Fixed and Moveable Windows
Horns
Lighting
Mirrors
Vehicle Access
Wipers and Washers

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Description and Operation
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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

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Windshield Replacement

Special Tools

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

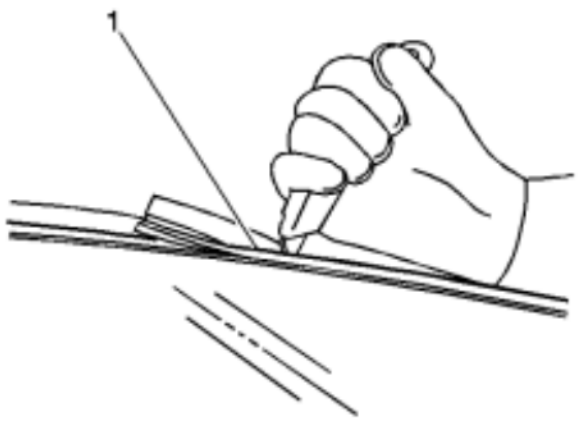
For equivalent regional tools, refer to Special Tools .

Removal Procedure

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

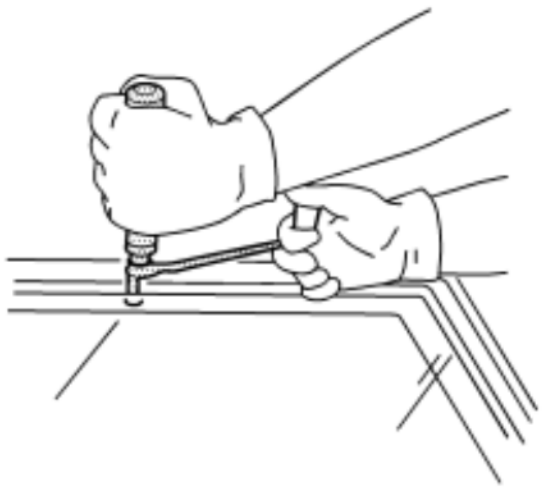
   Warning: If broken glass falls into the defroster outlets, it can be blown into the passenger compartment and cause personal injury.
6. Cover to protect the following parts from broken glass:
   - Upper dash pad
   - Defroster outlets and A/C outlets
   - Seats and carpeting

   Warning: Refer to Glass and Sheet Metal Handling Warning .



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

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 .

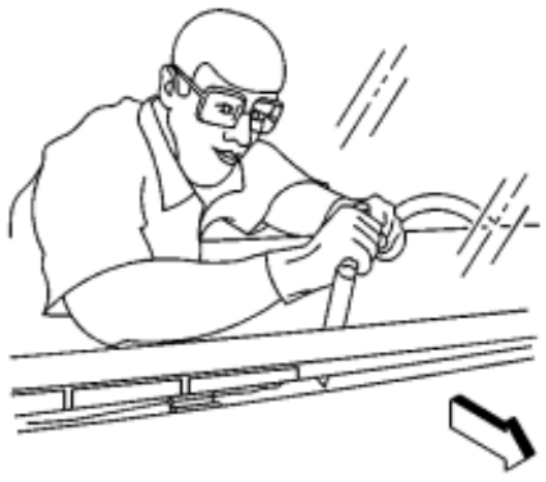


Note: Keep the cutting edge of the appropriate tool against the window. There are window locating pins, one in each upper corner of the window. Use care Not to remove or cut them off when removing the window. If the window locator pins are cut, it will be necessary to tape the window in place.

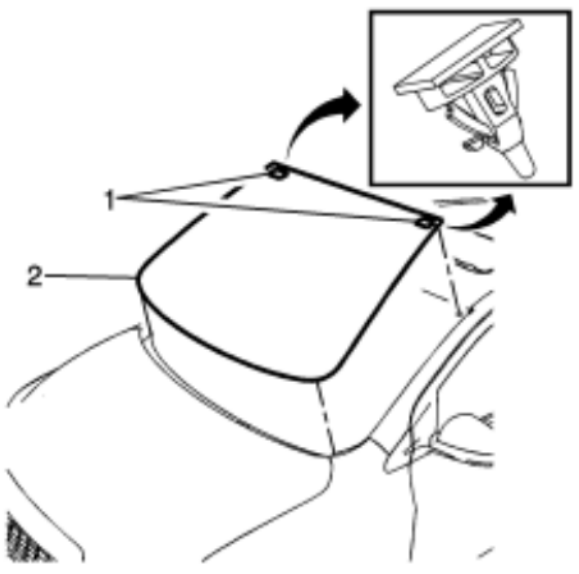
8. This will allow the auto-adhesive to be separated from the window.

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- 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.



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.



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

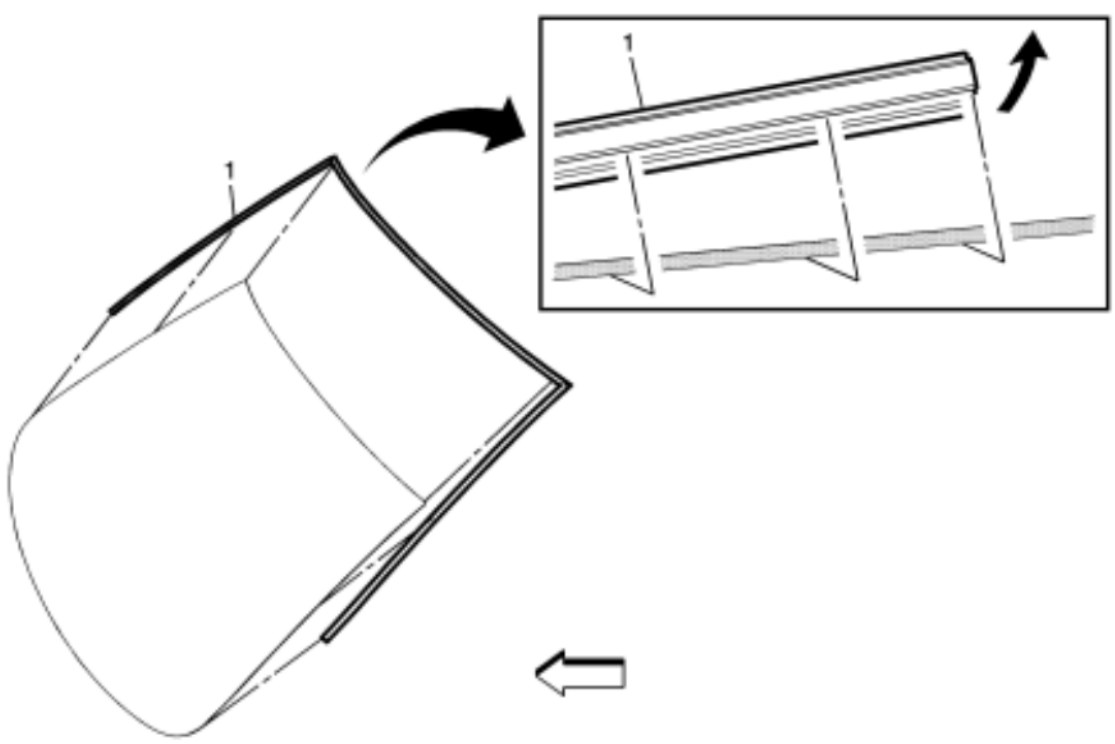
Installation Procedure

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

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Windshield Upper Reveal Molding Replacement

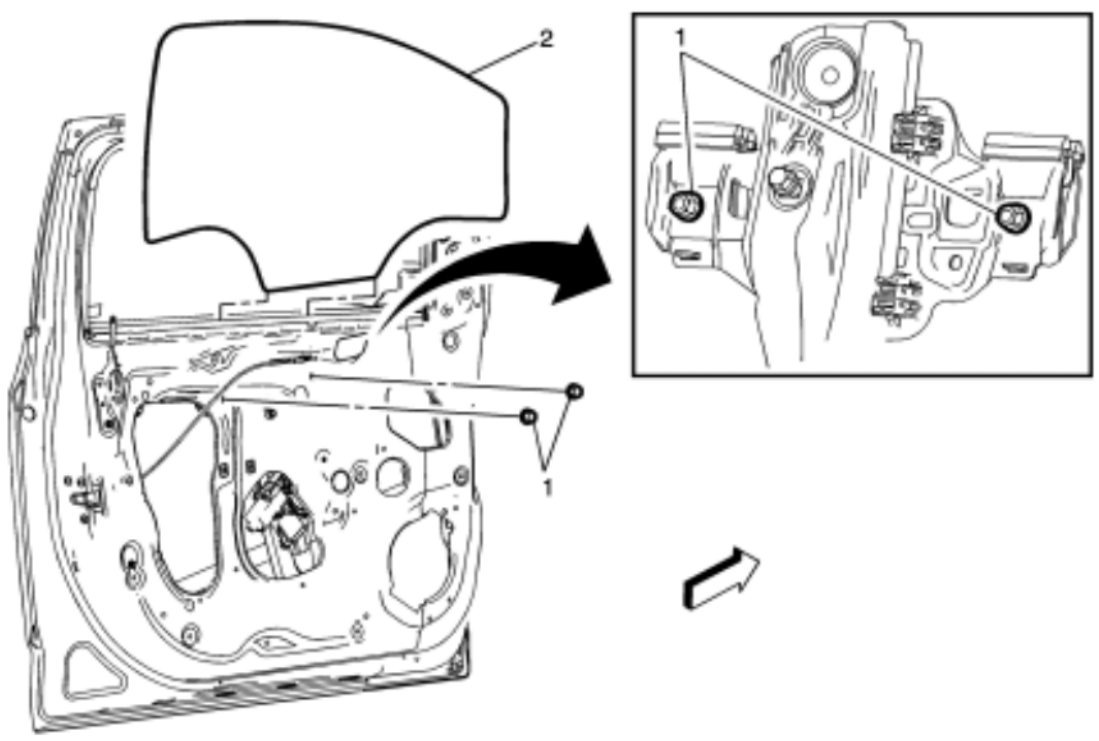


Callout	Component Name
Preliminary Procedures Remove the windshield to replace the reveal molding. Refer to Windshield Replacement .	
1	Windshield Reveal Molding **Warning:** Refer to Glass and Sheet Metal Handling Warning . **Procedure** 1. Mark the window at both ends before remove the reveal molding 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.

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Front Side Door Window Replacement

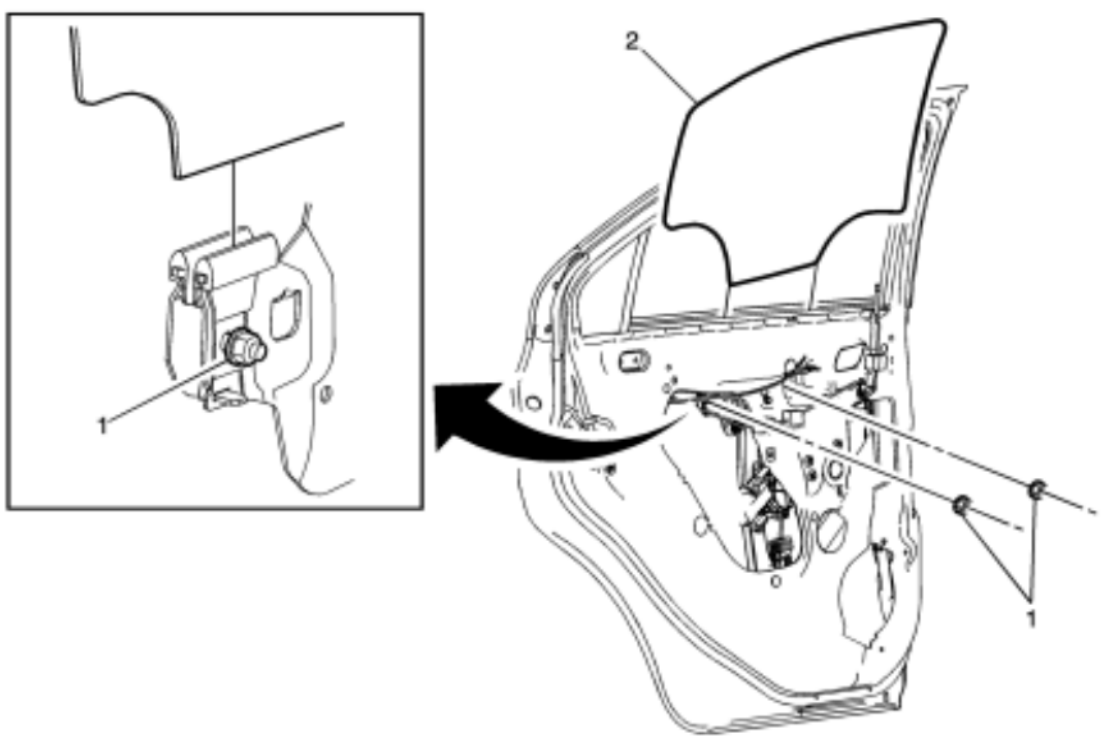


Callout	Component Name
	Warning: Refer to Glass and Sheet Metal Handling Warning . **Preliminary Procedures** 1. Remove the front side door trim panel. Refer to Front Side Door Trim Replacement . 2. Remove the front side door rear guide. Refer to Front Side Door Window Rear Guide Replacement 3. Remove the front side door window outer sealing strip. Refer to Front Side Door Window Outer Sealing Strip Replacement .
1	Front Side Door Window Regulator Guide Nuts (Qty: 2) **Caution:** Refer to Fastener Caution . **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)
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.

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Rear Side Door Window Replacement (Sedan)

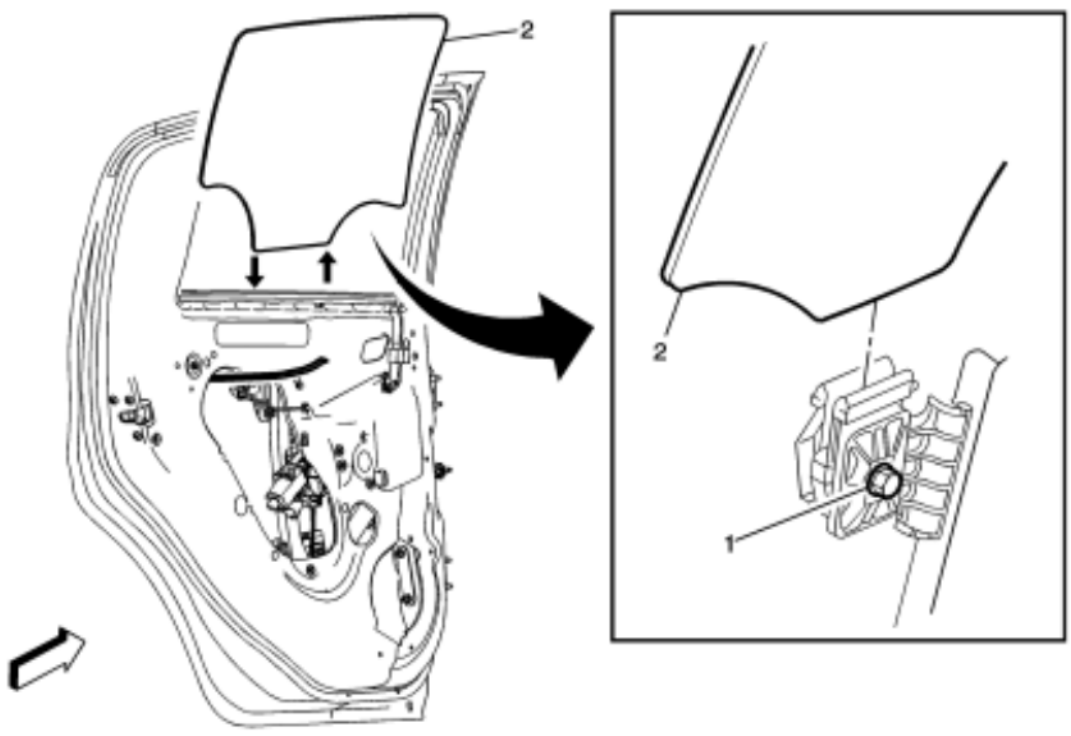


Callout	Component Name
	Warning: Refer to Glass and Sheet Metal Handling Warning . **Preliminary Procedures** 1. Remove the rear side door trim panel. Refer to Rear Side Door Trim Replacement . 2. Remove the rear side door rear guide. Refer to Rear Side Door Window Rear Guide Replacement . 3. Remove the rear side window outer sealing strip. Refer to Rear Side Door Window Outer Sealing Strip Replacement .
1	Rear Side Door Window Guide Nut (Qty: 2) **Caution:** Refer to Fastener Caution . **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.

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Rear Side Door Window Replacement (Hatchback)

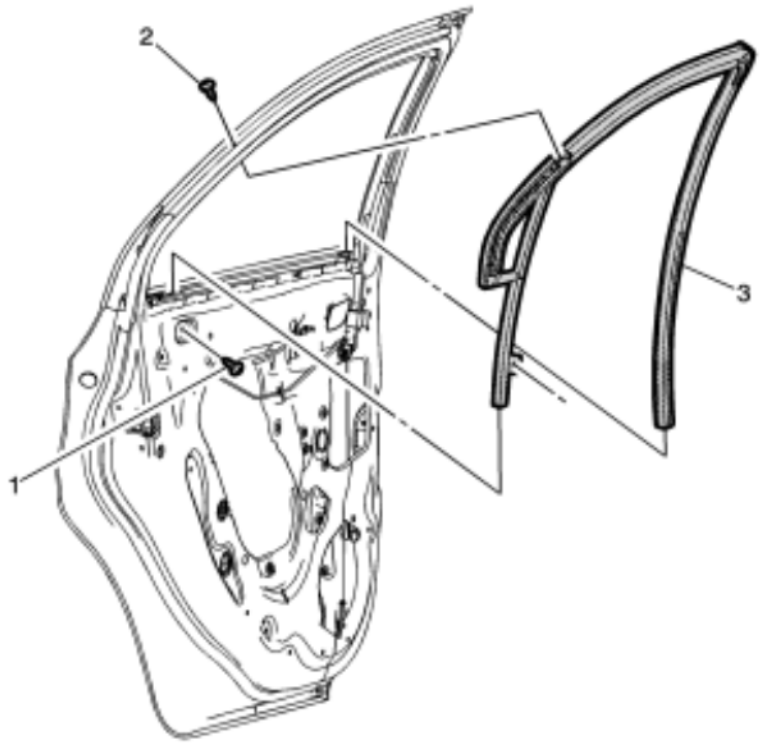


Callout	Component Name
	Warning: Refer to Glass and Sheet Metal Handling Warning . **Preliminary Procedures** 1. Remove the rear side door trim panel. Refer to Rear Side Door Trim Replacement . 2. Remove the rear side door rear guide. Refer to Rear Side Door Window Rear Guide Replacement . 3. Remove the rear side window outer sealing strip. Refer to Rear Side Door Window Outer Sealing Strip Replacement .
1	Rear Side Door Window Guide Nut (Qty: 2) **Caution:** Refer to Fastener Caution . **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.

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Rear Side Door Stationary Window Replacement



Callout	Component Name
Warning: Refer to Glass and Sheet Metal Handling Warning . **Preliminary Procedures** Remove the rear side door window. Refer to Rear Side Door Window Replacement .	
1	Rear Side Door Window Weatherstrip Lower Bolt **Caution:** Refer to Fastener Caution . **Tighten** 9 N·m (80 lb in) **Tip** The weatherstrip and window is serviced as one assembly.
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.

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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

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.

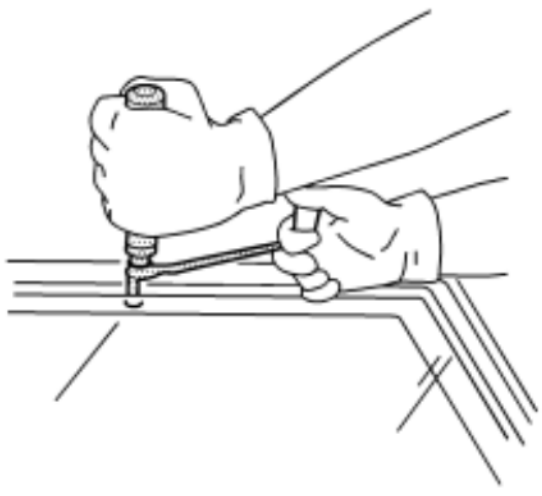
1. Open the rear compartment lid.



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

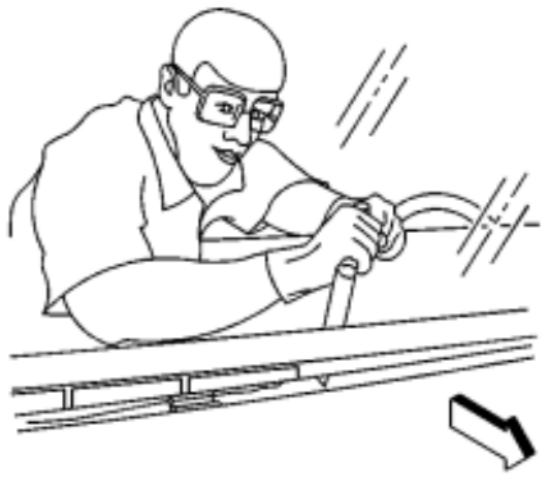


Note: Keep the cutting edge of the appropriate tool against the window. There are window locating pins, one in each upper corner of the window. Use care Not to remove or cut them off when removing the window. If the window locator pins are cut, it will be necessary to tape the window in place.

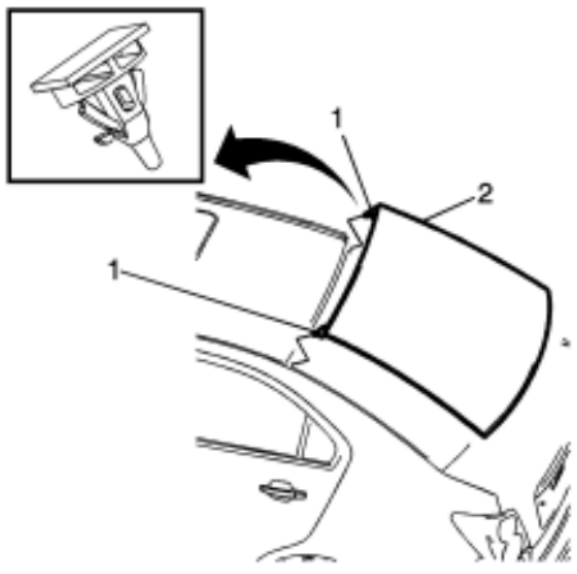
6. This will allow the auto-adhesive to be separated from the window.
7. Remove the rear window reveal molding. Refer to Rear Window Reveal Molding Replacement .

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- 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 .



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.



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

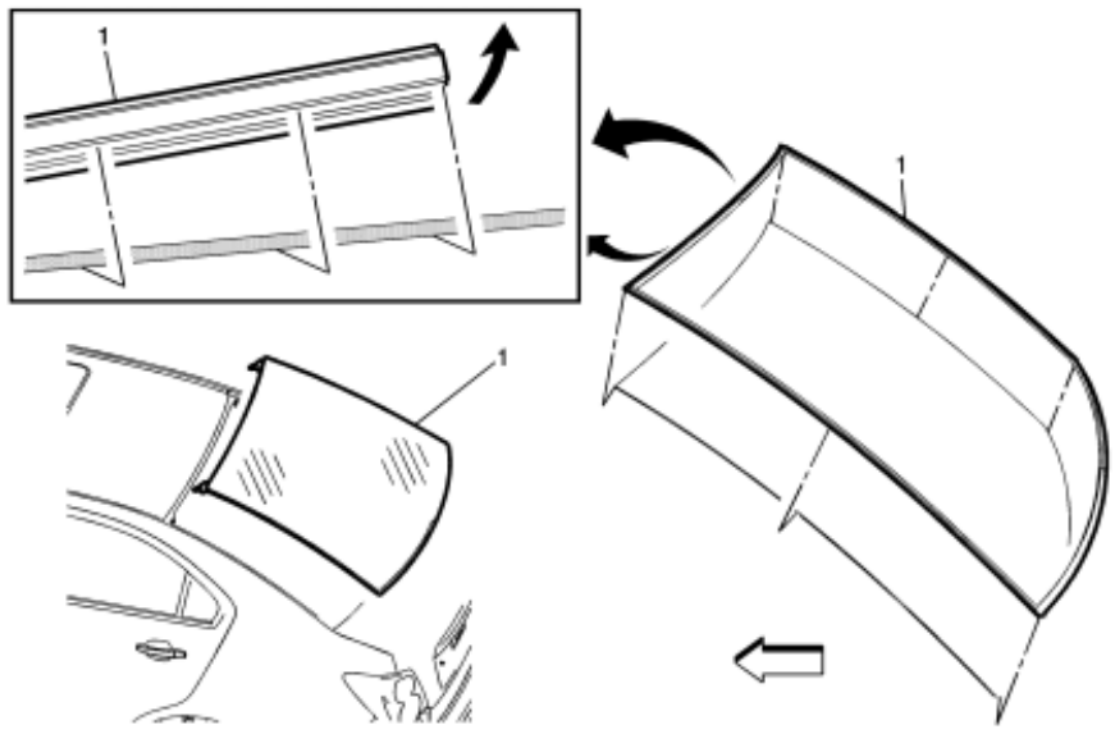
Installation Procedure

1. Install the rear window into the opening. Refer to Adhesive Installation of Rear Windows .
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.

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Rear Window Reveal Molding Replacement



Callout	Component Name
Preliminary Procedures Remove the rear window to replace the reveal molding. Refer to Rear Window Replacement .	
1	Rear Window Reveal Molding **Warning:** Refer to Glass and Sheet Metal Handling Warning . **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.

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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

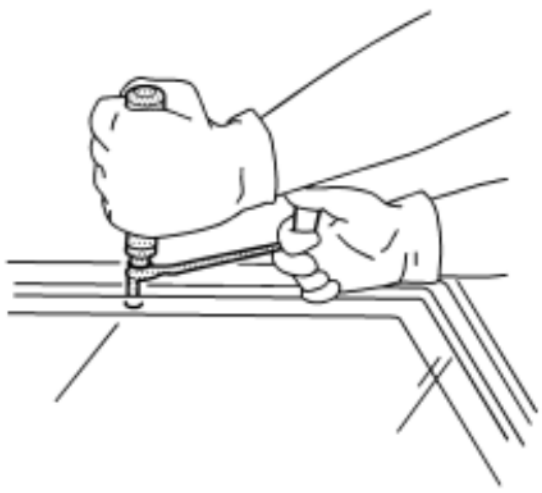
For equivalent regional tools, refer to Special Tools

Removal Procedure

Warning: Refer to Cracked Window Warning .

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

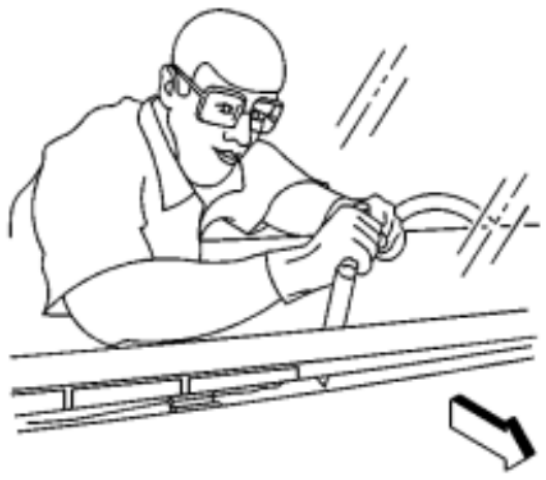
1. Open the liftgate.
2. Remove the liftgate trim. Refer to Liftgate Trim Finish Panel Replacement .
3. Disconnect the electrical connectors from the liftgate window defogger bus bar.
4. Remove the rear window wiper arm. Refer to Rear Window Wiper Arm Replacement .
5. Remove the rear spoiler. Refer to Rear End Spoiler Replacement .
   Warning: Refer to Defroster Outlet Warning .
6. Cover the following parts to protect from broken glass:
   - Upper dash pad
   - Defroster outlets and A/C outlets
   - Seats and carpeting



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.

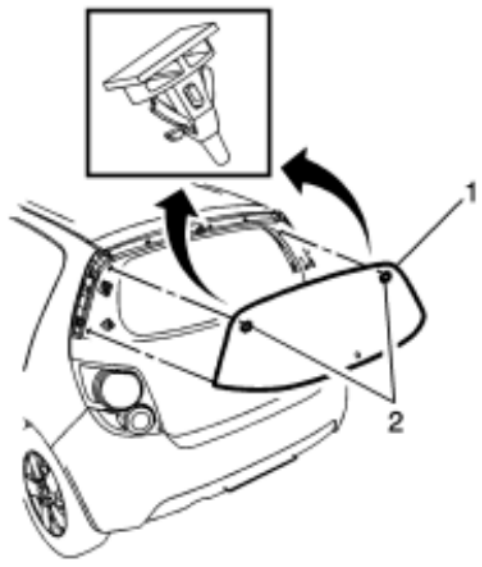
7. This will allow the auto-adhesive to be separated from the window.
   - Leave a base of auto-adhesive on the pinchweld flange.
   - The only suitable lubrication is clean water.
   - Use *BO-24402-A* Glass Sealant Remover (Cold Knife) .
   - *BO-39032* Stationary Glass Removal Tool , or equivalent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

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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.



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

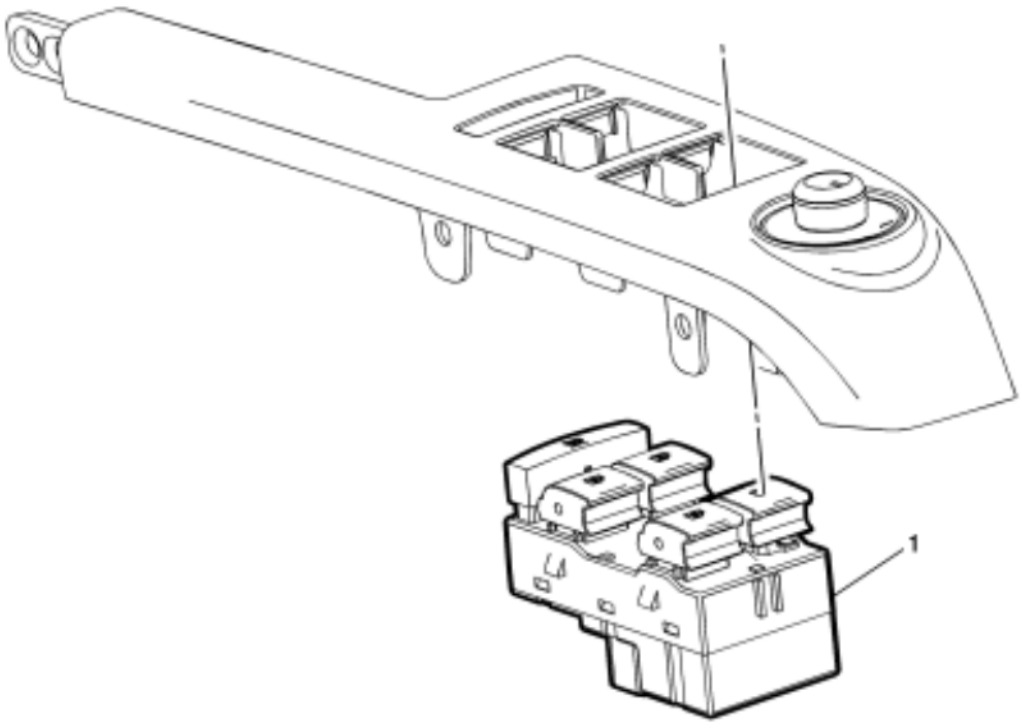
Installation Procedure

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

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Front Side Door Window Switch Replacement (Left Side)

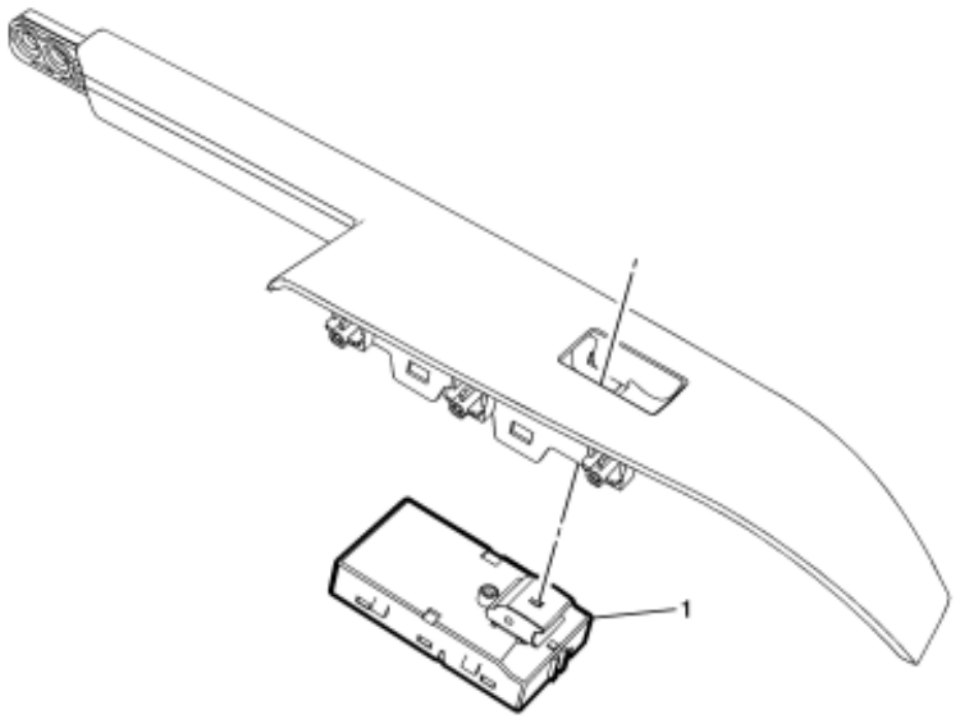


Callout	Component Name
Preliminary Procedure Remove the front side door window switch bezel. Refer to Front Side Door Window Switch Bezel Replacement .	
1	Front Side Door Window Switch Assembly **Procedure** 1. Disconnect the electrical connectors. 2. Refer to Control Module References for programming and set up procedures.

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Front Side Door Window Switch Replacement (Right Side)

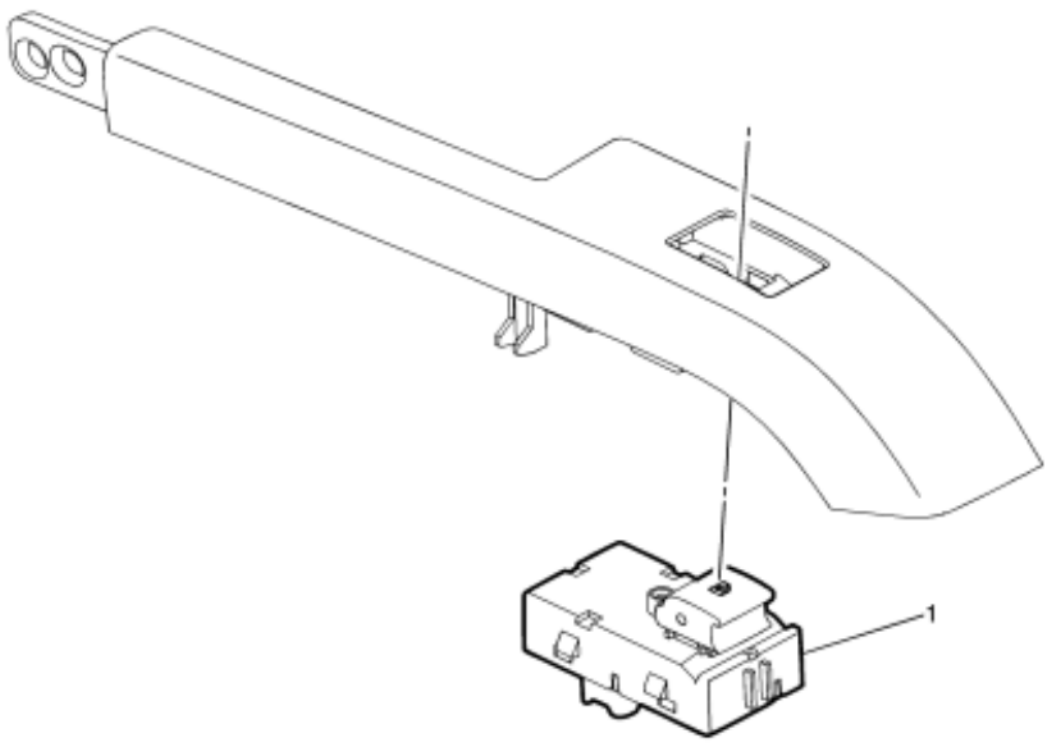


Callout	Component Name
Preliminary Procedure Remove the front side door widow switch bezel. Refer to Front Side Door Window Switch Bezel Replacement .	
1	Front Side Door Window Switch Assembly **Procedure** 1. Disconnect the electrical connectors. 2. Refer to Control Module References for programming and set up procedures.

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Rear Side Door Window Switch Replacement

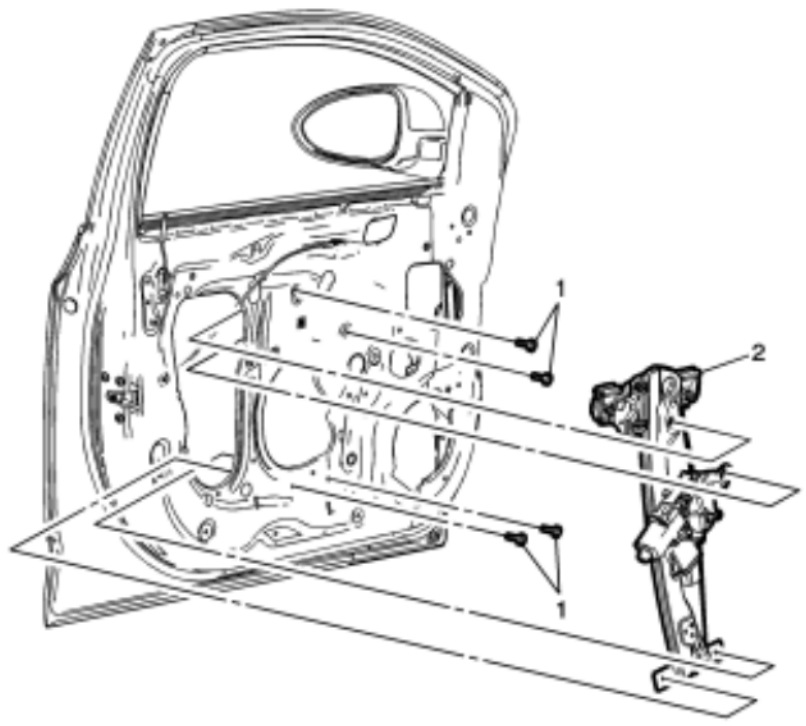


Callout	Component Name
Preliminary Procedure Remove the rear side door window switch bezel. Refer to Rear Side Door Window Switch Bezel Replacement .	
1	Rear Side Door Window Switch Assembly **Procedure** 1. Disconnect the electrical connectors. 2. Refer to Control Module References for programming and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

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Front Side Door Window Regulator Replacement



Callout	Component Name
Warning: Refer to Glass and Sheet Metal Handling Warning . **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 .	
1	Front Side Door Window Regulator Screw (Qty: 4) **Caution:** Refer to Fastener Caution . **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 . 2. Inspect the door window for proper operation before installing the door trim panel.

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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 B32054B 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:

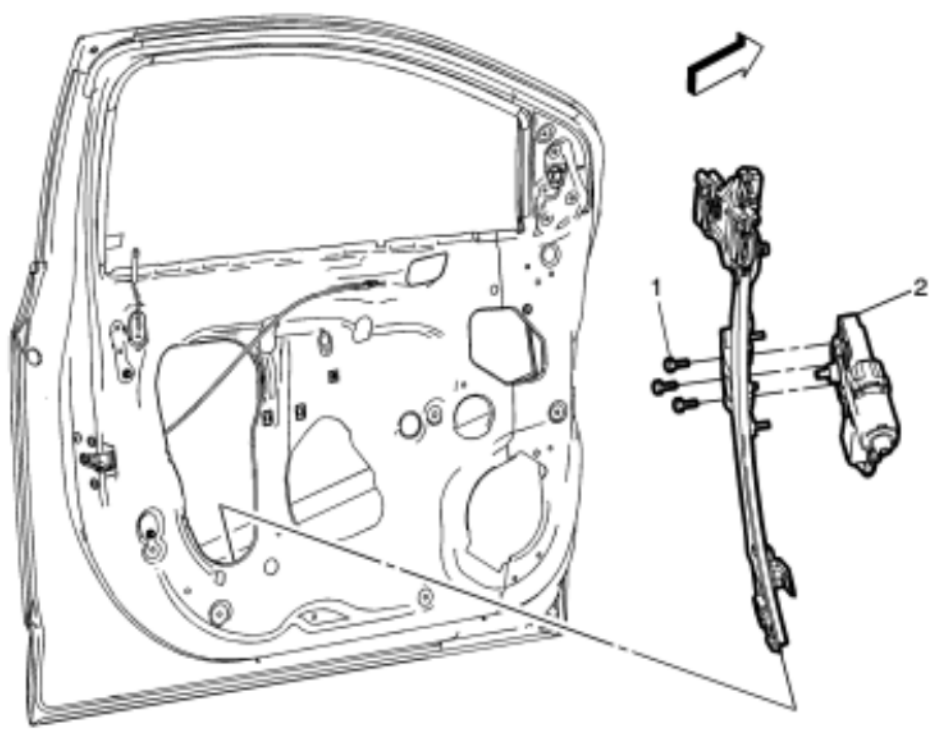
1. Ignition ON.
2. With a scan tool, select Module Diagnosis, Body Control Module, Configuration/Reset Functions and then select the appropriate Clear Window Learn Values for the window motor requiring the relearn procedure.
3. After the learn procedure, exit the scan tool learn procedure completely, 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.

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Front Side Door Window Regulator Motor Replacement

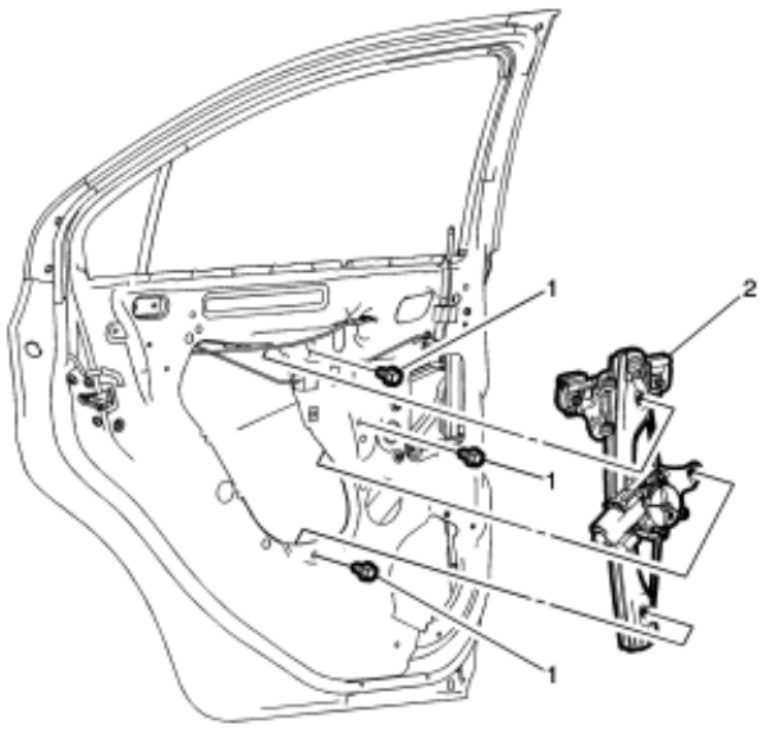


Callout	Component Name
Warning: Refer to Glass and Sheet Metal Handling Warning . **Preliminary Procedure** Remove the front side door window regulator. Front Side Door Window Regulator Replacement .	
1	Front Side Door Window Regulator Motor Screw (Qty: 3) **Caution:** Refer to Fastener Caution . **Procedure**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

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Rear Side Door Window Regulator Replacement (Sedan)

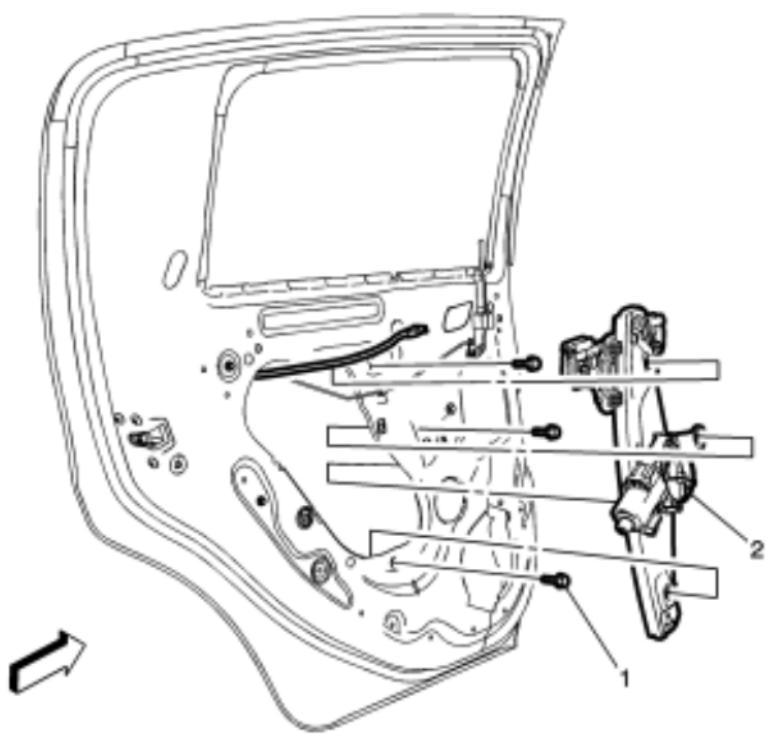


Callout	Component Name
Warning: Refer to Glass and Sheet Metal Handling Warning . **Preliminary Procedure** Remove the front side door window from the guide. Do Not remove the window from the vehicle, raise the window to the fully up position, tape in place. Refer to Rear Side Door Window Replacement .	
1	Rear Side Door Window Regulator Screw (Qty: 3) **Caution:** Refer to Fastener Caution . 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 . 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 . 2. Inspect the door window for proper operation before installing the door trim panel.

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Rear Side Door Window Regulator Replacement (Hatchback)

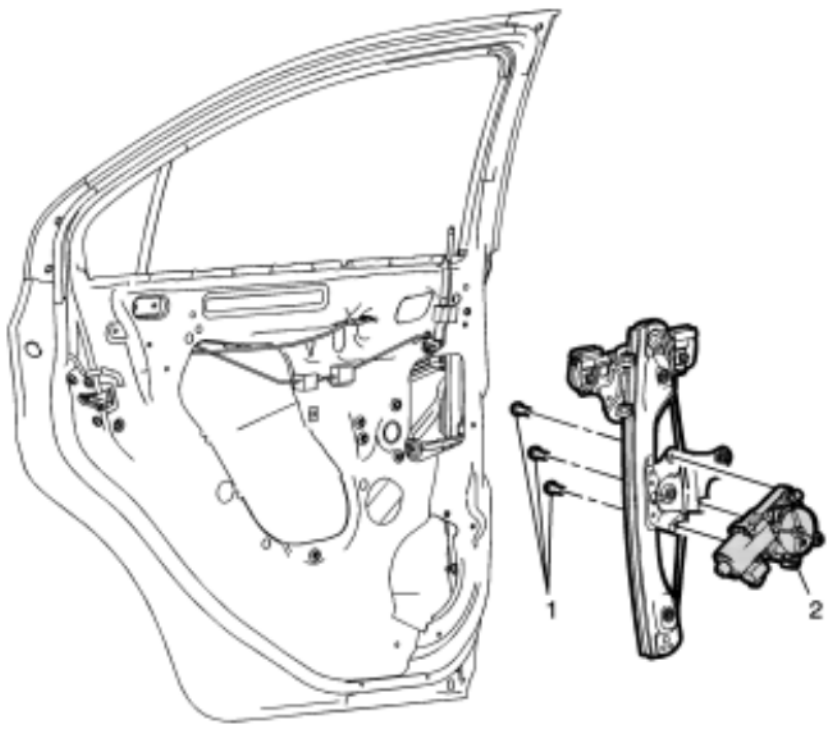


Callout	Component Name
Warning: Refer to Glass and Sheet Metal Handling Warning . **Preliminary Procedure** Remove the front side door window from the guide. Do not remove the window from the vehicle, raise the window to the fully up position, tape in place. Refer to Rear Side Door Window Replacement .	
1	Rear Side Door Window Regulator Screw (Qty: 3) **Caution:** Refer to Fastener Caution . **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 . 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 . 2. Inspect the door window for proper operation before installing the door trim panel.

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Rear Side Door Window Regulator Motor Replacement

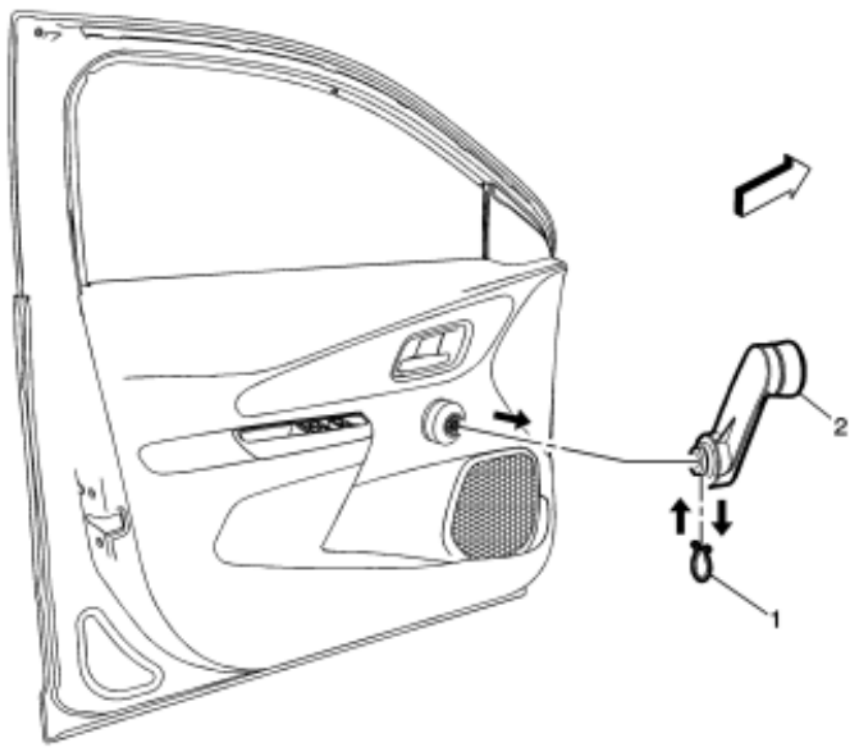


Callout	Component Name
Warning: Refer to Glass and Sheet Metal Handling Warning . **Preliminary Procedure** Remove the rear side door window regulator. Refer to Rear Side Door Window Regulator Replacement .	
1	Rear Side Door Window Regulator Motor Screw (Qty: 3). **Caution:** Refer to Fastener Caution . **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.

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Front Side Door Window Regulator Handle Replacement

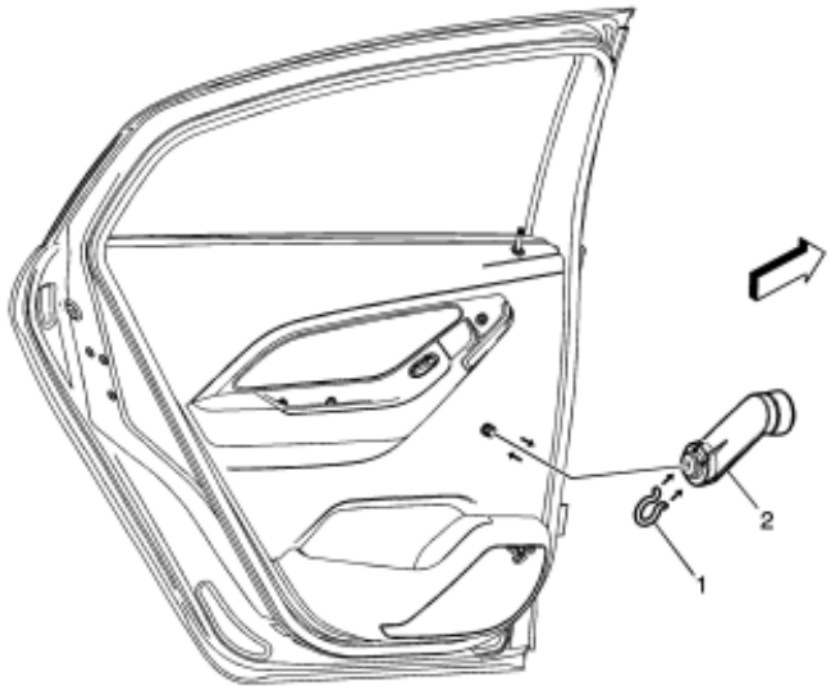


Callout	Component Name
1	Front Side Door Window Regulator Handle Clip **Procedure** Use the appropriate tool, remove the clip from handle.
2	Front Side Door Window Regulator Handle

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Rear Side Door Window Regulator Handle Replacement

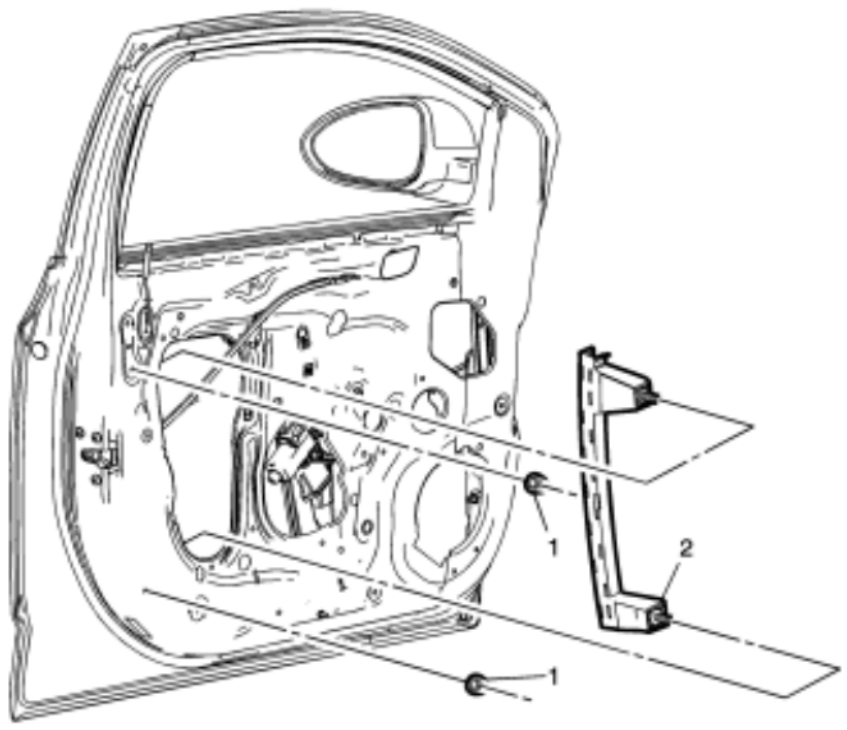


Callout	Component Name
1	Rear Side Door Window Regulator Handle Clip **Procedure** Use the appropriate tool, remove the clip from handle.
2	Rear Side Door Window Regulator Handle

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Front Side Door Window Rear Guide Replacement

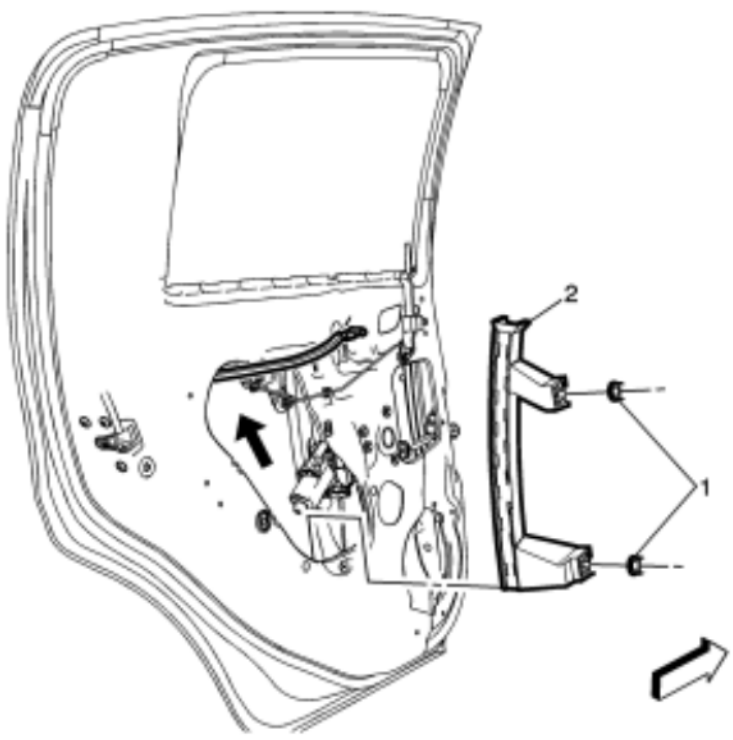


Callout	Component Name
Preliminary Procedure Remove the front side door trim panel. Refer to Front Side Door Trim Replacement .	
1	Front Side Door Window Rear Guide Nut (Qty:2) **Caution:** Refer to Fastener Caution . **Procedure** 1. Remove the front side door water deflector. 2. Do not remove the window 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.

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Rear Side Door Window Rear Guide Replacement

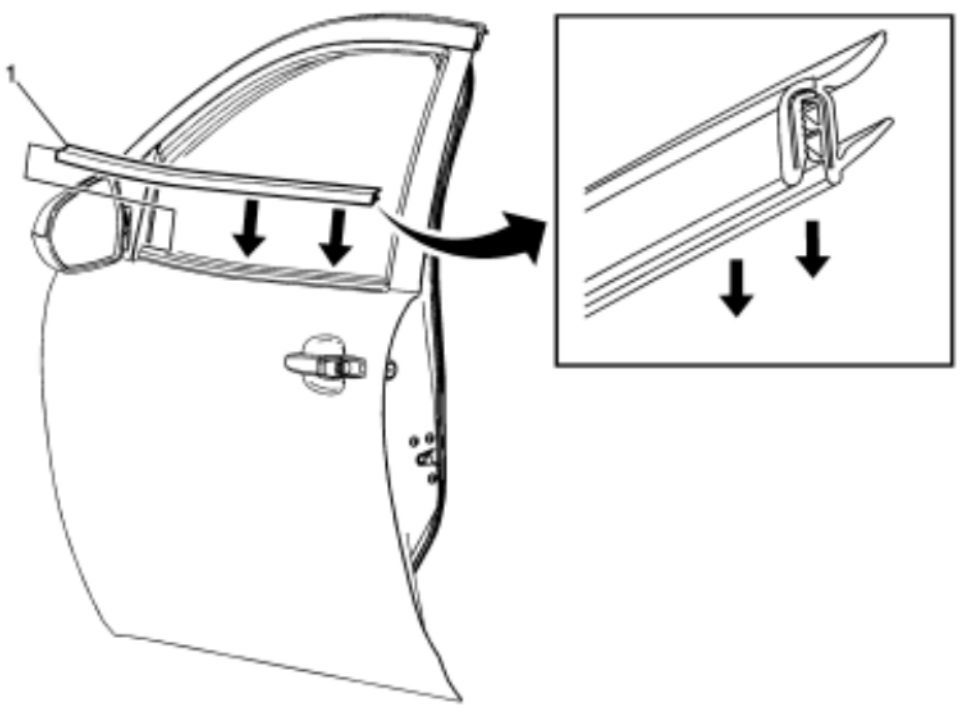


Callout	Component Name
Preliminary Procedure Remove the rear side door trim panel. Refer to Rear Side Door Trim Replacement .	
1	Rear Side Door Window Rear Guide Nut (Qty: 3) **Caution:** Refer to Fastener Caution . **Procedure** 1. Remove the rear side door water deflector. 2. Do Not remove the window from the vehicle, raise the window to the 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.

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Front Side Door Window Outer Sealing Strip Replacement

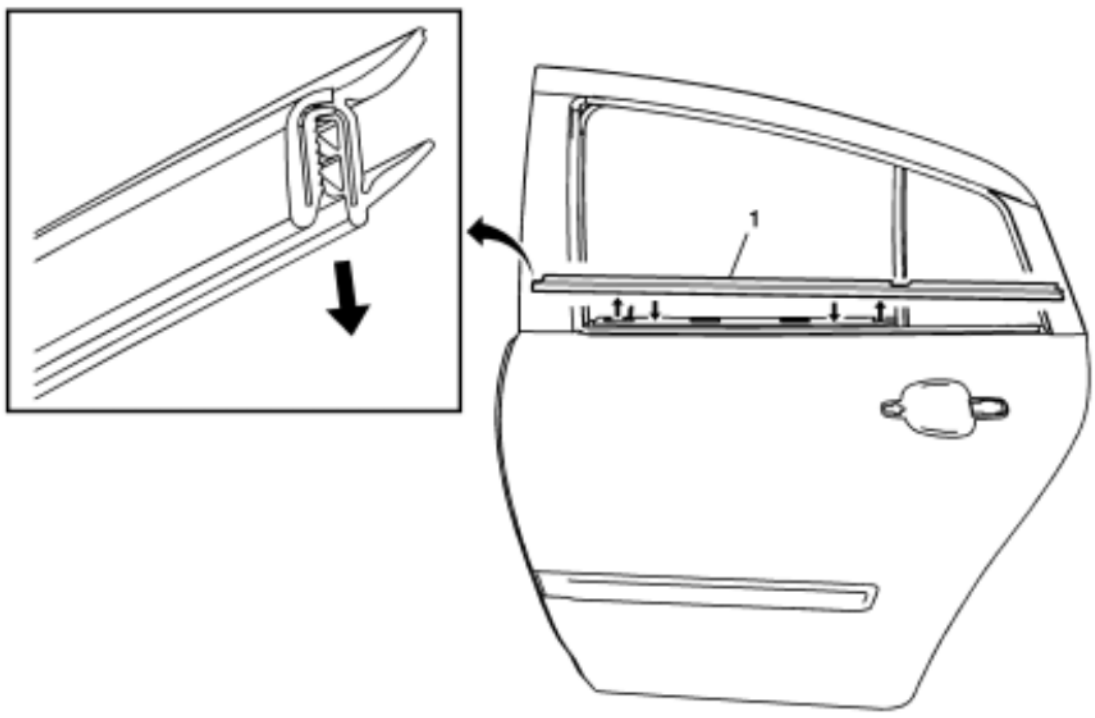


Callout	Component Name
1	Front Side Door Window Outer Sealing Strip **Procedure** 1. Do Not remove the outside rearview mirror. 2. Use the appropriate tool, lift the rear corner of the sealing strip and pull upward and away from the door flange. 3. Press firmly to insert the front side door window sealing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

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Rear Side Door Window Outer Sealing Strip Replacement (Sedan)

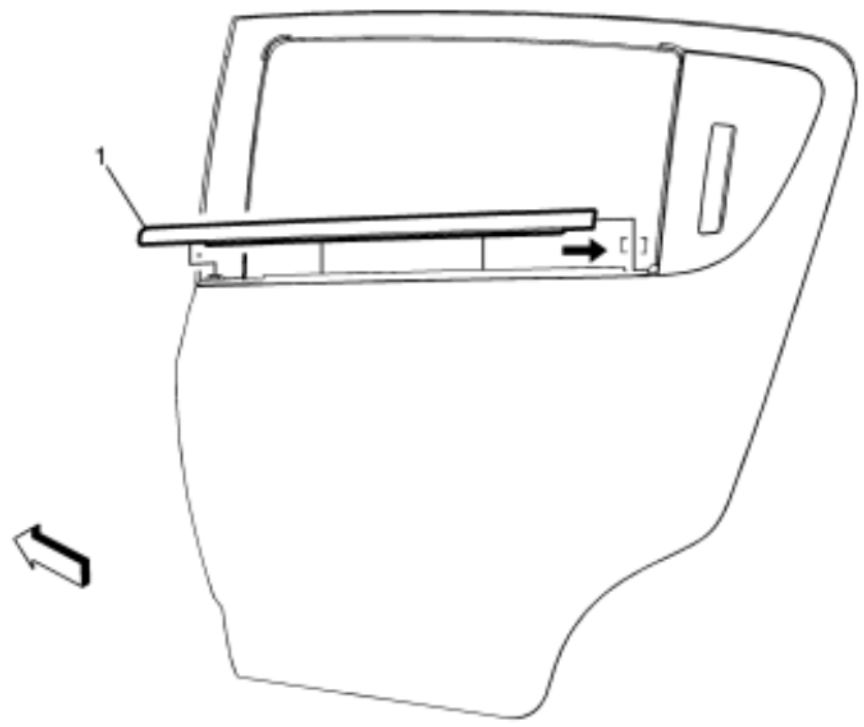


Callout	Component Name
1	Rear Side Door Window Outer Sealing Strip **Procedure** Use the appropriate tool, lift one end up and pull away from the door flange to remove.

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Rear Side Door Window Outer Sealing Strip Replacement (Hatchback)

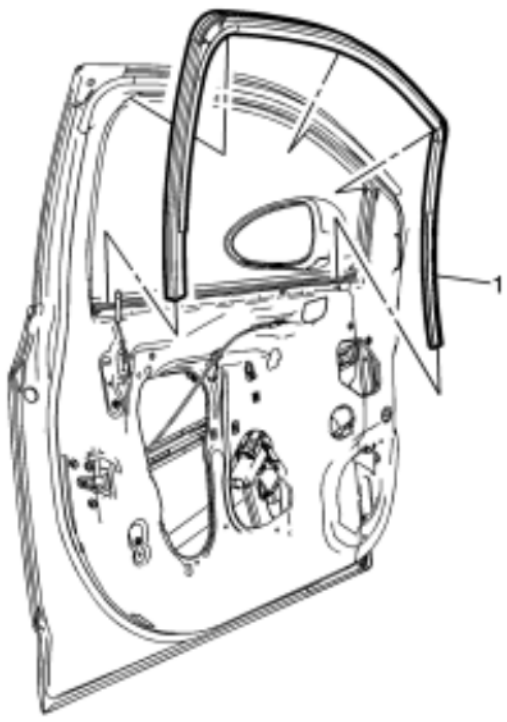


Callout	Component Name
1	Rear Side Door Window Outer Sealing Strip **Procedure** 1. Use the appropriate tool, lift the front corner of the sealing strip and pull upward and away from the door flange. 2. Press firmly to insert the rear side door window sealing strip back on the door flange. 3. Inspect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

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Front Side Door Window Weatherstrip Replacement

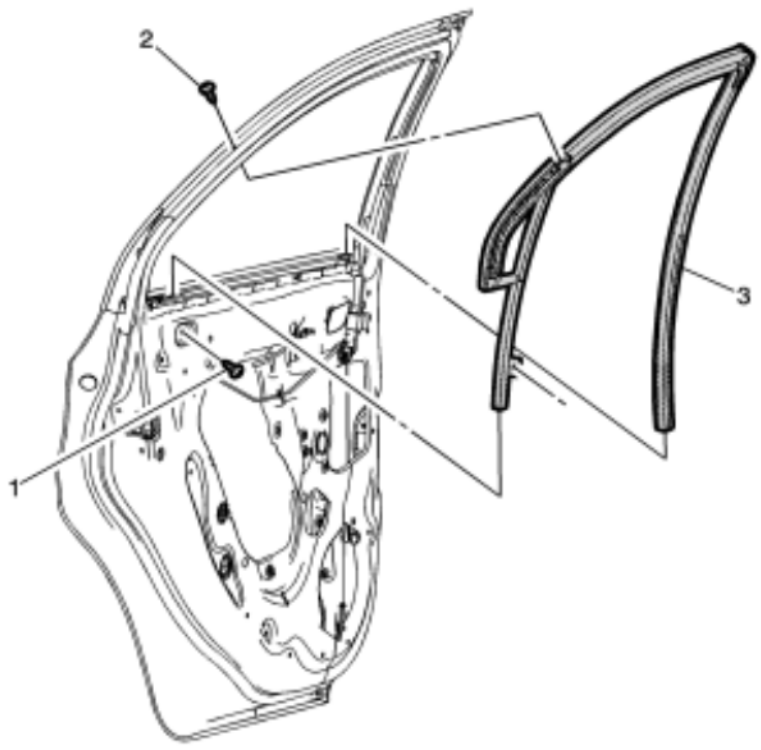


Callout	Component Name
Preliminary Procedures 1. Remove front side door trim panel. Refer to Front Side Door Trim Replacement . 2. Remove the outside rearview mirror. Refer to Outside Rearview Mirror Replacement .	
1	Front Side Door Window Weatherstrip **Procedure** 1. Place the window in the fully down 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.

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Rear Side Door Window Weatherstrip Replacement (Sedan)

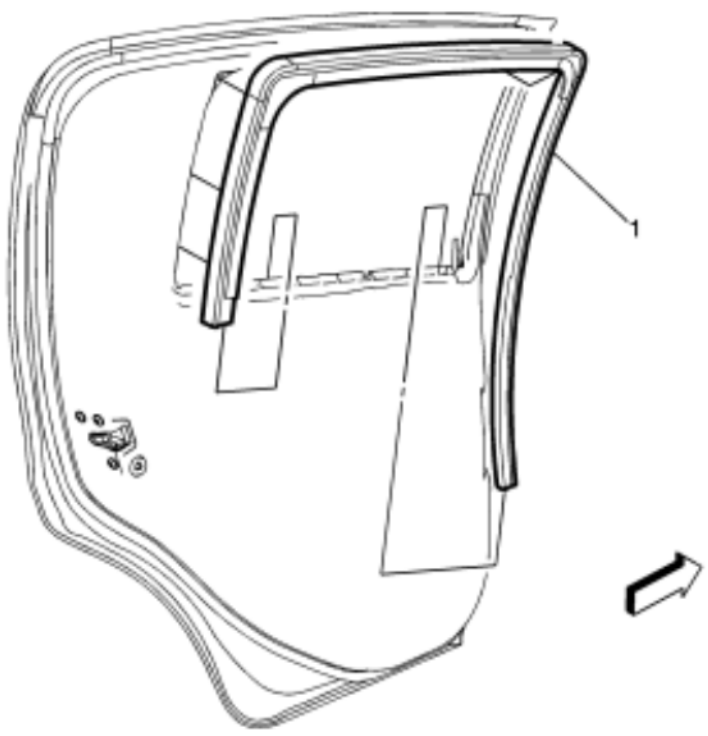


Callout	Component Name
Preliminary Procedures 1. The rear door side window weatherstrip and window is serviced as one assembly. Refer to Rear Side Door Stationary Window Replacement . 2. Remove the rear side door window . Refer to Rear Side Door Window Replacement .	
1	Rear Side Door Window Weatherstrip Lower Bolt **Caution:** Refer to Fastener Caution . **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)
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.

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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 .	
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.

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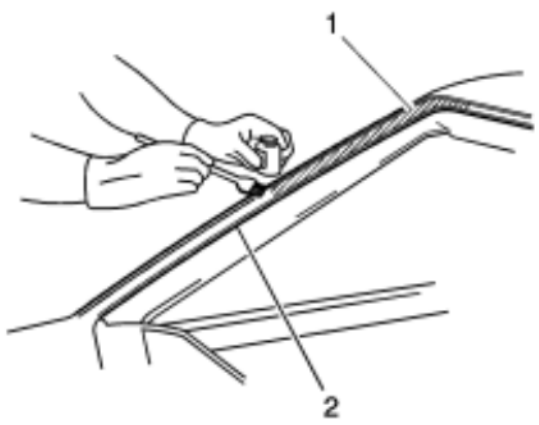
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Adhesive Installation of Windshields

Warning: Refer to Glass and Sheet Metal Handling Warning .

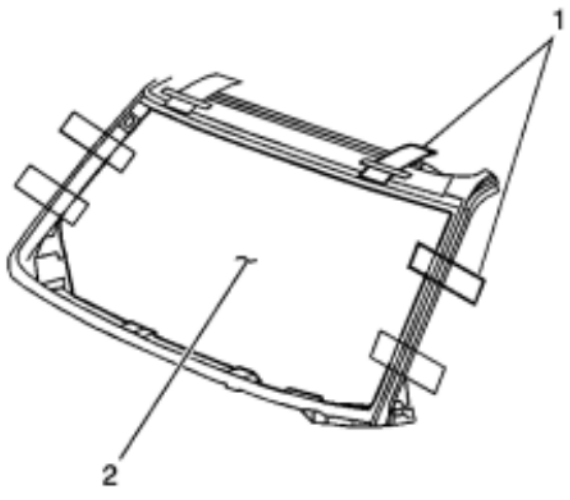
1. Use a urethane adhesive systems which meet GM Specification GM3651G.
2. Remove all mounds or loose pieces of urethane adhesive from the pinchweld area.
3. If the original window is being reused, remove all but approximately 2mm(3/64in) of the existing bead of urethane adhesive from the pinchweld flange 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 BASFDE15®, DuPont 2610®, Sherwin-Williams PSE4600 and NP70® and Martin-Semour 5120 and 5130® PPGDP90LF SPIES/ HECKER3688/8590 – 3688/5150 – 4070/5090 STANDOX11158/13320 – 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.



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.



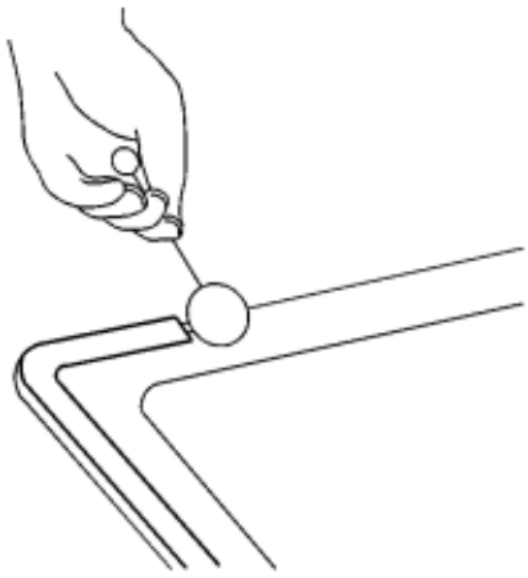
10. Use masking tape in order to mark the locations(1) of the window(2) in the opening.
11. Cut the masking tape in the center and remove the window from the opening.

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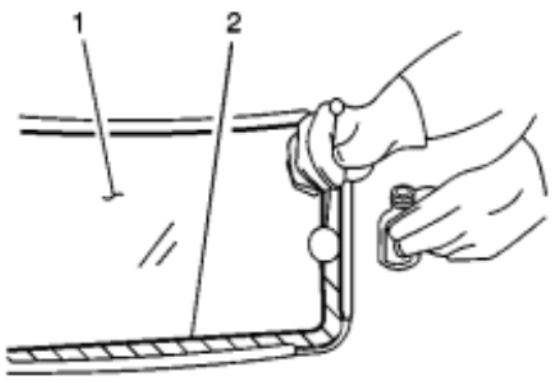


12. Apply glass prep clear to the area approximately 10–16 mm (3/8–5/8 in) around the entire perimeter of the window inner surface.

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

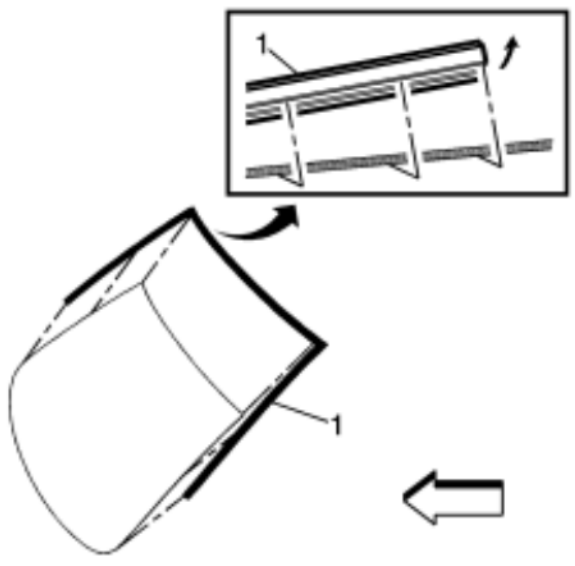


13. Apply bonded-glass primer and let dry per auto-adhesive instructions by the manufacturer's.

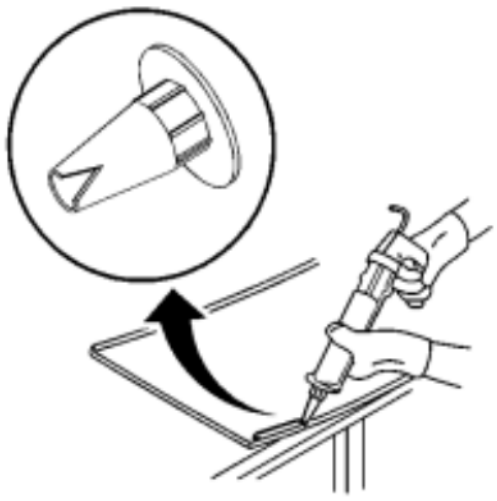


14. Apply the auto-adhesive primer-application (2) around the perimeter of the window (1) per auto-adhesive instructions by the manufacturer's.
15. Apply the glass primer black to the same areas (2) that glass prep clear was applied.
16. Allow the glass primer to dry per auto-adhesive instructions by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

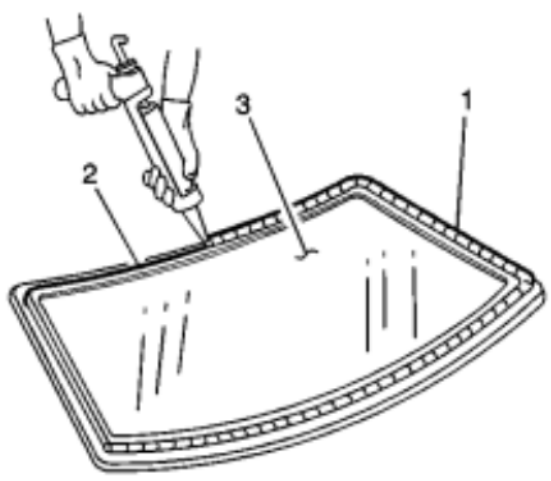
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17. Install the window reveal molding (1). Refer to Windshield Upper Reveal Molding Replacement .

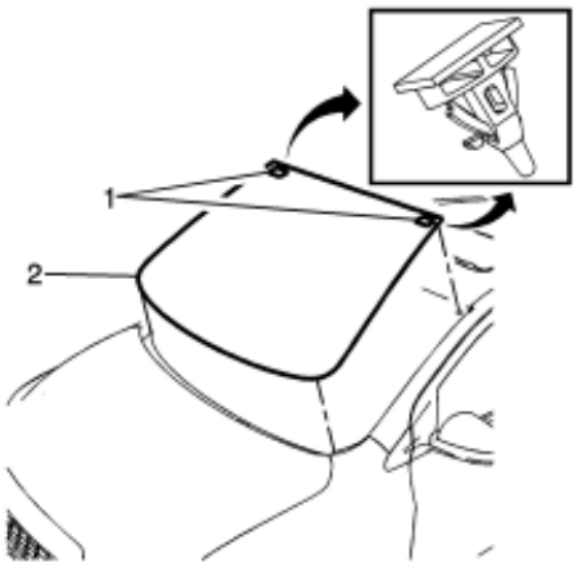


18. Use a cartridge-type caulking gun in order to apply a smooth, continuous bead.
    Cut the applicator nozzle to provided a V cut to apply the auto-adhesive.



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).

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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.



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.



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

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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.

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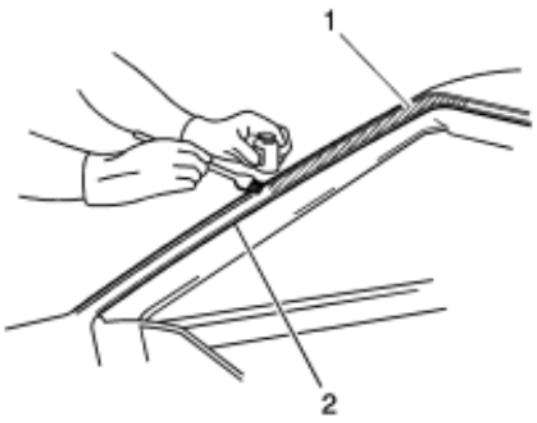
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Adhesive Installation of Rear Windows

Warning: Refer to Glass and Sheet Metal Handling Warning .

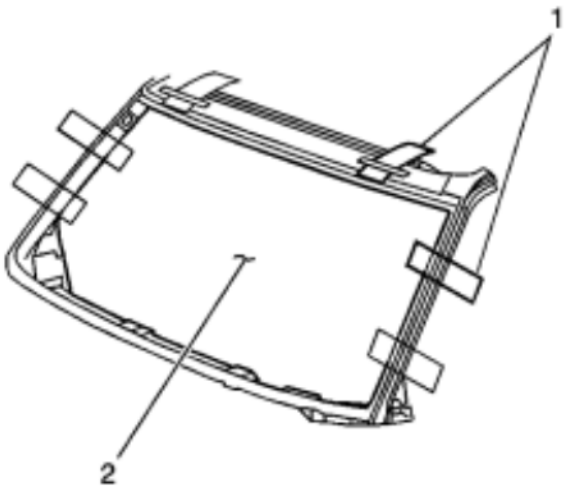
1. Use a urethane adhesive systems which meet GM Specification GM3651G.
2. Remove all mounds or loose pieces of urethane adhesive from the pinchweld area.
3. If the original window is being reused, remove all but approximately 2mm(3/64in) of the existing bead of urethane adhesive from the pinchweld flange 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 BASFDE15®, DuPont 2610®, Sherwin-Williams PSE4600 and NP70® and Martin-Semour 5120 and 5130® PPGDP90LF SPIES/ HECKER3688/8590 – 3688/5150 – 4070/5090 STANDOX11158/13320 – 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.



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.



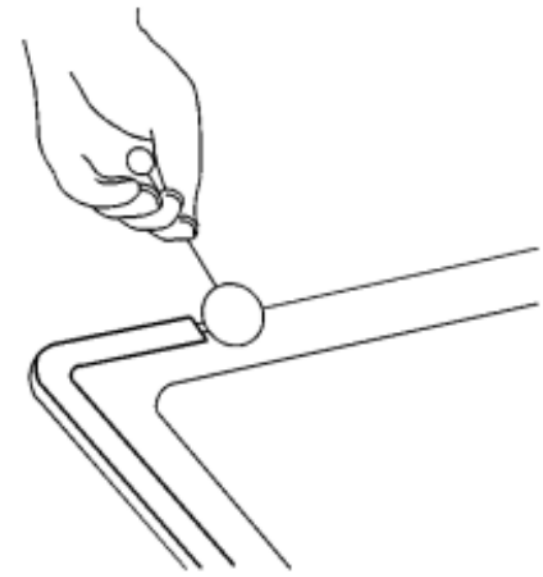
9. Use masking tape in order to mark the locations(1) of the window(2) in the opening.
10. Cut the masking tape in the center and remove the window from the opening.

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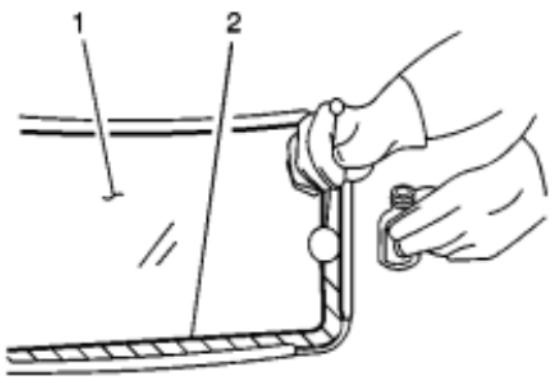


11. Apply glass prep clear to the area approximately 10–16 mm (3/8–5/8 in) around the entire perimeter of the window inner surface.

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



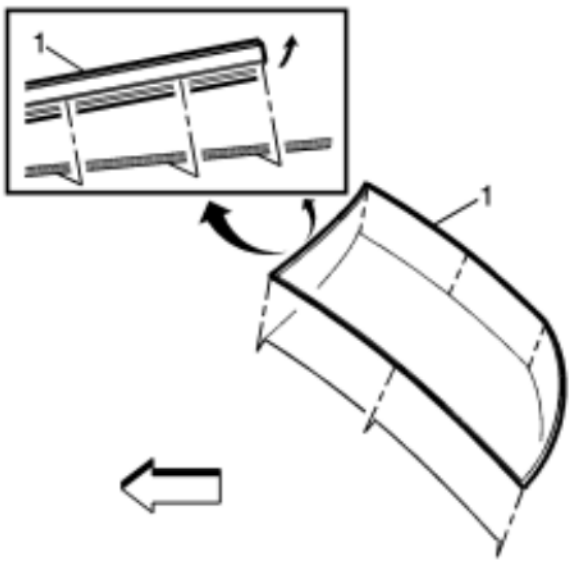
12. Apply bonded-glass primer and let dry per auto-adhesive instructions by the manufacturer's.



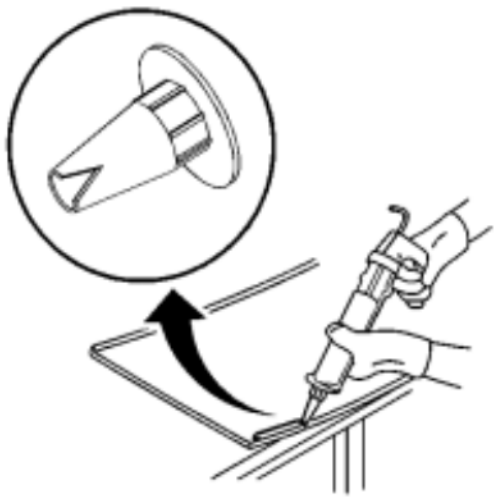
13. Apply the auto-adhesive primer-application (2) around the perimeter of the window (1) per auto-adhesive instructions by the manufacturer's.
14. Apply the glass primer black to the same areas (2) that glass prep clear was applied.
15. Allow the glass primer to dry per auto-adhesive instructions by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

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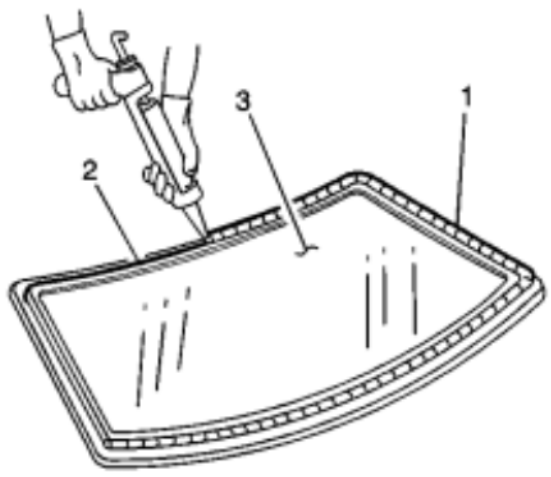
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16. Install the window reveal molding (1). Install the window reveal molding. Refer to Rear Window Reveal Molding Replacement .

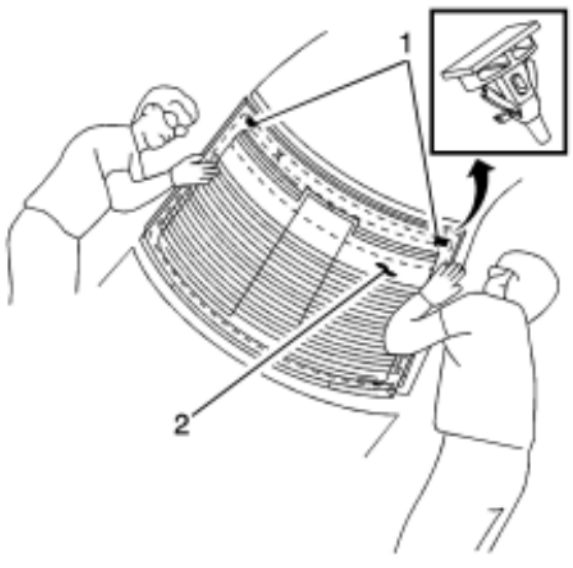


17. Use a cartridge-type caulking gun in order to apply a smooth, continuous bead.
    Cut the applicator nozzle to provided a V cut to apply the auto-adhesive.



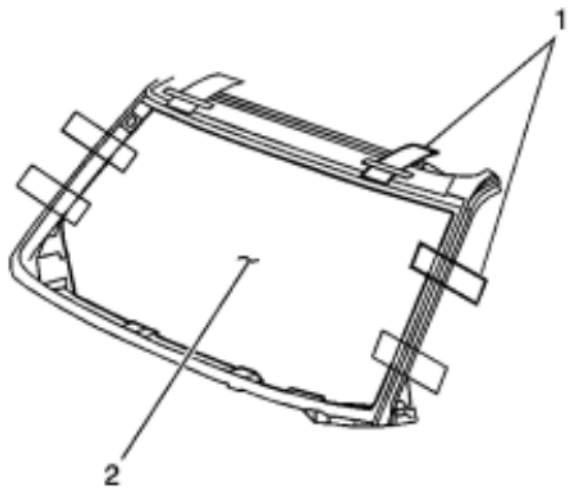
18. Use the edge of the window as a guide for the nozzle in order to apply the urethane adhesive (1) to the inner surface of the window (3).

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

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



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



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.

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



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

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.

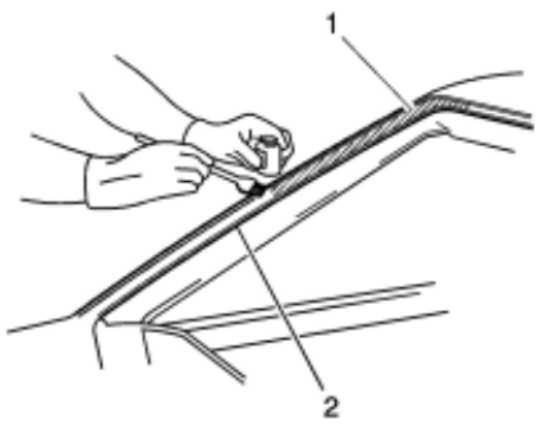
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Adhesive Installation of Liftgate Windows

Warning: Refer to Glass and Sheet Metal Handling Warning .

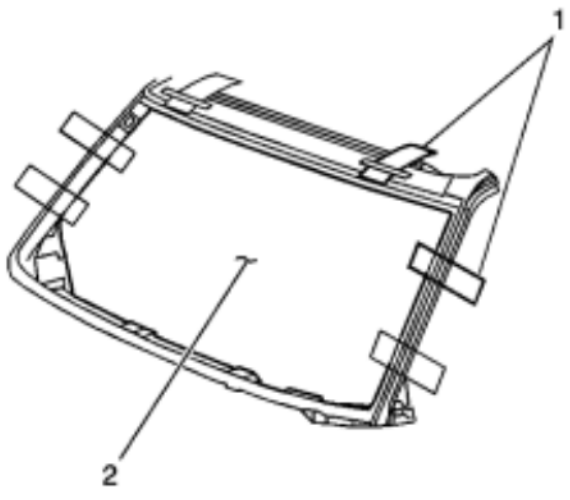
1. Use a urethane adhesive systems which meet GM Specification GM3651G.
2. Remove all mounds or loose pieces of urethane adhesive from the pinchweld area.
3. If the original window is being reused, remove all but approximately 2mm(3/64in) of the existing bead of urethane adhesive from the pinchweld flange 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 BASFDE15®, DuPont 2610®, Sherwin-Williams PSE4600 and NP70® and Martin-Semour 5120 and 5130® PPGDP90LF SPIES/ HECKER3688/8590 – 3688/5150 – 4070/5090 STANDOX11158/13320 – 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.



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.



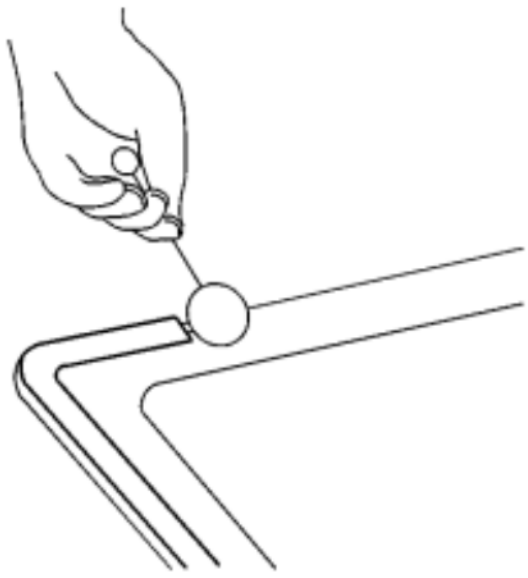
10. Use masking tape in order to mark the locations(1) of the window(2) in the opening.
11. Cut the masking tape in the center and remove the window from the opening.

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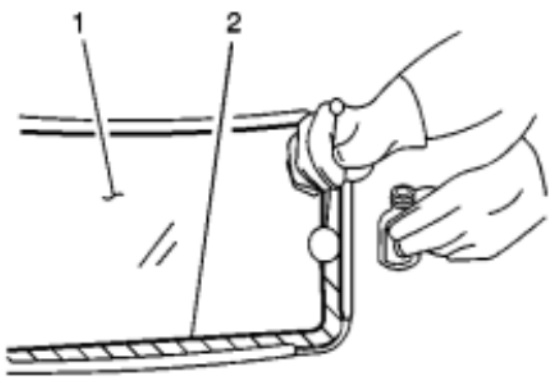


12. Apply glass prep clear to the area approximately 10–16 mm (3/8–5/8 in) around the entire perimeter of the window inner surface.

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

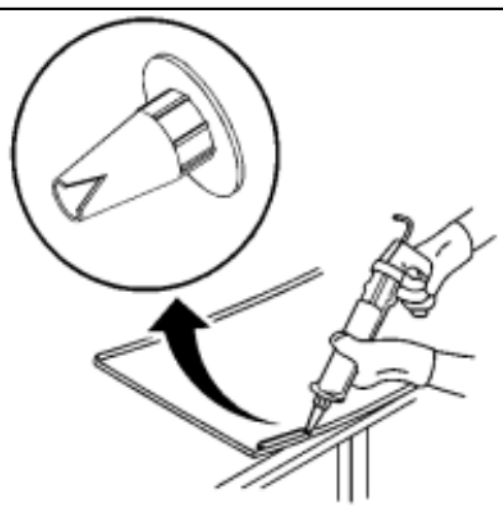


13. Apply bonded-glass primer and let dry per auto-adhesive instructions by the manufacturer's.

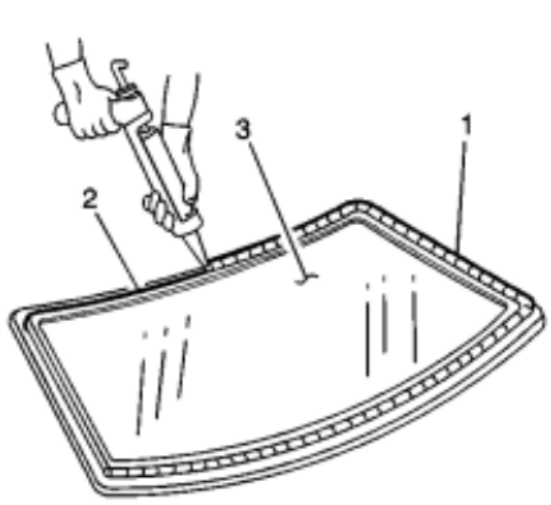


14. Apply the auto-adhesive primer-application (2) around the perimeter of the window (1) per auto-adhesive instructions by the manufacturer's.
15. Apply the glass primer black to the same areas (2) that glass prep clear was applied.
16. Allow the glass primer to dry per auto-adhesive instructions by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

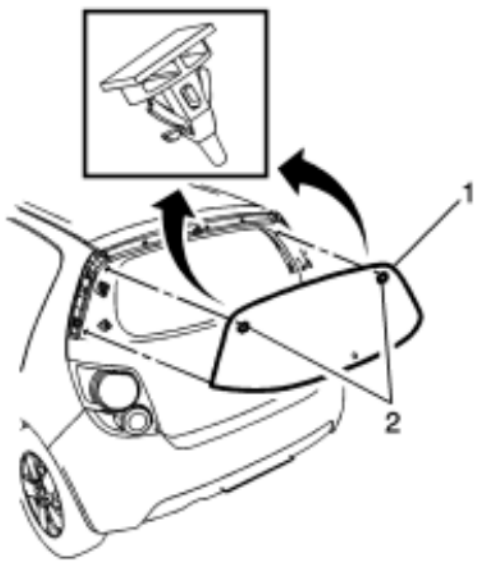
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17. Use a cartridge-type caulking gun in order to apply a smooth, continuous bead.
    Cut the applicator nozzle to provided a V cut to apply the auto-adhesive.
18. Install the window reveal molding, if equipped.



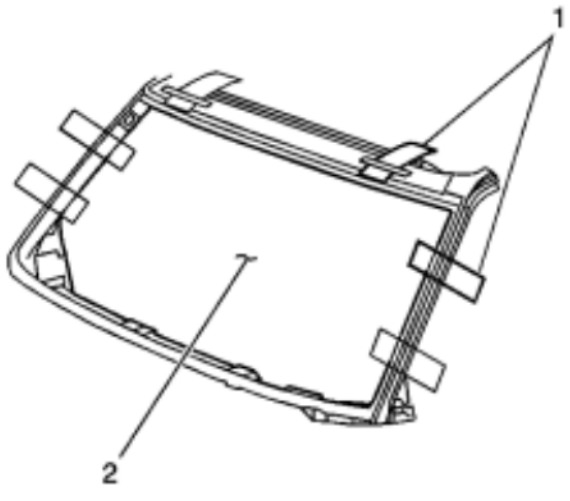
19. Use the edge of the window as a guide for the nozzle in order to apply the urethane adhesive (1) to the inner surface of the window (3).



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.

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



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.



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

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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.

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Full-Cut Method Description
Power Windows Description and Operation
Rear Window Defogger Description and Operation
Stationary Window Description
Urethane Adhesive Description

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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.

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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.

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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.

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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 GM3651G

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Urethane Adhesive Description

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

Use adhesive systems which meet GM Specification GM3651G.

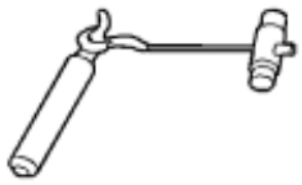
Use these materials based on specific manufacturer. Do NOT intermix primers or adhesives from one manufacturer to another.

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

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Special Tools

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

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Specifications
Horn Replacement
Steering Wheel Horn Contact Replacement
Description and Operation

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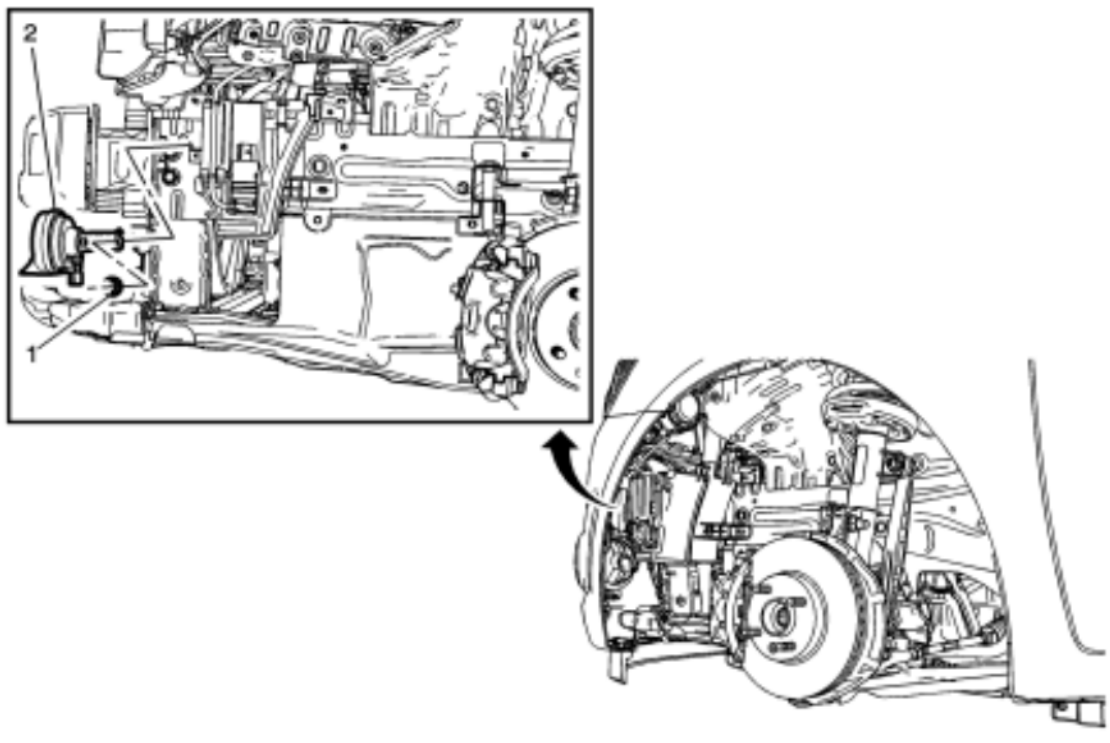
Fastener Tightening Specifications

Application	Specification	
	Metric	English
Horn Nut	17 N·m	13 lb ft
Steering Wheel Horn Contact Bolts	5.5 N·m	49 lb in

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Horn Replacement

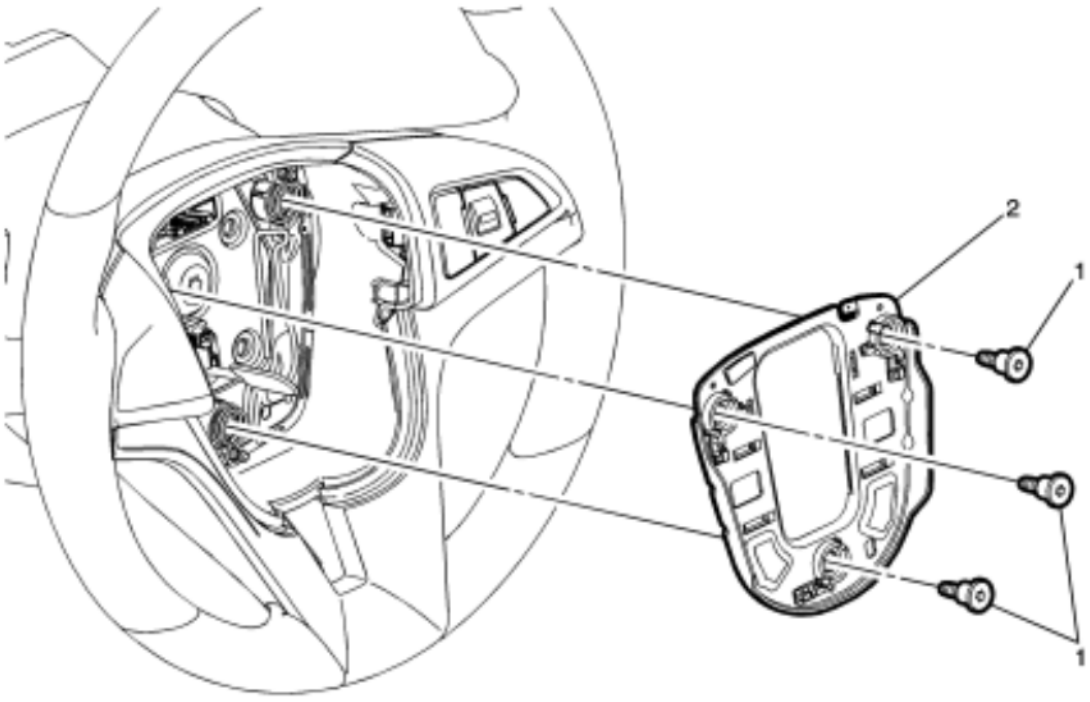


Callout	Component Name
Preliminary Procedure Remove the front wheelhouse liner front. Refer to Front Wheelhouse Liner Replacement .	
1	Horn Nut **Caution:** Refer to Fastener Caution . **Tighten** 17 N·m (13 lb ft)
2	Horn **Procedure** Disconnect the electrical connector.

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Steering Wheel Horn Contact Replacement



Callout	Component Name
Preliminary Procedure Remove the steering wheel inflatable restraint module. Refer to Steering Wheel Inflatable Restraint Module Replacement .	
1	Steering Wheel Horn Contact Spring Retainer Bolt (Qty: 3) **Caution:** Refer to Fastener Caution . **Tighten** 5.5 N·m (49 lb in)
2	Steering Wheel Horn Contact Assembly **Procedure** Disconnect the electrical connectors.

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Horns System Description and Operation

System Description

The horn system consists of the following components:

- F51UA 15A fuse
- Underhood fuse block (contains a non-serviceable PCB Horn relay)
- Horn switch
- Horn
- Body control module (BCM)

System Operation

- The vehicle horn is activated whenever the horn switch is depressed.
- The BCM commands the horns ON under any of the following conditions:
  - When the content theft deterrent system detects a vehicle intrusion—For further information refer to Content Theft Deterrent (CTD) Description and Operation .
  - When the keyless entry system is used to lock the vehicle, a horn chirp may sound to notify the driver that the vehicle has been locked. The notification feature may be enabled or disabled through personalization. For further information refer to Keyless Entry System Description and Operation .

Circuit Operation

The BCM controls the horn operation, when the horn switch is pressed, it closes a switch pulling the horn signal circuit low. When the BCM detects the drop in voltage in the horn switch signal circuit, it energizes the PCB Horn relay which provides B+ voltage to the horn control circuit, sounding the horn.

When the vehicle is in the Off Power Mode the BCM will attempt to detect a stuck or continuously activated horn switch. When enabled, activation of the horn will be limited to 10 seconds to protect the horn from excessive use.

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Specifications
Brake Pedal Position Sensor Calibration
Brake Pedal Position Sensor Replacement
Headlamp Switch Replacement
Hazard Warning Switch Replacement
Dome Lamp Bezel Replacement
Windshield Header Courtesy Lamp Replacement
Dome Lamp Bulb Replacement
Headlamp Replacement
Headlamp Bulb Replacement
Headlamp Housing Bracket Replacement
Headlamp Aiming
Front Fog Lamp Replacement
Front Fog Lamp Bulb Replacement
Front Fog Lamp Cover Replacement (Without T3U)
Front Fog Lamp Cover Replacement (With T3U)
Fog Lamp Aiming
Front Side Turn Signal Lamp Replacement
Front Side Turn Signal Lamp Bulb Replacement
Parking and Turn Signal Lamp Bulb Replacement
High Mount Stop Lamp Replacement (Sedan)
High Mount Stop Lamp Replacement (Hatchback)
Cargo Center Courtesy Lamp Bulb Replacement (Hatchback)
Cargo Center Courtesy Lamp Bulb Replacement (Sedan)
Backup Lamp Bulb Replacement (Sedan)
Rear License Plate Lamp Replacement (Sedan)
Rear License Plate Lamp Replacement (Hatchback)
Rear License Plate Lamp Bulb Replacement (Sedan)
Rear License Plate Lamp Bulb Replacement (Hatchback)
Tail Lamp Replacement (Sedan)
Tail Lamp Replacement (Hatchback)
Stop and Turn Signal Lamp Bulb Replacement (Sedan)
Stop and Turn Signal Lamp Bulb Replacement (Hatchback)
Rear Compartment Courtesy Lamp Replacement (Hatchback)
Rear Compartment Courtesy Lamp Replacement (Sedan)
Description and Operation

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Fastener Tightening Specifications

Application	Specification	
	Metric	English
Front Fog Lamp Bolt	1.5 N·m	13 lb in
Headlamp Bolt	2.5 N·m	22 lb in
High Mount Stop Lamp Bolt	2.5 N·m	22 lb in
Rear License Plate Lamp Bolt	1.0 N·m	9 lb in
Tail Lamp Bolt	2.5 N·m	22 lb in

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Brake Pedal Position Sensor Calibration

Calibration Criteria

Note: Do not apply the brake pedal during the brake pedal position sensor calibration procedure. Any movement of the brake pedal during this procedure will cause the calibration procedure to fail. If this occurs, the brake pedal position sensor calibration must be repeated.

Brake pedal position sensor calibration must be performed after the brake pedal position sensor or body control module (BCM) have been serviced. The calibration procedure will set the brake pedal position sensor home value. This value is used by the BCM to determine the action of the driver applying the brake system and to provide this information to the vehicle subsystems via serial data.

Calibration Procedure

1. Apply the parking brake.
2. Place the transmission in the PARK position for automatic transmission or NEUTRAL position for manual transmission.
3. Install a scan tool.
4. Clear all BCM DTCs before proceeding.
5. Navigate to the Configuration/Reset Functions menu of the BCM.
6. Select the Brake Pedal Position Sensor Learn procedure and follow the directions displayed on the screen.

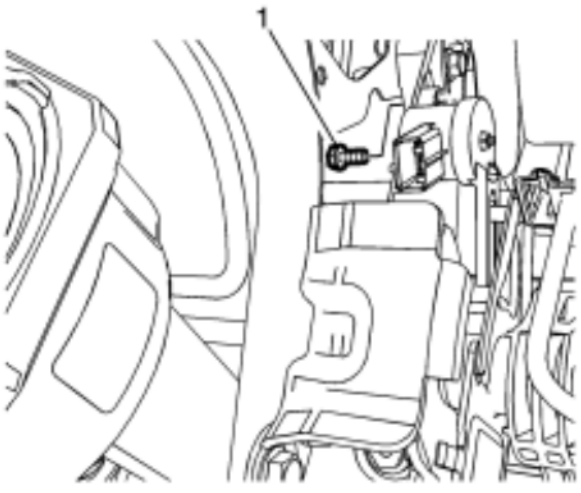
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Brake Pedal Position Sensor Replacement

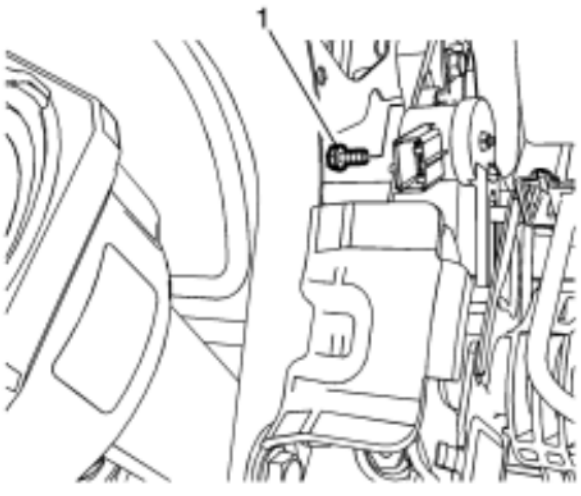
Removal Procedure

1. Remove the instrument panel lower trim pad cover. Refer to Instrument Panel Lower Trim Pad Cover Replacement .



2. Disconnect the brake pedal position sensor electrical connector.
3. Remove the brake pedal position sensor bolt(1).
4. Remove the brake pedal position sensor.

Installation Procedure



Note: Ensure the fork of the brake pedal position sensor is positioned over the brake pedal post.

1. Install the brake pedal position sensor to the brake pedal bracket.

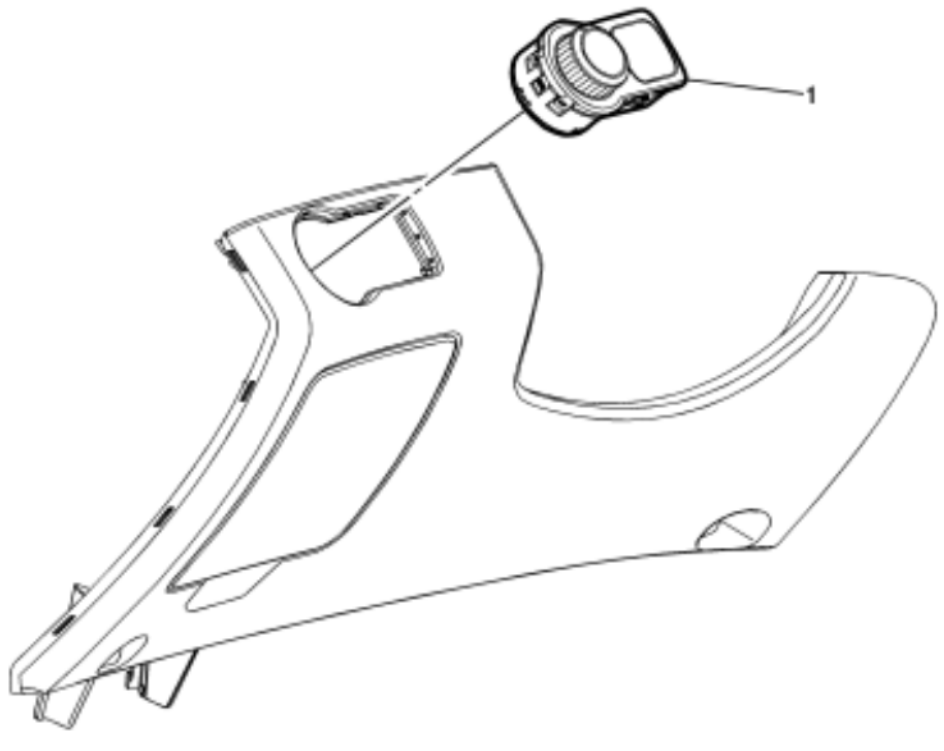
Caution: Refer to Fastener Caution .

2. Install the brake pedal position sensor bolt(1)and tighten to **3N·m (27lbin)**.
3. Connect the brake pedal position sensor electrical connector.
4. Calibrate the brake pedal position sensor. Refer to Brake Pedal Position Sensor Calibration .
5. Install the instrument panel lower trim pad cover. Refer to Instrument Panel Lower Trim Pad Cover Replacement .

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Headlamp Switch Replacement

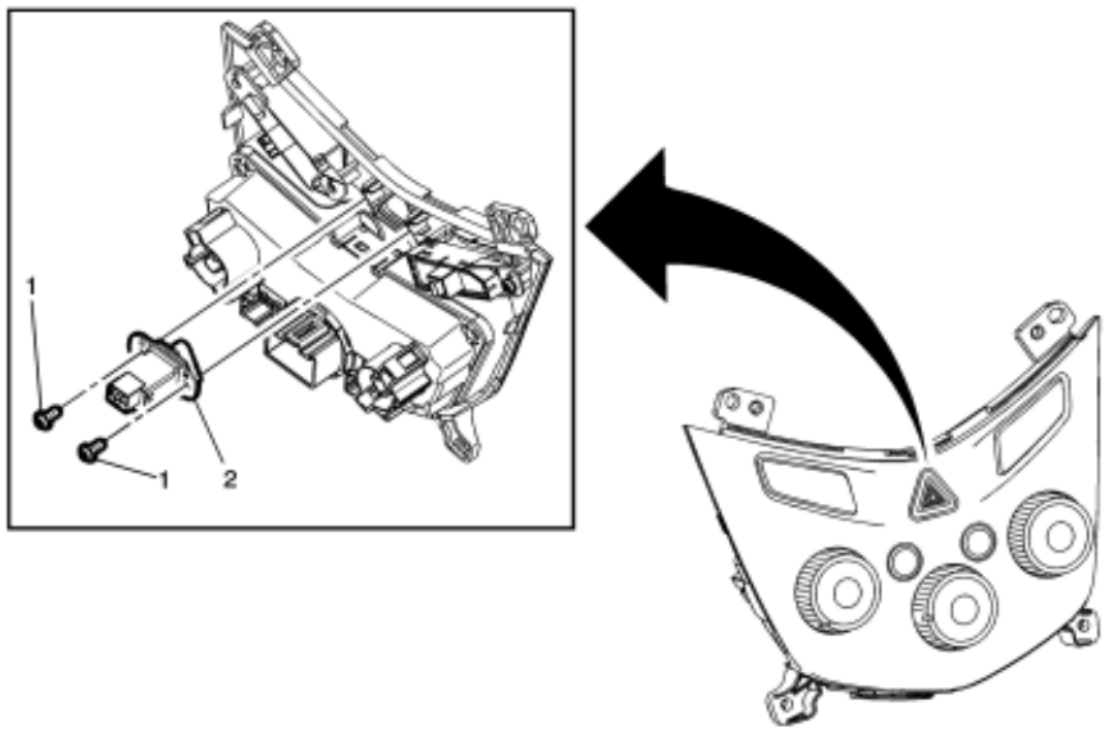


Callout	Component Name
Preliminary Procedure Remove the instrument panel lower trim pad cover. Refer to Instrument Panel Lower Trim Pad Cover Replacement	
1	Headlamp Switch **Procedure** 1. Gently depress tabs to remove the switch assembly from the instrument panel lower cover. 2. Disconnect the electrical connector.

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Hazard Warning Switch Replacement

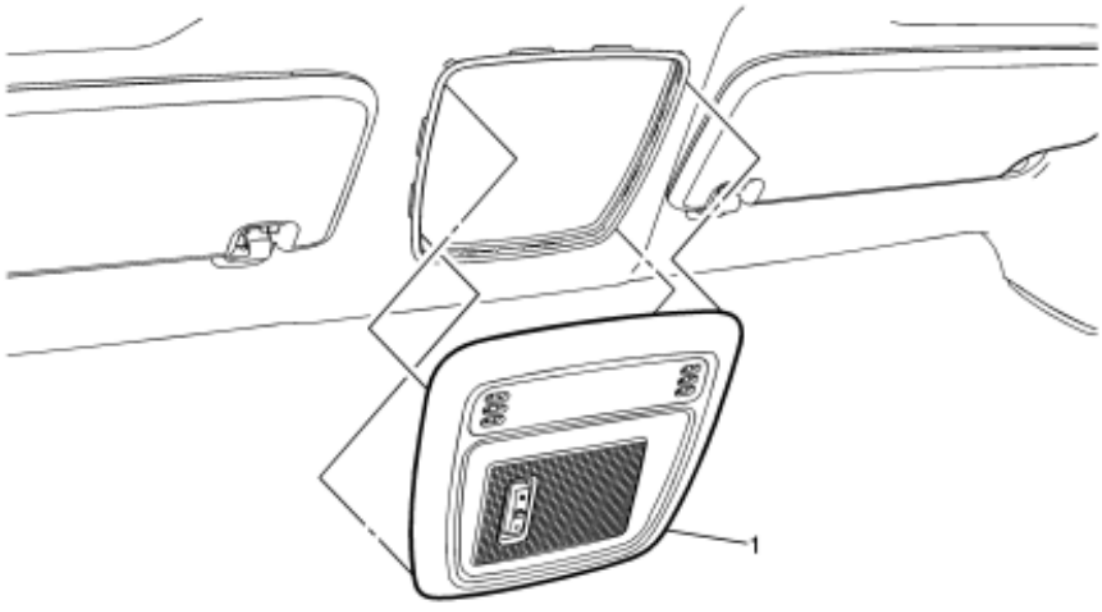


Callout	Component Name
Preliminary Procedure Remove the heater and air conditioning control. Refer to Heater and Air Conditioning Control Replacement .	
1	Hazard Warning Switch Bolts (Qty: 2) **Caution:** Refer to Fastener Caution .
2	Hazard Warning Switch **Procedure** Disconnect the electrical connector.

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Dome Lamp Bezel Replacement

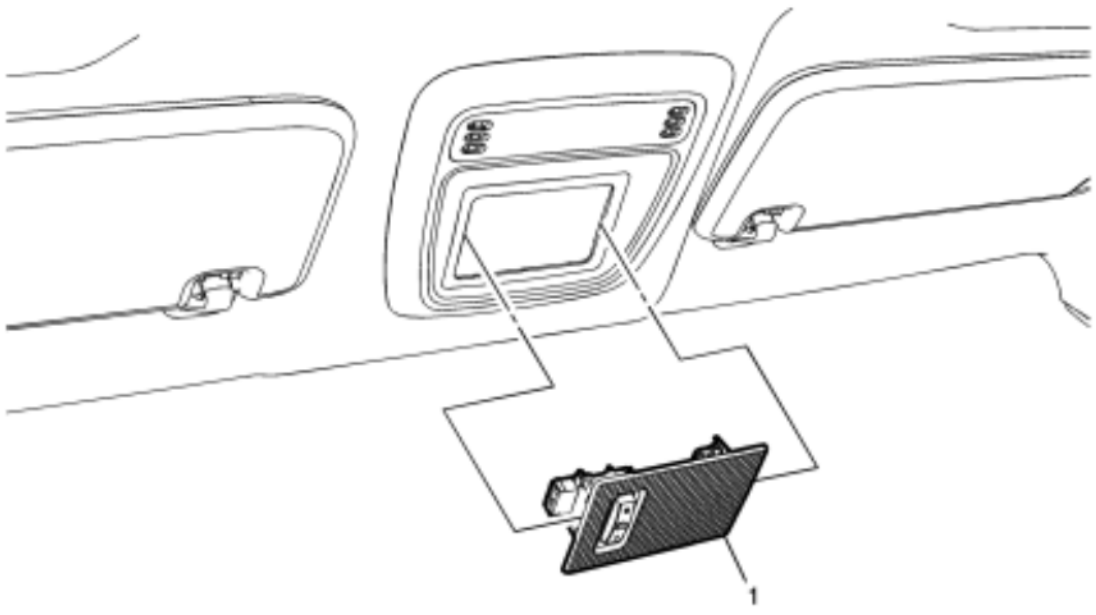


Callout	Component Name
1	Dome Lamp Bezel **Procedures** 1. Grasp the bezel assembly and pull downward to release the retainer clips securing the bezel assembly to the headliner. 2. Disconnect the electrical connections.

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Windshield Header Courtesy Lamp Replacement

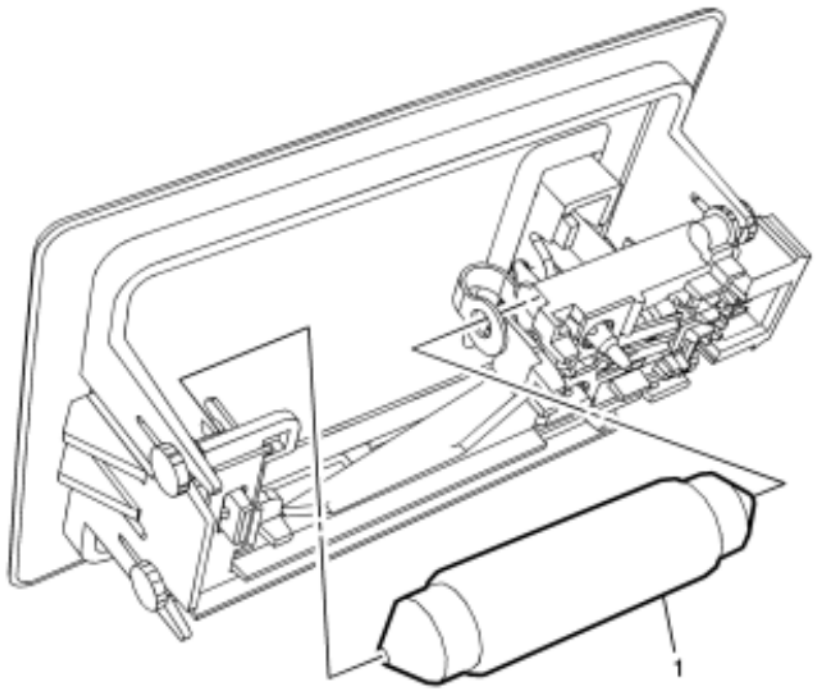


Callout	Component Name
1	Windshield Header Courtesy Lamp **Procedures** 1. Grasp the courtesy lamp assembly and pull downward to release the retainer clips securing the courtesy lamp assembly to the dome lamp bezel. 2. Disconnect the electrical connections.

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Dome Lamp Bulb Replacement

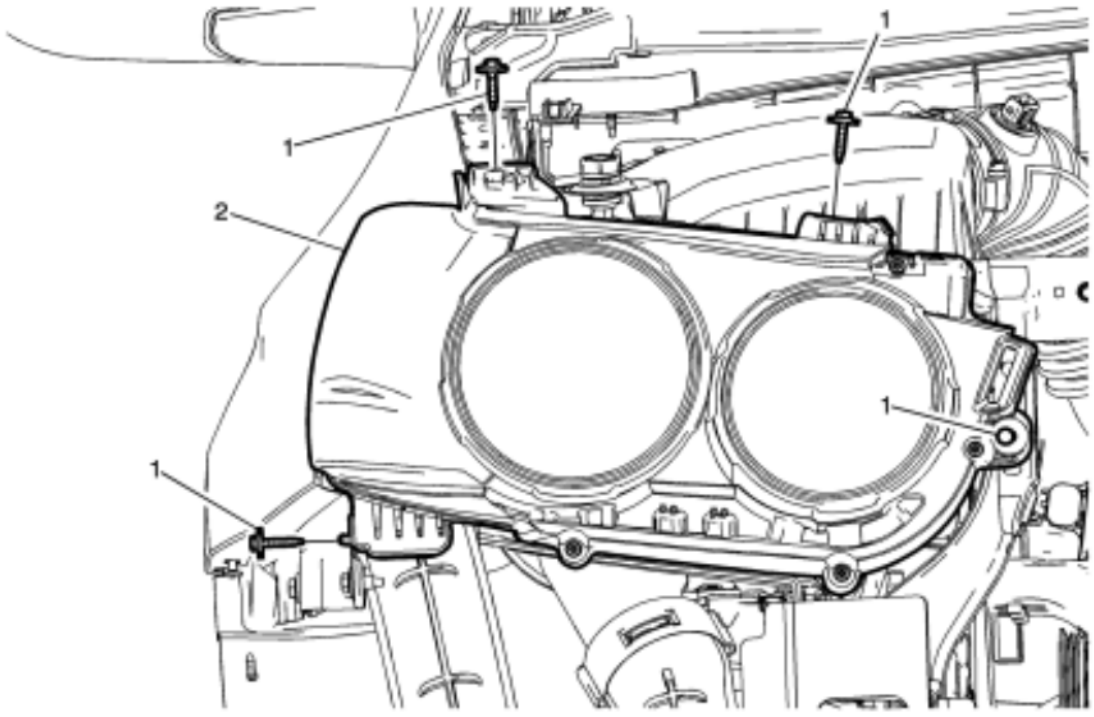


Callout	Component Name
Preliminary Procedure Remove the windshield header courtesy lamp. Refer to Windshield Header Courtesy Lamp Replacement	
1	Dome Lamp Bulb

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Headlamp Replacement

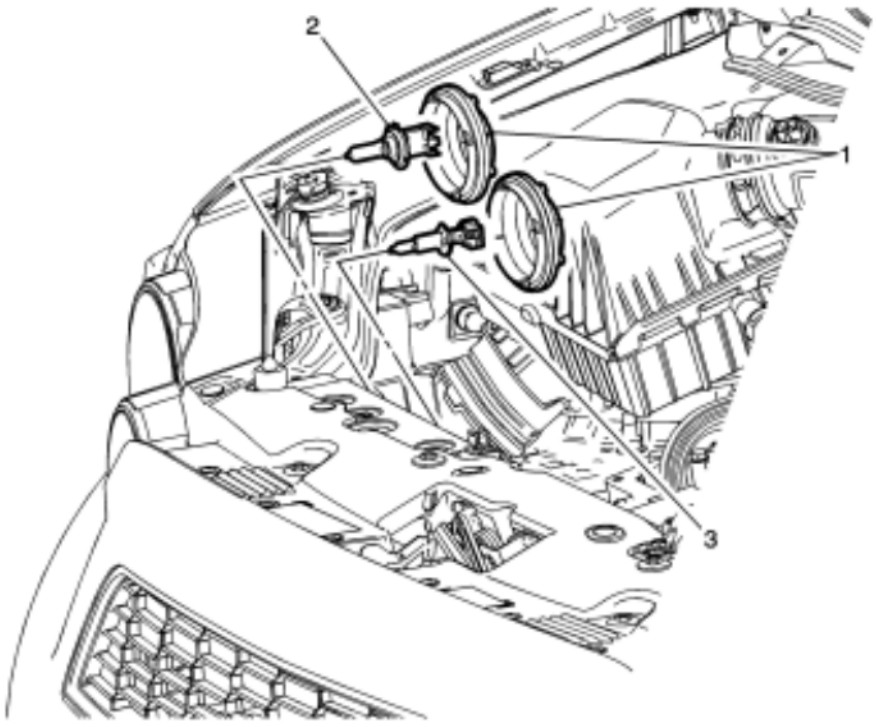


Callout	Component Name
Preliminary Procedure Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement .	
1	Headlamp Assembly Screw (Qty: 4) **Caution:** Refer to Fastener Caution . **Tighten** 2.5 N·m (22 lb in)
2	Headlamp Assembly **Procedure** 1. Disconnect the electrical connector bulb harness and remove the headlamp assembly. 2. Aim the headlamps after replacement. Refer to Headlamp Aiming .

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Headlamp Bulb Replacement

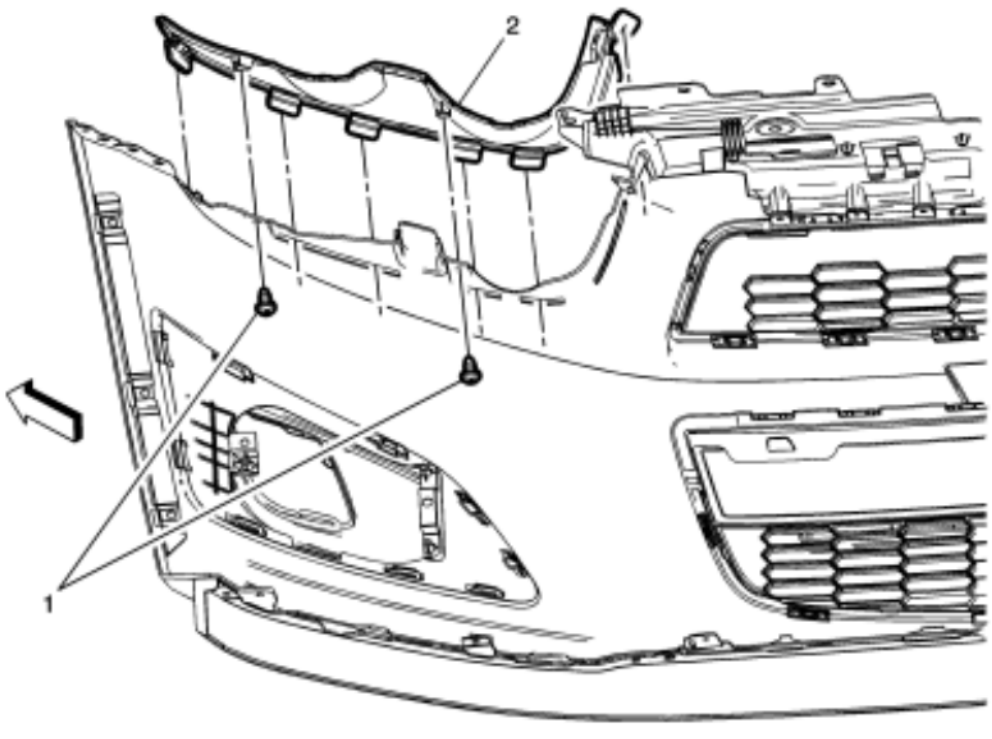


Callout	Component Name
Preliminary Procedure Open and support the hood assembly.	
1	Accessory Bulb Cover (Qty: 2)
2	**Warning:** Refer to Halogen Bulb Warning . Headlamp Bulb (Low Beam) **Procedure** 1. Disconnect the electrical connector from the bulb socket. 2. Rotate the bulb socket and remove from the headlamp housing.
3	Headlamp Bulb (High Beam) **Procedure** 1. Disconnect the electrical connector from the bulb socket. 2. Rotate the bulb socket a quarter turn and remove from the headlamp housing.

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Headlamp Housing Bracket Replacement



Callout	Component Name
Preliminary Procedure Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement .	
1	Headlamp Housing Bracket Screw (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 2.5 N·m (22 lb in)
2	Headlamp Housing Bracket **Procedure** Release the tabs on the housing bracket from the front bumper fascia and remove.

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Headlamp Aiming

Visual Aiming Preparation Procedure

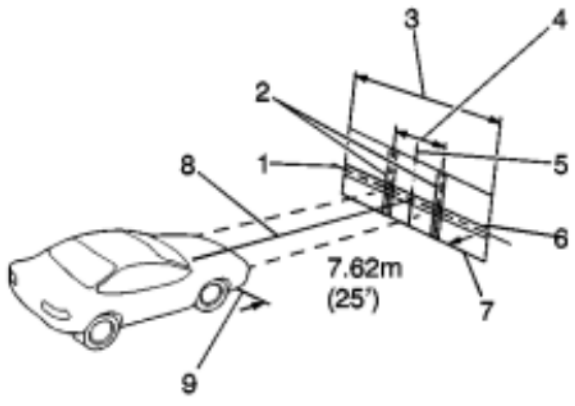
Note: Some state and local laws specify requirements for headlamp aim. Comply with all of these laws when performing any headlamp aiming operations.

Headlamp aim should be checked:

- When a new headlamp capsule is installed.
- If service or repairs to the front end area have, or may have, disturbed the headlamps or their mounting.

The aiming screen should meet the following criteria:

- The area will consist of a level surface large enough to allow for a vehicle and an additional 7.62 m (25 ft) measured from face of lamps to the front of the aiming screen.
- The screen will be 1.52 m (5 ft) high x 3.66 m (12 ft) wide with a matte white surface well shaded from extraneous light, and properly adjusted to the floor on which the vehicle stands. Provisions should be made to align the aiming screen parallel with the vehicle.
- The screen shall be provided with a fixed vertical centerline, two laterally adjustable vertical tapes, and one vertically adjustable horizontal tape.
- If a regular commercial aiming screen is not available, the screen may consist of a vertical wall having a clear uninterrupted area approximately 1.83 m (6 ft) high and 3.66 m (12 ft) wide. The surface should be finished with a washable non-gloss white paint.

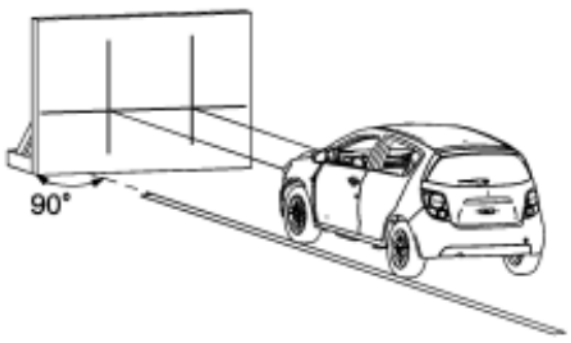


- After the aiming screen has been set up in a permanent location, paint a reference line on the floor directly under the lens of the lamps to indicate the proper location of the headlamps when they are being aimed:
  - Distance between headlamps (1)
  - Center line of screen (2)
  - Adjustable vertical pointer (3)
  - Adjustable horizontal tape (4)
  - Diagram of light screen (5)
  - Vertical center line ahead of right headlamp pointer position (6)
  - 7.62 m (25 ft) (7)
  - Car axis (8)
  - Adjustable vertical pointer
  - Horizontal center line of lamps
  - Vertical center line ahead of left headlamp

Prior to aiming the headlamps, the following steps must be taken:

1. Remove any snow, ice or mud from the vehicle.
2. The vehicle must have a full tank of gas.
3. Stop all other work on the vehicle.
4. If any service has been performed on the vehicle, make sure that all of the components are back in their original place.
5. The vehicle must be on a level surface.

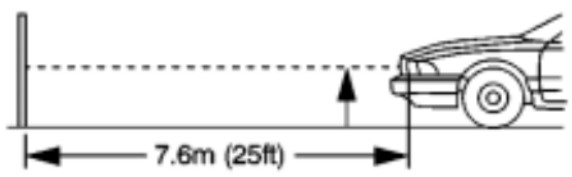
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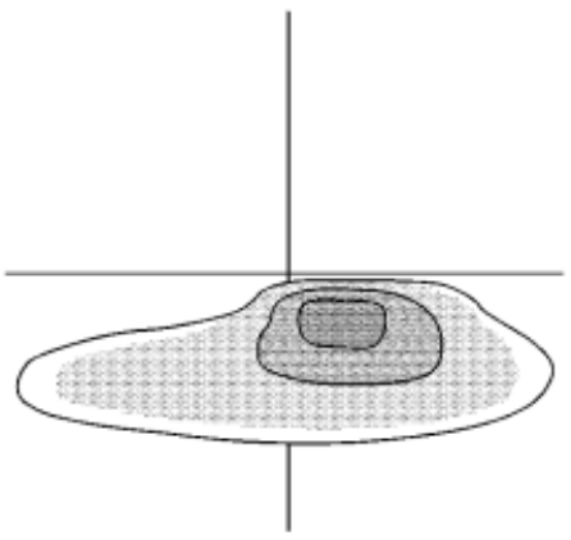
6. The vehicle left tires must be aligned with the reference line extending from the screen with the headlamps aligned with the reference line.
7. Do not load any cargo in the vehicle.
8. The vehicle must contain approximately 75 kg (165 lb) on the driver seat.
9. Inflate the tires to the proper pressure.
10. Simulate the vehicle loads if the intended use of the vehicle is for hauling heavy loads or towing a trailer.
11. Rock the vehicle in order to stabilize the suspension.
12. Turn on the headlamps to low beam and observe the left and the top edges of the high intensity zone on the screen. The edges of the high intensity zone should fall within the specifications.

Headlamp Aiming Procedure

1. Open the hood.



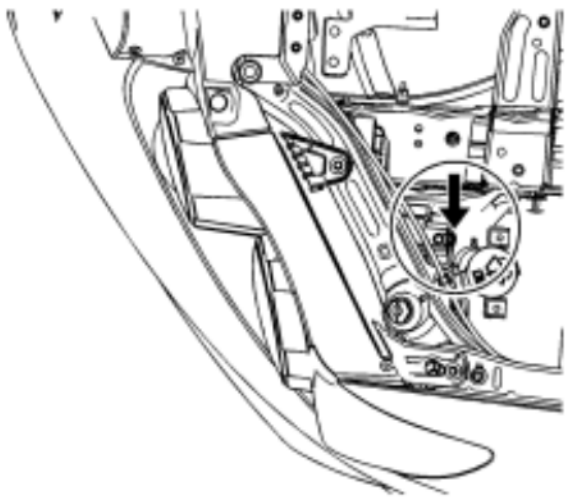
2. Measure from the floor to the center of the headlamp bulb. Some headlamps have an aim dot marked on the headlamp lens.
3. At the screen, measure from the floor and place the horizontal tape at the measured distance.
4. Measure from the reference line on the floor to the left headlamp bulb centerline.
5. At the screen, measure from the reference line and place the vertical tape at the measured distance.
6. Measure from the reference line on the floor to the right headlamp bulb centerline.
7. At the screen, measure from the reference line and place the vertical tape at the measured distance.



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Note: DO NOT cover the headlamp. This may cause excessive heat build up.

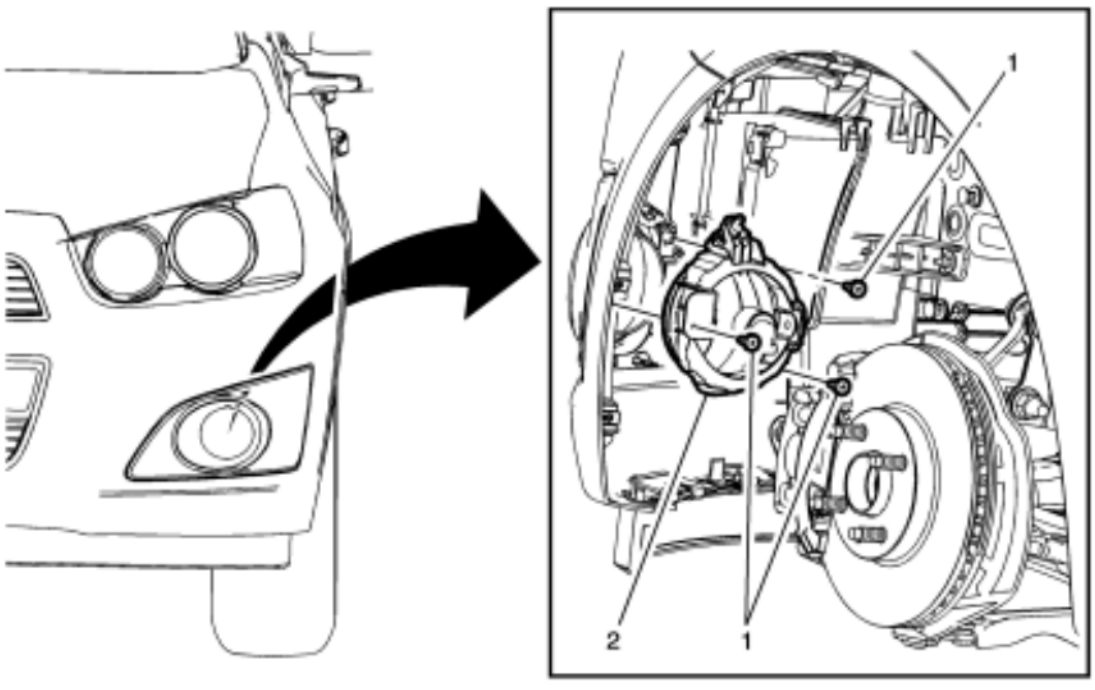
8. Turn ON the low beam headlamps. Block the light from projecting onto the screen from the passenger side headlamp.



9. Adjust the vertical aim screw (as shown by the arrow) of the headlamps to the specifications required by the state and the local authorities, or as shown in step number 8.
10. Repeat the aiming procedure for the passenger side headlamp while blocking the light from projecting onto the screen from the driver side headlamp.
11. Turn the headlamps OFF.
12. Close the hood.

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Front Fog Lamp Replacement

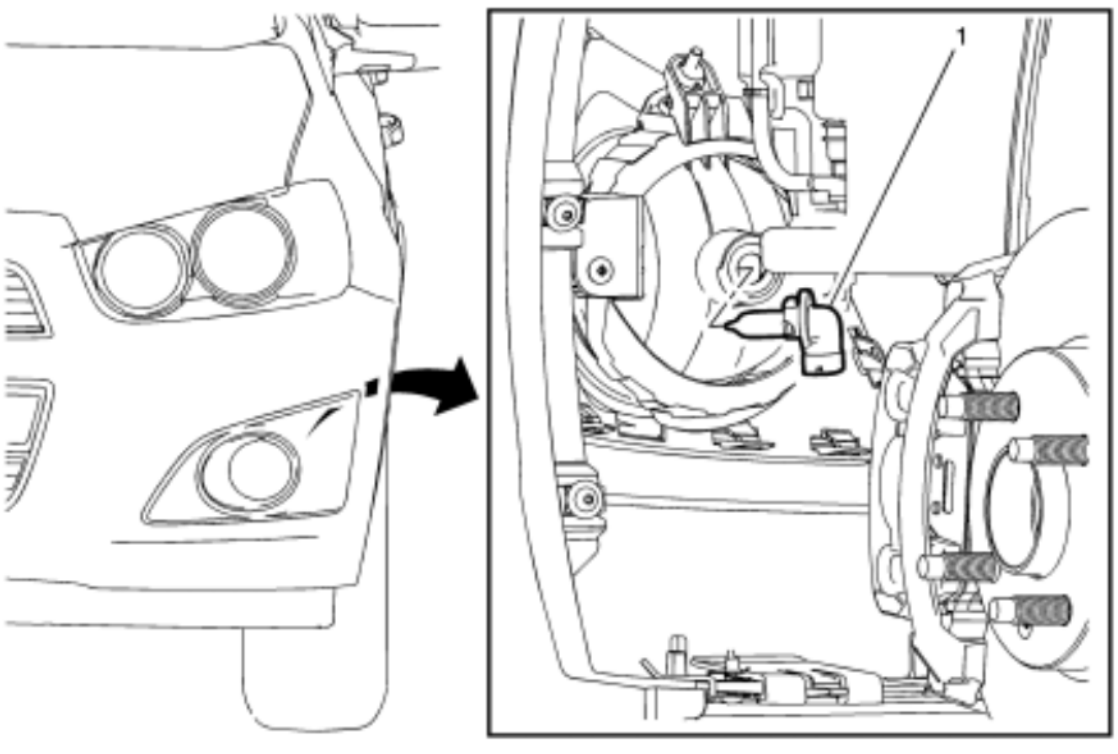


Callout	Component Name
Preliminary Procedure 1. Remove either the right front or left front wheelhouse liner. Refer to Front Wheelhouse Liner Replacement . 2. Disconnect the electrical connector from the fog lamp bulb socket.	
1	Front Fog Lamp Screw (Qty: 3) **Caution:** Refer to Fastener Caution . Remove the three fog lamp mounting screws from the front bumper fascia.
2	Front Fog Lamp **Procedure** Aim the front fog lamps after replacement. Refer to Fog Lamp Aiming .

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Front Fog Lamp Bulb Replacement

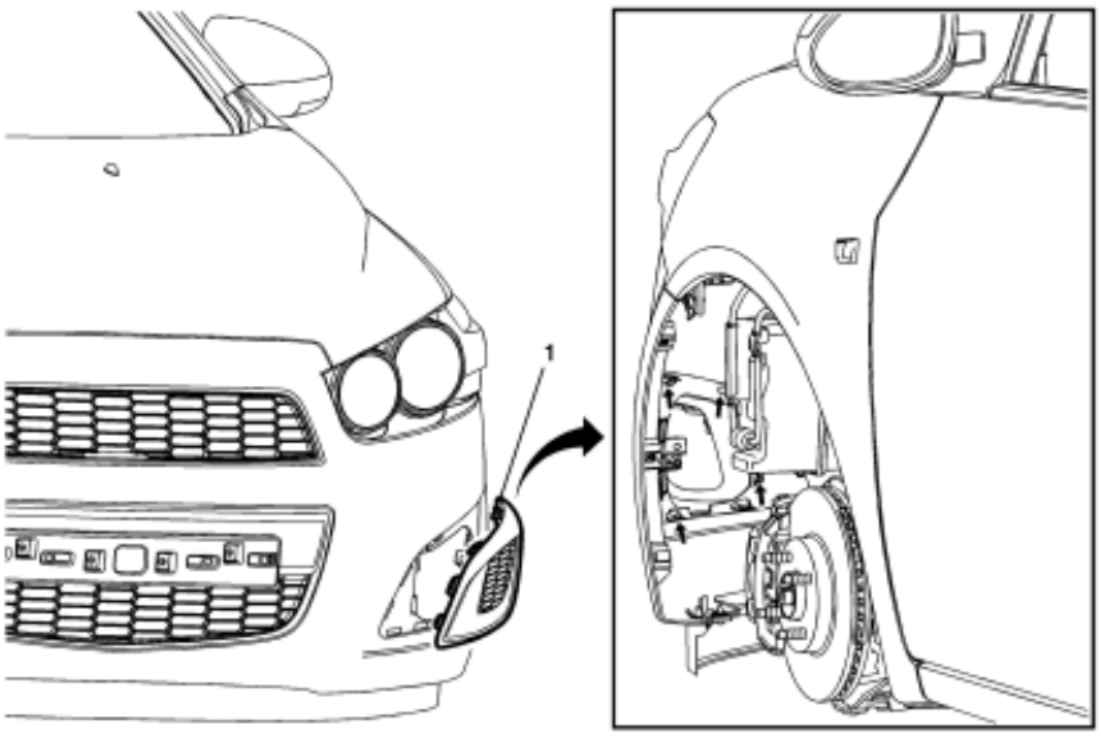


Callout	Component Name
Preliminary Procedure 1. Remove either the left front or right front wheelhouse liner. Refer to Front Wheelhouse Liner Replacement . 2. Disconnect the electrical connector to the fog lamp bulb.	
1	Front Fog Lamp Bulb **Warning:** Refer to Halogen Bulb Warning . Turn the fog lamp bulb socket counter-clockwise and remove from the fog lamp housing.

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Front Fog Lamp Cover Replacement (Without T3U)

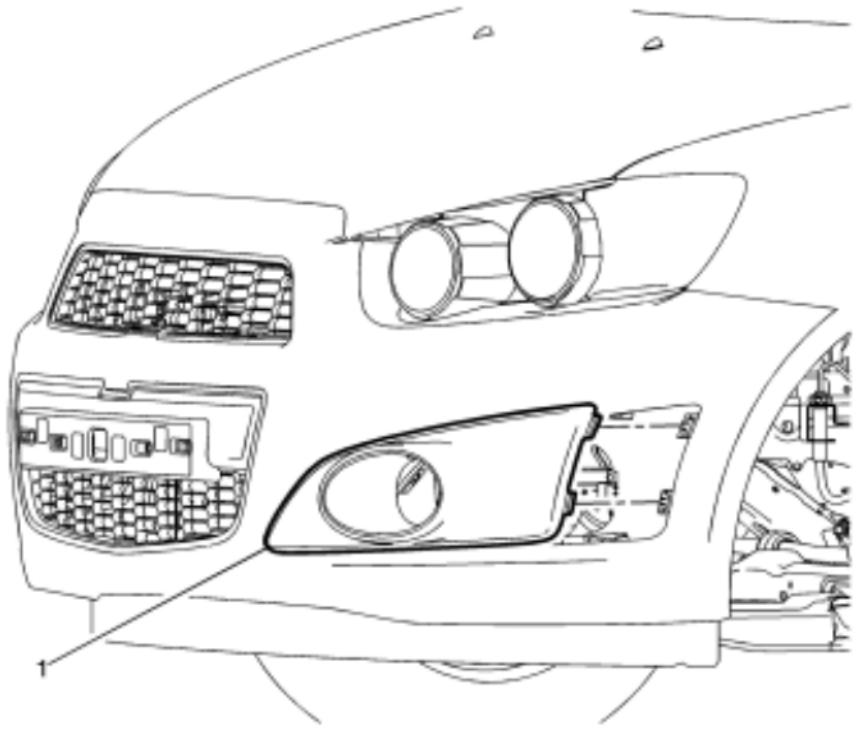


Callout	Component Name
	Preliminary Procedure Remove the front wheelhouse liner. Refer to Front Wheelhouse Liner Replacement .
1	Front Fog Lamp Front Cover **Procedure** Release the tabs securing the front fog lamp front cover to the front bumper fascia and remove.

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Front Fog Lamp Cover Replacement (With T3U)



Callout	Component Name
Preliminary Procedure Remove the front wheelhouse liner. Refer to Front Wheelhouse Liner Replacement .	
1	Front Fog Lamp Front Cover **Procedure** Release the tabs securing the front fog lamp front cover to the front bumper fascia and remove.

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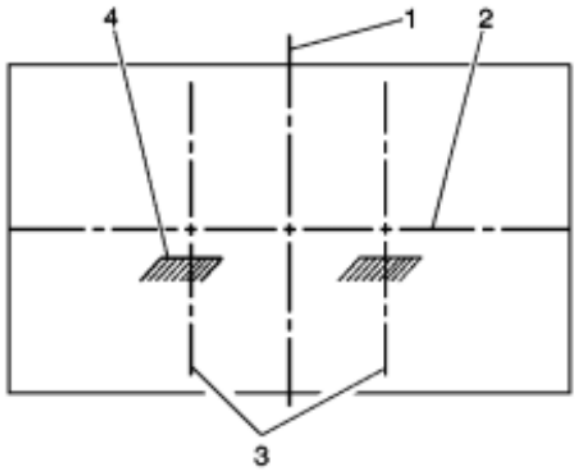
Fog Lamp Aiming

Preparation Procedure

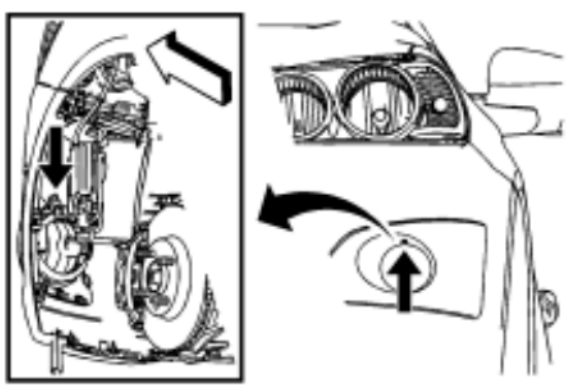
Note: Horizontal aim is not adjustable on this vehicle. Vertical aim is done by an adjusting nut located on the rear of the fog lamp. Prior to aiming the fog lamps, perform the following steps:

1. Completely assemble all of the components on the vehicle.
2. Place the vehicle on a level surface.
3. Stop all unnecessary operations or work that could affect the ride height of the vehicle.
4. Close the doors and verify that the luggage compartment is empty.
5. Stabilize the suspension by rocking the vehicle sideways.
6. Ensure that the fuel level is full.
7. Ensure that the tires are inflated to the proper pressure.
8. Ensure that the driver or a similar weight , approximately 75 kg (165 lb), is in the vehicle driver seat.

Aiming Procedure



1. Park the vehicle 7.6 m (25 ft) away from the target screen.
2. Measure from the center of the fog lamp to the ground line. Using this measurement, mark the horizontal centerline (2) of the fog lamp on the target screen directly in front of the vehicle.
3. Turn ON the fog lamps. The top of the fog lamp beam image (4) on the target screen should be 102 mm (4 in) below the center of the fog lamp lens height.

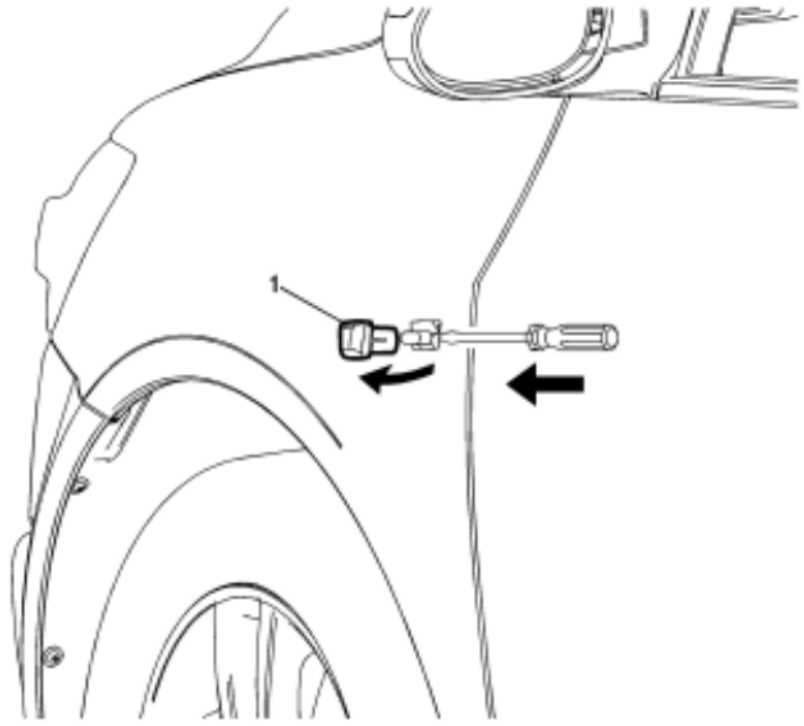


4. Adjust the fog lamp as required using the adjusting screw above the projector lens on the outside of the front bumper fascia.
5. Turn OFF the fog lamps.

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Front Side Turn Signal Lamp Replacement

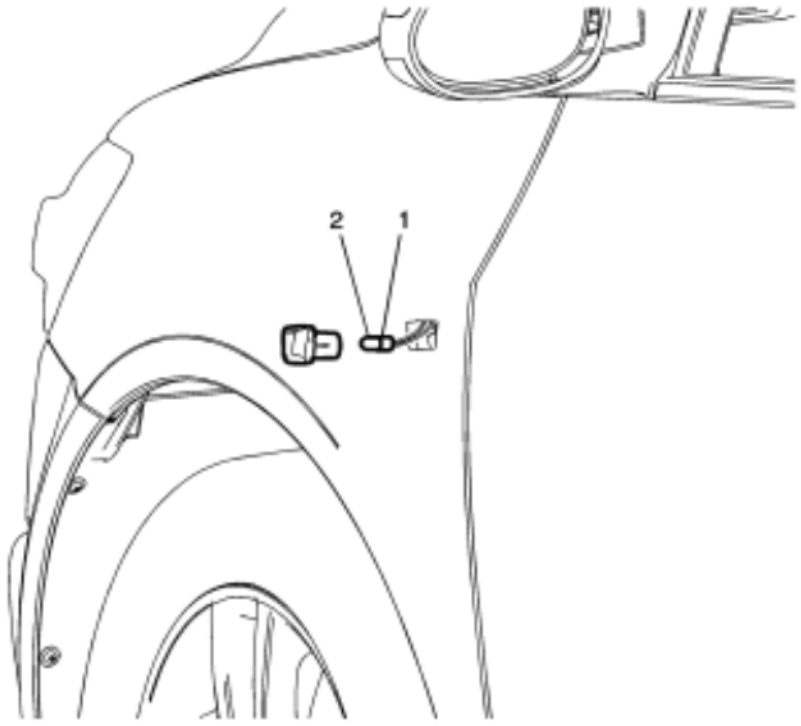


Callout	Component Name
Preliminary Procedures **Caution:** Refer to Exterior Trim Emblem Removal Caution . 1. Apply a layer of masking tape around the turn signal lamp being serviced. 2. Using a small flat-bladed tool, depress the rear edge of the left hand lamp or the front edge of the right hand lamp in order to rotate the lamp from the opening in the fender. 3. Rotate forward the lamp housing from the fender opening. 4. Rotate the electrical bulb socket counter-clockwise and remove from the housing.	
1	Front Side Turn Signal Lamp Assembly **Tip** Remove the masking tape from the fender after the lamp has been removed.

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Front Side Turn Signal Lamp Bulb Replacement

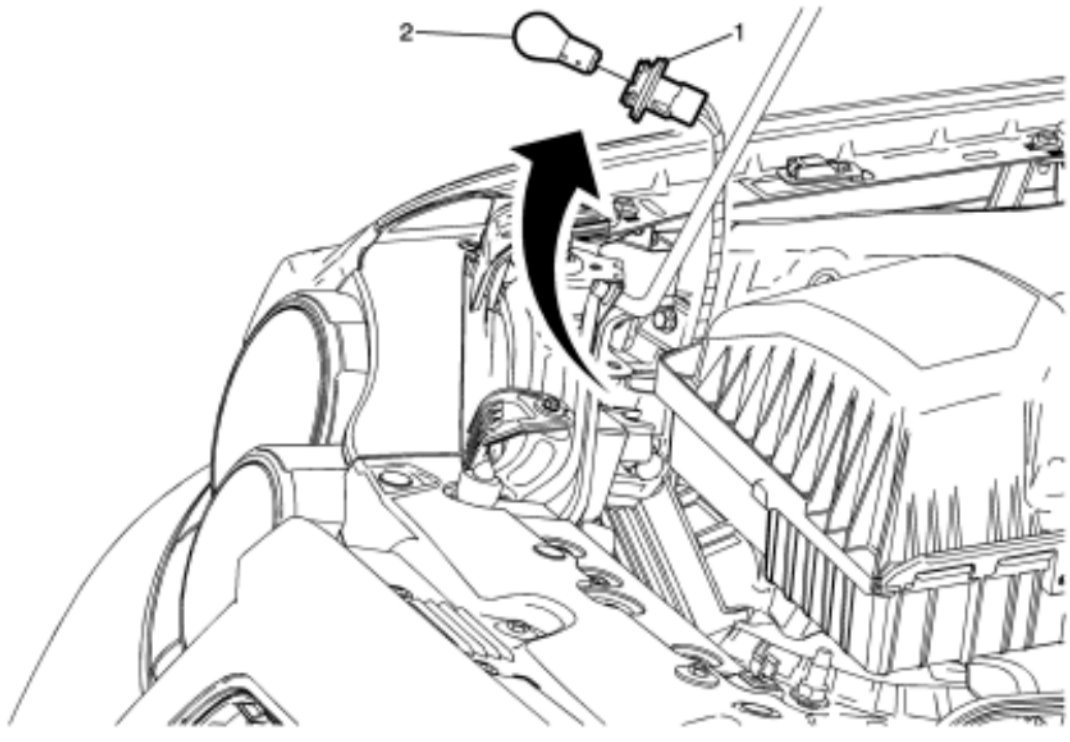


Callout	Component Name
Preliminary Procedure Remove the front side turn signal lamp. Refer to Front Side Turn Signal Lamp Replacement .	
1	Front Side Turn Signal Lamp Socket
2	Front Side Turn Signal Lamp Bulb **Procedure** Hold the bulb socket and pull the turn signal lamp bulb straight from the bulb socket.

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Parking and Turn Signal Lamp Bulb Replacement

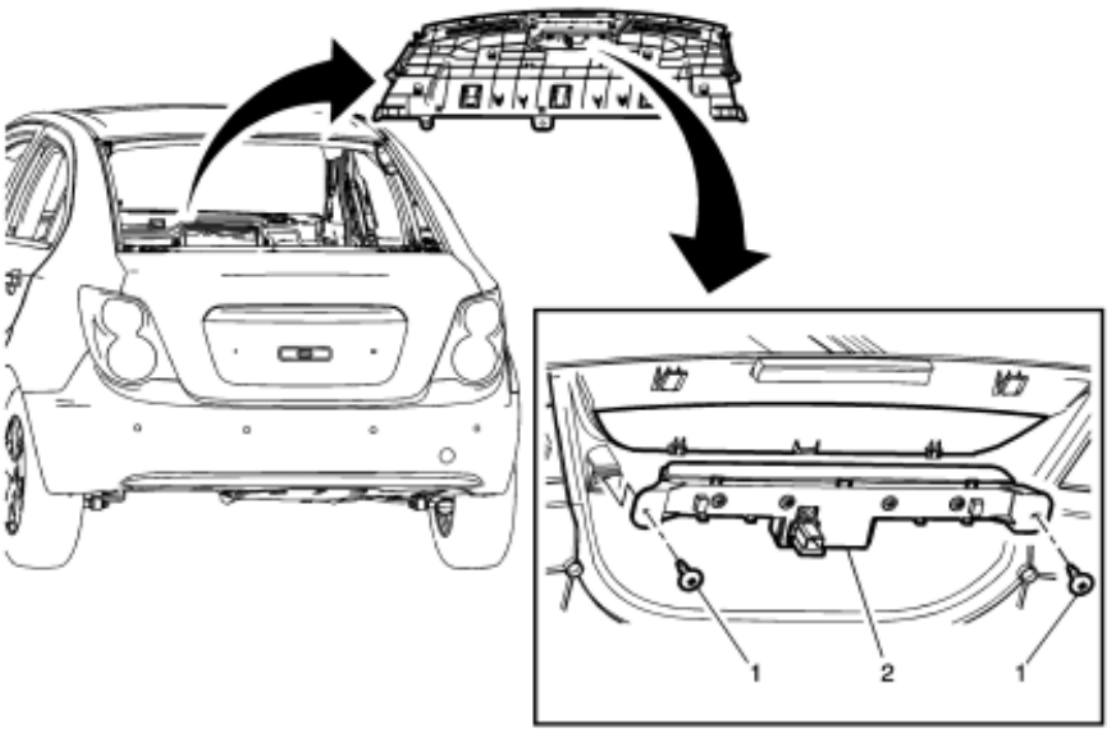


Callout	Component Name
Preliminary Procedures 1. Open and support the hood assembly. 2. Reposition the air cleaner inlet duct on the passenger side of the engine compartment. 3. Remove the low beam accessory bulb cover in order to access the front parking and turn signal lamp bulb socket.	
1	Parking and Turn Signal Lamp Bulb Socket **Procedure** Rotate the bulb socket counter-clockwise and remove from the headlamp housing.
2	Parking and Turn Signal Lamp Bulb **Procedure** Push inward and rotate the parking and turn signal bulb counter-clockwise in order to remove.

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High Mount Stop Lamp Replacement (Sedan)

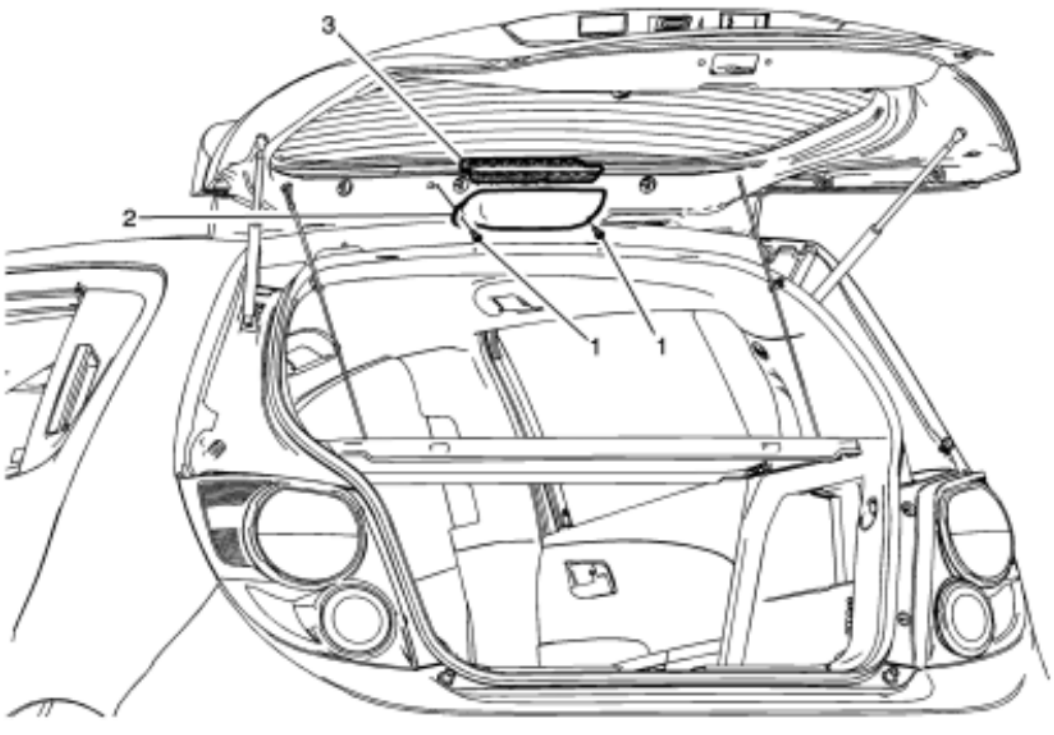


Callout	Component Name
Preliminary Procedure 1. Remove the rear window panel trim. Refer to Rear Window Panel Trim Replacement . 2. Place the rear window panel trim face down on a clean protected surface to access and remove the high mount stop lamp screws.	
1	High Mount Stop Lamp Screw (Qty: 2) **Caution:** Refer to Fastener Caution .
2	High Mount Stop Lamp **Tip** The high mount stop lamp is (LED) Light Emitting Diode and is serviced as an assembly.

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High Mount Stop Lamp Replacement (Hatchback)



Callout	Component Name
Preliminary Procedure Open and support the liftgate assembly.	
1	High Mount Stop Lamp Bolt (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 2.5 N·m (22 lb in)
2	High Mount Stop Lamp Cover **Procedure** Remove the cover and the four screws from the high mount stop lamp.
3	High Mount Stop Lamp Assembly **Procedure** Release the electrical connector and (LED) Light Emitted Diode lamp from the cover.

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Cargo Center Courtesy Lamp Bulb Replacement (Hatchback)

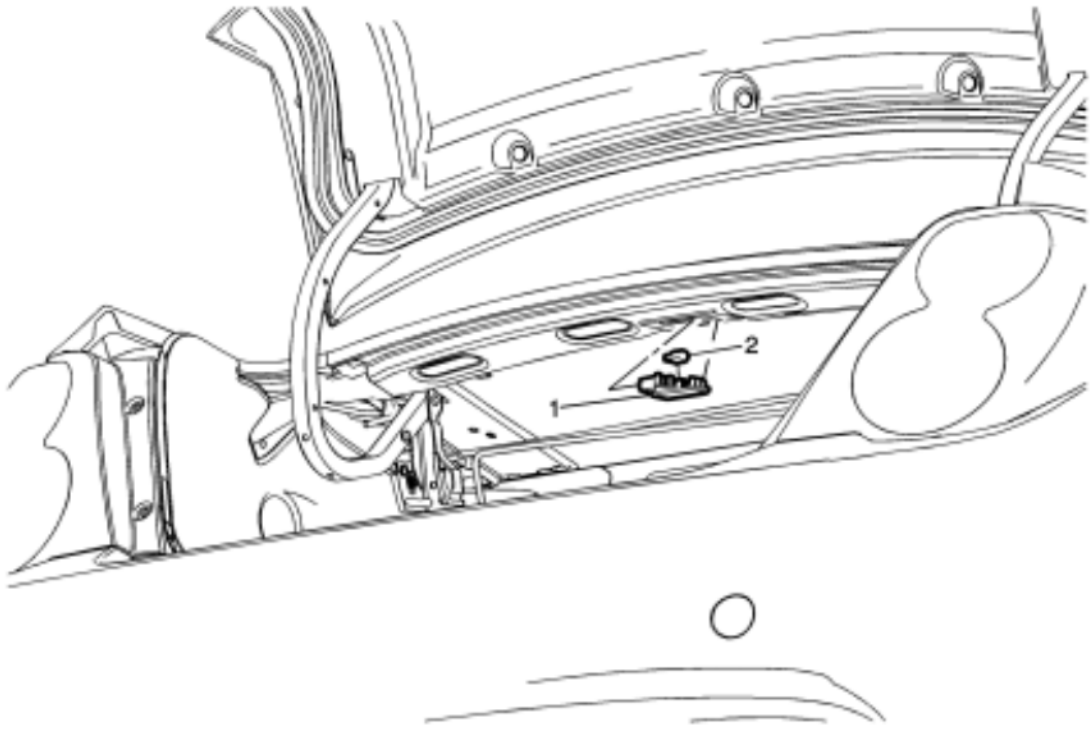


Callout	Component Name
1	Rear Compartment Courtesy Lamp Refer to Rear Compartment Courtesy Lamp Replacement
2	Cargo Lamp Bulb

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Cargo Center Courtesy Lamp Bulb Replacement (Sedan)

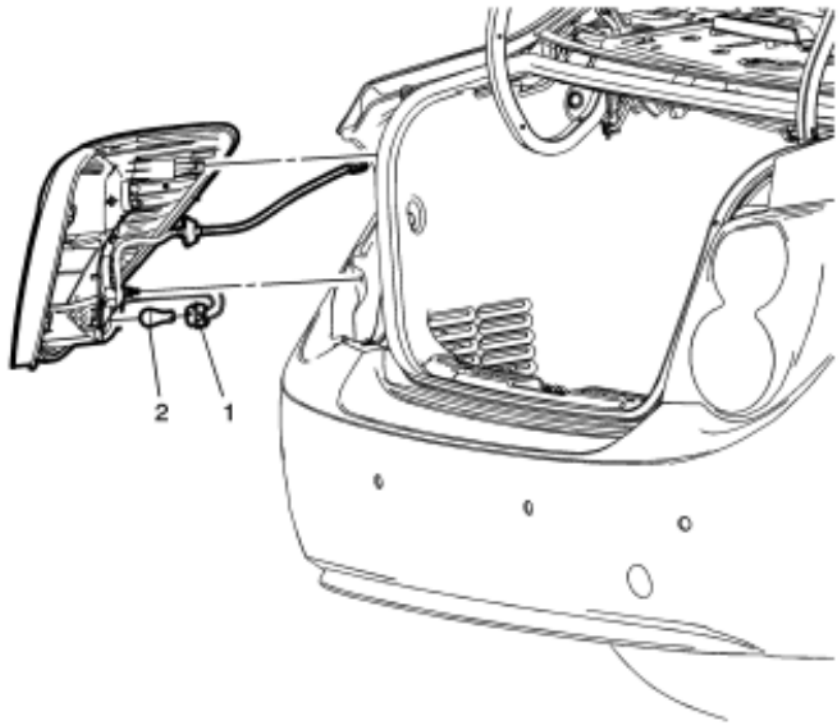


Callout	Component Name
1	Rear Compartment Courtesy Lamp Refer to Rear Compartment Courtesy Lamp Replacement
2	Cargo Lamp Bulb

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Backup Lamp Bulb Replacement (Sedan)

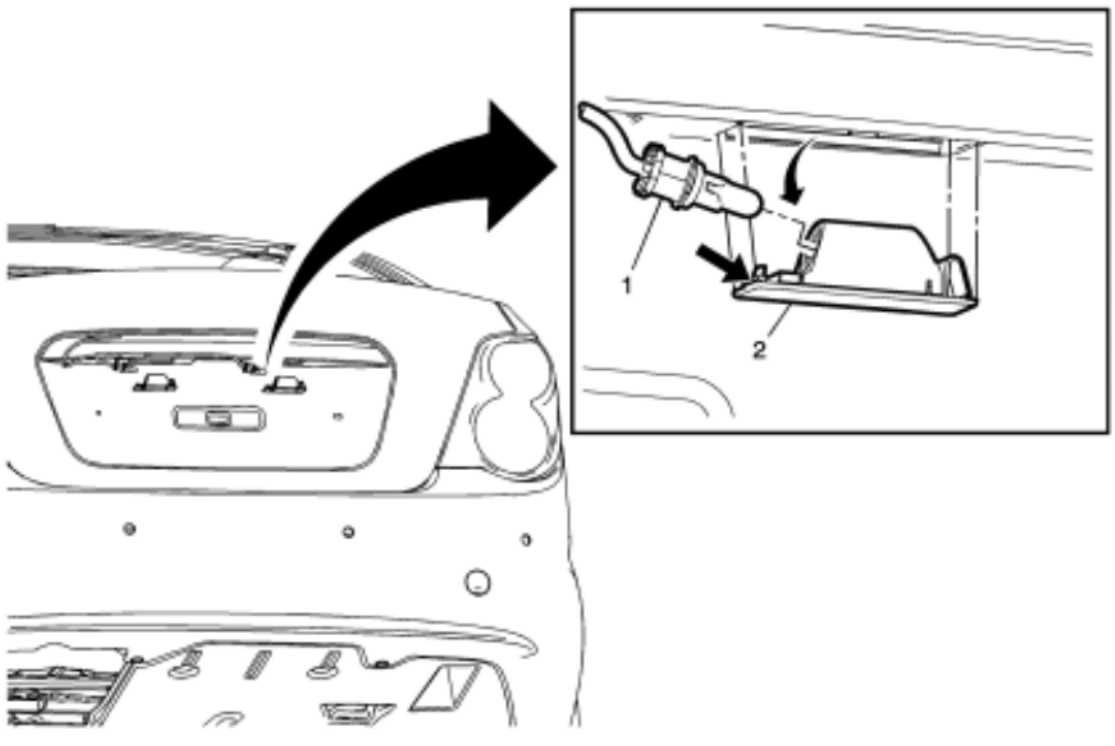


Callout	Component Name
Preliminary Procedure Remove the tail lamp assembly. Refer to Tail Lamp Replacement .	
1	Back Up Lamp Bulb Socket **Procedure** Rotate the back up lamp bulb socket counter-clockwise and remove from the tail lamp housing.
2	Back Up Lamp Bulb **Procedure** Push inward while rotating counter-clockwise on the bulb and remove from the lamp socket.

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Rear License Plate Lamp Replacement (Sedan)

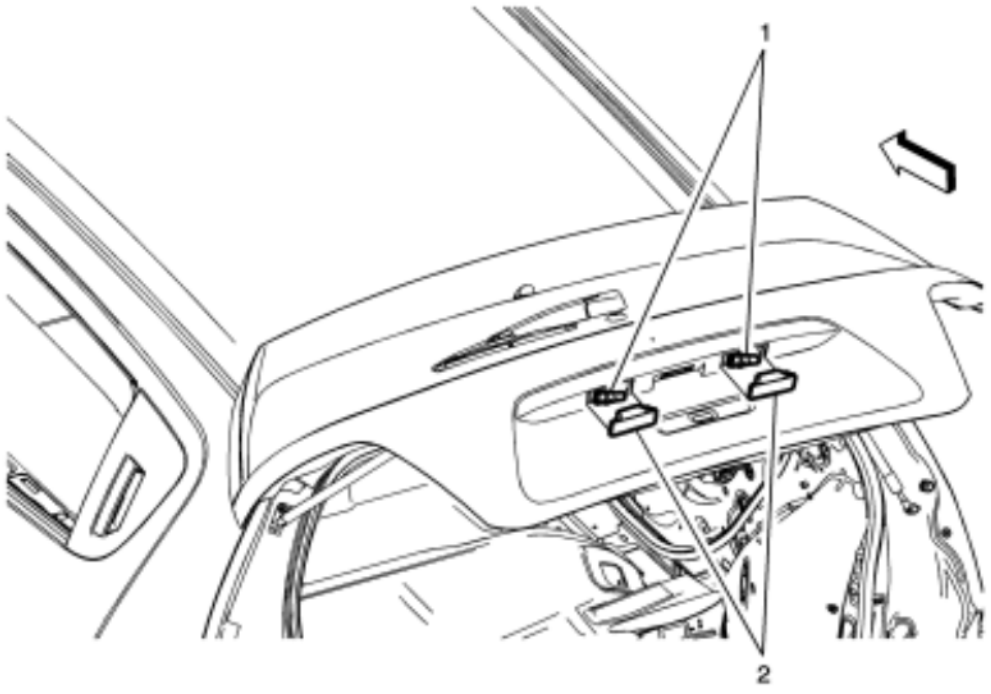


Callout	Component Name
Preliminary Procedure 1. Insert a small flat-blade at the arrow location at the lamp housing edge. 2. Push inward slightly and rotate downward. 3. Pull the housing down far enough to access the lamp socket and electrical harness.	
1	Rear License Plate Lamp Socket **Procedure** Rotate the lamp socket a quarter turn and remove.
2	Rear License Plate Lamp

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Rear License Plate Lamp Replacement (Hatchback)

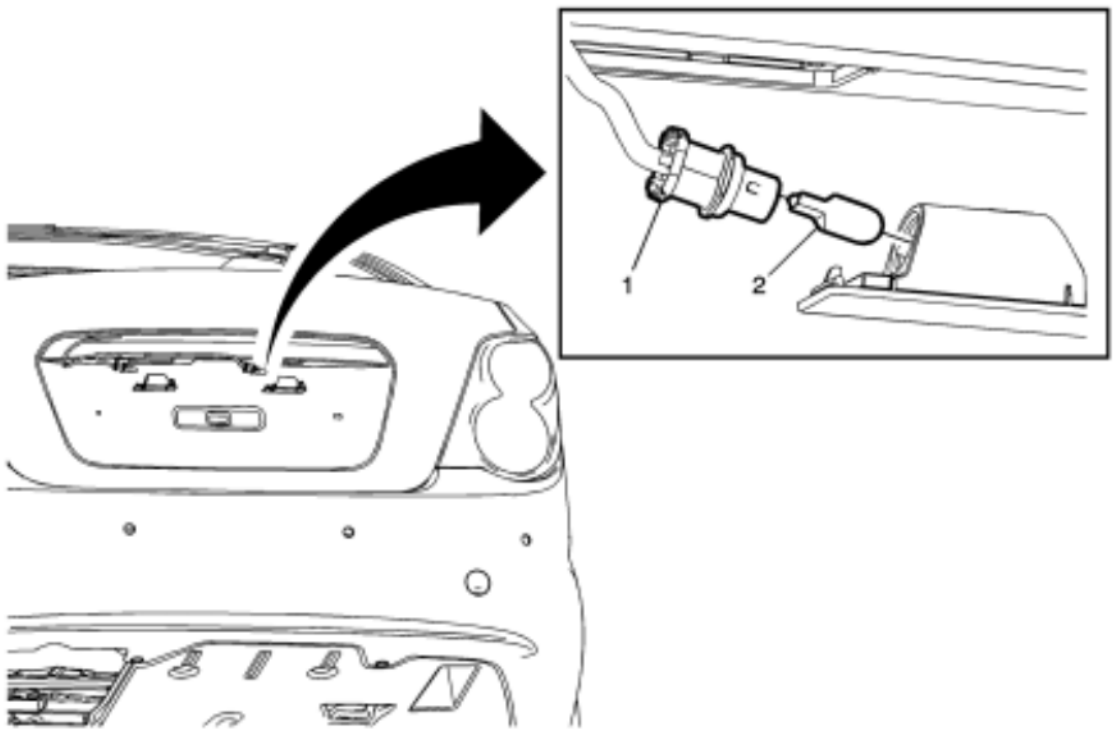


Callout	Component Name
Preliminary Procedure 1. Open and support the lift gate assembly. 2. At the left side of the lamp, insert a small flat-blade into the lamp housing edge and push slightly sideways to disengage the lamp housing from the rear applique. 3. Pull and rotate the housing downward far enough to remove and access the lamp socket and electrical harness.	
1	Rear License Plate Lamp Socket **Procedure** Rotate the lamp socket counter-clockwise and remove from the lamp housing.
2	Rear License Plate Lamp

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Rear License Plate Lamp Bulb Replacement (Sedan)

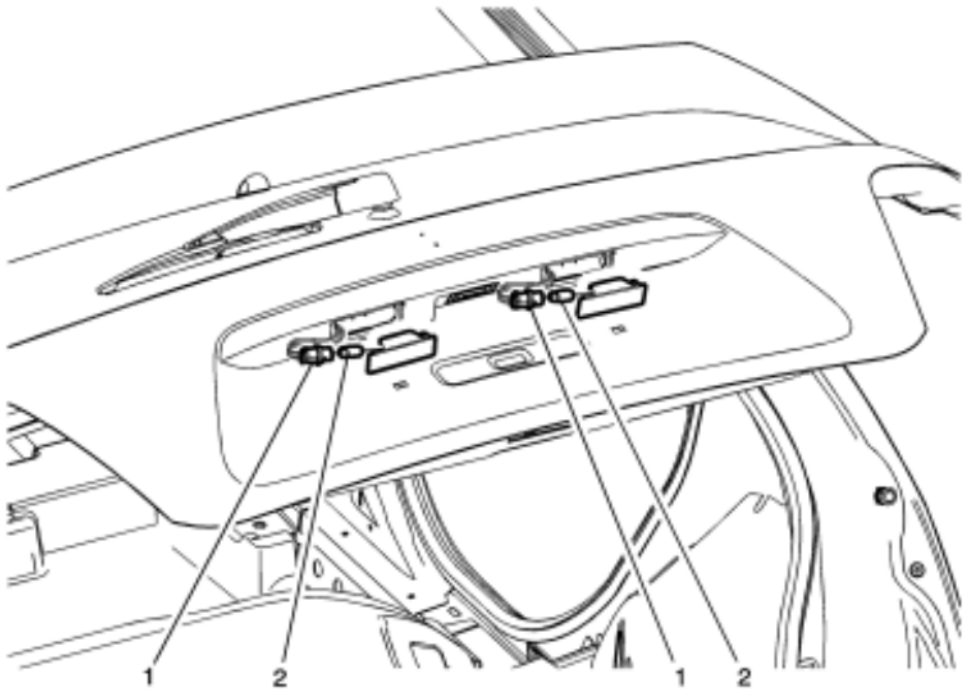


Callout	Component Name
Preliminary Procedure Remove the rear license plate lamp housing. Refer to Rear License Plate Lamp Replacement .	
1	License Plate Lamp Socket
2	License Plate Lamp Bulb **Tip** Pull the bulb straight out of the lamp socket.

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Rear License Plate Lamp Bulb Replacement (Hatchback)

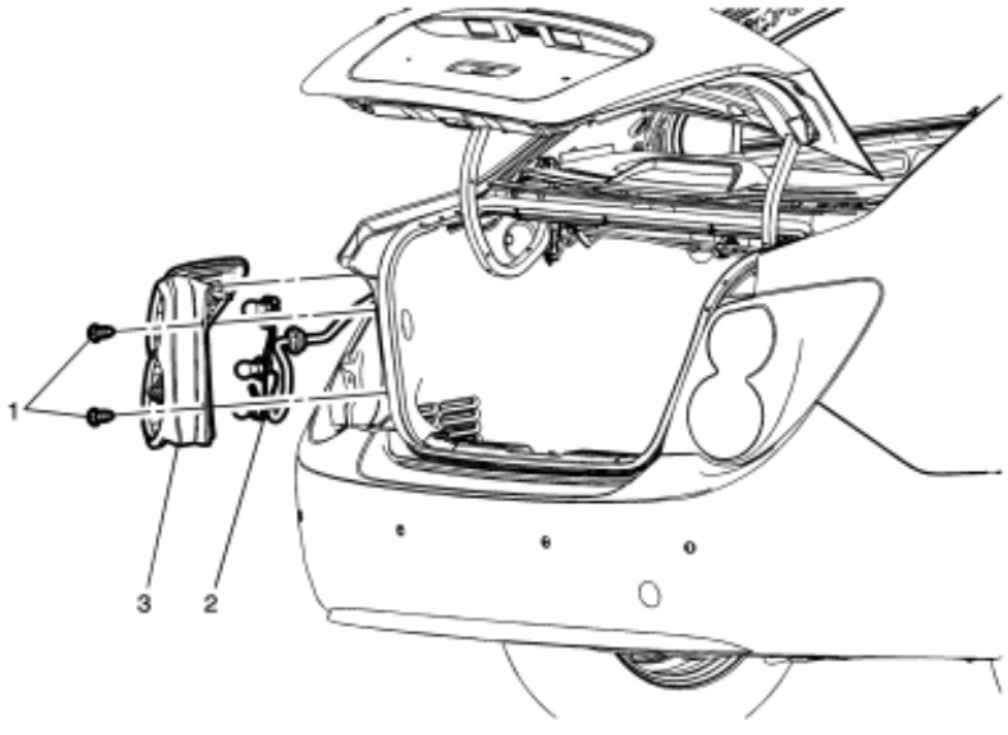


Callout	Component Name
Preliminary Procedure Remove the rear license plate lamp housing. Refer to Rear License Plate Lamp Replacement .	
1	License Plate Lamp Socket **Procedure** Rotate the electrical lamp socket a quarter turn counter-clockwise and remove from the lamp housing.
2	License Plate Lamp Bulb **Procedure** Pull the bulb straight out of the electrical lamp socket.

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Tail Lamp Replacement (Sedan)

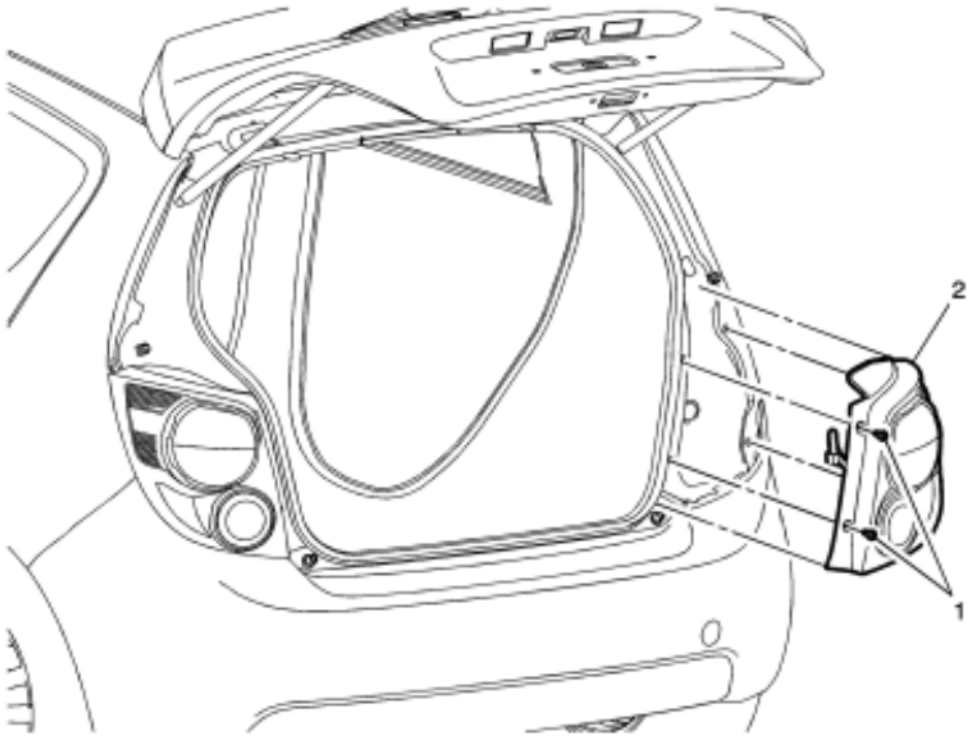


Callout	Component Name
Preliminary Procedure Open and secure the rear compartment lid.	
1	Tail Lamp Bolt/Screw (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 2.5N·m (22lbin)
2	Tail Lamp Electrical Harness **Procedure** Remove all three tail lamp bulb sockets with bulbs.
3	Tail Lamp

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Tail Lamp Replacement (Hatchback)

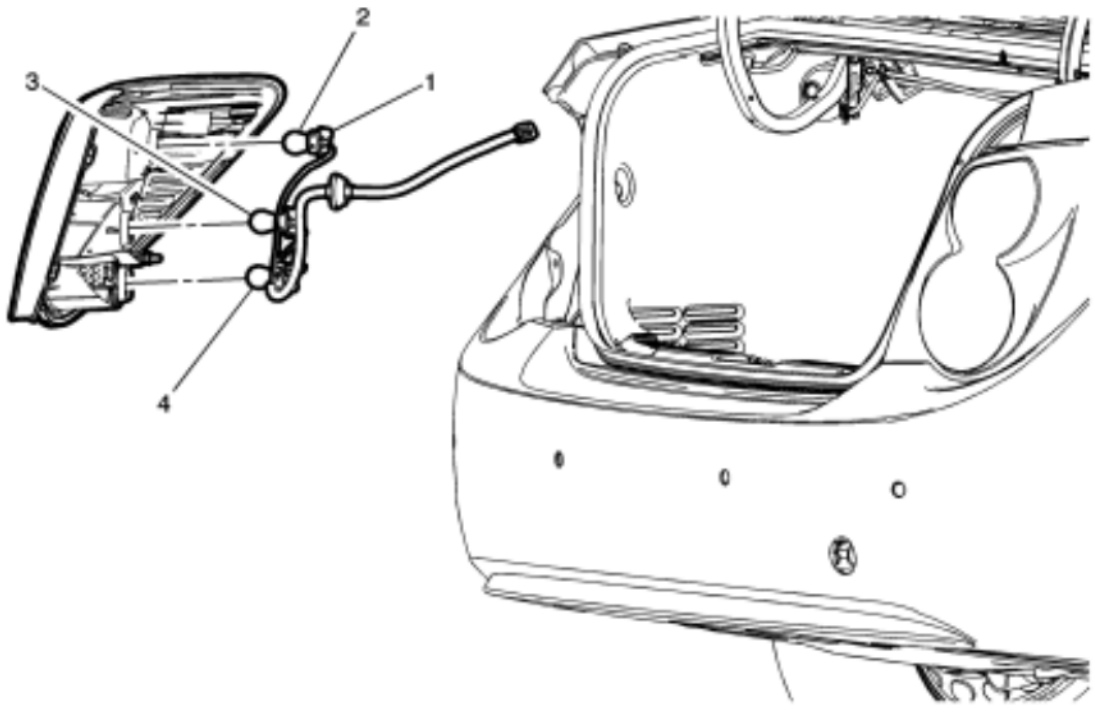


Callout	Component Name
Preliminary Procedure Open and support the liftgate assembly.	
1	Tail Lamp Bolt/Screw (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 2.5N·m (22lbin)
2	Tail Lamp Assembly **Procedure** 1. Hold both sides of the tail lamp assembly and give a quick pull rearward in order to disengage the two locator pins from the bodyside outer panel. 2. Rotate all three bulb sockets and remove from the tail lamp housing, being careful not to damage the exposed bulbs. 3. Disengage the tail lamp bulb electrical harness from the retainer clips on the tail lamp housing.

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Stop and Turn Signal Lamp Bulb Replacement (Sedan)

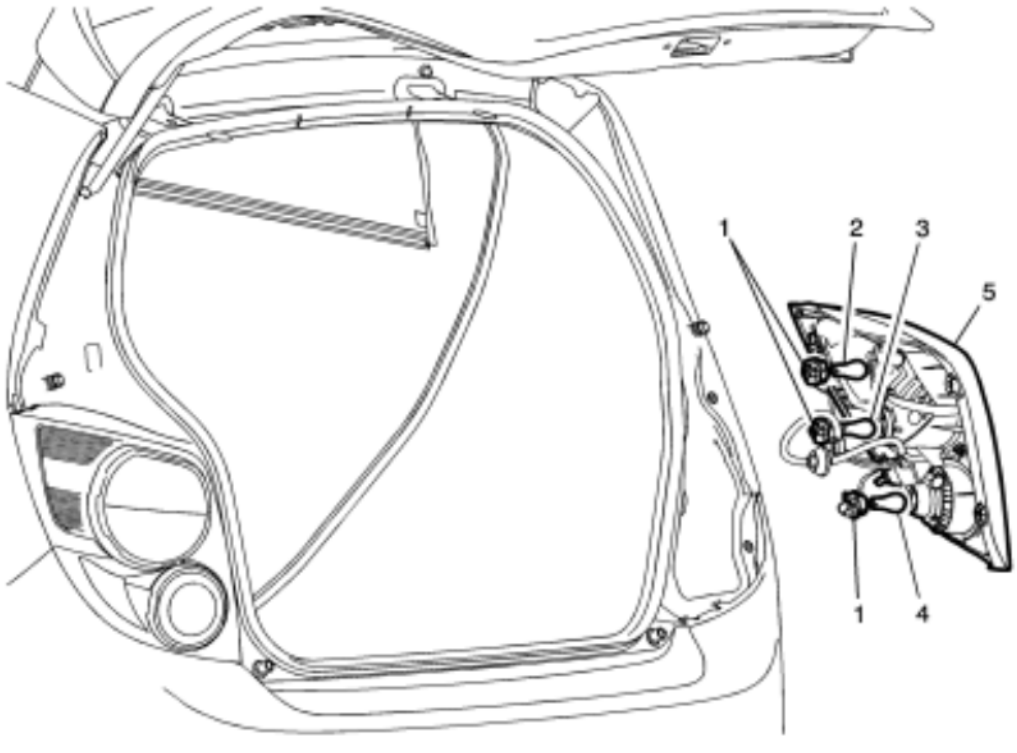


Callout	Component Name
Preliminary Procedure Remove the tail lamp assembly. Refer to Tail Lamp Replacement .	
1	Tail Lamp Socket **Procedure** Rotate the lamp socket counter-clockwise and remove the socket from the lamp housing.
2	Park and Stop Lamp Bulb **Procedure** Push the bulb inward while rotating counter-clockwise to remove.
3	Turn Signal Bulb
4	Back Up Bulb

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Stop and Turn Signal Lamp Bulb Replacement (Hatchback)



Callout	Component Name
Preliminary Procedure Remove the tail lamp assembly. Refer to Tail Lamp Replacement .	
1	Tail Lamp Socket (Qty: 3) **Procedure** Rotate the lamp socket counter-clockwise and remove the socket from the lamp housing.
2	Park and Stop Lamp Bulb **Procedure** Pull the bulb straight from the lamp harness socket.
3	Turn Signal Bulb
4	Back Up Bulb
5	Tail Lamp Housing Assembly

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Rear Compartment Courtesy Lamp Replacement (Hatchback)

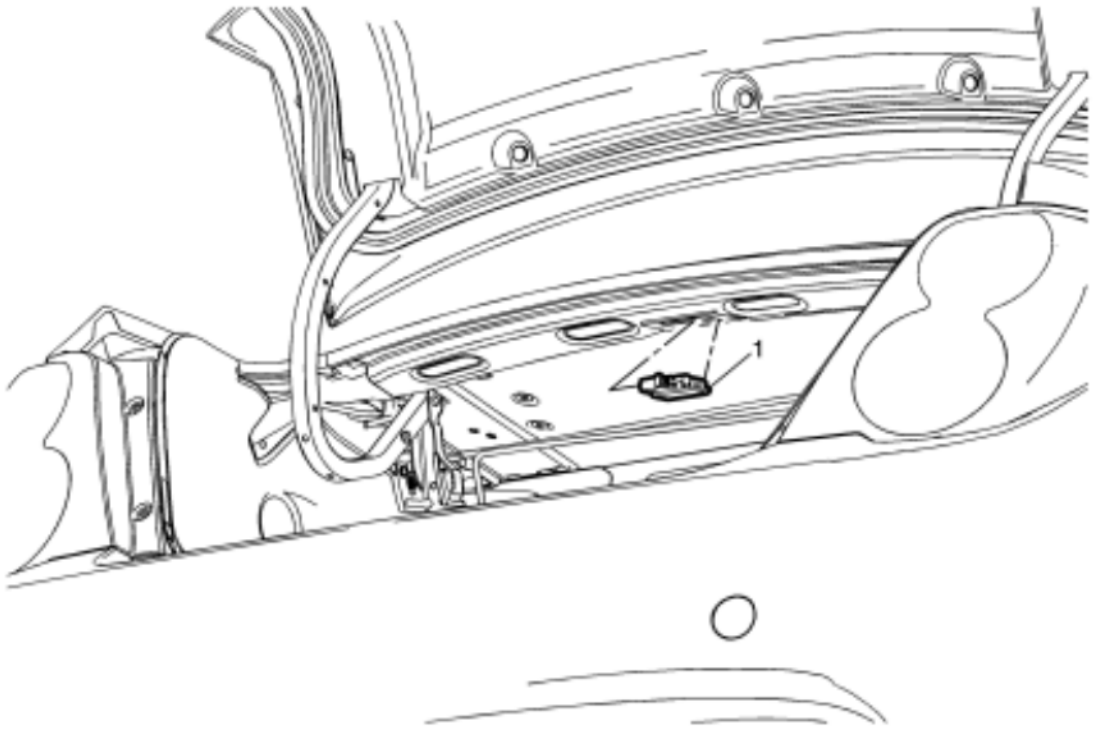


Callout	Component Name
1	Rear Compartment Courtesy Lamp Assembly **Procedure** 1. Use the appropriate trim tool in order to release the lamp assembly from the rear quarter trim panel. 2. Disconnect the electrical connection.

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Rear Compartment Courtesy Lamp Replacement (Sedan)



Callout	Component Name
1	Rear Compartment Courtesy Lamp Assembly **Procedure** 1. Use the appropriate trim tool in order to release the lamp assembly from the rear quarter trim panel. 2. Disconnect the electrical connection.

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Exterior Lighting Systems Description and Operation

Headlamps

The headlamps are controlled by the multifunction lever located on the left side of the steering column. The headlamps will only come on with the Ignition switch in the RUN position. Turning the headlamp switch to the first position turns ON the parking lamps, the license plate lamps and the instrument panel illumination. Turning the switch to the second position turns ON all of the previous lamps and the headlamps. Turning the switch to the OFF position turns OFF all the lamps.

Headlamp high beams and low beams are also controlled by this lever. When the headlamps are ON, pushing the lever away from the driver until the switch clicks changes the lamp from low beam to high beam. An indicator lamp on the instrument cluster assembly will come on when the high beam headlamps are ON. To return the headlamps to low beam, pull the lever toward the driver.

The headlamps must be aimed for proper illumination of the road. Headlamp aim should be checked whenever a new headlamp assembly is installed, or whenever service repairs to the front end area may have disturbed the headlamp assembly or its mountings.

Daytime Running Lamps

The daytime running lamps (DRL) will come ON when:

- The ignition is ON.
- The light is OFF.
- The parking brake is released.

When the exterior lights are ON, the DRL will turn OFF. To turn the DRL OFF when idling, apply the parking brake.

Parking and Turn Signal Lamps

The parking lamps can be turned on by turning the lighting switch to the first position. The parking lamps can be turned off by turning the switch to the OFF position.

When the turn signals are activated, the front and rear turn signal lamps flash to signal a turn. The turn signals work only when the ignition is ON.

The turn signals are controlled by the light switch on the left side of the steering column. Moving the lever all the way up or down, past the detent, will turn ON the front and rear turn signals. When the turn is completed, the lever will return to horizontal and the turn signals will stop flashing.

For changing lanes, or for shallow turns in which the steering wheel does not turn far enough to cancel the signal, move the signal lever only to the first detent and hold it there. When the lever is released, it will return to horizontal and the turn signals will cancel.

Side Marker Lamps

For the North American application, the side marker lamps are located in the front and rear bumper fascias and work in conjunction with the exterior lighting system. When the parking lamps or headlamps are turned on, the side marker lamps will illuminate to mark the front and the rear end of the vehicle.

Fog Lamps

The fog lamp switch is on the instrument panel to the right of the steering column. To use the fog lamps, first turn on the headlamps or the parking lamps, then push the fog lamp switch. The indicator light in the switch will illuminate to indicate that the fog lamps are on. Push the switch again to turn OFF the fog lamps. The indicator light will then go OFF.

The fog lamps should not be used as a substitute for the headlamps.

The fog lamps must be aimed for proper illumination of the road. Fog lamp aim should be checked when a new bulb is installed or if service or repairs in the front end area may have disturbed the fog lamp mountings.

Rear Combination Lamps

The tail lamps, stop lamps, turn signal lamps and backup lamp are one assembly.

Turning on either the headlamps or the parking lamps will also turn ON the tail lamps. When the brake pedal is pushed, the tail lamps will glow brighter to serve as stop lamps.

The center high-mounted stop lamp is located in the rear window and will come on when the brake pedal is pressed.

Backup Lamps

The backup lamps are located in the rear combination lamps. They will come on when the transaxle is shifted into reverse. On a vehicle with an automatic transaxle, the backup lamps are activated by the neutral safety backup (NSBU) switch. On a vehicle with a manual transaxle, they are activated by a reverse switch which is part of the transaxle.

License Plate Lamp

The license plate lamps will come ON when the headlamps or the parking lamps are ON. The license plate lamps are mounted above the license plate.

Lamp Control Module

The automatic lighting Off feature turns off the headlamps, park lamps, tail lamps, license plate lamps and instrument panel illumination within seconds of closing the driver's door. The feature activates if you leave the headlamp switch in the first or second position, remove the key, and get out of the car.

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Interior Lighting Systems Description and Operation

Interior Courtesy Lamp

The courtesy lamp is located on the headliner just behind the front seats. The lamp switch has 3 positions. If the switch is left in the center position, the lamp will go ON whenever a door is opened and go OFF when it is closed. In the ON position, the lamp will stay ON until it is turned OFF. In the OFF position, the lamp will not come ON, even when a door is opened.

Luggage Compartment Lamp

The luggage compartment lamp is located under the deck lid sill plate on the notchback. The lamp is located on the left-side wheelhouse trim panel on the hatchback. It will come ON whenever the luggage compartment is opened.

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Specifications
Outside Rearview Mirror Replacement (Power)
Outside Rearview Mirror Replacement (Manual)
Outside Rearview Mirror Housing Rear Cover Replacement
Outside Remote Control Rearview Mirror Switch Replacement
Outside Rearview Mirror Motor Replacement
Outside Rearview Mirror Glass Replacement
Outside Rearview Mirror Housing Replacement
Inside Rearview Mirror Replacement
Description and Operation

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Fastener Tightening Specifications

Application	Specification	
	Metric	English
Inside Rearview Mirror Fastener	2 N·m	18 lb in
Outside Rearview Mirror Motor Fastener	5 N·m	44 lb in
Outside Rearview Mirror Fastener	10 N·m	89 lb in

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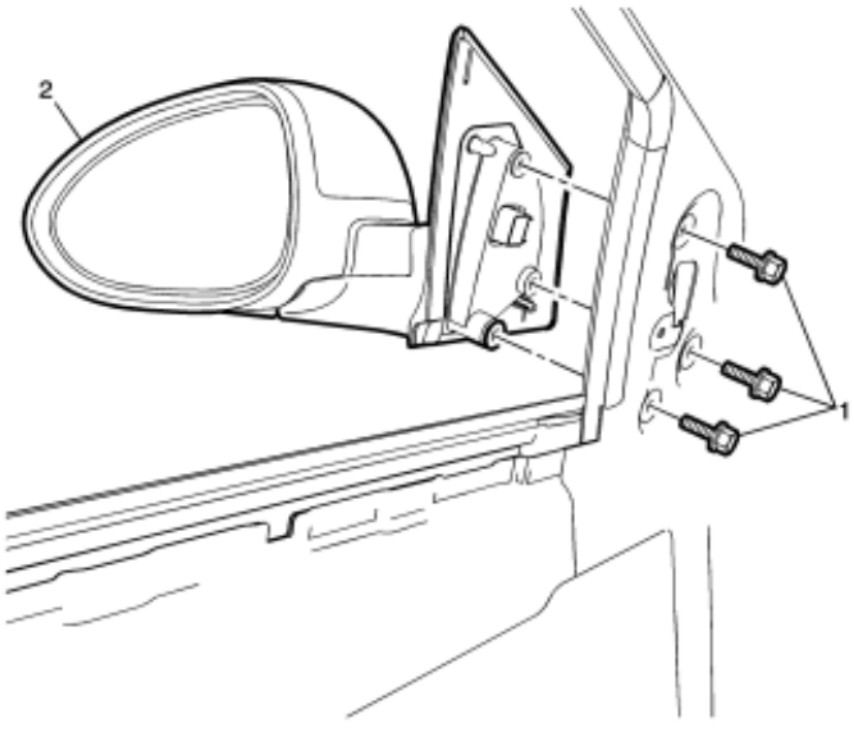
Adhesives, Fluids, Lubricants, and Sealers

Application	Type of Material	GM Part Number
Inside Mirror Adhesive Kit	Adhesive	Refer to Electronic Parts Catalog

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Outside Rearview Mirror Replacement (Power)

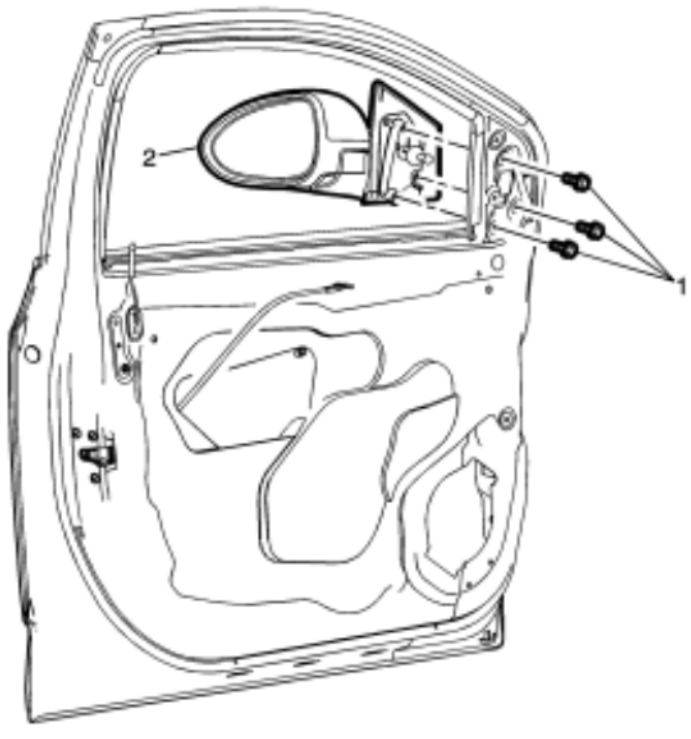


Callout	Component Name
Preliminary Procedures 1. Remove the front side door upper front trim panel. Refer to Front Side Door Upper Front Trim Panel Replacement . 2. Remove the outside rearview mirror bolt access hole on the front side door trim panel.	
1	Outside Rearview Mirror Fastener (Qty: 3) **Caution:** Refer to Fastener Caution . **Procedure** Disconnect the electrical connector. **Tighten** 10 N·m (89 lb in)
2	Outside Rearview Mirror **Procedure** Inspect the outside mirror for proper operation before installing the door trim panel.

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Outside Rearview Mirror Replacement (Manual)

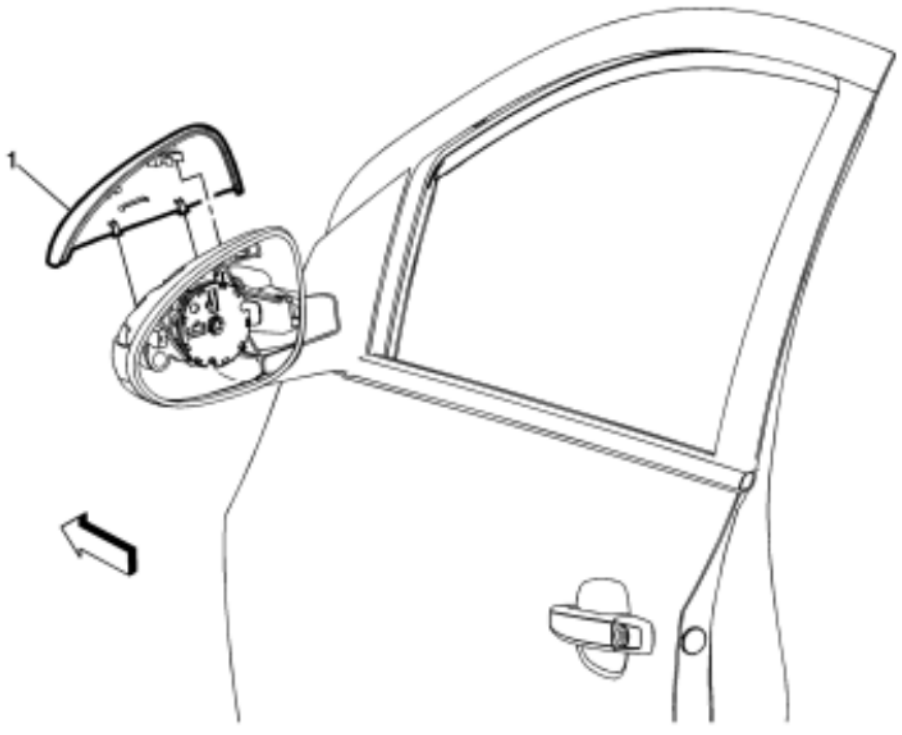


Callout	Component Name
	Preliminary Procedures 1. Remove the front side door upper front trim panel. Refer to Front Side Door Upper Front Trim Panel Replacement . 2. Remove the outside rearview mirror bolt access hole on the front side door trim panel.
1	Outside Rearview Mirror Fastener (Qty: 3) **Caution:** Refer to Fastener Caution . **Tighten** 10 N·m (89 lb in)
2	Outside Rearview Mirror **Procedure** 1. Transfer the outside rearview mirror knob. 2. Inspect the outside mirror for proper operation before installing the door trim panel.

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Outside Rearview Mirror Housing Rear Cover Replacement

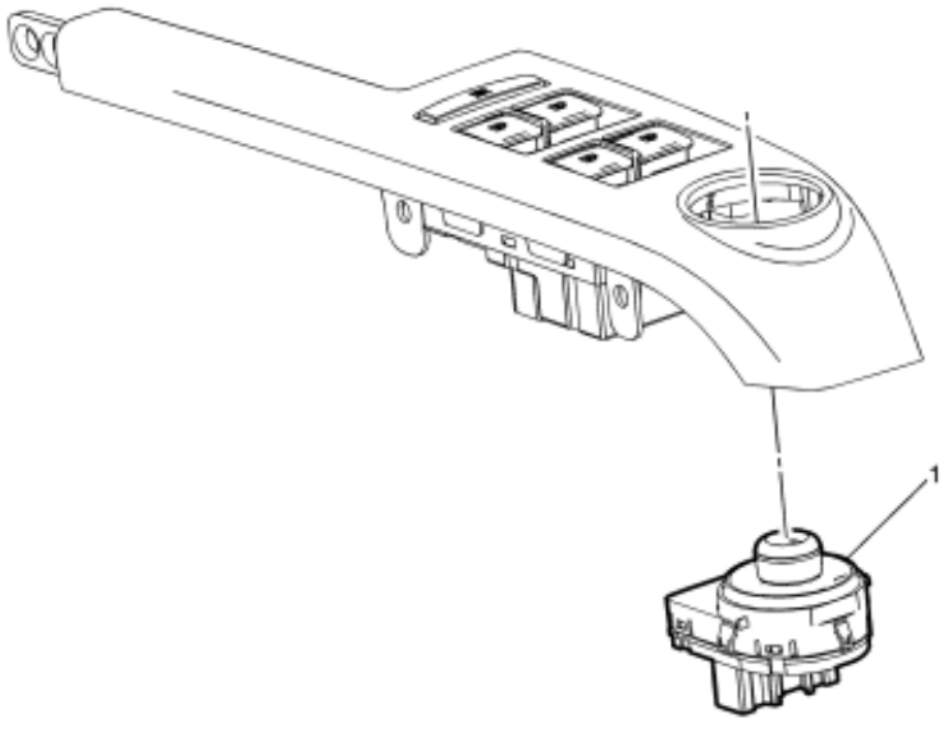


Callout	Component Name
Preliminary Procedures Remove the outside rearview mirror glass. Refer to Outside Rearview Mirror Glass Replacement .	
1	Outside Rearview Mirror Housing Cover **Tip** 1. After the mirror glass has been removed the retainers can be accessed to release. 2. Align the housing cover with the slots in the mirror housing, push downward locking retainers in place.

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Outside Remote Control Rearview Mirror Switch Replacement

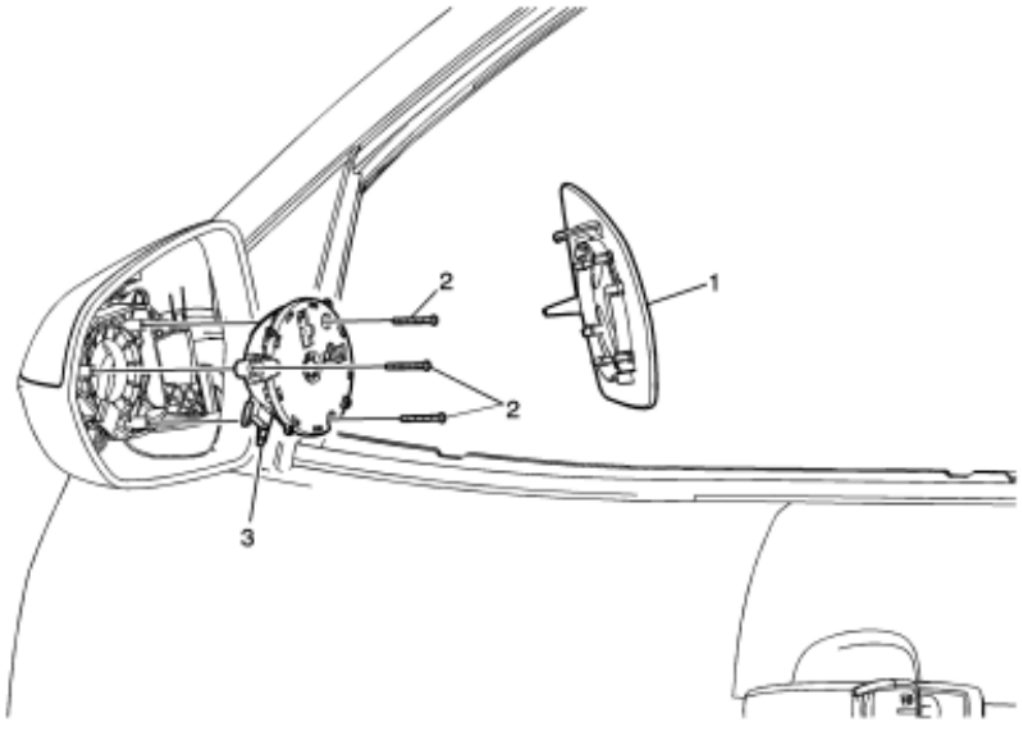


Callout	Component Name
Preliminary Procedure Remove the front side door widow switch bezel. Refer to Front Side Door Window Switch Bezel Replacement .	
1	Outside Remote Control Rearview Mirror Switch Assembly **Procedure** 1. Disconnect the electrical connector. 2. Refer to Control Module References for programming and set up procedures.

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Outside Rearview Mirror Motor Replacement



Callout	Component Name
1	Outside Rearview Mirror Glass **Procedure** Remove the outside rearview mirror glass. Refer to Outside Rearview Mirror Glass Replacement .
2	Outside Rearview Mirror Motor Fastener (Qty: 3) **Caution:** Refer to Fastener Caution . **Procedure** Disconnect the outside mirror motor electrical connector. **Tighten** 5 N·m (44 lb in)
3	Outside Rearview Mirror Motor **Procedure** Inspect the outside mirror for proper operation before installing the door trim panel.

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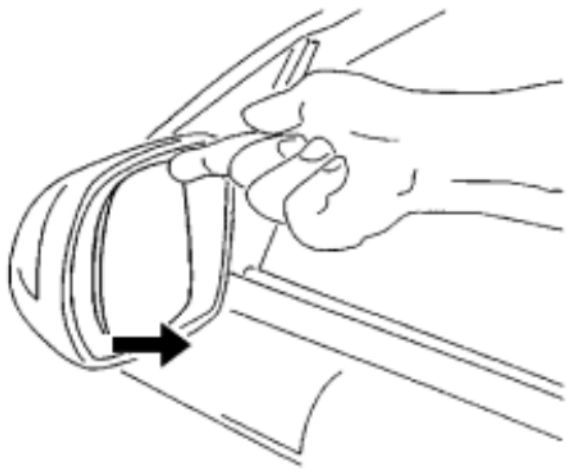
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Outside Rearview Mirror Glass Replacement

Removal Procedure

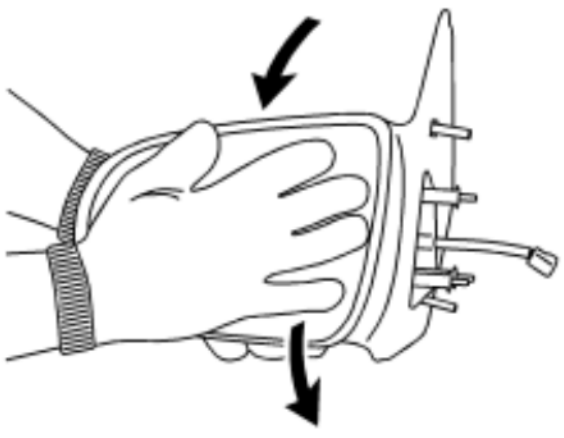
Warning: Approved safety glasses and gloves should be worn when performing this procedure to reduce the chance of personal injury.

1. Place masking tape over the mirror glass.



2. Carefully push the outside rearview mirror glass upward and into the right corner of the mirror housing, allowing access to the bottom edge.
3. Grasp the bottom edge of the mirror glass firmly, lift it up and pull rearward until the mirror glass releases the motor ring.

Installation Procedure

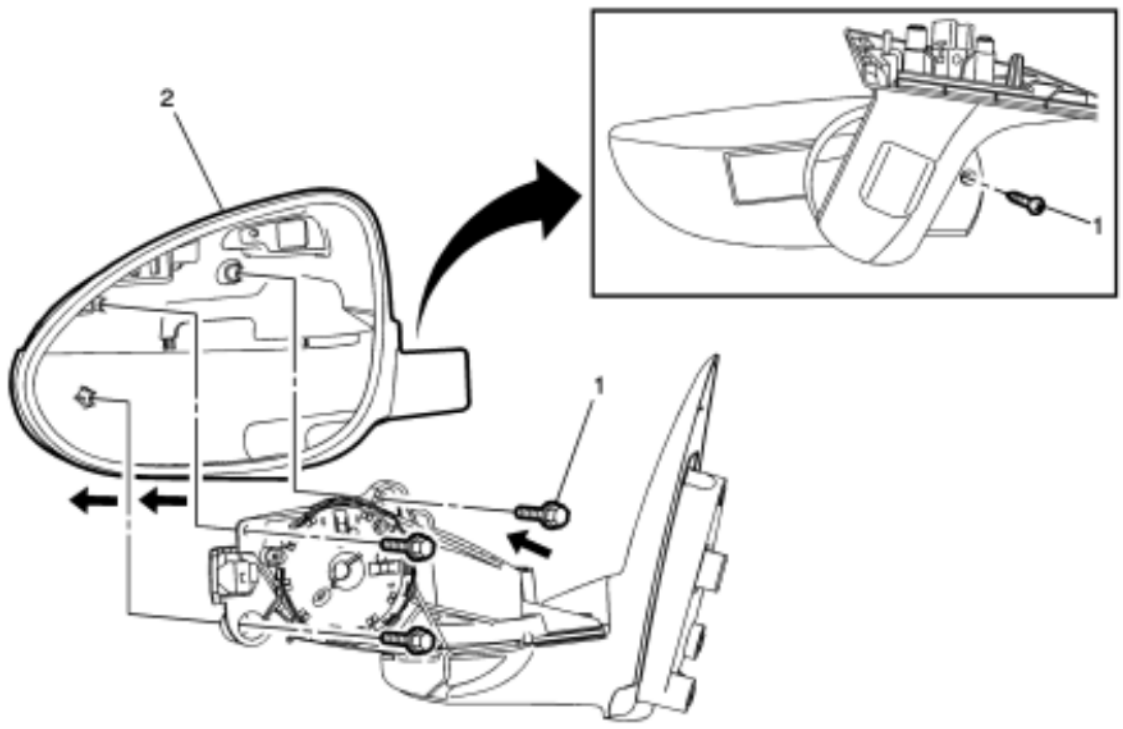


1. Place the mirror glass on the lower motor ring retainers.
2. Place one hand on the back of the mirror housing, using the flat palm of the other hand press inward locking the mirror glass to the motor ring.
3. Remove the masking tape from the mirror glass.
4. Inspect the outside mirror for proper operation before installing the door trim panel.

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Outside Rearview Mirror Housing Replacement

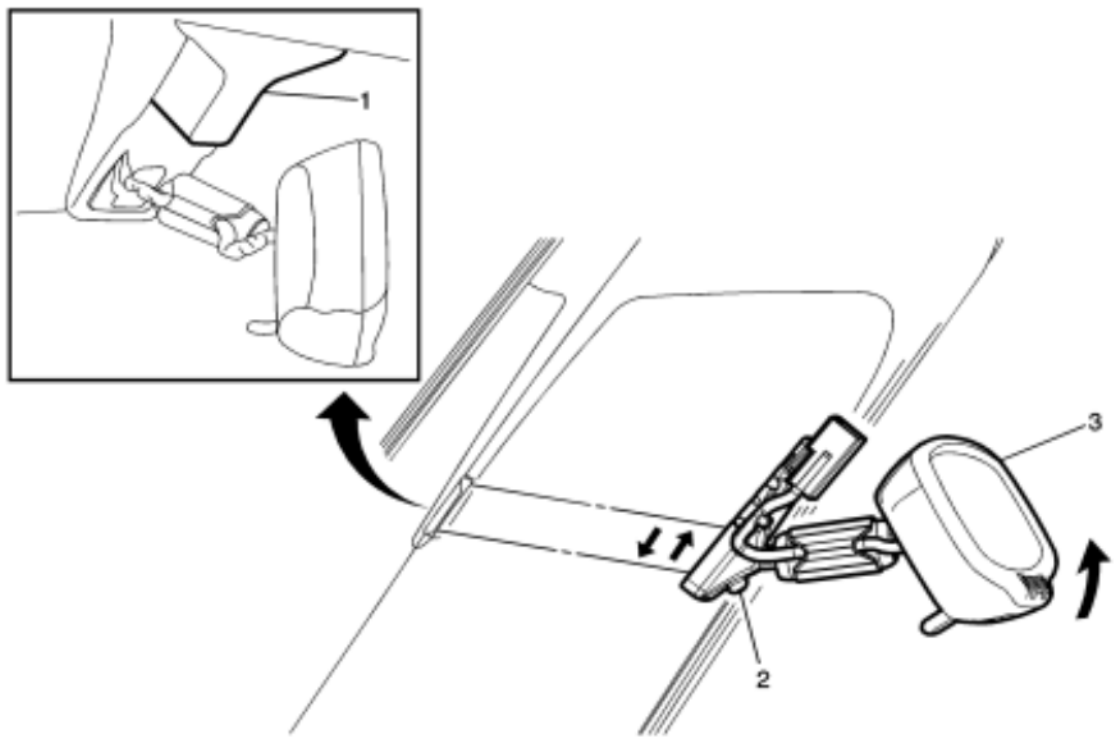


Callout	Component Name
Preliminary Procedures 1. Remove the outside rearview housing cover. Refer to Outside Rearview Mirror Housing Rear Cover Replacement . 2. Remove the outside rearview mirror motor. Refer to Outside Rearview Mirror Motor Replacement .	
1	Outside Rearview Mirror Housing Fastener (Qty: 4) **Caution:** Refer to Fastener Caution . **Tighten** 5 N·m (44 lb in)
2	Outside Rearview Mirror Housing **Procedure** Inspect the outside mirror for proper operation before installing the door trim panel.

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Inside Rearview Mirror Replacement



Callout	Component Name
1	Inside Rearview Mirror Cover **Procedure** 1. Remove the wire harness cover, sliding the cover upward releasing the cover from the support. 2. Disconnected the connector from the mirror base.
2	Inside Rearview Mirror Screw **Caution:** Refer to Fastener Caution . **Procedure** 1. Adjust the mirror to the full upward position, loosen the screw at the base in order to remove the mirror from the button. 2. Slide the mirror in an upward motion in order to remove. **Tighten** 2 N·m (18 lb in)
3	Inside Rearview Mirror

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Outside Mirror Description and Operation

Power Mirror System Components

The power mirror system consists of the following components:

- Outside rearview mirror switch
- Mirror selector switch
- Driver outside rearview mirror
- Passenger outside rearview mirror

Each of the outside rearview mirror contains two motors. The vertical motor operates the mirror in the up and down directions, and the horizontal motor operates the mirror in the left and right directions.

Power Mirror System Controls

The outside rearview mirror switch is a four position directional switch: Up, Down, Left and Right.

The mirror select switch is a three position switch: left, neutral/fold, and right.

Power Mirror System Operation

The outside rearview mirror switch receives battery voltage from the underhood fuse block The power mirror switch also receives a constant ground.

The four positions of the direction switch have dual switch contacts. Each of the contacts are connected to opposing sides of the appropriate power mirror motors through the selector switch. The selector switch completes these circuits depending on the position of the selector switch, L or R.

If the selector switch is placed in the L position and the up switch is pressed, battery voltage will be supplied to the left outside rearview mirror vertical motor through the left mirror motor vertical control circuit and ground through the left mirror motor common control circuit. If the down switch is pressed, battery voltage will be supplied to the left outside rearview mirror vertical motor through the left mirror motor common control circuit and ground through the left mirror motor vertical control circuit.

The remainder of the mirror functions operate in the same manner as described above. Placing the power mirror switch in opposing positions, left/right or up/down, will reverse the polarity to the mirror motor, reversing the direction of movement.

Folding Mirrors (If Equipped)

The folding mirror system is controlled through an electronic switch that can be activated when the mirror select switch is in the neutral position. When the mirror select switch is in the neutral position, the fold/retract function is activated by pressing the down arrow. The fold/retract switch will fold or retract the mirrors depending on their current state. When a power fold or retract function is activated, battery voltage is supplied to the fold motor by the appropriate fold or retract control circuit and the motor will be grounded by the opposite control circuit.

Heated Mirrors (If Equipped)

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

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Specifications
Front Side Door Inside Handle Cable Replacement
Rear Side Door Inside Handle Cable Replacement
Front Side Door Lock Cylinder Replacement
Rear Door Lock Cylinder Replacement
Front Side Door Outside Handle Replacement
Front Side Door Outside Handle Bracket Replacement
Rear Side Door Outside Handle Bracket Replacement
Liftgate Latch Replacement
Rear Side Door Outside Handle Replacement (Sedan)
Rear Side Door Outside Handle Replacement (Hatchback)
Front Side Door Latch Replacement
Rear Compartment Lid Latch Replacement
Rear Side Door Latch Replacement
Front Side Door Lock Cylinder Opening Cover Replacement
Rear Side Door Lock Cylinder Opening Cover Replacement
Front Side Door Locking Rod Replacement
Front Side Door Lock Cylinder Rod Replacement
Front Side Door Outside Handle Rod Adjustment
Front Side Door Outside Handle Rod Replacement
Rear Side Door Locking Rod Replacement (Sedan)
Rear Side Door Locking Rod Replacement (Hatchback)
Rear Side Door Locking Rod Bellcrank Replacement
Rear Side Door Outside Handle Rod Adjustment
Rear Side Door Outside Handle Rod Replacement (Sedan)
Rear Side Door Outside Handle Rod Replacement (Hatchback)
Front Side Door Lock Striker Adjustment
Front Side Door Lock Striker Replacement
Liftgate Latch Striker Replacement
Rear Compartment Lid Latch Striker Replacement
Rear Side Door Lock Striker Adjustment
Rear Side Door Lock Striker Replacement
Liftgate Release Switch Replacement
Door Lock Switch Replacement
Description and Operation

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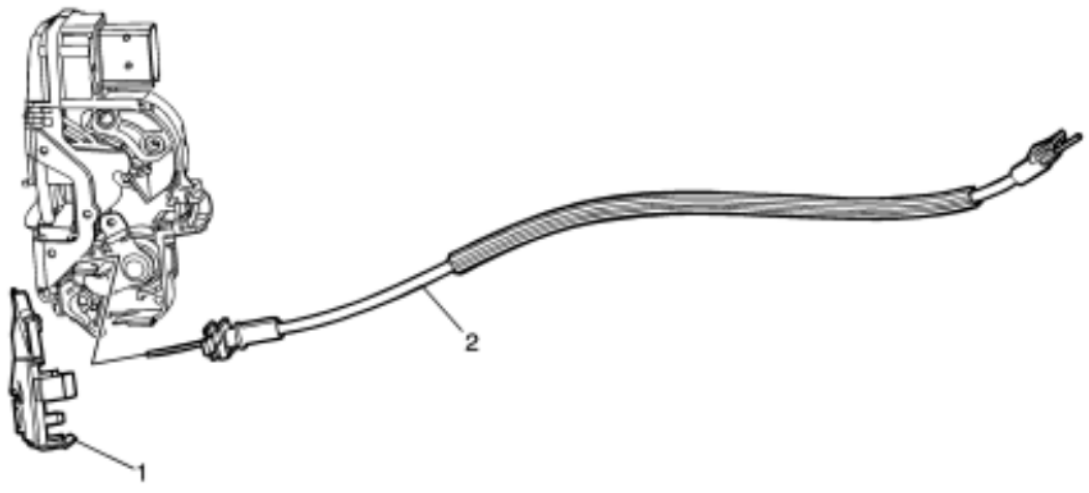
Fastener Tightening Specifications

Application	Specification	
	Metric	English
Front Side Door Lock Cylinder Clamp Screw	5 N·m	44 lb in
Front Side Door Lock Screws	10 N·m	89 lb in
Front Side Door Outside Handle Bracket Screw	5 N·m	44 lb in
Front Side Door Striker Screws	22 N·m	16 lb ft
Liftgate Latch Screws	9 N·m	80 lb in
Liftgate Latch Striker Bolts	22 N·m	16 lb ft
Rear Compartment Lid Latch Screw	9 N·m	80 lb in
Rear Compartment Lid Latch Striker Bolts	22 N·m	16 lb ft
Rear Side Door Lock Cylinder Clamp Screw	5 N·m	44 lb in
Rear Side Door Lock Screws	10 N·m	89 lb in
Rear Side Door Outside Handle Bracket Screw	5 N·m	44 lb in
Rear Side Door Striker Screws	22 N·m	16 lb ft

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Front Side Door Inside Handle Cable Replacement

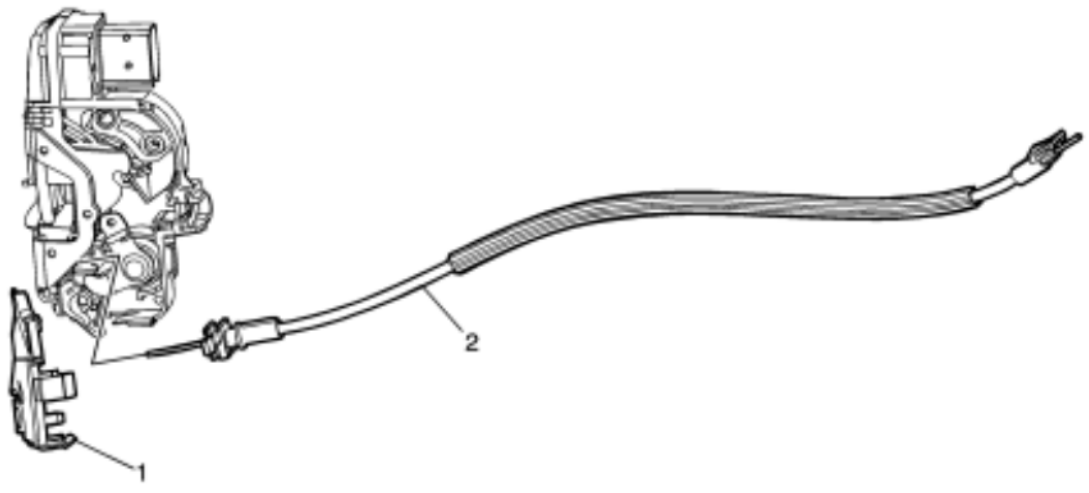


Callout	Component Name
Preliminary Procedure Remove the front side door latch. Refer to Front Side Door Latch Replacement .	
1	Front Side Door Inside Handle Cable Cover **Tip** Open the inside handle cable cover to access the release.
2	Front Side Door Inside Handle Cable

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Rear Side Door Inside Handle Cable Replacement

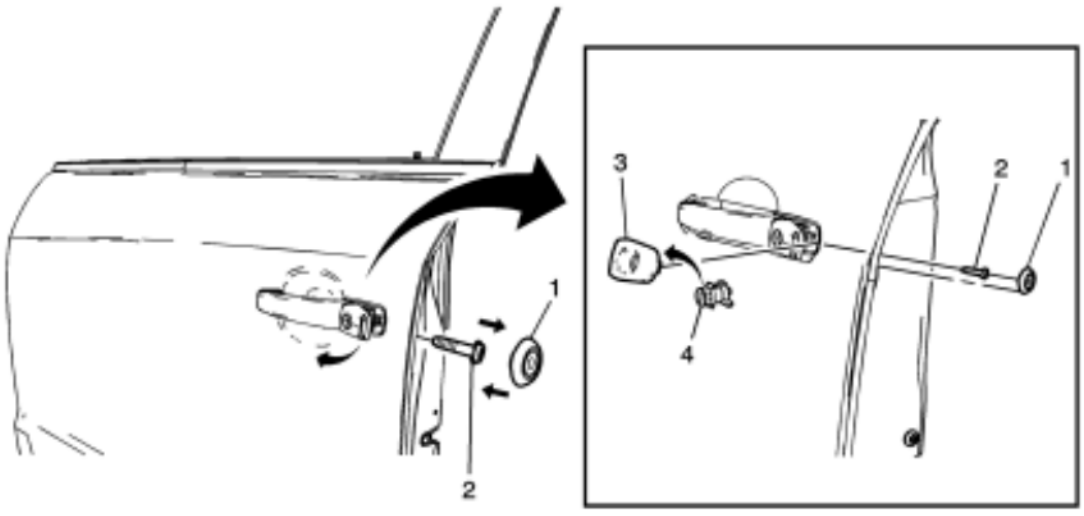


Callout	Component Name
Preliminary Procedure Remove the rear side door latch. Refer to Rear Side Door Latch Replacement .	
1	Rear Side Door Inside Handle Cable Cover **Tip** Open the inside handle cable cover to access the release.
2	Rear Side Door Inside Handle Cable

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Front Side Door Lock Cylinder Replacement

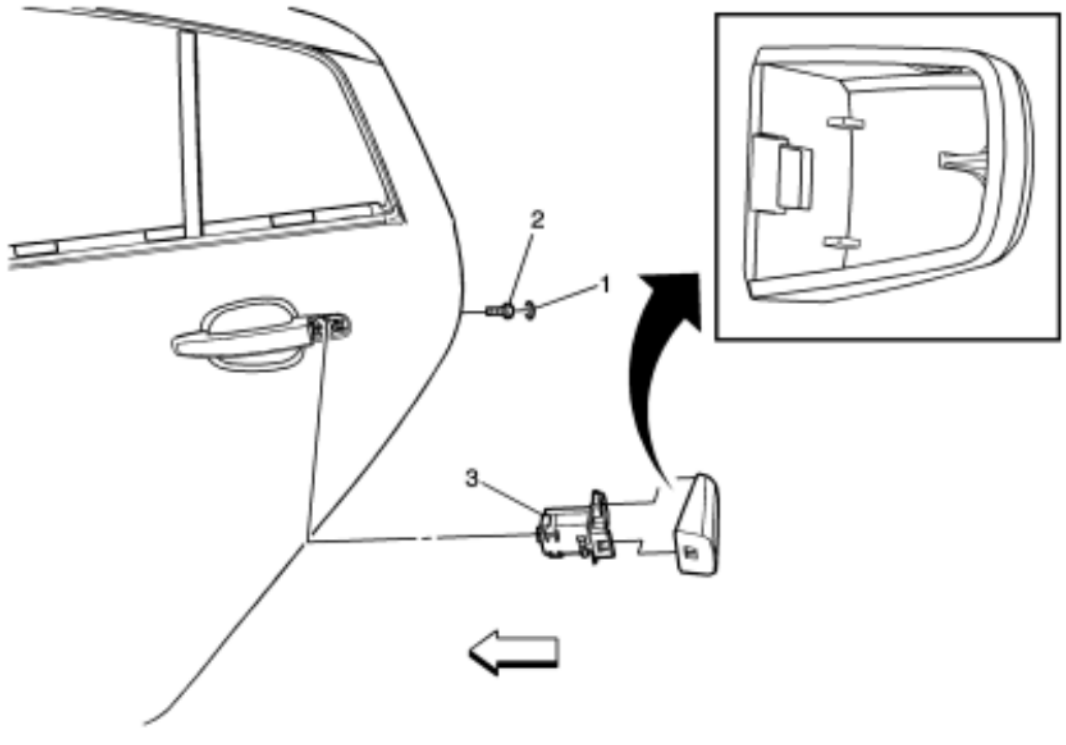


Callout	Component Name
1	Front Side Door Lock Cylinder Screw Access Plug **Tip** Use the appropriate tool, remove the plug.
2	Front Side Door Lock Cylinder Clamp Screw **Caution:** Refer to Fastener Caution . **Procedure** Do Not remove the cylinder clamp screw completely from the housing, unscrew the screw to a hard stop, releasing the cylinder from the housing. **Tip** It is not necessary to remove the outside door handle or housing to replace the lock cylinder. **Tighten** 5 N·m (44 lb in)
3	Front Side Door Lock Cylinder Cover **Procedure** Remove the lock cylinder cover. Refer to Front Side Door Lock Cylinder Opening Cover Replacement .
4	Front Side Door Lock Cylinder **Procedure** 1. Ensure that the lock cylinder gasket is in place when installing the lock cylinder to the handle. 2. Inspect the lock cylinder for proper operation.

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Rear Door Lock Cylinder Replacement

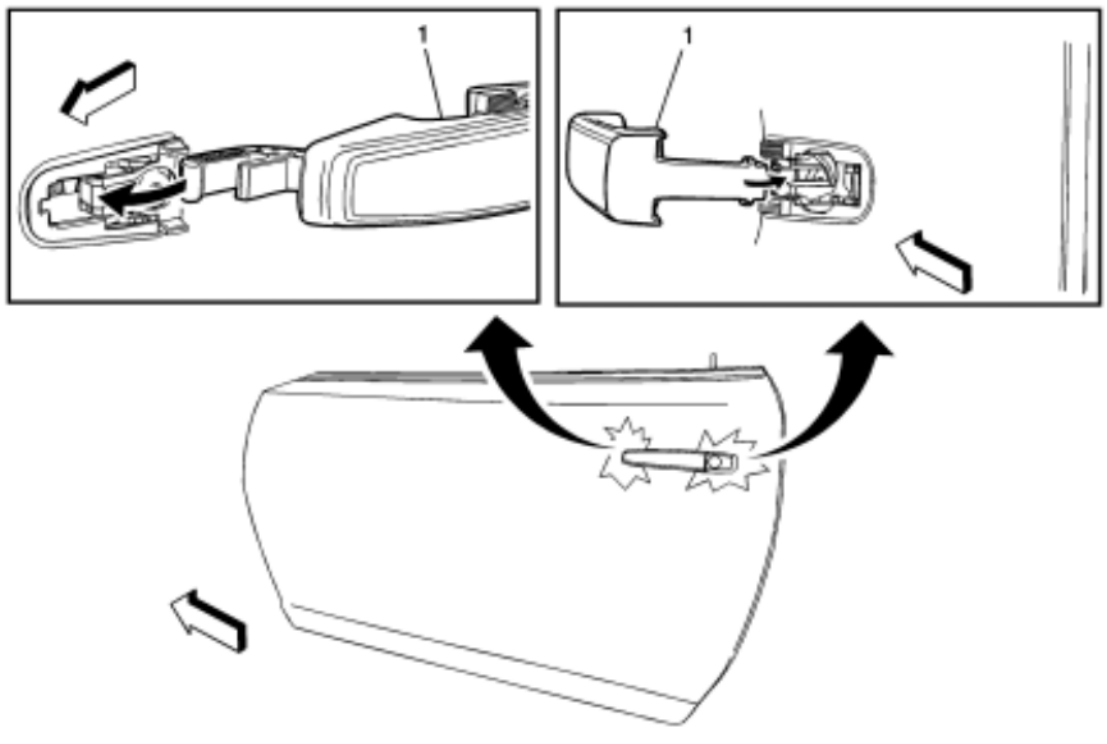


Callout	Component Name
1	Rear Side Door Lock Cylinder Opening Cover Screw Access Plug **Tip** Use a flat-bladed tool to remove the cover.
2	Rear Side Door Lock Cylinder Clamp Screw **Caution:** Refer to Fastener Caution . **Procedure** Do Not remove the cylinder screw completely from the housing. unscrew the screw to a hard stop, remove the cylinder. **Tighten** 5 N·m (44 lb in)
3	Rear Side Door Lock Cylinder **Procedure** Remove the lock cylinder cover. Refer to Rear Side Door Lock Cylinder Opening Cover Replacement .

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Front Side Door Outside Handle Replacement

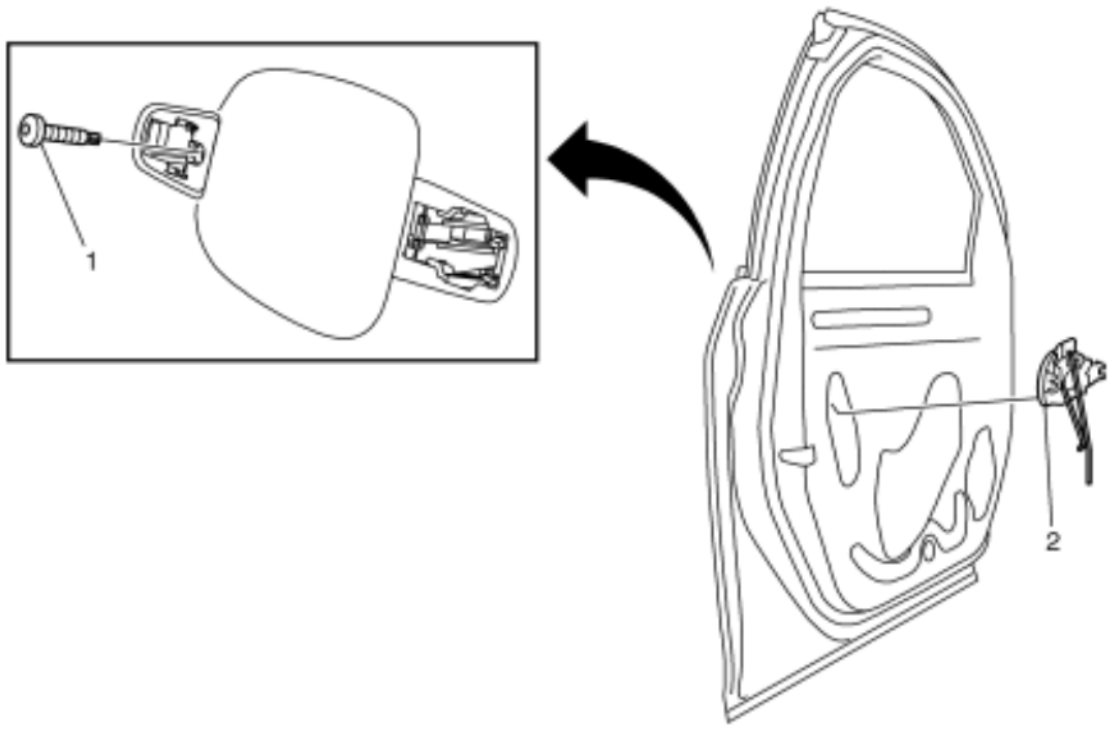


Callout	Component Name
1	Front Side Door Outside Handle **Procedure** 1. Remove the front side door water deflector. 2. Disconnect the electrical connector. 3. Remove the access hole plug located on the inside opening of the door that conceals the screw for the latch cylinder clamp. 4. Pull and hold the door handle in the open position. 5. While holding the door handle, unscrew the latch cylinder clamp screw until it comes to a hard stop. 6. Release the handle, by now the handle should stay in the open position. 7. Remove the lock cylinder, gently pull it straight out. 8. Remove the outside door handle by sliding rearwards and then out in a swinging motion. 9. Inspect the door locking system for proper operation before installing the trim panel. **Tip** While screwing in the screw for the lock cylinder hold the handle in the open position, this will avoid the door handle from snapping once the spring pressure is relieved and the door handle returns to the close position.

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Front Side Door Outside Handle Bracket Replacement

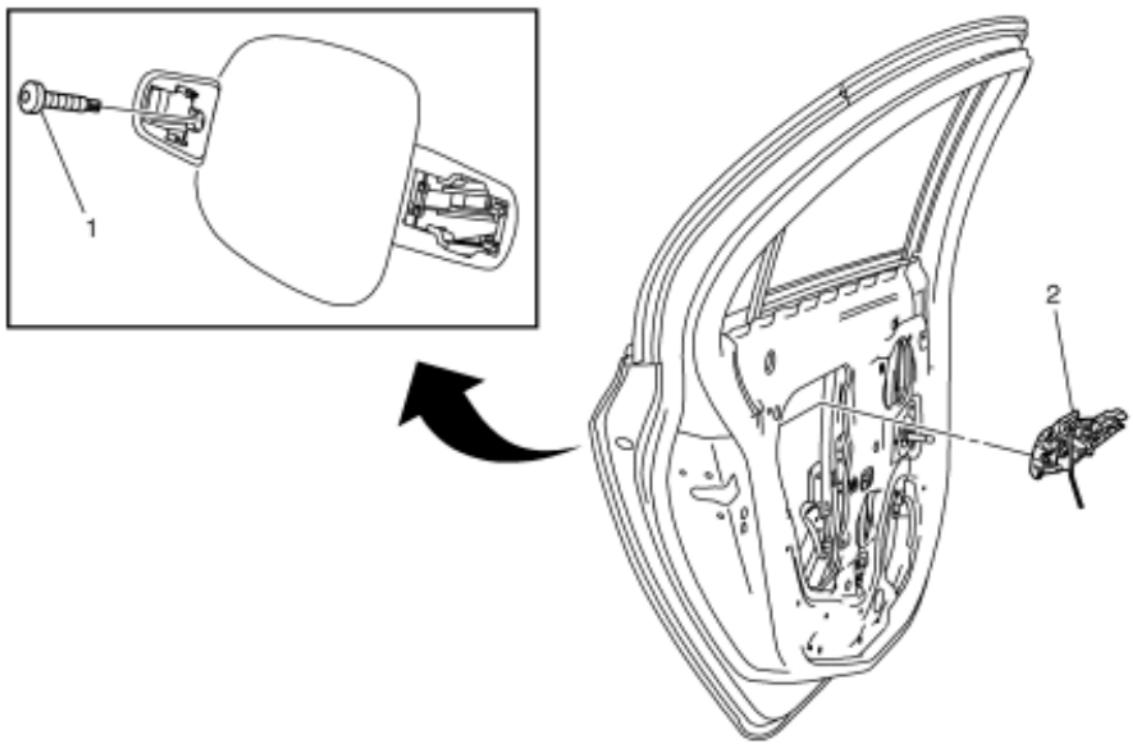


Callout	Component Name
Preliminary Procedures 1. Remove the front side door trim panel. Refer to Front Side Door Trim Replacement . 2. Remove the front side door outside handle. Refer to Front Side Door Outside Handle Replacement .	
1	Front Side Door Outside Handle Bracket Screw **Caution:** Refer to Fastener Caution . **Procedure** Remove the front side door water deflector. **Tighten** 5 N·m (44 lb in)
2	Front Side Door Outside Handle Bracket **Procedure** 1. Release front side door outside handle rod mechanism at shift linkage lever – clip. 2. Release the front side door latch cylinder rod from the door latch. 3. Transfer components as necessary. 4. Inspect the door latch system for proper operation before installing the door trim panel.

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Rear Side Door Outside Handle Bracket Replacement

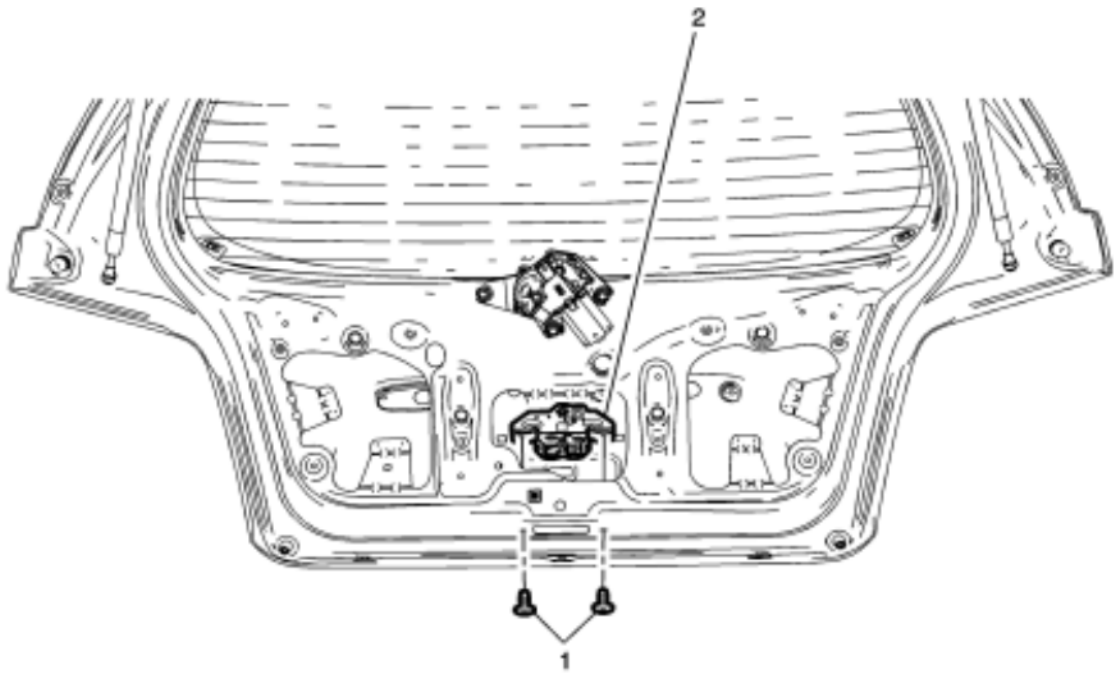


Callout	Component Name
Preliminary Procedures 1. Remove the rear side door trim panel. Refer to Rear Side Door Trim Replacement . 2. Remove the rear side door outside handle. Refer to Rear Side Door Outside Handle Replacement .	
1	Rear Side Door Outside Handle Bracket Screw **Caution:** Refer to Fastener Caution . **Procedure** Remove the rear side door water deflector. **Tighten** 5 N·m (44 lb in)
2	Rear Side Door Outside Handle Bracket **Procedure** 1. Release rear side door outside handle rod mechanism at shift linkage lever – clip. 2. Release the rear side door latch cylinder rod from the door latch. 3. Transfer components as necessary. 4. Inspect the door latch system for proper operation before installing the door trim panel.

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Liftgate Latch Replacement

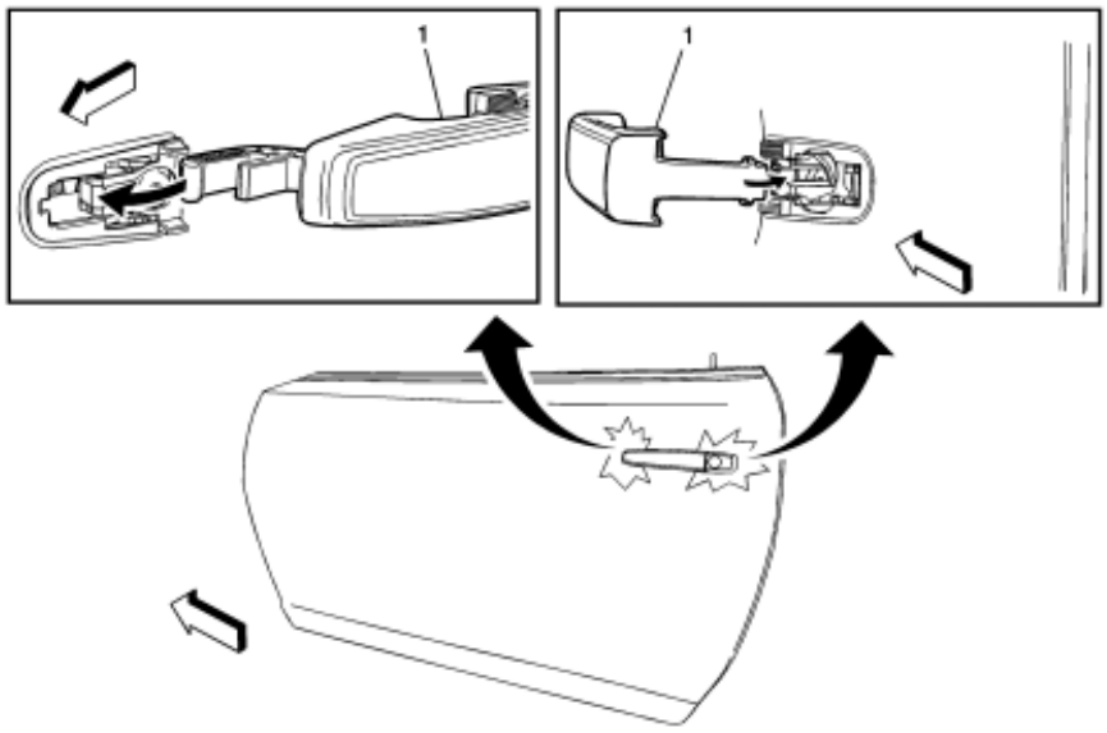


Callout	Component Name
Preliminary Procedures 1. Remove the liftgate trim finish panel. Refer to Liftgate Trim Finish Panel Replacement . 2. Remove the liftgate latch cover.	
1	Liftgate Latch Screw (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 9 N·m (80 lb in)
2	Liftgate Latch Assembly **Procedure** 1. Disconnect the electrical connector. 2. Adjust the liftgate if needed.

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Rear Side Door Outside Handle Replacement (Sedan)

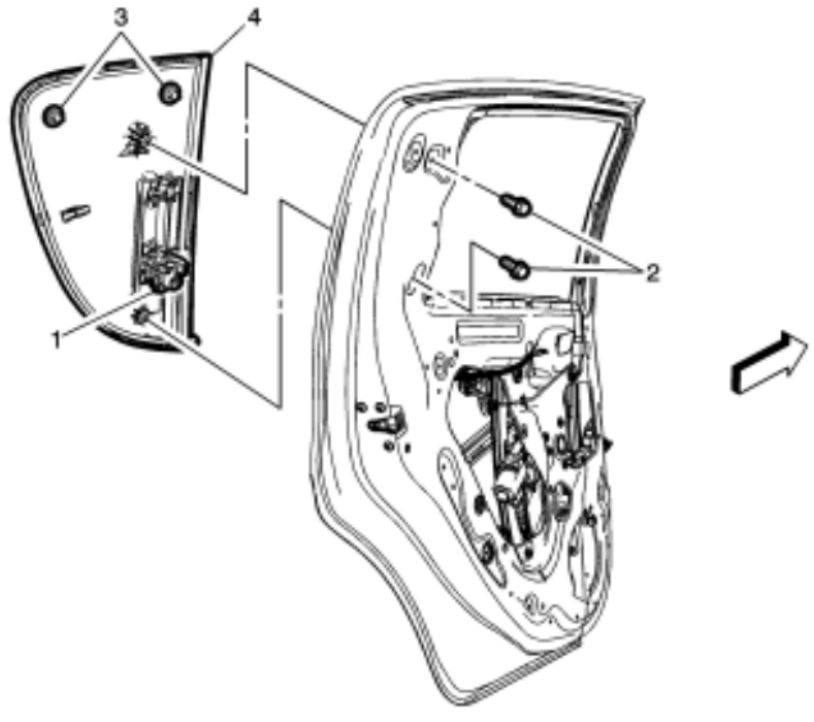


Callout	Component Name
Preliminary Procedures Remove the rear side door lock cylinder opening cover. Refer to Rear Side Door Lock Cylinder Opening Cover Replacement .	
1	Rear Side Door Outside Handle **Procedures** 1. Remove the rear side door water deflector. 2. Remove the access hole plug located on the inside opening of the door that conceals the screw for the lock cylinder clamp. 3. Pull and hold the door handle in the open position. 4. While holding the door handle, unscrew the lock cylinder clamp screw until it comes to a hard stop. 5. Release the handle, by now the handle should stay in the open position. 6. Remove the lock cylinder, gently pull it straight out. 7. Remove the outside door handle by sliding rearwards and then out in a swinging motion. 8. Inspect the door locking system for proper operation before installing the trim panel. **Tip** While screwing in the screw for the lock cylinder hold the handle in the open position, this will avoid the door handle from snapping once the spring pressure is relieved and the door handle returns to the close position.

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Rear Side Door Outside Handle Replacement (Hatchback)

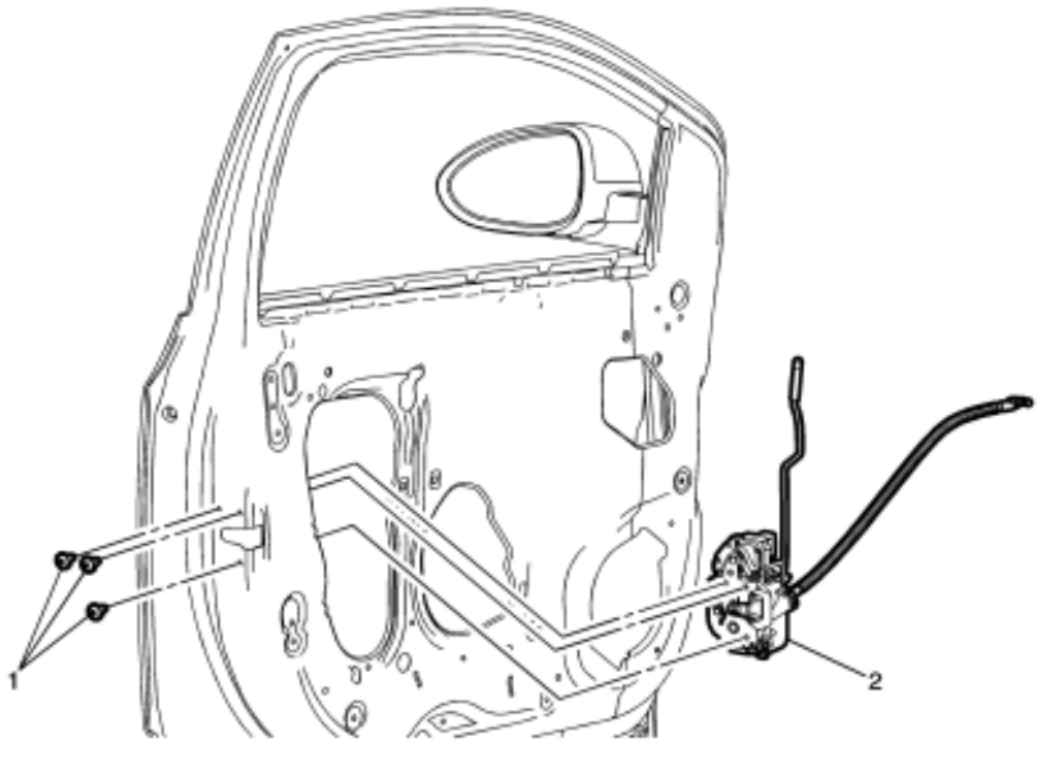


Callout	Component Name
	Preliminary Procedures Remove the rear side door trim panel. Refer to Rear Side Door Trim Replacement .
1	Rear Side Door Outside Handle Rod Clip **Procedure** 1. Place the window in the full up position. 2. Remove the water deflector. 3. Remove the outside door handle rod from the clip, Do not remove the rod from the door lock.
2	Rear Side Door Outside Handle Screws (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 9 N·m (80 lb in)
3	Rear Side Door Outside Handle Push-In Retainers (Qty: 2) **Tip** If the retainers are broken when removing they Must be replaced.
4	Rear Side Door Outside Handle **Procedure** In order to prevent outside handle lever pre-load, lock, outside handle shall be fully secured to the door prior to securing integral lock clip to outside handle rod. Integral lock clip shall be in the full up position while securing to outside handle rod. Refer to Rear Side Door Outside Handle Rod Adjustment .
	Tip Inspect the door lock system for proper operation before installing the door trim panel.

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Front Side Door Latch Replacement

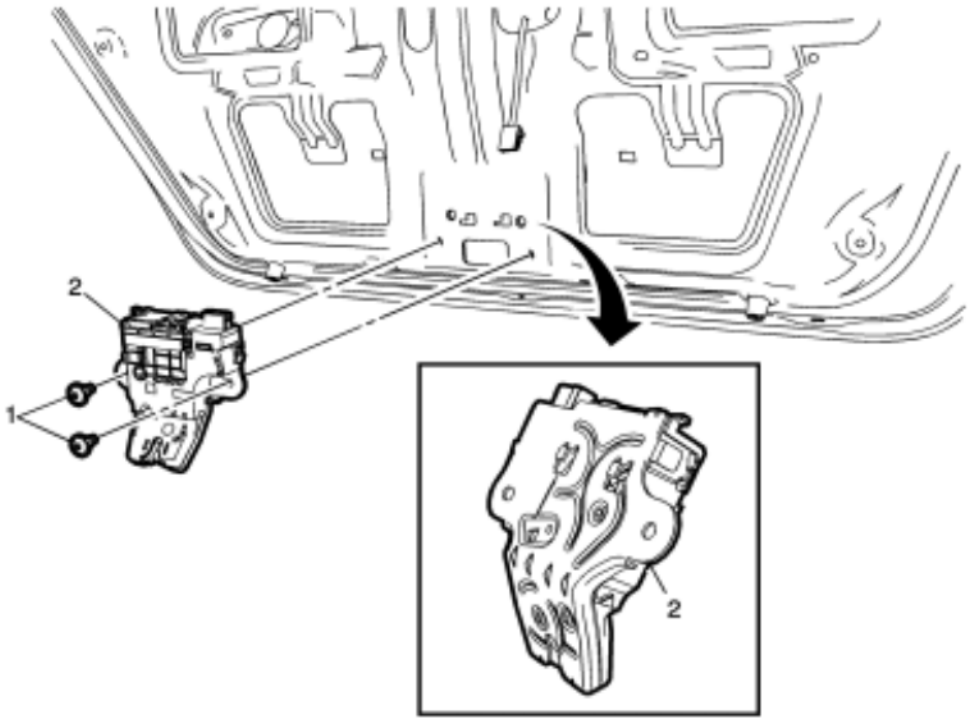


Callout	Component Name
Preliminary Procedure Remove the front side door trim panel. Refer to Front Side Door Trim Replacement .	
1	Front Side Door Lock Screw (Qty: 3) **Caution:** Refer to Fastener Caution . **Procedures** 1. Remove the water deflector. 2. Release the front inside door handle cable retainers from the door. 3. Remove the front side door window rear guide. Refer to Front Side Door Window Rear Guide Replacement . **Tighten** 10 N·m (89 lb in)
2	Front Side Door Lock Assembly **Procedure** 1. Disconnect the front side door lock electrical connector. 2. Transfer the front side door lock rods. 3. Front outside door handle rod adjustment. Refer to Front Side Door Outside Handle Rod Adjustment .

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Rear Compartment Lid Latch Replacement

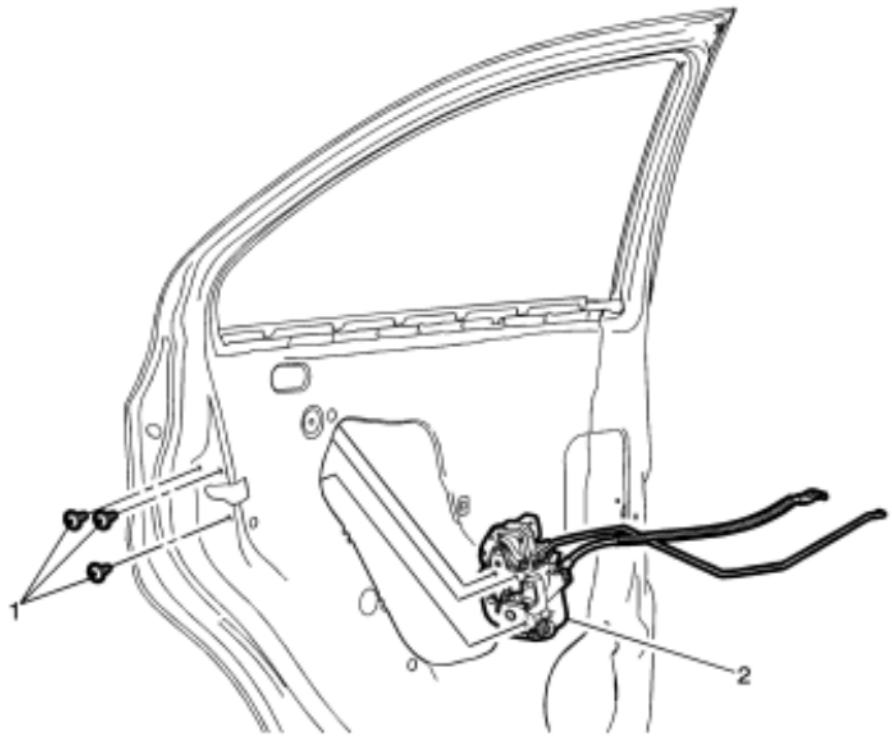


Callout	Component Name
Preliminary Procedure Remove the rear compartment lid inner panel trim. Refer to Rear Compartment Lid Inner Panel Trim Replacement .	
1	Rear Compartment Lid Latch Screw (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 9 N·m (80 lb in)
2	Rear Compartment Latch **Procedure** 1. Disconnect the electrical connection. 2. Slide the latch to the right and up to remove from the compartment lid.

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Rear Side Door Latch Replacement

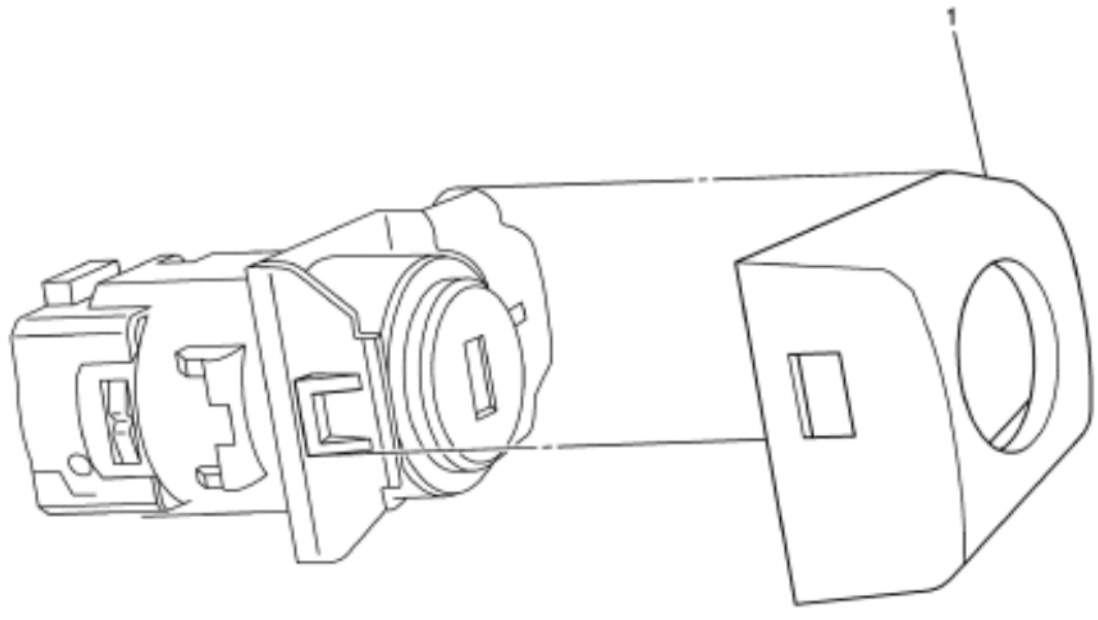


Callout	Component Name
	Preliminary Procedure Remove the rear side door trim panel. Refer to Rear Side Door Trim Replacement .
1	Rear Side Door Lock Screw (Qty: 3) **Caution:** Refer to Fastener Caution . **Procedures** 1. Remove the water deflector. 2. Release the rear inside door handle cable retainers from the door. 3. Remove the rear side door window rear guide. Refer to Rear Side Door Window Rear Guide Replacement . **Tighten** 10 N·m (89 lb in)
2	Rear Side Door Lock Assembly **Procedure** 1. Disconnect the rear side door lock electrical connector. 2. Transfer the rear side door lock rods. 3. Rear outside door handle rod adjustment. Refer to Rear Side Door Outside Handle Rod Adjustment .

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Front Side Door Lock Cylinder Opening Cover Replacement

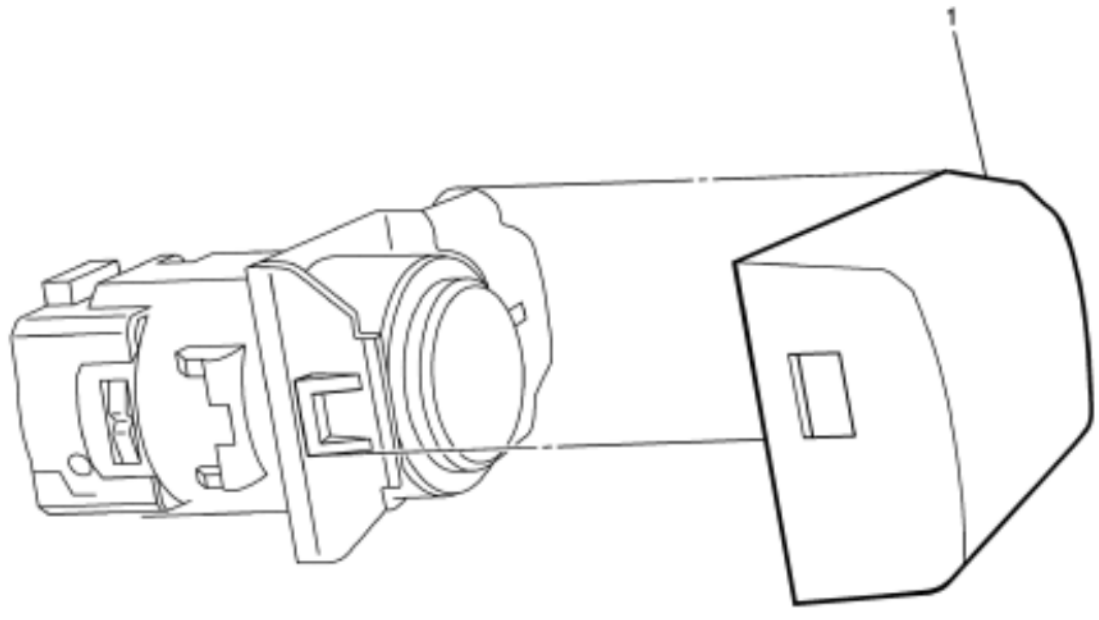


Callout	Component Name
1	Front Side Door Lock Cylinder Opening Cover **Procedure** 1. Remove the front side door lock cylinder, Do Not remove the outside door handle. Refer to Front Side Door Lock Cylinder Replacement . 2. Do Not remove the lock cylinder screw completely from the housing. Unscrew the screw to a hard stop, remove the cylinder. **Tip** Use a small flat-bladed tool to release the lock cylinder bezel retainers location on both sides.

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Rear Side Door Lock Cylinder Opening Cover Replacement

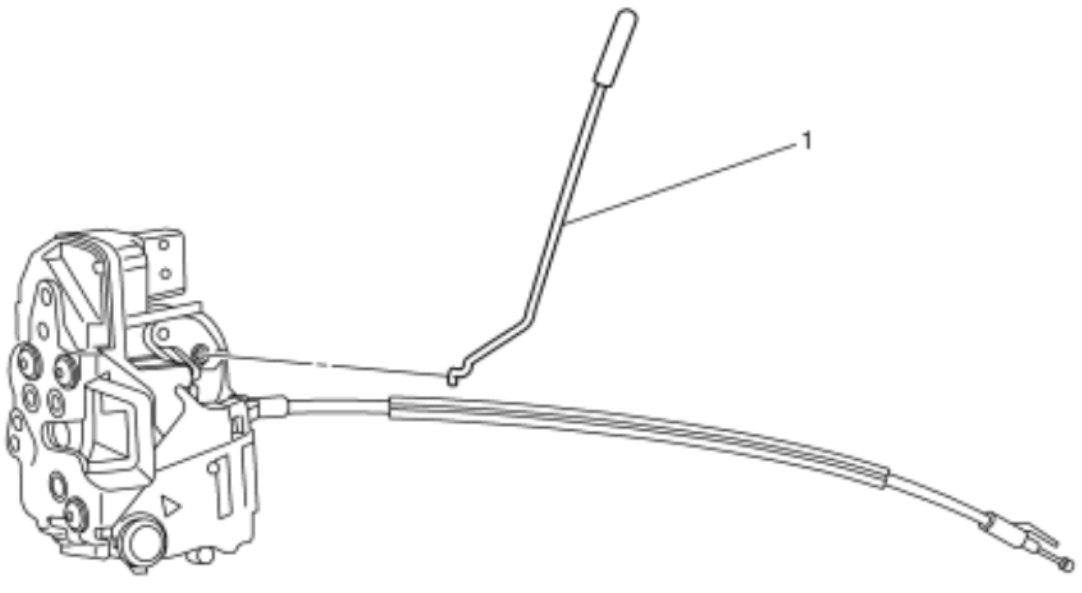


Callout	Component Name
1	Rear Side Door Lock Cylinder Opening Cover **Procedure** 1. Remove the rear side door lock cylinder, Do Not remove the outside door handle. Refer to Rear Door Lock Cylinder Replacement . 2. Do Not remove the lock cylinder screw completely from the housing. Unscrew the screw to a hard stop, remove the cylinder. **Tip** Use a small flat-bladed tool to release the lock cylinder bezel retainers location on both sides.

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Front Side Door Locking Rod Replacement

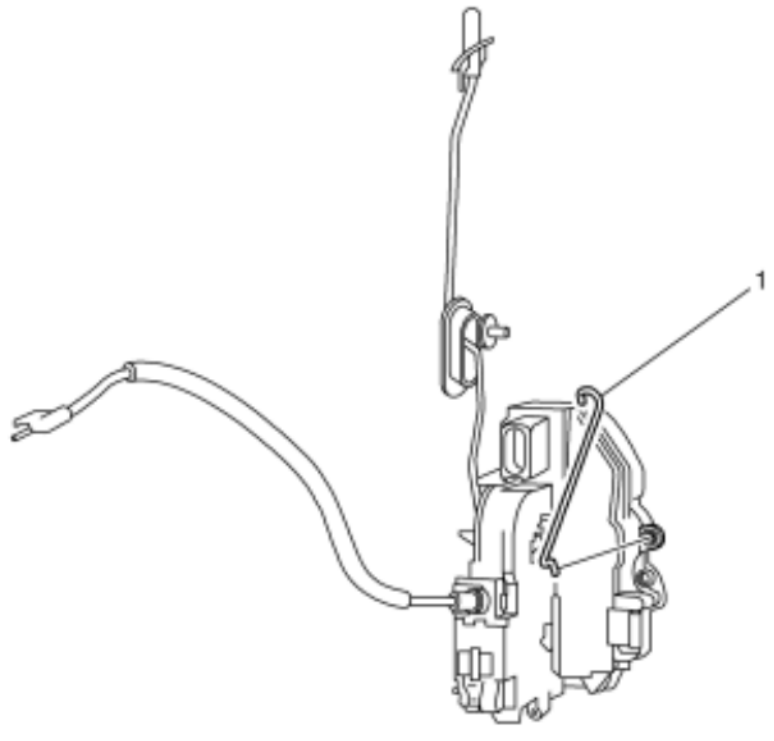


Callout	Component Name
Preliminary Procedure 1. Remove the front side door window rear guide. Refer to Front Side Door Window Rear Guide Replacement . 2. Remove the front side door lock . Refer to Front Side Door Latch Replacement . Do Not remove the lock completely from the door, lower the lock to disconnect the rod.	
1	Front Side Door Lock Rod **Procedure** 1. Place the window in the full up position. 2. Remove the water deflector. 3. Transfer components as necessary. 4. In order to prevent outside handle lever pre-load, lock, outside handle, handle bracket and cover/cap shall be fully secured to the door prior to securing integral lock clip to outside handle rod. Integral lock clip shall be in the full up position while securing to outside handle rod. Refer to Front Side Door Outside Handle Rod Adjustment . **Tip** Inspect the door lock system for proper operation before installing the door trim panel.

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Front Side Door Lock Cylinder Rod Replacement

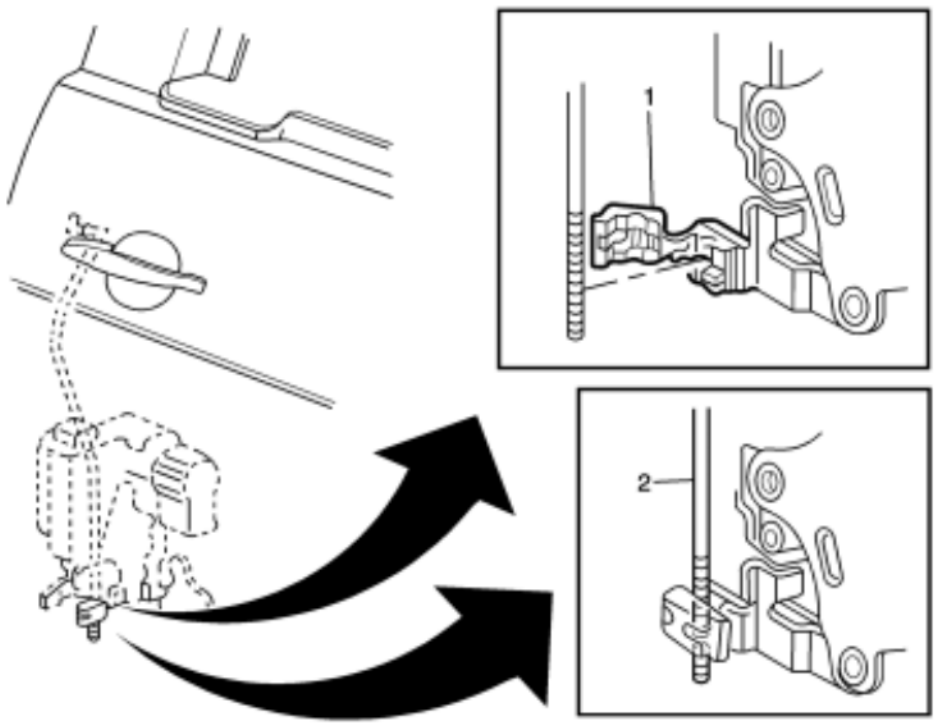


Callout	Component Name
Preliminary Procedure 1. Remove the rear side door window rear guide. Refer to Rear Side Door Window Rear Guide Replacement . 2. Remove the rear side door lock. Refer to Rear Side Door Latch Replacement .	
1	Rear Side Door Lock Cylinder Rod **Procedure** 1. Place the window in the full up position. 2. Remove the water deflector. 3. In order to prevent outside handle lever pre-load, lock, outside handle, handle bracket and cover/cap shall be fully secured to the door prior to securing integral lock clip to outside handle rod. Integral lock clip shall be in the full up position while securing to outside handle rod. Refer to Front Side Door Outside Handle Rod Adjustment . **Tip** Inspect the door lock system for proper operation before installing the door trim panel.

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Front Side Door Outside Handle Rod Adjustment

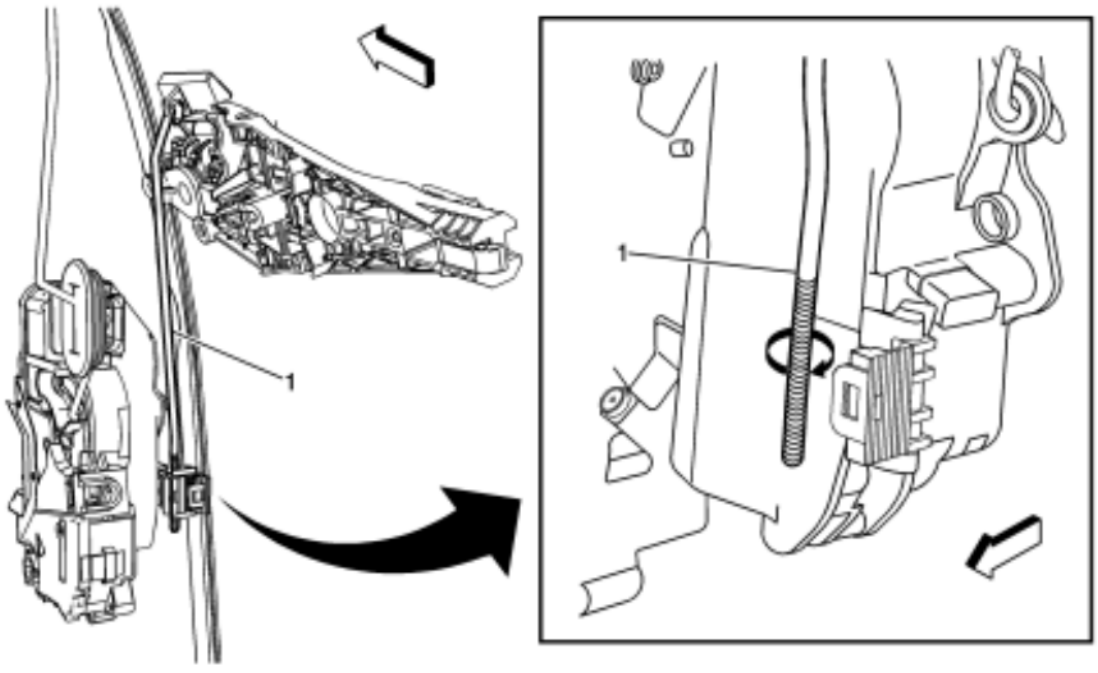


Callout	Component Name
Preliminary Procedures Remove the front side door trim panel. Refer to Front Side Door Trim Replacement	
1	Front Side Door Outside Handle Rod Retainer **Procedure** Remove the front side door water deflector.
2	Front Side Door Outside Handle Rod **Procedure** 1. Position the front side door outside handle rod in the retainer in order to eliminate any free play in the outside door handle. 2. Adjust the travel of the handle by removing the threaded rod from the retainer. 3. Install the retainer cover closed over the threaded front side door outside handle rod. 4. Inspect the door lock system for proper operation before installing the trim panel. **Tip** Use a flat-head tool to open the retainer from the threaded rod connecting the lock to the outside handle.

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Front Side Door Outside Handle Rod Replacement

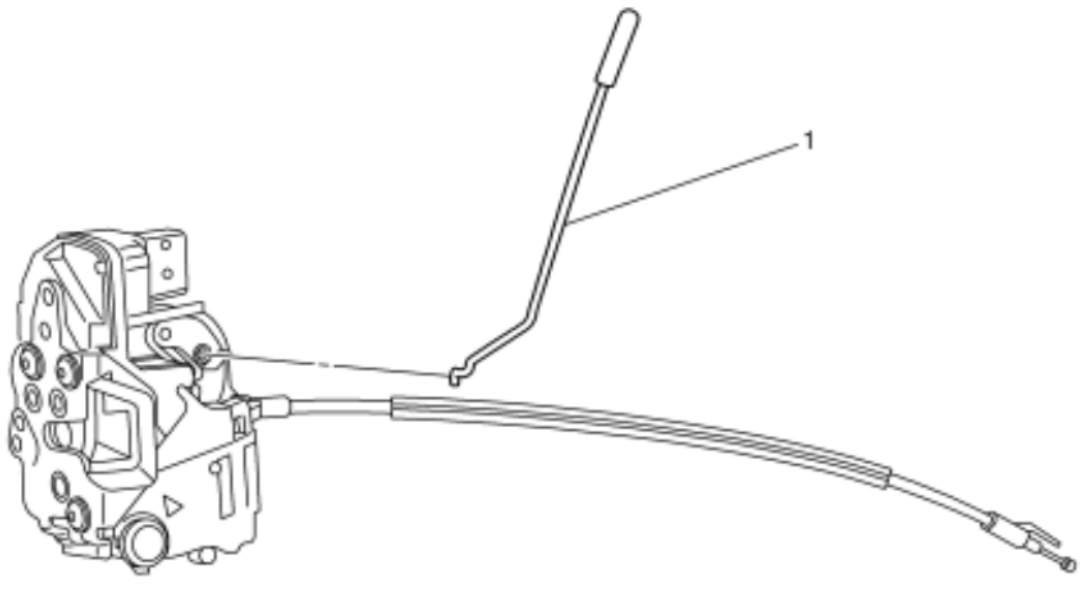


Callout	Component Name
Preliminary Procedure Remove the front side door outside handle bracket. Refer to Front Side Door Outside Handle Bracket Replacement .	
1	Front Side Door Outside Handle Rod **Procedure** 1. Place the window in the full up position. 2. Remove the water deflector. 3. Open the handle rod by releasing the clip at the end of the handle rod. 4. In order to prevent outside handle lever pre-load, lock, outside handle, handle bracket and cover/cap shall be fully secured to the door prior to securing integral lock clip to outside handle rod. Integral lock clip shall be in the full up position while securing to outside handle rod. Refer to Front Side Door Outside Handle Rod Adjustment . **Tip** Inspect the door lock system for proper operation before installing the door trim panel.

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Rear Side Door Locking Rod Replacement (Sedan)

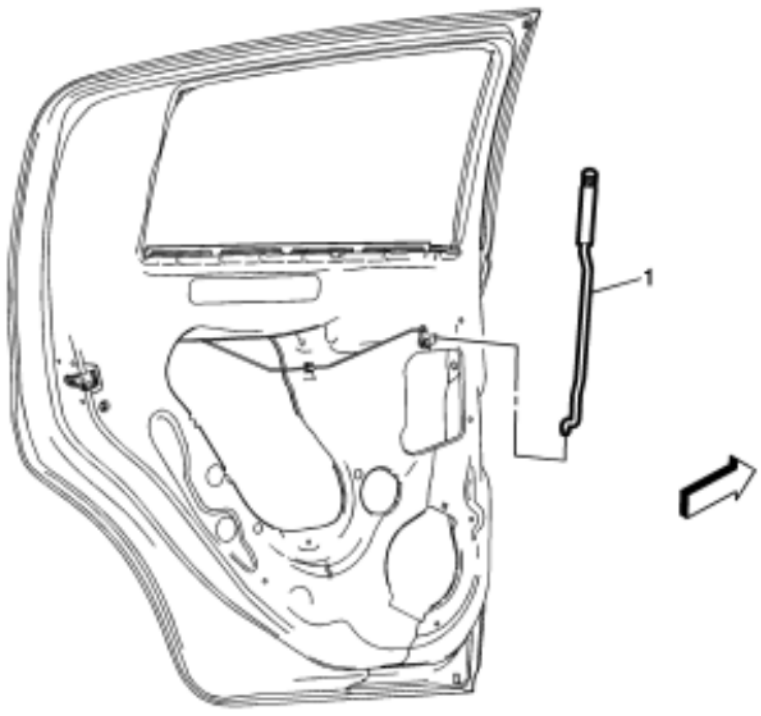


Callout	Component Name
Preliminary Procedure Remove the rear side door lock. Refer to Rear Side Door Latch Replacement . Do Not remove the lock completely from the door, lower the lock to disconnect the rod.	
1	Rear Side Door Lock Rod **Procedure** 1. Place the window in the full up position. 2. Remove the water deflector. 3. Transfer components as necessary. 4. In order to prevent outside handle lever pre-load, lock, outside handle, handle bracket and cover/cap shall be fully secured to the door prior to securing integral lock clip to outside handle rod. Integral lock clip shall be in the full up position while securing to outside handle rod. Refer to Rear Side Door Outside Handle Rod Adjustment . **Tip** Inspect the door lock system for proper operation before installing the door trim panel.

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Rear Side Door Locking Rod Replacement (Hatchback)

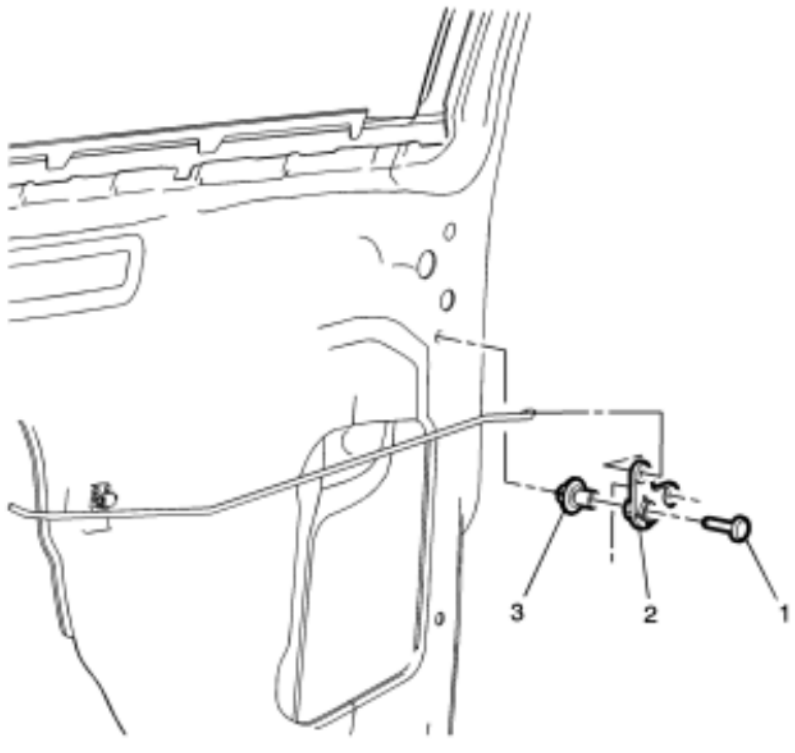


Callout	Component Name
Remove the rear side door trim panel. Refer to Rear Side Door Trim Replacement	
1	Rear Side Door Lock Rod **Procedure** Remove the water deflector. **Tip** Inspect the door lock system for proper operation before installing the door trim panel.

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Rear Side Door Locking Rod Bellcrank Replacement

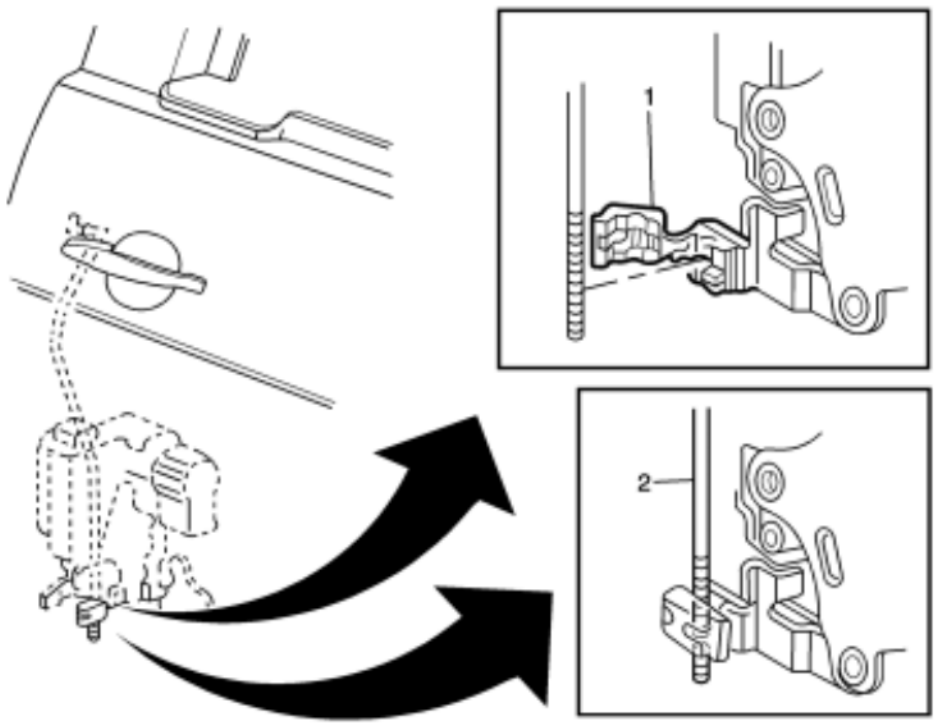


Callout	Component Name
Preliminary Procedures Remove the rear side door trim panel. Refer to Rear Side Door Trim Replacement .	
1	Rear Side Door Lock Rod Bellcrank Center Retainer **Procedure** 1. Place the window in the full up position. 2. Remove the water deflector. **Note:** Use a small flat-bladed tool to release the retainer from the center of the bellcrank.
2	Rear Side Door Lock Rod Bellcrank Center
3	Rear Side Door Lock Rod Bellcrank Retainer to Door **Note:** Inspect the door lock system for proper operation before installing the door trim panel.

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Rear Side Door Outside Handle Rod Adjustment

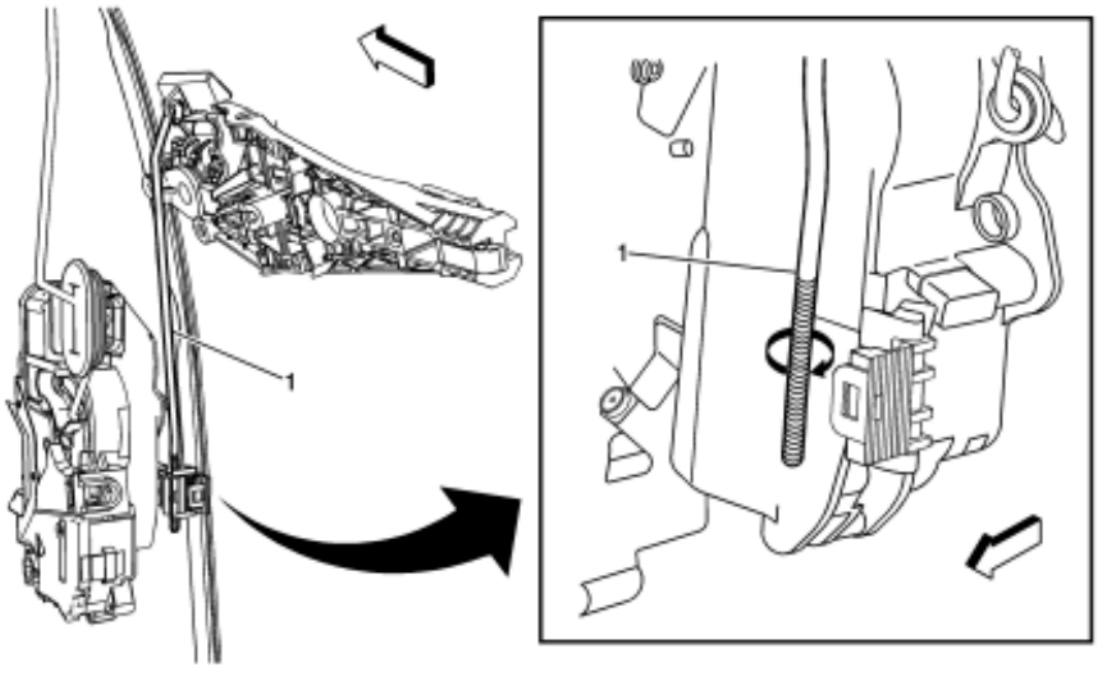


Callout	Component Name
Preliminary Procedures Remove the rear side door trim panel. Refer to Rear Side Door Trim Replacement .	
1	Rear Side Door Outside Handle Rod Retainer **Procedure** Remove the rear side door water deflector.
2	Rear Side Door Outside Handle Rod **Procedure** 1. Position the rear side door outside handle rod in the retainer in order to eliminate any free play in the outside door handle. 2. Adjust the travel of the handle by removing the threaded rod from the retainer. 3. Install the retainer cover closed over the threaded front side door outside handle rod. 4. Inspect the door locking system for proper operation before installing the trim panel. **Tip** Use a flat-head tool to open the retainer from the threaded rod connecting the lock to the outside handle.

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Rear Side Door Outside Handle Rod Replacement (Sedan)

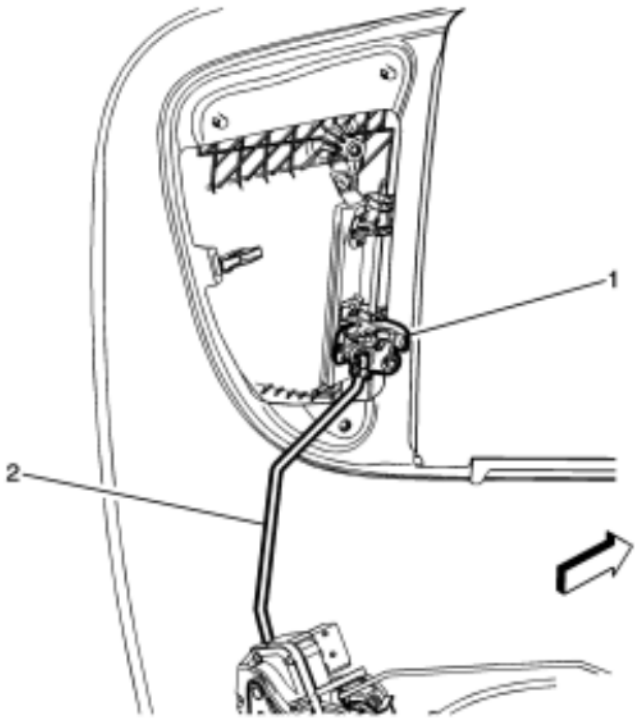


Callout	Component Name
	Preliminary Procedures Remove the rear side door trim panel. Refer to Rear Side Door Trim Replacement .
1	Rear Side Door Outside Handle Rod **Procedures** 1. Remove the rear side door water deflector. 2. Open the handle rod clip. 3. Inspect the door locking system for proper operation before installing the trim panel. Refer to Rear Side Door Outside Handle Rod Adjustment .

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Rear Side Door Outside Handle Rod Replacement (Hatchback)



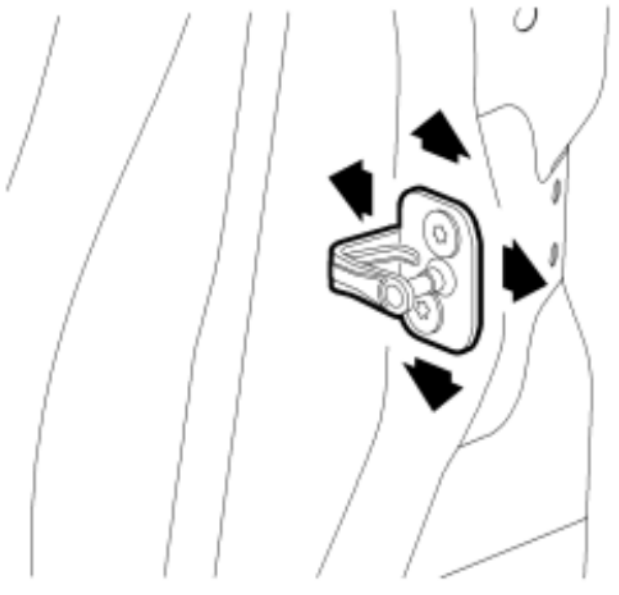
Callout	Component Name
Preliminary Procedures Remove the rear side door trim panel. Refer to Rear Side Door Trim Replacement .	
1	Rear Side Door Outside Handle Rod Upper Retainer **Procedure** Remove the water deflector
2	Rear Side Door Outside Handle Rod **Procedure** 1. Use a flat-head tool to open the lower retainer from the threaded rod connecting the lock to the outside handle. 2. Position the rear side door outside handle rod in the retainer in order to eliminate any free play in the outside door handle. 3. Adjust the travel of the handle by removing the threaded rod from the retainer. 4. In order to prevent outside handle lever pre-load, lock the outside handle shall be fully secured to the door prior to securing integral lock clip to outside handle rod. Integral lock clip shall be in the full up position while securing to outside handle rod. Refer to Rear Side Door Outside Handle Rod Adjustment . 5. Inspect the door lock system for proper operation before installing the trim panel.

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Front Side Door Lock Striker Adjustment

To determine if striker adjustment is required, proceed as follows:



1. Ensure the door is properly aligned within the door opening before proceeding with the striker adjustment.
2. Close the door onto the striker and note if the door drags on the striker causing the door to move upward or downward upon contact with the striker. Also note the closing effort to fully engage the lock.
3. Using a grease pencil, mark around the striker for reference of the original position. Loosen the striker.
4. Move the striker to eliminate drag on the striker and door lock and to achieve the proper door position within the door opening. Start with the up/down position, then position the striker to achieve proper alignment to the door opening. Set the in/out adjustment for the proper door seal engagement making sure the door closing efforts are correct.

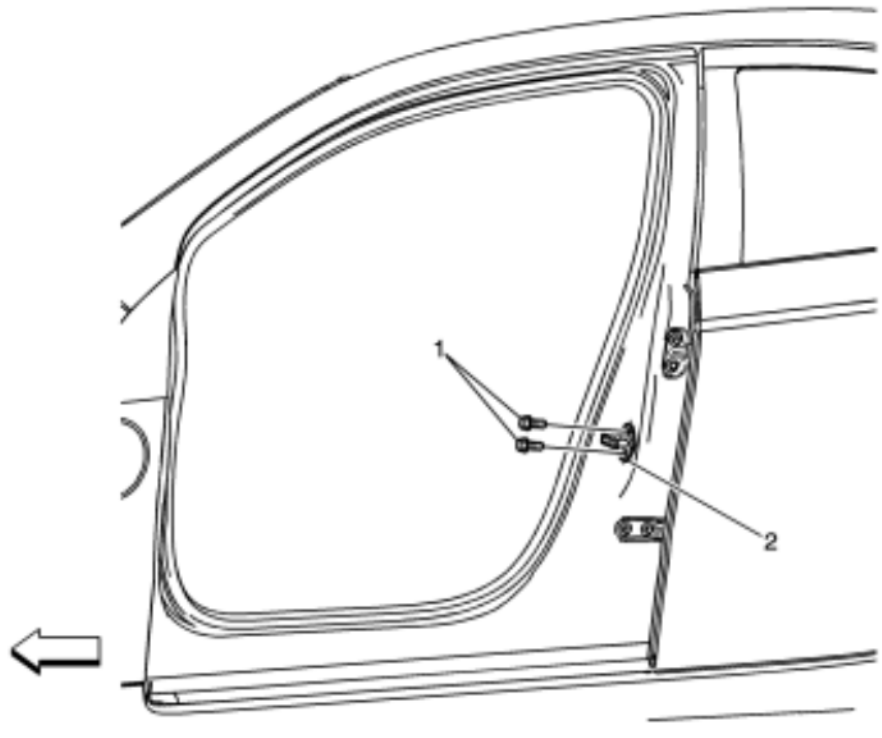
Caution: Refer to Fastener Caution .

5. Tighten the striker bolts. Tighten the front side door striker screws to **22 N·m (16 lb ft).**

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Front Side Door Lock Striker Replacement

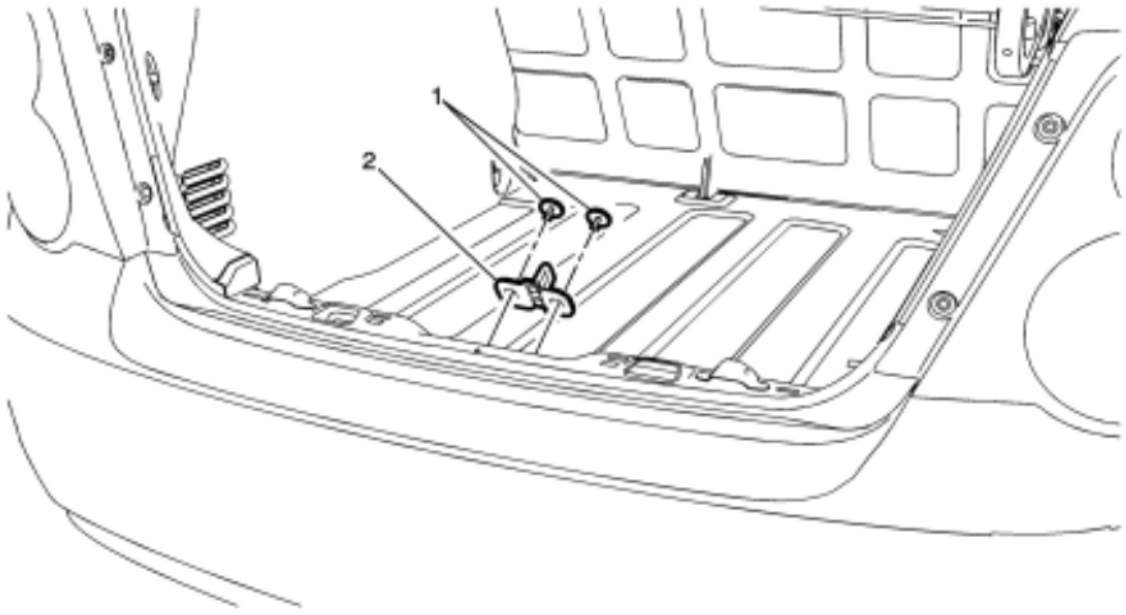


Callout	Component Name
1	Front Door Lock Striker Screws (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 22 N·m (16 lb ft)
2	Front Door Lock Striker **Procedure** Ensure the alignment of the striker. Refer to Front Side Door Lock Striker Adjustment .

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Liftgate Latch Striker Replacement

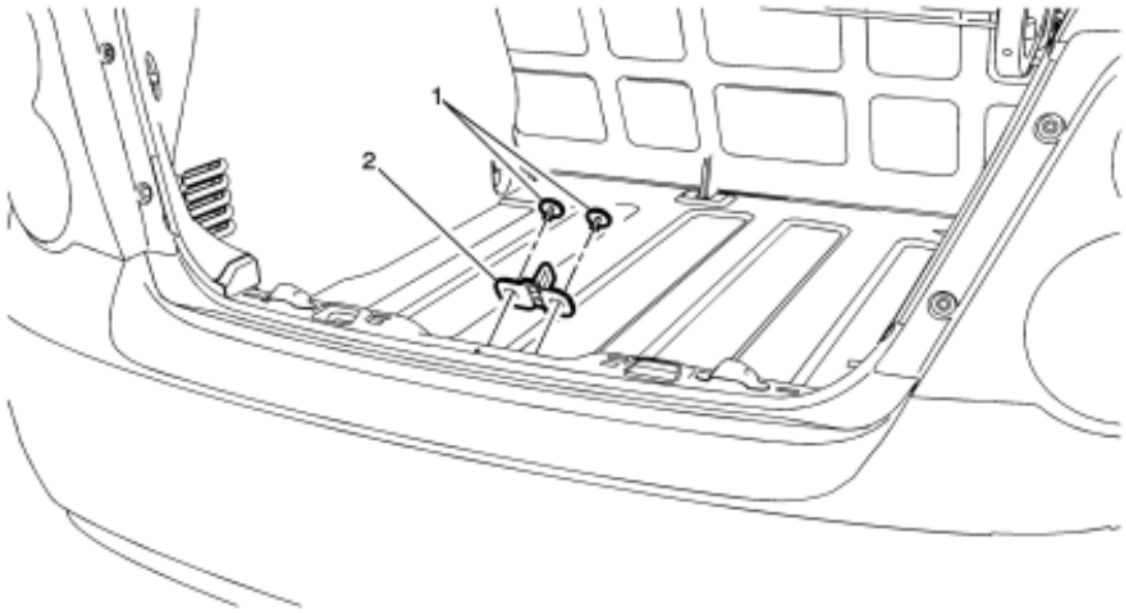


Callout	Component Name
Preliminary Procedure Remove the rear compartment sill trim plate. Refer to Rear Compartment Sill Trim Plate Replacement .	
1	Liftgate Latch Striker Bolt (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 22 N·m (16 lb ft)
2	Liftgate Latch Striker

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Rear Compartment Lid Latch Striker Replacement



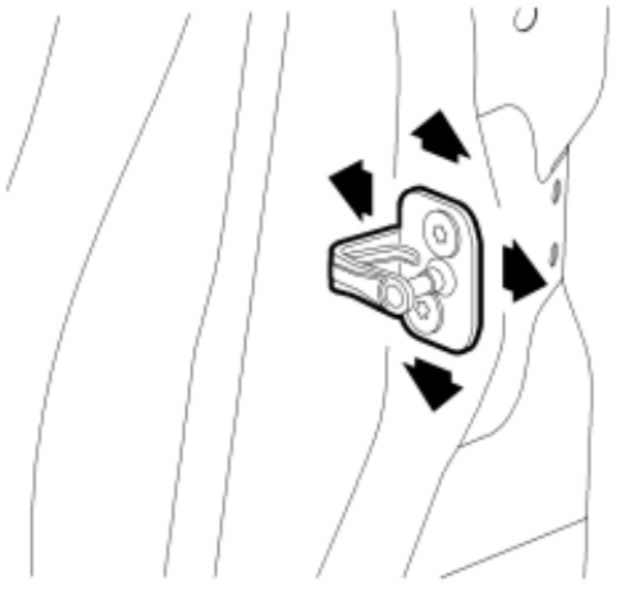
Callout	Component Name
Preliminary Procedure Remove the rear compartment sill trim plate. Refer to Rear Compartment Sill Trim Plate Replacement .	
1	Latch Striker Bolt (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 22 N·m (16 lb ft)
2	Rear Compartment Lid Latch Striker

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Rear Side Door Lock Striker Adjustment

To determine if striker adjustment is required, proceed as follows:



1. Ensure the door is properly aligned within the door opening before proceeding with the striker adjustment.
2. Close the door onto the striker and note if the door drags on the striker causing the door to move upward or downward upon contact with the striker. Also note the closing effort to fully engage the lock.
3. Using a grease pencil, mark around the striker for reference of the original position. Loosen the striker.
4. Move the striker to eliminate drag on the striker and door lock and to achieve the proper door position within the door opening. Start with the up/down position, then position the striker to achieve proper alignment to the door opening. Set the in/out adjustment for the proper door seal engagement making sure the door closing efforts are correct.

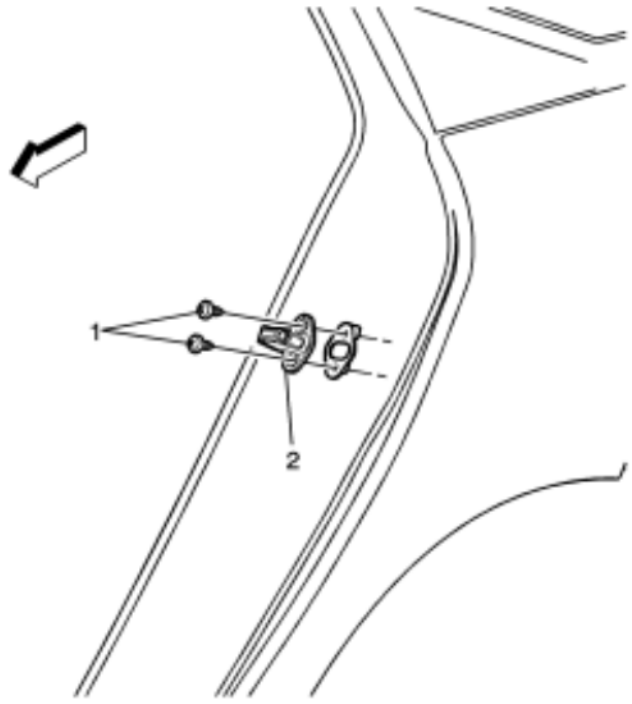
Caution: Refer to Fastener Caution .

5. Tighten the striker bolts. Tighten the rear side door striker bolts to **22 N·m (16 lb ft).**

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Rear Side Door Lock Striker Replacement

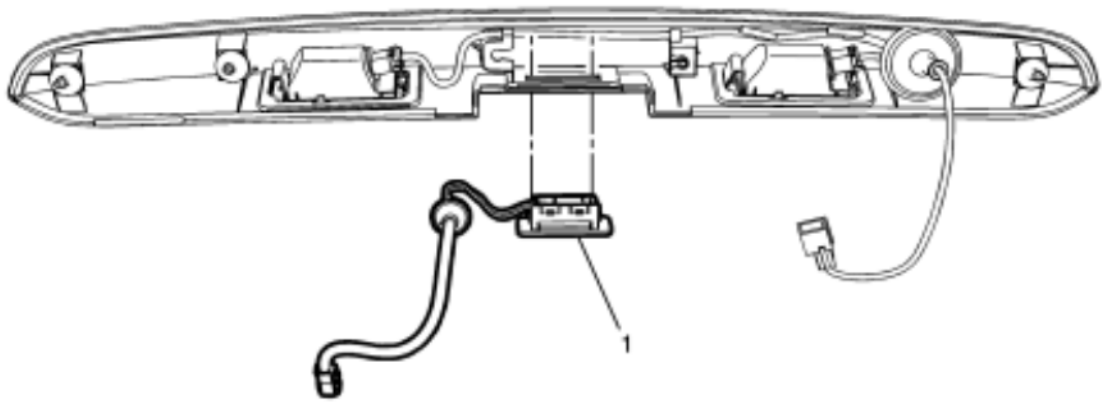


Callout	Component Name
1	Rear Side Door Lock Striker Screw (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 22 N·m (16 lb ft)
2	Rear Side Door Lock Striker **Procedures** 1. Ensure the spacer is in place. 2. Ensure proper alignment after installation. Refer to Rear Side Door Lock Striker Adjustment .

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Liftgate Release Switch Replacement

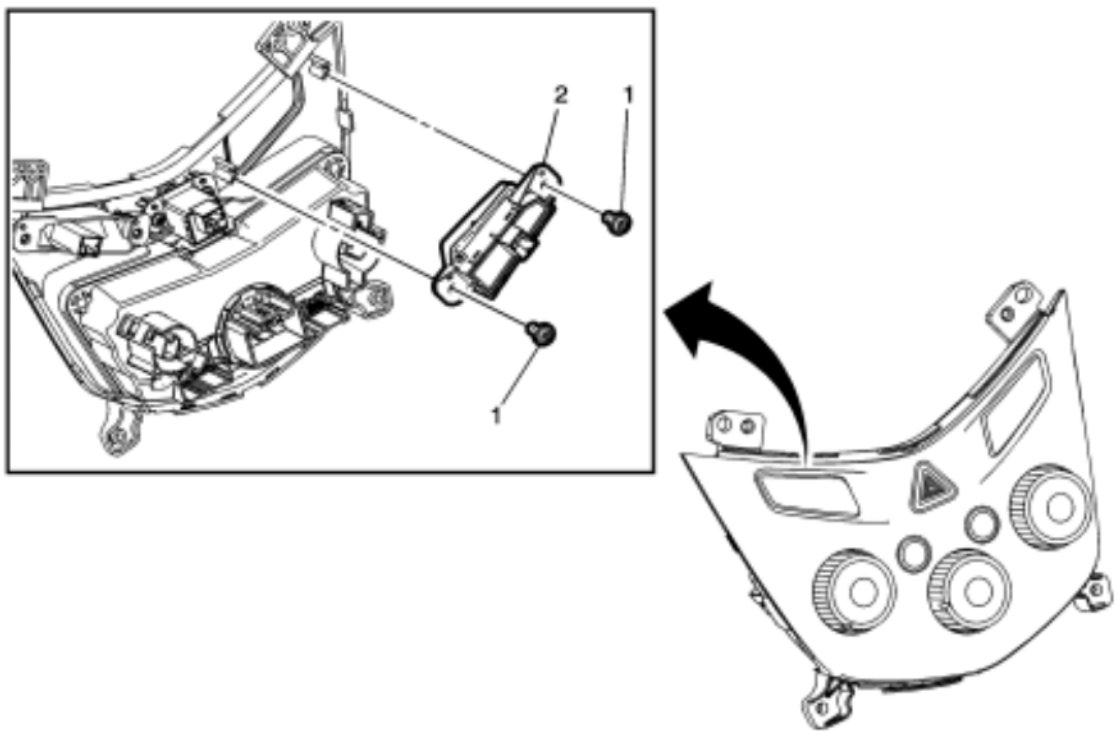


Callout	Component Name
Preliminary Procedure Remove the liftgate side applique. Refer to Liftgate Side Applique Replacement .	
1	Liftgate Release Switch **Procedure** Depress the retainers on the back side of the switch and push the switch out from the applique.

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Door Lock Switch Replacement



Callout	Component Name
Preliminary Procedure Remove the heater and air conditioning control. Refer to Heater and Air Conditioning Control Replacement .	
1	Door Lock Switch Bolts (Qty: 2) **Caution:** Refer to Fastener Caution .
2	Door Lock Switch **Procedure** Disconnect the electrical connector.

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Door Ajar Indicator Description and Operation
Fuel Fill Door Description and Operation
Luggage Compartment Description and Operation
Power Door Locks Description and Operation
Trunk/Liftgate Ajar Indicator Description and Operation

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Door Ajar Indicator Description and Operation

Door Ajar Indicator System Components

The door ajar indicator system consists of the following components:

- Body control module (BCM)
- Instrument panel cluster
- Driver door latch
- Passenger door latch
- Left rear door latch
- Right rear door latch
- Liftgate latch
- Rear compartment lid latch
- Driver window motor

Driver Door Ajar (AXG)

The driver window motor supplies a 12V signal to the door ajar switch within the door latch, when the driver door is open the door ajar switch closes pulling the 12V signal low. When the driver window motor detects the drop in the 12V signal circuit, it will then communicate this status to the BCM via local interconnect network (LIN) bus. The BCM communicates with the instrument cluster via serial data message. The instrument panel cluster, upon receipt of this serial data message, will illuminate the driver door ajar indicator and also send a serial data message to the radio to activate the door ajar audible warning when the vehicle speed is greater then 8km/h (5mph).

Driver/Passenger/Rear Door Ajar (Without AXG)

The body control module (BCM) supplies a 12V signal to each of the door latches, these latches contain an ajar switch which is normally open when the door is closed. When a door is ajar or open, the contacts of the ajar switch will close causing the voltage in the signal circuit to drop to zero volts. The BCM will detect the voltage drop and will send a message to the instrument panel cluster. The instrument panel cluster, upon receipt of this message, will illuminate the appropriate door ajar message in the driver information center and also send a message to the radio to activate the door ajar audible warning when the vehicle speed is greater then 8km/h (5mph).

Trunk/Liftgate Ajar

The body control module (BCM) provides a 12♦V signal to the trunk ajar signal circuit. The liftgate latch and the rear compartment lid latch contain an ajar switch which is normally open when the trunk or liftgate is closed. When the liftgate or trunk or is opened, the normally open ajar switch closes. With the ajar switch closed, ground is provided to the ajar switch signal circuit. The BCM detects the voltage drop and sends a serial data message to the instrument panel to display the door ajar indicator

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Fuel Fill Door Description and Operation

Fuel Door Release System Components

- Body control module (BCM)
- Fuel door release actuator

The locking and unlocking of the fuel door is a function of the power door lock system. The fuel door release actuator is supplied by the door lock control circuit and the driver door unlock control circuit. The BCM, upon receipt of a lock switch lock or unlock signal, will supply battery voltage to the door lock actuator lock or unlock control circuits. Since the opposite side of the lock actuator is connected to ground through the other lock actuator control circuit, the driver door latch assembly and the fuel door release actuator will then lock or unlock as commanded.

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Luggage Compartment Description and Operation

Luggage Compartment Release System Components

- Body control module (BCM)
- Exterior rear compartment lid release switch (Sedan)
- Liftgate unlatch switch (Hatchback)
- Rear compartment lid latch (Sedan)
- Liftgate latch (Hatchback)
- Rear compartment lid release relay (Sedan)
- Liftgate release relay (Hatchback)

Luggage Compartment Release Operation

Trunk/Liftgate Release Switch

The BCM monitors supplies a 12V signal to the release switch so that when the switch is pressed, the voltage within the signal circuit is pulled low and in response, the BCM will detect the voltage drop and check the status of the door lock system. If the driver door is locked, the BCM will ignore the request, if the driver door is unlocked, the BCM will recognize the request and will provide voltage to the release relay.

Rear Compartment Lid Latch

When BCM receives a rear compartment release command from the release switch, the BCM applies brief pulse of voltage to the release relay control circuit, which energizes the coil side of the relay. The switch side of the release relay then momentarily closes, supplying a brief pulse of battery positive voltage to the rear compartment latch. The rear compartment latch is continuously grounded and when it receives the voltage pulse, it will become energized and the latch will activate releasing the trunk lid or liftgate so that the trunk lid or liftgate may be manually raised to an open position.

Keyless Entry Transmitter

The BCM may also get a rear compartment release command from the remote keyless entry module. When the trunk button is pressed on the keyless entry transmitter, a rear compartment release request is sent to the remote keyless entry module, the remote keyless entry module will then send a serial data message to the BCM to command the release of the trunk/liftgate.

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Power Door Locks Description and Operation

Door Lock System Components

The power door lock system consists of the following components:

- Door lock switch, located in the instrument panel center stack
- Body control module (BCM)
- Driver door latch
- Passenger door latch
- Left rear door latch
- Right rear door latch

Door Lock and Unlock Operation

When a door lock switch is activated in the lock or unlock position the BCM will receive a ground signal on either the door lock switch lock or unlock signal circuits.

The BCM, upon receipt of a lock switch lock or unlock signal, will supply battery voltage to the door lock actuator lock or unlock control circuits. Since the opposite side of the lock actuator is connected to ground through the other lock actuator control circuit, the doors will then lock or unlock as commanded.

The following three circuits are used to operate the lock:

- Driver door unlock
- Passenger/rear doors unlock
- All door lock

The driver door lock actuator is isolated so it can be unlocked by itself using the keyless entry transmitter.

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Trunk/Liftgate Ajar Indicator Description and Operation

Door Ajar Indicator

The body control module (BCM) monitors the voltage level of the liftgate ajar signal circuit which is normally at the system voltage when the liftgate or trunk lid is closed. When the liftgate or trunk lid is ajar or open, a switch within the latch assembly closes providing a path to ground for the liftgate ajar signal circuit. The voltage within the signal circuit will then drop to 0 volts, the BCM will then detect the voltage drop and will send a serial data message to the instrument panel cluster (IPC). The IPC will then display the door ajar icon.

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Specifications
Windshield Wiper and Washer Switch Replacement
Windshield Washer Nozzle Hose Replacement
Windshield Washer Nozzle Replacement
Rear Window Washer Nozzle Replacement
Windshield Washer Solvent Container Hose Replacement
Windshield Washer Solvent Container Filler Tube Replacement
Windshield Washer Solvent Container Replacement
Windshield Washer Pump Replacement
Air Inlet Grille Panel Replacement
Windshield Wiper Arm Replacement
Rear Window Wiper Arm Replacement
Windshield Wiper Blade Replacement
Rear Window Wiper Blade Replacement
Windshield Wiper Motor Replacement
Rear Window Wiper Motor Replacement (Hatchback)
Windshield Wiper System Module Replacement
Rear Window Wiper Motor Grommet Replacement
Windshield Glass Cleaning
Wiper Blade Element Cleaning
Wiper Chatter Repair
Description and Operation
Special Tools

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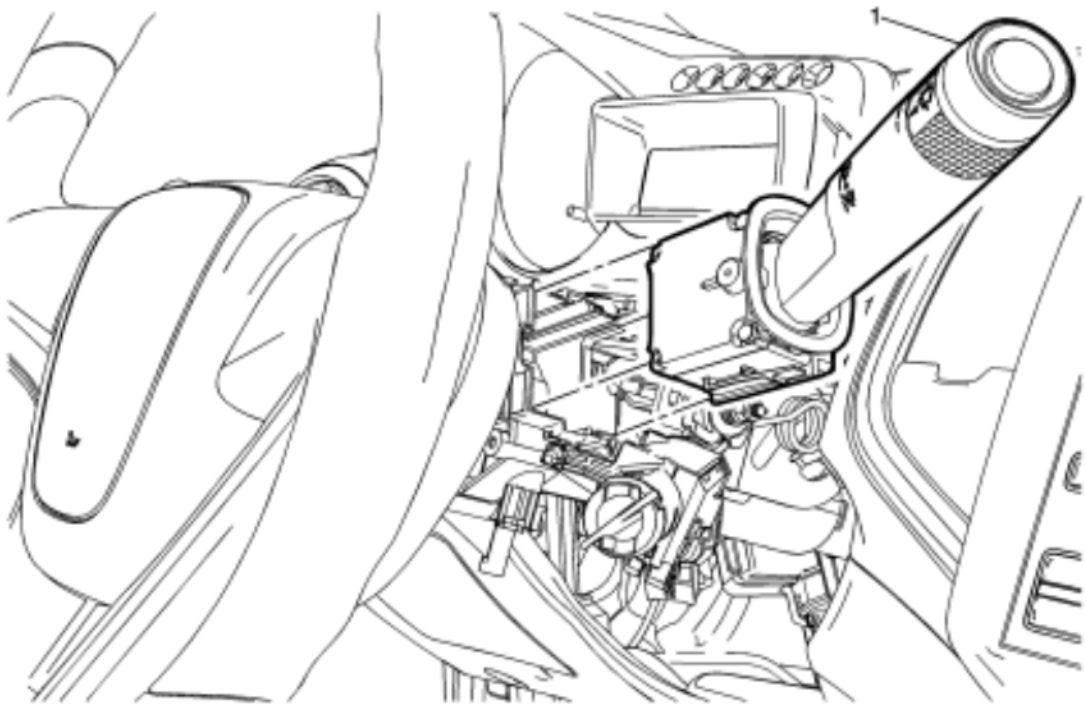
Fastener Tightening Specifications

Application	Specification	
	Metric	English
Air Inlet Grille Panel Screw	2.5 N·m	22 lb in
Rear Window Wiper Arm Nut	10 N·m	89 lb in
Rear Window Wiper Motor Bolt	9 N·m	80 lb in
Windshield Washer Solvent Container Nut	5 N·m	44 lb in
Windshield Wiper Arm Nut	25 N·m	18 lb ft
Windshield Wiper Motor Bracket Screw	8.5 N·m	75 lb in
Windshield Wiper System Module Bolt	18 N·m	13 lb ft

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Windshield Wiper and Washer Switch Replacement

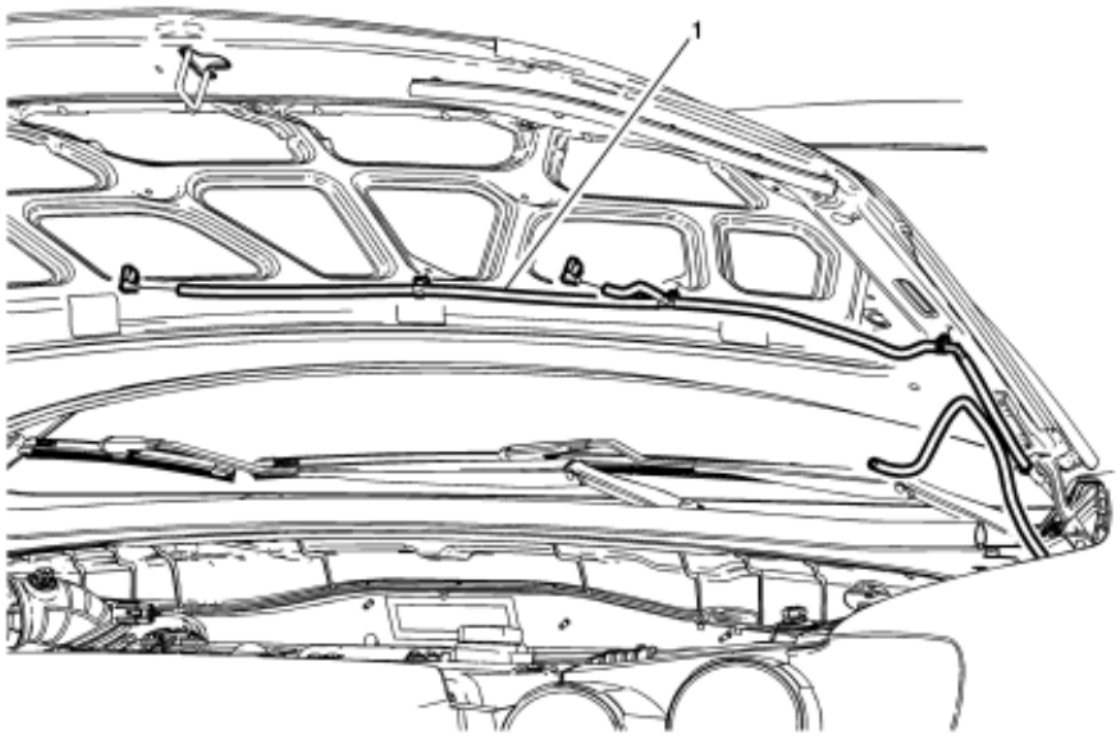


Callout	Component Name
	Preliminary Procedure Remove the upper trim cover and the lower trim cover from the steering column. Refer to Steering Column Lower Trim Cover Replacement .
1	Windshield Wiper and Washer Switch **Procedure** 1. Disconnect any electrical connectors as necessary. 2. Release the plastic retaining tabs and remove the windshield wiper and washer switch from the turn signal switch bracket.

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Windshield Washer Nozzle Hose Replacement

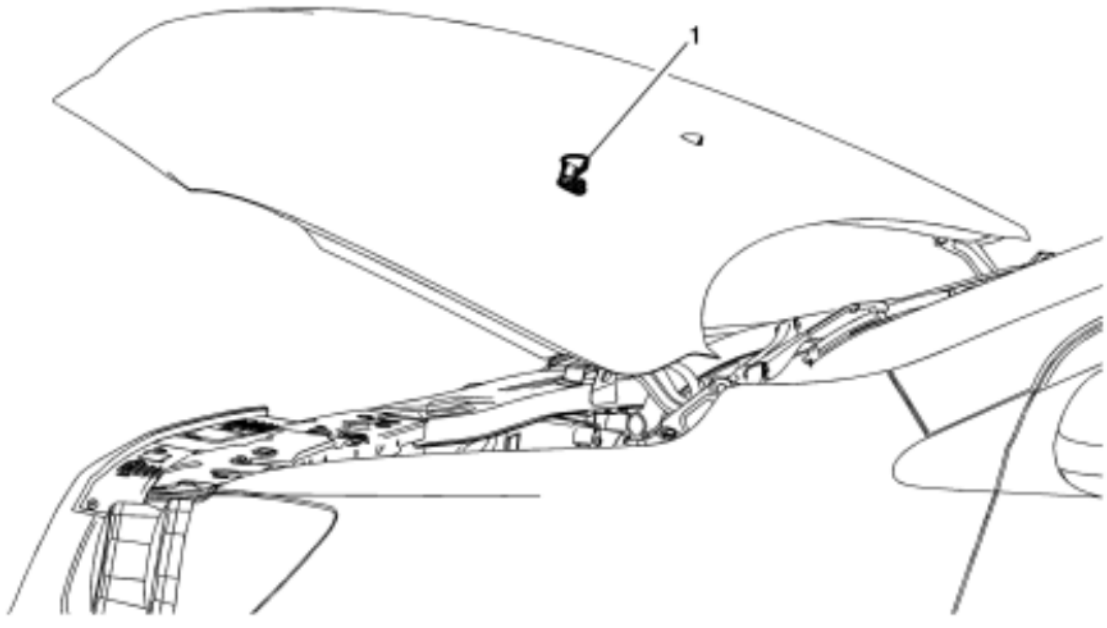


Callout	Component Name
Preliminary Procedure Remove the hood insulator. Refer to Hood Insulator Replacement .	
1	Windshield Washer Nozzle Hose **Procedure** 1. Disconnect the windshield washer hose at the front fender upper left hand bracket from the windshield washer solvent container pump hose. 2. Disconnect the windshield washer hose retainer at the hood hinge. 3. Disconnect all three washer hose retainers from the underside of the hood assembly. 4. Disconnect the windshield washer hose at both windshield washer nozzle spouts. 5. Remove the windshield washer hose from the vehicle.

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Windshield Washer Nozzle Replacement

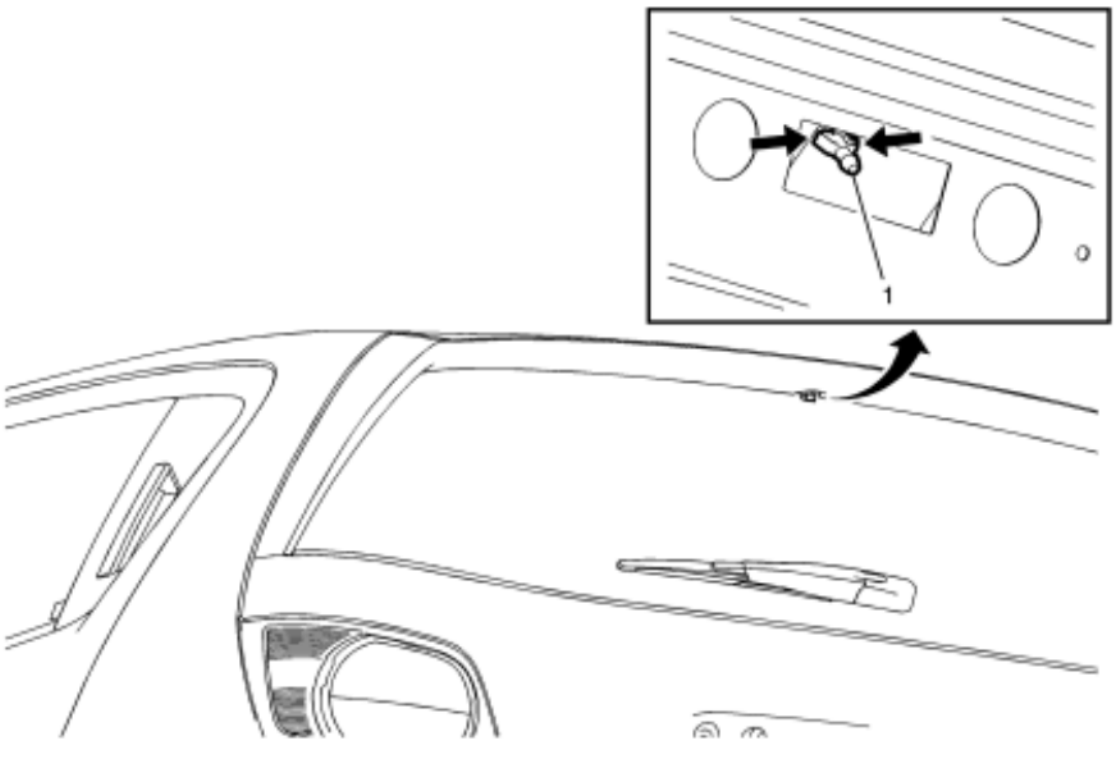


Callout	Component Name
Preliminary Procedure Remove the hood insulator. Refer to Hood Insulator Replacement .	
1	Windshield Washer Nozzle **Procedure** 1. Disconnect the windshield washer hose at the washer nozzle being serviced. 2. Using two fingers, squeeze the locking tabs on the underside of the hood on the washer nozzle. 3. Push the washer nozzle outward from the hood while rotating the washer nozzle to the right. 4. Remove the windshield washer nozzle from the hood assembly.

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Rear Window Washer Nozzle Replacement

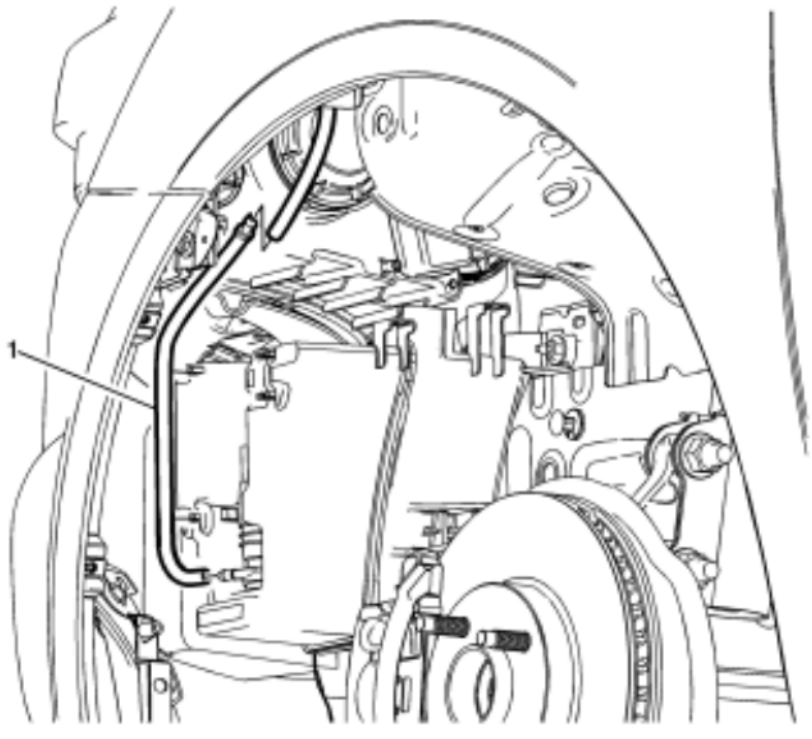


Callout	Component Name
Preliminary Procedure Remove the inside high mount stop lamp. Refer to High Mount Stop Lamp Replacement .	
1	Rear Window Washer Nozzle **Procedure** 1. Access the rear window washer nozzle through the hole in behind the high mounted stop lamp. 2. Disconnect the washer hose from the spout. 3. Pinch the two tabs on the rear window washer nozzle and push the nozzle up through the liftgate hole. 4. Remove the rear window washer nozzle from the vehicle.

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Windshield Washer Solvent Container Hose Replacement

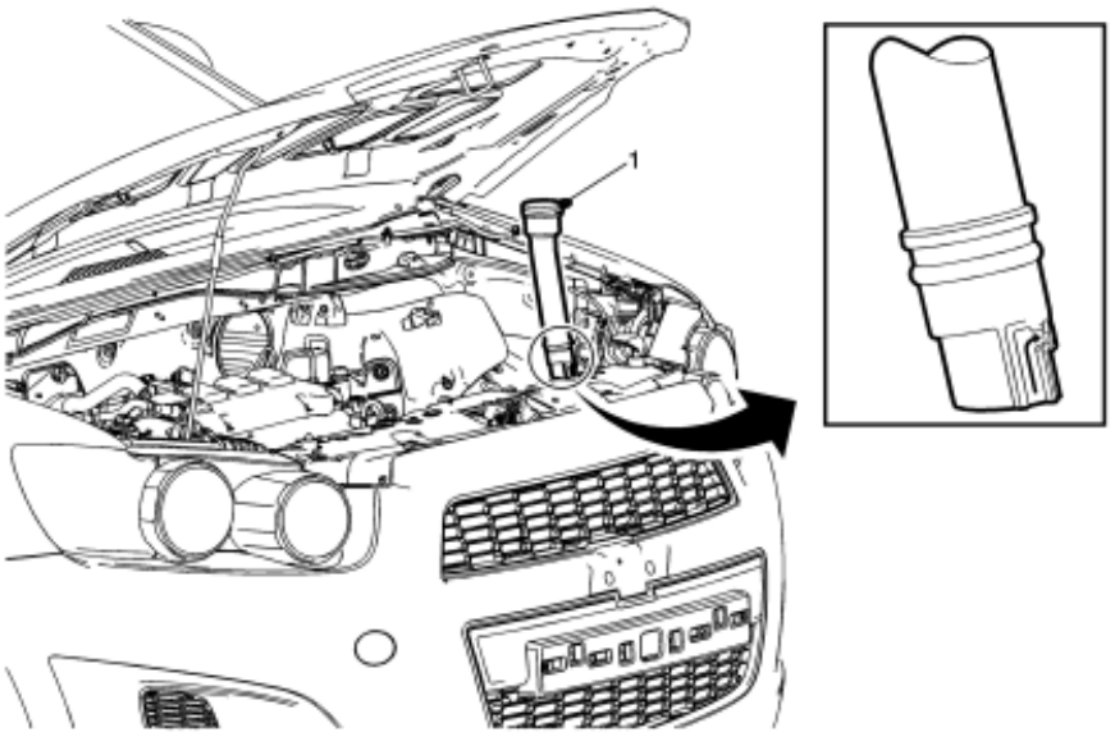


Callout	Component Name
Preliminary Procedure Remove the left front wheelhouse liner. Refer to Front Wheelhouse Liner Replacement .	
1	Windshield Washer Pump Hose **Procedure** 1. Place a clean suitable drain pan under the washer pump area. 2. Pull the hose from the windshield washer pump spout first. 3. Recover the windshield washer solvent from inside the hose. 4. Disconnect the windshield washer pump hose from the windshield washer nozzle hose near the front fender front bracket. 5. Disengage the windshield washer pump hose from the two retention clips on the windshield washer container. 6. Remove the windshield washer pump hose from the vehicle.

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Windshield Washer Solvent Container Filler Tube Replacement

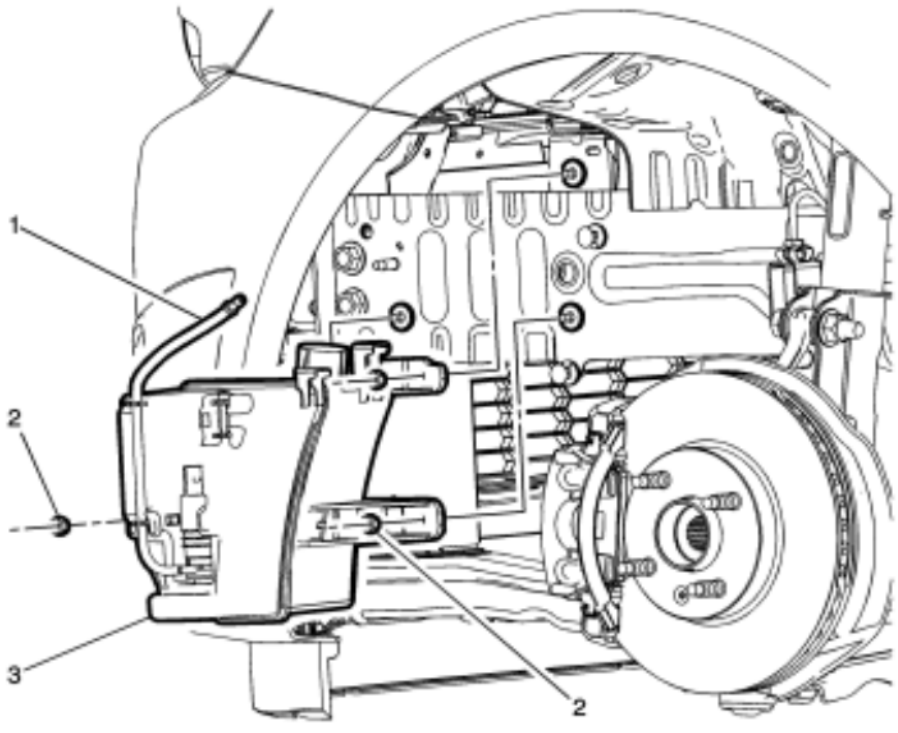


Callout	Component Name
Preliminary Procedure 1. Open and support the hood assembly. 2. Grasp the top portion of the windshield washer container filler tube and rotate the tube 1/8 turn counterclockwise to unlock from the windshield washer solvent container lock tabs. 3. Pull the tube straight from the windshield washer solvent container. 4. Inspect and/or replace the seal on the windshield washer container filler tube if damaged.	
1	Windshield Washer Solvent Container Filler Tube **Procedure** 1. Inspect the seal on the filler tube, replace as needed. 2. Remove and transfer the windshield washer solvent container cap. 3. Upon installation of the windshield washer solvent container filler tube back into the windshield washer solvent container, ensure to twist the filler tube 1/8 turn clockwise and lock the filler tube into the container lock tabs.

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Windshield Washer Solvent Container Replacement

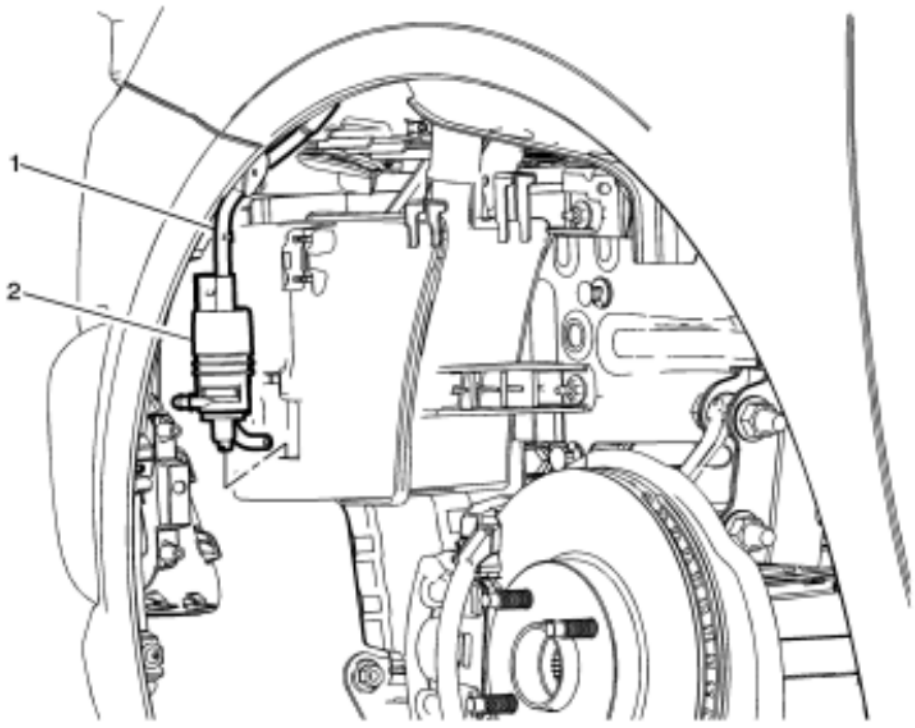


Callout	Component Name
Preliminary Procedures 1. Remove the windshield washer solvent container filler tube. Refer to Windshield Washer Solvent Container Filler Tube Replacement . 2. Remove the left side front portion of the front wheelhouse liner. Refer to Front Wheelhouse Liner Replacement . 3. Disconnect the windshield washer hose from the windshield washer solvent container washer pump hose. 4. Disconnect the windshield washer pump electrical connector from the washer pump.	
1	Windshield Washer Solvent Container Washer Pump Hose **Procedure** Disengage the washer pump hose from the washer pump spout and the windshield washer container retention tabs.
2	Windshield Washer Solvent Container Nut (Qty: 3) **Caution:** Refer to Fastener Caution . **Tighten** 5.0 N·m (44 lb in)
3	Windshield Washer Solvent Container **Procedure** 1. Remove the windshield washer solvent container from the three studs on the front compartment front outer side rail and battery tray support. 2. Remove the windshield washer pump from the windshield washer solvent container. 3. Empty the windshield washer solvent into a suitable approved clean container. 4. Transfer parts as needed.

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Windshield Washer Pump Replacement

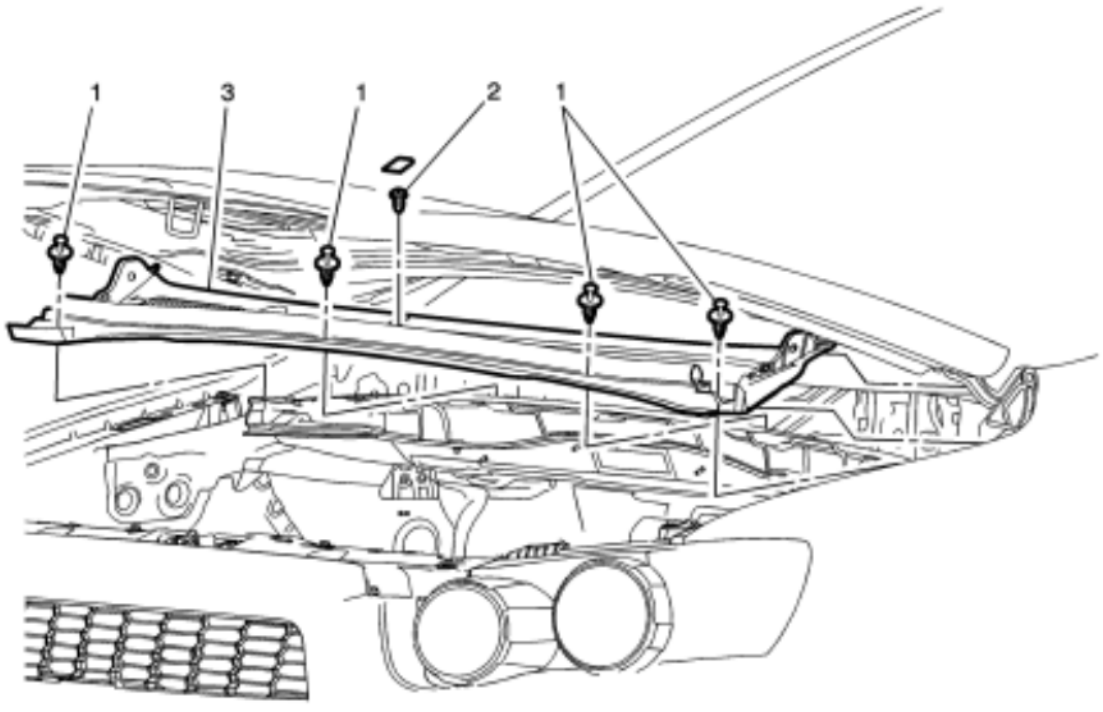


Callout	Component Name
Preliminary Procedure Remove the front left front wheelhouse liner. Refer to Front Wheelhouse Liner Replacement .	
1	Windshield Washer Pump Hose **Procedure** Place a clean suitable drain pan under the windshield washer pump area to recover the windshield washer solvent when the windshield washer pump hose is disconnected.
2	Windshield Washer Pump **Procedure** 1. Disconnect the electrical connector to the windshield washer pump. 2. Using two flat-bladed tools, place the blades on each side of the washer pump, under the windshield washer pump grommet. 3. Twist the two flat-blades in opposite directions to lift the washer pump from the windshield washer solvent container. 4. Disengage the washer pump from the windshield washer container. 5. Remove the windshield washer pump and discard the windshield washer pump grommet.

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Air Inlet Grille Panel Replacement

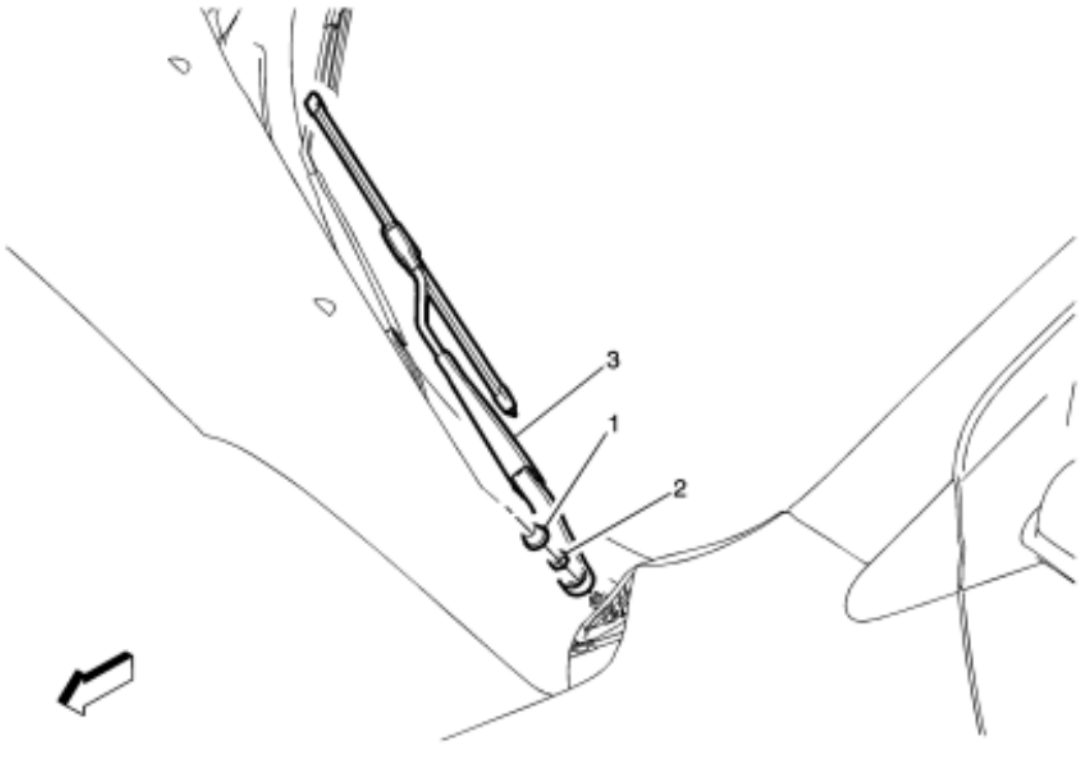


Callout	Component Name
Preliminary Procedure 1. Remove both wiper arm assemblies. Refer to Windshield Wiper Arm Replacement . 2. Remove both outer hood rear seals. Refer to Hood Rear Seal Replacement .	
1	Air Inlet Grille Panel Retainer (Qty: 4) **Procedure** Release and remove the retainers from the air inlet grille panel.
2	Air Inlet Panel Screw **Caution:** Refer to Fastener Caution . **Procedure** 1. Remove the screw cover from the air inlet grille panel. 2. Remove the air inlet grille panel screw. **Tighten** 2.5 N·m (22 lb in)
3	Air Inlet Grille Panel **Procedure** 1. Lift the front edge of the grille panel off the front edge of the dash upper extension panel opening cover. 2. Slide the grille panel forward from both hood hinges. 3. Remove the grille panel from the vehicle. 4. Remove the hood rear weather-strip. Refer to Hood Rear Weatherstrip Replacement .

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Windshield Wiper Arm Replacement

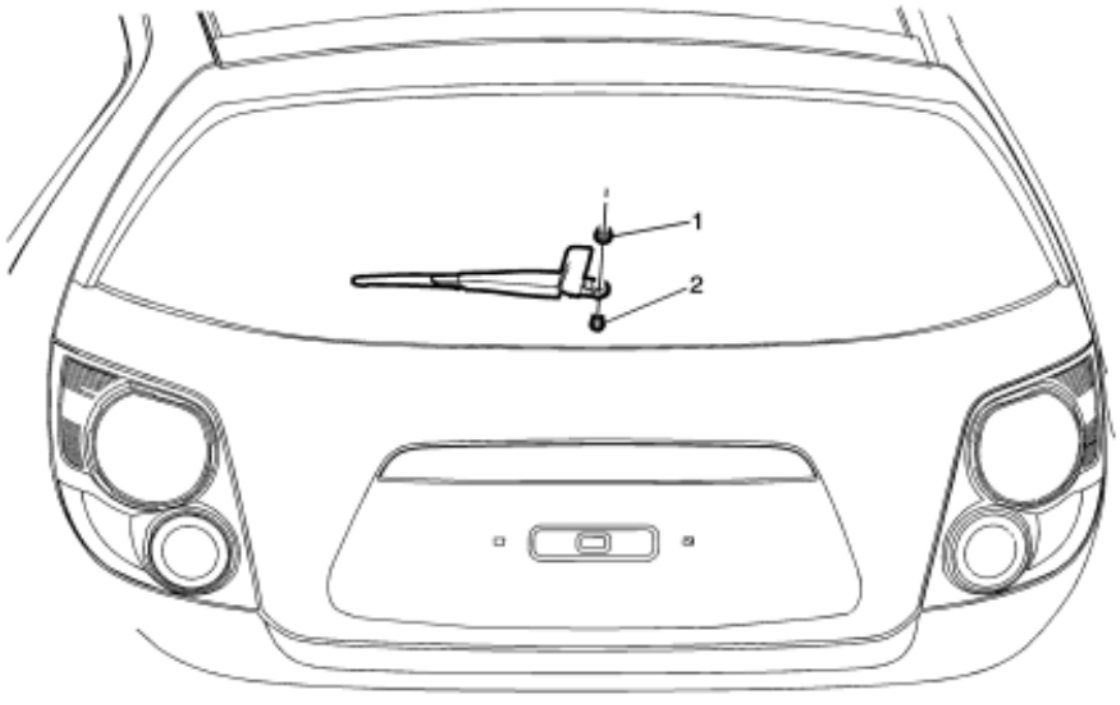


Callout	Component Name
Preliminary Procedure Open and support the hood assembly.	
1	Windshield Wiper Arm Nut Cap **Tip** Use a small flat-bladed tool in order to release the finish cap from the wiper arm assembly.
2	Windshield Wiper Arm Nut **Caution:** Refer to Fastener Caution . **Tighten** 25 N·m (18 lb ft)
3	Windshield Wiper Arm **Procedure** 1. Use the *BO–49385* puller in order to assist in the removal of the wiper arm from the wiper module pivot shaft. 2. Remove the wiper arm from the pivot shaft. 3. Clean the pivot shaft knurls with a soft wire brush before installing a new wiper arm. **Special Tools** *BO–49385* Wiper Arm Puller For equivalent regional tools, refer to Special Tools .

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Rear Window Wiper Arm Replacement

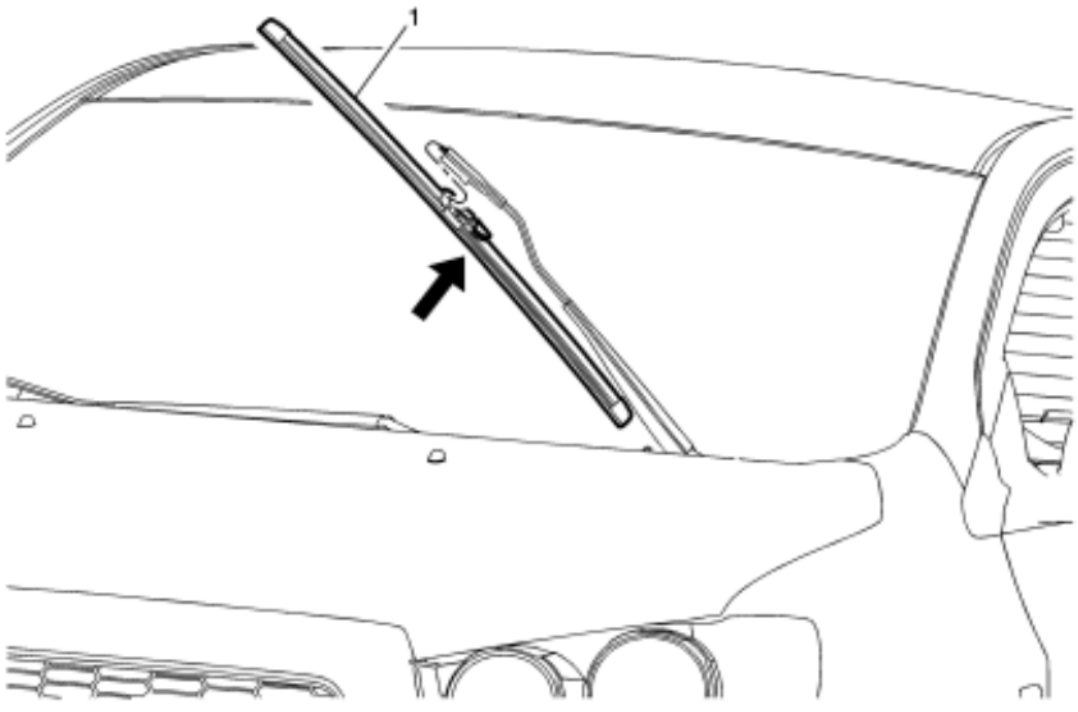


Callout	Component Name
Preliminary Procedure Using a small flat-bladed tool, release the locking tabs and lift the end of the wiper arm nut cover in order to access and remove the rear wiper arm nut.	
1	Rear Window Wiper Arm Nut **Caution:** Refer to Fastener Caution . **Tighten** 10 N·m (89 lb in)
2	Rear Window Wiper Arm **Tip** Align and hold the rear window wiper arm blade to the edge of the blackout on the rear liftgate window while tightening.

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Windshield Wiper Blade Replacement



Callout	Component Name
Preliminary Procedure 1. Service Up and hold the wiper arm off the windshield when performing the wiper blade replacement. 2. Pinch the two tabs on top of the wiper blade. 3. Rotate the bottom edge of the wiper blade, downward, away from the wiper arm. 4. Detach the wiper blade from the hook end of the windshield wiper arm. 5. Carefully return the windshield wiper arm back to the glass until the new wiper blade is installed.	
1	Windshield Wiper Blade Assembly

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Rear Window Wiper Blade Replacement

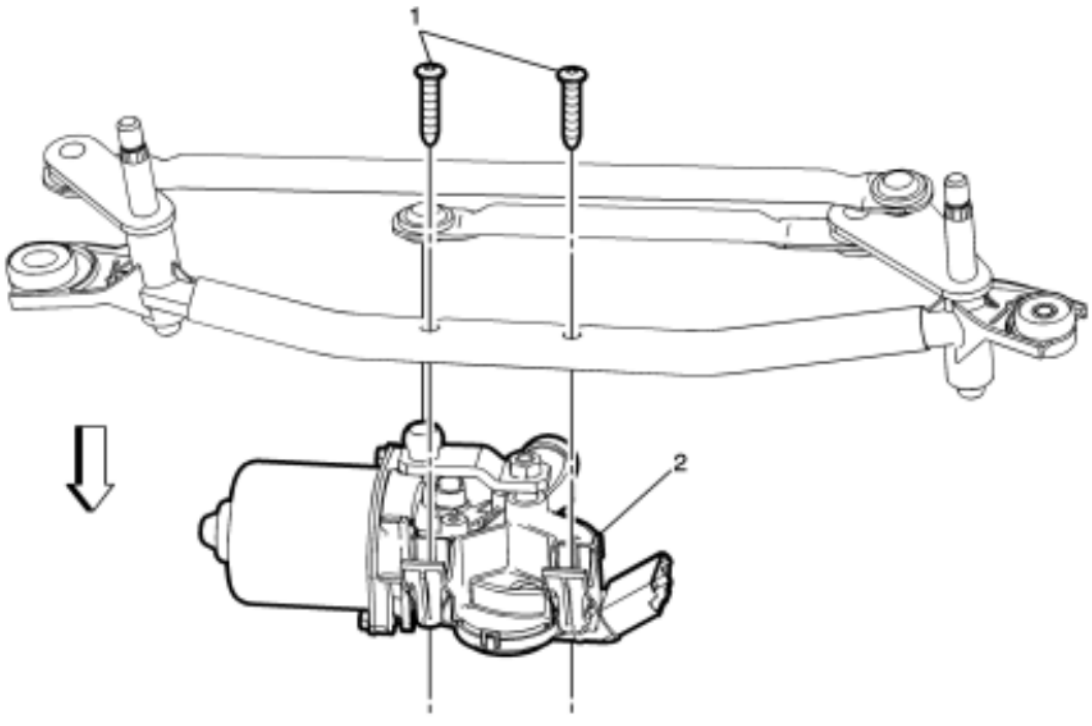


Callout	Component Name
Preliminary Procedure Lift the rear window wiper arm off the rear window and release the rear window wiper blade from the rear window wiper arm.	
1	Rear Window Wiper Blade

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Windshield Wiper Motor Replacement

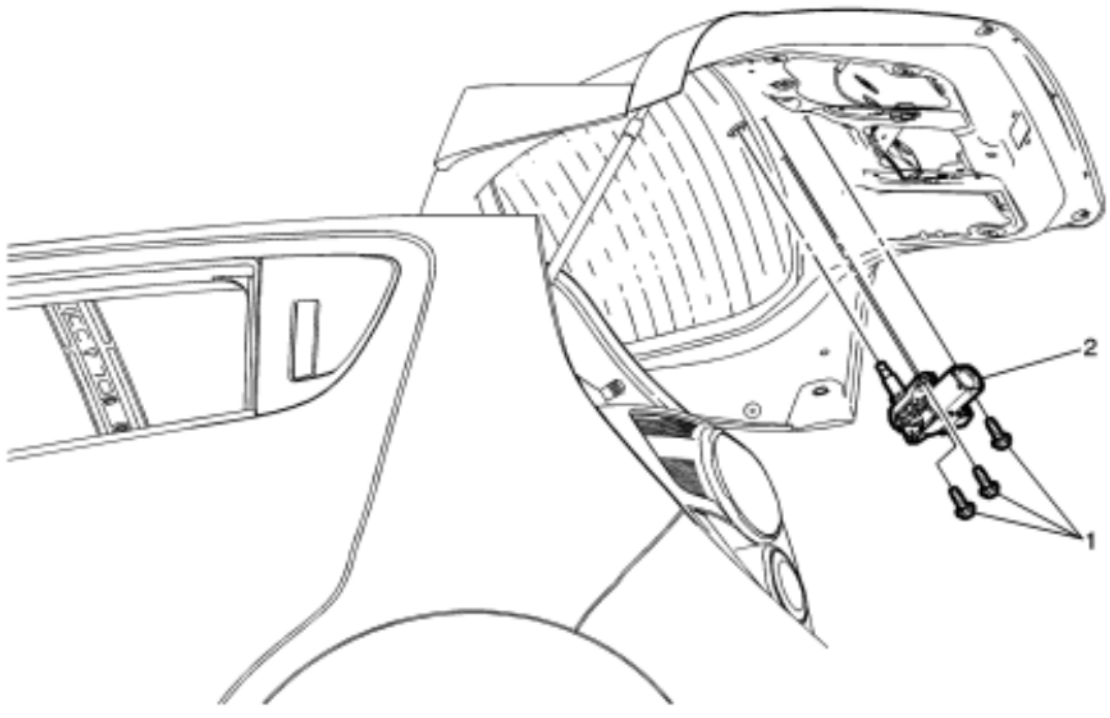


Callout	Component Name
Preliminary Procedure Remove the wiper system module. Refer to Windshield Wiper System Module Replacement	
1	Windshield Wiper Motor Bracket Screw (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 8.5 N·m (75 lb in)
2	Windshield Wiper Motor **Procedure** 1. Use a wiper linkage separator or similar tool, separate the transmission drive link from the wiper motor crank arm ball stud. 2. Use a wiper linkage installer or similar tool, install the transmission drive link onto the wiper motor crank arm ball stud. **Tip** Apply a small amount of grease to the inner cup on the transmission link to aid in installation.

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Rear Window Wiper Motor Replacement (Hatchback)

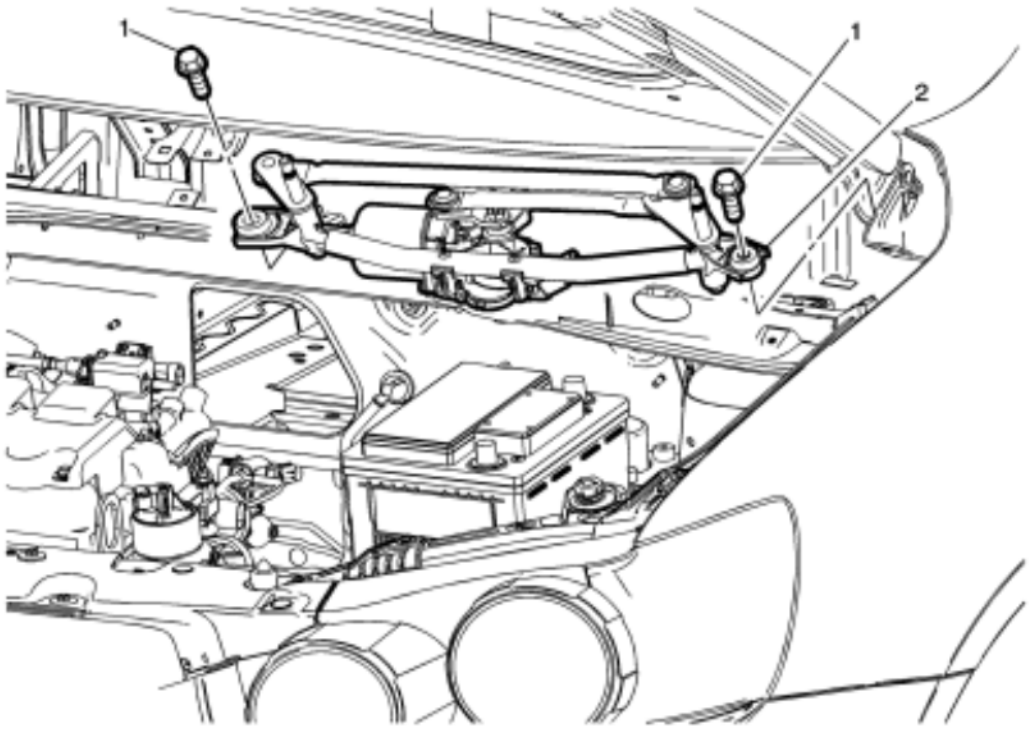


Callout	Component Name
Preliminary Procedure 1. Open and support the liftgate assembly. 2. Remove the rear window wiper arm assembly. Refer to Rear Window Wiper Arm Replacement . 3. Remove the rear liftgate trim finish panel. Refer to Liftgate Trim Finish Panel Replacement . 4. Disconnect the rear window wiper motor electrical connector.	
1	Rear Window Wiper Motor Bolt (Qty: 3) **Caution:** Refer to Fastener Caution . **Tighten** 9 N·m (80 lb in)
2	Rear Window Wiper Motor **Procedure** 1. Pull the rear window wiper motor inward from the rear liftgate. 2. Release the wiper motor pivot shaft from the rear window wiper motor window grommet. 3. Carefully remove the rear window wiper motor from the liftgate inner panel assembly.

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Windshield Wiper System Module Replacement

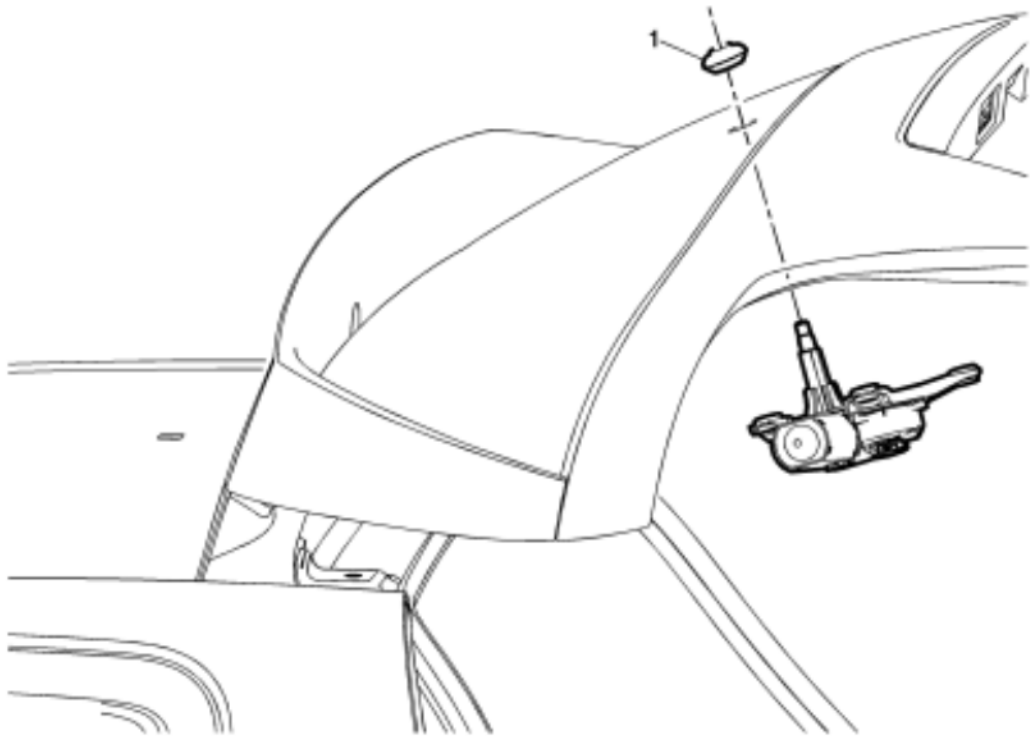


Callout	Component Name
Preliminary Procedures 1. Open and support the hood assembly. 2. Remove the air inlet grille panel. Refer to Air Inlet Grille Panel Replacement .	
1	Windshield Wiper System Module Bolt (Qty: 2) **Caution:** Refer to Fastener Caution . **Tighten** 18 N·m (13 lb ft)
2	Windshield Wiper System Module **Procedure** 1. Lift the wiper system module from the plenum brackets. 2. Disconnect the electrical connector from the windshield wiper motor. 3. Remove the windshield wiper system module from the plenum.

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Rear Window Wiper Motor Grommet Replacement



Callout	Component Name
Preliminary Procedure Remove the rear window wiper motor. Refer to Rear Window Wiper Motor Replacement .	
1	Rear Window Wiper Motor Grommet **Tip** Apply some lubricant to the outside of the grommet upon installation to aid in installation through the liftgate glass opening.

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Windshield Glass Cleaning

Clean the windshield with windshield cleaner, or equivalent. The cleaner should not harm the paint finish or scratch the glass. The glass is clean when the water no longer beads, but sheets across the entire glass surface.

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Wiper Blade Element Cleaning

Lift each blade assembly off of the windshield and clean the element with a cloth saturated with full strength washer solvent. Then rinse the blade assemblies with clear water.

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Wiper Chatter Repair

Some vehicles may exhibit a condition where the windshield wipers chatter and/or wipe unevenly. Several items may contribute to this condition. To completely repair this condition, ALL of the items listed should be tested and repaired as necessary.

- Clean the windshield glass. Refer to Windshield Glass Cleaning .
- Clean the wiper blade elements. Refer to Wiper Blade Element Cleaning .
- Inspect the wiper blade element set.

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Wiper/Washer System Description and Operation

Wiper/Washer System Components

The wiper/washer system consists of the following electrical components:

- Windshield Wiper Relay
- Windshield Wiper Speed Control Relay
- Windshield Washer Pump Relay
- Windshield Washer Fluid Pump
- Windshield Wiper Motor
- Window Wiper/Washer Switch
- Windshield Wiper Motor Fuse
- Windshield Washer Fluid Pump Fuse
- Body Control Module (BCM)
- Rear Window Wiper Motor
- Rear Window Wiper Motor Fuse
- Rear Window Wiper Relay
- Rear Window Washer Pump Relay
- Rear Window Washer Pump Fuse

Windshield Wiper System

The body control module (BCM) determines the front wipe/wash system mode of operation by monitoring several signals from the front wipe/wash switch as indicated in the wiper switch.

The front wipe/wash switch receives a reference ground signal from the BCM. Each input of the BCM provides a switched battery pull -up for each front wiper/washer switch output signal it receives. All the BCM inputs are recognized as active when the wiper switch provides a path to the referenced ground signal. The first signal received by the BCM is the result of 6 resistors in the front wiper switch configured as a resistor ladder network. This signal is connected to a BCM analog to digital input. Depending on the function selected (High, Low, Intermittent 1 thru 5, Mist, Off), the front wiper control switch connects a different set of resistors into the circuit resulting in different voltages appearing on the BCM A/D input. By monitoring this voltage, the BCM determines how to control the wiper motor On/Off Relay. It should be noted that High, Low, and Mist all have the same value on this signal circuit. The second signal received from the front wiper switch is active only when the front wiper switch is in the high speed wiper position. When the wiper switch is not in the high speed position, the switch is open and the signal circuit is pulled to battery by the BCM. When the wiper switch is in the high speed position, the switch pulls the circuit low. The BCM determines how to control the Wiper high/low speed relay from this input. The third signal received from the front wiper switch is from the momentary windshield wash control switch. When the washer switch is not active the switch is open and the signal circuit is pulled to battery by the BCM. When the washer switch is active, the switch pulls the circuit low. The BCM controls the windshield wash and windshield wash activated wiper operation based on this input.

The BCM controls front wiper motor operation through two output signals and the monitoring of one input signal. The two outputs (one high side drive, one low side drive) are used to control two external wiper motor relays: front wiper motor on/off relay: which provides the wiper motor with battery power when it is activated by the high side drive signal (switched battery) from the BCM. When left deactivated, the normally closed contacts provide a ground to the wiper motor. Wiper high/low speed relay: when activated by a low side drive signal (ground) from the BCM, it switches the power supplied by the wiper motors on/off relay to the motors high speed input. When left deactivated, the normally closed contacts connect the power supplied by the wiper motors on/off relay to the motors low speed input. The input used by the BCM is from the park switch located in the wiper motor assembly. When the wiper blades are not in the park position, the wiper park switch is open and the circuit is pulled up to battery by the BCM. When the wiper blades are in the park position at the bottom of the glass, the wiper park switch closes to ground pulling the park signal circuit low.

To initiate low speed operation, the BCM only energizes the front wiper motor on/off relay. This allows battery voltage from the wiper fuse to be applied through the switched contacts of the wiper motor on/off relay, through the normally closed contacts of the wiper high/low speed relay, to the low speed control circuit of the windshield wiper motor.

Redundant high speed switch pass through. The BCM provides redundant circuitry which places battery power on its wiper motor on/off relay output with activation of its low assertion high speed wiper switch input. The BCM shall be capable of doing this, even if the module has lost all microprocessor control. This redundant circuit shall supply power while in the RUN and CRANK power modes. however; while in the CRANK power mode, the pass through shall only be active if the BCM is NOT in a computer operating properly state.

To initiate high speed operation, the BCM energizes both the front wiper motor on/off relay and the wiper high/low speed relay . This allows battery voltage from the wiper fuse to be applied through the switched contacts of the wiper motor on/off relay, through the switched contacts of the wiper high/low speed relay, to the high speed control circuit of the windshield wiper motor.

Parking the wiper motor. In order to perform an accurate read of the park switch and to ensure the wipers will come to rest while still in the park position, parking of the wipers only occurs while in a low speed wiper mode. This requires that if the wipers are performing a high speed wiper operation at the time they are required to park, the BCM shall transition the Wipers to low speed by deactivating the wiper high/low relay before attempting to park. In order to park the wipers, the BCM monitors the park circuit until the park switch pulls the park circuit to ground. At this time, the BCM will immediately deactivate the wiper motor on/off relay. The relay contacts will switch back to their normally closed position and will apply ground to the wiper motor power inputs through the normally closed contacts of the wiper high/low relay. This deactivates and dynamically brakes the wiper motor in the park position. When the wiper switch is turned to the OFF position while the wiper motor is somewhere in mid-cycle, the BCM will continue to operate the motor until the wipers reach the park position. If the BCM is running the wiper motor and does not see a state transition of the park switch after 8 s, the wipers will stop immediately when the wiper switch is turned to OFF. If the ignition is turned OFF while the wipers are in mid-cycle, the wipers will stop immediately, regardless of position. The BCM will park the wipers next time the ignition is turned ON.

The windshield wiper system MIST operation is identical to LOW speed operation, except that the MIST switch is a press and release type switch. When the wiper switch is moved to the MIST position and released, low speed wiper motor operation is started and will continue until 1 cycle is complete. If the wiper switch is moved to the MIST position and held, the wiper motor will operate in the LOW speed mode until the switch is released.

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Windshield wiper intermittent operation is a low speed wiper motor function with a variable delay interval between the wiper motor cycles. The duration of the delay is controlled by the front wiper control switches intermittent 1 thru intermittent 5 settings. The wiper operation is as follows

1. The BCM will initiate a single wipe by activating its front wiper ON/OFF relay output.
2. At the completion of a single wipe, the BCM will park the wipers as described above.
3. The BCM will then pause the wipers in their park position for the time duration associated with intermittent delay switch setting.
4. When the delay time expires repeat Steps 1 and 3 until the system is turned off or taken out of intermittent mode. If the wiper switch is moved from a longer delay interval to a shorter delay interval, the BCM will command an immediate wipe cycle and reset the delay timer to the shorter delay interval.

Intermittent wiper operation may be vehicle speed sensitive. When enabled, the speed compensated intermittent feature causes the intermittent wiper delay intervals to become shorter as a function of increased speed. As vehicle speed is reduced the intervals will become closer to the predetermined

Windshield Washer System

The BCM controls the windshield wash operation and windshield wash activated wiper operation. When the BCM detects the activation of the momentary windshield wash control switch, it activates its washer pump relay drive output which supplies battery power to the coil of the washer pump relay. This energizes the relay, which switches battery power to the pump motor. The BCM will also activate continuous low speed windshield wipes as described above. Upon deactivation of the windshield wash control switch, the wiper control module (BCM) shall deactivate the wash motor and will also park the wiper motor as described above unless the drip wipe feature is enabled. On some vehicles the drip wipe feature will be enabled and cause the system to provide additional wiping of the windshield after the switch has been released and fluid is no longer being applied. The front wash feature may attempt to detect a stuck switch. When enabled, activation of the wash feature shall be limited to 10 seconds.

On vehicles with the Rear Wash feature a single reversing wash motor may be utilized for both the front and rear wash operation. In this system the wash motor is operated in one direction to spray fluid on the front windshield and then operated in the reverse direction to spray fluid on the rear window. The BCM Controls the reversing wash motor through two High Side Drive outputs. One controls the Front Wiper Motor Relay and one controls the Rear Wiper Relay.

Rear Wiper System

On vehicles equipped with a Rear Wiper, the BCM determines of the Rear Wipe/Wash System Mode of Operation by monitoring the multiplexed output of the Rear Wipe/Wash Switch. The Rear Wipe Wash Switch uses a reference ground signal from the BCM. The BCM provides a switched Battery pull-up for the Rear Wiper/Washer Switch output signal it receives. All the BCM inputs are recognized as active when the Rear Wiper Switch provides a path to the referenced ground signal. The Rear Wiper/Washer signal received by the BCM is the result of 3 resistors in the Rear Wiper Switch configured as a resistor ladder network. This signal is connected to a BCM Analog to Digital Input which also provides a switched Battery pull-up for the circuit. Depending on the function selected (Low, Intermittent, Off, Wash), the Rear Wiper Control Switch connects a different set of resistors into the circuit resulting in different voltages appearing on the BCM A/D input. By monitoring this voltage, the BCM determines how to control the Rear Wiper Motor Relay and the Rear Washer Relay.

The BCM Controls the single speed Rear Wiper Motor by its Active High output to the external Rear Wiper Motor Relay. When the BCM activates its output and applies Battery to the coil of the relay, the relay energizes, allowing Battery voltage from the fuse to be applied through the switched contacts of the Rear Wiper Motor Relay to the Rear Wiper Motors control input. The motor then operates continuously at low speed. The BCM does not control the parking of the Rear Wiper Motor, it is self parking. When the BCM deactivates its output, the contacts of the Rear Wiper Motor Relay switch back to ground which will be used by the wiper for Dynamic Braking. The Rear Wipers internal park switch and circuitry will sustain motor operation until the wiper arm has returned to its Park position.

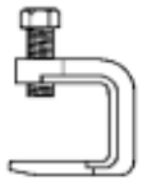
Rear Wash

When the Body Control Module detects that the Rear wiper/wash switch has activated the momentary Wash switch, it activates a High Side Drive output which supplies Battery to the coil of the Rear Washer Pump Relay. This energizes the Relay, which switches Battery Power to the Washer Pump Motor. The BCM will also activate continuous Low Speed Windshield Wipers as described above. The BCM software will attempt to detect a stuck Rear Wash Switch. A stuck Rear Wash Switch condition is detected if the Rear Wash Motor Relay Output has been continuously active for 10 seconds or more. Upon detecting this the BCM will fail soft the state of the Rear Wash Control to Inactive. This shall cause the System to perform as if the momentary Wash control had been released.

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Special Tools

Illustration	Tool Number/Description
	BO-49385 BO-6626 KM-6626 S0201912 Wiper Arm Puller

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