

2013 ACCESSORIES & EQUIPMENT

Collision Repair - Malibu

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Front Bumper Energy Absorber Fasteners	115 N.m	85 lb ft
Front End Upper Tie Bar Fasteners	22 N.m	16 lb ft

DIMENSIONS - BODY (SEDAN)

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 the marks, holes, slots, and fasteners are measured to the center. All dimensions are symmetrical unless otherwise specified.

Engine Compartment

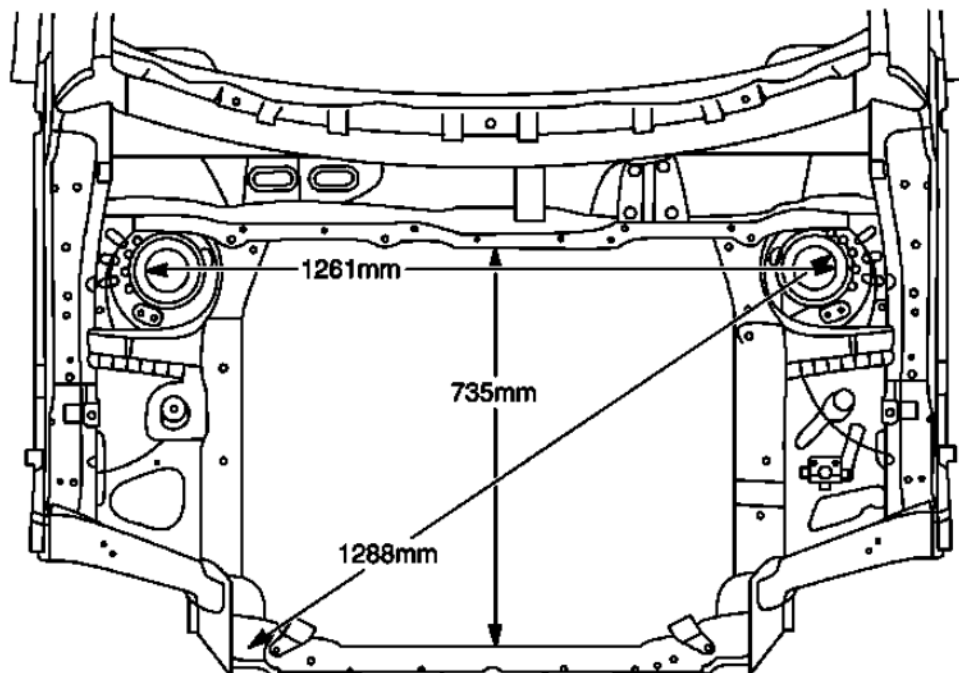


Fig. 1: Engine Compartment Dimensions
Courtesy of GENERAL MOTORS COMPANY

Rear End Dimensions

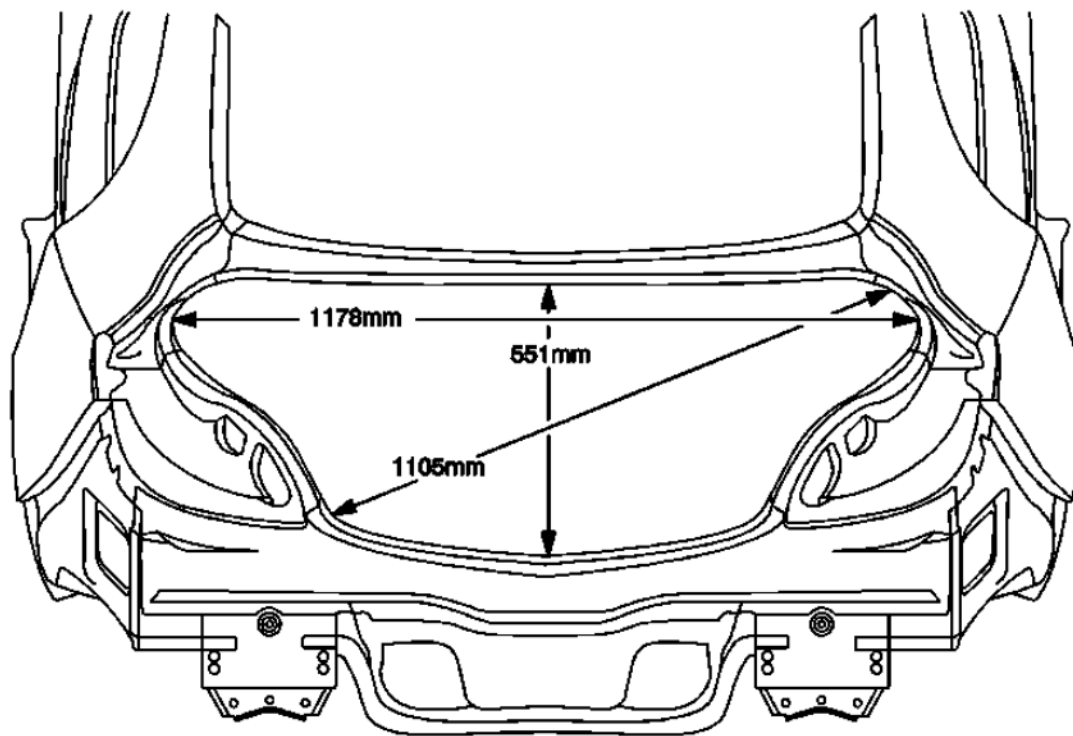


Fig. 2: Rear End Dimensions
Courtesy of GENERAL MOTORS COMPANY

Side

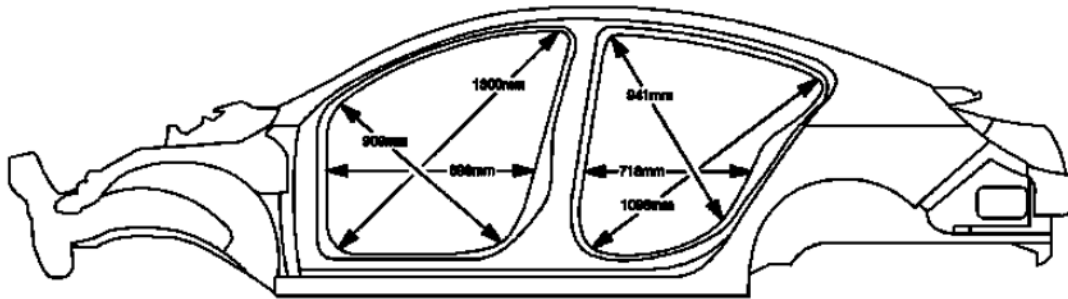


Fig. 3: Side Dimensions

Courtesy of GENERAL MOTORS COMPANY

VISUAL IDENTIFICATION

STRUCTURE IDENTIFICATION

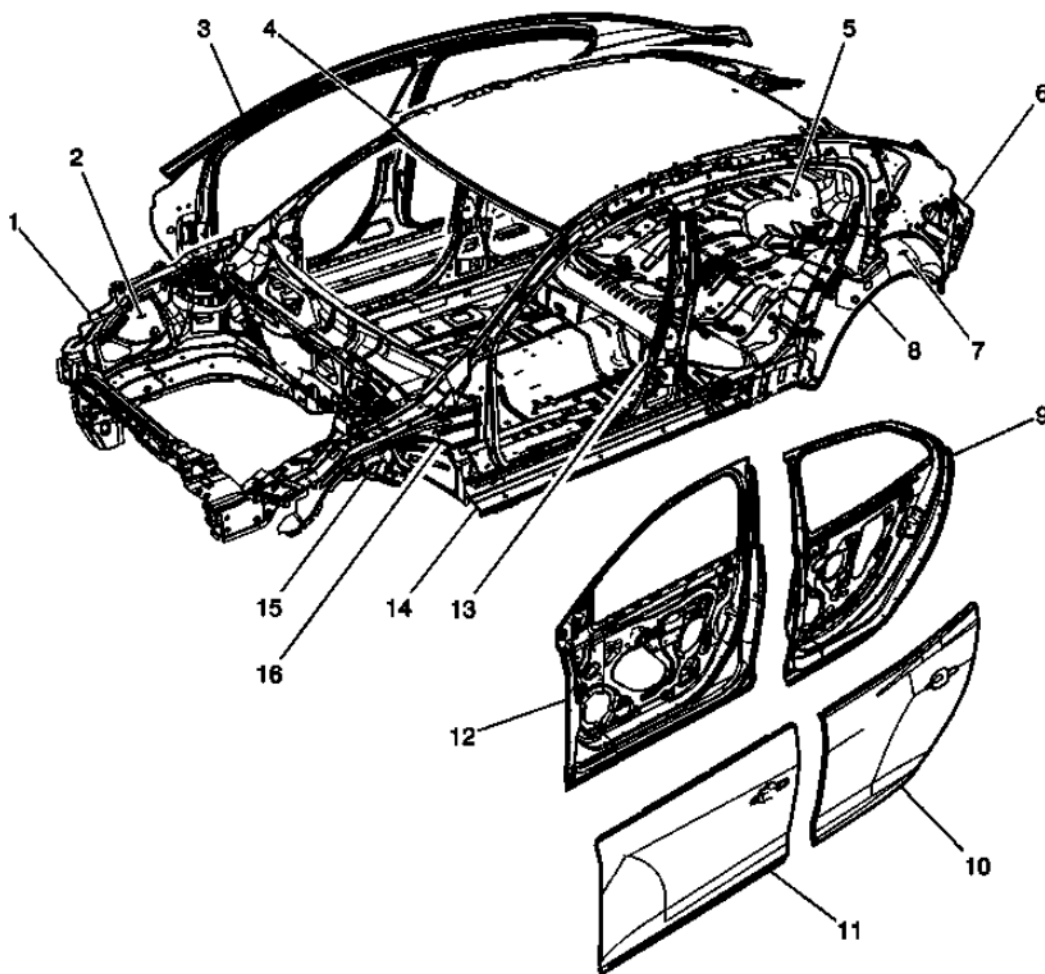


Fig. 4: Body Structure Identification
 Courtesy of GENERAL MOTORS COMPANY

Structure Identification

Number	Description	Material	Procedure
1	Front Compartment Upper Side Rail	<u>Mild Steel</u>	<u>Front Compartment Upper Side Rail Replacement</u>
2	Front Wheelhouse	<u>Mild Steel</u>	• <u>Front Wheelhouse Panel Replacement</u> • <u>Front Wheelhouse Front Panel Replacement</u>
3	Outer Bodyside Panel	<u>Mild Steel</u>	• <u>Quarter Outer Panel Sectioning</u> • <u>Center Pillar Sectioning - Outer</u> • <u>Rocker Outer Panel Sectioning</u>

4	Roof Outer Panel	<u>Mild Steel</u>	<u>Roof Outer Panel Replacement (Sedan)</u>
5	Rear Compartment Panel	<u>Mild Steel</u>	<u>Rear Floor Panel Sectioning</u>
6	Rear End Panel	<u>Mild Steel</u>	<u>Body Rear End Panel Replacement</u>
7	Rear Inner Wheelhouse	<u>Mild Steel</u>	• <u>Rear Wheelhouse Inner Panel Replacement</u> • <u>Body Side Inner Panel Sectioning</u>
8	Rear Side Rail	<u>High Strength Low Alloy Steel</u>	<u>Rail Replacement - Rear Section</u>
9	Rear Door Inner Reinforcement Beam	<u>Ultra High Strength Steel</u>	Not Serviced
10	Rear Outer Door Panel	<u>Mild Steel</u>	<u>Rear Side Door Outer Panel Replacement</u>
11	Front Outer Door Panel	<u>Mild Steel</u>	<u>Front Side Door Outer Panel Replacement</u>
12	Front Door Inner Reinforcement Beam	<u>Ultra High Strength Steel</u>	Not Serviced
13	Center Pillar Reinforcement	<u>Ultra High Strength Steel</u>	• <u>Center Pillar Reinforcement Replacement</u> • <u>Center Pillar Inner Panel Replacement</u>
14	Rocker Inner Panel	<u>Ultra High Strength Dual Phase Steel</u>	<u>Rocker Inner Panel Reinforcement Replacement</u>
15	Front Compartment Lower Rail	<u>Dual Phase Steel</u>	<u>Underbody Outer Front Side Rail Replacement</u>
16	Front Body Hinge Pillar	• <u>High Strength Low Alloy Steel</u> • <u>Mild Steel</u>	• <u>Front Hinge Pillar Body Sectioning (Upper), Front Hinge Pillar Body Sectioning (Lower)</u> • <u>Body Hinge Pillar Lower Reinforcement Replacement</u>

REPAIR INSTRUCTIONS

FRONT BUMPER ENERGY ABSORBER REPLACEMENT (WITHOUT HP6)

Removal Procedure

WARNING: Refer to Approved Equipment for Collision Repair Warning .

WARNING: Refer to Glass and Sheet Metal Handling Warning .

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

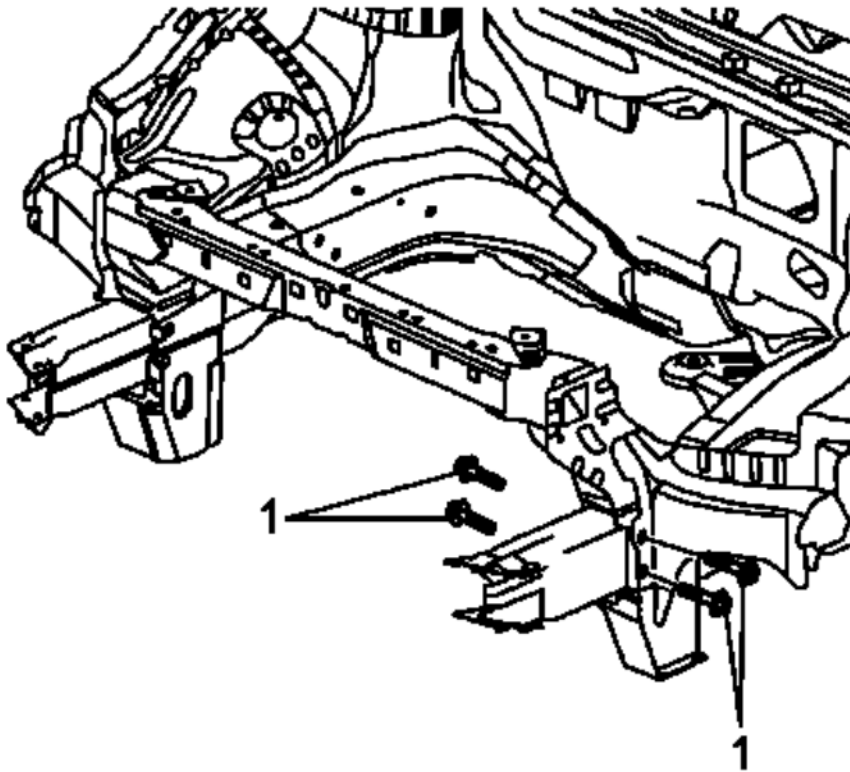


Fig. 5: Front Bumper Energy Absorber Fasteners
Courtesy of GENERAL MOTORS COMPANY

4. Remove the 4 front bumper energy absorber fastener (1).
5. Locate and mark all factory welds.

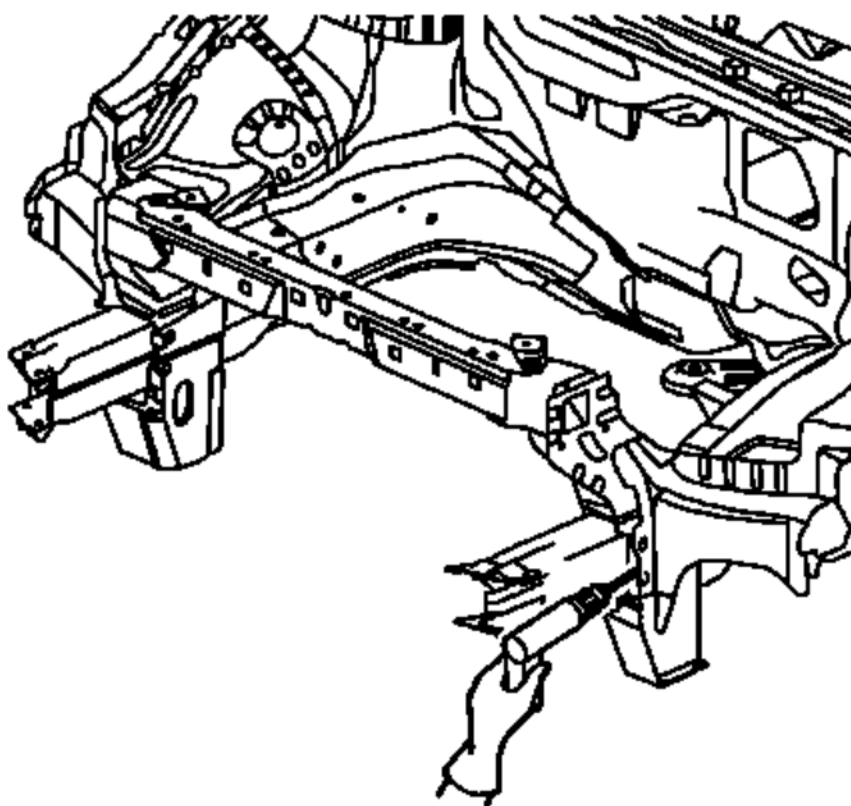


Fig. 6: Identifying Factory Welds
Courtesy of GENERAL MOTORS COMPANY

6. Drill all factory welds.
7. Remove the front bumper energy absorber.

Installation Procedure

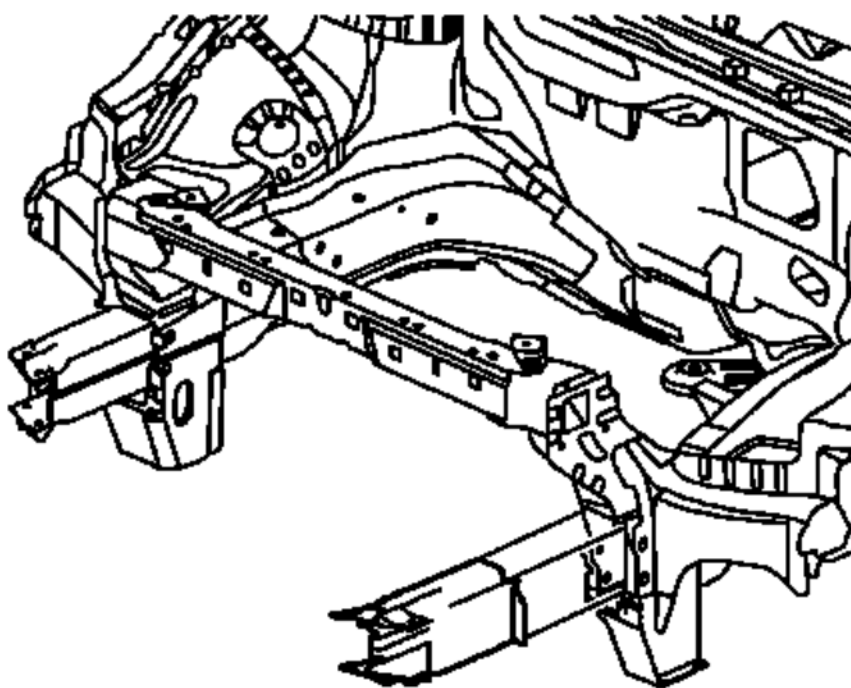


Fig. 7: Front Bumper Energy Absorber
Courtesy of GENERAL MOTORS COMPANY

1. Position the front bumper energy absorber on the vehicle.

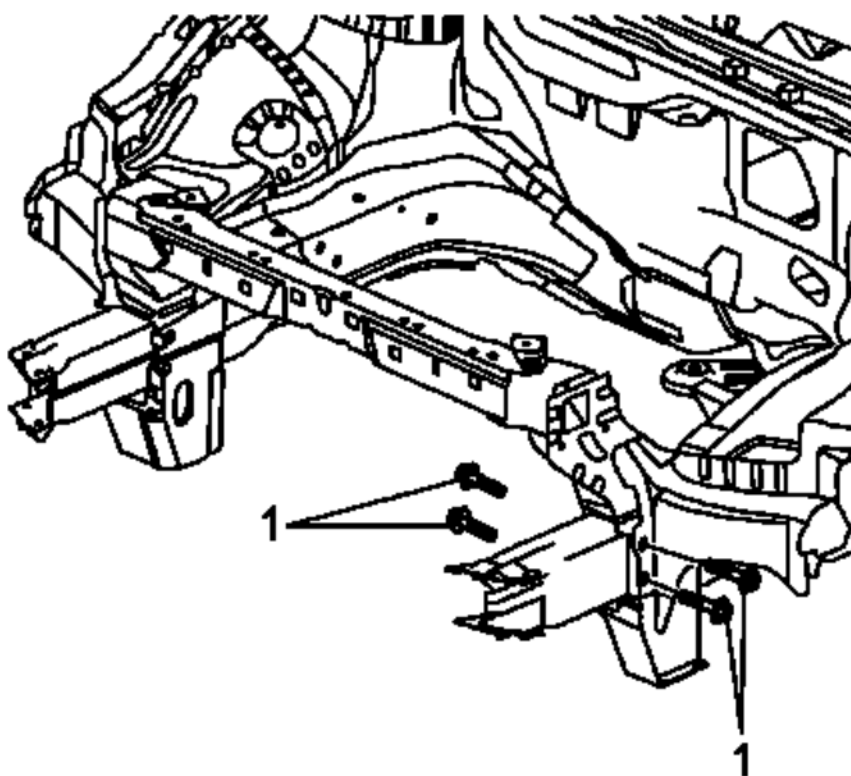


Fig. 8: Front Bumper Energy Absorber Fasteners
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

NOTE: Use only the original front bumper energy absorber fastener. Replace fastener if damaged.

2. Install the 4 front bumper energy absorber fasteners (1) and tighten to the front compartment front inner side rail 115 N.m (85 lb ft).

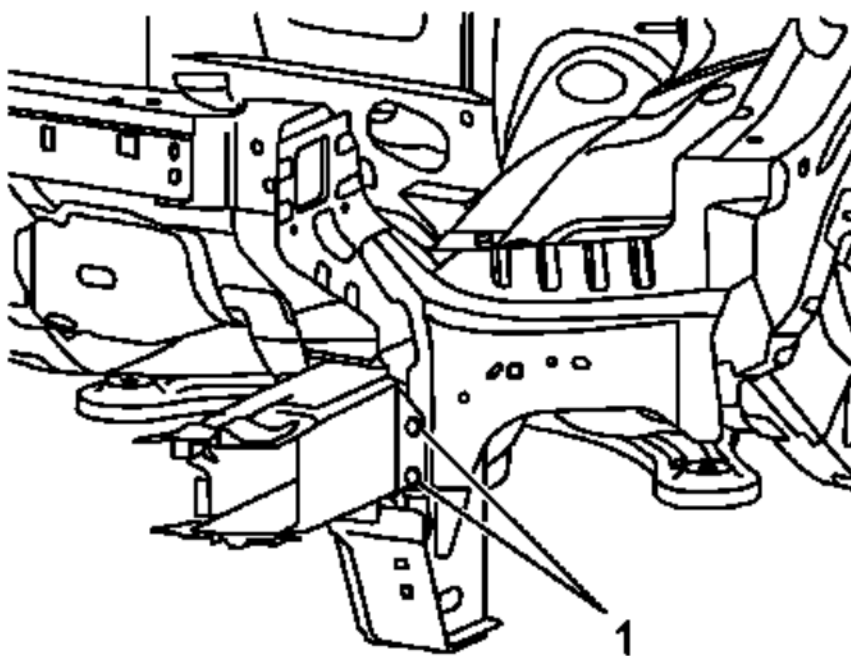


Fig. 9: Identifying Drill Holes

Courtesy of GENERAL MOTORS COMPANY

3. Drill two holes (1) 6 mm (0.24 in) along the edges of the front bumper energy absorber.

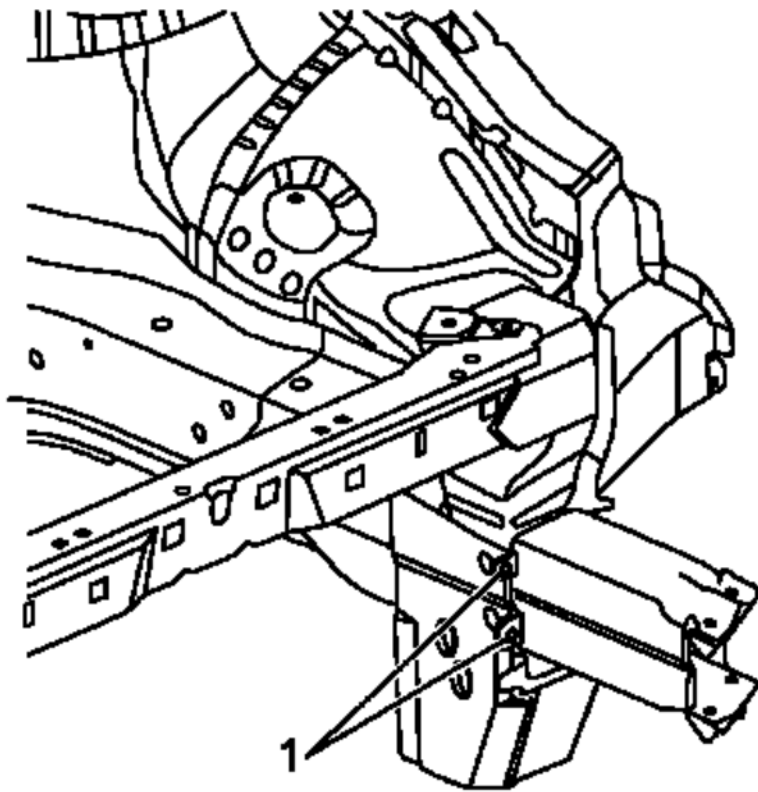


Fig. 10: Two Drill Holes

Courtesy of GENERAL MOTORS COMPANY

4. Drill two holes (1) 6 mm (0.24 in) along the edges of the front bumper energy absorber.

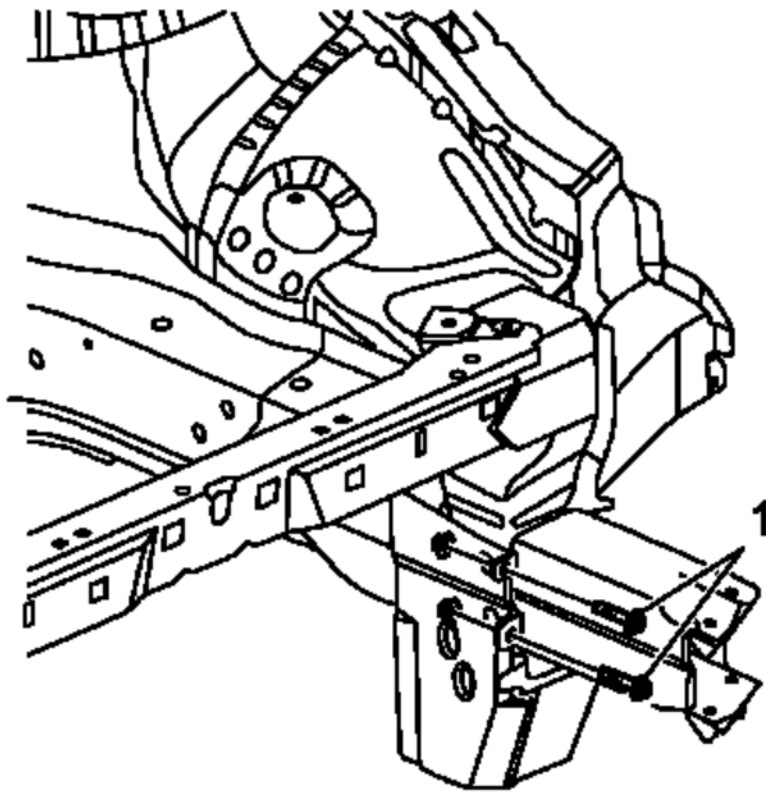


Fig. 11: Front End Upper Tie Bar Fastener
Courtesy of GENERAL MOTORS COMPANY

NOTE: Use only the original front end upper tie bar fastener (M6 bolt and nut).
Replace the fastener if damaged.

5. Install the 2 front end upper tie bar fasteners (1) and tighten to the front compartment front inner side rail 22 N.m (16 lb ft).

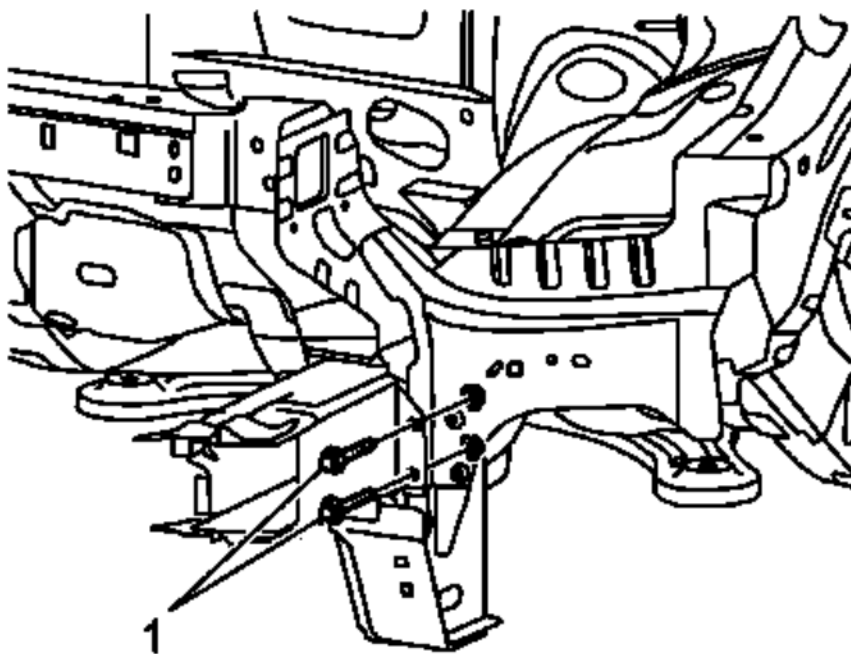


Fig. 12: Upper Front End Tie Bar Fastener
Courtesy of GENERAL MOTORS COMPANY

NOTE: Use only the original front end upper tie bar fastener (M6 bolt and nut).
Replace the fastener if damaged.

6. Install the 2 front end upper tie bar fasteners (1) and tighten to the front compartment front inner side rail 22 N.m (16 lb ft).
7. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
8. Install all related panels and components.
9. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
10. Enable the SIR system. Refer to SIR Disabling and Enabling .

FRONT BUMPER ENERGY ABSORBER REPLACEMENT (WITH HP6)

Removal Procedure

WARNING: Always perform the High Voltage Disabling procedure prior to servicing any High Voltage component or connection. Personal Protection Equipment (PPE) and proper procedures must be followed.

The High Voltage Disabling procedure includes the following steps:

- Identify how to disable high voltage.
- Identify how to test for the presence of high voltage.
- Identify condition under which high voltage is always present and personal protection equipment (PPE) and proper procedures must be followed.

Before working on any high voltage system, be sure to wear the following Personal Protection Equipment:

- Safety glasses with appropriate side shields when within 15 meters (50 feet) of the vehicle, either indoors or outdoors.
- Certified and up-to-date Class "0" Insulation gloves rated at 1000V with leather protectors.
 - Visually and functionally inspect the gloves before use.
 - Wear the Insulation gloves with leather protectors at all times when working with the high voltage battery assembly, whether the system is energized or not.

Failure to follow the procedures may result in serious injury or death.

WARNING: Refer to Approved Equipment for Collision Repair Warning .

WARNING: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Inspect the high voltage system. Refer to High Voltage System Inspection .
3. Disable the high voltage system. Refer to High Voltage Disabling .
4. Remove all related panels and components.

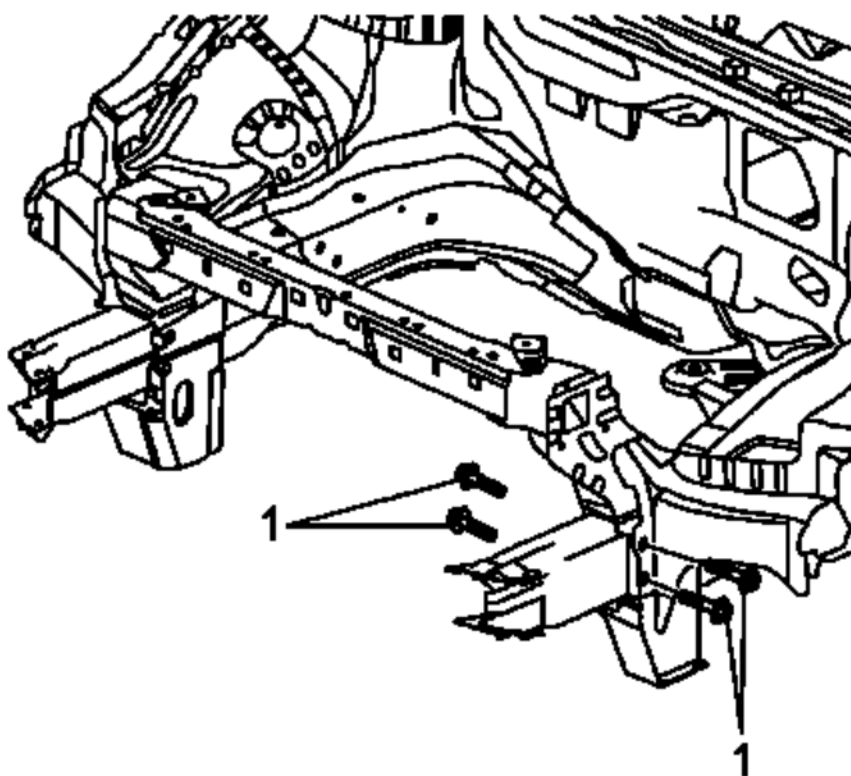


Fig. 13: Front Bumper Energy Absorber Fasteners
Courtesy of GENERAL MOTORS COMPANY

5. Remove the 4 front bumper energy absorber fastener (1).
6. Locate and mark all factory welds.

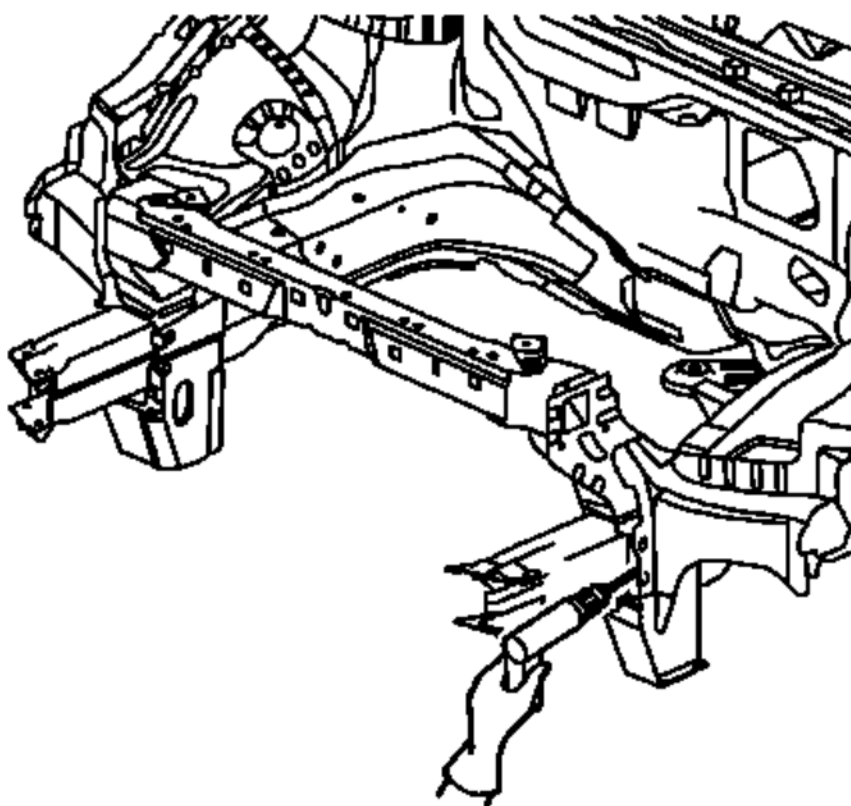


Fig. 14: Identifying Factory Welds
Courtesy of GENERAL MOTORS COMPANY

7. Drill all factory welds.
8. Remove the front bumper energy absorber.

Installation Procedure

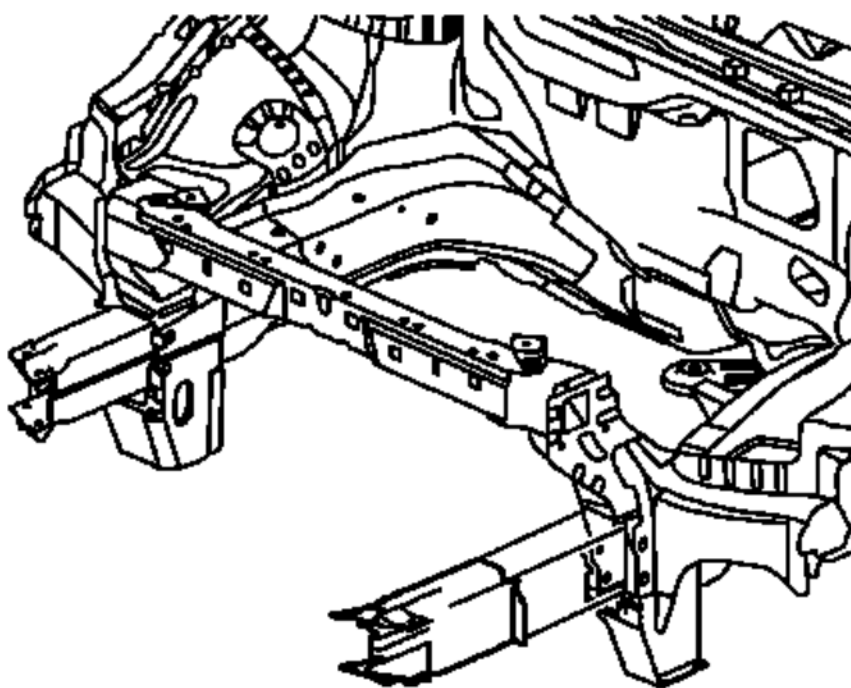


Fig. 15: Front Bumper Energy Absorber
Courtesy of GENERAL MOTORS COMPANY

1. Position the front bumper energy absorber on the vehicle.

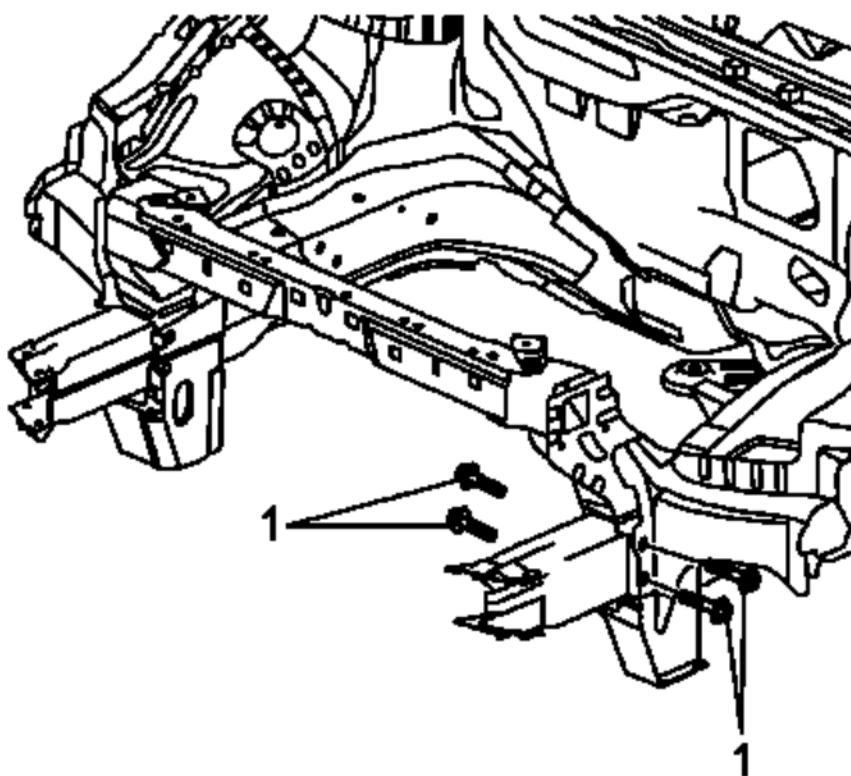


Fig. 16: Front Bumper Energy Absorber Fasteners
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

NOTE: Use only the original front bumper energy absorber fastener. Replace fastener if damaged.

2. Install the 4 front bumper energy absorber fasteners (1) and tighten to the front compartment front inner side rail 115 N.m (85 lb ft).

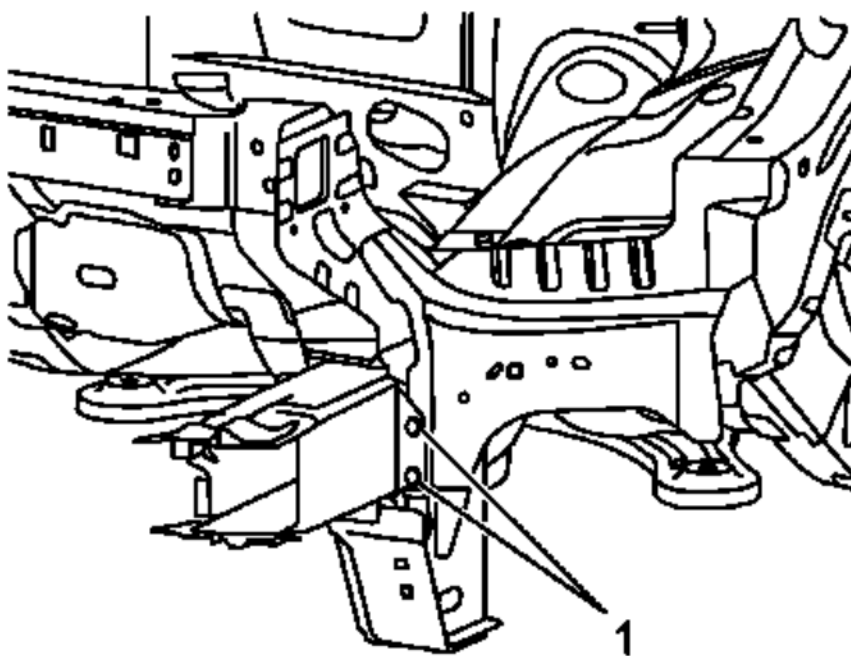


Fig. 17: Identifying Drill Holes

Courtesy of GENERAL MOTORS COMPANY

3. Drill two holes (1) 6 mm (0.24 in) along the edges of the front bumper energy absorber.

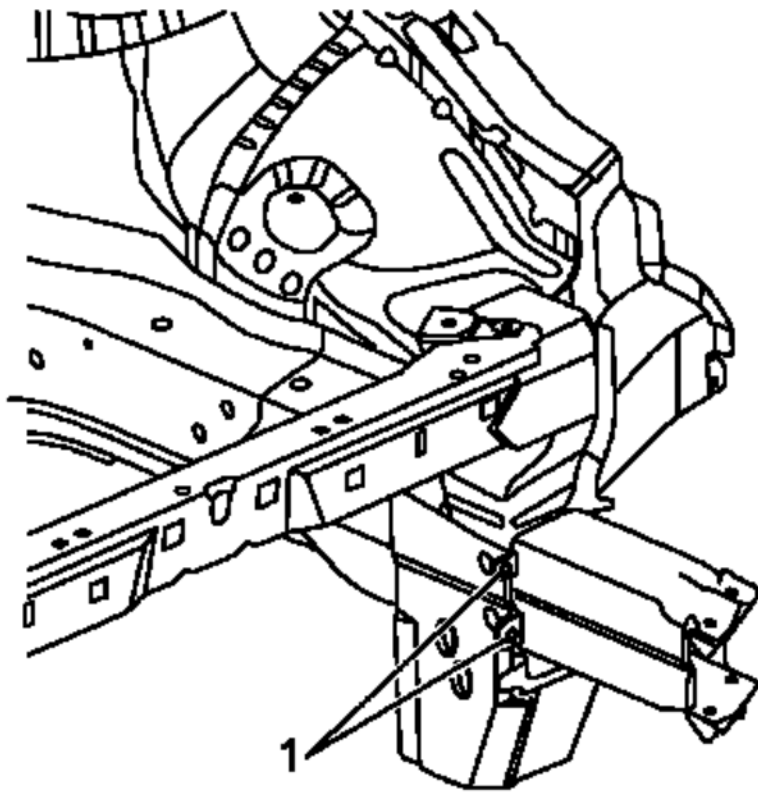


Fig. 18: Two Drill Holes

Courtesy of GENERAL MOTORS COMPANY

4. Drill two holes (1) 6 mm (0.24 in) along the edges of the front bumper energy absorber.

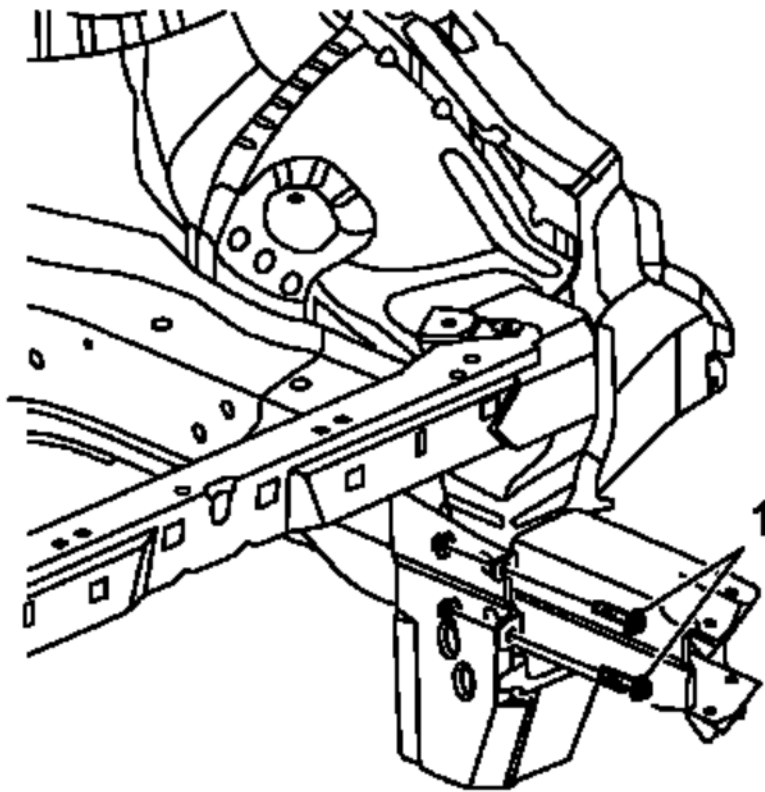


Fig. 19: Front End Upper Tie Bar Fastener
Courtesy of GENERAL MOTORS COMPANY

NOTE: Use only the original front end upper tie bar fastener (M6 bolt and nut).
Replace the fastener if damaged.

5. Install the 2 front end upper tie bar fasteners (1) and tighten to the front compartment front inner side rail 22 N.m (16 lb ft).

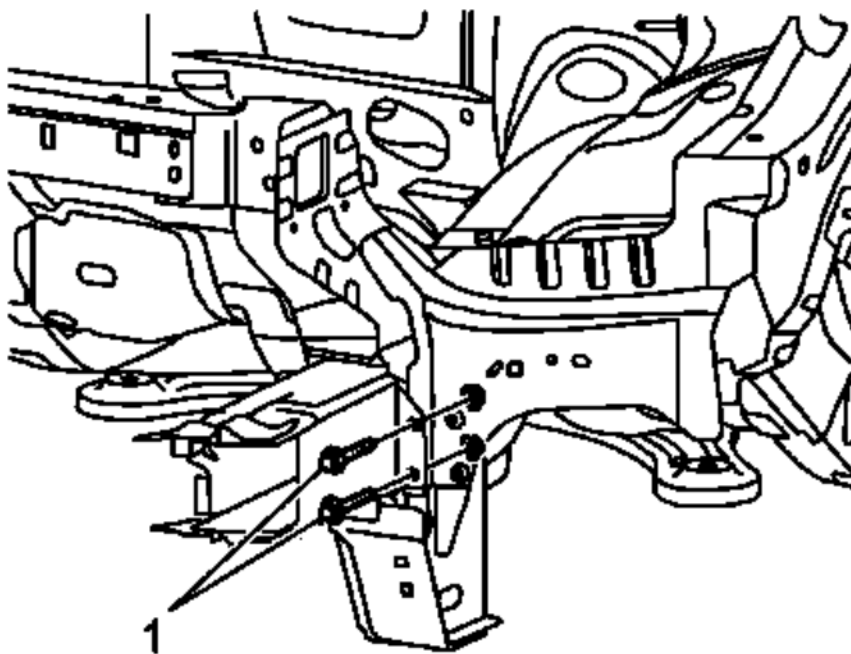


Fig. 20: Upper Front End Tie Bar Fastener
Courtesy of GENERAL MOTORS COMPANY

NOTE: Use only the original front end upper tie bar fastener (M6 bolt and nut).
Replace the fastener if damaged.

6. Install the 2 front end upper tie bar fasteners (1) and tighten to the front compartment front inner side rail 22 N.m (16 lb ft).
7. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
8. Install all related panels and components.
9. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
10. Enable the high voltage system. Refer to High Voltage Enabling .
11. Enable the SIR system. Refer to SIR Disabling and Enabling .

FRONT WHEELHOUSE FRONT PANEL REPLACEMENT

Removal Procedure

WARNING: Refer to Approved Equipment for Collision Repair Warning .

WARNING: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. 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 .

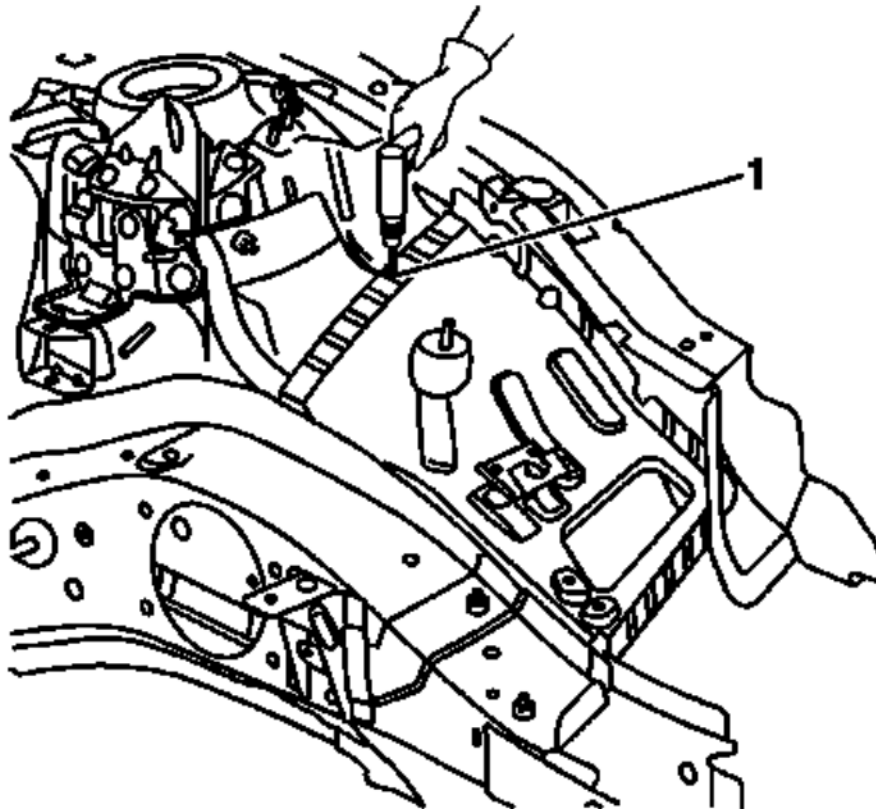


Fig. 21: Drilling Out Front Wheelhouse Front Panel Factory Welds
Courtesy of GENERAL MOTORS COMPANY

6. Locate and mark all the necessary factory welds of the front wheelhouse front panel (1).
7. Drill all factory welds. Note the number and location of welds for installation of the service assembly.
8. Remove the front wheelhouse front panel.

Installation Procedure

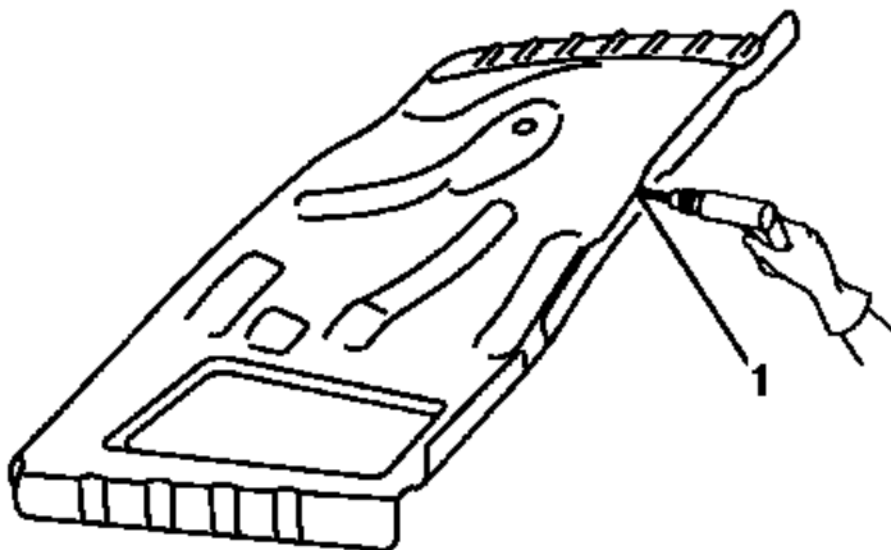


Fig. 22: Drilling 8 mm (5/16 in) Holes For New Front Wheelhouse Front Panel
Courtesy of GENERAL MOTORS COMPANY

1. Drill 8 mm (5/16 in) for plug welding along the edges of the front wheelhouse front panel as noted from the original panel (1).
2. Clean and prepare the attaching surfaces for welding.

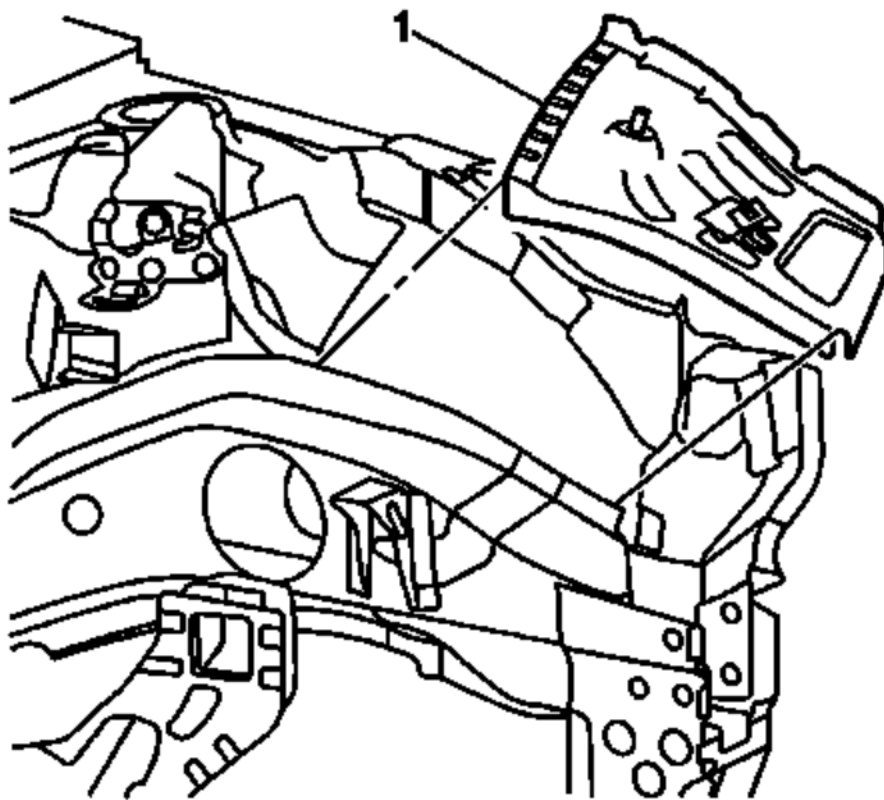


Fig. 23: Front Wheelhouse Front Panel
Courtesy of GENERAL MOTORS COMPANY

3. Position the front wheelhouse front panel on the vehicle (1).
4. Verify the fit of the front wheelhouse front panel.
5. Clamp the front wheelhouse front panel into position.

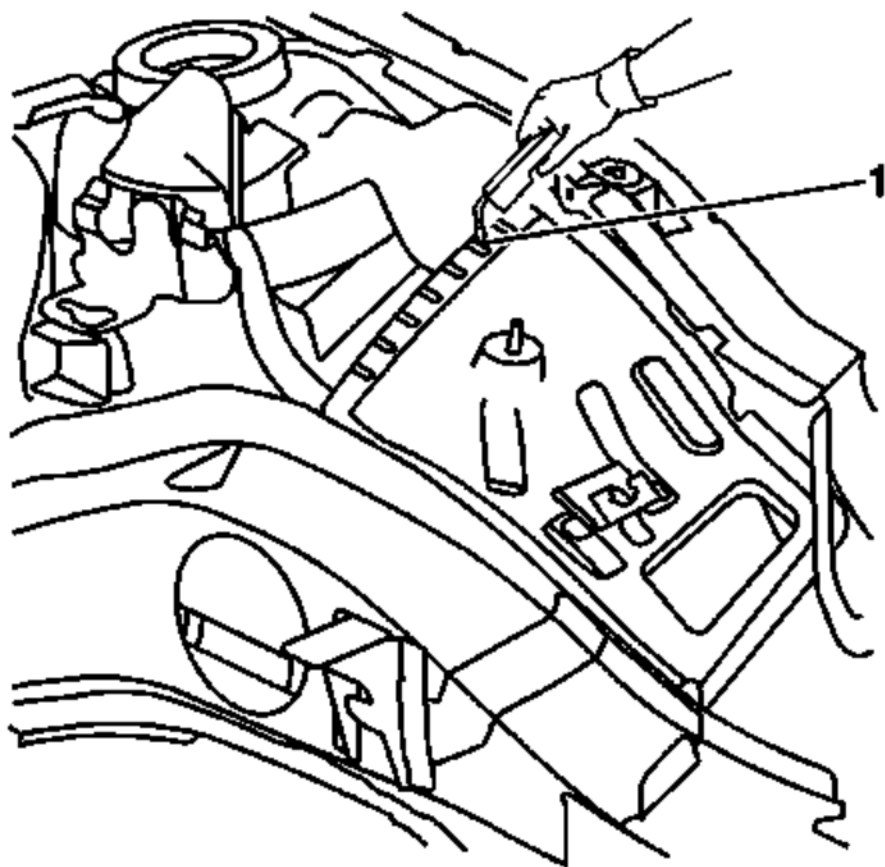


Fig. 24: Welding Front Wheelhouse Front Panel
 Courtesy of GENERAL MOTORS COMPANY

6. Plug weld accordingly (1).
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** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

FRONT WHEELHOUSE PANEL REPLACEMENT

Removal Procedure

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

NOTE: **Sectioning of the front wheelhouse assembly is not recommended. 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 .

NOTE: Inspect the front of the cowl for damage. If the metal surface is damaged, the cowl panel must be repaired to restore the structural integrity of the vehicle.

4. Repair as much of the damage as possible.

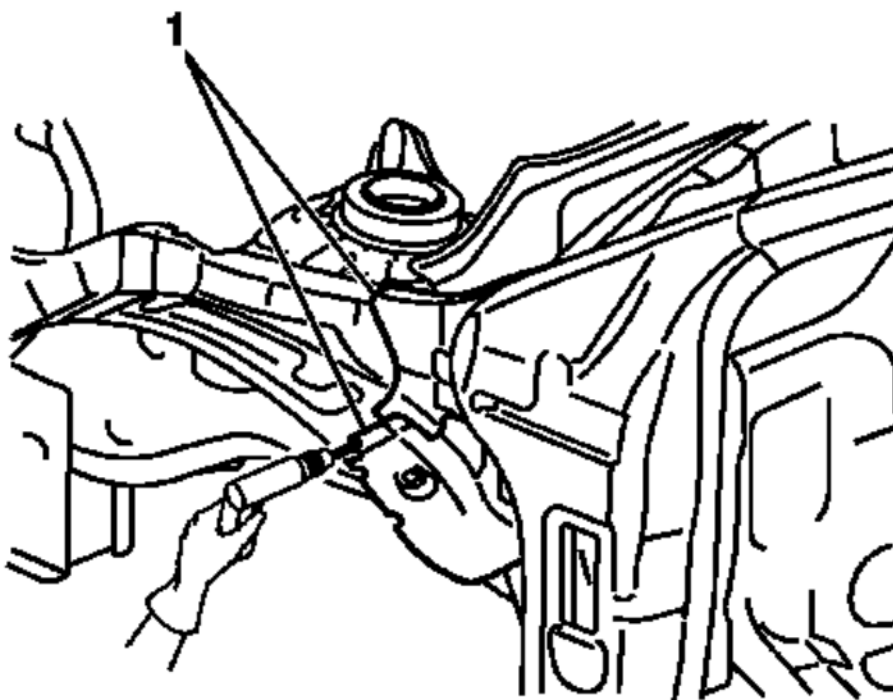


Fig. 25: Drilling Out Front Wheelhouse Panel Factory Welds
Courtesy of GENERAL MOTORS COMPANY

5. Locate, mark, and drill out all factory welds (1). Note the number and location of welds for installation of the service assembly.
6. Remove the front wheelhouse from the vehicle.

Installation Procedure

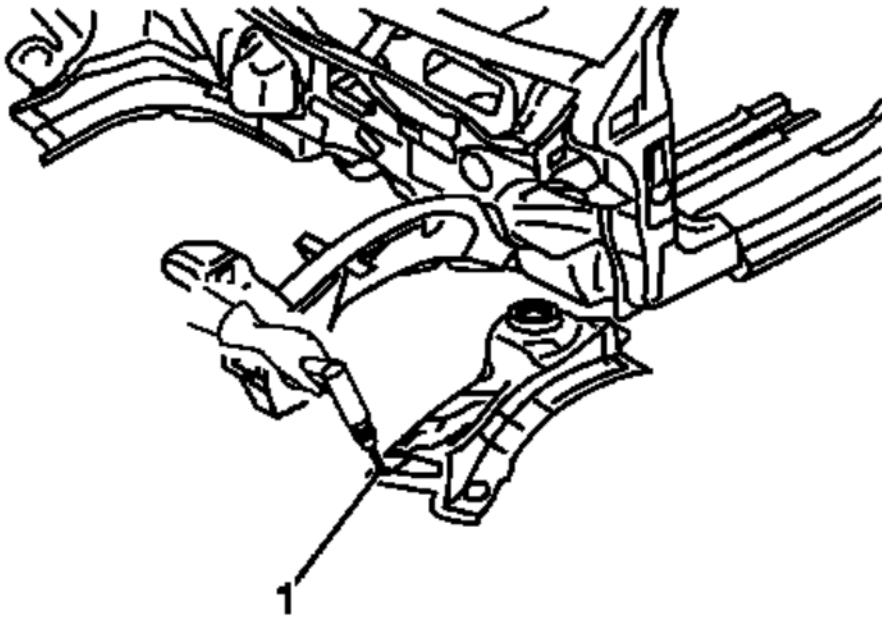


Fig. 26: Drilling Holes In New Front Wheelhouse For Welding
Courtesy of GENERAL MOTORS COMPANY

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

1. Drill 8 mm (5/16 in) plug weld holes as necessary on service part, in the locations noted from the original assembly (1).
2. Clean and prepare the 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**.

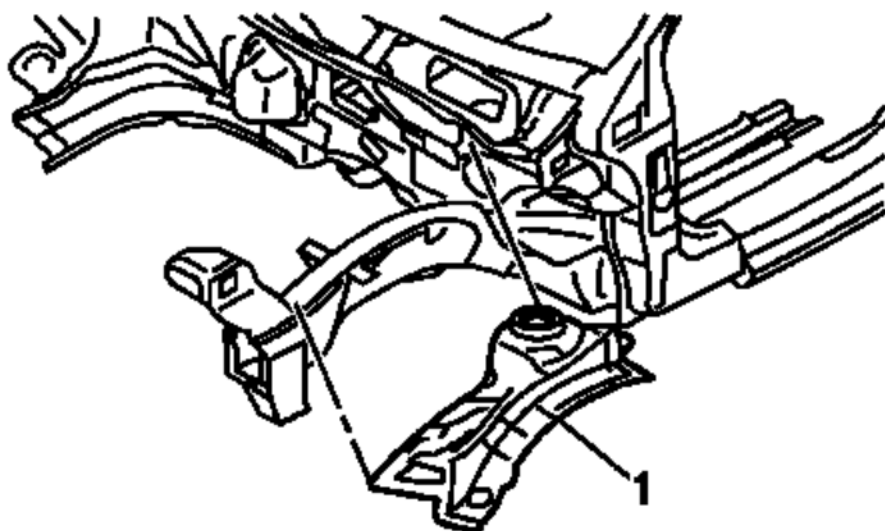


Fig. 27: Front Wheelhouse

Courtesy of GENERAL MOTORS COMPANY

4. Position the service front wheelhouse to the vehicle using 3-dimensional measuring equipment (1). Clamp the front wheelhouse in place.

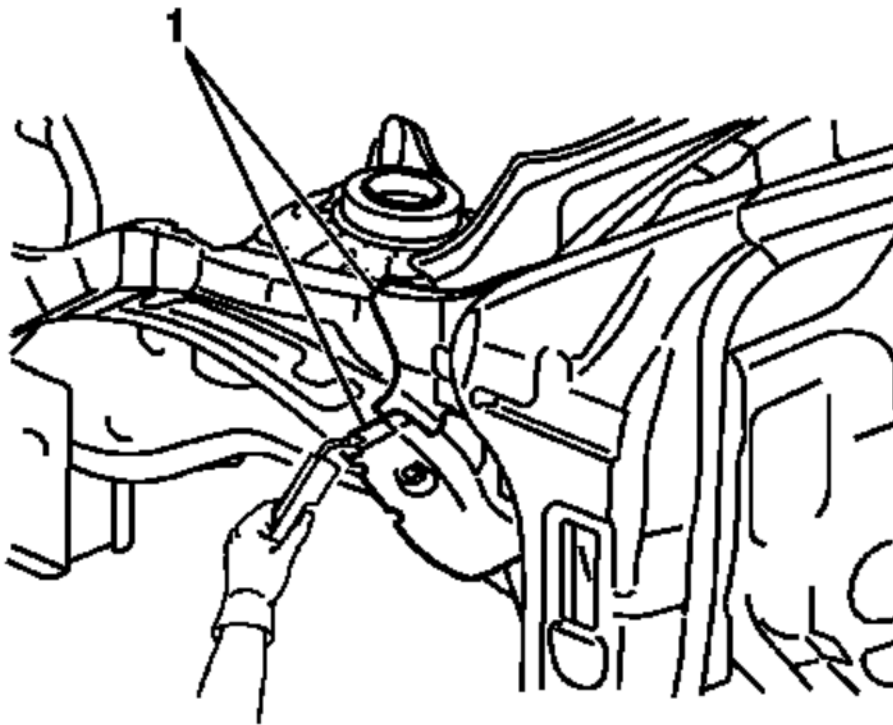


Fig. 28: Welding Front Wheelhouse
Courtesy of GENERAL MOTORS COMPANY

5. When the service assembly is correctly positioned, plug weld accordingly (1).
6. Measure frequently to ensure proper fit and alignment.
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** .
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** .
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to **Dimensions - Body (Sedan)**.
5. Remove the sealers and anti-corrosion materials from the repair area. Refer to **Anti-Corrosion Treatment and Repair** .

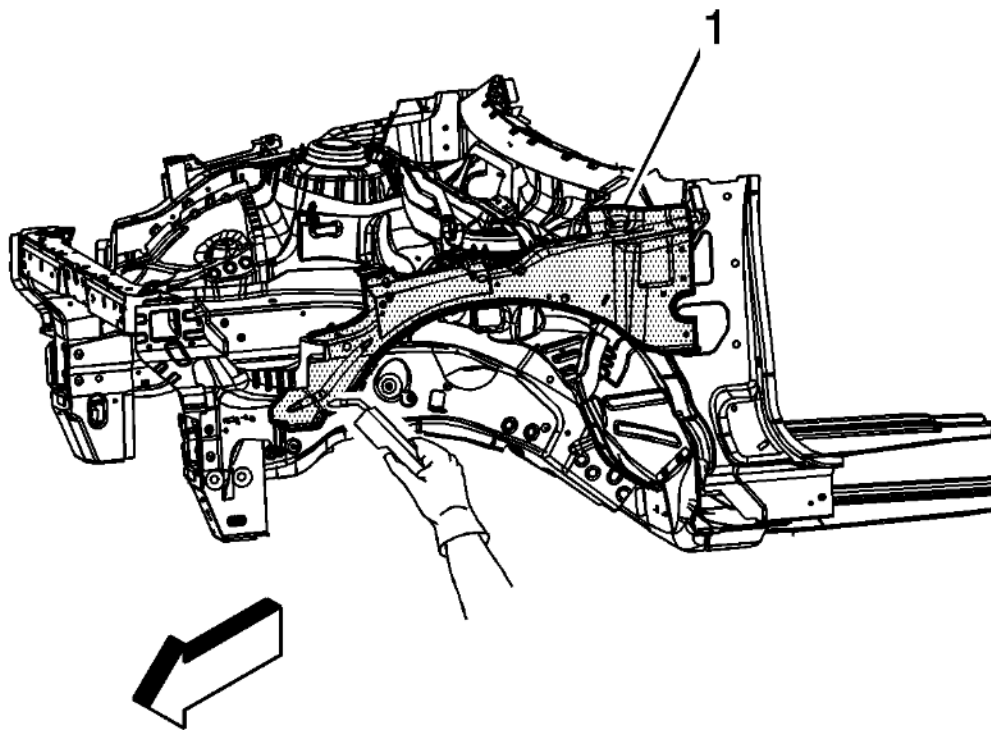


Fig. 29: Welding Upper Rail

Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage any inner panels or reinforcements.

6. Locate and drill out all factory welds. Note the number and location of the welds for installation of the front upper rail (1).

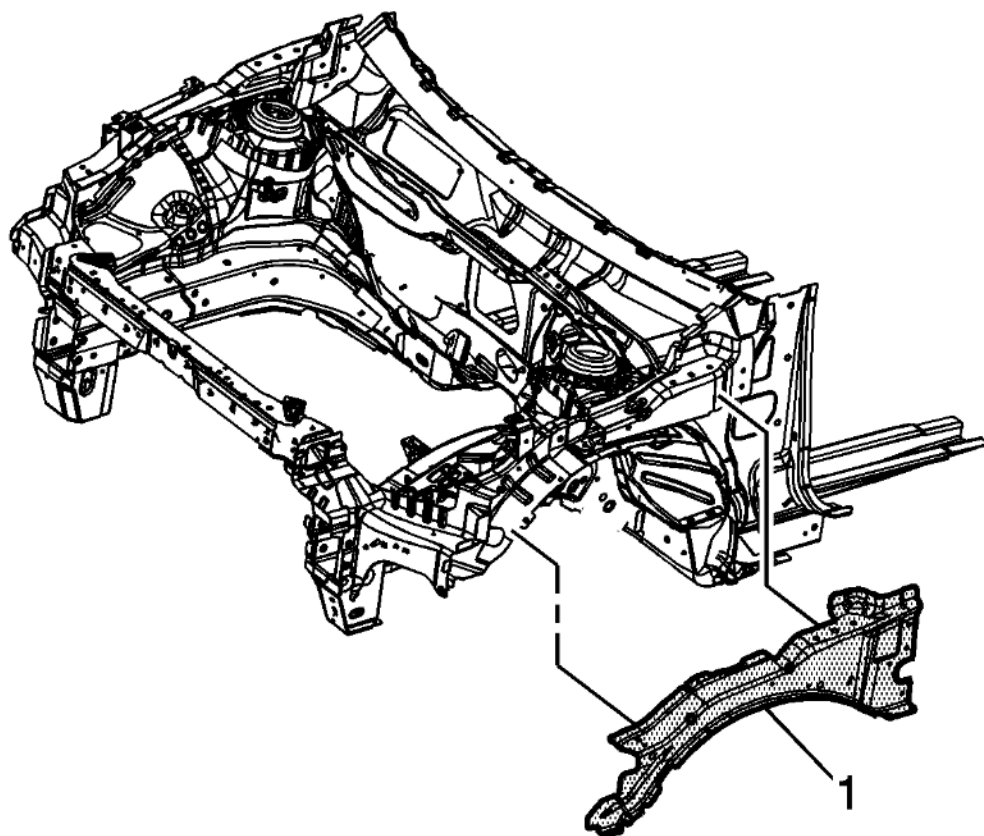


Fig. 30: Upper Rail

Courtesy of GENERAL MOTORS COMPANY

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

Installation Procedure

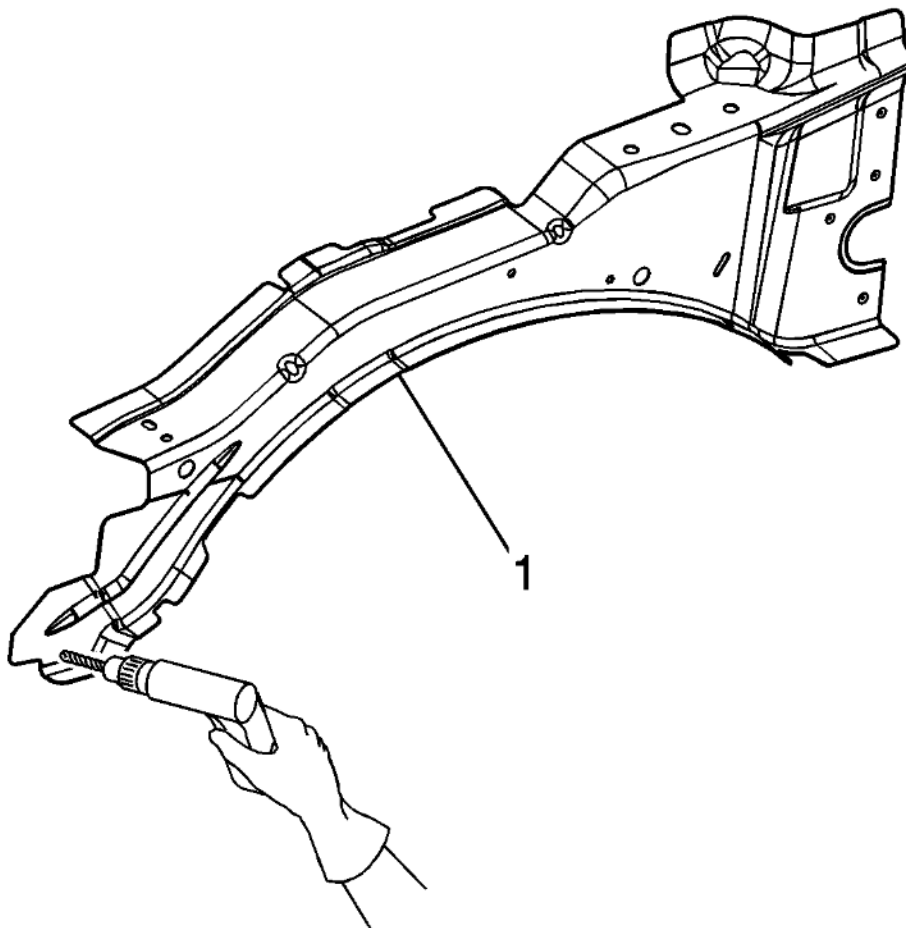


Fig. 31: Drilling Plug Weld Holes In Replacement Upper Rail
Courtesy of GENERAL MOTORS COMPANY

NOTE: If you cannot determine the location of the original plug weld holes, space the plug weld holes every 40 mm (1 1/2 in) apart.

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel (1).
2. Prepare all mating surfaces as necessary.
3. Apply 3M Weld-Thru Coating P/N 05916 or equivalent to all mating surfaces.

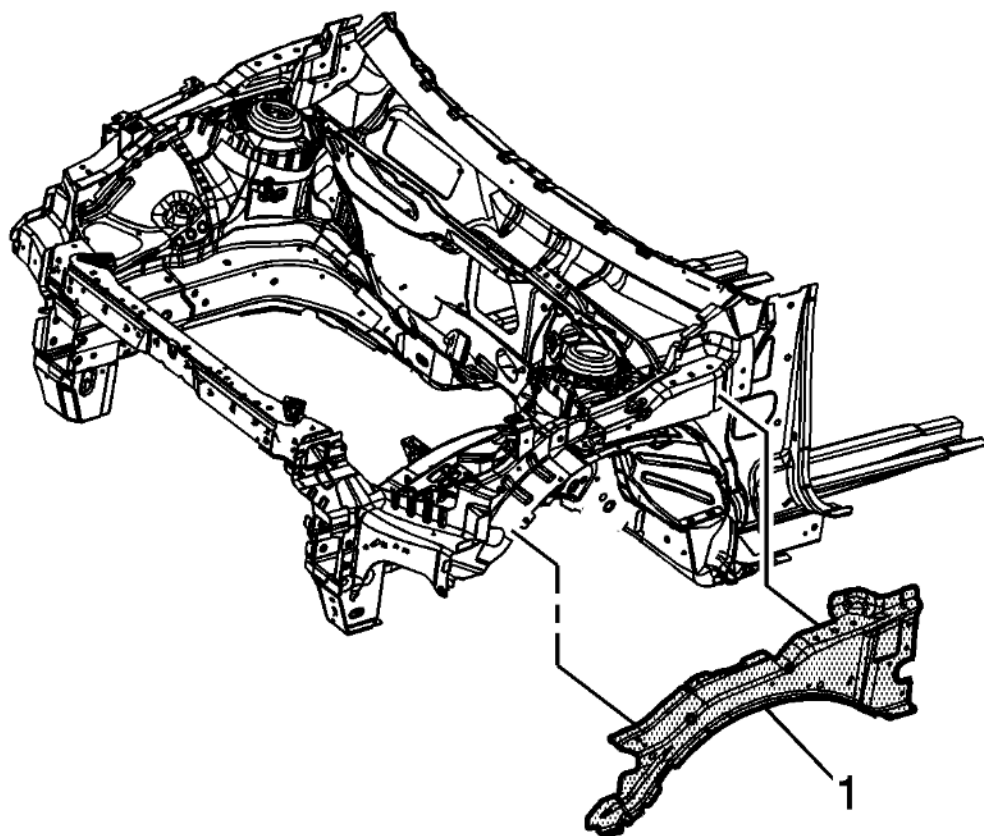


Fig. 32: Upper Rail

Courtesy of GENERAL MOTORS COMPANY

4. Position the front upper rail on the vehicle using 3-dimensional measuring equipment. Clamp the rail in place (1).

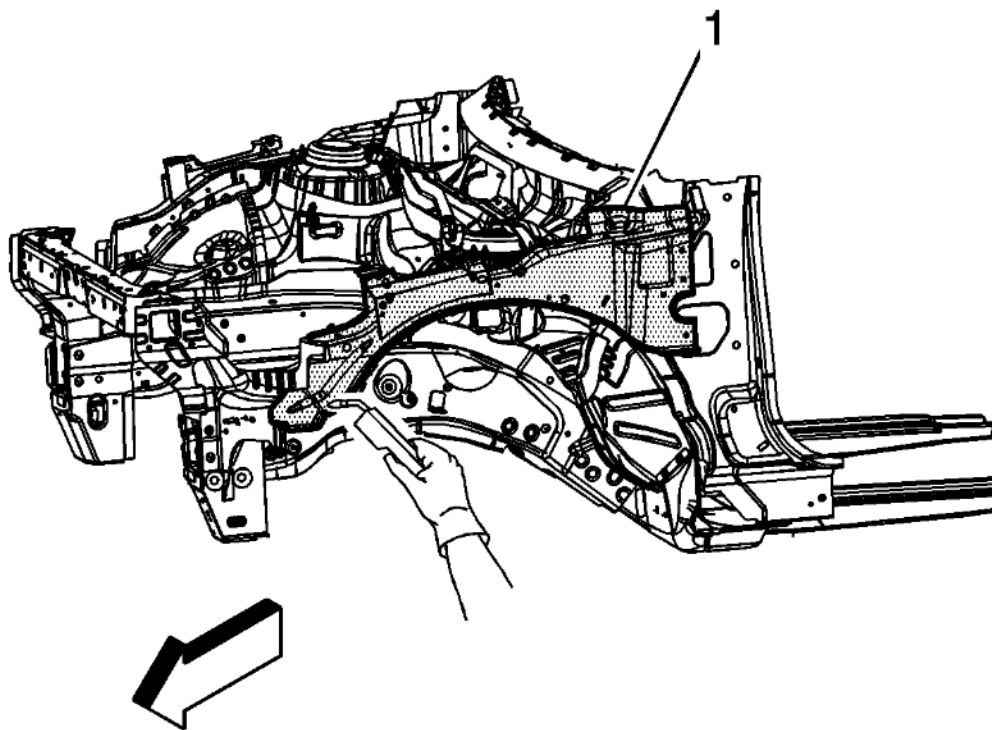


Fig. 33: Welding Upper Rail

Courtesy of GENERAL MOTORS COMPANY

5. Plug weld accordingly (1).
6. Clean and prepare all welded surfaces.
7. Install all 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 repair area. Refer to **Basecoat/Clearcoat Paint Systems** .
10. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

FRONT COMPARTMENT FRONT HALF 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** .
3. Remove the front compartment upper side rail. Refer to **Front Compartment Upper Side Rail Replacement**.
4. Remove the headlamp mount panel.
5. Remove the front wheelhouse. Refer to **Front Wheelhouse Panel Replacement**.
6. Visually inspect the damage. Repair as much of the damage as possible.
7. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .

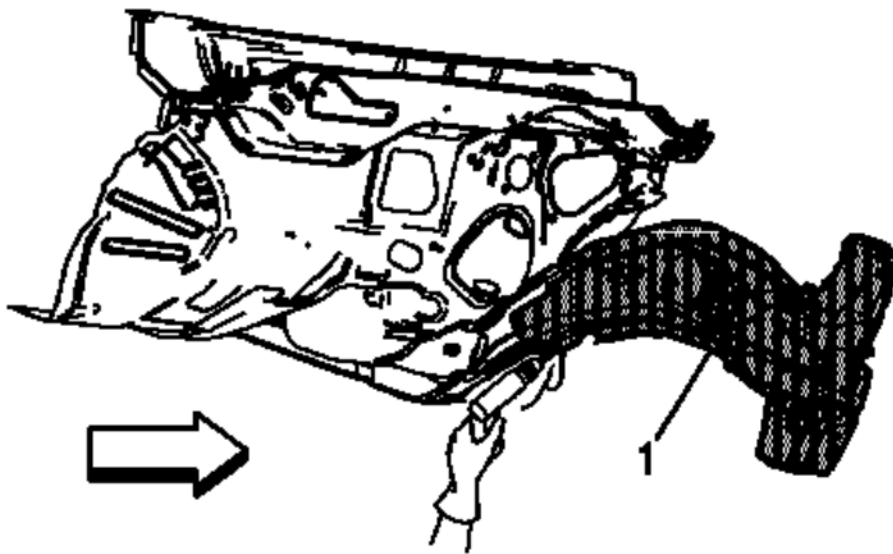


Fig. 34: Drilling Out Front Compartment Front Half Rail Factory Welds
Courtesy of GENERAL MOTORS COMPANY

NOTE: Record the number and location of the factory welds for installation of the front compartment front half rail.

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

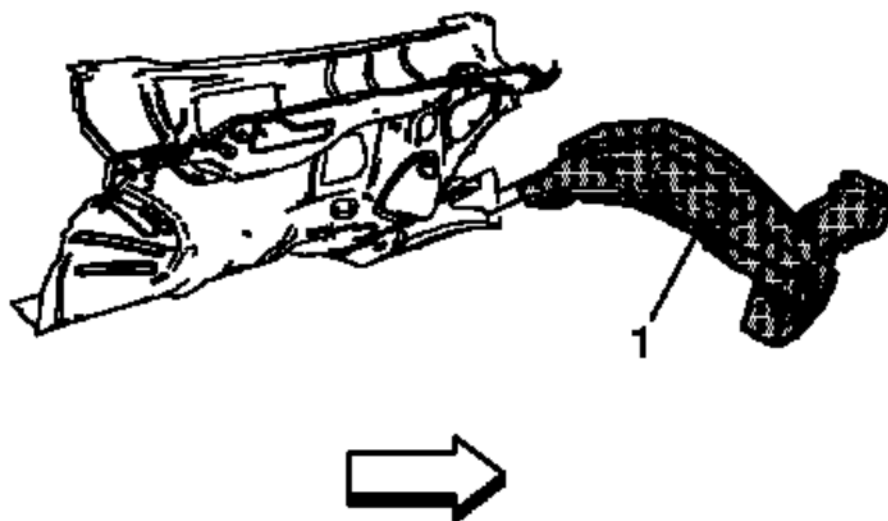


Fig. 35: Front Compartment Front Half Rail
Courtesy of GENERAL MOTORS COMPANY

9. Remove the damaged front compartment front half rail (1).

Installation Procedure

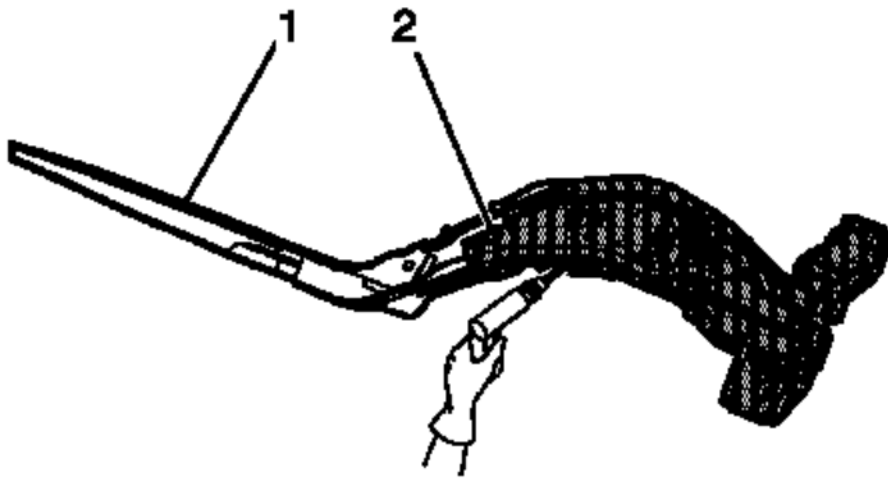


Fig. 36: Drilling Out Front Compartment Front Half Rail Factory Welds
Courtesy of GENERAL MOTORS COMPANY

1. Drill out necessary factory welds on the full service assembly (1) where the front compartment front half rail attaches (2), to the full rail service assembly.

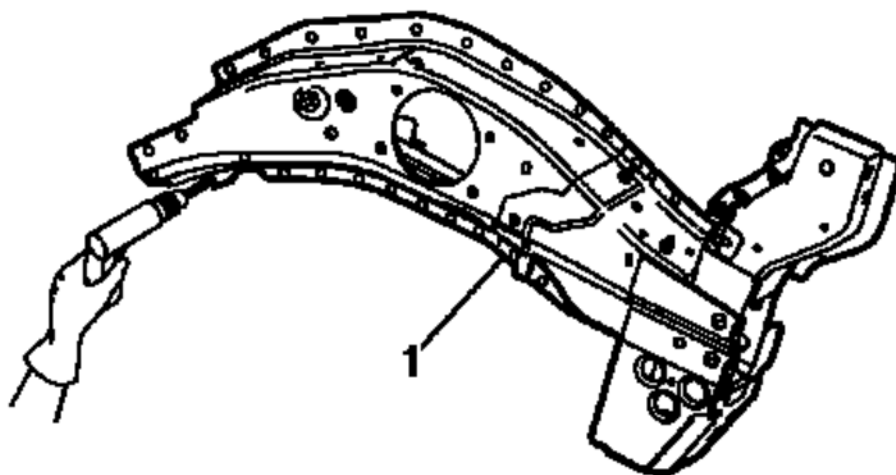


Fig. 37: Drilling Holes In Replacement Front Compartment Front Half Rail
Courtesy of GENERAL MOTORS COMPANY

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.

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

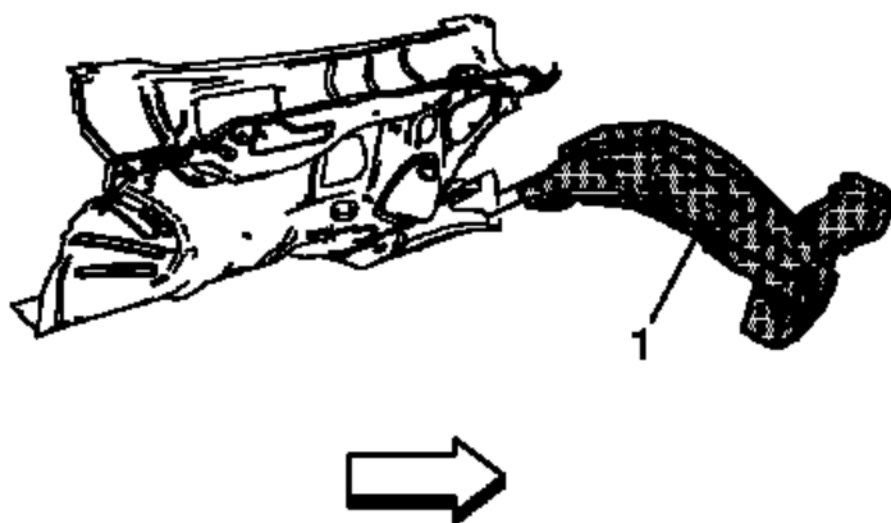


Fig. 38: Front Compartment Front Half Rail
Courtesy of GENERAL MOTORS COMPANY

6. Position the front compartment front half rail on the vehicle (1).
7. Verify the fit of the front compartment front half rail.
8. Clamp the front compartment front half rail into position.

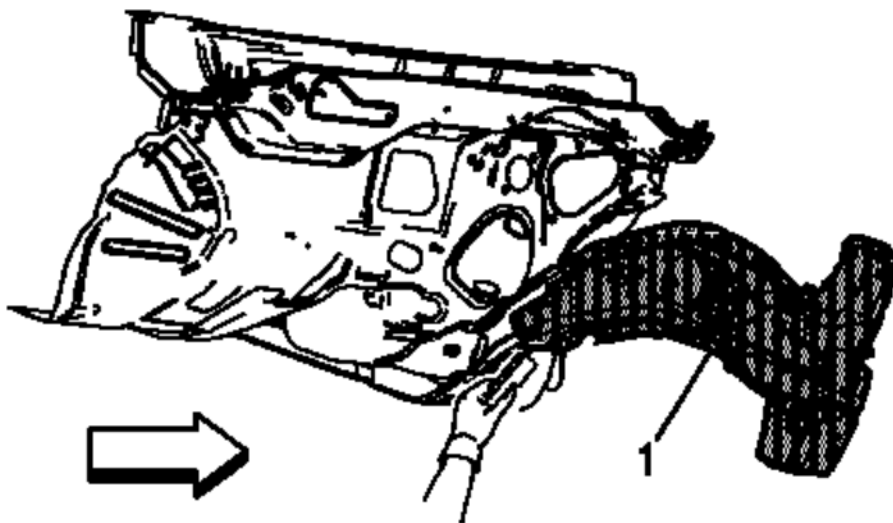


Fig. 39: Welding Front Compartment Front Half Rail
Courtesy of GENERAL MOTORS COMPANY

9. Plug weld accordingly (1).
10. Clean and prepare all of the welded surfaces.
11. Install all of the related panels and components.
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. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection** .
15. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

UNDERBODY OUTER FRONT SIDE RAIL REPLACEMENT

Removal Procedure

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

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

2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Repair as much of the damage as possible. Refer to Dimensions - Body (Sedan).
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .

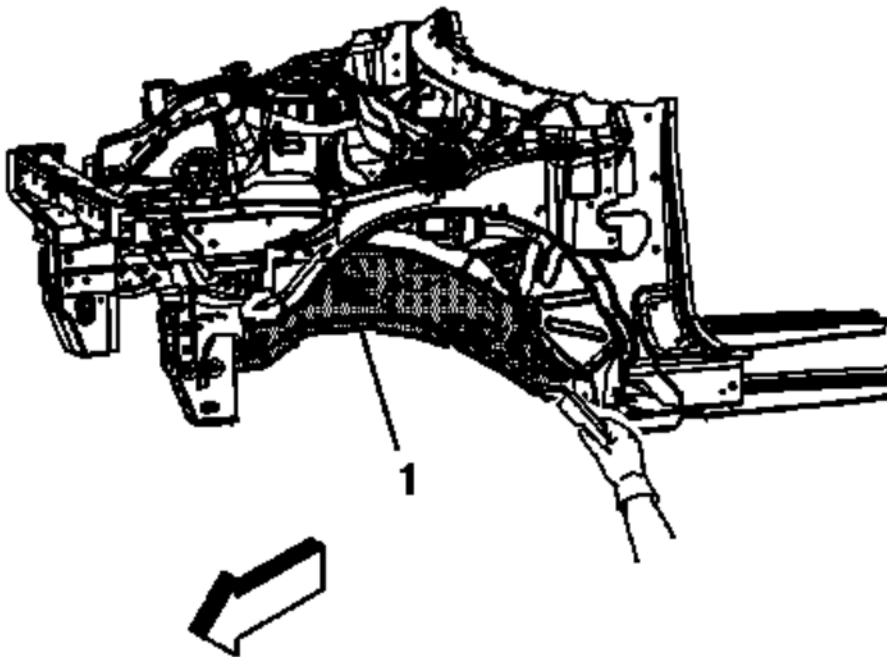


Fig. 40: Welding Outer Rail

Courtesy of GENERAL MOTORS COMPANY

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

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

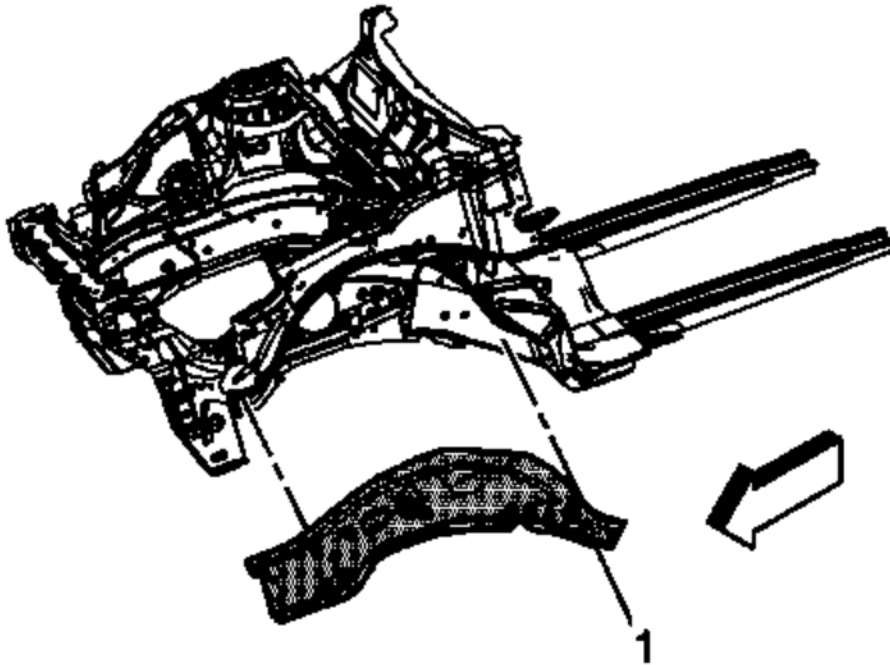


Fig. 41: Outer Rail

Courtesy of GENERAL MOTORS COMPANY

7. Remove the outer rail from the vehicle (1).

Installation Procedure

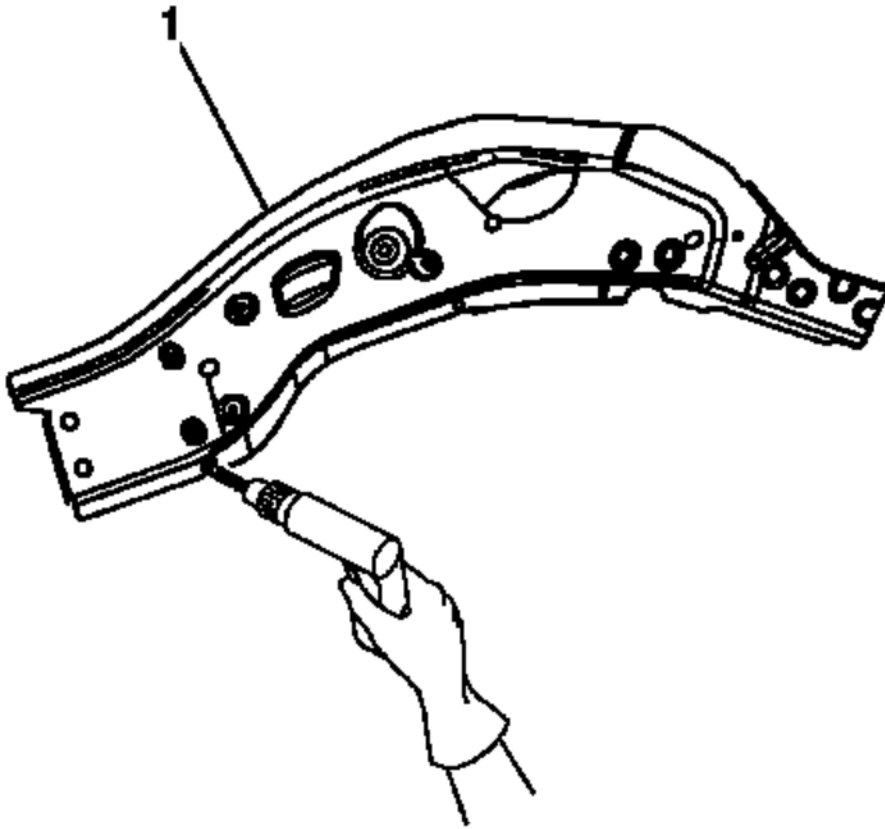


Fig. 42: Drilling Holes In New Outer Rail
Courtesy of GENERAL MOTORS COMPANY

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 locations noted from the original panel (1).
2. Prepare all mating surfaces as necessary.
3. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

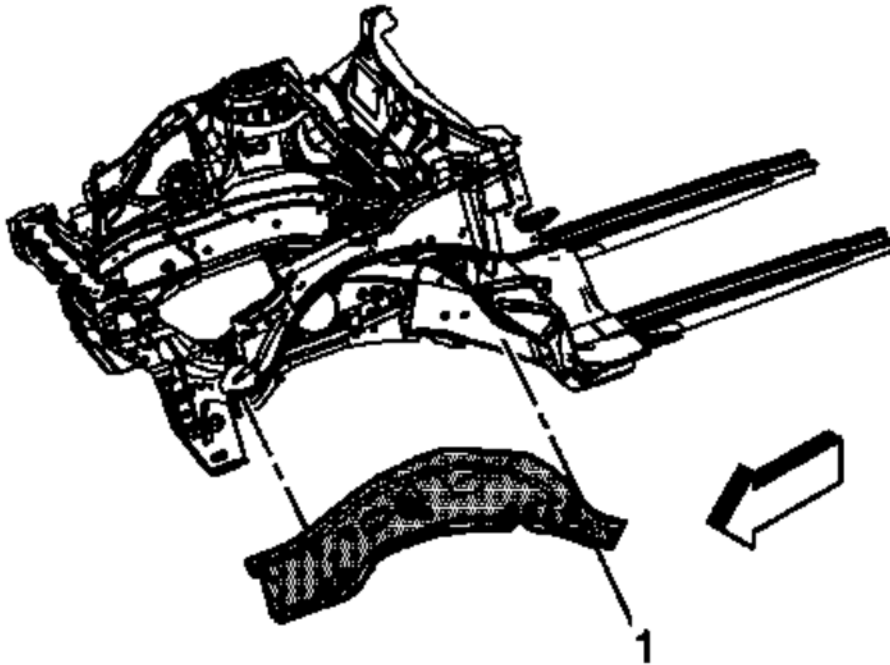


Fig. 43: Outer Rail

Courtesy of GENERAL MOTORS COMPANY

4. Position the outer rail to the vehicle using 3-dimensional measuring equipment. Clamp the outer rail in place (1).

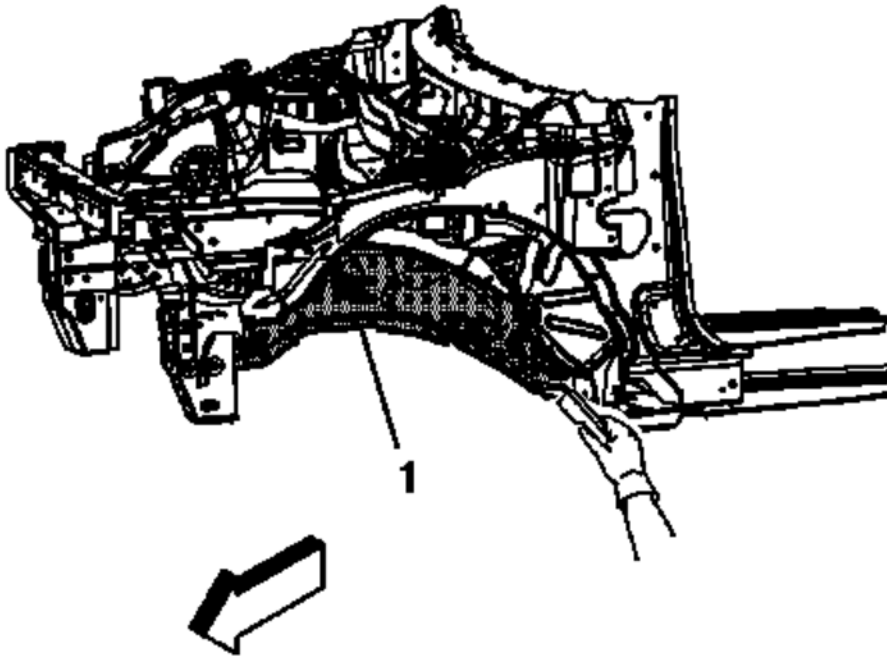


Fig. 44: Welding Outer Rail

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** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

FRONT HINGE PILLAR BODY SECTIONING (UPPER)

Removal Procedure

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

NOTE: **Sectioning should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle.**

The body side outer panels are available in one-piece side frames. You can perform any one of these replacement procedures separately or in any combination, depending upon the extent of damage to the vehicle. Stay away from the door and window opening radius areas. Perform sectioning only in straight areas of the openings.

1. Disable the SIR system. Refer to **SIR Disabling and Enabling** .
2. Disconnect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection** .
3. Remove all related panels and components.
4. Repair as much of the damaged area as possible. Refer to **Dimensions - Body (Sedan)**.
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .

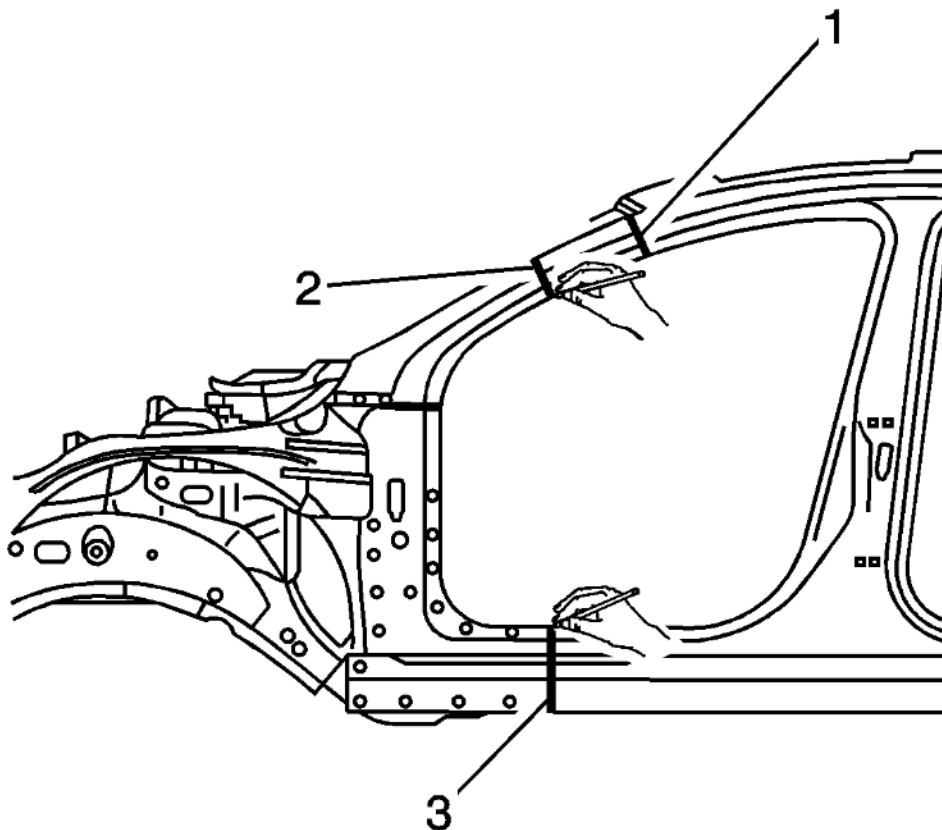


Fig. 45: Measuring And Cutting Location On Front Hinge Pillar
Courtesy of GENERAL MOTORS COMPANY

NOTE: Sectioning can be done anywhere in the straight area along the rocker panel.

6. On the "A" Pillar Measure down 300 mm from the roof edge (1). Mark this cut location on the front hinge pillar (2). Mark a cut location in the straight area on the rocker panel (3).

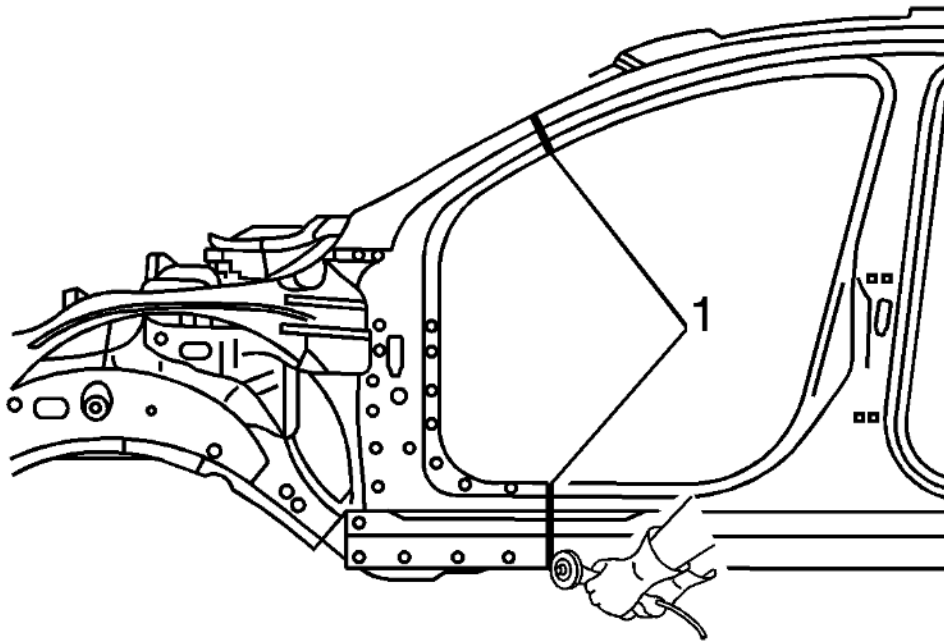


Fig. 46: Identifying Front Hinge Pillar Body Sectioning Area
Courtesy of GENERAL MOTORS COMPANY

7. Cut the front hinge pillar body where sectioning is to be performed (1).
8. Locate and mark all the necessary factory welds of the front hinge pillar body.

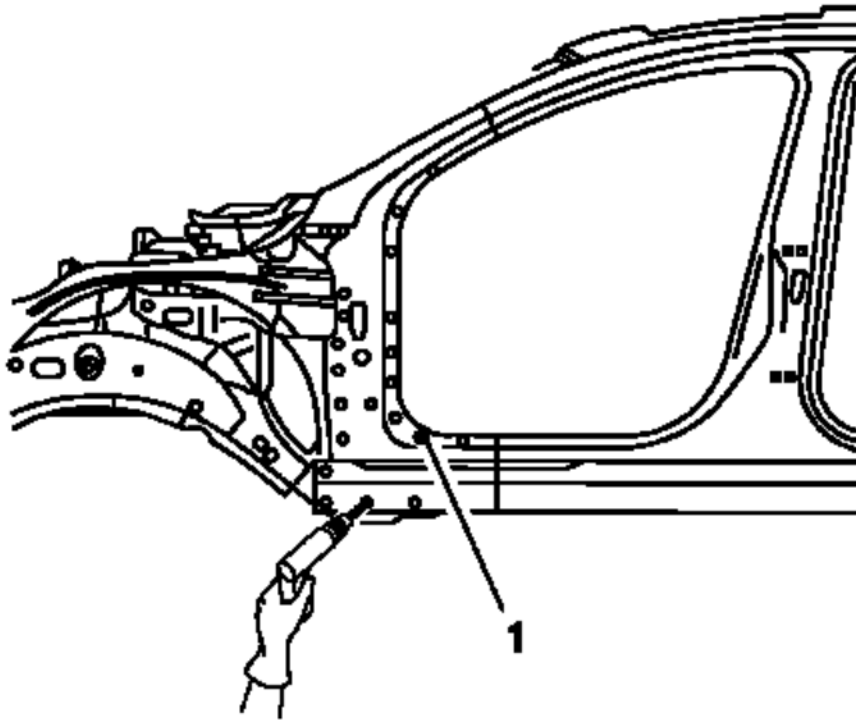


Fig. 47: Drilling Out Factory Welds
Courtesy of GENERAL MOTORS COMPANY

NOTE: Record the number and location of welds for installation of the service assembly.

9. Drill out all factory welds (1) The Upper Outer Rail will need to be removed to locate 4 hidden welds on Hinge Pillar Reinforcement.

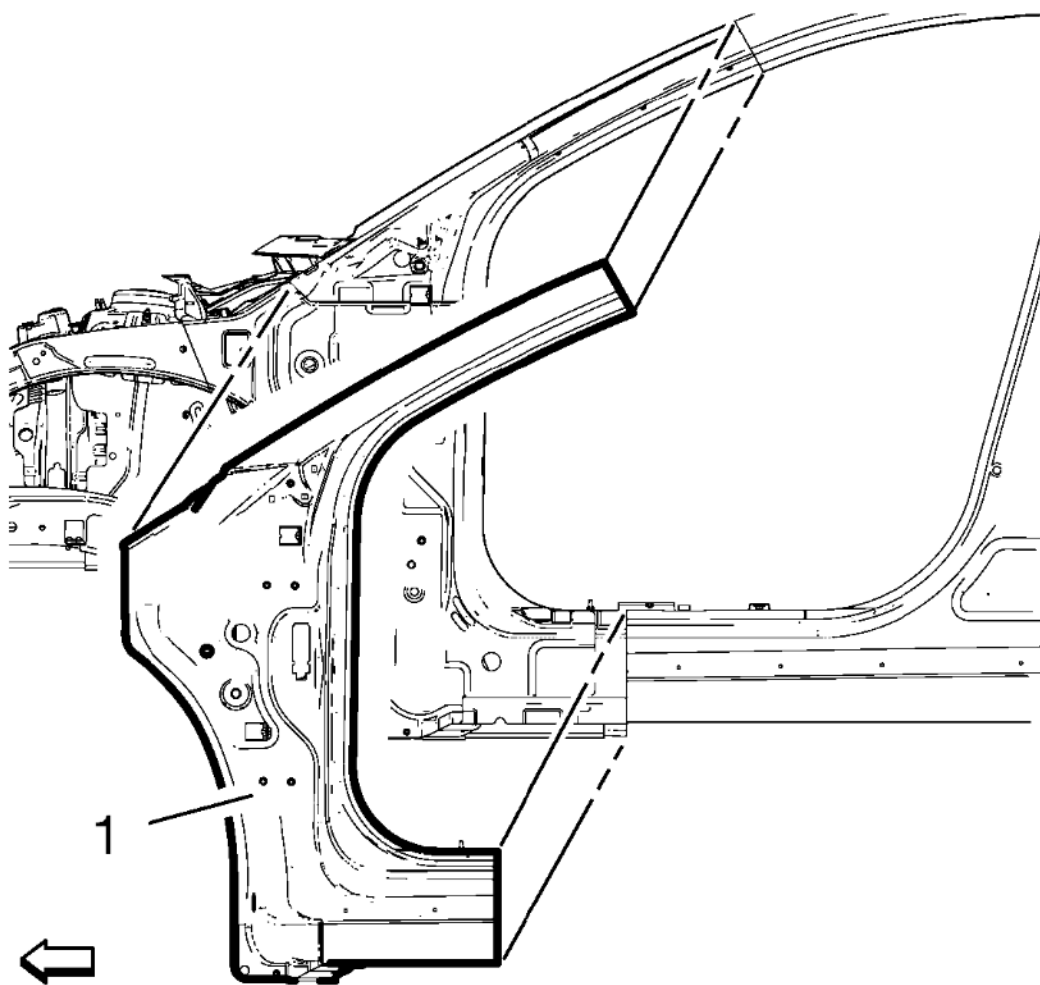


Fig. 48: Front Hinge Pillar Body
Courtesy of GENERAL MOTORS COMPANY

10. Remove the damaged front hinge pillar body (1).

Installation Procedure

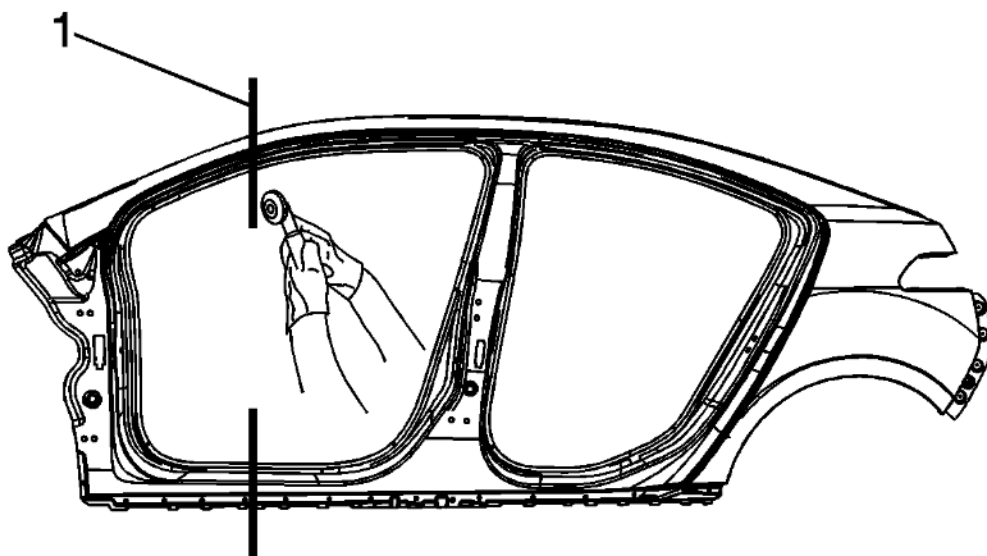


Fig. 49: Cutting Service Part In Corresponding Locations To Overlap Remaining Original Panel
Courtesy of GENERAL MOTORS COMPANY

1. From the service part, cut the panel in corresponding locations to overlap the remaining original panel by 25 mm (1 in) at each joint location (1).

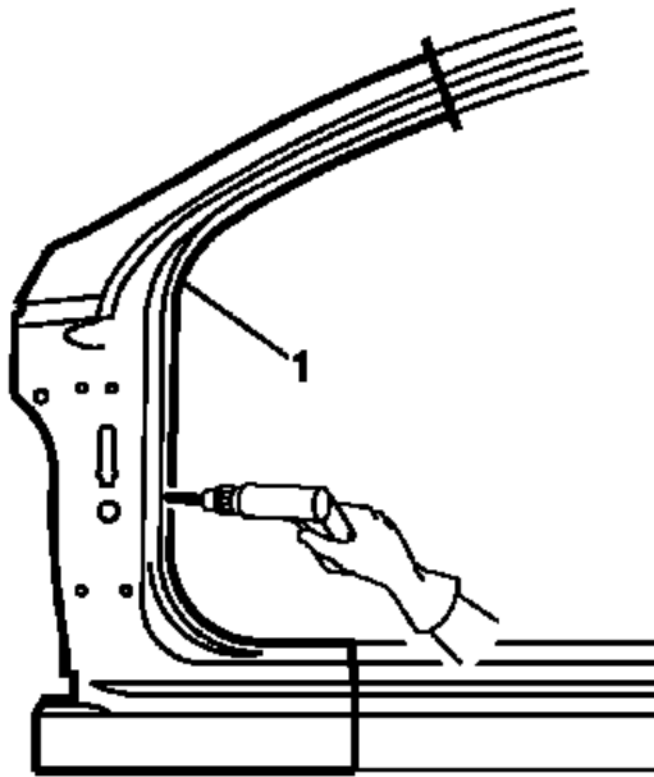


Fig. 50: Drilling 8 mm (5/16 In) Plug Weld Holes In Service Part
Courtesy of GENERAL MOTORS COMPANY

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

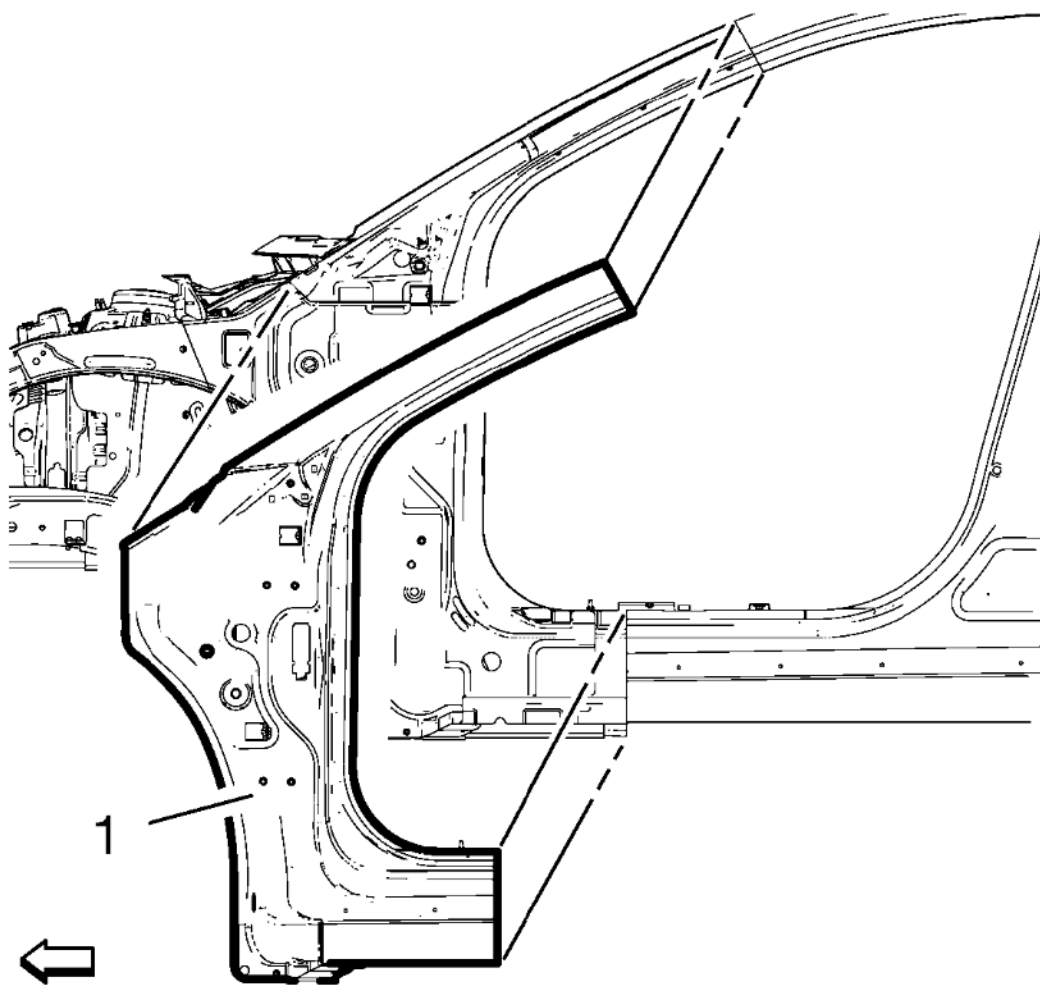


Fig. 51: Front Hinge Pillar Body

Courtesy of GENERAL MOTORS COMPANY

5. Position the outer front pillar to the vehicle using 3-dimensional measuring equipment (1). Clamp the pillar in place.

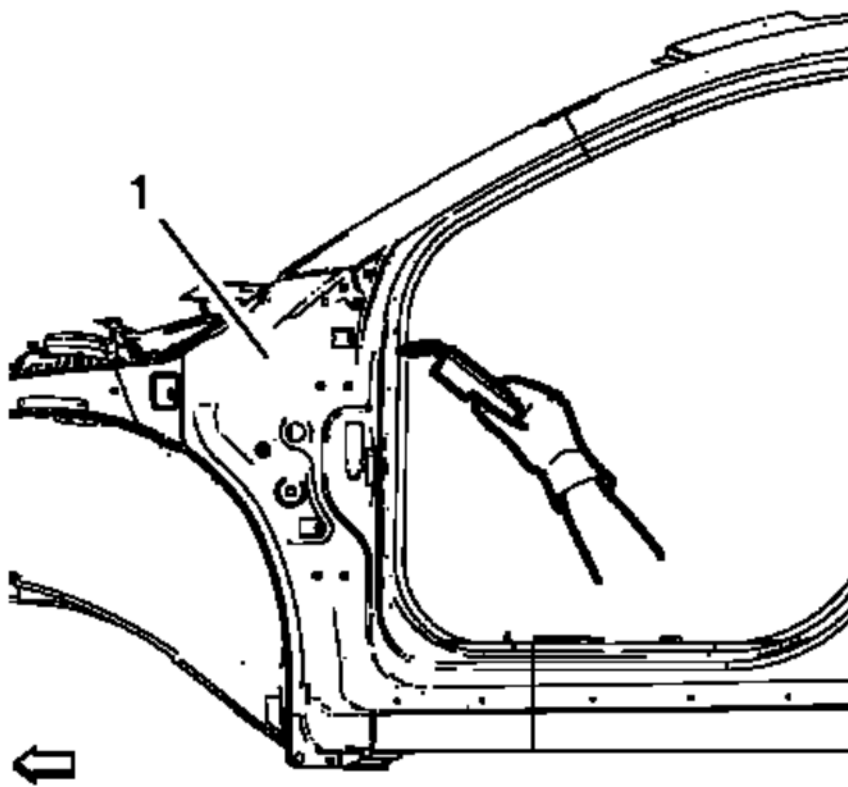


Fig. 52: Welding Front Hinge Pillar Body
Courtesy of GENERAL MOTORS COMPANY

6. Plug weld accordingly (1).

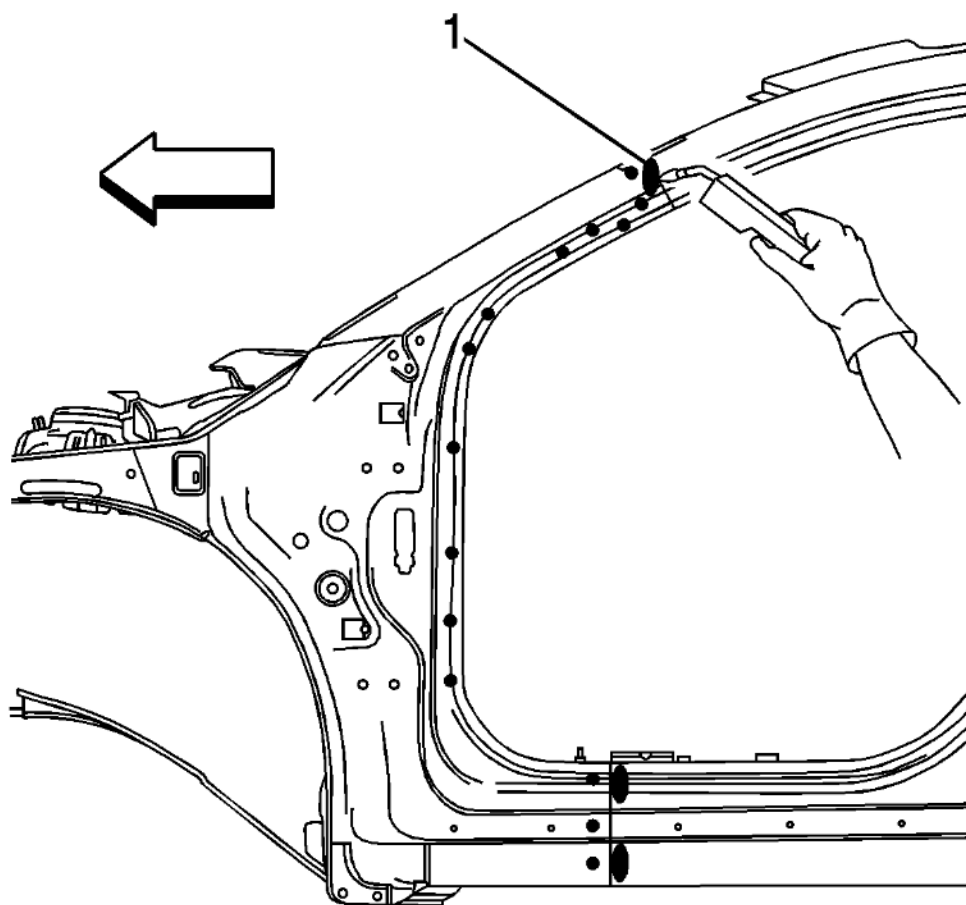


Fig. 53: Stitch Welding Joint

Courtesy of GENERAL MOTORS COMPANY

7. 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 (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**.
13. Enable the SIR system. Refer to **SIR Disabling and Enabling**.

FRONT HINGE PILLAR BODY SECTIONING (LOWER)

Removal Procedure

WARNING: Refer to Approved Equipment for Collision Repair Warning .

NOTE: **Sectioning should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle.**

The body side outer panels are available in one-piece side frames. You can perform any one of these replacement procedures separately or in any combination, depending upon the extent of damage to the vehicle. Stay away from the door and window opening radius areas. Perform sectioning only in straight areas of the openings.

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Repair as much of the damaged area as possible. Refer to Dimensions - Body (Sedan).
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .

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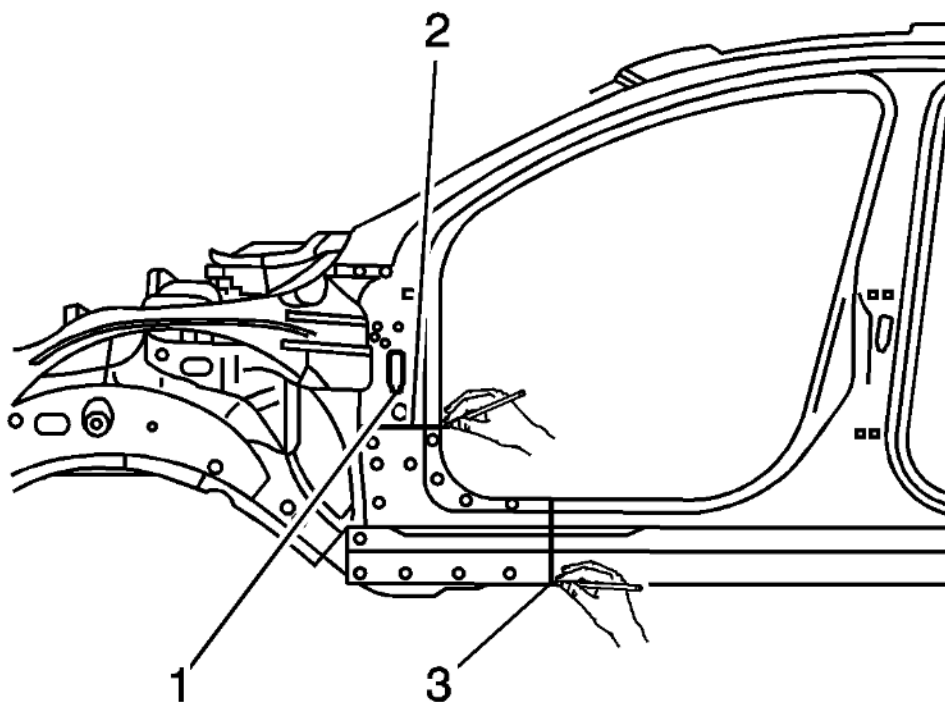


Fig. 54: Sectioning Straight Area Along Rocker Panel
Courtesy of GENERAL MOTORS COMPANY

NOTE: Sectioning can be done anywhere in the straight area along the rocker panel.

6. On the "A" Pillar Measure down 120 mm from the door wiring conduit hole lower edge (1). Mark this cut location on the front hinge pillar (2). Mark a cut location in the straight area on the rocker panel (3).

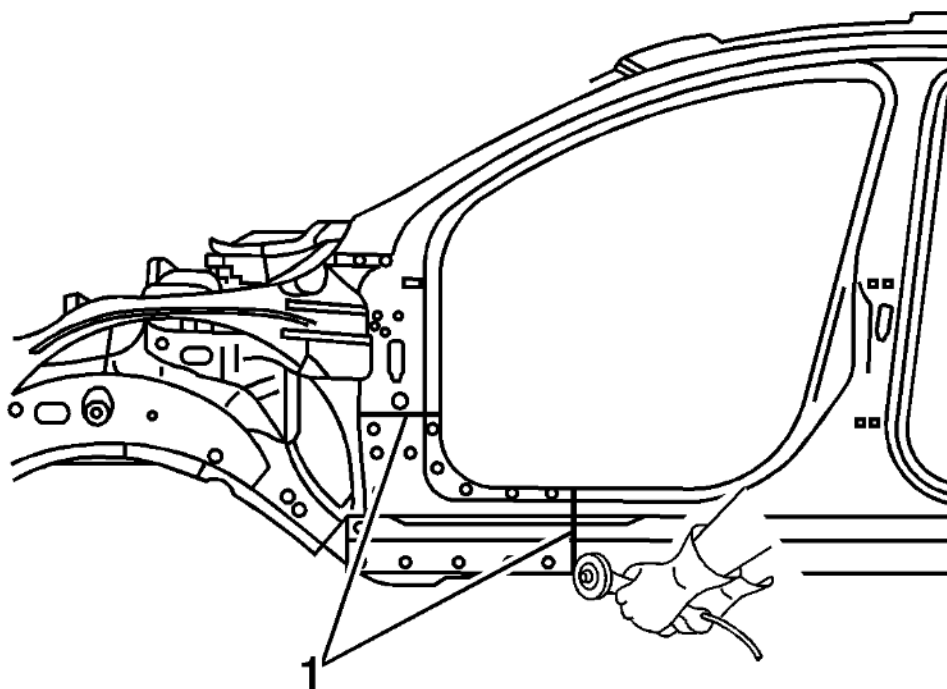


Fig. 55: Cutting Where Sectioning Is Performed
Courtesy of GENERAL MOTORS COMPANY

7. Cut the front hinge pillar body where sectioning is to be performed (1).
8. Locate and mark all the necessary factory welds of the front hinge pillar body.

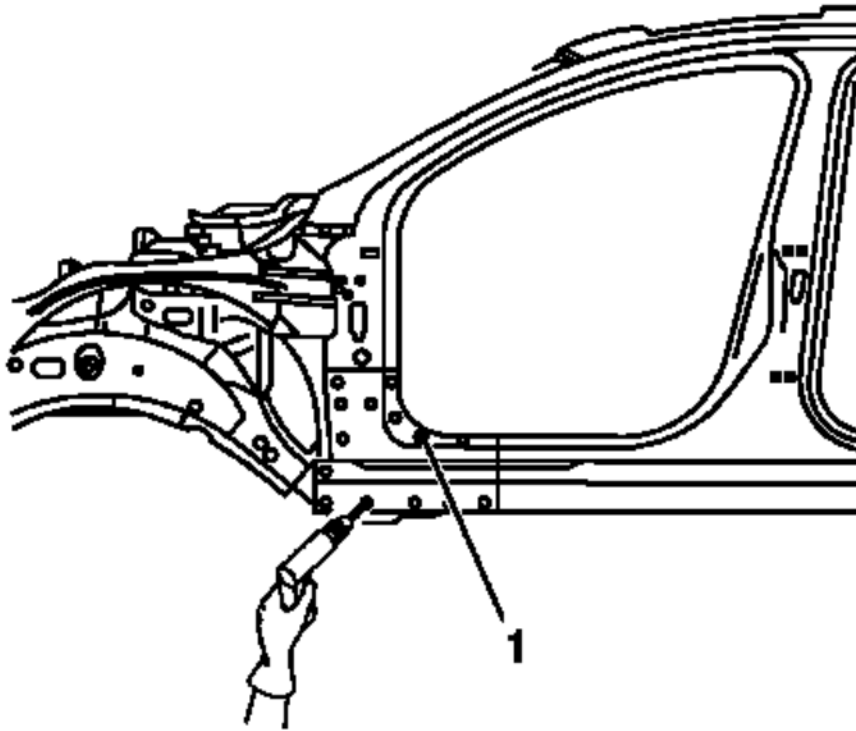


Fig. 56: Drilling Out Factory Welds
Courtesy of GENERAL MOTORS COMPANY

NOTE: Record the number and location of welds for installation of the service assembly.

9. Drill out all factory welds (1).
10. Remove the damaged front hinge pillar body.

Installation Procedure

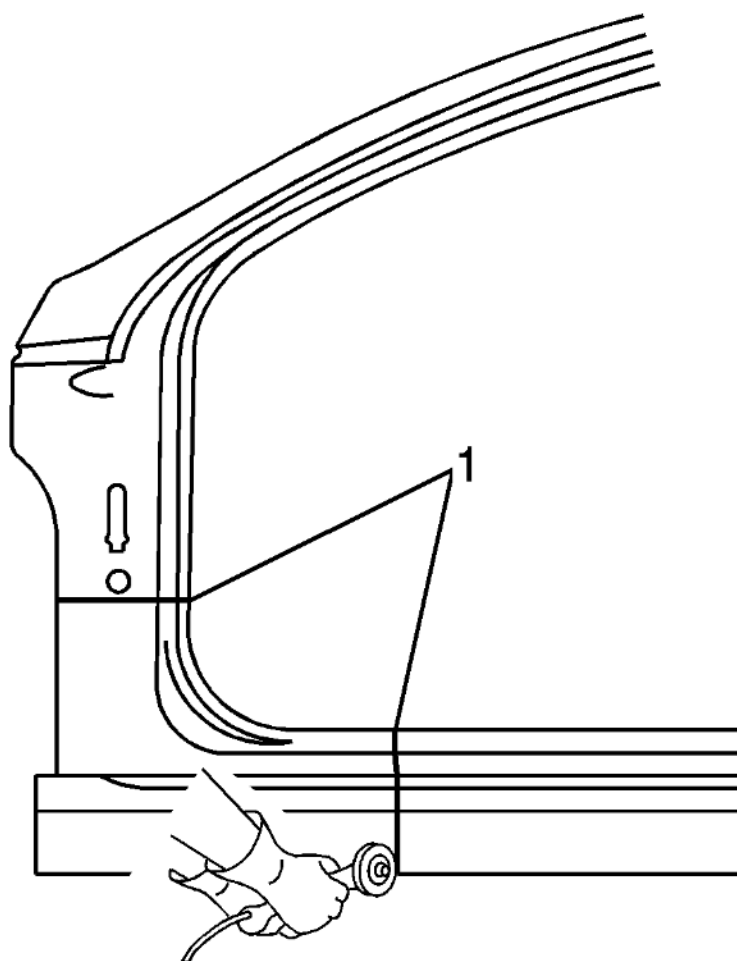


Fig. 57: Cutting Replacement Hinge Pillar
Courtesy of GENERAL MOTORS COMPANY

1. From the service part, cut the panel in corresponding locations to overlap the remaining original panel by 25 mm (1 in) at each joint location (1).

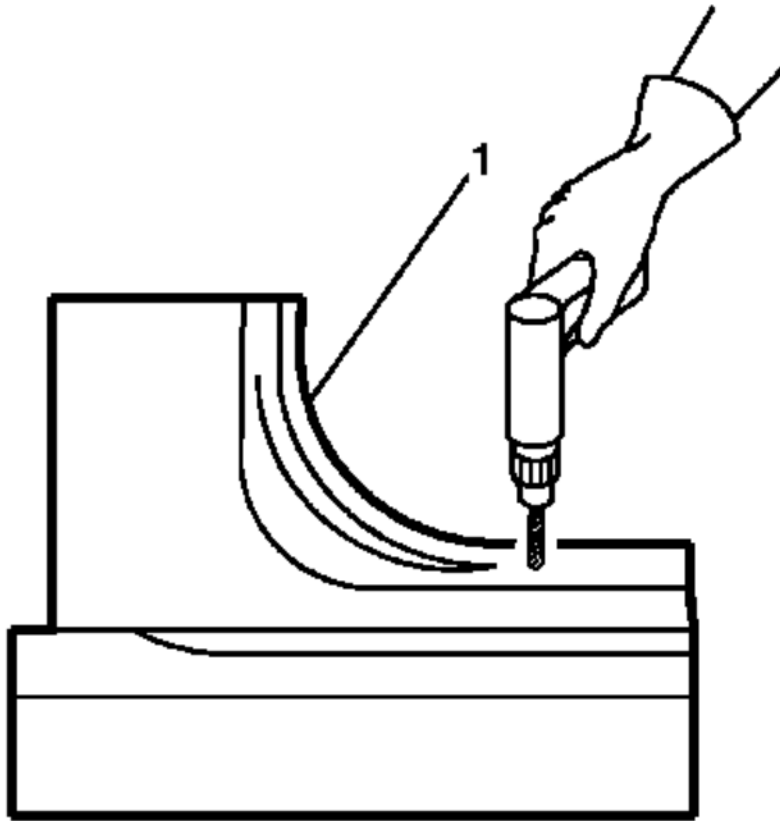


Fig. 58: Drilling Plug Weld Holes

Courtesy of GENERAL MOTORS COMPANY

2. Drill 8 mm (5/16 in) plug weld holes along the sectioning area in the service part, and at the locations noted from the original panel and along sectioned joint (1).
3. Prepare all matting surfaces as necessary.
4. Apply 3M Weld-Thru Coating P/N 05916 or equivalent to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair**.

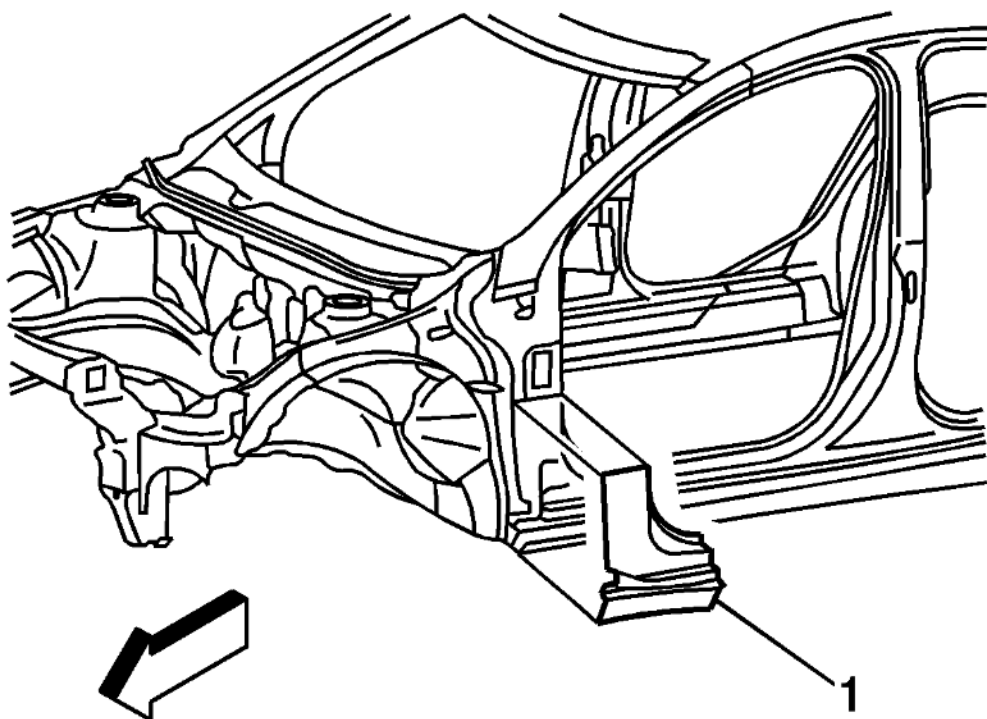


Fig. 59: View Of Outer Front Pillar
Courtesy of GENERAL MOTORS COMPANY

5. Position the outer front pillar to the vehicle using 3-dimensional measuring equipment (1). Clamp the pillar in place.

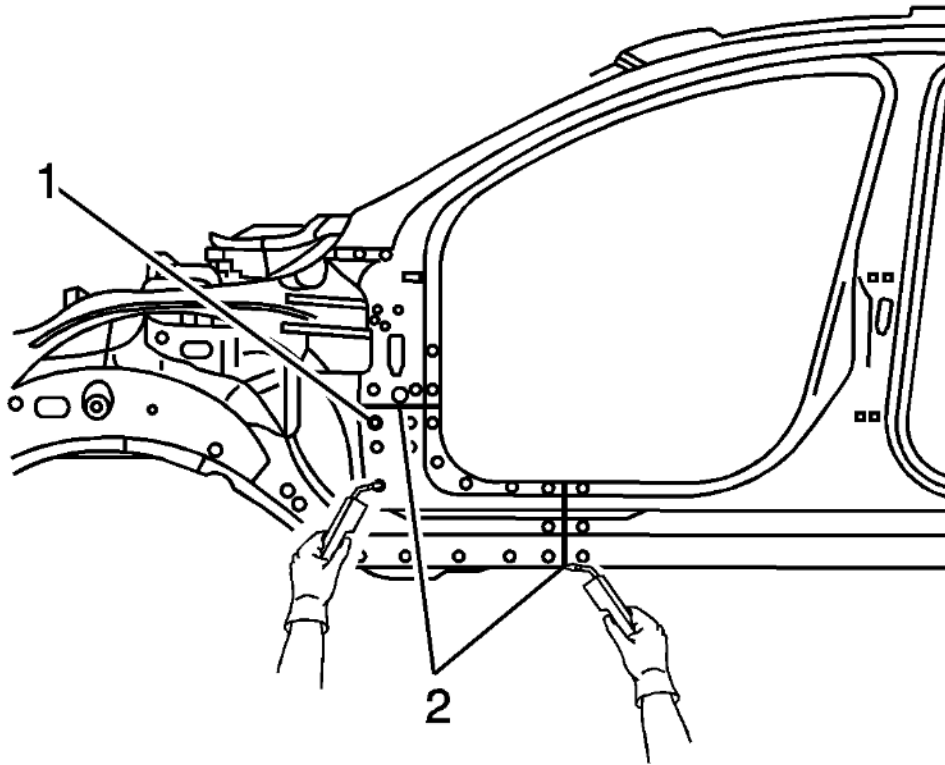


Fig. 60: Welding Outer Front Pillar
Courtesy of GENERAL MOTORS COMPANY

6. Plug weld accordingly (1).
7. To create a solid weld with minimum heat distortion, make a 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 (2).
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**.
13. Enable the SIR system. Refer to **SIR Disabling and Enabling**.

BODY HINGE PILLAR LOWER REINFORCEMENT REPLACEMENT

Removal Procedure

WARNING: Refer to Approved Equipment for Collision Repair Warning .

WARNING: Refer to Collision Sectioning Warning .

WARNING: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Remove all related panels and components.
3. Visually inspect the damage. Repair as much of the damage as possible.
4. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
5. Section body side outer-hinge pillar area. Refer to Front Hinge Pillar Body Sectioning (Upper), Front Hinge Pillar Body Sectioning (Lower).

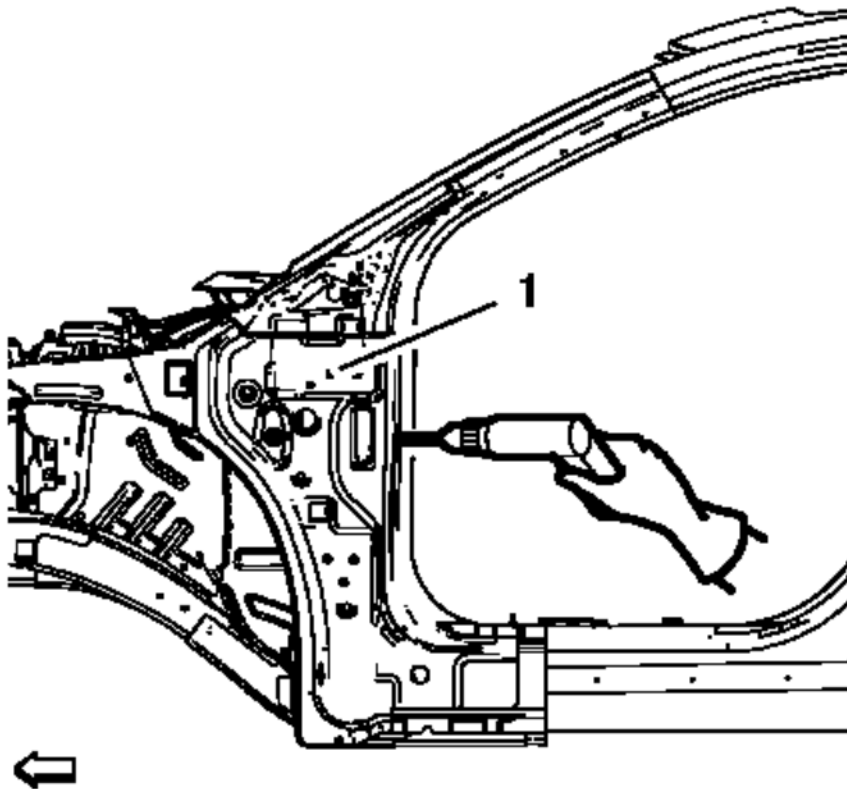


Fig. 61: Drilling Factory Welds Of Body Hinge Pillar Lower Reinforcement
Courtesy of GENERAL MOTORS COMPANY

6. Locate and mark all the necessary factory welds of the body hinge pillar lower reinforcement (1).
7. Drill all factory welds. Note the number and location of welds for installation of the service assembly.

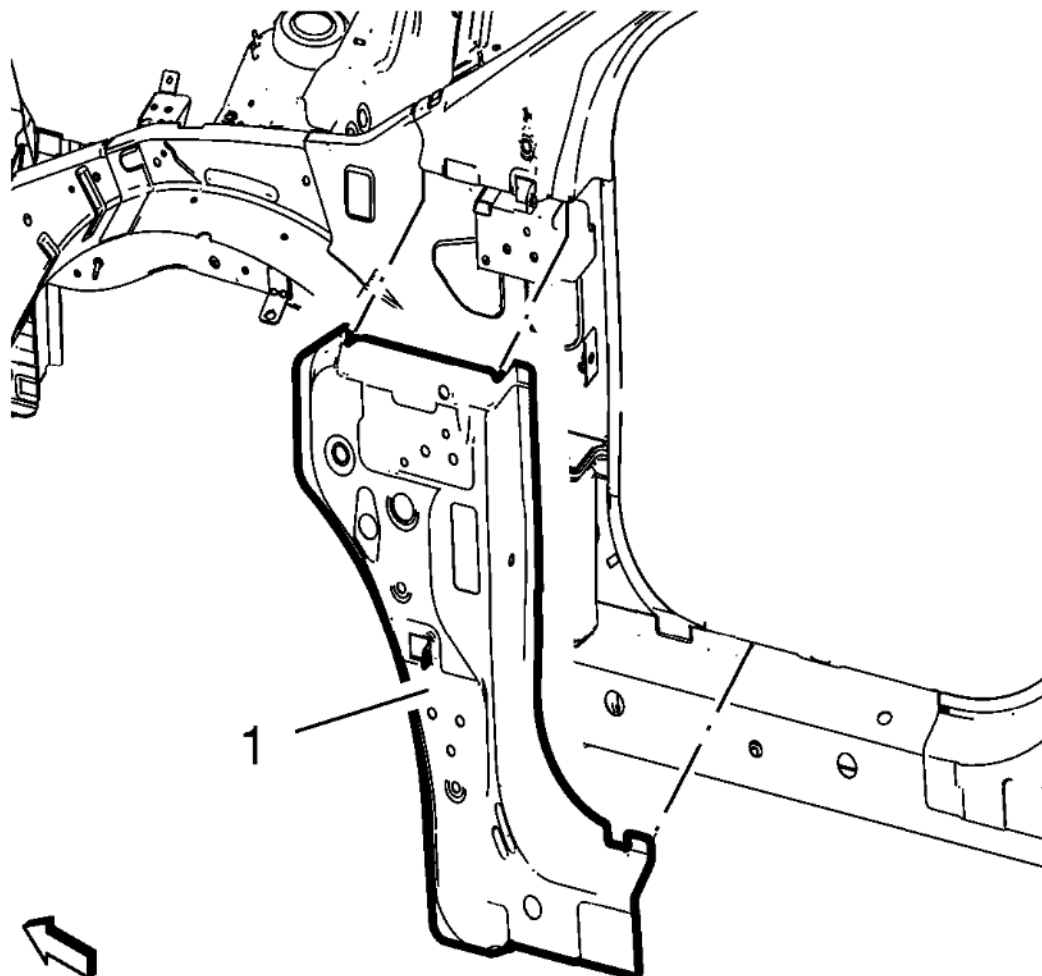


Fig. 62: Body Hinge Pillar Lower Reinforcement
Courtesy of GENERAL MOTORS COMPANY

8. Remove the damaged body hinge pillar lower reinforcement (1).

Installation Procedure

1. Prepare all mating surfaces as necessary.

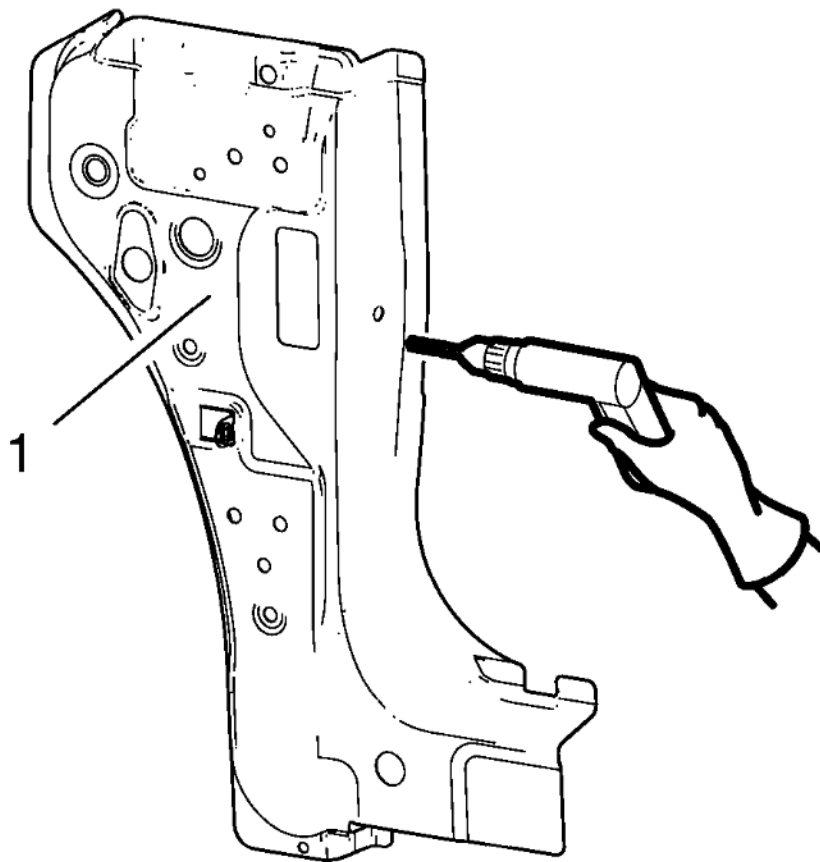


Fig. 63: Drilling Hole For Plug Welding Body Hinge Pillar Lower Reinforcement
Courtesy of GENERAL MOTORS COMPANY

2. Drill 8 mm (5/16 in) for plug welding along the edges of the body hinge pillar lower reinforcement (1) as noted from the original panel.
3. Clean and prepare the attaching surfaces for welding.

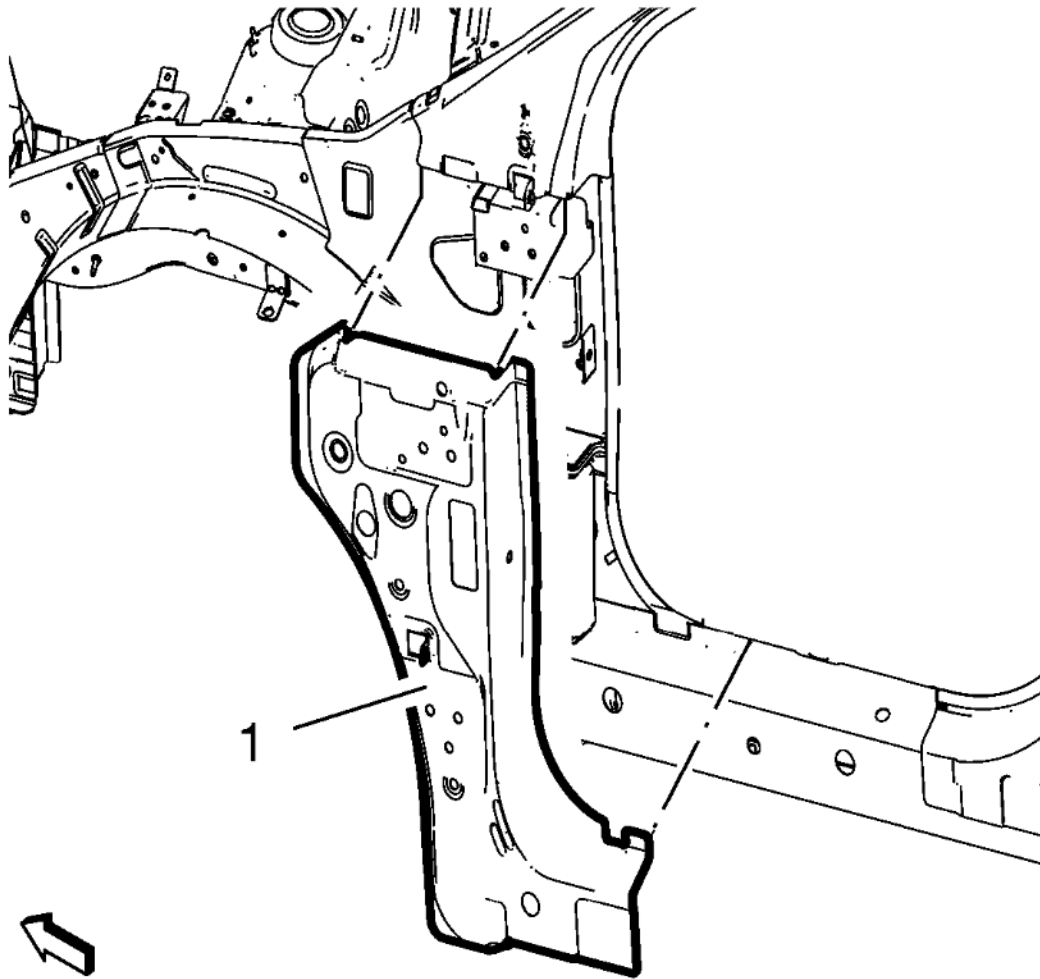


Fig. 64: Body Hinge Pillar Lower Reinforcement
Courtesy of GENERAL MOTORS COMPANY

4. Position the body hinge pillar lower reinforcement (1) on the vehicle.
5. Verify the fit of the body hinge pillar lower reinforcement.
6. Clamp the body hinge pillar lower reinforcement into position.

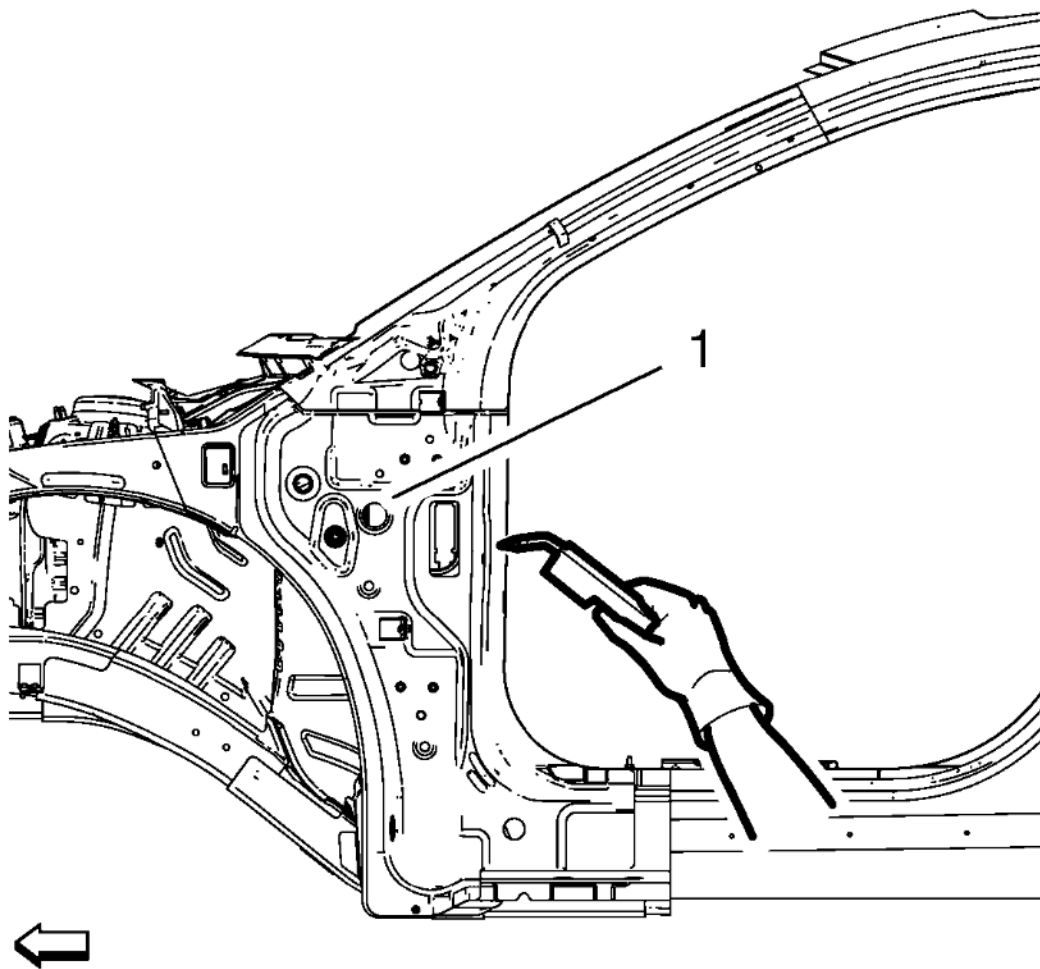


Fig. 65: Welding Body Hinge Pillar Lower Reinforcement
 Courtesy of GENERAL MOTORS COMPANY

7. Plug weld the body hinge pillar lower reinforcement (1) accordingly.
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair**.
9. Install the bodyside outer hinge pillar section. Refer to **Front Hinge Pillar Body Sectioning (Upper)**, **Front Hinge Pillar Body Sectioning (Lower)**.
10. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems**.
11. Install all related panels and components.
12. Enable the SIR system. Refer to **SIR Disabling and Enabling**.

ROOF OUTER PANEL REPLACEMENT (SEDAN)

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 .
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.

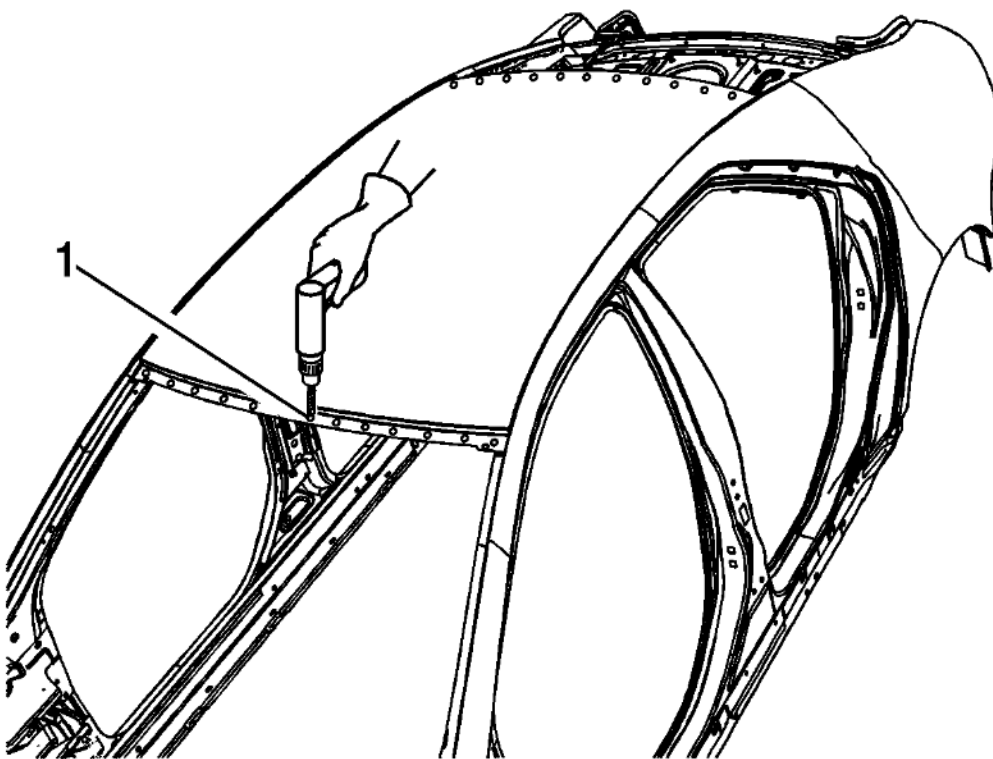


Fig. 66: Drilling Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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

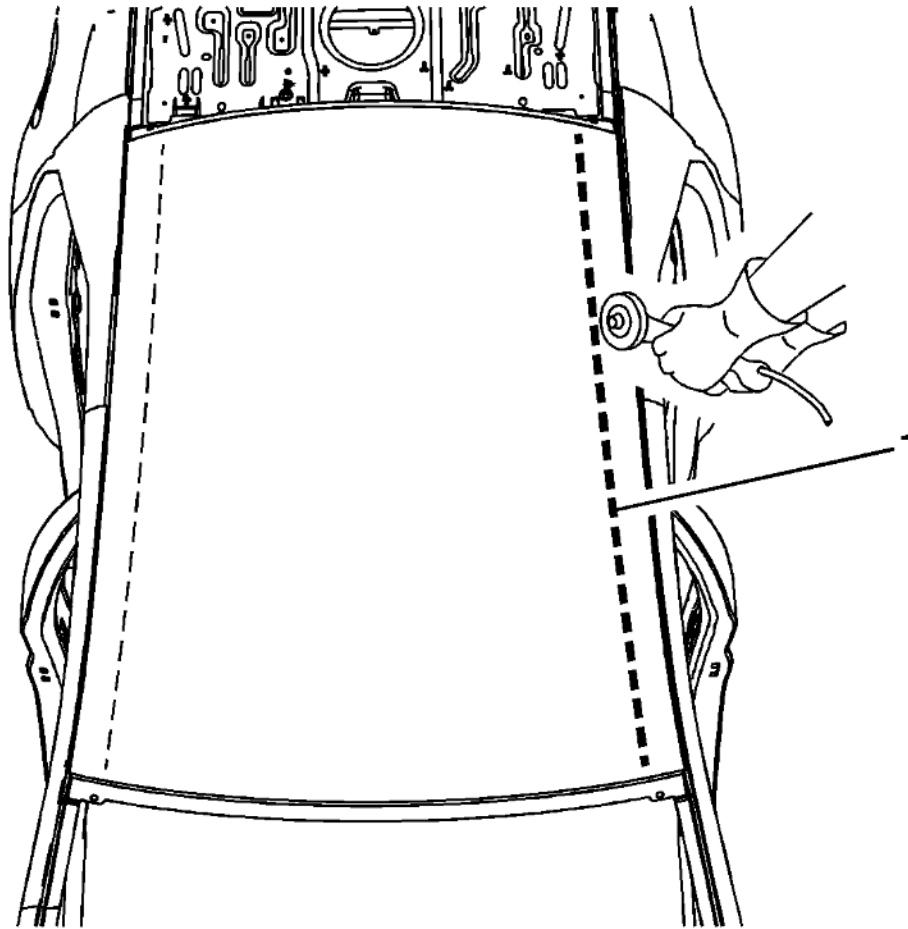


Fig. 67: Cutting Panel 30 mm Inboard Of Roof Edge
Courtesy of GENERAL MOTORS COMPANY

8. On the side rail area of the roof use a cut off wheel or equivalent to cut the panel 30 mm inboard of the roof edge (1).
9. Remove the center portion of the panel.

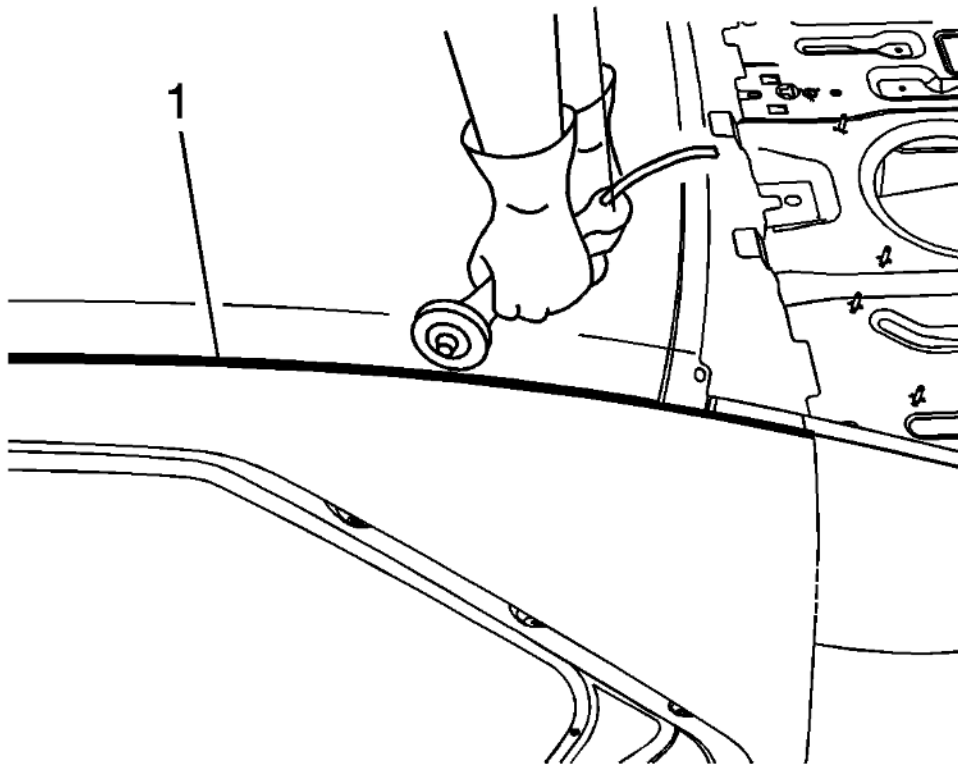


Fig. 68: Grinding Out MIG Braze Joint
Courtesy of GENERAL MOTORS COMPANY

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

Installation Procedure

1. Dry fit the service panel to the vehicle.

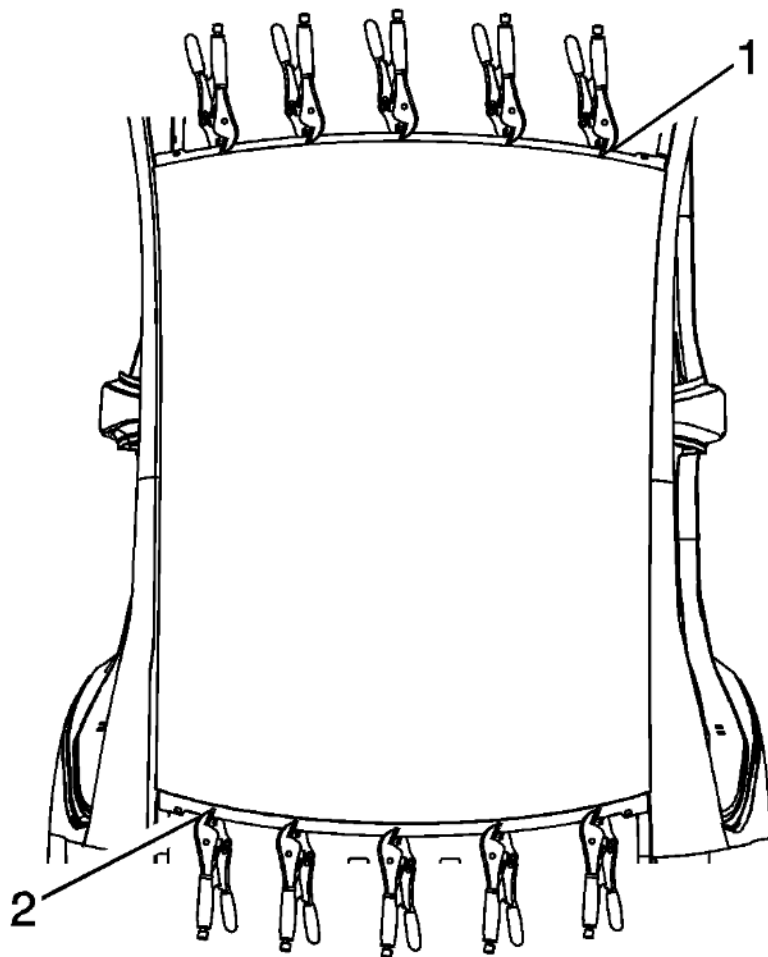


Fig. 69: Clamping Panel Into Position
Courtesy of GENERAL MOTORS COMPANY

2. Clamp the panel into position in the rear window opening (1). Adjust the bow of the roof front to rear. Clamp in place in the windshield opening area (2).

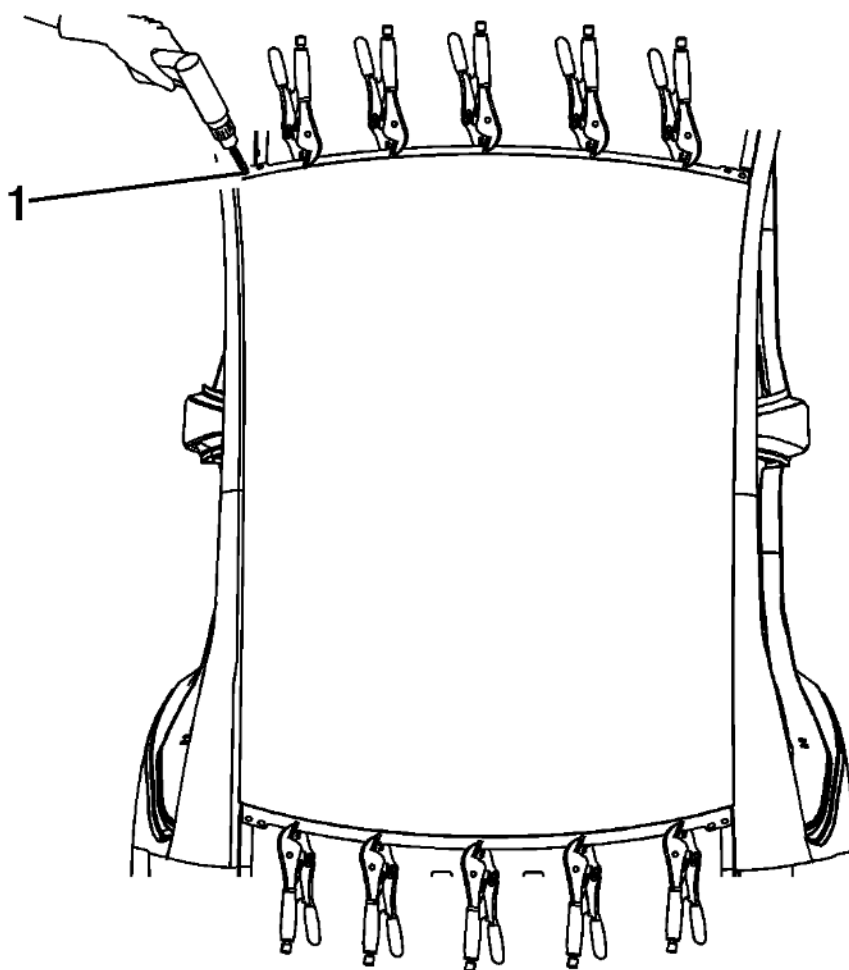


Fig. 70: Drilling 3.2 mm (1/8 in) Hole In Each Corner Of Panel
Courtesy of GENERAL MOTORS COMPANY

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 (1).
4. Remove the service panel from the vehicle.

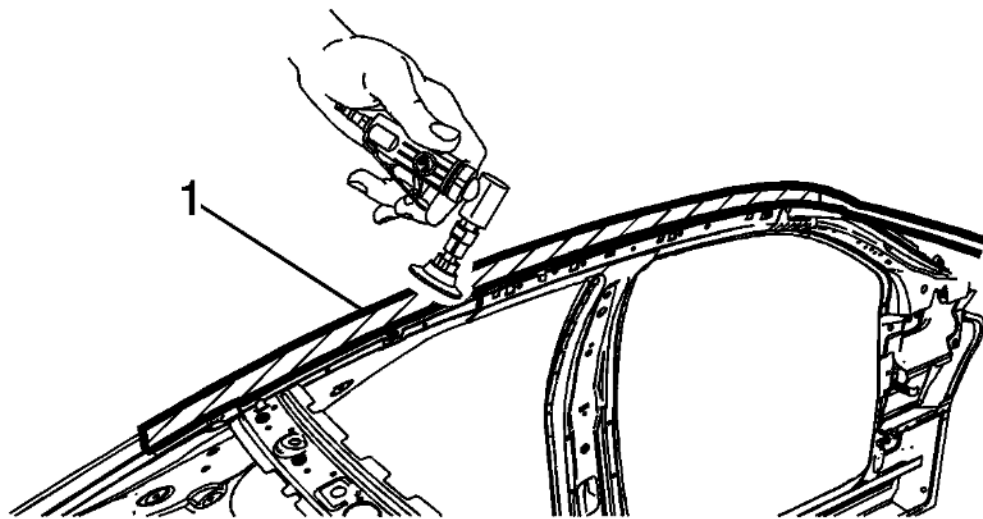


Fig. 71: Preparing Roof Rail Area With Abrasive Wheel
Courtesy of GENERAL MOTORS COMPANY

5. Prepare the roof rail area of the vehicle with a Rol-lock abrasive wheel or equivalent (1).
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 manufacturers preparation instructions.

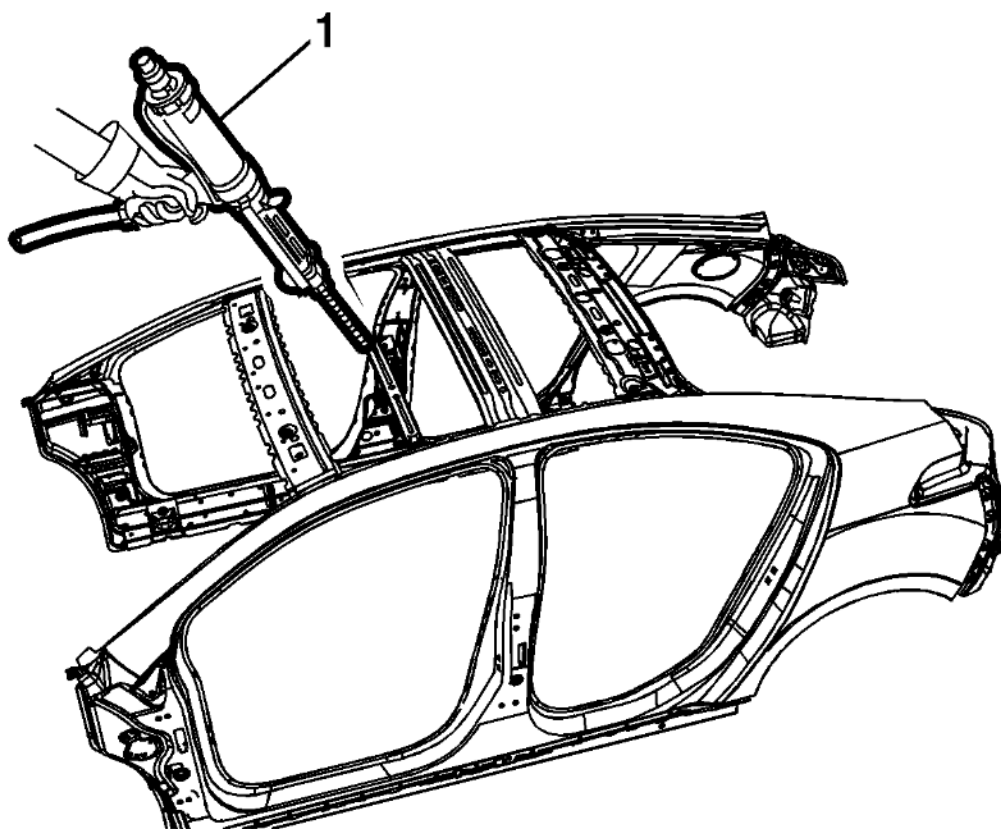


Fig. 72: Applying Fusor Super Flexible Anti-Flutter Foam Fast Set
Courtesy of GENERAL MOTORS COMPANY

8. Apply Fusor super flexible anti-flutter foam fast set (1), or equivalent, to the roof bows in the locations noted from the original panel.

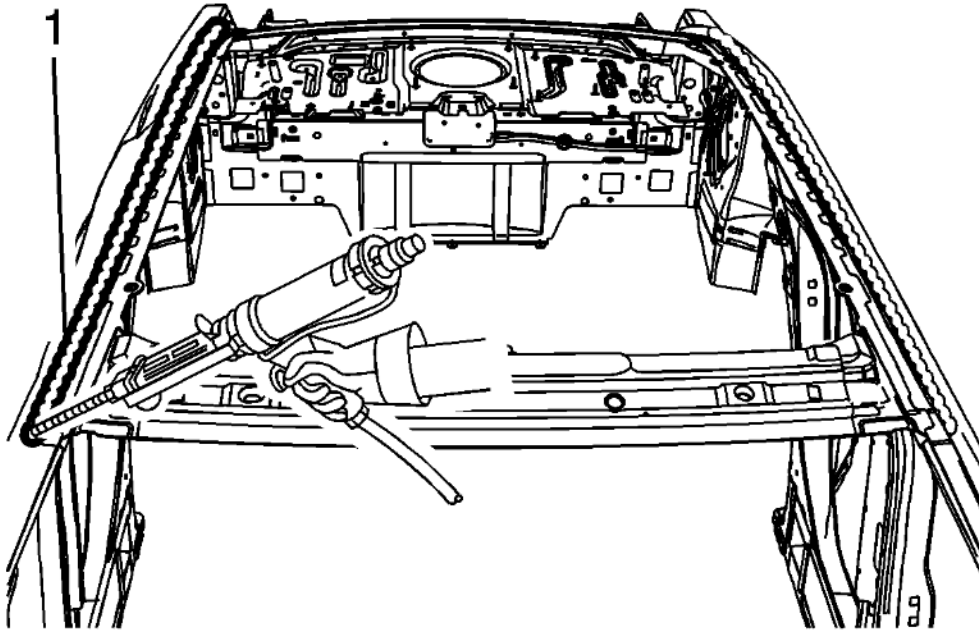


Fig. 73: Applying Bead Of Metal Panel Bonding Adhesive
Courtesy of GENERAL MOTORS COMPANY

9. Apply a 12 mm (1/2 in) bead of metal panel bonding adhesive **Metal Panel Bonding** to the left and right roof rails (1).
10. With the help of a second person lower the service panel straight down onto the vehicle.

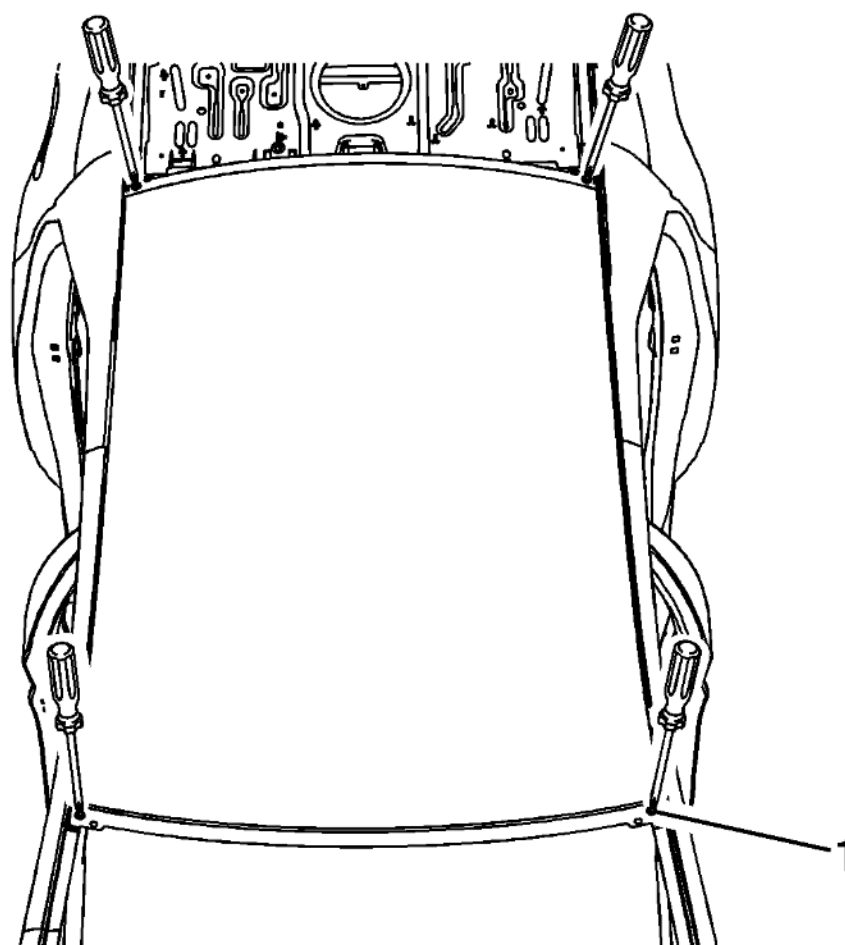


Fig. 74: Aligning Roof Panel With Awls
Courtesy of GENERAL MOTORS COMPANY

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 (1).
12. Clamp the roof in place in the front and rear window openings.
13. Clean up the excess urethane from the surface.

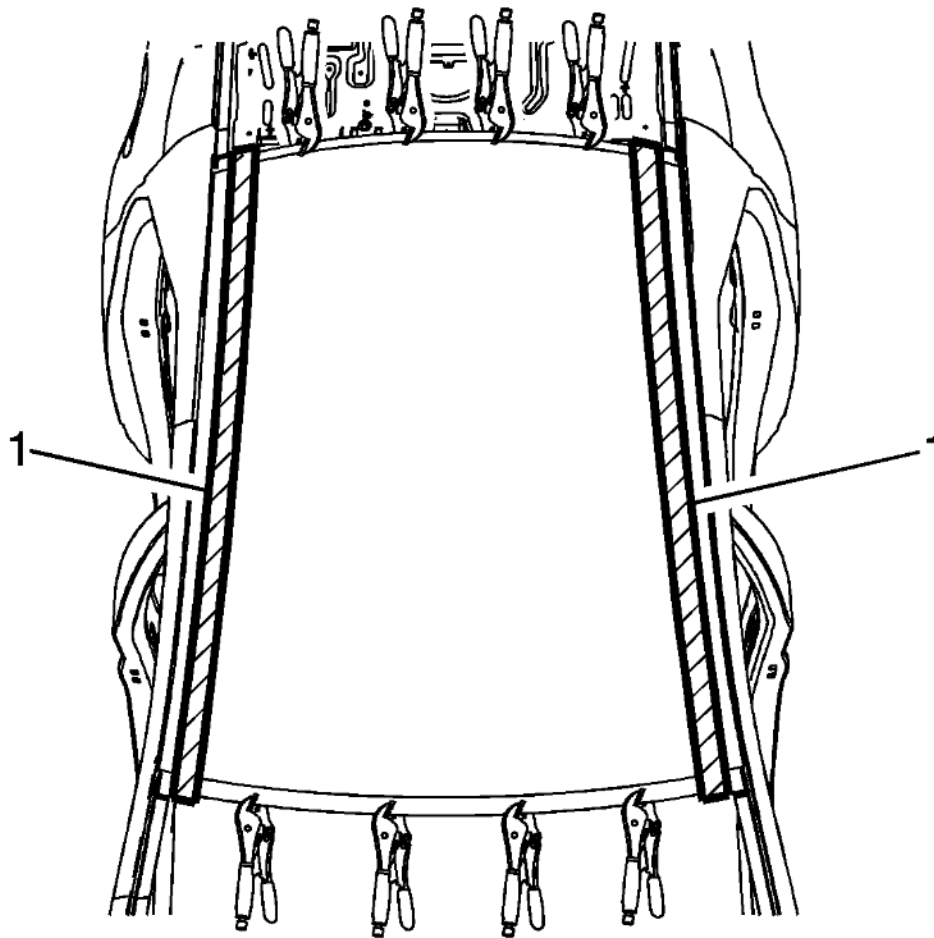


Fig. 75: Installing 25 mm (1 in) Wide Ratchet Strap Across Roof
Courtesy of GENERAL MOTORS COMPANY

14. 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.

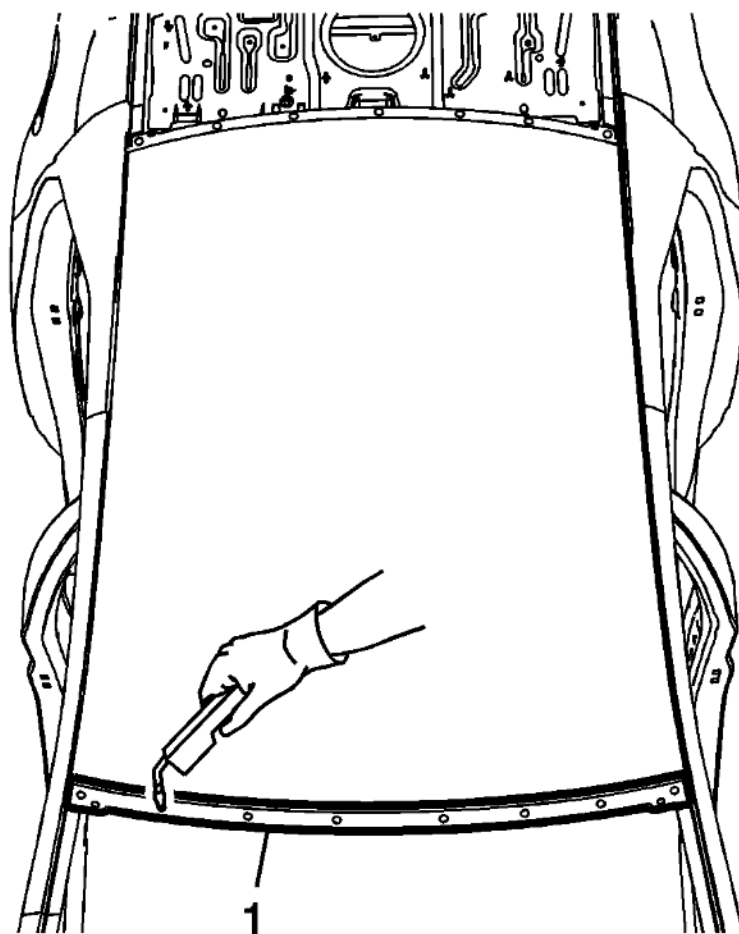


Fig. 76: Plug Weldding Panel

Courtesy of GENERAL MOTORS COMPANY

16. Plug weld accordingly (1). 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** .
22. Enable the SIR system. Refer to **SIR Disabling and Enabling**

ROCKER INNER PANEL REINFORCEMENT REPLACEMENT

Removal Procedure

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

2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.

WARNING: Refer to Approved Equipment for Collision Repair Warning .

NOTE: 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 as necessary. Refer to Anti-Corrosion Treatment and Repair .

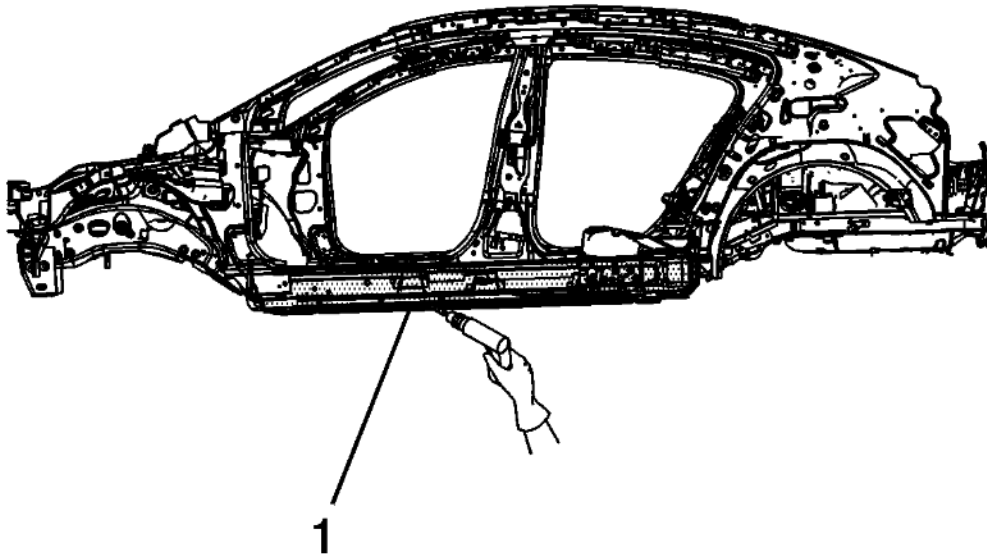


Fig. 77: Drilling Rocker Inner Panel Reinforcement Factory Welds
Courtesy of GENERAL MOTORS COMPANY

NOTE: The inner reinforcement is a high strength steel and cannot be sectioned

or altered.

5. Drill out factory welds (1).

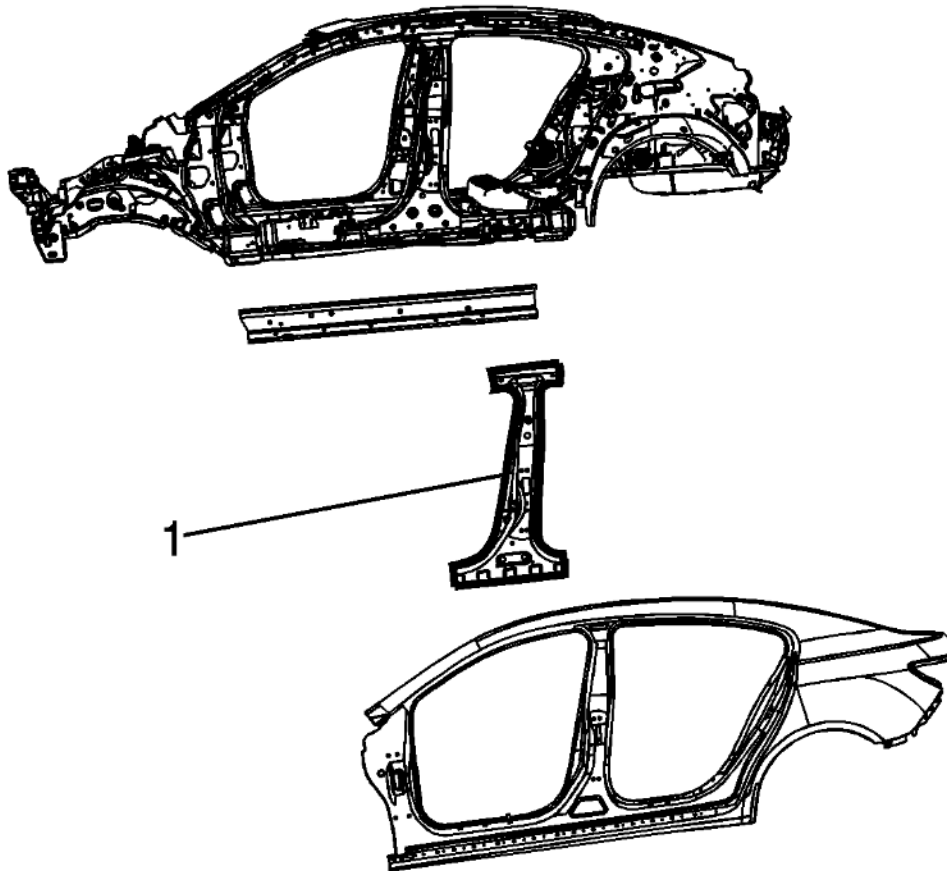


Fig. 78: Center Pillar Reinforcement
Courtesy of GENERAL MOTORS COMPANY

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

6. After the body side outer panel is removed to gain access to rocker, the center pillar reinforcement must be removed (1).

Installation Procedure

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

1. Prepare the mating surfaces as necessary.
2. Apply GM approved weld-thru coating or equivalent. Refer to **Anti-Corrosion Treatment and Repair** .
3. Position the rocker reinforcement in place, use 3-dimensional measuring equipment, clamp in place.

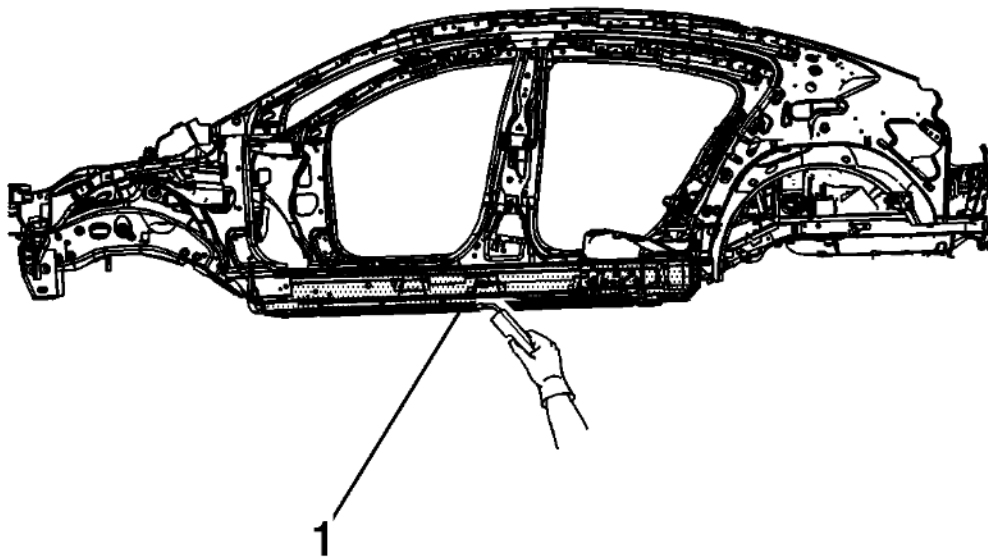


Fig. 79: Welding Rocker Reinforcement
Courtesy of GENERAL MOTORS COMPANY

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

ROCKER OUTER PANEL SECTIONING

NOTE: According to different corrosion warranties, only the regional mandatory joining methods are allowed.

Removal Procedure

WARNING: Refer to Approved Equipment for Collision Repair Warning .

WARNING: Refer to Collision Sectioning Warning .

WARNING: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. 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 .

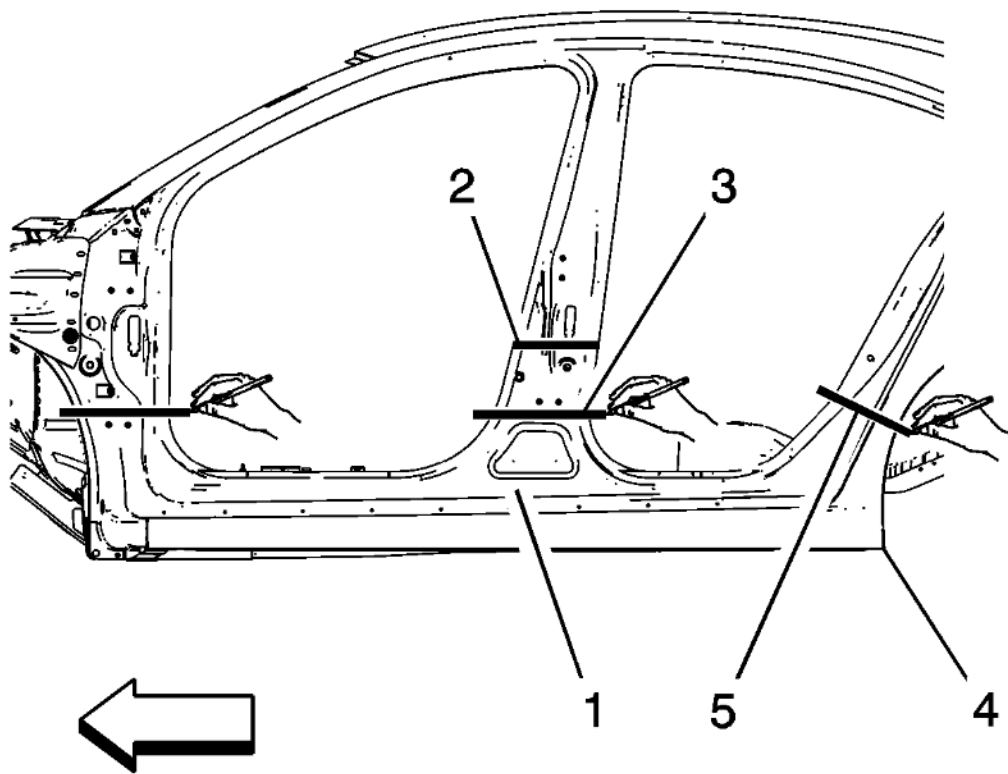


Fig. 80: Rocker Panel Cut Lines

Courtesy of GENERAL MOTORS COMPANY

6. Create cut lines on the rocker outer panel (1). To avoid cutting into hidden reinforcements within the center pillar panel, measure 115 mm down from bottom of electrical conduit hole (2), mark a cut line (3). To avoid a cutting into a sound deadener baffle within the lock pillar panel, measure 350 mm up from the bottom of the rocker panel (4), mark a cut line (5).
7. Perform additional sectioning procedures as needed depending on damage to vehicle. Refer to **Quarter Outer Panel Sectioning**, **Front Hinge Pillar Body Sectioning (Upper)**, **Front Hinge Pillar Body Sectioning (Lower)**, or **Center Pillar Sectioning - Outer**.

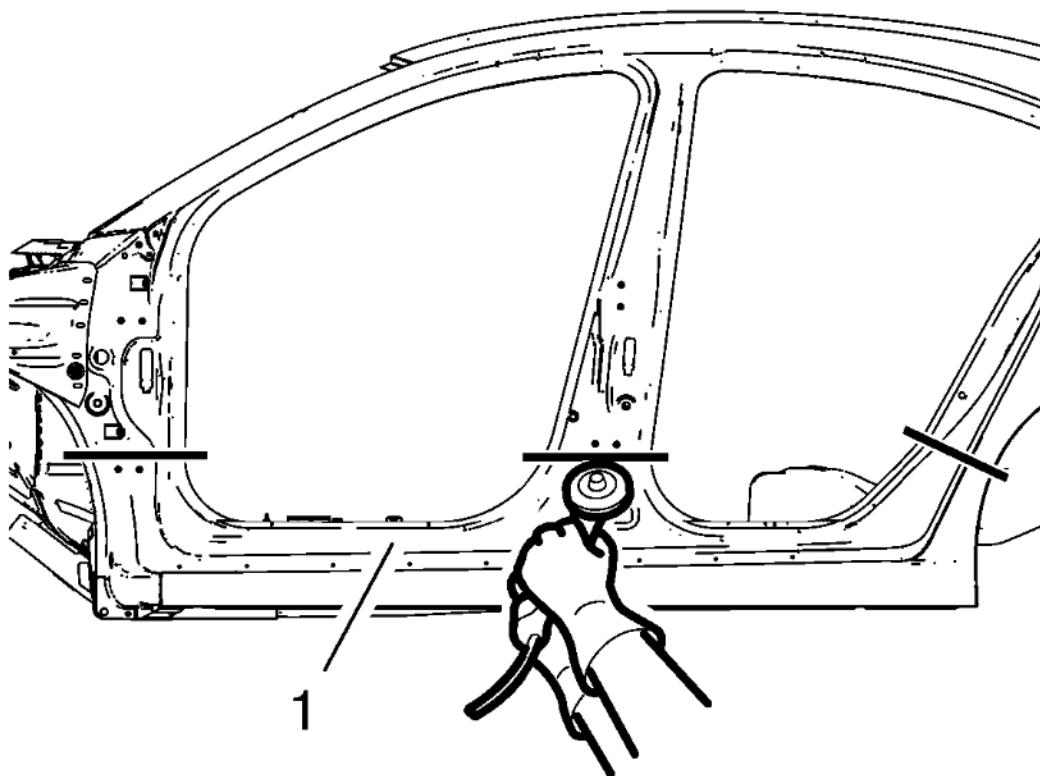


Fig. 81: Cutting Rocker Outer Panel
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage any inner panels or reinforcements.

8. Cut the rocker outer panel (1) where sectioning is to be performed.

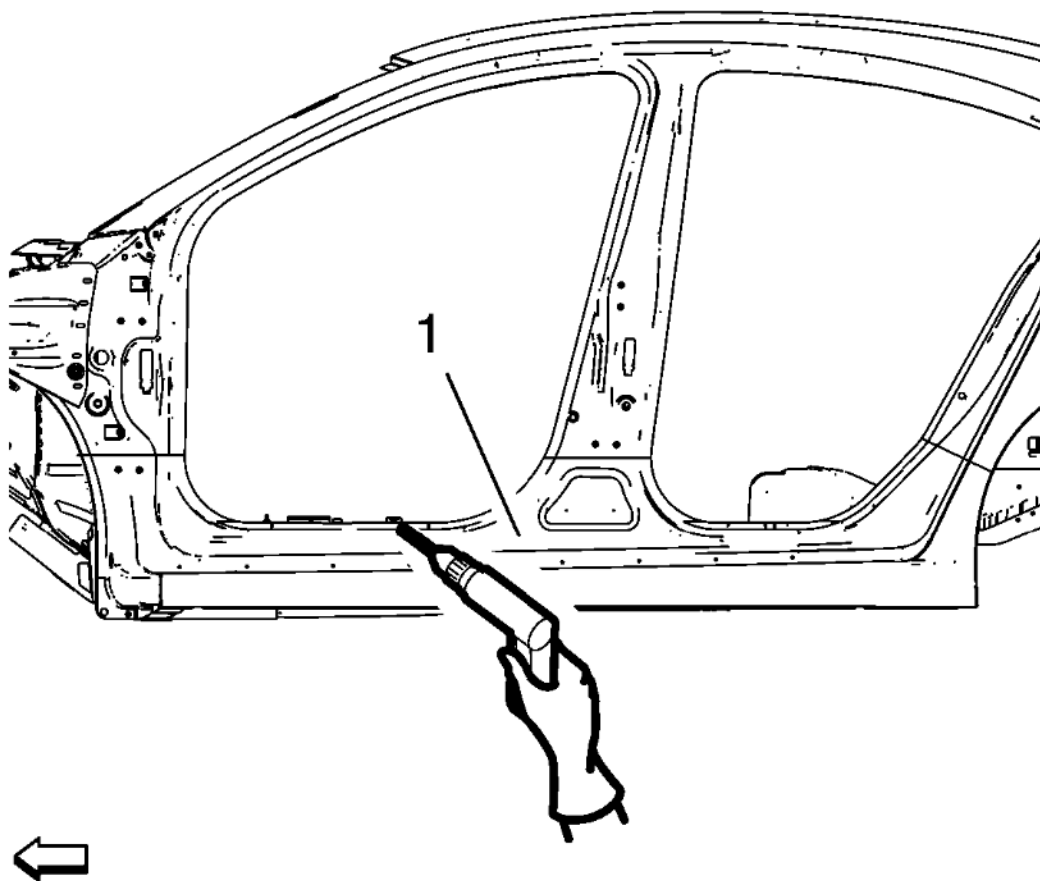


Fig. 82: Drilling Factory Welds Of Rocker Outer Panel
Courtesy of GENERAL MOTORS COMPANY

9. Locate and mark all the necessary factory welds of the rocker outer panel (1).
10. Drill all factory welds.

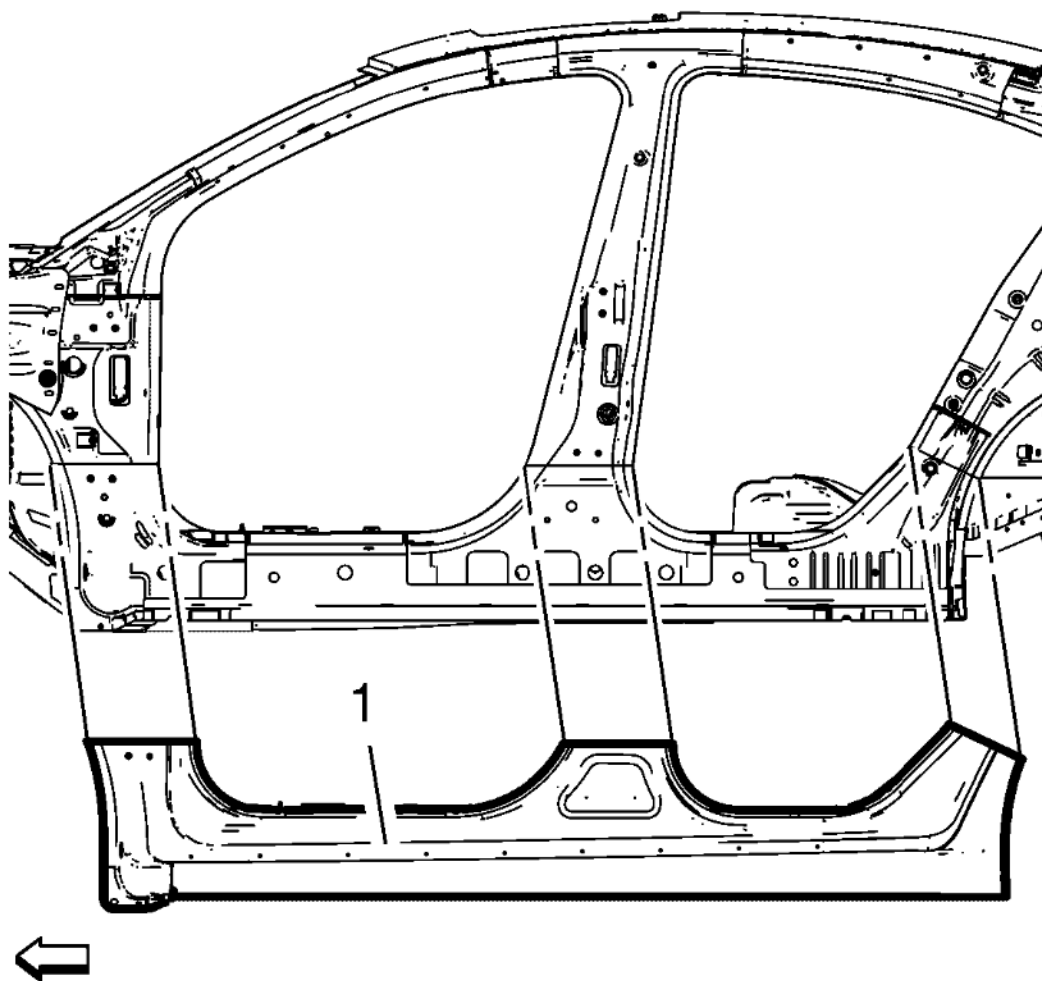


Fig. 83: Rocker Outer Panel

Courtesy of GENERAL MOTORS COMPANY

11. Remove the damaged rocker outer panel (1).

Installation Procedure

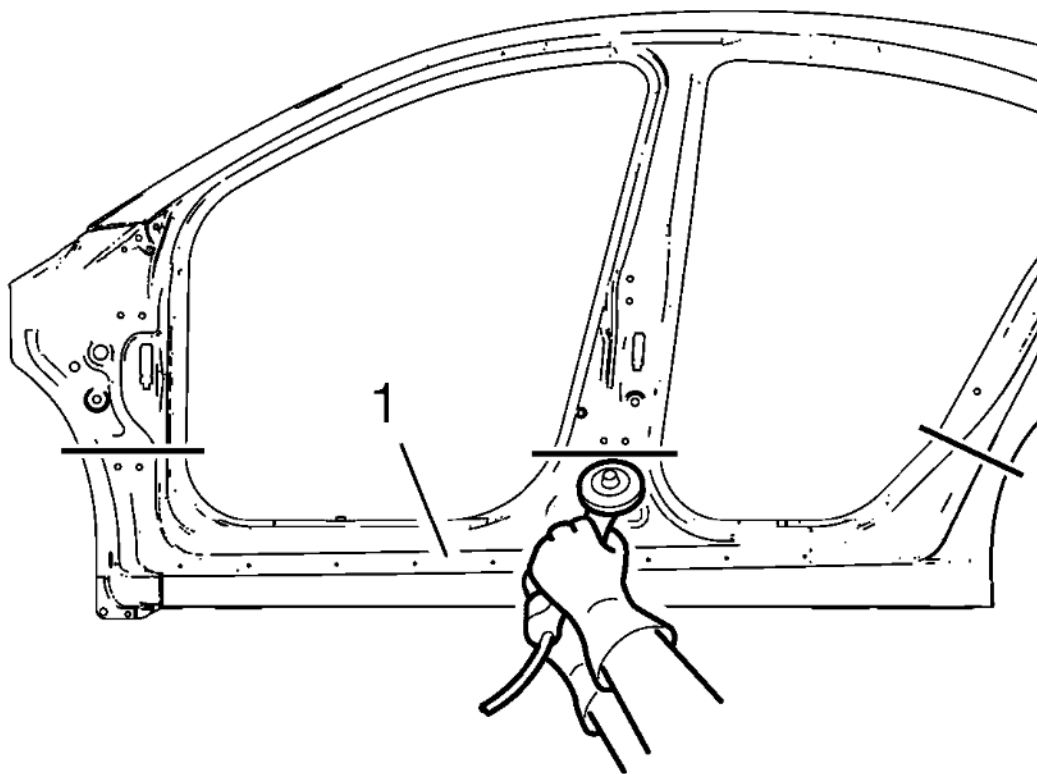


Fig. 84: Cutting Rocker Outer Panel
Courtesy of GENERAL MOTORS COMPANY

1. From the service part (1), cut the panel in corresponding locations to overlap the remaining original panel by 25 mm (1 inch) at each joint location.
2. Prepare all mating surfaces as necessary.

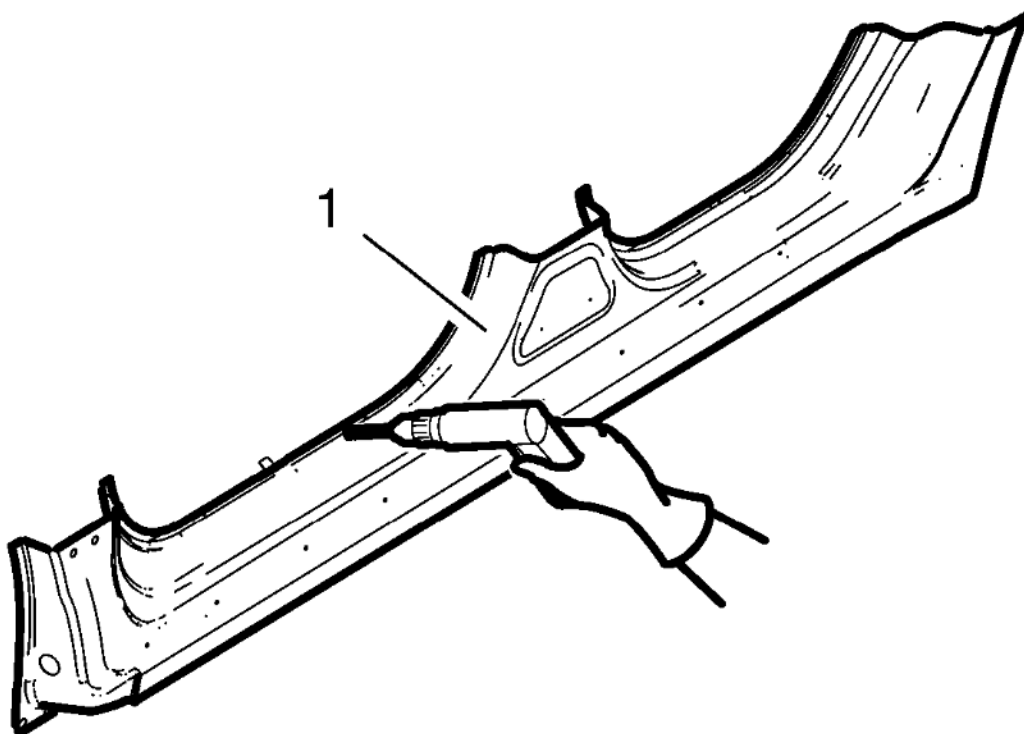


Fig. 85: Drilling Hole For Plug Welding New Rocker Outer Panel
Courtesy of GENERAL MOTORS COMPANY

3. Drill 8 mm (5/16 in) plug weld holes in the service part (1), as necessary, in the corresponding locations noted on the original panel and along sectioned joint.
4. Clean and prepare the attaching surfaces for welding.
5. Apply GM approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

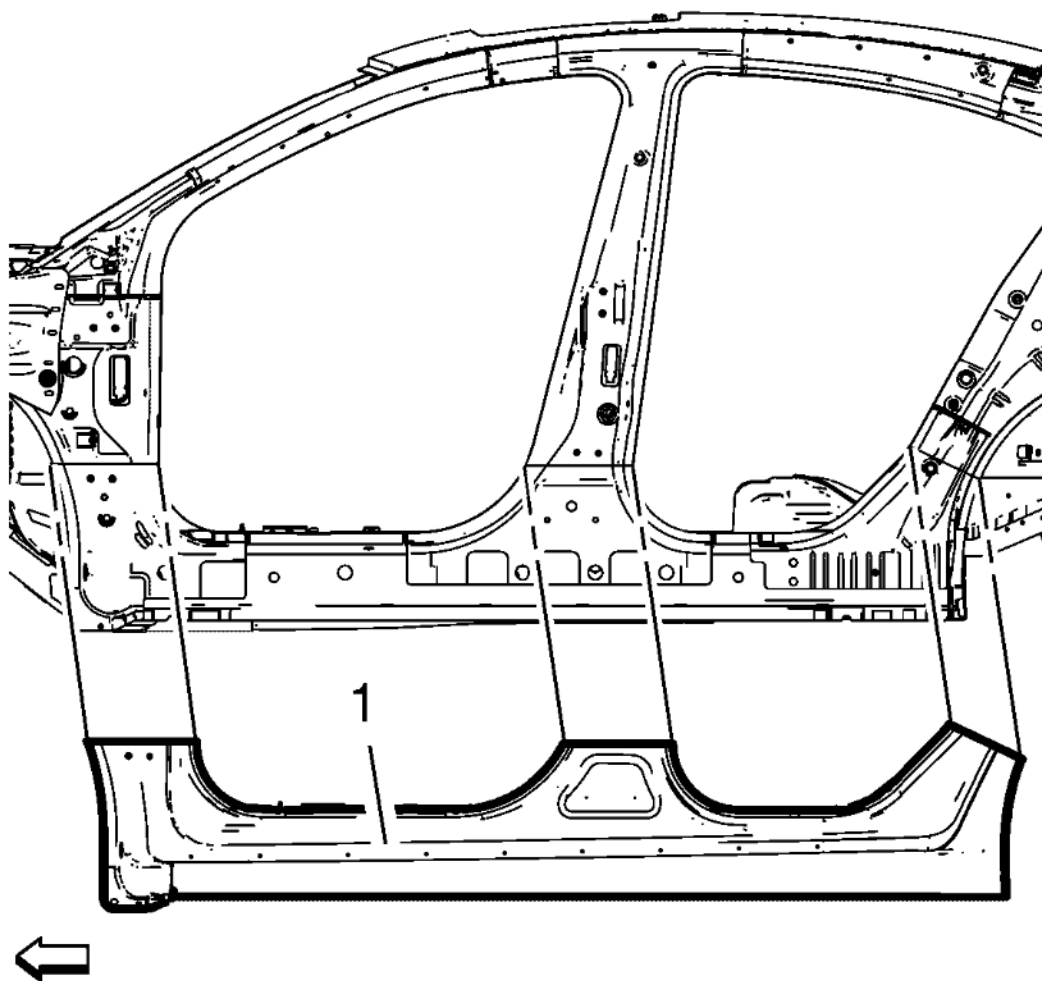


Fig. 86: Rocker Outer Panel

Courtesy of GENERAL MOTORS COMPANY

6. Position the rocker outer panel section (1) to the vehicle using 3-dimensional measuring equipment. Clamp the pillar in place.

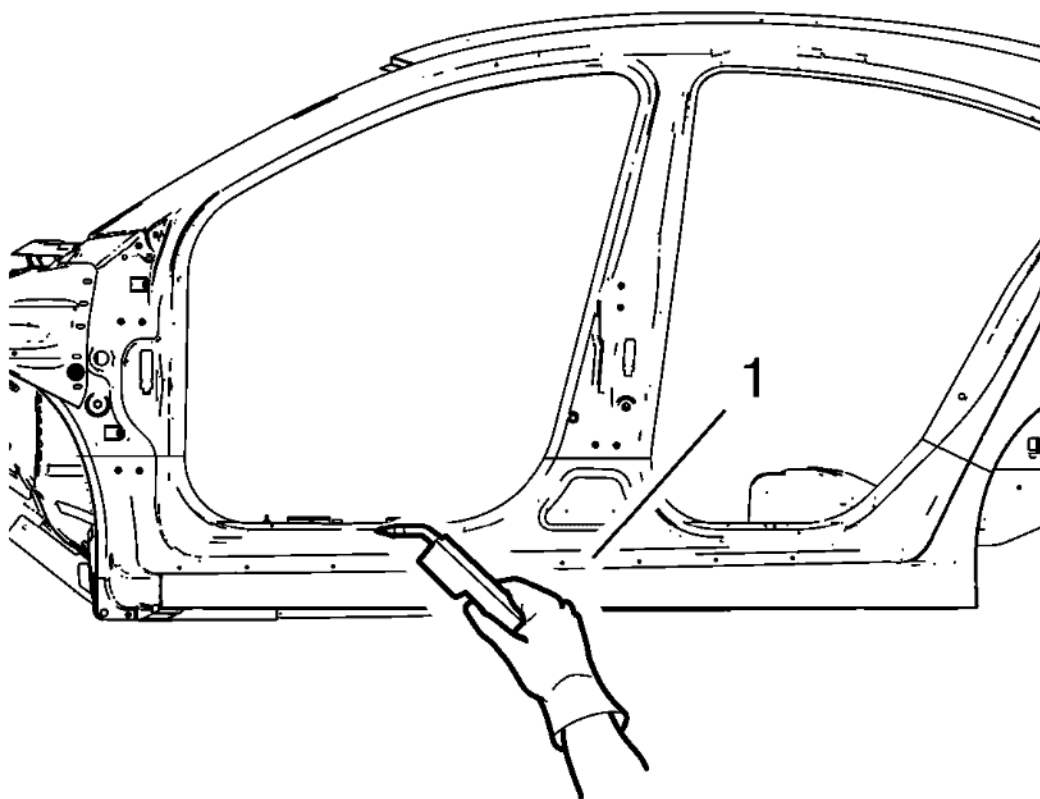


Fig. 87: Welding Rocker Outer Panel
Courtesy of GENERAL MOTORS COMPANY

7. Plug weld the rocker outer panel (1) accordingly.

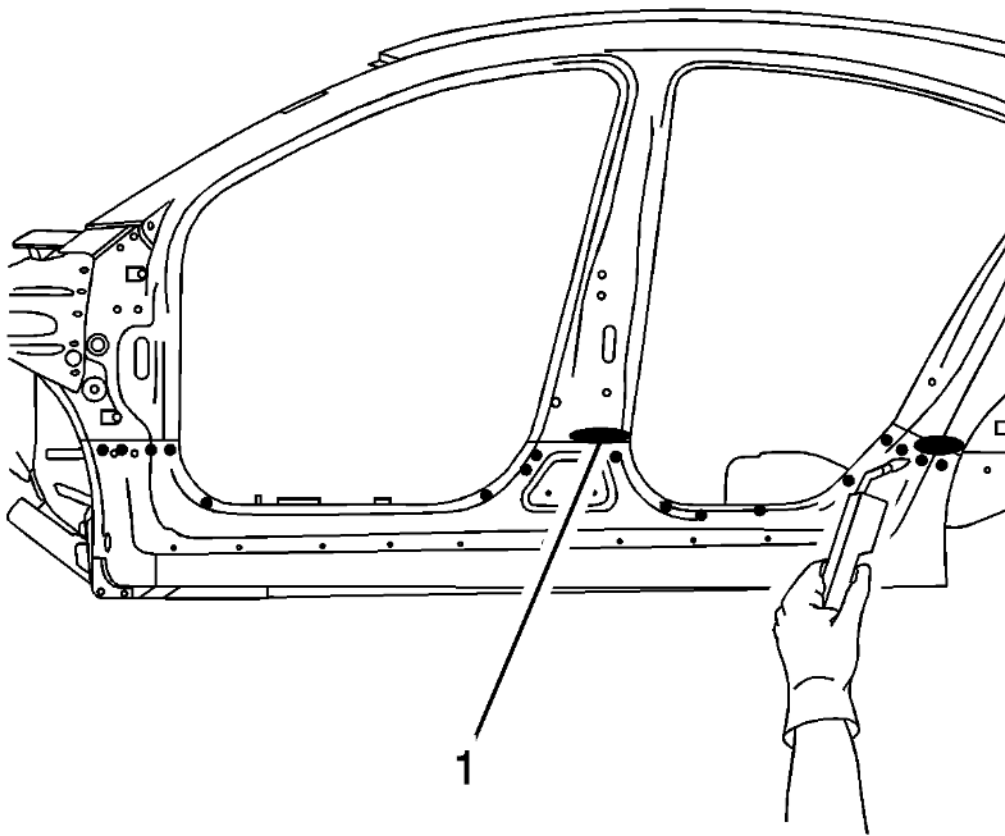


Fig. 88: Welding Replacement Part In Place
Courtesy of GENERAL MOTORS COMPANY

8. 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.
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.
11. Install all related panels and components.
12. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

BODY SIDE INNER PANEL SECTIONING

Removal Procedure

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

WARNING: Refer to Collision Sectioning Warning .

WARNING: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. 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 .

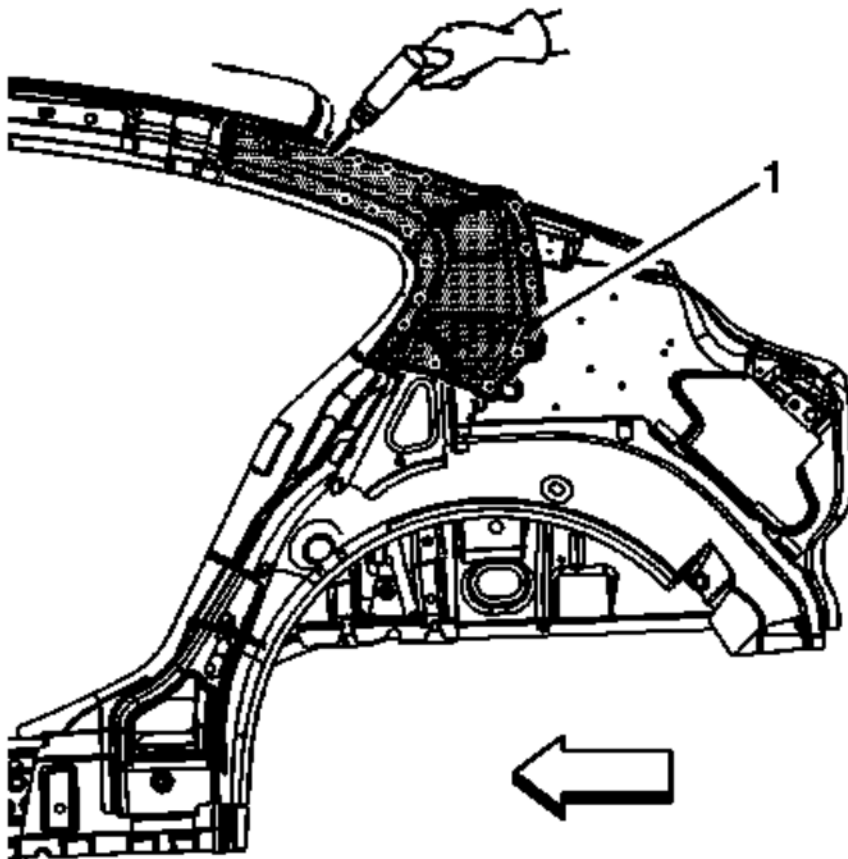


Fig. 89: body lock pillar upper reinforcement
Courtesy of GENERAL MOTORS COMPANY

6. Locate and drill out the necessary factory welds of the body lock pillar upper reinforcement (1). Do not drill out the welds above the roof line. With the body lock pillar upper reinforcement still attached above

the roof line, pry the lower portion of the reinforcement away from the body side inner panel.

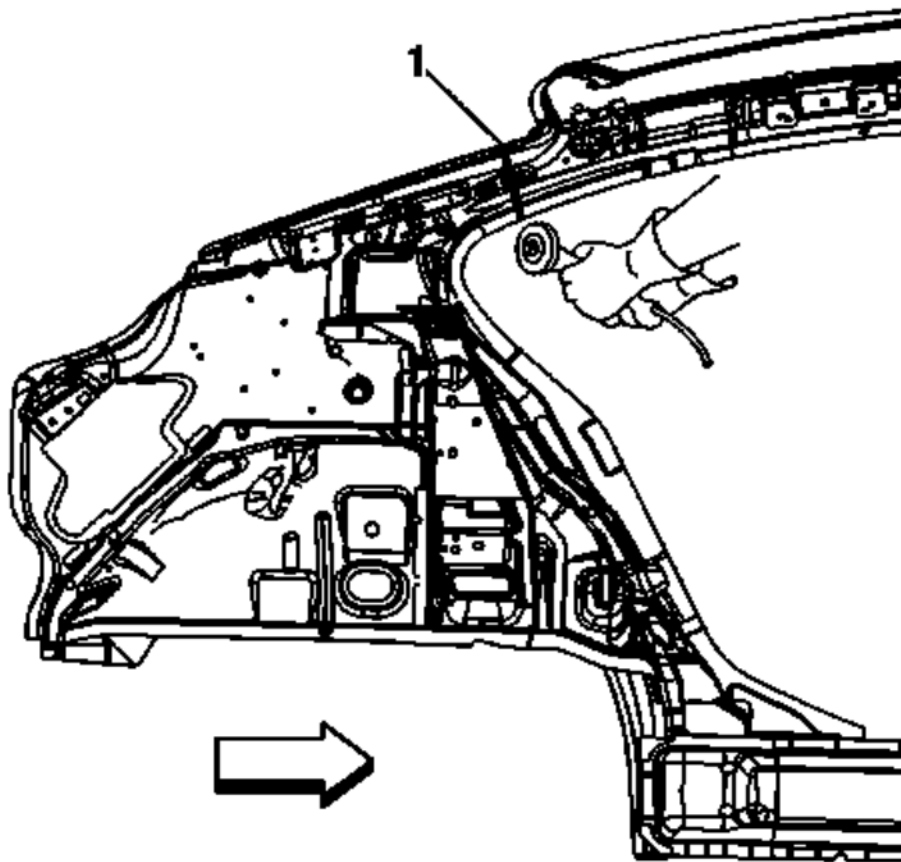


Fig. 90: cutting body side inner panel
Courtesy of GENERAL MOTORS COMPANY

7. From inside of vehicle, cut body side inner panel where sectioning is to be performed (1).

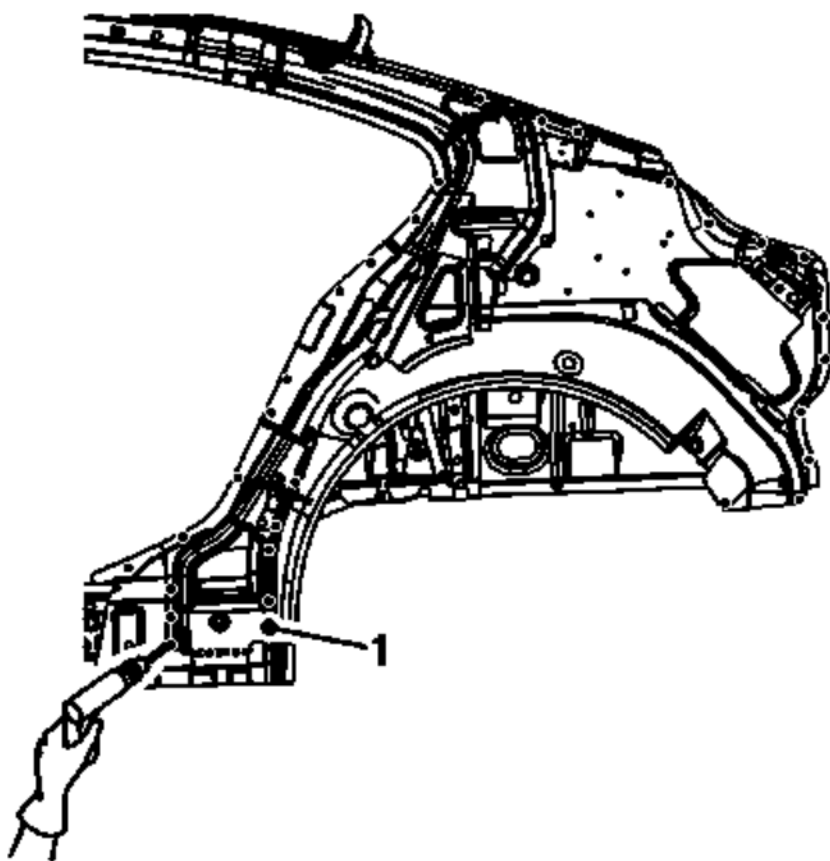


Fig. 91: drilling out welds of body side inner panel
Courtesy of GENERAL MOTORS COMPANY

8. Locate and drill out all necessary welds of the body side inner panel (1)

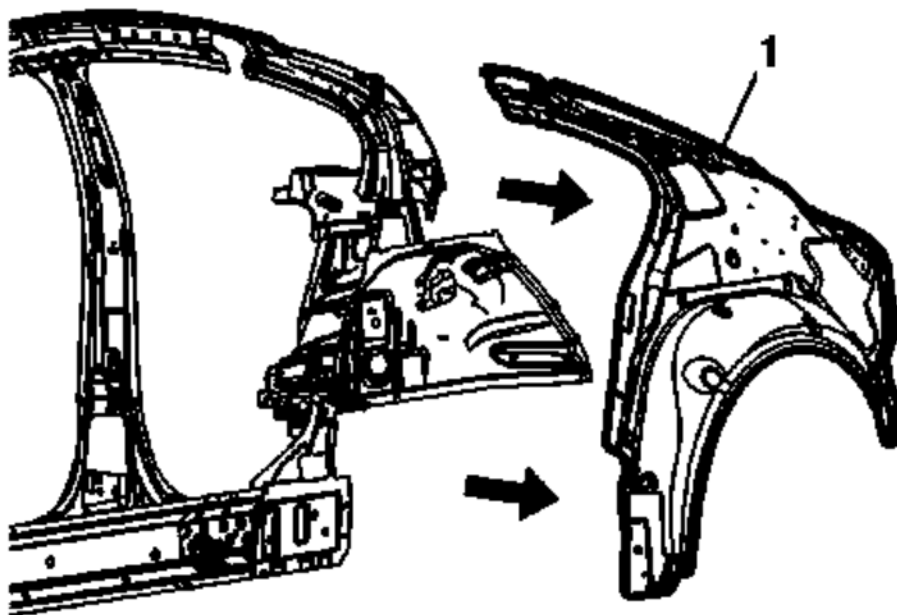


Fig. 92: Remove the damaged body side inner panel
Courtesy of GENERAL MOTORS COMPANY

9. Remove the damaged body side inner panel (1).

Installation Procedure

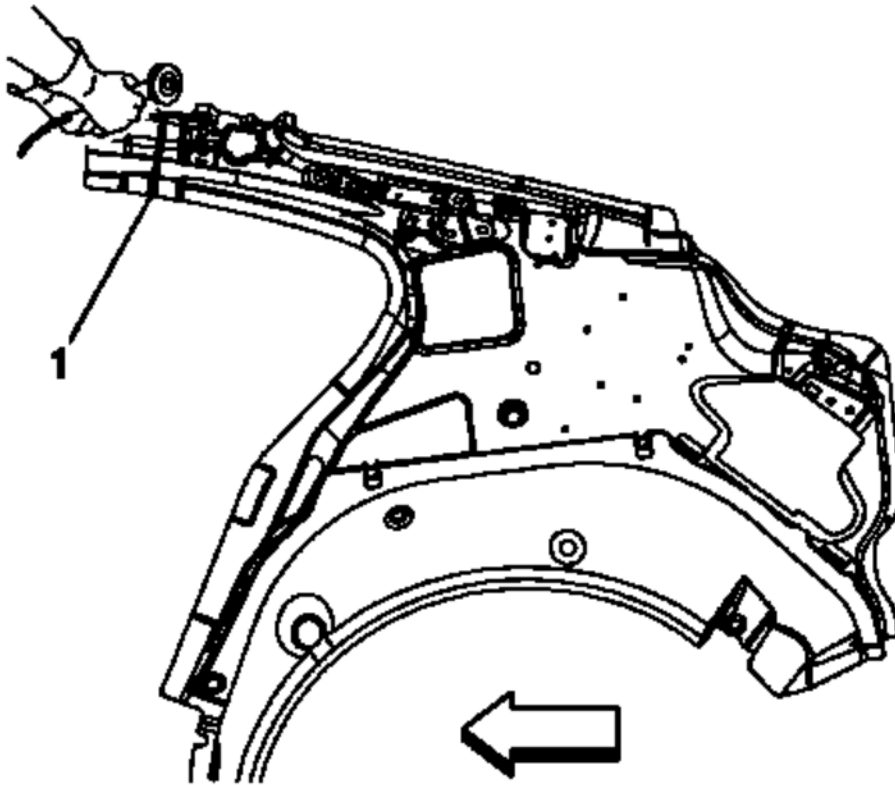


Fig. 93: cutting panel to overlap remaining original panel by 25 mm (1 in)
Courtesy of GENERAL MOTORS COMPANY

1. From the service part, cut the panel in corresponding locations to overlap the remaining original panel by 25 mm (1 in) at each joint location (1).

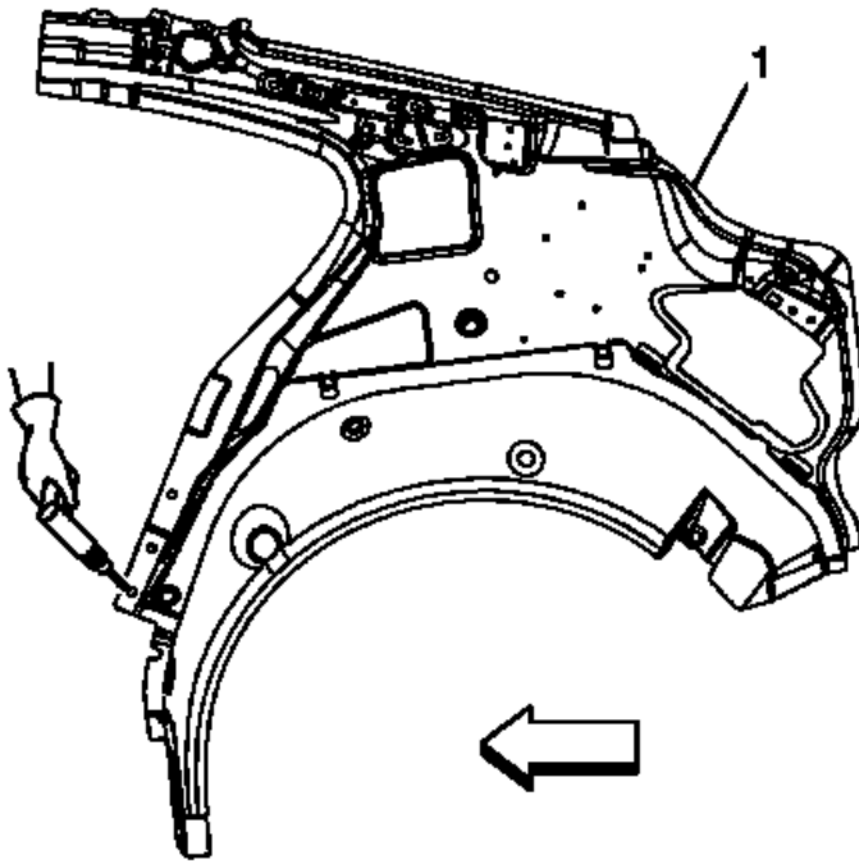


Fig. 94: plugging weld holes in service part
Courtesy of GENERAL MOTORS COMPANY

2. Drill 8 mm (5/16 in) plug weld holes in the service part (1), as necessary, in the corresponding locations noted on the original panel and along sectioned joint.
3. Prepare all matting surfaces for welding, as necessary.
4. Apply GM approved Weld-Thru Coating or equivalent to all matting surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

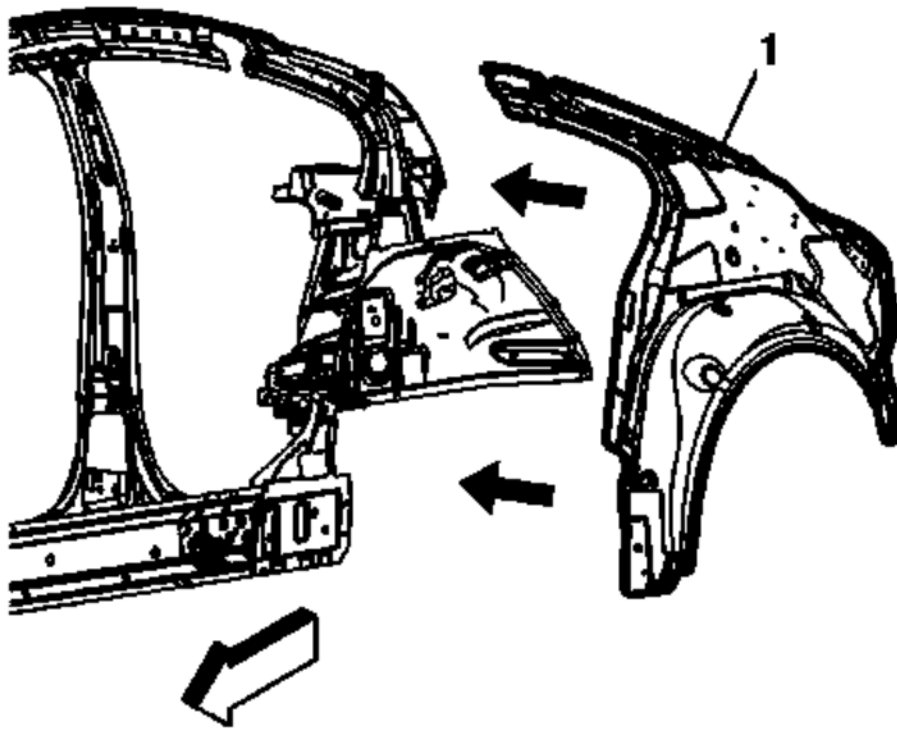


Fig. 95: Positioning body side inner panel
Courtesy of GENERAL MOTORS COMPANY

5. Position the body side inner panel (1) to the vehicle using 3-dimensional measuring equipment. Clamp the panel in place.

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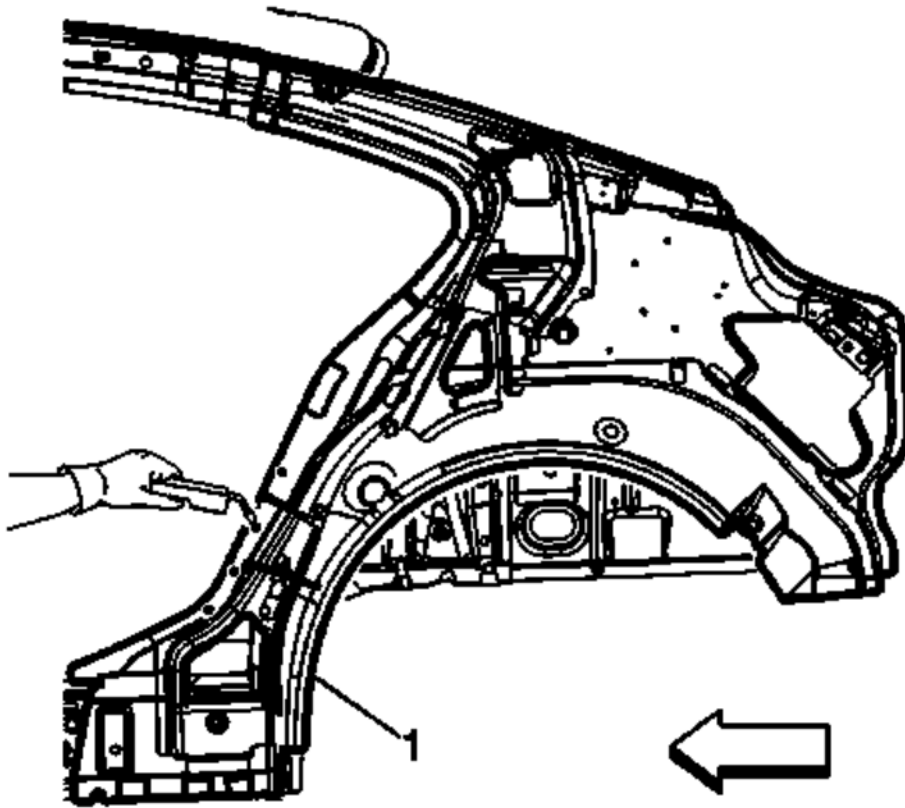


Fig. 96: Plug welding

Courtesy of GENERAL MOTORS COMPANY

6. Plug weld accordingly (1).

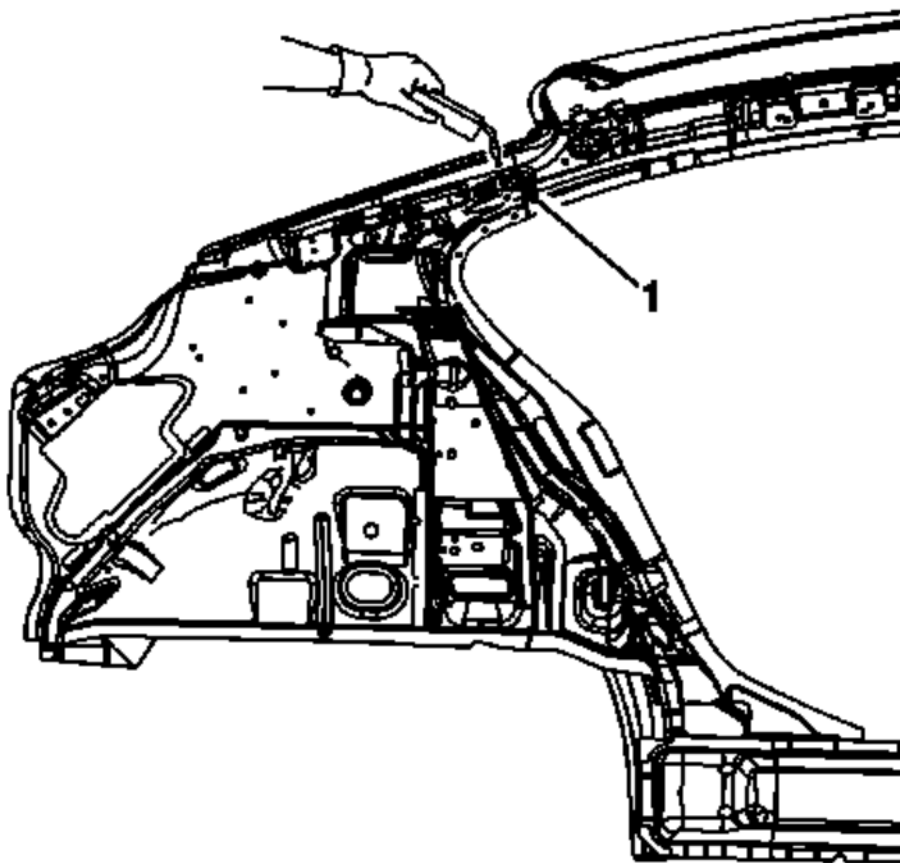


Fig. 97: completing stitch weld

Courtesy of GENERAL MOTORS COMPANY

7. 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 (1).
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** .
12. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

REAR FLOOR PANEL 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**.
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 damaged area as possible. Refer to **Dimensions - Body (Sedan)**.

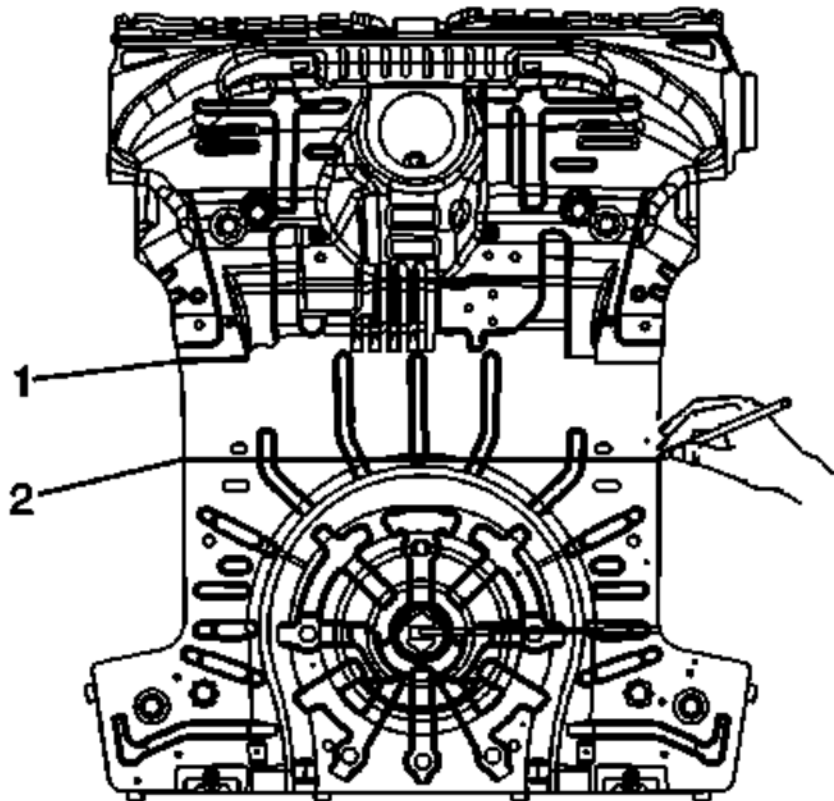


Fig. 98: Marking Rear Compartment Floor Panel Cut Locations
Courtesy of GENERAL MOTORS COMPANY

6. Measure 70 mm rearward from the rear edge of the #5 bar (1). Mark the cut location (2).

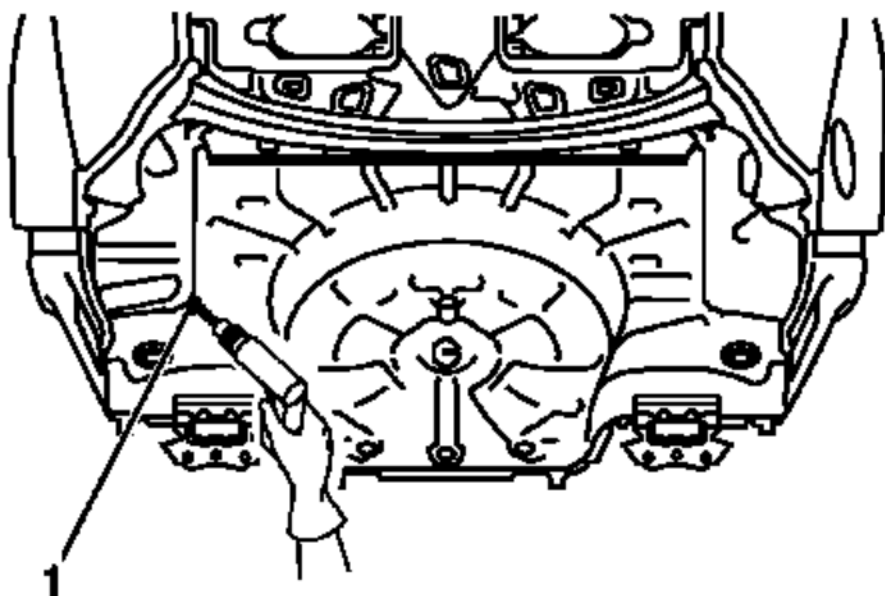


Fig. 99: Drilling Out Rear Compartment Floor Panel Spot Welds
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage any adjacent panels or components when cutting or drilling out spot welds. Record the number and location of welds for installation of the service part.

7. Drill out all factory welds (1).

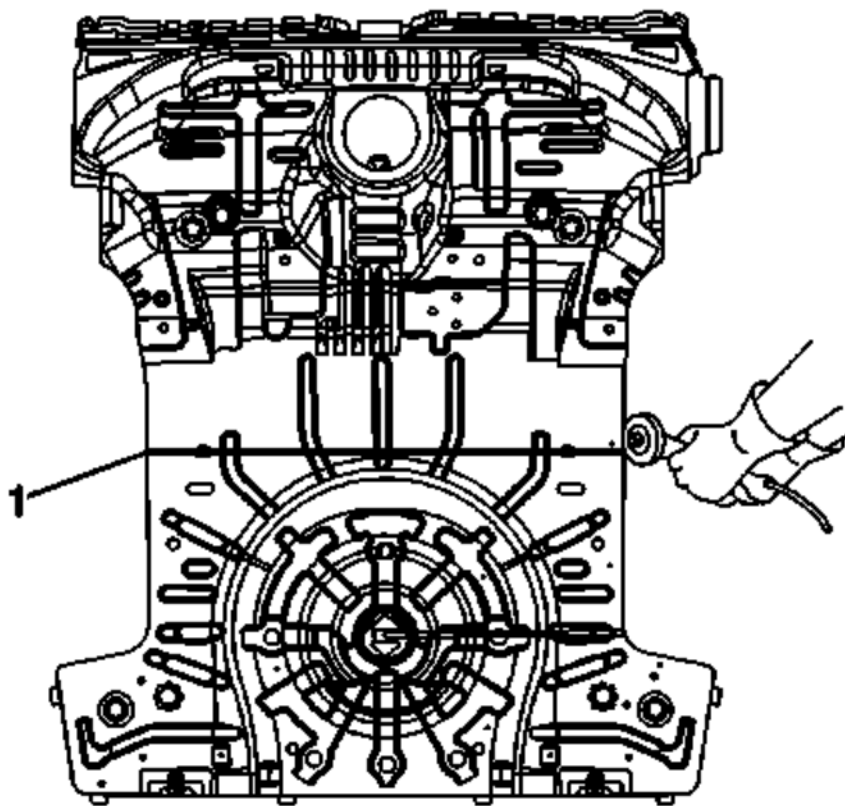


Fig. 100: Cutting Rear Compartment Floor Panel
Courtesy of GENERAL MOTORS COMPANY

8. Cut the rear floor panel accordingly (1).

Installation Procedure

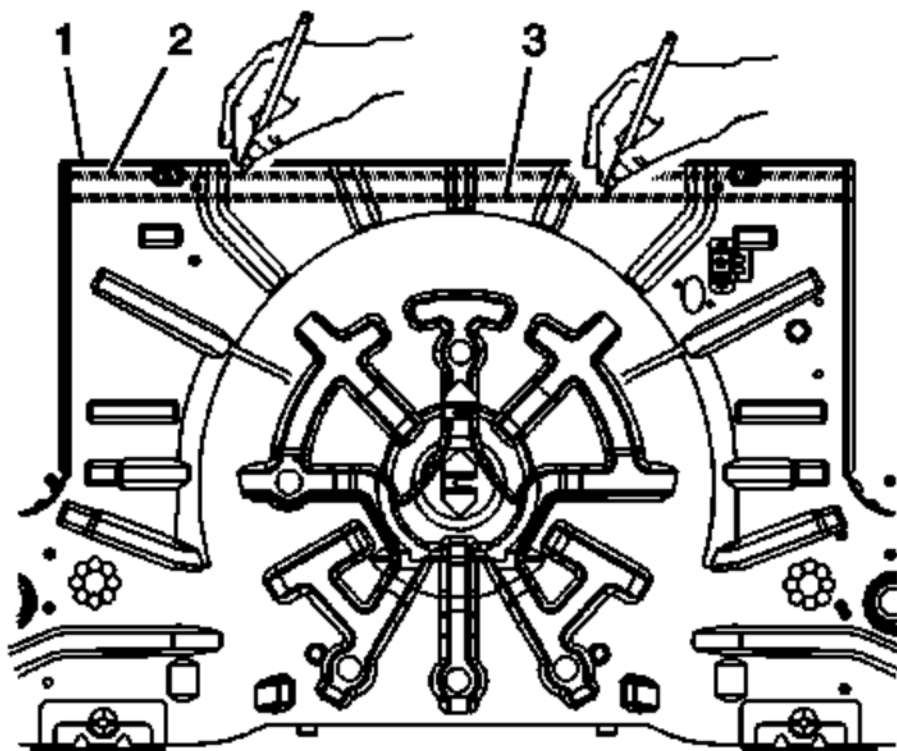


Fig. 101: Marking Rear Compartment Floor Panel For Plug Welds
 Courtesy of GENERAL MOTORS COMPANY

NOTE: The service part is supplied precut at the proper location for sectioning. The service part will overlap the original floor panel by approximately 50 mm at the cut location. Two rows of evenly staggered plug welds will provide the necessary weld strength for this procedure.

1. Create 2 rows of plug welds in the service part as follows. For the 1st row, measure 13 mm from the front edge of the service part (1). Mark a straight line across the width of the service part (2). For the 2nd row, measure 25 mm from the 1st row. Mark a straight line across the width of the service part (3).

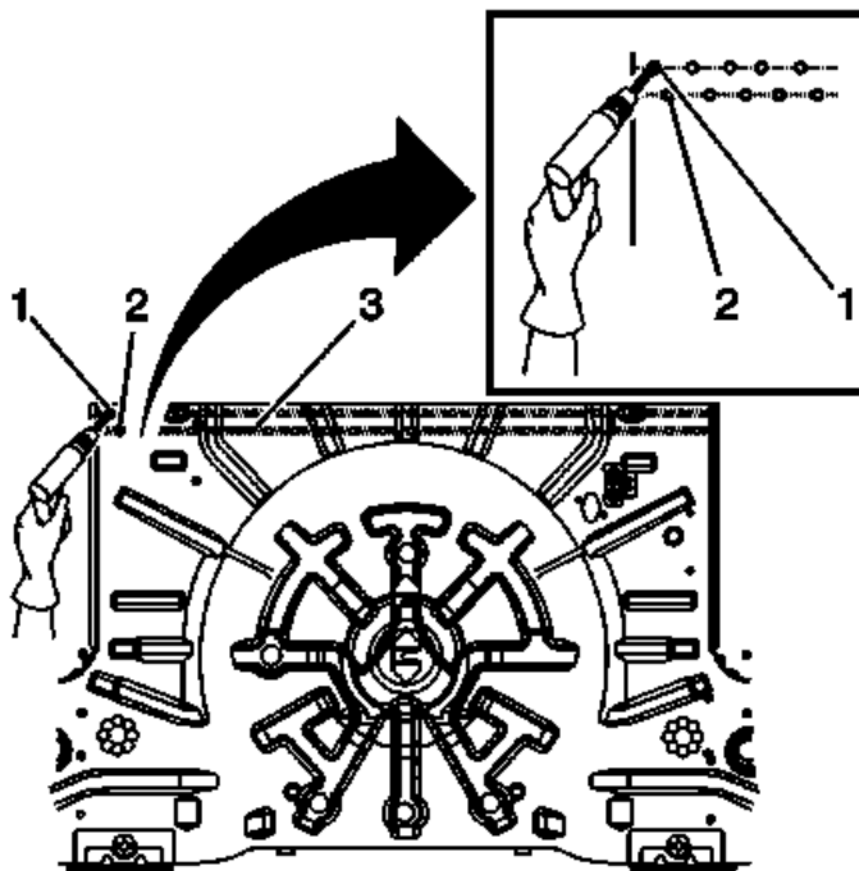


Fig. 102: Drilling 8 mm (5/16 in) Plug Weld Holes In Rear Compartment Floor Panel
 Courtesy of GENERAL MOTORS COMPANY

2. Drill 8 mm (5/16 in) plug weld holes, every 40 mm along the 1st marked row. Locating the first hole 20 mm (1) from the left edge of the service part.
3. Drill 8 mm (5/16 in) plug weld holes, every 40 mm along the 2nd marked row (3). Locate first hole 40 mm (2) from the left edge of the service part.
4. Prepare all mating surfaces for welding, as necessary.
5. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair**.
6. Position the rear floor pan to the vehicle using 3-dimensional measuring equipment. Clamp the part in place.

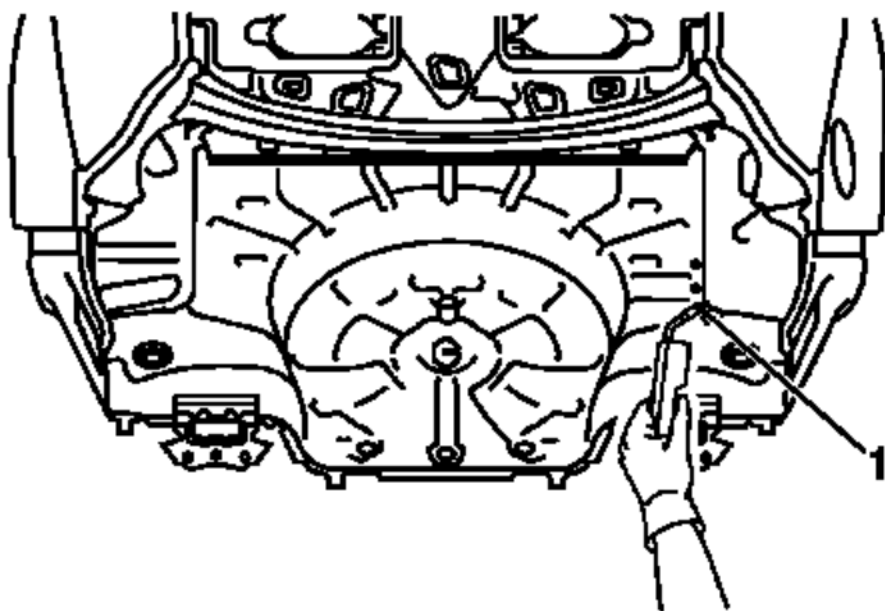


Fig. 103: Welding Rear Compartment Floor Panel
Courtesy of GENERAL MOTORS COMPANY

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

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

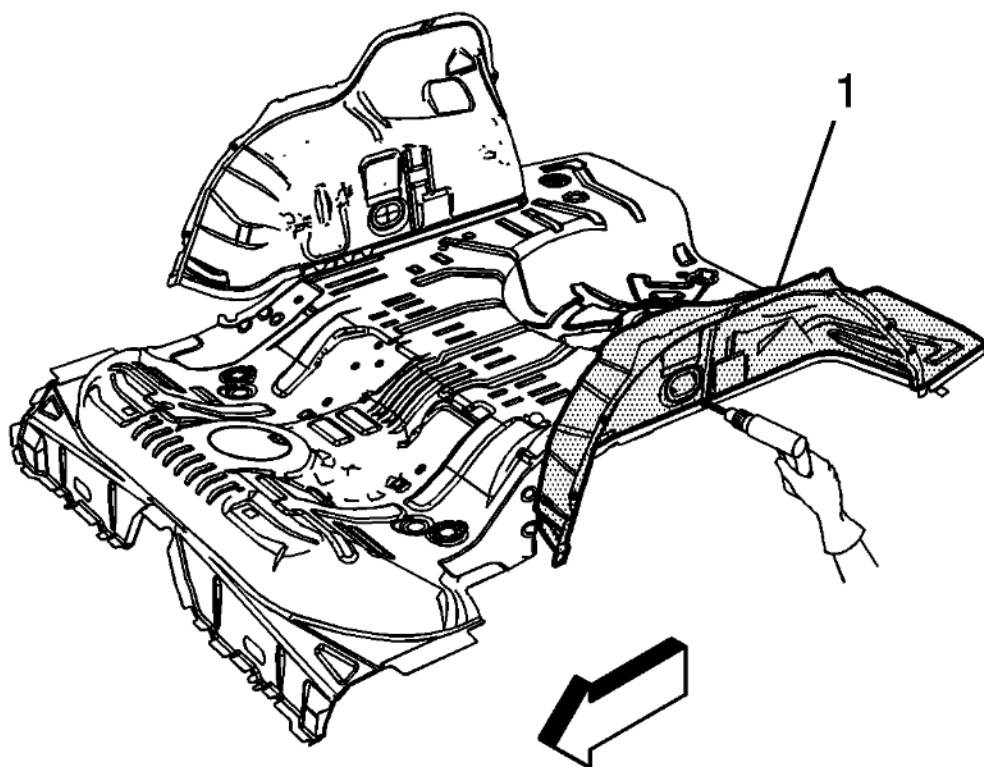


Fig. 104: Drilling Out Rear Inner Wheelhouse Factory Welds
Courtesy of GENERAL MOTORS COMPANY

NOTE: Note the number and location of the factory welds for installation of the rear inner wheelhouse.

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

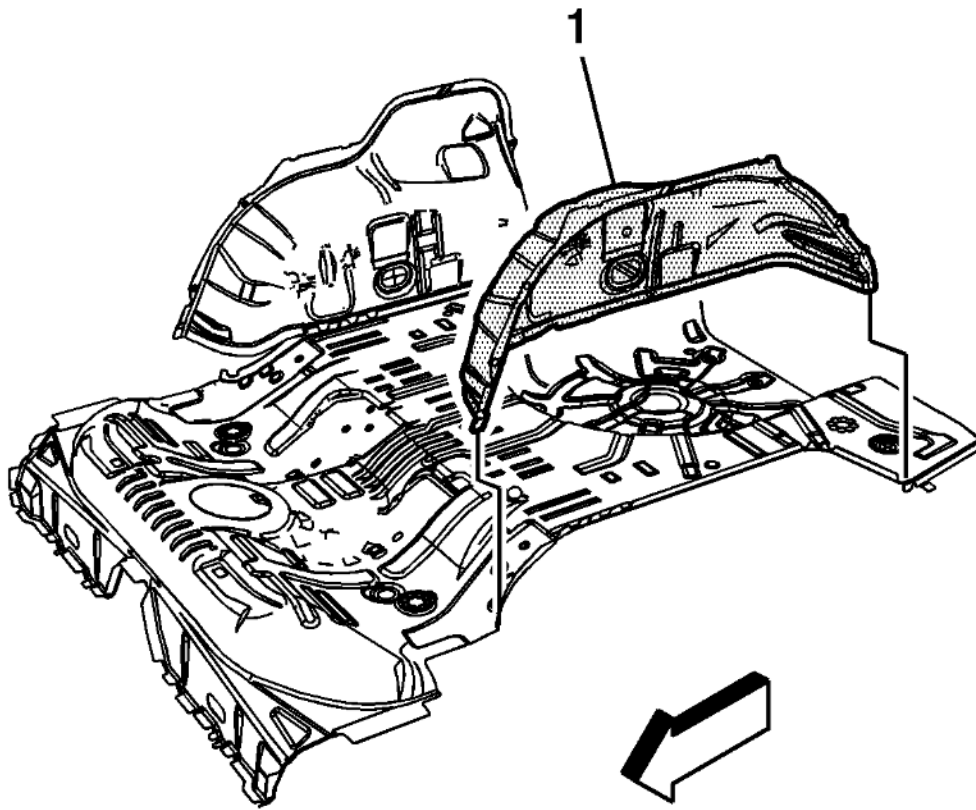


Fig. 105: Rear Inner Wheelhouse
Courtesy of GENERAL MOTORS COMPANY

7. Remove the rear inner wheelhouse (1).

Installation Procedure

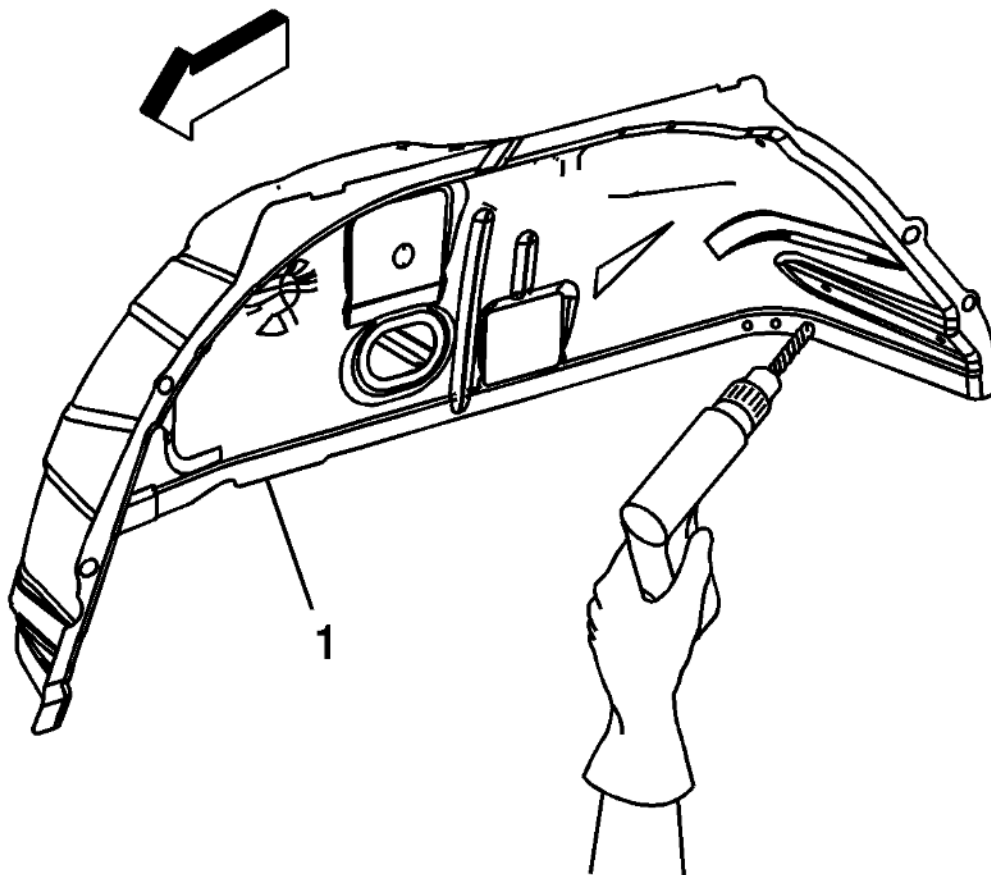


Fig. 106: Drilling Plug Weld Holes In Replacement Rear Inner Wheelhouse
Courtesy of GENERAL MOTORS COMPANY

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 locations noted from the original panel (1).
2. Prepare all mating surfaces for welding as necessary.
3. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

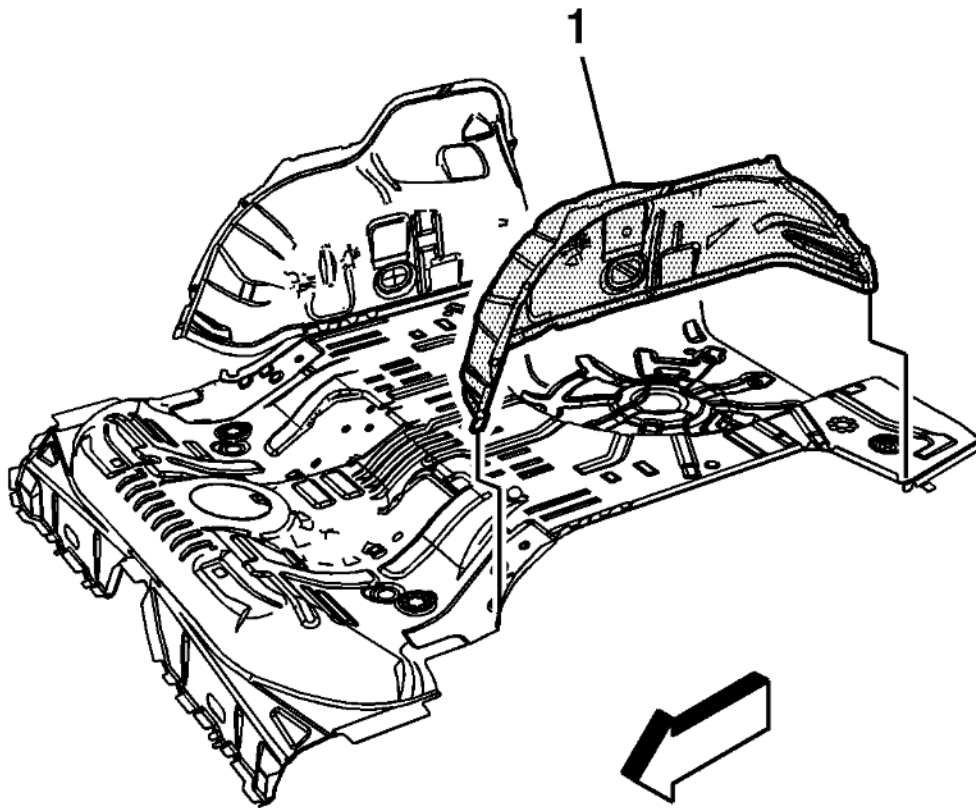


Fig. 107: Rear Inner Wheelhouse
 Courtesy of GENERAL MOTORS COMPANY

4. Position the rear inner wheelhouse to the vehicle. Clamp the part in place (1).
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** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

QUARTER OUTER PANEL SECTIONING

Removal Procedure

WARNING: Refer to Approved Equipment for Collision Repair Warning .

1. Disconnect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection** .
2. Disable the SIR system. Refer to **SIR Disabling and Enabling** .
3. Restore as much of the damage as possible to factory specifications. Refer to **Dimensions - Body (Sedan)**.
4. Remove all related panels and components.
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** .

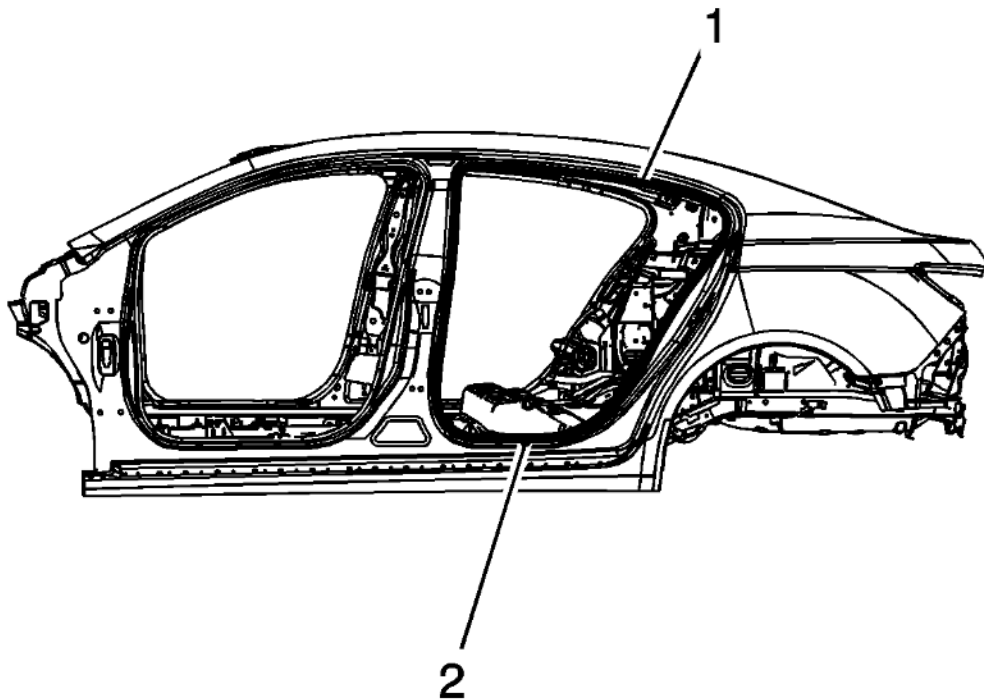


Fig. 108: Quarter Outer Panel Cut Locations
Courtesy of GENERAL MOTORS COMPANY

6. Section the sail panel and the rocker panel.
 - At the sail panel, measure from the back glass opening down 85 mm. Scribe a line. This is the cut location (1).

- Scribe a line on the rocker panel on the flat area between the holes where the molding attaches to the rocker panel. From the third hole rearward, measure 90 mm forward. This is the cut location (2).

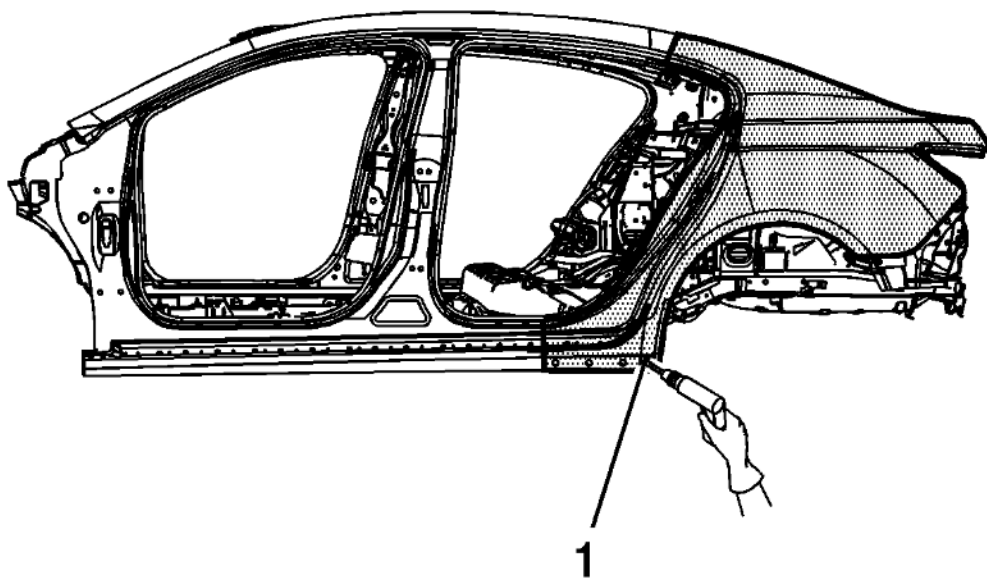


Fig. 109: Drilling Out Quarter Outer Panel Factory Welds
Courtesy of GENERAL MOTORS COMPANY

7. Locate and drill out all factory welds. Note the number and location of welds for installation of the quarter panel (1).

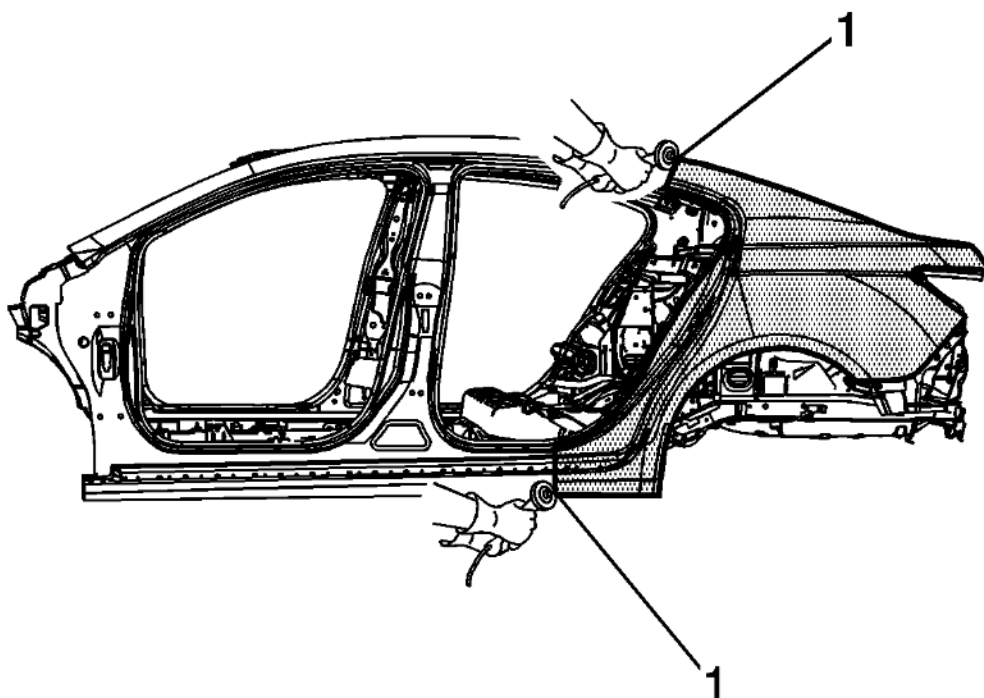


Fig. 110: Cutting Quarter Outer Panel
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage any other panel or reinforcements when cutting at the marked locations.

8. Cut the panel at the marked locations (1).

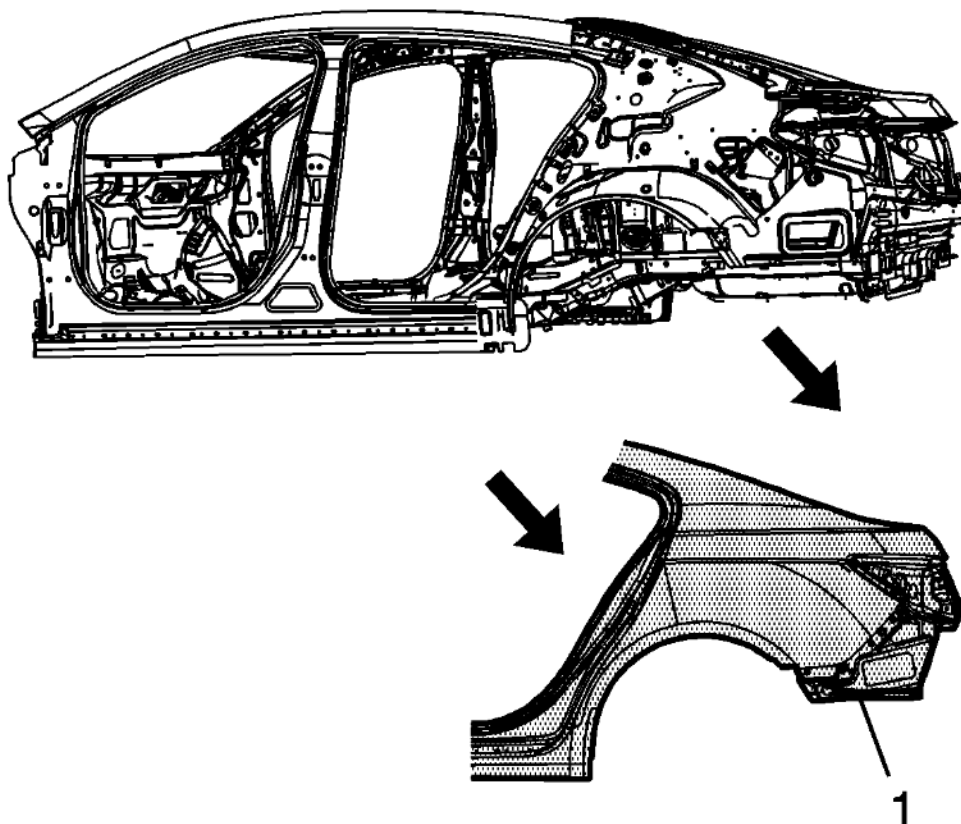


Fig. 111: Quarter Outer Panel

Courtesy of GENERAL MOTORS COMPANY

9. Remove the lower quarter panel (1).

Installation Procedure

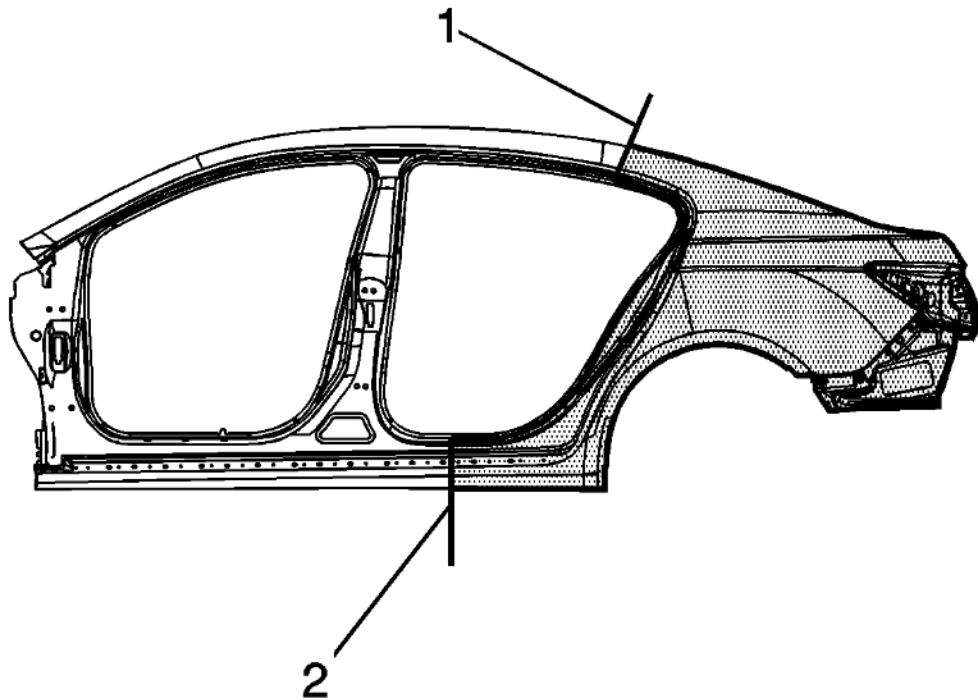


Fig. 112: Marking Cut Lines On Service Quarter Outer Panel
Courtesy of GENERAL MOTORS COMPANY

1. From the service part, cut the panel in corresponding locations to overlap the remaining original panel by 25 mm (1 in) at each joint location (1, 2).

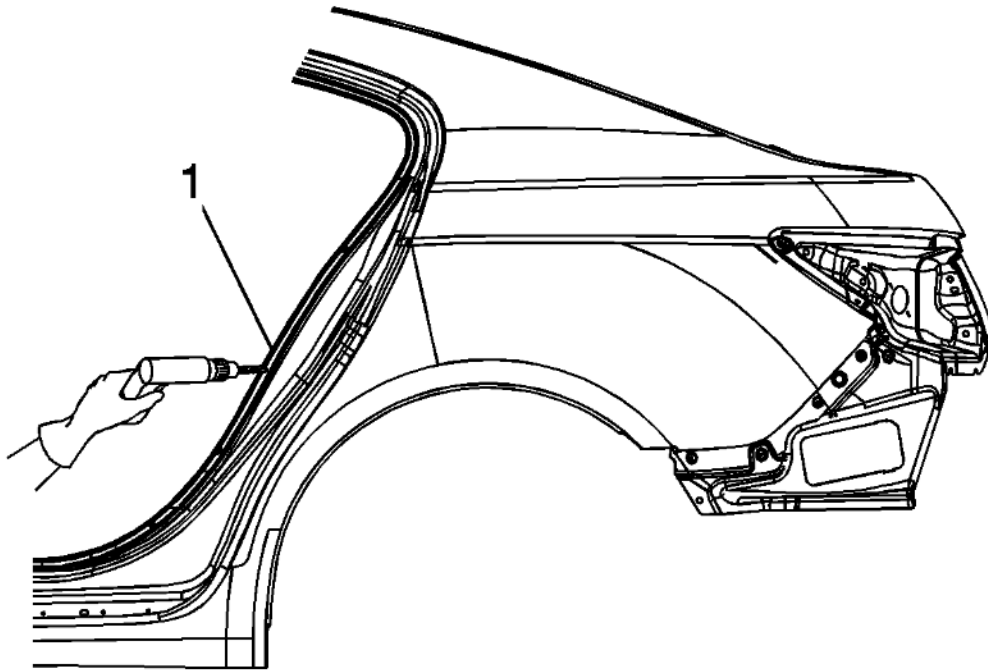


Fig. 113: Drilling Plug Weld Holes In Service Quarter Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

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.

3. Prepare all mating surfaces for welding, as necessary.
4. Apply GM-approved Weld-Thru coating or equivalent to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

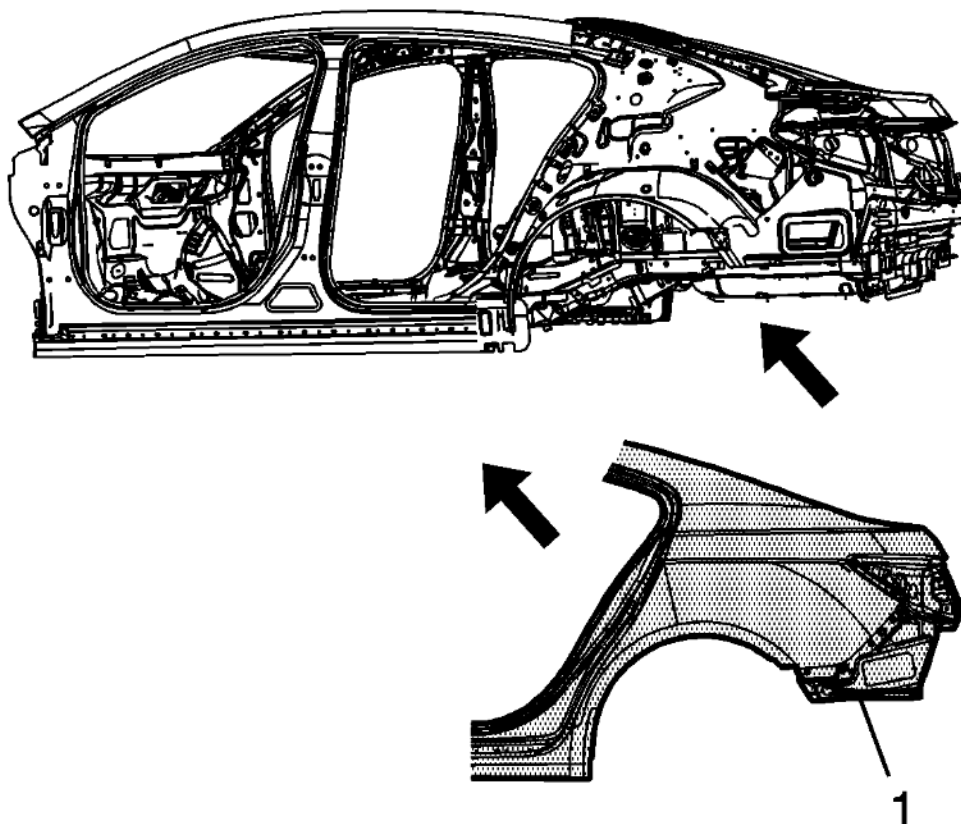


Fig. 114: Quarter Outer Panel

Courtesy of GENERAL MOTORS COMPANY

5. Position the new service panel and clamp in place (1).
6. Perform the sectioning procedure.

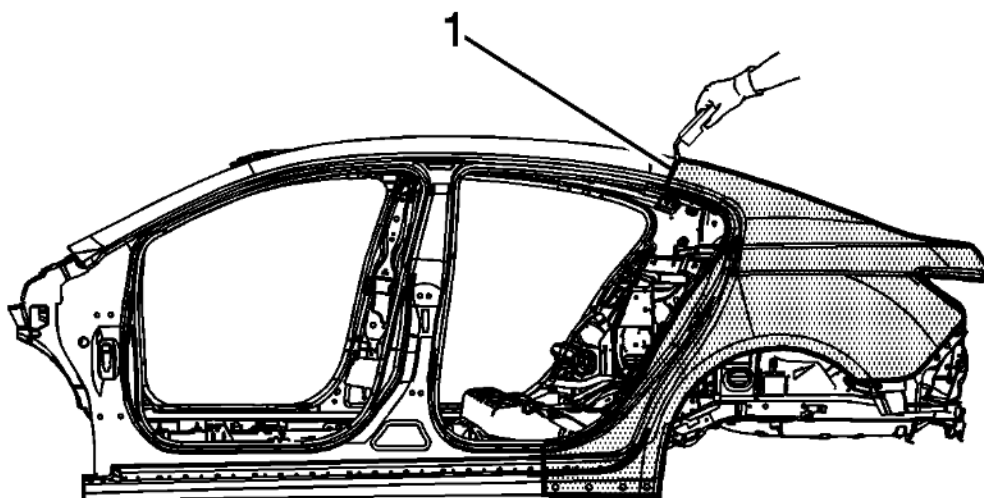


Fig. 115: Welding Quarter Outer Panel
Courtesy of GENERAL MOTORS COMPANY

7. Plug weld accordingly (1).
8. To create a solid weld with the minimum heat distortion, make a 25 mm (1 in) stitch weld along the seam with gaps of 25 mm (1 in) gaps between them. Go back and complete the stitch weld.
9. Clean and prepare all welded surfaces.

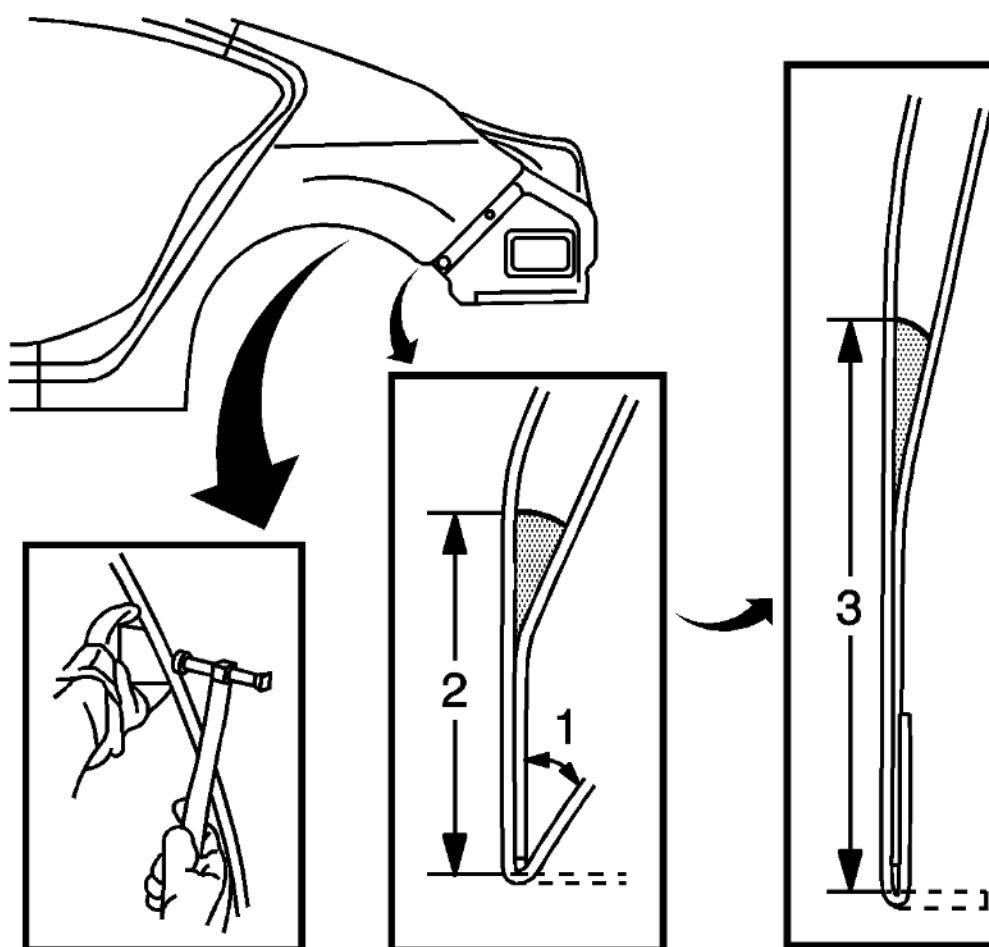


Fig. 116: Pre-Flanging Wheel Housing
 Courtesy of GENERAL MOTORS COMPANY

10. Pre-flange wheel housing. Using flat faced body hammer, bend over the flanged edge 45 degrees (1), at the same time holding a hard rubber block against it. Use structural adhesive in the area (2).
11. Bend the wheel arch (3).
12. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair**.
13. Paint the repair area. Refer to **Basecoat/Clearcoat Paint Systems**.
14. Install all related panels and components.
15. Enable the SIR system. Refer to **SIR Disabling and Enabling**.
16. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection**.

BODY REAR END 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. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Repair as much of the damage as possible. Refer to Dimensions - Body (Sedan).
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .

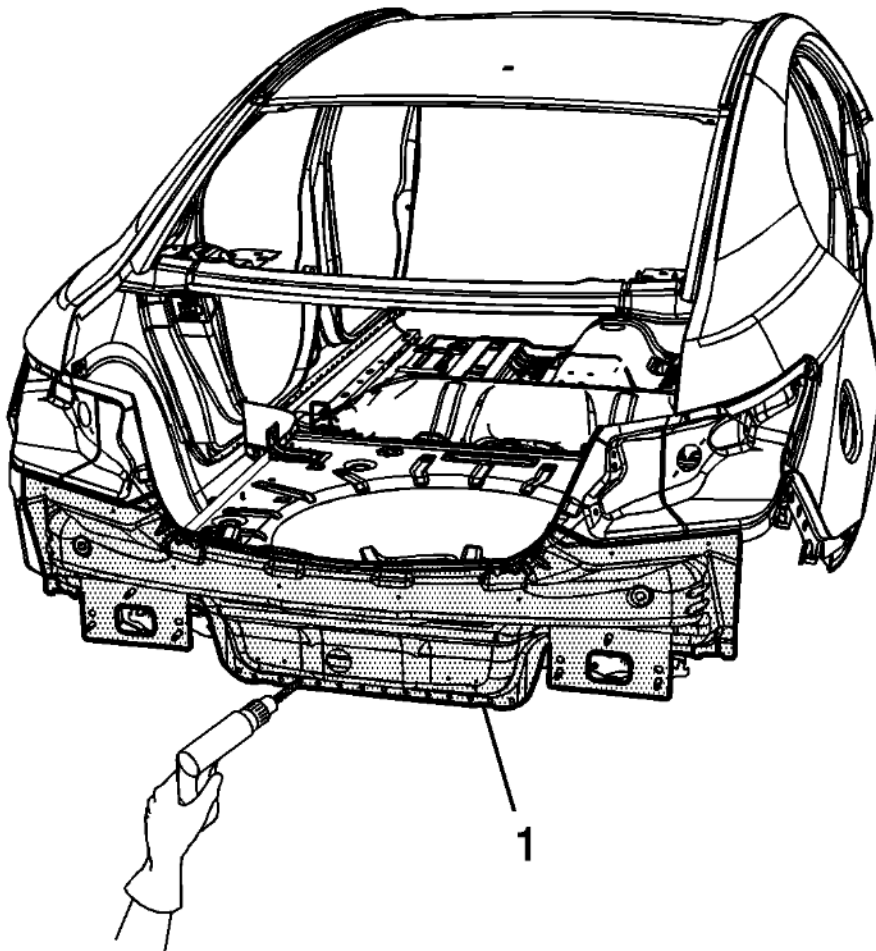


Fig. 117: Drilling Out Body Rear End Panel Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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

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

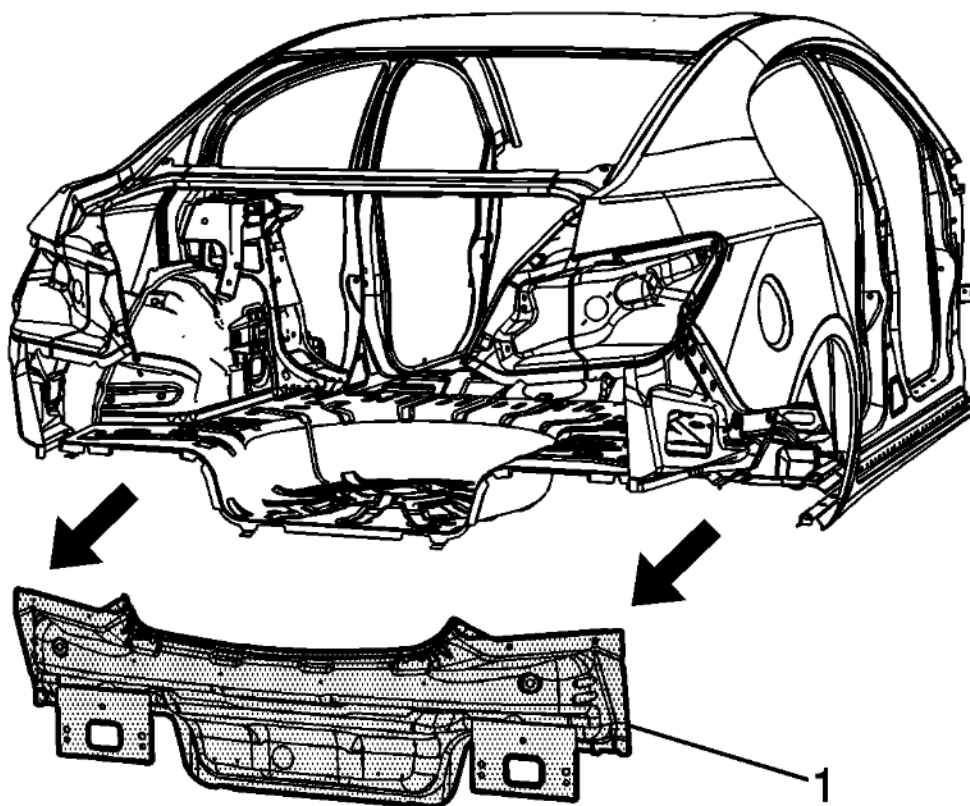


Fig. 118: Rear End Panel
Courtesy of GENERAL MOTORS COMPANY

7. Remove the rear end panel (1).

Installation Procedure

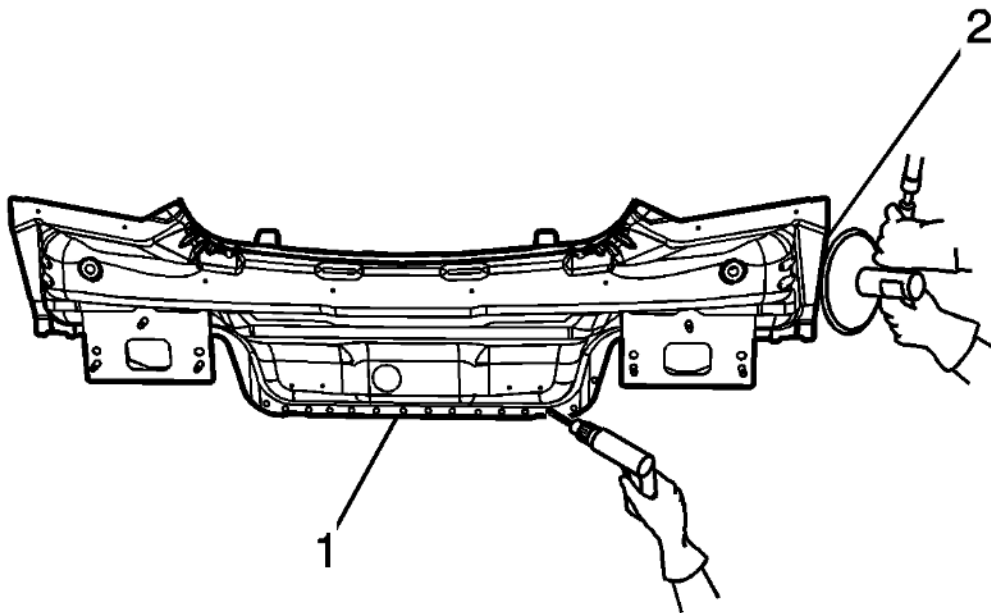


Fig. 119: Drilling Plug Weld Holes Replacement Rear End Panel
Courtesy of GENERAL MOTORS COMPANY

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 locations noted from the original panel (1).
2. Clean and prepare all matting surfaces as necessary (2).

NOTE: Remove excess weld and sealer

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

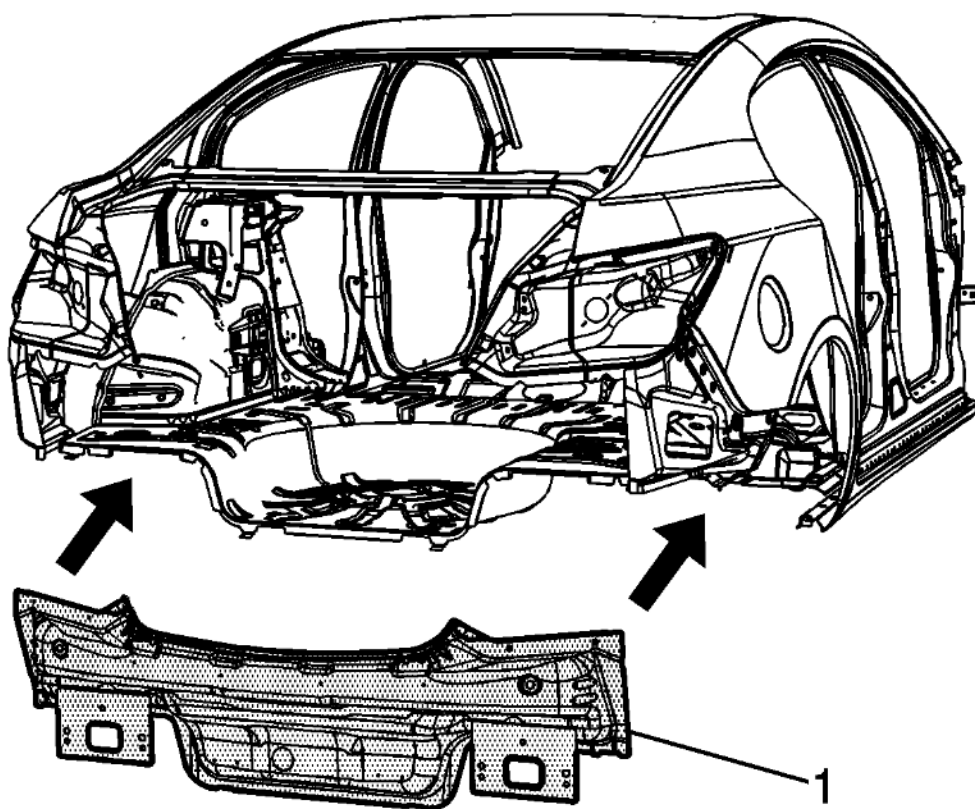


Fig. 120: Rear End Panel

Courtesy of GENERAL MOTORS COMPANY

4. Position the rear end panel on the vehicle. Use 3-dimensional measuring equipment to inspect the panel (1).
5. Clamp the panel in place.

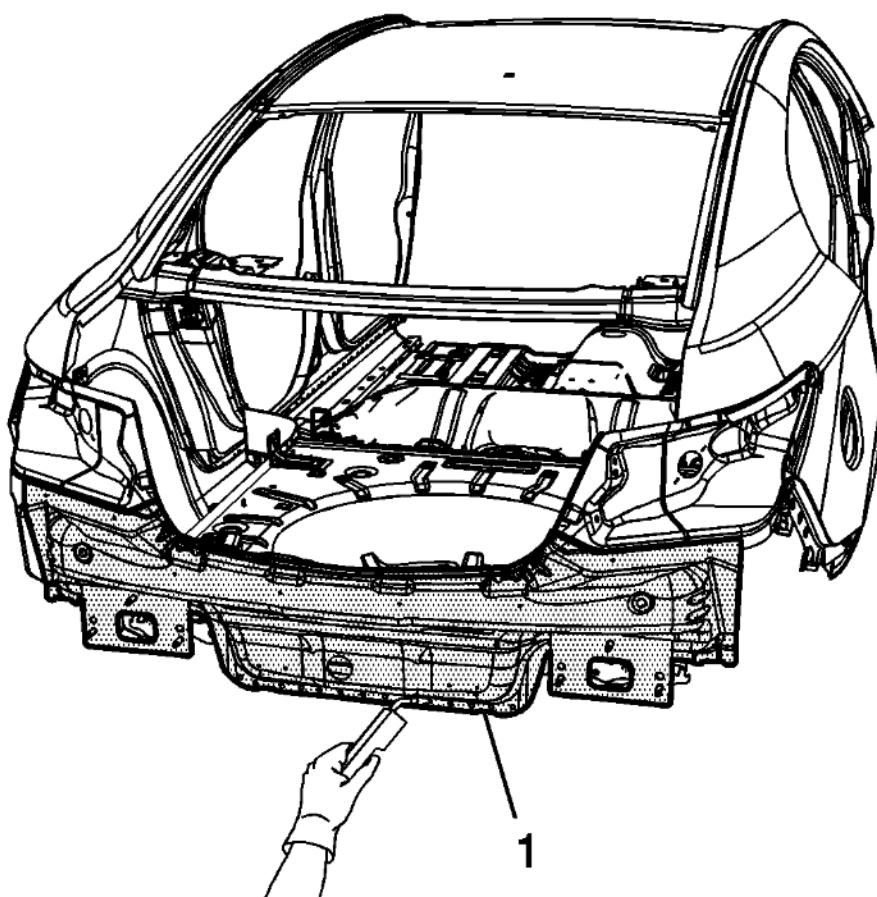


Fig. 121: Welding Rear End Panel
 Courtesy of GENERAL MOTORS COMPANY

6. Plug weld accordingly (1).
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** .
12. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

CENTER PILLAR INNER PANEL REPLACEMENT

Removal Procedure

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

WARNING: Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Remove all related panels and components.
3. Visually inspect the damage. Repair as much of the damage as possible.
4. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
5. Locate and mark all factory welds.

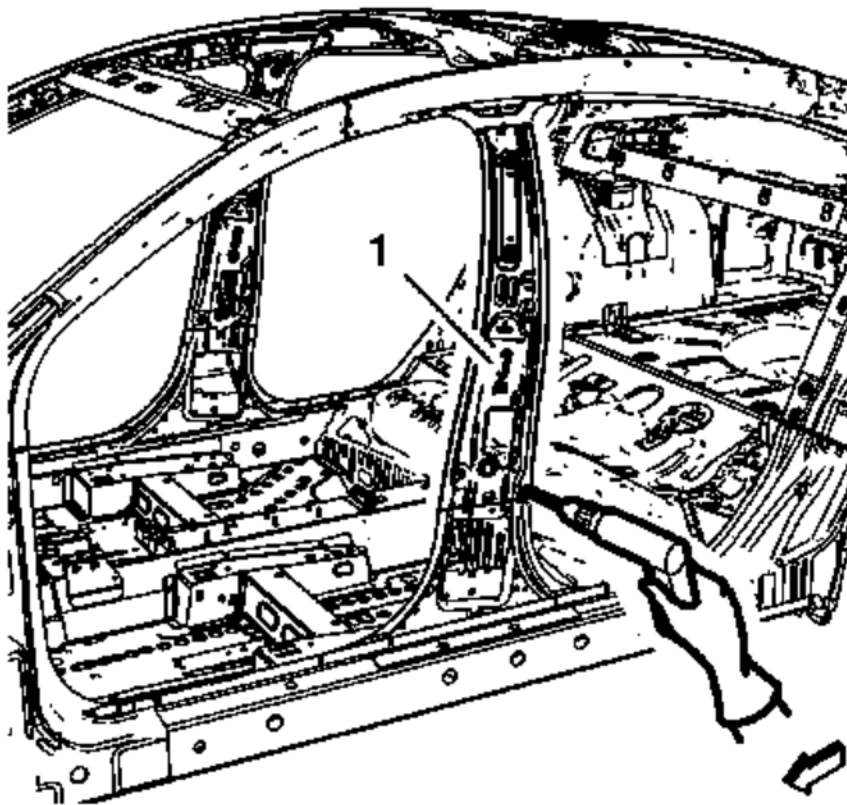


Fig. 122: Drilling Factory Welds From Lower Center Pillar Inner Panel
Courtesy of GENERAL MOTORS COMPANY

6. Drill all factory welds lower of the center pillar inner panel (1). Note the number and location of welds for installation of the service assembly.

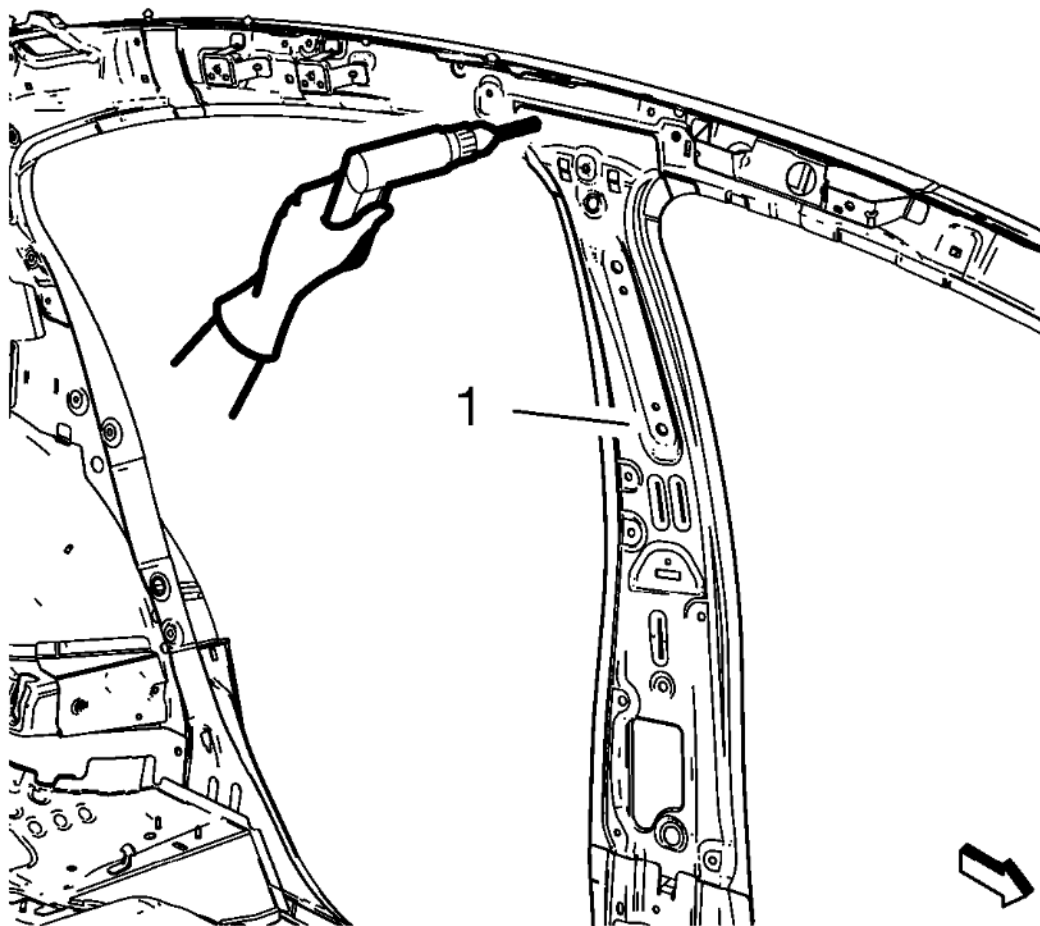


Fig. 123: Drilling Factory Welds From Upper Center Pillar Inner Panel
Courtesy of GENERAL MOTORS COMPANY

7. Drill all factory welds upper of the center pillar inner panel (1). Note the number and location of welds for installation of the service assembly.

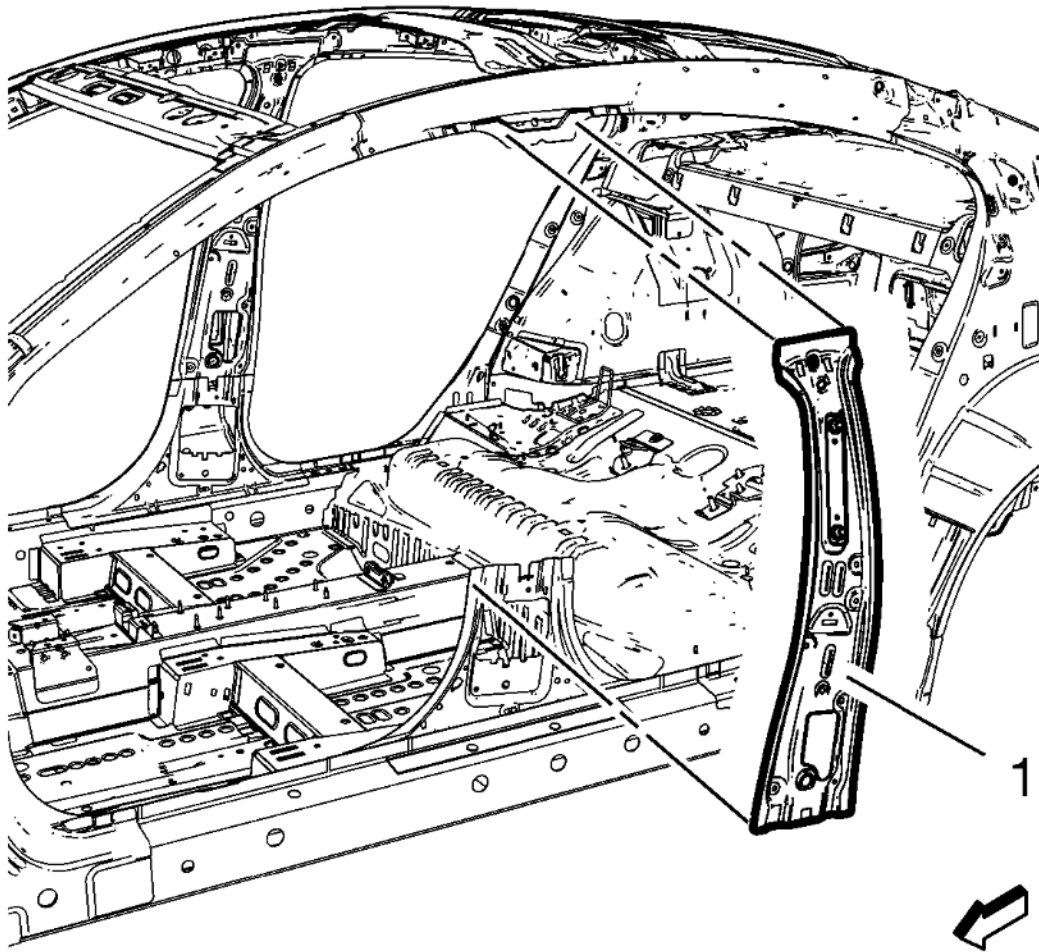


Fig. 124: Center Pillar Inner Panel
Courtesy of GENERAL MOTORS COMPANY

8. Remove the damaged center pillar inner panel (1).

Installation Procedure

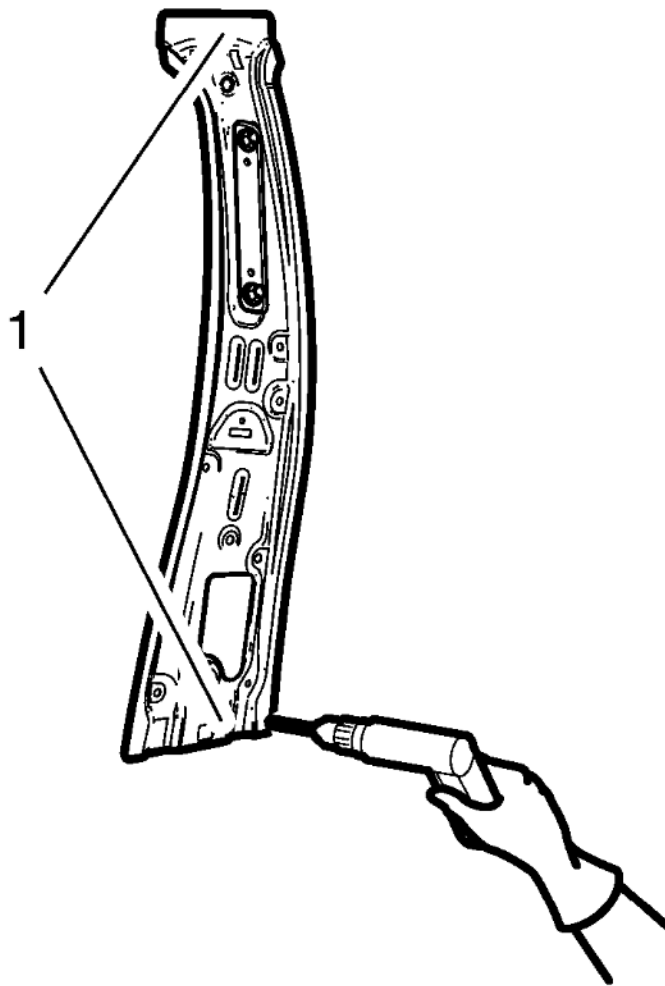


Fig. 125: Drilling Holes Plug Welding Holes In New Center Pillar Inner Panel
Courtesy of GENERAL MOTORS COMPANY

1. Drill 8 mm (5/16 in) for plug welding along the edges of the center pillar inner panel (1) as noted from the original panel.
2. Clean and prepare the attaching surfaces for welding.

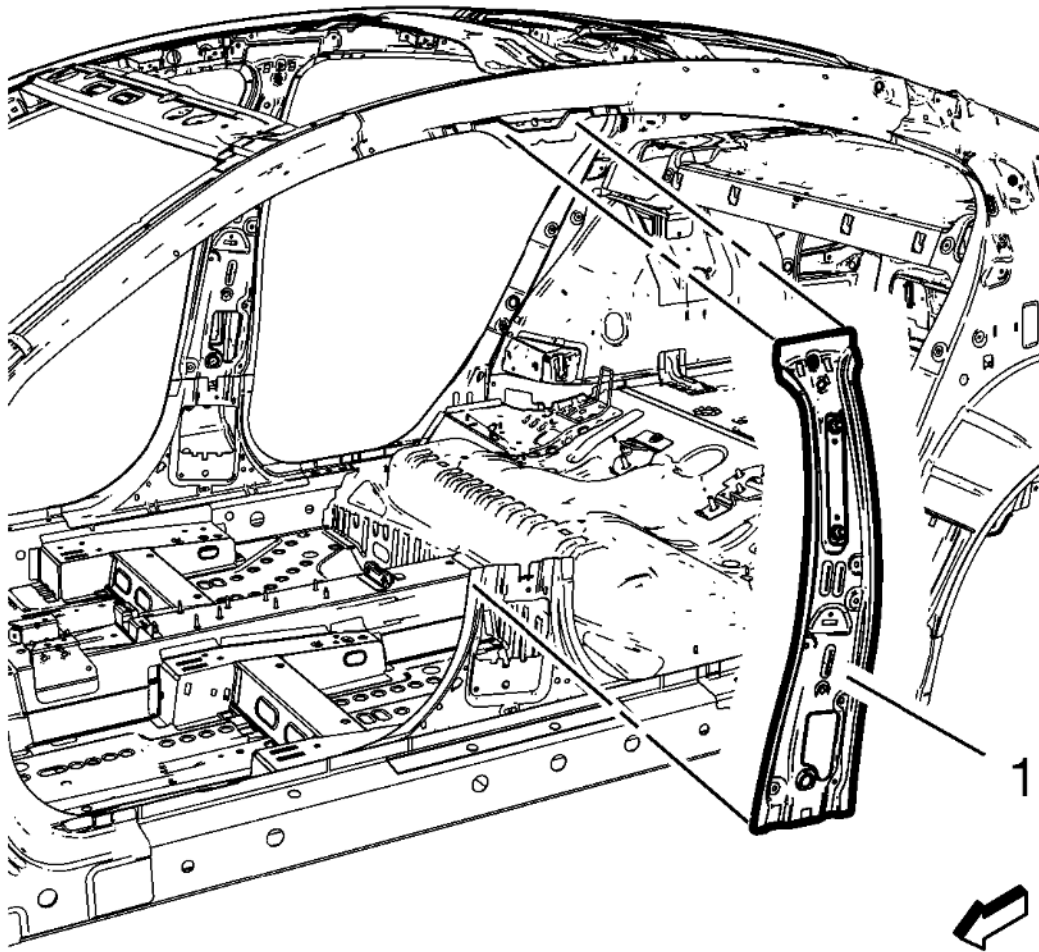


Fig. 126: Center Pillar Inner Panel
Courtesy of GENERAL MOTORS COMPANY

3. Position the center pillar inner panel (1) on the vehicle.
4. Verify the fit of the panel.
5. Clamp the center pillar inner panel into position.

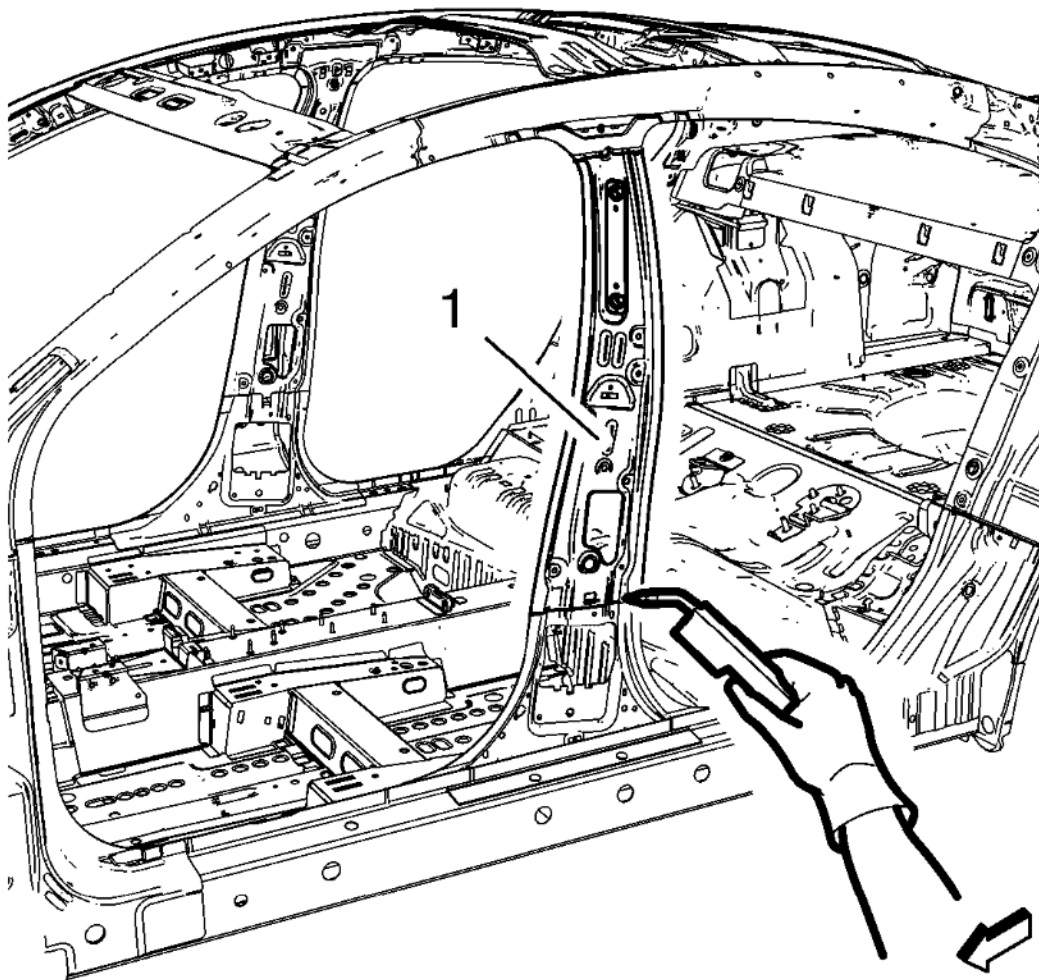


Fig. 127: Welding Upper And Lower Center Pillar Inner Panel
Courtesy of GENERAL MOTORS COMPANY

6. Plug weld accordingly center pillar inner panel (1) upper and lower.
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. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

CENTER PILLAR REINFORCEMENT REPLACEMENT

Removal Procedure

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

WARNING: Refer to Glass and Sheet Metal Handling Warning .

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

1. Disable the SIR System. Refer to SIR Disabling and Enabling .
2. Remove all related panels and components.
3. Visually inspect the damage. Repair as much of the damage as possible.
4. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
5. Remove body side center pillar section. Refer to Center Pillar Sectioning - Outer.

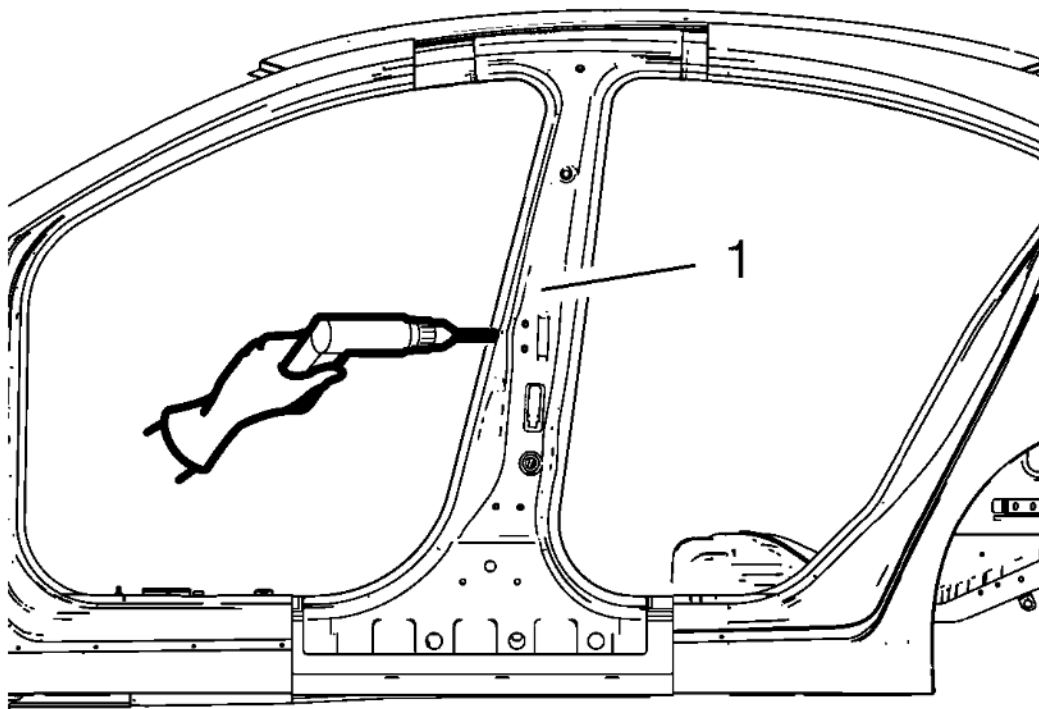


Fig. 128: Drilling Factory Welds Of Center Pillar Reinforcement
Courtesy of GENERAL MOTORS COMPANY

6. Locate and mark all the necessary factory welds of the center pillar reinforcement (1).
7. Drill all factory welds. Note the number and location of welds for installation of the service assembly.

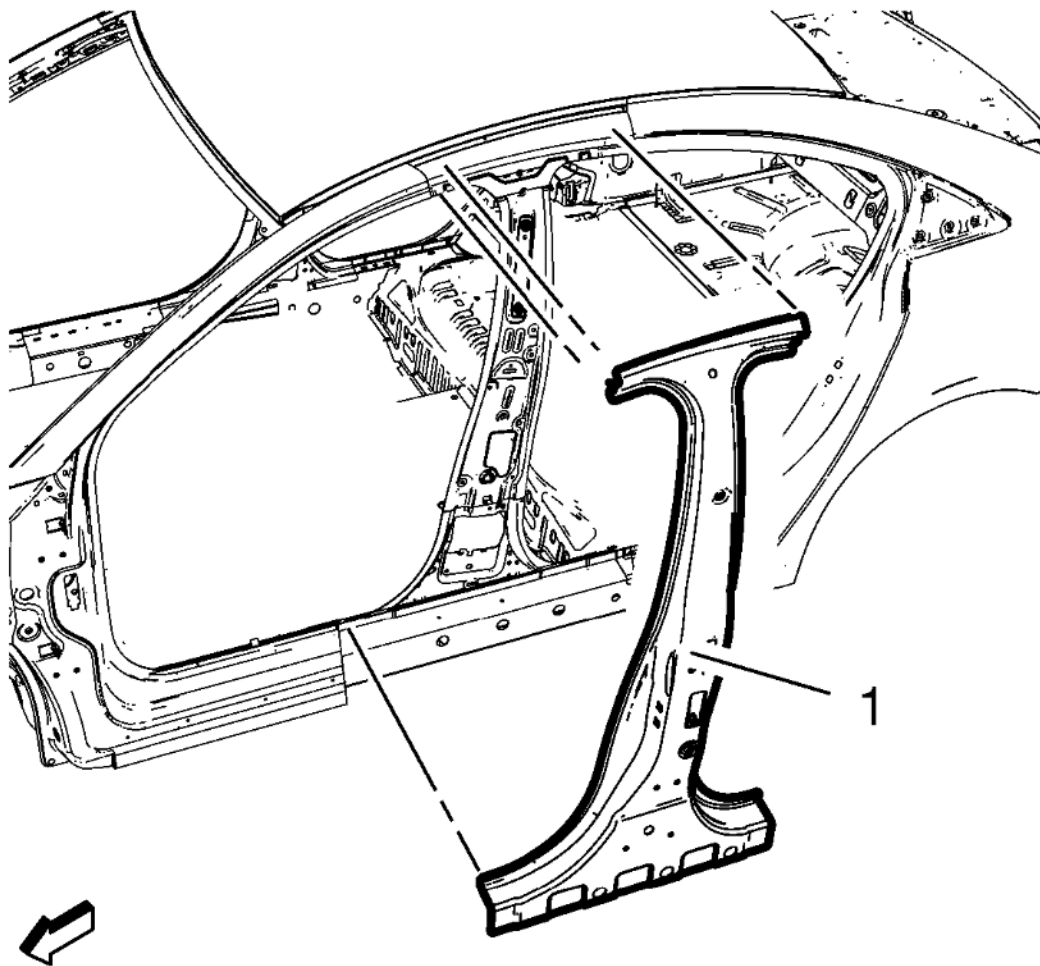


Fig. 129: Center Pillar Reinforcement
Courtesy of GENERAL MOTORS COMPANY

8. Remove the damaged center pillar reinforcement (1).

Installation Procedure

1. Prepare all matting surfaces as necessary.
2. Align the center pillar reinforcement.

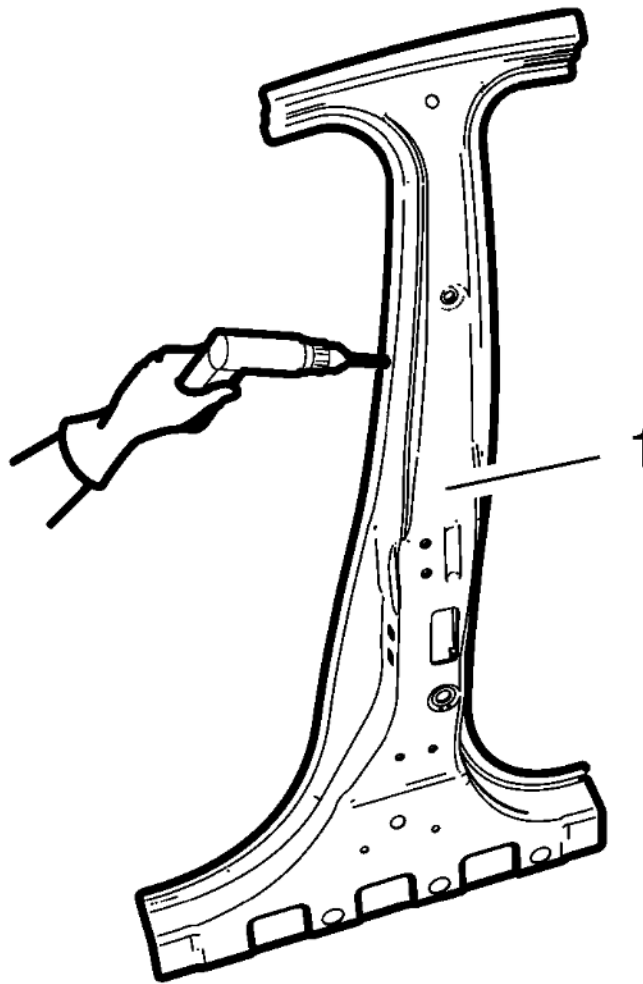


Fig. 130: Drilling Plug Weld Holes For New Center Pillar Reinforcement
Courtesy of GENERAL MOTORS COMPANY

3. Drill 8 mm (5/16 in) for plug welding along the edges of the center pillar reinforcement (1) as noted from the original panel.
4. Clean and prepare the attaching surfaces for welding.

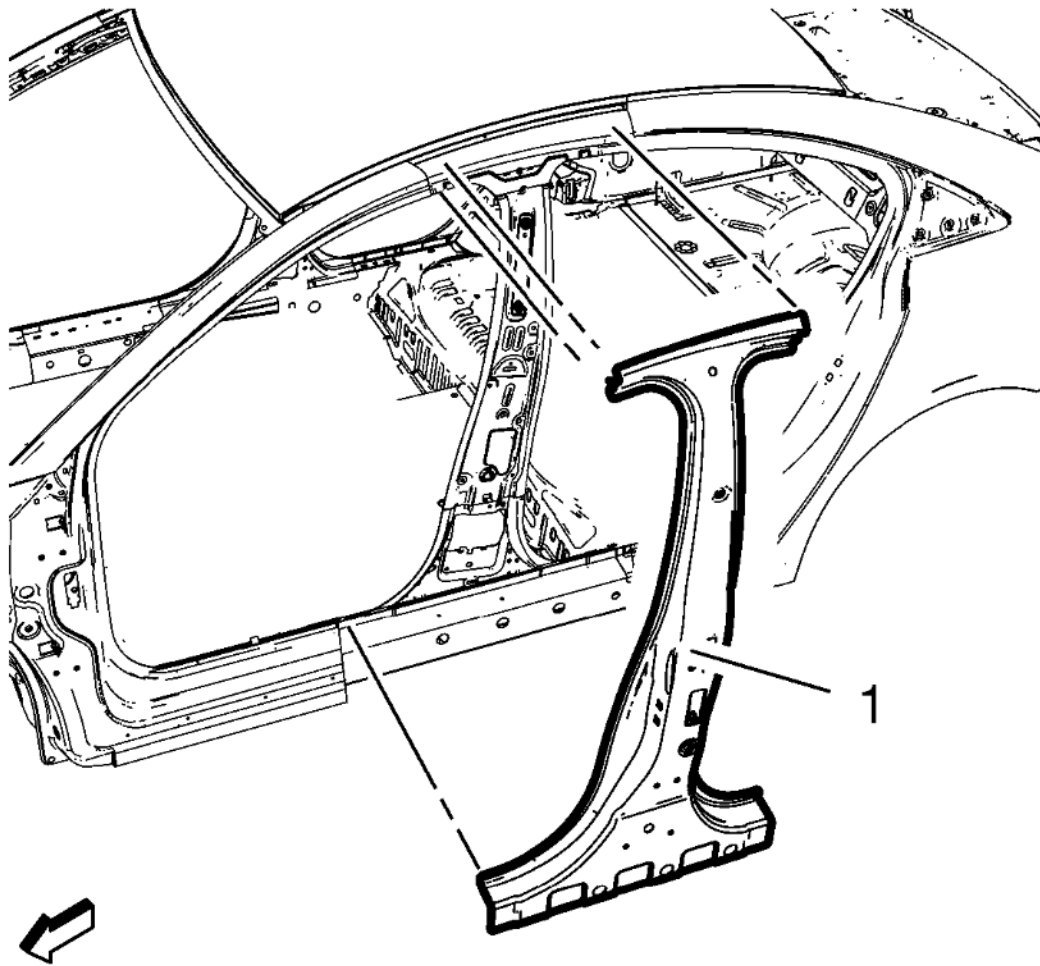


Fig. 131: Center Pillar Reinforcement
Courtesy of GENERAL MOTORS COMPANY

5. Position the center pillar reinforcement (1) on the vehicle using 3-dimensional measuring equipment.
6. Verify the fit of the center pillar reinforcement.
7. Clamp the center pillar reinforcement into position.

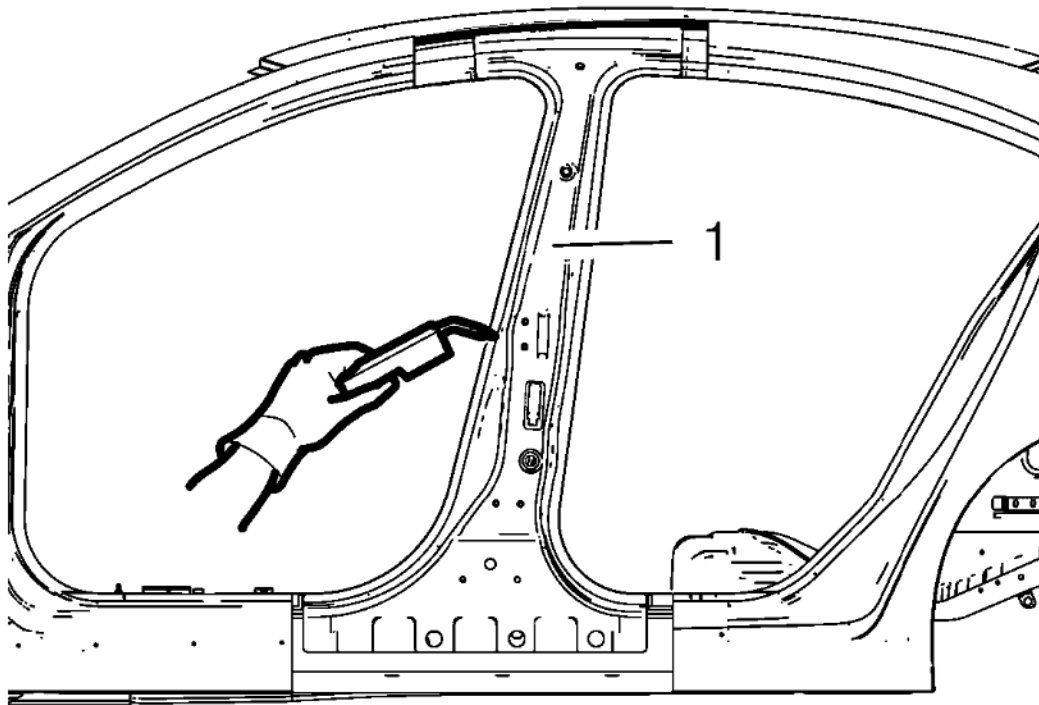


Fig. 132: Welding Center Pillar Reinforcement
Courtesy of GENERAL MOTORS COMPANY

8. Plug weld the center pillar reinforcement (1) accordingly.
9. Complete body side center pillar sectioning. Refer to **Center Pillar Sectioning - Outer**.
10. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair**.
11. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems**.
12. Install all related panels and components.
13. 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: Sectioning should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle.

NOTE: This procedure was developed to allow full access for the replacement of the center reinforcement pillar replacement since sectioning is not endorsed or recommended to the reinforcement due to the ultra high strength steel [Ultra High Strength Steel](#).

1. Disable the SIR system. Refer to [SIR Disabling and Enabling](#).
2. Remove all related panels and components.
3. Remove the sealers and anti-corrosion materials from the repair area, as necessary, and note their location. Refer to [Anti-Corrosion Treatment and Repair](#).
4. Repair as much of the damaged area as possible. Refer to [Dimensions - Body \(Sedan\)](#).

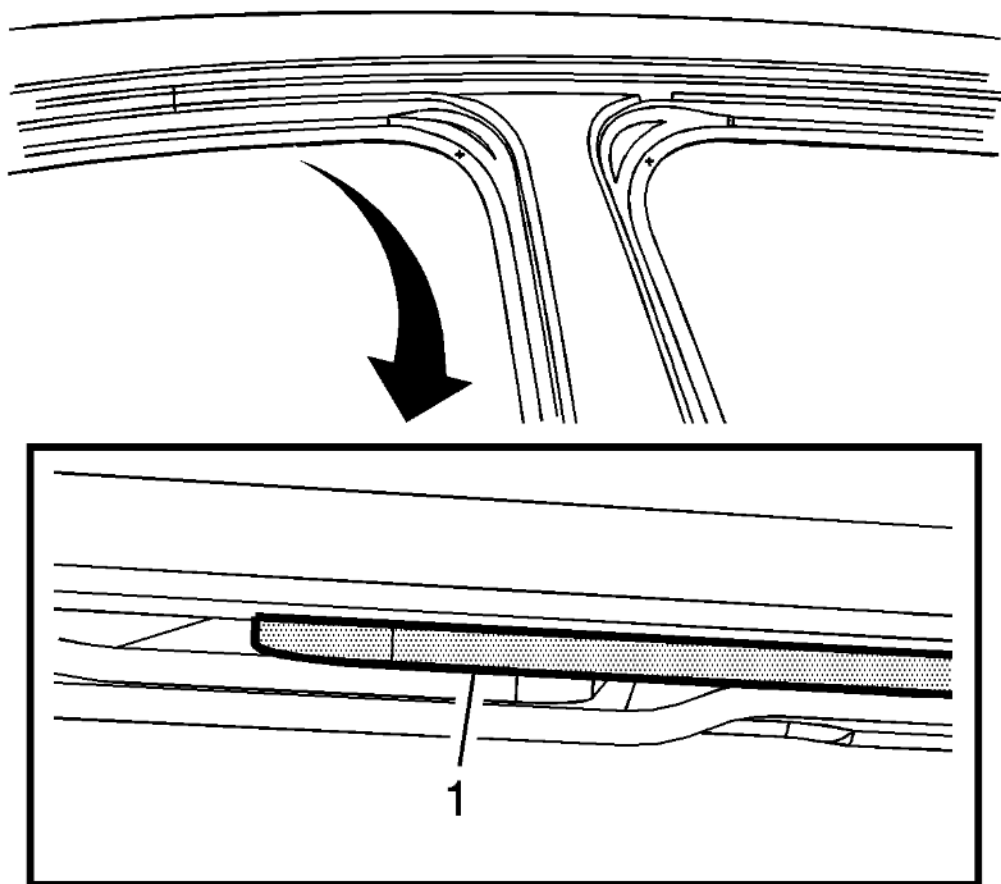


Fig. 133: Removing Weatherstrip

Courtesy of GENERAL MOTORS COMPANY

5. Remove the weatherstrip, observe the flange in the center pillar area. There will be a 3-metal stack-up. The center layer is the center pillar inner reinforcement (1).

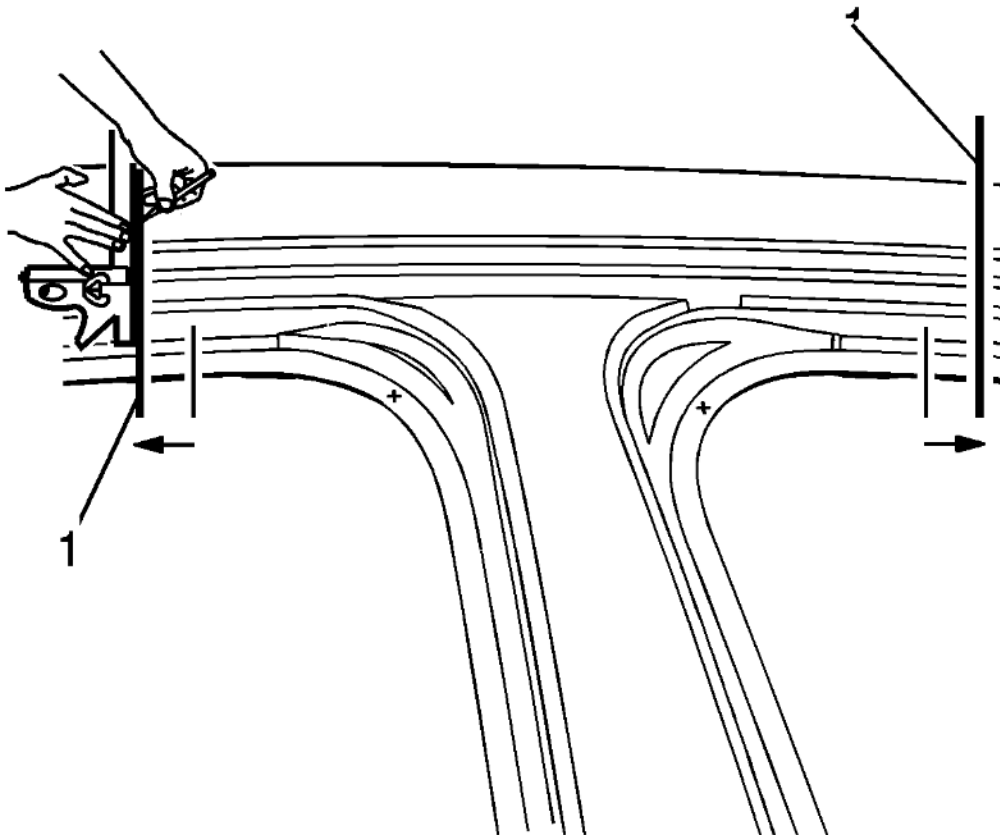


Fig. 134: Vertical Line Marks

Courtesy of GENERAL MOTORS COMPANY

6. Measure 13 mm (1/2 in) from the forward and rearward edges of the center pillar inner reinforcement and mark a vertical line (1).

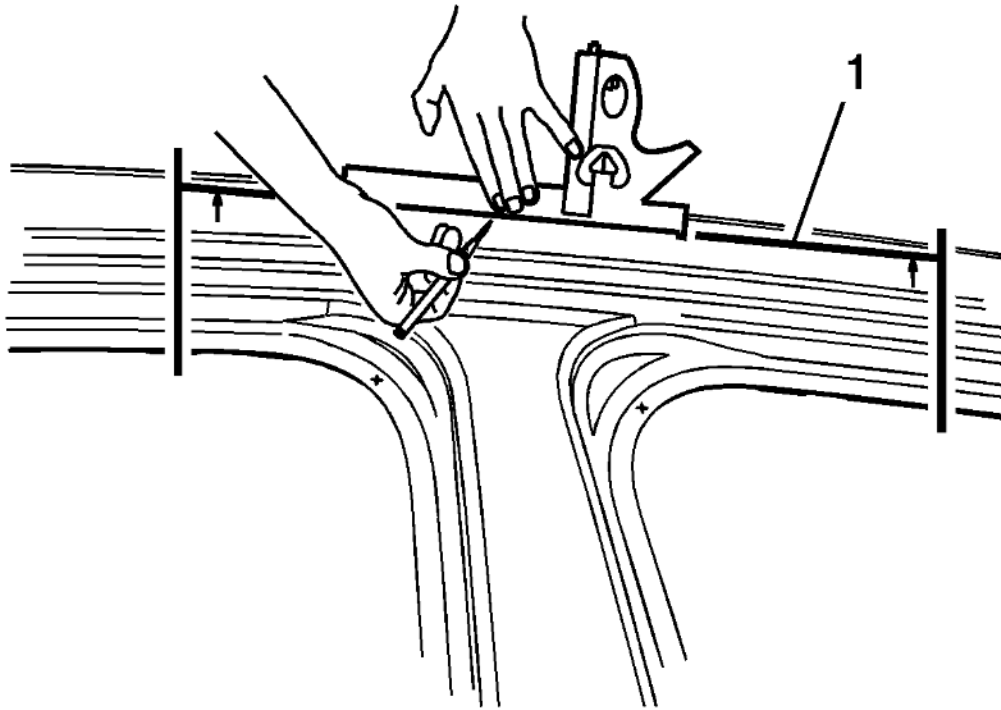


Fig. 135: Measuring Up 1 Inch From Door Opening Feature Line And Mark A Horizontal Line.
Courtesy of GENERAL MOTORS COMPANY

7. Measure down 25 mm (1 in) from the upper edge of the body side outer panel and mark a horizontal line (1). This is the cut line.

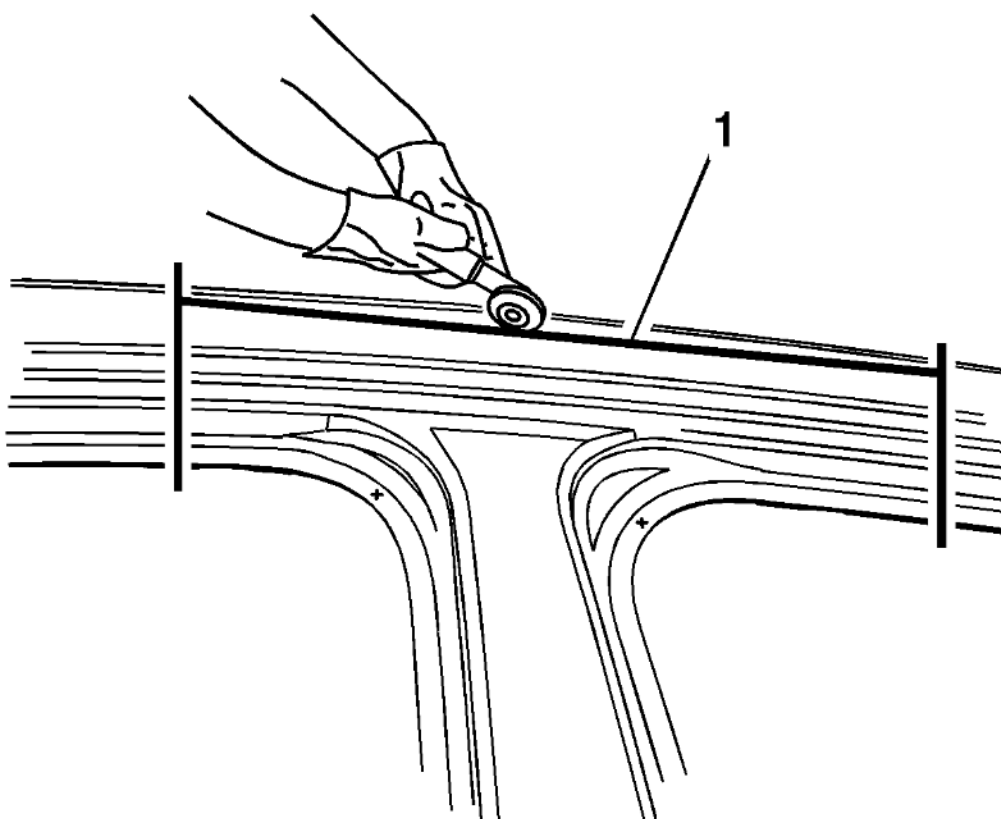


Fig. 136: Cutting Access Window In Center Pillar
Courtesy of GENERAL MOTORS COMPANY

8. Cut access window (1) in the center pillar outer.
9. Perform additional sectioning procedures as needed depending on damage to vehicle. Refer to **Quarter Outer Panel Sectioning**, **Rocker Outer Panel Sectioning**, or **Front Hinge Pillar Body Sectioning (Upper)**, **Front Hinge Pillar Body Sectioning (Lower)**.

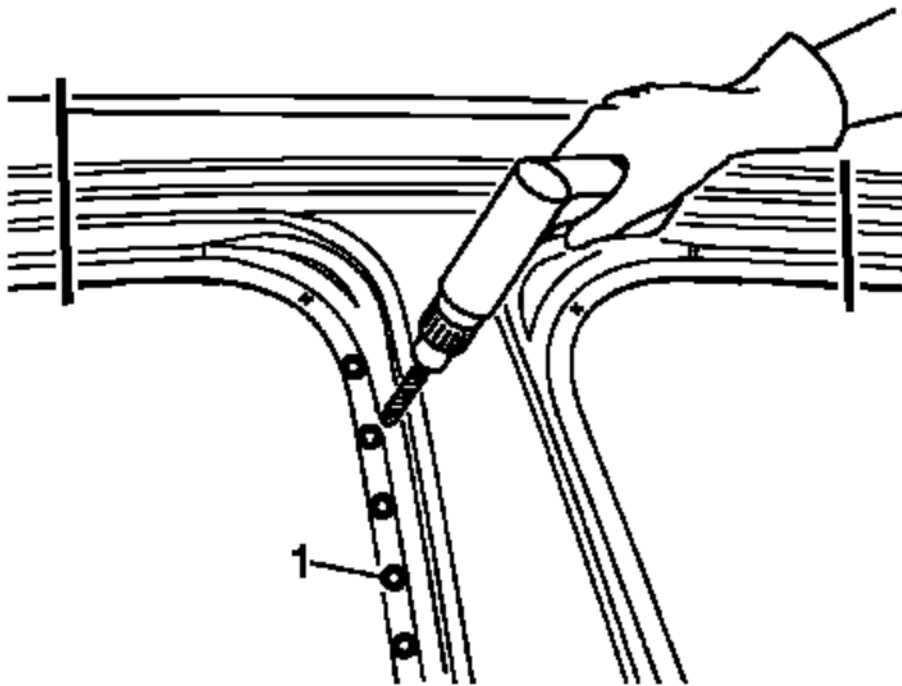


Fig. 137: Drilling Out Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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

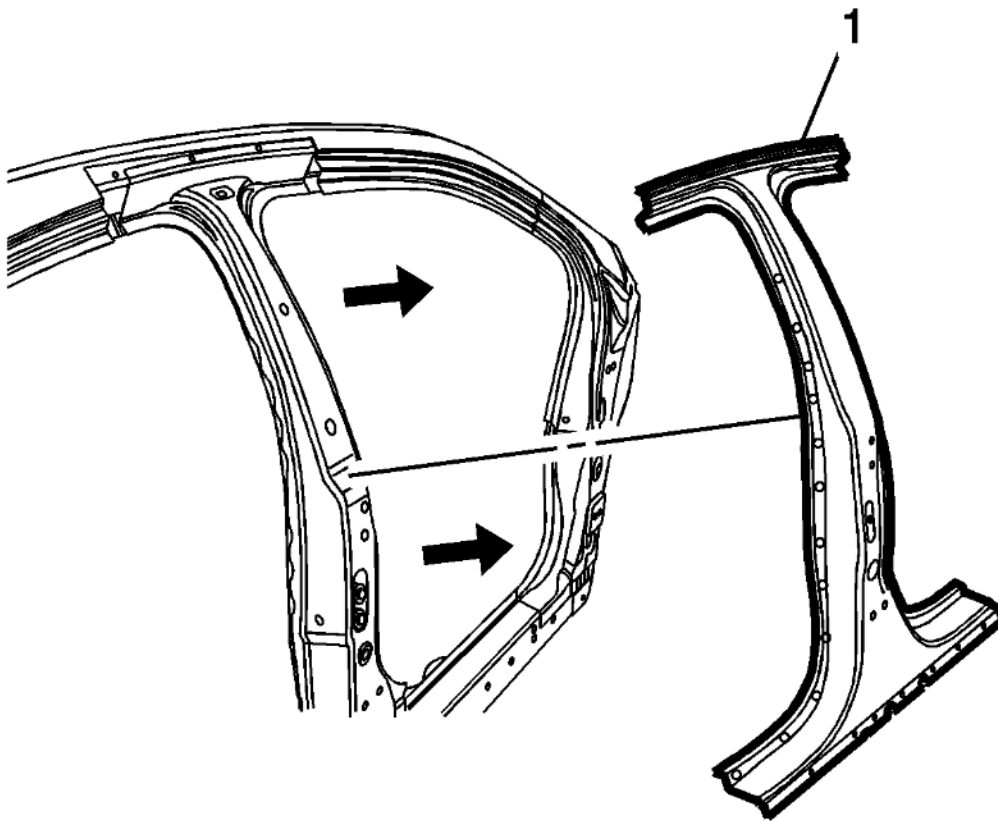


Fig. 138: Center Pillar Outer Panel Section
Courtesy of GENERAL MOTORS COMPANY

11. Remove the damaged center pillar outer panel section (1).

Installation Procedure

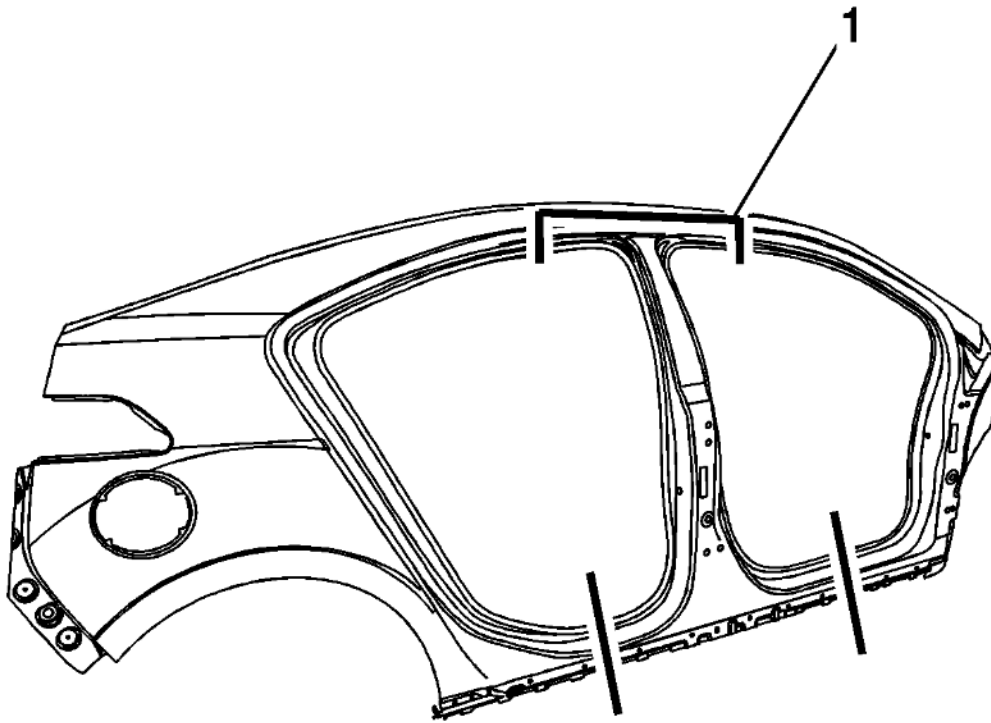


Fig. 139: Cutting Panel In Corresponding Locations
Courtesy of GENERAL MOTORS COMPANY

1. From the service part, cut the panel in corresponding locations to overlap the remaining original panel by 25 mm (1 in) at each joint location (1).

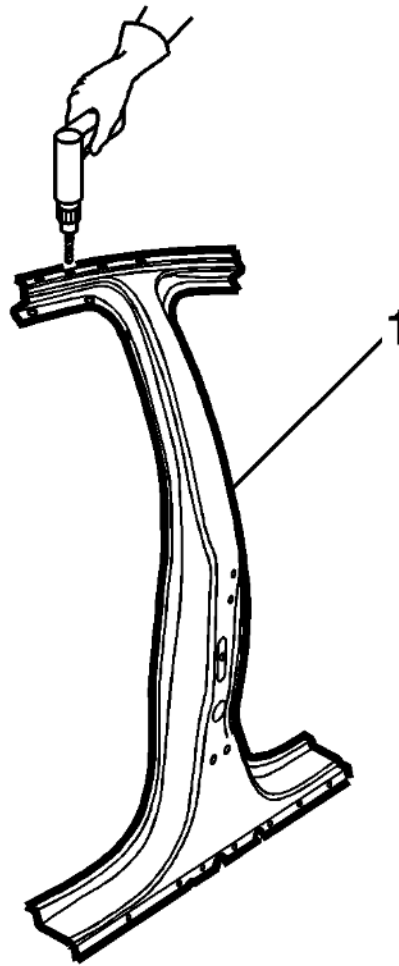


Fig. 140: Drilling Plug Weld Holes In Service Part
Courtesy of GENERAL MOTORS COMPANY

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

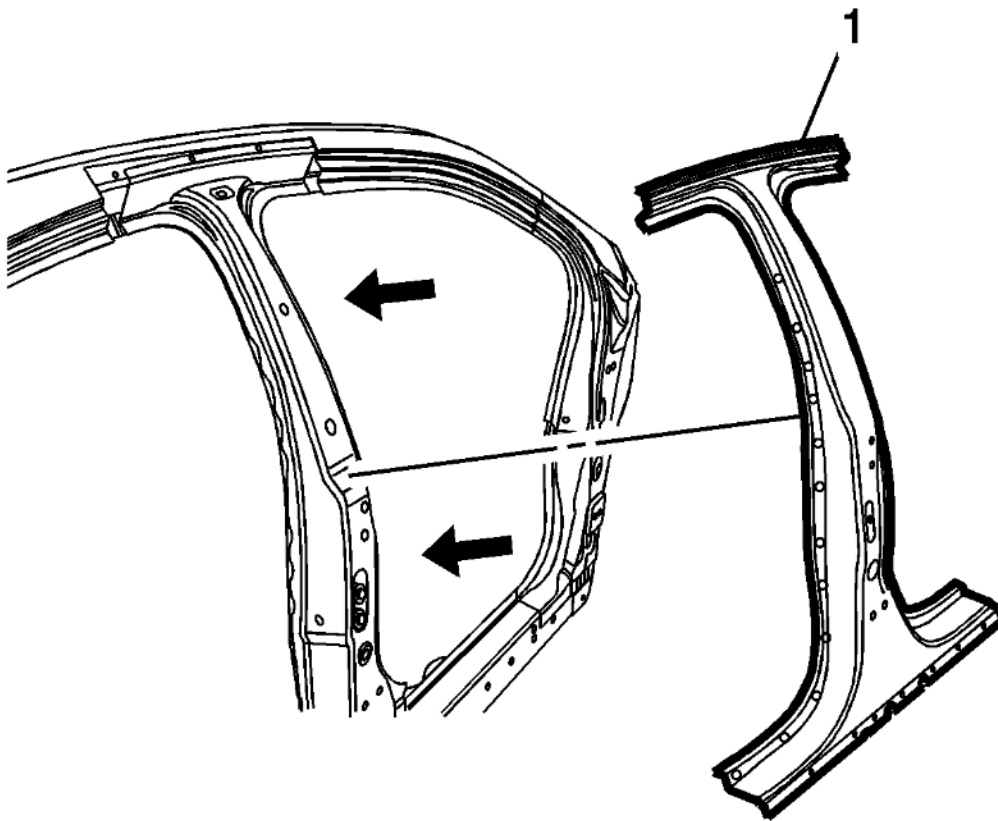


Fig. 141: Positioning Outer Center Pillar
Courtesy of GENERAL MOTORS COMPANY

5. Position the outer center pillar (1) to the vehicle using 3-dimensional measuring equipment. Clamp the pillar in place.

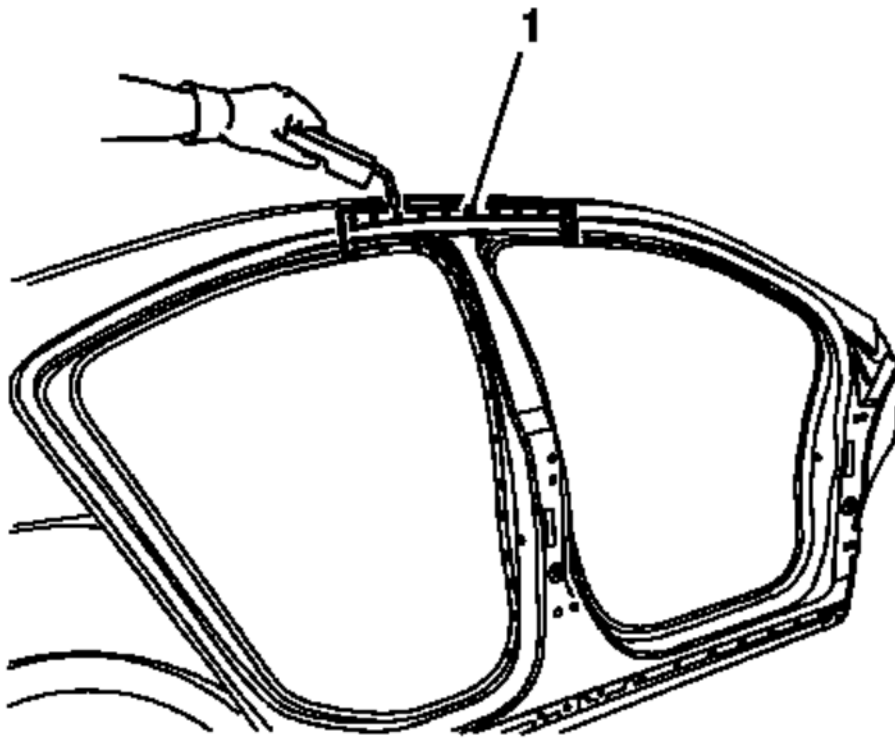


Fig. 142: Plug Welding Outer Center Pillar
Courtesy of GENERAL MOTORS COMPANY

6. Plug weld accordingly (1).

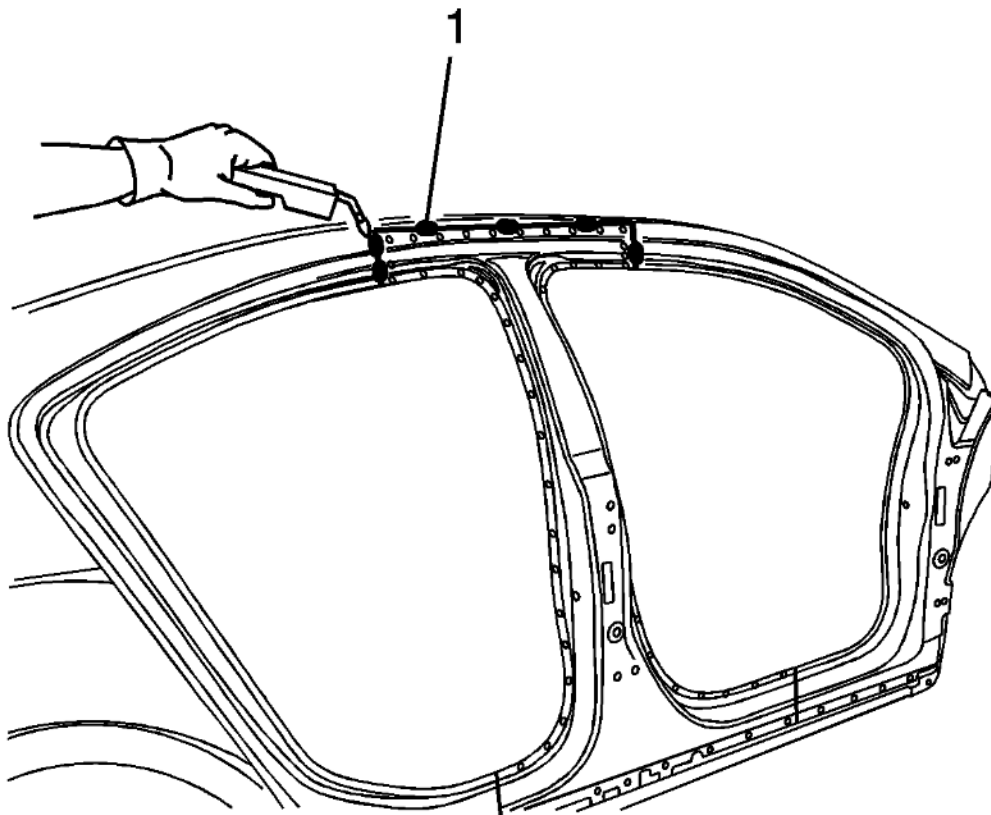


Fig. 143: Installing Outer Center Pillar
 Courtesy of GENERAL MOTORS COMPANY

7. To create a solid weld with minimum heat distortion, make a 25 mm (1 in) stitch weld along the seam with gaps of 25 mm (1 in) gaps between them. Go back and complete the stitch weld (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. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

FRONT SIDE DOOR OUTER PANEL REPLACEMENT

Removal Procedure

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

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** .
2. Disable the SIR system. Refer to **SIR Disabling and Enabling** .
3. Remove the door from the vehicle. Refer to **Front Side Door Replacement** .
4. Remove all related panels and components.

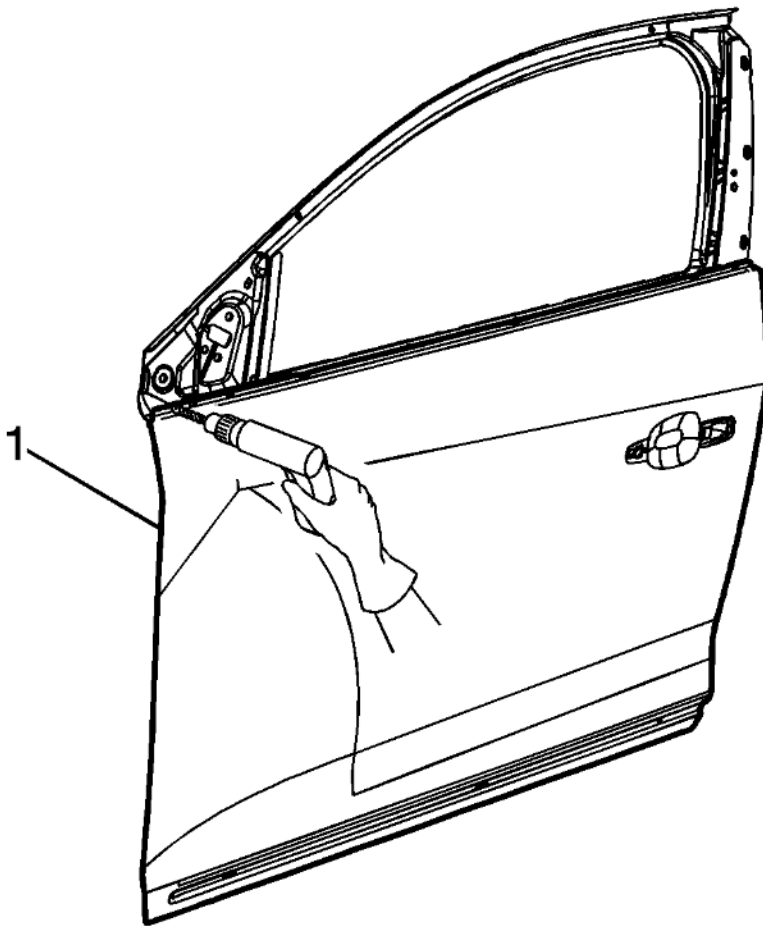


Fig. 144: Drilling Holes in Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

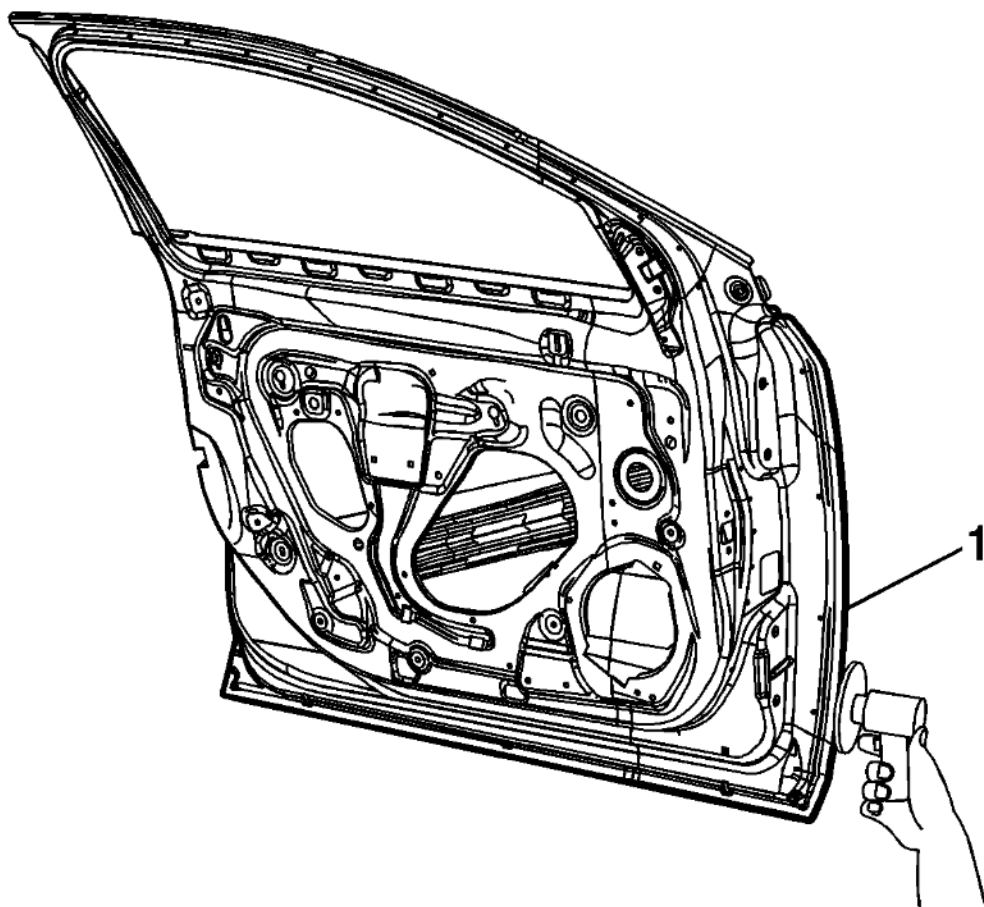


Fig. 145: Grinding Front Side Door Outer Panel Mating Flanges
Courtesy of GENERAL MOTORS COMPANY

6. Grind the edges of the door outer panel to separate the outer door panel from the door shell (1).

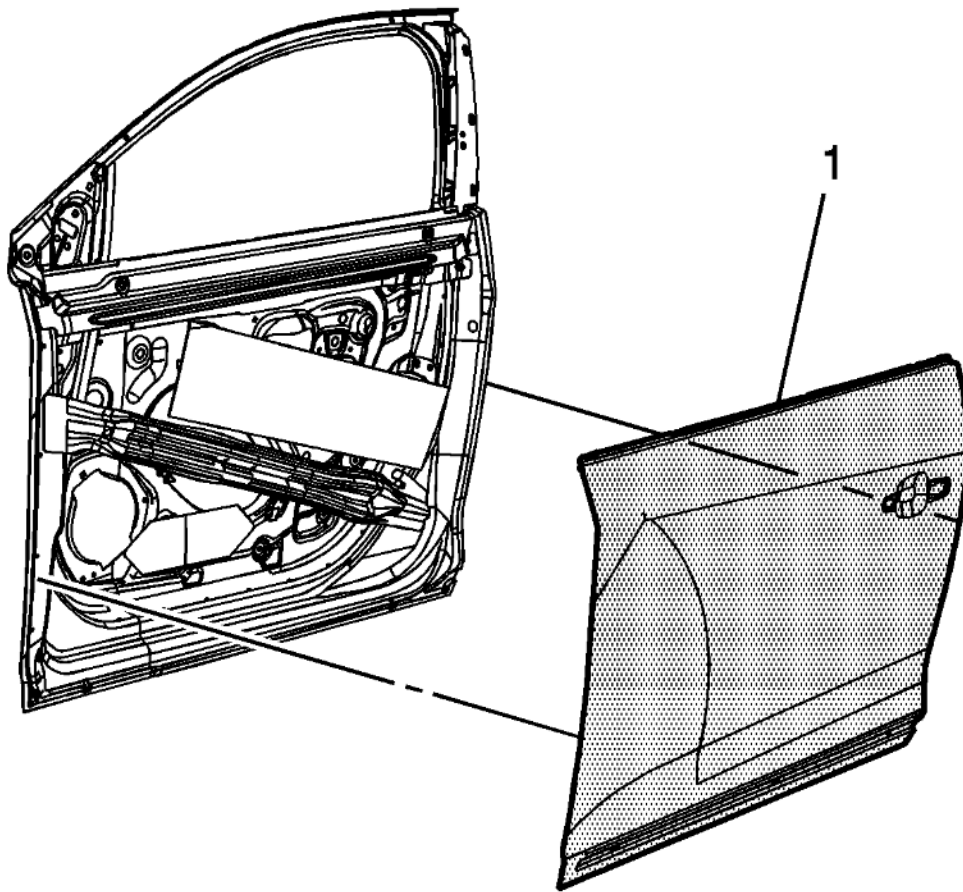


Fig. 146: Front Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

WARNING: Inspection of the door guard beam for damage must be performed before replacement of the door outer panel. If damage to the door guard beam is found the door must be replaced. Failure to do so may compromise the structural integrity of the vehicle and may cause personal injury if the vehicle is involved in a collision.

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

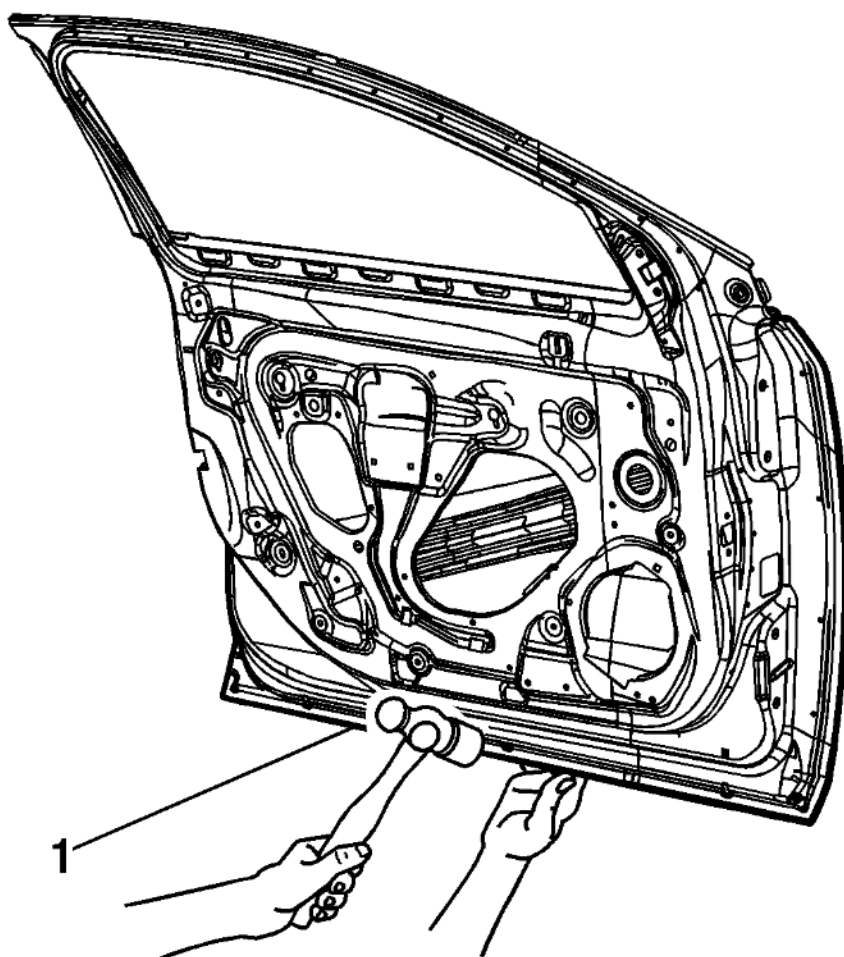


Fig. 147: Straightening Edges Of Front Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

9. Straighten the edges of the door shell (1).

Installation Procedure

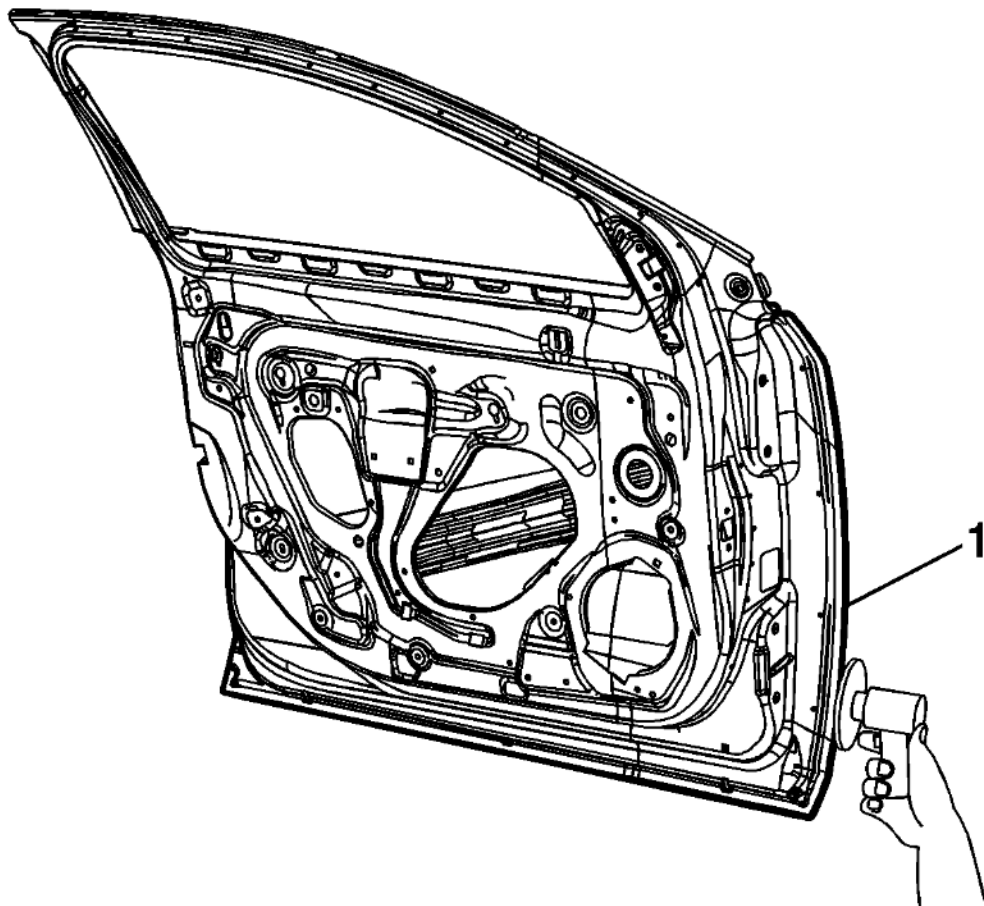


Fig. 148: Grinding Front Side Door Outer Panel Mating Flanges
Courtesy of GENERAL MOTORS COMPANY

1. Using a grinding disk grind the surface of the door shell mating flanges to bare steel (1).

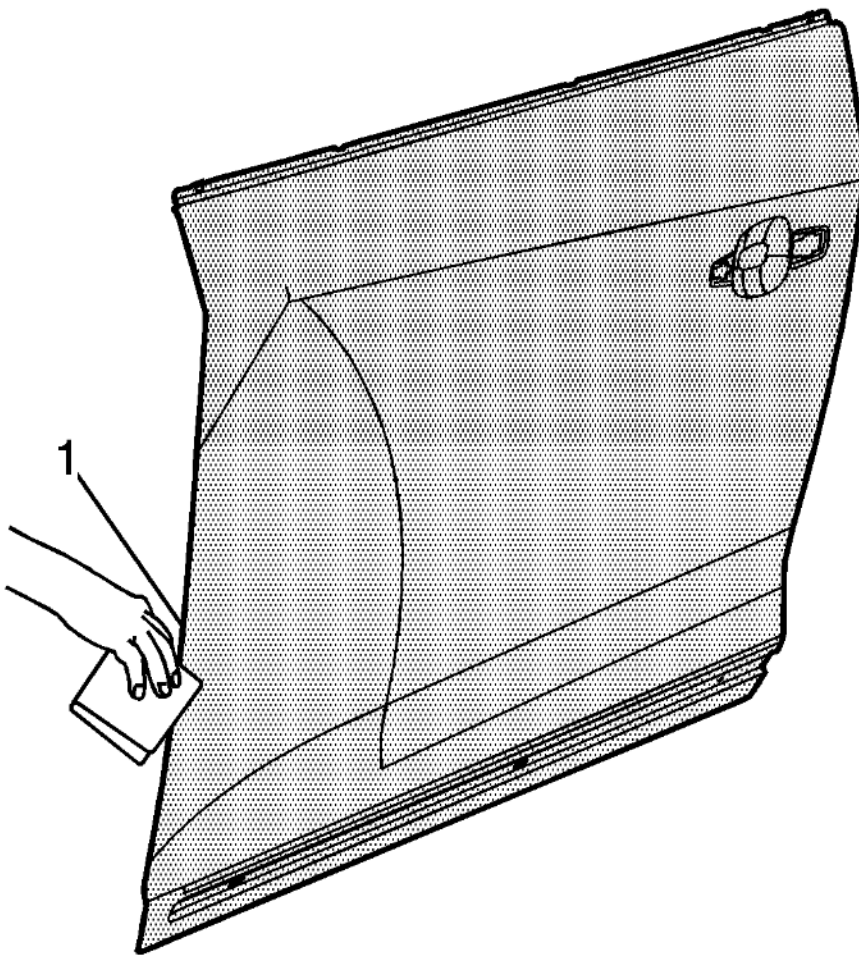


Fig. 149: Scuffing Front Side Door Outer Panel Opposing Mating Surfaces
Courtesy of GENERAL MOTORS COMPANY

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

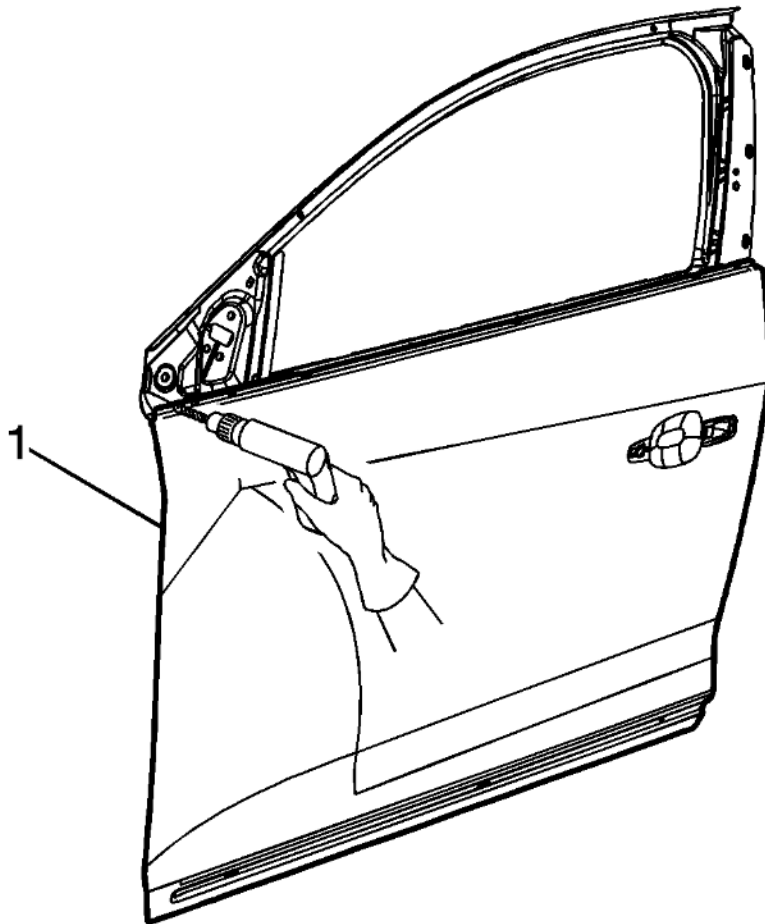


Fig. 150: Drilling Holes in Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

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

4. Clean the mating surfaces.

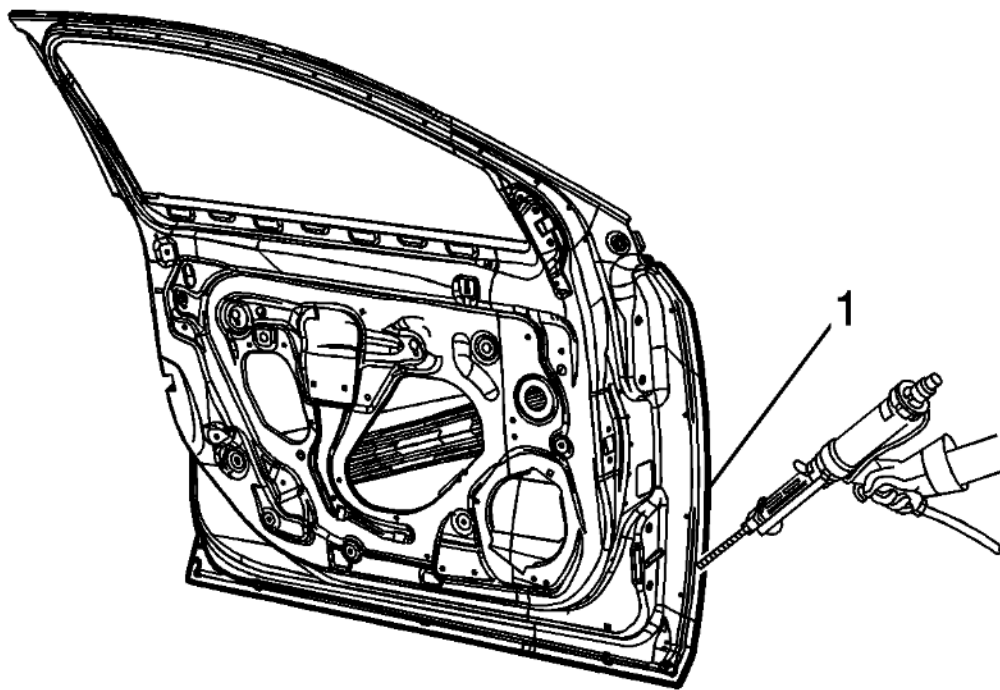


Fig. 151: Applying Bead Of Metal Panel Bonding Adhesive To Front Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not allow the adhesive to totally cure off the vehicle, as proper alignment of the door outer panel to the door shell will be difficult.

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

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

7. Apply a 9-13 mm (3/8-1/2 in) bead of metal panel bonding adhesive to the mating surface of the service panel.

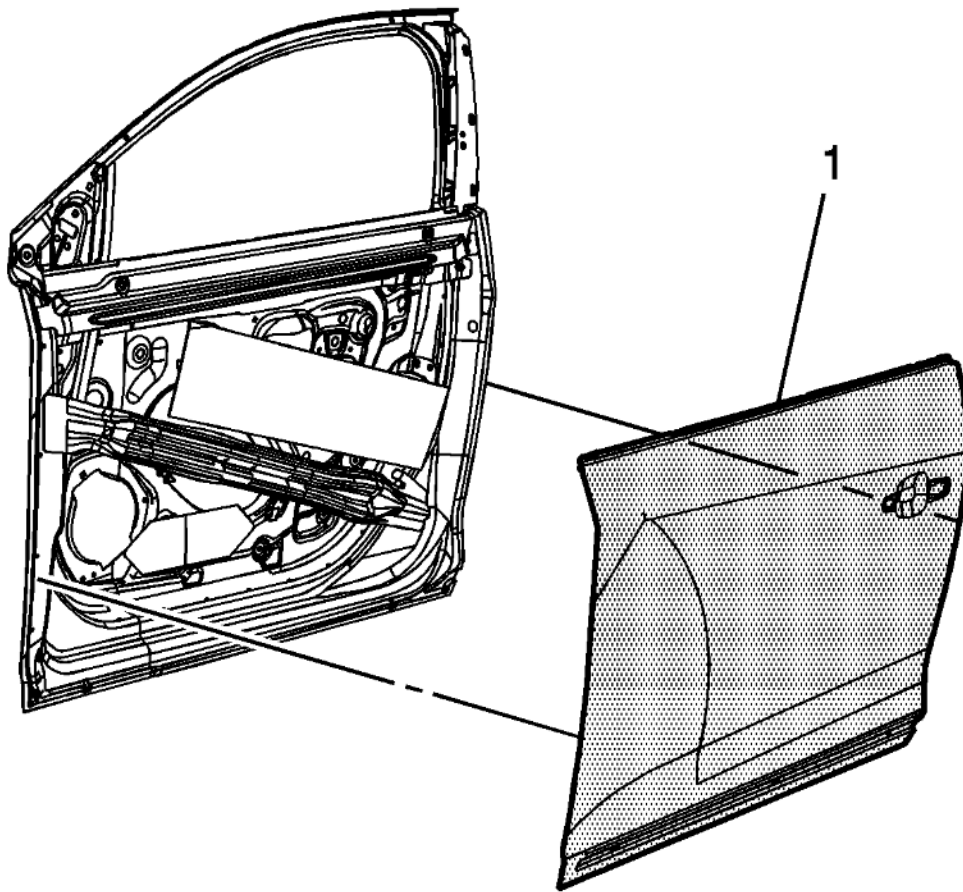


Fig. 152: Front Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

8. Install the door outer panel to the door shell (1).
9. Clamp the door outer panel into position as required.

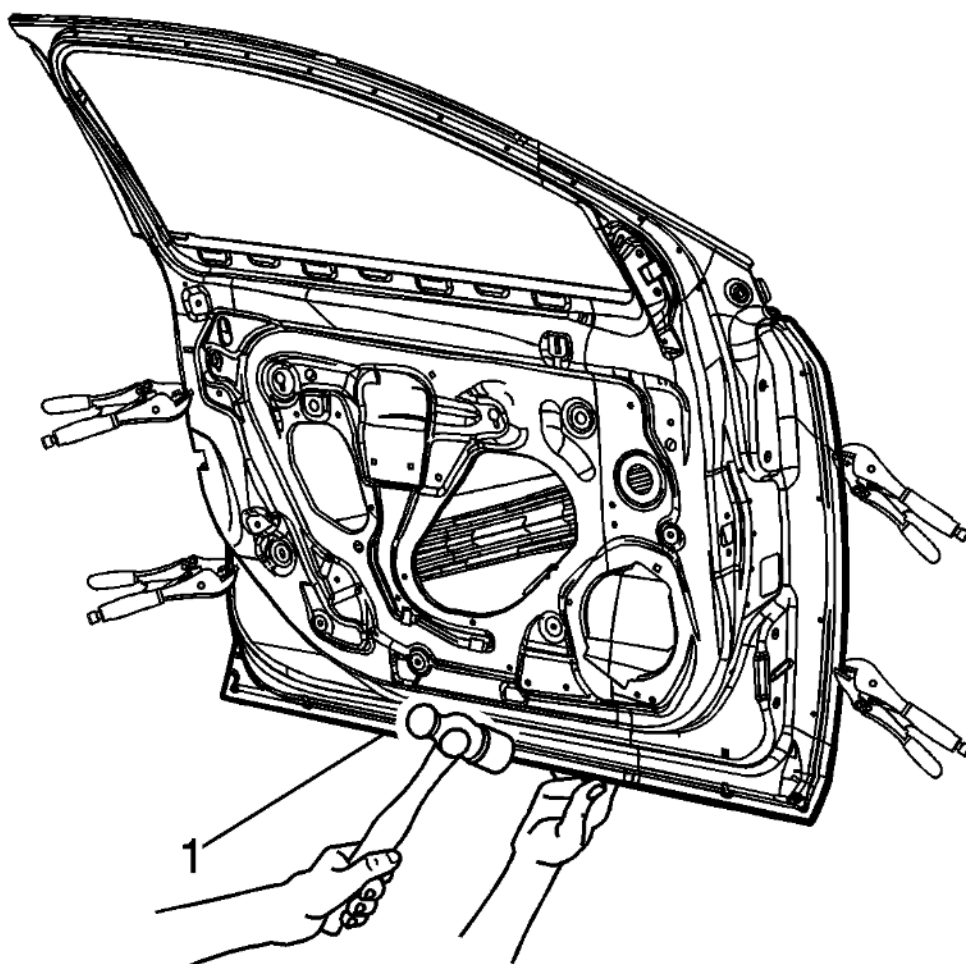


Fig. 153: re-hemming hem flanges around Front Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

Continue to hammer in stages along the hem flanges (1).

11. Using lacquer thinner remove the excess adhesive from the door panel area.
12. Install the door to the vehicle. Inspect the door outer panel for proper alignment. Adjust the alignment as required. Refer to **Front Side Door Replacement** .

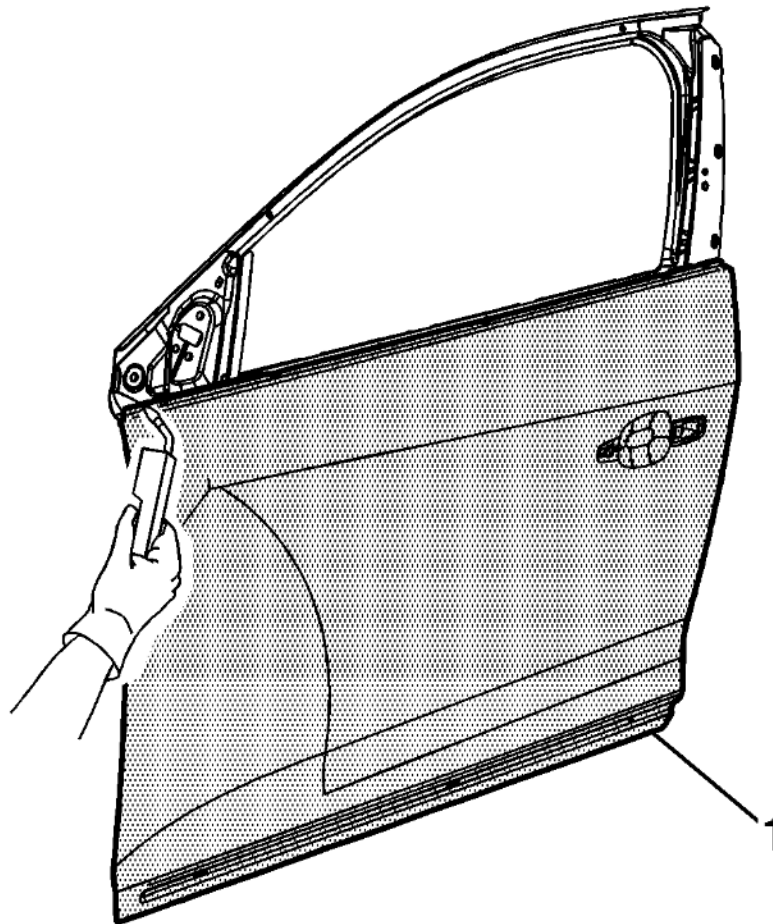


Fig. 154: Welding Front Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

13. Metal-inert gas (MIG) weld the door outer panel to the door frame in the locations noted at the upper door frame (1).
14. Clean and prepare all welded surfaces.

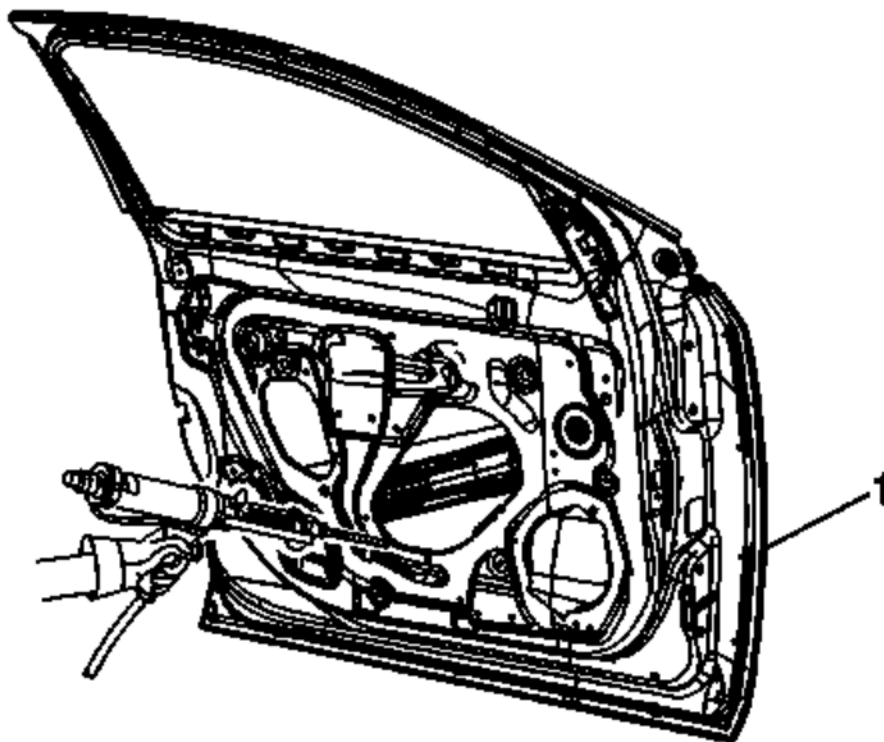


Fig. 155: Applying Fusor Super Flexible Anti-Flutter Foam To Inside Of Side Door Outer Panel
 Courtesy of GENERAL MOTORS COMPANY

15. 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 and the upper belt reinforcement (1).
16. Apply sealers and anti-corrosion materials to the repair area as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
17. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
18. Install all related panels and components.
19. Enable the SIR system. Refer to **SIR Disabling and Enabling** .
20. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection** .

REAR SIDE 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 .

WARNING: Refer to SIR Warning .

2. Disable the SIR system. Refer to SIR Disabling and Enabling .
3. Remove the door from the vehicle. Refer to Front Side Door Replacement , or to Rear Side Door Replacement .

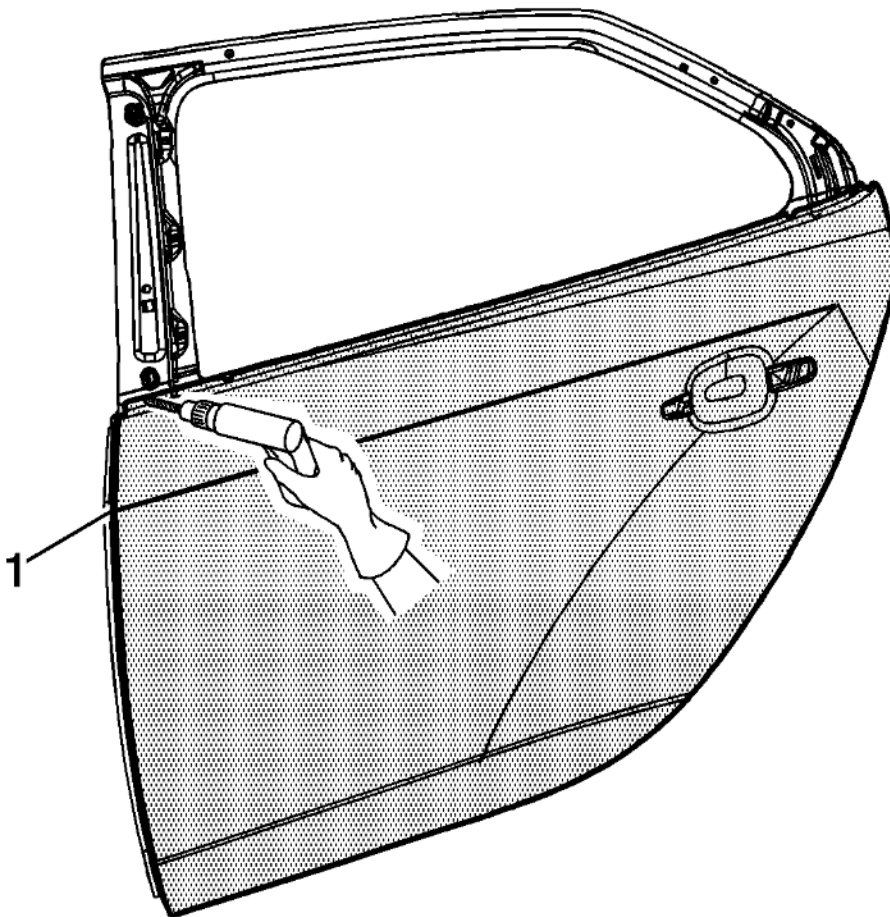


Fig. 156: Drilling Holes in Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

4. Locate and drill out all factory welds. Note the number and location of welds (1).

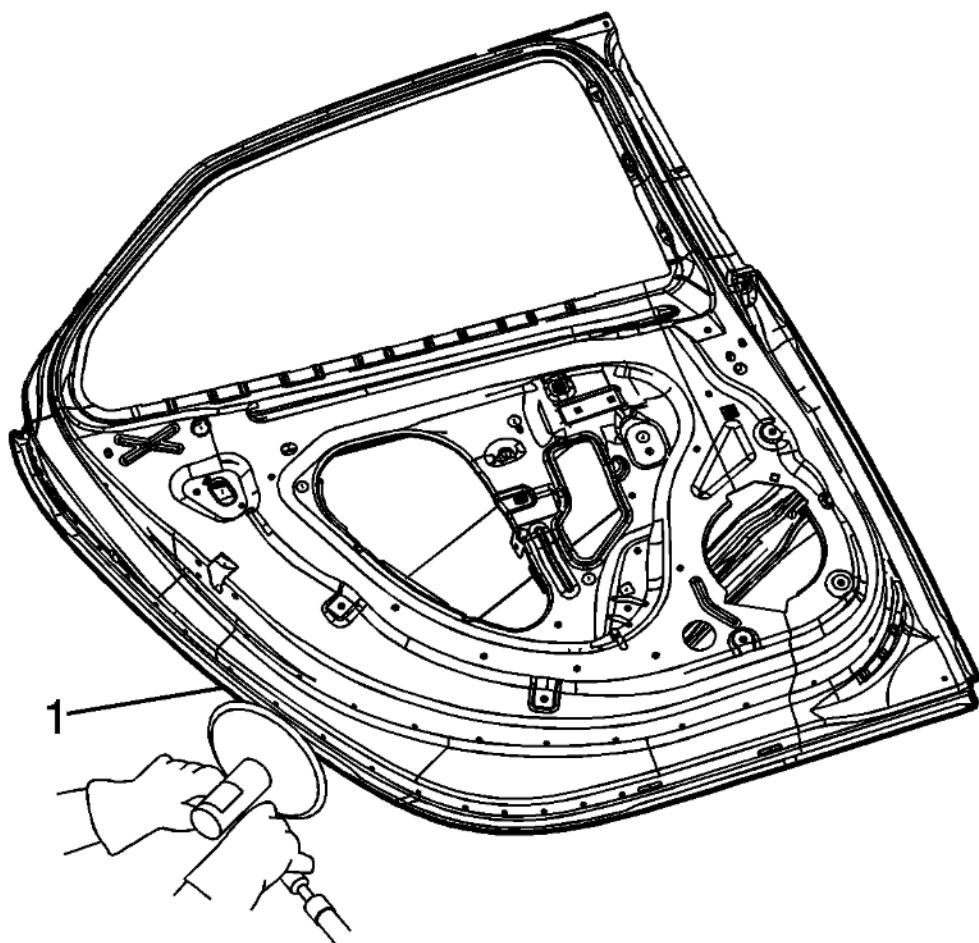


Fig. 157: Grinding Off Edges Of Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

5. Grind the edges of the door outer panel to separate the outer door panel from the door shell (1).

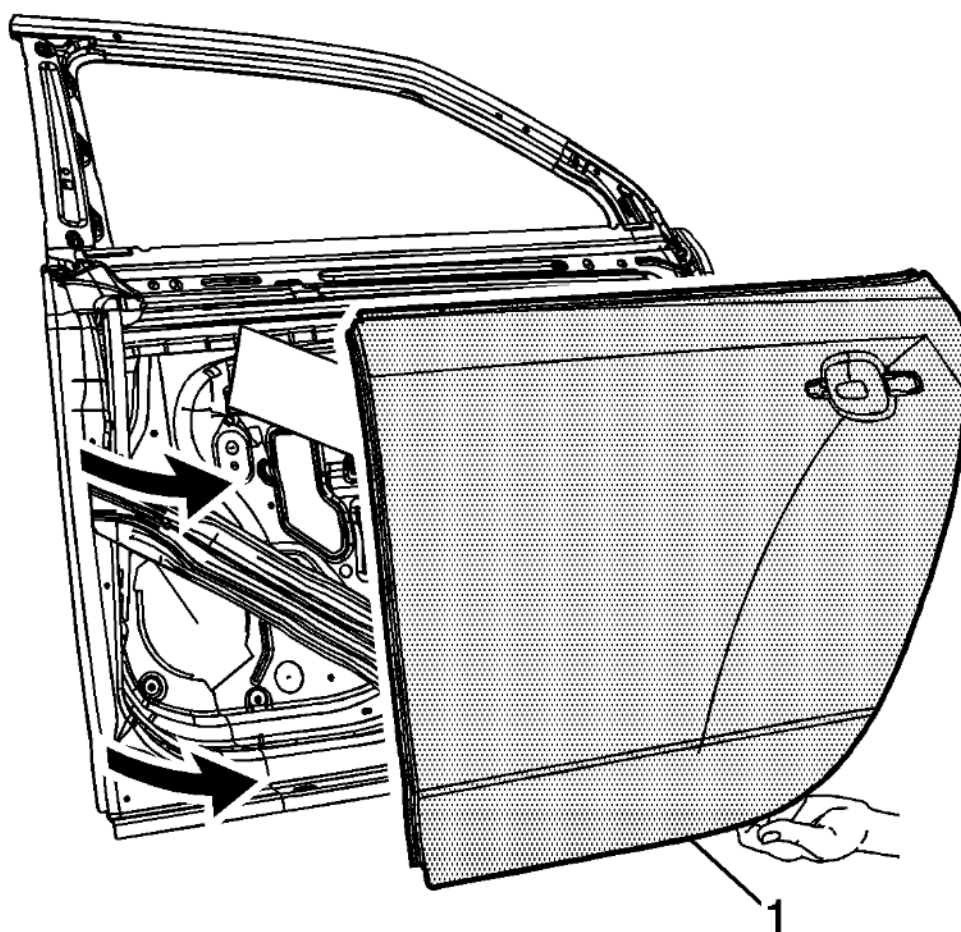


Fig. 158: Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

WARNING: Inspection of the door guard beam for damage must be performed before replacement of the door outer panel. If damage to the door guard beam is found the door must be replaced. Failure to do so may compromise the structural integrity of the vehicle and may cause personal injury if the vehicle is involved in a collision.

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

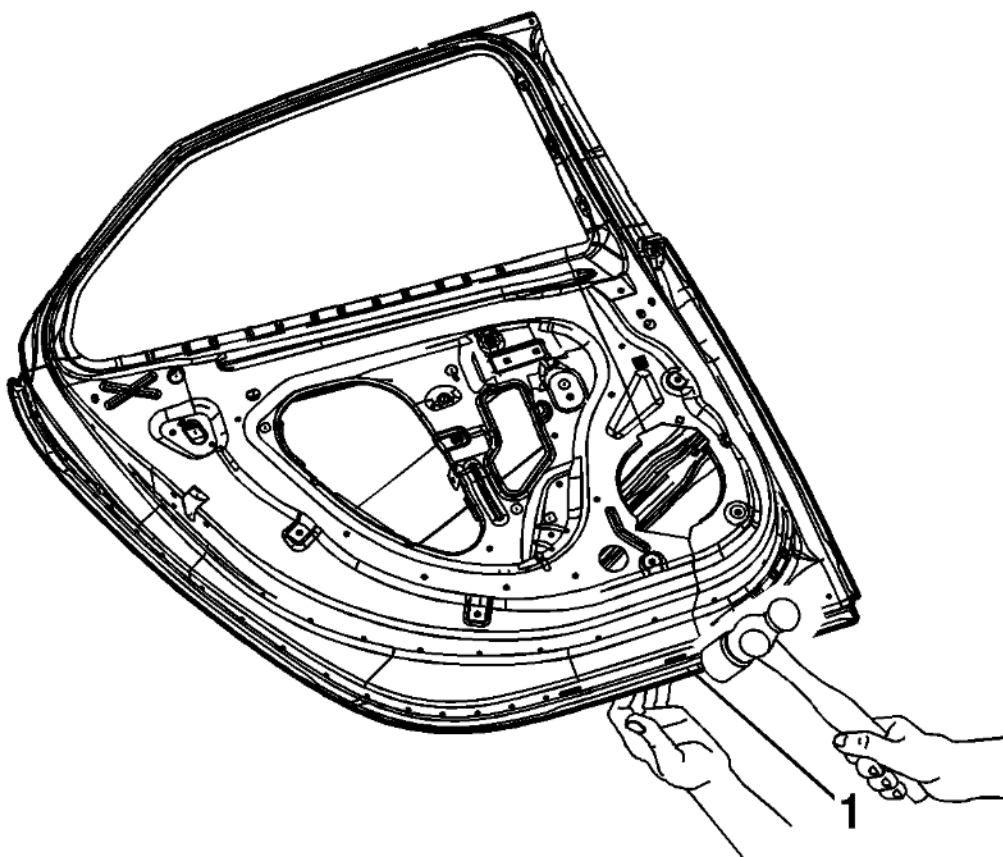


Fig. 159: Straightening Edges Of Door Shell
Courtesy of GENERAL MOTORS COMPANY

8. Straighten the edges of the door shell (1).

Installation Procedure

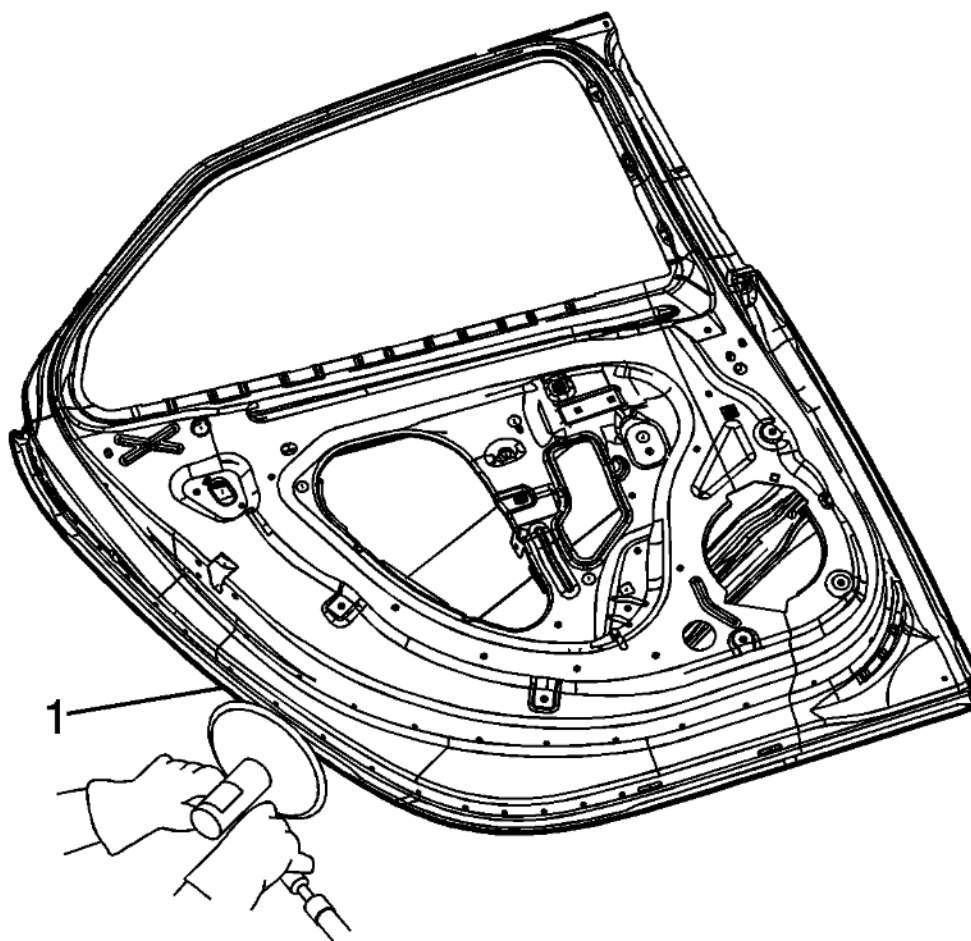


Fig. 160: Grinding Off Edges Of Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

1. Using a grinding disk grind the surface of the door shell mating flanges to bare steel (1).

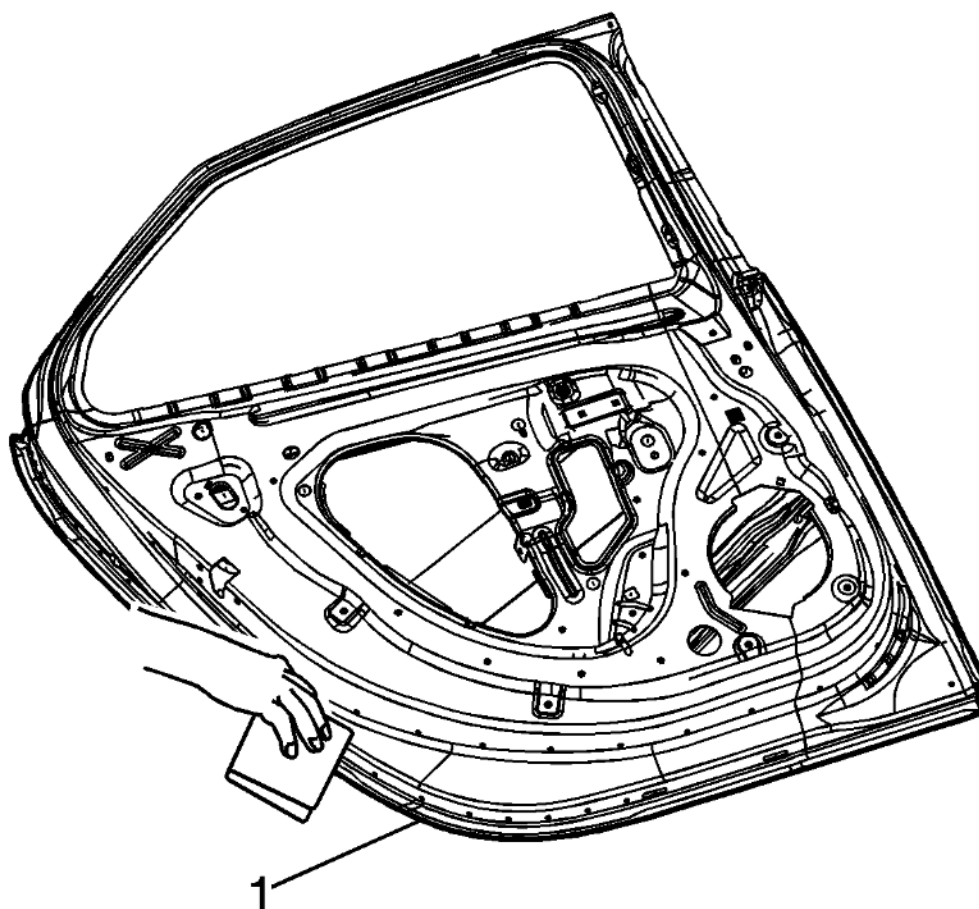


Fig. 161: Scuffing Opposing Mating Surfaces Of Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

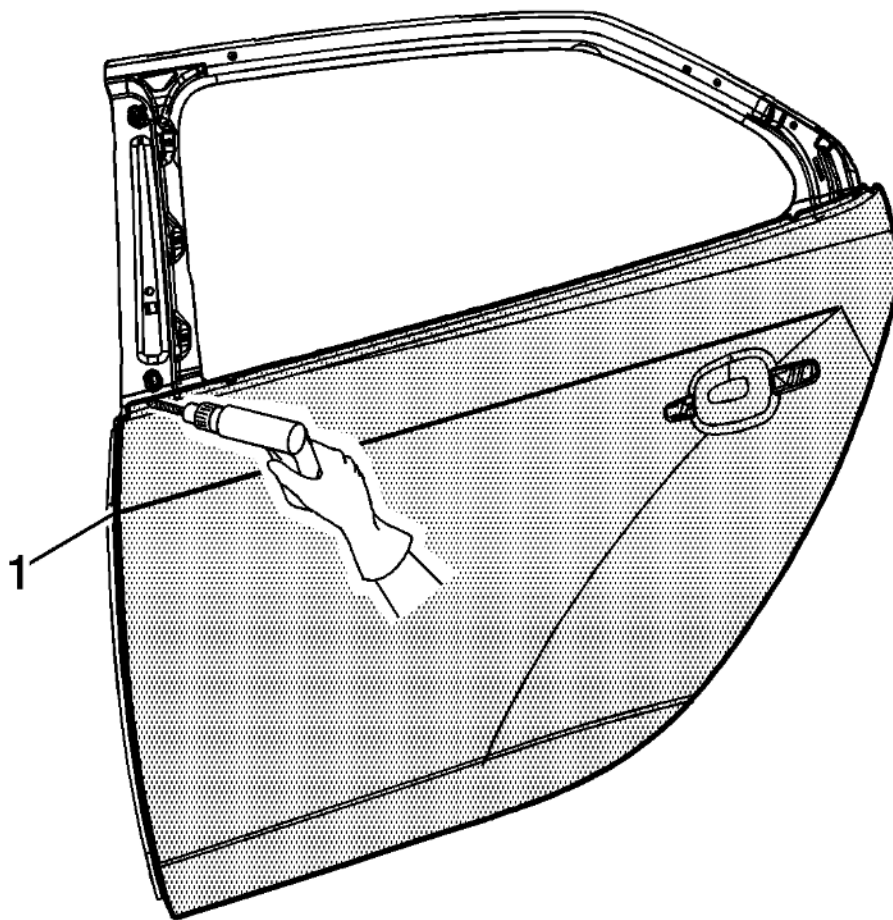


Fig. 162: Drilling Holes in Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

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

4. Clean the mating surfaces.

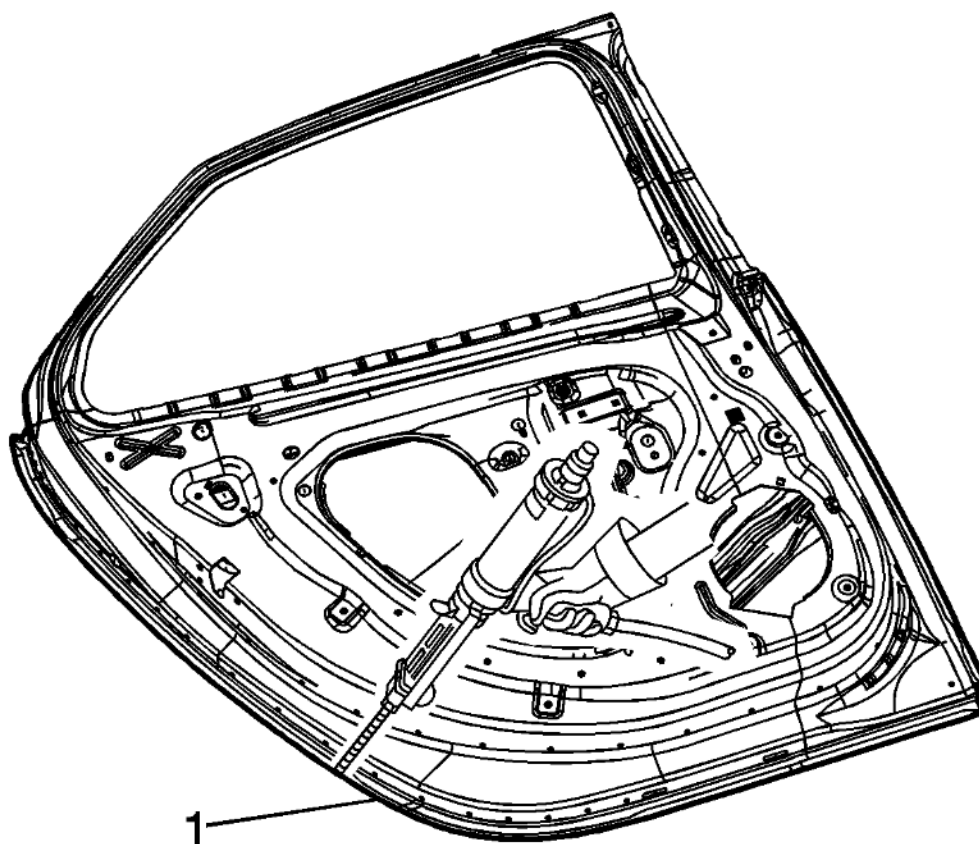


Fig. 163: Applying Metal Panel Bonding Adhesive To Mating Surfaces Of Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

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

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

7. Apply a 9-13 mm (3/8-1/2 in) bead of metal panel bonding adhesive to the mating surface of the service panel.
8. Install the door outer panel to the door shell.
9. Clamp the door outer panel into position as required.

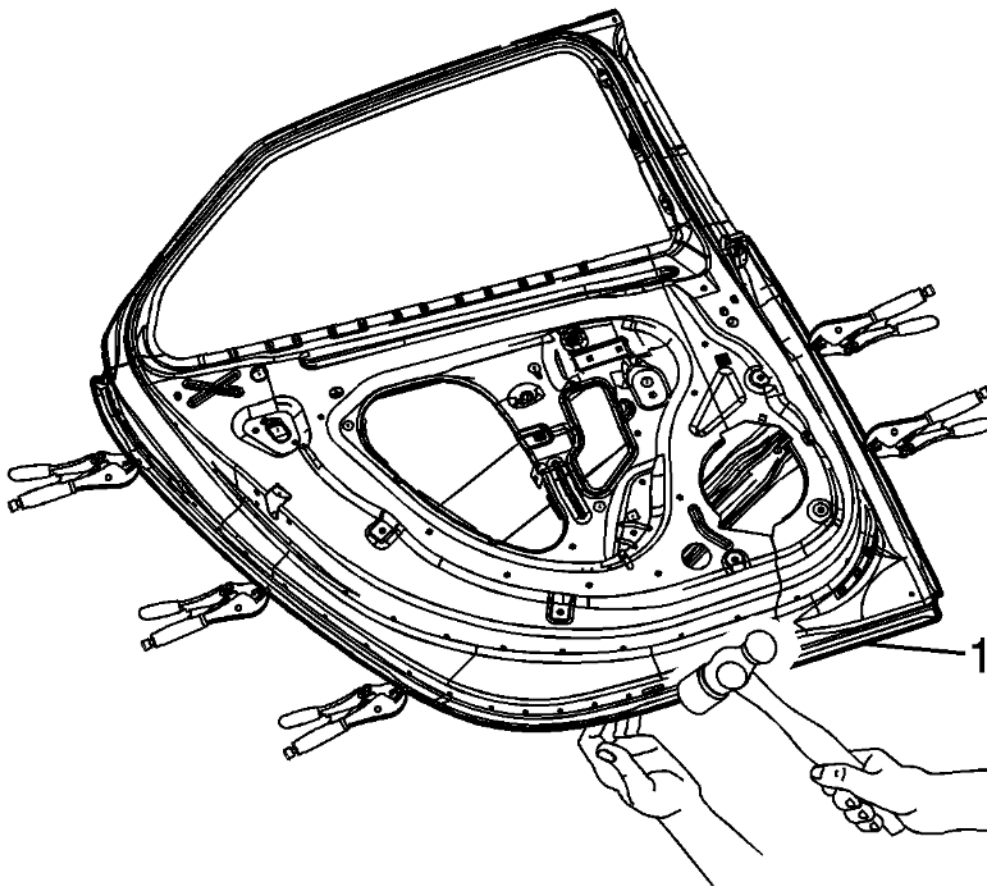


Fig. 164: Re-Hemming Hem Flanges Of Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

10. Using a hammer re-hem the hem flanges around the door shell. Continue to hammer in stages along the hem flanges (1).
11. Using lacquer thinner remove the excess adhesive from the door panel area.
12. Install the door to the vehicle check the door outer panel for proper alignment, adjust the alignment as required.

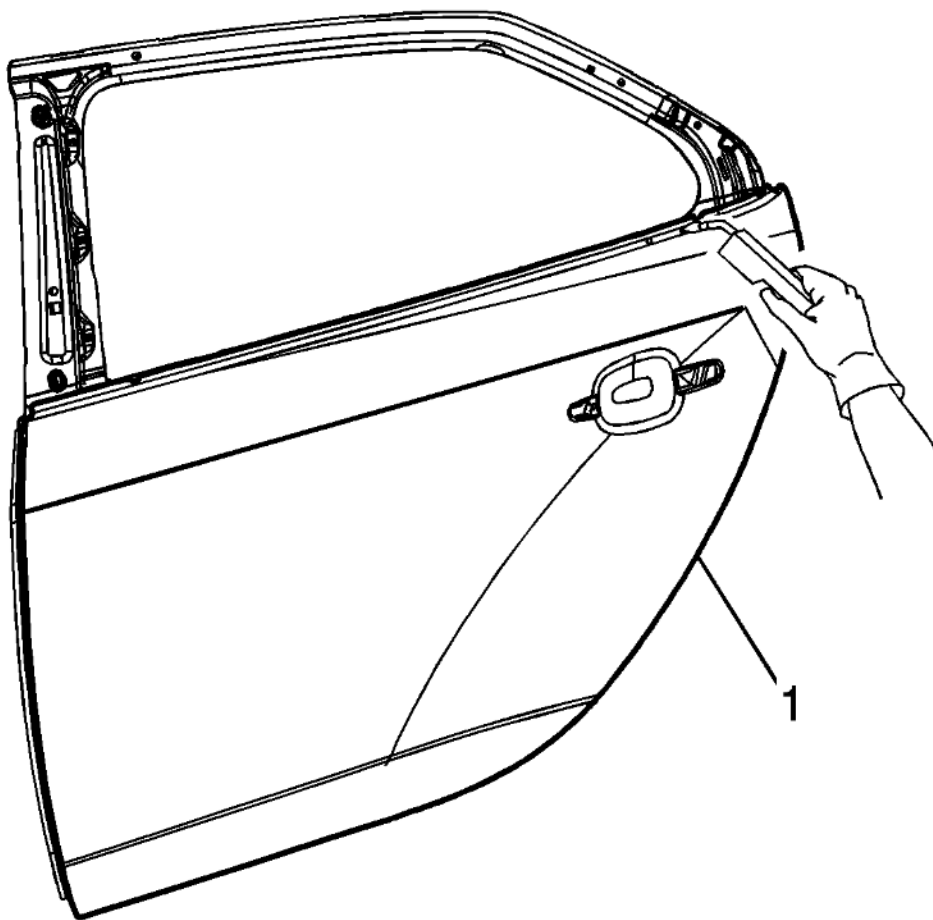


Fig. 165: Welding Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

13. Metal-inert gas (MIG) weld the door outer panel to the door frame in the locations noted at the upper door frame (1).
14. Clean and prepare all welded surfaces.

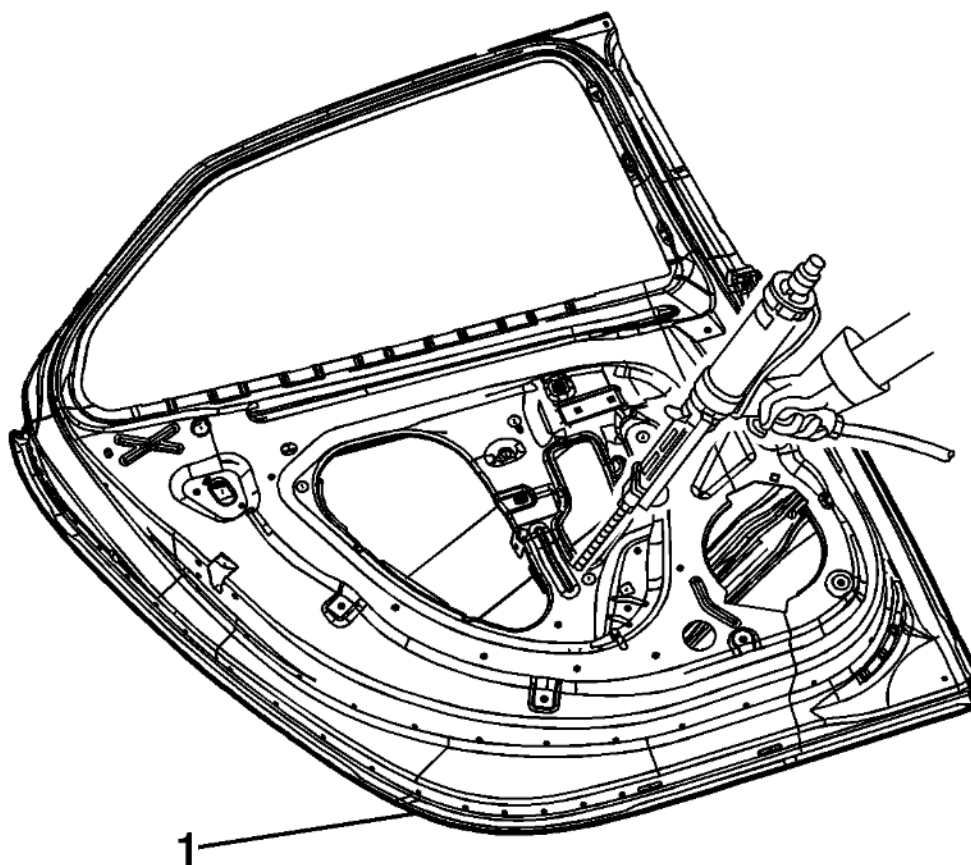


Fig. 166: Applying Fusor Super Flexible Anti-Flutter Foam To Inside Of Side Door Outer Panel
 Courtesy of GENERAL MOTORS COMPANY

15. 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 and the upper belt reinforcement (1).
16. Apply sealers and anti-corrosion materials to the repair area as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
17. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
18. Install all related panels and components.
19. Install the door to the vehicle. Refer to **Front Side Door Replacement** , or to **Rear Side Door Replacement** .
20. Enable the SIR system. Refer to **SIR Disabling and Enabling** .
21. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection** .

RAIL REPLACEMENT - REAR SECTION

Removal Procedure

WARNING: Refer to Approved Equipment for Collision Repair Warning .

1. Disable the supplemental inflatable restraint (SIR) System. Refer to SIR Disabling and Enabling .
2. Remove all related panels and components.
3. Repair as much of the damage as possible to factory specifications. Refer to Dimensions - Body (Sedan).
4. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .

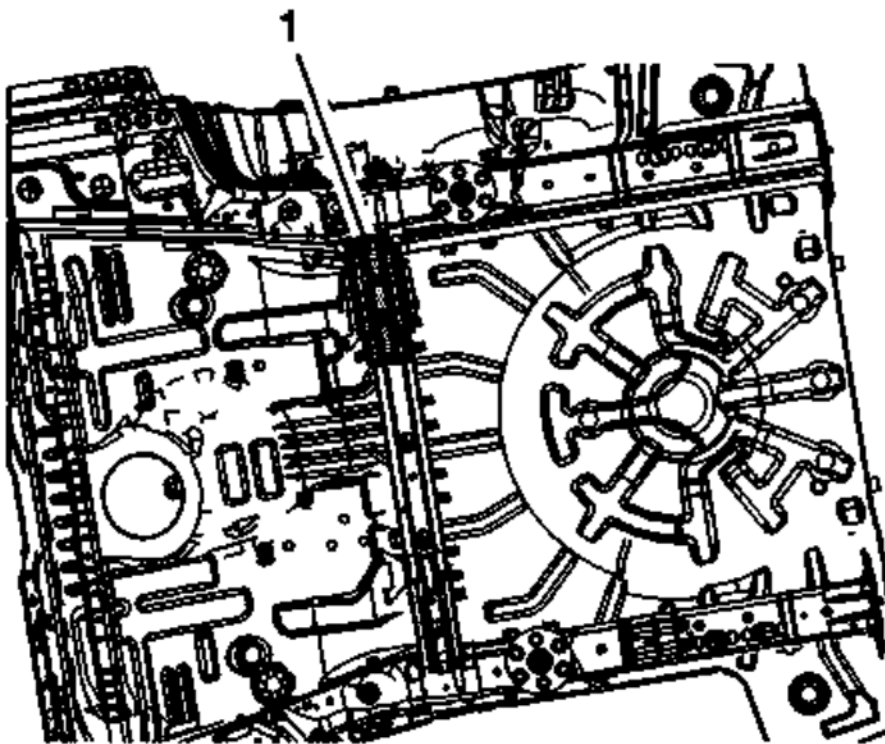


Fig. 167: Locating Factory Welds

Courtesy of GENERAL MOTORS COMPANY

NOTE: To remove the rear rail-rear section, the number five bar extension (1) will have to be removed to gain access to the rail spot welds.

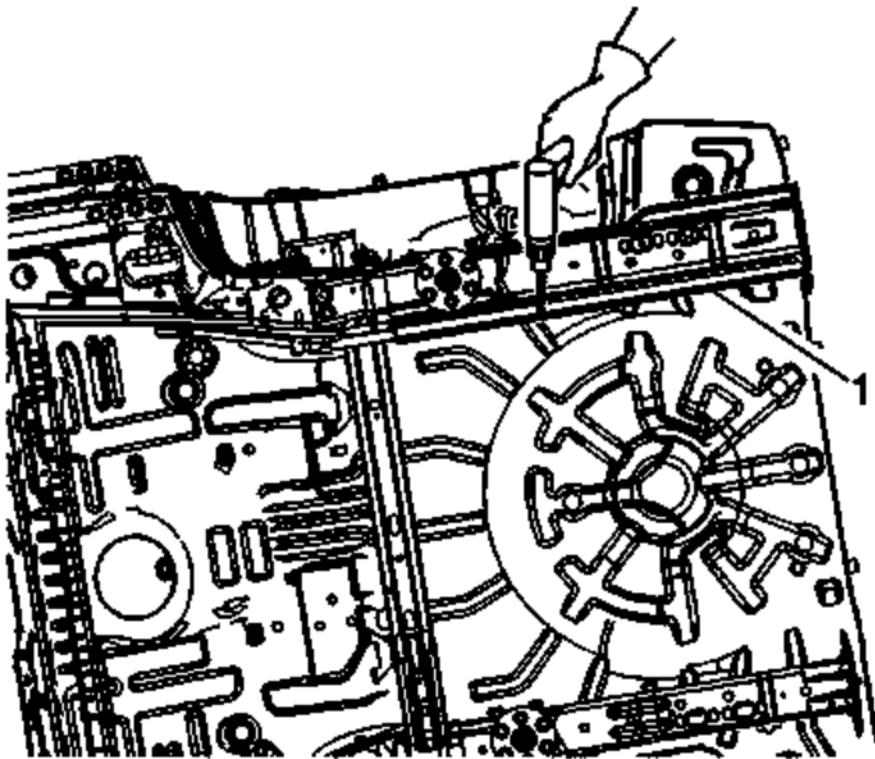


Fig. 168: Drilling Out Factory Welds
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage any inner panels or reinforcements. In areas where structural adhesive is present, heat the area to assist with removing the components.

5. Locate and drill out all factory welds (1). Note the number and location of the welds for installation of the rear rail - rear section.

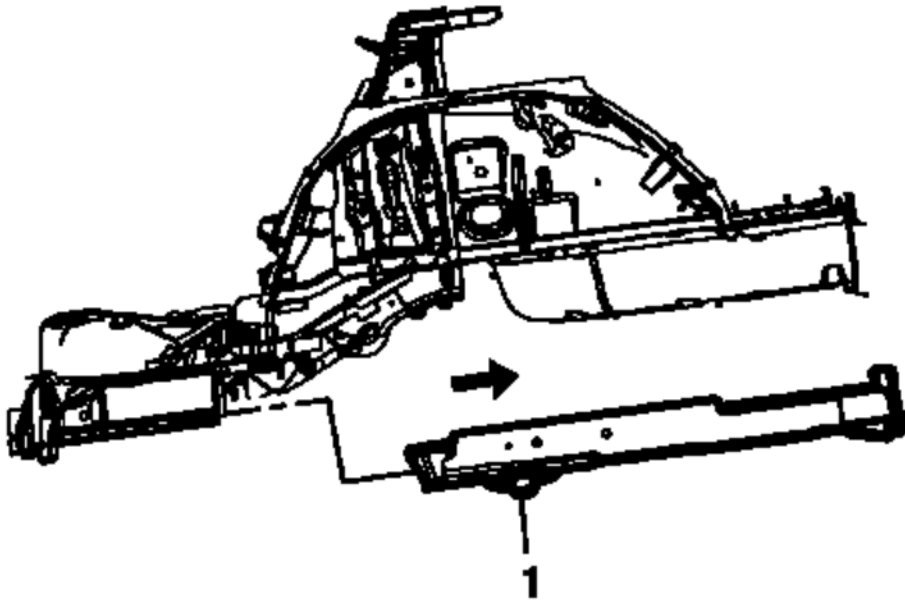


Fig. 169: Removing Rear Rail -- Rear Section
Courtesy of GENERAL MOTORS COMPANY

6. Remove the damaged rear rail - rear section (1).

Installation Procedure

NOTE:

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

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

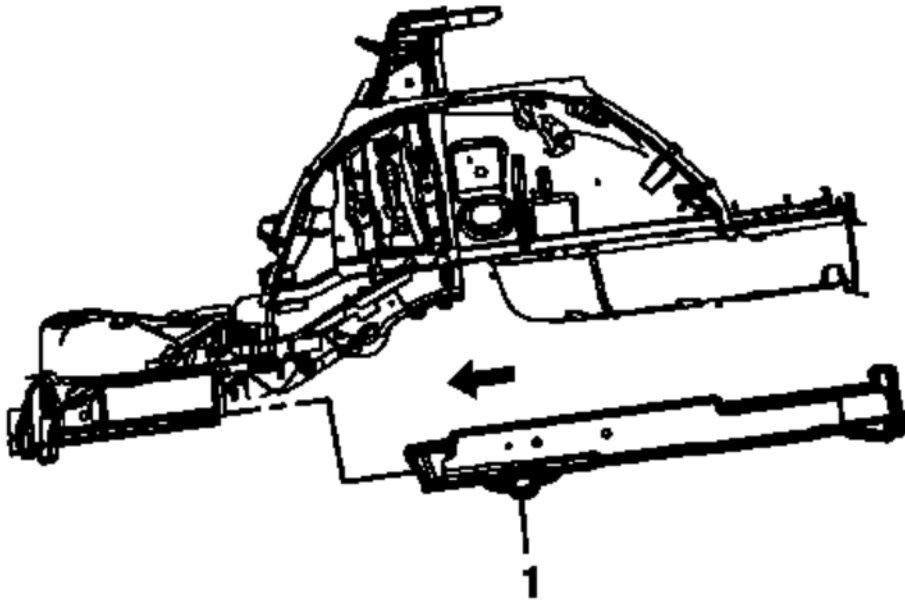


Fig. 170: Rear Rail -- Rear Section
Courtesy of GENERAL MOTORS COMPANY

3. Position the rear rail-rear section (1) to the vehicle using 3-dimensional measuring equipment. Clamp the rear rail lower into place.

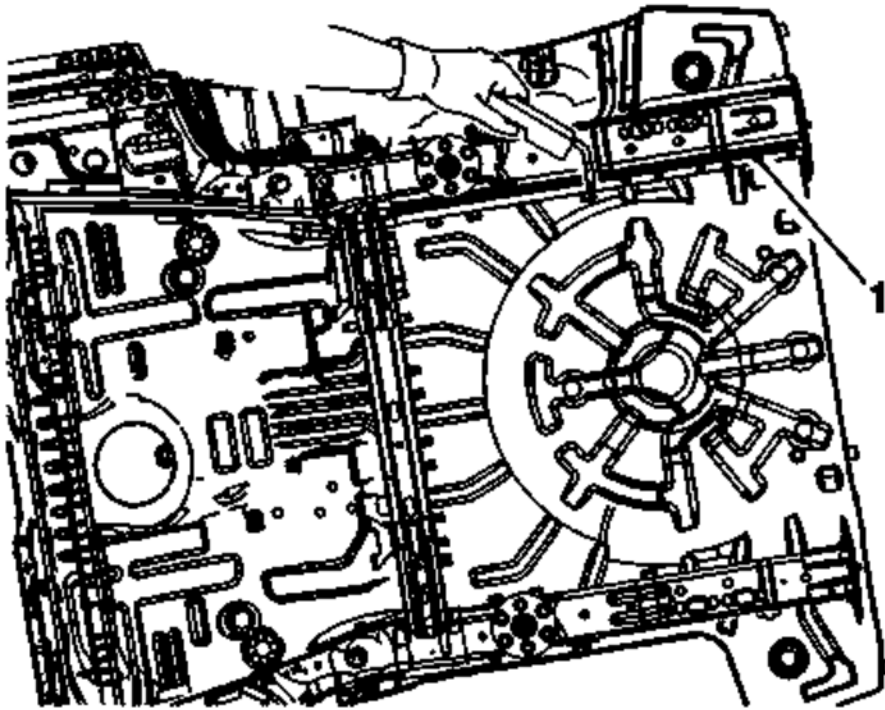


Fig. 171: Plug Welding Rear Rail -- Rear Section
 Courtesy of GENERAL MOTORS COMPANY

4. Plug weld accordingly (1).
5. Clean and prepare all welded surfaces.
6. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
7. Paint the repair area. Refer to **Basecoat/Clearcoat Paint Systems** .
8. Install all related panels and components.
9. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

DESCRIPTION AND OPERATION

DUAL PHASE STEEL

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

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

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

Recommended Repairs

- Cold repairs can be performed on this type of steel, unless the damage includes kinks. If the damage includes kinks, the part should be replaced.
- Sectioning or partial replacement of this type of steel is recommended only at approved locations, in a specific sectioning procedure.
- 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 DUAL PHASE STEEL

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

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 at factory joints only. 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.

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.