Body Repair

Collision Repair

Specifications

Fastener Specifications

<table>
<thead>
<tr>
<th>Application</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-Car Brace Mounting Bolts</td>
<td>25 Y, 18 lb ft</td>
</tr>
<tr>
<td>Windshield Frame Mounting Bolts</td>
<td>25 Y, 18 lb ft</td>
</tr>
</tbody>
</table>

Blind Rivet

<table>
<thead>
<tr>
<th>Code</th>
<th>GM Part Number</th>
<th>Grip Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR1</td>
<td>19353808</td>
<td>1.5–3.5 mm</td>
</tr>
<tr>
<td>SR2</td>
<td>19353809</td>
<td>3.3–5.3 mm</td>
</tr>
<tr>
<td>SR3</td>
<td>19353806</td>
<td>4.8–6.8 mm</td>
</tr>
<tr>
<td>SR4</td>
<td>11612252</td>
<td>1.2–6.3 mm</td>
</tr>
<tr>
<td>SR5</td>
<td>11610245</td>
<td>2.03–9.53 mm</td>
</tr>
</tbody>
</table>

Flow Drill Screw (FDS)

<table>
<thead>
<tr>
<th>Type</th>
<th>Part Number</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production FDS</td>
<td>11547009</td>
<td>5 Y minimum</td>
</tr>
<tr>
<td>Service FDS</td>
<td>11547380</td>
<td>5 Y minimum</td>
</tr>
</tbody>
</table>
Tighten screw to achieve a fully driven, seated and not stripped fastener, ensure screw is fully seated.

**Stripped FDS**
Do not increase original FDS hole size, using Service FDS tighten screw to achieve a fully driven and fully seated.

**New FDS Hole for Production and Service**
- Pilot hole for production FDS 4.0 mm
- Pilot hole for service FDS 5.4 mm
- Clearance hole for FDS 7.0 mm
Dimensions - Body

Point-to-point measurements are for reference only. All measurements are given in millimeters. Use these measurements for diagnosing and estimating. Point-to-point measurements are duplicated with tram bar pointers set at equal lengths. All die marks, holes, slots, and fasteners are measured to the center. All dimensions are symmetrical unless otherwise specified.

Point to Point Measurements

[Diagram showing measurements 1101.01 mm and 1147.48 mm]
Point to Point Measurements

- 1429.99 mm
- 1773.48 mm
- 886.85 mm
## Structure Identification

<table>
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<tr>
<th>Number</th>
<th>Description</th>
<th>Material</th>
<th>Procedure</th>
</tr>
</thead>
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<tr>
<td>1</td>
<td>Rear Compartment Panel Frame</td>
<td>Sheet Molded Compound (SMC)</td>
<td>Rear Compartment Panel Frame</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Panel Bonding</td>
<td>Replacement</td>
</tr>
<tr>
<td>2</td>
<td>Windshield Frame</td>
<td>Aluminum</td>
<td>Windshield Frame Replacement</td>
</tr>
<tr>
<td>3</td>
<td>Front Wheelhouse</td>
<td>Sheet Molded Compound (SMC)</td>
<td>Front Wheelhouse Panel Replacement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Panel Bonding</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Side Door Frame Opening</td>
<td>Sheet Molded Compound (SMC)</td>
<td>Side Door Opening Frame Replacement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Panel Bonding</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Floor Panel</td>
<td>Sheet Molded Compound (SMC)</td>
<td>Floor Panel Replacement</td>
</tr>
<tr>
<td></td>
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<td>Panel Bonding</td>
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</tr>
<tr>
<td>6</td>
<td>Rear Compartment Panel</td>
<td>Sheet Molded Compound (SMC)</td>
<td>Rear Compartment Panel Replacement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Panel Bonding</td>
<td></td>
</tr>
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</table>
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<th>Description</th>
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<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hood Plate Stud</td>
<td>Aluminum</td>
<td>Hood Plate Stud Replacement</td>
</tr>
<tr>
<td>2</td>
<td>Front Bumper Impact Bar</td>
<td>Aluminum</td>
<td>Front Bumper Impact Bar Replacement</td>
</tr>
<tr>
<td>3</td>
<td>Front Rail (Front Section)</td>
<td>Aluminum</td>
<td>Front Rail Replacement (Front Section)Front Rail Replacement (Rear Section)</td>
</tr>
<tr>
<td>4</td>
<td>Front Rail Section (Rear Section)</td>
<td>Aluminum</td>
<td>Front Rail Replacement (Front Section)Front Rail Replacement (Rear Section)</td>
</tr>
<tr>
<td>5</td>
<td>Front Body Hinge Pillar</td>
<td>Aluminum</td>
<td>Front Hinge Pillar Body Replacement</td>
</tr>
<tr>
<td>6</td>
<td>Front Door Lock Pillar</td>
<td>Aluminum</td>
<td>Body Lock Pillar Outer Panel Replacement</td>
</tr>
<tr>
<td>Page</td>
<td>Description</td>
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<td>Details</td>
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</tr>
<tr>
<td>7</td>
<td>Rear Rail Replacement (Front Section)</td>
<td>Aluminum</td>
<td>Rear Rail Replacement (Front Section)</td>
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<td>Aluminum Replacement (Front Section)</td>
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</tr>
<tr>
<td>8</td>
<td>Rear Rail Replacement (Rear Section)</td>
<td>Aluminum</td>
<td>Rear Rail Replacement (Front Section)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Rear Rail Replacement (Rear Section)</td>
</tr>
<tr>
<td>9</td>
<td>Rear Bumper Impact Bar</td>
<td>Aluminum</td>
<td>Rear Bumper Impact Bar Replacement</td>
</tr>
</tbody>
</table>
Repair Instructions

Front Bumper Impact Bar Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

1. Disable the SIR system. Refer to SIR Disabling and Enabling.
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
3. Remove all related panels and components.
4. Note the location and remove the sealers and anti-corrosion materials from the repair area. Refer to Anti-Corrosion Treatment and Repair.

Note:

- Hand tools, saw blades and abrasives used for aluminum repairs should be dedicated for aluminum only to prevent contamination.
- When removing welds, favor the bumper bar side of the weld joint.

5. Locate and remove all factory welds (1) attaching the front bumper bar to the front frame rails. Note the location of the welds for installation of the new bumper bar.

6. Remove the damaged bumper bar (1).
7. Remove pieces of the bumper bar which are left attached to the rail ends.
8. Straighten and deburr the rail ends. Keep the perimeter and shape of the rail end as original as possible.

Installation Procedure
1. Dry fit the bumper bar for proper fit and alignment before welding.
   
   **Note:** Use a stainless steel brush to remove the oxide layer prior to welding.

2. Clean and prepare all of the welded mating surfaces.

3. Install the front bumper bar (1).

4. Position the bumper bar to the vehicle using 3-dimensional measuring equipment.
5. Using a MIG welder, equipped with PULSE technology (P-MIG), weld (1) the bumper bar to the frame rail ends duplicating the factory welds.

6. Apply the sealers and anti-corrosion materials to the repair area. Refer to Anti-Corrosion Treatment and Repair.

7. Paint the repair area. Refer to Basecoat/Clearcoat Paint Systems.

8. Install all related panels and components.

9. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.

10. Enable the SIR system. Refer to SIR Disabling and Enabling.
Hood Plate Stud Replacement

Removal Procedure

The hood anchor plate assembly is riveted to the inside of the front frame rail. Access to the hood plate assembly will require the removal of the welded front bumper bar.

**Warning:** Refer to Approved Equipment for Collision Repair Warning.

1. Disable the SIR system. Refer to SIR Disabling and Enabling.
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
3. Remove all related panels and components.
4. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
5. Remove the hood hinge. Refer to Hood Hinge Replacement.
6. Remove the front impact bar. Refer to Front Bumper Impact Bar Replacement.

7. Drill out the two retaining rivets (1) holding the hood hinge bolt bracket.
8. Remove the broken hinge bolt.

Installation Procedure

**Note:** Replacement fasteners used with aluminum frames requires a tin-zinc coating to prevent galvanic corrosion.

1. Install replacement part.
2. Install the hood hinge retaining bolt bracket rivets.
3. Install the front impact bar. Refer to Front Bumper Impact Bar Replacement.
4. Install the hood hinge. Refer to Hood Hinge Replacement.
5. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems.
6. Apply the sealers and the anti-corrosion materials to the repaired area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
7. Install all related panels and components.
8. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
9. Enable the SIR system. Refer to SIR Disabling and Enabling.
Front Wheelhouse Panel Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

The front wheelhouse is comprised of 2 types of materials. These include sheet molded compound (SMC) for the inner panel and carbon fiber for the outer panel. The wheelhouse is bonded to the front structure and frame rail with structural adhesive.

1. Disable the SIR system. Refer to SIR Disabling and Enabling.
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
3. Remove all related panels and components.
4. Remove the wheelhouse by applying heat and pry to detach adhesive along the bonding surface (1).
5. Remove the wheelhouse (1) from the vehicle.
6. Save any and all brackets, mounting studs, and accessories for transfer to the new front wheelhouse.
7. Note the location of the adhesive and remove all remaining loose adhesive.
8. Inspect the front structure and frame rails for damage.
9. Repair as much of the damage as possible to the factory specifications.

**Installation Procedure**

**Note:** Shims may be necessary to achieve proper panel alignment.

1. Before applying adhesive dry fit the wheelhouse, fender and hood for proper fit and alignment.
   **Note:** DO NOT top coat any bonding surface. Use primer only on bonding surfaces. Refer to adhesive manufacturer's recommendations.
2. Clean and scuff all bonding mating surfaces according to adhesive manufacturer's recommendations.
3. Inspect old wheelhouse for factory adhesive bond line. Apply a consistent bead of structural adhesive (1) 10 mm (3/8 in) in diameter to the wheelhouse to mate with the front structure and frame rail. Refer to Sheet Molded Compound (SMC) Panel Bonding.
4. Install the wheelhouse (1) to the vehicle.
5. Apply pressure to the wheelhouse to set the adhesive.
6. Clamp or mechanically fasten the wheelhouse into place as necessary.
7. Remove any excess adhesive and let dry to manufactures specifications.
8. Install all related panels and components.
9. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
10. Enable the SIR system. Refer to SIR Disabling and Enabling.
Front Floor Panel Replacement (Extension)

Special Tools

J-42058 Frame Adapter Clamp
For equivalent regional tools, refer to Special Tools

Removal Procedure

**Warning:** Refer to Approved Equipment for Collision Repair Warning.

**Note:** Left shown right similar.

1. Disable the SIR system. [SIR Disabling and Enabling](#).
2. Disconnect the battery negative cable. [Battery Negative Cable Disconnection and Connection](#).
3. Remove all related panels and components.
4. Remove front floor panel carpet. [Front Floor Panel Carpet Replacement - Left Side](#).
5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. [Anti-Corrosion Treatment and Repair](#).
6. Use J-42058 frame adapter clamp, or equivalent, to secure the vehicle.

**Note:** Hand tools, saw blades and abrasives used for aluminum repairs should be dedicated for aluminum only in order to prevent contamination.
Note: Save all removed flow drill screws.

7. Remove flow drill screws (1) [4X].
   
   Note: Drill through top layer only.

8. Remove spot welds (2) [6X].

Warning: When separating the aluminum panels during collision repair, be sure to adhere to the following precautions:
   
   - Do not use an open flame
Focus heat onto panel being replaced and do not exceed 200°C (392°F) for 3 consecutive minutes
Use care not to damage adjacent panel while prying the panels apart
Failure to follow the precautions may lead to vehicle damage or personal injury.

9. Apply heat to front floor extension (1) to release adhesive and remove extension panel.
10. Remove remaining adhesive from body joining areas using care not to thin parent metal.

Installation Procedure

1. Temporarily install replacement floor extension panel.

2. Install flow drill screws (1) to ensure alignment of new part [4X].
   Note: Mark drill bit to drill only depth needed to install rivet body.
   Note: If rivet hole goes through top side of floor, hole will have to be properly sealed from passenger compartment side after rivets are installed.

3. Drill 6.6 mm holes (2) for structural blind rivets SR2 in location of previous spot welds [3X].

4. Drill 6.6 mm holes (3) for structural blind rivets SR5 in location of previous spot welds [3X].

5. Remove flow drill screws (1) one at a time and drill holes to 7/32" or 5.6 mm for service flow drill screws while maintaining position of part on structure.

6. Remove replacement panel.
Note: Only remove E-coat where adhesive will be applied.

7. Clean and prepare all mating surfaces for structural adhesive according to manufacturer's recommendations (1). Aluminum Panel Bonding (Non-Structural)/Aluminum Panel Bonding (Structural).

8. Apply structural adhesive (1) to mating surfaces of replacement floor panel extension and body structure according to adhesive manufacturer's recommendations. Aluminum Panel Bonding (Non-Structural)/Aluminum Panel Bonding (Structural).

Note: Right side shown, for left side continue to step 12.

Note: Ensure flow drill screws are fully seated and not stripped with a minimum torque of 5 Y.

9. Install flow drill screws (1) [3X].

10. Install structural blind rivets SR1 (2) [3X].

11. Install structural blind rivet SR5 (3) [1X].
Note: Ensure flow drill screws are fully seated and not stripped with a minimum torque of 5 Y.

12. Install replacement floor panel extension on vehicle.
13. Install flow drill screws (1) to aid in locating panel [4X].
14. Install structural blind rivets (2) (SR2) [3X].
15. Install structural blind rivets (3) (SR5) [3X].
17. Apply the sealers and anti-corrosion materials to the repair area as necessary. Anti-Corrosion Treatment and Repair.
19. Install all related panels and components.
20. Connect the battery negative cable. Battery Negative Cable Disconnection and Connection.
21. Enable the SIR System. SIR Disabling and Enabling.
Front Hinge Pillar Body Replacement

Removal Procedure

Note: When welding cast aluminum recommend wire alloy is 4043 and the recommend wire size is 0.035. The shielding gas is 100 percent Argon.

The front hinge pillar panel is bolted, welded, and bonded with structural adhesive to the side structure and frame rail. The replacement front hinge pillar panel is comprised of two types of materials. These include 6063 aluminum for the upper panel and A356 cast aluminum for the lower panel. You must remove and replace the side door opening panel in order to replace the front hinge pillar.

Warning: Refer to Approved Equipment for Collision Repair Warning.

1. Disable the SIR system. Refer to SIR Disabling and Enabling.
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to Dimensions - BodyDimensions - Body (Motor Compartment - Corvette).
5. Note the location of the sealers and the anti-corrosion materials and remove these components from the repair area as necessary. Refer to Anti-Corrosion Treatment and Repair.
6. Remove the bolts (1) attaching the front hinge pillar to the windshield frame.
Note: Do NOT damage the inner panels or the reinforcements.

Note: Hand tools, saw blades and abrasives used for aluminum repairs should be dedicated for aluminum only to prevent contamination.

7. Locate and remove all factory welds (1) from the front outer hinge pillar. Note the number and location of the welds for installation of the new hinge pillar.

8. Locate and remove all factory welds (1) from the rear outer hinge pillar. Note the number and location of the welds for installation of the new hinge pillar.

9. Locate and remove all factory welds (1) from the inner hinge pillar. Note the number and location of the welds for installation of the new hinge pillar.
10. Remove the damaged hinge pillar.

11. Note the location of the adhesive and remove all remaining loose adhesive.

Installation Procedure

1. Before applying the adhesive, dry fit the hinge pillar for proper fit and alignment.
   
   **Note:** Use primer only on bonding surfaces. Do NOT top coat any bonding surfaces. Refer to the adhesive manufacture's recommendation.

2. Clean and prepare all bonding mating surfaces according to the adhesive manufacturer's recommendations.

3. Apply a consistent bead of structural adhesive 10 mm (3/8 in) in diameter to mate with the bonding surfaces. Refer to [Sheet Molded Compound (SMC) Panel Bonding](#).

4. Position the hinge pillar to the vehicle using 3-dimensional measuring equipment.

   **Caution:** Refer to [Fastener Caution](#).

5. Install the bolts (1) that attach the windshield frame to the front hinge pillar and tighten to 25 Y (18 lb ft).

   **Note:** Use a stainless steel brush to remove the oxide layer prior to welding.

6. Prepare all welding attachment surfaces as necessary.

   **Note:** Recommend wire alloy is 4043 and wire size is 0.035. The shielding gas is 100 percent Argon. A 2 minute cooling down period is recommend for every 2 minutes or 100 mm (4 in) of welding.

   Using a PULSED-MIG welder, tack weld the hinge pillar to the vehicle.
7. Using a PULED-MIG welder, stitch weld the front outer hinge pillar to the vehicle in the locations noted on the original panel.

8. Using a PULED-MIG welder, stitch weld the rear outer hinge pillar to the vehicle in the locations noted on the original panel (1).

9. Using a PULED-MIG welder, stitch weld the inner hinge pillar to the vehicle in the locations noted on the original panel.

10. Apply the sealers and the anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.


12. Install all related panels and components.
13. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.

14. Enable the SIR system. Refer to SIR Disabling and Enabling.
**Body Lock Pillar Outer Panel Replacement**

**Removal Procedure**

**Warning:** Refer to Approved Equipment for Collision Repair Warning.

1. Disable the SIR system. Refer to SIR Disabling and Enabling.

2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.

3. Remove all related panels and components.

4. Repair as much of the damage as possible to factory specifications. Refer to Dimensions - Body Dimensions - Body (Motor Compartment - Corvette).

**Warning:** Refer to Sound Deadener Foam in the Lock Striker Pillars Warning.

5. Note the location of the sealers and anti-corrosion materials and remove these components from the repair area as necessary. Refer to Anti-Corrosion Treatment and Repair.

6. Locate and remove all factory welds (1). Note the number and the location of the welds for installation of the replacement part.
7. Remove the damaged outer lock pillar.

Installation Procedure

1. Position the outer lock pillar.

2. Clean and prepare all mating surfaces, as necessary for welding.

3. Drill 8 mm (5/16 in) for plug welding around the perimeter of the outer lock pillar (1) as noted from the original panel.
4. Verify the fit of the outer lock pillar reinforcement.

5. Clamp the outer lock pillar into position

**Note:** Recommended wire alloy is 5554 and wire size is 0.035. The shielding gas is 100 percent Argon.

6. Using a PULSED-MIG (P-MIG) or Resistance Welder, weld the lock pillar to the structure duplicating the factory welds (1).

7. Apply the sealers and the anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.


9. Install all related panels and components.

10. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.

11. Enable the SIR system. Refer to SIR Disabling and Enabling.
Rear Bumper Impact Bar Replacement

Removal Procedure

**Warning:** Refer to [Approved Equipment for Collision Repair Warning](#).

1. Disable the SIR system. Refer to [SIR Disabling and Enabling](#).
2. Disconnect the negative battery cable. Refer to [Battery Negative Cable Disconnection and Connection](#).
3. Remove all related panels and components.
4. Remove or reposition the wiring to avoid damage.
5. Repair as much of the damage as possible to the factory specifications.

6. Note the location and remove the sealers and anti-corrosion materials from the repair area. Refer to [Anti-Corrosion Treatment and Repair](#).

7. Using a heat gun, detach the adhesive from the rear bar (1) to the rear compartment panel. Apply heat along the top of the impact bar and pry apart to separate the impact bar from the rear compartment panel.

   **Note:** Do not cut into the frame rails.

8. Cut the welds around the perimeter of the frame rail ends. Cut the welds favoring the impact bar side of the joint.
9. To gain access to the inner rail welds, modify the rear wall of the SMC rear compartment panel in the following manner:
   - From inside the vehicle locate, mark, and cut out windows in the rear compartment panel.
   - Save the cutouts for re-installation.

10. Extract pieces of the impact bar which are left attached to the rail ends.

11. The windows provide access to the MIG welds (1) attaching the impact bar to the rails.

12. Cut the remaining welds around the perimeter of the impact bar, favoring the impact bar side of the joint.

13. Remove the damaged impact bar.

14. Extract pieces of the impact bar which are left attached to the rail ends.

15. Straighten and deburr the rail ends. Keep the perimeter and shape of the rail ends as original as possible.

**Installation Procedure**

1. Temporarily position the impact bar for proper fit and alignment.

2. Clean and prepare all of the welded surfaces.

3. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to [Anti-Corrosion Treatment and Repair](#).

   **Note:** DO NOT top coat the bonding surface of the rear bar. Use primer only on bonding surfaces. Refer to adhesive manufacturer's recommendations.

4. Clean and prepare all bonding mating surfaces according to adhesive manufacturer's recommendations.

5. Apply a consistent bead of structural adhesive to the top impact bar to bond to the rear compartment panel. Refer to [Sheet Molded Compound (SMC) Panel Bonding](#).

6. Position the bumper impact bar to the vehicle using 3-dimensional measuring equipment.
7. Using a metal inert gas (MIG) welder, stitch weld the rear bar to the frame rail ends.

   **Note:** Recommend wire alloy is 5554 and wire size is 0.035. The shielding gas is 100 percent Argon. A two minute cooling down period is recommended for every 2 minutes or 100 m (4 in) of welding.

   **Note:** DO NOT top coat the bonding surface of the rear bar. Use primer only on bonding surfaces. Refer to adhesive manufacturer’s recommendations.

8. Clean and prepare all bonding mating surfaces according to adhesive manufacturer’s recommendations.

9. Apply a consistent bead of structural adhesive to the top impact bar to bond to the rear compartment panel (1). Refer to Sheet Molded Compound (SMC) Panel Bonding.

10. Reinstall the SMC cut outs

11. Apply the sealers and anti-corrosion materials to the repair area. Refer to Anti-Corrosion Treatment and Repair.


13. Install all related panels and components.

14. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.

15. Enable SIR system. Refer to SIR Disabling and Enabling.
Front Rail Replacement (Front Section)

Removal Procedure

**Warning:** Refer to Approved Equipment for Collision Repair Warning.

1. Disable the SIR system. Refer to SIR Disabling and Enabling.
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
3. Remove all related panels and components.
4. Remove the front impact bar. Refer to Front Bumper Impact Bar Replacement.
5. Note the location and remove the sealers and anti-corrosion materials from the repair area. Refer to Anti-Corrosion Treatment and Repair.
6. Inspect the front of the dash panel, floor panels, and all other sheet molded compound (SMC) for cracks or areas that may need to be repaired or resealed.

7. Remove the damaged section of frame rail. Cut the welds around the perimeter using a cut off wheel or equivalent tool. Grind off the remaining weld from the casting.

Installation Procedure

1. Dry fit the rail for proper fit and alignment before welding.
2. Clean and prepare all weld mating surfaces.
3. Position the front rail to the vehicle using 3-dimensional measuring equipment.

   **Note:** Recommend wire alloy is 5554 and wire size is .035. The shielding gas is 100 percent Argon. A two minute cooling down period is recommended for every 2 minutes or 100 mm (4 in) of welding.

   **Note:** Use a stainless steel brush to remove the oxide layer prior to welding.
4. Using a MIG Welder equipped with Pulse technology (P-MIG) welder, weld the front frame rail to the cast rail section duplicating the factory welds.
Note: If no trace of the original welds is present, follow the pattern specified for welding the rail to the cast rail section. Measurement shown are in millimeters.

5. Install the front impact bar. Refer to Front Bumper Impact Bar Replacement.

Note: Recommend wire alloy is 5554 and wire size is .035. The shielding gas is 100 percent Argon. A two minute cooling down period is recommended for every 2 minutes or 100 mm (4 in) of welding.

6. Apply the sealers and anti-corrosion materials to the repair area. Refer to Anti-Corrosion Treatment and Repair.

7. Paint the repair area. Refer to Basecoat/Clearcoat Paint Systems.

8. Install all related panels and components.

9. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.

10. Enable SIR system. Refer to SIR Disabling and Enabling.
**Front Rail Replacement (Rear Section)**

**Special Tools**

*J-42058 Frame Adapter Clamp*

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

**Removal Procedure**

**Warning:** Refer to [Approved Equipment for Collision Repair Warning](#).

**Note:** Left shown, right similar.

1. Disable the SIR system. [SIR Disabling and Enabling](#).
2. Disconnect the battery negative cable. [Battery Negative Cable Disconnection and Connection](#).
3. Remove all related panels and components.
4. Remove the front impact bar. [Front Bumper Impact Bar Replacement](#).
5. Remove front wheelhouse panel. [Front Wheelhouse Panel Replacement](#).
6. Remove front floor extension panel. [Front Floor Panel Replacement (Extension)](#).
7. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. [Anti-Corrosion Treatment and Repair](#).
8. Use *J-42058* frame adapter clamp, or equivalent, to secure the vehicle.
9. From outboard side of rail remove flow drill screws (1) from the front floor panel upper support [2X].
Remove attaching bolts (2) [2X].

10. From top side of rail remove flow drill screw (1) [1X].
11. From inboard and underside of rail remove flow drill screws (1) [6X] and attaching bolt (2) [1X].

12. From backside of rail remove attaching bolts (1) [2X] and flow drill screws (2) [4X].
13. Locate and remove factory MIG welds (1) [3X] from outboard and underside of rail.

14. Using cut-off wheel or equivalent, remove section of upper floor panel extension (1) to access factory MIG weld (2). Cut-out piece will be welded back on after installation of new rail.

15. Remove factory MIG weld (2).
16. From backside of rail remove factory MIG weld (1).

Warning: When separating the aluminum panels during collision repair, be sure to adhere to the following precautions:

- Do not use an open flame
- Focus heat onto panel being replaced and do not exceed 200°C (392°F) for 3 consecutive minutes
- Use care not to damage adjacent panel while prying the panels apart

Failure to follow the precautions may lead to vehicle damage or personal injury.
17. Apply heat to the panel in shaded area (1) to release adhesive.

18. Using a cut off wheel or equivalent tool make cuts (1) through casting of damaged rail using care not to cut into support braces (2) behind.

    **Note:** Removing cut out sections will allow movement of the rail when releasing adhesive in other areas of the rail joint.

19. Apply heat to the cut out areas (3) and remove.

20. Apply heat to panel (1) in shaded area to release adhesive.
21. From top of rail apply heat to panel in shaded area (1) to release adhesive.

22. Remove damaged rail assembly (1).

Installation Procedure

Note: Accurate and timely assembly methods must be used in order to meet proper bonding requirements.

Note: Dry fit all parts with proper clamping devices prior to final assembly to ensure full understanding of the assembly process.

Note: When using adhesive, ensure all necessary tools and materials are in place prior to final assembly.
1. Remove remaining adhesive from body joining areas using care not to thin parent metal.

2. Temporarily install replacement rail assembly (1). Ensure proper fit by measuring 3 dimensionally.

3. Drill 7/32" or 5.6 mm pilot holes (2) for service flow drill screws [3X].

4. Drill 7/32" or 5.6 mm pilot holes (1) for service flow drill screws [6X].
5. Drill 7/32" or 5.6 mm pilot holes (1) for service flow drill screws [4X].

6. Remove replacement rail assembly.

7. Apply structural adhesive (1) to mating surfaces of body structure according to adhesive manufacturer's recommendations. Aluminum Panel Bonding (Non-Structural) Aluminum Panel Bonding (Structural).
8. Apply structural adhesive (1) to mating surfaces of replacement rail assembly according to adhesive manufacturer’s recommendations. [Aluminum Panel Bonding (Non-Structural)] [Aluminum Panel Bonding (Structural)].

9. Install replacement rail assembly (1) on vehicle. Clamp or fixture as necessary. Measure 3 dimensionally to ensure proper alignment.
Note: Ensure flow drill screws are fully seated and not stripped with a minimum torque of 5 Y.

10. From outboard side of rail install service flow drill screws (1) [2X] and attaching bolts (2) [2X].

Note: Ensure flow drill screws are fully seated and not stripped with a minimum torque of 5 Y.

11. From top side of rail install flow drill screw (1) [1X].
Note: Ensure flow drill screws are fully seated and not stripped with a minimum torque of 5 Y.

12. From inboard and underside of rail install flow drill screws (1) [6X] and attaching bolt (2) [1X].

Note: Ensure flow drill screws are fully seated and not stripped with a minimum torque of 5 Y.

13. From backside of rail install attaching bolts (1) [2X] and flow drill screws (2) [4X].
Note: MIG welds should be installed using MIG welder equipped with Pulse Technology
Note: Recommended wire alloy is 5554 at 1.0 mm
Note: Shielding gas is 100 percent Argon
Note: Keep E-coat and paint 30 mm from weld area

14. Install MIG welds (1) from outboard and underside of rail matching factory welds [3X].

15. Install MIG weld at top of rail assembly (1) matching factory weld. Locate and weld in cut-out piece removed previously (2).
16. Install MIG weld (1) at backside of rail assembly matching factory MIG weld.

17. Clean weld area and install MIG welds to outboard side of replacement rail assembly joining extruded rail section (1) to cast rail section (2) [2X]. Top weld is 25 mm long (3). Bottom weld is 28 mm long (4).

19. Install front wheelhouse panel. Front Wheelhouse Panel Replacement
21. Apply the sealers and anti-corrosion materials to the repair area as necessary. Anti-Corrosion Treatment and Repair.
23. Install all related panels and components.
24. Connect the battery negative cable. Battery Negative Cable Disconnection and Connection.
25. Enable the SIR System. SIR Disabling and Enabling.
Windshield Frame Replacement

Removal Procedure

The windshield frame is made of cast aluminum components. The windshield frame is bonded and bolted to the front hinge pillars with structural adhesive. It is also braced to the tunnel assembly by a bolted and bonded cross car beam.

**Warning:** Refer to Approved Equipment for Collision Repair Warning.

**Note:** An attempt to repair the windshield frame may compromise the structural integrity of the vehicle. Complete replacement is recommended.

1. Disable the SIR system. Refer to SIR Disabling and Enabling.
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
3. Remove all related panels and components.
4. Drill out the close-end rivets securing the upper plenum to the windshield frame.
5. Remove the upper plenum (1) by removing the attaching bolts and applying heat and pry to detach the adhesive along the bonding surface.
6. Separate the lower plenum from the windshield frame by applying heat and pry to detach the adhesive along the bonding surface.
7. Remove the bolts attaching the cross-car brace.
8. Remove the cross car brace by applying heat and pry to detach the adhesive along the tunnel bonding surface.
9. Remove the bolts attaching the lower plenum and dash panel (1). Apply heat and pry to detach the adhesive along the bonding surfaces.

10. Remove the bolts (1) attaching the windshield frame to the front hinge pillars.

11. Remove the windshield frame (1) by applying heat and pry to detach the adhesive along the bonding surface.

12. Save any and all brackets, mounting studs, and accessories for transfer to the windshield frame.

13. Note the location of the adhesive and remove all remaining loose adhesive.

14. Inspect the structure and frame rails for damage.
15. Repair as much of the damage as possible to the factory specifications.

**Installation Procedure**

1. Before applying adhesive, dry fit the windshield frame for proper fit and alignment.

   **Note:** DO NOT top coat any bonding surface. Use primer only on bonding surfaces. Refer to adhesive manufacturer's recommendations.

2. Clean and prepare all bonding mating surfaces according to adhesive manufacturer's recommendations.

3. Apply a consistent bead of structural adhesive (1) 10 mm (3/8 in) in diameter to the windshield frame to mate with the bonding surfaces. Refer to Sheet Molded Compound (SMC) Panel Bonding.

4. Install the windshield frame (1) to the vehicle.
**Caution:** Refer to Fastener Caution.

5. Install the bolts (1) that attach the windshield frame to the front hinge pillar and tighten to 25 Y (18 lb ft).

6. Clamp or mechanically fasten the windshield frame into place.

7. Apply structural adhesive to bond the lower dash panel and lower plenum to the windshield frame. Refer to Sheet Molded Compound (SMC) Panel Bonding.

8. Drill holes and use close-end rivets to secure the lower plenum to the windshield frame while adhesive cures.

9. Apply the structural adhesive to the area where the cross-car brace bonds to the center tunnel assembly. Refer to Sheet Molded Compound (SMC) Panel Bonding.

10. Install the cross-car brace to the vehicle.

11. Install the cross-car brace bolts and tighten to 25 Y (18 lb ft).

12. Install all hardware attaching the instrument panel (I/P) supports to the windshield frame.

13. Apply a consistent bead of structural adhesive (1) to the bonding surfaces to mate with the upper plenum. Refer to Sheet Molded Compound (SMC) Panel Bonding.
14. Install the upper plenum (1) to the windshield frame.
15. Install the close-end rivets, in the factory locations, securing the upper plenum to the windshield frame.
16. Remove any excess adhesive.
17. Install all related panels and components.
18. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
19. Enable the SIR system. Refer to SIR Disabling and Enabling.
Side Door Opening Frame Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

The side door opening frame is made of sheet molded compound (SMC), and is bonded to the side structure and frame rail with structural adhesive.

1. Disable the SIR system. Refer to SIR Disabling and Enabling.

2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.

3. Remove all related panels and components.

Warning: Refer to Actions to Take When Working with Fuel Warning.

4. Verify that the fuel inlet is sealed before proceeding with repair procedure.

5. Remove the door frame by applying heat and pry to detach the adhesive (1) along the bonding surface.

6. Remove the door frame from the vehicle.

7. Note the location of the adhesive and remove only the loose adhesive.

8. Inspect the side structure and frame rails for damage.

Installation Procedure

1. Before applying adhesive dry fit the door frame for proper fit and alignment.

   Note: DO NOT top coat any bonding surface. Use primer only on bonding surfaces. Refer to adhesive manufacturer's recommendations.

2. Clean and prepare all bonding mating surfaces according to adhesive manufacturer's recommendations.

3. Dry fit the door frame and door for fit and alignment.
4. Apply a bead of High Viscosity Urethane to the side structure and frame rail and to all areas originally bonded.

5. Apply dollops of structural adhesive (1) to the original locations on the body side. Refer to Sheet Molded Compound (SMC) Panel Bonding.

6. Install the door frame on the vehicle.

7. Apply pressure to the door frame to set the adhesive.

8. Clamp or tape the door frame in place as necessary.

9. Remove any excess adhesive.

10. Install all related panels and components.

11. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.

12. Enable the SIR system. Refer to SIR Disabling and Enabling.
Warning: Refer to Approved Equipment for Collision Repair Warning.

1. Disable the SIR system. SIR Disabling and Enabling.
2. Disconnect the battery negative cable. Battery Negative Cable Disconnection and Connection.
3. Remove all related panels and components.
5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Anti-Corrosion Treatment and Repair.
6. Repair as much of the damage as possible to the factory specifications.
7. Inspect the floor panels and all other sheet molded compound (SMC) for cracks or areas that may need to be repaired or resealed.

Note: Hand tools, saw blades and abrasives used for aluminum repairs should be dedicated for aluminum only to prevent contamination.

8. Locate and remove all factory welds on the inboard side of the upper extension panel (1). Note the location of the welds for installation of the upper extension panel.
9. The upper extension is bonded along the inboard edge. Pry the extension upward while applying heat to the inboard edge of the panel along the bond line to separate.
10. Bend the extension upward at the rear to gain access to the top frame rail weld (1).
11. Locate and remove all factory welds (1) attaching the outer body extension panel to the structure. Note the location of the welds for installation of the new extension panel.

12. Remove the screws from the extension panel bracket (1).

13. Remove the screws from the floor panel bracket (1).

14. Favoring the center rail cut the welds around the perimeter using a cut off wheel or equivalent tool. Remove damaged rail and remove remaining weld from the center rail (1)
**Installation Procedure**

**Note:** Pre-Drill holes with 7/32 or 5.6 mm drill before installation of service screw. As noted from original part.

1. Install the screws for the extension panel bracket (1). Aluminum Panel Bonding (Non-Structural)/Aluminum Panel Bonding (Structural).

2. Install the screws for the floor panel bracket (1). Aluminum Panel Bonding (Non-Structural)/Aluminum Panel Bonding (Structural).

**Note:** Recommended wire alloy is 5554 and wire size is 1 mm (0.035 in). The shielding gas is 100 percent Argon.

3. Using a P-MIG welder, stitch weld the cast rail section (1) to the center rail duplicating the factory welds.
4. Using a P-MIG welder, add two stitch welds (1) to new rail joining cast section (2) to extruded section (3) duplicating factory welds.

5. Apply structural adhesive to the inboard side of the upper extension panel. (1). **Aluminum Panel Bonding (Non-Structural)**

   **Note:** Recommended wire alloy is 5554 and wire size is 1 mm (0.035 in). The shielding gas is 100 percent Argon.

6. Using a P-MIG welder, plug weld the upper extension panel (1) to the rail duplicating the factory welds.
Warning: Refer to Sound Deadener Foam in the Lock Striker Pillars Warning.

Note: Pre-Drill holes with 7/32 or 5.6 mm drill before installation of service screw.

Note: Recommended wire alloy is 5554 and wire size is 1 mm (0.035 in). The shielding gas is 100 percent Argon.

7. Using a P-MIG welder, plug weld the outer body extension panel (1) duplicating the factory welds.

Note: Pre-Drill holes with 7/32 or 5.6 mm drill before installation of service screw.

8. Install the service screws for the outer body extension panel (1).


10. Apply the sealers and anti-corrosion materials to the repair area as necessary. Anti-Corrosion Treatment and Repair.


12. Install all related panels and components.

13. Connect the battery negative cable. Battery Negative Cable Disconnection and Connection.

14. Enable the SIR System. SIR Disabling and Enabling.
Rear Rail Replacement (Rear Section)

Removal Procedure

**Warning:** Refer to [Approved Equipment for Collision Repair Warning](#).

1. Disable the SIR system. Refer to [SIR Disabling and Enabling](#).
2. Disconnect the negative battery cable. Refer to [Battery Negative Cable Disconnection and Connection](#).
3. Remove all related panels and components.
4. Remove the rear impact bar. Refer to [Rear Bumper Impact Bar Replacement](#).
5. Note the location and remove the sealers and anti-corrosion materials from the repair area. Refer to [Anti-Corrosion Treatment and Repair](#).

6. Remove the damaged section of frame rail. Cut the welds around the perimeter using a cut off wheel or equivalent tool. Grind off the remaining weld from the casting (1).

Installation Procedure

**Warning:** Refer to [Collision Sectioning Warning](#).

1. Dry fit the rail for proper fit and alignment before welding.
2. Clean and prepare all weld mating surfaces.
3. Position the rear rail to the vehicle using 3-dimensional measuring equipment.

**Note:** Recommend wire alloy is 5554 and wire size is 0.035. The shielding gas is 100 percent Argon.

A two minute cooling down period is recommended for every 2 minutes or 100 mm (4 in) of welding.

Use a stainless steel brush to remove the oxide layer prior to welding.

4. Using a PULSED-MIG (P-MIG) welder, weld the rear frame rail to the cast rail section duplicating the factory welds.
Note: If no trace of the original welds is present, follow the pattern specified for welding the rear rail to the cast rail section. Numbers represent measurement in millimeters.

5. Install the rear impact bar. Refer to Rear Bumper Impact Bar Replacement.

Note: Recommend wire alloy is 5554 and wire size is 0.035. The shielding gas is 100 percent Argon.

A two minute cooling down period is recommended for every 2 minutes or 100 mm (4 in) of welding.

6. Apply the sealers and anti-corrosion materials to the repair area. Refer to Anti-Corrosion Treatment and Repair.

7. Paint the repair area. Refer to Basecoat/Clearcoat Paint Systems.

8. Install all related panels and components.

9. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.

10. Enable the SIR system. Refer to SIR Disabling and Enabling.
The floor panel is an LCM (Liquid Compression Mold) Composite and is bonded to the structure using panel bonding adhesive.

1. Disable the SIR system. Refer to SIR Disabling and Enabling.
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
3. Remove all related panels and components.
4. Remove or reposition electrical components and wiring harness as necessary to avoid damage.
5. Remove wiring harness clips for transfer to new floor panel.

6. Using a reciprocating saw or equivalent tool cut a large section of the floor out to gain access to the bond joint.

   **Note:** Use caution not to overheat aluminum structure.

7. Remove the remaining floor by applying heat and prying to detach adhesive along the bonding surface (1).
8. Remove the floor panel from the vehicle.
9. Save any and all brackets, mounting studs, and accessories for transfer to the new floor.
10. Note the location and remove all remaining loose adhesive.
11. Inspect the structure and frame rails for damage.

Installation Procedure

1. Before applying adhesive dry fit the floor panel for proper fit and alignment.
   
   **Note:** DO NOT top coat any bonding surface. Use primer only on bonding surfaces. Refer to adhesive manufacturer's recommendations.

2. Clean and prepare all bonding mating surfaces according to adhesive manufacturer's recommendations.

   **Note:** Keep adhesive away from seat studs to minimize squeeze out.

3. Apply a consistent bead of bonding adhesive (1) 10 mm (3/8 in) in diameter to the floor structure and frame rail to mate with the bonding surface of the floor. Refer to Sheet Molded Compound (SMC) Panel Bonding.
4. Install the floor panel to the vehicle.
5. Apply weight to the floor panel to set the adhesive.
6. Install the seat mounting nuts to set the adhesive at the cross brace.
   
   **Note:** Ensure that no adhesive is on the threads before installing nuts.
7. Smooth adhesive around perimeter of floor panel from underside of vehicle to form a consistent, leak-proof seal.
8. Clamp or mechanically fasten the front end panel into place as necessary.
9. Remove any excess adhesive.
10. After adhesive cures remove seat mounting nuts before reassembly.
11. Install all related panels and components.
12. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
13. Enable the SIR system. Refer to SIR Disabling and Enabling.
Rear Compartment Panel Replacement

Removal Procedure

The rear compartment panel is made of sheet molded compound (SMC), and is bonded to the rear structure and frame rails with structural adhesive.

Warning: Refer to Approved Equipment for Collision Repair Warning.

1. Disable the SIR system. Refer to SIR Disabling and Enabling.
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
3. Remove all related panels and components.

Warning: Refer to Actions to Take When Working with Fuel Warning.

4. Verify that the fuel inlet is sealed before proceeding with the repair procedure.
5. Remove the rear compartment frame panel. Refer to Rear Compartment Panel Frame Replacement.

6. Remove the screws attaching the rear compartment panel to the frame rails.
Note: The front edge of the rear compartment panel is also bonded across the seatback area and along the top of the rear impact bar.

Note: The adhesive material will release from the structure by applying heat to approximately 200°C (400°F). A noticeable popping sound can normally be heard when the adhesive releases.

7. Remove the rear compartment panel by applying heat to the inside of the rear compartment along the bond lines (1) indicated on the floor.
8. Pry to detach the adhesive along the bonding surface.
9. The front edge of the rear compartment panel is also bonded across the seatback area and along the top of the rear impact bar. Apply heat and pry to detach the adhesive along the bonding surface.

10. Remove the rear compartment panel.
11. Save all brackets, mounting studs, and accessories for transfer to the new rear compartment panel.
12. Note the location of the adhesive and remove all remaining loose adhesive.
13. Inspect the rear structure and the frame rails for damage.
14. Repair as much of the damage as possible to the factory specifications.

**Installation Procedure**

1. Before applying the adhesive, dry fit the rear compartment panel for proper fit and alignment.
   
   **Note:** Do NOT top coat any bonding surface. Use primer only on bonding surfaces. Refer to adhesive manufacturer’s recommendations.

2. Clean and prepare all bonding mating surfaces according to the adhesive manufacturer’s recommendations.
3. Apply a consistent bead of structural adhesive (1) 12 mm (1/2 in) in diameter to the following locations. Refer to Sheet Molded Compound (SMC) Panel Bonding.

- The top of the frame rails
- The backside of the lock pillars
- Over the fuel filler neck
- To all original bonding surfaces

**Note:** The rear compartment panel is positioned to the frame rail using 2 dimples formed in the bottom surface of the rear compartment panel.

4. Position the rear compartment panel dimples (1) to the holes in the frame rail.
5. Install the rear compartment panel to the vehicle.

6. Apply pressure to the rear compartment panel to set the adhesive.

7. Install the screws attaching the rear compartment panel to the frame rails.

8. Clamp or mechanically fasten the rear compartment panel in place as necessary.

9. Remove any excess adhesive.

10. Install the rear compartment frame panels. Refer to Rear Compartment Panel Frame Replacement.

11. Install all related panels and components.

12. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.

13. Enable the SIR system. Refer to SIR Disabling and Enabling.
Rear Compartment Panel Frame Replacement

Removal Procedure

The rear compartment frame is made of sheet molded compound (SMC), and is bonded to the rear structure with structural adhesive.

---

**Warning:** Refer to Approved Equipment for Collision Repair Warning.

1. Disable the SIR system. Refer to SIR Disabling and Enabling.
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
3. Remove all related panels and components.
4. Remove the rear compartment frame by applying heat to the panel being replaced to detach the adhesive along the bonding surface. Use care not to damage the SMC panel below.
5. Remove the rear compartment frame (1).
6. Note the location of the adhesive and remove all remaining loose adhesive.
7. Inspect the rear structure and frame rails for damage.

Installation Procedure

**Note:** Shims may be necessary to achieve proper panel alignment. Use care to keep shims out of adhesive path.

1. Before applying the adhesive, dry fit the rear compartment frame for proper fit and alignment.
2. Clean and prepare all bonding mating surfaces according to the adhesive manufacturer's recommendations.
3. Apply a consistent bead of structural adhesive (1) 10 mm (3/8 in) in diameter to the rear structure in order to mate with the rear compartment frame. Refer to Sheet Molded Compound (SMC) Panel Bonding.
4. Install the rear compartment frame (1).

5. Apply pressure to the rear compartment frame to set the adhesive.

6. Clamp or mechanically fasten the rear compartment frame into place.

7. Remove any excess adhesive.

8. Install all related panels and components.

9. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.

10. Enable the SIR system. Refer to SIR Disabling and Enabling.
Description and Operation

Aluminum Panel Bonding (Non-Structural)

This information is intended to provide general guidelines for non-structural adhesive bonding of aluminum panels. Panel bonding of aluminum is only recommended when the panel is originally bonded to the vehicle.

The adhesives listed in this document are known to meet the General Motors specifications and requirements for non-structural bonding of aluminum body panels.

Bonding procedures in general are applicable only at factory joints.

The use of adhesive to section aluminum panels is not recommended by General Motors.

Rivets, or other mechanical fasteners, may be required in combination with adhesive bonding, if they were used on the original panel, or recommended in the specific service procedure. The recommended rivets, fasteners, and adhesive should be used with adhesive, when replacing the original panel.

**Note:** Always follow the adhesive manufacturer's instructions of application, handling, and curing for the specific product.

### Non-Structural Bonding Adhesives for Aluminum Panels

<table>
<thead>
<tr>
<th>GM Goodwrench®</th>
<th>GMSPO of Canada</th>
<th>Ashland Pliogrip Structural Adhesives Crest Industries, Inc.</th>
<th>Lord Fusor Structural Adhesive</th>
<th>Product Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>89020330</td>
<td>89020332</td>
<td>7770B</td>
<td>127 EZ</td>
<td>Medium Set</td>
</tr>
<tr>
<td>N/A</td>
<td>N/A</td>
<td>7779B</td>
<td>N/A</td>
<td>Fast Set</td>
</tr>
</tbody>
</table>

Canadian applications may use U.S. part numbers. Refer to your GM Dealer Parts Department for the correct part number applications.
Aluminum Panel Bonding (Structural)

This information is intended to provide general guidelines for adhesive bonding of aluminum panels. Panel bonding of aluminum is only recommended when the panel is originally bonded to the vehicle.

The adhesives listed in this document are known to meet the General Motors specifications and requirements for bonding of aluminum body panels. Bonding procedures in general are applicable only at factory joints.

The use of adhesive to section aluminum panels is not recommended by General Motors.

Rivets, or other mechanical fasteners, may be used in combination with adhesive bonding of aluminum panels. The specified rivets, or fasteners, should be used with adhesive, when replacing the original panel.

Impact Resistant Adhesive is used in joints in frame rail assemblies and strut tower assemblies and other body structure joints that have critical strength requirements. The factory applied Impact Resistant Adhesive is purple in color when cured. The Impact Resistant adhesives available for servicing these joints are considerably stronger once cured than panel bonding adhesives. The other bonding adhesives are non-impact resistant, offer a lower strength rating and cannot be used to service joints that are originally made with Impact Resistant Adhesive.

Note: Always follow the adhesive manufacturer's instructions for application, handling, and curing for the specific product.

Adhesives currently meeting the performance requirements include the adhesive products listed below meet these guidelines:

**Aluminum Panel Bonding Impact Resistant**

<table>
<thead>
<tr>
<th>Manufacturer and Part Number</th>
<th>Description</th>
</tr>
</thead>
</table>
| Fusor 2098                  | Fusor 2098 Impact Resistant Adhesive  
Available from Lord Fusor 800-234-3876  
www.fusor.com |
| 3M 07333                    | 3M Impact Resistant Structural Adhesive  
Available from 3M  
www.3MCollision.com |
| Pliogrip 5770P              | Pliogrip 5770P Structural Impact Durable Adhesive  
Available from Ashland 800-PLIOGRIP  
www.ashland.com/products/pliogrip-structural-adhesives |
Sheet Molded Compound (SMC) Panel Bonding

This is intended to provide general guidelines for sheet molded compound (SMC) and carbon fiber adhesive bonding of full panel replacement in regards to collision repair procedures.

Sectioning, partial panel of full panels, is not supported by General Motors unless specifically documented in a Service Bulletin or Manual.

Important:

- Prepare the surfaces to be bonded according to adhesive manufacturer's recommendations. Many adhesive manufacturers have different preparation methods. Do not intermix adhesive manufacturers systems. Mixing materials from different manufacturers can produce unsatisfactory results.
- DO NOT top coat any adhesive bonding mating surface. Use primer only on bonding surfaces. Refer to adhesive manufacturer's recommendations for priming applications.

Adhesives currently meeting the performance requirements include General Motors materials and products manufactured by Ashland and Lord Fusor. At this time, ONLY the adhesive products listed below meet this guideline:

<table>
<thead>
<tr>
<th>Product Type</th>
<th>89020330</th>
<th>89020332</th>
<th>7770B</th>
<th>127 EZ</th>
<th>Medium Set</th>
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<tbody>
<tr>
<td>GM Goodwrench®</td>
<td>GMSPO of Canada</td>
<td>Ashland Pliogrip Structural Adhesives</td>
<td>Crest Industries, Inc</td>
<td>Lord Fusor Structural Adhesive</td>
<td>Product Type</td>
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<tr>
<td>1–800–822–4100</td>
<td>1–800–822–4100</td>
<td>7770B</td>
<td>127 EZ</td>
<td>Fast Set</td>
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Canadian applications may use U.S. part numbers. Refer to your GM Dealer Parts Department for the correct part number applications.
## Special Tools and Equipment

### Special Tools

<table>
<thead>
<tr>
<th>Illustration</th>
<th>Tool Number/ Description</th>
</tr>
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</table>
| ![Frame Adapter Clamp](image) | J 42058  
Frame Adapter Clamp |