedure

1. Remove the rear side door trim panel.
2. Inspect for the following conditions before making adjustments:

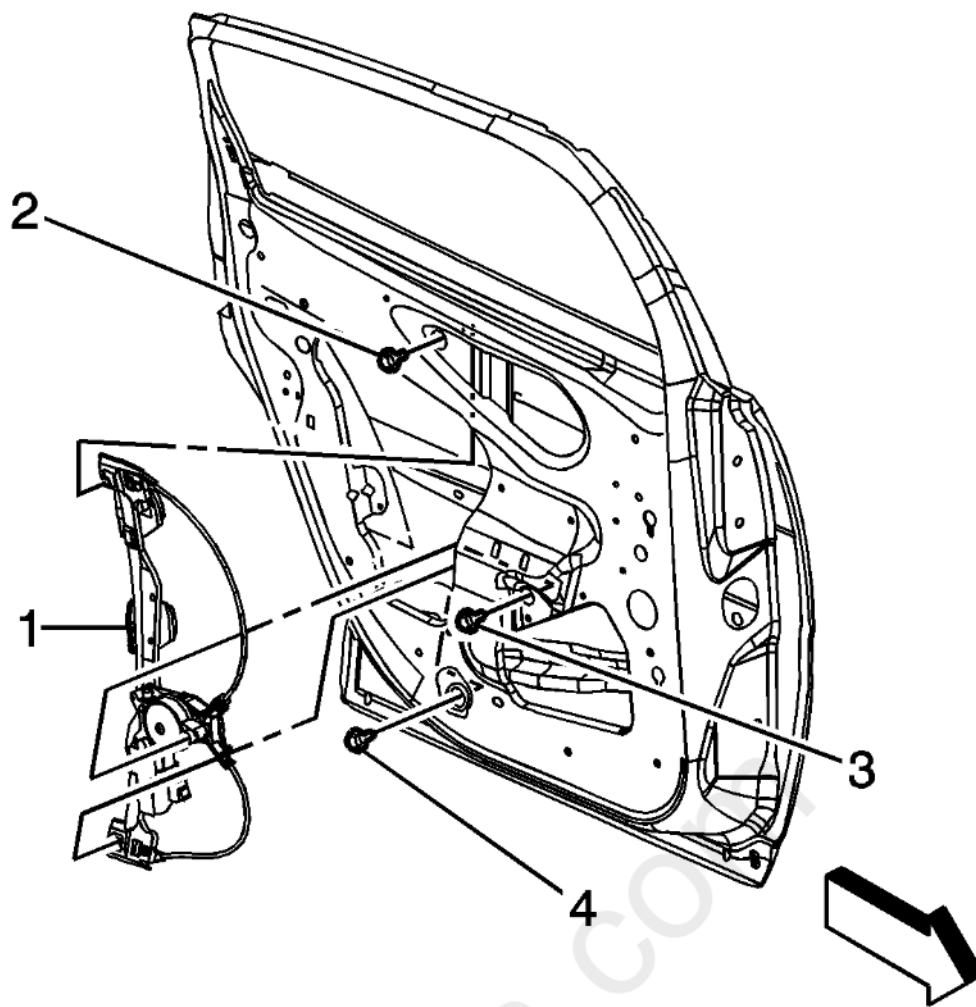


Fig. 11: Window Regulator

Courtesy of GENERAL MOTORS COMPANY

- Using a flat-bladed tool, straighten the run channel lip by pulling it out to its correct position.
 - Use a flat-bladed tool to push the run channel rearward to seat it in the door frame.
 - Inspect the window guide channel to window fasteners to ensure that they are in the proper slots and the window is not tilted forward.
 - Inspect the window to be straight up and down position.
 - Loosen the nuts that attach the window regulator (1) to the inner door panel, in the specified sequence (2, 3, 4).
3. Loosen the nuts that attach the rear side door window regulator (1) to the inner door panel in the specified sequence (2, 3, 4).

CAUTION: Refer to **Fastener Caution** .

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

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

REAR SIDE DOOR WINDOW REPLACEMENT

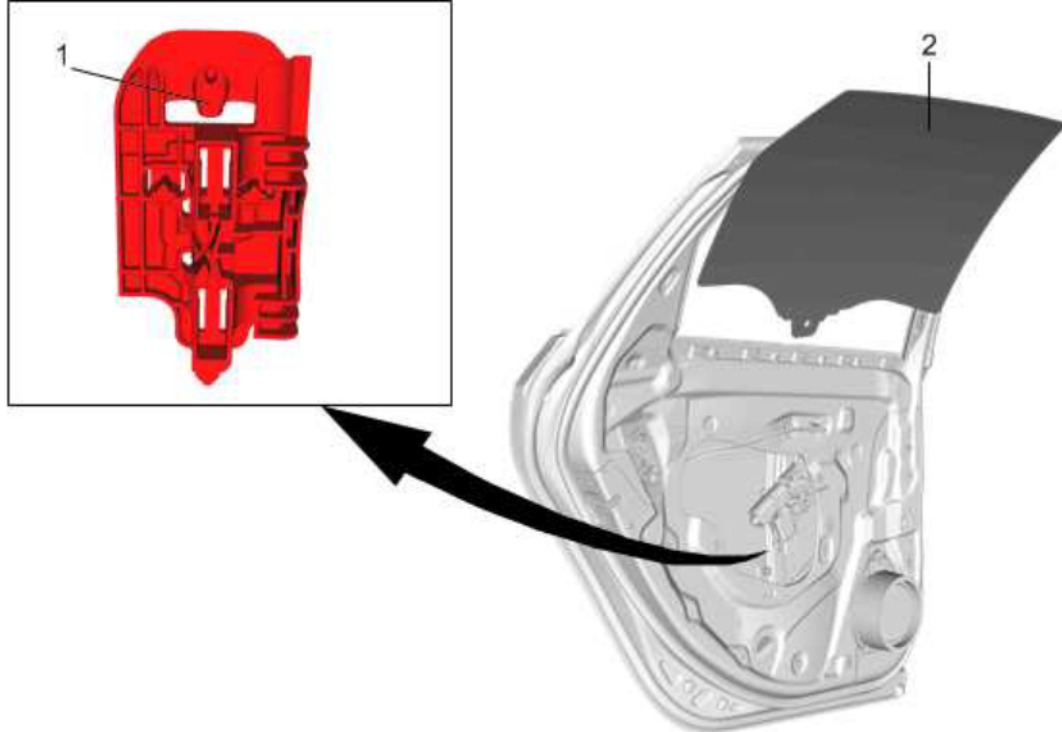


Fig. 12: Rear Side Door Window

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning . WARNING: Disconnect the power window switch when working inside the door. When operated, the Express Up/Down Feature allows the door window to move very quickly, without stopping, which could cause personal injury. CAUTION: Refer to Paint Damage Caution . Preliminary Procedures Rear Side Door Trim Replacement Rear Side Door Window Belt Reveal Molding Replacement Rear Side Door Window Inner Sealing Strip Replacement - Remove the water deflector. Rear Side Door Window Channel Retainer Replacement Rear Side Door Window Front Channel Replacement	
1	Rear Side Door Window Regulator Retainer Procedure - Use masking tape to tape the window in the full up position to the door frame. - Using the proper tool release the window from the regulator guide. - Lower the window regulator full down. - Remove the masking tape from the window. - Tilt the window downward in the front, pull on the back of the window and pull it out from the door frame.

Callout	Component Name
2	Rear Side Door Window NOTE: Inspect the window for proper operation before install the door trim panel.

QUARTER WINDOW REPLACEMENT

Special Tools

- **BO-24402-A** Glass Sealant Remover (Cold Knife).
- **BO-39032** Stationary Glass Removal Tool or equivalent in order to remove the window.
- Use a urethane adhesive systems which meet GM Specification GM 3651G

Removal Procedure

1. **Body Side Rear Window Lower Garnish Molding Replacement** » Remove

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 inner trim of the window.

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

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

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

3. Carefully cut around the inside of the quarter modular window to expose the urethane adhesive bead.

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

NOTE: Keep the cutting edge of the tool against the window. Do this from inside the vehicle to protect the outer painted surface.

Use care not to damage the retainers. If the retainer get damaged it will be necessary to use mask tape to tape it in place while curing.

4. Keep the cutting edge of the tool against the inside of the window.

This will allow the urethane adhesive to be separated from the window.

- Leave a base of urethane on the pinch-weld flange.
- The only suitable lubrication is clear water.
- **BO-24402-A** Glass Sealant Remover (Cold Knife).
- **BO-39032** Stationary Glass Removal Tool or equivalent in order to remove the window.
- Remove the quarter modular window (1) from the pinch-weld flange.

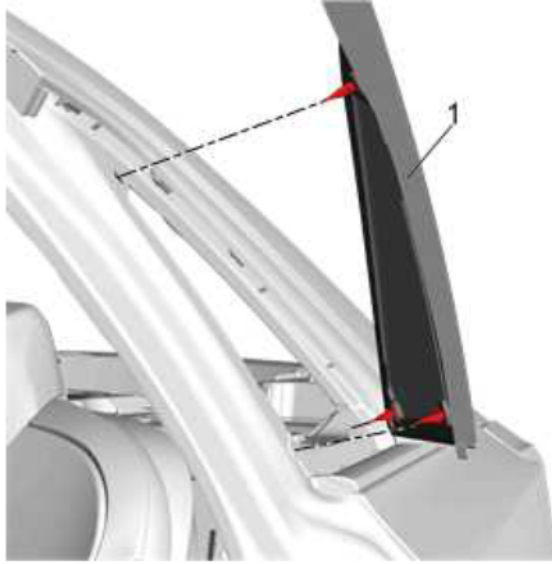


Fig. 13: Quarter Modular Window
Courtesy of GENERAL MOTORS COMPANY

Installation Procedure

1. **Adhesive Installation of Quarter Windows**
2. **Body Side Rear Window Lower Garnish Molding Replacement** » Install
3. Masking tape around the perimeter of the painted surfaces and the interior trim » Remove

QUARTER WINDOW REPLACEMENT - BRAZIL

Special Tools

- **S-0201964** Bonded, Glass Removing Device
- Glass Handling Suction Cups
- Use an adhesive that is approved by GM

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

Removal Procedure

1. Open the rear compartment lid.

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

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

2. Remove the sealing strip from the lower edge of the rear window.
3. Disconnect the electrical connectors from the rear window defogger bus bar.

NOTE: Use care around the high mount stop lamp when removing the rear window.

4. Disconnect the connector from the radio antenna module.
5. Lower the rear edge of the headliner this will allow the special tool **S-0201964** Bonded, Glass Removing Device to cut across the top of the window and not damage the headliner edge.
6. Protect the following parts from broken glass, seats and carpeting.
7. Remove the rear window from the auto-adhesive as follows:

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

- Leave a base of urethane approximately 2 mm (0.078 in) on the pinch-weld flange.

- The only suitable lubrication is clear water.
 - Use **S-0201964** Bonded, Glass Removing Device.
8. Using the appropriate tool, carefully cut around the lace (1), start in the center working from side to side of the window to access the urethane adhesive bead, if equipped.

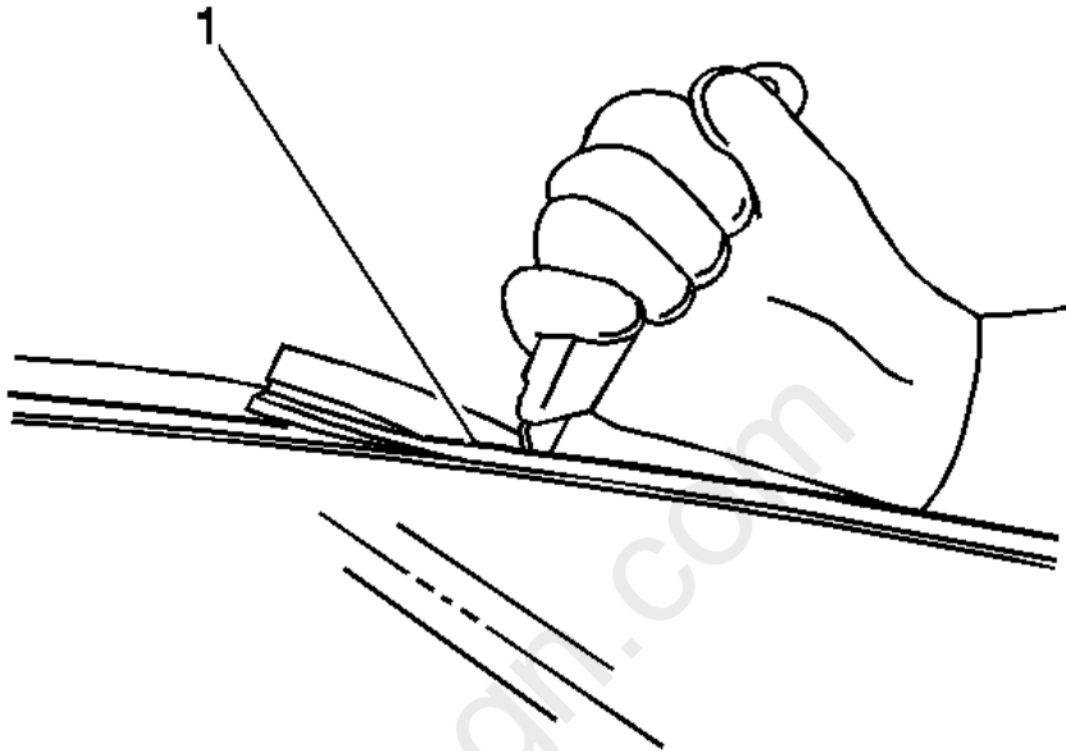


Fig. 14: Using Utility Knife To Remove Reveal Molding
 Courtesy of GENERAL MOTORS COMPANY

WARNING: Refer to [Glass and Sheet Metal Handling Warning](#) .

NOTE: If the original window is being reused the window lace is not serviceable.

9. Start the cut between the center of the rear window and the roof.
1. Do this from inside the vehicle, insert the tool **S-0201964** Bonded, Glass Removing Device (1) between the center of the rear window and the roof, thus perforating the adhesive.
 2. Move the cutting wire along the outside edge of the window.
 3. Remove the tool **S-0201964** Bonded, Glass Removing Device.
 4. Do this from inside the vehicle, install the cutting wire special tool **S-0201964** Bonded, Glass Removing Device (1).
 5. Do this from outside the vehicle, install the cutting wire special tool **S-0201964** Bonded, Glass Removing Device.
 6. With an assistant, use the special tool **S-0201964** Bonded, Glass Removing Device (1) to hold the cutting wire, pull it starting from the outside, back and forth releasing the window from the adhesive.
 7. While cutting the window reposition the cutting wire and special tools, so as to cut the adhesive along the window completely.
10. Remove the rear window from the vehicle with an assistant, use the glass handling suction cups.



Fig. 15: Removing Windshield With Aid Of An Assistant
Courtesy of GENERAL MOTORS COMPANY

Installation Procedure

1. If reusing or replacing the window, use the appropriate tool, remove the auto-adhesive bead on the window surface and pinch-weld flange to approximately 2 mm (0.078 in).
2. Clean the bonding area on the window.

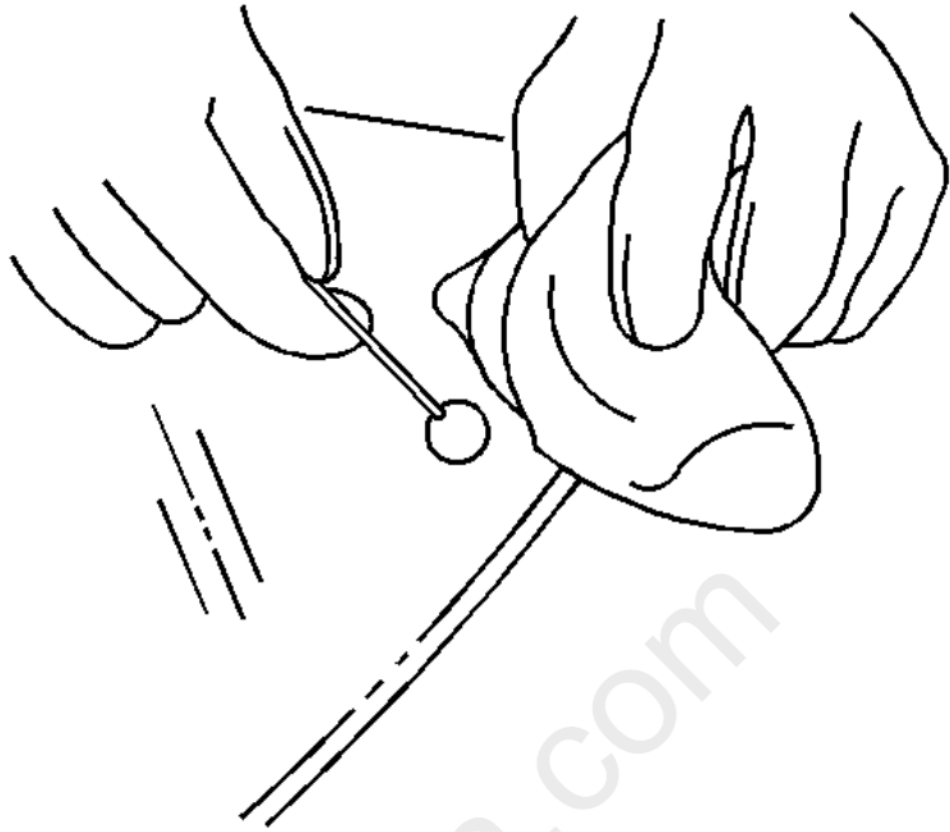


Fig. 16: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

3. Apply bonded-glass primer and let dry per auto-adhesive instructions by the manufacturer's.

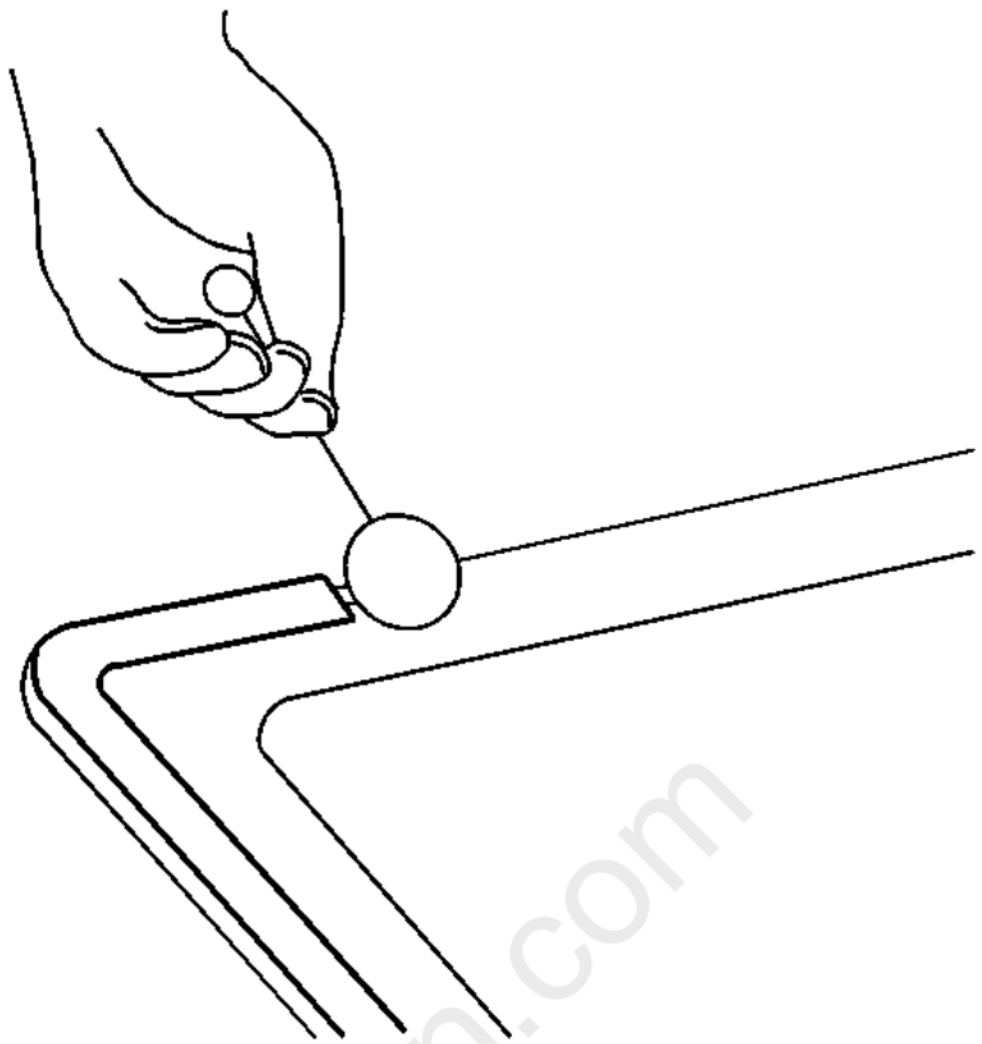


Fig. 17: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

4. Apply the auto-adhesive primer-application (2) around the perimeter of the rear window (1) per auto-adhesive instructions by the manufacturer's.

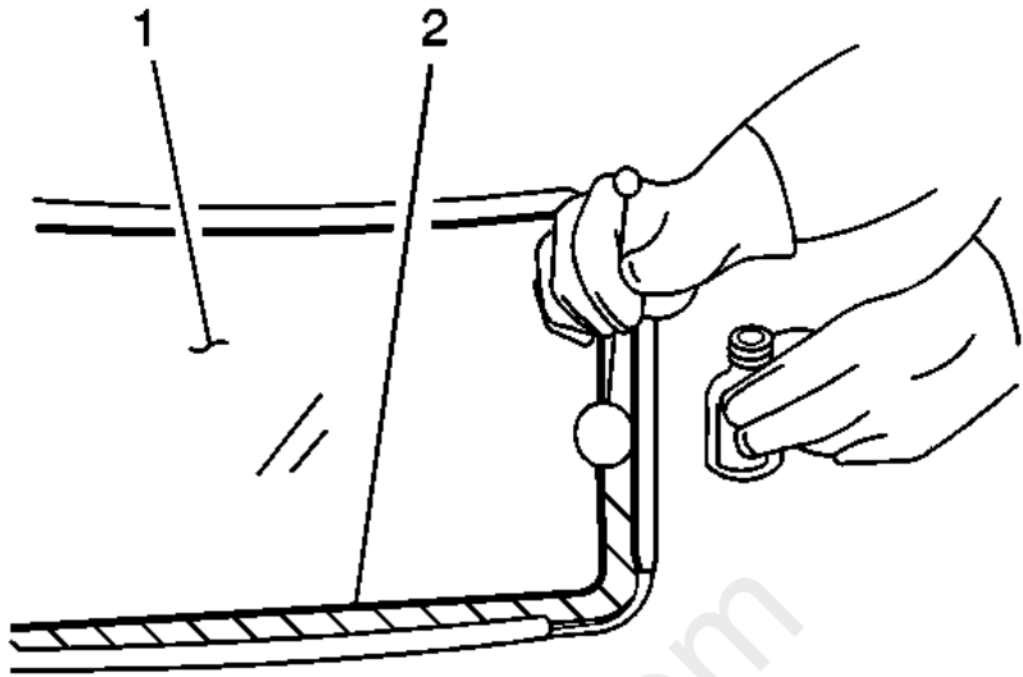


Fig. 18: Applying Glass Primer

Courtesy of GENERAL MOTORS COMPANY

5. Cut the applicator nozzle to provide a V cut to apply the auto-adhesive.

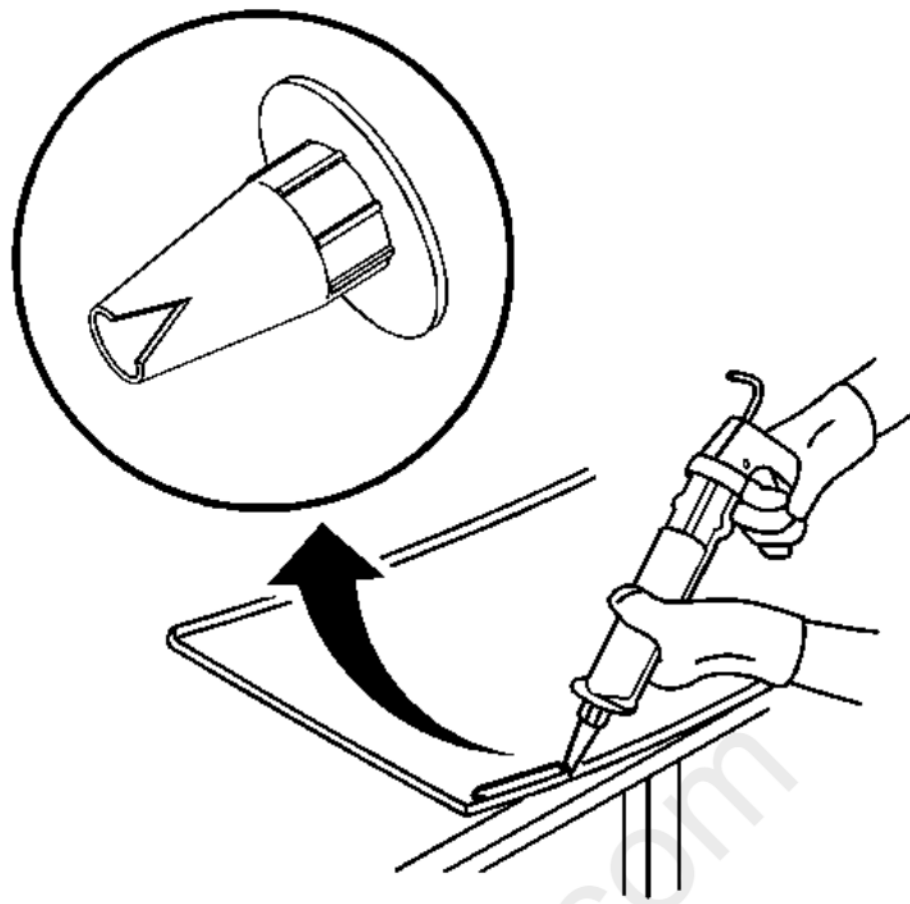


Fig. 19: View Of Modified Applicator Nozzle

Courtesy of GENERAL MOTORS COMPANY

6. Install the sealing strip to the bottom of the rear window.
7. With an assistant, use the glass handling cups, align the window locating pins to the slots located in each corner of the pinch-weld flange. Lower the window to touch the auto-adhesive.

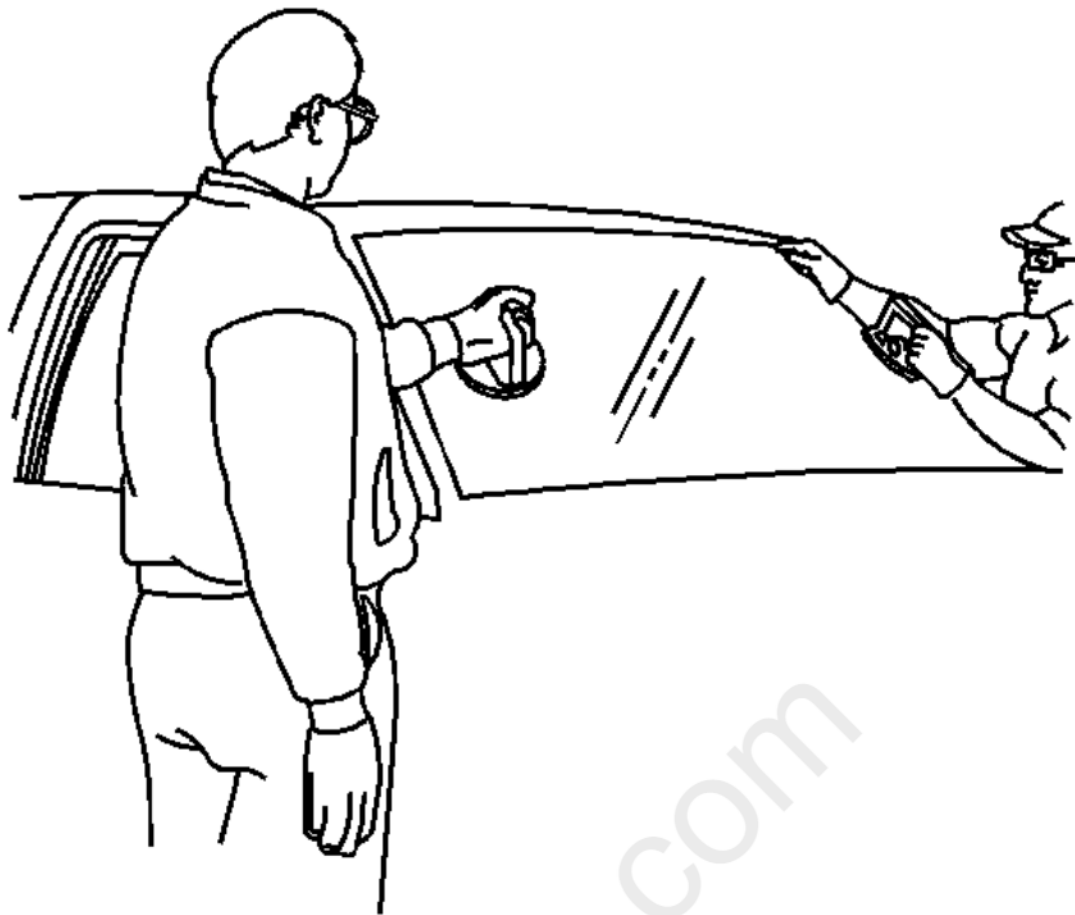


Fig. 20: Removing Windshield With Aid Of An Assistant

Courtesy of GENERAL MOTORS COMPANY

NOTE: If the locating pins were cut off it will be necessary to tape the window in place until the auto-adhesive cures per auto-adhesive instructions by the manufacturer's.

8. Remove the glass handling cups.
9. Gently depress the window on the auto-adhesive bead until the window is seated 1 mm (0.039 in) below the roof.

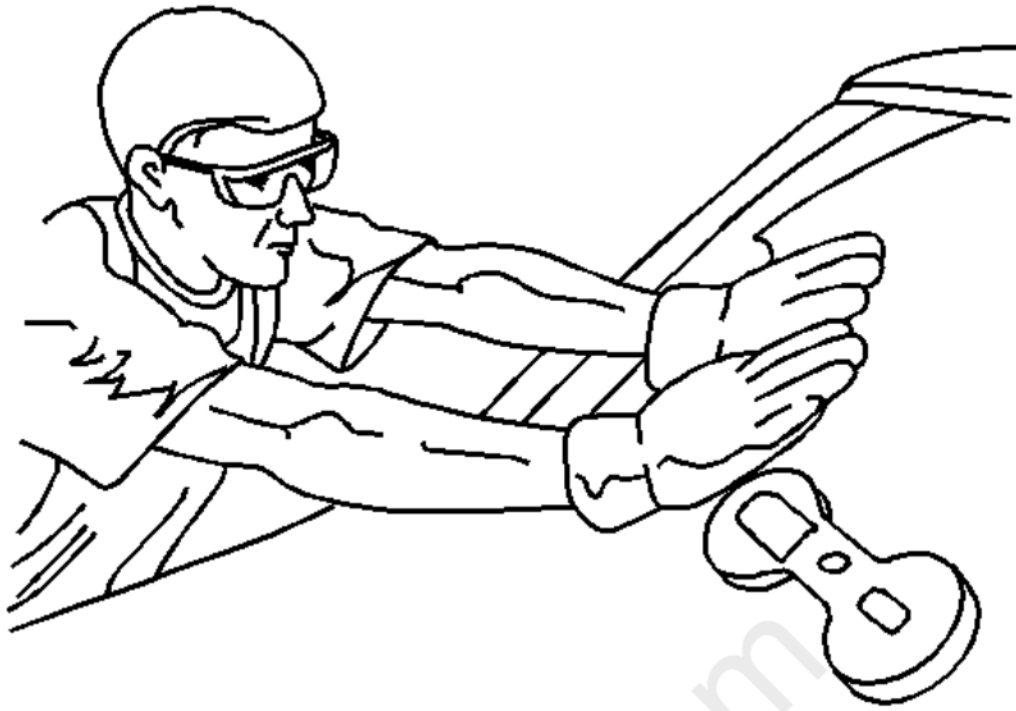


Fig. 21: Pressing Window Into Place

Courtesy of GENERAL MOTORS COMPANY

10. Use masking tape (1) to hold the window (2) in the position until the auto-adhesive completely cures.

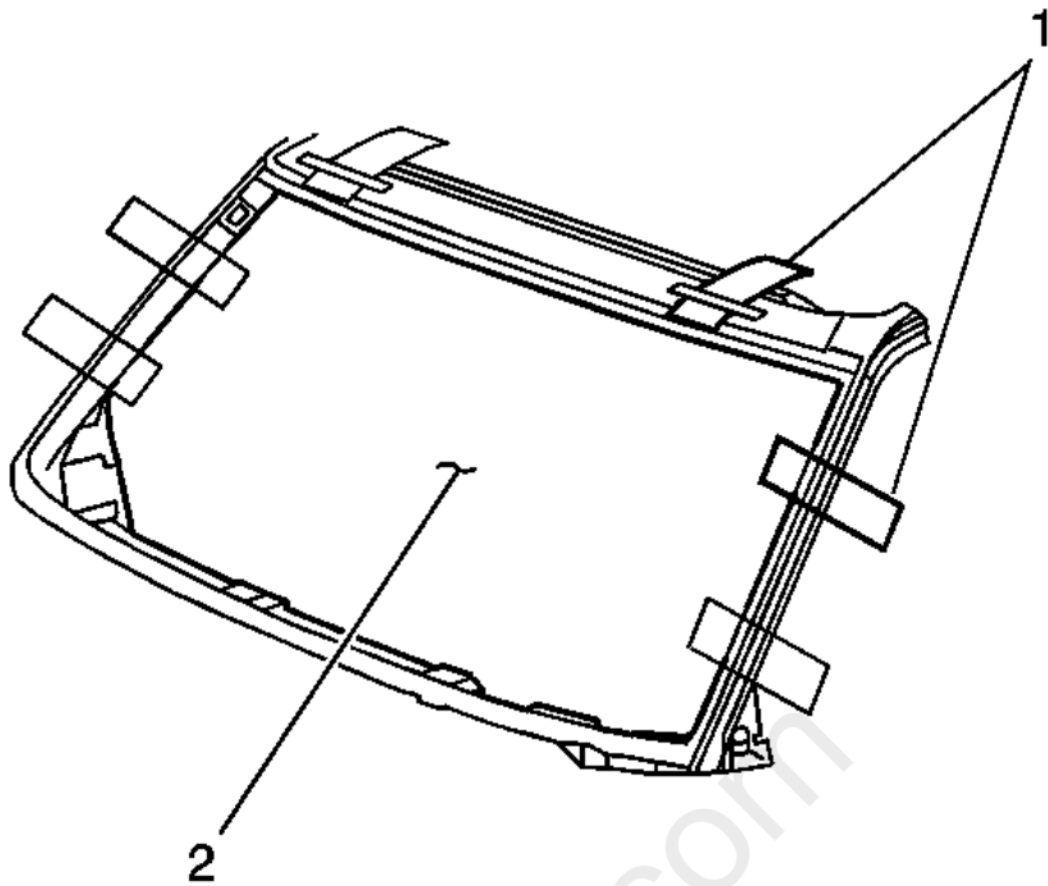


Fig. 22: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS COMPANY

11. Connect the rear window defogger electrical connectors to the bus bars.
12. Connect the connector from the radio antenna module.
13. Install the rear edge of the headliner.
14. Make sure to observe the auto-adhesive curing time before releasing the vehicle per auto-adhesive instructions by the manufacturer's.
15. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

NOTE: Following the auto-adhesive installation instructions, using nafta to remove any excess of auto-adhesive within 30 minutes, otherwise it will not be possible to remove the auto-adhesive excess unless using mechanical means.

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

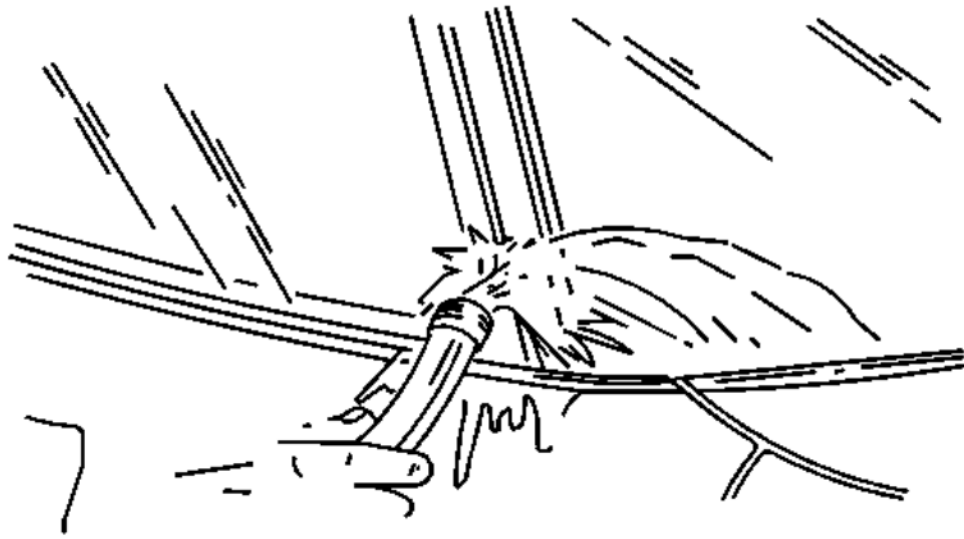


Fig. 23: Performing Water Hose Test
Courtesy of GENERAL MOTORS COMPANY

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

17. Inspect the window for leaks.
18. If any leaks are found, use a plastic paddle in order to apply extra auto-adhesive at the leak point.
19. Retest the window for leaks.
20. Maintain the following conditions in order to properly cure the auto-adhesive:
 - Partially lower a door window in order to prevent pressure buildups when closing doors before the auto-adhesive cures.
 - Do not drive the vehicle until the auto-adhesive is cured. Refer to the above curing times.
 - Do not use compressed air in order to dry the auto-adhesive.
21. Clean any excess auto-adhesive from the body.

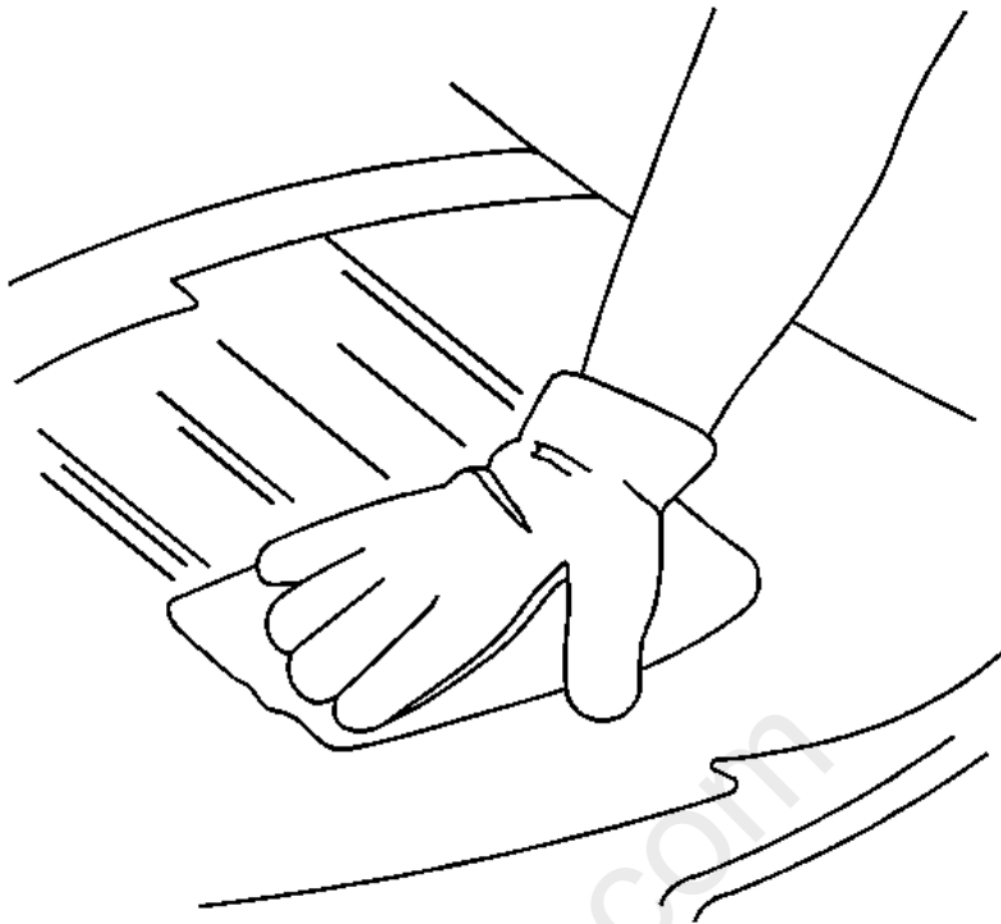


Fig. 24: Cleaning Excess Urethane Adhesive From Body
Courtesy of GENERAL MOTORS COMPANY

22. Close the rear compartment lid.
23. Ensure that the electrical components are working properly.

REAR WINDOW REPLACEMENT

Special Tools

- **BO-24402-A** Glass Sealant Remover (Cold Knife).
- **BO-39032** Stationary Glass Removal Tool or equivalent in order to remove the window.
- Use a urethane adhesive systems which meet GM Specification GM 3651G

Removal Procedure

1. Rear Compartment Lid» Open

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 inner trim.

2. Rear window lower seal» Remove
3. Electrical connectors» Disconnect
4. Cover to protect the following parts from broken glass:

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

- Upper dash pad
 - Defroster outlets and A/C outlets
 - Seats and carpeting
5. Using the appropriate tool, carefully cut around the lace, start in the center working from side to side of the window to access the urethane adhesive bead, if equipped.

WARNING: Refer to [Glass and Sheet Metal Handling Warning](#) .

6. This will allow the urethane adhesive to be separated from the window.

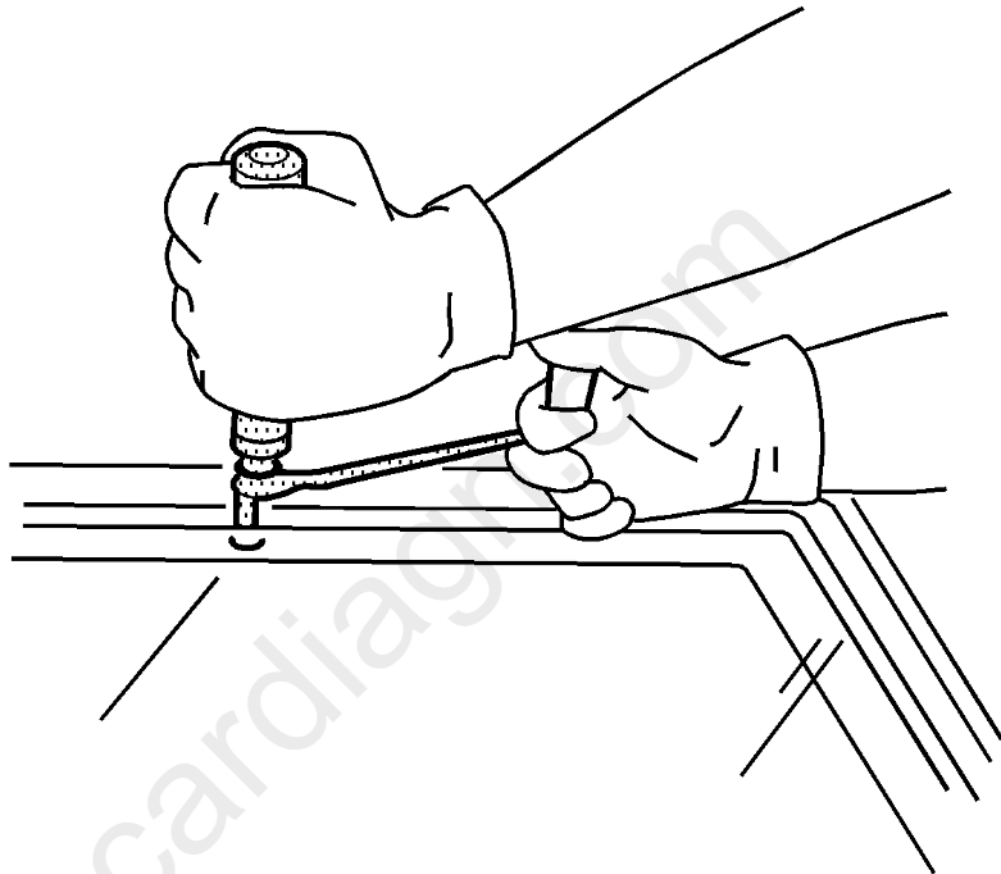


Fig. 25: Separating Urethane Adhesive From Window

Courtesy of GENERAL MOTORS COMPANY

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

- Leave a base of urethane on the pinchweld flange.
 - The only suitable lubrication is clear water.
 - **BO-24402-A** Glass Sealant Remover (Cold Knife).
 - **BO-39032** Stationary Glass Removal Tool or equivalent in order to remove the window.
7. With the aid of an assistant lift the rear window (1) from the opening.

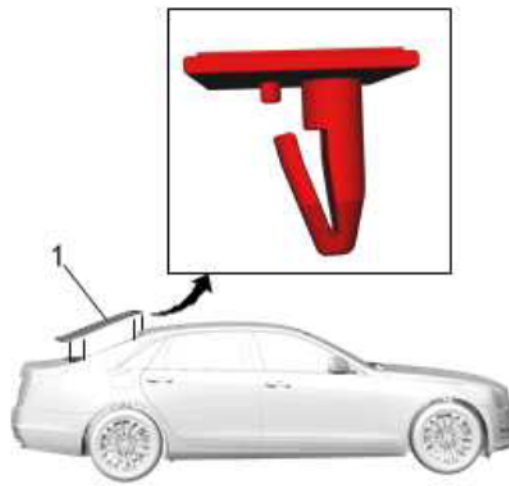


Fig. 26: Rear Window
 Courtesy of GENERAL MOTORS COMPANY

Installation Procedure

1. Adhesive Installation of Rear Windows

2. Rear window lower seal» Install
3. Electrical connectors» Connect
4. Rear compartment lid» Close
5. Double layer of masking tape around the perimeter of the painted surfaces and the interior trim» Remove

REAR WINDOW REPLACEMENT - BRAZIL

Special Tools

- **S-0201964** Bonded, Glass Removing Device
- Glass Handling Suction Cups
- Use an adhesive that is approved by GM

For equivalent regional tools, refer to Special Tools.

Removal Procedure

1. Open the rear compartment lid.

WARNING: Refer to Cracked Window Warning .

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

2. Remove the sealing strip from the lower edge of the rear window.
3. Disconnect the electrical connectors from the rear window defogger bus bar.

NOTE: Use care around the high mount stop lamp when removing the rear window.

4. Disconnect the connector from the radio antenna module.
5. Lower the rear edge of the headliner this will allow the special tool **S-0201964** Bonded, Glass Removing Device to cut across the top of the window and not damage the headliner edge.
6. Protect the following parts from broken glass, seats and carpeting.
7. Remove the rear window from the auto-adhesive as follows:

WARNING: Refer to [Glass and Sheet Metal Handling Warning](#) .

- Leave a base of urethane approximately 2 mm (0.078 in) on the pinch-weld flange.
 - The only suitable lubrication is clear water.
 - Use **S-0201964** Bonded, Glass Removing Device.
8. Using the appropriate tool, carefully cut around the lace (1), start in the center working from side to side of the window to access the urethane adhesive bead, if equipped.

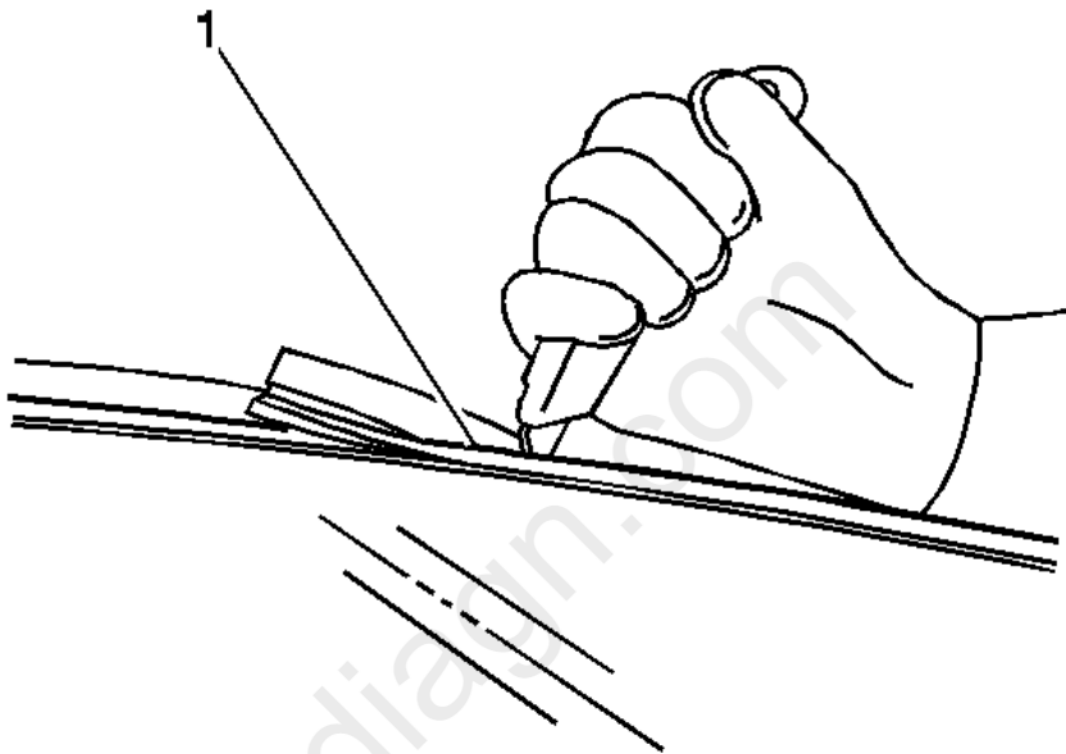


Fig. 27: Using Utility Knife To Remove Reveal Molding

Courtesy of GENERAL MOTORS COMPANY

WARNING: Refer to [Glass and Sheet Metal Handling Warning](#) .

NOTE: If the original window is being reused the window lace is not serviceable.

9. Start the cut between the center of the rear window and the roof.
1. Do this from inside the vehicle, insert the tool **S-0201964** Bonded, Glass Removing Device (1) between the center of the rear window and the roof, thus perforating the adhesive.
 2. Move the cutting wire along the outside edge of the window.
 3. Remove the tool **S-0201964** Bonded, Glass Removing Device.
 4. Do this from inside the vehicle, install the cutting wire special tool **S-0201964** Bonded, Glass Removing Device (1).
 5. Do this from outside the vehicle, install the cutting wire special tool **S-0201964** Bonded, Glass Removing Device.
 6. With an assistant, use the special tool **S-0201964** Bonded, Glass Removing Device (1) to hold the cutting wire, pull it starting from the outside, back and forth releasing the window from the adhesive.

7. While cutting the window reposition the cutting wire and special tools, so as to cut the adhesive along the window completely.
10. Remove the rear window from the vehicle with an assistant, use the glass handling suction cups.

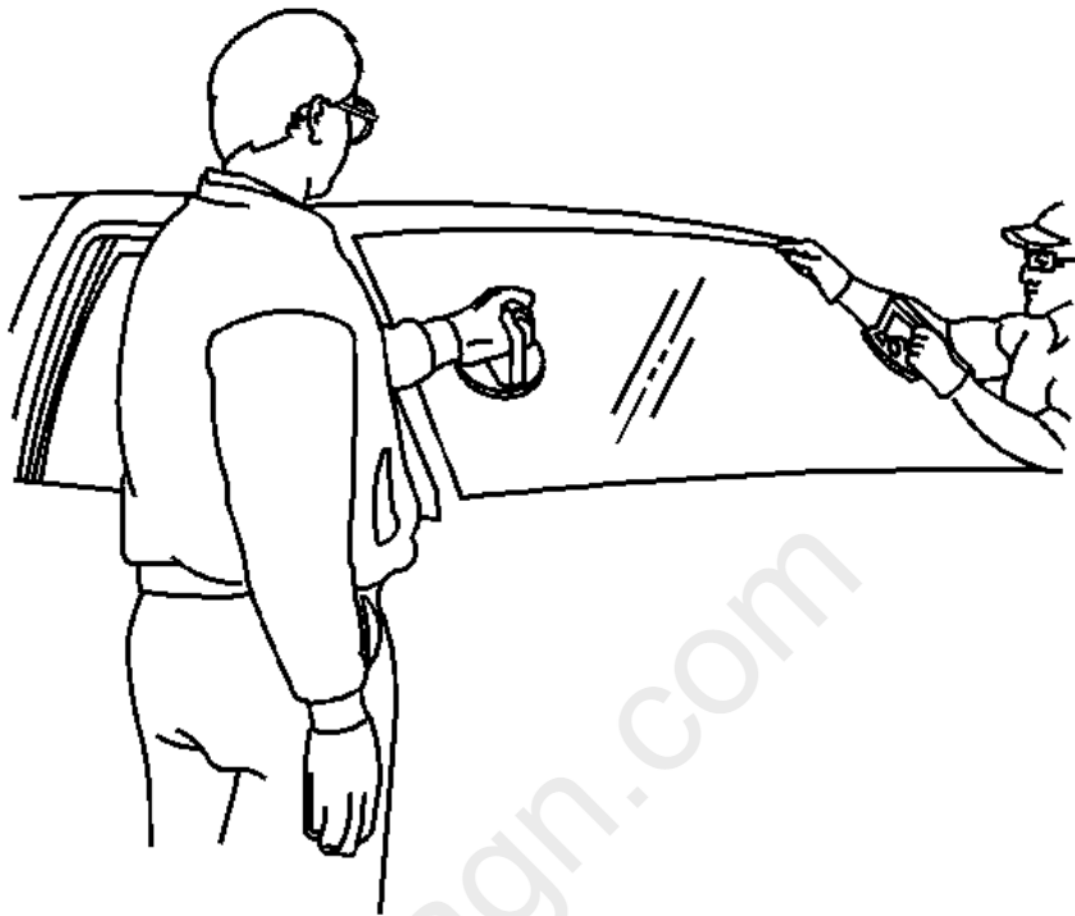


Fig. 28: Removing Windshield With Aid Of An Assistant
Courtesy of GENERAL MOTORS COMPANY

Installation Procedure

1. If reusing or replacing the window, use the appropriate tool, remove the auto-adhesive bead on the window surface and pinch-weld flange to approximately 2 mm (0.078 in).
2. Clean the bonding area on the window.

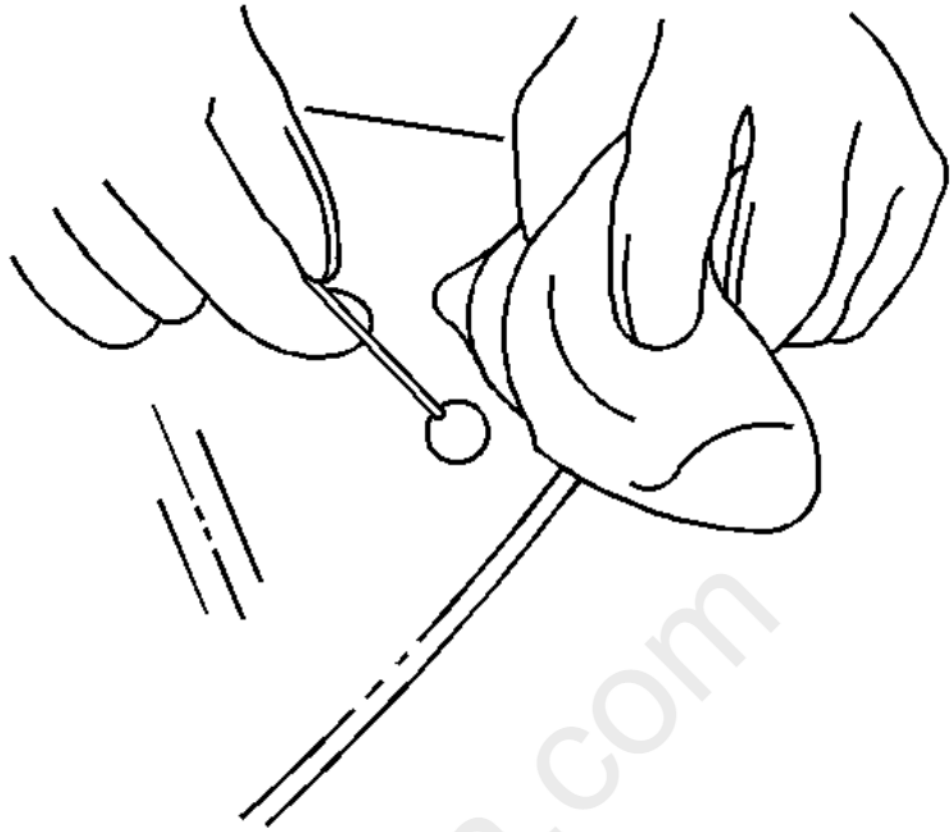


Fig. 29: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

3. Apply bonded-glass primer and let dry per auto-adhesive instructions by the manufacturer's.

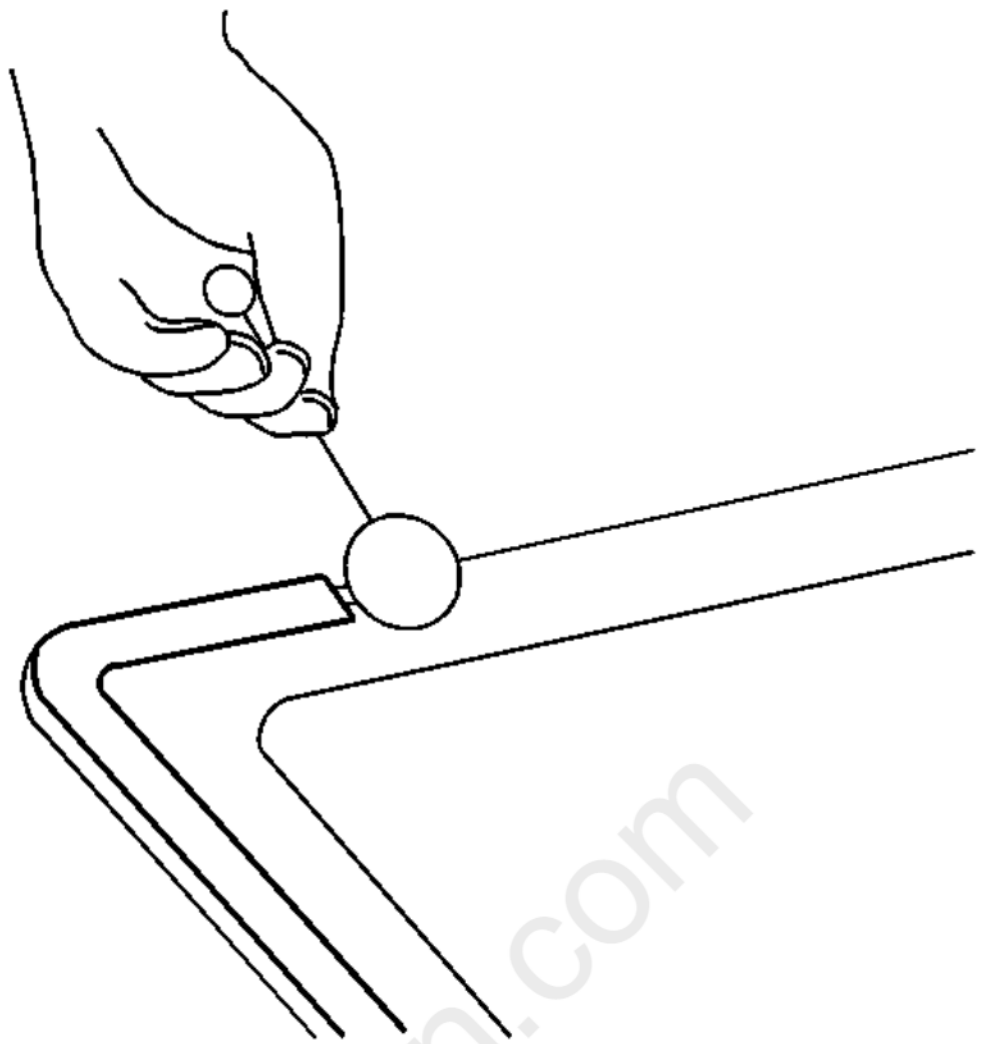


Fig. 30: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

4. Apply the auto-adhesive primer-application (2) around the perimeter of the rear window (1) per auto-adhesive instructions by the manufacturer's.

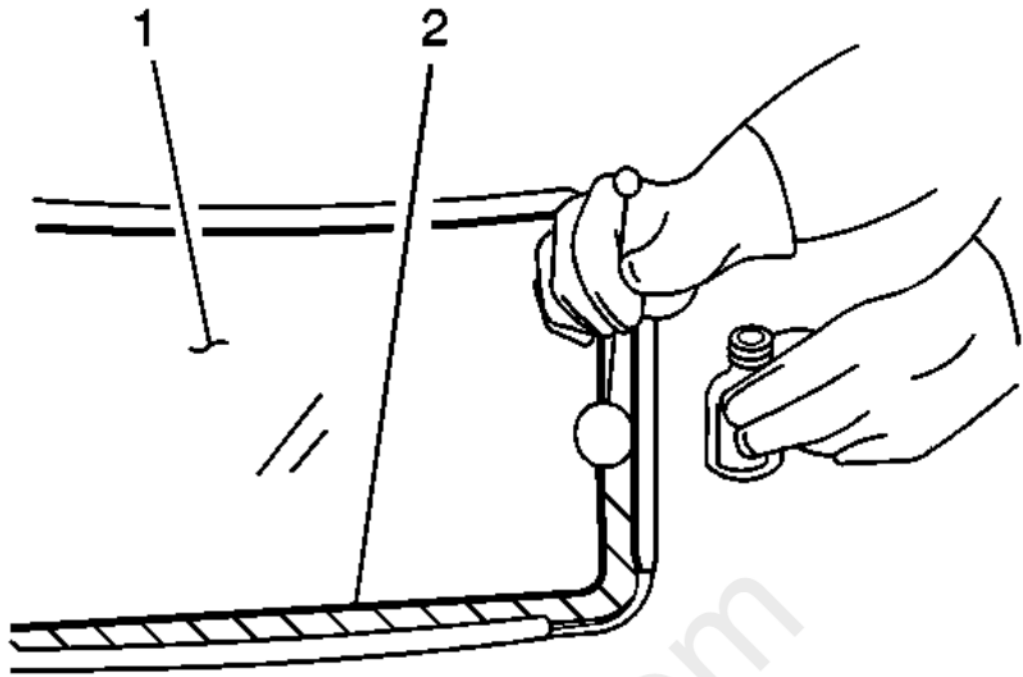


Fig. 31: Applying Glass Primer

Courtesy of GENERAL MOTORS COMPANY

5. Cut the applicator nozzle to provide a V cut to apply the auto-adhesive.

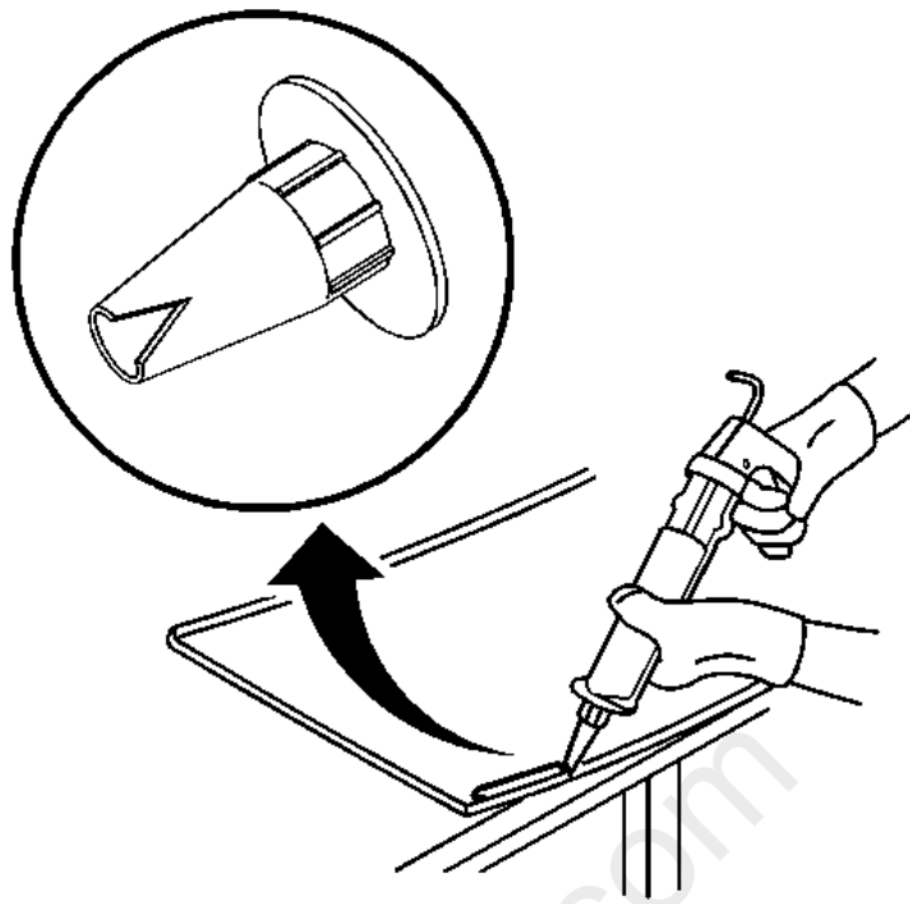


Fig. 32: View Of Modified Applicator Nozzle

Courtesy of GENERAL MOTORS COMPANY

6. Install the sealing strip to the bottom of the rear window.
7. With an assistant, use the glass handling cups, align the window locating pins to the slots located in each corner of the pinch-weld flange. Lower the window to touch the auto-adhesive.

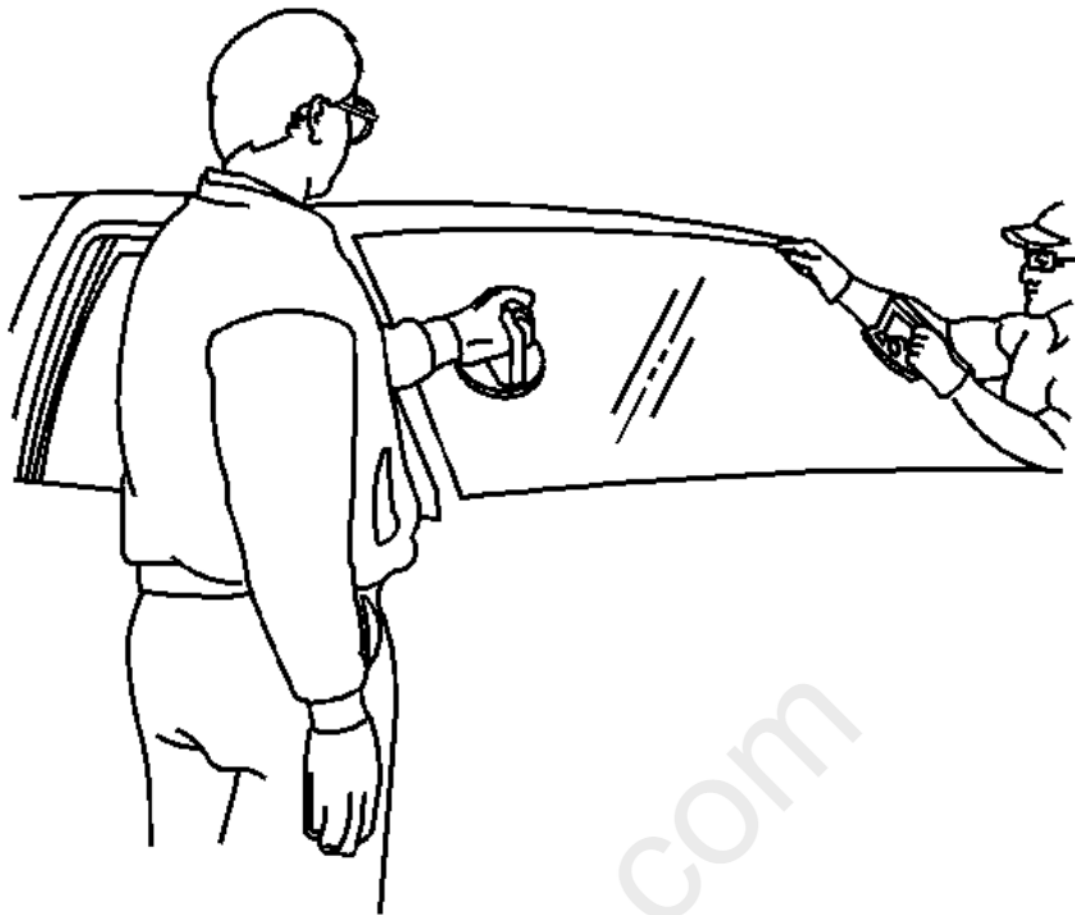


Fig. 33: Removing Windshield With Aid Of An Assistant

Courtesy of GENERAL MOTORS COMPANY

NOTE: If the locating pins were cut off it will be necessary to tape the window in place until the auto-adhesive cures per auto-adhesive instructions by the manufacturer's.

8. Remove the glass handling cups.
9. Gently depress the window on the auto-adhesive bead until the window is seated 1 mm (0.039 in) below the roof.

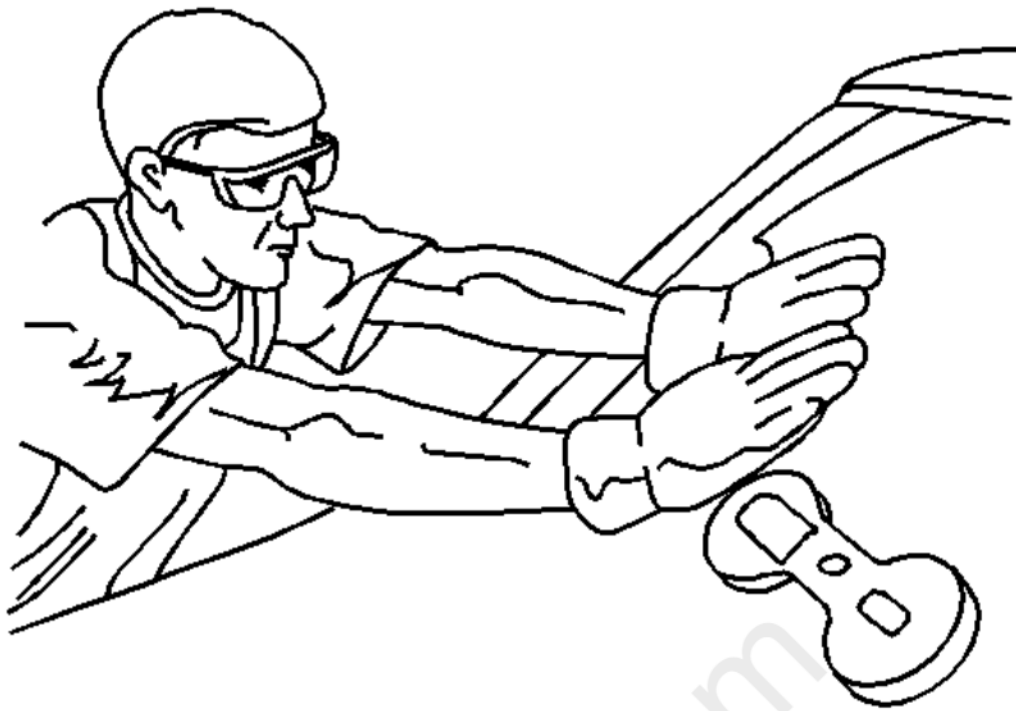


Fig. 34: Pressing Window Into Place

Courtesy of GENERAL MOTORS COMPANY

10. Use masking tape (1) to hold the window (2) in the position until the auto-adhesive completely cures.

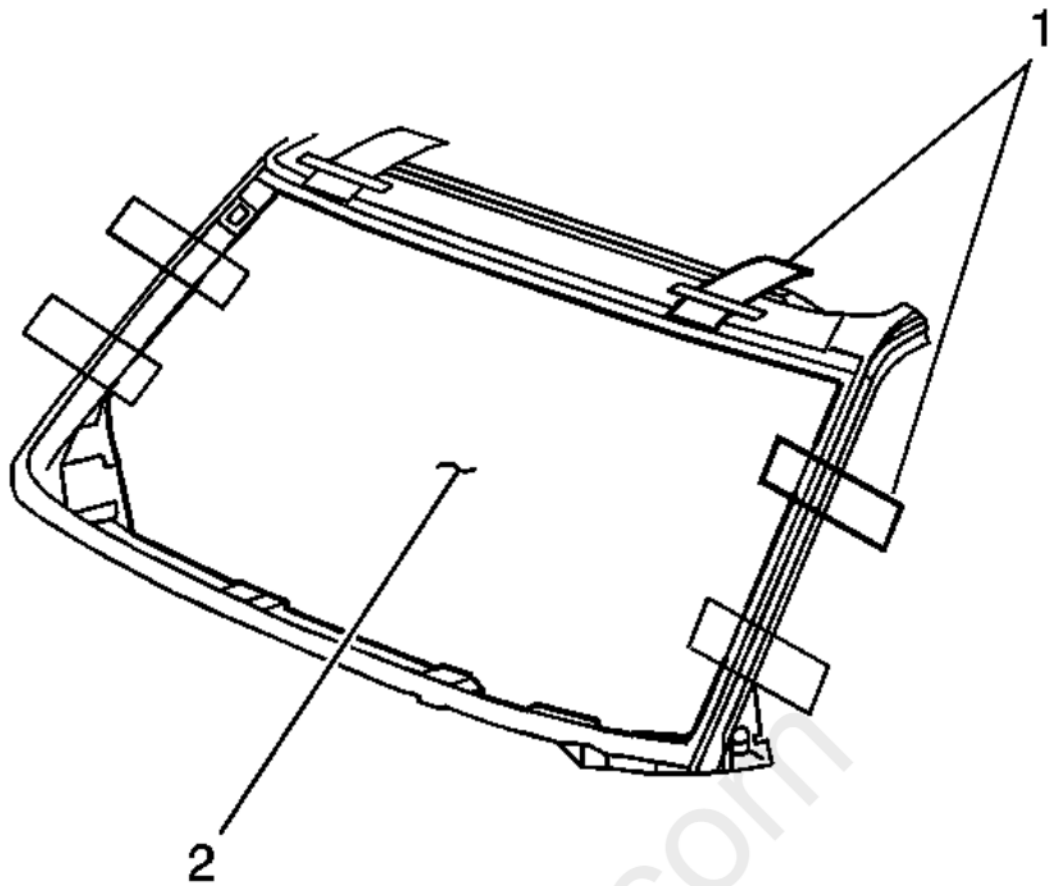


Fig. 35: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS COMPANY

11. Connect the rear window defogger electrical connectors to the bus bars.
12. Connect the connector from the radio antenna module.
13. Install the rear edge of the headliner.
14. Make sure to observe the auto-adhesive curing time before releasing the vehicle per auto-adhesive instructions by the manufacturer's.
15. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

NOTE: Following the auto-adhesive installation instructions, using nafta to remove any excess of auto-adhesive within 30 minutes, otherwise it will not be possible to remove the auto-adhesive excess unless using mechanical means.

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

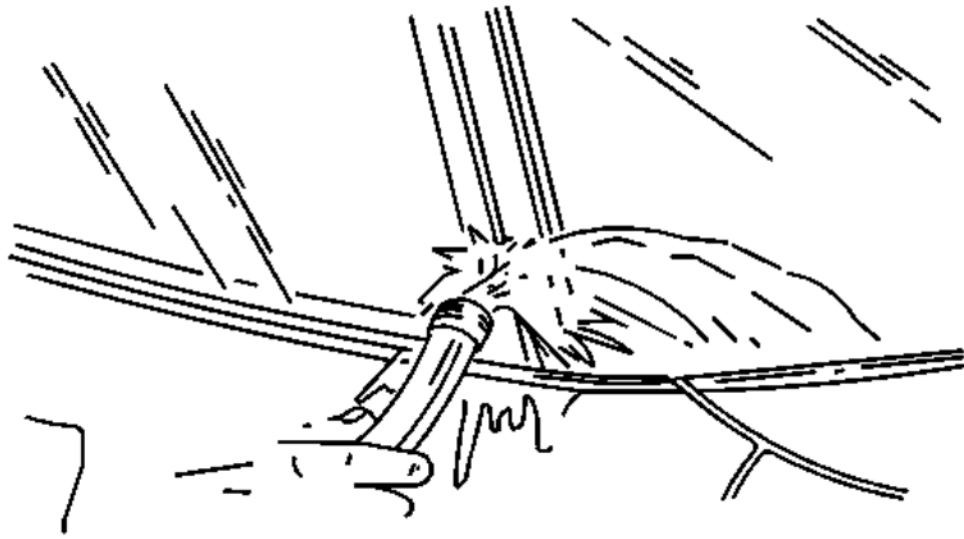


Fig. 36: Performing Water Hose Test
Courtesy of GENERAL MOTORS COMPANY

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

17. Inspect the window for leaks.
18. If any leaks are found, use a plastic paddle in order to apply extra auto-adhesive at the leak point.
19. Retest the window for leaks.
20. Maintain the following conditions in order to properly cure the auto-adhesive:
 - Partially lower a door window in order to prevent pressure buildups when closing doors before the auto-adhesive cures.
 - Do not drive the vehicle until the auto-adhesive is cured. Refer to the above curing times.
 - Do not use compressed air in order to dry the auto-adhesive.
21. Clean any excess auto-adhesive from the body.

Fig. 38: Rear Side Door Window Front Channel
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass And Sheet Metal Handling Warning .	
WARNING: Disconnect the power window switch when working inside the door. When operated, the Express Up/Down Feature allows the door window to move very quickly, without stopping, which could cause personal injury.	
Preliminary Procedure Radio Rear Side Door Speaker Replacement	
1	Rear Side Door Window Front Channel Retainer Bolt (Qty: 2) CAUTION: Refer to Fastener Caution . Tighten 11 N.m (97 lb in)
2	Rear Side Door Window Front Channel Procedure Place the window in the full up position and tape in place. NOTE: Inspect the door window for proper operation before installing the door trim panel.

FRONT SIDE DOOR WINDOW FRAME REAR APPLIQUE REPLACEMENT



Fig. 39: Front Side Door Window Frame Rear Applique
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name

Callout	Component Name
Preliminary Procedures <u>Front Side Door Window Inner Sealing Strip Replacement</u> <u>Front Side Door Window Belt Reveal Molding Replacement</u> <u>Front Side Door Window Weatherstrip Replacement</u> NOTE: It is not necessary to completely remove the weatherstrip. Reposition the upper rear edge of the front side door weatherstrip.	
1	Front Side Door Window Frame Inner Upper Screw CAUTION: Refer to <u>Fastener Caution</u> . Tighten 1.5 N.m (13 lb in)
2	Front Side Door Window Frame Rear Applique Outer Screw [2x] CAUTION: Refer to <u>Fastener Caution</u> . Tighten 1.5 N.m (13 lb in)
3	Front Side Door Window Frame Rear Applique - Use a solution of 50/50 isopropyl alcohol and water to clean the adhesive surface. - Peel the protective film from the foam tape and install the rear applique to the vehicle.

REAR SIDE DOOR WINDOW FRAME FRONT APPLIQUE REPLACEMENT

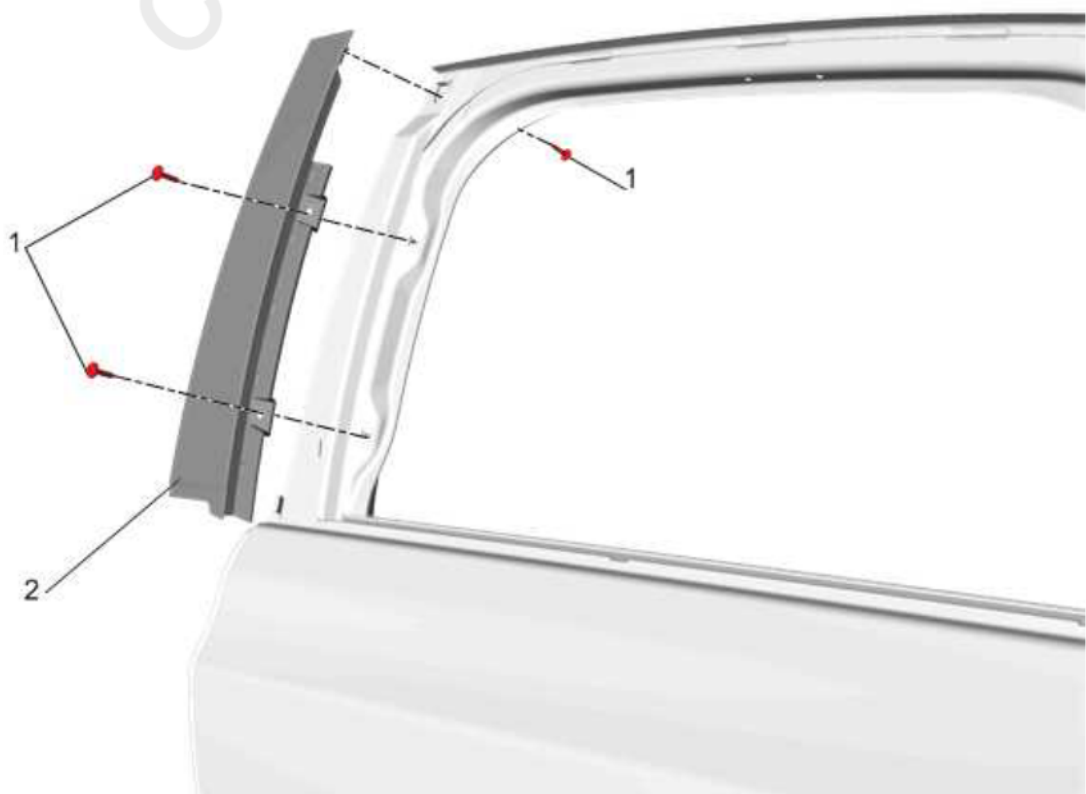


Fig. 40: Rear Side Door Window Frame Front Applique
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Rear Side Door Window Belt Reveal Molding Replacement 2. Rear Side Door Window Inner Sealing Strip Replacement 3. It is not necessary to completely remove the weatherstrip. Reposition the upper front edge of the rear side door weatherstrip. Refer to Rear Side Door Window Weatherstrip Replacement	
1	Rear Side Door Window Frame Applique Screw [3x] CAUTION: Refer to Fastener Caution . Tighten 1.5 N.m (13 lb in)
2	Rear Side Door Window Frame Front Applique 1. Use a solution of 50/50 isopropyl alcohol and water to clean the adhesive surface. 2. Peel the protective film from the foam tape and install the rear applique to the vehicle.

REAR SIDE DOOR WINDOW FRAME REAR APPLIQUE REPLACEMENT

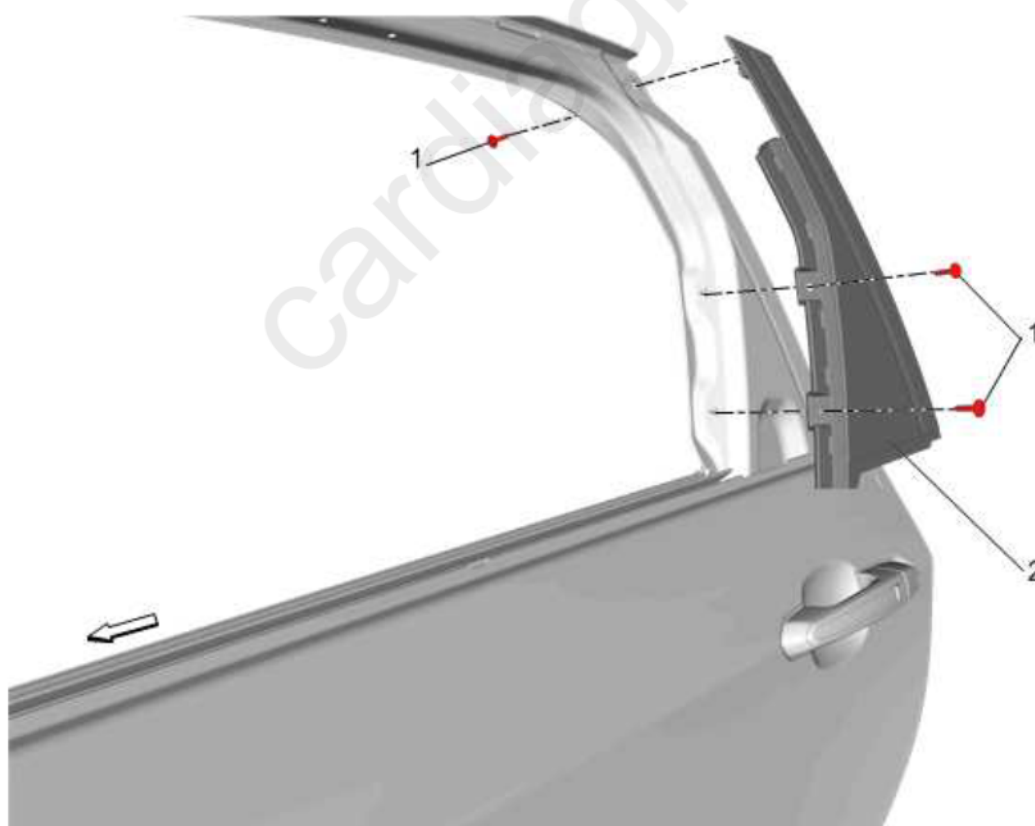


Fig. 41: Rear Side Door Window Frame Rear Applique
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name

Callout	Component Name
Preliminary Procedures 1. Rear Side Door Window Belt Reveal Molding Replacement 2. Rear Side Door Window Inner Sealing Strip Replacement 3. It is not necessary to completely remove the weatherstrip. Reposition the upper front edge of the rear side door weatherstrip. Refer to Rear Side Door Window Weatherstrip Replacement	
1	Rear Side Door Window Frame Rear Applique Screw [3x] CAUTION: Refer to Fastener Caution . Tighten 1.5 N.m (13 lb in)
2	Rear Side Door Window Frame Rear Applique Procedure 1. Use a solution of 50/50 isopropyl alcohol and water to clean the adhesive surface. 2. Peel the protective film from the foam tape and install the rear applique to the vehicle.

FRONT SIDE DOOR WINDOW CONTROL SWITCH REPLACEMENT

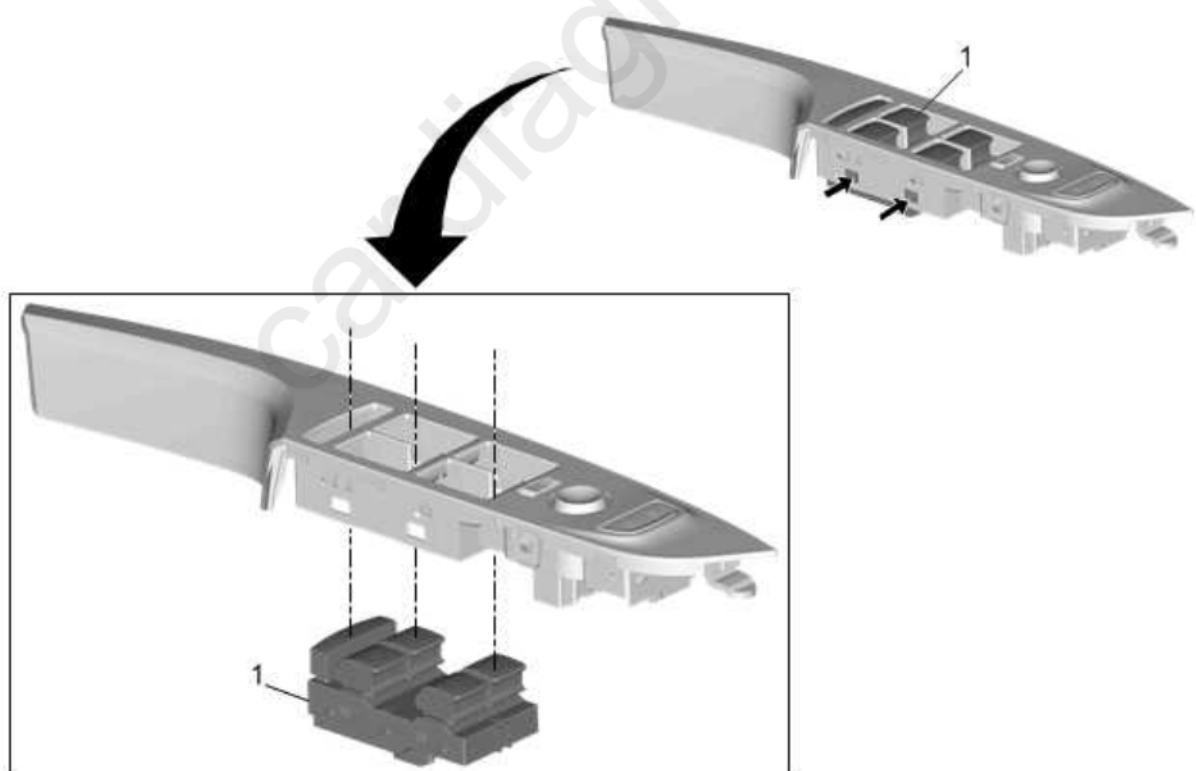


Fig. 42: Front Side Door Window Control Switch
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Front Side Door Armrest Switch Mount Plate Replacement (Drivers Side) Front Side Door Armrest Switch Mount Plate Replacement (Passenger Side)	

Callout	Component Name
1	Front Side Door Window Control Switch Procedure 1. Release the switch assembly from the switch mount plate by depressing the tabs along each side of the switch. 2. Control Module References for programming and setup information, if required.

FRONT SIDE DOOR WINDOW SWITCH REPLACEMENT - RIGHT SIDE

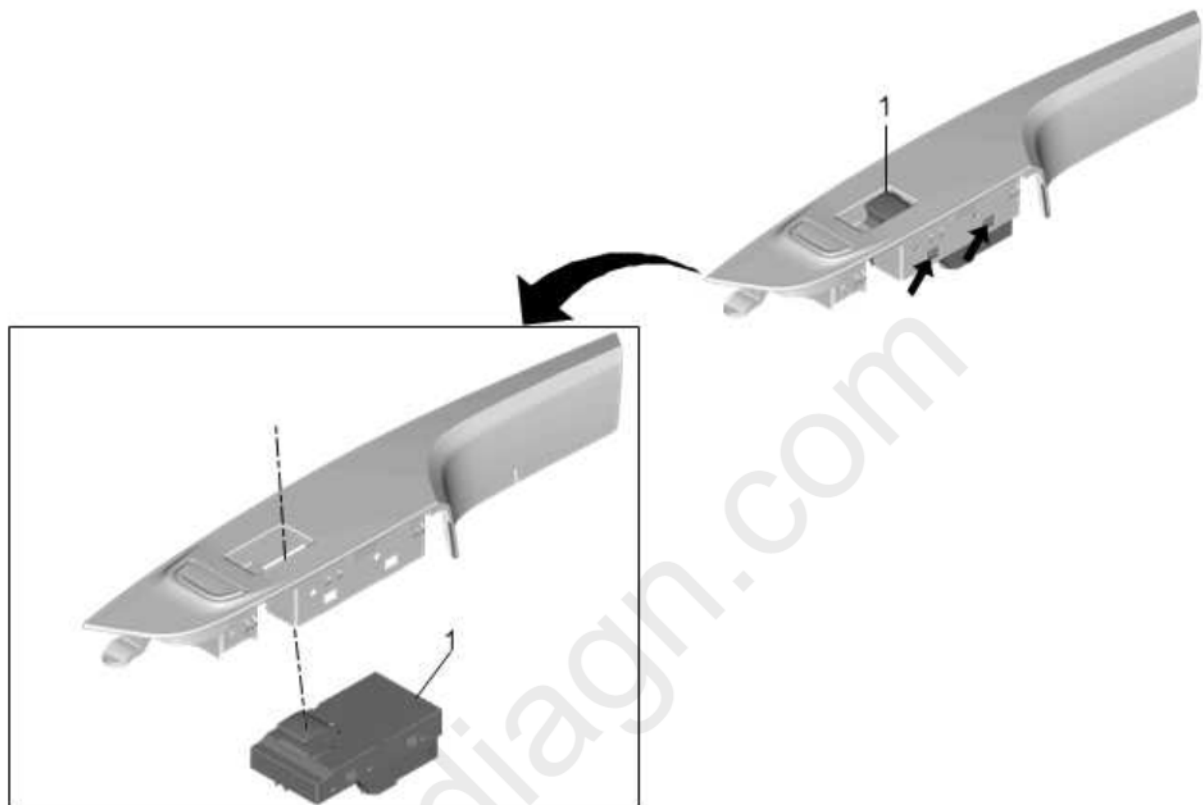


Fig. 43: Front Side Door Window Switch - Right Side
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Front Side Door Armrest Switch Mount Plate Replacement (Drivers Side) Front Side Door Armrest Switch Mount Plate Replacement (Passenger Side)	
1	Front Side Door Window Switch Procedure 1. Release the switch assembly from the switch mount plate by depressing the tabs along each side of the switch. 2. Control Module References for programming and setup information, if required.

REAR SIDE DOOR WINDOW SWITCH REPLACEMENT

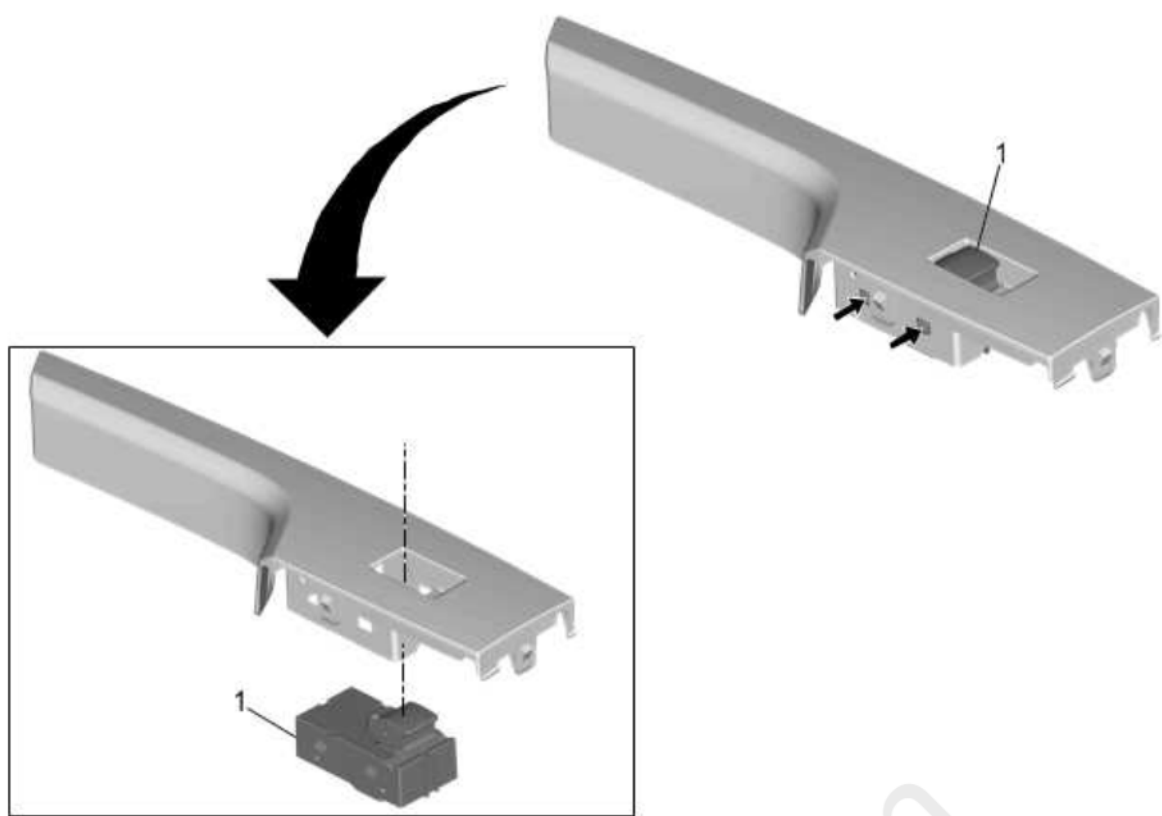


Fig. 44: Rear Side Door Window Switch
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	
<u>Rear Side Door Armrest Switch Mount Plate Replacement</u>	
1	Rear Side Door Window Switch Procedure 1. Release the tabs and remove the switch. 2. <u>Control Module References</u> for programming and setup information, if required.

FRONT SIDE DOOR WINDOW REGULATOR REPLACEMENT

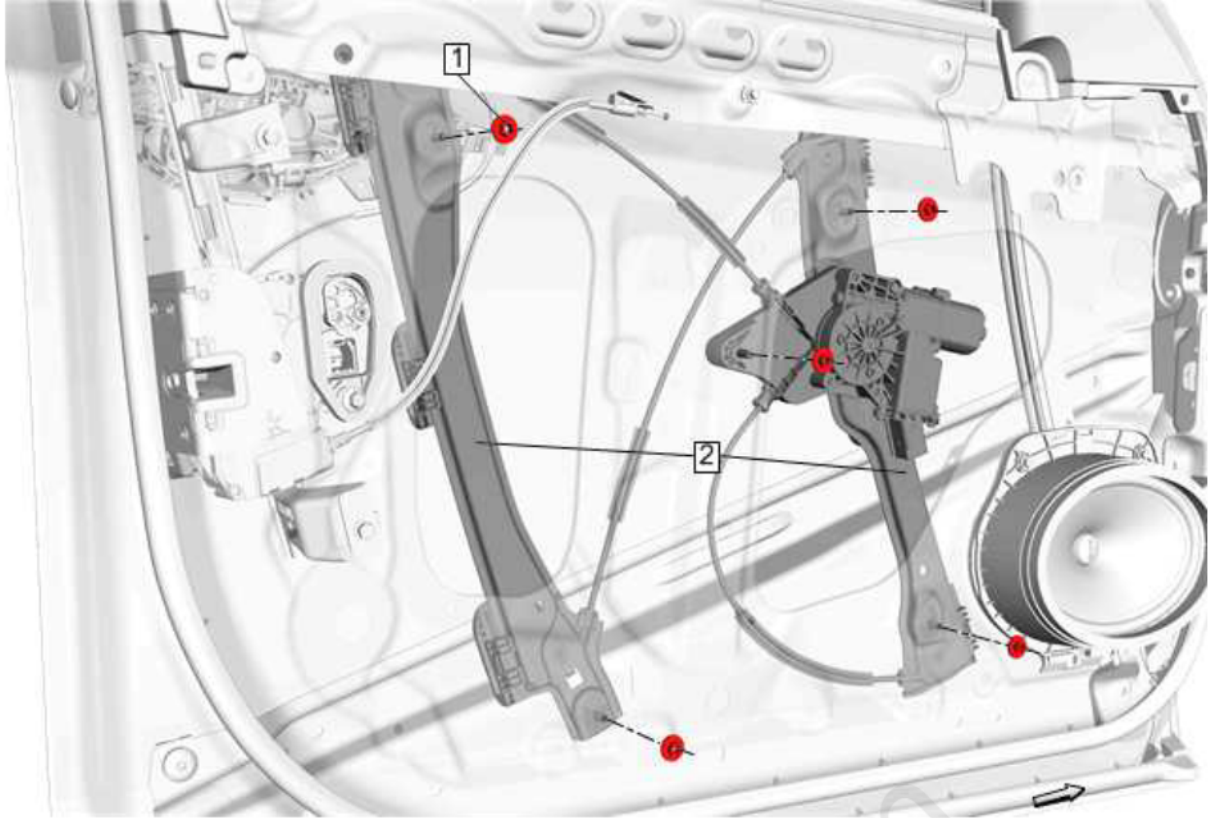


Fig. 45: Front Side Door Window Regulator
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Disconnect the power window switch when working inside the door. When operated, the Express Up/Down Feature allows the door window to move very quickly, without stopping, which could cause personal injury.	
Preliminary Procedures 1. Place the front side door window in the full up position. 2. Front Side Door Trim Replacement 3. Front Side Door Water Deflector 4. Tape the window to the upper door frame before releasing the window from the window retainers.	
1	Front Side Door Window Regulator Nut [5x] CAUTION: Refer to Fastener Caution . Tighten 11 N.m (97 lb in)
2	Front Side Door Window Regulator Procedure 1. Disconnect the electrical connector. 2. Transfer all parts as necessary. NOTE: Inspect the window for proper operation before installing the door trim.

WINDOW MOTOR PROGRAMMING - EXPRESS FUNCTION

Window Motor Normalized Procedure

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

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

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

Open, then Close Driver Window

Open, then Close Passenger Window

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

To normalize the window motor, follow these steps:

1. Vehicle in Service Mode.

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.

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

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

Window Motor Relearn Procedure

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

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

NOTE: Prior to performing the relearn procedure the vehicle must have all 4 wheels properly inflated and mounted, the vehicle must be sitting on a level surface and all doors must be completely closed.

To relearn the window motor, follow these steps:

1. Vehicle in Service Mode.
2. With a scan tool, select Module Diagnosis, Body Control Module, Configuration/Reset Functions and then select the appropriate Clear Window Learn Values for the window motor requiring the relearn procedure.

3. After the learn procedure, exit the scan tool learn procedure completely, the power window cannot be normalized and will not function until you exit the program.
4. Starting with the window completely UP, press and hold the power window switch until the window is fully open and continue holding the switch down for approximately 5 seconds after the window is completely open.
5. Pull the power window switch up until the window is fully closed and continue holding the switch up for approximately 5 seconds after the window is completely closed.

The window is now reprogrammed.

FRONT SIDE DOOR WINDOW REGULATOR MOTOR REPLACEMENT

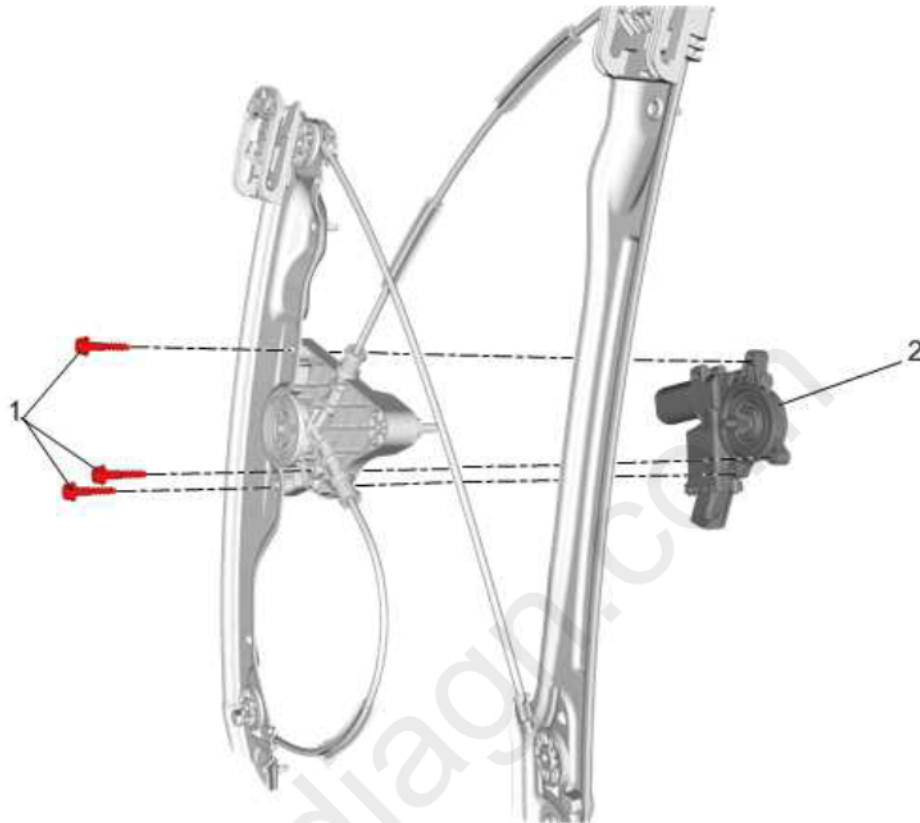


Fig. 46: Front Side Door Window Regulator Motor
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Place the front side door window in the full up position. 2. Front Side Door Trim Replacement 3. Front Side Door Water Deflector» Remove	
1	Front Side Door Window Regulator Motor Screw [3x] CAUTION: Refer to Fastener Caution . Tighten 10 N.m (89 lb in)

Callout	Component Name
2	Front Side Door Window Regulator Motor Procedure Disconnect the electrical connector. NOTE: Inspect the window for proper operation before installing the door trim.

REAR SIDE DOOR WINDOW REGULATOR REPLACEMENT

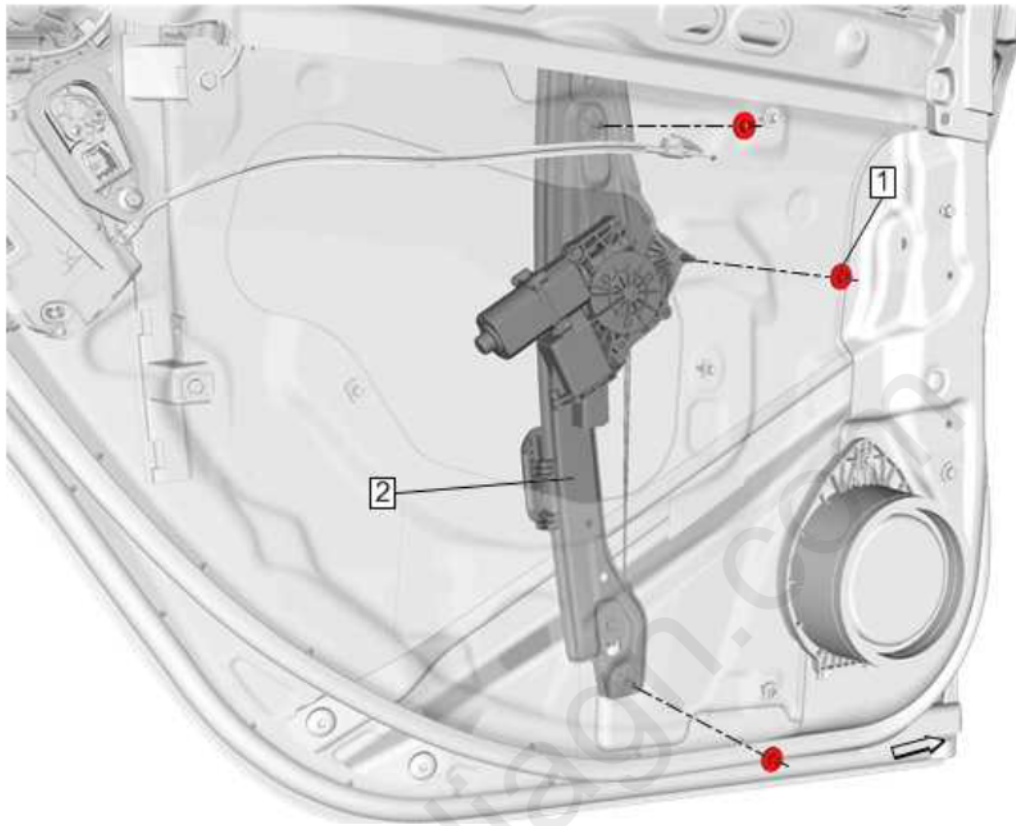


Fig. 47: Rear Side Door Window Regulator
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Disconnect the power window switch when working inside the door. When operated, the Express Up/Down Feature allows the door window to move very quickly, without stopping, which could cause personal injury. Preliminary Procedures 1. Place the rear side door window in the full up position. 2. Rear Side Door Trim Replacement 3. Rear Side Door Water Deflector 4. Tape the window to the upper door frame before releasing the window from the window retainer.	
1	Rear Side Door Window Regulator Nut [3x] CAUTION: Refer to Fastener Caution . Tighten 10 N.m (89 lb in)

Callout	Component Name
2	Rear Side Door Window Regulator Procedure 1. Disconnect the electrical connector. 2. Transfer all parts as necessary. NOTE: Inspect the window for proper operation before installing the door trim.

REAR SIDE DOOR WINDOW REGULATOR MOTOR REPLACEMENT

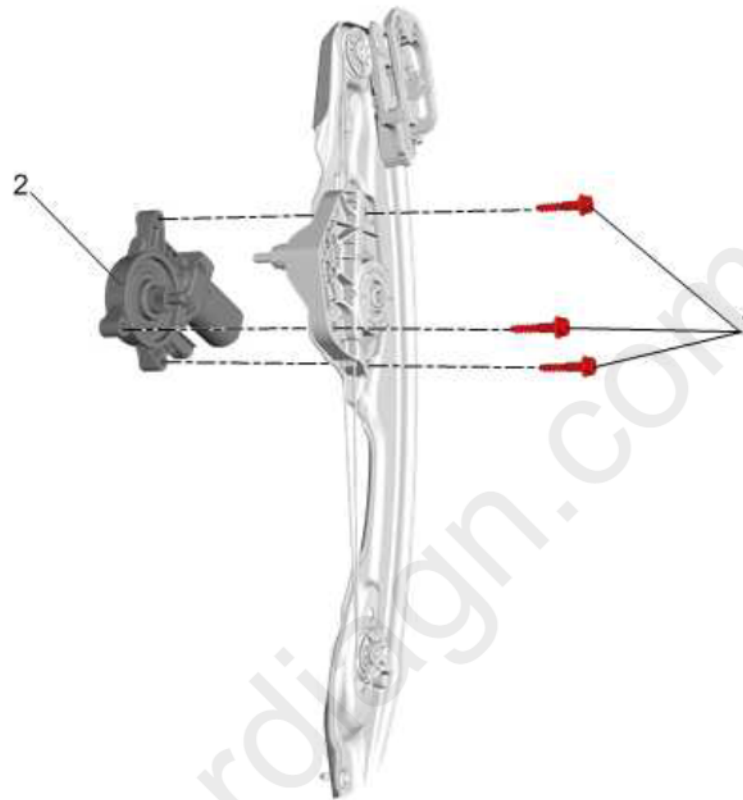


Fig. 48: Rear Side Door Window Regulator Motor
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Place the rear side door window in the full up position. 2. Rear Side Door Trim Replacement 3. Rear Side Door Water Deflector» Remove	
1	Rear Side Door Window Regulator Motor Screw [3x] CAUTION: Refer to Fastener Caution . Tighten 10 N.m (89 lb in)

Callout	Component Name
2	Rear Side Door Window Regulator Motor Procedure Disconnect the electrical connector. NOTE: Inspect the window for proper operation before installing the door trim.

FRONT SIDE DOOR WINDOW CHANNEL RETAINER REPLACEMENT

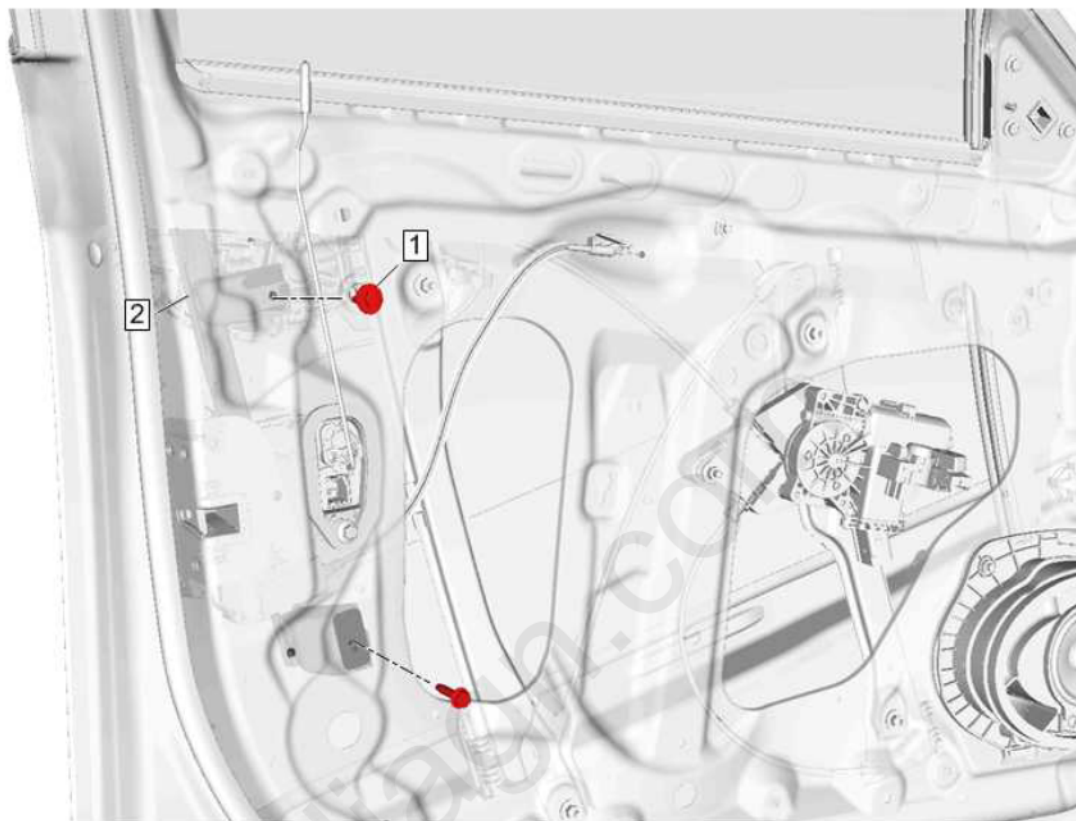


Fig. 49: Front Side Door Window Channel Retainer

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning . WARNING: Disconnect the power window switch when working inside the door. When operated, the Express Up/Down Feature allows the door window to move very quickly, without stopping, which could cause personal injury. Preliminary Procedures 1. Front Side Door Trim Replacement 2. Front Side Door Water Deflector	
1	Front Side Door Window Channel Retainer Bolt [2x] CAUTION: Refer to Fastener Caution . Tighten 11 N.m (97 lb in)

Callout	Component Name
2	Front Side Door Window Channel Retainer Procedure Release the electrical harness with retainer from the channel retainer.

REAR SIDE DOOR WINDOW CHANNEL RETAINER REPLACEMENT

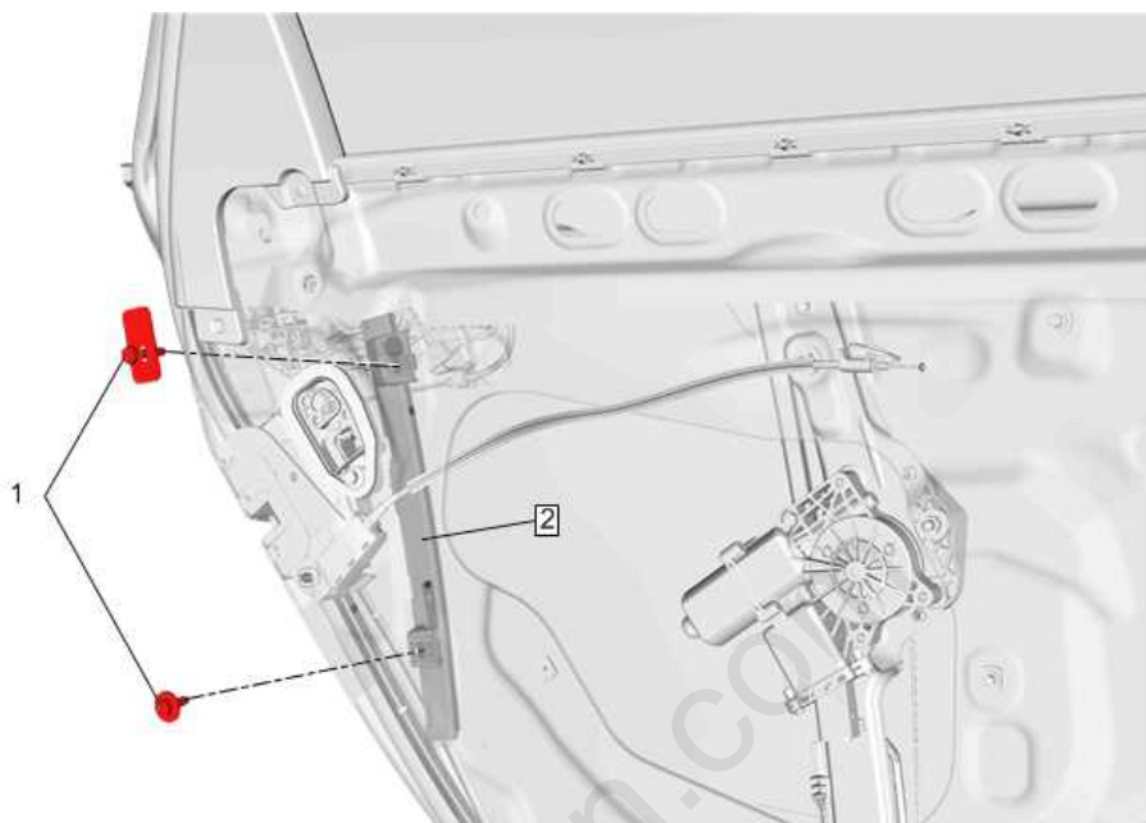


Fig. 50: Rear Side Door Window Channel Retainer

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning . WARNING: Disconnect the power window switch when working inside the door. When operated, the Express Up/Down Feature allows the door window to move very quickly, without stopping, which could cause personal injury.	
Preliminary Procedure Rear Side Door Trim Replacement	
1	Rear Side Door Window Channel Bolt [2x] CAUTION: Refer to Fastener Caution . Tighten 11 N.m (97 lb in)

Callout	Component Name
2	Rear Side Door Window Channel Retainer Procedure 1. Place the window in the full up position and tape in place. 2. Remove the rear side door water deflector. 3. Release the rear side door window weatherstrip from the channel and reposition to gain access to the part. 4. Disconnect the electrical harness from the channel. 5. Remove the rear side door window channel retainer. NOTE: Inspect the window for proper operation before installing the trim.

FRONT SIDE DOOR WINDOW INNER SEALING STRIP REPLACEMENT

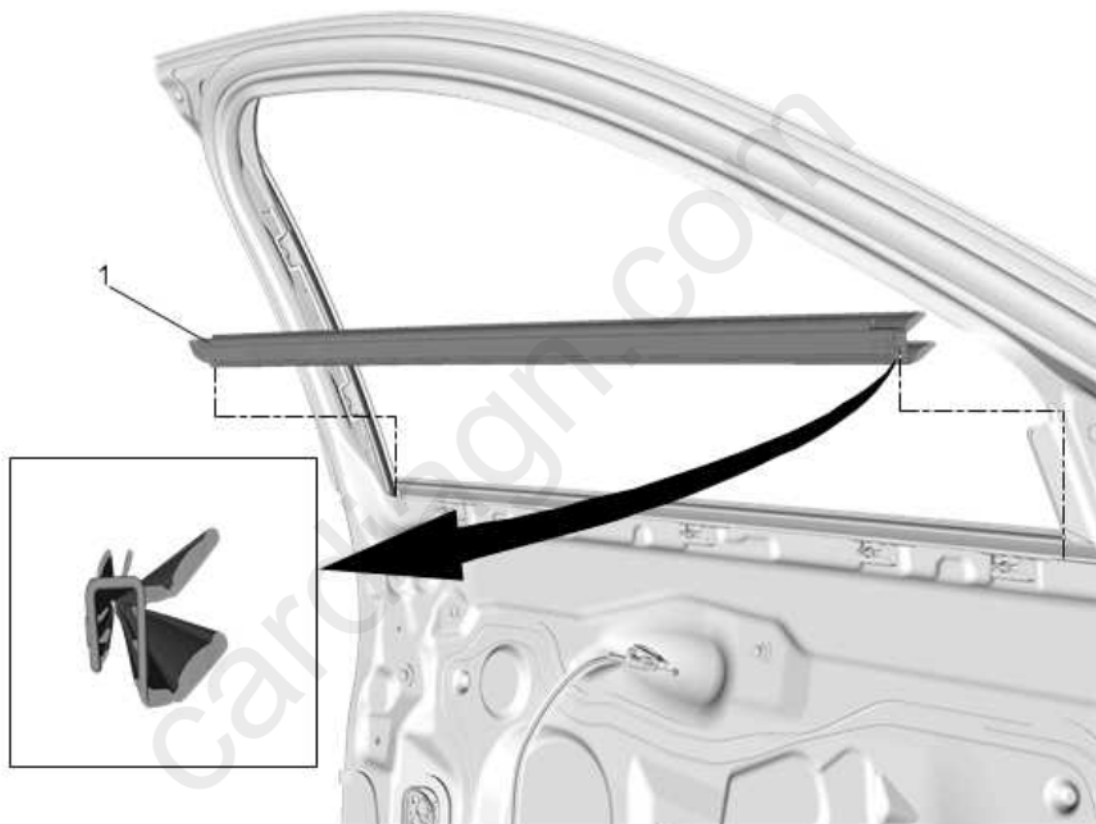


Fig. 51: Front Side Door Window Inner Sealing Strip
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Place the front door window in the full down position. 2. <u>Front Side Door Window Garnish Molding Replacement</u>	

Callout	Component Name
1	Front Side Door Window Inner Sealing Strip Procedure 1. Lift the front side door window inner strip off the pinch-weld flange. 2. Press firmly to insert the front side door window inner strip back on the door flange. NOTE: Inspect the window for proper operation before installing the door trim.

REAR SIDE DOOR WINDOW UPPER REVEAL MOLDING REPLACEMENT

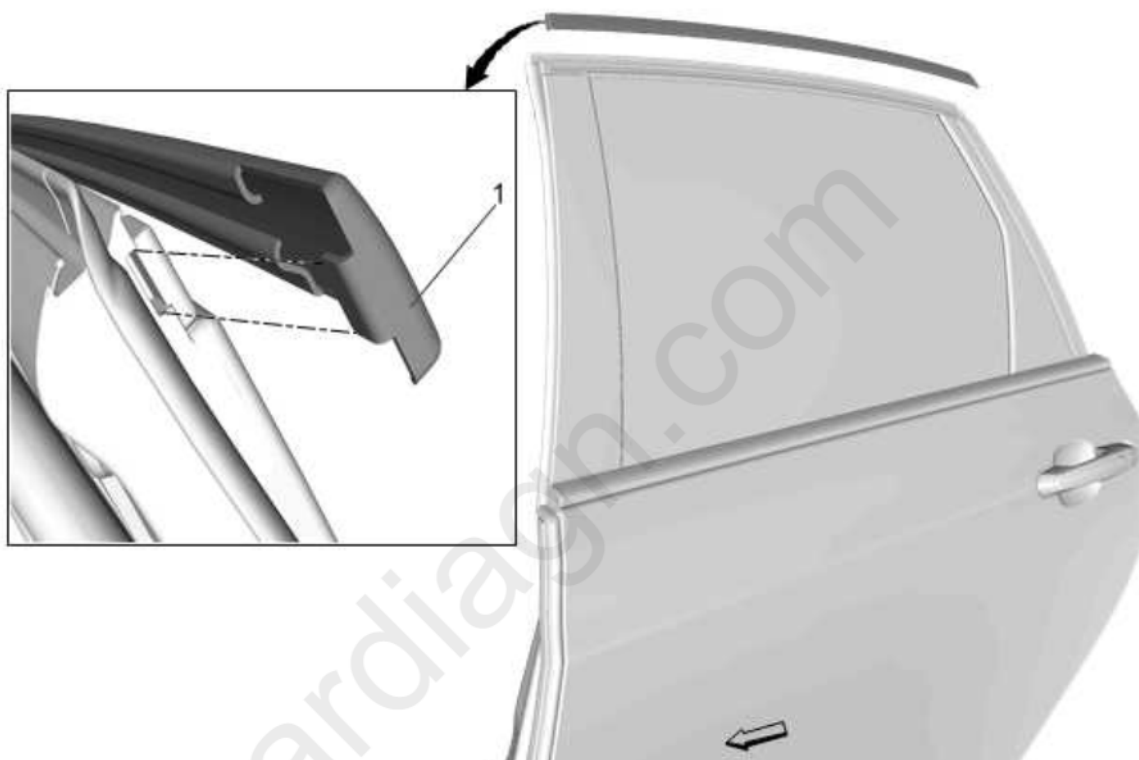


Fig. 52: Rear Side Door Window Upper Reveal Molding

Courtesy of GENERAL MOTORS COMPANY

Callous	Component Name
1	Rear Side Door Window Upper Reveal Molding Procedure 1. Apply masking tape to the outer applique and door frame. 2. Using the appropriate tool, separate the upper reveal molding from the side door window weatherstrip. 3. Use a suitable lubricant to assist in sliding the reveal molding down the center of the weatherstrip.

REAR SIDE DOOR WINDOW BELT REVEAL MOLDING REPLACEMENT

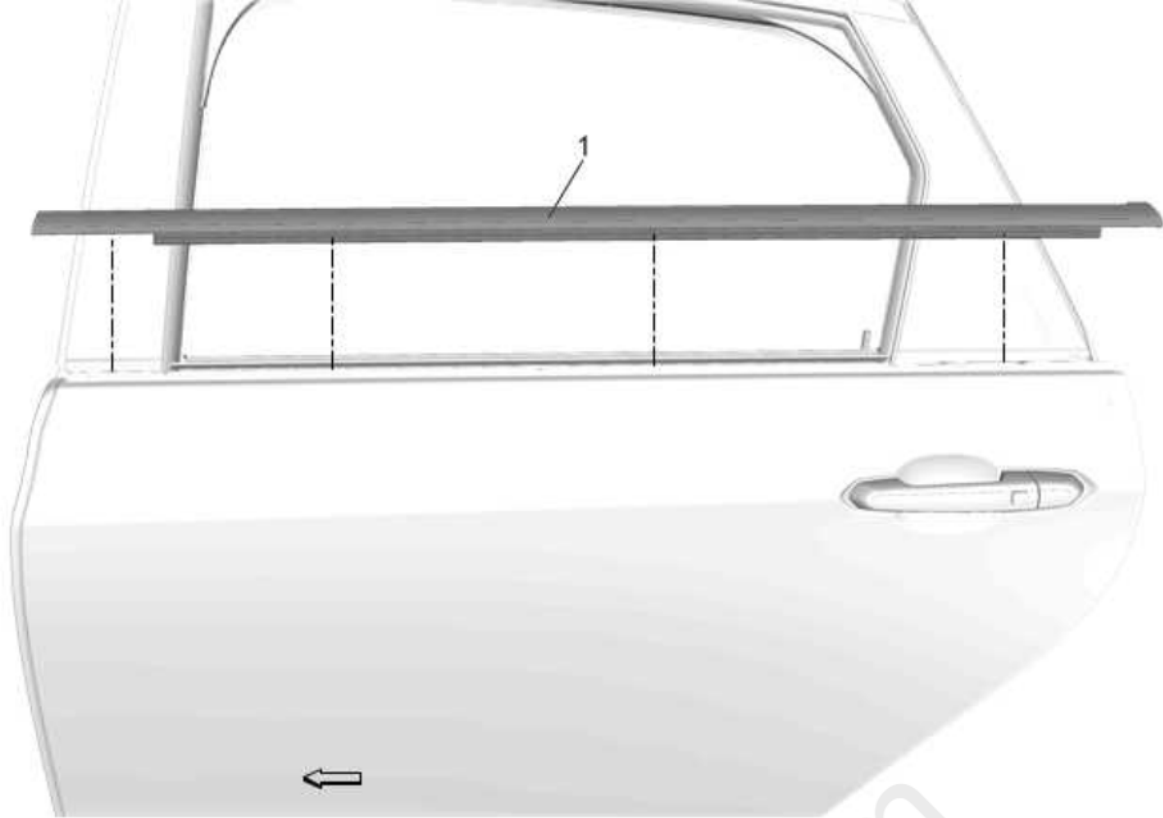


Fig. 53: Rear Side Door Window Belt Reveal Molding

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Rear Side Door Window Belt Reveal Molding Procedure 1. Place the rear side door window in the down position. 2. Tape off the lower window frame to prevent damage to the door. 3. Using the appropriate tool, lift upward on one end of the reveal molding. Work the reveal molding down the door flange until it fully releases. 4. Install the sealing strip to the flange of the door and push downward until fully seated. NOTE: Inspect the door window for proper operation.

FRONT SIDE DOOR WINDOW BELT REVEAL MOLDING REPLACEMENT

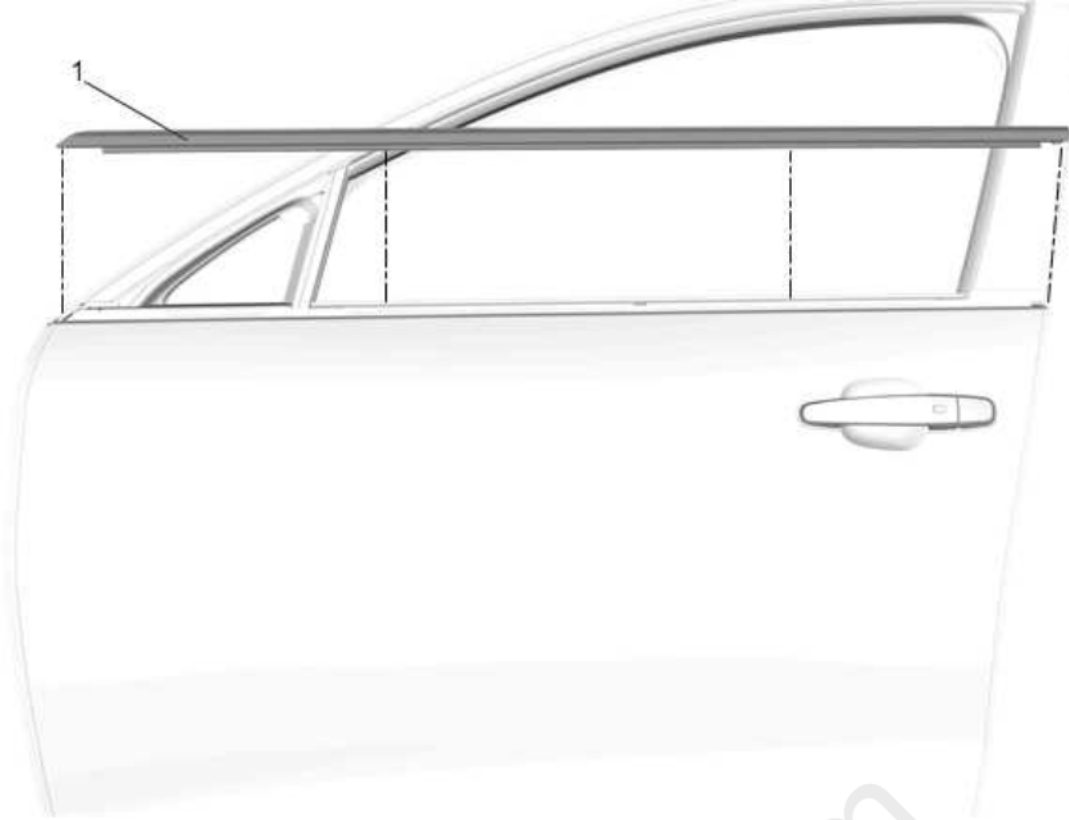


Fig. 54: Front Side Door Window Belt Reveal Molding
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Outside Rearview Mirror Replacement</u>	
1	Front Side Door Window Belt Reveal Molding CAUTION: Refer to <u>Paint Damage Caution</u> . Procedure 1. Place the front door window in the full down position. 2. Apply masking tape to the outer applique and door frame. 3. Using a small flat-bladed tool, lift up at the rear of the belt molding and slide the front of the belt molding out from underneath and behind the front side door window upper reveal molding to remove from the door flange. 4. Press firmly to insert the front side door window belt reveal molding back on the door flange. 5. Inspect the window for proper operation.

FRONT SIDE DOOR WINDOW UPPER REVEAL MOLDING REPLACEMENT

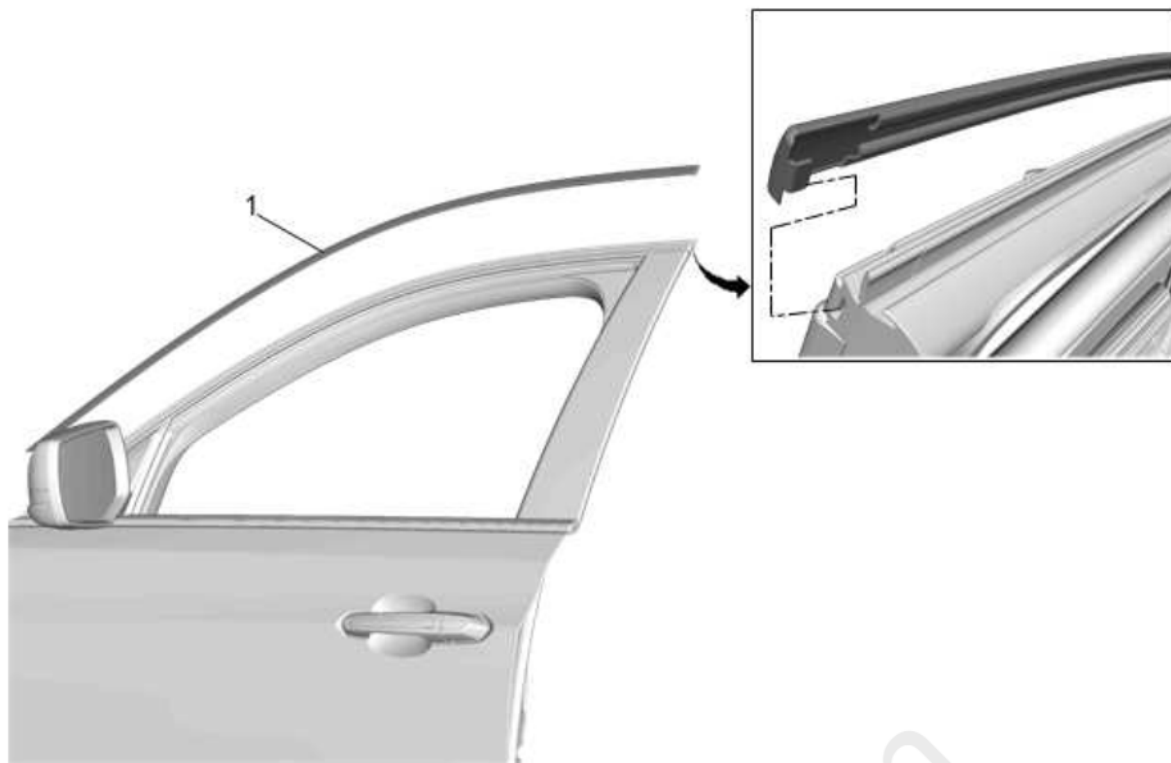


Fig. 55: Front Side Door Window Upper Reveal Molding
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Side Door Window Upper Reveal Molding Procedure 1. Open the door and place the window in the full down position. 2. Apply masking tape to the outer applique and door frame. 3. Using the appropriate tool, separate the upper reveal molding from the side door window weatherstrip. 4. Spray the weatherstrip with a suitable lubricant to assist in sliding the reveal molding down the center of the weatherstrip.

REAR SIDE DOOR WINDOW INNER SEALING STRIP REPLACEMENT

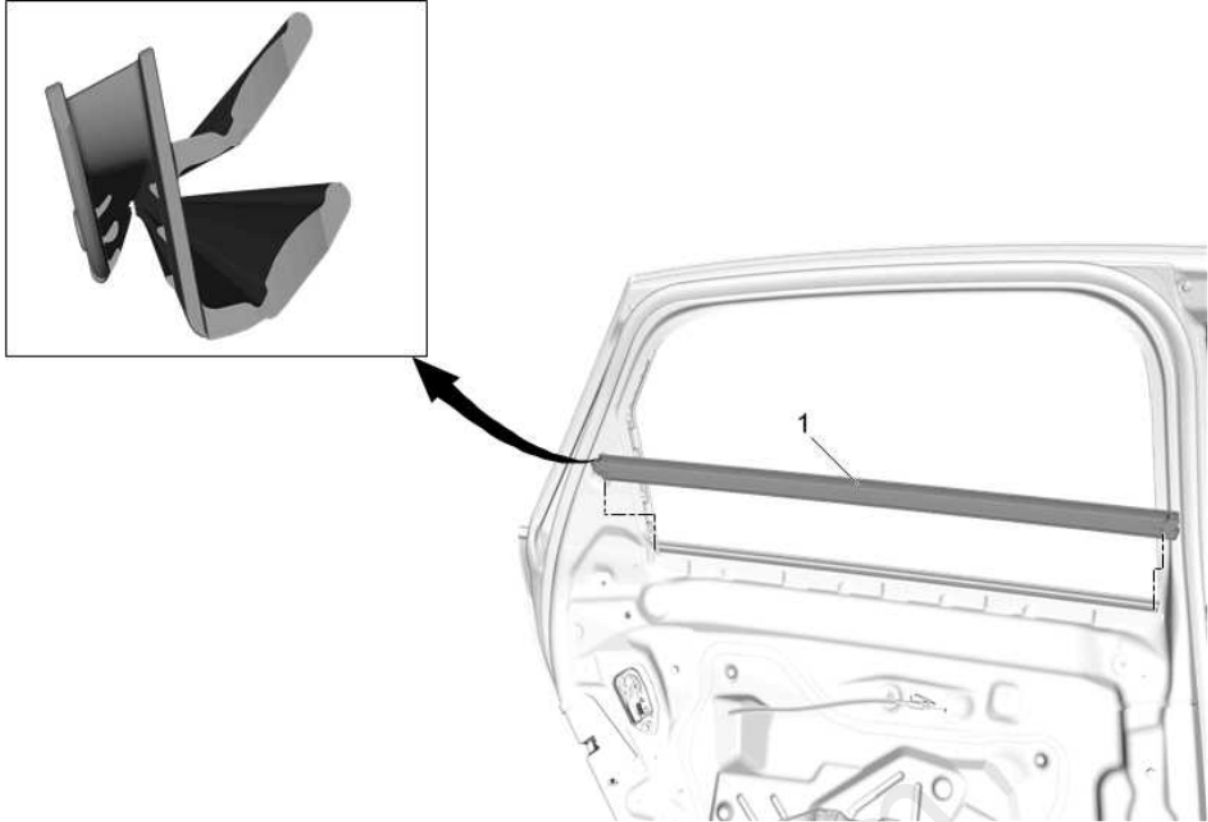


Fig. 56: Rear Side Door Window Inner Sealing Strip
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Place the rear door window in the full down position. 2. Rear Side Door Trim Replacement 3. Rear Side Door Window Garnish Molding Replacement	
1	Rear Side Door Window Inner Sealing Strip Procedure 1. Lift the rear side door window inner strip off the pinch-weld flange. 2. Press firmly to insert the rear side door window inner strip back on the door flange. NOTE: Inspect the window for proper operation before installing the door trim.

FRONT SIDE DOOR WINDOW WEATHERSTRIP REPLACEMENT

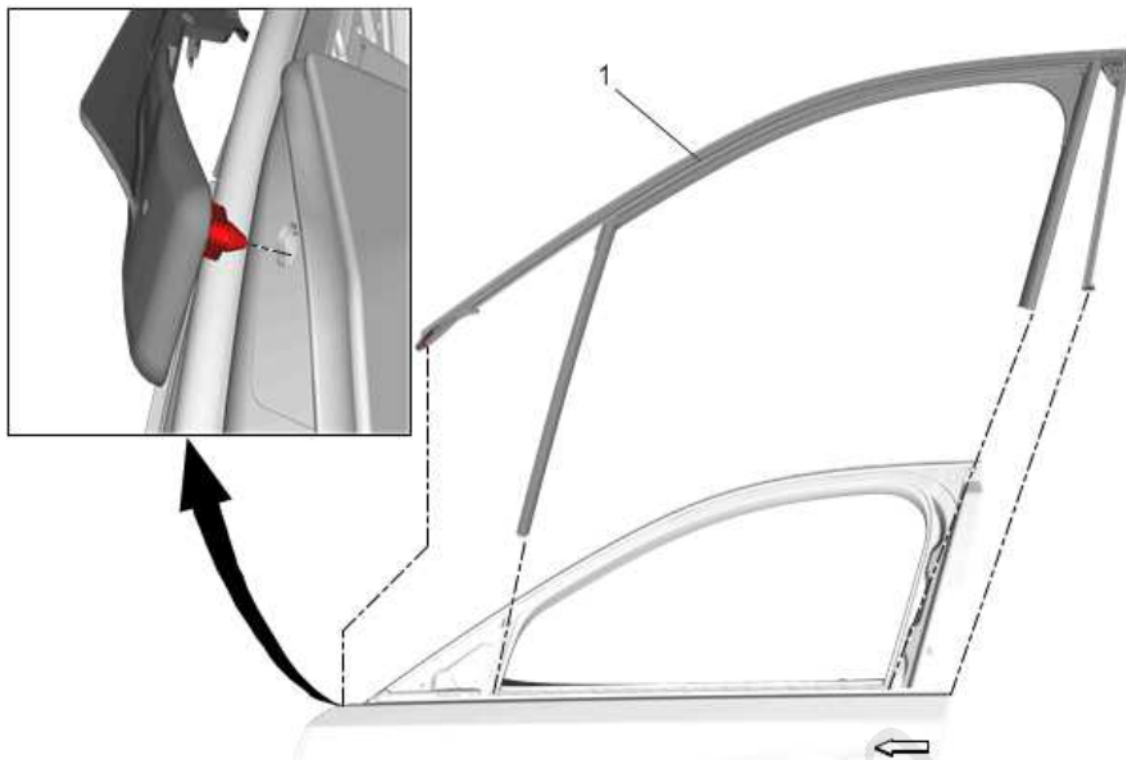


Fig. 57: Front Side Door Window Weatherstrip
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	
1. Front Side Door Window Frame Rear Applique Replacement 2. Front Side Door Window Replacement	
1	Front Side Door Window Weatherstrip

REAR SIDE DOOR WINDOW WEATHERSTRIP REPLACEMENT

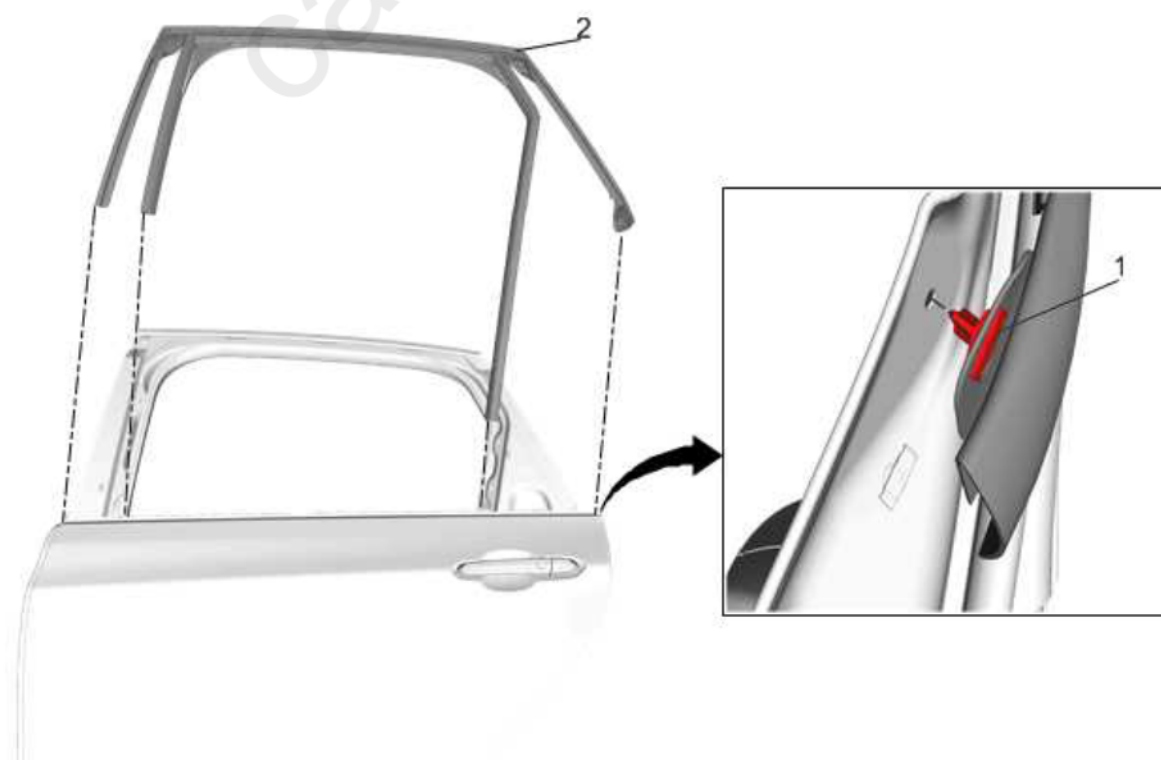


Fig. 58: Rear Side Door Window Weatherstrip
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures Rear Side Door Window Replacement Rear Side Door Window Frame Front Applique Replacement Rear Side Door Window Frame Rear Applique Replacement	
1	Rear Side Door Window Weatherstrip Fastener
2	Rear Side Door Window Weatherstrip

ADHESIVE INSTALLATION OF WINDSHIELDS

1. Use a urethane adhesive systems which meet GM Specification GM 3651G.

WARNING: Refer to [Glass and Sheet Metal Handling Warning](#) .

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

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.

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.
7. Shake the pinch-weld primer for at least 1 minute.

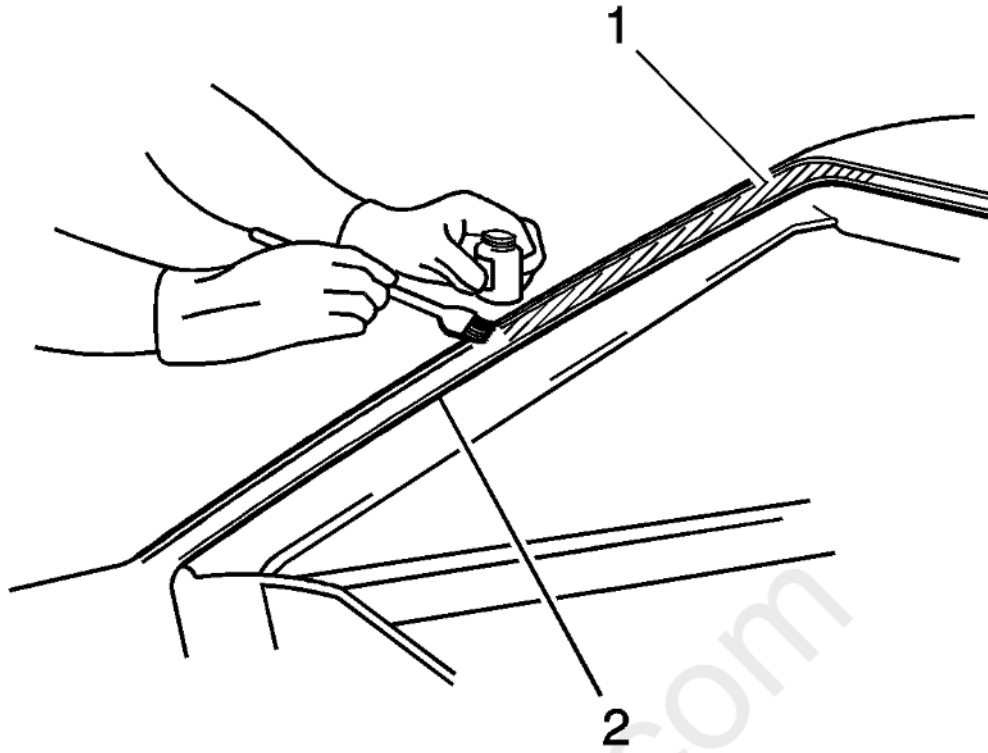


Fig. 59: Applying Pinch-Weld Primer

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.

8. Use a new dauber in order to apply the primer to the surface of the pinch-weld flange (1).
9. Allow the pinch-weld primer to dry for approximately 10 minutes.
10. With the an assistant, dry fit the window (1) to the opening in order to determine the correct position.

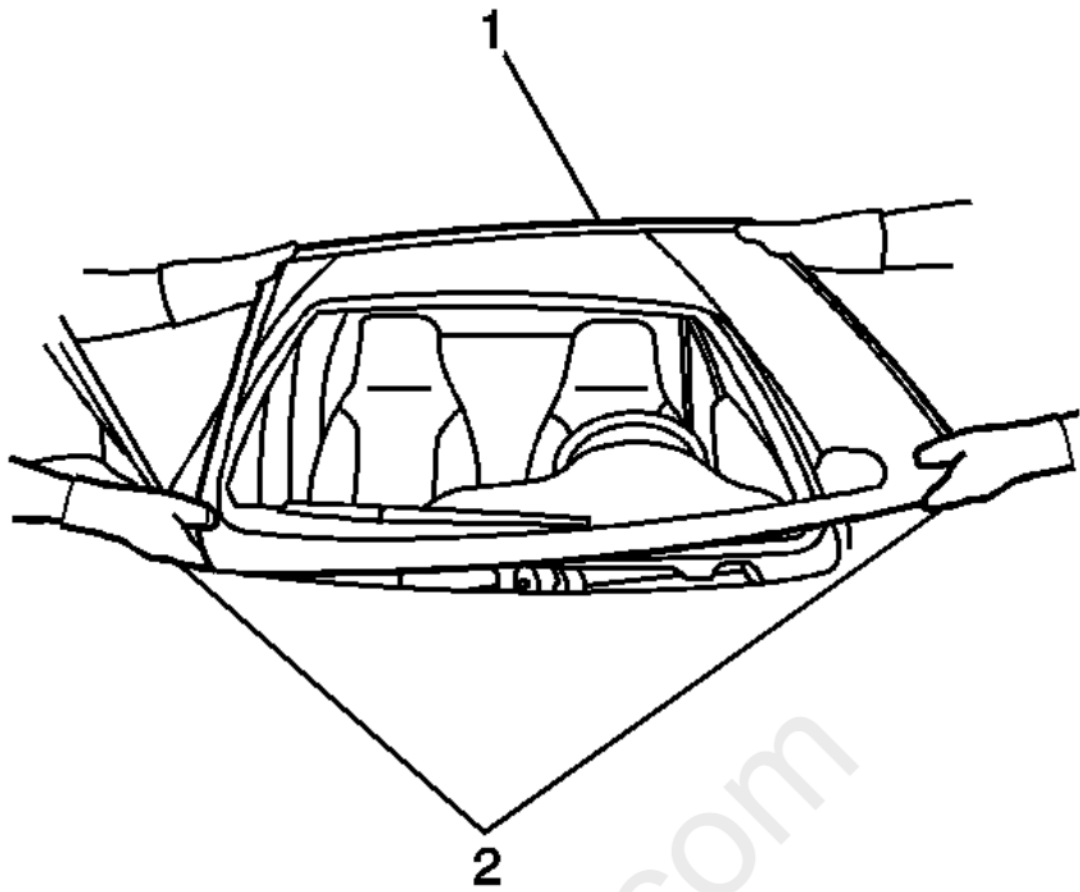


Fig. 60: Removing/Installing Windshield

Courtesy of GENERAL MOTORS COMPANY

11. Use masking tape in order to mark the locations (1) of the window (2) in the opening.

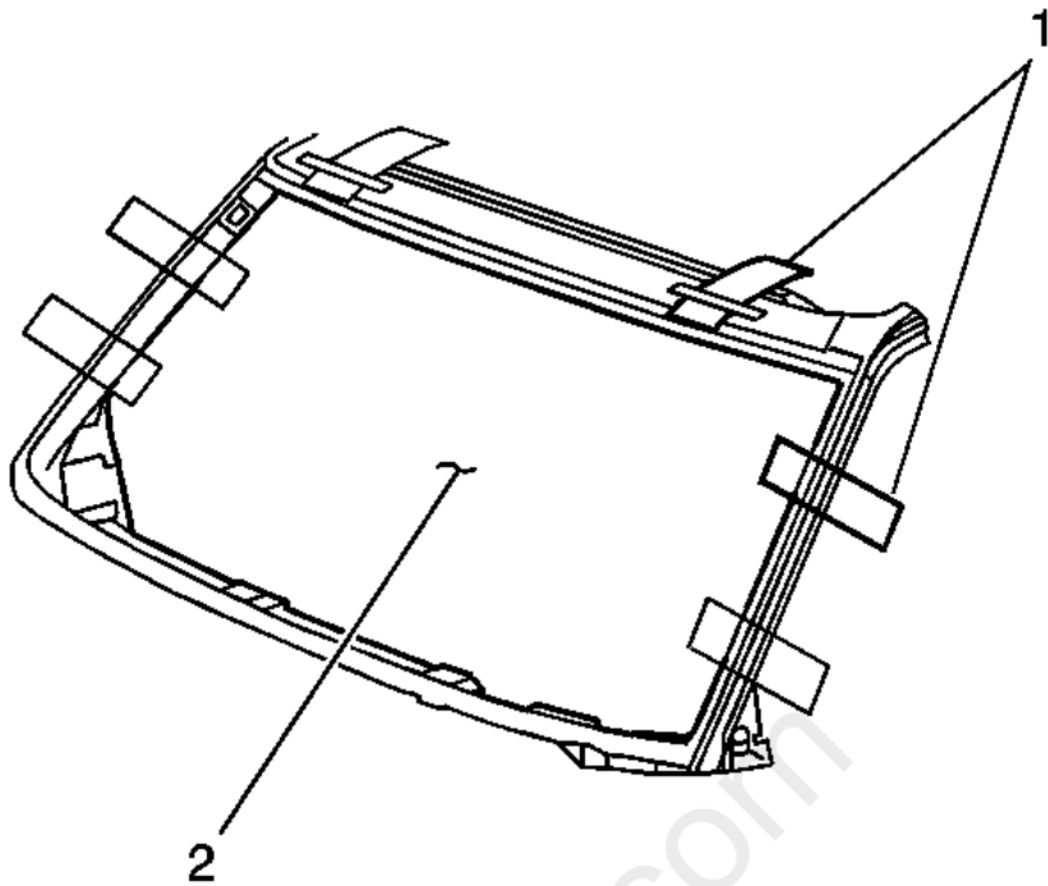


Fig. 61: Aligning Tape Lines On Window To Body.

Courtesy of GENERAL MOTORS COMPANY

12. Cut the masking tape in the center and remove the window from the opening.
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.

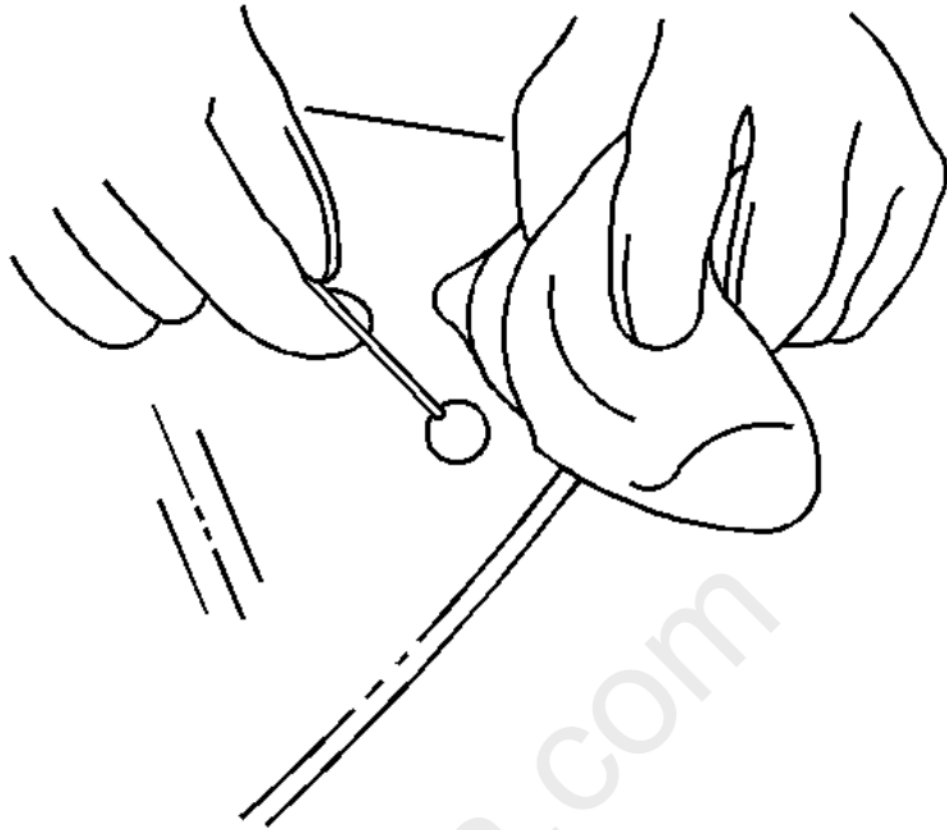


Fig. 62: Applying Glass Prep

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.

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

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

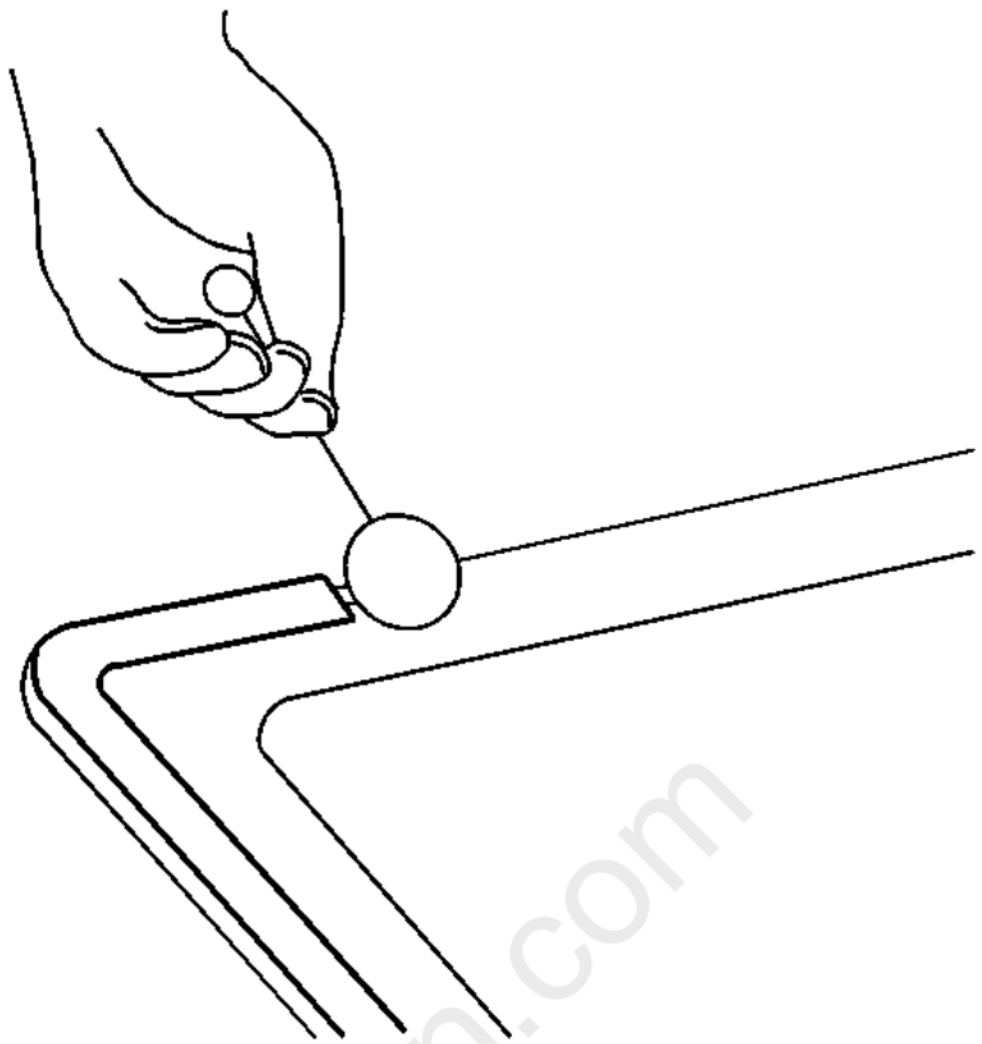


Fig. 63: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

15. Shake the glass primer black for at least 1 minute.

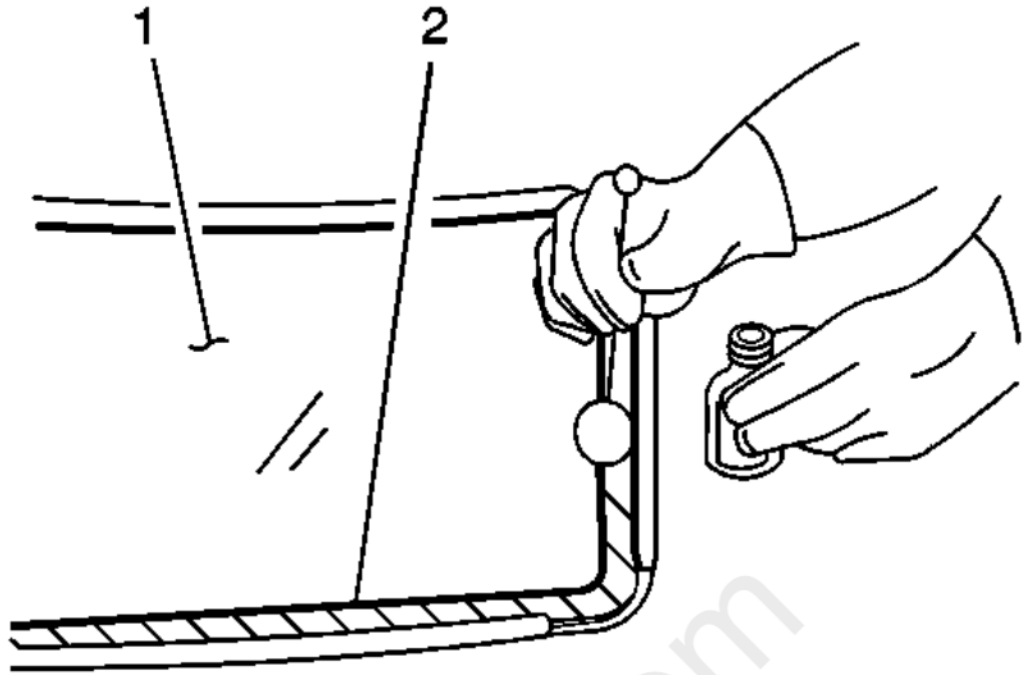


Fig. 64: Applying Glass Primer

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. 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.
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.

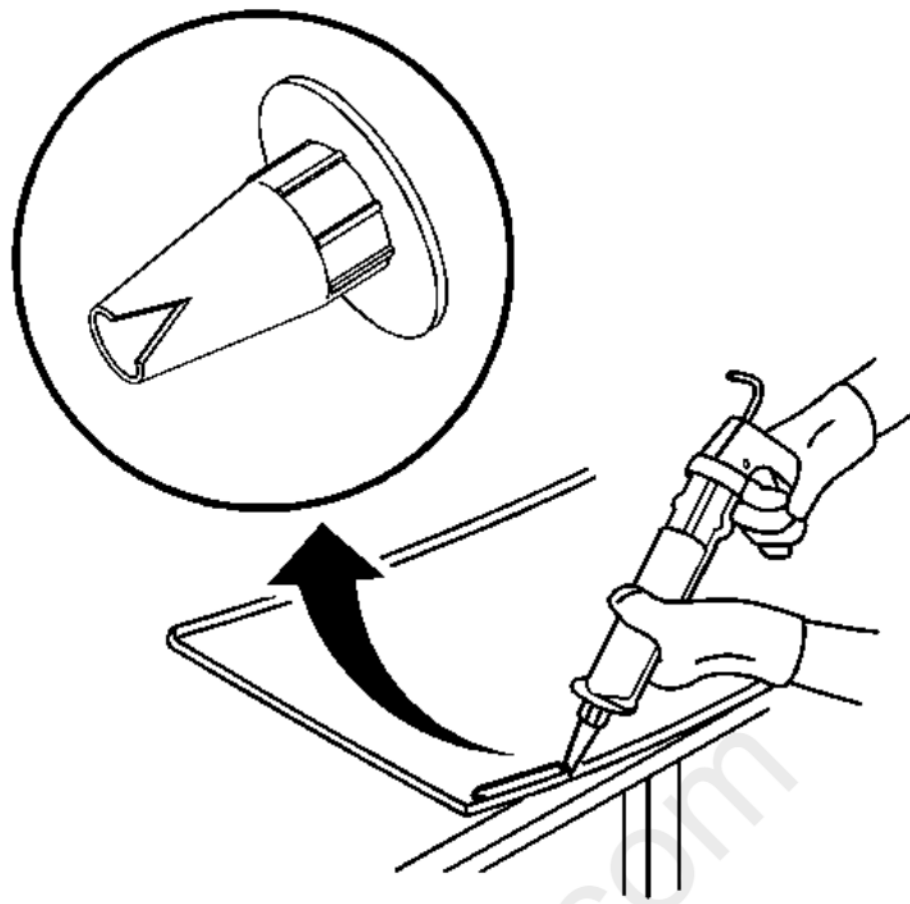


Fig. 65: View Of Modified Applicator Nozzle

Courtesy of GENERAL MOTORS COMPANY

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

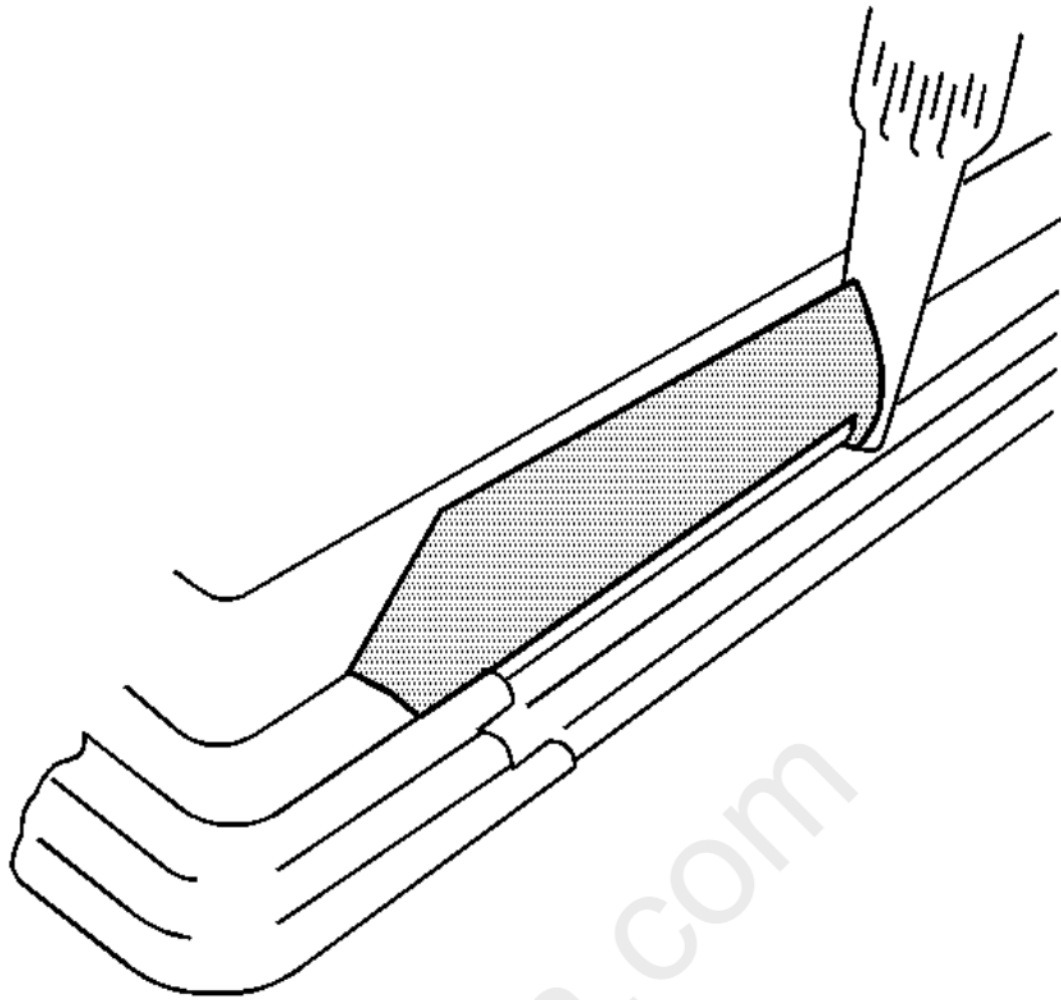


Fig. 66: Applying Continuous Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS COMPANY

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).

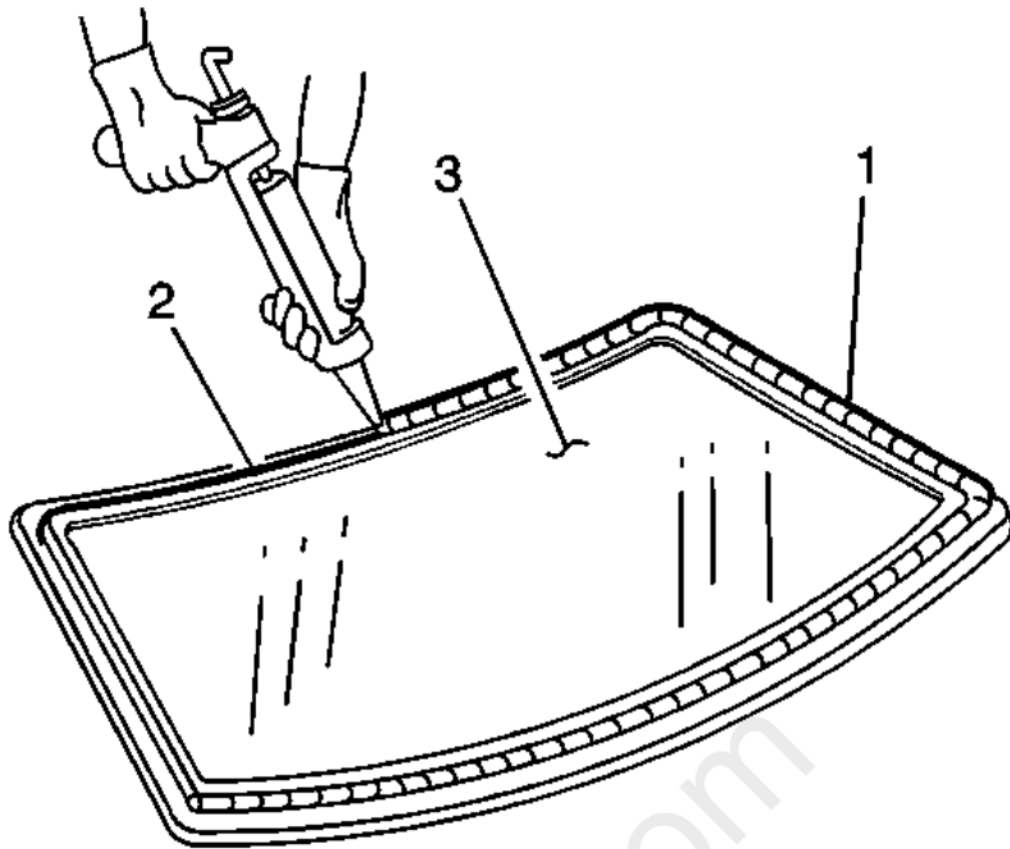


Fig. 67: Applying Urethane Adhesive To Inner Surface Of Window

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.

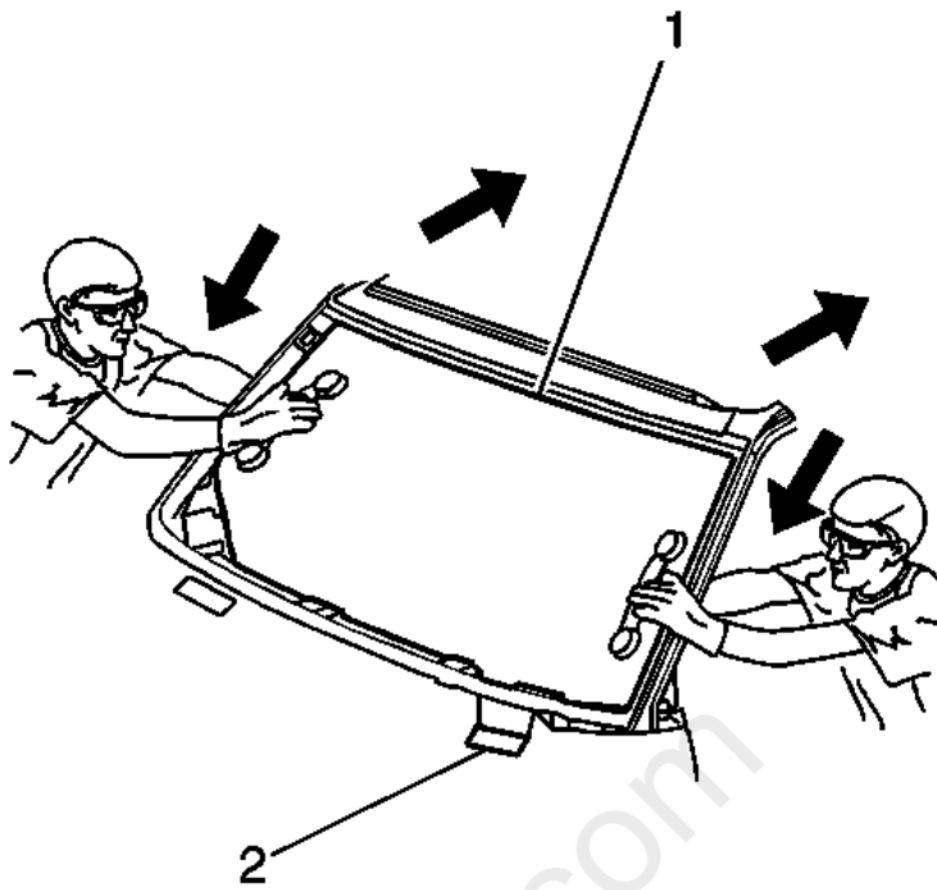


Fig. 68: Installing Windshield

Courtesy of GENERAL MOTORS COMPANY

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

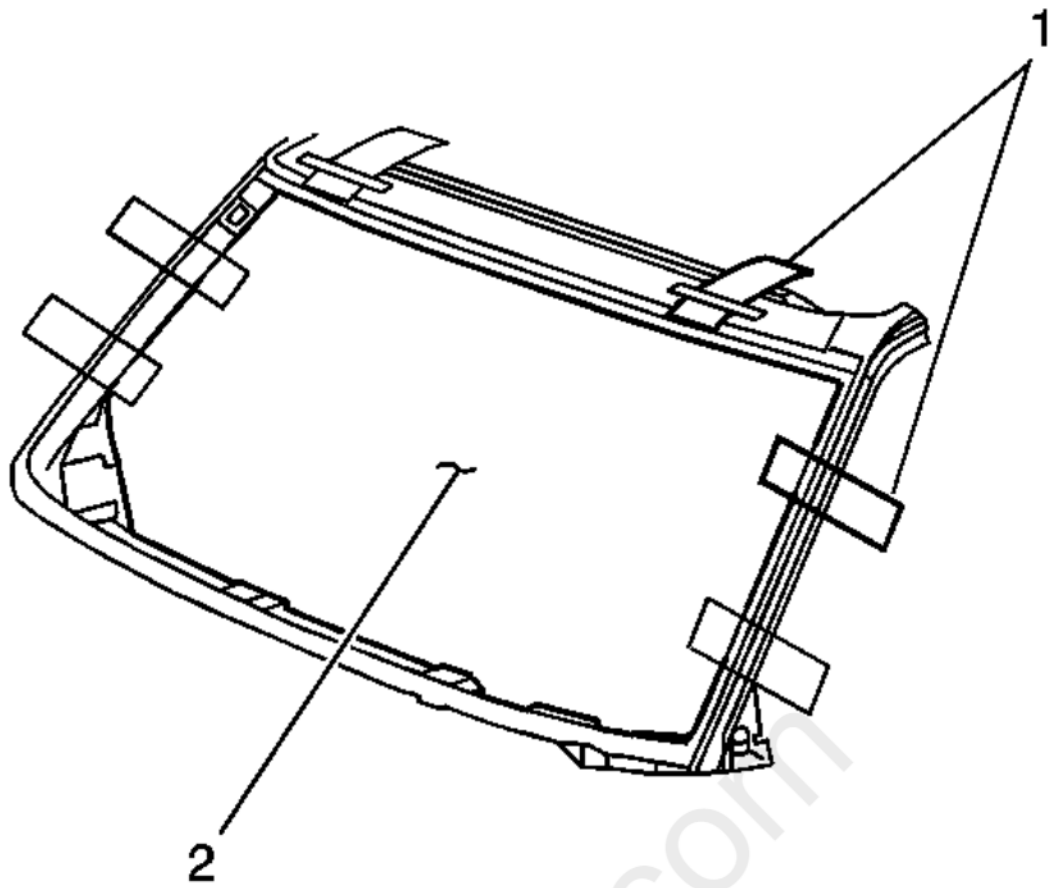


Fig. 69: Aligning Tape Lines On Window To Body.
Courtesy of GENERAL MOTORS COMPANY

23. Press the window firmly into place, 1 mm (0.039 in) below surface.

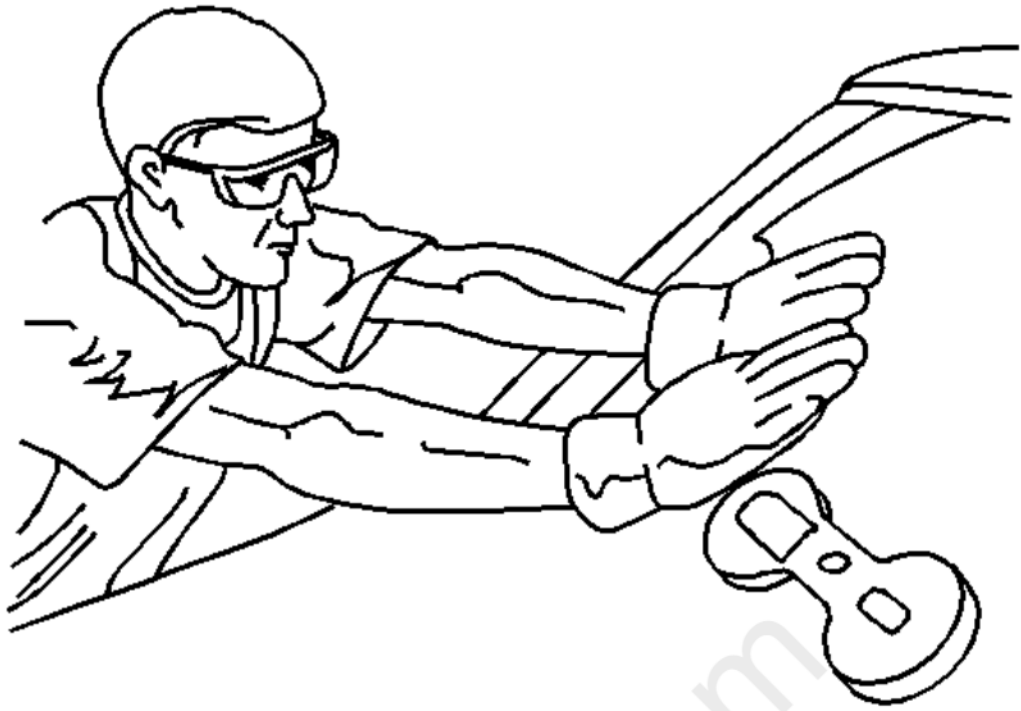


Fig. 70: Pressing Window Into Place

Courtesy of GENERAL MOTORS COMPANY

24. Tape the window to the body in order to minimize movement until the urethane adhesive cures.
25. Clean any excess urethane adhesive from the body.

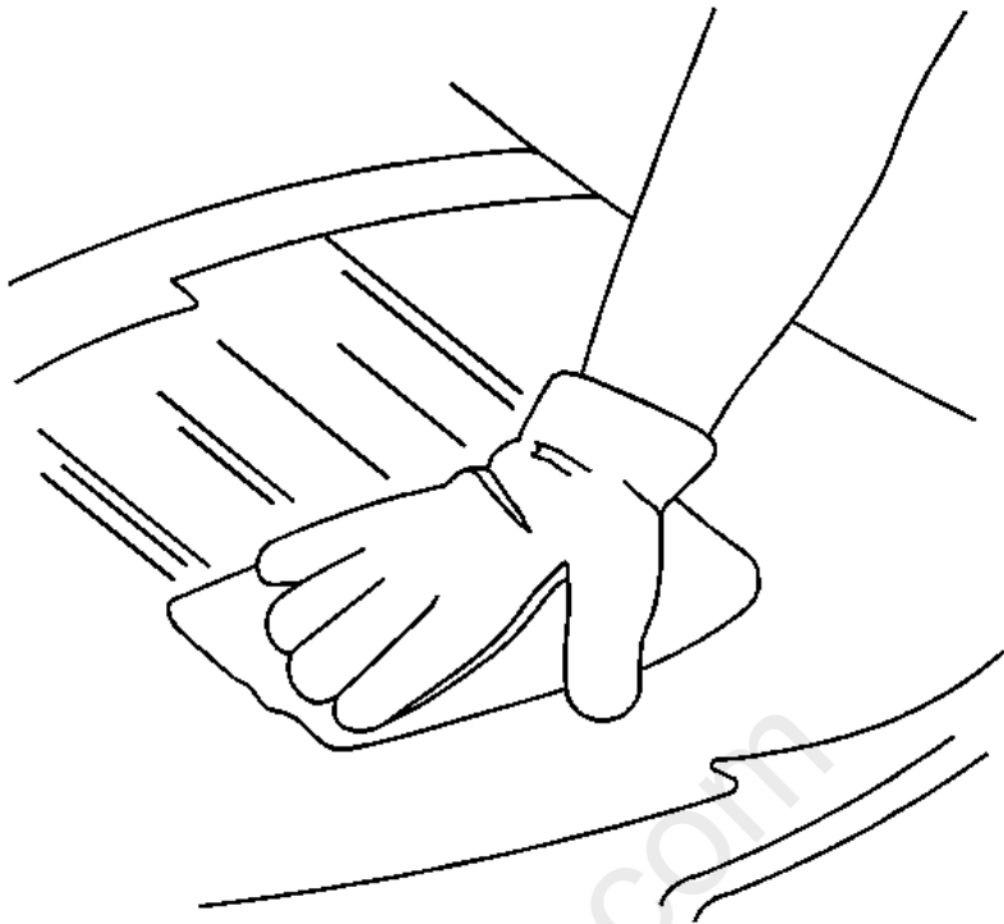


Fig. 71: Cleaning Excess Urethane Adhesive From Body

Courtesy of GENERAL MOTORS COMPANY

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

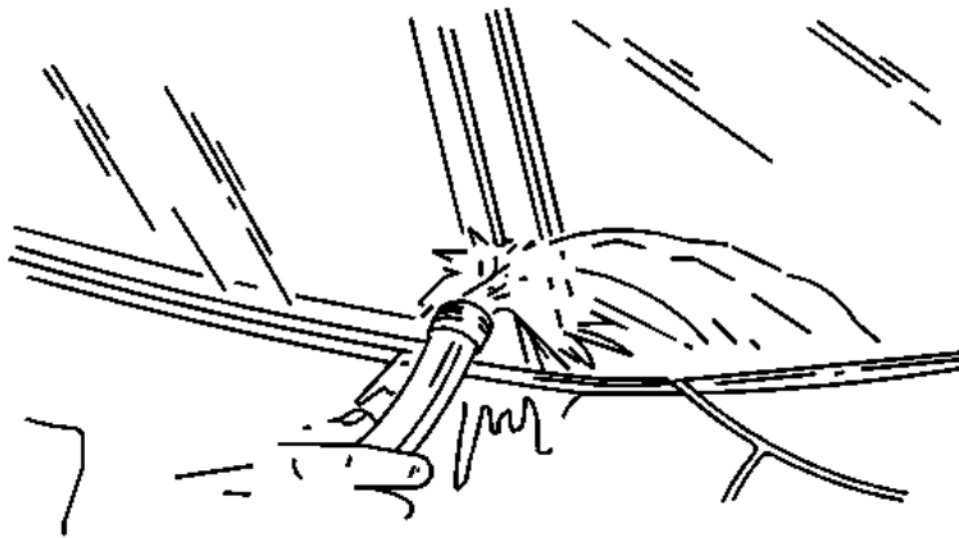


Fig. 72: Performing Water Hose Test
Courtesy of GENERAL MOTORS COMPANY

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

27. 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.
30. Maintain the following conditions in order to properly cure the urethane adhesive:

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.

- 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 QUARTER WINDOWS

1. Use a urethane adhesive systems which meet GM Specification GM 3651G

WARNING: Refer to [Glass and Sheet Metal Handling Warning](#) .

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

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 DE15Â®, DuPont 2610Â®, Sherwin-Williams PSE 4600 and NP70Â® and Martin-Semour 5120 and 5130Â® PPG DP90LF SPIES/HECKER 3688/8590 - 3688/5150 - 4070/5090 STANDEX 11158/13320 - 14653/14980 products are approved for this application.

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.
7. Ensure that the window locator pins (1) are positioned to the pinch-weld flange.



Fig. 73: Window Locator Pins

Courtesy of GENERAL MOTORS COMPANY

8. Dry fit the window (2) to the opening in order to determine the correct position.
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.

12. Shake the primer clear for at least 1 minute.

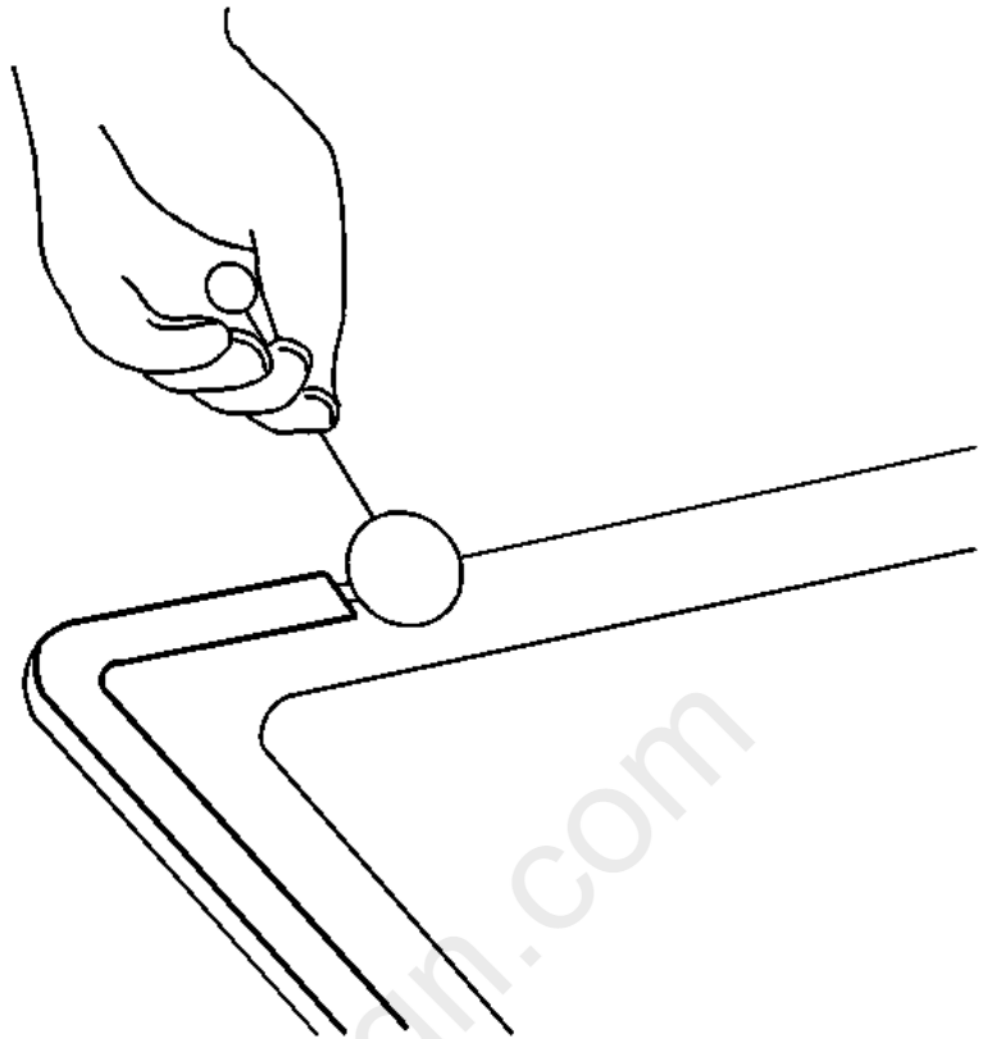


Fig. 74: Applying Glass Prep

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.

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

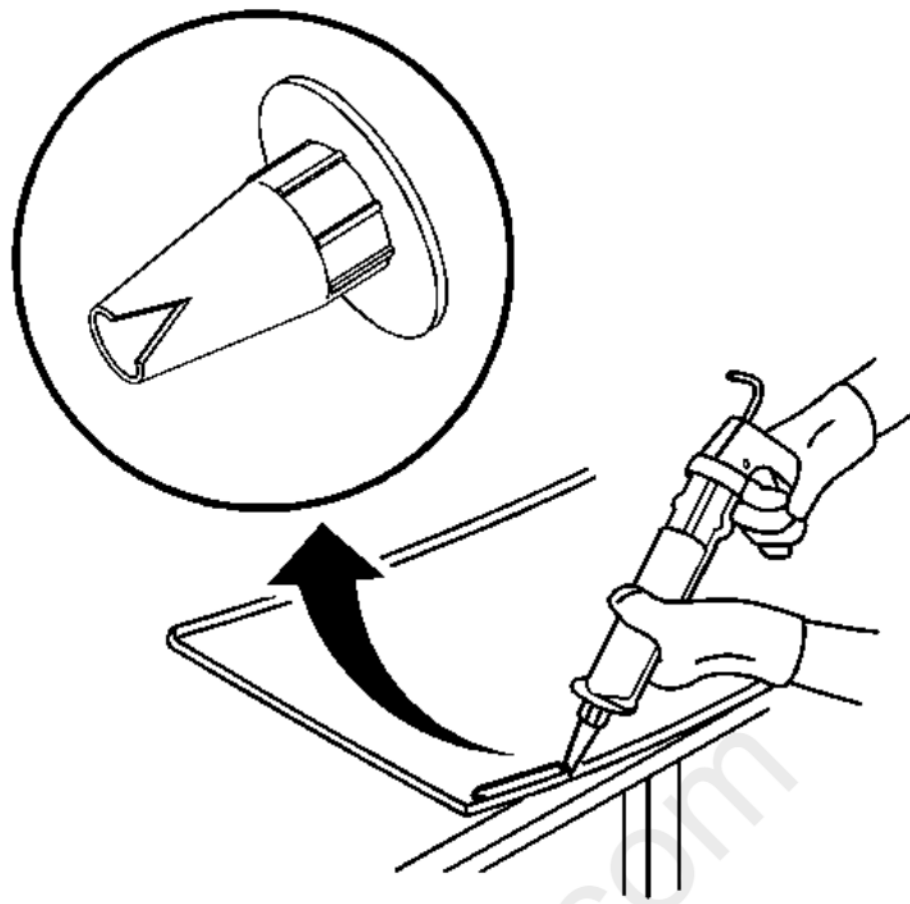


Fig. 75: View Of Modified Applicator Nozzle

Courtesy of GENERAL MOTORS COMPANY

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

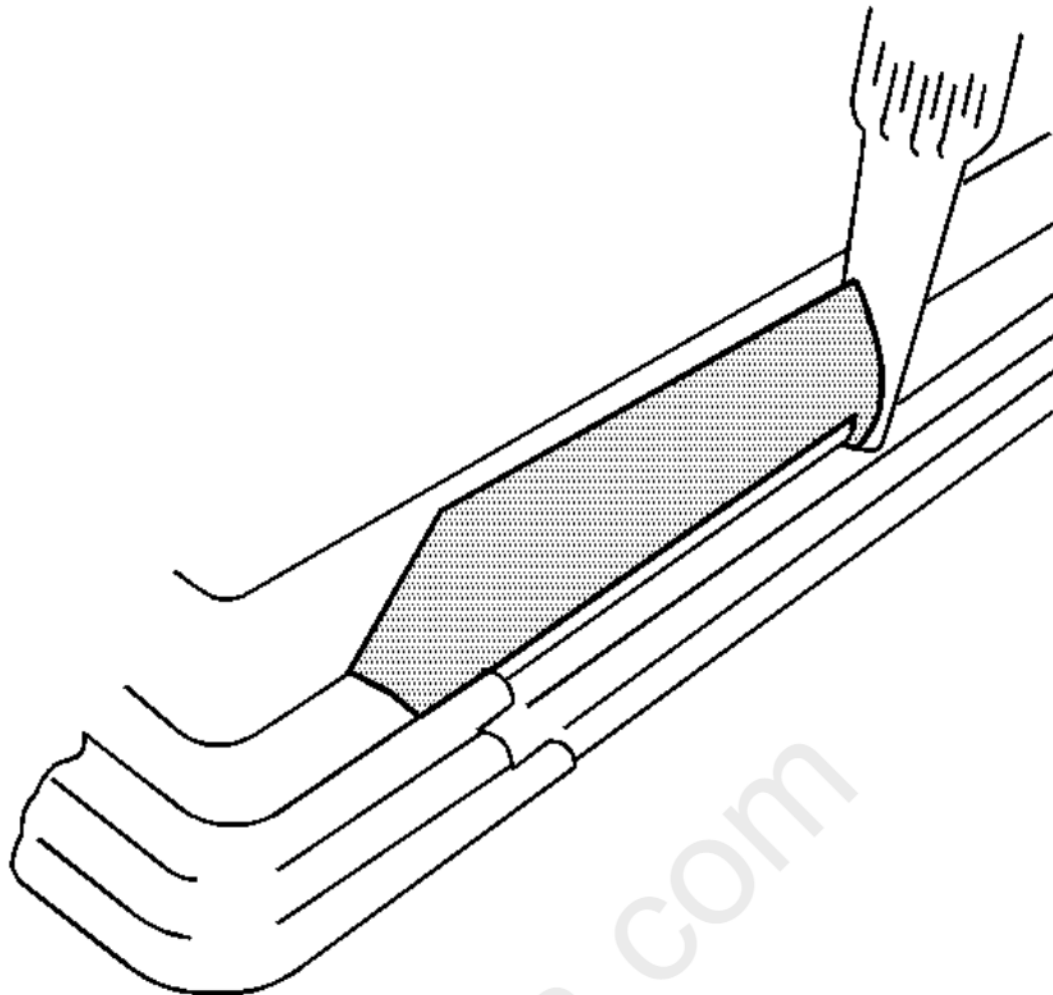


Fig. 76: Applying Continuous Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS COMPANY

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

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

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

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 21Å°C (70Å°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.

- 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

1. Use a urethane adhesive systems which meet GM Specification GM 3651G.

WARNING: Refer to [Glass and Sheet Metal Handling Warning](#) .

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

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.

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.
7. Shake the pinch-weld primer black #3 for at least 1 minute.

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.

8. Use a new dauber in order to apply the primer to the surface of the pinch-weld flange (1).
9. Allow the pinch-weld primer to dry for approximately 10 minutes.
10. With the aid of an assistant, dry fit the window (1) to the opening in order to determine the correct position.

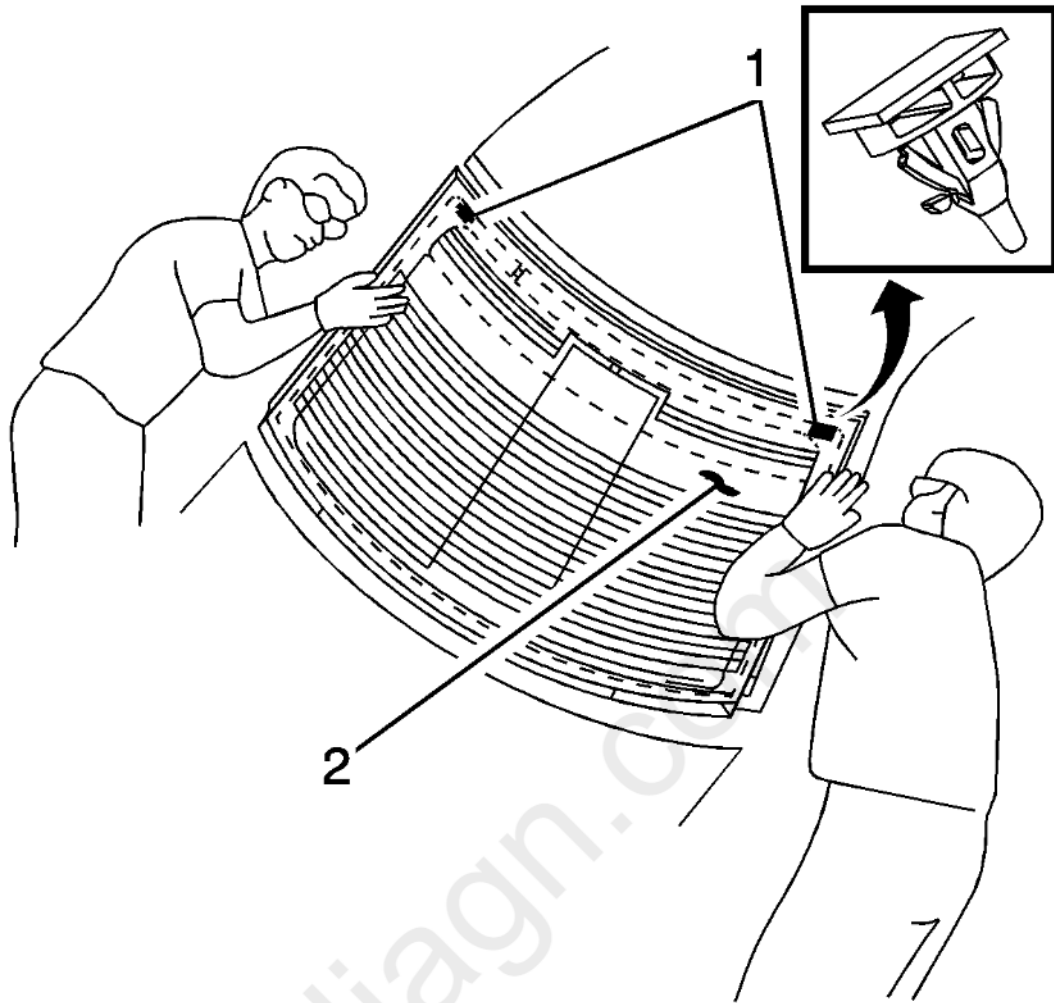


Fig. 77: Installing Rear Window

Courtesy of GENERAL MOTORS COMPANY

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.
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.

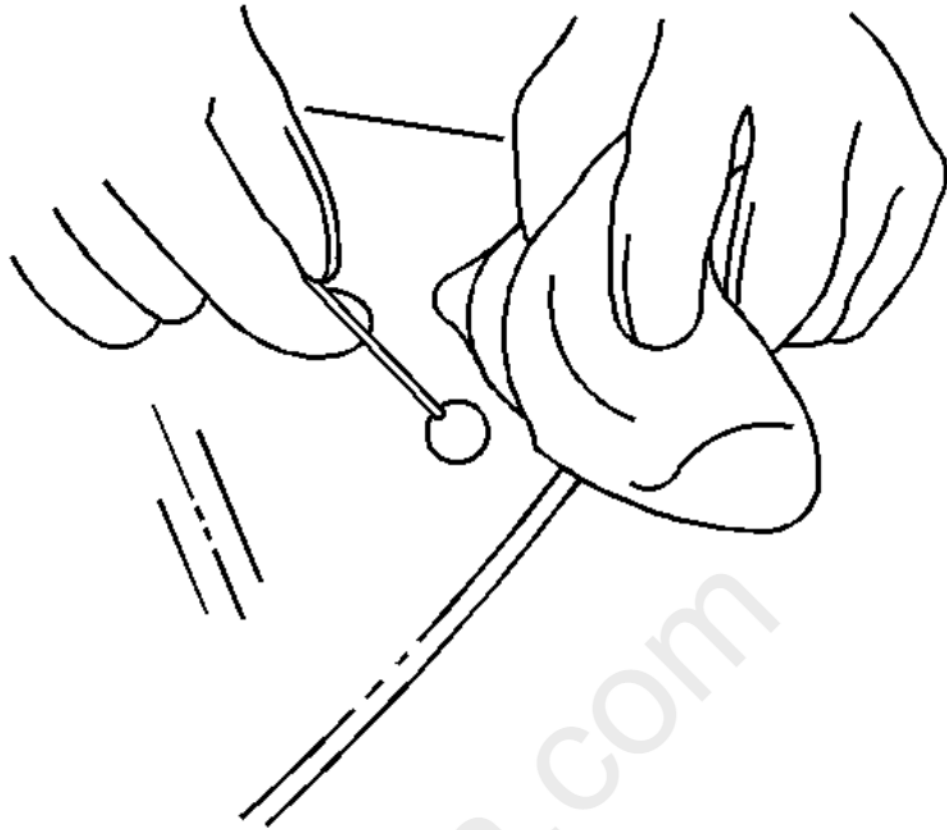


Fig. 78: Applying Glass Prep

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.

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

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

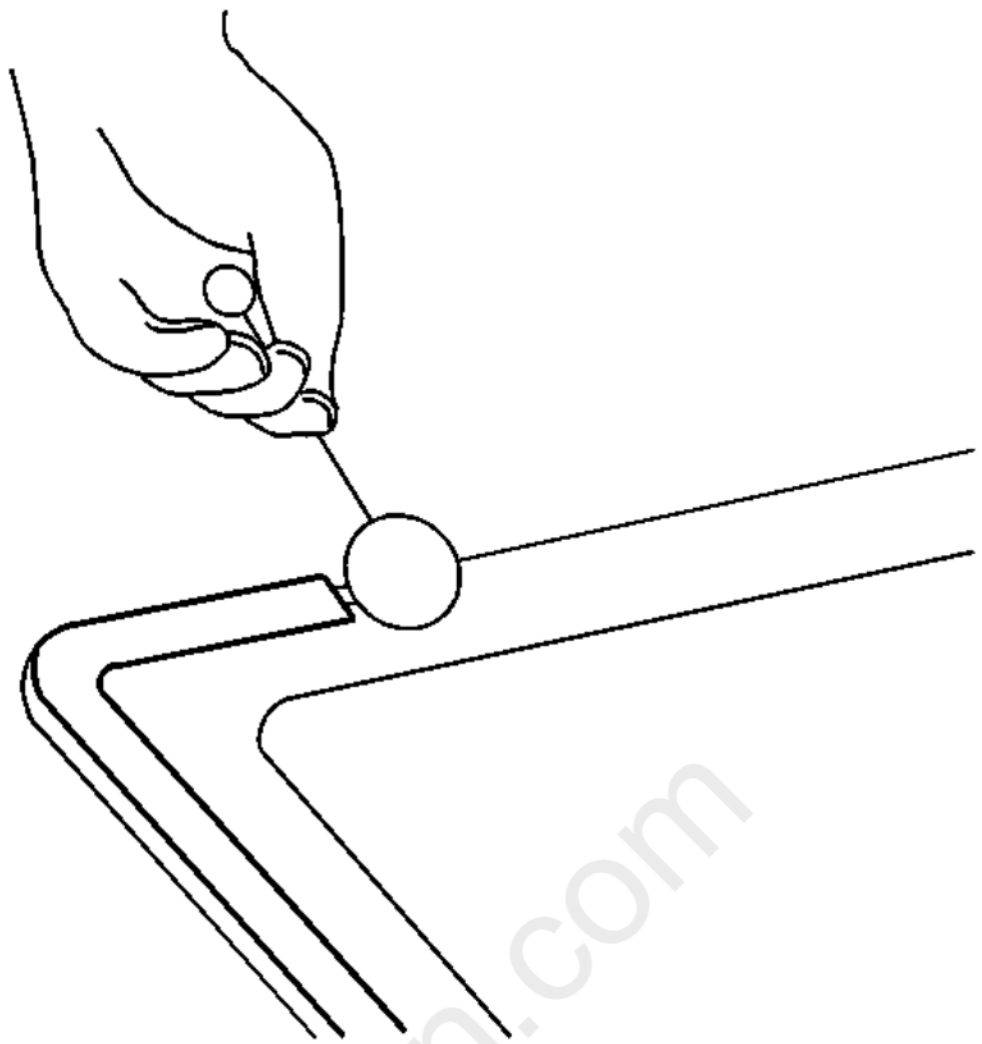


Fig. 79: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

16. Shake the glass primer black for at least 1 minute.

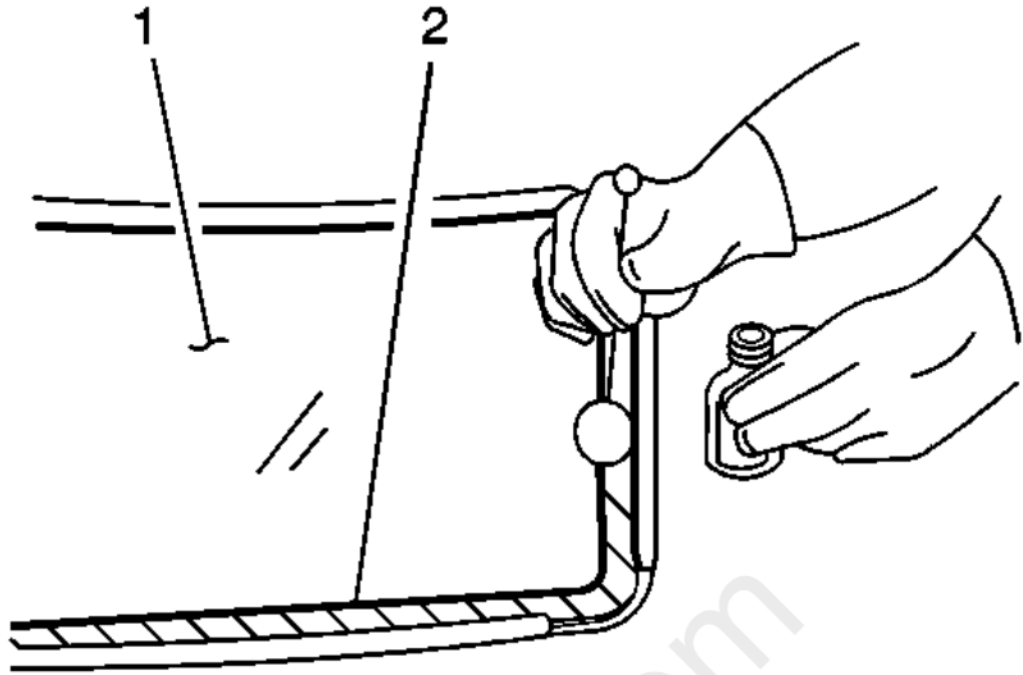


Fig. 80: Applying Glass Primer

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.

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.
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.

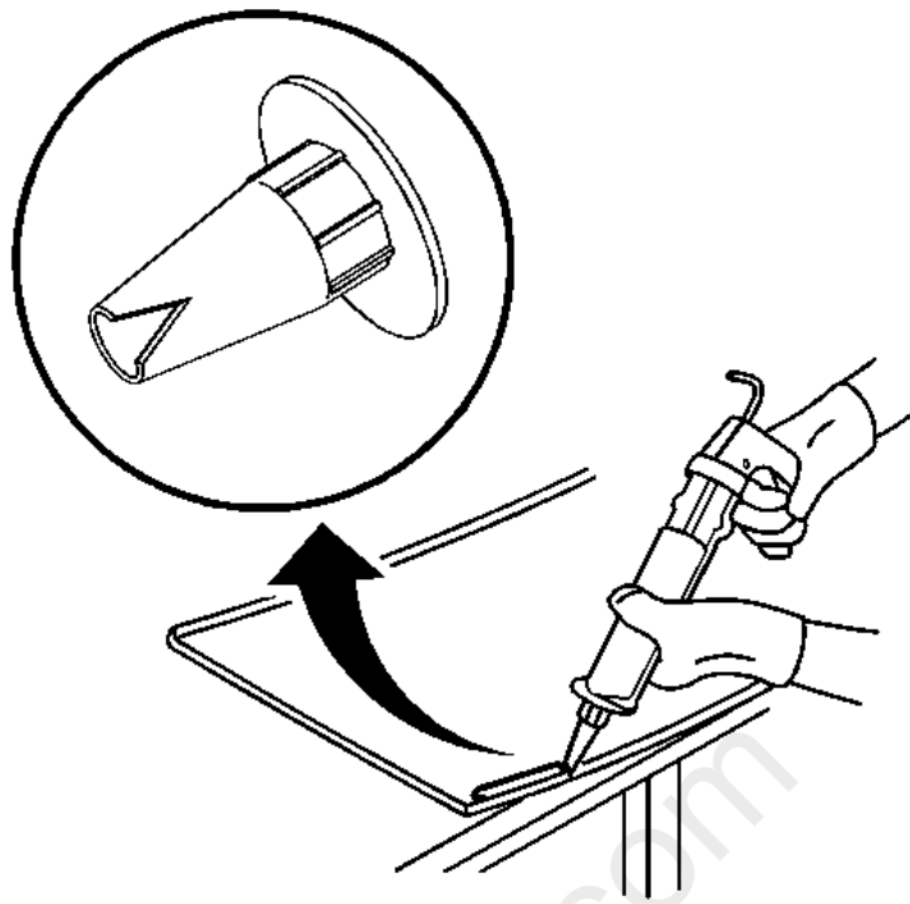


Fig. 81: View Of Modified Applicator Nozzle

Courtesy of GENERAL MOTORS COMPANY

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

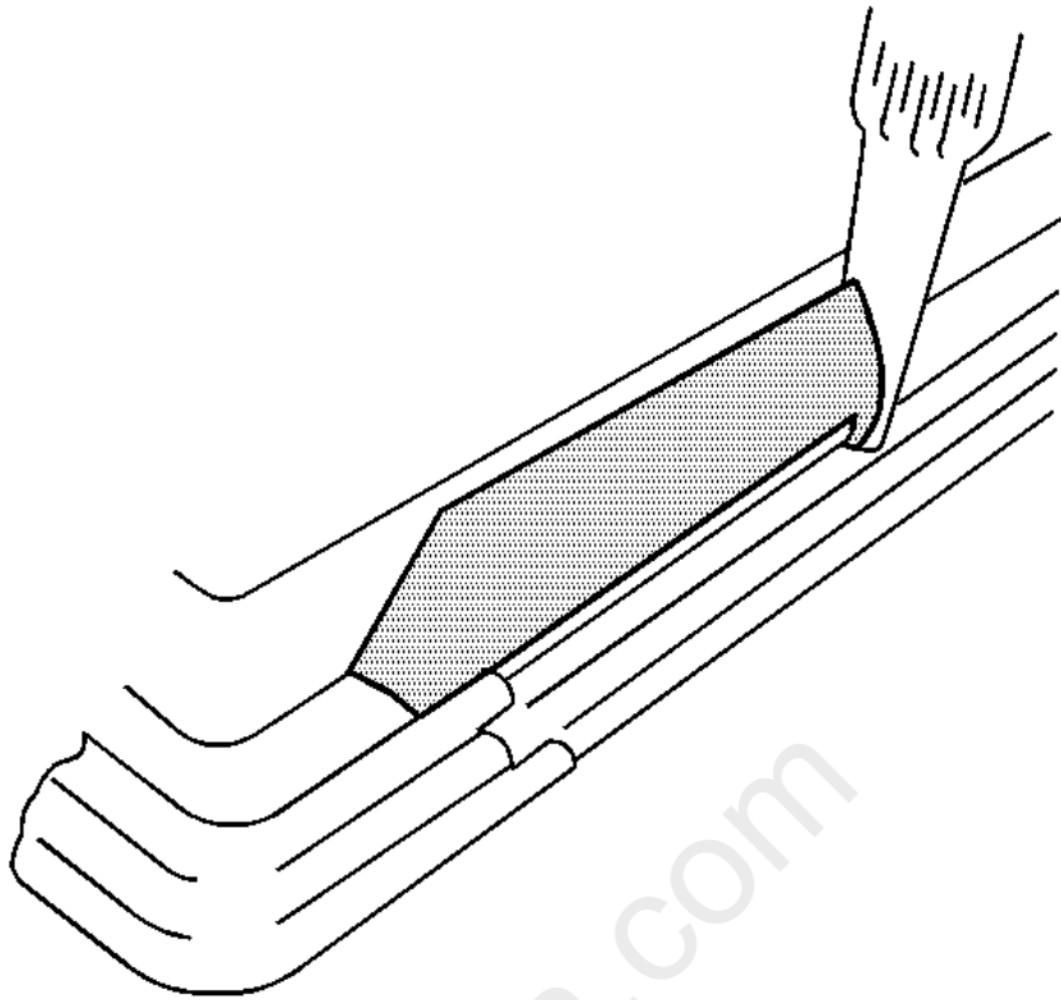


Fig. 82: Applying Continuous Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS COMPANY

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).

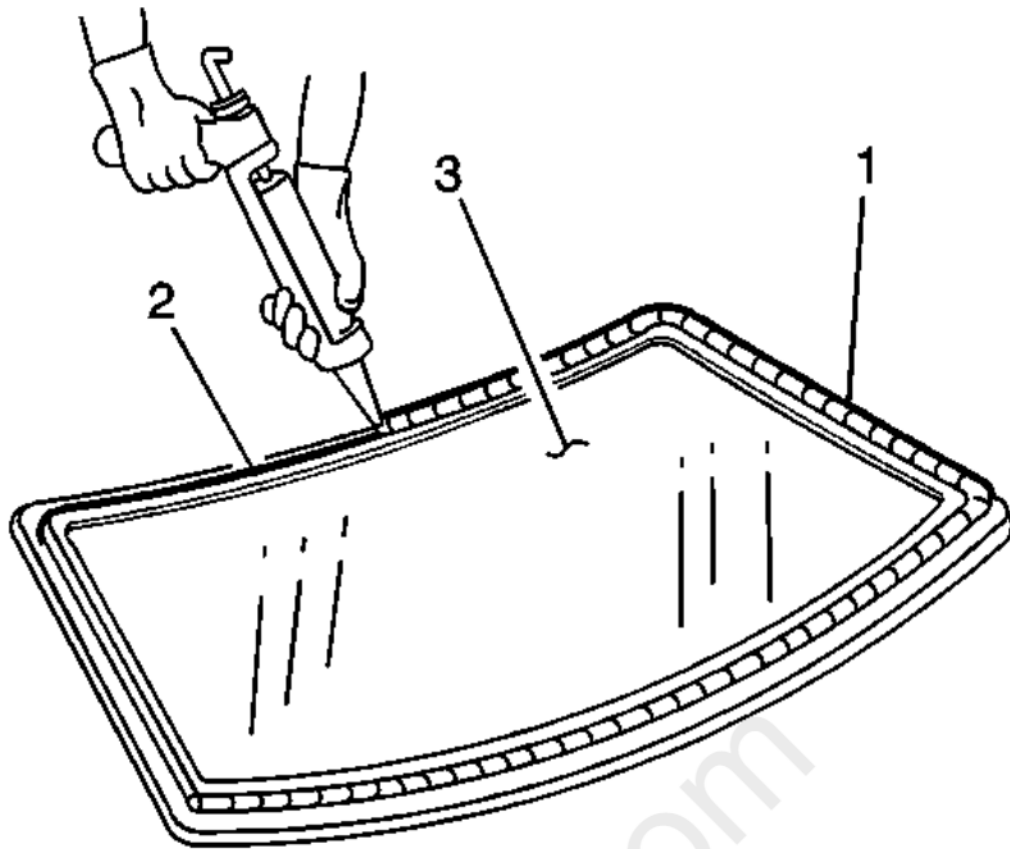


Fig. 83: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS COMPANY

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

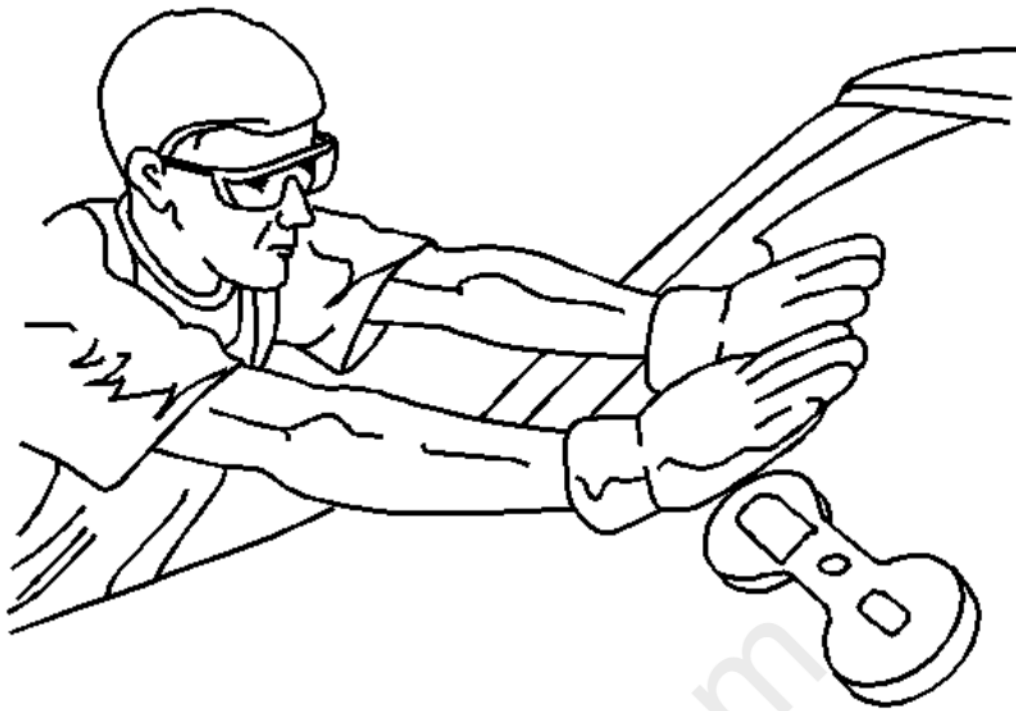


Fig. 84: Pressing Window Into Place

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.

25. Tape the window to the body in order to minimize movement until the urethane adhesive cures.
26. Clean any excess urethane adhesive from the body.

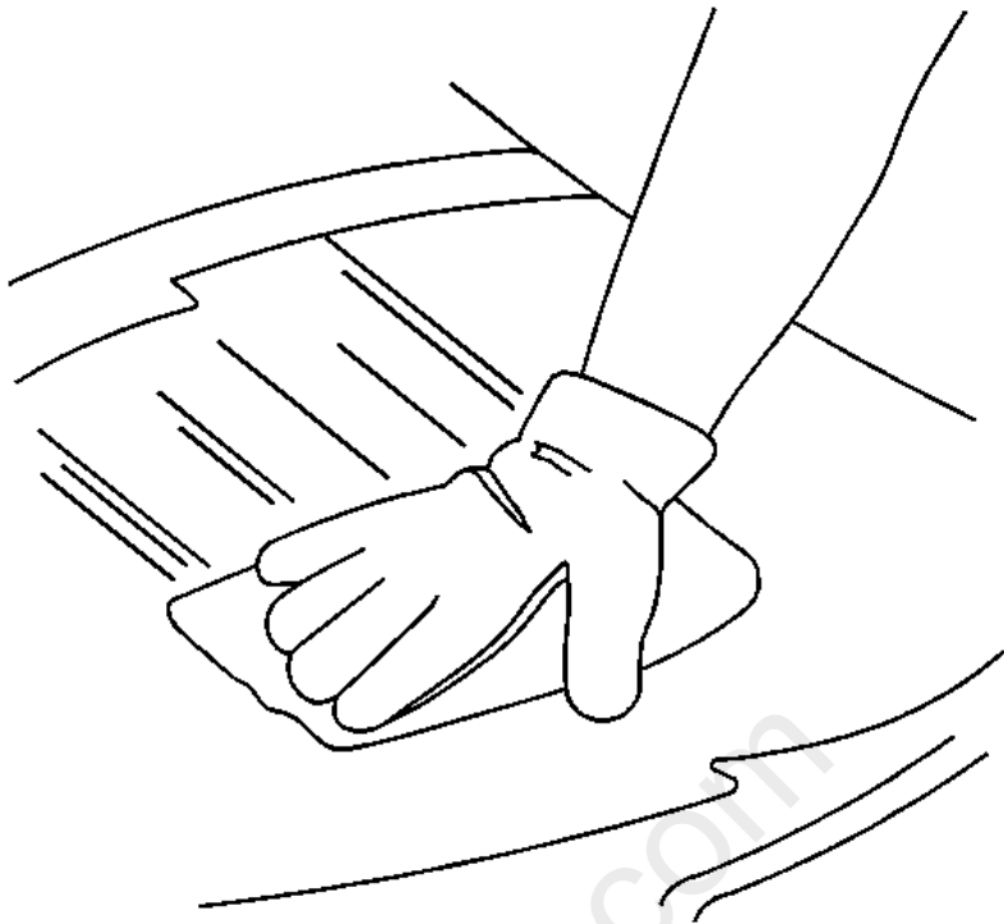


Fig. 85: Cleaning Excess Urethane Adhesive From Body

Courtesy of GENERAL MOTORS COMPANY

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

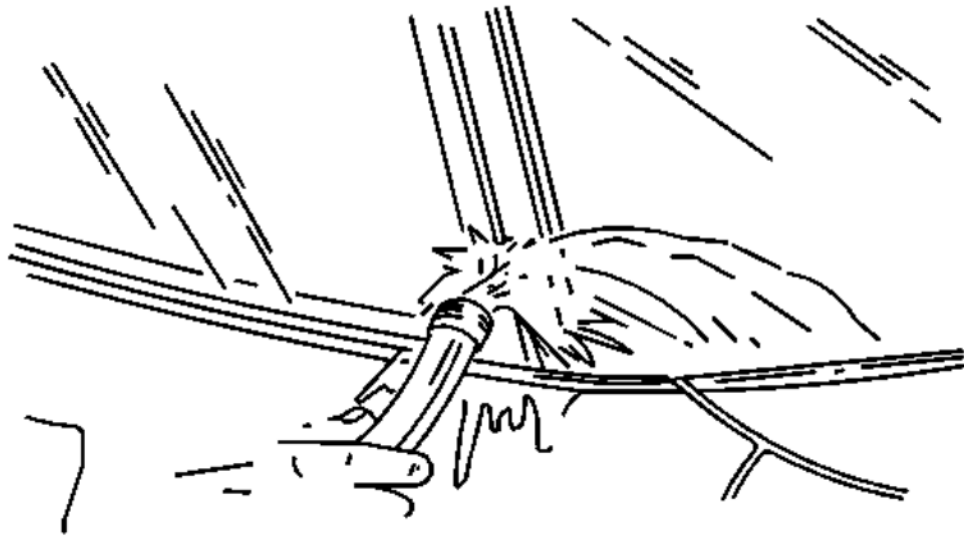


Fig. 86: Performing Water Hose Test
Courtesy of GENERAL MOTORS COMPANY

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

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

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.

- 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.

DESCRIPTION AND OPERATION

FULL-CUT METHOD DESCRIPTION

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

This method includes the following:

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

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

- IMPORTANT:
- If corrosion of the pinch-weld flange is present or if sheet metal repairs or replacements are required, refinish the pinch-weld flange in order to present a clean, primer-only surface.
 - If paint repairs are required, mask the flange bonding area, prior to applying the color coat, in order to provide a clean, primer-only surface.
 - Appropriate materials for these primer applications are typically 2 component catalyzed products. Use materials such as BASF DE15®¹, DuPont 2610®², Sherwin-Williams PSE 4600 and NP70®³ and Martin-Semour 5120, 5130®⁴, PPG DP90LF SPIES/HECKER 3688/8590 - 3688/5150 - 4070/5090 STANDEX 11158/13320 - 14653/14980 products are approved for this application. Follow the manufacturer's directions for the mix, the application and the drying times.
 - After repairing the opening as indicated, shake the pinch-weld primer black well. Using a new dauber, apply the primer to the primed surface of the flange in the bonding area. Allow the primer to dry for 10 minutes.

POWER WINDOWS DESCRIPTION AND OPERATION

Power Windows System Components

The power window system consists of the following components:

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

14 Power Windows AXG-AEF-AER Block Diagram

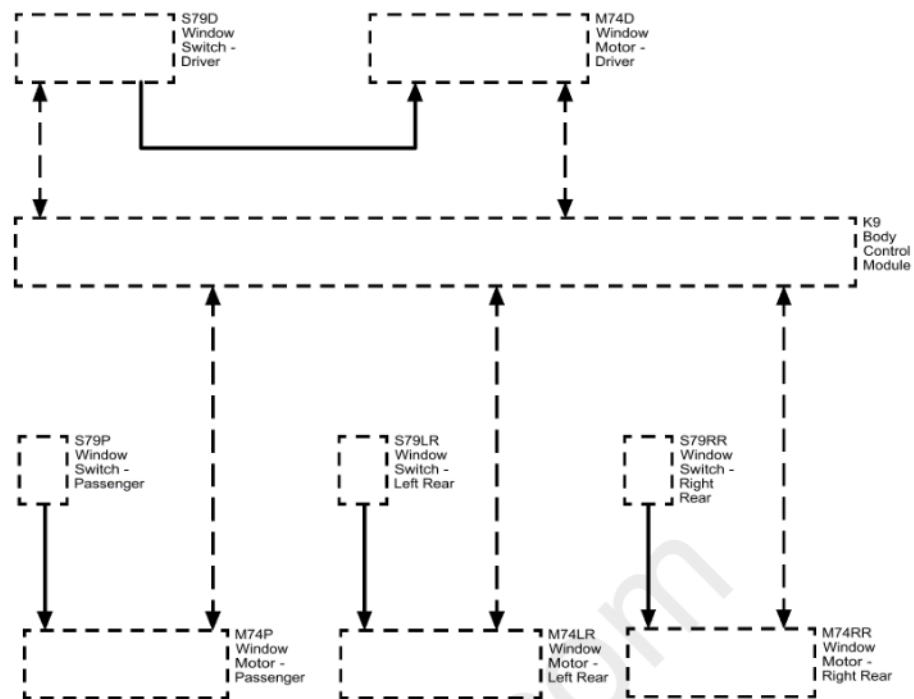


Fig. 87: 14 Power Windows AXG-AEF-AER Block Diagram
Courtesy of GENERAL MOTORS COMPANY

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

Driver, Passenger and Rear Window Motors

The driver and passenger, left rear and right rear doors contain smart motors that will detect excessive resistance while performing the express up function and automatically reverse direction to prevent injury to any occupants that may become trapped between the closing window and the door frame. The automatic reverse safety feature can be overridden by pulling and holding the window switch.

The logic circuit within the window motors monitor the up, down and express signal circuits which are normally equal to B+ voltage. When a switch is used on the driver, passenger, left rear or right rear window switch, the contacts close causing a voltage drop within the appropriate signal circuit. The window motor will detect the voltage drop and will command the window to move in the direction requested.

Each window motor communicates to the body control module (BCM) by a serial data circuit. When the driver wishes to control the passenger, left rear or right rear window, the driver will use the appropriate

switch on the driver window switch. When this switch is used, a serial data message is sent to the BCM requesting a window motor command, the BCM will then send a serial data message to the appropriate window motor which will then move in the direction requested.

Lockout Switch Feature

The driver power window switch contains a window lockout switch, when the driver presses the window lockout switch, a serial data message is sent to the BCM which will send a disable command to the rear window switches, deactivating them. The rear windows will still function normally from the switches on the driver window switch.

REAR WINDOW DEFOGGER DESCRIPTION AND OPERATION

Rear Window Defogger System Components

The rear window defogger system consists of the following components:

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

Rear Window Defogger Block Diagram

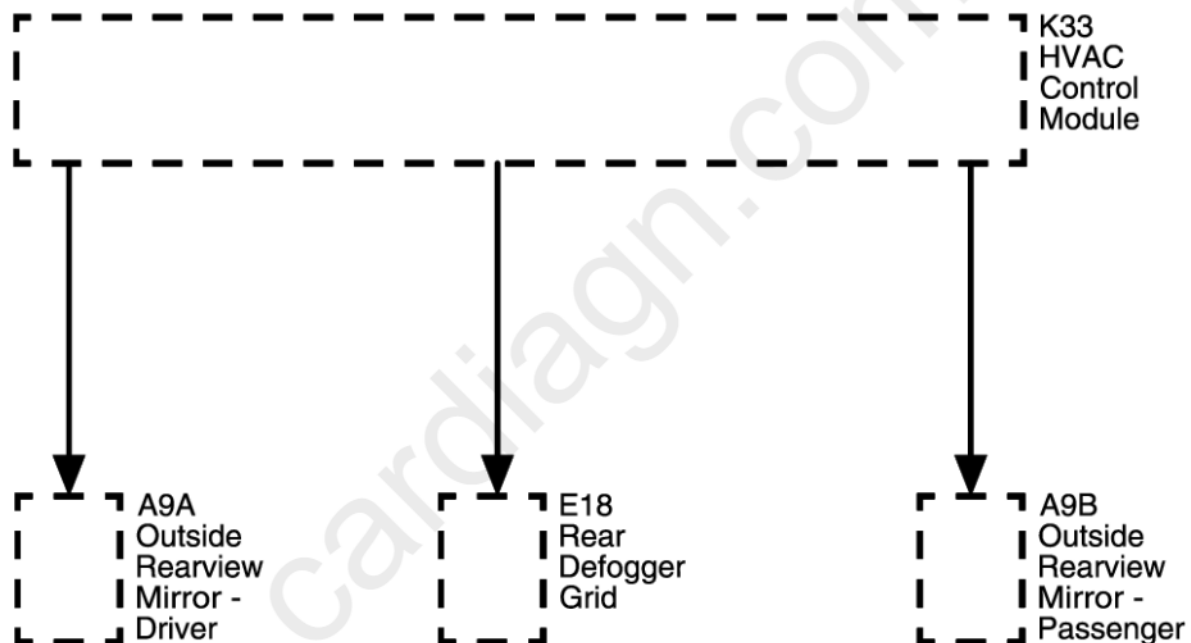


Fig. 88: Rear Window Defogger Block Diagram

Courtesy of GENERAL MOTORS COMPANY

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

Rear Window Defogger Operation

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

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

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

STATIONARY WINDOW DESCRIPTION

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

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

URETHANE ADHESIVE DESCRIPTION

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

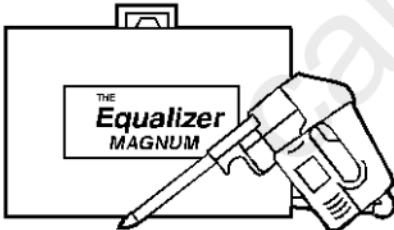
Use an adhesive that is approved by GM, Specification GMW-15672.

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

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

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

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