

2017 ACCESSORIES & EQUIPMENT

Fixed and Moveable Windows - Encore, Trax

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 Manual Window Regulator Screw	11 N.m (97 lb in)
Front Side Door Power Window Regulator Bolt	11 N.m (97 lb in)
Front Side Door Window Regulator Guide Nut	10 N.m (89 lb in)
Front Side Door Window Regulator Motor Screw	5 N.m (44 lb in)
Rear Side Door Manual Window Regulator Bolt	11 N.m (97 lb in)
Rear Side Door Power Window Regulator Motor Screw	5 N.m (44 lb in)
Rear Side Door Window Guide Nut	10 N.m (89 lb in)
Rear Side Door Window Rear Guide Nut	9 N.m (80 lb in)
Rear Side Door Window Weatherstrip Upper Screw	3 N.m (27 lb in)

SCHEMATIC WIRING DIAGRAMS

MOVEABLE WINDOW WIRING SCHEMATICS (BUICK)

Driver Front Window (Buick)

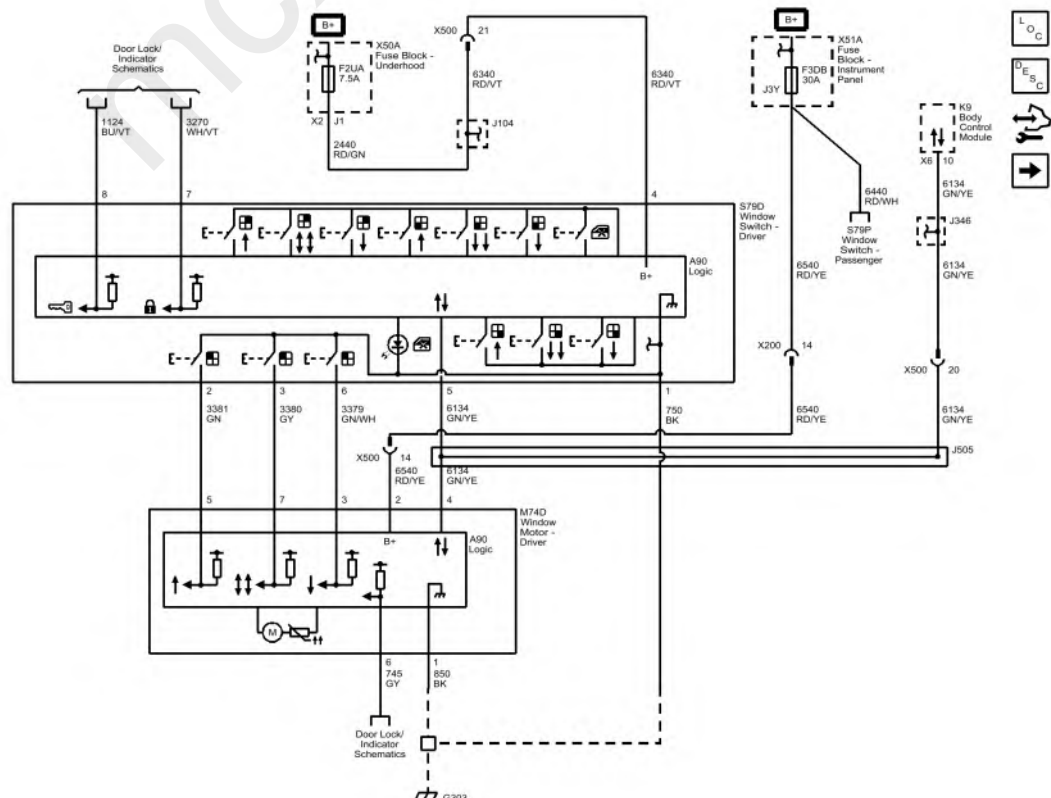


Fig. 1: Driver Front Window (Buick)
Courtesy of GENERAL MOTORS COMPANY

Passenger Front Window (Buick)

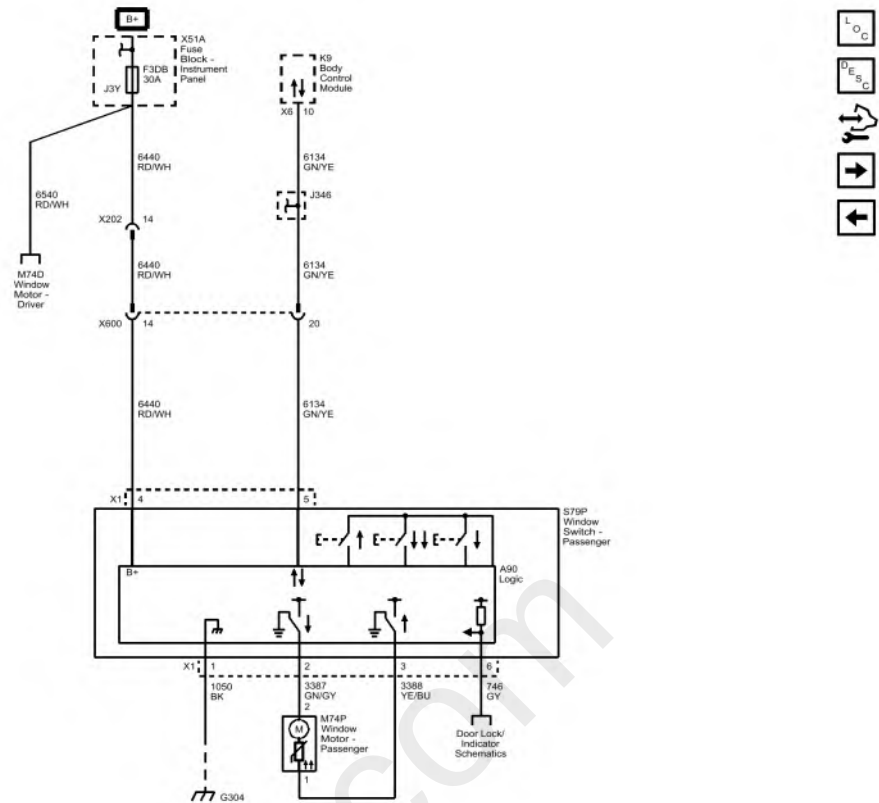


Fig. 2: Passenger Front Window (Buick)
Courtesy of GENERAL MOTORS COMPANY

Rear Windows (Buick)

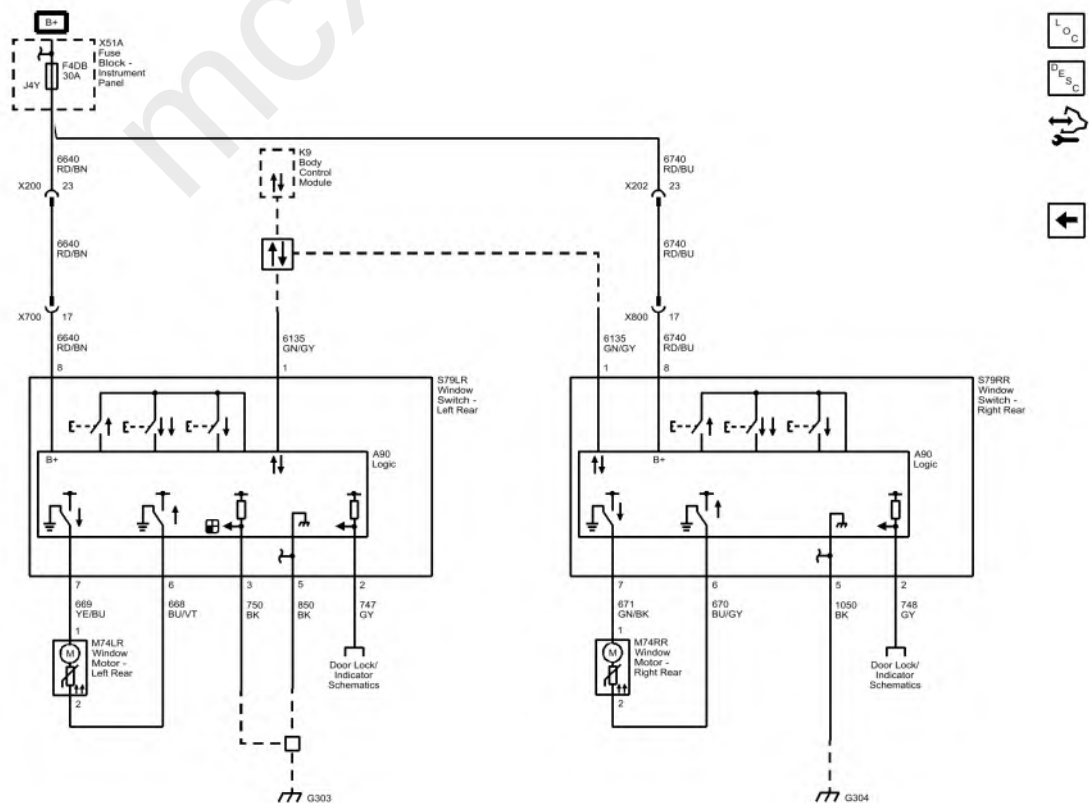


Fig. 3: Rear Windows (Buick)
Courtesy of GENERAL MOTORS COMPANY

MOVEABLE WINDOW WIRING SCHEMATICS (CHEVROLET)

Driver Door (Chevrolet)

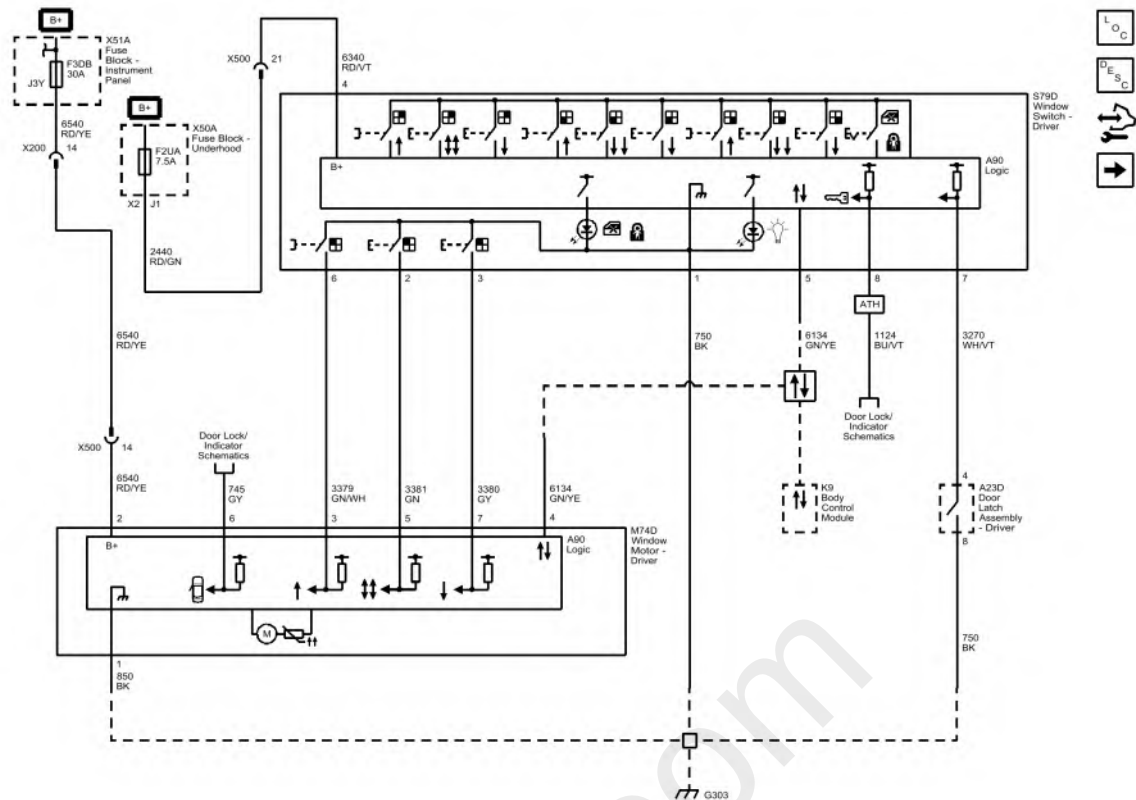


Fig. 4: Driver Door (Chevrolet)

Courtesy of GENERAL MOTORS COMPANY

Passenger Door (Chevrolet)

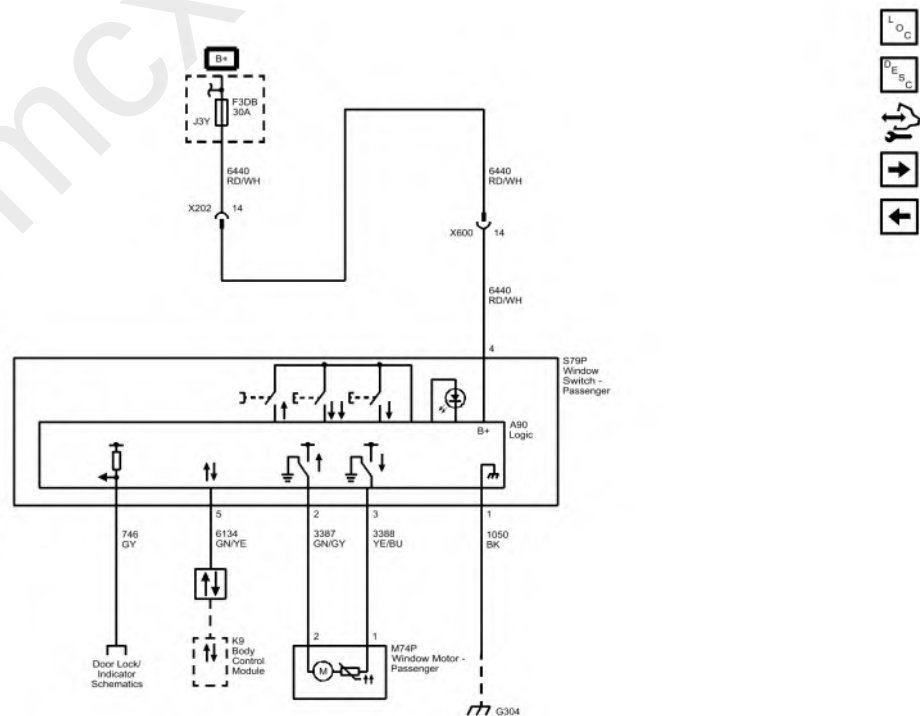


Fig. 5: Passenger Door (Chevrolet)

Courtesy of GENERAL MOTORS COMPANY

Rear Doors (Chevrolet)

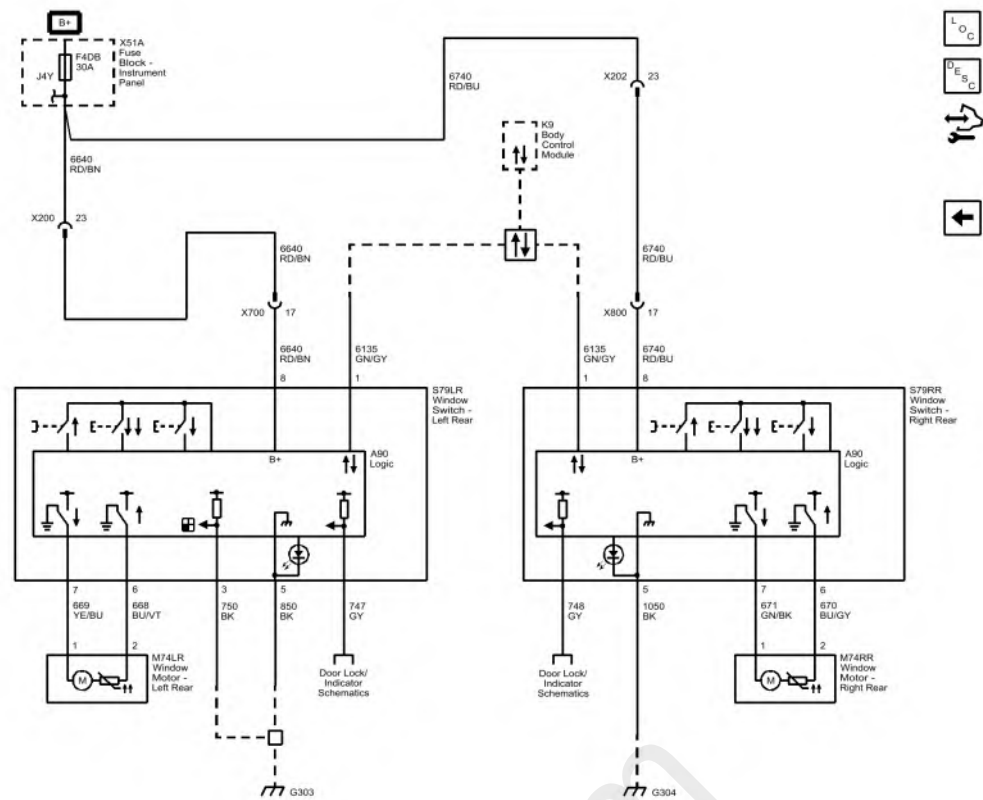


Fig. 6: Rear Doors (Chevrolet)

Courtesy of GENERAL MOTORS COMPANY

DEFOGGER WIRING SCHEMATICS (BUICK)

Defogger (Buick)

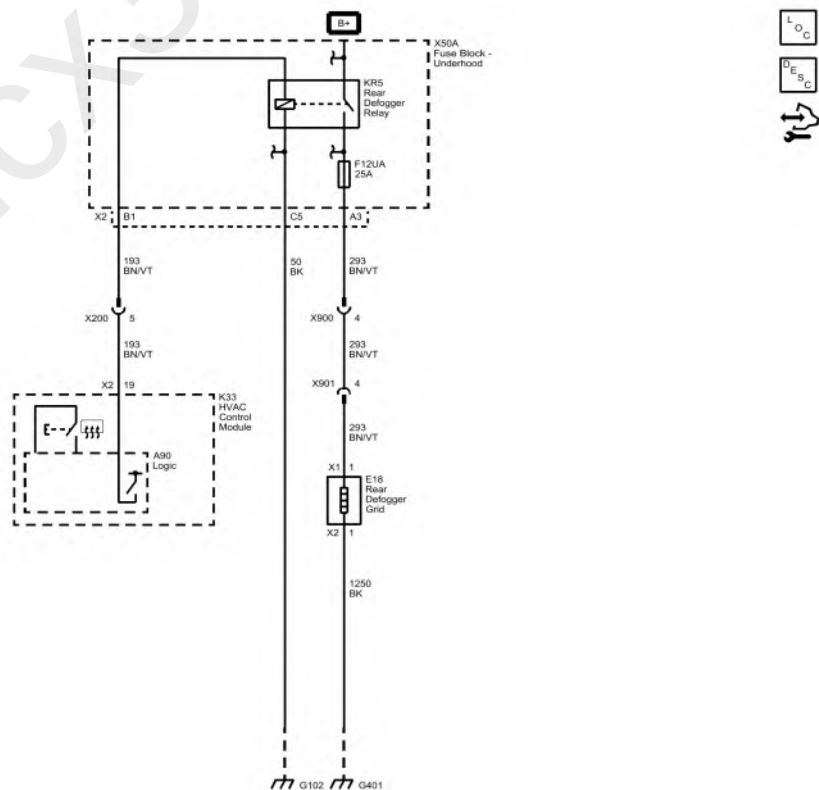


Fig. 7: Defogger (Buick)

Courtesy of GENERAL MOTORS COMPANY

DEFOGGER WIRING SCHEMATICS (CHEVROLET)

Defogger (Chevrolet)

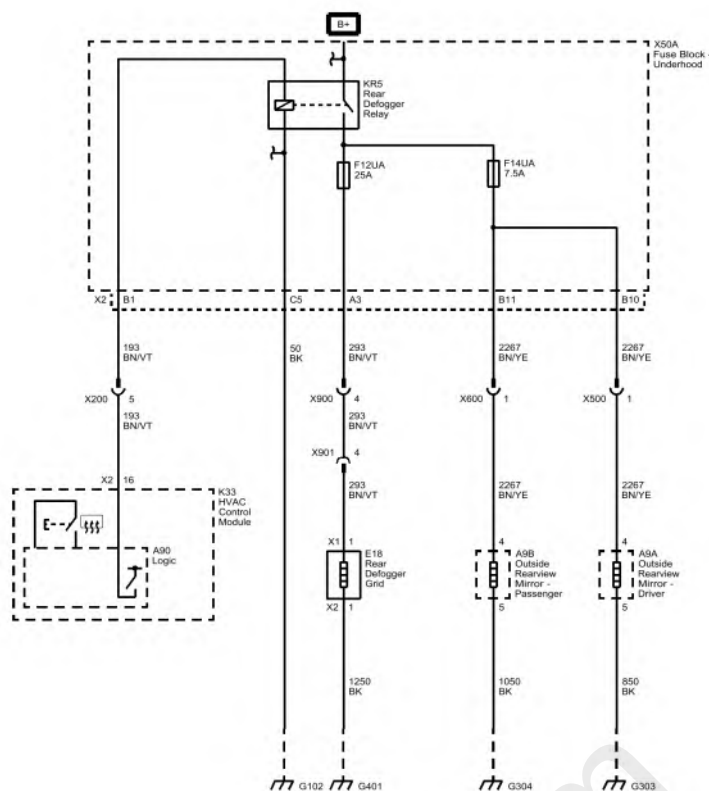


Fig. 8: Defogger (Chevrolet)

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 Descriptor

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.

Circuit	Description
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
X50A Fuse Block - Underhood	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.

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 02 E18 Rear Defogger Grid = Disabled
- B0283 05 E18 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 (Buick)Defogger Schematics (Chevrolet)

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE) COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)

Component View Reference

Front of Vehicle/Engine Compartment Component Views (Buick) Front of Vehicle/Engine Compartment Component Views (Chevrolet)

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

Circuit/System Verification

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

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

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

Refer to: Circuit/System Testing

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

3. All OK.

Circuit/System Testing

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

1. Ignition/Vehicle & All vehicle systems Off
2. Disconnect the electrical connector: X2 @ X50A Fuse Block - Underhood
3. Test for less than 10 Ω between the test points: Ground circuit terminal C5 X2 & Ground
 - **If 10 Ω or greater**
 1. Disconnect Ground Connection
 2. Test for less than 2 Ω between the test points: Ground circuit terminal C5 X2 & 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: X2 @ X50A Fuse Block - Underhood
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 @ X50A Fuse Block - Underhood
 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 B1 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: X50A Fuse Block - Underhood
- **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](#)

- Refer to [Front Compartment Fuse Block Replacement](#)
- For control module replacement, programming, and setup refer to: [Control Module References](#)

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

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 B316B

Driver Window Switch

DTC B317A

Passenger Window Switch

DTC B318A

Left Rear Window Switch

DTC B319A

Right Rear Window Switch

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 Switch Down = Inoperative 2. Driver Left Front Window Switch Up = Inoperative 3. Driver Left Front Window Switch Express = Inoperative				

Circuit/System Description

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

Circuit	Description
B+ - S79D Window Switch - Driver	Supplied from a fuse.
B+ - M74D Window Motor - Driver	Supplied from a fuse.
B+ - S79P Window Switch - Passenger	Supplied from a fuse.
B+ - S79LR Window Switch - Left Rear	Supplied from a fuse.

Circuit	Description
B+ - S79RR Window Switch - 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 Motor Passenger Down Control	The output circuit is switched from ground to 12 V to activate the component.
Power Window Motor Passenger Up Control	The output circuit is switched from ground to 12 V to activate the component.
Power Window Motor Left Rear Up Control	The output circuit is switched from ground to 12 V to activate the component.
Power Window Motor Left Rear Down Control	The output circuit is switched from ground to 12 V to activate the component.
Power Window Motor Right Rear Up Control	The output circuit is switched from ground to 12 V to activate the component.
Power Window Motor Right Rear Down Control	The output circuit is switched from ground to 12 V to activate the component.
Ground	Chassis Ground

Component	Description
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.
S79P Window Switch - Passenger	The switch has a normally open contact.
M74P Window Motor - Passenger	An electric DC motor.
S79LR Window Switch - Left Rear	The switch has a normally open contact.
M74LR Window Motor - Left Rear	An electric DC motor.
S79RR Window Switch - Right Rear	The switch has a normally open contact.
M74RR Window Motor - Right Rear	An electric DC motor.
K9 Body Control Module	The module controls various vehicle functions like lighting, central door locking, power windows, etc.

Conditions for Running the DTC

Ignition On/Vehicle In Service Mode

Conditions for Setting the DTC

B316B 00

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

B317A 02

S79P Window Switch - Passenger = Switch Stuck - For greater than 60 s

B318A 02

S79LR Window Switch - Left Rear = Switch Stuck - For greater than 60 s

B319A 02

S79RR Window Switch - Right Rear = Switch Stuck - For greater than 60 s

Actions Taken When the DTC Sets

Window Switch - Malfunction

Conditions for Clearing the DTC

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

- 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 (Buick) Moveable Window Schematics (Chevrolet)

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE) COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)

Component View Reference

Door Component Views (Buick) Door Component Views (Chevrolet)

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. S79D Window Switch - 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**

Refer to: Circuit/System Testing

- **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 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**

Test or replace the component: S79D Window Switch - Driver

- **If the specified state**

4. 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**

5. 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**

6. 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**

7. S79LR Window Switch - Left Rear Not Pressed

Verify the scan tool parameter: Left Rear Window Switch at Door = Inactive

- **If not the specified state**

Test or replace the component: S79LR Window Switch - Left Rear

- **If the specified state**

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

Verify the scan tool parameter:

- Left Rear Window Switch at Door = Up
- Left Rear Window Switch at Door = Down
- Left Rear Window Switch at Door = Express Down
- **If not the specified state**

Test or replace the component: S79LR Window Switch - Left Rear

- **If the specified state**

9. S79P Window Switch - Passenger Not Pressed

Verify the scan tool parameter: Passenger Window Switch at Door = Inactive

- **If not the specified state**

Test or replace the component: S79P Window Switch - Passenger

- **If the specified state**

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

Verify the scan tool parameter:

- Passenger Window Switch at Door = Up
- Passenger Window Switch at Door = Down
- Passenger Window Switch at Door = Express Down
- **If not the specified state**

Test or replace the component: S79P Window Switch - Passenger

- **If the specified state**

11. S79RR Window Switch - Right Rear Not Pressed

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

- **If not the specified state**

Test or replace the component: S79RR Window Switch - Right Rear

- **If the specified state**

12. Operate the component: S79RR Window Switch - Right Rear - Pressed & Pulled

Verify the scan tool parameter:

- Right Rear Window Switch at Door = Up
- Right Rear Window Switch at Door = Down
- Right Rear Window Switch at Door = Express Down
- **If not the specified state**

Test or replace the component: S79RR Window Switch - Right Rear

- **If the specified state**

13. All OK.

Circuit/System Testing

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

1. Ignition/Vehicle & All vehicle systems Off
2. 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. Disconnect Ground Connection
 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 Off & Remove Test lamp
 2. Test for infinite resistance between the test points: B+ circuit terminal 4 & Ground
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, 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 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**
7. 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 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 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**

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 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**

9. 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 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 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**

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 3 @ 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 3 & 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 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**

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

Repair Instructions

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

- Refer to [Rear Side Door Window Switch Replacement](#)
- Refer to [Front Side Door Window Regulator Motor Replacement](#)
- Refer to [Front Side Door Window Switch Replacement \(Driver Side, Buick\)](#)[Front Side Door Window Switch Replacement \(Passenger Side, Buick\)](#)[Front Side Door Window Switch Replacement \(Driver Side, Chevrolet\)](#)[Front Side Door Window Switch Replacement \(Passenger Side, Chevrolet\)](#)

DTC B3205: DRIVER WINDOW MOTOR

Diagnostic Instructions

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

DTC Descriptor

DTC B3205

Driver Window Motor

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

Circuit/System Description

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

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

Component	Description
M74D Window Motor - Driver	• Power Window Control • The control module and the DC motor are one assembly.

Conditions for Running the DTC

Ignition On/Vehicle In Service Mode

Conditions for Setting the DTC

B3205 00

M74D Window Motor - Driver = Incompatible Hardware or Equipment

B3205 39

M74D Window Motor - Driver = Internal Malfunction

B3205 42

Calibration Update = Failed

B3205 4B

- Battery - Disconnected/Replaced
- Front Side Door Wiring Harness - Disconnected
- M74D Window Motor - Driver - Disconnected

Actions Taken When the DTC Sets

B3205 00, B3205 39, B3205 42

M74D Window Motor - Driver = Inoperative

B3205 4B

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

Conditions for Clearing the DTC

B3205 00

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

B3205 39, B3205 42

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

B3205 4B

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

Reference Information

Schematic Reference

Moveable Window Schematics (Buick) Moveable Window Schematics (Chevrolet)

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE) COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)

Component View Reference

Door Component Views (Buick) Door Component Views (Chevrolet)

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. All OK.

Repair Instructions

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

Refer to [Front Side Door Window Regulator Motor Replacement](#)

SYMPTOMS - FIXED AND MOVEABLE WINDOWS

Important Preliminary Checks Before Starting:

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

Visual/Physical Inspection

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

Intermittent

NOTE:

- **Inspect for proper installation of electrical components if an intermittent condition exists. Inspect for aftermarket theft deterrent devices, lights, and**

cellular phones. Ensure that no aftermarket equipment is connected to the class 2 circuit. If you can not locate an intermittent condition, a cellular phone signal may cause the condition. Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to [Testing for Intermittent Conditions and Poor Connections](#) .

- The problem may or may not turn ON the SERVICE VEHICLE SOON indicator or store a DTC. Do not use the symptom tables to diagnose intermittent conditions. The malfunction must be present in order to locate the problem.

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

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

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

Symptom List

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

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

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

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.

Circuit	Description
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
X50A Fuse Block - Underhood	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.

Reference Information

Schematic Reference

[Defogger Schematics \(Buick\)](#)[Defogger Schematics \(Chevrolet\)](#)

Connector End View Reference

[COMPONENT CONNECTOR END VIEWS - INDEX \(ENCORE\)](#)[COMPONENT CONNECTOR END VIEWS - INDEX \(TRAX\)](#)

Component View Reference

[Front of Vehicle/Engine Compartment Component Views \(Buick\)](#)[Front of Vehicle/Engine Compartment Component Views \(Chevrolet\)](#)

Electrical Information Reference

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

Scan Tool Reference

[Control Module References](#)

Circuit/System Verification

1. Ignition On/Vehicle In Service Mode
2. Operate the component: Rear Defogger Switch 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: K33 HVAC Control Module

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

4. All OK.

Circuit/System Testing

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

1. Ignition/Vehicle & All vehicle systems Off
2. 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. Disconnect Ground Connection
 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: F12UA Fuse
 - **If the fuse is open**
 1. Replace the component: F12UA Fuse
 2. Verify the fuse does not open.
 - If the fuse opens, test or replace the component: X50A Fuse Block - Underhood
 - 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 X50A Fuse Block - Underhood
11. Ignition On/Vehicle In Service Mode
12. Momentarily connect a 25 A fused jumper wire between the test points: Control circuit terminal A3 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: 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 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 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: Control circuit terminal 1 X1 @ Component harness & Terminal A3 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**

13. Ignition/Vehicle & All vehicle systems Off

14. Verify the fuse is not open: F12UA Fuse

• **If the fuse is open**

Test or replace the component: X50A Fuse Block - Underhood

• **If the fuse is not open**

15. Test for less than 10 Ω between the test points: Ground circuit terminal C5 X2 & Ground

• **If 10 Ω or greater**

1. Disconnect Ground Connection

2. Test for less than 2 Ω between the test points: Ground circuit terminal C5 X2 & 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**

16. Connect the electrical connector: X2 X50A Fuse Block - Underhood

17. Disconnect the electrical connector: X2 K33 HVAC Control Module

18. Ignition On/Vehicle In Service Mode

19. 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 X50A Fuse Block - Underhood

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 B1 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: X50A Fuse Block - Underhood

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

20. Replace the component: K33 HVAC Control Module

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

- Refer to [Front Compartment Fuse Block Replacement](#)
- Refer to [Liftgate Window Replacement](#)
- For control module replacement, programming, and setup refer to: [Control Module References](#)

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	-	-
B+ - M74D Window Motor - Driver	U1534 00	U1534 00	-	-
B+ - S79P Window Switch - Passenger	U153A 00	U153A 00	-	-
B+ - S79RR Window Switch - Right Rear	U1534 00, U154A 00	U154A 00	-	-
B+ - S79LR Window Switch - Left Rear	U1534 00, U154A 00	U1534 00	-	-
Serial Data - S79D Window Switch - Driver	U1534 00, U1538 00, U153A 00	U1538 00	U1538 00	-
Serial Data - M74D Window Motor - Driver	U1534 00, U1538 00, U153A 00	U1534 00	U1534 00	-
Serial Data - S79P Window Switch - Passenger	U1534 00, U1538 00, U153A 00	U153A 00	U153A 00	-
Serial Data - S79LR Window Switch - Left Rear	U1534 00, U154A 00	U1534 00	U1534 00	-
Serial Data - S79RR Window Switch - Right Rear	U1534 00, U154A 00	U154A 00	U154A 00	-
Power Window Master Switch Left Front Down Signal	B316B 02	1	1	-
Power Window Switch Driver Express Signal	B316B 02	1	1	-
Power Window Master Switch Left Front Up Signal	B316B 02	1	1	-
Control - M74P Window Motor - Passenger	2	2	2	-
Control - M74LR Window Motor - Left Rear	3	3	3	-
Control - M74RR Window Motor - Right Rear	4	4	4	-
Ground - S79D Window Switch - Driver	-	U1538 00	-	-
Ground - M74D Window Motor - Driver	-	U1534 00	-	-
Ground - S79P Window Switch - Passenger	-	U153A 00	-	-

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ground - S79LR Window Switch - Left Rear	-	U1534 00	-	-
Ground - S79RR Window Switch - Right Rear	-	U154A 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+ - S79D Window Switch - Driver	Supplied from a fuse.
B+ - S79P Window Switch - Passenger	Supplied from a fuse.
B+ - S79LR Window Switch - Left Rear	Supplied from a fuse.
B+ - S79RR Window Switch - 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 Motor Passenger Down Control	The output circuit is switched from ground to 12 V to activate the component.
Power Window Motor Passenger Up Control	The output circuit is switched from ground to 12 V to activate the component.
Power Window Motor Left Rear Up Control	The output circuit is switched from ground to 12 V to activate the component.
Power Window Motor Left Rear Down Control	The output circuit is switched from ground to 12 V to activate the component.
Power Window Motor Right Rear Up Control	The output circuit is switched from ground to 12 V to activate the component.
Power Window Motor Right Rear Down Control	The output circuit is switched from ground to 12 V to activate the component.
Ground	Chassis Ground

Component	Description
S79D Window Switch - Driver	The S79 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 and the DC motor are one assembly.
S79P Window Switch - Passenger	The switch has a normally open contact.
M74P Window Motor - Passenger	An electric DC motor.
S79LR Window Switch - Left Rear	The switch has a normally open contact.
M74LR Window Motor - Left Rear	An electric DC motor.
S79RR Window Switch - Right Rear	The switch has a normally open contact.
M74RR Window Motor - Right Rear	An electric DC motor.
K9 Body Control Module	The module controls various vehicle functions like lighting, central door locking, power windows, etc.

Diagnostic Aids

M74D Window Motor - Driver - Window Express Up System Not Initialized

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

M74D Window Motor - Driver Normalized. Refer to **Window Motor Programming - Express Function**

Reference Information

Schematic Reference

Moveable Window Schematics (Buick)**Moveable Window Schematics (Chevrolet)**

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX (ENCORE)**COMPONENT CONNECTOR END VIEWS - INDEX (TRAX)**

Component View Reference

Door Component Views (Buick)**Door Component Views (Chevrolet)**

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

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

- **If not the specified state**

Refer to: Circuit/System Testing - Test 2

- **If the specified state**

4. S79D Window Switch - Driver 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**

Test or replace the component: S79D Window Switch - Driver

- **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. 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**

Refer to: Circuit/System Testing - Test 3

- **If the specified state**

9. 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**

Refer to: Circuit/System Testing - Test 3

- **If the specified state**

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

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

- **If not the specified state**

Refer to: Circuit/System Testing - Test 3

- **If the specified state**

11. All OK.

Circuit/System Testing

Test 1

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

1. Ignition/Vehicle & All vehicle systems Off
2. Disconnect the electrical connector: M74D Window Motor - Driver
3. Test for less than 10 Ω between the test points: Ground circuit terminal 1 & Ground
 - **If 10 Ω or greater**
 1. Disconnect Ground Connection
 2. Test for less than 2 Ω between the test points: M74D Window Motor - Driver 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: M74D Window Motor - Driver B+ circuit terminal 2 @ Output terminal @ F3DB 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: M74D Window Motor - Driver
 - **If the test lamp turns On**
6. Test or replace the component: M74D Window Motor - Driver

Test 2

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

1. Ignition/Vehicle & All vehicle systems Off

2. 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. Disconnect Ground Connection
 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 Off & Remove Test lamp
 2. Test for infinite resistance between the test points: B+ circuit terminal 4 & Ground
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, 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, repair the short to ground on the circuit.
 - If infinite resistance, 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 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

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

1. Ignition/Vehicle & All vehicle systems Off
2. Disconnect the appropriate electrical connector: S79P Window Switch - Passenger/S79LR Window Switch - Left Rear/S79RR Window Switch - Right Rear
3. Test for less than 10 Ω between the test points:
 - S79P Window Switch - Passenger: Ground circuit terminal 1 & Ground
 - S79LR Window Switch - Left Rear: Ground circuit terminal 5 & Ground
 - S79RR Window Switch - Right Rear: Ground circuit terminal 5 & Ground
 - **If 10 Ω or greater**
 1. Disconnect Ground Connection
 2. Test for less than 2 Ω between the test points:
 - Ground circuit terminal 1 @ S79P Window Switch - Passenger & Ground Connection
 - Ground circuit terminal 5 @ S79LR Window Switch - Left Rear & Ground Connection
 - Ground circuit terminal 5 @ S79RR Window Switch - Right Rear & 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:
 - S79P Window Switch - Passenger: B+ circuit terminal 4 & Ground
 - S79LR Window Switch - Left Rear: B+ circuit terminal 8 & Ground
 - S79RR Window Switch - Right Rear: B+ circuit terminal 8 & 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 Off & Remove Test lamp
 2. Test for infinite resistance between the test points:
 - S79P Window Switch - Passenger: B+ circuit terminal 4 & Ground
 - S79LR Window Switch - Left Rear: B+ circuit terminal 8 & Ground
 - S79RR Window Switch - Right Rear: B+ circuit terminal 8 & Ground
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the component: S79 Window Switch
 - **If the test lamp turns On**
 - 6. Ignition/Vehicle Off
 - 7. Connect the electrical connector: S79 Window Switch
 - 8. Disconnect the electrical connector: M74 Window Motor
 - 9. Connect a test lamp between the test points: Control circuit terminal 1 & Control circuit terminal 2
 - 10. Ignition On/Vehicle In Service Mode
 - 11. Perform the scan tool control function: Window Motor Up & Down

Verify the test lamp state:

Window Motor Up = Test lamp On

Window Motor Down = Test lamp On

- **If not the specified state**

1. Ignition/Vehicle Off & Remove Test lamp
 2. Disconnect the electrical connector: S79 Window Switch
 3. Ignition On/Vehicle In Service Mode
 4. Test for less than 1 V between the test points:
 - Control circuit terminal 1 @ Component harness & Ground
 - Control circuit terminal 2 @ Component harness & Ground
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V
1. Ignition/Vehicle Off
 2. Test for infinite resistance between the test points:
 - Control circuit terminal 1 @ Component harness & Ground
 - Control circuit terminal 2 @ Component harness & Ground
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If less than infinite resistance
1. Test for less than 2 Ω between the test points:
 - Control circuit terminal 1 @ Component harness & Control circuit terminal 3 @ S79P Window Switch - Passenger
 - Control circuit terminal 2 @ Component harness & Control circuit terminal 2 @ S79P Window Switch - Passenger
 - Control circuit terminal 1 @ Component harness & Control circuit terminal 7 @ S79LR Window Switch - Left Rear
 - Control circuit terminal 2 @ Component harness & Control circuit terminal 6 @ S79LR Window Switch - Left Rear
 - Control circuit terminal 1 @ Component harness & Control circuit terminal 7 @ S79RR Window Switch - Right Rear
 - Control circuit terminal 2 @ Component harness & Control circuit terminal 6 @ S79RR Window Switch - Right Rear
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the component: S79 Window Switch

• **If the specified state**

12. Test or replace the component: M74 Window Motor

Component Testing

M74P Window Motor - Passenger/M74LR Window Motor - Left Rear/M74RR Window Motor - Right Rear

1. Ignition/Vehicle Off
2. Disconnect the appropriate electrical connector:
 - M74P Window Motor - Passenger
 - M74LR Window Motor - Left Rear
 - M74RR Window Motor - Right Rear
3. Connect a 25 A fused jumper wire between the test points: Control terminal 1 & B+

CAUTION: Complete the testing as quickly as possible in order to prevent overheating and damaging the component.

4. Momentarily connect a jumper wire between the test points: Control terminal 2 & Ground

Reverse the jumper wires 2 times between the terminals.

Verify the component works as specified: M74 Window Motor = Up & Down

• **If not the specified state**

Replace the component:

- M74P Window Motor - Passenger
- M74LR Window Motor - Left Rear
- M74RR Window Motor - Right Rear
- **If the specified state**

5. All OK.

Repair Instructions

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

- Refer to [Rear Side Door Window Switch Replacement](#)
- Refer to [Front Side Door Window Regulator Motor Replacement](#)
- Refer to [Rear Side Door Window Regulator Motor Replacement](#)
- Refer to [Front Side Door Window Switch Replacement \(Driver Side, Buick\)](#)[Front Side Door Window Switch Replacement \(Passenger Side, Buick\)](#)[Front Side Door Window Switch Replacement \(Driver Side, Chevrolet\)](#)[Front Side Door Window Switch Replacement \(Passenger Side, Chevrolet\)](#)

SIDE DOOR WINDOW MECHANICAL DIAGNOSIS

Cause	Correction
DEFINITION: A mechanical condition that requires a correction for proper operation of the side door window. Refer to Symptoms - Fixed and Moveable Windows prior to beginning this table.	
Intermittent Operation	Check proper glass alignment/attachment and door seal installation.
	Check switch and switch bezel to see if sticking.
	Check wire harness for pinched/shorted wire.
	THIS STEP APPLIES TO ALL TWO PIN MOTOR CONNECTORS ONLY. Perform electrical diagnostics, by first applying 12 volt power supply to the regulator motor to verify motor function.
Glass Binds	Check proper glass alignment/attachment.
	Check for defective seal and/or proper seal installation.
	Check for debris in glass run channel.
	Check for glass run channel position.
Regulator/Glass Rattles	Check for loose fasteners and retorque if required.
	Check that the glass is in the channel and reinstall if not positioned correctly.
Noisy Operation	Check for other components in the glass path such as wire harness, impact foam, lock rods, or cables.
	Check for proper glass alignment/attachment and door seal installation.
Windnoise	Check seals, mirror patch, and glass alignment.
False glass reversal, the glass goes down unexpectedly.	Check seals, reinitialize the glass and/or realign the glass.
	Check for debris in the glass run channel.

REPAIR INSTRUCTIONS

WINDSHIELD REPLACEMENT

Special Tools

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

For equivalent regional tools, refer to [Special Tools](#).

Removal Procedure

1. Open the hood.
2. Remove the windshield wiper arms. Refer to [Windshield Wiper Arm Replacement](#).

3. Remove the air inlet grille. Refer to [Air Inlet Grille Panel Replacement \(Chevrolet\)](#), [Air Inlet Grille Panel Replacement \(Buick\)](#) .
4. Remove the outside moisture sensor. Refer to [Windshield Outside Moisture Sensor Replacement](#) .
5. Remove the remote control door lock receiver. Refer to [Remote Control Door Lock Receiver Replacement](#) .
6. Remove the inside rearview mirror. Refer to [Inside Rearview Mirror Replacement](#) .
7. Remove the windshield garnish molding. Refer to [Windshield Garnish Molding Replacement \(Buick\)](#), [Windshield Garnish Molding Replacement \(Chevrolet\)](#) .

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

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

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

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

9. Using the appropriate tool, carefully cut the windshield reveal molding in order to access the auto-adhesive bead.

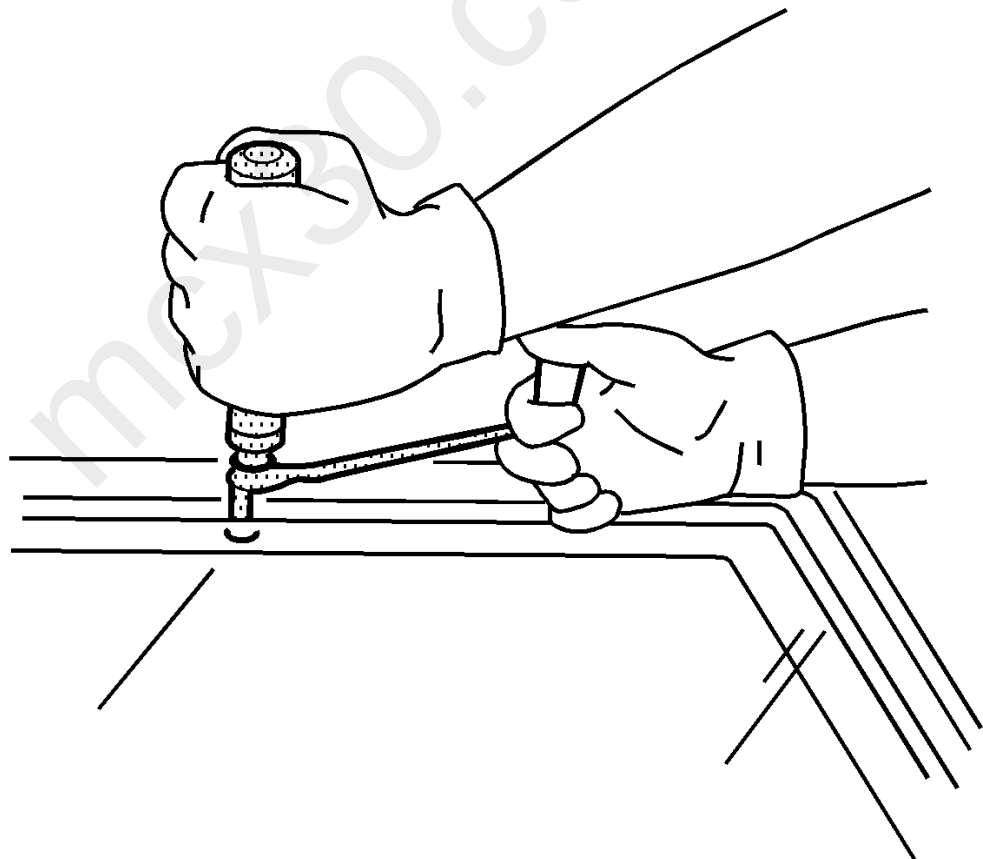


Fig. 9: Separating Adhesive From Window
Courtesy of GENERAL MOTORS COMPANY

NOTE: Keep the cutting edge of the appropriate tool against the window. There are window locating pins, one in each upper corner of the window. Use care Not to

remove or cut them off when removing the window. If the window locator pins are cut, it will be necessary to tape the window in place.

10. This will allow the auto-adhesive to be separated from the window.

- Leave a base of auto-adhesive on the pinchweld flange.
- The only suitable lubrication is clean water, no oils, lubes or soaps.
- Use **BO-24402-A** Glass Sealant Remover (Cold Knife).
- **BO-39032** Stationary Glass Removal Tool, or equivalent in order to remove the window.



Fig. 10: Separating Bottom Of Window

Courtesy of GENERAL MOTORS COMPANY

11. Use the appropriate tool to remove the bottom of the window from the auto-adhesive. Keep the cutting edge of the tool against the window. Do this from inside the vehicle.

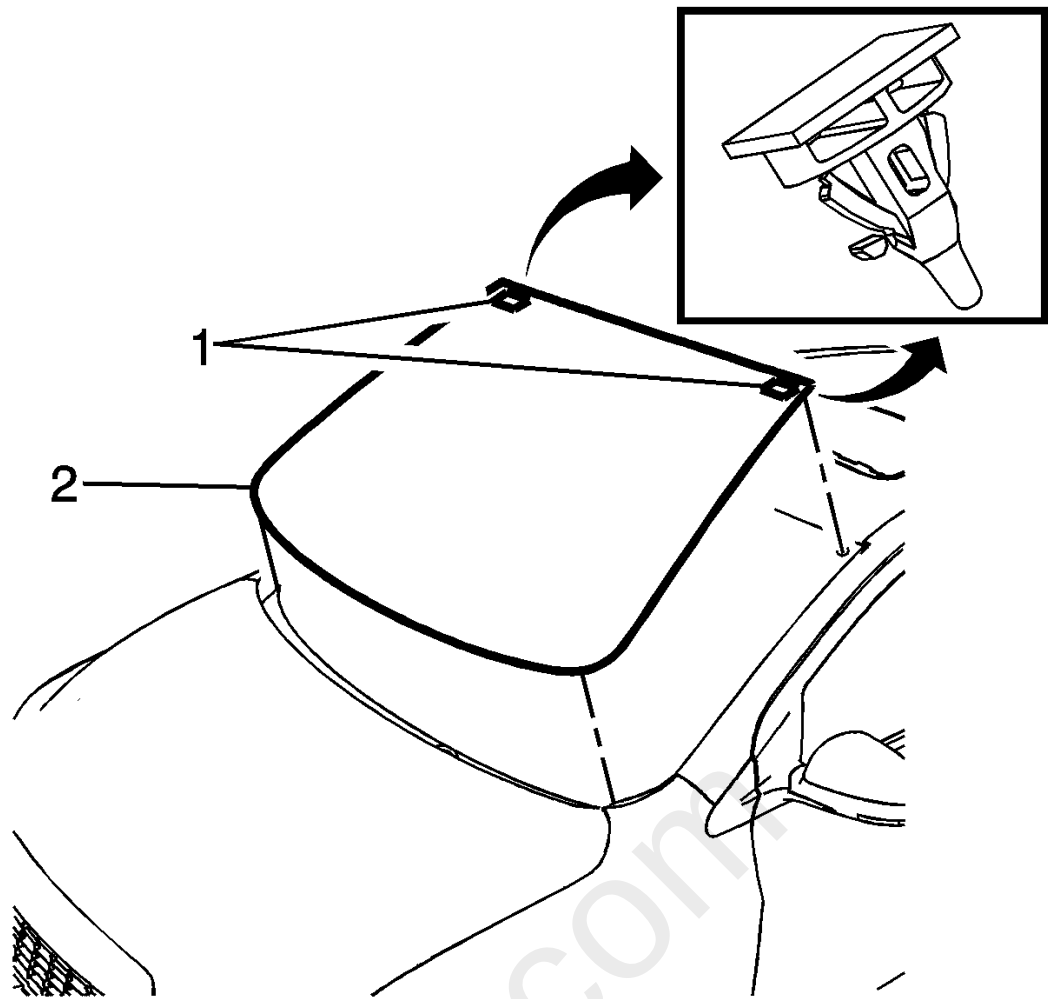


Fig. 11: Window & Retainers

Courtesy of GENERAL MOTORS COMPANY

12. With an assistant, remove the window (2) from the vehicle. Check that the retainers (1) are still attached to the window before installing.

Installation Procedure

1. Install the windshield into the opening. Refer to [Adhesive Installation of Windshields](#).
2. Remove the outside moisture sensor. Refer to [Windshield Outside Moisture Sensor Replacement](#).
3. Remove the remote control door lock receiver. Refer to [Remote Control Door Lock Receiver Replacement](#).
4. Install the rearview mirror. Refer to [Inside Rearview Mirror Replacement](#).
5. Install the windshield garnish molding. Refer to [Windshield Garnish Molding Replacement \(Buick\)](#), [Windshield Garnish Molding Replacement \(Chevrolet\)](#).
6. Install the air inlet grille. Refer to [Air Inlet Grille Panel Replacement \(Chevrolet\)](#), [Air Inlet Grille Panel Replacement \(Buick\)](#).
7. Install the windshield wipers arms. Refer to [Windshield Wiper Arm Replacement](#).
8. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.
9. Close the hood.

FRONT SIDE DOOR WINDOW REPLACEMENT

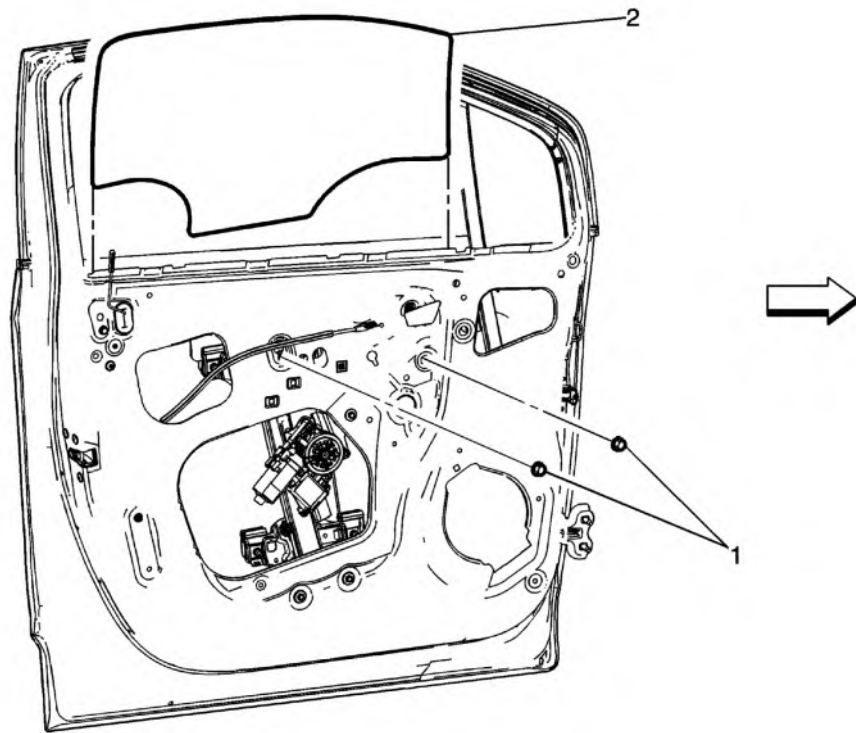


Fig. 12: Front Side Door Window

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning .	
Preliminary Procedures 1. Remove the front side door trim. Refer to Front Side Door Trim Replacement (Buick) Front Side Door Trim Replacement (Chevrolet) . 2. Remove the front side door window garnish molding. Refer to Front Side Door Window Garnish Molding Replacement 3. Loosen the front side door rear guide, Do not remove. Refer to Front Side Door Window Rear Guide Replacement	
1	Front Side Door Window Regulator Guide Nuts (Qty: 2) CAUTION: Refer to Fastener Caution . Procedure 1. Use masking tape, tape off the outer door frame, applique and the front side door window outer sealing strip to prevent scratching. 2. Remove the front side door water deflector. 3. Loosen nuts so that the window can be removed from the guides. 4. In order to remove the window out of the frame, carefully grasp and tilt the window as you guide the window up and forward. Tighten 10 N.m (89 lb in)

Callout	Component Name
2	Front Side Door Window Procedure 1. Lower the window to align the guide nuts with the access holes in the inner door panel. 2. Do not operate the regulator motor without supporting the window. Ensure that the window remains in the guide when operating the regulator motor. 3. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the guide. 4. Inspect the window for proper operation before installing the trim.

REAR SIDE DOOR WINDOW REPLACEMENT

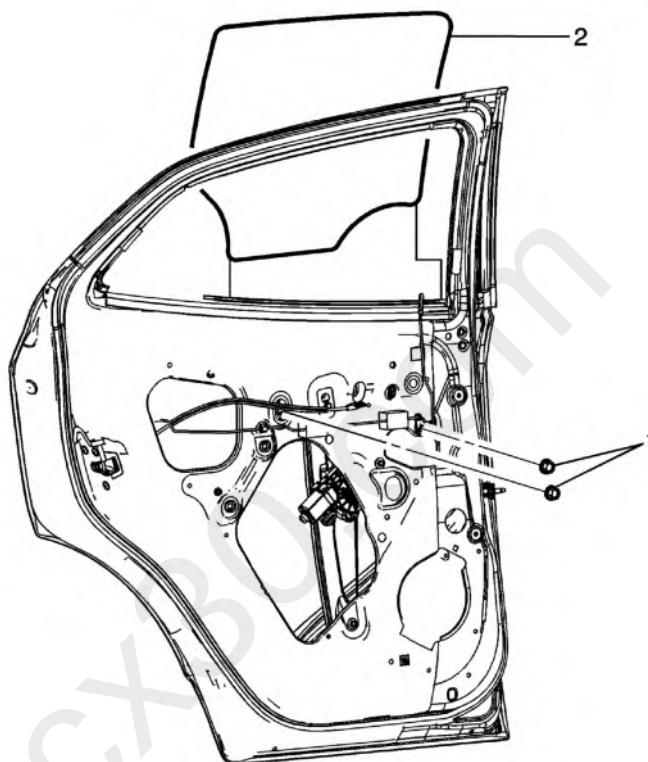


Fig. 13: Rear Side Door Window

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning .	
Preliminary Procedures 1. Remove the rear side door trim. Refer to Rear Side Door Trim Replacement . 2. Remove the rear side door window garnish molding. Refer to Rear Side Door Window Garnish Molding Replacement (Buick) Rear Side Door Window Garnish Molding Replacement (Chevrolet) . 3. Remove the rear side door rear guide. Refer to Rear Side Door Window Rear Guide Replacement.	

Callout	Component Name
1	Rear Side Door Window Guide Nuts (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Procedure 1. Use masking tape, tape off the outer door frame, applique and outer sealing strip to prevent scratching. 2. Remove the rear side door water deflector. 3. Loosen nuts on the guide so that the window can be removed. 4. Remove the rear door window regulator. Refer to <u>Rear Side Door Window Regulator Replacement (Power)</u><u>Rear Side Door Window Regulator Replacement</u>. After the window has been detached from the regulator lower window into the door panel. 5. Remove the rear side door window weatherstrip. Refer to <u>Rear Side Door Window Weatherstrip Replacement</u>. 6. Remove the window from the door. NOTE: In order to remove the window out of the frame, carefully grasp and tilt the window as you guide the window up and forward. Tighten 10 N.m (89 lb in)
2	Rear Side Door Window Procedure 1. Place the window into the door before installing the window regulator. 2. Install the rear side door window weatherstrip to the door frame. 3. Slide the window to the full up position, tape in place. 4. Install rear door window regulator in the door. 5. Align the window guide with the access holes in the inner door panel. 6. Do not operate the regulator motor without supporting the window. Ensure that the window remains in the guide when operating the regulator motor. 7. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the guide. Tighten the nuts to the window guide. 8. Inspect the window for proper operation before installing the trim.

REAR SIDE DOOR STATIONARY WINDOW REPLACEMENT

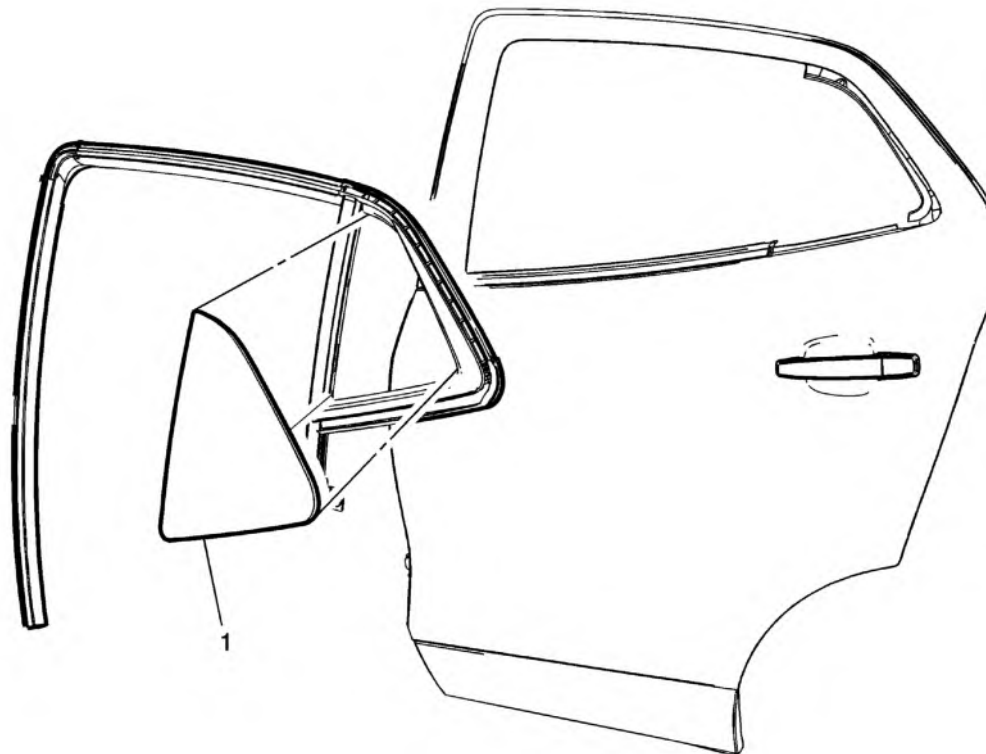


Fig. 14: Rear Side Door Stationary Window
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning .	
Preliminary Procedures Remove the rear side door window weatherstrip. Refer to Rear Side Door Window Weatherstrip Replacement .	
1	Rear Side Door Stationary Window Procedure 1. With the assembly on a clean and dry surface, roll the stationary window out of the weatherstrip. 2. Ensure that the window weatherstrip and stationary window is fitted around the inner door frame fully. 3. Install the window to the front and rear guides, hand move the window up and down before installing the window to the regulator. 4. Carefully move the window upward for short slow intervals, while ensuring that the window remains in the guide. 5. Inspect the window for proper operation before installing the trim.

LIFTGATE WINDOW REPLACEMENT

Special Tools

- J 24402-A Glass Sealant (Cold Knife) Remover
- J 39032 Stationary Glass Removal Tool
- Use a urethane adhesive systems which meet GM Specification GMW 15672

Removal Procedure

WARNING: Refer to [Cracked Window Warning](#) .

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

1. Open the liftgate.
2. Remove the liftgate trim. Refer to [Liftgate Lower Trim Finish Panel Replacement](#) .
3. Disconnect the electrical connectors from the liftgate window defogger bus bar.
4. Remove the rear window wiper arm. Refer to [Rear Window Wiper Arm Replacement](#) .
5. Remove the rear spoiler. Refer to [Rear End Spoiler Replacement](#) .

WARNING: Refer to [Defroster Outlet Warning](#) .

6. Cover the following parts to protect from broken glass, seats and carpeting.

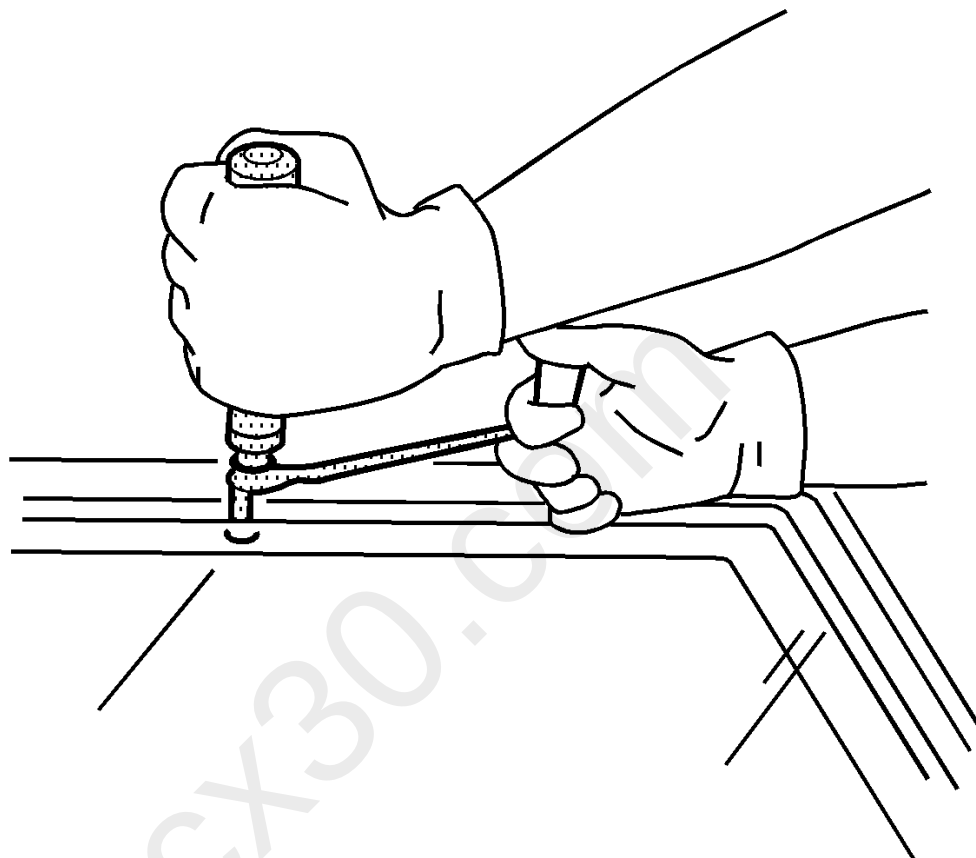


Fig. 15: Separating Urethane Adhesive From Window

Courtesy of GENERAL MOTORS COMPANY

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

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

7. Remove the window from the urethane adhesive.
 - Leave a base of urethane approximately 2 mm (0.078 in) on the pinch-weld flange.
 - The only suitable lubrication is clear water, no oils, lubes or soaps.
 - Use **J 24402-A** glass sealant (cold knife) remover, **J 39032** stationary glass removal tool or equivalent in order to remove the window.

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

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

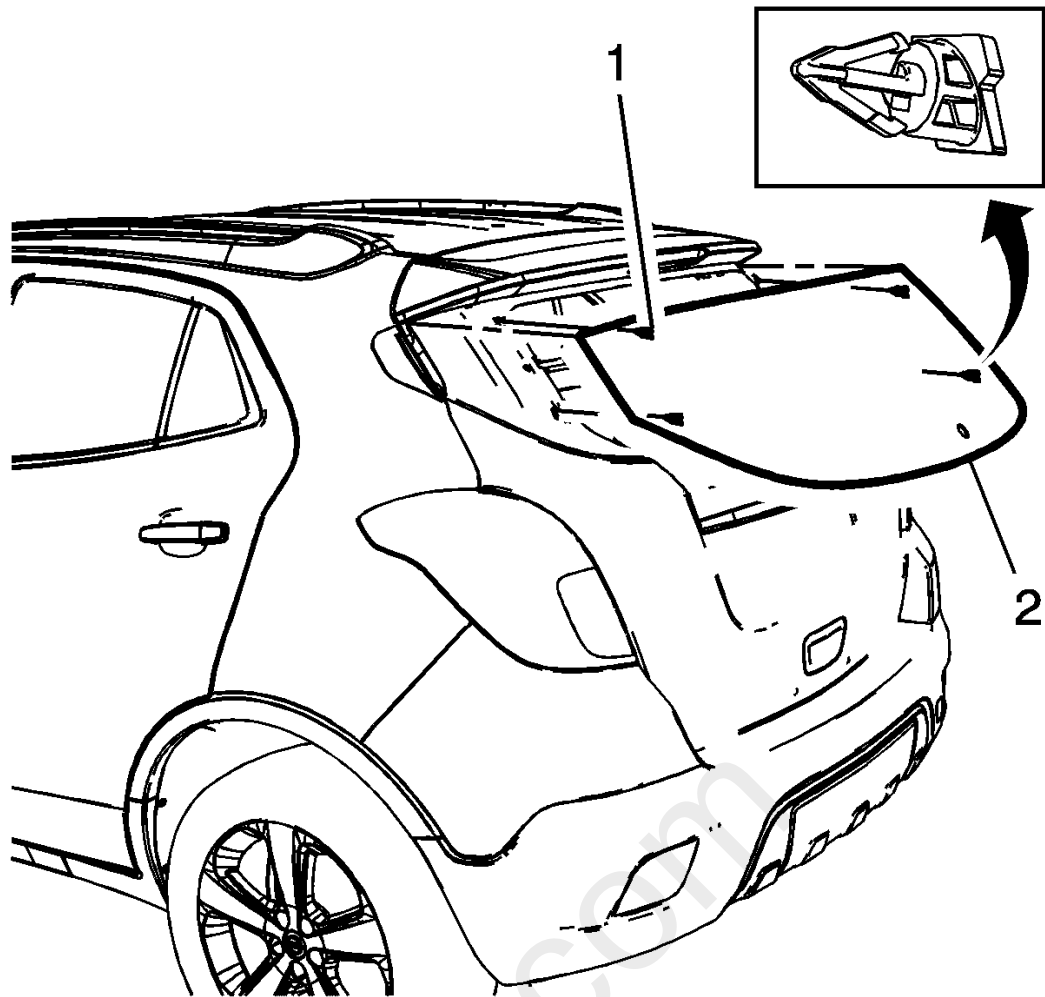


Fig. 16: Liftgate Window And Retainers
Courtesy of GENERAL MOTORS COMPANY

9. With an assistant, remove the window (2) from the vehicle. Check that the retainers (1) are still attached to the window before installing.

Installation Procedure

1. Install the liftgate window into the opening. Refer to [Adhesive Installation of Liftgate Windows](#).
2. Install the rear spoiler. Refer to [Rear End Spoiler Replacement](#).
3. Install the rear window wiper arm. Refer to [Rear Window Wiper Arm Replacement](#).
4. Connect the liftgate window defogger electrical connectors to the bus bar.
5. Install the liftgate trim. Refer to [Liftgate Lower Trim Finish Panel Replacement](#).
6. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.
7. Close the liftgate.

FRONT SIDE DOOR STATIONARY WINDOW REPLACEMENT

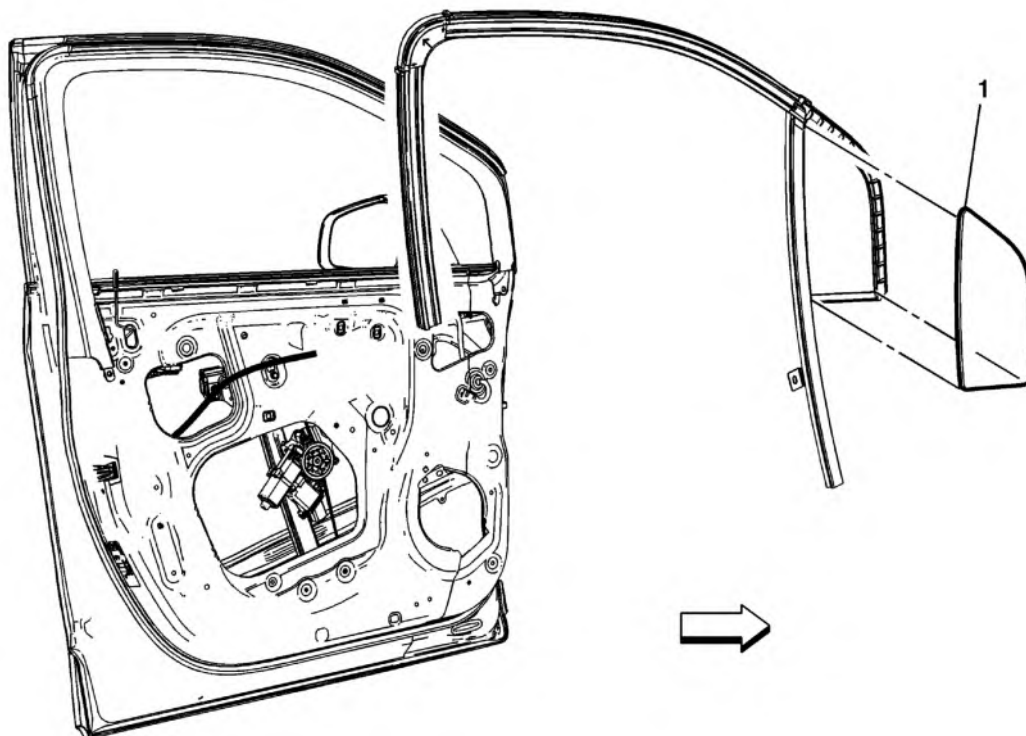


Fig. 17: Front Side Door Stationary Window
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to <u>Glass and Sheet Metal Handling Warning</u> .	
Preliminary Procedures Remove the front side door window weatherstrip. Refer to <u>Front Side Door Window Weatherstrip Replacement</u>	
1	Front Side Door Stationary Window Procedure 1. With the assembly on a clean and dry surface, roll the stationary window out of the weatherstrip. 2. Ensure that the window weatherstrip and stationary window is fitted around the inner door frame fully. 3. Install the window to the front and rear guides, hand move the window up and down before installing the window to the regulator. 4. Carefully move the window upward in short slow intervals, while ensuring that the window remains in the guide. 5. Inspect the window for proper operation before installing the trim.

FRONT SIDE DOOR WINDOW SWITCH REPLACEMENT (DRIVER SIDE, BUICK)

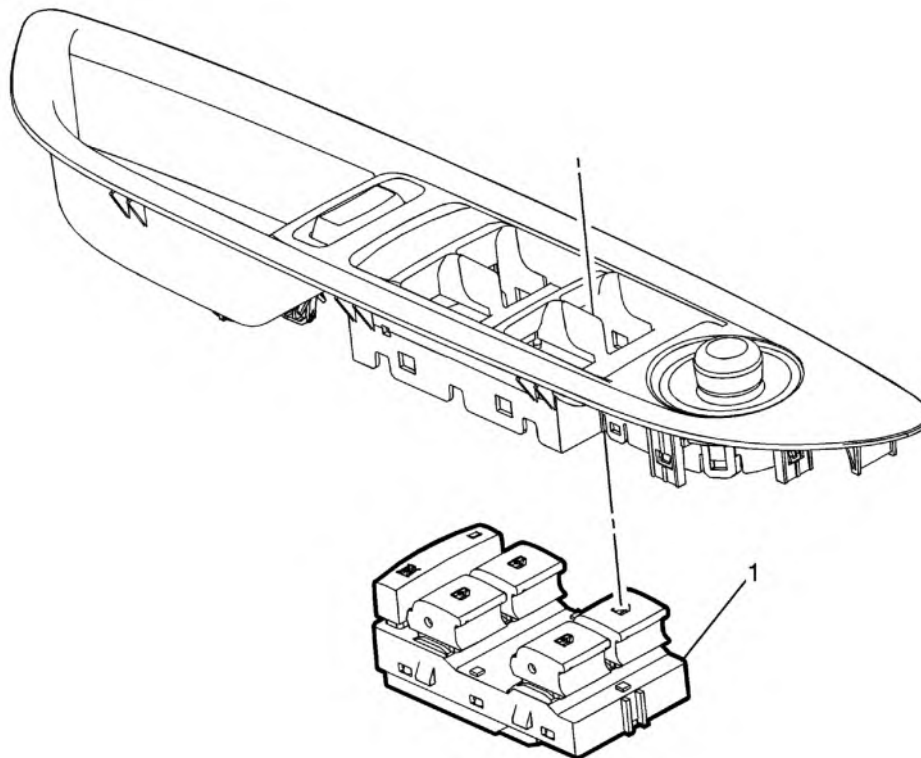


Fig. 18: Front Side Door Window Switch (Driver Side, Encore)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front side door armrest switch mount plate. Refer to Front Side Door Armrest Switch Mount Plate Replacement (Driver Side Door, Buick) .	
1	Front Side Door Window Switch Assembly Driver Side Procedure 1. Release tabs on switch to remove from the front side door armrest switch mount plate. 2. Refer to Control Module References for programming and set up procedures.

FRONT SIDE DOOR WINDOW SWITCH REPLACEMENT (PASSENGER SIDE, BUICK)

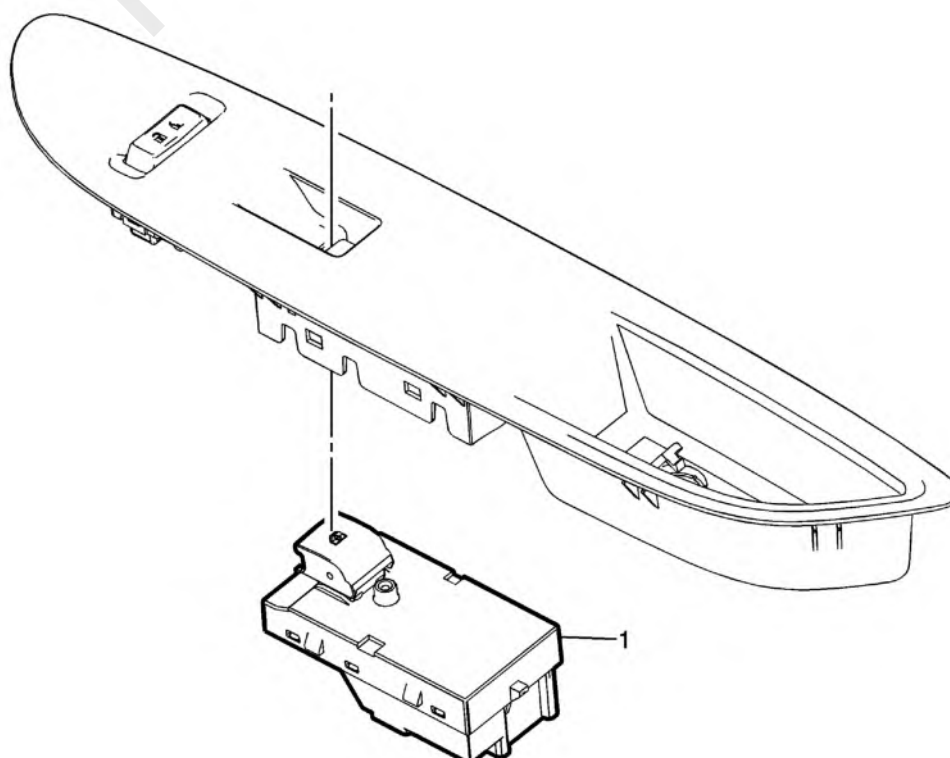


Fig. 19: Front Side Door Window Switch (Passenger Side, Encore)
 Courtesy of GENERAL MOTORS COMPANY

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

FRONT SIDE DOOR WINDOW SWITCH REPLACEMENT (DRIVER SIDE, CHEVROLET)

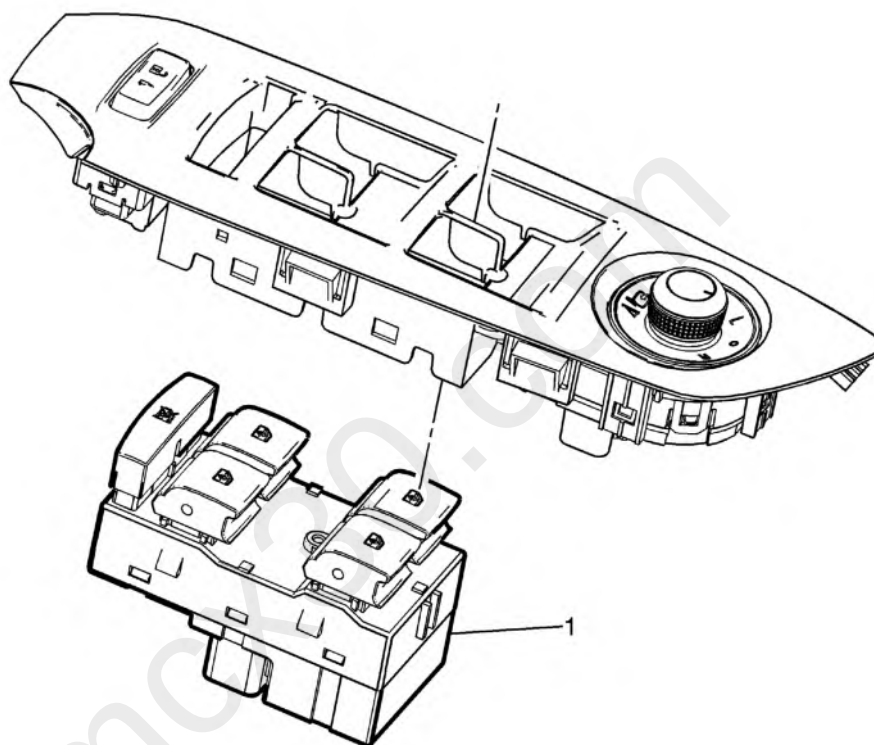


Fig. 20: Front Side Door Window Switch (Driver Side, Trax)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front side door armrest switch mount plate. Refer to Front Side Door Armrest Switch Mount Plate Replacement (Driver Side Door, Chevrolet) .	
1	Front Side Door Window Switch Assembly Driver Side Procedure 1. Release tabs on switch to remove from the front side door armrest switch mount plate. 2. Refer to Control Module References for programming and set up procedures.

FRONT SIDE DOOR WINDOW SWITCH REPLACEMENT (PASSENGER SIDE, CHEVROLET)

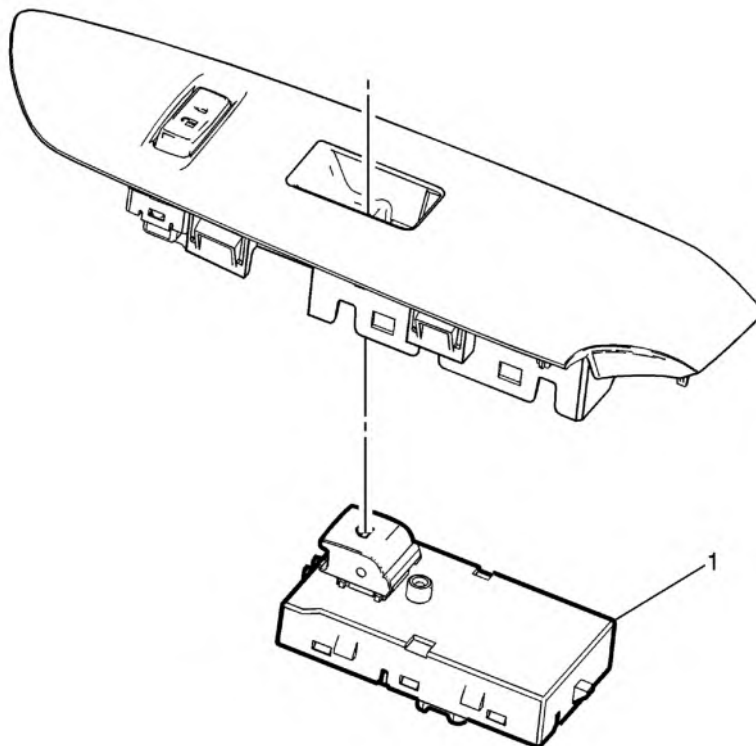


Fig. 21: Front Side Door Window Switch (Passenger Side, Trax)

Courtesy of GENERAL MOTORS COMPANY

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

REAR SIDE DOOR WINDOW SWITCH REPLACEMENT

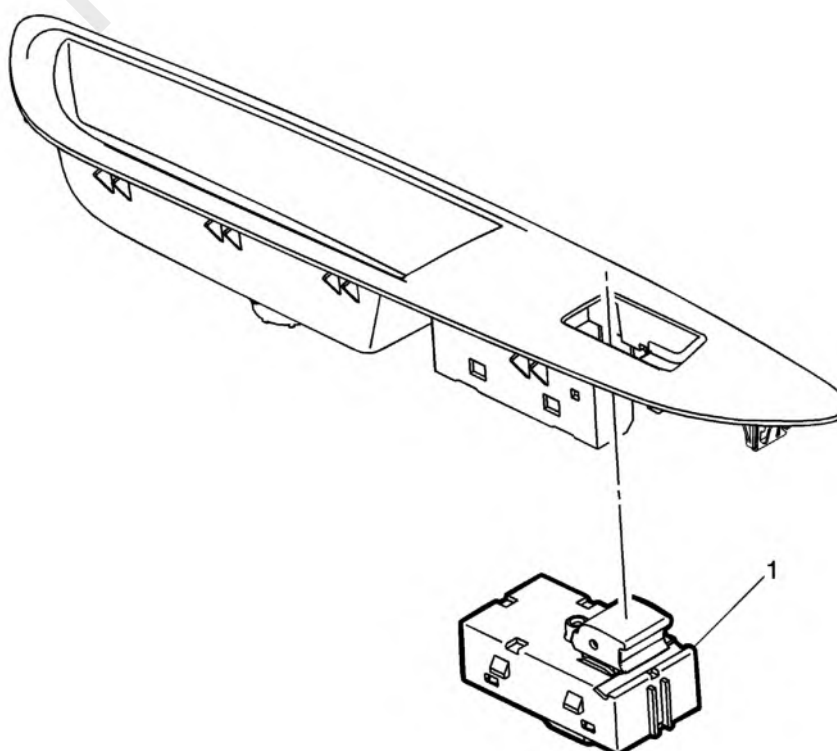


Fig. 22: Rear Side Door Window Switch
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the rear side door accessory switch mount plate. Refer to Rear Side Door Accessory Switch Mount Plate Replacement (Buick) Rear Side Door Accessory Switch Mount Plate Replacement (Chevrolet) .	
1	Rear Side Door Window Switch Assembly Procedure 1. Release the tabs on switch to remove from the rear side door accessory switch mount plate. 2. Refer to Control Module References for programming and set up procedures.

FRONT SIDE DOOR WINDOW REGULATOR REPLACEMENT (POWER)

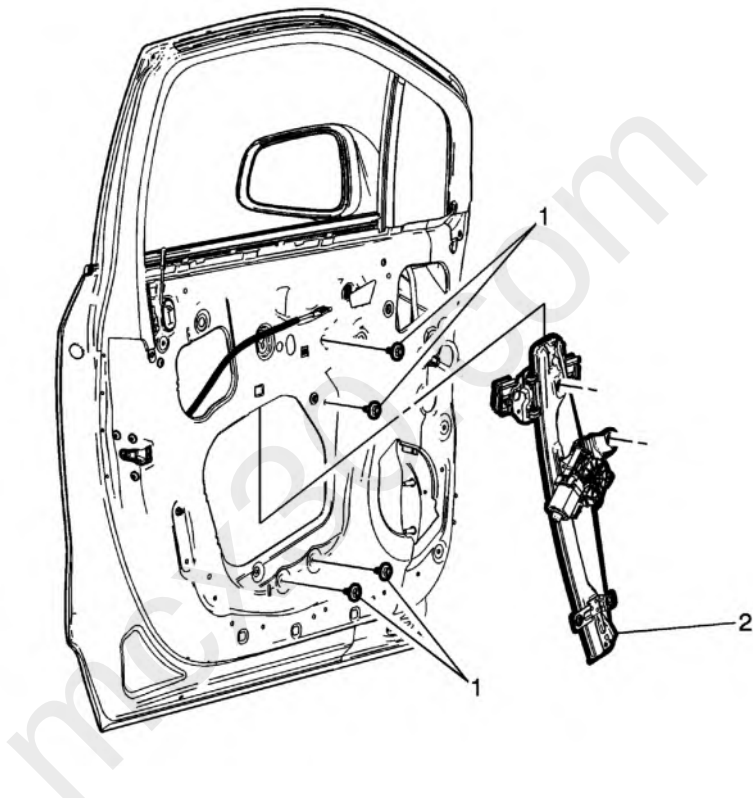


Fig. 23: Front Side Door Window Regulator (Power)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning .	
Preliminary Procedure Remove the front side door window from the window regulator guide nuts. Do Not remove the window from the vehicle, raise the window to the full up position, tape in place. Refer to Front Side Door Window Replacement .	
Empty space for additional content	

Callout	Component Name
1	Front Side Door Power Window Regulator Bolts (Qty: 4) CAUTION: Refer to Fastener Caution . Procedure 1. Remove the front side door water deflector. 2. Disconnect the electric connector from the regulator motor. Tighten 11 N.m (97 lb in)
2	Front Side Door Power Window Regulator Procedure 1. Transfer the front side door window regulator motor. Refer to Front Side Door Window Regulator Motor Replacement. 2. Inspect the door window for proper operation before installing the door trim.

FRONT SIDE DOOR WINDOW REGULATOR REPLACEMENT (MANUAL)

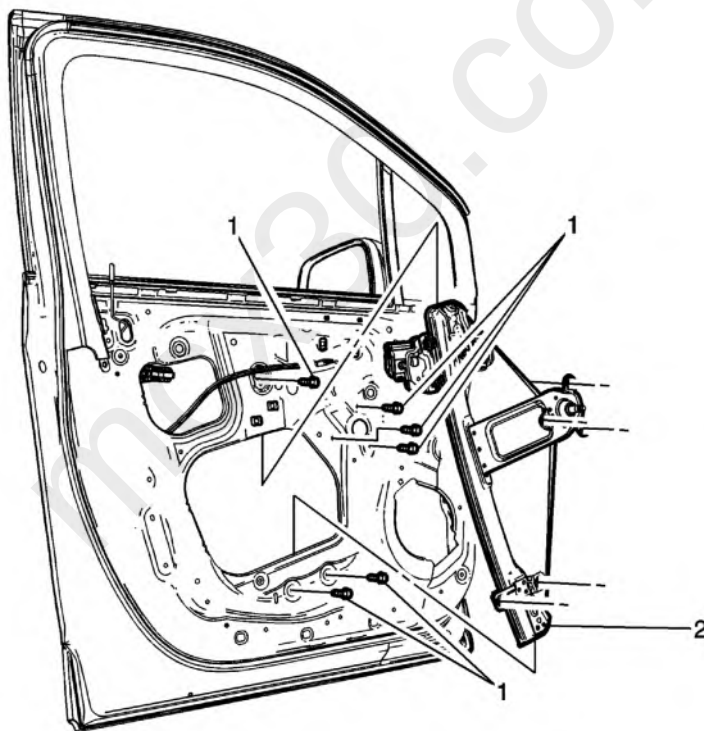


Fig. 24: Front Side Door Window Regulator (Manual)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING:	
	Refer to Glass and Sheet Metal Handling Warning .
Preliminary Procedure Remove the front side door window from the window regulator guide nuts. Do Not remove the window from the vehicle, raise the window to the full up position, tape in place. Refer to Front Side Door Window Replacement.	

Callout	Component Name
1	Front Side Door Manual Window Regulator Screw (Qty: 5) CAUTION: Refer to Fastener Caution . Procedure Remove the front side door water deflector. Tighten 11 N.m (97 lb in)
2	Front Side Door Manual Window Regulator NOTE: Inspect the door window for proper operation before installing the door trim.

WINDOW MOTOR PROGRAMMING - EXPRESS FUNCTION

Window Motor Normalized Procedure

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

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

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

Open, then Close Driver Window

Open, then Close Passenger Window

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

To normalize the window motor, follow these steps:

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

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

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

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

Window Motor Relearn Procedure

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

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

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

To relearn the window motor, follow these steps:

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

The window is now reprogrammed.

FRONT SIDE DOOR WINDOW REGULATOR MOTOR REPLACEMENT

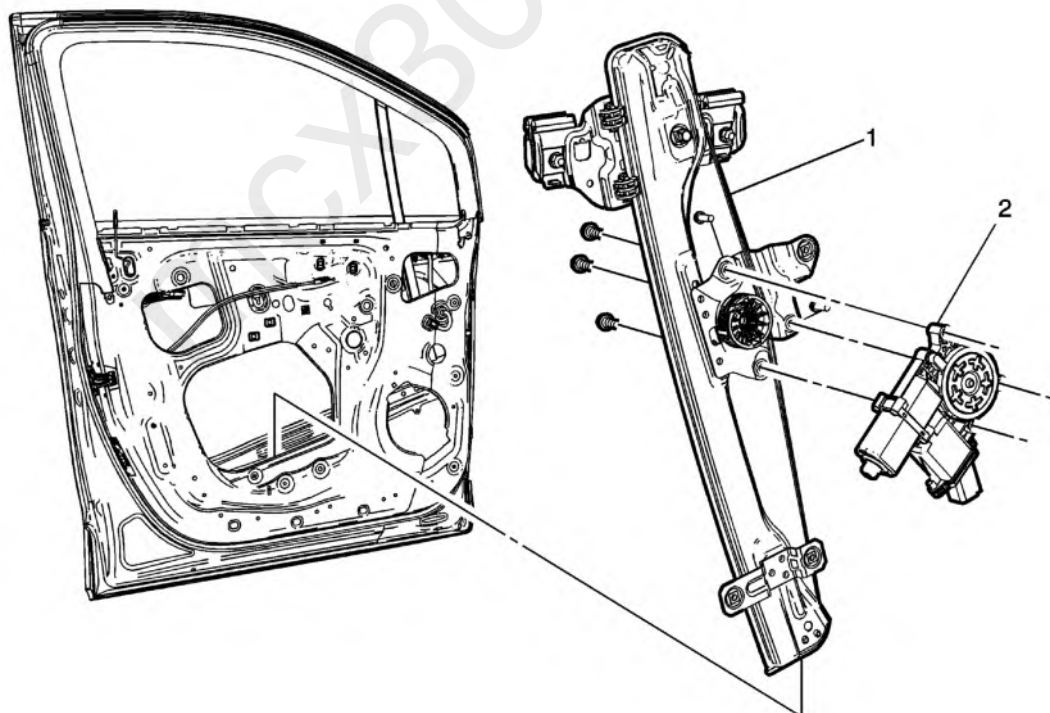


Fig. 25: Front Side Door Window Regulator Motor
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning .	
Preliminary Procedure Remove the front side door window regulator. Refer to Front Side Door Window Regulator Replacement (Power) Front Side Door Window Regulator Replacement (Manual) .	
1	Front Side Door Window Regulator Motor Screw (Qty: 3) CAUTION: Refer to Fastener Caution . Procedure 1. Remove the front side door water deflector. 2. Disconnect the electric connector from the regulator motor. Tighten 5 N.m (44 lb in)
2	Front Side Door Window Regulator Motor Procedure Inspect the door window for proper operation before installing the door trim.

REAR SIDE DOOR WINDOW REGULATOR REPLACEMENT (POWER)

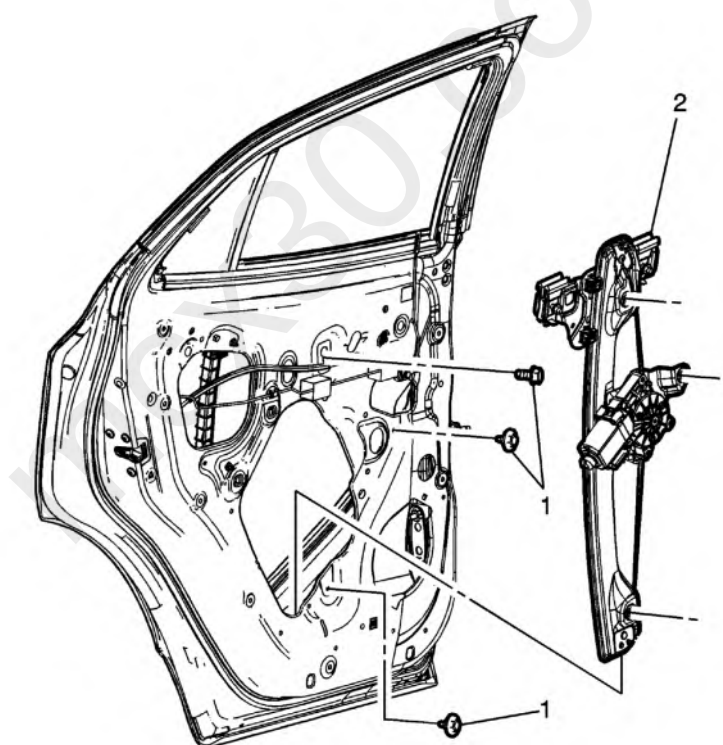


Fig. 26: Rear Side Door Window Regulator (Power)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning .	
Preliminary Procedure Remove the rear side door window from the window regulator guide nuts. Do Not remove the window from the vehicle, raise the window to the full up position, tape in place. Refer to Rear Side Door Window Replacement .	

Callout	Component Name
1	Rear Side Door Power Window Regulator Screw (Qty: 3) CAUTION: Refer to Fastener Caution . 1. Remove the rear side door water deflector. 2. Disconnect the door electrical connector. Tighten 11 N.m (97 lb in)
2	Rear Side Door Power Window Regulator Procedure 1. Transfer the rear side door window regulator motor. Refer to Rear Side Door Window Regulator Motor Replacement . 2. Inspect the door window for proper operation before installing the door trim.

REAR SIDE DOOR WINDOW REGULATOR REPLACEMENT (MANUAL)

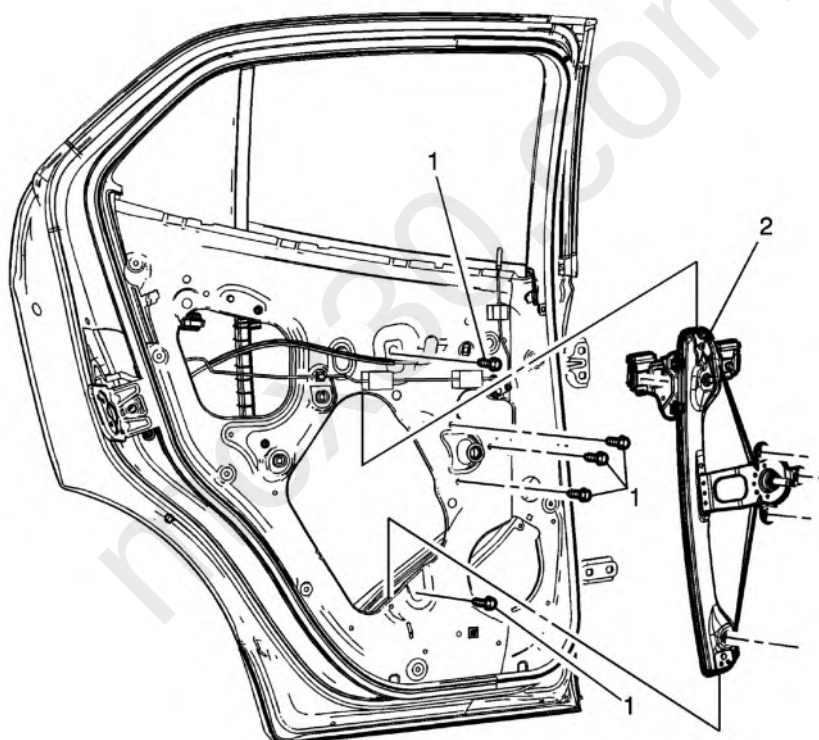


Fig. 27: Rear Side Door Window Regulator (Manual)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures Remove the rear side door window from the window regulator guide nuts. Do Not remove the window from the vehicle, raise the window to the full up position, tape in place. Refer to Rear Side Door Window Replacement .	

Callout	Component Name
1	Rear Side Door Manual Window Regulator Bolts (Qty: 5) CAUTION: Refer to Fastener Caution . Procedure Remove the rear side door water deflector. Tighten 11 N.m (97 lb in)
2	Rear Side Door Manual Window Regulator Procedure Inspect the door window for proper operation before installing the door trim.

REAR SIDE DOOR WINDOW REGULATOR MOTOR REPLACEMENT

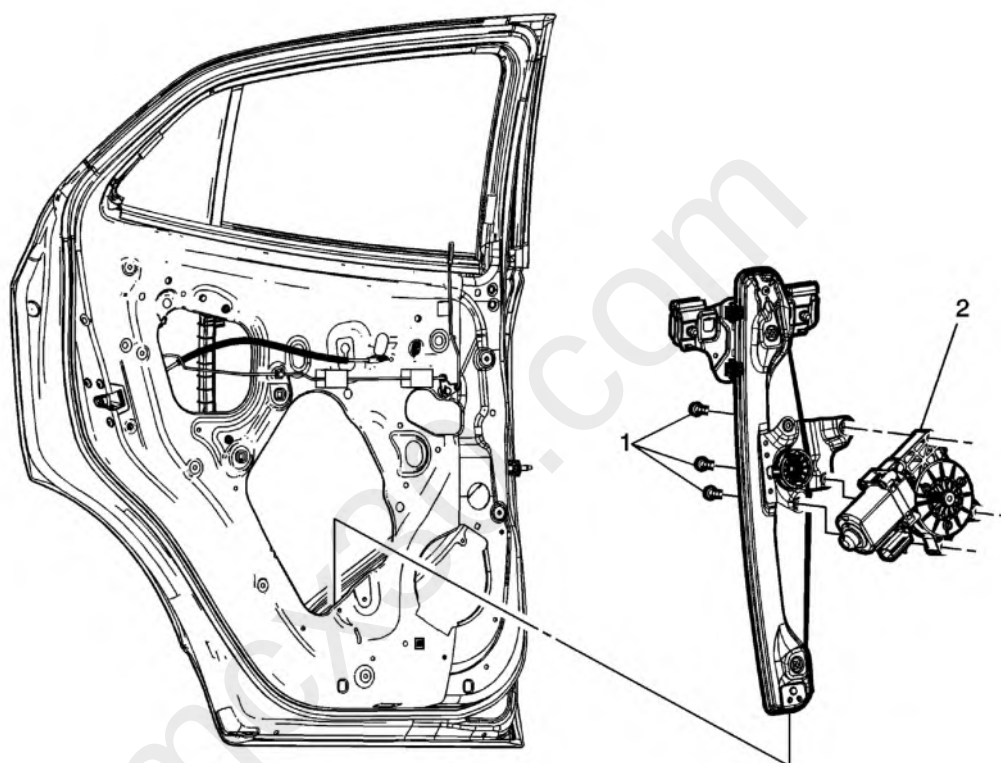


Fig. 28: Rear Side Door Window Regulator Motor
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning . Preliminary Procedure Remove the rear side door window regulator. Refer to Rear Side Door Window Regulator Replacement (Power) .	

Callout	Component Name
1	Rear Side Door Power Window Regulator Motor Screw (Qty: 3). CAUTION: Refer to Fastener Caution . Procedure 1. Remove the rear side door water deflector. 2. Disconnect the electrical connector from the window regulator motor. Tighten 5 N.m (44 lb in)
2	Rear Side Door Power Window Regulator Motor Procedure Inspect the door window for proper operation before installing the door trim.

FRONT SIDE DOOR WINDOW REGULATOR HANDLE REPLACEMENT

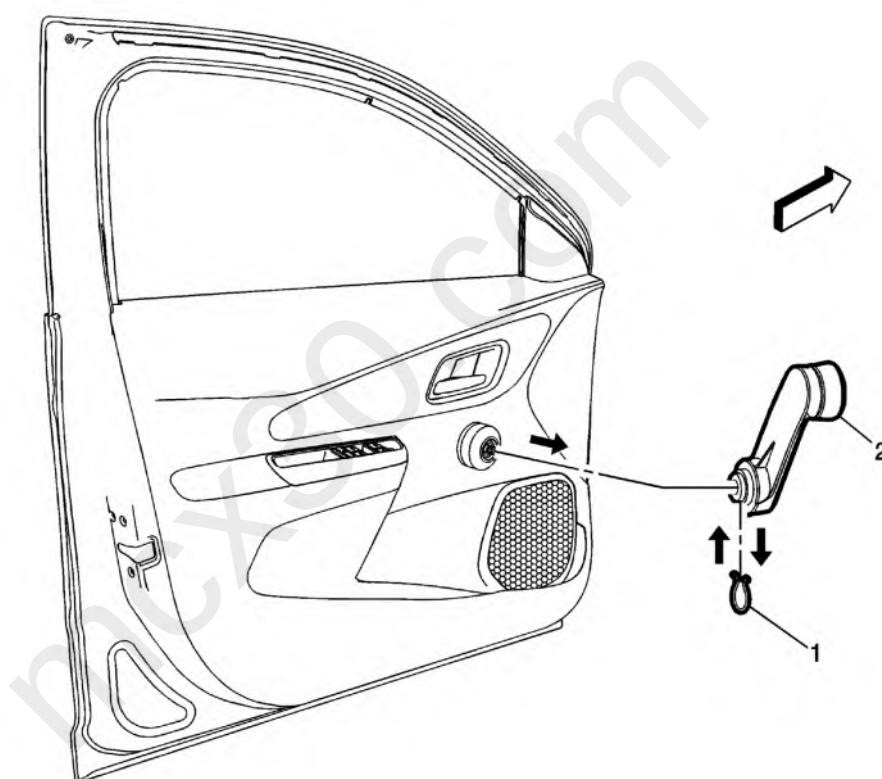


Fig. 29: Front Side Door Window Regulator Handle
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Side Door Window Regulator Handle Clip Procedure Use the appropriate tool, remove the clip and from handle.
2	Front Side Door Window Regulator Handle NOTE: Install the plastic spacer behind the window handle.

FRONT SIDE DOOR WINDOW REAR GUIDE REPLACEMENT

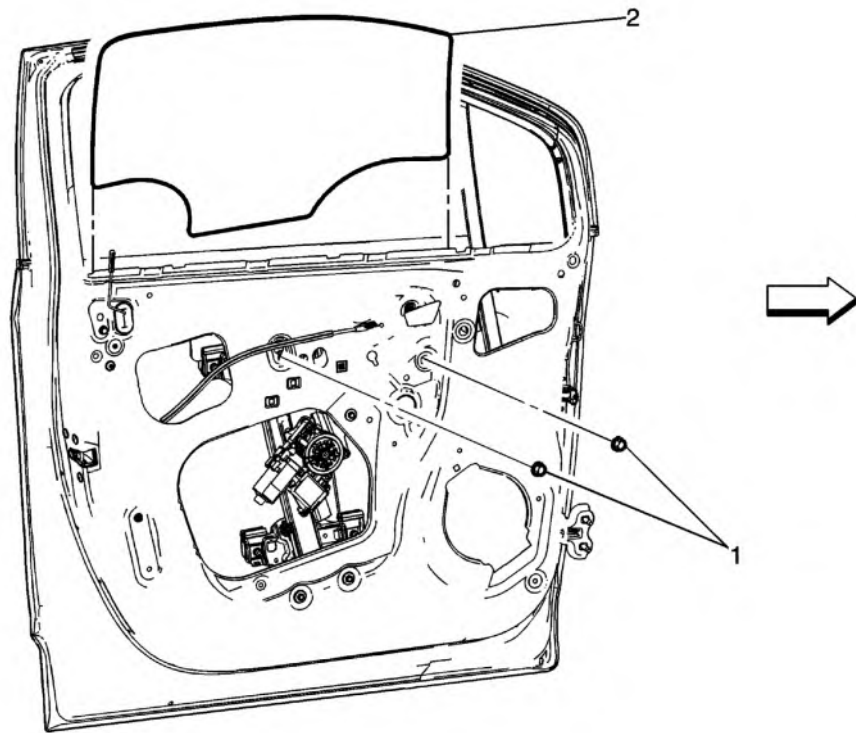


Fig. 30: Front Side Door Window Rear Guide
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning .	
Preliminary Procedures 1. Remove the front side door trim. Refer to Front Side Door Trim Replacement (Buick) Front Side Door Trim Replacement (Chevrolet) . 2. Remove the front side door window garnish molding. Refer to Front Side Door Window Garnish Molding Replacement 3. Loosen the front side door rear guide, Do not remove.	
1	Front Side Door Window Regulator Guide Nuts (Qty: 2) CAUTION: Refer to Fastener Caution . Procedure 1. Use masking tape, tape off the outer door frame, applique and the front side door window outer sealing strip to prevent scratching. 2. Remove the front side door water deflector. 3. Loosen nuts so that the window can be removed from the guides. 4. In order to remove the window out of the frame, carefully grasp and tilt the window as you guide the window up and forward. Tighten 10 N.m (89 lb in)

Callout	Component Name
2	Front Side Door Window Procedure 1. Lower the window to align the guide nuts with the access holes in the inner door panel. 2. Do not operate the regulator motor without supporting the window. Ensure that the window remains in the guide when operating the regulator motor. 3. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the guide. 4. Inspect the window for proper operation before installing the trim.

REAR SIDE DOOR WINDOW REAR GUIDE REPLACEMENT

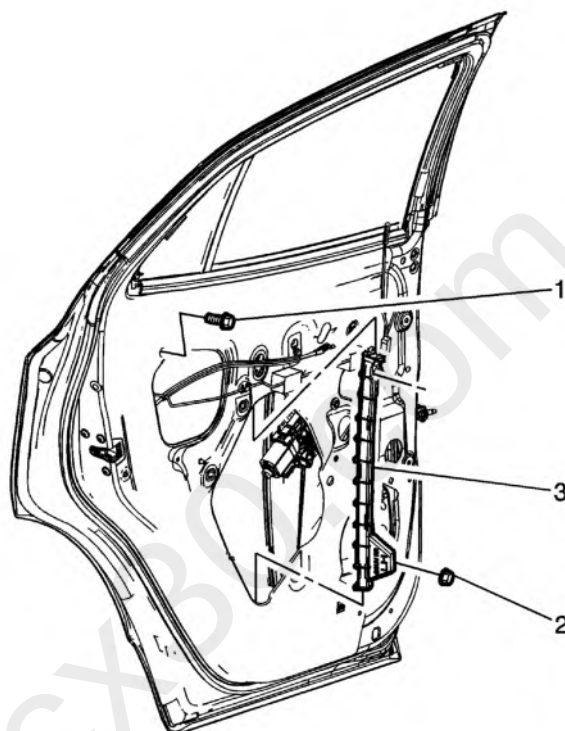


Fig. 31: Rear Side Door Window Rear Guide
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the rear side door trim. Refer to Rear Side Door Trim Replacement .	
1	Rear Side Door Window Rear Guide Bolt CAUTION: Refer to Fastener Caution . Procedure 1. Remove the rear side door water deflector. 2. Do Not remove the window from the vehicle, raise the window to the full up position. 3. Pull the weatherstrip out of the inner channel guide. Tighten 9 N.m (80 lb in)
2	Rear Side Door Window Rear Guide Nut Tighten 9 N.m (80 lb in)

Callout	Component Name
3	Rear Side Door Window Rear Guide Procedure 1. Ensure that the window is in the front and rear guides. 2. Carefully move the window downward in short slow intervals, while ensuring that the window remains in the guide. 3. Inspect the window for proper operation before installing the trim.

FRONT SIDE DOOR WINDOW OUTER SEALING STRIP REPLACEMENT

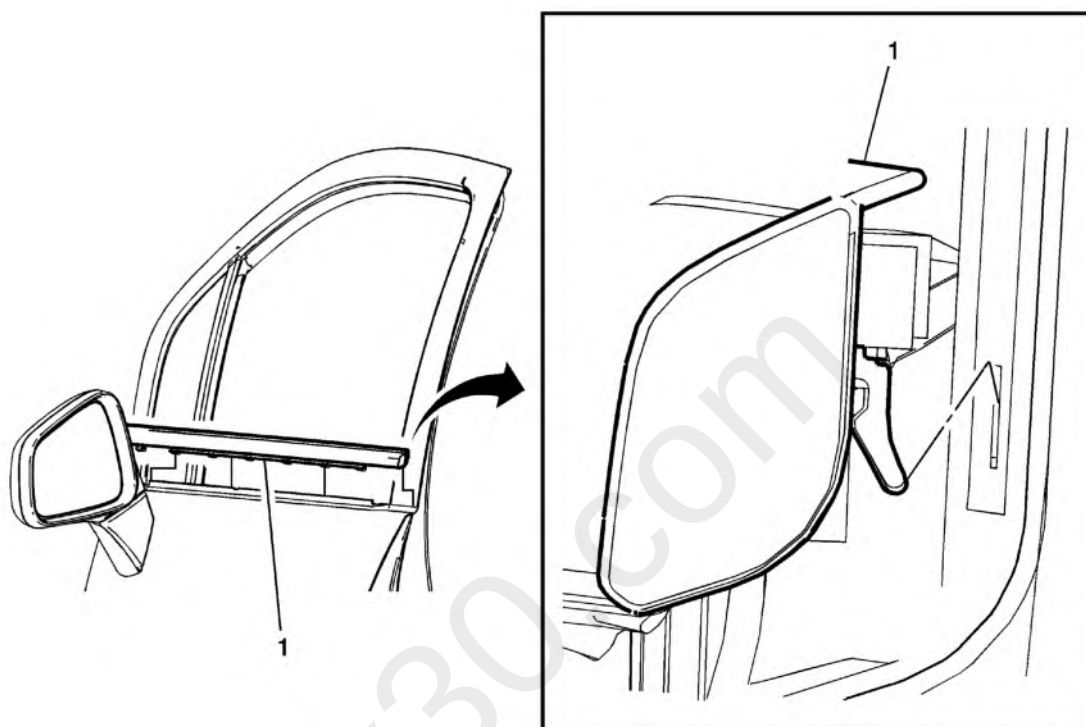


Fig. 32: Front Side Door Window Outer Sealing Strip
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Side Door Window Outer Sealing Strip Procedure 1. Do Not remove the outside rearview mirror. 2. Use the appropriate tool, lift the rear corner of the sealing strip and pull upward and away from the door flange. 3. Press firmly to insert the front side door window sealing strip back on the door flange. 4. Inspect the door window for proper operation.

FRONT SIDE DOOR WINDOW INNER SEALING STRIP REPLACEMENT (BUICK)

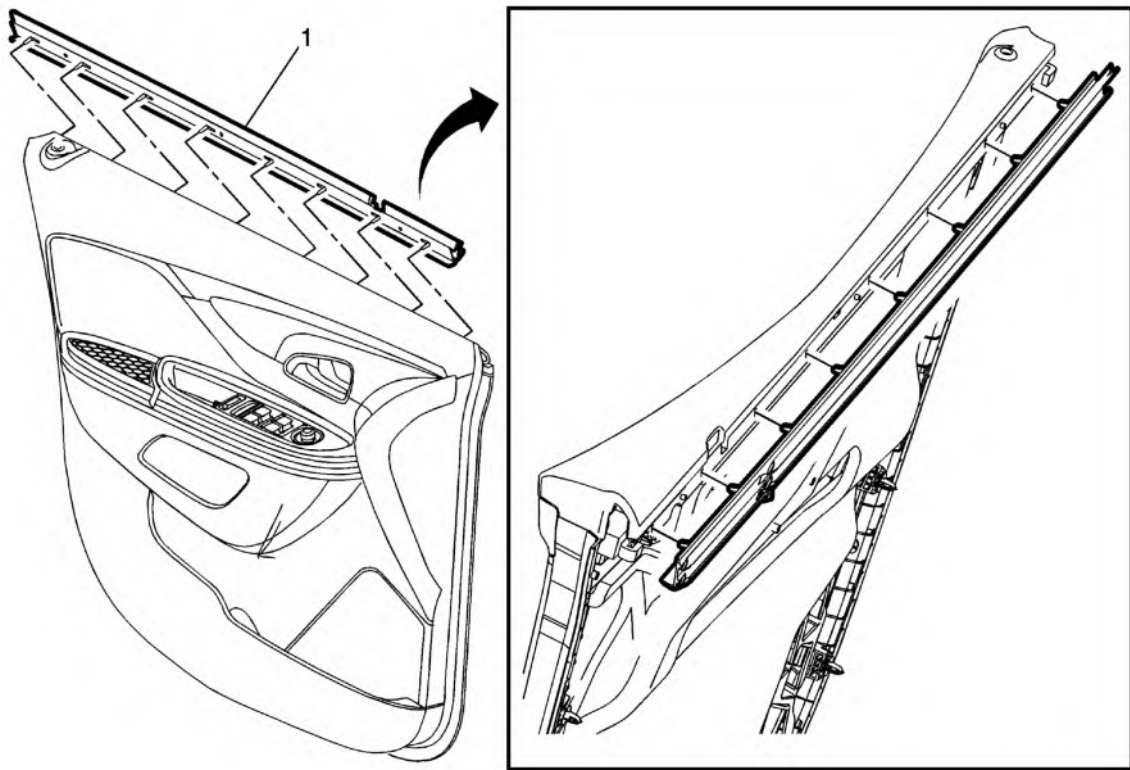


Fig. 33: Front Side Door Window Inner Sealing Strip (Encore).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front side door trim. Refer to Front Side Door Trim Replacement (Buick) .	
1	Front Side Door Window Inner Sealing Strip Assembly Procedure Pull outward to disengage sealing strip from door trim panel.

FRONT SIDE DOOR WINDOW INNER SEALING STRIP REPLACEMENT (CHEVROLET)

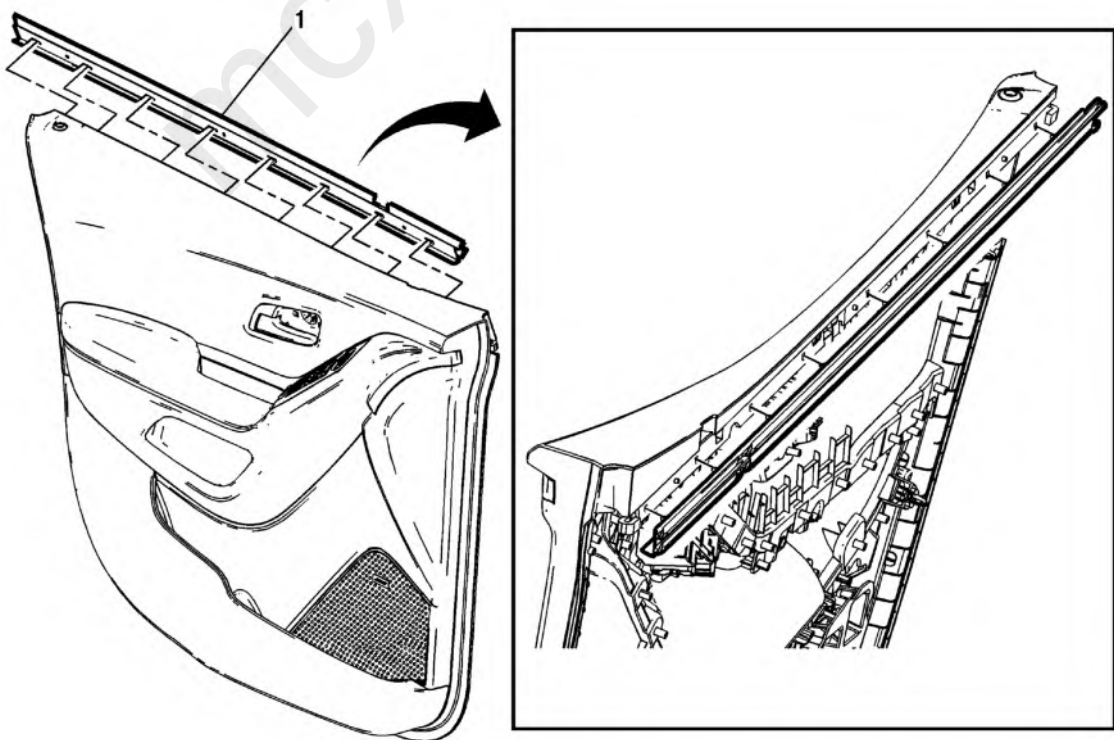


Fig. 34: Front Side Door Window Inner Sealing Strip (Trax)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
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Callout	Component Name
Preliminary Procedure Remove the front side door trim. Refer to Front Side Door Trim Replacement (Chevrolet) .	
1	Front Side Door Window Inner Sealing Strip Assembly Procedure 1. Unbend the metal retaining tabs fastening the inner sealing strip to the door trim panel. 2. Pull outward to disengage sealing strip from door trim panel.

REAR SIDE DOOR WINDOW INNER SEALING STRIP REPLACEMENT

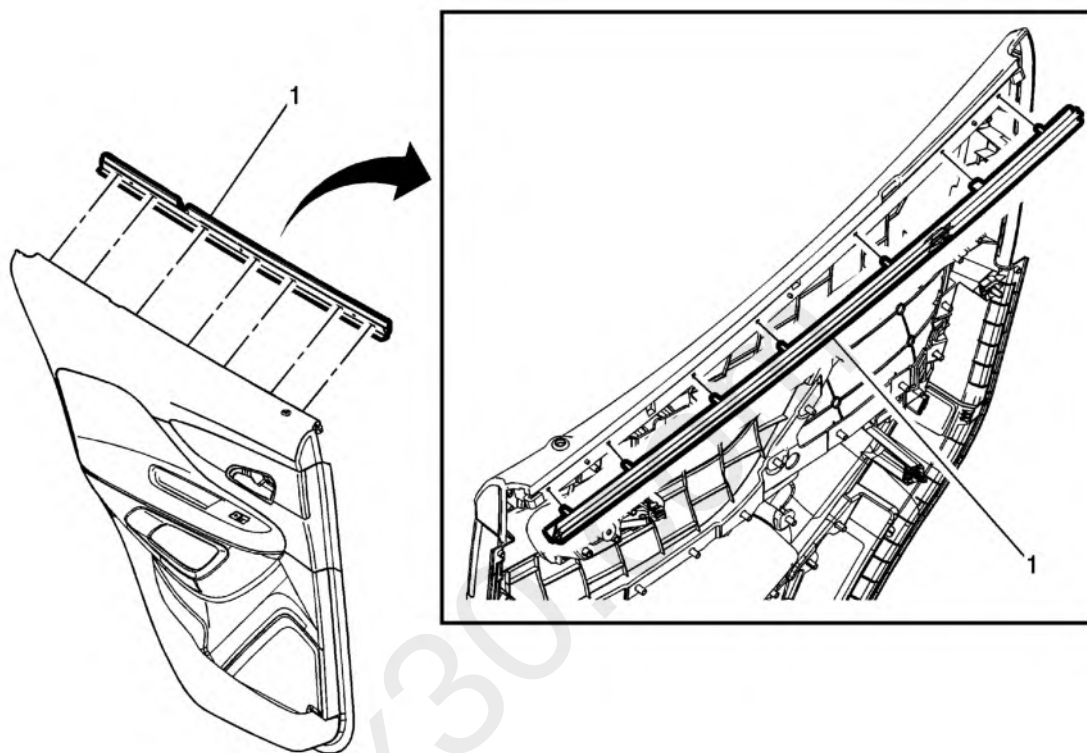


Fig. 35: Rear Side Door Window Inner Sealing Strip

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the rear side door trim. Refer to Rear Side Door Trim Replacement .	
1	Rear Side Door Window Inner Sealing Strip Assembly Procedure 1. Unbend the metal retaining tabs fastening the inner sealing strip to the door trim panel. 2. Pull outward to disengage sealing strip from door trim panel.

REAR SIDE DOOR WINDOW OUTER SEALING STRIP REPLACEMENT

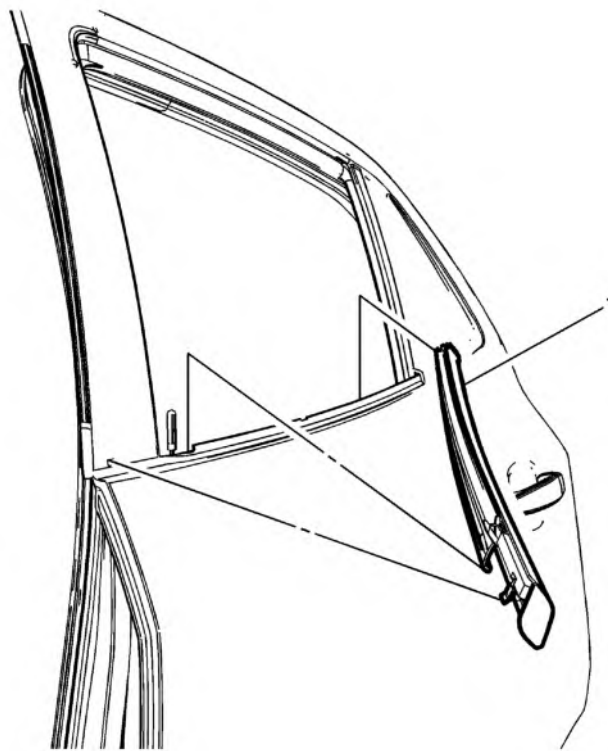


Fig. 36: Rear Side Door Window Outer Sealing Strip

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Rear Side Door Window Outer Sealing Strip
Procedure 1. Use the appropriate tool, lift the front edge of the sealing strip and pull upward and away from the door flange. 2. Press firmly to insert the rear side door window sealing strip back on the door flange. 3. Inspect the door window for proper operation.	

FRONT SIDE DOOR WINDOW WEATHERSTRIP REPLACEMENT

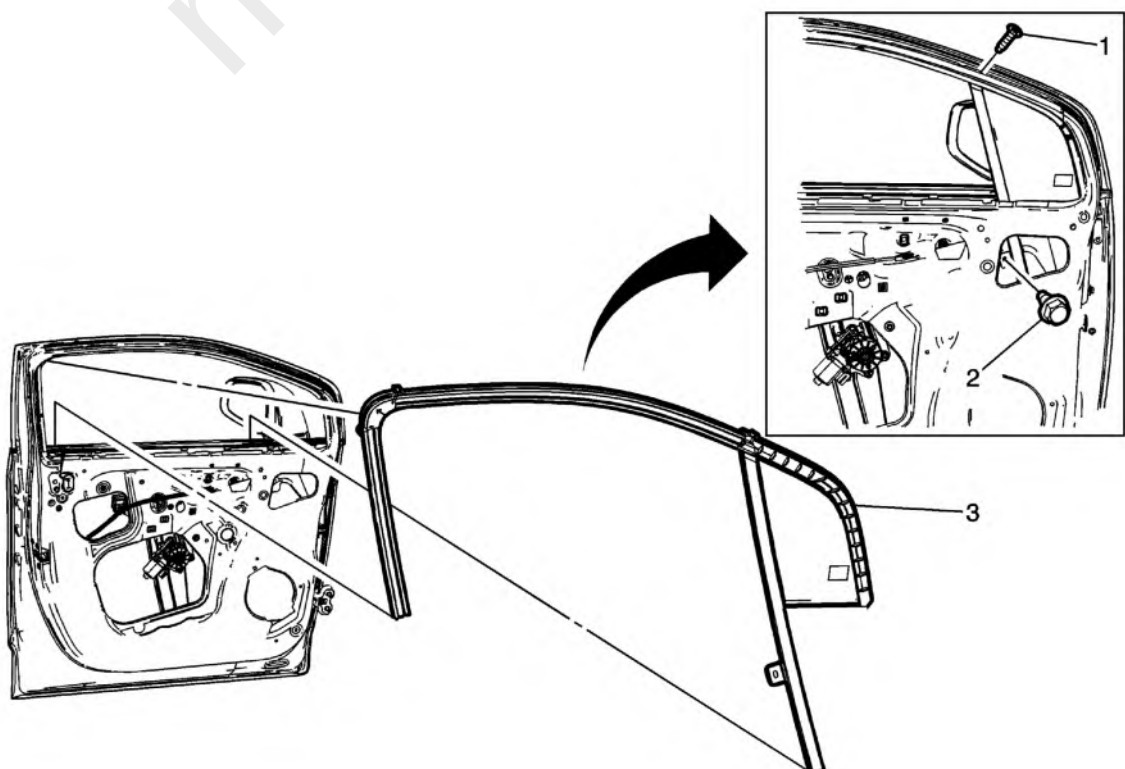


Fig. 37: Front Side Door Window Weatherstrip
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning . Preliminary Procedures Remove the front side door window. Refer to Front Side Door Window Replacement .	
1	Front Side Door Window Weatherstrip Upper Screw CAUTION: Refer to Fastener Caution . Procedure 1. Use masking tape, tape off the outer door frame, applique and the front side door window outer sealing strip to prevent scratching. 2. Pull the weatherstrip out of the upper retainer to expose the upper screw. Tighten 3 N.m (27 lb in)
2	Front Side Door Window Weatherstrip Lower Bolt Procedure 1. Remove the weatherstrip from the front and rear lower guides. 2. In order to remove the window weatherstrip from the door frame, carefully grasp the window and weatherstrip as it pulling downward guide the window out of the door. Tighten 9 N.m (80 lb in)
3	Front Side Door Window Weatherstrip Procedure 1. Before installing the window ensure that the window weatherstrip is fitted around the inner door frame fully. 2. Install the window to the front and rear guides, hand move the window up and down before installing the window to the regulator. 3. Carefully move the window upward in short slow intervals, while ensuring that the window remains in the guide. 4. Inspect the window for proper operation before installing the trim.

REAR SIDE DOOR WINDOW WEATHERSTRIP REPLACEMENT

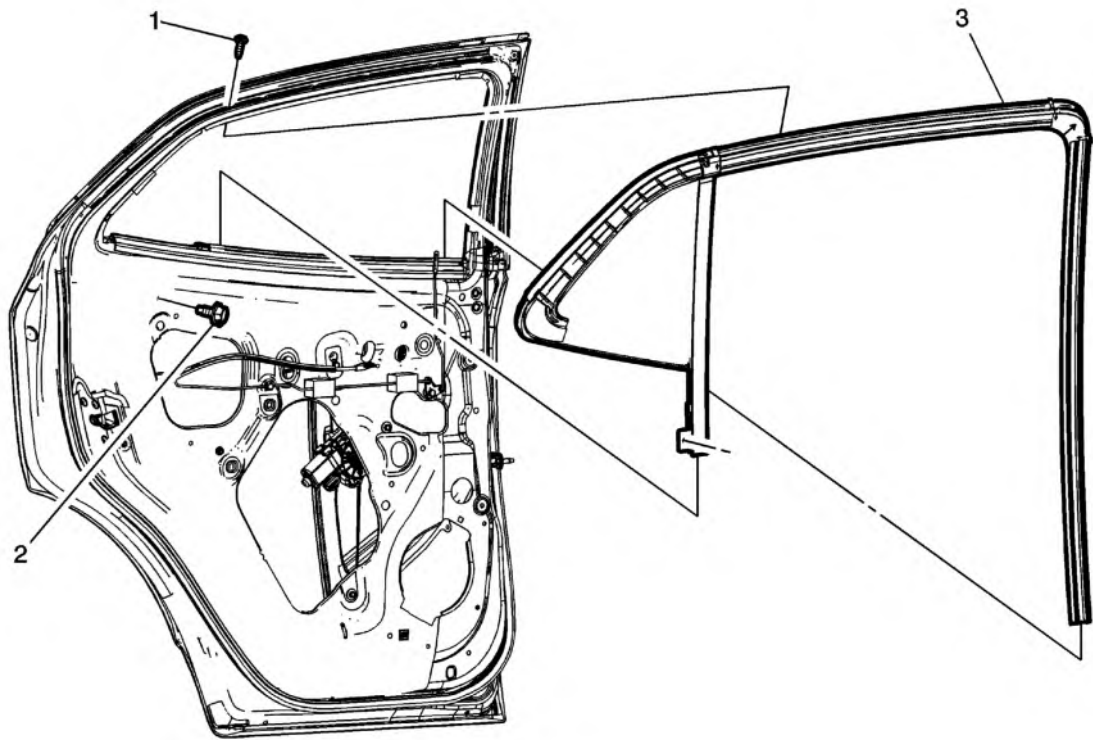


Fig. 38: Rear Side Door Window Weatherstrip

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Glass and Sheet Metal Handling Warning .	
Preliminary Procedures Remove the rear side door window regulator. Refer to Rear Side Door Window Regulator Replacement (Power) Rear Side Door Window Regulator Replacement . After the window has been detached from the regulator lower window into the door panel.	
1	Rear Side Door Window Weatherstrip Upper Screw CAUTION: Refer to Fastener Caution . Procedure 1. Pull the weatherstrip out of the upper retainer to expose the upper screw. 2. Remove the weatherstrip from the rear lower guide. 3. In order to remove the window weatherstrip from the door frame, remove the window regulator and lower the window down in the door panel so that the rear window weatherstrip can be separated from the door frame. Tighten 3 N.m (27 lb in)
2	Rear Side Door Window Weatherstrip Lower Bolt Tighten 9 N.m (80 lb in)
3	Rear Side Door Window Weatherstrip Procedures 1. Insert the weatherstrip downward in the guide until fully seated. 2. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the guides. 3. Inspect the door window for proper operation before installing the door trim.

ADHESIVE INSTALLATION OF WINDSHIELDS

WARNING: Refer to Glass and Sheet Metal Handling Warning .

1. Use a urethane adhesive systems which meet GM Specification GMW 15672.
2. Remove all mounds or loose pieces of urethane adhesive from the pinch-weld area.
3. If the original window is being reused, remove all but approximately 2 mm (3/64 in) of the existing bead of urethane adhesive from the pinchweld flange by using a clean utility knife or razor blade scraper.
4. Inspect for any of the following problems in order to help prevent future breakage of the window:
 - The flange of the window opening
 - High weld
 - Solder spots
 - Hardened sealer
 - Any other obstruction or irregularity in the pinchweld flange

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

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

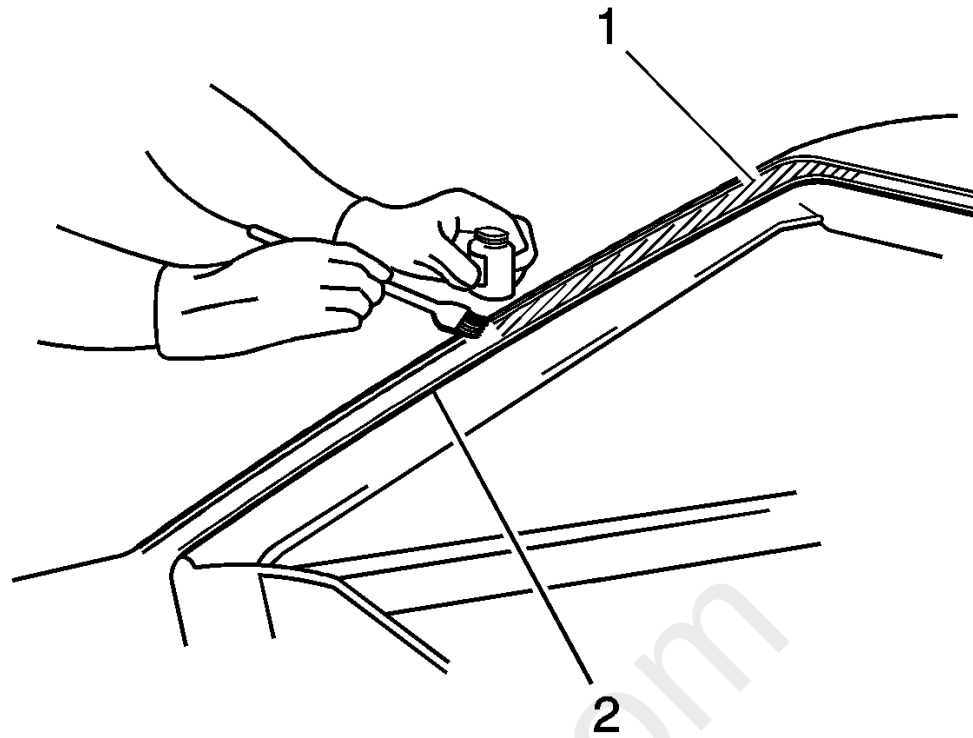


Fig. 39: Applying Pinch-Weld Primer

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.

7. Apply the primer to the surface of the pinch-weld flange (1).
8. Allow the pinch-weld primer to dry per auto-adhesive instructions by the manufacturer's.
9. With an assistant, dry fit the window (2) to the opening in order to determine the correct position.

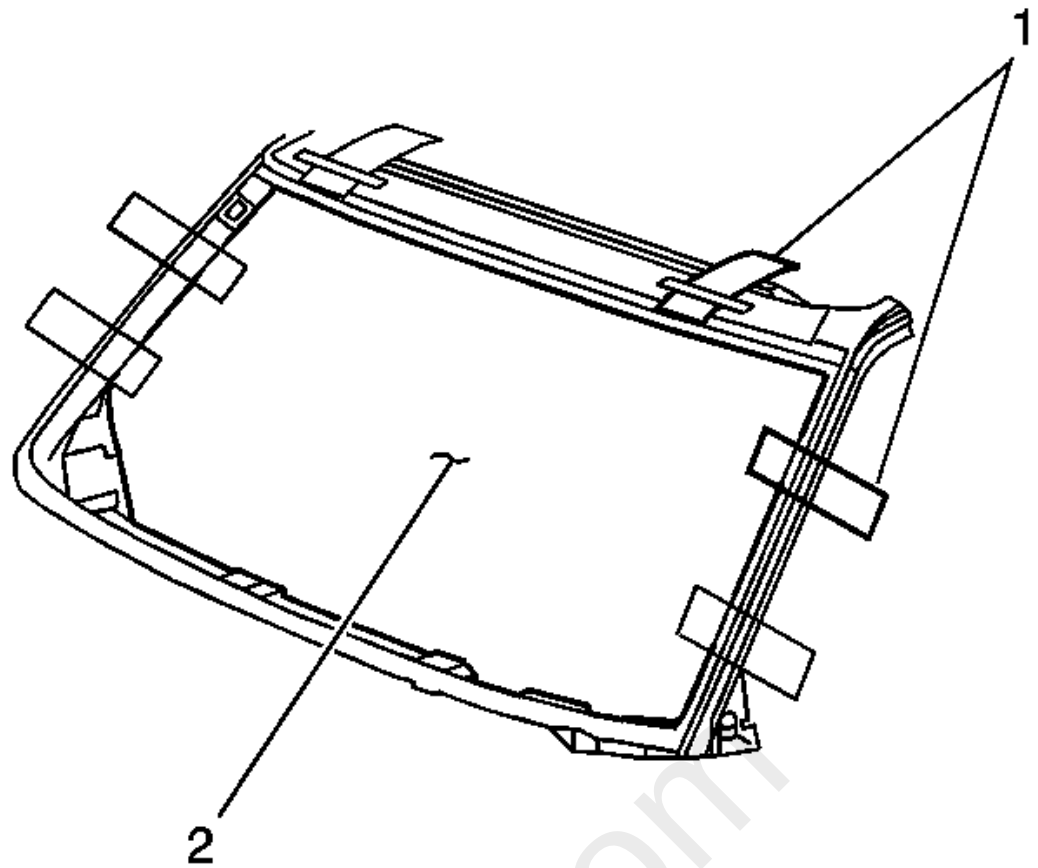


Fig. 40: Marking Location Of Window In Opening
Courtesy of GENERAL MOTORS COMPANY

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

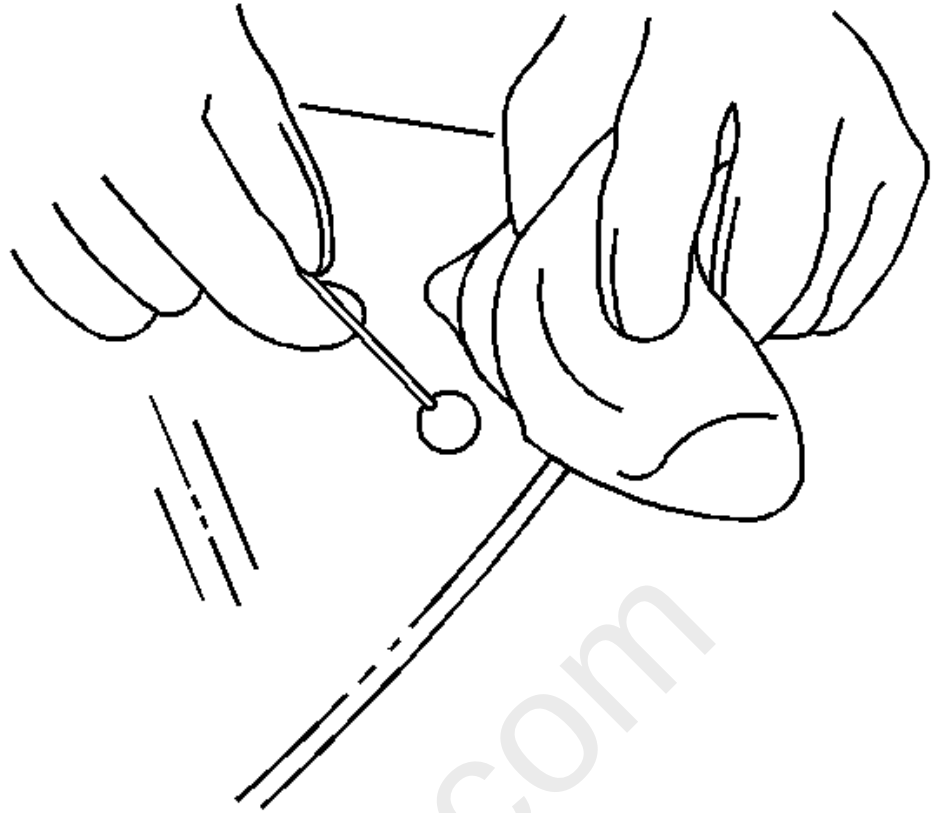


Fig. 41: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

12. Apply glass prep clear to the area approximately 10-16 mm (3/8-5/8 in) around the entire perimeter of the window inner surface.

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

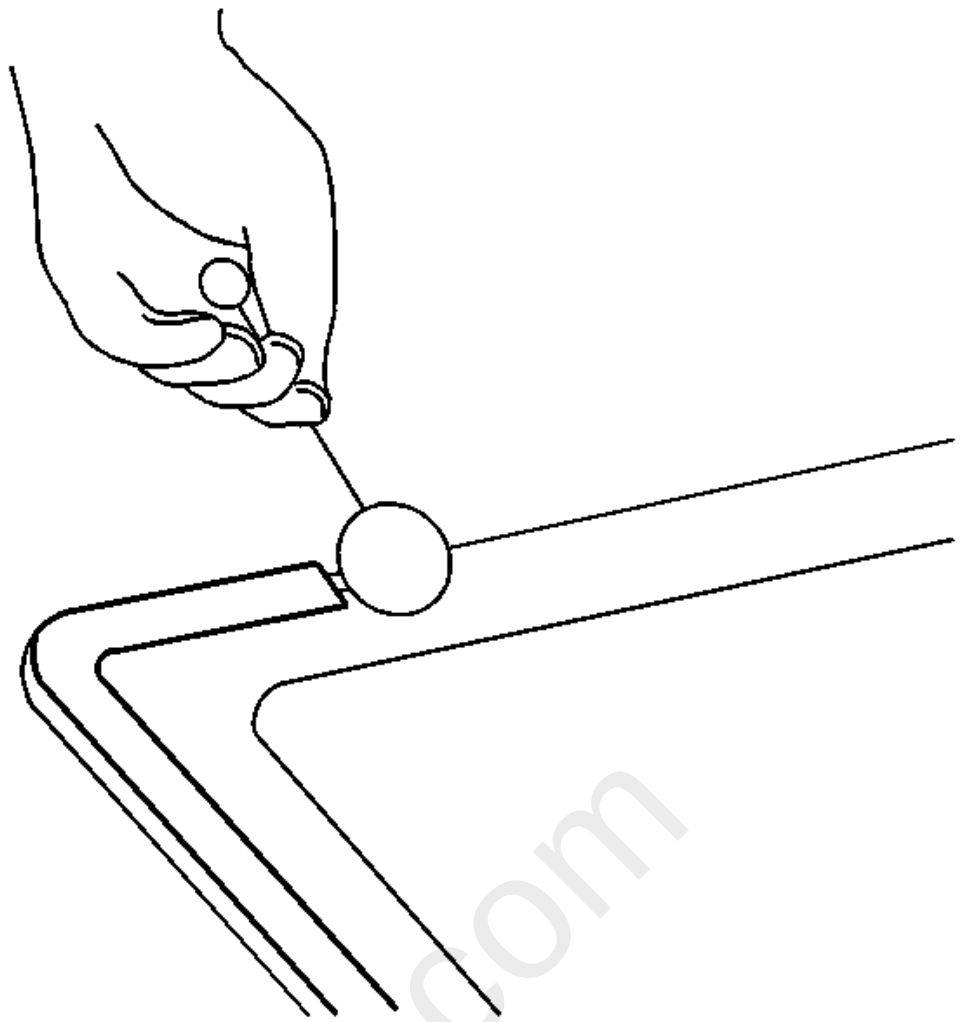


Fig. 42: Applying Glass Primer

Courtesy of GENERAL MOTORS COMPANY

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

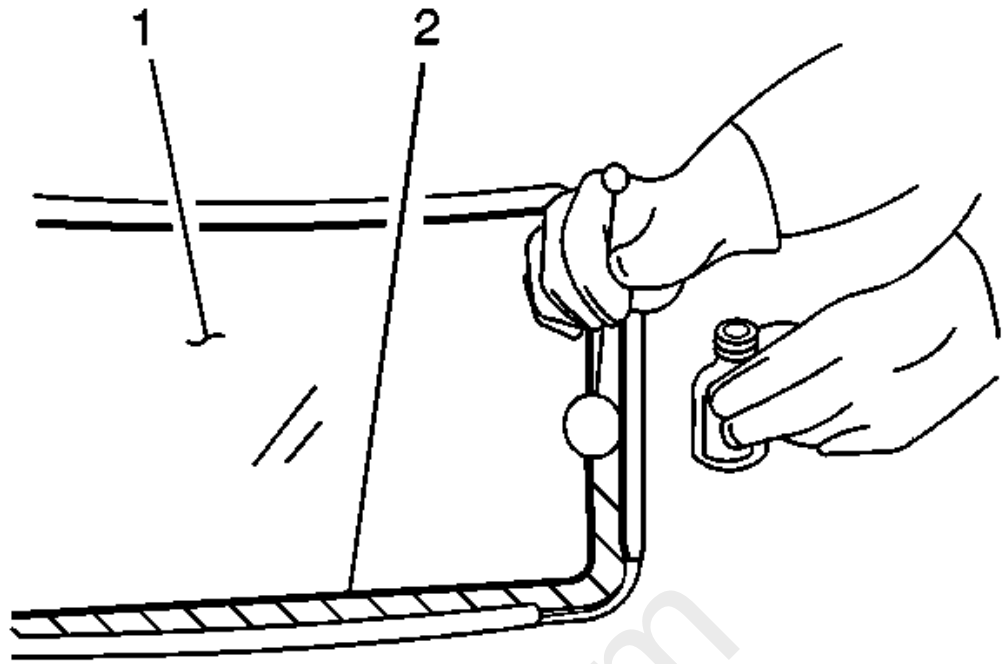


Fig. 43: Applying Glass Primer

Courtesy of GENERAL MOTORS COMPANY

14. Apply the auto-adhesive primer-application (2) around the perimeter of the window (1) per auto-adhesive instructions by the manufacturer's.
15. Apply the glass primer black to the same areas that glass prep clear was applied.
16. Allow the glass primer to dry per auto-adhesive instructions by the manufacturer's.

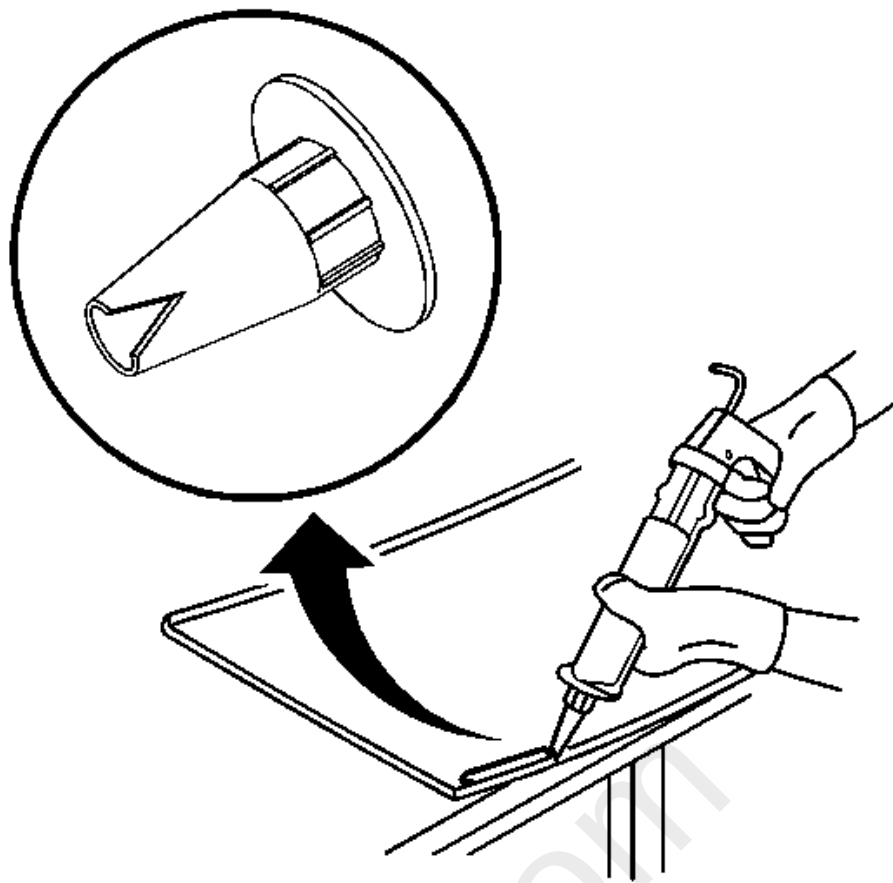


Fig. 44: Modified Applicator Nozzle

Courtesy of GENERAL MOTORS COMPANY

17. Use a cartridge-type caulking gun in order to apply a smooth, continuous bead of urethane adhesive.
Cut the applicator nozzle to provided a V cut to apply the auto-adhesive.

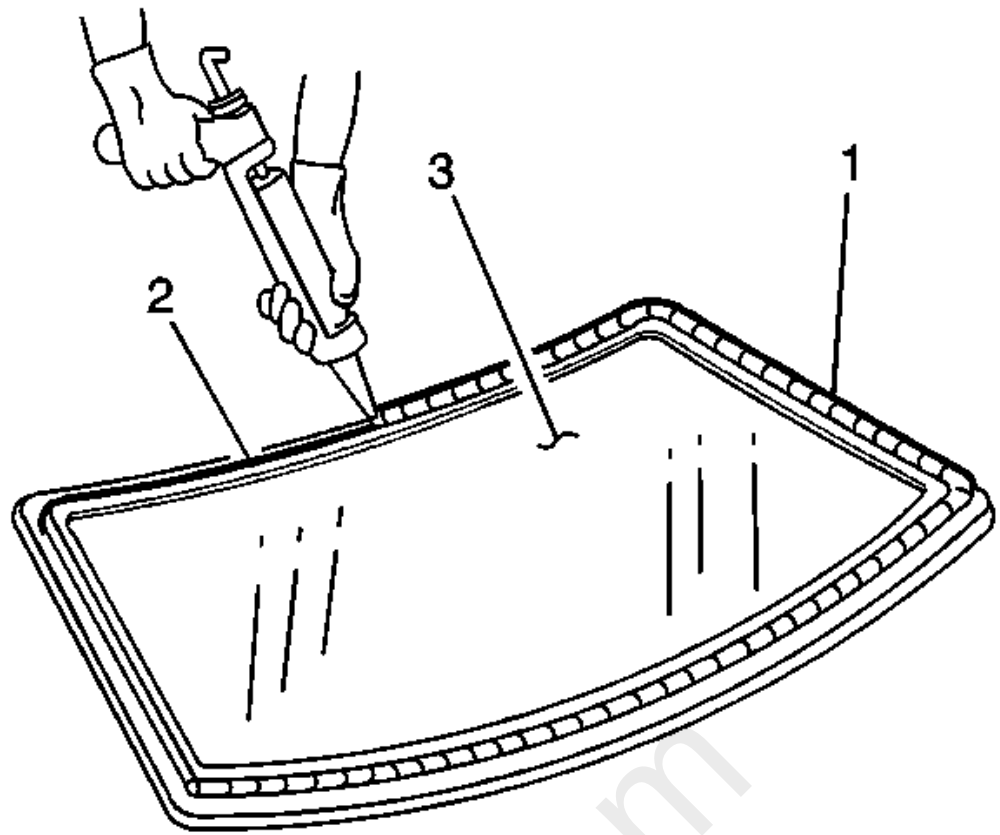


Fig. 45: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS COMPANY

18. 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).

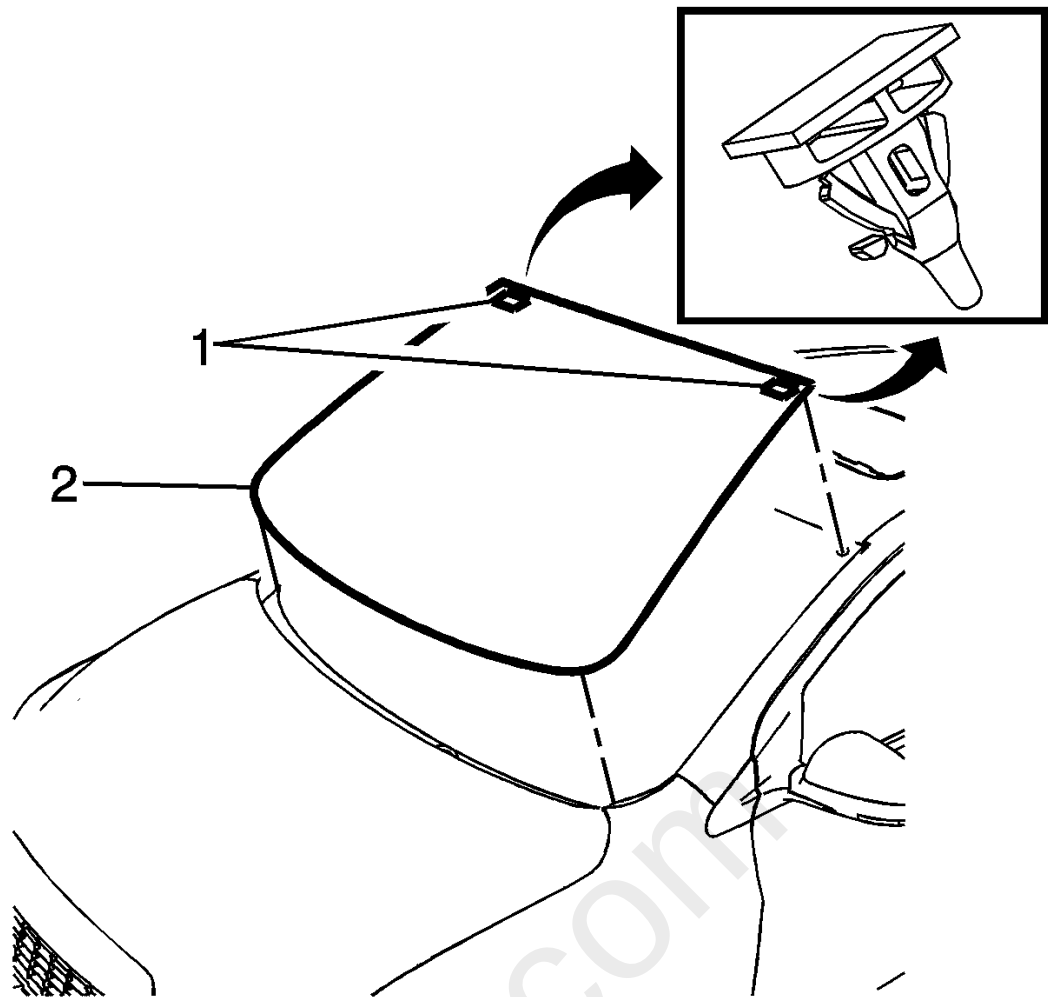


Fig. 46: Window & Locating Pins

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.

19. With an assistant, align the window locating pins (1) to the slots located in each corner of the pinch-weld flange. Lower the window (2) to touch the auto-adhesive.
20. Gently depress the window on the auto-adhesive bead until the window reveal molding is seated.
21. Tape the window to the body in order to minimize movement and until the auto-adhesive cures per auto-adhesive instructions by the manufacturer's.
22. Ensure all excess urethane adhesive is cleaned from the body before water test.

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

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

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

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

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

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

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

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

28. Complete the window installation.

ADHESIVE INSTALLATION OF LIFTGATE WINDOWS

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

1. Use a urethane adhesive systems which meet GM Specification GMW 15672.
2. Remove all mounds or loose pieces of urethane adhesive from the pinchweld area.
3. If the original window is being reused, remove all but approximately 2 mm (3/64 in) of the existing bead of urethane adhesive from the pinchweld flange by using a clean utility knife or razor blade scraper.
4. Inspect for any of the following problems in order to help prevent future breakage of the window:
 - The flange of the window opening
 - High weld
 - Solder spots
 - Hardened sealer
 - Any other obstruction or irregularity in the pinchweld flange

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

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

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

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

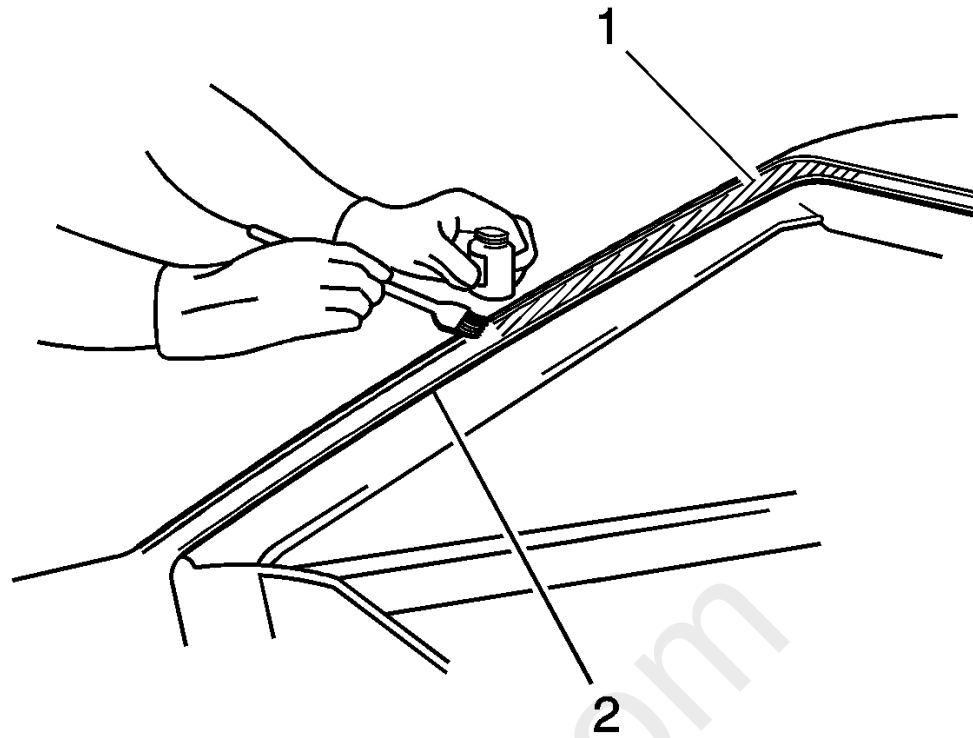


Fig. 47: Applying Pinch-Weld Primer

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.

7. Apply the primer to the surface of the pinch-weld flange (1).
8. Allow the pinch-weld primer to dry per auto-adhesive instructions by the manufacturer's.
9. With an assistant, dry fit the window (2) to the opening in order to determine the correct position.

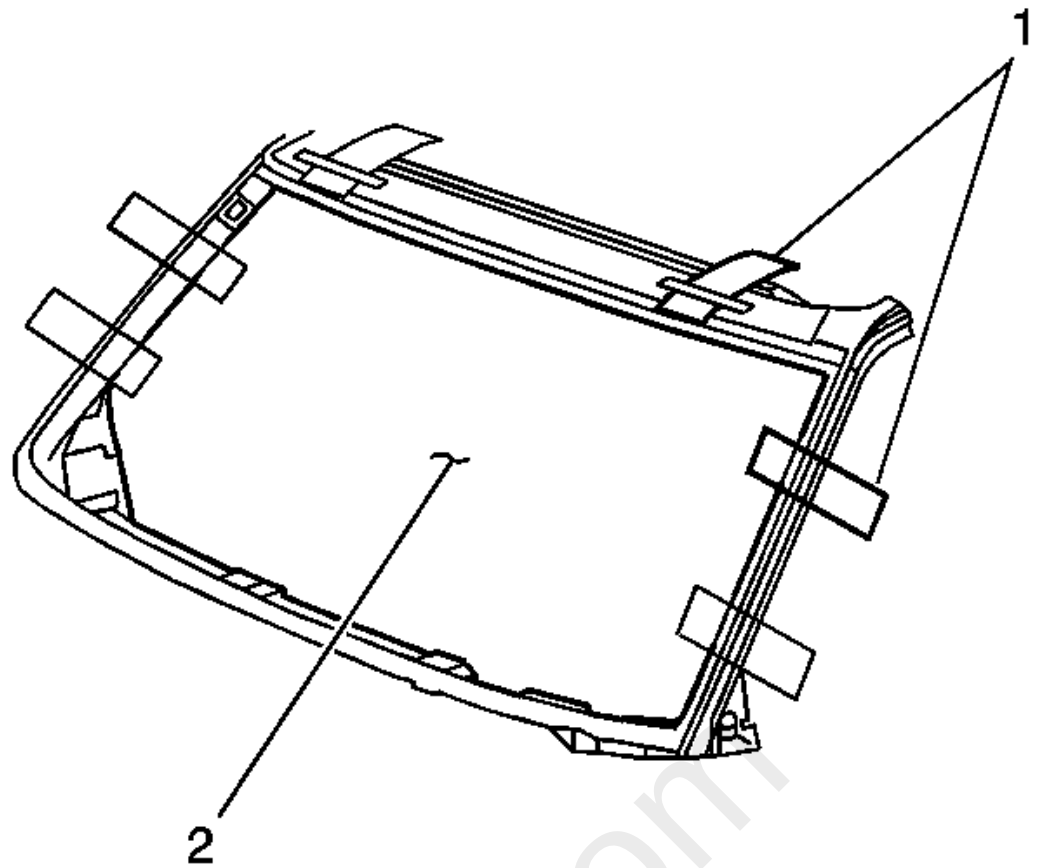


Fig. 48: Marking Location Of Window In Opening
Courtesy of GENERAL MOTORS COMPANY

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

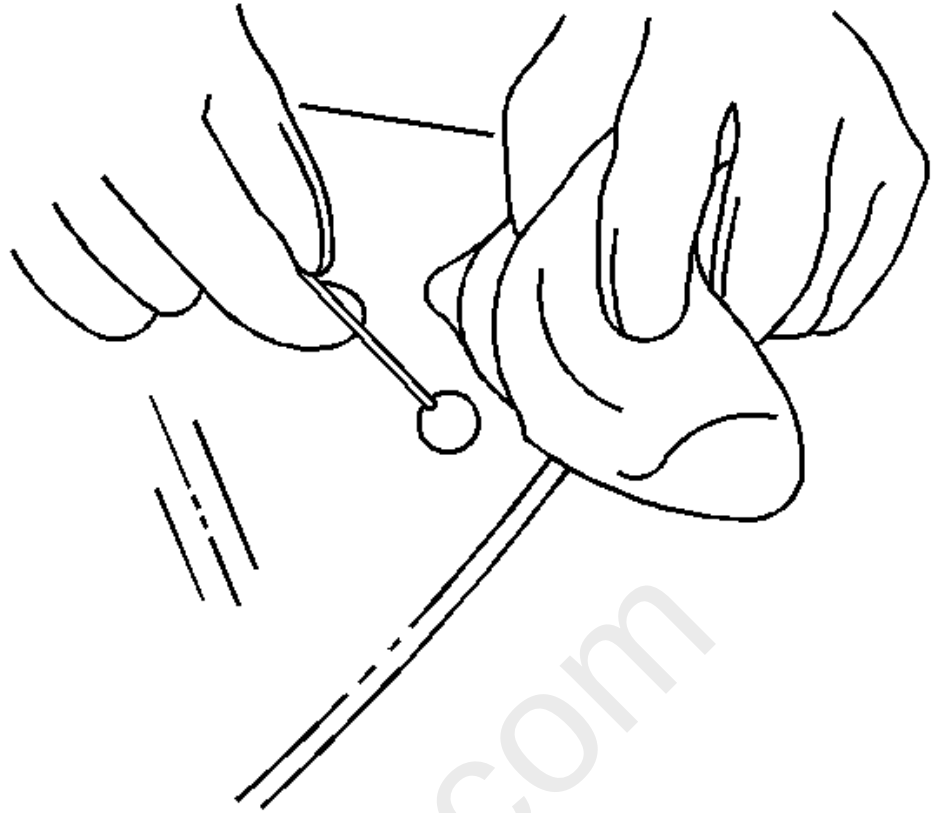


Fig. 49: Applying Glass Prep To Window Inner Surface
Courtesy of GENERAL MOTORS COMPANY

12. Apply glass prep clear to the area approximately 10-16 mm (3/8-5/8 in) around the entire perimeter of the window inner surface.

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

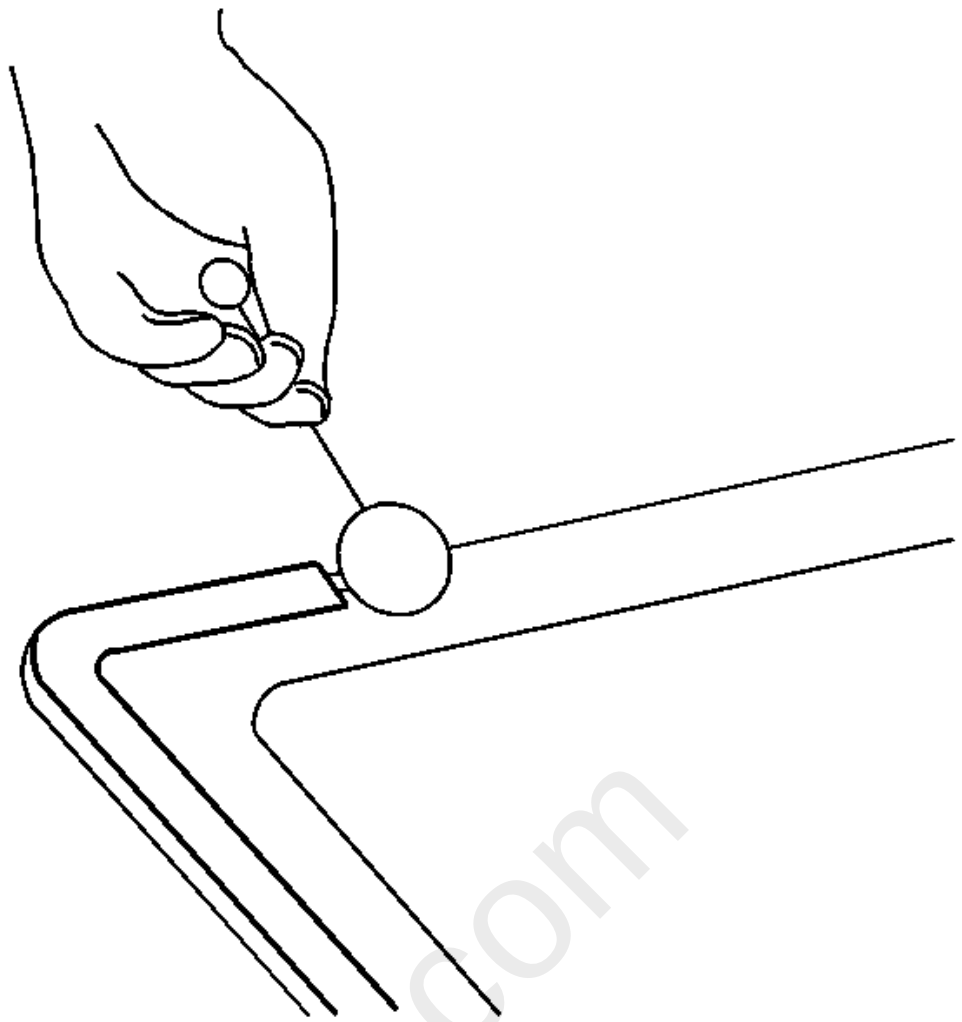


Fig. 50: Applying Glass Primer

Courtesy of GENERAL MOTORS COMPANY

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

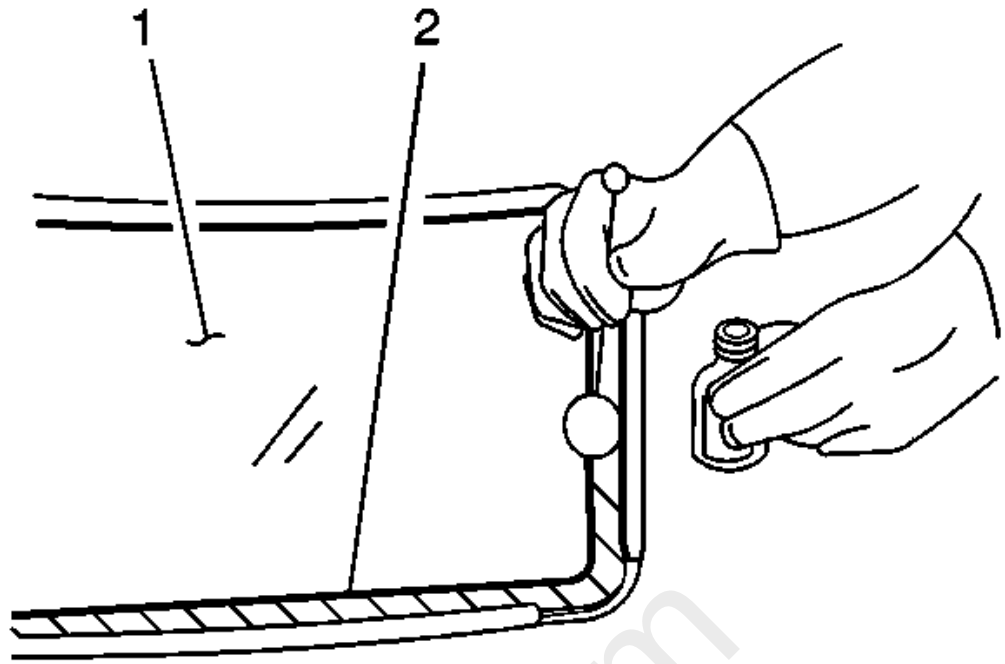


Fig. 51: Applying Glass Primer

Courtesy of GENERAL MOTORS COMPANY

14. Apply the auto-adhesive primer-application (2) around the perimeter of the window (1) per auto-adhesive instructions by the manufacturer's.
15. Apply the glass primer black to the same areas that glass prep clear was applied.
16. Allow the glass primer to dry per auto-adhesive instructions by the manufacturer's.

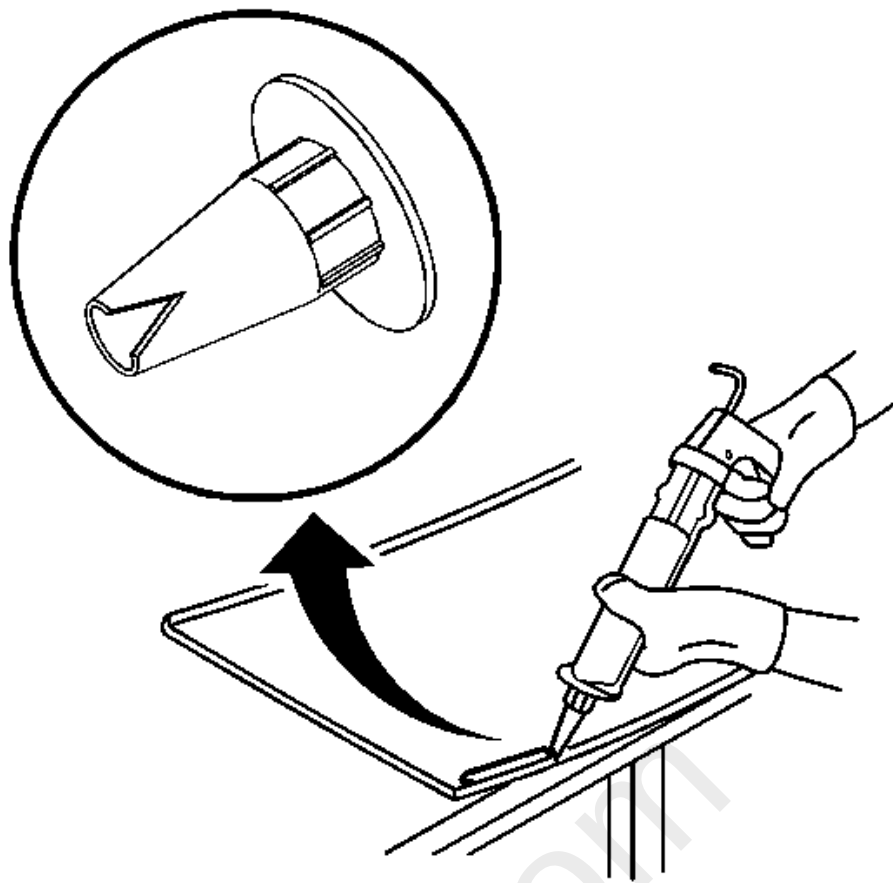


Fig. 52: Modified Applicator Nozzle

Courtesy of GENERAL MOTORS COMPANY

17. Use a cartridge-type caulking gun in order to apply a smooth, continuous bead.

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

18. Install the window reveal molding, if equipped.

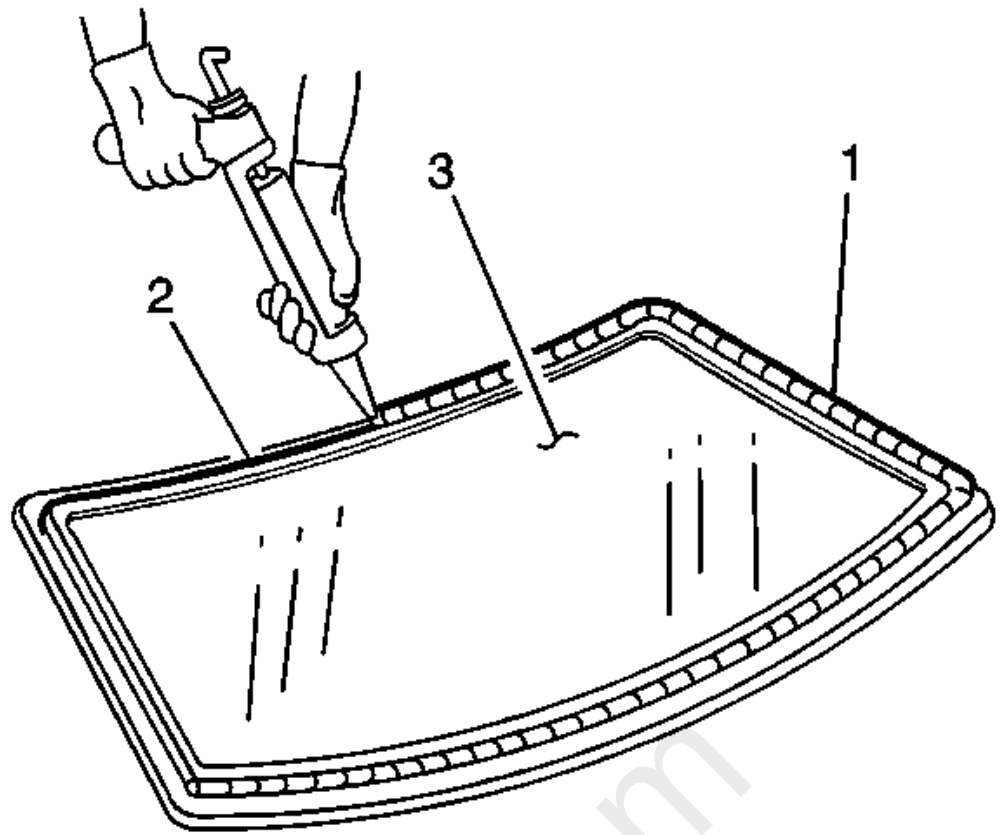


Fig. 53: Applying Urethane Adhesive To Inner Surface Of Window

Courtesy of GENERAL MOTORS COMPANY

19. 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).

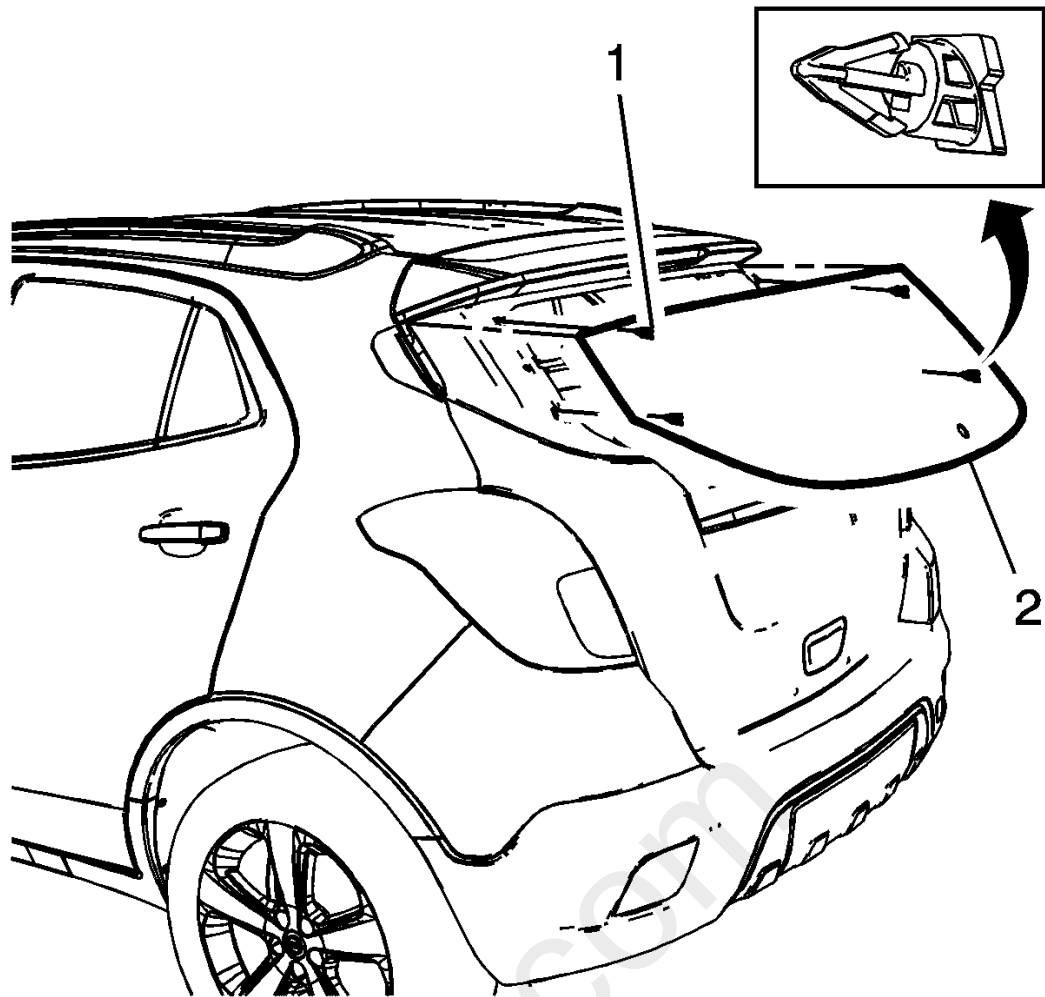


Fig. 54: Liftgate Window And Locating Pins
Courtesy of GENERAL MOTORS COMPANY

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.

20. With an assistant, align the window locating pins (1) to the slots located in each corner of the pinch-weld flange. Lower the window (2) to touch the auto-adhesive.

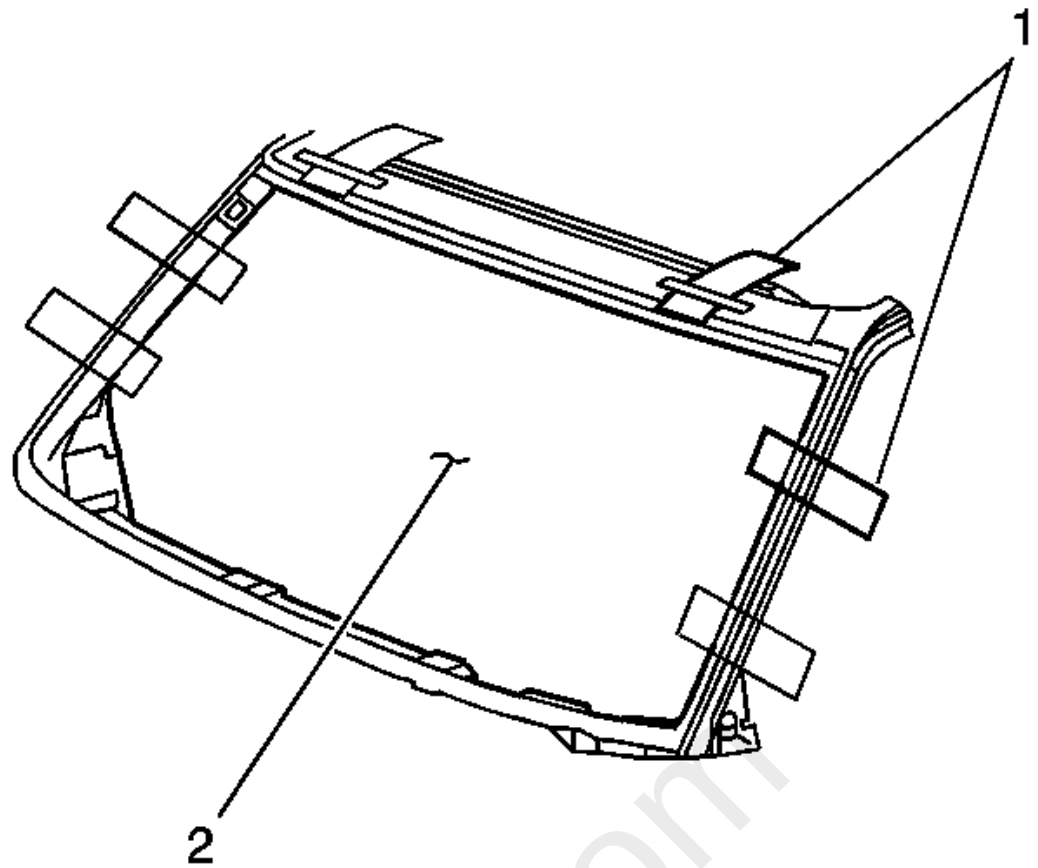


Fig. 55: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS COMPANY

21. If the locating pins were damaged, align the masking tape (1) lines on the window (2) and the body.

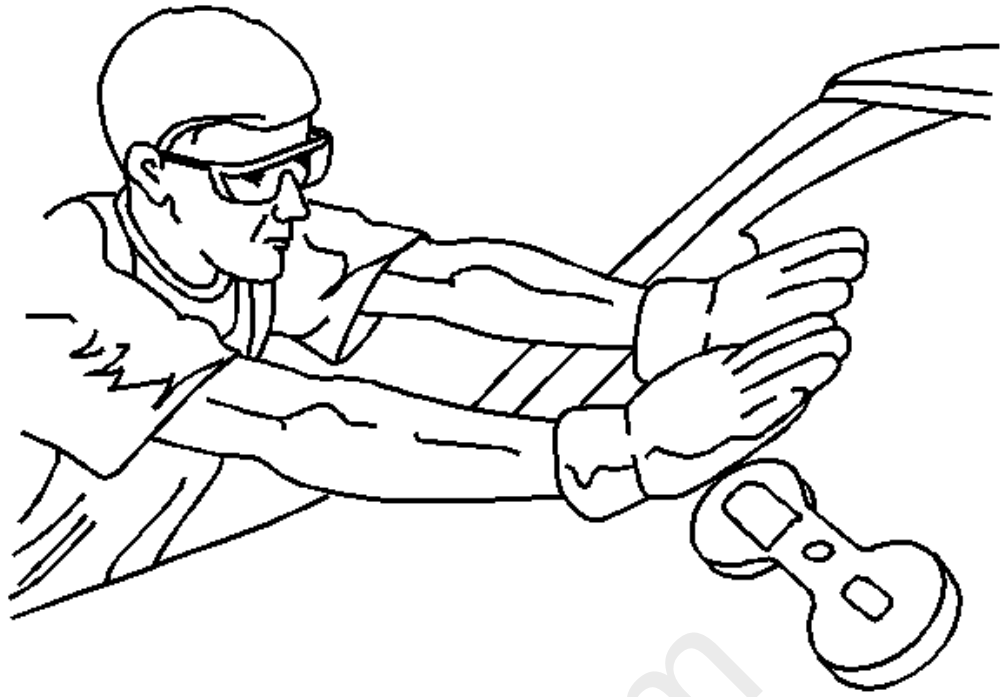


Fig. 56: Pressing Window Into Place

Courtesy of GENERAL MOTORS COMPANY

22. Gently depress the window on the auto-adhesive bead until the window reveal molding is seated.
23. Tape the window to the body in order to minimize movement and until the auto-adhesive cures per auto-adhesive instructions by the manufacturer's.

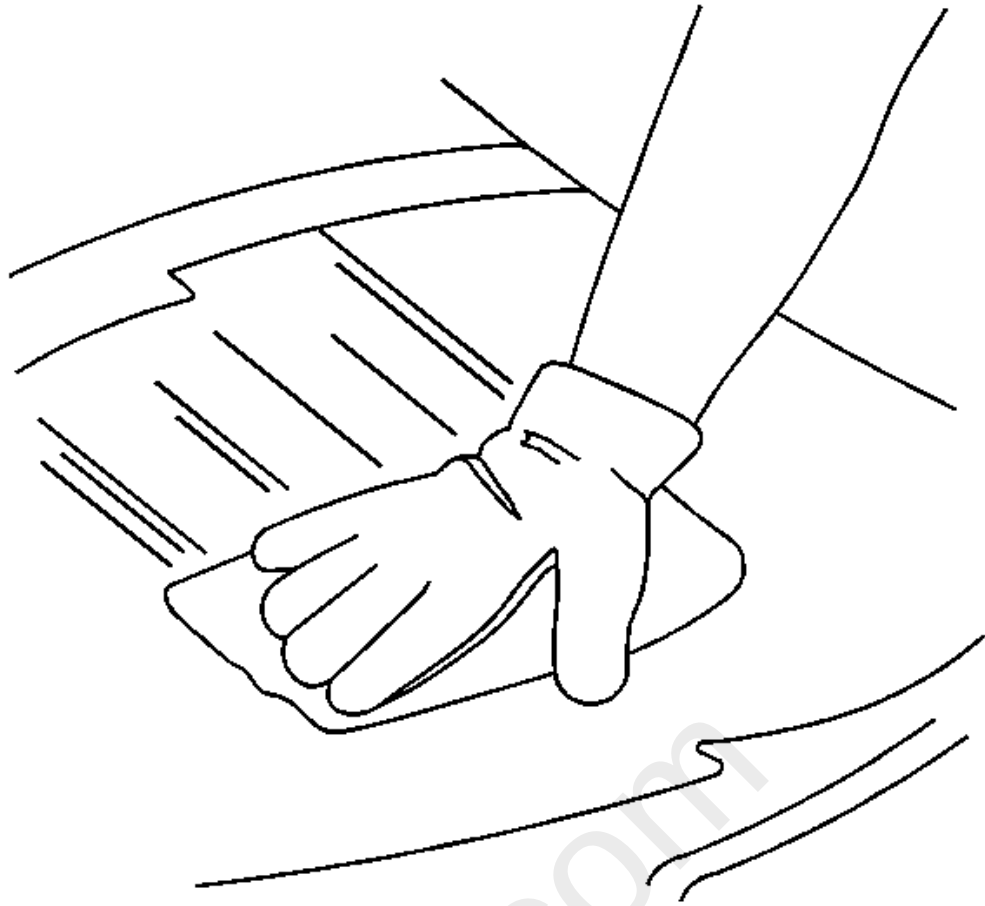


Fig. 57: Cleaning Excess Urethane Adhesive From Body
Courtesy of GENERAL MOTORS COMPANY

24. Ensure all excess urethane adhesive is cleaned from the body before water test.

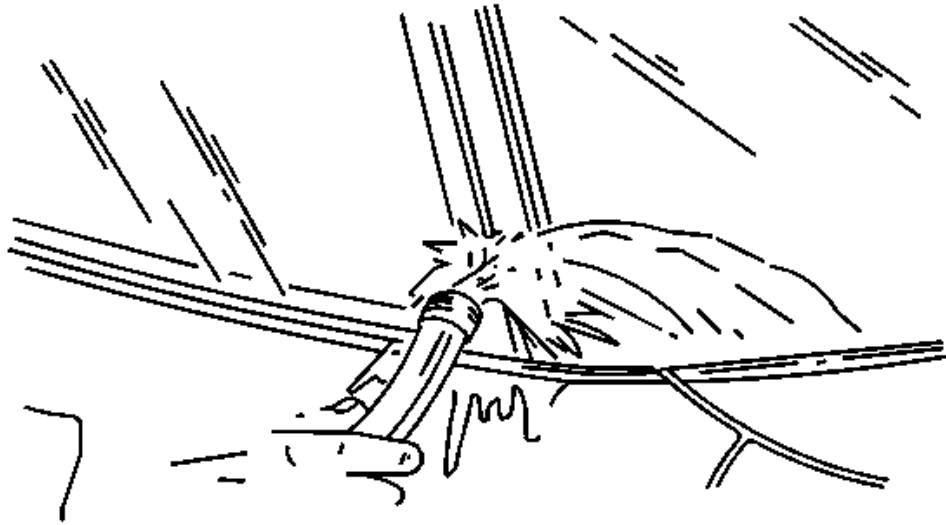


Fig. 58: Performing Water Hose Test
Courtesy of GENERAL MOTORS COMPANY

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

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

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

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

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

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

DESCRIPTION AND OPERATION

FULL-CUT METHOD DESCRIPTION

NOTE:

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

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.

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
- Right rear door latch
- Left rear door latch
- Window motors in each of the doors
- 30A Fuse
- Body control module (BCM)

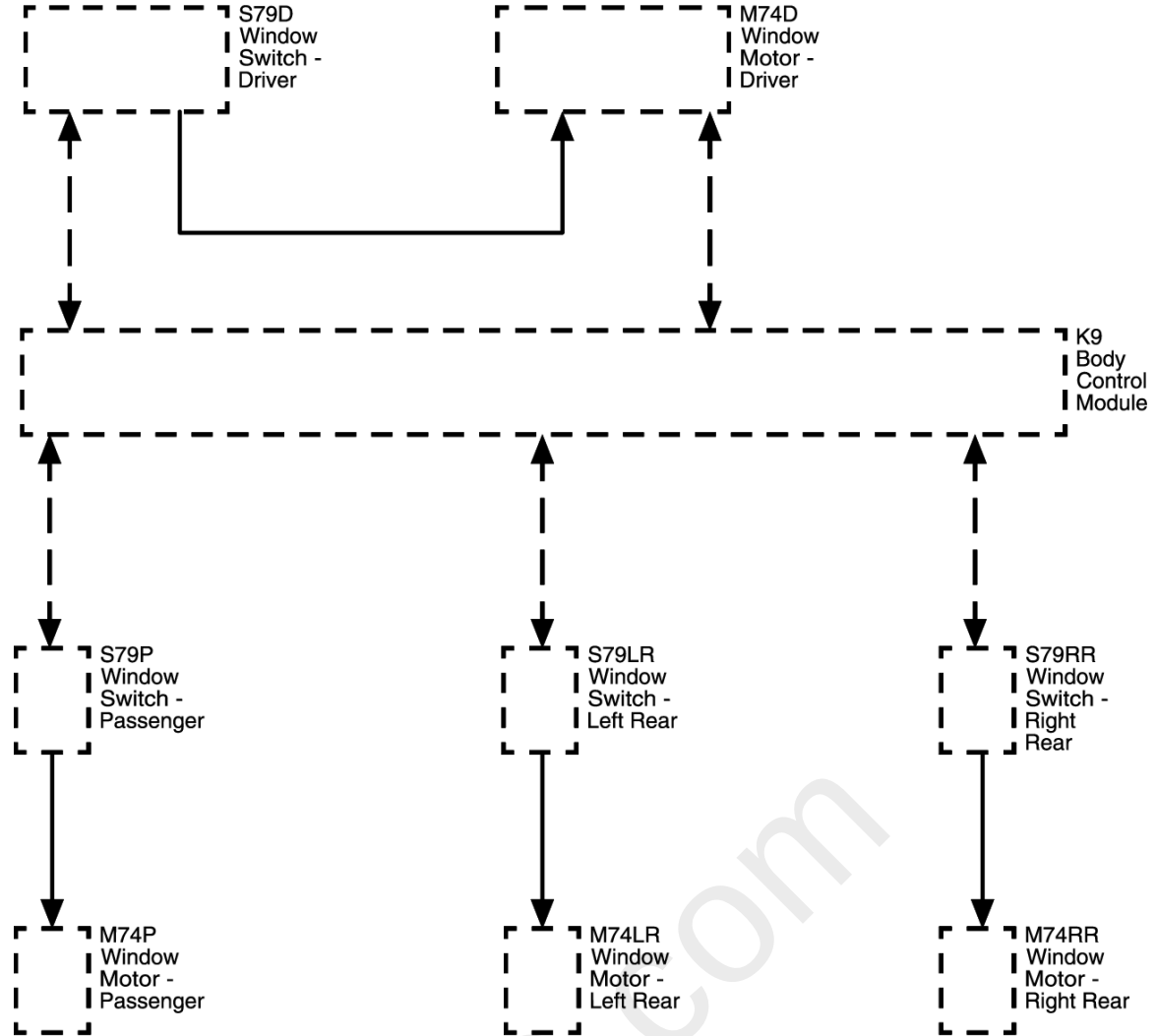


Fig. 59: Power Window System Block Diagram
Courtesy of GENERAL MOTORS COMPANY

Driver Express Up and Express Down Power Window Motor

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

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

Passenger, Left Rear and Right Rear Express Down Window Motors

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

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

Lockout Switch Feature

The driver 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, the rear window switches will then ignore all functions when a passenger uses the rear window switch. The rear window motor commands will still function normally when the driver uses the appropriate 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
- Underhood fuse block (Contains rear defogger PCB relay)
- Rear defogger grid
- Driver Outside Rearview Mirror
- Passenger Outside Rearview Mirror
- 30A fuse

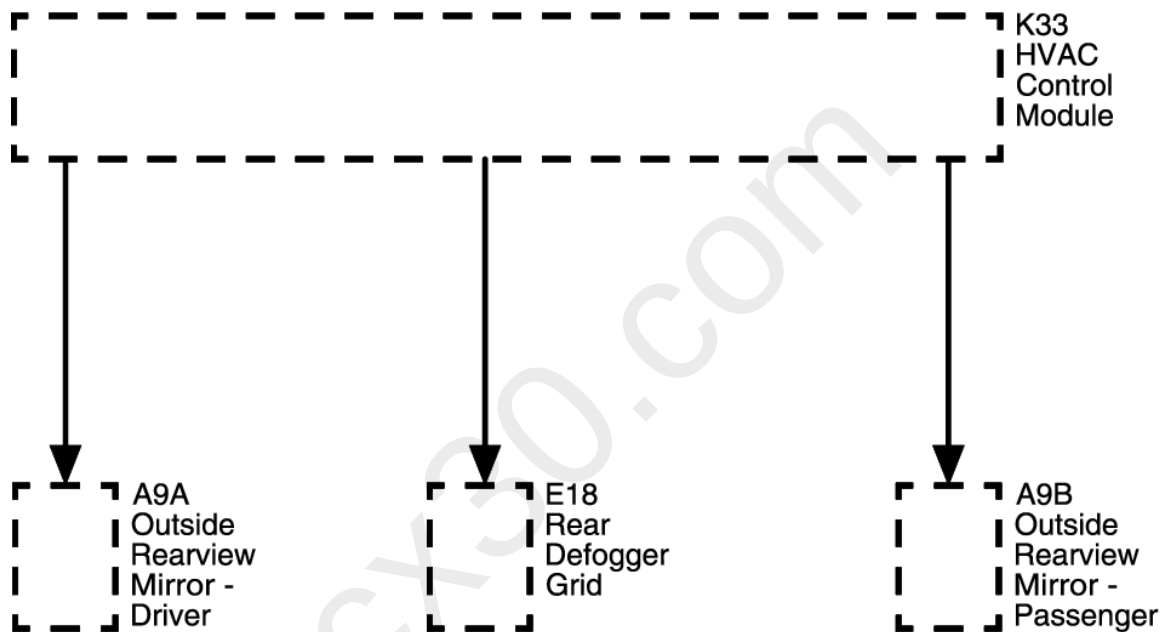


Fig. 60: Rear Window Defogger System Block Diagram

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)

Heated Mirrors

The heated mirrors are also controlled through the rear defogger relay. Whenever the rear window defogger is turned on battery voltage is supplied to the mirror heater elements through the left and right mirror heater element control circuits.

STATIONARY WINDOW DESCRIPTION

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

URETHANE ADHESIVE DESCRIPTION

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

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

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

Always follow the system manufacturer's instructions for application, handling, and curing.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

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

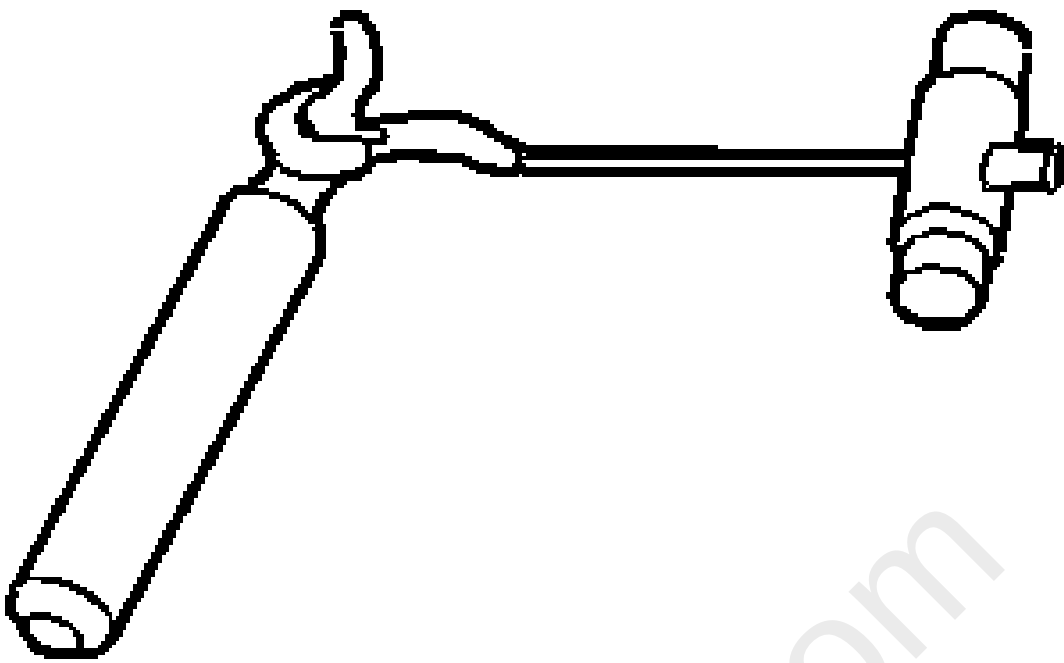
Illustration	Tool Number/Description
 A line drawing of a mechanical tool, possibly a torque wrench or a similar device. It features a long, cylindrical handle on the left, connected to a head assembly on the right. The head assembly includes a horizontal shaft and a vertical component with a small, rectangular protrusion. The drawing is simple, using black outlines on a white background.	

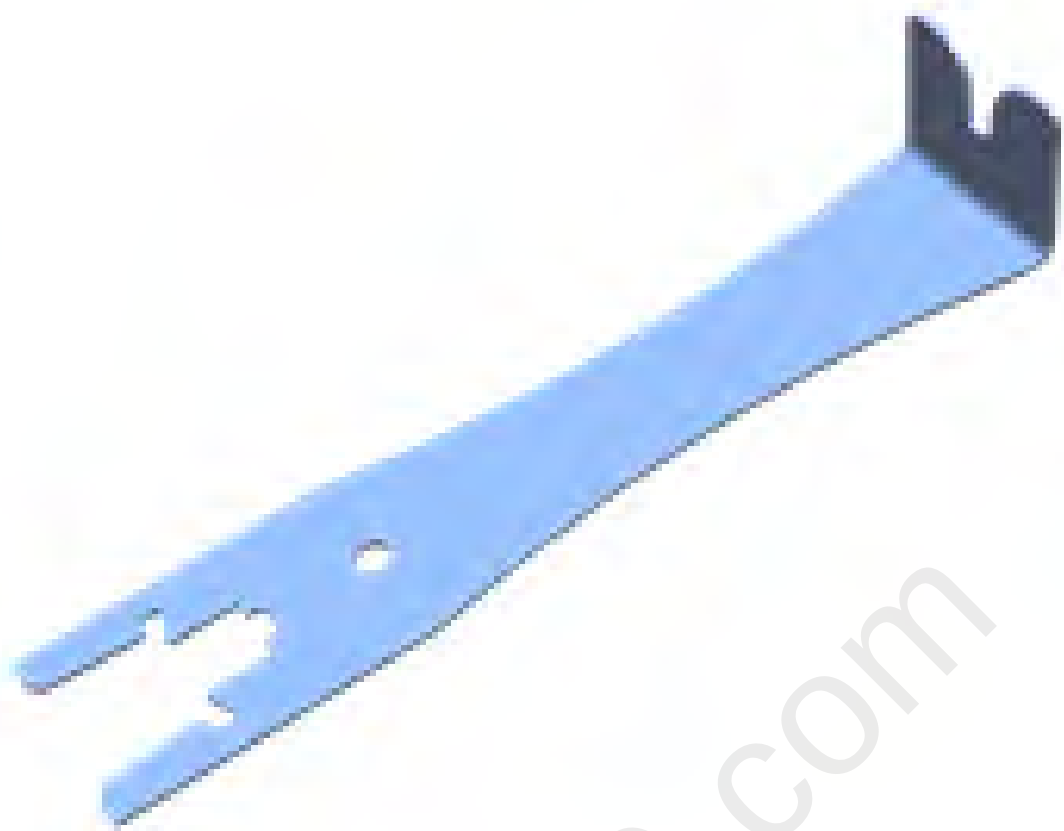
Illustration	Tool Number/Description
	BO-38778-2 J-38778-2 Door Trim Pad Clip Remover
	BO-39032 J-39032 Stationary Glass Removal Tool

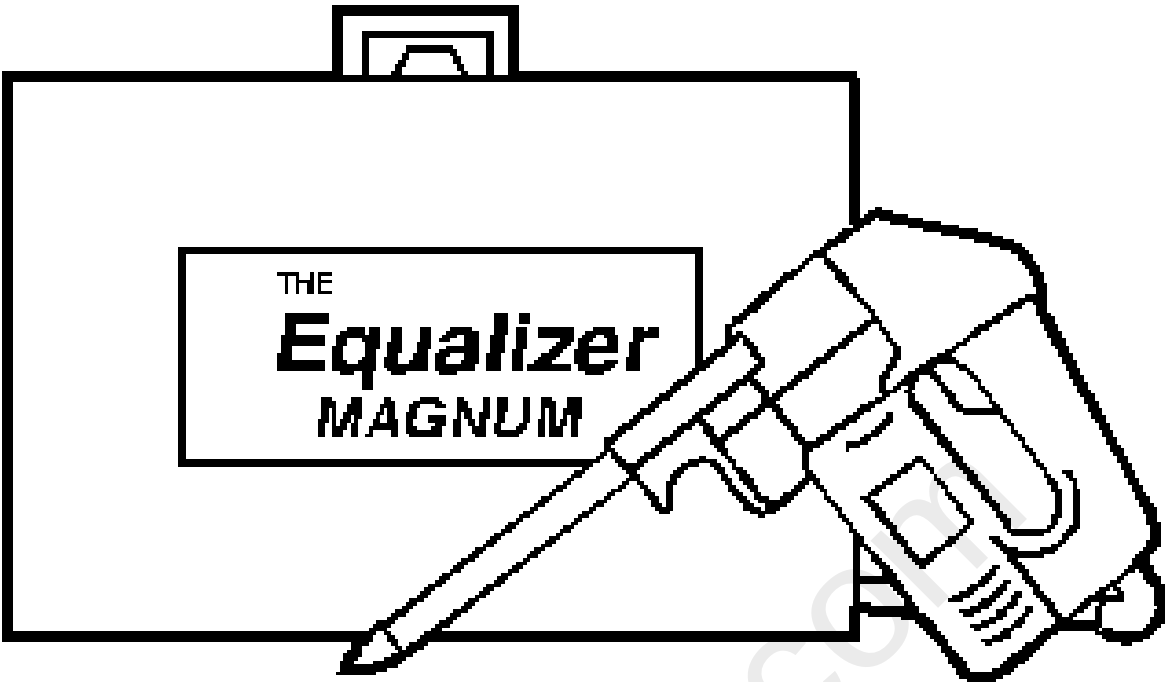
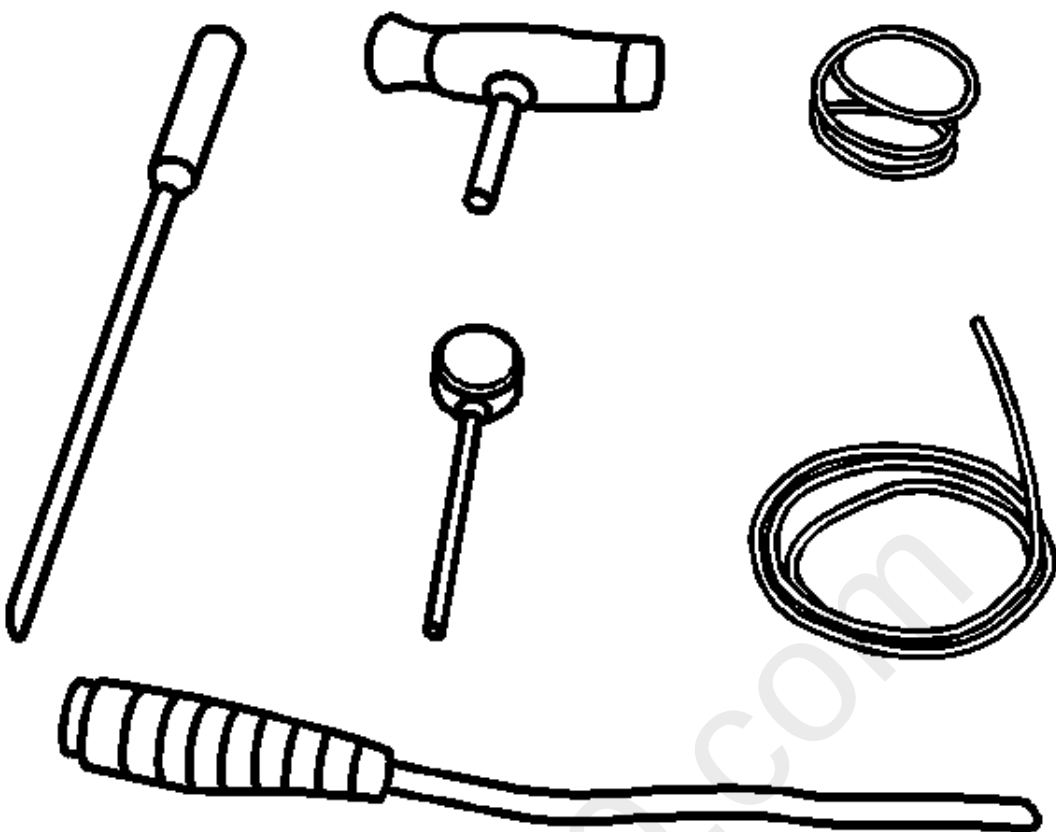
Illustration	Tool Number/Description
 A line drawing illustration of a hand holding a Magnum Equalizer tool. The tool is a long, thin, tapered device with a handle that has a trigger and a button. The hand is shown in profile, gripping the handle. To the left of the hand is a rectangular box with a label that reads "THE <i>Equalizer</i> MAGNUM". The box has a small handle on top. The entire illustration is enclosed in a rectangular border.	

Illustration	Tool Number/Description
	BO-39040 J-39040 Quarter Window Remover

Illustration	Tool Number/Description
 The illustration shows five tools: a long thin rod with a small ring at one end; a T-shaped handle with a small ring at the end of the stem; a small ring; a coiled wire; and a long curved rod with a ribbed handle.	BO-0201964 S-0201964 Bonded - Glass Removing Device Brazil - Use local equivalent