

2017 ACCESSORIES & EQUIPMENT

Collision Repair - Encore, Trax

SPECIFICATIONS

DIMENSIONS - BODY (OPEL, BUICK)

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

Point-to-Point Measurements

Front End

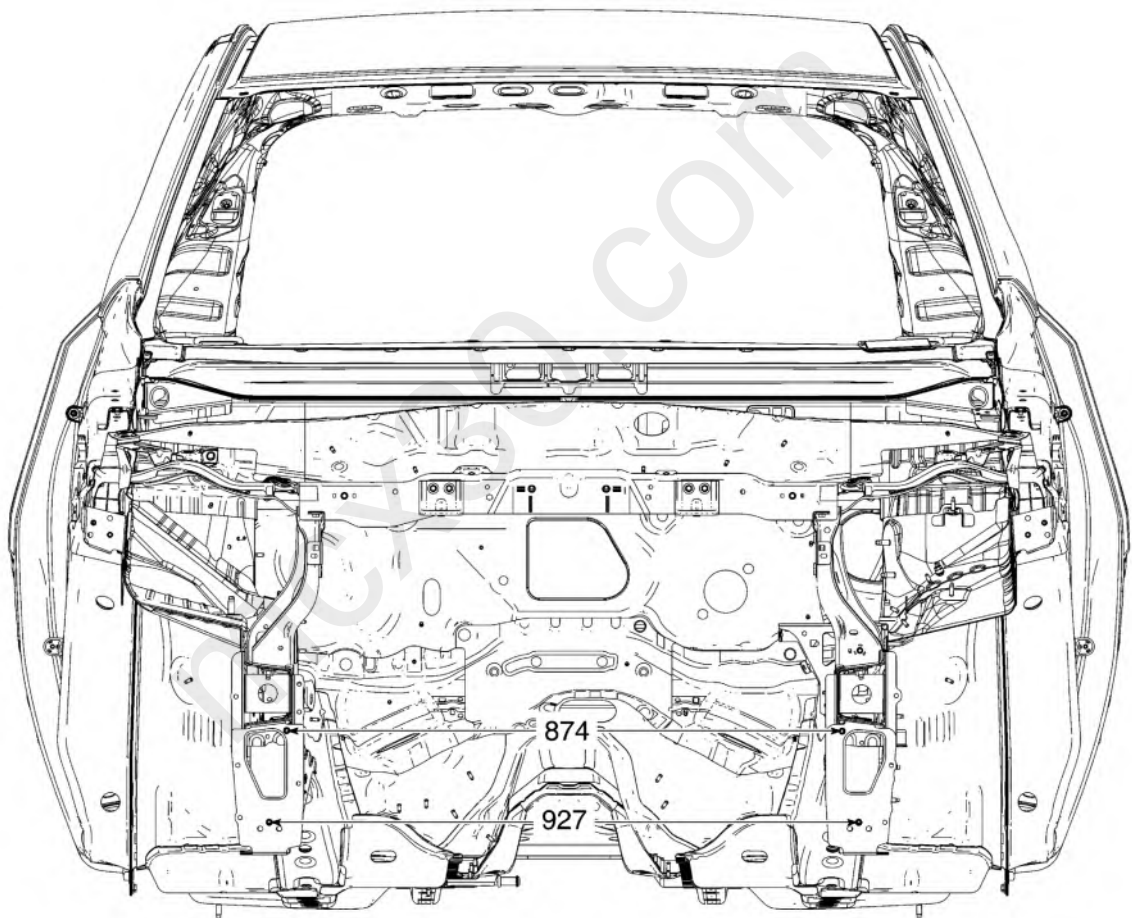


Fig. 1: Front End Point-to-Point Measurements

Courtesy of GENERAL MOTORS COMPANY

Engine Compartment

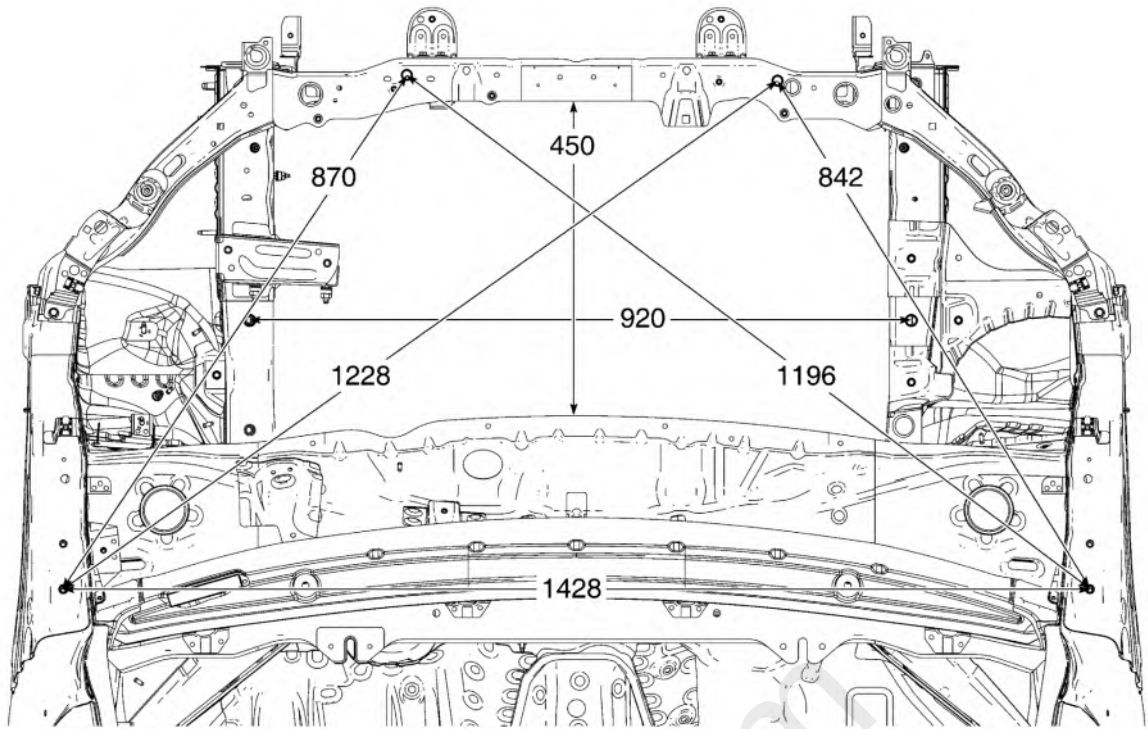


Fig. 2: Engine Compartment Point-to-Point Measurements
Courtesy of GENERAL MOTORS COMPANY

Front End Lower

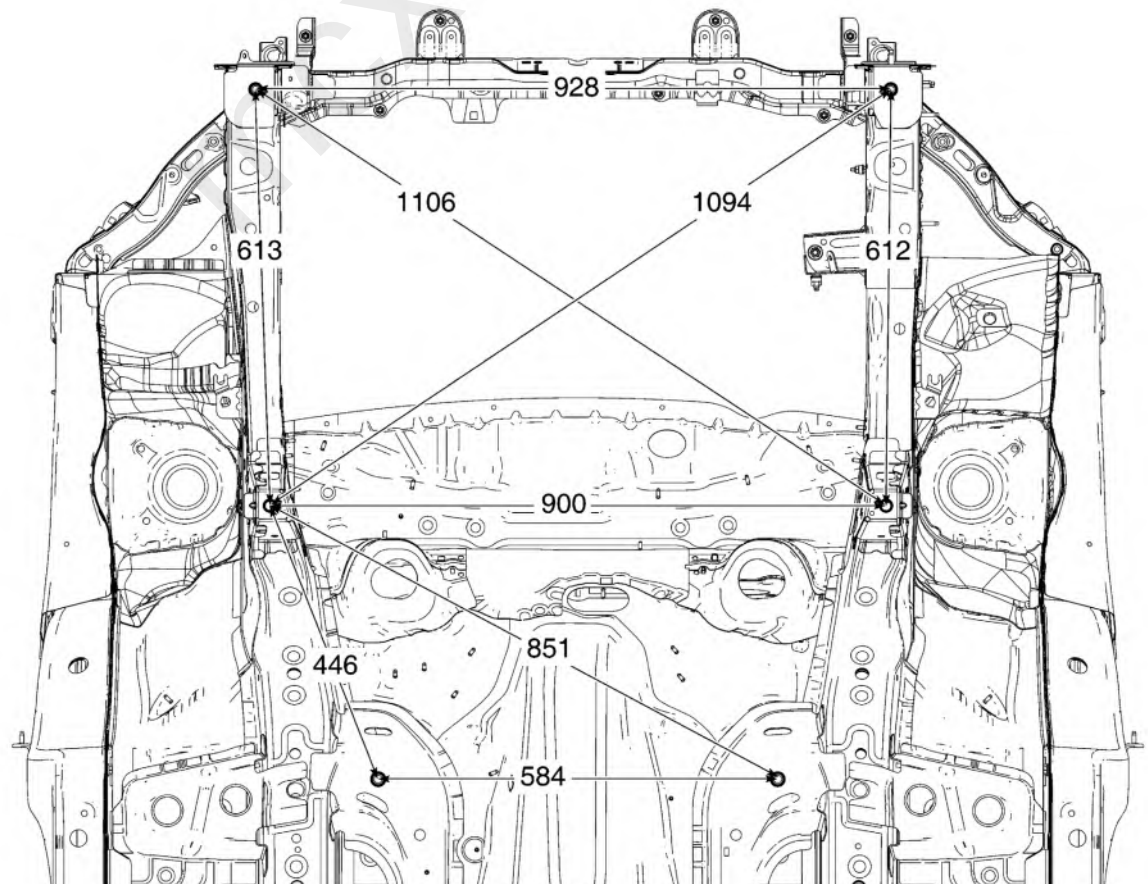


Fig. 3: Front End Lower Point-to-Point Measurements
Courtesy of GENERAL MOTORS COMPANY

Rear End Lower

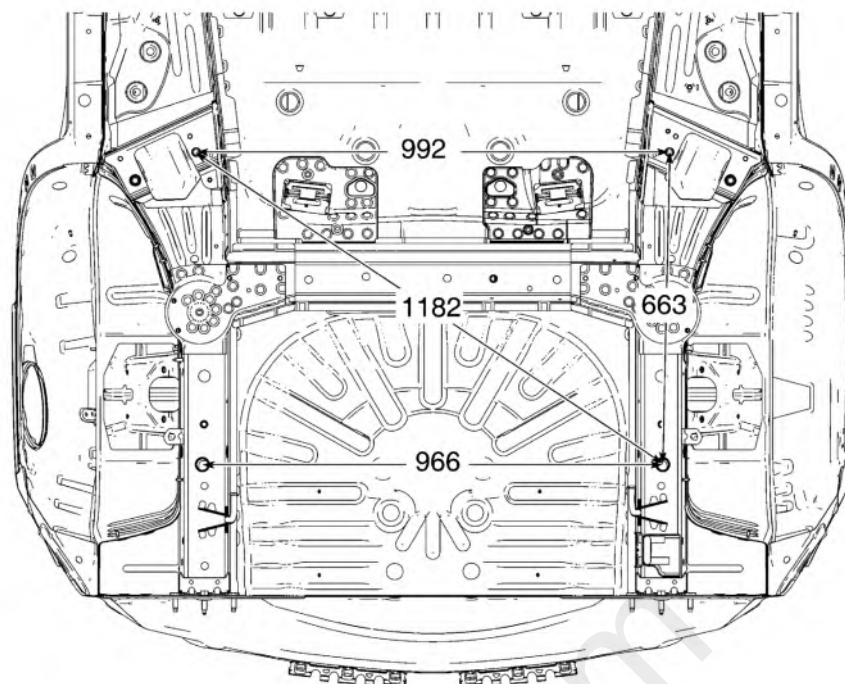


Fig. 4: Rear End Lower Point-to-Point Measurements
Courtesy of GENERAL MOTORS COMPANY

Rear End

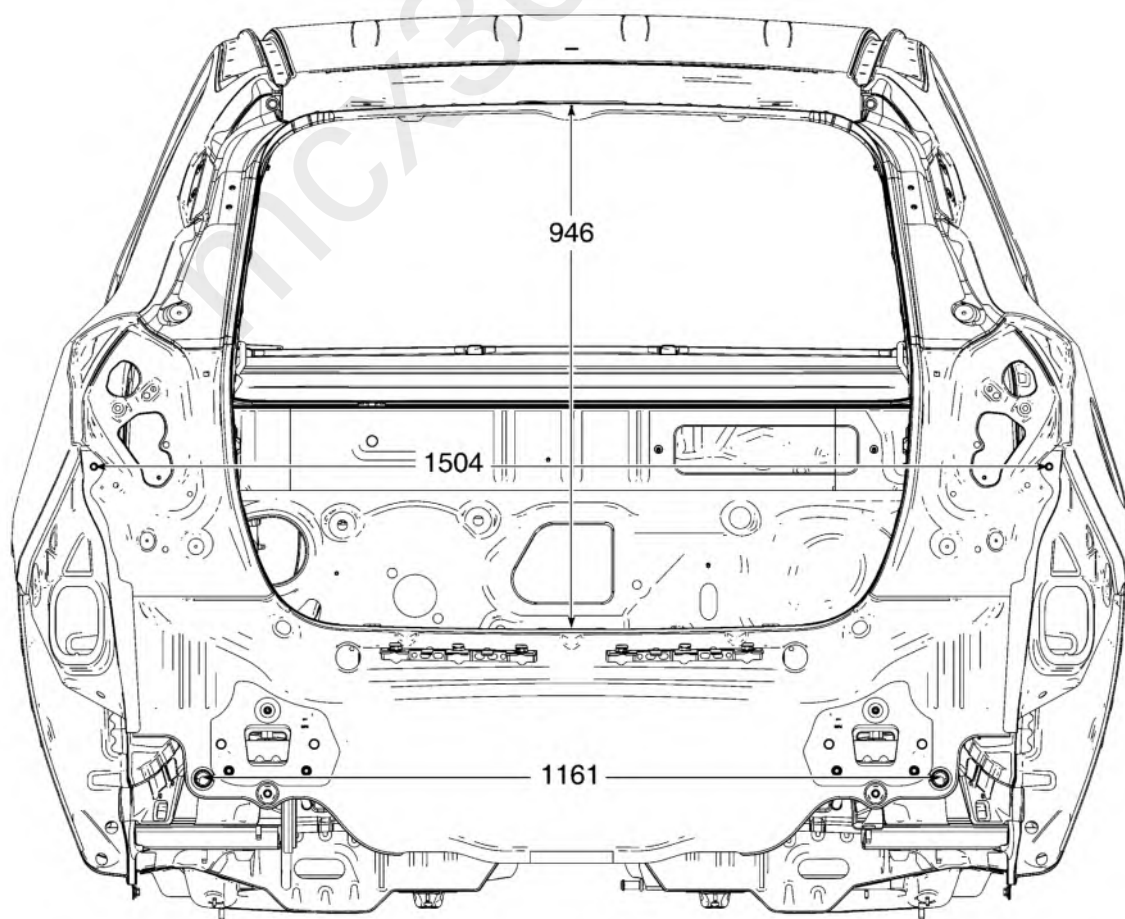


Fig. 5: Rear End Point-To-Point Measurements
Courtesy of GENERAL MOTORS COMPANY

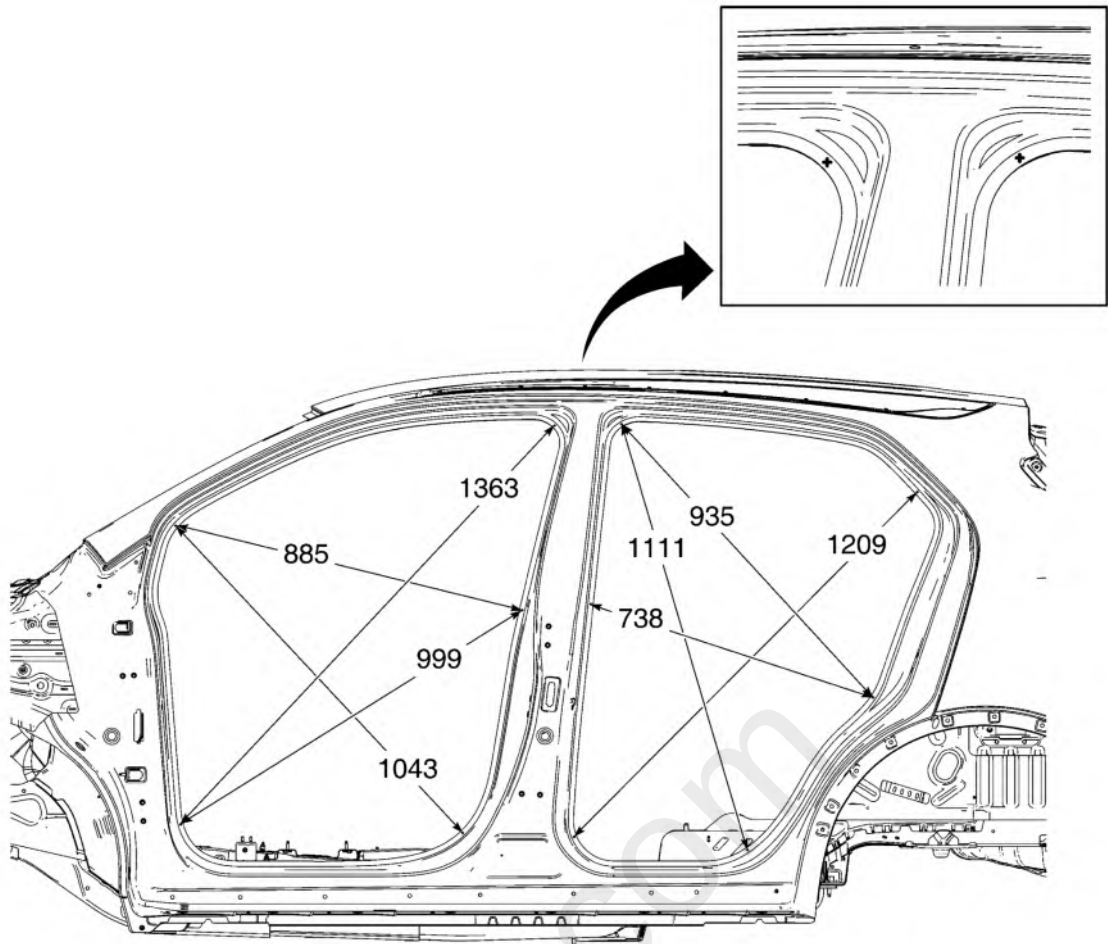


Fig. 6: Side Point-To-Point Measurements
Courtesy of GENERAL MOTORS COMPANY

DIMENSIONS - BODY (CHEVROLET, HOLDEN)

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

Point-to-Point Measurements

Front End

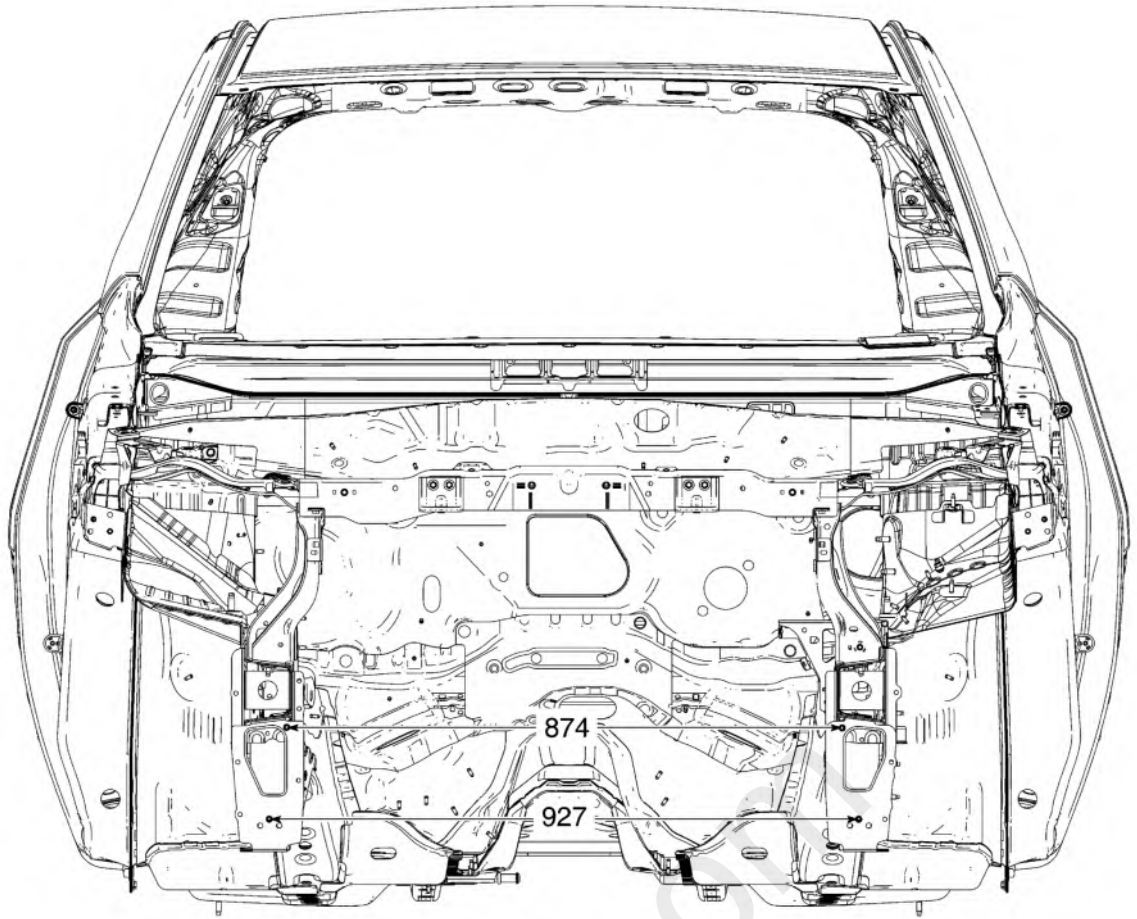


Fig. 7: Front End Point-to-Point Measurements
Courtesy of GENERAL MOTORS COMPANY

Engine Compartment

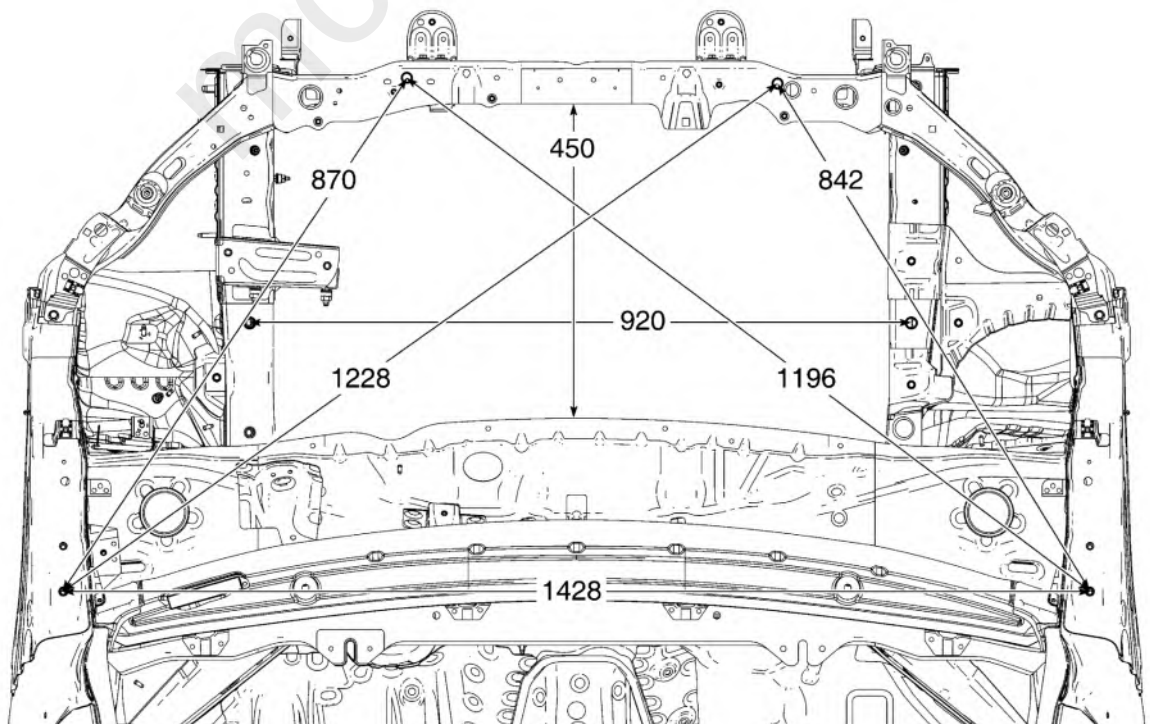


Fig. 8: Engine Compartment Point-to-Point Measurements
Courtesy of GENERAL MOTORS COMPANY

Front End Lower

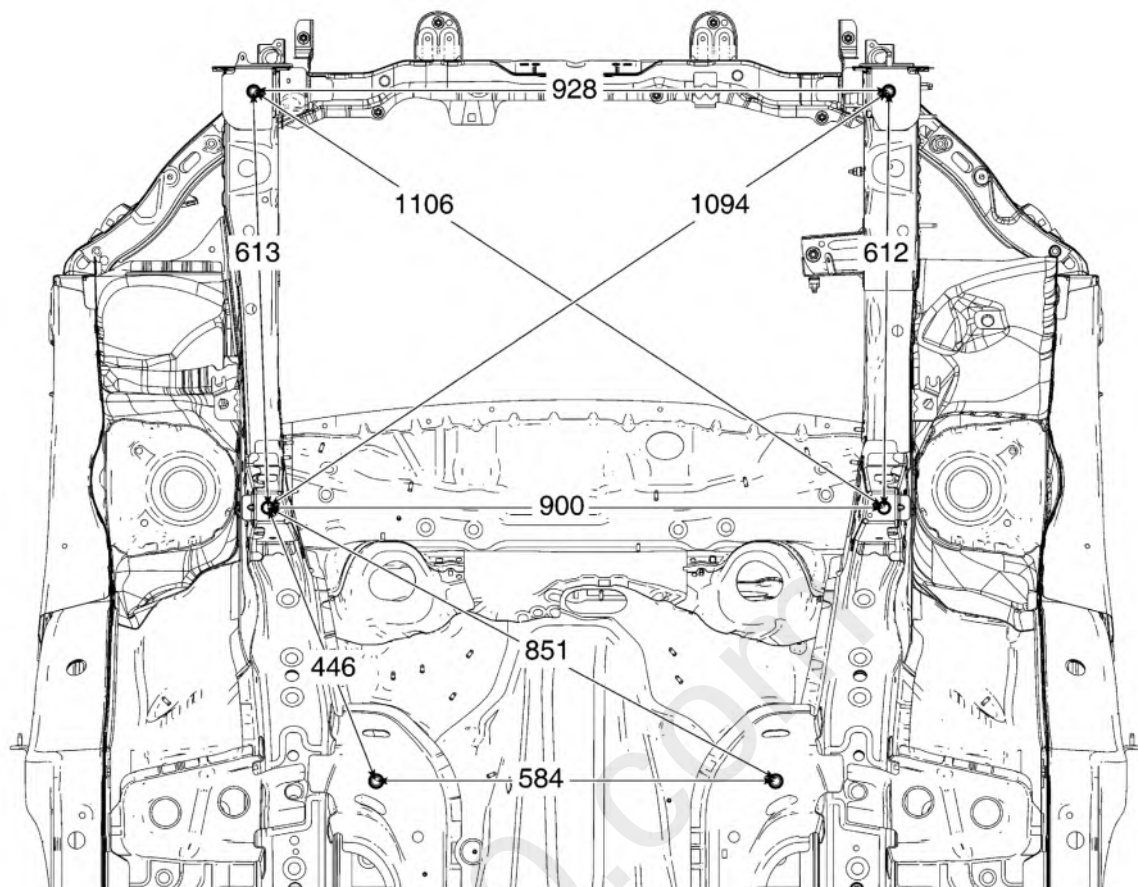


Fig. 9: Front End Lower Point-to-Point Measurements
Courtesy of GENERAL MOTORS COMPANY

Rear End Lower

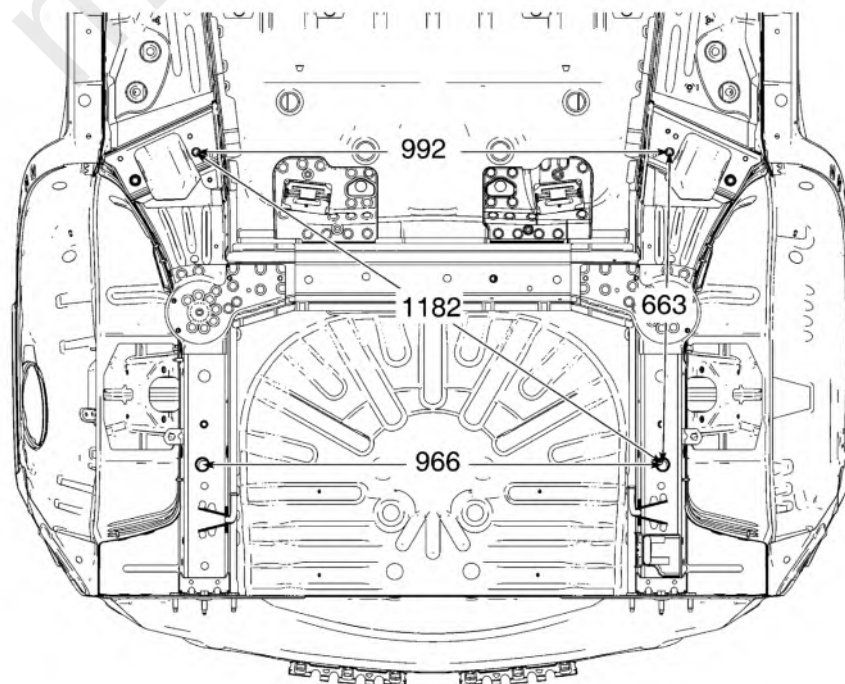


Fig. 10: Rear End Lower Point-to-Point Measurements
Courtesy of GENERAL MOTORS COMPANY

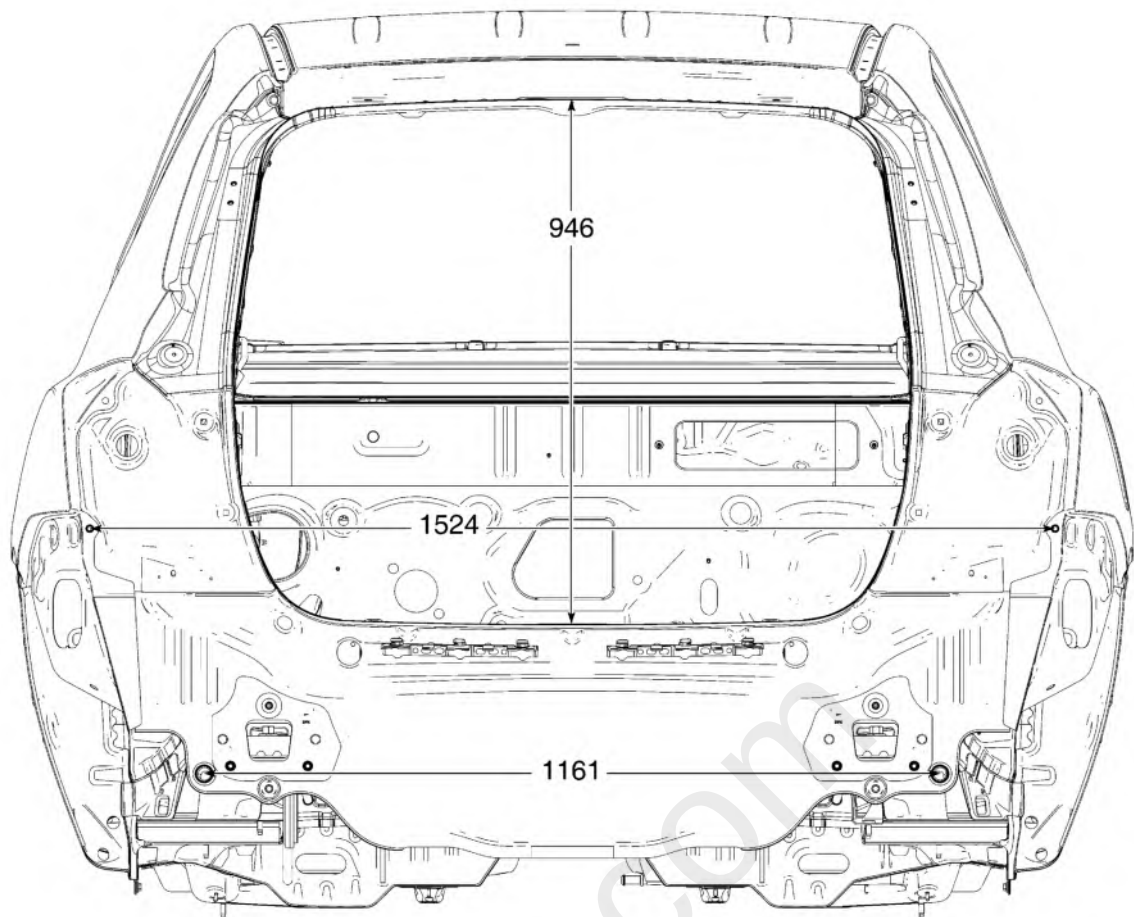


Fig. 11: Rear End Point-to-Point Measurements
Courtesy of GENERAL MOTORS COMPANY

Side

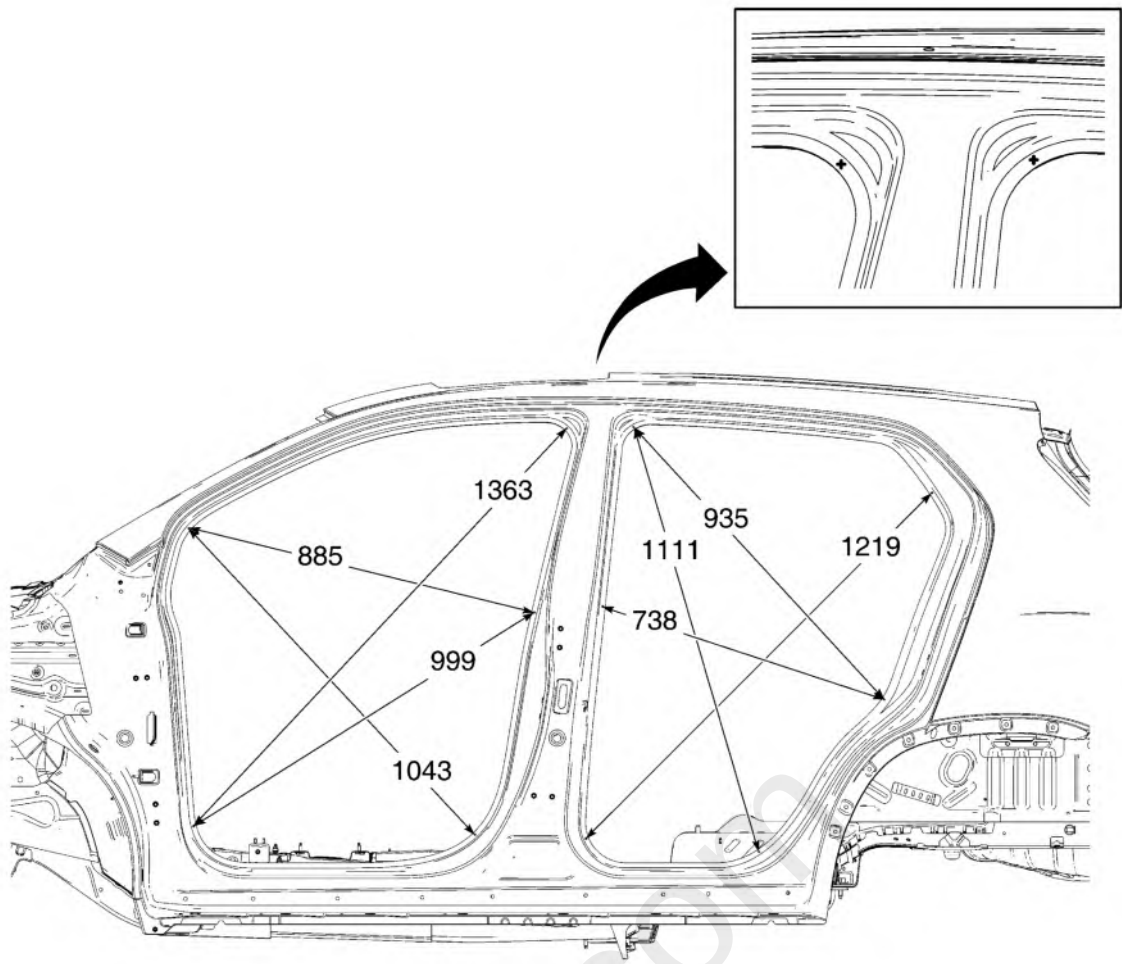


Fig. 12: Side Point-to-Point Measurements
Courtesy of GENERAL MOTORS COMPANY

VISUAL IDENTIFICATION

STRUCTURE IDENTIFICATION

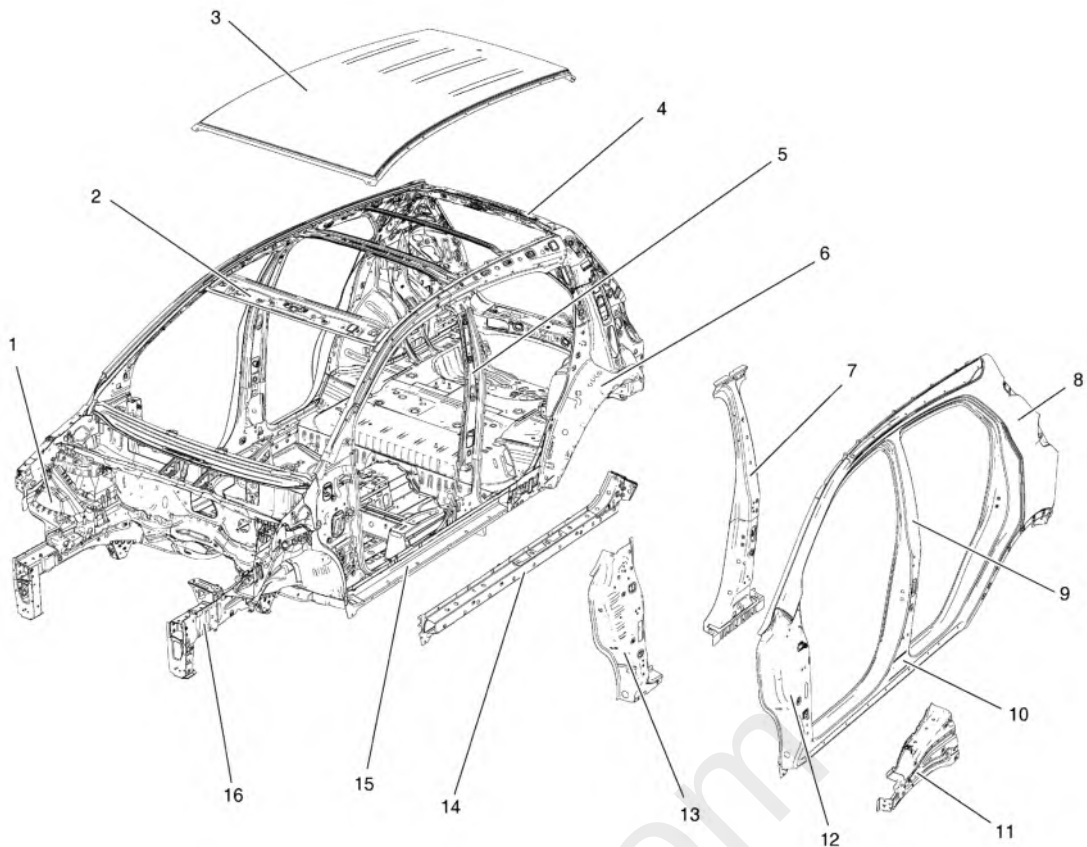


Fig. 13: Front Structure

Courtesy of GENERAL MOTORS COMPANY

View Front

Number	Description	Material	Procedure
1	Front Wheelhouse Panel	- Front Wheelhouse Front Panel - Mild Steel - Front Wheelhouse Panel Brace - Dual Phase Steel	Front Wheelhouse Panel Replacement
2	Roof Front Header Panel	Ultra High Strength Steel	Roof Front Header Panel Replacement
3	Roof Outer Panel	Mild Steel	Roof Outer Panel Replacement
4	Roof Rear Header Panel	Mild Steel	Roof Rear Header Panel Replacement
5	Center Pillar Inner Panel	Dual Phase Steel	Center Pillar Inner Panel Replacement
6	Rear Wheelhouse Outer Panel	Mild Steel	Rear Wheelhouse Outer Panel Replacement
7	Center Pillar Reinforcement	- Center Pillar Upper Reinforcement - Ultra High Strength Steel - Center Pillar Lower Reinforcement - High Strength Low Alloy Steel	Center Pillar Reinforcement Replacement
8	Quarter Outer Panel	Mild Steel	Quarter Outer Panel Sectioning
9	Center Pillar - Outer	Mild Steel	Center Pillar Sectioning - Outer
10	Rocker Outer Panel	Mild Steel	Rocker Outer Panel Sectioning

Number	Description	Material	Procedure
11	Front Compartment Upper Side Rail	- Front Compartment Upper Outer Rail - <u>Dual Phase Steel</u> - Hood Hinge Reinforcement - <u>High Strength Low Alloy Steel</u>	<u>Front Compartment Upper Side Rail Replacement</u>
12	Front Hinge Pillar Body	<u>Mild Steel</u>	<u>Front Hinge Pillar Body Sectioning</u>
13	Body Hinge Pillar Lower Reinforcement	<u>High Strength Low Alloy Steel</u>	<u>Body Hinge Pillar Lower Reinforcement Replacement</u>
14	Body Side Frame Rocker Reinforcement	- Rocker Outer Panel Reinforcement - <u>Ultra High Strength Dual Phase Steel</u> - Body Lock Pillar Lower Reinforcement - <u>Dual Phase Steel</u> - Rocker Outer Panel Front Reinforcement - <u>High Strength Low Alloy Steel</u>	<u>Body Side Frame Rocker Reinforcement Replacement</u>
15	Rocker Inner Panel	- Rocker Front Inner Panel - <u>Ultra High Strength Dual Phase Steel</u> - Rocker Inner Rear Panel - <u>High Strength Low Alloy Steel</u>	<u>Rocker Inner Panel Replacement</u>
16	Front Compartment Side Rail	- Front Compartment Outer Side Rail - <u>High Strength Low Alloy Steel</u> - Front Compartment Inner Side Rail - <u>Dual Phase Steel</u>	<u>Front Compartment Side Rail Sectioning</u>

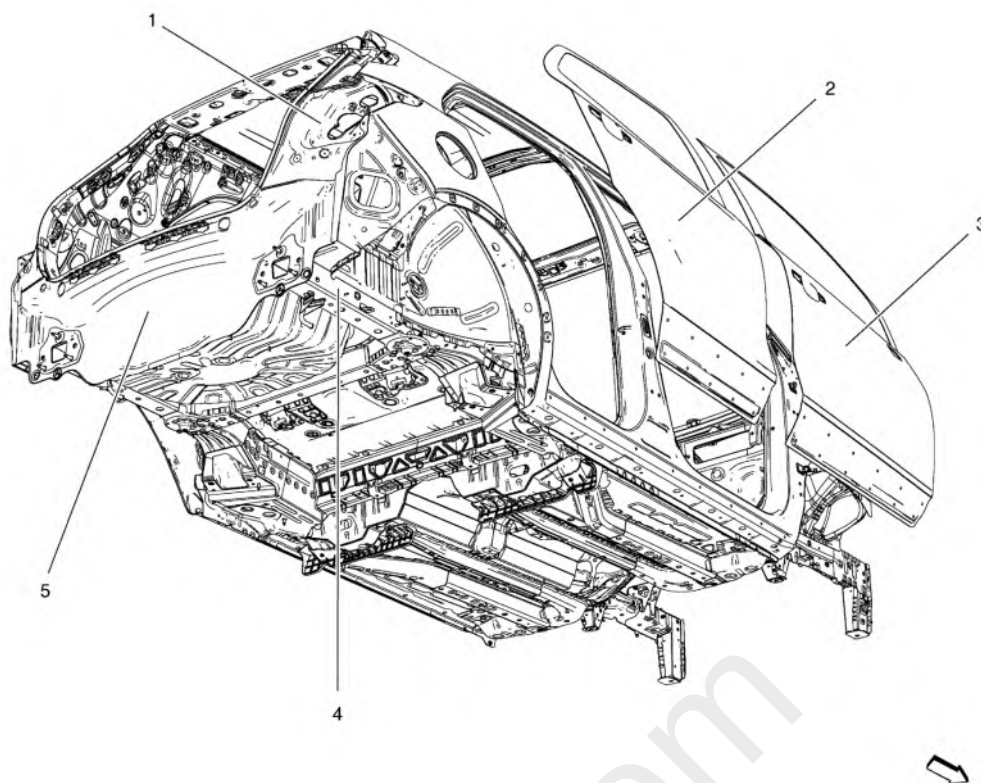


Fig. 14: Rear Structure

Courtesy of GENERAL MOTORS COMPANY

View Rear

Number	Description	Material	Procedure
1	Body Tail Lamp Filler Panel	Mild Steel	Body Tail Lamp Filler Panel Replacement
2	Rear Side Door Outer Panel	Mild Steel	Rear Side Door Outer Panel Replacement
3	Front Side Door Outer Panel	Mild Steel	Front Side Door Outer Panel Replacement
4	Underbody Rear Side Rail	High Strength Low Alloy Steel	-
5	Rear End Panel	Mild Steel	Rear End Panel Replacement

REPAIR INSTRUCTIONS

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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .

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.

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

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.

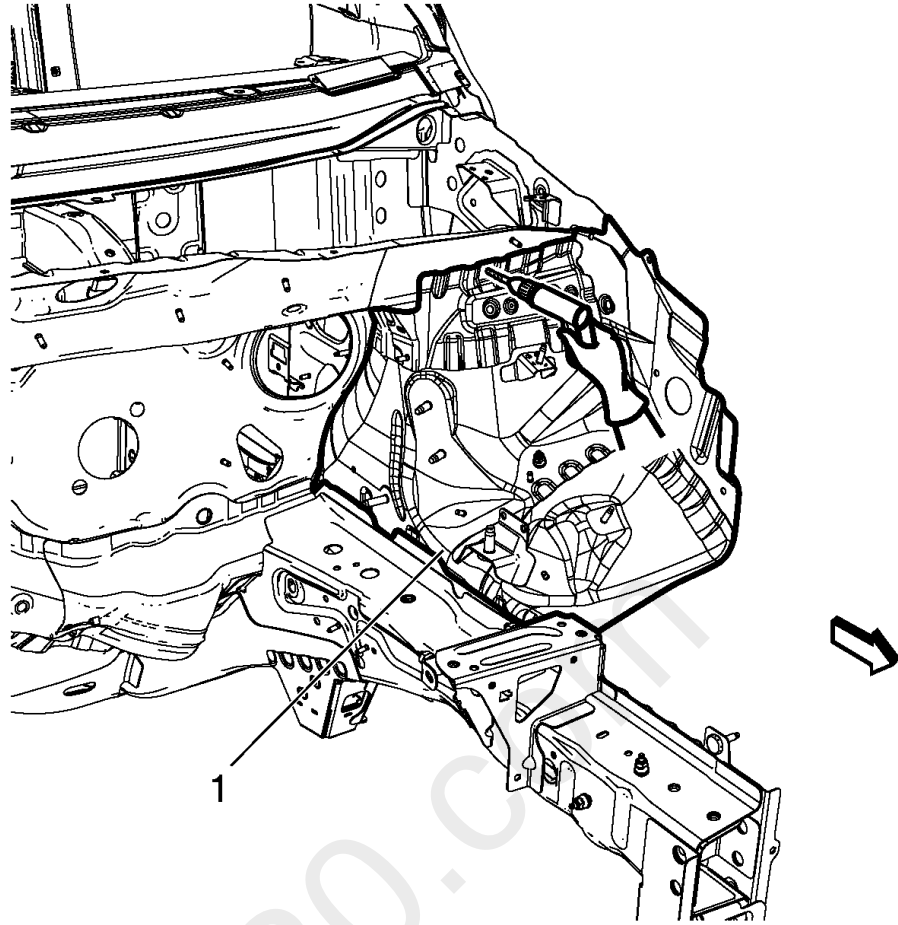


Fig. 15: Drilling Out All Factory Welds

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.

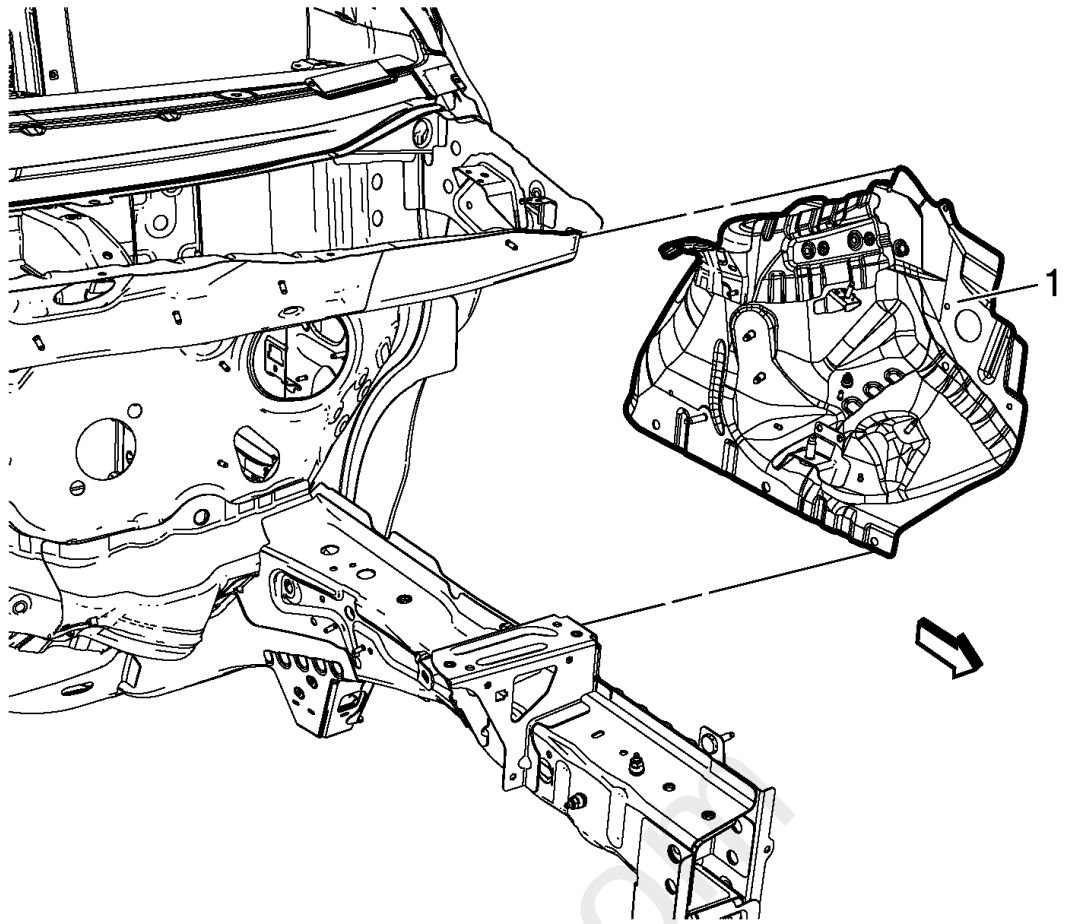


Fig. 16: Front Wheelhouse

Courtesy of GENERAL MOTORS COMPANY

6. Remove the front wheelhouse (1) from the vehicle.

Installation Procedure

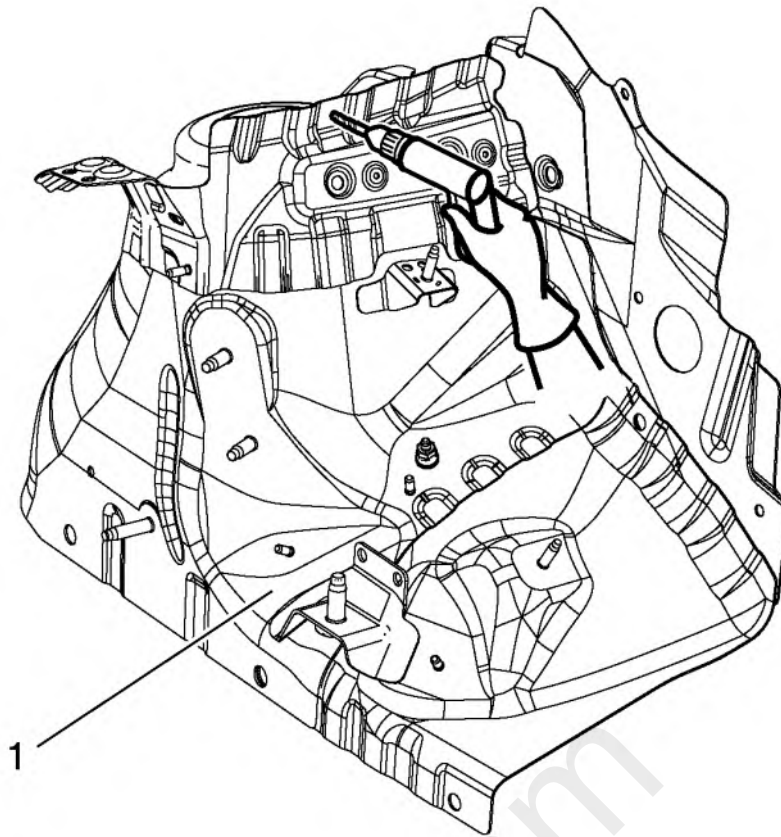


Fig. 17: Drilling Plug Weld Holes

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 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 \(Base\)](#) .

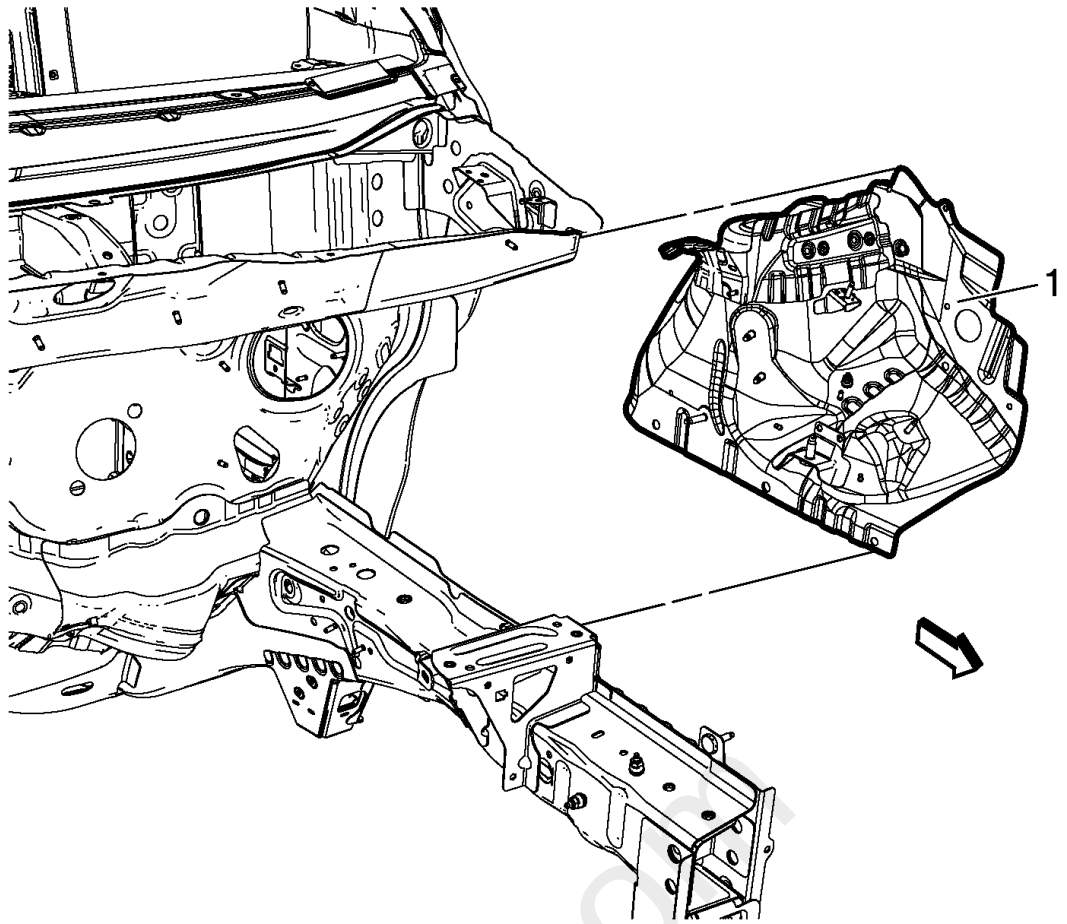
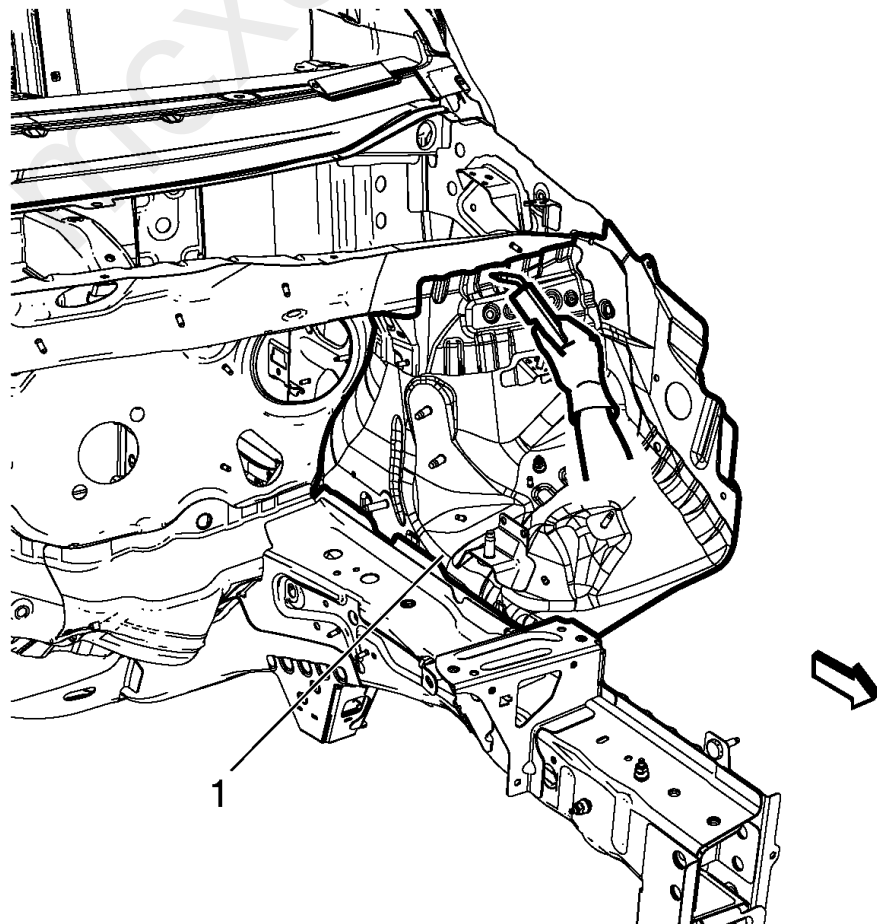


Fig. 18: Front Wheelhouse Front Panel
Courtesy of GENERAL MOTORS COMPANY

4. Position the service front wheelhouse front panel to the vehicle (1). Clamp the front wheelhouse in place.



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 \(Base\)](#) .
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 \(without KL9\)](#), [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
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 \(without KL9\)](#), [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to [Dimensions - Body_\(Opel, Buick\)](#), [Dimensions - Body_\(Chevrolet, Holden\)](#).
5. Remove the sealers and anti-corrosion materials from the repair area. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#) .

NOTE: Do not damage any inner panels or reinforcements.

6. Locate and mark all the necessary factory welds and weld seams of the front compartment upper side rail.

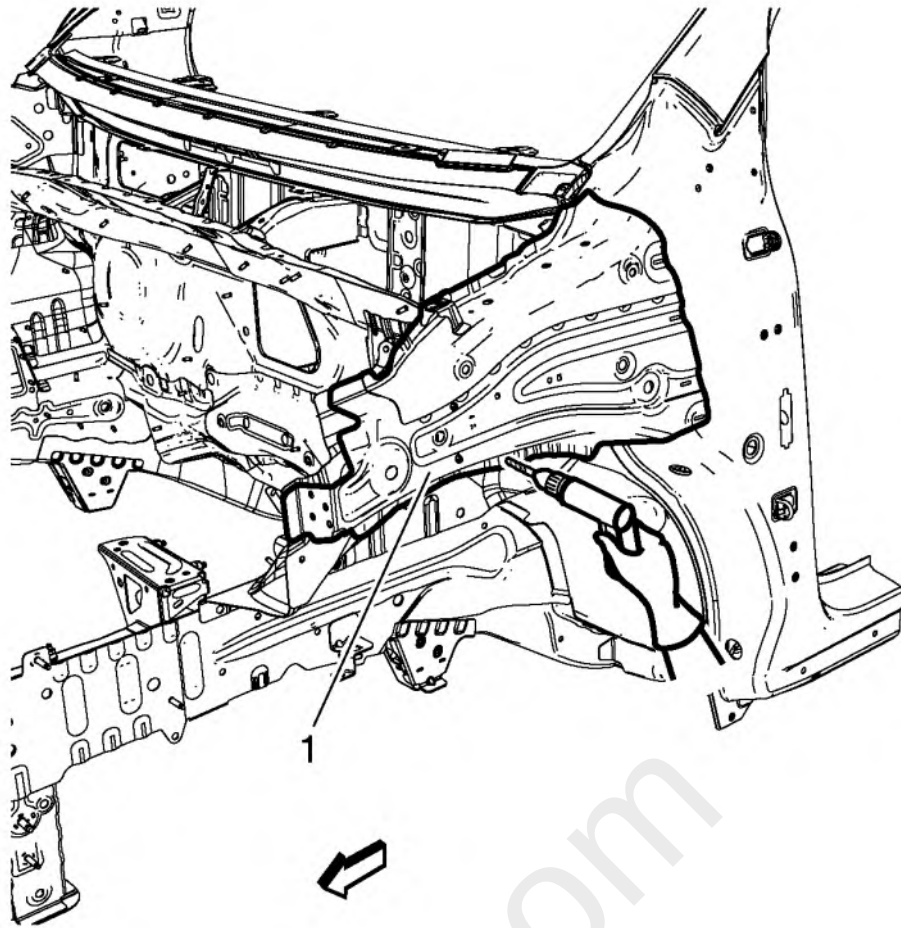
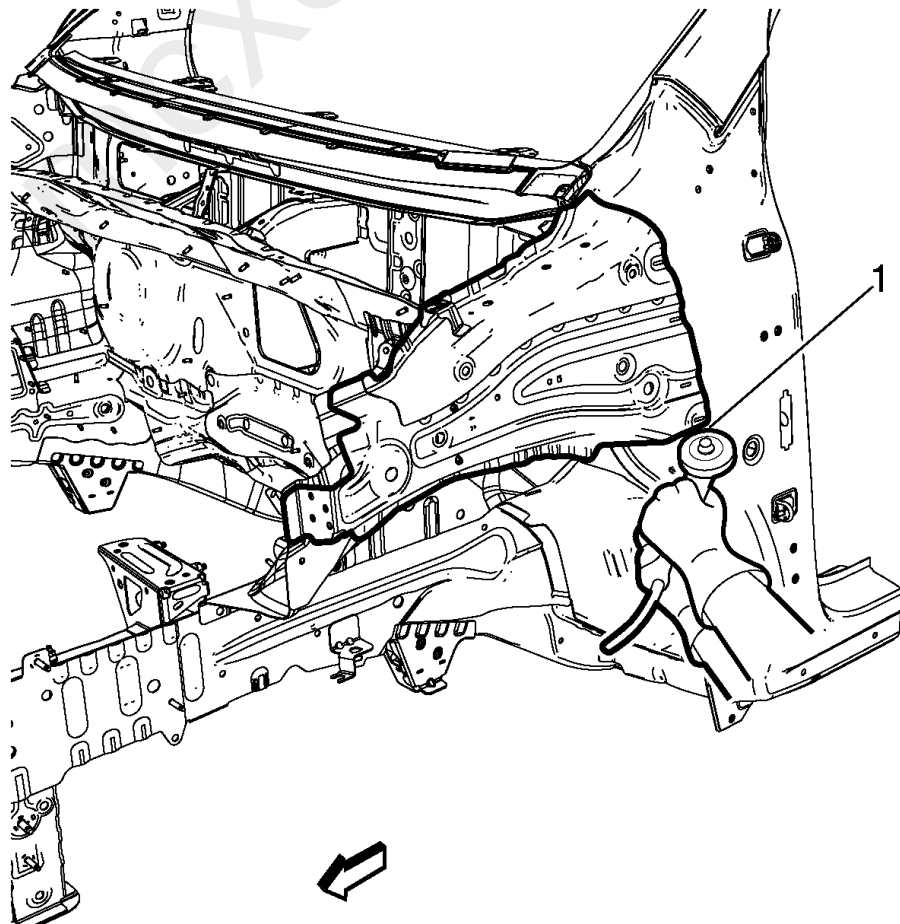


Fig. 20: Drilling All Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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



8. Grind factory weld seams (1).

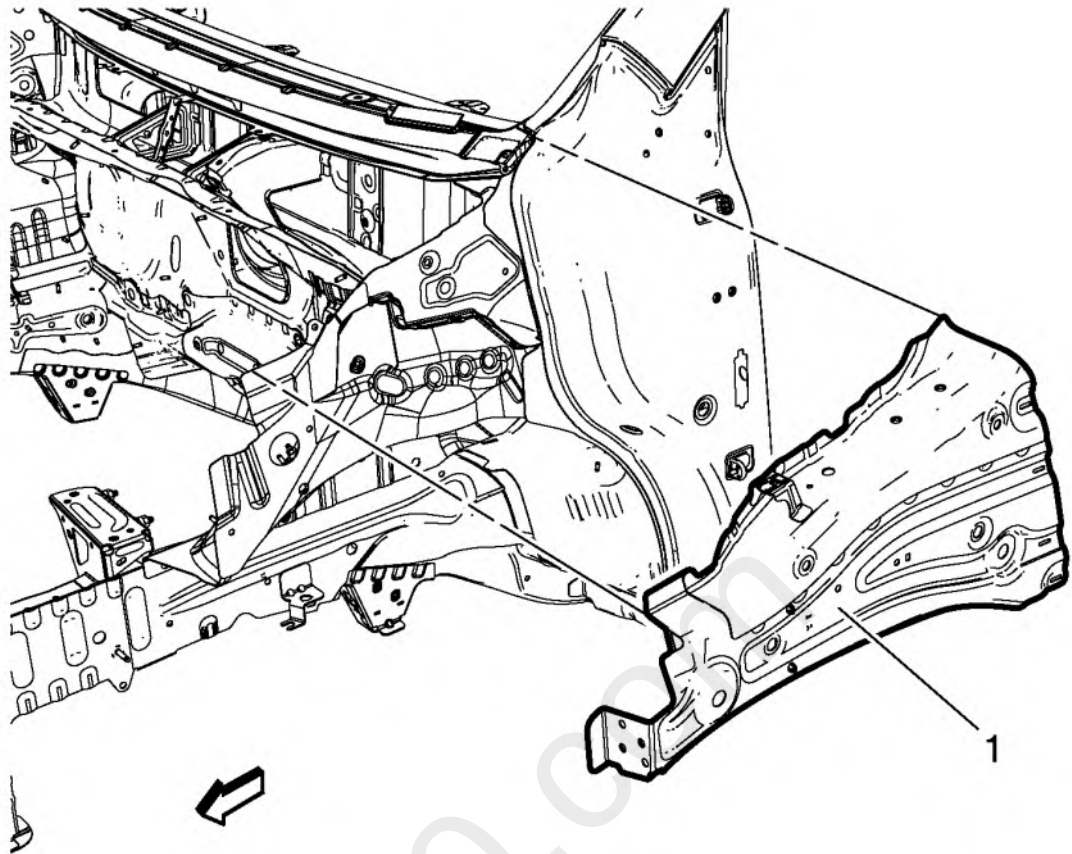


Fig. 22: Front Compartment Upper Side Rail

Courtesy of GENERAL MOTORS COMPANY

9. Remove the front compartment upper side rail (1).

Installation Procedure

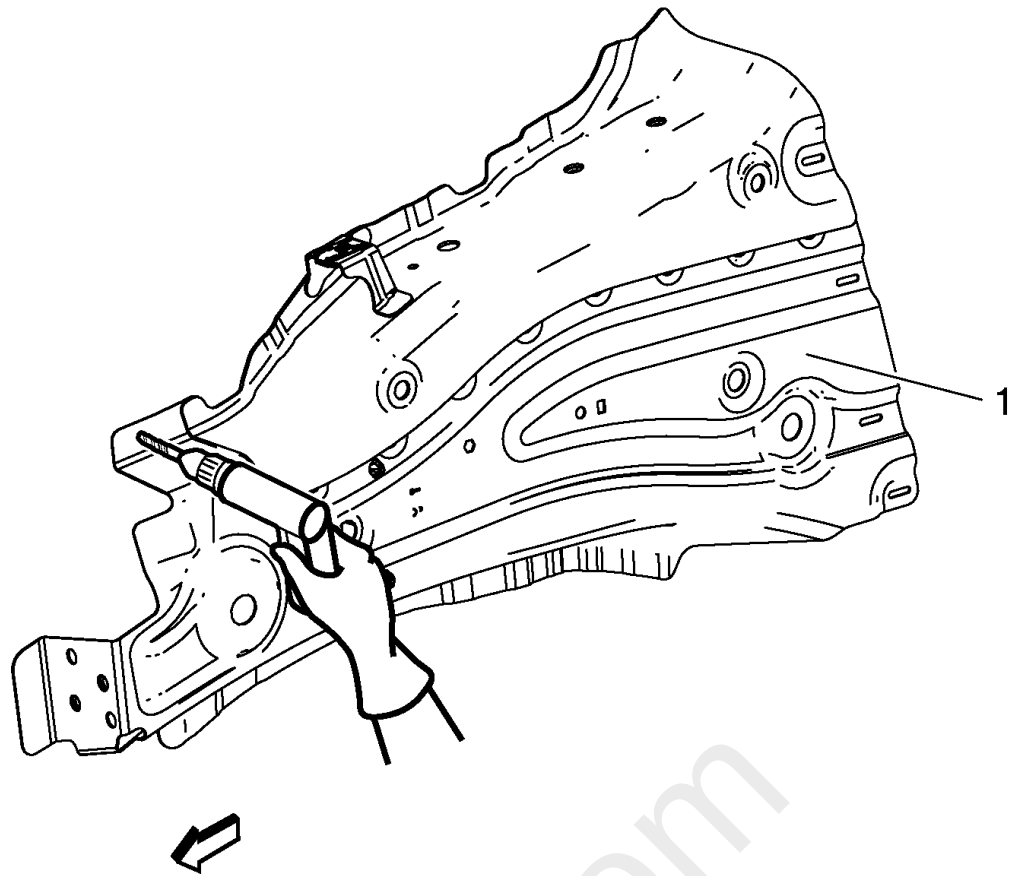


Fig. 23: Drilling Holes For Plug Welding

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 in) apart.

1. Drill 8 mm (5/16 in) holes for plug weld 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.

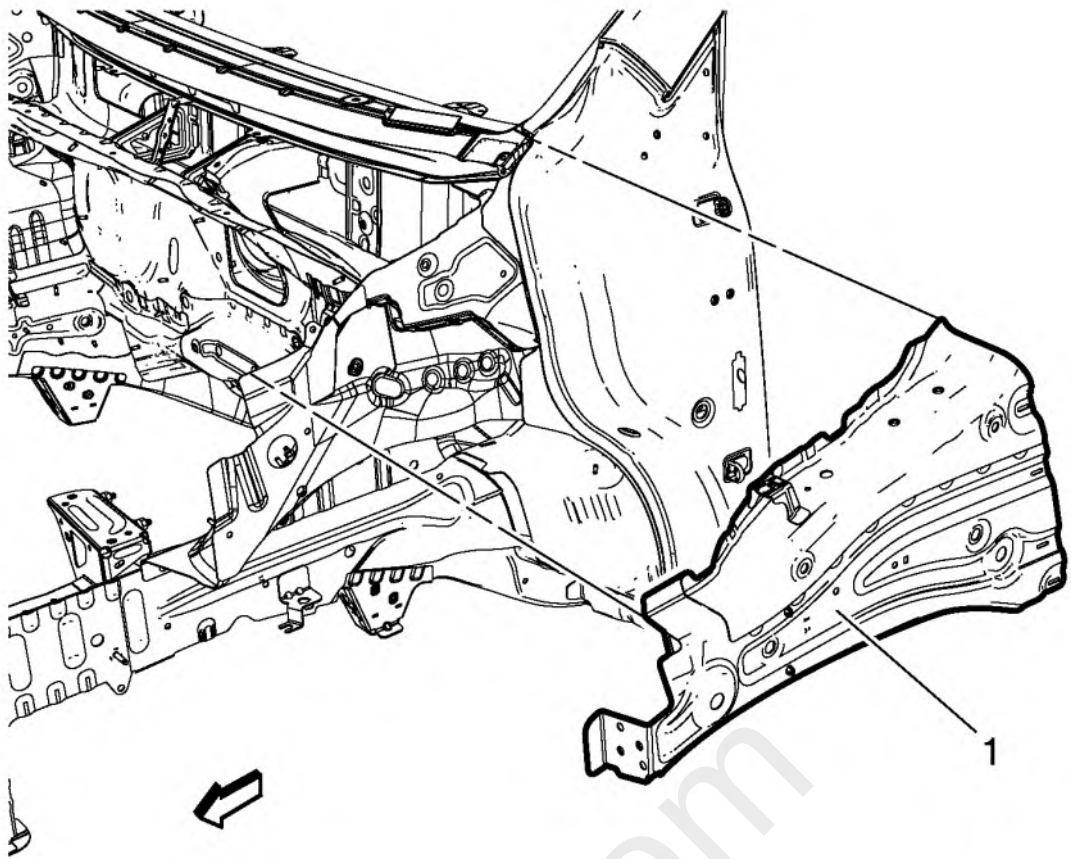


Fig. 24: Front Compartment Upper Side Rail
Courtesy of GENERAL MOTORS COMPANY

3. Position the front compartment upper side rail (1) on the vehicle.
4. Verify the fit of the front compartment upper side rail.
5. Clamp the front compartment upper side rail into position.

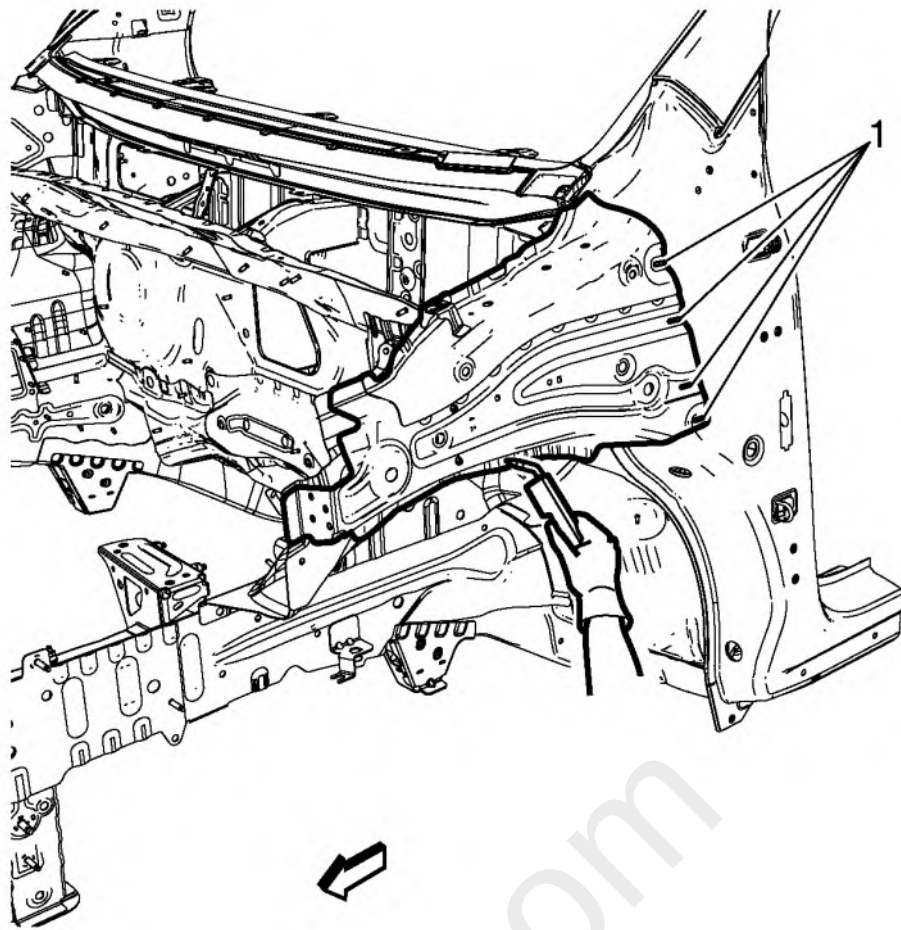


Fig. 25: Front Hinge Pillar Body
Courtesy of GENERAL MOTORS COMPANY

NOTE: Plug weld factory slots in the front hinge pillar body area (1) as noted from the original panel.

6. Plug weld accordingly (1).
7. Clean and prepare all welded surfaces.
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
12. Enable the SIR system. Refer to [SIR Disabling and Enabling](#).

FRONT COMPARTMENT SIDE RAIL 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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
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 \(Base\)](#).

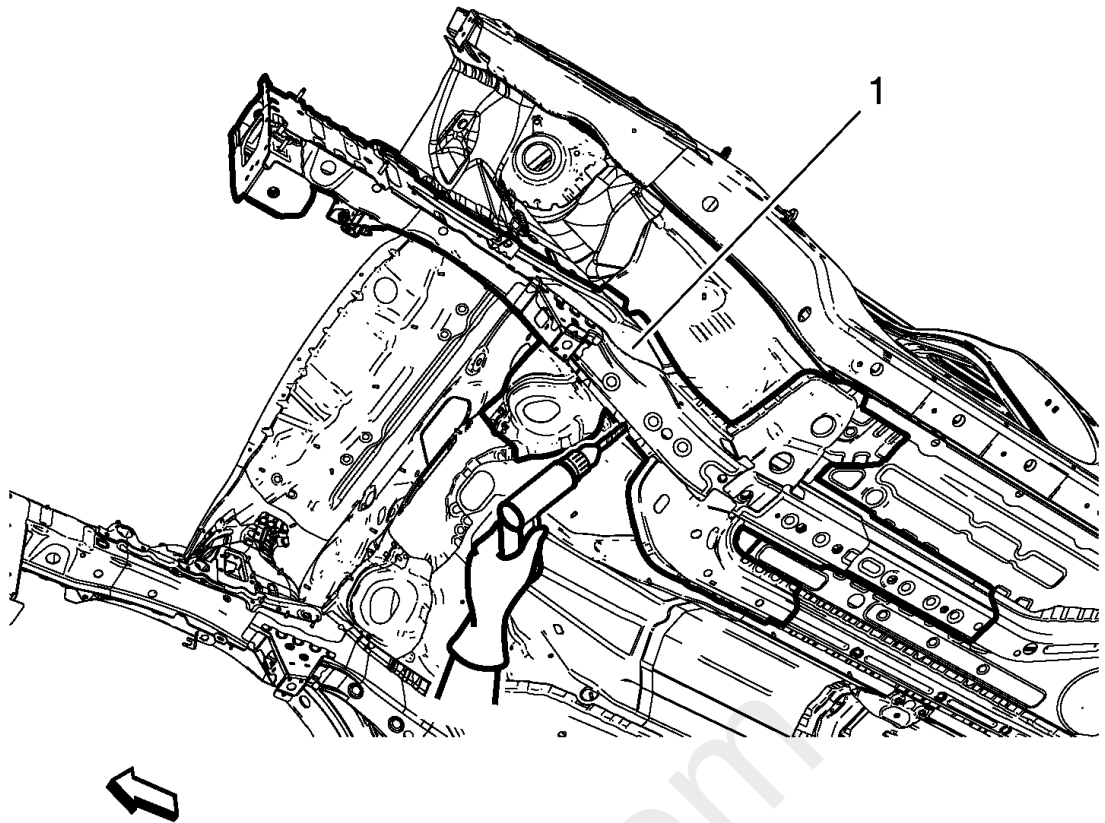
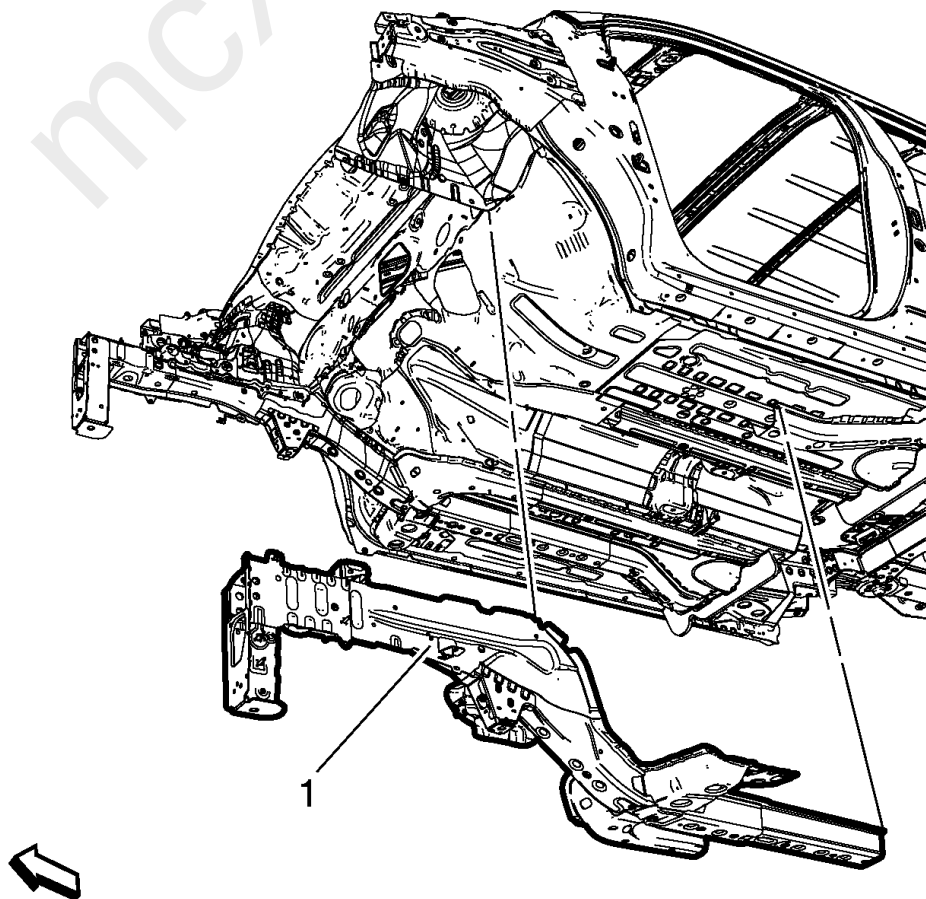


Fig. 26: Drilling Factory Welds

Courtesy of GENERAL MOTORS COMPANY

6. Locate and mark all the necessary factory welds of the front compartment side rail.
7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.



8. Remove the front compartment side rail (1).

Installation Procedure

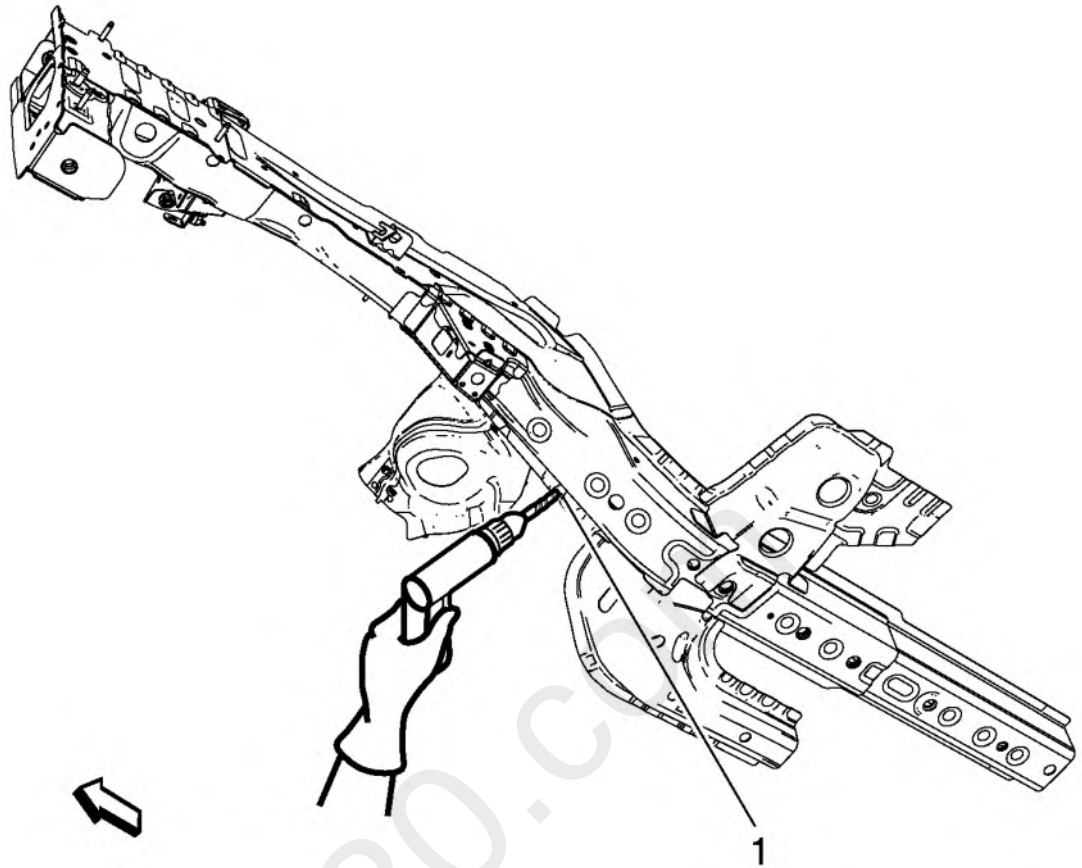


Fig. 28: Drilling Holes For Plug Welds
Courtesy of GENERAL MOTORS COMPANY

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

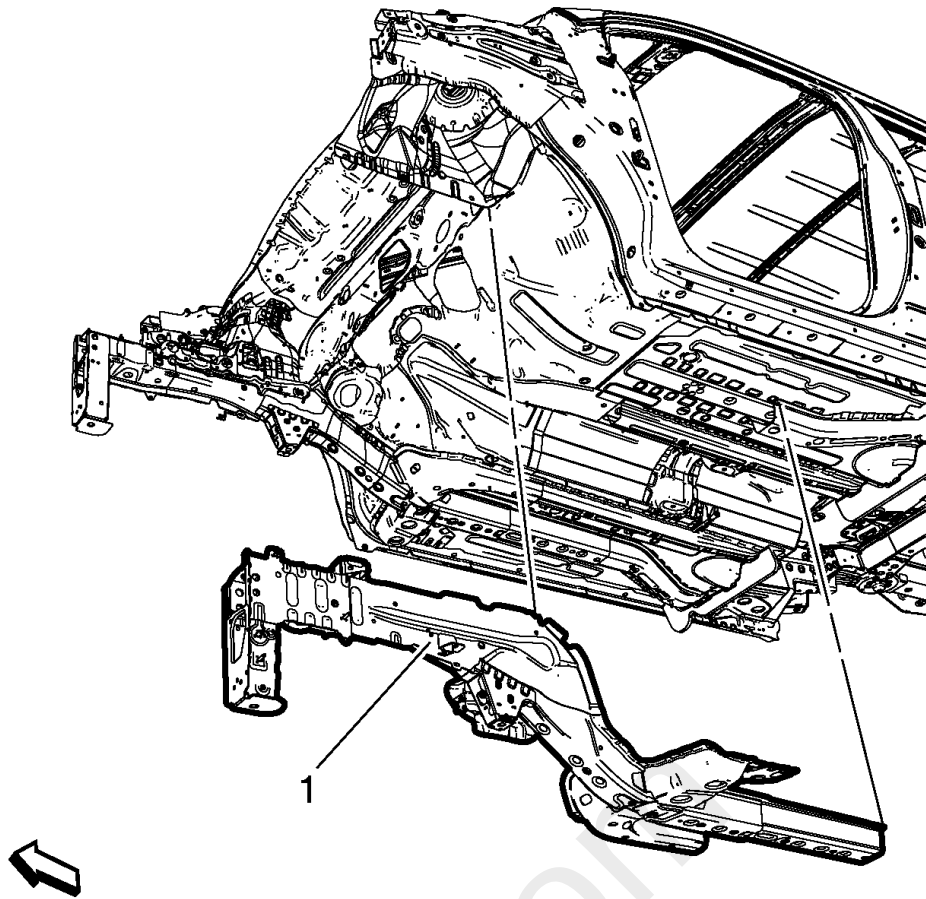


Fig. 29: Front Compartment Side Rail

Courtesy of GENERAL MOTORS COMPANY

3. Position the front compartment side rail on the vehicle (1).
4. Verify the fit of the front compartment side rail.
5. Clamp the front compartment side rail into position.

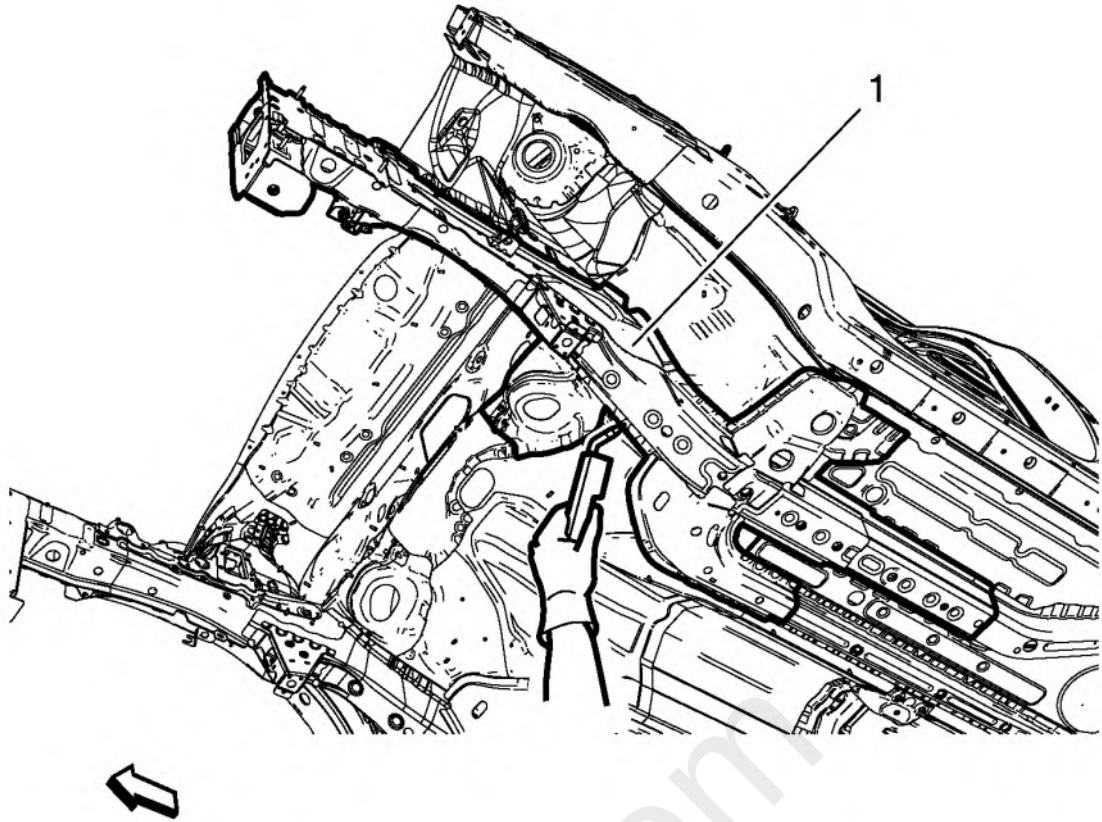


Fig. 30: Plug Welding

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 \(Base\)](#).
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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
11. Enable the SIR system. Refer to [SIR Disabling and Enabling](#).

FRONT COMPARTMENT SIDE RAIL SECTIONING

Removal Procedure

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

WARNING: 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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
3. Remove all the 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 \(Base\)](#).

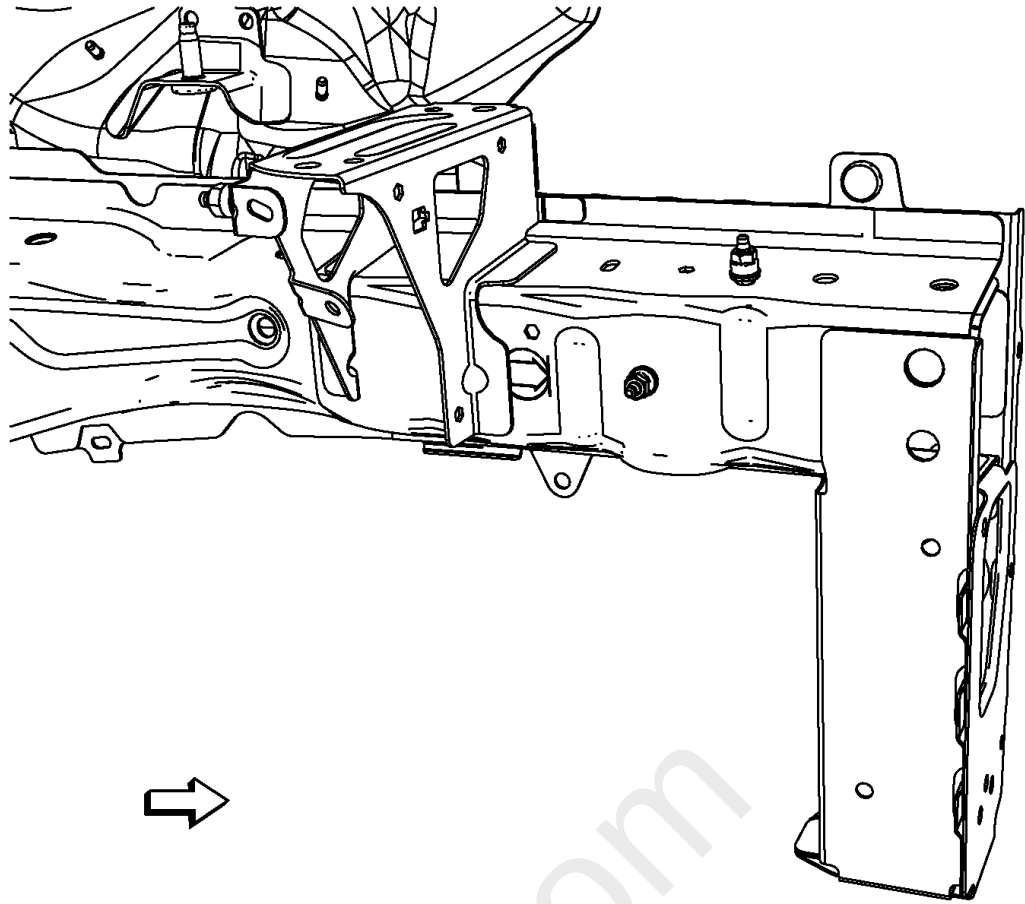


Fig. 31: Front Compartment Side Rail
Courtesy of GENERAL MOTORS COMPANY

6. Locate the die mark on the inner lower surface of the front compartment side rail.

NOTE: Do not section the rail in any area other than the die mark location given.

7. Align a sliding square or similar tool to the line at the tip of the arrow in the die mark. Scribe a line across the rail.

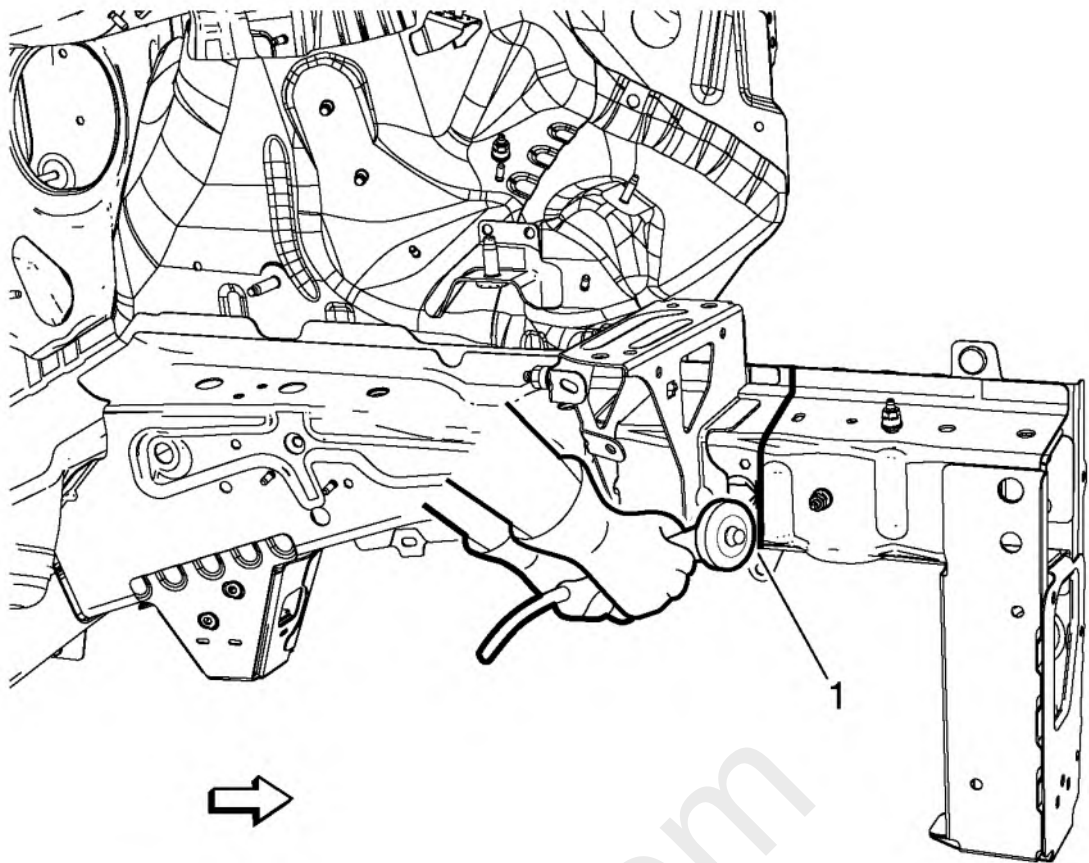


Fig. 32: Sectioning Front Compartment Side Rail
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage any other panels or reinforcements.

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

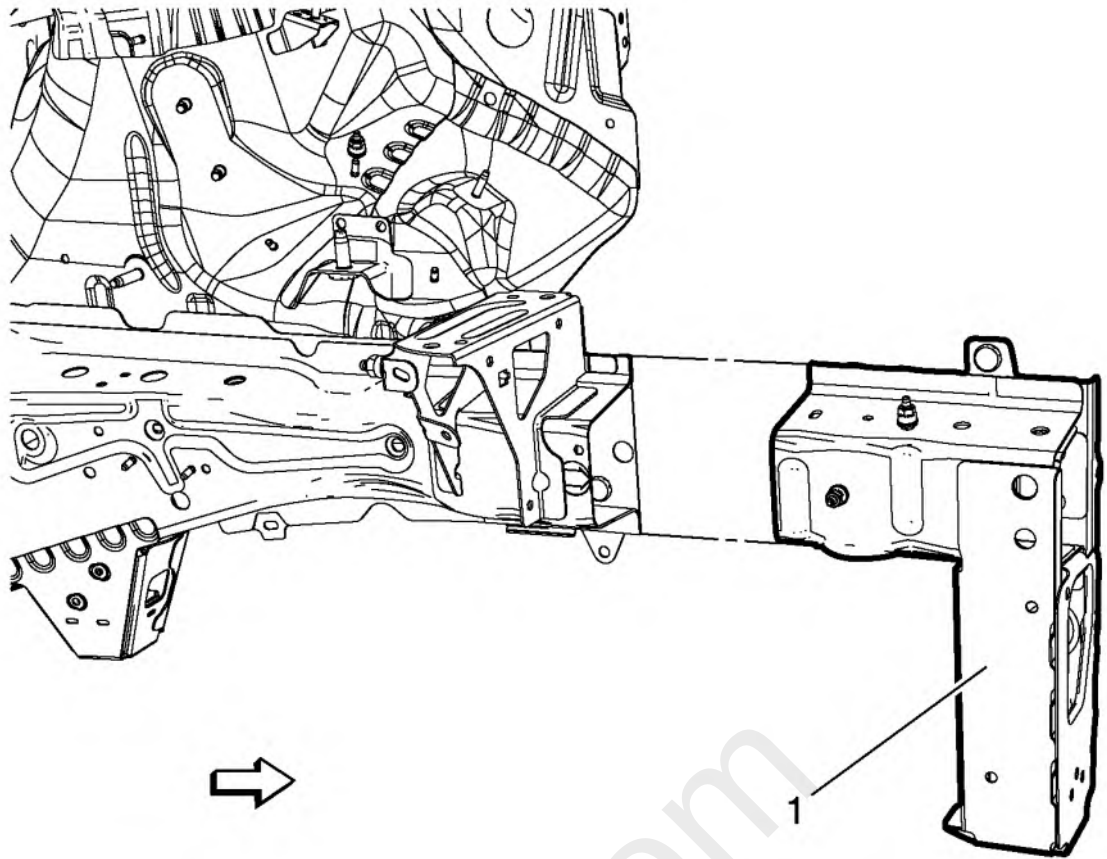


Fig. 33: Front Compartment Side Rail
Courtesy of GENERAL MOTORS COMPANY

9. Remove the damaged front compartment side rail (1).
10. Drill two 8 mm (5/16 in) plug weld holes on each of the 3 sides of the front compartment side rail (1). Position the center of the holes 10 mm (3/8 in) from the cut edge.

Installation Procedure

1. Locate the original cutting line on the service part front compartment side rail.
2. Align a sliding square or similar tool to the original cutting line and scribe a line across the rail.
3. Use the same tool to transfer this scribed line onto the sides and the weld flanges of the rail.
4. Place a mark forward, 25 mm (1 in) from the scribed line on all 3 sides of the service rail.
5. Use the tool to scribe a line on all 3 sides and weld flanges of the rail.

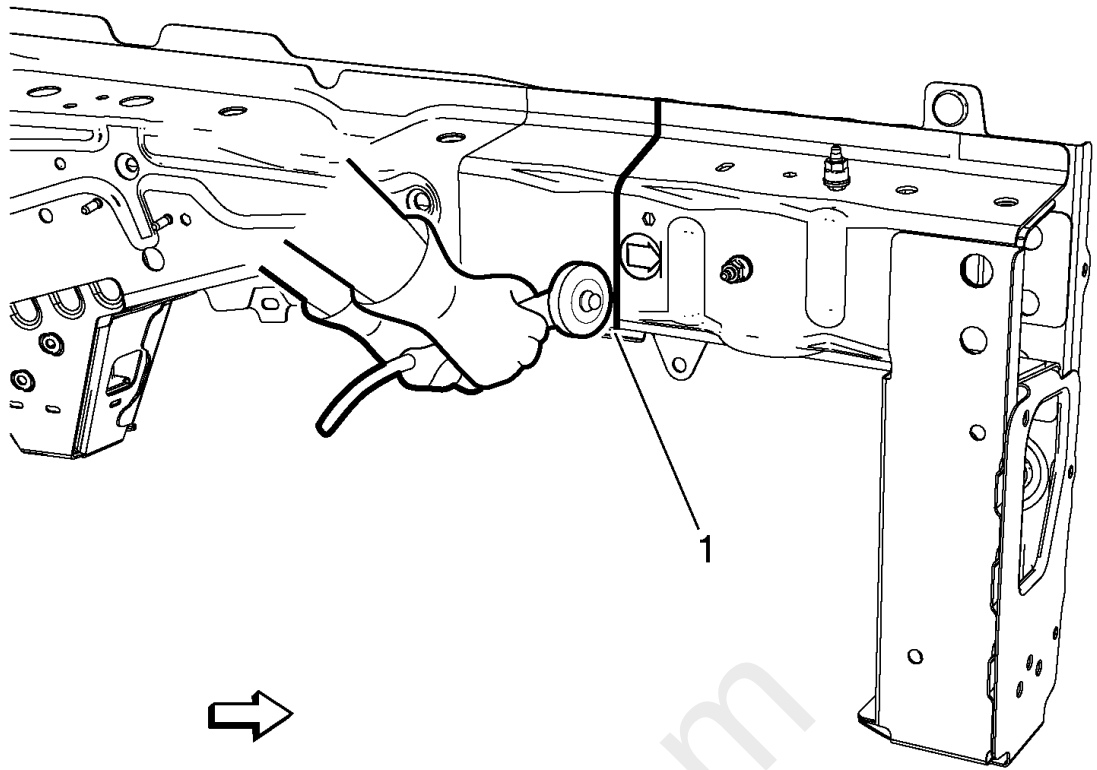


Fig. 34: Scribe Marks On Rail

Courtesy of GENERAL MOTORS COMPANY

6. Cut at the scribe line (1).
7. Remove the front portion of the rail.

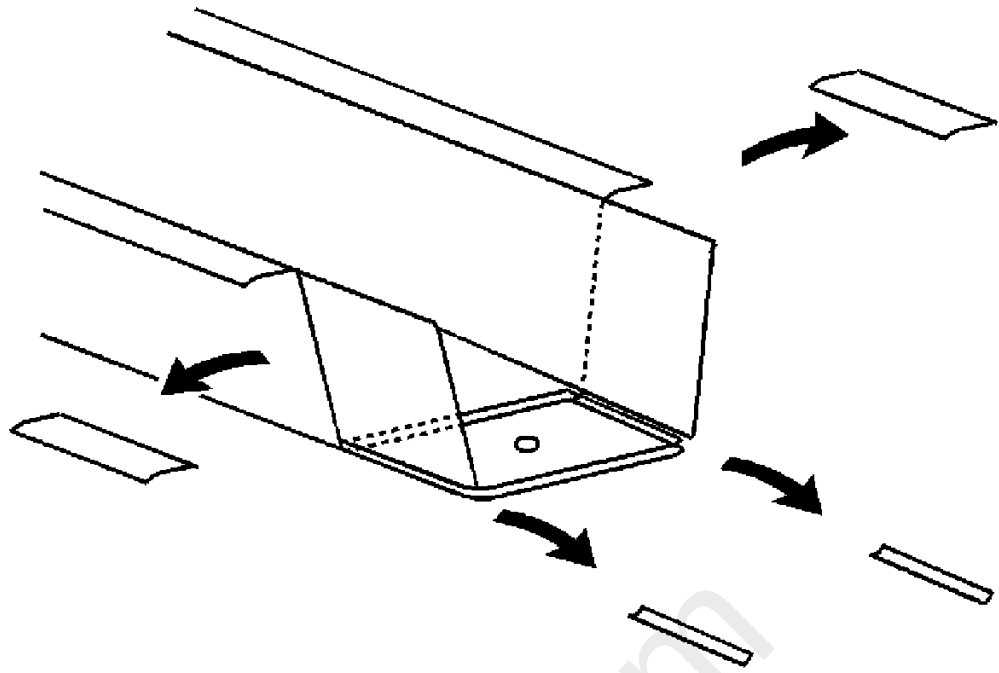


Fig. 35: Cutting And Preparing Front Compartment Side Rail Service Part
Courtesy of GENERAL MOTORS COMPANY

8. Cut the upper outer flanges of the front portion of the front compartment side rail service part. Cut the flanges back to the first scribe line and remove the tabs.
9. Cut the lower radius corners of the service part back to the first scribe line and remove the small corners.
10. Bend the bottom side of the service part at the sectioning location inward slightly by aligning a vice grip flanging tool or similar tool at the first scribed line.
11. Clean and prepare the attaching surfaces for welding.

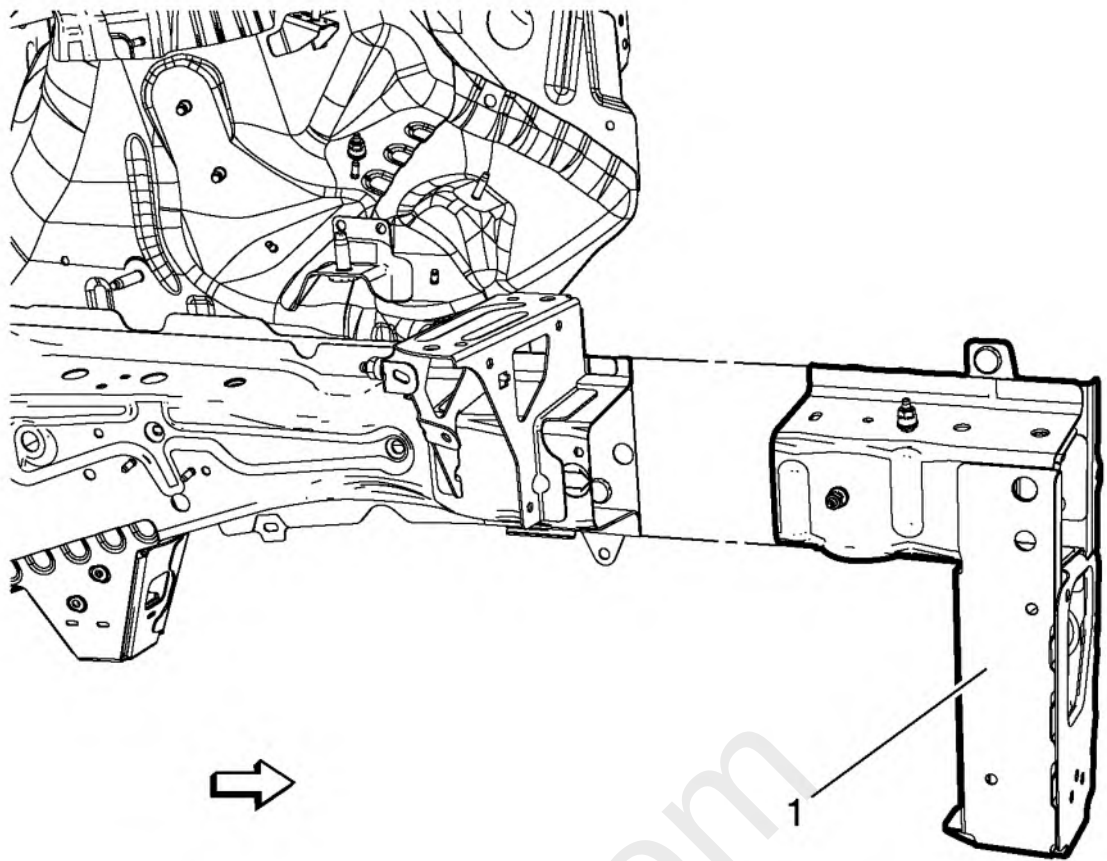
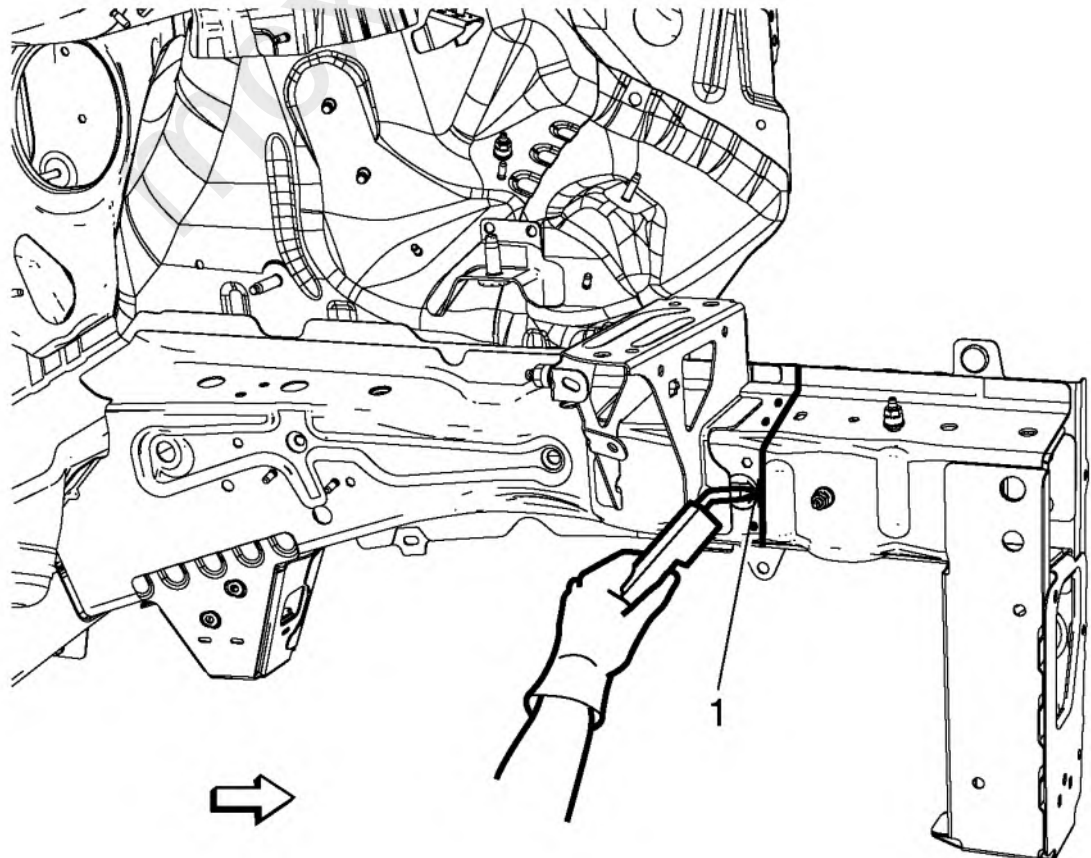


Fig. 36: Front Compartment Side Rail
Courtesy of GENERAL MOTORS COMPANY

12. Position the front compartment side rail (1) on the vehicle.



13. Tack weld (1) the part into position.
14. Inspect the service front compartment side rail for proper dimensions, using 3-dimensional measuring equipment.
15. Plug weld at each 8 mm (5/16 in) plug weld hole location.
16. Stitch weld along the entire sectioning joint. Make welds along the seam with 25 mm (1 in) gaps between. Weld the gaps.
17. Clean and prepare the welded surfaces.
18. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#) .
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 \(without KL9\)](#), [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
22. Enable the SIR system. Refer to [SIR Disabling and Enabling](#) .

FRONT HINGE PILLAR BODY 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 \(without KL9\)](#), [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
3. Remove all the 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 \(Base\)](#) .

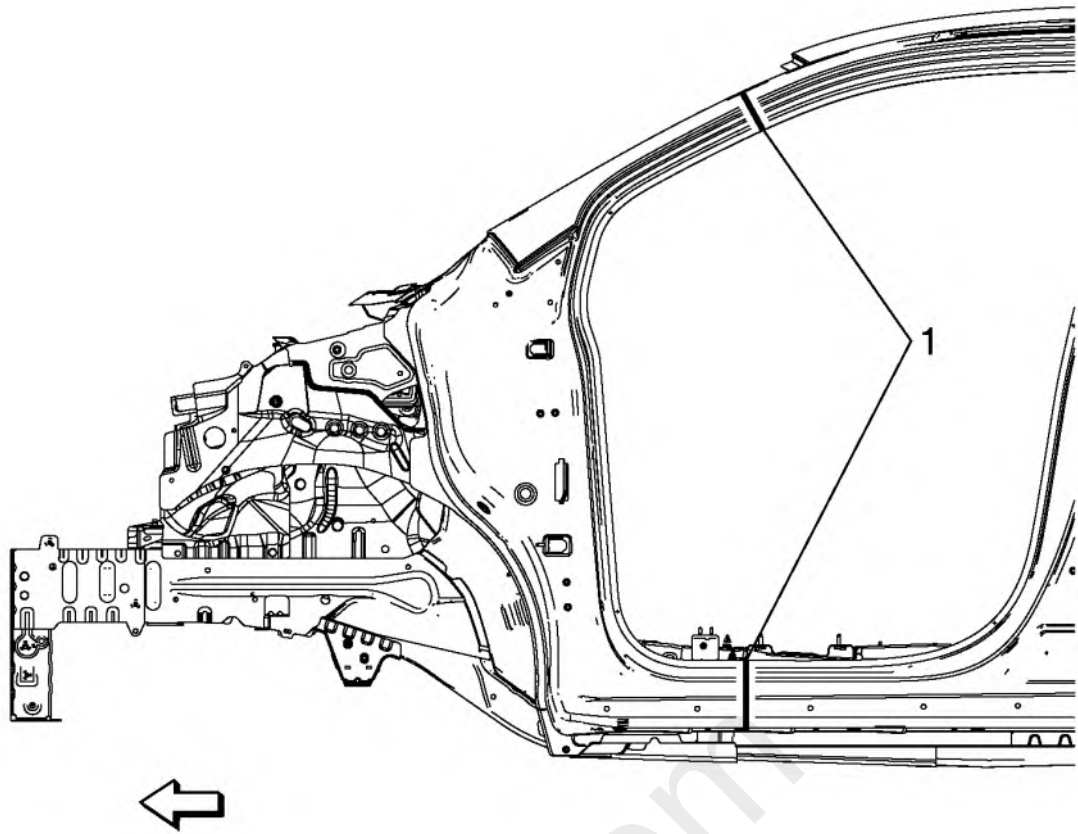


Fig. 38: Cut Lines On Front Hinge Pillar Body
Courtesy of GENERAL MOTORS COMPANY

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

6. Create cut lines (1) on the front hinge pillar body.

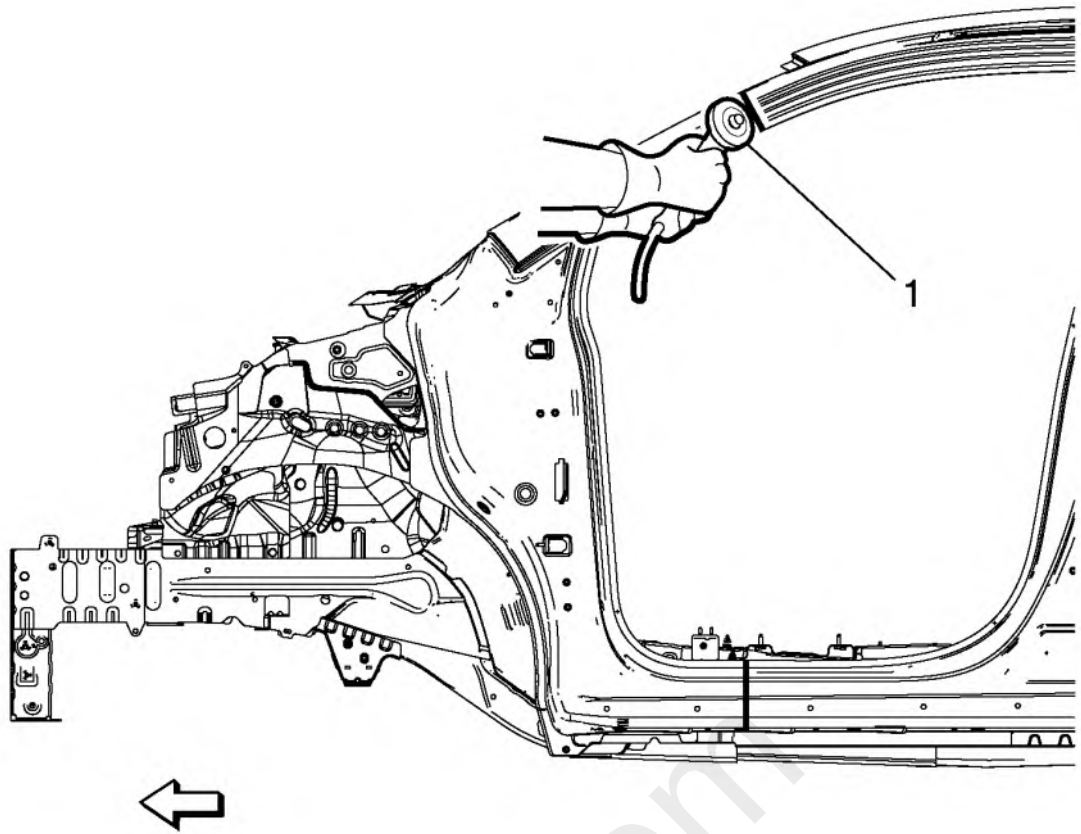


Fig. 39: Cutting Panel On Cut Lines
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage any inner panels or reinforcements.

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

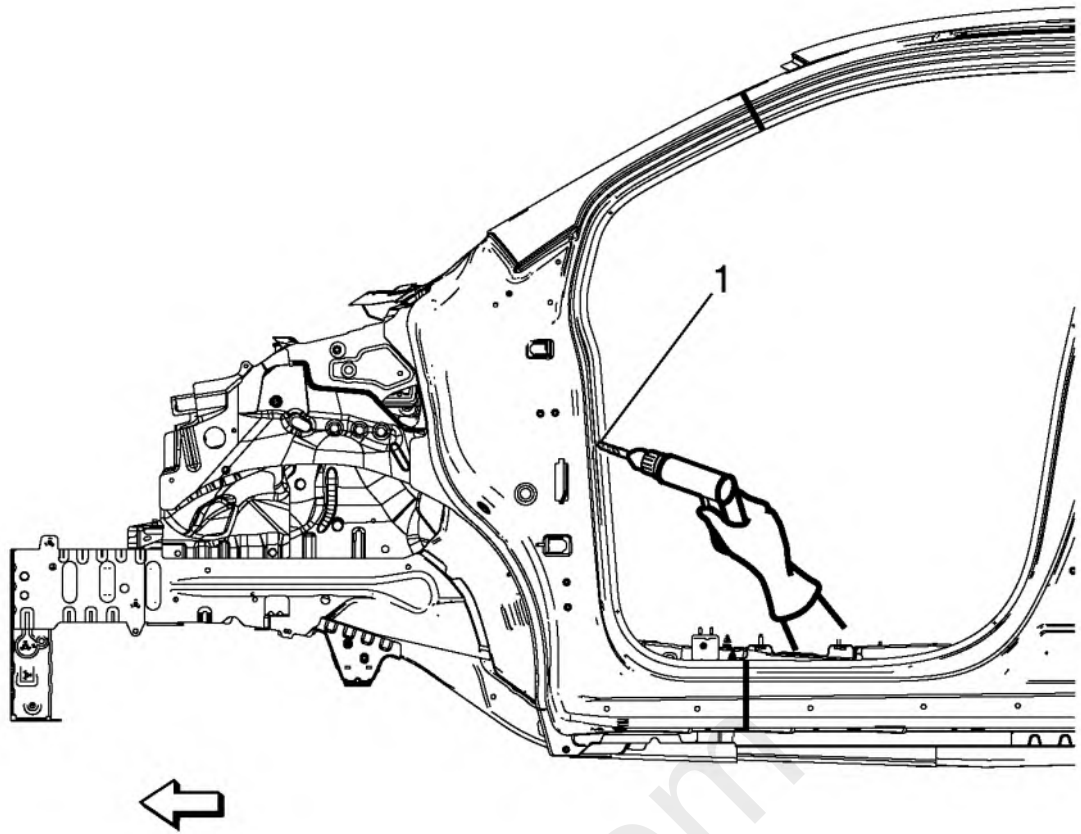
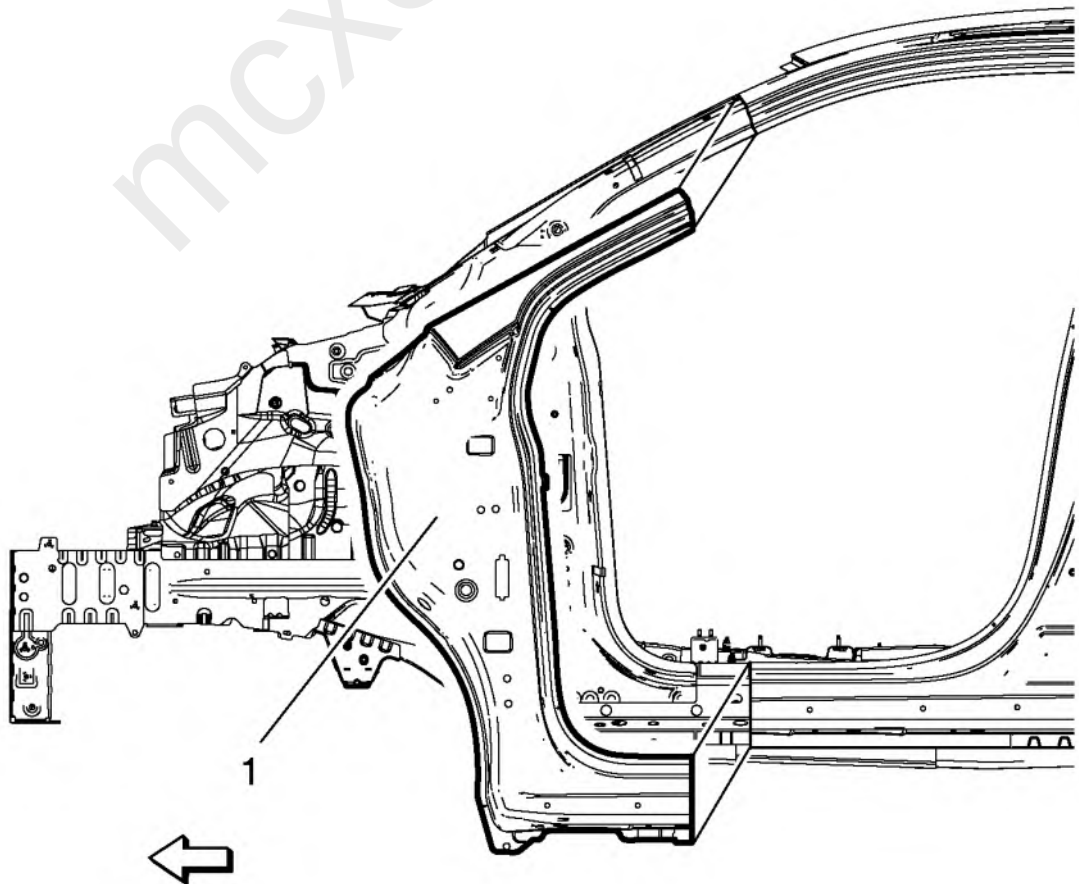


Fig. 40: Drilling Factory Welds

Courtesy of GENERAL MOTORS COMPANY

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



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

Installation Procedure

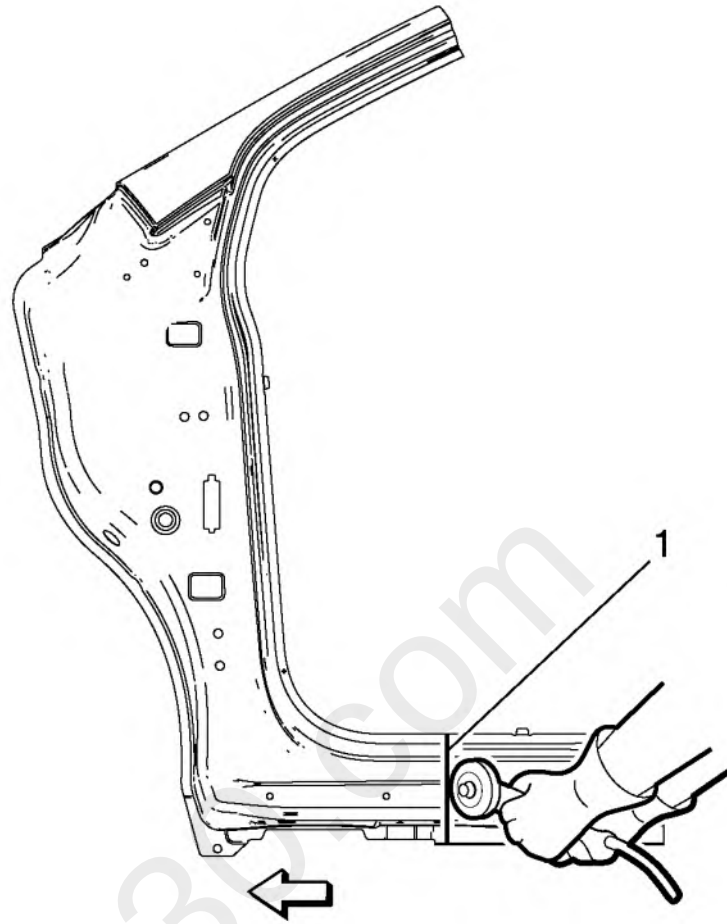


Fig. 42: Preparing Front Hinge Pillar Body Service Part
Courtesy of GENERAL MOTORS COMPANY

1. Cut the front hinge pillar body in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to overlap the remaining original panel by 25 mm (1 in) at each joint location (1).
2. Prepare all mating surfaces as necessary.

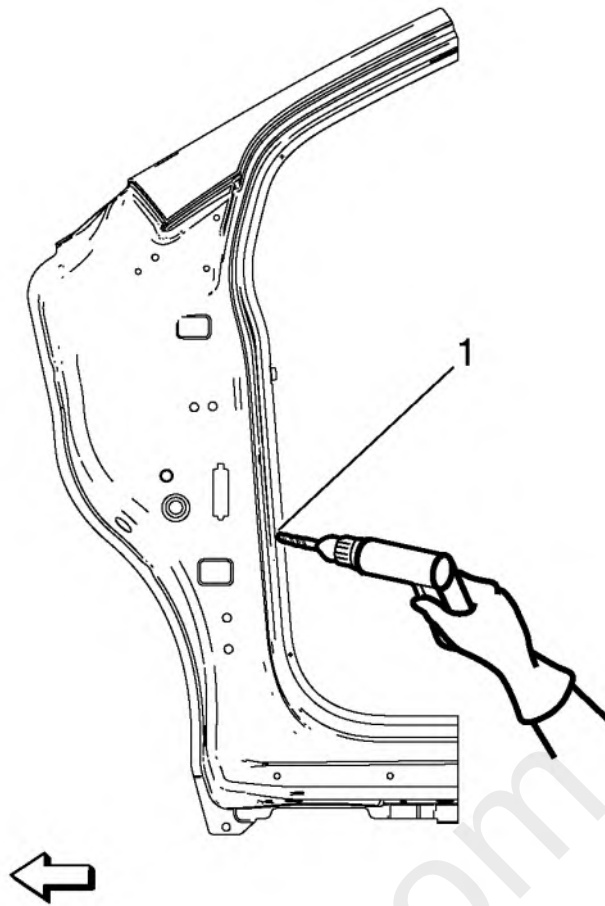


Fig. 43: Drilling Plug Weld Holes

Courtesy of GENERAL MOTORS COMPANY

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

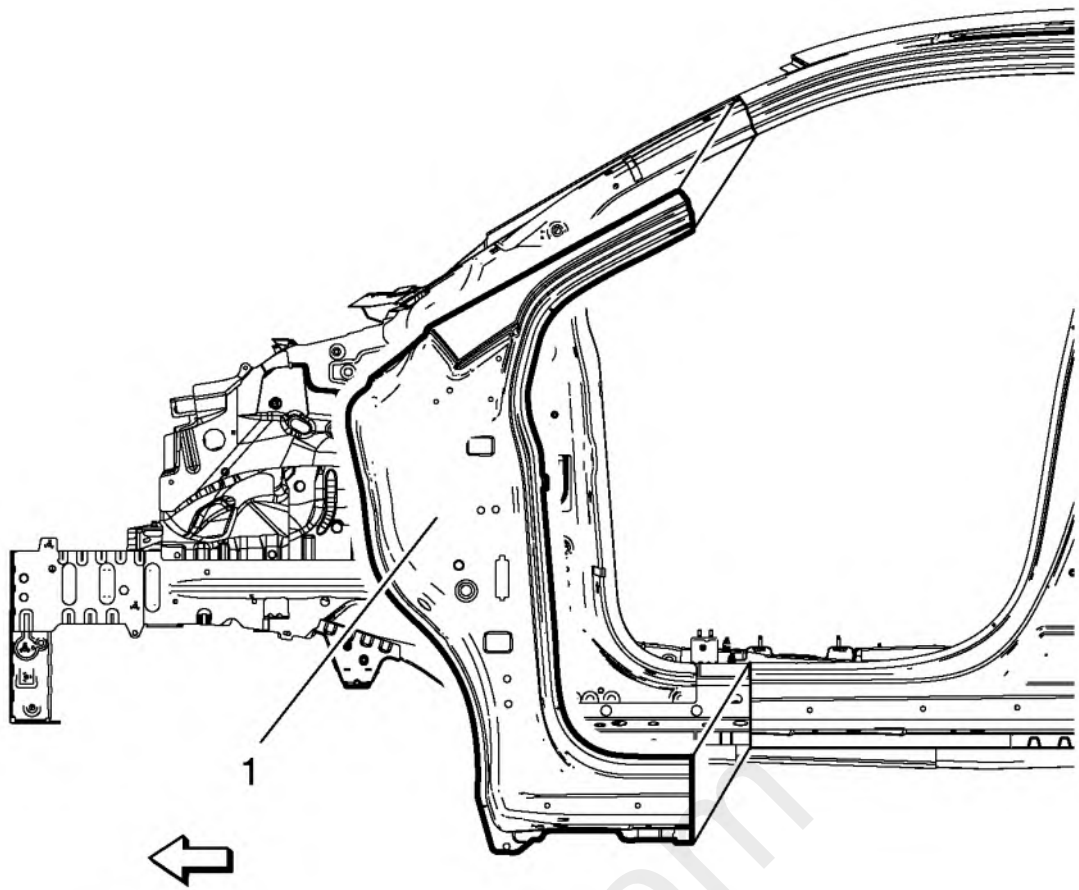


Fig. 44: Front Hinge Pillar Body

Courtesy of GENERAL MOTORS COMPANY

5. Position the front hinge pillar body on the vehicle (1).
6. Verify the fit of the front hinge pillar body.
7. Clamp the front hinge pillar body into position.

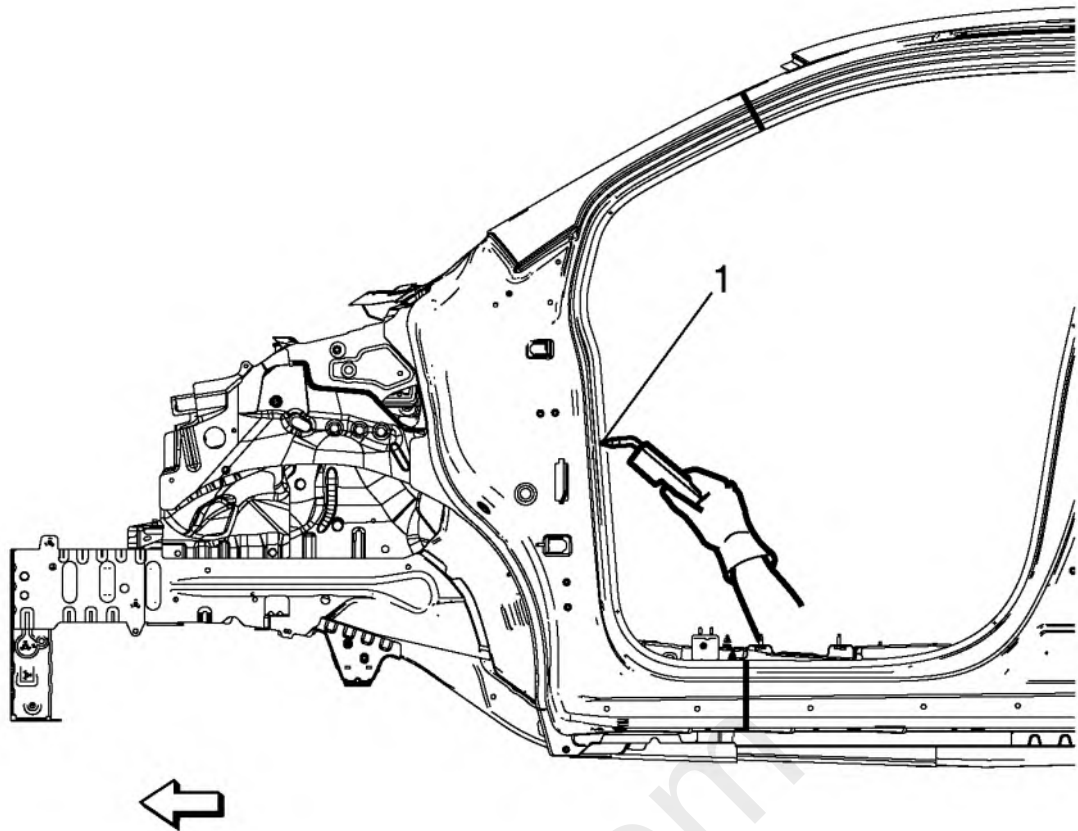


Fig. 45: Plug Welding

Courtesy of GENERAL MOTORS COMPANY

8. Plug weld accordingly (1).
9. To create a solid weld at the sectioning joint, 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.
10. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
11. Paint the repaired area. Refer to [Basecoat/Clearcoat Paint Systems](#).
12. Install all related panels and components.
13. Connect the negative battery cable. Refer to [Battery Negative Cable Disconnection and Connection \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
14. 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](#).

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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
3. Remove all related panels and components.
4. Repair as much of the damage as possible. Refer to [Dimensions - Body \(Opel, Buick\)](#) [Dimensions - Body \(Chevrolet, Holden\)](#).
5. Remove the sealers and anti-corrosion materials from the repair area. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
6. Locate and mark all the necessary factory welds of the front hinge pillar body.

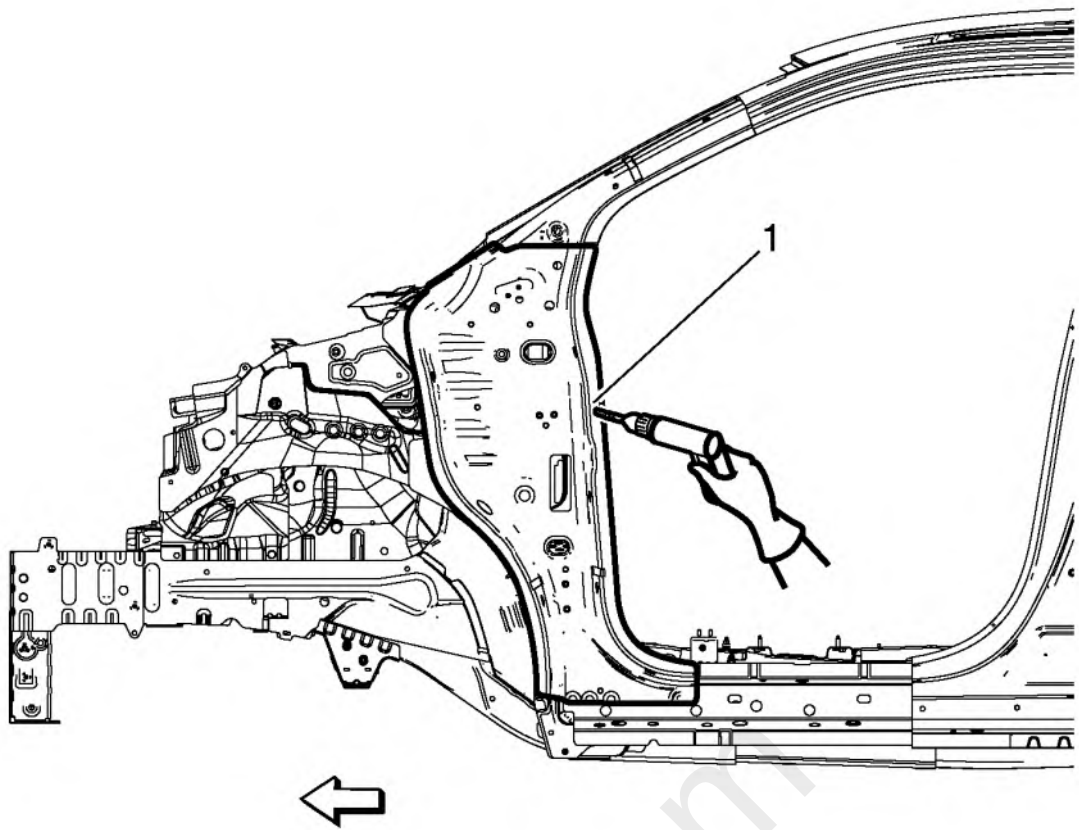
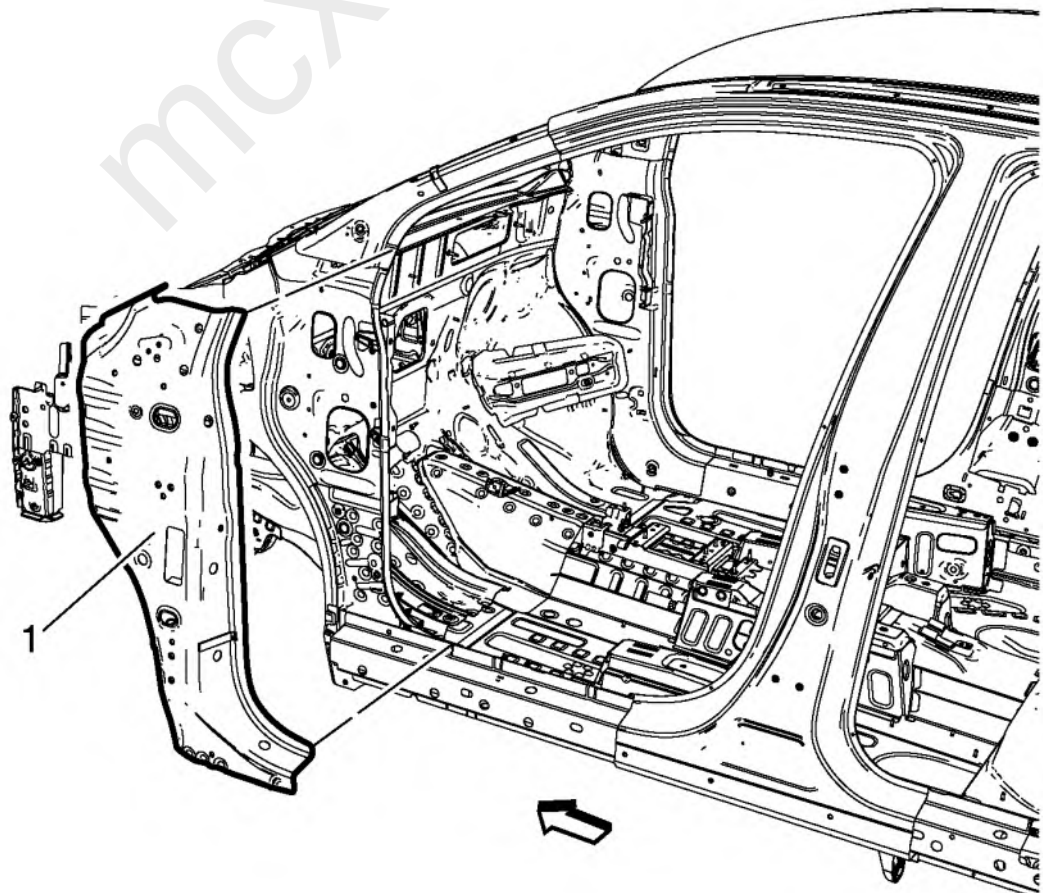


Fig. 46: Drilling Factory Welds

Courtesy of GENERAL MOTORS COMPANY

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



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

Installation Procedure

1. Prepare all mating surfaces as necessary.
2. Align the front hinge pillar body reinforcement.

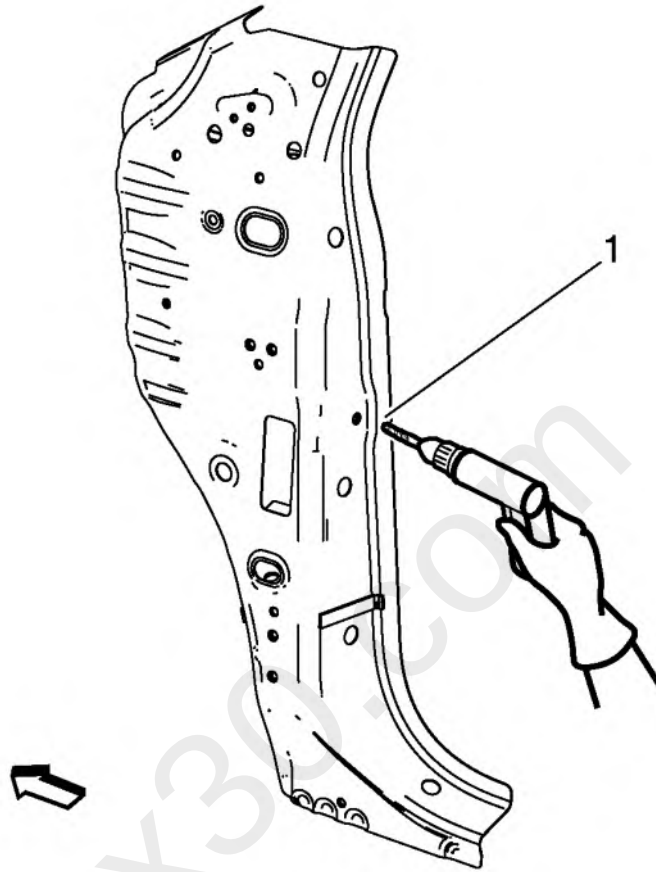


Fig. 48: Drilling Plug Weld Holes Along Front Hinge Pillar Body Edges
Courtesy of GENERAL MOTORS COMPANY

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

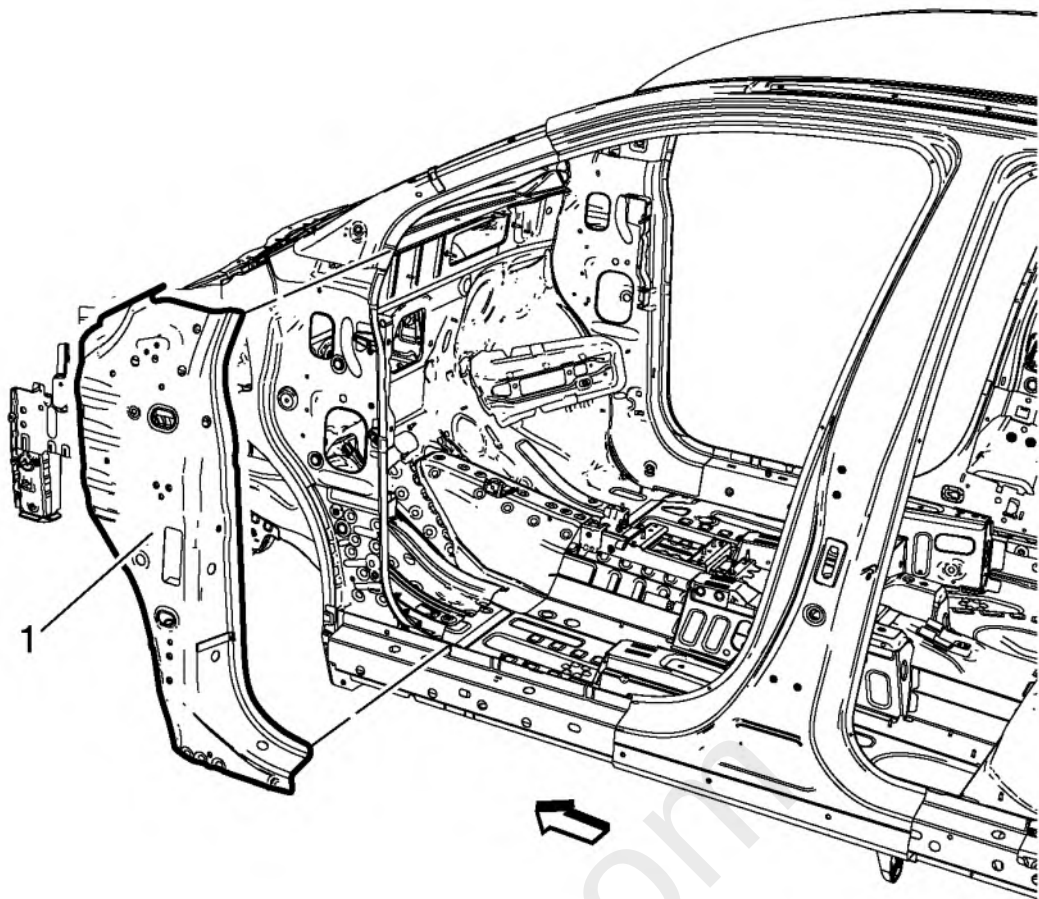


Fig. 49: Front Hinge Pillar Body Reinforcement
Courtesy of GENERAL MOTORS COMPANY

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

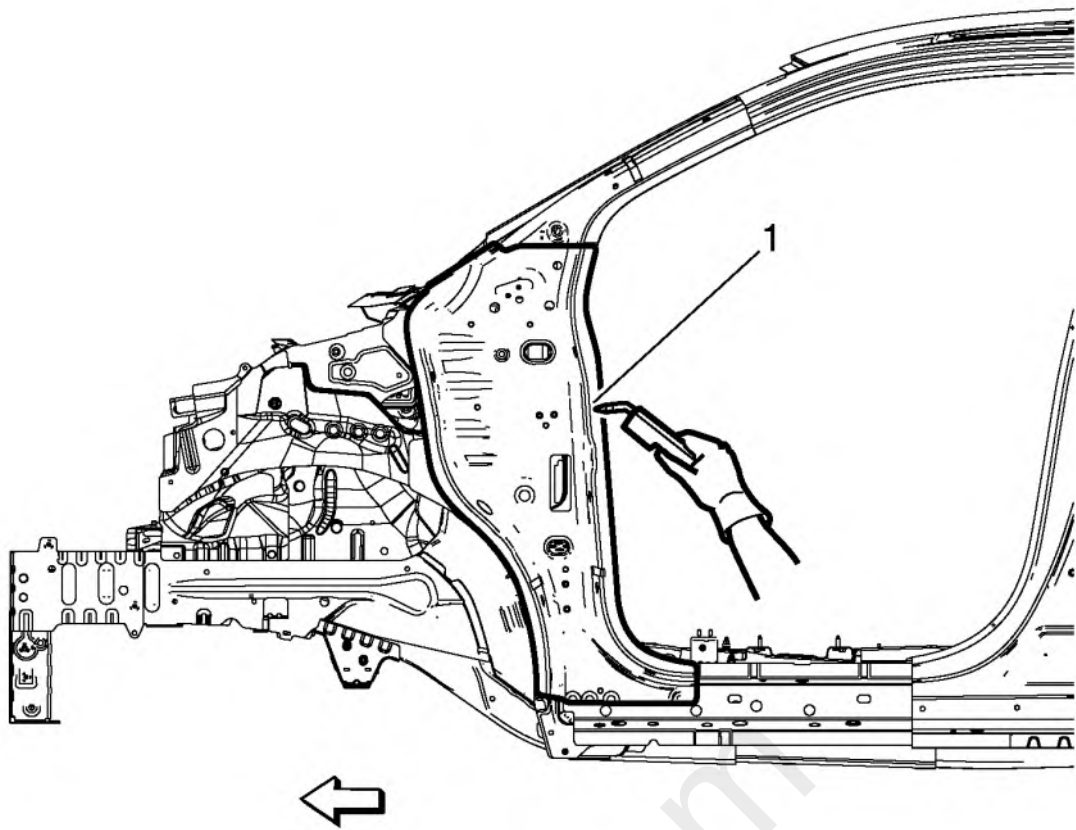


Fig. 50: Plug Welding Replacement Part
Courtesy of GENERAL MOTORS COMPANY

8. Plug weld accordingly (1).
9. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
10. Paint the repaired area. Refer to [Basecoat/Clearcoat Paint Systems](#).
11. Install all related panels and components.
12. Connect the negative battery cable. Refer to [Battery Negative Cable Disconnection and Connection \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
13. Enable the SIR system. Refer to [SIR Disabling and Enabling](#).

ROOF OUTER PANEL REPLACEMENT

Removal Procedure

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

1. Disable the SIR system. Refer to [SIR Disabling and Enabling](#).
2. Disconnect the negative battery cable. Refer to [Battery Negative Cable Disconnection and Connection \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
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 \(Base\)](#).
6. Locate and mark all factory welds.

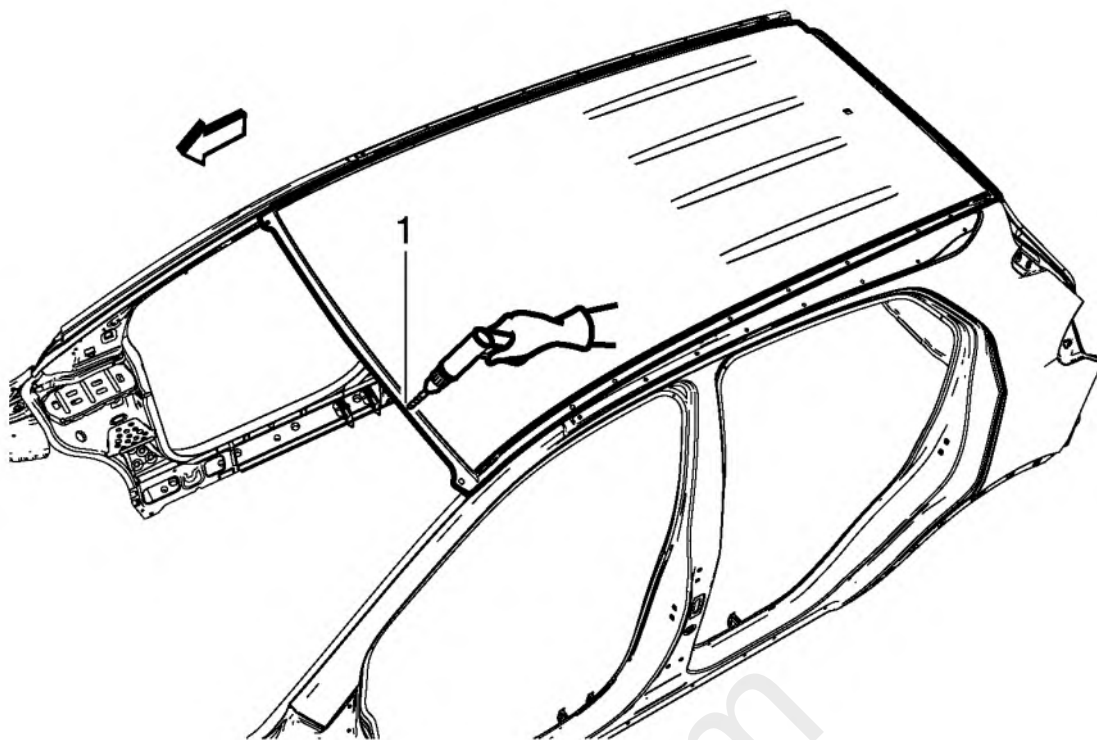
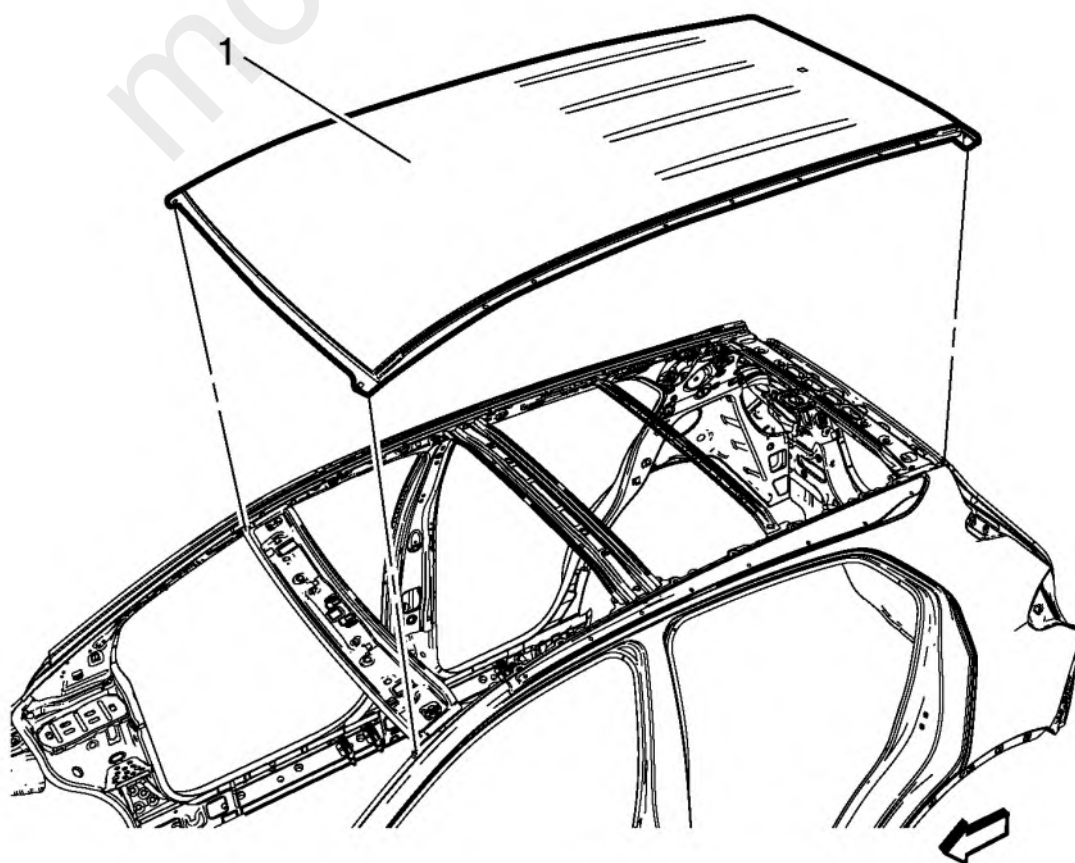


Fig. 51: Drilling Factory Welds

Courtesy of GENERAL MOTORS COMPANY

7. Drill all factory welds (1). Note the number and location of welds for installation of the service assembly.
8. Cut the adhesive with an appropriate tool.



9. Remove the damaged roof panel (1).

Installation Procedure

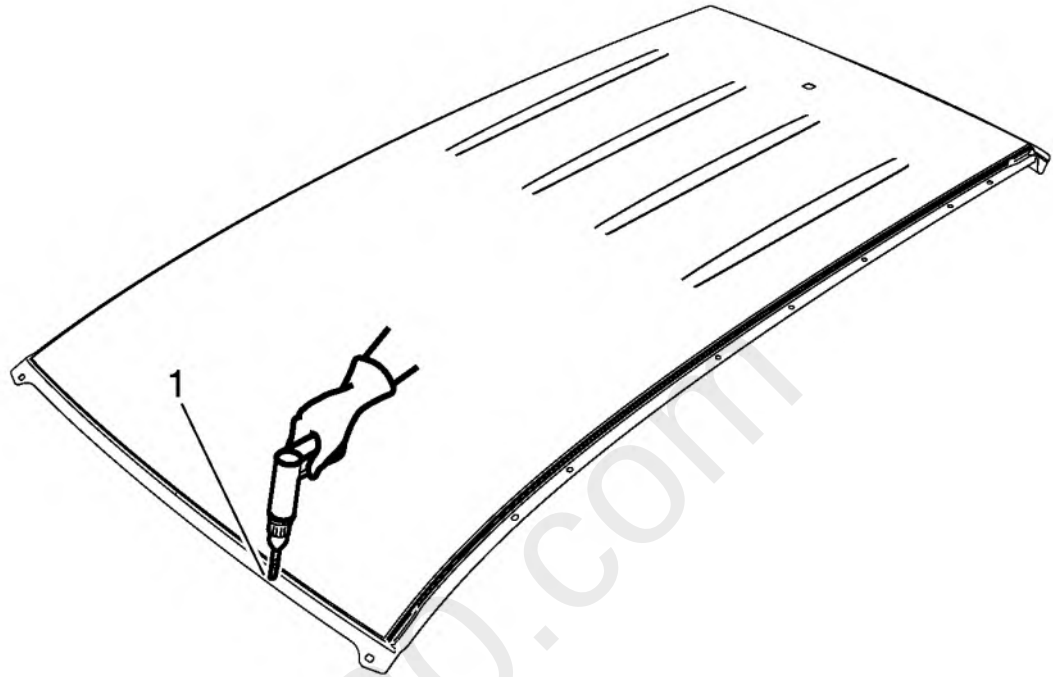


Fig. 53: Drilling Holes For Plug Welding

Courtesy of GENERAL MOTORS COMPANY

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

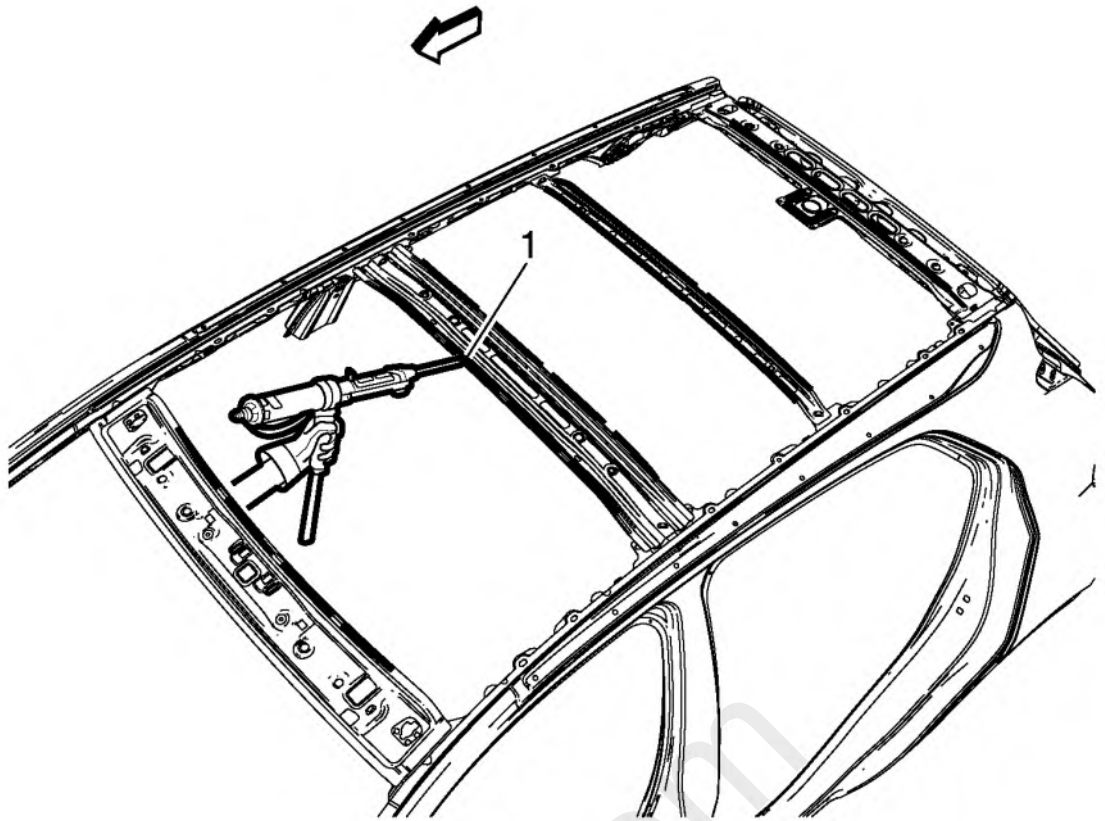
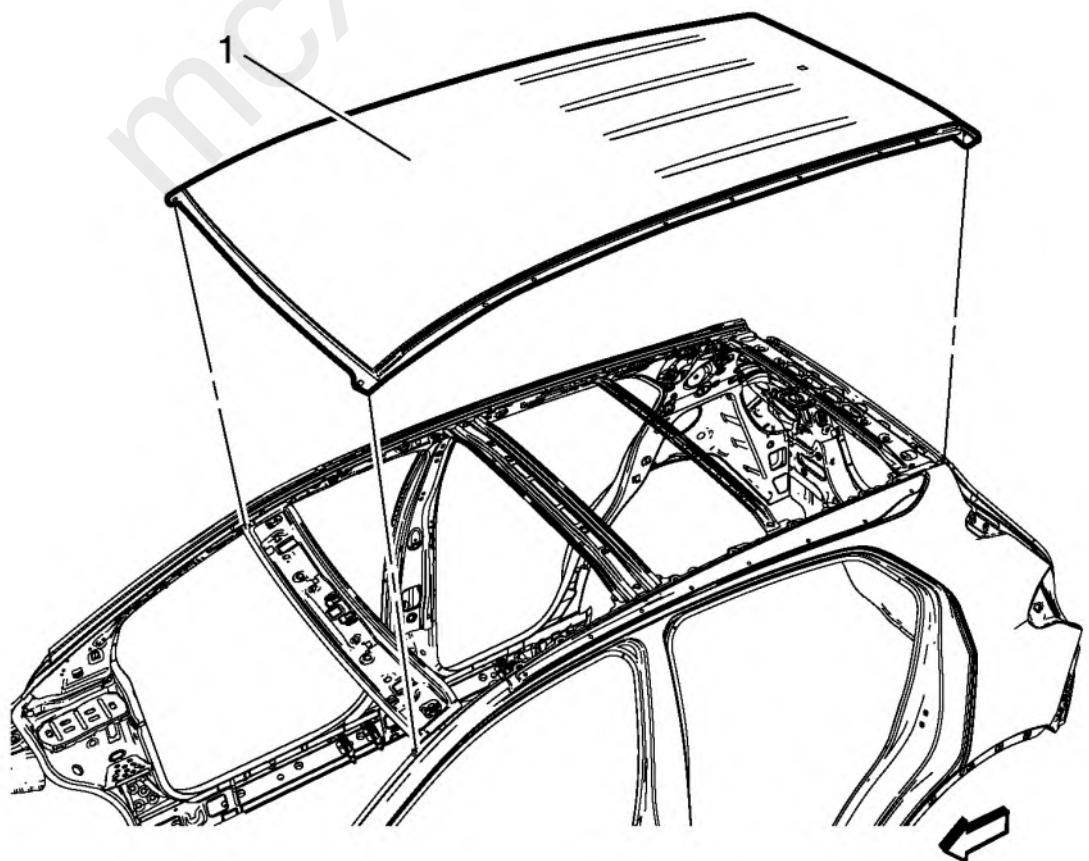


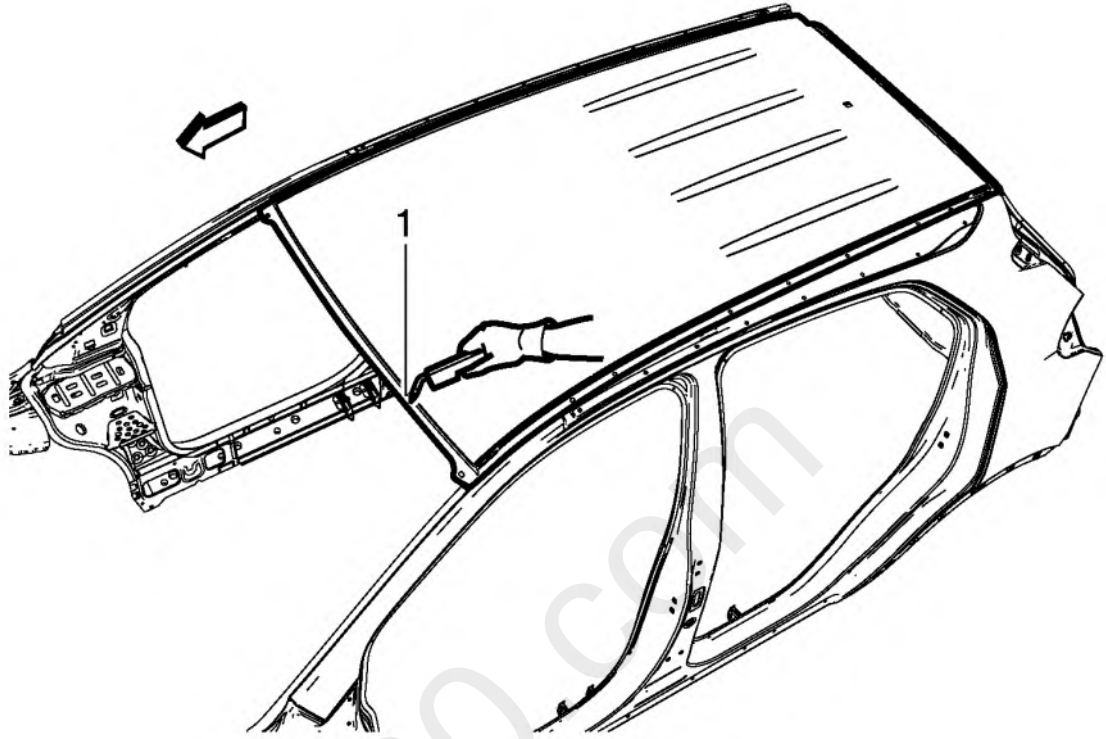
Fig. 54: Applying Adhesive

Courtesy of GENERAL MOTORS COMPANY

3. Apply one-part windshield urethane adhesive as noted from the original panel (1).



4. Position the roof panel (1) on the vehicle.
5. Verify the fit of the panel.
6. Clamp the panel into position.

**Fig. 56: Plug Welding Roof Panel**

Courtesy of GENERAL MOTORS COMPANY

7. Plug weld accordingly (1).
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
12. Enable the SIR system. Refer to [SIR Disabling and Enabling](#).

ROOF FRONT HEADER PANEL REPLACEMENT

Removal Procedure

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

NOTE: The roof front header panel is made of Ultra High Strength Steel and should be replaced only at factory joints. Repairing or sectioning of this part is not recommended. Refer to [Ultra High Strength Steel](#).

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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).

3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to [Dimensions - Body \(Opel, Buick\)](#)[Dimensions - Body \(Chevrolet, Holden\)](#).
5. Remove the sealers and anti-corrosion materials from the repair area. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
6. Locate and mark all factory welds.

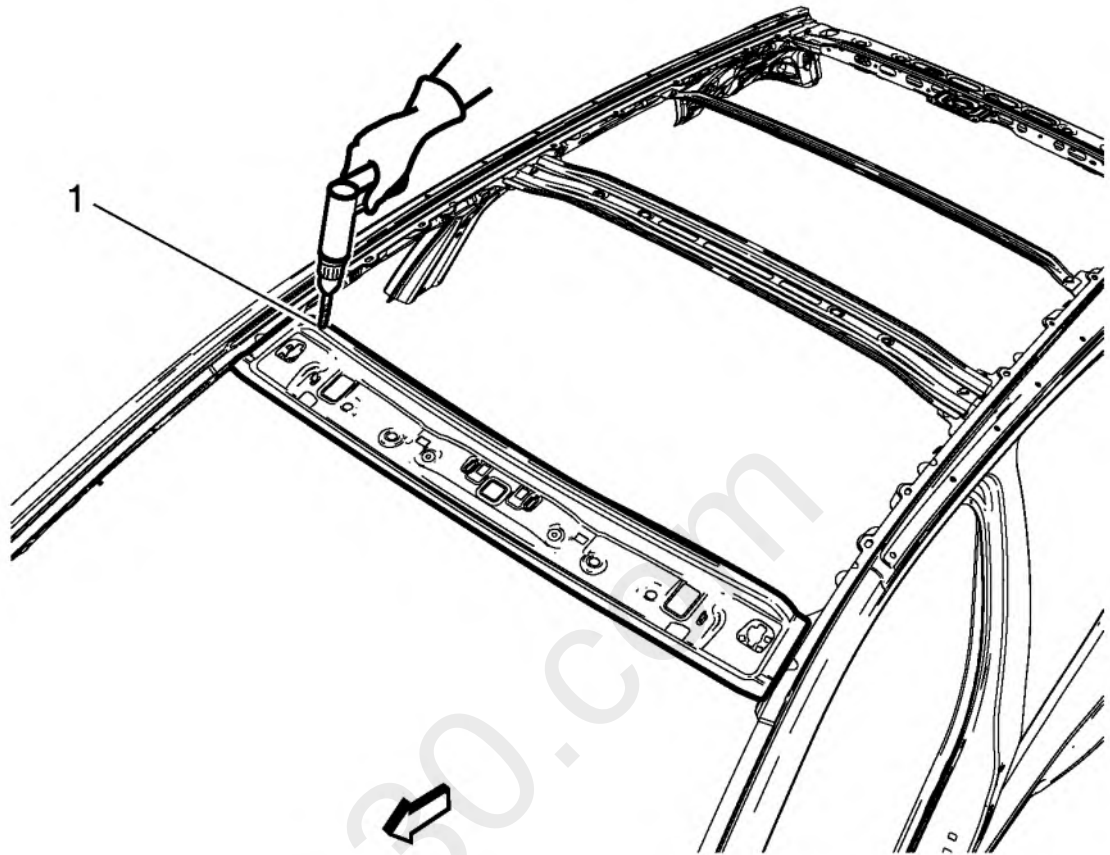


Fig. 57: Drilling Factory Welds

Courtesy of GENERAL MOTORS COMPANY

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

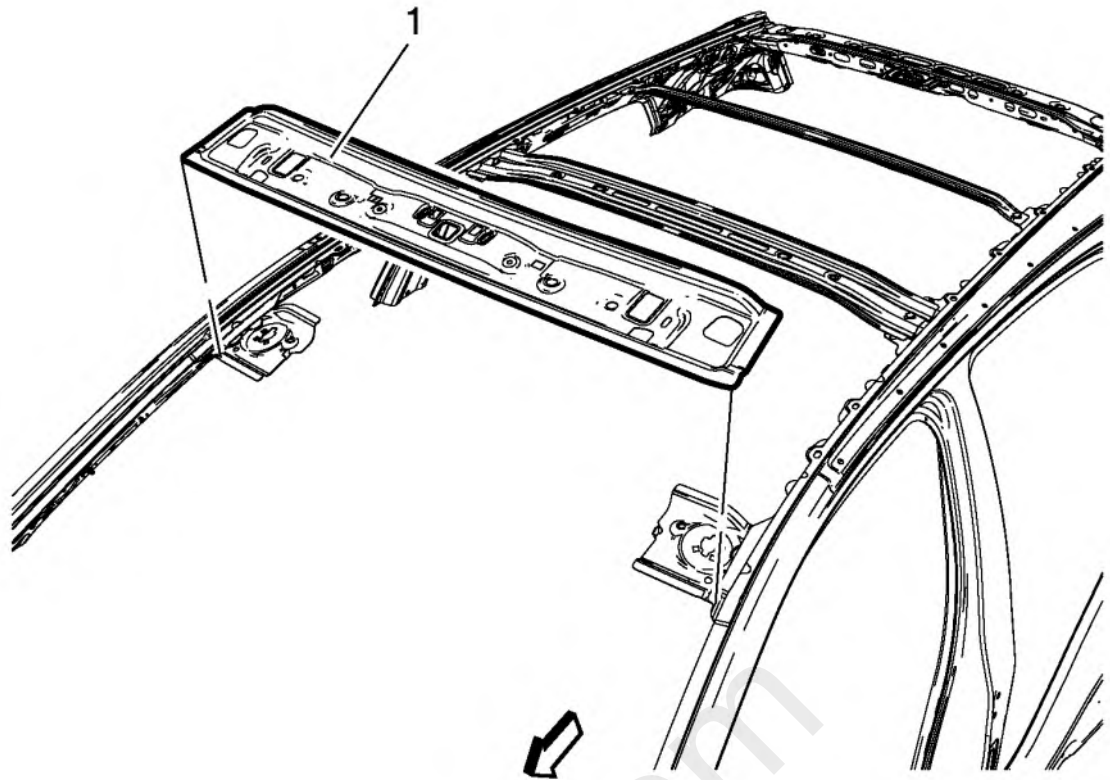


Fig. 58: Roof Front Header Panel

Courtesy of GENERAL MOTORS COMPANY

8. Remove the damaged roof front header panel (1).

Installation Procedure

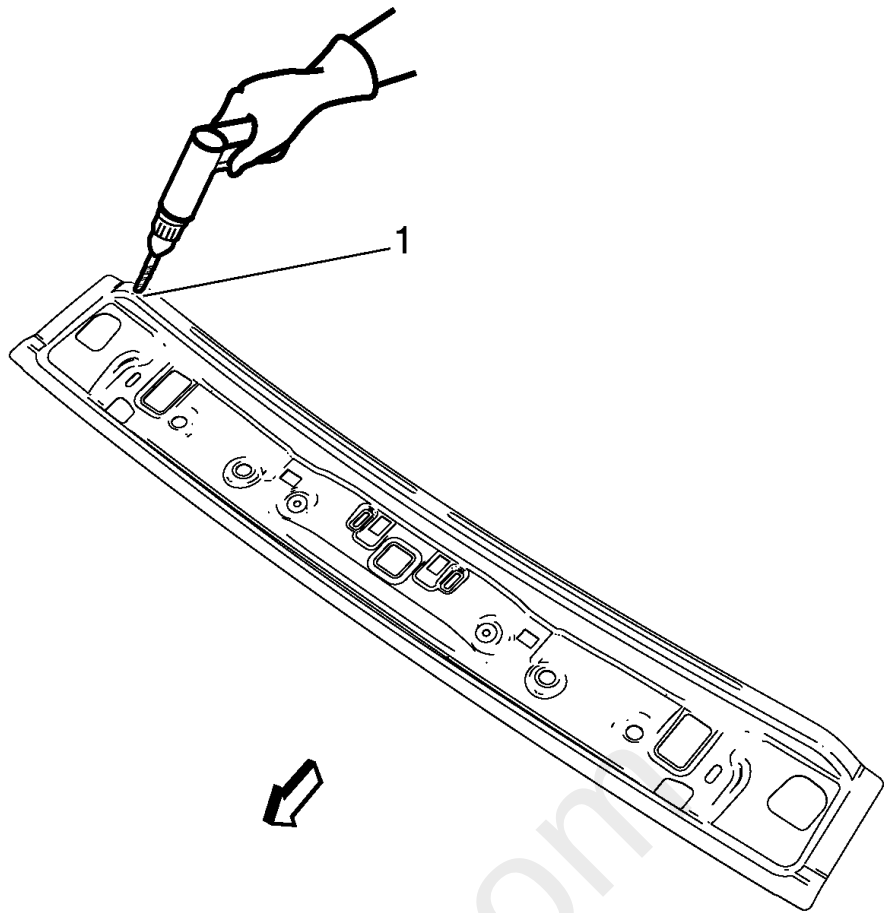


Fig. 59: Drilling Plug Weld Holes

Courtesy of GENERAL MOTORS COMPANY

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

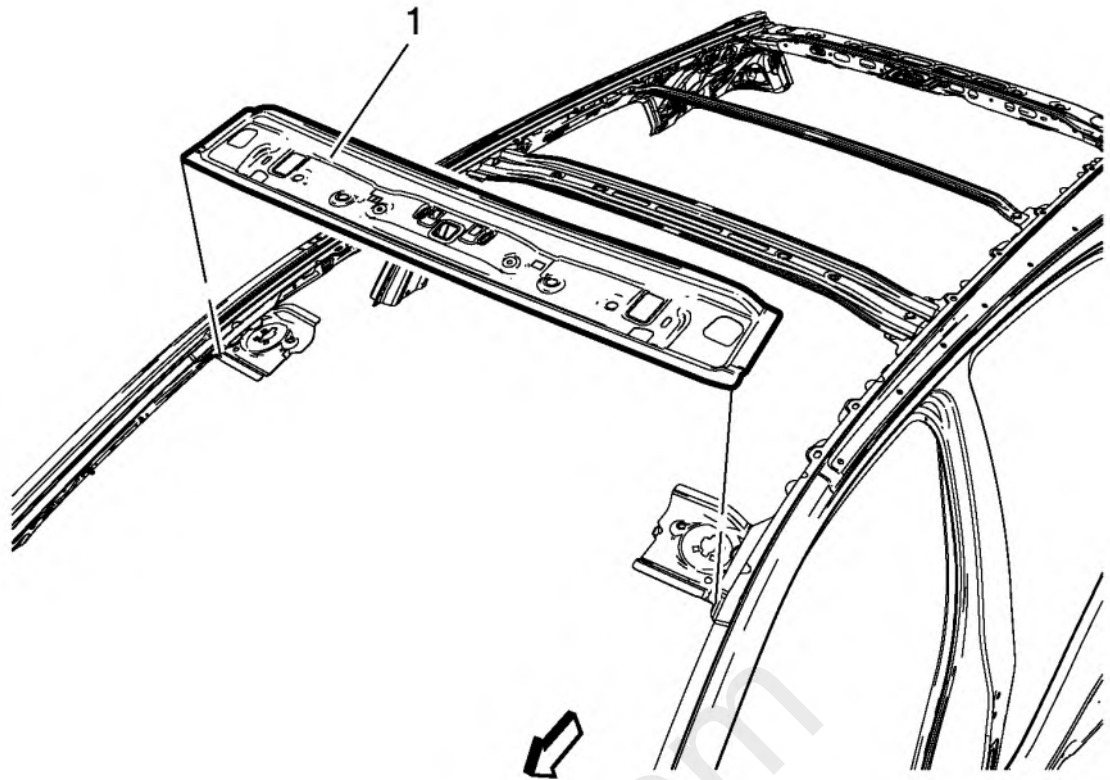


Fig. 60: Roof Front Header Panel

Courtesy of GENERAL MOTORS COMPANY

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

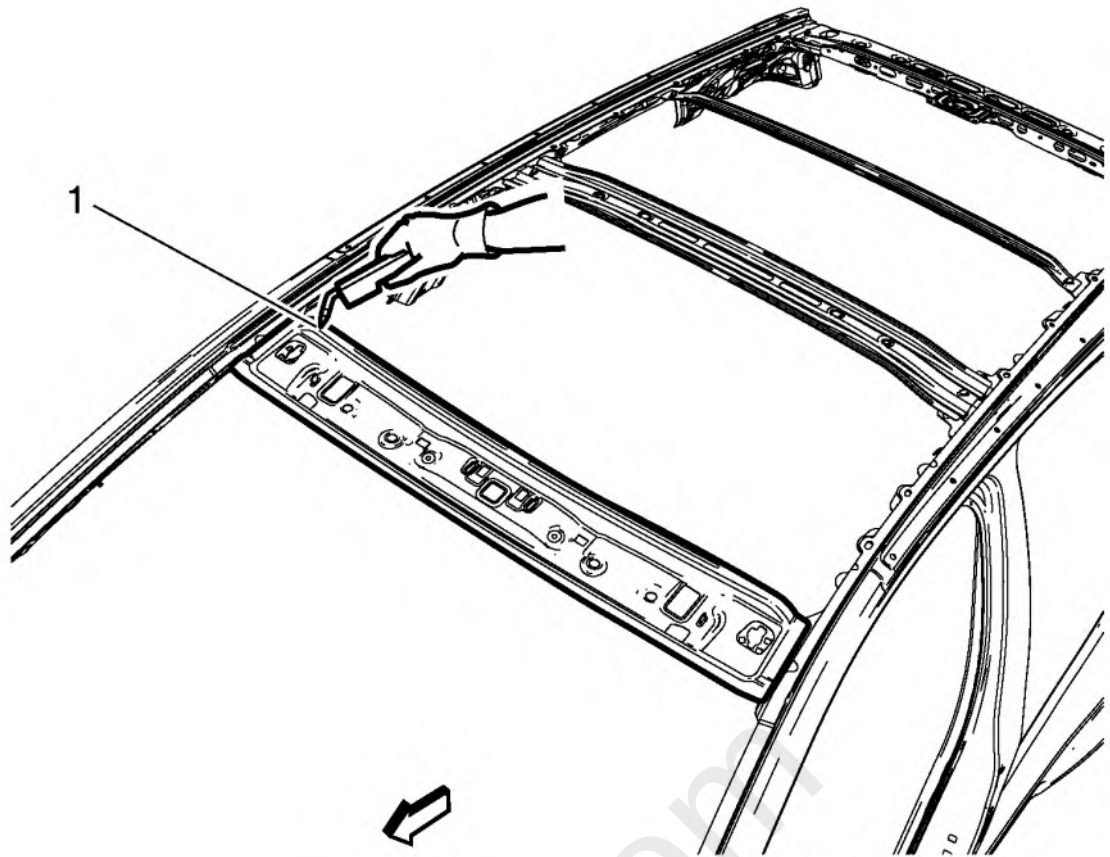


Fig. 61: Plug Welding Roof Front Header Panel
 Courtesy of GENERAL MOTORS COMPANY

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 \(Base\)](#).
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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
11. Enable the SIR system. Refer to [SIR Disabling and Enabling](#).

ROOF REAR HEADER 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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to [Dimensions - Body \(Opel, Buick\)](#) [Dimensions - Body \(Chevrolet, Holden\)](#).
5. Remove the sealers and anti-corrosion materials from the repair area. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
6. Locate and mark all factory welds.

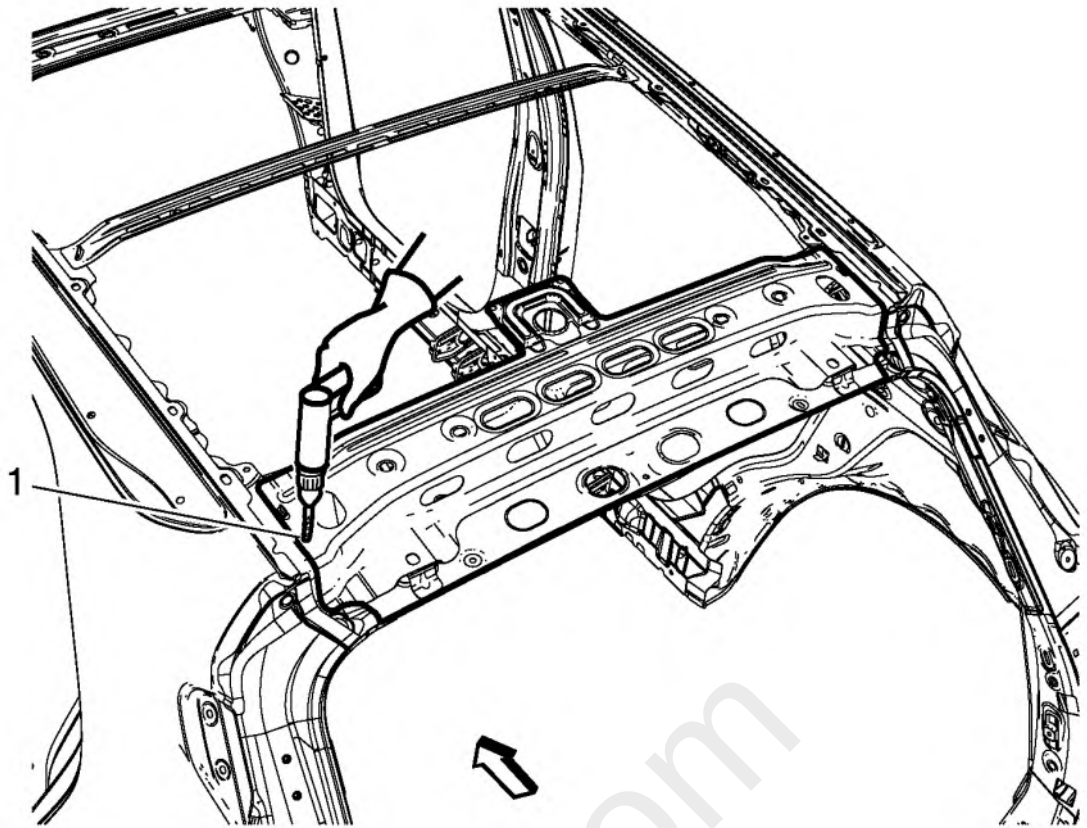
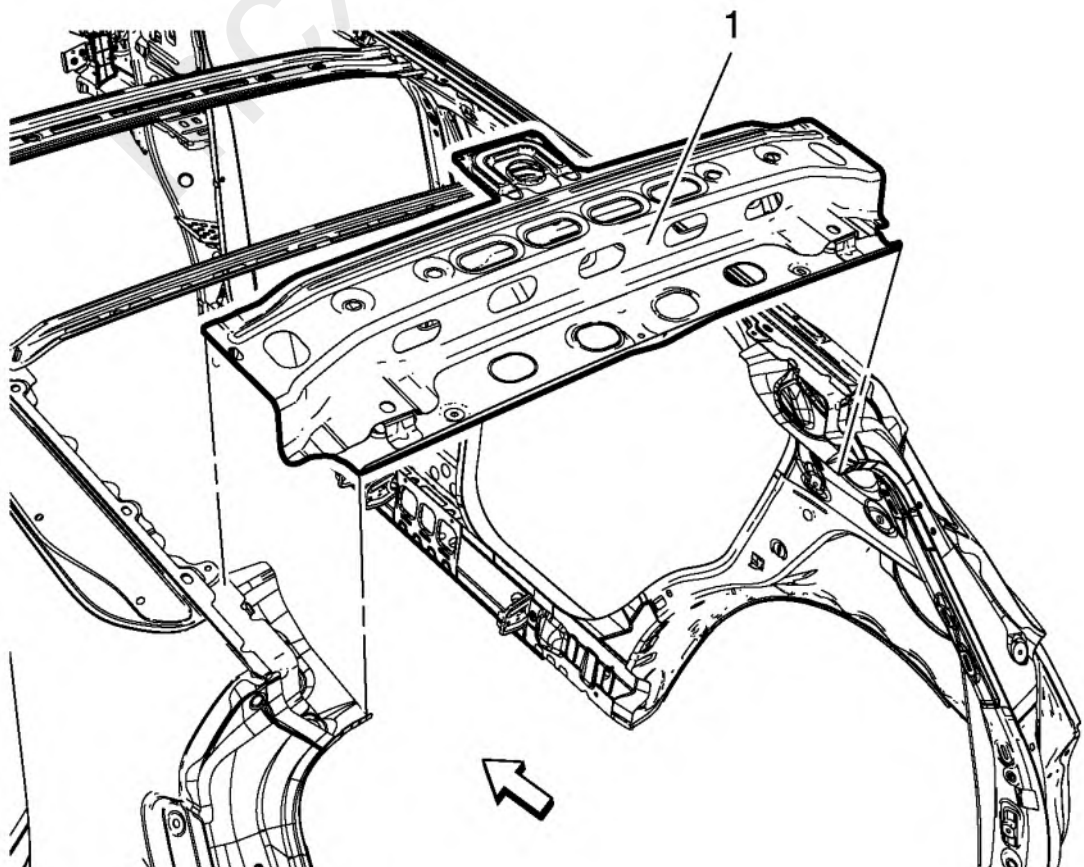


Fig. 62: Drilling Factory Welds

Courtesy of GENERAL MOTORS COMPANY

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



8. Remove the damaged rear header panel (1).

Installation Procedure

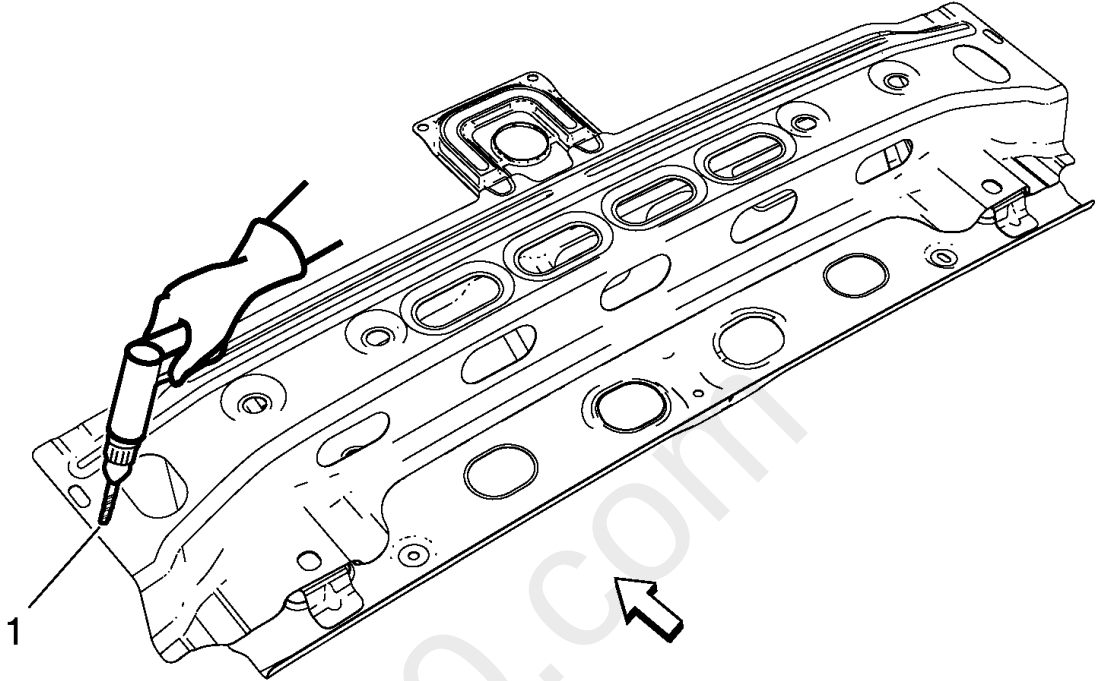


Fig. 64: Drilling Plug Weld Holes In Service Panel
Courtesy of GENERAL MOTORS COMPANY

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

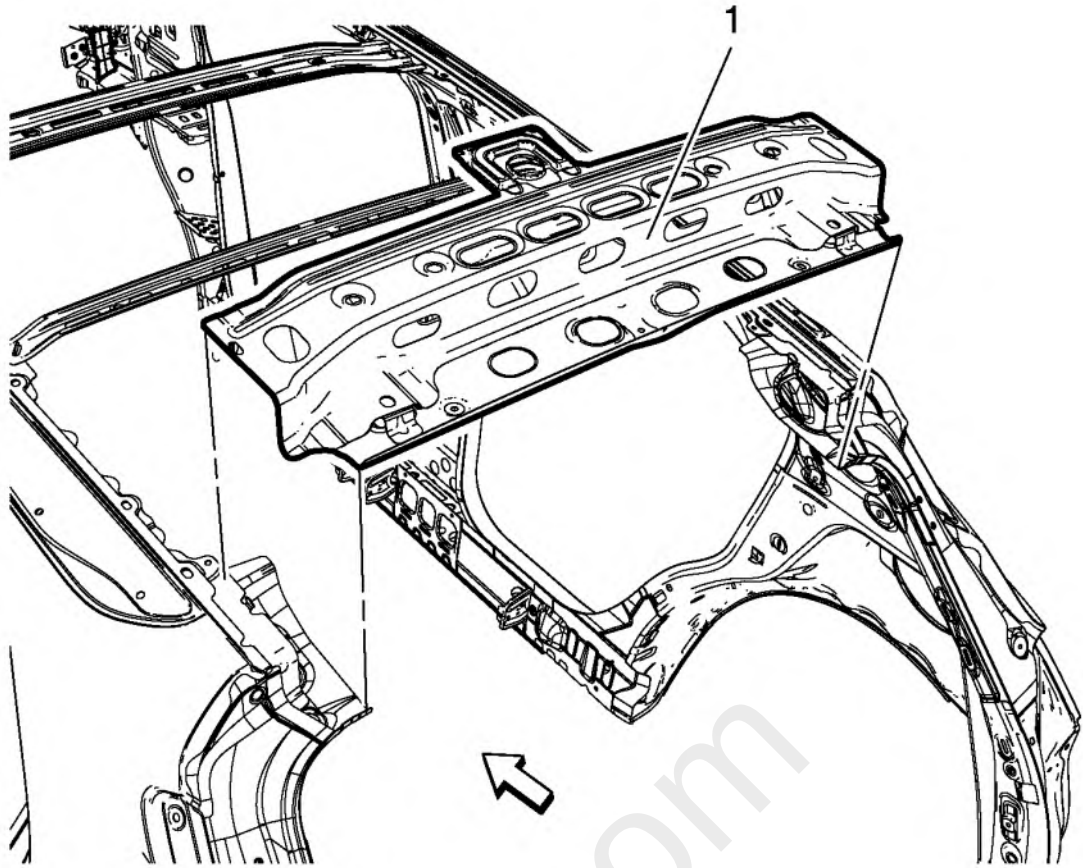


Fig. 65: Rear Header Panel

Courtesy of GENERAL MOTORS COMPANY

3. Position the roof rear header (1) panel on the vehicle.
4. Verify the fit of the panel.
5. Clamp the roof rear header panel into position.

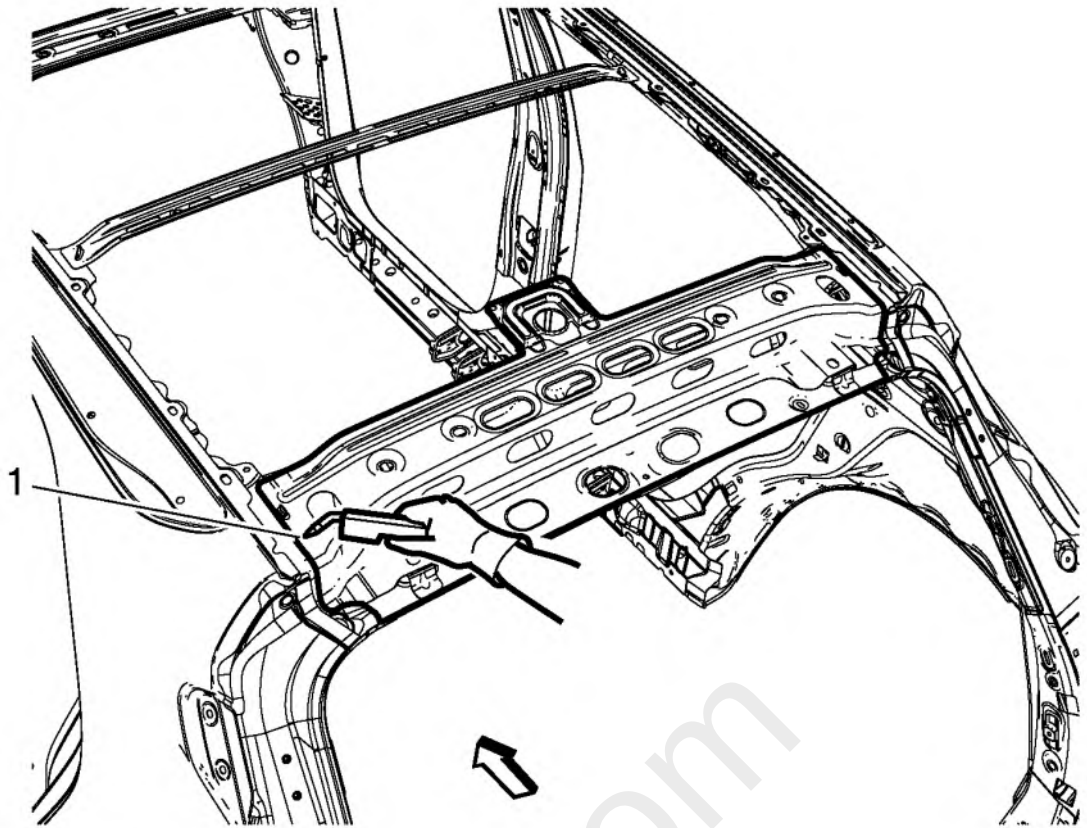


Fig. 66: Plug Welding Rear Header Panel

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 \(Base\)](#).
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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
11. Enable the SIR system. Refer to [SIR Disabling and Enabling](#).

ROCKER INNER PANEL REPLACEMENT

Removal Procedure

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

NOTE: The rocker inner panel is made of Ultra High Strength Dual Phase Steel and should be replaced only at factory joints. Repairing or sectioning of this part is not recommended. Refer to [Ultra High Strength Dual Phase Steel](#).

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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to [Dimensions - Body \(Opel, Buick\)](#) [Dimensions - Body \(Chevrolet, Holden\)](#).
5. Remove the sealers and anti-corrosion materials from the repair area. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).

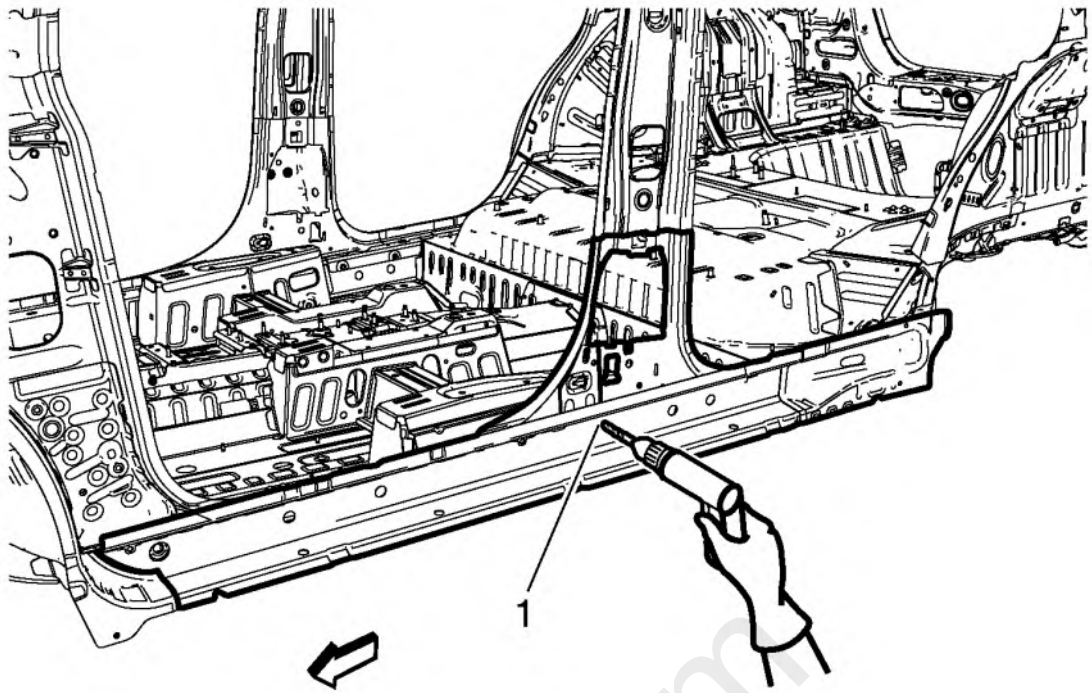
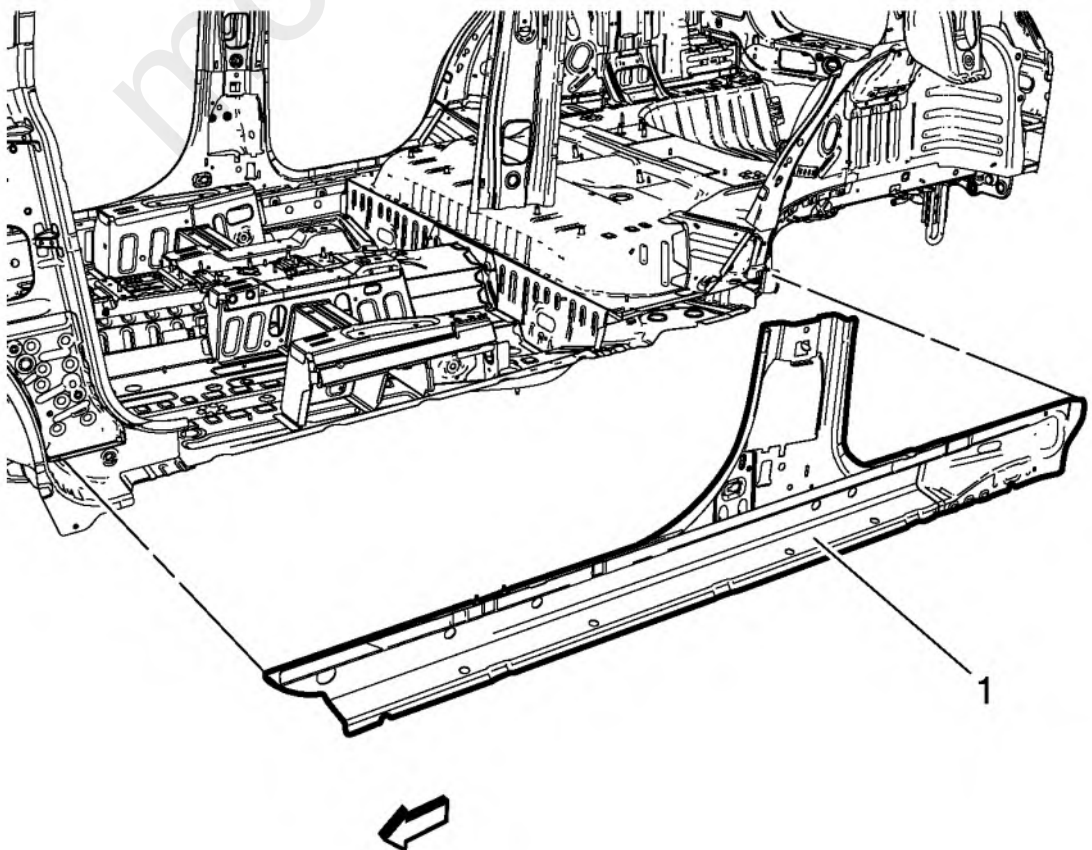


Fig. 67: Drilling Out Factory Welds
 Courtesy of GENERAL MOTORS COMPANY

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



8. Remove the damaged rocker inner panel (1).

Installation Procedure

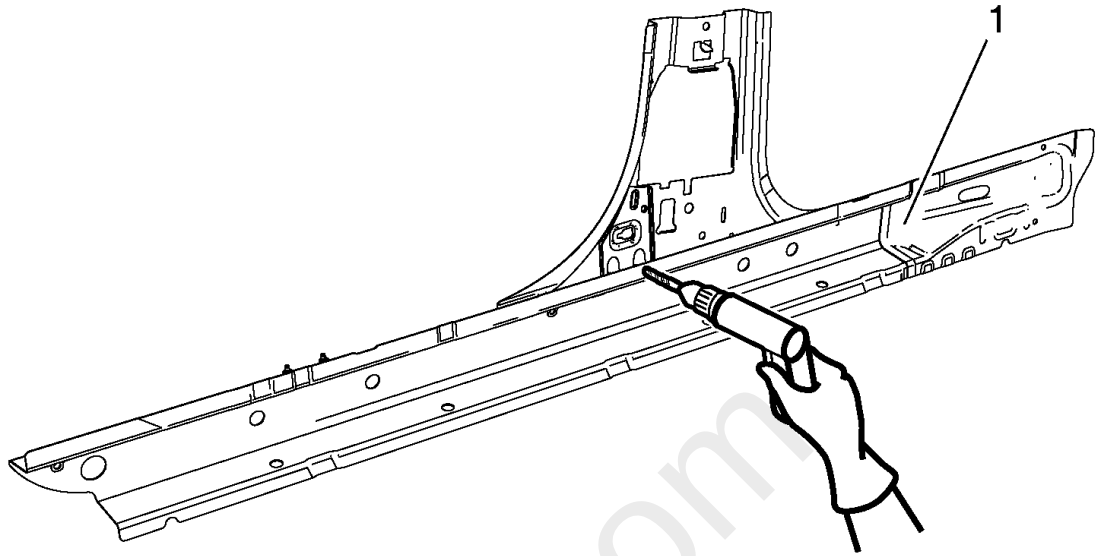


Fig. 69: Drilling Plug Weld Holes In Rocker Inner Panel Service Part

Courtesy of GENERAL MOTORS COMPANY

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

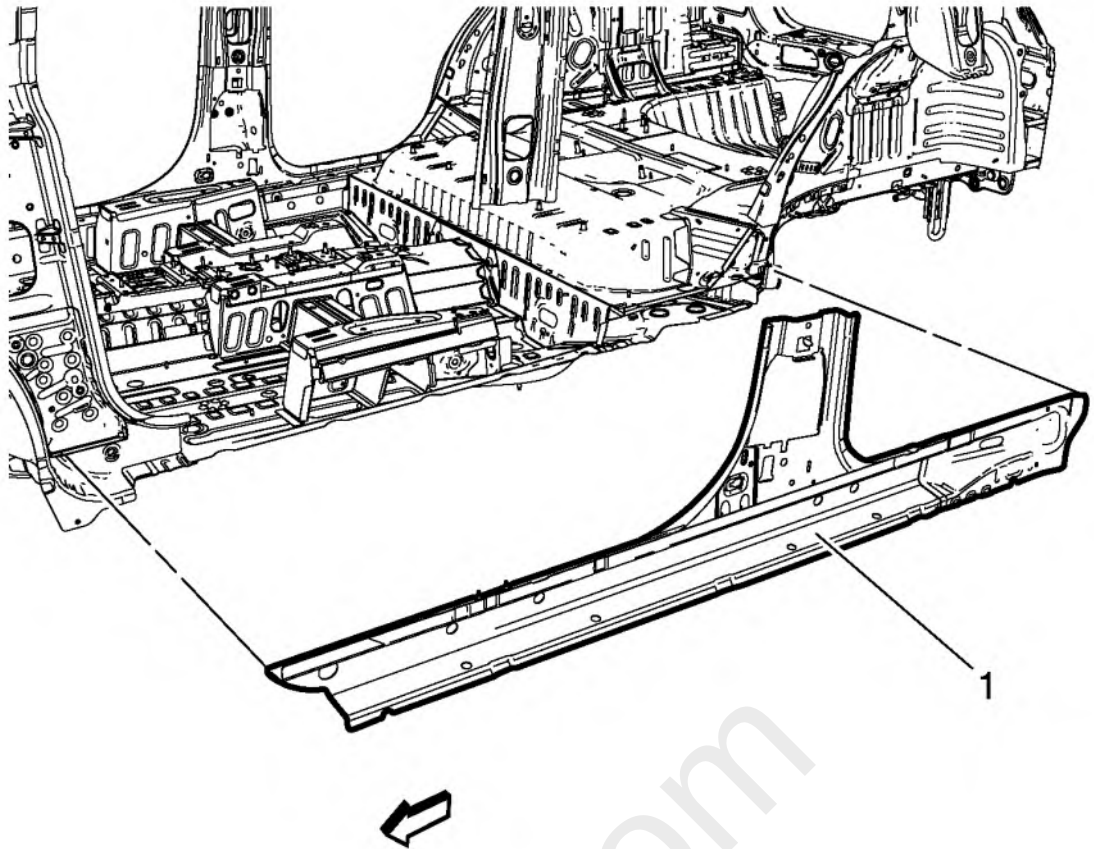


Fig. 70: Rocker Inner Panel

Courtesy of GENERAL MOTORS COMPANY

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

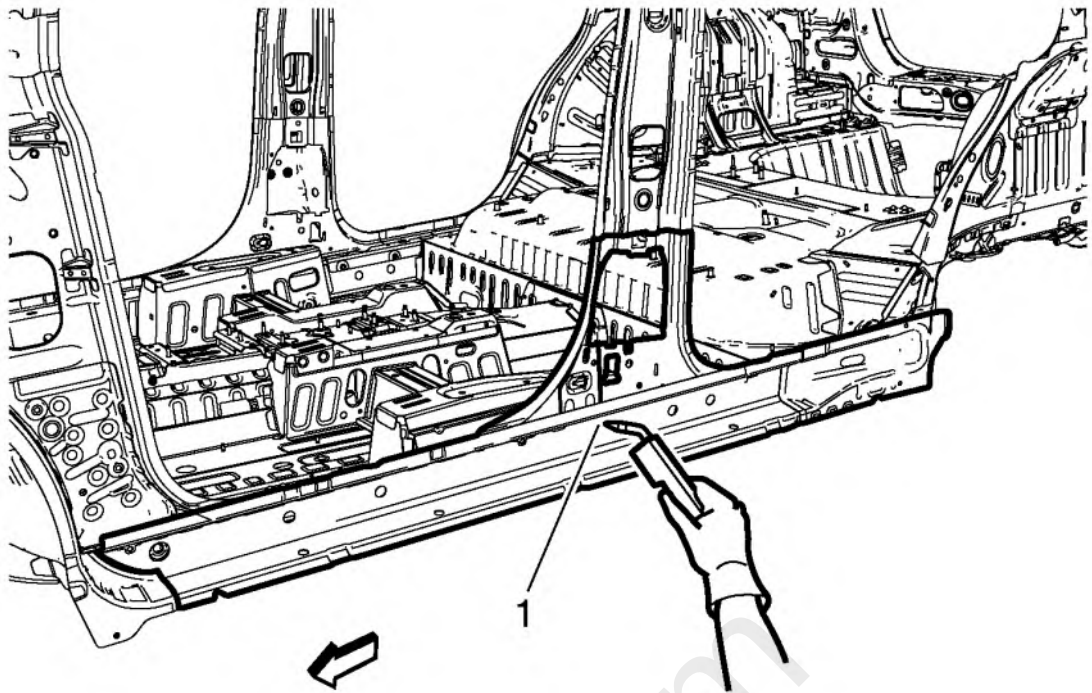


Fig. 71: Plug Welding Rocker Inner Panel
 Courtesy of GENERAL MOTORS COMPANY

6. Plug the weld accordingly (1).
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
11. Enable the SIR system. Refer to [SIR Disabling and Enabling](#).

ROCKER OUTER 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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
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 \(Base\)](#).

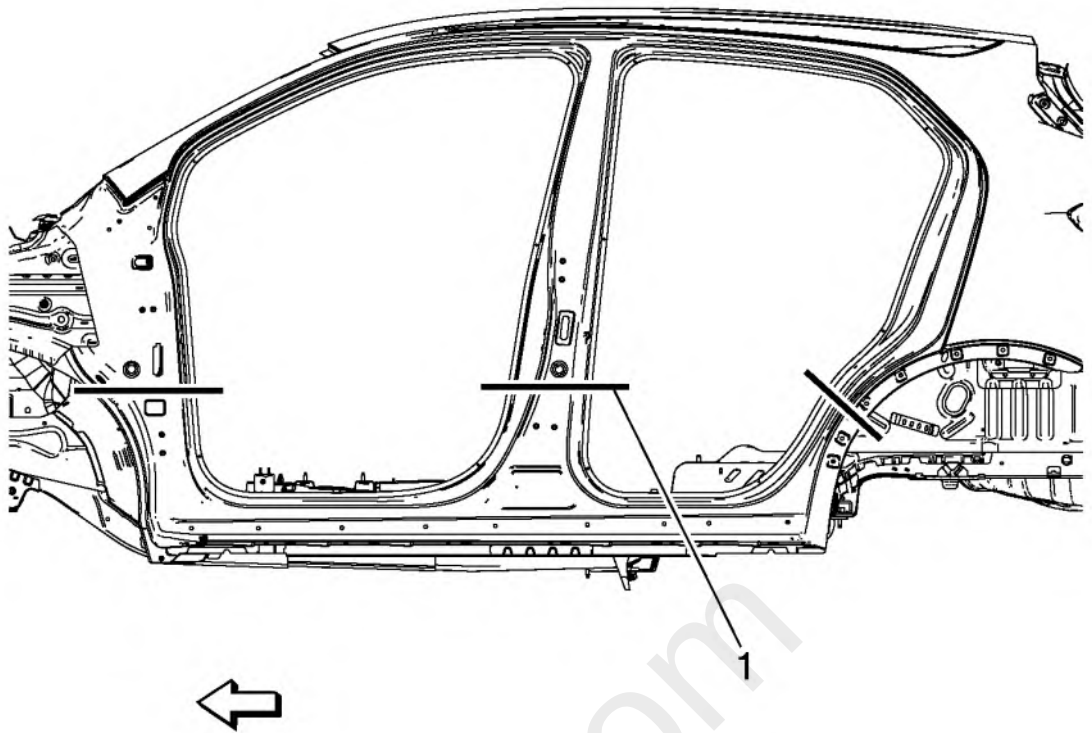
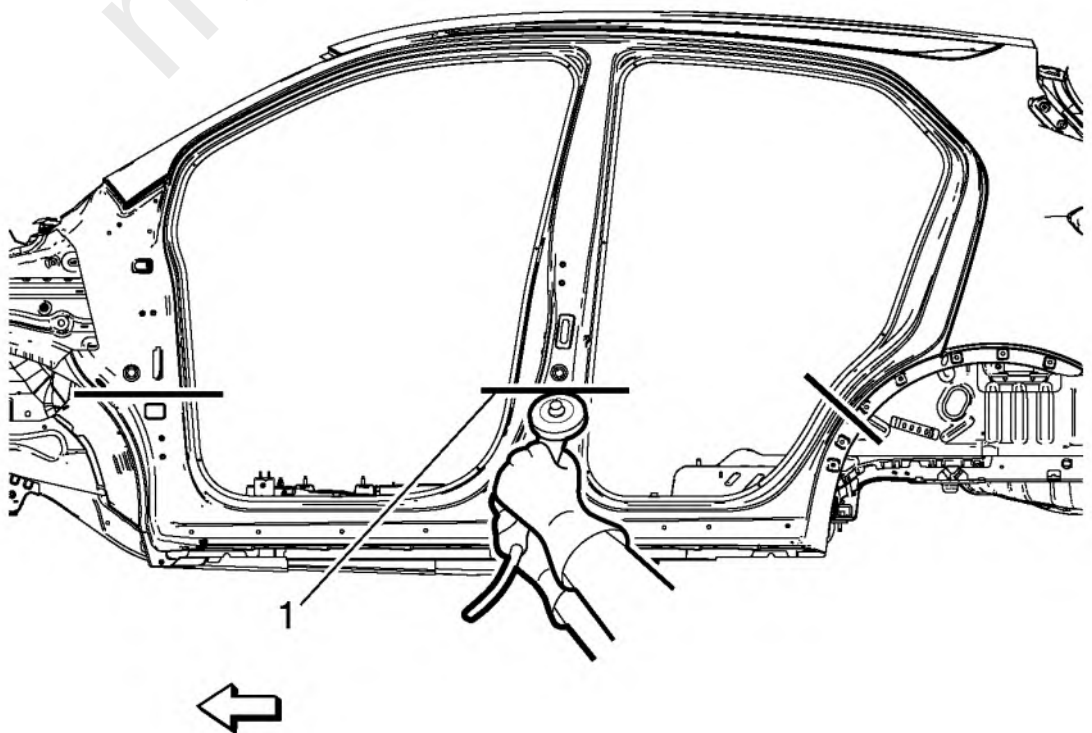


Fig. 72: Creating Cut Lines On Rocker Outer Panel
 Courtesy of GENERAL MOTORS COMPANY

6. Create cut lines on the rocker outer panel (1).



NOTE: Do not damage any inner panels or reinforcements.

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

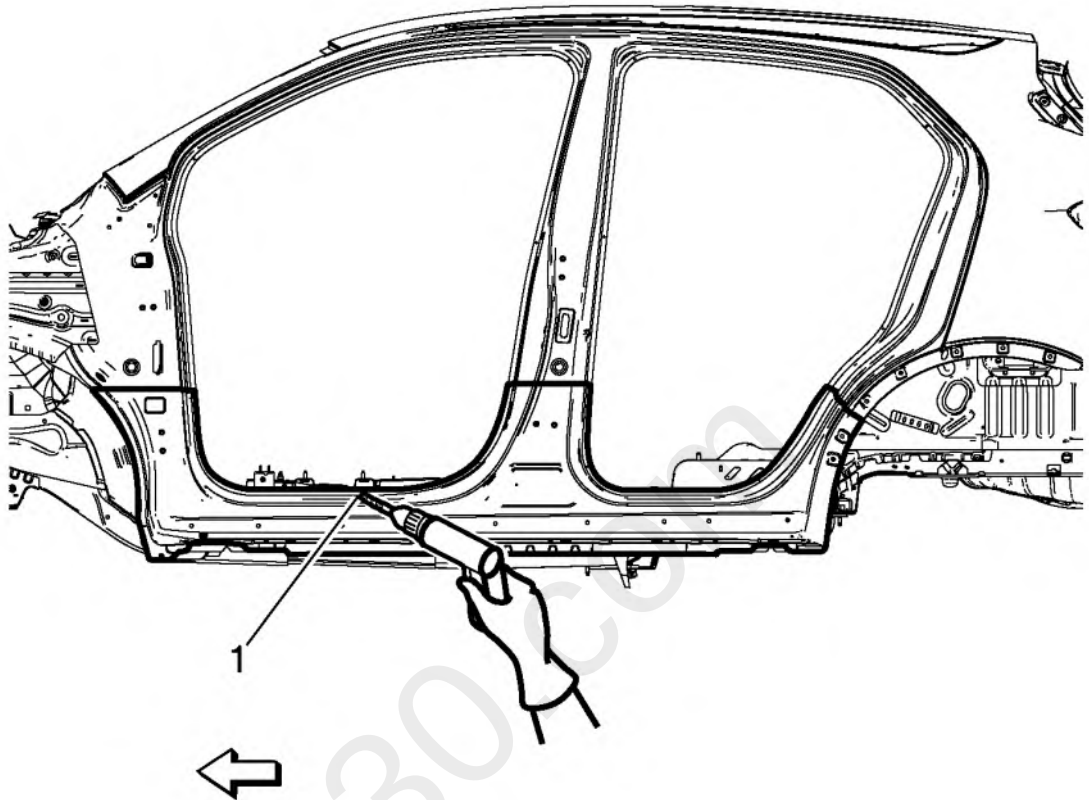


Fig. 74: Drilling Out Factory Welds

Courtesy of GENERAL MOTORS COMPANY

8. Locate and mark all the necessary factory welds of the rocker outer panel.
9. Drill all factory welds. Note the number and location of welds for installation of the service assembly.

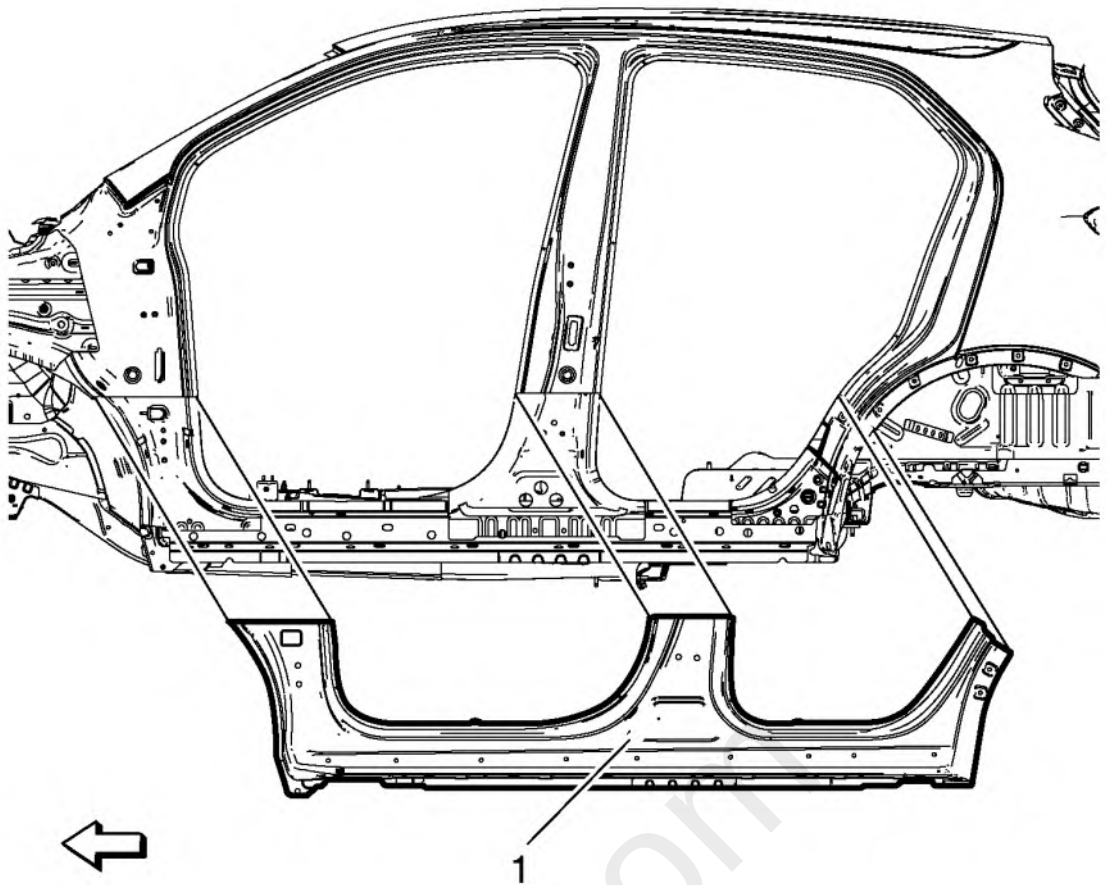


Fig. 75: Rocker Outer Panel

Courtesy of GENERAL MOTORS COMPANY

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

Installation Procedure

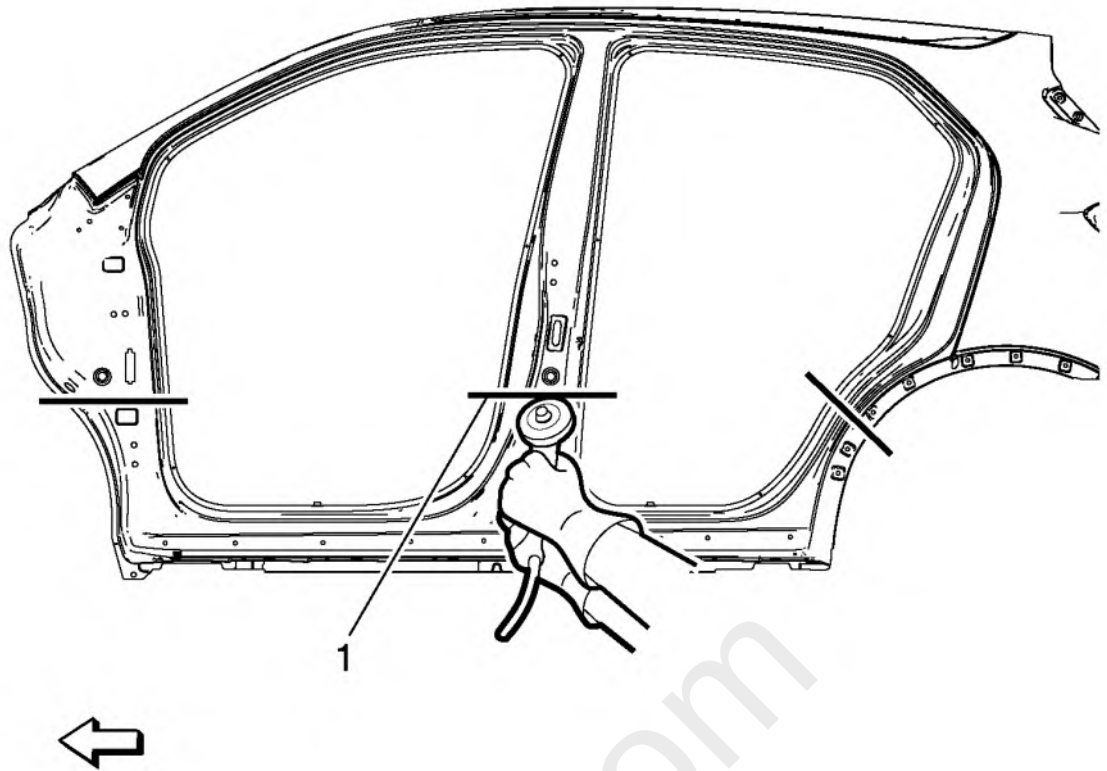


Fig. 76: Cutting Rocker Outer Panel Service Part In Corresponding Locations
Courtesy of GENERAL MOTORS COMPANY

1. Cut the rocker outer panel in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to overlap the remaining original panel by 25 mm (1 inch) at each joint location (1).
2. Prepare all mating surfaces as necessary.

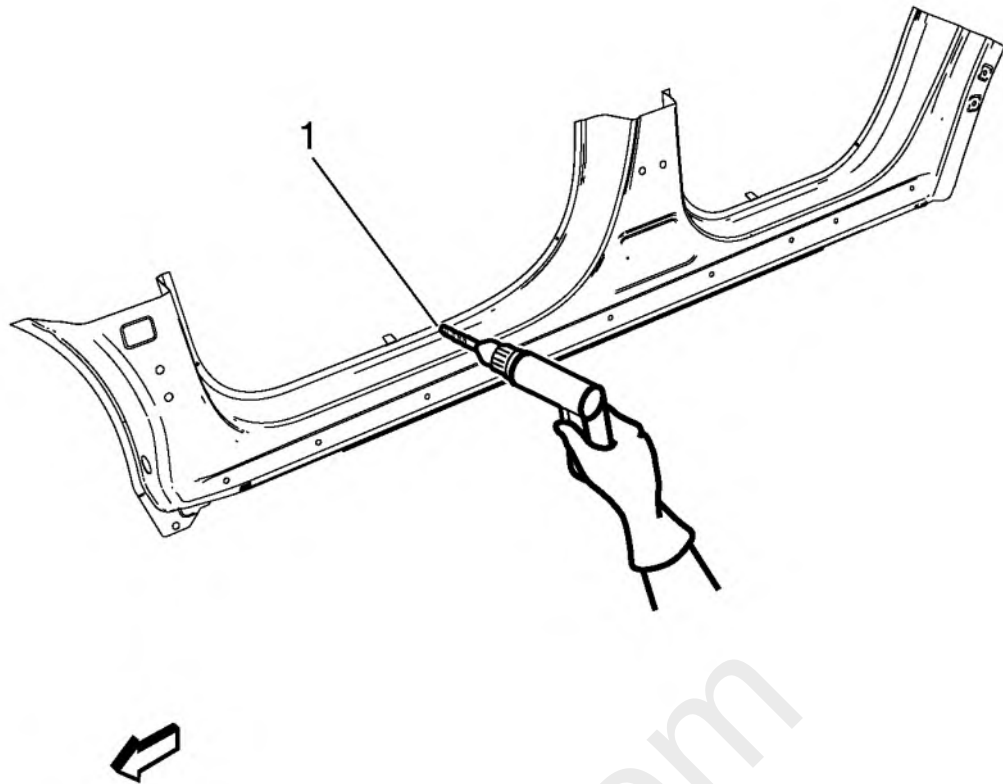


Fig. 77: Drilling Holes For Plug Welds

Courtesy of GENERAL MOTORS COMPANY

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

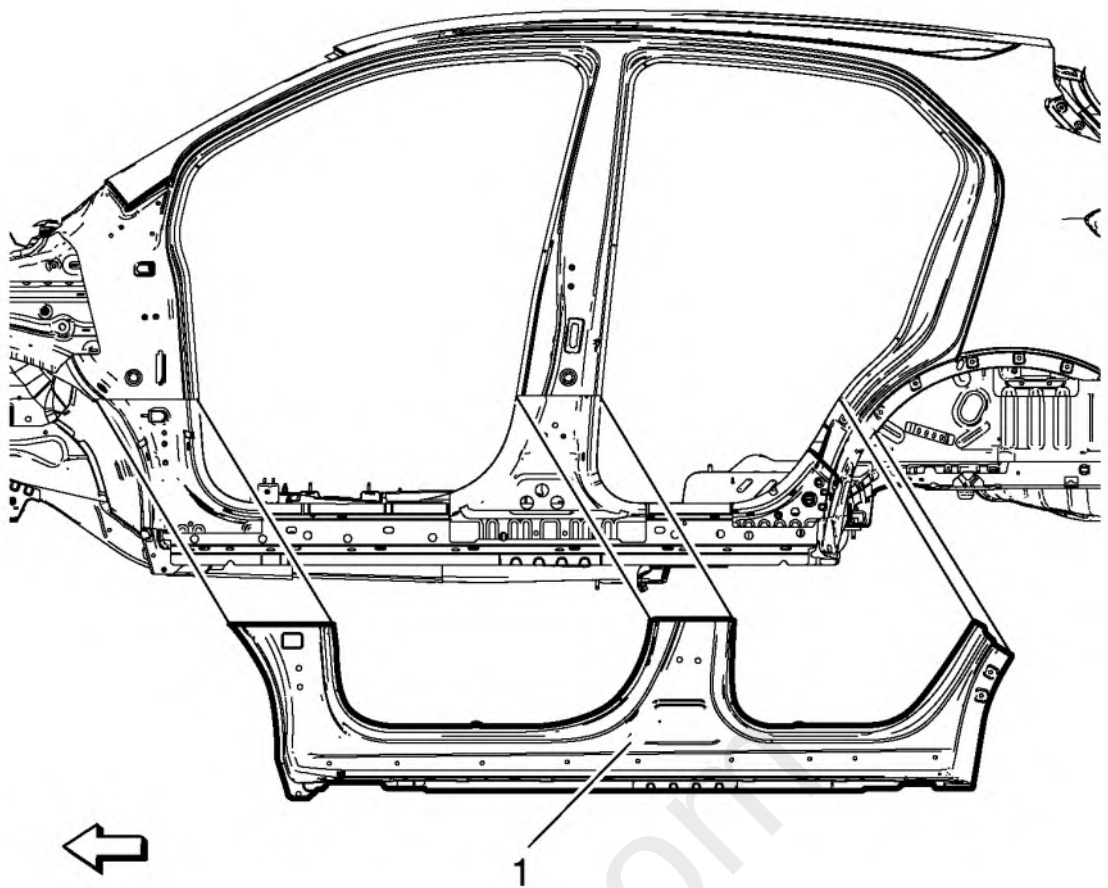


Fig. 78: Rocker Outer Panel

Courtesy of GENERAL MOTORS COMPANY

5. Position the rocker outer panel on the vehicle (1).
6. Verify the fit of the rocker outer panel.
7. Clamp the rocker outer panel into position.

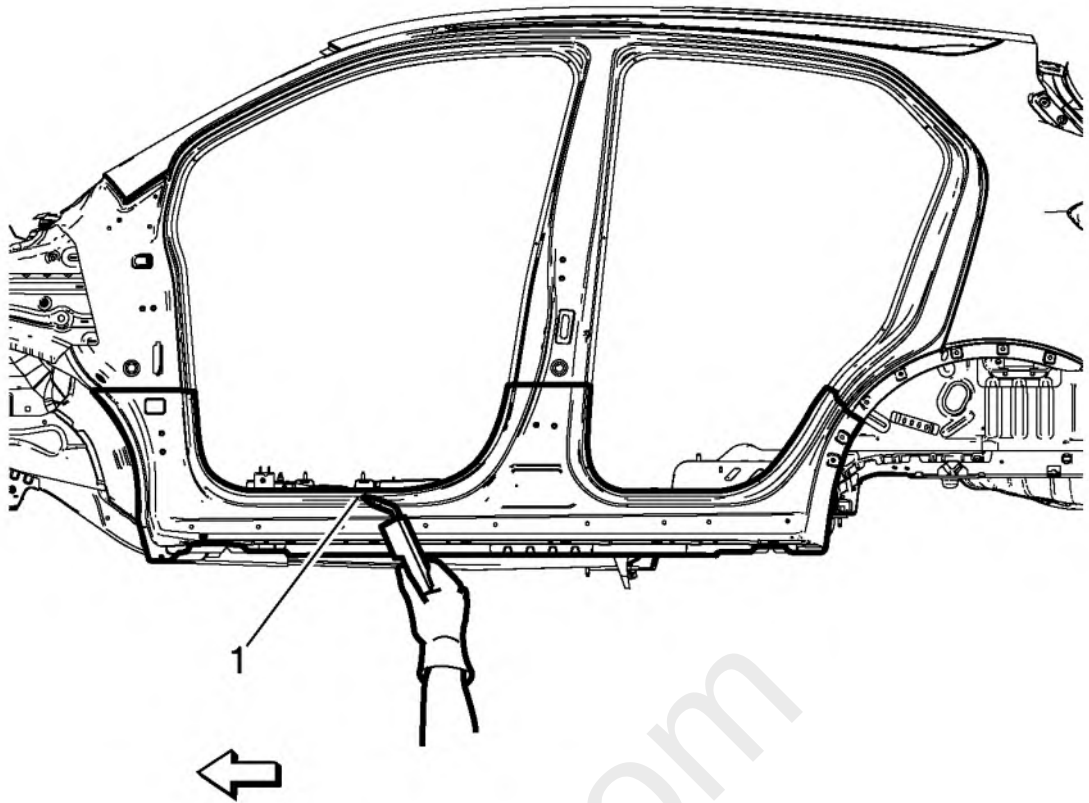


Fig. 79: Plug Welding Rocker Outer Panel
 Courtesy of GENERAL MOTORS COMPANY

8. Plug weld accordingly (1).
9. To create a solid weld with minimum heat distortion, make 25 mm (1 in) stitch welds along the seam with 25 mm (1 in) gaps between them. Then go back and complete the stitch weld.
10. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
11. Paint the repaired area. Refer to [Basecoat/Clearcoat Paint Systems](#).
12. Install all related panels and components.
13. Connect the negative battery cable. Refer to [Battery Negative Cable Disconnection and Connection \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
14. Enable the SIR system. Refer to [SIR Disabling and Enabling](#).

BODY SIDE FRAME ROCKER REINFORCEMENT REPLACEMENT

Removal Procedure

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

WARNING: Refer to [Glass and Sheet Metal Handling Warning](#).

NOTE: The body side frame rocker reinforcement is made of Ultra High Strength Dual Phase Steel and should be replaced only at factory joints. Repairing or sectioning of this part is not recommended. Refer to [Ultra High Strength Dual Phase Steel](#).

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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
3. Remove all related panels and components.

4. Repair as much of the damage as possible to factory specifications. Refer to [Dimensions - Body \(Opel, Buick\)](#)[Dimensions - Body \(Chevrolet, Holden\)](#).
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
6. Locate and mark all the necessary factory welds of the body side frame rocker reinforcement.

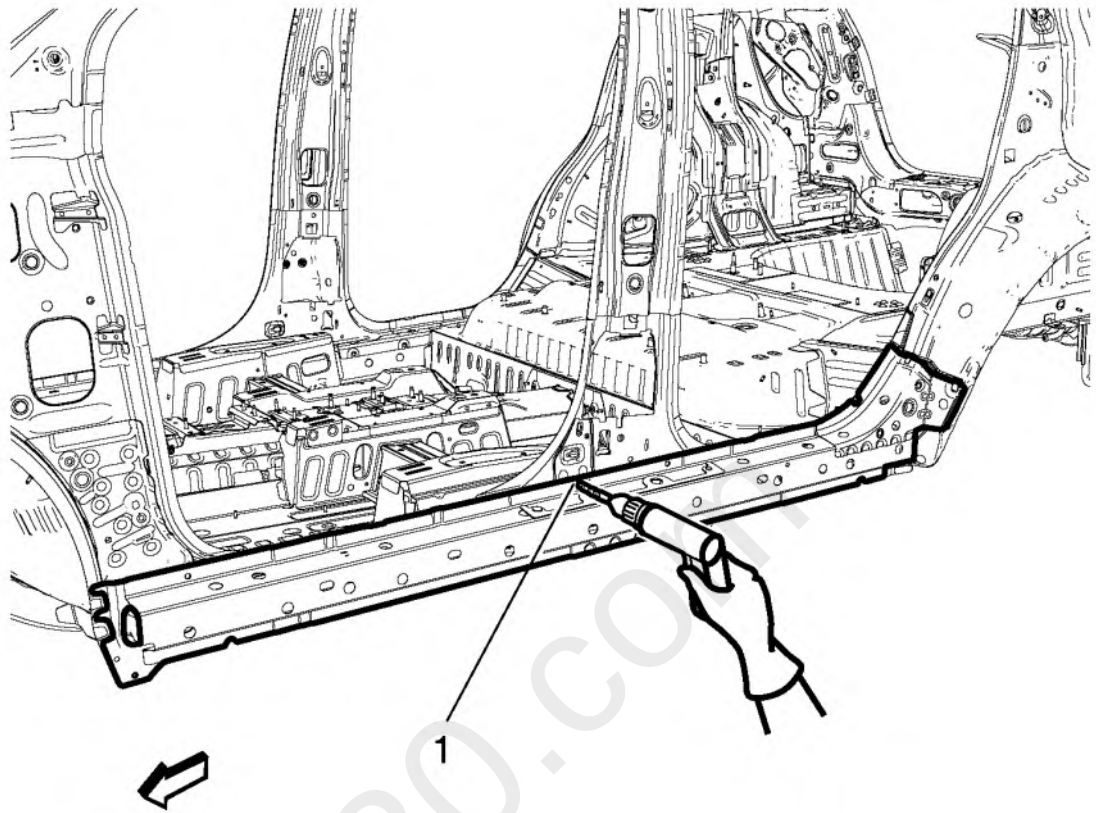


Fig. 80: Drilling Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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

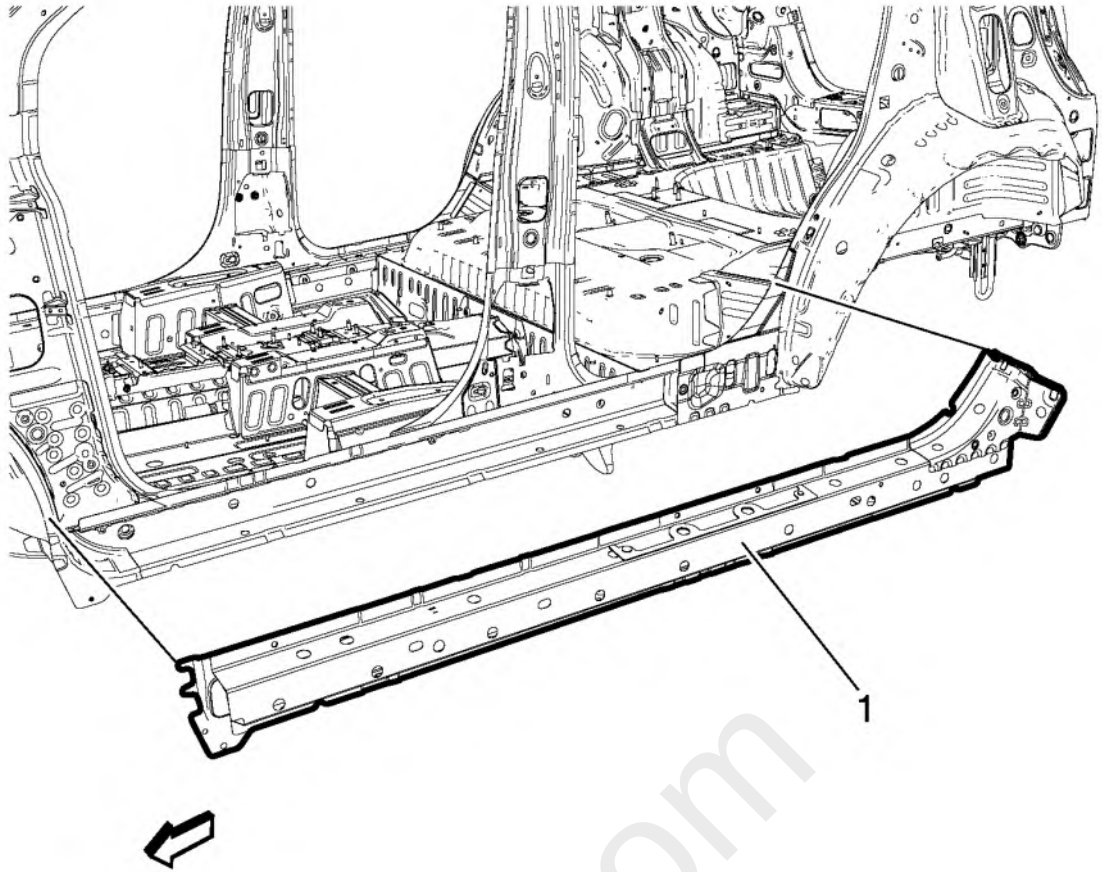


Fig. 81: Body Side Frame Rocker Reinforcement
Courtesy of GENERAL MOTORS COMPANY

8. Remove the damaged body side frame rocker reinforcement (1).

Installation Procedure

1. Align the body side frame rocker reinforcement.

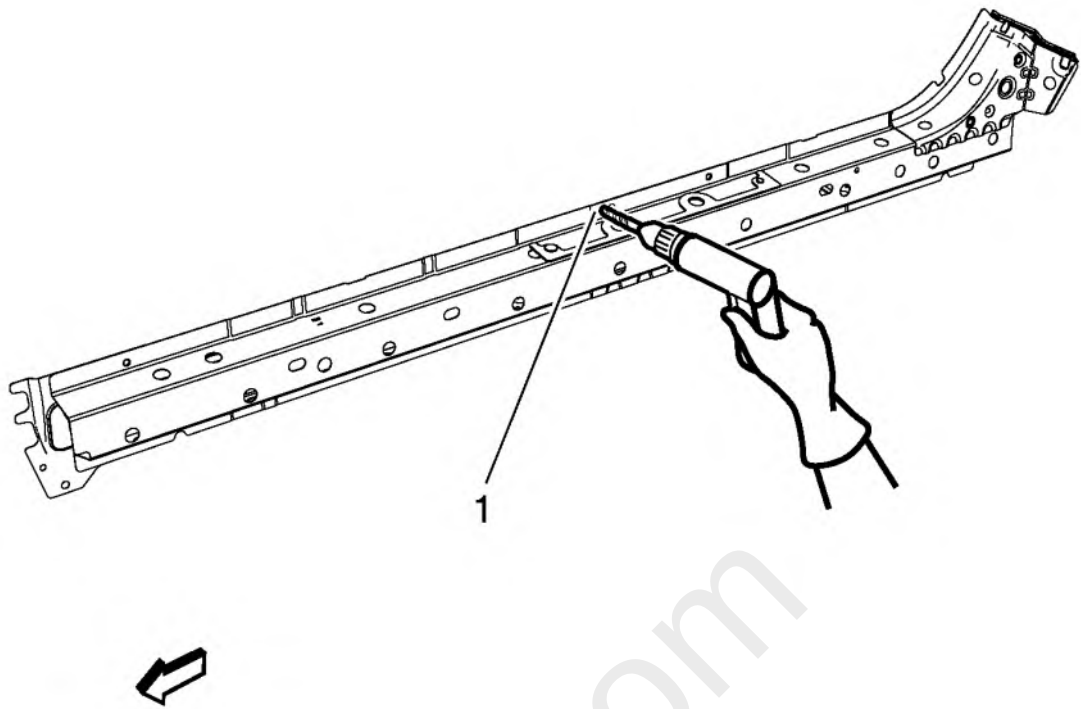


Fig. 82: Drilling Plug Weld Holes In Body Side Frame Rocker Reinforcement Service Part
Courtesy of GENERAL MOTORS COMPANY

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

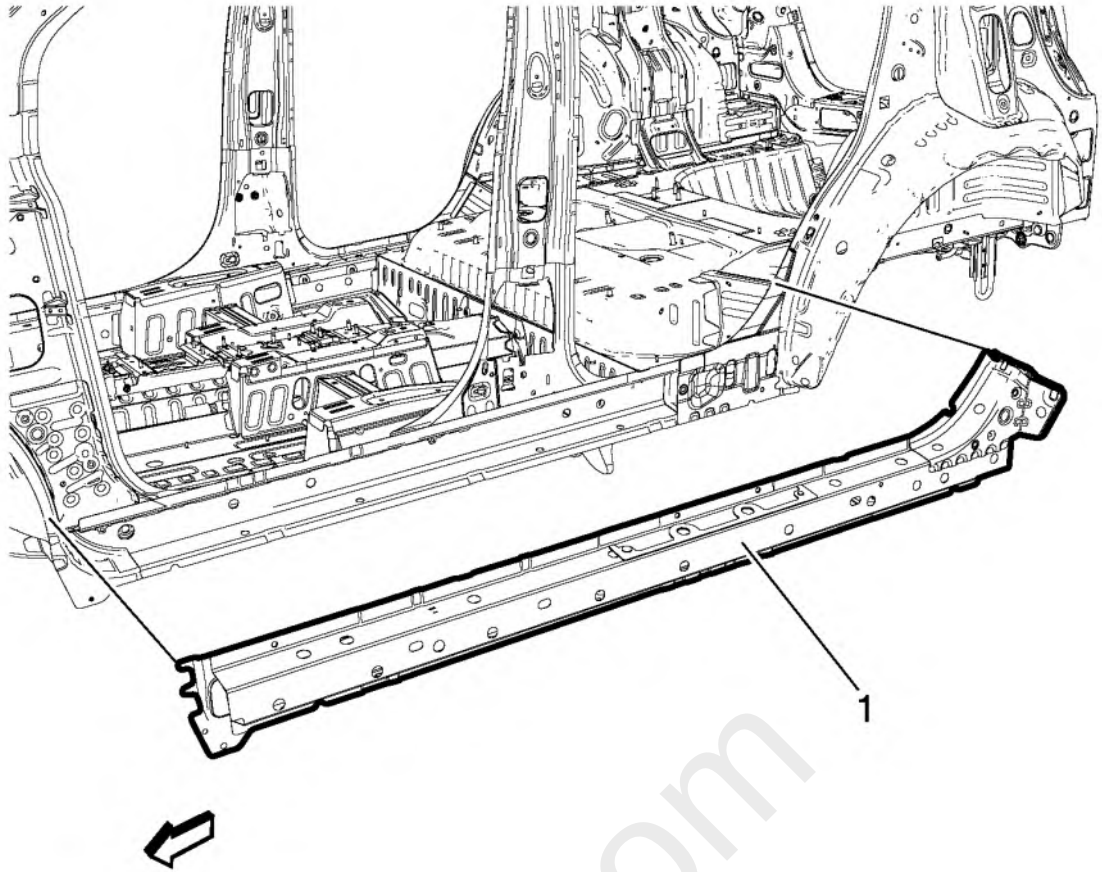


Fig. 83: Body Side Frame Rocker Reinforcement
Courtesy of GENERAL MOTORS COMPANY

4. Position the body side frame rocker reinforcement on the vehicle (1).
5. Verify the fit of the body side frame rocker reinforcement.
6. Clamp the body side frame rocker reinforcement into position.

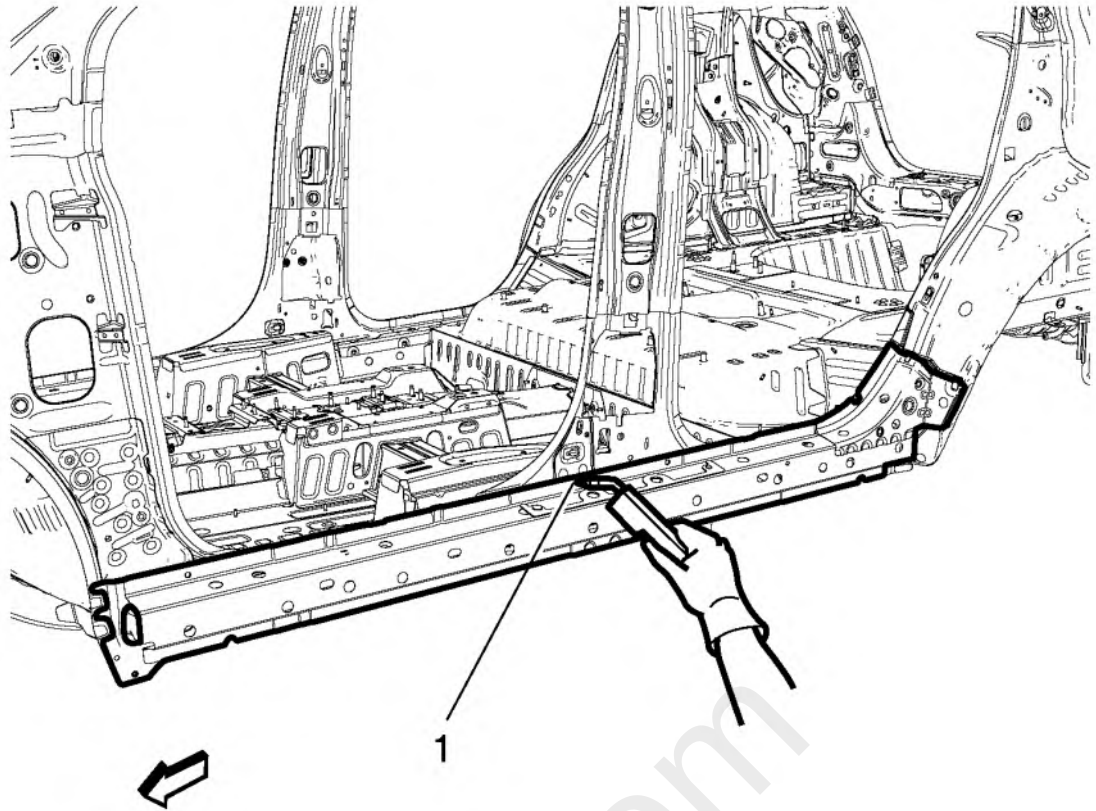


Fig. 84: Plug Welding Body Side Frame Rocker Reinforcement
 Courtesy of GENERAL MOTORS COMPANY

7. Plug the weld accordingly (1).
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#) .
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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
12. Enable the SIR system. Refer to [SIR Disabling and Enabling](#) .

FRONT SIDE DOOR OUTER PANEL REPLACEMENT

Special Tools

- **BO-6392** Flanging Tool Kit
- **BO-6396** Bonding Pliers

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

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

Removal Procedure

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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
3. Remove the front side door. Refer to [Front Side Door Replacement](#) .

4. Remove the front side door outside handle. Refer to [Front Side Door Outside Handle Replacement \(Without ATH\) Front Side Door Outside Handle Replacement \(With ATH\)](#) .
5. Remove the outside rearview mirror. Refer to [Outside Rearview Mirror Replacement](#) .
6. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#) .

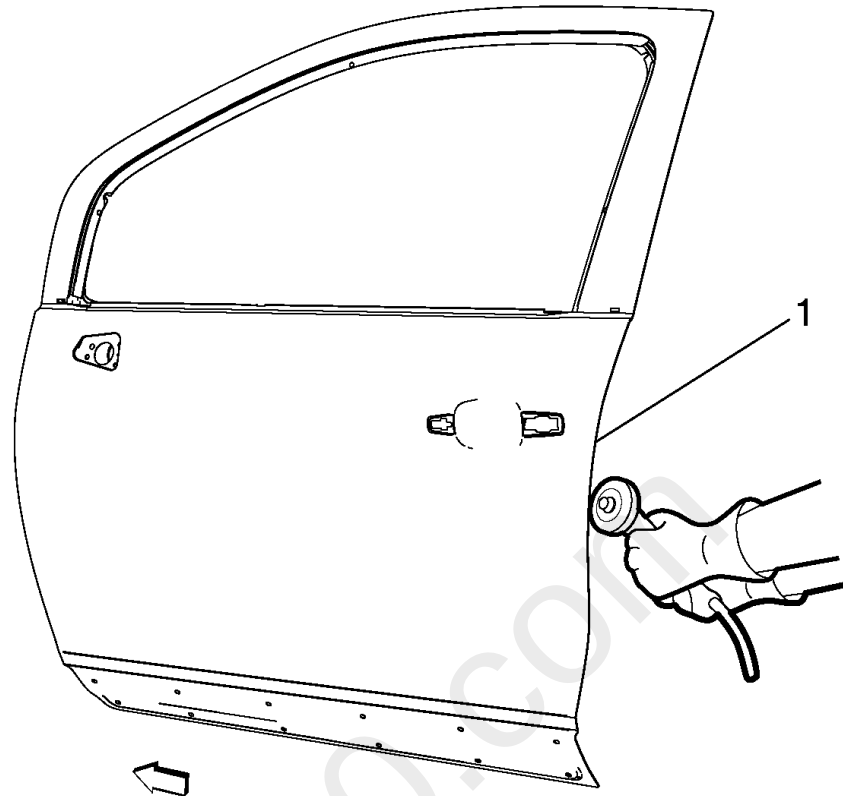


Fig. 85: Grinding Edge Of Side Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

7. Grind the edges of the front side door outer panel (1) to separate the outer door panel from the door shell.

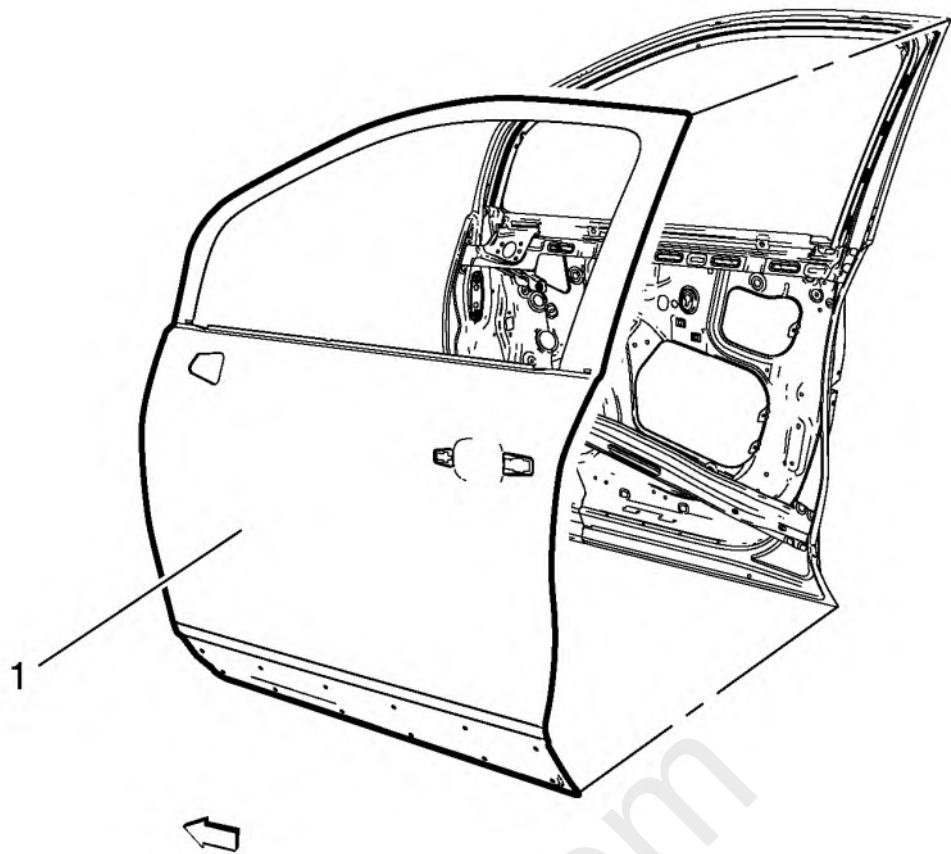


Fig. 86: Front Side Door Outer Door Panel
Courtesy of GENERAL MOTORS COMPANY

8. Remove the front side door outer door panel (1).
9. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
10. Straighten the edges of the door shell.

Installation Procedure

1. Align the front side door outer panel.
2. Verify the fit of the front side door outer panel.

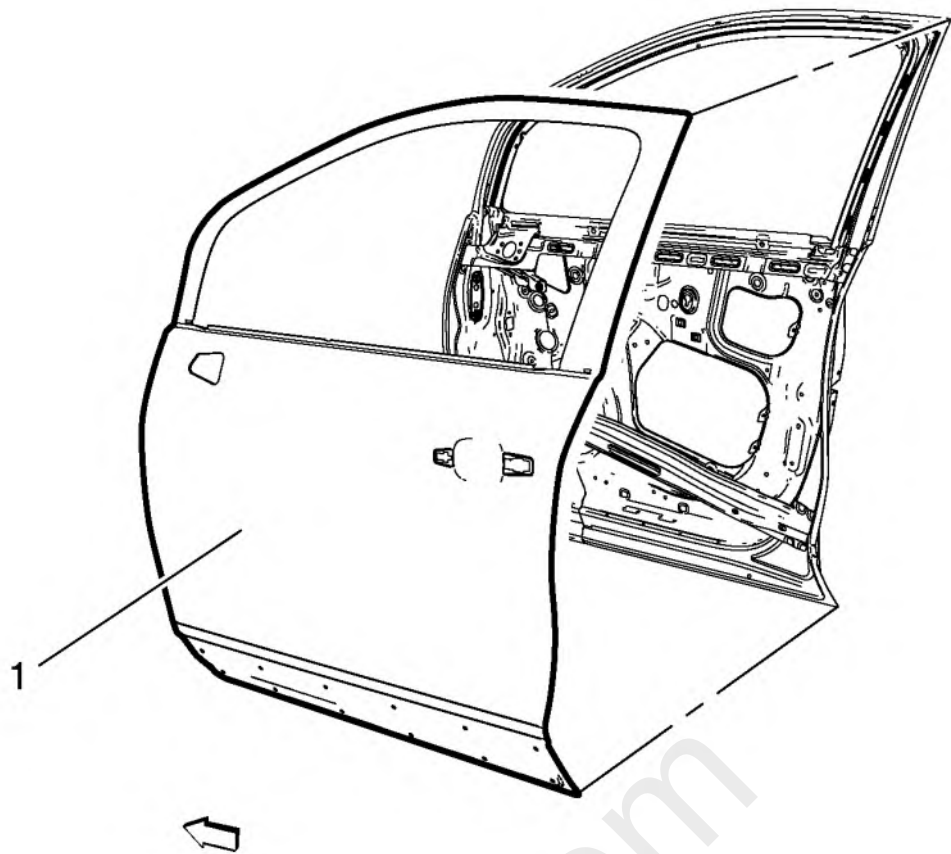


Fig. 87: Front Side Door Outer Door Panel
Courtesy of GENERAL MOTORS COMPANY

3. Clamp the front side door outer panel (1) into position.
4. Pre-flanging the flange with **BO-6396** pliers and **BO-6392** tool kit.

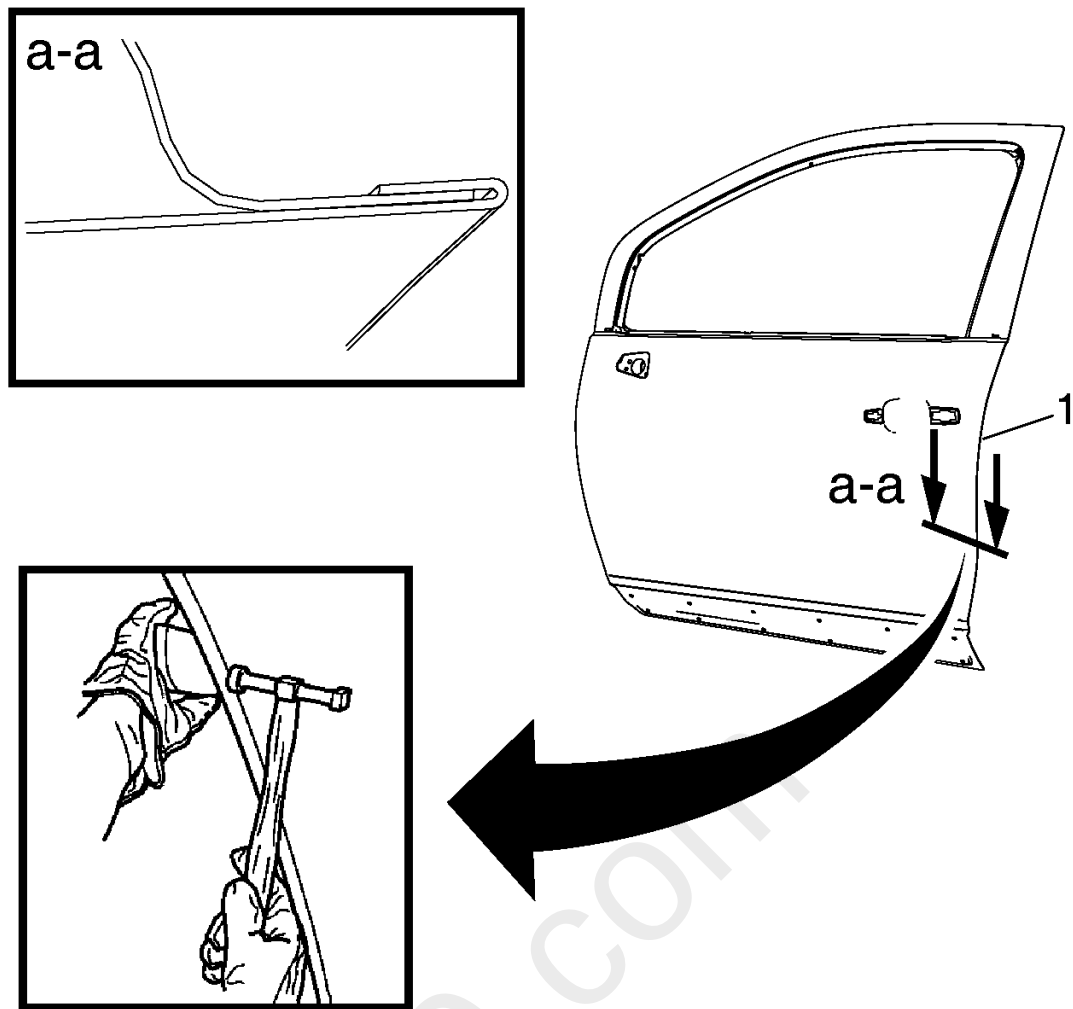


Fig. 88: Front Side Door Outer Door Panel Hem Flanges
 Courtesy of GENERAL MOTORS COMPANY

5. Continue to hammer in stages along the hem flanges (1).
6. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
7. Install the outside rearview mirror. Refer to [Outside Rearview Mirror Replacement](#).
8. Install the front side door outside handle. Refer to [Front Side Door Outside Handle Replacement \(Without ATH\)](#) [Front Side Door Outside Handle Replacement \(With ATH\)](#).
9. Install the front side door. Refer to [Front Side Door Replacement](#).
10. Paint the repaired area. Refer to [Basecoat/Clearcoat Paint Systems](#).
11. Install all related panels and components.
12. Connect the negative battery cable. Refer to [Battery Negative Cable Disconnection and Connection \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
13. Enable the SIR system. Refer to [SIR Disabling and Enabling](#).

REAR SIDE DOOR OUTER PANEL REPLACEMENT

Special Tools

- BO-6392 Flanging Tool Kit
- BO-6396 Bonding Pliers

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

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

Removal Procedure

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 \(without KL9\)](#), [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
3. Remove the rear side door. Refer to [Rear Side Door Replacement](#) .
4. Remove the rear side door outside handle. Refer to [Rear Side Door Outside Handle Replacement \(Without ATH\)](#), [Rear Side Door Outside Handle Replacement \(With ATH\)](#) .
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#) .

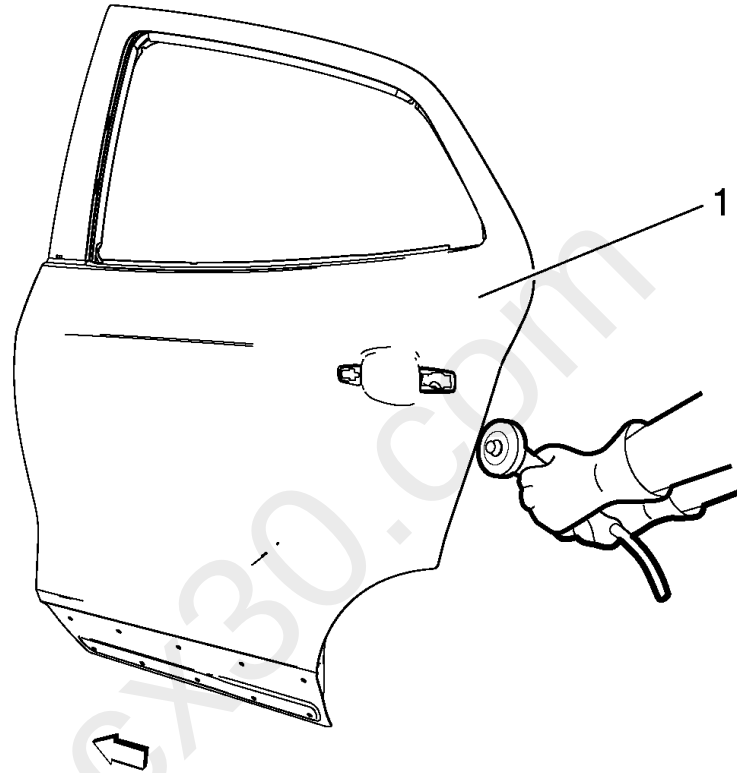


Fig. 89: Grinding Edges Of Rear Side Door Outer Panel

Courtesy of GENERAL MOTORS COMPANY

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

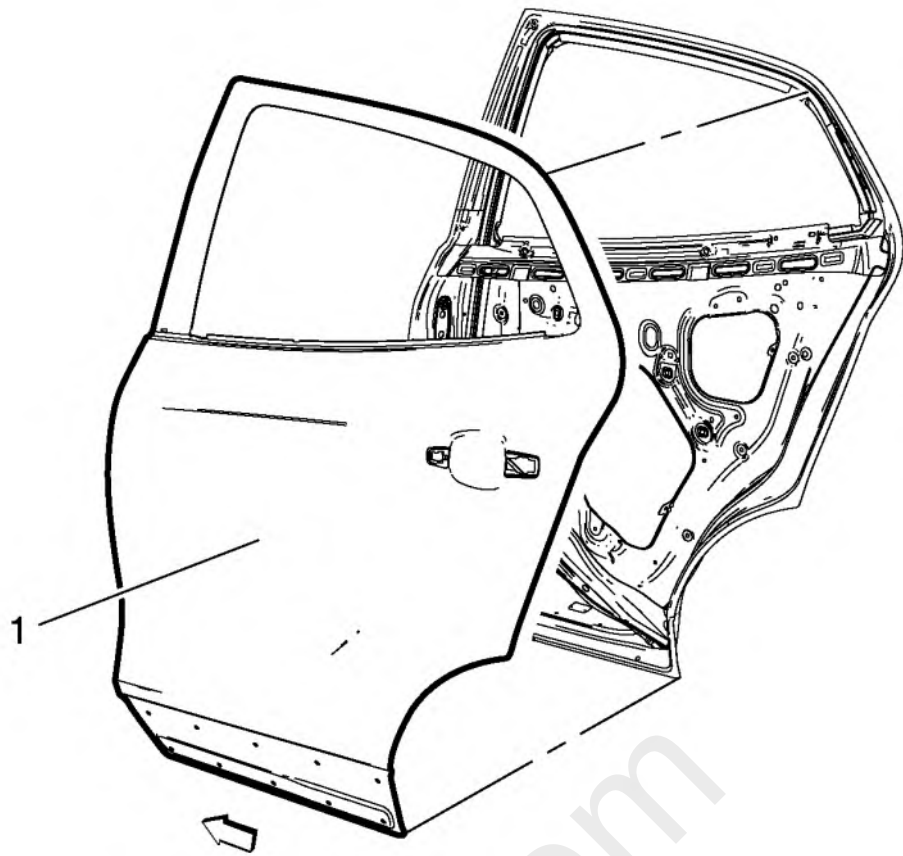


Fig. 90: Rear Side Door Outer Door Panel
Courtesy of GENERAL MOTORS COMPANY

7. Remove the rear side door 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 \(Base\)](#).
9. Straighten the edges of the door shell.

Installation Procedure

1. Align the rear side door outer panel.
2. Verify the fit of the rear side door outer panel.

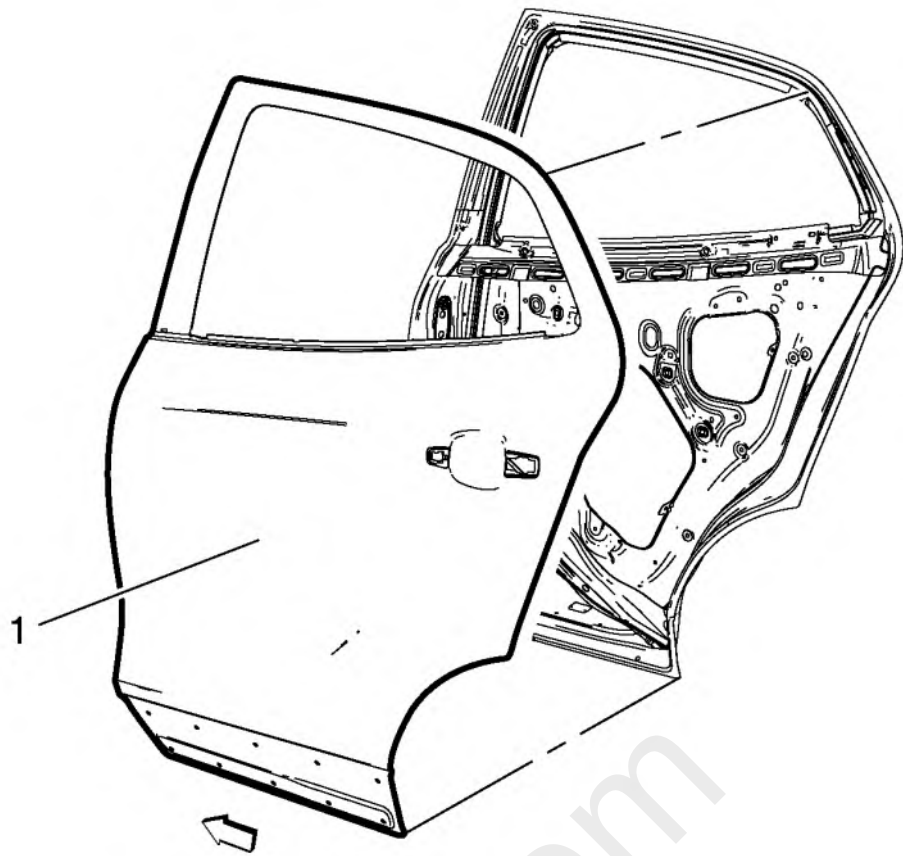


Fig. 91: Rear Side Door Outer Door Panel
Courtesy of GENERAL MOTORS COMPANY

3. Clamp the rear side door outer panel (1) into position.
4. Pre-flanging the flange with **BO-6396** pliers and **BO-6392** tool kit.

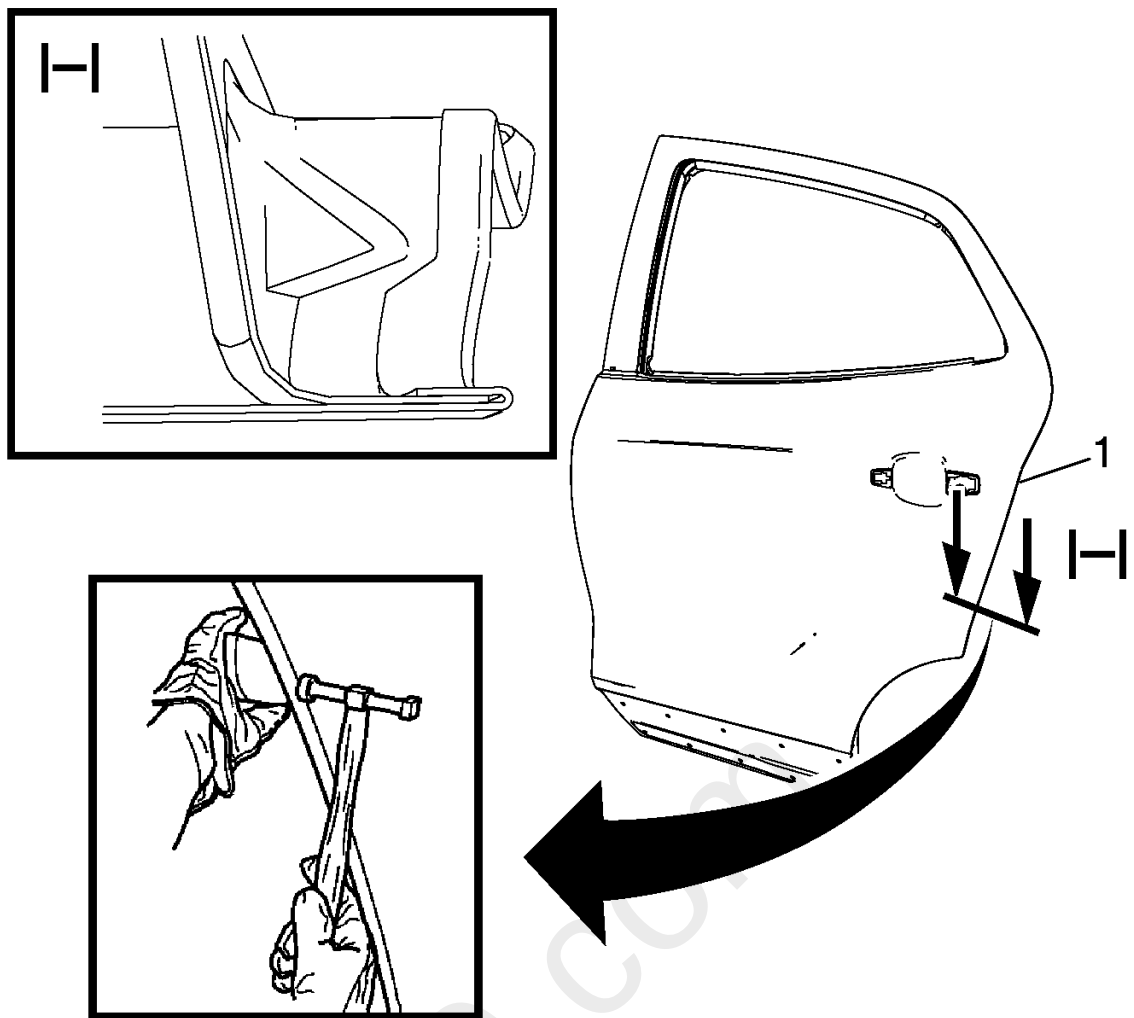


Fig. 92: Rear Side Door Outer Door Panel Hem Flanges
 Courtesy of GENERAL MOTORS COMPANY

5. Continue to hammer in stages along the hem flanges (1).
6. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
7. Install the rear side door outside handle. Refer to [Rear Side Door Outside Handle Replacement \(Without ATH\)](#) [Rear Side Door Outside Handle Replacement \(With ATH\)](#).
8. Install the rear side door. Refer to [Rear Side Door Replacement](#).
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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
12. Enable the SIR system. Refer to [SIR Disabling and Enabling](#).

REAR COMPARTMENT FLOOR PANEL REPLACEMENT

Removal Procedure

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

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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
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 \(Base\)](#).

6. Locate and mark all the necessary factory welds of the rear compartment floor panel.

7. Note the number and location of weld studs for installation of the service assembly.

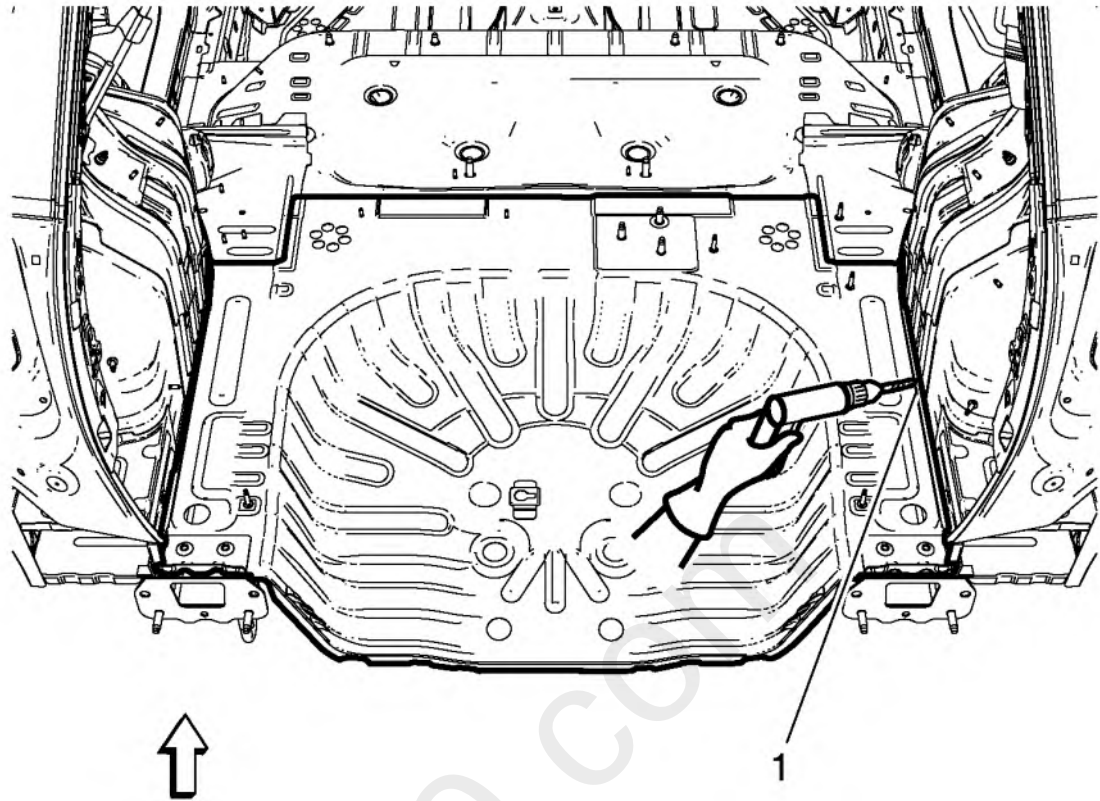


Fig. 93: Drilling Factory Welds

Courtesy of GENERAL MOTORS COMPANY

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

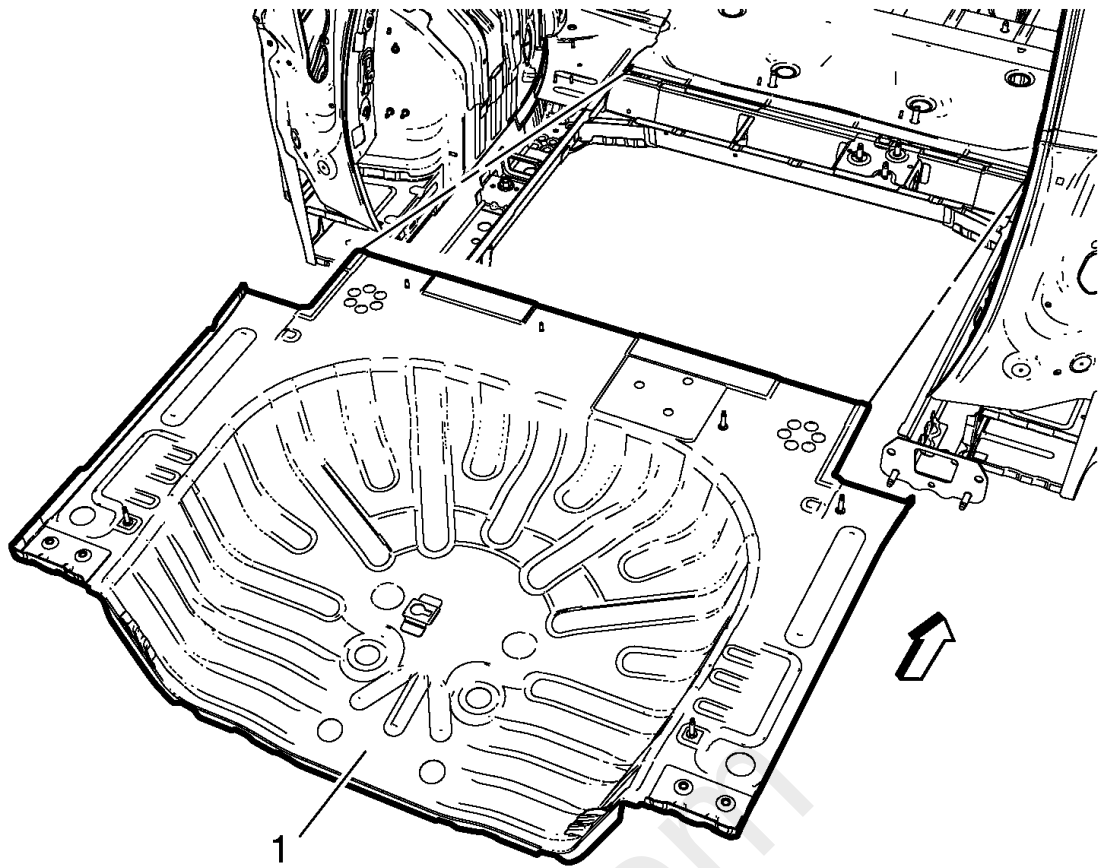


Fig. 94: Rear Compartment Floor Panel
Courtesy of GENERAL MOTORS COMPANY

9. Remove the damaged rear compartment floor panel (1).

Installation Procedure

1. Align the rear compartment floor panel.

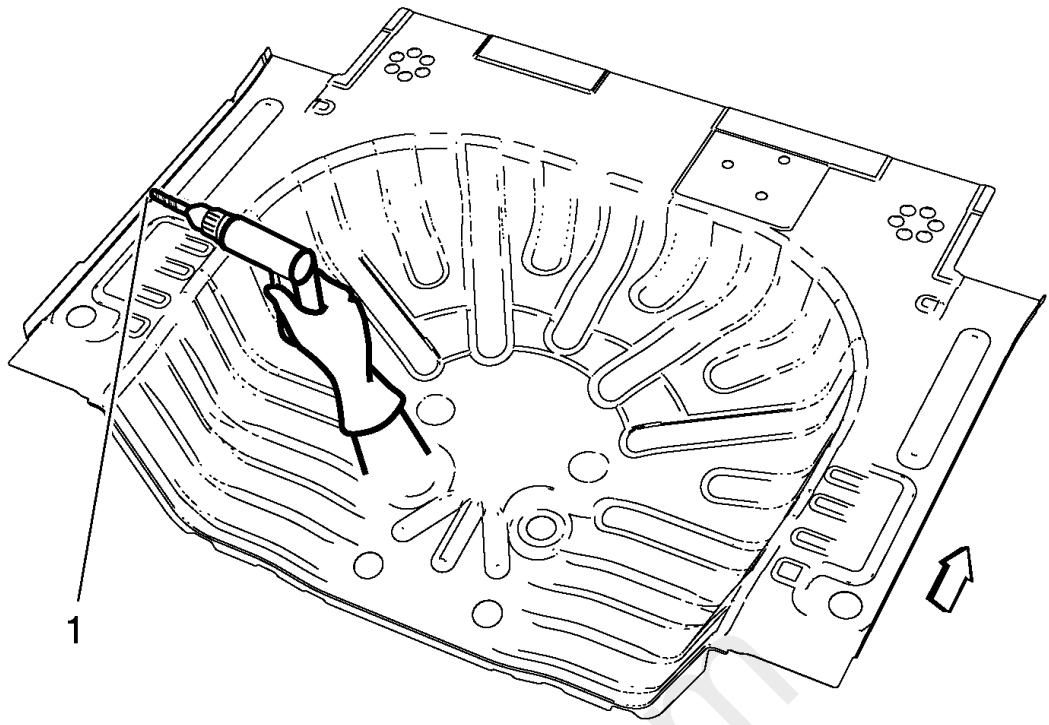


Fig. 95: Drilling Plug Weld Holes In Rear Compartment Floor Panel
Courtesy of GENERAL MOTORS COMPANY

2. Drill a 8 mm (5/16 in) holes for plug welding along the edges of the rear compartment floor panel as noted from the original panel (1).
3. Clean and prepare the attaching surfaces for welding.
4. Position the rear compartment floor panel on the vehicle.
5. Verify the fit of the rear compartment floor panel.
6. Clamp the rear compartment floor panel into position.

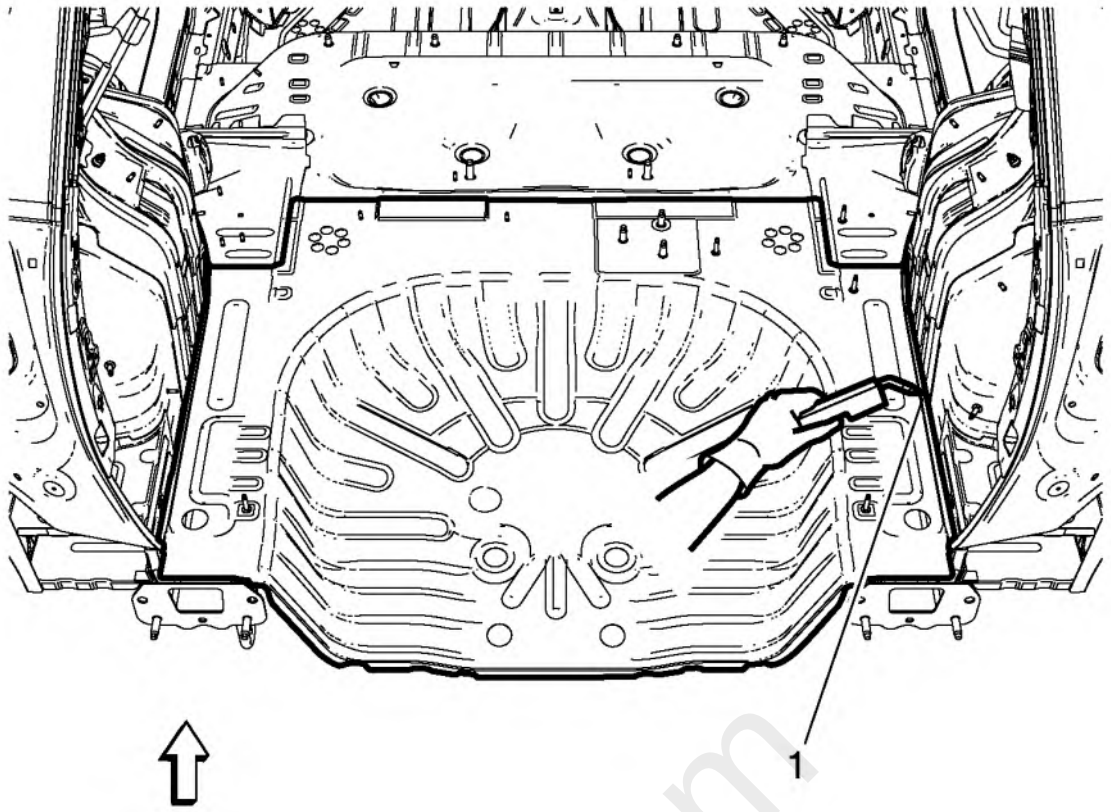


Fig. 96: Plug Welding Rear Compartment Floor Panel
 Courtesy of GENERAL MOTORS COMPANY

7. Plug the weld accordingly (1).

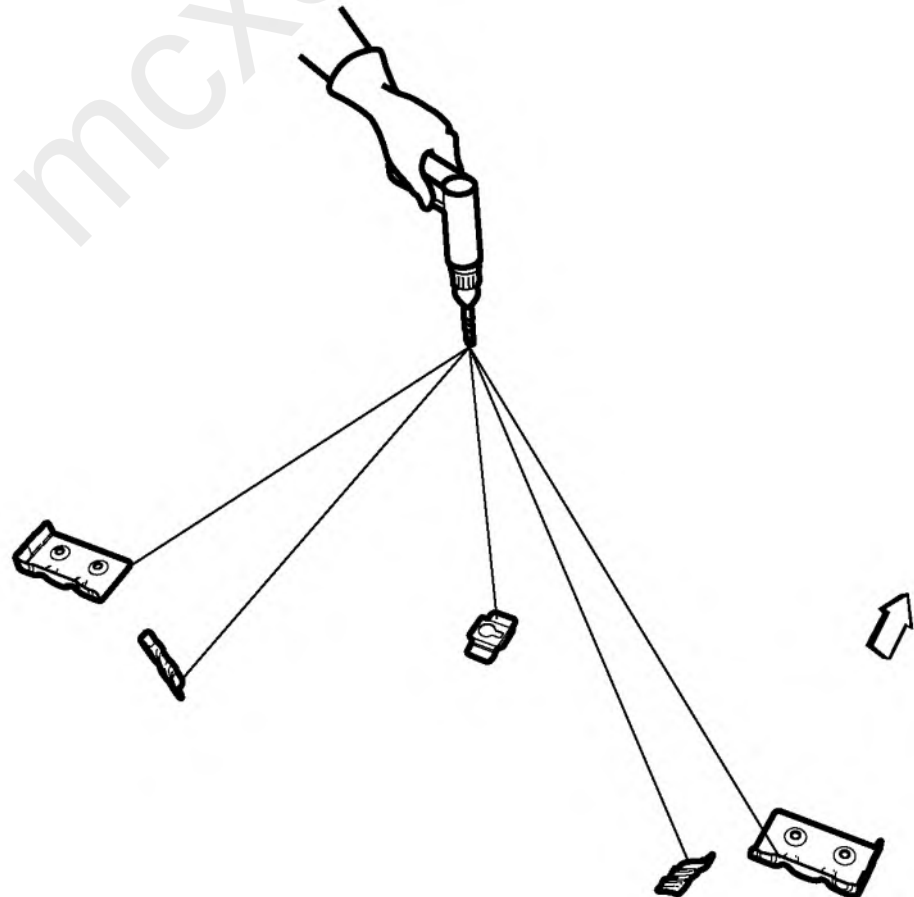


Fig. 97: Drilling Plug Weld Holes In Attaching Components
Courtesy of GENERAL MOTORS COMPANY

8. Drill 8 mm (5/16 in) for plug welding along the edges of the floor panel rear reinforcement, the spare wheel carrier bracket, the shipping device and the floor panel reinforcement as noted from the original panel (1).
9. Clean and prepare the attaching surfaces for welding.
10. Position the floor panel rear reinforcement, the spare wheel carrier bracket, the shipping device and the floor panel reinforcement on the vehicle.
11. Verify the fit of the floor panel rear reinforcement, the spare wheel carrier bracket, the shipping device and the floor panel reinforcement.

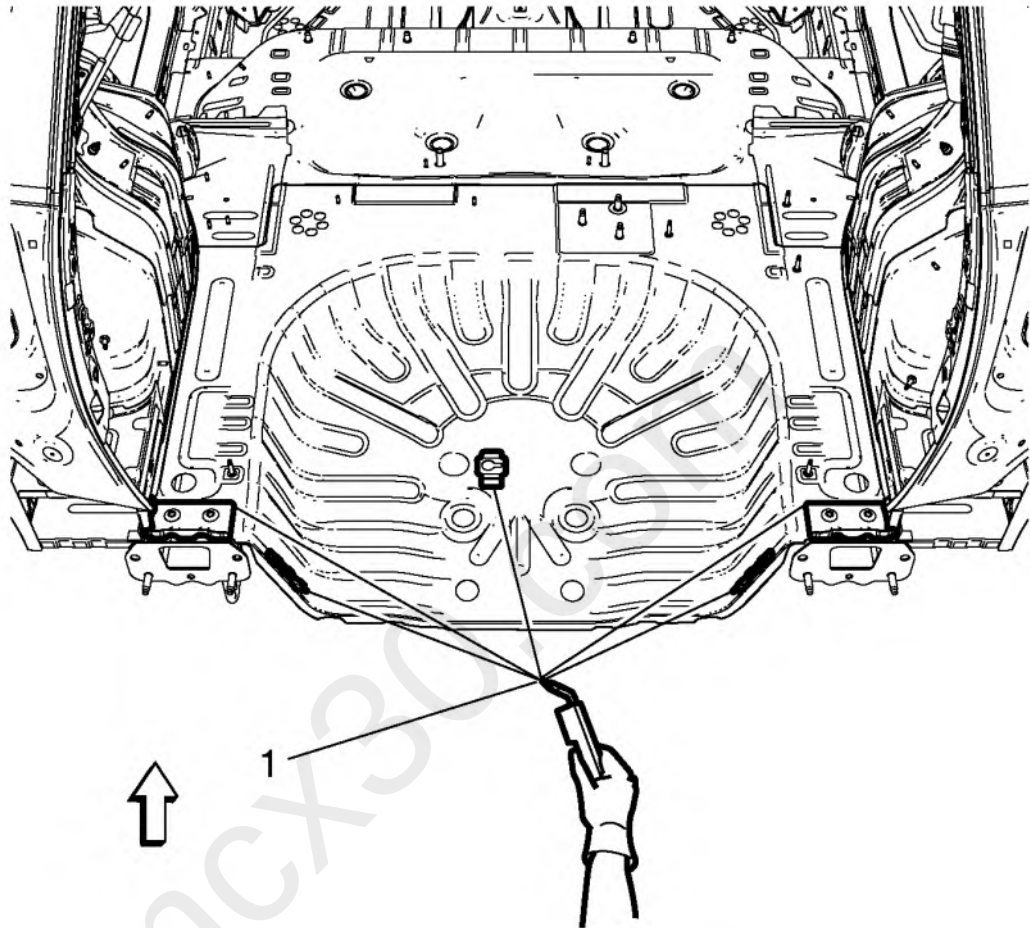


Fig. 98: Plug Welding Rear Compartment Floor Panel
Courtesy of GENERAL MOTORS COMPANY

12. Plug weld accordingly (1).
13. Weld accordingly the weld studs as noted.
14. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
15. Paint the repaired area. Refer to [Basecoat/Clearcoat Paint Systems](#).
16. Install all related panels and components.
17. Connect the negative battery cable. Refer to [Battery Negative Cable Disconnection and Connection \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
18. Enable the SIR system. Refer to [SIR Disabling and Enabling](#).

REAR WHEELHOUSE OUTER 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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to [Dimensions - Body_\(Opel, Buick\)](#)[Dimensions - Body_\(Chevrolet, Holden\)](#).
5. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#) .
6. Locate and mark all the necessary factory welds of the rear wheelhouse outer panel.

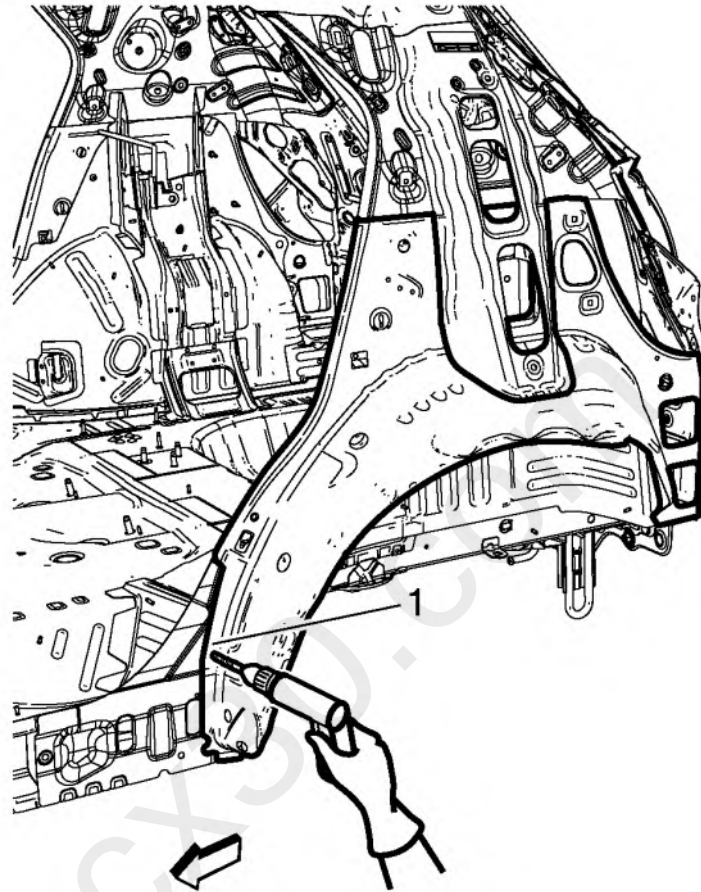


Fig. 99: Drilling Factory Welds From Rear Wheelhouse Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

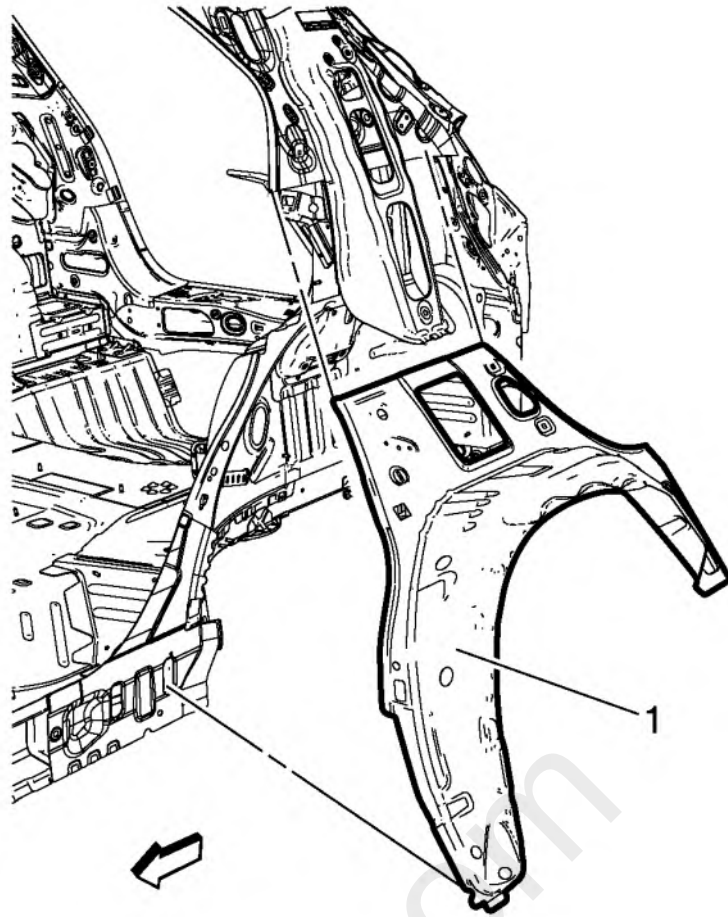


Fig. 100: Rear Wheelhouse Outer Panel
Courtesy of GENERAL MOTORS COMPANY

8. Remove the damaged rear wheelhouse outer panel (1).

Installation Procedure

1. Align the rear wheelhouse outer panel.

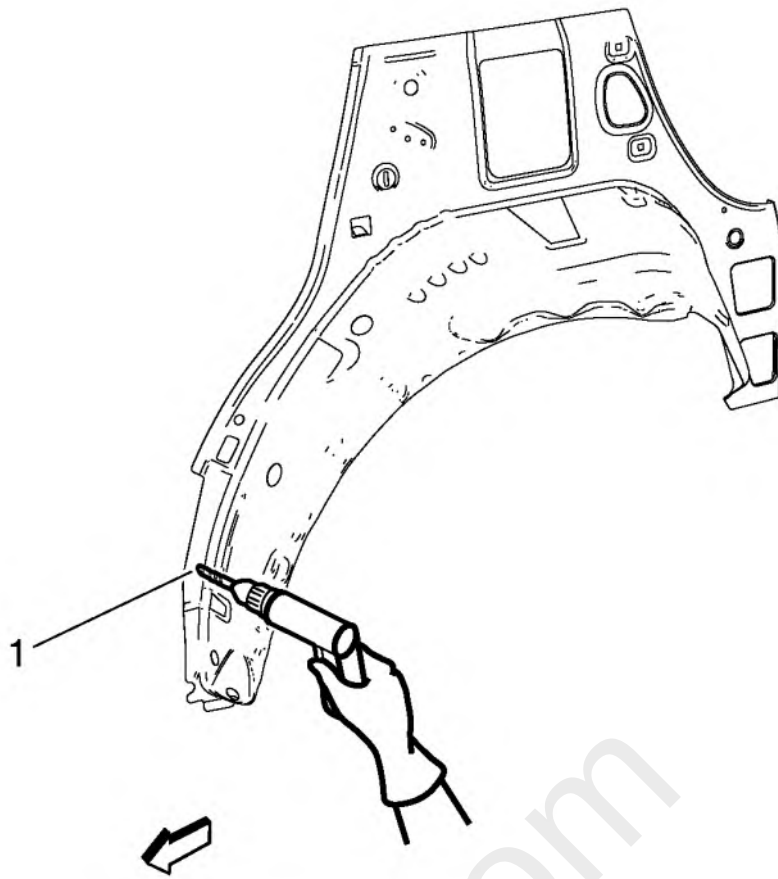


Fig. 101: Drilling Plug Weld Holes In Rear Wheelhouse Outer Panel Service Part
Courtesy of GENERAL MOTORS COMPANY

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

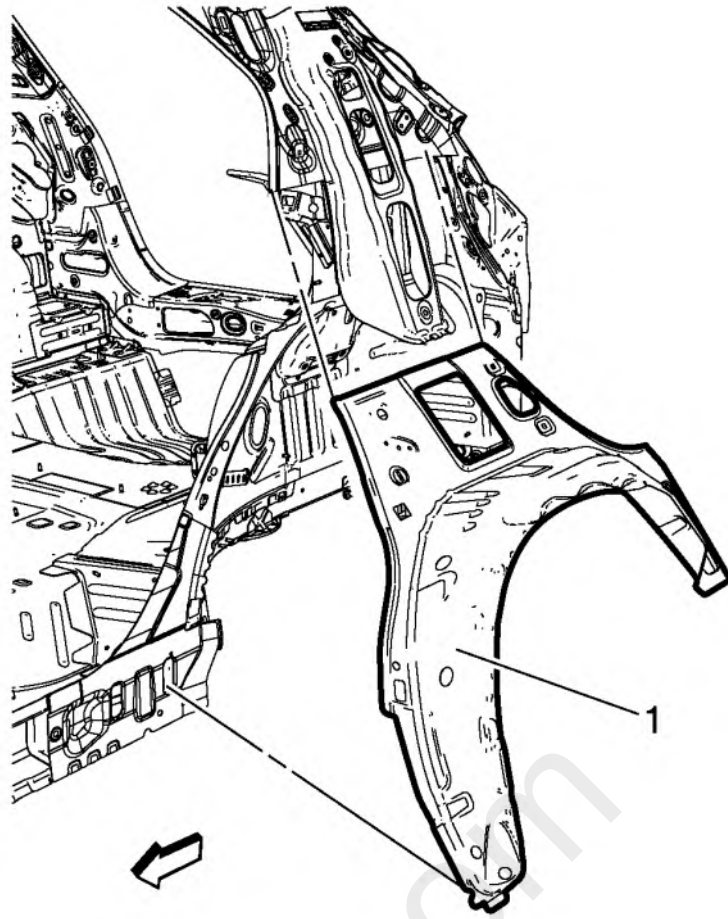


Fig. 102: Rear Wheelhouse Outer Panel

Courtesy of GENERAL MOTORS COMPANY

4. Position the rear wheelhouse outer panel on the vehicle (1).
5. Verify the fit of the rear wheelhouse outer panel.
6. Clamp the rear wheelhouse outer panel into position.

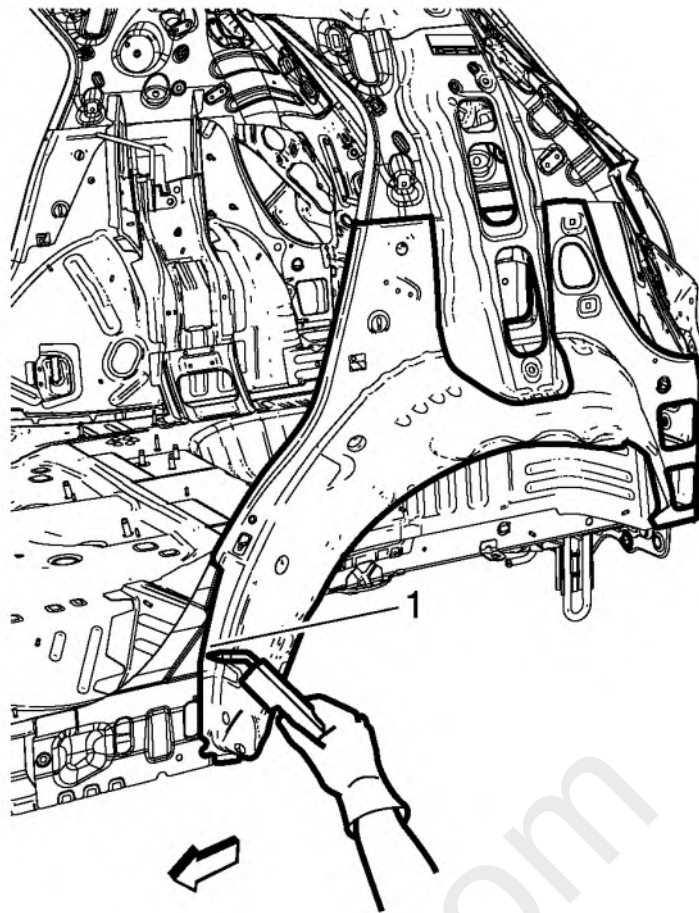


Fig. 103: Plug Welding Rear Wheelhouse Outer Panel

Courtesy of GENERAL MOTORS COMPANY

7. Plug the weld accordingly (1).
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
12. Enable the SIR system. Refer to [SIR Disabling and Enabling](#).

QUARTER 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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
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 \(Base\)](#).

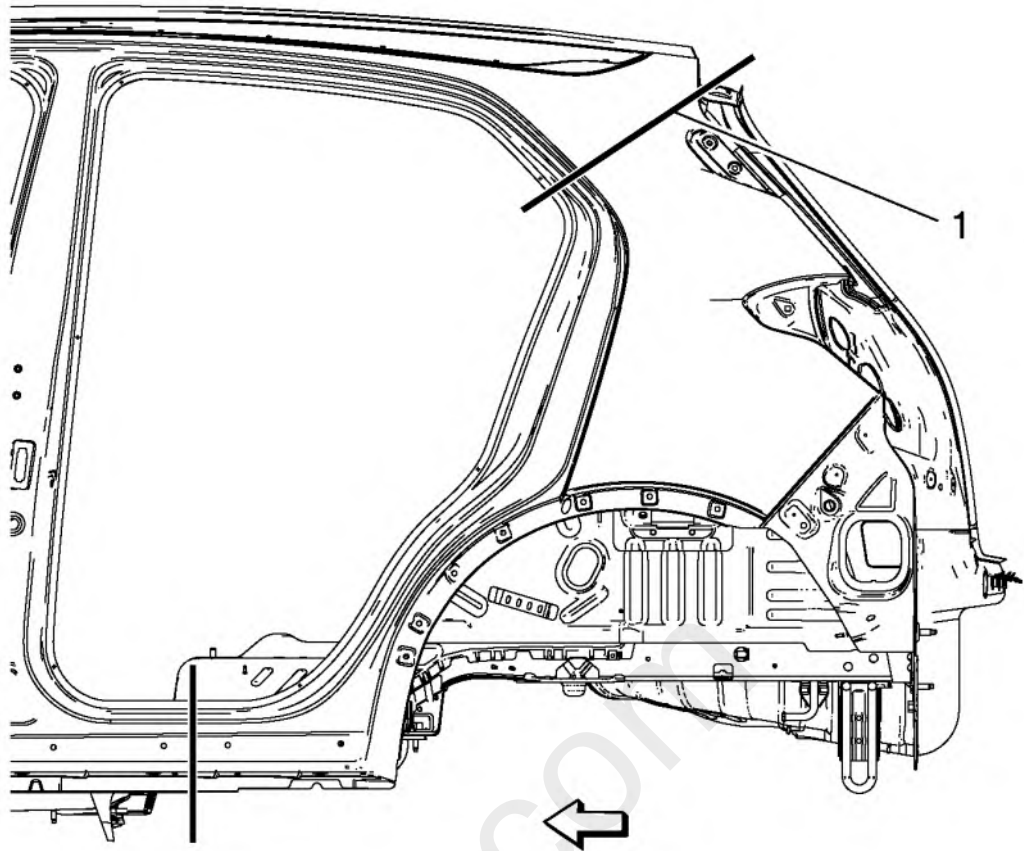


Fig. 104: Cut Lines For Quarter Outer Panel
Courtesy of GENERAL MOTORS COMPANY

6. Create cut lines on the quarter outer panel (1).

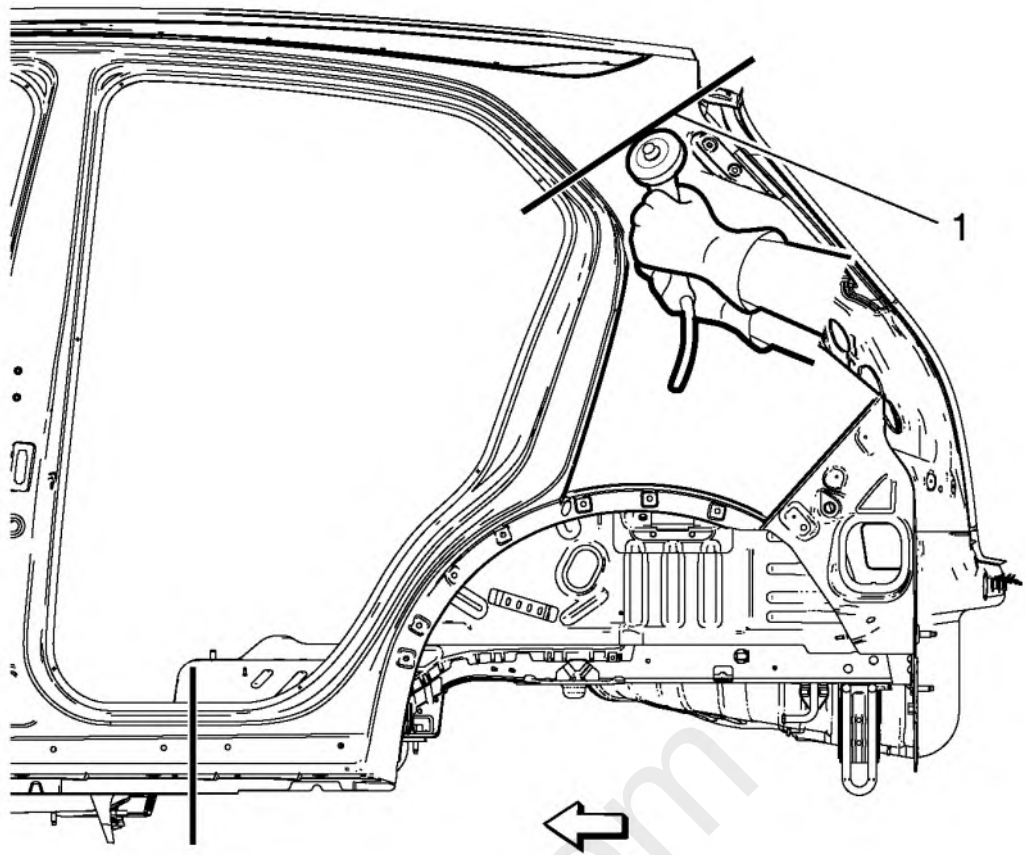


Fig. 105: Sectioning Quarter Outer Panel
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage any inner panels or reinforcements.

7. Cut the panel where sectioning is to be performed (1).
8. Locate and mark all the necessary factory welds of the quarter outer panel.

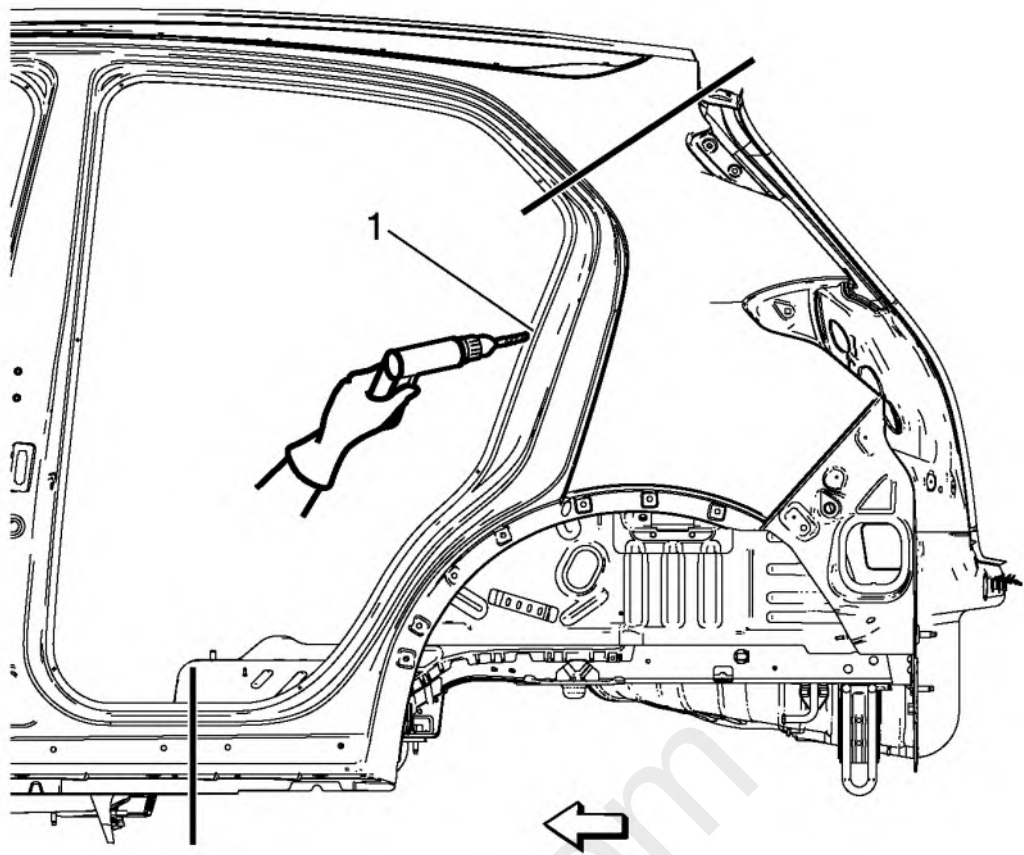
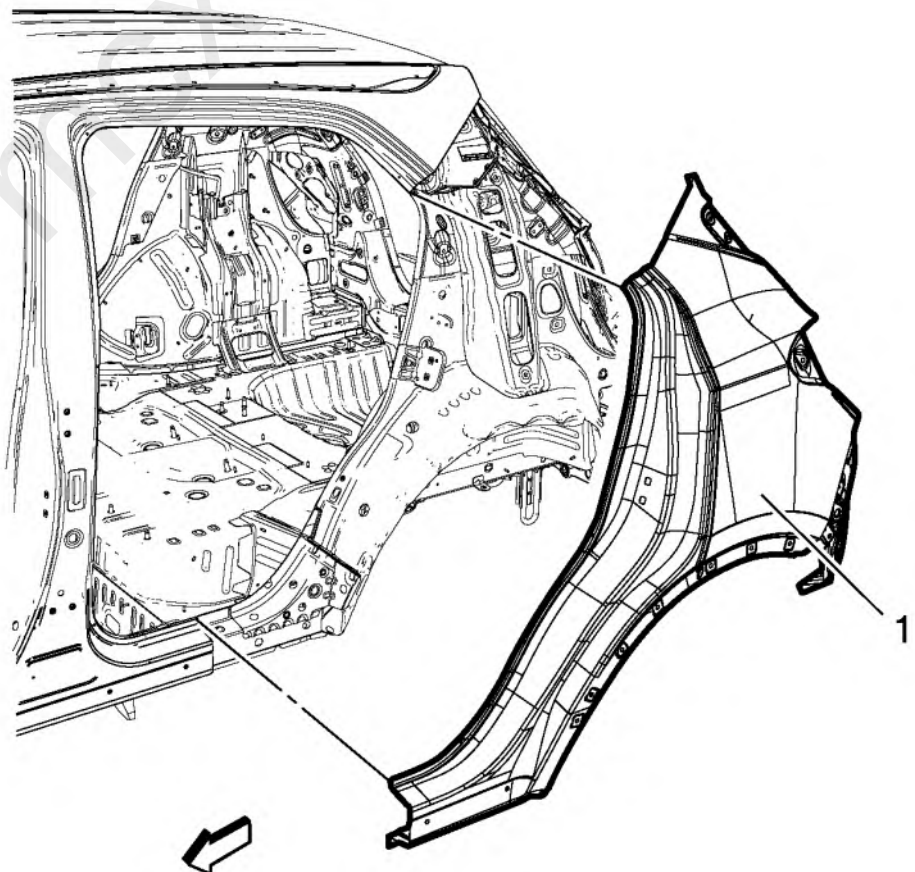


Fig. 106: Drilling Factory Welds From Quarter Outer Panel
 Courtesy of GENERAL MOTORS COMPANY

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



10. Remove the damaged quarter outer panel (1).

Installation Procedure

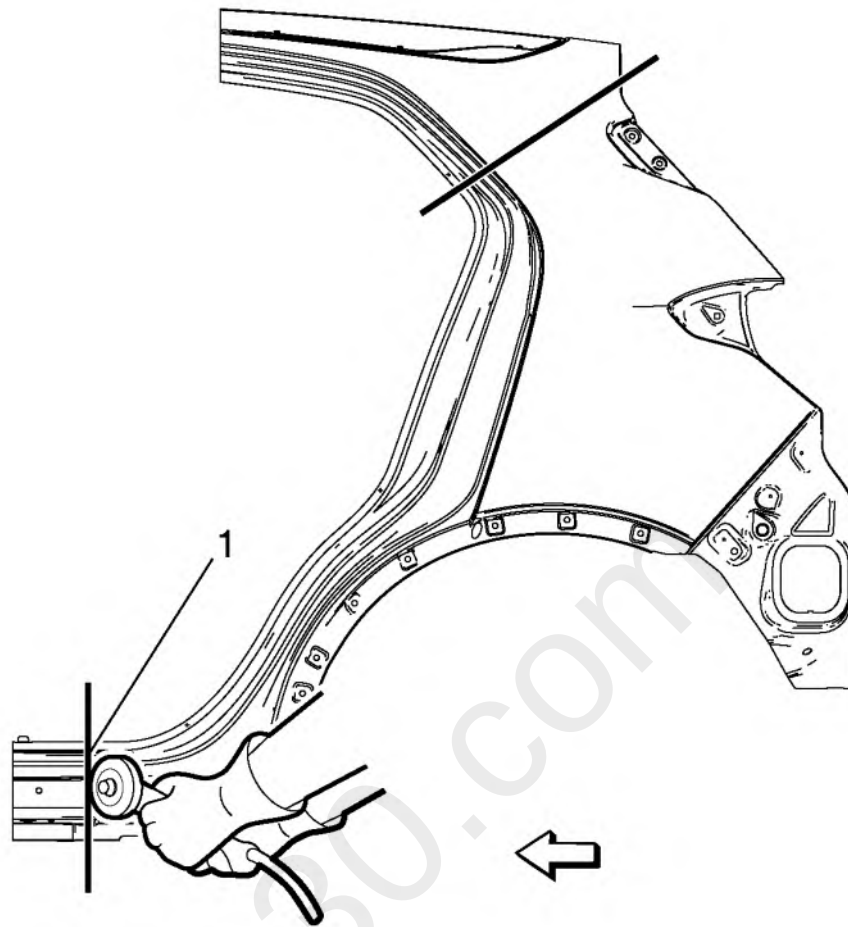


Fig. 108: Cutting Quarter Outer Panel Service Part In Corresponding Locations

Courtesy of GENERAL MOTORS COMPANY

1. Cut the quarter outer panel in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to overlap the remaining original panel by 25 mm (1 inch) at each joint location (1).
2. Prepare all mating surfaces as necessary.

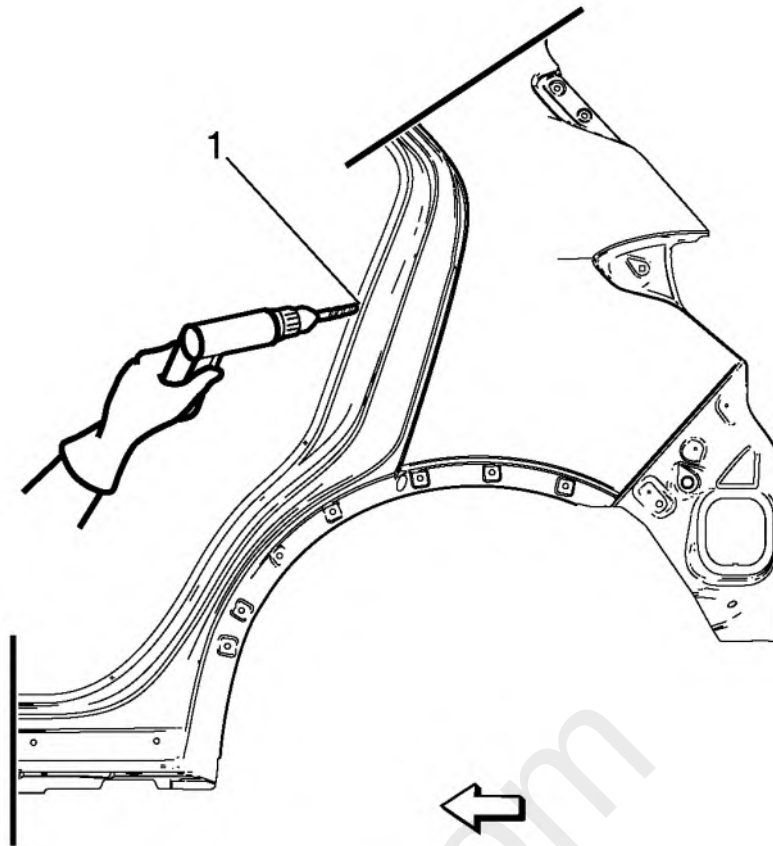


Fig. 109: Drilling Holes In Quarter Outer Panel Service Part
Courtesy of GENERAL MOTORS COMPANY

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

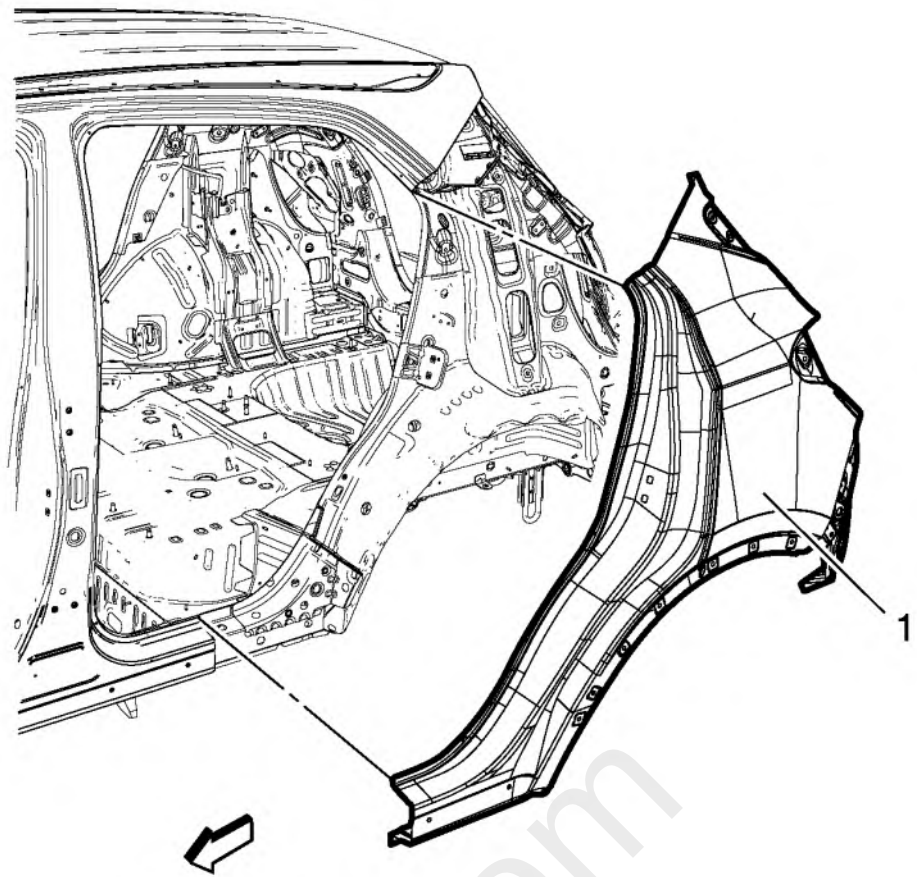


Fig. 110: Quarter Outer Panel

Courtesy of GENERAL MOTORS COMPANY

5. Position the quarter outer panel on the vehicle (1).
6. Verify the fit of the quarter outer panel.
7. Clamp the quarter outer panel into position.

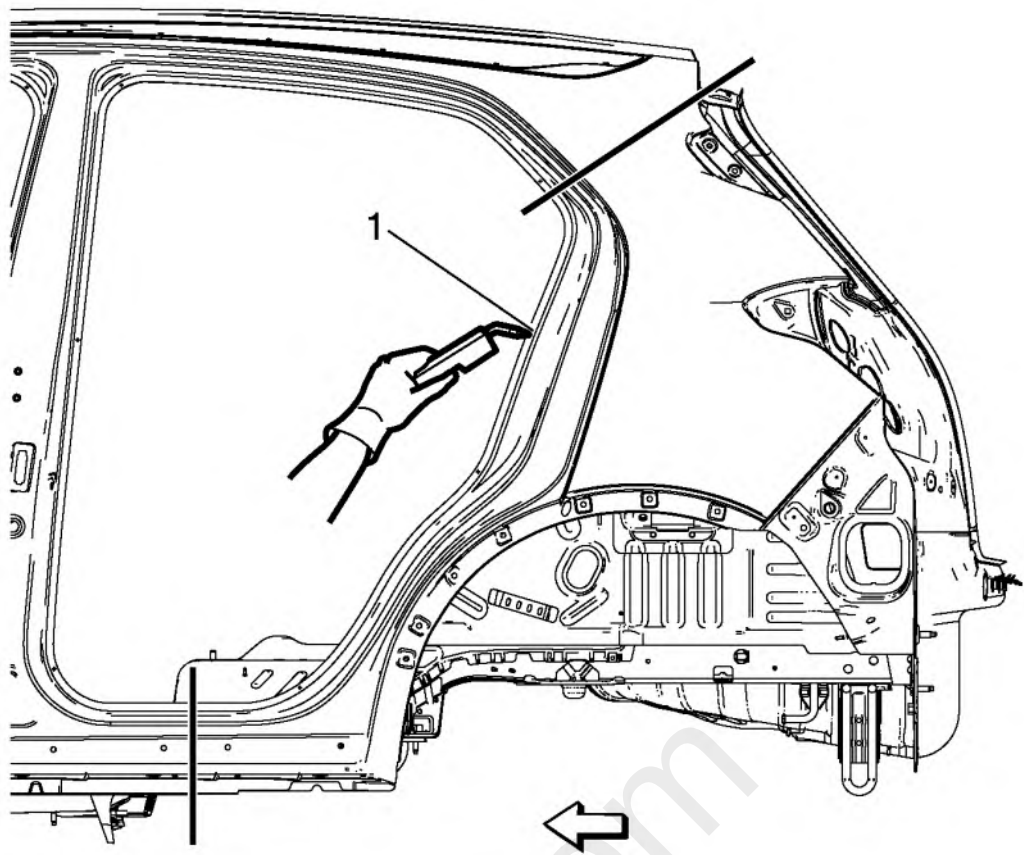


Fig. 111: Plug Welding Quarter Outer Panel
Courtesy of GENERAL MOTORS COMPANY

8. Plug weld accordingly (1).
9. To create a solid weld with minimum heat distortion, make 25 mm (1 in) stitch welds along the seam with 25 mm (1 in) gaps between them. Then go back and complete the stitch weld.
10. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
11. Paint the repaired area. Refer to [Basecoat/Clearcoat Paint Systems](#).
12. Install all related panels and components.
13. Connect the negative battery cable. Refer to [Battery Negative Cable Disconnection and Connection \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
14. 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. Disconnect the negative battery cable. Refer to [Battery Negative Cable Disconnection and Connection \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
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 \(Base\)](#).
6. Locate and mark all factory welds.

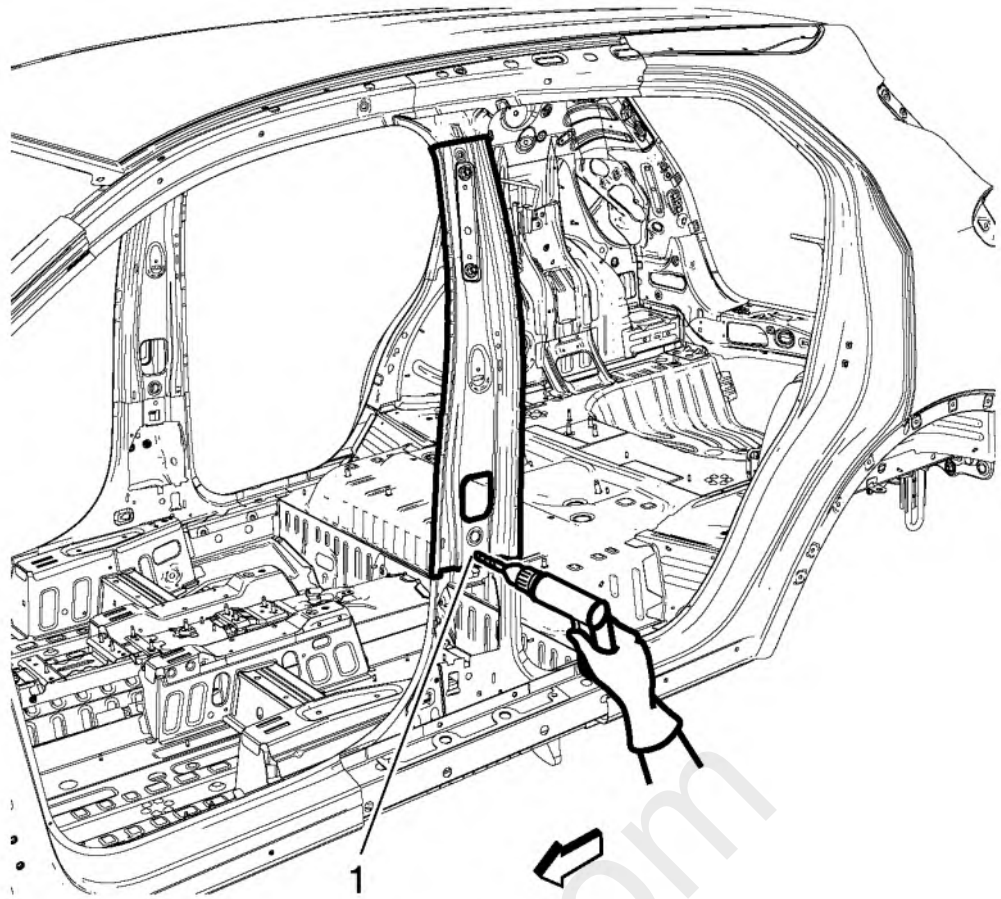


Fig. 112: Drilling Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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

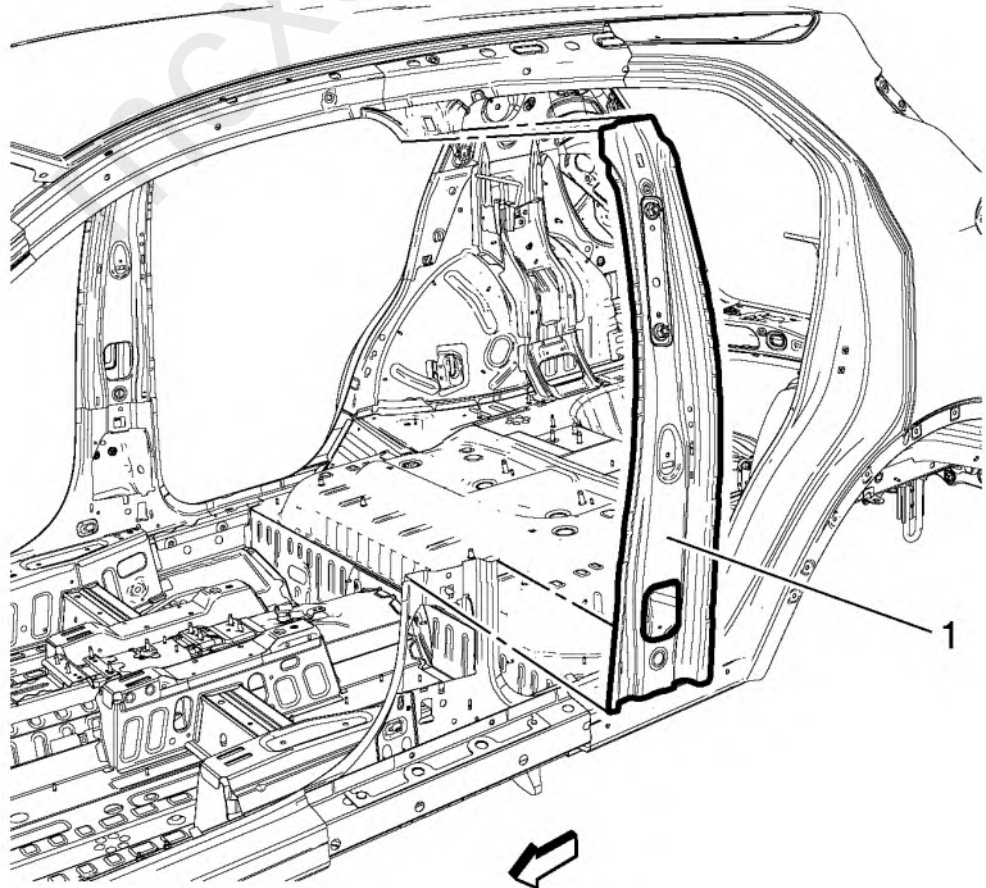


Fig. 113: Center Pillar Inner Panel
Courtesy of GENERAL MOTORS COMPANY

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

Installation Procedure

1. Prepare all mating surfaces as necessary.
2. Align the center pillar inner panel.

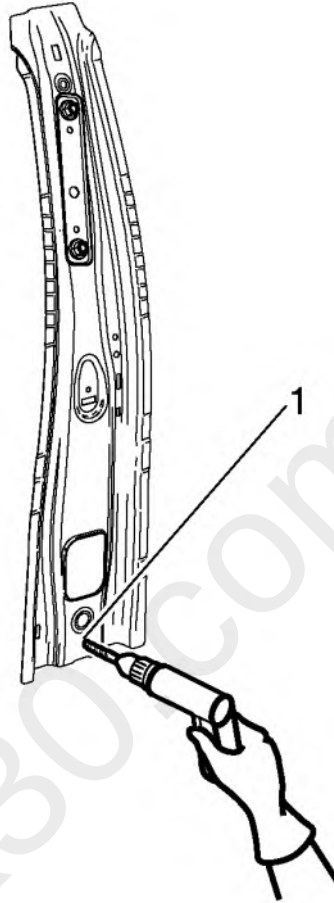


Fig. 114: Drilling Plug Weld Holes In Center Pillar Inner Panel Service Part
Courtesy of GENERAL MOTORS COMPANY

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

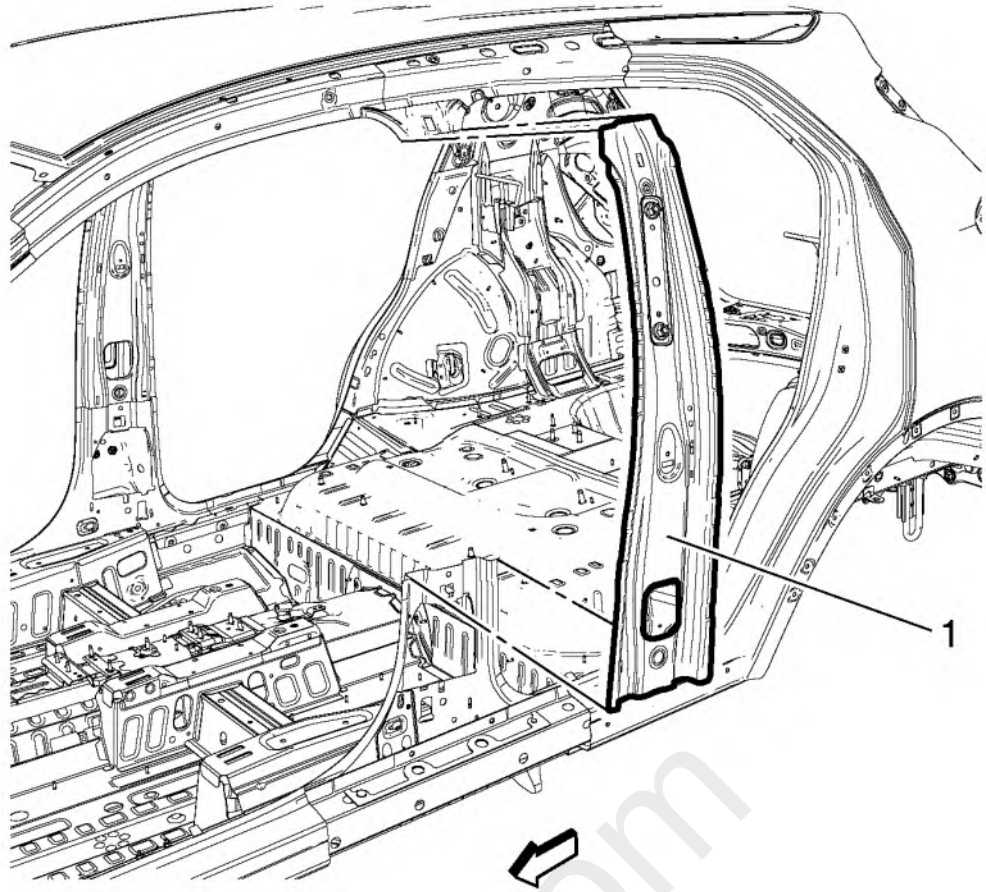


Fig. 115: Center Pillar Inner Panel

Courtesy of GENERAL MOTORS COMPANY

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

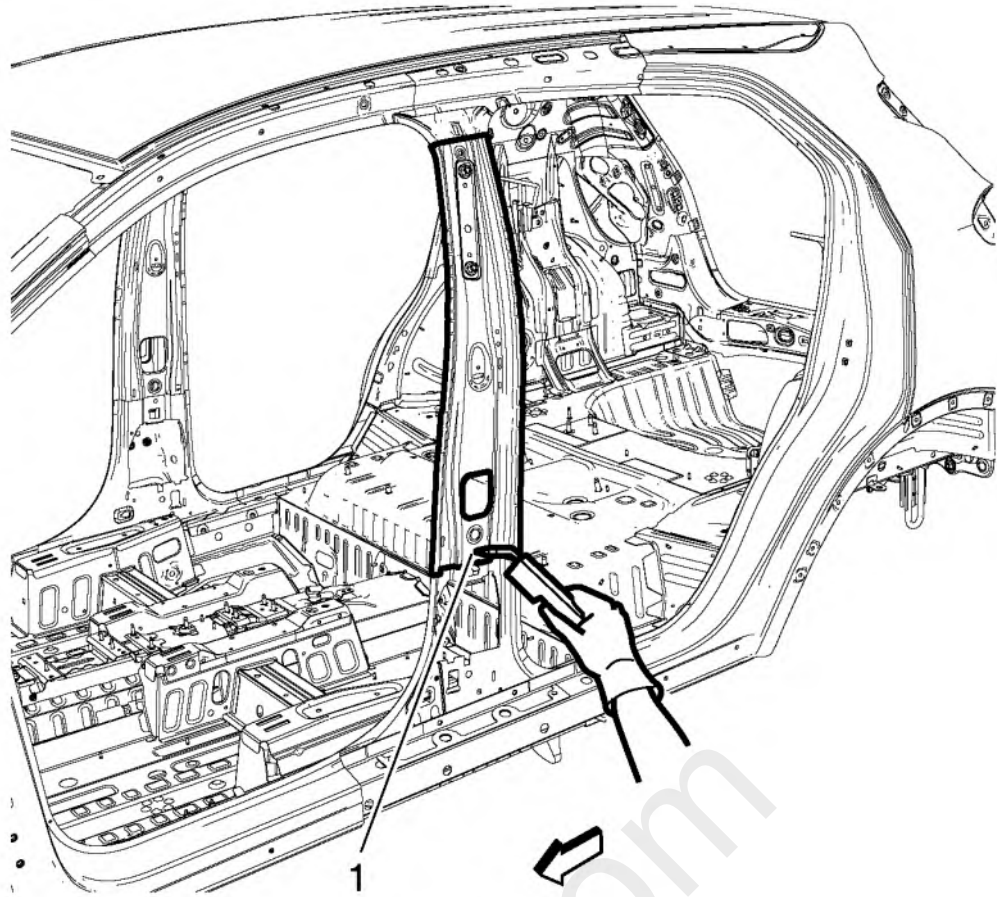


Fig. 116: Plug Welding Center Pillar Inner Panel
 Courtesy of GENERAL MOTORS COMPANY

8. Plug weld accordingly (1).
9. To create a solid weld with minimum heat distortion, make 25 mm (1 in) stitch welds along the seam with 25 mm (1 in) gaps between them. Then go back and complete the stitch weld.
10. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
11. Paint the repaired area. Refer to [Basecoat/Clearcoat Paint Systems](#).
12. Install all related panels and components.
13. Connect the negative battery cable. Refer to [Battery Negative Cable Disconnection and Connection \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
14. 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: The center pillar upper stiffener is made of Dual Phase Steel and should be replaced only at factory joints. Repairing or sectioning of this part is not recommended. Refer to [Dual Phase Steel](#).

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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
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 \(Base\)](#).
6. Locate and mark all the necessary factory welds of the center pillar reinforcement.

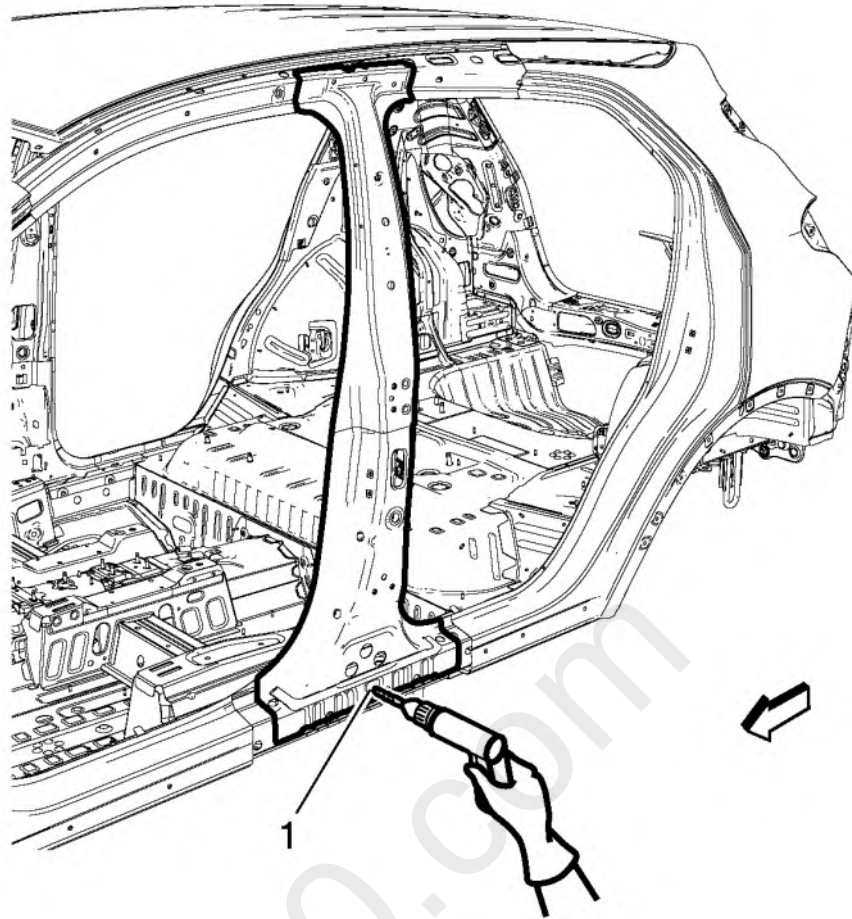


Fig. 117: Drilling Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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

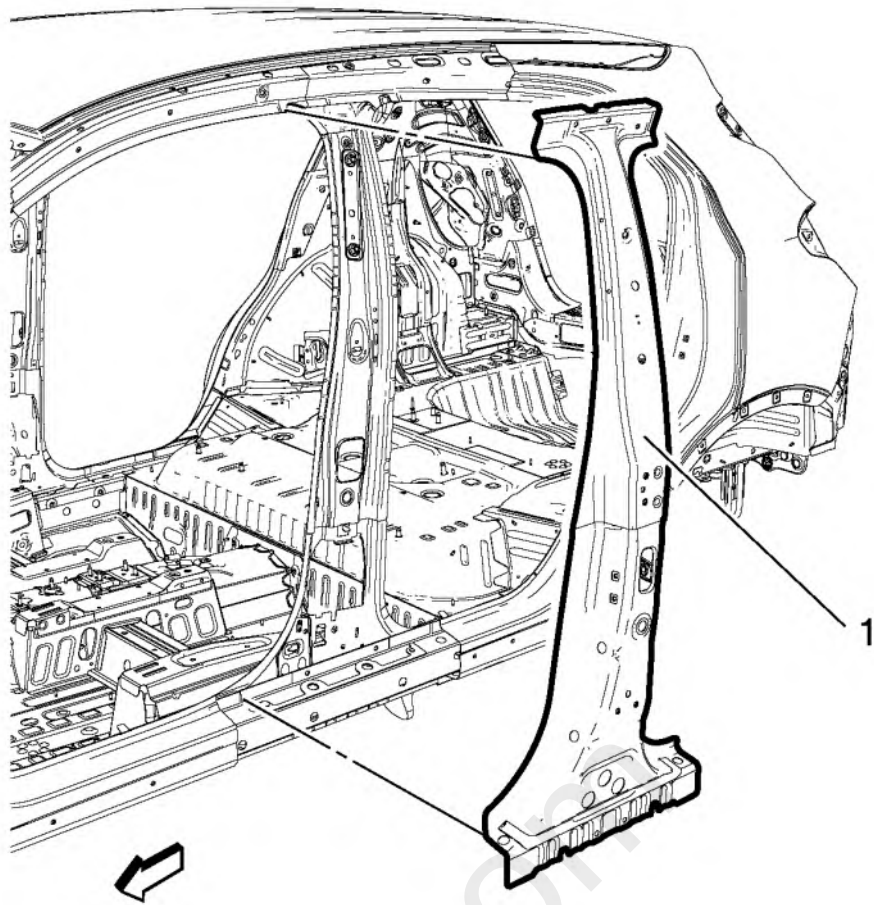


Fig. 118: Center Pillar Reinforcement
Courtesy of GENERAL MOTORS COMPANY

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

Installation Procedure

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

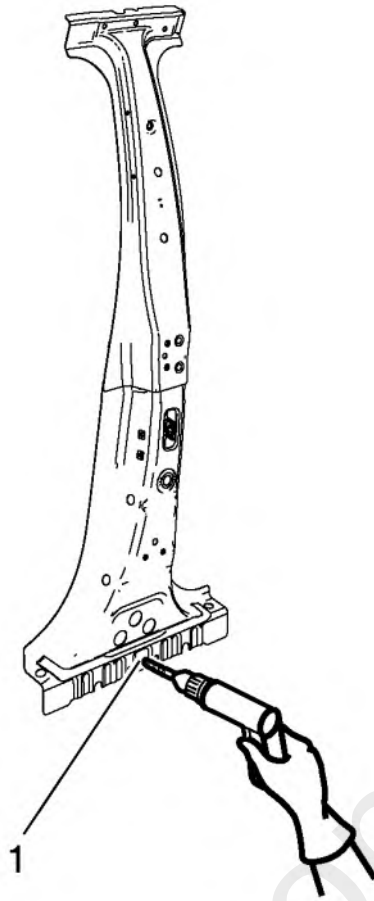


Fig. 119: Drilling Plug Weld Holes In Center Pillar Reinforcement Service Part
Courtesy of GENERAL MOTORS COMPANY

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

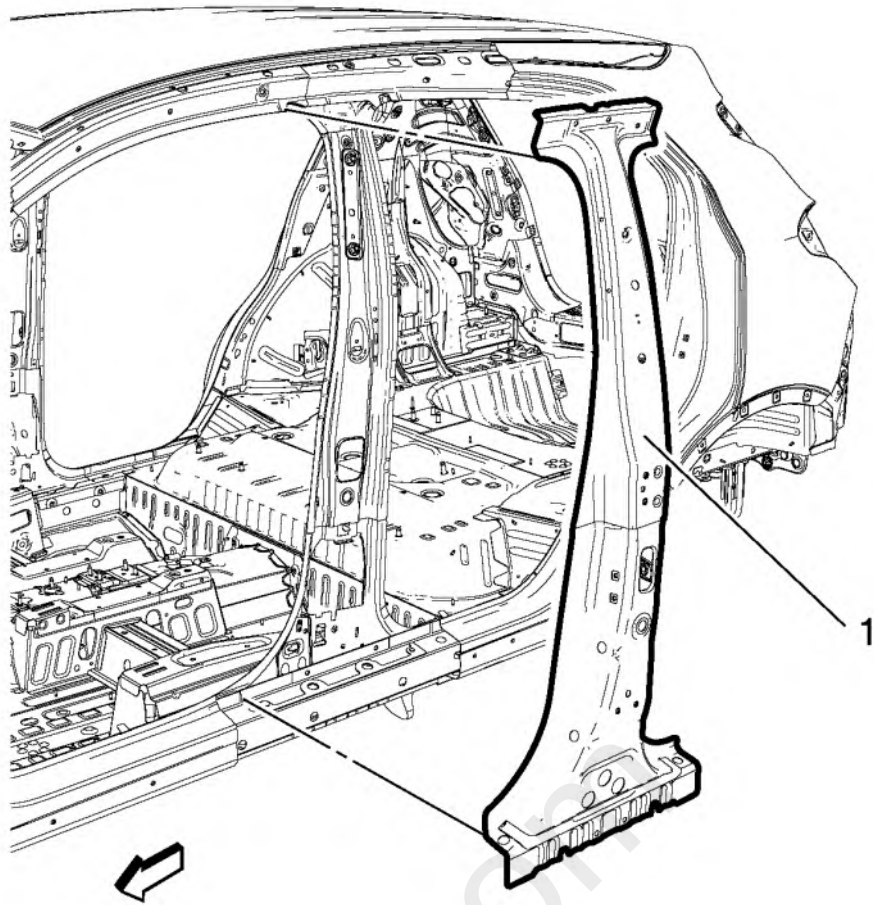


Fig. 120: Center Pillar Reinforcement

Courtesy of GENERAL MOTORS COMPANY

5. Position the center pillar reinforcement on the vehicle (1).
6. Verify the fit of the center pillar reinforcement.
7. Clamp the center pillar reinforcement into position.

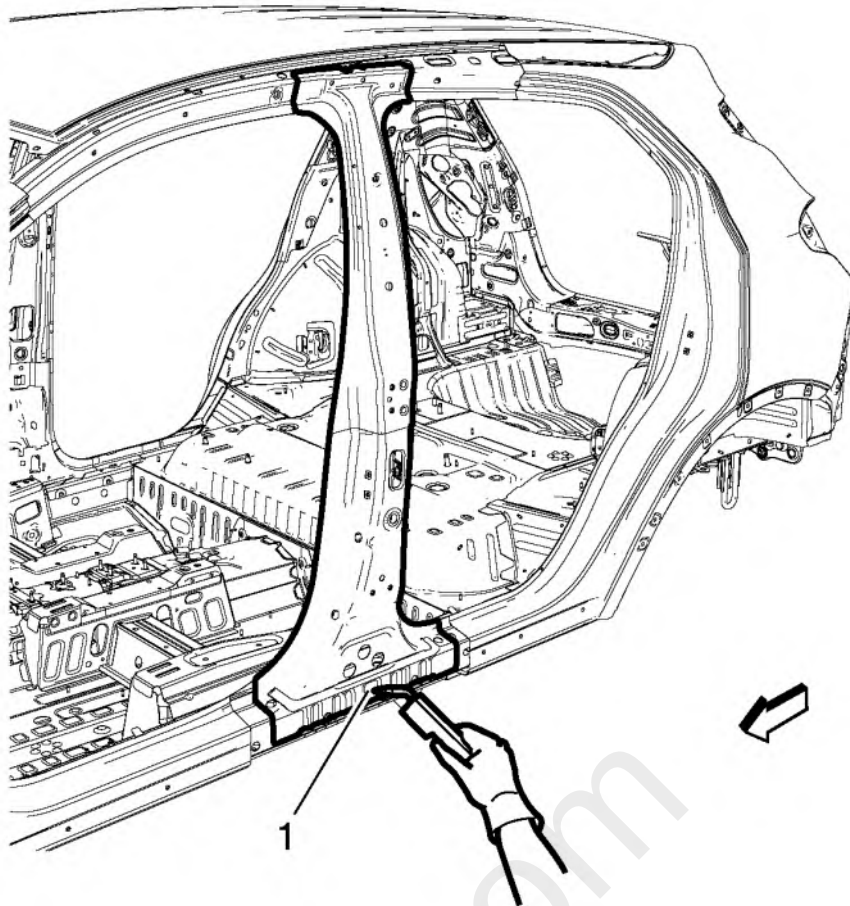


Fig. 121: Plug Welding Center Pillar Reinforcement
 Courtesy of GENERAL MOTORS COMPANY

8. Plug weld accordingly (1).
9. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
10. Paint the repaired area. Refer to [Basecoat/Clearcoat Paint Systems](#).
11. Install all related panels and components.
12. Connect the negative battery cable. Refer to [Battery Negative Cable Disconnection and Connection \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
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](#).

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

WARNING: Refer to [Glass and Sheet Metal Handling Warning](#).

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

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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
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 \(Base\)](#).

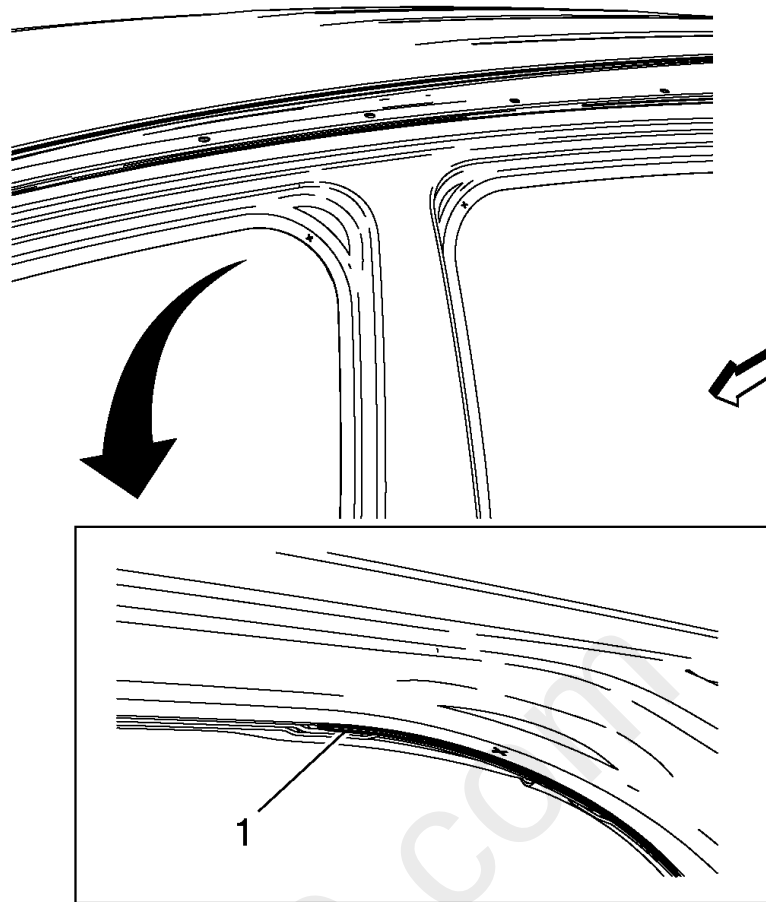


Fig. 122: Center Pillar Weatherstrip
Courtesy of GENERAL MOTORS COMPANY

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

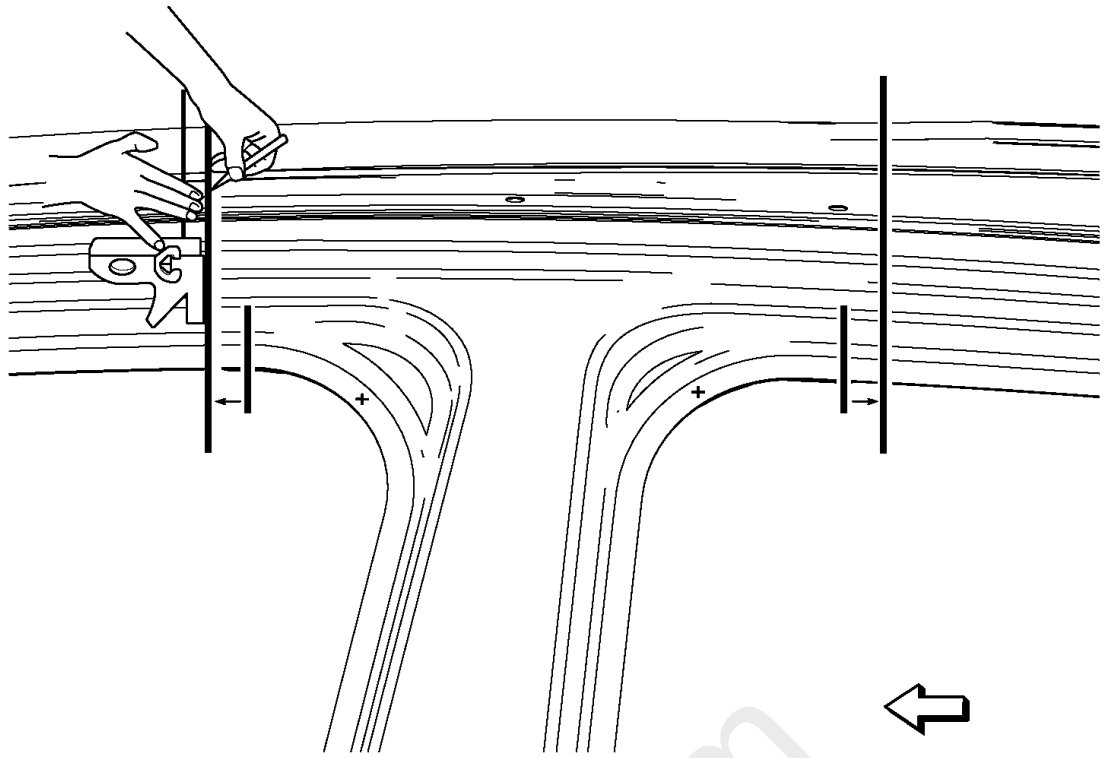
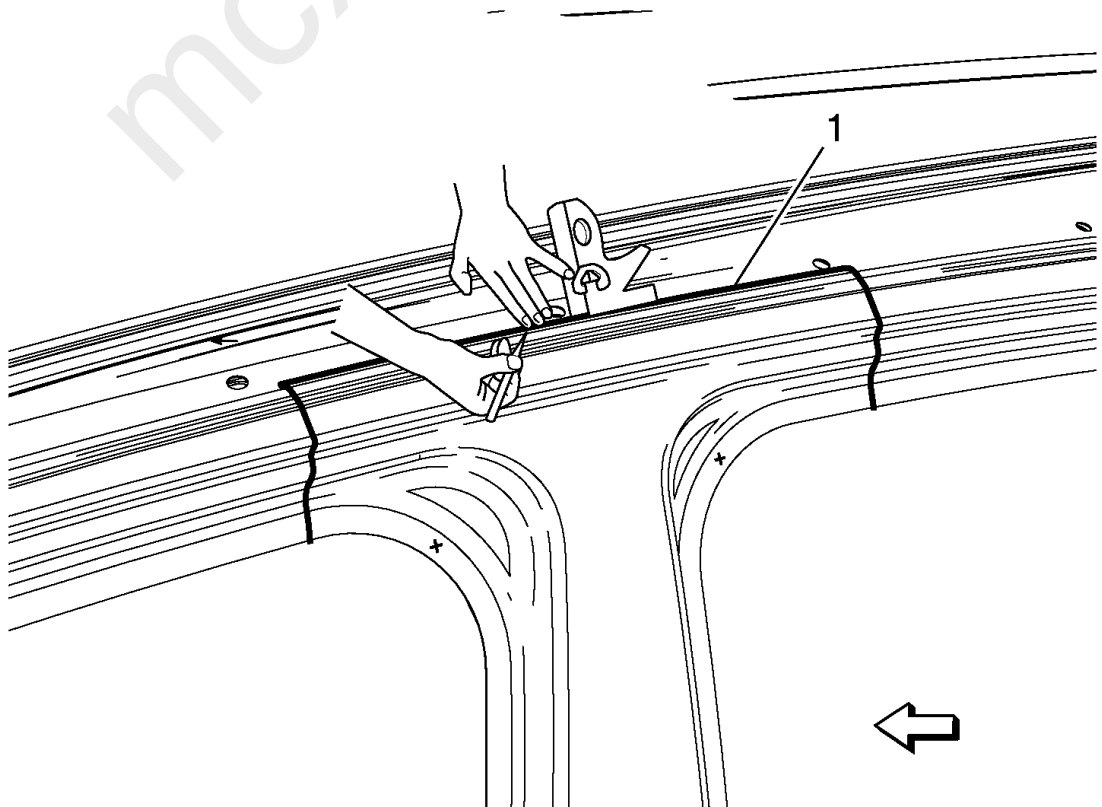


Fig. 123: Center Pillar Reinforcement Cut Line Marks
Courtesy of GENERAL MOTORS COMPANY

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



8. Measure up 1 inch from the door opening feature line (1) and mark a horizontal line.

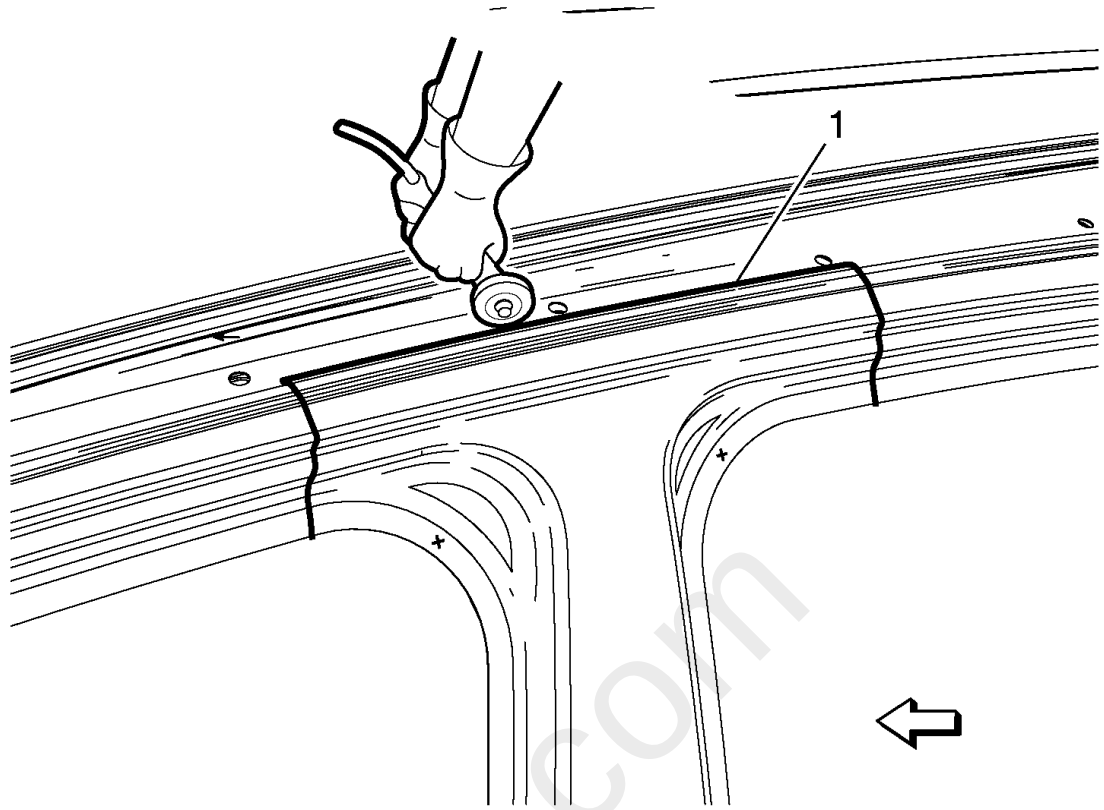


Fig. 125: Cutting Access Window In Center Pillar Outer
Courtesy of GENERAL MOTORS COMPANY

9. Cut access window (1) in the center pillar outer.
10. Perform additional sectioning procedures as needed depending on damage to vehicle. Refer to [Rocker Outer Panel Sectioning](#), or [Front Hinge Pillar Body Sectioning](#).

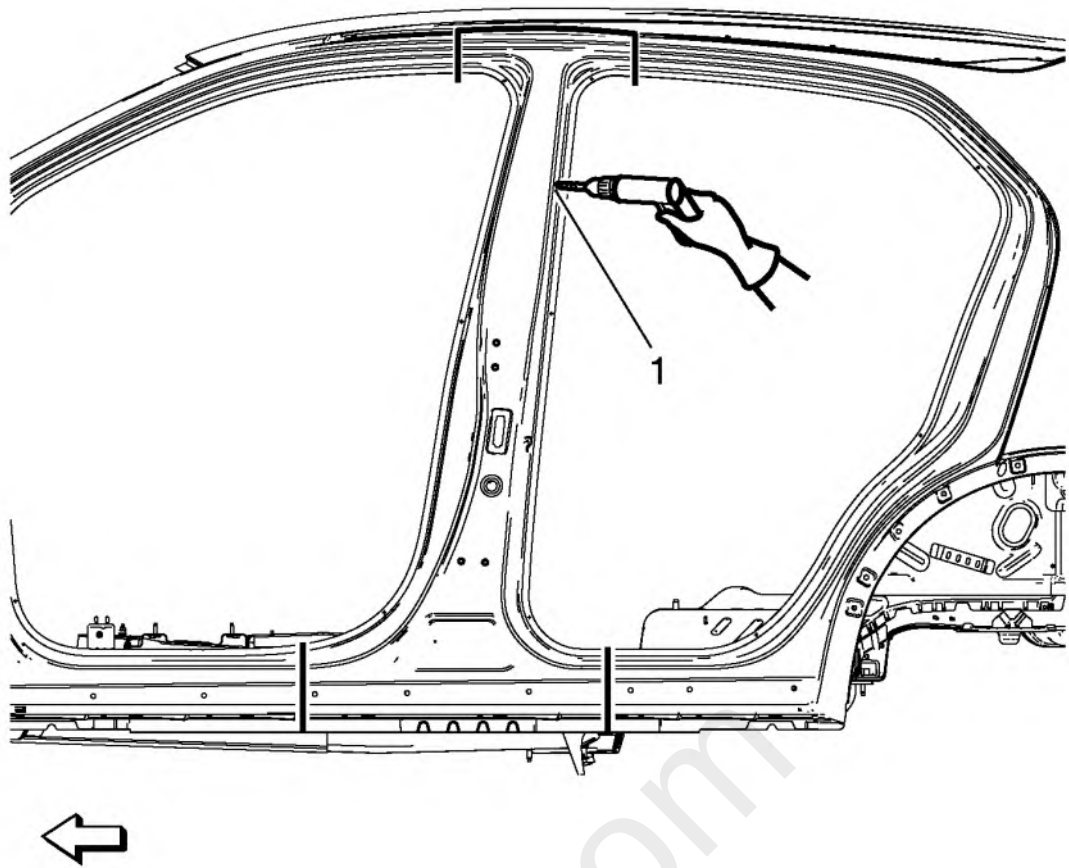
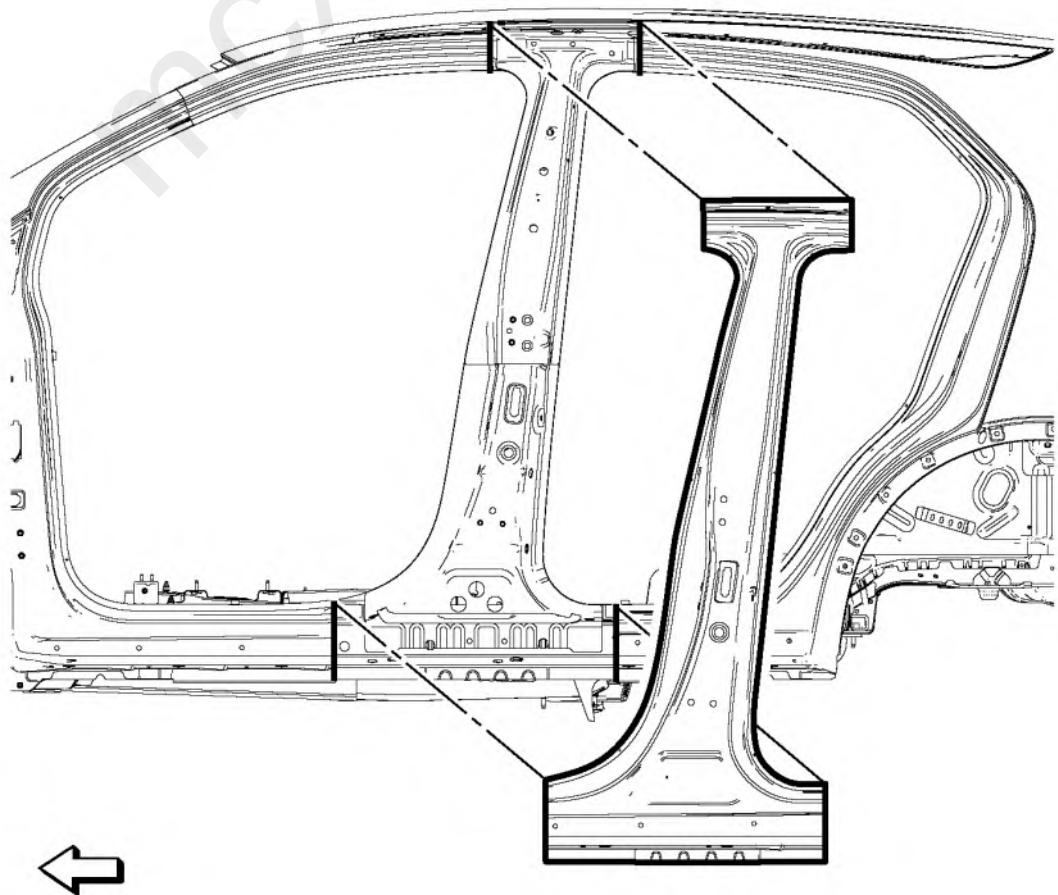


Fig. 126: Drilling Out Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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



12. Remove the damaged center pillar outer panel section.

Installation Procedure

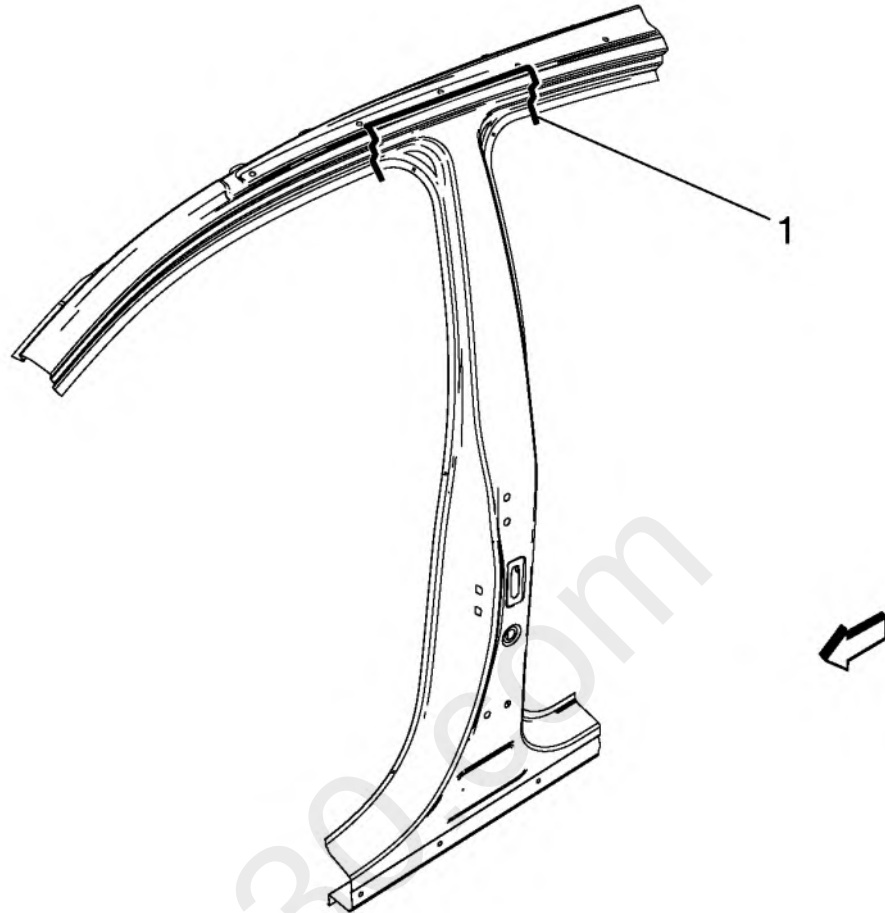


Fig. 128: Cutting Center Pillar Outer Panel Service Part In Corresponding Locations
Courtesy of GENERAL MOTORS COMPANY

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).

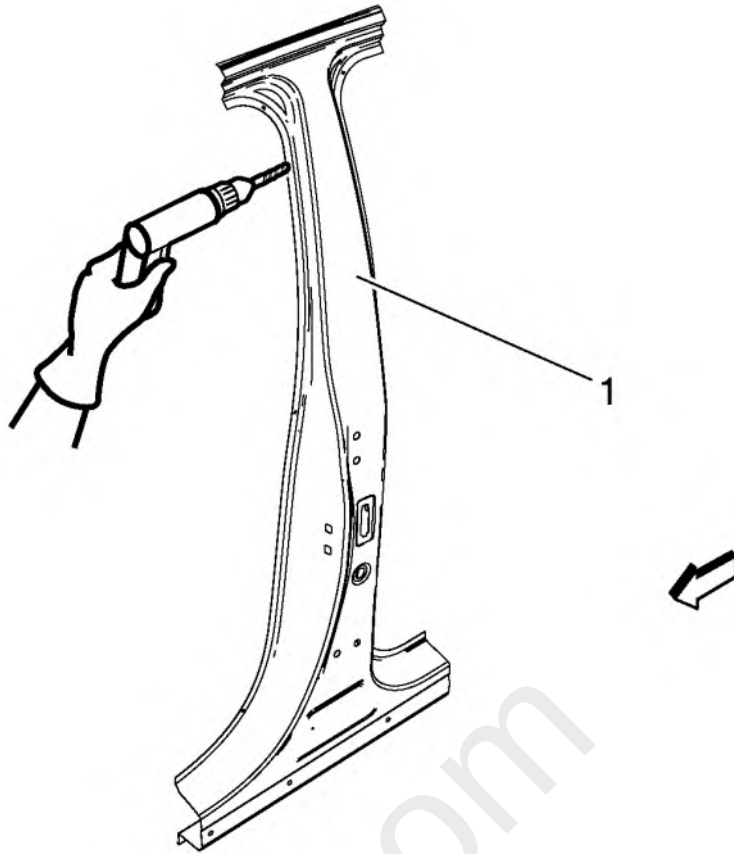


Fig. 129: Drilling Plug Weld Holes In Center Pillar Outer Panel Section Service Part
Courtesy of GENERAL MOTORS COMPANY

2. Drill 8 mm (5/16 in) holes for plug welding in the service part (1), as necessary, in the corresponding locations noted on the original panel and along sectioned joint.
3. Clean and prepare the attaching surfaces for welding.

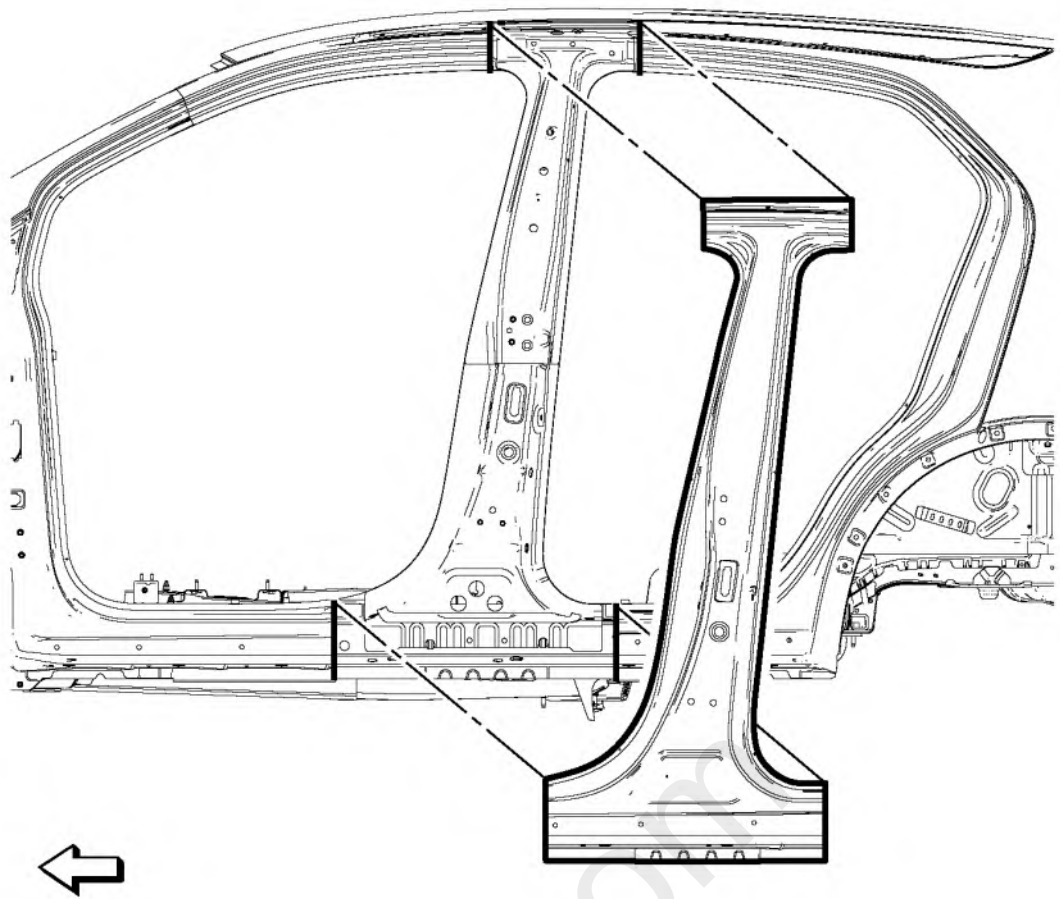
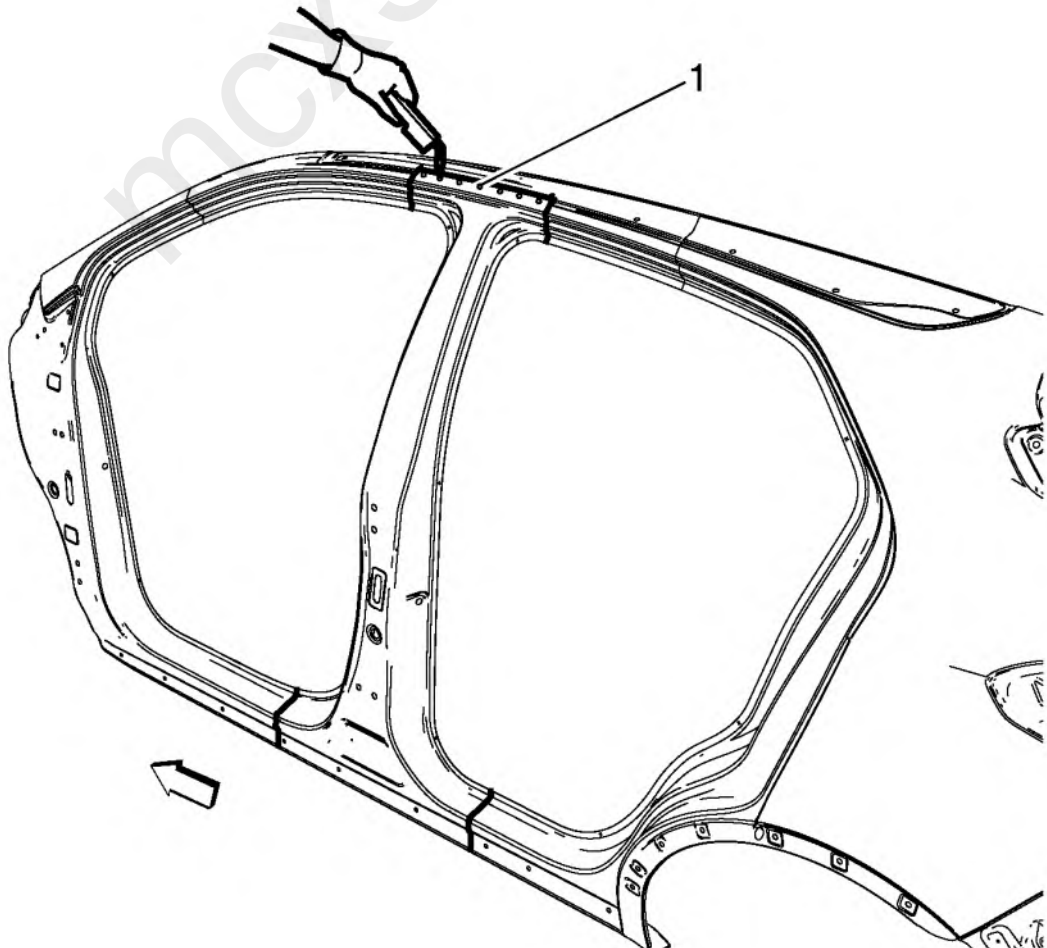


Fig. 130: Center Pillar Outer Panel Section
Courtesy of GENERAL MOTORS COMPANY

4. Position the center pillar outer panel to the vehicle. Clamp the pillar in place.



5. Plug weld accordingly (1).

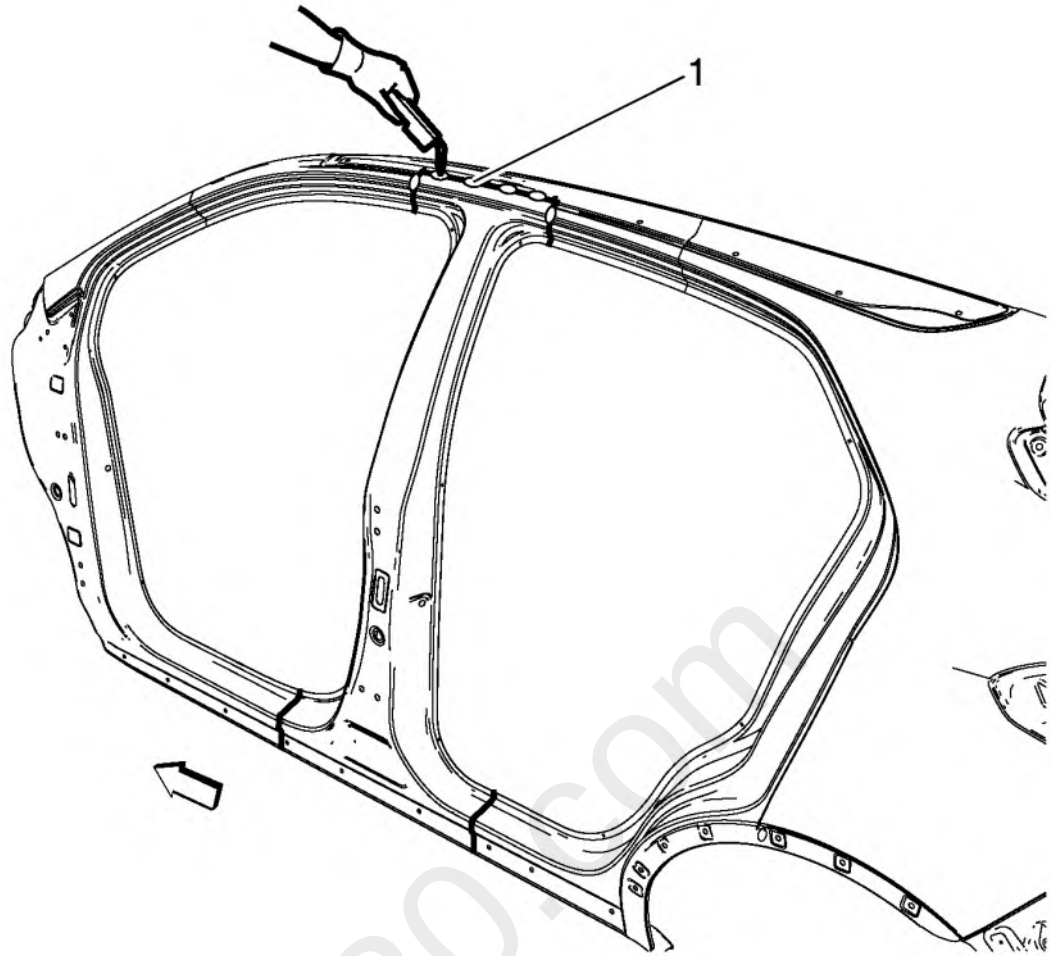


Fig. 132: Solid Welding Center Pillar Outer Panel Section
Courtesy of GENERAL MOTORS COMPANY

6. 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).
7. Clean and prepare all of the welded surfaces
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#) .
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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
12. Enable the SIR system. Refer to [SIR Disabling and Enabling](#) .

REAR RAIL 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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
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 \(Base\)](#).

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

6. Locate and mark all the necessary factory welds of the body rear rail panel.

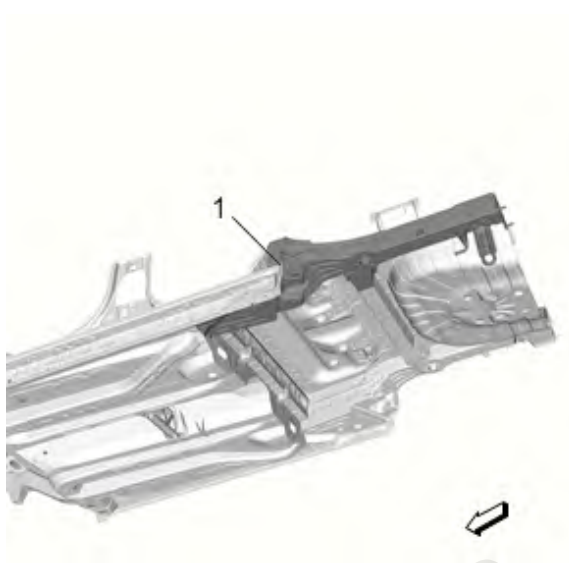


Fig. 133: Drilling Out Factory Welds
Courtesy of GENERAL MOTORS COMPANY

7. Drill all factory welds (1).

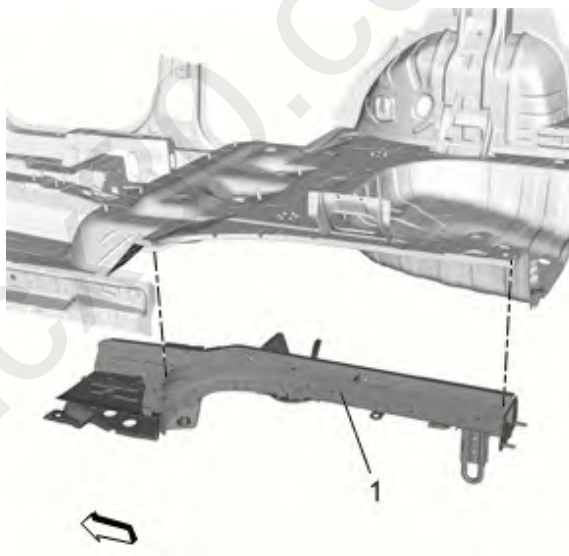


Fig. 134: Body Rear Rail Panel
Courtesy of GENERAL MOTORS COMPANY

8. Remove the body rear rail panel (1).

Installation Procedure



Fig. 135: Drilling Plug Weld Holes In Body Rear Rail Panel Service Part
 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).

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

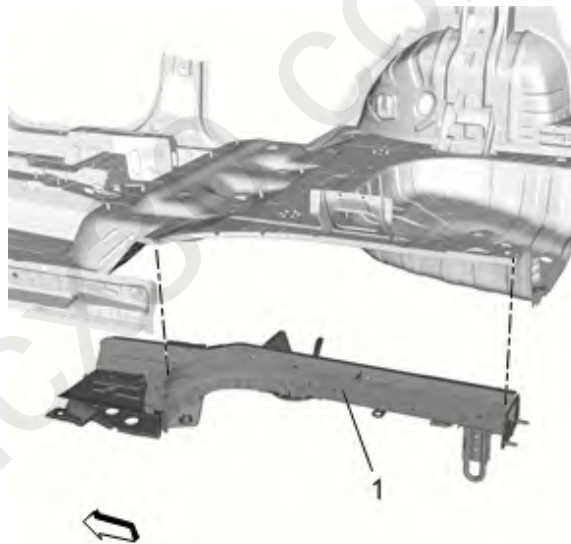


Fig. 136: Body Rear Rail Panel
 Courtesy of GENERAL MOTORS COMPANY

3. Position the body rear rail panel on the vehicle (1).
4. Verify the fit of the body rear rail panel.
5. Clamp the body rear rail panel into position.

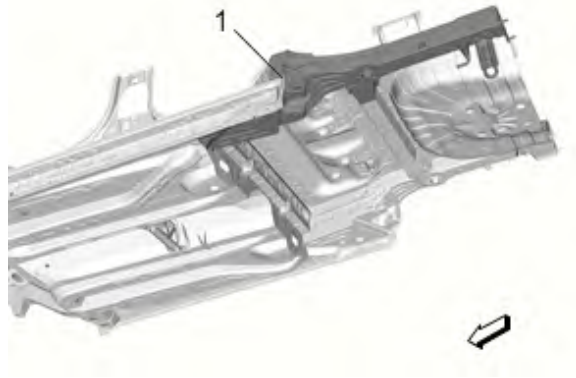


Fig. 137: Plug Weld Body Rear Rail Panel
Courtesy of GENERAL MOTORS COMPANY

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 \(Base\)](#) .
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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
11. Enable the SIR system. Refer to [SIR Disabling and Enabling](#) .

REAR RAIL 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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
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 \(Base\)](#) .

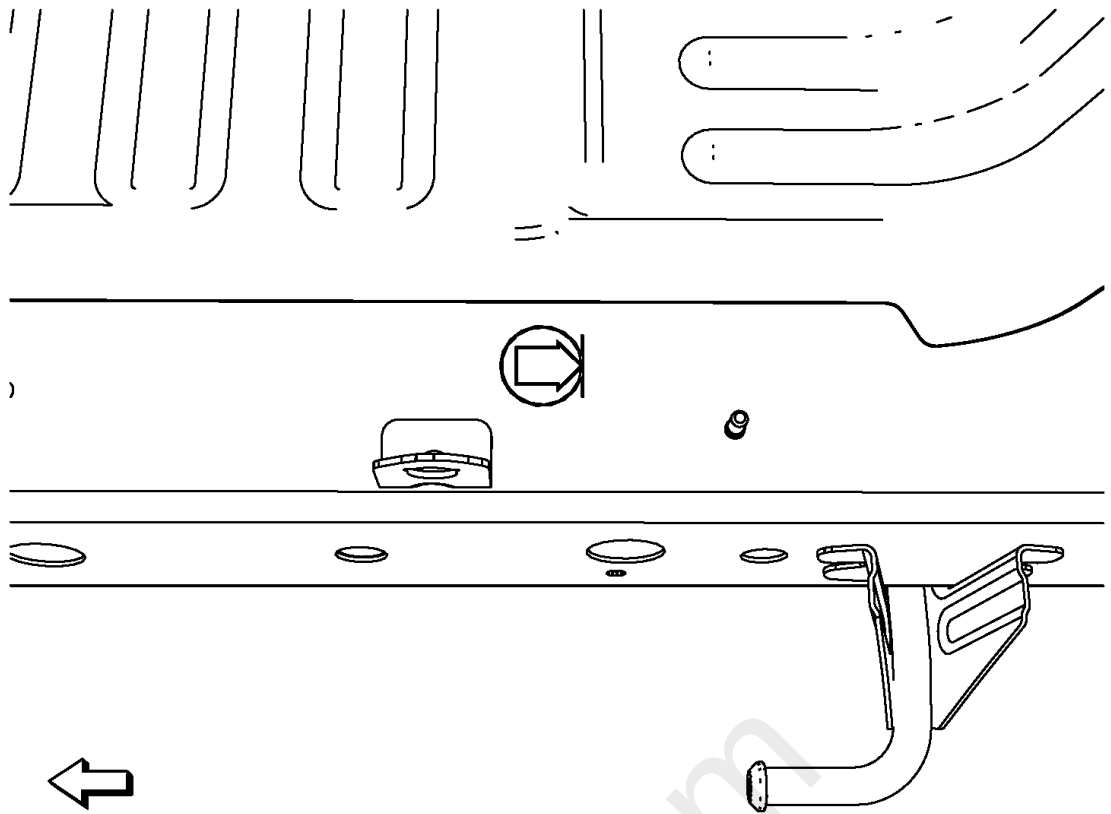


Fig. 138: Die Mark On Outer And Inner Lower Surface Of Rear Rail
Courtesy of GENERAL MOTORS COMPANY

6. Locate the die mark on the outer and inner lower surface of the rear rail.

NOTE: **Do not section the rail in any area other than the die mark location given.**

7. Align a sliding square or similar tool to the line at the tip of the arrow in the die mark. Scribe a line across the rail.

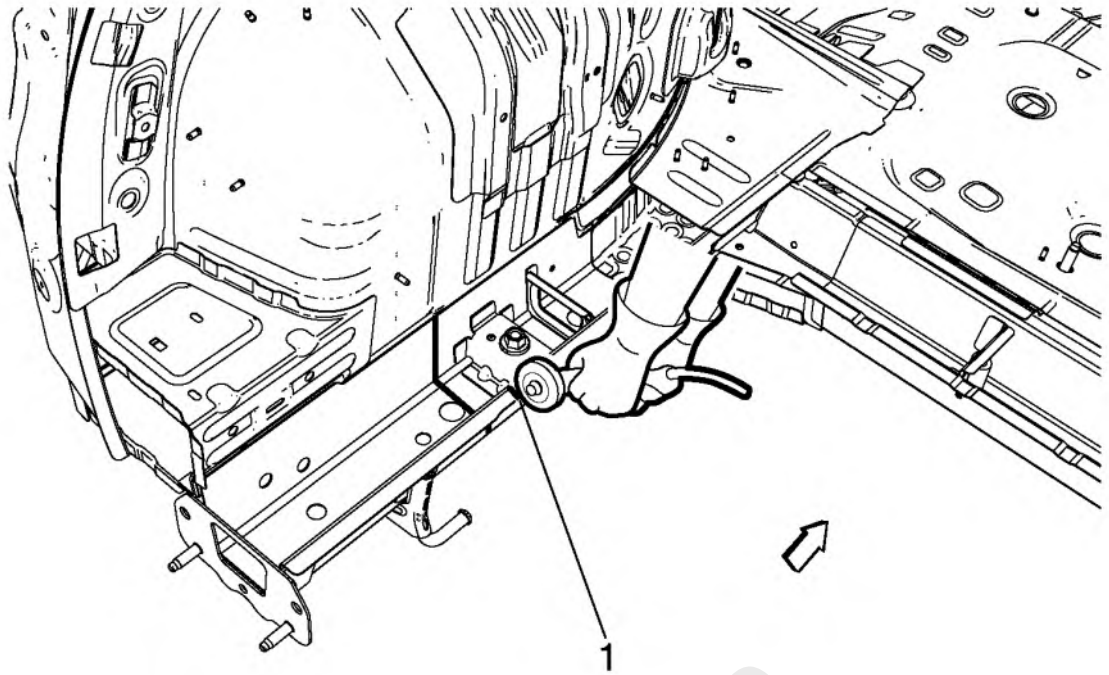


Fig. 139: Cutting Rear Side Rail

Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not damage any other panels or reinforcements.

8. Cut the panel where sectioning is to be performed (1).
9. Locate and mark all the necessary factory welds of the rear side rail.

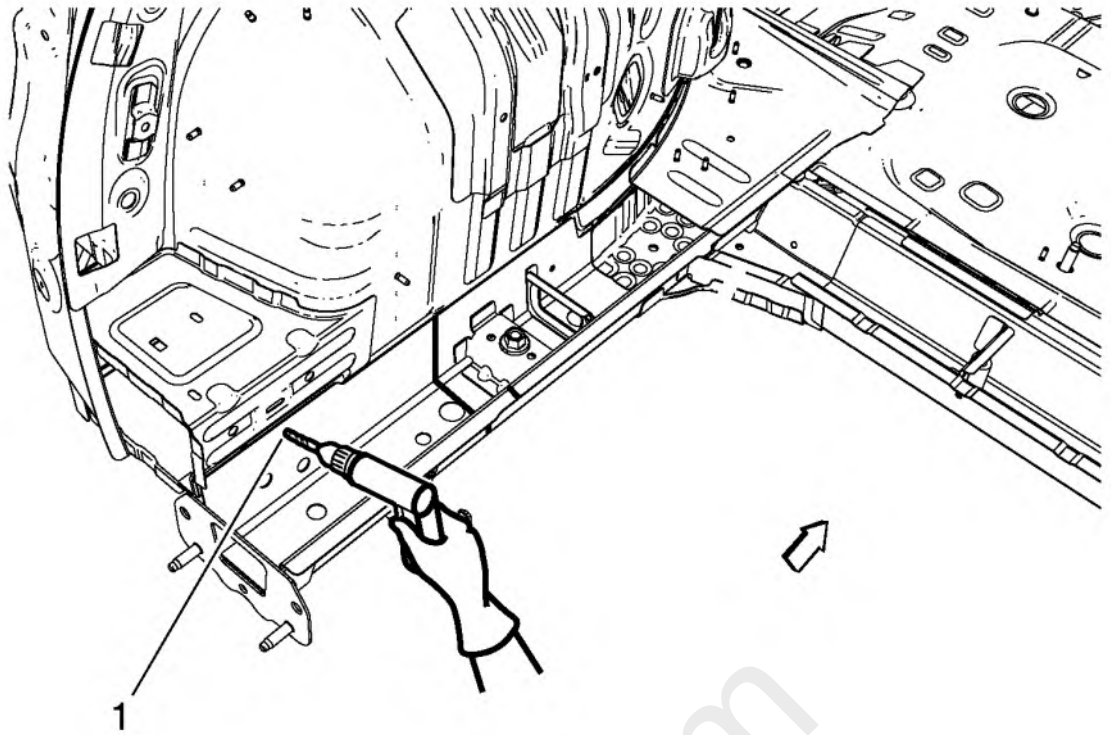
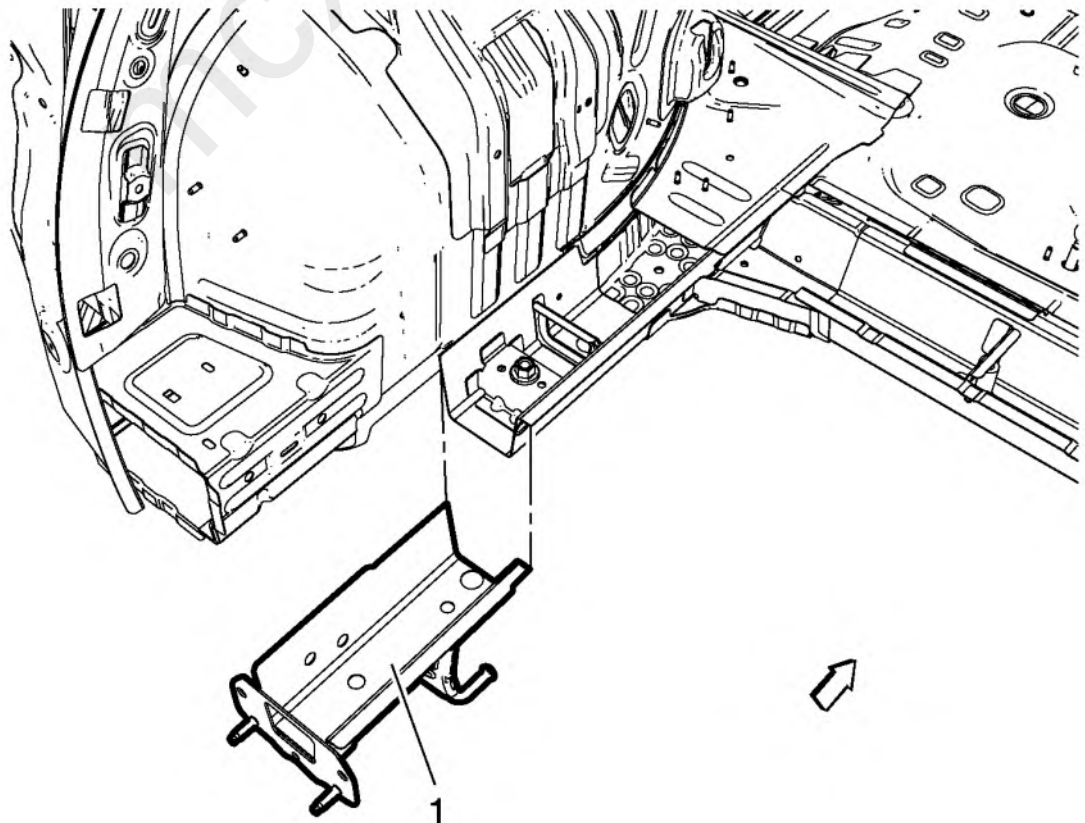


Fig. 140: Drilling Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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



11. Remove the damaged rear side rail (1).

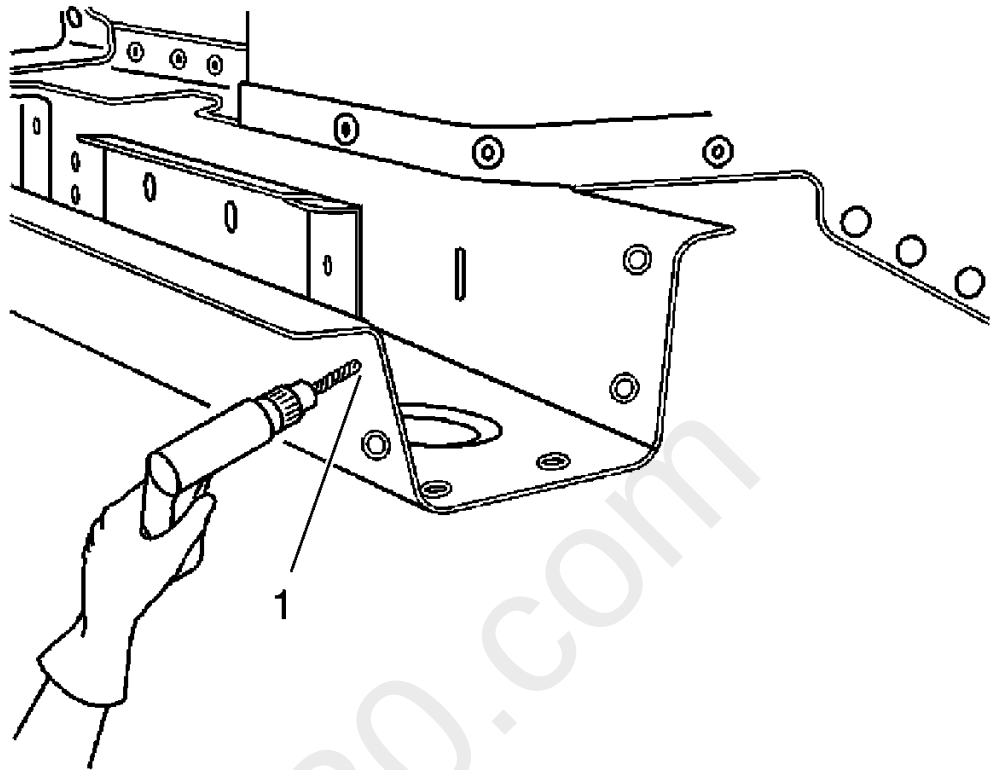


Fig. 142: Drilling Plug Weld Holes In Rear Side Rail

Courtesy of GENERAL MOTORS COMPANY

12. Drill two 8 mm (5/16 in) plug weld holes on each of the 3 sides of the rear rail (1). Position the center of the holes 10 mm (3/8 in) from the cut edge.

Installation Procedure

1. Locate the original cutting line on the service part rear rail.
2. Align a sliding square or similar tool to the original cutting line and scribe a line across the rail.
3. Use the same tool to transfer this scribed line onto the sides and the weld flanges of the rail.
4. Place a mark forward, 25 mm (1 in) from the scribed line on all 3 sides of the service rail.
5. Use the tool to scribe a line on all 3 sides and weld flanges of the rail.

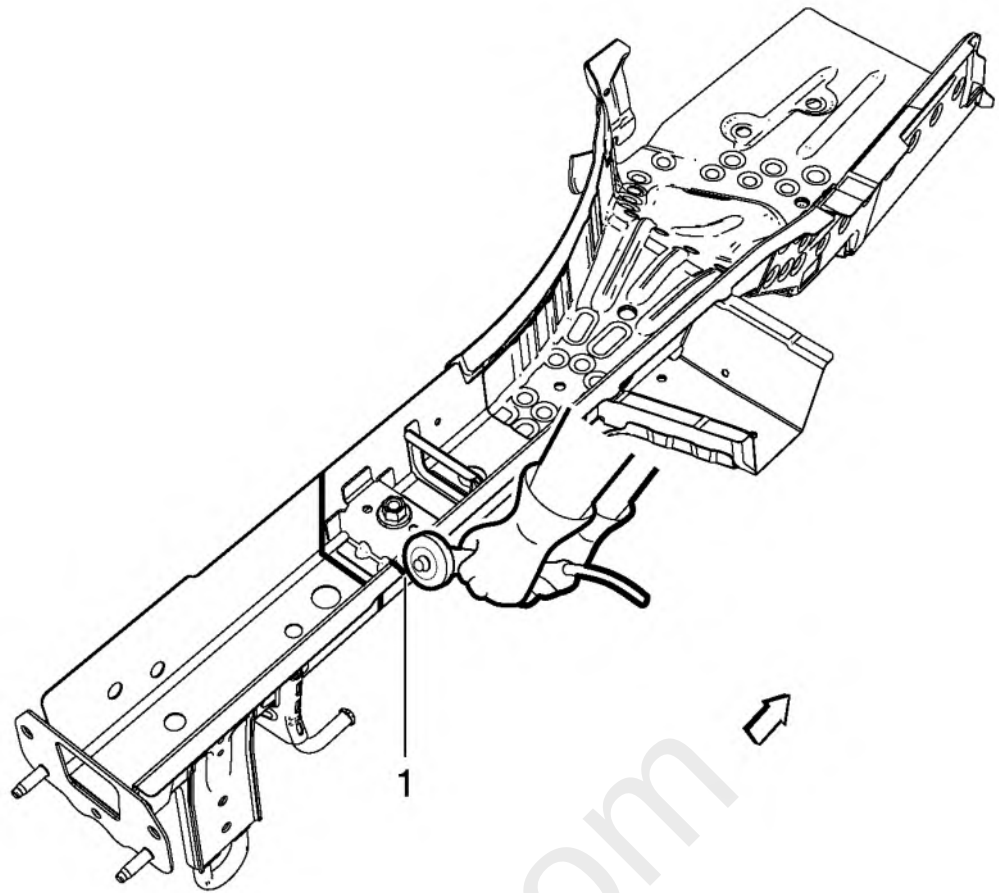


Fig. 143: Cutting Rear Portion Of Rail
Courtesy of GENERAL MOTORS COMPANY

6. Cut at the scribe line (1).
7. Remove the rear portion of the rail.

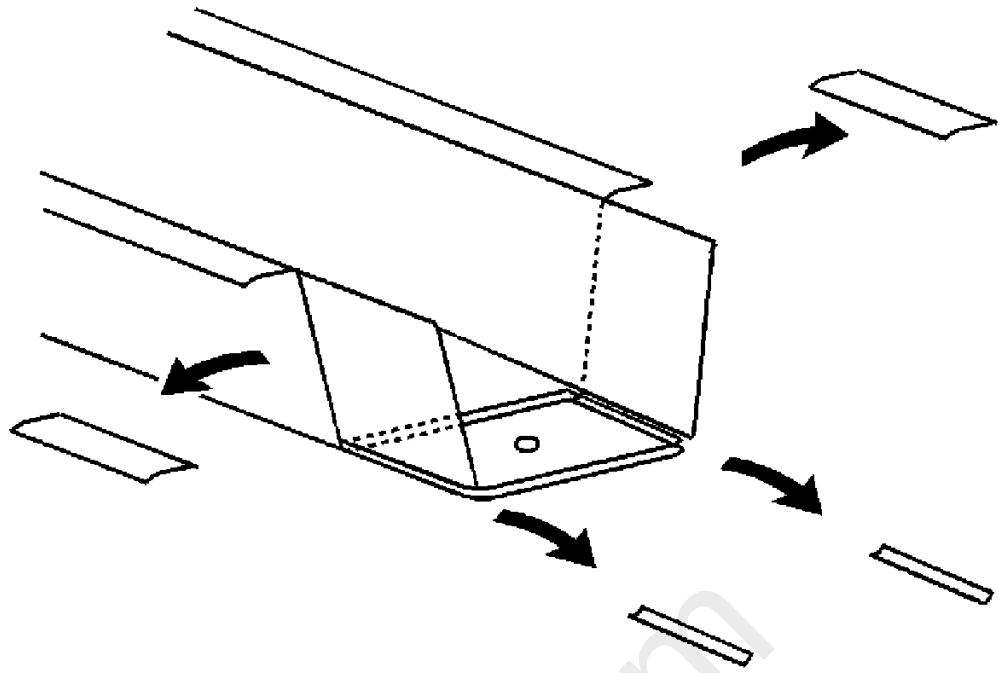


Fig. 144: Cutting Rear Side Rail Service Part Accordingly.
Courtesy of GENERAL MOTORS COMPANY

8. Cut the upper outer flanges of the rear portion of the rear rail service part. Cut the flanges back to the first scribe line and remove the tabs.
9. Cut the lower radius corners of the service part back to the first scribe line and remove the small corners.
10. Bend the bottom side of the service part at the sectioning location inward slightly by aligning a vice grip flanging tool or similar tool at the first scribed line.
11. Clean and prepare the attaching surfaces for welding.

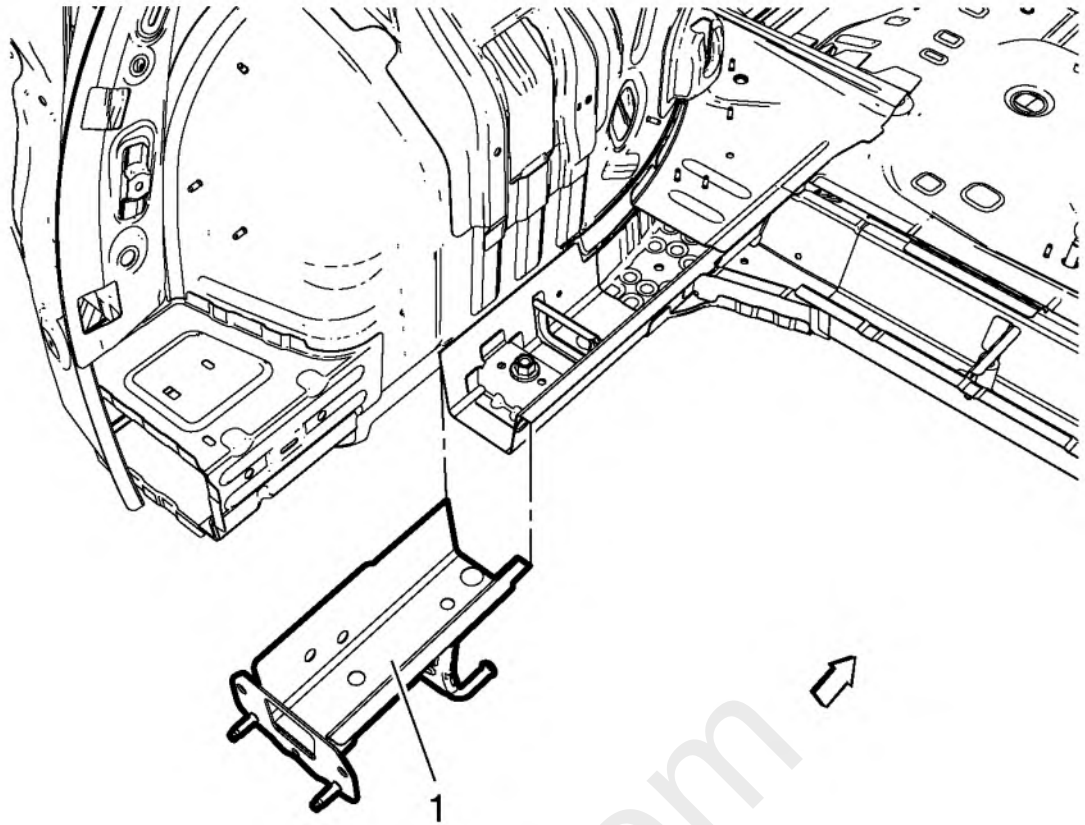


Fig. 145: Rear Side Rail

Courtesy of GENERAL MOTORS COMPANY

12. Position the rear side rail (1) on the vehicle.

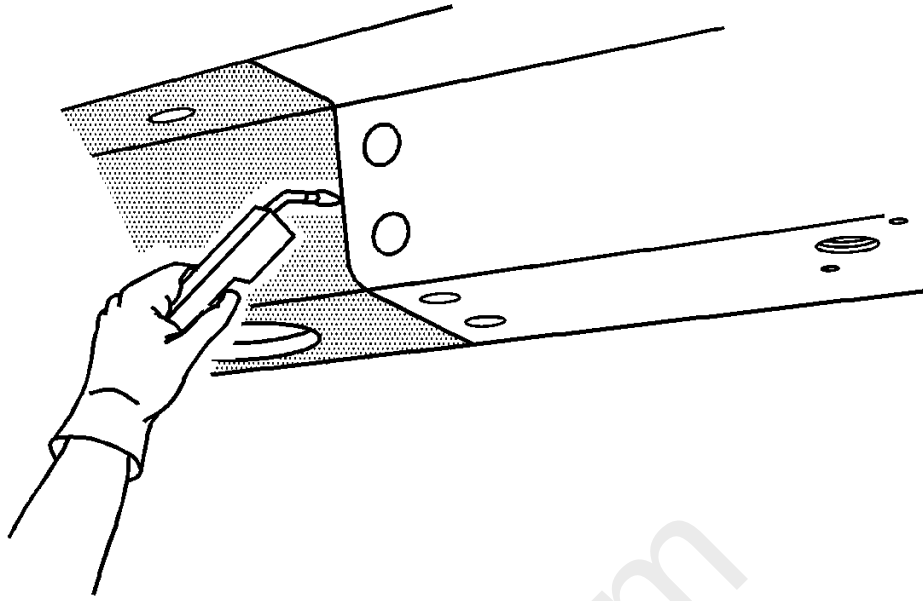


Fig. 146: Welding Rear Side Rail

Courtesy of GENERAL MOTORS COMPANY

13. Tack weld the part into position.
14. Inspect the service rear rail for proper dimensions, using 3-dimensional measuring equipment.
15. Plug weld at each 8 mm (5/16 in) plug weld hole location.
16. Stitch weld along the entire sectioning joint. Make welds along the seam with 25 mm (1 in) gaps between. Weld the gaps.
17. Clean and prepare the welded surfaces.
18. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#) .
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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
22. Enable the SIR system. Refer to [SIR Disabling and Enabling](#) .

REAR END PANEL REPLACEMENT

Removal Procedure

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

WARNING: Refer to [Glass and Sheet Metal Handling Warning](#) .

NOTE: The rear end lower panel reinforcement extension is made of Ultra High Strength Dual Phase Steel and should be replaced only at factory joints.

Repairing or sectioning of this part is not recommended. Refer to [Ultra High Strength Dual Phase Steel](#).

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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
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 \(Base\)](#) .

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

6. Locate and mark all the necessary factory welds of the body rear end panel.

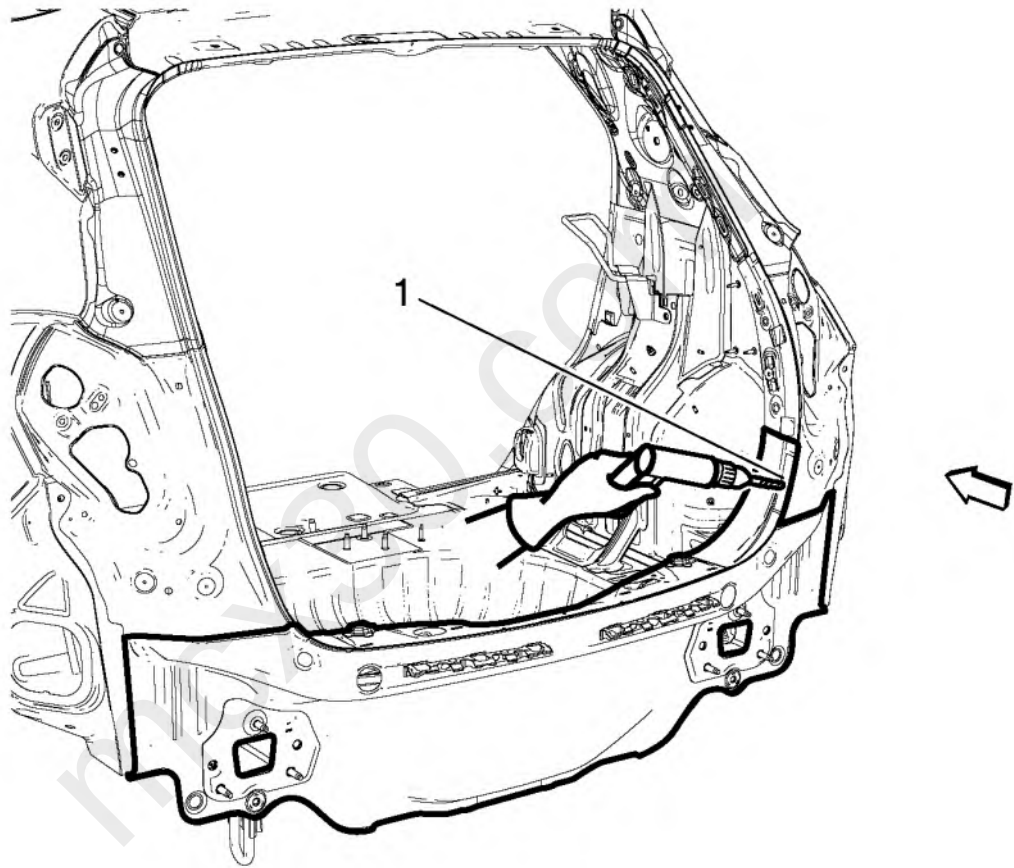


Fig. 147: Drilling Factory Welds
Courtesy of GENERAL MOTORS COMPANY

7. Drill all factory welds (1).

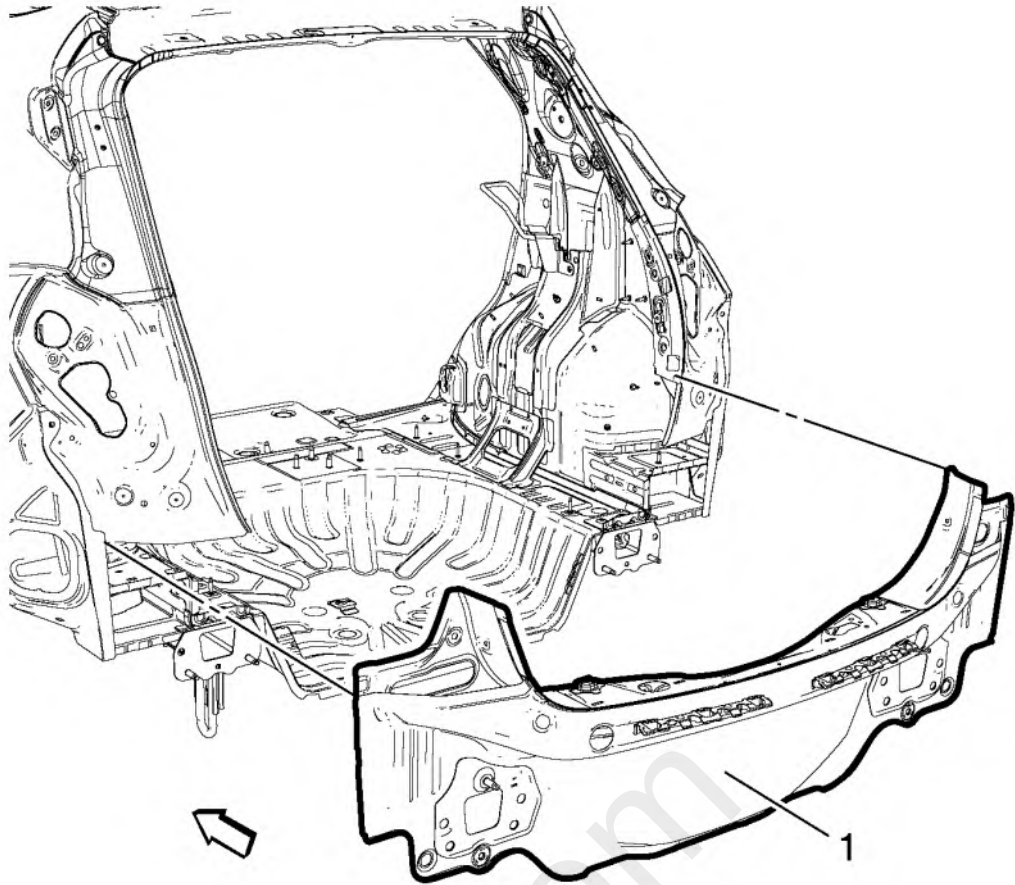


Fig. 148: Body Rear End Panel

Courtesy of GENERAL MOTORS COMPANY

8. Remove the body rear end panel (1).

Installation Procedure

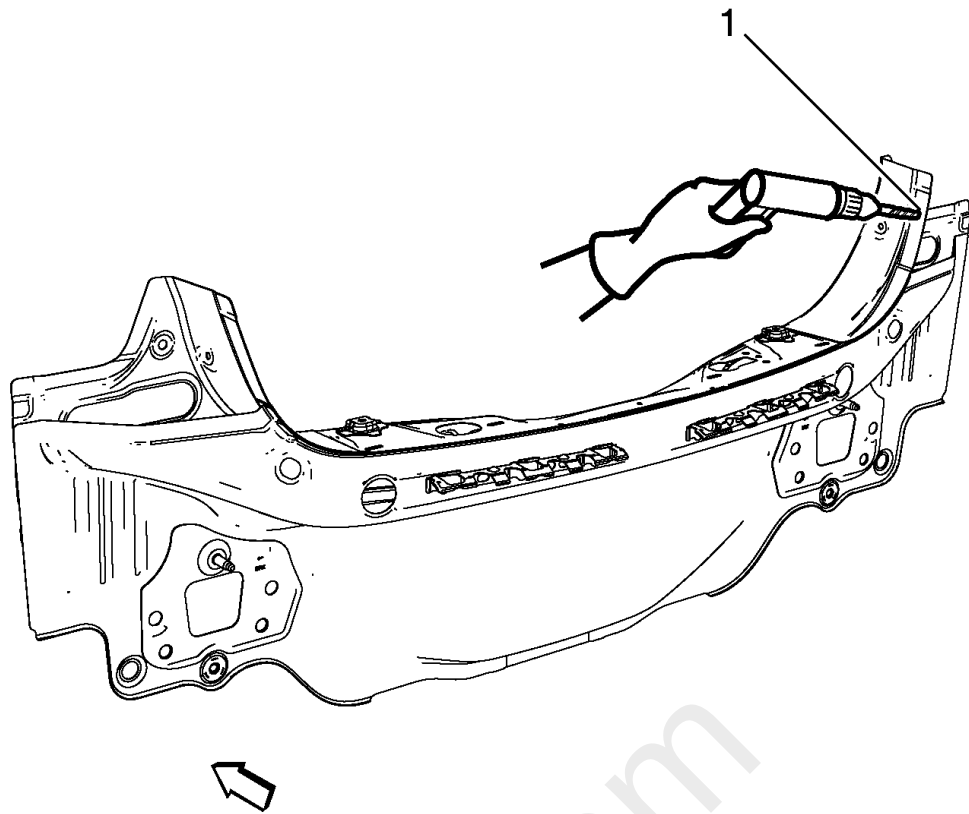


Fig. 149: Drilling Plug Weld Holes

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).

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

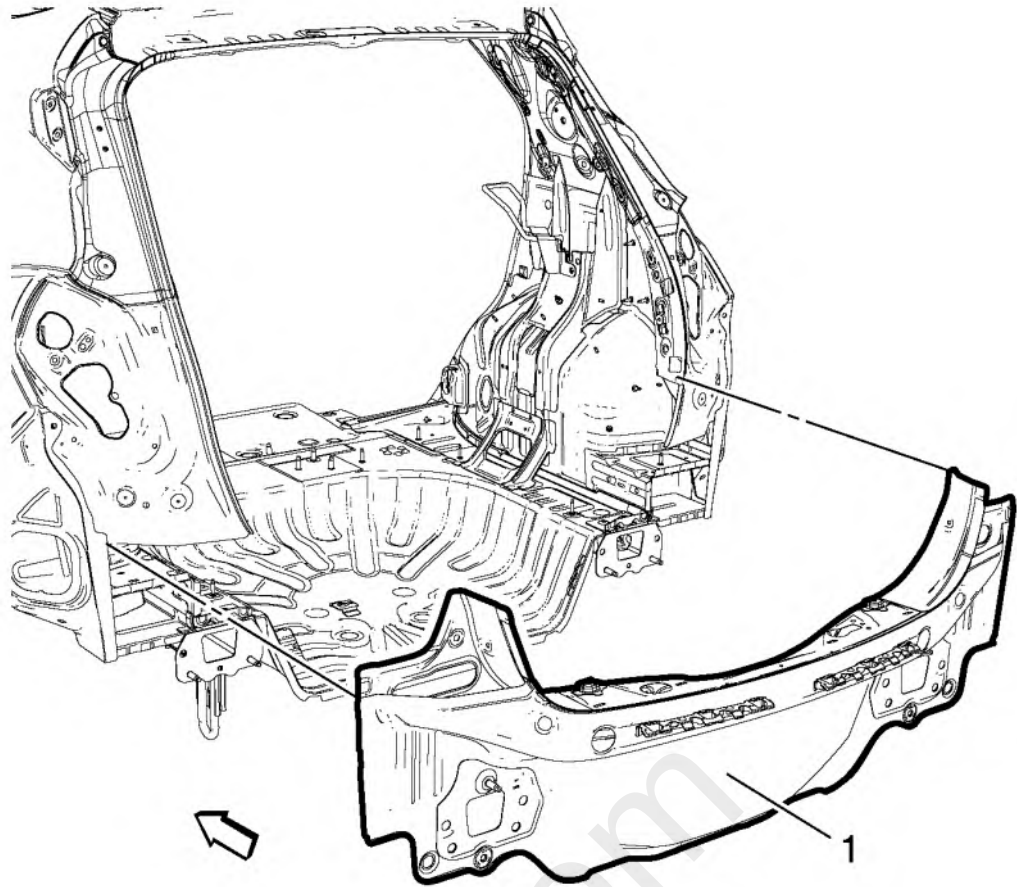


Fig. 150: Body Rear End Panel

Courtesy of GENERAL MOTORS COMPANY

3. Position the body rear end panel on the vehicle (1).
4. Verify the fit of the body rear end panel.
5. Clamp the body rear end panel into position.

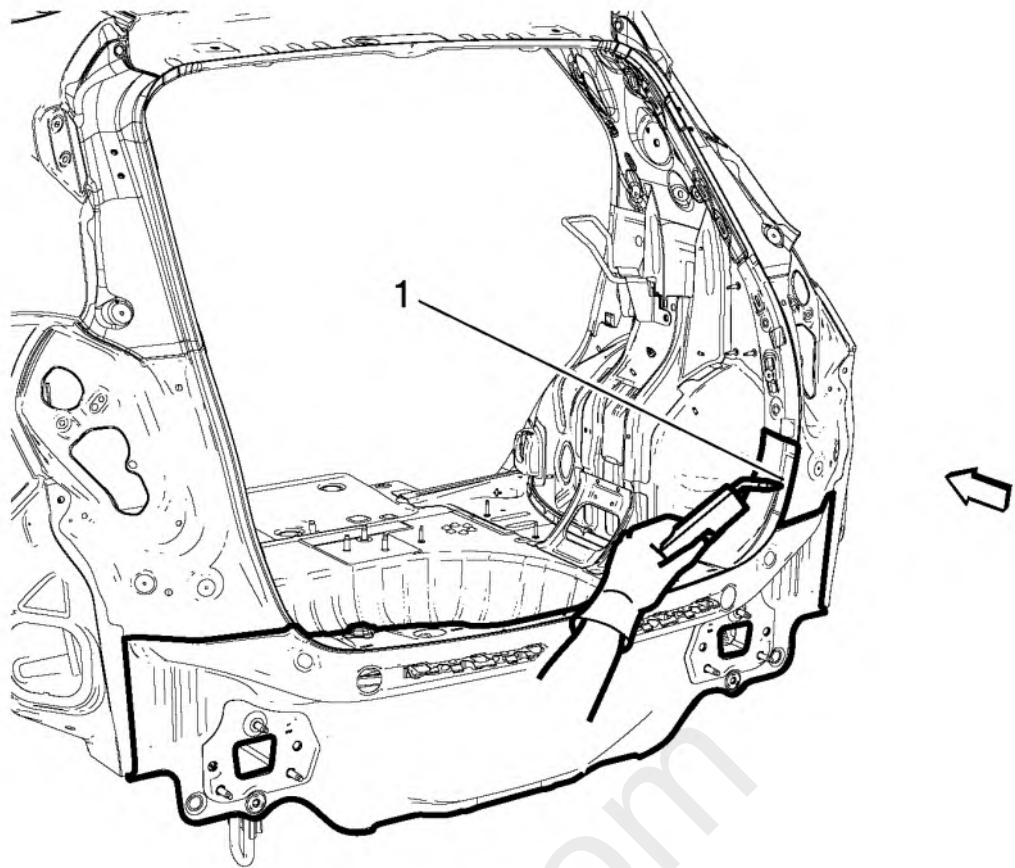


Fig. 151: Plug Welding Body Rear End Panel
Courtesy of GENERAL MOTORS COMPANY

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 \(Base\)](#) .
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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
11. Enable the SIR system. Refer to [SIR Disabling and Enabling](#) .

BODY TAIL LAMP FILLER 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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#) .
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 \(Base\)](#) .
6. Locate and mark all the necessary factory welds of the body tail lamp filler panel.

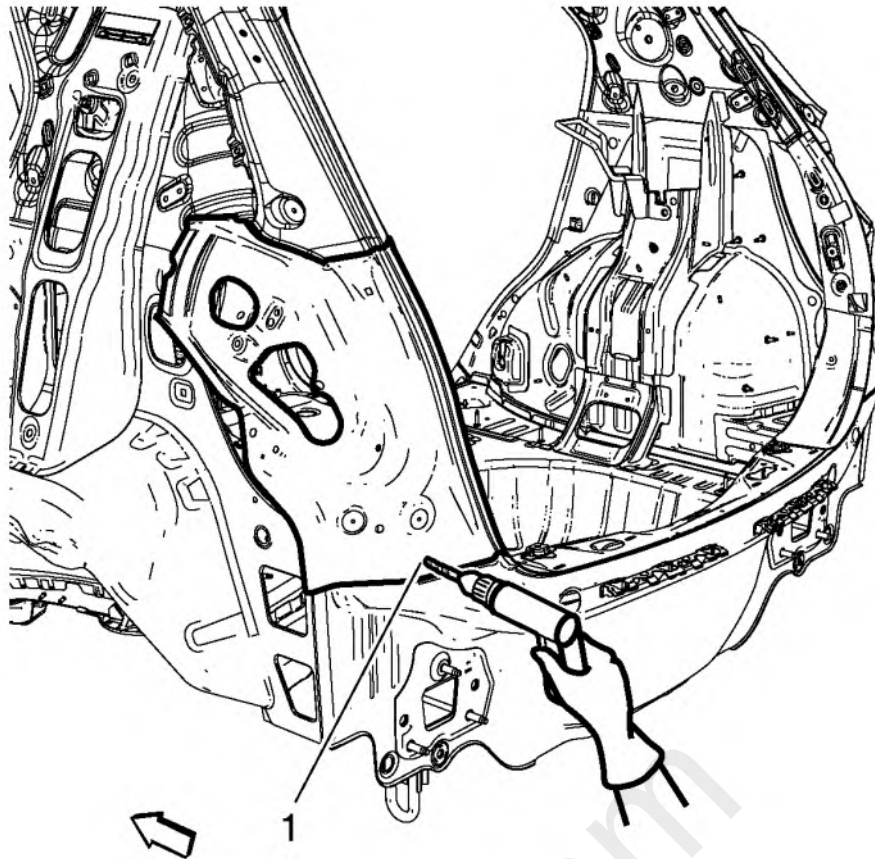
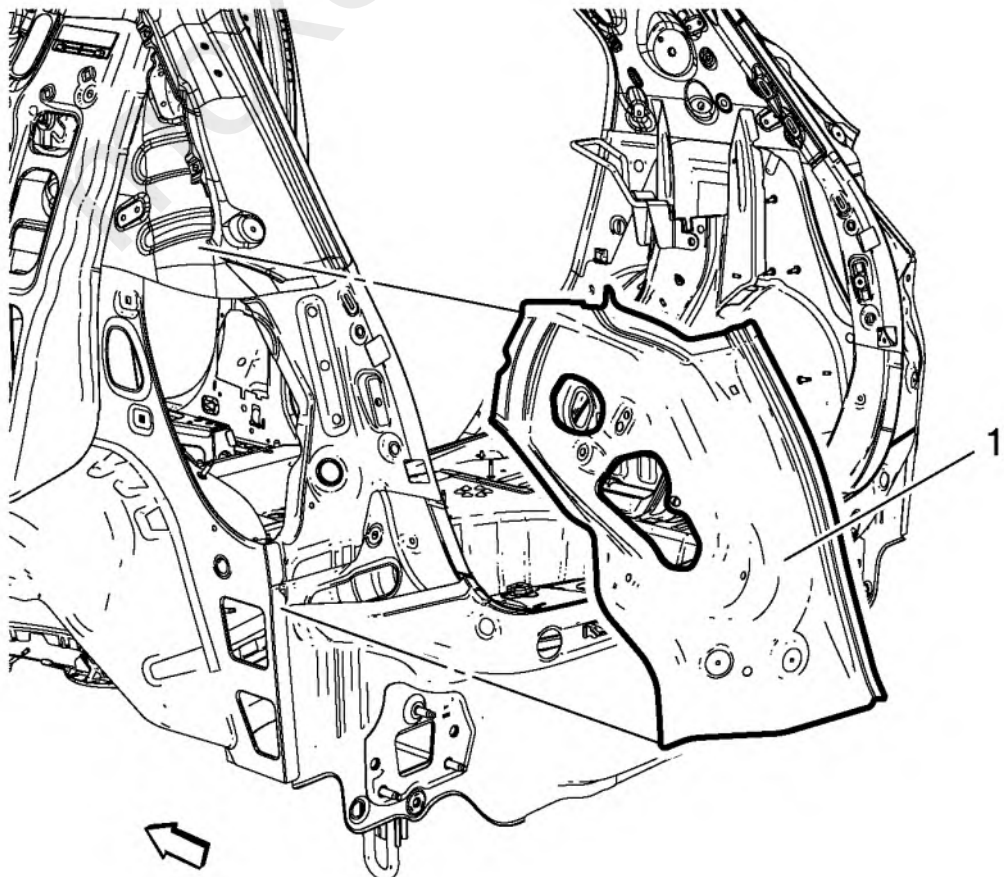


Fig. 152: Drilling Factory Welds
 Courtesy of GENERAL MOTORS COMPANY

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



8. Remove the body tail lamp filler panel (1).

Installation Procedure

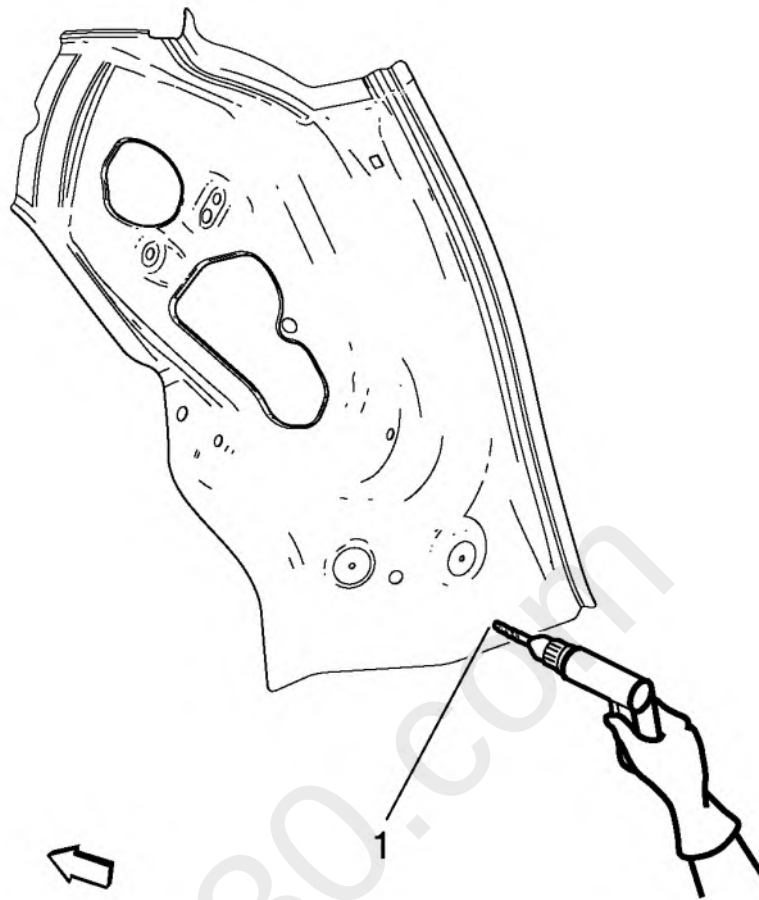


Fig. 154: Drilling Plug Weld Holes In Body Tail Lamp Filler Panel Service Part
Courtesy of GENERAL MOTORS COMPANY

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

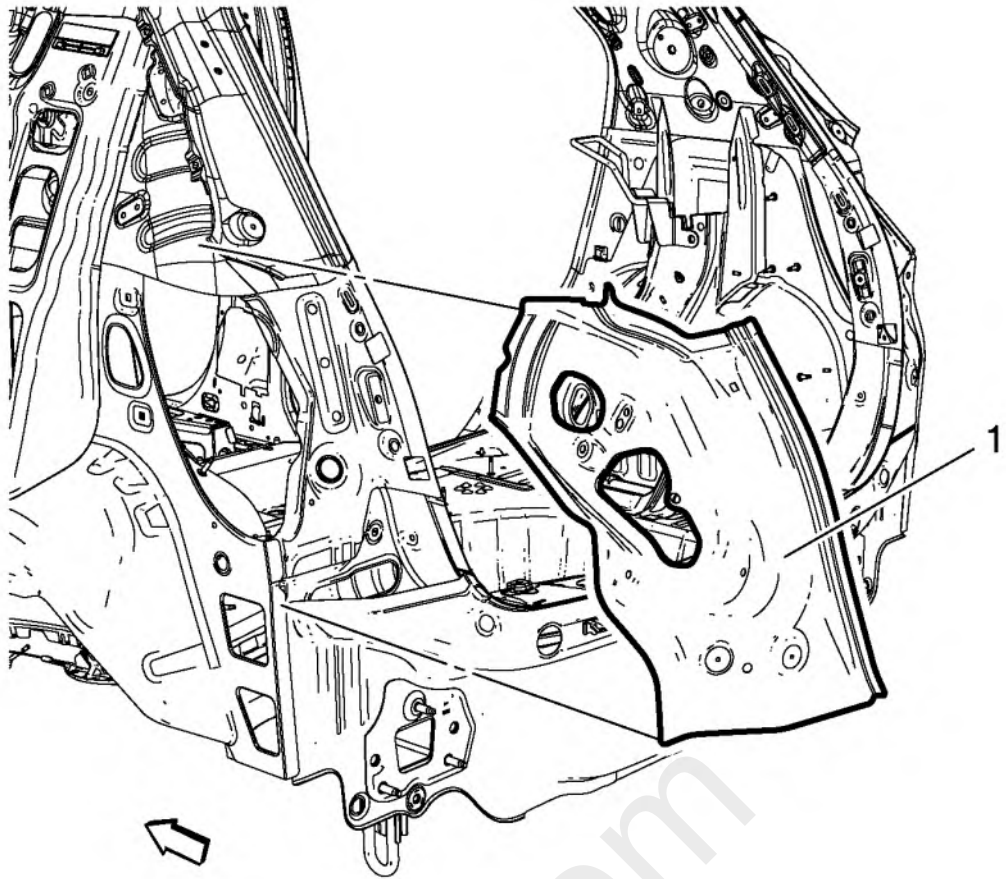


Fig. 155: Body Tail Lamp Filler Panel

Courtesy of GENERAL MOTORS COMPANY

3. Position the body tail lamp filler panel on the vehicle (1).
4. Verify the fit of the body tail lamp filler panel.
5. Clamp the body tail lamp filler panel into position.

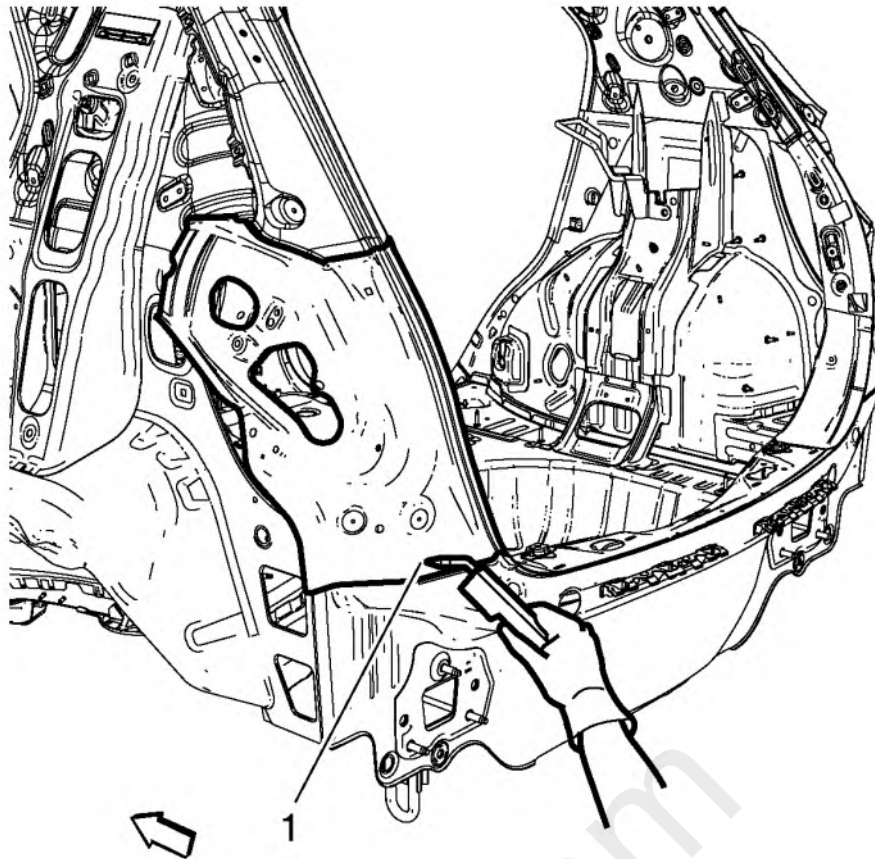


Fig. 156: Plug Welding Body Tail Lamp Filler Panel

Courtesy of GENERAL MOTORS COMPANY

6. Plug the weld accordingly (1).
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to [Anti-Corrosion Treatment and Repair \(Base\)](#).
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 \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
11. 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 (dual phase steel with a tensile strength up to and including 800 MPa), also known as DP.

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

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

Recommended Repairs

- Cold repairs can be performed on this type of steel, unless the damage includes kinks. If the damage includes kinks, the part should be replaced.
- Sectioning or partial replacement of this type of steel is recommended only at approved locations, in a specific sectioning procedure.
- When recommended in a specific sectioning procedure, this type of steel can be used as a weld plate for reinforcing the sectioning location.

- Squeeze resistance spot welding can be used to replace factory spot welds, where applicable.
- MIG plug welding and MIG stitch welding can be used on this type of steel.
- MIG brazing can be used on this type of steel.

HIGH STRENGTH LOW ALLOY STEEL

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

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

Recommended Repairs

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

MILD STEEL

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

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

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

Recommended Repairs

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

ULTRA HIGH STRENGTH DUAL PHASE STEEL

This information provides repair recommendations and general guidelines for steel classified as Ultra High Strength Dual Phase Steel (dual phase steel with a tensile strength greater than 780 MPa), also known as DPX.

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.
- This type of steel should not be used as a weld plate for reinforcing the sectioning location.

Recommended Repairs

- Squeeze resistance spot welding can be used to replace factory spot welds, where applicable.
- MIG plug welding can be used to replace factory spot welds.
- MIG brazing can be used to replace factory spot welds.

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 greater than 700 MPa.

This includes the common steel names of:

- Ultra High Strength Steel (UHSS)
- Martensitic Steel (MS)
- Press Hardened Steel (PHS)
- Boron Steel

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.
- This type of steel should not be used as a weld plate for reinforcing the sectioning location.

Recommended Repairs

- Squeeze resistance spot welding can be used to replace factory spot welds, where applicable.
- MIG plug welding can be used to replace factory spot welds.
- MIG brazing can be used to replace factory spot welds.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Illustration	Tool Number/Description

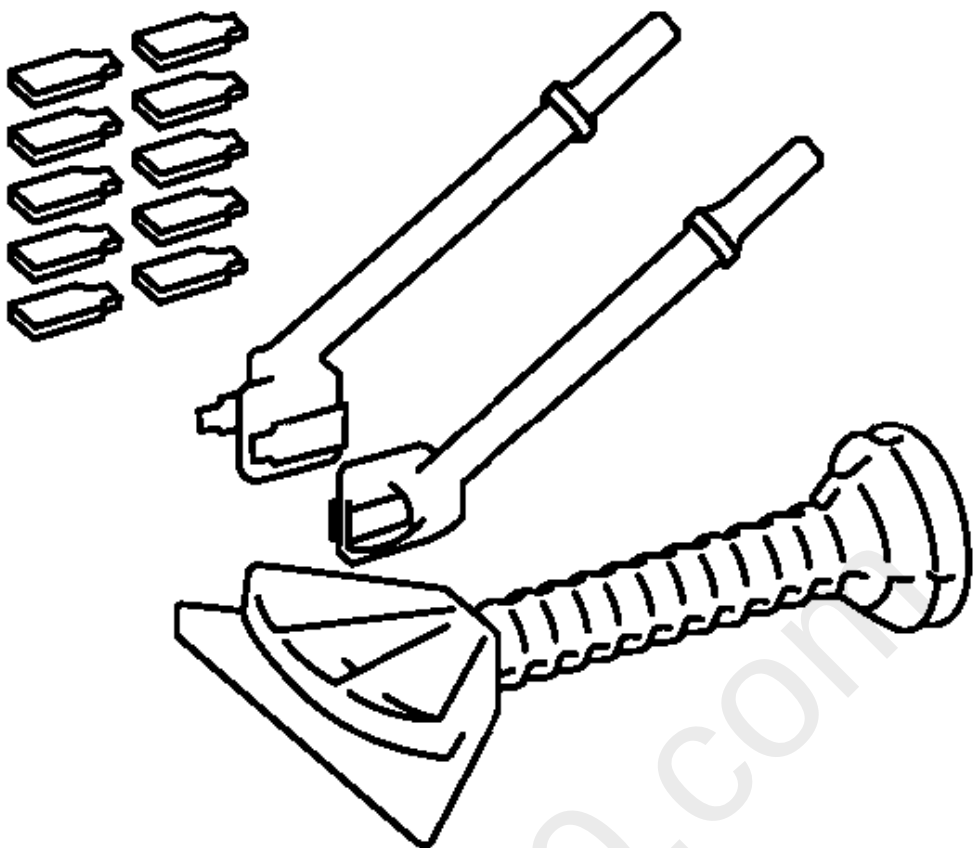
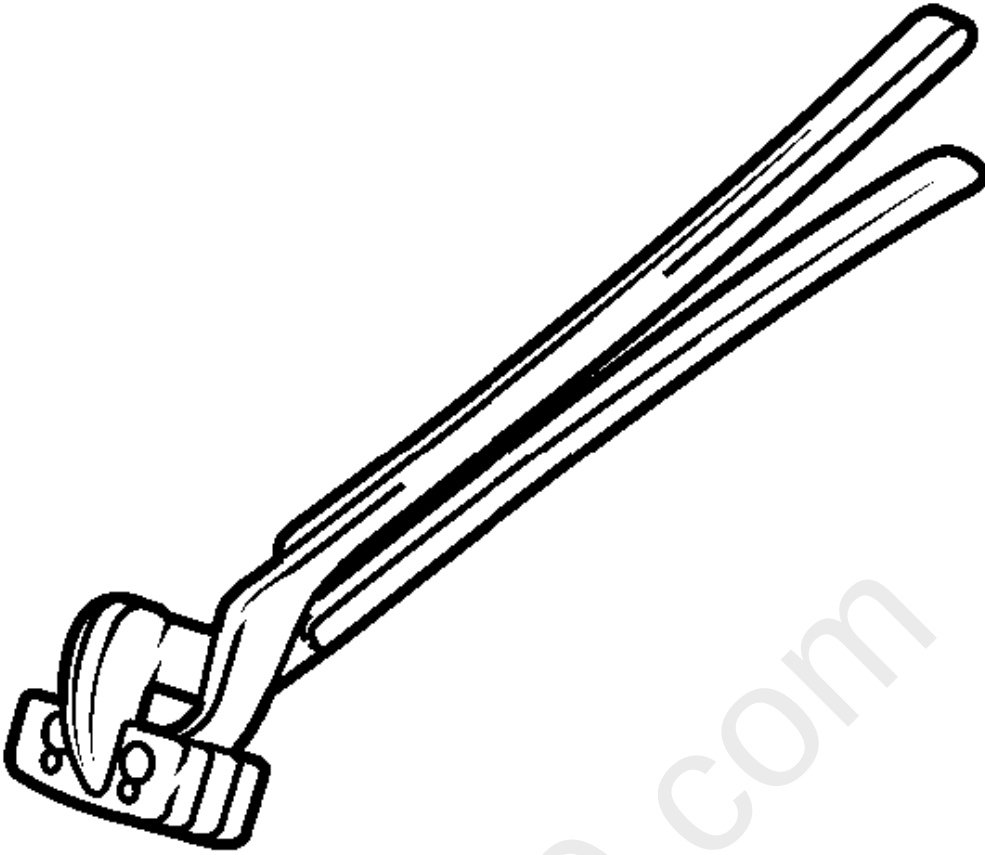
Illustration	Tool Number/Description
 A line drawing of a flanging tool kit. It includes two long-handled tools with adjustable heads, a large conical flange with a threaded section, and a set of 12 small rectangular inserts arranged in two columns of six. A large, faint watermark 'mcx30.com' is visible across the bottom half of the page.	BO-6392 MKM-6392 Flanging Tool Kit

Illustration	Tool Number/Description
	BO-6396 KM-6396 Bonding Pliers