

2013 ACCESSORIES & EQUIPMENT

Fixed and Moveable Windows - Cruze

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Front Side Door Window Regulator Bolt	9 N.m	80 lb in
Front Side Door Window Regulator Motor Bolt	6 N.m	53 lb in
Front Side Door Window Regulator Sash Nut	9 N.m	80 lb in
Rear Side Door Stationary Window Divider Channel Belt Support Bolt	8 N.m	71 lb in
Rear Side Door Window Regulator Bolt	9 N.m	80 lb in
Rear Side Door Window Regulator Motor Bolt	6 N.m	53 lb in
Rear Side Door Window Regulator Sash Nut	9 N.m	80 lb in
Rear Side Door Stationary Window Bolt	8 N.m	71 lb in

SCHEMATIC WIRING DIAGRAMS

MOVEABLE WINDOW WIRING SCHEMATICS

Driver Door (AXG) Wiring Schematics

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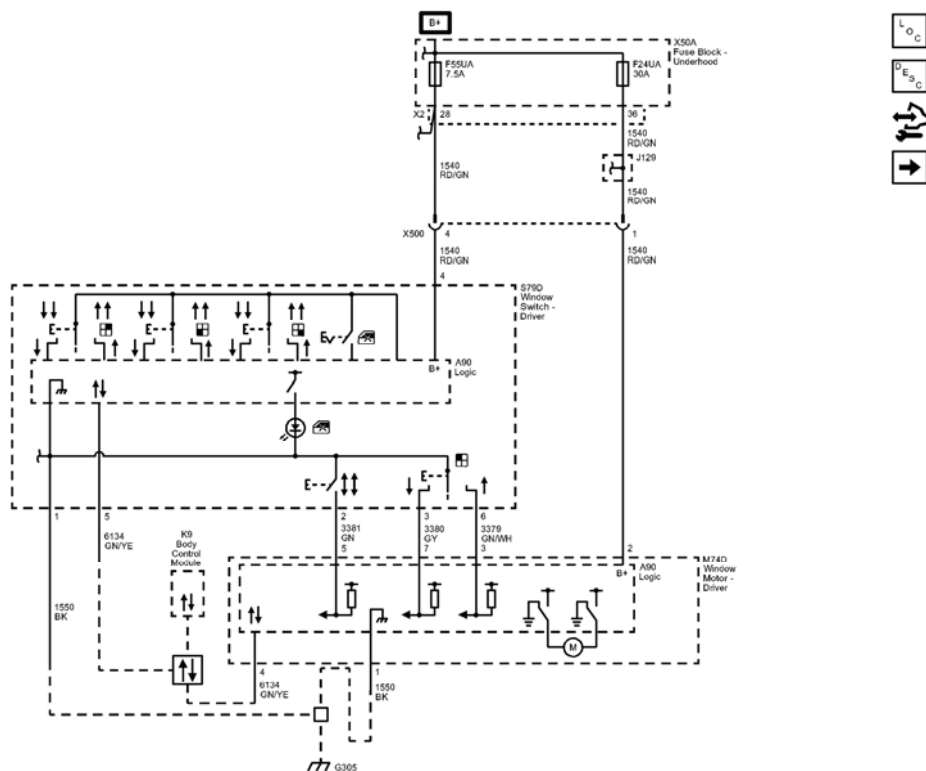


Fig. 1: Driver Door (AXG) Wiring Schematics
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1540	Battery Positive Voltage
1540 RD/GN	1540 RD/GN
CAV_4	4
CAV_28	28
CONN_X2	X2
1540_RD/GN	1540 RD/GN
1540_RD/GN	1540 RD/GN
CAV_2	2
CAV_36	36
1540_RD/GN	1540 RD/GN
1540_RD/GN	1540 RD/GN
1550	Ground
1550_BK	1550 BK
CAV_1	1
1550_BK	1550 BK
CAV_1	1
	Linear Interconnect Network

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6134	Bus 3
6134_GN/YE	6134 GN/YE
CAV_4	4
6134_GN/YE	6134 GN/YE
CAV_5	5
Data_Communication_Schematics_REF	Data Communication Schematics
3381	Power Window Switch Driver Express Signal
3381_GN	3381 GN
CAV_5	5
CAV_2	2
3380	Power Window Switch Driver Down Signal
3380_GY	3380 GY
CAV_7	7
CAV_3	3
3379	Power Window Switch Driver Up Signal
3379_GN/WH	3379 GN/WH
CAV_3	3
CAV_6	6
X500	X500
CAV_4	4
CAV_1	1
F24UA	F24UA 30A
G305	G305
F55UA	F55UA 7.5A
X500	X500
A90	Logic
S79D	
M74D	
A90	Logic
X50A	
K9	

Driver Door (AEC) Wiring Schematics

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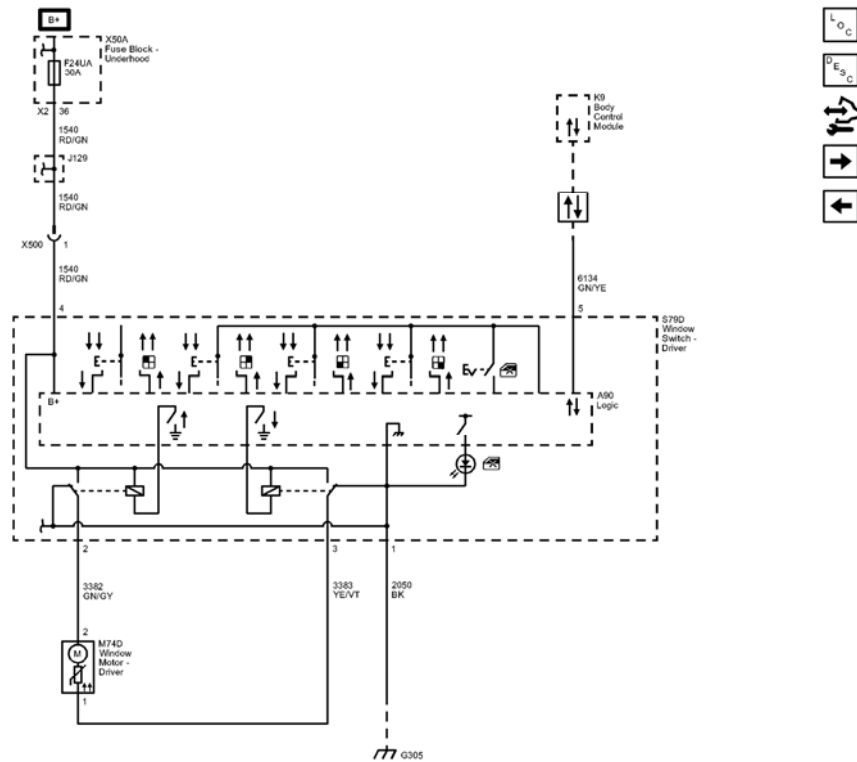


Fig. 2: Driver Door (AEC) Wiring Schematics
 Courtesy of GENERAL MOTORS COMPANY

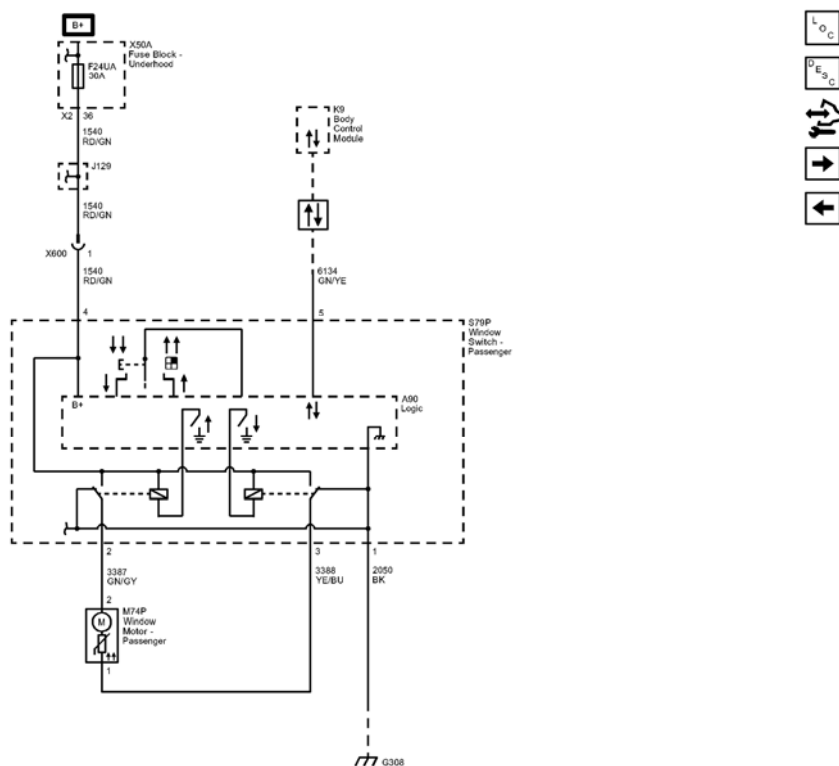
Callout	Component Name
1540	Battery Positive Voltage
CAV 4	4
CAV_36	36
CONN_X2	X2
1540_RD/GN	1540 RD/GN
1540_RD/GN	1540 RD/GN
1540_RD/GN	1540 RD/GN
CAV_1	1
6134	Linear Interconnect Network Bus 3
6134_GN/YE	6134 GN/YE
CAV 5	5
Data_Communication_Schematics_REF	Data Communication Schematics
3382	Power Window Motor Driver Up Control
3382_GN/GY	3382 GN/GY

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CAV_2	2
CAV_2	2
3383	Power Window Motor Driver Down Control
3383_YE/VT	3383 YE/VT
CAV_3	3
CAV_1	1
2050	Ground
2050_BK	2050 BK
CAV_1	1
G305	G305
F24UA	F24UA 30A
X500	X500
A90	Logic
S79D	
X50A	
K9	
M74D	

Passenger Door Wiring Schematics



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Fig. 3: Passenger Door Wiring Schematics
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1540	Battery Positive Voltage
1540_RD/GN	1540 RD/GN
CAV_4	4
CAV_36	36
CONN_X2	X2
CAV_5	5
1540_RD/GN	1540 RD/GN
1540_RD/GN	1540 RD/GN
CAV_1	1
3387	Power Window Motor Co-Driver Up Control
3387_GN/GY	3387 GN/GY
CAV_2	2
CAV_2	2
3388	Power Window Motor Co-Driver Down Control
3388_YE/BU	3388 YE/BU
CAV_3	3
CAV_1	1
2050	Ground
2050_BK	2050 BK
CAV_1	1
6134	Linear Interconnect Network Bus 3
Data_Communication_Schematics_REF	Data Communication Schematics
6134_GN/YE	6134 GN/YE
G308	G308
F24UA	F24UA 30A
X600	X600
A90	Logic
X50A	
K9	
S79P	
M74P	

Rear Doors Wiring Schematics

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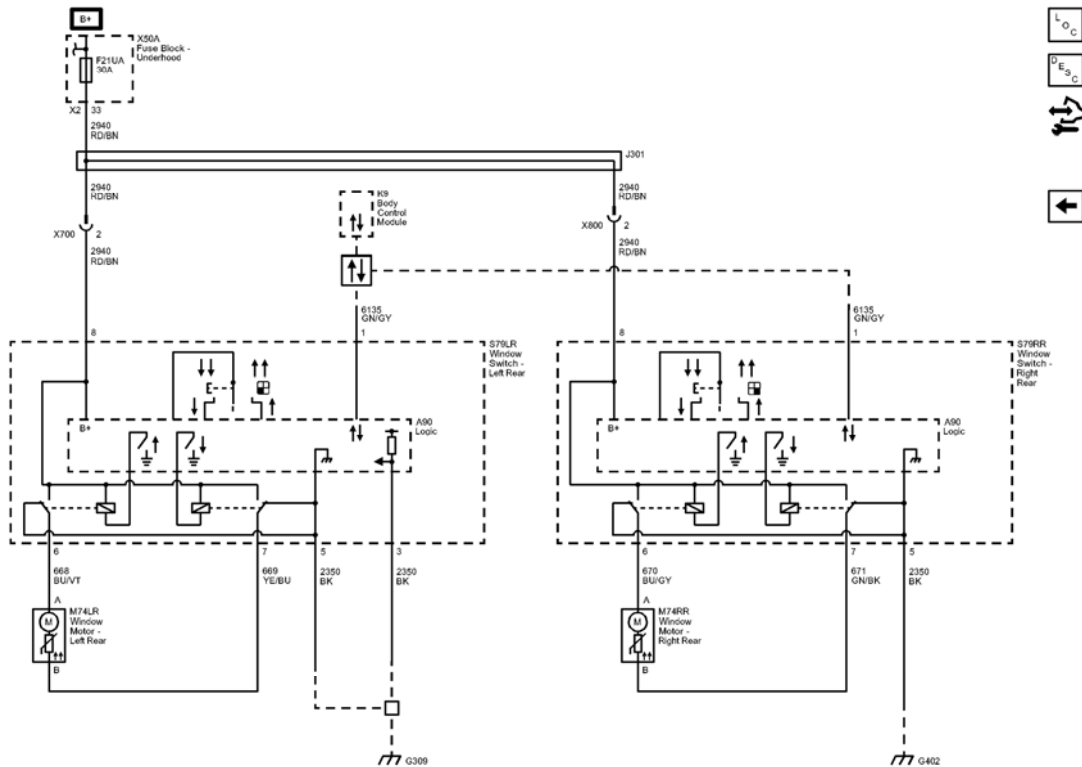


Fig. 4: Rear Doors Wiring Schematics
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
2940	Battery Positive Voltage
2940 RD/BN	2940 RD/BN
CAV_8	8
CAV_33	33
CONN_X2	X2
2940_RD/BN	2940 RD/BN
2940_RD/BN	2940 RD/BN
2940_RD/BN	2940 RD/BN
CAV_8	8
2940_RD/BN	2940 RD/BN
CAV_2	2
CAV_2	2
6135	Linear Interconnect Network Bus 4
6135_GN/GY	6135 GN/GY
CAV_1	1
6135_GN/GY	6135 GN/GY

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CAV_1	1
Data_Communication_Schematics_REF	Data Communication Schematics
668	Power Window Motor Left Rear Up Control
668_BU/VT	668 BU/VT
CAV_A	A
CAV_6	6
669	Power Window Motor Left Rear Down Control
669_YE/BU	669 YE/BU
CAV_7	7
CAV_B	B
2350	Ground
2350_BK	2350 BK
CAV_3	3
2350_BK	2350 BK
CAV_5	5
670	Power Window Motor Right Rear Up Control
670_BU/GY	670 BU/GY
CAV_A	A
CAV_6	6
671	Power Window Motor Right Rear Down Control
671_GN/BK	671 GN/BK
CAV_7	7
CAV_B	B
2350_BK	2350 BK
CAV_5	5
G309	G309
G402	G402
F21UA	F21UA 30A
X700	X700
X800	X800
J301	J301
A90	Logic
X50A	
K9	
S79LR	
M74LR	
A90	Logic

S79RR

M74RR

DEFOGGER WIRING SCHEMATICS

Defogger Wiring Schematics

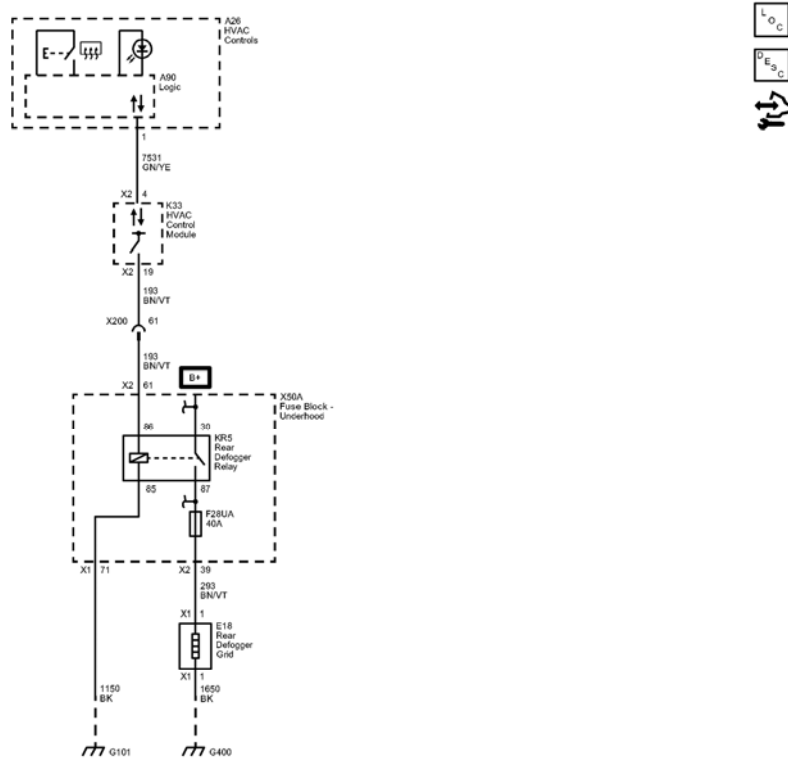


Fig. 5: Defogger Wiring Schematics
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
7531	Linear Interconnect Network Bus 9
7531_GN/YE	7531 GN/YE
CAV_4	4
CONN_X2	X2
CAV_1	1
193	Rear Defog Relay Control
CAV_61	61
CONN_X2	X2
CAV_19	19
CONN_X2	X2

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193_BN/VT	193 BN/VT
193_BN/VT	193 BN/VT
CAV_61	61
CAV_86	86
CAV_30	30
CAV_85	85
CAV_87	87
1150	Ground
1150_BK	1150 BK
CAV_71	71
CONN_X1	X1
293	Rear Defog Element Supply Voltage
293 BN/VT	293 BN/VT
CAV_1	1
CONN_X1	X1
CAV_39	39
CONN_X2	X2
1650	Ground
1650_BK	1650 BK
CAV_1	1
CONN_X1	X1
G400	G400
G101	G101
X200	X200
F28UA	F28UA 40A
E18	
A90	Logic
KR5	
X50A	
K33	
A26	

COMPONENT LOCATOR

WINDOW SYSTEMS COMPONENT VIEWS

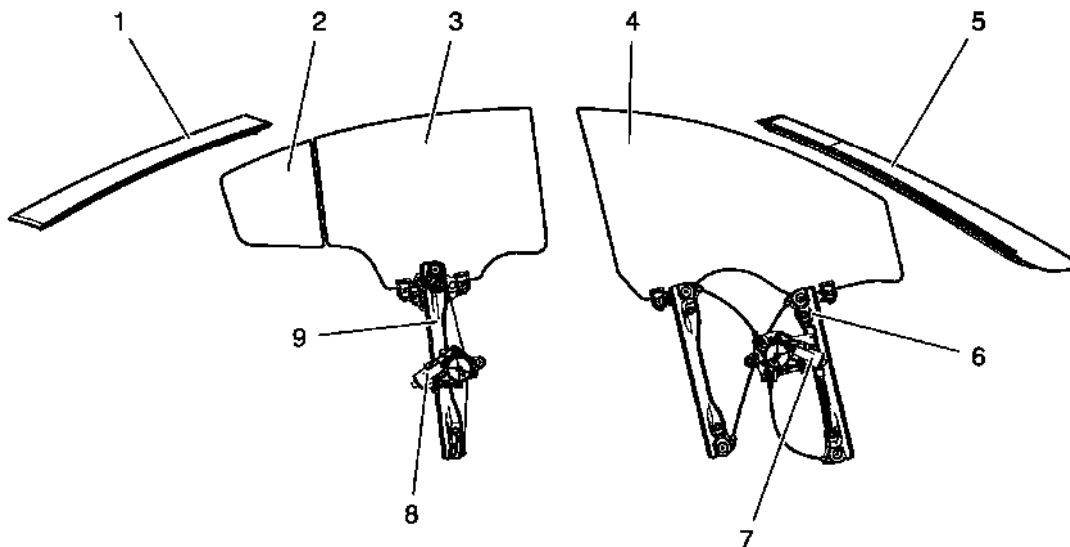


Fig. 6: Window Systems Components (4-Door Notchback 69)
Courtesy of GENERAL MOTORS COMPANY

Window Systems Component Views

Number	Description	Procedure
1	Rear Window	<u>Rear Window Replacement</u>
2	Rear Side Door Stationary Window	<u>Rear Side Door Stationary Window Replacement</u>
3	Rear Side Door Window	<u>Rear Side Door Window Replacement</u>
4	Front Side Door Window	<u>Front Side Door Window Replacement</u>
5	Windshield	<u>Windshield Replacement</u>
6	Front Side Door Window Regulator	<u>Front Side Door Window Regulator Replacement</u>
7	Front Side Door Window Regulator Motor	<u>Front Side Door Window Regulator Motor Replacement</u>
8	Rear Side Door Window Regulator Motor	<u>Rear Side Door Window Regulator Motor Replacement</u>
9	Rear Side Door Window Regulator	<u>Rear Side Door Window Regulator Replacement</u>

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

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DIAGNOSTIC CODE INDEX

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

DTC B0283

Diagnostic Instructions

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

DTC Descriptors

DTC B0283 02

Rear Defrost Circuit Short To Ground

DTC B0283 05

Rear Defrost Circuit Short To Battery or Open

Diagnostic Fault Information

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

Circuit/System Description

When the HVAC control module receives a rear window defog request from the HVAC control faceplate, the HVAC control module will supply voltage to the relay coil. Battery positive voltage is supplied at all times to the relay switched input and the relay coil is always grounded. This allows battery positive voltage from the

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relay switched input to flow through the switch contacts and out the relay switched output to the rear window defogger grid.

Conditions for Running the DTC

Battery voltage must be between 9-16 V.

Conditions for Setting the DTC

B0283 02

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

B0283 05

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

Action Taken When the DTC Sets

B0283 02

The rear window defogger will be inoperative.

B0283 05

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

Conditions for Clearing the DTC

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

Reference Information

Schematic Reference

Defogger Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Rear Window Defogger Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

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

Refer to Circuit/System Testing below

- **If the rear window defogger turns ON and OFF**
3. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the KR5 rear defogger relay. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 ohms between the ground circuit terminal 2 and ground.
 - **If 10 ohms or greater**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the ground circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, repair the open/high resistance in the ground connection.
 - **If less than 10 ohms**
3. Connect a test lamp between the control circuit terminal 1 and the ground circuit terminal 2, engine running.
4. Verify the test lamp turns ON and OFF when commanding the Rear Defogger On and Off with a scan tool.
 - **If the test lamp is always OFF**
 1. Ignition OFF, disconnect the harness connector at the K33 HVAC control module.
 2. Test for infinite resistance between the control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.

- If infinite resistance
- 3. Test for less than 2 ohms in the control circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the K33 HVAC control module.
- **If the test lamp is always ON**
- 1. Ignition OFF, disconnect the harness connector at the K33 HVAC control module, engine running.
- 2. Test for less than 1 V between the control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the K33 HVAC control module.
- **If the test lamp turns ON and OFF**
- 5. Test or replace the KR5 rear defogger relay.

Component Testing

Relay Test

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

Replace the KR5 rear defogger relay.

- **If between 60-180 ohms**
- 3. Test for infinite resistance between the terminals listed below:
 - 3 and 1
 - 3 and 5
 - 3 and 2
 - 2 and 5
- **If less than infinite resistance**

Replace the KR5 rear defogger relay.

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

Replace the KR5 rear defogger relay.

- **If less than 2 ohms**

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6. All OK

Repair Instructions

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

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

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

Diagnostic Instructions

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

DTC Descriptors

DTC B316B

Driver Window Switch

DTC B317A

Passenger Window Switch

DTC B318A

Left Rear Window Switch

DTC B319A

Right Rear Window Switch

For symptom byte information refer to: **Symptom Byte List**

Circuit/System Description

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

Conditions for Running the DTC

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Ignition ON.

Conditions for Setting the DTC

B316B 00

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

B316B 02

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

B316B 39

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

B317A 02

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

B318A 02

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

B319A 02

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

Action Taken When the DTC Sets

The affected power window will malfunction.

Conditions for Clearing the DTC

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

- The DTC will be current for as long as the fault is present.
- The DTC will change from current to history when the fault is no longer present.
- A history DTC will clear after 100 consecutive ignition cycles if the condition for the malfunction is no longer present.

B316B 39

If the DTC is current, the driver window switch must be replaced before the DTC can be cleared.

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Windows Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

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

Window Switch - Right Rear.

- If the right rear window does not move, refer to Circuit/System Testing below.
- If the right rear window moves

7. All OK.

Circuit/System Testing

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

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

Replace the S79LR Window Switch - Left Rear.
 - **If the parameters changes**
4. Verify the scan tool Passenger Window Switch at Door parameter changes between Inactive and Active when pressing and pulling the S79P Window Switch - Passenger.
 - **If the parameters do not change**

Replace the S79P Window Switch - Passenger.
 - **If the parameters changes**
5. Verify the scan tool Right Rear Window Switch at Door parameter changes between Inactive and Active when pressing and pulling the S79RR Window Switch - Right Rear.
 - **If the parameters do not change**

Replace the S79RR Window Switch - Right Rear.
 - **If the parameters changes**
6. All OK.

Repair Instructions

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

- **Front Side Door Window Switch Replacement - Right Side**
- **Front Side Door Window Switch Replacement - Left Side**
- **Rear Side Door Window Switch Replacement**

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

Diagnostic Instructions

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

DTC Descriptors

DTC B316B

Driver Window Switch

DTC B317A

Passenger Window Switch

DTC B318A

Left Rear Window Switch

DTC B319A

Right Rear Window Switch

For symptom byte information refer to: **Symptom Byte List**

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Window Motor Down Control	B316B 02	1	1	-
Driver Window Motor Express Control	B316B 02	1	1	-
Driver Window Motor Up Control	B316B 02	1	1	-
1. Driver Window Malfunction				

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Circuit/System Description

The driver window motor supplies 12V signal circuits to the driver window switch, when a window switch has been activated, a switch closes providing a ground to the appropriate signal circuit causing the voltage to drop to 0V. The driver window motor will detect the voltage drop in the signal circuit and will command the window to move in the desired direction.

The driver window master control switch also contains control switches for the passenger, left rear and right rear window functions. When a window switch is pressed, a serial data message is sent to the body control module (BCM). The BCM examines the request and checks for messages from other power window motors that may prohibit window movement. If no prohibitive messages have been received, the BCM will send a serial data message to the appropriate passenger or rear window switch which will perform the command as requested.

Conditions for Running the DTC

Battery voltage must be between 9-16 V.

Conditions for Setting the DTC

B316B 00

The BCM has detected a control switch on the driver window master switch has been active for greater than 60 seconds.

B316B 02

The driver window motor has detected the driver window master switch is active for greater than 60 seconds.

B316B 39

The driver window motor has detected an internal failure within the driver window switch

B317A 02

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

B317A 39

The BCM has detected an internal failure within the passenger window switch

B318A 02

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

B318A 39

The BCM has detected an internal failure within the left rear window switch

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B319A 02

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

B319A 39

The BCM has detected an internal failure within the right rear window switch

Action Taken When the DTC Sets

The affected power window will malfunction.

Conditions for Clearing the DTC

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

- The DTC will be current for as long as the fault is present.
- The DTC will change from current to history when the fault is no longer present.
- A history DTC will clear after 100 consecutive ignition cycles if the condition for the malfunction is no longer present.

B316B 39, B317A 39, B318A 39, B319A 39

If the DTC is current, the affected window switch must be replaced before the DTC can be cleared.

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Windows Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the scan tool parameters listed below change when pressing and pulling the switches for the passenger, left rear and right rear window on the driver window master control;

- Left Rear Main Control Down Switch - Inactive and Active
- Left Rear Main Control Express Switch - Inactive and Active
- Left Rear Main Control Up Switch - Inactive and Active
- Right Rear Main Control Down Switch - Inactive and Active
- Right Rear Main Control Express Switch - Inactive and Active
- Right Rear Main Control Up Switch - Inactive and Active
- Front Passenger Main Control Down Switch - Inactive and Active
- Front Passenger Main Control Express Switch - Inactive and Active
- Front Passenger Main Control Up Switch - Inactive and Active
- **If any parameter does not change**

Replace the S79D Window Switch-Driver.

- **If the parameters change**

3. Verify the scan tool parameters listed below change when pressing and pulling the S79P Window Switch-Passenger, the S79LR Window Switch-Left Rear and the S79RR Window Switch-Right Rear.

- Passenger Window Switch at Door - Inactive, Up, Down, Express Down
- Left Rear Window Switch at Door - Inactive, Up, Down, Express Down
- Right Rear Window Switch at Door - Inactive, Up, Down, Express Down
- **If any parameter does not change**

Test or replace the appropriate passenger or rear S79 Window Switch

- **If all the parameters change**

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

- Driver Window Main Control Down Switch - Inactive and Active
- Driver Window Main Control Up Switch - Inactive and Active
- Driver Window Main Control Express Switch - Inactive and Active
- **If any parameter does not change**

Refer to Circuit/System Testing below.

- **If all the parameters change**

5. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S79D Window Switch-Driver. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 ohms between the ground circuit terminal 1 and ground.
 - **If 10 ohms or greater**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the ground circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, repair the open/high resistance in the ground connection.
 - **If less than 10 ohms**
3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 4 and ground.
 - **If the test lamp does not illuminate and the circuit fuse is good**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the B+ circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, verify the fuse is not open and there is voltage at the fuse.
 - **If the test lamp does not illuminate and the circuit fuse is open**
 1. Ignition OFF.
 2. Test for infinite resistance between the B+ circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the S79D Window Switch-Driver.
 - **If the test lamp illuminates**
5. Verify the scan tool Driver Window Main Control Down Switch parameter is Inactive.
 - **If not Inactive**
 1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
 2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 3 and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the M74D Window Motor-Driver.
 - **If Inactive**
6. Install a 3 A fused jumper wire between the signal circuit terminal 3 and the ground circuit terminal 1.
7. Verify the scan tool Driver Window Main Control Down Switch parameter is Active
 - **If not Active**
 1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D

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Window Motor-Driver, ignition ON.

2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit terminal 3 and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V
3. Test for less than 2 ohms in the signal circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the M74D Window Motor-Driver.
- **If Active**
8. Verify the scan tool Driver Window Main Control Up Switch parameter is Inactive.
 - **If not Inactive**
 1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
 2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 6 and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the M74D Window Motor-Driver.
 - **If Inactive**
9. Install a 3 A fused jumper wire between the signal circuit terminal 6 and the ground circuit terminal 1.
10. Verify the scan tool Driver Window Main Control Up Switch parameter is Active
 - **If not Active**
 1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, ignition ON.
 2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit 6 and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V
 3. Test for less than 2 ohms in the signal circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the M74D Window Motor-Driver.
 - **If Active**
11. Verify the scan tool Driver Window Main Control Express Switch parameter is Inactive.
 - **If not Inactive**
 1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
 2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 2 and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the M74D Window Motor-Driver.
 - **If Inactive**
12. Install a 3 A fused jumper wire between the signal circuit terminal 2 and the ground circuit terminal 1.
13. Verify the scan tool Driver Window Main Control Express Switch parameter is Active

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- **If not Active**

1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, ignition ON.
2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit 2 and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V
3. Test for less than 2 ohms in the signal circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the M74D Window Motor-Driver.

- **If Active**

14. Test or replace the S79D Window Switch-Driver.

Repair Instructions

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

- **Front Side Door Window Switch Replacement - Right Side**
- **Front Side Door Window Switch Replacement - Left Side**
- **Rear Side Door Window Regulator Motor Replacement**
- **Front Side Door Window Regulator Motor Replacement**

DTC B3205

Diagnostic Instructions

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

DTC Descriptors

DTC B3205

Driver Window Motor

For symptom byte information refer to: **Symptom Byte List**

Circuit/System Description

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

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Conditions for Running the DTC

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

Conditions for Setting the DTC

B3205 00

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

B3205 39

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

B3205 42

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

B3205 4B

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

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

Action Taken When the DTC Sets

The driver power window will malfunction.

Conditions for Clearing the DTC

B3205 00

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

B3205 39

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

B3205 42

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

B3205 4B

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

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Windows Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

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

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

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

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

4. All OK.

Repair Instructions

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

Front Side Door Window Regulator Motor Replacement

SYMPTOMS - FIXED AND MOVEABLE WINDOWS

Important Preliminary Checks Before Starting:

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

Visual/Physical Inspection

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

Intermittent

NOTE:

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

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

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

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

Symptom List

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

- **Rear Window Defogger Malfunction**
- **Power Windows Malfunction (AEC), Power Windows Malfunction (AXG)**

REAR WINDOW DEFOGGER MALFUNCTION

Diagnostic Instructions

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

Diagnostic Fault Information

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

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Circuit/System Description

When the HVAC Control Module receives a rear window defog request from the HVAC control faceplate, the HVAC Control Module will supply voltage to the relay coil. Battery positive voltage is supplied at all times to the relay switched input and the relay coil is always grounded. This allows battery positive voltage from the relay switched input to flow through the switch contacts and out the relay switched output to the rear window defogger grid.

Diagnostic Aids

The rear window defogger indicator will still function when the rear defogger switch is pressed, but if the Remote Start Enable ambient temperature is greater than 5°C (40°F) may cause the rear window defogger grid not to function:

Reference Information

Schematic Reference

Defogger Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Rear Window Defogger Description and Operation

Electrical Information Reference

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

Circuit/System Verification

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

Replace the A26 HVAC controls.
 - **If the parameter changes between On and Off**
3. Verify the E18 Rear Defogger Grid turns ON and OFF when commanding the Rear Defogger On and Off

with a scan tool.

- **If the E18 Rear Defogger Grid does not turn ON and OFF**

Refer to Circuit/System Testing

- **If the E18 Rear Defogger Grid turns ON and OFF**

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

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

Replace the A26 HVAC controls.

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

5. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the KR5 Rear Defogger Relay. It may take up to 2 minutes for all vehicle systems to power down.

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

- **If 10 ohms or greater**

1. Ignition OFF.

2. Test for less than 2 ohms in the ground circuit end to end.

- If 2 ohms or greater, repair the open/high resistance in the circuit.

- If less than 2 ohms, repair the open/high resistance in the ground connection.

- **If less than 10 ohms**

3. Connect a test lamp between the control circuit terminal 1 and the ground circuit terminal 2, engine running.

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

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

1. Ignition OFF, disconnect the harness connector at the K33 HVAC Control Module.

2. Test for infinite resistance between the control circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.

- If infinite resistance

3. Test for less than 2 ohms in the control circuit end to end.

- If 2 ohms or greater, repair the open/high resistance in the circuit.

- If less than 2 ohms, replace the K33 HVAC Control Module.

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

1. Ignition OFF, disconnect the harness connector at the K33 HVAC Control Module, ignition ON.

2. Test for less than 1 V between the control circuit and ground.

- If 1 V or greater, repair the short to voltage on the circuit.

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- If less than 1 V, replace the K33 HVAC Control Module.
- **If the test lamp turns ON and OFF**
- 5. Verify that a test lamp does not illuminate between the control circuit terminal 5 and ground.
 - **If the test lamp illuminates**

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

Component Testing

Relay Test

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

Replace the KR5 Rear Defogger Relay.

- **If between 60-180 ohms**

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

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

- **If less than infinite resistance**

Replace the KR5 Rear Defogger Relay.

- **If infinite resistance**

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

- **If 2 ohms or greater**

Replace the KR5 Rear Defogger Relay.

- **If less than 2 ohms**

6. All OK

Rear Defogger Grid Test

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

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

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

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

Replace the rear window

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

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

Replace the rear window

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

3. All OK

Repair Instructions

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

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

POWER WINDOWS MALFUNCTION (AEC)

Diagnostic Instructions

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Window Switch B+	U1538 00	U1538 00	-	-
Driver Window Switch Serial Data	U1534 00, U1538 00, U153A 00	U1538 00	U1538 00	-
Driver Window Switch Ground	-	U1538 00	-	-
Driver Window Motor Control	1	1	1	-
Passenger Window Switch B+	U153A 00	U153A 00	-	-
Passenger Window Switch Serial Data	U1534 00, U1538 00, U153A 00	U153A 00	U153A 00	-
Passenger Window Switch Ground	-	U153A 00	-	-
Passenger Window Motor Control	2	2	2	-
Left Rear Window Switch B+	U1534 00	U1534 00	-	-
Left Rear Window Switch	U1534 00,	U1534 00	U1534 00	-

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Serial Data	U154A 00			
Left Rear Window Switch Ground	-	U1534 00	-	-
Left Rear Window Motor Control	3	3	3	-
Right Rear Window Switch B+	U154A 00	U154A 00	-	-
Right Rear Window Switch Serial Data	U154A 00, U1548 00	U154A 00	U154A 00	-
Right Rear Window Switch Ground	-	U154A 00	-	-
Right Rear Window Motor Control	4	4	4	-
1. Driver Window Motor Inoperative 2. Passenger Window Motor Inoperative 3. Left Rear Window Motor Inoperative 4. Right Rear Window Motor Inoperative				

Circuit/System Description

When the ignition switch is in the RUN or ACCY position, or retained accessory power is enabled and the driver or passenger window switch or rear window switch is pressed in the down position, voltage is applied to the appropriate window motor causing that window to open. When the driver or passenger window switch is pulled in the up position, voltage is applied to the appropriate window motor in the opposite direction causing that window to close.

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

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Windows Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the driver, passenger, left rear and right rear window move while commanding the window UP and DOWN with a scan tool.
 - **If the window does not move UP and DOWN as commanded**

Refer to Circuit/System Testing below.

- **If the window moves UP and DOWN as commanded**
3. Verify the scan tool Left Rear Main Control Down Switch, Left Rear Main Control Express Switch, Left Rear Main Control Up Switch, Right Rear Main Control Down Switch, Right Rear Main Control Express Switch, Right Rear Main Control Up Switch, Front Passenger Main Control Down Switch, Front Passenger Main Control Express Switch, and the Front Passenger Main Control Up Switch parameter changes between Inactive and Active when pressing and pulling each switch on the driver window switch.
 - **If the parameters do not change**
 4. Verify the scan tool Child Security Lockout Switch parameter changes between Inactive and Active when pressing the window lockout switch.
 - **If the parameter does not change**

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

- **If the parameters change**
5. Verify the lockout indicator turns ON and OFF when commanding the Child Security Lock Indicator ON and OFF with a scan tool.
 - **If the indicator does not turn ON and OFF**

Replace the S79D window switch-driver.

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

6. Command the rear window lockout by pressing the window lockout switch on the driver window switch.
7. Verify the left rear and right rear window does not move while commanding the window UP and DOWN with the left rear window switch and right rear window switch.
 - **If a rear window moves UP and DOWN as commanded**

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

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

8. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the appropriate S79 window switch. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 ohms between the ground circuit terminal listed below and ground:
 - S79D window switch-driver - ground circuit terminal 1
 - S79P window switch-passenger - ground circuit terminal 1
 - S79LR window switch-left rear - ground circuit terminal 5
 - S79RR window switch-right rear - ground circuit terminal 5
 - **If 10 ohms or greater**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the ground circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, repair the open/high resistance in the ground connection.
 - **If less than 10 ohms**
3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal listed below and ground:
 - S79D window switch-driver - B+ circuit terminal 4
 - S79P window switch-passenger - B+ circuit terminal 4
 - S79LR window switch-left rear - B+ circuit terminal 8
 - S79RR window switch-right rear - B+ circuit terminal 8
 - **If the test lamp does not illuminate and the circuit fuse is good**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the B+ circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, verify the fuse is not open and there is voltage at the fuse.
 - **If the test lamp does not illuminate and the circuit fuse is open**
 1. Ignition OFF.
 2. Test for infinite resistance between the B+ circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance
- 3. Test for infinite resistance between the signal circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the S79 window switch
 - **If the test lamp illuminates**
- 5. Test for 5-10 V between the serial data circuit terminal listed below and ground
 - S79D window switch-driver - serial data circuit terminal 5
 - S79P window switch-passenger - serial data circuit terminal 5
 - S79LR window switch-left rear - serial data circuit terminal 1
 - S79RR window switch-right rear - serial data circuit terminal 1
 - **If less than 5 V**
 - 1. Ignition OFF, disconnect the harness connector at the K9 body control module.
 - 2. Test for infinite resistance between the serial data and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance
 - 3. Test for less than 2 ohms in the serial data circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance on the circuit.
 - If less than 2 ohms, replace the K9 body control module.
 - **If greater than 10 V**
 - 1. Ignition OFF, disconnect the harness connector at the K9 body control module, ignition ON.
 - 2. Test for less than 1 V between the serial data circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V, replace the K9 body control module
 - **If between 5-10 V**
- 6. Ignition OFF connect the harness connector at the S79 window switch and disconnect the harness connector at the M74 window motor.
- 7. Test for less than 5 ohms between the control circuit terminal 1 and ground.
 - **If 5 ohms or greater**
 - 1. Ignition OFF, disconnect the harness connector at the S79 window switch.
 - 2. Test for less than 2 ohms in the control circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the S79 window switch.
 - **If less than 5 ohms**
- 8. Test for less than 5 ohms between the control circuit terminal 2 and ground.
 - **If 5 ohms or greater**
 - 1. Ignition OFF, disconnect the harness connector at the S79 window switch.
 - 2. Test for less than 2 ohms in the control circuit end to end.

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- If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the S79 window switch.
 - **If less than 5 ohms**
9. Connect a test lamp between the control circuit terminal 1 and control circuit terminal 2, ignition ON.
 10. Verify the test lamp illuminates when commanding the UP and DOWN states with the S79 window switch.
 - **If the test lamp does not illuminate during either of the commands**
 1. Ignition OFF, disconnect the harness connector at the S79 window switch.
 2. Test for infinite resistance between each control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the S79 window switch.
 - **If the test lamp illuminates during each of the commands**
 11. Test or replace the M74 window motor.

Component Testing

Window Motor

1. Ignition OFF, disconnect the harness connector at the appropriate M74 window motor.
2. Install a 25 A fused jumper wire between one of the control terminals and 12 V. Momentarily install a jumper wire between the other control terminal and ground. Reverse the jumper wires at least two times, the M74 window motor should perform the UP and DOWN functions.
 - **If the function does not perform the UP and DOWN functions**

Replace the M74 window motor.
 - **If the function performs the UP and DOWN functions**
3. All OK

Repair Instructions

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

- **Front Side Door Window Regulator Motor Replacement**
- **Rear Side Door Window Regulator Motor Replacement**
- **Rear Side Door Window Switch Replacement**
- **Front Side Door Window Switch Replacement - Right Side**
- **Front Side Door Window Switch Replacement - Left Side**

POWER WINDOWS MALFUNCTION (AXG)

Diagnostic Instructions

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

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Window Switch B+	U1538 00	U1538 00	-	-
Driver Window Switch Serial Data	U1534 00, U1538 00, U153A 00	U1538 00	U1538 00	-
Driver Window Switch Ground	-	U1538 00	-	-
Driver Window Motor B+	U1534 00	U1534 00	-	-
Driver Window Motor Serial Data	U1534 00, U1538 00, U153A 00	U1534 00	U1534 00	-
Driver Window Motor Down Control	B316B 02	1	1	-
Driver Window Motor Express Control	B316B 02	1	1	-
Driver Window Motor Up Control	B316B 02	1	1	-
Driver Window Motor Ground	-	U1534 00	-	-
Passenger Window Switch B+	U153A 00	U153A 00	-	-
Passenger Window Switch Serial Data	U1534 00, U1538 00, U153A 00	U153A 00	U153A 00	-
Passenger Window Switch Ground	-	U153A 00	-	-
Passenger Window Motor Control	2	2	2	-
Left Rear Window Switch B+	U1534 00	U1534 00	-	-
Left Rear Window Switch Serial Data	U1534 00, U154A 00	U1534 00	U1534 00	-
Left Rear Window Switch Ground	-	U1534 00	-	-
Left Rear Window Motor Control	3	3	3	-
Right Rear Window Switch	U154A 00	U154A 00	-	-

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B+				
Right Rear Window Switch Serial Data	U154A 00, U1548 00	U154A 00	U154A 00	-
Right Rear Window Switch Ground	-	U154A 00	-	-
Right Rear Window Motor Control	4	4	4	-
1. Driver Window Malfunction 2. Passenger Window Inoperative 3. Left Rear Window Inoperative 4. Right Rear Window Inoperative				

Circuit/System Description

The driver window motor supplies 12 V signal circuits to the driver window switch, when a window switch has been activated, a switch closes providing a ground to the appropriate signal circuit causing the voltage to drop to 0 V. The driver window motor will detect the voltage drop in the signal circuit and will command the window to move in the desired direction.

The driver window master control switch also contains control switches for the passenger, left rear and right rear window functions. When a window switch is pressed, a serial data message is sent to the body control module (BCM). The BCM examines the request and checks for messages from other power window motors that may prohibit window movement. If no prohibitive messages have been received, the BCM will send a serial data message to the appropriate passenger or rear window switch which will perform the command as requested.

Diagnostic Aids

The loss of the express up and express down functions for the driver window may have occurred for the following reasons:

- The battery was disconnected
- The battery was replaced
- The door wiring harness was disconnected
- The window motor was disconnected

The driver window motor will need to be normalized in order to restore the express functions, refer to **Window Motor Programming - Express Function** for the proper procedure.

Reference Information

Schematic Reference

Moveable Window Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Windows Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the driver window functions while commanding the Driver Window Motor Up and Down with a scan tool.
 - **If the window does not move UP and DOWN as commanded**

Refer to Circuit/System Testing below- Driver Window Motor Malfunction.
 - **If the window moves UP and DOWN as commanded**
3. Verify the driver window functions while commanding the window UP, express UP, DOWN and express DOWN with the S79D Window Switch-Driver.
 - **If the driver window does not move UP or DOWN as commanded**

Refer to Circuit/System Testing below- Driver Window Switch Malfunction.
 - **If the driver window does not express UP or express DOWN**

Normalize the M74D Window Motor-Driver, refer to **Window Motor Programming - Express Function**.
 - **If after normalization, the driver window does not express UP or express DOWN**

Refer to Circuit/System Testing below- Driver Window Switch Malfunction.
 - **If the driver window moves UP, express UP, DOWN and express DOWN as commanded**
4. Verify the scan tool parameters listed below change when pressing and pulling the switches for the passenger, left rear and right rear window on the driver window master control;

- Left Rear Main Control Down Switch - Inactive and Active
- Left Rear Main Control Express Switch - Inactive and Active
- Left Rear Main Control Up Switch - Inactive and Active
- Right Rear Main Control Down Switch - Inactive and Active
- Right Rear Main Control Express Switch - Inactive and Active
- Right Rear Main Control Up Switch - Inactive and Active
- Front Passenger Main Control Down Switch - Inactive and Active
- Front Passenger Main Control Express Switch - Inactive and Active
- Front Passenger Main Control Up Switch - Inactive and Active
- **If the parameters do not change**

Refer to Circuit/System Testing below- Driver Window Switch Malfunction.

- **If the parameters changes**

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

- **If the parameters do not change**

Refer to **Power Door Child Lock Malfunction**

- **If the parameters changes**

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

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

Replace the S79D Window Switch-Driver.

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

7. Verify the passenger, left rear and right rear window functions while commanding the Passenger Window Motor, Left Rear Window Motor and Right Rear Window Motor Up and Down with a scan tool.

- **If the window does not move Up and Down as commanded**

Refer to Circuit/System Testing below- Passenger Power Window Inoperative.

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

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

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

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

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

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

10. All OK.

Circuit/System Testing

Driver Window Motor Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the M74D Window Motor-Driver. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 ohms between the ground circuit terminal 1 and ground.
 - **If 10 ohms or greater**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the ground circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, repair the open/high resistance in the ground connection.
 - **If less than 10 ohms**
3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 2 and ground.
 - **If the test lamp does not illuminate and the circuit fuse is good**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the B+ circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, verify the fuse is not open and there is voltage at the fuse.
 - **If the test lamp does not illuminate and the circuit fuse is open**
 1. Ignition OFF.
 2. Test for infinite resistance between the B+ circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the M74D Window Motor-Driver.
 - **If the test lamp illuminates**
5. Test or replace the M74D Window Motor-Driver.

Driver Window Switch Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S79D Window Switch-Driver. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 ohms between the ground circuit terminal 1 and ground.
 - **If 10 ohms or greater**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the ground circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.

- If less than 2 ohms, repair the open/high resistance in the ground connection.
 - **If less than 10 ohms**
- 3. Ignition ON.
- 4. Verify a test lamp illuminates between the B+ circuit terminal 4 and ground.
 - **If the test lamp does not illuminate and the circuit fuse is good**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the B+ circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, verify the fuse is not open and there is voltage at the fuse.
 - **If the test lamp does not illuminate and the circuit fuse is open**
 1. Ignition OFF.
 2. Test for infinite resistance between the B+ circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the S79D Window Switch-Driver.
 - **If the test lamp illuminates**
- 5. Verify the scan tool Driver Window Main Control Down Switch parameter is Inactive.
 - **If not Inactive**
 1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
 2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 3 and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the M74D Window Motor-Driver.
 - **If Inactive**
- 6. Install a 3 A fused jumper wire between the signal circuit terminal 3 and the ground circuit terminal 1.
- 7. Verify the scan tool Driver Window Main Control Down Switch parameter is Active
 - **If not Active**
 1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, Ignition ON.
 2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit terminal 3 and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V
 3. Test for less than 2 ohms in the signal circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the M74D Window Motor-Driver.
 - **If Active**
- 8. Verify the scan tool Driver Window Main Control Up Switch parameter is Inactive.
 - **If not Inactive**

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1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 6 and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the M74D Window Motor-Driver.
- **If Inactive**
9. Install a 3 A fused jumper wire between the signal circuit terminal 6 and the ground circuit terminal 1.
10. Verify the scan tool Driver Window Main Control Up Switch parameter is Active
 - **If not Active**
 1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, Ignition ON.
 2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit 6 and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V
 3. Test for less than 2 ohms in the signal circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the M74D Window Motor-Driver.
 - **If Active**
11. Verify the scan tool Driver Window Main Control Express Switch parameter is Inactive.
 - **If not Inactive**
 1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.
 2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 2 and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the M74D Window Motor-Driver.
 - **If Inactive**
12. Install a 3 A fused jumper wire between the signal circuit terminal 2 and the ground circuit terminal 1.
13. Verify the scan tool Driver Window Main Control Express Switch parameter is Active
 - **If not Active**
 1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, Ignition ON.
 2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit 2 and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V
 3. Test for less than 2 ohms in the signal circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the M74D Window Motor-Driver.
 - **If Active**

14. Test or replace the S79D Window Switch-Driver.

Passenger Power Window Inoperative

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the appropriate passenger or rear S79 Window Switch. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 ohms between the ground circuit terminal listed below and ground:
 - S79P Window Switch-Passenger - ground circuit terminal 1
 - S79LR Window Switch-Left Rear - ground circuit terminal 5
 - S79RR Window Switch-Right Rear - ground circuit terminal 5
 - **If 10 ohms or greater**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the ground circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, repair the open/high resistance in the ground connection.
 - **If less than 10 ohms**
3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal listed below and ground:
 - S79P Window Switch-Passenger - B+ circuit terminal 4
 - S79LR Window Switch-Left Rear - B+ circuit terminal 8
 - S79RR Window Switch-Right Rear - B+ circuit terminal 8
 - **If the test lamp does not illuminate and the circuit fuse is good**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the B+ circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, verify the fuse is not open and there is voltage at the fuse.
 - **If the test lamp does not illuminate and the circuit fuse is open**
 - 1. Ignition OFF.
 - 2. Test for infinite resistance between the B+ circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the S79 Window Switch
 - **If the test lamp illuminates**
5. Ignition OFF, connect the harness connector at the S79 Window Switch and disconnect the harness connector at the M74 Window Motor.
6. Test for less than 5 ohms between the control circuit terminal 1 and ground.
 - **If 5 ohms or greater**
 1. Ignition OFF, disconnect the harness connector at the S79 Window Switch.
 2. Test for less than 2 ohms in the control circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.

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- If less than 2 ohms, replace the S79 Window Switch.
- **If less than 5 ohms**
- 7. Test for less than 5 ohms between the control circuit terminal 2 and ground.
 - **If 5 ohms or greater**
 1. Ignition OFF, disconnect the harness connector at the S79 Window Switch.
 2. Test for less than 2 ohms in the control circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, replace the S79 Window Switch.
 - **If less than 5 ohms**
- 8. Connect a test lamp between the control circuit terminal 1 and control circuit terminal 2, ignition ON.
- 9. Verify the test lamp turns ON when commanding the UP and DOWN states with the S79 Window Switch.
 - **If the test lamp remains OFF during either of the commands**
 1. Ignition OFF, remove the test lamp, disconnect the harness connector at the S79 Window Switch.
 2. Test for infinite resistance between each control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the S79 Window Switch.
 - **If the test lamp turns ON during each of the commands**
- 10. Test or replace the M74 Window Motor.

Component Testing

1. Ignition OFF, disconnect the harness connector at the appropriate passenger or rear M74 Window Motor.
2. Install a 25 A fused jumper wire between one of the control terminals and 12 V. Momentarily install a jumper wire between the other control terminal and ground. Reverse the jumper wires at least two times, the M74 Window Motor should perform the UP and DOWN functions.
 - **If the function does not perform the UP and DOWN functions**

Replace the passenger or rear M74 Window Motor.
 - **If the function performs the UP and DOWN functions**
3. All OK

Repair Instructions

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

- **Front Side Door Window Regulator Motor Replacement**
- **Front Side Door Window Switch Replacement - Left Side**
- **Rear Side Door Window Regulator Motor Replacement**
- **Rear Side Door Window Switch Replacement**

- **Front Side Door Window Switch Replacement - Right Side**

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

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. Disconnect the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
2. Remove the air inlet grille. Refer to **Air Inlet Grille Panel Replacement** .
3. Remove the windshield garnish molding. Refer to **Windshield Garnish Molding Replacement** .
4. Remove the inside rearview mirror. Refer to **Inside Rearview Mirror Replacement** .

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

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

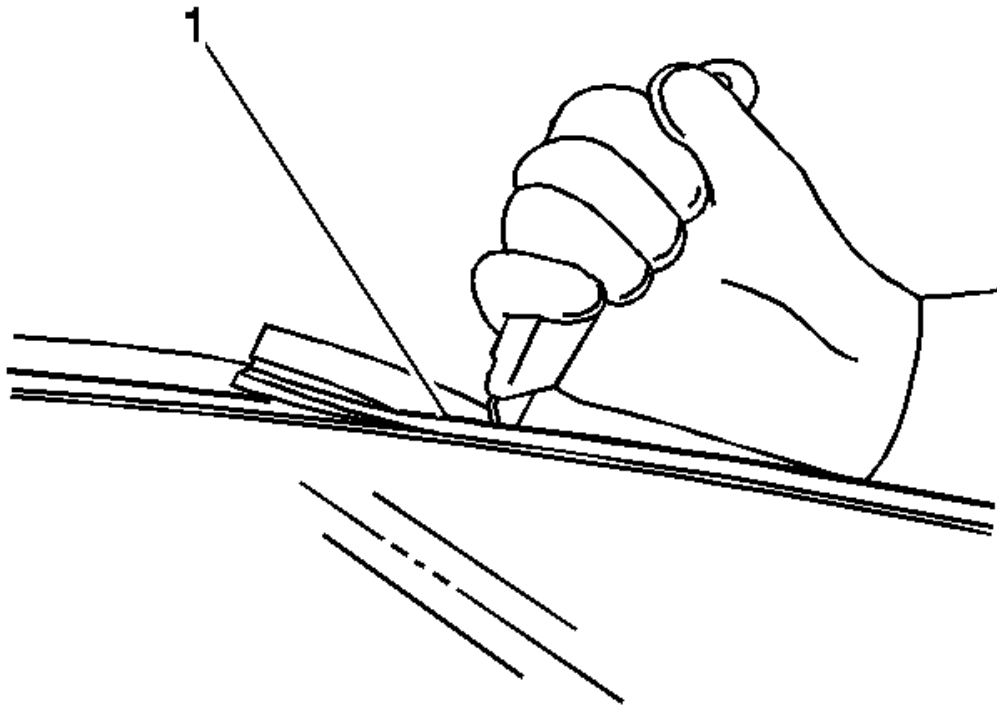


Fig. 7: Using Utility Knife To Remove Reveal Molding
Courtesy of GENERAL MOTORS COMPANY

WARNING: Refer to Glass and Sheet Metal Handling Warning .

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

6. Using the appropriate tool, carefully cut around the lace (1), start in the center working from side to side of the windshield to access the urethane adhesive bead.

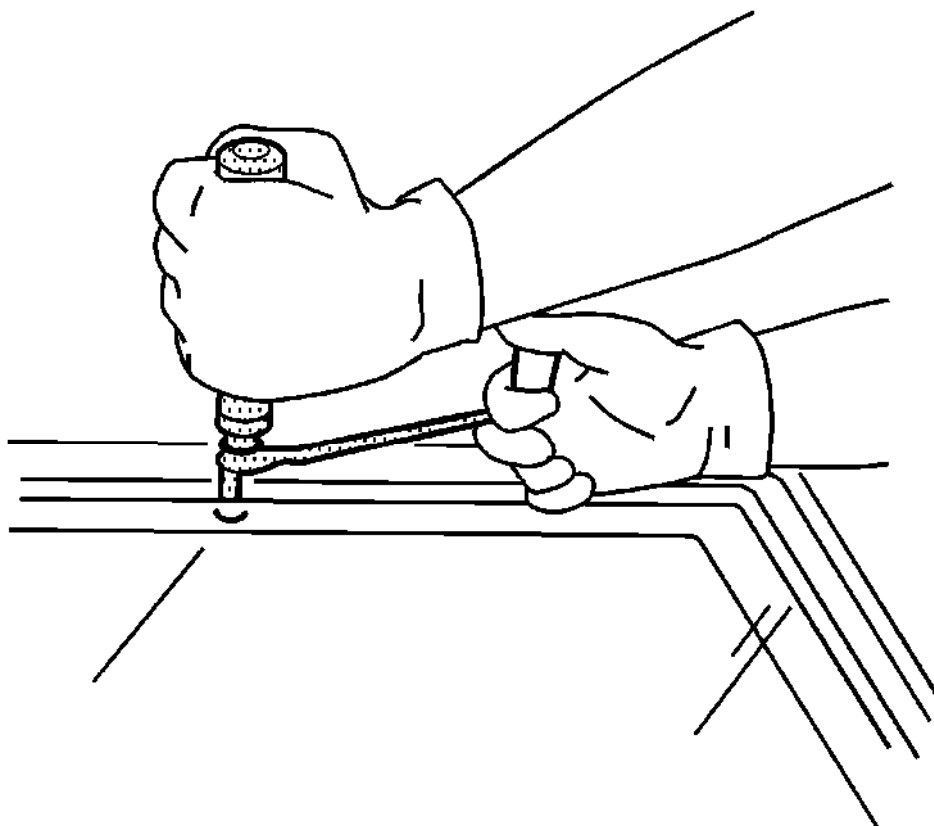


Fig. 8: Separating Urethane Adhesive From Window

Courtesy of GENERAL MOTORS COMPANY

NOTE: Use care when removing the window not to cut off the locator pins on the left and right sides. If the locating pins are cut off it will be necessary to use masking tape to tape the window in place until the auto-adhesive cures.

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.
 - **BO-24402-A** Glass Sealant Remover (Cold Knife).
 - **BO-39032** Stationary Glass Removal Tool, or equivalent in order to remove the window.

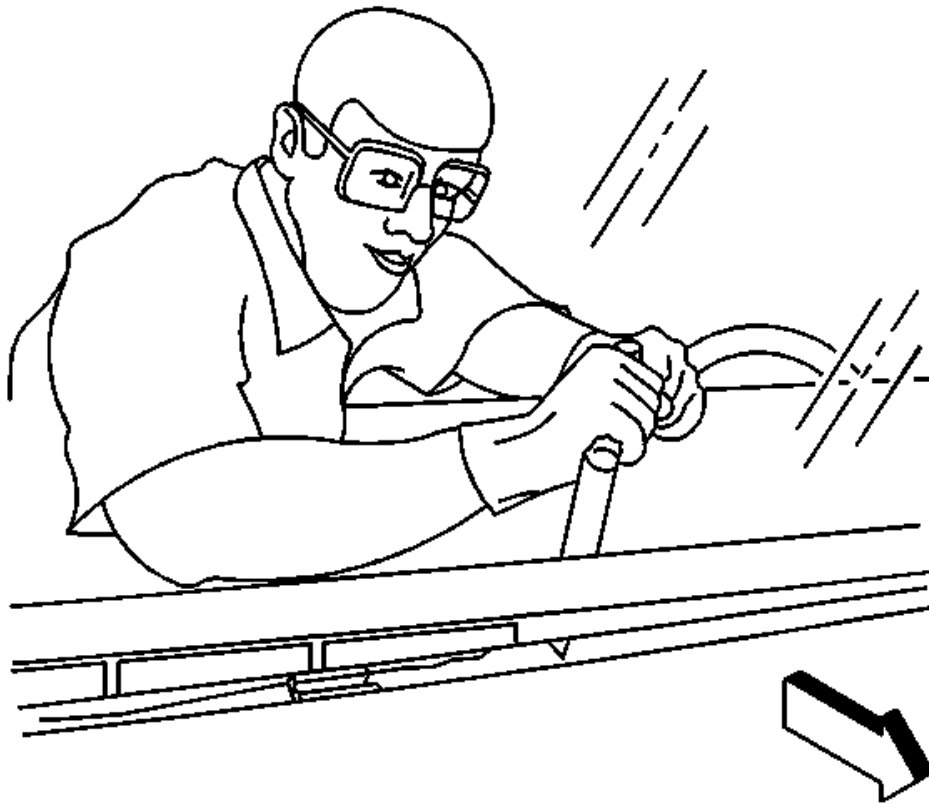


Fig. 9: Separating Bottom Of Window

Courtesy of GENERAL MOTORS COMPANY

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

8. If necessary, use the appropriate tool to remove the bottom corners of the windshield from the urethane adhesive.

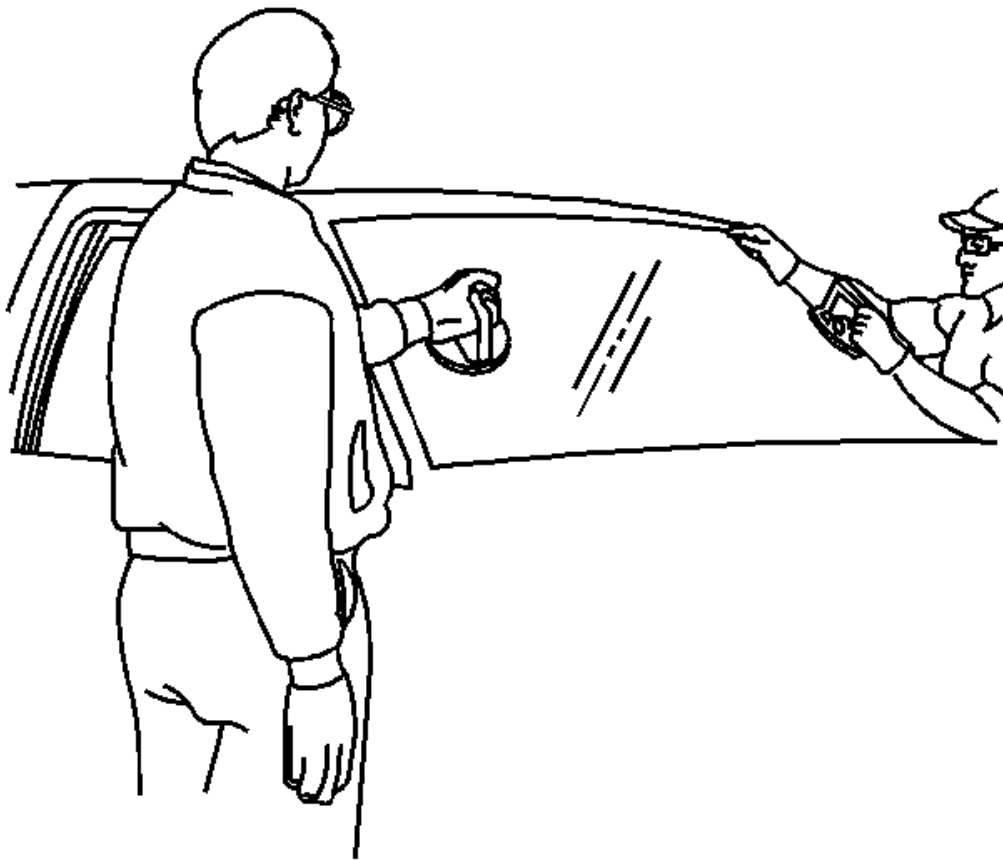


Fig. 10: Removing Windshield With Aid Of An Assistant
Courtesy of GENERAL MOTORS COMPANY

9. Remove the windshield from the vehicle with an assistant.

Installation Procedure

1. Install the windshield into the opening with an assistant. Refer to **Adhesive Installation of Stationary Windows (Rear Window)**, **Adhesive Installation of Stationary Windows (Windshield)**.
2. Install the inside rearview mirror. Refer to **Inside Rearview Mirror Replacement** .
3. Install the windshield garnish molding. Refer to **Windshield Garnish Molding Replacement** .
4. Install the air inlet grille. Refer to **Air Inlet Grille Panel Replacement** .
5. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.
6. Connect the battery. Refer to **Battery Negative Cable Disconnection and Connection** ..

FRONT SIDE DOOR WINDOW ADJUSTMENT

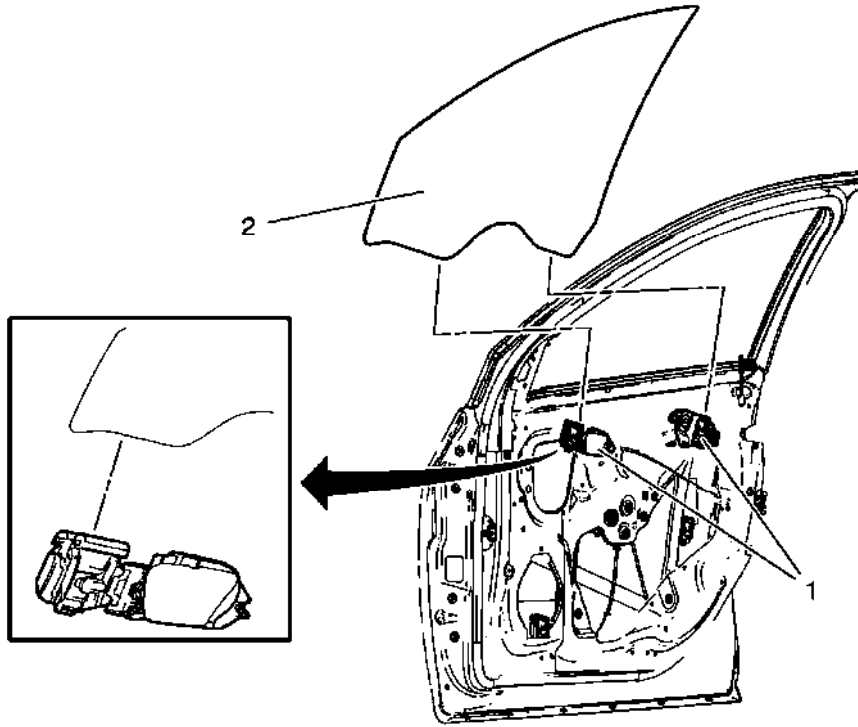


Fig. 11: Front Side Door Window And Regulator Sash Nuts
 Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Adjustment

Callout	Component Name
WARNING: Refer to <u>Glass and Sheet Metal Handling Warning</u> .	
WARNING: Refer to <u>Express Window Down Warning</u> .	
Preliminary Procedures	
1. Remove the front side door trim. Refer to <u>Front Side Door Trim Replacement</u> . 2. Remove the front side door water deflector. Refer to <u>Front Side Door Water Deflector Replacement</u> .	
1	Front Side Door Window Regulator Sash Nut (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 10 N.m (89 lb in)

Front Side Door Window

Procedure

2

1. Loosen the window regulator sash nuts.
2. Connect the door trim panel wire connector.
3. Start the vehicle to ensure maximum power to the window motor. This is required in order to fully seat the window for adjustment.
4. Using the power window switch, raise the window to the full up position.
5. Tighten the front side door window regulator sash nuts.
6. Inspect for proper window operation and a tight seal.
7. Shut off the vehicle.

FRONT SIDE DOOR WINDOW REPLACEMENT

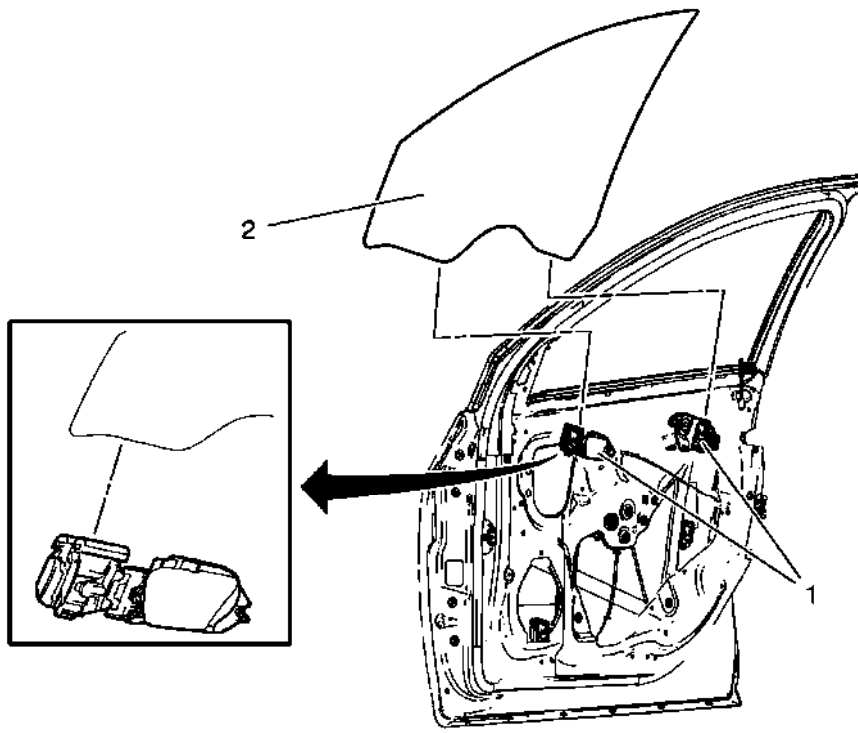


Fig. 12: Front Side Door Window And Regulator Sash Nuts
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Replacement

Callout	Component Name
Preliminary Procedure	

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1. Position the window approximately half way down in the door.
2. Remove the front side door water deflector. Refer to **Front Side Door Water Deflector Replacement**.
3. Remove the front side door window outer sealing strip. Refer to **Front Side Door Window Outer Sealing Strip Replacement**.

1	Front Side Door Window Regulator Sash Nut (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u>. Tighten 9 N.m (80 lb in)
2	Front Side Door Window Procedure 1. Loosen the window regulator sash nuts, pull upward to release the window from the sash. 2. Rotate the front door window as necessary to remove it from the door.

REAR SIDE DOOR WINDOW ADJUSTMENT

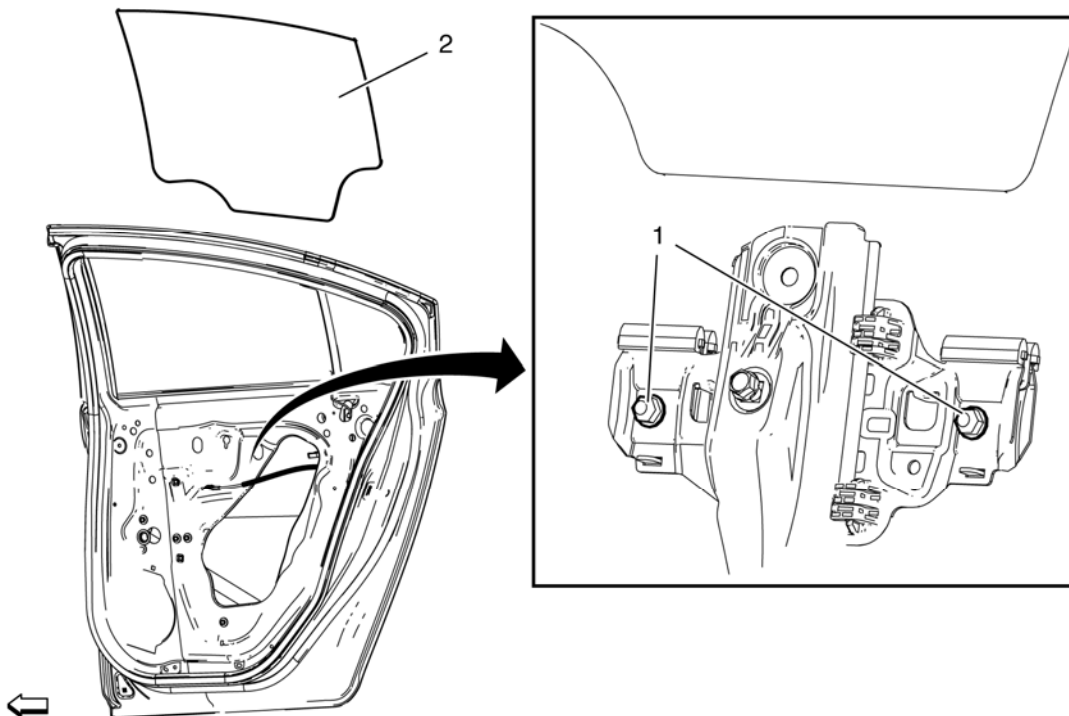


Fig. 13: Rear Side Door Window And Regulator Sash Nuts

Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Adjustment

Callout	Component Name
WARNING: Refer to <u>Glass and Sheet Metal Handling Warning</u> . WARNING: Refer to <u>Express Window Down Warning</u> . Preliminary Procedures 1. Remove the rear side door trim. Refer to <u>Rear Side Door Trim Replacement</u> . 2. Remove the rear side door water deflector. Refer to <u>Rear Side Door Water Deflector Replacement</u> .	
1	Rear Side Door Window Regulator Sash Nut (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 10 N.m (89 lb in)
2	Rear Side Door Window Procedure 1. Loosen the window regulator sash nuts. 2. Connect the door trim panel wire connector. 3. Start the vehicle to ensure maximum power to the window motor. This is required in order to fully seat the window for adjustment. Using the power window switch, raise the window to the full up position. 4. Tighten the rear side door window regulator sash nuts. 5. Inspect for proper window operation and a tight seal. 6. Shut off the vehicle.

REAR SIDE DOOR WINDOW REPLACEMENT

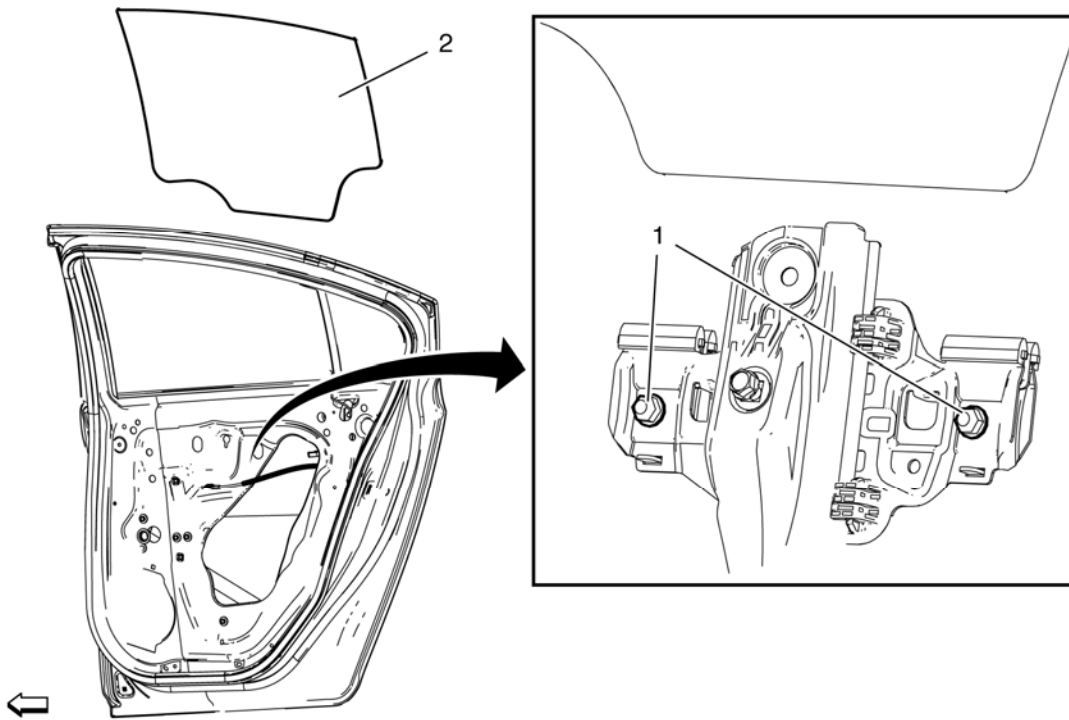


Fig. 14: Rear Side Door Window And Regulator Sash Nuts
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Replacement

Callout	Component Name
Preliminary Procedures	
1. Position the window approximately half way down in the door. 2. Remove the rear side door water deflector. Refer to <u>Rear Side Door Water Deflector Replacement</u> . 3. Remove the rear side door window outer sealing strip. Refer to <u>Rear Side Door Window Outer Sealing Strip Replacement</u>.	
1	Rear Side Door Window Regulator Sash Nut (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 9 N.m (80 lb in)
2	Rear Side Door Window Procedure

- | | |
|--|--|
| | <ol style="list-style-type: none">1. Loosen the window regulator sash nuts, pull upward to release the window from the sash.2. Rotate the rear door window as necessary to remove it from the door. |
|--|--|

REAR SIDE DOOR STATIONARY WINDOW REPLACEMENT

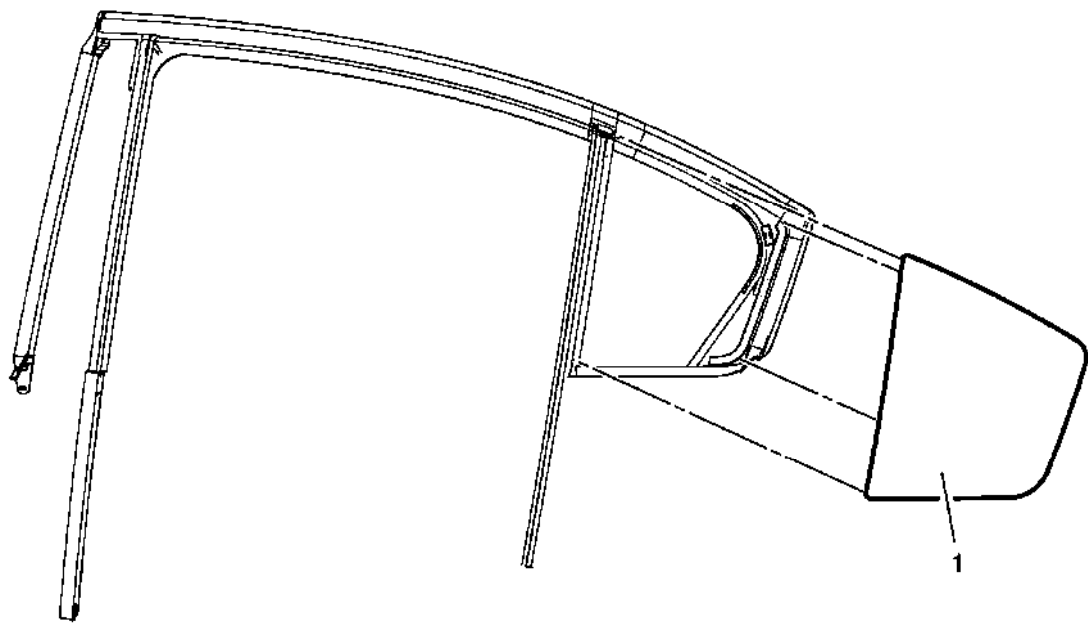


Fig. 15: Rear Side Door Stationary Window
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Stationary Window Replacement

Callout	Component Name
Preliminary Procedure Remove the rear side door window weatherstrip with the rear side door stationary window. Refer to Rear Side Door Window Weatherstrip Replacement .	
1	Rear Door Stationary Window Procedure Remove the rear side door stationary window from the weatherstrip.

REAR SIDE DOOR STATIONARY WINDOW DIVIDER CHANNEL REPLACEMENT

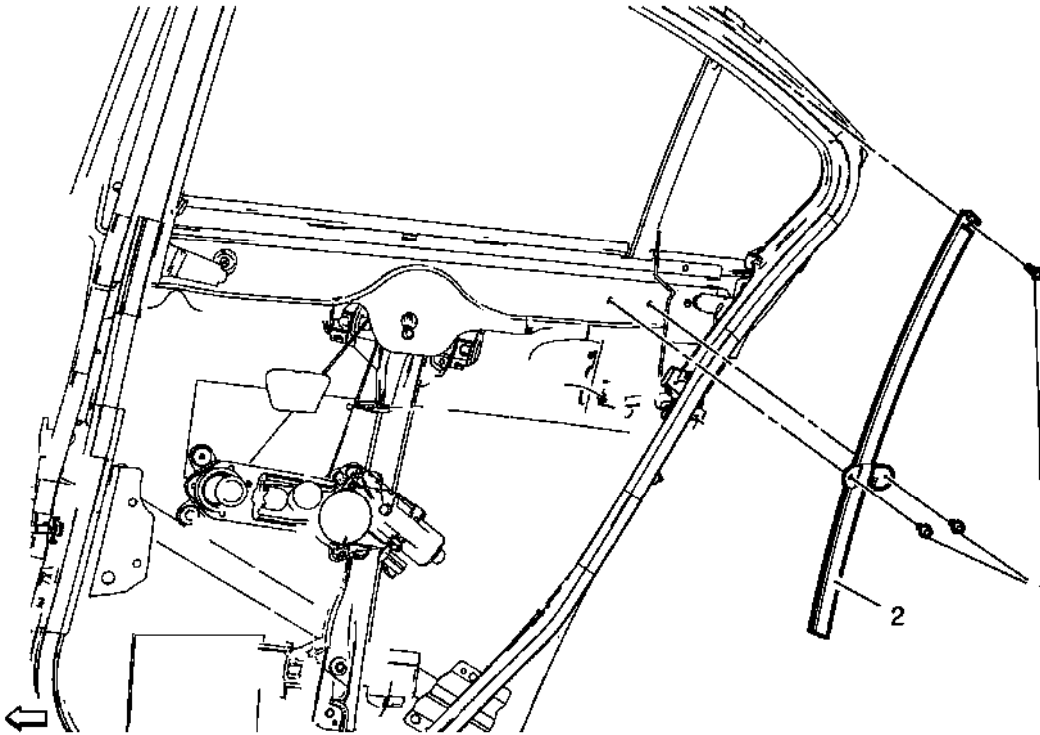


Fig. 16: Rear Side Door Stationary Window Divider Channel And Bolts
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Stationary Window Divider Channel Replacement

callout	Component Name
Preliminary Procedure Remove the rear side door window. Refer to <u>Rear Side Door Window Replacement</u>	
1	Rear Side Door Stationary Window Divider Channel Bolt (Qty: 3) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 9 N.m(80 lb in)
2	Rear Side Door Stationary Window Divider Channel

REAR WINDOW 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

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

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. Disconnect the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
2. Remove the quarter window garnish molding. Refer to **Quarter Window Garnish Molding Replacement** .
3. Disconnect the rear window radio antenna connector.
4. Disconnect the electrical connectors from the rear window defogger bus bars.
5. Protect the following parts from broken glass:
 - Seats
 - Carpeting

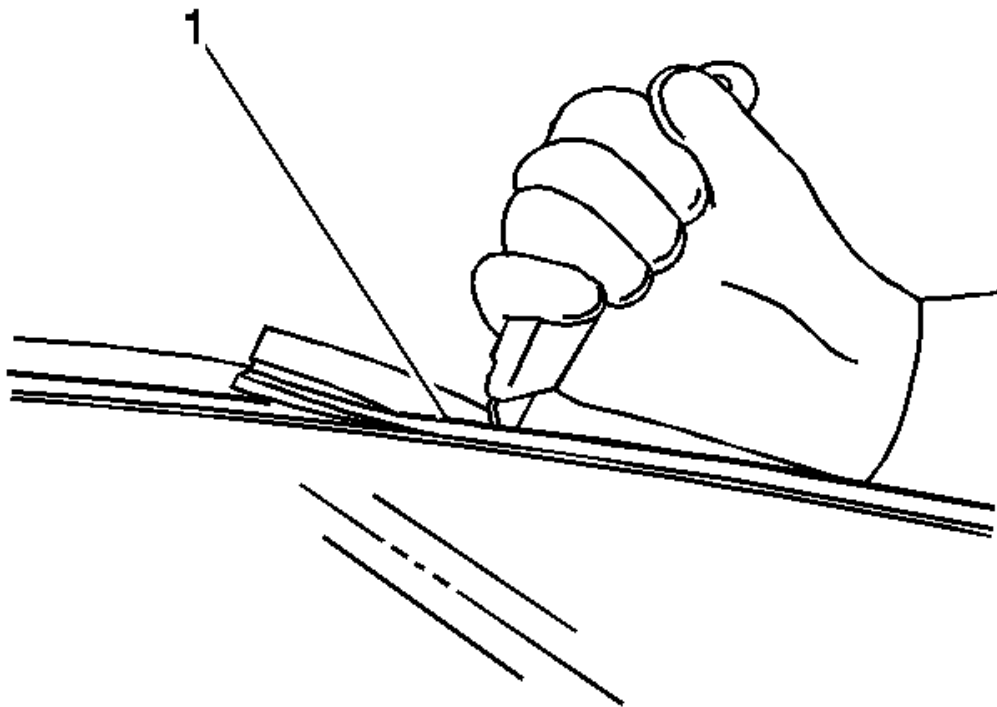


Fig. 17: Using Utility Knife To Remove Reveal Molding
Courtesy of GENERAL MOTORS COMPANY

WARNING: Refer to Glass and Sheet Metal Handling Warning .

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

6. Using the appropriate tool, carefully cut around the lace (1), start in the center working from side to side of the windshield to access the urethane adhesive bead.

WARNING: Refer to Defroster Outlet Warning .

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

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

- Seats and carpeting

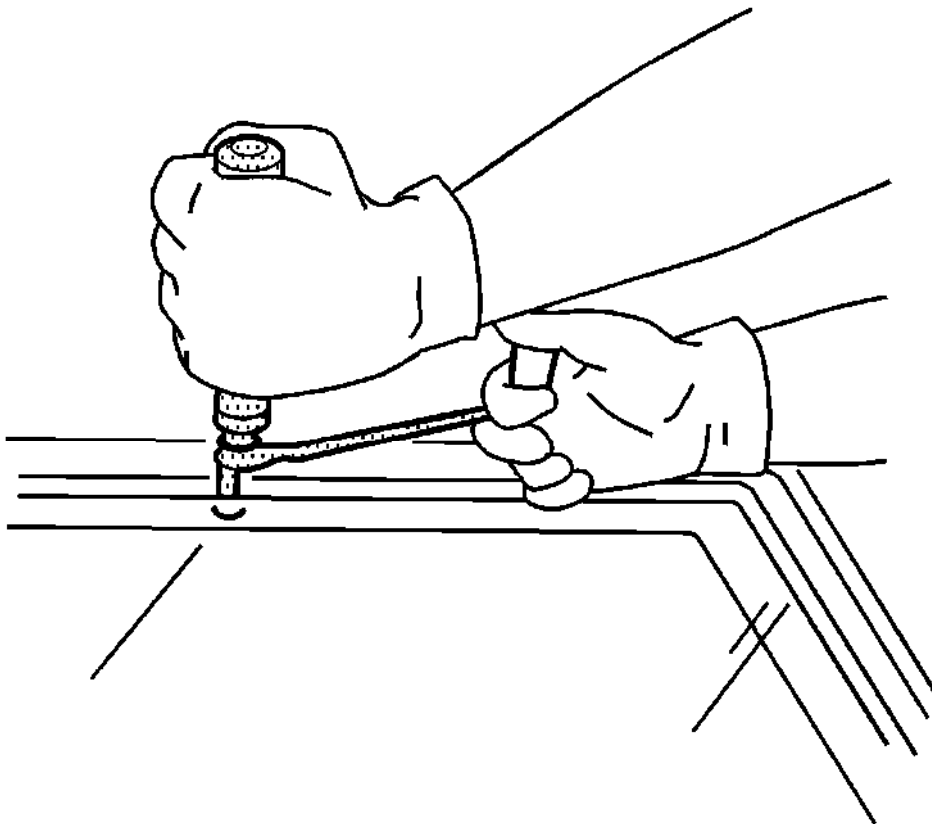


Fig. 18: Separating Urethane Adhesive From Window
Courtesy of GENERAL MOTORS COMPANY

NOTE: Use care when removing the rear window not to cut off the locator pins on the left and right sides. If the locating pins are cut off it will be necessary to use masking tape to tape the window in place until the auto-adhesive cures.

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

8. 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.
 - **BO-24402-A** Glass Sealant Remover (Cold Knife).
 - **BO-39032** Stationary Glass Removal Tool, or equivalent in order to remove the window.

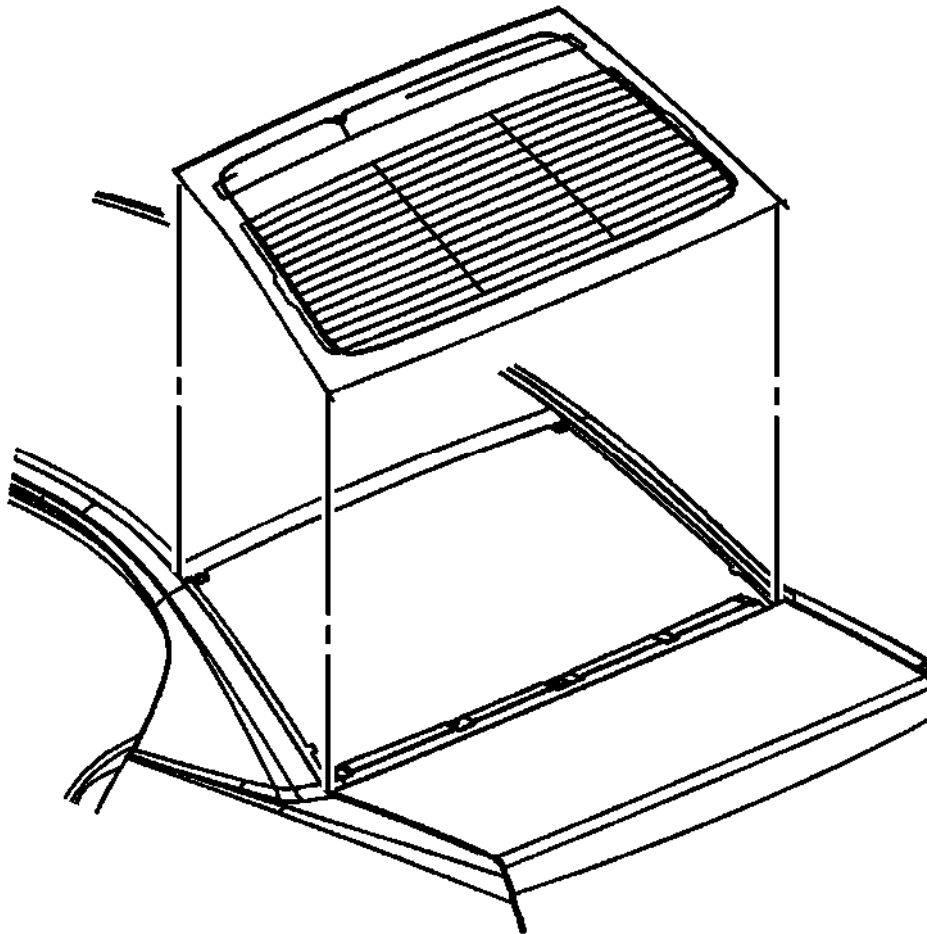


Fig. 19: View Of Rear Window
Courtesy of GENERAL MOTORS COMPANY

9. With the an assistant, remove the window from the vehicle.

Installation Procedure

1. Install the rear window into the opening with an assistant. Refer to **Adhesive Installation of Stationary Windows (Rear Window)**, **Adhesive Installation of Stationary Windows (Windshield)**.
2. Connect the rear window defogger electrical connectors to the bus bars.
3. Connect the rear window radio antenna connector.
4. Install the quarter window garnish molding. Refer to **Quarter Window Garnish Molding Replacement** .
5. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.
6. Connect the battery. Refer to **Battery Negative Cable Disconnection and Connection** .

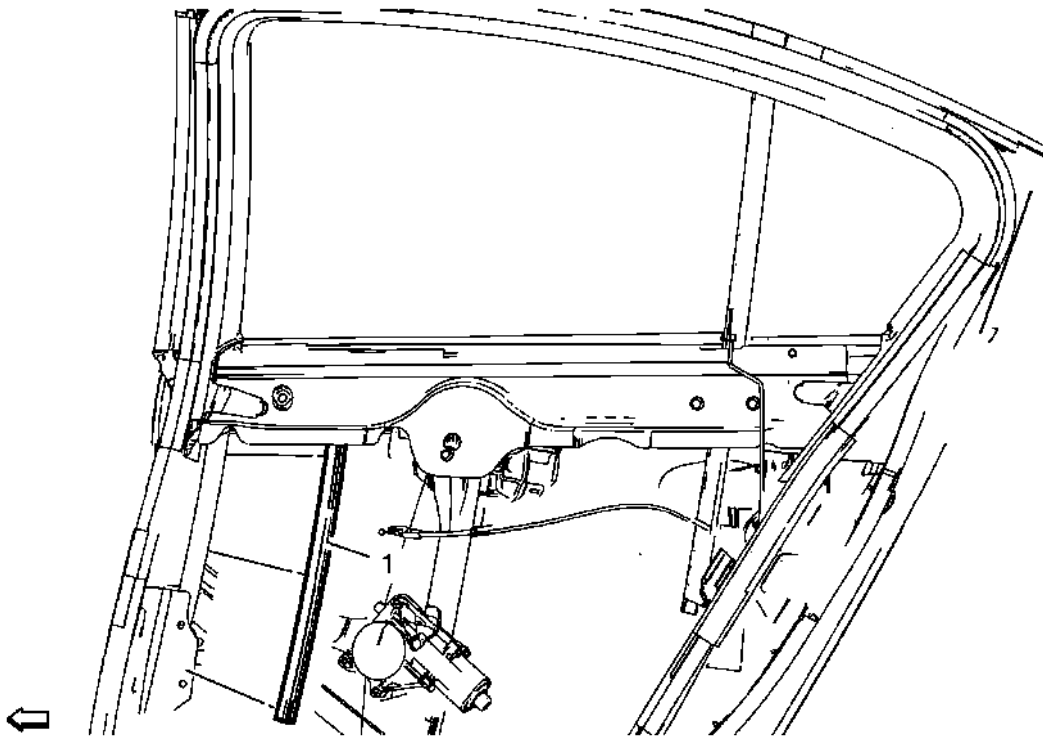
REAR SIDE DOOR WINDOW CHANNEL INSULATOR REPLACEMENT

Fig. 20: Rear Side Door Window Channel Insulator
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Channel Insulator Replacement

Callout	Component Name
Preliminary Procedures	
Remove the rear side door water deflector. Refer to <u>Rear Side Door Water Deflector Replacement</u> .	
1	Rear Side Door Window Channel Insulator

FRONT SIDE DOOR WINDOW SWITCH REPLACEMENT - RIGHT SIDE

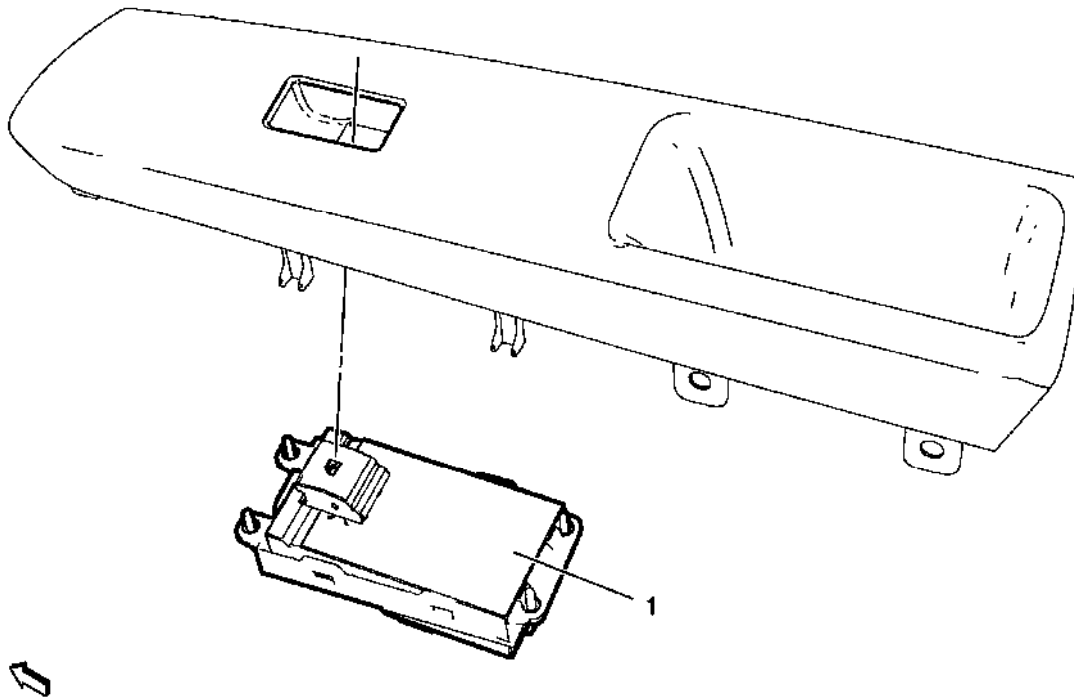


Fig. 21: Right Front Side Door Window Switch
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Switch Replacement - Right Side

Callout	Component Name
Preliminary Procedures Remove the front side door window switch bezel. Refer to <u>Front Side Door Window Switch Bezel Replacement</u> .	
1	Front Side Door Window Switch Assembly

FRONT SIDE DOOR WINDOW SWITCH REPLACEMENT - LEFT SIDE

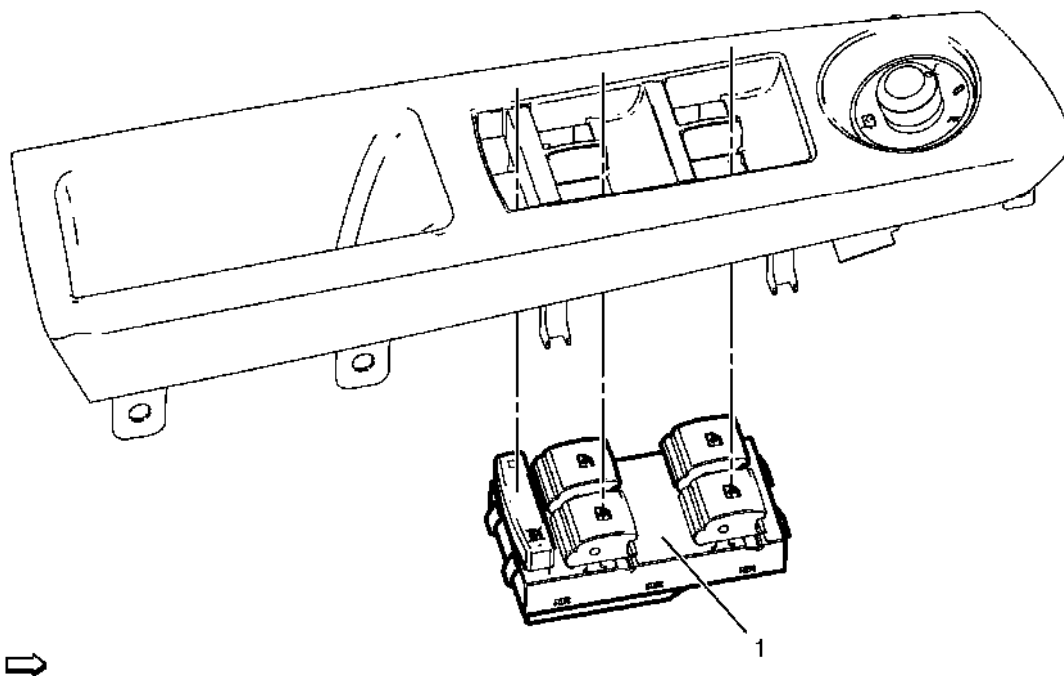


Fig. 22: Left Front Side Door Window Switch
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Switch Replacement - Left Side

Callout	Component Name
Preliminary Procedures Remove the front side door window switch bezel. Refer to <u>Front Side Door Window Switch Bezel Replacement</u> .	
1	Front Side Door Window Switch Assembly

FRONT SIDE DOOR WINDOW AND MULTIFUNCTION SWITCH REPLACEMENT

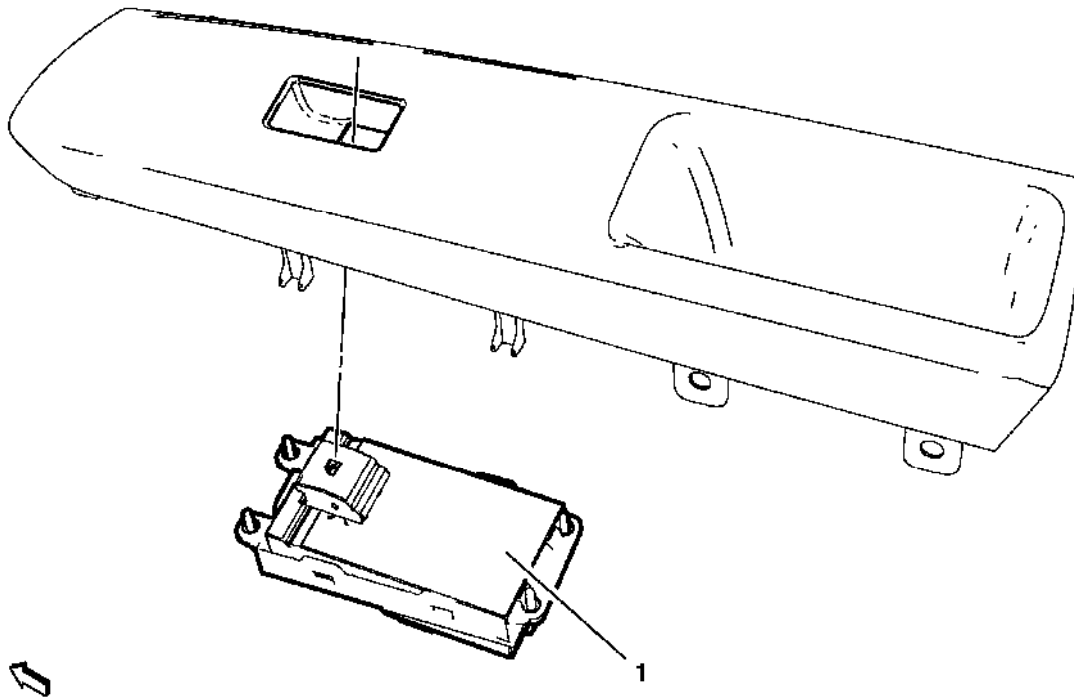


Fig. 23: Front Side Door Window and Multifunction Switch
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window and Multifunction Switch Replacement

Callout	Component Name
Preliminary Procedures Remove the front side door window switch bezel. Refer to <u>Front Side Door Window Switch Bezel Replacement</u> .	
1	Front Side Door Window and Multifunction Switch Procedure Disconnect electrical connector.

REAR SIDE DOOR WINDOW SWITCH REPLACEMENT

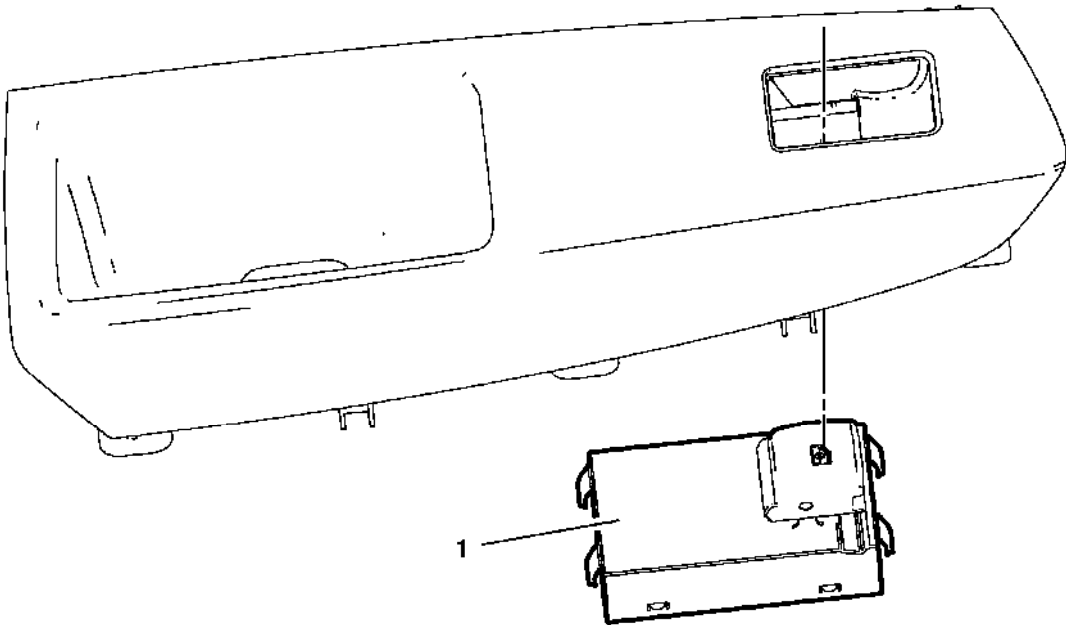


Fig. 24: Rear Side Door Window Switch Assembly
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Switch Replacement

Callout	Component Name
Preliminary Procedures Remove the rear side door window switch bezel. Refer to <u>Rear Side Door Window Switch Bezel Replacement</u> .	
1	Rear Side Door Window Switch Assembly

FRONT SIDE DOOR WINDOW REGULATOR REPLACEMENT

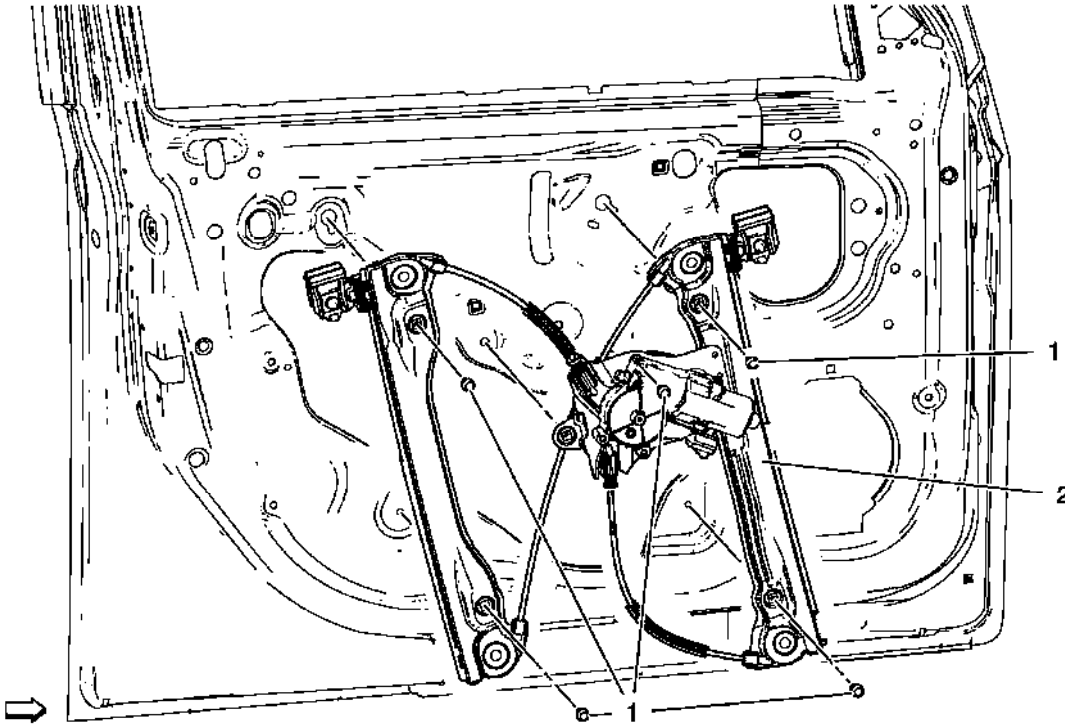


Fig. 25: Front Side Door Window Regulator Assembly And Screws
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Regulator Replacement

Callout	Component Name
Preliminary Procedure Remove the front side door water deflector. Refer to Front Side Door Water Deflector Replacement .	
1	Front Side Door Window Regulator Screw (Qty: 5) CAUTION: Refer to Fastener Caution . Procedure After detaching window from regulator, manually move window to it's full up position and securely tape to window frame. Tighten 9 N.m (80 lb in)
2	Front Side Door Window Regulator Assembly Procedure Remove all components as needed.

WINDOW MOTOR PROGRAMMING - EXPRESS FUNCTION

Window Motor Normalized Procedure

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

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

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

Open, then Close Driver Window

Open, then Close Passenger Window

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

To normalize the window motor, follow these steps:

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

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

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

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

Window Motor Relearn Procedure

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

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

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- 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

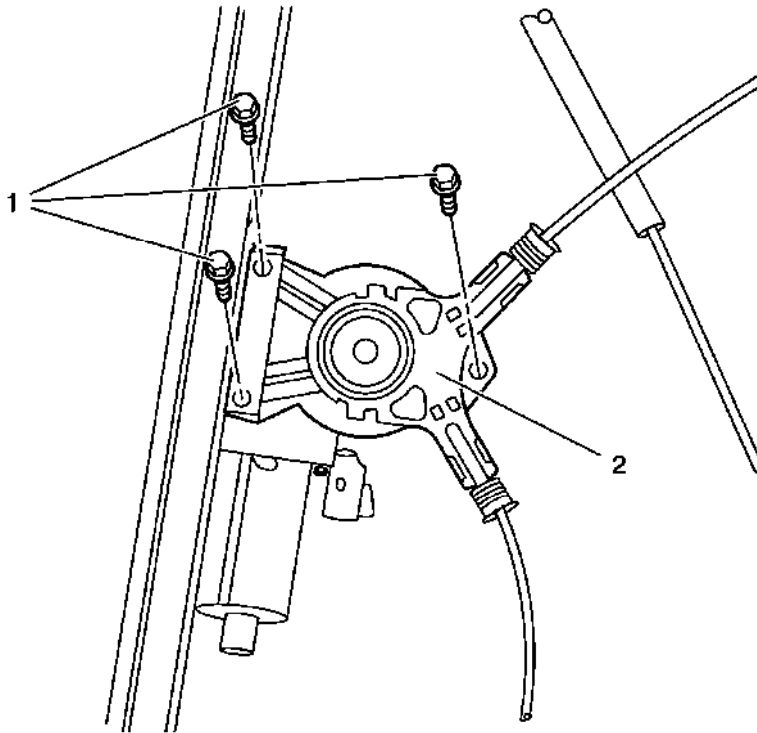


Fig. 26: Front Side Door Window Regulator Motor Assembly And Screws
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Regulator Motor Replacement

Callout	Component Name
Preliminary Procedure Remove the front side door window regulator. Refer to <u>Front Side Door Window Regulator Replacement</u> .	
1	Front Side Door Window Regulator Motor Screw (Qty: 3) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 9 N.m (80 lb in)
2	Front Side Door Window Regulator Motor Assembly

REAR SIDE DOOR WINDOW REGULATOR REPLACEMENT

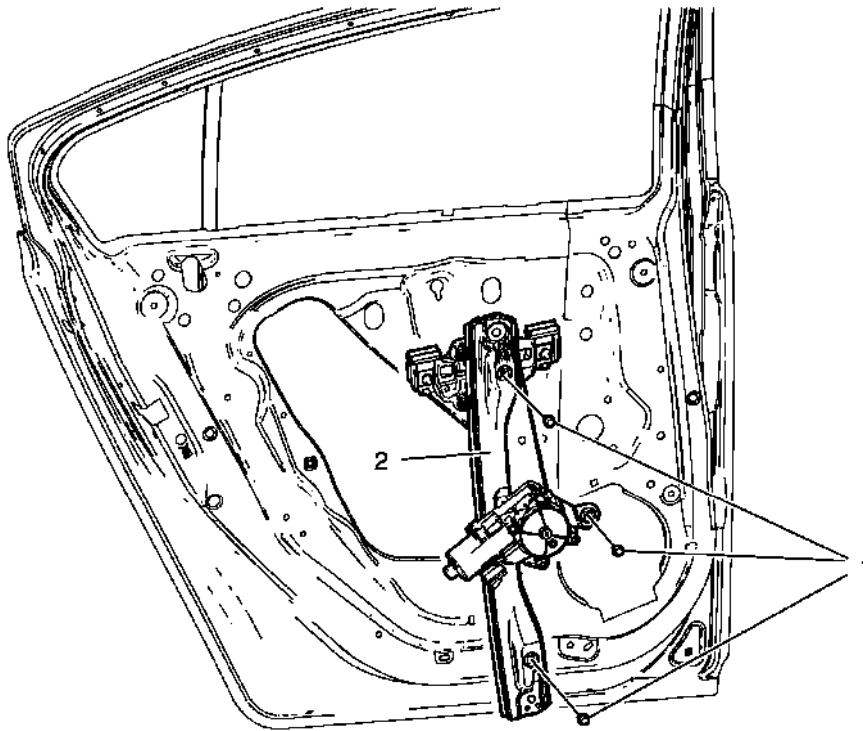


Fig. 27: Rear Side Door Window Regulator Assembly And Screws
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Regulator Replacement

Callout	Component Name
Preliminary Procedure Remove the rear side door water deflector. Refer to <u>Rear Side Door Water Deflector Replacement</u> .	
1	Rear Side Door Window Regulator Screw (Qty: 3) CAUTION: Refer to <u>Fastener Caution</u> . Procedure After detaching window from regulator, manually move window to it's full up position and securely tape to window frame. Tighten 9 N.m (80 lb in)
2	Rear Side Door Window Regulator Assembly Procedure Remove all components as needed.

REAR SIDE DOOR WINDOW REGULATOR MOTOR REPLACEMENT

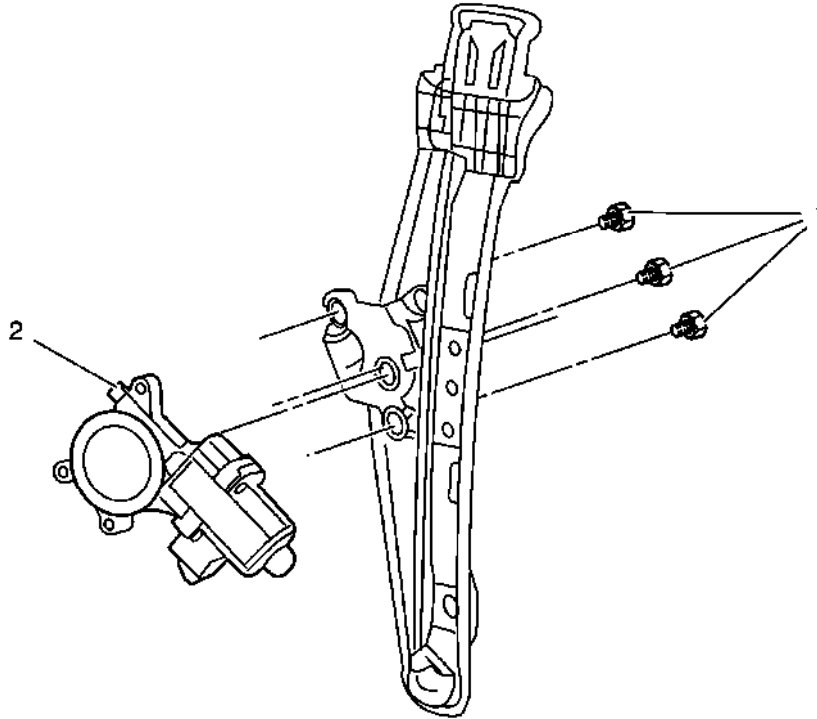


Fig. 28: Rear Side Door Window Regulator Motor Assembly And Screws
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Regulator Motor Replacement

Callout	Component Name
Preliminary Procedure Remove the rear side door window regulator. Refer to <u>Rear Side Door Window Regulator Replacement</u> .	
1	Rear Side Door Window Regulator Motor Screw (Qty: 3) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 9 N.m (80 lb in)
2	Rear Side Door Window Regulator Motor Assembly

FRONT SIDE DOOR WINDOW OUTER SEALING STRIP REPLACEMENT

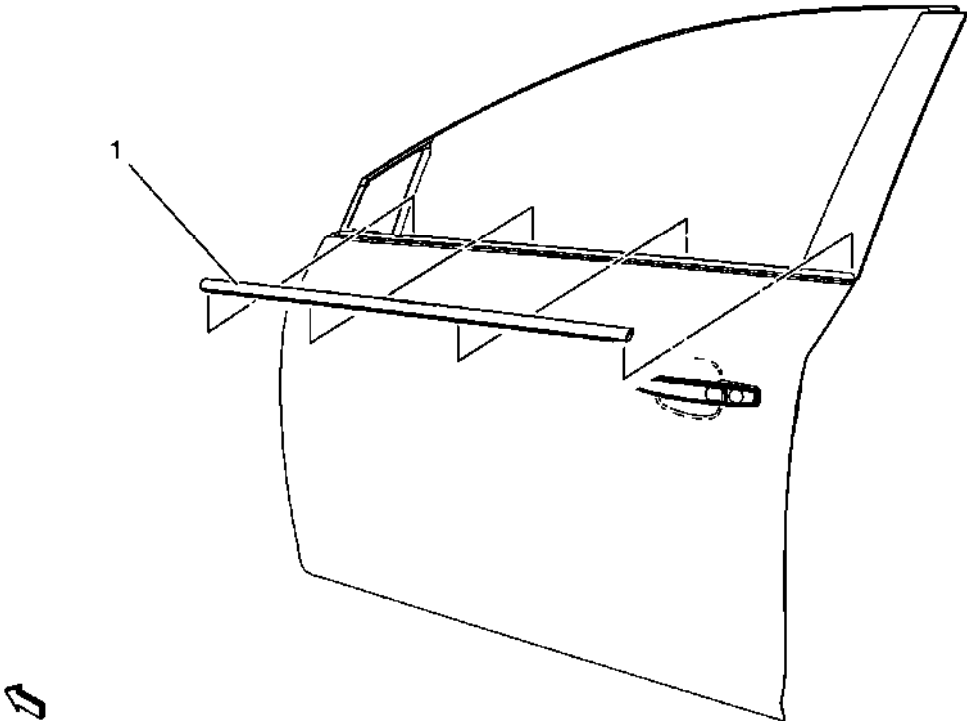


Fig. 29: Front Side Door Window Outer Sealing Strip
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Outer Sealing Strip Replacement

Callout	Component Name
1	Front Side Door Window Outer Sealing Strip Assembly
Procedure Pull up and away from the door flange to remove.	

FRONT SIDE DOOR WINDOW INNER SEALING STRIP REPLACEMENT

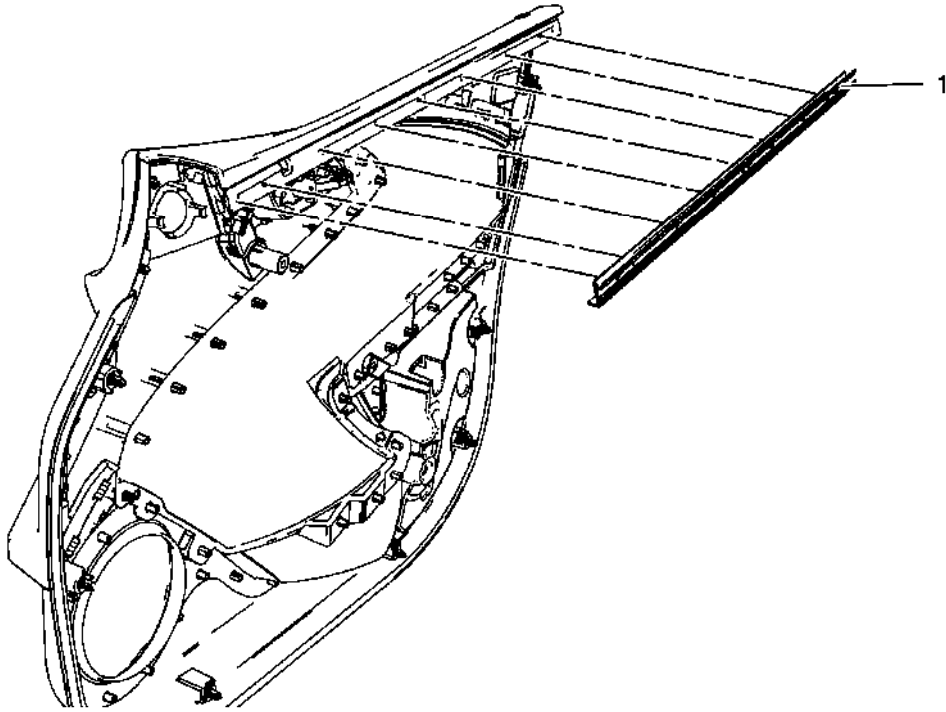


Fig. 30: Front Side Door Window Inner Sealing Strip
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Inner Sealing Strip Replacement

Callout	Component Name
Preliminary Procedures	
Remove the front side door trim. Refer to <u>Front Side Door Trim Replacement</u>	
1	Front Side Door Window Inner Sealing Strip

REAR SIDE DOOR WINDOW INNER SEALING STRIP REPLACEMENT

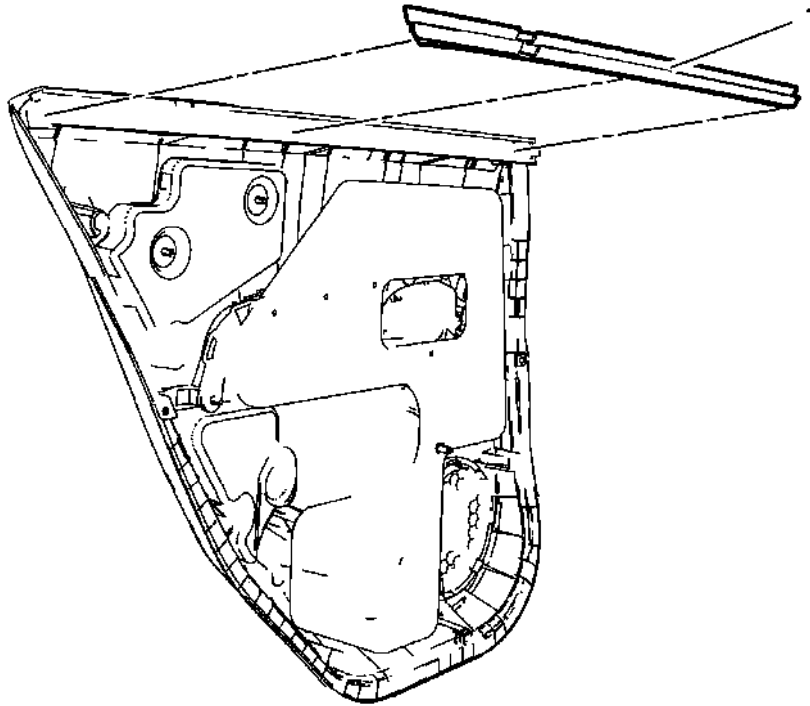


Fig. 31: Rear Side Door Window Inner Sealing Strip
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Inner Sealing Strip Replacement

callout	Component Name
Preliminary Procedure Remove the rear side door trim. Refer to <u>Rear Side Door Trim Replacement</u> .	
1	Rear Side Door Window Inner Sealing Strip

REAR SIDE DOOR WINDOW OUTER SEALING STRIP REPLACEMENT

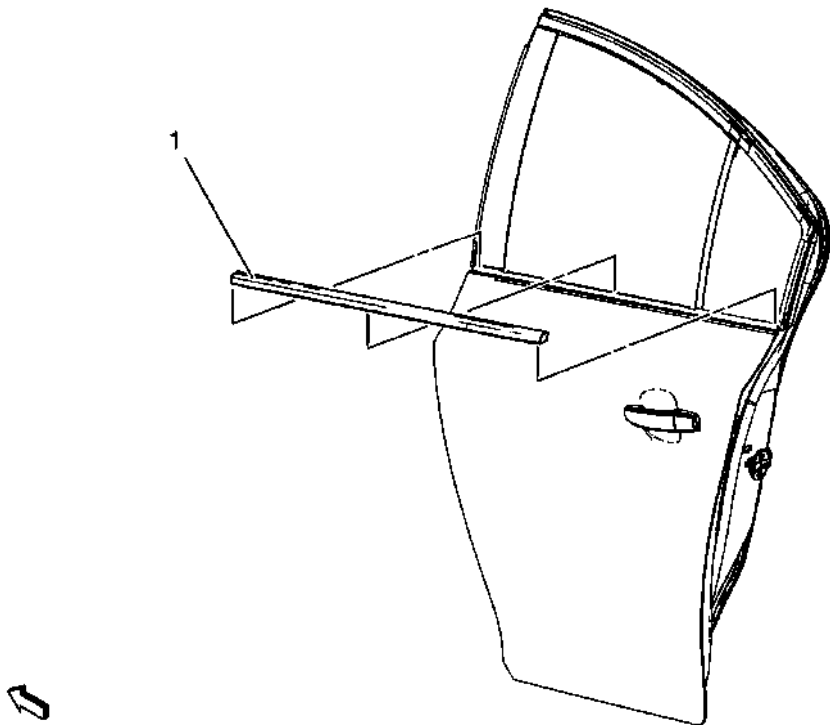


Fig. 32: Rear Side Door Window Outer Sealing Strip Assembly
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Outer Sealing Strip Replacement

Callout	Component Name
1	Rear Side Door Window Outer Sealing Strip Assembly

FRONT SIDE DOOR WINDOW WEATHERSTRIP REPLACEMENT

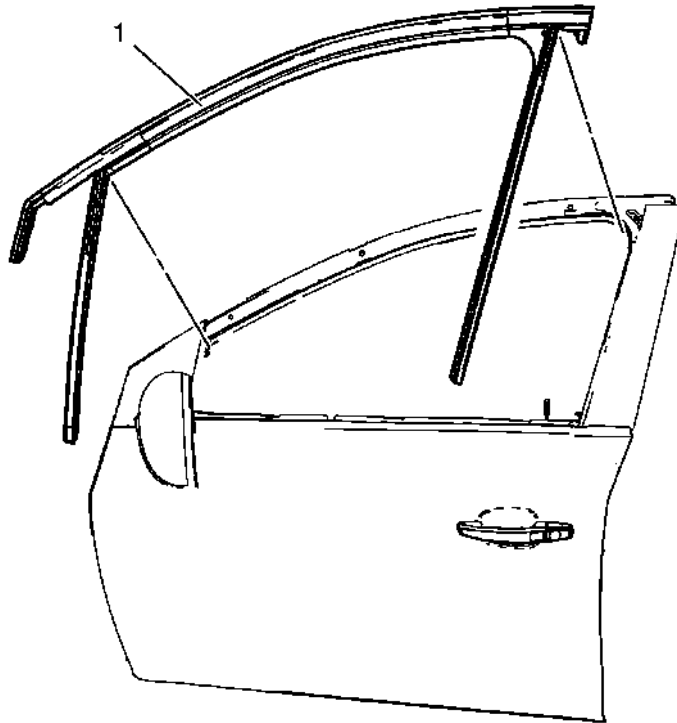


Fig. 33: Front Side Door Window Weatherstrip
Courtesy of GENERAL MOTORS COMPANY

Front Side Door Window Weatherstrip Replacement

Callout	Component Name
Preliminary Procedures	
1. Remove the outside rearview mirror. Refer to <u>Outside Rearview Mirror Replacement</u> .	
2. Remove the front side door window rear cover. Refer to <u>Front Side Door Window Frame Rear Cover Replacement</u> .	
3. Remove the front side door window. Refer to <u>Front Side Door Window Replacement</u> .	
1	Front Side Door Window Weatherstrip Procedure Pull the front side door window weatherstrip away from the outer window flange to remove.

REAR SIDE DOOR WINDOW WEATHERSTRIP REPLACEMENT

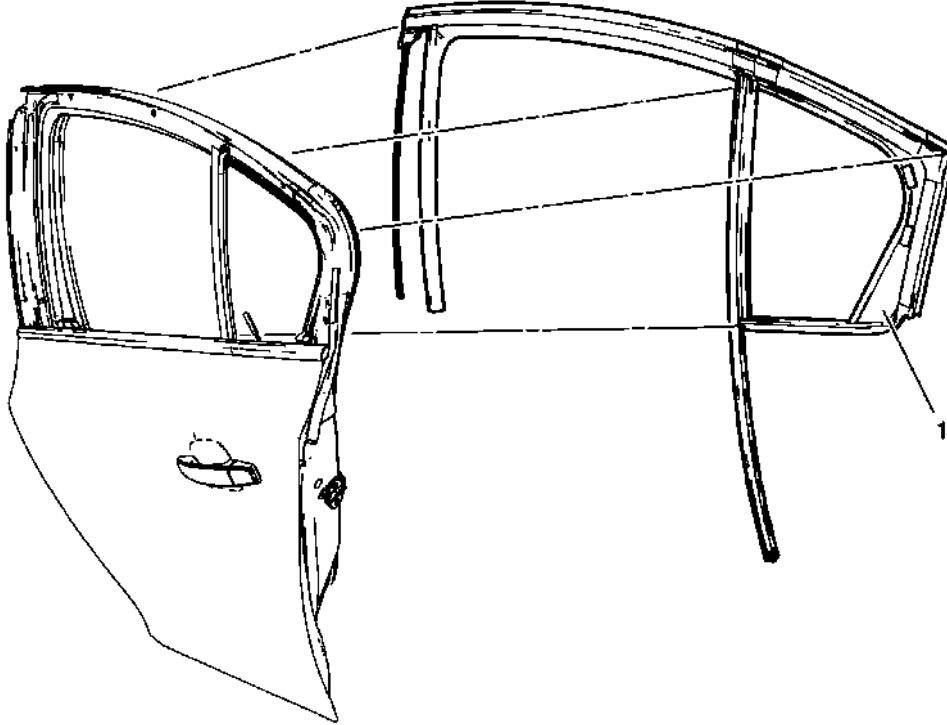


Fig. 34: Rear Side Door Window Weatherstrip
Courtesy of GENERAL MOTORS COMPANY

Rear Side Door Window Weatherstrip Replacement

Callout	Component Name
Preliminary Procedures	
1. Remove the rear side door window frame front cover. Refer to <u>Rear Side Door Window Frame Front Cover Replacement</u> .	
2. Remove the rear side door window. Refer to <u>Rear Side Door Window Replacement</u> .	
1	Rear Side Door Window Weatherstrip Procedure 1. Pull the rear side door window weatherstrip away from the outer window flange to remove. 2. Remove the rear side door stationary window from the rear side door window weatherstrip.

ADHESIVE INSTALLATION OF STATIONARY WINDOWS (WINDSHIELD)

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

2013 Chevrolet Cruze

2013 ACCESSORIES & EQUIPMENT Fixed and Moveable Windows - Cruze

1. Use a urethane adhesive systems which meet GM Specification GM 3651G.
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 pinch-weld flange surface and window 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:
 - High weld
 - Solder spots
 - Hardened sealer
 - Any other obstruction or irregularity in the pinch-weld 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.

WARNING: Refer to Window Retention Warning .

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

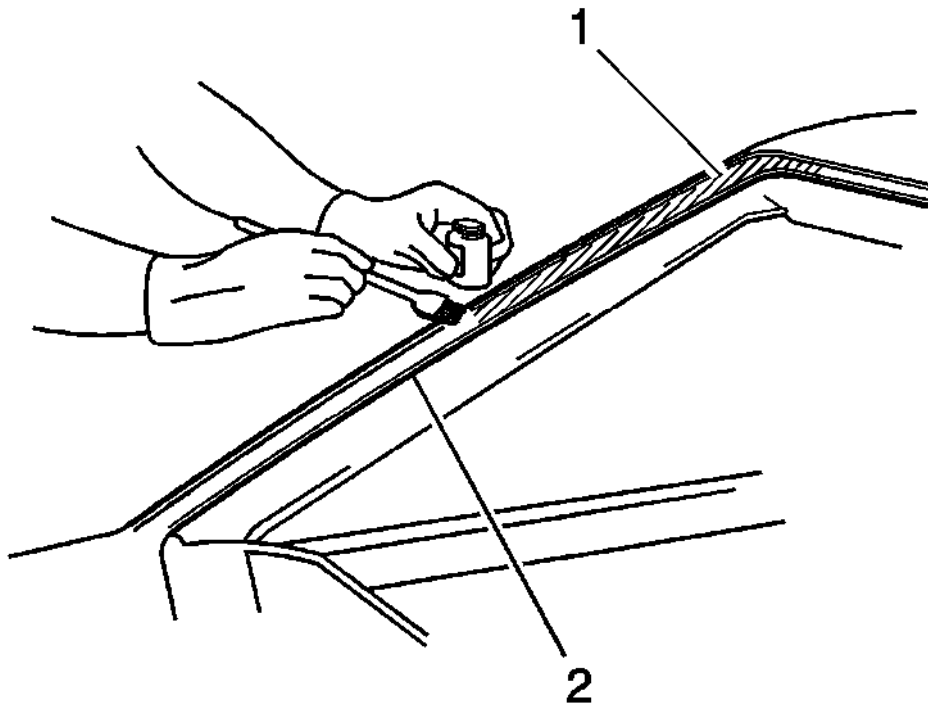


Fig. 35: Applying Pinch-Weld Primer

Courtesy of GENERAL MOTORS COMPANY

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

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

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

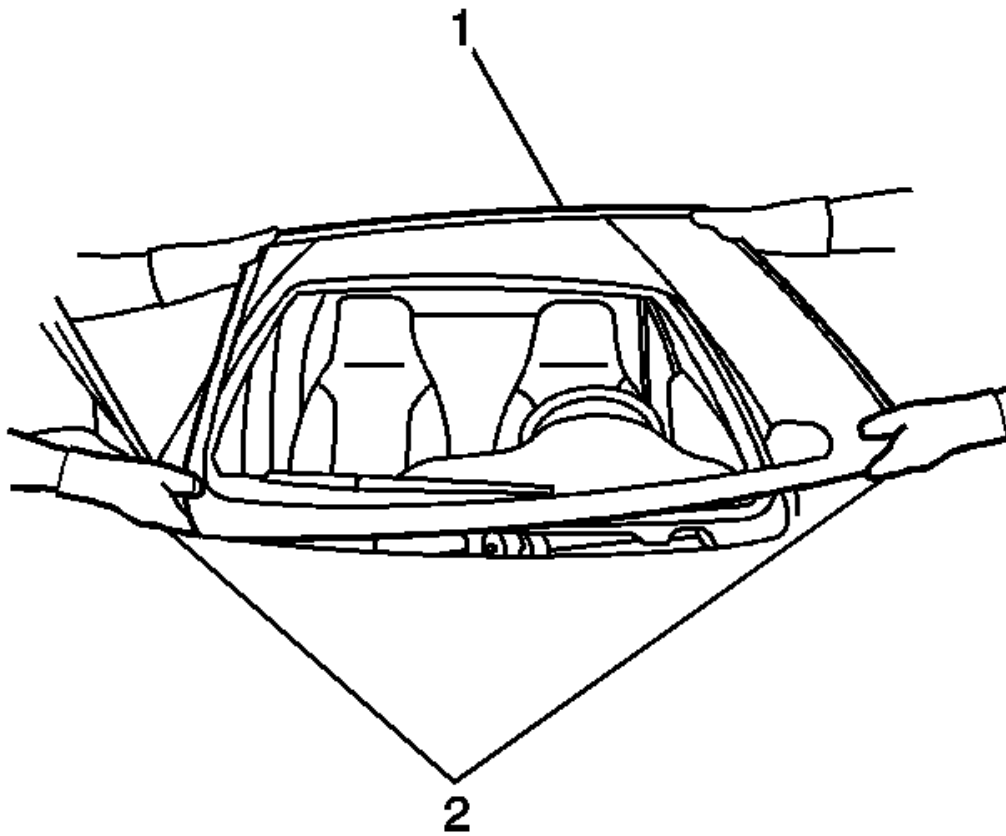


Fig. 36: Removing/Installing Windshield

Courtesy of GENERAL MOTORS COMPANY

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

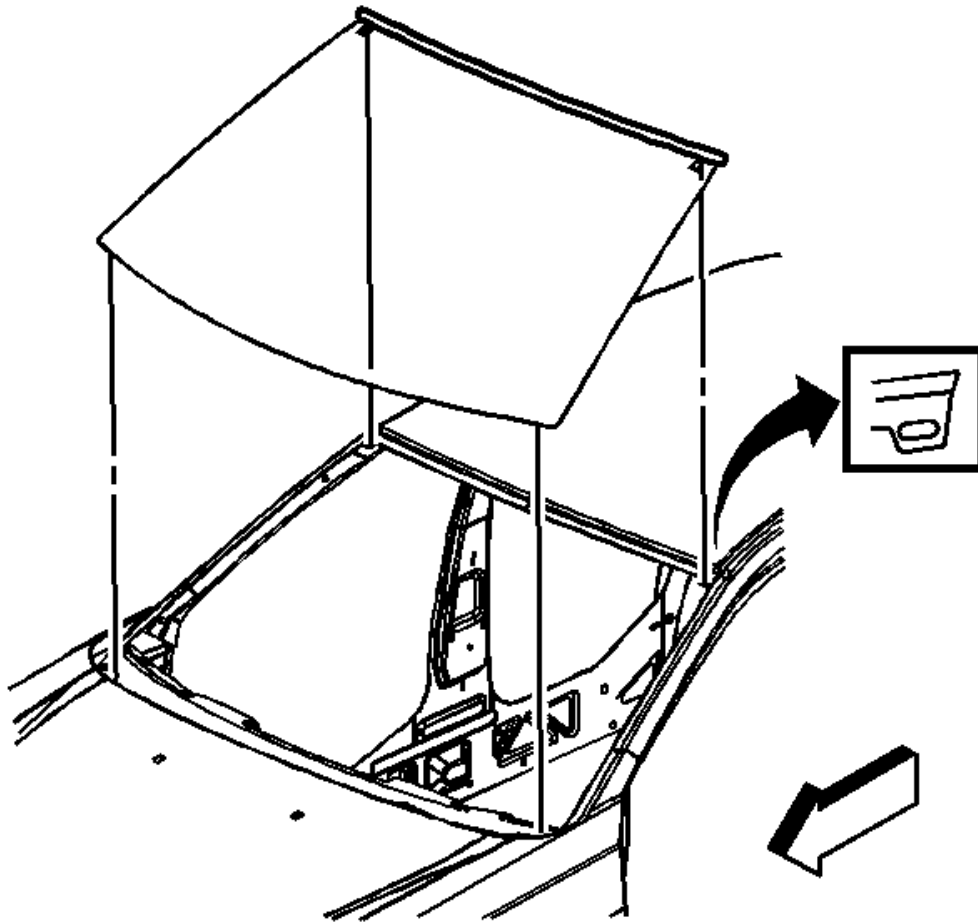


Fig. 37: Identifying Locator Slots On Upper Pinch-Weld Flange
Courtesy of GENERAL MOTORS COMPANY

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

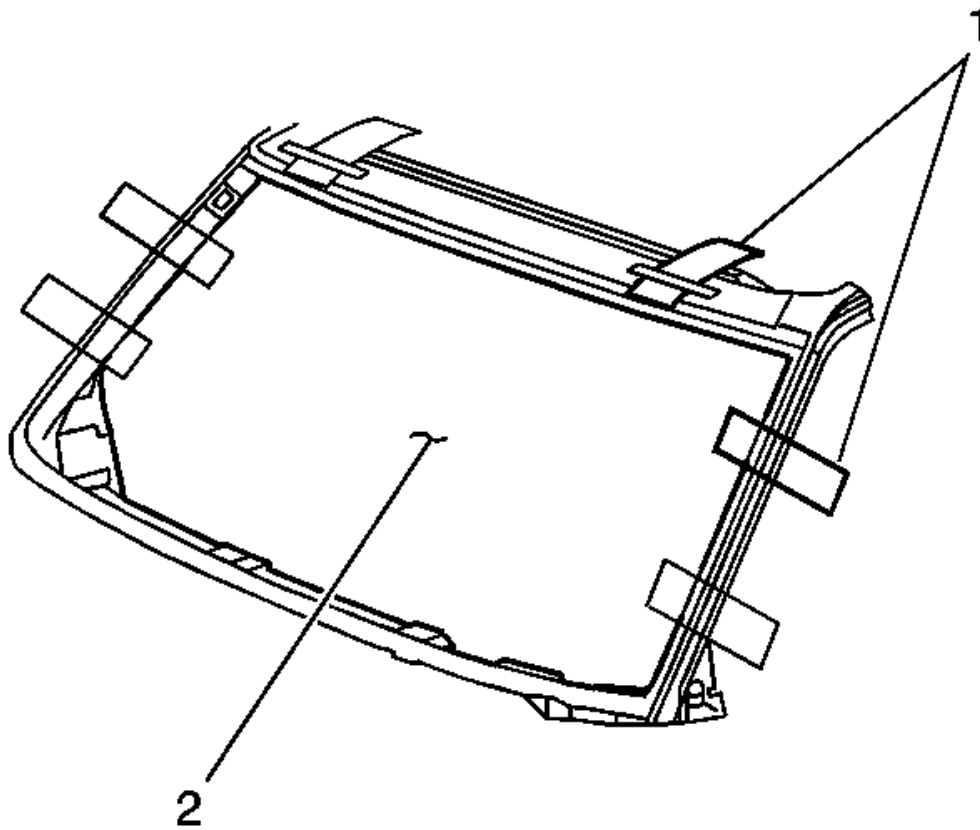


Fig. 38: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS COMPANY

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

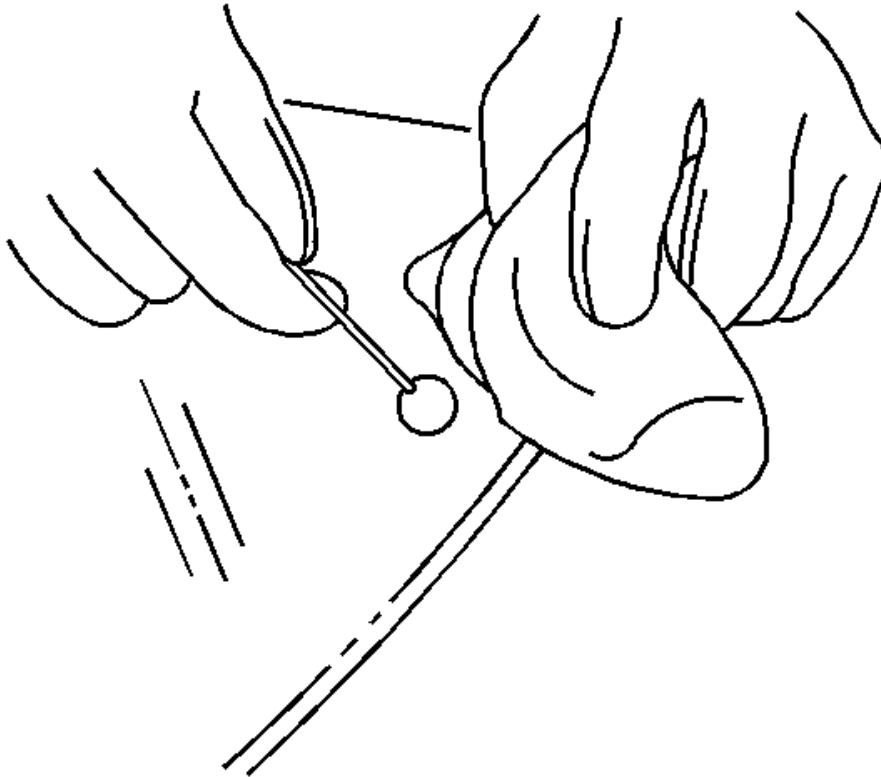


Fig. 39: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

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

14. Use a new dauber in order to apply glass prep clear #1 to the area approximately 18 mm (0.71 in) around the entire perimeter of the window inner surface.

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

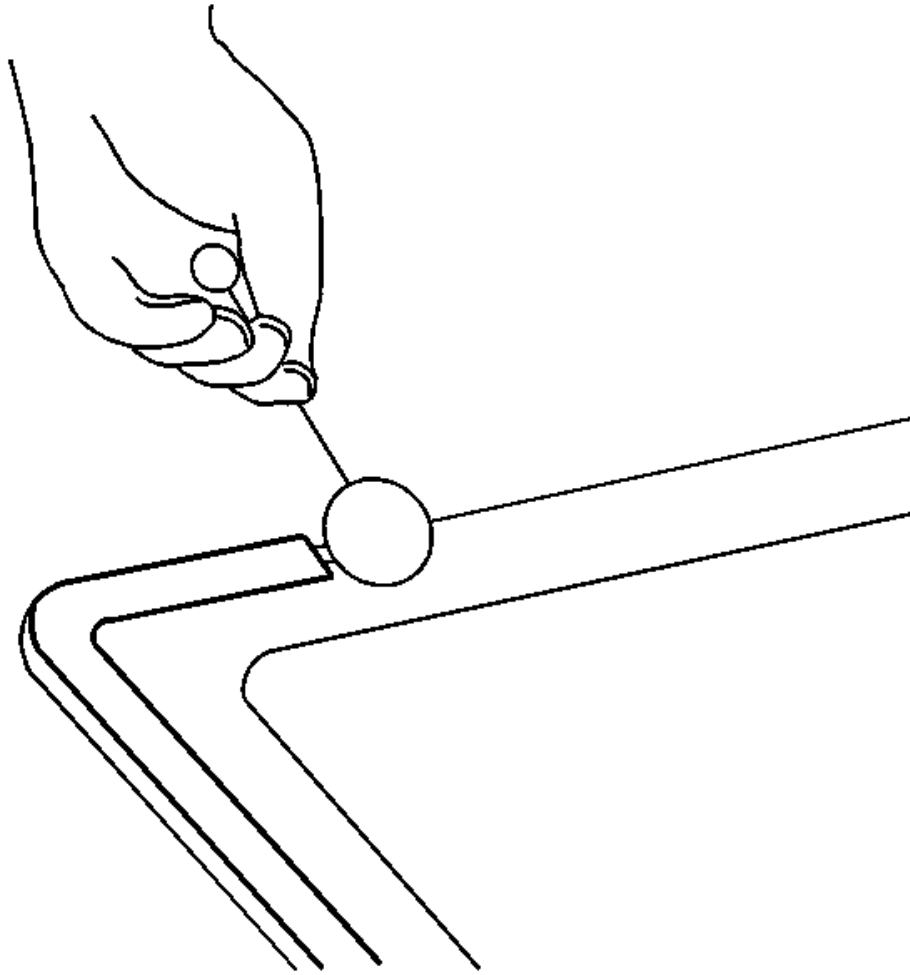


Fig. 40: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

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

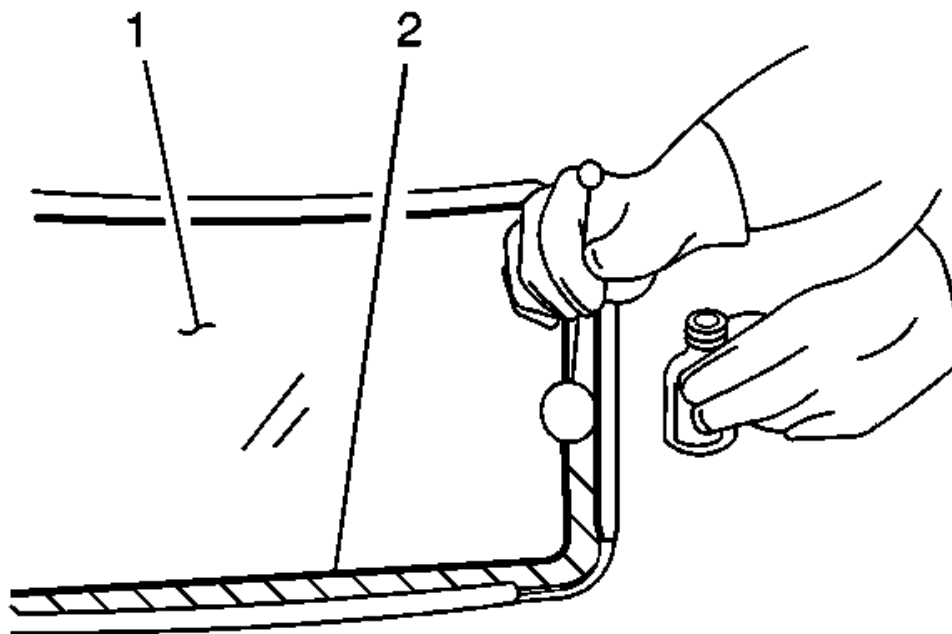


Fig. 41: Applying Glass Primer

Courtesy of GENERAL MOTORS COMPANY

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

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

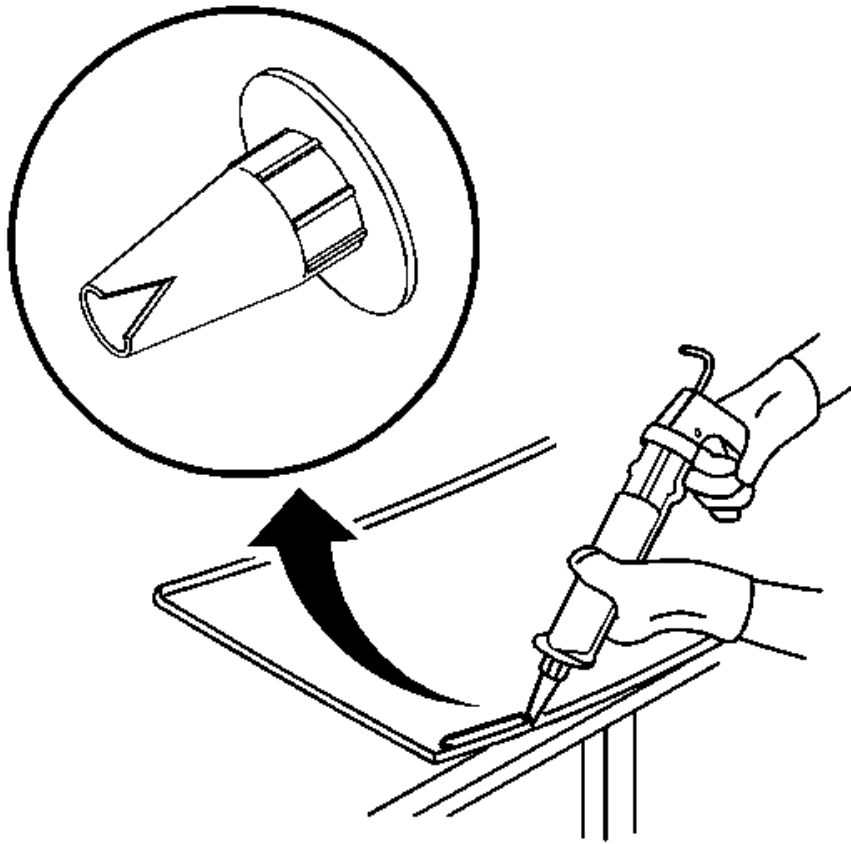


Fig. 42: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS COMPANY

19. Cut the applicator nozzle in order to provide a minimum urethane bead of 8 mm (0.31 in) wide and 16 mm (0.63 in) high.

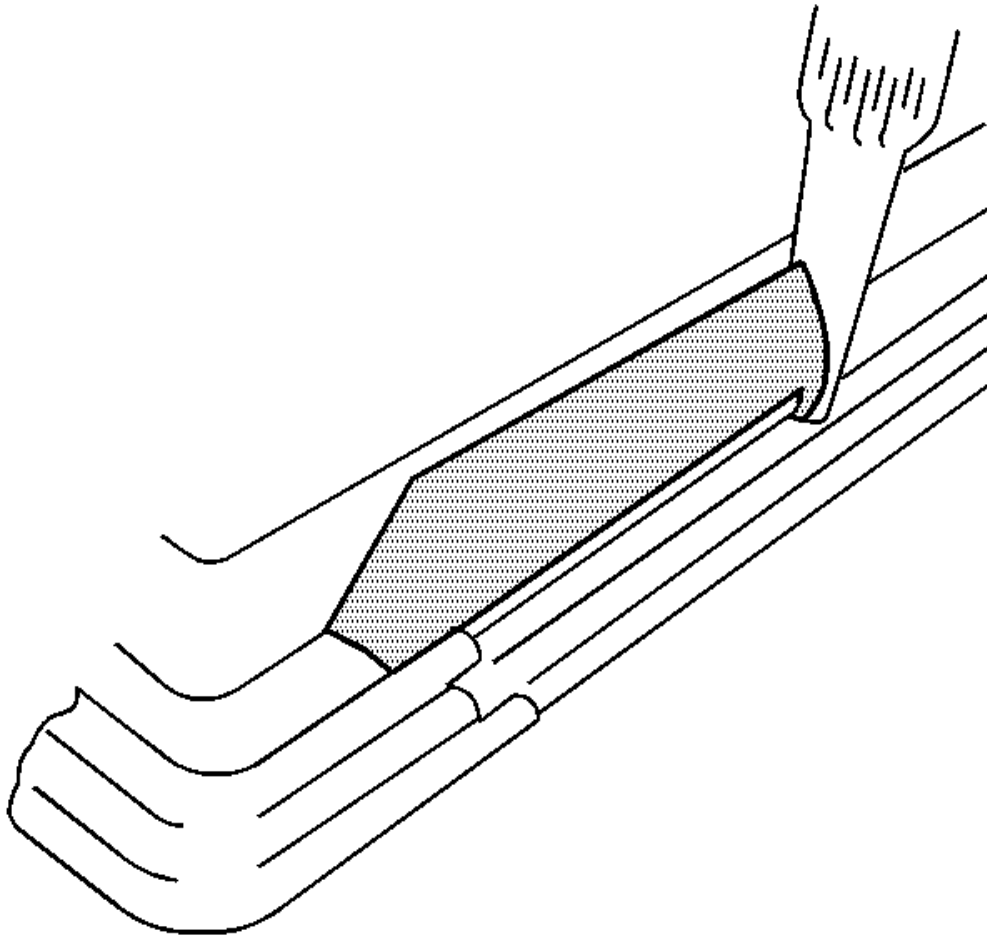


Fig. 43: Applying Continuous Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS COMPANY

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

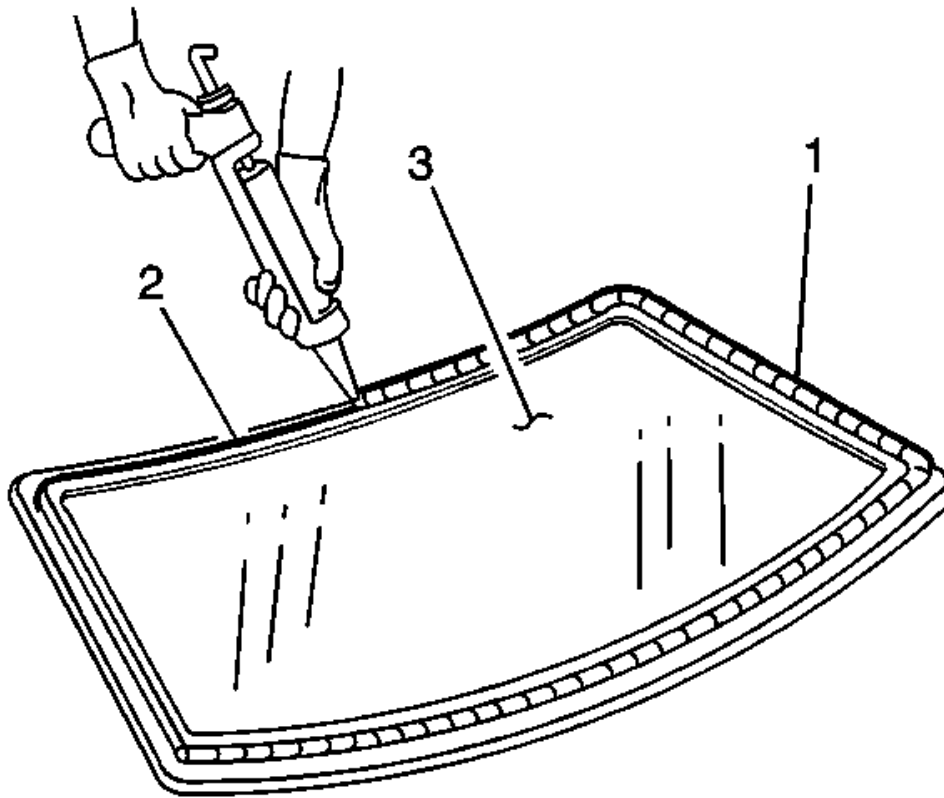


Fig. 44: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS COMPANY

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

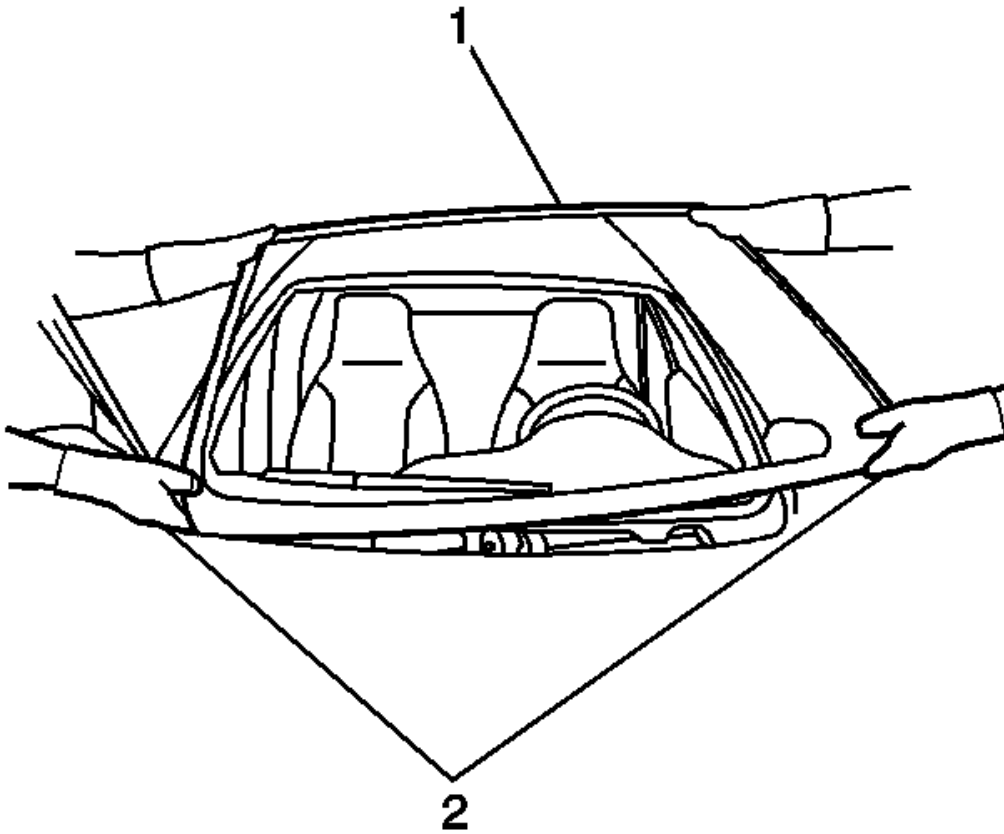


Fig. 45: Removing/Installing Windshield
Courtesy of GENERAL MOTORS COMPANY

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

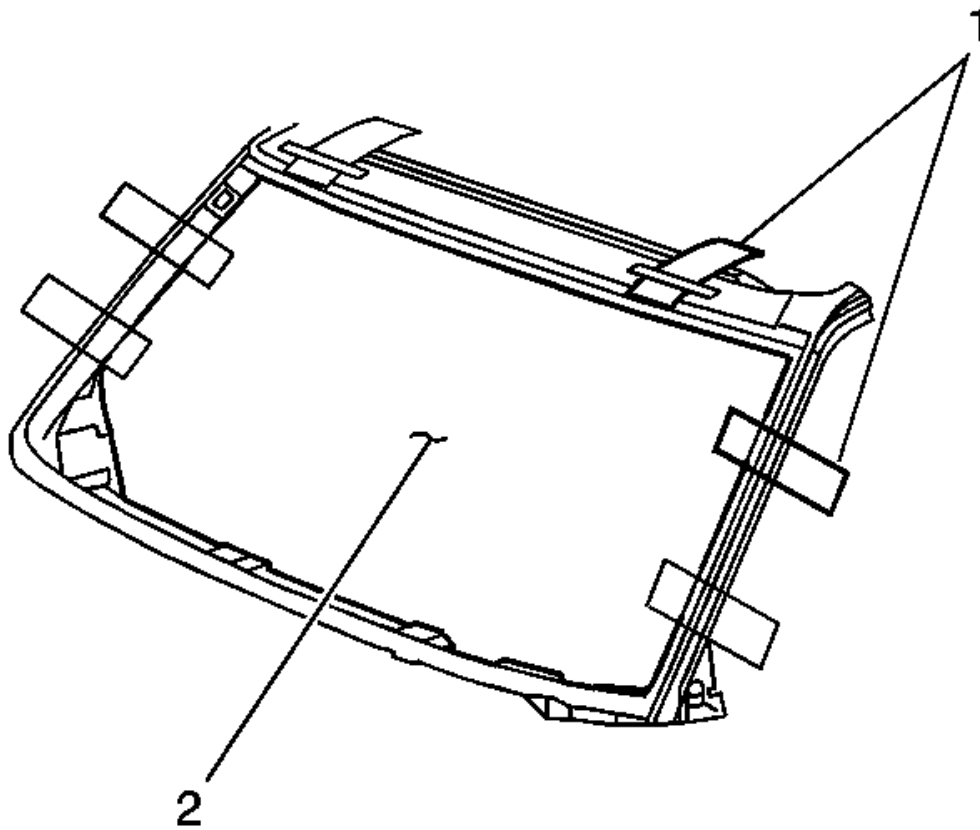


Fig. 46: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS COMPANY

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

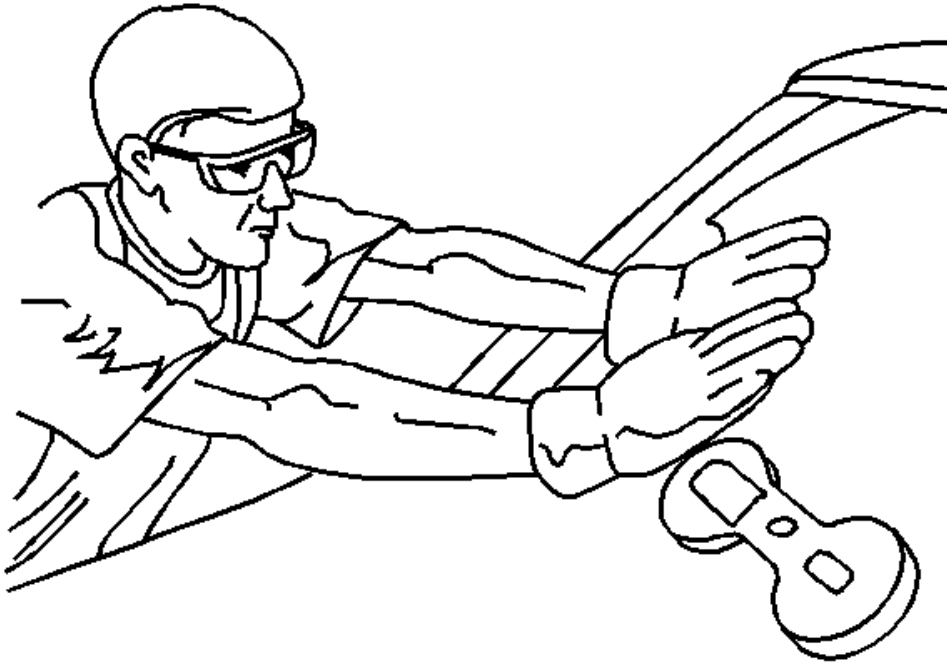


Fig. 47: Pressing Window Into Place

Courtesy of GENERAL MOTORS COMPANY

NOTE: To prevent damage to the window due to objects impacting an exposed edge, upon installation, the window must rest 1 mm (0.04 in) below the surface of the sheet metal.

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

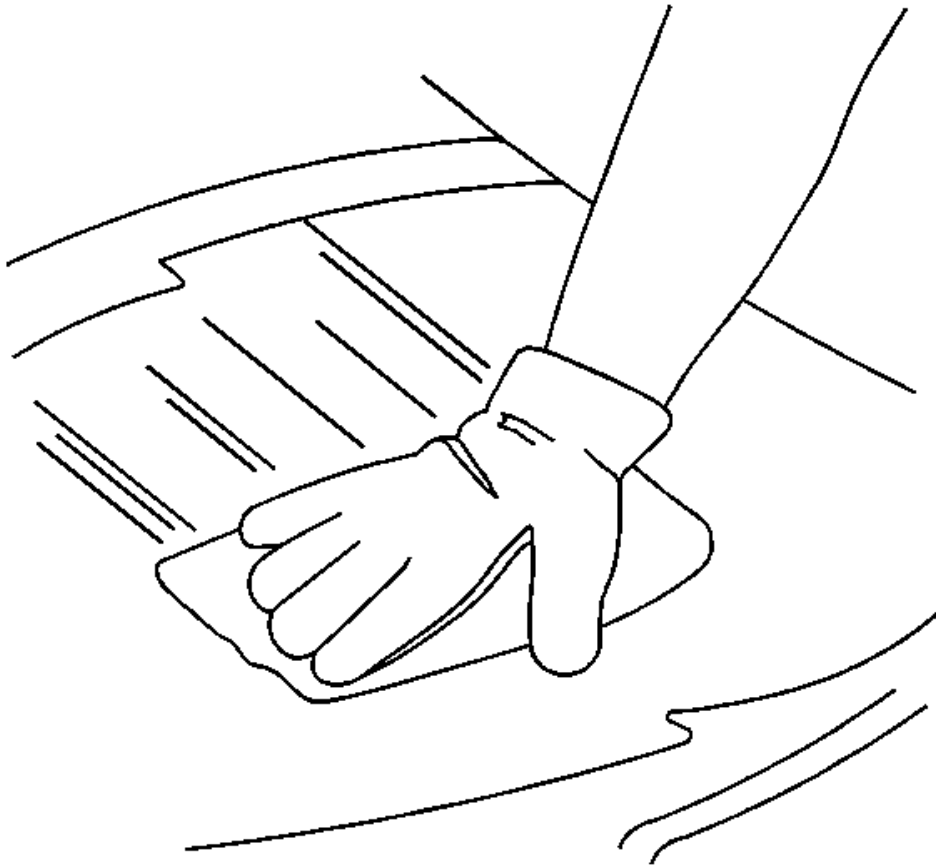


Fig. 48: Cleaning Excess Urethane Adhesive From Body
Courtesy of GENERAL MOTORS COMPANY

26. Clean any excess urethane adhesive from the body.

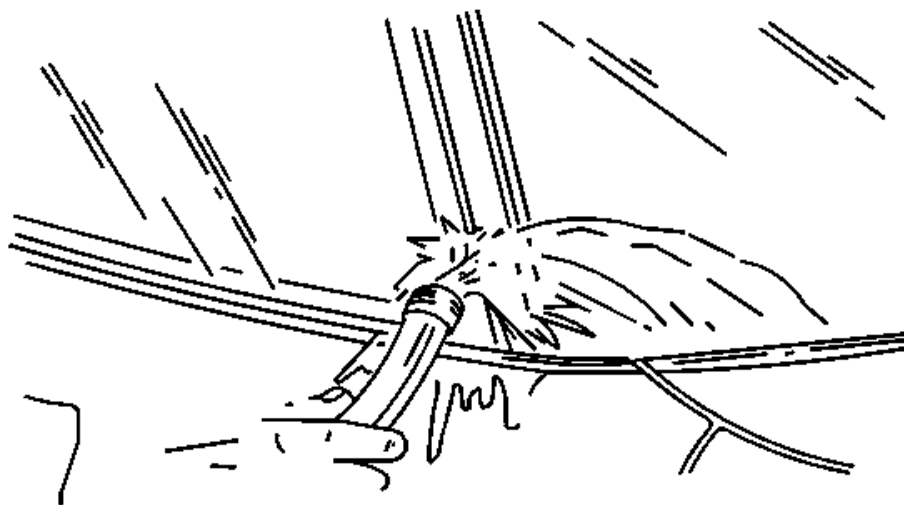


Fig. 49: Performing Water Hose Test
Courtesy of GENERAL MOTORS COMPANY

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

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

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

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

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

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

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

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

ADHESIVE INSTALLATION OF STATIONARY WINDOWS (REAR WINDOW)

WARNING: Refer to Glass and Sheet Metal Handling Warning .

1. Use a urethane adhesive systems which meet GM Specification GM 3651G.
2. Remove all mounds or loose pieces of urethane adhesive from the 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 pinch-weld flange and window 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:
 - High weld
 - Solder spots
 - Hardened sealer
 - Any other obstruction or irregularity in the pinch-weld 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.

WARNING: Refer to Window Retention Warning .

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

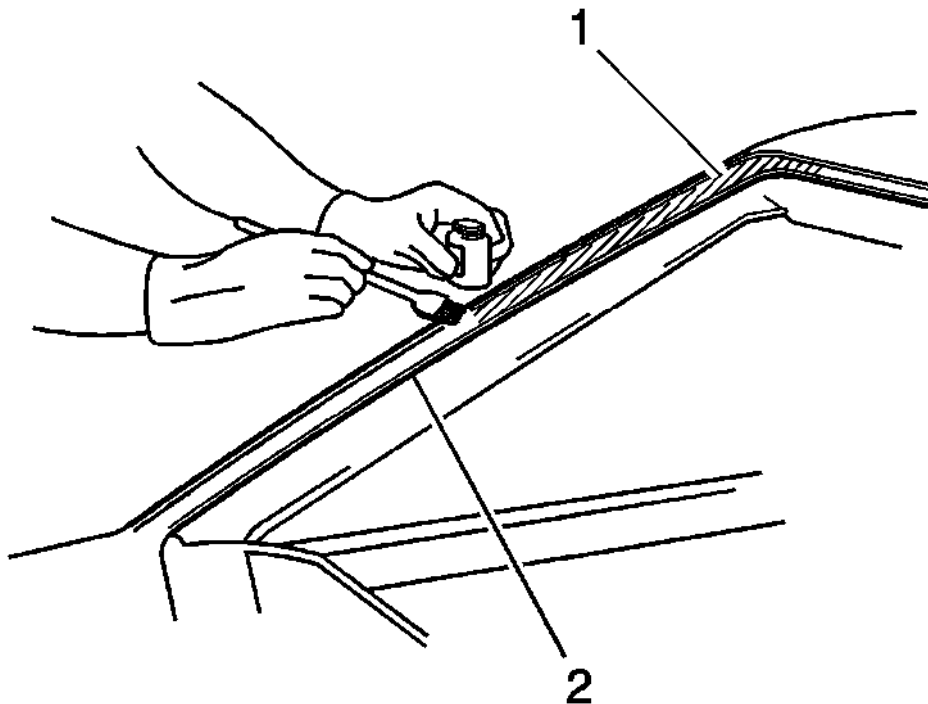


Fig. 50: Applying Pinch-Weld Primer
Courtesy of GENERAL MOTORS COMPANY

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

NOTE: Do not apply the black #3 primer to the existing bead (1) of the urethane

adhesive on the pinch-weld flange. Apply the primer only to nicks, scratches or the primed surfaces.

7. Shake the pinch-weld primer black #3 for at least 1 minute.
8. Use a new dauber in order to apply the primer to the surface of the pinch-weld flange (2).
9. Allow the pinch-weld primer to dry for approximately 10 minutes.

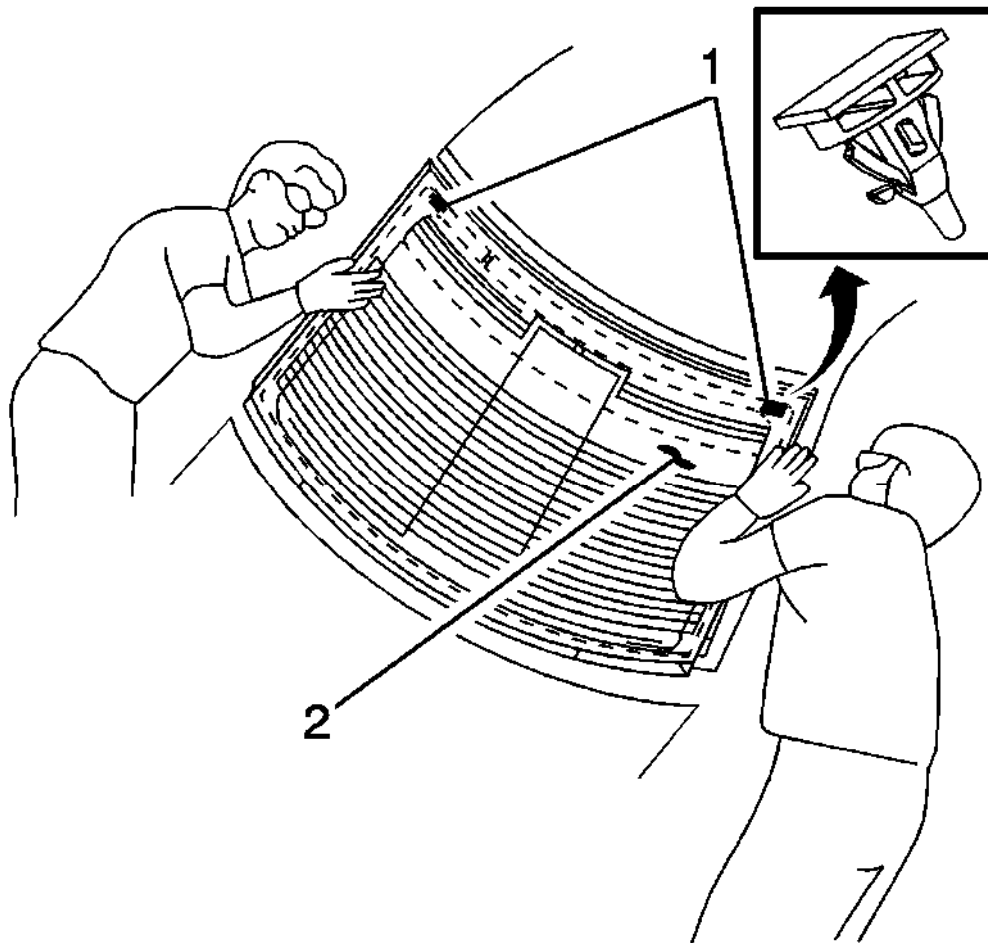


Fig. 51: Installing Rear Window

Courtesy of GENERAL MOTORS COMPANY

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

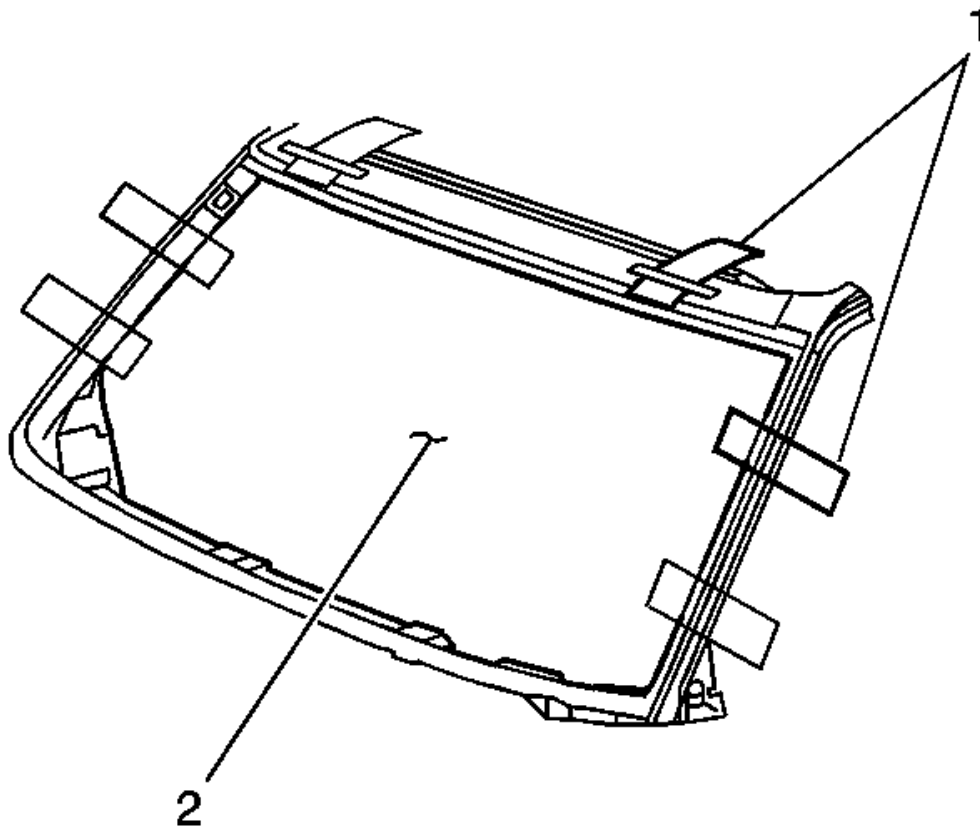


Fig. 52: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS COMPANY

12. Use masking tape 91) to mark the locations of the window (2) in the opening.
13. Cut the masking in the center and remove the window from the opening.

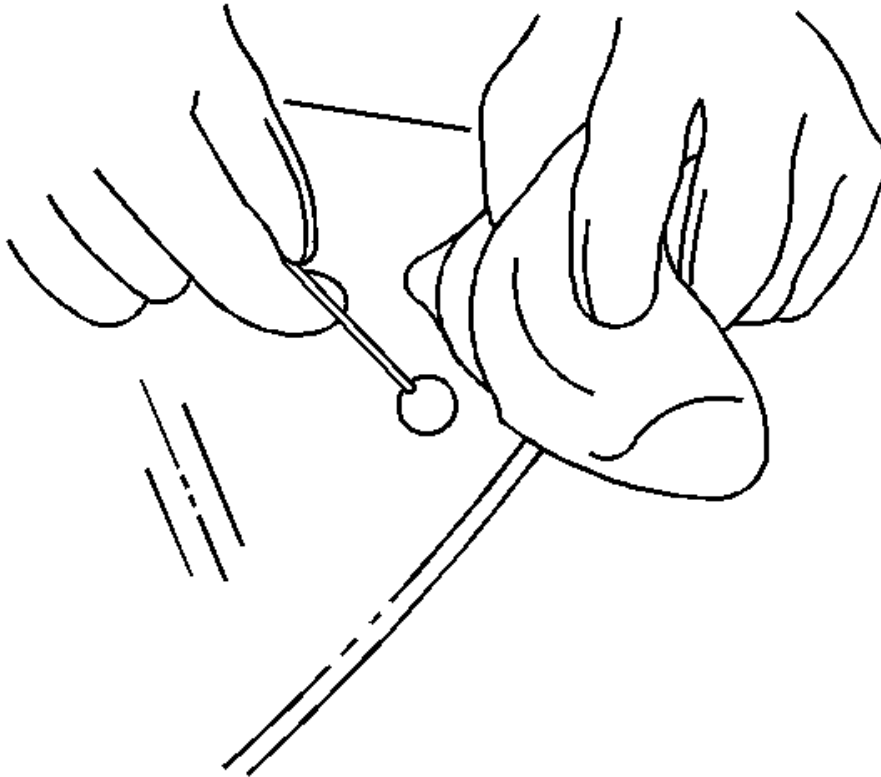


Fig. 53: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

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

14. Use a new dauber in order to apply glass prep clear #1 to the area approximately 18 mm (0.71 in) around the entire perimeter of the window inner surface.

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

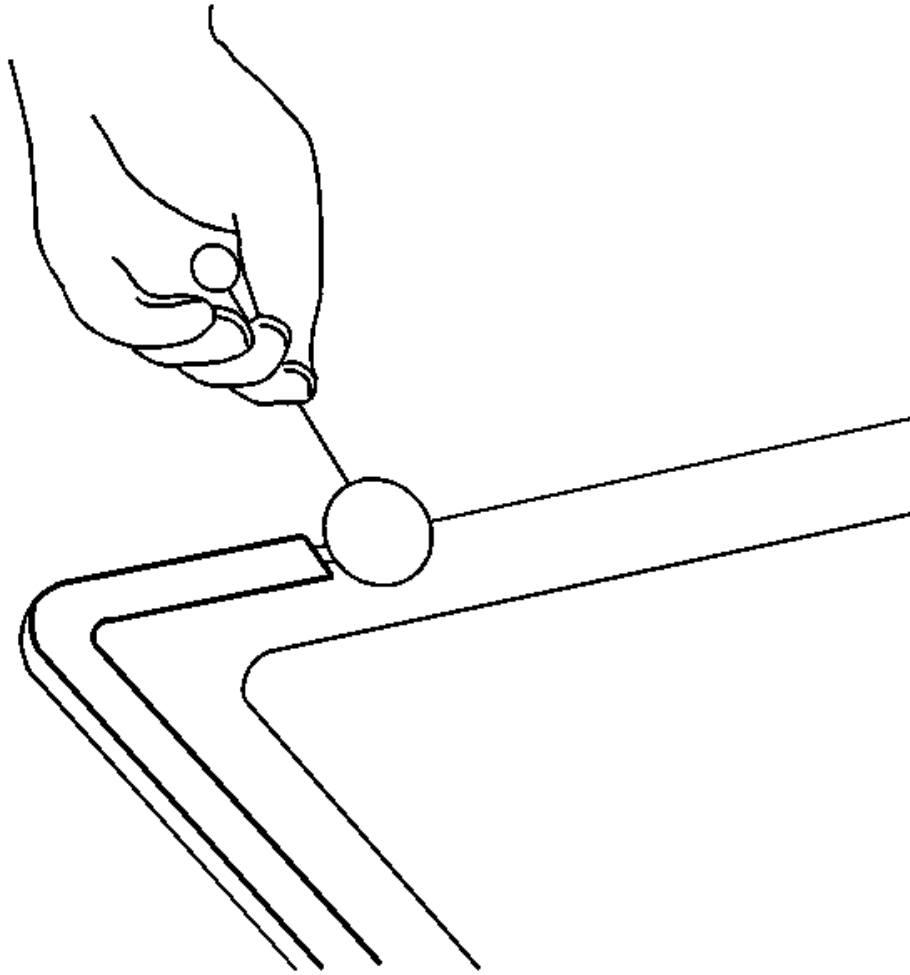


Fig. 54: Applying Glass Prep

Courtesy of GENERAL MOTORS COMPANY

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

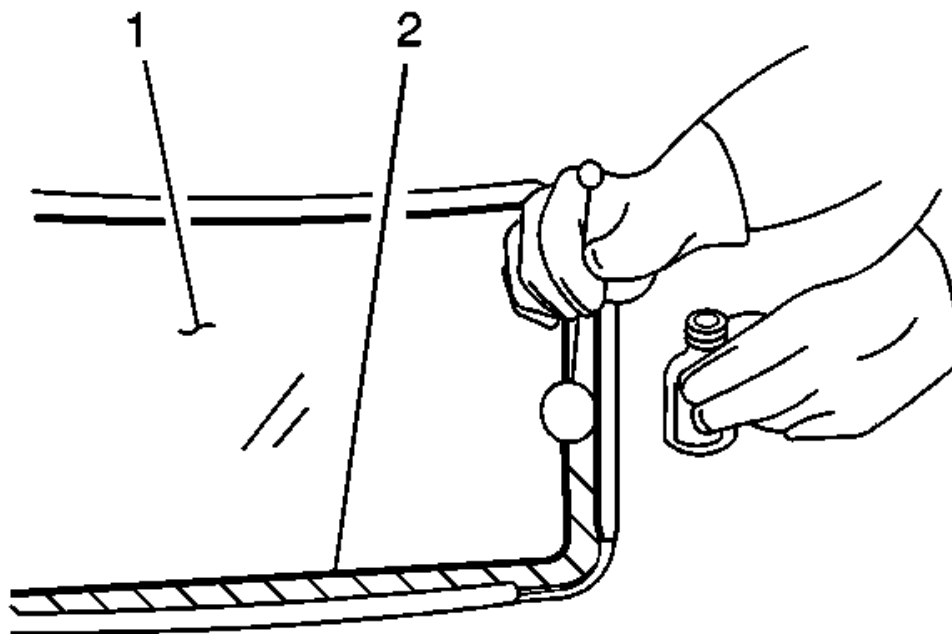


Fig. 55: Applying Glass Primer

Courtesy of GENERAL MOTORS COMPANY

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

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

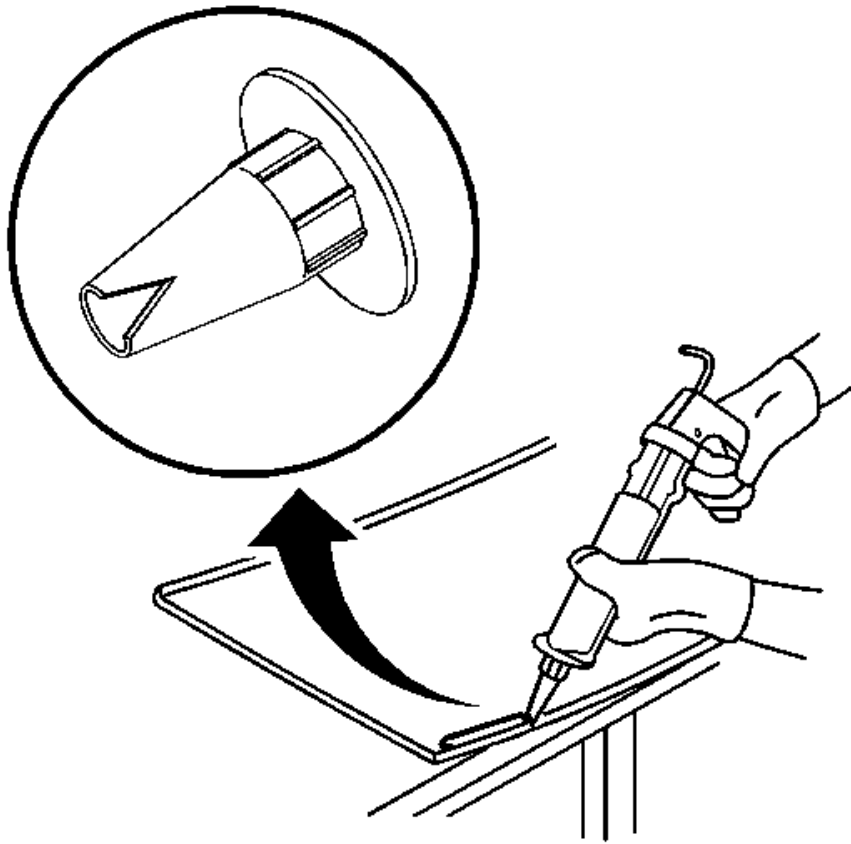


Fig. 56: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS COMPANY

19. Cut the applicator nozzle in order to provide a minimum urethane bead of 8 mm (0.31 in) wide and 16 mm (0.63 in) high.

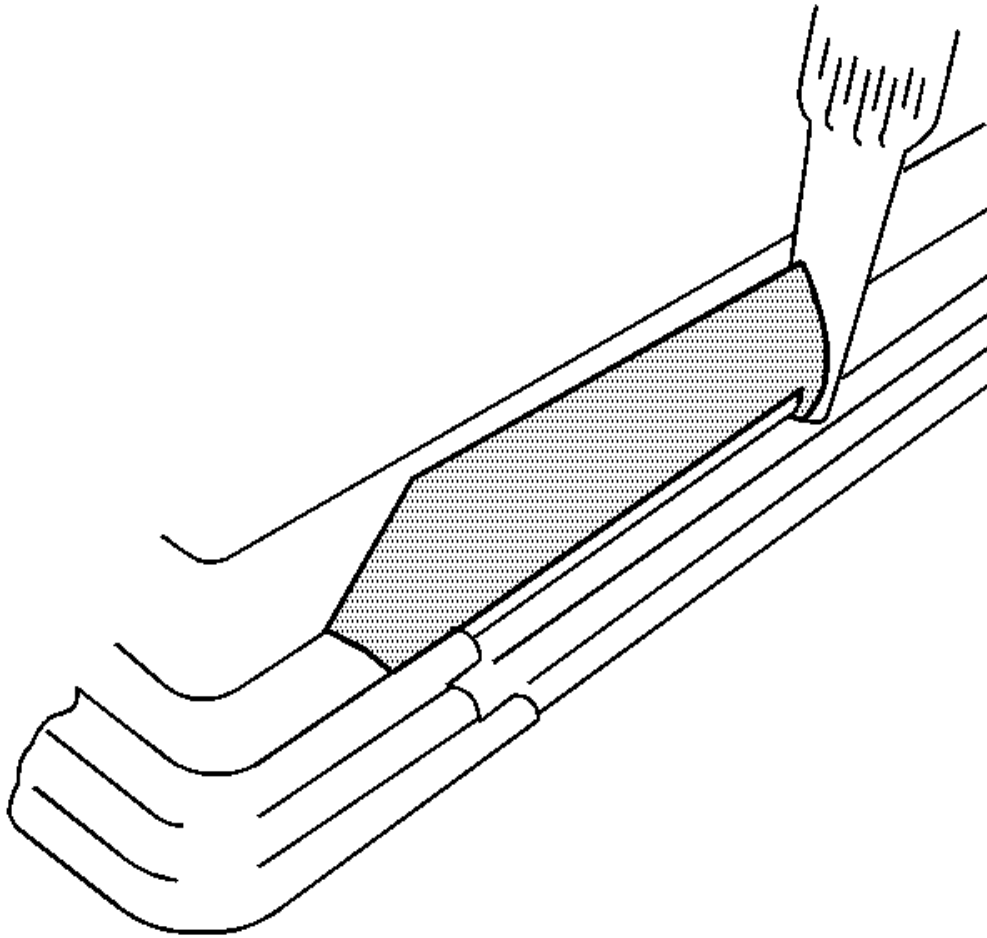


Fig. 57: Applying Continuous Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS COMPANY

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

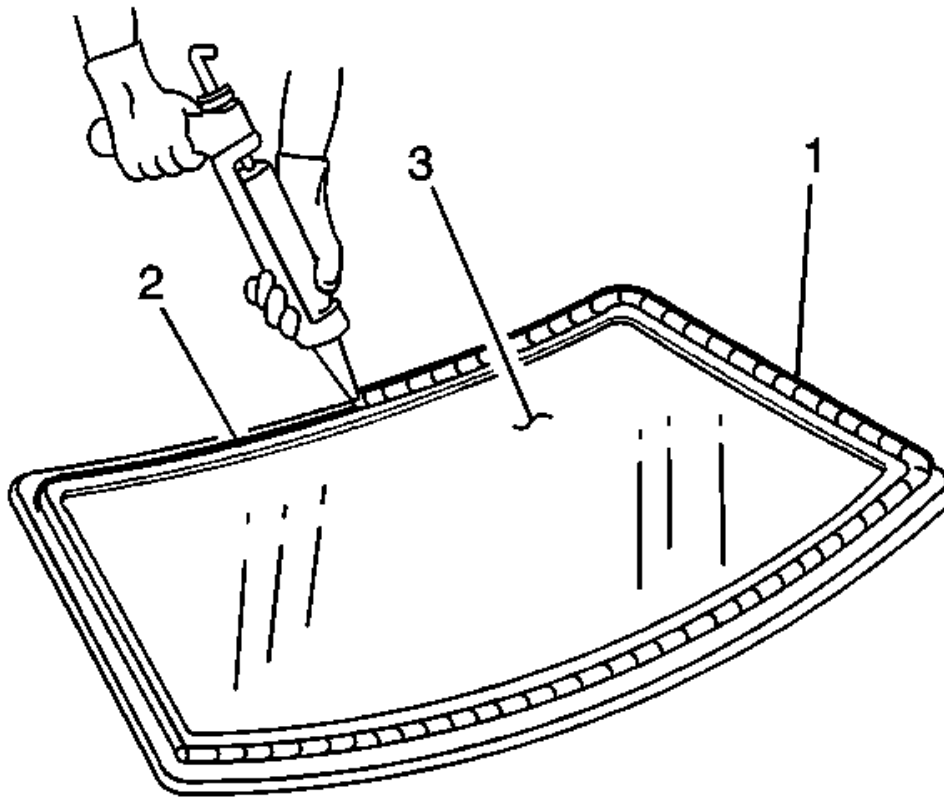


Fig. 58: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS COMPANY

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

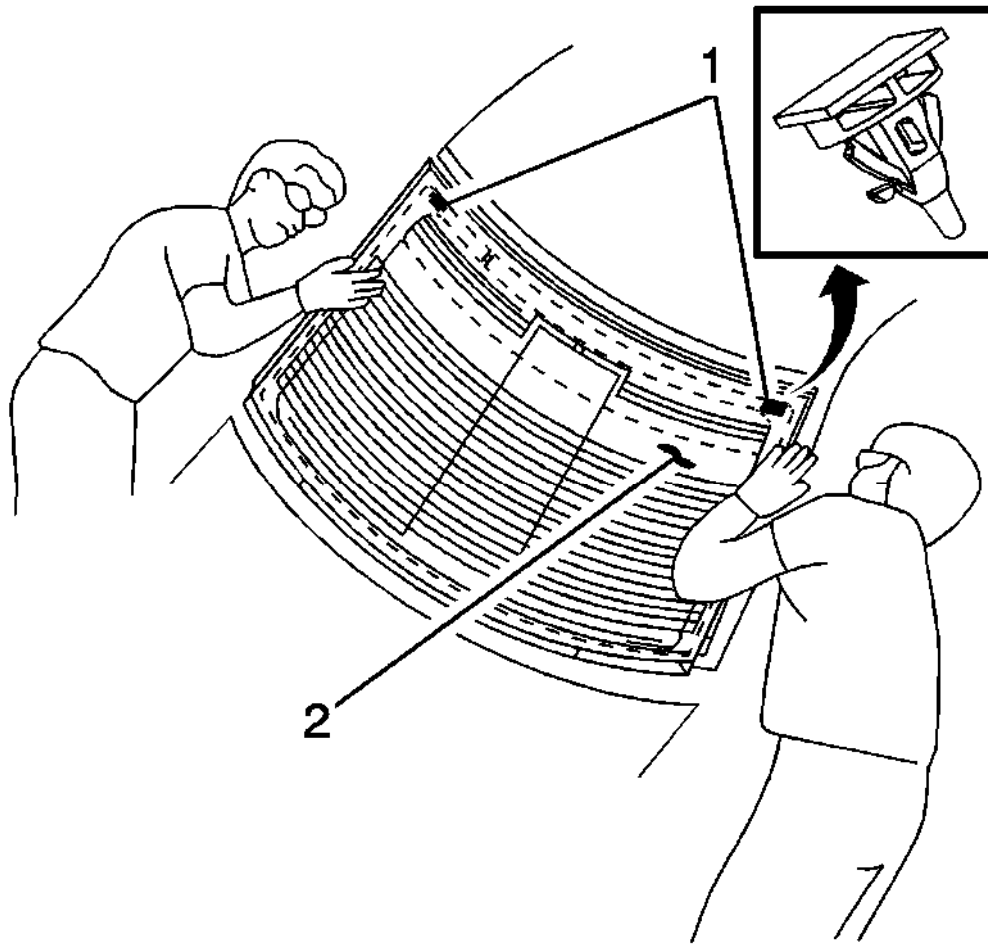


Fig. 59: Installing Rear Window

Courtesy of GENERAL MOTORS COMPANY

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

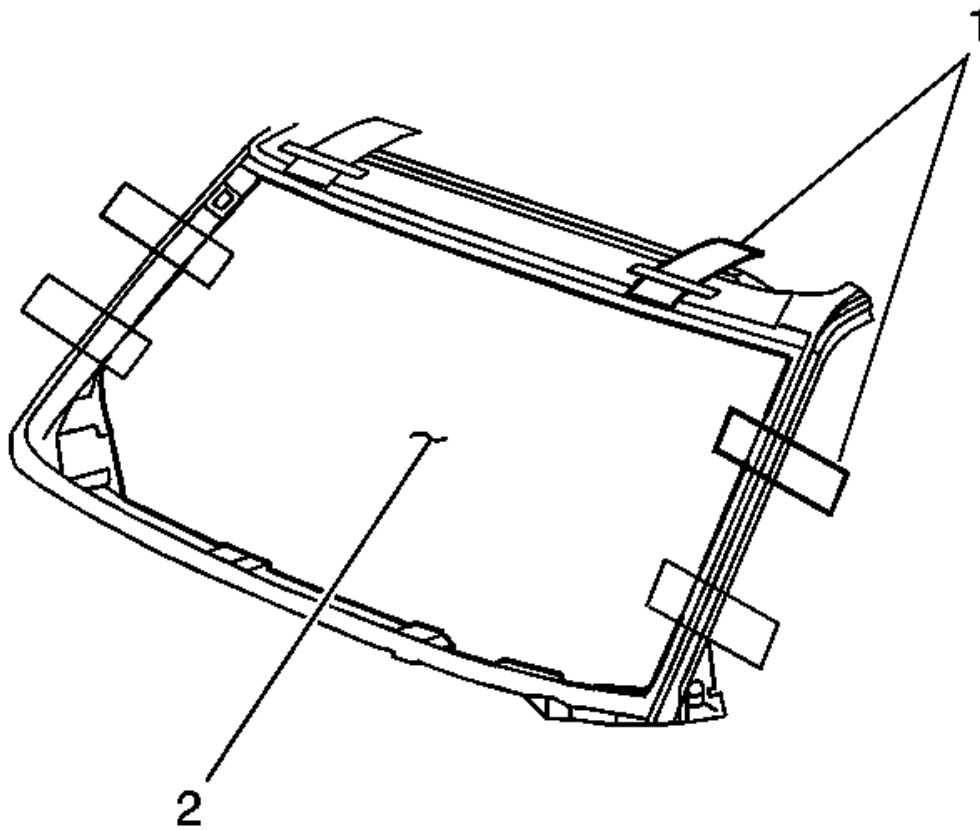


Fig. 60: Aligning Tape Lines On Window To Body
Courtesy of GENERAL MOTORS COMPANY

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

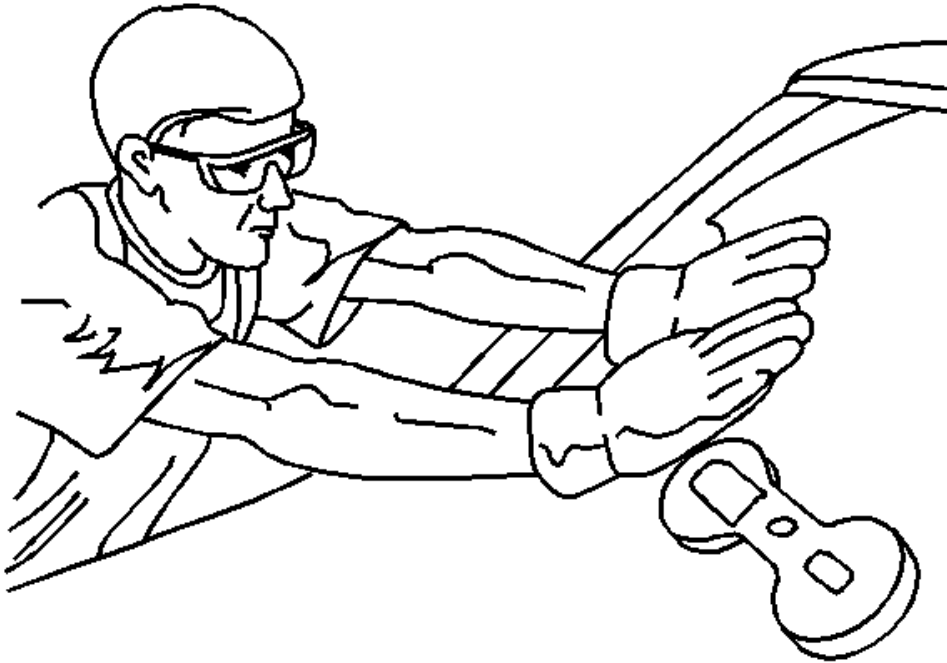


Fig. 61: Pressing Window Into Place

Courtesy of GENERAL MOTORS COMPANY

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

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

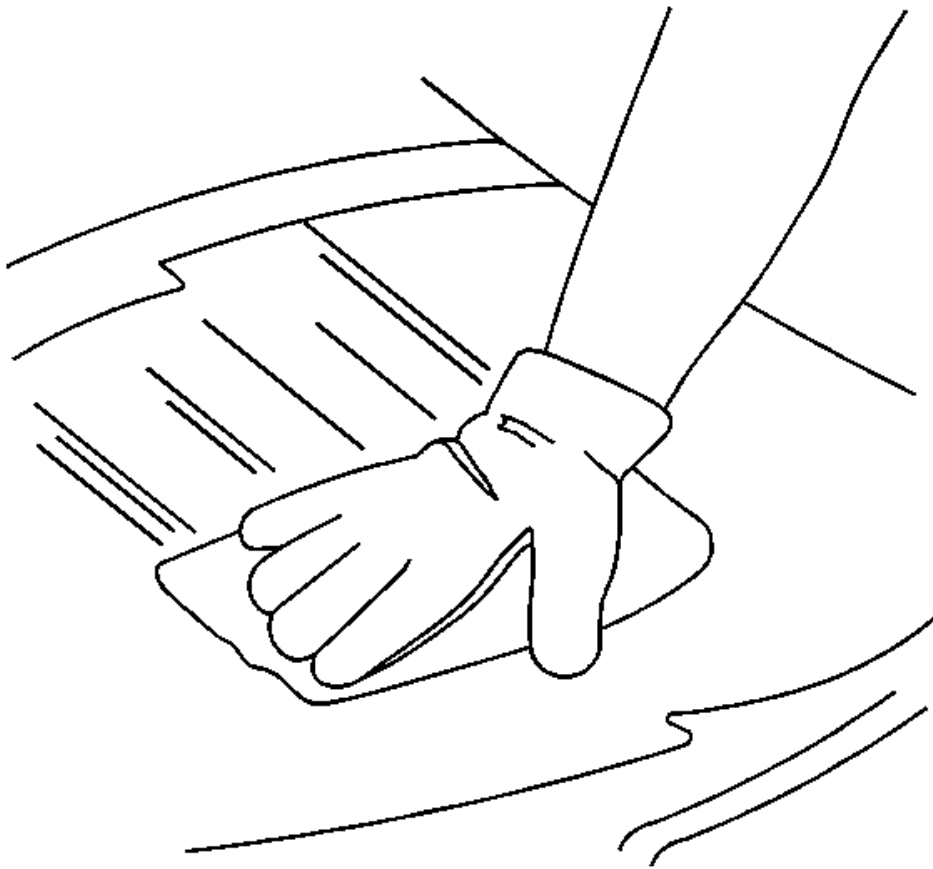


Fig. 62: Cleaning Excess Urethane Adhesive From Body
Courtesy of GENERAL MOTORS COMPANY

26. Clean any excess urethane adhesive from the body.

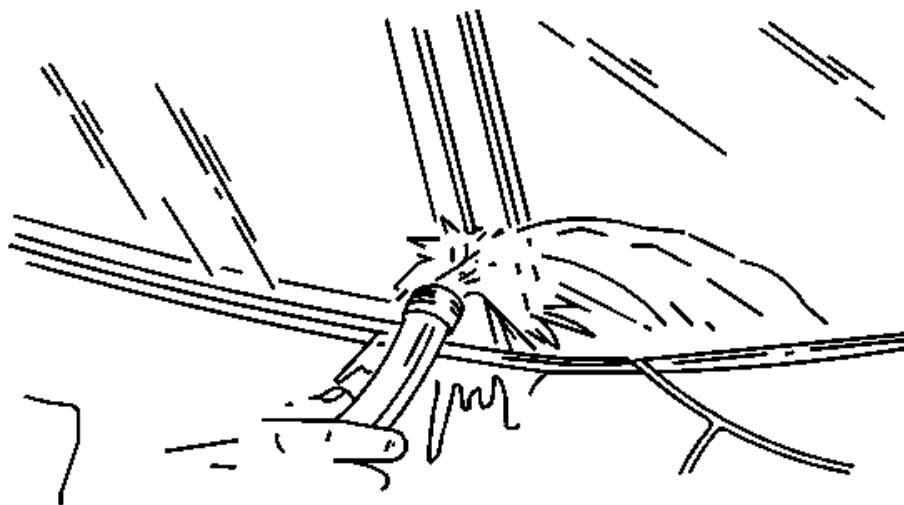


Fig. 63: Performing Water Hose Test
Courtesy of GENERAL MOTORS COMPANY

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

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

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

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

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

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

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

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

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

32. Complete the window installation.

DESCRIPTION AND OPERATION

ADHESIVE SERVICE KIT DESCRIPTION

Use the urethane adhesive for replacement of any urethane adhesive-installed windows.

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.

POWER WINDOWS DESCRIPTION AND OPERATION

Power Windows System Components

The power window system consists of the following components:

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

Power Window System

This vehicle can be configured as follows:

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

Driver Express Up and Express Down Window Motor

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

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

All Doors with Express Down Only Window Motors

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

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

Lockout Switch Feature

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

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

REAR WINDOW DEFOGGER DESCRIPTION AND OPERATION

Rear Window Defogger System Components

The rear window defogger system consists of the following components:

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

Rear Window Defogger Operation

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

Pressing the heated rear window switch on the HVAC control face plate causes the HVAC control head to send a serial data message to the HVAC control module requesting rear window defog operation. The HVAC control module upon receipt of the serial data message will provide voltage to the coil side of the rear window defogger relay, this will energize the relay causing the relay switch contacts to close allowing B+ voltage to flow through the rear defogger grid control circuit to the rear defogger grid.

When the rear heated window switch is pressed and the engine is running, the rear defog control system will remain active for 10 minutes. After the initial cycle has lapsed, pressing the switch again will continue rear window defogger operation, but the cycle will only last 5 minutes. The rear defog control system will function continuously if the vehicle speed is greater than 70 kilometers per hour (45 mph).

STATIONARY WINDOW DESCRIPTION

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

The extended method (also known as long method, full strip or full cut) is the only recommended procedure for General Motors Vehicle.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Illustration	Tool Number / Description
	BO-569-A KM-569-A M-680156 Plug Lifter

2013 Chevrolet Cruze

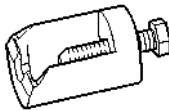
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GE-604-D
MKM-604-D
Torx Bit and Socket Set



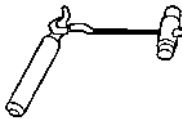
BO-641
MKM-641
Suction Holder



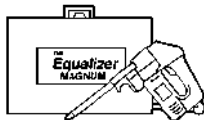
BO-6626
KM-6626
Wiper Arm Puller



DT-6459-B
MKM-J-6459-B
Torque Wrench



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



BO-39032
J-39032
Stationary Glass Removal Tool



EL-47955
J-2534
Multi Diagnostic Interface MDI

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BO-50169
KM-317-B
Remover, Window Crank