Fixed and Moveable Windows

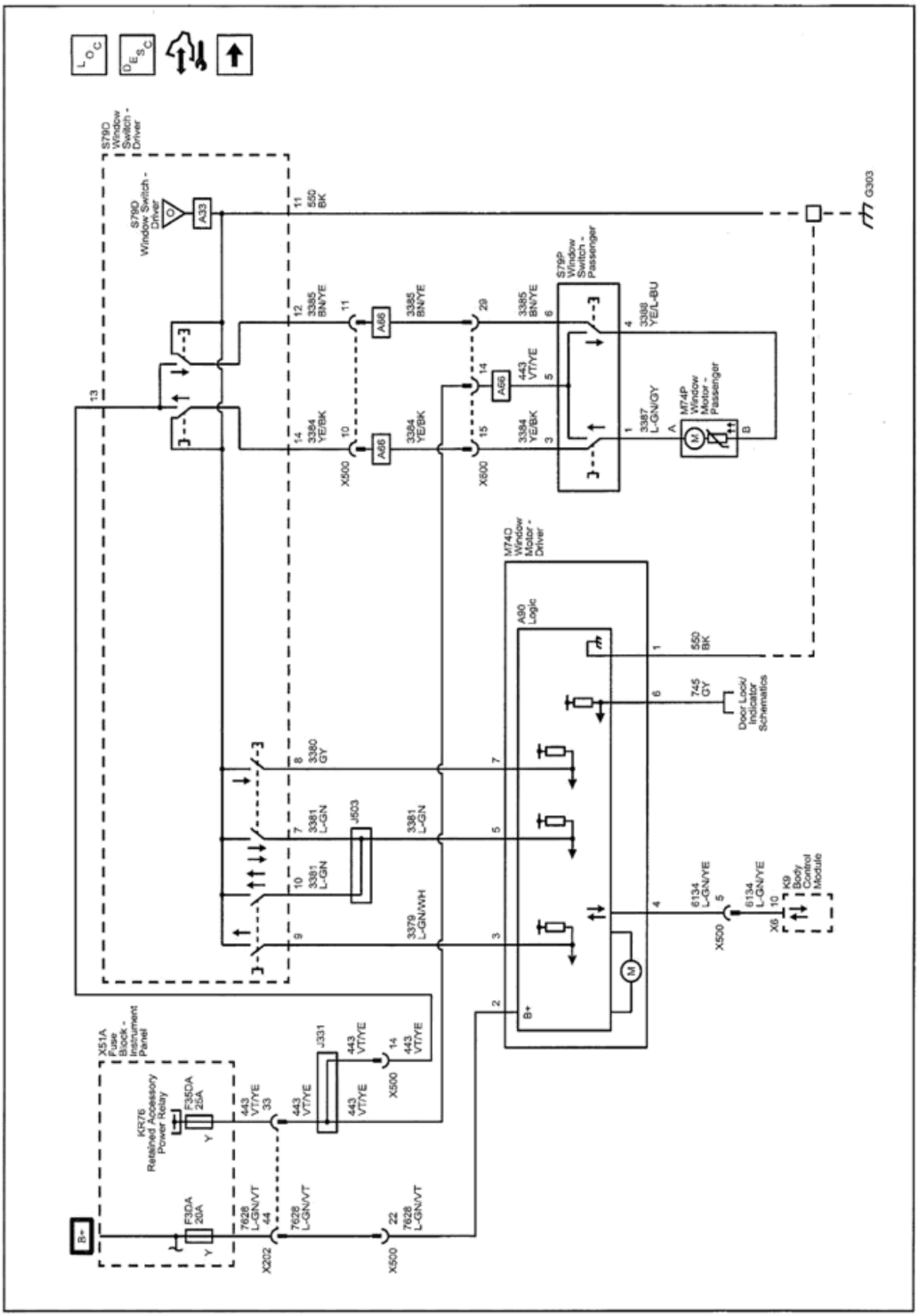
Specifications

Fastener Tightening Specifications

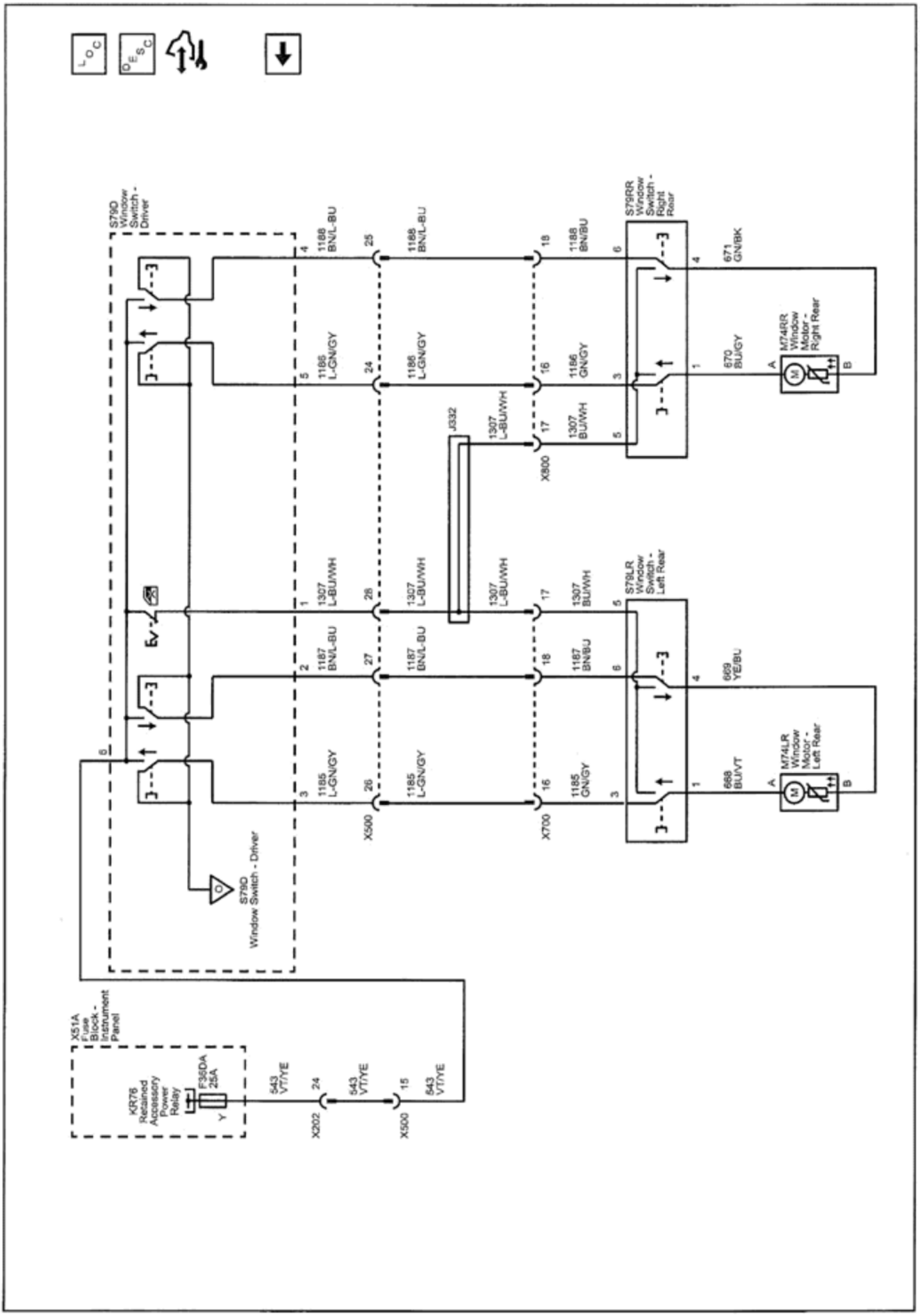
Application	Specification	
	Metric	English
Front Side Door Window Guide Nuts	11 N•m	97 lb in
Front Side Door Window Rear Guide Bolts	11 N•m	97 lb in
Front Side Door Window Regulator Power / Manual Screws	11 N•m	97 lb in
Front Side Door Window Regulator Motor Bolts	5 N•m	44 lb in
Rear Side Door Window Guide Nuts	11 N•m	96 lb in
Front Side Door Window Regulator Power / Manual Screws	11 N•m	97 lb in
Rear Side Door Window Rear Guide Bolts	11 N•m	97 lb in
Rear Side Door Window Regulator Motor Bolts	5 N•m	44 lb in
Rear Side Door Window Weatherstrip Lower Screw	9 N•m	80 lb in
Rear Side Door Window Weatherstrip Upper Screw	3 N•m	27 lb in

Schematic and Routing Diagrams

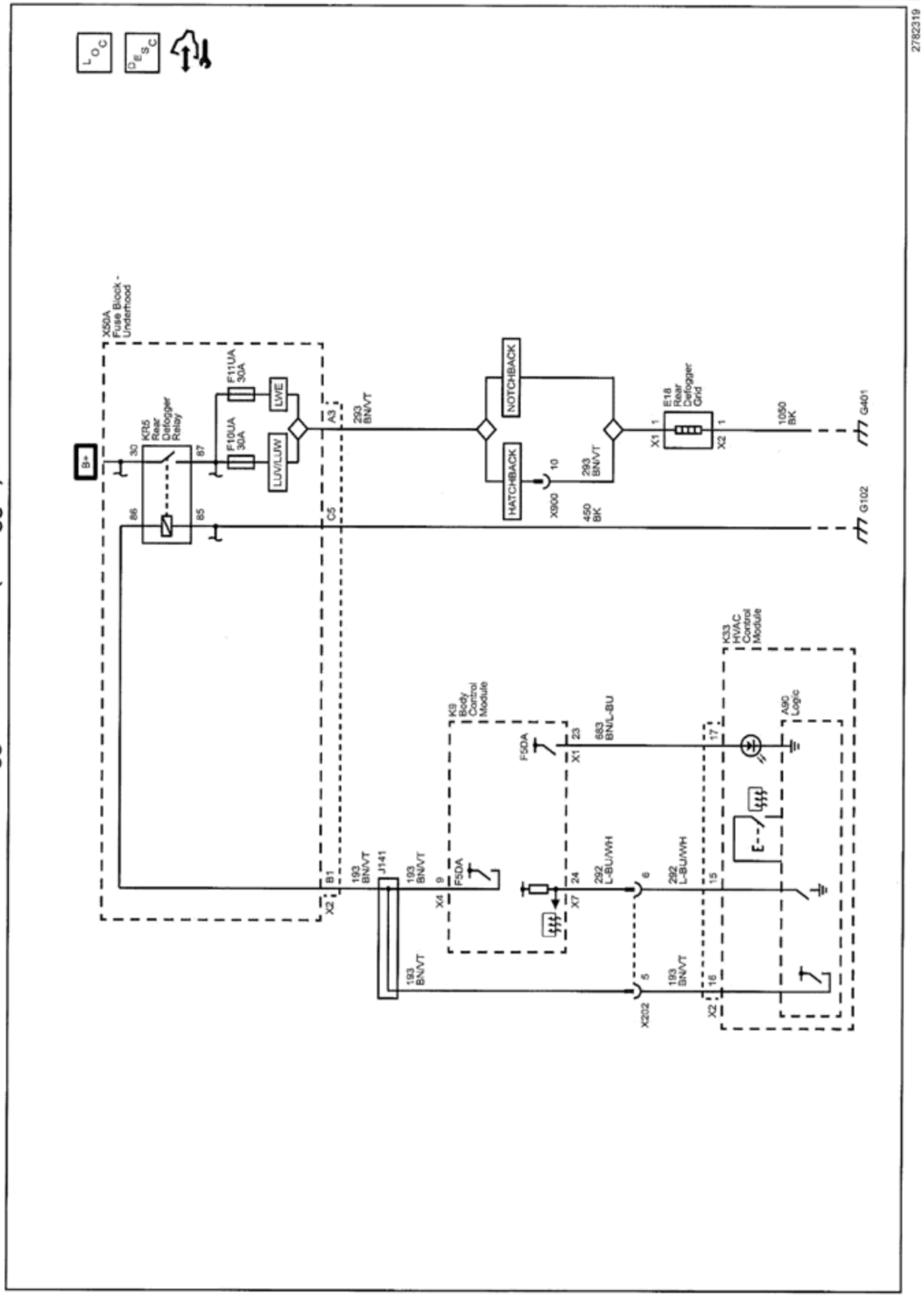
Moveable Window Schematics (Front Doors)



Moveable Window Schematics (Rear Doors (A33))



Defogger Schematics (Defogger)



Diagnostic Information and Procedures

DTC B0283

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

DTC B0283 02: Rear Defrost Circuit Short To Ground
DTC B0283 05: Rear Defrost Circuit High Voltage/Open

Diagnostic Fault Information

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

Circuit/System Description

Battery positive voltage is supplied through a 30A fuse in the underhood fuse block, to the Rear Defogger Relay switched input. When the rear window defogger switch is pressed, The HVAC control module commands the rear window defogger system by supplying voltage to the Rear Defogger Relay coil. The Rear Defogger Relay is energized and the defogger indicator is illuminated. With the relay energized, battery positive voltage is allowed from the relay switched input through the switch contacts and out the relay switched output to the rear window defogger grid.

Conditions for Running the DTC

Battery voltage must be between 9–16 V.

Conditions for Setting the DTC

B0283 02

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

B0283 05

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

Action Taken When the DTC Sets

The rear window defogger will malfunction.

Conditions for Clearing the DTC

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

Reference Information

Schematic Reference

Defogger Schematics on page 4-8

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Rear Window Defogger Description and Operation on page 4-69

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Engine Running.
2. Verify the E18 Rear Defogger Grid turns ON and OFF when pressing the rear window defogger switch.

⇒ **If the E18 Rear Defogger Grid does not turn ON or OFF**

Refer to Circuit/System Testing

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

3. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the KR5 Rear Defogger Relay. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 85 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF.

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

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Connect a test lamp between the control circuit terminal 86 and the ground circuit terminal 85, Engine Running.
4. Verify the test lamp turns ON and OFF when pressing the rear window defogger switch.

⇒ **If the test lamp is always OFF**

4.1. Ignition OFF, disconnect the harness connector at the K33 HVAC control module.

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

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

⇓ If infinite resistance

4.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K33 HVAC control module.

⇒ **If the test lamp is always ON**

4.1. Ignition OFF, disconnect the harness connector at the K33 HVAC control module, Engine Running.

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

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

⇒ If less than 1 V, replace the K33 HVAC control module.

⇓ **If the test lamp turns ON and OFF**

5. Test or replace the KR5 Rear Defogger Relay.

Component Testing

Relay Test

1. Ignition OFF, disconnect the KR5 Rear Defogger Relay.
2. Test for 60-180 Ω between terminals 85 and 86.

⇒ **If less than 60 Ω or greater than 180 Ω**

Replace the KR5 Rear Defogger Relay.

⇓ **If between 60-180 Ω**

3. Test for infinite resistance between the terminals listed below:
   - 30 and 86
   - 30 and 87
   - 30 and 85
   - 85 and 87

⇒ **If less than infinite resistance**

Replace the KR5 Rear Defogger Relay.

⇓ **If infinite resistance**

4. Install a 3 A fused jumper wire between relay terminal 85 and 12 V. Install a jumper wire between relay terminal 86 and ground.
5. Test for less than 2 Ω between terminals 30 and 87.

⇒ **If 2 Ω or greater**

Replace the KR5 Rear Defogger Relay.

⇓ **If less than 2 Ω**

6. All OK

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Relay Replacement (Within an Electrical Center) on page 11-607* or *Relay Replacement (Attached to Wire Harness) on page 11-607*
- *Control Module References on page 6-3* for the HVAC control module replacement, programming and setup

DTC B316B

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptor

DTC B316B 00: Driver Window Switch Malfunction

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Window Motor Control	B316B 00	1	1	—
1. Driver Window Malfunction				

Circuit/System Description

The driver window motor is supplied with B+ voltage which is used to power the motor and also used as a reference voltage within the logic circuit. When the driver window switch is pressed, a switch is closed causing the reference voltage in the appropriate circuit in the window motor to drop, the window motor responds by moving the window in the direction commanded.

Conditions for Running the DTC

Battery voltage must be between 9–16 V.

Conditions for Setting the DTC

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

Action Taken When the DTC Sets

The driver power window will malfunction.

Conditions for Clearing the DTC

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

Reference Information

Schematic Reference

Moveable Window Schematics on page 4-6

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Power Windows Description and Operation on page 4-69

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the scan tool parameters listed below change when pressing and pulling the driver window control switch on the driver window master control:
   - Driver Window Main Control Down Switch — Inactive and Active
   - Driver Window Main Control Up Switch — Inactive and Active
   - Driver Window Main Control Express Switch — Inactive and Active

⇒ **If any parameter does not change**

Refer to Circuit/System Testing

⇓ **If all the parameters change**

3. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S79D Window Switch-Driver. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 11 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF.

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

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Ignition ON.
4. Verify the scan tool Driver Window Main Control Down Switch parameter is Inactive.

⇒ **If not Inactive**

4.1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.

4.2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 8 and ground.

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

⇒ If infinite resistance, replace the M74D Window Motor-Driver.

⇓ **If Inactive**

5. Install a 3 A fused jumper wire between the signal circuit terminal 8 and the ground circuit terminal 11.
6. Verify the scan tool Driver Window Main Control Down Switch parameter is Active

⇒ **If not Active**

6.1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, ignition ON.

6.2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit terminal 8 and ground.

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

⇓ If less than 1 V

6.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the M74D Window Motor-Driver.

⇓ **If Active**

7. Verify the scan tool Driver Window Main Control Up Switch parameter is Inactive.

⇒ **If not Inactive**

7.1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.

7.2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 9 and ground.

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

⇒ If infinite resistance, replace the M74D Window Motor-Driver.

⇓ **If Inactive**

8. Install a 3 A fused jumper wire between the signal circuit terminal 9 and the ground circuit terminal 11.
9. Verify the scan tool Driver Window Main Control Up Switch parameter is Active

⇒ **If not Active**

9.1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, ignition ON.

9.2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit 9 and ground.

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

⇓ If less than 1 V

9.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the M74D Window Motor-Driver.

⇓ **If Active**

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

⇒ **If not Inactive**

10.1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.

10.2. Test for infinite resistance between the S79D Window Switch-Driver signal circuit terminal 10 and ground.

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

⇒ If infinite resistance, replace the M74D Window Motor-Driver.

⇓ **If Inactive**

11. Install a 3 A fused jumper wire between the signal circuit terminal 10 and the ground circuit terminal 11.

12. Verify the scan tool Driver Window Main Control Express Switch parameter is Active

⇒ **If not Active**

12.1. Ignition OFF, remove the 3 A fused jumper wire, disconnect the harness connector at the M74D Window Motor-Driver, ignition ON.

12.2. Test for less than 1 V between the S79D Window Switch-Driver signal circuit 10 and ground.

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

⇓ If less than 1 V

12.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the M74D Window Motor-Driver.

⇓ **If Active**

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

Component Testing

Driver Window Switch

1. Ignition OFF, disconnect the harness connector at the S79D Window Switch-Driver.
2. Test for infinite resistance between the terminals listed below with the switch in the open position:
   - Ground terminal 11 and control terminal 7
   - Ground terminal 11 and control terminal 8
   - Ground terminal 11 and control terminal 9
   - Ground terminal 11 and control terminal 10

⇒ **If less than infinite resistance**

Replace the S79D Window Switch-Driver.

⇓ **If infinite resistance**

3. Test for less than 3 Ω between the ground terminal 11 and the control terminal 9 with the switch in the Up position.

⇒ **If 3 Ω or greater**

Replace the S79D Window Switch-Driver.

⇓ **If less than 3 Ω**

4. Test for less than 3 Ω between the ground terminal 11 and the control terminal 8 with the switch in the Down position.

⇒ **If 3 Ω or greater**

Replace the S79D Window Switch-Driver.

⇓ **If less than 3 Ω**

5. All OK

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Front Side Door Window Regulator Motor Replacement on page 4-43*
- *Front Side Door Window Switch Replacement (Left Side) on page 4-38* or *Front Side Door Window Switch Replacement (Right Side) on page 4-39*

DTC B3205

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

DTC B3205: Driver Window Motor

For symptom byte information refer to: *Symptom Byte List on page 6-85*

Circuit/System Description

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

Conditions for Running the DTC

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

Conditions for Setting the DTC

B3205 00

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

B3205 39

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

B3205 42

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

B3205 4B

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

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

Action Taken When the DTC Sets

The driver power window will malfunction.

Conditions for Clearing the DTC

B3205 00

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

B3205 39

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

B3205 42

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

B3205 4B

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

Reference Information

Schematic Reference

Moveable Window Schematics on page 4-6

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Power Windows Description and Operation on page 4-69

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Ignition ON
2. Verify the driver window functions while commanding the Driver Window Motor Up and Down with a scan tool.

⇒ **If the Up and Down does not work**

Replace the M74D Window Motor — Driver.

⇓ **If the UP and DOWN works**

3. Verify the driver window performs the Express Up and Express Down functions with the driver window switch.

⇒ **If the driver window does not Express Up and Express Down**

Normalize the driver window motor, refer to *Window Motor Programming - Express Function on page 4-42*.

⇓ **If the driver window performs the Express Up and Express Down functions**

4. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

Front Side Door Window Regulator Motor Replacement on page 4-43

Symptoms - Fixed and Moveable Windows

Important Preliminary Checks Before Starting:

1. Perform the *Diagnostic System Check - Vehicle on page 6-66* before using the symptom tables in order to verify that all of the following are true:
   - There are no DTCs set.
   - The control modules can communicate via the serial data link.
2. Review the power window system operation or rear window defogger system operation in order to familiarize yourself with the system functions. Refer to the following:
   - *Rear Window Defogger Description and Operation on page 4-69*
   - *Power Windows Description and Operation on page 4-69*

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the rear window defogger. Refer to *Checking Aftermarket Accessories on page 11-525*.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

Note:

- Inspect for proper installation of electrical components if an intermittent condition exists. Inspect for aftermarket theft deterrent devices, lights, and cellular phones. Ensure that no aftermarket equipment is connected to the class 2 circuit. If you can not locate an intermittent condition, a cellular phone signal may cause the condition. Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to *Testing for Intermittent Conditions and Poor Connections on page 11-531*.
- The problem may or may not turn ON the SERVICE VEHICLE SOON indicator or store a DTC. Do not use the symptom tables to diagnose intermittent conditions. The malfunction must be present in order to locate the problem.

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

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

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

Symptom List

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

- *Rear Window Defogger Malfunction on page 4-16*
- *Power Windows Malfunction on page 4-18*

Rear Window Defogger Malfunction

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

Diagnostic Fault Information

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

Circuit/System Description

Battery positive voltage is supplied through a 30A fuse in the underhood fuse block, to the rear defogger relay switched input. When the rear window defogger switch is pressed, The HVAC control module commands the rear window defogger system by supplying voltage to the rear defogger relay coil. The rear defogger relay is energized and the defogger indicator is illuminated. With the relay energized, battery positive voltage is allowed from the relay switched input through the switch contacts and out the relay switched output to the rear window defogger grid.

Reference Information

Schematic Reference

Defogger Schematics on page 4-8

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Rear Window Defogger Description and Operation on page 4-69

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Engine running.
2. Verify the scan tool Rear Defogger Switch parameter changes between Active and Inactive when pressing the rear window defogger switch.

⇒ **If the parameter does not change between Active and Inactive**

Replace the K33 HVAC control module.

⇓ **If the parameter changes between Active and Inactive**

3. Verify the E18 Rear Defogger Grid turns ON and OFF when pressing the rear window defogger switch.

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

Refer to Circuit/System Testing

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

4. Verify the rear window defog indicator turns ON and OFF when commanding the Illuminate All Indicators On and Off with a scan tool.

⇒ **If the rear window defog indicator does not turn ON and OFF**

Replace the K33 HVAC control module.

⇓ **If the rear window defog indicator turns ON and OFF**

5. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the KR5 Rear Defogger Relay. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 85 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF.

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

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Engine Running
4. Verify a test lamp illuminates between the B+ circuit terminal 30 and ground.

⇒ **If the test lamp does not illuminate**

⇒ Replace the X50A Fuse Block-Underhood

⇓ **If the test lamp illuminates**

5. Connect a test lamp between the control circuit terminal 86 and the ground circuit terminal 85.
6. Verify the test lamp turns ON and OFF pressing the rear window defogger switch.

⇒ **If the test lamp is always OFF**

6.1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K33 HVAC Control Module.

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

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

⇓ If infinite resistance

6.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K33 HVAC Control Module.

⇒ **If the test lamp is always ON**

6.1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K33 HVAC Control Module, Ignition ON.

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

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

⇒ If less than 1 V, replace the K33 HVAC Control Module.

⇓ **If the test lamp turns ON and OFF**

7. Verify that a test lamp does not illuminate between the control circuit terminal 87 and ground.

⇒ **If the test lamp illuminates**

Repair the short to voltage on the control circuit

⇓ **If the test lamp does not illuminate**

8. Ignition OFF and all vehicle systems OFF, disconnect the X2 harness connector at the E18 Rear Defogger Grid. It may take up to 2 minutes for all vehicle systems to power down.
9. Test for less than 10 Ω between the ground circuit terminal 1 and ground.

⇒ **If 10 Ω or greater**

9.1. Ignition OFF.

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

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

10. Connect the X2 harness connector at the E18 Rear Defogger Grid.
11. Ignition ON, connect a 30 A fused jumper wire between the B+ circuit terminal 30 and the control circuit terminal 87.
12. Verify the E18 Rear Defogger Grid is activated.

⇒ **If the E18 Rear Defogger Grid does not activate**

12.1. Ignition OFF, remove the jumper wire, disconnect the X1 harness connector at the E18 Rear Defogger Grid.

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

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

⇓ If infinite resistance

12.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the E18 Rear Defogger Grid.

⇓ **If the E18 Rear Defogger Grid activates**

13. Test or replace the KR5 Rear Defogger Relay.

Component Testing

Relay Test

1. Ignition OFF, disconnect the KR5 Rear Defogger Relay.
2. Test for 60-180 Ω between terminals 85 and 86.

⇒ **If less than 60 Ω or greater than 180 Ω**

Replace the KR5 Rear Defogger Relay.

⇓ **If between 60-180 Ω**

3. Test for infinite resistance between the terminals listed below:
   - 30 and 86
   - 30 and 87

- 30 and 85
- 85 and 87

⇒ **If less than infinite resistance**

Replace the KR5 Rear Defogger Relay.

⇓ **If infinite resistance**

4. Install a 3 A fused jumper wire between relay terminal 85 and 12 V. Install a jumper wire between relay terminal 86 and ground.
5. Test for less than 2 Ω between terminals 30 and 87.

⇒ **If 2 Ω or greater**

Replace the KR5 Rear Defogger Relay.

⇓ **If less than 2 Ω**

6. All OK

Rear Defogger Grid Test

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

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

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

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

Replace the rear window

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

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

Replace the rear window

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

3. All OK

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the diagnostic procedure.

- *Relay Replacement (Within an Electrical Center) on page 11-607* or *Relay Replacement (Attached to Wire Harness) on page 11-607*
- *Rear Window Replacement on page 4-34*
- *Liftgate Window Replacement on page 4-36*
- *Control Module References on page 6-3* for HVAC Control Module replacement, programming and setup

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Power Windows Malfunction

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Driver Window Switch Ignition, Terminal 6	7, 9	7, 9	—	—
Driver Window Switch Ignition, Terminal 13	2, 5	4	—	—
Driver Window Switch Ground	—	1	—	—
Driver Window Motor B+	U1534 00	U1534 00	—	—
Driver Window Motor Down Control	B316B 02	2	2	—
Driver Window Motor Express Control	B316B 02	2	2	—
Driver Window Motor Up Control	B316B 02	2	2	—
Driver Window Motor Ground	—	U1534 00	—	—
Passenger Window Switch Ignition	2, 5	3	—	—
Passenger Window Switch Signal	2, 5	5	5	—

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Passenger Window Motor Control	2, 5	5	5	—
Left Rear Window Switch Signal	7, 9	7	7	—
Left Rear Window Switch Lockout Control	7, 9	6	10	—
Left Rear Window Motor Control	7, 9	7	7	—
Right Rear Window Switch Signal	7, 9	9	9	—
Right Rear Window Switch Lockout Control	7, 9	8	10	—
Right Rear Window Motor Control	7, 9	9	9	—

1. All Power Windows Inoperative
2. Driver Window Inoperative
3. Passenger Window Inoperative from Passenger Switch
4. Passenger Window Inoperative from Driver Switch
5. Passenger Window Inoperative from Driver and Passenger Switches
6. Left Rear Window Inoperative from Left Rear Switch
7. Left Rear Window Inoperative from Driver and Left Rear Switches
8. Right Rear Window Inoperative from Right Rear Switch
9. Right Rear Window Inoperative from Driver and Right Rear Switches
10. Rear Window Lockout Inoperative

Circuit/System Description

The driver side window consists of a driver window switch and a window motor capable of express up and express down functions. When the driver window switch is pressed or pulled, the voltage within the appropriate signal circuit drops and the window motor will then perform the commanded function.

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 the 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 V 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.

Diagnostic Aids

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

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

To normalize the window motor refer to *Window Motor Programming - Express Function on page 4-42*.

Reference Information

Schematic Reference

Moveable Window Schematics on page 4-6

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Power Windows Description and Operation on page 4-69

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the M74D Window Motor-Driver functions while commanding the Driver Window Motor Up and Down with a scan tool.

⇒ **If the M74D Window Motor-Driver does not move UP and DOWN as commanded**

Refer to Circuit/System Testing — Driver Window Motor Malfunction.

⇓ **If the M74D Window Motor-Driver moves UP and DOWN as commanded**

3. Verify the M74D Window Motor-Driver moves while commanding the window UP and DOWN with the S79D Window Switch-Driver.

⇒ **If the M74D Window Motor-Driver does not move UP and DOWN as commanded**

Refer to Circuit/System Testing — Driver Window Switch Malfunction.

⇓ **If the M74D Window Motor-Driver moves UP and DOWN as commanded**

4. Verify the M74D Window Motor-Driver performs the express UP and express DOWN functions with the S79D Window Switch-Driver.

⇒ **If the driver window does not express UP or express DOWN**

Normalize the M74D Window Motor-Driver, refer to *Window Motor Programming - Express Function on page 4-42*.

4.1. Verify the M74D Window Motor-Driver performs the express UP and express DOWN functions with the S79D Window Switch-Driver

⇒ **If the M74D Window Motor-Driver does not express UP or express DOWN**

Refer to Circuit/System Testing — Driver Window Switch Malfunction.

⇓ **If the M74D Window Motor-Driver performs the express UP and express DOWN functions**

5. Verify the M74P Window Motor-Passenger performs the UP and DOWN functions at both the S79D Window Switch-Driver and S79P Window Switch-Passenger.

⇒ **If the M74P Window Motor-Passenger is inoperative from both the S79D Window Switch-Driver and S79P Window Switch-Passenger**

Refer to Circuit/System Testing – Passenger Window Inoperative From Both Switches.

⇒ **If the M74P Window Motor-Passenger is inoperative from the S79P Window Switch-Passenger only**

Refer to Circuit/System Testing – Passenger Window Inoperative From A Single Switch.

⇒ **If the M74P Window Motor-Passenger is inoperative from the S79D Window Switch-Driver only**

Refer to Circuit/System Testing – Passenger Window Inoperative From A Single Switch.

⇓ **If the M74P Window Motor-Passenger performs the UP and DOWN functions at both S79D Window Switch-Driver and S79P Window Switch-Passenger**

6. Verify the left rear and right rear M74 Window Motor performs the UP and DOWN functions at both the S79D Window Switch-Driver and each of the rear S79 Window Switch.

⇒ **If a M74 Window Motor is inoperative from both the driver and rear window switch**

Refer to Circuit/System Testing – Rear Window Inoperative From Both Switches

⇒ **If a rear M74 Window Motor is inoperative from the rear window switch only**

Refer to Circuit/System Testing – Rear Window Switch Inoperative

⇒ **If a M74 Window Motor is inoperative from the driver window switch only**

Test or replace the S79D Window Switch-Driver.

⇓ **If the M74 Window Motor performs the UP and DOWN functions at both the S79D Window Switch-Driver and the rear S79 Window Switch**

7. Lock out the rear window switches by pressing the lockout switch on the S79D Window Switch-Driver.
8. Verify the left rear and right rear M74 Window Motor is inoperative at both of the rear S79 Window Switch .

⇒ **If both rear M74 Window Motor continue to function from the rear S79 Window Switch**

Refer to Circuit/System Testing – Rear Window Lockout Inoperative

⇓ **If both rear M74 Window Motor is inoperative from the rear S79 Window Switch**

9. All OK.

Circuit/System Testing

Driver Window Motor Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the M74D Window Motor-Driver. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 1 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF.

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

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Ignition ON.

4. Verify a test lamp illuminates between the B+ circuit terminal 2 and ground.

⇒ **If the test lamp does not illuminate and the circuit fuse is good**

4.1. Ignition OFF.

4.2. Test for less than 2 Ω in the B+ circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse.

⇒ **If the test lamp does not illuminate and the circuit fuse is open**

4.1. Ignition OFF.

4.2. Test for infinite resistance between the B+ circuit and ground.

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

⇒ If infinite resistance, replace the M74D Window Motor-Driver.

⇓ **If the test lamp illuminates**

5. Test for 5–10 V between the serial data circuit terminal 4 and ground

⇒ **If less than 5 V**

5.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

5.2. Test for infinite resistance between the serial data circuit and ground.

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

⇓ If infinite resistance

5.3. Test for less than 2 Ω in the serial data circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance on the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇒ **If greater than 10 V**

5.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module, ignition ON.

5.2. Test for less than 1 V between the serial data circuit and ground.

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

⇓ If less than 1 V, replace the K9 Body Control Module.

⇓ **If between 5–10 V**

6. Replace the M74D Window Motor-Driver.

Driver Window Switch Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S79D Window Switch-Driver. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 11 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF.

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

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Ignition ON.
4. Verify the scan tool Driver Window Main Control Down Switch parameter is Inactive.

⇒ **If not Inactive**

4.1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.

4.2. Test for infinite resistance between the signal circuit terminal 8 and ground.

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

⇒ If infinite resistance, replace the M74D Window Motor-Driver.

⇓ **If Inactive**

5. Install a 3 A fused jumper wire between the signal circuit terminal 8 and the ground circuit terminal 11.
6. Verify the scan tool Driver Window Main Control Down Switch parameter is Active

⇒ **If not Active**

6.1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver, ignition ON.

6.2. Test for less than 1 V between the signal circuit terminal 8 and ground.

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

⇓ If less than 1 V

6.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the M74D Window Motor-Driver.

⇓ **If Active**

7. Verify the scan tool Driver Window Main Control Up Switch parameter is Inactive.

⇒ **If not Inactive**

7.1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.

7.2. Test for infinite resistance between the signal circuit terminal 9 and ground.

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

⇒ If infinite resistance, replace the M74D Window Motor-Driver.

⇓ **If Inactive**

8. Install a 3 A fused jumper wire between the signal circuit terminal 9 and the ground circuit terminal 11.
9. Verify the scan tool Driver Window Main Control Up Switch parameter is Active

⇒ **If not Active**

9.1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver, ignition ON.

9.2. Test for less than 1 V between the signal circuit terminal 9 and ground.

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

⇓ If less than 1 V

9.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the M74D Window Motor-Driver.

⇓ **If Active**

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

⇒ **If not Inactive**

10.1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver.

10.2. Test for infinite resistance between the signal circuit terminal 7 and ground.

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

⇒ If infinite resistance, replace the M74D Window Motor-Driver.

⇓ **If Inactive**

11. Install a 3 A fused jumper wire between the signal circuit terminal 7 and the ground circuit terminal 11.
12. Verify the scan tool Driver Window Main Control Express Switch parameter is Active

⇒ **If not Active**

12.1. Ignition OFF, disconnect the harness connector at the M74D Window Motor-Driver, ignition ON.

12.2. Test for less than 1 V between the signal circuit terminal 7 and ground.

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

⇓ If less than 1 V

12.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the M74D Window Motor-Driver.

⇓ **If Active**

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

Passenger Window Inoperative From Both Switches

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S79P Window Switch-Passenger. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the control circuit terminal 3 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF, disconnect the harness connector at the S79D Window Switch-Driver.

2.2. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the S79D Window Switch-Driver.

⇓ **If less than 10 Ω**

3. Test for less than 10 Ω between the control circuit terminal 6 and ground.

⇒ **If 10 Ω or greater**

3.1. Ignition OFF, disconnect the harness connector at the S79D Window Switch-Driver.

3.2. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the S79D Window Switch-Driver.

⇓ **If less than 10 Ω**

4. Connect a test lamp between the control circuit terminal 3 and control circuit terminal 6, ignition ON.

5. Verify the test lamp turns ON when commanding the UP and DOWN functions with the S79D Window Switch-Driver.

⇒ **If the test lamp remains OFF during either of the commands**

5.1. Ignition OFF, disconnect the harness connector at the S79D Window Switch-Driver.

5.2. Test for infinite resistance between each control circuit and ground.

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

⇒ If infinite resistance, replace the S79D Window Switch-Driver.

⇓ **If the test lamp turns ON during each of the commands**

6. Ignition OFF and all vehicle systems OFF, connect the harness connector at the S79P Window Switch-Passenger and disconnect the harness connector at the M74P Window Motor-Passenger. It may take up to 2 minutes for all vehicle systems to power down.
7. Test for less than 10 Ω between the control circuit terminal A and ground.

⇒ **If 10 Ω or greater**

7.1. Ignition OFF, disconnect the harness connector at the S79P Window Switch-Passenger.

7.2. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the S79P Window Switch-Passenger.

⇓ **If less than 10 Ω**

8. Test for less than 10 Ω between the control circuit terminal B and ground.

⇒ **If 10 Ω or greater**

8.1. Ignition OFF, disconnect the harness connector at the S79P Window Switch-Passenger.

8.2. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the S79P Window Switch-Passenger.

⇓ **If less than 10 Ω**

9. Connect a test lamp between the control circuit terminal A and control circuit terminal B, ignition ON.
10. Verify the test lamp turns ON when commanding the UP and DOWN functions with the S79P Window Switch-Passenger.

⇒ **If the test lamp remains OFF during either of the commands**

10.1. Ignition OFF, disconnect the harness connector at the S79P Window Switch-Passenger.

10.2. Test for infinite resistance between each control circuit and ground.

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

⇒ If infinite resistance, replace the S79P Window Switch-Passenger.

⇓ **If the test lamp turns ON during each of the commands**

11. Test or replace the M74P Window Motor-Passenger.

Passenger Window Inoperative From A Single Switch

1. Ignition OFF, disconnect the harness connector at the appropriate S79P Window Switch-Passenger or S79D Window Switch-Driver, ignition ON
2. Verify a test lamp illuminates between the ignition circuit terminal listed below and ground.
   - S79P Window Switch-Passenger — ignition circuit terminal 5
   - S79D Window Switch-Driver — ignition circuit terminal 13

⇒ **If the test lamp does not illuminate**

2.1. Ignition OFF.

2.2. Test for less than 2 Ω in the ignition circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, verify the fuse is OK and there is voltage at the fuse.

⇓ **If the test lamp illuminates**

3. Test or replace the S79P Window Switch-Passenger or S79D Window Switch-Driver,.

Rear Window Inoperative From Both Switches

1. Ignition OFF, disconnect the harness connector at the S79D Window Switch-Driver. Ignition ON
2. Verify a test lamp illuminates between the ignition circuit terminal 6 and ground.

⇒ **If the test lamp does not illuminate and the circuit fuse is good**

2.1. Ignition OFF.

2.2. Test for less than 2 Ω in the ignition circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, refer to *Retained Accessory Power Malfunction on page 11-520.*

⇒ **If the test lamp does not illuminate and the circuit fuse is open**

2.1. Ignition OFF.

2.2. Test for infinite resistance between the ignition circuit and ground.

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

⇓ If infinite resistance

2.3. Test for infinite resistance between the control circuit terminals listed below and ground:

- Control circuit terminal 1
- Control circuit terminal 2
- Control circuit terminal 3
- Control circuit terminal 4
- Control circuit terminal 5

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

⇒ If infinite resistance, replace the S79D Window Switch-Driver.

⇓ **If the test lamp illuminates**

3. Ignition OFF and all vehicle systems OFF, connect the harness connector at the S79D Window Switch-Driver and disconnect the harness connector at the appropriate rear S79 Window Switch. It may take up to 2 minutes for all vehicle systems to power down
4. Test for less than 10 Ω between the control circuit terminal 3 and ground.

⇒ **If 10 Ω or greater**

4.1. Ignition OFF, disconnect the harness connector at the S79D Window Switch-Driver.

4.2. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the S79D Window Switch-Driver.

⇓ **If less than 10 Ω**

5. Test for less than 10 Ω between the control circuit terminal 6 and ground.

⇒ **If 10 Ω or greater**

5.1. Ignition OFF, disconnect the harness connector at the S79D Window Switch-Driver.

5.2. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the S79D Window Switch-Driver.

⇓ **If less than 10 Ω**

6. Connect a test lamp between the control circuit terminal 3 and control circuit terminal 6, ignition ON.
7. Verify the test lamp turns ON when commanding the UP and DOWN states with the S79D Window Switch-Driver.

⇒ **If the test lamp remains OFF during either of the commands**

7.1. Ignition OFF, disconnect the harness connector at the S79D Window Switch-Driver.

7.2. Test for infinite resistance between each control circuit and ground.

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

⇒ If infinite resistance, replace the S79D Window Switch-Driver.

⇓ **If the test lamp turns ON during each of the commands**

8. Ignition OFF and all vehicle systems OFF, connect the harness connector at the rear S79 Window Switch and disconnect the harness connector at the rear M74 Window Motor. It may take up to 2 minutes for all vehicle systems to power down.
9. Test for less than 10 Ω between the control circuit terminal listed below and ground:
   - Control terminal A
   - Control terminal B

⇒ **If 10 Ω or greater**

9.1. Ignition OFF, disconnect the harness connector at the rear S79 Window Switch.

9.2. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the rear S79 window switch.

⇓ **If less than 10 Ω**

10. Connect a test lamp between the control circuit terminal A and the control circuit terminal B, ignition ON.
11. Verify the test lamp turns ON when commanding the UP and DOWN states with the rear S79 Window Switch.

⇒ **If the test lamp remains OFF during either of the commands**

11.1. Ignition OFF, disconnect the harness connector at the rear S79 Window Switch.

11.2. Test for infinite resistance between each control circuit and ground.

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

⇒ If infinite resistance, replace the rear S79 Window Switch.

⇓ **If the test lamp turns ON during each of the commands**

12. Test or replace the rear M74 Window Motor.

Rear Window Lockout Inoperative

1. Ignition OFF, disconnect the harness connector at the appropriate rear S79 Window Switch. Ignition ON
2. Connect a test lamp between the control circuit terminal 5 and ground.
3. Verify the test lamp turns ON and OFF when commanding the rear window lockout ON and OFF with the rear window lockout switch.

⇒ **If the test lamp is always OFF**

3.1. Ignition OFF, disconnect the harness connector at the S79D Window Switch-Driver.

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

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

⇓ If infinite resistance

3.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the S79D Window Switch-Driver.

⇒ **If the test lamp is always ON**

3.1. Ignition OFF, disconnect the harness connector at the S79D Window Switch-Driver, ignition ON.

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

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

⇒ If less than 1 V, replace the S79D Window Switch-Driver.

⇓ **If the test lamp turns ON and OFF**

4. Test or replace the rear S79 Window Switch.

Component Testing

1. Ignition OFF, disconnect the harness connector at the appropriate passenger or rear M74 Window Motor.
2. Install a 20 A fused jumper wire between one of the control terminals and 12 V. Momentarily install a jumper wire between the other control terminal and ground. Reverse the jumper wires at least two times, the M74 Window Motor should perform the UP and DOWN functions.

⇒ **If the M74 Window Motor does not perform the UP and DOWN functions**

Replace the passenger or rear M74 Window Motor.

⇓ **If the M74 Window Motor performs the UP and DOWN functions**

3. All OK

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Front Side Door Window Regulator Motor Replacement on page 4-43*
- *Rear Side Door Window Switch Replacement on page 4-40*
- *Rear Side Door Window Regulator Replacement (Sedan) on page 4-44* or *Rear Side Door Window Regulator Replacement (Hatchback) on page 4-45*
- *Front Side Door Window Switch Replacement (Left Side) on page 4-38* or *Front Side Door Window Switch Replacement (Right Side) on page 4-39*

Side Door Window Mechanical Diagnosis

Cause	Correction
DEFINITION: A mechanical condition that requires a correction for proper operation of the side door window. Refer to *Symptoms - Fixed and Moveable Windows on page 4-15* prior to beginning this table.	
Intermittent Operation	Check proper glass alignment/attachment and door seal installation.
	Check switch and switch bezel to see if sticking.
	Check wire harness for pinched/shorted wire.
	THIS STEP APPLIES TO ALL TWO PIN MOTOR CONNECTORS ONLY. Perform electrical diagnostics, by first applying 12 volt power supply to the regulator motor to verify motor function.
Glass Binds	Check proper glass alignment/attachment.
	Check for defective seal and/or proper seal installation.
	Check for debris in glass run channel.
	Check for glass run channel position.
Regulator/Glass Rattles	Check for loose fasteners and retorque if required.
	Check that the glass is in the channel and reinstall if not positioned correctly.
Noisy Operation	Check for other components in the glass path such as wire harness, impact foam, lock rods, or cables.
	Check for proper glass alignment/attachment and door seal installation.

Side Door Window Mechanical Diagnosis (cont'd)

Cause	Correction
Windnoise	Check seals, mirror patch, and glass alignment.
False glass reversal, the glass goes down unexpectedly.	Check seals, reinitialize the glass and/or realign the glass.
	Check for debris in the glass run channel.

Repair Instructions

Windshield Replacement

Special Tools

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

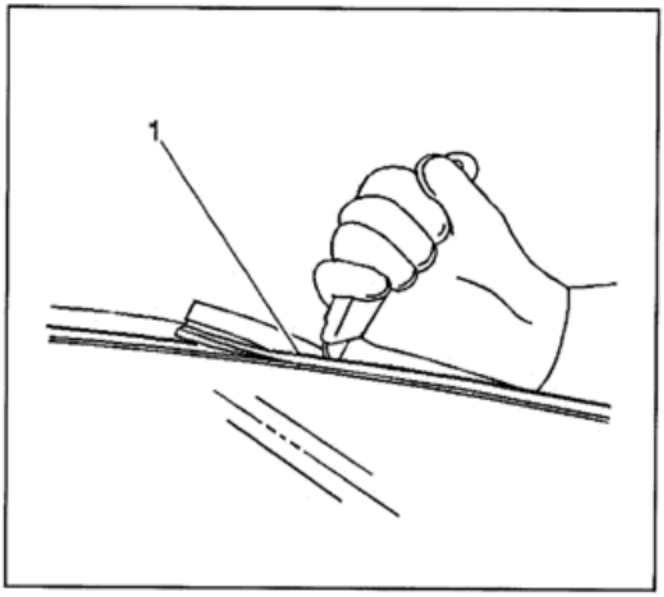
For equivalent regional tools, refer to *Special Tools on page 4-70.*

Removal Procedure

1. Open the hood.
2. Remove the windshield wiper arms. Refer to *Windshield Wiper Arm Replacement on page 4-375.*
3. Remove the air inlet grille. Refer to *Air Inlet Grille Panel Replacement on page 4-374.*
4. Remove the inside rearview mirror. Refer to *Inside Rearview Mirror Replacement on page 4-235.*
5. Remove the interior windshield garnish moldings. Refer to *Windshield Side Garnish Molding Replacement on page 2-73.*

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

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

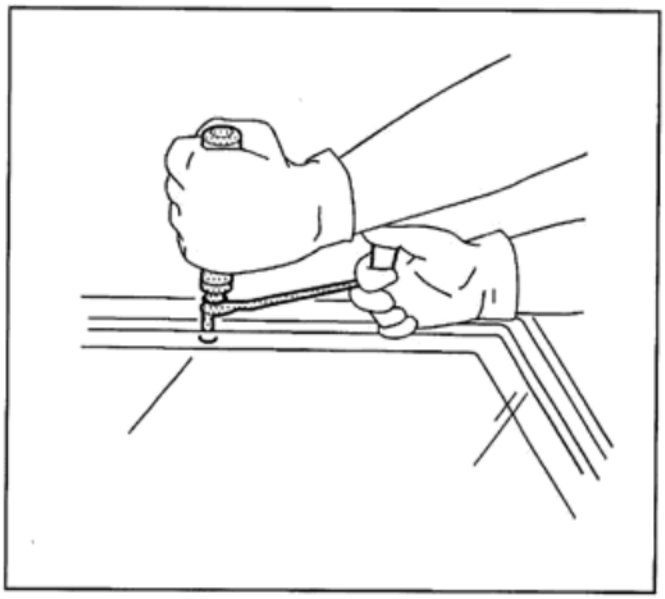


379905

Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5.

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

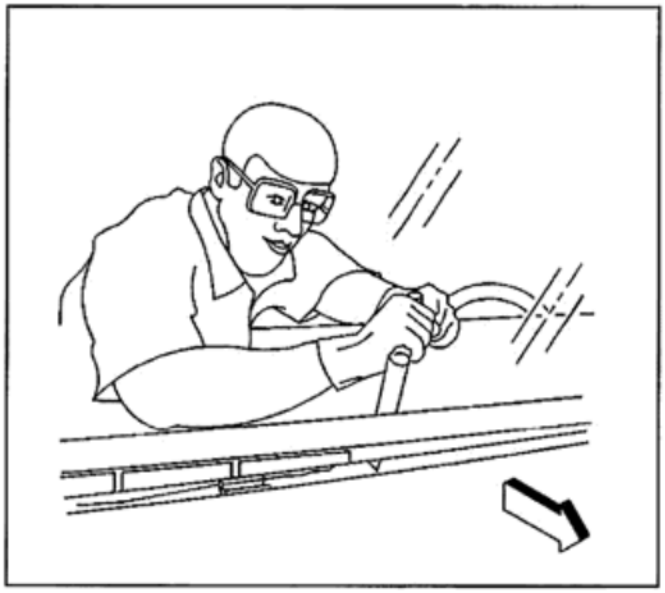
7. Using the appropriate tool, carefully cut the windshield reveal molding (1) in order to access the auto-adhesive bead. Refer to *Windshield Upper Reveal Molding Replacement on page 4-28.*



71179

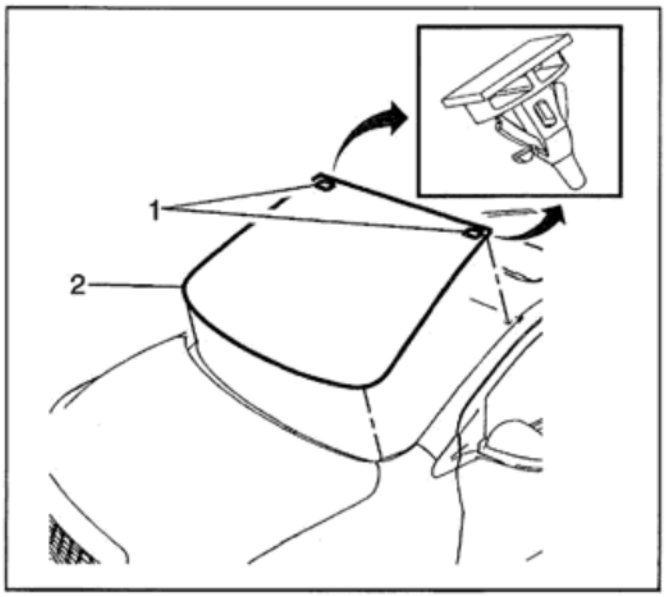
Note: Keep the cutting edge of the appropriate tool against the window. There are window locating pins, one in each upper corner of the window. Use care Not to remove or cut them off when removing the window. If the window locator pins are cut, it will be necessary to tape the window in place.

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



379883

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



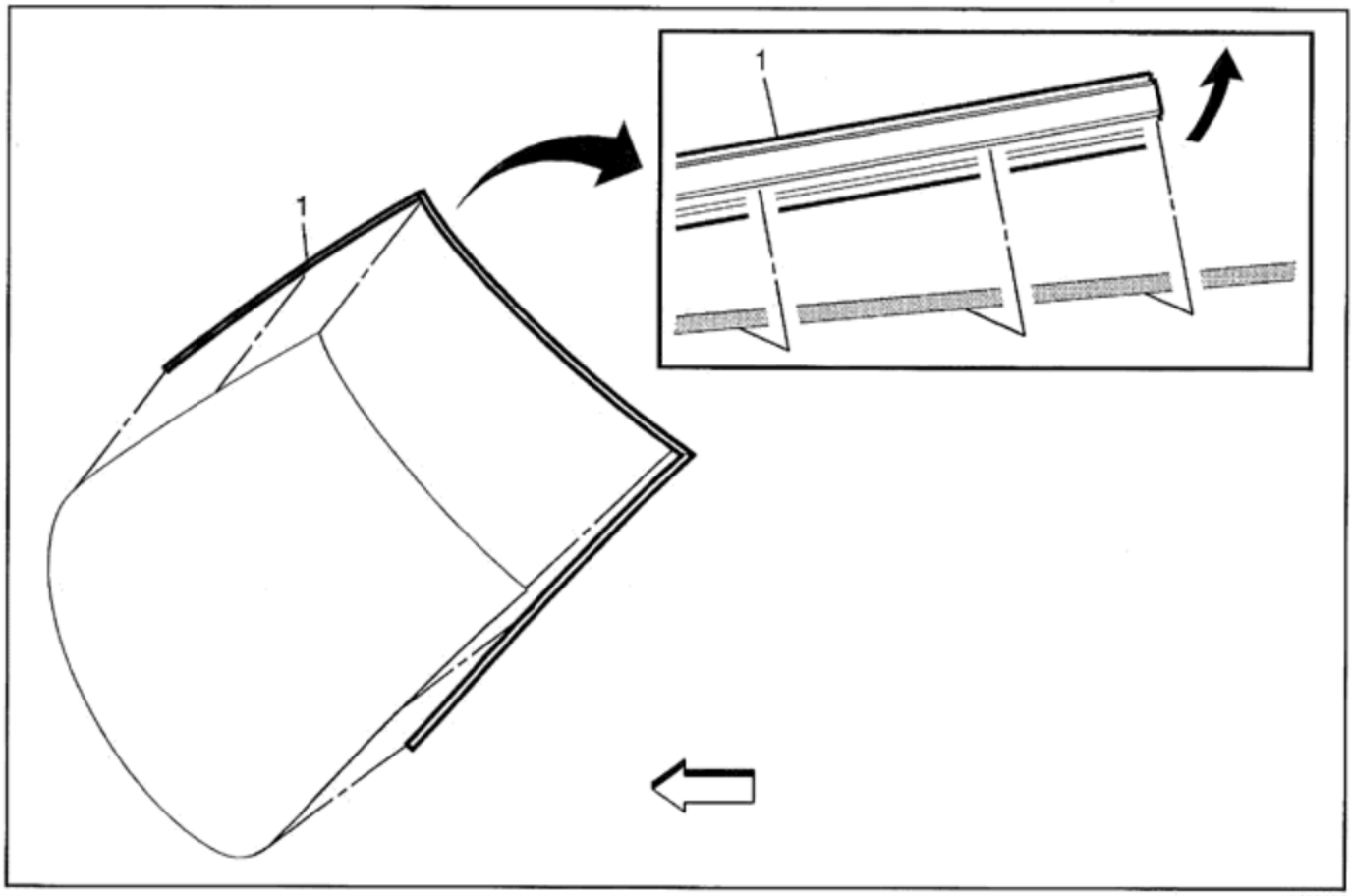
2424998

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

Installation Procedure

1. Install the windshield into the opening. Refer to *Adhesive Installation of Windshields on page 4-57*.
2. Install the rearview mirror. Refer to *Inside Rearview Mirror Replacement on page 4-235*.
3. Install the interior windshield garnish moldings. Refer to *Windshield Side Garnish Molding Replacement on page 2-73*.
4. Install the air inlet grille. Refer to *Air Inlet Grille Panel Replacement on page 4-374*.
5. Install the windshield wipers arms. Refer to *Windshield Wiper Arm Replacement on page 4-375*.
6. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.
7. Close the hood.

Windshield Upper Reveal Molding Replacement

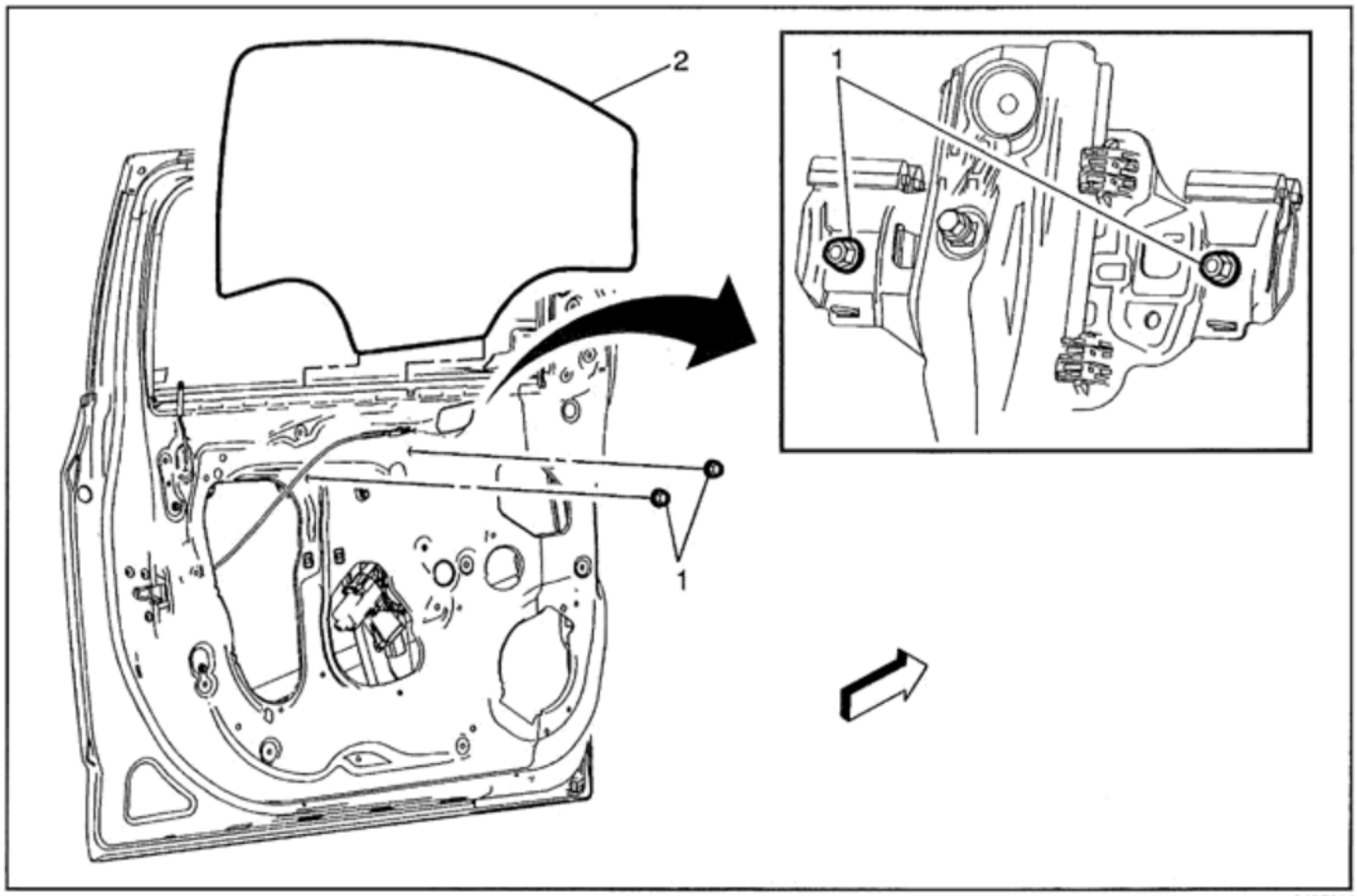


2425010

Windshield Upper Reveal Molding Replacement

Callout	Component Name
Preliminary Procedures Remove the windshield to replace the reveal molding. Refer to *Windshield Replacement on page 4-26.*	
1	Windshield Reveal Molding ***Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5.*** **Procedure** 1. Mark the window at both ends before remove the reveal molding for installing. 2. Place the window on a clean and dry surface. 3. Use a suitable plastic tool, use care when releasing the reveal molding not to pry on the window. 4. Clean around the edges and surface of the window and molding with a 50/50 mixture of isopropyl alcohol and water by volume on a dampened lint free cloth.

Front Side Door Window Replacement



2425014

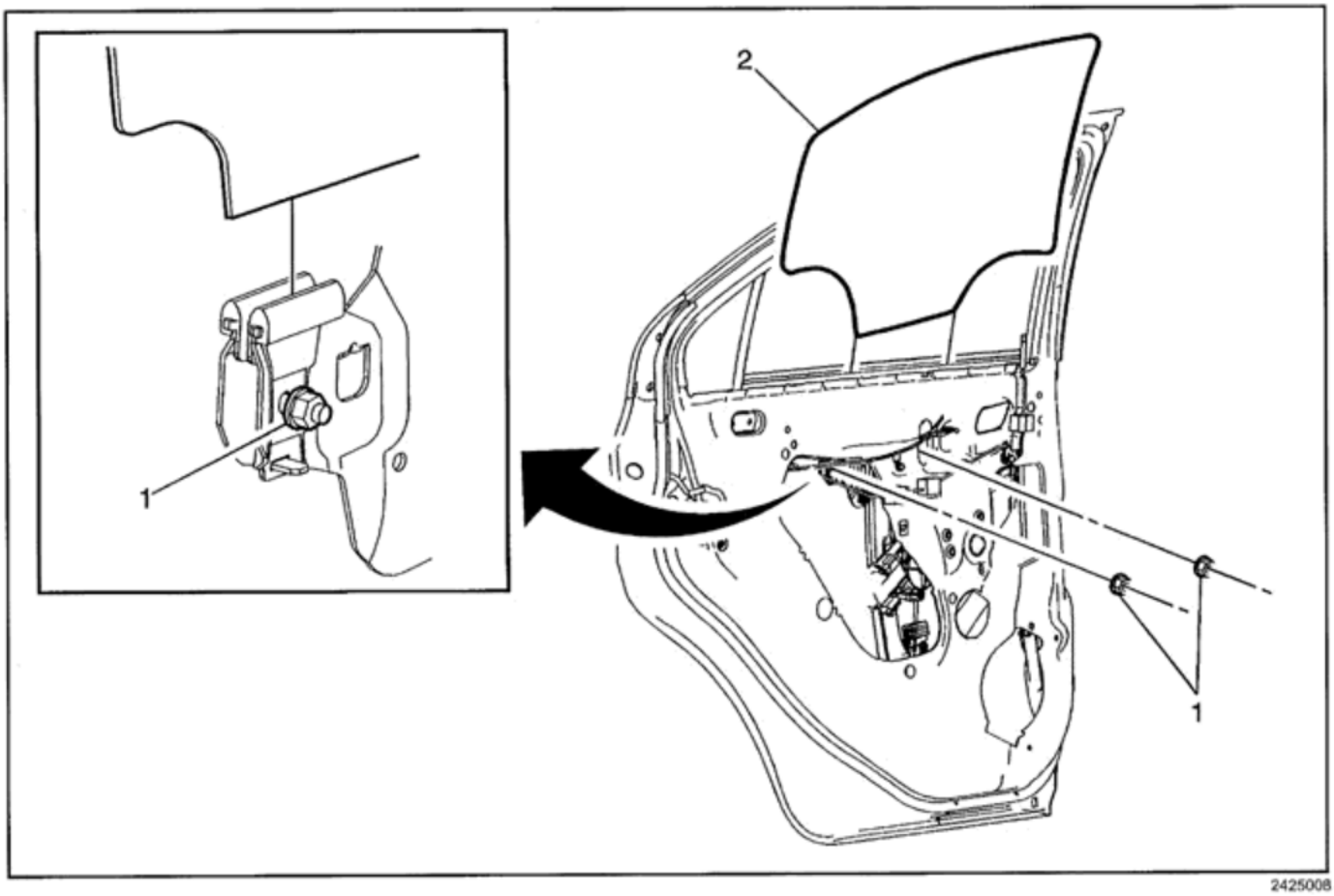
Front Side Door Window Replacement

Callout	Component Name
	Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5.
	Preliminary Procedures 1. Remove the front side door trim panel. Refer to *Front Side Door Trim Replacement on page 2-67*. 2. Remove the front side door rear guide. Refer to *Front Side Door Window Rear Guide Replacement on page 4-49* 3. Remove the front side door window outer sealing strip. Refer to *Front Side Door Window Outer Sealing Strip Replacement on page 4-51*.
1	Front Side Door Window Regulator Guide Nuts (Qty: 2) **Caution:** Refer to *Fastener Caution on page 0-8*. **Procedure** 1. Use masking tape, tape off the outer door frame and applique to prevent scratching. 2. Remove the front side door water deflector. 3. Loosen nuts so that the window can be removed from the guides. 4. In order to remove the window out of the frame, carefully grasp and tilt the window as you guide the window up and forward. **Tighten** 11 N•m (97 lb in)

Front Side Door Window Replacement (cont'd)

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

Rear Side Door Window Replacement (Sedan)

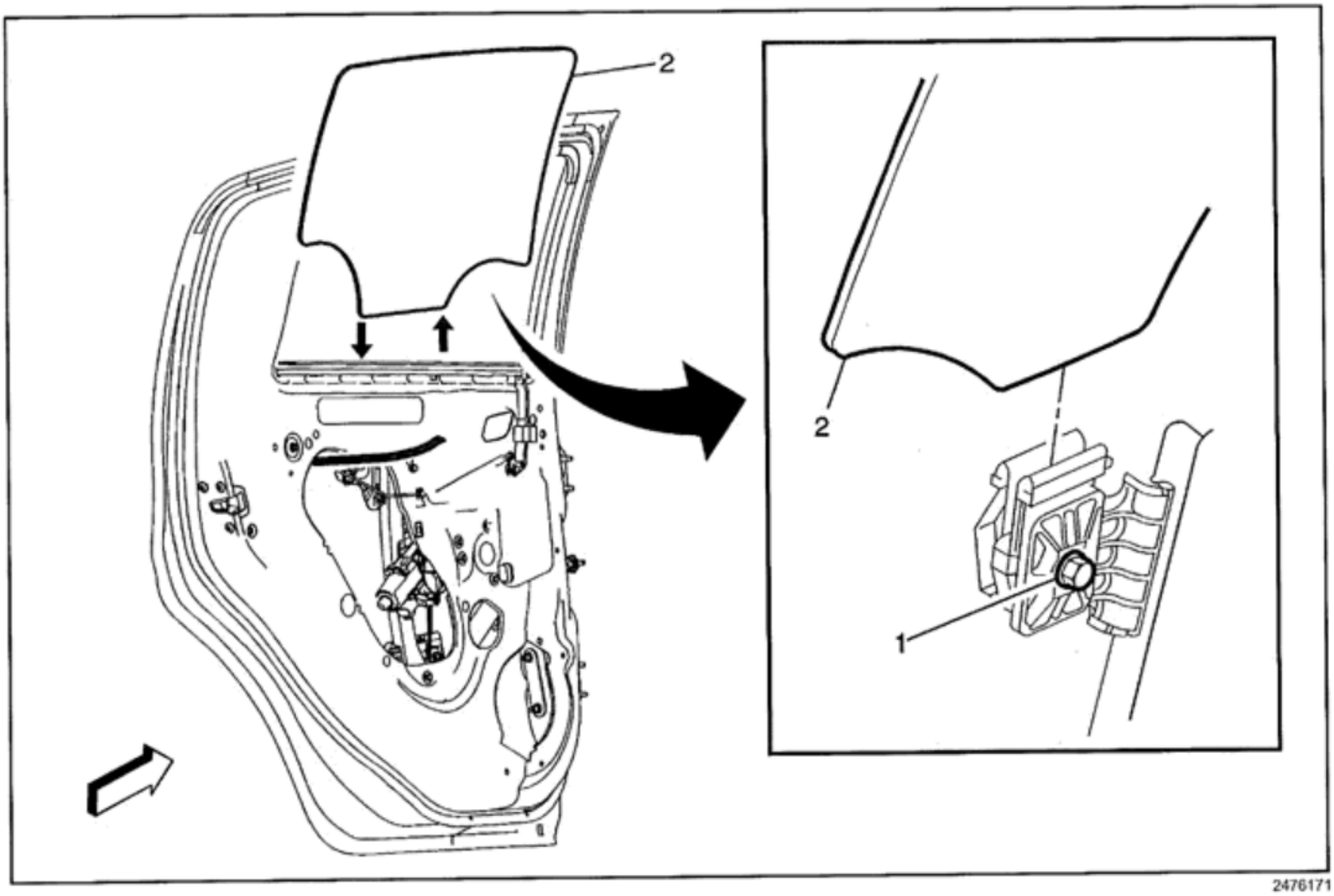


2425008

Rear Side Door Window Replacement (Sedan)

Callout	Component Name
Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5.	
Preliminary Procedures 1. Remove the rear side door trim panel. Refer to *Rear Side Door Trim Replacement (Sedan) on page 2-84* or *Rear Side Door Trim Replacement (Hatchback) on page 2-83*. 2. Remove the rear side door rear guide. Refer to *Rear Side Door Window Rear Guide Replacement on page 4-50*. 3. Remove the rear side window outer sealing strip. Refer to *Rear Side Door Window Outer Sealing Strip Replacement (Hatchback) on page 4-53* or *Rear Side Door Window Outer Sealing Strip Replacement (Sedan) on page 4-52*.	
1	Rear Side Door Window Guide Nut (Qty: 2) **Caution:** Refer to *Fastener Caution on page 0-8*. **Procedure** 1. Use masking tape, tape off the outer door frame and applique to prevent scratching. 2. Remove the rear side door water deflector. 3. Loosen nuts on the guide so that the window can be removed. 4. In order to remove the window out of the frame, carefully grasp and tilt the window as you guide the window up and forward. **Tighten** 11 N•m (97 lb in)
2	Rear Side Door Window **Procedure** 1. Align the window guide with the access holes in the inner door panel. 2. Install the window to the guide. 3. Do not operate the regulator motor without supporting the window. Ensure that the window remains in the guide when operating the regulator motor. 4. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the guide. Tighten the nuts to the window guide. 5. Inspect the window for proper operation before installing the trim panel.

Rear Side Door Window Replacement (Hatchback)



2476171

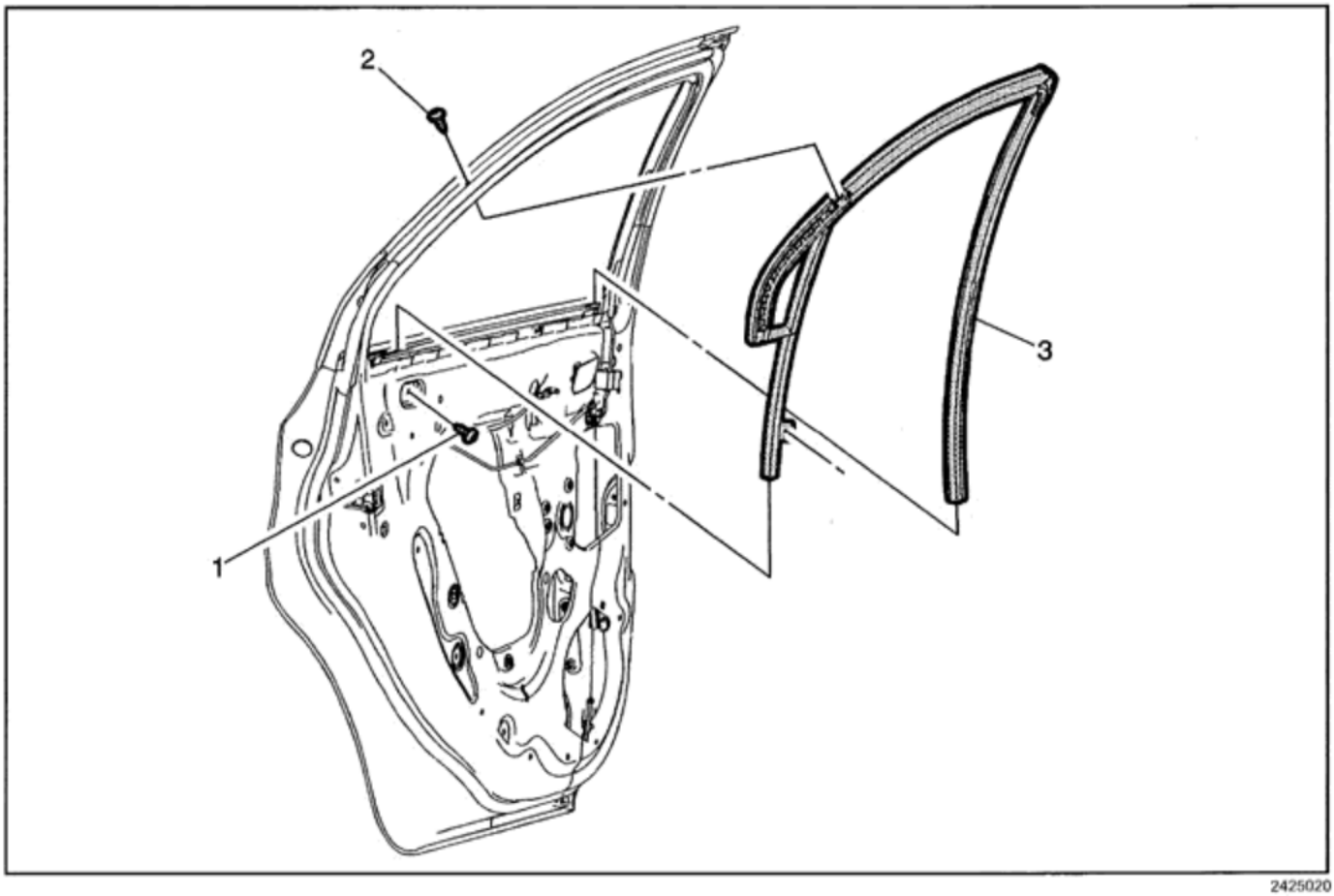
Rear Side Door Window Replacement (Hatchback)

Callout	Component Name
	Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5.
	Preliminary Procedures 1. Remove the rear side door trim panel. Refer to *Rear Side Door Trim Replacement (Sedan) on page 2-84* or *Rear Side Door Trim Replacement (Hatchback) on page 2-83*. 2. Remove the rear side door rear guide. Refer to *Rear Side Door Window Rear Guide Replacement on page 4-50*. 3. Remove the rear side window outer sealing strip. Refer to *Rear Side Door Window Outer Sealing Strip Replacement (Hatchback) on page 4-53* or *Rear Side Door Window Outer Sealing Strip Replacement (Sedan) on page 4-52*.
1	Rear Side Door Window Guide Nut (Qty: 2) **Caution:** Refer to *Fastener Caution on page 0-8*. **Procedure** 1. Use masking tape, tape off the outer door frame and applique to prevent scratching. 2. Remove the rear side door water deflector. 3. Loosen nuts on the guide so that the window can be removed. 4. In order to remove the window out of the frame, carefully grasp and tilt the window as you guide the window up and forward. **Tighten** 11 N•m (97 lb in)

Rear Side Door Window Replacement (Hatchback) (cont'd)

Callout	Component Name
2	Rear Side Door Window **Procedure** 1. Align the window guide with the access holes in the inner door panel. 2. Install the window to the guide. 3. Do not operate the regulator motor without supporting the window. Ensure that the window remains in the guide when operating the regulator motor. 4. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the guide. Tighten the nuts to the window guide. 5. Inspect the window for proper operation before installing the trim panel.

Rear Side Door Stationary Window Replacement



2425020

Rear Side Door Stationary Window Replacement

Callout	Component Name
	Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5. **Preliminary Procedures** Remove the rear side door window. Refer to *Rear Side Door Window Replacement (Hatchback) on page 4-32* or *Rear Side Door Window Replacement (Sedan) on page 4-30*.
1	Rear Side Door Window Weatherstrip Lower Bolt **Caution:** Refer to *Fastener Caution on page 0-8*. **Tighten** 9 N•m (80 lb in) **Tip:** The weatherstrip and window is serviced as one assembly.

Rear Side Door Stationary Window Replacement (cont'd)

Callout	Component Name
2	Rear Side Door Window Weatherstrip Upper Screw **Procedures** 1. Pull the weatherstrip out of the upper retainer to expose the screw. 2. Remove the weatherstrip from the front and rear lower guides. 3. Grasp both upper corners, pull forward releasing assembly from the door frame. **Tighten** 3 N•m (27 lb in)
3	Rear Side Door Window Weatherstrip **Procedures** 1. Insert the weatherstrip downward in the guide until fully seated. 2. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the guides. 3. Inspect the door window for proper operation before installing the door trim panel.

Rear Window Replacement

Special Tools

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

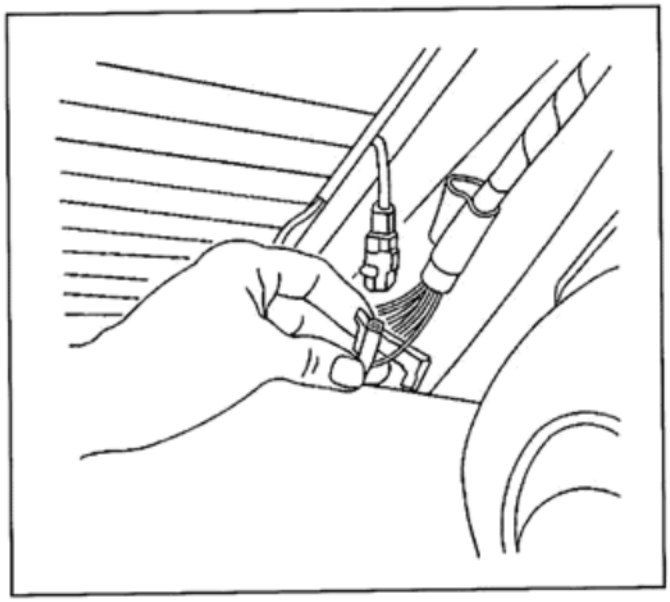
For equivalent regional tools, refer to *Special Tools on page 4-70*

Removal Procedure

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

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

1. Open the rear compartment lid.

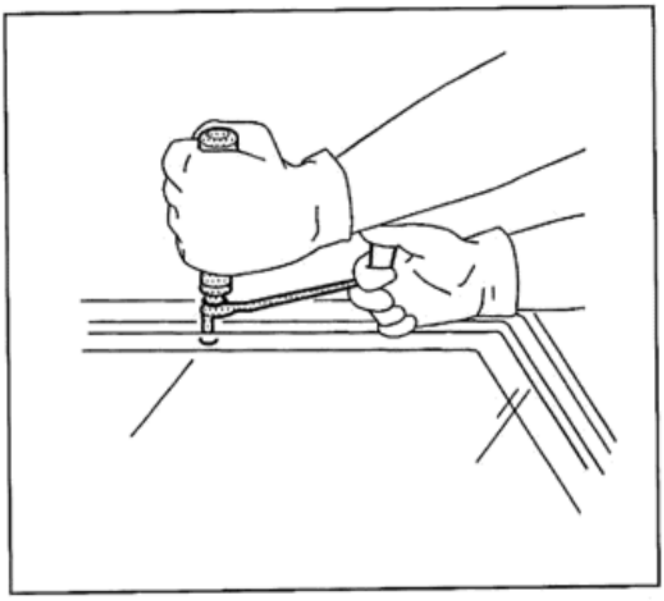


401856

2. Disconnect the rear window defogger electrical connectors.
3. Disconnect the OnStar® antenna, if equipped.
4. Disconnect the rear window radio antenna connector.

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

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

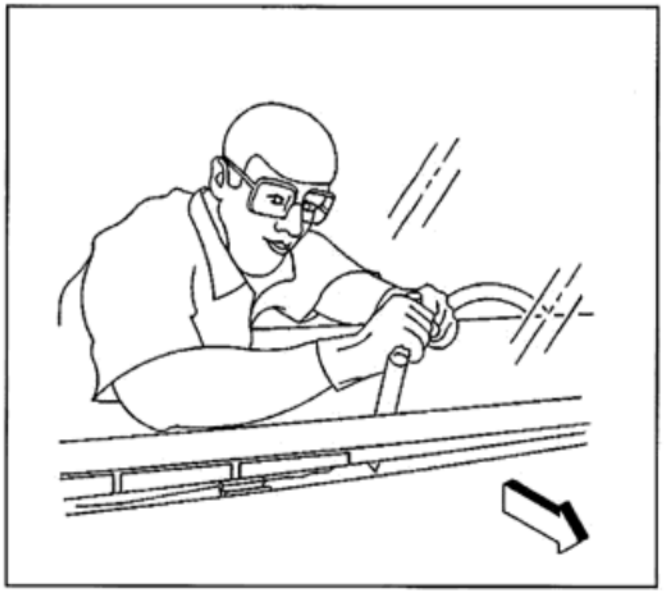


71179

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

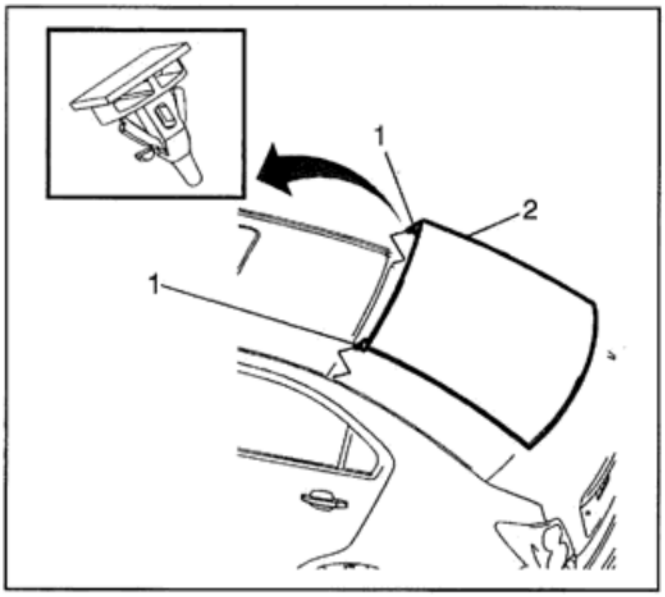
6. This will allow the auto-adhesive to be separated from the window.

7. Remove the rear window reveal molding. Refer to *Rear Window Reveal Molding Replacement on page 4-36*.
   - Leave a base of urethane on the pinchweld flange.
   - The only suitable lubrication is clear water.
   - The only suitable lubrication is clear water.
   - *BO-24402-A* Glass Sealant Remover (Cold Knife).
   - *BO-39032* Stationary Glass Removal Tool.



379883

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



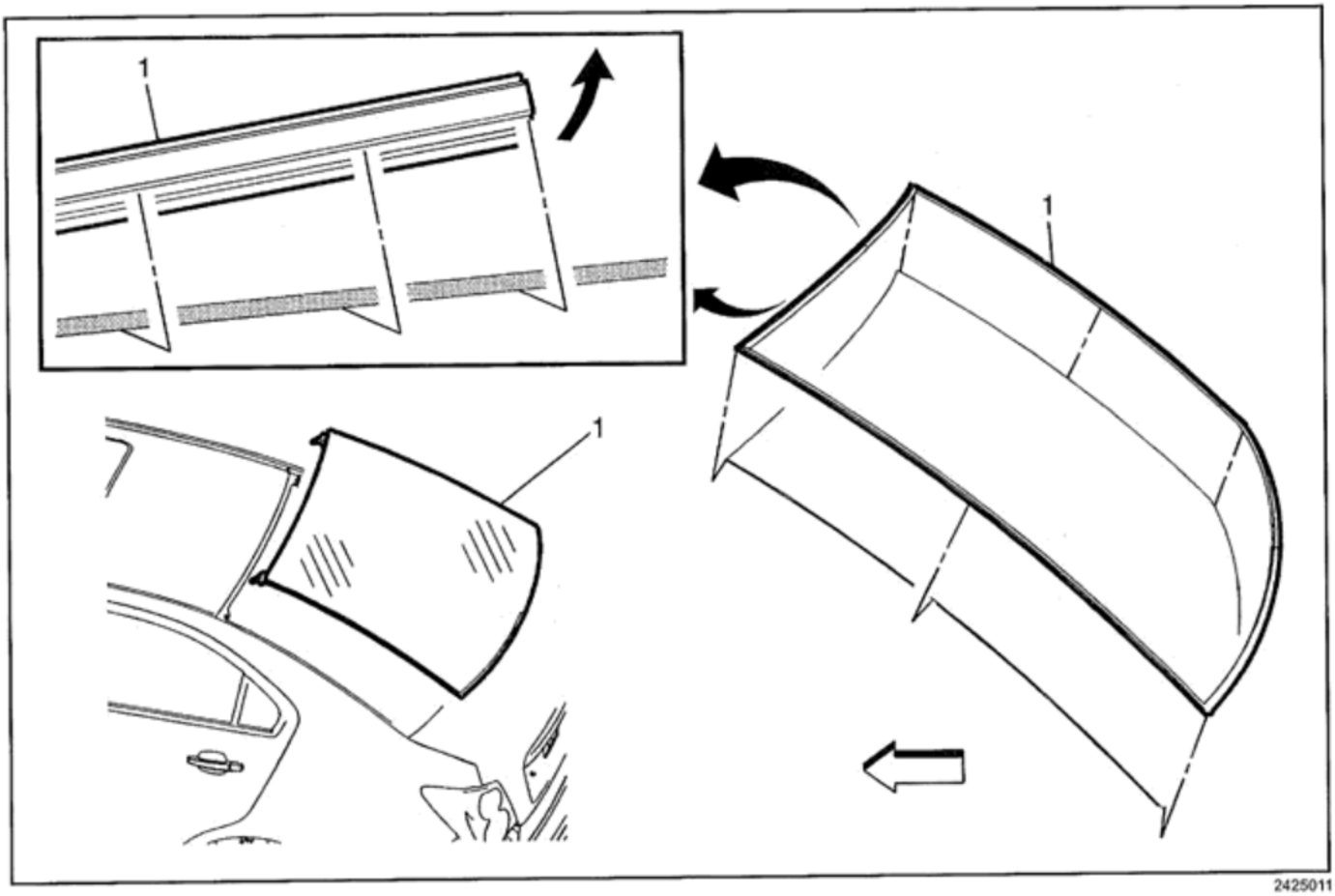
2424997

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

Installation Procedure

1. Install the rear window into the opening. Refer to *Adhesive Installation of Rear Windows on page 4-61*.
2. Connect the rear window defogger electrical connectors.
3. Install the rear window radio antenna connector.
4. Connect the OnStar® antenna, if equipped.
   Check the radio and OnStar® system to verify reception.
5. Close the rear compartment lid.
6. Remove the double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

Rear Window Reveal Molding Replacement



2425011

Rear Window Reveal Molding Replacement

Callout	Component Name
Preliminary Procedures Remove the rear window to replace the reveal molding. Refer to *Rear Window Replacement on page 4-34*.	
1	Rear Window Reveal Molding ***Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5.*** **Procedure** 1. Mark the window at both ends before remove the reveal molding for installing. 2. Place the window on a clean and dry surface. 3. Use a suitable plastic tool, use care when releasing the reveal molding not to pry on the window. 4. Clean around the edges and surface of the window and molding with a 50/50 mixture of isopropyl alcohol and water by volume on a dampened lint free cloth.

Liftgate Window Replacement

Special Tools

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

For equivalent regional tools, refer to *Special Tools on page 4-70*

Removal Procedure

Warning: Refer to Cracked Window Warning on page 0-4.

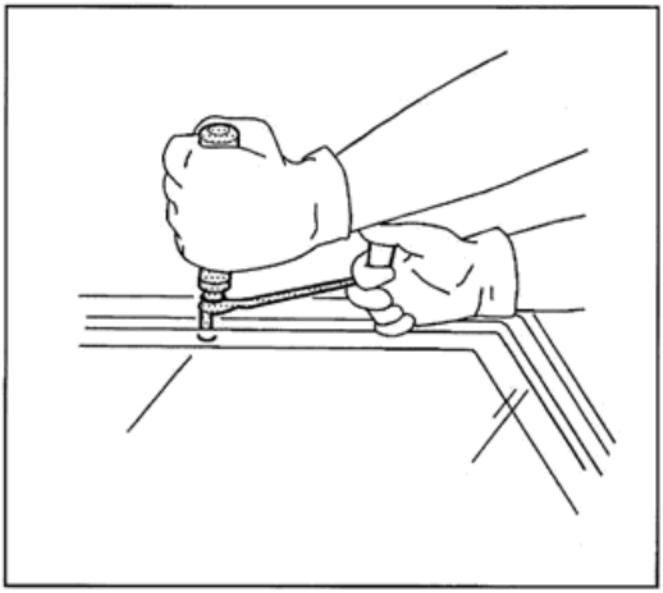
Note: Before cutting out a stationary window, apply a double layer of masking tape around the perimeter of the painted surfaces and the interior trim.

1. Open the liftgate.
2. Remove the liftgate trim. Refer to *Liftgate Trim Finish Panel Replacement (Hatchback) on page 2-86*.
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 on page 4-376.*
5. Remove the rear spoiler. Refer to *Rear End Spoiler Replacement (Hatchback TTV) on page 2-17.*

Warning: Refer to Defroster Outlet Warning on page 0-4.

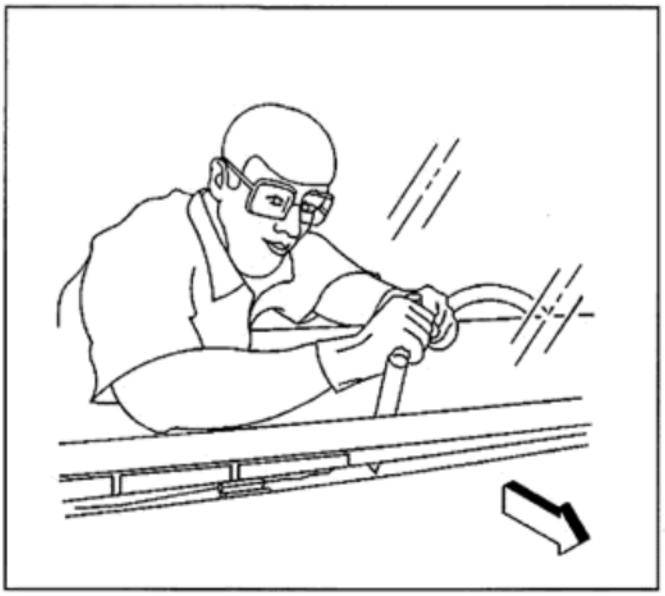
6. Cover the following parts to protect from broken glass:
   - Upper dash pad
   - Defroster outlets and A/C outlets
   - Seats and carpeting



71179

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

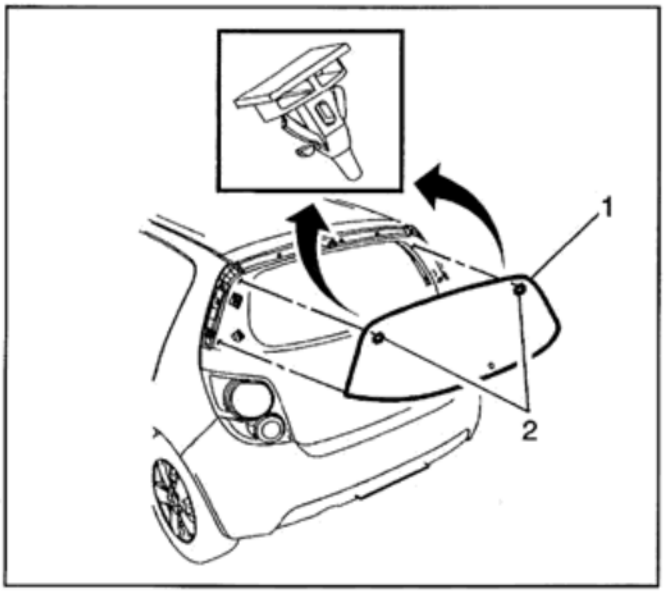
7. This will allow the auto-adhesive to be separated from the window.
   - Leave a base of auto-adhesive on the pinchweld flange.
   - The only suitable lubrication is clean water.
   - Use *BO-24402-A* Glass Sealant Remover (Cold Knife).
   - *BO-39032* Stationary Glass Removal Tool, or equivalent in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



379883

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

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



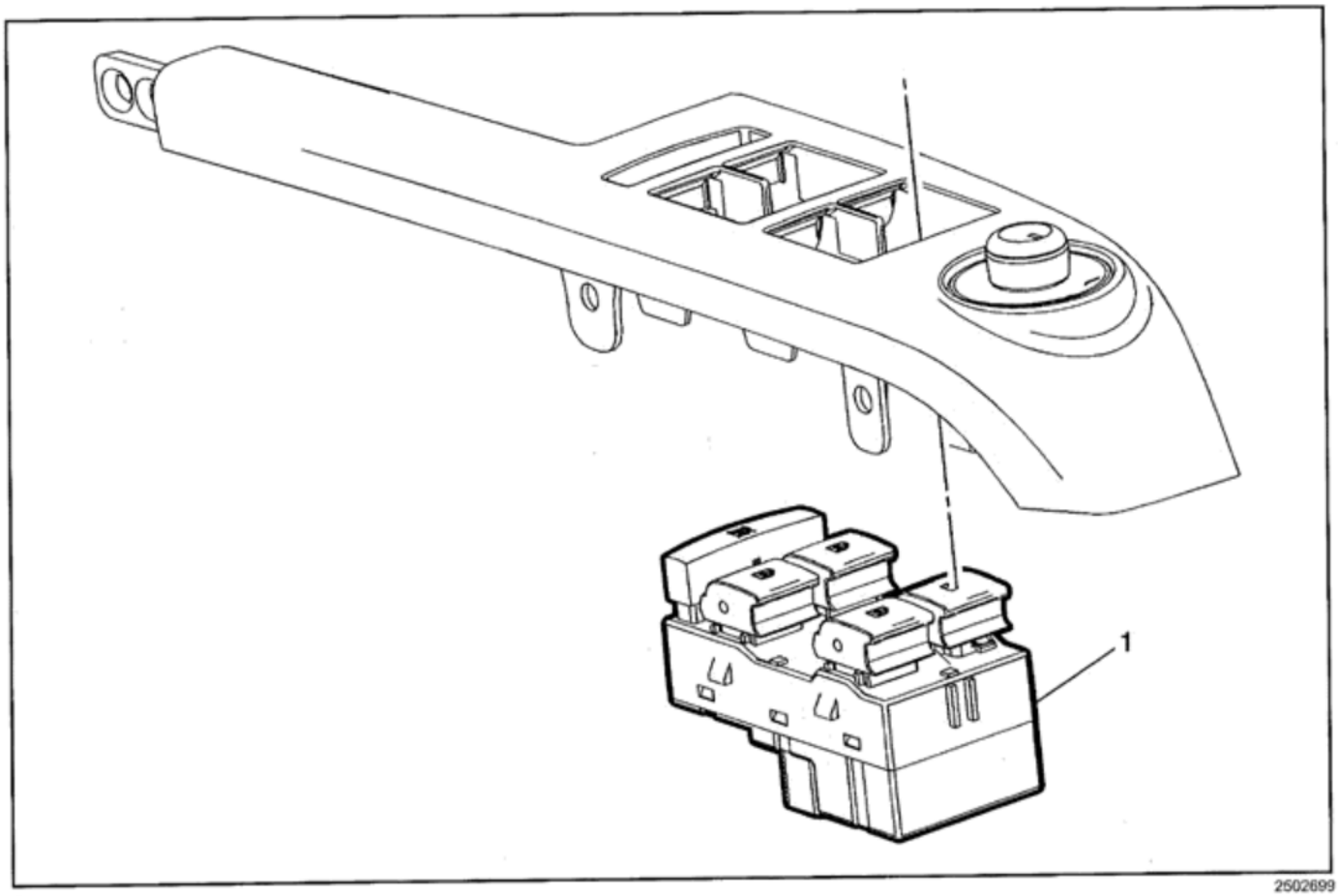
2424999

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

Installation Procedure

1. Install the liftgate window into the opening. Refer to *Adhesive Installation of Liftgate Windows on page 4-65*.
2. Install the rear spoiler. Refer to *Rear End Spoiler Replacement (Hatchback TTV) on page 2-17*.
3. Install the rear window wiper arm. Refer to *Rear Window Wiper Arm Replacement on page 4-376*.
4. Connect the liftgate window defogger electrical connectors to the bus bar.
5. Install the liftgate trim. Refer to *Liftgate Trim Finish Panel Replacement (Hatchback) on page 2-86*.
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 Switch Replacement (Left Side)

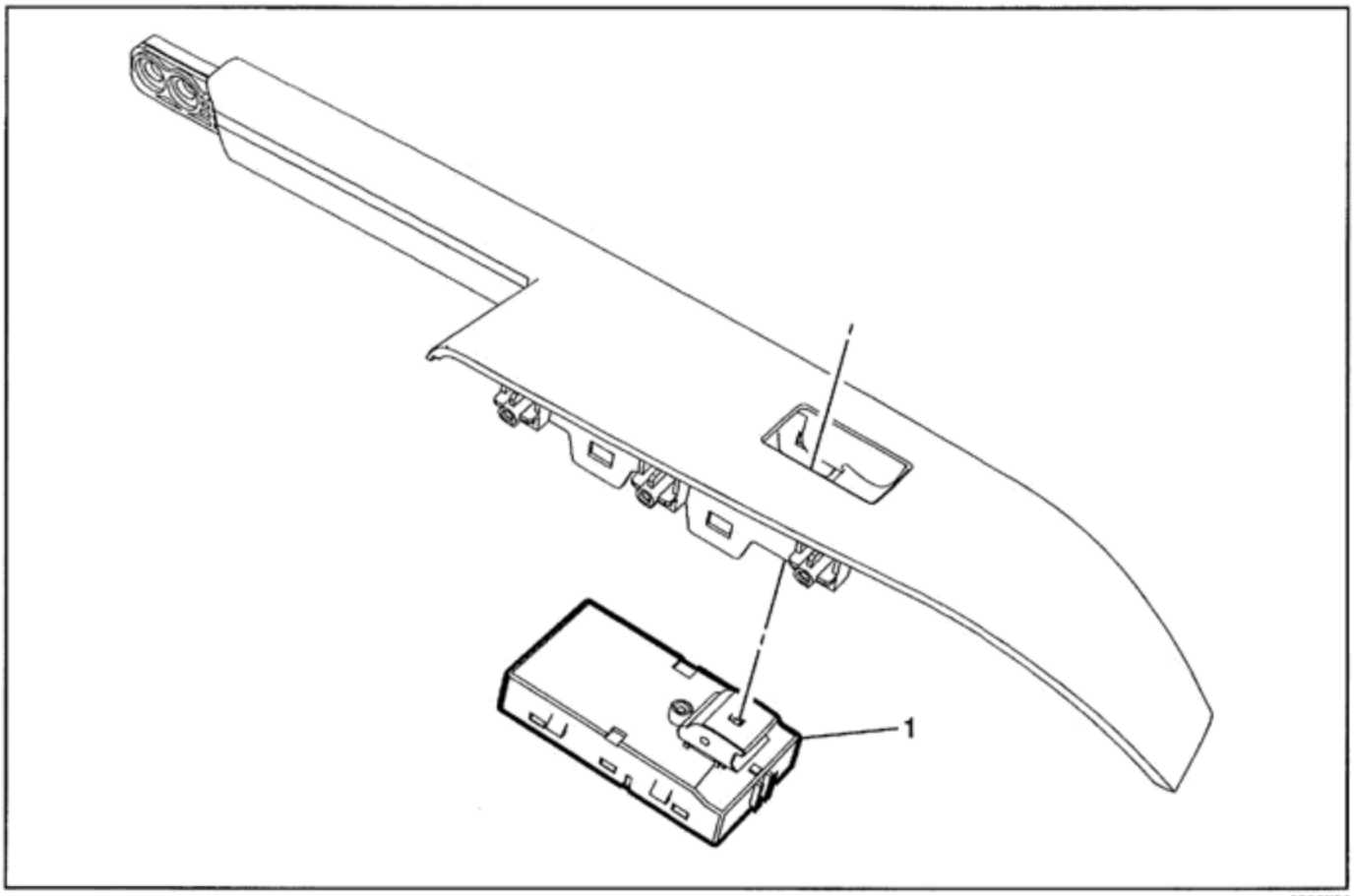


2502699

Front Side Door Window Switch Replacement (Left Side)

Callout	Component Name
Preliminary Procedure Remove the front side door window switch bezel. Refer to *Front Side Door Window Switch Bezel Replacement (Right Side) on page 2-64* or *Front Side Door Window Switch Bezel Replacement (Left Side) on page 2-63*.	
1	Front Side Door Window Switch Assembly **Procedure** 1. Disconnect the electrical connectors. 2. Refer to *Control Module References on page 6-3* for programming and set up procedures.

Front Side Door Window Switch Replacement (Right Side)

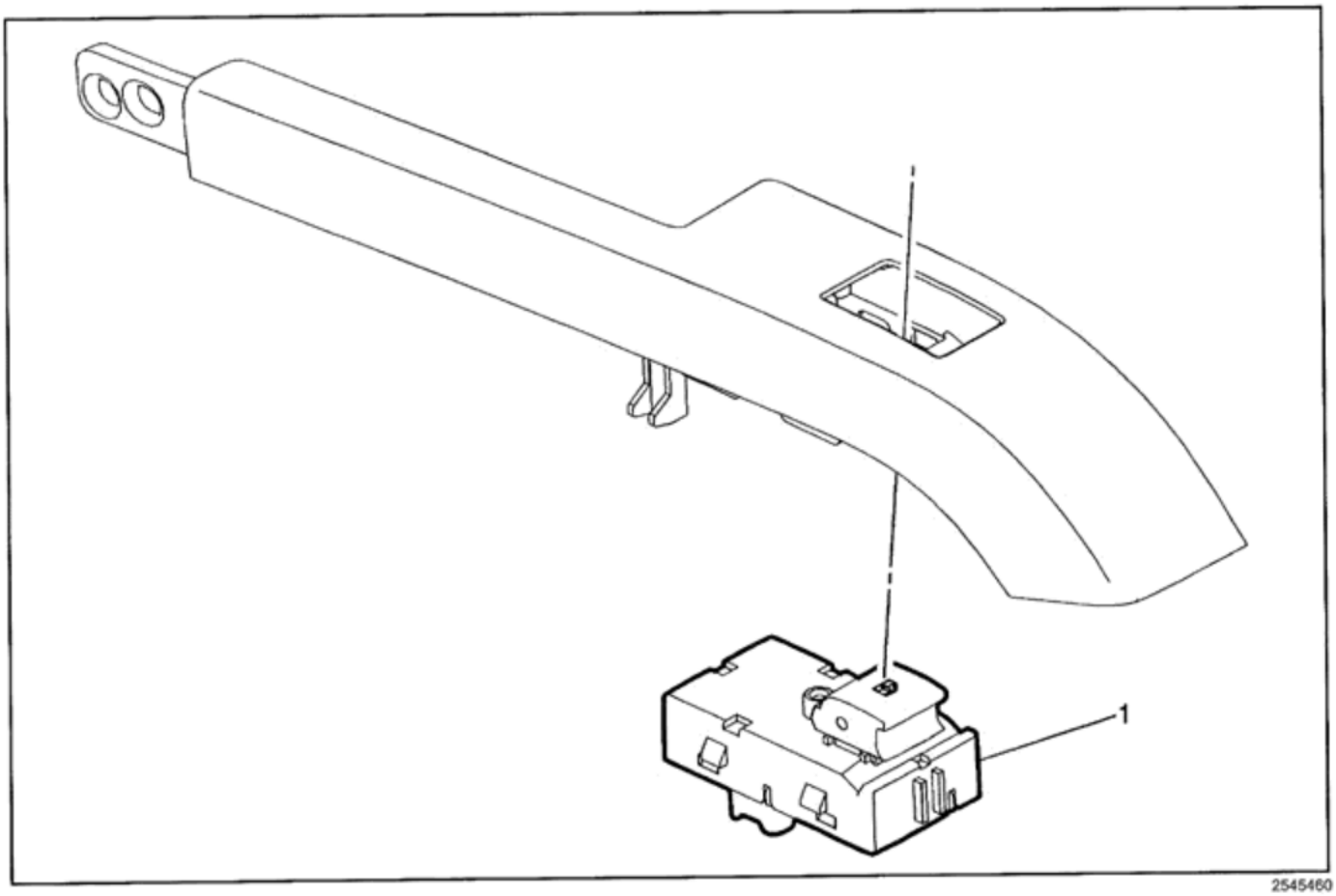


2502706

Front Side Door Window Switch Replacement (Right Side)

Callout	Component Name
Preliminary Procedure Remove the front side door widow switch bezel. Refer to *Front Side Door Window Switch Bezel Replacement (Right Side) on page 2-64* or *Front Side Door Window Switch Bezel Replacement (Left Side) on page 2-63*.	
1	Front Side Door Window Switch Assembly **Procedure** 1. Disconnect the electrical connectors. 2. Refer to *Control Module References on page 6-3* for programming and set up procedures.

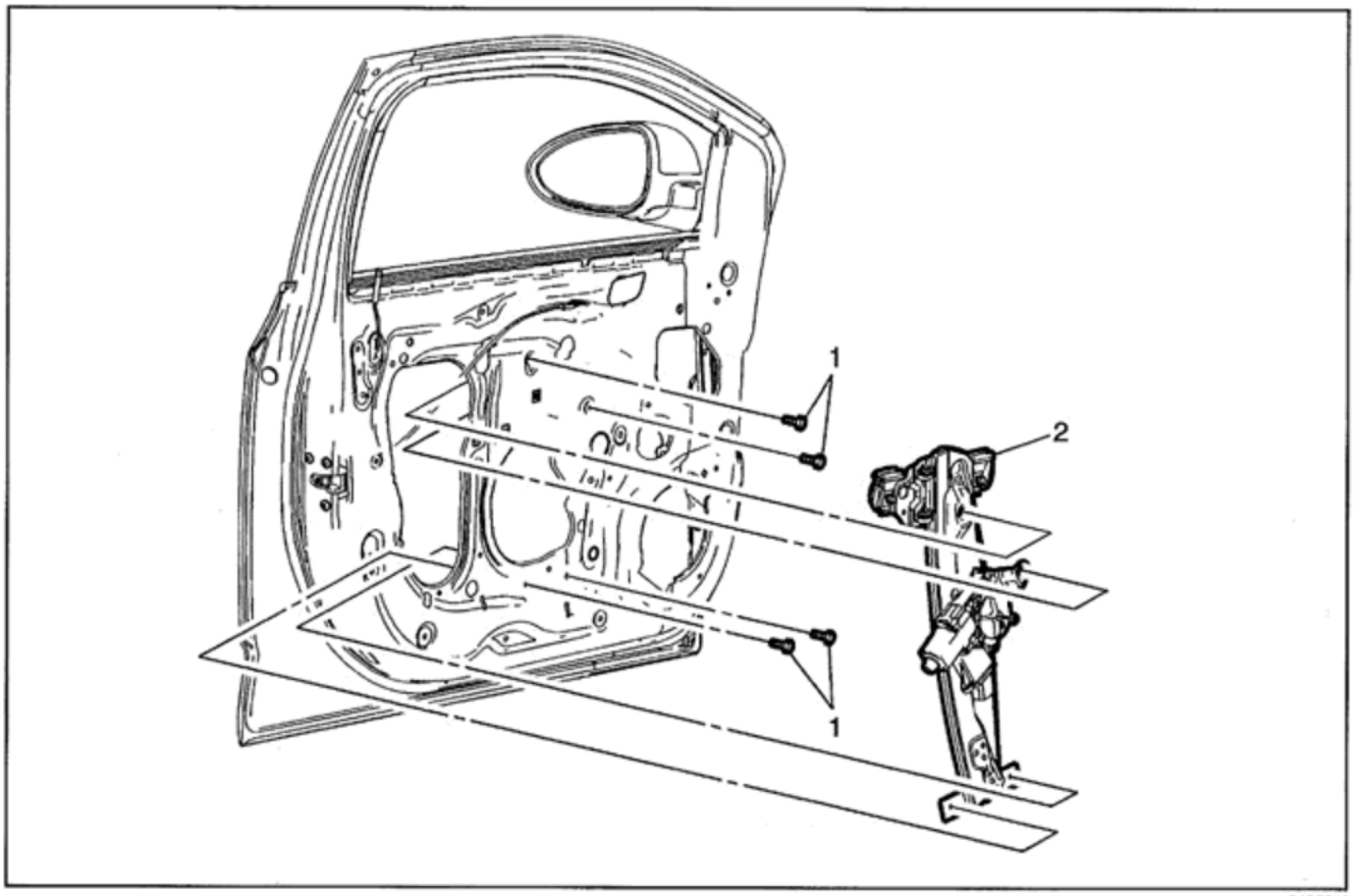
Rear Side Door Window Switch Replacement



Rear Side Door Window Switch Replacement

Callout	Component Name
Preliminary Procedure Remove the rear side door window switch bezel. Refer to *Rear Side Door Window Switch Bezel Replacement on page 2-65*.	
1	Rear Side Door Window Switch Assembly **Procedure** 1. Disconnect the electrical connectors. 2. Refer to *Control Module References on page 6-3* for programming and set up procedures.

Front Side Door Window Regulator Replacement



2425013

Front Side Door Window Regulator Replacement

Callout	Component Name
	Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5.
	Preliminary Procedure Remove the front side door window from the guide. Do Not remove the window from the vehicle, raise the window to the fully up position, tape in place. Refer to *Front Side Door Window Replacement on page 4-29*.
1	Front Side Door Window Regulator Screw (Qty: 4) **Caution:** Refer to *Fastener Caution on page 0-8*. **Procedure** 1. Remove the front side door water deflector. 2. Loosen the window guide nuts, Do Not remove the nuts from the guide. 3. Disconnect the electric connector from the regulator motor. **Tighten** 11 N•m (97 lb in)
2	Front Side Door Window Regulator **Procedure** 1. Transfer the front side door window regulator motor. Refer to *Front Side Door Window Regulator Motor Replacement on page 4-43*. 2. Inspect the door window for proper operation before installing the door trim panel.

Window Motor Programming - Express Function

Window Motor Normalized Procedure

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

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

Note: When DTC B3205 4B is set, the following warnings will be displayed on the driver information center:

Open, then Close Driver Window

These warnings will clear once the window has been "Normalized" and the DTC will clear.

To normalize the window motor, follow these steps:

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

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

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

Window Motor Relearn Procedure

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

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

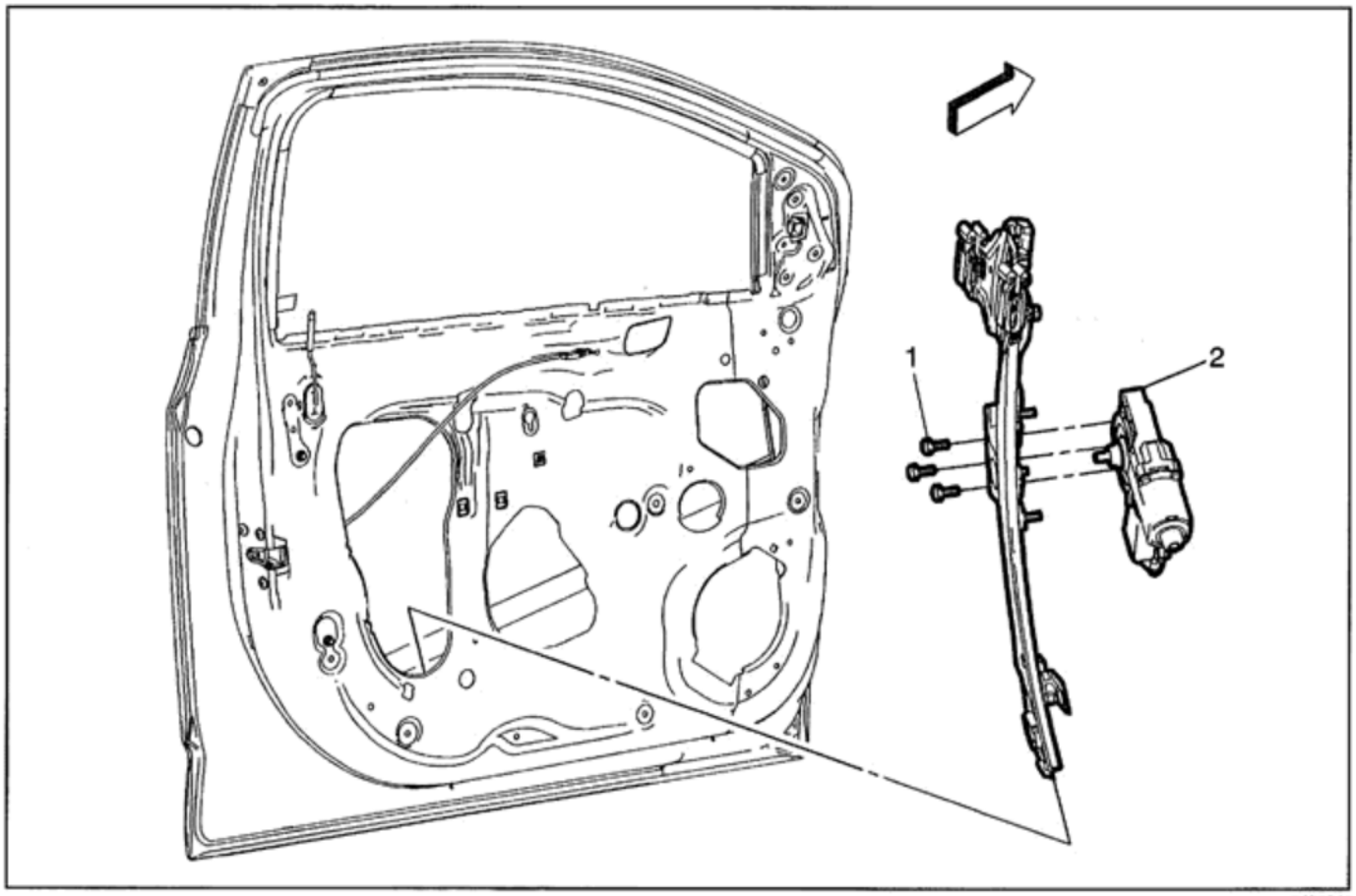
Note: Prior to performing the relearn procedure the vehicle must have all 4 wheels properly inflated and mounted, the vehicle must be sitting on a level surface and all doors must be completely closed.

To relearn the window motor, follow these steps:

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

The window is now reprogrammed.

Front Side Door Window Regulator Motor Replacement

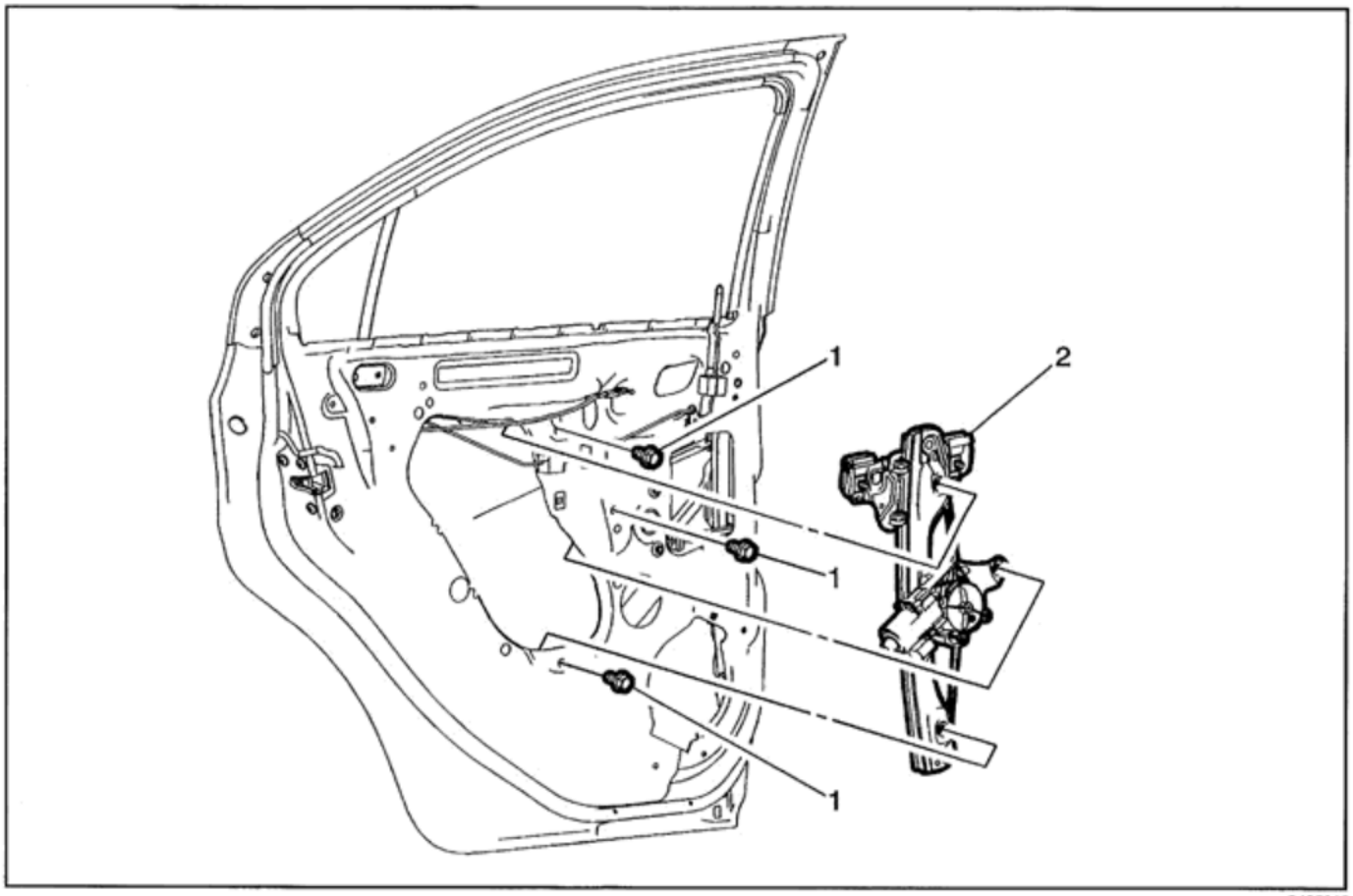


2425015

Front Side Door Window Regulator Motor Replacement

Callout	Component Name
Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5.	
Preliminary Procedure Remove the front side door window regulator. *Front Side Door Window Regulator Replacement on page 4-41.*	
1	Front Side Door Window Regulator Motor Screw (Qty: 3) **Caution:** Refer to *Fastener Caution on page 0-8.* **Procedure** 1. Remove the front side door water deflector. 2. Disconnect the electric connector from the regulator motor. **Tighten** 5 N•m (44 lb in)
2	Front Side Door Window Regulator Motor **Procedure** Inspect the door window for proper operation before installing the door trim.

Rear Side Door Window Regulator Replacement (Sedan)

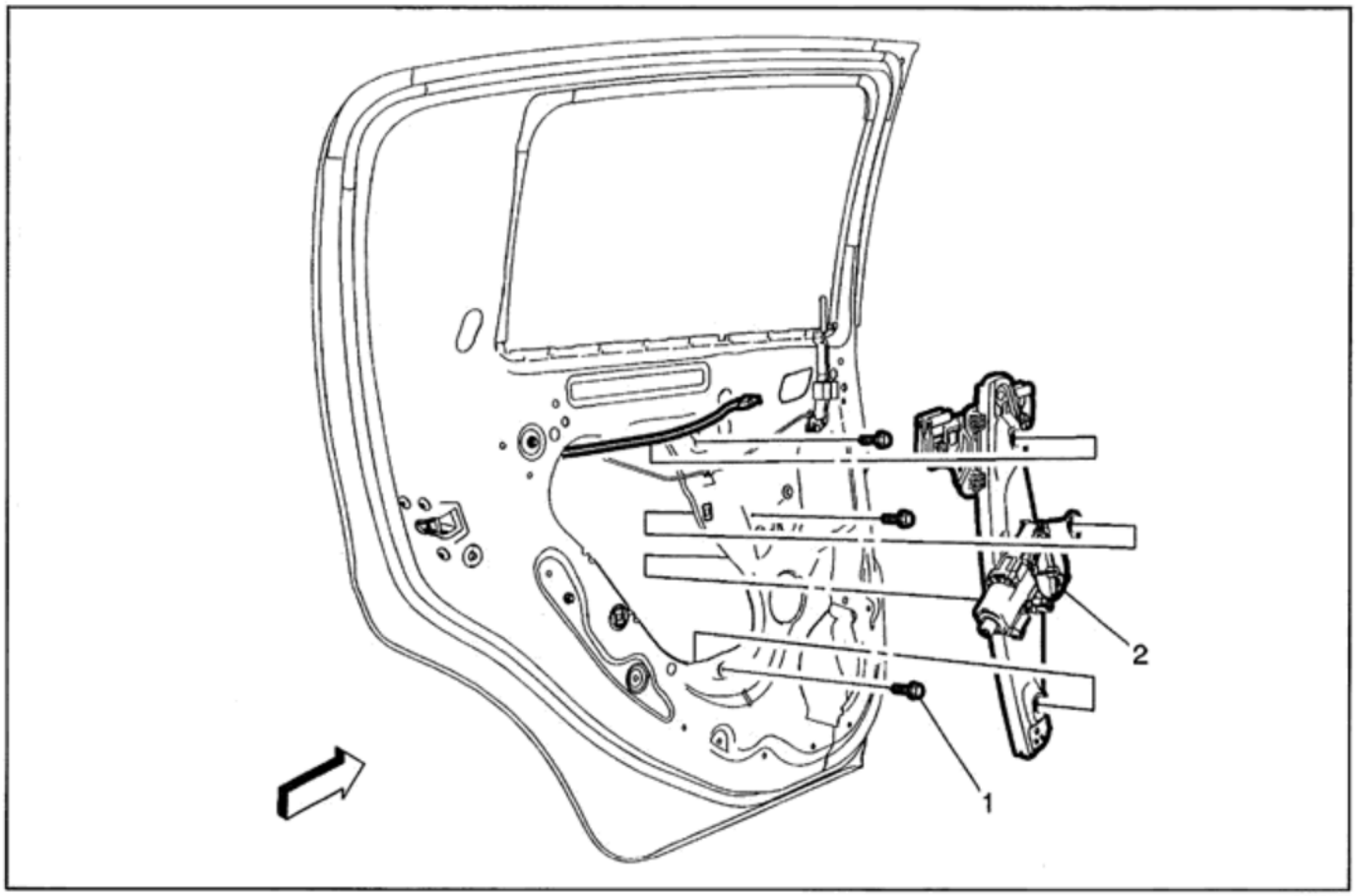


2425018

Rear Side Door Window Regulator Replacement (Sedan)

Callout	Component Name
	Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5.
	Preliminary Procedure Remove the front side door window from the guide. Do Not remove the window from the vehicle, raise the window to the fully up position, tape in place. Refer to *Rear Side Door Window Replacement (Hatchback) on page 4-32* or *Rear Side Door Window Replacement (Sedan) on page 4-30*.
1	Rear Side Door Window Regulator Screw (Qty: 3) **Caution:** Refer to *Fastener Caution on page 0-8*. 1. Remove the rear side door water deflector. 2. Loosen the window guide nuts, Do Not remove the nuts from the guide. 3. Disconnect the door electrical connector. 4. Remove the rear side door window from the guide. Refer to *Rear Side Door Window Rear Guide Replacement on page 4-50*. Do Not remove the window from the vehicle, raise the window to the fully up position, tape in place. **Tighten** 11 N•m (97 lb in)
2	Rear Side Door Window Regulator **Procedure** 1. Transfer the rear side door window regulator motor. Refer to *Rear Side Door Window Regulator Motor Replacement on page 4-46*. 2. Inspect the door window for proper operation before installing the door trim panel.

Rear Side Door Window Regulator Replacement (Hatchback)

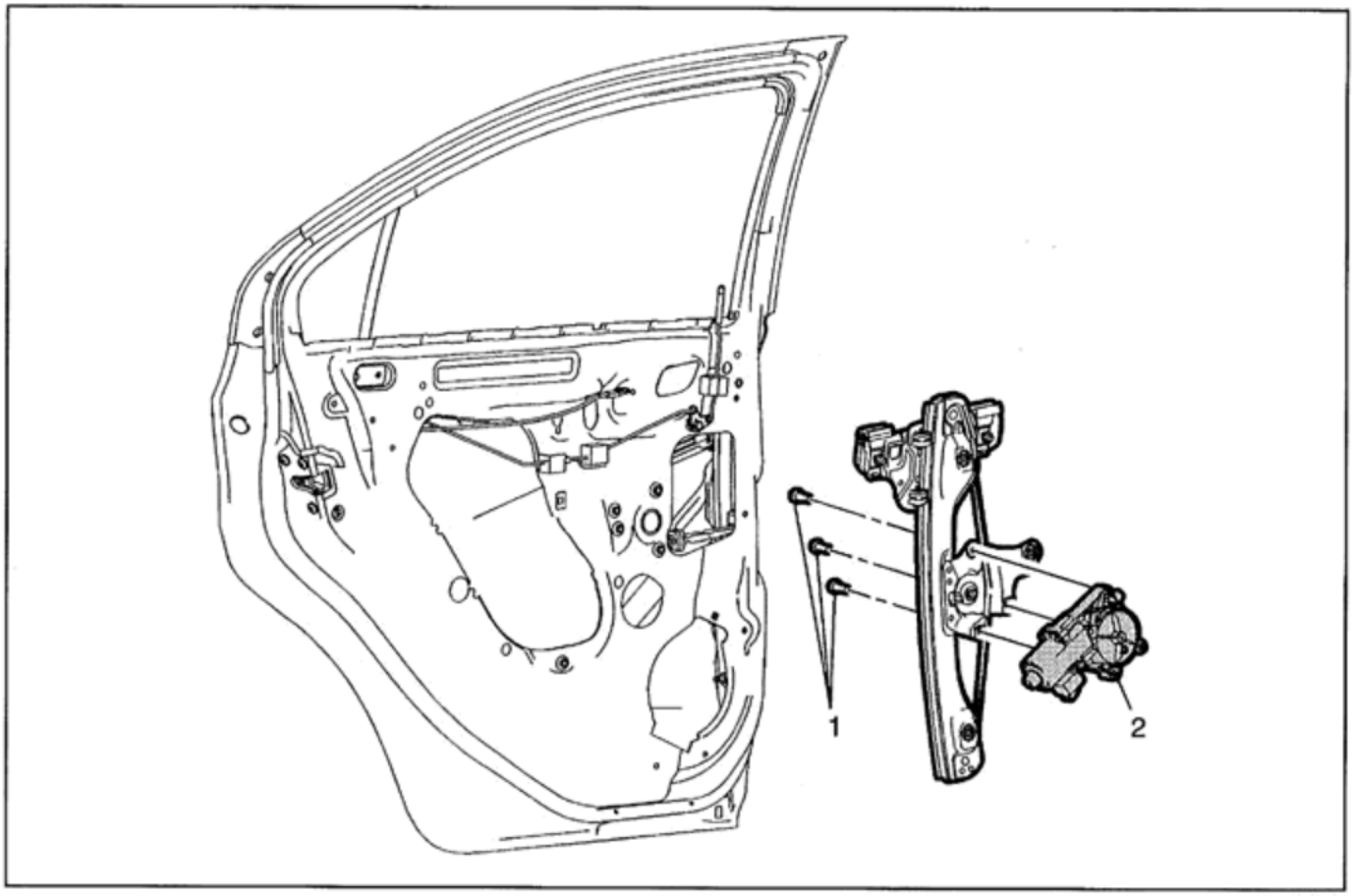


2476168

Rear Side Door Window Regulator Replacement (Hatchback)

Callout	Component Name
	Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5.
	Preliminary Procedure Remove the front side door window from the guide. Do not remove the window from the vehicle, raise the window to the fully up position, tape in place. Refer to *Rear Side Door Window Replacement (Hatchback) on page 4-32* or *Rear Side Door Window Replacement (Sedan) on page 4-30*.
1	Rear Side Door Window Regulator Screw (Qty: 3) **Caution:** Refer to *Fastener Caution on page 0-8*. **Procedure** 1. Remove the rear side door water deflector. 2. Loosen the window guide nuts. Do not remove the nuts from the guide. 3. Disconnect the door electrical connector. 4. Remove the rear side door window from the guide. Refer to *Rear Side Door Window Rear Guide Replacement on page 4-50*. Do not remove the window from the vehicle, raise the window to the fully up position, tape in place. **Tighten** 11 N•m (97 lb in)
2	Rear Side Door Window Regulator **Procedure** 1. Transfer the rear side door window regulator motor. Refer to *Rear Side Door Window Regulator Motor Replacement on page 4-46*. 2. Inspect the door window for proper operation before installing the door trim panel.

Rear Side Door Window Regulator Motor Replacement

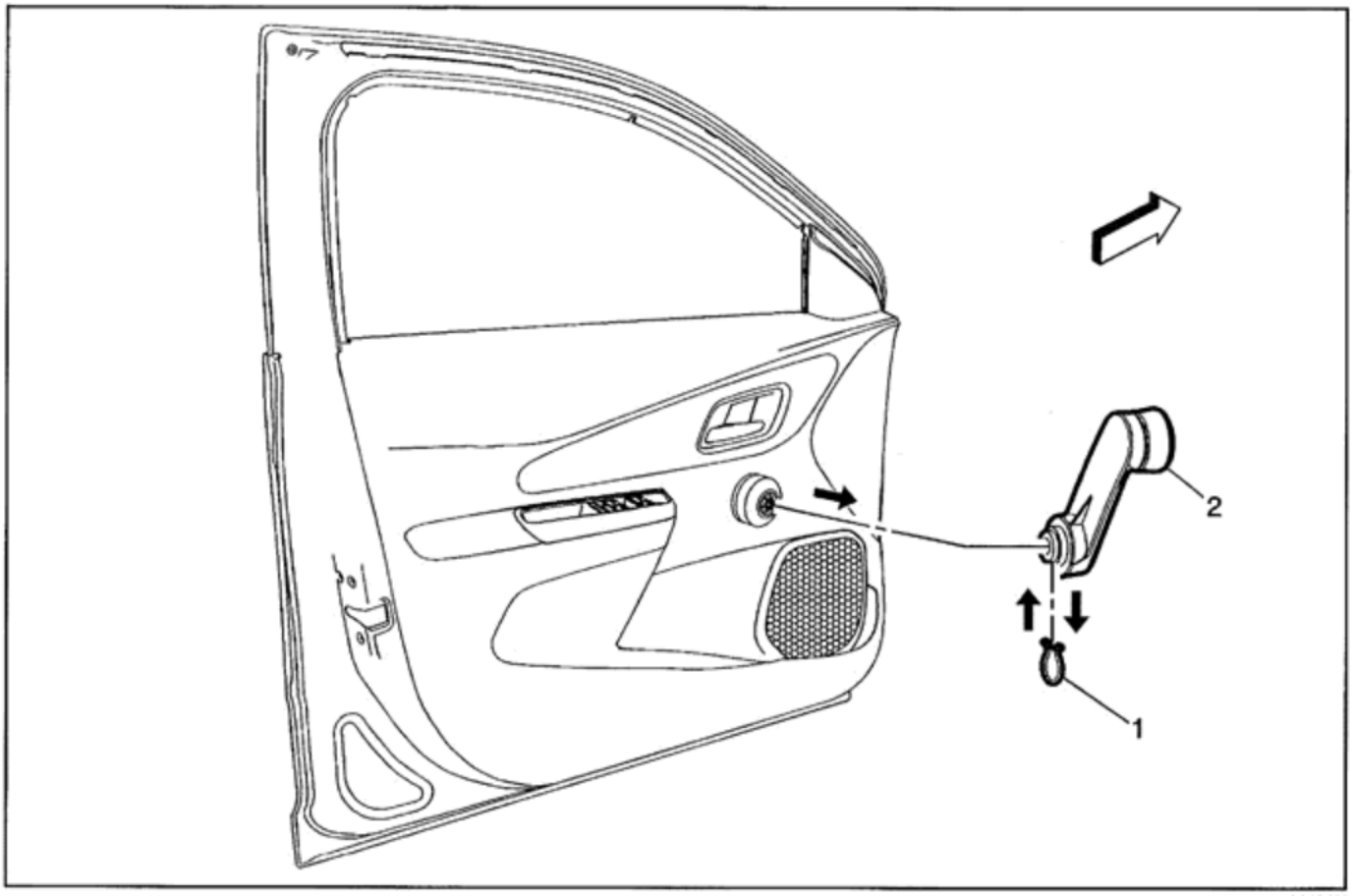


2425019

Rear Side Door Window Regulator Motor Replacement

Callout	Component Name
	Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5.
	Preliminary Procedure Remove the rear side door window regulator. Refer to *Rear Side Door Window Regulator Replacement (Sedan) on page 4-44* or *Rear Side Door Window Regulator Replacement (Hatchback) on page 4-45*.
1	Rear Side Door Window Regulator Motor Screw (Qty: 3). **Caution:** Refer to *Fastener Caution on page 0-8*. **Procedure** 1. Remove the rear side door water deflector. 2. Remove the rear side door window from the guide. Do Not remove the window from the vehicle, raise the window to the fully up position, tape in place. 3. Disconnect the electrical connector from the window regulator motor. **Tighten** 5 N•m (44 lb in)
2	Rear Side Door Window Regulator Motor **Procedure** Inspect the door window for proper operation before installing the door trim panel.

Front Side Door Window Regulator Handle Replacement

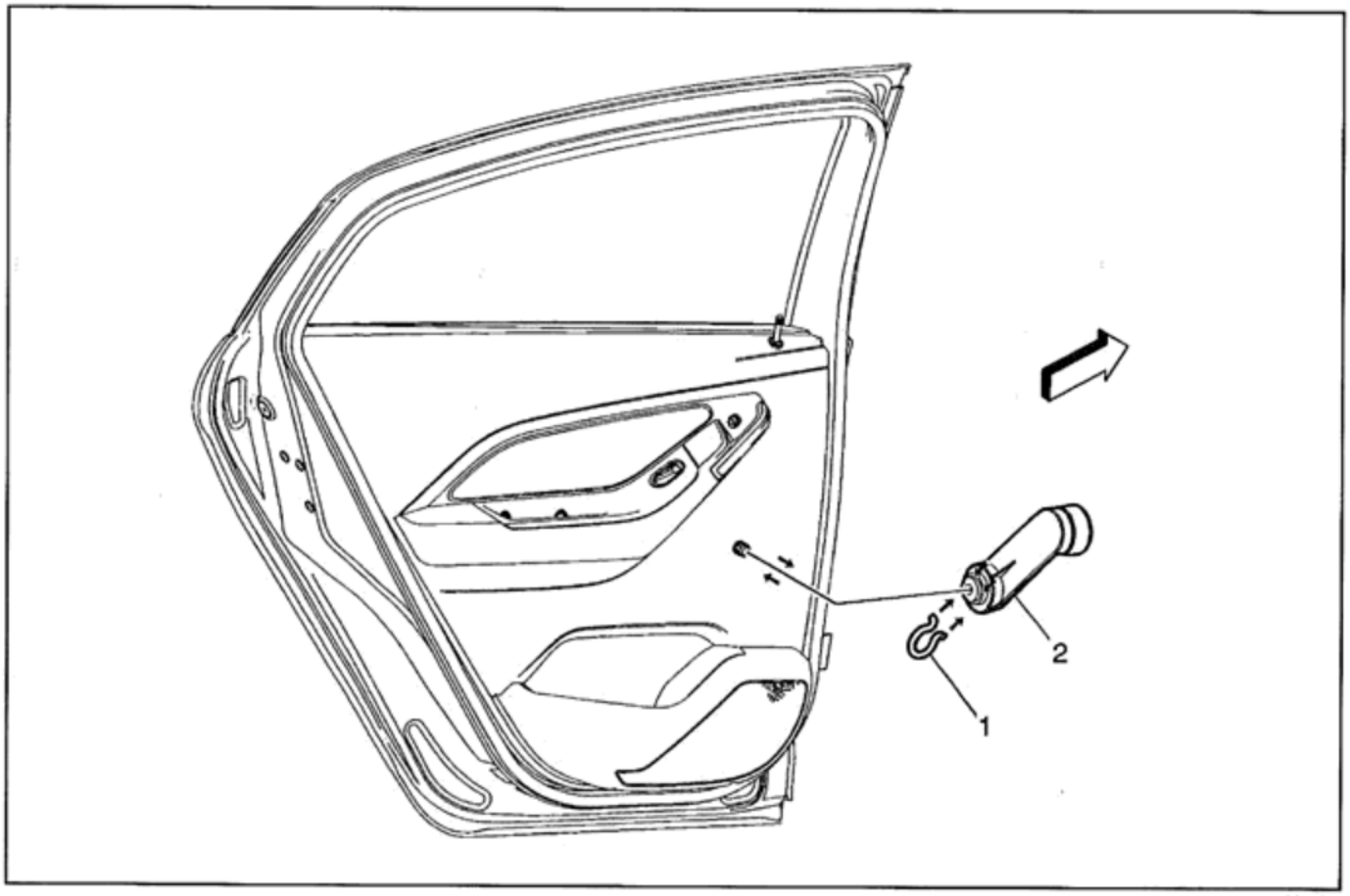


2259113

Front Side Door Window Regulator Handle Replacement

Callout	Component Name
1	Front Side Door Window Regulator Handle Clip **Procedure** Use the appropriate tool, remove the clip from handle.
2	Front Side Door Window Regulator Handle

Rear Side Door Window Regulator Handle Replacement

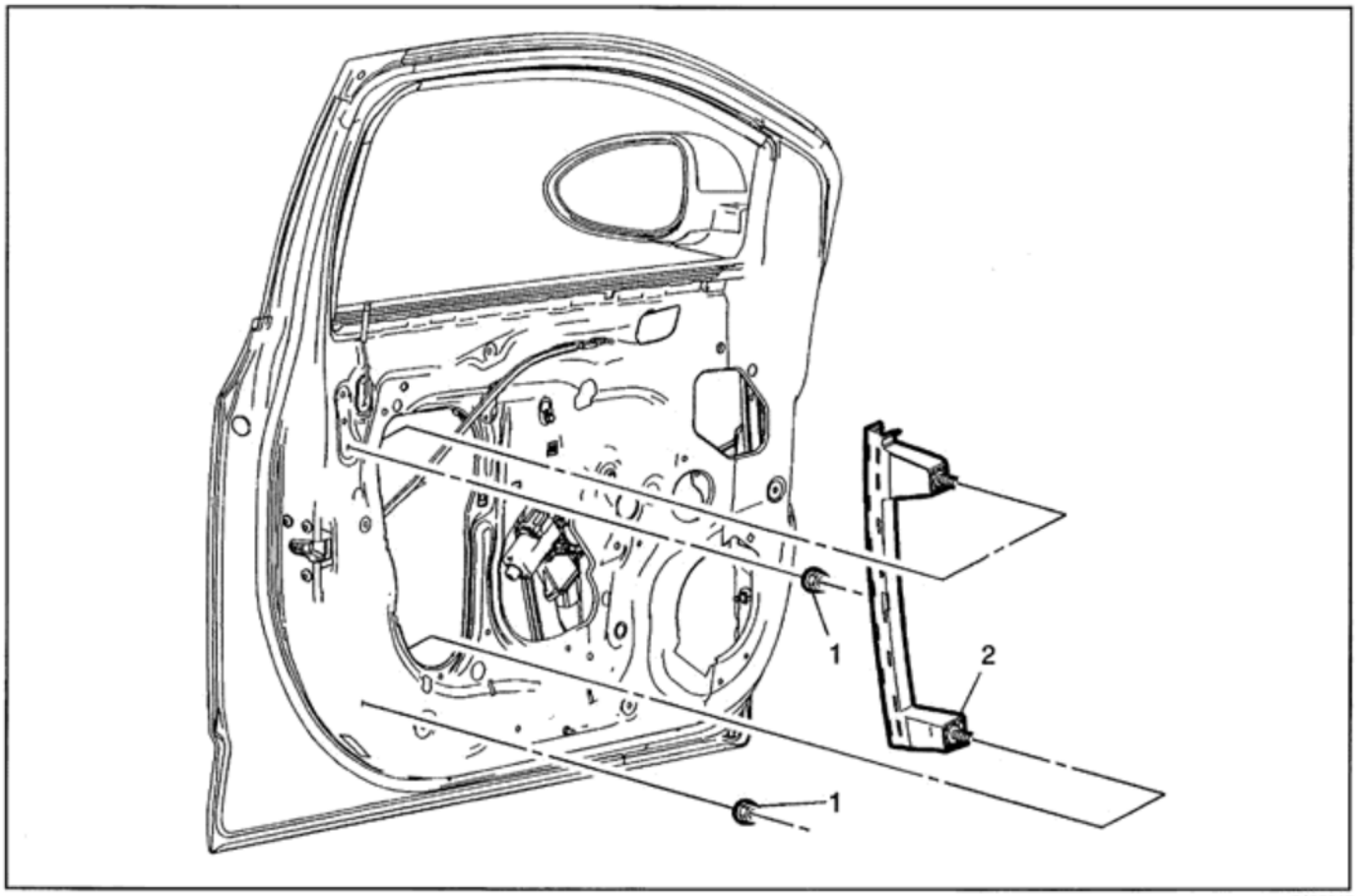


2255229

Rear Side Door Window Regulator Handle Replacement

Callout	Component Name
1	Rear Side Door Window Regulator Handle Clip **Procedure** Use the appropriate tool, remove the clip from handle.
2	Rear Side Door Window Regulator Handle

Front Side Door Window Rear Guide Replacement

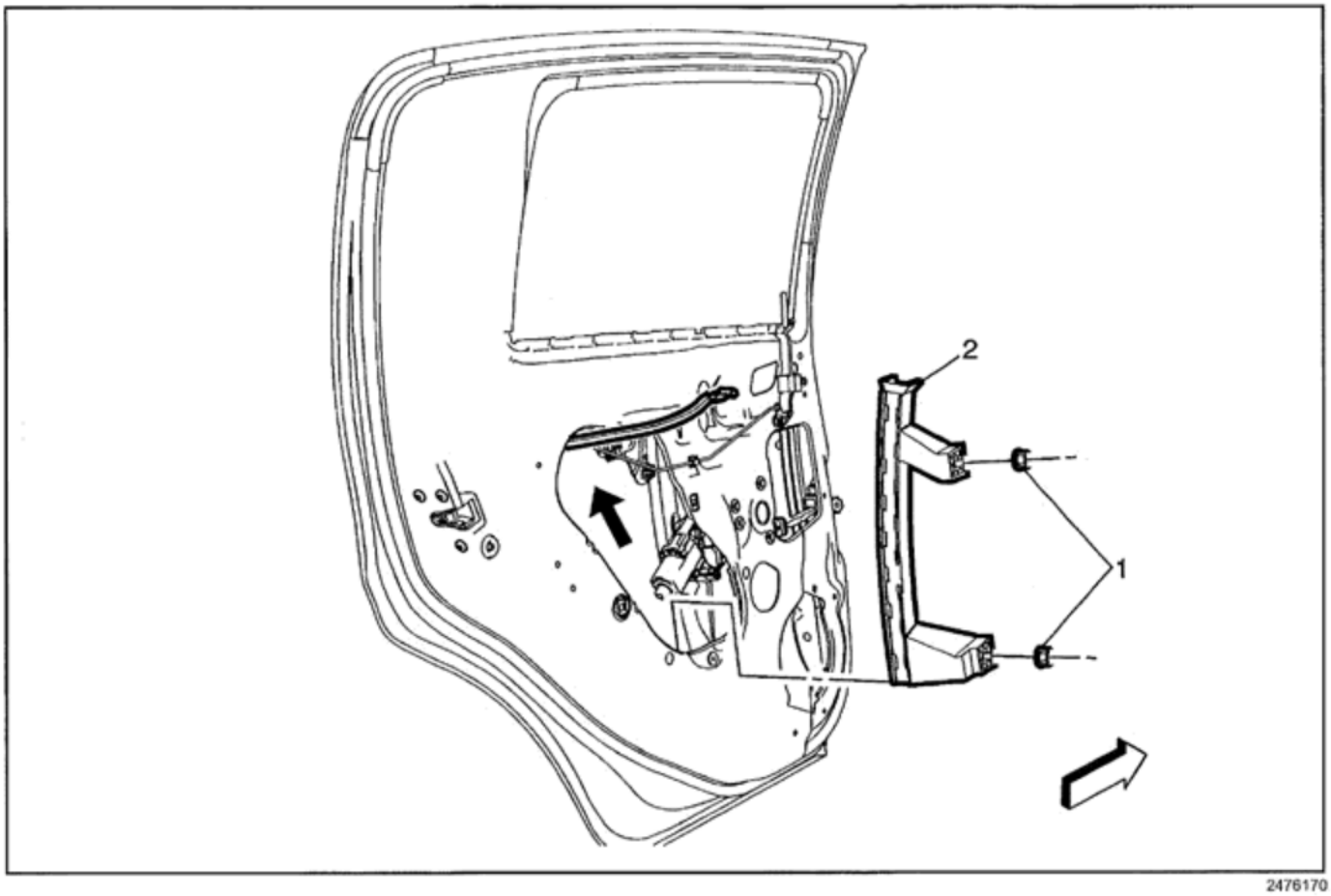


2425017

Front Side Door Window Rear Guide Replacement

Callout	Component Name
Preliminary Procedure Remove the front side door trim panel. Refer to *Front Side Door Trim Replacement on page 2-67*.	
1	Front Side Door Window Rear Guide Nut (Qty :2) **Caution:** Refer to *Fastener Caution on page 0-8*. **Procedure** 1. Remove the front side door water deflector. 2. Do not remove the window from the vehicle, raise the window to the fully up position. 3. Pull the weatherstrip out from the inner channel of the guide. **Tighten** 11 N•m (97 lb in)
2	Front Side Door Window Rear Guide **Tip:** Inspect the window for proper operation before installing the trim panel.

Rear Side Door Window Rear Guide Replacement

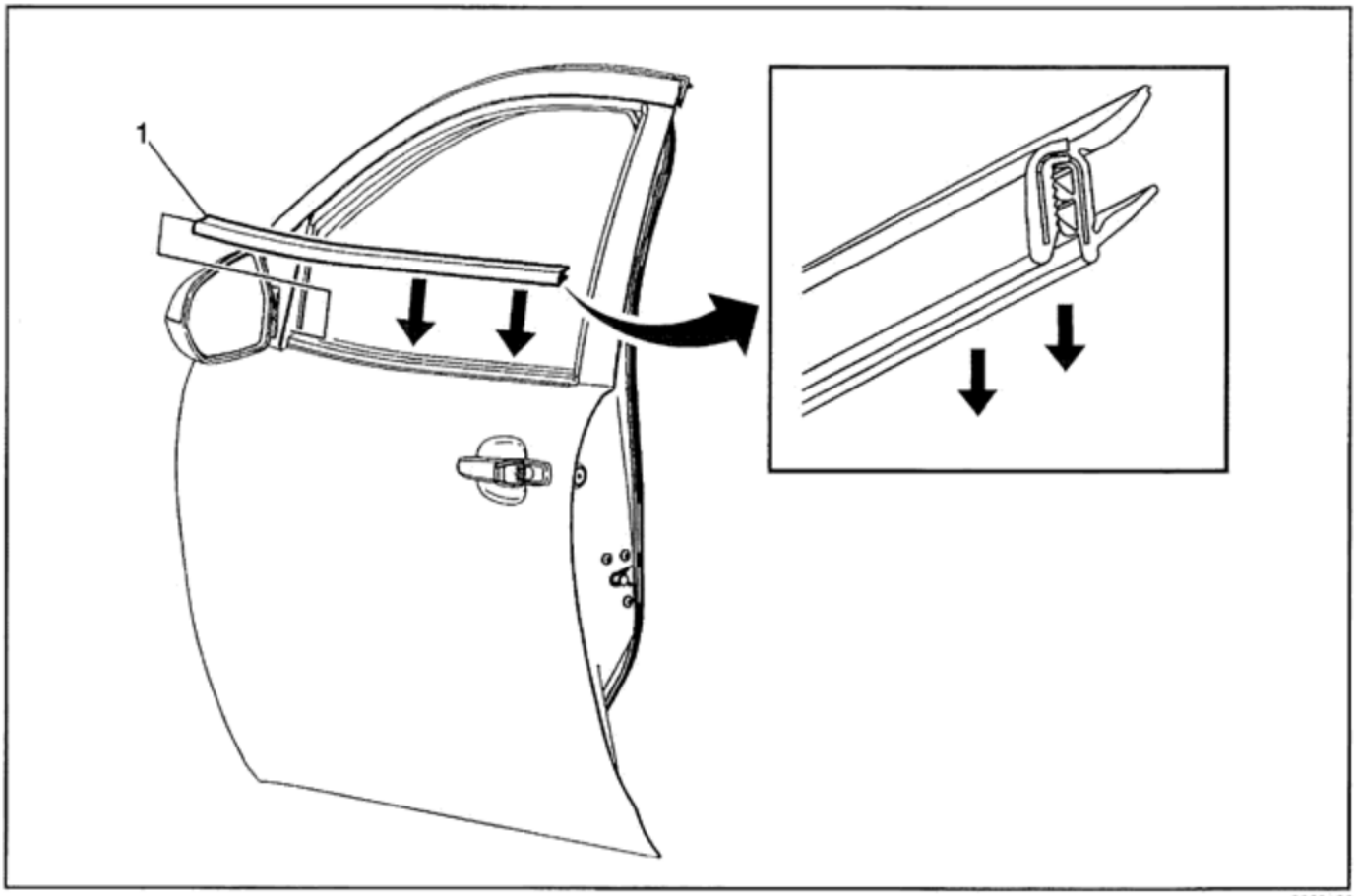


2476170

Rear Side Door Window Rear Guide Replacement

Callout	Component Name
Preliminary Procedure Remove the rear side door trim panel. Refer to *Rear Side Door Trim Replacement (Sedan) on page 2-84* or *Rear Side Door Trim Replacement (Hatchback) on page 2-83*.	
1	Rear Side Door Window Rear Guide Nut (Qty: 3) **Caution:** Refer to *Fastener Caution on page 0-8*. **Procedure** 1. Remove the rear side door water deflector. 2. Do Not remove the window from the vehicle, raise the window to the fully up position. 3. Pull the weatherstrip out from the inner channel of the guide. **Tighten** 11 N•m (97 lb in)
2	Rear Side Door Window Rear Guide **Tip:** Inspect the door window for proper operation before installing the door trim panel.

Front Side Door Window Outer Sealing Strip Replacement

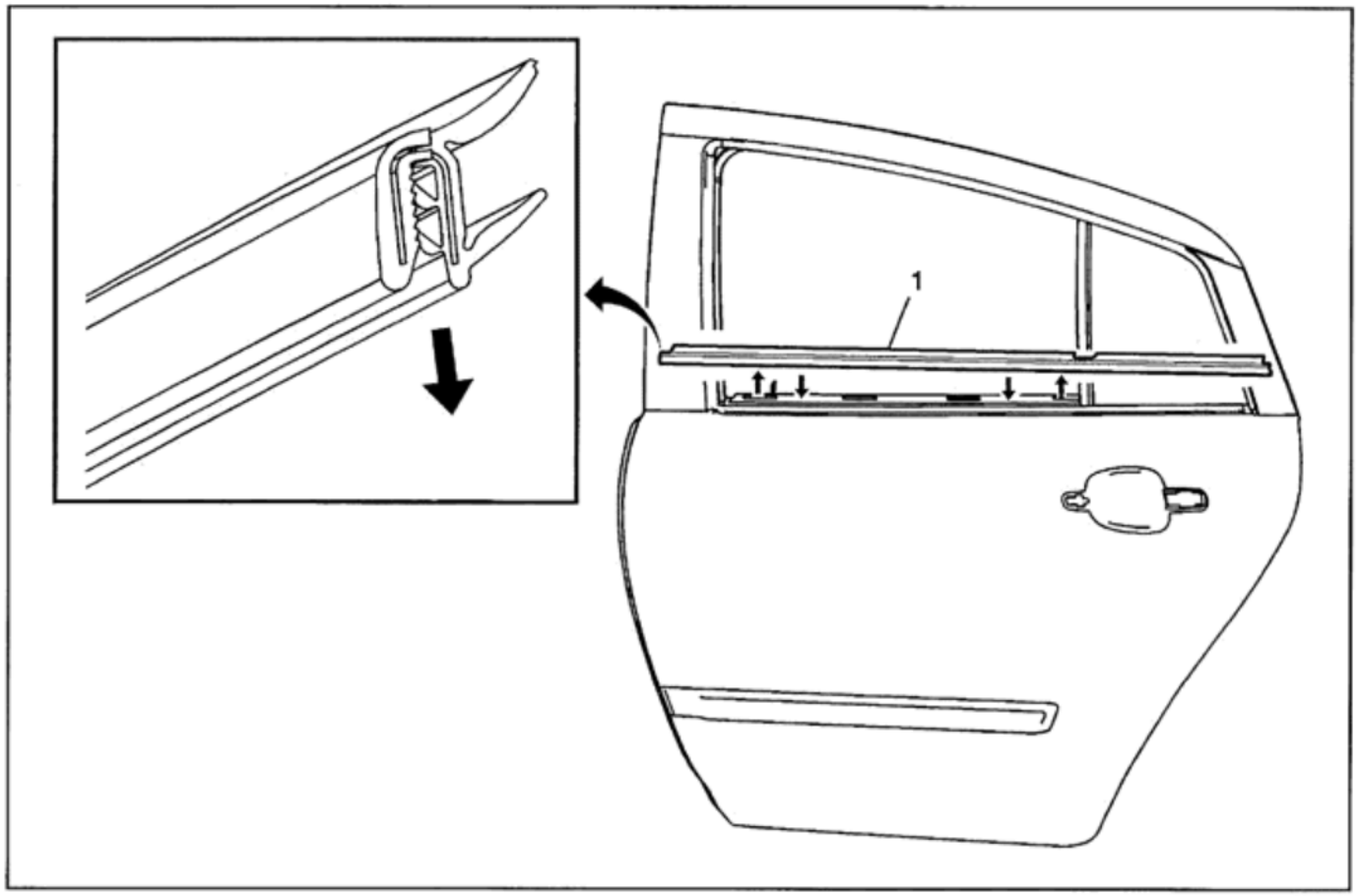


2259126

Front Side Door Window Outer Sealing Strip Replacement

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

Rear Side Door Window Outer Sealing Strip Replacement (Sedan)

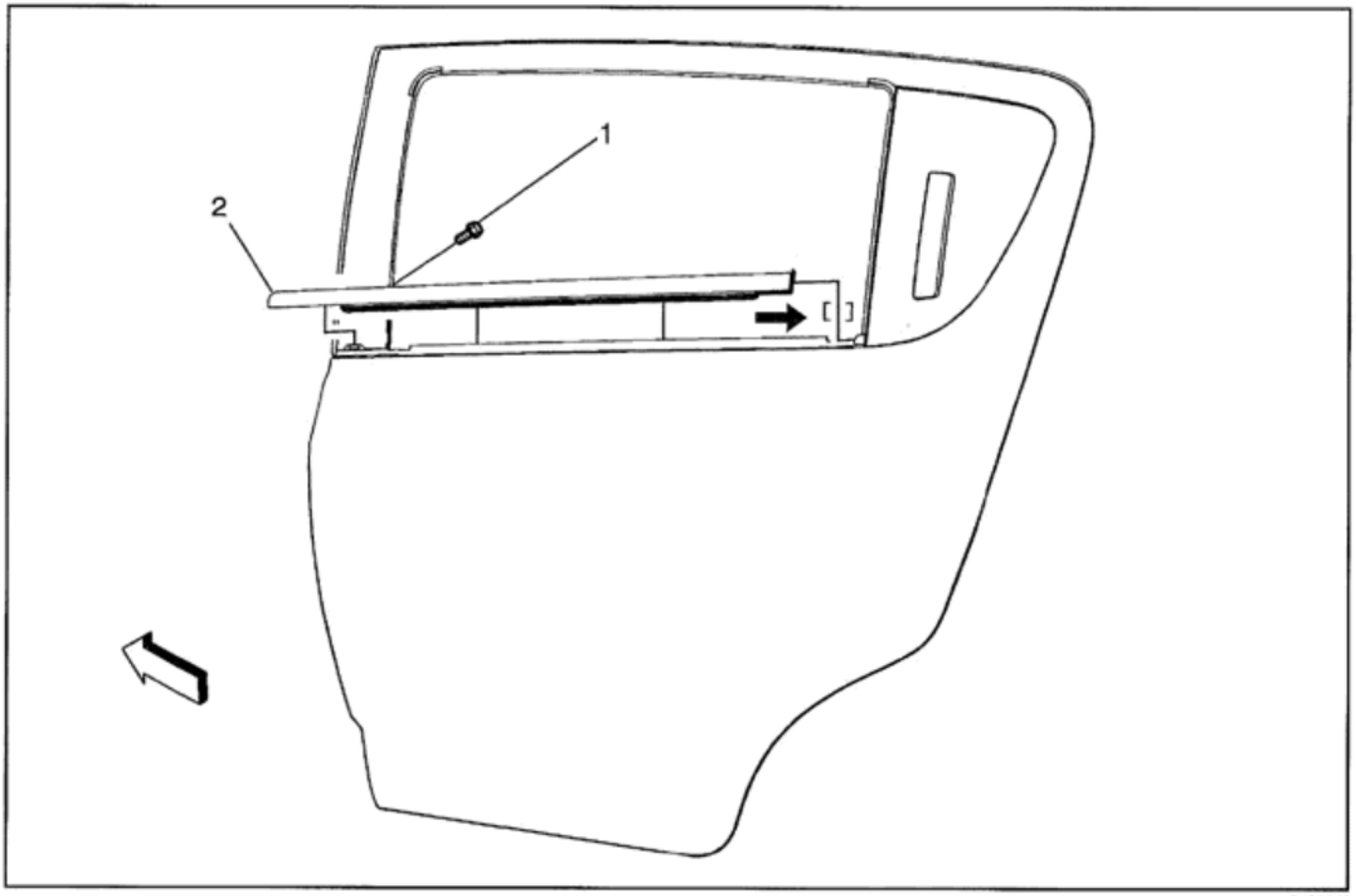


2257515

Rear Side Door Window Outer Sealing Strip Replacement (Sedan)

Callout	Component Name
1	Rear Side Door Window Outer Sealing Strip **Procedure** Use the appropriate tool, lift one end up and pull away from the door flange to remove.

Rear Side Door Window Outer Sealing Strip Replacement (Hatchback)

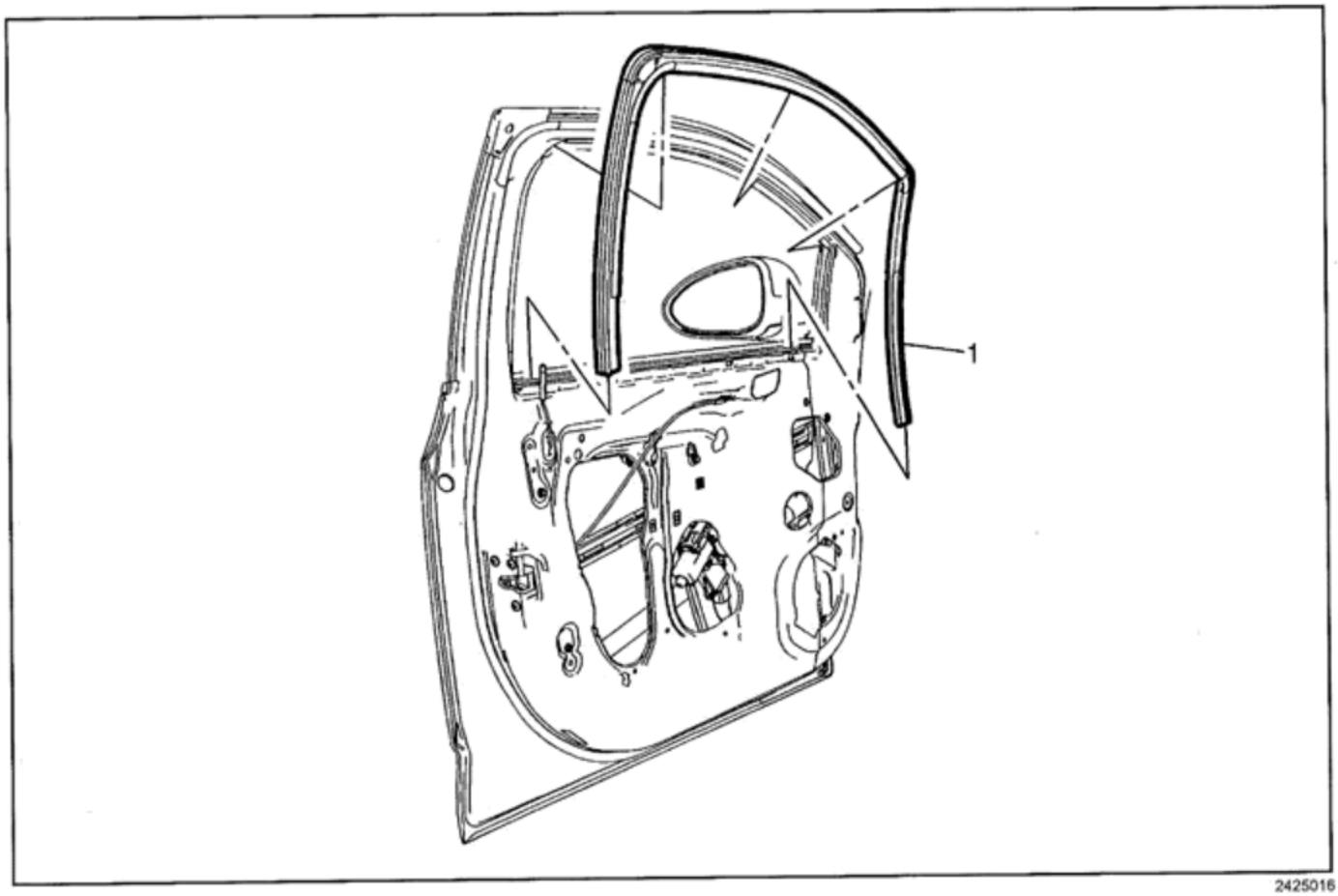


2425049

Rear Side Door Window Outer Sealing Strip Replacement (Hatchback)

Callout	Component Name
1	Rear Side Door Window Outer Sealing Strip Screw **Caution:** Refer to *Fastener Caution on page 0-8.* **Tighten** 2 N•m (18 lb in) **Note:** Open the rear door to the full open position to expose the rear side door window outer sealing strip screw that is located on the front inner edge of the door.
2	Rear Side Door Window Outer Sealing Strip **Procedure** 1. Use the appropriate tool, lift the front corner of the sealing strip and pull upward and away from the door flange. 2. Press firmly to insert the rear side door window sealing strip back on the door flange. 3. Inspect the door window for proper operation before installing the door trim panel.

Front Side Door Window Weatherstrip Replacement

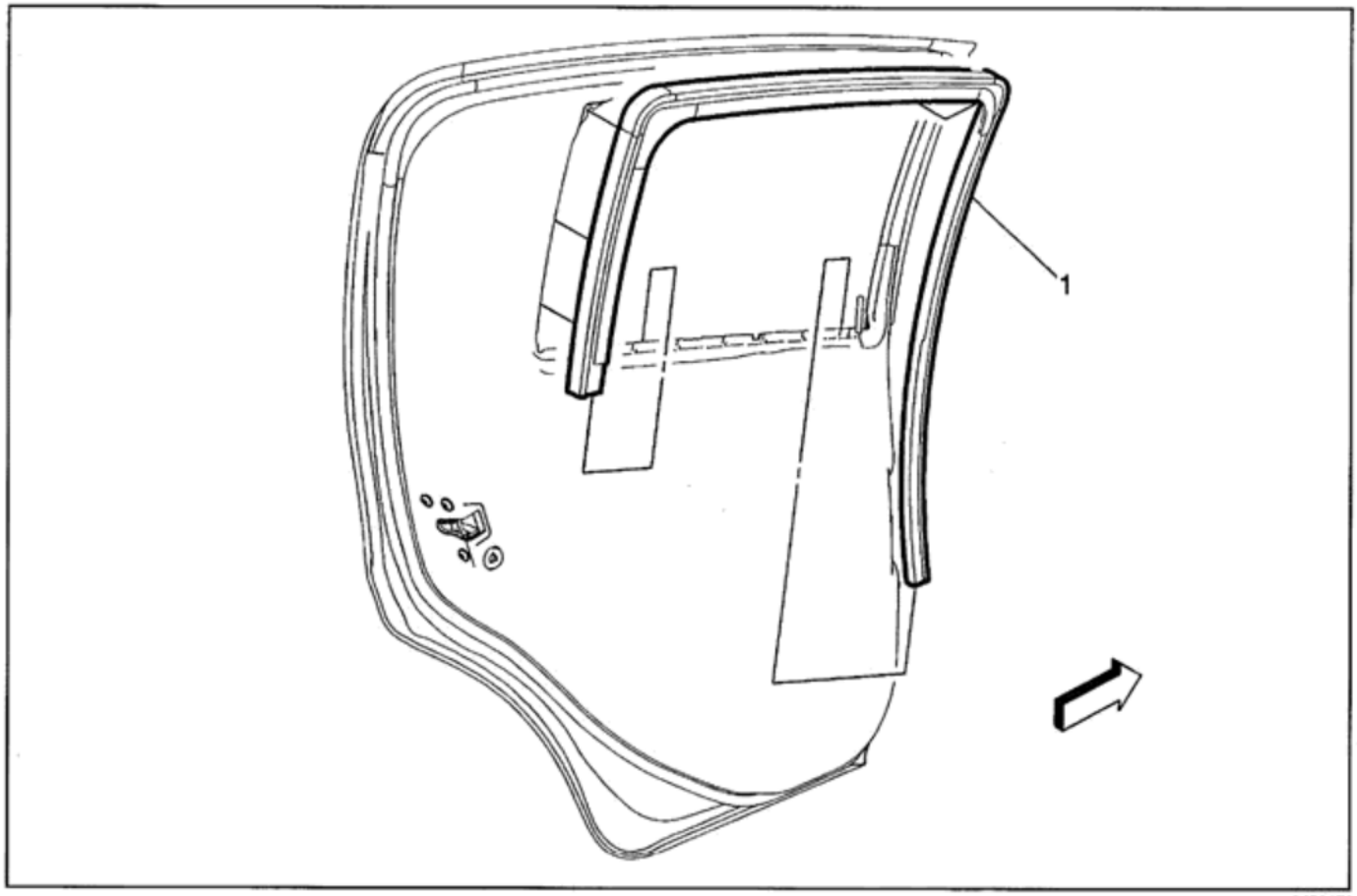


2425016

Front Side Door Window Weatherstrip Replacement

Callout	Component Name
Preliminary Procedures 1. Remove front side door trim panel. Refer to *Front Side Door Trim Replacement on page 2-67*. 2. Remove the outside rearview mirror. Refer to *Outside Rearview Mirror Replacement (Power) on page 4-229* or *Outside Rearview Mirror Replacement (Manual) on page 4-228*.	
1	Front Side Door Window Weatherstrip **Procedure** 1. Place the window in the fully down position. 2. Remove the water deflector. 3. Grasp both upper corners of the window weatherstrip, pull downward releasing the assembly from the door frame. 4. Insert the weatherstrip downward in the front and rear channel until fully seated. 5. Position the window weatherstrip in the upper rear corner of the frame, work the weatherstrip around the door frame. 6. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the channels. 7. Inspect the door window for proper operation before installing the door trim panel.

Rear Side Door Window Weatherstrip Replacement (Hatchback)

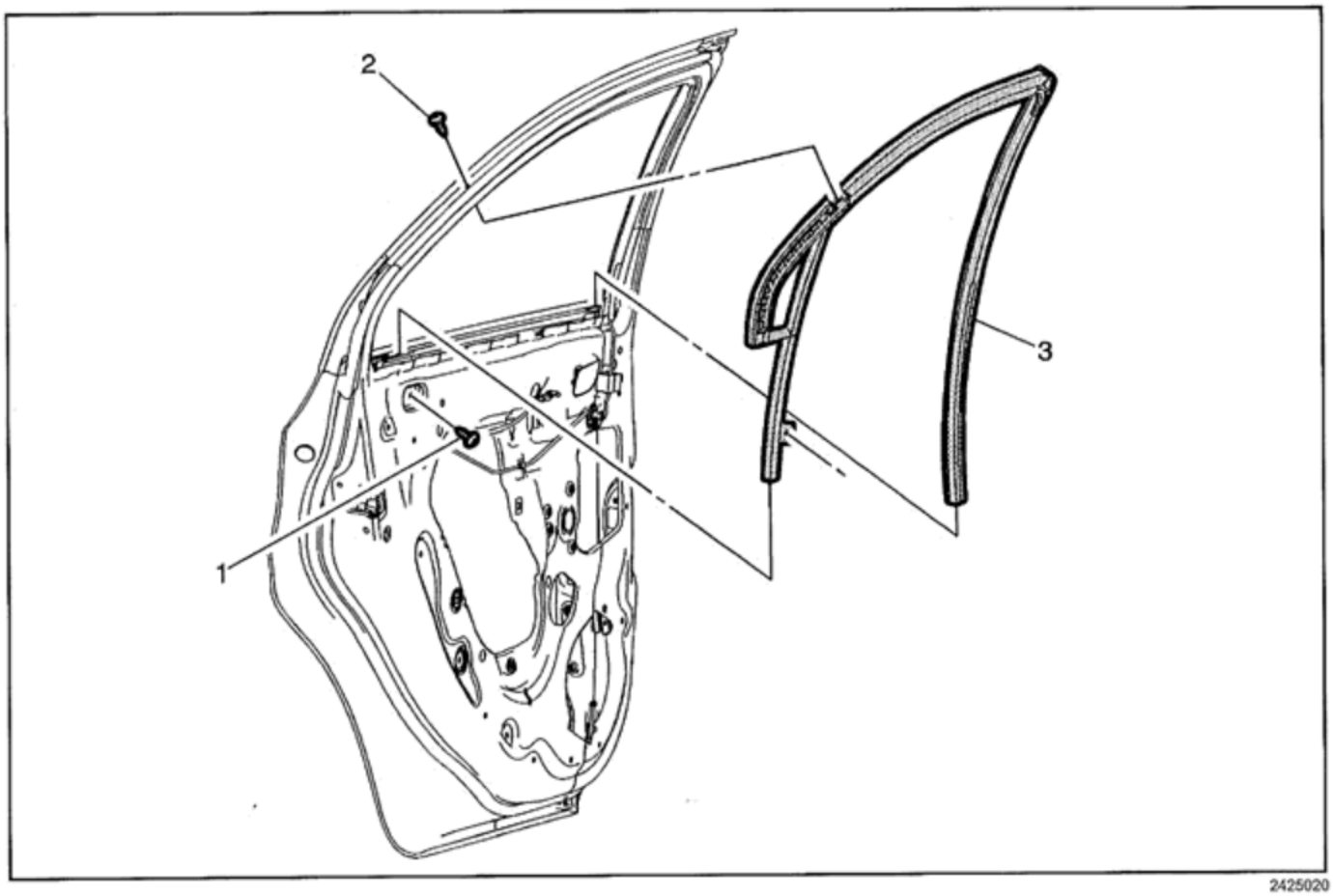


2476172

Rear Side Door Window Weatherstrip Replacement (Hatchback)

Callout	Component Name
Preliminary Procedure Remove the rear side door window . Refer to *Rear Side Door Window Replacement (Hatchback) on page 4-32* or *Rear Side Door Window Replacement (Sedan) on page 4-30*.	
1	Rear Side Door Window Weatherstrip **Procedure** 1. Remove the rear side door water deflector. 2. Remove the weatherstrip from the front and rear lower window guides. 3. Grasp both upper corners, pull downward releasing the weatherstrip from the door frame. 4. Insert the weatherstrip downward in the window guides until fully seated. 5. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the guides. 6. Inspect the door window for proper operation before installing the door trim panel.

Rear Side Door Window Weatherstrip Replacement (Sedan)



2425020

Rear Side Door Window Weatherstrip Replacement (Sedan)

Callout	Component Name
Preliminary Procedures 1. The rear door side window weatherstrip and window is serviced as one assembly. Refer to *Rear Side Door Stationary Window Replacement on page 4-33*. 2. Remove the rear side door window . Refer to *Rear Side Door Window Replacement (Hatchback) on page 4-32* or *Rear Side Door Window Replacement (Sedan) on page 4-30*.	
1	Rear Side Door Window Weatherstrip Lower Bolt **Caution:** Refer to *Fastener Caution on page 0-8*. **Procedure** Remove the rear side door water deflector. **Tighten** 9 N•m (80 lb in)
2	Rear Side Door Window Weatherstrip Upper Screw **Procedure** 1. Pull the door weatherstrip out of the upper retainer to expose the screw. 2. Remove the weatherstrip from the front and rear lower guides. 3. Grasp both upper corners, pull downward releasing the weatherstrip from the door frame. **Tighten** 3 N•m (27 lb in)

Rear Side Door Window Weatherstrip Replacement (Sedan) (cont'd)

Callout	Component Name
3	Rear Side Door Window Weatherstrip **Procedure** 1. Insert the weatherstrip downward in the guide until fully seated. 2. Carefully move the regulator upward for short slow intervals, while ensuring that the window remains in the guides. 3. Inspect the door window for proper operation before installing the door trim panel.

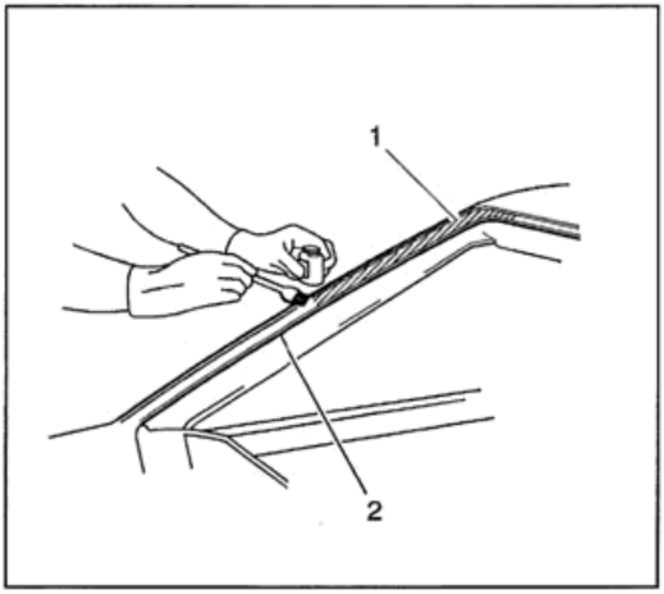
Adhesive Installation of Windshields

Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5.

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

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

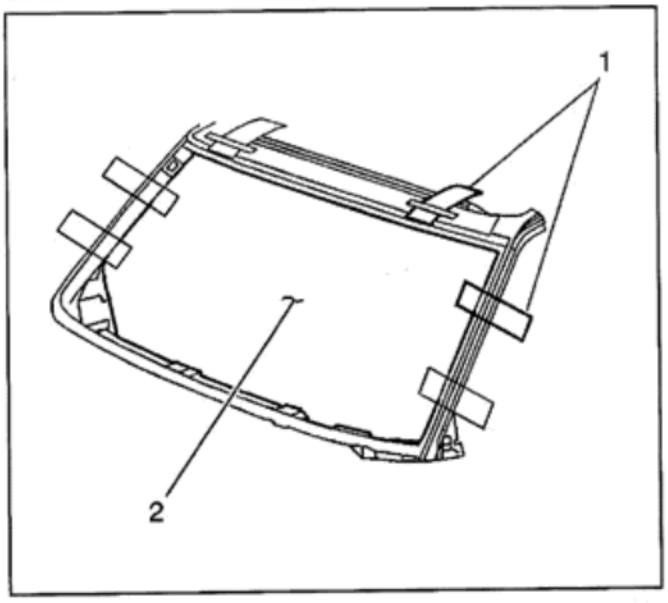
5. After repairing the opening as indicated, perform the following steps:
   5.1. Remove all traces of broken glass from the outer cowl panel, seats, floor and defroster ducts.
   5.2. Clean around the edge of the inside surface of the window with a 50/50 mixture of isopropyl alcohol and water by volume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



245283

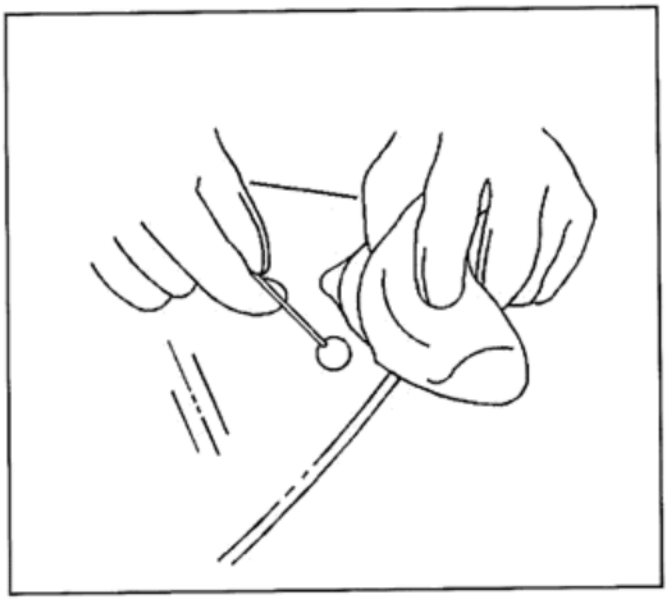
Warning: Failure to prep the area prior to the application of primer may cause insufficient bonding of urethane adhesive. Insufficient bonding of urethane adhesive may allow unrestrained occupants to be ejected from the vehicle resulting in personal injury.

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



745571

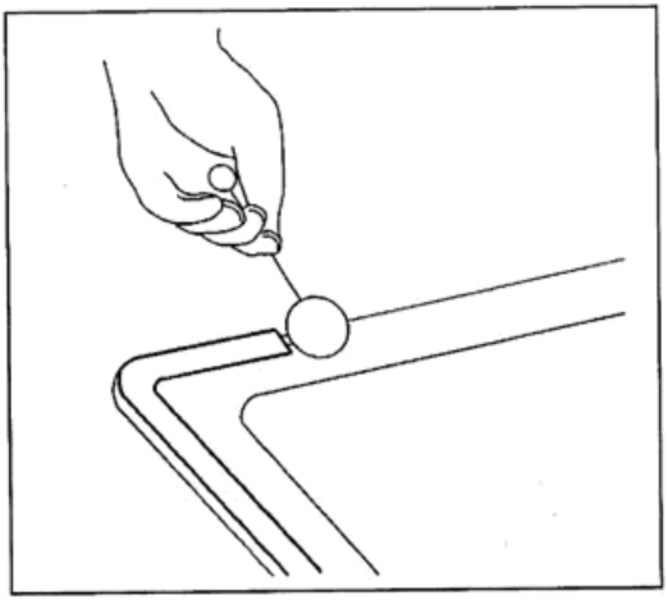
10. Use masking tape in order to mark the locations (1) of the window (2) in the opening.
11. Cut the masking tape in the center and remove the window from the opening.



379890

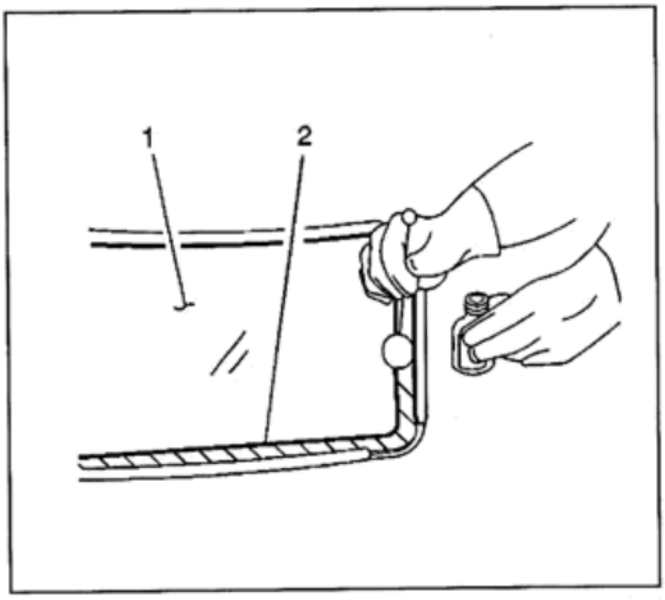
12. Apply glass prep clear to the area approximately 10–16 mm (3/8–5/8 in) around the entire perimeter of the window inner surface.

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



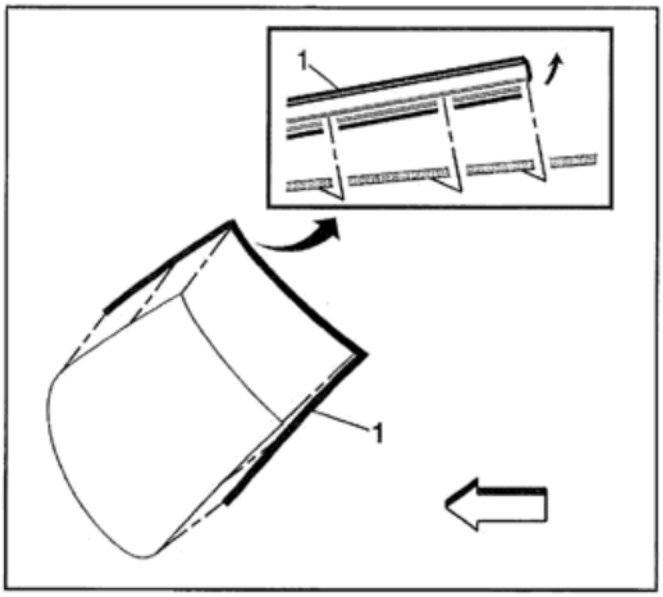
161424

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



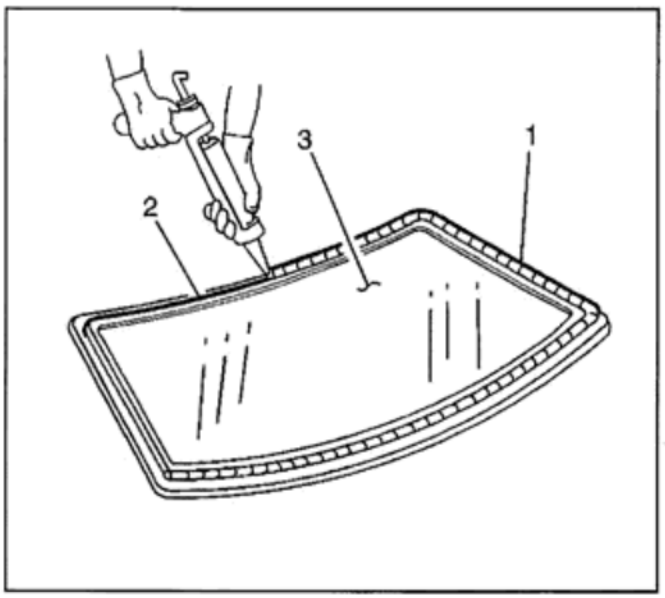
245290

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



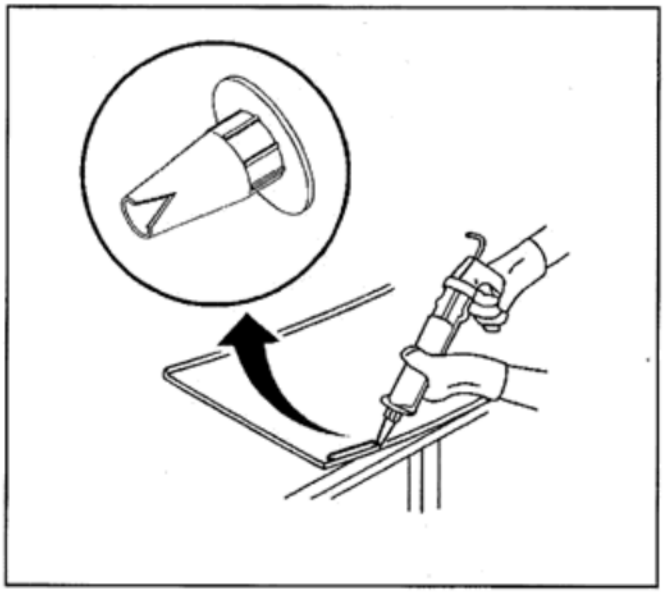
2424992

17. Install the window reveal molding (1). Refer to *Windshield Upper Reveal Molding Replacement on page 4-28*.



245315

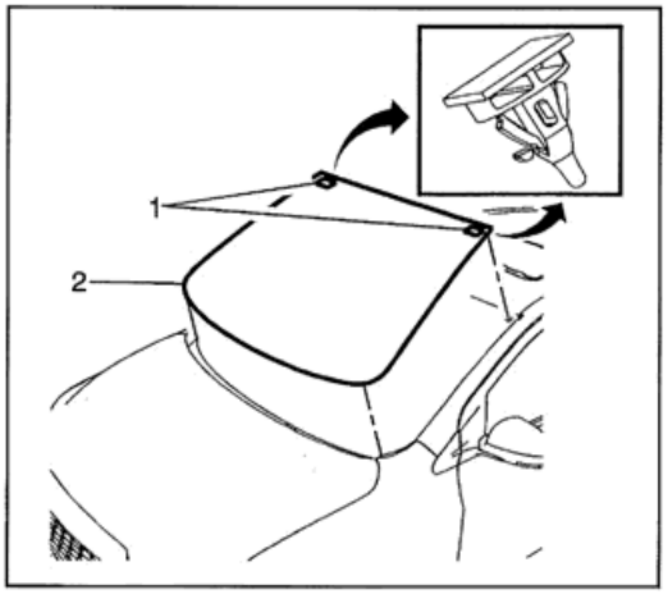
19. Use the edge of the window as a guide for the nozzle in order to apply the urethane adhesive (1) to the inner surface of the window (3).



161427

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

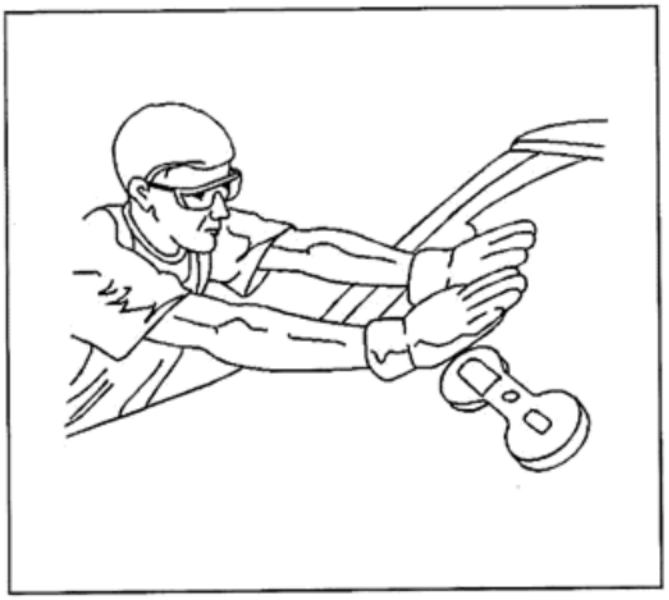
    Cut the applicator nozzle to provided a V cut to apply the auto-adhesive.



2424998

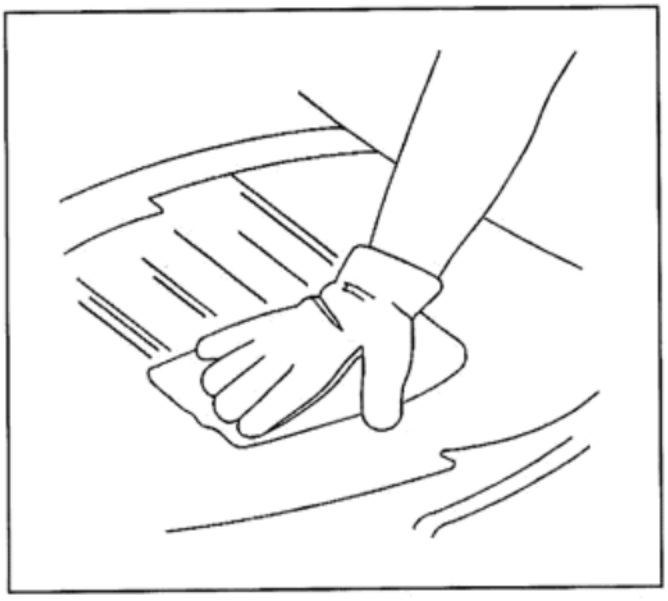
Note: If the locating pins were cut off it will be necessary to tape the window in place until the auto-adhesive cures per auto-adhesive instructions by the manufacturer's.

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



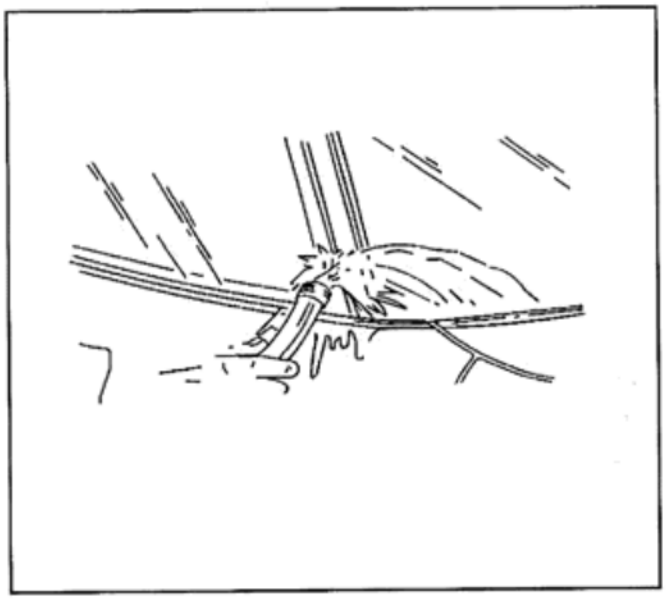
706204

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



706194

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



95572

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

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

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

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

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

28. 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.
29. Complete the window installation.

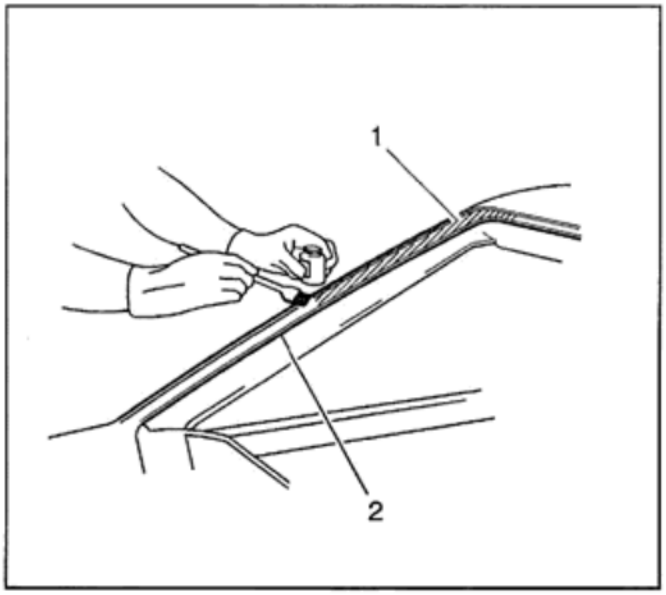
Adhesive Installation of Rear Windows

Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5.

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

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

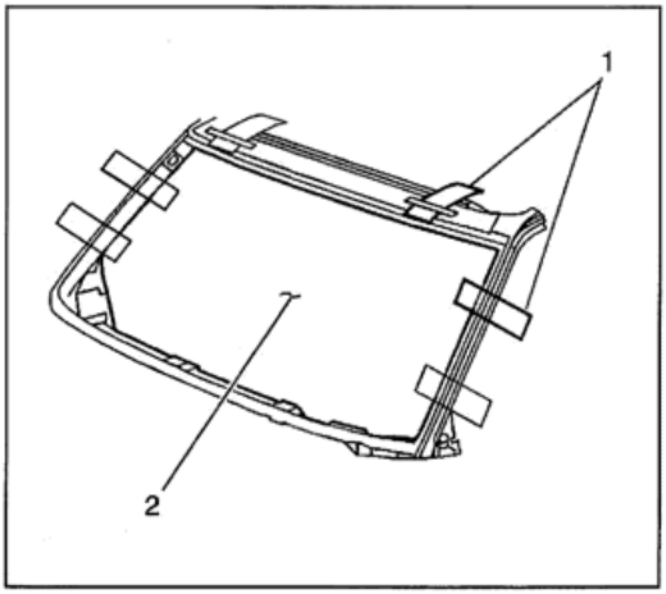
5. After repairing the opening as indicated, perform the following steps:
   5.1. Remove all traces of broken glass from the outer cowl panel, seats, floor and defroster ducts.
   5.2. Clean around the edge of the inside surface of the window with a 50/50 mixture of isopropyl alcohol and water by volume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



245283

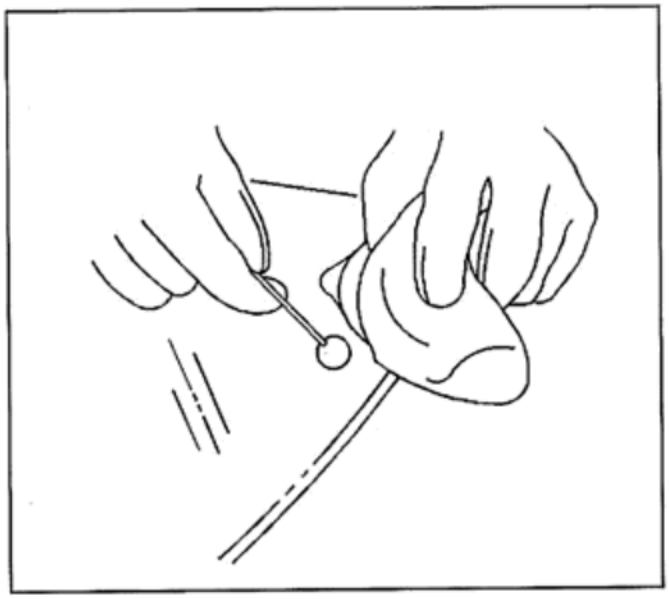
Warning: Failure to prep the area prior to the application of primer may cause insufficient bonding of urethane adhesive. Insufficient bonding of urethane adhesive may allow unrestrained occupants to be ejected from the vehicle resulting in personal injury.

7. Apply the primer to the surface of the pinch-weld flange (1).
8. Allow the pinch-weld primer to dry per auto-adhesive instructions by the manufacturer's.



745571

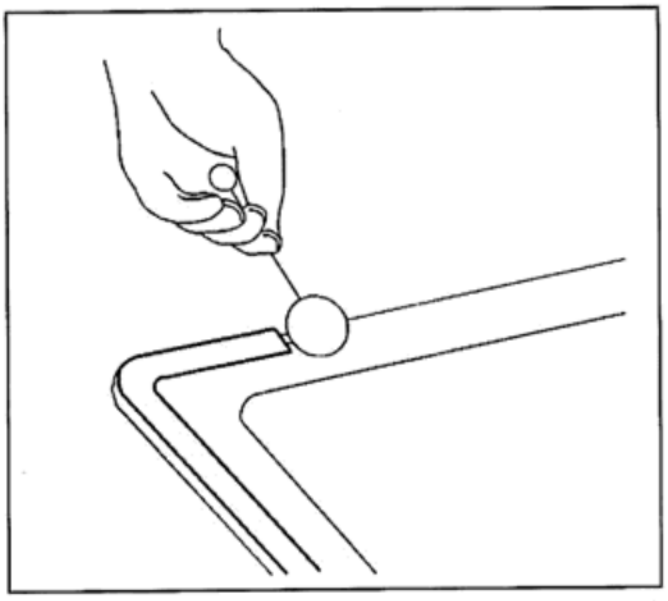
9. Use masking tape in order to mark the locations (1) of the window (2) in the opening.
10. Cut the masking tape in the center and remove the window from the opening.



379890

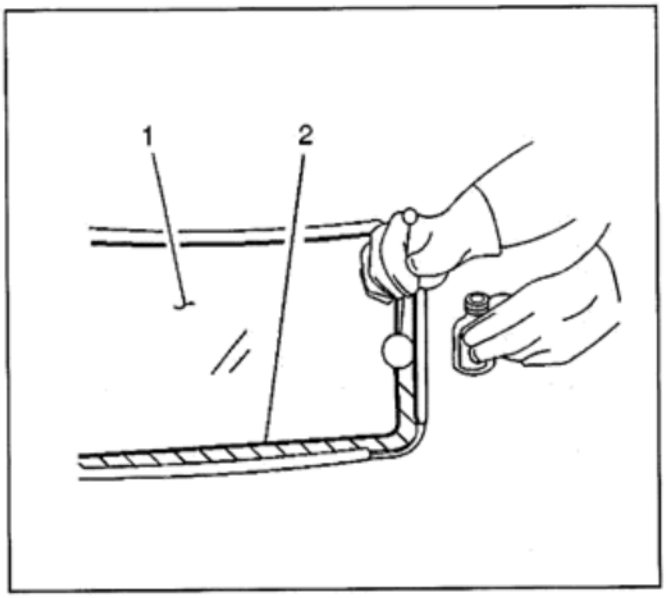
11. Apply glass prep clear to the area approximately 10–16 mm (3/8–5/8 in) around the entire perimeter of the window inner surface.

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



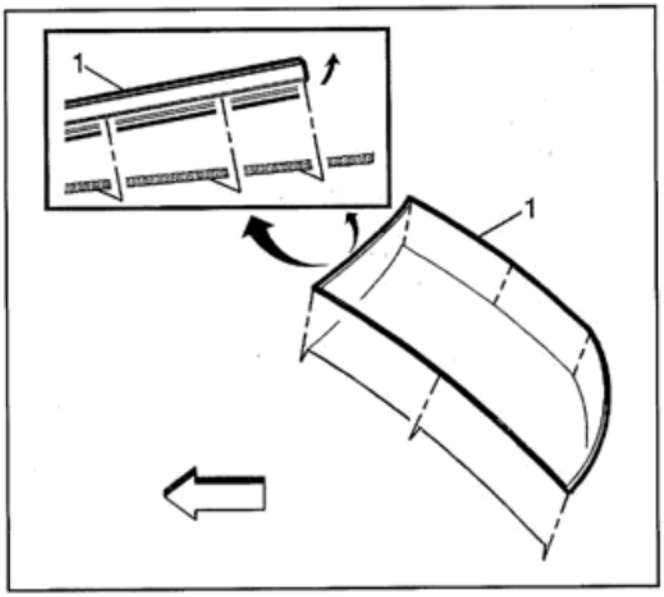
161424

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



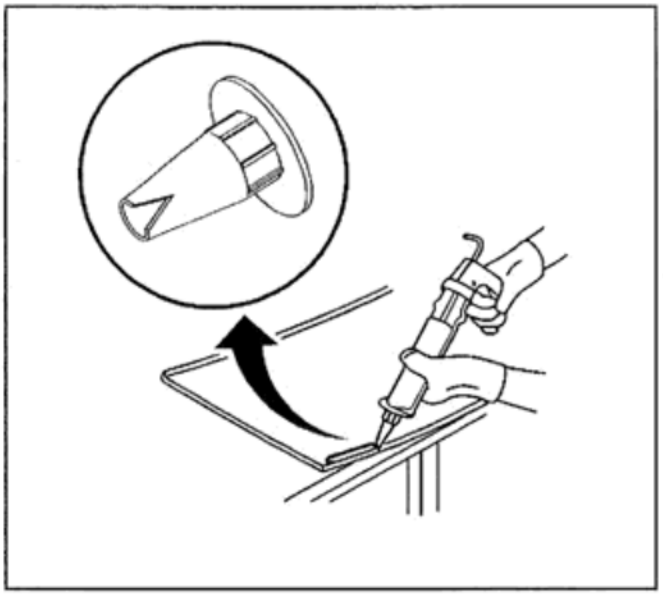
245290

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



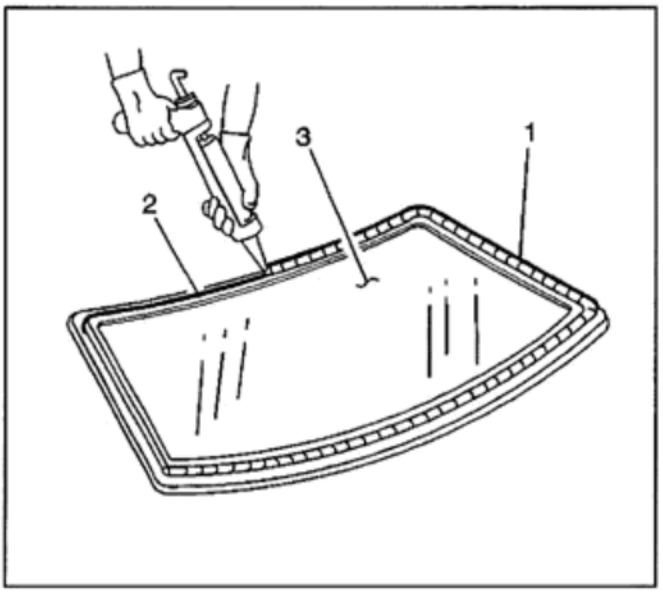
2424993

16. Install the window reveal molding (1). Install the window reveal molding. Refer to *Rear Window Reveal Molding Replacement on page 4-36*.



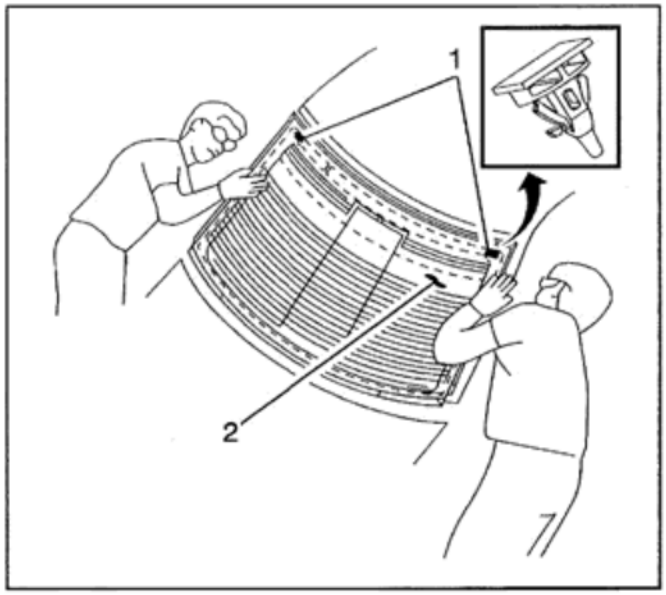
161427

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



245315

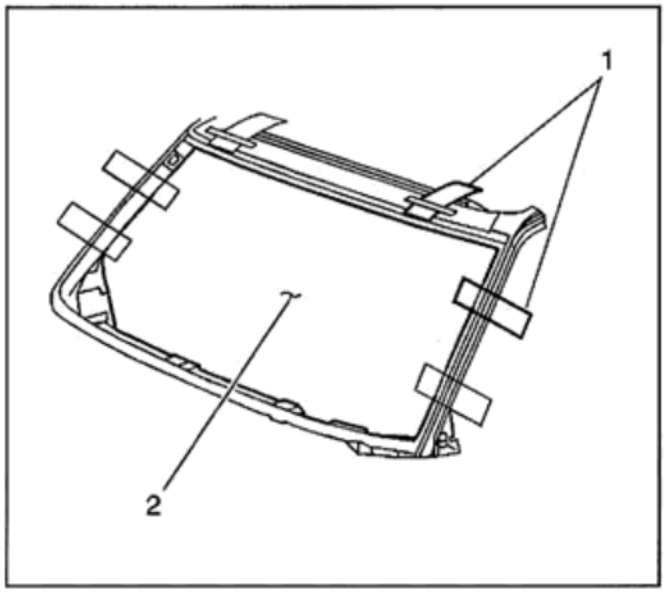
18. Use the edge of the window as a guide for the nozzle in order to apply the urethane adhesive (1) to the inner surface of the window (3).



757629

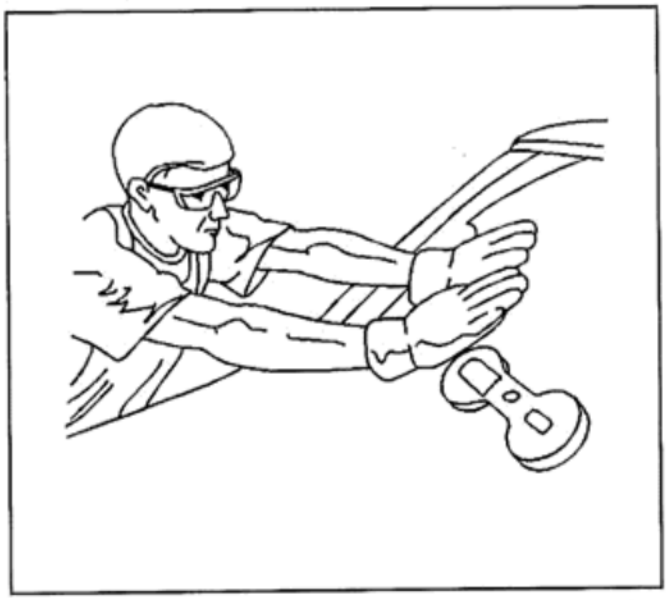
Note: If the locating pins were cut off it will be necessary to tape the window in place until the auto-adhesive cures per auto-adhesive instructions by the manufacturer's.

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



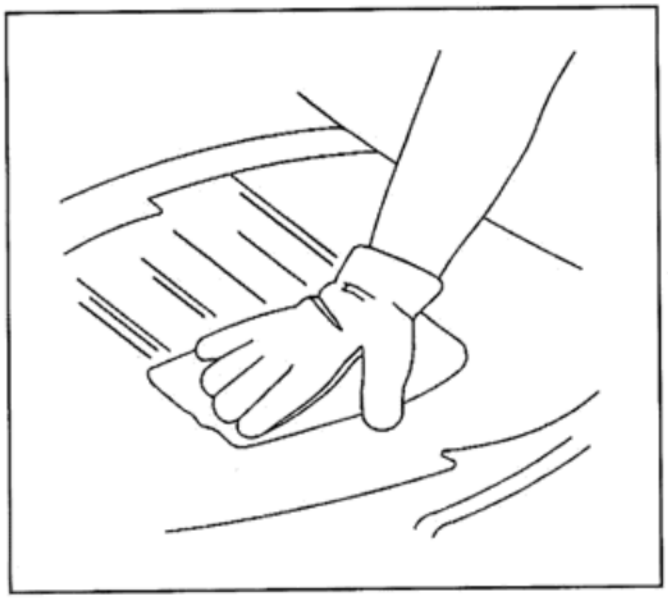
745571

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



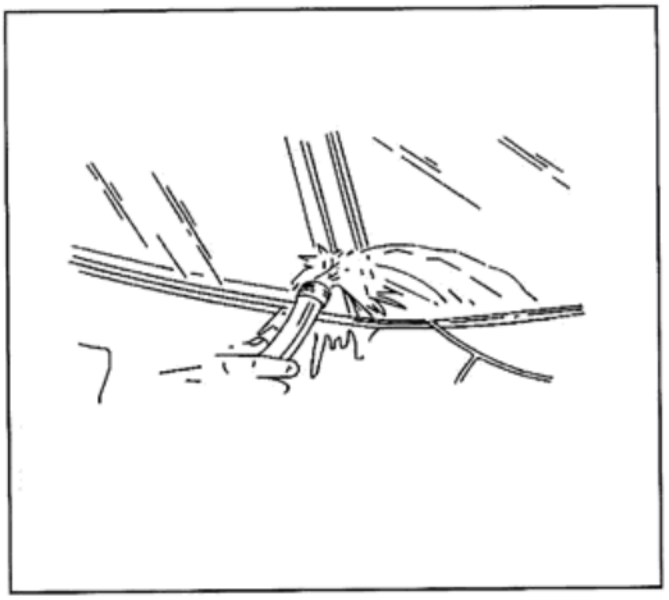
706204

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



706194

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



95572

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

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

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

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

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

28. 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.
29. Complete the window installation.

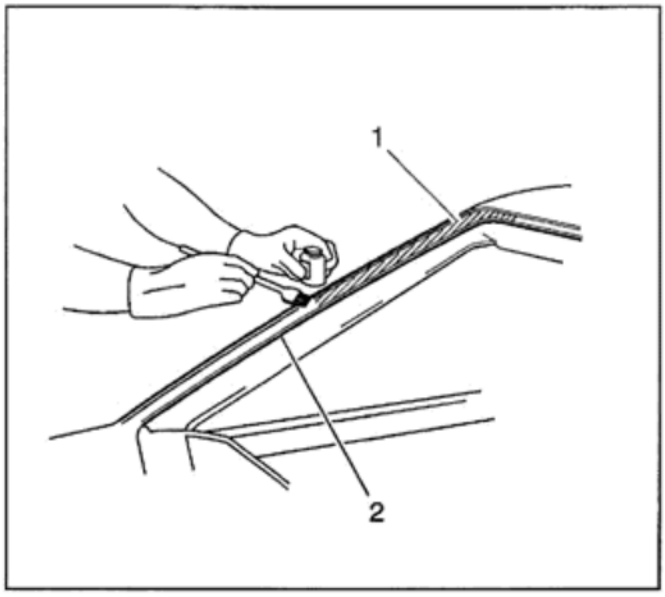
Adhesive Installation of Liftgate Windows

Warning: Refer to Glass and Sheet Metal Handling Warning on page 0-5.

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

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

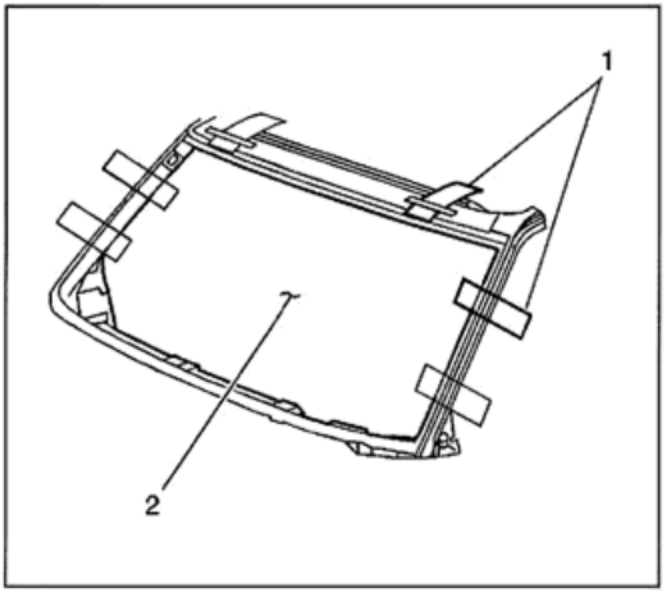
5. After repairing the opening as indicated, perform the following steps:
   5.1. Remove all traces of broken glass from the outer cowl panel, seats, floor and defroster ducts.
   5.2. Clean around the edge of the inside surface of the window with a 50/50 mixture of isopropyl alcohol and water by volume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



245283

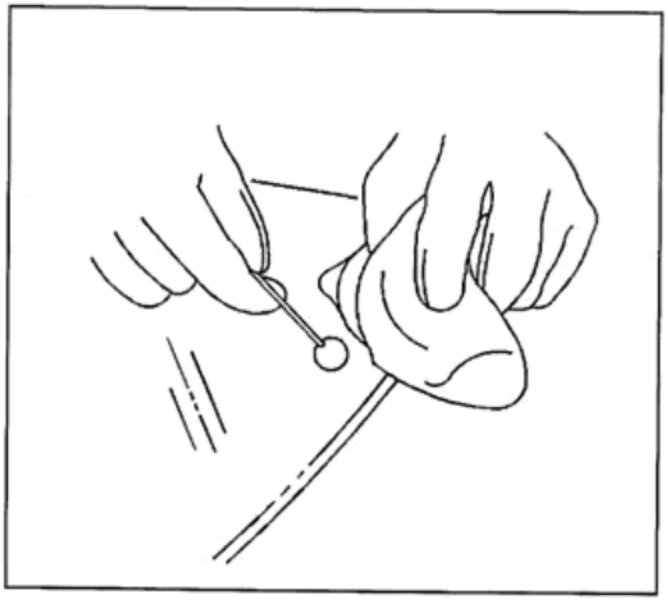
Warning: Failure to prep the area prior to the application of primer may cause insufficient bonding of urethane adhesive. Insufficient bonding of urethane adhesive may allow unrestrained occupants to be ejected from the vehicle resulting in personal injury.

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



745571

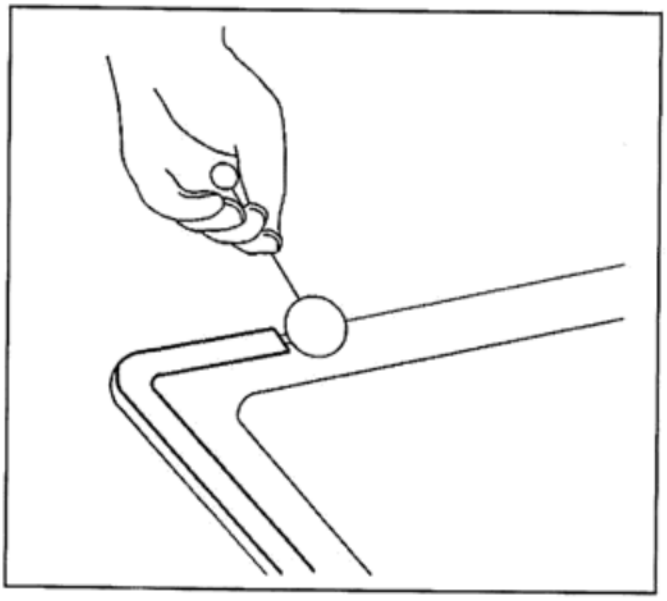
10. Use masking tape in order to mark the locations (1) of the window (2) in the opening.
11. Cut the masking tape in the center and remove the window from the opening.



379890

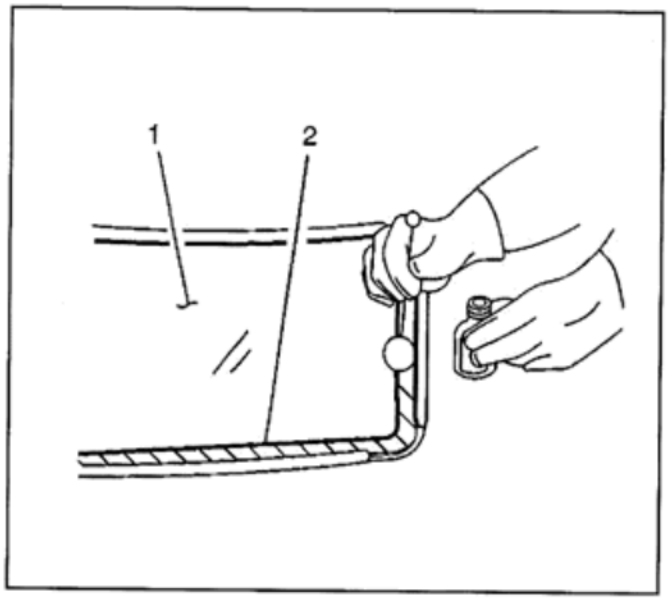
12. Apply glass prep clear to the area approximately 10–16 mm (3/8–5/8 in) around the entire perimeter of the window inner surface.

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



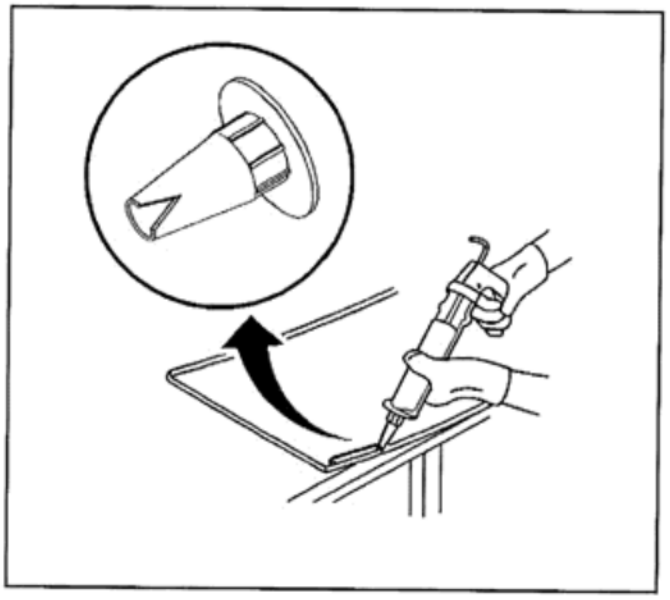
161424

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



245290

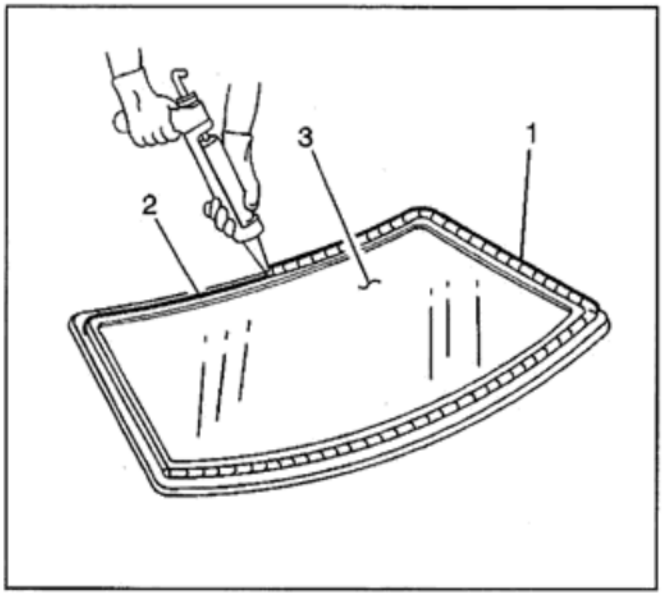
14. Apply the auto-adhesive primer-application (2) around the perimeter of the window (1) per auto-adhesive instructions by the manufacturer's.
15. Apply the glass primer black to the same areas (2) that glass prep clear was applied.
16. Allow the glass primer to dry per auto-adhesive instructions by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



161427

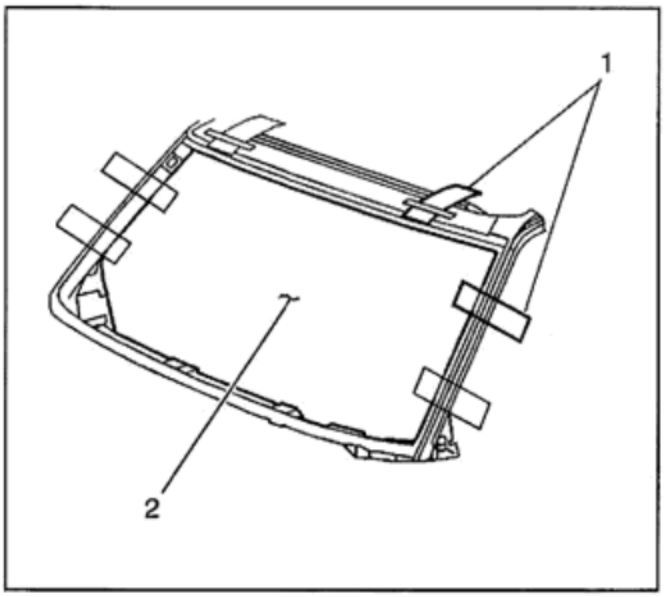
17. Use a cartridge-type caulking gun in order to apply a smooth, continuous bead.

    Cut the applicator nozzle to provided a V cut to apply the auto-adhesive.
18. Install the window reveal molding, if equipped.



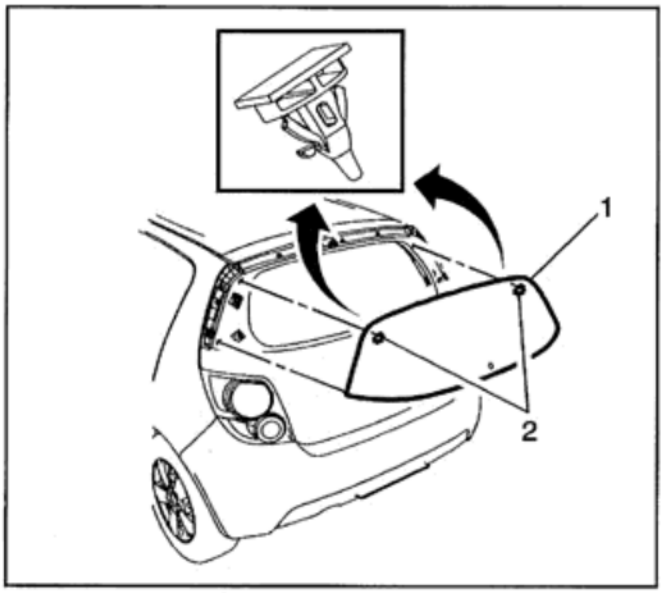
245315

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



745571

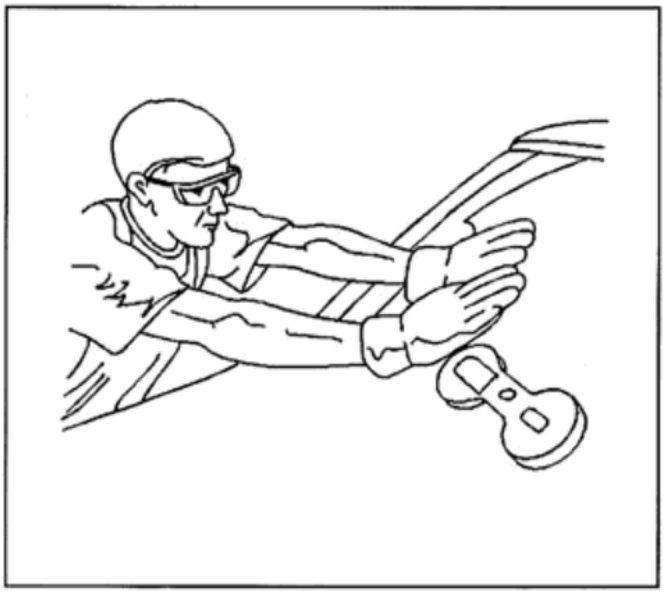
21. If the locating pins were damaged, align the masking tape (1) lines on the window (2) and the body.



2424999

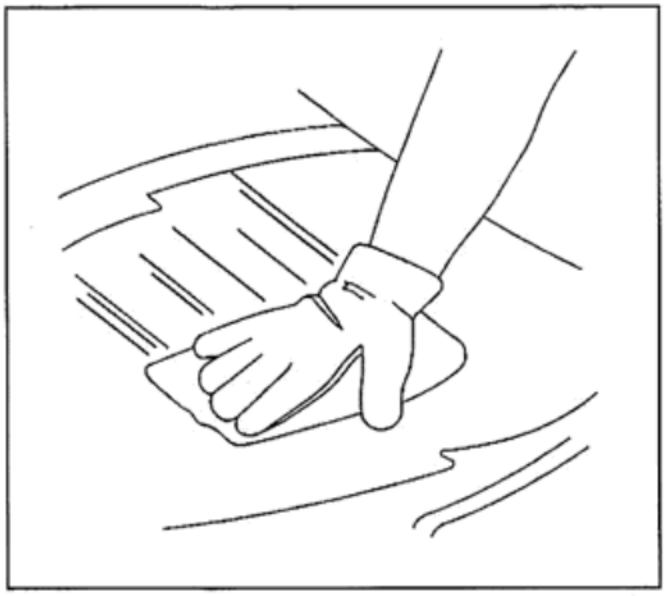
Note: If the locating pins were cut off it will be necessary to tape the window in place until the auto-adhesive cures per auto-adhesive instructions by the manufacturer's.

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



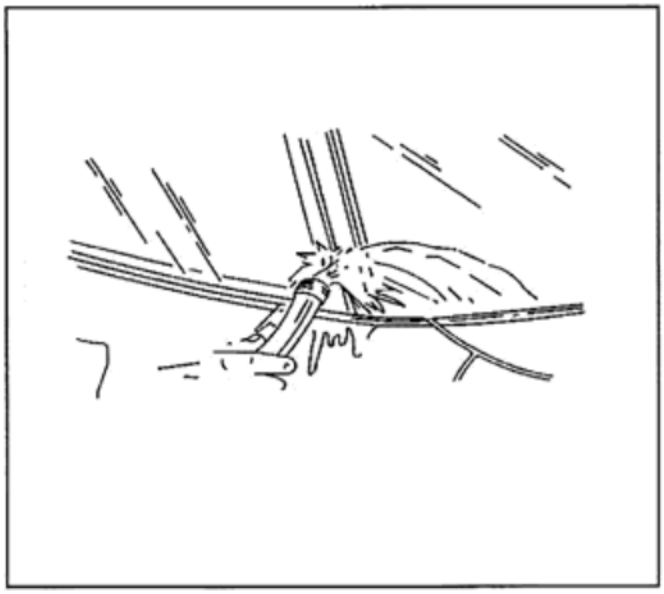
706204

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



706194

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



95572

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

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

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

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

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

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

Description and Operation

Full-Cut Method Description

Note:

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

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

This method includes the following:

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

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

Power Windows Description and Operation

Power Window System Components

The power window system consists of the following components:

- Driver window switch
- Front passenger window switch
- Left rear window switch
- Right rear window switch
- Window regulator motors in each of the doors
- 30 amp fuse
- 25 amp fuse

Power Window System Controls

The power window system can be controlled by a power window up or down switch activation.

Window Operation and the Driver Window Switch

When the ignition switch is in the RUN or ACCY position, or Retained Accessory Power (RAP) is enabled, battery positive voltage is supplied to the driver window switch. Ground for the switch is provided by a ground circuit connected to a ground stake. When the driver window switch is pressed in the down position, the voltage is applied to the driver window motor down circuit and ground is applied to the driver window motor up circuit causing the window to open. When the driver window switch is pressed in the up position, the polarity is reversed, voltage and ground are applied to the opposite circuits and the window closes. In order to control the passenger windows from the driver door, the driver window switch assembly contains a separate window switch for each passenger door window. These window switches operate in the same way as the driver window switch, except that the applied voltage and ground must also pass through the local passenger, left rear or right rear window switch in order to command the respective window motor.

The driver window switch also provides power and ground for the local rear window switches. Battery positive voltage is supplied, through the power window master switch lockout signal circuit, to each remote rear window switch. The remote front passenger door window switch has a separate battery positive voltage circuit, however, this circuit is spliced into the driver window switch voltage supply circuit within the IP Fuse Block. Ground for all three of the passenger door switches, is also supplied by the driver window switch.

Driver Express Up and Express Down Power Window Motor (If Equipped)

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

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

Lockout Switch Feature

The driver window switch contains a rear window lockout switch which disconnects the battery positive voltage supply to the remote rear passenger door window switches, disabling them. The remote front passenger door window switch cannot be locked out.

Window Operation and the Passenger Window Switches

When the ignition switch is in the RUN or ACCY position, or Retained Accessory Power (RAP) is enabled, battery positive voltage is supplied to each of the remote passenger door window switches. When a remote window switch is pressed in the down position, voltage is applied to the window motor down circuit and ground is applied to the window motor up circuit, causing the window to open. When the window switch is pressed in the up position, the polarity is reversed, voltage and ground are applied to the opposite circuits, and the window closes.

Rear Window Defogger Description and Operation

Rear Window Defogger System Components

The rear window defogger system consist of the following components:

- The HVAC control module
- The body control module (BCM)
- The rear defogger relay
- The rear window grid

Rear Window Defogger Operation

The BCM supplies 12 V to the rear window defogger switch signal circuit to the HVAC control module. When you depress the rear window defogger switch, the rear window defogger switch pulls the signal circuit low. The BCM interprets as a request for the rear window defogger system. The BCM enables the rear window defogger system by supplying voltage to the rear defogger relay coil. The relay coil supply voltage is also spliced off internally in the BCM to the supply voltage circuit of the rear window defogger indicator. The rear defogger relay is energized and the rear window defogger indicator is illuminated. With the relay energized, battery positive voltage is allowed from the relay switched input through the switch contacts and out the relay switched output to the rear window defogger grid.

When you start the engine and press the rear window defogger switch for the first time, the defogger cycle lasts for 15 minutes. Further operation results in 7.5 minute defogger cycles. The rear defogger feature will not time out if vehicle speed is above 80 km/h (50 mph). The defogger cycle resets to 15 minutes when you cycle the ignition to the OFF position and then to the ON position.

Stationary Window Description

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

Urethane Adhesive Description

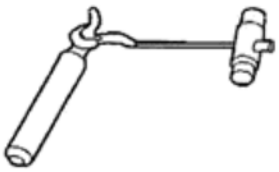
For replacement of any adhesive-installed window, use the full cut method only.

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

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

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

Special Tools and Equipment

Illustration	Tool Number/ Description
 3898	BO-24402-A J-24402-A Glass Sealant Cold Knife Remover
 3905	BO-39032 J-39032 Stationary Glass Removal Tool