2007 ACCESSORIES & EQUIPMENT

Fixed and Moveable Windows - Outlook

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specifications	
	Metric	English
Door Window Regulator Bolts	10 N.m	89 lb in
Door Window Regulator to Door Bolts	10 N.m	89 lb in
Door Window Regulator Motor Bolts to Door	9 N.m	80 lb in
Door Window Regulator Motor to Regulator Bolts	5 N.m	44 lb in
Endgate Molding Retaining Screws	3 N.m	27 lb in
Front Door Window Regulator Clamp Nuts	10 N.m	89 lb in
Front Door Window Weatherstrip/Run Channel Retaining Bolts	10 N.m	89 lb in
Liftgate Window Striker Nuts	6 N.m	53 lb in
Side Reveal Molding Screws	2 N.m	18 lb in

SCHEMATIC AND ROUTING DIAGRAMS

MOVEABLE WINDOW SCHEMATICS (AXA)

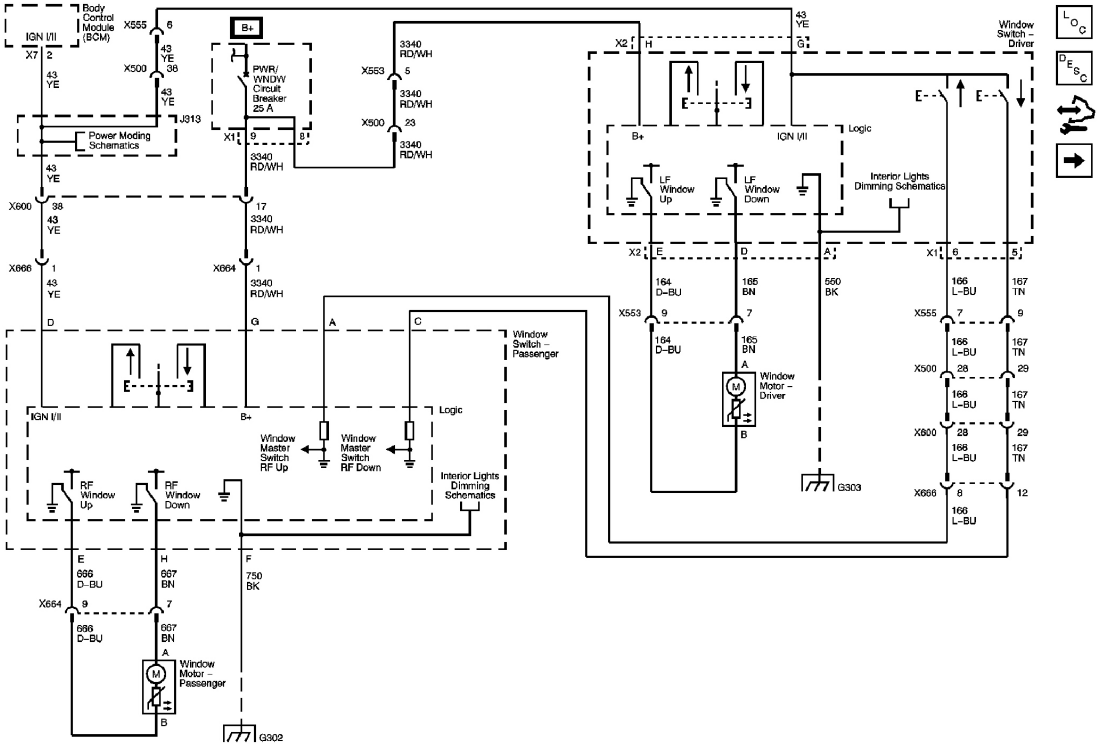


Fig. 1: Front Moveable Window Schematic (Except AXC/AXE)
Courtesy of GENERAL MOTORS CORP.

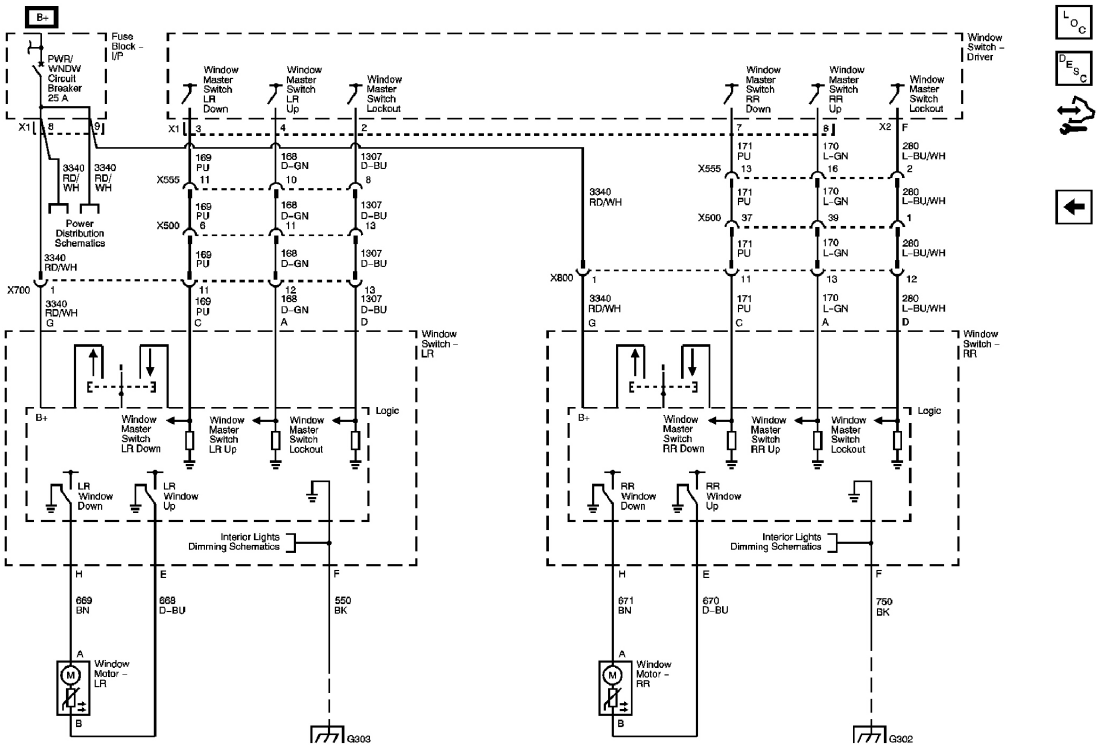


Fig. 2: RearMoveable Window Schematic
Courtesy of GENERAL MOTORS CORP.

MOVEABLE WINDOW SCHEMATICS (AXC/AXE)

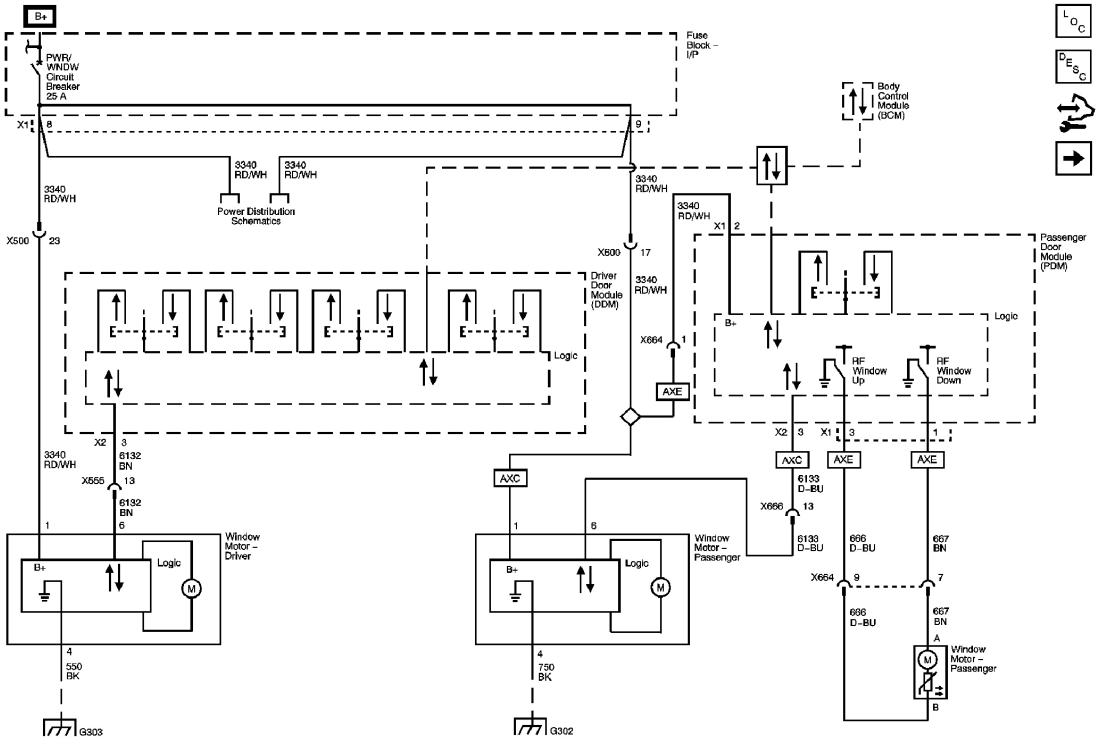


Fig. 3: Front Moveable Window Schematic (AXC/AXE)
Courtesy of GENERAL MOTORS CORP.

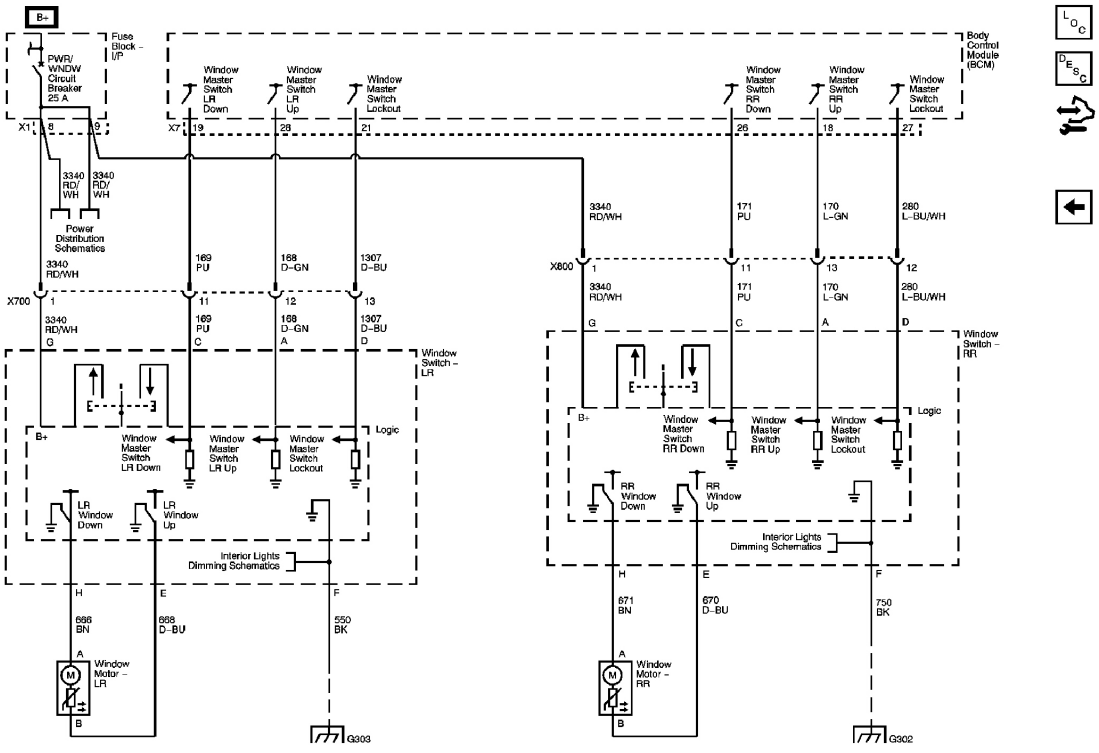
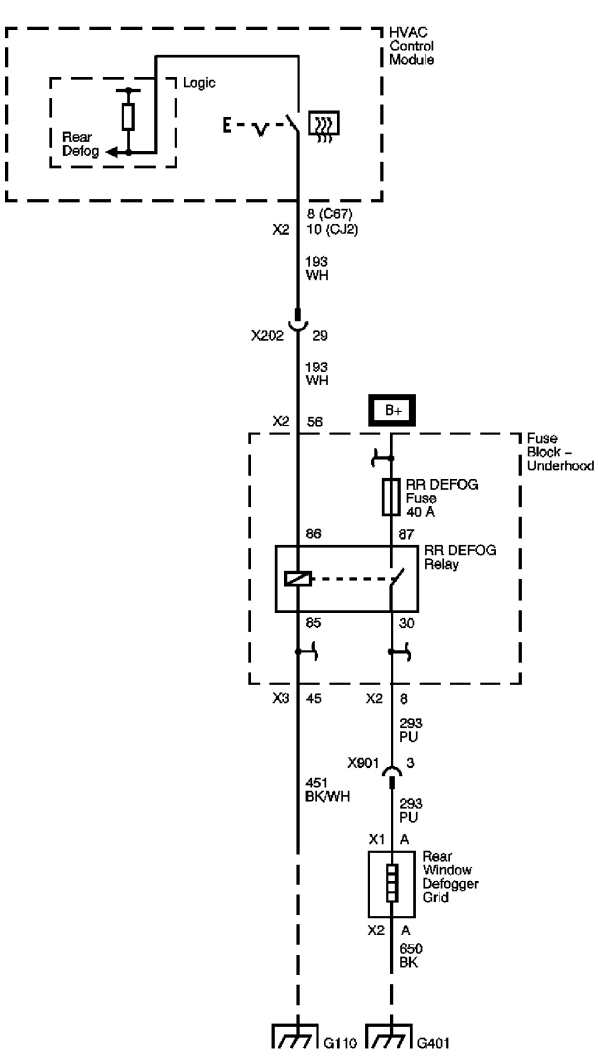


Fig. 4: Rear Moveable Window Schematic (AXC/AXE)
Courtesy of GENERAL MOTORS CORP.

DEFOGGER SCHEMATICS



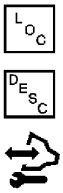


Fig. 5: Defogger Schematic
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

WINDOW SYSTEMS COMPONENT VIEWS

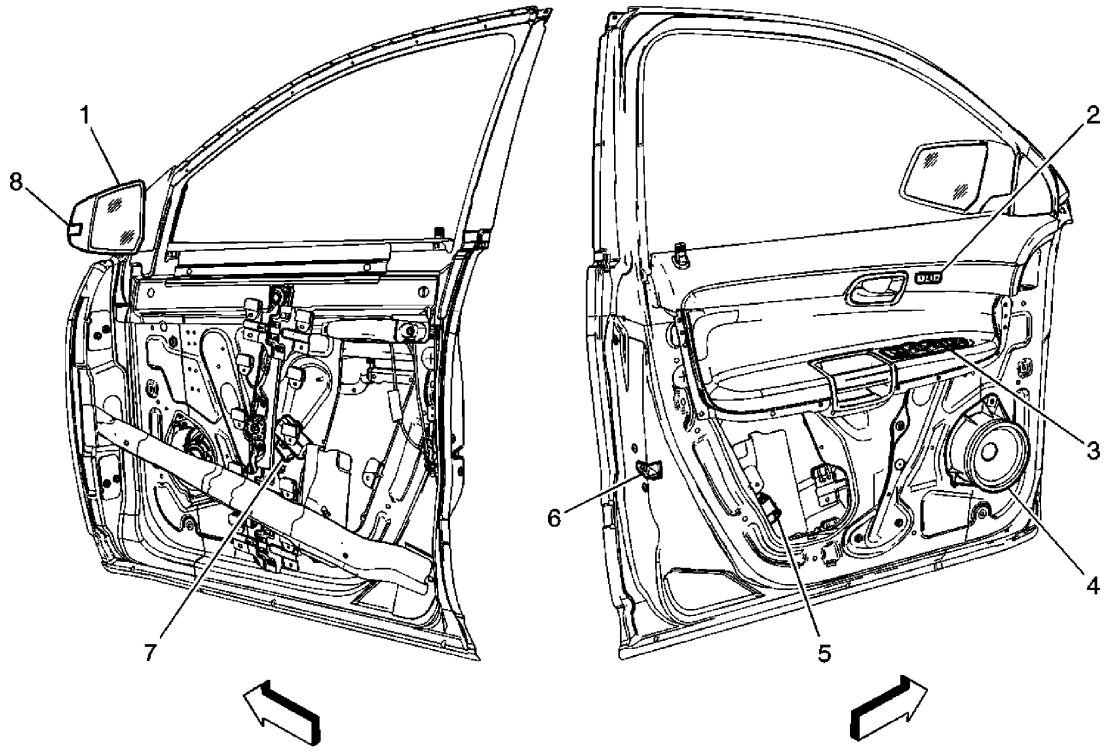


Fig. 6: Identifying Driver Door Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 6

Callout	Component Name
1	Outside Rearview Mirror - Driver
2	Memory Seat Switch (AG3)
3	Driver Door Module (DDM) (AXC/AXE)
4	Speaker - LF Door
5	Inflatable Restraint Side Impact Sensing Module (SISM) - Left
6	Door Latch Assembly - Driver
7	Window Motor - Driver
8	Turn Signal Lamp (Part of Outside Rearview)

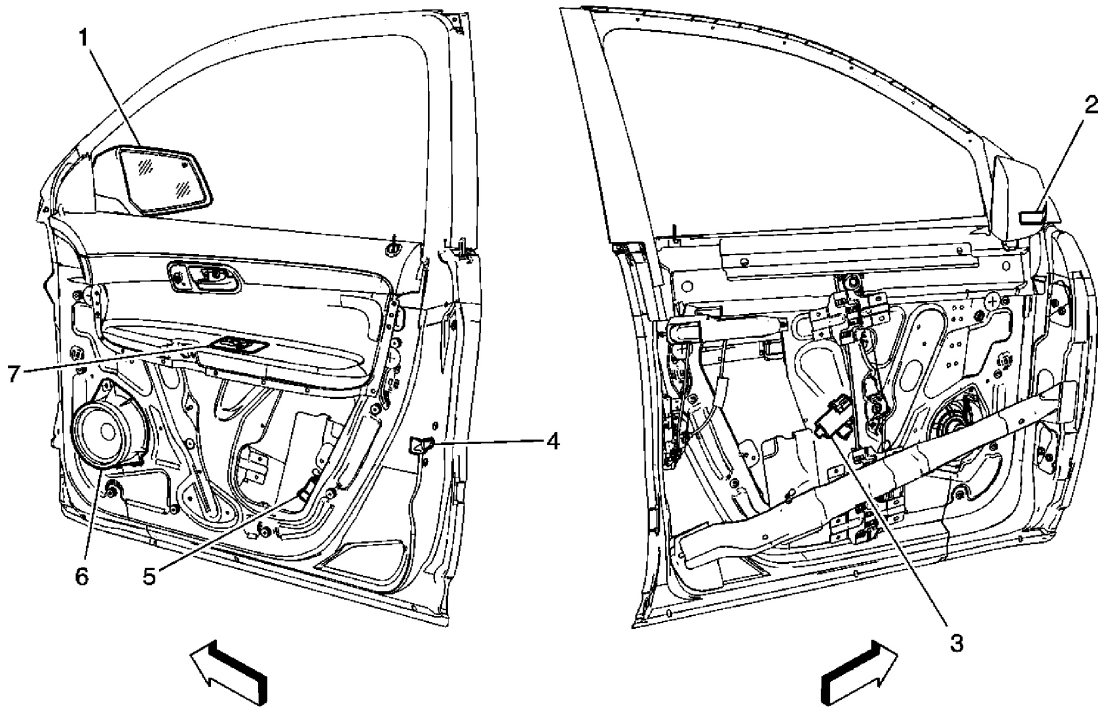


Fig. 7: Identifying Passenger Door Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 7

Callout	Component Name
1	Outside Rearview Mirror - Passenger
2	Turn Signal Lamp (Part of Outside Rearview Mirror)
3	Window Motor - Passenger
4	Door Latch Assembly - Passenger
5	Inflatable Restraint Side Impact Sensing Module (SISM) - Right
6	Speaker - RF Door
7	Window Switch - Passenger (AXA)

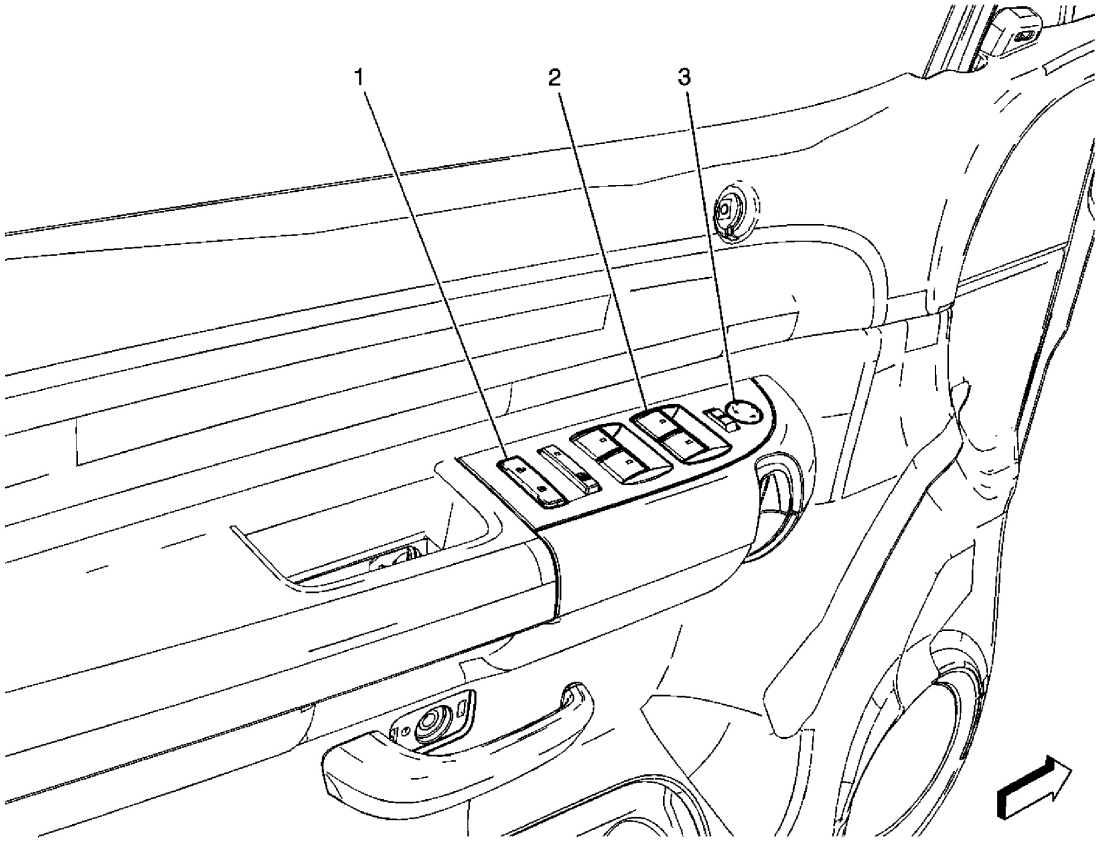


Fig. 8: Identifying Driver Door Switches (Without AXC Or AXE)
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 8

Callout	Component Name
1	Door Lock Switch - Driver
2	Window Switch - Driver
3	Outside Rearview Mirror Switch

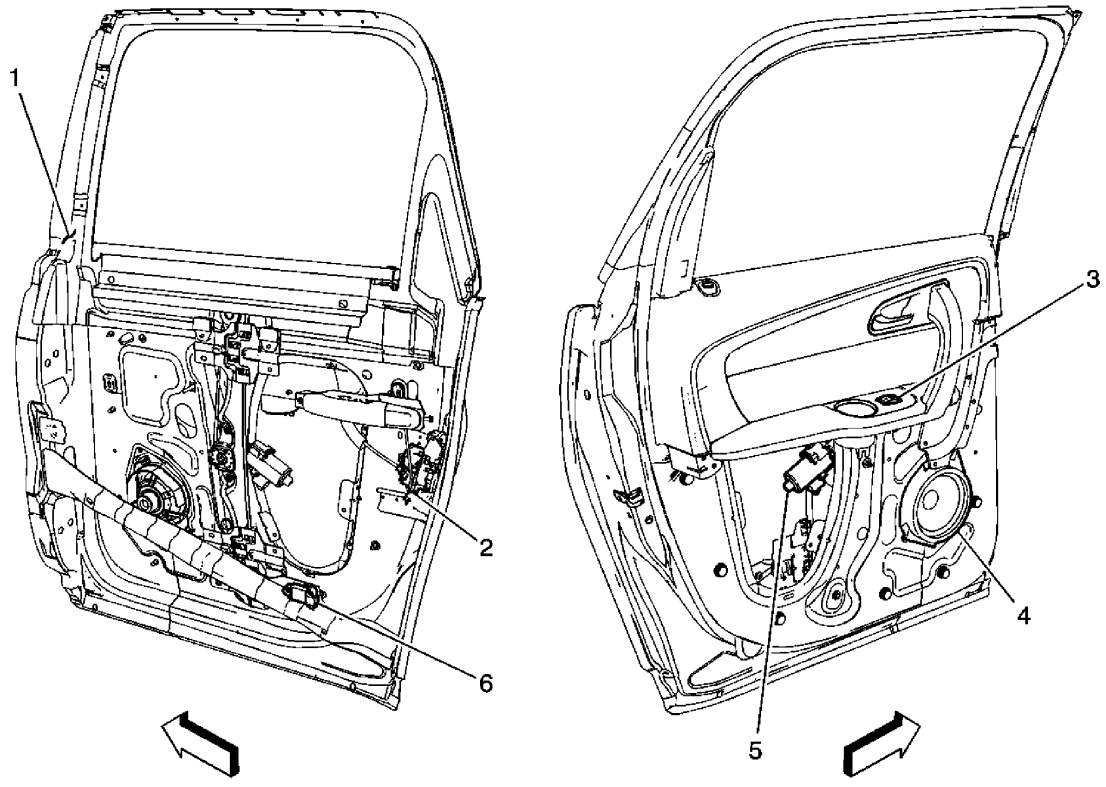


Fig. 9: Locating LR Door Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 9

Callout	Component Name
1	Door Frame
2	Door Latch Assembly - LR
3	Window Switch - LR
4	Speaker - LR Door
5	Window Motor - LR
6	Inflatable Restraint Side Impact Sensing Module (SISM) - LR

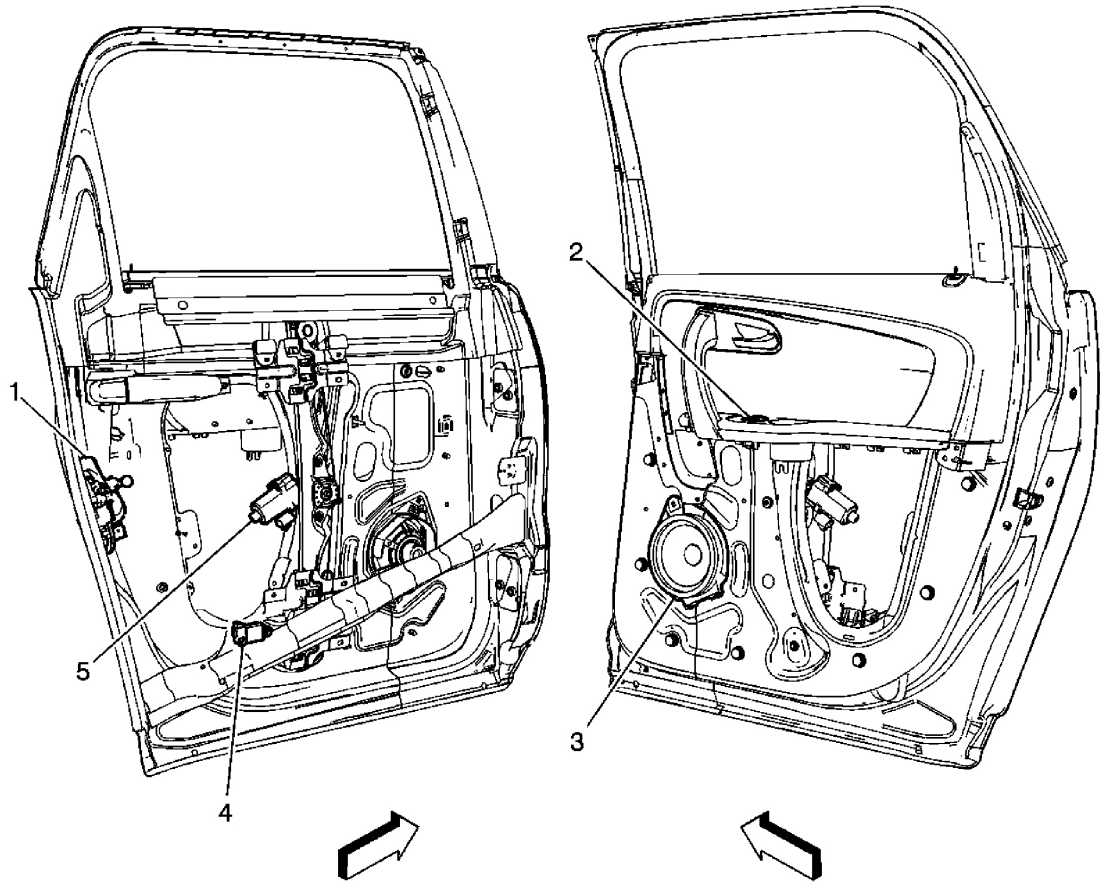


Fig. 10: Locating RR Door Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 10

Callout	Component Name
1	Door Latch Assembly - RR
2	Window Switch - RR
3	Speaker - RR Door
4	Inflatable Restraint Side Impact Sensing Module (SISM) - RR
5	Window Motor - RR

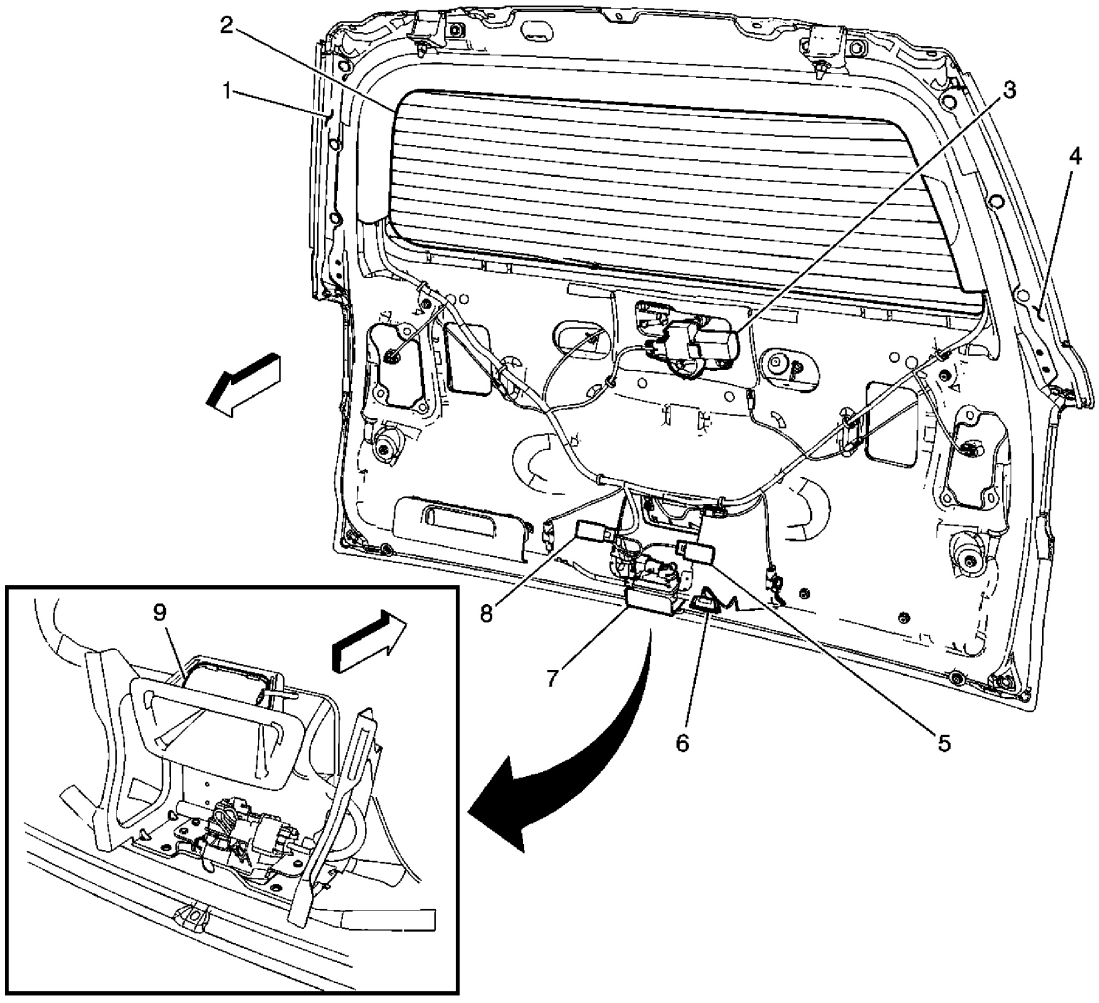


Fig. 11: Identifying Liftgate Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 11

Callout	Component Name
1	Liftgate Object Sensor - Right (E61)
2	Rear Window Defogger Grid
3	Rear Window Wiper Motor
4	Liftgate Object Sensor - Left (E61)
5	Courtesy Lamp - Liftgate - Left
6	Liftgate Switch - Interior (E61)
7	Liftgate Latch Assembly
8	Courtesy Lamp - Liftgate - Right

9	Liftgate Switch - Exterior (E61)

WINDOW SYSTEMS CONNECTOR END VIEWS

Rear Window Defogger Grid X1

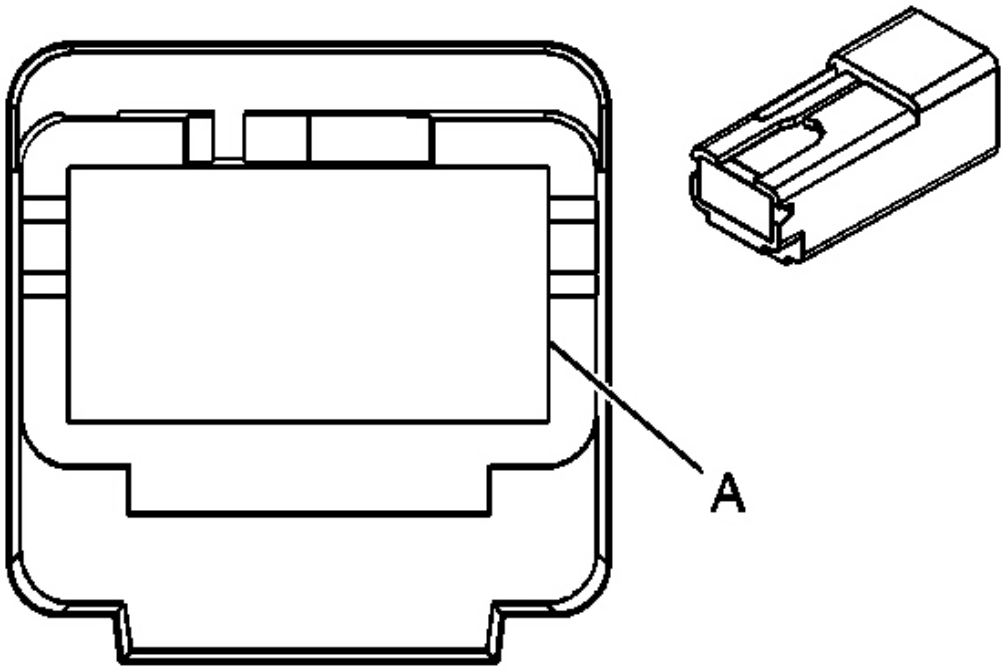


Fig. 12: Rear Window Defogger Grid X1 Connector End View
Courtesy of GENERAL MOTORS CORP.

Rear Window Defogger Grid X1 Connector Parts Information

Connector Part Information

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

Terminal Part Information

- Terminal/Tray: 12034110/18

- Core/Insulation Crimp: B/G
- Release Tool/Test Probe: 12094430/J-35616-42 (RD)

Rear Window Defogger Grid X1 Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	5 PU	293	Rear Defog Element Supply Voltage

Rear Window Defogger Grid X2

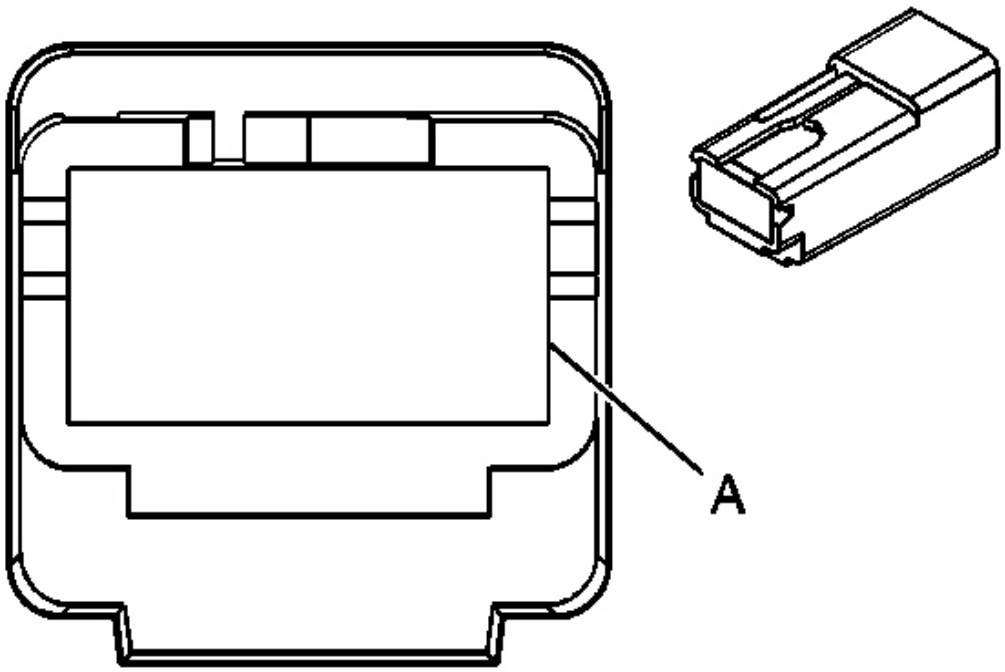


Fig. 13: Rear Window Defogger Grid X2 Connector End View
Courtesy of GENERAL MOTORS CORP.

Rear Window Defogger Grid X2 Connector Parts Information

Connector Part Information

- OEM: 12092133
- Service: 12167133

- Description: 1-Way F Metri-Pack 630 Series Self Lock (BK)

Terminal Part Information

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

Rear Window Defogger Grid X2 Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	3 BK	650	Ground

Window Motor - Driver (WDA+AXA)

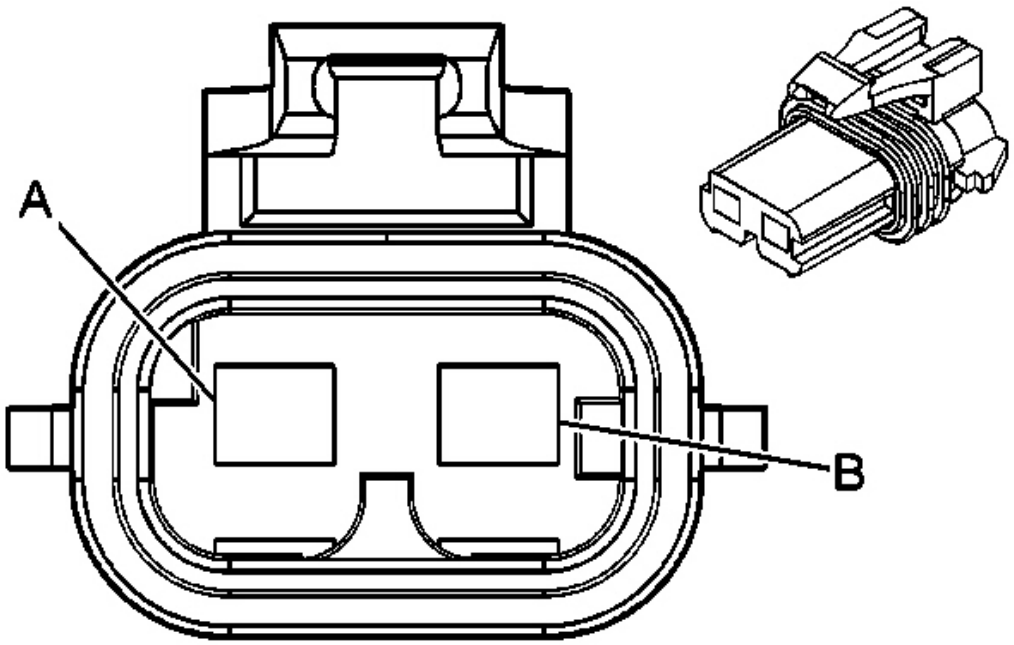


Fig. 14: Window Motor - Driver (WDA+AXA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Motor - Driver (WDA+AXA) Connector Parts Information

Connector Part Information

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

Terminal Part Information

- Terminal/Tray: 12110845/4
- Core/Insulation Crimp: F/5
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Window Motor - Driver (WDA+AXA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	3 BN	165	Power Window Motor Left Front Down Control
B	3 D-BU	164	Power Window Motor Left Front Up Control

Window Motor - Driver (Z88+AXA)

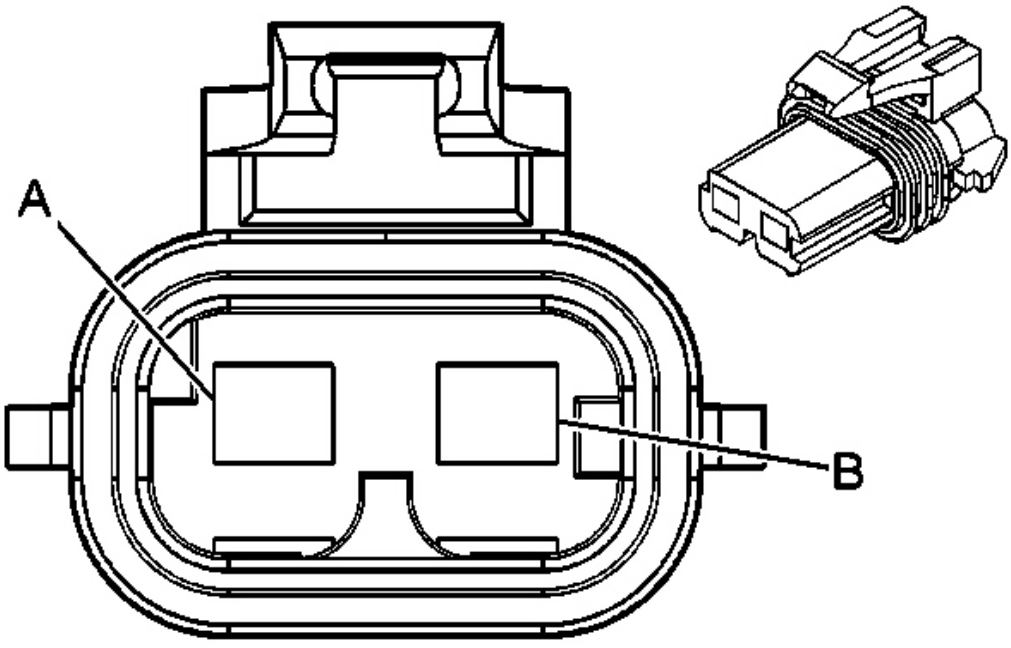


Fig. 15: Window Motor - Driver (Z88+AXA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Motor - Driver (Z88+AXA) Connector Parts Information

Connector Part Information

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

Terminal Part Information

- Terminal/Tray: 12110845/4
- Core/Insulation Crimp: A/5
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Window Motor - Driver (Z88+AXA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

A	2 D-BU	165	Power Window Motor Left Front Down Control
B	2 BN	164	Power Window Motor Left Front Up Control

Window Motor - Driver (WDA+AXC/AXE)

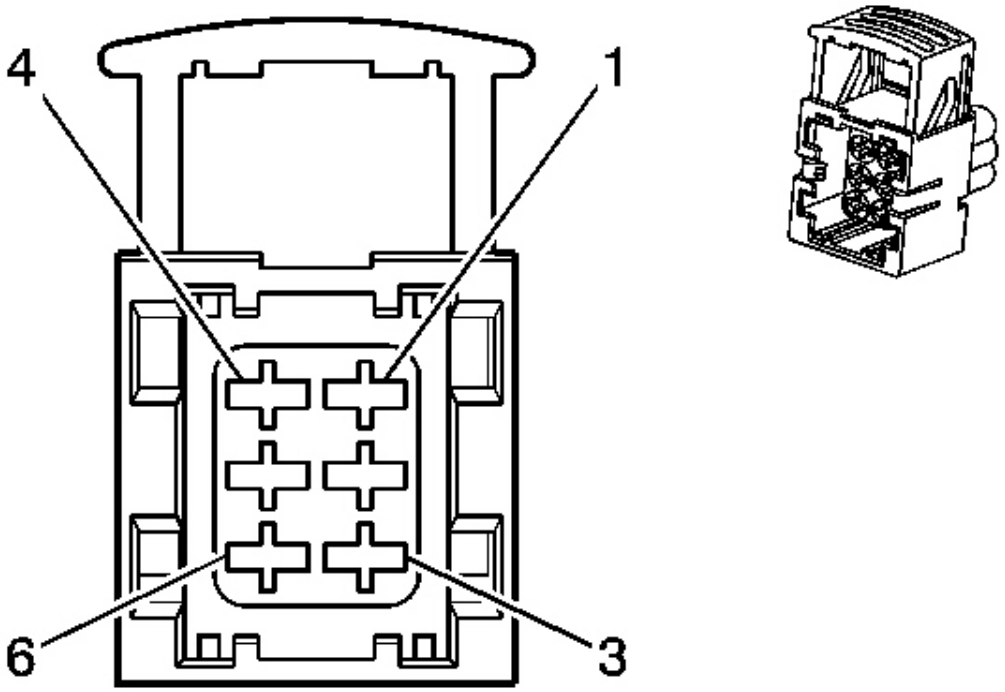


Fig. 16: Window Motor - Driver (WDA+AXC/AXE) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Motor - Driver (WDA+AXC/AXE) Connector Parts Information

Connector Part Information

- OEM: 2-1355696-1
- Service: 88988401
- Description: 6-Way F Timer Jr-Power Series, Sealed (GY)

Terminal Part Information

- Pins: 1, 4
- Terminal/Tray: 4-964273-1/15
- Core/Insulation Crimp: C/5
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

- Pins: 6
- Terminal/Tray: 4-964286-1/16
- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

Window Motor - Driver (WDA+AXC/AXE) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	2 RD/WH	3340	Battery Positive Voltage
2-3	-	-	Not Used
4	2 BK	550	Ground
5	-	-	Not Used
6	0.35 BN	6132	Linear Interconnect Network Bus

Window Motor - Driver (Z88+AXC/AXE)

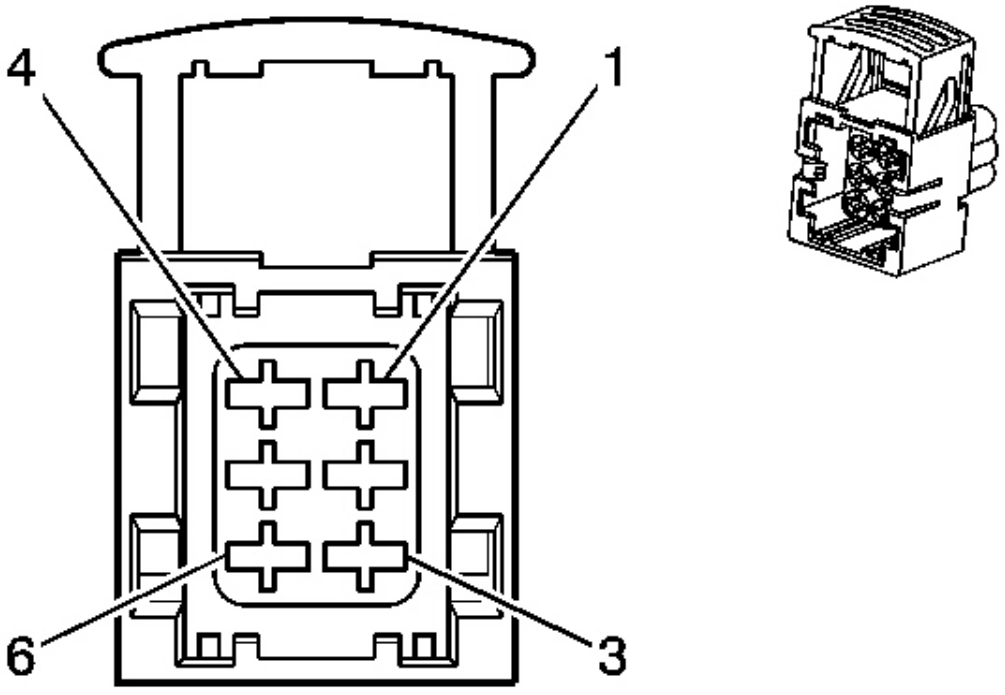


Fig. 17: Window Motor - Driver (Z88+AXC/AXE) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Motor - Driver (Z88+AXC/AXE) Connector Parts Information

Connector Part Information

- OEM: 2-1355696-1
- Service: 88988401
- Description: 6-Way F Timer Jr-Power Series, Sealed (GY)

Terminal Part Information

- Pins: 1, 4
- Terminal/Tray: 4-964273-1/15
- Core/Insulation Crimp: C/5
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

- Pins: 6
- Terminal/Tray: 4-964286-1/16
- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

Window Motor - Driver (Z88+AXC/AXE) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	2 RD/WH	3340	Battery Positive Voltage
2-3	-	-	Not Used
4	2 BK	550	Ground
5	-	-	Not Used
6	0.35 BN	6132	Linear Interconnect Network Bus

Window Motor - LR (WDA)

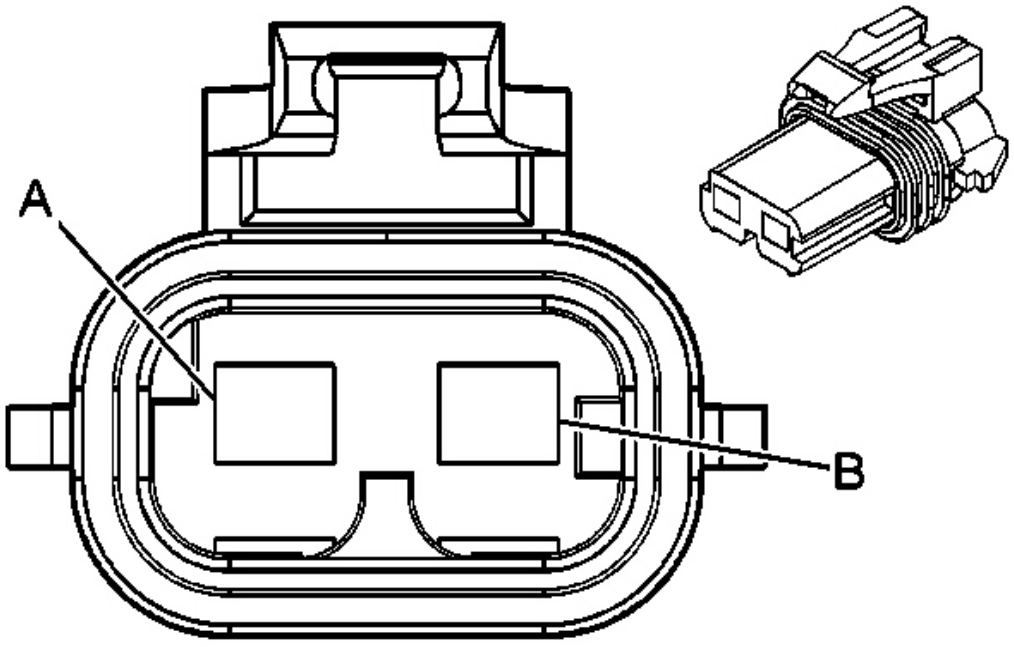


Fig. 18: Window Motor - LR (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Motor - LR (WDA) Connector Parts Information

Connector Part Information

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

Terminal Part Information

- Terminal/Tray: 12110853/4
- Core/Insulation Crimp: F/5
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Window Motor - LR (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	3 BN	669	Power Window Motor Left Rear Down Control
B	3 D-BU	668	Power Window Motor Left Rear Up Control

Window Motor - LR (Z88)

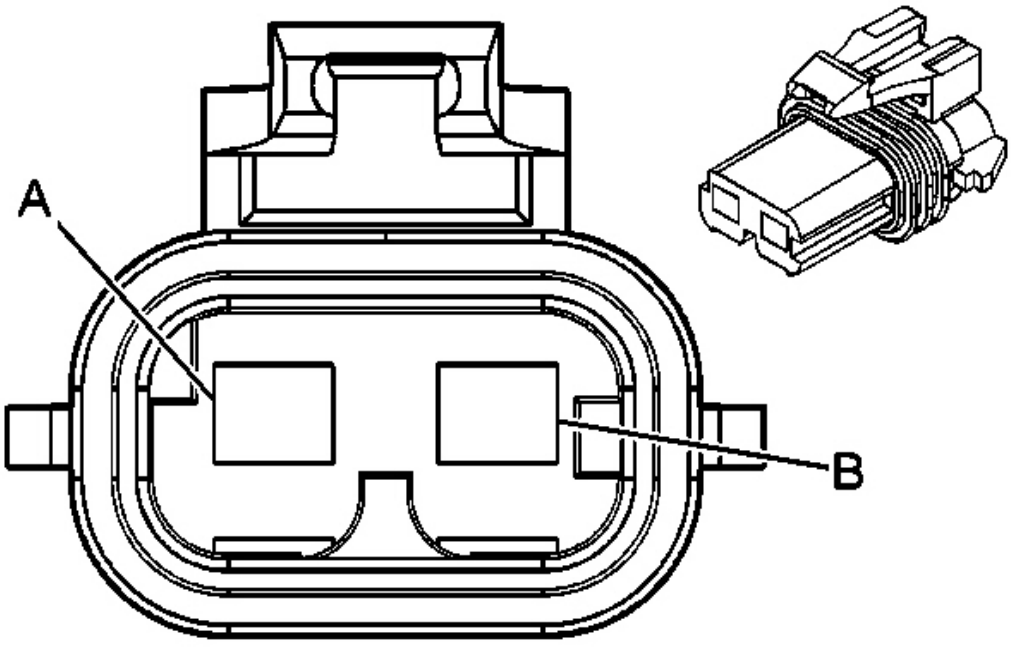


Fig. 19: Window Motor - LR (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Motor - LR (Z88) Connector Parts Information

Connector Part Information

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

Terminal Part Information

- Terminal/Tray: 12110853/4
- Core/Insulation Crimp: F/5
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Window Motor - LR (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

A	3 BN	669	Power Window Motor Left Rear Down Control
B	3 D-BU	668	Power Window Motor Left Rear Up Control

Window Motor - Passenger (WDA+AXA/AXE)

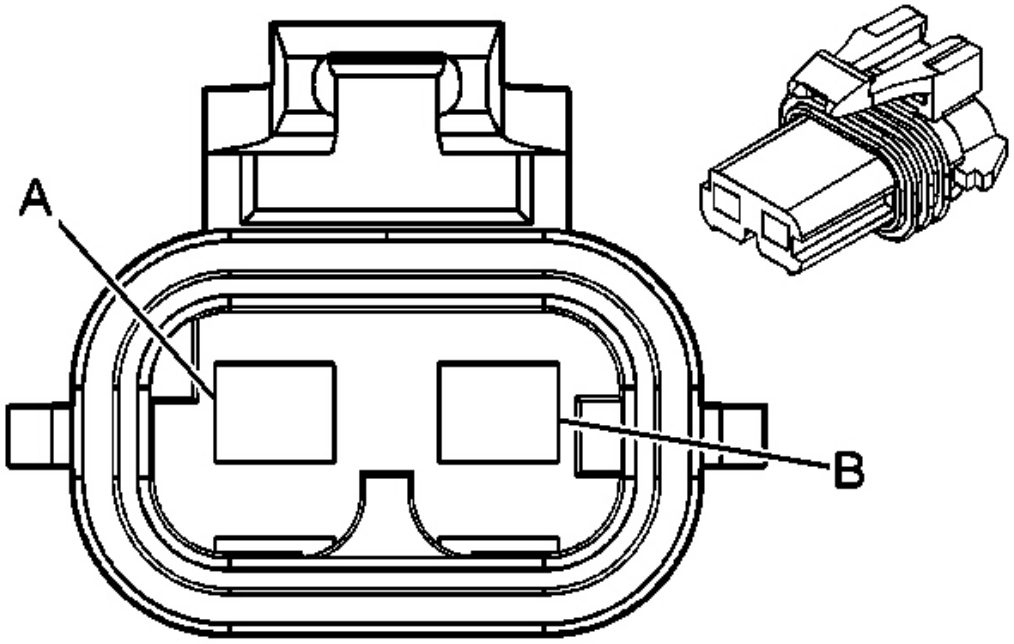


Fig. 20: Window Motor - Passenger (WDA+AXA/AXE) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Motor - Passenger (WDA+AXA/AXE) Connector Parts Information

Connector Part Information

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

Terminal Part Information

- Terminal/Tray: 12110845/4
- Core/Insulation Crimp: A/5
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Window Motor - Passenger (WDA+AXA/AXE) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	2 BN	667	Power Window Motor Right Front Down Control
B	2 D-BU	666	Power Window Motor Right Front Up Control

Window Motor - Passenger (Z88+AXA/AXE)

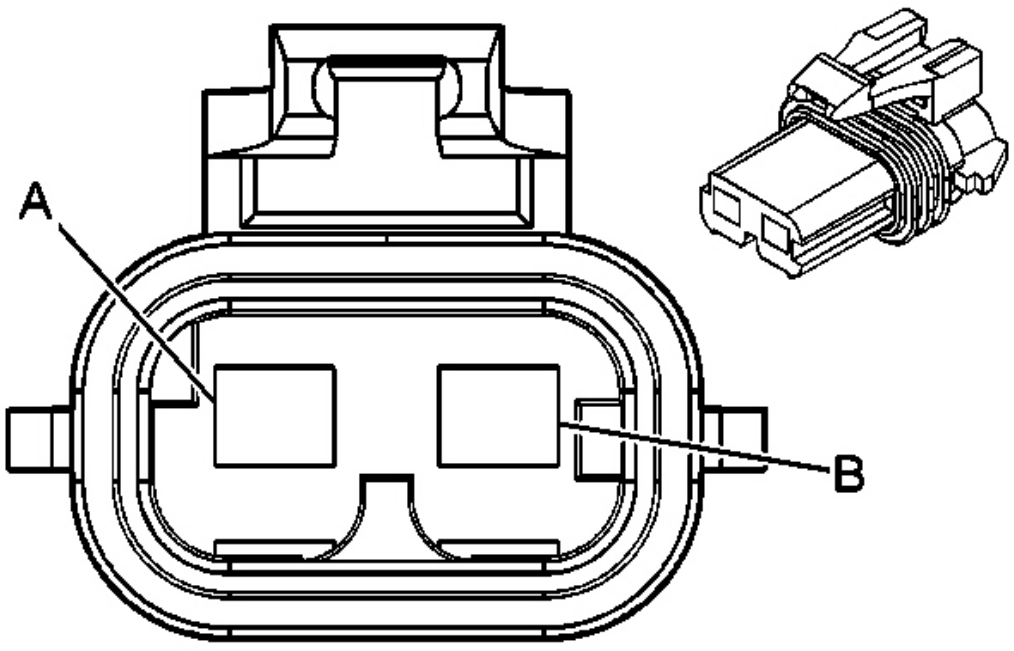


Fig. 21: Window Motor - Passenger (Z88+AXA/AXE) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Motor - Passenger (Z88+AXA/AXE) Connector Parts Information

Connector Part Information

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

Terminal Part Information

- Terminal/Tray: 12110845/4
- Core/Insulation Crimp: A/5
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Window Motor - Passenger (Z88+AXA/AXE) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	2 BN	667	Power Window Motor Right Front Down Control
B	2 D-BU	666	Power Window Motor Right Front Up Control

Window Motor - Passenger (WDA+AXC)

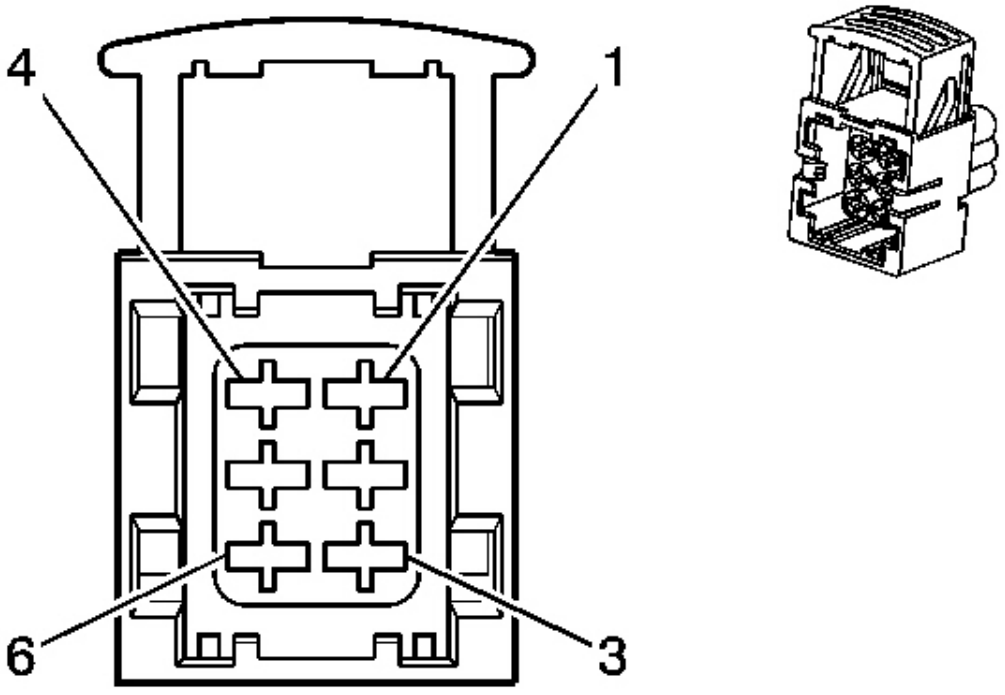


Fig. 22: Window Motor - Passenger (WDA+AXC) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Motor - Passenger (WDA+AXC) Connector Parts Information

Connector Part Information

- OEM: 2-1355696-1
- Service: 88988401
- Description: 6-Way F Timer Jr-Power Series, Sealed (GY)

Terminal Part Information

- Pins: 1, 4
- Terminal/Tray: 4-964273-1/15
- Core/Insulation Crimp: C/5
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

- Pins: 6
- Terminal/Tray: 4-964286-1/16
- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

Window Motor - Passenger (WDA+AXC) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	2 RD/WH	3340	Battery Positive Voltage
2-3	-	-	Not Used
4	2 BK	750	Ground
5	-	-	Not Used
6	0.35 D-BU	6133	Linear Interconnect Network Bus

Window Motor - Passenger (Z88+AXC)

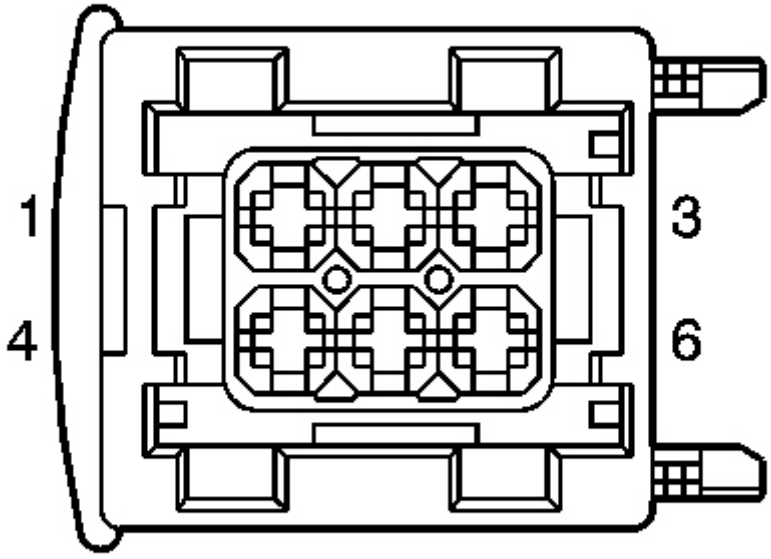


Fig. 23: Window Motor - Passenger (Z88+AXC) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Motor - Passenger (Z88+AXC) Connector Parts Information

Connector Part Information

- OEM: 2-963212-1
- Service: 88988401
- Description: 6-Way F Junior Power Timer (GY)

Terminal Part Information

- Pins: 1, 4
- Terminal/Tray: 4-964273-1/15
- Core/Insulation Crimp: C/5
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

- Pins: 6
- Terminal/Tray: 4-964286-1/16
- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: 12093647/J-35616-4A (PU)

Window Motor - Passenger (Z88+AXC) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	2 RD/WH	3340	Battery Positive Voltage
2-3	-	-	Not Used
4	2 BK	750	Ground
5	-	-	Not Used
6	0.35 D-BU	6133	Linear Interconnect Network Bus

Window Motor - RR (WDA)

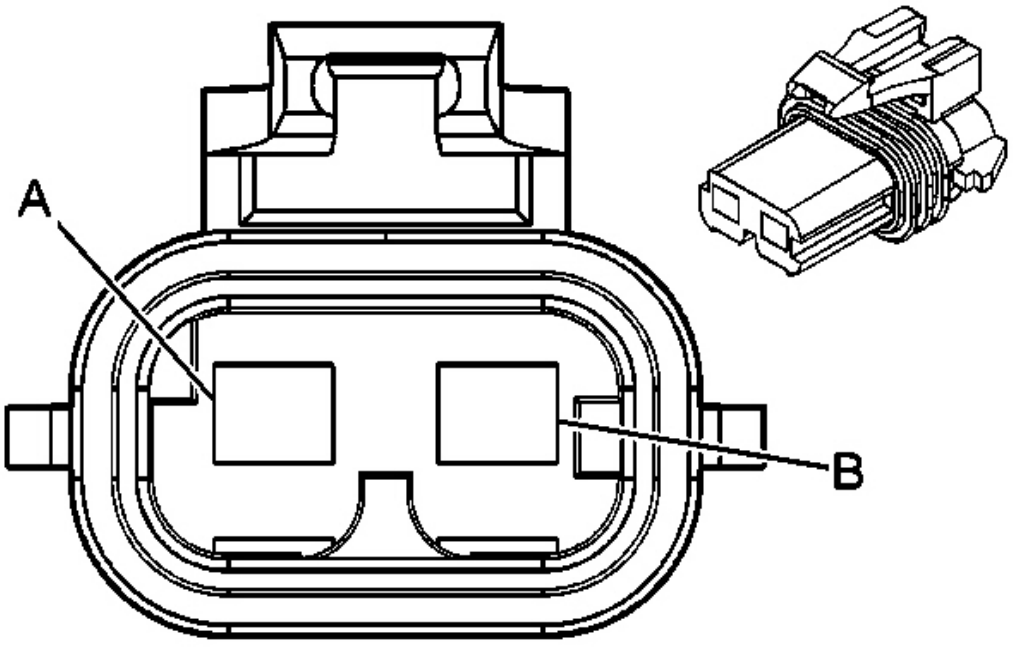


Fig. 24: Window Motor - RR (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Motor - RR (WDA) Connector Parts Information

Connector Part Information

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

Terminal Part Information

- Terminal/Tray: 12110853/4
- Core/Insulation Crimp: F/5
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Window Motor - RR (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

A	3 BN	671	Power Window Motor Right Rear Down Control
B	3 D-BU	670	Power Window Motor Right Rear Up Control

Window Motor - RR (Z88)

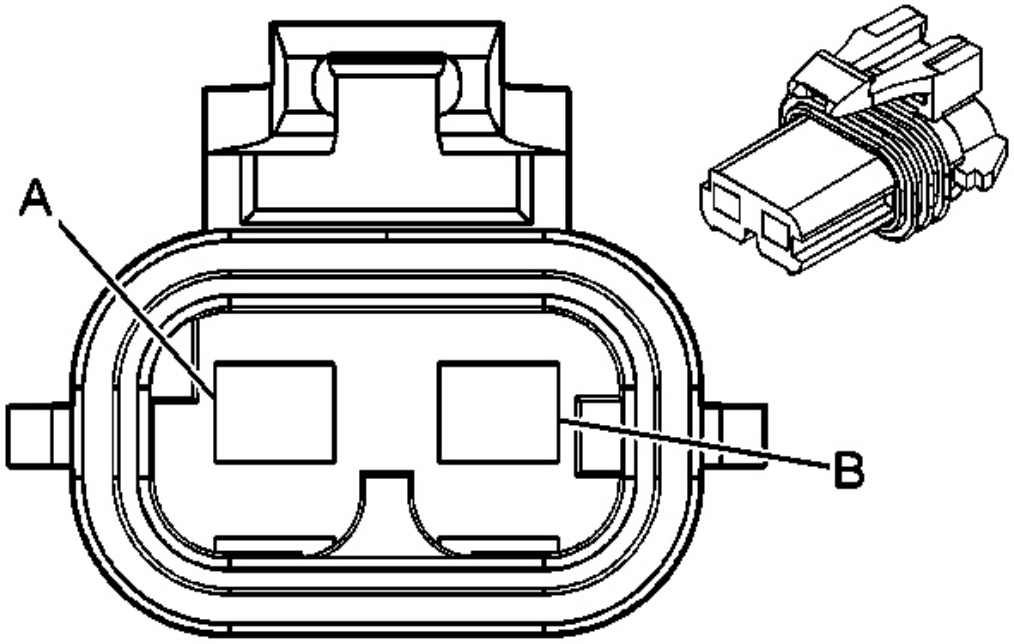


Fig. 25: Window Motor - RR (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Motor - RR (Z88) Connector Parts Information

Connector Part Information

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

Terminal Part Information

- Terminal/Tray: 12110853/4
- Core/Insulation Crimp: F/5
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Window Motor - RR (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	3 BN	671	Power Window Motor Right Rear Down Control
B	3 D-BU	670	Power Window Motor Right Rear Up Control

Window Switch - Driver X1 (WDA+AXA)

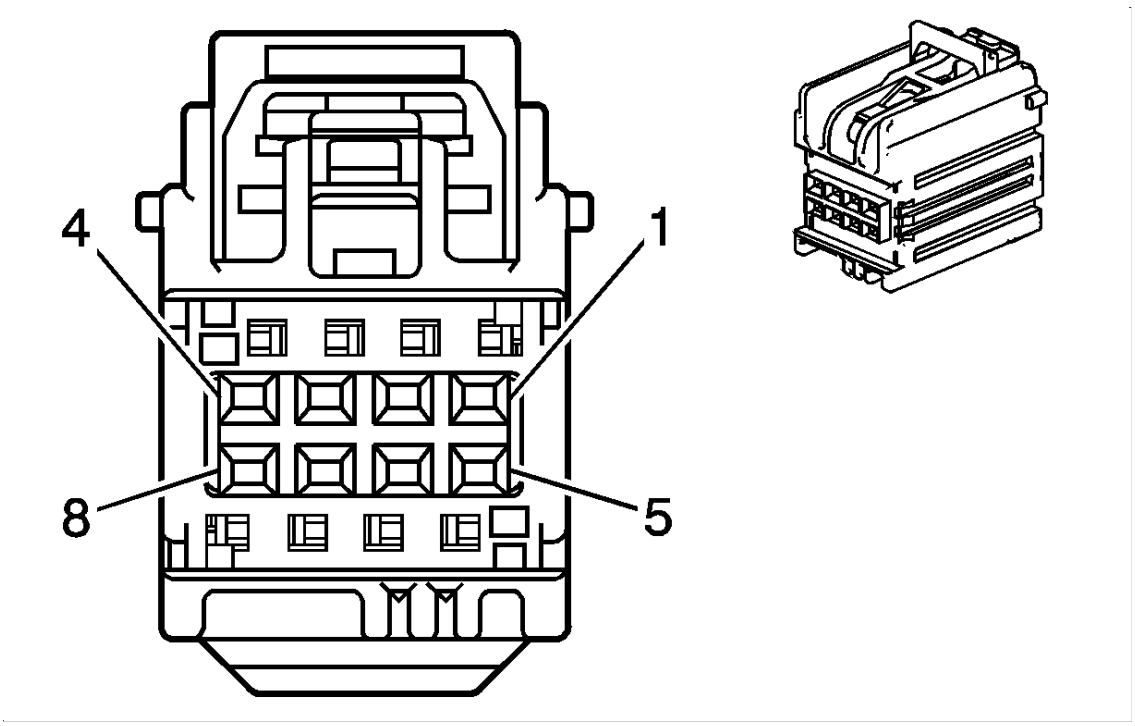


Fig. 26: Window Switch - Driver X1 (WDA+AXA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Switch - Driver X1 (WDA+AXA) Connector Parts Information

Connector Part Information

- OEM: 7283-9028-30
- Service: See Catalog

- Description: 8-Way F YESC Kaizen Series (BK)

Terminal Part Information

- Pins: 1
- Terminal/Tray: 7114-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

- Pins: 2-8
- Terminal/Tray: 7116-4618-02/14
- Core/Insulation Crimp: P/P
- Release Tool/Test Probe: J-38125-215/J-35616-64B (L-BU)

Window Switch - Driver X1 (WDA+AXA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 PU/WH	1382	LED Dimming Signal
2	0.35 D-BU	1307	Power Window Master Switch Lockout Signal
3	0.35 PU	169	Power Window Master Switch Left Rear Down Signal
4	0.35 D-GN	168	Power Window Master Switch Left Rear Up Signal
5	0.35 TN	167	Power Window Master Switch Right Front Down Signal
6	0.35 L-BU	166	Power Window Master Switch Right Front Up Signal
7	0.35 PU	171	Power Window Master Switch Right Rear Down Signal
8	0.35 L-GN	170	Power Window Master Switch Right Rear Up Signal

Window Switch - Driver X1 (Z88+AXA)

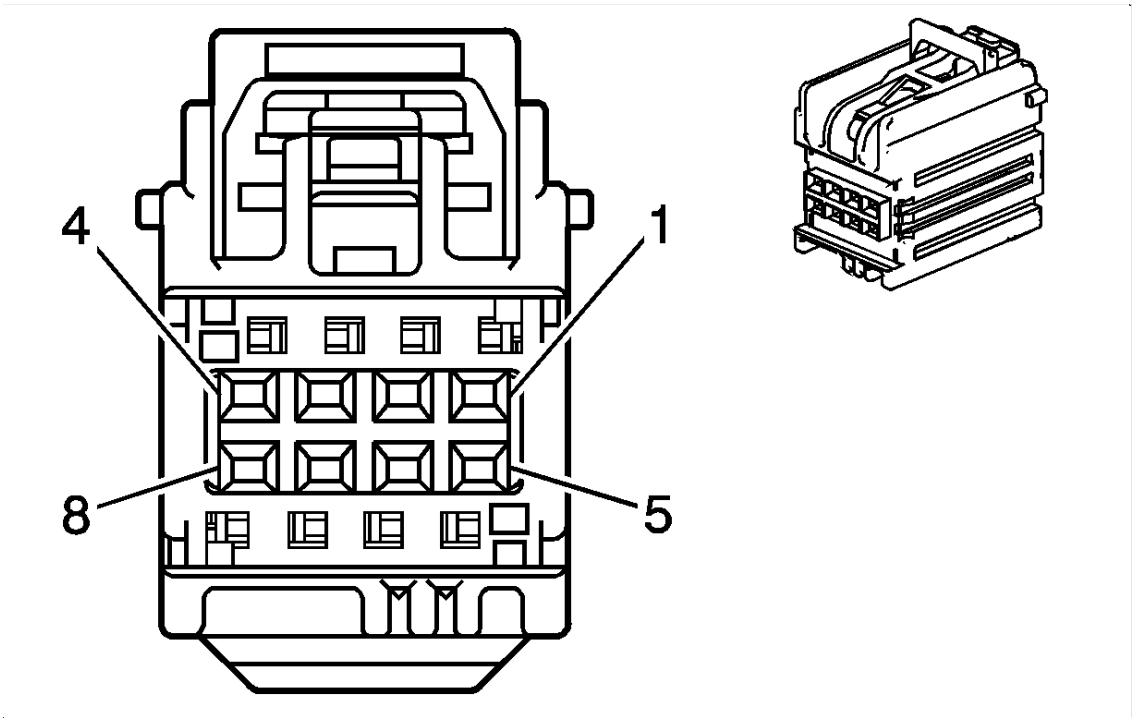


Fig. 27: Window Switch - Driver X1 (Z88+AXA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Switch - Driver X1 (Z88+AXA) Connector Parts Information

Connector Part Information

- OEM: 7283-9028-30
- Service: See Catalog
- Description: 8-Way F YESC Kaizen Series (BK)

Terminal Part Information

- Terminal/Tray: 7116-4618-02/14
- Core/Insulation Crimp: P/P
- Release Tool/Test Probe: J-38125-215/J-35616-64B (L-BU)

Window Switch - Driver X1 (Z88+AXA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 PU/WH	1382	LED Dimming Signal
2	0.35 D-BU	1307	Power Window Master Switch Lockout Signal
3	0.35 PU	169	Power Window Master Switch Left

			Rear Down Signal
4	0.35 D-GN	168	Power Window Master Switch Left Rear Up Signal
5	0.35 TN	167	Power Window Master Switch Right Front Down Signal
6	0.35 L-BU	166	Power Window Master Switch Right Front Up Signal
7	0.35 PU	171	Power Window Master Switch Right Rear Down Signal
8	0.35 L-GN	170	Power Window Master Switch Right Rear Up Signal

Window Switch - Driver X2 (WDA+AXA)

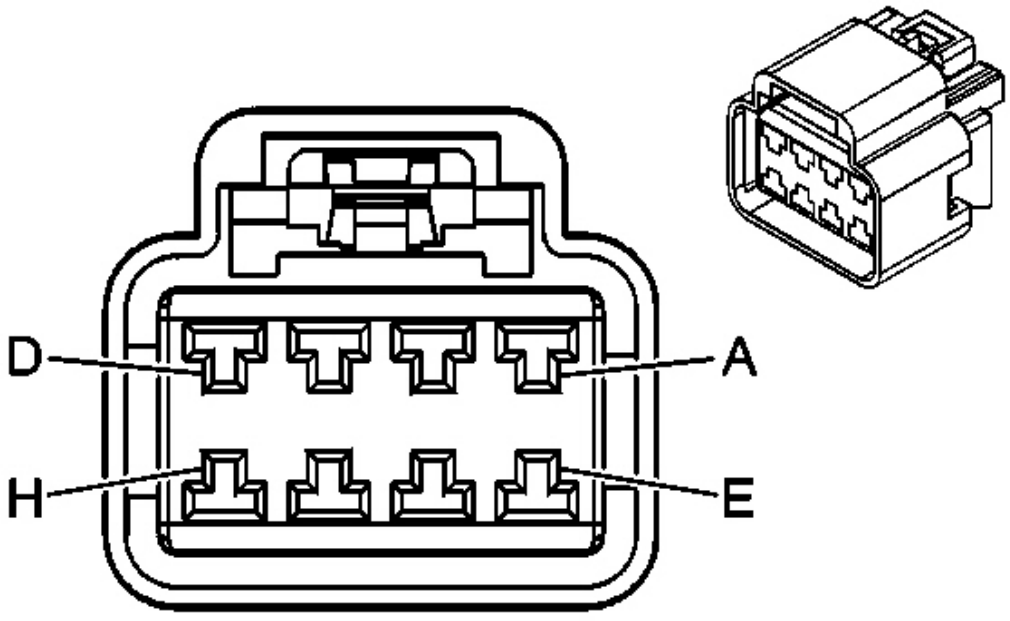


Fig. 28: Window Switch - Driver X2 (WDA+AXA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Switch - Driver X2 (WDA+AXA) Connector Parts Information

Connector Part Information

- OEM: 15326924
- Service: 15306174
- Description: 8-Way F GT 280 Series (BK)

Terminal Part Information

- Pins: A, D, E, H
- Terminal/Tray: 15304713/19
- Core/Insulation Crimp: F/D
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

- Pins: F, G
- Terminal/Tray: 15304711/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Window Switch - Driver X2 (WDA+AXA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	3 BK	550	Ground
B-C	-	-	Not Used
D	3 BN	165	Power Window Motor Left Front Down Control
E	3 D-BU	164	Power Window Motor Left Front Up Control
F	0.35 L-BU/WH	280	Power Window Master Switch Lockout Right Rear Signal
G	0.35 YE	43	Ignition I/II Voltage
H	3 RD/WH	3340	Battery Positive Voltage

Window Switch - Driver X2 (Z88+AXA)

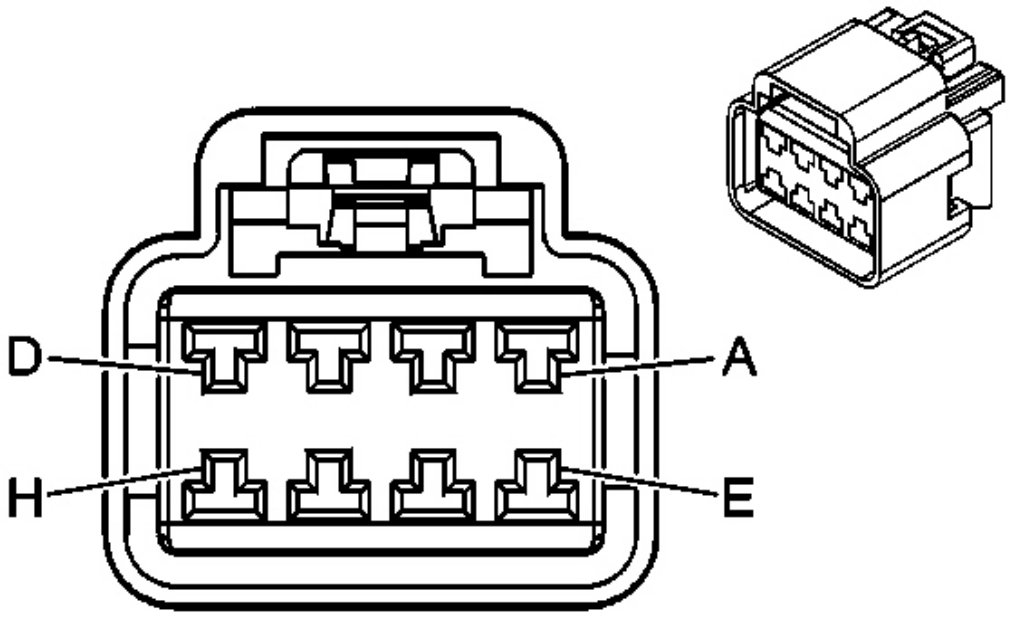


Fig. 29: Window Switch - Driver X2 (Z88+AXA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Switch - Driver X2 (Z88+AXA) Connector Parts Information

Connector Part Information

- OEM: 15326924
- Service: 15306174
- Description: 8-Way F GT 280 Series (BK)

Terminal Part Information

- Pins: A, D, E, H
- Terminal/Tray: 15304713/19
- Core/Insulation Crimp: F/D
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

- Pins: F, G
- Terminal/Tray: 15304711/8

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

Window Switch - Driver X2 (Z88+AXA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	3 BK	550	Ground
B-C	-	-	Not Used
D	3 BN	165	Power Window Motor Left Front Down Control
E	3 D-BU	164	Power Window Motor Left Front Up Control
F	0.35 L-BU/WH	280	Power Window Master Switch Lockout Right Rear Signal
G	0.35 YE	43	Ignition I/II Voltage
H	3 RD/WH	3340	Battery Positive Voltage

Window Switch - LR (WDA)

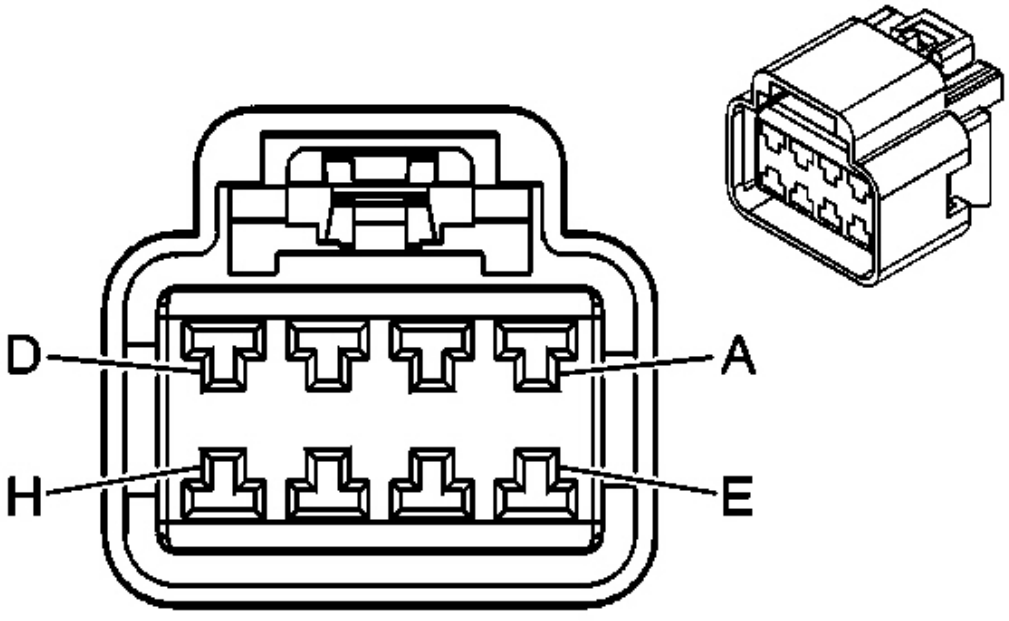


Fig. 30: Window Switch - LR (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Switch - LR (WDA) Connector Parts Information

Connector Part Information

- OEM: 15326924
- Service: 15306174
- Description: 8-Way F GT 280 Series (BK)

Terminal Part Information

- Pins: A-D
- Terminal/Tray: 15304711/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

- Pins: E-H
- Terminal/Tray: 15304713/19
- Core/Insulation Crimp: Pins E, H - F/D
- Core/Insulation Crimp: Pins F, G - 4/4
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Window Switch - LR Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 D-GN	168	Power Window Master Switch Left Rear Up Signal
B	0.35 GY	8	Instrument Panel Lamp Supply Voltage
C	0.35 PU	169	Power Window Master Switch Left Rear Down Signal
D	0.35 D-BU	1307	Power Window Master Switch Lockout Signal
E	3 D-BU	668	Power Window Motor Left Rear Up Control
F	2 BK	550	Ground
G	2 RD/WH	3340	Battery Positive Voltage
H	3 BN	669	Power Window Motor Left Rear Down Control

Window Switch - LR (Z88)

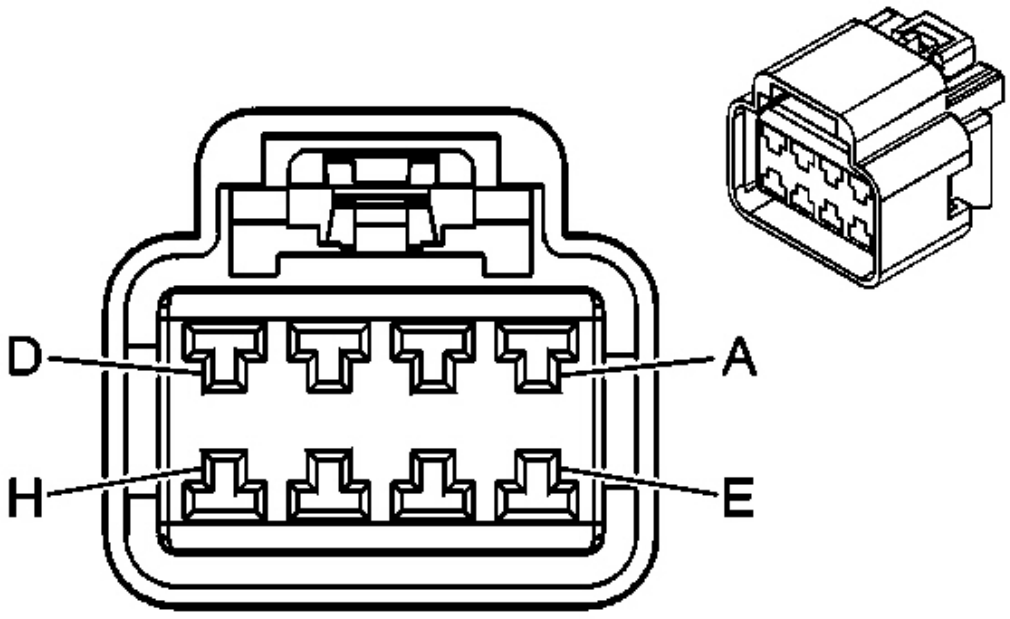


Fig. 31: Window Switch - LR (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Switch - LR (Z88) Connector Parts Information

Connector Part Information

- OEM: 15326924
- Service: 15306174
- Description: 8-Way F GT 280 Series (BK)

Terminal Part Information

- Pins: A-D
- Terminal/Tray: 15304711/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

- Pins: E-H
- Terminal/Tray: 15304713/19
- Core/Insulation Crimp: Pins E, H - F/D
- Core/Insulation Crimp: Pins F, G - 4/4
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Window Switch - LR (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 D-GN	168	Power Window Master Switch Left Rear Up Signal
B	0.35 GY	8	Instrument Panel Lamp Supply Voltage
C	0.35 PU	169	Power Window Master Switch Left Rear Down Signal
D	0.35 D-BU	1307	Power Window Master Switch Lockout Signal
E	3 D-BU	668	Power Window Motor Left Rear Up Control
F	2 BK	550	Ground
G	2 RD/WH	3340	Battery Positive Voltage
H	3 BN	669	Power Window Motor Left Rear Down Control

Window Switch - Passenger (WDA+AXA)

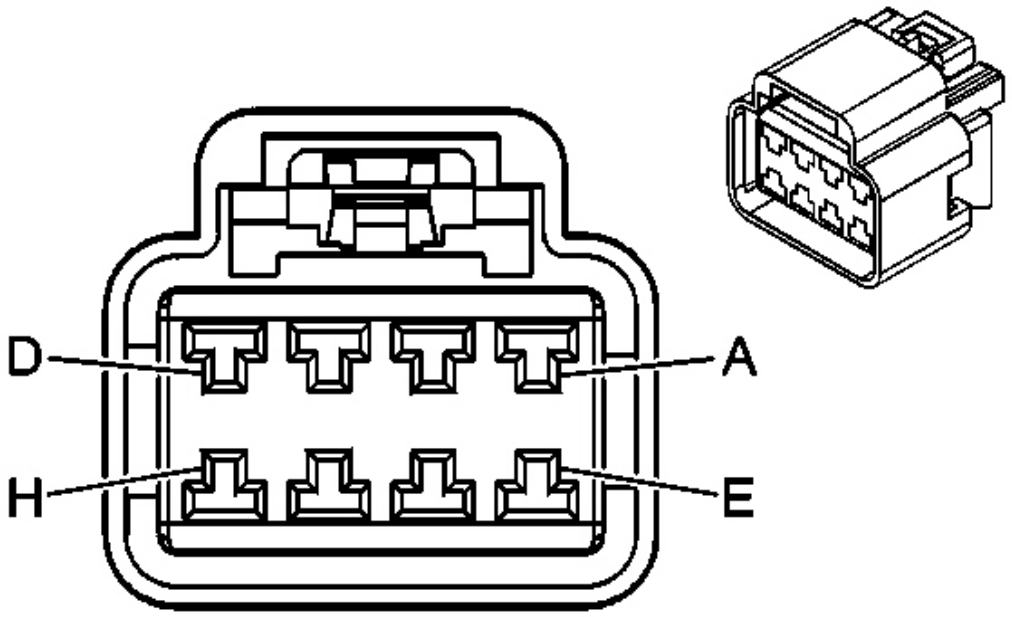


Fig. 32: Window Switch - Passenger (WDA+AXA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Switch - Passenger (WDA+AXA) Connector Parts Information

Connector Part Information

- OEM: 15326924
- Service: 15306174
- Description: 8-Way F GT 280 Series (BK)

Terminal Part Information

- Pins: A-D
- Terminal/Tray: 15304711/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

- Pins: E-H
- Terminal/Tray: 15304713/19

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

Window Switch - Passenger (WDA+AXA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 L-BU	166	Power Window Master Switch Right Front Up Signal
B	0.35 GY	8	Instrument Panel Lamp Supply Voltage
C	0.35 TN	167	Power Window Master Switch Right Front Down Signal
D	0.35 YE	43	Ignition I/II Voltage
E	2 D-BU	666	Power Window Motor Right Front Up Control
F	2 BK	750	Ground
G	2 RD/WH	3340	Battery Positive Voltage
H	2 BN	667	Power Window Motor Right Front Down Control

Window Switch - Passenger (Z88+AXA)

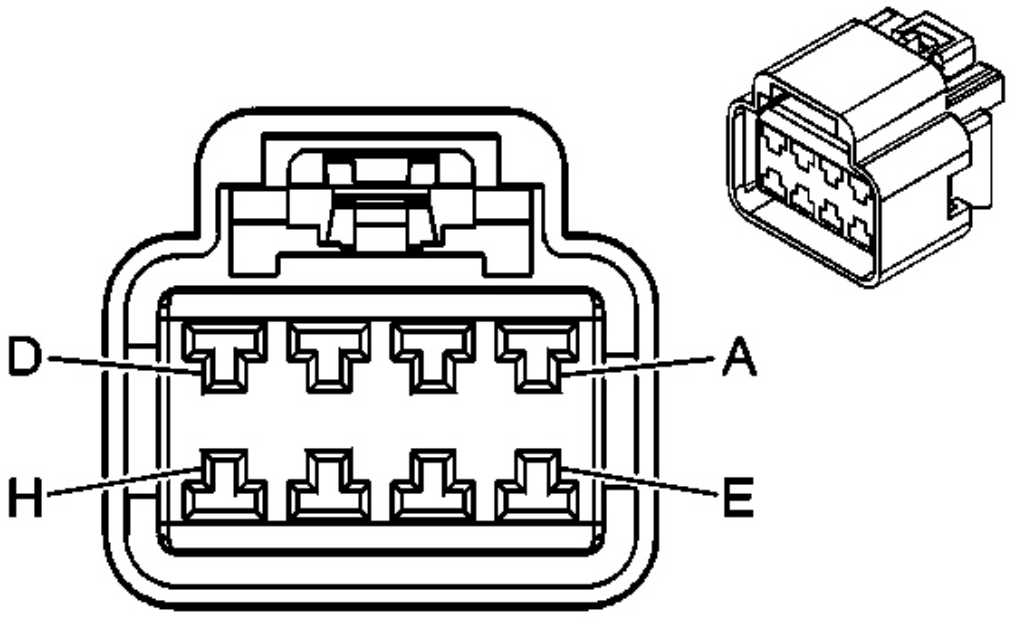


Fig. 33: Window Switch - Passenger (Z88+AXA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Switch - Passenger (Z88+AXA) Connector Parts Information

Connector Part Information

- OEM: 15326924
- Service: 15306174
- Description: 8-Way F GT 280 Series (BK)

Terminal Part Information

- Pins: A-D
- Terminal/Tray: 15304711/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

- Pins: E- H
- Terminal/Tray: 15304713/19

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

Window Switch - Passenger (Z88+AXA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 L-BU	166	Power Window Master Switch Right Front Up Signal
B	0.35 GY	8	Instrument Panel Lamp Supply Voltage
C	0.35 TN	167	Power Window Master Switch Right Front Down Signal
D	0.35 YE	43	Ignition I/II Voltage
E	2 D-BU	666	Power Window Motor Right Front Up Control
F	2 BK	750	Ground
G	2 RD/WH	3340	Battery Positive Voltage
H	2 BN	667	Power Window Motor Right Front Down Control

Window Switch - RR (WDA)

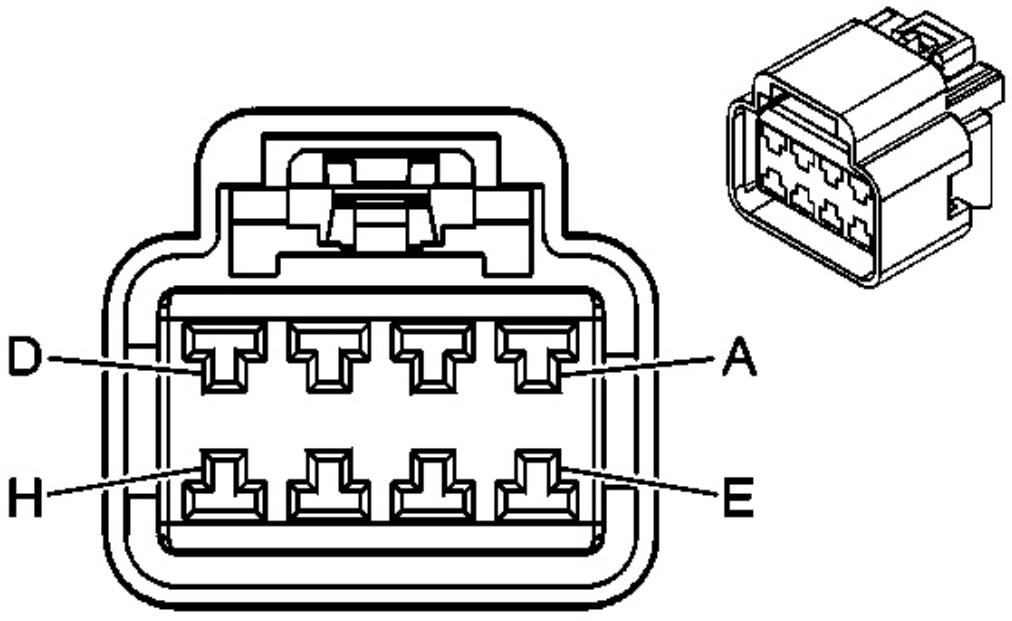


Fig. 34: Window Switch - RR (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Switch - RR (WDA) Connector Parts Information

Connector Part Information

- OEM: 15326924
- Service: 15306174
- Description: 8-Way F GT 280 Series (BK)

Terminal Part Information

- Pins: A-D
- Terminal/Tray: 15304711/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

- Pins: E-H
- Terminal/Tray: 15304713/19

- Core/Insulation Crimp: Pins E, H - F/D
- Core/Insulation Crimp: Pins F, G - 4/4
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Window Switch - RR (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 L-GN	170	Power Window Master Switch Right Rear Up Signal
B	0.35 GY	8	Instrument Panel Lamp Supply Voltage
C	0.35 PU	171	Power Window Master Switch Right Rear Down Signal
D	0.35 L-BU/WH	280	Power Window Master Switch Lockout Right Rear Signal
E	3 D-BU	670	Power Window Motor Right Rear Up Control
F	2 BK	750	Ground
G	2 RD/WH	3340	Battery Positive Voltage
H	3 BN	671	Power Window Motor Right Rear Down Control

Window Switch - RR (Z88)

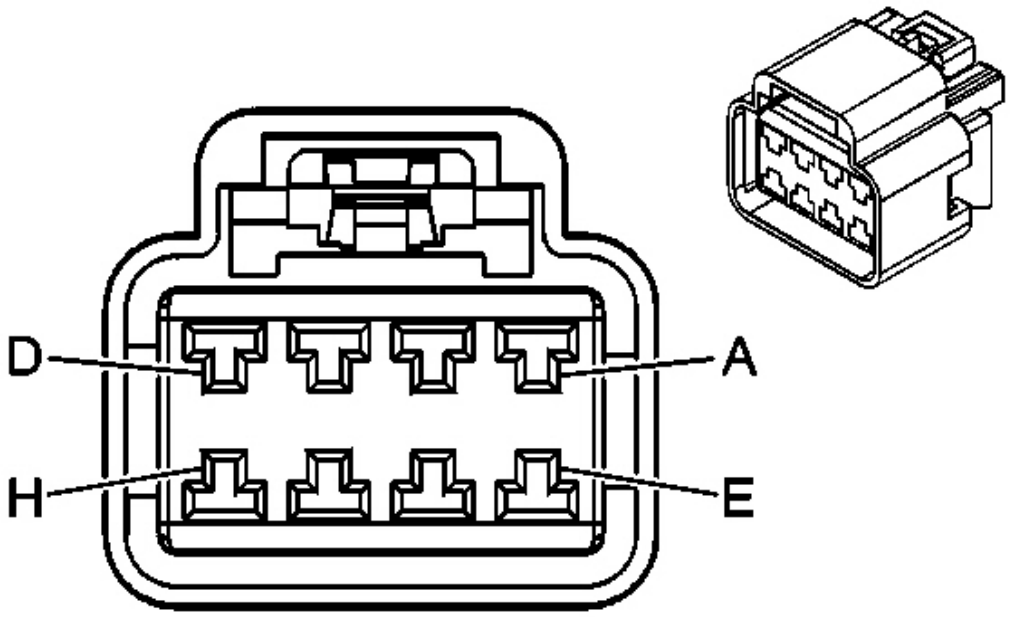


Fig. 35: Window Switch - RR (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Window Switch - RR (Z88) Connector Parts Information

Connector Part Information

- OEM: 15326924
- Service: 15306174
- Description: 8-Way F GT 280 Series (BK)

Terminal Part Information

- Pins: A-D
- Terminal/Tray: 15304711/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

- Pins: E-H
- Terminal/Tray: 15304713/19

- Core/Insulation Crimp: Pins E, H - F/D
- Core/Insulation Crimp: Pins F, G - 4/4
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Window Switch - RR (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 L-GN	170	Power Window Master Switch Right Rear Up Signal
B	0.35 GY	8	Instrument Panel Lamp Supply Voltage
C	0.35 PU	171	Power Window Master Switch Right Rear Down Signal
D	0.35 L-BU/WH	280	Power Window Master Switch Lockout Right Rear Signal
E	3 D-BU	670	Power Window Motor Right Rear Up Control
F	2 BK	750	Ground
G	2 RD/WH	3340	Battery Positive Voltage
H	3 BN	671	Power Window Motor Right Rear Down Control

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC B0283	Electric Rear Defrost Circuit Short To Ground or Open
DTC B320A	Front Door Window Motor Failure, Calibration Data Set Not Programmed Or Not Learned
DTC B3205	Window Inactive Over Current Fault Or Motor Fast Over Current Fault
DTC B3820 Or B3823	Left Or Right Rear Window Up Control Circuit
DTC B3821 Or DTC B3824	Left Or Right Rear Window Relay Power Circuit

DIAGNOSTIC STARTING POINT - FIXED AND MOVEABLE WINDOWS

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

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

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

SCAN TOOL DATA DEFINITIONS

BCM/Data Display/Doors

LR Window Down Cmd

The scan tool displays On/Off. When the left rear window is commanded down, the scan tool display will change from Off to On.

LR Window Enable Cmd

The scan tool displays On/Off. When the driver switch rear window lockout switch is depressed for the left rear window, the scan tool display will change from Off to On.

LR Window Up Cmd

The scan tool displays On/Off. When the left rear window is commanded up, the scan tool display will change from Off to On.

RR Window Down Cmd

The scan tool displays On/Off. When the right rear window is commanded down, the scan tool display will change from Off to On.

RR Window Enable Cmd

The scan tool displays On/Off. When the driver switch rear window lockout switch is depressed for the right rear window, the scan tool display will change from Off to On.

RR Window Up Cmd

The scan tool displays On/Off. When the right rear window is commanded up, the scan tool

display will change from Off to On.

DDM/Special Functions/Door Window Test

Front Window Up/Down

This test will command the front window both up and down.

Rear Window Up/Down

This test will command the rear window both up and down.

PDM/Special Functions/Door Window Test

Front Window Up/Down

This test will command the front window both up and down.

Rear Window Up/Down

This test will command the rear window both up and down.

HVAC Control Module/Data Display/HVAC System Data

Rear Defrost LED

The scan tool displays On/Off. This parameter indicates the commanded state of the rear defrost indicator.

Rear Defrost State

The scan tool displays On/Off. This parameter indicates the commanded state of the rear defrost.

Inputs

Rear Defrost Switch

The scan tool displays Active/Inactive. This parameter indicates the current status of the rear defrost switch.

HVAC Control Module/Output Control/Special Functions

Rear Defog

Commands the rear window defogger ON and OFF.

SCAN TOOL DATA LIST

Body Control Module

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF/Vehicle in PARK/All Doors Closed			
LR Window Down Cmd.	Doors	On/Off	Off
LR Window Enable Cmd.	Doors	On/Off	Off
LR Window Up Cmd.	Doors	On/Off	Off
RR Window Down Cmd.	Doors	On/Off	Off
RR Window Enable Cmd.	Doors	On/Off	Off
RR Window Up Cmd.	Doors	On/Off	Off

HVAC Control Module

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF/Vehicle in PARK			
Rear Defrost LED	HVAC System Data	On/Off	Off
Rear Defrost State	HVAC System Data	On/Off	Off
Rear Defrost Switch	Inputs	Active/Inactive	Inactive

SCAN TOOL OUTPUT CONTROLS

HVAC Control Module

Scan Tool Output Control	Additional Menu Selections	Description
Rear Defog	Special Functions	Commands the rear window defogger ON and OFF

Driver Door Module

Scan Tool Output Control	Additional Menu Selection(s)	Description
	Special	

Front Window Up/Down	Functions/Output Controls/Door Window Test	This test will command the front window both up and down
Rear Window Up/Down	Special Functions/Output Controls/Door Window Test	This test will command the rear window both up and down
Window Lockout Indicator	Special Functions/Output Controls/Indicator Test	This will command the window lockout indicator ON

Passenger Door Module

Scan Tool Output Control	Additional Menu Selection(s)	Description
Front Window Up/Down	Special Functions/Output Controls/Door Window Test	This test will command the front window both up and down
Rear Window Up/Down	Special Functions/Output Controls/Door Window Test	This test will command the rear window both up and down
Window Lockout Indicator	Special Functions/Output Controls/Indicator Test	This will command the window lockout indicator ON

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 06

Electric Rear Defrost Circuit Short To Ground Or Open

Diagnostic Fault Information

DTC B0283

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Relay Switch B+ Circuit	2	2	-	-
Rear Defogger Relay Control	B0283 06	B0283 06	2	-
Rear Defogger Control Circuit	2	2	1	-
Relay Coil Ground	-	2	2	-
Rear Window Defogger Grid Ground	-	2	2	-
1. Rear Defogger Always ON 2. Rear defogger Inoperative				

Circuit/System Description

The HVAC control module monitors the voltage level on the supply voltage circuit of the RR DEFOG relay. The voltage level should be low while the RR DEFOG relay is de-energized. The voltage will be near system voltage when the HVAC control module energizes the RR DEFOG relay.

Conditions for Running the DTC

Battery voltage must be between 9-16 volts.

Conditions for Setting the DTC

B0283 02

This DTC will set when the HVAC control module detects a short to ground or open/high resistance in the rear defog relay control circuit for 1 second or greater.

Action Taken When the DTC Sets

- The HVAC control module stores the DTC to memory.
- The rear window defogger will not operate.

Conditions for Clearing the DTC

- This DTC will change from current to history when the fault is no longer present.
- A history DTC will clear after 100 consecutive ignition cycles if the condition for the malfunction is no longer present.
- The technician issues a scan tool CLEAR DTCs command.

Reference Information

Schematic Reference

Defogger Schematics

Connector End View Reference

Window Systems Connector End Views

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

- **Scan Tool Data List**
- **Scan Tool Data Definitions**
- **Scan Tool Output Controls**

Circuit/System Verification

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

Circuit/System Testing

1. Ignition OFF, disconnect the RR DEFOG relay.
2. Ignition OFF, test for less than 1.0 ohm of resistance between terminal 45 and ground.

- If greater than the specified range, test the relay coil ground circuit for an open/high resistance

3. Connect a test lamp between terminal 56 and terminal 45.
4. Ignition ON, command the rear defog relay ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
   - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the HVAC Control Module.
   - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the HVAC control module.
5. If all circuits test normal, test or replace the RR DEFOG relay.

Component Testing

Relay Test

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

Repair Procedures

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

Control Module References for HVAC control module and BCM replacement, setup and programming

Relay Replacement (Attached to Wire Harness) or **Relay Replacement (Within an Electrical Center)**

DTC B320A

Diagnostic Instructions

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

DTC Descriptors

DTC B320A 39

Front Door Window Motor Internal Electronic Failure

DTC B320A 42

Front Door Window Motor Calibration Data Set Not Programmed

DTC B320A 4B

Front Door Window Motor Calibration Not Learned

Diagnostic Fault Information

DTC B320A

Circuit	Short to Ground	Open/High Resistance	Short to Voltage
Driver Door Module B+	U0199	U0199	-
Driver Window Motor B+	U1511, B320A 4B	U1511, B320A 4B	-
LR Window Switch B+	1, 2, 3, 4	3	-
Passenger Door Module B+	2	4	-
Passenger Window Motor B+	1, 2, 3, 4	3, 4	-
RR Window Switch B+	1, 2, 3, 4	1	1
Driver Window Motor Serial Data	U1511, B320A 4B	U1511, B320A 4B	1
Passenger Window Motor Serial Data (AXC)	B3205 00	2	B3205 00
LR Window Motor Control	3	3	3
Passenger Window Motor Control (AXE)	2	2	2

RR Window Motor Control	4	4	4
Window Master Switch LR Down Control	B3820	B3820	B3820
Window Master Switch Lockout Control	3, 4	3, 4	3, 4
Window Master Switch LR Up Control	B3819	B3819	B3819
Window Master Switch RR Down Control	B3823	B3823	B3823
Window Master Switch RR Up Control	B3822	B3822	B3822
Driver Door Module Ground	-	U0199	U0199
LR Window Switch Ground	-	3	3
Passenger Door Module Ground	-	2	2
Passenger Window Motor Ground (AXC)	-	2	2
RR Window Switch Ground	-	4	4
1. Driver Window Malfunction 2. Passenger Window Malfunction 3. Left Rear Window Malfunction 4. Right Rear Window Malfunction			

Circuit/System Description

The front door power window motors communicate with the driver door module (DDM) and passenger door module (PDM) over the LIN BUS. The motors contain a logic module which must be normalized or programmed any time the window motor is serviced to provide proper operation and communication between door modules and window motors.

Conditions for Running the DTC

The DDM or PDM initializes on key up.

Conditions for Setting the DTC

B320A 39

An internal malfunction has been detected by the DDM or PDM in the front power window motor while commanding the window UP/DOWN.

B320A 42

A not normalized/programmed driver or front passenger door power window motor.

B320A 4B

The front window motor experiences a loss of voltage in the B+ circuit or an open/high resistance in the LIN BUS circuit.

Action Taken When the DTC Sets

The affected power window will be inoperative.

Conditions for Clearing the DTC

B320A 39

The affected power window motor has an internal electrical failure and must be replaced before the DTC can be cleared.

B320A 42

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

B320A 4B

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

Reference Information

Schematic Reference

Moveable Window Schematics (AXA) or **Moveable Window Schematics (AXC/AXE)**

Connector End View Reference

Window Systems Connector End Views

Description and Operation

Power Windows Description and Operation (RPO AXC/AXE) or **Power Windows Description and Operation (RPO AXA)**

Electrical Information Reference

- **Circuit Testing**

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

Scan Tool Reference

- **Scan Tool Data Definitions**
- **Scan Tool Data List**
- **Scan Tool Output Controls**

Circuit/System Verification

Ignition ON, command the appropriate power window DOWN and UP with a scan tool. The appropriate power window should go DOWN and UP as commanded.

Circuit/System Testing

B320A 39 Or B320A 42

Ignition ON, reprogram the appropriate power window and operate the power window within the conditions for running the DTC, verify the DTC does not reset. If the DTC resets, replace the appropriate power window motor.

B320A 42

Ignition ON, command the appropriate front window motor fully DOWN by pressing and holding the front window switch for 5 seconds, then command the appropriate front window motor fully UP by lifting and holding the front window switch for 5 seconds. If the DTC resets, replace the appropriate power window motor.

Repair Instructions

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

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 00

Window Inactive Over Current Fault

DTC B3205 0B

Window Motor Fast Over Current Fault

Diagnostic Fault Information

DTC B3205

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Door Module B+	1	1	-	-
Driver Window Motor B+	1, 2, 3, 4	1	-	-
LR Window Switch B+	1, 2, 3, 4	3	-	-
Passenger Door Module B+	2	2	-	-
Passenger Window Motor B+	1, 2, 3, 4	2	-	-
RR Window Switch B+	1, 2, 3, 4	4	-	-
Driver Window Motor Serial Data	1	1	1	-
Passenger Window Motor Serial Data (AXC)	2	2	2	-
LR Window Motor Control	3	3	3	-
Passenger Window Motor Control (AXE)	B3205 00	2	B3205 00	-
RR Window Motor Control	4	4	4	-
Window Master Switch LR Down Control	3	B3820 04	3	-

Window Master Switch Lockout Control	3, 4	3, 4	3, 4	-
Window Master Switch LR Up Control	3	3	3	-
Window Master Switch RR Down Control	4	B3823 04	4	-
Window Master Switch RR Up Control	4	4	4	-
Driver Door Module Ground	-	1	1	-
LR Window Switch Ground	-	3	3	-
Passenger Door Module Ground	-	2	2	-
Passenger Window Motor Ground (AXC)	-	2	2	-
RR Window Switch Ground	-	4	4	-
1. Driver Window Malfunction 2. Passenger Window Malfunction 3. Left Rear Window Malfunction 4. Right Rear Window Malfunction				

Circuit/System Description

The passenger door module (PDM) controls the power window functions through the power window motor up and down control circuits. The PDM monitors the control circuits for fault conditions when the up or down operation is requested prior to activating the function and during the operation.

Conditions for Running the DTC

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

Conditions for Setting the DTC

B3205 00

The PDM detects a short to ground or short to voltage on a window motor control circuit.

B3205 0B

During 5 occurrences of power window motor operation in an ignition cycle, the PDM has detected excessive current flow on a window motor control circuit.

Action Taken When the DTC Sets

The passenger power window will be inoperative.

Conditions for Clearing the DTC

The PDM will clear the history DTC after 50 fault free ignition cycles or in response to a scan tool command.

Diagnostic Aids

The DTC B3205 0B can be set due to excessive physical resistance in the window regulator assembly. Ensure proper mechanical operation of the regulator assembly prior to replacing electrical components.

Reference Information

Schematic Reference

Moveable Window Schematics (AXA) or **Moveable Window Schematics (AXC/AXE)**

Connector End View Reference

Window Systems Connector End Views

Description and Operation

Power Windows Description and Operation (RPO AXC/AXE) or **Power Windows Description and Operation (RPO AXA)**

Electrical Information Reference

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

Scan Tool Reference

- **Scan Tool Data Definitions**
- **Scan Tool Data List**
- **Scan Tool Output Controls**

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the passenger window motor.
2. Ignition OFF, test for less than 1.0 ohm of resistance between the control circuit terminal A and ground.
    - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuits test normal, replace the PDM.
3. Ignition OFF, test for less than 1.0 ohm of resistance between the control circuit terminal B and ground.
    - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuits test normal, replace the PDM.
4. Connect a test lamp between control circuit terminal A and control circuit terminal B.
5. Ignition ON, command the passenger window UP and DOWN by pressing the passenger window switch. The test lamp should turn ON when commanding the UP and DOWN states.
    - If the test lamp remains OFF during either of the commands, test for a short to ground on either control circuit. If the circuits test normal, replace the PDM.
6. If all circuits test normal, test or replace the passenger window motor.

Component Testing

1. Install a 25-amp fused jumper wire between the control terminal A and 12 volts. Momentarily install a jumper wire between the control terminal B and ground. The passenger window motor should perform the UP or DOWN function.
    - If the function does not perform as specified, replace the appropriate Window Motor.
2. Reverse the jumper wires; the passenger window motor should perform the DOWN or UP function.
    - If the function does not perform as specified, replace the passenger window motor.

Repair Procedures

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

Door Window Regulator Motor Replacement

DTC B3820 OR B3823

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 B3820 04

Left Rear Window Down Control Circuit

DTC B3823 04

Right Rear Window Down Control Circuit

Circuit/System Description

The rear door windows can be raised or lowered by the appropriate rear passenger door switch or the driver window switch.

Conditions for Running the DTC

Battery voltage must be between 9-16 volts.

Conditions for Setting the DTC

B3820 04

The left rear window down circuit is open

B3823 04

The right rear window down circuit is open.

Action Taken When the DTC Sets

- The BCM stores the DTC to memory.
- The BCM will not attempt left/right rear window down operation.

Conditions for Clearing the DTC

- This DTC will change from current to history when the fault is no longer present.
- A history DTC will clear after 100 consecutive ignition cycles if the condition for the malfunction is no longer present.
- The technician issues a scan tool CLEAR DTCs command.

Reference Information

Schematic Reference

Moveable Window Schematics (AXA) or **Moveable Window Schematics (AXC/AXE)**

Connector End View Reference

Window Systems Connector End Views

Description and Operation

Power Windows Description and Operation (RPO AXC/AXE) or **Power Windows Description and Operation (RPO AXA)**

Electrical Information Reference

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

Scan Tool Reference

- **Scan Tool Data Definitions**
- **Scan Tool Data List**
- **Scan Tool Output Controls**

Circuit/System Verification

Command the appropriate rear door window DOWN and UP with a scan tool. The appropriate rear door window should go DOWN and UP as commanded.

Circuit/System Testing

1. Ignition OFF, disconnect the window master switch down circuit terminal C at the appropriate the appropriate rear window switch.

2. Ignition ON, connect a test lamp between the appropriate window master switch down circuit terminal C and ground.
3. Command the rear window DOWN with a scan tool. The test lamp should illuminate while commanding the DOWN state.
    - If the lamp is always OFF, test the control circuit for an open/high resistance, if the circuit tests normal, replace the body control module (BCM).
4. If all circuits test normal, replace the appropriate rear window switch.

Repair Procedures

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

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

DTC B3821 OR DTC B3824

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 B3824

Left Rear Window Relay Power Circuit

DTC B3824

Right Rear Window Relay Power Circuit

Diagnostic Fault Information

DTC B3821 Or DTC B3824

Circuit	Short to Ground	Open/High Resistance	Short to Voltage
Driver Door Module B+	U0199	U0199	-
Driver Window Motor B+	U1511, B320A 4B	U1511, B320A 4B	-

LR Window Switch B+	1, 2, 3, 4	3	-
Passenger Door Module B+	2	4	-
Passenger Window Motor B+	1, 2, 3, 4	3, 4	-
RR Window Switch B+	1, 2, 3, 4	1	1
Driver Window Motor Serial Data	U1511, B320A 4B	U1511, B320A 4B	1
Passenger Window Motor Serial Data (AXC)	B3205 00	2	B3205 00
LR Window Motor Control	3	3	3
Passenger Window Motor Control (AXE)	2	2	2
RR Window Motor Control	4	4	4
Window Master Switch LR Down Control	B3820	B3820	B3820
Window Master Switch Lockout Control	3, 4	3, 4	3, 4
Window Master Switch LR Up Control	B3819	B3819	B3819
Window Master Switch RR Down Control	B3823	B3823	B3823
Window Master Switch RR Up Control	B3822	B3822	B3822
Driver Door Module Ground	-	U0199	U0199
LR Window Switch Ground	-	3	3
Passenger Door Module Ground	-	2	2
Passenger Window Motor Ground (AXC)	-	2	2
RR Window Switch Ground	-	4	4
1. Driver Window Malfunction 2. Passenger Window Malfunction 3. Left Rear Window Malfunction 4. Right Rear Window Malfunction			

Circuit/System Description

The body control module (BCM) supplies voltage to the rear window switches allowing for normal window operation from the rear switches. If the rear window lockout function is enabled,

the BCM will not supply voltage to the rear window switches and the rear windows will only operate when the BCM receives a command to operate the appropriate rear window UP or DOWN from the driver door module (DDM).

Conditions for Running the DTC

- Battery voltage is between 9-16 volts.
- The ignition switch is in the ON position.
- The window lockout function is disabled.

Conditions for Setting the DTC

B3821

The left rear window lockout circuit is shorted to ground.

B3824

The right rear window lockout circuit is shorted to ground.

Action Taken When the DTC Sets

The left or right rear power window will be inoperative.

Conditions for Clearing the DTC

- When the fault is no longer present the DTC will be a history status code.
- The history code will clear after 50 fault free ignition cycles or by using the scan tool clear DTCs feature.

Reference Information

Schematic Reference

Moveable Window Schematics (AXA) or **Moveable Window Schematics (AXC/AXE)**

Connector End View Reference

Window Systems Connector End Views

Description and Operation

Power Windows Description and Operation (RPO AXC/AXE) or **Power Windows Description and Operation (RPO AXA)**

Electrical Information Reference

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

Scan Tool Reference

- **Scan Tool Data Definitions**
- **Scan Tool Data List**
- **Scan Tool Output Controls**

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the appropriate rear window switch.
2. Ignition ON, connect a test lamp between the power window lockout control circuit terminal D and ground.
3. Command the Rear Window Lockout parameter ON and OFF by pressing the rear lockout switch on the driver master control. The test lamp should turn ON and OFF when changing between the commanded states.
    - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
4. If all circuits test normal, replace the appropriate rear window switch.

Repair Procedures

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

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

SYMPTOMS - FIXED AND MOVEABLE WINDOWS

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

1. Perform the **Diagnostic System Check - Vehicle** , before using the Symptom Tables in order to verify that all of the following are true:

- There are no DTCs set
- The control modules can communicate via the serial data link

2. Review the system operation in order to familiarize yourself with the system functions. Refer to the following system descriptions:
   - **Power Windows Description and Operation (RPO AXC/AXE)Power Windows Description and Operation (RPO AXA)**
   - **Rear Window Defogger Description and Operation**

Visual/Physical Inspection

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

Intermittent

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

Symptom List

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

- **Rear Window Defogger Malfunction**
- **Power Windows Inoperative - All (AXA)** or **Power Windows Inoperative - All (AXC/AXE)**

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

Rear Window Defogger Malfunction

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Relay Switch B+ Circuit	2	2	-	-
Rear Defogger Relay Control	B0283 06	B0283 06	2	-
Rear Defogger Control Circuit	2	2	1	-
Relay Coil Ground	-	2	2	-
Rear Window Defogger Grid Ground	-	2	2	-
1. Rear Defogger Always ON 2. Rear defogger Inoperative				

Circuit/System Description

When you depress the rear defogger button, voltage is supplied to the RR DEFOG relay coil and the HVAC control module also illuminates the rear window defogger indicator. Battery positive voltage is supplied at all times to the RR DEFOG relay switched input and the RR DEFOG relay coil is always grounded. This allows battery positive voltage from the relay switched input through the switch contacts and out the relay switched output to the rear window defogger. Ground for the rear defogger grid is provided by G401. When you start the engine and press the rear defogger switch for the first time, the defogger cycle lasts for 15 minutes. Further operation results in 7.5-minute defogger cycles. The defogger cycle resets to 15 minutes when you cycle the ignition to the OFF position and then to the ON position.

Reference Information

Schematic Reference

Defogger Schematics

Connector End View Reference

Window Systems Connector End Views

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

- **Scan Tool Data List**
- **Scan Tool Data Definitions**
- **Scan Tool Output Controls**

Circuit/System Verification

1. Ignition ON, observe the operation of the rear window defogger grid while pressing the rear defogger switch. The rear defogger grid should ACTIVATE and DEACTIVATE when changing between commanded states.
2. Command the rear window defogger ON and OFF with the scan tool. The rear window defogger indicator should turn ON and OFF when changing between the commanded states.
    - If the defogger indicator does not illuminate or continuously, replace the HVAC control module.

Circuit/System Testing

1. Ignition OFF, disconnect the RR DEFOG relay.
2. Ignition OFF, test for less than 1.0 ohm of resistance between terminal 85 and ground.
    - If greater than the specified range, test for an open/high resistance.
3. Ignition ON, verify that a test lamp does not illuminate between terminal 30 and ground.
    - If the test lamp illuminates, test the control circuit for a short to voltage
4. Verify that a test lamp illuminates between the terminal 87 and ground.
    - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the RR DEFOG circuit fuse is open, test terminal 30 for a short to ground.
5. Ignition OFF, disconnect the harness connector X2 at the rear window defogger grid.
6. Ignition OFF, test for less than 1.0 ohm of resistance between the rear window defogger grid ground circuit terminal A and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
7. Connect the harness connector X2 at the rear window defogger grid.
8. Ignition ON, connect a 40-A fused jumper wire between terminal 87 and the terminal 30.

Verify the rear window defogger grid is activated.

- If the rear window defogger grid does not activate, test the control circuit for an open/high resistance. If the circuit tests normal, test or replace the rear window defogger grid.

9. Connect a test lamp between terminal 86 and terminal 85.
10. Command the rear defogger grid ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states
    - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the HVAC control module.
    - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the HVAC control module.
11. If all circuits test normal, test or replace the RR DEFOG relay

Component Testing

Relay Test

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

Repair Procedures

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

- **HVAC Control Module Replacement** for HVAC control module replacement
- **Liftgate Window Replacement**

- **Relay Replacement (Attached to Wire Harness)** or **Relay Replacement (Within an Electrical Center)**

POWER WINDOWS INOPERATIVE - ALL (AXA)

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

Power Windows Inoperative - All (AXA)

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Window Switch B+	1, 2, 3, 4	1	-	-
Passenger Window Switch B+	1, 2, 3, 4	2	-	-
LR Window Switch B+	1, 2, 3, 4	3	-	-
RR Window Switch B+	1, 2, 3, 4	4	-	-
Window Master Switch Lockout	3, 4	3, 4	3, 4	-
Driver Window Motor Control	1	1	1	-
Passenger Window Motor Control	2	2	2	-
LR Window Motor Control	3	3	3	-
RR Window Motor Control	4	4	4	-
Driver Window Switch Ground	-	1	1	-
Passenger Window Switch Ground	-	2	2	-
LR Window Switch Ground	-	3	3	-

RR Window Switch Ground	-	4	4	-
1. Driver Power Window Malfunction 2. Front Passenger Window Malfunction 3. Left Rear Power Window Malfunction 4. Right Rear Power Window Malfunction				

Circuit/System Description

The power window system will operate any time the ignition is the ACC or RUN position. The power window system will also operate whenever the body control module (BCM) is in retained accessory power (RAP) mode. The driver power window switch contains individual window switches for each of power windows. All windows may be controlled up and down from the driver power window switch. The individual passenger power window switches will only control the up and down operation of their respective power window.

Each power window contains a reversible power window motor. The direction the window travels is dependent upon the polarity of the supply voltage. By reversing polarity of the supply voltage the window motor will move up or down. Each power window motor is internally circuit breaker protected.

Battery voltage is supplied to each power window switch through the accessory voltage supply circuit. The power window switch also receives a constant ground source. The power window motor control circuits are connected to ground through the normally closed up and down contacts of the power window switch. When the power switch is placed in the down position, the power window motor down control circuit is switched to 12 volts and is applied to the down side of the power window motor. Since the other side of the power motor is connected to ground through the normally closed contacts of the up switch, the window travels down. By placing the power window switch in the up position, the polarity of the power window motor is reversed and the window travels up.

The drivers window switch has express-up and express-down features that allows the window to be raised and lowered completely without holding the switch. Press the front of the switch part way and release it and the drivers window will open a small amount. Press the switch down all the way and release it and the window will go completely down automatically. Pull up the front of the switch part way and release it and the drivers window will go up a small amount. Pull up the switch all the way and release it and the window will go completely up automatically.

Reference Information

Schematic Reference

Moveable Window Schematics (AXA) or Moveable Window Schematics (AXC/AXE)

Connector End View Reference

Window Systems Connector End Views

Description and Operation

Power Windows Description and Operation (RPO AXC/AXE) or Power Windows Description and Operation (RPO AXA)

Electrical Information Reference

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

Scan Tool Reference

- Scan Tool Data Definitions
- Scan Tool Data List
- Scan Tool Output Controls

Circuit/System Verification

1. Ignition ON, command the appropriate door window UP and DOWN by pressing and lifting the appropriate window switch. Observe the operation of the appropriate door windows.
    - If the front driver door window is inoperative, refer to **Driver Power Window Inoperative**.
    - If the front passenger door window is inoperative, refer to **Passenger Power Window Inoperative**.
    - If the left rear or right rear door window is inoperative, refer to **Rear Power Window Inoperative**.
2. Command the express down and express up functions of the driver door window by pressing down and pulling up on the drivers window switch past the first detent and releasing. The drivers window should roll completely down and completely up.
    - If the drivers window fails to roll completely down or up, replace the driver window switch.

Circuit/System Testing

Driver Power Window Inoperative

1. Ignition OFF, disconnect the harness connector X2 at the Driver Window Switch.
2. Ignition OFF, test for less than 1.0 ohm of resistance between the ground circuit terminal A and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal H and ground.
    - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the PWR/WNDW circuit breaker is open, replace the driver window switch.
4. Reconnect the harness connector X2 at the driver window switch, disconnect the harness connector at the driver window motor.
5. Ignition OFF, test for less than 1.0 ohm of resistance between the control circuit terminal A and ground.
    - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuits test normal, replace the driver window switch.
6. Ignition OFF, test for less than 1.0 ohm of resistance between the control circuit terminal B and ground.
    - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuits test normal, replace the driver window switch.
7. Connect a test lamp between control circuit terminal A and control circuit terminal B.
8. Command the driver window UP and DOWN by pressing the driver window switch. The test lamp should turn ON when commanding the UP and DOWN states.
    - If the test lamp remains OFF during either of the commands, test for a short to ground on either control circuit. If the circuits test normal, replace the driver window switch.
9. If all circuits test normal, test or replace the driver window motor.

Passenger Power Window Inoperative

1. Ignition OFF, disconnect the harness connector at the Passenger Window Switch.
2. Ignition OFF, test for less than 1.0 ohm of resistance between the ground circuit terminal F and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal G and

ground.

- If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the PWR/WNDW circuit breaker is open, replace the passenger window switch.

4. Connect a test lamp between the control circuit terminal A and control circuit terminal C.
5. Ignition ON, command the passenger window UP and DOWN by pressing the window control on the driver window switch. The test lamp should illuminate during either of the commands.
   - If the test lamp is always OFF, test for a short to ground on either control circuit. If all circuits test normal, test or replace the driver window switch.
6. Ignition OFF, reconnect the passenger window switch.
7. Ignition OFF, disconnect the harness connector at the passenger window motor.
8. Ignition OFF, test for less than 1.0 ohm of resistance between the control circuit terminal A and ground.
   - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuits test normal, replace the passenger window switch.
9. Ignition OFF, test for less than 1.0 ohm of resistance between the control circuit terminal B and ground.
   - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuits test normal, replace the passenger window switch.
10. Connect a test lamp between control circuit terminal A and control circuit terminal B.
11. Ignition ON, command the passenger window UP and DOWN by pressing the passenger window switch. The test lamp should turn ON when commanding the UP and DOWN states.
    - If the test lamp remains OFF during either of the commands, test for a short to ground on either control circuit. If the circuits test normal, replace the passenger window switch.
12. If all circuits test normal, test or replace the passenger window motor.

Rear Power Window Inoperative

1. Ignition OFF, disconnect the harness connector at the appropriate rear Window Switch.
2. Ignition OFF, test for less than 1.0 ohm of resistance between the ground circuit terminal F and ground.
   - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal G and ground.

- If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the PWR/WNDW circuit breaker is open, replace the appropriate rear window switch.

4. Connect a test lamp between the control circuit terminal A and control circuit terminal C.
5. Ignition ON, command the appropriate rear window UP and DOWN by pressing the appropriate window control on the Driver Window Switch. The test lamp should illuminate during either of the commands.
   - If the test lamp is always OFF, test for a short to ground on either control circuit. If all circuits test normal, test or replace the driver window switch.
6. Ignition OFF, reconnect the appropriate rear Window Switch.
7. Ignition OFF, disconnect the Window Master Switch Lockout circuit at the appropriate rear window switch.
8. Ignition OFF, disconnect the harness connector at the appropriate rear Window Motor
9. Ignition OFF, test for less than 1.0 ohm of resistance between the control circuit terminal A and ground.
   - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuits test normal, replace the appropriate rear window switch.
10. Ignition OFF, test for less than 1.0 ohm of resistance between the control circuit terminal B and ground.
    - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuits test normal, replace the appropriate rear window switch.
11. Connect a test lamp between control circuit terminal A and control circuit terminal B.
12. Ignition ON, command the appropriate rear window UP and DOWN by pressing the appropriate rear window switch. The test lamp should turn ON when commanding the UP and DOWN states.
    - If the test lamp remains OFF during either of the commands, test for a short to ground on either control circuit. If the circuits test normal, replace the appropriate rear window switch.
13. Reconnect the Window Master Switch Lockout circuit at the appropriate rear window switch.
14. Command the appropriate rear window UP and DOWN by pressing the appropriate rear Window Switch. The test lamp should turn ON when commanding the UP and DOWN states
    - If the test lamp remains OFF during either of the commands, test the Window Master

Switch Lockout circuit for a short to ground. If the circuits test normal, replace the Driver Window Switch

15. If all circuits test normal, test or replace the passenger window motor.

Component Testing

Window Motor

1. Install a 25-amp fused jumper wire between the control terminal A and 12 volts. Momentarily install a jumper wire between the control terminal B and ground. The appropriate window motor should perform the UP or DOWN function.
   - If the function does not perform as specified, replace the appropriate window motor.
2. Reverse the jumper wires; the appropriate window motor should perform the DOWN or UP function.
   - If the function does not perform as specified, replace the appropriate window motor.

Repair Procedures

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

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

POWER WINDOWS INOPERATIVE - ALL (AXC/AXE)

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

Power Windows Inoperative - All (AXC/AXE)

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Door Module B+	1	1	-	-
Driver Window Motor B+	1, 2, 3, 4	2	-	-
LR Window Switch B+	1, 2, 3, 4	3	-	-

Passenger Door Module B+	2	4	-	-
Passenger Window Motor B+	1, 2, 3, 4	3, 4	3, 4	-
RR Window Switch B+	1, 2, 3, 4	1	1	-
Driver Window Motor Serial Data	B3205 00	1	B3205 00	-
Passenger Window Motor Serial Data (AXC)	B3205 00	2	B3205 00	-
LR Window Motor Control	3	3	3	-
Passenger Window Motor Control (AXE)	2	2	2	-
RR Window Motor Control	4	4	4	-
Window Master Switch LR Down Control	3	B3820 04	3	-
Window Master Switch Lockout Control	3, 4	3, 4	3, 4	-
Window Master Switch LR Up Control	3	3	3	-
Window Master Switch RR Down Control	4	B3820 04	4	-
Window Master Switch RR Up Control	4	4	4	-
Driver Door Module Ground	-	1	1	-
LR Window Switch Ground	-	3	3	-
Passenger Door Module Ground	-	2	2	-
Passenger Window Motor Ground (AXC)	-	2	2	-
RR Window Switch Ground	-	4	4	-

1. Driver Window Malfunction

2. Passenger Window Malfunction
3. Left Rear Window Malfunction
4. Right Rear Window Malfunction

Circuit/System Description

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

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

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

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

Reference Information

Schematic Reference

Moveable Window Schematics (AXA) or **Moveable Window Schematics (AXC/AXE)**

Connector End View Reference

Window Systems Connector End Views

Description and Operation

Power Windows Description and Operation (RPO AXC/AXE) or **Power Windows**

Description and Operation (RPO AXA)

Electrical Information Reference

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

Scan Tool Reference

- **Scan Tool Data Definitions**
- **Scan Tool Data List**
- **Scan Tool Output Controls**

Circuit/System Verification

1. Command the appropriate front power window UP/DOWN with a scan tool, the appropriate front power window should perform the UP/DOWN command.
    - If a front power window fails the UP/DOWN operation, refer to **Front Window Motor Malfunction (RPO AXC)**.
2. Observe the operation of the power windows while pressing and pulling the window switches on the driver master control. Each window should perform the UP and DOWN command.
    - If a window fails the UP/DOWN operation, refer to **Driver Window Switch Malfunction**.
3. Observe the operation of passenger power window while pressing and pulling the passenger window switch, the window should perform the UP and DOWN command.
    - If the passenger window fails the UP/DOWN operation, refer to **Passenger Window Switch Malfunction (RPO AXC)** or **Passenger Window Malfunction (RPO AXE)**.
4. Observe the operation of each rear window while pressing and pulling the appropriate rear door switch. The appropriate rear window should perform the UP and DOWN command.
    - If the either rear window fails the UP/DOWN operation, refer to **Rear Window Malfunction**.

Circuit/System Testing

Front Window Motor Malfunction (RPO AXC)

1. Ignition OFF, disconnect the harness connector at the appropriate window motor.
2. Ignition OFF, test for less than 1.0 ohm of resistance between the power window motor ground circuit terminal 4 and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal 1 and ground.
    - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance, if the circuit test normal and the PWR/WNDW circuit breaker is open, replace the appropriate window motor.
4. Ignition OFF, reconnect the appropriate window motor.
5. Ignition ON, command the appropriate power window UP/DOWN with a scan tool, the window should go UP/DOWN.
    - If the window fails to go UP/DOWN, check the control circuit terminal 6 for a short to ground or an open/high resistance. If the circuit tests normal, replace the appropriate window motor.
6. If all circuits tests normal, replace the appropriate door module.

Driver Window Switch Malfunction

1. Ignition OFF, disconnect the harness connector X1 at the DDM.
2. Ignition OFF, check for less than 1.0 ohm resistance between the ground circuit terminal 5 and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal 4 and ground.
    - If the test lamp does not illuminate, test the B+ circuit for a short to ground or open/high resistance. If the circuit tests normal and the DR/LCK fuse is open, replace the DDM.
4. Ignition OFF, reconnect the harness connector X1 at the DDM.
5. Ignition ON, observe the scan tool Window Up/Down Cmd parameter while pressing and pulling the appropriate power window switch on the driver master control. The reading should change between ON and OFF.
    - If the scan tool Window Up/Down Cmd parameter is always OFF, replace the DDM.
    - If the scan tool Window Up/Down Cmd parameter is always ON, replace the DDM.
6. Ignition ON, observe the scan tool Window Enable Cmd parameter while pressing and depressing the appropriate window lockout switch on the driver master control. The reading

should change between ON and OFF.

- If the scan tool Window Enable Cmd parameter is always OFF, replace the DDM.
- If the scan tool Window Enable Cmd parameter is always ON, replace the DDM.

Passenger Window Switch Malfunction (RPO AXC)

1. Ignition OFF, disconnect the harness connector X1 at the PDM.
2. Ignition OFF, check for less than 1.0 ohm resistance between the ground circuit terminal 5 and ground.
   - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal 4 and ground.
   - If the test lamp does not illuminate, test the B+ circuit for a short to ground or open/high resistance. If the circuit tests normal and the DR/LCK fuse is open, replace the PDM.
4. Ignition OFF, reconnect the harness connector X1 at the PDM.
5. Ignition ON, observe the scan tool Window Up/Down Cmd parameter while pressing and pulling the power window switch. The reading should change between ON and OFF.
   - If the scan tool Window Up/Down Cmd parameter is always OFF, replace the PDM.
   - If the scan tool Window Up/Down Cmd parameter is always ON, replace the PDM.

Passenger Window Malfunction (RPO AXE)

1. Ignition OFF, disconnect the harness connector X1 at the PDM.
2. Ignition OFF, check for less than 1.0 ohm resistance between the ground circuit terminal 5 and ground.
   - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal 2 and ground.
   - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the PWR/WNDW circuit breaker is open, replace the PDM.
4. Ignition OFF, reconnect the PDM and disconnect the harness connector at the passenger window motor.
5. Ignition OFF, test for less than 1.0 ohm of resistance between the control circuit terminal A and ground.
   - If greater than the specified range, test the control circuit for a short to voltage or an

open/high resistance. If circuits test normal, replace the PDM.

6. Ignition OFF, test for less than 1.0 ohm of resistance between the control circuit terminal B and ground.
    - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuits test normal, replace the PDM.
7. Connect a test lamp between control circuit terminal A and control circuit terminal B.
8. Ignition ON, command the passenger window UP and DOWN by pressing the passenger window switch. The test lamp should turn ON when commanding the UP and DOWN states.
    - If the test lamp remains OFF during either of the commands, test for a short to ground on either control circuit. If the circuits test normal, replace the PDM.
9. If all circuits test normal, test or replace the passenger window motor.

Rear Window Malfunction

1. Ignition OFF, disconnect the harness connector at the appropriate rear Window Switch.
2. Ignition OFF, test for less than 1.0 ohm of resistance between the ground circuit terminal F and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal G and ground.
    - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the PWR/WNDW circuit breaker is open, replace the appropriate rear Window Switch.
4. Connect a test lamp between the Window Master Switch Up control circuit terminal A and B+.
5. Ignition ON, command the appropriate rear window UP with a scan tool. The test lamp should illuminate during the command.
    - If the test lamp is always OFF, test the control circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the BCM.
6. Connect a test lamp between the Window Master Switch Down control circuit terminal C and B+.
7. Ignition ON, command the appropriate rear window DOWN with a scan tool. The test lamp should illuminate during the command.
    - If the test lamp is always OFF, test the control circuit for a short to ground or open/high resistance. If the circuit tests normal, replace the BCM.
8. Ignition OFF, reconnect the appropriate rear Window Switch.

9. Ignition OFF, disconnect the Window Master Switch Lockout circuit at the appropriate rear window switch.
10. Ignition OFF, disconnect the harness connector at the appropriate rear window motor.
11. Ignition OFF, test for less than 1.0 ohm of resistance between the control circuit terminal A and ground.
    - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuits test normal, replace the appropriate rear Window Switch.
12. Ignition OFF, test for less than 1.0 ohm of resistance between the control circuit terminal B and ground.
    - If greater than the specified range, test the control circuit for a short to voltage or an open/high resistance. If circuits test normal, replace the appropriate rear Window Switch.
13. Connect a test lamp between control circuit terminal A and control circuit terminal B.
14. Ignition ON, command the appropriate rear window UP and DOWN by pressing the appropriate rear Window Switch. The test lamp should turn ON when commanding the UP and DOWN states.
    - If the test lamp remains OFF during either of the commands, test for a short to ground on either control circuit. If the circuits test normal, replace the appropriate rear Window Switch.
15. Ignition OFF, reconnect the Window Master Switch Lockout harness to the appropriate rear window switch.
16. Ignition ON, command the appropriate rear window UP and DOWN by pressing the appropriate rear Window Switch. The test lamp should turn ON when commanding the UP and DOWN states.
    - If the test lamp remains OFF during either of the commands, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
17. If all circuits test normal, test or replace the appropriate rear window motor.

Component Testing

Window Motor (Rear and RPO AXE Passenger)

1. Install a 25-amp fused jumper wire between the control terminal A and 12 volts. Momentarily install a jumper wire between the control terminal B and ground. The appropriate window motor should perform the UP or DOWN function.
    - If the function does not perform as specified, replace the appropriate window motor.

2. Reverse the jumper wires; the appropriate window motor should perform the DOWN or UP function.
    - If the function does not perform as specified, replace the appropriate window motor.

Repair Procedures

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

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

REPAIR INSTRUCTIONS

WINDSHIELD REPLACEMENT

Tools Required

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

Removal Procedure

IMPORTANT: When ordering a windshield or door windows, verify if the vehicles is equipped with or without CE1 (RAINSENSE™) or Y91 (RAINSENSE™ and luxury edition) and order accordingly. The windshield and door windows have Quiet Tuning acoustic lamination. Due to the difference in processing, along with the difference in the curvature of the window, the optics of the window may appear wavy on a cross-car view from the outside of the vehicle. This is a normal condition and the windshield should not be replaced for this condition.

The view through the window from the driver's position is clear and not affected.

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

1. Open the hood.
2. Remove the windshield wiper arms and blades. Refer to **Wiper Arm Replacement** .
3. Remove the air inlet grille. Refer to **Air Inlet Grille Panel Replacement** .
4. Remove the interior windshield pillar garnish moldings. Refer to **Windshield Garnish Molding Replacement - Left Side** and **Windshield Garnish Molding Replacement - Right Side** .
5. Remove the rearview mirror. Refer to **Rearview Mirror Replacement** .

CAUTION: Refer to Defroster Outlet Caution .

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

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

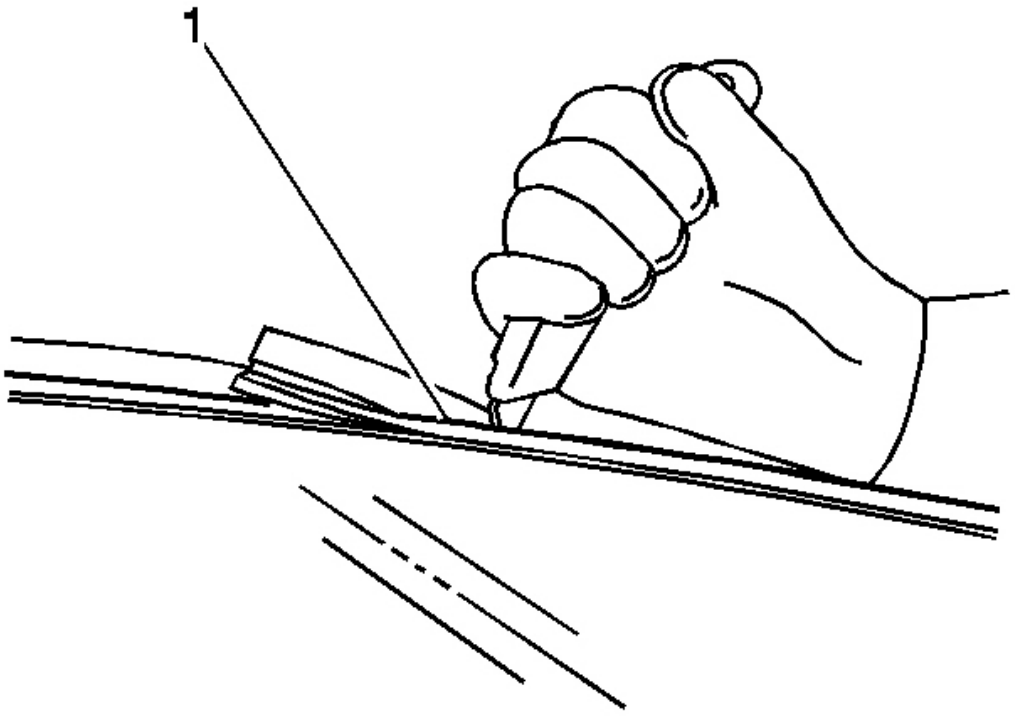


Fig. 36: View Of Using Utility Knife To Remove Reveal Molding
Courtesy of GENERAL MOTORS CORP.

7. Using a utility knife, carefully cut the exposed reveal molding (1) from the sides and the top edge of the windshield to access the urethane adhesive bead, if equipped.

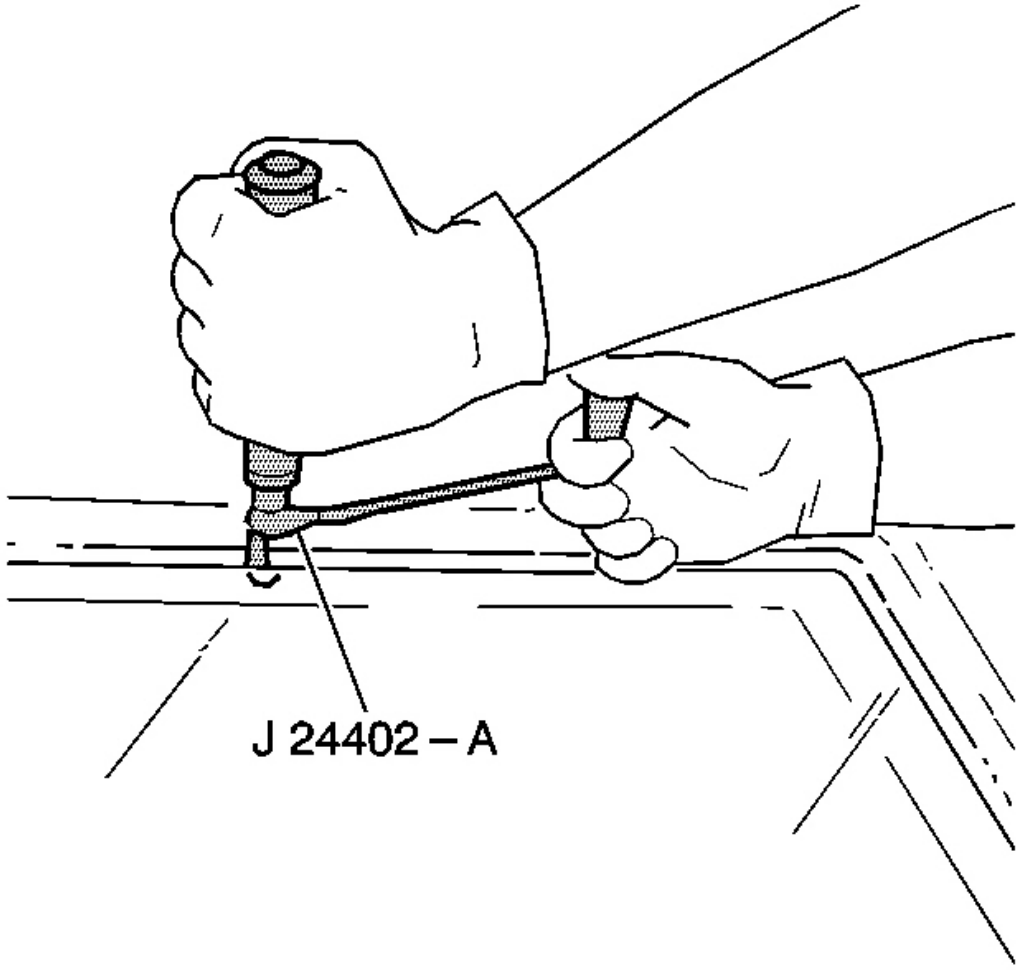


Fig. 37: View Of Separating Urethane Adhesive From Window
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: 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.
   - Use **J 24402-A** , **J 39032** or equivalent to remove the window. See **Special Tools**.

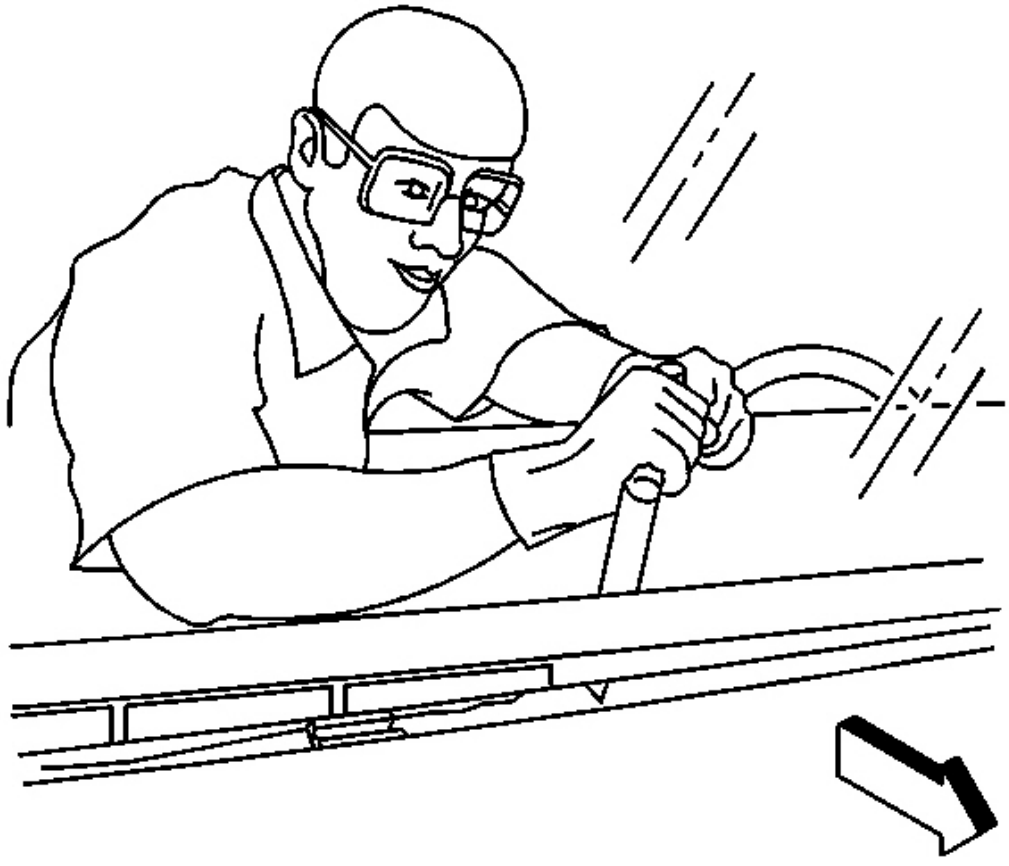


Fig. 38: View Of Separating Bottom Of Window
Courtesy of GENERAL MOTORS CORP.

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

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

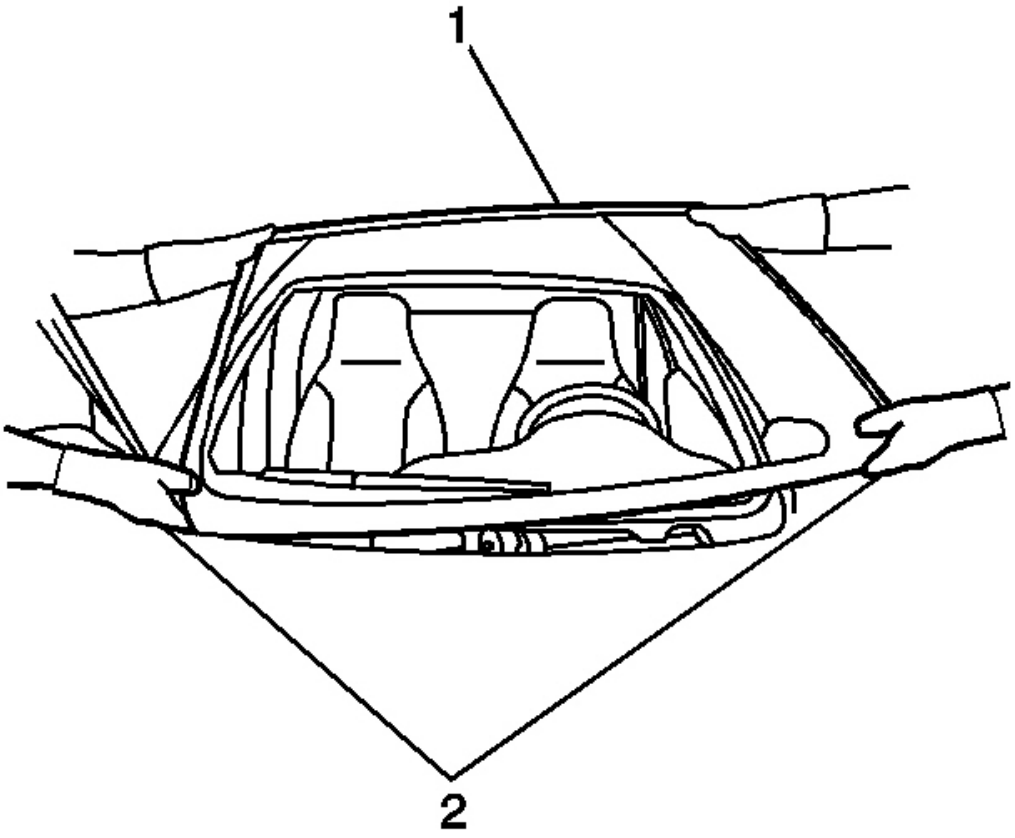


Fig. 39: Identifying Windshield
Courtesy of GENERAL MOTORS CORP.

10. With the aid of an assistant (2), remove the windshield (1) from the vehicle.

Installation Procedure

1. Install the windshield into the opening. Refer to **Adhesive Installation of Windshields**.
2. Install the rearview mirror. Refer to **Rearview Mirror Replacement** .
3. Install the interior windshield pillar garnish moldings. Refer to **Windshield Garnish Molding Replacement - Left Side** and **Windshield Garnish Molding Replacement - Right Side** .
4. Install the air inlet grille. Refer to **Air Inlet Grille Panel Replacement** .
5. Install the windshield wipers arms and blades. Refer to **Wiper Arm Replacement** .

6. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.
7. Close the hood.

WINDSHIELD REVEAL MOLDING REPLACEMENT

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

FRONT SIDE DOOR WINDOW REPLACEMENT

IMPORTANT: When ordering a windshield or door windows, verify if the vehicles is equipped with or without CE1 (RAINSENSE™) or Y91 (RAINSENSE™ and luxury edition) and order accordingly. The windshield and door windows have Quiet Tuning acoustic lamination. Due to the difference in processing, along with the difference in the curvature of the window, the optics of the window may appear wavy on a cross-car view from the outside of the vehicle. This is a normal condition and the windshield should not be replaced for this condition. The view through the window from the driver's position is clear and not affected.

Removal Procedure

1. Remove the door trim panel. Refer to **Front Side Door Trim Panel Replacement - Left Side** or **Front Side Door Trim Panel Replacement - Right Side** .
2. Remove the water deflector. Refer to **Front Side Door Water Deflector Replacement** .
3. Remove the inner belt sealing strip. Refer to **Front Side Door Window Belt Inner Sealing Strip Replacement**.

CAUTION: Disconnect the power window switch when working inside the driver's door. When operated, the Express Down Feature allows the door window to drop very quickly, without stopping, which could cause personal injury.

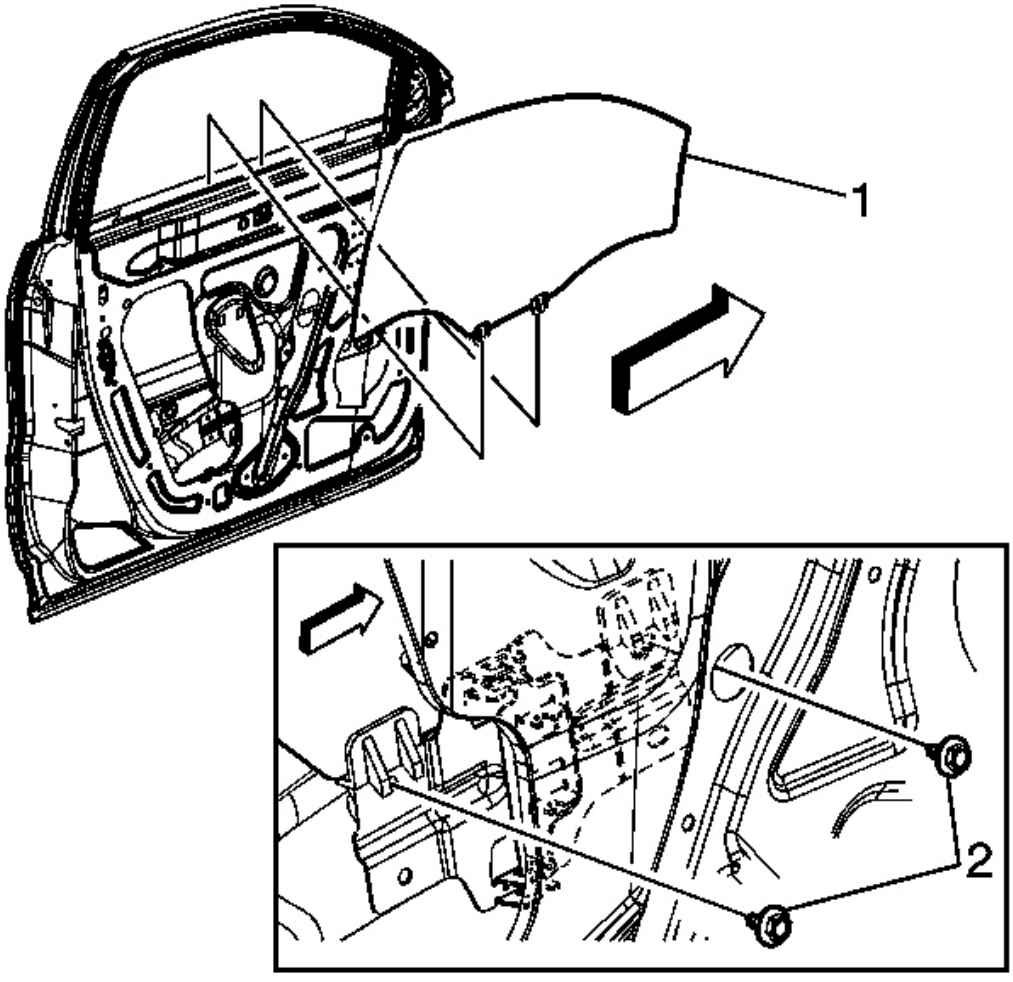


Fig. 40: Locating Front Side Door Window And Regulator Bolts
Courtesy of GENERAL MOTORS CORP.

4. Place the window (1) in a serviceable position.
5. Remove the regulator bolts (2).

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

6. In order to remove the window out of the frame, carefully grasp and tilt the window as you guide the window up and forward.

7. Remove the window from the door.

Installation Procedure

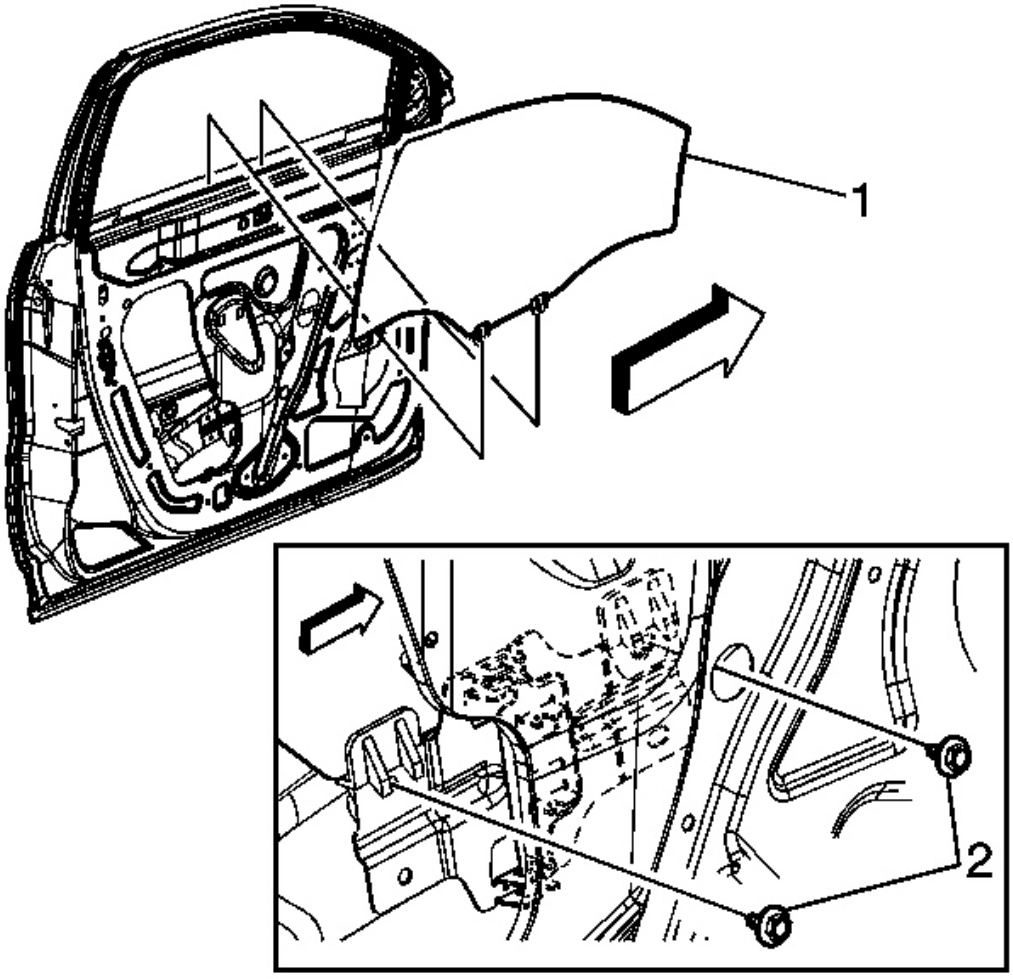


Fig. 41: Locating Front Side Door Window And Regulator Bolts
Courtesy of GENERAL MOTORS CORP.

1. Install the window to the door with the regulator adjusted to the remove/load position.
2. Tilt the window forward and carefully guide the window into the rear run channel.
3. Position the window (1) to an upright position.

4. Loosely tighten the regulator bolts (2).

IMPORTANT: Do not operate the regulator motor without supporting the window. Ensure that the window remains in the run channels when operating the regulator motor.

5. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the run channels.
6. Position the window (1) to a fully secure position into the upper door weatherstrip.

NOTE: Refer to Fastener Notice .

7. Tighten the 2 regulator bolts (2).

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

8. Lower the window to the full down position.
9. Install the inner belt sealing strip. Refer to **Front Side Door Window Belt Inner Sealing Strip Replacement**.
10. Install the water deflector. Refer to **Front Side Door Water Deflector Replacement** .
11. Install the door trim panel. Refer to **Front Side Door Trim Panel Replacement - Left Side** or **Front Side Door Trim Panel Replacement - Right Side** .

REAR SIDE DOOR WINDOW REPLACEMENT

Removal Procedure

1. Remove the door trim panel. Refer to **Rear Side Door Trim Panel Replacement** .
2. Remove the water deflector.
3. Remove the outer belt sealing strip. Refer to **Rear Door Window Belt Outer Sealing Strip Replacement**.

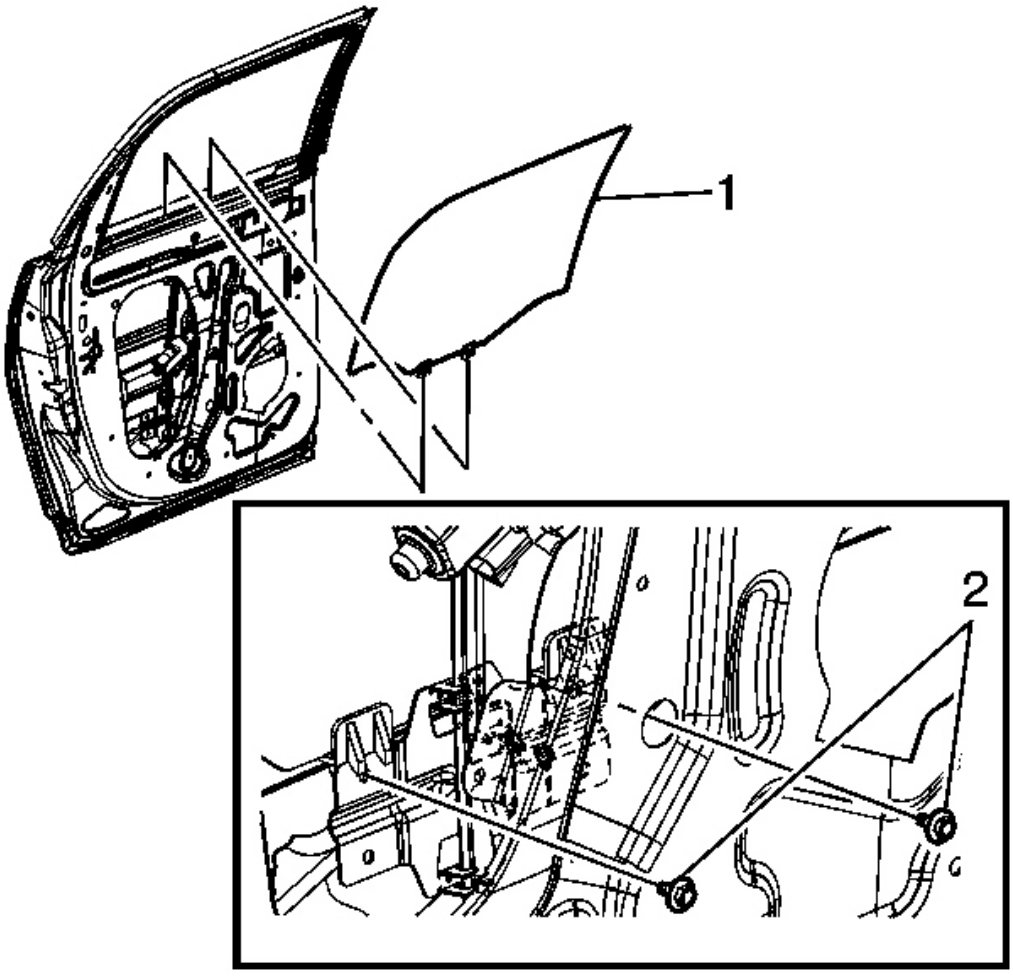


Fig. 42: Identifying Rear Door Window Guide Bolts
Courtesy of GENERAL MOTORS CORP.

4. Lower the window (1) to align the bolts with the access holes in the inner door panel.
5. Remove the window guide bolts (2).

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

6. In order to remove the window out of the frame, carefully grasp and tilt the window as you guide the window up and forward.

7. Remove the window from the door.

Installation Procedure

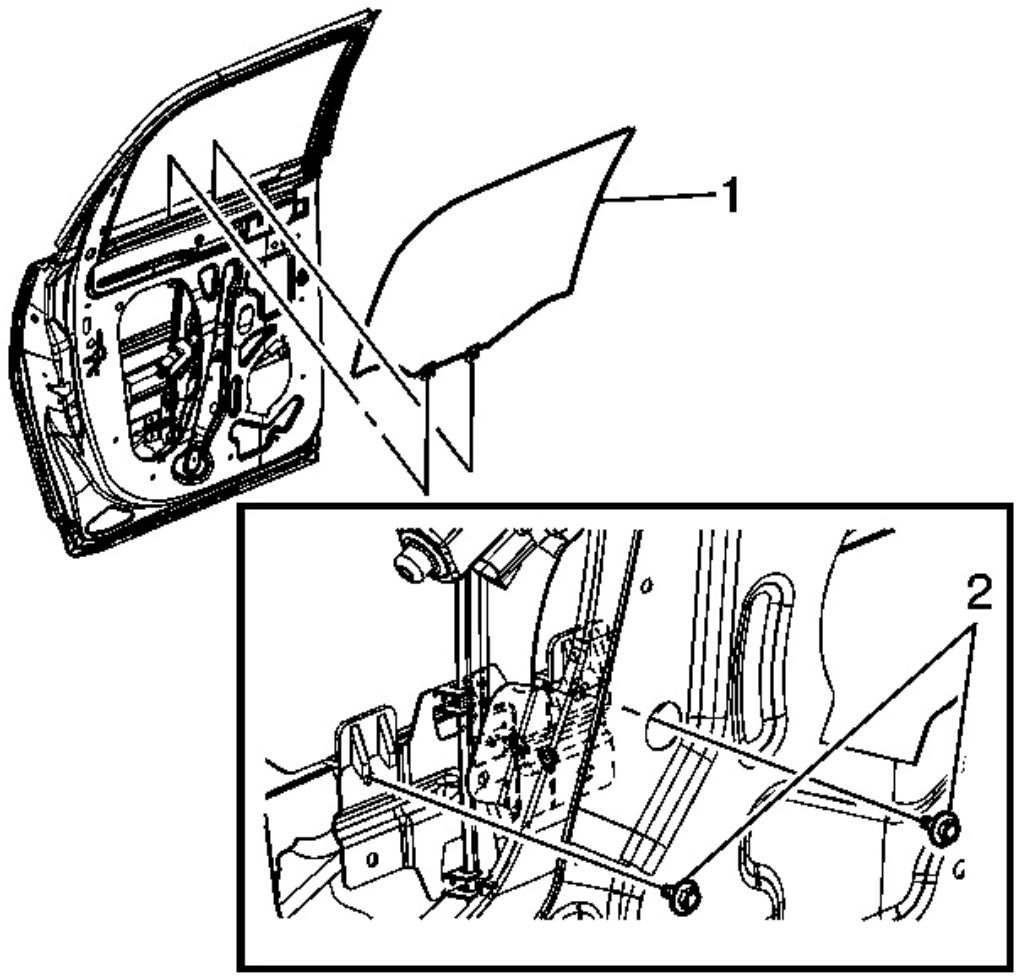


Fig. 43: Identifying Rear Door Window Guide Bolts
Courtesy of GENERAL MOTORS CORP.

1. With the regulator in the remove/load position, install the window (1) to the door.
2. Tilt the window forward and carefully guide the window into the rear channel.
3. Position the window to an upright position. Ensure that the window is seated into the channels.

4. Loosely tighten the window guide bolts (2).

IMPORTANT: Do not operate the regulator motor without supporting the window. Ensure that the window remains in the channels when operating the regulator motor.

5. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the channels.
6. Position the window (1) to a fully secure position into the upper door weatherstrip.

NOTE: Refer to Fastener Notice .

7. Tighten the 2 window guide bolts (2).

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

8. Lower the window to the full down position.
9. Install the outer belt sealing strip. Refer to **Rear Door Window Belt Outer Sealing Strip Replacement**.
10. Install the water deflector.
11. Install the door trim panel. Refer to **Rear Side Door Trim Panel Replacement** .

QUARTER WINDOW REPLACEMENT

Tools Required

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

Removal Procedure

CAUTION: Refer to Cracked Window Caution .

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

1. Open the liftgate.
2. Remove the rear quarter panel trim. Refer to **Rear Quarter Upper Trim Panel Replacement (without RPO E61)** or **Rear Quarter Upper Trim Panel Replacement (with RPO E61)** .
3. Disconnect the electrical connectors from the antenna, if equipped.

CAUTION: Refer to Defroster Outlet Caution .

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

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

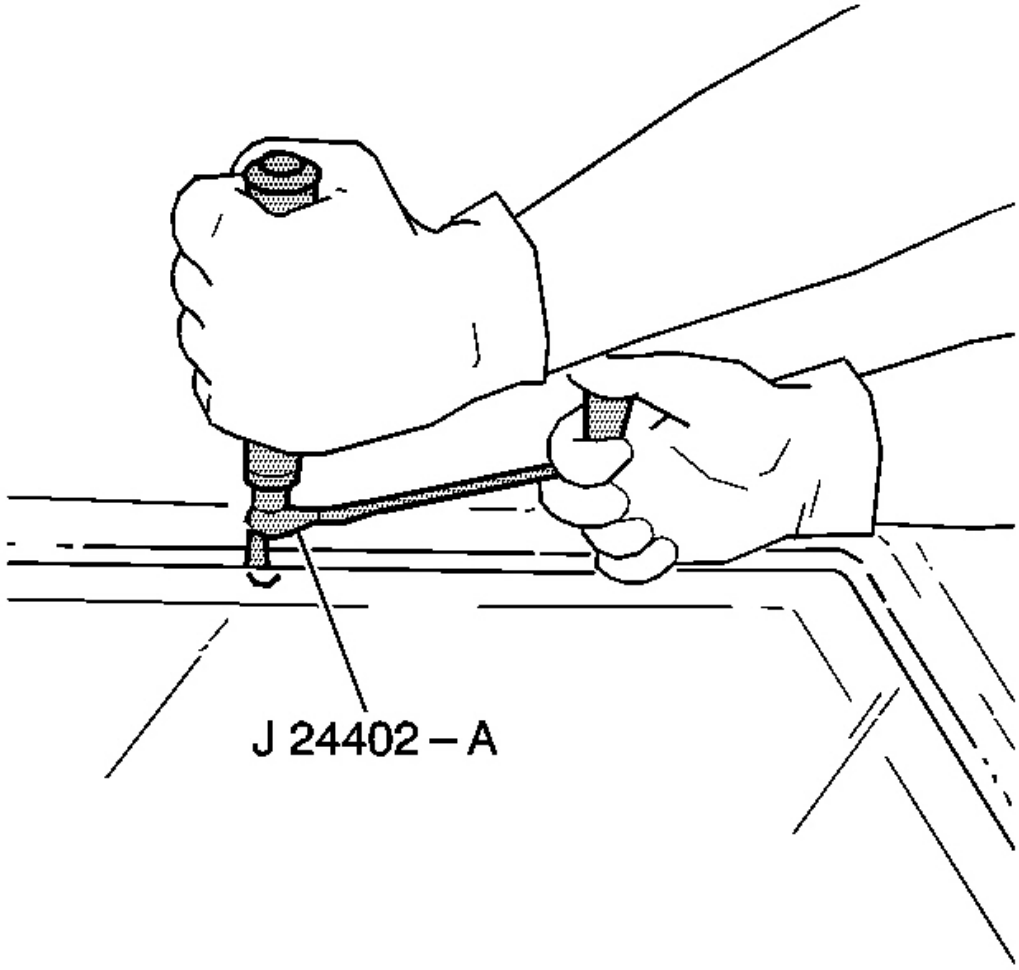


Fig. 44: View Of Separating Urethane Adhesive From Window
Courtesy of GENERAL MOTORS CORP.

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

5. Remove the window from the urethane adhesive.
   - Leave a base of urethane approximately 2 mm (0.078 in) on the pinch-weld flange.
   - The only suitable lubrication is clear water.
   - Use **J 24402-A** , **J 39032** or equivalent to remove the window. See **Special Tools**.

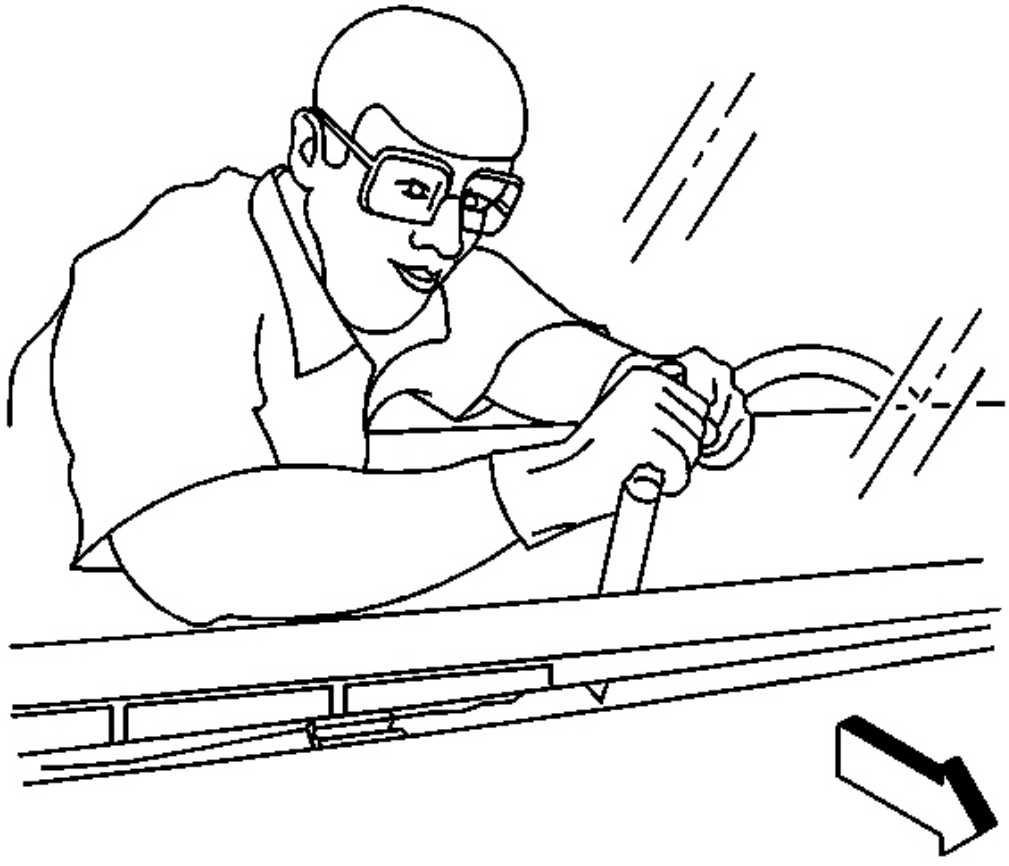


Fig. 45: View Of Separating Bottom Of Window
Courtesy of GENERAL MOTORS CORP.

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

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

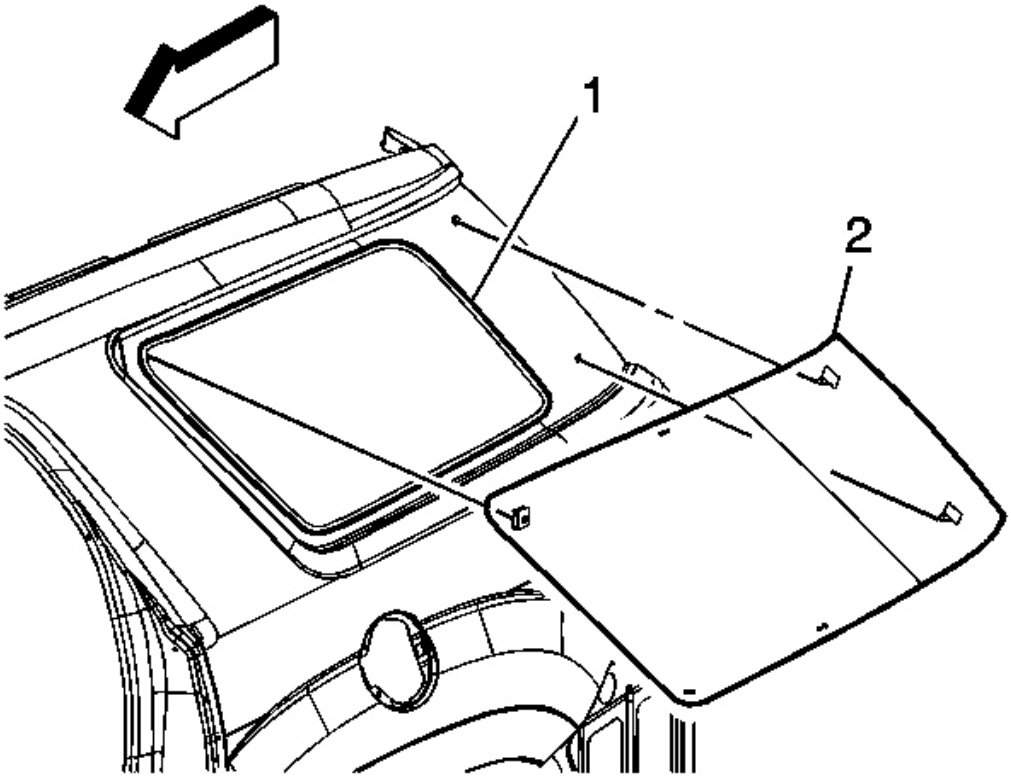


Fig. 46: View Of Quarter Window
Courtesy of GENERAL MOTORS CORP.

7. With the aid of an assistant, remove the window (2) from the vehicle.

Installation Procedure

1. Install the quarter window into the opening. Refer to **Adhesive Installation of Bodyside Stationary Windows**.
2. Connect the electrical connectors to the antenna, if equipped.
3. Install the rear quarter upper trim panel. Refer to **Rear Quarter Upper Trim Panel Replacement (without RPO E61)** or **Rear Quarter Upper Trim Panel Replacement (with RPO E61)** .
4. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

5. Close the liftgate.

LIFTGATE WINDOW REPLACEMENT

Tools Required

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

Removal Procedure

CAUTION: Refer to Cracked Window Caution .

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

1. Open the liftgate.
2. Remove the liftgate trim. Refer to **Liftgate Trim Panel Replacement** .
3. Disconnect the electrical connectors from the liftgate window defogger bus bar.
4. Remove the rear window wiper arm. Refer to **Rear Window Wiper Arm Replacement** .
5. Remove the rear spoiler. Refer to **Rear Spoiler Replacement** .

CAUTION: Refer to Defroster Outlet Caution .

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

- Seats and carpeting

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

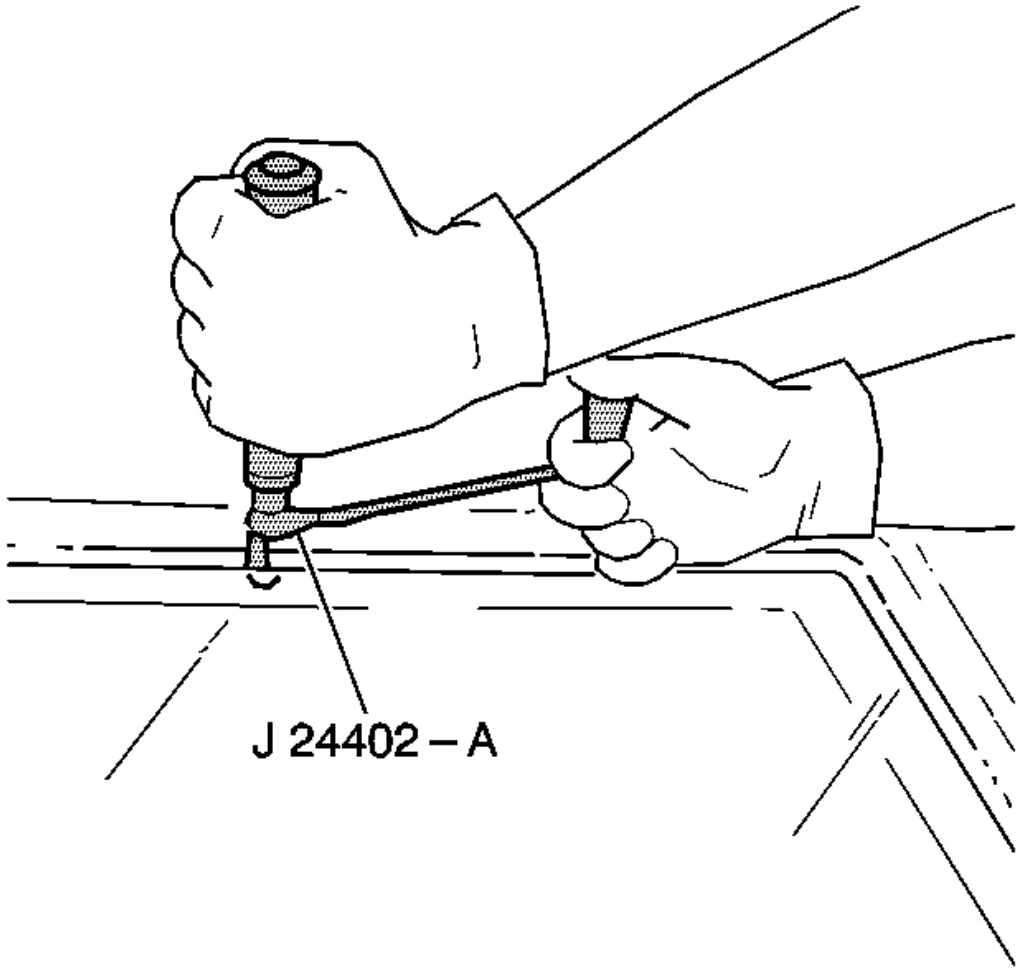


Fig. 47: View Of Separating Urethane Adhesive From Window
Courtesy of GENERAL MOTORS CORP.

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

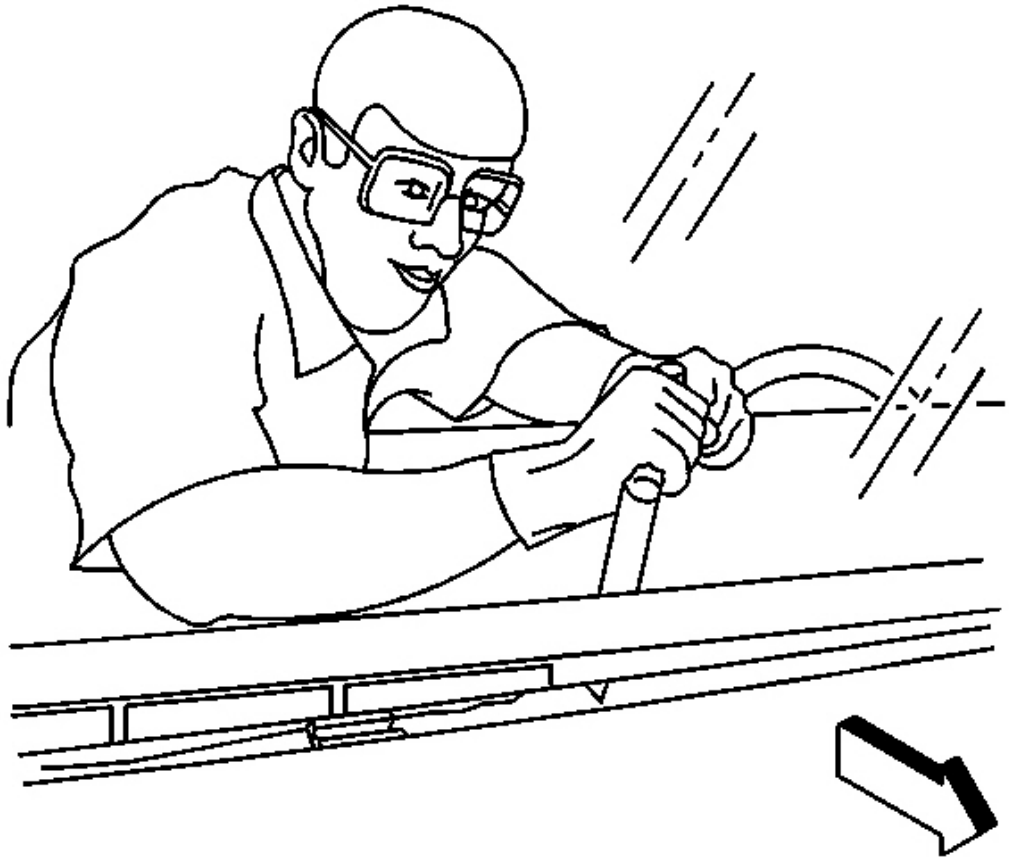


Fig. 48: View Of Separating Bottom Of Window
Courtesy of GENERAL MOTORS CORP.

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

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

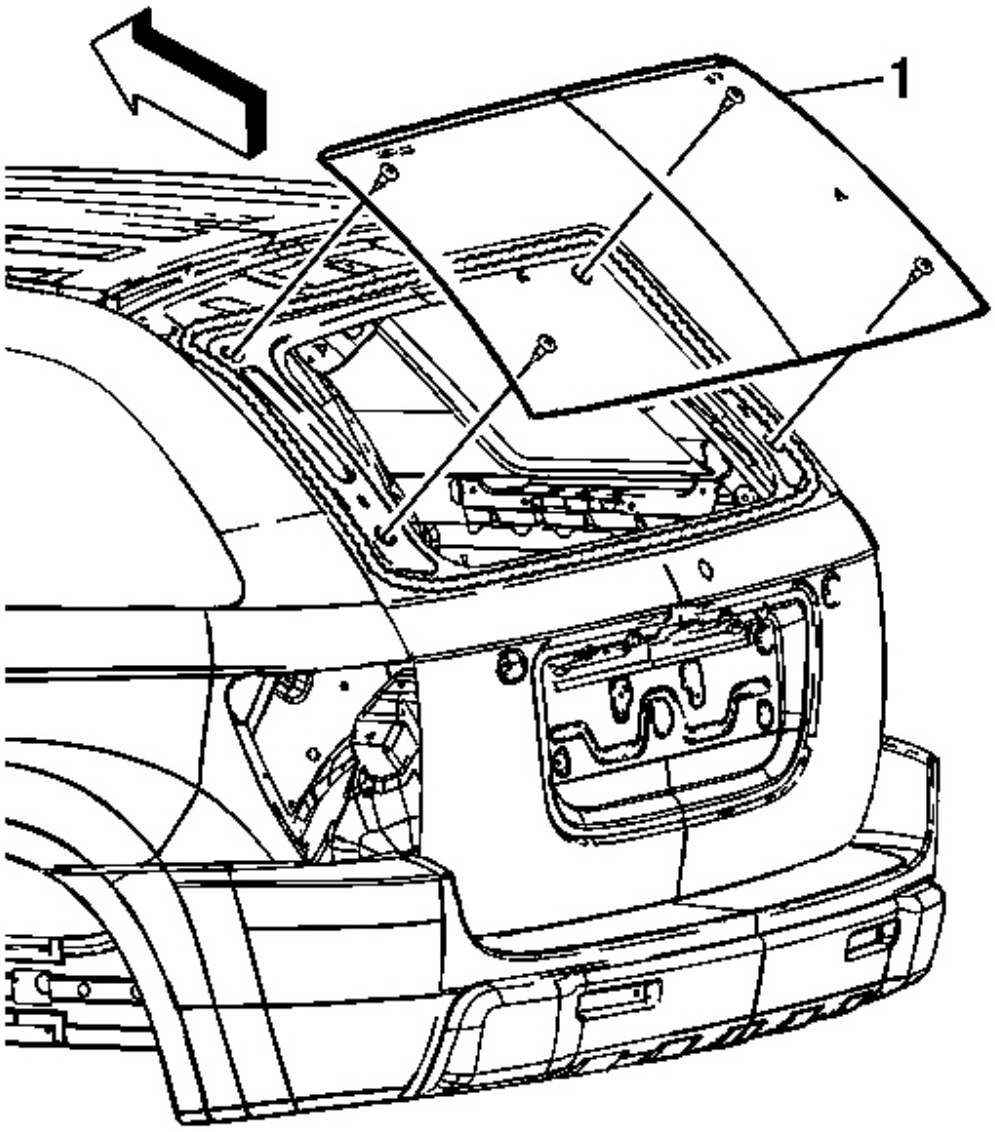


Fig. 49: View Of Liftgate Window
Courtesy of GENERAL MOTORS CORP.

9. With the aid of an assistant, remove the window (1) from the vehicle.

Installation Procedure

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

FRONT SIDE DOOR WINDOW CHANNEL REPLACEMENT

Removal Procedure

1. Remove the door trim panel. Refer to **Front Side Door Trim Panel Replacement - Left Side** or **Front Side Door Trim Panel Replacement - Right Side** .
2. Remove the water deflector. Refer to **Front Side Door Water Deflector Replacement** .
3. Remove the window. Refer to **Front Side Door Window Replacement**.

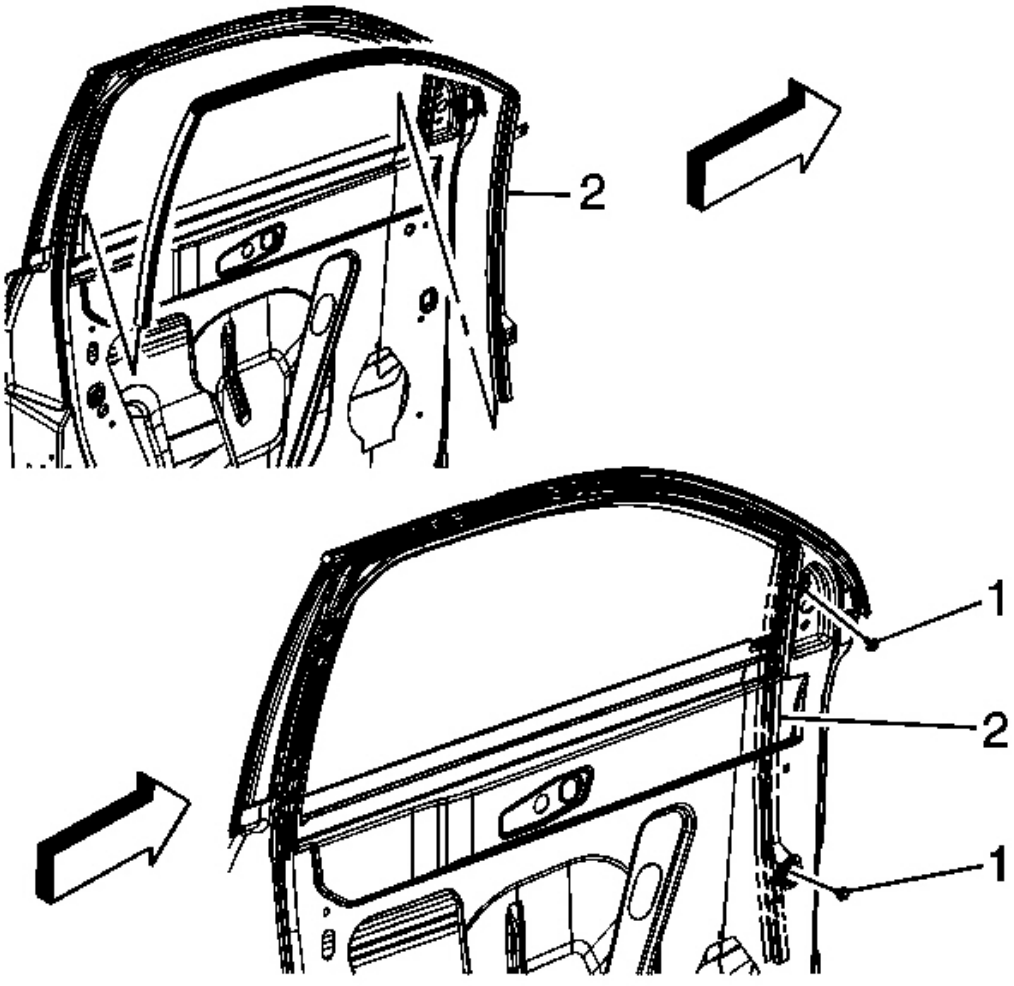


Fig. 50: Locating Weatherstrip/Run Channel And Bolts
Courtesy of GENERAL MOTORS CORP.

4. Remove the 2 bolts (1) that retain the weatherstrip/run channel (2) to the door.
5. Pull the weatherstrip/run channel away from the window frame opening.
6. Carefully twist and pull up on the weatherstrip/run channel, in order remove the weatherstrip/run channel from the top of the door frame.
7. Remove the weatherstrip/run channel from the door.

Installation Procedure

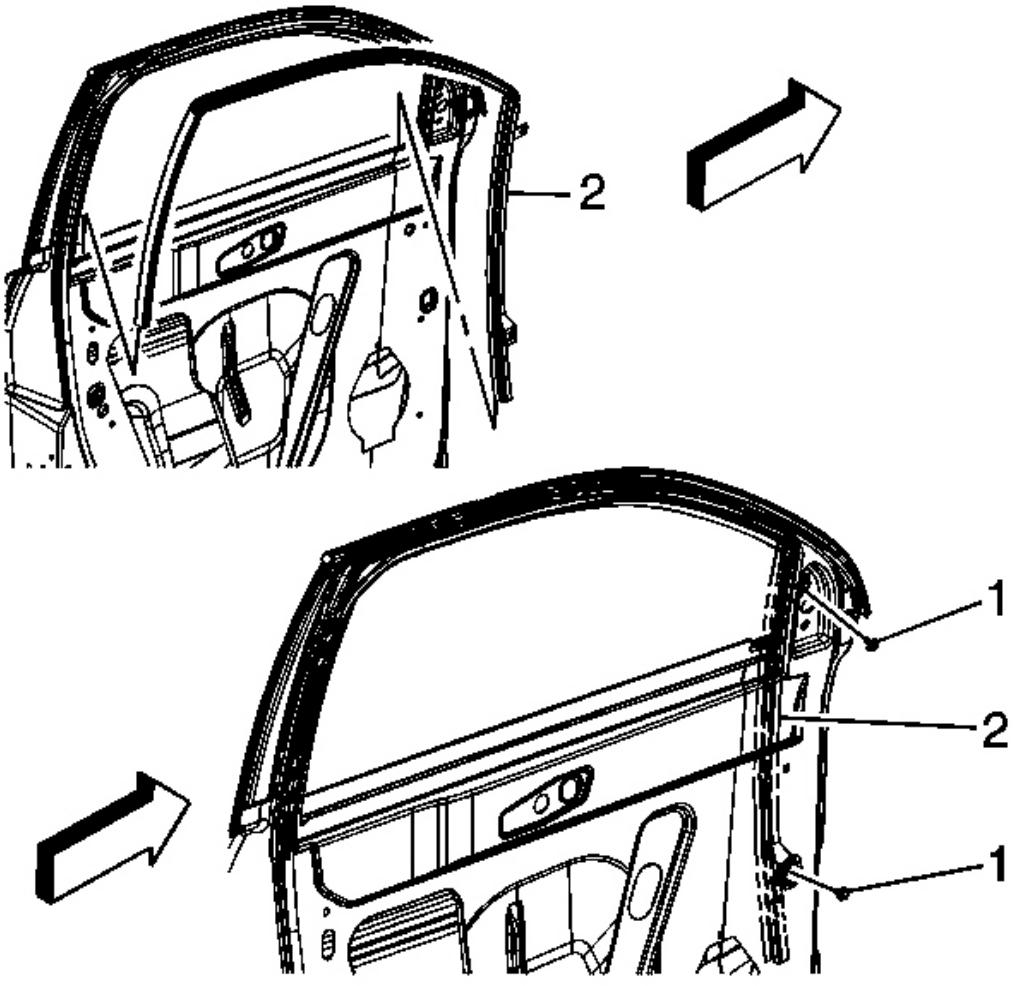


Fig. 51: Locating Weatherstrip/Run Channel And Bolts
Courtesy of GENERAL MOTORS CORP.

1. Install the weatherstrip/run channel (2) to the door.
2. Position the tabs on the weatherstrip/run channel into the slots in the door.
3. Press the weatherstrip/run channel into the window frame opening.

NOTE: Refer to Fastener Notice .

4. Install the retaining bolts (1).

Tighten: Tighten the retaining bolts to 10 N.m (88 lb in).

5. Install the window. Refer to **Front Side Door Window Replacement**.
6. Install the water deflector. Refer to **Front Side Door Water Deflector Replacement** .
7. Install the door trim panel. Refer to **Front Side Door Trim Panel Replacement - Left Side** or **Front Side Door Trim Panel Replacement - Right Side** .

REAR SIDE DOOR WINDOW CHANNEL REPLACEMENT

Removal Procedure

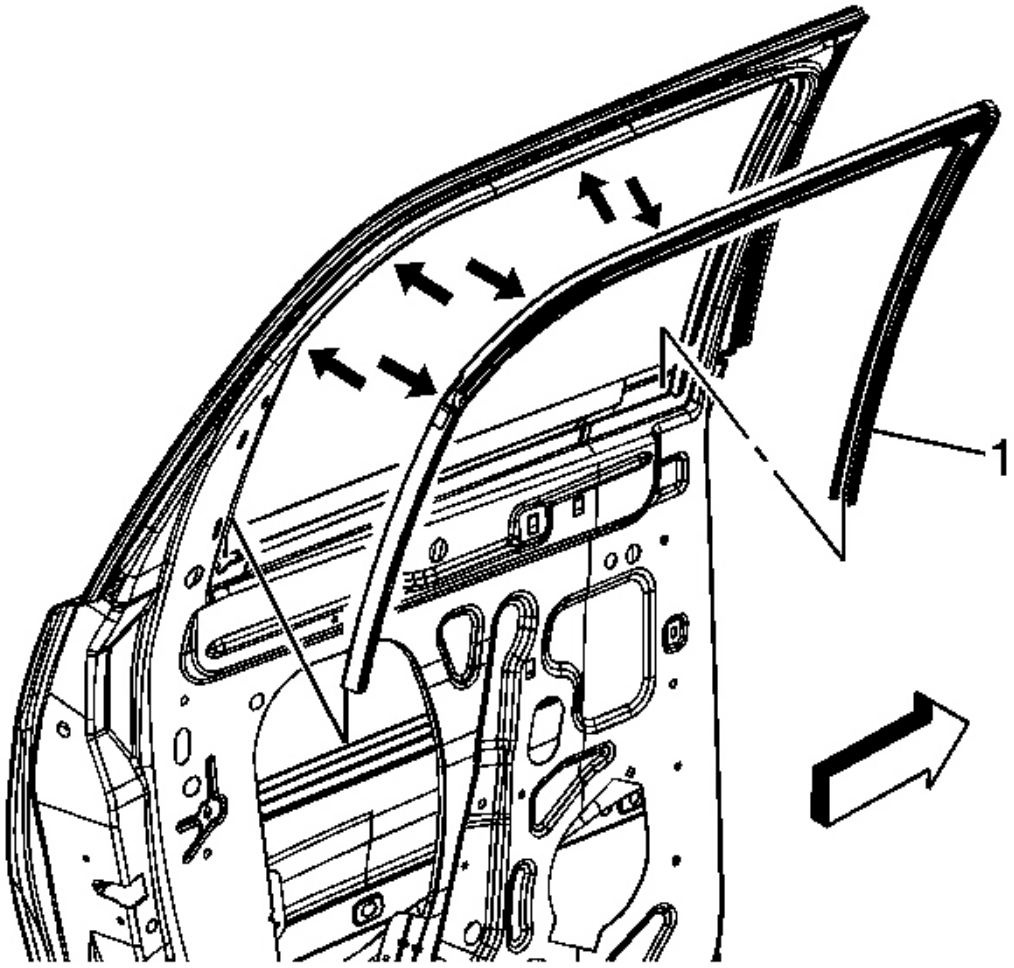


Fig. 52: Locating Rear Side Door Window Channel
Courtesy of GENERAL MOTORS CORP.

1. Pull the weatherstrip/run channel (1) from the window frame opening.
2. Carefully twist and pull downward on the weatherstrip run channel releasing it from the upper door frame.
3. Remove the weatherstrip/run channel from the door.

Installation Procedure

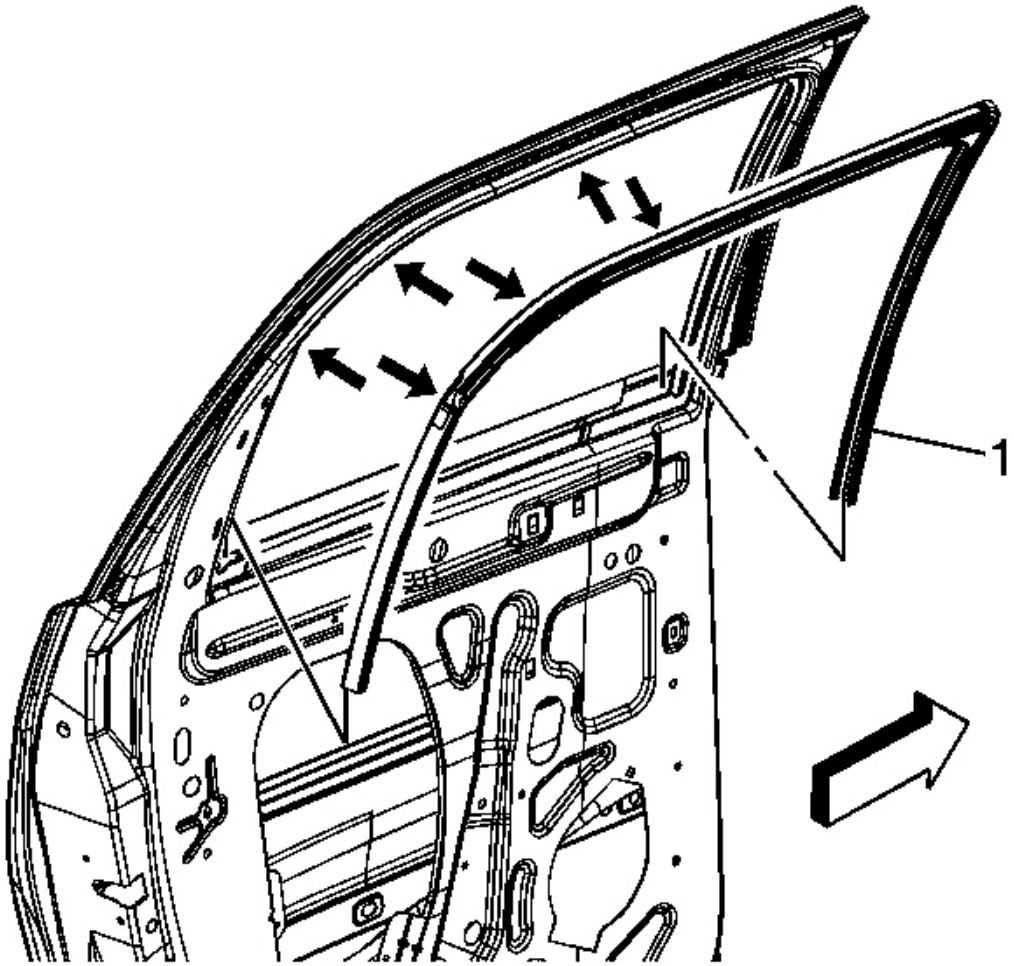


Fig. 53: Locating Rear Side Door Window Channel

Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Install the weatherstrip/run channel by fitting both corners to the upper door frame and then pushing inward on the sides.

1. Install the weatherstrip/run channel (1) to the door.
2. Press the weatherstrip/run channel (1) into the window frame opening.

STATIONARY WINDOW REVEAL MOLDING REPAIR

Removal Procedure

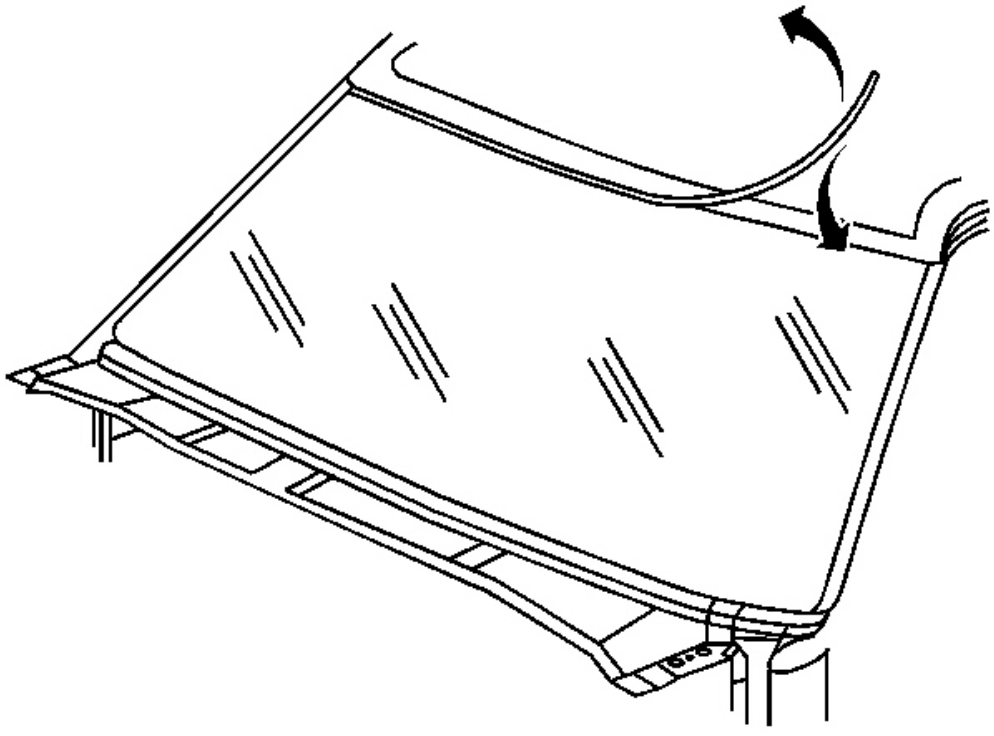


Fig. 54: View Of Windshield Reveal Molding

Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to GLASS AND SHEET METAL HANDLING CAUTION .

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

1. Lift up on the loose area of the reveal molding.
2. Clean the top edge of the window surface and the reveal molding with a 50/50 mixture of isopropyl alcohol and water by volume on a dampened lint-free cloth.

Installation Procedure

CAUTION: Refer to Window Retention Caution .

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

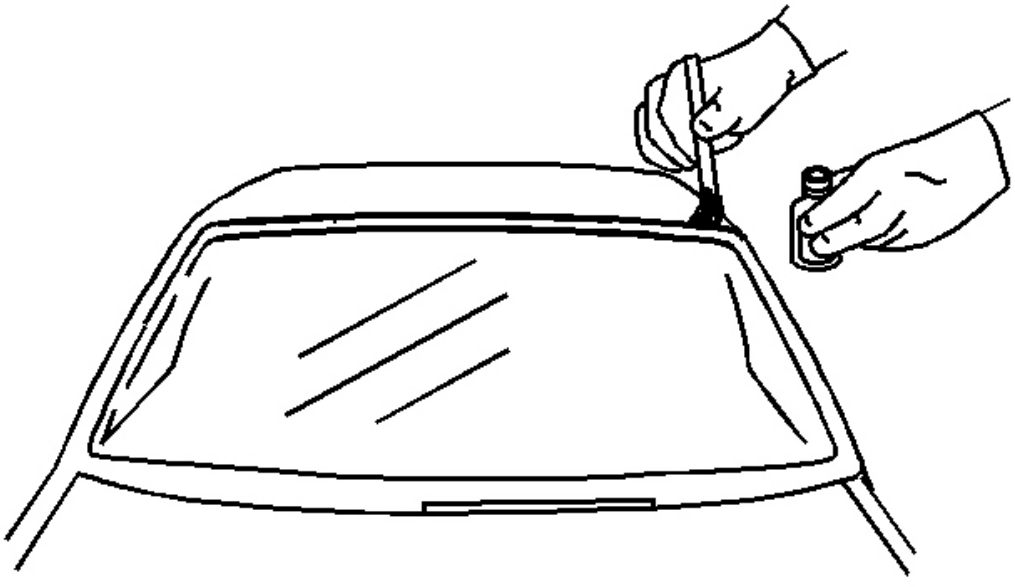


Fig. 55: Applying Glass Prep
Courtesy of GENERAL MOTORS CORP.

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

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

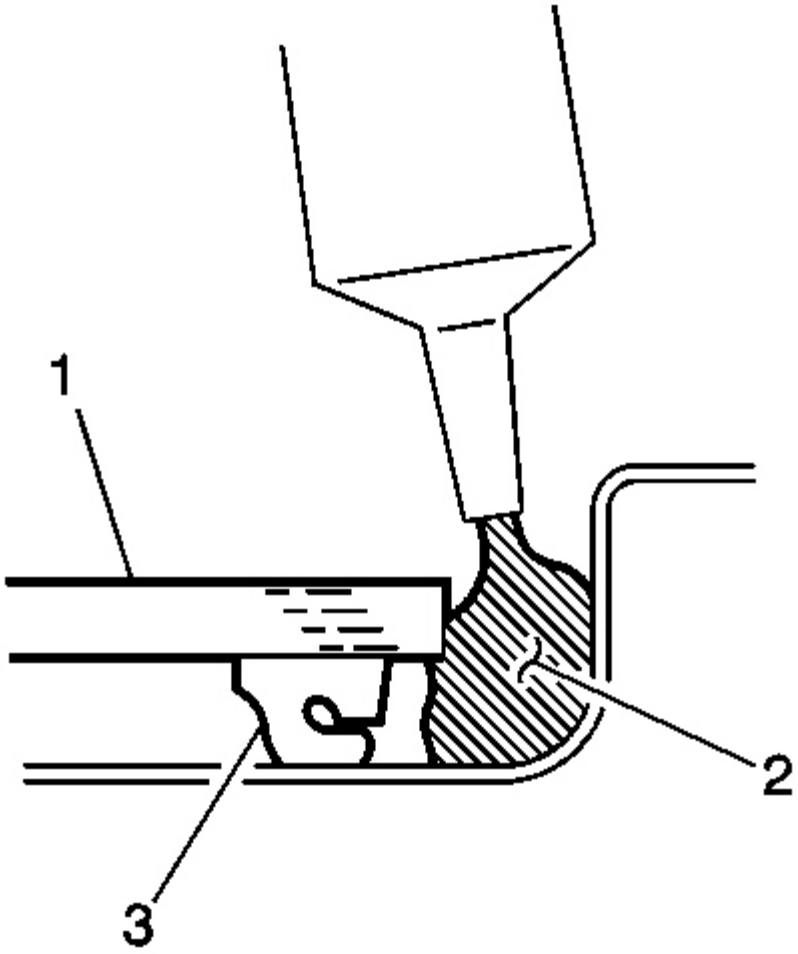


Fig. 56: Applying Urethane Adhesive Between Window & Pinch-Weld
Courtesy of GENERAL MOTORS CORP.

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

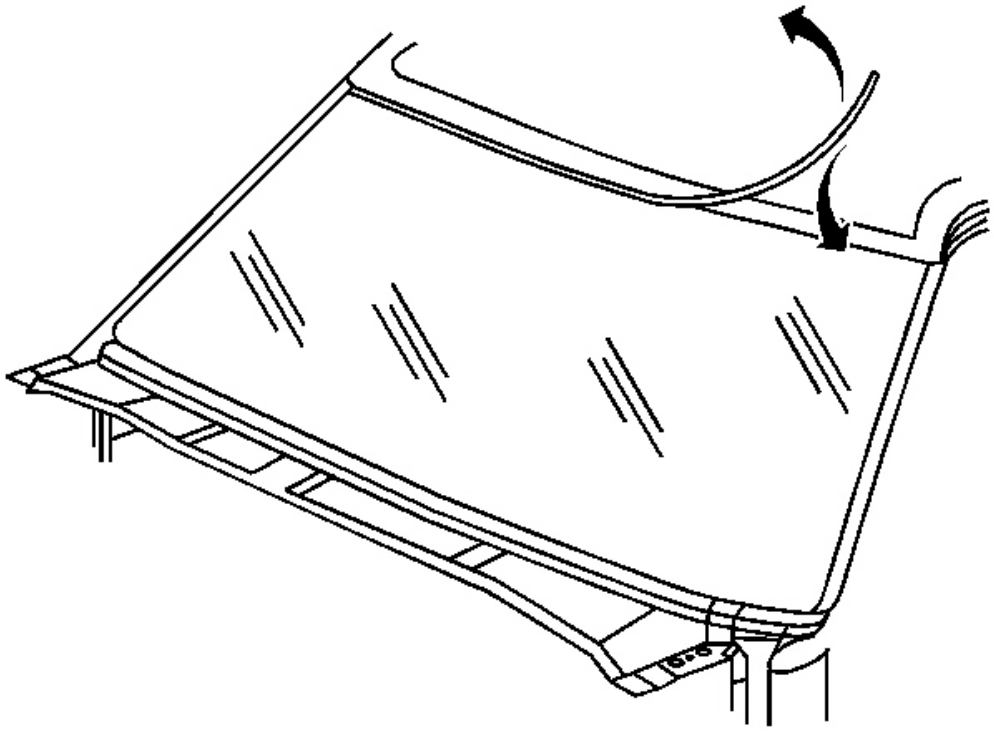


Fig. 57: View Of Windshield Reveal Molding
Courtesy of GENERAL MOTORS CORP.

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

REAR SIDE DOOR WINDOW REVEAL MOLDING REPLACEMENT

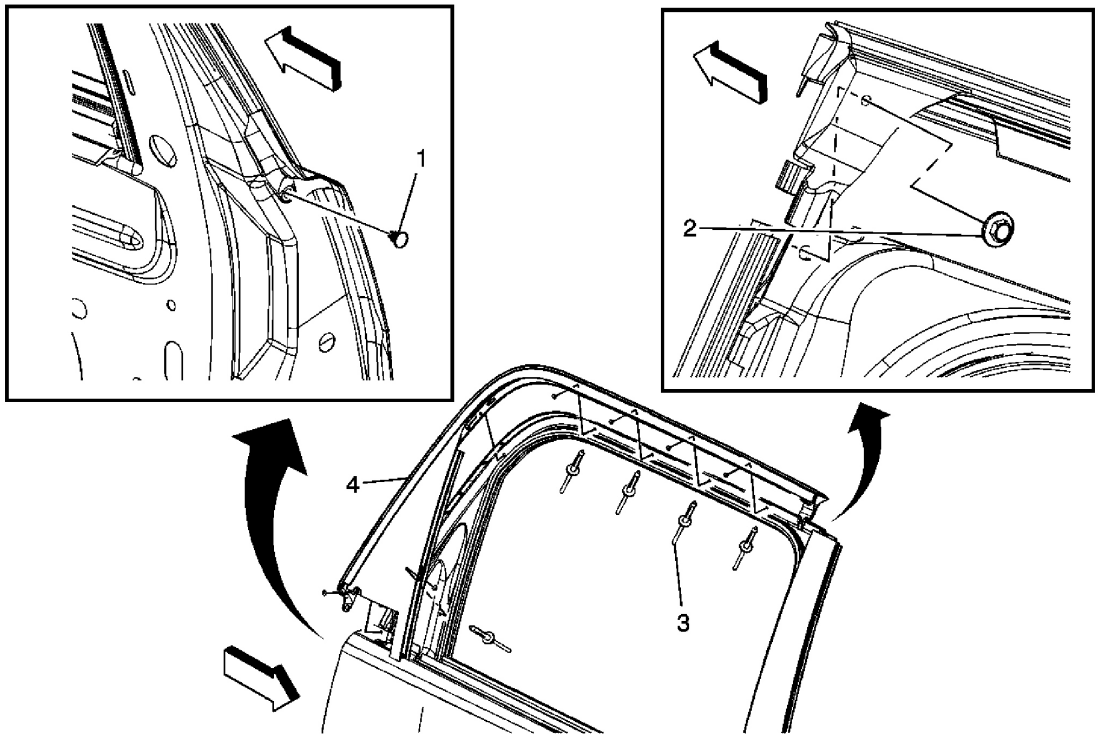


Fig. 58: Identifying Rear Side Door Window Reveal Molding
Courtesy of GENERAL MOTORS CORP.

Rear Side Door Window Reveal Molding Replacement

Callous	Component Name
1	Rear Side Door Window Reveal Molding Lower Screw **NOTE:** **Refer to Fastener Notice .** **Tighten:** 5 N.m (44 lb in)
2	Rear Side Door Window Reveal Molding Upper Screw **Tip:** Replace the clip if damaged, transfer the clip to the new part.
3	Rear Side Door Window Upper Reveal Molding Rivets (Qty: 6)
4	Rear Side Door Window Upper Reveal Molding

REAR SIDE DOOR WINDOW SWITCH REPLACEMENT

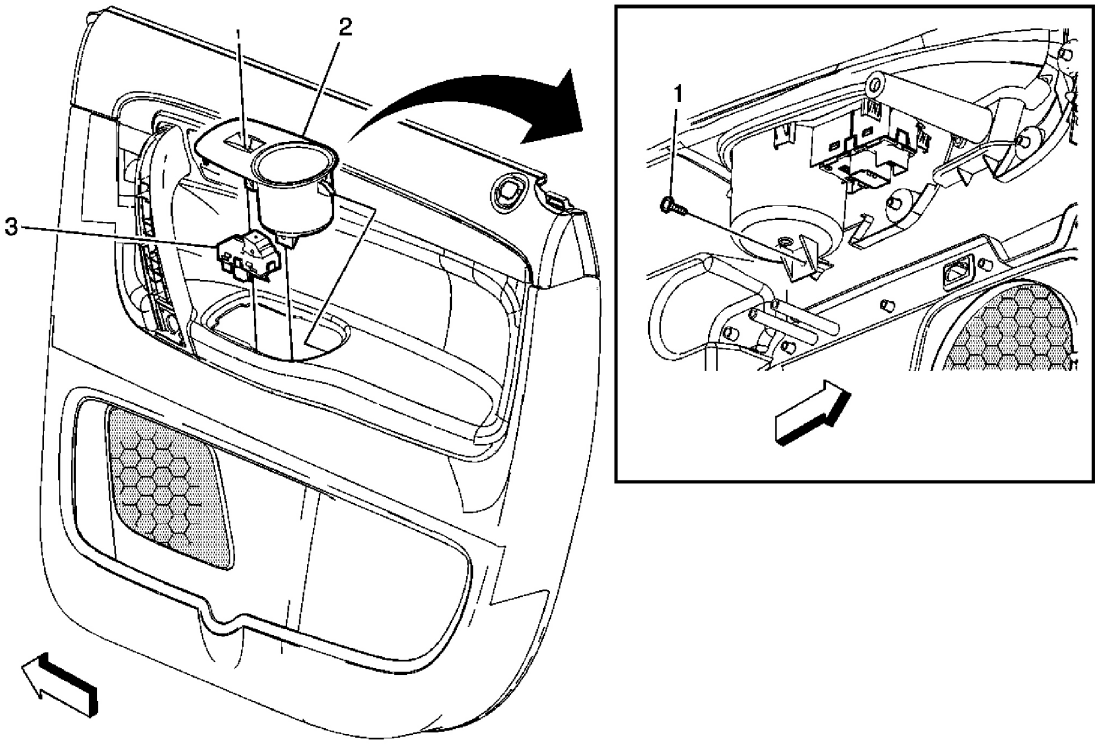


Fig. 59: View Of Rear Side Door Window Switch
Courtesy of GENERAL MOTORS CORP.

Rear Side Door Window Switch Replacement

Callout	Component Name
Preliminary Procedure: Remove rear door trim panel. Refer to **Rear Side Door Trim Panel Replacement** .	
1	Rear Switch Plate Screw **NOTE:** **Refer to Fastener Notice .** **Tighten:** 2 N.m (18 lb in)
2	Rear Switch Plate Assembly **Tip:** Use a flat-bladed tool to pry switch plate from door trim.
3	Rear Side Door Window Switch Assembly **Tip:** Disconnect electrical connectors.

FRONT SIDE DOOR WINDOW REGULATOR REPLACEMENT

Removal Procedure

CAUTION: Refer to Express Window Down Caution .

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

IMPORTANT: If servicing the left front door window regulator it MUST be serviced as assembly because of the window express feature. The right door is serviced as regulator or motor.

1. Remove the door trim panel. Refer to **Front Side Door Trim Panel Replacement - Left Side** or **Front Side Door Trim Panel Replacement - Right Side** .
2. Remove the water deflector. Refer to **Front Side Door Water Deflector Replacement** .
3. Remove the energy absorber retainers and energy absorber from the door.
4. Remove the to covers that conceal the holes for the regulator bolts.
5. Remove the window guide to regulator bolts (3). Refer to **Front Side Door Window Replacement**.
6. Raise and support the window in the full up position.
7. Disconnect the electrical connector from the regulator motor.

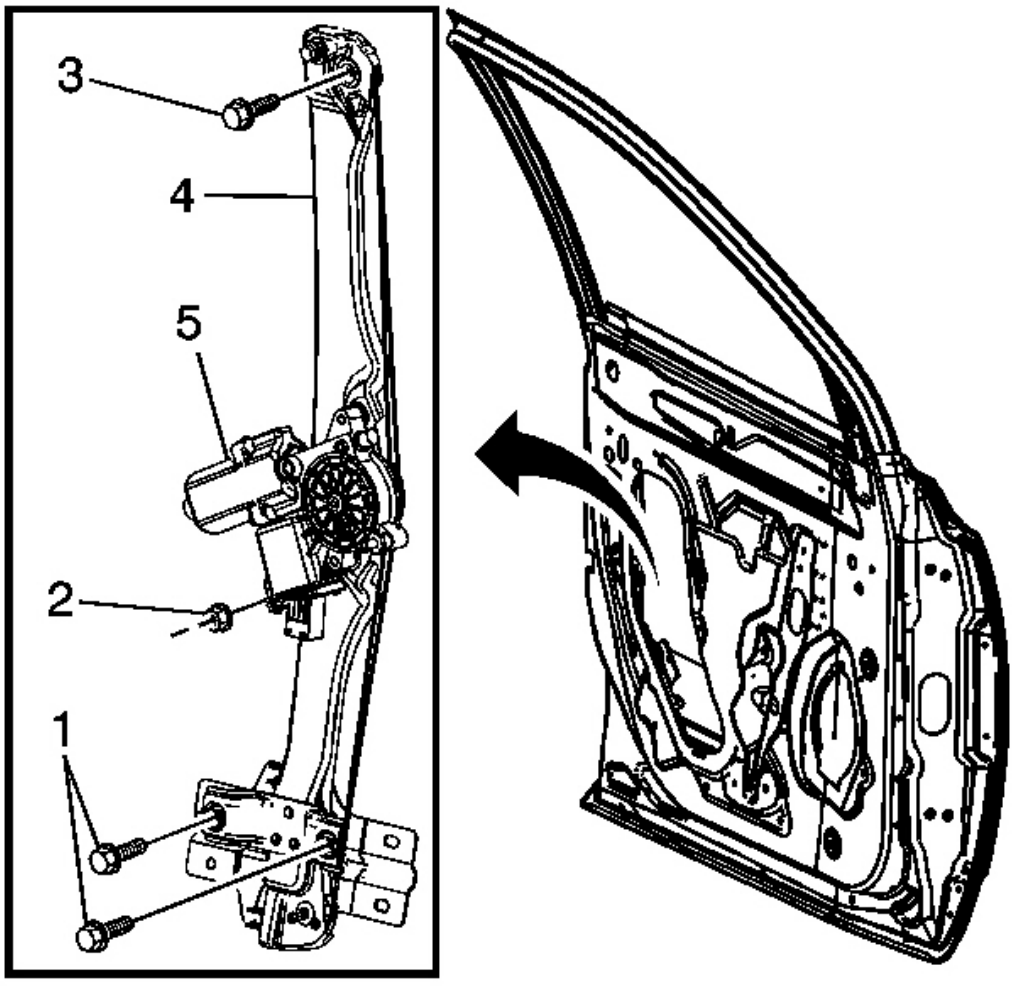


Fig. 60: Identifying Upper & Lower Bolts
Courtesy of GENERAL MOTORS CORP.

8. Loosen the upper bolt (1) that retain the regulator to the upper inner door.
9. Remove the nut (2) that retains the motor to the door.
10. Remove the lower bolt (4).
11. Lift the regulator/motor upward in order to release the upper bolts (1) from the door.
12. Rotate the upper portion of the regulator (5) forward.
13. Beginning with the lower portion, remove the regulator through the door opening.

14. Remove the upper bolt (1) from the regulator (5).
15. Transfer the power window motor (6).

Installation Procedure

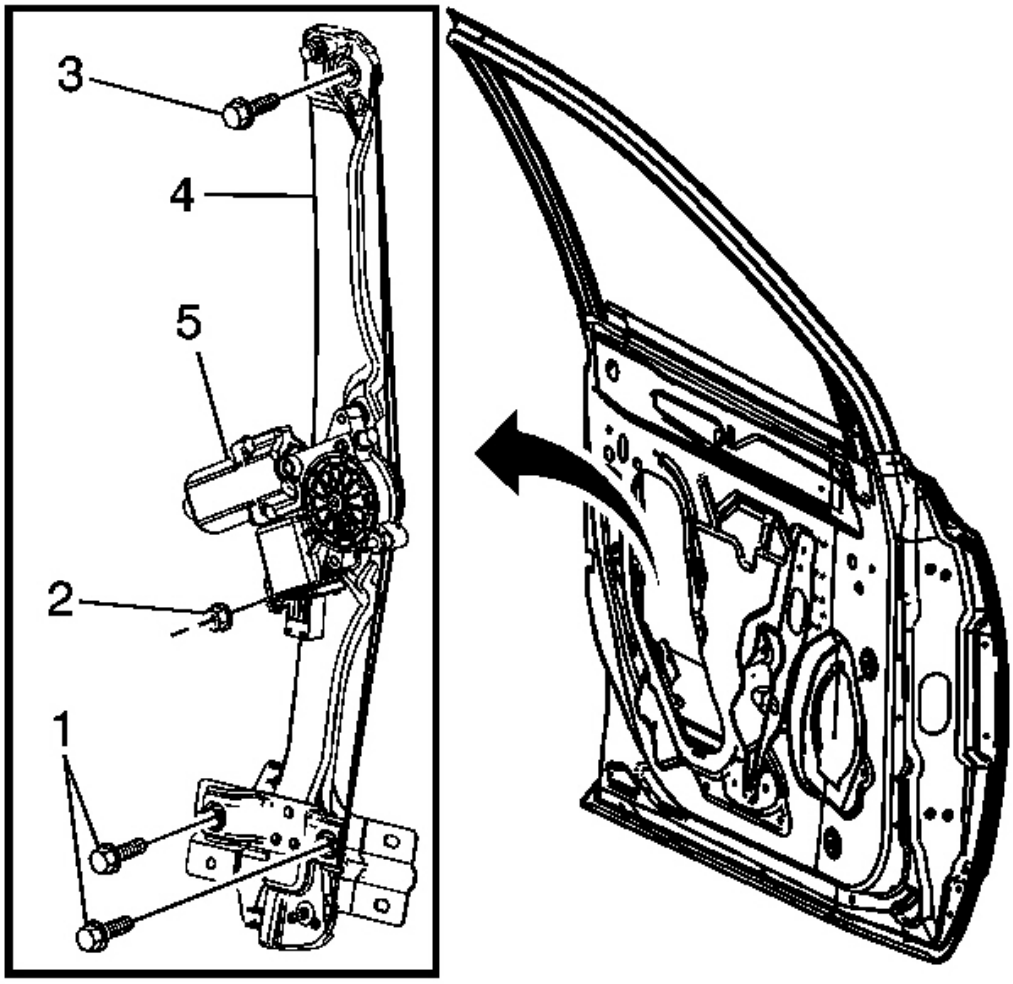


Fig. 61: Identifying Upper & Lower Bolts
Courtesy of GENERAL MOTORS CORP.

1. Partially install the upper bolt (1) to the regulator (5).
2. Beginning with the upper portion, install the regulator through the door opening in a semi-horizontal position.

3. Position the regulator (5) fully forward into the door cavity.
4. Rotate the regulator to a vertical position.
5. Lower and hang the regulator onto the door sheet metal using the upper bolt (1) that were previously installed.
6. Remove the window support and lower the window to the window guide on the regulator.
7. Loosely tighten the regulator window carrier bolts.
8. Operate the window upward to the full up position, ensuring the window remains in the run channels.

NOTE: Refer to Fastener Notice .

9. Install the nut (2) that retains the motor to the door.

   Tighten: Tighten nut to 9 N.m (80 lb in).

10. Install the upper and lower bolts (1, 4) that retain the regulator to the door.

    Tighten: Tighten bolts to 10 N.m (88 lb in).

11. Connect the electrical connector to the regulator motor.
12. Install the energy absorber retainers and energy absorber to the door.
13. Install the covers that conceal the regulator bolt holes.
14. Install the water deflector. Refer to **Front Side Door Water Deflector Replacement** .
15. Install the door trim panel. Refer to **Front Side Door Trim Panel Replacement - Left Side** or **Front Side Door Trim Panel Replacement - Right Side** .

DOOR WINDOW REGULATOR MOTOR REPLACEMENT

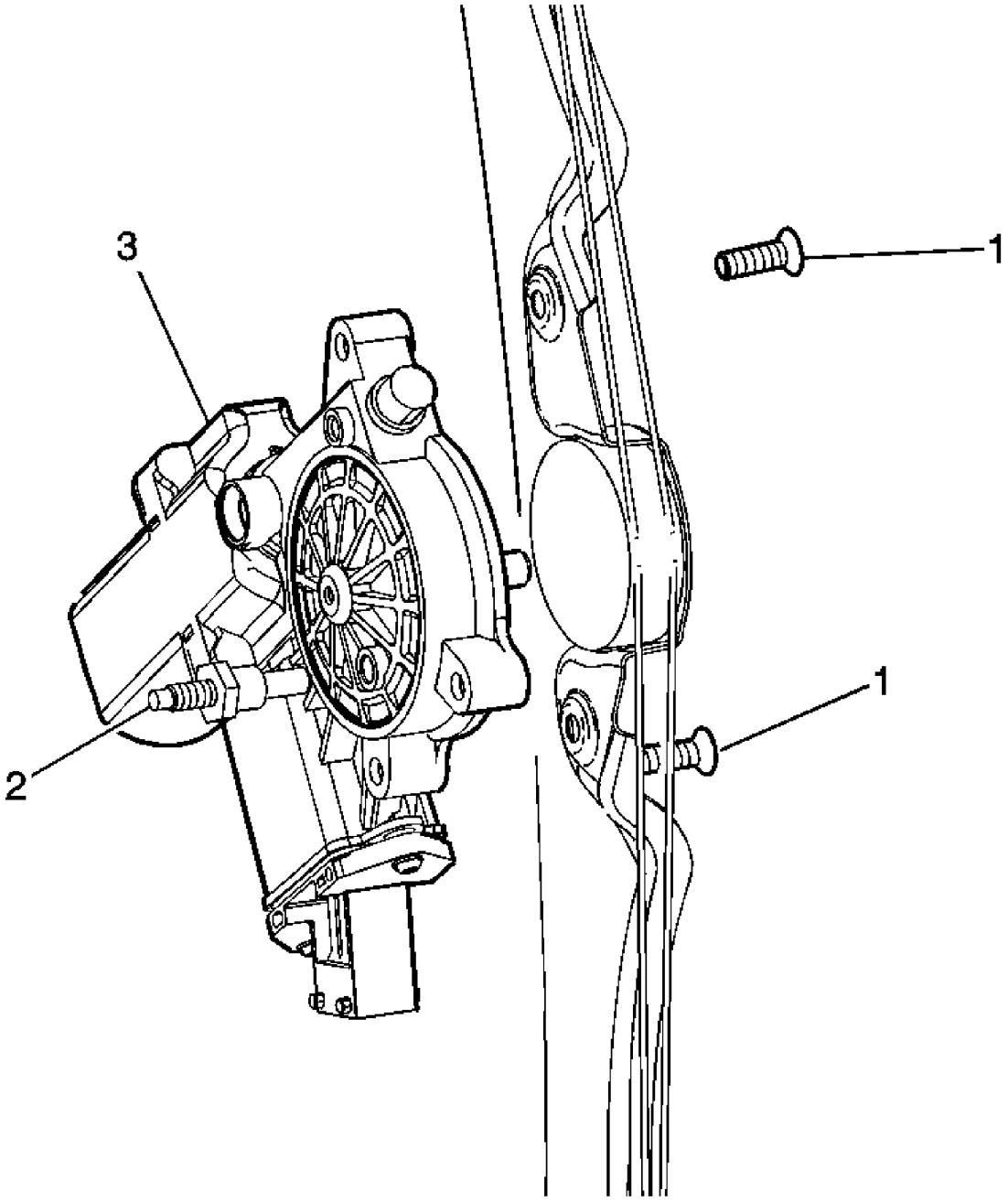


Fig. 62: Identifying Door Window Regulator Motor
Courtesy of GENERAL MOTORS CORP.

Door Window Regulator Motor Replacement

Callout	Component Name
Preliminary Procedures: Remove the window regulator. Refer to **Front Side Door Window Regulator**	

Replacement or **Rear Side Door Window Regulator Replacement**.	
1	Door Window Regulator Motor Bolt (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 5 N.m (9 lb in)
2	Door Window Regulator Motor Stud Bolt **Tighten:** 5 N.m (9 lb in)
3	Door Window Regulator Motor

FRONT SIDE DOOR WINDOW REGULATOR MOTOR REPLACEMENT

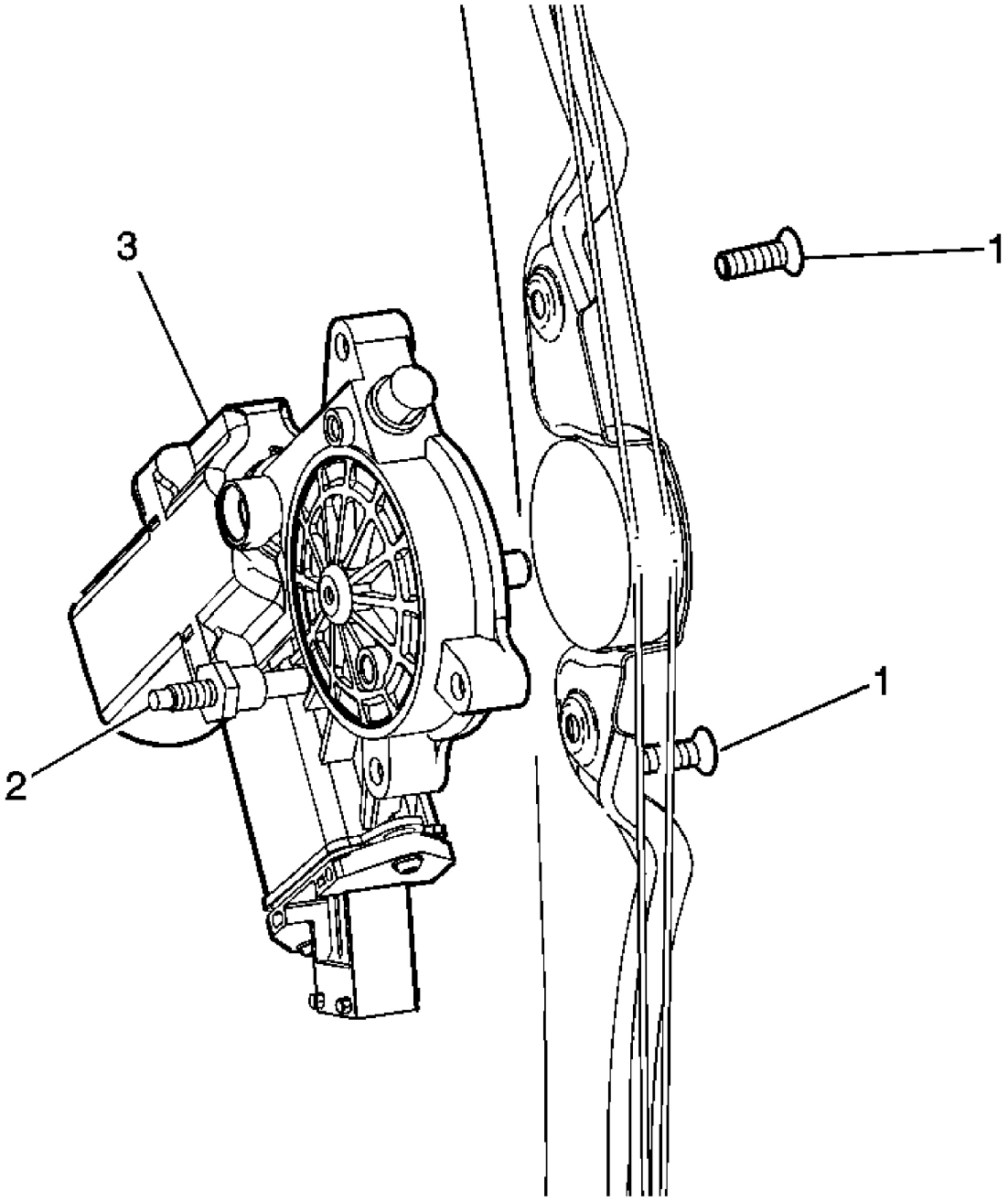


Fig. 63: Identifying Door Window Regulator Motor
Courtesy of GENERAL MOTORS CORP.

Front Side Door Window Regulator Motor Replacement

Callout	Component Name
Preliminary Procedures: Remove the window regulator. Refer to **Front Side Door Window Regulator**	

Replacement or **Rear Side Door Window Regulator Replacement**.	
1	Door Window Regulator Motor Bolt (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 5N.m (9 lb in)
2	Door Window Regulator Motor Stud Bolt **Tighten:** 5 N.m (9 lb in)
3	Door Window Regulator Motor

REAR SIDE DOOR WINDOW REGULATOR REPLACEMENT

Removal Procedure

1. Remove the door trim panel. Refer to **Rear Side Door Trim Panel Replacement** .
2. Remove the water deflector. Refer to **Rear Side Door Water Deflector Replacement** .
3. Remove the energy absorber retainers and energy absorber from the door.
4. Remove the to covers that conceal the holes for the regulator bolts.

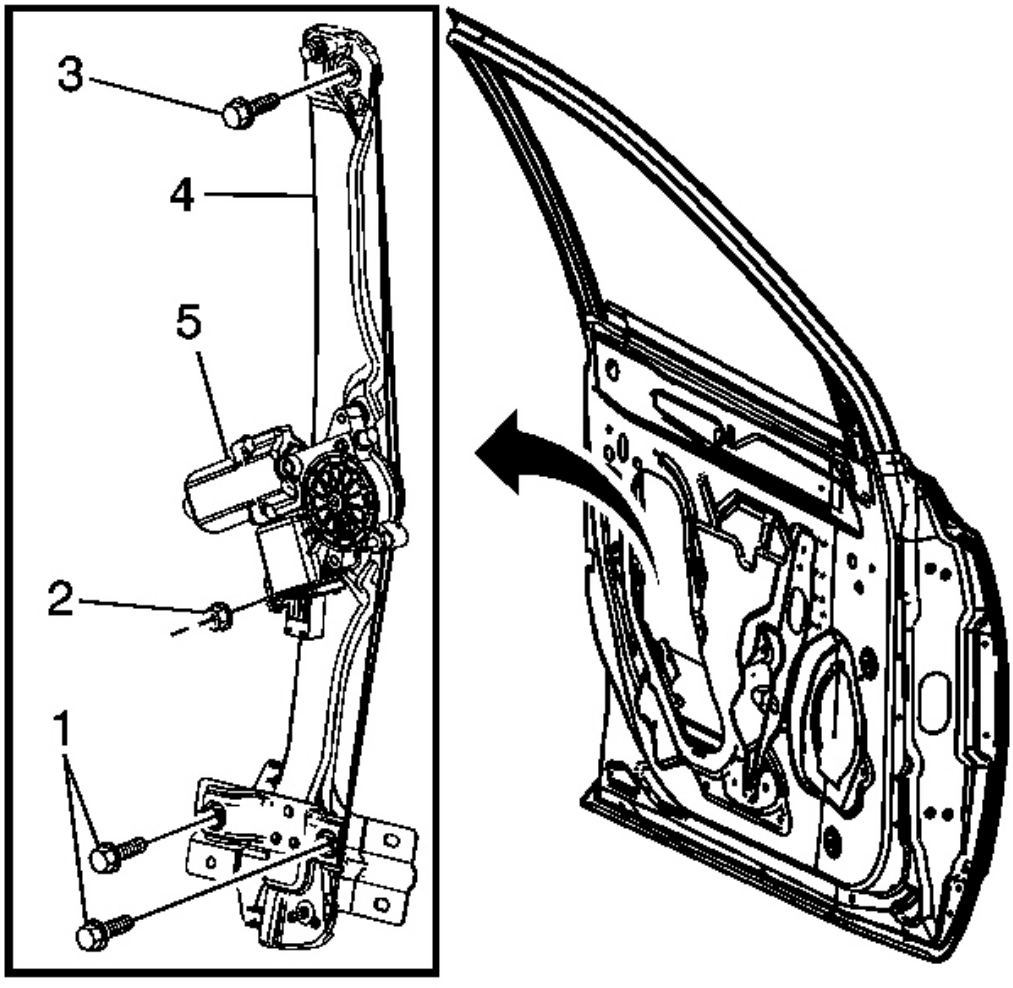


Fig. 64: Identifying Upper & Lower Bolts
Courtesy of GENERAL MOTORS CORP.

5. Remove the window to regulator bolts (3). Refer to **Rear Side Door Window Replacement**.
6. Raise and support the window in the full up position.
7. Disconnect the electrical connector from the regulator motor.
8. Loosen the upper bolt (1) that retain the regulator to the inner door.
9. Remove the nut (2) that retains the motor to the door.
10. Remove the lower regulator bolts (4).

11. Lift the regulator/motor upward in order to release the upper bolt (1) from the door.
12. Rotate the upper portion of the regulator forward.
13. Beginning with the lower portion, remove the regulator through the door opening.
14. Remove the upper bolt (1) from the regulator (5).
15. Remove the window regulator motor (6) from the regulator. Refer to **Door Window Regulator Motor Replacement**.

Installation Procedure

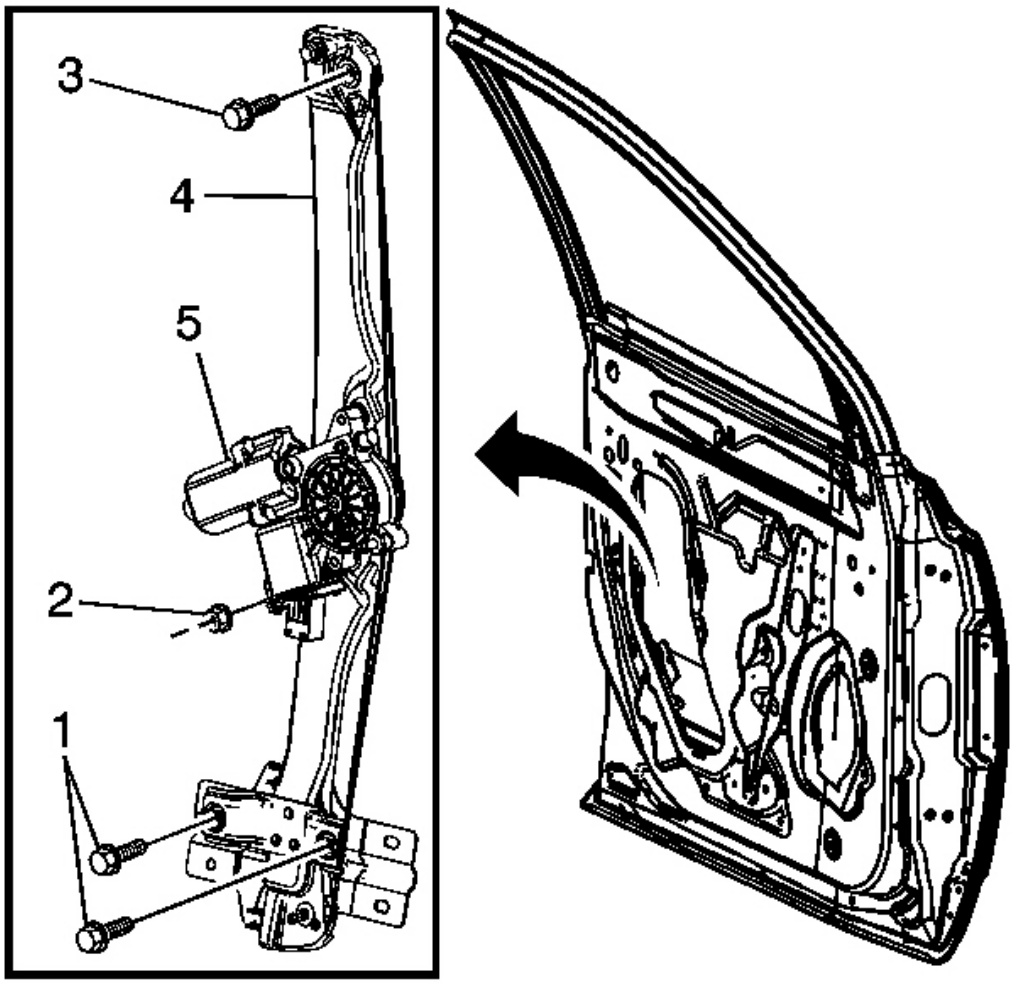


Fig. 65: Identifying Upper & Lower Bolts

Courtesy of GENERAL MOTORS CORP.

1. Install the window regulator motor (6) to the regulator. Refer to **Door Window Regulator Motor Replacement**.
2. Partially install the upper bolt (1) to the regulator (5).
3. Beginning with the upper portion, install the regulator through the door opening in a semi-horizontal position.
4. Position the regulator fully forward into the door cavity.
5. Rotate the regulator to a vertical position.
6. Lower and hang the regulator onto the door sheet metal using the upper bolt (1) that were previously installed.

NOTE: Refer to Fastener Notice .

7. Install the nut (2) that retains the motor to the door.

   Tighten: Tighten nut to 9 N.m (80 lb in).

8. Install the upper and lower bolts (1, 4) that retain the regulator to the door.

   Tighten: Tighten bolts to 10 N.m (88 lb in).

9. Connect the electrical connector to the regulator motor.
10. Remove the window support and lower the window to the window guide on the regulator.
11. Loosely tighten the regulator window carrier bolts.
12. Operate the window upward to the full up position, ensuring the window remains in the run channels.
13. Install the energy absorber retainers and energy absorber to the door.
14. Install the covers that conceal the regulator bolt holes.
15. Install the water deflector. Refer to **Rear Side Door Water Deflector Replacement** .
16. Install the door trim panel. Refer to **Rear Side Door Trim Panel Replacement** .

FRONT SIDE DOOR WINDOW BELT OUTER SEALING STRIP REPLACEMENT

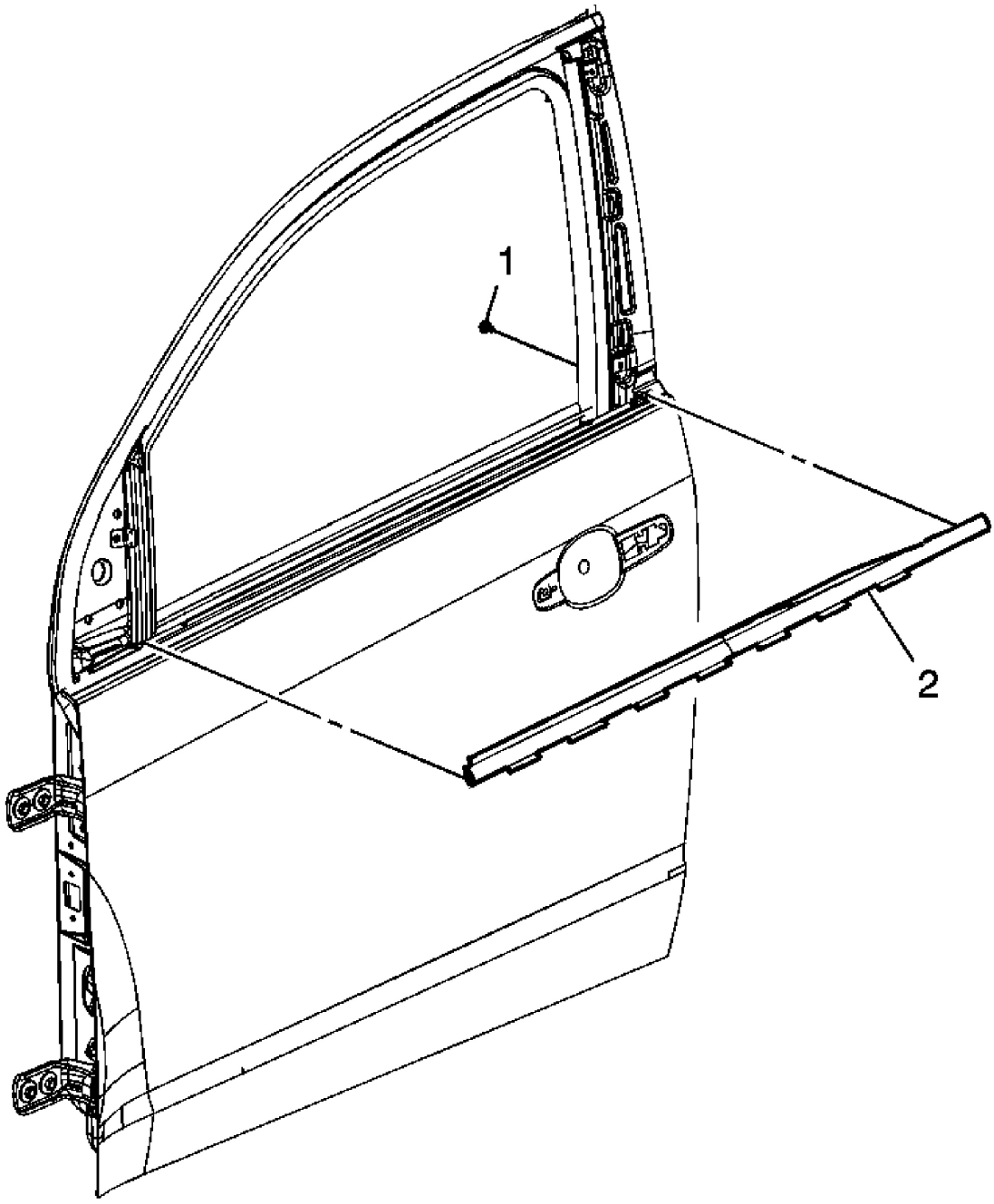


Fig. 66: View Of Front Side Door Window Belt Outer Sealing Strip
Courtesy of GENERAL MOTORS CORP.

Front Side Door Window Belt Outer Sealing Strip Replacement

Callout	Component Name
Preliminary Procedure:	

Remove outside rearview mirror. Refer to **Power Mirror Replacement** .	
1	Front Side Door Outer Sealing Strip Panel Screw **NOTE:** **Refer to Fastener Notice .** **Tip:** The screw is located in the lower rear of the door frame. **Tighten:** 1.5 N.m (13 lb in)
2	Front Side Door Outer Sealing Strip Panel **Procedures** 1. Remove the outer sealing strip by lifting up on the front of the seal and working rearward. 2. When re-installing the outer sealing strip, align the fastener with the locating hole in the door frame.

FRONT SIDE DOOR WINDOW BELT INNER SEALING STRIP REPLACEMENT

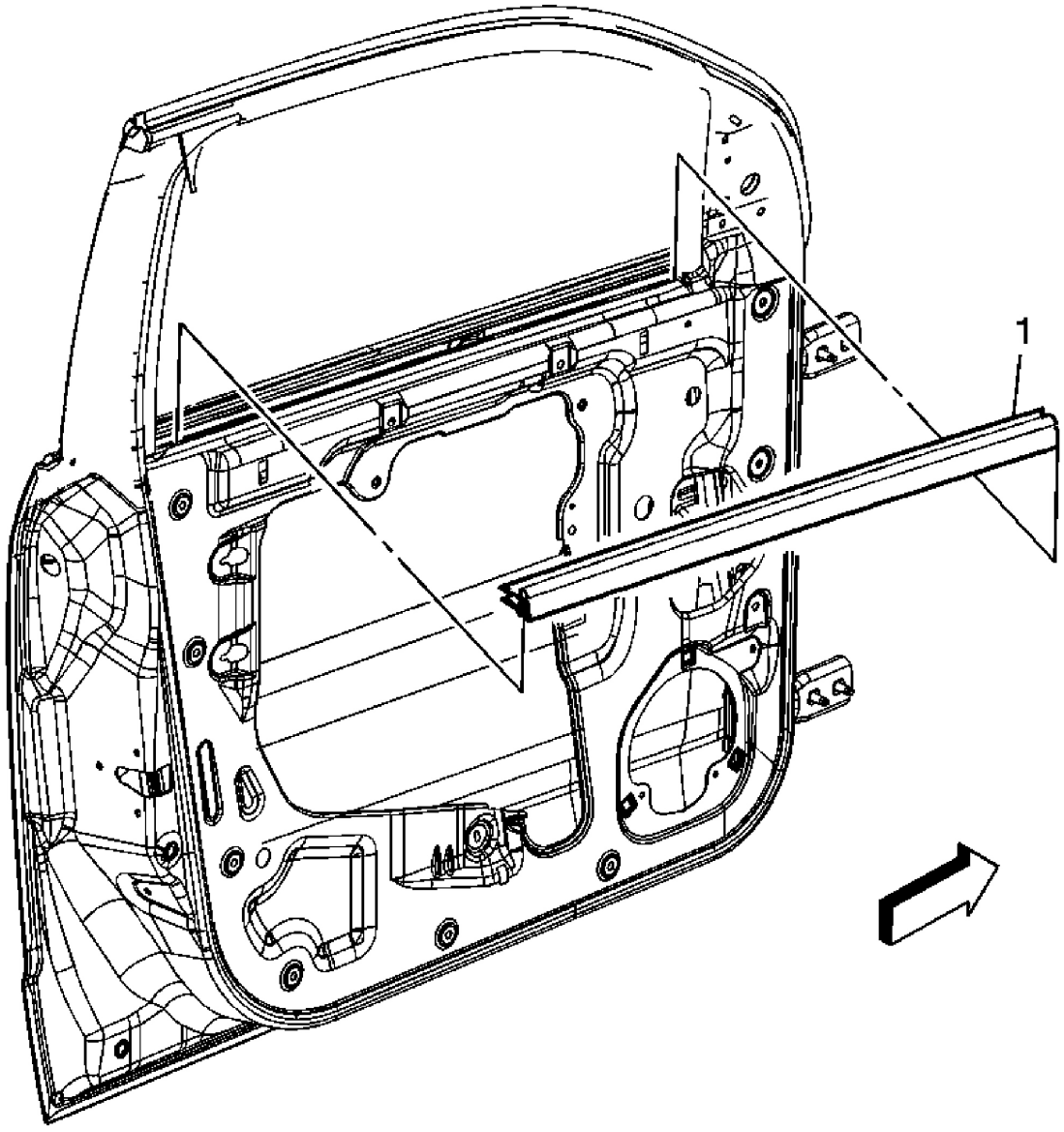


Fig. 67: View Of Front Side Door Window Belt Inner Sealing Strip
Courtesy of GENERAL MOTORS CORP.

Front Side Door Window Belt Inner Sealing Strip Replacement

Callout	Component Name
Preliminary Procedures: Remove front door trim panel. Refer to **Front Side Door Trim Panel Replacement - Left Side** or **Front Side Door Trim Panel Replacement - Right Side** .	
1	Front Side Door Inner Window Sealing Strip

1	**Procedure** 1. Start from the front edge of the door, pull upward on the inner window sealing strip to release it from the pinch-weld flange. 2. Install the inner window sealing strip to the front edge of the door, press firmly onto the pinch-weld flange and work it rearward.

REAR DOOR WINDOW BELT INNER SEALING STRIP REPLACEMENT

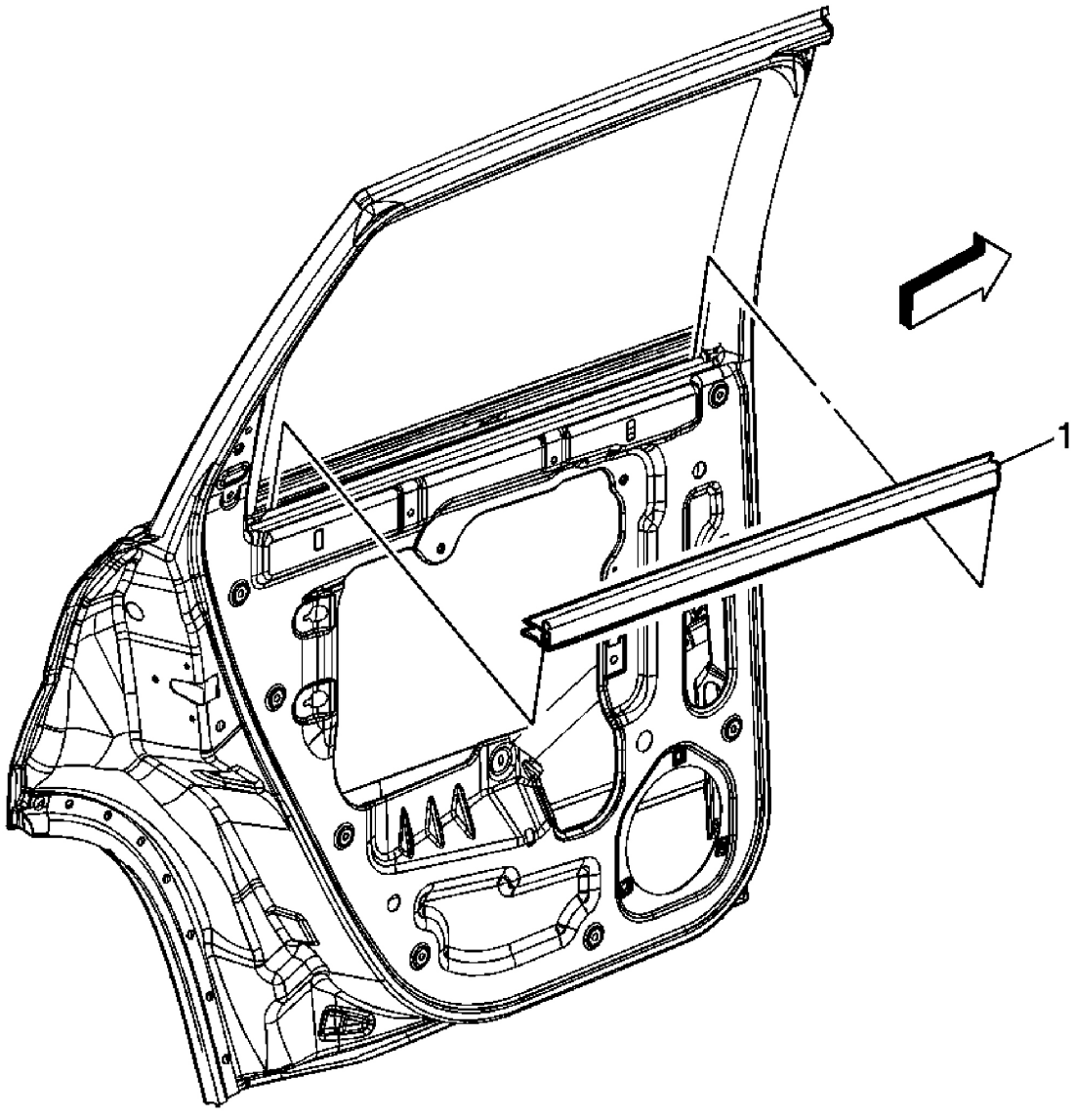


Fig. 68: View Of Rear Door Window Belt Inner Sealing Strip
Courtesy of GENERAL MOTORS CORP.

Rear Door Window Belt Inner Sealing Strip Replacement

Callout	Component Name
Fastener Tightening Specifications: Refer to **Fastener Tightening Specifications**. **Preliminary Procedure:** Remove rear door trim panel. Refer to **Rear Side Door Trim Panel Replacement** .	
1	Rear Side Door Inner Window Sealing Strip **Procedures** 1. Start from the front edge of the door, pull upward on the inner window sealing strip to release it from the pinch-weld flange. 2. Install the inner window sealing strip to the front edge of the door, press firmly onto the pinch-weld flange and work it rearward.

REAR DOOR WINDOW BELT OUTER SEALING STRIP REPLACEMENT

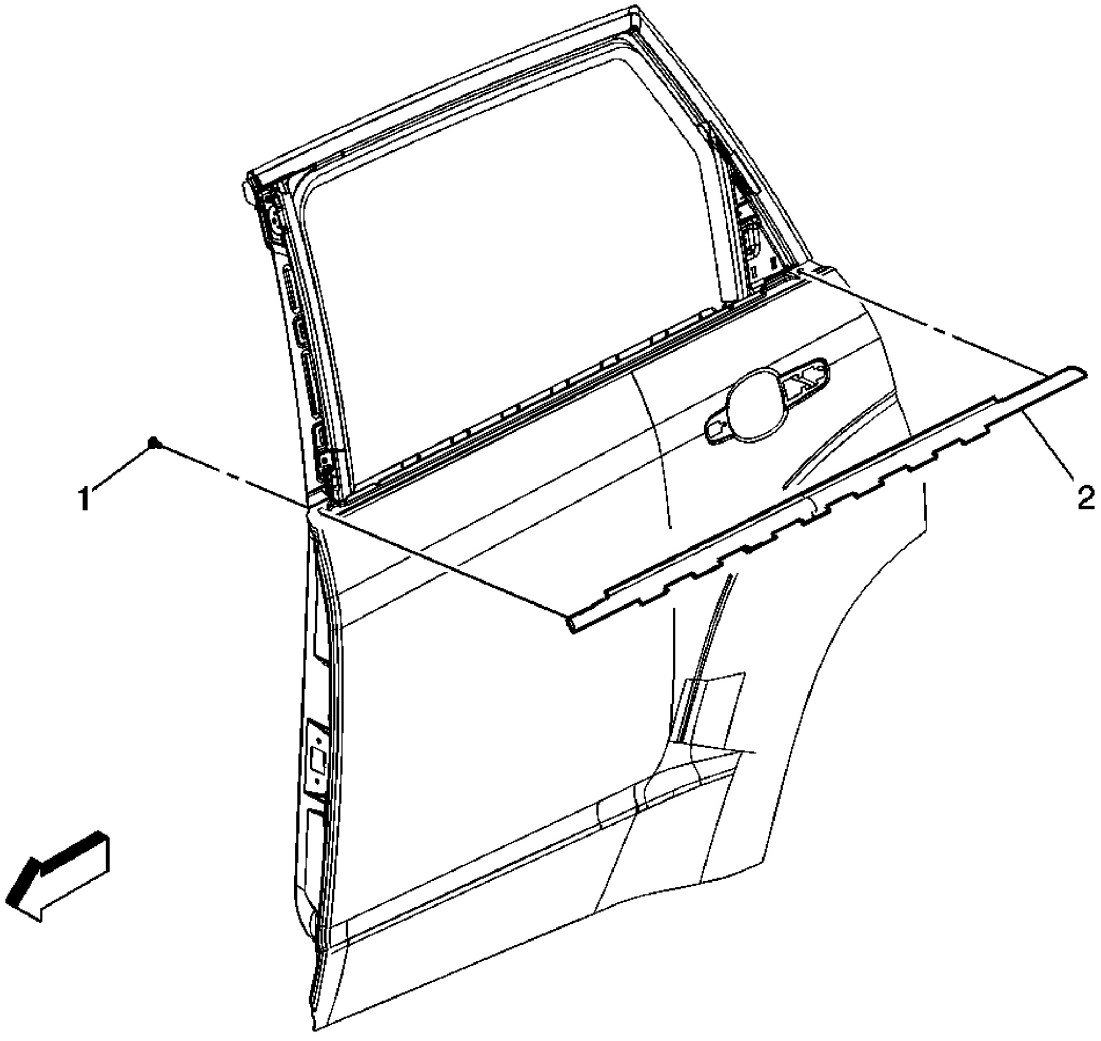


Fig. 69: View Of Rear Door Window Belt Outer Sealing Strip
Courtesy of GENERAL MOTORS CORP.

Rear Door Window Belt Outer Sealing Strip Replacement

Callout	Component Name
1	Rear Side Door Outer Sealing Strip Screw **NOTE:** **Refer to Fastener Notice .** **Tighten:** 1.5 N.m (13 lb in)
	Rear Side Door Outer Sealing Strip

2	**Procedure** 1. Remove by lifting up on seal starting at the rear and working forward. 2. When re-installing, align outer seal fastener location with hole in door structure and outer panel retaining tabs. 3. Start at rear of belt seal, push down onto flange until fully seated.

FRONT SIDE DOOR WINDOW INNER WEATHERSTRIP REPLACEMENT

Removal Procedure

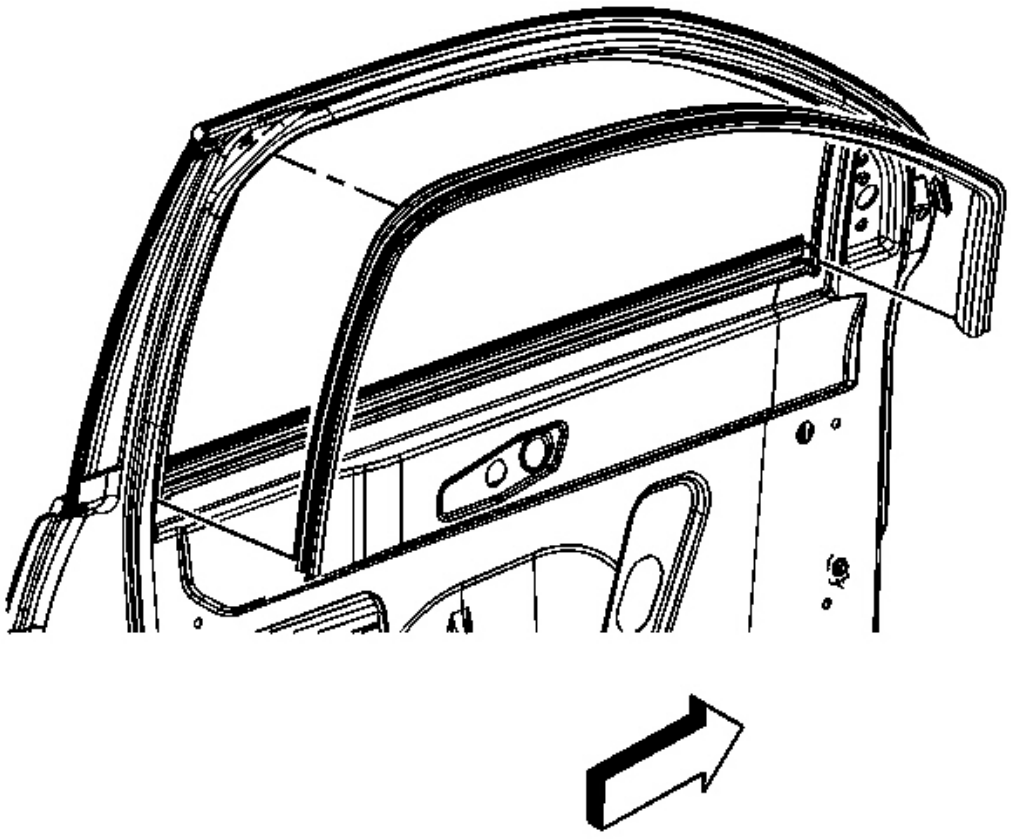


Fig. 70: Identifying Front Side Door Window Inner Weatherstrip
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: It is Not necessary to remove the inner door trim panel.

IMPORTANT: Install the weatherstrip/run channel by fitting both corners to the upper door frame and then pushing inward on the sides.

1. Open the door.
2. Lower the window to the full down position.
3. Grasp the window weatherstrip in the center.

   Pull downward until the window weatherstrip fully releases from the door frame.

4. Remove the window weatherstrip from the front door.

Installation Procedure

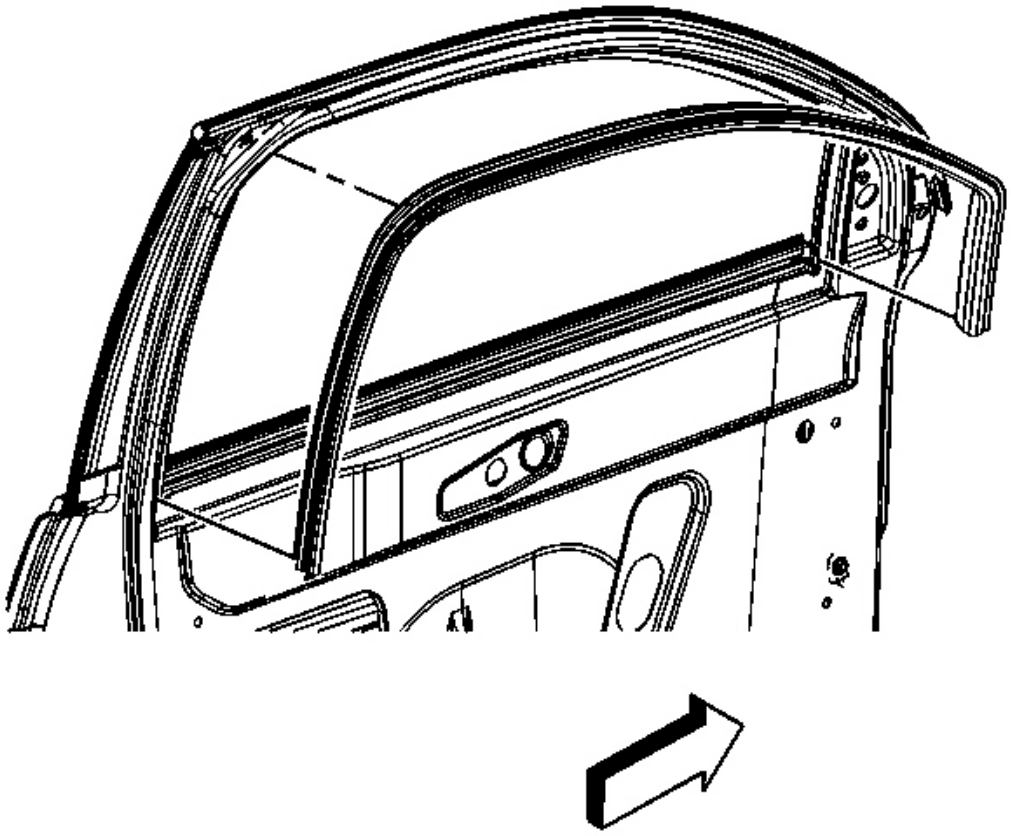


Fig. 71: Identifying Front Side Door Window Inner Weatherstrip
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: It is Not necessary to remove the inner door trim panal.

IMPORTANT: Install the weatherstrip/run channel by fitting both corners to the upper door frame and then pushing inward on the sides.

1. Position the window weatherstrip to the door starting in the upper corners.
2. Firmly seat the window weatherstrip to the door, working out in both directions.
3. Inspect the window to ensure the weatherstrip is properly positioned.
4. Inspect the window for proper operation.
5. Close the door.

REAR SIDE DOOR WINDOW INNER WEATHERSTRIP REPLACEMENT

Removal Procedure

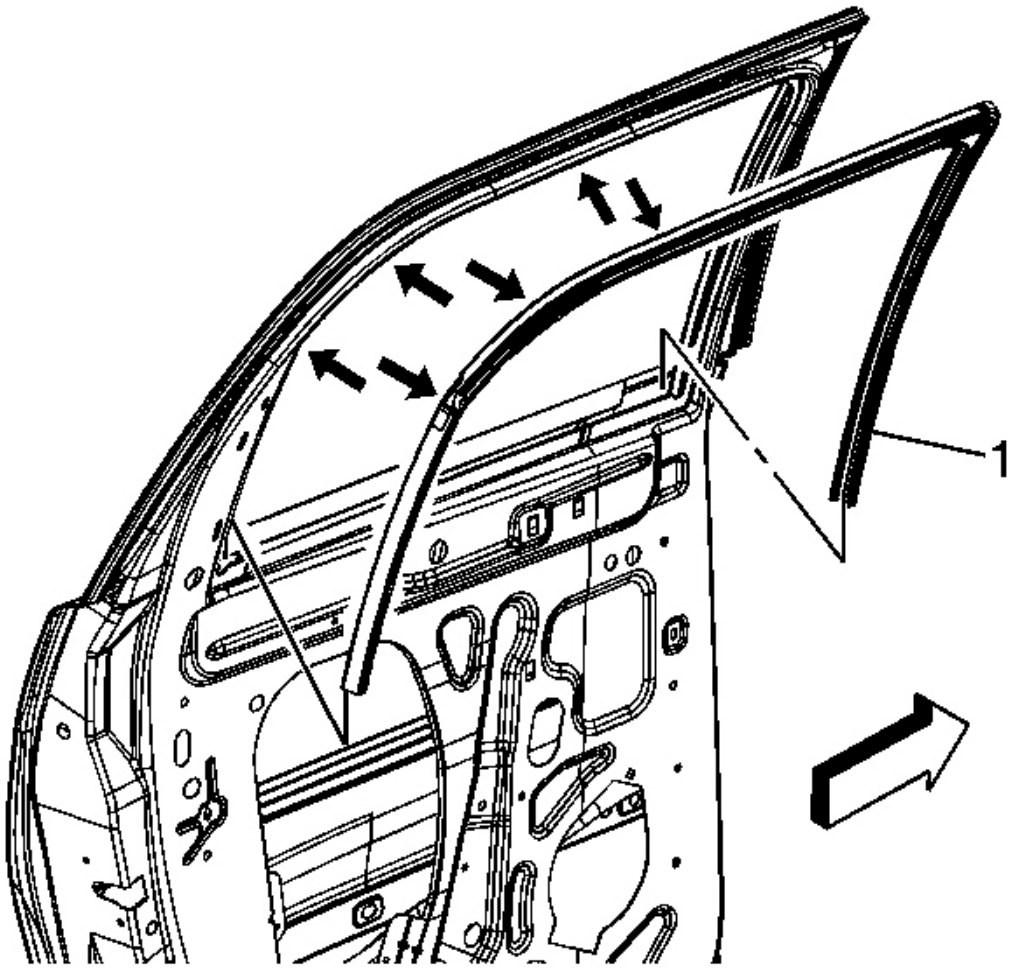


Fig. 72: Locating Rear Side Door Window Channel
Courtesy of GENERAL MOTORS CORP.

1. Open the door.
2. Lower the window to the full down position.
3. Grasp the window weatherstrip in the center.

Pull downward until the window weatherstrip fully releases from the door frame.

4. Remove the window weatherstrip (1) from the front door.

Installation Procedure

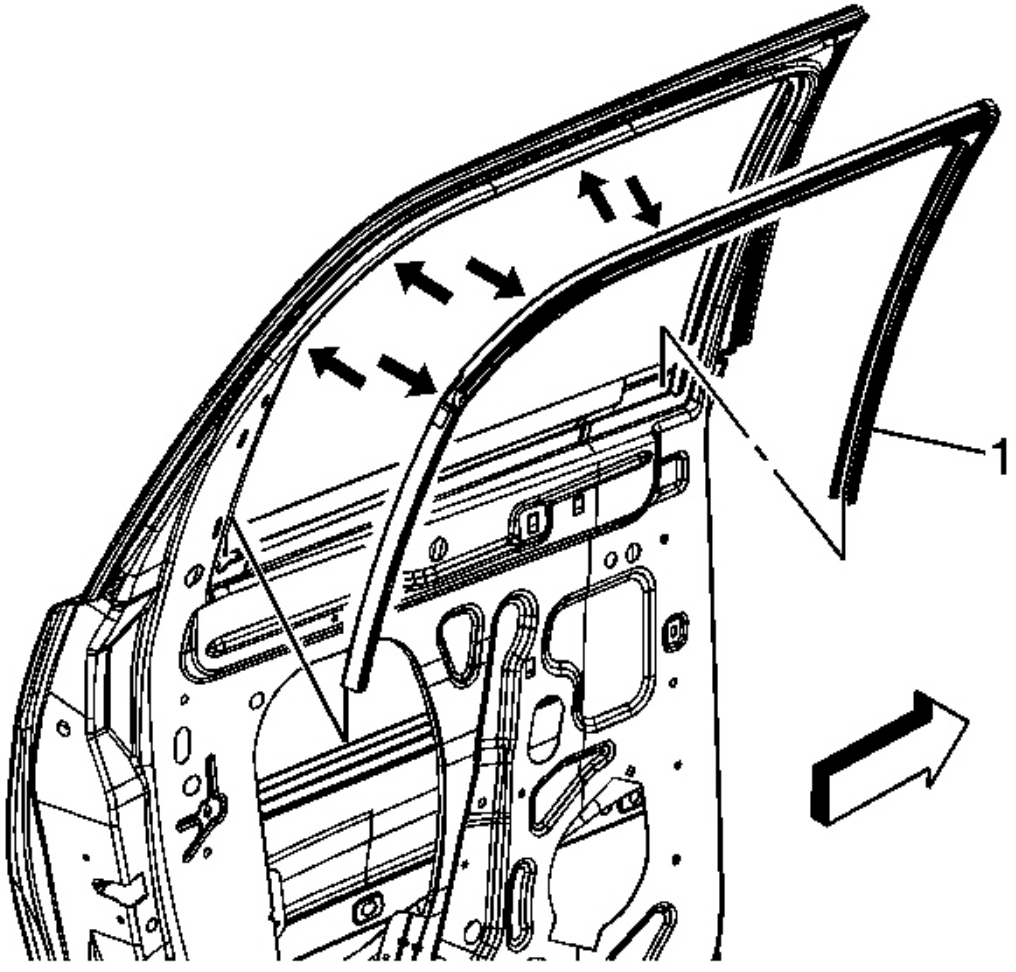


Fig. 73: Locating Rear Side Door Window Channel
Courtesy of GENERAL MOTORS CORP.

1. Position the window weatherstrip (1) to the door starting in the corner.
2. Firmly seat the window weatherstrip to the door, working out in both directions.

3. Inspect the window to ensure the weatherstrip is properly positioned.
4. Inspect the window for proper operation.
5. Close the door.

ADHESIVE INSTALLATION OF WINDSHIELDS

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

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

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

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

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

CAUTION: Refer to Window Retention Caution .

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

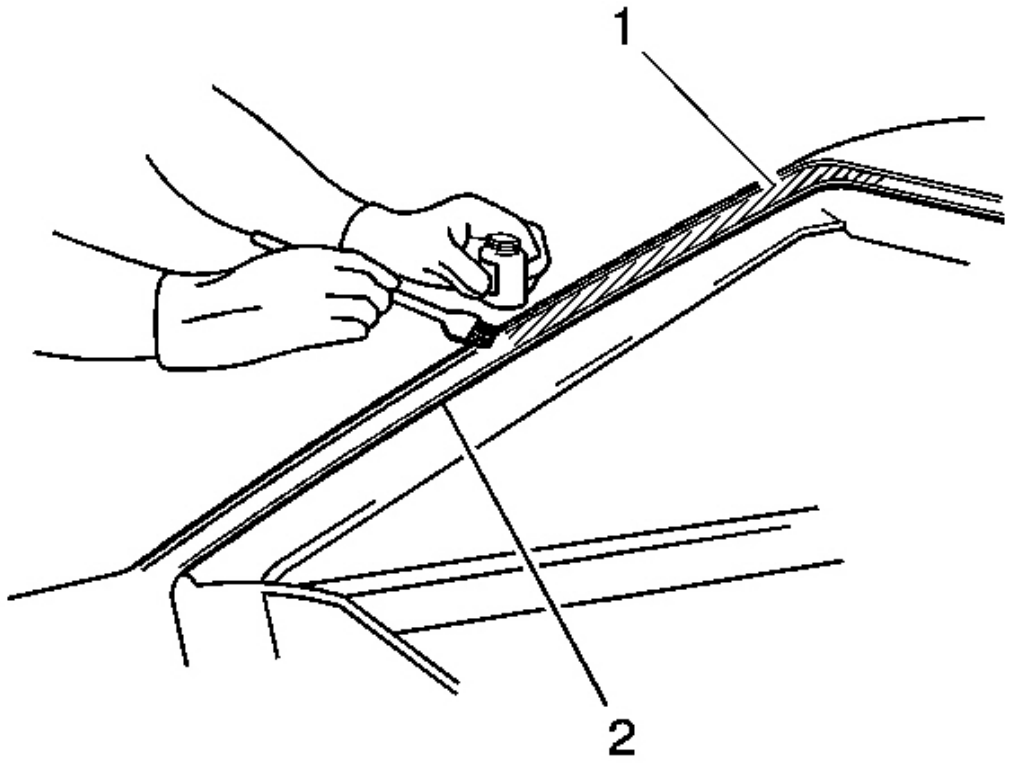


Fig. 74: Applying Pinch-Weld Primer
Courtesy of GENERAL MOTORS CORP.

CAUTION: 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.

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

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

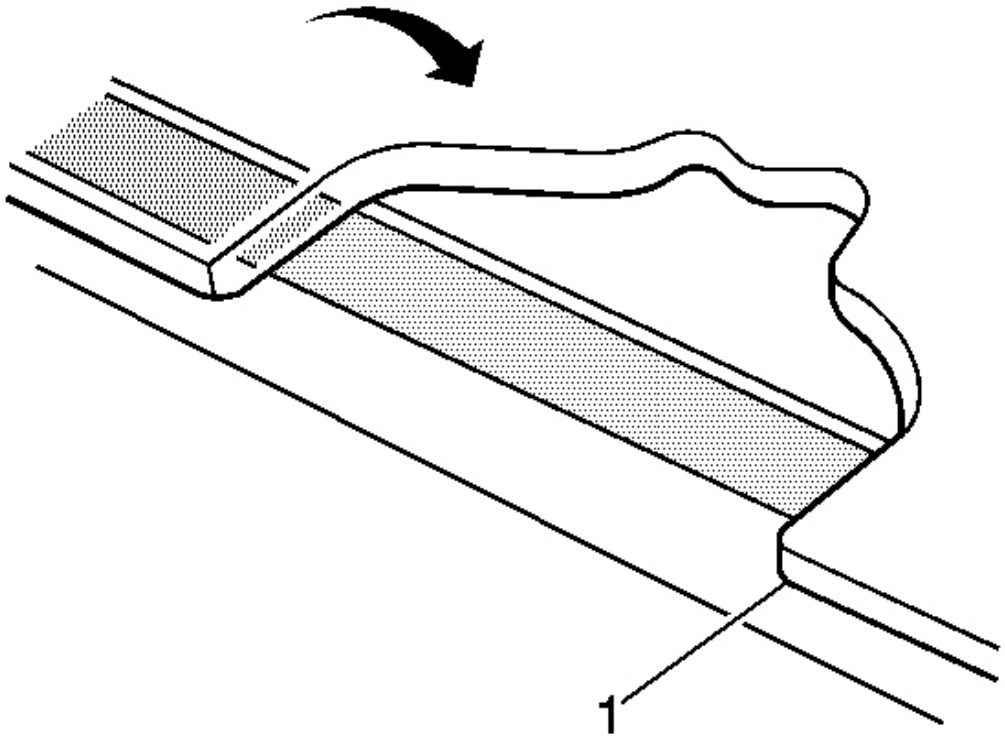


Fig. 75: Identifying Windshield & VIN Plate Filler Strip
Courtesy of GENERAL MOTORS CORP.

NOTE: Do not use spacers when installing a windshield. The stress caused by the spacers may damage the windshield.

10. Install the VIN plate filler strip (1) to the windshield (2), if equipped.

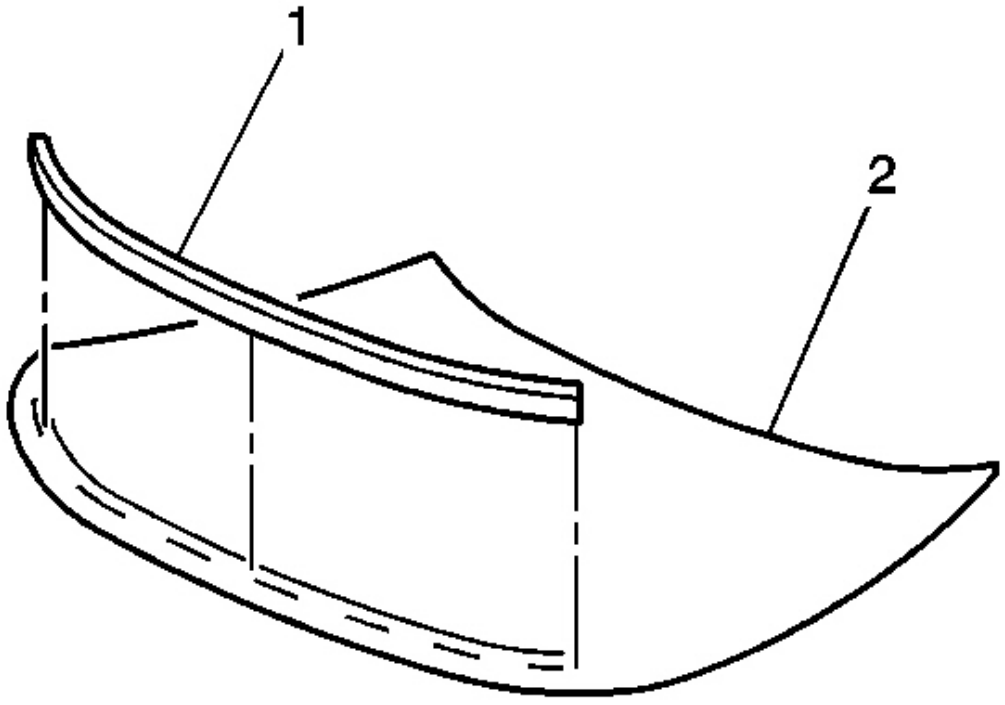


Fig. 76: Identifying Windshield Acoustic Strip
Courtesy of GENERAL MOTORS CORP.

11. Install the new windshield acoustic strip (1) to the windshield (2), if damaged.

    The acoustic strip aids in reducing noise.

12. If window reveal molding is damaged it must be replaced, start in the center and work toward each end pressing firmly into place.

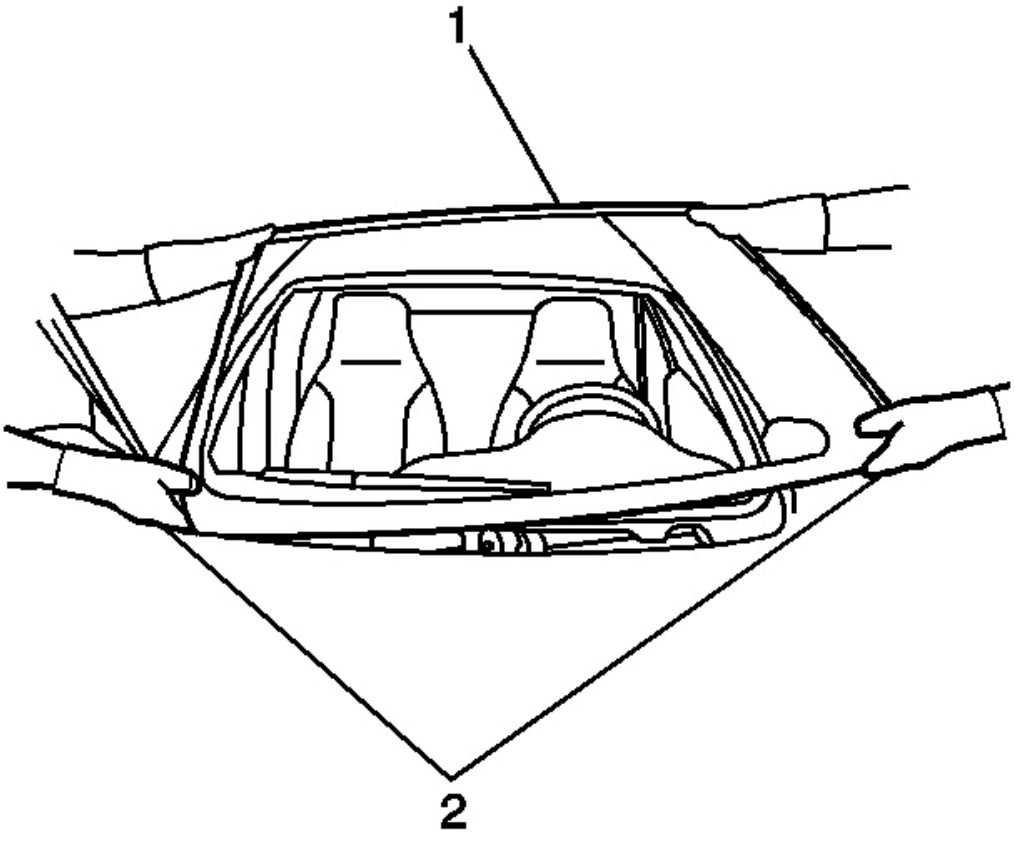


Fig. 77: Identifying Windshield
Courtesy of GENERAL MOTORS CORP.

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

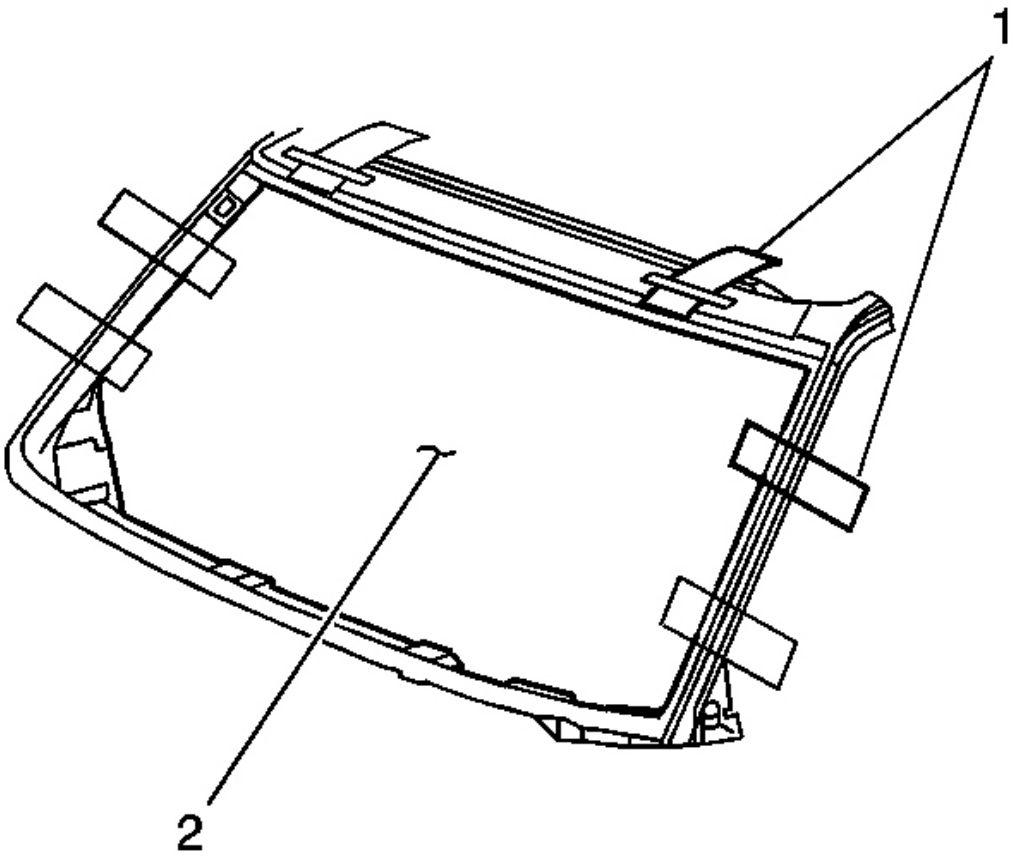


Fig. 78: Identifying Masking Taped Windshield Location In Opening
Courtesy of GENERAL MOTORS CORP.

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

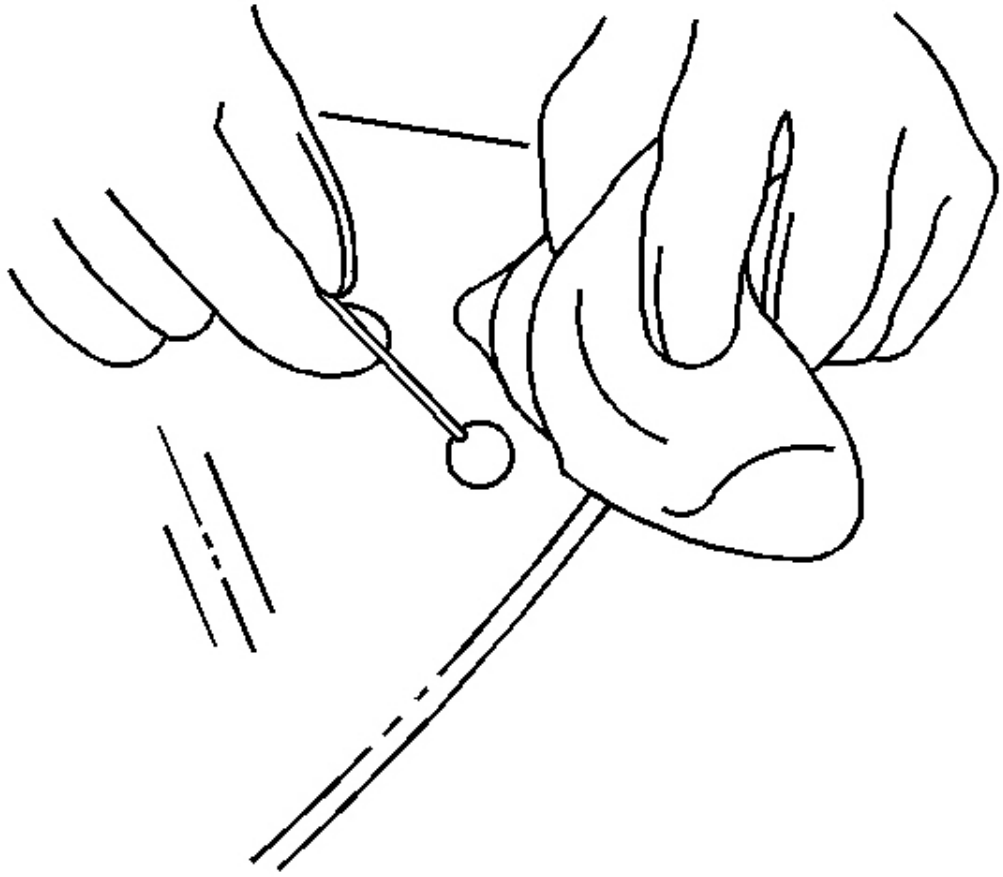


Fig. 79: Applying Glass Prep
Courtesy of GENERAL MOTORS CORP.

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

16. Use a new dauber in order to apply glass prep clear #1 to the area approximately 10-16 mm (3/8-5/8 in) around the entire perimeter of the window inner surface.

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

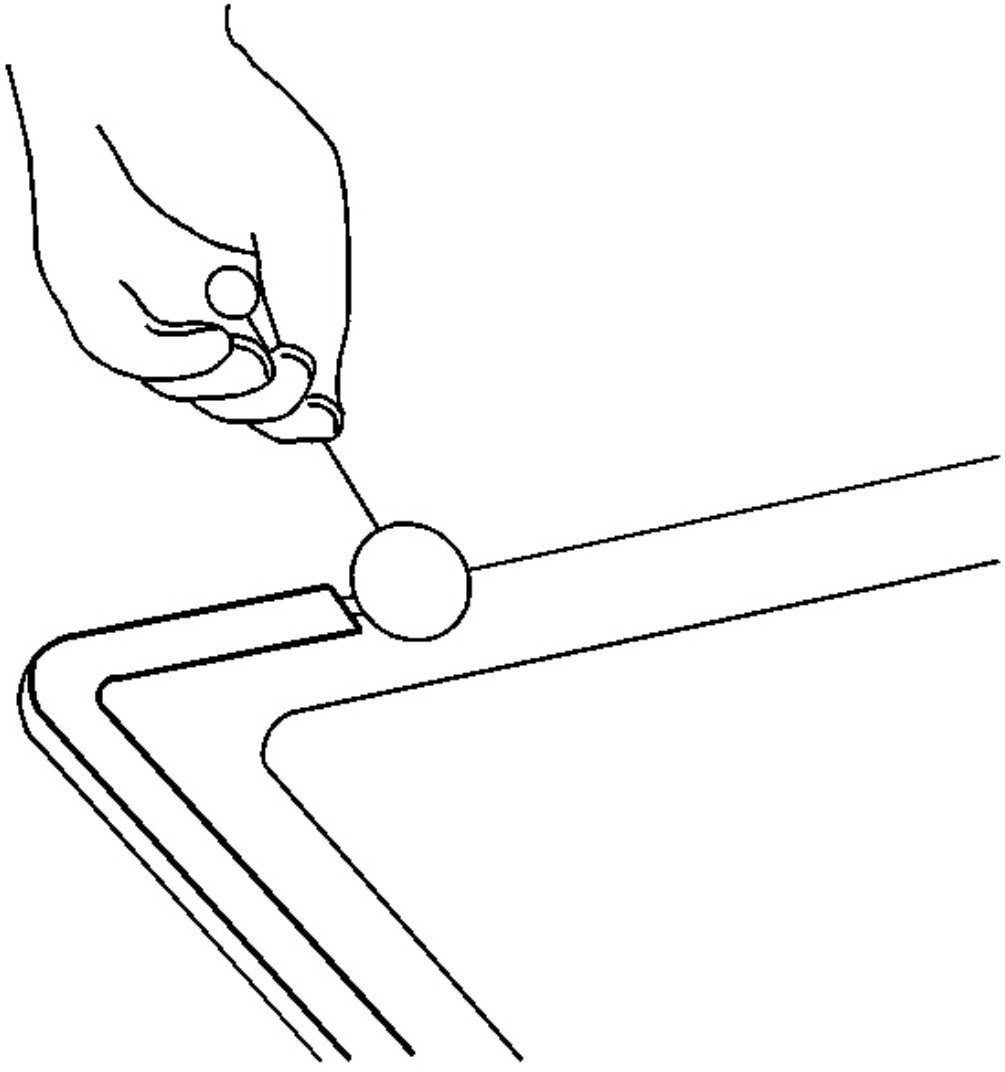


Fig. 80: Applying second Coat Of Glass Prep
Courtesy of GENERAL MOTORS CORP.

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

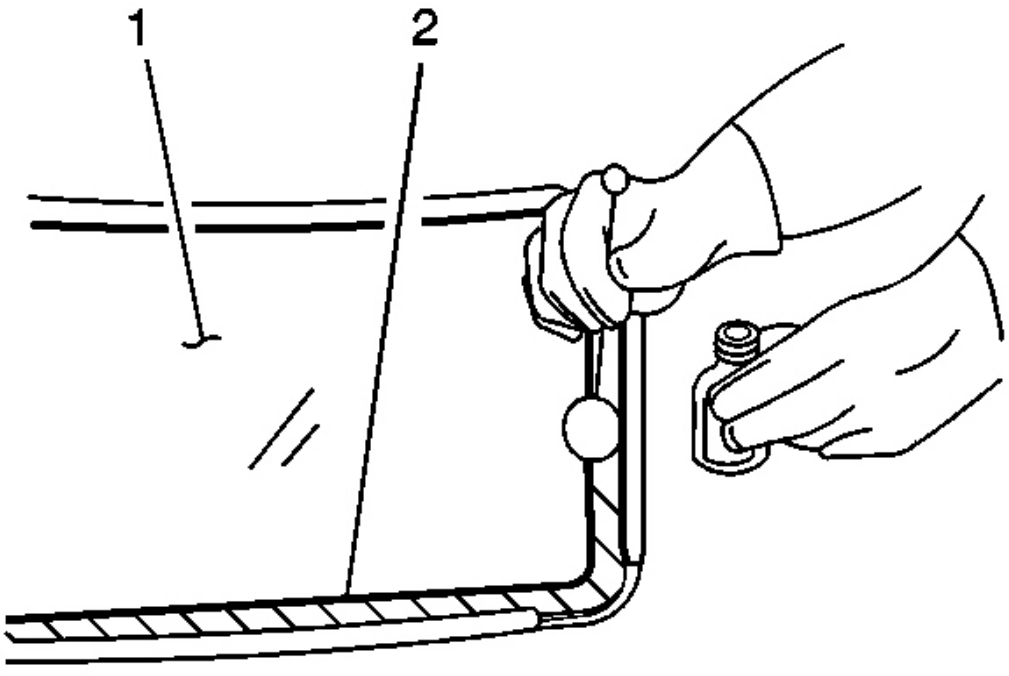


Fig. 81: Applying Glass Primer
Courtesy of GENERAL MOTORS CORP.

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

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

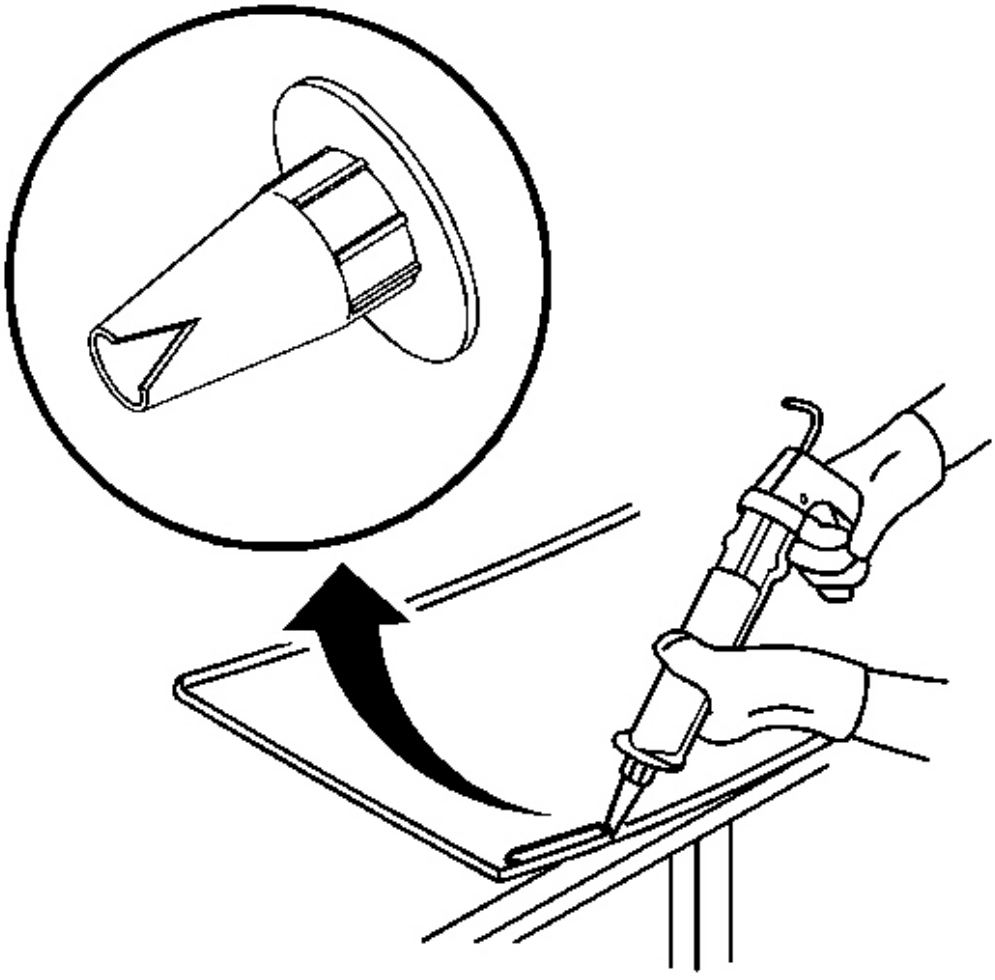


Fig. 82: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS CORP.

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

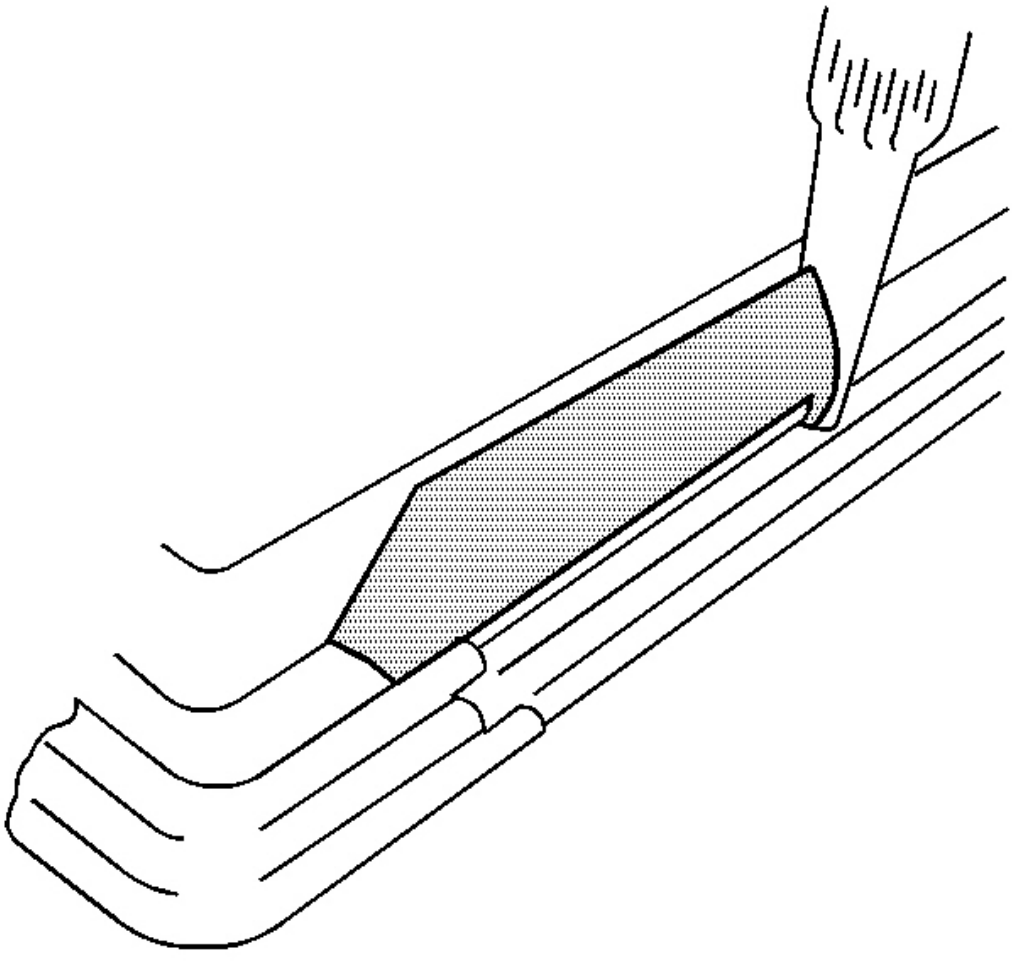


Fig. 83: Applying Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS CORP.

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

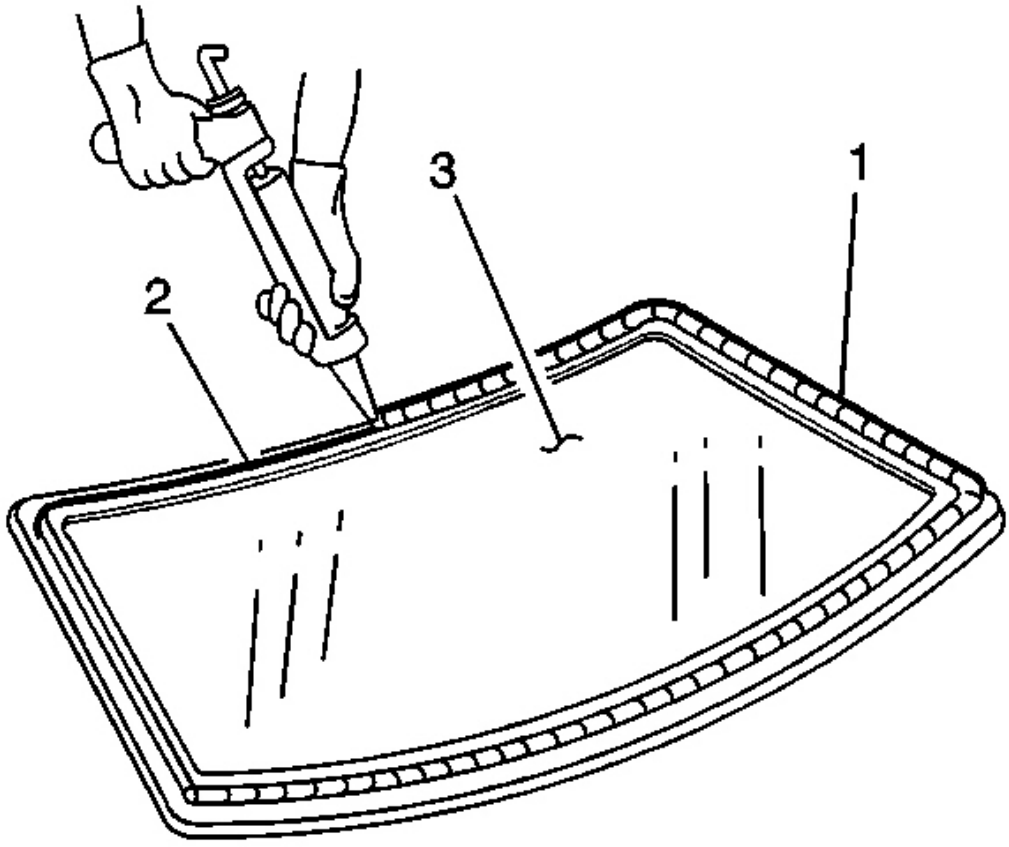


Fig. 84: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS CORP.

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

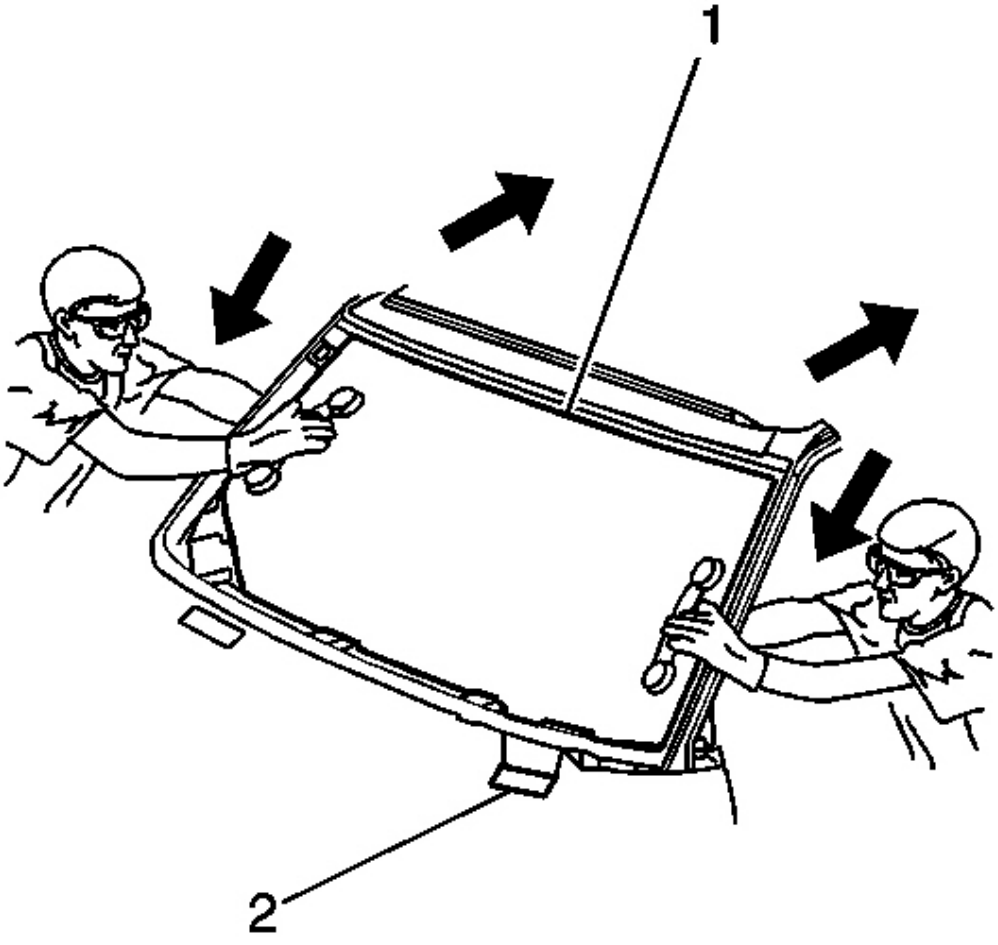


Fig. 85: Illustrating Windshield Installation
Courtesy of GENERAL MOTORS CORP.

24. With the aid of an assistant, place the window in the opening. If installing a windshield, place the windshield on the lower supports (2), if equipped.

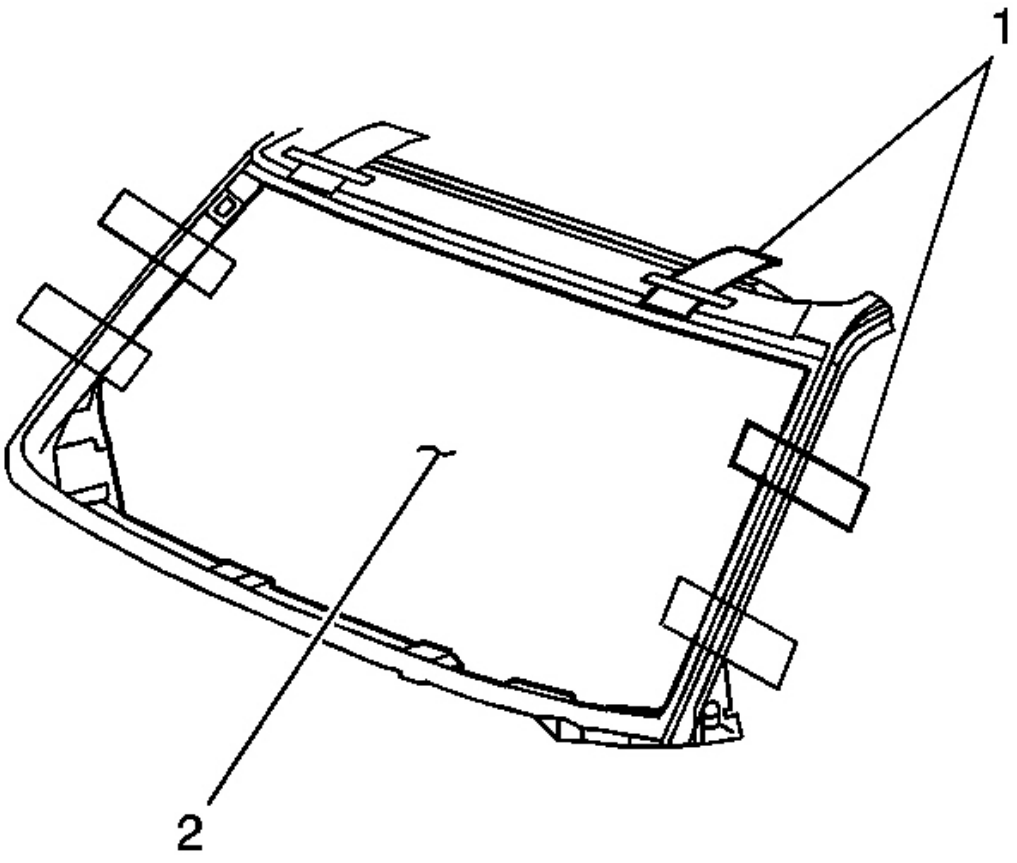


Fig. 86: Identifying Masking Taped Windshield Location In Opening
Courtesy of GENERAL MOTORS CORP.

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

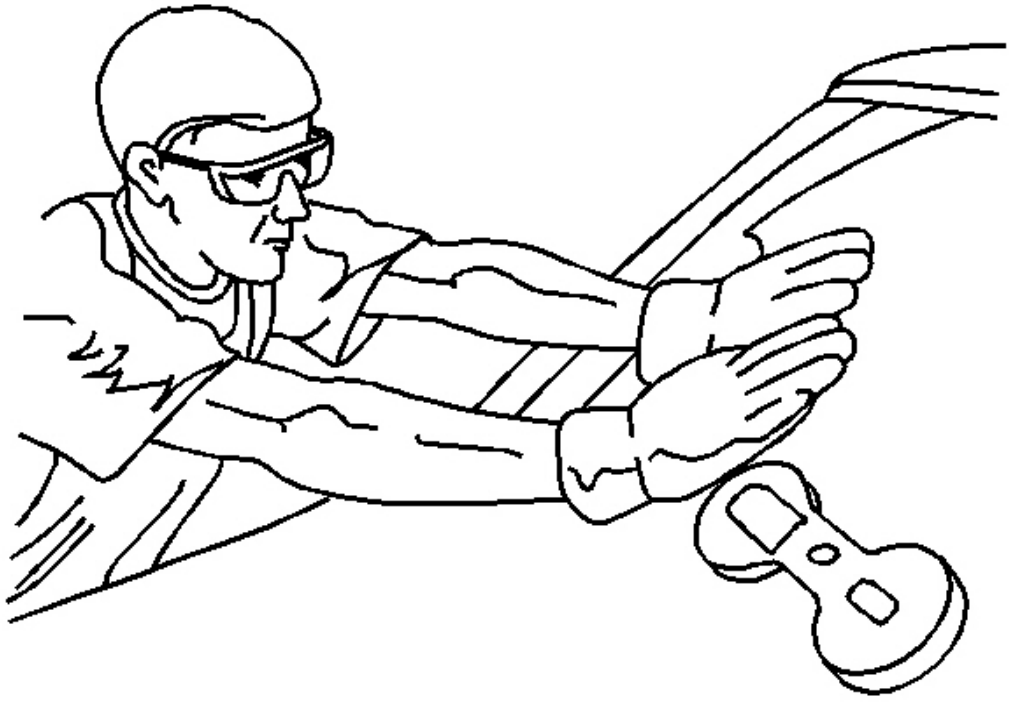


Fig. 87: Pressing Window Firmly Into Place
Courtesy of GENERAL MOTORS CORP.

26. Press the window firmly into place.
27. Tape the window to the body in order to minimize movement until the urethane adhesive cures.

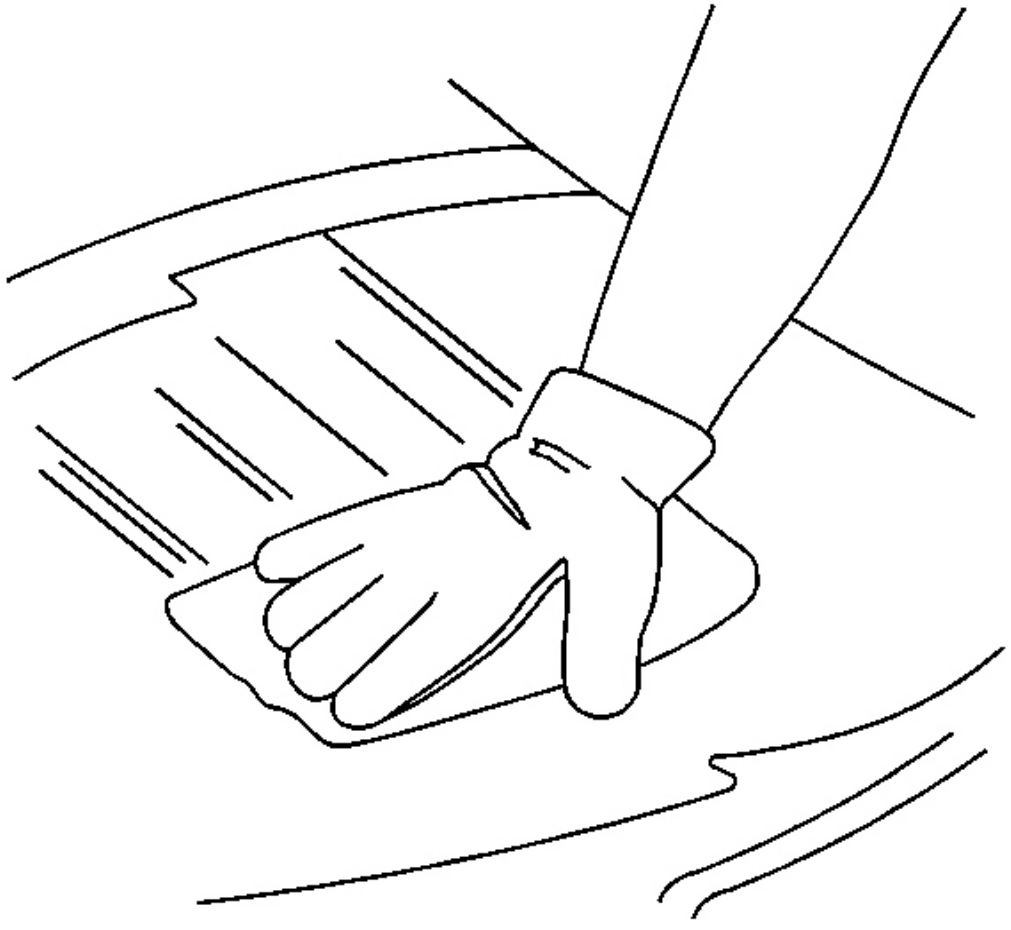


Fig. 88: Cleaning Excess Urethane Adhesive From Body
Courtesy of GENERAL MOTORS CORP.

28. Clean any excess urethane adhesive from the body.

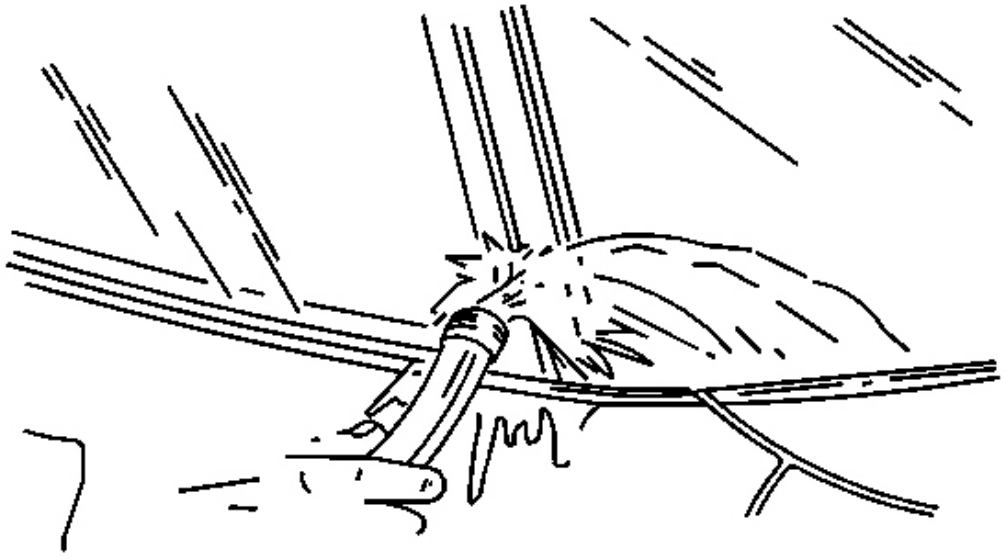


Fig. 89: Performing Water Hose Test
Courtesy of GENERAL MOTORS CORP.

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

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

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

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

at least 24 hours for the complete curing of the urethane adhesive.

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

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

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

ADHESIVE INSTALLATION OF BODYSIDE STATIONARY WINDOWS

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

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

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

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

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

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

CAUTION: Refer to Window Retention Caution .

CAUTION: 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.

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

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

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

10. If the original window is being reused and the window reveal molding is damaged or becomes detached, replace the window reveal molding if equipped.

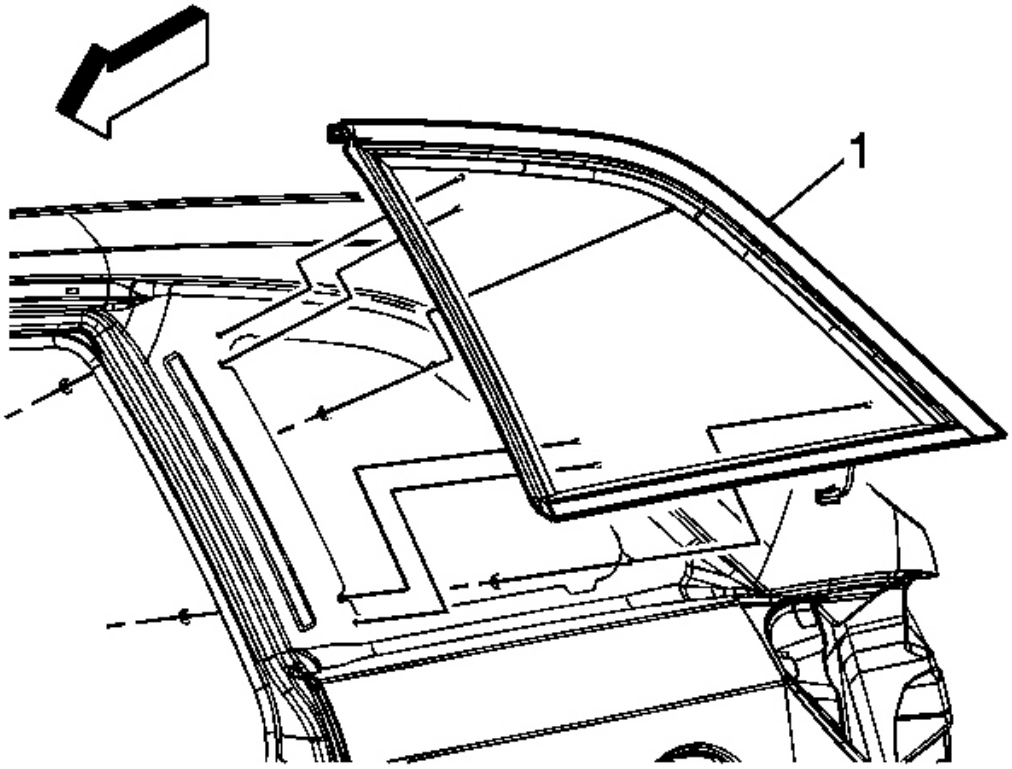


Fig. 90: Locating Bodyside Stationary Window
Courtesy of GENERAL MOTORS CORP.

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

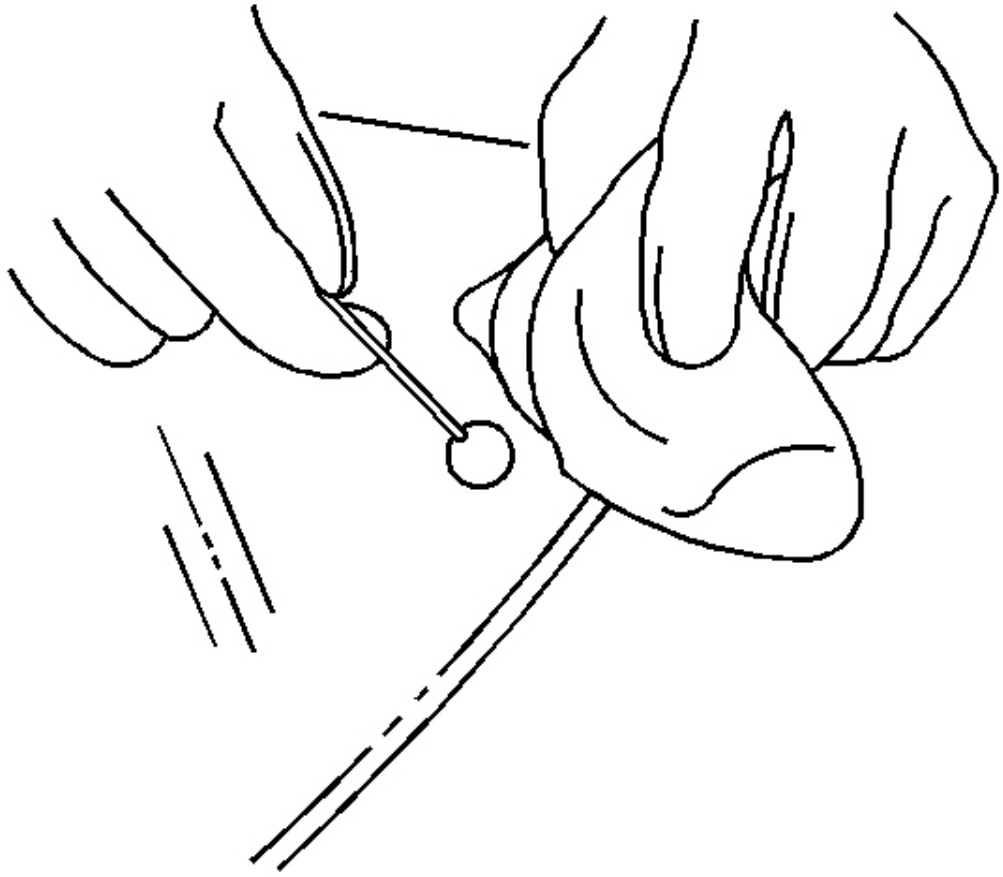


Fig. 91: Applying Glass Prep
Courtesy of GENERAL MOTORS CORP.

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

15. 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.

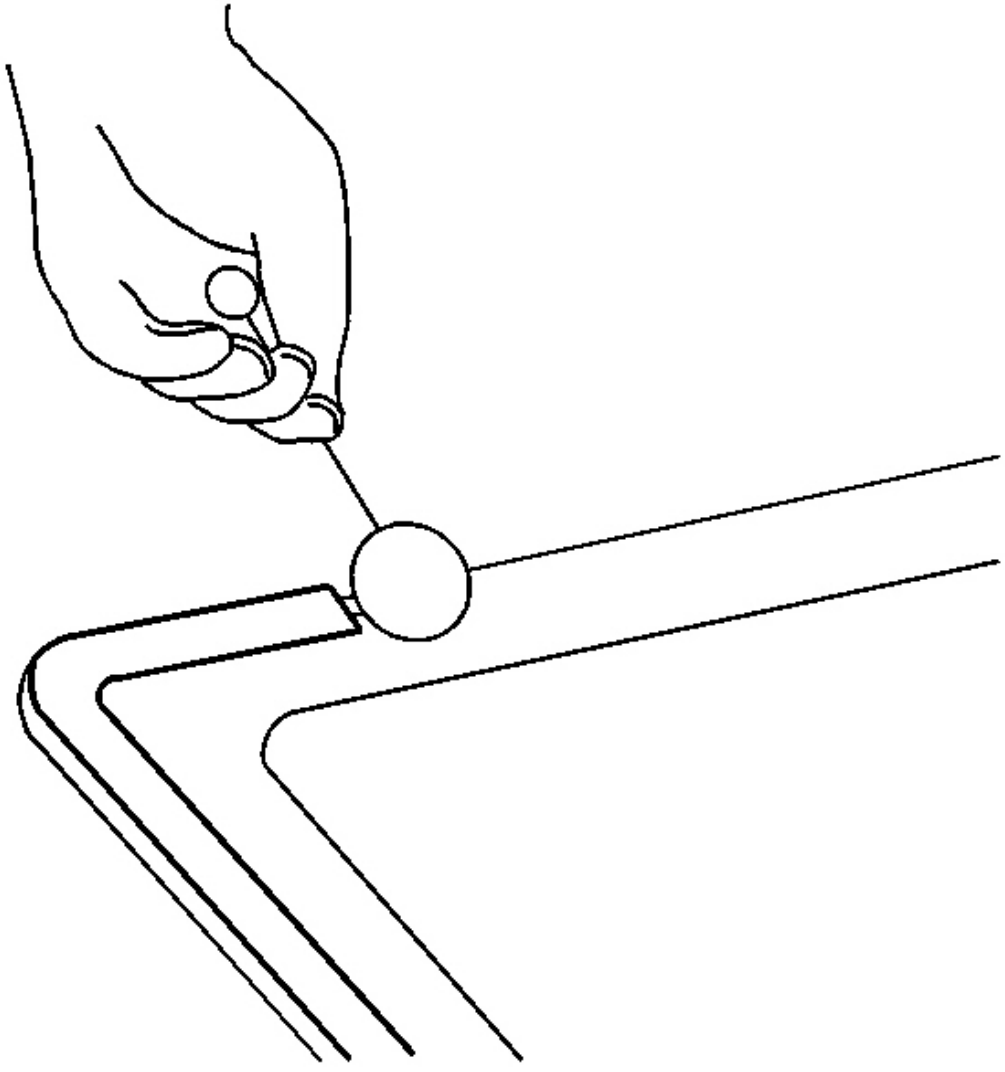


Fig. 92: Applying second Coat Of Glass Prep
Courtesy of GENERAL MOTORS CORP.

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

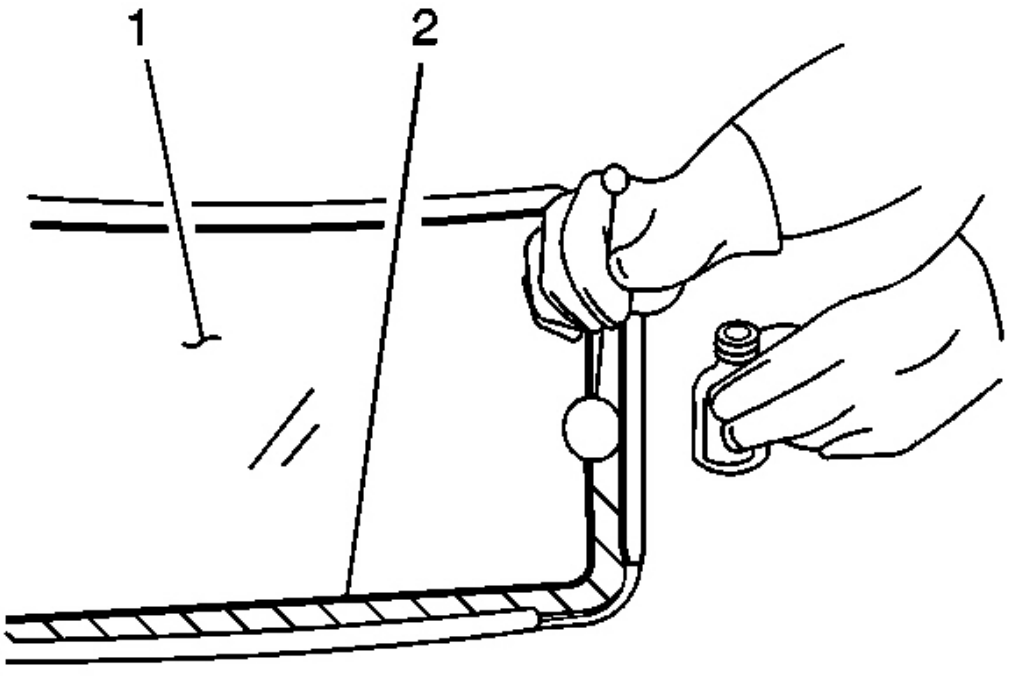


Fig. 93: Applying Glass Primer
Courtesy of GENERAL MOTORS CORP.

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

17. Shake the glass primer black #2 for at least 1 minute.
18. 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.
19. Allow the glass primer to dry for approximately 10 minutes.

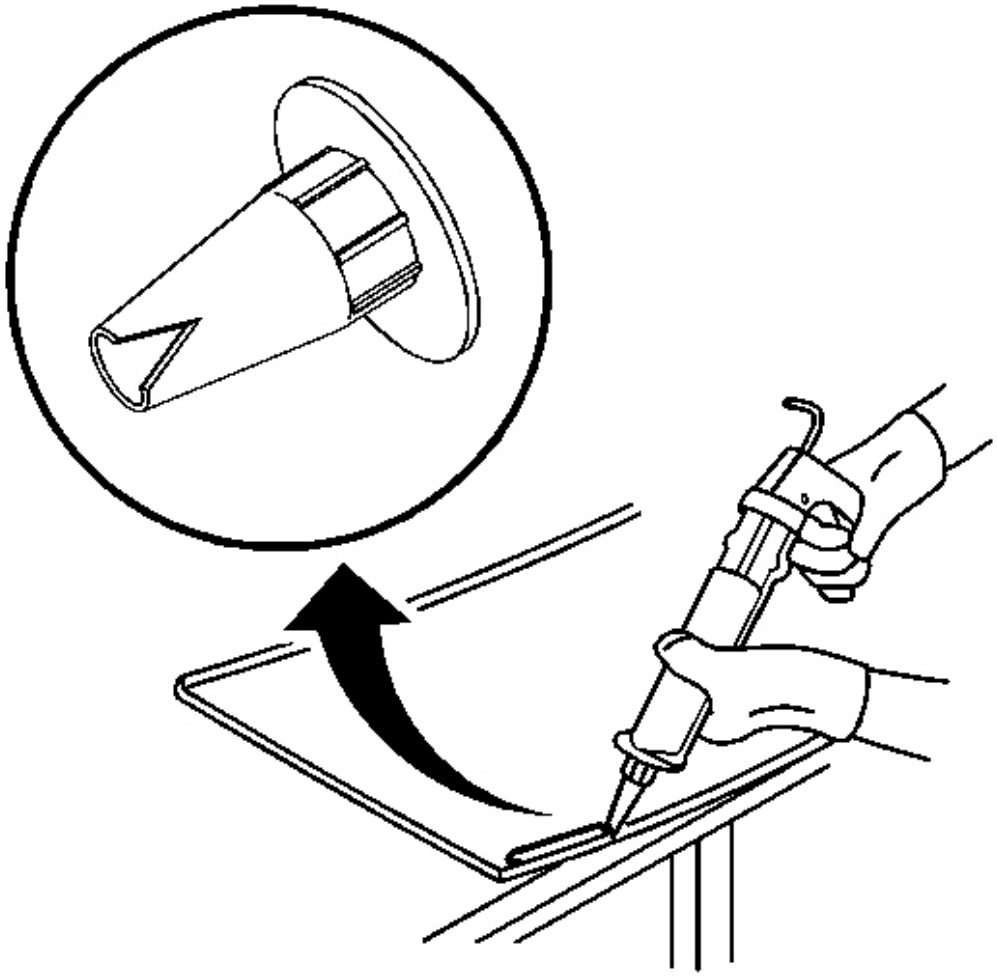


Fig. 94: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS CORP.

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

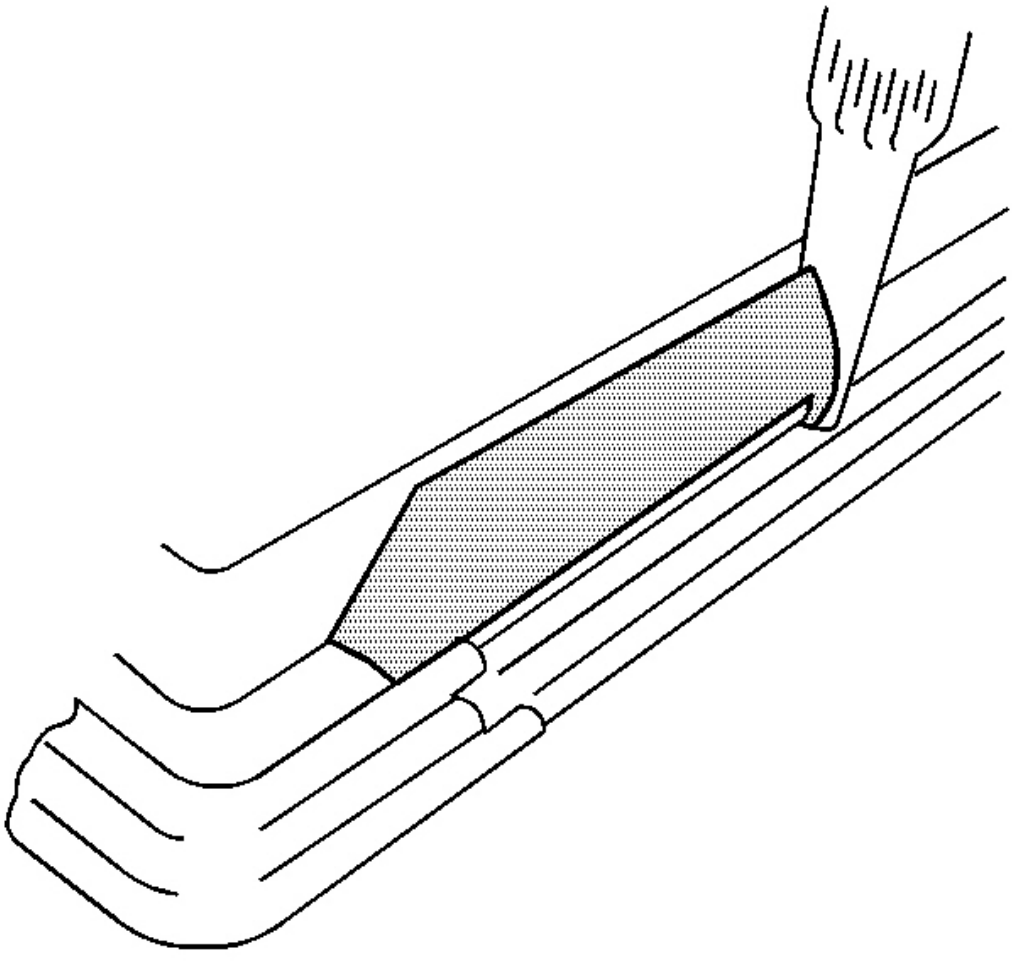


Fig. 95: Applying Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS CORP.

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

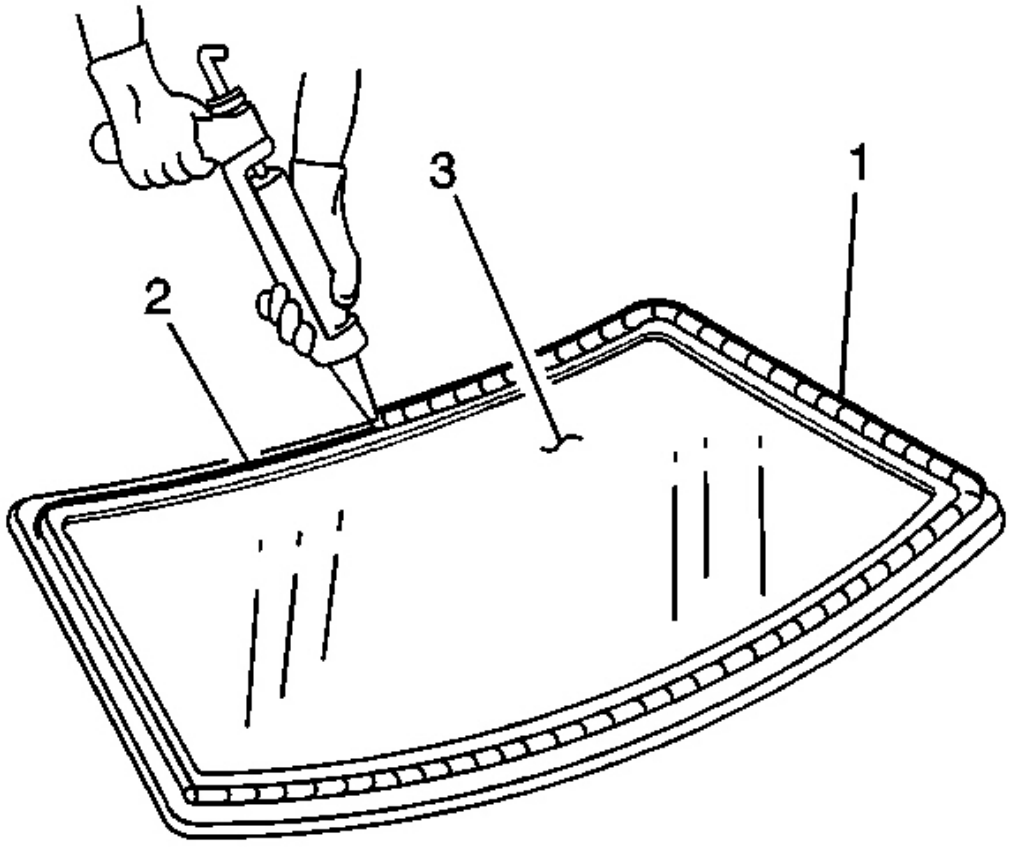


Fig. 96: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS CORP.

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

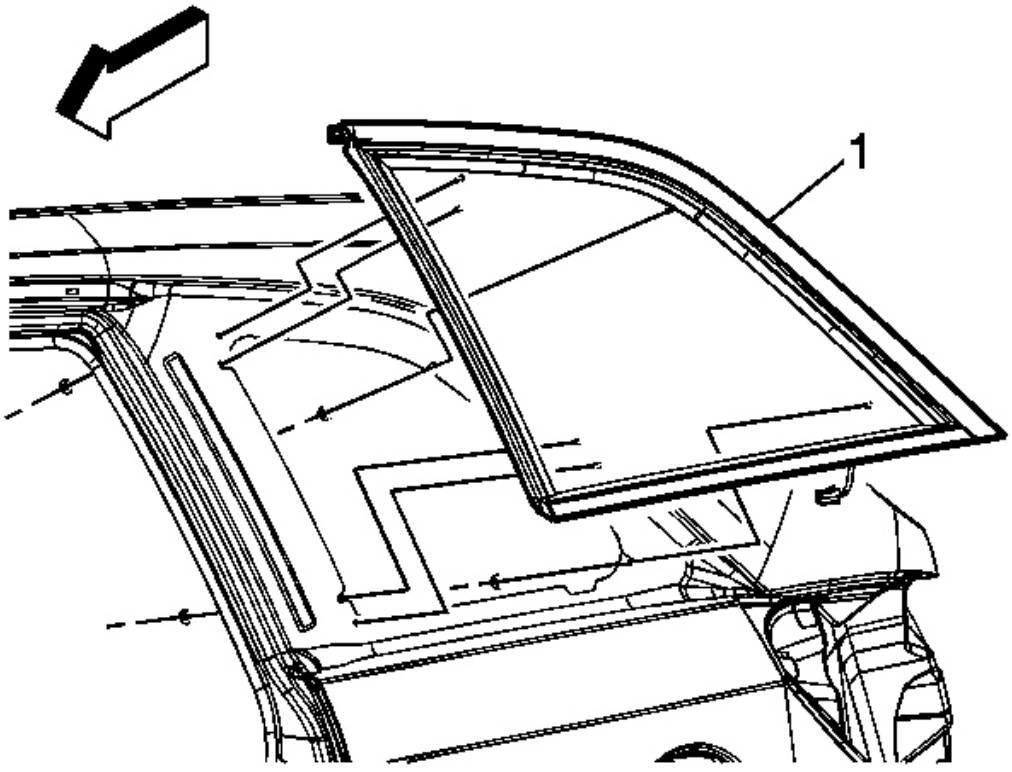


Fig. 97: Locating Bodyside Stationary Window
Courtesy of GENERAL MOTORS CORP.

23. With the aid of an assistant, place the window (1) in the opening.
24. Align the masking tape lines on the window and the body.

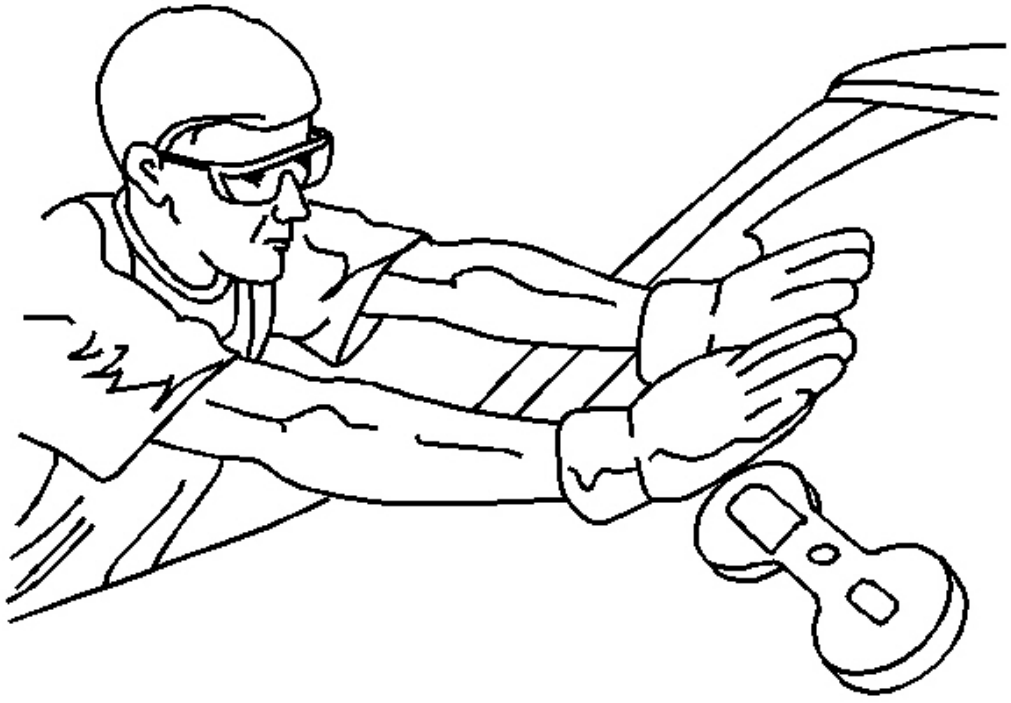


Fig. 98: Pressing Window Firmly Into Place
Courtesy of GENERAL MOTORS CORP.

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

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

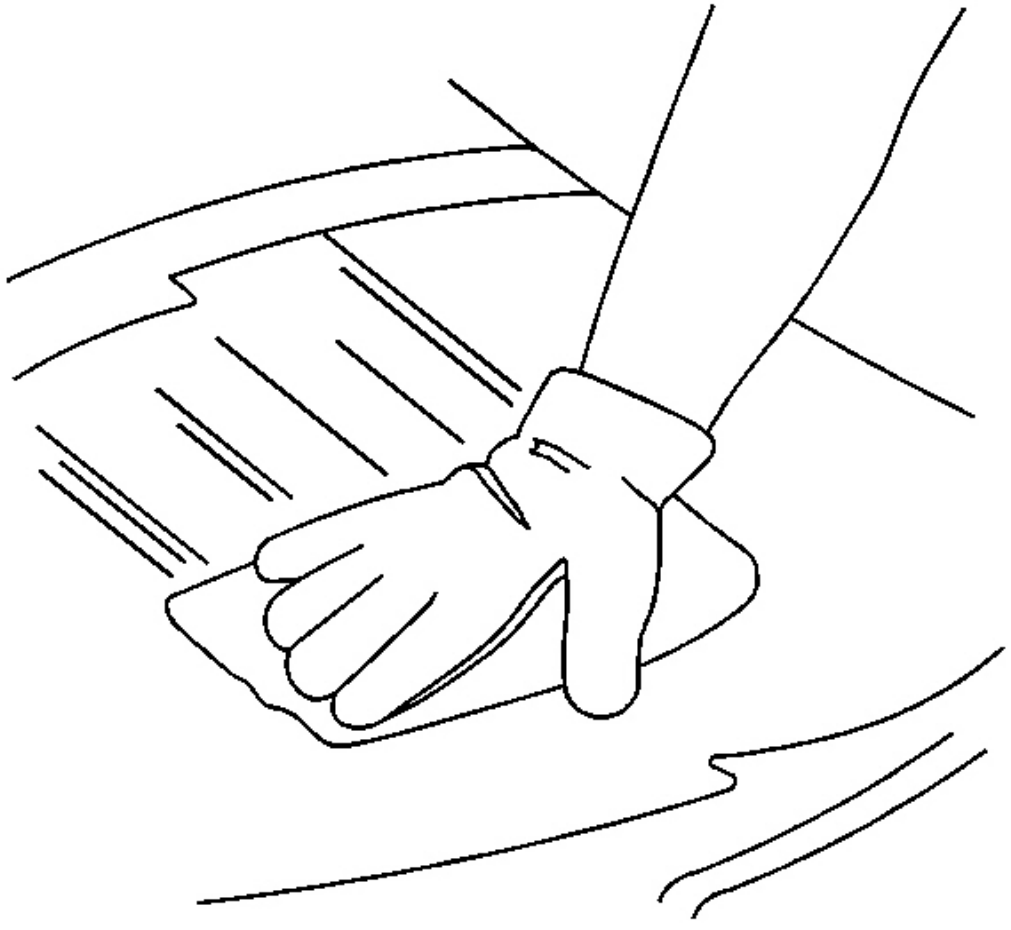


Fig. 99: Cleaning Excess Urethane Adhesive From Body
Courtesy of GENERAL MOTORS CORP.

27. Clean any excess urethane adhesive from the body.

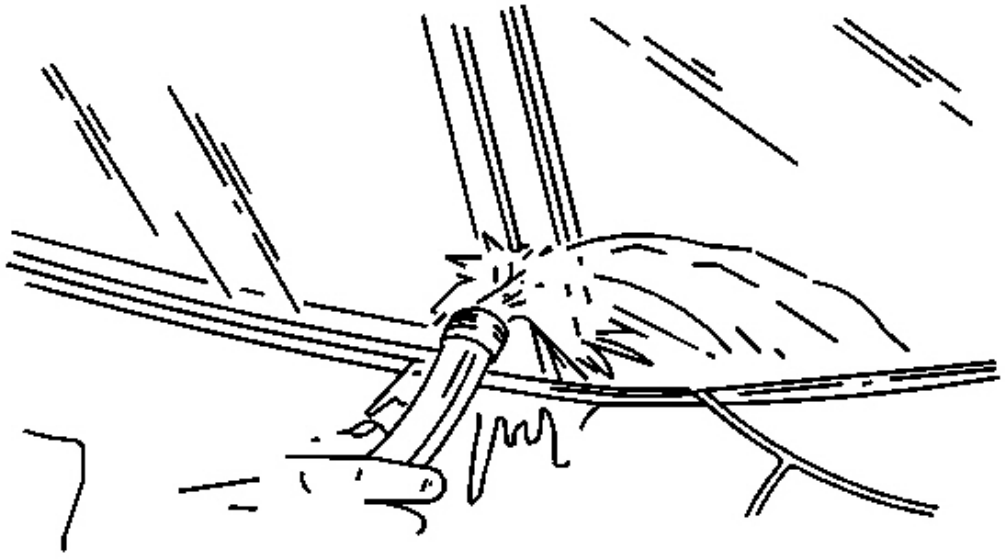


Fig. 100: Performing Water Hose Test
Courtesy of GENERAL MOTORS CORP.

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

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

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

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

at least 24 hours for the complete curing of the urethane adhesive.

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

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

32. 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.
33. Complete the window installation.

ADHESIVE INSTALLATION OF ROOF STATIONARY WINDOWS

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

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

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

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

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

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

CAUTION: Refer to Window Retention Caution .

CAUTION: 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.

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

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

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

10. If the original window is being reused and the window reveal molding is damaged or becomes detached, replace the window reveal molding if equipped.

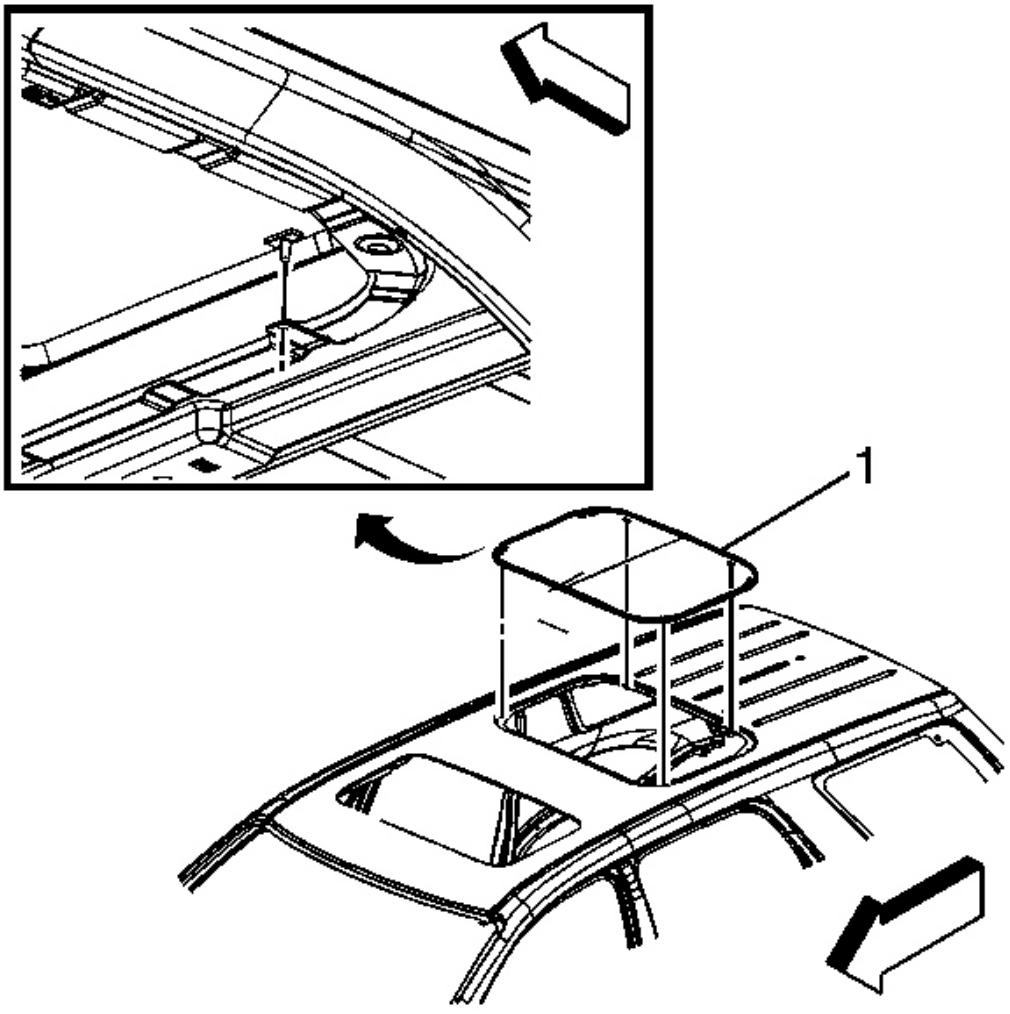


Fig. 101: Locating Sunroof Window
Courtesy of GENERAL MOTORS CORP.

11. With the aid of an assistant, dry fit the window to the opening in order to determine the correct position.
12. Ensure the window locator pins are positioned into the locator slots roof pinch-weld flange.

13. Use masking tape to mark the locations of the window in the opening.
14. Cut the masking in the center and remove the window from the opening.

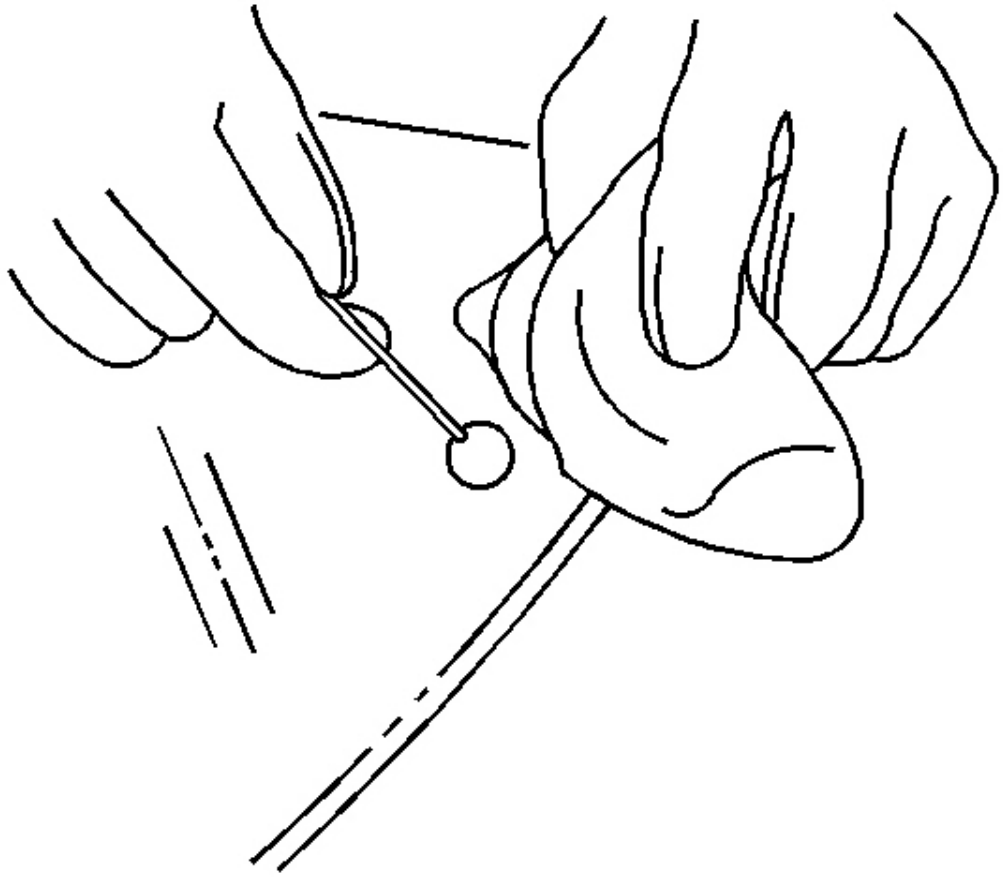


Fig. 102: Applying Glass Prep
Courtesy of GENERAL MOTORS CORP.

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

15. 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.

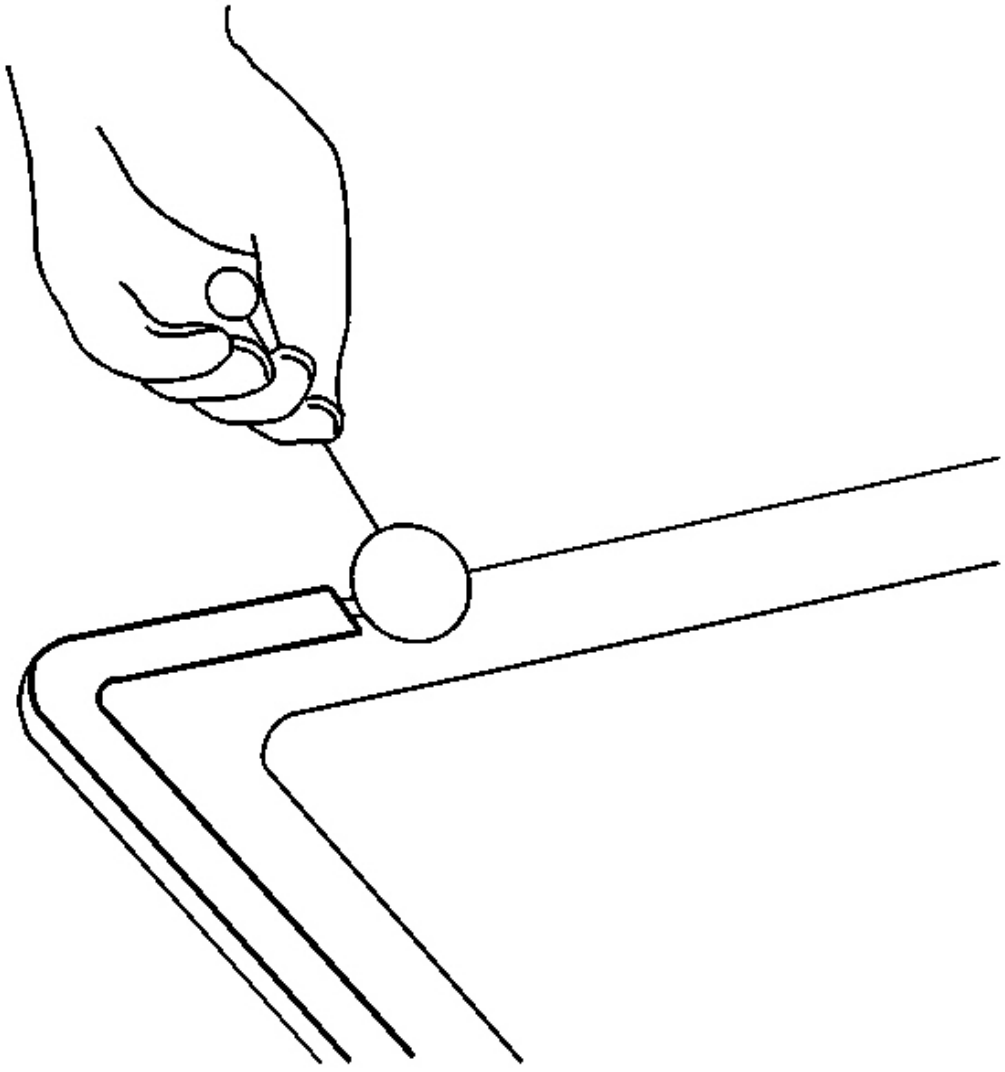


Fig. 103: Applying second Coat Of Glass Prep
Courtesy of GENERAL MOTORS CORP.

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

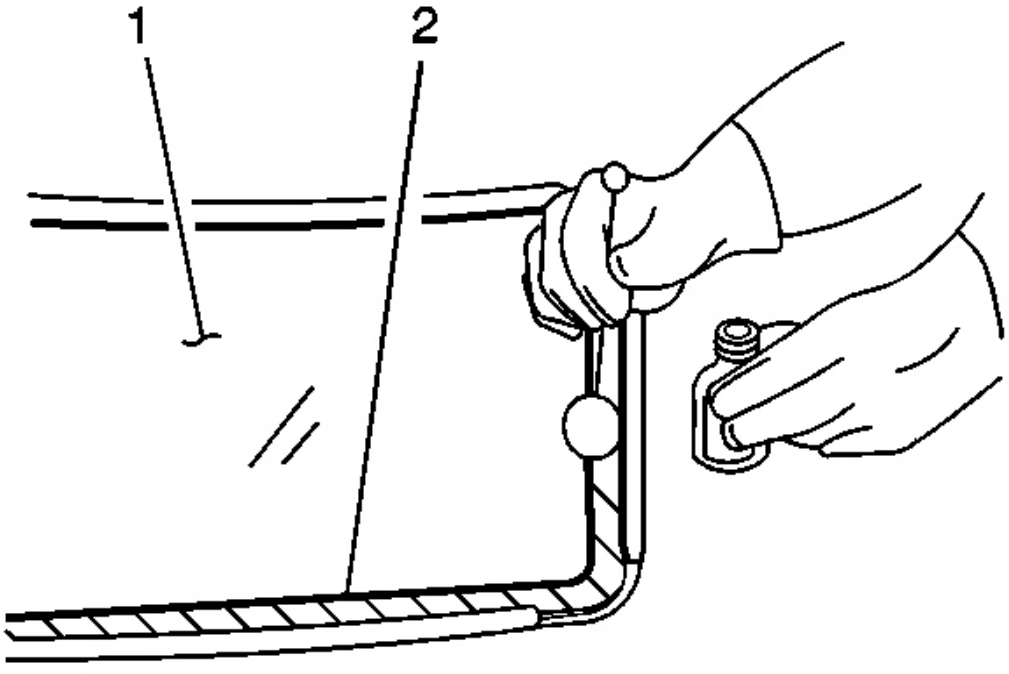


Fig. 104: Applying Glass Primer
Courtesy of GENERAL MOTORS CORP.

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

17. Shake the glass primer black #2 for at least 1 minute.
18. 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.
19. Allow the glass primer to dry for approximately 10 minutes.

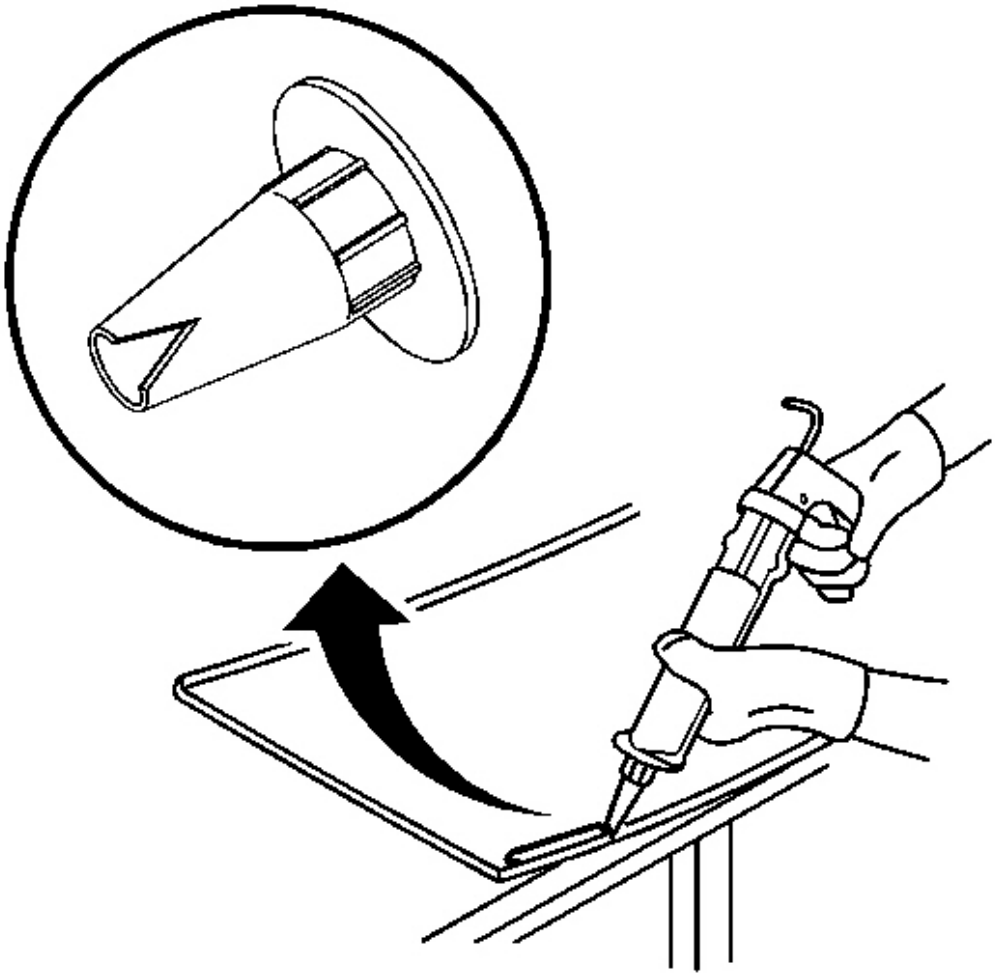


Fig. 105: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS CORP.

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

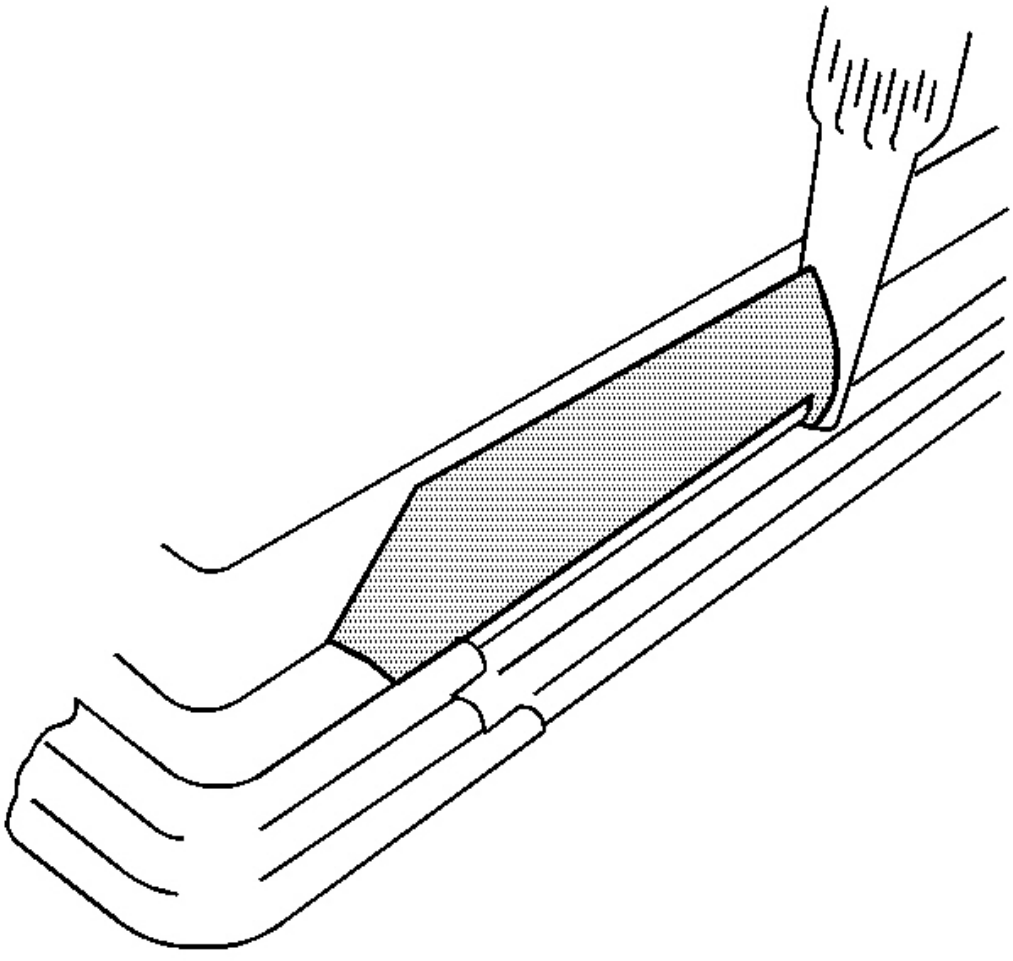


Fig. 106: Applying Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS CORP.

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

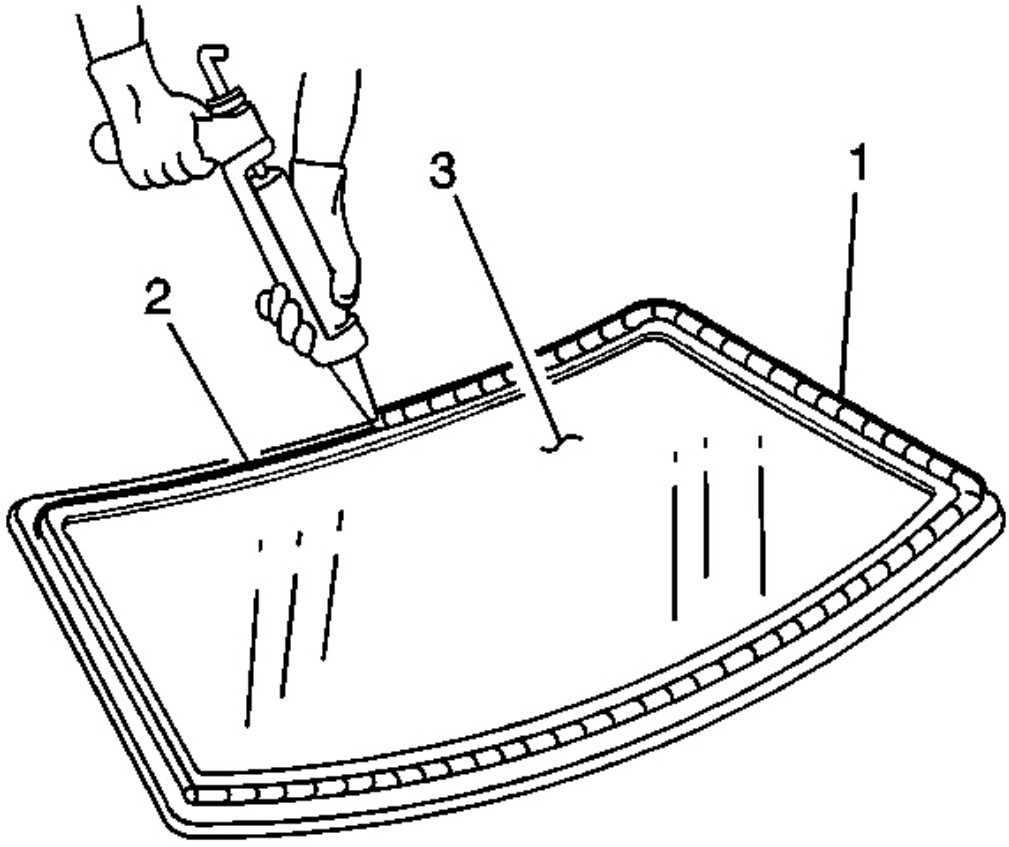


Fig. 107: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS CORP.

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

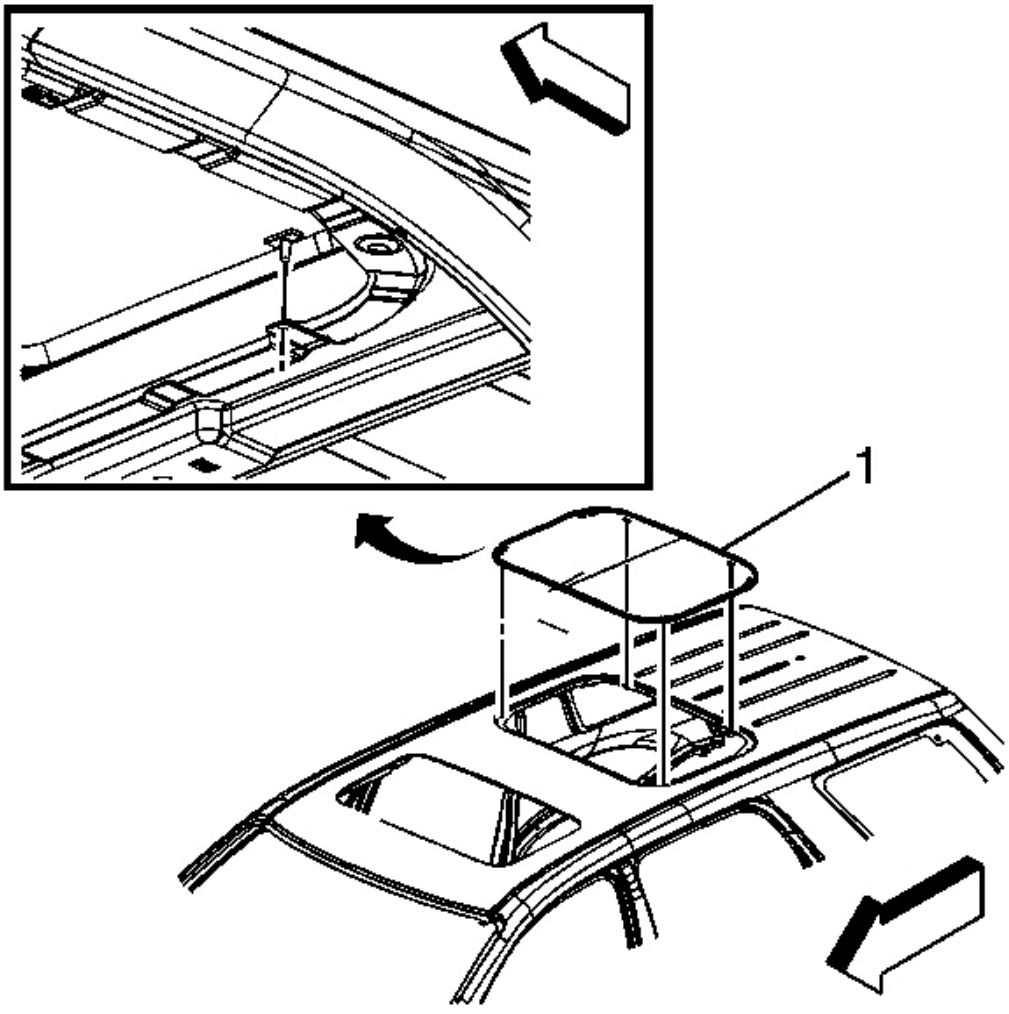


Fig. 108: Locating Sunroof Window
Courtesy of GENERAL MOTORS CORP.

23. With the aid of an assistant, place the window (1) in the opening.
24. Align the masking tape lines on the window and the body.

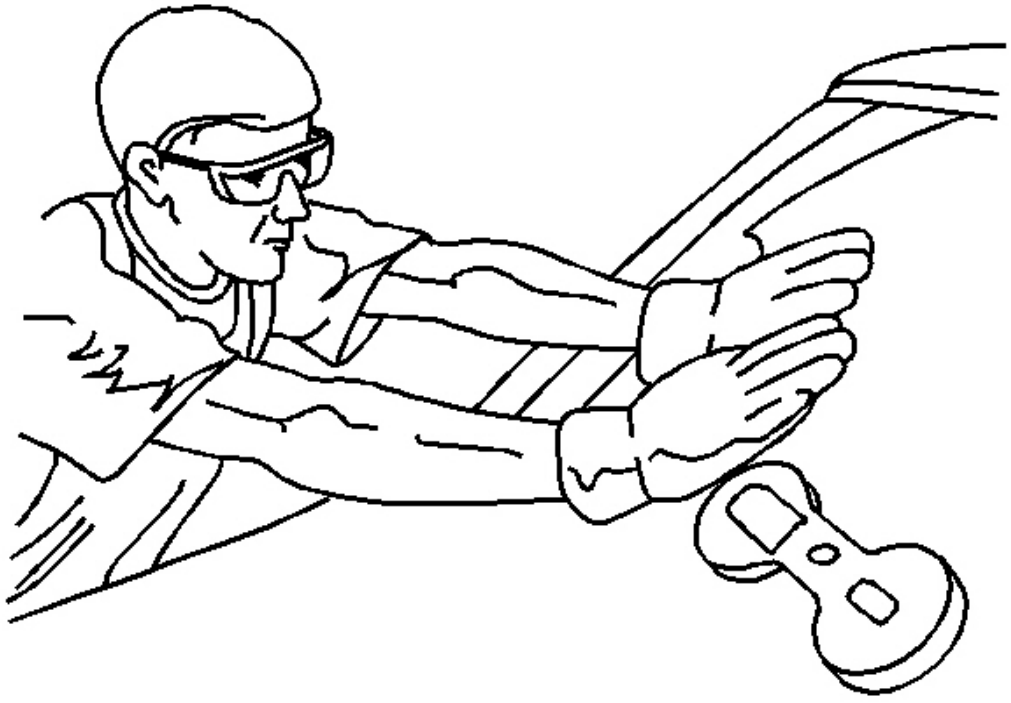


Fig. 109: Pressing Window Firmly Into Place
Courtesy of GENERAL MOTORS CORP.

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

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

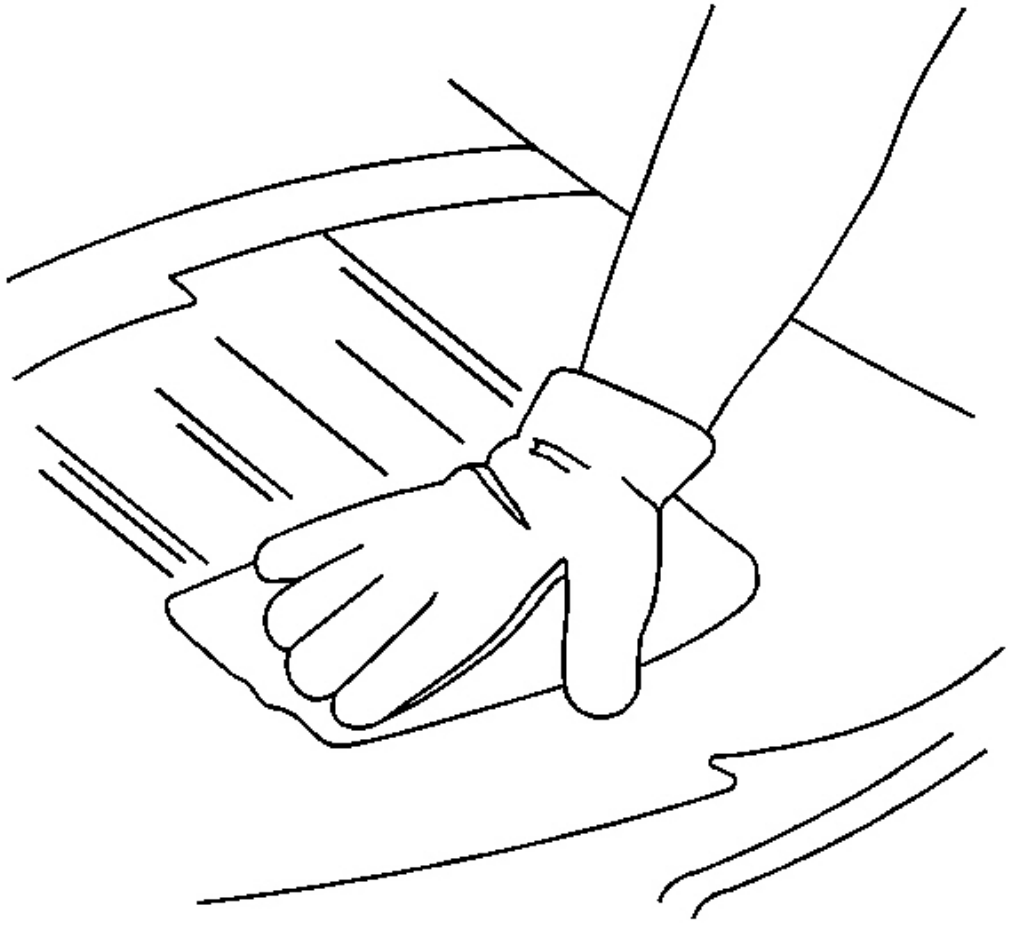


Fig. 110: Cleaning Excess Urethane Adhesive From Body
Courtesy of GENERAL MOTORS CORP.

27. Clean any excess urethane adhesive from the body.

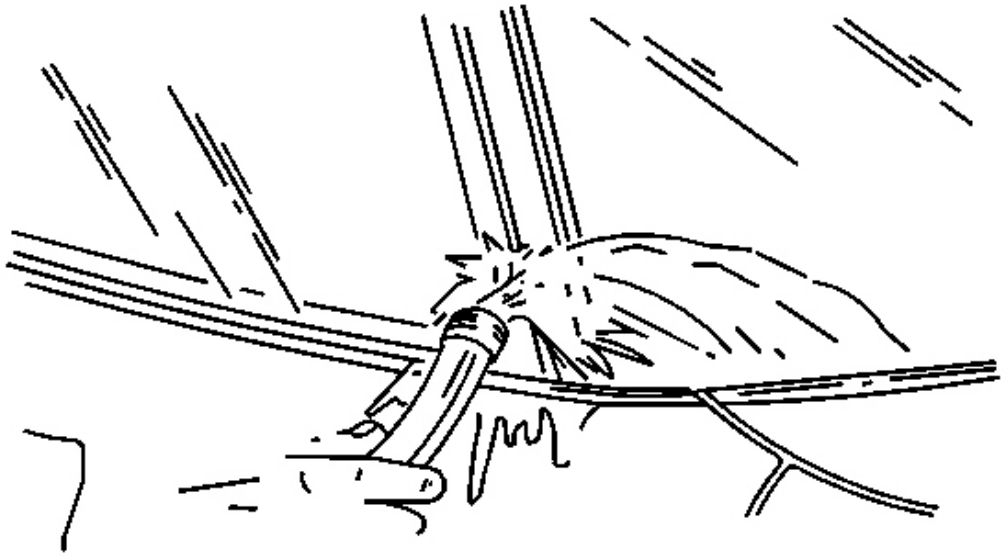


Fig. 111: Performing Water Hose Test
Courtesy of GENERAL MOTORS CORP.

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

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

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

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

at least 24 hours for the complete curing of the urethane adhesive.

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

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

32. 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.
33. Complete the window installation.

ADHESIVE INSTALLATION OF ENDGATE STATIONARY WINDOWS

CAUTION: Refer to Glass and Sheet Metal Handling Caution .

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

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

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

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

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

CAUTION: Refer to Window Retention Caution .

CAUTION: 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.

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

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

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

10. If the original window is being reused and the window reveal molding is damaged or becomes detached, replace the window reveal molding if equipped.

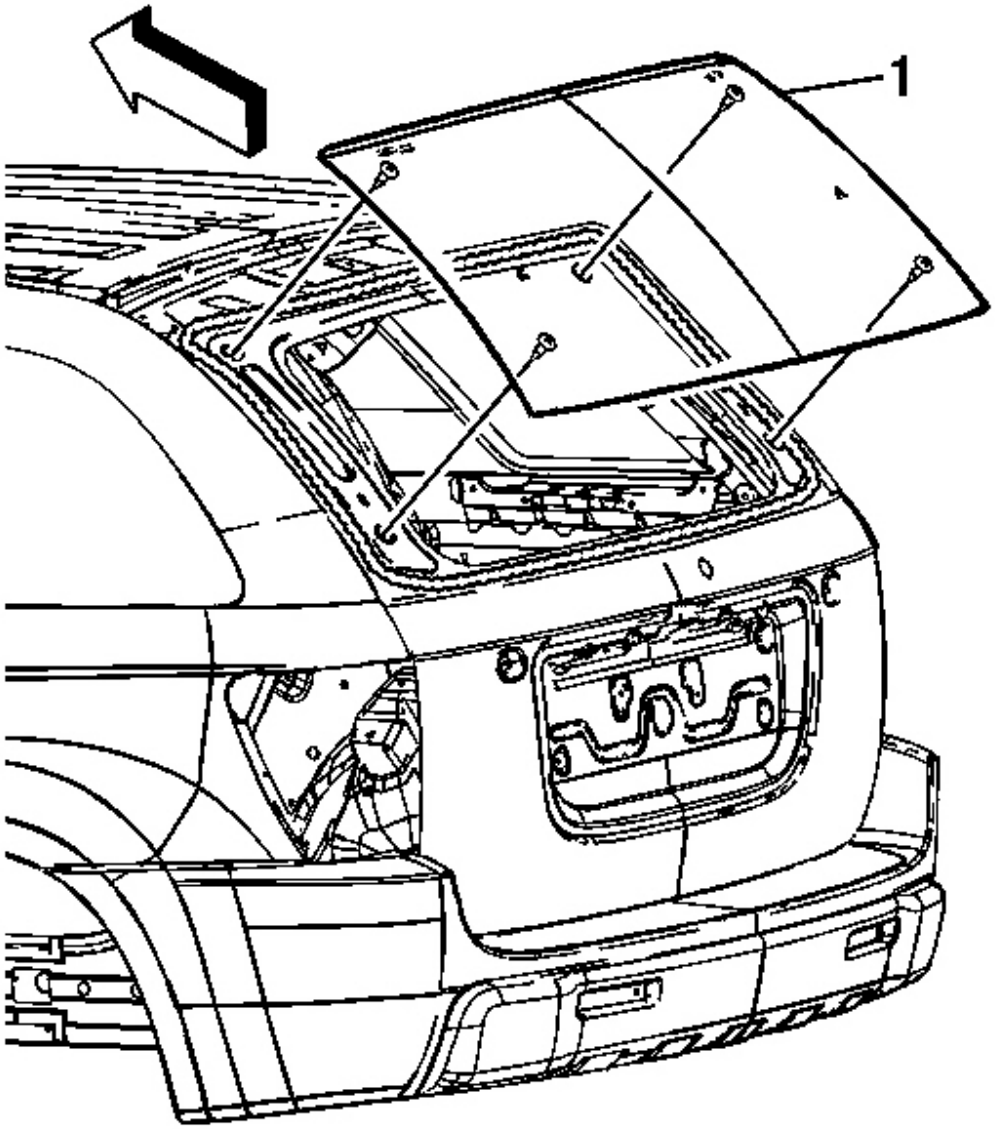


Fig. 112: View Of Liftgate Window
Courtesy of GENERAL MOTORS CORP.

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

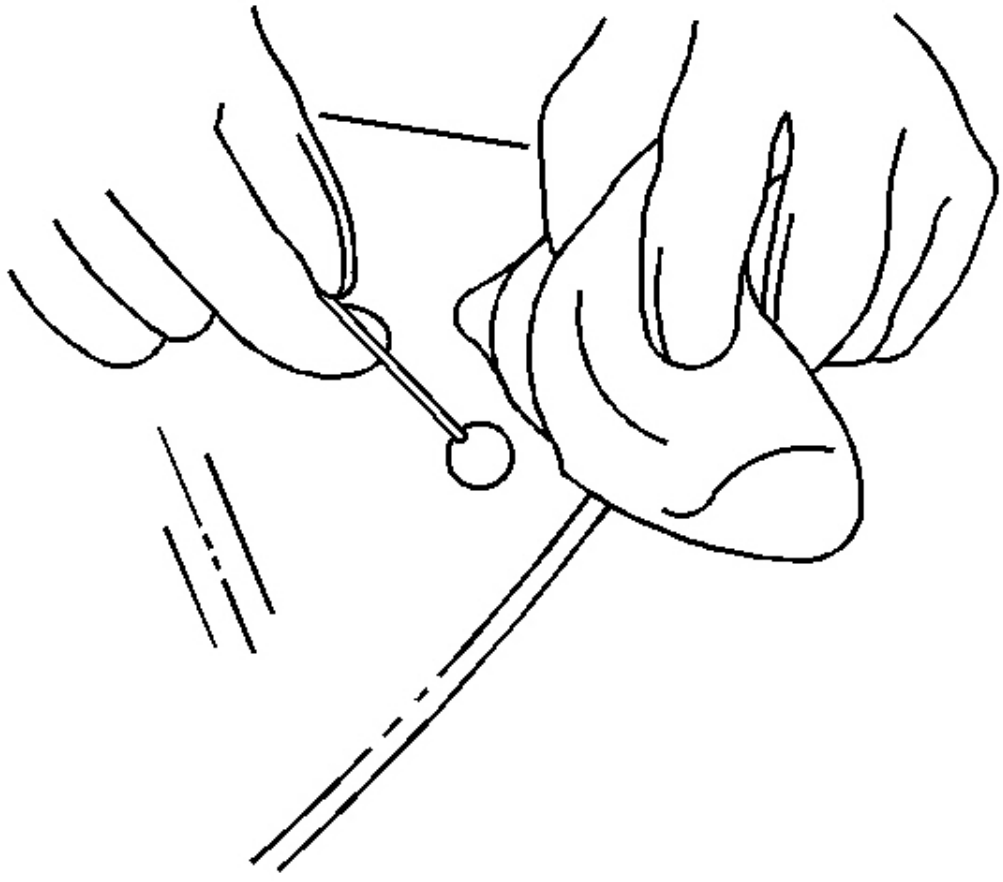


Fig. 113: Applying Glass Prep
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Use care when applying glass prep clear #1 on the window. This primer dries almost instantly and may stain the viewing

area of the window if not applied evenly.

15. 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.

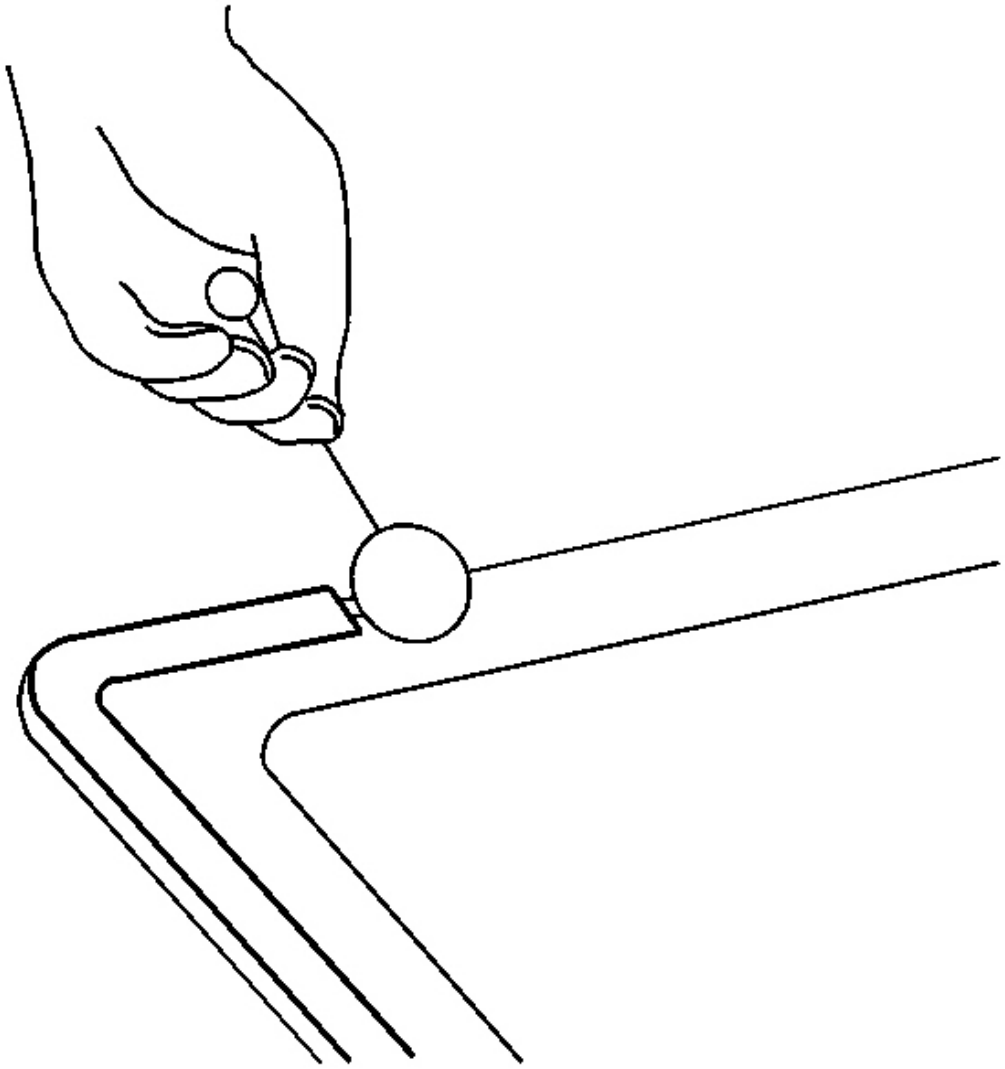


Fig. 114: Applying second Coat Of Glass Prep

Courtesy of GENERAL MOTORS CORP.

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

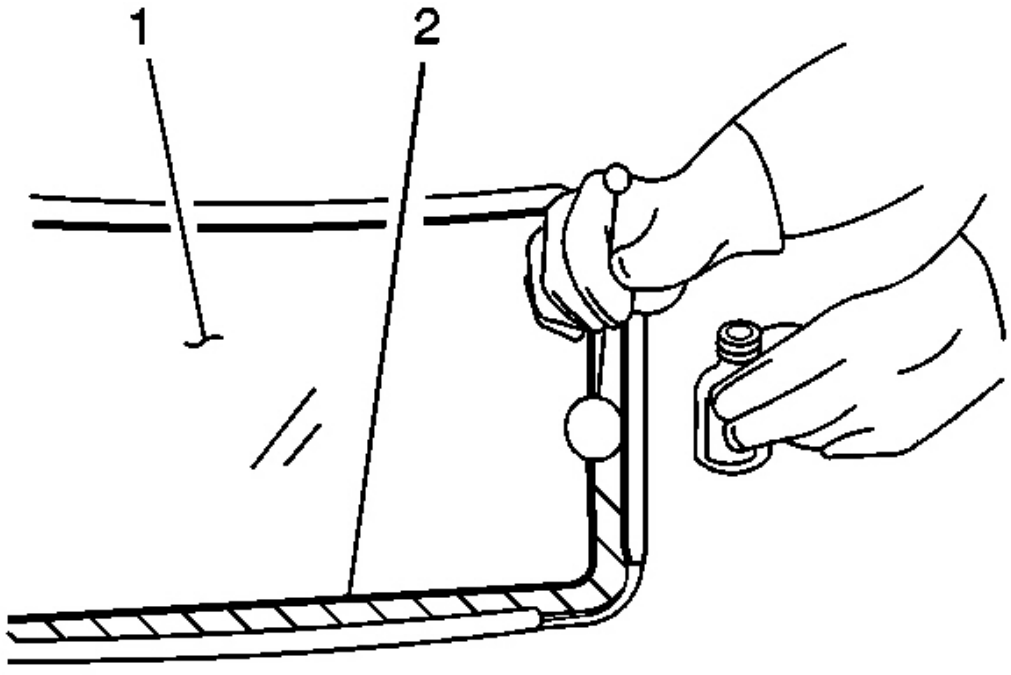


Fig. 115: Applying Glass Primer
Courtesy of GENERAL MOTORS CORP.

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

17. Shake the glass primer black #2 for at least 1 minute.
18. 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.
19. Allow the glass primer to dry for approximately 10 minutes.

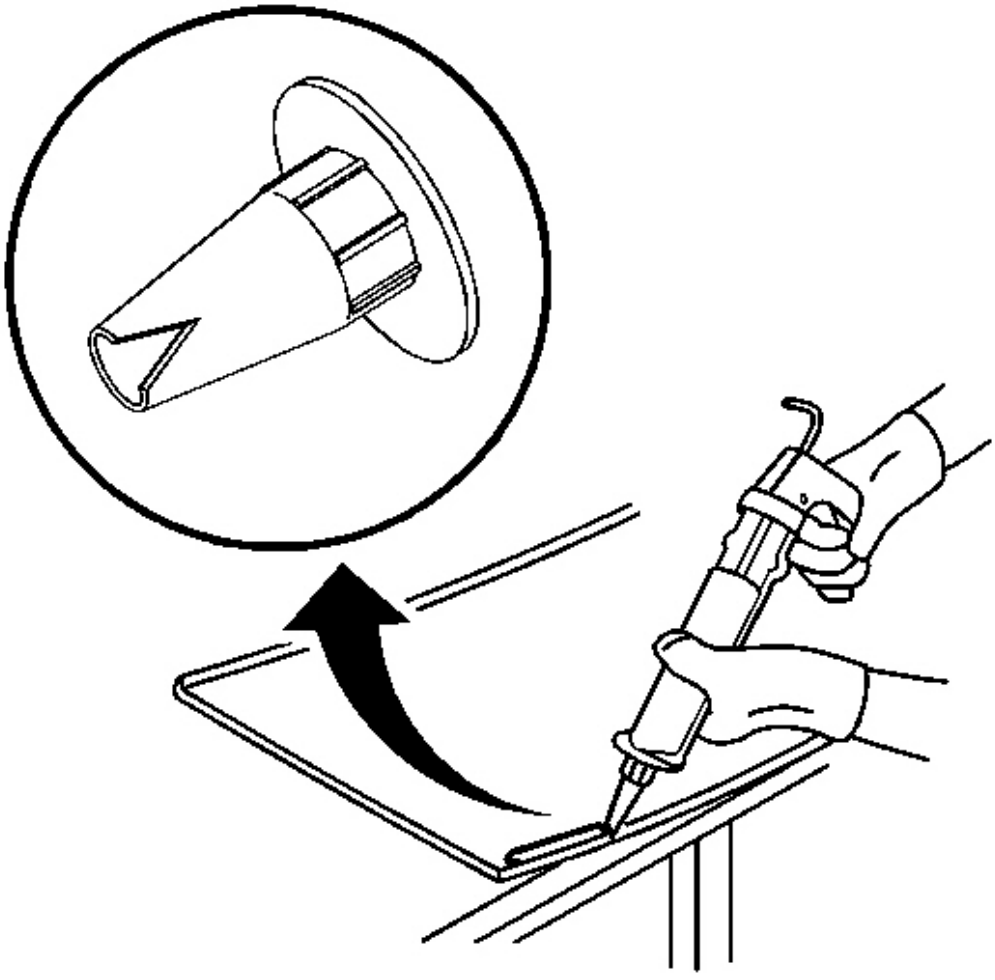


Fig. 116: View Of Modified Applicator Nozzle
Courtesy of GENERAL MOTORS CORP.

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

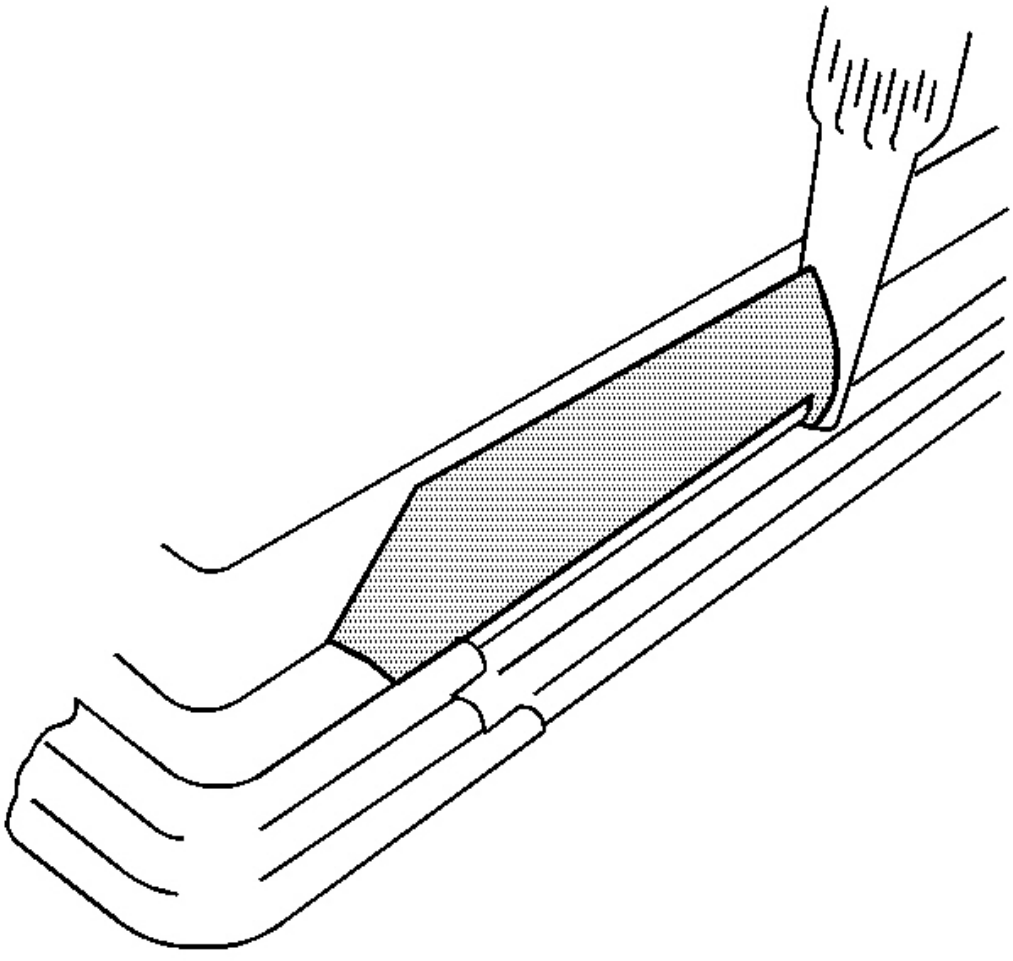


Fig. 117: Applying Bead Of Urethane Adhesive
Courtesy of GENERAL MOTORS CORP.

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

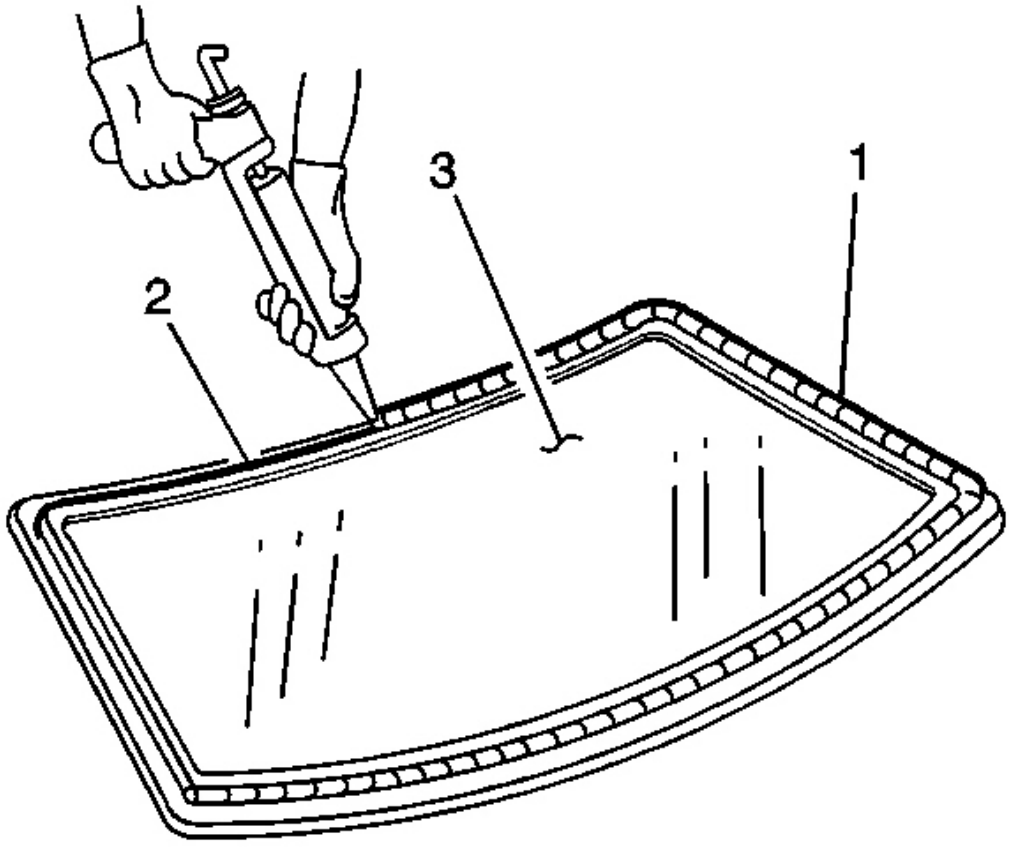


Fig. 118: Applying Urethane Adhesive To Inner Surface Of Window
Courtesy of GENERAL MOTORS CORP.

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

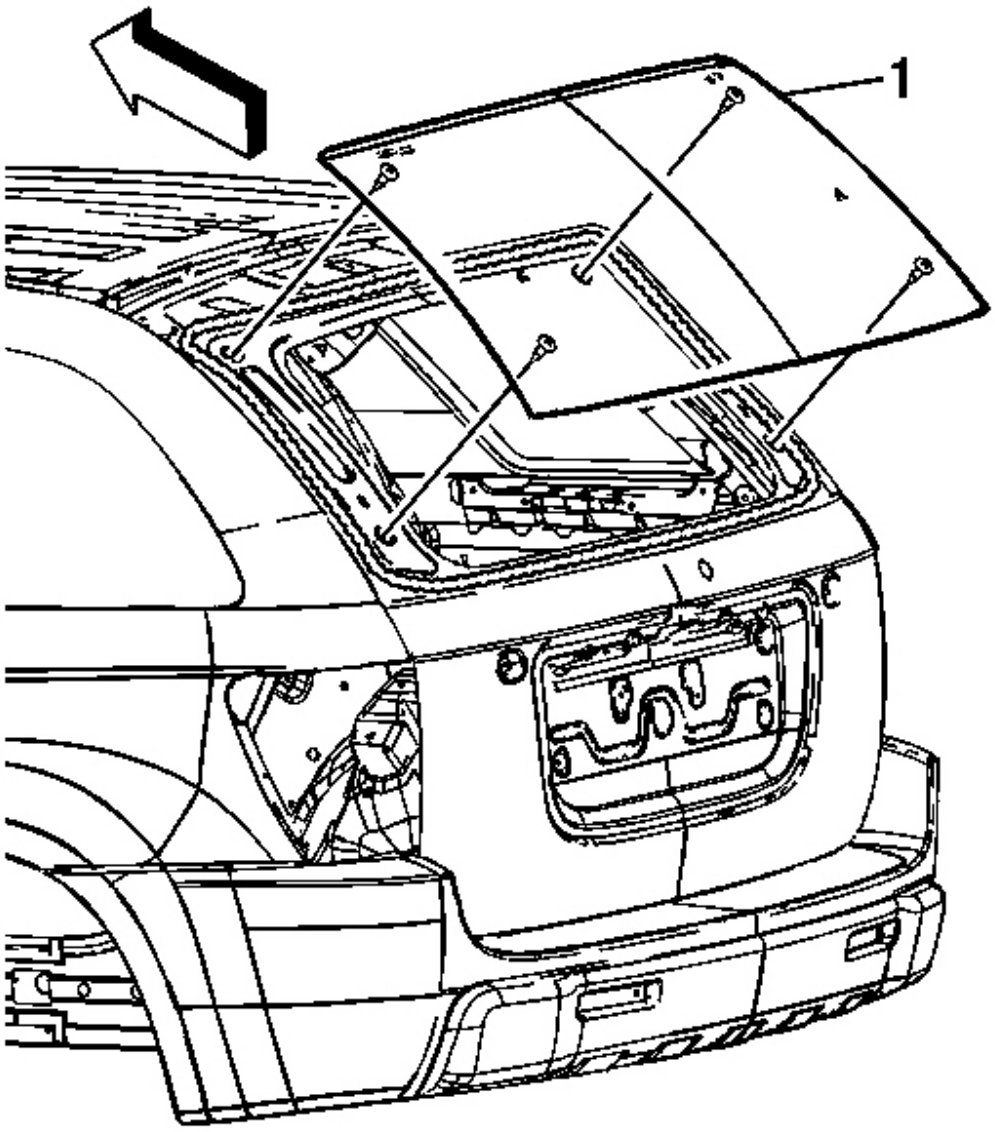


Fig. 119: View Of Liftgate Window
Courtesy of GENERAL MOTORS CORP.

23. With the aid of an assistant, place the window (1) in the opening.
24. Align the masking tape lines on the window and the body.

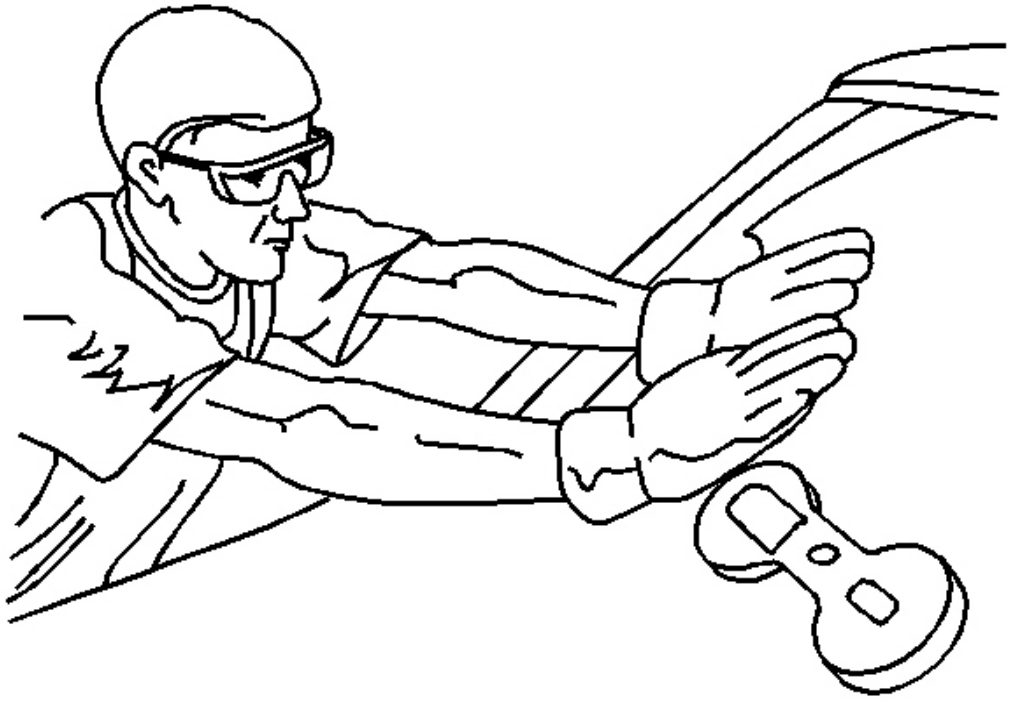


Fig. 120: Pressing Window Firmly Into Place
Courtesy of GENERAL MOTORS CORP.

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

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

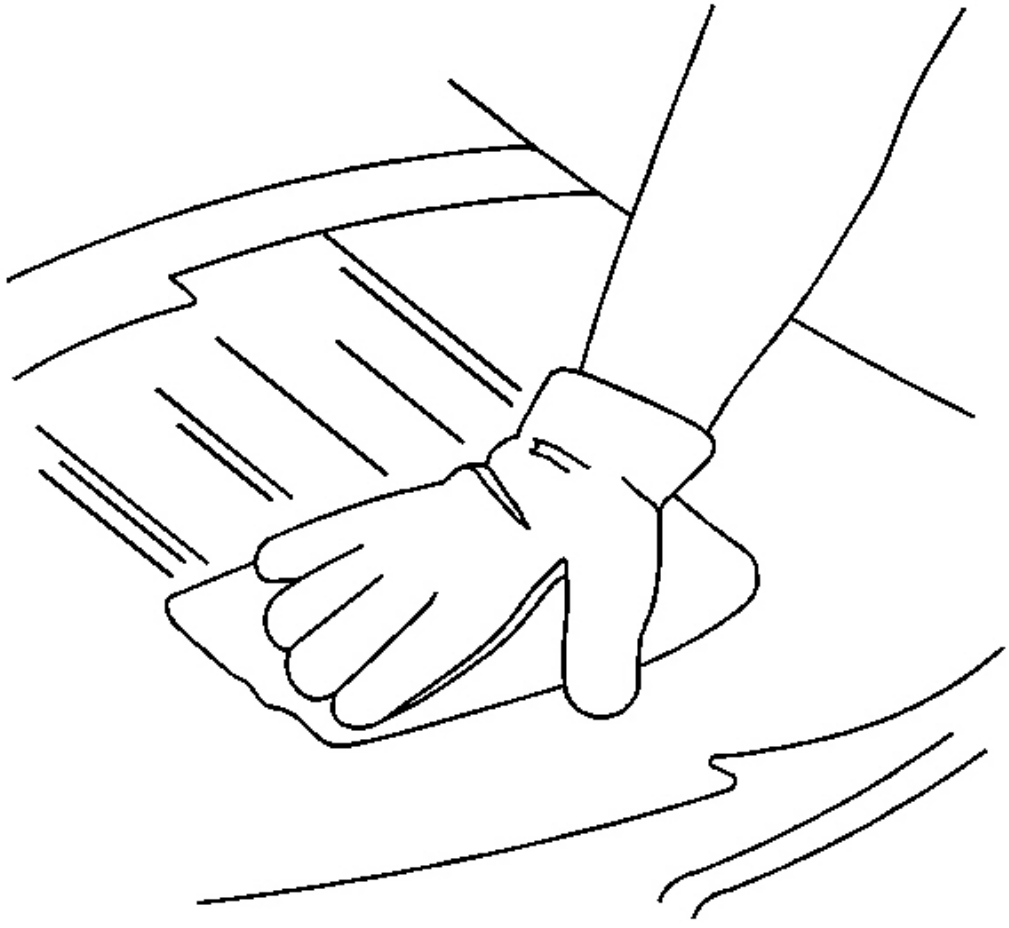


Fig. 121: Cleaning Excess Urethane Adhesive From Body
Courtesy of GENERAL MOTORS CORP.

27. Clean any excess urethane adhesive from the body.

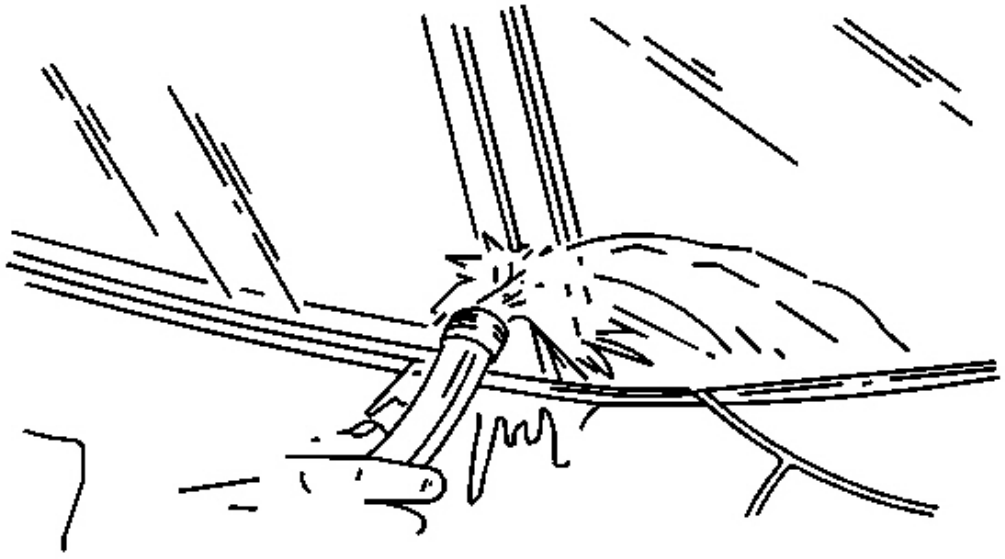


Fig. 122: Performing Water Hose Test
Courtesy of GENERAL MOTORS CORP.

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

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

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

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

at least 24 hours for the complete curing of the urethane adhesive.

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

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

32. 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.
33. Complete the window installation.

FRONT SIDE DOOR WINDOW REAR CHANNEL REPLACEMENT

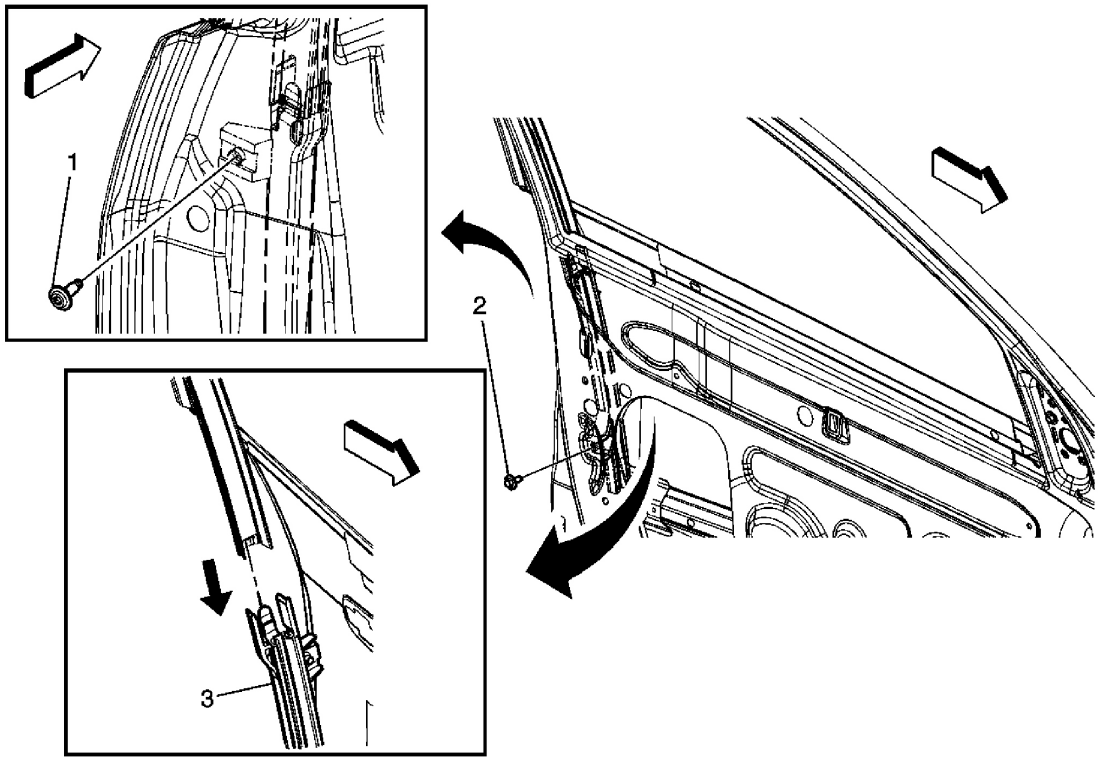


Fig. 123: Identifying Front Side Door Window Rear Channel
Courtesy of GENERAL MOTORS CORP.

Front Side Door Window Rear Channel Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the interior trim panel. Refer to **Front Side Door Trim Panel Replacement - Left Side** or **Front Side Door Trim Panel Replacement - Right Side** . 2. Remove the water deflector. Refer to **Front Side Door Water Deflector Replacement** .	
1	Front Side Door Window Rear Channel Upper Bolt **NOTE:** **Refer to Fastener Notice .** **Tighten:** 10 N.m (89 lb in)
2	Front Side Door Window Rear Channel Lower Bolt
3	Front Side Door Window Rear Channel **Tip:** Install the front side door window rear channel, ensure that the upper and lower clip together.

DESCRIPTION AND OPERATION

FULL-CUT METHOD DESCRIPTION

IMPORTANT:

- **If corrosion of the pinch-weld flange is present or if sheet metal repairs or replacements are required, refinish the pinch-weld flange in order to present a clean, primer-only surface.**
- **If paint repairs are required, mask the flange bonding area, prior to applying the color coat, in order to provide a clean, primer-only surface.**
- **Appropriate materials for these primer applications are typically 2 component catalyzed products. Use materials such as BASF DE15®, DuPont 2610®, Sherwin-Williams PSE 4600 and NP70® and Martin-Semour 5120,5130®, PPG DP90LF SPIES/HECKER 3688/8590 - 3688/5150 - 4070/5090**

STANDOX 11158/13320 - 14653/14980 products are approved for this application. Follow the manufacturer's directions for the mix, the application and the drying times.

- **After repairing the opening as indicated, shake the pinch-weld primer black #3 well. Using a new dauber, apply the primer to the primed surface of the flange in the bonding area. Allow the primer to dry for 10 minutes.**

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

This method includes the following:

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

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

ADHESIVE SERVICE KIT DESCRIPTION

The GM of Canada Adhesive Caulking Kit, P/N 10952983, contains the following items:

- Four different primers
- A tube of urethane adhesive with a nozzle
- Four daubers
- Instructions with warnings

Use the urethane adhesive caulking kit for replacement of any urethane adhesive-installed window using the full cut method.

In the United States or Canada, you may use any of the following equivalent urethane adhesive systems which meet GM Specification GM 3651G:

- Dow Automotive - Essex 400HV. One part and requires associated primers.
- Dow Automotive - Essex U216. Two part and requires associated primers.

  Call Dow Automotive at 1-800-453-3779 for more information.

- 3M™ "Fast Cure" Auto Glass Urethane. One part and requires associated primers.

  Call 3M™ at 1-877-666-2277 for more information.

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.

STATIONARY WINDOW DESCRIPTION

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

POWER WINDOWS DESCRIPTION AND OPERATION (RPO AXC/AXE)

Power Window System Components

The power window system consists of the following components:

- Driver door module (DDM)
- Body control module (BCM)
- Passenger door module (PDM)
- Rear door power window switches
- Power window motors in each of the doors (circuit breaker protected)

Power Window System Operation

The driver master control contains 4 power window switches which are integral components to the Driver Door Module (DDM). Closing any of the normally open switches provides the DDM with a request for power window operation. The switches for the 2 front windows have 3 positions up, down and express down, while the switches for the rear windows have only 2 positions, up and down. Each of these switches and their positions is a direct input into the DDM. Upon receiving a request for power window operation, the DDM, transmits a GMLAN message indicating the switch and it's changed position.

The passenger door module (PDM) contains a single power window switch that is an integral component. Closing of this normally open, rocker switch provides the PDM with a request for the front passenger power window operation. The switch for the front passenger window has 2

positions up and down. Each of these switch positions is a direct input to the PDM.

The 2 rear passenger doors have their own switches. A switch activation alone can control the up and down functions of the rear windows. However the BCM, upon receiving a GMLAN message from the DDM, can send a signal to the appropriate rear window switch which will activate their respective rear window motors.

Driver Power Window Operation

The switch for the driver power window has 3 positions up, down and express down and its position is a direct input into the driver door module (DDM). When the driver power window motor module receives LIN message from the DDM, the driver power window motor module will apply power and ground to the driver door window motor to move the window as requested.

Front Passenger Power Window Operation RPO AXE

The switch for the front passenger power window has 3 positions up, down and express down and its position is a direct input into the passenger door module (PDM). When the passenger power window motor module receives LIN from the PDM, the passenger power window motor module will apply power and ground to the passenger door window motor to move the window as requested.

The front passenger power window can also be operated from the driver master control. The front passenger window switch on the driver master control has 3 positions UP, Down and Express Down and its position is a direct input into the DDM. Upon receiving a request for front passenger power window operation, the DDM transmits a GMLAN message indicating the changed switch position to the BCM which then sends a command to the PDM. When the PDM receives a passenger door window switch request from the BCM, it will send a command to the passenger power window motor module which will apply power and ground to the passenger door window motor to move the window as requested.

Front Passenger Power Window Operation RPO AXC

The switch for the front passenger power window has 3 positions up, down and express down and its position is a direct input into the passenger door module (PDM), when the switch is pushed down or pulled up, the logic circuit within the passenger power window switch will provide power and ground to the window motor causing the window to open or by reversing polarity, the window will close.

The front passenger power window can also be operated from a switch on the driver master control. When the front passenger window switch on the driver master control is pushed down or pulled up, it's position is signaled to the BCM via the DDM. When the BCM receives this

command the appropriate signal is sent to the PDM which will provide power and ground to the window motor causing the window to open or close.

Rear Passenger Power Window Operation

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

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

Rear Power Window Lockout Operation

The rear window lockout function is operated from the driver master control, when the rear window lockout switched is pressed, an indicator light will illuminate and a GMLAN message will be sent to the BCM via the DDM. When the BCM receives a lockout command, the rear door power window switches are disabled. Once activated, the rear power window switches will be disabled until the ignition switch is cycled or the switch is pressed again to enable the rear window switches.

POWER WINDOWS DESCRIPTION AND OPERATION (RPO AXA)

Power Window System Components

The power window system consists of the following components:

- Driver Door Switch (DDS)
- Passenger Door Switch (PDS)
- Rear Door Power Window Switches (RPDS)
- Power window motors

Power Window System Controls

The power window system will operate anytime the Retained Accessory Power (RAP) system is active or when the ignition switch is in the ACCY or ON position.

The driver and passenger door lock and side window switches are integrated control module

switch assemblies. The Driver Door Switch (DDS) and Passenger Door Switch (PDS) switches are normally open, 3 position rocker type switches, with detents for up, down and express down. The DDS rear passenger window switches are normally open, 2 position rocker type switches, with detents for up and down. The DDS rear window lockout switch is a push button type switch that provides an active signal to the DDS whenever pressed. Whenever the rear window lockout switch is pressed the DDS will activate or deactivate the rear window lockout function depending on the current state and illuminate the switch indicator whenever the function is active.

The PDS contains a single power window switch that is an integral component. Closing of this normally open, rocker switch provides the PDS with a request for the front passenger power window operation. The switch for the front passenger window has 3 positions UP, Down and Express Down. Each of these switch positions is a direct input to the PDS.

The rear passenger door power window switches are normally open, 2 position rocker type switches, with detents for up and down.

Driver Power Window Operation

The switch for the driver power window has 3 positions UP, Down and Express Down and it's position is a direct input into the driver door switch (DDS). Upon receiving a request for power window operation (switch activation), the DDS supplies voltage to the power window motor left front up or down circuit and grounds the opposite and the power window motor runs to move the window up or down.

Front Passenger Power Window Operation

The switch for the front passenger power window has 3 positions UP, Down and Express Down and it's position is a direct input into the passenger door switch (PDS). Upon receiving a request for power window operation (switch activation), the PDS supplies voltage to the power window motor right front up or down circuit and grounds the opposite and the power window motor runs to drive the window up or down.

The front passenger power window can also be operated from the driver door switch (DDS). The front passenger window switch on the DDS has 3 positions UP, Down and Express Down and its position is a direct input into the DDS. Upon receiving a request for front passenger power window operation, the DDS transmits a command signal indicating the changed switch position. When the PDS receives this message, the PDS supplies voltage to the power window motor right front up or down circuit and grounds the opposite and the power window motor runs to move the window up or down.

Rear Passenger Power Window Operation

The rear passenger power windows can also be operated from the driver door switch (DDS). The rear passenger window switches on the DDS has 2 positions, UP and Down and its position is a direct input into the DDS. Upon receiving a request for rear passenger power window operation, the DDS transmits a command signal indicating the changed switch position. When the rear door power window switches (RPDS) receives this message, the RPDS supplies voltage to the respective power window motor up or down circuit and grounds the opposite and the power window motor runs to move the window up or down.

Rear Power Window Lockout Operation

The rear window lockout function is operated from the driver door switch (DDS) through a command signal to the rear door power window switches (RPDS). When the RPDS receives an active lockout command, the rear door power window switches are disabled and the indicator lamp on the lockout switch will illuminate. Once disabled, the lockout feature will remain in effect until the ignition switch is cycled or the driver enables the rear windows by pressing the rear window lockout switch again.

REAR WINDOW DEFOGGER DESCRIPTION AND OPERATION

Rear Window Defogger System Components

The rear window defogger system consists of the following components:

- Heating ventilation air conditioning control module (HVAC)
- RR DEFOG relay
- Rear window that has the defogger grid

Rear Window Defogger Operation

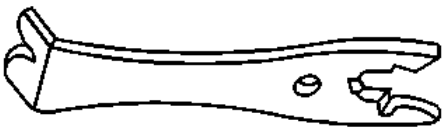
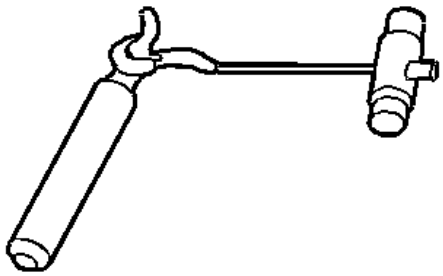
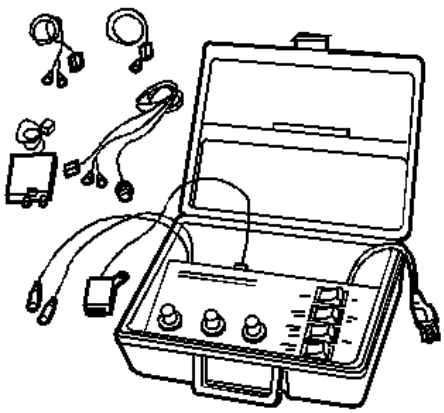
When you depress the rear defogger switch, voltage is supplied to the RR DEFOG relay coil and the HVAC control module also illuminates the rear window defogger indicator. Battery positive voltage is supplied at all times to the RR DEFOG relay switched input and the RR DEFOG relay coil is always grounded. This allows battery positive voltage from the relay switched input through the switch contacts and out the relay switched output to the rear window defogger. The HVAC module also sends a message to the driver door module (DDM) and passenger door module (PDM) on the GMLAN serial communication circuit to activate the heated mirrors, if equipped

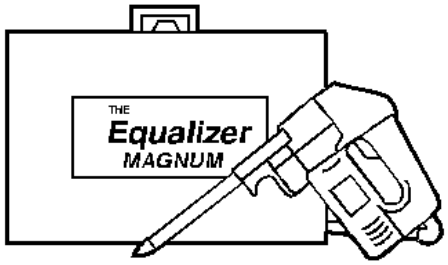
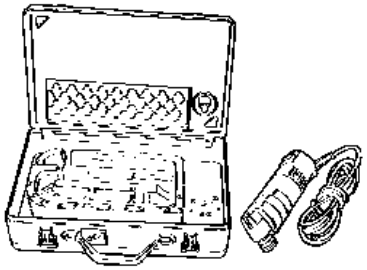
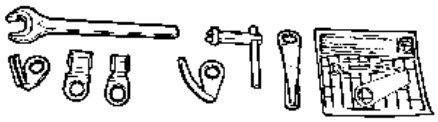
When you turn ON the ignition and press the rear window defogger switch for the first time, the defogger cycle lasts 10 minutes. Further operation results in 5-minute defogger cycles.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Special Tools

Illustration	Tool Number/Description
	J-9886-01 Regulator Handle Tool
	J-24402-A Glass Sealant Cold Knife Remover
	J-33431-C Signal Generator and Instrument Panel Tester

	J-39032 Stationary Glass Removal Tool
 	J-39040 Quarter Window Remover