

ACCESSORIES & EQUIPMENT

Collision Repair - CTS Coupe & Wagon

SPECIFICATIONS

DIMENSIONS - BODY (WAGON)

Point to Point Measurements

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

Engine Compartment

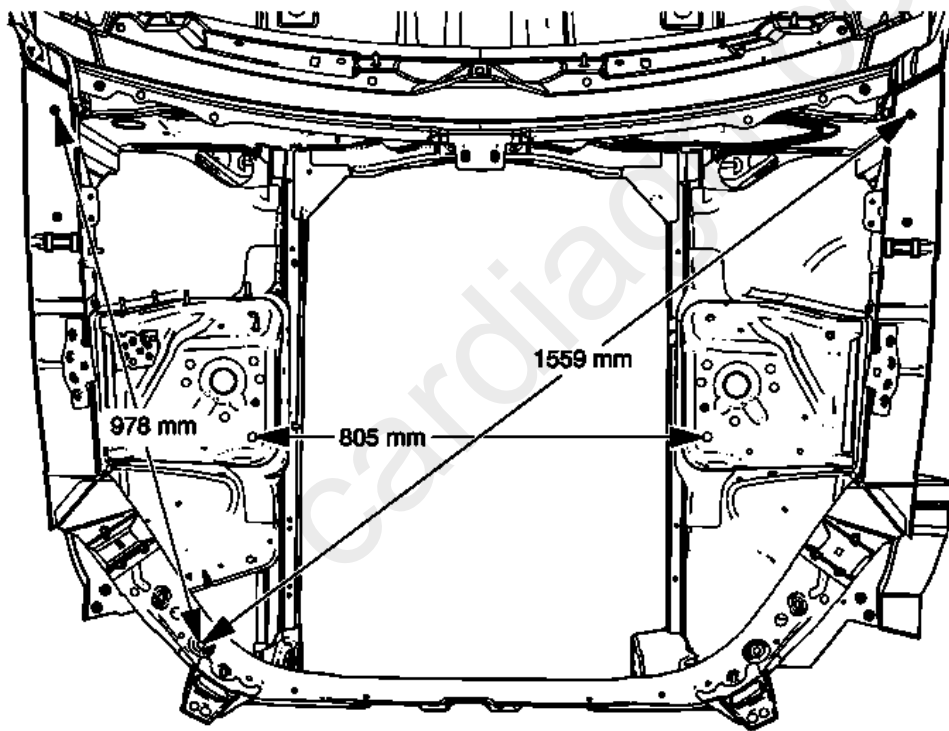


Fig. 1: Identifying Engine Compartment Dimensions
Courtesy of GENERAL MOTORS COMPANY

Rear End

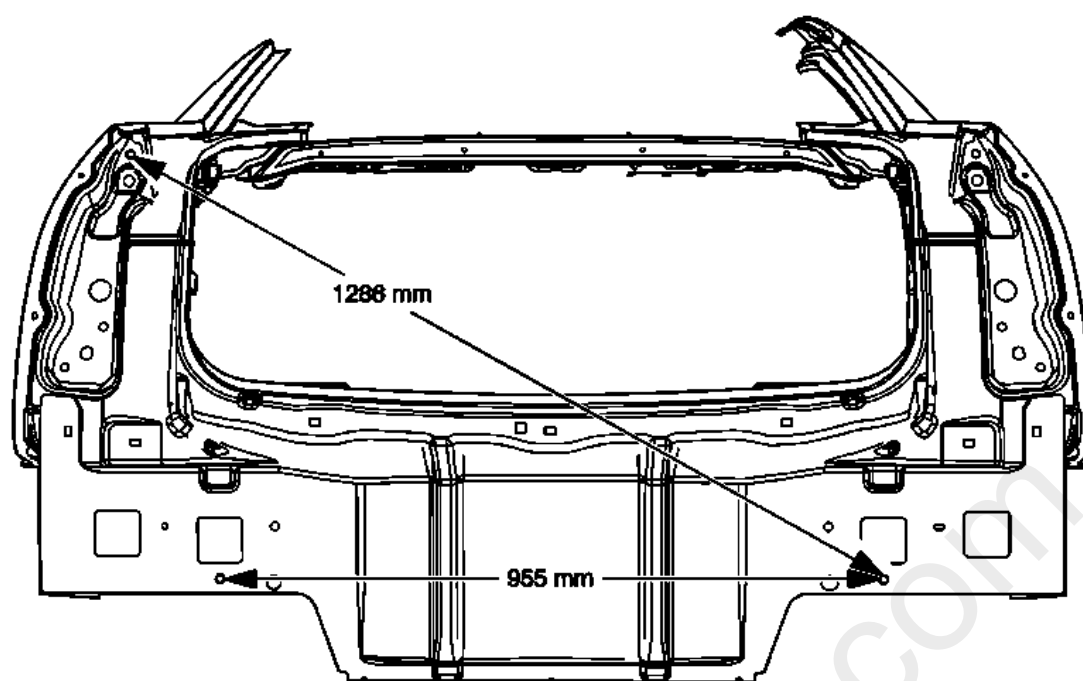


Fig. 2: Identifying Rear End Dimensions
 Courtesy of GENERAL MOTORS COMPANY

Side

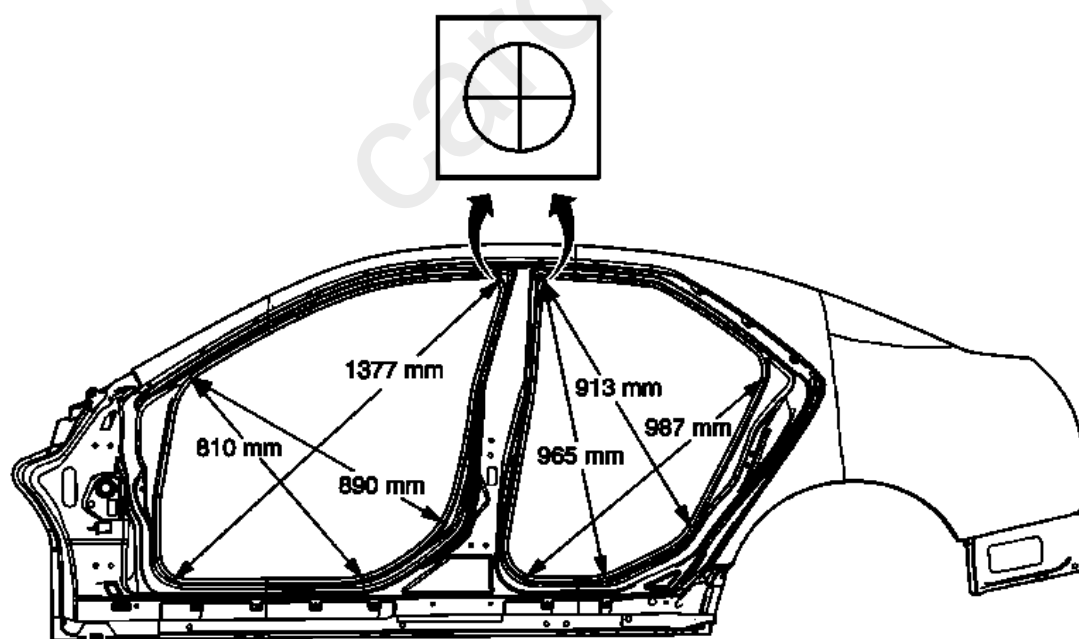


Fig. 3: Identifying Side Dimensions
Courtesy of GENERAL MOTORS COMPANY

VISUAL IDENTIFICATION

STRUCTURE IDENTIFICATION

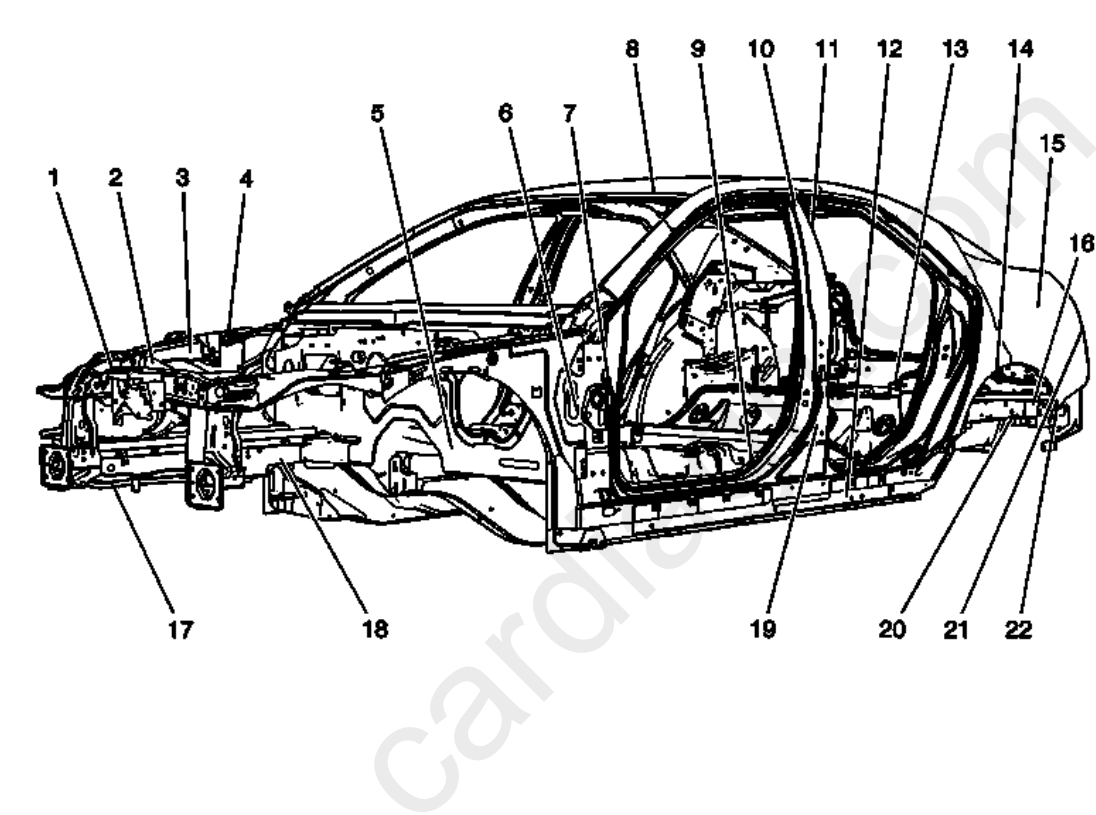


Fig. 4: Structure Identification
Courtesy of GENERAL MOTORS COMPANY

Structure Identification (Wagon)

Number	Description	Material	Procedure
1	Tie Bar	<u>Mild Steel</u>	<u>Front End Upper Tie Bar Replacement</u>
2	Front Wheelhouse	<u>Mild Steel</u>	<u>Front Wheelhouse Panel Replacement</u>
3	Front Wheelhouse	<u>Mild Steel</u>	<u>Front Wheelhouse Sectioning</u>
4	Front Compartment Upper Side rail	<u>Mild Steel</u>	<u>Front Compartment Upper Side Rail Replacement</u>
	Front Compartment Front	<u>High Strength</u>	<u>Front Compartment Side Rail</u>

5	Rail	<u>Low Alloy Steel</u>	<u>Sectioning</u>
6	Front Inner Hinge Pillar	<u>Mild Steel</u>	<u>Front Inner Hinge Pillar Body Replacement</u>
7	Front Hinge Pillar	<u>Mild Steel</u>	<u>Front Hinge Pillar Body Sectioning</u>
8	Roof Outer Panel	<u>Mild Steel</u>	<u>Roof Outer Panel Replacement (Sedan), Roof Outer Panel Replacement (Wagon)</u>
9	Rocker Inner Panel	<u>Ultra High Strength Steel</u>	<u>Rocker Inner Panel Replacement</u>
10	Body Lock Pillar Outer Panel Reinforcement	<u>Mild Steel</u>	<u>Body Lock Pillar Outer Panel Reinforcement Sectioning</u>
11	Body Lock Pillar Inner Panel	<u>Dual Phase Steel</u>	<u>Body Lock Pillar Inner Panel Replacement</u>
12	Rocker Outer Panel	<u>Ultra High Strength Steel</u>	<u>Rocker Outer Panel Replacement (Sedan), Rocker Outer Panel Replacement (Coupe)</u>
13	Rear Compartment Floor	<u>Mild Steel</u>	<u>Rear Compartment Floor Panel Replacement</u>
14	Rear Outer Wheelhouse	<u>Mild Steel</u>	<u>Rear Wheelhouse Outer Panel Replacement (Wagon), Rear Wheelhouse Outer Panel Replacement (Sedan)</u>
15	Quarter Outer Panel	<u>Mild Steel</u>	<u>Quarter Outer Panel Replacement (Wagon), Quarter Outer Panel Replacement (Sedan)</u>
16	Underbody Rear Side Rail	<u>High Strength Low Alloy Steel</u>	<u>Underbody Rear Side Rail Replacement</u>
17	Lower Rail	<u>High Strength Low Alloy Steel</u>	<u>Lower Rail Sectioning</u>
18	Lower Rail	<u>High Strength Low Alloy Steel</u>	<u>Lower Rail Replacement</u>
19	Center Pillar Outer	<u>Mild Steel</u>	<u>Center Pillar Sectioning - Outer</u>
20	Rear Rail	<u>High Strength Low Alloy Steel</u>	<u>Rear Rail Replacement</u>
21	Rear End Panel	<u>Mild Steel</u>	<u>Rear End Panel Replacement (Wagon), Rear End Panel Replacement (Sedan)</u>
22	Wheel Opening	NA	<u>Wheel Opening Flanging</u>

REPAIR INSTRUCTIONS

FRONT END UPPER TIE BAR REPLACEMENT

Removal Procedure

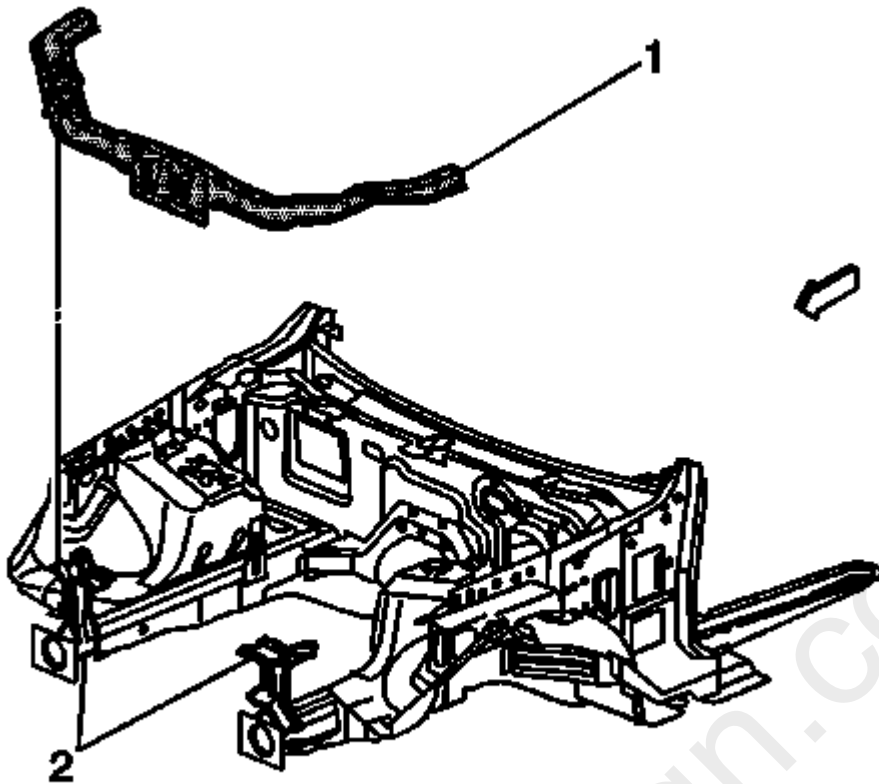


Fig. 5: View Of Tie Bar

Courtesy of GENERAL MOTORS COMPANY

WARNING: Refer to Approved Equipment for Collision Repair Warning .

NOTE: The front upper tie bar is serviced as 3 components: Right and left side tie bar reinforcements (2) and the upper tie bar (1).

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 (Coupe) , Battery Negative Cable Disconnection and Connection (Wagon) .
3. Remove all related panels and components.
4. Restore as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
6. Locate, mark, and drill out all factory welds attaching the upper tie bar (1) and reinforcements (2) if necessary.
7. Remove the damaged tie bar (1).

Installation Procedure

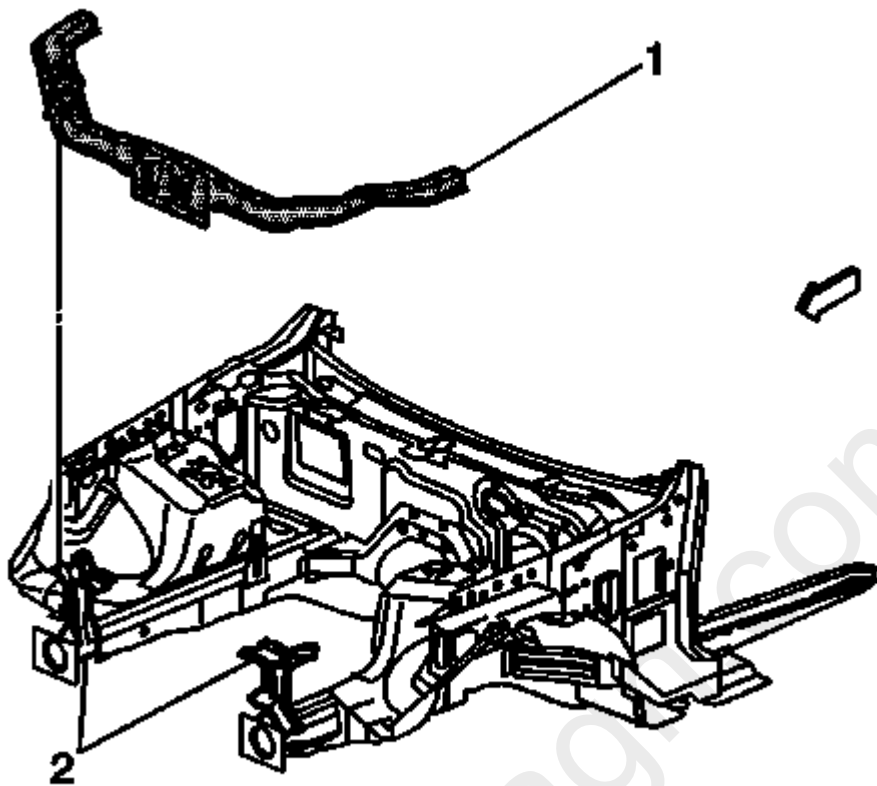


Fig. 6: View Of Tie Bar

Courtesy of GENERAL MOTORS COMPANY

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

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

4. Temporarily position the upper tie bar (1) and reinforcements (2) on the vehicle.
5. Check location using 3-dimensional measuring equipment.
6. Plug weld accordingly.
7. Clean and prepare welded surfaces.
8. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
9. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion**

Treatment and Repair .

10. Install all of the related panels and components.
11. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
12. 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 SIR system. Refer to **SIR Disabling and Enabling** .
2. Disconnect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .

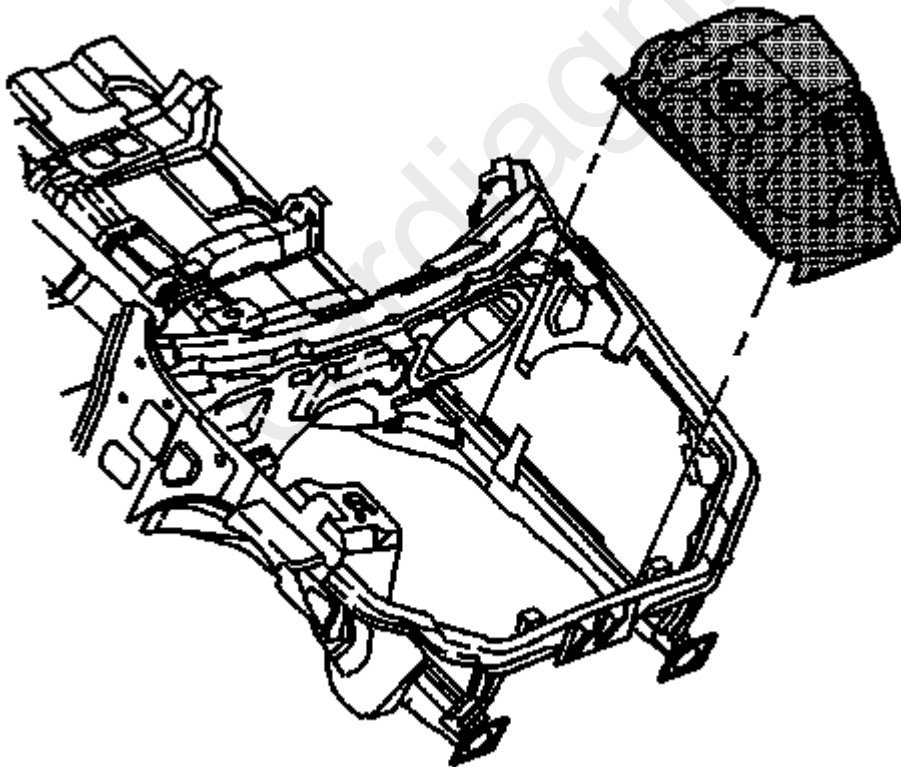


Fig. 7: View Of Front Wheelhouse
Courtesy of GENERAL MOTORS COMPANY

NOTE: The front wheelhouse service panel is serviced as a complete assembly, which includes the upper front strut mounting surface. The upper strut mounting surface is a dimensionally critical area. Use 3-dimensional measuring equipment to locate the front wheelhouse assembly.

3. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
4. Repair as much of the damage as possible.

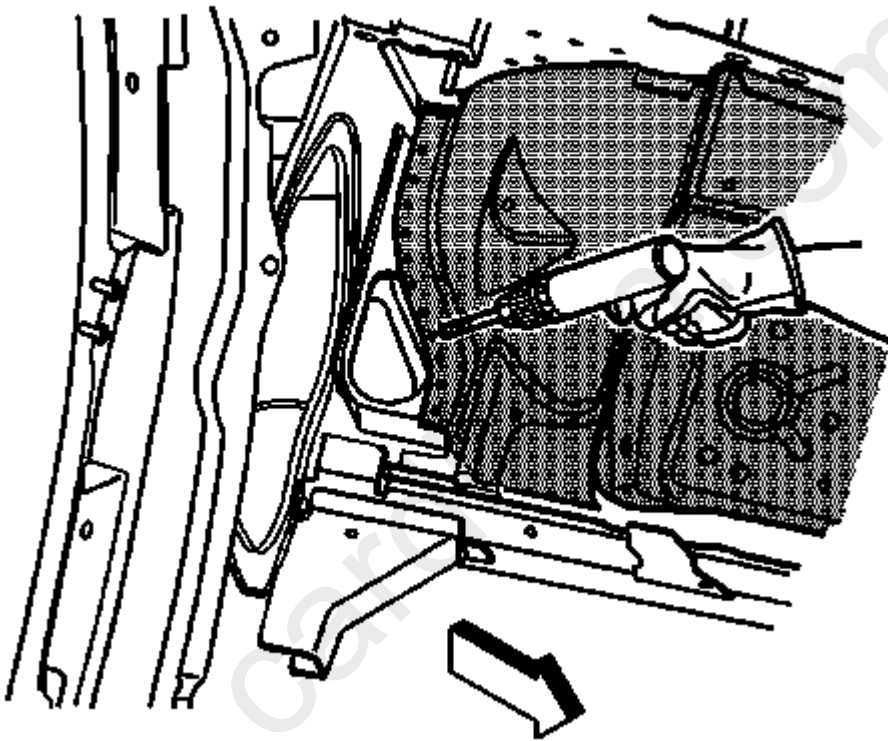


Fig. 8: Drilling Out Front Wheelhouse Factory Welds
Courtesy of GENERAL MOTORS COMPANY

5. Locate, mark, and drill out all factory welds. Note the number and location of welds for installation of the service assembly.

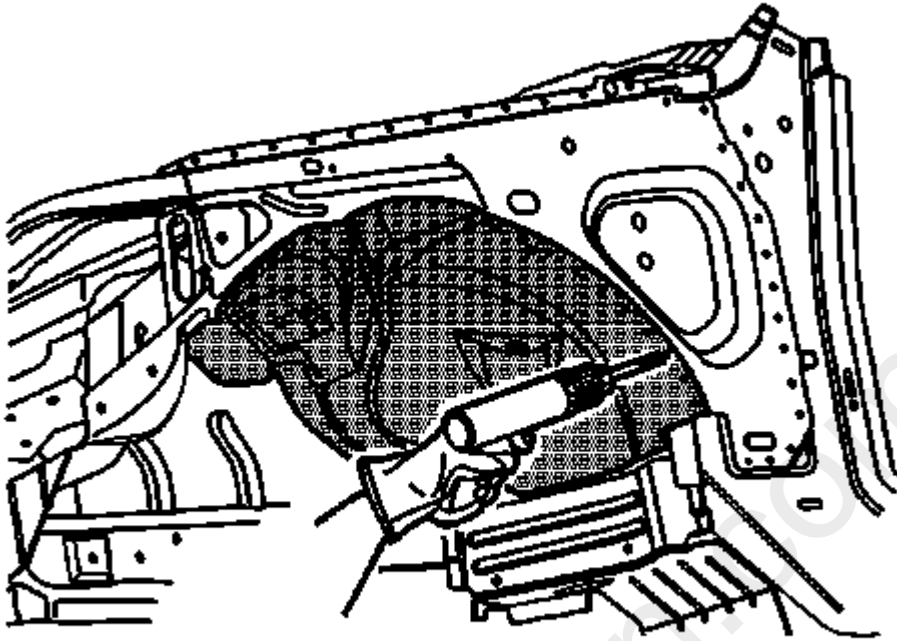


Fig. 9: Drilling Out Front Wheelhouse Spot Welds
Courtesy of GENERAL MOTORS COMPANY

6. Drill from the outside of the wheelhouse to remove the spot welds that attach the wheelhouse to the frame rail.

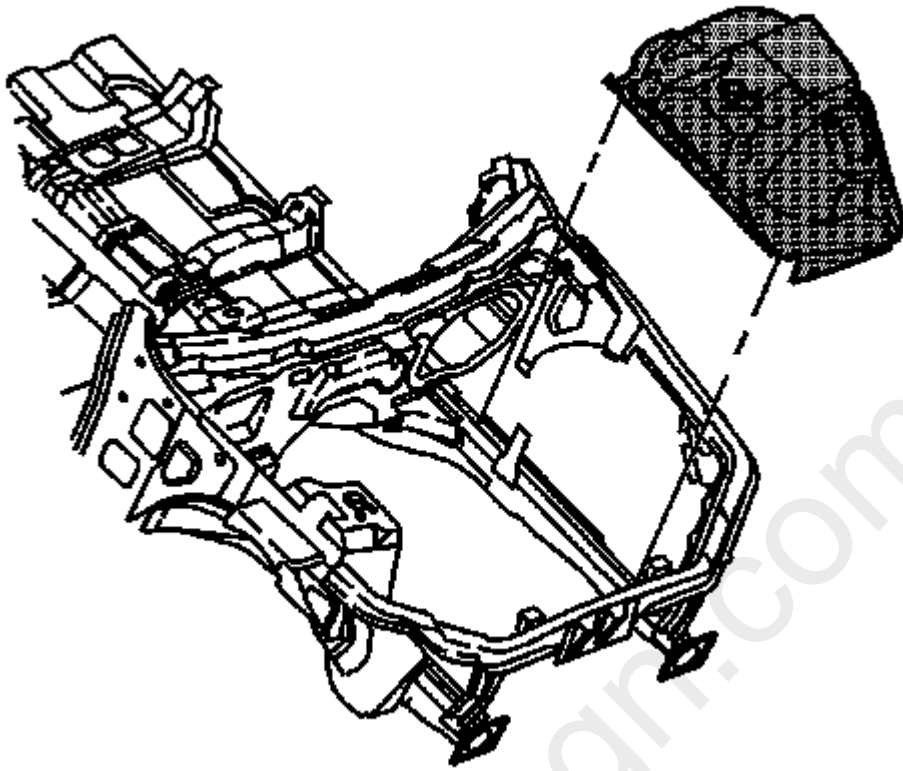


Fig. 10: View Of Front Wheelhouse
Courtesy of GENERAL MOTORS COMPANY

7. Remove the wheelhouse from the vehicle.

Installation Procedure

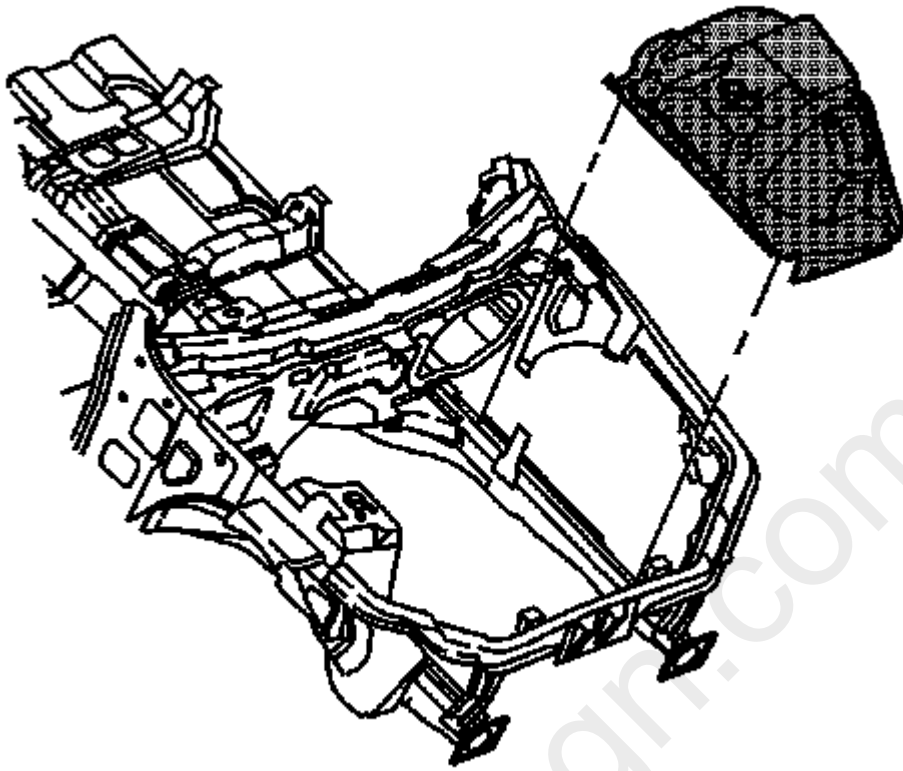


Fig. 11: View Of Front Wheelhouse
Courtesy of GENERAL MOTORS COMPANY

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

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

4. Position the wheelhouse on the vehicle. Verify proper fit using 3-dimensional measuring equipment.

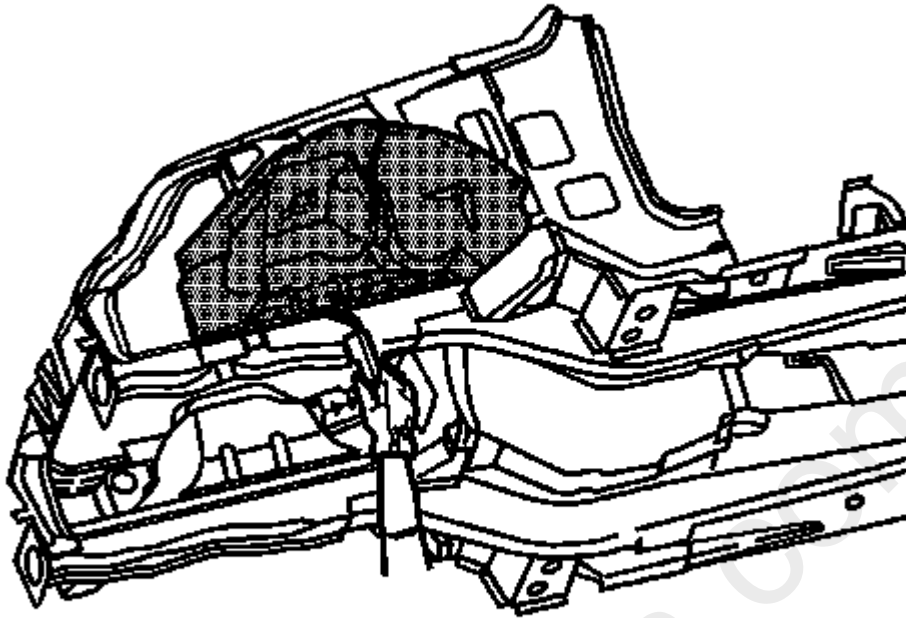


Fig. 12: Plug Welding Front Wheelhouse
Courtesy of GENERAL MOTORS COMPANY

5. Measure frequently to ensure proper fit and alignment.

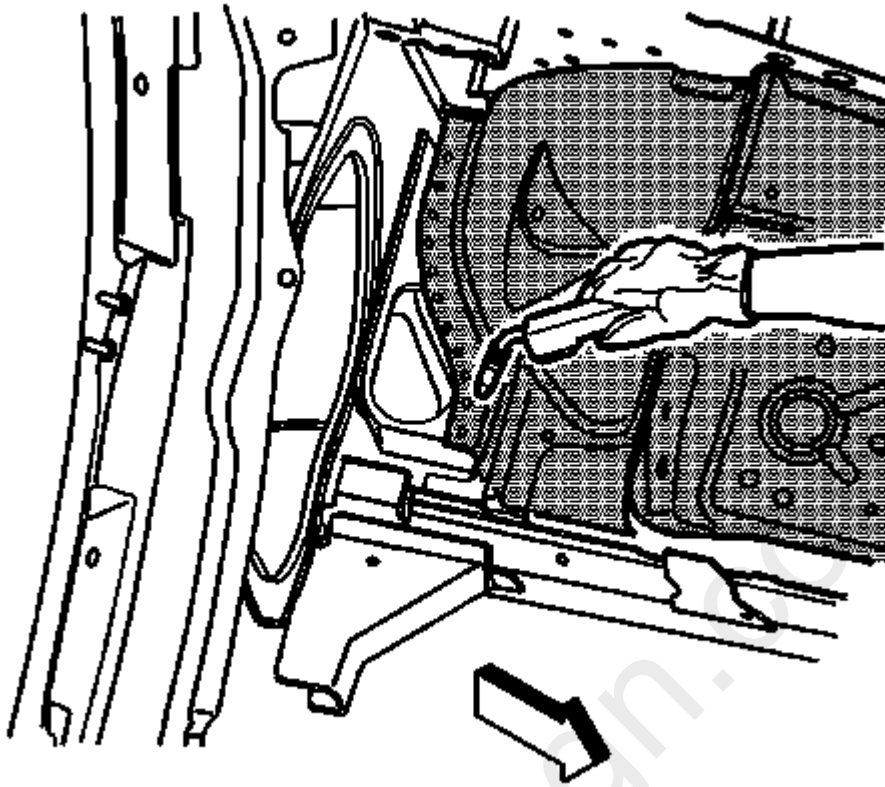


Fig. 13: Welding Front Wheelhouse Assembly
Courtesy of GENERAL MOTORS COMPANY

6. When the service assembly is correctly positioned, plug weld accordingly.
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** .
9. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
10. Install all related panels and components.
11. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
12. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

FRONT WHEELHOUSE SECTIONING

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 (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .

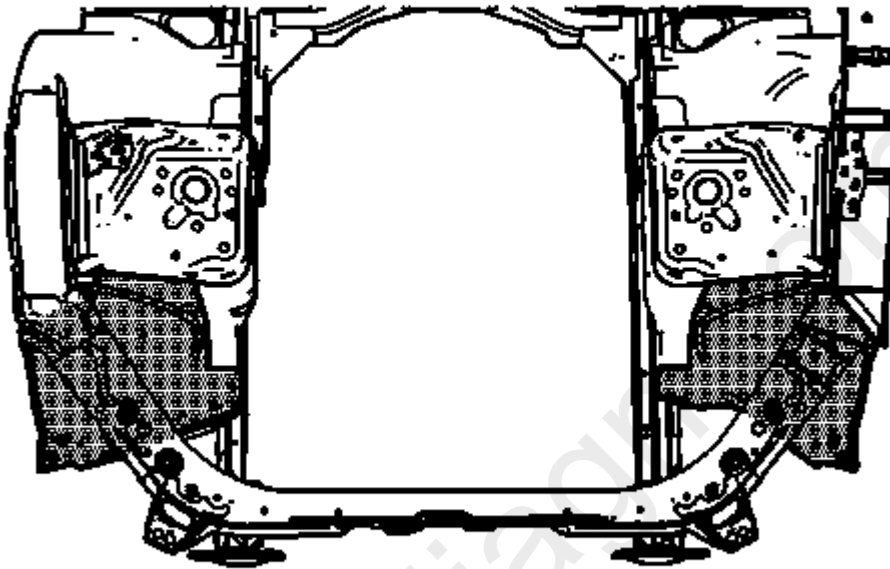


Fig. 14: View of Front Frame

Courtesy of GENERAL MOTORS COMPANY

NOTE: The front wheelhouse service panel is serviced as a complete assembly, which includes the upper front strut mounting surface. The upper strut mounting surface is a dimensionally critical area. Use 3-dimensional measuring equipment to locate the front wheelhouse assembly. If the damage is forward of the strut mounting area use this sectioning procedure.

3. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
4. Repair as much of the damage as possible.

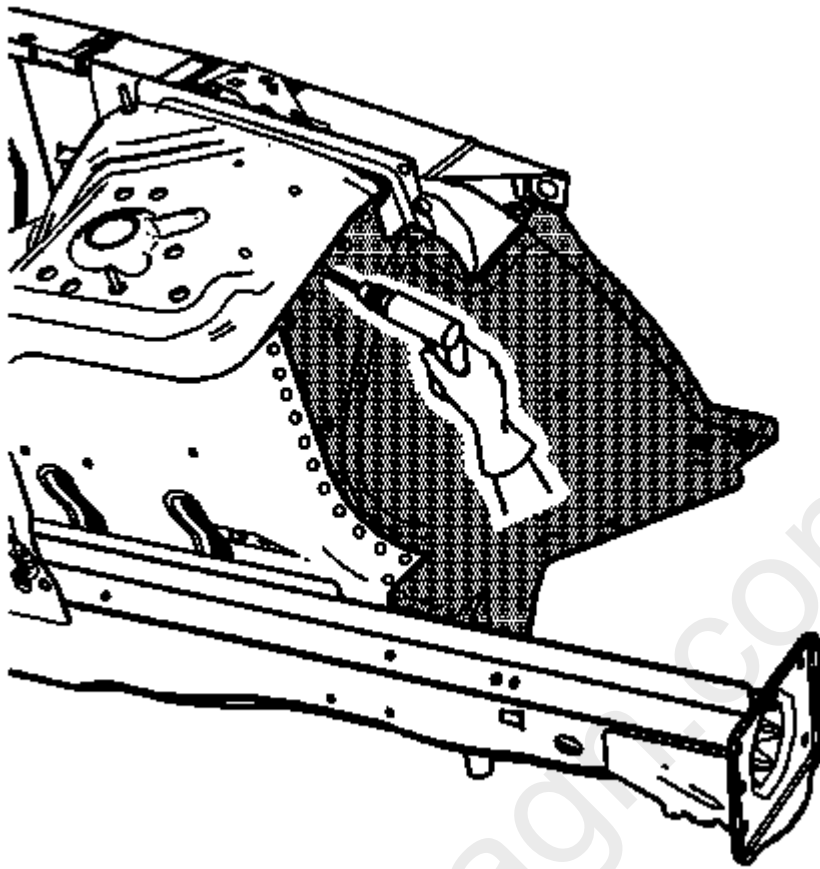


Fig. 15: View of Drilling Welds
Courtesy of GENERAL MOTORS COMPANY

5. Locate, mark, and drill out all factory welds. Note the number and location of welds for installation of the service assembly.

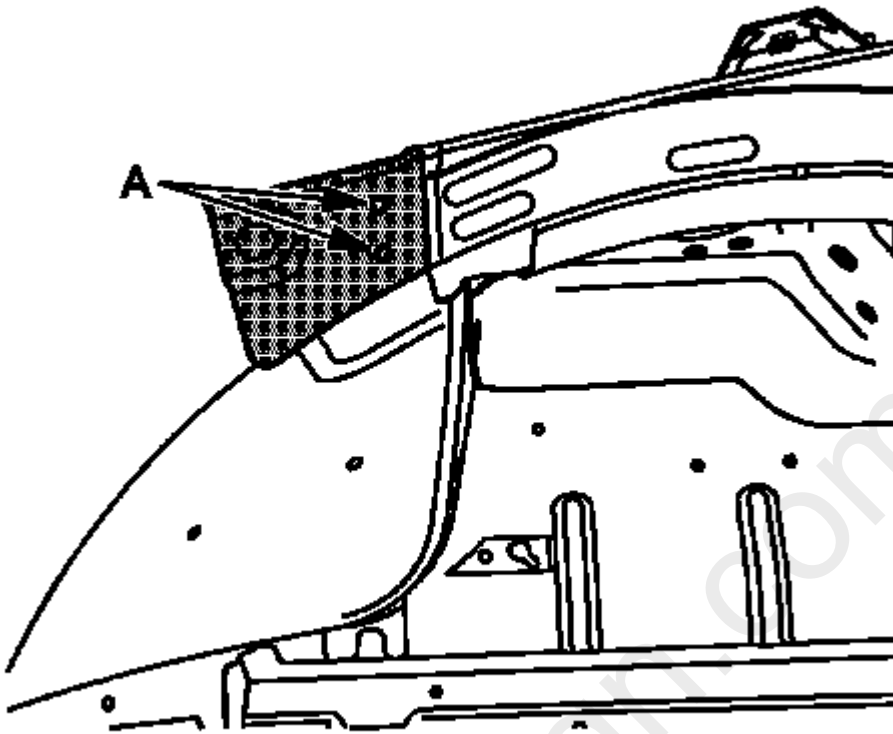


Fig. 16: View of Welds in Wheel Well
Courtesy of GENERAL MOTORS COMPANY

6. If the upper outer rail is on the vehicle it is necessary to cut and bend the corner at the front edge up and out of the way to access two welds (A).
7. Drill from the outside of the wheelhouse to remove the spot welds that attach the wheelhouse to the frame rail.
8. Remove the wheelhouse section from the vehicle.

Installation Procedure

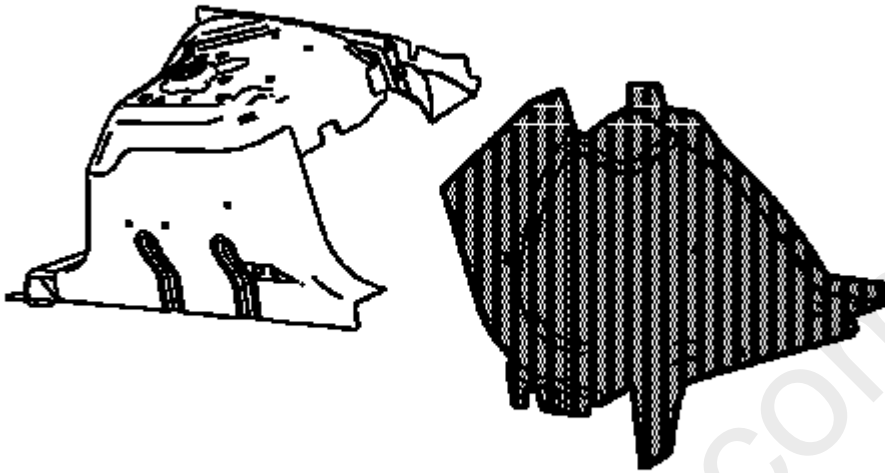


Fig. 17: View of Wheelhouse Sections
Courtesy of GENERAL MOTORS COMPANY

1. Drill out the welds from the service assembly and remove the wheelhouse section.
2. Prepare the mating surfaces as necessary.
3. Apply Weld-Thru Coating to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .
4. Drill 8 mm (5/16 in) plug weld holes as necessary in the locations noted from the original assembly.

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

5. Position the wheelhouse section on the vehicle. Verify proper fit using three-dimensional measuring equipment.

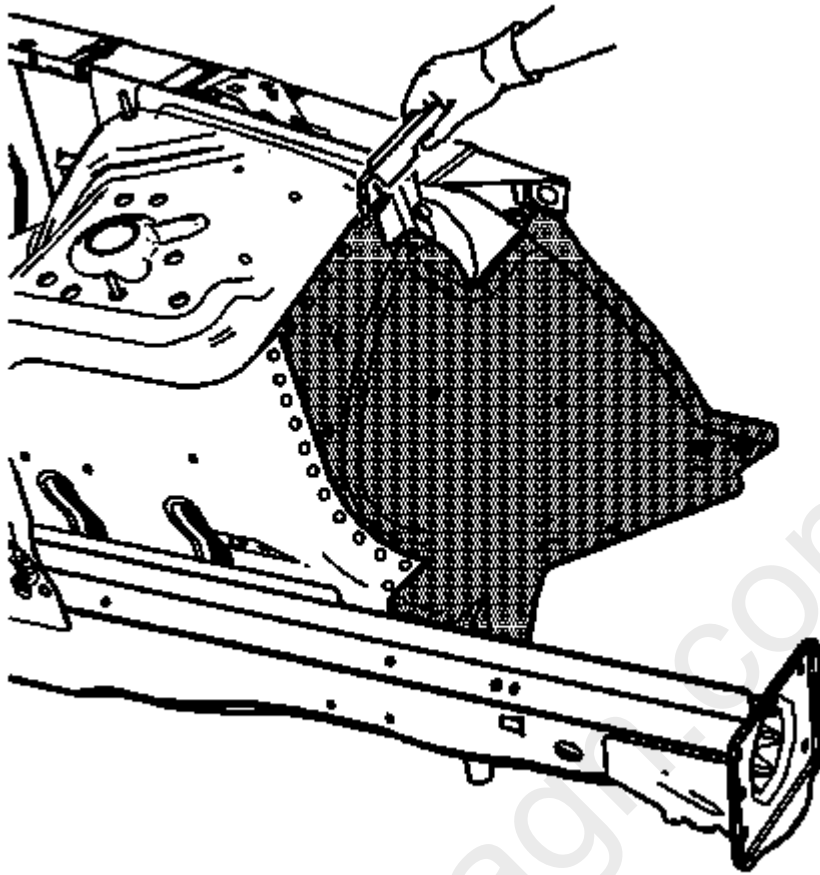


Fig. 18: View of Assembly and Welds
Courtesy of GENERAL MOTORS COMPANY

6. When the service assembly is correctly positioned, plug weld accordingly.

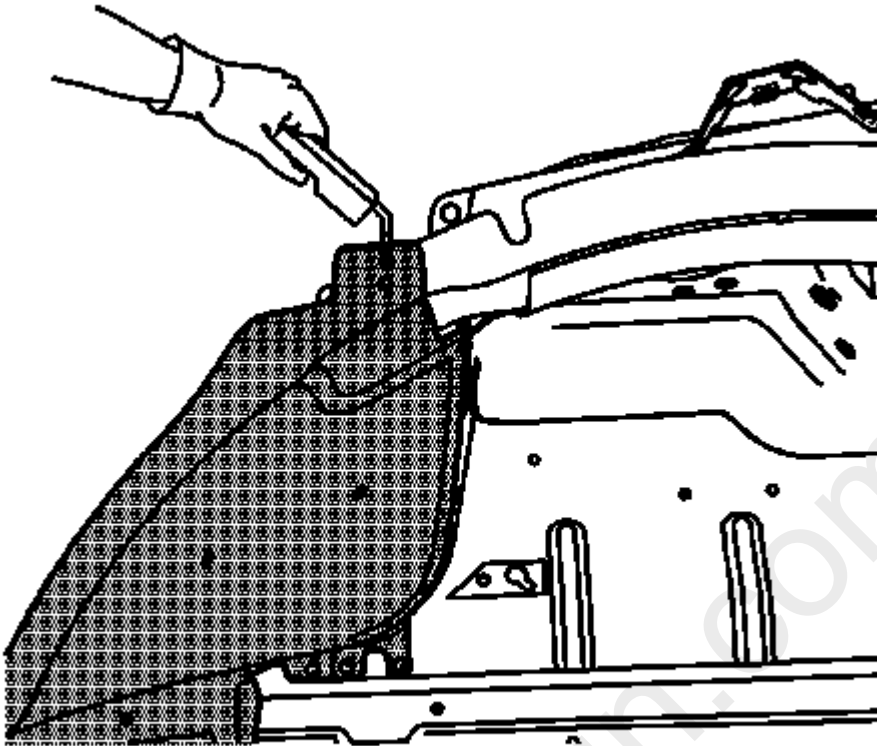


Fig. 19: Identifying Welded Surfaces
Courtesy of GENERAL MOTORS COMPANY

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** .
9. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
10. Install all related panels and components.
11. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
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** .

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 (Coupe) , Battery Negative Cable Disconnection and Connection (Wagon) .

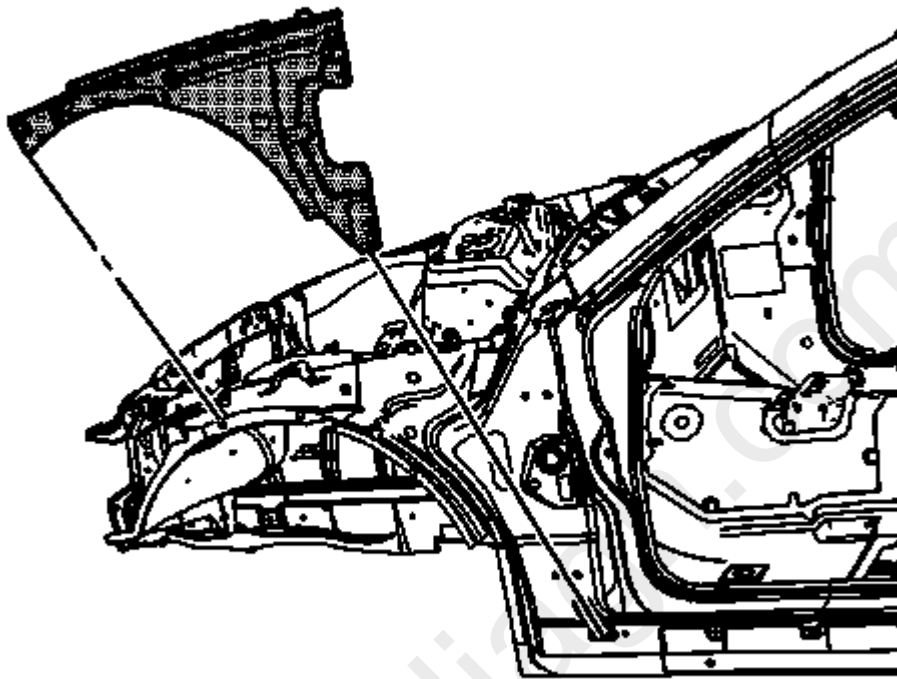


Fig. 20: View of Front Wheel Well and Surface
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Sectioning of the front upper rails is not recommended.**

3. Remove all related panels and components.
4. Restore as much of the damage as possible .
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
6. Locate, mark, and drill out all factory welds attaching the outer rail.
7. Remove the damaged outer rail.

Installation Procedure

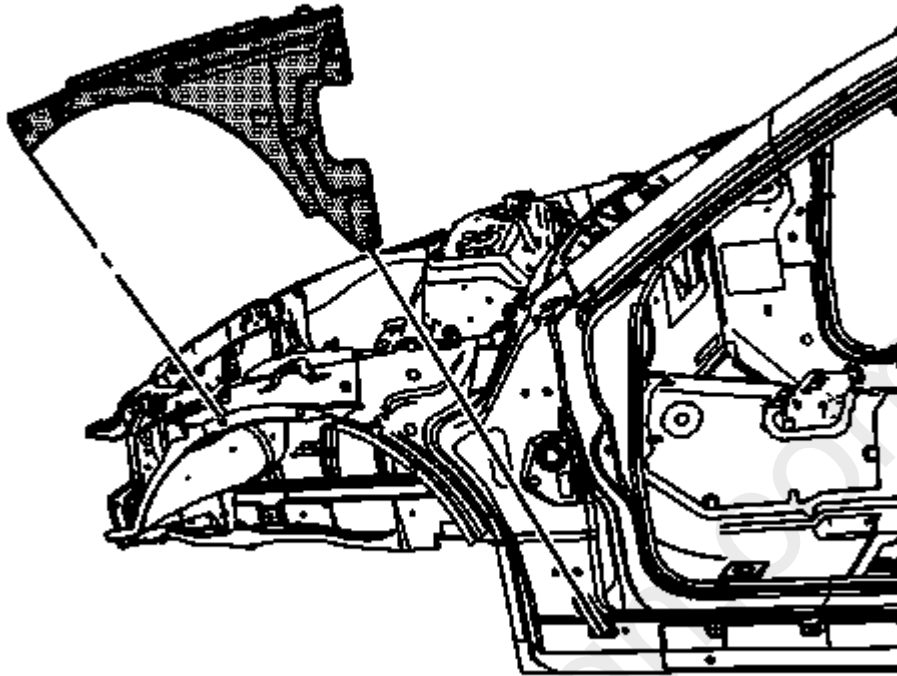


Fig. 21: View of Front Wheel Well and Surface
Courtesy of GENERAL MOTORS COMPANY

1. Prepare the mating surfaces as necessary.
2. Apply Weld-Thru Coating to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair .

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

3. Drill 8 mm (5/16 in) plug weld holes as necessary in the locations noted from the original panels.
4. Temporarily position the outer rail on the vehicle.
5. Verify the location using 3-dimensional measuring equipment.
6. Plug weld accordingly.
7. Clean and prepare welded surfaces.
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
9. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
10. Install all of the related panels and components.

11. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
12. 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** .

NOTE:

- If the damage exceeds the recommended area for sectioning and the rail cannot be straightened, then replace the entire rail.
- Sectioning procedures have been developed to simplify the repair of the lower rails, as long as the damage rearward of the sectioning location can be repaired to factory specifications.
- Failure to follow the instructions may lead to improper rail sectioning, which may compromise the structural integrity of the vehicle.

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 (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .

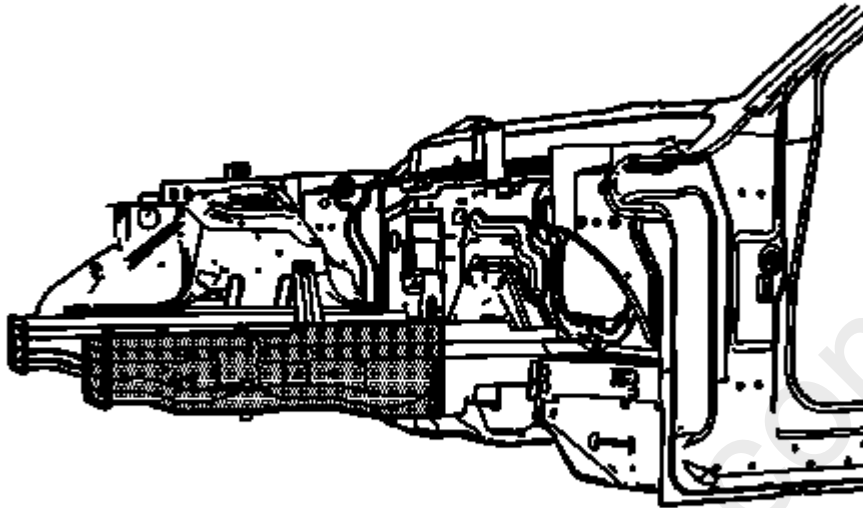


Fig. 22: Front Compartment Front Rail
Courtesy of GENERAL MOTORS COMPANY

3. Remove all of the 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. Perform the necessary procedures to gain access to the repair.

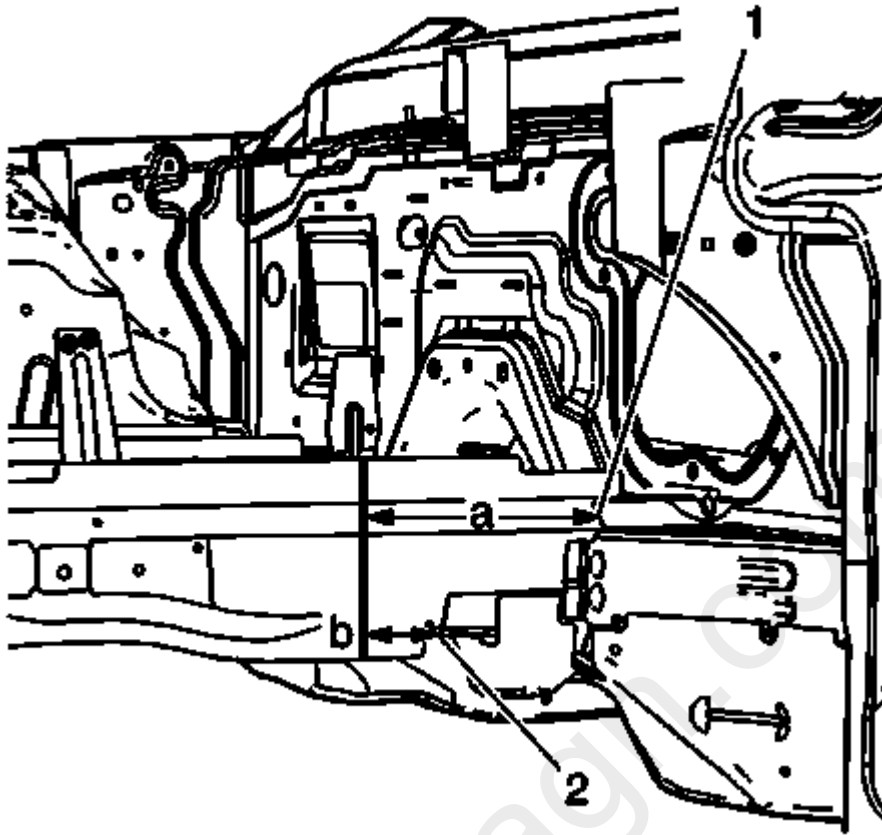


Fig. 23: Upper Reinforcement Bracket
Courtesy of GENERAL MOTORS COMPANY

7. On the outboard side of the rail, locate the upper reinforcement bracket (1). On the bottom of the rail, locate the lower reinforcement bracket (2).
8. Measure 280 mm (11 in) (a) forward from the edge of the upper reinforcement bracket (1). Make a mark.
9. Measure 100 mm (4 in) (b) forward from the edge of the lower reinforcement bracket (2). Make a mark.

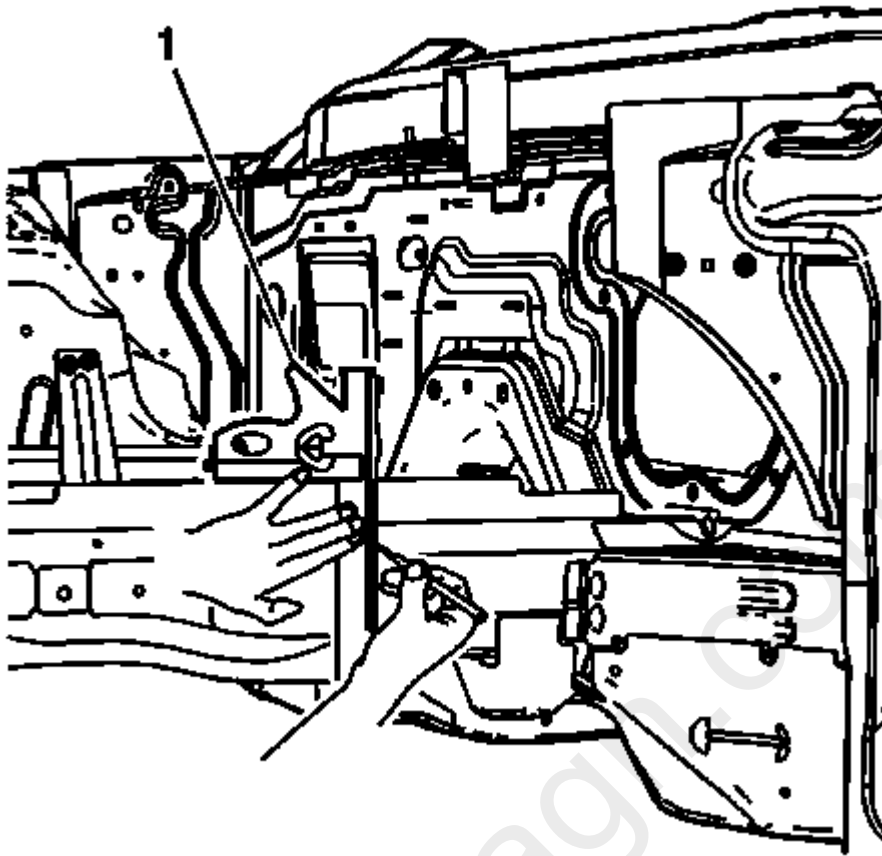


Fig. 24: Aligning Using A Sliding Square
Courtesy of GENERAL MOTORS COMPANY

10. Using the two marks, align a sliding square or similar tool (1) square to the surface to the vertical walls of the frame rail.
11. Scribe a line to both sides of the frame rails.

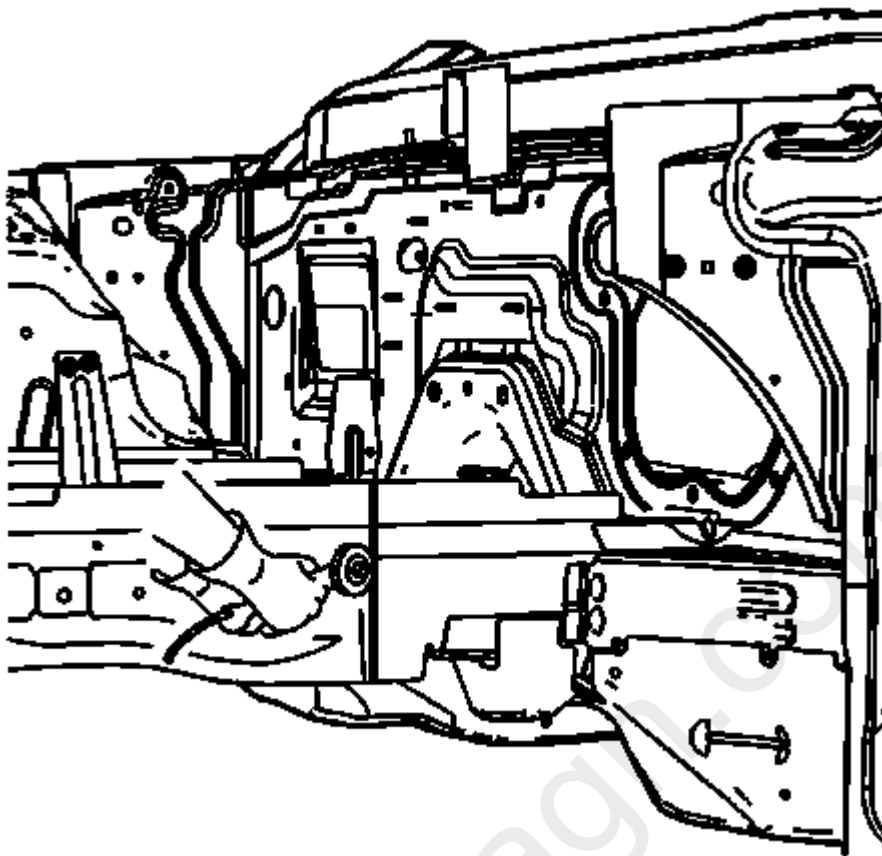


Fig. 25: Cutting Frame Rail

Courtesy of GENERAL MOTORS COMPANY

12. Cut the frame rail at the marked location.

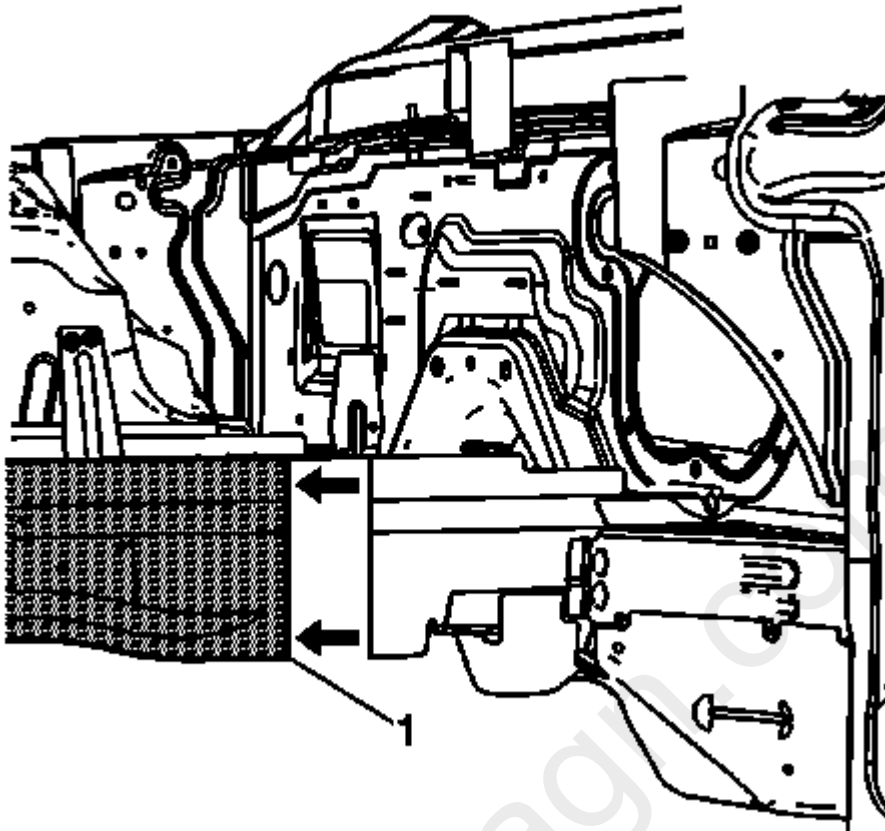


Fig. 26: Damaged Frame Rail Section
Courtesy of GENERAL MOTORS COMPANY

13. Remove the damaged frame rail section (1) from the vehicle.

Installation Procedure

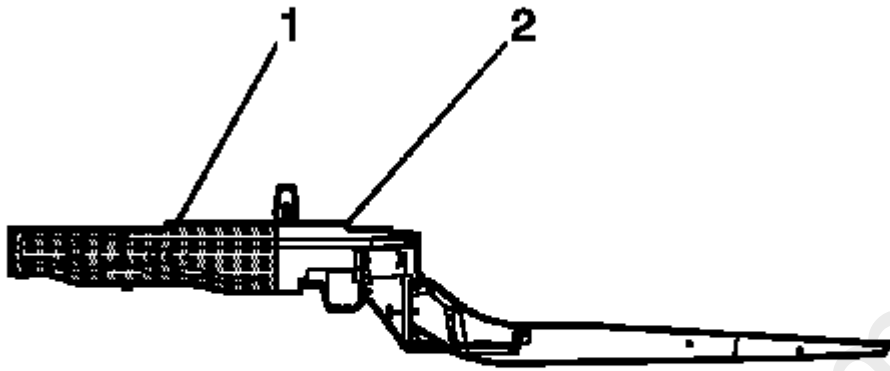


Fig. 27: Rail Section Service Part
Courtesy of GENERAL MOTORS COMPANY

1. In order to create the rail section service part (1), cut the full rail service part (2).

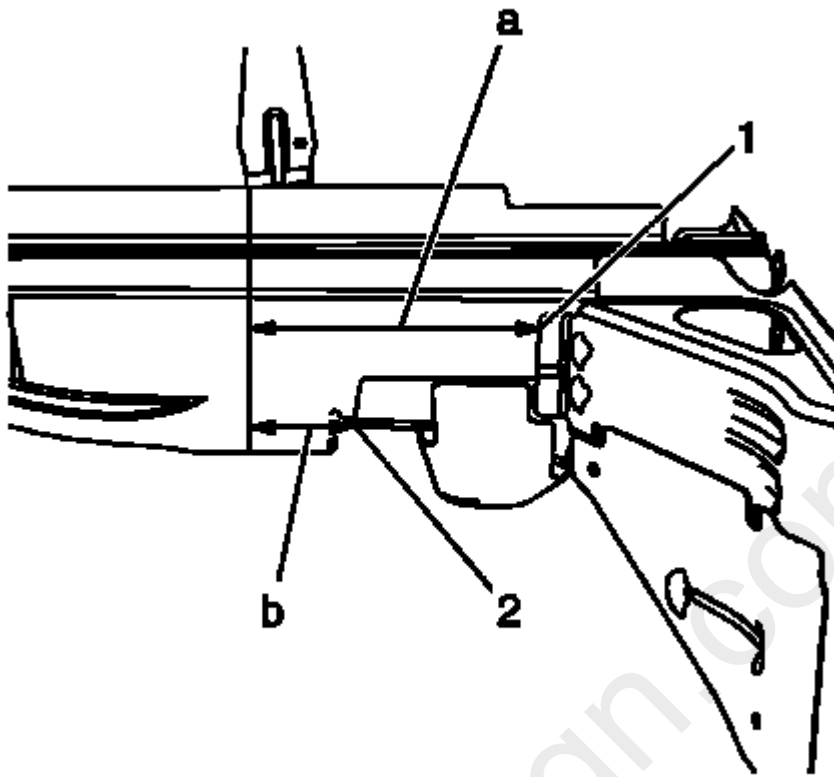


Fig. 28: Upper & Lower Reinforcement Bracket
Courtesy of GENERAL MOTORS COMPANY

2. On the outboard side of the full rail service part, locate the upper reinforcement bracket (1). On the bottom of the rail, locate the lower reinforcement bracket (2).
3. Measure 280 mm (11 in) (a) forward from the edge of the upper reinforcement bracket (1). Make a mark.

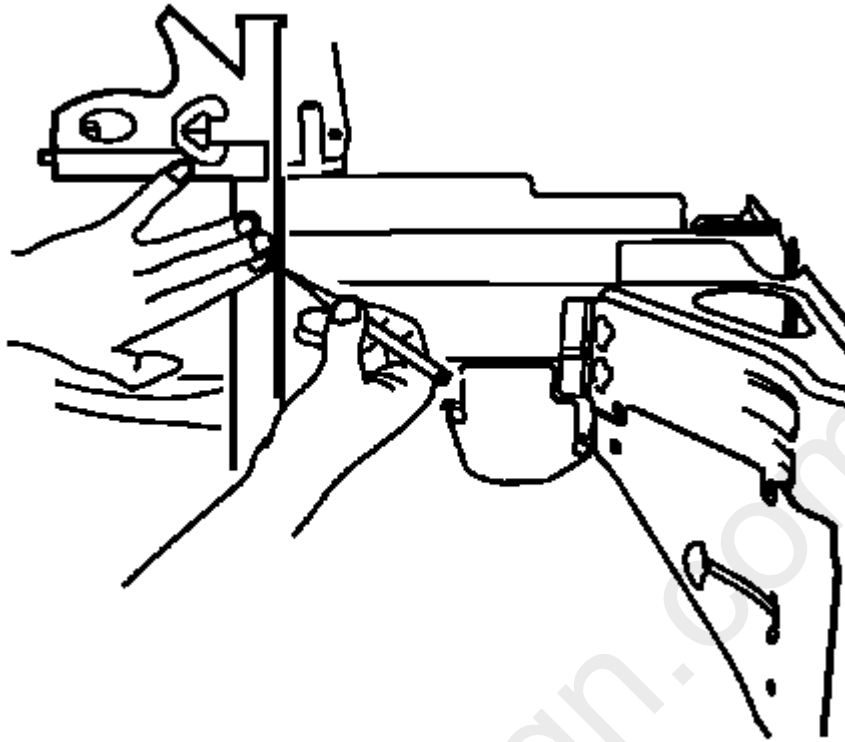


Fig. 29: Aligning Using A Sliding Square
Courtesy of GENERAL MOTORS COMPANY

4. Using the two marks, align a sliding square or similar tool square to the surface to the vertical walls of the frame rail.
5. Scribe a line to both sides of the frame rails.
6. Measure 100 mm (4 in) (b) forward from the edge of the lower reinforcement bracket (2). Make a mark.

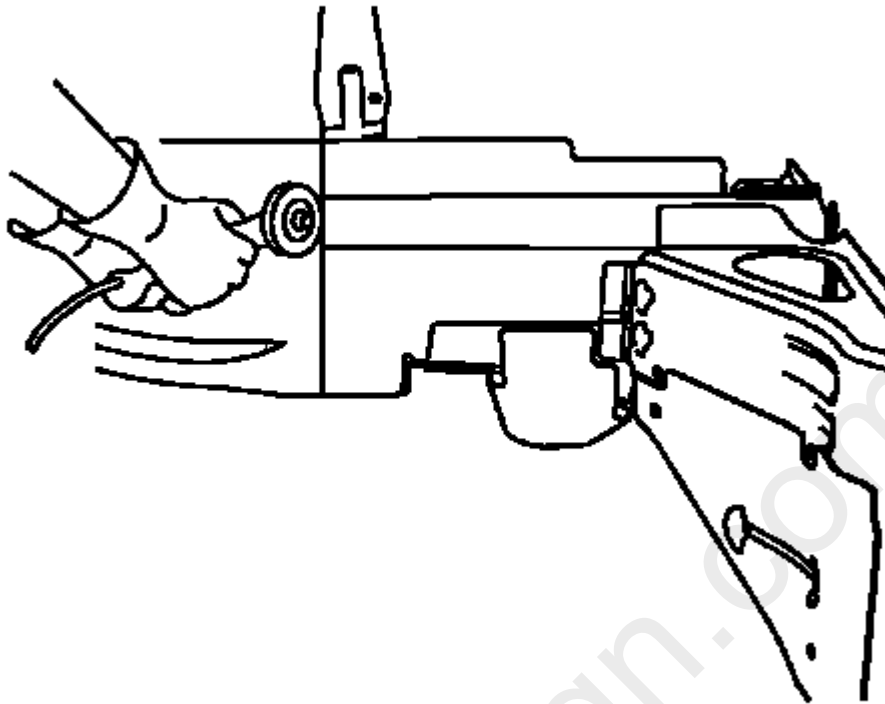


Fig. 30: Cutting Frame Rail

Courtesy of GENERAL MOTORS COMPANY

7. Cut the frame rail at the marked location.

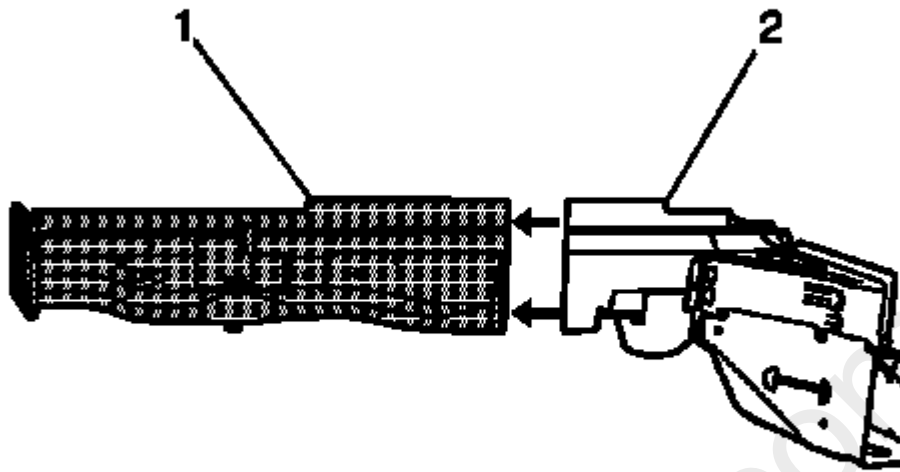


Fig. 31: Removing Rail Section From Full Rail Service Part
Courtesy of GENERAL MOTORS COMPANY

8. Remove the rail section (1) from the full rail service part (2).

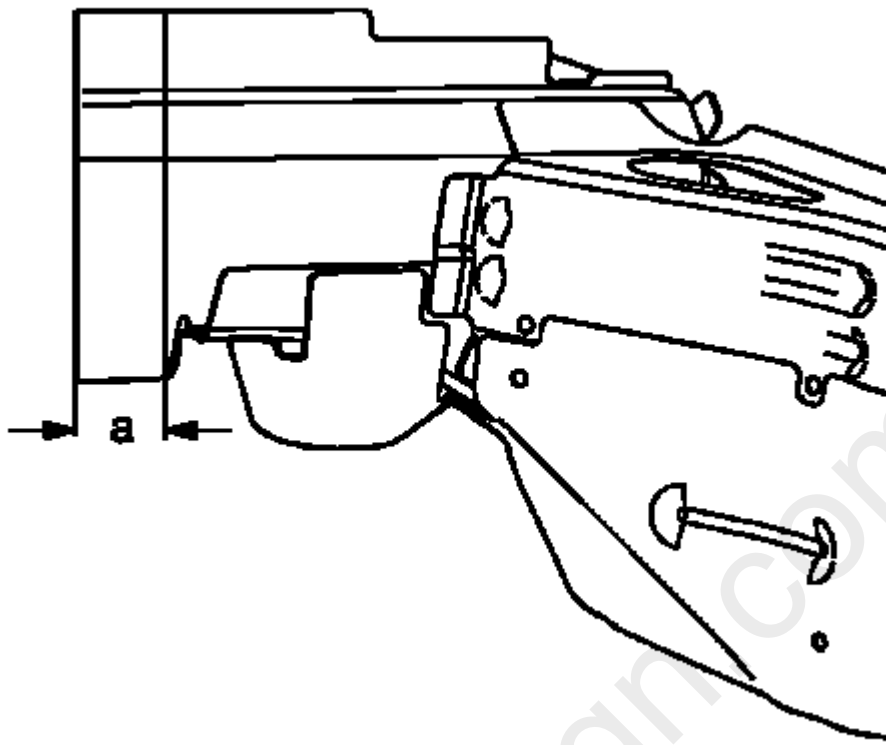


Fig. 32: Cutting Sleeve Or Backing Plate For Sectioning Joint
Courtesy of GENERAL MOTORS COMPANY

9. From the unused portion of the full rail service part, measure, mark, and cut a 50 mm (2-in) (a) section of rail to be used as a sleeve or backing plate for the sectioning joint.
10. Cut through the top and the bottom of the sleeve to create two individual pieces that can be installed in the near rail section.
11. Trim the pieces as necessary to provide a flush fit along the inner surface of the new rail section.

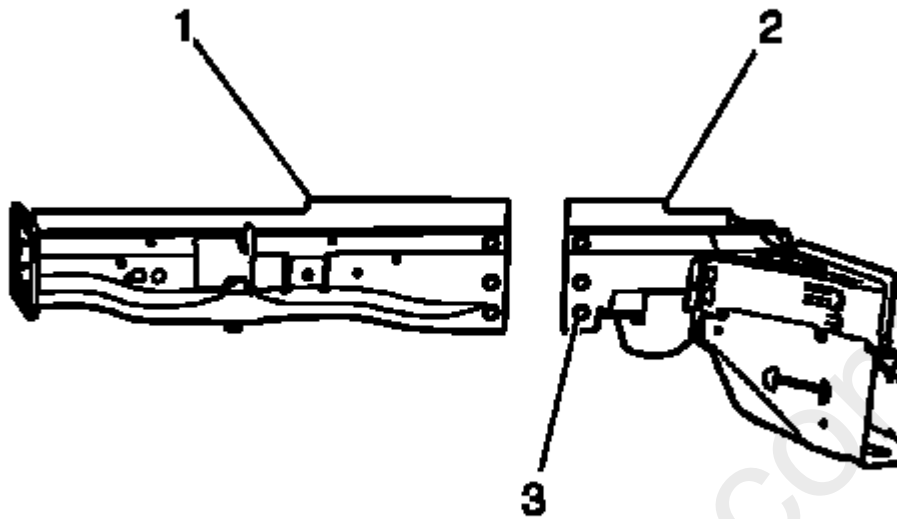


Fig. 33: Rail Section

Courtesy of GENERAL MOTORS COMPANY

12. Drill 6 8 mm (5/16 in) (3) plug weld holes in the rail section (1), so that there are 3 holes equally spaced on each side of the rail.
13. Drill 6 8 mm (5/16 in) (3) plug weld holes in the vehicle rail (2), so that there are 3 holes equally spaced on each side of the rail.
14. Clean and prepare all of the welded surfaces.
15. Apply weld-thru coating as necessary. Refer to **Anti-Corrosion Treatment and Repair** .

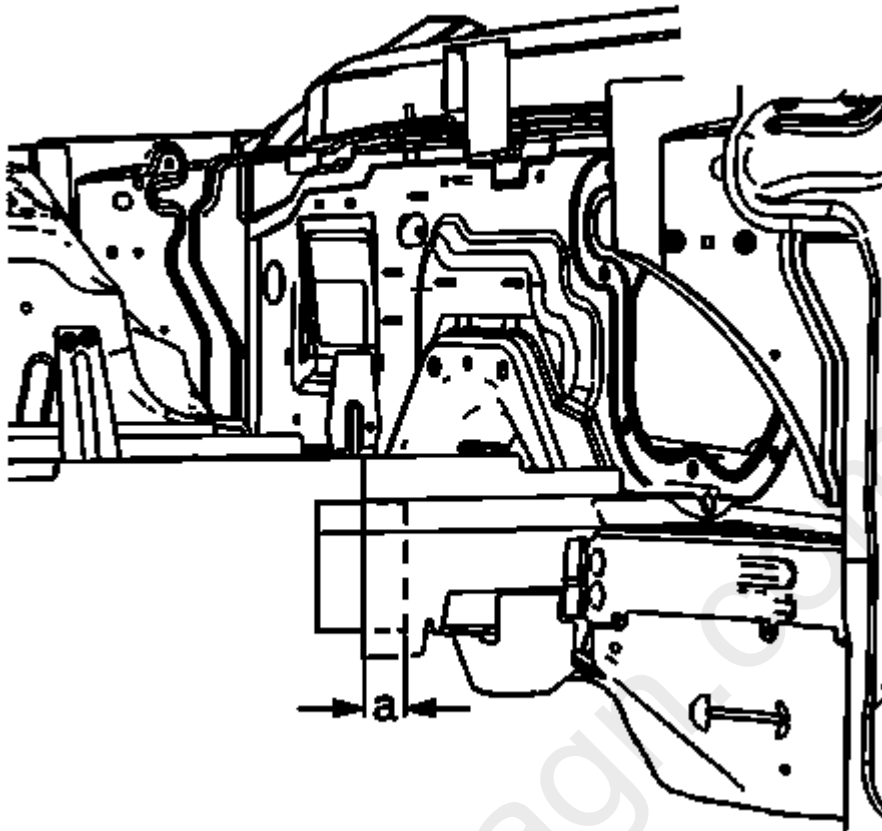


Fig. 34: Vehicle Frame Rail

Courtesy of GENERAL MOTORS COMPANY

16. Install the 2 sleeve pieces 25 mm (1 in) (a) into the vehicle frame rail.
17. Plug weld accordingly at each plug weld location.

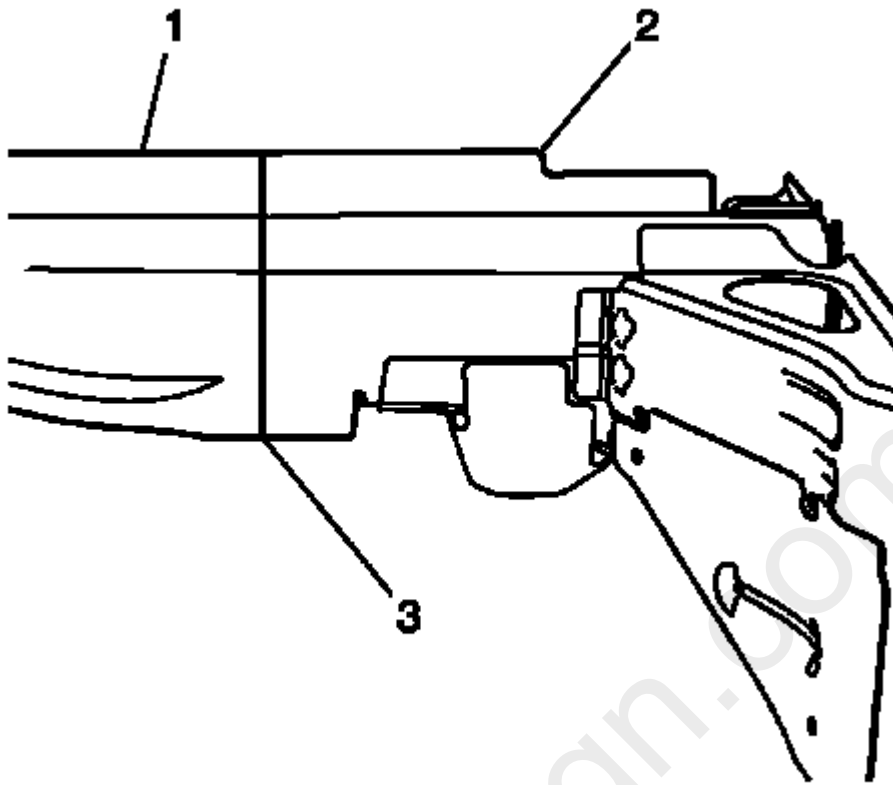


Fig. 35: Service Rail Section

Courtesy of GENERAL MOTORS COMPANY

18. Position the service rail section (1) to the existing rail (2).
19. Maintain a gap (3) of 1 1/2 times the frame rail metal thickness at the sectioning joint. Clamp in place.
20. Inspect the frame measurements 3-dimensional to ensure proper position of the service rail section.
21. Plug weld accordingly at each plug weld location.
22. Inspect the frame measurements 3-dimensional to ensure proper position of the service rail section.

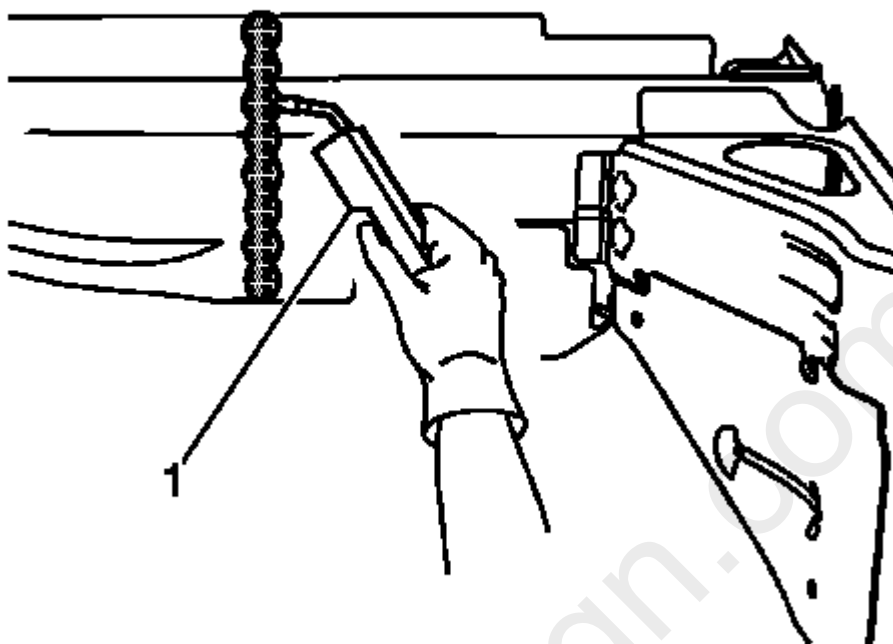


Fig. 36: Stitch Welding

Courtesy of GENERAL MOTORS COMPANY

23. Stitch weld along the entire sectioning joint. Make 25 mm (1 in) welds along the seam with 25 mm (1 in) gaps between (1).
24. Complete the stitch weld.
25. Clean and prepare all of the welded surfaces.
26. Install all of the related panels and components.
27. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
28. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
29. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
30. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

FRONT INNER HINGE PILLAR BODY REPLACEMENT

Removal Procedure

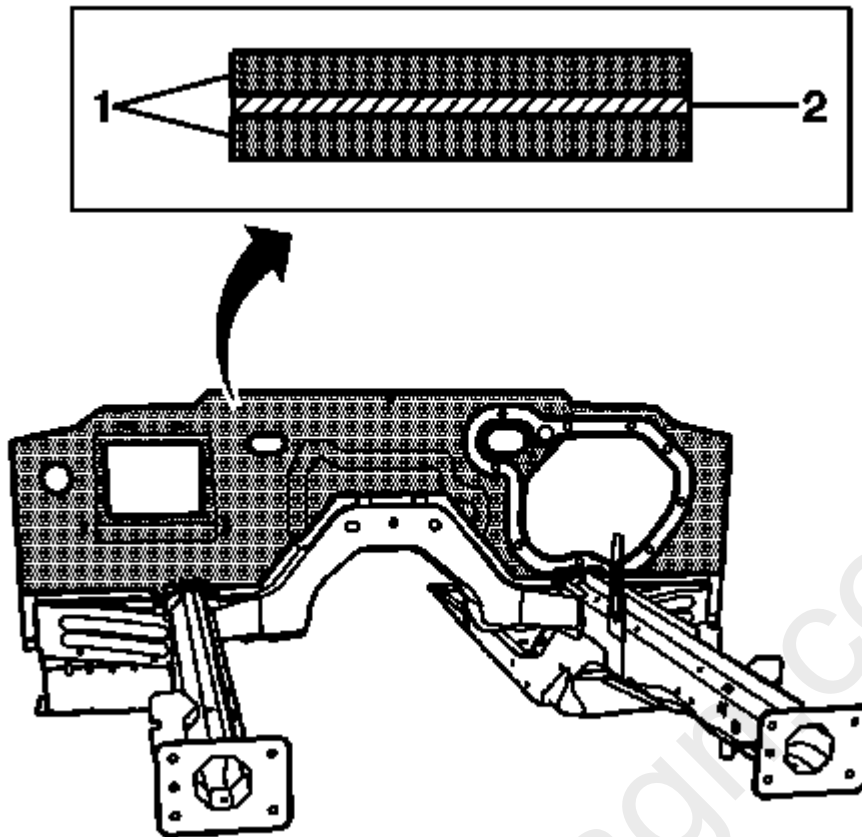


Fig. 37: View Of Dash Panel

Courtesy of GENERAL MOTORS COMPANY

NOTE: Failure to follow this procedure will compromise the structural integrity of the vehicle.

The front of the dash panel is formed from laminated steel. This steel is constructed by bonding 2 pieces of cold rolled steel (1) with a viscosities layer of adhesive (2). MIG welding laminated steel does not meet GM Corporate standards for structural integrity. As an alternative, all factory welds may be replaced by using the rivet and adhesive bond method described in the installation portion of this procedure. The rivet and adhesive bond method must only be used in the areas described in this 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 (Coupe) , Battery Negative Cable Disconnection and Connection (Wagon) .

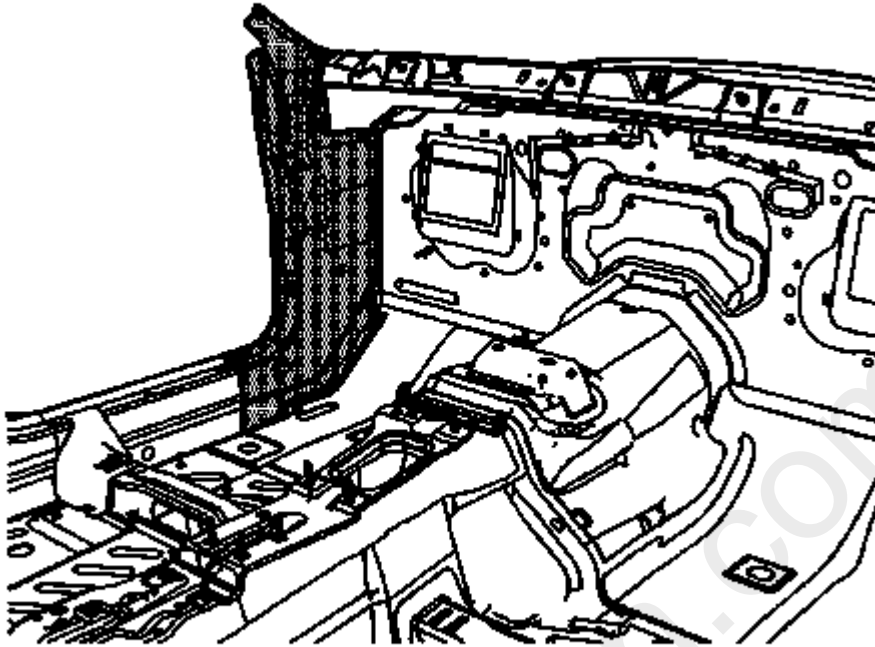


Fig. 38: Removing Sealers And Anti-Corrosion Materials From Repair Area
Courtesy of GENERAL MOTORS COMPANY

3. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
4. Visually inspect the damaged area. Repair as much of the damage as possible. Refer to **Dimensions - Body (Wagon)**.

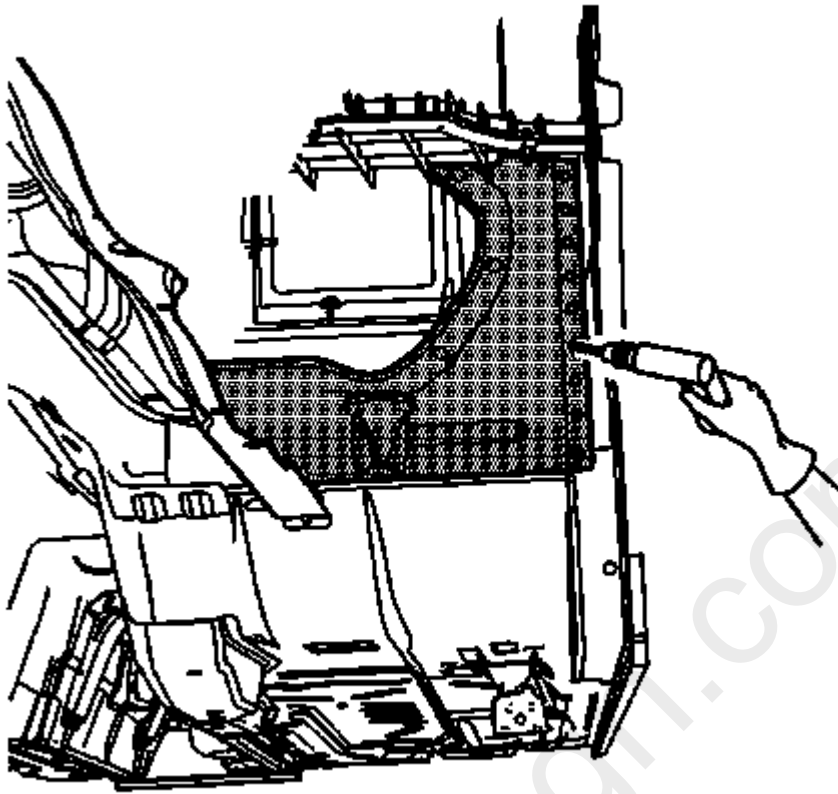


Fig. 39: Drilling Out Factory Welds On Weld Flange
Courtesy of GENERAL MOTORS COMPANY

5. Using a 7 mm (17/64 in) drill bit, locate and drill out the factory welds on the weld flange connecting the front inner hinge pillar to the dash panel.

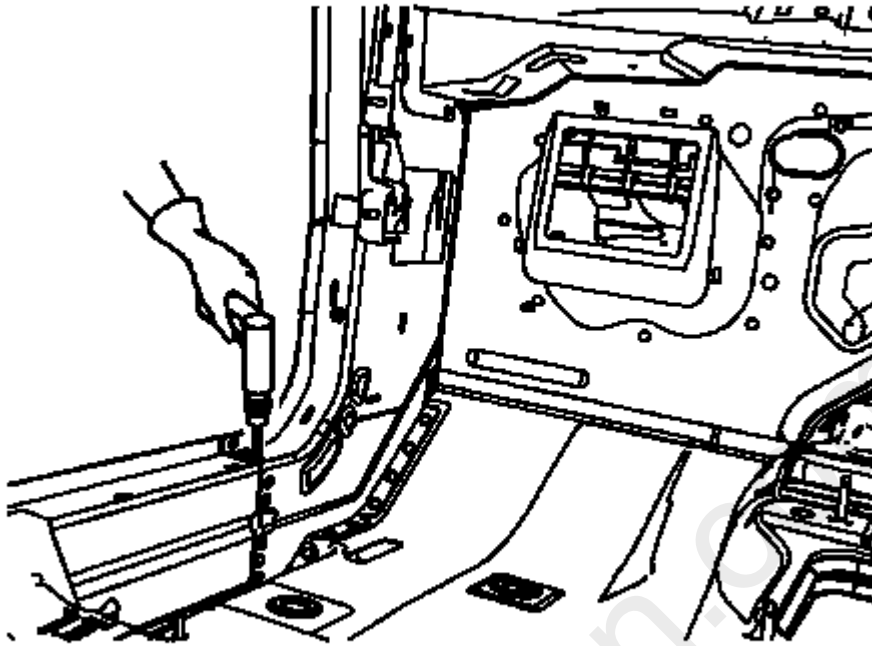


Fig. 40: Drilling Out All Remaining Factory Welds
Courtesy of GENERAL MOTORS COMPANY

NOTE: Note the number and location of welds for installation of the front inner hinge pillar.

6. Locate and drill out all remaining factory welds, using an 8 mm (5/16 in) spot weld remover.

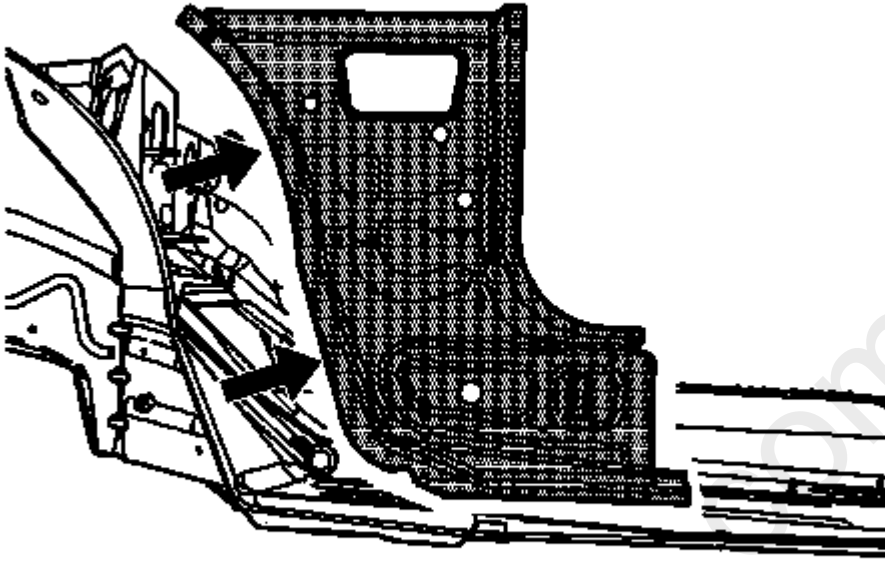


Fig. 41: View Of Front Inner Hinge Pillar
Courtesy of GENERAL MOTORS COMPANY

7. Remove the front inner hinge pillar from the vehicle.

Installation Procedure

1. Remove the dash support bracket from the service part.
2. Position the service front inner hinge pillar in the vehicle using 3-dimensional measuring equipment. Clamp the front inner hinge pillar in place.

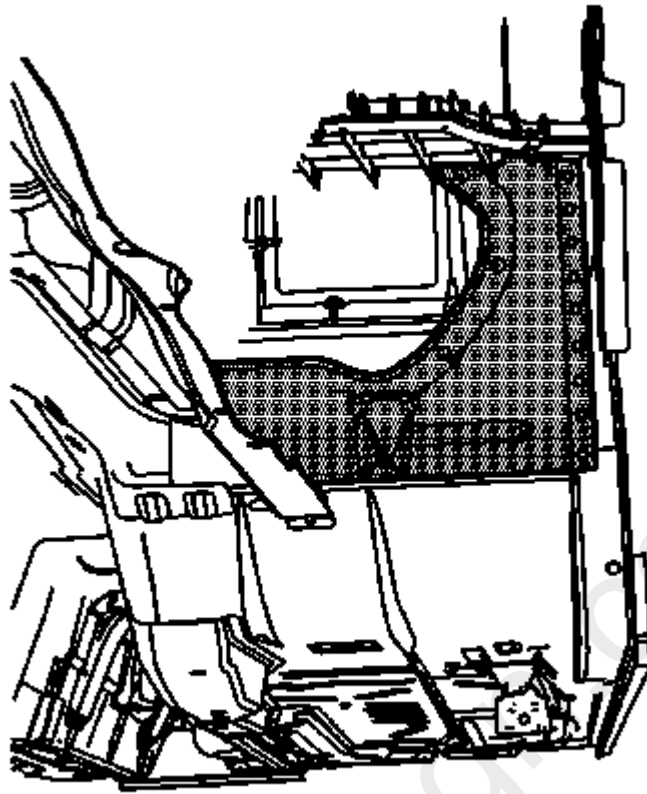


Fig. 42: Drilling Rivet Attachment Holes Into Service Hinge Pillar
Courtesy of GENERAL MOTORS COMPANY

3. Using a 7 mm (17/64 in) bit, drill the rivet attachment holes into the service hinge pillar through the dash in the locations as noted from the factory front inner hinge pillar.

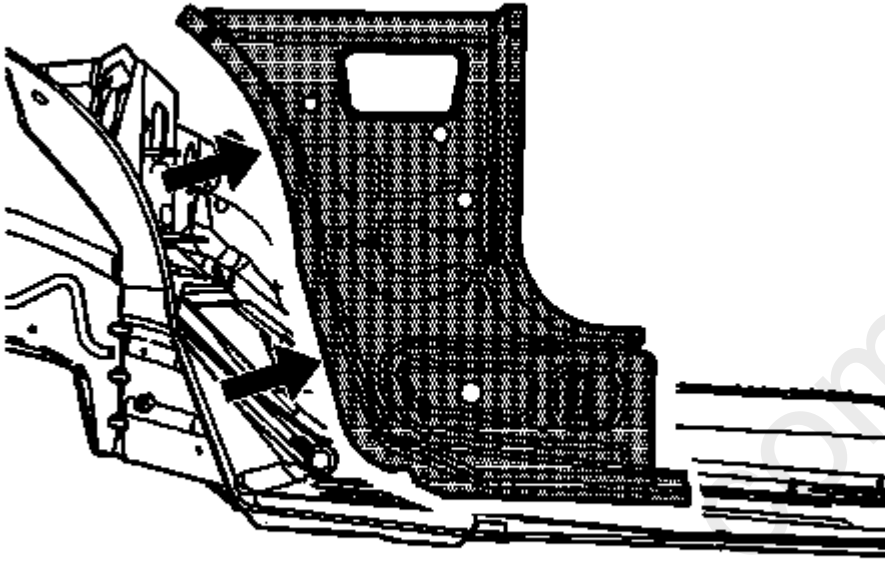


Fig. 43: View Of Front Inner Hinge Pillar
Courtesy of GENERAL MOTORS COMPANY

4. Remove the service front inner hinge pillar.

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.

5. Drill 8 mm (5/16 in) plug weld holes as necessary in the locations noted from the original assembly.
6. Prepare the MIG weld mating surfaces as necessary.
7. Apply GM-approved Weld-Thru Coating or equivalent to all MIG weld mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

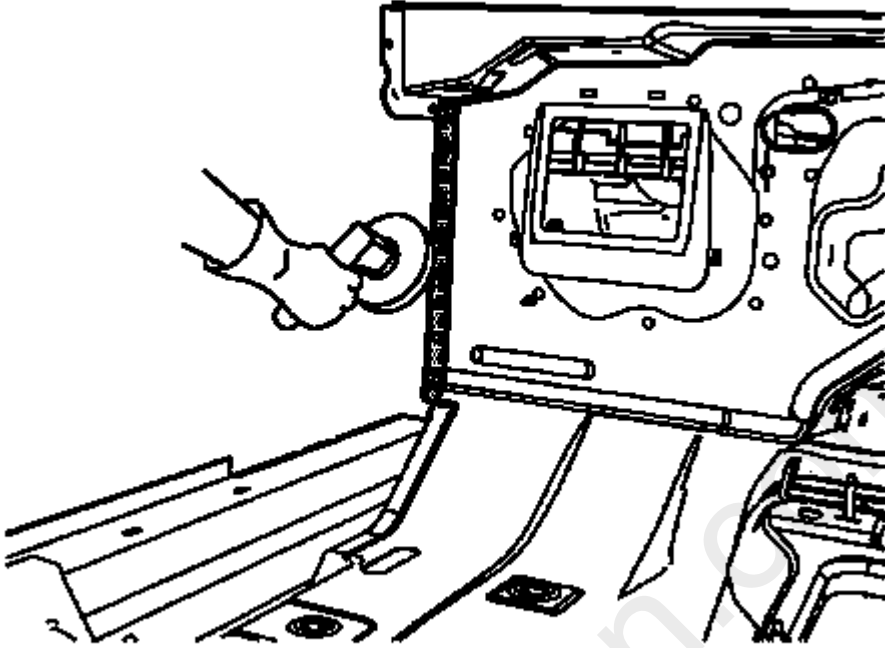


Fig. 44: Grinding To Bare Steel

Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage the corners or thin the metal during the grinding process.

8. Prepare the bonding mating areas by grinding to bare steel the surface of the dash panel and the service front inner hinge pillar flanges.

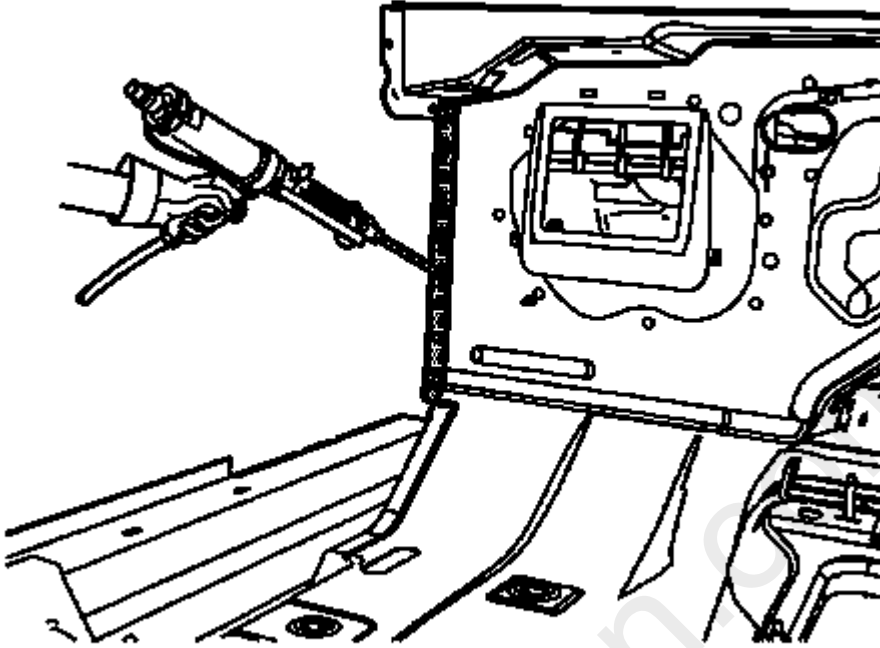


Fig. 45: Applying Bead Of Metal Panel Bonding Adhesive
Courtesy of GENERAL MOTORS COMPANY

9. Apply a 3-6 mm (1/8-1/4 in) bead of metal panel bonding adhesive to the mating surfaces of the dash panel and the front inner hinge pillar service panel. Refer to **Metal Panel Bonding**.

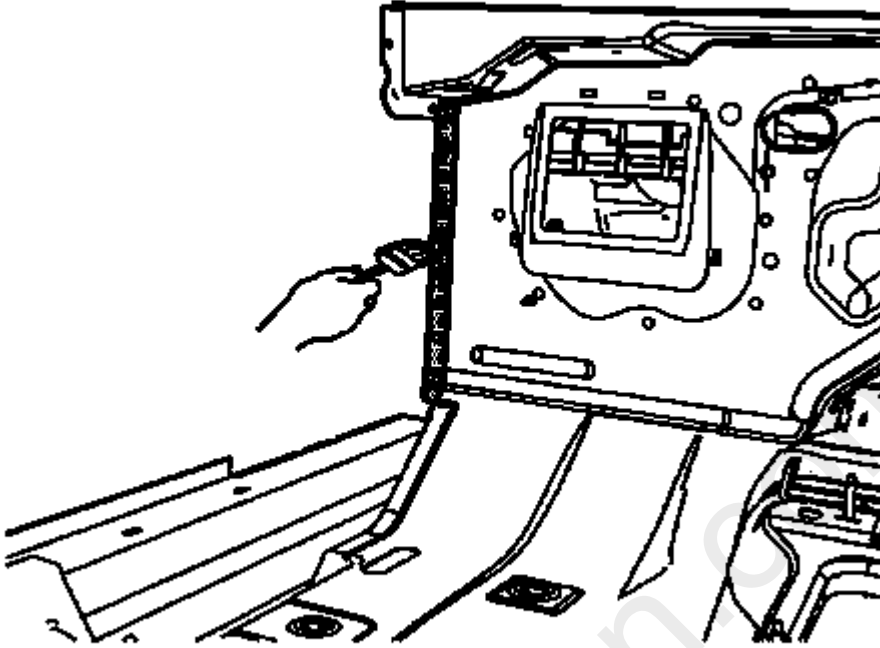


Fig. 46: Spreading A Coating Of Adhesive On Mating Surfaces
Courtesy of GENERAL MOTORS COMPANY

10. Using a small acid brush, spread a coating of adhesive on the mating surfaces. Cover all of the bare metal to ensure corrosion protection.
11. Apply a 3 to 6 mm (1/8 to 1/4 in) bead of metal panel bonding adhesive to the mating surface of the service part.

NOTE: Do not pull the front inner hinge pillar off of the dash after adhesion. To align the parts, slide the front inner hinge pillar against the dash panel.

12. Position the service front inner hinge pillar to the vehicle using 3-dimensional measuring equipment. Clamp the front inner hinge pillar in place.

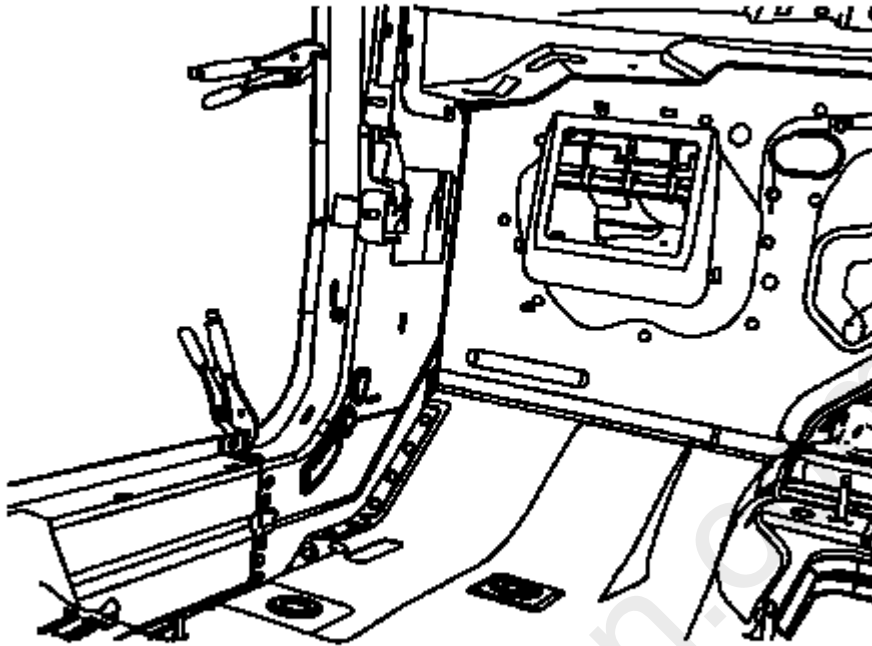


Fig. 47: Positioning Of Service Front Inner Hinge Pillar
Courtesy of GENERAL MOTORS COMPANY

NOTE: Verify the proper positioning of the service front inner hinge pillar prior to riveting and welding.

13. Install the 14 mm (17/32 in) long rivets so that the rivet head contacts the rail extension and the front of the dash panel.

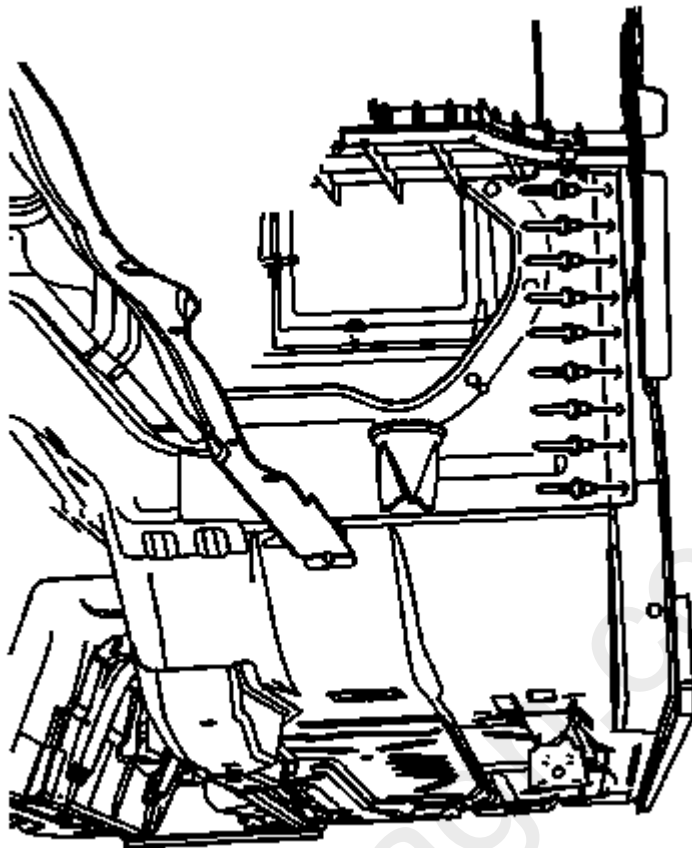


Fig. 48: Removing Excess Adhesive From Front Inner Hinge Pillar Bond Rivet Area
Courtesy of GENERAL MOTORS COMPANY

14. Remove the excess adhesive from the front inner hinge pillar bond rivet area.

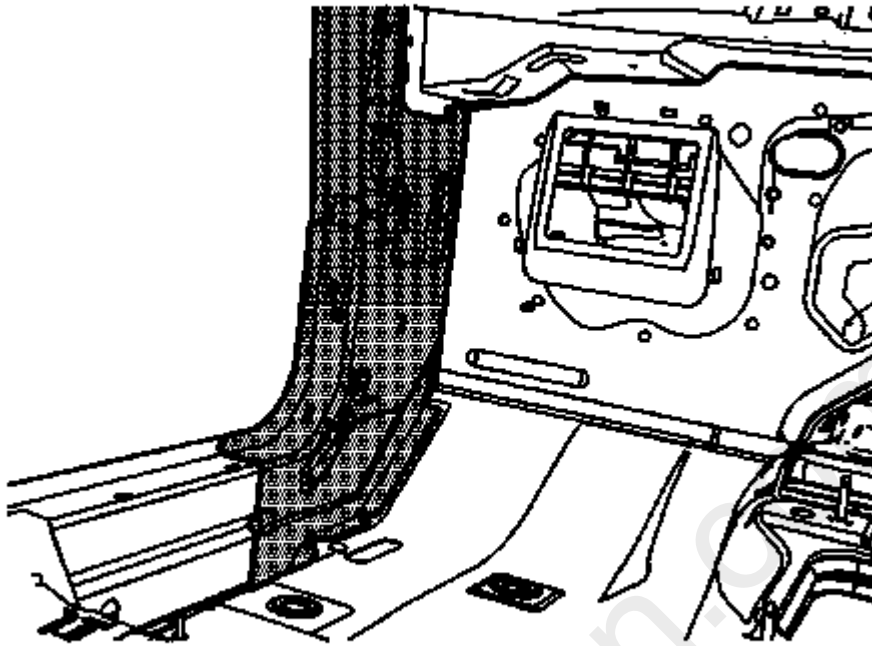


Fig. 49: Plug Welding

Courtesy of GENERAL MOTORS COMPANY

15. Plug weld accordingly.
16. Clean and prepare all of the welded surfaces.
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 **Basecoat/Clearcoat Paint Systems** .
19. Install all related panels and components.
20. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
21. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

FRONT HINGE PILLAR BODY SECTIONING

Removal Procedure

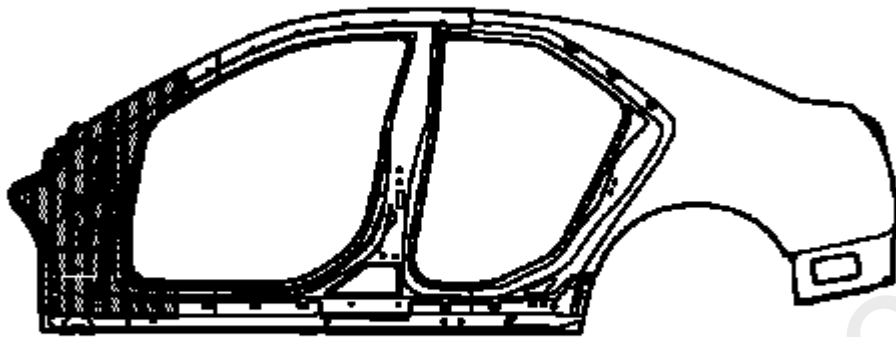


Fig. 50: View of Full Body Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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.

The full body-side outer panel comes as a complete assembly and can be replaced at factory seams after the removal of the fixed glass and roof. Any one of these service procedures can be performed separately or in any combination, depending upon the extent of damage to the vehicle. Sectioning must take place in specified areas only.

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 (Coupe) , Battery Negative Cable Disconnection and Connection (Wagon) .
3. Remove all related panels and components.
4. Repair as much of the damage as possible .

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. Remove sound deadeners as necessary and note their location.
6. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .

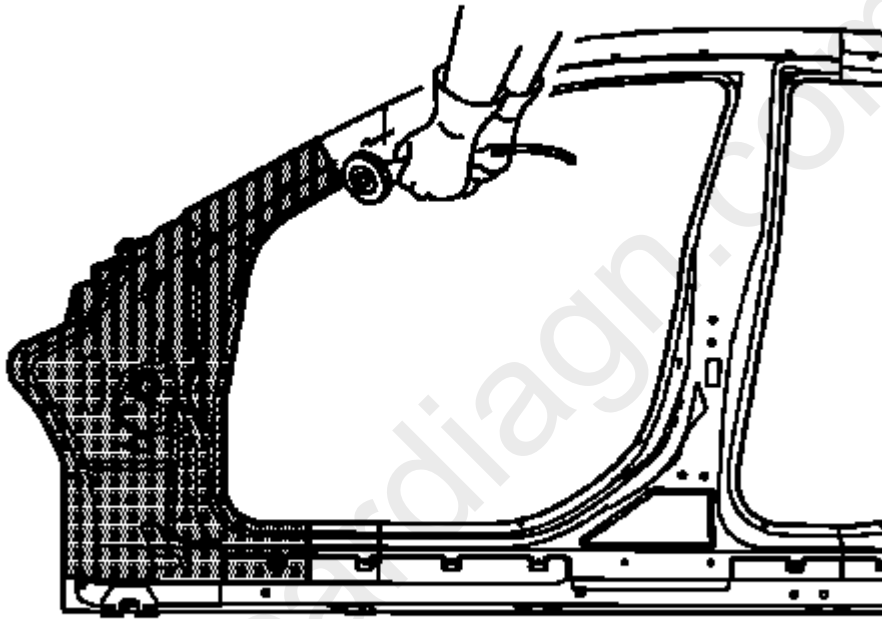


Fig. 51: View of Front Hinge and Panel
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage any inner panels or reinforcements.

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

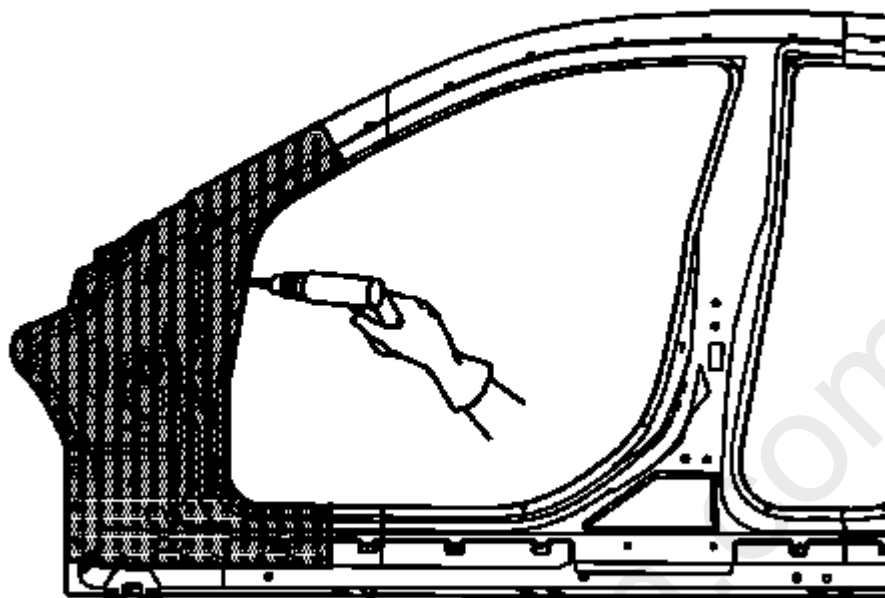


Fig. 52: View of Body Panel and Welds
Courtesy of GENERAL MOTORS COMPANY

NOTE: Note the number and location of the factory welds for installation of the hinge pillar.

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

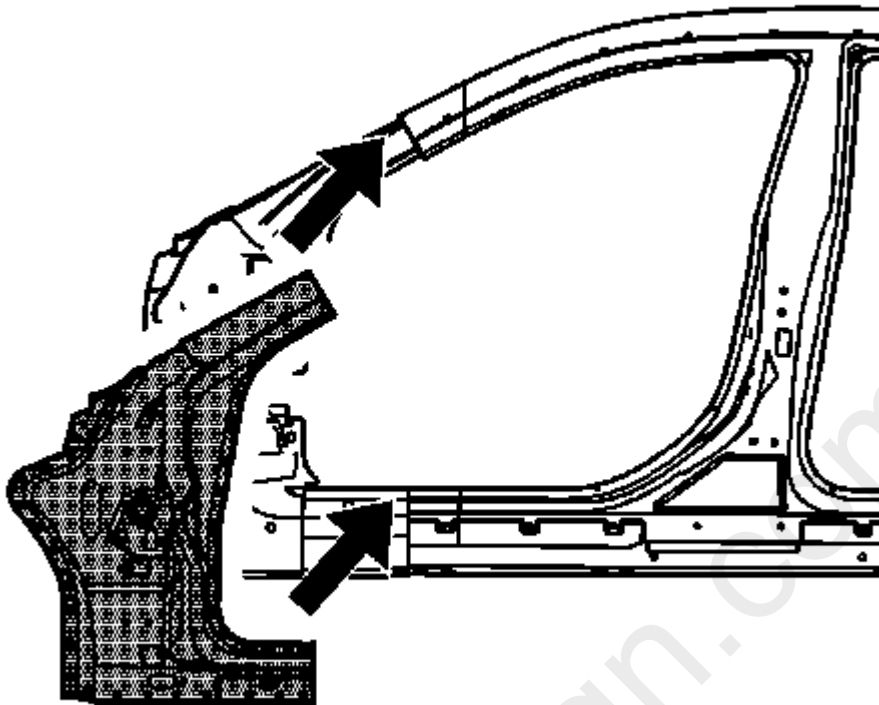


Fig. 53: View of Panel and Hinge Pillar
Courtesy of GENERAL MOTORS COMPANY

9. Remove the damaged hinge pillar.

Installation Procedure

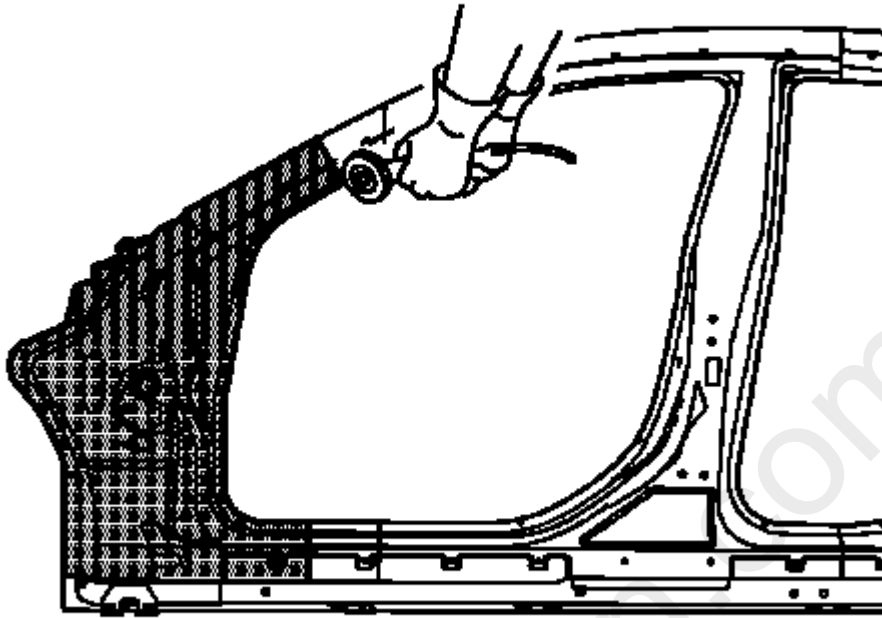


Fig. 54: View of Front Hinge and Panel
Courtesy of GENERAL MOTORS COMPANY

1. Cut the outer front hinge pillar in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to allow a gap of $1 \frac{1}{2}$ times the metal thickness at the sectioning joint.

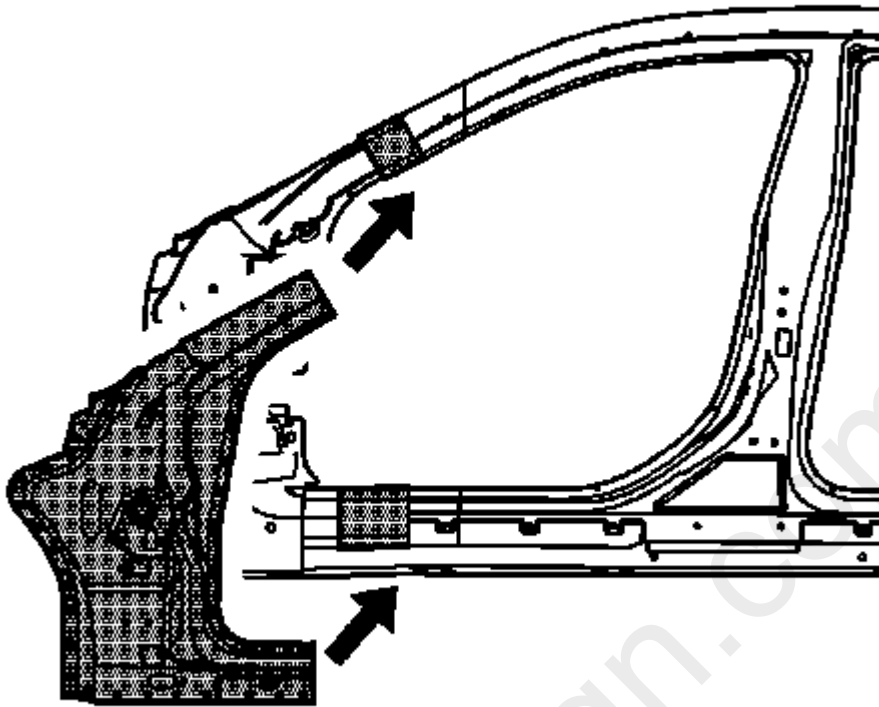


Fig. 55: View of Panel and Pillar

Courtesy of GENERAL MOTORS COMPANY

2. Create a 50 mm (2 in) backing plate from the unused portion of the service part in the windshield pillar area. Create a 100 mm (4 in) backing plate from the unused portion of the service part for the rocker area. Trim the backing plates as necessary to fit behind the sectioning joint.

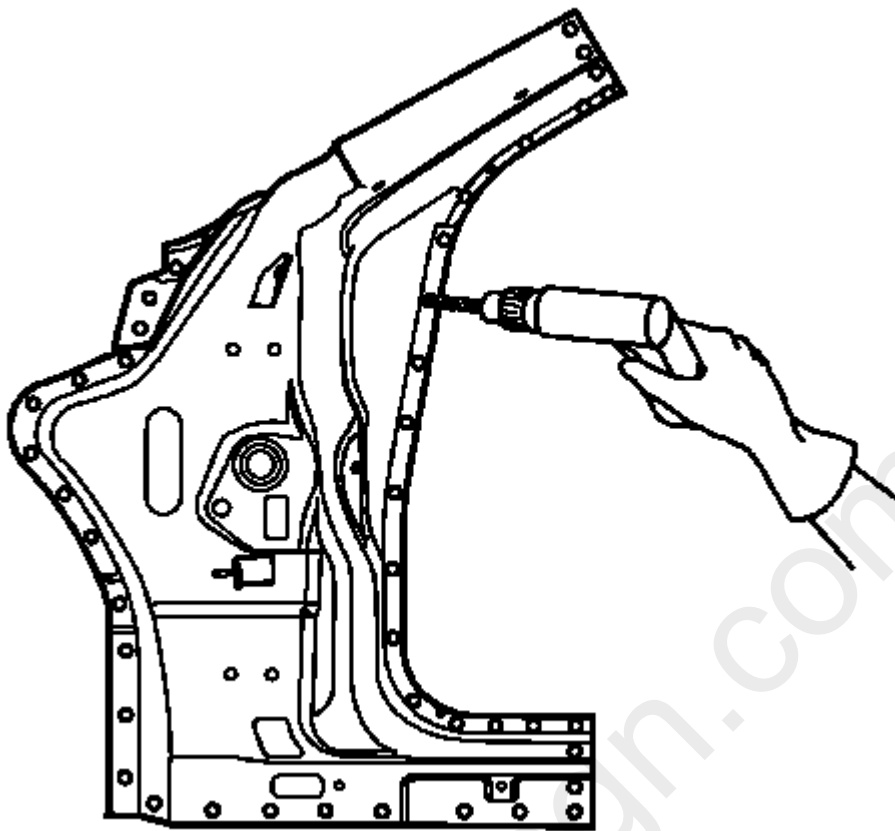


Fig. 56: View of Pillar and Weld Holes
Courtesy of GENERAL MOTORS COMPANY

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

3. 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.
4. Prepare all mating surfaces as necessary.
5. Apply GM-approved weld-thru coating or equivalent to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

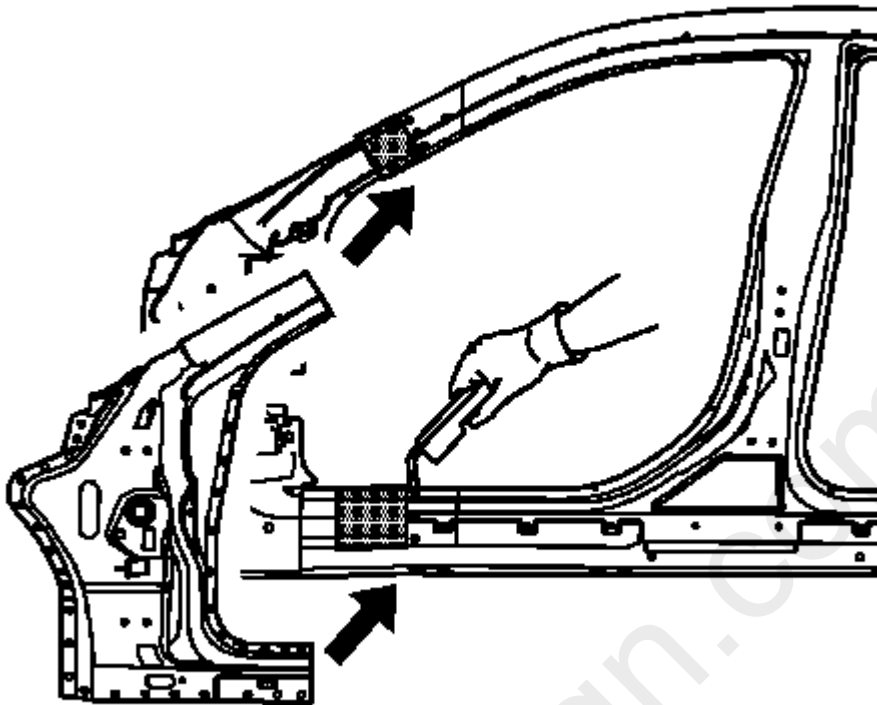


Fig. 57: View of Backing Plate

Courtesy of GENERAL MOTORS COMPANY

6. Fit the backing plate halfway into the sectioning joint, clamp in place and plug weld to the vehicle.
7. Align outer front pillar using 3-dimensional measuring equipment.

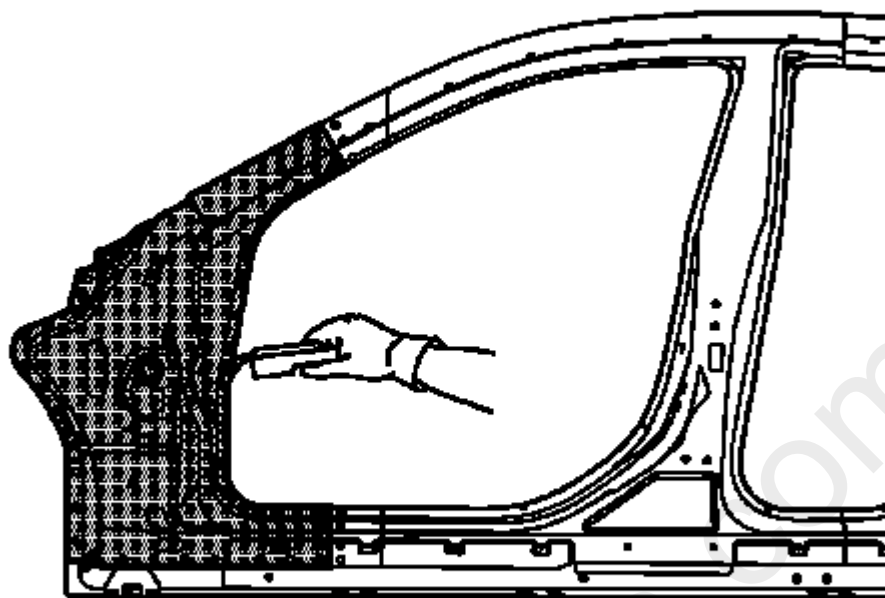


Fig. 58: View of Weld on Panel

Courtesy of GENERAL MOTORS COMPANY

8. Plug weld accordingly.

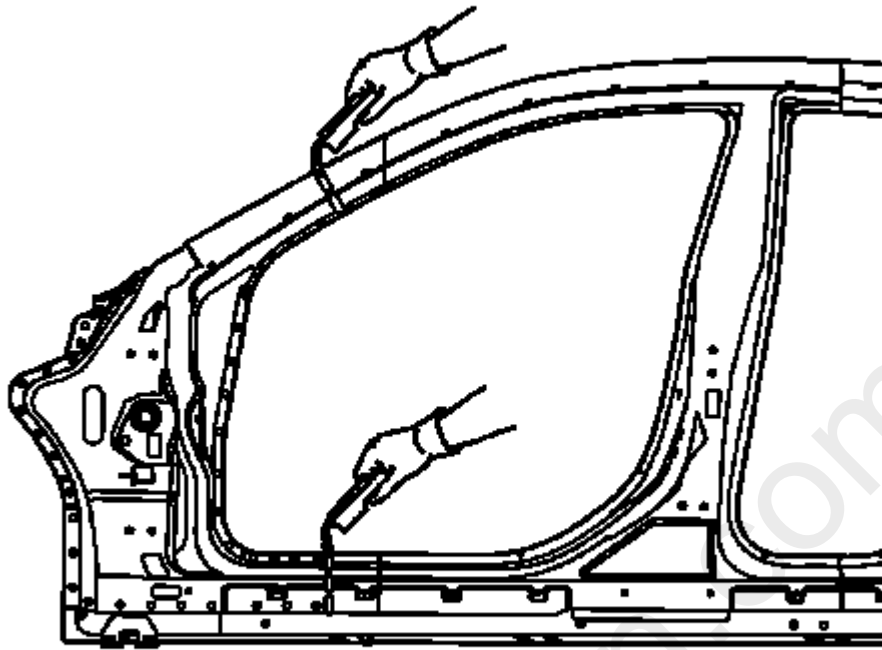


Fig. 59: View of Frame and Weld
Courtesy of GENERAL MOTORS COMPANY

9. To create a solid weld with minimum heat distortion, make a 25 mm (1 in) stitch weld along the seam with 25 mm (1 in) gaps between them. Go back and complete the stitch weld.
10. Clean and prepare all of the welded surfaces.
11. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
12. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
13. Install all of the related panels and components.
14. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
15. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

ROOF OUTER PANEL REPLACEMENT (WAGON)

Removal Procedure

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

NOTE: Use care when cutting to protect adjacent panels. Cut inboard of the side frame structure.

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 (Wagon)** .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
6. Locate and mark all factory welds in the front and rear window openings.

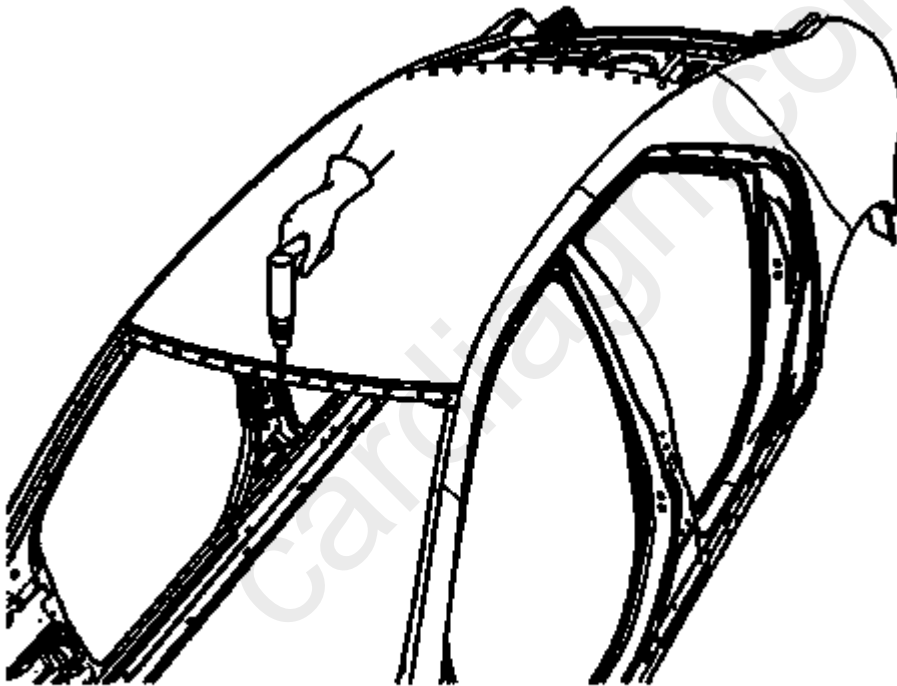


Fig. 60: View of Body Frame and Welding
Courtesy of GENERAL MOTORS COMPANY

7. Drill all factory welds. Note the number and location of welds for installation of the service assembly.

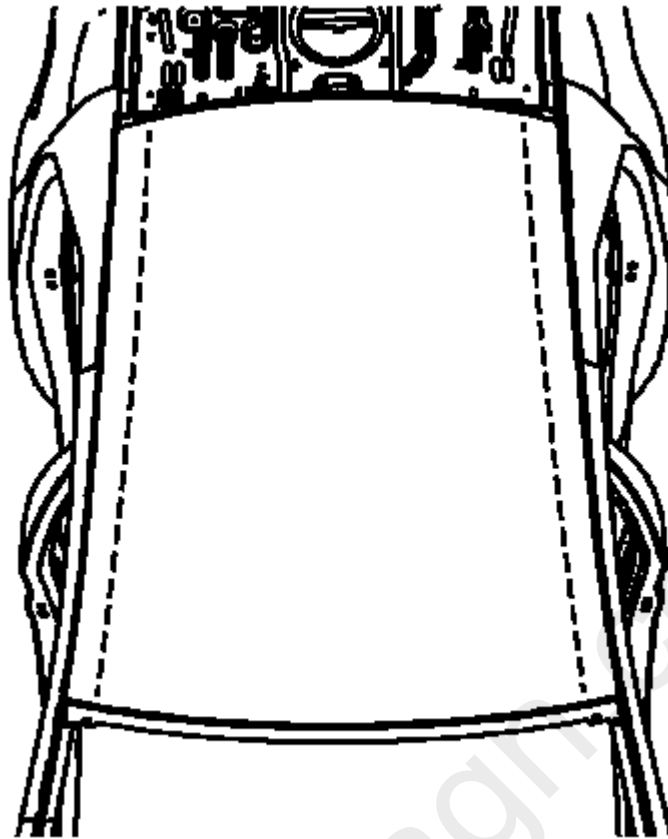


Fig. 61: View of Roof and Side Rail

Courtesy of GENERAL MOTORS COMPANY

8. On the side rail area of the roof use a cut off wheel or equivalent to cut the panel 50 mm (2.0 in) inboard of the MIG braze.
9. Remove the center portion of the panel.

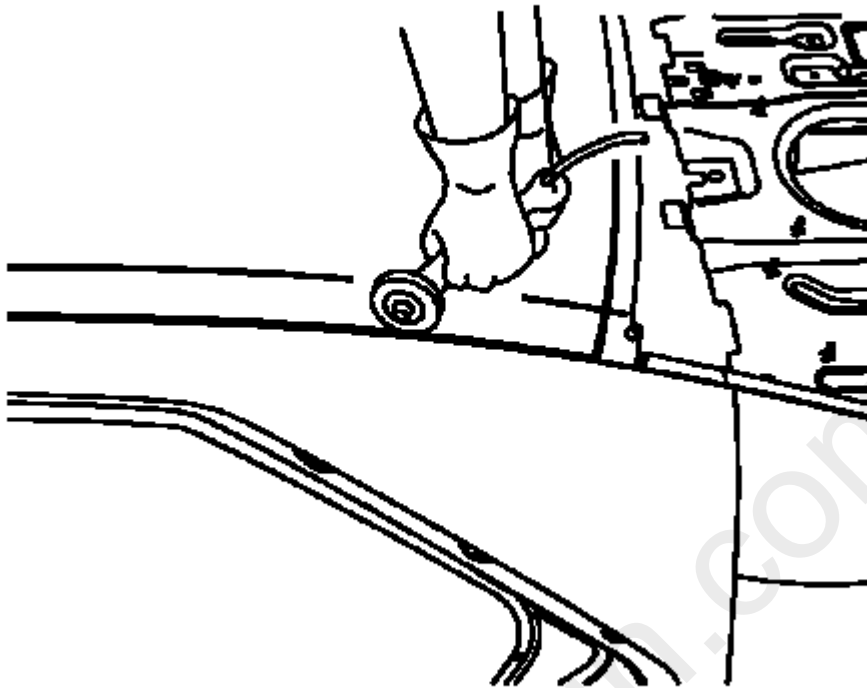


Fig. 62: View of Panel

Courtesy of GENERAL MOTORS COMPANY

10. To separate the remaining portion of the panel use a cut off wheel or equivalent to grind out the joint.
11. Remove the remaining portion of the original panel.

Installation Procedure

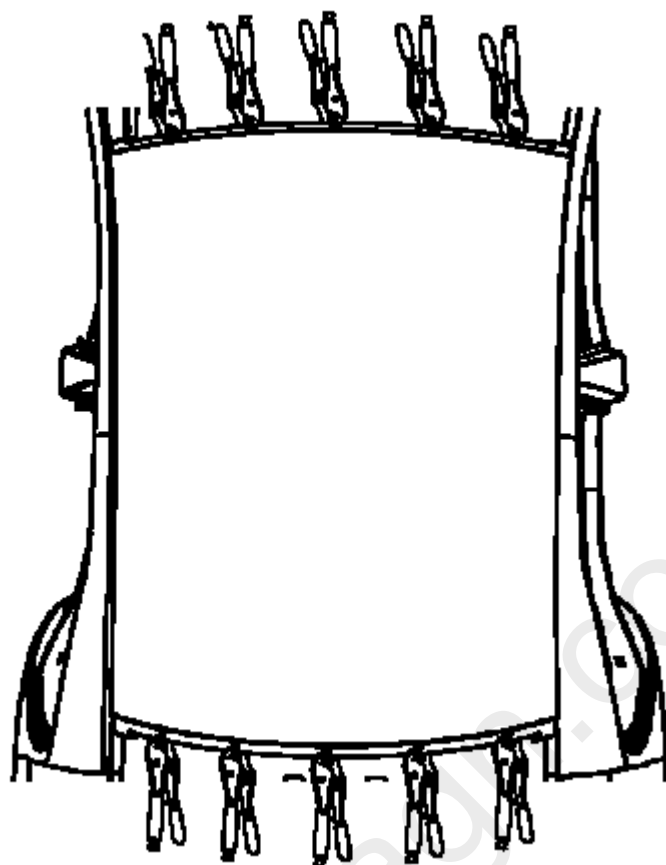


Fig. 63: View of Panel and Clamps
Courtesy of GENERAL MOTORS COMPANY

1. Dry fit the service panel to the vehicle.
2. Clamp the panel into position in the rear window opening. Adjust the bow of the roof front to rear. Clamp in place in the windshield opening area.

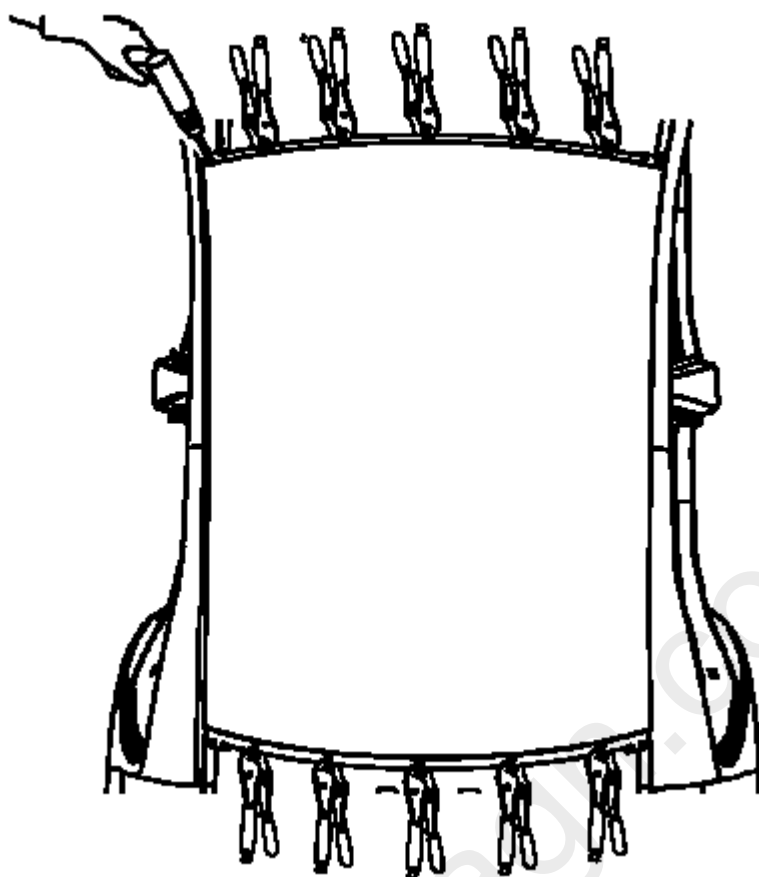


Fig. 64: View of Clamped Panel and Drill
Courtesy of GENERAL MOTORS COMPANY

3. With the service panel clamped in position drill a 3.2 mm (1/8 in) hole in each corner of the panel in the front and rear window openings.
4. Remove the service panel from the vehicle.

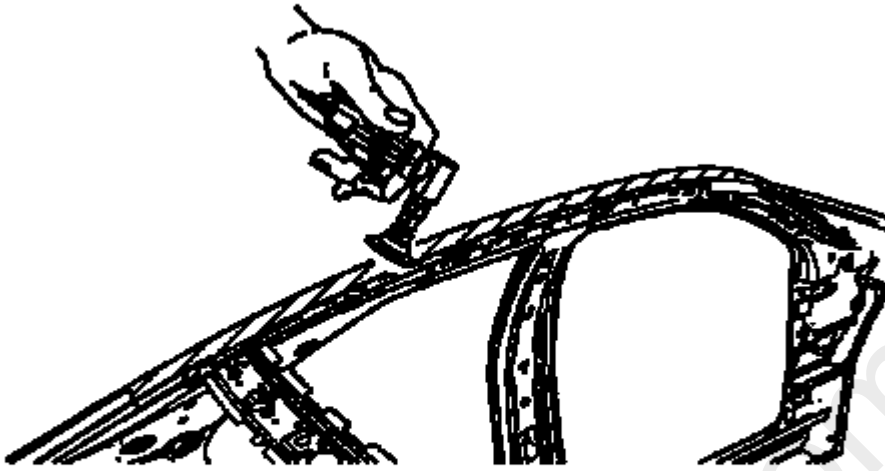


Fig. 65: View of Rail and Abrasive Wheel
Courtesy of GENERAL MOTORS COMPANY

5. Prepare the roof rail area of the vehicle with a Rol-lock abrasive wheel or equivalent.
6. Clean and prepare the front and rear window attaching surfaces for welding. Refer to **Anti-Corrosion Treatment and Repair** .
7. Prepare the roof side rail bond areas. Refer to adhesive manufactures preparation instructions.
8. Apply fusor super flexible anti-flutter foam fast set, or equivalent, to the roof bows in the locations noted from the original panel.

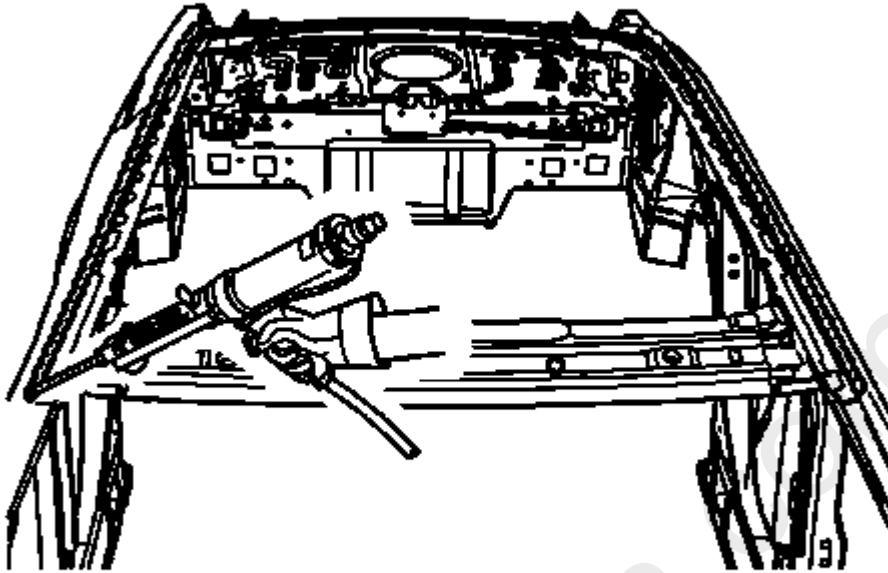


Fig. 66: View of Roof Rail and Application
Courtesy of GENERAL MOTORS COMPANY

9. Apply a 12 mm (1/2 in) bead of the windshield urethane to the left and right roof rails.
10. With the help of a second person lower the service panel straight down onto the vehicle.

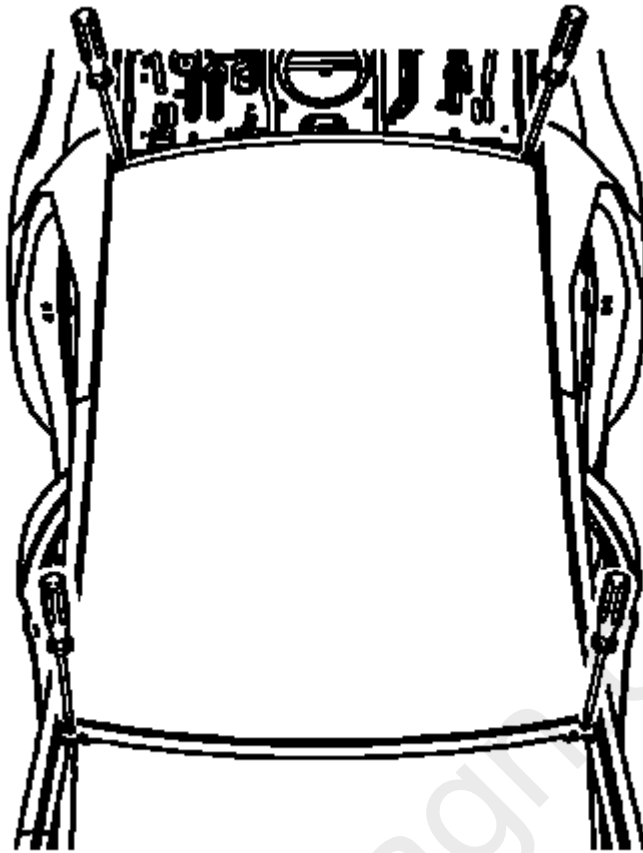


Fig. 67: View of Roof

Courtesy of GENERAL MOTORS COMPANY

NOTE: This step will insure the proper location and contour to the vehicle

11. Insert an awl or equivalent tool into the four holes drilled in the window openings in step 3.
12. Clamp the roof in place in the front and rear window openings.
13. Clean up the excess urethane from the surface.

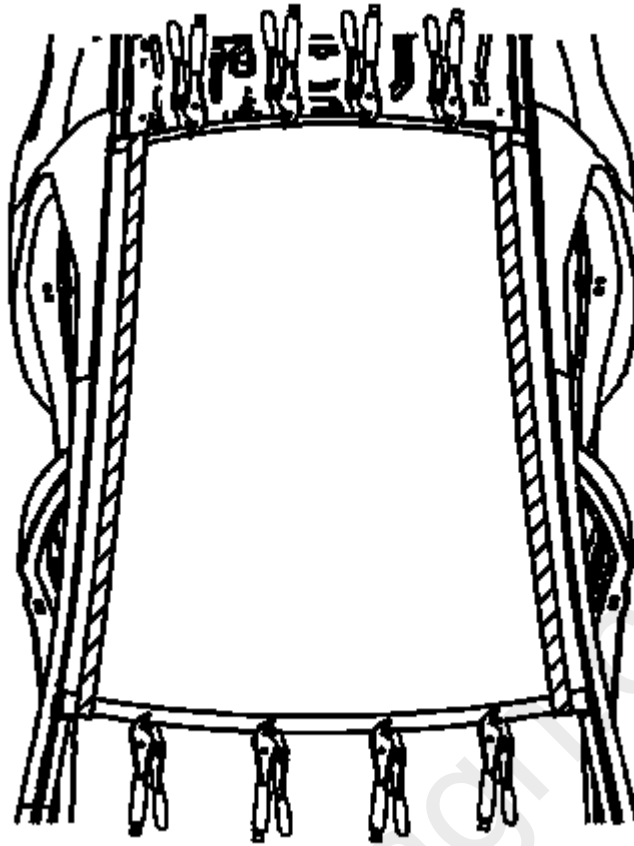


Fig. 68: View of Roof and Bond Area
Courtesy of GENERAL MOTORS COMPANY

14. Install 25 mm (1 in) wide ratchet strap or equivalent across the roof inboard of the bond area. Apply light even pressure to the bond area.
15. Allow adhesive to completely cure per manufacturers instructions. Remove the ratchet straps.

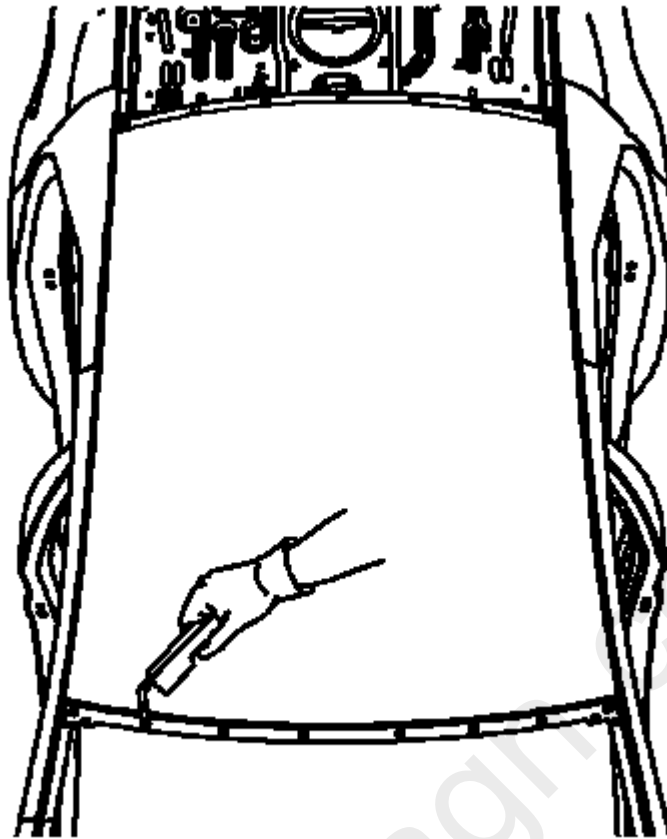


Fig. 69: View of Roof and Welding Application
Courtesy of GENERAL MOTORS COMPANY

16. Plug weld accordingly. Weld the four holes used for alignment.
17. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
18. Use a high quality seam sealer to fill the gap between the outer roof panel and the body side roof rail. Follow the manufacturers instructions.
19. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
20. Install all related panels and components.
21. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Wagon)** .
22. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

ROOF OUTER PANEL REPLACEMENT (WAGON)

Removal Procedure

The production roof panel is attached with laser guided MIG brazing on a portion of the side rails and resistance spot welds in the windshield and liftgate openings. The service roof replacement procedure uses a GM3651-G

windshield urethane adhesive to replace the MIG braze on the side rails and MIG plug welds in all weld flange areas to replace the spot welds. The windshield, lift-gate, and rails for the luggage carrier must be removed for this procedure.

WARNING: Refer to Approved Equipment for Collision Repair Warning .

NOTE: Use care when cutting to protect adjacent panels. Cut inboard of the side frame structure.

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 (Wagon) .
3. Remove all related panels and components.
4. Visually inspect the damage. Repair as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
6. Locate and mark all factory welds in the front, rear and side rails of the roof panel.

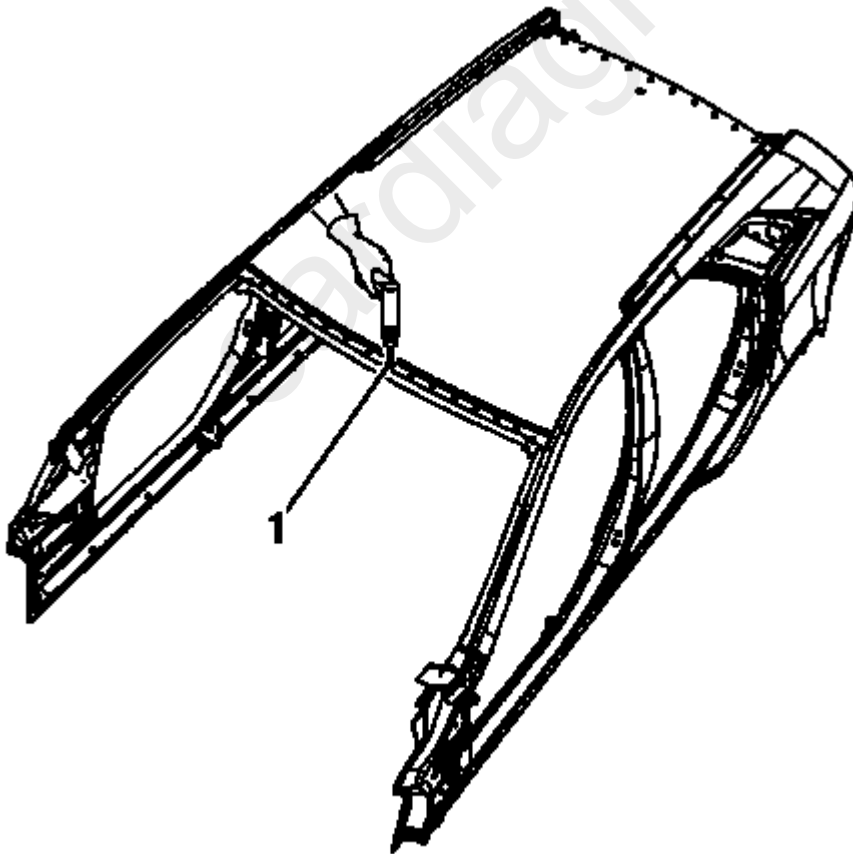


Fig. 70: Drilling All Factory Welds
Courtesy of GENERAL MOTORS COMPANY

7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.

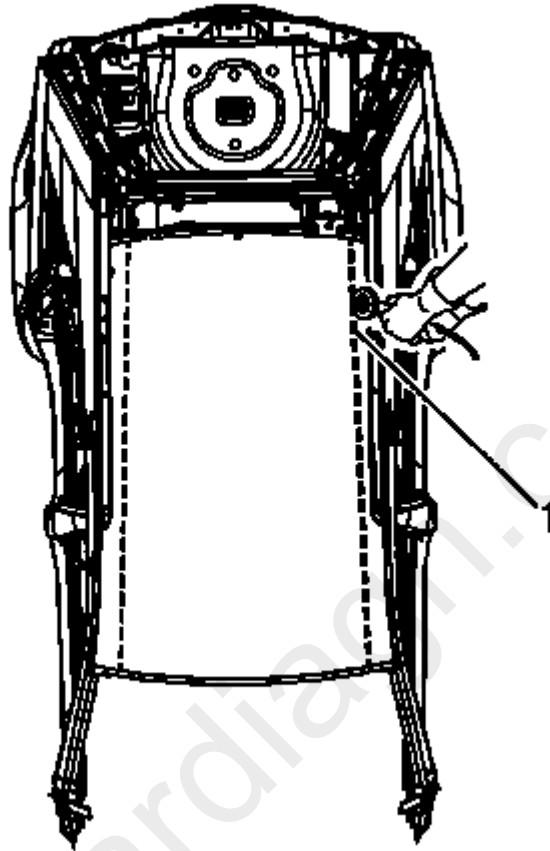


Fig. 71: Cutting Inboard Mig Braze
Courtesy of GENERAL MOTORS COMPANY

8. On the side rail area of the roof use a cut off wheel or equivalent to cut the panel 50 mm (2.0 in) inboard of the MIG braze (1).
9. Remove the center portion of the panel.

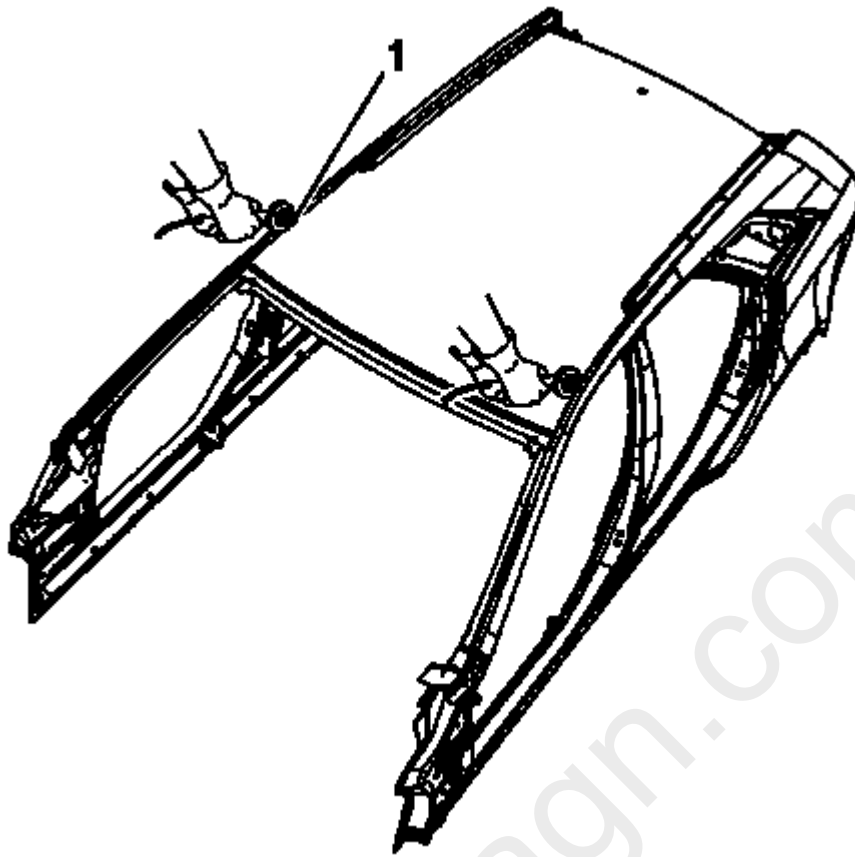


Fig. 72: Grinding Out Mig Braze Joint
Courtesy of GENERAL MOTORS COMPANY

NOTE: It is not necessary to remove all of the braze material from the side rail.

10. To separate the remaining portion of the panel use a cut off wheel or equivalent to grind out the MIG braze joint. (1)
11. Remove the remaining portion of the original panel.

Installation Procedure

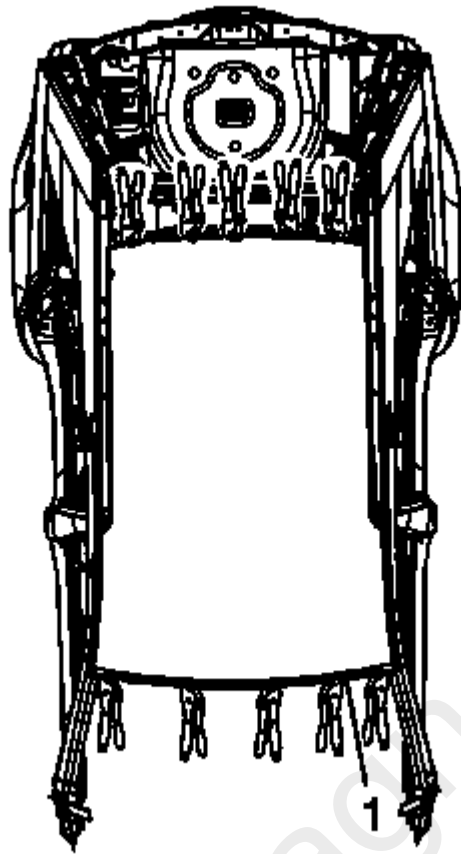


Fig. 73: Clamping Panel Into Position In Rear Window Opening
Courtesy of GENERAL MOTORS COMPANY

1. Dry fit the service panel to the vehicle. Clamp the panel into position in the rear window opening (1).
2. Adjust the bow of the roof front to rear. Use the marks left on the roof rail from the MIG braze to get an even contour. Clamp in place in the windshield opening area.

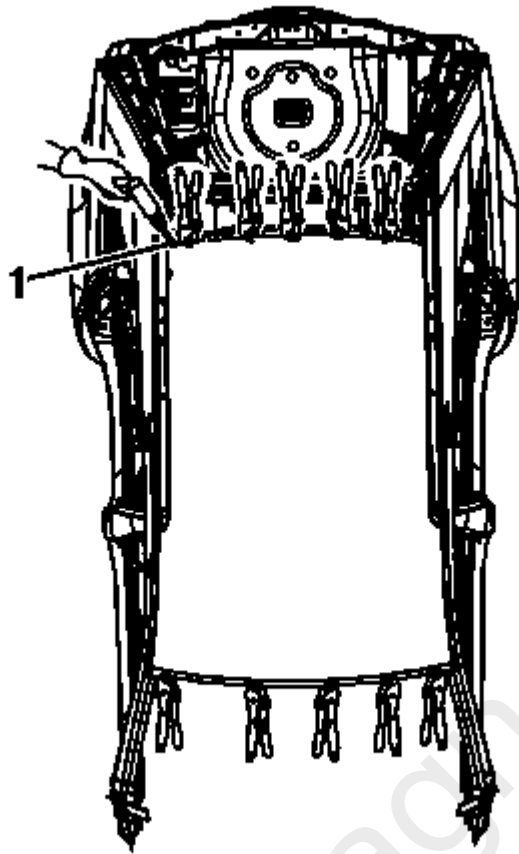


Fig. 74: Welding Roof Panel To Inner Structure
Courtesy of GENERAL MOTORS COMPANY

3. With the service panel clamped in position, drill six 3.2 mm (1/8 in) holes in the front, side, and rear weld flanges to locate the roof panel to the inner structure (1).
4. Remove the service panel from the vehicle.

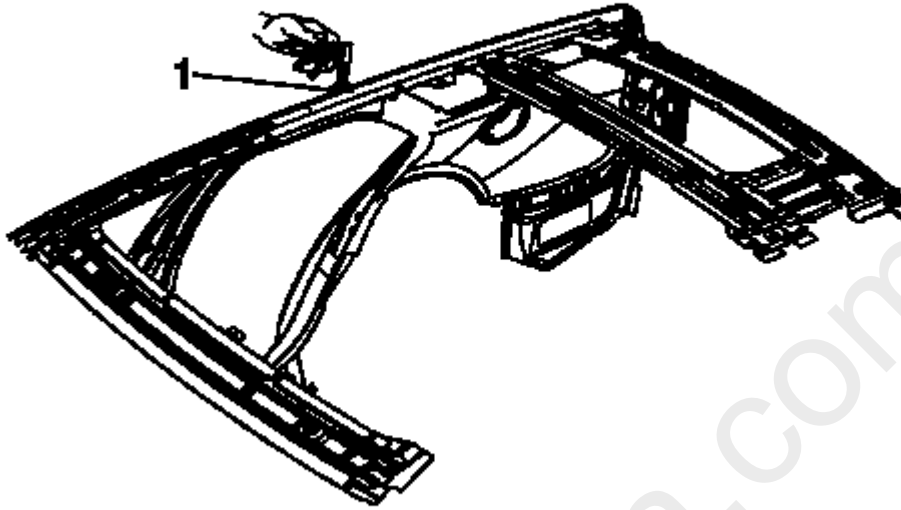


Fig. 75: Identifying Rol-Lock Abrasive Wheel
Courtesy of GENERAL MOTORS COMPANY

NOTE: It is not necessary to remove all of the MIG braze material.

5. Prepare the roof rail area of the vehicle by removing the MIG braze with a Rol-lock abrasive wheel or equivalent (1).
6. Clean and prepare all weld flange surfaces for welding. Refer to **Anti-Corrosion Treatment and Repair** .
7. Prepare the roof side rail bond areas (above the front doors) for adhesive. Refer to adhesive manufactures preparation instructions.

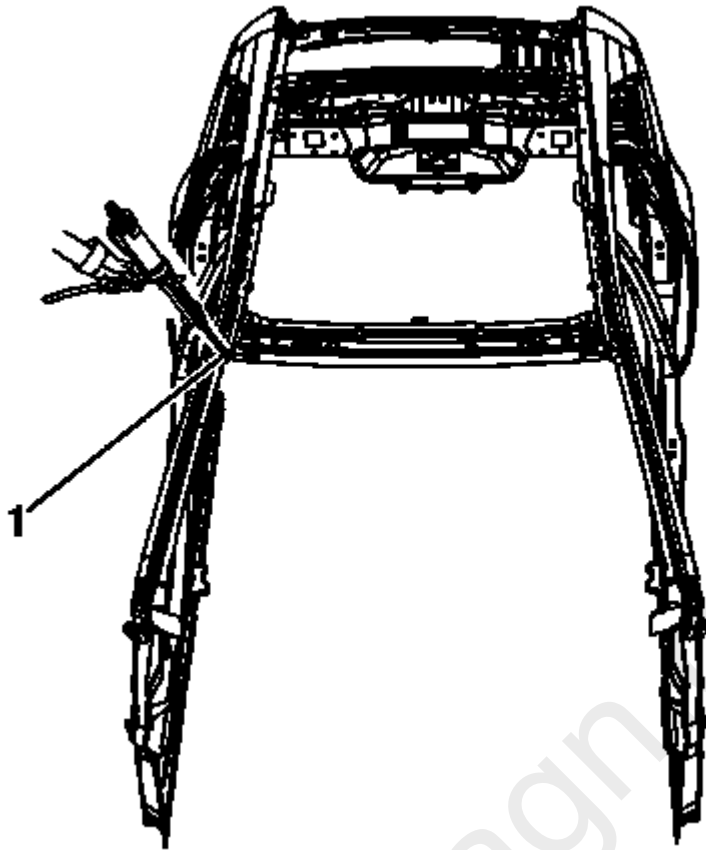


Fig. 76: Applying A 12 mm (1/2 In) Bead Of Windshield Urethane
Courtesy of GENERAL MOTORS COMPANY

8. Apply a 12 mm (1/2 in) bead of the windshield urethane to the left and right roof rails (1).
9. With the help of a second person lower the service panel straight down onto the vehicle.

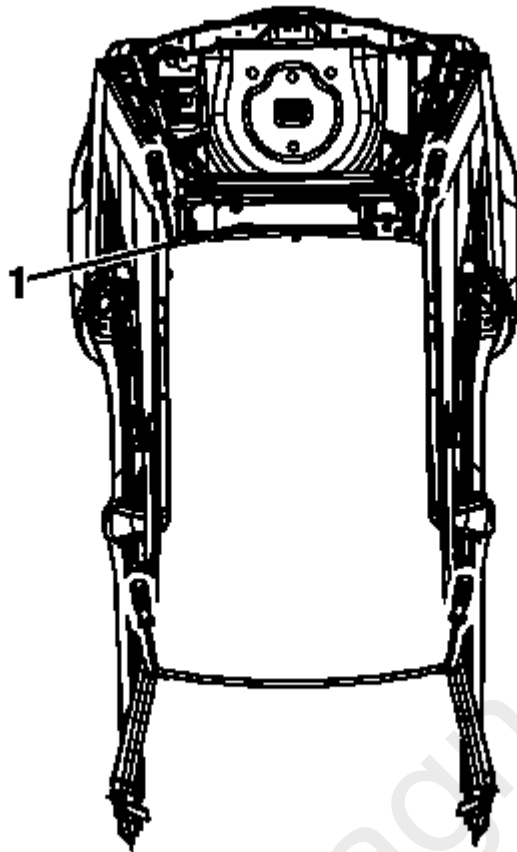


Fig. 77: Inserting An Awl Into Holes Drilled In Window And Lift-Gate Openings
Courtesy of GENERAL MOTORS COMPANY

NOTE: This step will insure the proper location and contour to the vehicle

10. Insert an awl or equivalent tool into the four holes drilled in the window and lift-gate openings in step 3 (1).
11. Temporarily install two screws into side rails of roof panel near adhesive.
12. Clamp the roof in place along the front and rear weld flanges.
13. Clean up the excess urethane from the surface.

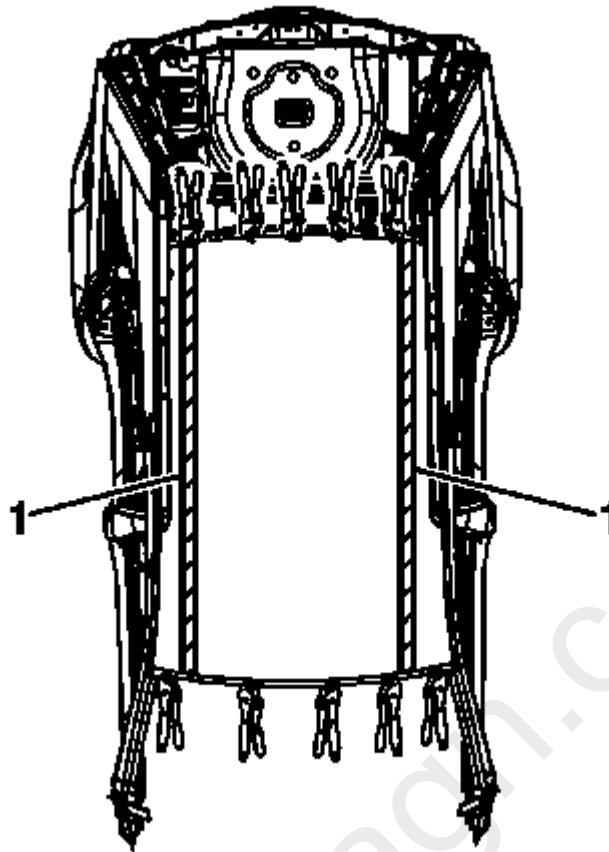


Fig. 78: Applying Light Even Pressure To Bond Area Using Ratchet Strap Or Equivalent Across Roof Inboard Of Bond Area

Courtesy of GENERAL MOTORS COMPANY

14. If necessary, install 25 mm (1 in) wide ratchet strap or equivalent across the roof inboard of the bond area (1). Apply light even pressure to the bond area.
15. Allow adhesive to completely cure per manufacturers instructions. Remove the ratchet straps.

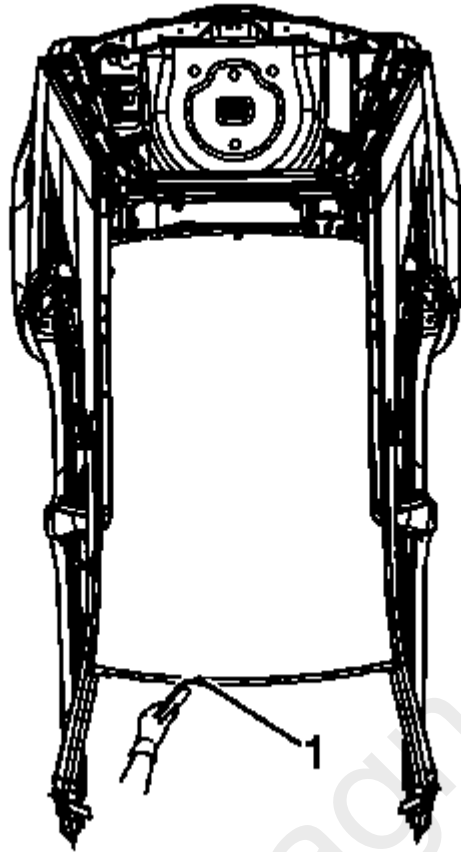


Fig. 79: Plugging Weld
Courtesy of GENERAL MOTORS COMPANY

16. Plug weld accordingly (1). Remove screws and weld all holes used for alignment.
17. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
18. Use a high quality two part self leveling seam sealer to fill the gap between the outer roof panel and the body side roof rail. Follow the manufacturers instructions.
19. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
20. Install all related panels and components.
21. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Wagon)** .
22. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

ROCKER INNER 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 (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
3. Remove all related panels and components.
4. Repair as much of the damaged area as possible..

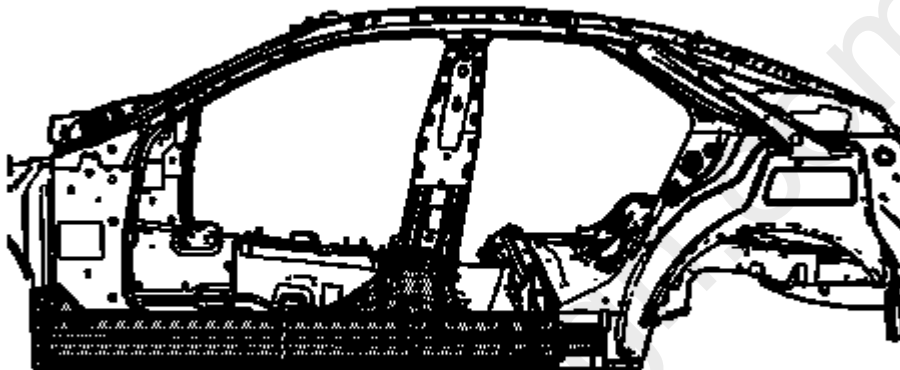


Fig. 80: Identifying Rocker Panel and Frame
Courtesy of GENERAL MOTORS COMPANY

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 rocker panel.

NOTE: The lower inner lock pillar is part of the inner rocker panel service part. If it is undamaged leave it on the vehicle and remove it from the service part by drilling out the welds.

6. Locate and drill out all the necessary factory welds.

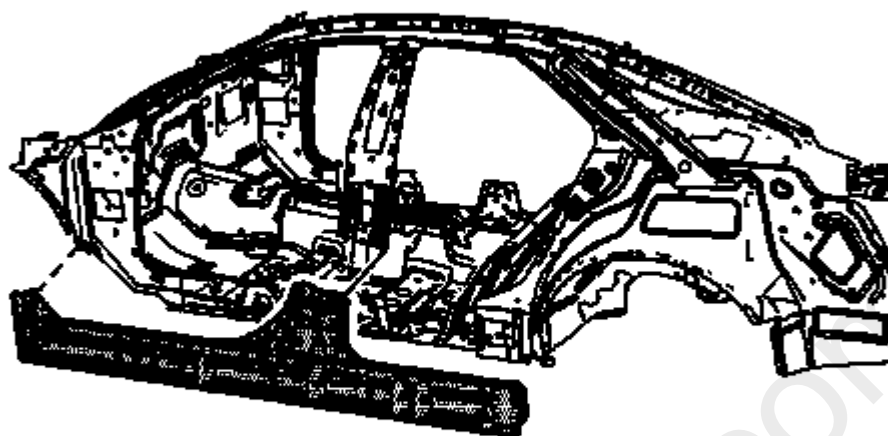


Fig. 81: View of Rocker Panel Assembly
Courtesy of GENERAL MOTORS COMPANY

7. Remove the inner rocker panel.

Installation Procedure

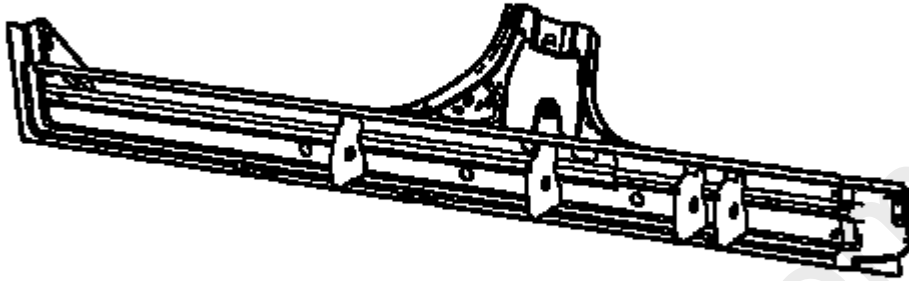


Fig. 82: View of Rocker Panel Assembly
Courtesy of GENERAL MOTORS COMPANY

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.
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** .

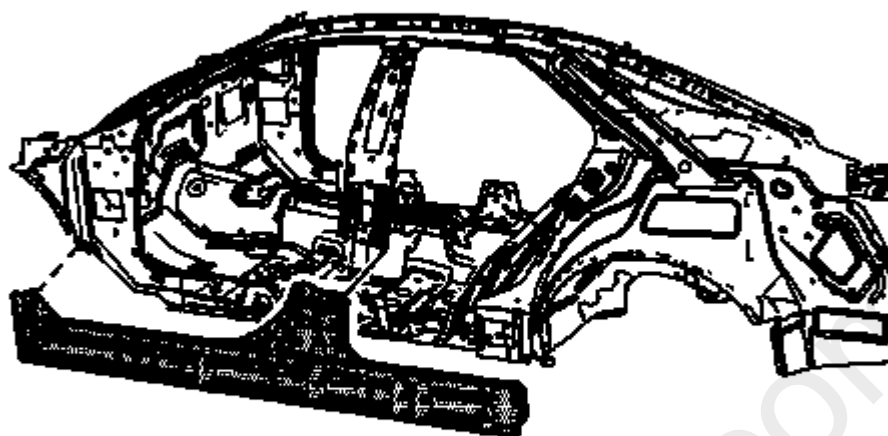


Fig. 83: View of Rocker Panel Assembly
Courtesy of GENERAL MOTORS COMPANY

4. Position the inner rocker panel and clamp the panel in place.

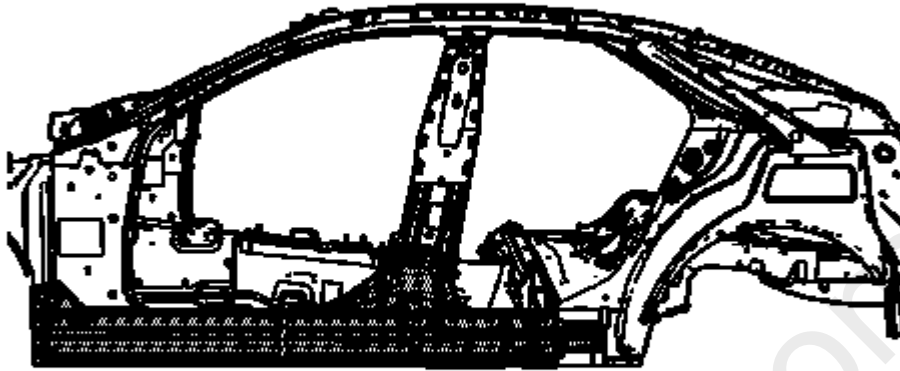


Fig. 84: Identifying Rocker Panel and Frame
Courtesy of GENERAL MOTORS COMPANY

5. Plug weld accordingly.
6. Clean and prepare all of the welded surfaces.
7. Install all of the related panels and components.
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
9. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
10. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

BODY LOCK PILLAR OUTER PANEL REINFORCEMENT 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 negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (Coupe) , Battery Negative Cable Disconnection and Connection (Wagon) .
3. Remove all related panels and components.
4. Repair as much of the damaged area as possible. Refer to Dimensions - Body (Wagon).
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .

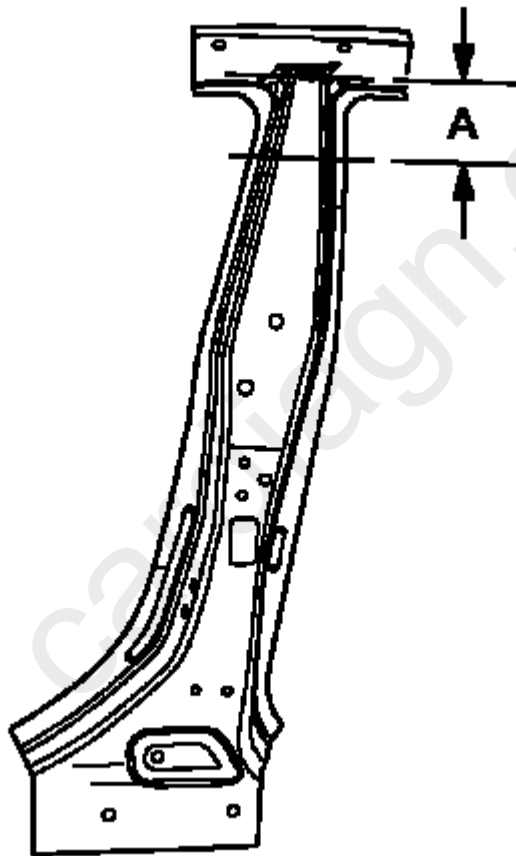


Fig. 85: View of Center Pillar

Courtesy of GENERAL MOTORS COMPANY

6. On the center pillar reinforcement, measure from the bottom of the rectangular impression (a) down 100 mm (4 in). Scribe a line.

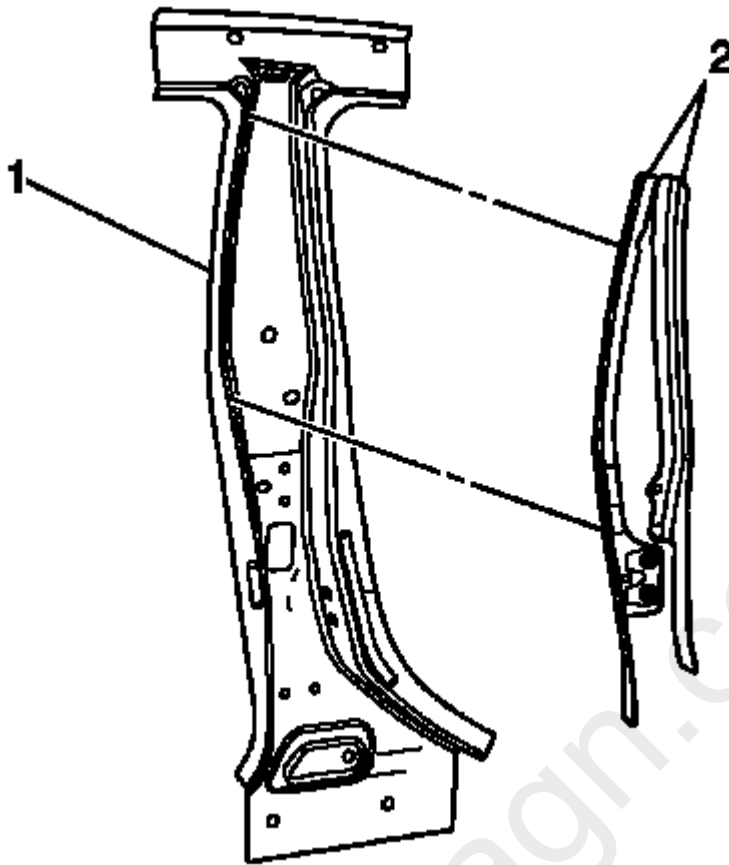


Fig. 86: View of Outer Panel and Inner Reinforcements
Courtesy of GENERAL MOTORS COMPANY

7. Cut the panel at the mark made previously. At the same time, completely cut through the outer panel (1) and the inner reinforcements (2).

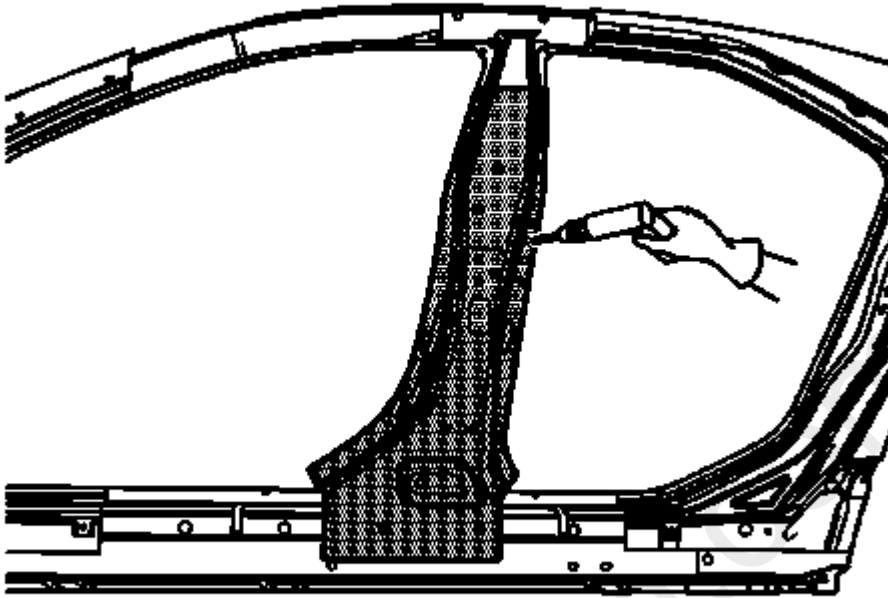


Fig. 87: View of Welding

Courtesy of GENERAL MOTORS COMPANY

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

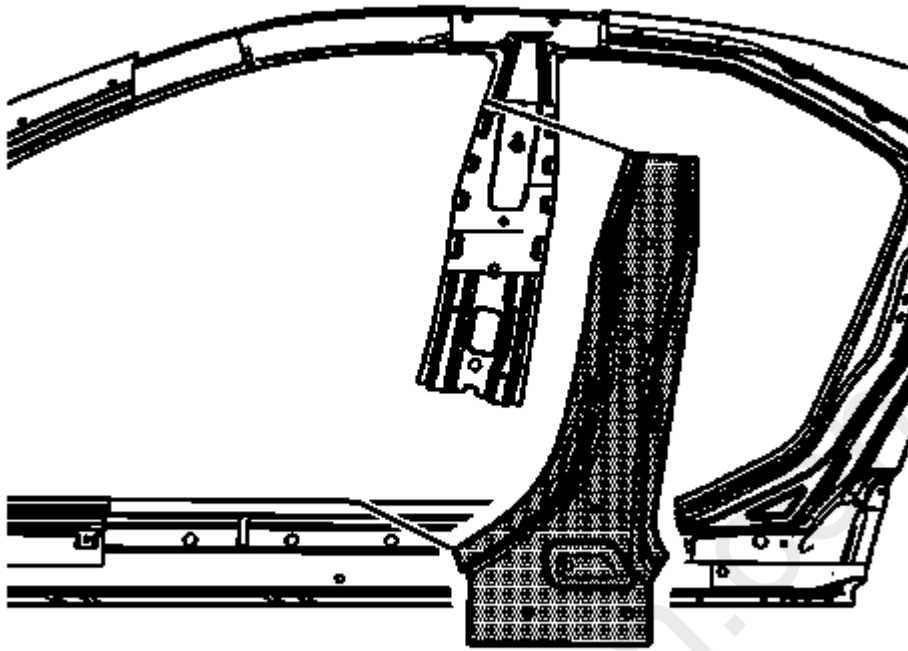


Fig. 88: Identifying Center Pillar
Courtesy of GENERAL MOTORS COMPANY

9. Remove the damaged center pillar.

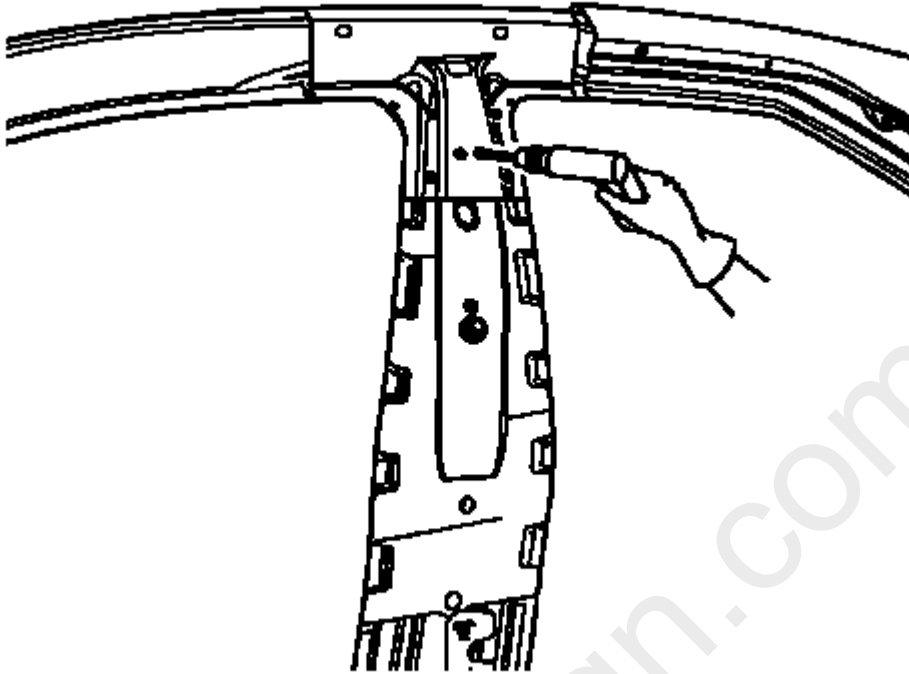


Fig. 89: Identifying 6 Welds

Courtesy of GENERAL MOTORS COMPANY

10. Drill out the 6 spot welds holding the remainder of the reinforcement still on the vehicle.

Installation Procedure

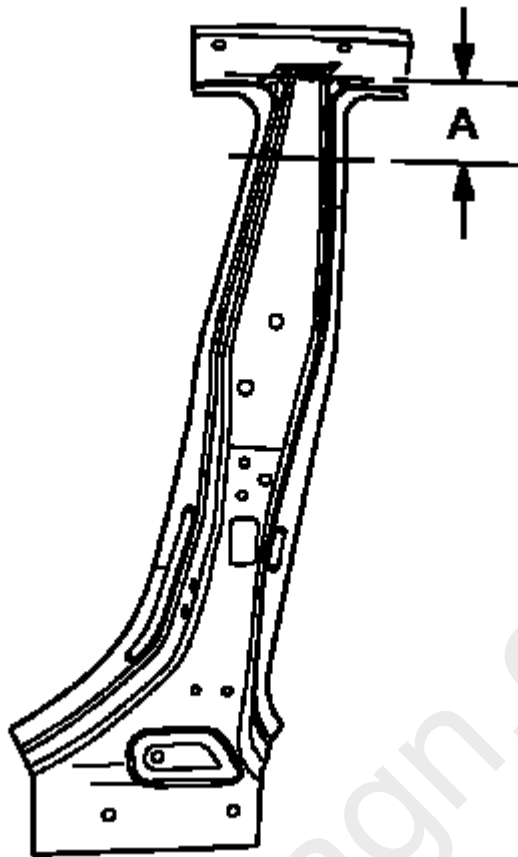


Fig. 90: View of Center Pillar

Courtesy of GENERAL MOTORS COMPANY

1. To prepare the service part, measure down from the bottom of the rectangular impression (a) 100 mm (4 in). Scribe a line on the center pillar reinforcement service part.

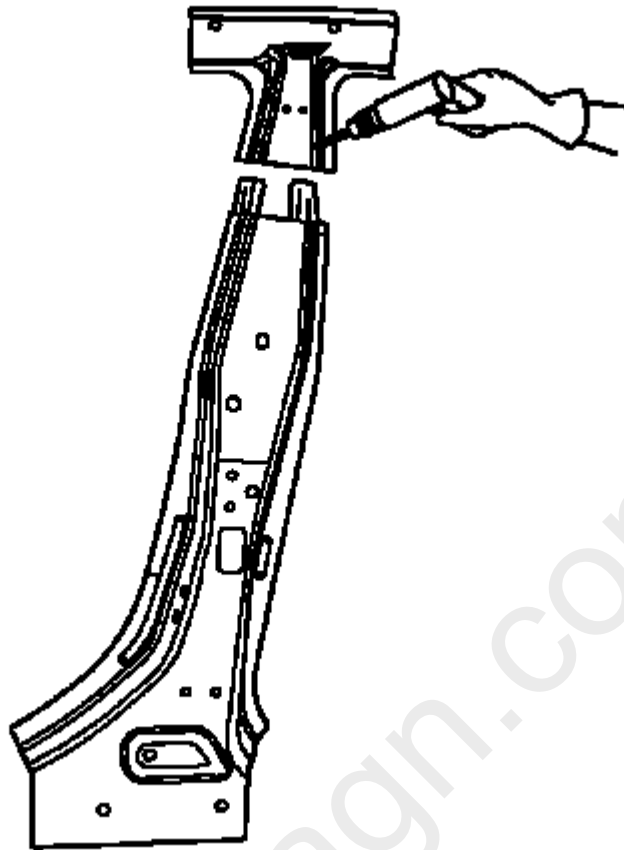


Fig. 91: View of Section and Reinforcement
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage the inner reinforcements cut through the outer panel only.

2. Drill out the six welds above the section cut that connect the inner reinforcement to the outer reinforcement.

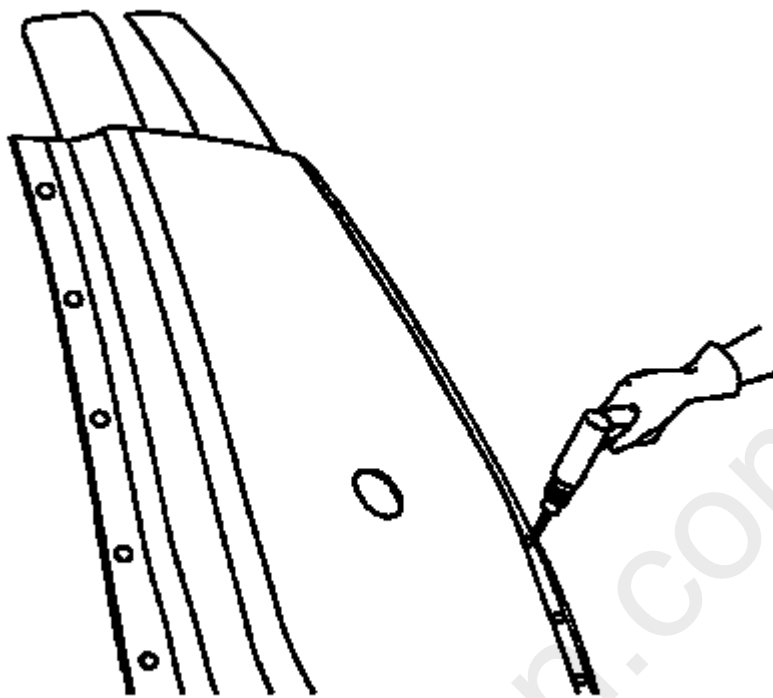


Fig. 92: View of Panel

Courtesy of GENERAL MOTORS COMPANY

3. Cut the service panel at the scribed location.
4. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the corresponding locations noted on the original panel.
5. Prepare all mating surfaces for welding as necessary.
6. Apply Weld-Thru Coating to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair**

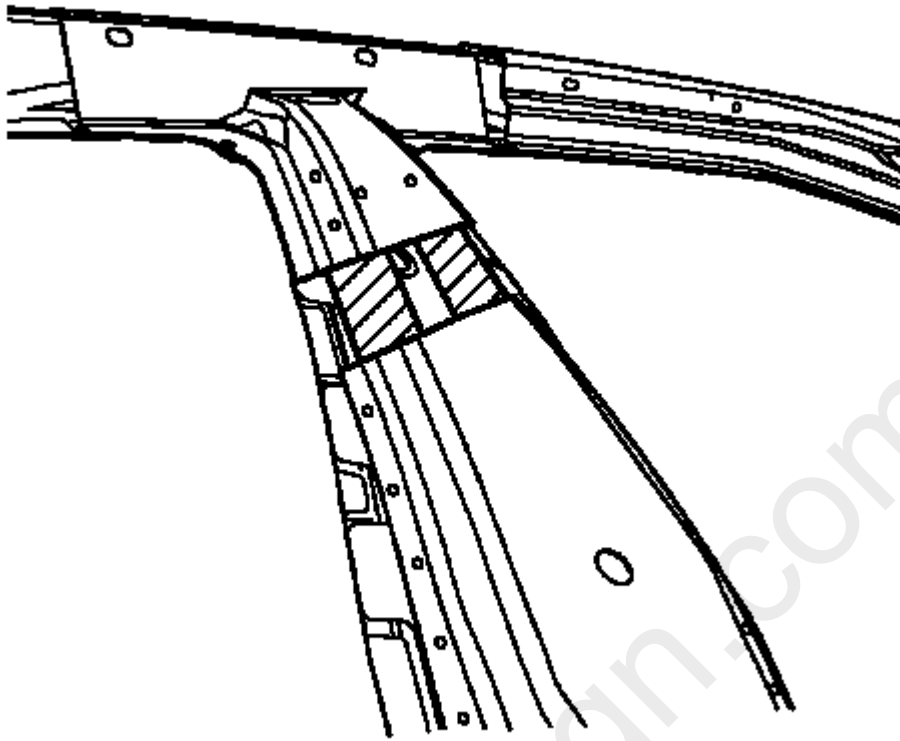


Fig. 93: View of Section Joints

Courtesy of GENERAL MOTORS COMPANY

7. Slide the top sectioning joint together by sliding the service part under the original part at the sectioning area.
8. Position the service part on the vehicle using 3-dimensional measuring equipment. Clamp the part in place.

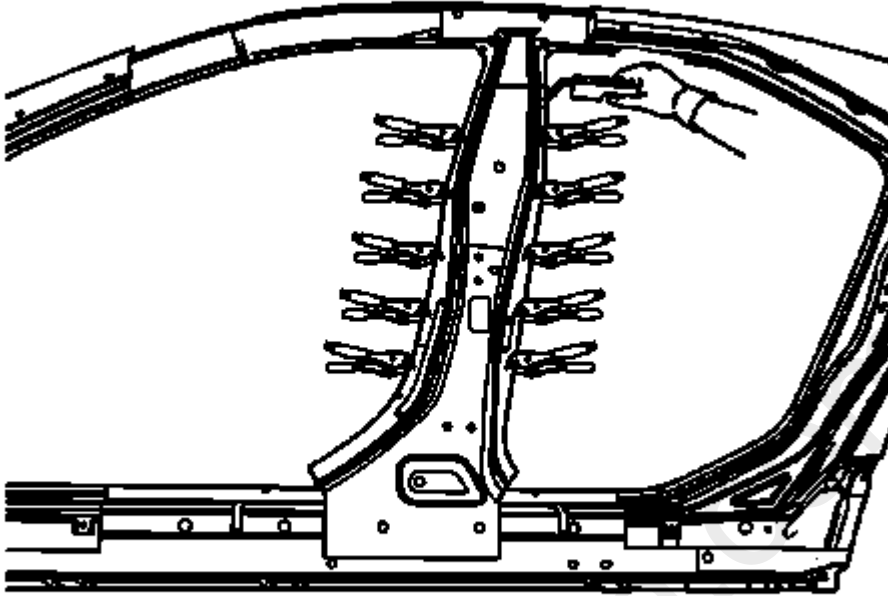


Fig. 94: View of Clamps Holding Section Joints
Courtesy of GENERAL MOTORS COMPANY

9. Plug weld accordingly.
10. To create a solid weld with minimum heat distortion, make 25 mm (1 in) stitch welds along the sectioning joint seam with gaps of 25 mm (1 in). Go back and complete the stitch weld.
11. Clean and prepare all of the welded surfaces.
12. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
13. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
14. Install all of the related panels and components.
15. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
16. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

BODY LOCK PILLAR INNER 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 (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
3. Remove all related panels and components.
4. Repair as much of the damaged area as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .

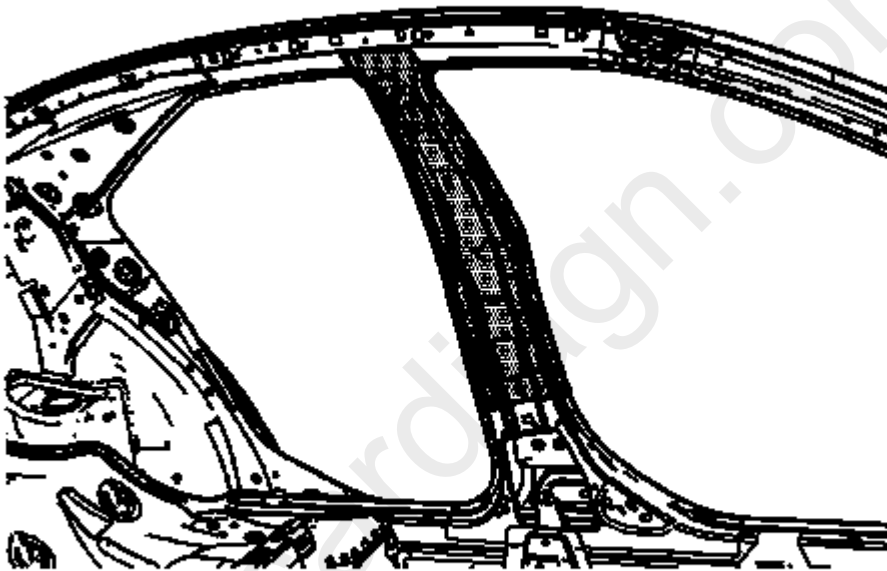


Fig. 95: View of Frame and Inner Pillar
Courtesy of GENERAL MOTORS COMPANY

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.

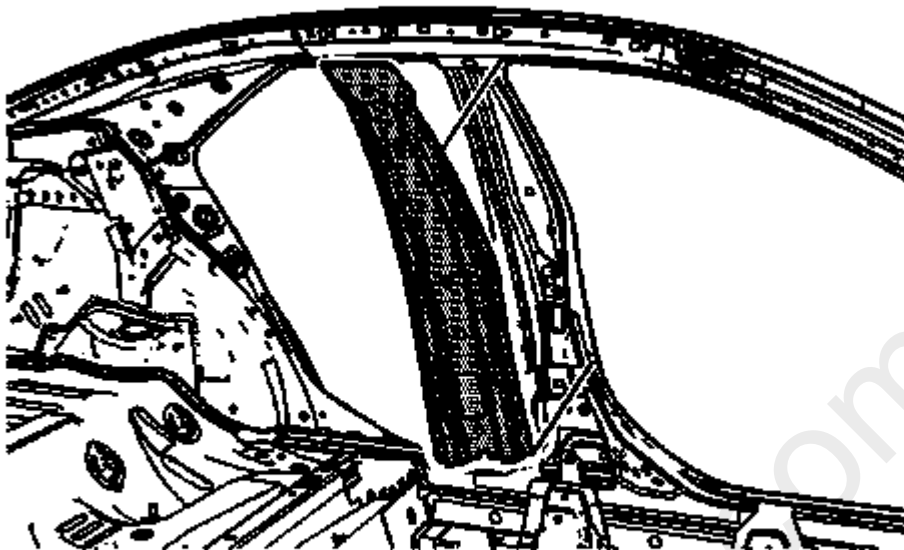


Fig. 96: View of Frame and Inner Pillar
Courtesy of GENERAL MOTORS COMPANY

7. Remove the inner pillar.

Installation Procedure

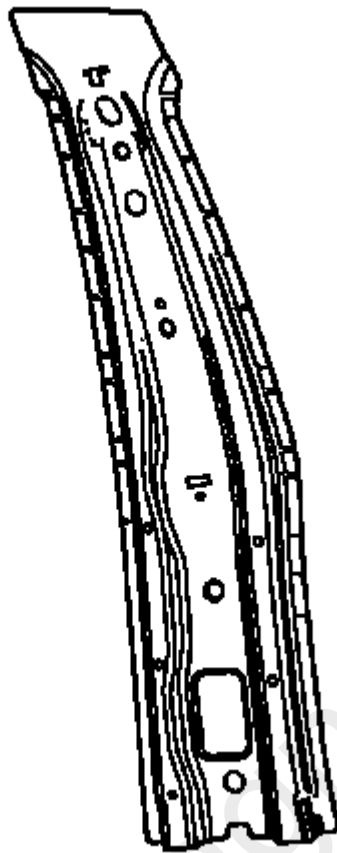


Fig. 97: Identifying Body Lock Pillar Inner Panel
Courtesy of GENERAL MOTORS COMPANY

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.

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.
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** .

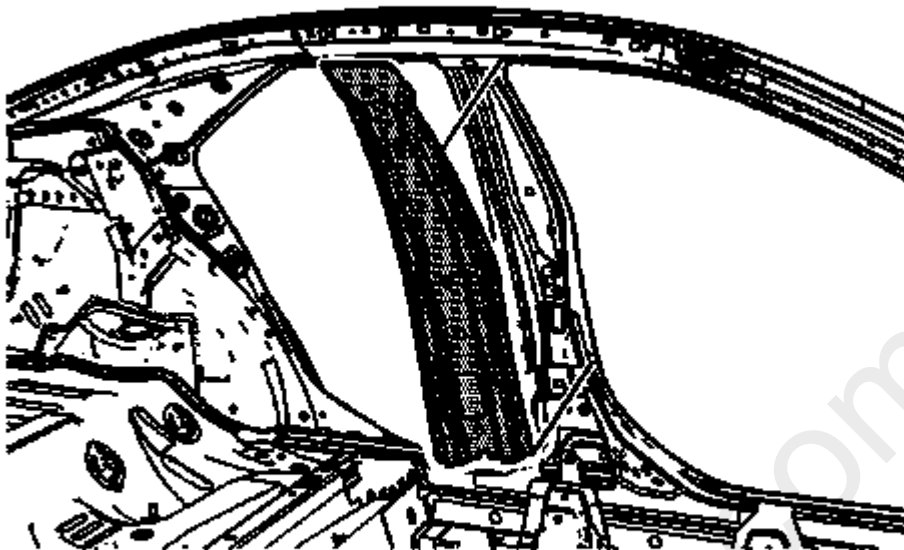


Fig. 98: View of Frame and Inner Pillar
Courtesy of GENERAL MOTORS COMPANY

4. Position the inner pillar lock front door on the vehicle. Clamp the part in place.

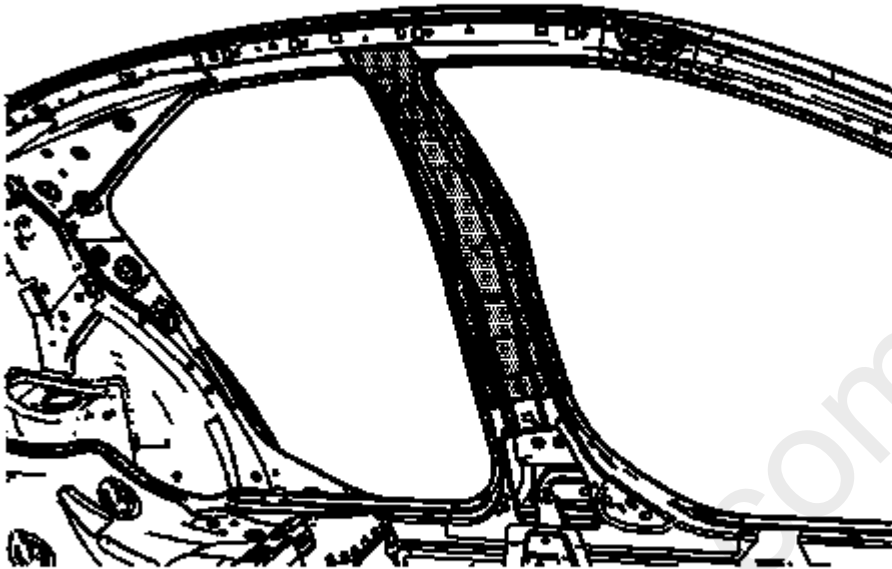


Fig. 99: View of Frame and Inner Pillar
Courtesy of GENERAL MOTORS COMPANY

5. Plug weld accordingly.
6. Clean and prepare all of the welded surfaces.
7. Install all of the related panels and components.
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
9. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
10. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

ROCKER OUTER PANEL REPLACEMENT (COUPE)

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 (Coupe)** .
3. Repair as much of the damaged area as possible.

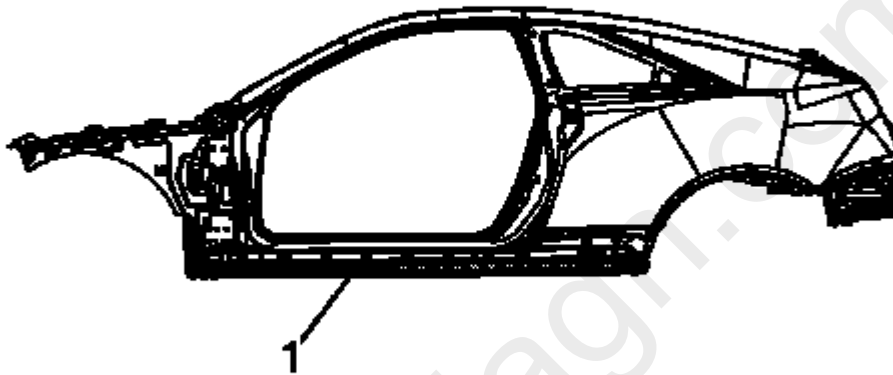


Fig. 100: Sealers, Anti-Corrosion Materials And Repair Area
Courtesy of GENERAL MOTORS COMPANY

NOTE: The rocker outer panel/reinforcement assembly is made of Ultra High Strength steel; UHSS and cannot be sectioned or altered. Refer to the UHSS repair Chart.

Failure to replace any damaged reinforcement as described could compromise the structural integrity of the vehicle.

4. Remove the sealers and anti-corrosion materials from the repair area (1), as necessary. Refer to **Anti-Corrosion Treatment and Repair** .

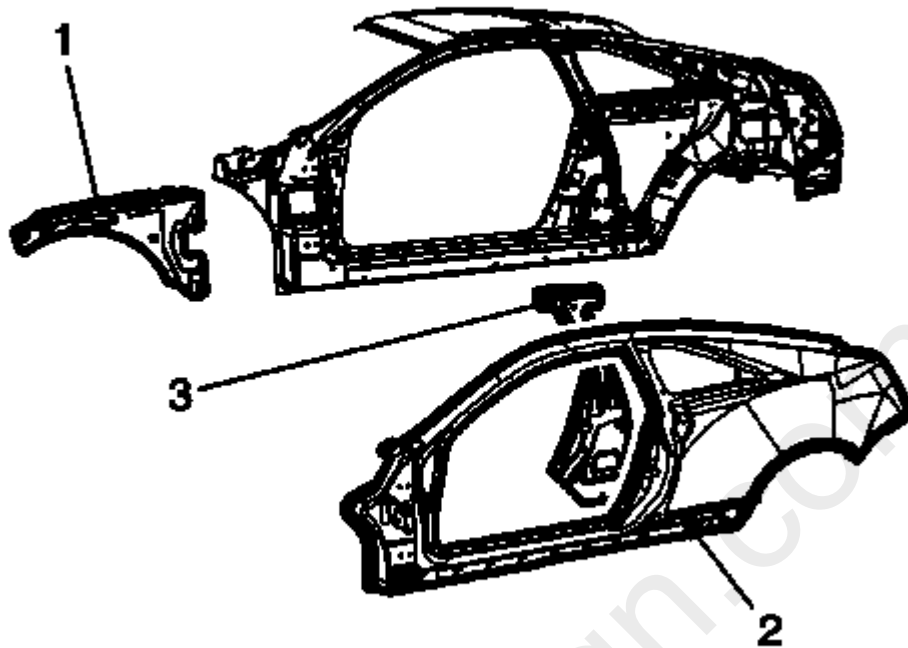


Fig. 101: Upper Fender Rail, Side Frame Outer And B-Pillar
Courtesy of GENERAL MOTORS COMPANY

5. Remove as necessary all related panels and components including the upper fender rail (1), the side frame outer (2), and the B-pillar (3).
6. Drill out all factory welds using an 8 mm (5/16 in) drill bit.

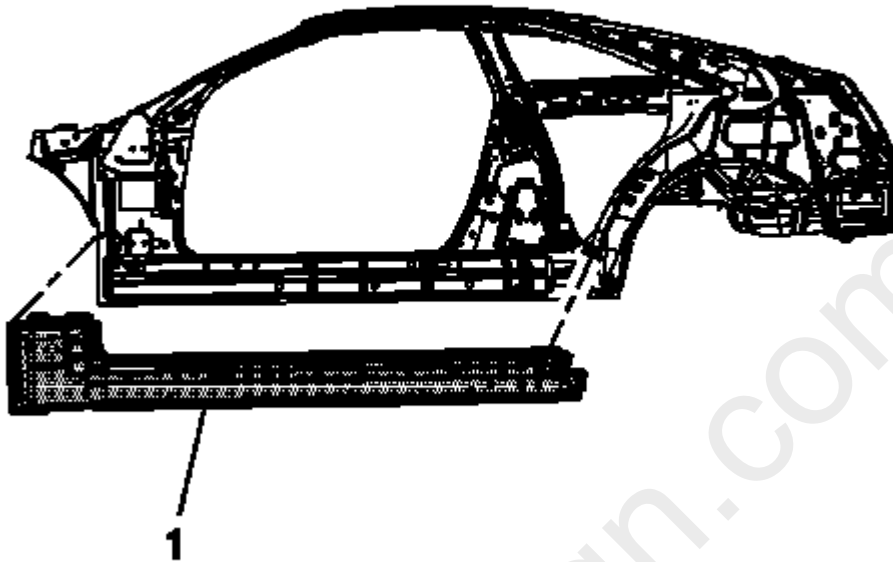


Fig. 102: Factory Seams

Courtesy of GENERAL MOTORS COMPANY

7. Remove the rocker outer panel at factory seams (1).

Installation Procedure

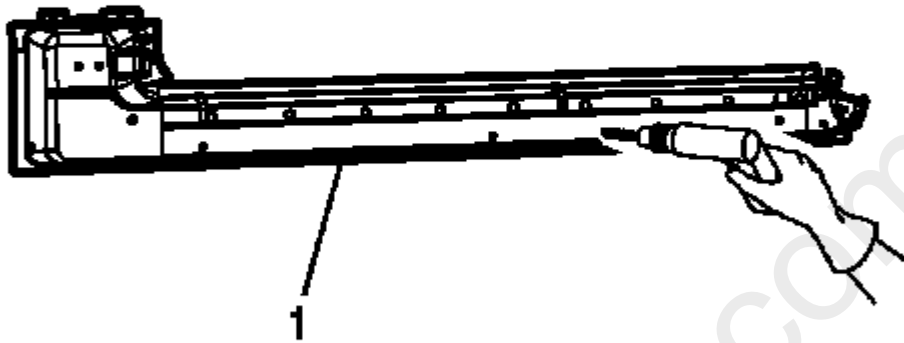


Fig. 103: Rocker Outer

Courtesy of GENERAL MOTORS COMPANY

1. Drill 8 mm (5/16 in) plug weld holes in the new rocker outer (1) as necessary in the locations noted from the original panel.

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.

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 outer rocker panel and clamp the panel in place.

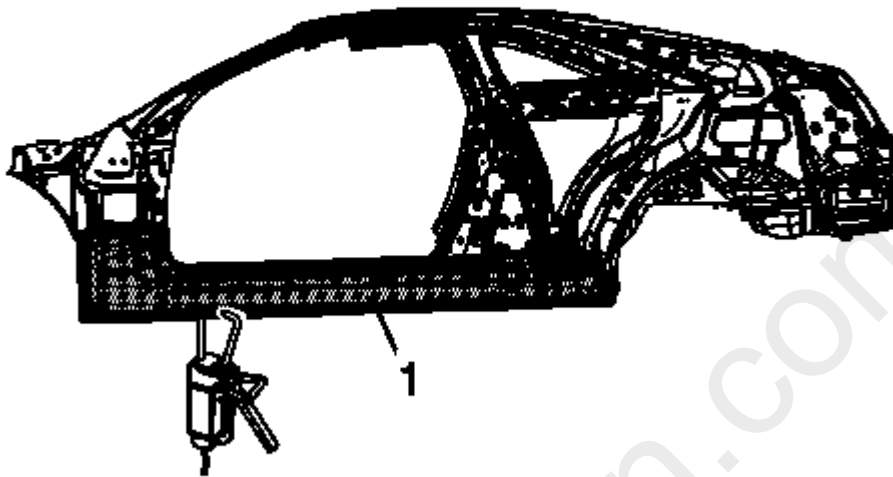


Fig. 104: Applying Sealers And Anti-Corrosion Materials
Courtesy of GENERAL MOTORS COMPANY

5. Weld all areas noted during the removal process (1).
6. Clean and prepare all of the welded surfaces.
7. Install all of the related panels and components.
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
9. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
10. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

ROCKER OUTER PANEL REPLACEMENT (WAGON)

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 (Wagon)** .
3. Remove all related panels and components.
4. Repair as much of the damaged area as possible.

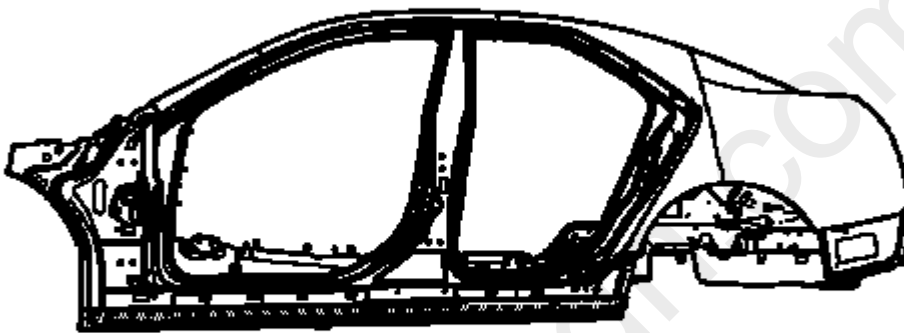


Fig. 105: View of Frame

Courtesy of GENERAL MOTORS COMPANY

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

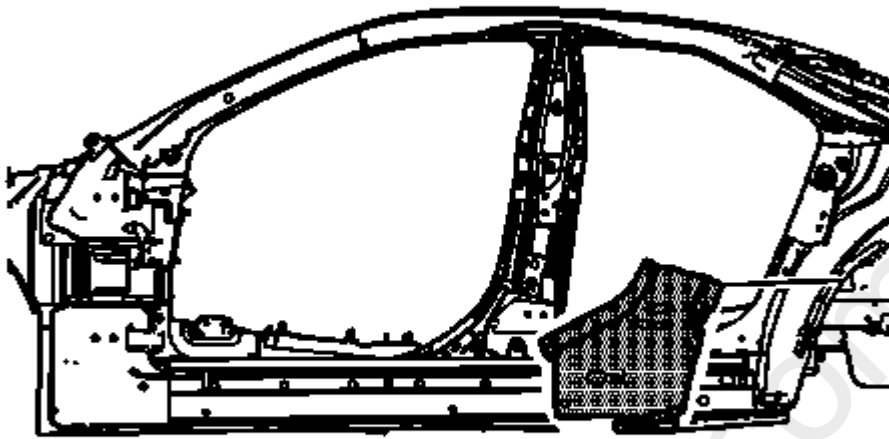


Fig. 106: View of Frame and Out Rocker Panel
Courtesy of GENERAL MOTORS COMPANY

NOTE: Note the number and location of the factory welds for installation of the outer rocker panel.

6. Locate and drill out all the necessary factory welds.
7. Remove the lower body side frame reinforcement to access the rear welds.

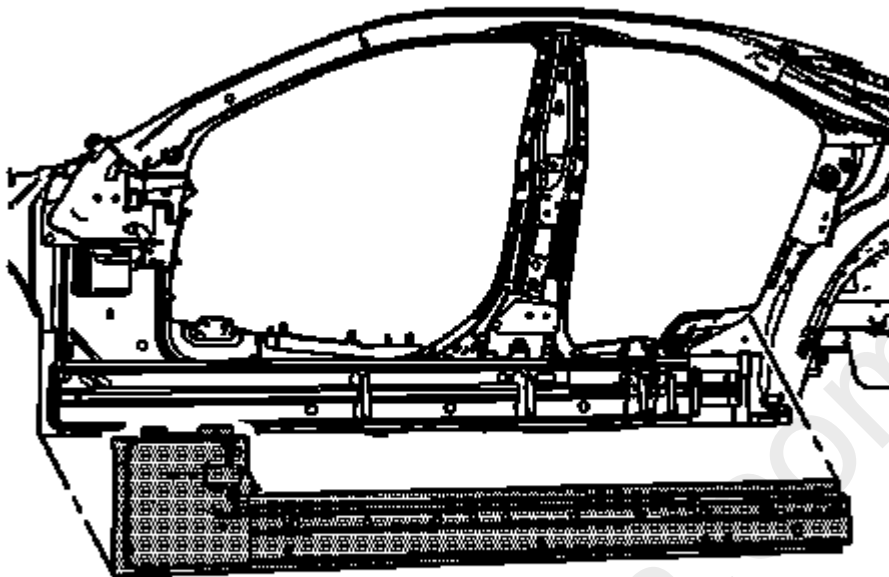


Fig. 107: View of Outer Rocker Panel and Frame
Courtesy of GENERAL MOTORS COMPANY

8. Remove the outer rocker panel.

Installation Procedure

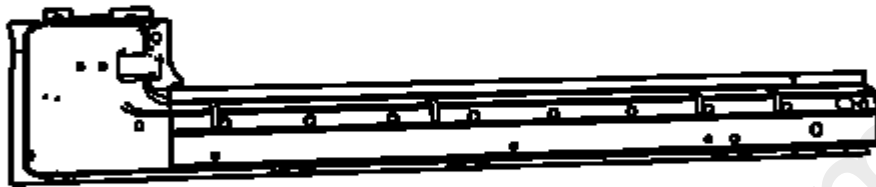


Fig. 108: View of Rocker Panel and Welding Holes
Courtesy of GENERAL MOTORS COMPANY

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.
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** .

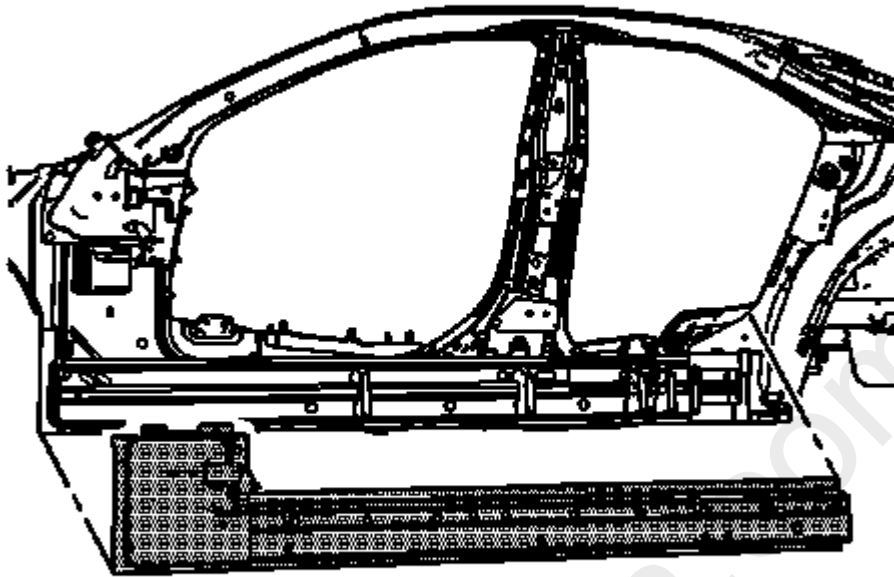


Fig. 109: View of Outer Rocker Panel and Frame
Courtesy of GENERAL MOTORS COMPANY

4. Position the outer rocker panel and clamp the panel in place.

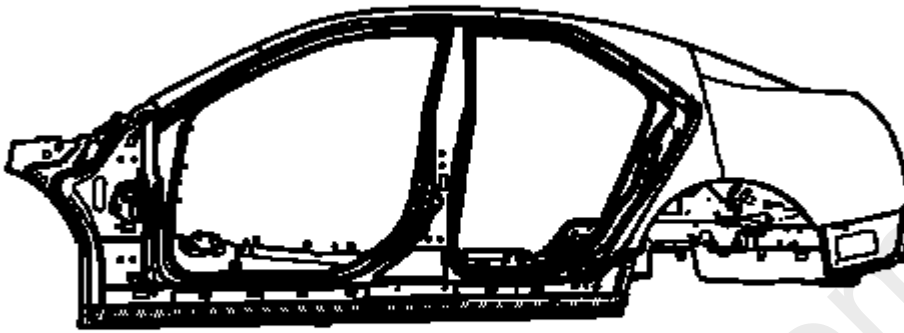


Fig. 110: View of Frame
Courtesy of GENERAL MOTORS COMPANY

5. Plug weld accordingly.
6. Reinstall the lower body side frame reinforcement.
7. Clean and prepare all of the welded surfaces.
8. Install all of the related panels and components.
9. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
10. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
11. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Wagon)** .
12. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

REAR COMPARTMENT FLOOR 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 (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .

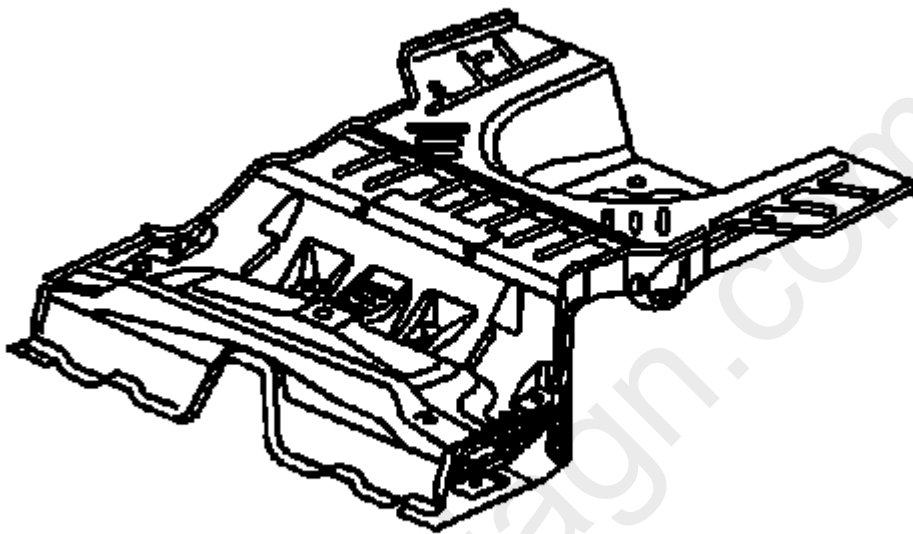


Fig. 111: Identifying Rear Compartment Panel
Courtesy of GENERAL MOTORS COMPANY

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.

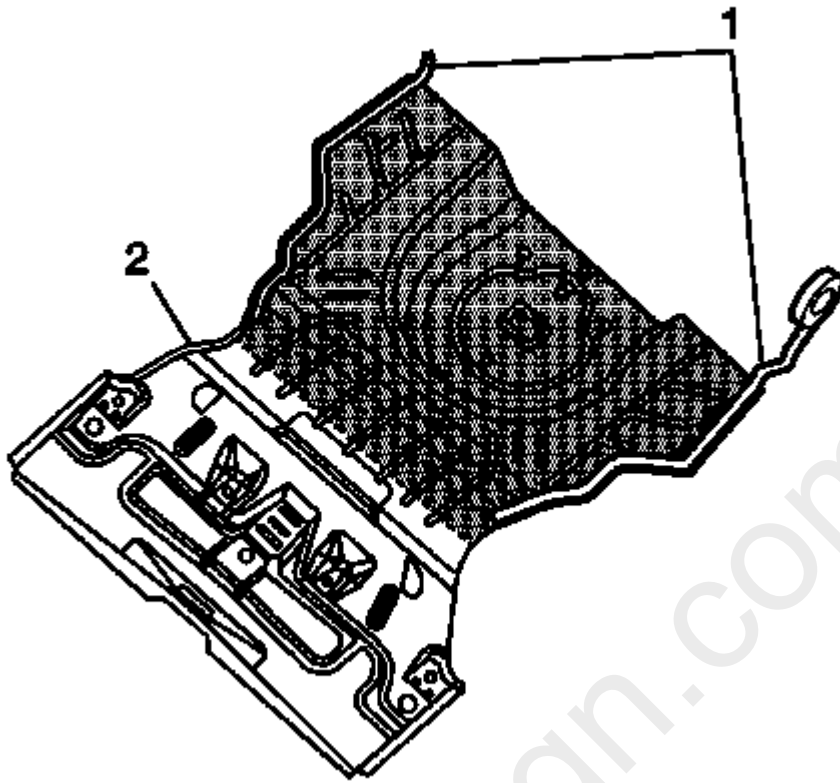


Fig. 112: Applying Masking Tape To Rear Compartment Panel
Courtesy of GENERAL MOTORS COMPANY

6. Apply a 25 mm (1 in) wide piece of masking tape (1) to the rear compartment panel along the contour of the wheelhouse, from the #5 crossbar to the rear of the compartment panel. Apply the tape on both sides of the rear compartment panel.

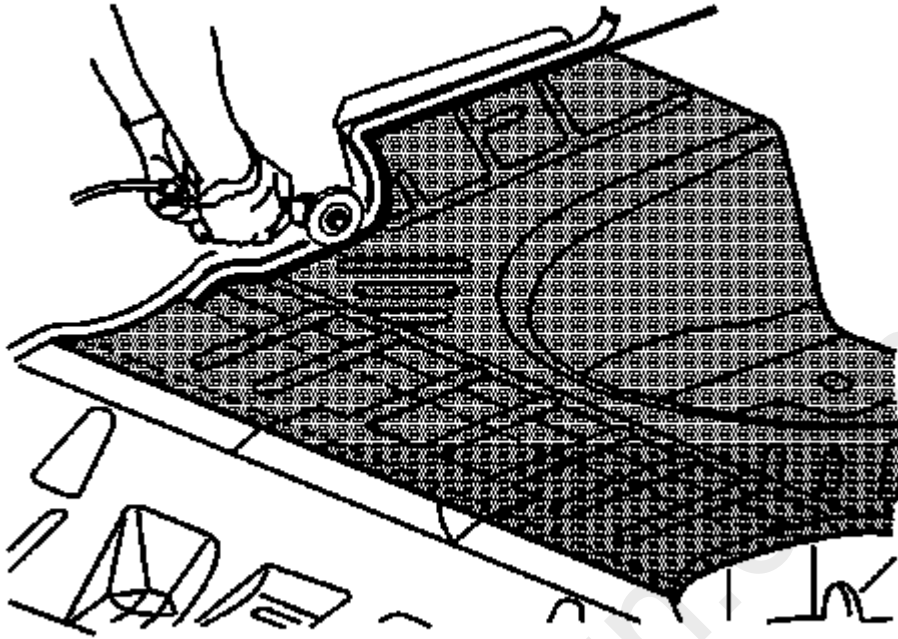


Fig. 113: Cutting Along Inboard Side Of Tape
Courtesy of GENERAL MOTORS COMPANY

7. Cut along the inboard side of the tape to create a weld flange.

NOTE: Do not damage any inner panels or reinforcements.

8. Cut the rear compartment panel at the rear edge of the #5 crossbar.

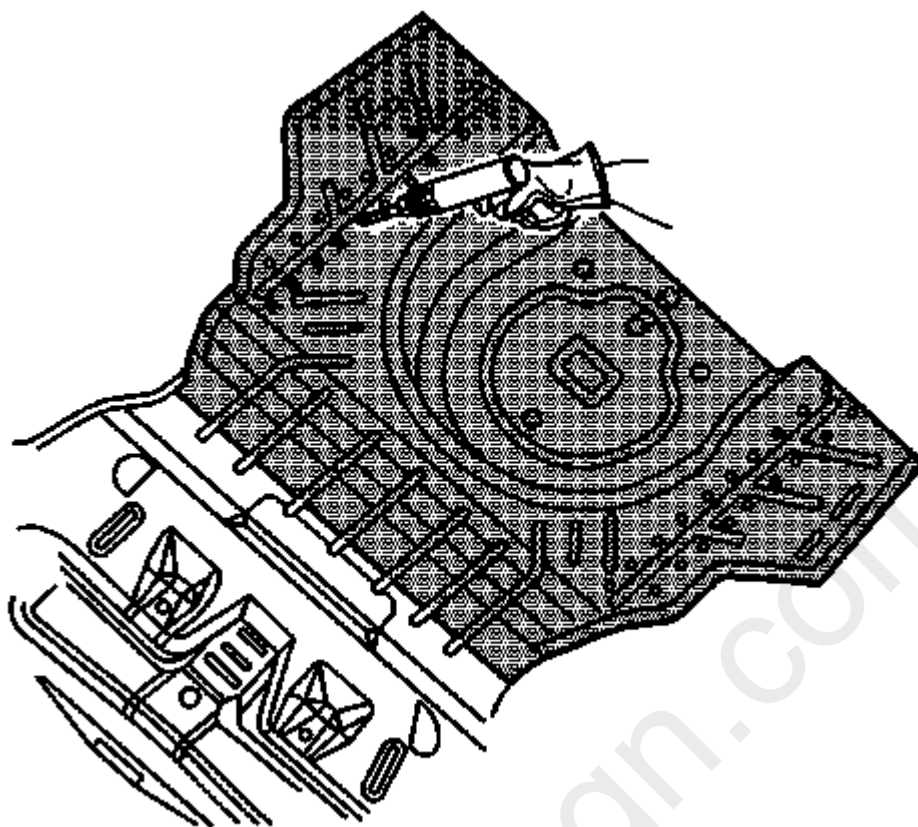


Fig. 114: Drilling Out Rail & Wheelhouse Spot Welds
Courtesy of GENERAL MOTORS COMPANY

9. Locate, mark, and drill out all factory welds. Note the number and location of welds for installation of the service assembly.
10. Remove the damaged rear compartment panel from the vehicle.

Installation Procedure

NOTE: This part has structural weld-thru adhesive in the joint areas. Replace this with additional spot welds at the attachment points. This can be accomplished by adding an additional weld between each factory weld in all areas.

1. Prepare the mating surfaces as necessary.
2. Apply a 25 mm (1 in) piece of masking tape along the contour of the wheelhouse from the front edge to the rear edge of the rear compartment floor service part on both sides. Cut along the outside of the tape and remove the up-turned flange.
3. Drill 8 mm (5/16 in) plug weld holes along the front edge of the service part spaced 40 mm (1 1/2 in) apart.

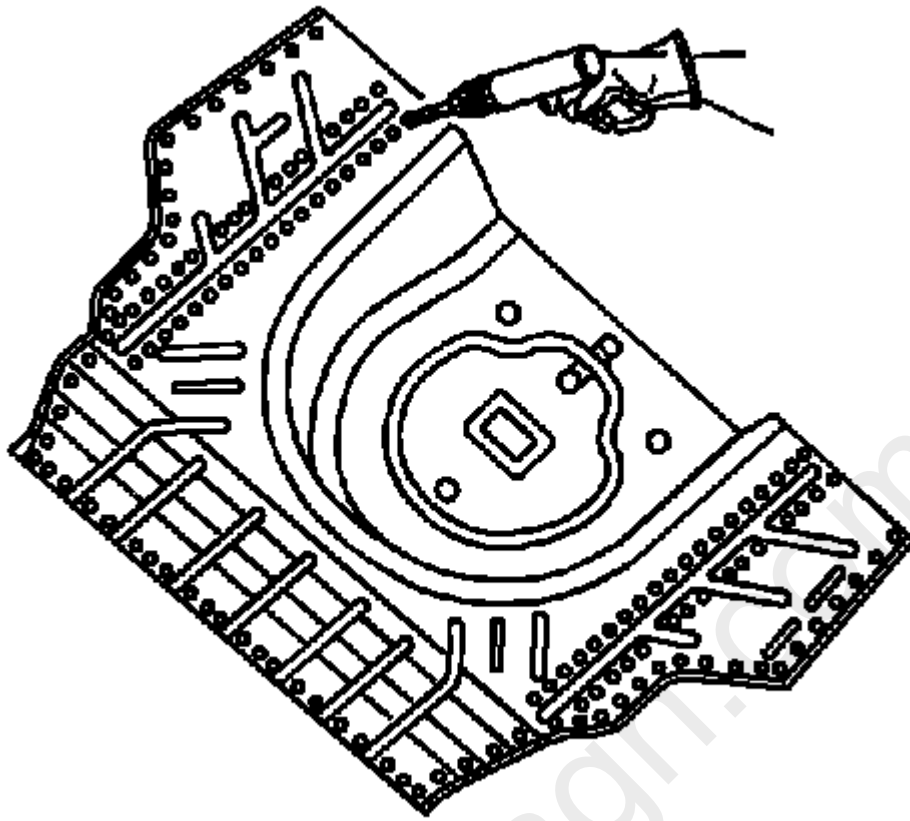


Fig. 115: Preparing Mating Surfaces For Welding
Courtesy of GENERAL MOTORS COMPANY

4. Drill 8 mm (5/16 in) plug weld holes in the service part, as necessary, in the locations noted from the original panel.
5. Apply Weld-Thru to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .
6. Install and align the service part using 3-dimensional measuring equipment.

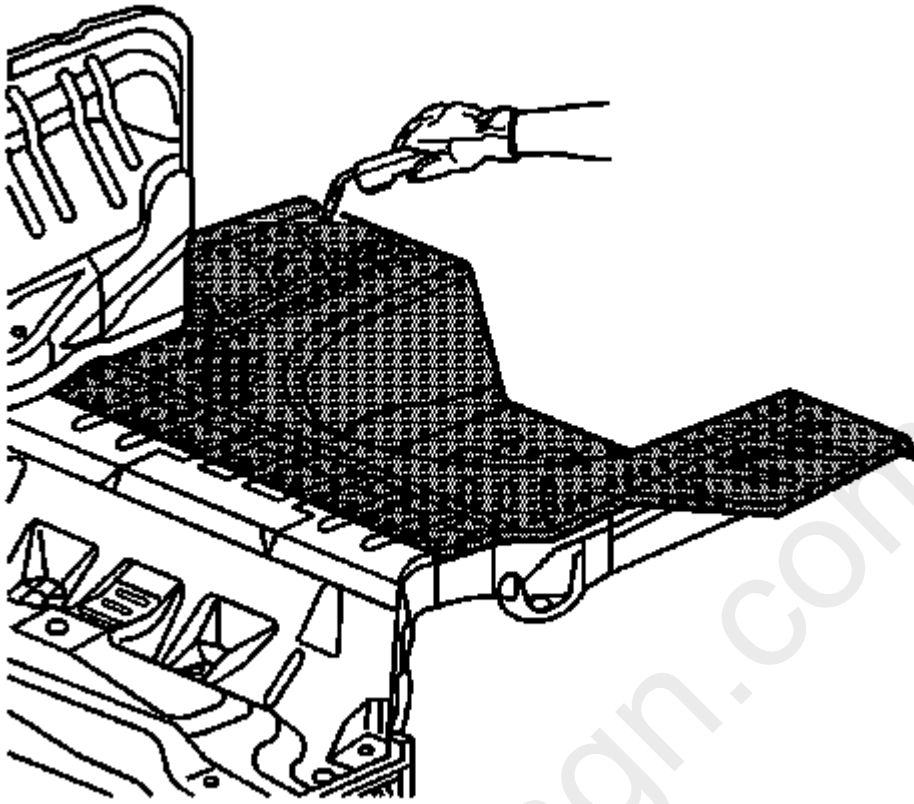


Fig. 116: Welding Floor Pan
Courtesy of GENERAL MOTORS COMPANY

7. Plug weld accordingly.

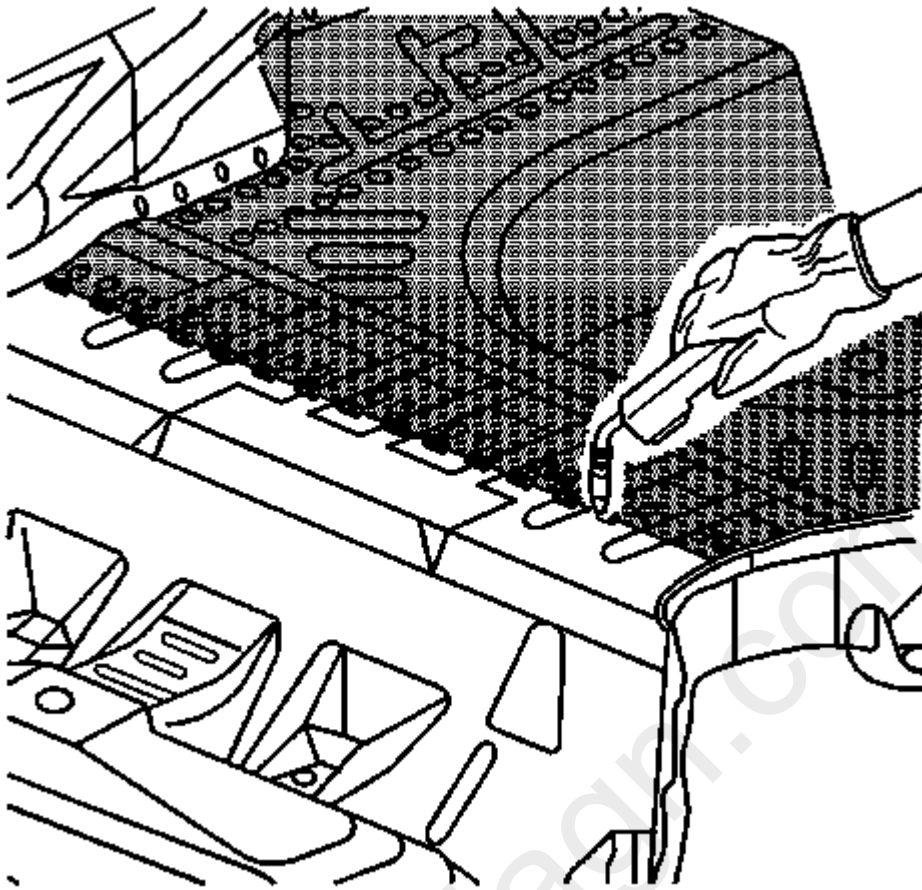


Fig. 117: Stitch Welding Rear Compartment Panel Section
Courtesy of GENERAL MOTORS COMPANY

8. To create a solid weld along the front of the service part with a minimum of heat distortion, make a 25 mm (1 in) stitch weld along the seam with 25 mm (1 in) gaps between them.

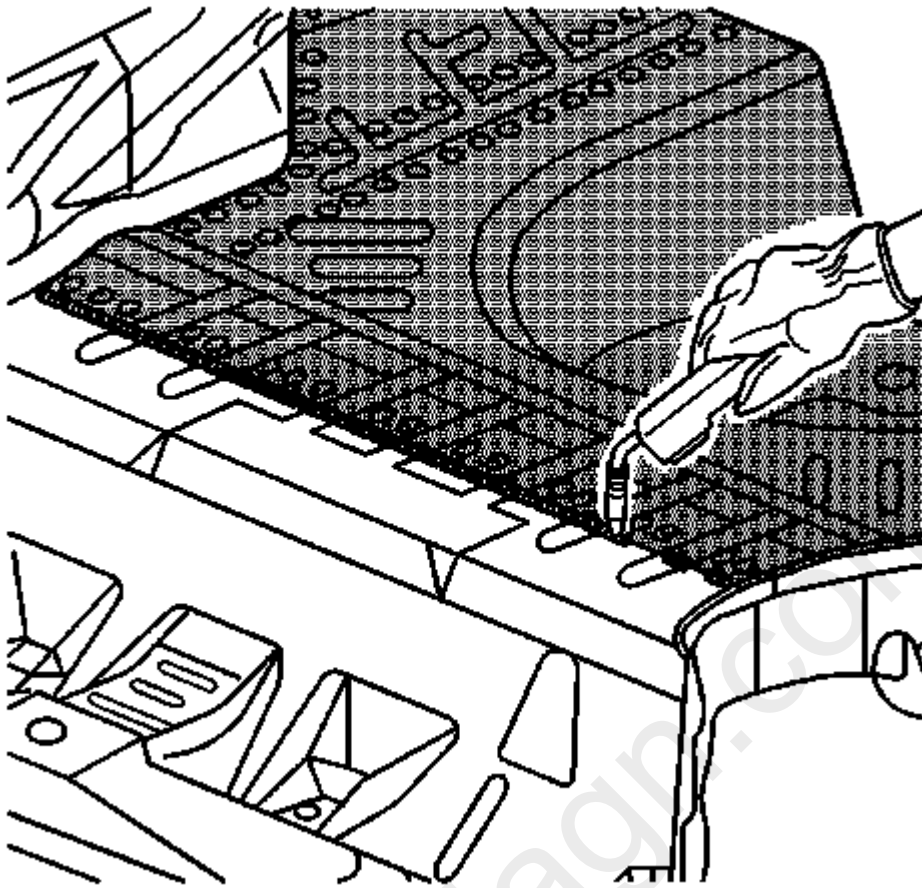


Fig. 118: Welding Rear Compartment Panel Section
Courtesy of GENERAL MOTORS COMPANY

9. Clean and prepare all welded surfaces.
10. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
11. Apply the sealers and 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 (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
14. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

REAR WHEELHOUSE OUTER PANEL REPLACEMENT (WAGON)

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 (Wagon)** .

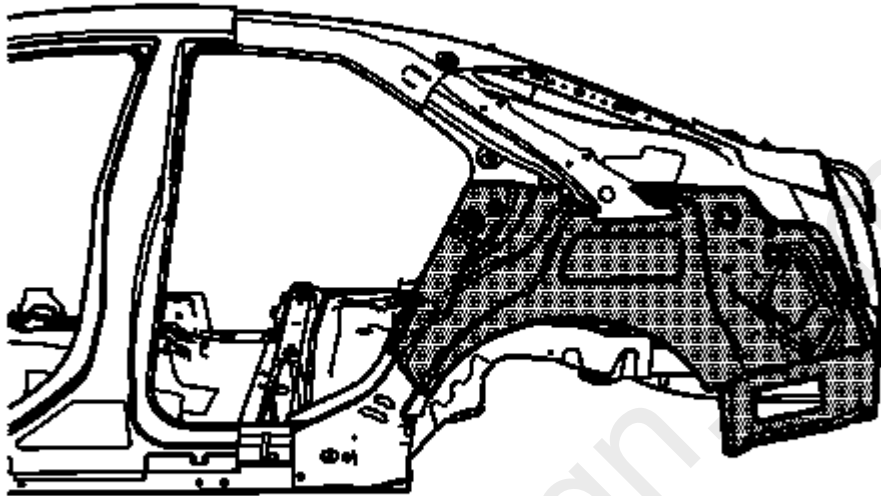


Fig. 119: View of Body Frame and Related Panels
Courtesy of GENERAL MOTORS COMPANY

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

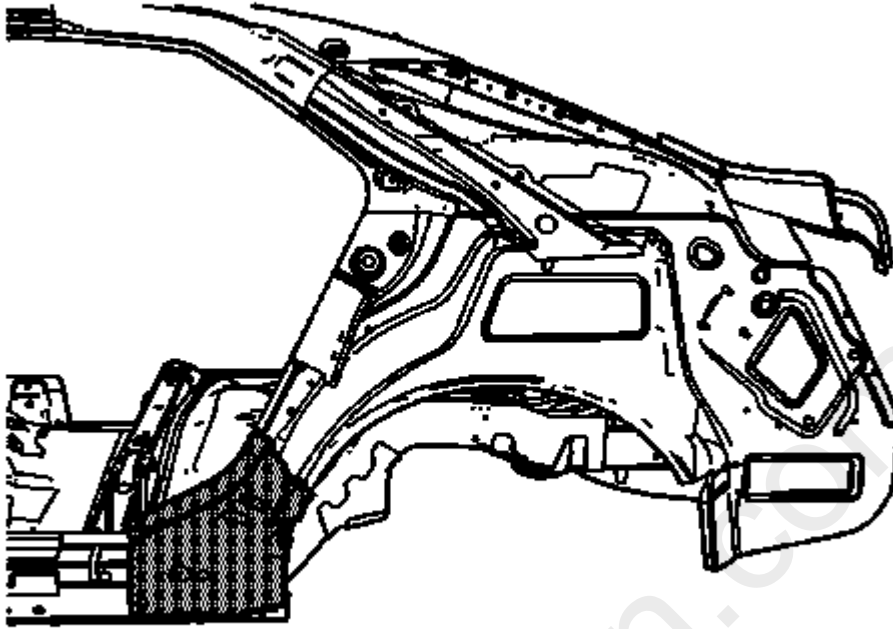


Fig. 120: View of Body Frame and Inner Reinforcement
Courtesy of GENERAL MOTORS COMPANY

6. Remove the body inner reinforcement.

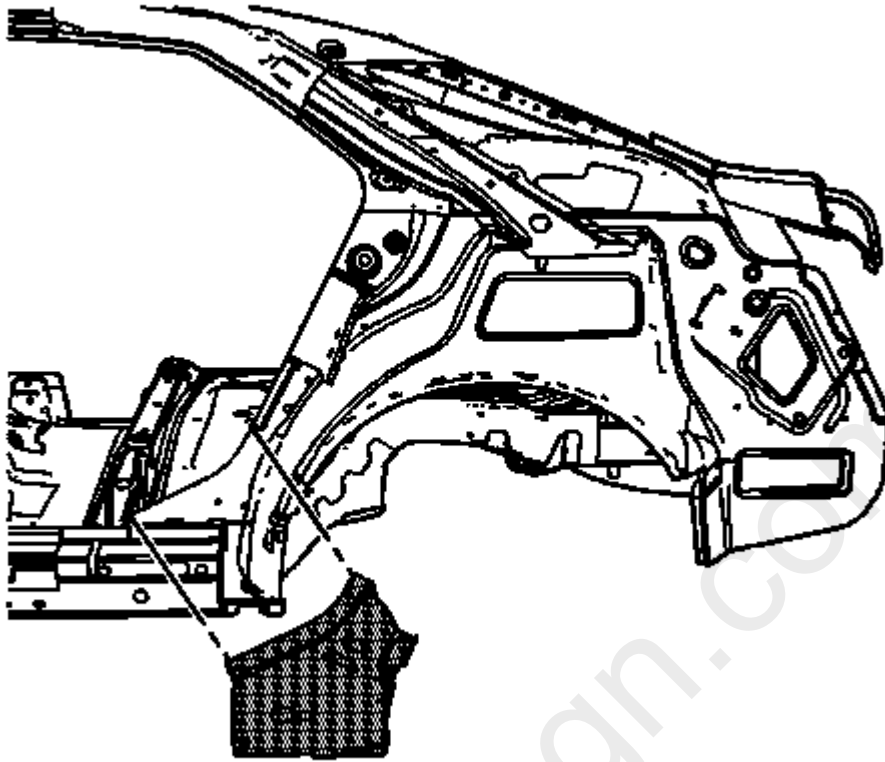


Fig. 121: View of Body Frame and Inner Reinforcement
Courtesy of GENERAL MOTORS COMPANY

NOTE:

- Do not damage any inner panels or reinforcements.
- Note the number and location of the factory welds for installation of the inner quarter panel.

7. Locate, mark, and drill out all the necessary factory welds.

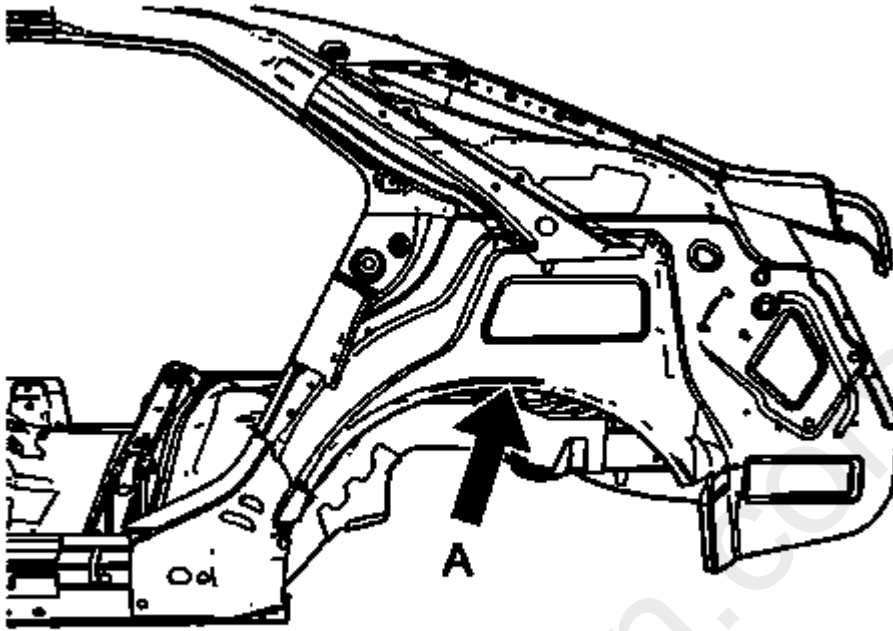


Fig. 122: View of Body Frame and Wheelhouse
Courtesy of GENERAL MOTORS COMPANY

8. Use a panel cutter to remove the three hidden welds under the upper reinforcement. These welds connect the outer wheelhouse to the inner wheelhouse (A).
9. Remove the damaged wheelhouse.

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.

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

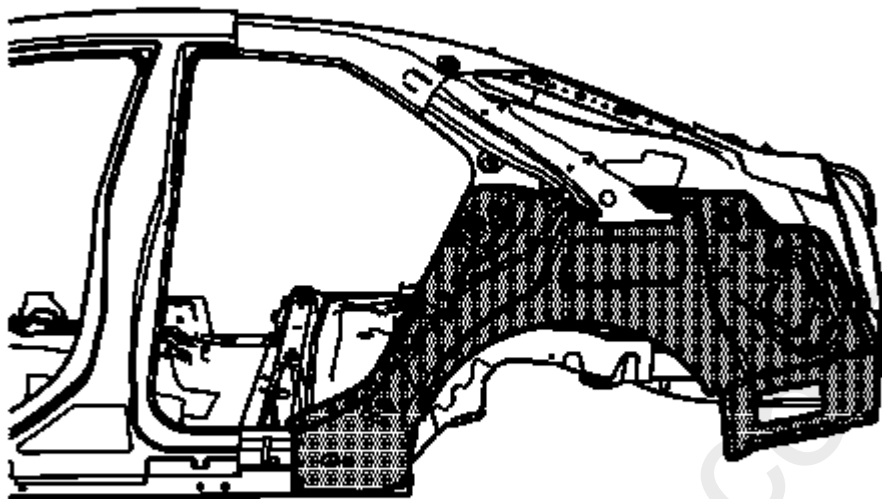


Fig. 123: View of Body Frame and Service Part
Courtesy of GENERAL MOTORS COMPANY

4. Align the service part on the vehicle using 3-dimensional measuring equipment.

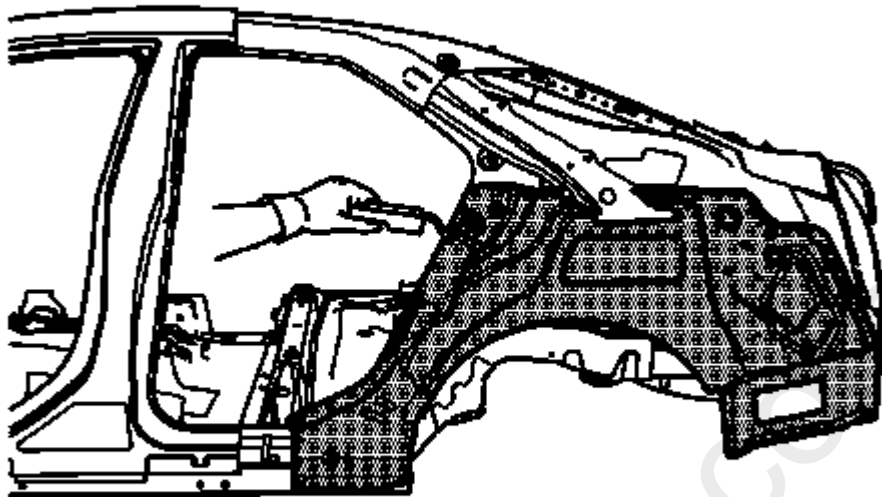


Fig. 124: View of Body Frame and Welding
Courtesy of GENERAL MOTORS COMPANY

5. Plug weld accordingly.

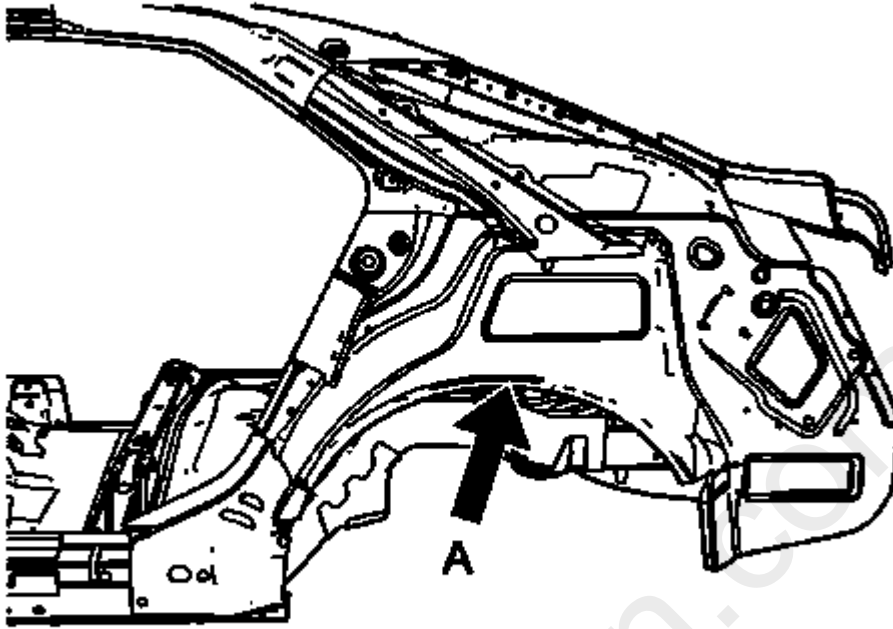


Fig. 125: View of Body Frame and Wheelhouse
Courtesy of GENERAL MOTORS COMPANY

6. In the upper reinforcement area replace the three hidden spot welds with three 25 mm (1 in) stitch welds (A).

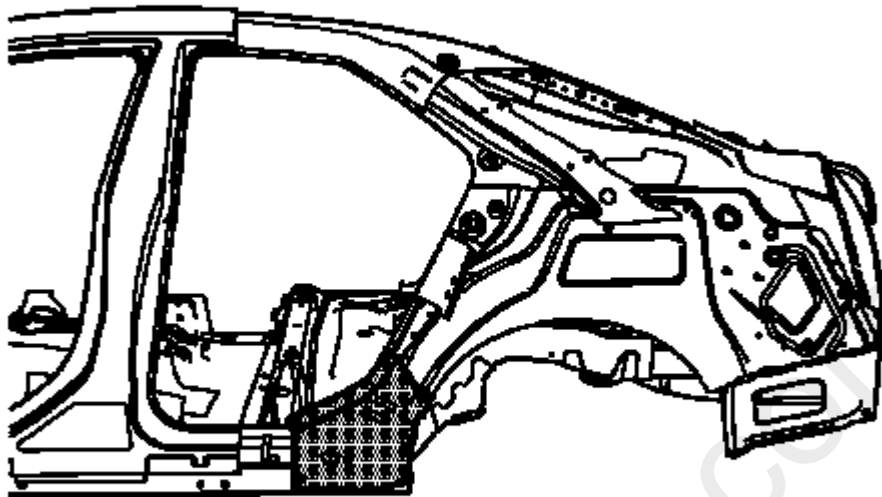


Fig. 126: Body Frame and Inner Reinforcement
Courtesy of GENERAL MOTORS COMPANY

7. Install the body inner reinforcement.
8. Clean and prepare all of the welded surfaces.
9. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
10. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
11. Install all of the related panels and components.
12. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Wagon)** .
13. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

REAR WHEELHOUSE OUTER PANEL REPLACEMENT (WAGON)

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 (Wagon)** .

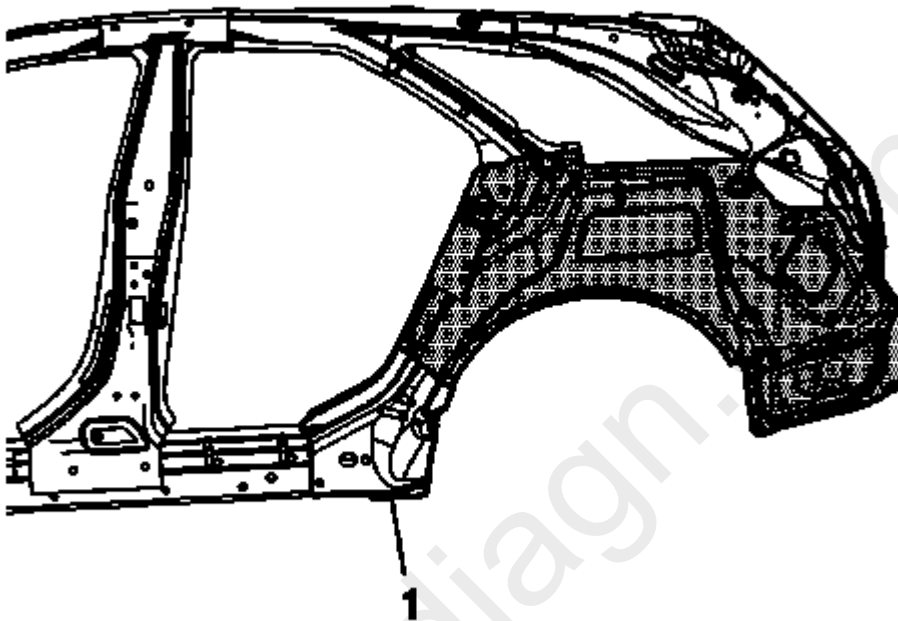


Fig. 127: Removing/Installing All Related Panels And Components
Courtesy of GENERAL MOTORS COMPANY

3. Remove all related panels and components (1).
4. Restore as much of the damage as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .

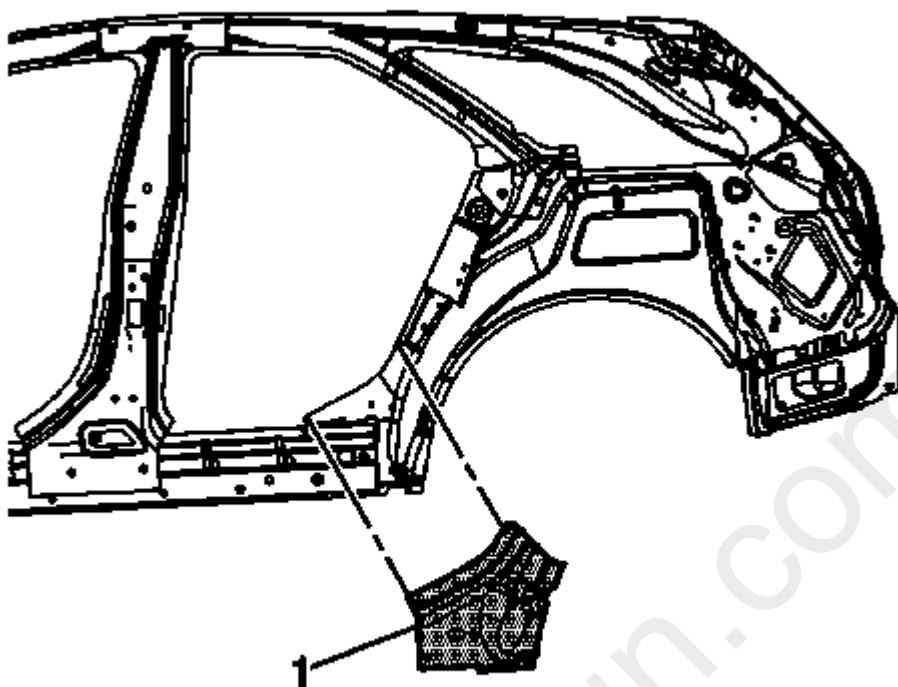


Fig. 128: Removing/Installing The Body Inner Reinforcement
Courtesy of GENERAL MOTORS COMPANY

6. Remove the body inner reinforcement (1).

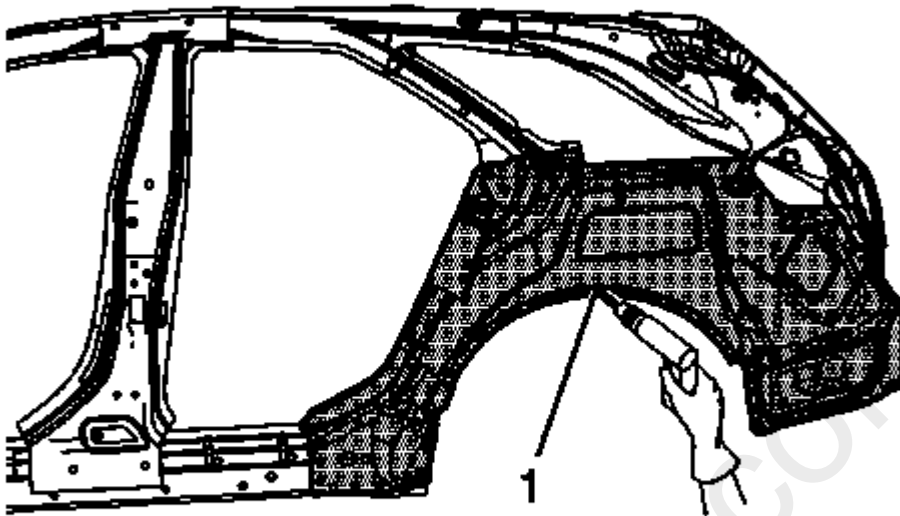


Fig. 129: Drilling Out All Necessary Factory Welds (Wagon)
Courtesy of GENERAL MOTORS COMPANY

NOTE:

- Do not damage any inner panels or reinforcements.
- Note the number and location of the factory welds for installation of the inner quarter panel.

7. Locate, mark, and drill out all the necessary factory welds (1).

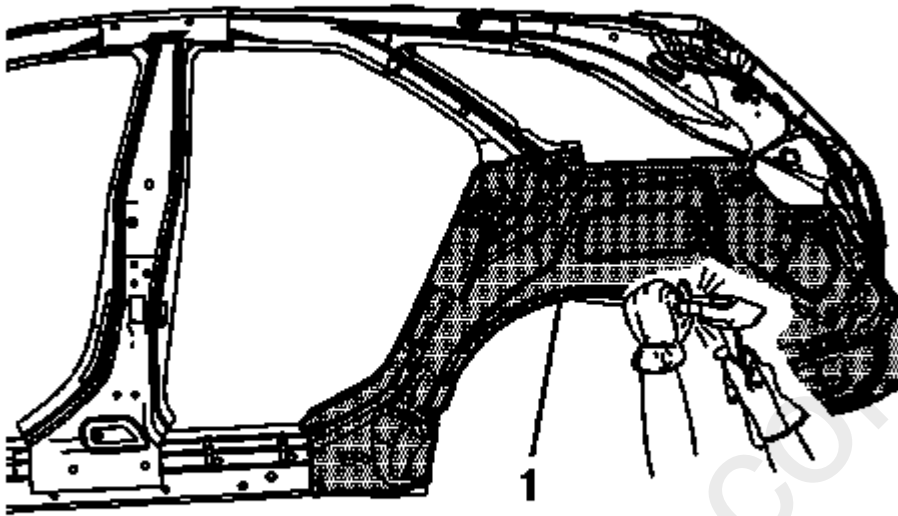


Fig. 130: Identifying Panel Cutter
Courtesy of GENERAL MOTORS COMPANY

8. Use a panel cutter to remove the three hidden welds under the upper reinforcement (1). These welds connect the outer wheelhouse to the inner wheelhouse.
9. Remove the damaged wheelhouse.

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.

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

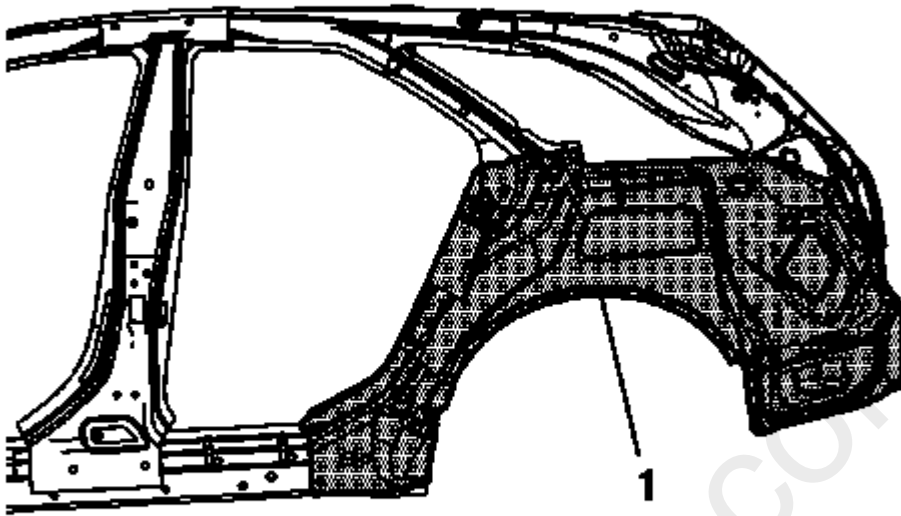


Fig. 131: Aligning Service Part On Vehicle Using 3-Dimensional Measuring Equipment
Courtesy of GENERAL MOTORS COMPANY

4. Align the service part on the vehicle using 3-dimensional measuring equipment (1).

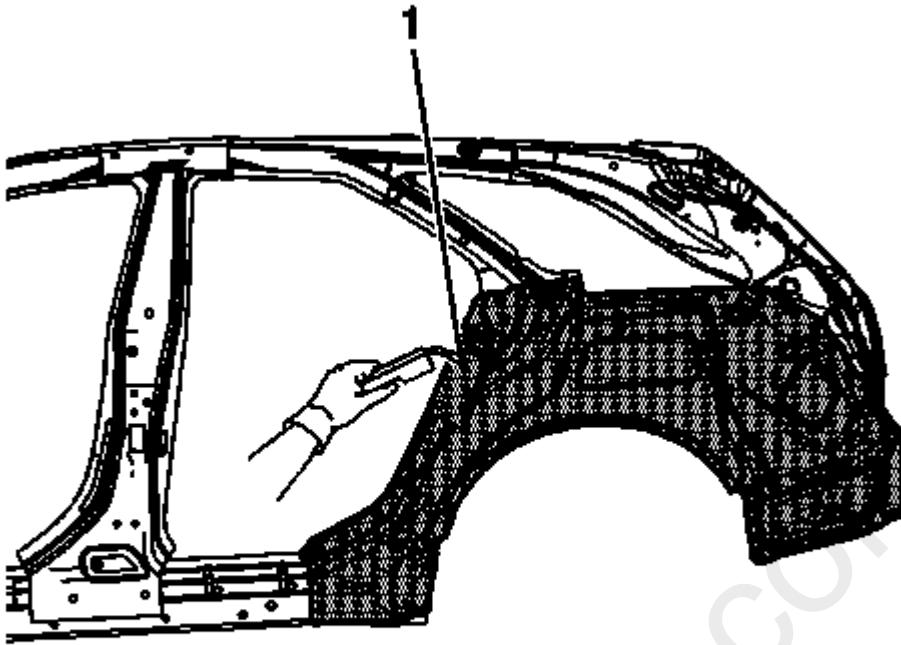


Fig. 132: Plugging Weld Accordingly
Courtesy of GENERAL MOTORS COMPANY

5. Plug weld accordingly (1).

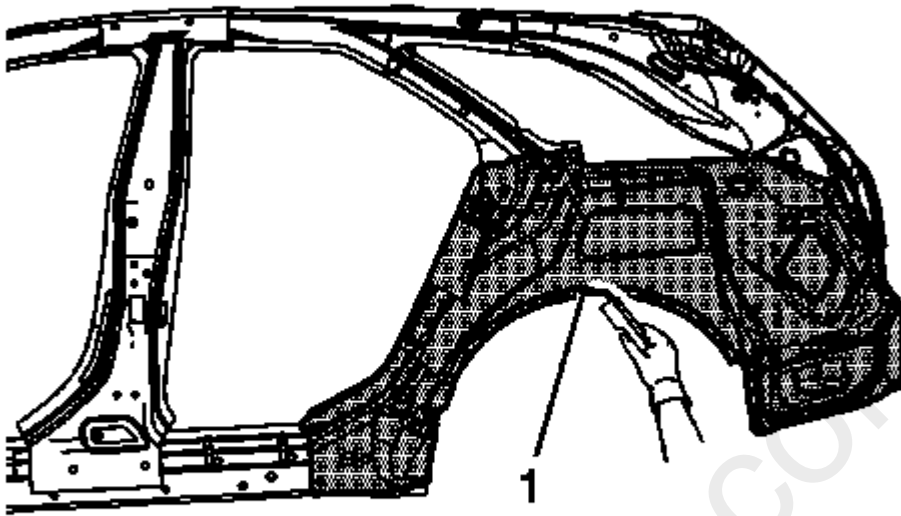


Fig. 133: Replacing Three Hidden Spot Welds With Three 25 mm (1 In) Stitch Welds
Courtesy of GENERAL MOTORS COMPANY

6. In the upper reinforcement area replace the three hidden spot welds with three 25 mm (1 in) stitch welds (1).

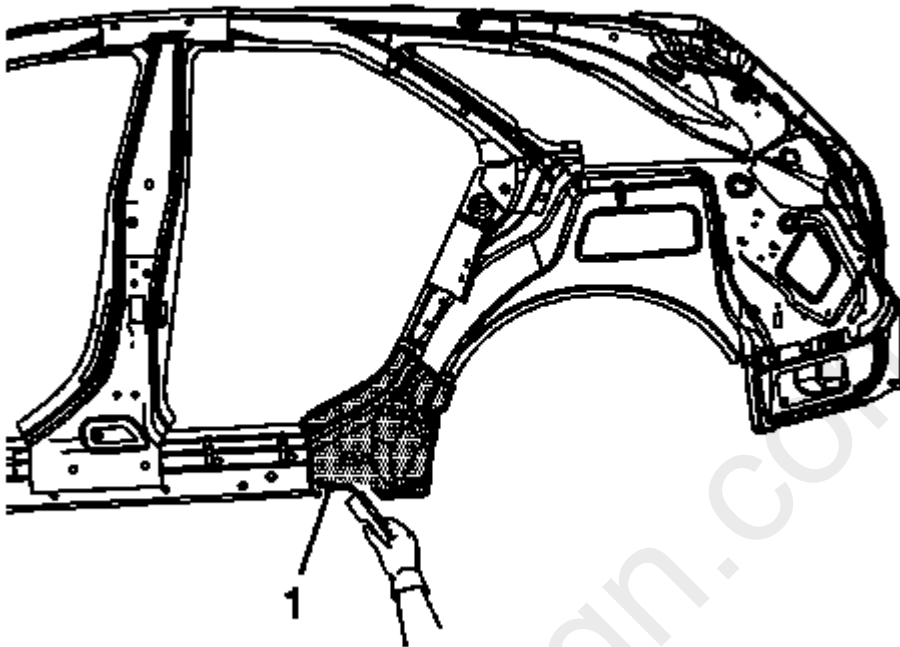


Fig. 134: Body Inner Reinforcement
Courtesy of GENERAL MOTORS COMPANY

7. Install the body inner reinforcement (1).
8. Clean and prepare all of the welded surfaces.
9. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
10. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
11. Install all of the related panels and components.
12. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Wagon)** .
13. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

QUARTER OUTER PANEL REPLACEMENT (WAGON)

Removal Procedure

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

WARNING: When working with any type of glass or sheet metal with exposed or rough edges, wear approved safety glasses and gloves in order to reduce the chance of personal injury.

NOTE: When replacing panels that involve servicing of stationary glass, refer to Stationary Window Description before performing any priming or refinishing. Sectioning Should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle.

NOTE: The service part comes with the quarter panel extension, tail lamp pocket and trunk trough attached. These parts can be left on the vehicle if not damaged. Drill out the factory welds on the vehicle and the service part and install the outer panel only.

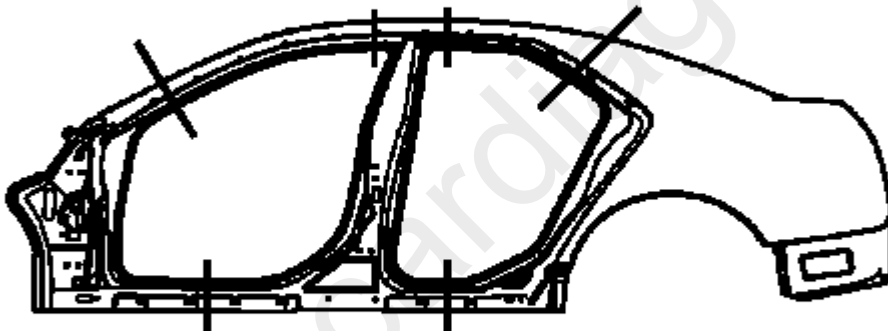


Fig. 135: View of Body Frame

Courtesy of GENERAL MOTORS COMPANY

The full body-side outer panel comes as a complete assembly and can be replaced at factory seams after the removal of the fixed glass and roof. Any one of these service procedures can be performed separately or in any combination, dependent upon the extent of damage to the vehicle. Sectioning must take place in specified areas only.

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 (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
3. Remove the rear window. Refer to **Rear Window Replacement (Wagon/Coupe)** , **Rear Window Replacement (Wagon)** .
4. Remove all related panels and components.
5. Restore as much of the damage as possible.
6. Remove sound deadeners as necessary and note their location.
7. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .

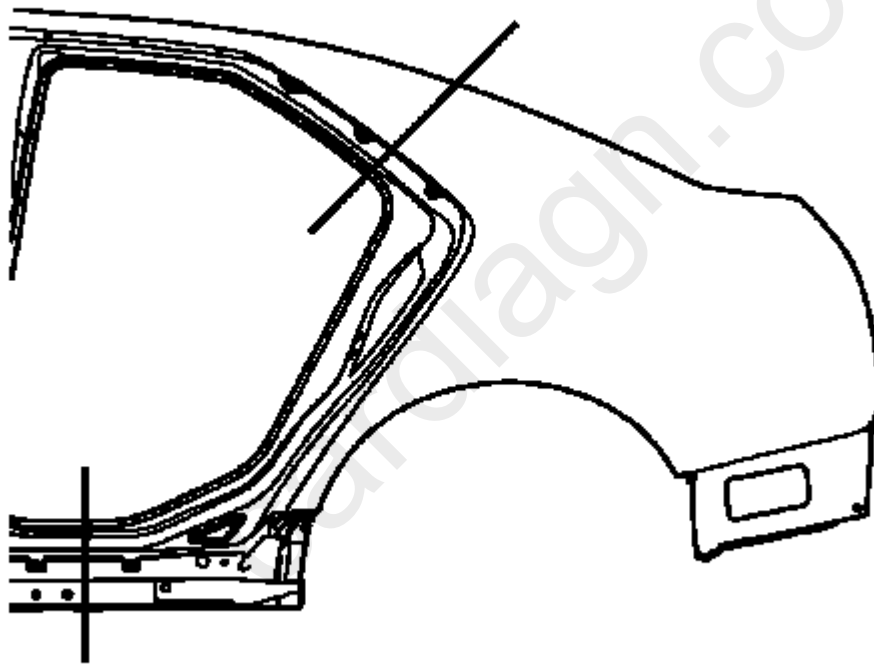


Fig. 136: View of Body Frame and Locations
Courtesy of GENERAL MOTORS COMPANY

8. Create cut lines on the rocker panel within the approved sectioning locations.

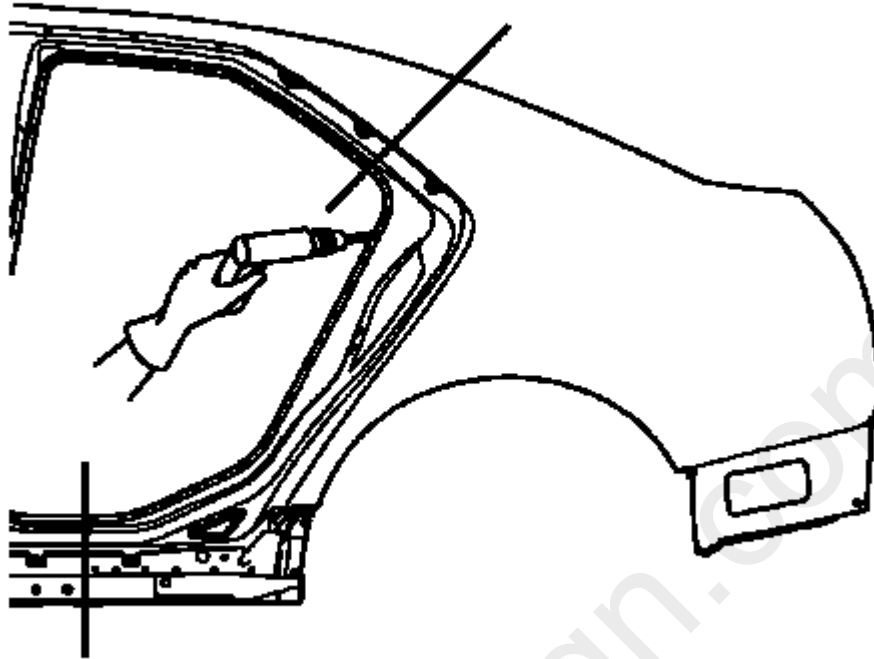


Fig. 138: Body Frame and Glass Opening
Courtesy of GENERAL MOTORS COMPANY

NOTE: Note the number and location of the factory welds for installation of the quarter panel.

12. Locate, mark, and drill out all the necessary factory welds.

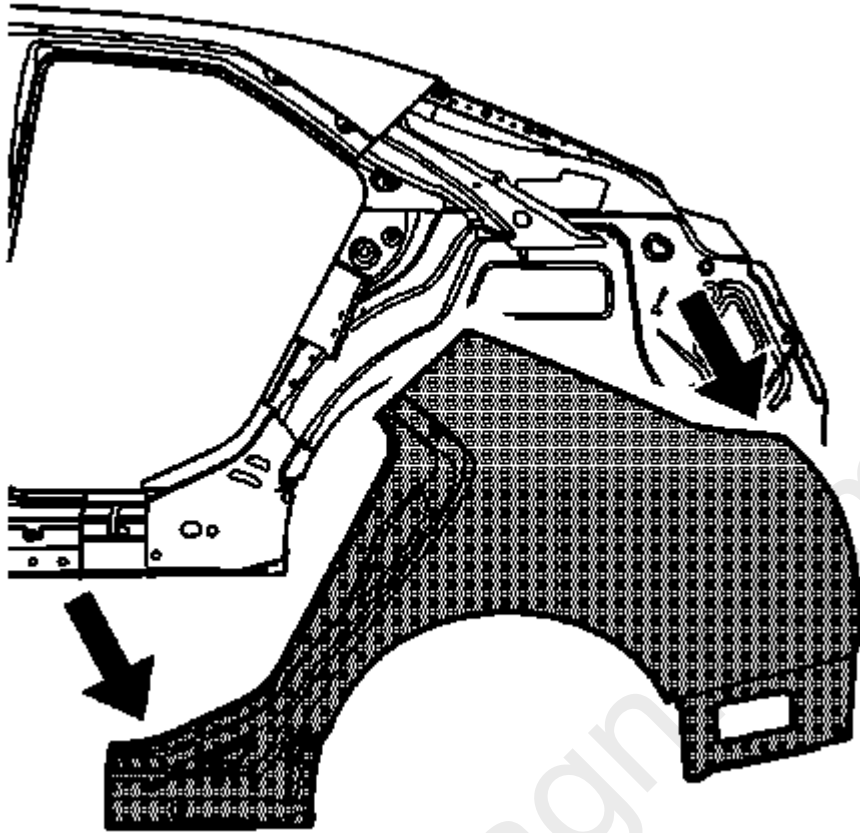


Fig. 139: View of Body Frame and Quarter Panel
Courtesy of GENERAL MOTORS COMPANY

13. Remove the damaged quarter panel.

Installation Procedure

NOTE: This part has structural weld-thru adhesive in the joint areas. It is necessary to replace this with additional spot welds at the attachment points. This can be accomplished by adding an additional weld between each factory weld in all areas that have adhesive.

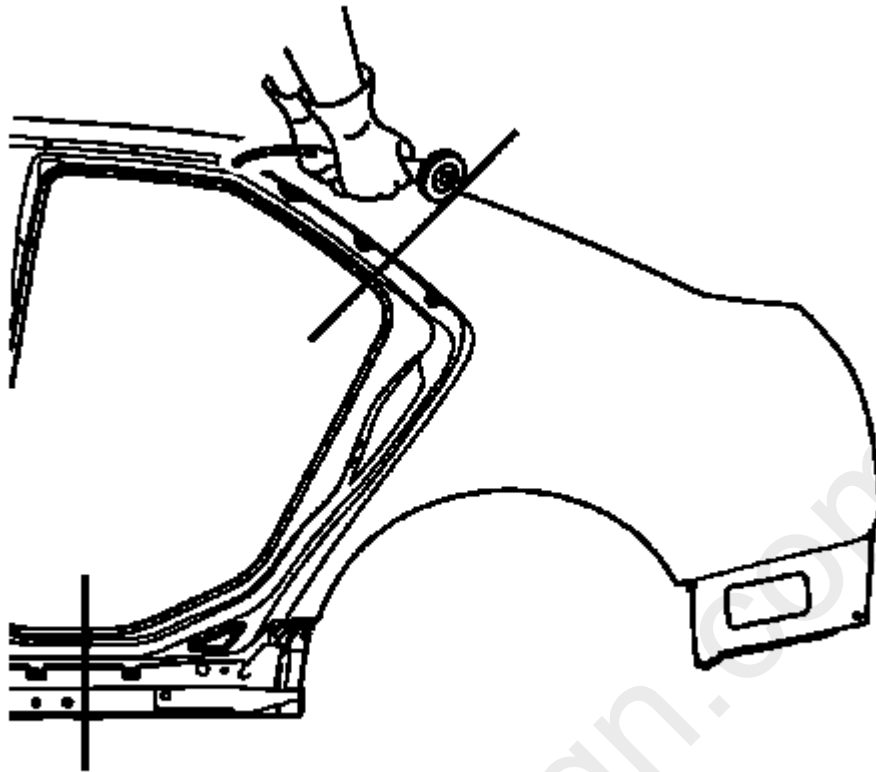


Fig. 140: View of Door Frame

Courtesy of GENERAL MOTORS COMPANY

1. Cut the body side assembly in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to allow a gap of one-and-one-half-times the metal thickness at the sectioning joint.

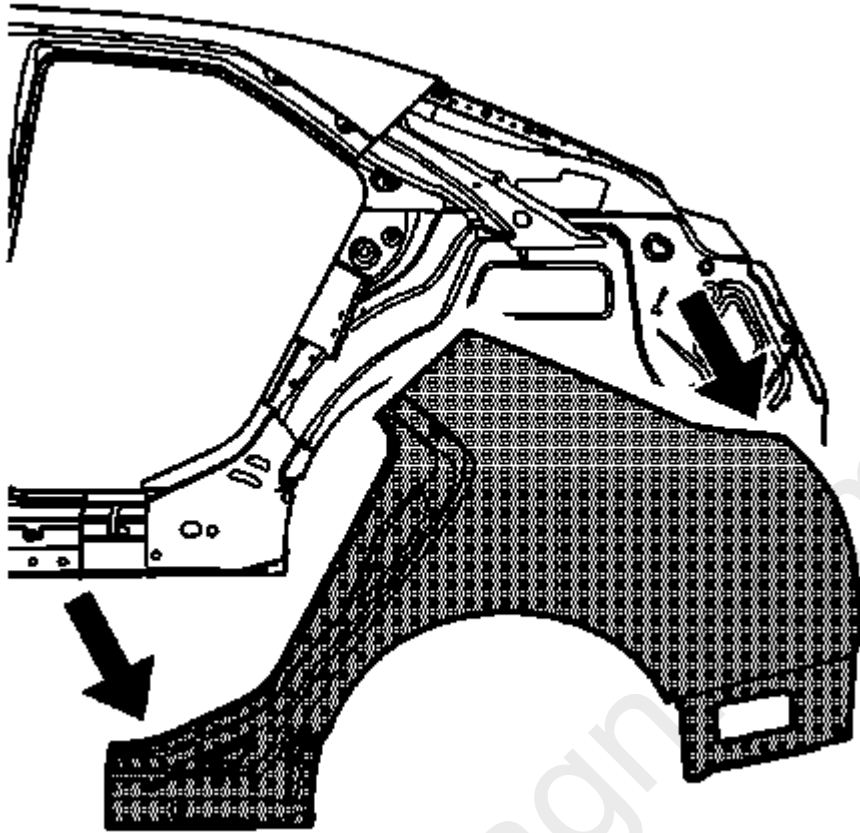


Fig. 141: View of Body Frame and Quarter Panel
 Courtesy of GENERAL MOTORS COMPANY

2. Create a 50 mm (2 in) backing plate from the unused portion of the service part for the back glass area. Create a 100 mm (4 in) backing plate from the unused portion of the service part for the rocker area. Trim the backing plates as necessary to fit behind the sectioning joints.

NOTE: In any area damaged beyond recognition, space the plug weld holes every 40 mm (1 1/2 in) apart.

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

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.

4. Prepare all mating surfaces as necessary.
5. Apply GM-approved weld-thru coating or equivalent to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair**
6. Fit the backing plates halfway into the sectioning joints, clamp in place and plug weld to the vehicle.
7. Align quarter panel using three-dimensional measuring equipment.

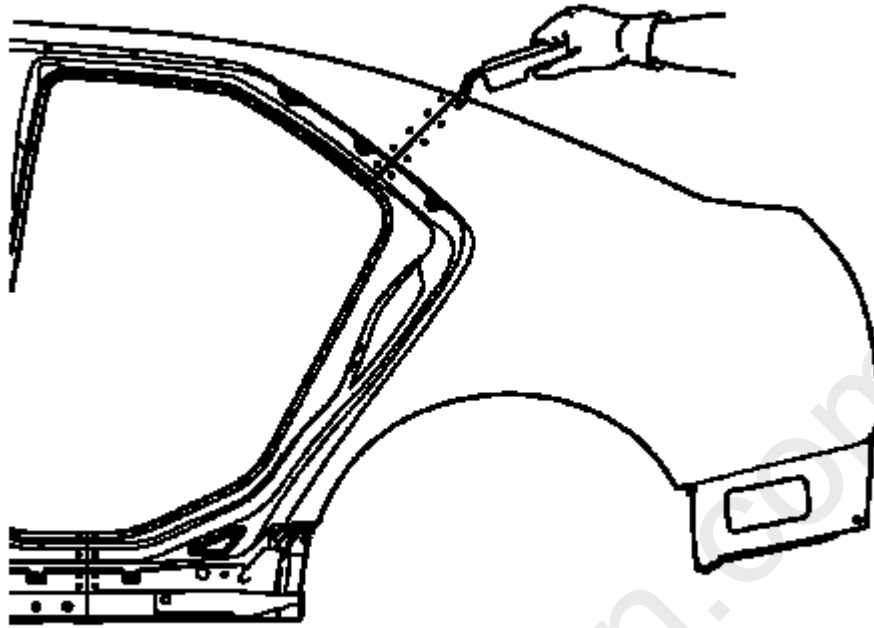


Fig. 142: Identifying Body Frame, Panel and Weld
Courtesy of GENERAL MOTORS COMPANY

8. Plug weld accordingly.
9. 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.

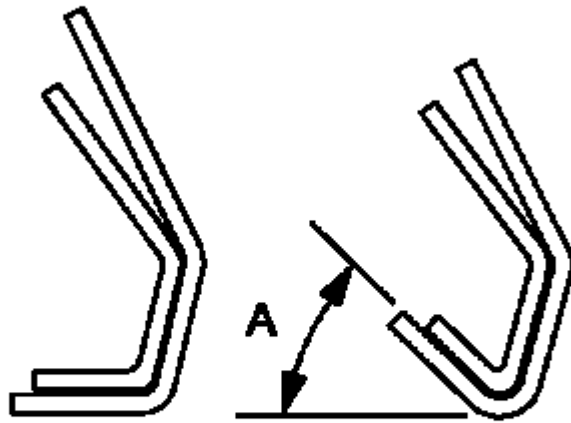


Fig. 143: Forming Wheel Opening Flange
Courtesy of GENERAL MOTORS COMPANY

10. Clean and prepare all of the welded surfaces.
11. On vehicles equipped with optional wheels, locate the wheel opening flange between the 10 o'clock and 2 o'clock positions.
12. Perform the fender flanging procedure (A). Refer to **Wheel Opening Flanging**.
13. Apply sound deadening materials as necessary.
14. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems**.
15. Install the rear window. Refer to **Rear Window Replacement (Wagon/Coupe)**, **Rear Window Replacement (Wagon)**.
16. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair**.
17. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)**, **Battery Negative Cable Disconnection and Connection (Wagon)**.
18. Enable the SIR system. Refer to **SIR Disabling and Enabling**.

QUARTER OUTER PANEL REPLACEMENT (WAGON)

Removal Procedure

WARNING: Refer to Approved Equipment for Collision Repair Warning .

WARNING: When working with any type of glass or sheet metal with exposed or rough edges, wear approved safety glasses and gloves in order to reduce the chance of personal injury.

NOTE: When replacing panels that involve servicing of stationary glass, refer to Stationary Window Description before performing any priming or refinishing. Sectioning Should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle.

NOTE: The service part comes with the quarter panel extension, tail lamp pocket and trunk trough attached. These parts can be left on the vehicle if not damaged. Drill out the factory welds on the vehicle and the service part and install the outer panel only.

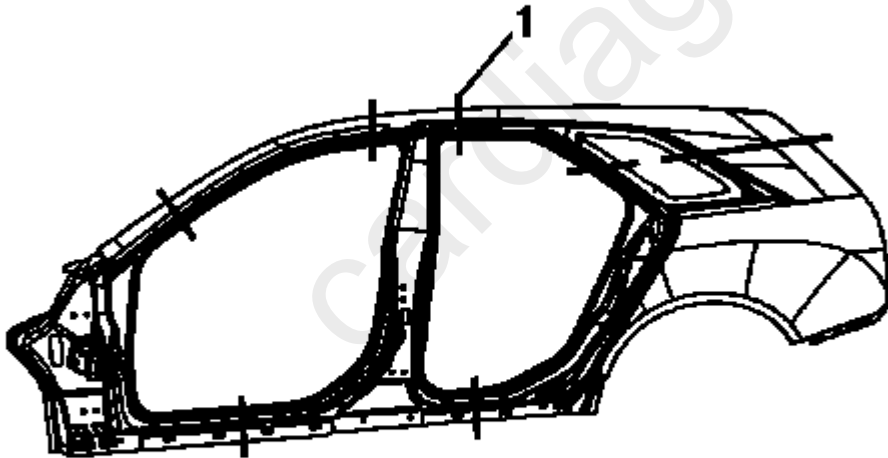


Fig. 144: Sectioning Specified Areas
Courtesy of GENERAL MOTORS COMPANY

The full body-side outer panel comes as a complete assembly and can be replaced at factory seams after the removal of the fixed glass and roof. Any one of these service procedures can be performed separately or in any combination, dependent upon the extent of damage to the vehicle. Sectioning must take place in specified areas only (1).

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 (Wagon)** .
3. Remove the rear window. Refer to **Rear Window Replacement (Wagon)** .
4. Remove all related panels and components.
5. Restore as much of the damage as possible.
6. Remove sound deadeners as necessary and note their location.
7. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .

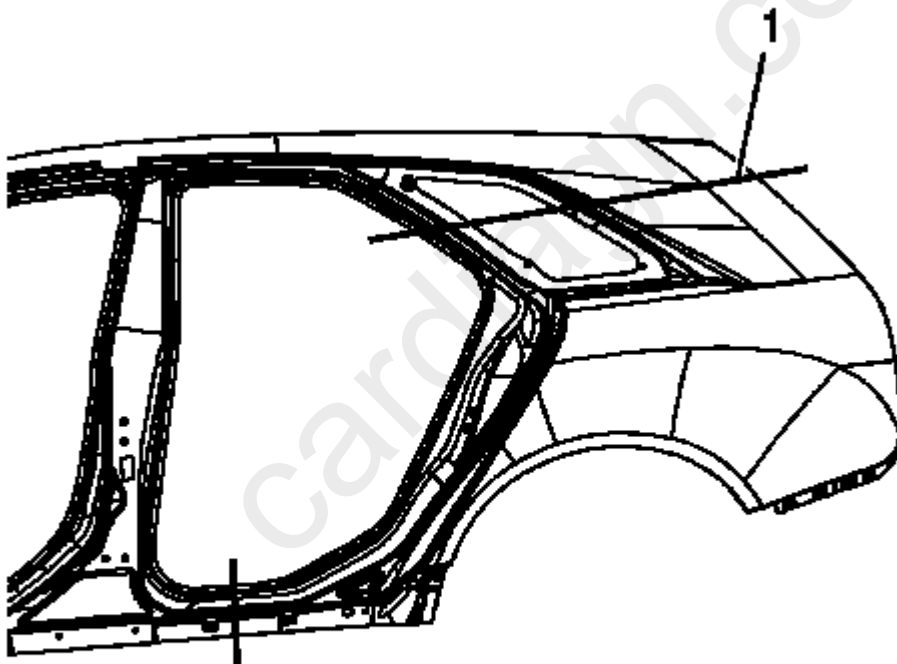


Fig. 145: Creating Cut Lines On Rocker Panel
Courtesy of GENERAL MOTORS COMPANY

8. Create cut lines on the rocker panel within the approved sectioning locations (1).
9. In the back-glass opening, measure down 150 mm (6 in) from the rear edge of the roof.

10. In the door opening, measure down 90 mm (3.5 in) from the weather strip hole.

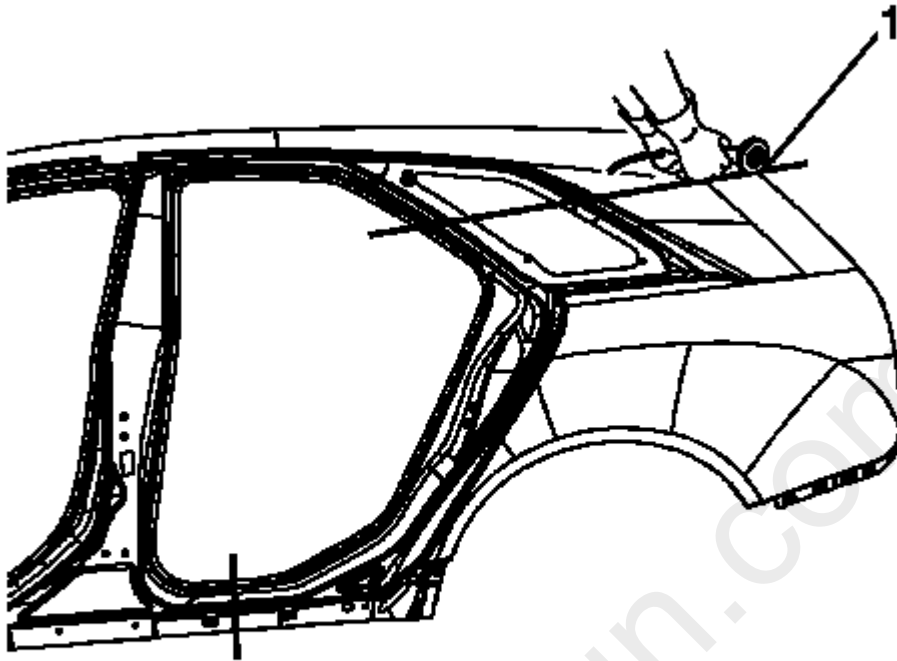


Fig. 146: Cutting Panel

Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage any inner panels or reinforcements.

11. Cut the panel where sectioning is to be performed (1).

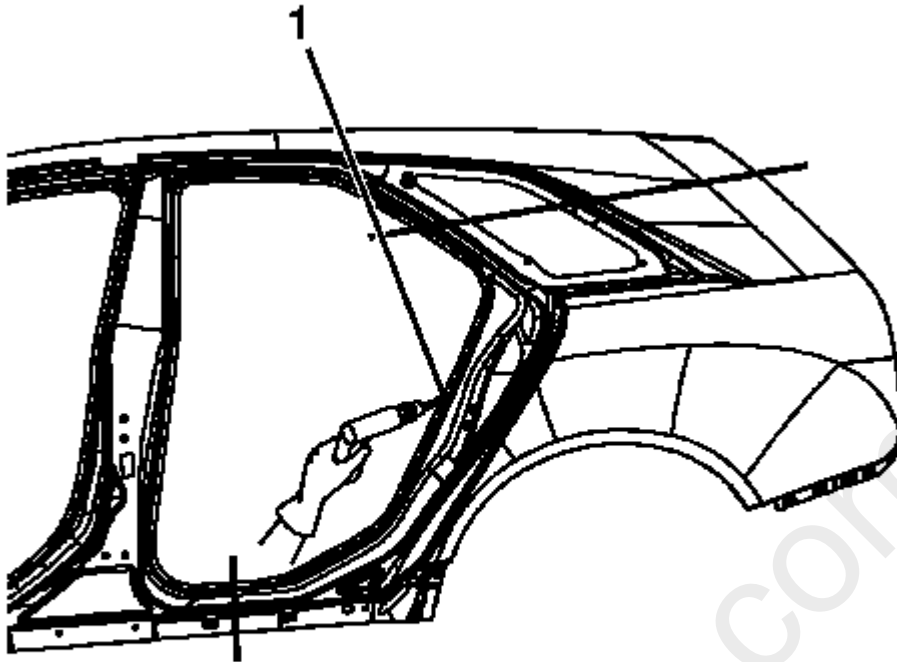


Fig. 147: Drilling Out All Necessary Factory Welds
Courtesy of GENERAL MOTORS COMPANY

NOTE: Note the number and location of the factory welds for installation of the quarter panel.

12. Locate, mark, and drill out all the necessary factory welds (1).

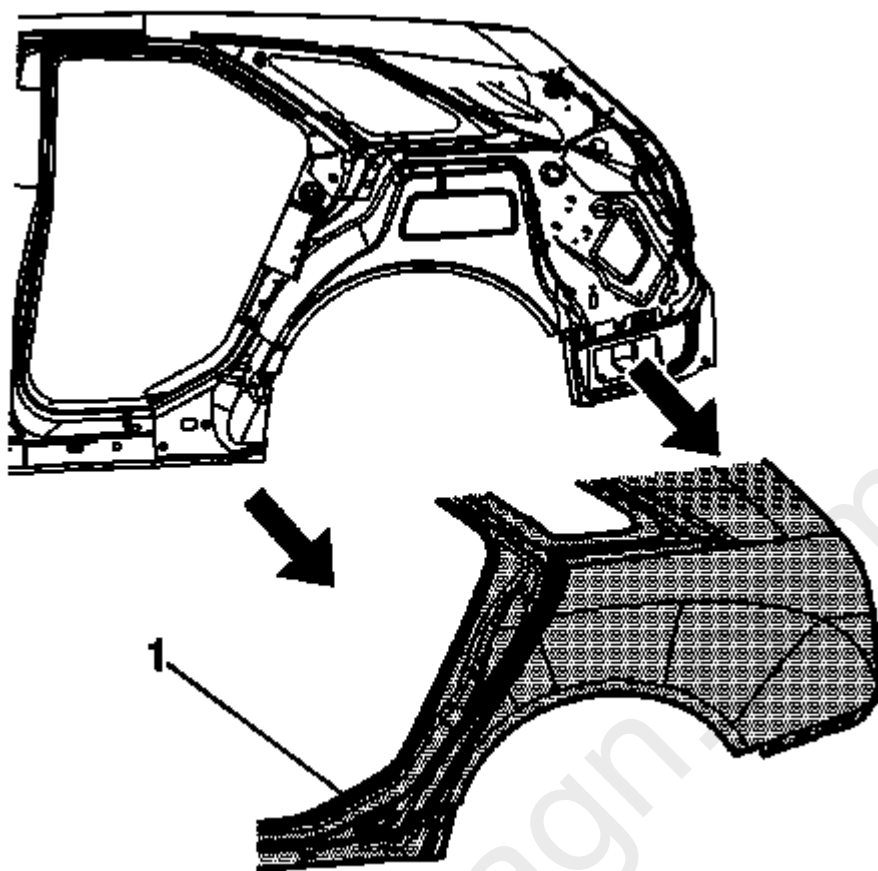


Fig. 148: Identifying Damaged Quarter Panel
Courtesy of GENERAL MOTORS COMPANY

13. Remove the damaged quarter panel (1).

Installation Procedure

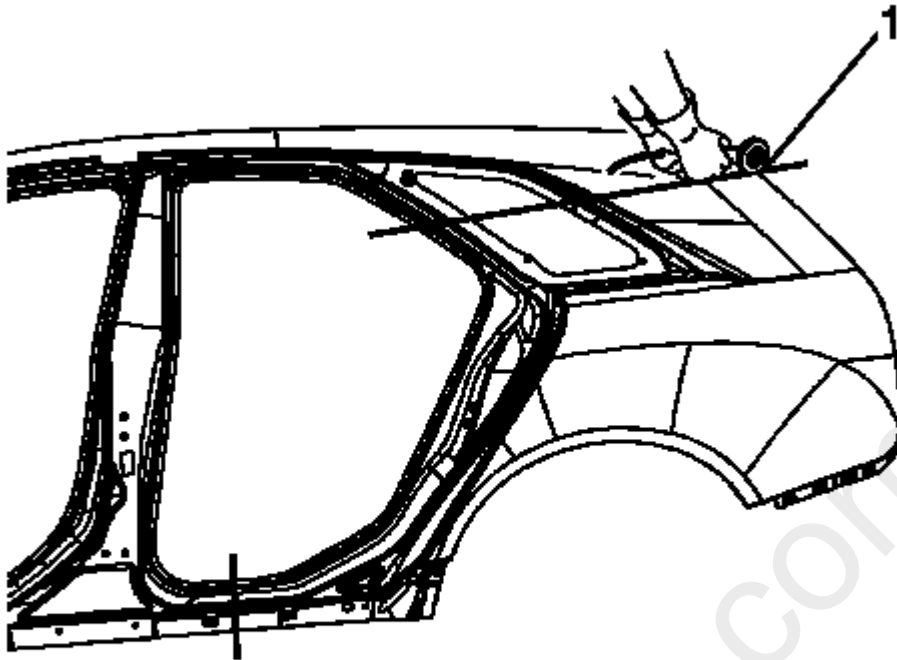


Fig. 149: Cutting Panel

Courtesy of GENERAL MOTORS COMPANY

NOTE: This part has structural weld-thru adhesive in the joint areas. It is necessary to replace this with additional spot welds at the attachment points. This can be accomplished by adding an additional weld between each factory weld in all areas that have adhesive.

1. Cut the body side assembly in corresponding locations to fit the remaining original panel (1). The sectioning joint should be trimmed to allow a gap of one-and-one-half-times the metal thickness at the sectioning joint.
2. Create a 50 mm (2 in) backing plate from the unused portion of the service part for the back glass area. Create a 100 mm (4 in) backing plate from the unused portion of the service part for the rocker area. Trim the backing plates as necessary to fit behind the sectioning joints.

NOTE: In any area damaged beyond recognition, space the plug weld holes every 40 mm (1 1/2 in) apart.

3. Drill 8 mm (5/16 in) along the sectioning cut on the remaining original part. Locate these holes 13 mm (1/2 in) from the edge of part and spaced 40 mm (1 1/2 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 plates halfway into the sectioning joints, clamp in place and plug weld to the vehicle.
8. Align quarter panel using three-dimensional measuring equipment.

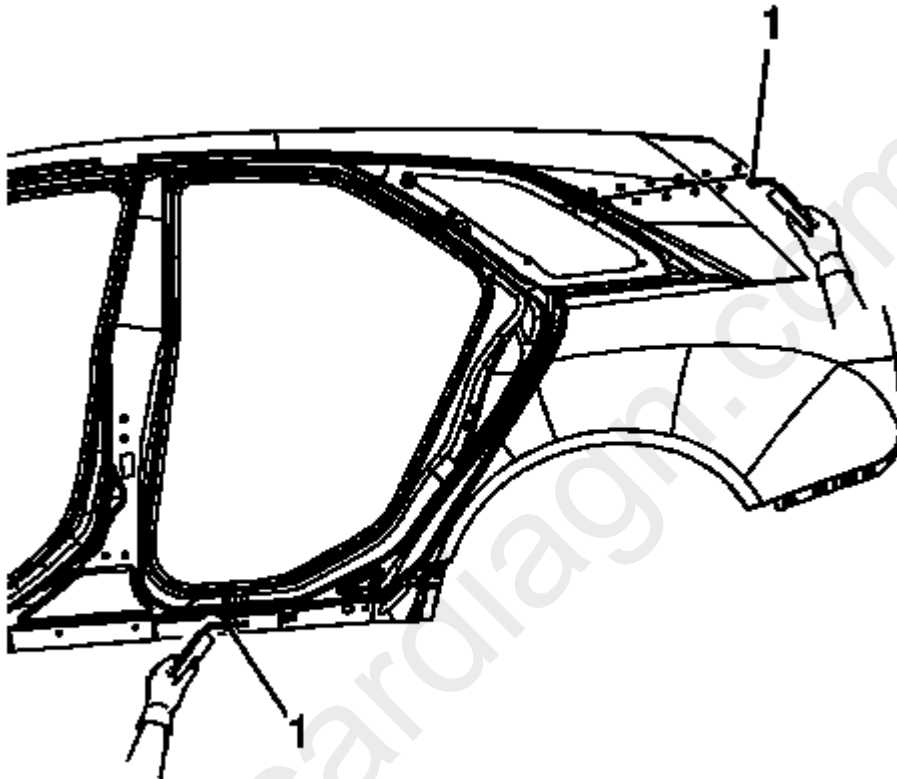


Fig. 150: Plugging Weld Accordingly
Courtesy of GENERAL MOTORS COMPANY

9. Plug weld accordingly (1).
10. 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.
11. Clean and prepare all of the welded surfaces.
12. On vehicles equipped with optional wheels, locate the wheel opening flange between the 10 o'clock and 2 o'clock positions.

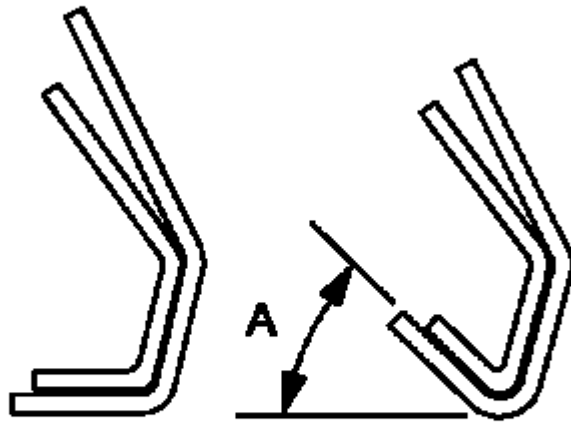


Fig. 151: Forming Wheel Opening Flange
Courtesy of GENERAL MOTORS COMPANY

13. Perform the fender flanging procedure (A). Refer to **Wheel Opening Flanging**.
14. Apply sound deadening materials as necessary.
15. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems**.
16. Install the rear window. Refer to **Rear Window Replacement (Wagon)**.
17. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair**.
18. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Wagon)**.
19. Enable the SIR system. Refer to **SIR Disabling and Enabling**.

UNDERBODY REAR SIDE RAIL 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 (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
3. Remove all related panels and components.
4. Repair as much of the damaged area as possible.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .

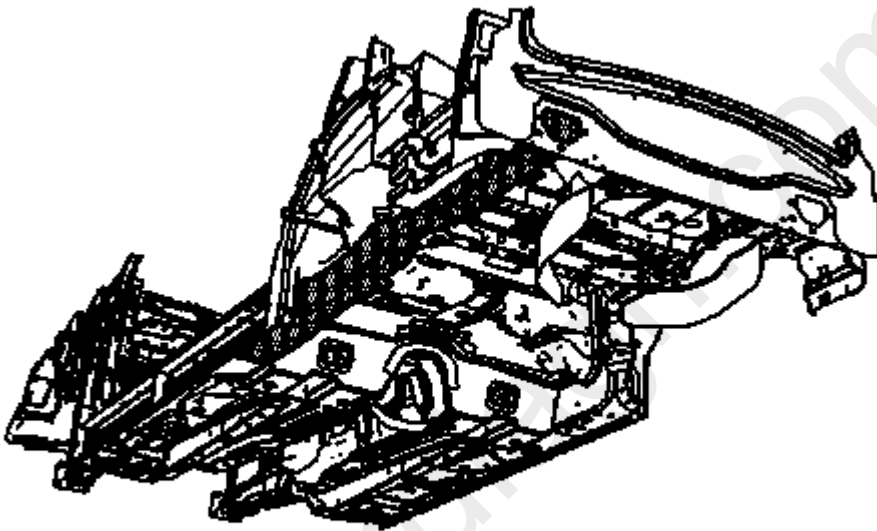


Fig. 152: View Of Factory Welds
Courtesy of GENERAL MOTORS COMPANY

6. Locate and drill out all the necessary factory welds.

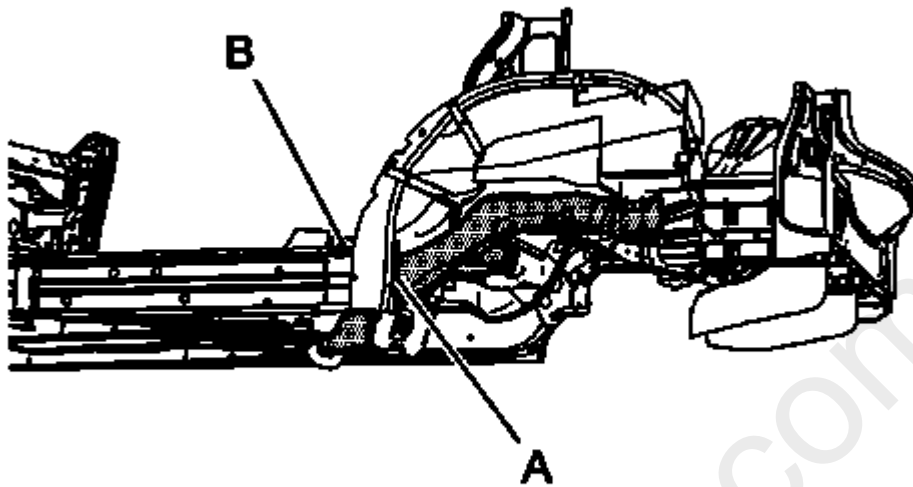


Fig. 153: View Of Hidden Welds

Courtesy of GENERAL MOTORS COMPANY

NOTE: Two hidden welds (A, B) are in the wheel house and rocker panel arms.

7. Locate and note the areas with structural adhesive.
8. Bend down the weld flange on the #5 bar.

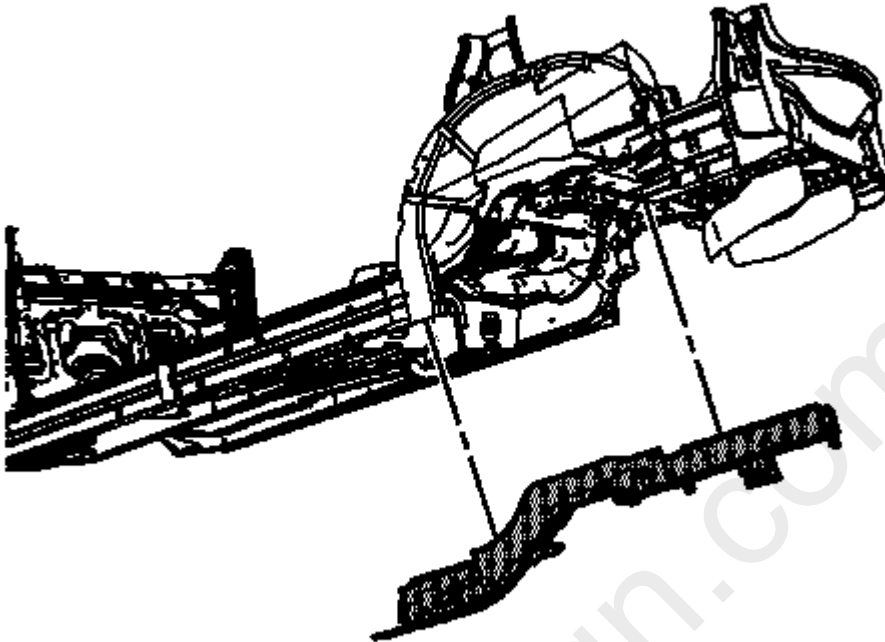


Fig. 154: View Of Rear Rail

Courtesy of GENERAL MOTORS COMPANY

9. Remove the 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.

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 for welding as necessary.
3. Apply Weld-Thru Coating to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

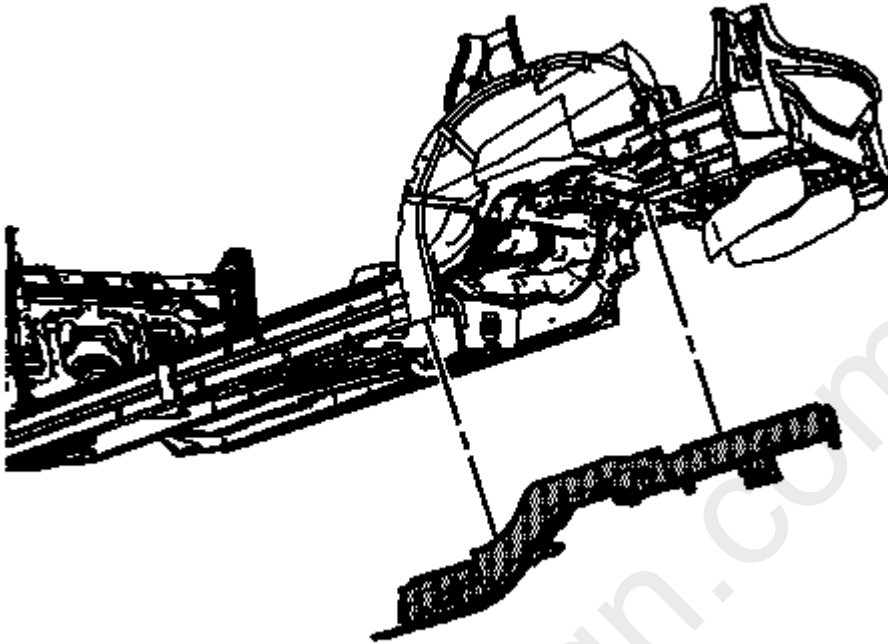


Fig. 155: View Of Rear Rail

Courtesy of GENERAL MOTORS COMPANY

4. Position the rear rail to the vehicle using 3-dimensional measuring equipment. Clamp the rail in place.
5. Install structural adhesive as noted during the Removal Procedure. Refer to **Metal Panel Bonding**.

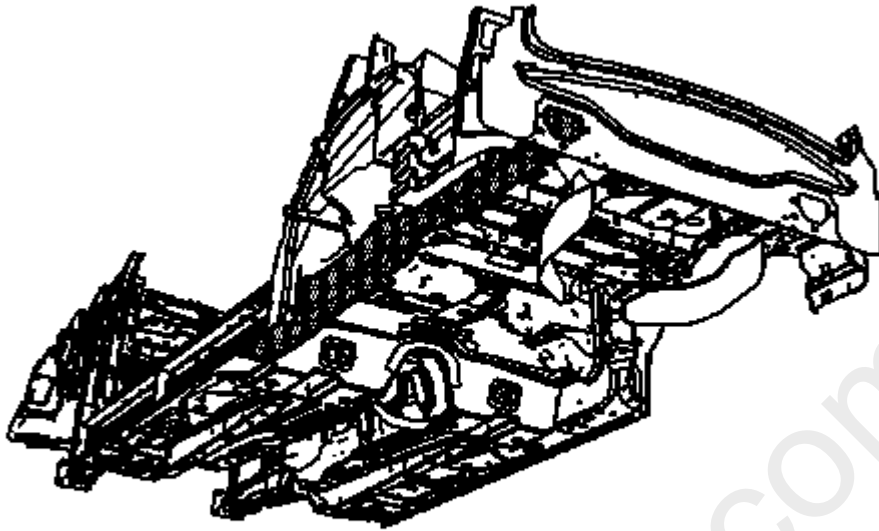


Fig. 156: View Of Factory Welds
Courtesy of GENERAL MOTORS COMPANY

6. Plug weld accordingly.
7. Clean and prepare all of the welded surfaces.
8. Install all of the related panels and components.
9. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
10. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
11. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
12. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

LOWER RAIL SECTIONING

Removal Procedure

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

NOTE: If front rail damage is limited to 205 mm (8 in) from the front end, a pre-sleeved service section is available. This service section includes the front bumper mounting bracket.

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 (Coupe) , Battery Negative Cable Disconnection and Connection (Wagon) .

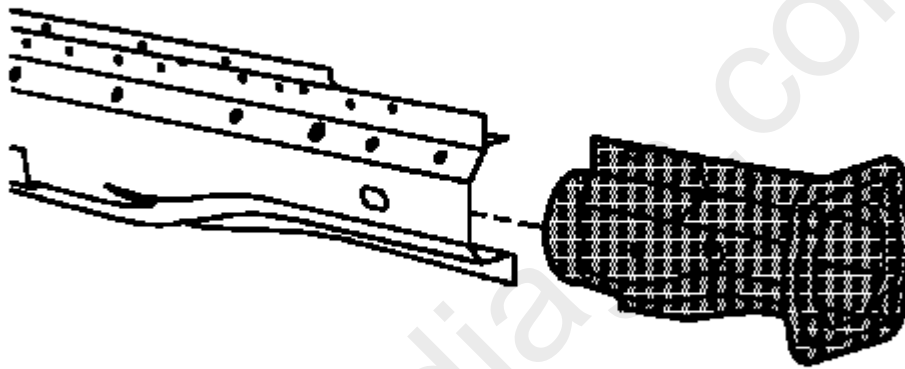


Fig. 157: View Of Lower Rail Section
Courtesy of GENERAL MOTORS COMPANY

3. Remove all of the related panels and the components, including the left front wheelhouse mounting bracket to the rail.
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 as the damage as possible.
6. Locate the die marks on the inner and outer rail.

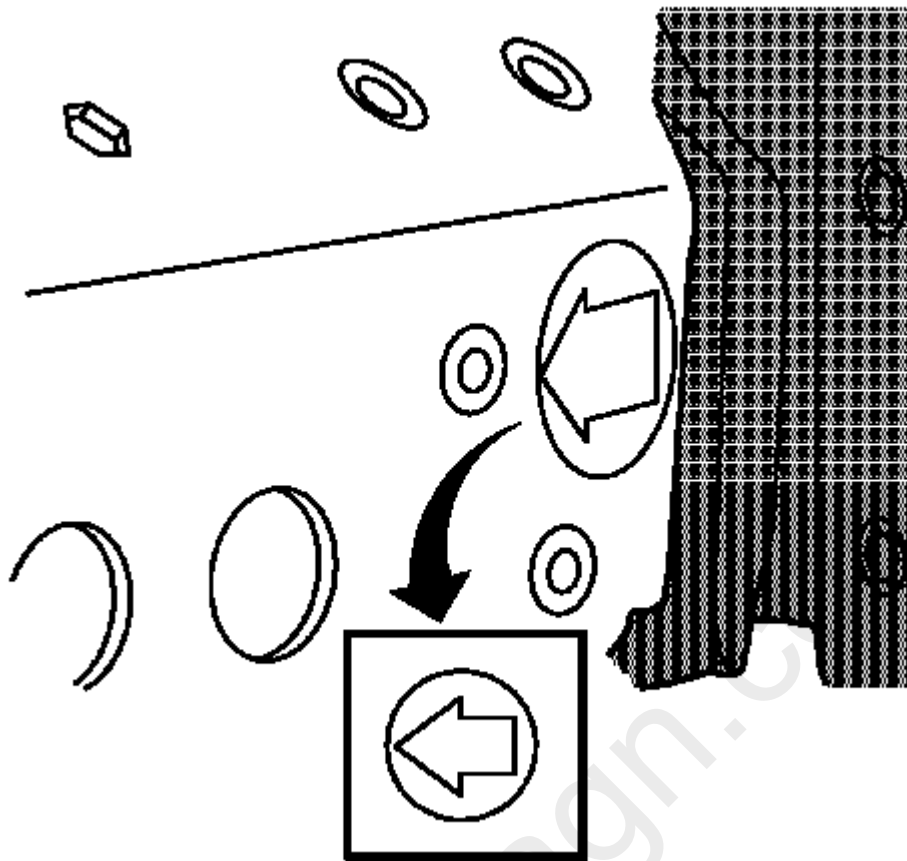


Fig. 158: Locating Front Rail Die Marks
Courtesy of GENERAL MOTORS COMPANY

7. Locate the die marks on the front rail.

NOTE: Do not damage the rail behind the die marks.

8. Scribe a line 360 degrees around the frame rail at the die marks.
9. Cut at the marked location.
10. Remove the damaged component from the vehicle.

Installation Procedure

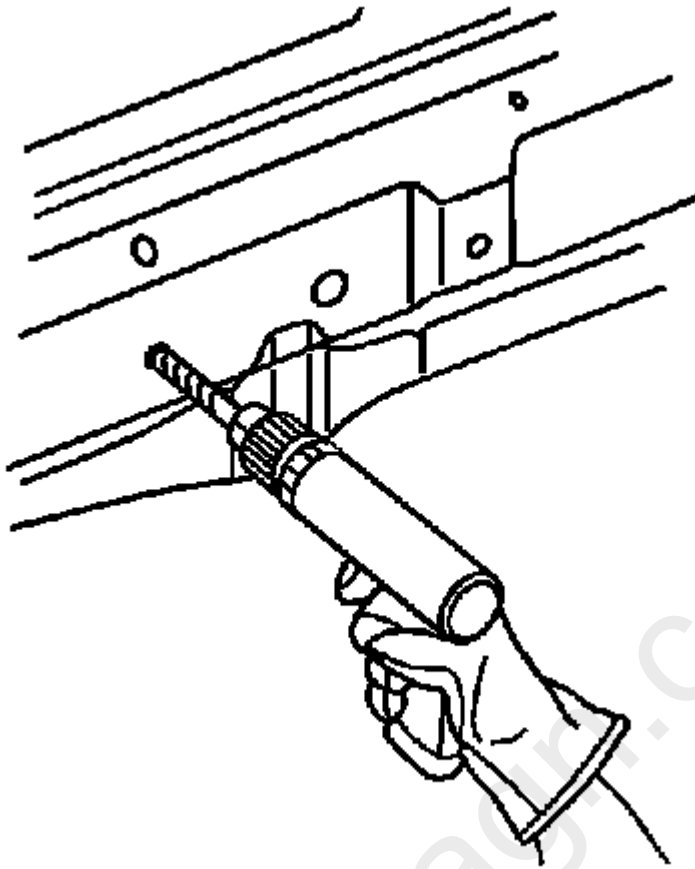


Fig. 159: Drilling Plug Weld Holes On Frame Rail
Courtesy of GENERAL MOTORS COMPANY

1. Drill 4 plug weld holes; 2 at the inside and 2 at the outside, 13 mm (1/2 in) from the cut line and 50 mm (2 in) apart on the existing frame rail.
2. Apply Weld-Thru Coating to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

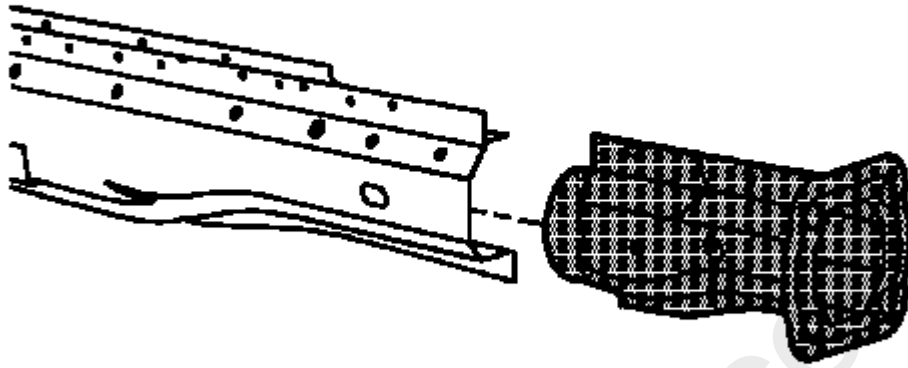


Fig. 160: View Of Lower Rail Section
Courtesy of GENERAL MOTORS COMPANY

3. Install and position the replacement service section using 3-dimensional measuring.

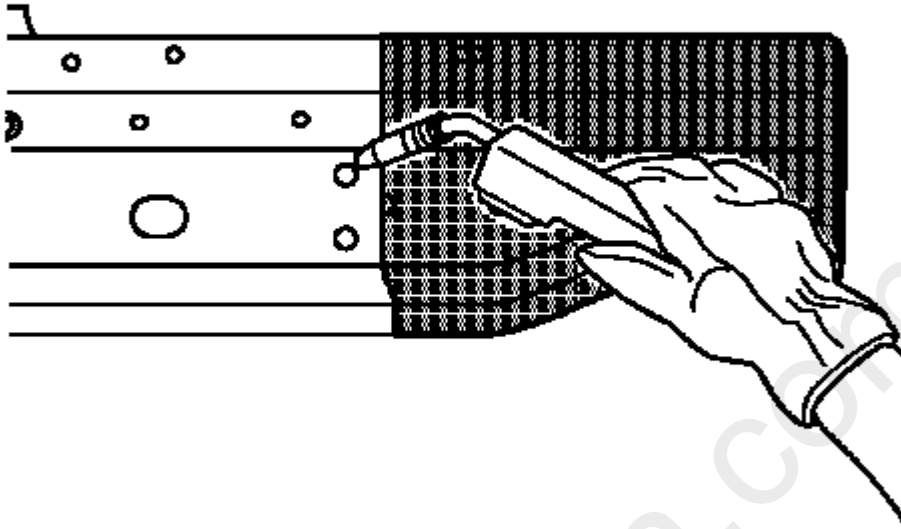


Fig. 161: Welding Lower Rail Section
Courtesy of GENERAL MOTORS COMPANY

4. Tack weld the part into position at the initial plug weld holes.
5. Inspect the service part for proper dimensions using 3-dimensional measuring equipment.
6. Stitch weld along the entire sectioning joint. Make 25 mm (1 in) welds along the seam with 25 mm (1 in) gaps between.
7. Complete the stitch weld.
8. Clean and prepare the welded surfaces.
9. Position the tie bar mounting bracket. Weld the bracket in place.
10. Install all of the related panels and components.
11. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
12. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
13. Enable the SIR system. Refer to **SIR Disabling and Enabling** .
14. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .

LOWER RAIL REPLACEMENT

Removal Procedure

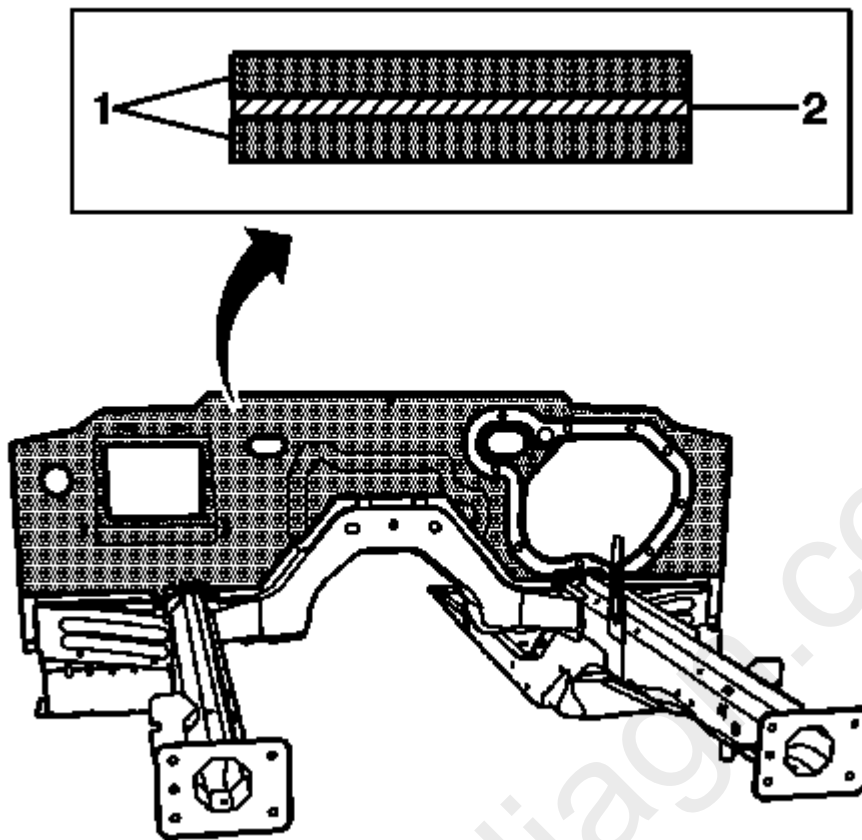


Fig. 162: View Of Dash Panel

Courtesy of GENERAL MOTORS COMPANY

WARNING: Refer to Approved Equipment for Collision Repair Warning .

The front of the dash panel is formed from laminated steel. This steel is constructed by bonding 2 pieces of cold rolled steel (1) with a viscoelastic layer of adhesive (2). Metal inert gas (MIG) welding laminated steel does not meet GM Corporate standards for structural integrity. As an alternative, all factory welds will be replaced by using the rivet and adhesive bond method described in the installation portion of this procedure. The rivet and adhesive bond method must only be used in the areas as described in this procedure.

NOTE: Failure to follow this procedure will compromise the structural integrity of the vehicle.

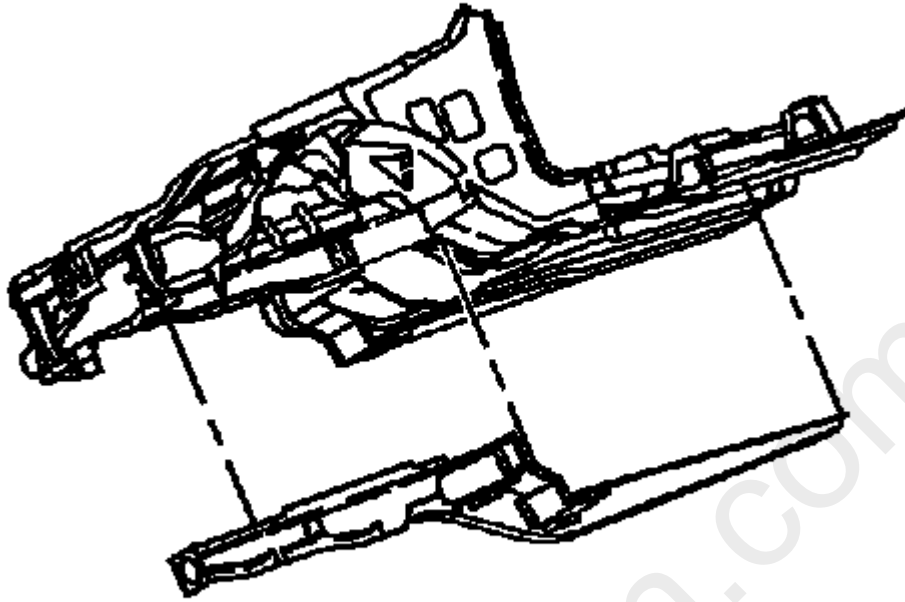


Fig. 163: Removing/Installing Lower Rail
Courtesy of GENERAL MOTORS COMPANY

WARNING: Refer to Foam Sound Deadeners Warning .

NOTE: The full rail service part comes with structural foam already installed. This part is replaced at factory seams.

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 (Coupe) , Battery Negative Cable Disconnection and Connection (Wagon) .

WARNING: Refer to Defroster Outlet Warning .

3. Remove all related panels and components.
4. Repair as much of the damage as possible.
5. Remove the sealers and the 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 full rail service part.

6. Remove the front wheelhouse assembly. Refer to Front Wheelhouse Panel Replacement.

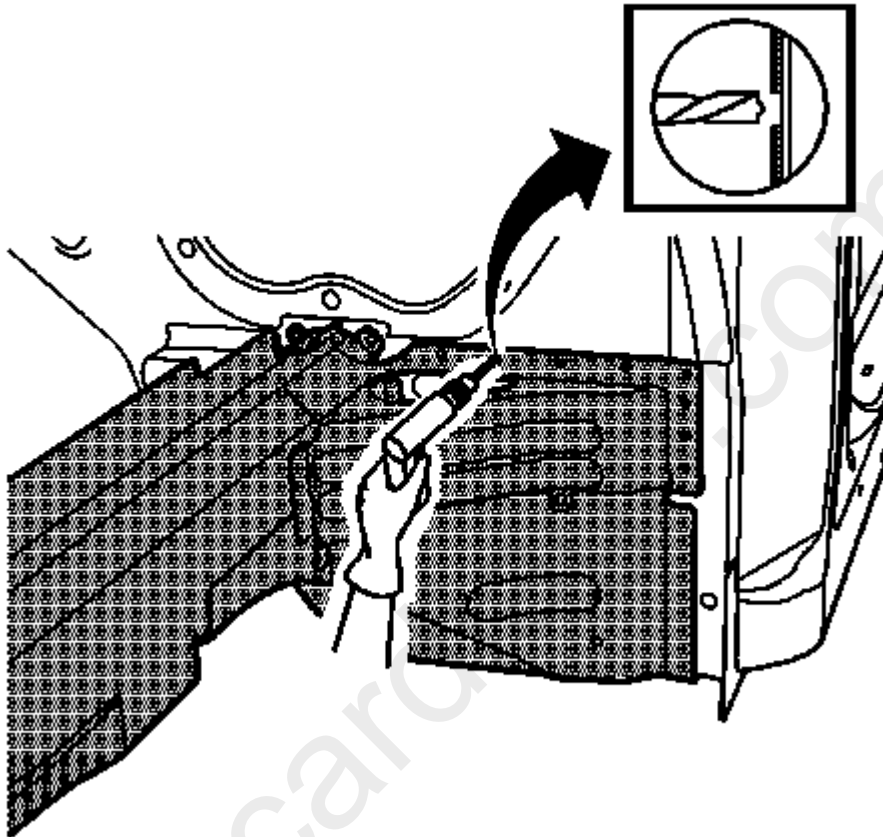


Fig. 164: Drilling Out Lower Rail-To-Dash Panel Weld Flange Factory Welds
Courtesy of GENERAL MOTORS COMPANY

NOTE: Drill through the rail flange only. Do NOT drill into the dash panel or the inner reinforcements.

7. Using an 8 mm (5/16 in) spot weld remover, locate and drill out the factory welds on the weld flange connecting the lower rail to the dash panel.

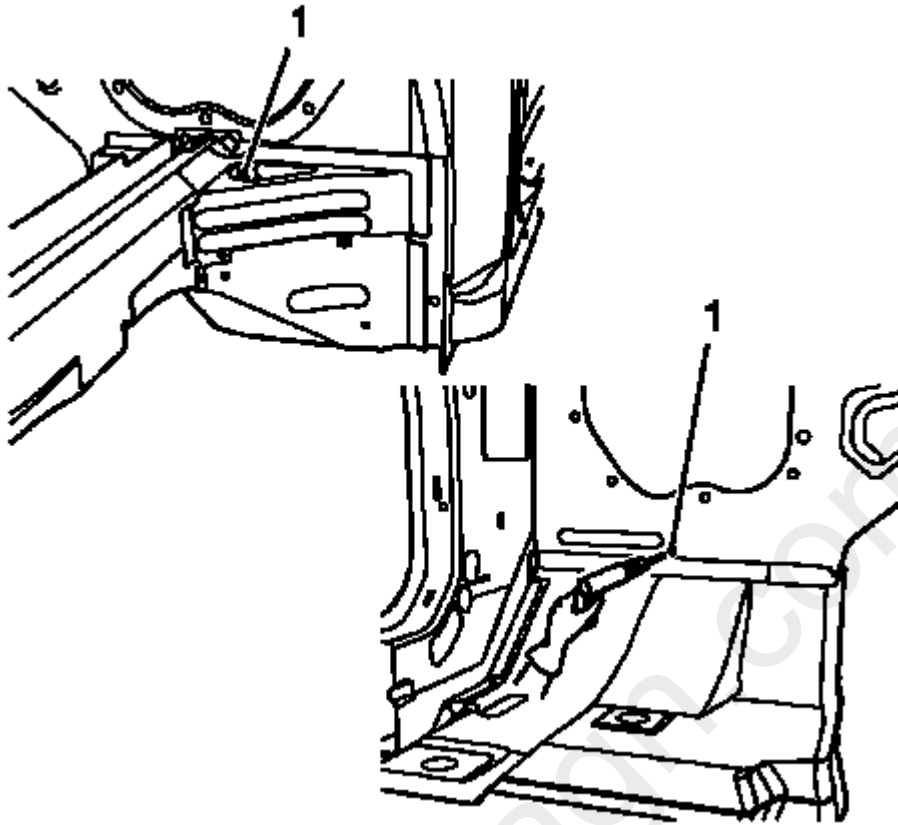


Fig. 165: Locating Dash Panel Factory Weld
Courtesy of GENERAL MOTORS COMPANY

8. From the passenger compartment, locate and drill out the remaining factory weld (1) on the dash panel.

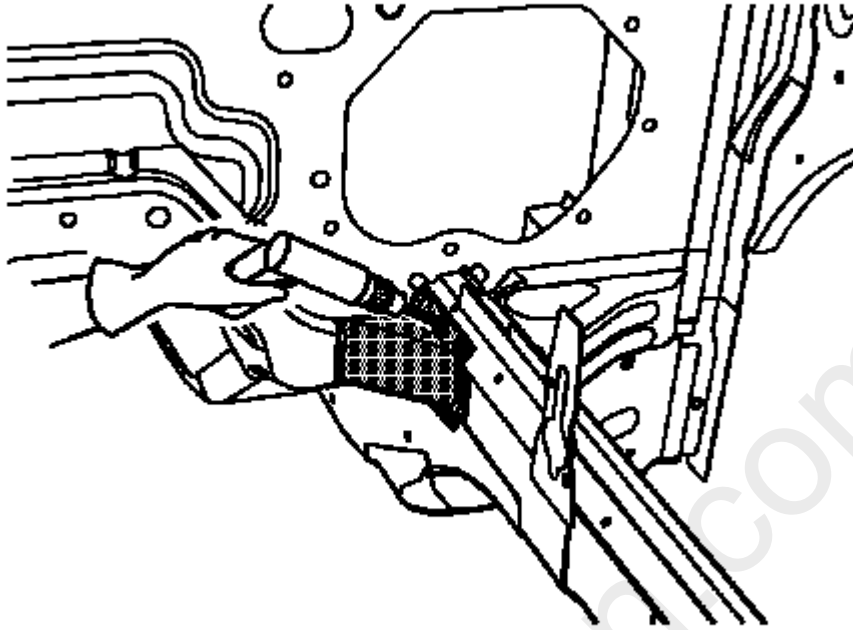


Fig. 166: Drilling Out Factory Welds Between Rail & Rail Inner Reinforcement
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do NOT remove the rail inner reinforcement from the vehicle.

9. Locate and drill out the factory welds between the rail inner reinforcement and the rail.

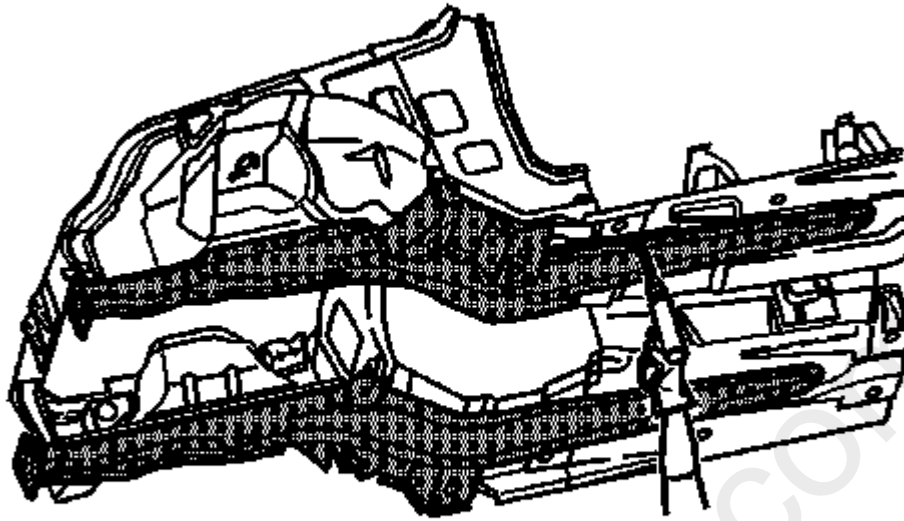


Fig. 167: Drilling Out Lower Rail Factory Welds
Courtesy of GENERAL MOTORS COMPANY

10. Locate and drill out the remaining factory welds on the rail.

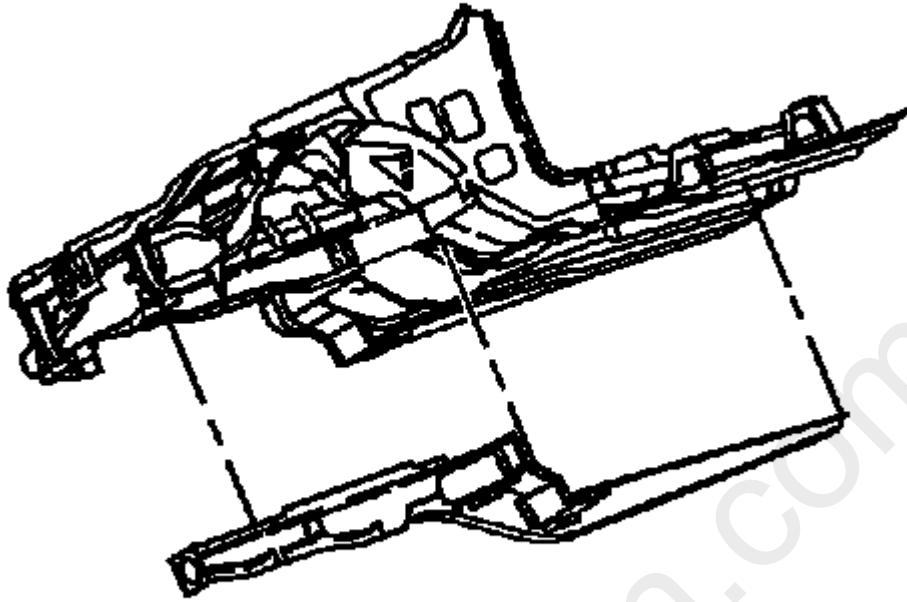


Fig. 168: Removing/Installing Lower Rail
Courtesy of GENERAL MOTORS COMPANY

11. Remove the full rail.

Installation Procedure

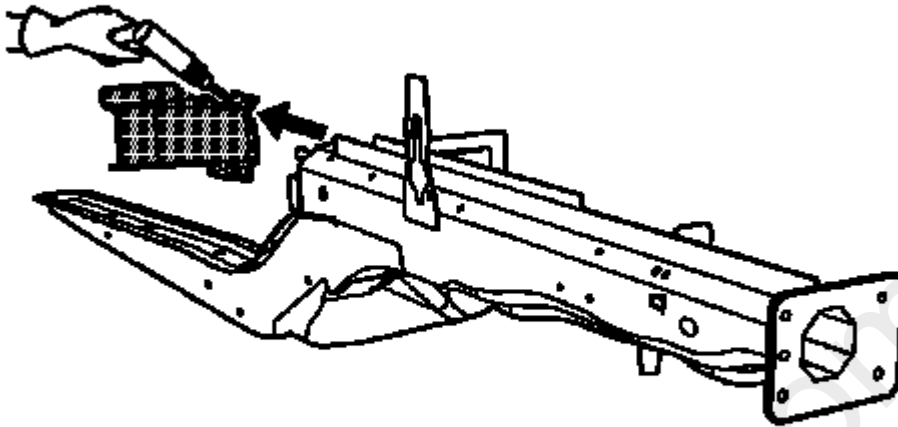


Fig. 169: Drilling Through Rail Inner Reinforcement Flange
Courtesy of GENERAL MOTORS COMPANY

NOTE: Drill through the rail inner reinforcement flange only. Do NOT drill into the rail.

1. On the full rail service part, locate and drill out the factory welds between the rail inner reinforcement and the service rail.
2. Remove the rail inner reinforcement from the service rail.

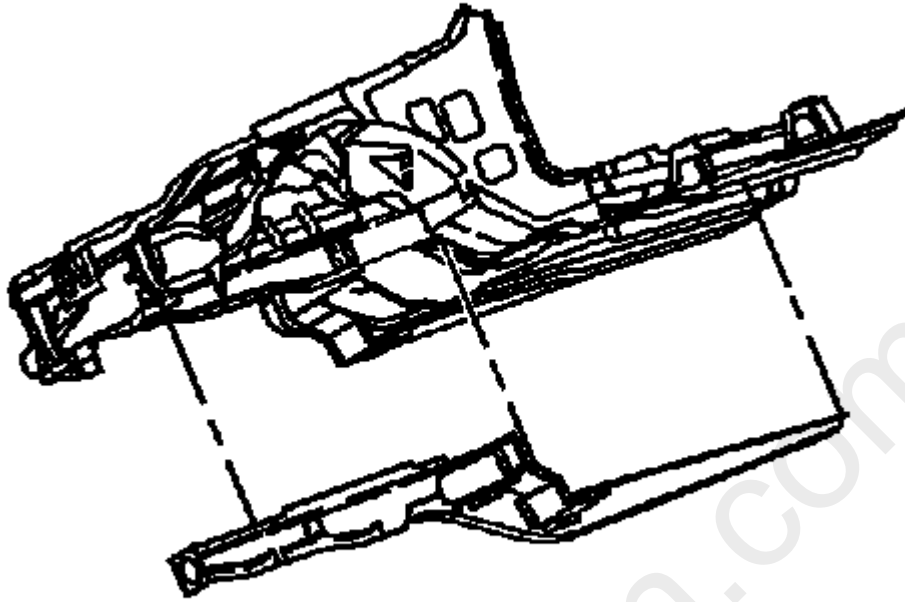


Fig. 170: Removing/Installing Lower Rail
Courtesy of GENERAL MOTORS COMPANY

3. Position the service rail to the vehicle using three-dimensional measuring equipment.
4. Clamp the rail in place.

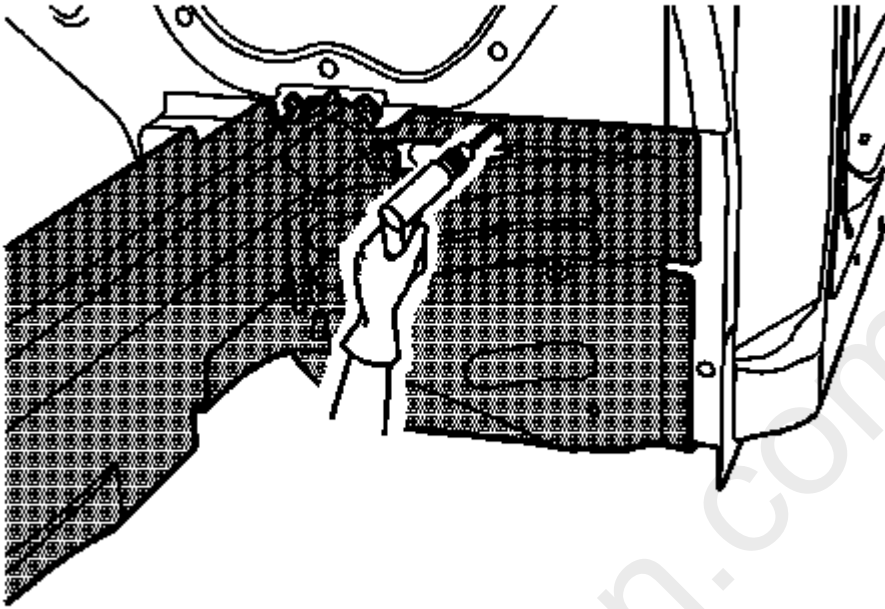


Fig. 171: Drilling Rivet Attachment Holes Through Service Rail & Dash Panel
Courtesy of GENERAL MOTORS COMPANY

5. Using a 7 mm (17/64 in) bit, drill the rivet attachment holes through the service rail and the dash panel in the exact locations as noted from the factory rail.

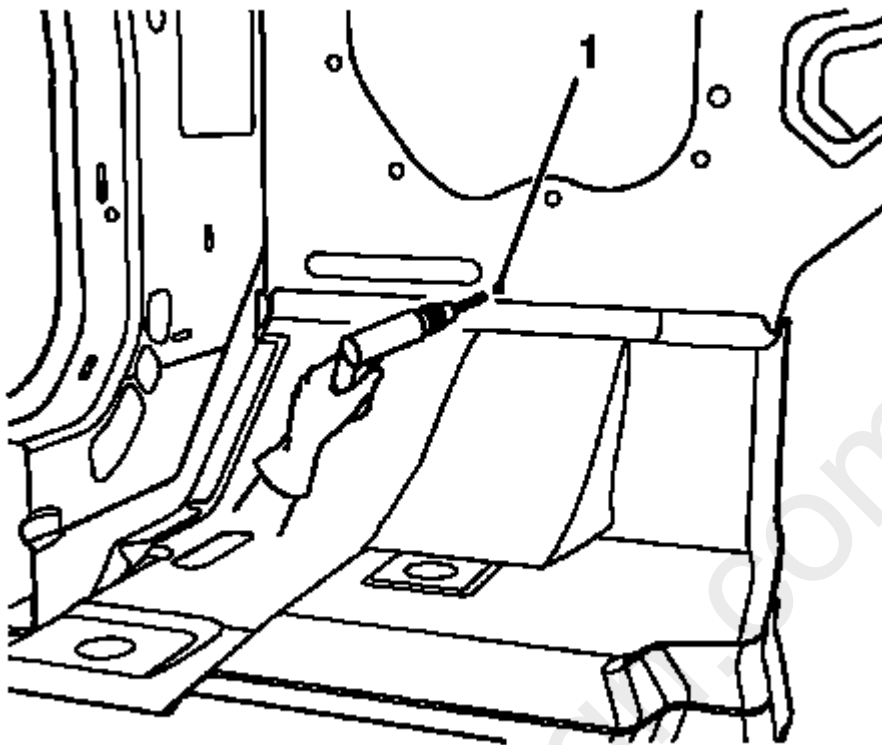


Fig. 172: Drilling Rivet Attachment Hole Through Service Rail
Courtesy of GENERAL MOTORS COMPANY

6. From the passenger compartment side of the vehicle, using a 7 mm (17/64 in) bit, drill the rivet attachment hole through the service rail using the existing 8 mm (5/16 in) hole in the dash panel as an alignment mark.
7. Remove the service rail.

NOTE: If the location of the original plug weld holes cannot be determined, space the plug weld holes every 40 mm (1.5 in) apart.

8. Drill 8 mm (5/16 in) plug weld holes in the service rail, as necessary, in the remaining locations noted from the original rail.
9. Prepare the plug weld mating surfaces, as necessary.
10. Apply Weld-Thru Coating to the plug weld mating surfaces. Refer to **Anti-Corrosion Treatment and Repair**.

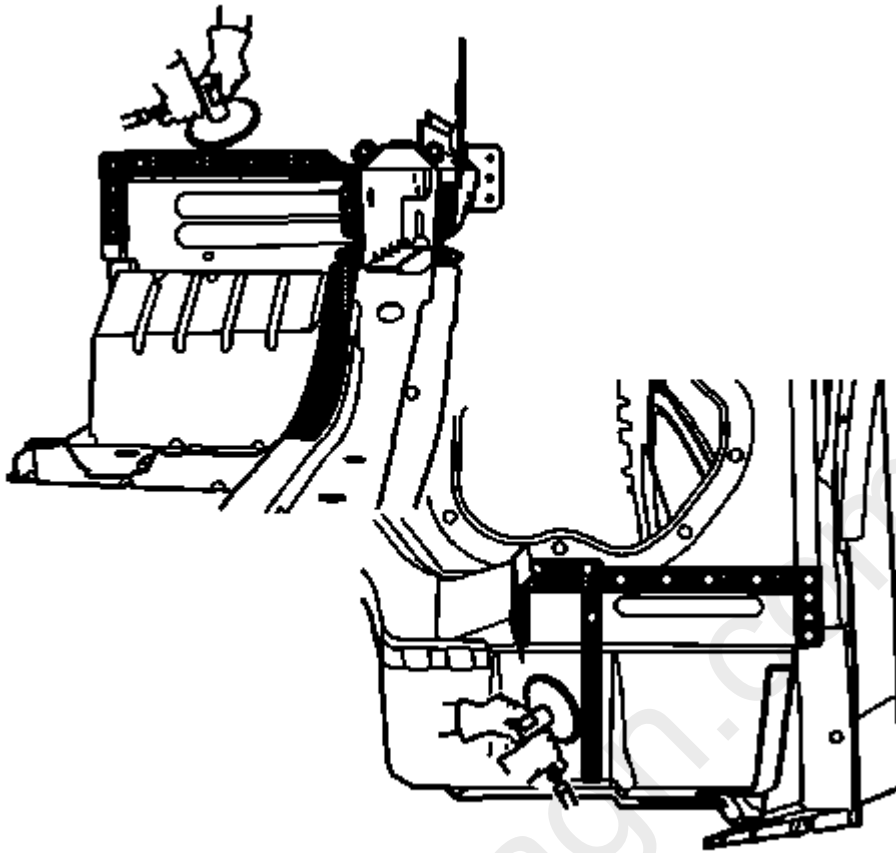


Fig. 173: Grinding Body Mating & Service Part Flanges
Courtesy of GENERAL MOTORS COMPANY

11. Prepare the bond mating areas by grinding the body mating and the service part flanges to bare steel. Do NOT damage the corners or thin the metal during the grinding process.
12. Clean the mating surfaces.

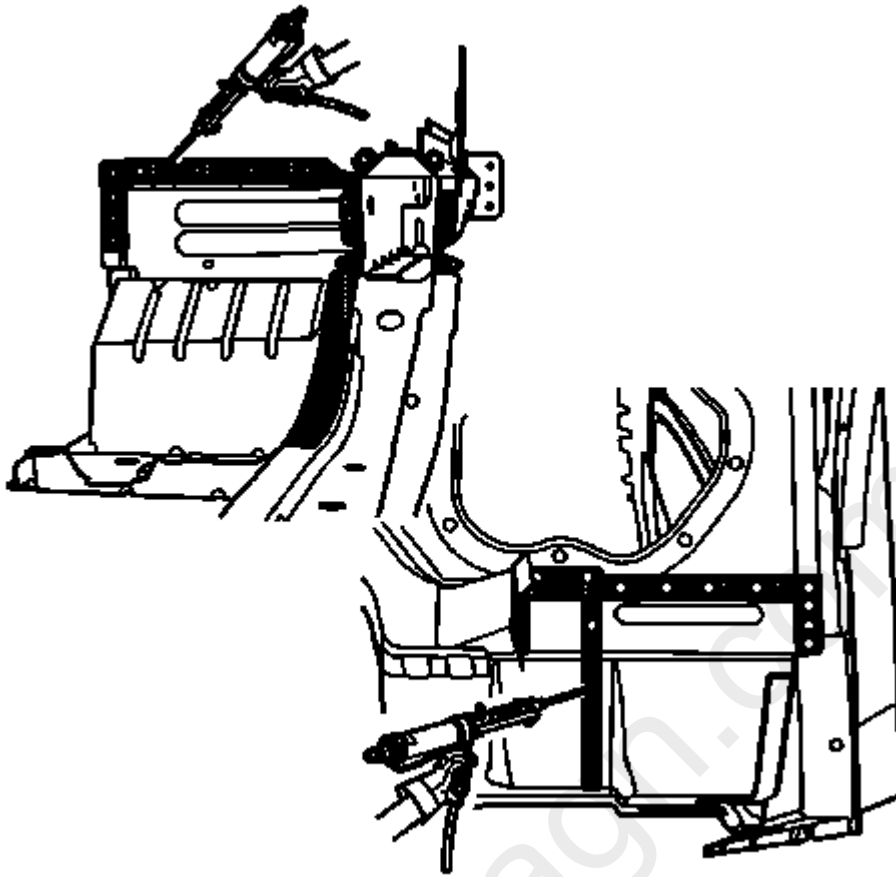


Fig. 174: Applying Adhesive To Mating Surfaces
Courtesy of GENERAL MOTORS COMPANY

NOTE: The adhesive has a 40-50 minute working time. Do NOT allow the adhesive to cure prior to installing the service rail.

13. Apply a 3-6 mm (1/8-1/4 in) bead of metal panel bonding adhesive to both of the mating surfaces. Refer to **Metal Panel Bonding**.

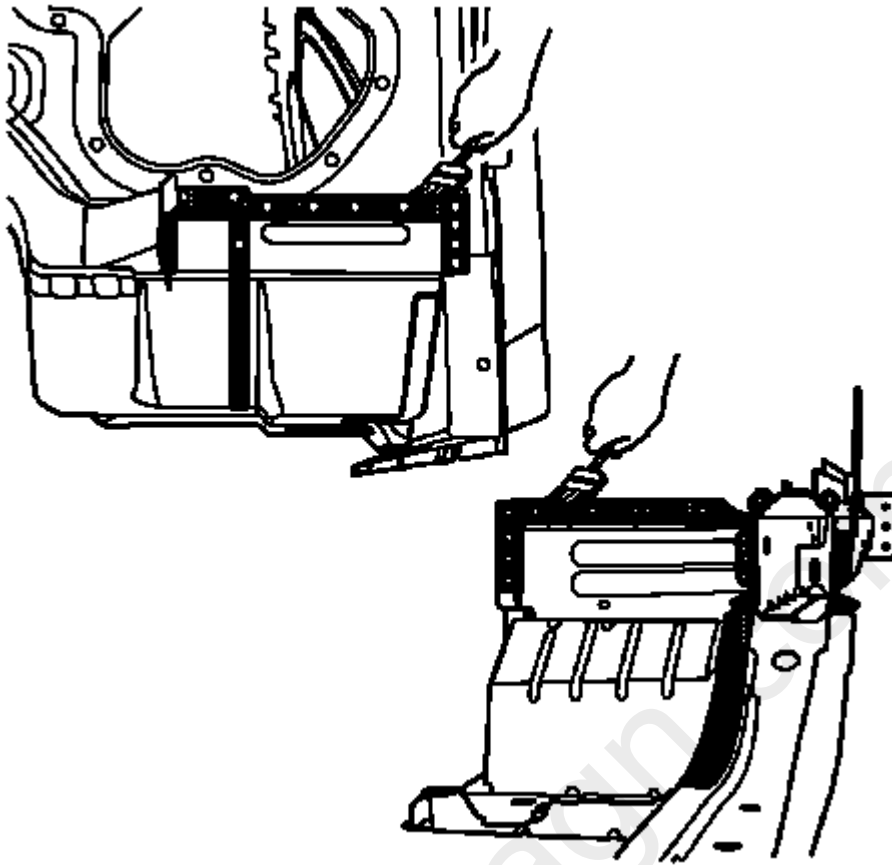


Fig. 175: Spreading A Coat Of Adhesive To Mating Surfaces
Courtesy of GENERAL MOTORS COMPANY

14. Using a small acid brush, spread a coat of adhesive to both of the mating surfaces. Cover all of the bare metal to ensure corrosion protection.

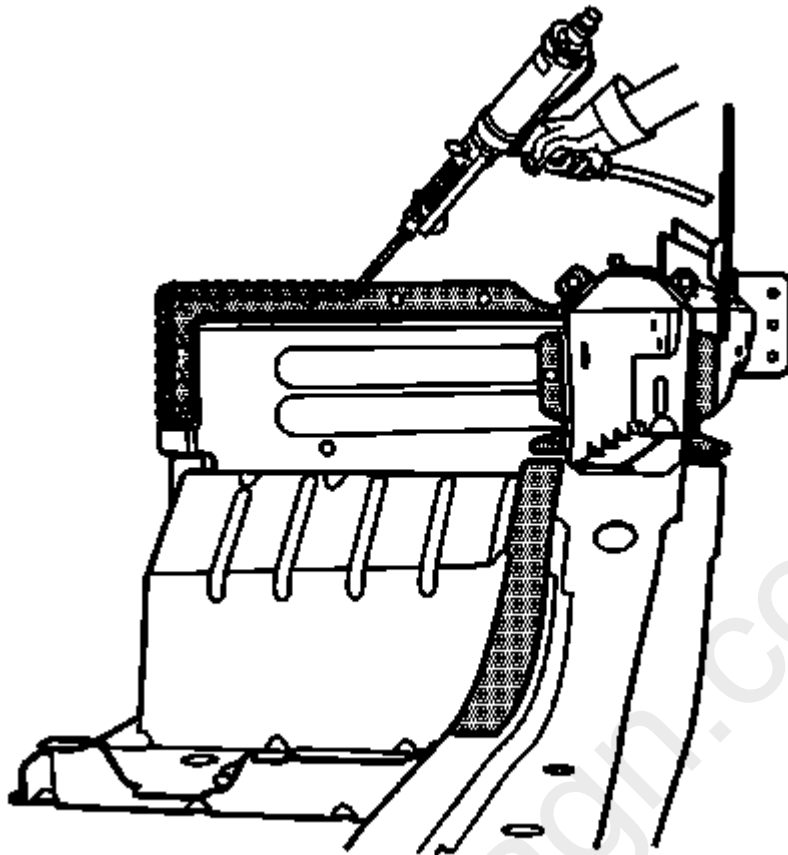


Fig. 176: Applying Metal Panel Bonding Adhesive To Service Rail Mating Surface
Courtesy of GENERAL MOTORS COMPANY

15. Apply a 3-6 mm (1/8-1/4 in) bead of metal panel bonding adhesive to the mating surface of the service rail. Refer to **Metal Panel Bonding**.

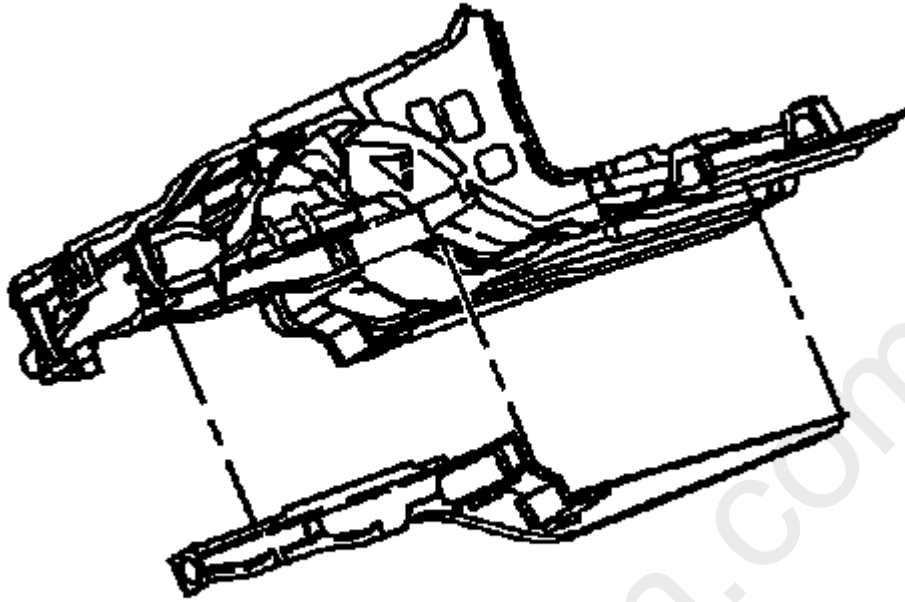


Fig. 177: Removing/Installing Lower Rail
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do NOT pull the rail off of the dash after adhesion. To align the parts, slide the rail against the front of the dash.

16. Position the service rail to the vehicle using three-dimensional measuring equipment.
17. Clamp the rail in place.

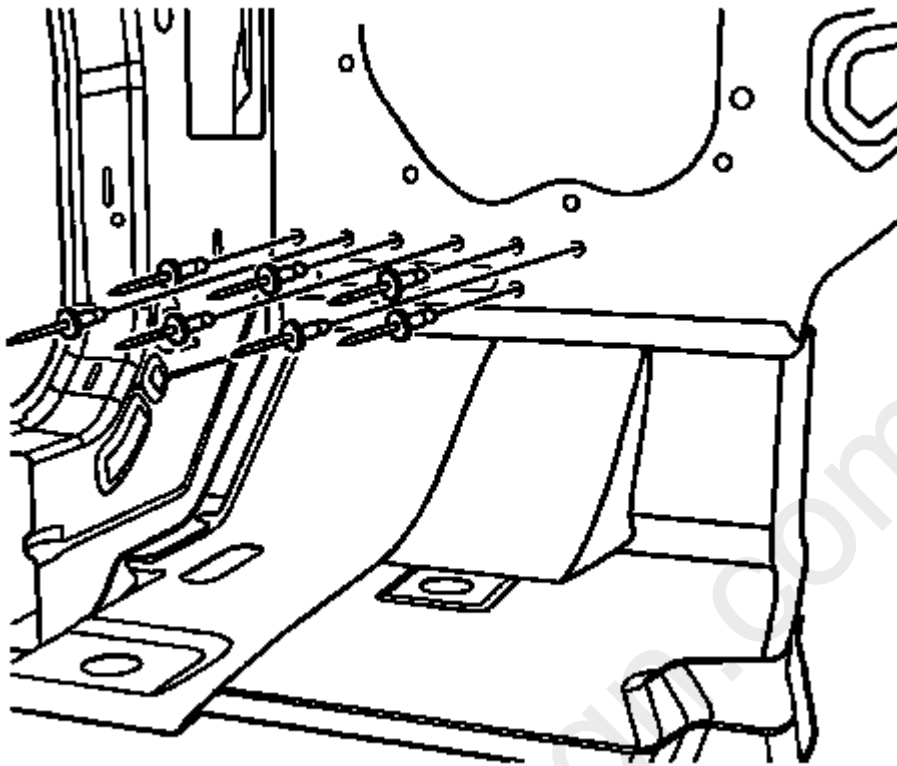


Fig. 178: View Of Dash Long Rivets
Courtesy of GENERAL MOTORS COMPANY

NOTE: Verify proper positioning of the service rail prior to riveting and welding.

18. Install the 9 mm (11/32 in) long rivets so that the rivet head contacts the passenger compartment side of the dash.

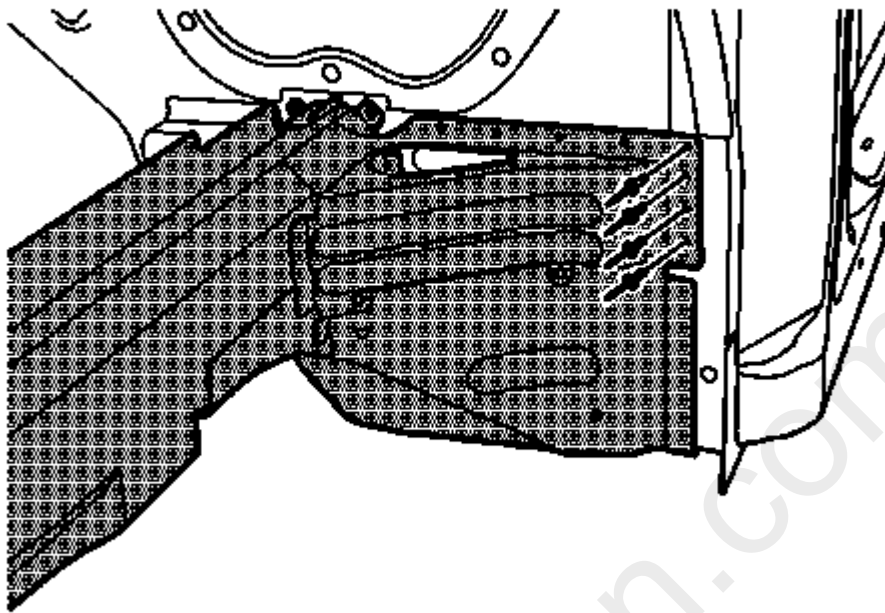


Fig. 179: View Of Rail Long Rivets
Courtesy of GENERAL MOTORS COMPANY

19. Install the 14 mm (17/32 in) long rivets so that the rivet head contacts the rail.
20. Remove the excess adhesive from the rail area.
21. Plug weld the remaining holes accordingly.
22. Clean and prepare all of the welded surfaces.
23. Install the front wheelhouse assembly. Refer to **Front Wheelhouse Panel Replacement**.
24. Apply the sealers and anti-corrosion materials to the repaired area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
25. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
26. Install all of the related panels and components.
27. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
28. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

CENTER PILLAR SECTIONING - OUTER

Removal Procedure

WARNING: Refer to Approved Equipment for Collision Repair Warning .

NOTE: The full body-side outer panel comes as a complete assembly and can be replaced at factory seams after the removal of the fixed glass and roof. Any one of these service procedures can be performed separately or in any combination, dependent upon the extent of damage to the vehicle. Sectioning must take place in specified areas only.

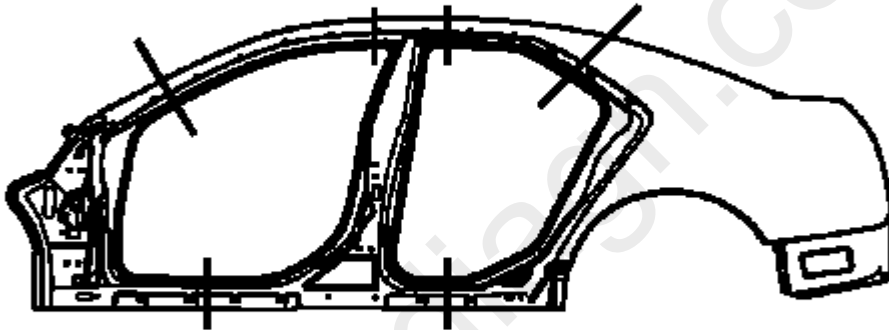


Fig. 180: View of Body Frame

Courtesy of GENERAL MOTORS COMPANY

WARNING: Refer to Defroster Outlet Warning .

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

4. Remove the sealers and anti-corrosion materials from the repair area, as necessary, and note their location. Refer to **Anti-Corrosion Treatment and Repair** .

WARNING: Refer to **Foam Sound Deadeners Warning** .

5. Remove sound deadeners, as necessary.
6. Repair as much of the damage as possible.

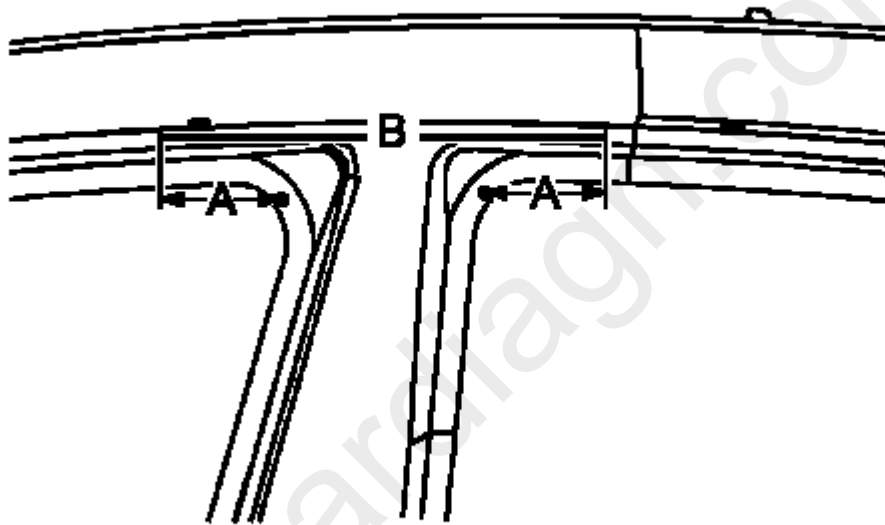


Fig. 181: View Of Cut Lines

Courtesy of GENERAL MOTORS COMPANY

7. At the top of the center pillar, measure 50 mm (2.0 in) out from the diemark (A) and create a vertical cut line. Create a horizontal cut line in the upper crease where the reveal molding mounts (B), allow for a 20 mm (3/4 in) overlap.
8. Create cut lines on the rocker panel within the approved sectioning locations.

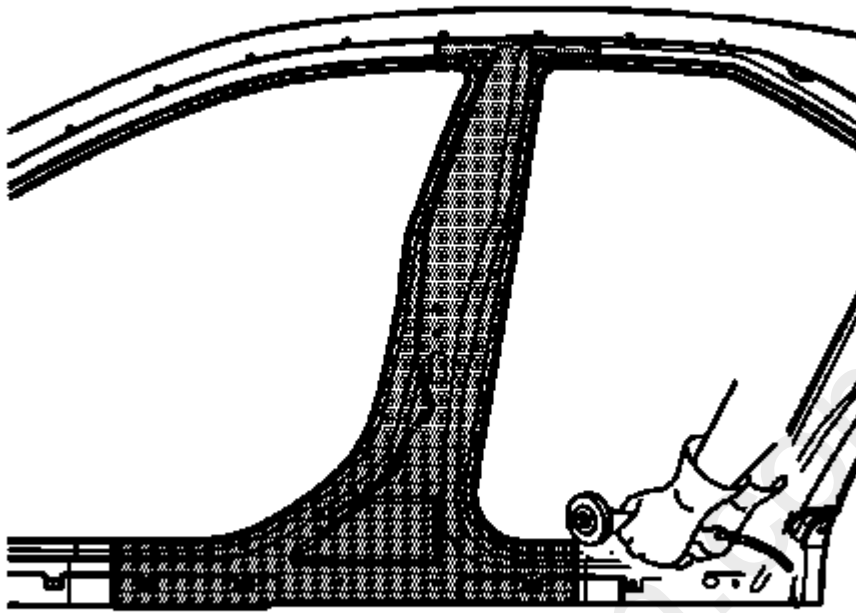


Fig. 182: View of Door Frame and Pillar
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage any inner panels or reinforcements.

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

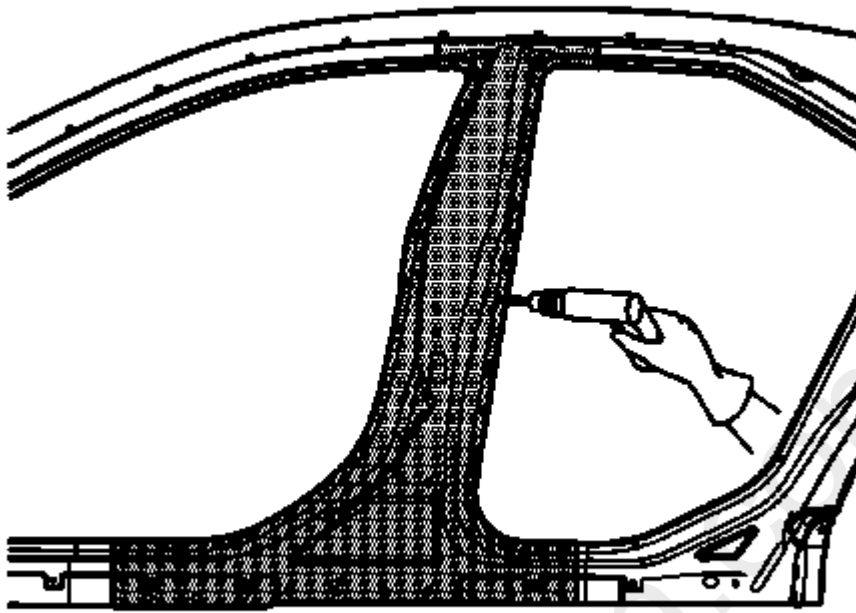


Fig. 183: View of Door Frame and Welding Application
Courtesy of GENERAL MOTORS COMPANY

10. Locate and drill out all factory welds. Note the number and location of welds for installation of the service part.
11. Remove the damaged center pillar.

Installation Procedure

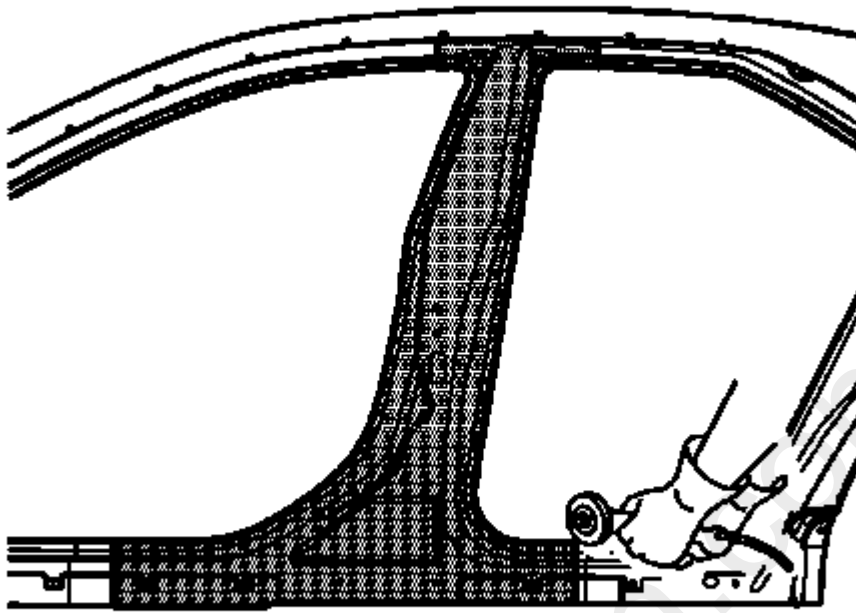


Fig. 184: View of Door Frame and Pillar
 Courtesy of GENERAL MOTORS COMPANY

1. Cut the outer center pillar in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to allow a gap of 1 1/2 times the metal thickness at the sectioning joint.
2. Create a 100 mm (4 in) backing plate from the unused portion of the service part for the rocker area. Trim the backing plates, as necessary, to fit behind the sectioning joint.
3. In the upper center pillar area, use the existing pillar reinforcement as a backing plate

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

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

9. Align outer center pillar using 3-dimensional measuring equipment.
10. Plug weld accordingly.

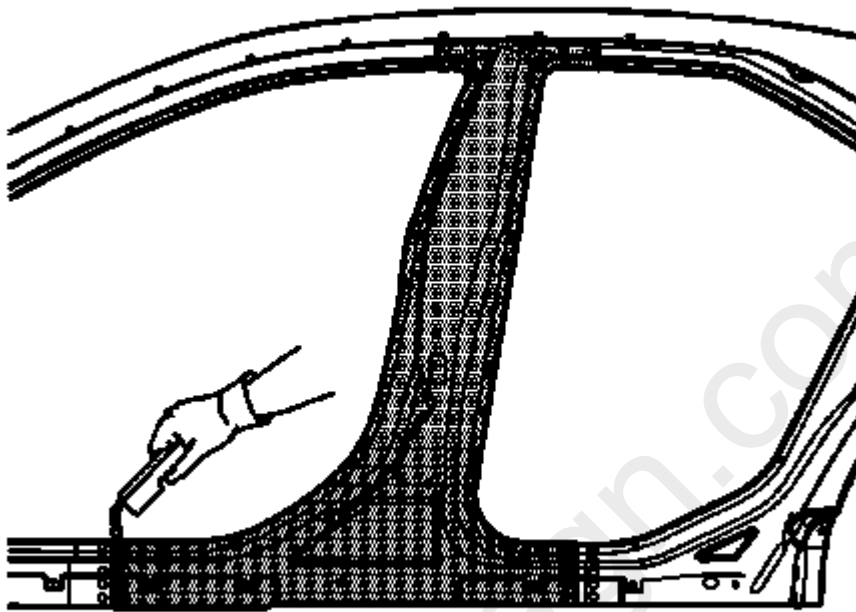


Fig. 185: Identifying Door Frame and Weld Application
Courtesy of GENERAL MOTORS COMPANY

11. To create a solid weld with minimum heat distortion, make a 25 mm (1 in) stitch weld along the seam with 25 mm (1 in) gaps between them. Go back and complete the stitch weld.
12. Clean and prepare all of the welded surfaces.
13. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
14. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
15. Install all of the related panels and components.
16. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
17. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

DOOR OUTER PANEL REPLACEMENT

Removal Procedure

WARNING: Refer to Approved Equipment for Collision Repair Warning .

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

1. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (Coupe) , Battery Negative Cable Disconnection and Connection (Wagon) .
2. Disable the SIR system. Refer to SIR Disabling and Enabling .
3. Remove the door from the vehicle. Refer Front Side Door Replacement (Wagon/Wagon) , Front Side Door Replacement (Coupe) .
4. Remove the outer door handle. Refer to Front Side Door Outside Handle Replacement (Front Door with ATH) , Front Side Door Outside Handle Replacement (Front and Rear Doors with ATH) , Front Side Door Outside Handle Replacement (Without ATH) .

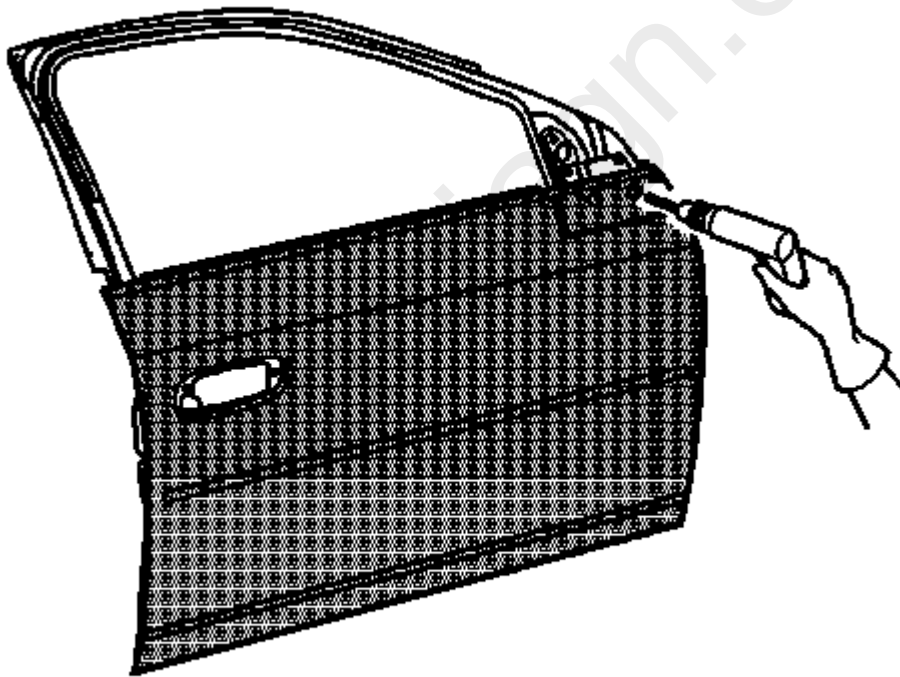


Fig. 186: Drilling Out Outer Door Panel Spot Welds
Courtesy of GENERAL MOTORS COMPANY

5. Cut a hole in the outer door panel to access the welds on the belt reinforcement.
6. Drill out the spot welds that attach the outer belt reinforcement to the outer door panel flange.

7. Remove the outside rear view mirror. Refer to **Power Mirror Replacement (Wagon/Wagon)** , **Power Mirror Replacement (Coupe)** .

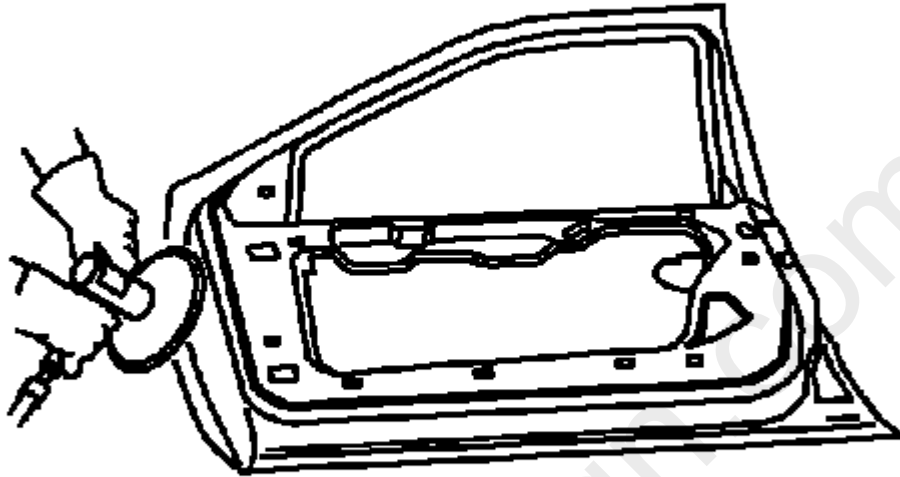


Fig. 187: Grinding Door Edges

Courtesy of GENERAL MOTORS COMPANY

8. Grind the edges of the door outer panel to separate the outer door panel from the door shell.

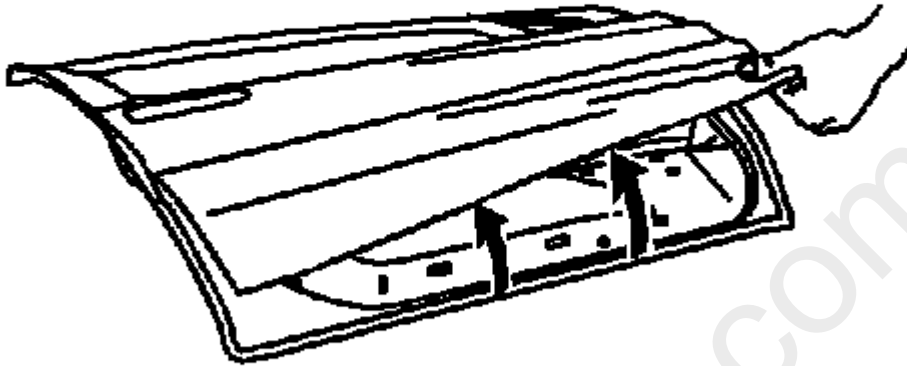


Fig. 188: View Of Rear Outer Door Panel
Courtesy of GENERAL MOTORS COMPANY

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

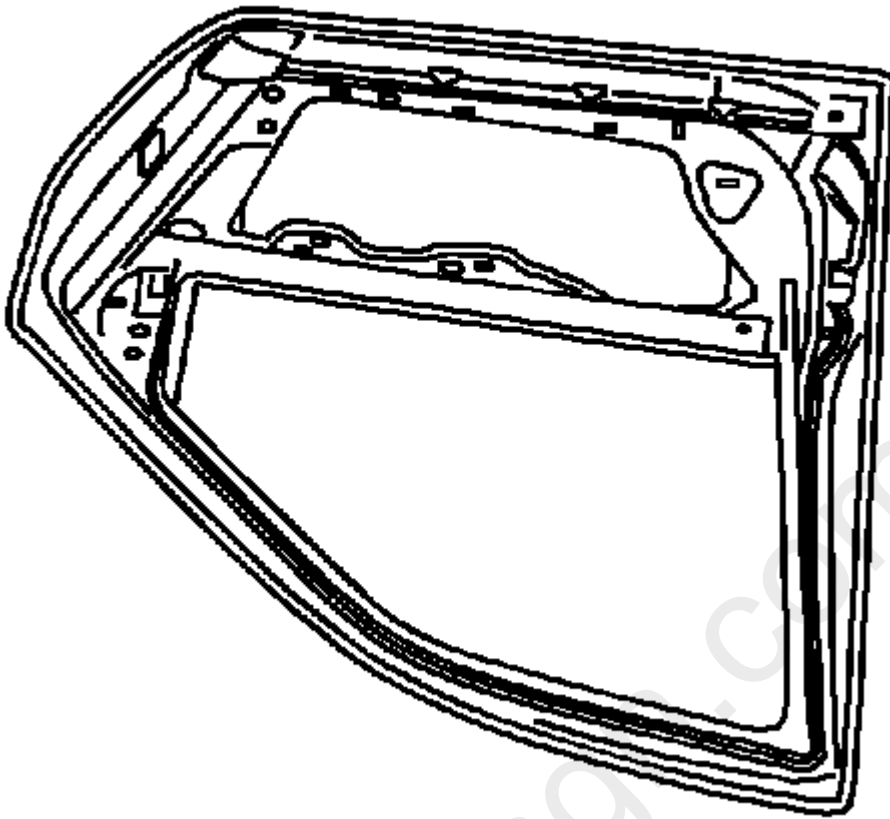


Fig. 189: View Of Door Shell

Courtesy of GENERAL MOTORS COMPANY

11. Straighten the edges of the door shell.

Installation Procedure

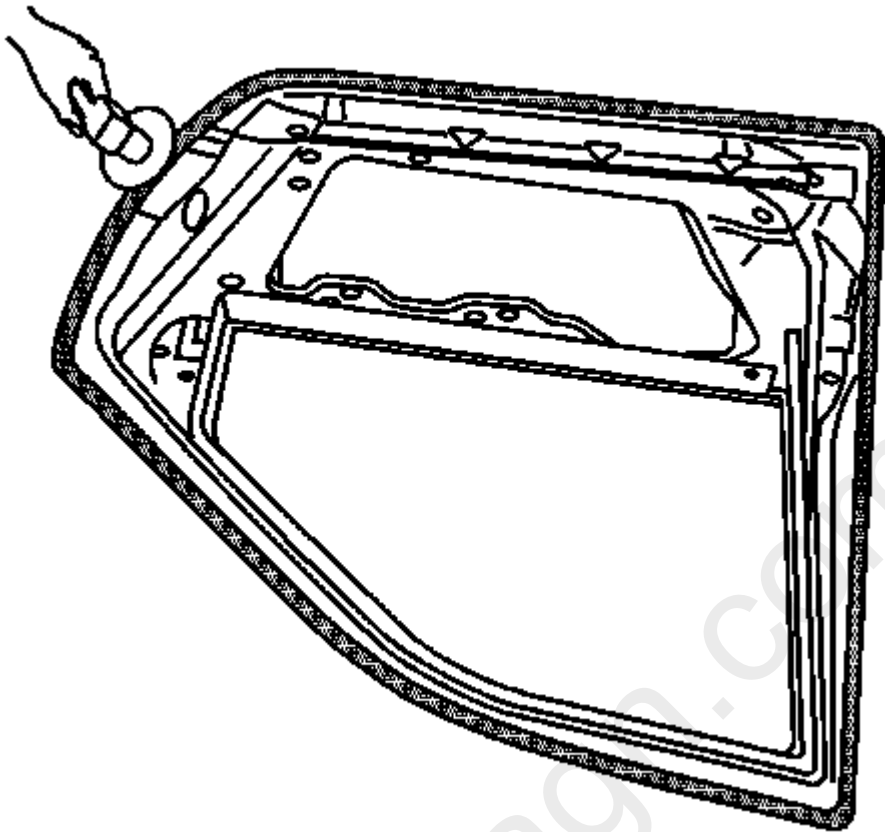


Fig. 190: Grinding Door Shell Mating Flanges Smooth
Courtesy of GENERAL MOTORS COMPANY

1. Grind the surface of the door shell mating flanges to bare steel.

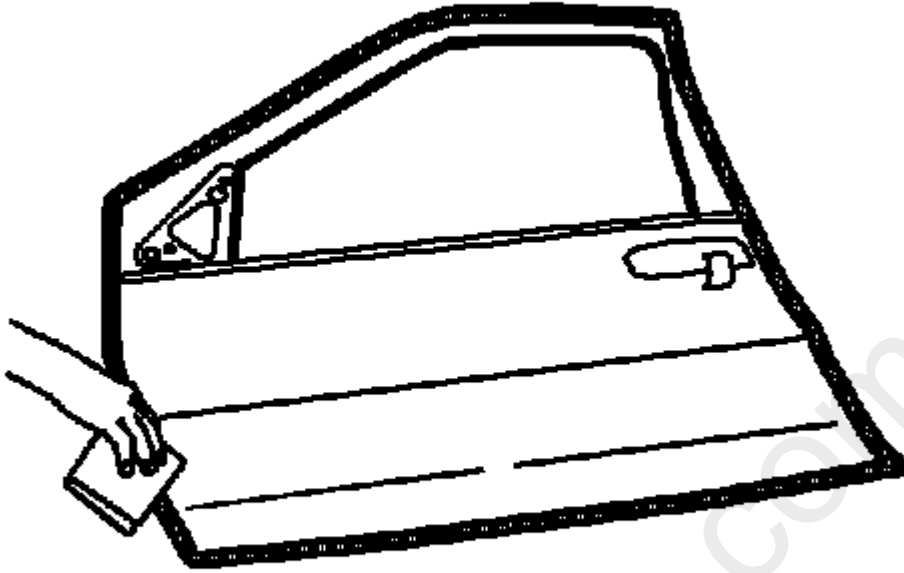


Fig. 191: Scuffing Mating Surfaces Of Outer Door Panel
Courtesy of GENERAL MOTORS COMPANY

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

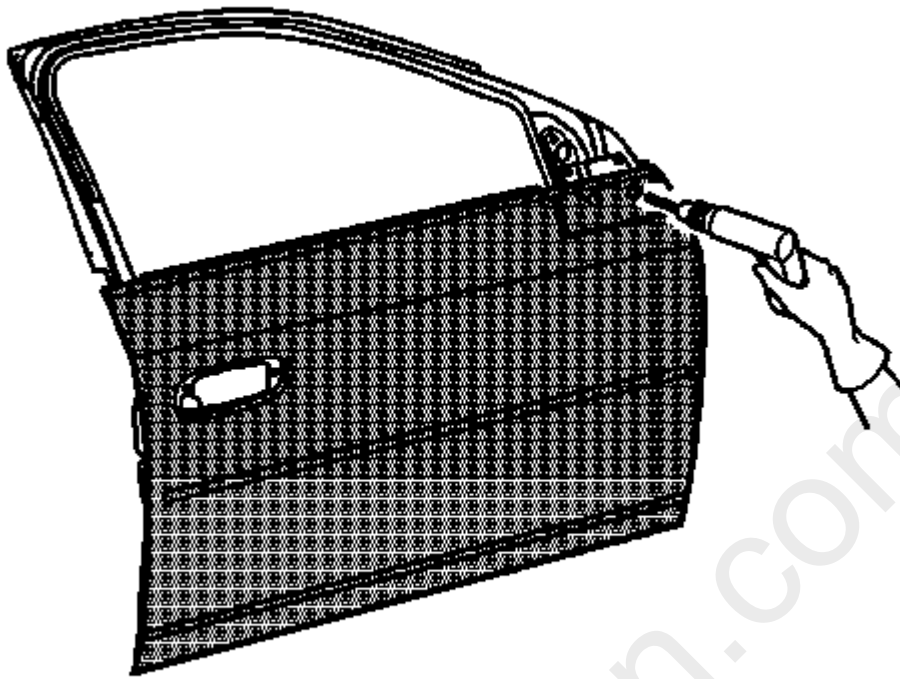


Fig. 192: Drilling Out Outer Door Panel Spot Welds
Courtesy of GENERAL MOTORS COMPANY

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

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

4. Prepare all mating surfaces as necessary.
5. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

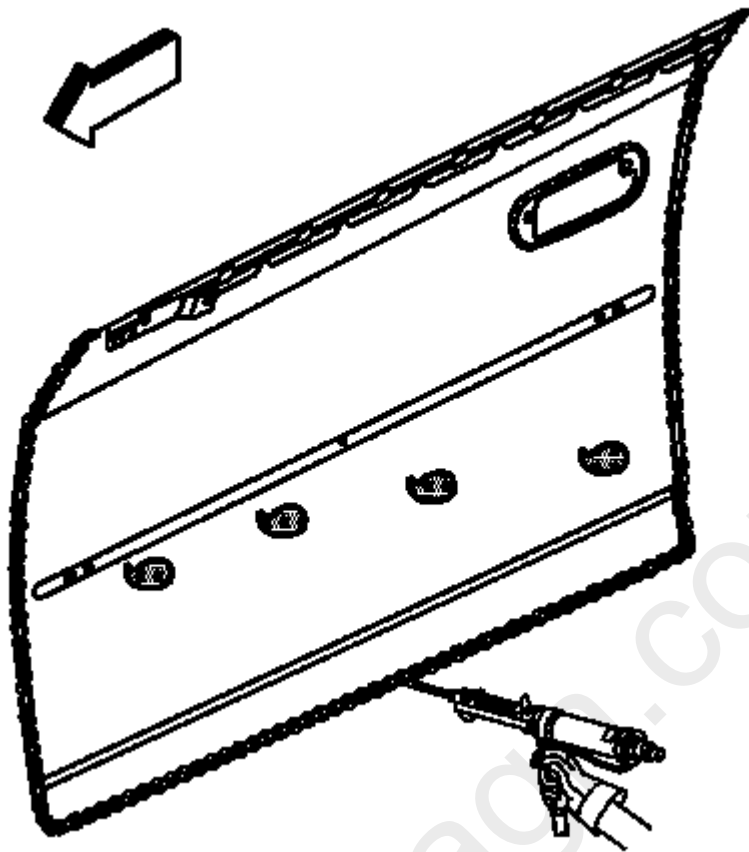


Fig. 193: Applying Adhesive To Outer Door Panel Mating Surfaces
Courtesy of GENERAL MOTORS COMPANY

NOTE: 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.

6. Apply a 3-6 mm (1/8 to 1/4 in) bead of metal panel bonding adhesive.
7. Using a small acid brush, spread a coat of adhesive to cover all the bare metal surfaces to ensure corrosion protection.
8. Apply a 9-13 mm (3/8 to 1/2 in) bead of metal panel bonding adhesive.

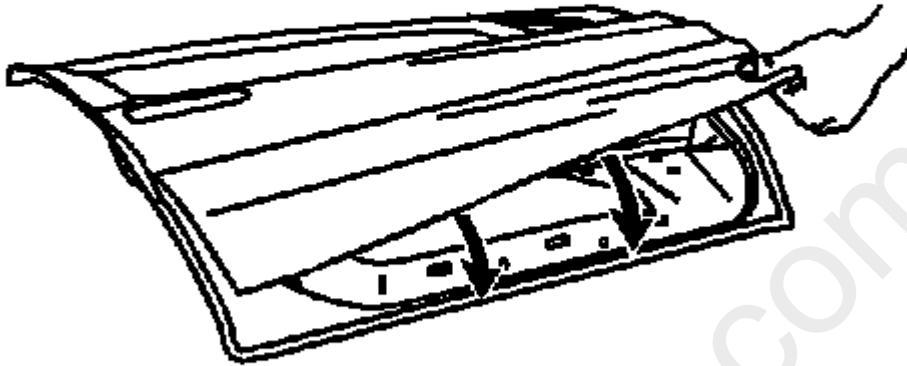


Fig. 194: View Of Door Outer Panel To Door Shell
Courtesy of GENERAL MOTORS COMPANY

NOTE: **DO NOT** pull the panels apart after being joined together. Slide the panels against each other to realign the panels.

9. Install the door outer panel to the door shell.
10. Clamp the door outer panel into position as required.

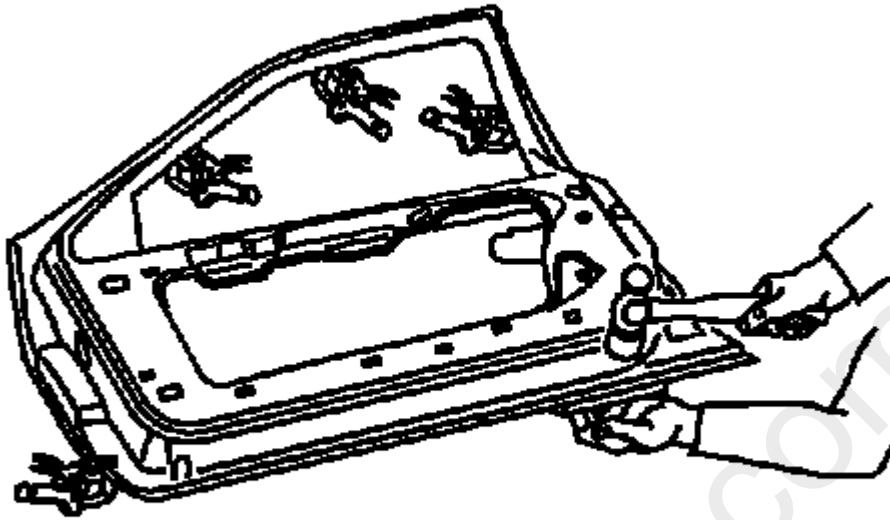


Fig. 195: Repairing Hem Flanges With Hammer
Courtesy of GENERAL MOTORS COMPANY

11. Using a hammer re-hem the hem flanges around the door shell .

Continue to hammer in stages along the hem flanges.

12. Using lacquer thinner remove the excess adhesive from the door panel area.
13. Install the door to the vehicle check the door outer panel for proper alignment, adjust the alignment as required. Refer **Front Side Door Replacement (Wagon/Wagon)** , **Front Side Door Replacement (Coupe)** .
14. Remove the door from the vehicle to complete the repair.

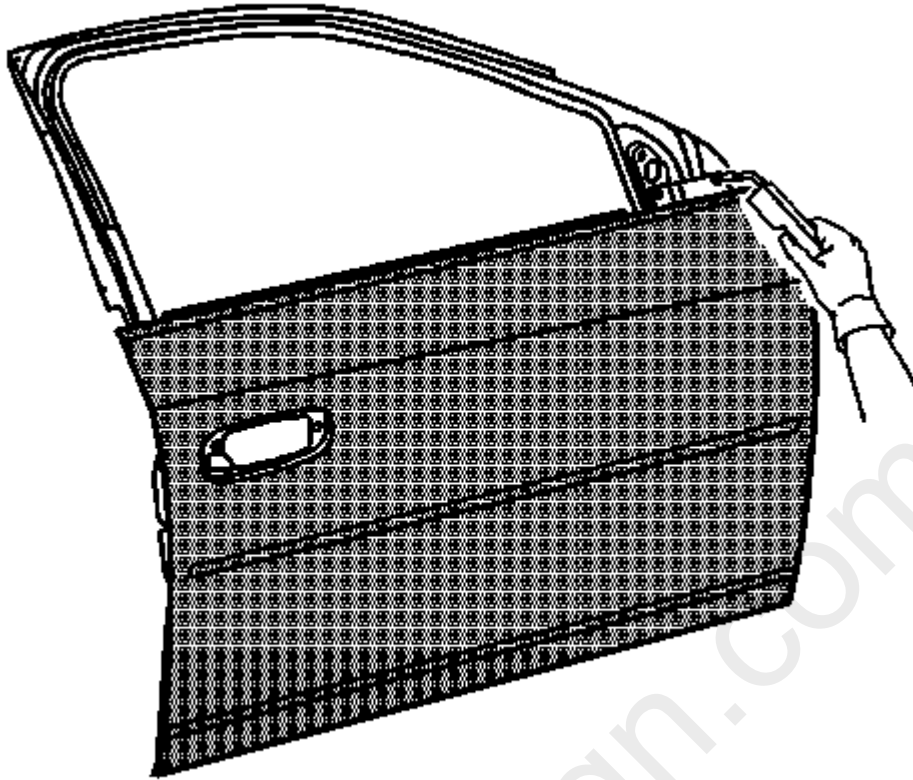


Fig. 196: Welding Outer Door Panel To Door Frame
Courtesy of GENERAL MOTORS COMPANY

15. Metal-Inert Gas (MIG) weld the door outer panel to the door frame in the locations noted at the upper door frame.
16. Clean and prepare all welded surfaces.

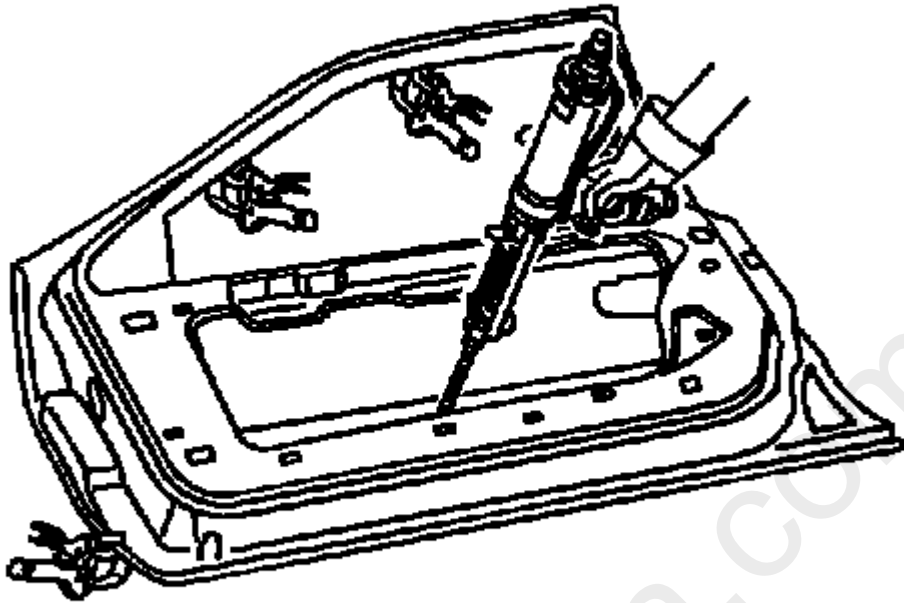


Fig. 197: Applying Anti-Flutter Foam To Outer Door Panel
Courtesy of GENERAL MOTORS COMPANY

17. 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 inner safety beam.
18. Apply sealers and anti-corrosion materials to the repair area as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
19. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
20. Install the door to the vehicle. Inspect the door outer panel for proper alignment and adjust the alignment as required. Refer to **Front Side Door Replacement (Wagon/Wagon)** , **Front Side Door Replacement (Coupe)** .
21. Install the outer door handle. Refer to **Front Side Door Outside Handle Replacement (Front Door with ATH)** , **Front Side Door Outside Handle Replacement (Front and Rear Doors with ATH)** , **Front Side Door Outside Handle Replacement (Without ATH)** .
22. Install the outside rear view mirror. Refer to **Power Mirror Replacement (Wagon/Wagon)** , **Power Mirror Replacement (Coupe)** .
23. Enable the SIR system. Refer to **SIR Disabling and Enabling** .
24. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .

REAR RAIL 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 (Coupe) , Battery Negative Cable Disconnection and Connection (Wagon) .

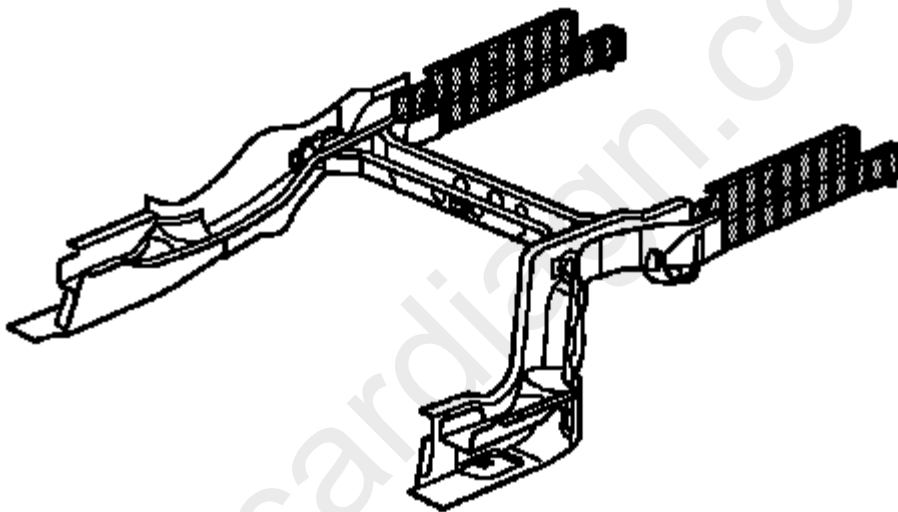


Fig. 198: Locating Rear Rail

Courtesy of GENERAL MOTORS COMPANY

NOTE:

- The rear rails are available as complete assemblies. The rear rail section is also available separately.
- This procedure should be used if the damage is rearward of the factory joint between the front and rear rail components.

3. Remove all related panels and components.

WARNING: Refer to Foam Sound Deadeners Warning .

4. Remove and note the location of any sound deadening materials.
5. Remove and note the location of the sealers and anti-corrosion materials from the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
6. Repair as much of the damage as possible.

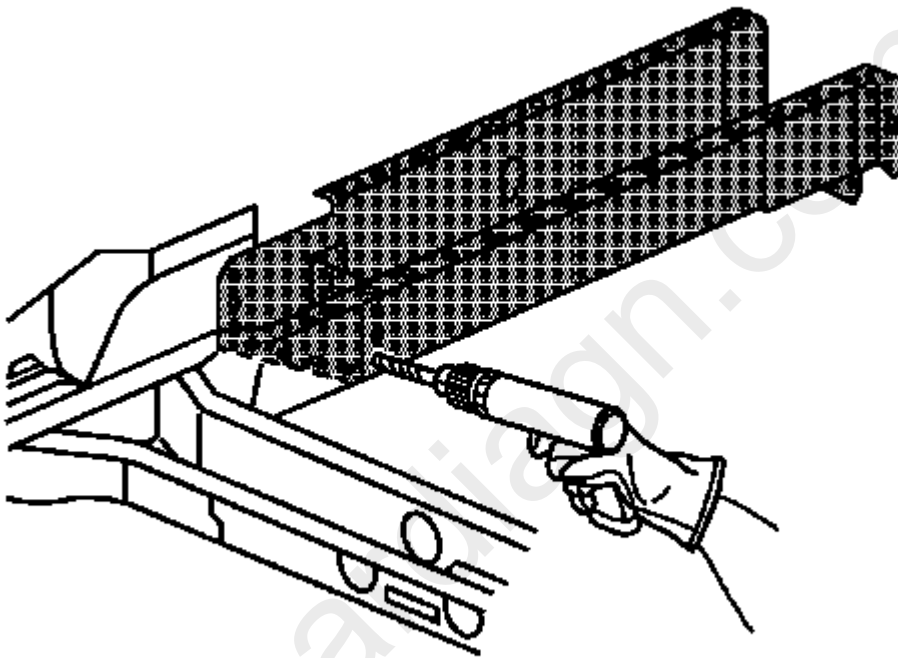


Fig. 199: Drilling Out Rear Rail Factory Welds
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage any inner panels or reinforcements.

7. Locate, mark, and drill out all factory welds. Note the number and location of welds for installation of the service assembly.

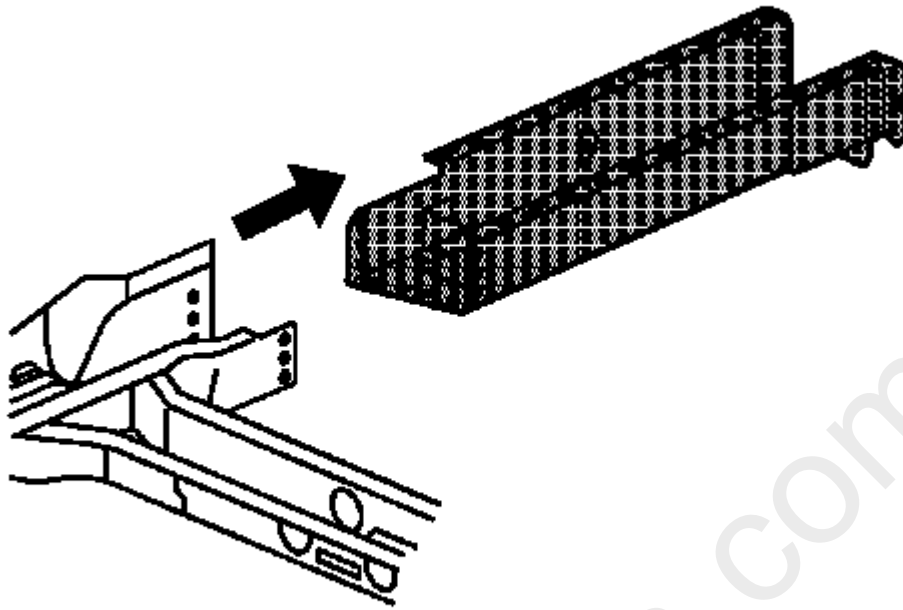


Fig. 200: View Of Rear Rail

Courtesy of GENERAL MOTORS COMPANY

8. Remove the damaged rail section.

Installation Procedure

- NOTE:** This part has structural weld-thru adhesive in the joint areas. Replace this with additional spot welds at the attachment points. This can be accomplished by adding an additional weld between each factory weld in all areas.
- NOTE:** If the location of the original plug weld holes can not be determined, or if structural weld-thru adhesive is present, space the plug weld holes every 40 mm (1 1/2 in).

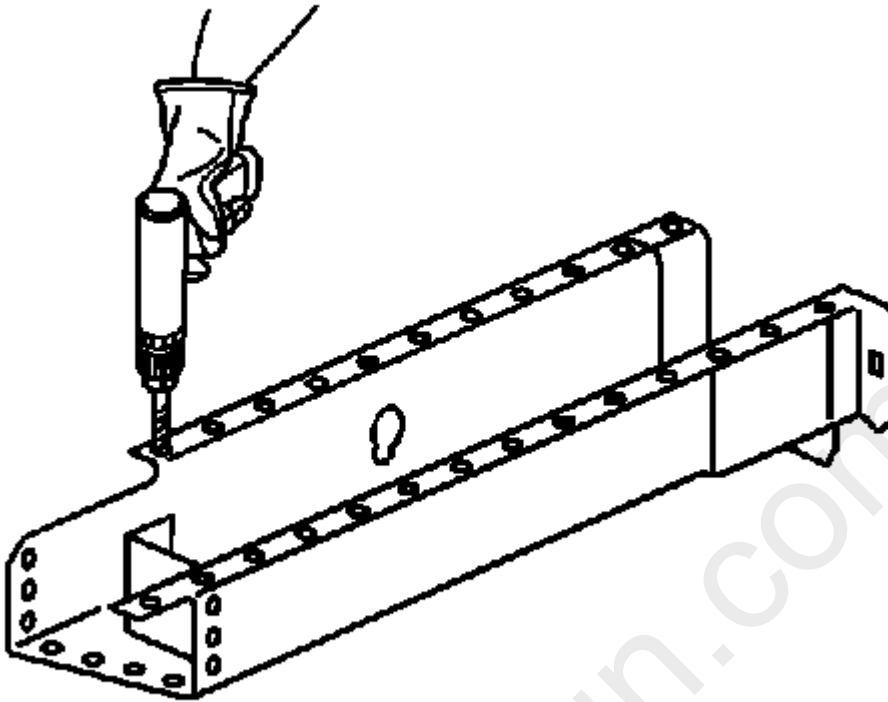


Fig. 201: Drilling Plug Weld Holes In Rear Rail
Courtesy of GENERAL MOTORS COMPANY

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 the mating surfaces, as necessary.
3. Apply Weld-Thru Coating to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

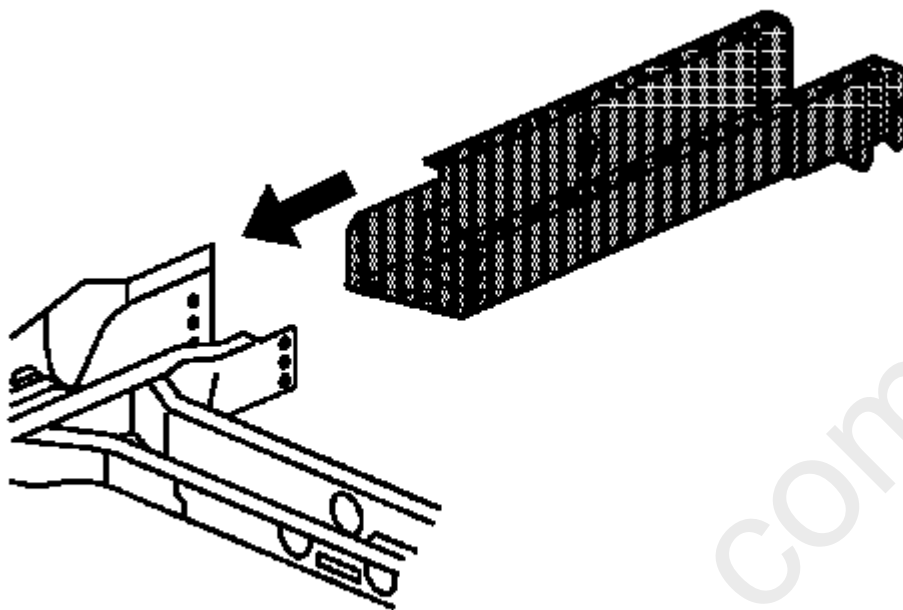


Fig. 202: View Of Rear Rail

Courtesy of GENERAL MOTORS COMPANY

4. Position the rear rail service part. Verify the fit with 3-dimensional measuring equipment.

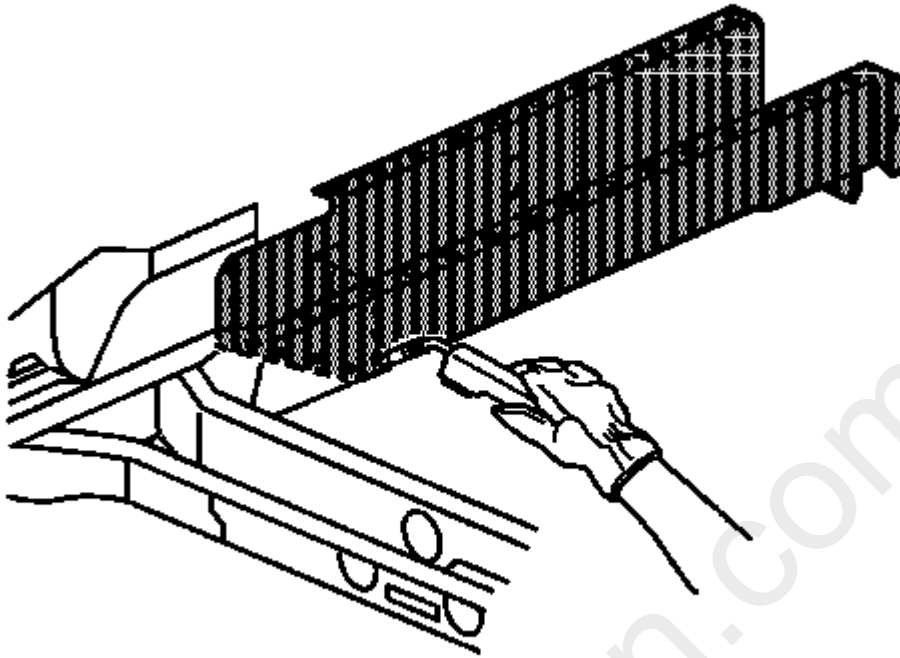


Fig. 203: Plug Welding Rear Rail
Courtesy of GENERAL MOTORS COMPANY

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** .
8. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
9. Install all related panels and components.
10. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Coupe)** , **Battery Negative Cable Disconnection and Connection (Wagon)** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

REAR END PANEL REPLACEMENT (WAGON)

Removal Procedure

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

NOTE: This panel is replaced at factory seams.

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 (Wagon) .

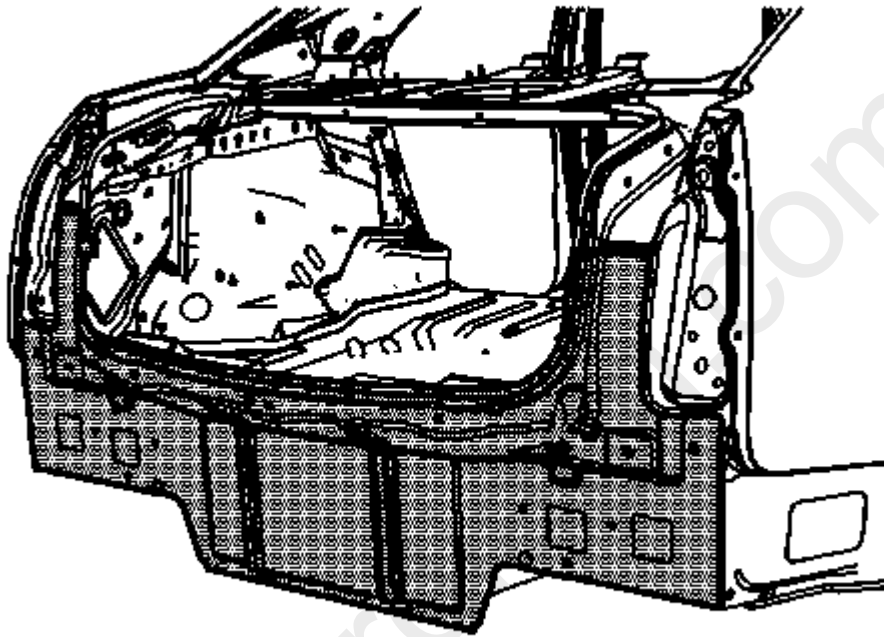


Fig. 204: View of Rear Body Frame
Courtesy of GENERAL MOTORS COMPANY

WARNING: Refer to Defroster Outlet Warning .

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

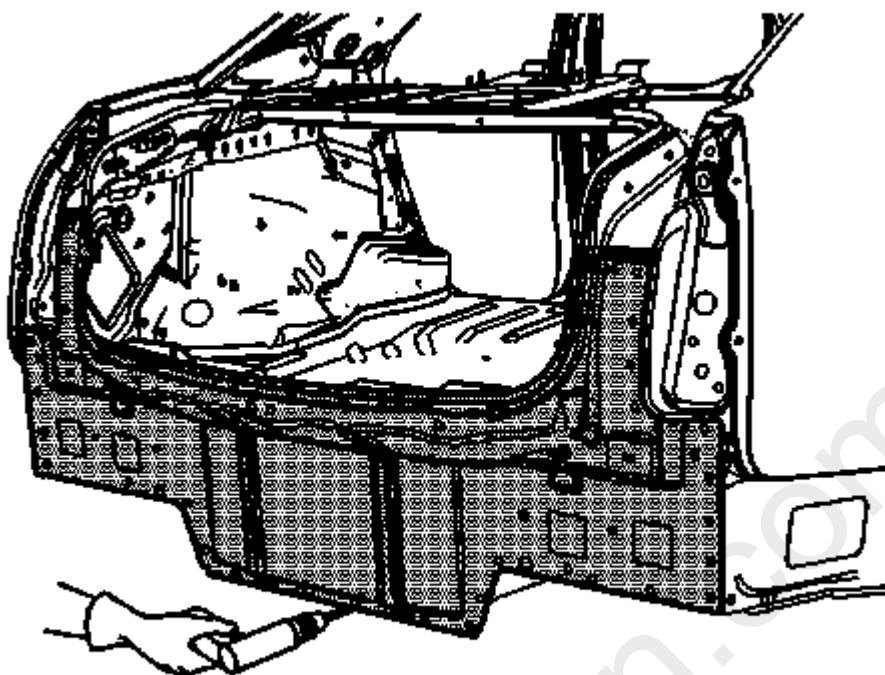


Fig. 205: View of Rear Body Frame and Welds
Courtesy of GENERAL MOTORS COMPANY

NOTE: Note the number and location of the factory welds for installation of the rear end panel.

6. Locate, mark, and drill out all the necessary factory welds.

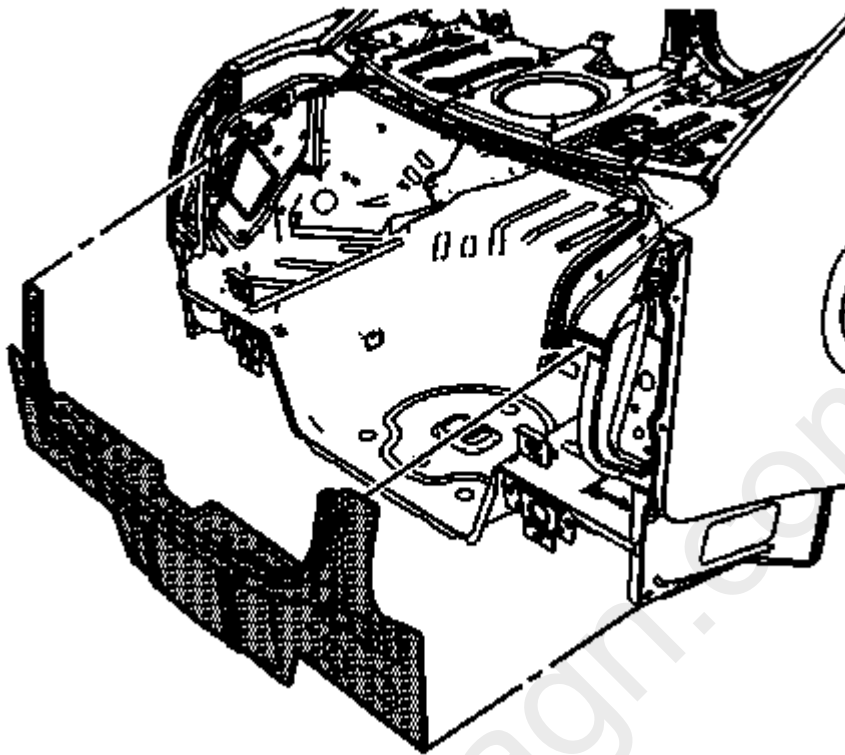


Fig. 206: View of Rear End Panel Assembly
Courtesy of GENERAL MOTORS COMPANY

7. Remove the rear end panel.

Installation Procedure

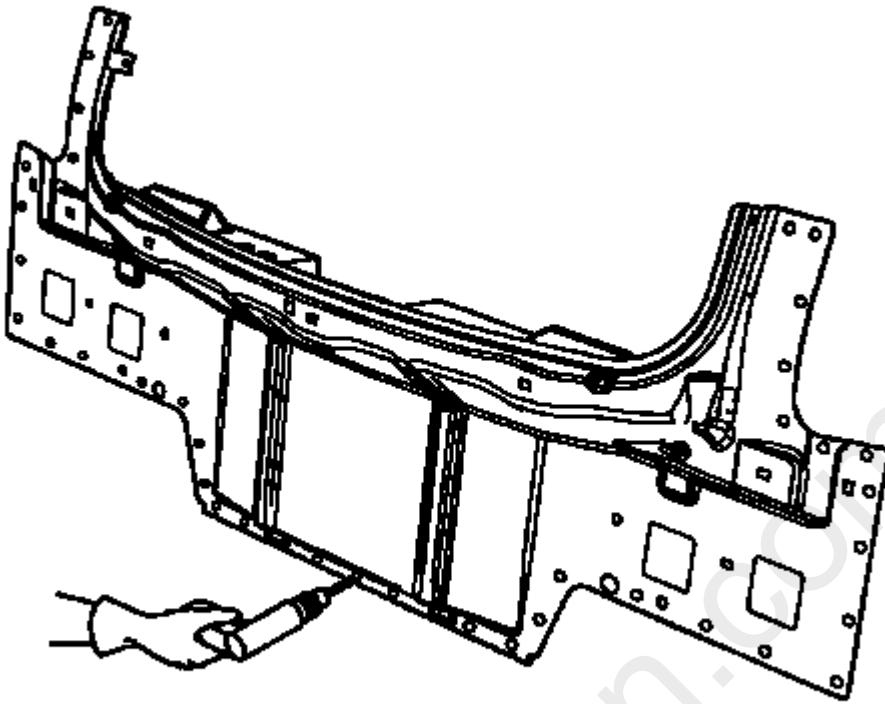


Fig. 207: View of Rear End Panel and Weld
Courtesy of GENERAL MOTORS COMPANY

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

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 Weld-Thru Coating to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

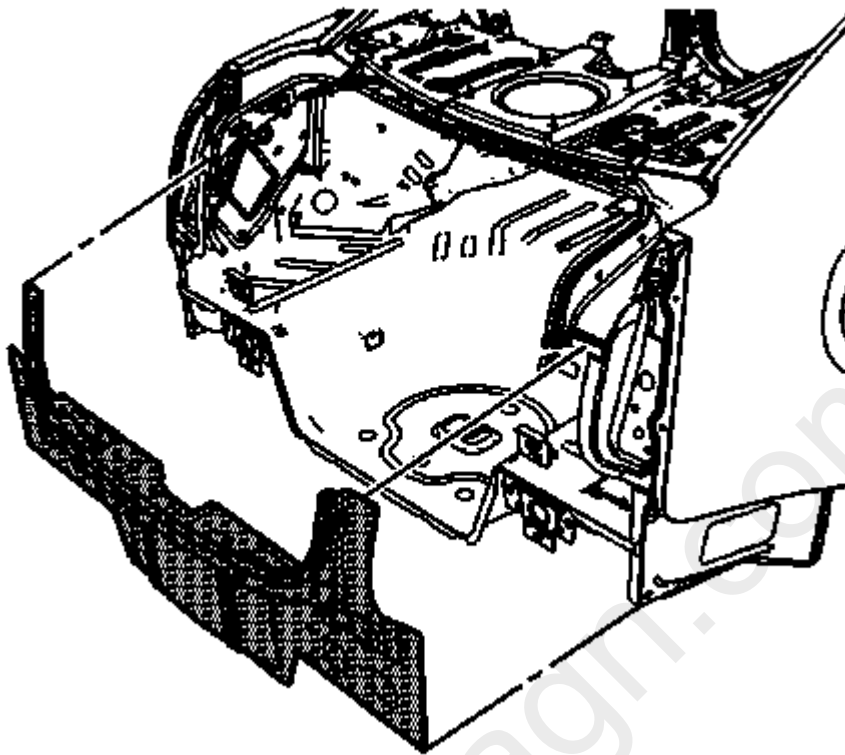


Fig. 208: View of Rear End Panel Assembly
Courtesy of GENERAL MOTORS COMPANY

4. Position the rear end panel.

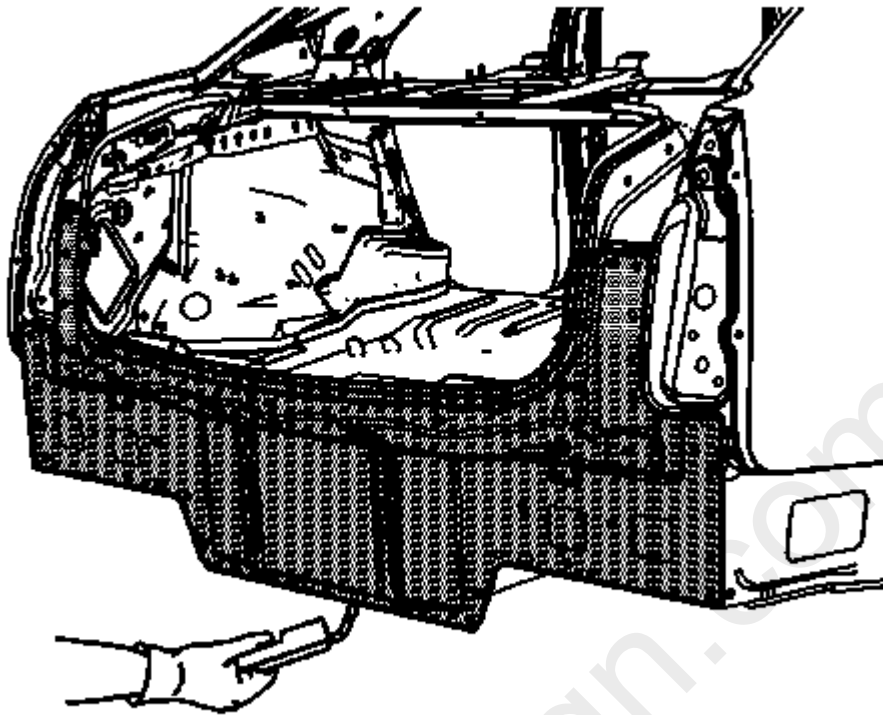


Fig. 209: View of Rear End and Weld
Courtesy of GENERAL MOTORS COMPANY

5. Plug weld accordingly.
6. Clean and prepare all of the welded surfaces.
7. Install all of the related panels and components.
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
9. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
10. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Wagon)** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

REAR END PANEL REPLACEMENT (WAGON)

Removal Procedure

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

NOTE: This panel is replaced at factory seams.

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 (Wagon) .

WARNING: Refer to Defroster Outlet Warning .

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

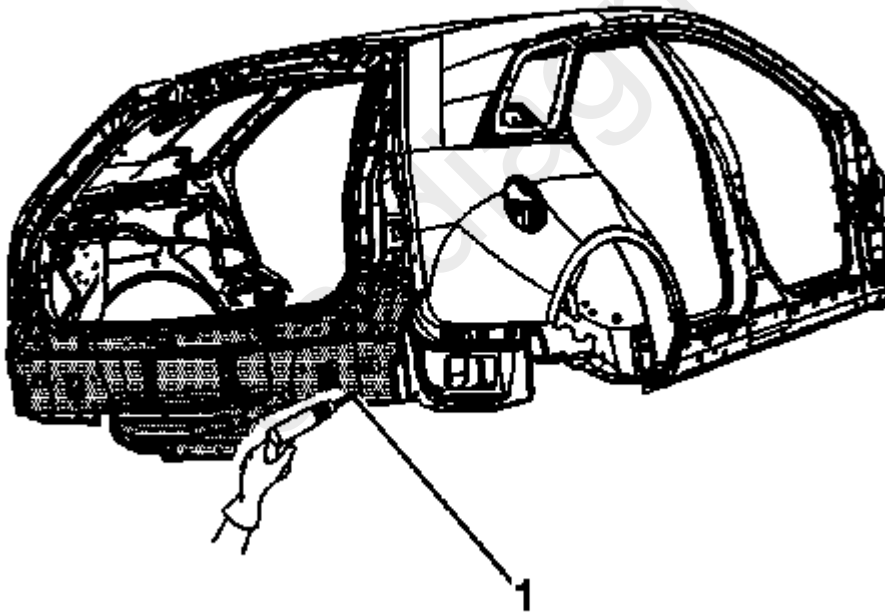


Fig. 210: Drilling Out All Necessary Factory Welds (Rear End Panel)
Courtesy of GENERAL MOTORS COMPANY

NOTE: Note the number and location of the factory welds for installation of the rear end panel.

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

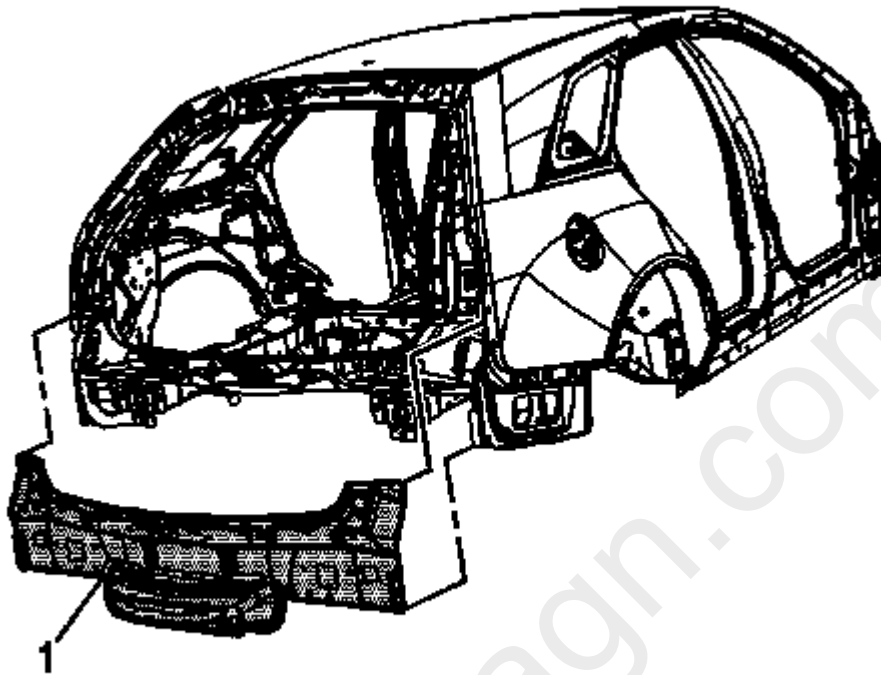


Fig. 211: Identifying Rear End Panel
Courtesy of GENERAL MOTORS COMPANY

7. Remove the rear end panel (1).

Installation Procedure

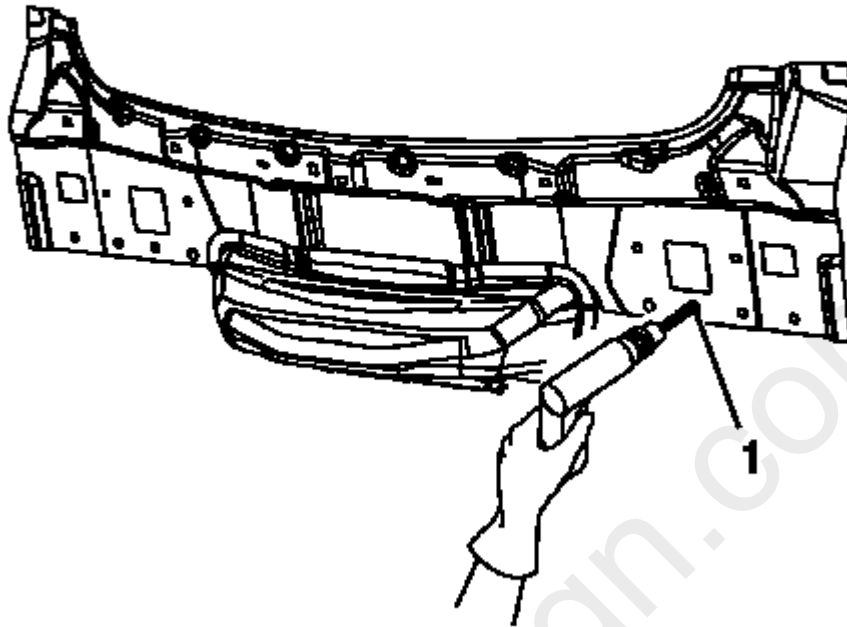


Fig. 212: Plugging Weld Holes

Courtesy of GENERAL MOTORS COMPANY

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

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 Weld-Thru Coating to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

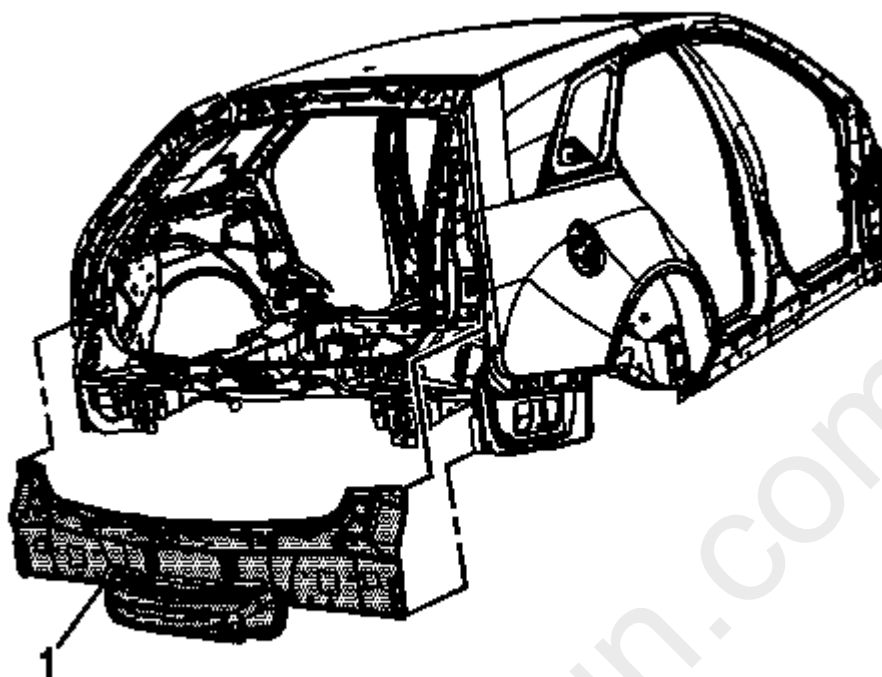


Fig. 213: Identifying Rear End Panel
Courtesy of GENERAL MOTORS COMPANY

4. Position the rear end panel (1).

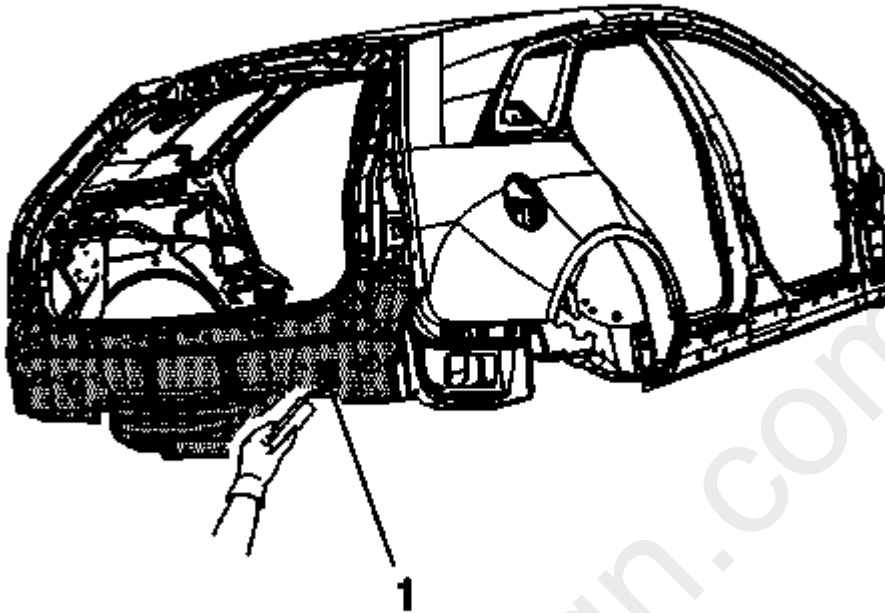


Fig. 214: Plug Weld Accordingly (Rear)
Courtesy of GENERAL MOTORS COMPANY

5. Plug weld accordingly (1).
6. Clean and prepare all of the welded surfaces.
7. Install all of the related panels and components.
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
9. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
10. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Wagon)** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

WHEEL OPENING FLANGING

Tools Required

Fender Flanging Tool

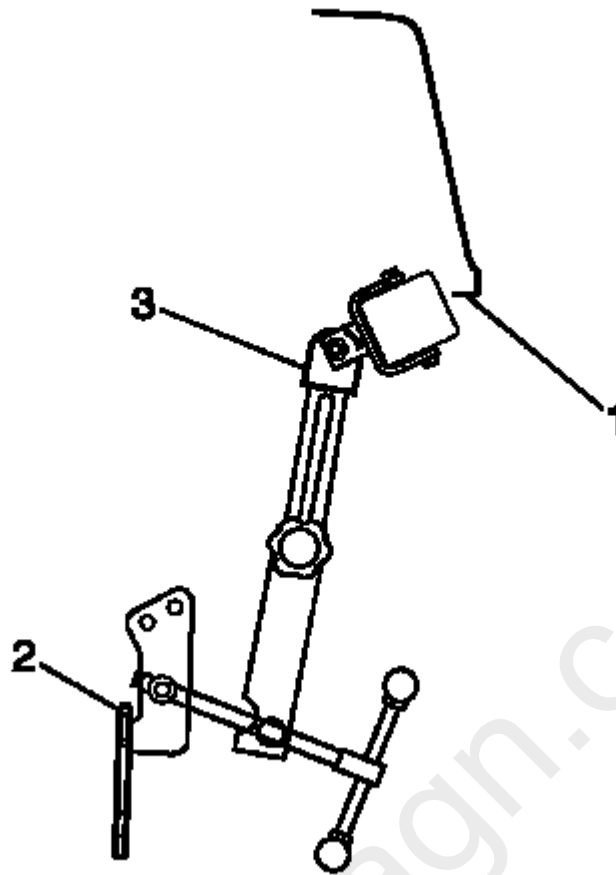


Fig. 215: View of Fender Flanging Tool
Courtesy of GENERAL MOTORS COMPANY

1. Raise the rear of the vehicle. Safely secure the vehicle on a jack stand.
2. Remove the rear wheel when the flange needs to be bent (1).
3. Place the tool hub dish flange onto the wheel hub. Tighten the lugs to snug (2).
4. Adjust the arm length so that the center of the roller is aligned with the inboard flange of the outer wheelhouse.
5. Adjust the roller to achieve the desired angle to wheelhouse lip (3).

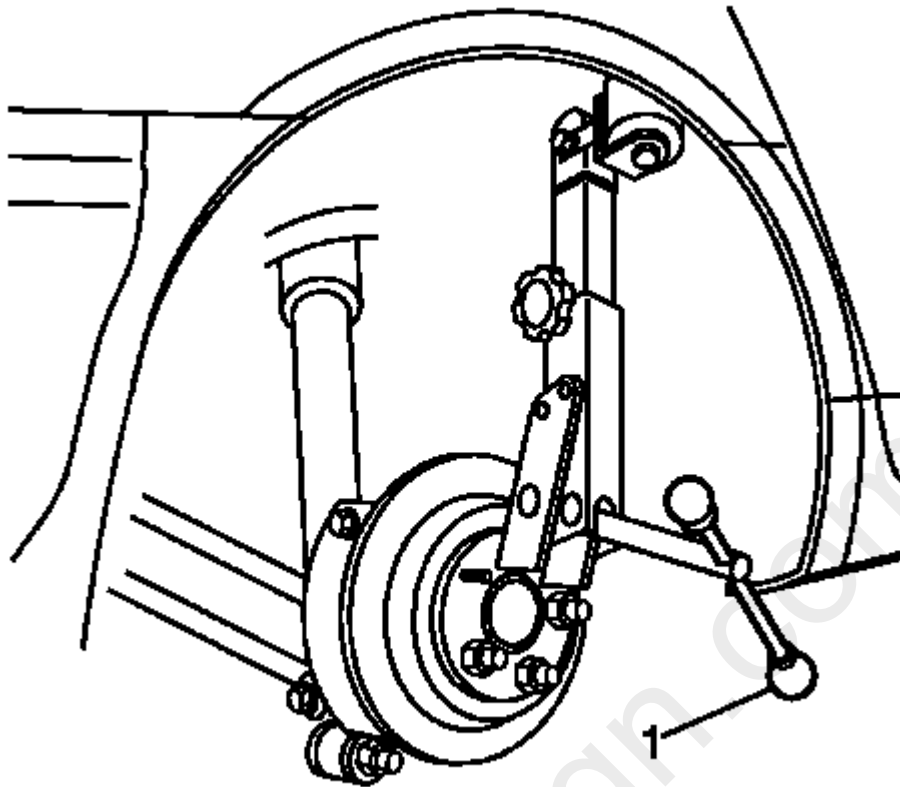


Fig. 216: Tightening Hand Wheel
Courtesy of GENERAL MOTORS COMPANY

6. Tighten the hand wheel located on the tool (1) to apply slight pressure.
7. Use a heat gun to gently warm the area to be rolled. This will make the adhesives and paints more pliable around the outer wheelhouse.

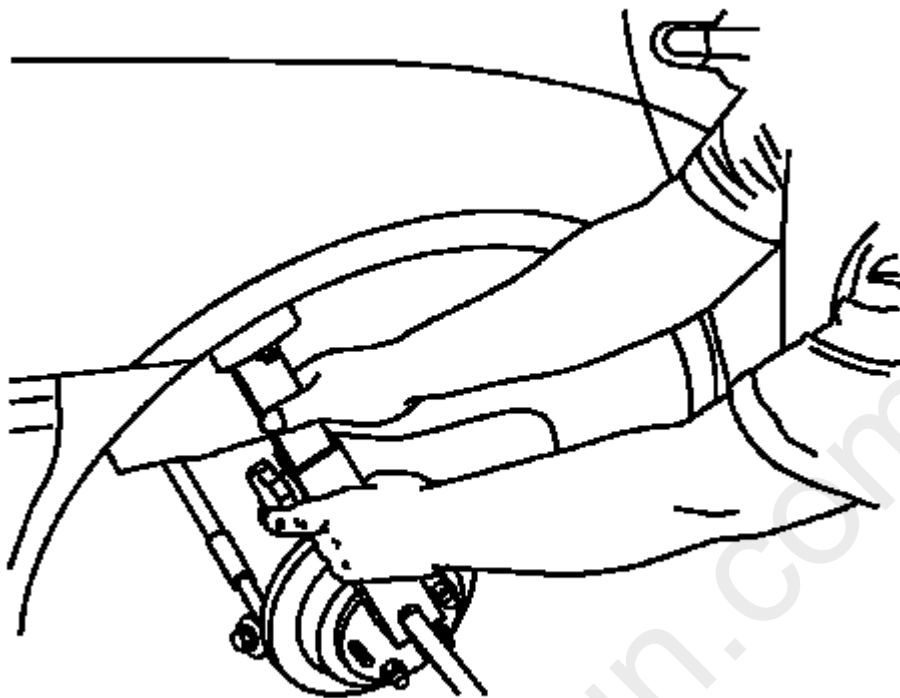


Fig. 217: Reforming Inner Fender Lip
Courtesy of GENERAL MOTORS COMPANY

8. Hold the tool firmly. Swing the tool in an arcing motion to reform the inner fender lip.

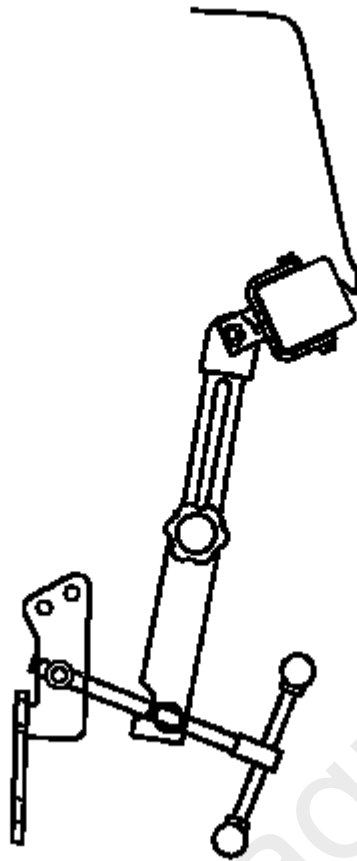


Fig. 218: Adjusting Tool To Redirect Flange To Desired Location
Courtesy of GENERAL MOTORS COMPANY

9. Adjust the tool as necessary by adding pressure to the rollers to redirect the flange to the desired location.
10. Remove the flanging tool.

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.
- This type of steel can be used as a sleeve, or backer plate, when recommended in a specific sectioning procedure.
- 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.
- This type of steel can be used as a sleeve, or backer plate, during sectioning procedures.
- 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 is intended to provide general guidelines for adhesive bonding of exterior panels as an alternative to Metal-Inert Gas (MIG) welding. Panel bonding may be seen as an alternative to MIG welding to provide full panel replacement in regards to collision repair procedures. The benefits of panel bonding is:

- No heat or burn damage when additional welding is not required
- Corrosion protection
- Can act as a sealant
- Improved process for complicated shapes (wheelhouse area)

The General Motors specification for metal bonding adhesives is GM 6449G. The scope of this specification is intended to provide the performance guidelines of structural adhesive systems used to repair (metallic) automotive bodies in the aftermarket. These types of adhesives are intended for use when bonding replacement

body panels as an option to welding as the attachment means. GM information outlines the use of room temperature cure acrylic adhesives that contain glass bead technology.

Bonding procedures in general are applicable only to a factory seams type approach.

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

Applicable components for this technology are EXTERIOR PANELS ONLY, including door skins, tail panels, roof outer panels and quarter panels.

IMPORTANT: Do not use adhesives for vehicle underbody or upper body structure type repairs such as structural rails, shock/strut towers, floor pans, upper fender rails, body side pillars, door rings-side or rear, rocker panels, unless specifically documented in a GM Service Bulletin or Manual. If in doubt, use only the procedures referenced in the Service Manual for the specific vehicle being repaired.

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

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

Metal Panel Bonding

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

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.
- This type of steel can be used as a sleeve, or backer plate, when recommended in a specific sectioning procedure.
- 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 backing reinforcement or a sleeve for a sectioning joint.**

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.

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