Body Repair
Collision Repair
Specifications

Dimensions - Body

Description
Point-to-Point Measurements are for reference only. All measurements are given in millimeters. Use these measurements for diagnosis 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.

Under Hood Opening Dimensions

Body Side Opening Dimensions (Equinox)
Rear Body Dimensions
## Structure Identification (Coupe)

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Repair Instructions

Front End Upper Tie Bar Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

Warning: Refer to Glass and Sheet Metal Handling Warning.

Note: Before beginning the repair, refer to Metal Panel Bonding for proper adhesive applicator preparations and general information.

1. Disable the supplemental inflatable restraint (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.
5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.

Note: Do not damage any inner panels or reinforcements. Record the number and location of the original welds for installation of the service part.

6. Locate and drill out all factory welds (1).

Installation Procedure
**Note:** If the location of the original plug welds cannot be determined or structural weld-thru adhesive was present, space plug weld holes every 40 mm (1 1/2 in) apart.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel (1).
2. Prepare all mating surfaces as necessary.
3. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to [Anti-Corrosion Treatment and Repair](#).

4. Position the tie bar assembly to the vehicle using 3-dimensional measuring equipment (1). Clamp the tie bar assembly into place.
5. Plug weld accordingly (1).
6. Clean and prepare all welded surfaces.
7. Apply the sealers and 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.
Front Wheelhouse Panel Replacement

Removal Procedure

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

1. Disable the supplemental inflatable restraint (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.
5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.

6. Remove the front tie bar. Refer to Front End Upper Tie Bar Replacement.
Note: Do not damage any inner panels or reinforcements.

7. Locate and drill out all factory welds. Note the number and location of the welds for installation of the front wheelhouse.

8. Remove the damaged front wheelhouse.

Installation Procedure

Note: If the location of the original plug weld holes cannot be determined, space the plug weld holes every 40 mm (1 1/2 in) apart.
Some panels may have structural weld-thru adhesive. It is necessary to replace the weld-thru adhesive with an additional spot weld between each factory spot weld.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel.
2. Prepare all mating surfaces as necessary.
3. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair.

4. Position the front wheelhouse to the vehicle using 3-dimensional measuring equipment. Clamp the front wheelhouse into place.

5. Plug weld accordingly.
6. Replace the tie bar. Refer to Front End Upper Tie Bar Replacement.
7. Clean and prepare all welded surfaces.
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
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.


**Front Compartment Upper Side Rail Replacement**

**Removal Procedure**

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

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

**Note:** Before beginning the repair, refer to Metal Panel Bonding for proper adhesive applicator preparations and general information.

1. Disable the supplemental inflatable restraint (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.

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

**Note:** Do not damage any inner panels or reinforcements. Record the number and location of the original welds for installation of the service part.

6. Locate and drill out all factory welds (1).

7. Remove the damaged front upper outer rail (1).

**Installation Procedure**
Note: If the location of the original plug welds cannot be determined or structural weld-thru adhesive was present, space plug weld holes every 40 mm (1 1/2 in) apart.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel (1).
2. Prepare all mating surfaces as necessary.
3. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair.
4. Position the front upper outer rail to the vehicle using 3-dimensional measuring equipment (1). Clamp the front upper outer rail into place.
5. Plug weld accordingly (1).
6. Clean and prepare all welded surfaces.
7. Apply the sealers and 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.
Plenum Upper Panel Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

1. Disable the supplemental inflatable restraint (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.
5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.

Note: Do not damage any inner panels or reinforcements.
6. Locate and drill out all factory welds. Note the number and location of the welds for installation of the plenum top panel.
7. Remove the damaged plenum top panel.

Installation Procedure

Note: If the location of the original plug weld holes can not be determined, space the plug weld holes every 40 mm (1 1/2 in) apart.

Some panels may have structural weld-thru adhesive. It is necessary to replace the weld-thru adhesive with an additional spot weld between each factory spot weld.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel.
2. Prepare all mating surfaces as necessary.
3. Apply GM–approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair.
4. Position the plenum top panel to the vehicle using 3-dimensional measuring equipment. Clamp the plenum top panel into place.
5. Plug weld accordingly.
6. Clean and prepare all welded surfaces.
7. Apply the sealers and 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.
Front Compartment Front Rail Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

1. Disable the supplemental inflatable restraint (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.
5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.

6. Locate and drill out all factory welds. Note the number and location of the welds for installation of the front lower rail.

7. Remove the damaged front lower rail.

Installation Procedure

Note: If the location of the original plug weld holes cannot be determined, space the plug weld holes every 40 mm (1 1/2 in) apart.

Some panels may have structural weld-thru adhesive. It is necessary to replace the weld-thru adhesive with an additional spot weld between each factory spot weld.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel.
2. Prepare all mating surfaces as necessary.
3. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair.
4. Position the front lower rail to the vehicle using 3-dimensional measuring equipment. Clamp the front lower rail into place.

5. Plug weld accordingly.

6. Clean and prepare all welded surfaces.

7. Apply the sealers and 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.
Front Compartment Side Rail Sectioning

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

Warning: Sectioning should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle and cause personal injury if the vehicle is in a collision.

1. Disable the SIR system. Refer to SIR Disabling and Enabling.
2. Disconnect the battery negative cable. Refer to Battery Negative Cable Disconnection and Connection.

3. Remove all related panels and components.
4. Remove the sealers and anti-corrosion materials from the repair area as necessary. Refer to Anti-Corrosion Treatment and Repair.
5. Repair as much of the damage as possible to factory specifications. Refer to Dimensions - Body.

6. Locate the die marks on the inner and outer halves of the front rail.
**Note:** Do not section the rail except where indicated.

7. Measure forward of the straight line shown on the die marks 21 mm (53/64 in). Mark the rail at both die mark locations.

8. At the marks made forward of the die marks, align a sliding square or similar tool to the bottom side of the front rail. Scribe a line 360 degrees around the frame rail, 21 mm (53/64 in) forward of the die marks (1).

9. Cut the rail at the marked location.
10. Remove the damaged component from the vehicle.

**Installation Procedure**

1. Cut the upper and lower inner and outer corners of the frame rail. Cut at the beginning and the end of the radius at each corner rearward 4 mm (5/32 in) to the scribe line.

2. Bend each side of the rail inward by aligning a vice grip flanging tool or similar tool to the scribe line. Bend a 4 mm (5/32 in) flange inward slightly. This flange is the welding backer.
3. Prepare the sectioning weld area as necessary for welding.

4. Locate the die marks on the service part front rail.

5. Measure forward of the straight line shown on the die marks 17 mm (43/64 in). Mark the rail at both die mark locations.

6. At the marks made forward of the die marks, align a sliding square or similar tool to the bottom side of the front rail. Scribe a line 360 degrees around the frame rail, 17 mm (43/64 in) forward of the die marks (1).

7. Cut at the marked location. Remove the front portion of the rail.
8. Prepare the cut edge of the front rail section for welding.
9. Apply 3M Weld-Thru Coating P/N 05916 or equivalent to all mating surfaces.

10. Position the front rail section using 3-dimensional measuring equipment. Clamp the service part in place.

11. Tack weld the part into position.
12. Inspect the service rail for proper dimensions using 3-dimensional measuring equipment.
13. Stitch weld along the entire sectioning joint. Make 25 mm (1 in) welds along the seam with 25 mm (1 in) gaps between.
14. Complete the stitch weld.
15. Clean and prepare all welded surfaces.
16. Install all related panels and components.
17. Apply the sealers and anti-corrosion materials to the repair area as necessary. Refer to Anti-Corrosion Treatment and Repair.
18. Paint the repaired area. Refer to Anti-Corrosion Treatment and Repair.
19. Enable the SIR System. Refer to SIR Disabling and Enabling.
20. Connect the battery negative cable. Refer to Battery Negative Cable Disconnection and Connection.
Front Compartment Inner Side Rail Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

Warning: Refer to Glass and Sheet Metal Handling Warning.

Note: Before beginning the repair, refer to Metal Panel Bonding for proper adhesive applicator preparations and general information.

1. Disable the supplemental inflatable restraint (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.
5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.

Note: Do not damage any inner panels or reinforcements. Record the number and location of the original welds for installation of the service part.
6. Locate and drill out all factory welds (1).
7. Remove the rear engine cradle mount.
8. Separate the front and rear sections of the tower rail. Care must be taken not to damage the inner side plate.
9. Remove the damaged front lower inner rail – front half (1).

**Installation Procedure**

**Note:** If the location of the original plug welds cannot be determined or structural weld-thru adhesive was present, space plug weld holes every 40 mm (1 1/2 in) apart.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel (1).
2. Prepare all mating surfaces as necessary.
3. Apply GM–approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair.
4. Position the front lower inner rail - front half to the vehicle using 3-dimensional measuring equipment (1). Clamp the front lower inner rail - front half into place.

5. Plug weld accordingly (1).

6. Install the rear engine cradle mount.

7. Clean and prepare all welded surfaces.

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


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.
Underbody Outer Front Side Rail Replacement

Removal Procedure

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

1. Disable the supplemental inflatable restraint (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.
5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.

**Note:** Do not damage any inner panels or reinforcements.

6. Locate and drill out all factory welds. Note the number and location of the welds for installation of the front lower outer rail.
7. Remove the rear engine cradle mount.
8. Remove the damaged front lower outer rail.

**Installation Procedure**

**Note:** If the location of the original plug weld holes cannot be determined, space the plug weld holes every 40 mm (1 1/2 in) apart.

Some panels may have structural weld-thru adhesive. It is necessary to replace the weld-thru adhesive with an additional spot weld between each factory spot weld.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel.
2. Prepare all mating surfaces as necessary.
3. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to [Anti-Corrosion Treatment and Repair](#).
4. Position the front lower outer rail to the vehicle using 3-dimensional measuring equipment. Clamp the front lower outer rail into place.

5. Plug weld accordingly.

6. Install the rear engine cradle mount.

7. Clean and prepare all welded surfaces.

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


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.
Front Inner Hinge Pillar Body Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

1. Disable the supplemental inflatable restraint (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.
5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
6. Remove the damaged portion of the body side.

Note: Do not damage any inner panels or reinforcements.

7. Locate and drill out all factory welds. Note the number and location of the welds for installation of the hinge pillar inner reinforcement.
8. Remove the damaged hinge pillar inner reinforcement.

**Installation Procedure**

- **Note:** If the location of the original plug weld holes cannot be determined, space the plug weld holes every 40 mm (1 1/2 in) apart.
- Some panels may have structural weld-thru adhesive. It is necessary to replace the weld-thru adhesive with an additional spot weld between each factory spot weld.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel.
2. Prepare all mating surfaces as necessary.
3. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to [Anti-Corrosion Treatment and Repair](#).
4. Position the hinge pillar inner reinforcement to the vehicle using 3-dimensional measuring equipment. Clamp the hinge pillar inner reinforcement into place.

5. Plug weld accordingly.

6. Clean and prepare all welded surfaces.

7. Install the new body side section.

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


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.
Front Hinge Pillar Body Sectioning

Removal Procedure

**Note:** Section in specified areas only. Sectioning outside of these areas may compromise the structural integrity of the vehicle. The door frame can be replaced at factory seams, but requires the removal of the windshield and the roof. The sectioning procedures have been developed as a more cost-effective alternative to complete replacement. The specific area to be sectioned is determined by the extent of the damage to the vehicle.

1. Disable the supplemental inflatable restraint (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](#).

**Warning:** Foam sound deadeners must be removed from areas within 152.4 mm (6 in) of where flame is to be used for body repairs. When reinstalling foam sound deadeners, avoid inhaling fumes as bodily injury may result.

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

6. Drill spot welds and remove the front upper outer rail.
**Note:** Do NOT damage any inner panels or reinforcements.

7. Cut the panel where sectioning is to be performed.

8. Locate and drill out all factory welds. Note the number and location of the welds for installations of the service part.

9. Remove the damaged windshield pillar section.

**Installation Procedure**

1. Cut the replacement windshield pillar section in corresponding locations to fit the original panel. The sectioning joint should be trimmed to allow 1½ times the metal thickness at the sectioning joint.
2. Create a 50 mm (2 in) backing plate (1) from the unused portion of the service part. Trim the backing plate as necessary to fit behind the sectioning joint where there is no reinforcement.

3. Drill 8 mm (5/16 in) plug weld holes along the sectioning cut on the remaining original part. Locate these holes 13 mm (1/2 in) from the edge and spaced 40 mm (1½ in) apart.

**Note:** In any area damaged beyond recognition, or if structural Weld-Thru adhesive is present, space the plug weld holes 40 mm (1½ in) apart.

4. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel and along the sectioning cut.

5. Prepare all mating surfaces, as necessary.

6. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair.
7. Fit the backing plate (2) halfway into the sectioning joint, clamp and plug weld to the vehicle.

8. Position the service part.


Note: To create a solid weld with minimum heat distortion make 25 mm (1 in) stitch welds along the seam with 25 mm (1 in) gaps between. Then go back and complete the stitch weld.

10. Stitch weld the sectioning joint.

11. Clean and prepare all welded surfaces.
12. Install the front upper outer rail.

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


15. Install all related panels and components.

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

17. Enable the SIR system. Refer to SIR Disabling and Enabling.
Roof Outer Panel Replacement

Removal Procedure

This repair procedure includes an installation procedure for either metal-inert gas welding or adhesive bonding.

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

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

**Note:** Before beginning the repair, refer to Metal Panel Bonding for proper adhesive applicator preparations and general information.

**Note:** When replacing panels that involve servicing of stationary windows, refer to Adhesive Installation of Windshields before performing any priming or refinishing.

1. Disable the supplemental inflatable restraint (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.
5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
6. Remove the windshield. Refer to Windshield Replacement.
7. Remove the liftgate. Refer to Liftgate Replacement.

**Note:** Do not damage any inner panels or reinforcements. Record the number and location of the original welds for installation of the service part.

8. Locate and drill out all factory welds (1).

**Installation Procedure**
1. Drill 8 mm (5/16 in) plug weld holes as necessary in locations noted from the original panel (1).

**Important:** If the location of the original plug weld holes cannot be determined, or if structural weld-thru adhesive is present, space the plug weld holes every 40 mm (1 1/2 in) apart.

2. Prepare all mating surfaces as necessary.

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

4. With the aid of an assistant, position the roof panel to the body (1).
5. Plug weld accordingly (1).
6. Clean and prepare all welded surfaces.

7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
9. Install the windshield. Refer to Windshield Replacement.
10. Install the liftgate. Refer to Liftgate 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.
Rocker Inner Panel Reinforcement Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

Warning: Refer to Glass and Sheet Metal Handling 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. Perform additional procedures as necessary. Refer to Front Hinge Pillar Body Sectioning.
5. Restore as much of the damage as possible to factory specifications using 3-dimensional measuring equipment.

6. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary (1). Refer to Anti-Corrosion Treatment and Repair.

Note: Do not damage any inner panels or reinforcements.

Note: The rocker inner panel is made of ultra high strength steel and should be replaced only at factory joints. Sectioning or straightening are not recommended. Refer to Ultra High Strength Steel.

Note: Ultra high steel is very difficult to drill. When possible drill spot welds from the back side of the panel.

Note: Record the number and location of the original welds for installation of the service part.

7. Locate and drill out all factory welds (1).
8. Remove the damaged inner rocker panel (1).

**Installation Procedure**

**Note:** If the location of the original plug welds cannot be determined or structural weld thru adhesive was present, space plug weld holes every 40 mm (1 1/2 in) apart.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary (1), in the locations noted from the original panel.
2. Prepare all attachment surfaces as necessary.
3. Apply GM approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to [Anti-Corrosion Treatment and Repair](#).
4. Position the inner rocker panel (1).
5. Clamp service parts in position.
6. Inspect the vehicle for proper dimensions using 3-dimensional equipment.

7. Plug weld accordingly (1).
8. Clean and prepare all welded surfaces.
9. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
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.
Front Side Door Outer Panel Replacement

Removal Procedure

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

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

**Note:** Before beginning the repair, refer to Metal Panel Bonding for proper adhesive applicator preparations and general information.

1. Disable the supplemental inflatable restraint (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.
5. Remove the door assembly. Refer to Front Side Door Replacement.

6. Locate and drill out all factory welds (1). Note the number and location of welds at the upper window frame and the mirror locations.

7. Grind the edges of the door outer panel to separate the outer door panel from the door shell (1).
Warning: Inspection of the door guard beam for damage must be performed before replacement of the door outer panel. If damage to the door guard beam is found the door must be replaced. Failure to do so may compromise the structural integrity of the vehicle and may cause personal injury if the vehicle is involved in a collision.

8. Remove the outer door panel (1).

9. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.

10. Straighten the edges of the door inner panel (1).

Installation Procedure
1. Using a grinding disk, grind the surface of the door shell, removing all adhesive (1). Mate the flanges to the outer panel.

2. Scuff the opposing mating surfaces of the door outer panel to remove the gloss of the E-Coat (1).

Note: If the location of the original plug welds cannot be determined or structural weld-thru adhesive was present, space plug weld holes every 40 mm (1 1/2 in) apart.

3. Drill 8 mm (5/16 in) plug weld holes as necessary in the locations noted from the original panel (1).
4. Clean the mating surfaces.

**Note:** The adhesive has a 40–50 minute working time. Do not allow the door to totally cure off the vehicle, as proper alignment of the door outer panel to the door shell will be difficult.

5. **Apply a 3–6 mm (1/8–1/4 in) bead of metal panel bonding adhesive to both of the mating surfaces (1).**

6. Using a small acid brush, spread a coat of adhesive to cover all the bare metal surfaces to ensure corrosion protection.

7. **Install the door outer panel to the door shell (1).**
Note: Do NOT pull the panels apart after being joined together. Slide the panels against each other to realign the panels.

8. Clamp the door outer panel into position as required (1).

9. Using a hammer re-hem the hem flanges around the door shell (2).
   Continue to hammer in stages along the hem flanges.

10. Using lacquer thinner remove the excess adhesive from the door panel area.

11. Install the door to the vehicle. Inspect the door outer panel for proper alignment, adjust the alignment as required.

12. Using metal-inert gas (MIG), weld the door outer panel to the door frame in the locations noted at the upper door frame (1).

13. Clean and prepare all welded surfaces.

14. Apply Fusor super flexible anti-flutter foam-fast set, Fusor P/N 121/124 or equivalent in 4–5 evenly spaced locations between the door outer panel and the impact beam (1).

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


17. Install the door assembly. Refer to Front Side Door Replacement.

18. Install all related panels and components.

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

20. Enable the SIR system. Refer to SIR Disabling and Enabling.
Rear Side Door Outer Panel Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

Warning: Refer to Glass and Sheet Metal Handling Warning.

Note: Before beginning the repair, refer to Metal Panel Bonding for proper adhesive applicator preparations and general information.

1. Disable the supplemental inflatable restraint (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.

5. Remove the door assembly. Refer to Rear Side Door Adjustment.

6. Locate and drill out all factory welds (1). Note the number and location of welds at the upper window.

7. Grind the edges of the door outer panel to separate the outer door panel from the door shell (1).
**Warning:** Inspection of the door guard beam for damage must be performed before replacement of the door outer panel. If damage to the door guard beam is found the door must be replaced. Failure to do so may compromise the structural integrity of the vehicle and may cause personal injury if the vehicle is involved in a collision.

8. Remove the outer door panel (1).

9. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair](#).

10. Straighten the edges of the door inner panel (1).

**Installation Procedure**
1. Using a grinding disk, grind the surface of the door shell, removing all adhesive (1). Mate the flanges to the outer panel.

2. Scuff the opposing mating surfaces of the door outer panel to remove the gloss of the E-Coat (1).

3. **Note:** If the location of the original plug welds cannot be determined or structural weld-thru adhesive was present, space plug weld holes every 40 mm (1 1/2 in) apart.

   Drill 8 mm (5/16 in) plug weld holes as necessary in the locations noted from the original panel (1).
4. Clean the mating surfaces.

Note: The adhesive has a limited working time. Do not allow the door to totally cure off the vehicle, as proper alignment of the door outer panel to the door shell will be difficult.

5. Apply a 3–6 mm (1/8–1/4 in) bead of metal panel bonding adhesive GM P/N 12378566/7 (Canadian P/N 88901674/5) or equivalent, to both of the mating surfaces (1).

6. Using a small acid brush, spread a coat of adhesive to cover all the bare metal surfaces to ensure corrosion protection.

7. Install the door outer panel to the door shell (1).
Note: Do NOT pull the panels apart after being joined together. Slide the panels against each other to realign the panels.

8. Clamp the door outer panel into position as required (1).

9. Using a hammer re-hem the hem flanges around the door shell (2).
   Continue to hammer in stages along the hem flanges.

10. Using lacquer thinner remove the excess adhesive from the door panel area.

11. Install the door to the vehicle. Inspect the door outer panel for proper alignment, adjust the alignment as required.

12. Using metal-inert gas (MIG), weld the door outer panel to the door frame in the locations noted at the upper door frame (1).

13. Clean and prepare all welded surfaces.
14. Apply Fusor super flexible anti-flutter foam-fast set, Fusor P/N 121/124 or equivalent in 4–5 evenly spaced locations between the door outer panel and the impact beam (1).

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


17. Install the door assembly. Refer to Front Side Door Replacement.

18. Install all related panels and components.

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

20. Enable the SIR system. Refer to SIR Disabling and Enabling.
Rear Floor Panel Replacement

Removal Procedure

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

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

**Note:** Before beginning the repair, refer to Metal Panel Bonding for proper adhesive applicator preparations and general information.

1. Disable the supplemental inflatable restraint (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.
5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.

**Note:** Do not damage any inner panels or reinforcements. Record the number and location of the original welds for installation of the service part.

6. Locate and drill out all factory welds (1).

7. Remove the damaged rear floor panel (1).

Installation Procedure
**Note:** If the location of the original plug weld holes cannot be determined, space the plug weld holes every 40 mm (1 1/2 in) apart.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel (1).
2. Prepare all mating surfaces as necessary.
3. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair.
4. Position the rear floor panel to the vehicle using 3-dimensional measuring equipment. Clamp the rear floor panel into place.

5. Plug weld accordingly (1).
6. Clean and prepare all welded surfaces.
7. Apply the sealers and 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 Wheelhouse Inner Panel Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

Warning: Refer to Glass and Sheet Metal Handling Warning.

Note: Before beginning the repair, refer to Metal Panel Bonding for proper adhesive applicator preparations and general information.

1. Disable the supplemental inflatable restraint (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.
5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.

Note: Do not damage any inner panels or reinforcements. Record the number and location of the original welds for installation of the service part.

6. Locate and drill out all the necessary factory welds (1).

Installation Procedure
**Note:** If the location of the original plug welds cannot be determined or structural weld-thru adhesive was present, space plug weld holes every 40 mm (1 1/2 in) apart.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel.
2. Prepare all mating surfaces as necessary.
3. Apply GM–approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair.
   
   Position the rear inner wheelhouse to the vehicle. Clamp the part in place.

4. Plug weld accordingly.
5. Clean and prepare all of the welded surfaces.
6. Install all of the related panels and components.
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
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.
Quarter Outer Panel Sectioning

Removal Procedure

Note: Section in specified areas only. Sectioning outside of these areas may compromise the structural integrity of the vehicle. The door frame can be replaced at factory seams, but requires the removal of the windshield and the roof. The sectioning procedures have been developed as a more cost-effective alternative to complete replacement. The specific area to be sectioned is determined by the extent of the damage to the vehicle.

Note: When replacing panels that involve servicing of stationary glass, refer to Adhesive Installation of Windshields before performing any priming or refinishing.

1. Disable the supplemental inflatable restraint (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 (1).

4. Repair as much of the damage as possible to factory specifications. Refer to Dimensions - Body.

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

Note: Do NOT damage any inner panels or reinforcements.

6. Cut the panel where sectioning is to be performed (1).
7. Locate and drill out all factory welds. Note the number and location of the welds for installations of the service part (1).

8. Remove the damaged quarter panel.

Installation Procedure

1. Cut the replacement quarter panel in corresponding locations to fit the original panel. The sectioning joint should be trimmed to allow 1½ times the metal thickness at the sectioning joint.

2. Create two 50 mm (2 in) backing plates and one 100 mm (4 in) backing plate from the unused portion of the service part. Trim the backing plates as necessary to fit behind the sectioning joints where no reinforcements exist.

3. Drill 8 mm (5/16 in) plug weld holes along the sectioning cut on the remaining original part. Locate these holes 13 mm (1/2 in) from the edge and spaced 40 mm (1½ in) apart.
4. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel and along the sectioning cut (1).
5. Prepare all mating surfaces, as necessary.
6. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair.
7. Fit the backing plates halfway into the sectioning joints, clamp and plug weld to the vehicle.
8. Position the quarter panel.

9. Plug weld accordingly (1).

**Note:** To create a solid weld with minimum heat distortion make 25 mm (1 in) stitch welds along the seam with 25 mm (1 in) gaps between. Then go back and complete the stitch weld.

10. Stitch the weld sectioning joint.
11. Clean and prepare all welded surfaces.
12. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
15. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
16. Enable the SIR system. Refer to SIR Disabling and Enabling.
Body Rear End Panel Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

Warning: Refer to Glass and Sheet Metal Handling Warning.

1. Disable the supplemental inflatable restraint (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.

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

   Note: Do not damage any inner panels or reinforcements. Record the number and location of the original welds for installation of the service part.

6. Locate and drill out all factory welds (1).

7. Remove the damaged rear end panel (1).

Installation Procedure
**Note:** If the location of the original plug welds cannot be determined or structural weld-thru adhesive was present, space plug weld holes every 40 mm (1 1/2 in) apart.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel (1).
2. Prepare all mating surfaces as necessary.
3. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair.

4. Position the rear end panel to the vehicle using 3-dimensional measuring equipment (1). Clamp the rear end panel into place.
5. Plug weld accordingly (1).
6. Clean and prepare all welded surfaces.
7. Apply the sealers and 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.
**Center Pillar Sectioning**

**Removal Procedure**

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

**Warning:** Refer to Collision Sectioning Warning.

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

**Caution:** Refer to Collision Repair Anchoring Caution.

**Note:** The center pillar outer panel section is part of the body side outer panel and is mild steel. Mild Steel.

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

1. Disable the SIR system. SIR Disabling and Enabling.
2. Remove all related panels and components.
3. Visually inspect the vehicle for additional damage to the vehicle structure. Repair as much of the damage to the vehicle structure as possible, prior to replacing any damaged parts.
4. Remove the sealers and anti-corrosion materials from the repair area as necessary. Anti-Corrosion Treatment and Repair.

5. Measure and mark on the body side outer 64 mm (2 1/2 in) forward from the front door opening die mark (1) and 70 mm (2 3/4 in) rearward from the rear door opening die mark (2).
6. Mark a horizontal line (1) on the body line of the body side outer between the two marked vertical lines.

7. Cut an access window (1) in the upper center pillar outer at the marked locations.

**Note:** Do not damage or cut attaching panels and reinforcements. [Structure Identification]

8. Mark and cut the sectioning locations (1) of the lower center pillar outer.
Note: Record the number and location of the original welds for installation of the service assembly.

9. Remove all factory welds from the center pillar outer section (1).

10. Remove the damaged center pillar outer section (1).

   Note: If impact resistant adhesive is present remove and replace as necessary.

11. Remove the impact resistant adhesive from the repair area, as necessary. Metal Panel Bonding.

Installation Procedure

Note: Squeeze Type Resistance Spot Welds equivalent to the factory spot welds are recommended. If access to use Squeeze Type Resistance Spot
Welds is not possible, MIG/MAG 8 mm (5/16 in) plug welds may be used, to replace those specific welds.

Note: The service part will overlap the original body side outer by approximately 25 mm at the cut location.

1. Cut the replacement center pillar outer section (1) from the body side outer to create a 25 mm (1.0 in) overlap from the original cut location.

Note: Space plug weld holes every 40 mm (1 1/2 in) apart at the sectioning location.

2. Drill 8 mm (5/16 in) plug weld holes (2) in the service part (1) at the sectioning location.

3. Prepare all mating surfaces for welding as necessary.

Note: Space plug weld holes every 40 mm (1 1/2 in) apart at the sectioning location.

4. Drill 8 mm (5/16 in) plug weld holes (1) along the sectioning joint at the top of the original body side outer.
5. Cut two 3 mm x 25 mm slot (1) in the corners of the original body side outer.

6. Prepare all mating surfaces for welding as necessary.

7. Position the center pillar outer section (1) on the vehicle using 3-dimensional measuring equipment.

8. Verify the fit of the center pillar outer section.

9. Ensure that the upper center pillar outer section of the service part slides underneath of the original body side outer.

10. Apply the impact resistant adhesive to the repair area, as necessary. Metal Panel Bonding.

11. Clamp the center pillar outer section (1) into position.
12. Weld the center pillar outer section (1) accordingly.
13. Apply the sealers and anti-corrosion materials to the repair area as necessary.
15. Install all related panels and components.
16. Enable the SIR System. SIR Disabling and Enabling.

Note: To create a solid weld with minimum heat distortion make 25 mm (1 in) stitch welds along the seam with 25 mm (1 in) gaps between them. Then go back and complete the stitch weld.
Center Pillar Outer Panel Reinforcement Replacement

**Removal Procedure**

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](#).

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

**Note:** The service B-Pillar will come as a complete assembly and the center B-Pillar Reinforcement is constructed of ultra high strength steel (martensitic) and can not be sectioned. It can only be replaced as a one piece unit.

3. Remove all related panels and components (1).
4. Repair as much of the damaged area as possible. Refer to [Dimensions - Body](#).
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair](#).

**Note:** Note the number and location of the factory welds for installation of the inner pillar lock front door.

6. Locate and drill out all the necessary factory welds (1).
7. Remove the Center B-Pillar from the factory seams (1).

**Installation Procedure**

**Note:** If the location of the original plug weld holes cannot be determined, space the plug weld holes every 40 mm (1 in) apart.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the corresponding locations noted on the original panel (1).
2. Prepare all mating surfaces for welding as necessary.
3. Apply GM approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to [Anti-Corrosion Treatment and Repair](#).
4. Position the service part on the vehicle using 3-dimensional measuring equipment. Clamp the part in place.
5. Plug weld accordingly (1).

6. Clean and prepare all welded surfaces.

7. Apply the sealers and 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 Rail Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

1. Disable the supplemental inflatable restraint (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.
5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.

Note: Do not damage any inner panels or reinforcements.

6. Locate and drill out all factory welds. Note the number and location of the welds for installation of the rear rail lower.
7. Remove the damaged rear rail.

Installation Procedure

Note: If the location of the original plug weld holes can not be determined, space the plug weld holes every 40 mm (1 1/2 in) apart.

Some panels may have structural weld-thru adhesive. It is necessary to replace the weld-thru adhesive with an additional spot weld between each factory spot weld.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel.
2. Prepare all mating surfaces as necessary.
3. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair.
4. Position the rear rail lower to the vehicle using 3-dimensional measuring equipment. Clamp the rear rail lower into place.
5. Plug weld accordingly.
6. Clean and prepare all welded surfaces.
7. Apply the sealers and 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.
**Rail Replacement - Rear Section**

**Removal Procedure**

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

1. Disable the supplemental inflatable restraint (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.

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

6. **Note:** Do not damage any inner panels or reinforcements.

7. From inside of the vehicle, locate and drill out all factory welds. Note the number and location of the welds for installation of the rear rail lower – half.

8. Remove the No. 5 crossbar.
8. Remove the damaged rear rail lower – section

**Installation Procedure**

**Note:** If the location of the original plug weld holes can not be determined, space the plug weld holes every 40 mm (1 1/2 in) apart.

Some panels may have structural weld-thru adhesive. It is necessary to replace the weld-thru adhesive with an additional spot weld between each factory spot weld.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel.
2. Prepare all mating surfaces as necessary.
3. Apply GM–approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to [Anti-Corrosion Treatment and Repair](#).
4. Position the rear rail lower – rear section, rear rail upper, and No. 5 crossbar to the vehicle using 3-dimensional measuring equipment. Clamp the parts into place.

5. Plug weld accordingly.

6. Clean and prepare all welded surfaces.

7. Apply the sealers and 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.
MIG Welded Full Panel Replacement

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

Note: Use this procedure for all panels that are replaced at the factory seams, unless a specific procedure exists in the Collision Repair section of this vehicle's service information.

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.

Warning: Refer to Foam Sound Deadeners Warning.

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

6. Locate and drill out all factory welds (1). Note the number and location of the welds for installation of the service part.

Note: Do not damage any inner panels or reinforcements.

7. Remove the damaged part (1).

Installation Procedure
Note: If the location of the original plug weld holes cannot be determined, space the plug weld holes every 40 mm (1 1/2 in) apart. Where structural adhesive was present, space the plug weld holes every 20 mm (3/4 in) apart.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel (1).
2. Prepare all attachment surfaces as necessary.
3. Prepare all mating surfaces as necessary.
4. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair.
5. Position the service part. Clamp in place.

6. Plug weld accordingly (1).
7. Clean and prepare all welded surfaces.
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
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.
Description and Operation

**Dual Phase Steel**

This information provides repair recommendations and general guidelines for steel classified as Dual Phase Steel, also known as DP. This type of steel normally has a tensile strength below 780 MPa.

General Motors recommends the following when repairing or replacing this type of steel during collision repair.

**Note:** The use of heat to repair damage is not recommended for this classification of steel.

**Recommended Repairs**

- Cold repairs can be performed on this type of steel, unless the damage includes kinks. If the damage includes kinks, the part should be replaced.
- Sectioning or partial replacement of this type of steel is recommended only at approved locations, in a specific sectioning procedure.
- When recommended in a specific sectioning procedure, this type of steel can be used as a weld plate for reinforcing the sectioning location.
- Squeeze Resistance Spot Welding can be used to replace factory spot welds, where applicable.
- MIG plug welding and MIG stitch welding can be used on this type of steel.
- MIG Brazing can be used on this type of steel.
High Strength Low Alloy Steel

This information provides repair recommendations and general guidelines for steel classified as High Strength Low Alloy Steel, also known as HSLA. This type of steel normally has a tensile strength range from 300–700 MPa.

General Motors recommends the following when repairing or replacing this type of steel during collision repair.

**Recommended Repairs**

- Cold repairs can be performed on this type of steel, unless the damage includes kinks. If the damage includes kinks, the part should be replaced.
- Controlled use of heat can be used to repair damage, if the heat does not exceed 650°C (1200°F). The heat should be applied a maximum of 2 times, for up to 90 seconds.
- Sectioning or partial replacement of this type of steel is recommended only at approved locations, in a specific sectioning procedure.
- When recommended in a specific sectioning procedure, this type of steel can be used as a weld plate for reinforcing the sectioning location.
- Squeeze Resistance Spot Welding can be used to replace factory spot welds, where applicable.
- MIG plug welding and MIG stitch welding can be used on this type of steel.
- MIG Brazing can be used on this type of steel.
Metal Panel Bonding

This information is intended to provide general guidelines for adhesive bonding of steel panels. Panel bonding of steel 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 steel body panels. Bonding procedures in general are applicable only at factory joints.

The use of adhesive to section steel panels is not recommended by General Motors. Rivets, or other mechanical fasteners, may be used in combination with adhesive bonding of steel panels. The specified rivets, or fasteners, should be used with adhesive, when replacing the original panel.

Two types of adhesives are listed here. 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 can be used in all other joints that are not 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:

### Steel Panel Bonding Impact Resistant

<table>
<thead>
<tr>
<th>Manufacturer and Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fusor 2098</td>
<td>Fusor 2098 Impact Resistant Adhesive&lt;br&gt;Available from Lord Fusor 800-234-3876&lt;br/www.fusor.com</td>
</tr>
<tr>
<td>3M 07333</td>
<td>3M Impact Resistant Structural Adhesive&lt;br&gt;Available from 3M&lt;br/www.3MCollision.com</td>
</tr>
</tbody>
</table>

### Steel Panel Bonding

<table>
<thead>
<tr>
<th>Manufacturer and Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GM P/N 12378566 (US)</td>
<td>Fast Set Panel Bonding Adhesive</td>
</tr>
<tr>
<td>GM P/N 88901674 (Canada)</td>
<td>Fast Set Panel Bonding Adhesive</td>
</tr>
<tr>
<td>Lord Fusor P/N 110B/111B</td>
<td>Fast Set Panel Bonding Adhesive</td>
</tr>
<tr>
<td>GM P/N 12378567 (US)</td>
<td>Medium Set Panel Bonding Adhesive</td>
</tr>
<tr>
<td>GM P/N 88901675 (Canada)</td>
<td>Medium Set Panel Bonding Adhesive</td>
</tr>
<tr>
<td>Lord Fusor P/N 108B/109B</td>
<td>Medium Set Panel Bonding Adhesive</td>
</tr>
<tr>
<td>3M P/N 8116</td>
<td>Panel Bonding Adhesive</td>
</tr>
<tr>
<td>Ashland Plio Grip Panel 60</td>
<td>Panel Bonding Adhesive</td>
</tr>
</tbody>
</table>

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Mild Steel

This information provides repair recommendations and general guidelines for steel classified as Mild Steel. This type of steel normally has a tensile strength less than 270 MPa. This includes the common steel names of:

- Mild Steel
- Bake Hardenable Steel (BH)
- Solid Solution Strengthened Steel

General Motors recommends the following when repairing or replacing this type of steel during collision repair.

Recommended Repairs:

- Cold repairs can be performed on this type of steel, unless the damage includes kinks. If the damage includes kinks, the part should be replaced.
- Controlled use of heat can be used to repair damage, if the heat does not exceed 650°C (1200°F). The heat should be applied a maximum of 2 times, for up to 90 seconds.
- Sectioning or partial replacement of this type of steel is recommended only at approved locations, in a specific sectioning procedure.
- When recommended in a specific sectioning procedure, this type of steel can be used as a weld plate for reinforcing the sectioning location.
- Squeeze Resistance Spot Welding can be used to replace factory spot welds, where applicable
- MIG plug welding and MIG stitch welding can be used on this type of steel.
- MIG Brazing can be used on this type of steel.
Ultra High Strength Steel

This information provides repair recommendations and general guidelines for steel classified as Ultra High Strength Steel, also known as UHSS. This type of steel normally has a tensile strength of 780 MPa, or greater.

This includes the common steel names of:
- Ultra High Strength Dual Phase Steel (DPX)
- Martensitic Steel (M)
- Boron/Press Hardened Steel (B)
- Multi-Phase Steel (MP)
- TRIP Steel (TR)

General Motors recommends the following when repairing or replacing this type of steel during collision repair.

Note:
- Repair of this type of steel is not recommended.
- This type of steel should be replaced only, at factory joints. Sectioning or partial replacement is not recommended.
- The use of heat to repair damage is not recommended for this type of steel.
- Stitch Welding is not recommended for this type of steel (unless replacing a factory installed stitch weld).
- This type of steel should not be used as a weld plate for reinforcing the sectioning location.

Recommended Repairs
- Squeeze Resistance Spot Welding can be used to replace factory spot welds, where applicable.
- MIG plug welding can be used to replace factory spot welds.
- MIG Brazing can be used to replace factory spot welds.