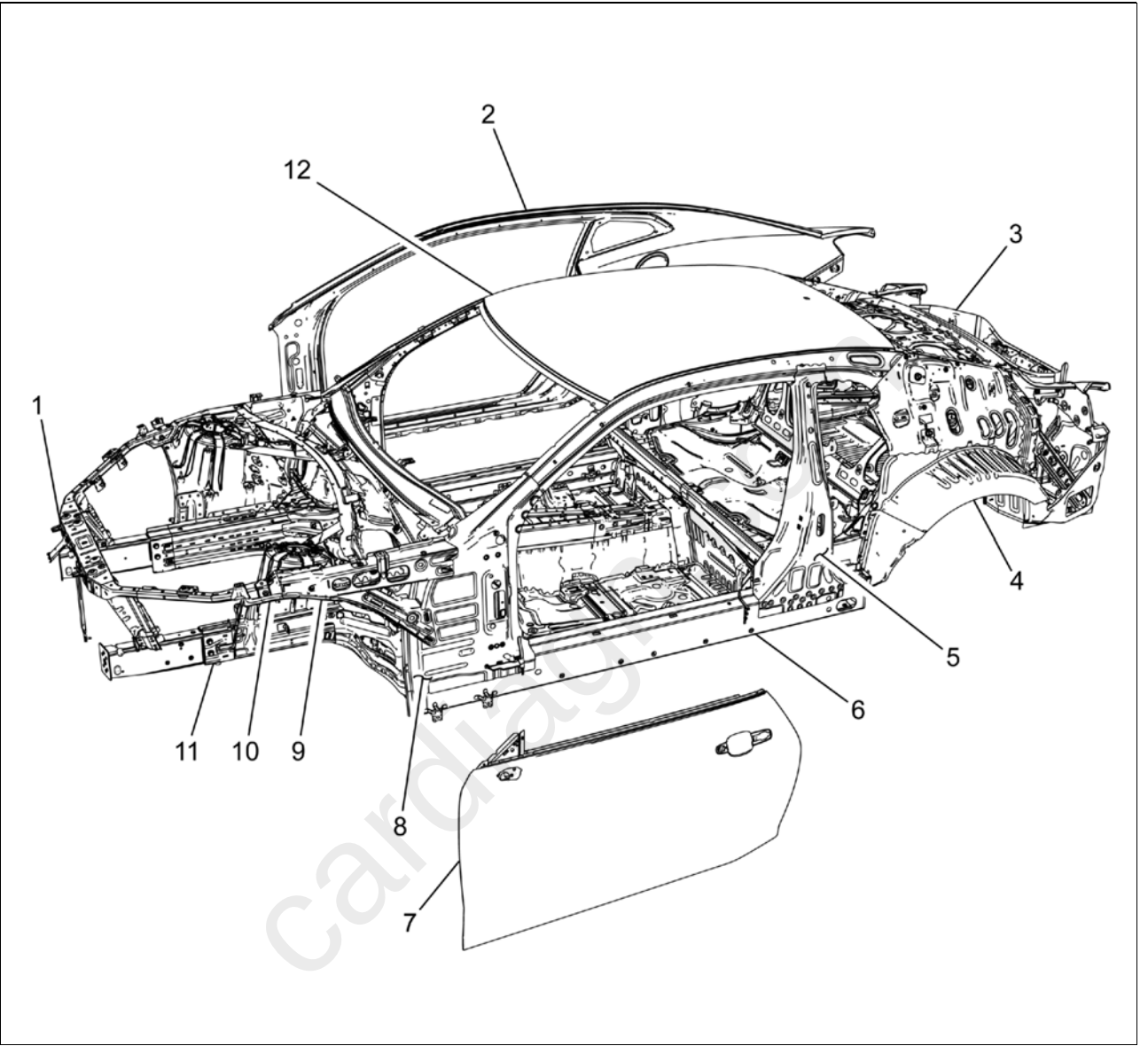


VISUAL IDENTIFICATION > STRUCTURE IDENTIFICATION

Fig 1: Structure Identification



Courtesy of GENERAL MOTORS COMPANY

Number	Description	Material	Procedure
1	Front End Upper Tie Bar Replacement	Mild Steel	
2	Outer Bodyside Panel	Mild Steel	• Front Hinge Pillar Body Sectioning (Lower) Front Hinge Pillar Body Sectioning (Upper) • Rocker Outer Panel

			Sectioning
3	Rear End Panel	Mild Steel	Body Rear End Panel Replacement
4	Rear Frame Rail	High Strength Low Alloy Steel	
5	Center Pillar Reinforcement	Ultra High Strength Steel	
6	Rocker Inner Panel	Ultra High Strength Steel	Rocker Inner Panel Reinforcement Replacement
7	Front Outer Door Panel	Mild Steel	
8	Front Body Inner Hinge Pillar	High Strength Low Alloy Steel	
9	Front Side Rail	Mild Steel	Front Compartment Upper Side Rail Replacement
10	Front Wheelhouse		Front Wheelhouse Panel Replacement (Complete) Front Wheelhouse Panel Replacement (Partial)
11	Front Compartment Lower rail	High Strength Low Alloy Steel	• • •
12	Roof Outer	Mild Steel	Roof Outer Panel Replacement

REPAIR INSTRUCTIONS > FRONT WHEELHOUSE PANEL REPLACEMENT (COMPLETE) > REMOVAL PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .



WARNING:

Refer to Battery Disconnect Warning .



NOTE:

The front wheelhouse panel is cast aluminum and it is rivet bonded to the front lower frame rail (Ultra High Strength Steel) and hinge pillar upper extensions (Dual Phase Steel). The front wheelhouse is serviced as a complete assembly that includes the hinge pillar upper extension, which is rivet bonded to the front wheelhouse panel.



NOTE:

This procedure describes how to replace the complete front wheelhouse assembly, using recommended adhesive and rivets to attach the assembly to the front lower frame rail. The assembly requires welding at the cowl on the upper hinge pillar extension.



NOTE:

Partial replacement of the front wheelhouse assembly can be done by replacing only the front wheelhouse panel (cast aluminum). The front wheelhouse panel will need to be separated from the complete wheelhouse service assembly and replaced using adhesive and rivets.

1. Disable the SIR system and then disconnect the negative battery cable. Refer to SIR Disabling and Enabling .
2. Remove all related panels and components.

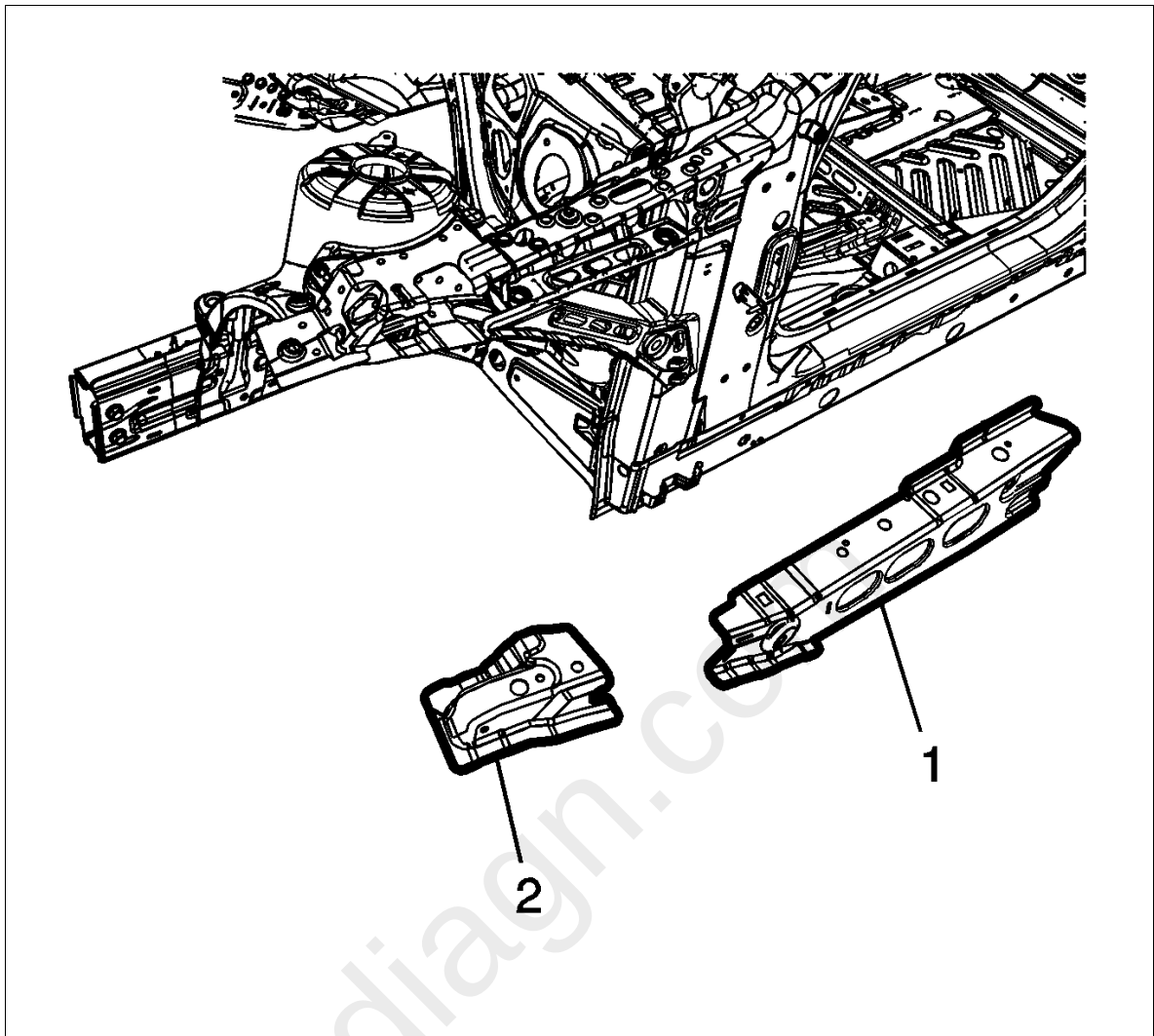


NOTE:

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.

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

Fig 1: Front Upper Outer Rail And Front Tie Bar Attachment Bracket



Courtesy of GENERAL MOTORS COMPANY

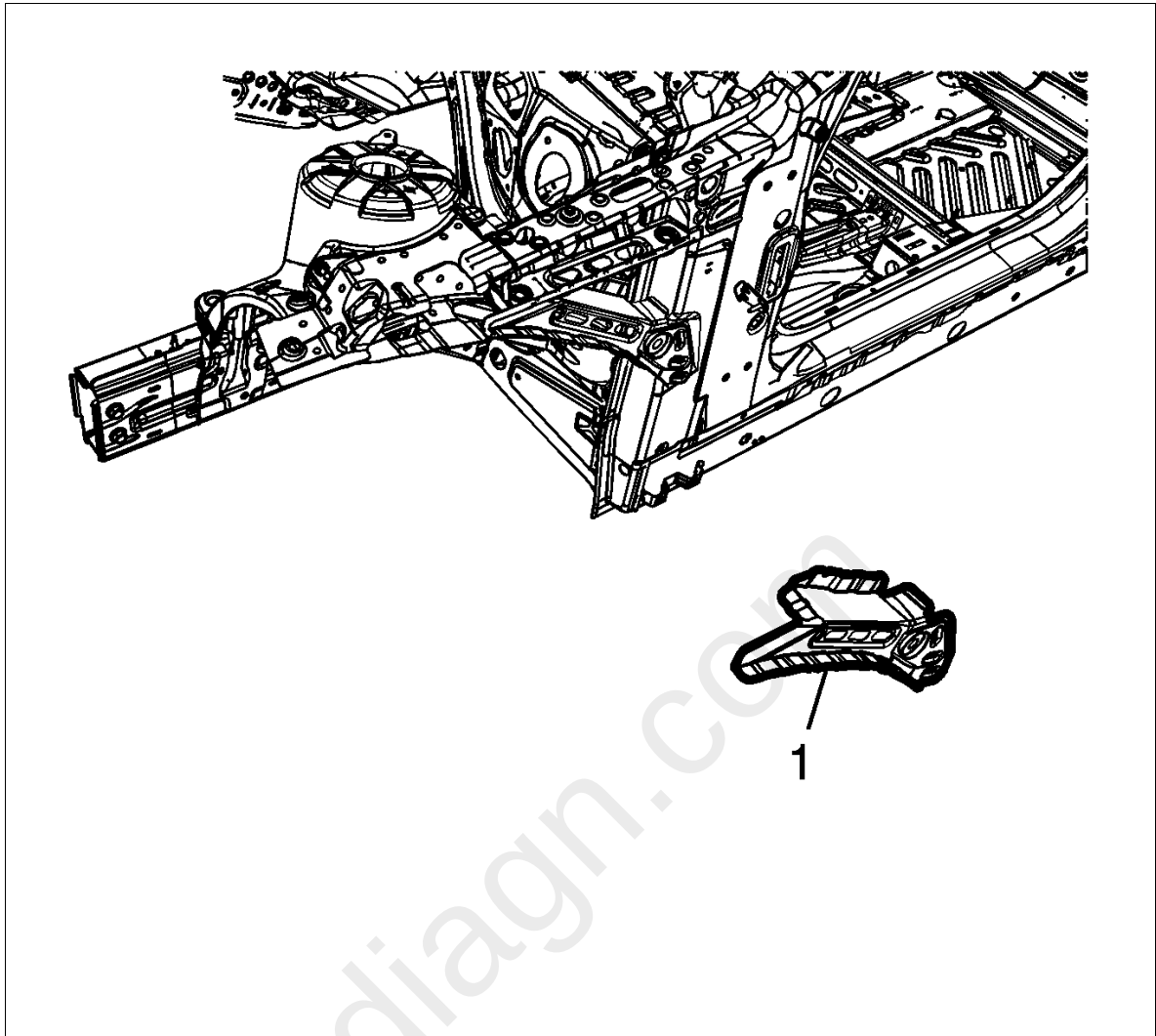


NOTE:

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

5. Remove all necessary factory welds and then remove the front upper outer rail (1) and the front tie bar attachment bracket (2), to access rivets and hinge pillar upper extension welds.

Fig 2: Upper Outer Rail Reinforcement Bracket



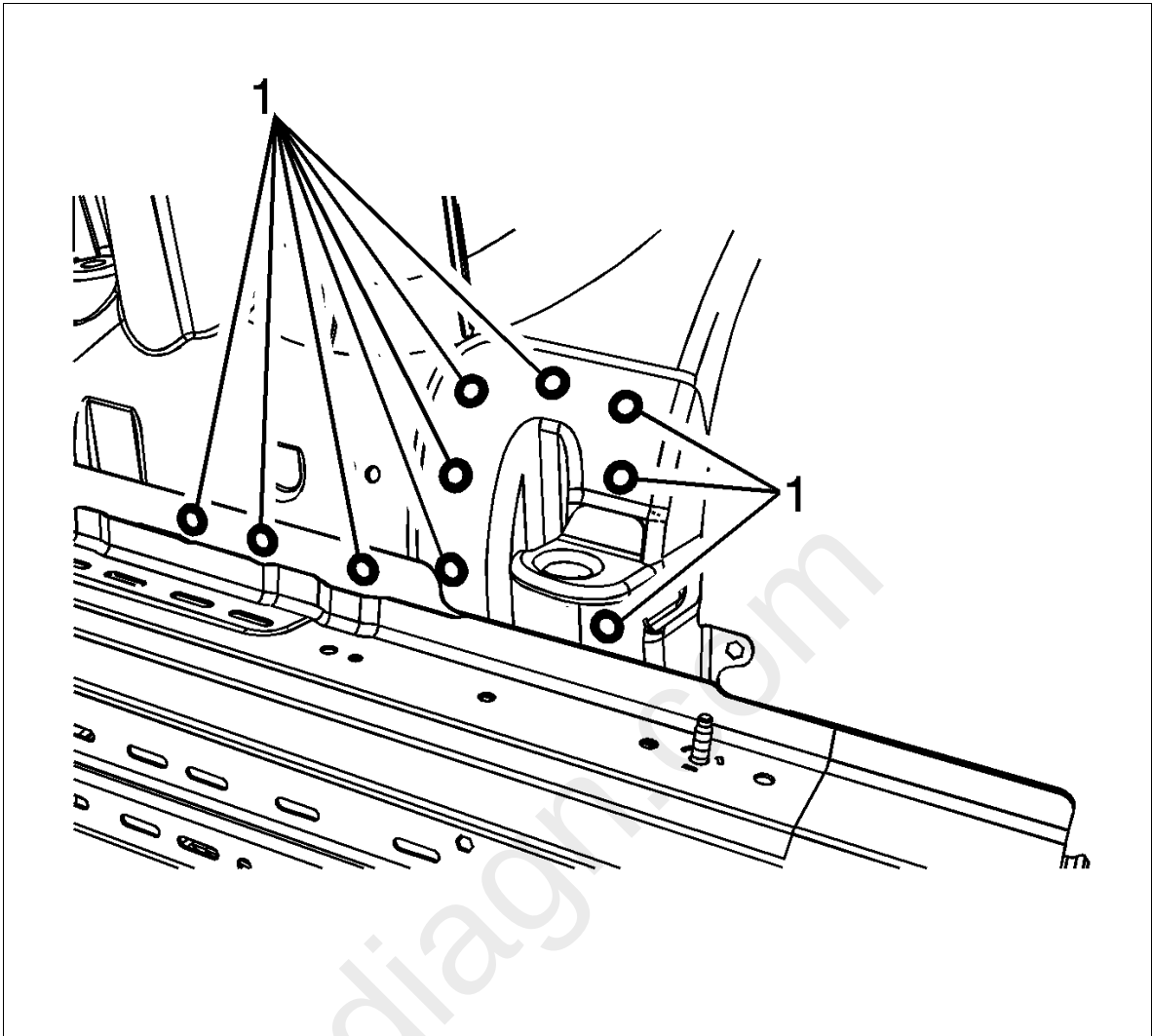
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

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

6. Remove all necessary factory welds for the upper outer rail reinforcement bracket and then remove the upper outer rail reinforcement bracket (1), then remove the welds from the hinge pillar upper extensions from the cowl area.

Fig 3: Front Wheelhouse Assembly



Courtesy of GENERAL MOTORS COMPANY

 NOTE:

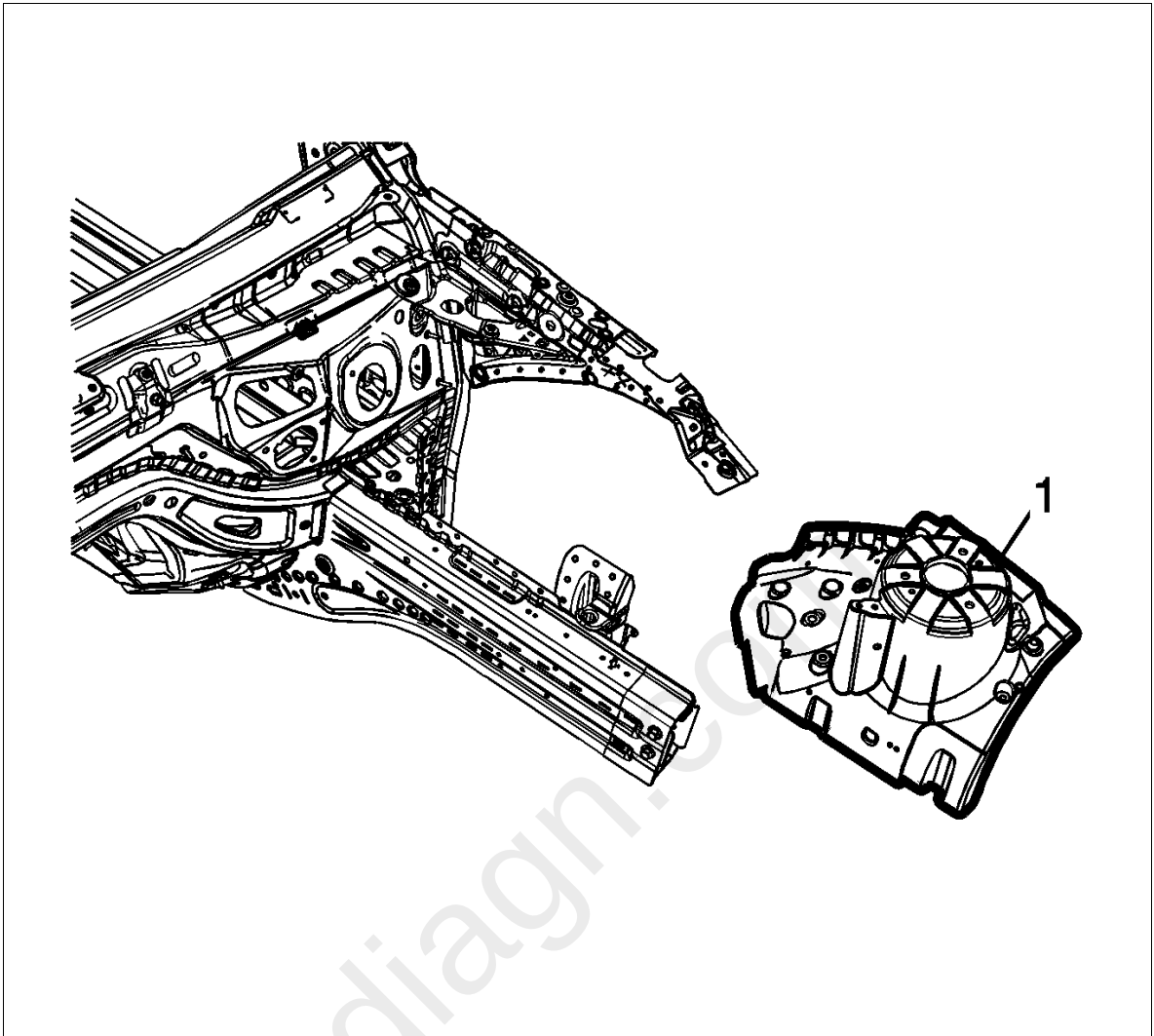
Record the number and location of the rivets for installation of the service assembly.

 NOTE:

The rivets can be removed by using a chisel and hammer to remove the head of the rivet and then driving out the remainder of the rivet with a punch and hammer, or drilled out with a suitable drill bit and drill

7. Locate, mark and remove the factory rivets that attach the front wheelhouse assembly to the structure (1).

Fig 4: Front Wheelhouse Assembly Removed



Courtesy of GENERAL MOTORS COMPANY

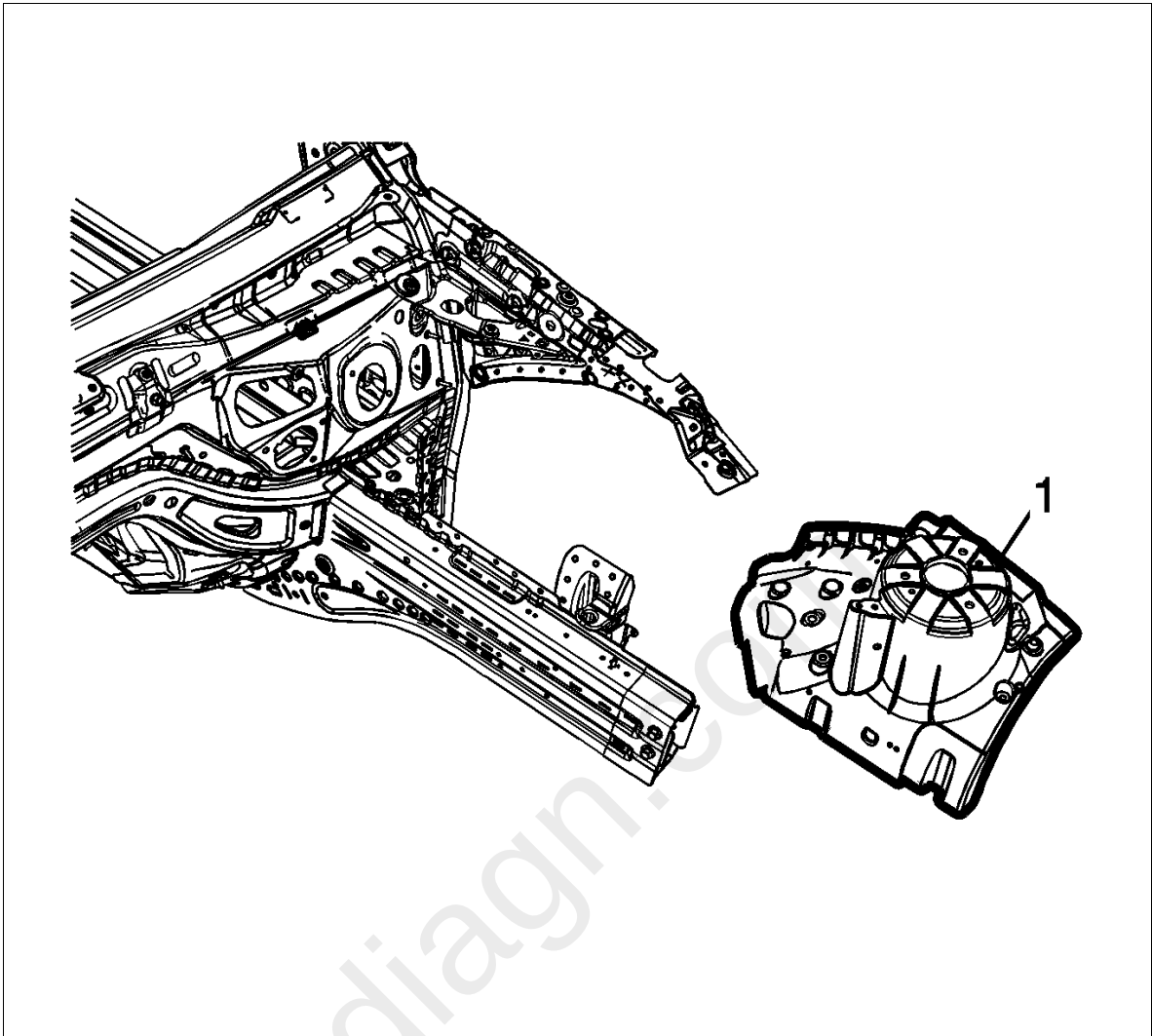
 NOTE:

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

8. To complete the removal of the front wheelhouse panel, apply heat to the adhesive material to cause the adhesive to release and then remove the wheelhouse assembly from the vehicle (1).

**REPAIR INSTRUCTIONS > FRONT WHEELHOUSE PANEL REPLACEMENT
(COMPLETE) > INSTALLATION PROCEDURE**

Fig 1: Front Wheelhouse Assembly Removed



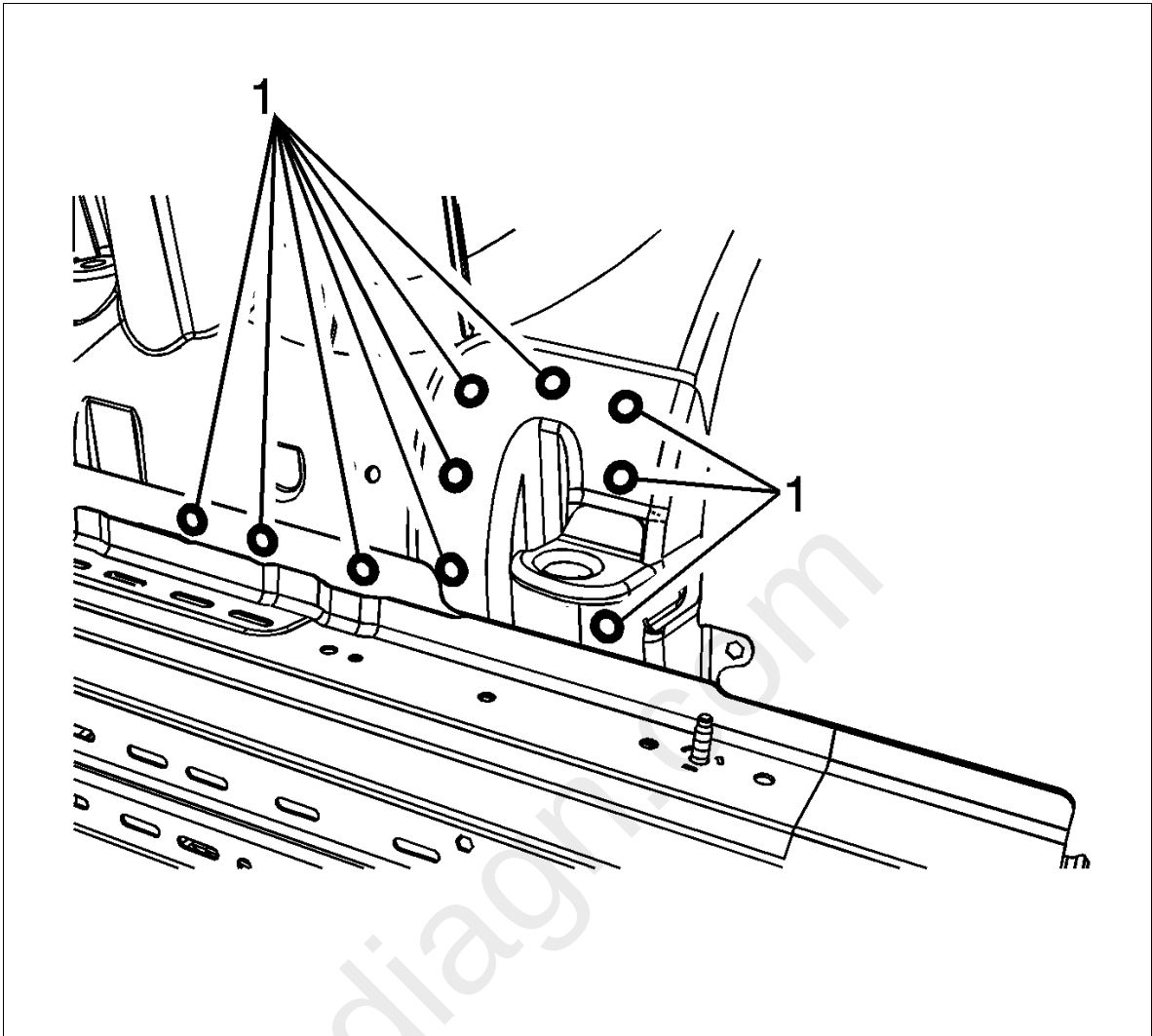
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

Note: Proper alignment of the wheelhouse assembly is important. The use of 3-dimensional measuring equipment is recommended when installing the part.

1. Prior to applying adhesive, or welding, fit the wheelhouse assembly to the structure and check for proper alignment (1).

Fig 2: Front Wheelhouse Assembly



Courtesy of GENERAL MOTORS COMPANY

2. With the part properly located and aligned, mark the locations for the rivets and welds recorded from the original part and drill the holes for the rivets (1).
3. Remove the part from the vehicle to clean and prepare the surfaces for bonding and welding.

 NOTE:

Leave the Elpo-coating on the adhesive bonding surfaces of the service part to allow additional protection of the aluminum from galvanic corrosion.

4. Scuff sand the bonding surfaces on the service part to remove the gloss of the Elpo-coating.
5. Using a grinding disk, or equivalent, prepare a bare steel surface on the bonding areas of the vehicle structure.
6. Clean and prepare all welding surfaces.

 NOTE:

Refer to adhesive manufacturer's recommendation for specific application and curing recommendations.

7. Apply a bead of adhesive to all bonding surfaces on the vehicle structure and service part, per the adhesive manufacturer's recommendations. Refer to Aluminum Panel Bonding .

 NOTE:

Completely cover all bare surfaces with the adhesive.

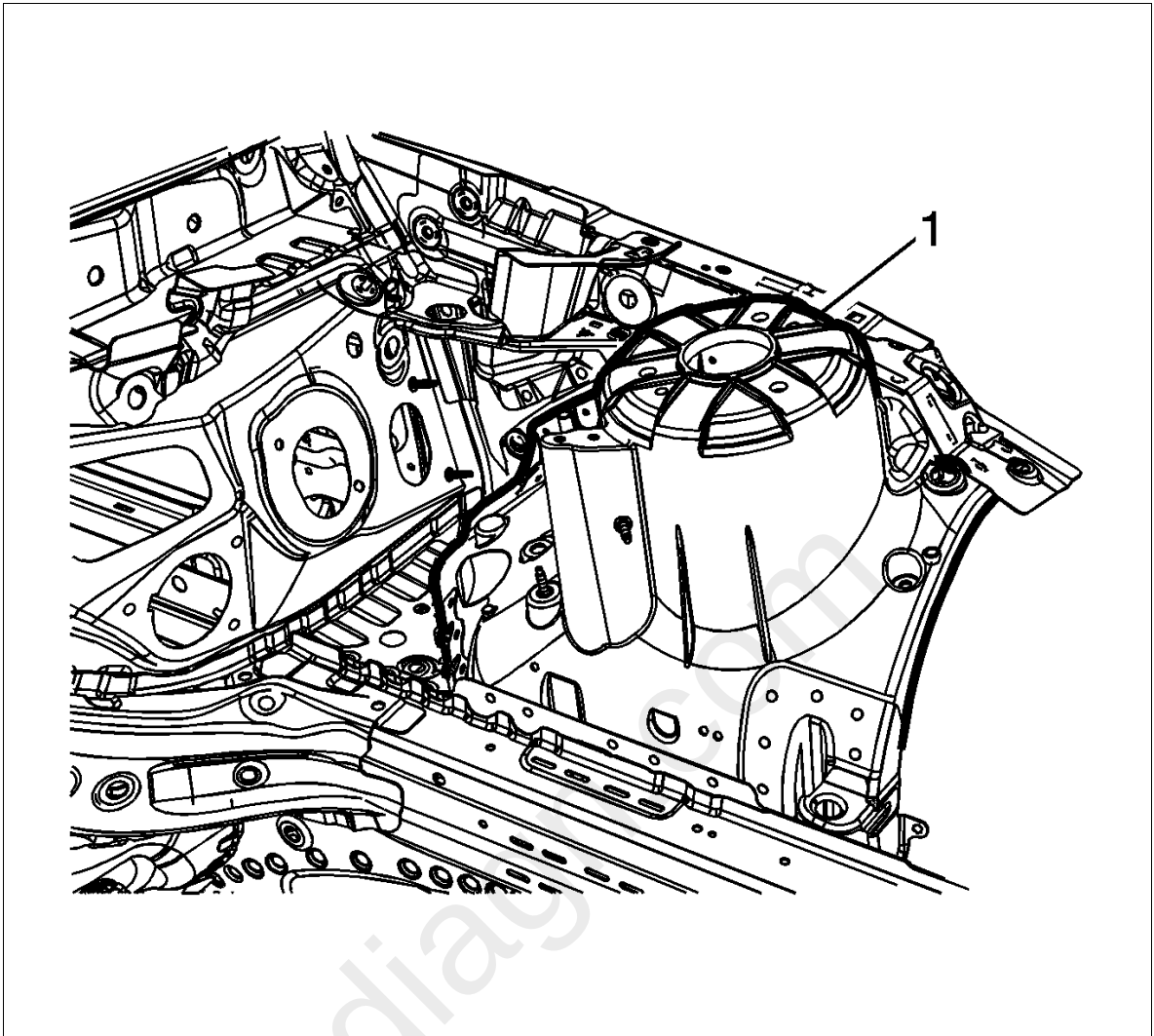
8. Using a small brush, spread a coat of the adhesive to cover the entire adhesive bonding surface, to ensure proper corrosion protection.

 NOTE:

Do not allow the adhesive to cure off the vehicle, prior to installing and aligning the part. Refer to adhesive manufacturer's recommendations for specific cure times.

9. Apply a bead of adhesive to the mating surface of the service part, per the adhesive manufacturer's recommendations.

Fig 3: Proper Alignment Of Wheelhouse Assembly



Courtesy of GENERAL MOTORS COMPANY

 NOTE:

Do not pull the panels apart after joined together. Slide the panels against each other to realign the panels, or proper joint strength may be affected.

 NOTE:

Proper alignment of the wheelhouse assembly is important. The use of 3-dimensional measuring equipment is recommended when installing the part.

10. Install the service part to the vehicle structure and check for proper alignment (1).
11. Install the rivets along the bonding joint, at the original locations. Refer to the electronic parts catalog for the recommended rivets.

12. Weld the service part at the original weld locations, as necessary.
13. Install front tie bar attachment bracket, front outer upper rail and upper outer rail reinforcement bracket.
14. Clean all welded surfaces.
15. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
16. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
17. Install all related panels and components.
18. Enable the SIR system and then connect the negative battery cable. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > FRONT WHEELHOUSE PANEL REPLACEMENT (PARTIAL) > REMOVAL PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .



WARNING:

Refer to Battery Disconnect Warning .



NOTE:

The front wheelhouse panel is cast aluminum and it is rivet bonded to the front lower frame rail (Ultra High Strength Steel) and hinge pillar upper extensions (Dual Phase Steel). The front wheelhouse is serviced as a complete assembly that includes the hinge pillar upper extension, which is rivet bonded to the front wheelhouse panel.



NOTE:

This procedure describes how to perform a partial replacement of the front wheelhouse

assembly, using recommended adhesive and rivets to attach the assembly to the front lower frame rail and upper hinge pillar extension. This procedure can be used to replace the front wheelhouse panel (cast aluminum), when the upper hinge pillar extension is not damaged, or can be repaired. The hinge pillar upper extension can left attached to cowl area.

1. Disable the SIR system and then disconnect the negative battery cable. Refer to SIR Disabling and Enabling .
2. Remove all related panels and components.

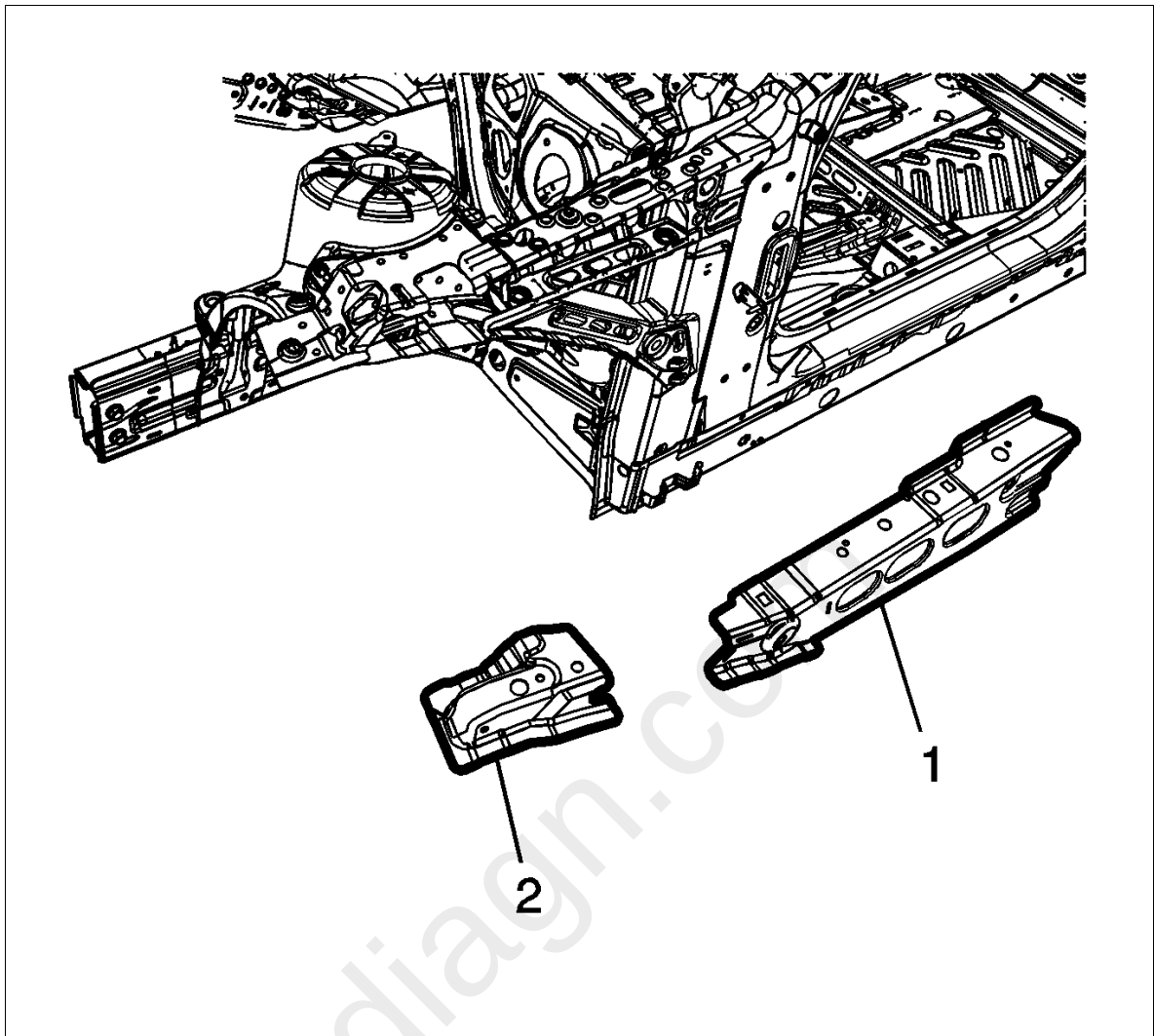


NOTE:

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

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

Fig 1: Front Upper Outer Rail And Front Tie Bar Attachment Bracket



Courtesy of GENERAL MOTORS COMPANY

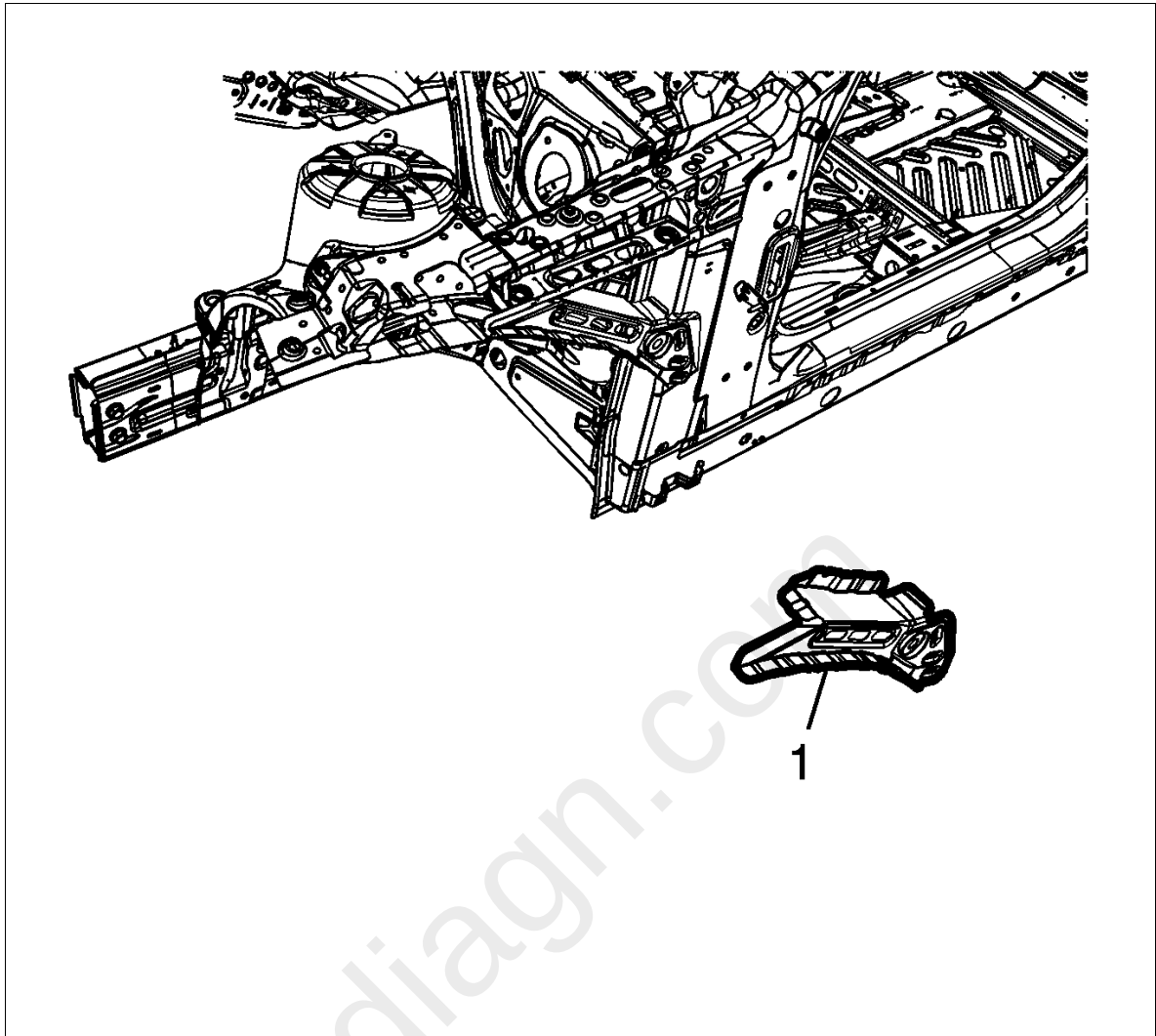


NOTE:

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

5. Remove all necessary factory welds and then remove the front upper outer rail (1) and the front tie bar attachment bracket (2), to access rivets and hinge pillar upper extension welds.

Fig 2: Upper Outer Rail Reinforcement Bracket



Courtesy of GENERAL MOTORS COMPANY

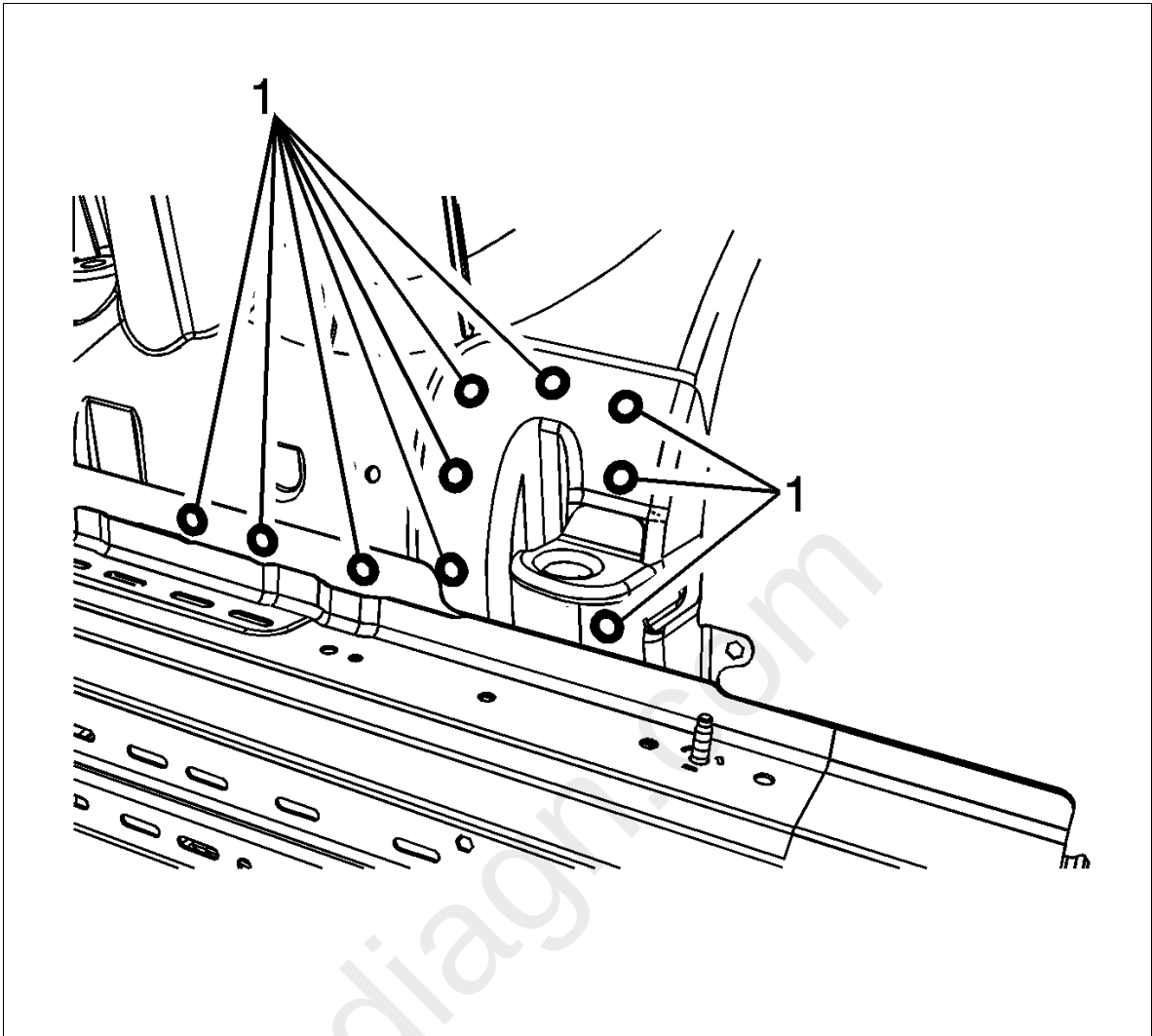


NOTE:

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

6. Remove all necessary factory welds for the upper outer rail reinforcement bracket and then remove the upper outer rail reinforcement bracket (1).

Fig 3: Front Wheelhouse Assembly



Courtesy of GENERAL MOTORS COMPANY

 NOTE:

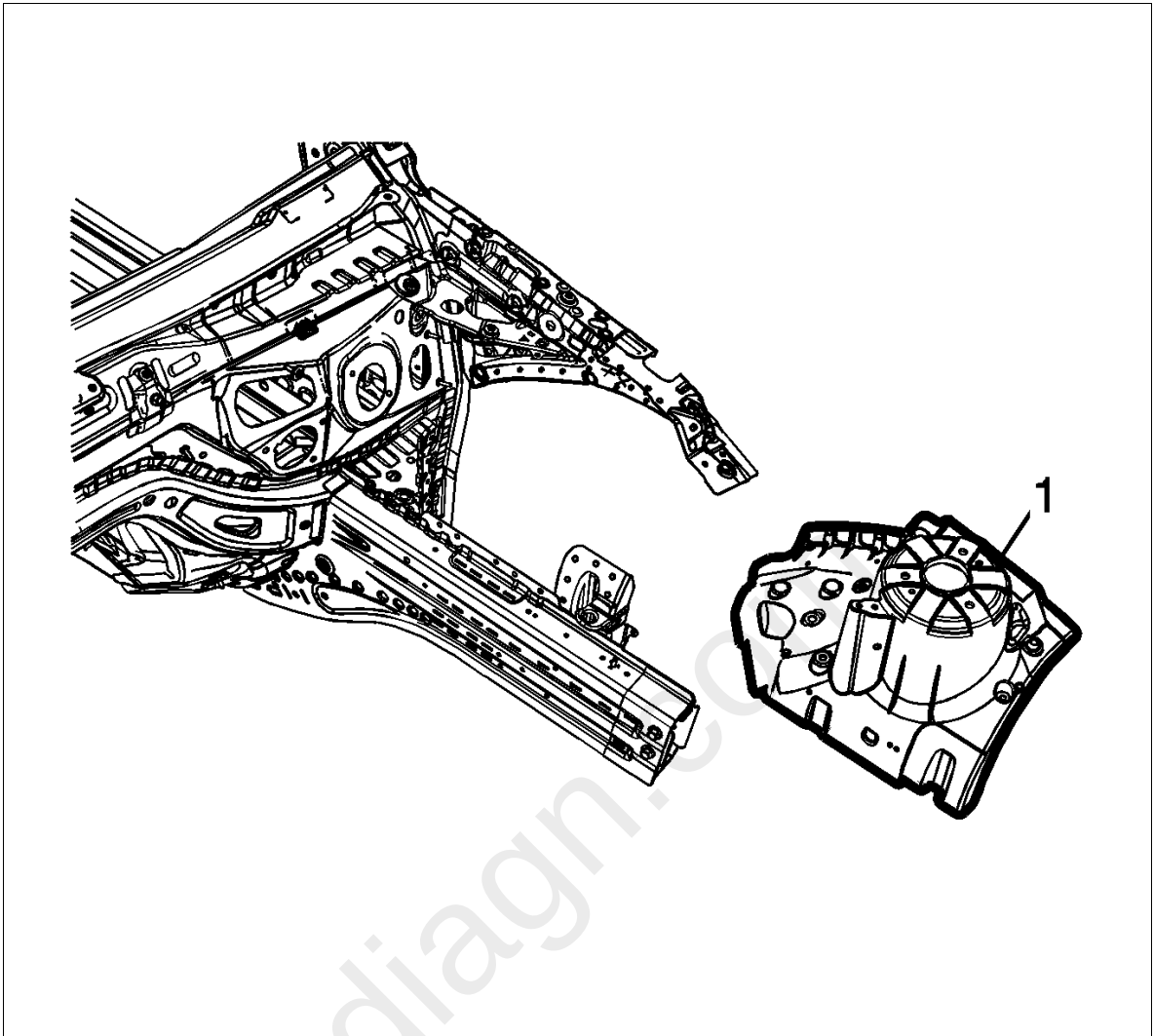
Record the number and location of the rivets for installation of the service assembly.

 NOTE:

The rivets can be removed by using a chisel and hammer to remove the head of the rivet and then driving out the remainder of the rivet with a punch and hammer, or drilled out with a suitable drill bit and drill.

7. Locate, mark and remove the factory rivets that attach the front wheelhouse assembly to the structure (1).

Fig 4: Front Wheelhouse Assembly Removed



Courtesy of GENERAL MOTORS COMPANY

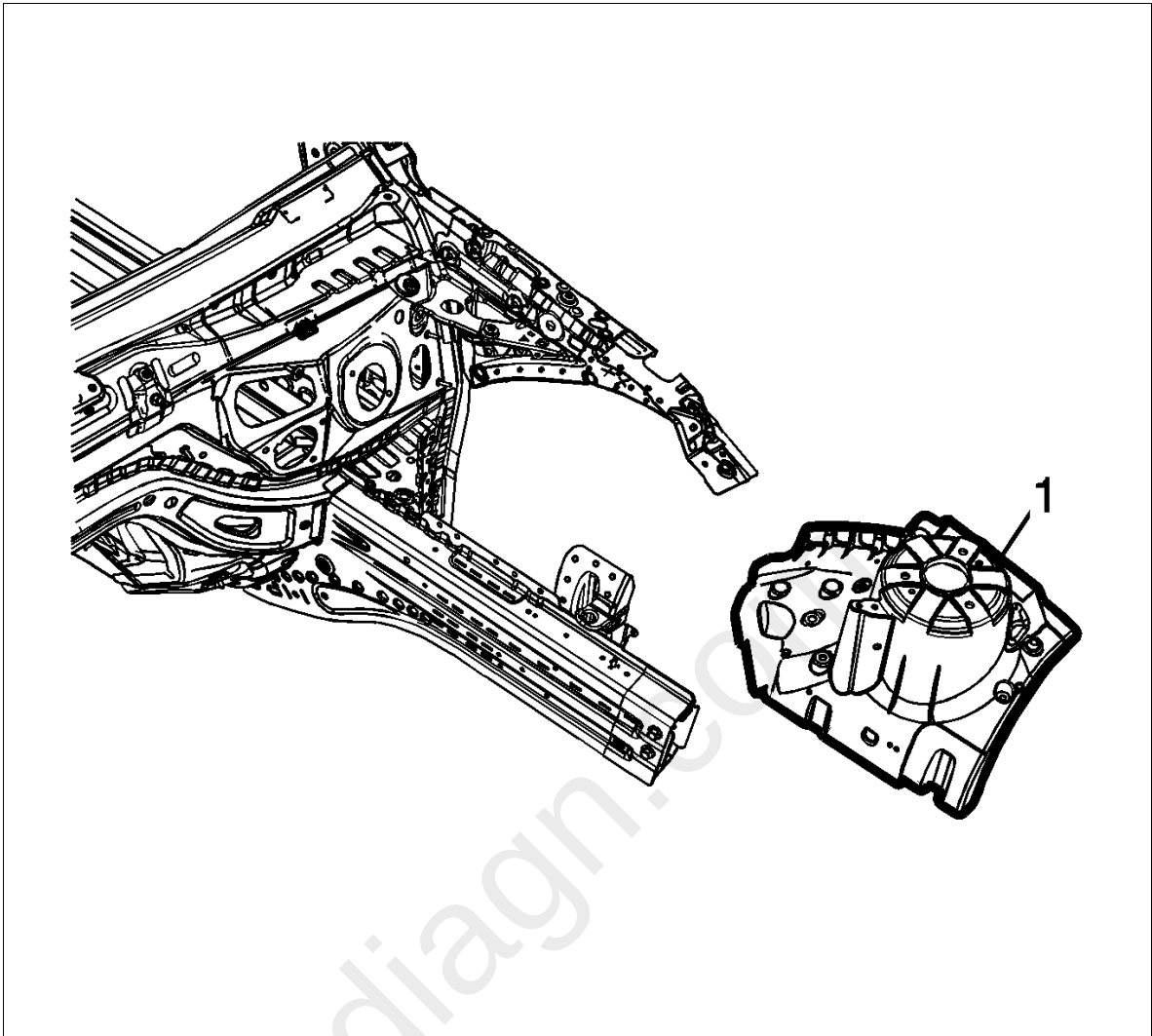
 NOTE:

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

8. To complete the removal of the front wheelhouse panel, apply heat to the adhesive material to cause the adhesive to release and then remove the wheelhouse assembly from the vehicle (1).

**REPAIR INSTRUCTIONS > FRONT WHEELHOUSE PANEL REPLACEMENT (PARTIAL)
> INSTALLATION PROCEDURE**

Fig 1: Front Wheelhouse Assembly Removed



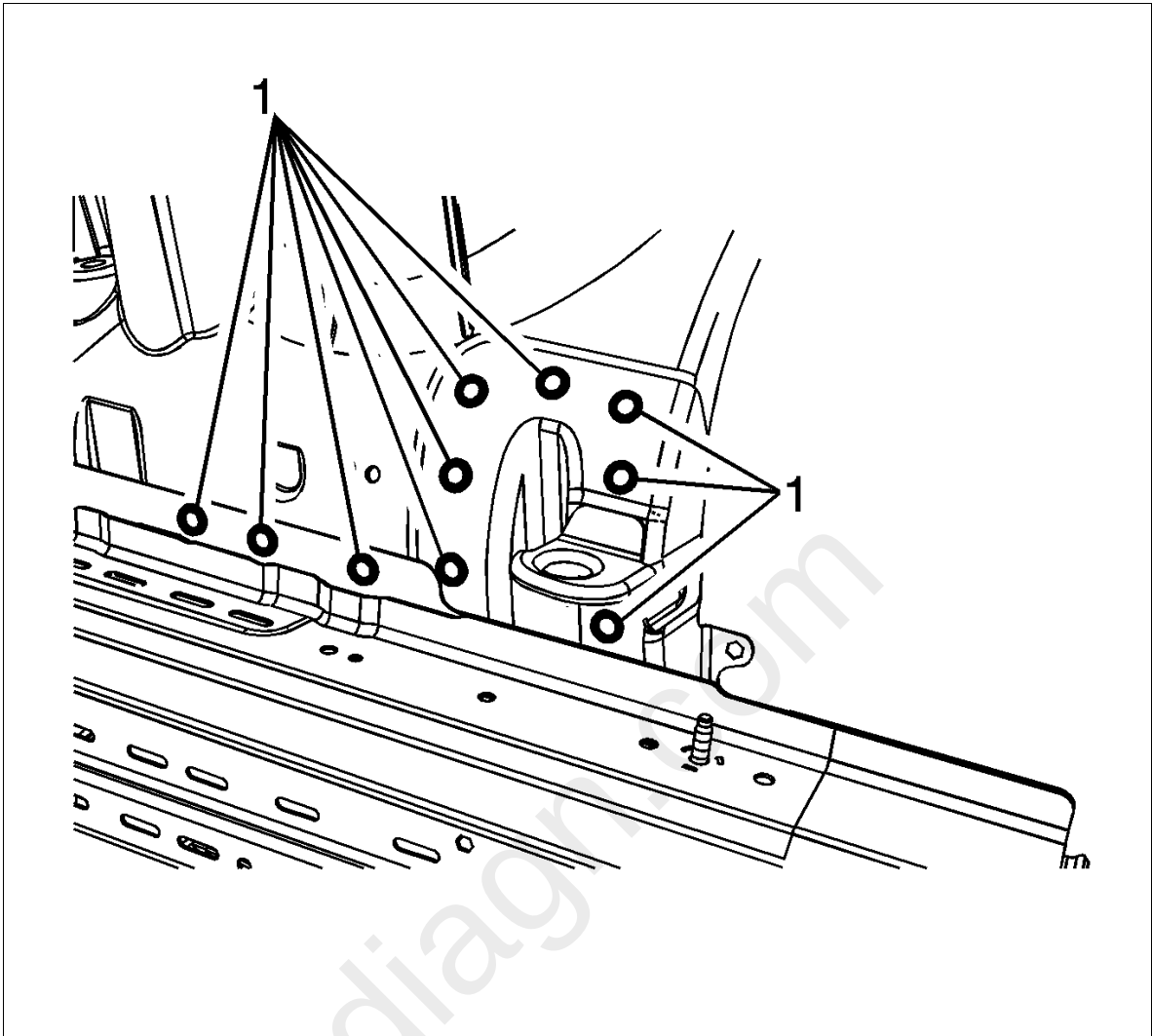
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

Note: Proper alignment of the wheelhouse assembly is important. The use of 3-dimensional measuring equipment is recommended when installing the part.

1. Prior to applying adhesive, or welding, fit the wheelhouse assembly to the structure and check for proper alignment (1).

Fig 2: Front Wheelhouse Assembly



Courtesy of GENERAL MOTORS COMPANY

2. With the part properly located and aligned, mark the locations for the rivets and welds recorded from the original part and drill the holes for the rivets (1).
3. Remove the part from the vehicle to clean and prepare the surfaces for bonding and welding.

 NOTE:

Leave the Elpo-coating on the adhesive bonding surfaces of the service part to allow additional protection of the aluminum from galvanic corrosion.

4. Scuff sand the bonding surfaces on the service part to remove the gloss of the Elpo-coating.
5. Using a grinding disk, or equivalent, prepare a bare steel surface on the bonding areas of the vehicle structure.
6. Clean and prepare all welding surfaces.

 NOTE:

Refer to adhesive manufacturer's recommendation for specific application and curing recommendations.

7. Apply a bead of adhesive to all bonding surfaces on the vehicle structure and service part, per the adhesive manufacturer's recommendations. Refer to Aluminum Panel Bonding .

 NOTE:

Completely cover all bare surfaces with the adhesive.

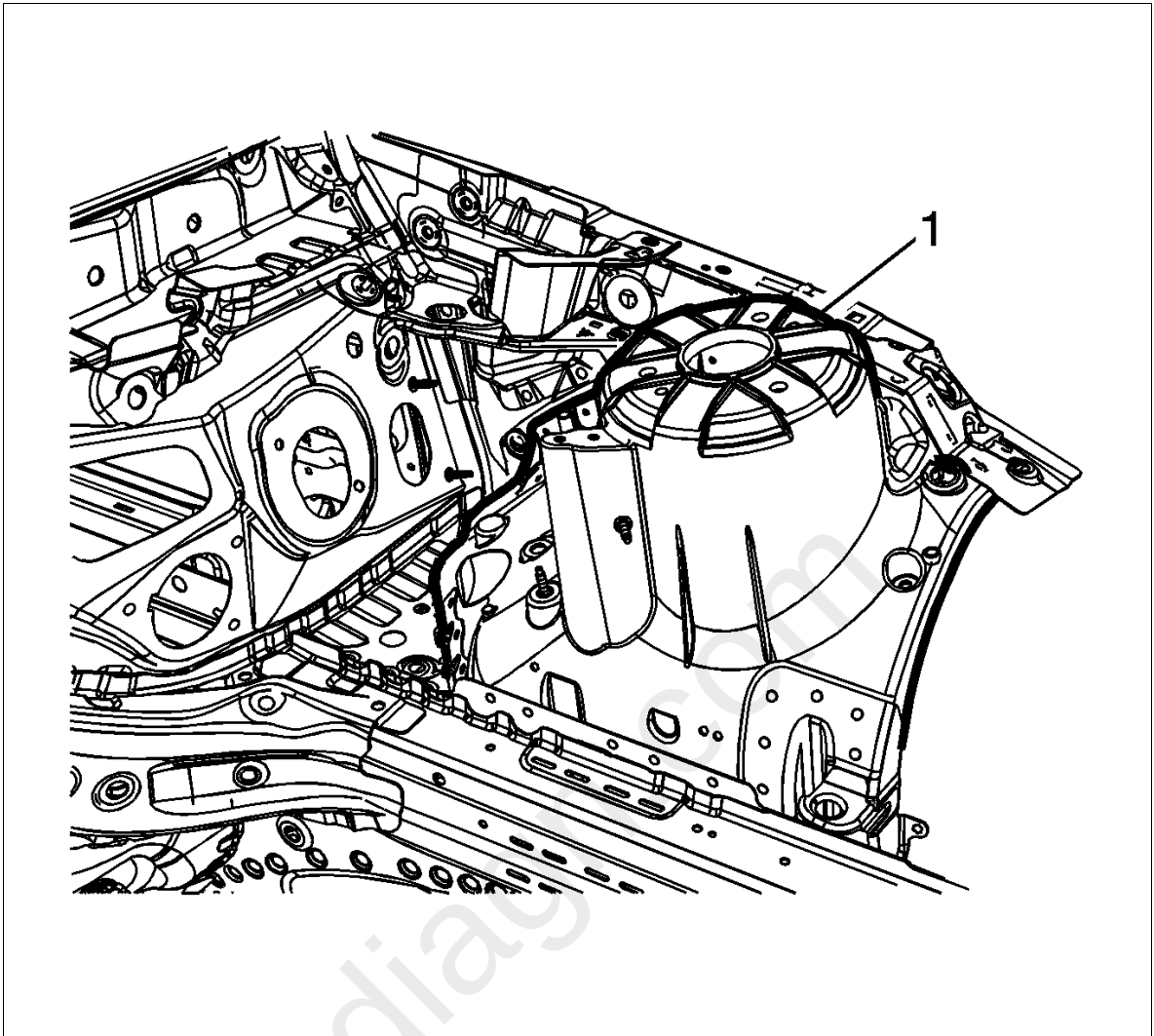
8. Using a small brush, spread a coat of the adhesive to cover the entire adhesive bonding surface, to ensure proper corrosion protection.

 NOTE:

Do not allow the adhesive to cure off the vehicle, prior to installing and aligning the part. Refer to adhesive manufacturer's recommendations for specific cure times.

9. Apply a bead of adhesive to the mating surface of the service part, per the adhesive manufacturer's recommendations.

Fig 3: Proper Alignment Of Wheelhouse Assembly



Courtesy of GENERAL MOTORS COMPANY

 NOTE:

Do not pull the panels apart after joined together. Slide the panels against each other to realign the panels, or proper joint strength may be affected.

 NOTE:

Proper alignment of the wheelhouse assembly is important. The use of 3-dimensional measuring equipment is recommended when installing the part.

10. Install the service part to the vehicle structure and check for proper alignment (1).
11. Install the rivets along the bonding joint, at the original locations. Refer to the electronic parts catalog for the recommended rivets.

12. Install front tie bar attachment bracket, front outer upper rail and upper outer rail reinforcement bracket.
13. Clean all welded surfaces.
14. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
15. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
16. Install all related panels and components.
17. Enable the SIR system and then connect the negative battery cable. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > FRONT COMPARTMENT UPPER SIDE RAIL REPLACEMENT > REMOVAL PROCEDURE

 WARNING:

Refer to Approved Equipment for Collision Repair Warning .

 WARNING:

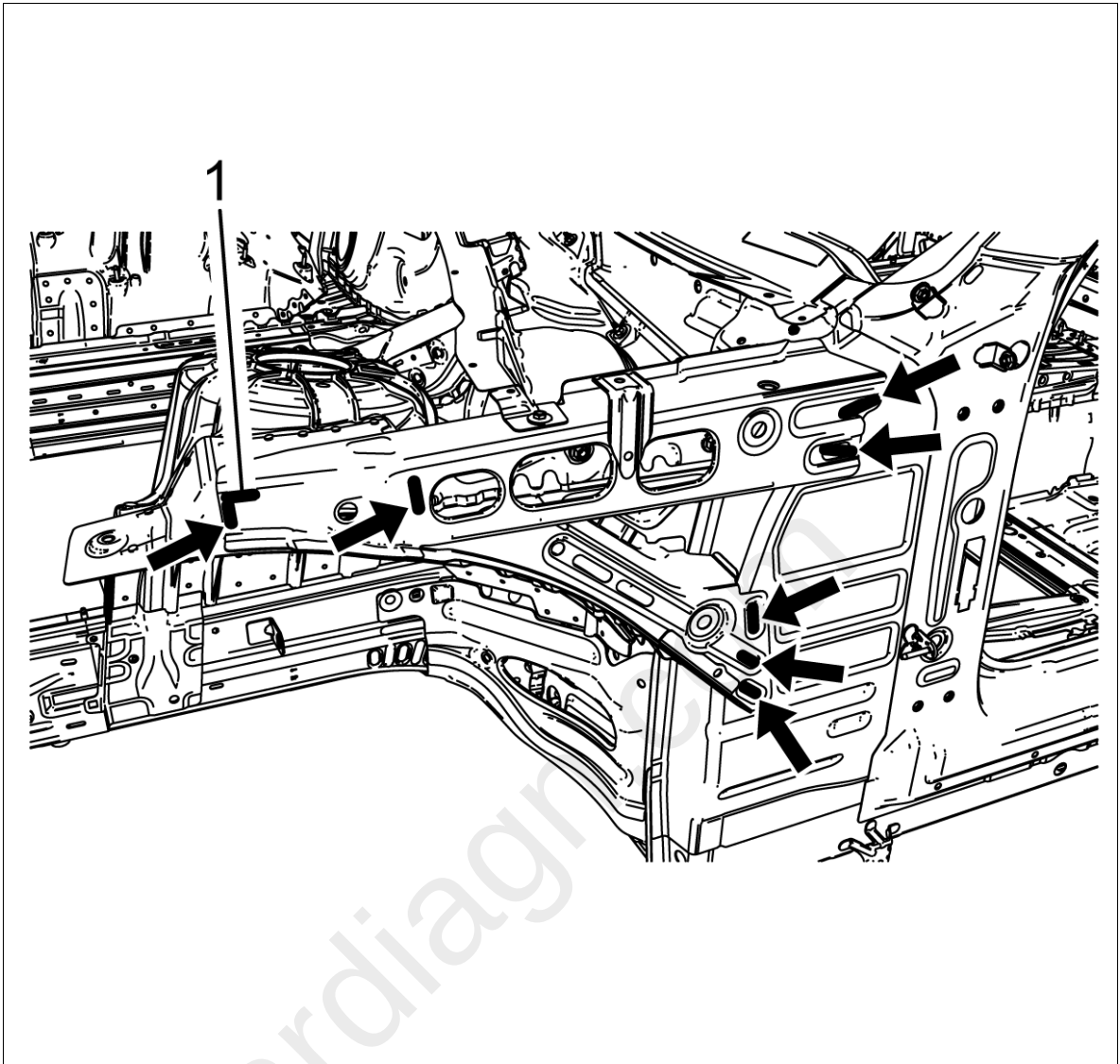
Refer to Foam Sound Deadeners Warning .

 WARNING:

Refer to Battery Disconnect Warning .

1. Disable the SIR system and then disconnect the negative battery cable. Refer to SIR Disabling and Enabling .
2. Remove all related panels and components.
3. Repair as much of the damage as possible to factory specifications. Refer to Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area. Refer to Anti-Corrosion Treatment and Repair .

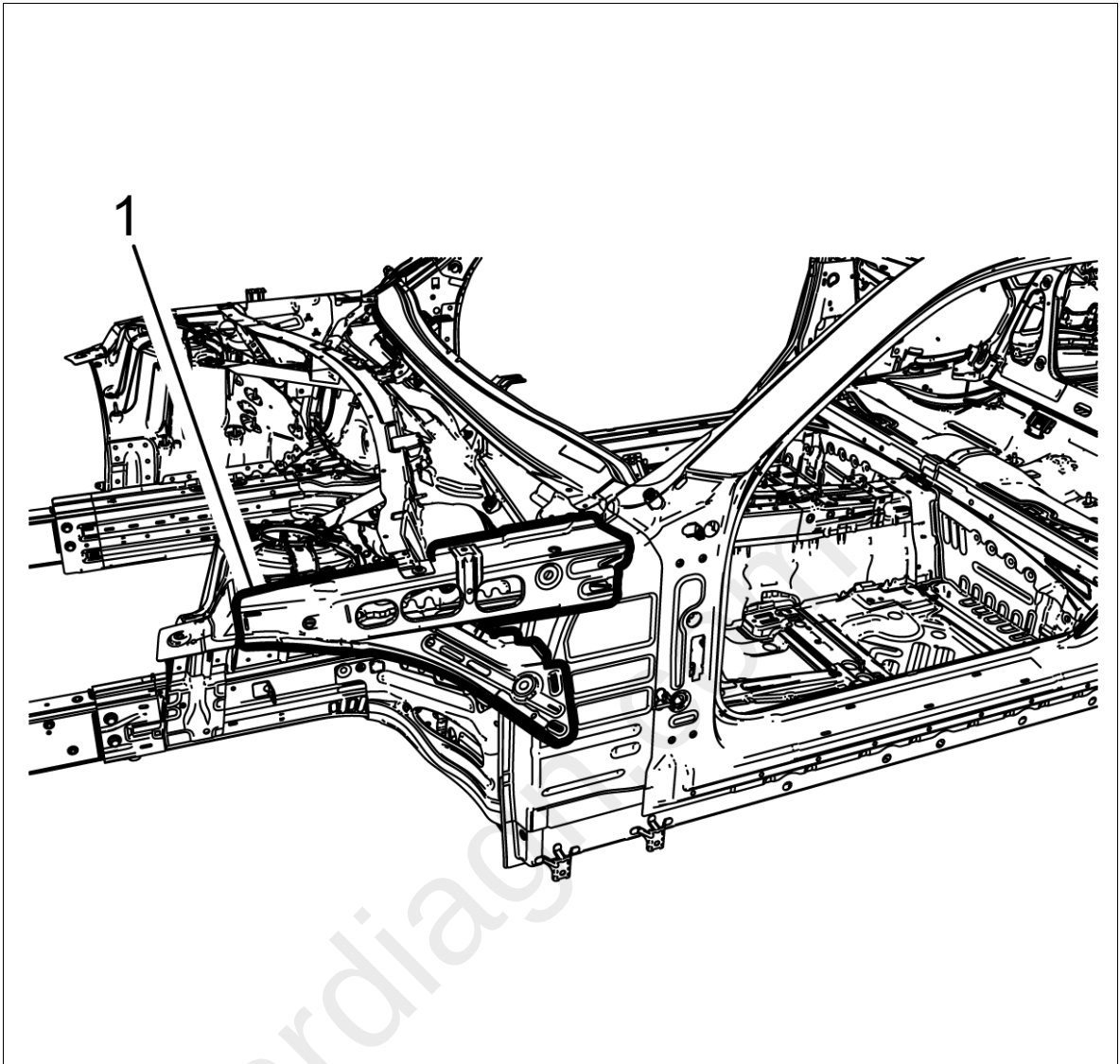
Fig 1: Damaged Front Upper Rail



Courtesy of GENERAL MOTORS COMPANY

5. Record the number and location of welds and slot braze joints (1) for installation of the service assembly. Do not damage any inner panel reinforcements.

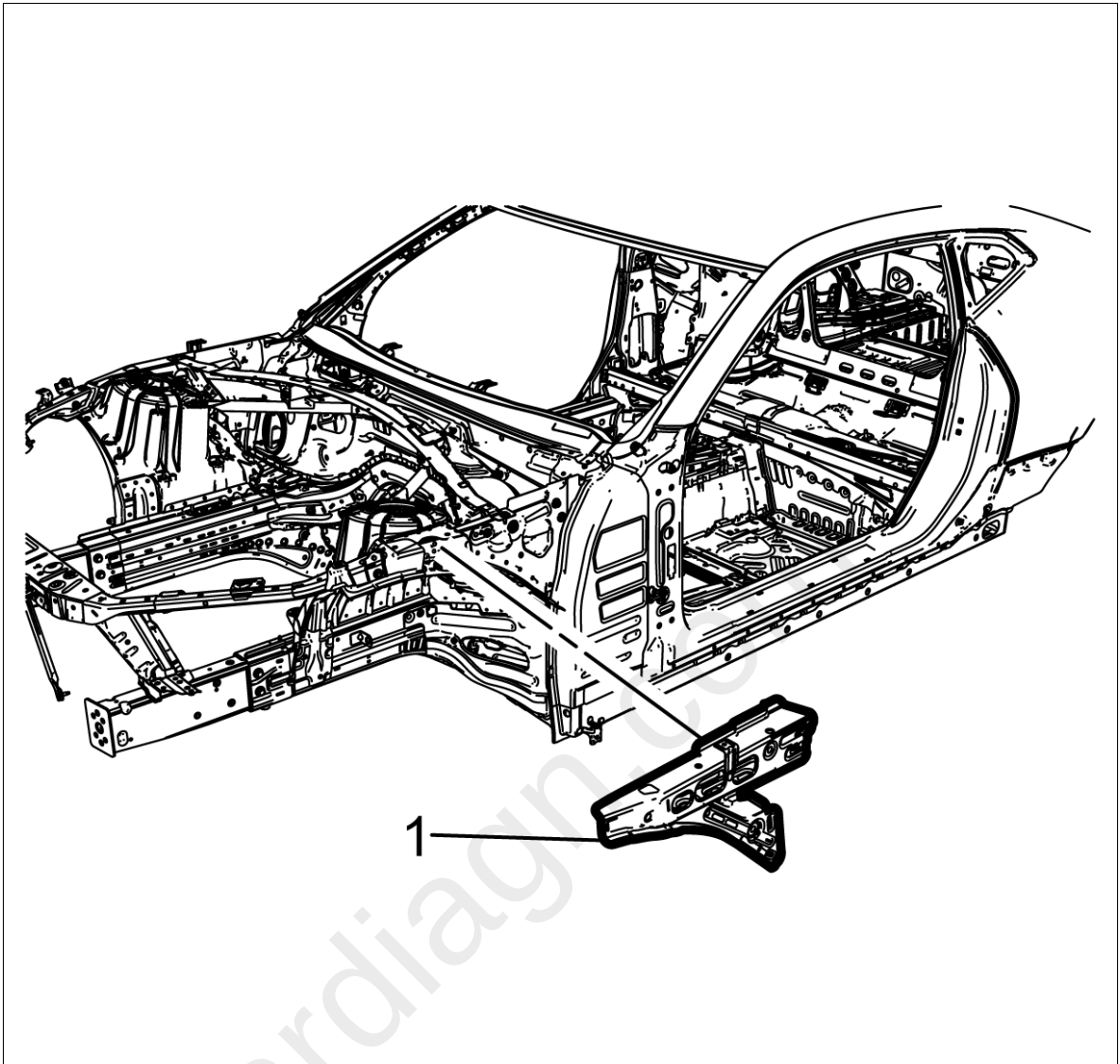
Fig 2: Front Upper Rail



Courtesy of GENERAL MOTORS COMPANY

6. Remove factory welds as required. Note the number and location of the welds for installation of the front upper rail (1).

Fig 3: Front Upper Rail

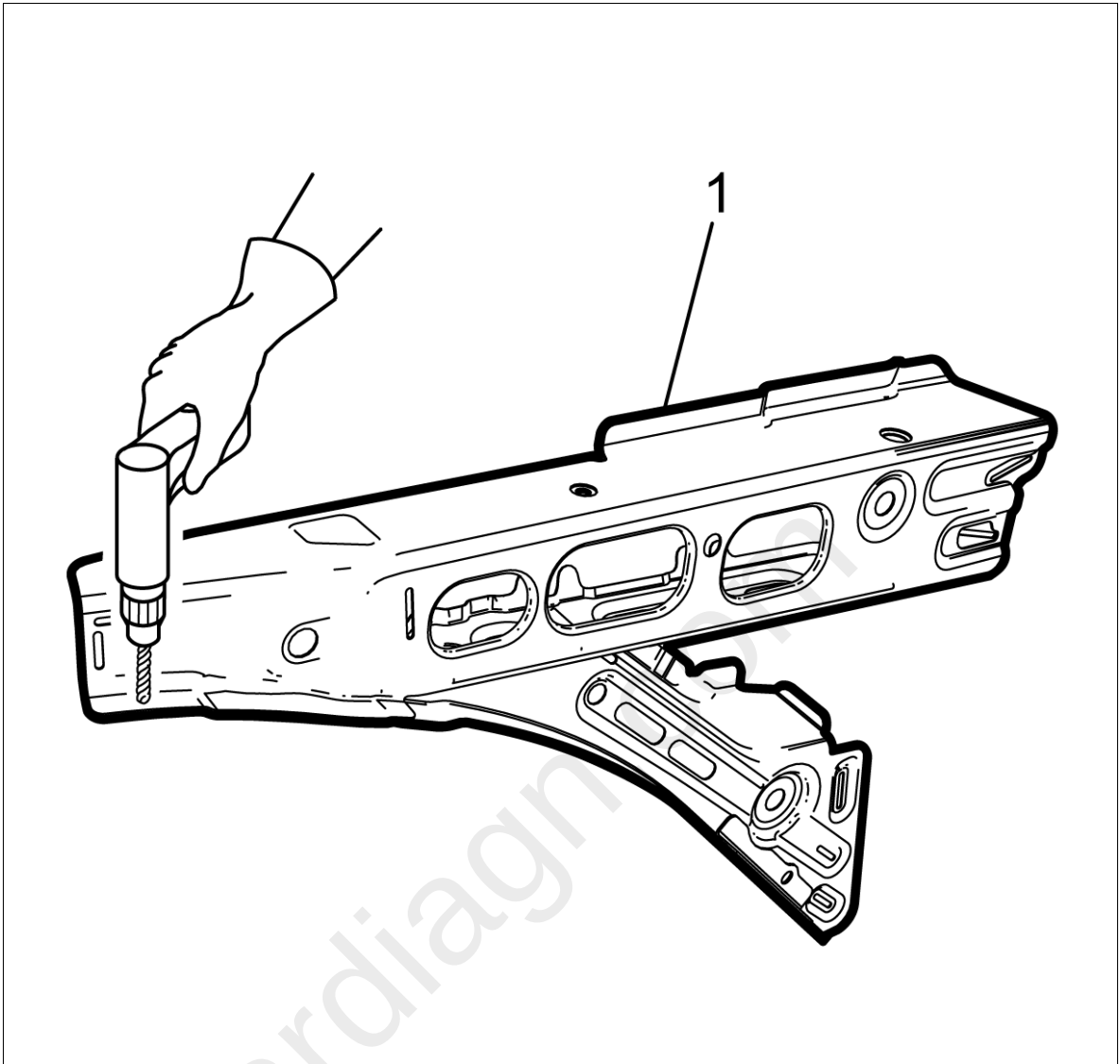


Courtesy of GENERAL MOTORS COMPANY

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

**REPAIR INSTRUCTIONS > FRONT COMPARTMENT UPPER SIDE RAIL
REPLACEMENT > INSTALLATION PROCEDURE**

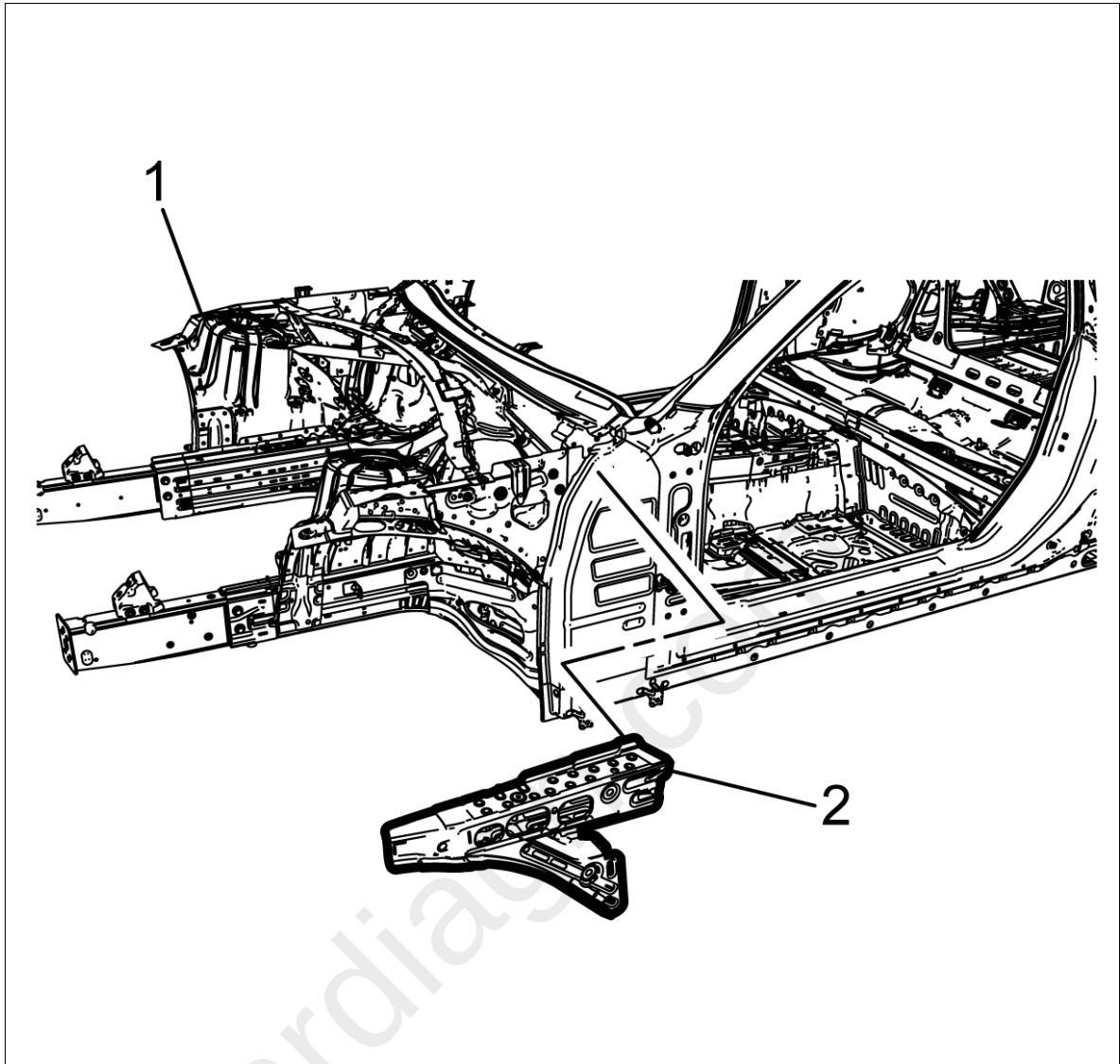
Fig 1: Drilling



Courtesy of GENERAL MOTORS COMPANY

1. Prepare all mating surfaces as necessary.

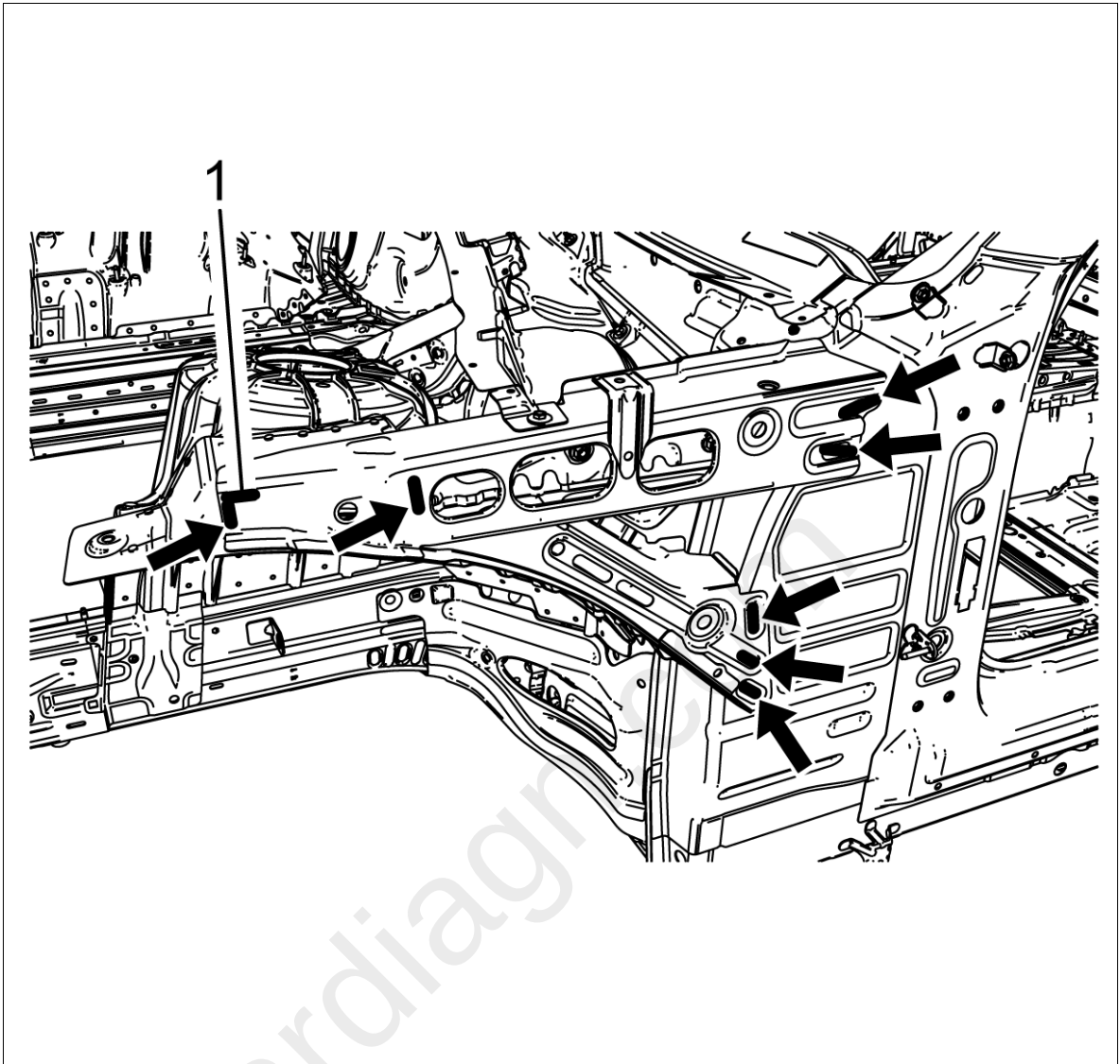
Fig 2: Front Upper Rail



Courtesy of GENERAL MOTORS COMPANY

2. Position the front upper rail on the vehicle (1). Clamp the rail in place and verify that it is in the correct location (2).

Fig 3: Damaged Front Upper Rail



Courtesy of GENERAL MOTORS COMPANY



NOTE:

MIG Brazing Welds equivalent to the factory brazing welds are recommended.

3. Weld accordingly at the original factory weld locations and MIG Braze at factory MIG Braze locations (1).
4. Clean and prepare all welded surfaces.
5. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
6. Paint the repair area. Refer to Basecoat/Clearcoat Paint Systems .
7. Install all related panels ad components.

8. Enable the SIR system and connect the negative battery cable. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > FRONT COMPARTMENT FRONT RAIL REPLACEMENT > REMOVAL PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .



WARNING:

Refer to Battery Disconnect Warning .

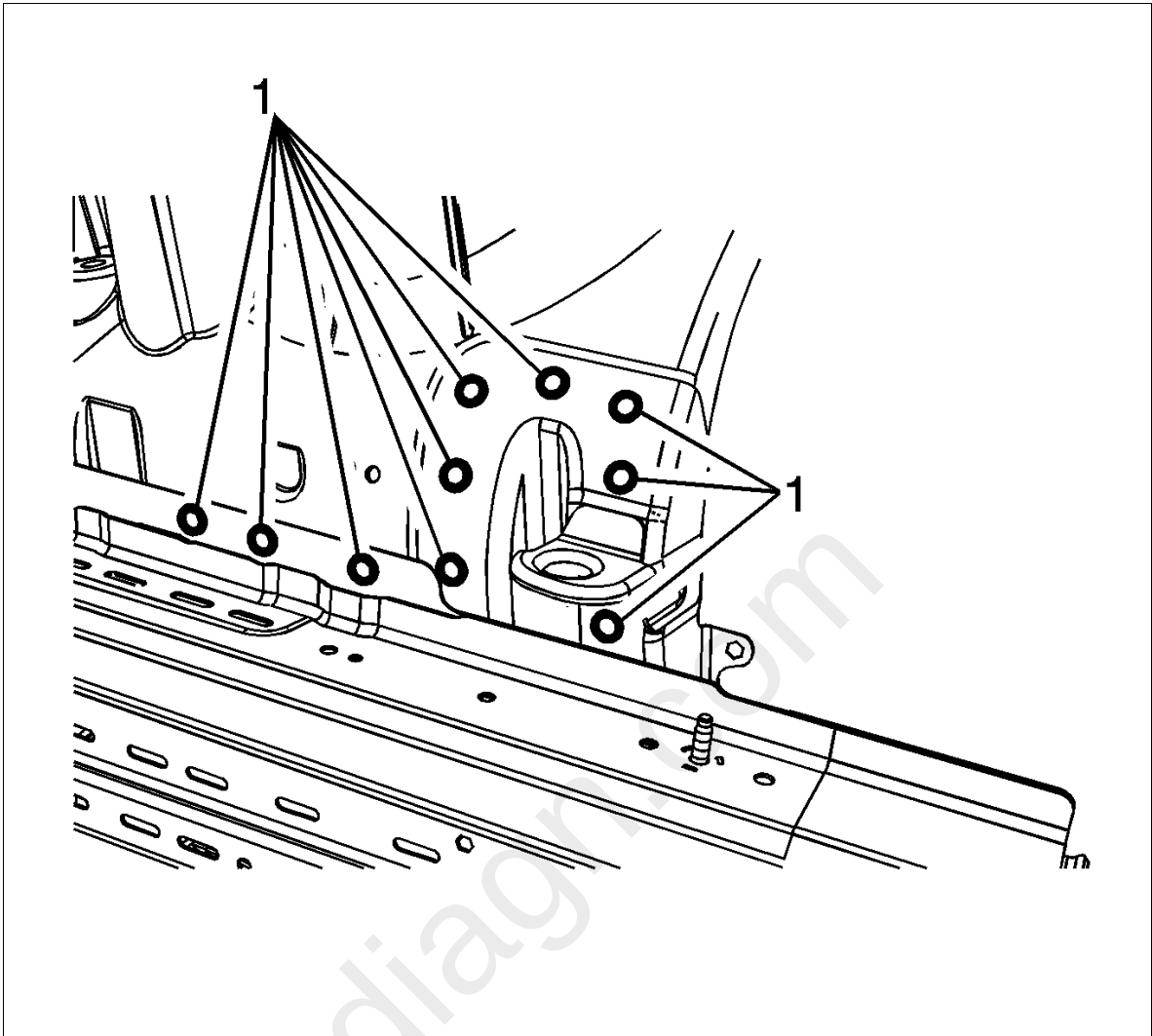


NOTE:

The front compartment lower rail assembly is made of Ultra High Strength Steel. Sectioning or repair of Ultra High Strength Steel is not recommended. It should be replaced as a complete assembly at factory locations. Refer to Ultra High Strength Steel

1. Disable the SIR system and then disconnect the negative battery cable. Refer to SIR Disabling and Enabling .
2. Remove all related panels and components.
3. Repair as much of the damage as possible. Refer to Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .

Fig 1: Front Wheelhouse Assembly



Courtesy of GENERAL MOTORS COMPANY

 NOTE:

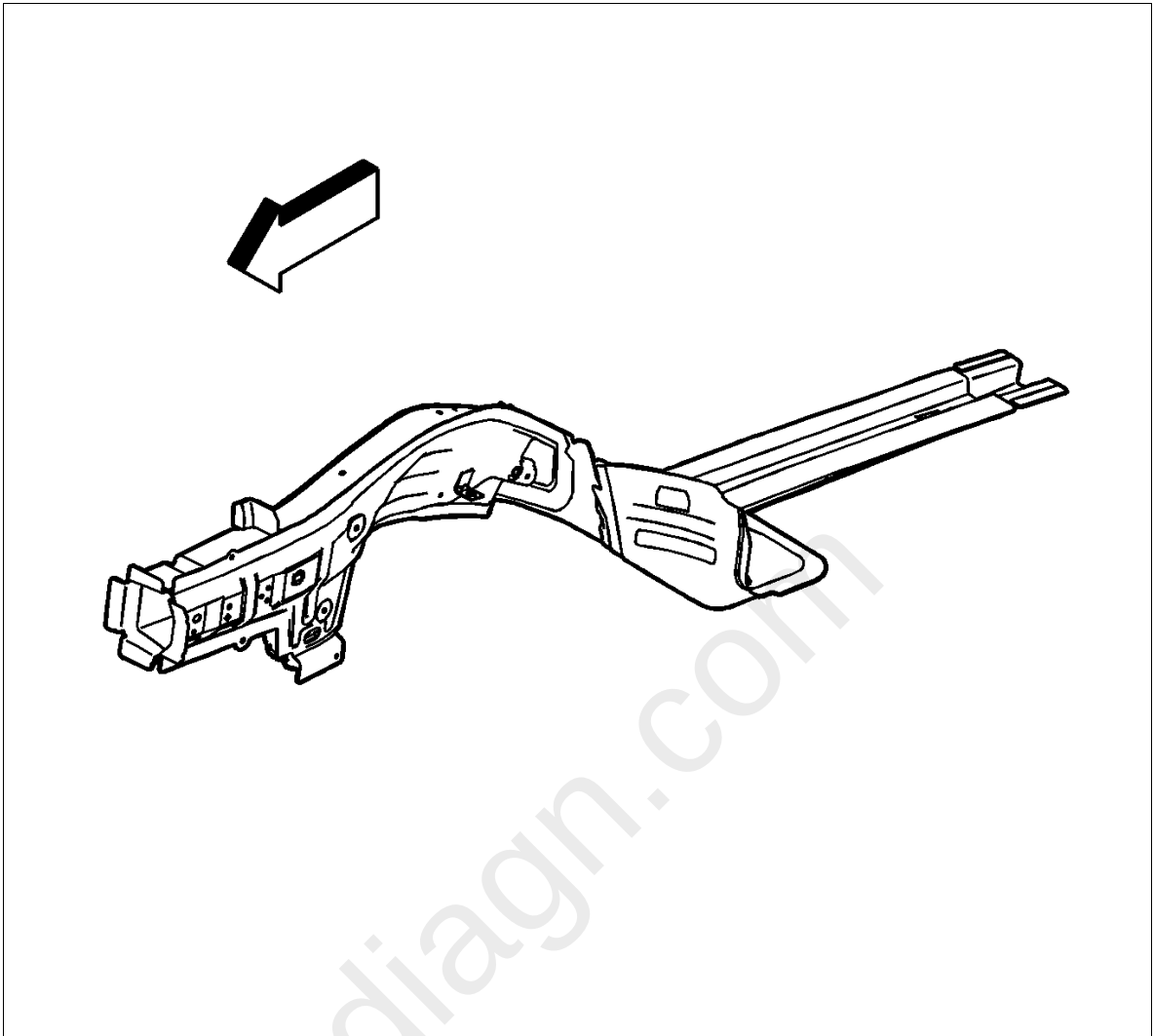
Note the front lower frame rail is attached to the front wheelhouse assembly (cast aluminum) using adhesive bonding and rivets. Do not damage the front wheelhouse during removal of the front lower frame rail.

 NOTE:

The rivets can be removed by using a chisel and hammer to remove the head of the rivet and then driving out the remainder of the rivet with a punch and hammer, or drilled out with a suitable drill bit and drill.

5. Locate, mark and remove the factory rivets that attach the front wheelhouse assembly to the front lower frame rail (1).

Fig 2: Drilling 8 mm (5/16 in) Plug Weld Holes - Front Rail



Courtesy of GENERAL MOTORS COMPANY

 NOTE:

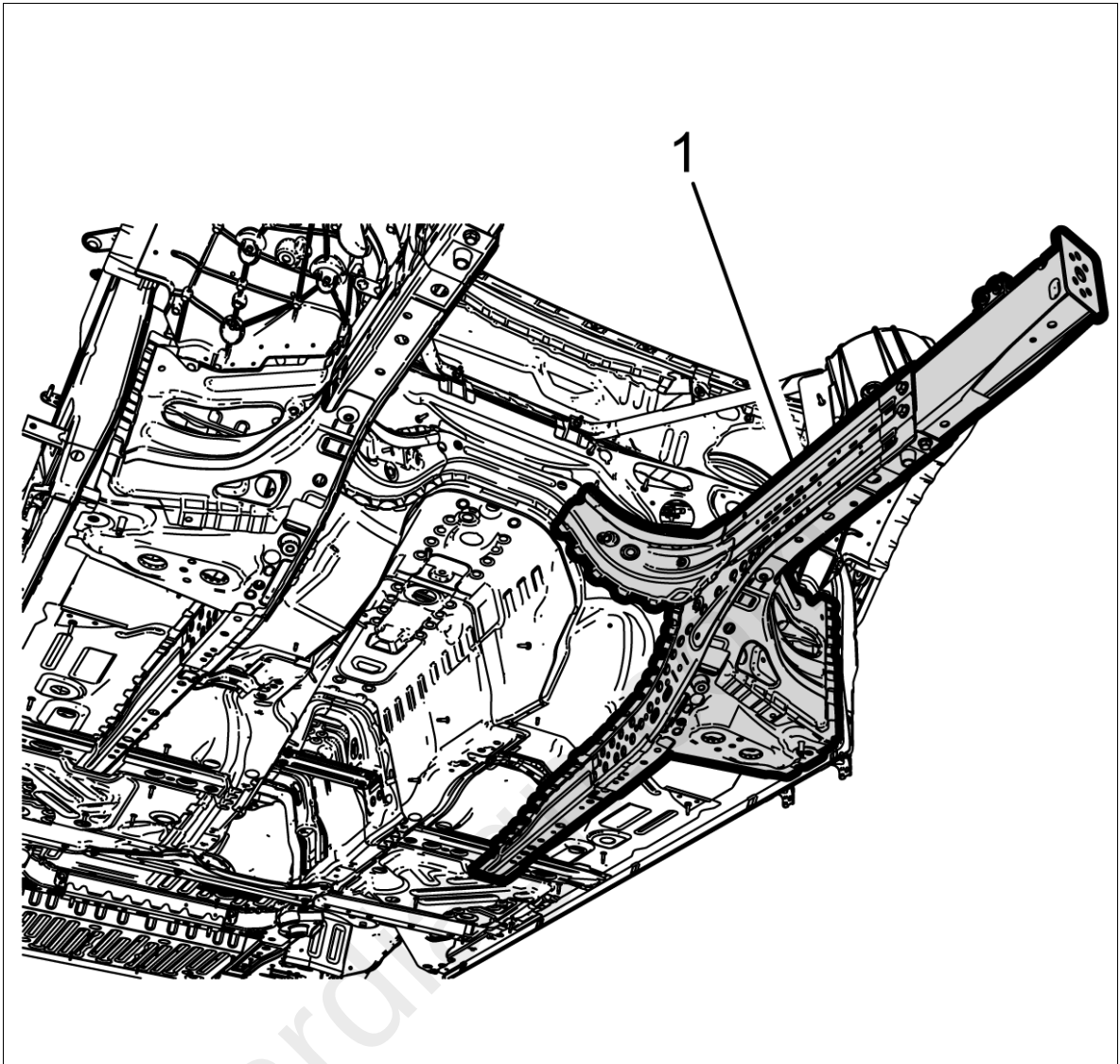
Note the number and location of the factory welds for installation of the full rail service part.

 NOTE:

The inner side rail gussets, outer side rail gussets, side rail rear extension need to be removed when replacing the front lower frame rail.

6. Remove welds from the inner side rail gussets, outer side rail gussets, and rear side rail extension from the front lower frame rail assembly, and then remove the parts.

Fig 3: Factory Welds



Courtesy of GENERAL MOTORS COMPANY

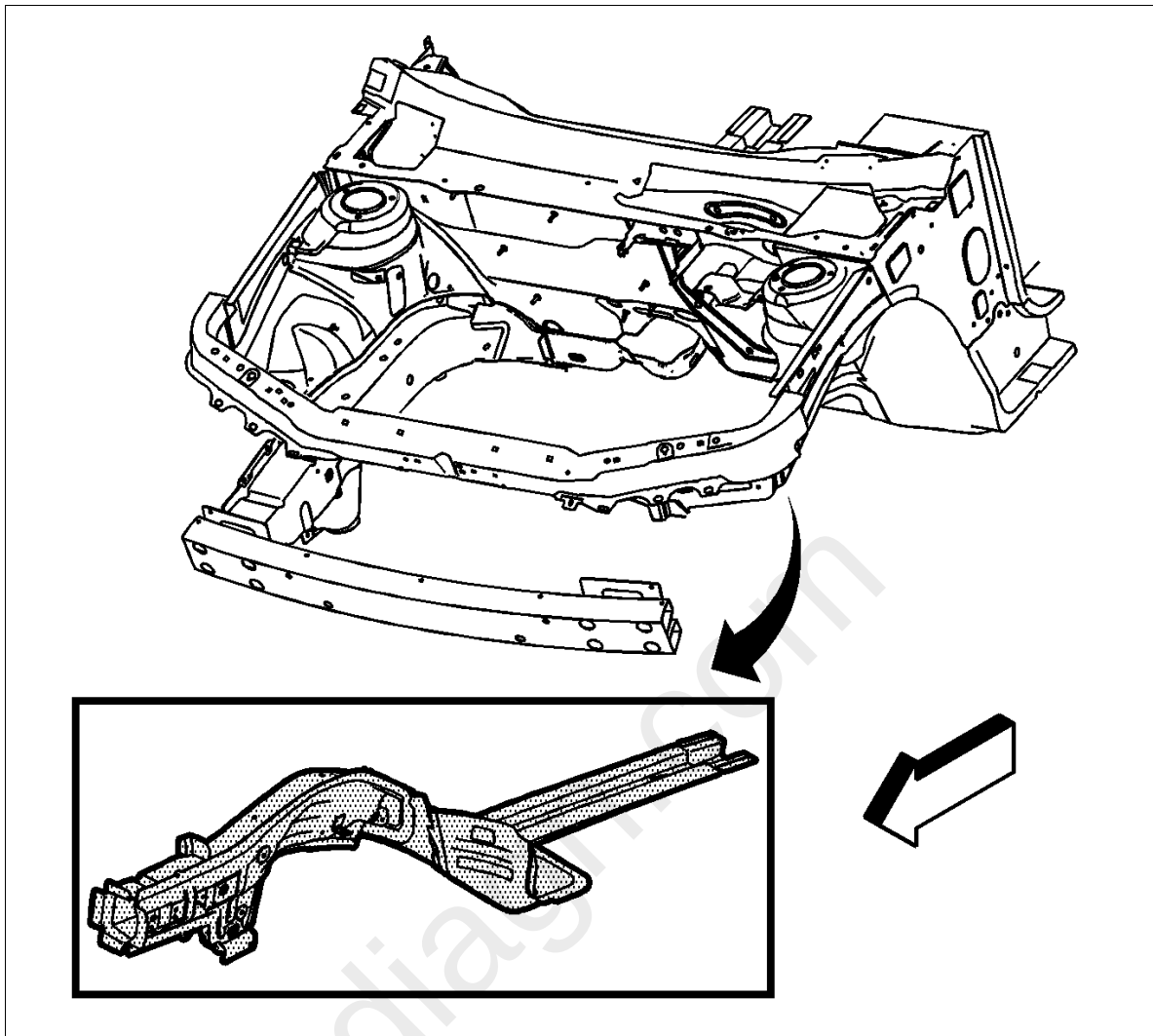


NOTE:

Note the number and location of the factory welds for installation of the full rail service part.

7. Remove the factory welds from the front lower frame rail, as necessary.

Fig 4: Removing Full Rail



Courtesy of GENERAL MOTORS COMPANY

 NOTE:

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

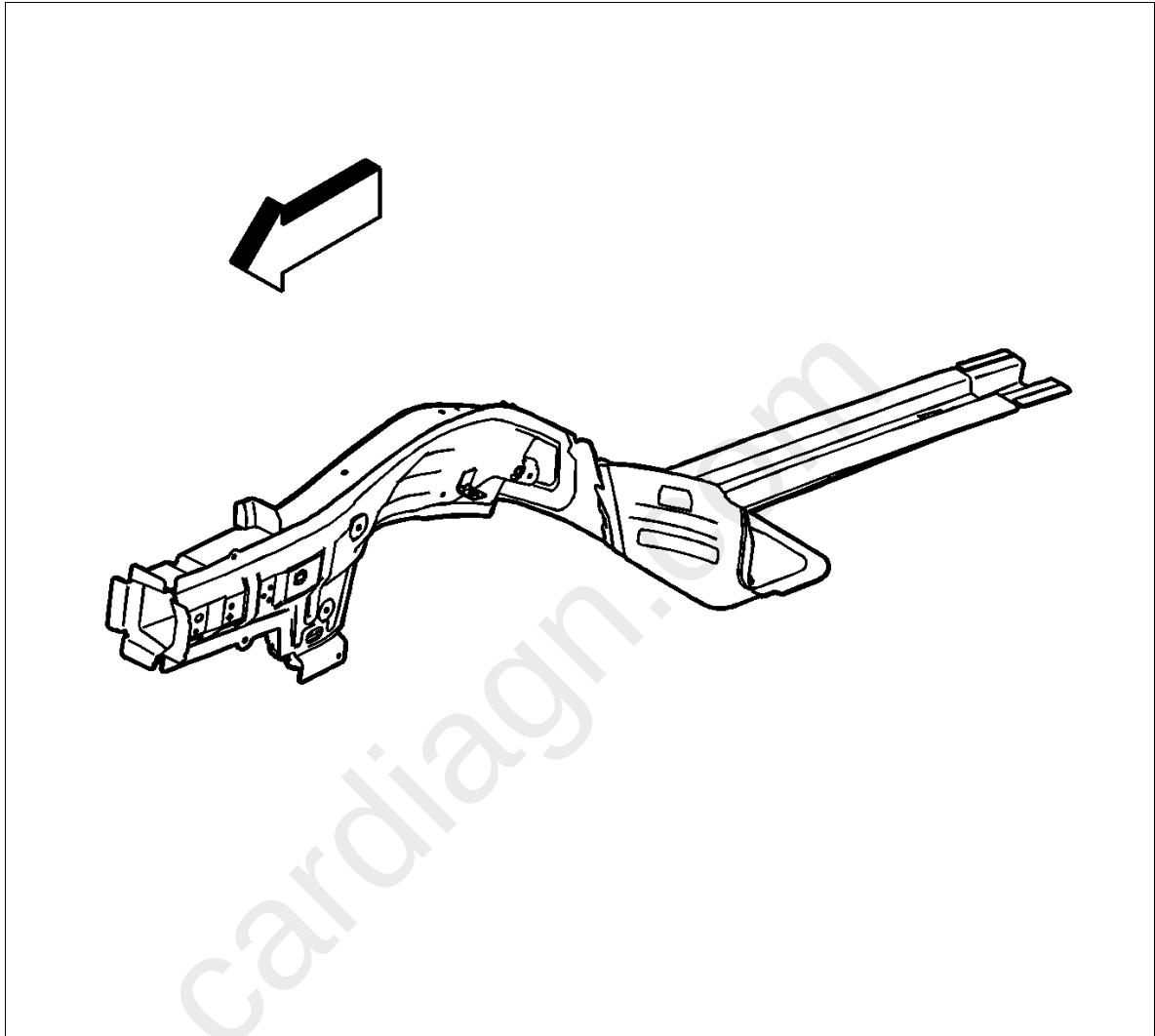
 NOTE:

Adhesive and welds will need to be removed from the tabs that attach the frame rail to the cowl reinforcement, before the rail can be removed.

8. To complete the removal of the front wheelhouse panel, apply heat to the adhesive material to cause the adhesive to release, and then remove the part.

REPAIR INSTRUCTIONS > FRONT COMPARTMENT FRONT RAIL REPLACEMENT > INSTALLATION PROCEDURE

Fig 1: Drilling 8 mm (5/16 in) Plug Weld Holes - Front Rail



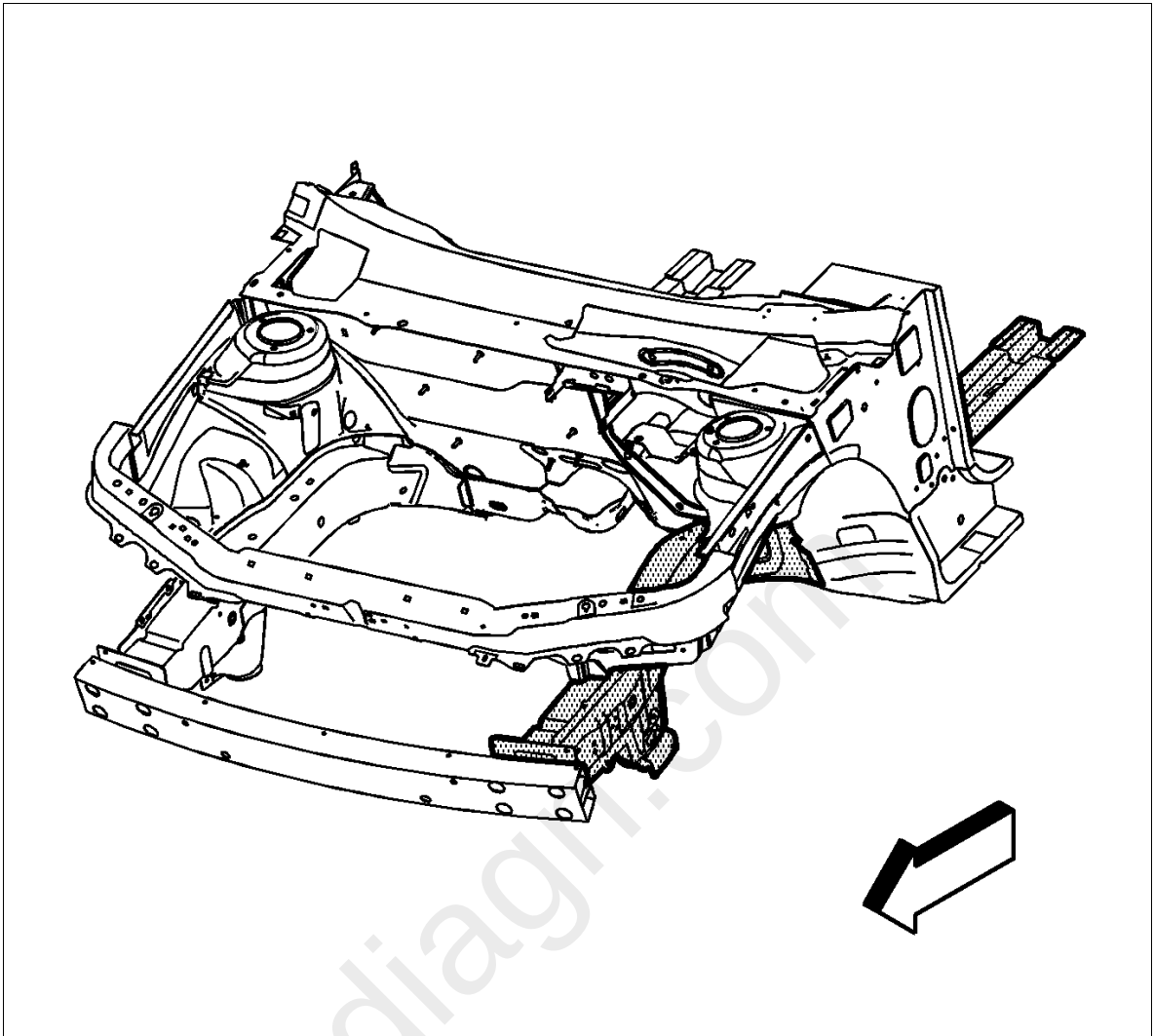
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

The inner side rail gussets, outer side rail gussets and rear side extension will need to be reinstalled after the front lower frame rail is attached to the vehicle structure.

1. Remove the inner side rail gussets, outer side rail gussets and rear side rail extension from the service part, prior to installing the service part.

Fig 2: Drill Out All Necessary Factory Welds - Front Rail



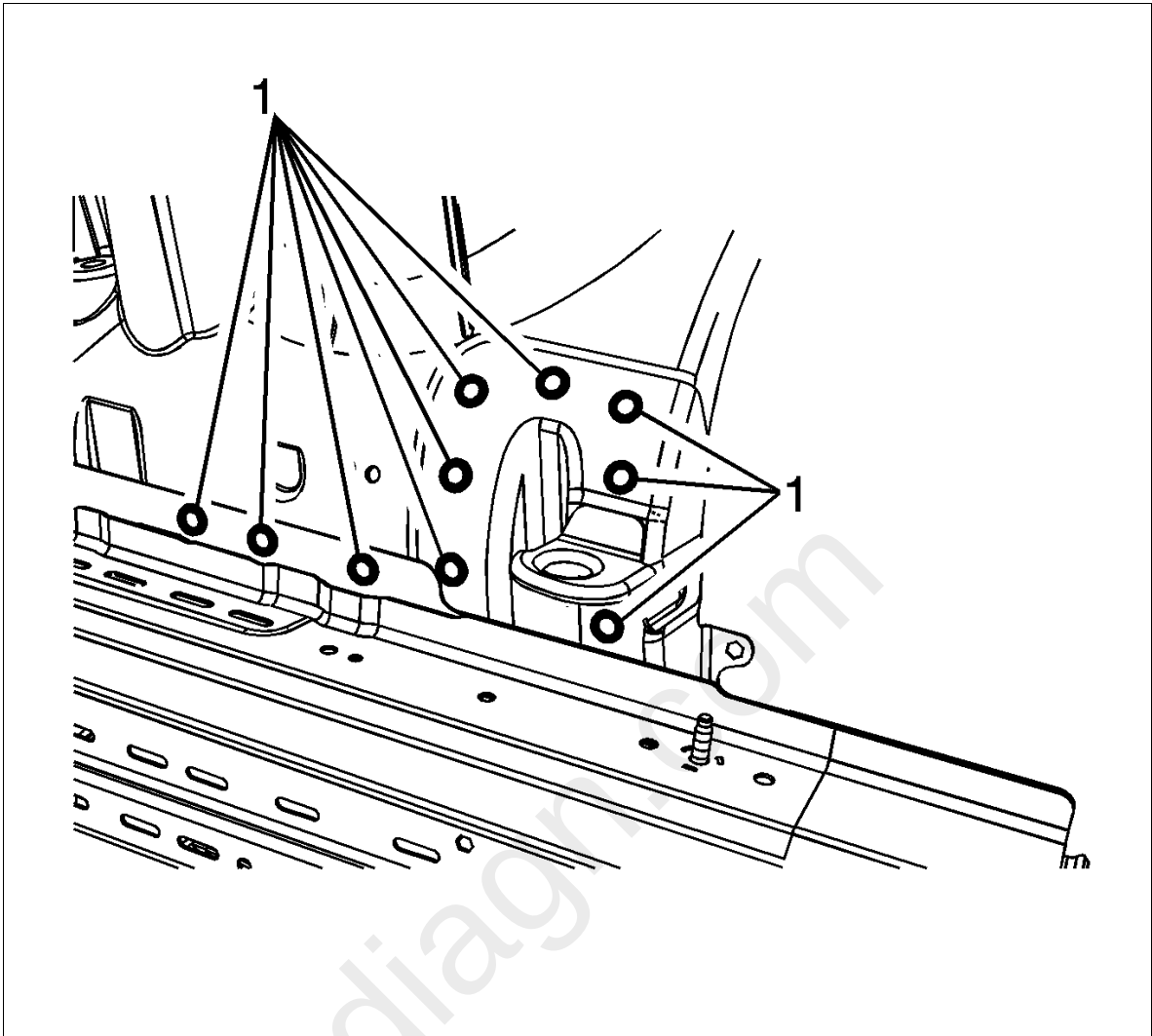
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

Proper alignment of the front lower frame rail is important. The use of 3-dimensional measuring equipment is recommended when installing the part.

2. Prior to applying adhesive, or welding, fit the front lower frame rail to the structure and check for proper alignment.

Fig 3: Front Wheelhouse Assembly



Courtesy of GENERAL MOTORS COMPANY

3. With the part properly located and aligned, mark the locations for the rivets and welds recorded from the original part and drill the holes for the rivets (1).
4. Remove the part from the vehicle to clean and prepare the surfaces for bonding and welding.
5. Clean and prepare all bonding and welding surfaces.

 NOTE:

Refer to adhesive manufacturer's recommendation for specific application and curing recommendations.

6. Apply a bead of adhesive to all bonding surfaces on the vehicle structure and service part, per the adhesive manufacturer's recommendations. Refer to Aluminum Panel Bonding .

 NOTE:

Completely cover all bare surfaces with the adhesive.

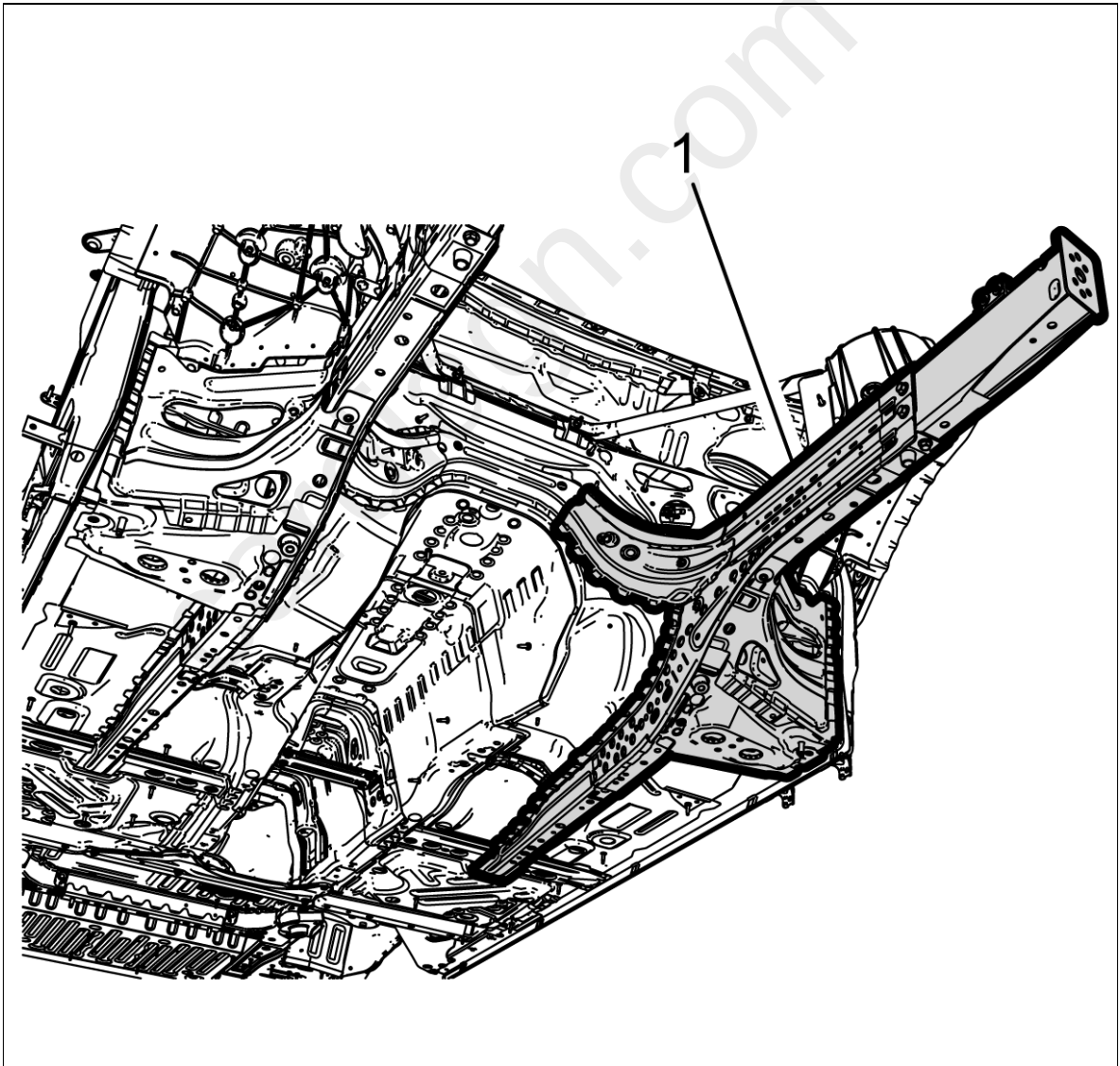
7. Using a small brush, spread a coat of the adhesive to cover the entire adhesive bonding surface, to ensure proper corrosion protection.

 NOTE:

Do not allow the adhesive to cure off the vehicle, prior to installing and aligning the part. Refer to adhesive manufacturer's recommendations for specific cure times.

8. Apply a bead of adhesive to the mating surface of the service part, per the adhesive manufacturer's recommendations.

Fig 4: Panels Together



Courtesy of GENERAL MOTORS COMPANY

 NOTE:

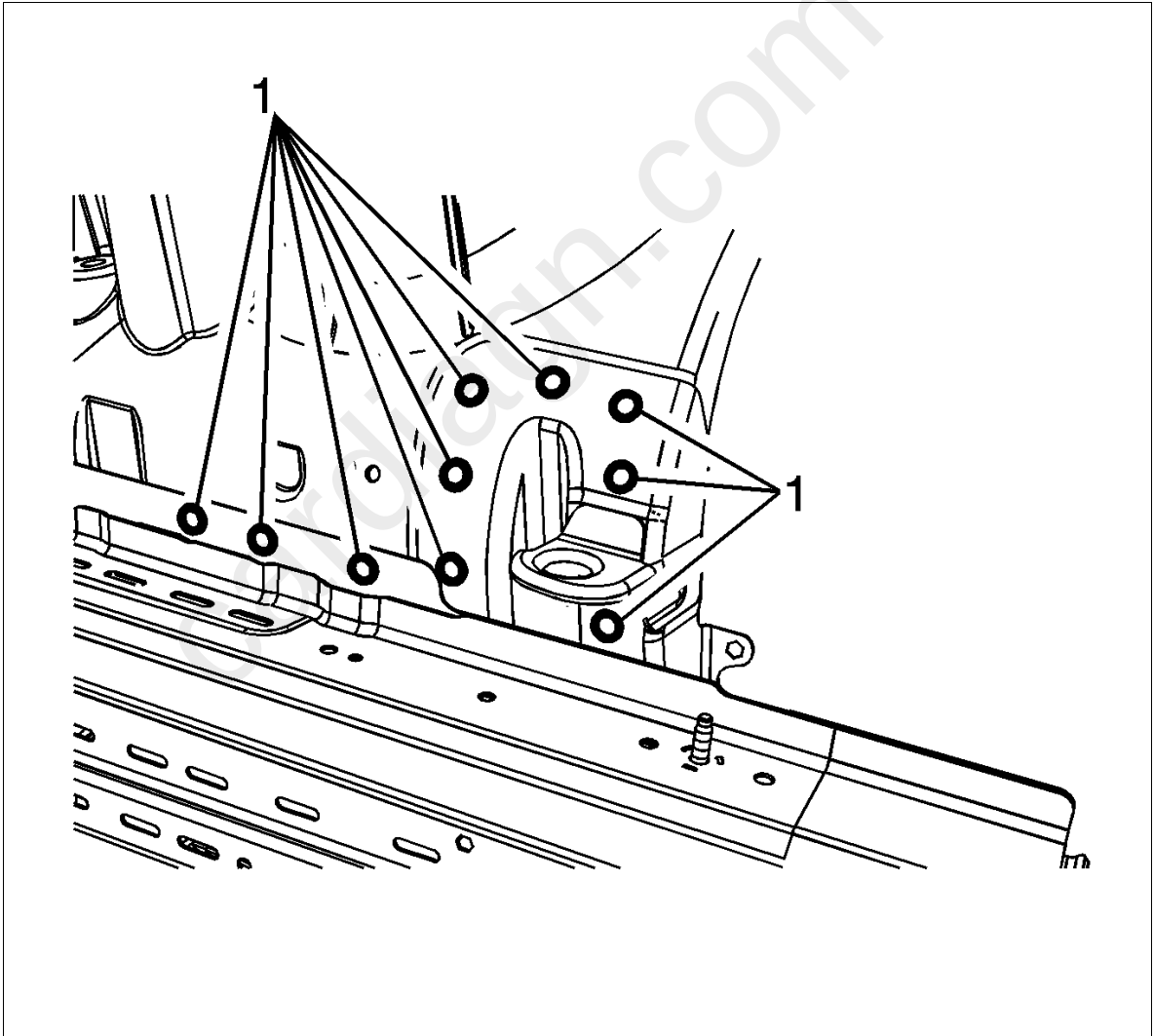
Do not pull the panels apart after joined together. Slide the panels against each other to realign the panels, or proper joint strength may be affected.

 NOTE:

Proper alignment of the wheelhouse assembly is important. The use of 3-dimensional measuring equipment is recommended when installing the part.

9. Install the service part to the vehicle structure and check for proper alignment.

Fig 5: Front Wheelhouse Assembly



Courtesy of GENERAL MOTORS COMPANY

10. Install the rivets along the bonding joint, at the original locations. Refer to the electronic parts catalog for the recommended rivets.

11. Weld the service part at the original weld locations, as necessary.
12. Install inner side rail gussets, outer side rail gussets and rear side rail extension removed from the service part.
13. Clean and prepare all of the welded surfaces.
14. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
15. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
16. Install all related panels and components.
17. Enable the SIR system and then connect the negative battery cable. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > FRONT HINGE PILLAR BODY SECTIONING (LOWER) > REMOVAL PROCEDURE

 WARNING:

Refer to Approved Equipment for Collision Repair Warning .

 WARNING:

Refer to Foam Sound Deadeners Warning .

 WARNING:

Refer to Battery Disconnect Warning .



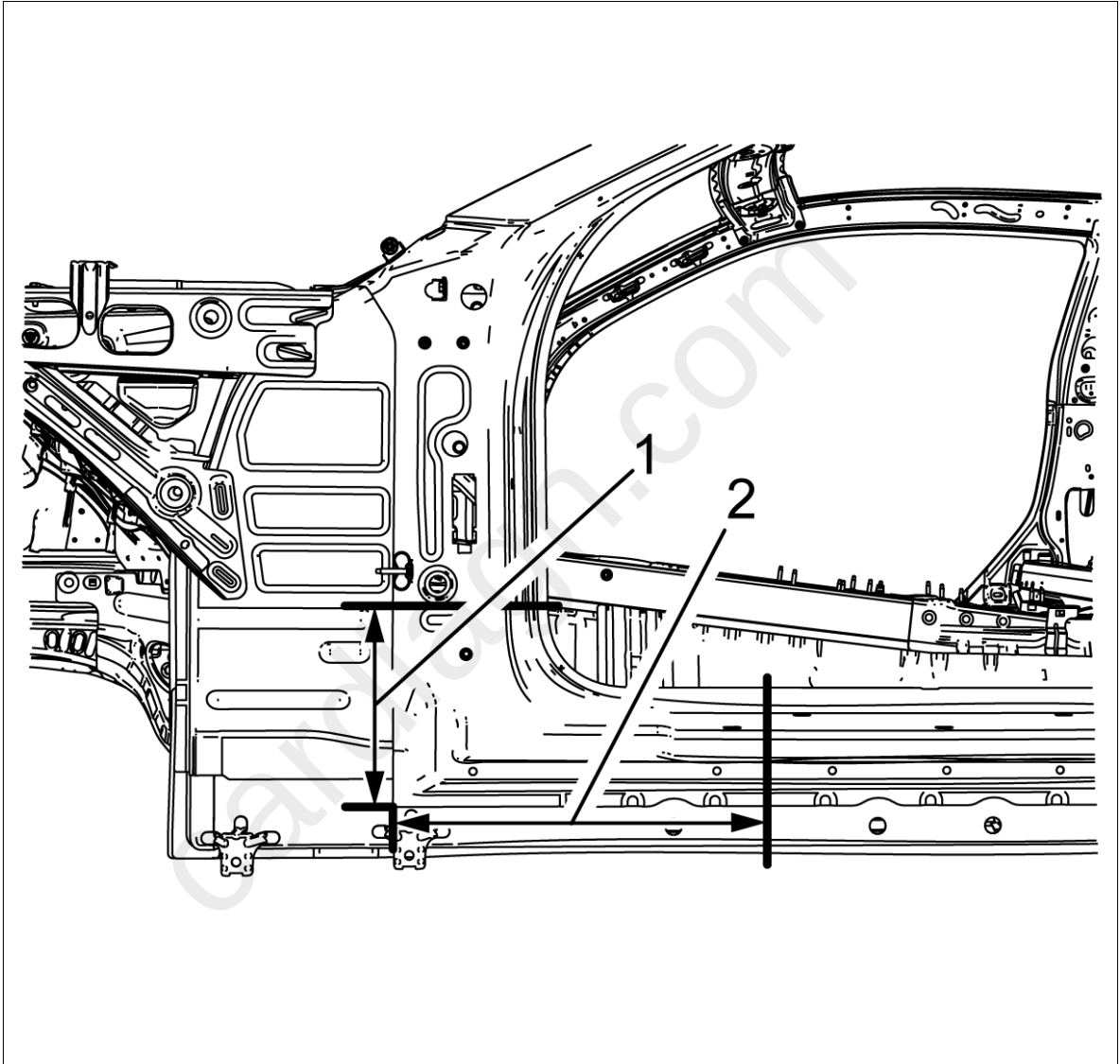
NOTE:

There are sectioning procedures available for various locations of the body side outer panel. The sectioning procedure and location should be chosen based on the extent of damage to the vehicle and other inner reinforcements that need to be replaced. Sectioning should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle. Refer to other service procedures for additional sectioning locations.

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

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

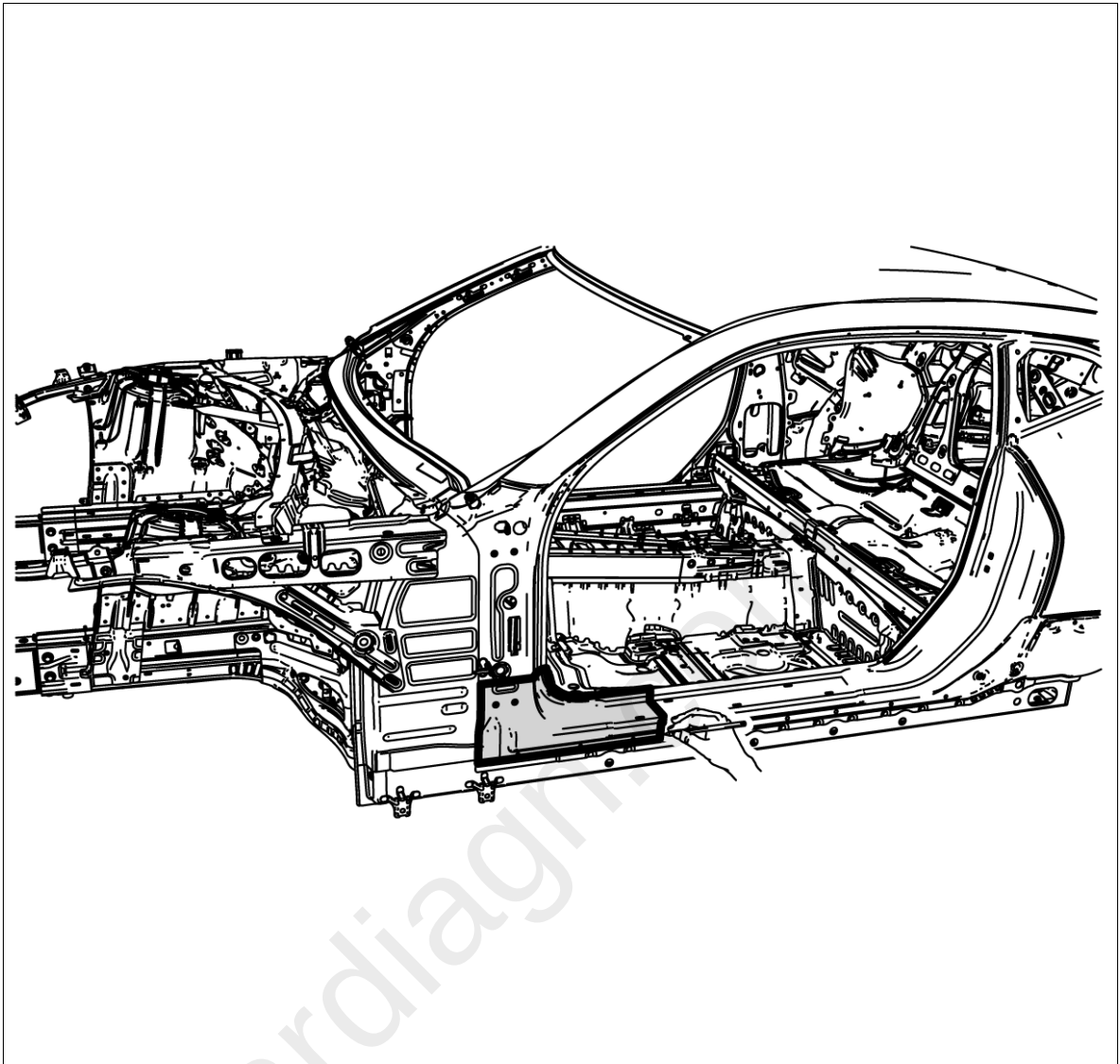
Fig 1: Measure And Mark Bodyside Panel



Courtesy of GENERAL MOTORS COMPANY

6. Measure and mark bodyside panel using dimensions listed in step 7.

Fig 2: Number And Location Of Original Welds



Courtesy of GENERAL MOTORS COMPANY

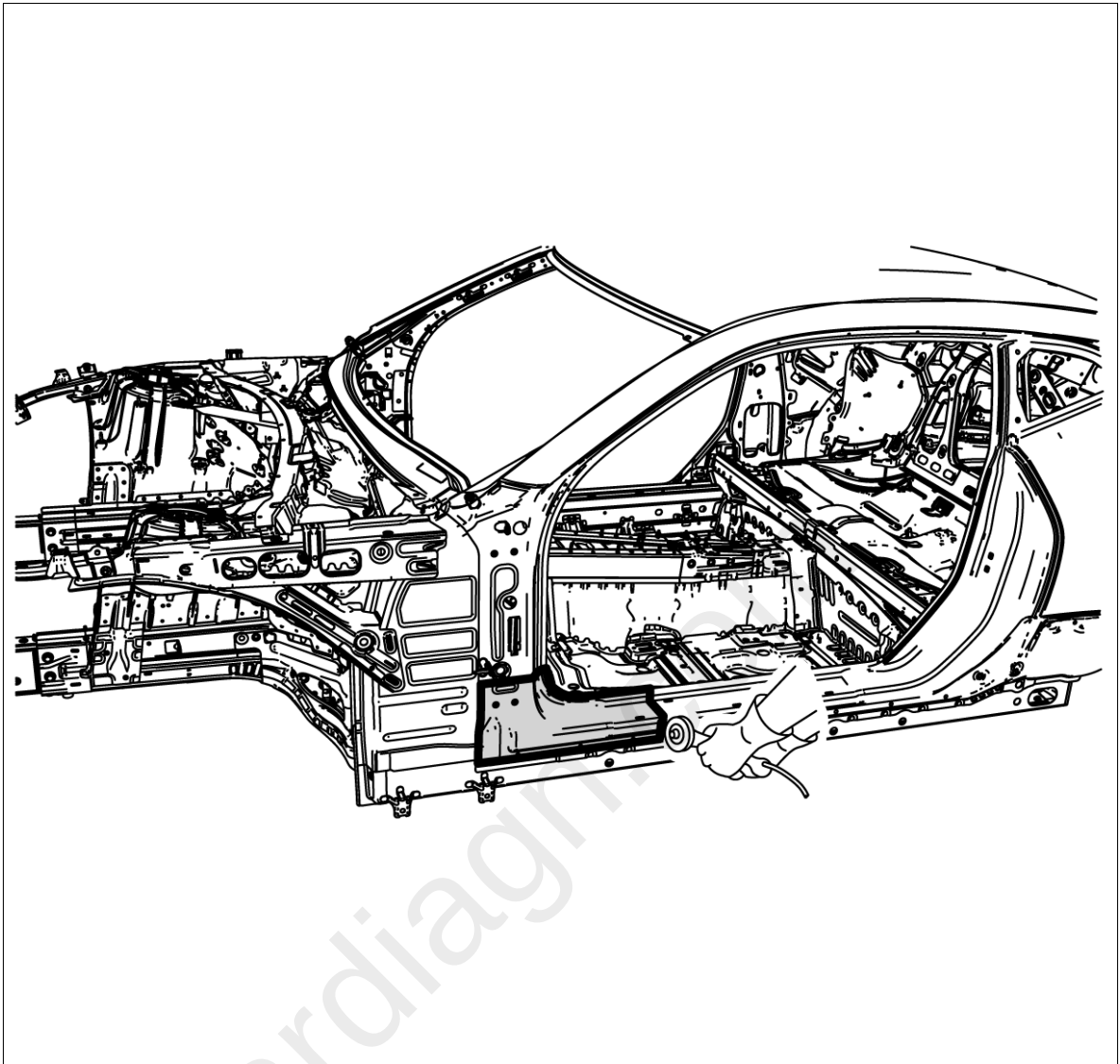


NOTE:

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

7. Measure upward from the lower edge of the bodyside panel at the rocker edge 200 mm and mark a cut line horizontally in the bodyside outer just above the lower door hinge mount point (1). Mark another cut location vertically in the straight area on the body side outer rocker panel 420 mm rearward from front edge of the body side panel at the rocker (2).
8. Perform additional sectioning procedures as needed, depending on damage to vehicle. Refer to Quarter Outer Panel Sectioning , Rocker Outer Panel Sectioning , or Center Pillar Sectioning - Outer .

Fig 3: Outer Body Side Panel



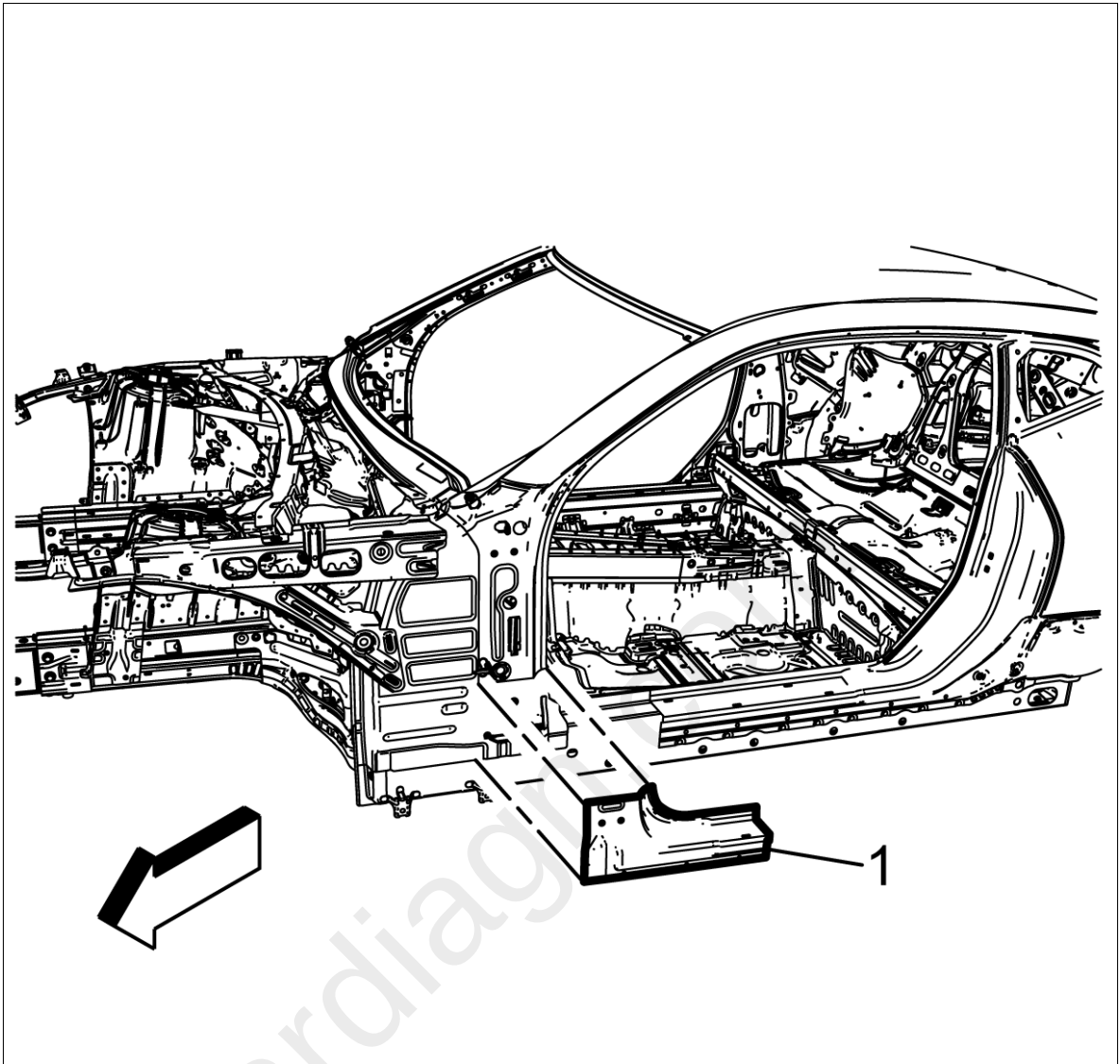
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

Do not damage or cut the front hinge pillar reinforcement, or outer rocker panel reinforcement. The outer rocker panel reinforcement is made of Ultra High Strength Steel. Sectioning, or repair of Ultra High Strength Steel is not recommended. Refer to Ultra High Strength Steel .

9. Cut the outer body side panel where sectioning is to be performed (1).

Fig 4: Damaged Front Hinge Pillar Body Section

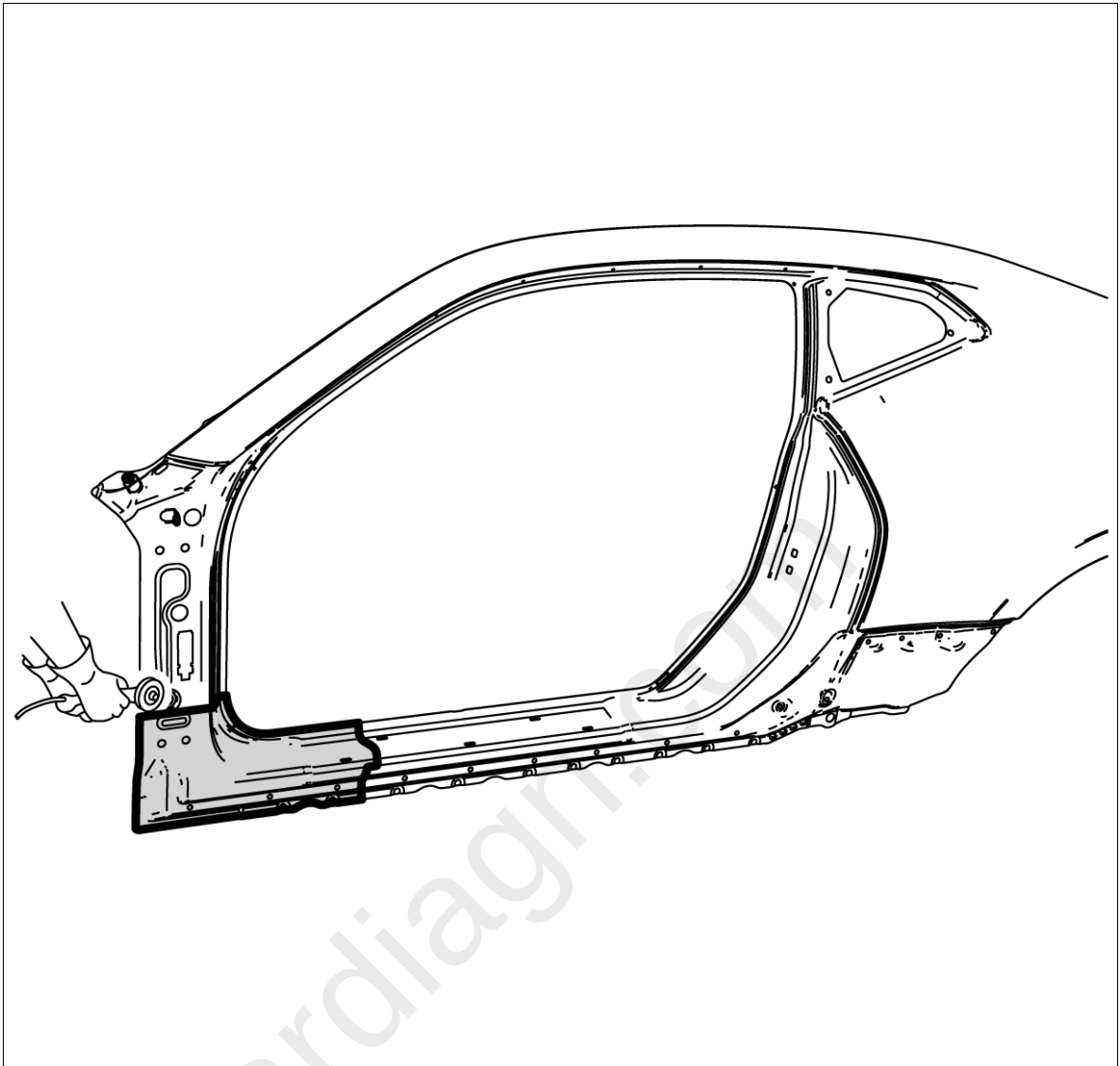


Courtesy of GENERAL MOTORS COMPANY

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

**REPAIR INSTRUCTIONS > FRONT HINGE PILLAR BODY SECTIONING (LOWER) >
INSTALLATION PROCEDURE**

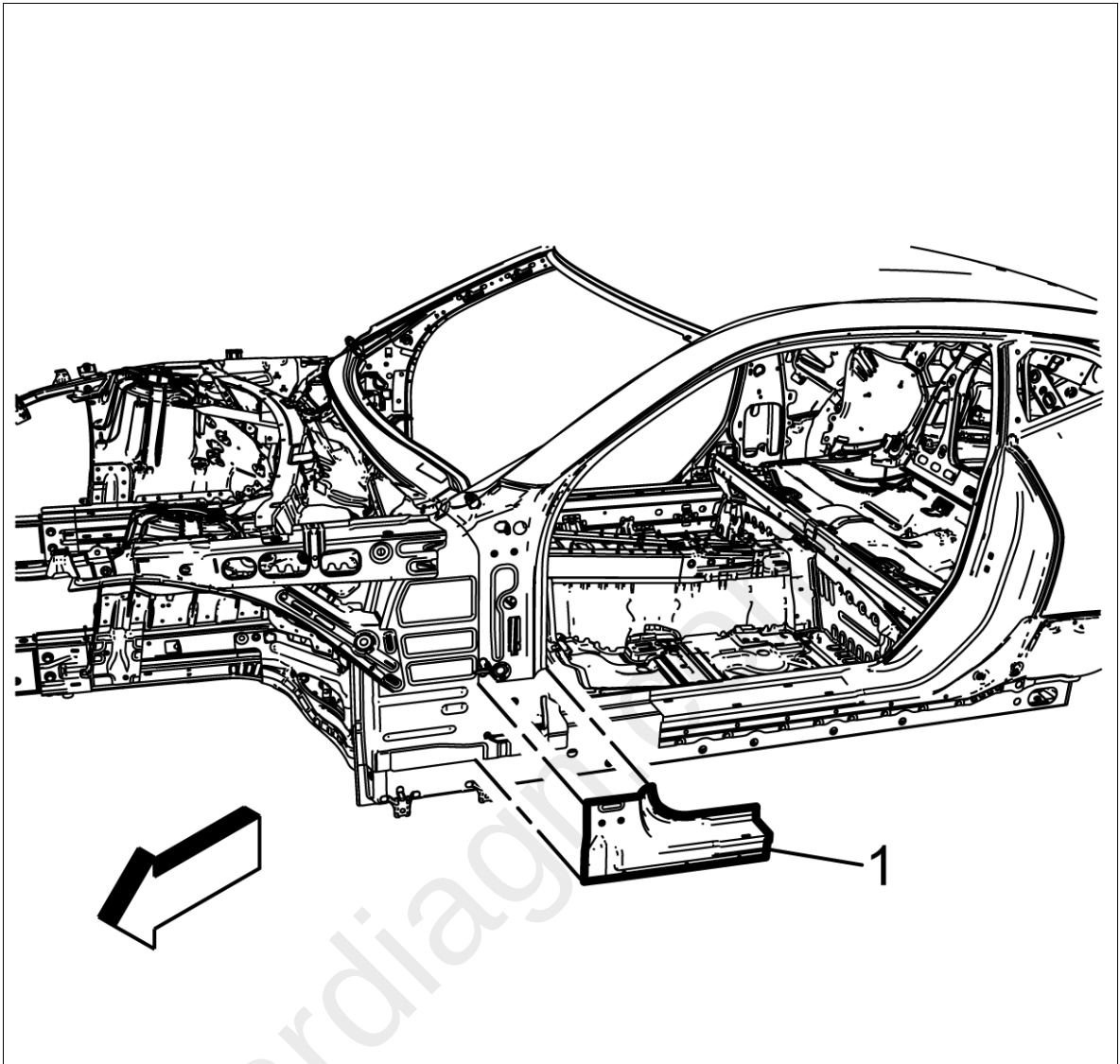
Fig 1: Cuting Panel



Courtesy of GENERAL MOTORS COMPANY

1. From the service part, cut the panel in corresponding locations to overlap the remaining original panel by 25 mm (1 in) at each joint location (1).
2. Prepare all matting surfaces as necessary.
3. Apply Weld-Thru Coating to all matting surfaces. Refer to Anti-Corrosion Treatment and Repair

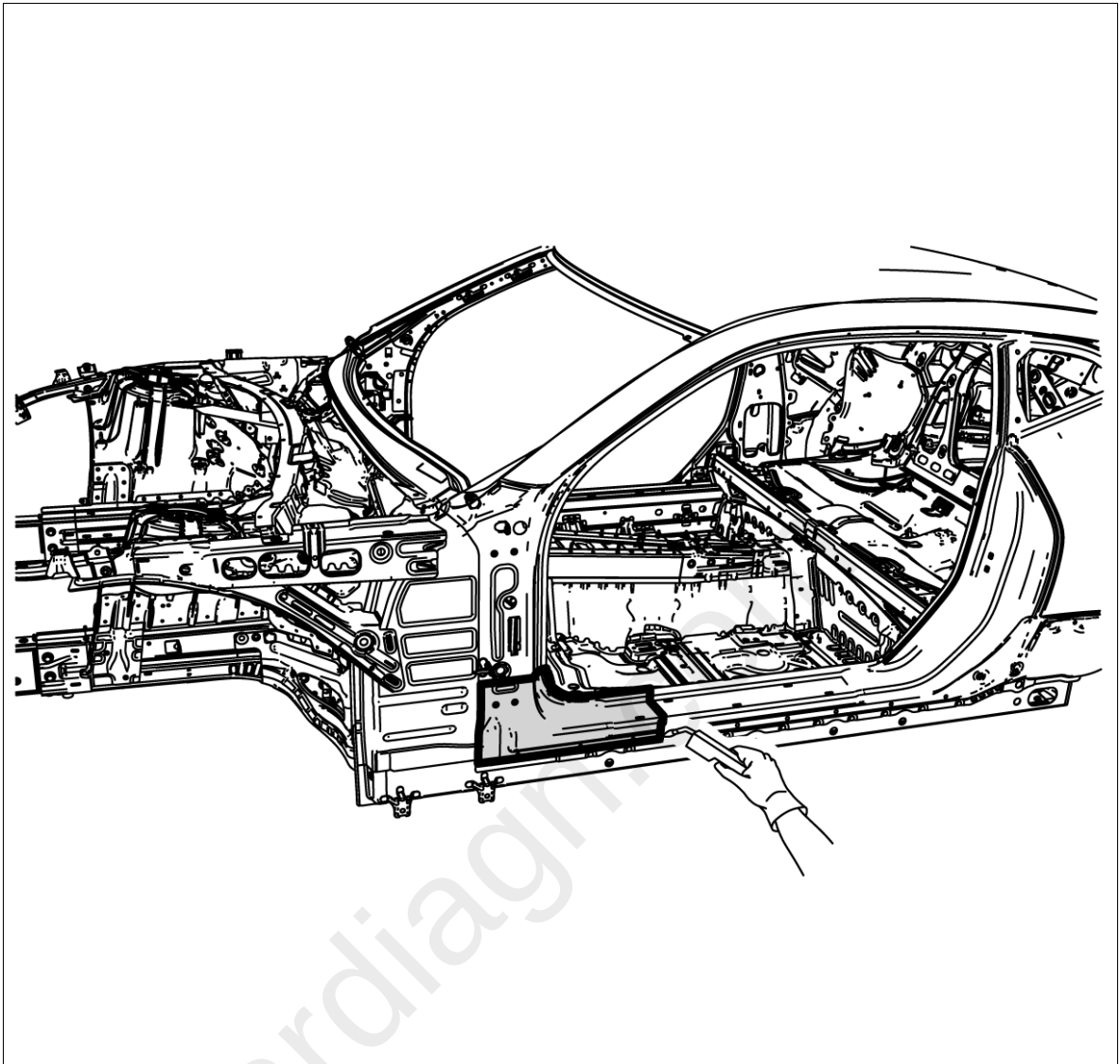
Fig 2: Outer Front Pillar



Courtesy of GENERAL MOTORS COMPANY

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

Fig 3: Perimeter Of Part



Courtesy of GENERAL MOTORS COMPANY

5. Weld the perimeter of the part at the original spot weld locations (1). To create a solid weld with minimum heat distortion, make stitch welds along the 25 mm overlap joints, with equal gaps between the welds. Then go back and complete the welds, to create a solid weld joint (2).
6. Clean and prepare all of the welded surfaces.
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
9. Install all of the related panels and components.
10. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
11. Enable the SIR system. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > FRONT HINGE PILLAR BODY SECTIONING (UPPER) > REMOVAL PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .



WARNING:

Refer to Battery Disconnect Warning .



WARNING:

Refer to Glass and Sheet Metal Handling Warning .

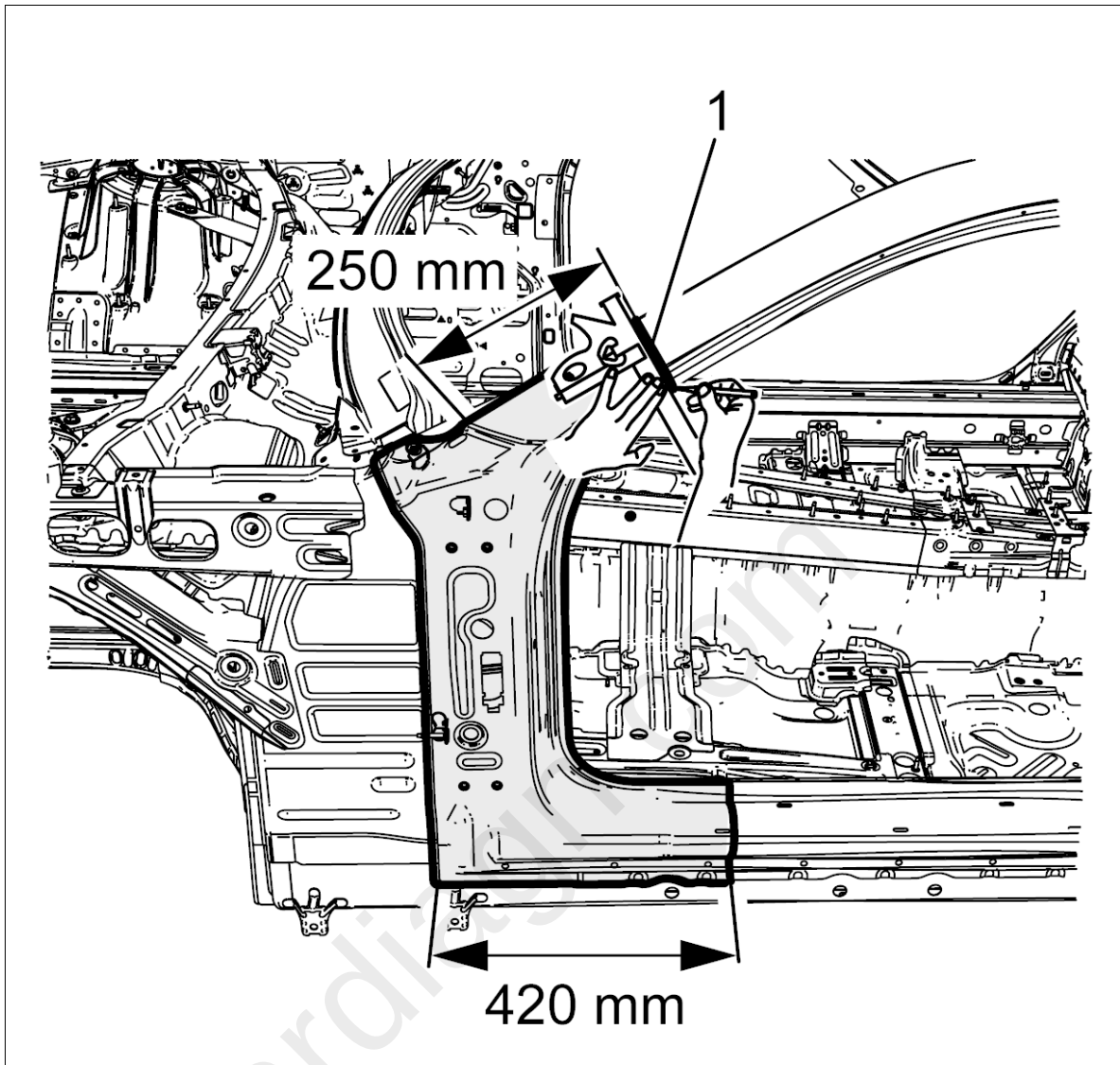


NOTE:

This procedure was developed to allow access for the complete replacement of the front body hinge pillar reinforcement. There are sectioning procedures available for various locations of the body side outer panel. The sectioning procedure and location should be chosen based on the extent of damage to the vehicle and other inner reinforcements that need to be replaced. Sectioning should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle. Refer to other service procedures for additional sectioning locations.

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

Fig 1: Sectioning



Courtesy of GENERAL MOTORS COMPANY

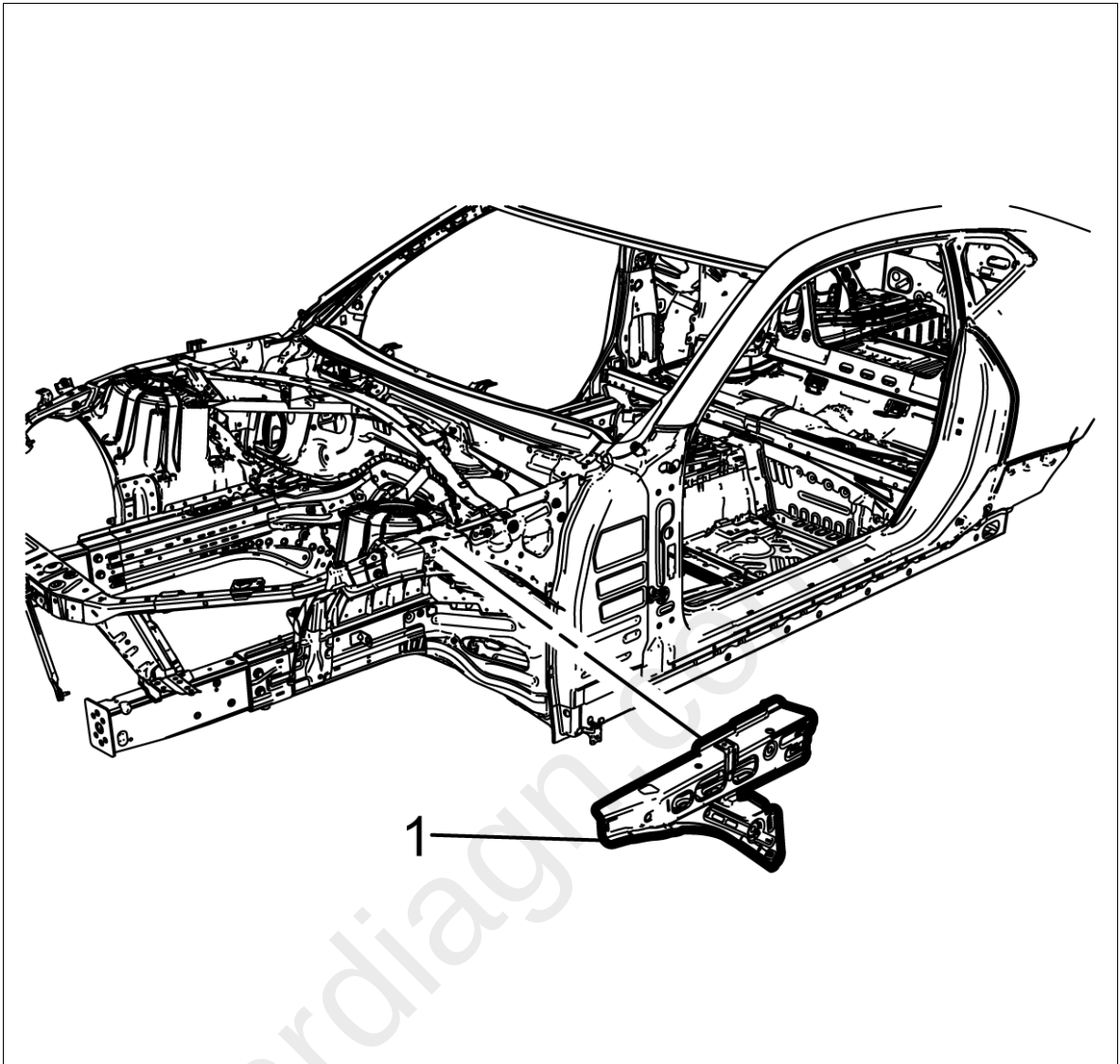


NOTE:

Sectioning can be performed anywhere in the straight area along the rocker panel.

6. On the "A" pillar, measure up 250 mm from front edge of body side panel at the bottom of the "A" pillar (1). Mark this cut location on the front hinge pillar. Mark a cut location in the straight area of the rocker panel 420 mm rearward from front edge of the body side panel at the rocker.
7. Perform additional sectioning procedures as needed depending on damage to vehicle. Refer to Quarter Outer Panel Sectioning , Rocker Outer Panel Sectioning , or Center Pillar Sectioning - Outer .

Fig 2: Service Assembly



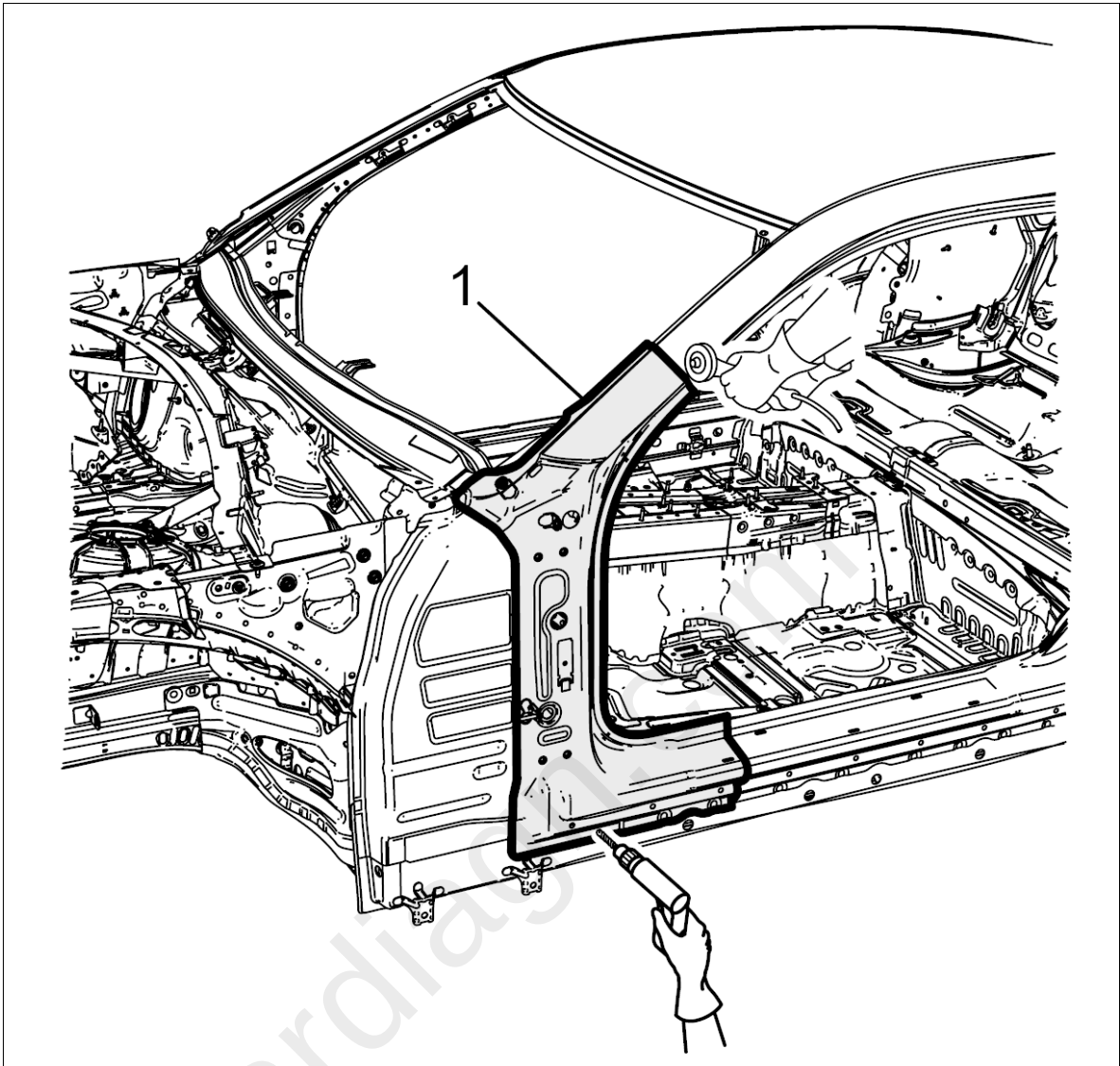
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

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

8. Remove the front compartment upper side rail for access to welds and to remove the front hinge pillar outer panel. Refer to Front Compartment Upper Side Rail Replacement .

Fig 3: Cut Front Hinge Pillar Body



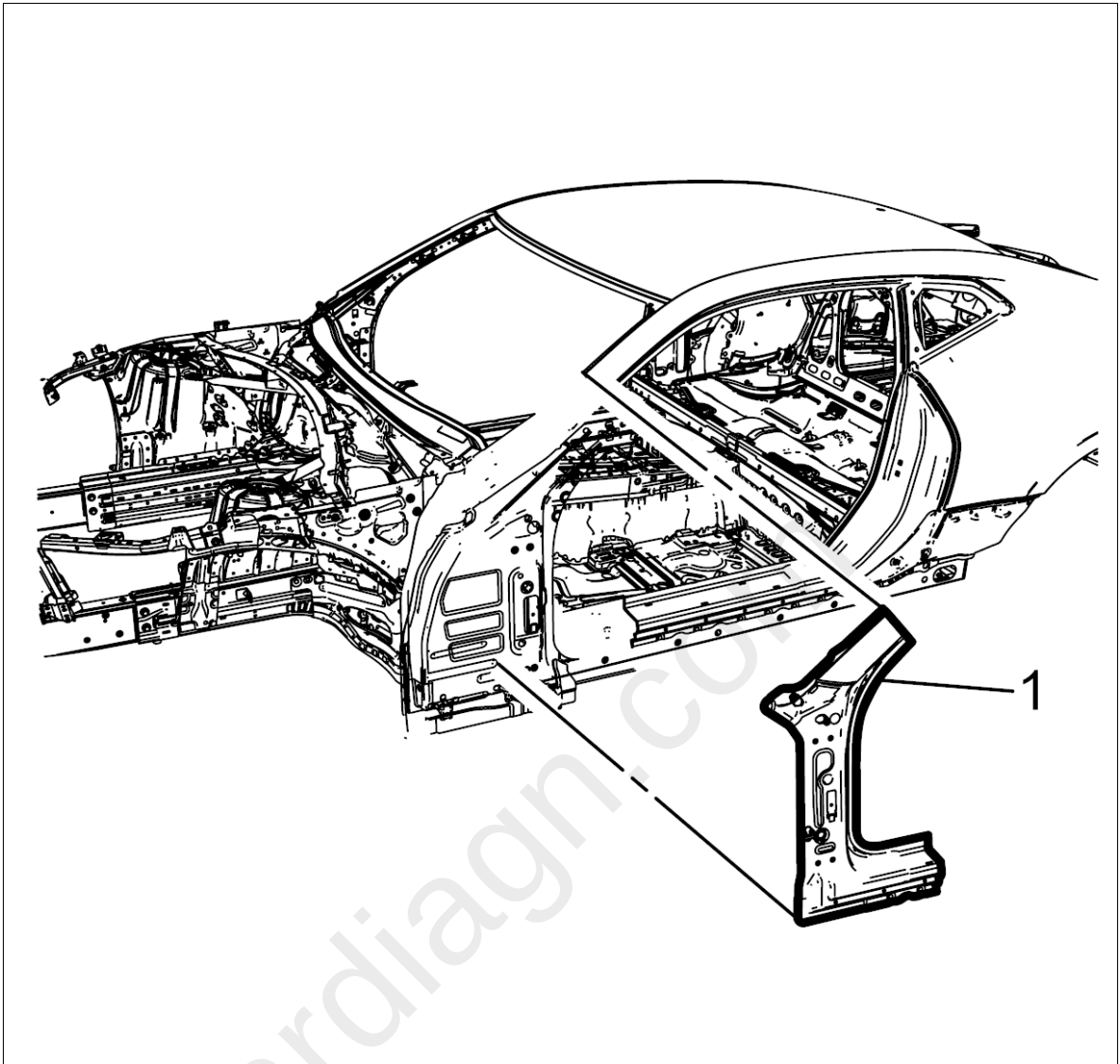
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

Do not damage or cut the upper roof pillar reinforcements or rocker outer panel reinforcements. The upper roof pillar reinforcements and rocker outer panel reinforcements are made of Ultra High Strength Steel. Sectioning, or repair of Ultra High Strength Steel is not recommended. Refer to Ultra High Strength Steel .

9. Cut the front hinge pillar body where sectioning is to be performed (1).

Fig 4: Front Hinge Pillar Body

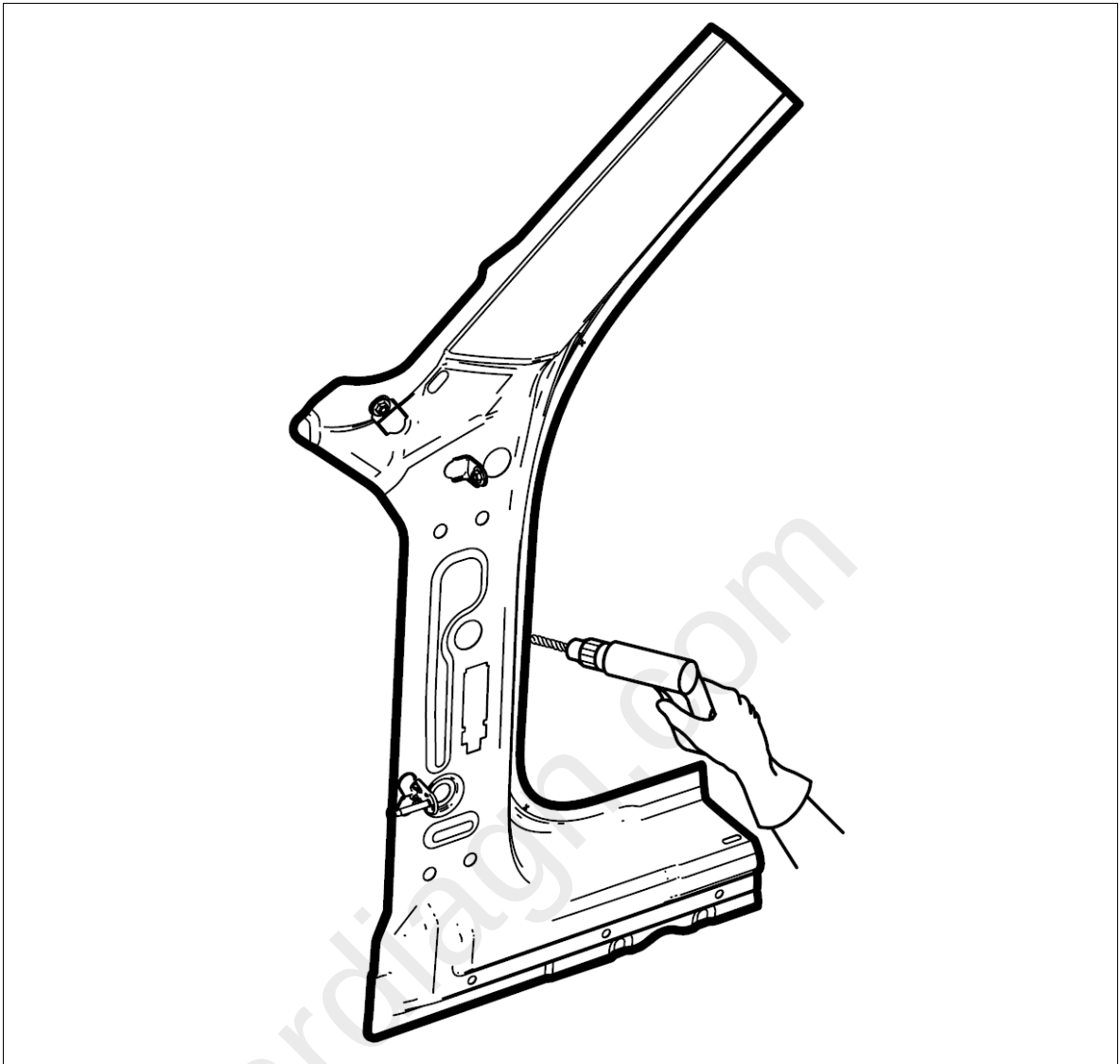


Courtesy of GENERAL MOTORS COMPANY

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

**REPAIR INSTRUCTIONS > FRONT HINGE PILLAR BODY SECTIONING (UPPER) >
INSTALLATION PROCEDURE**

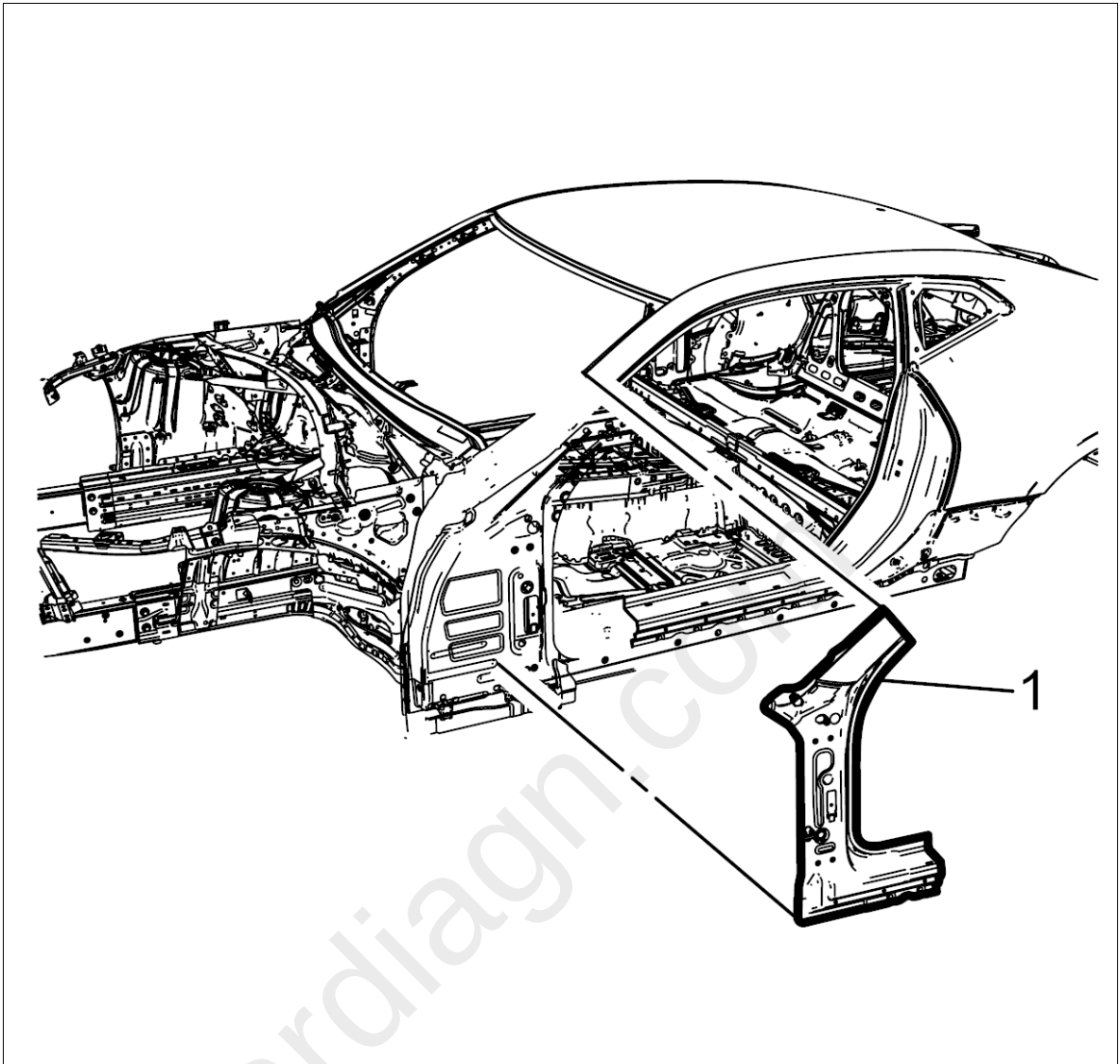
Fig 1: Cut Panel In Corresponding Locations



Courtesy of GENERAL MOTORS COMPANY

1. From the service part, cut the panel in corresponding locations to overlap the remaining original panel by 25 mm (1 in) at each joint location (1).
2. Prepare all mating surfaces as necessary.
3. Apply GM-approved weld-thru coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair .

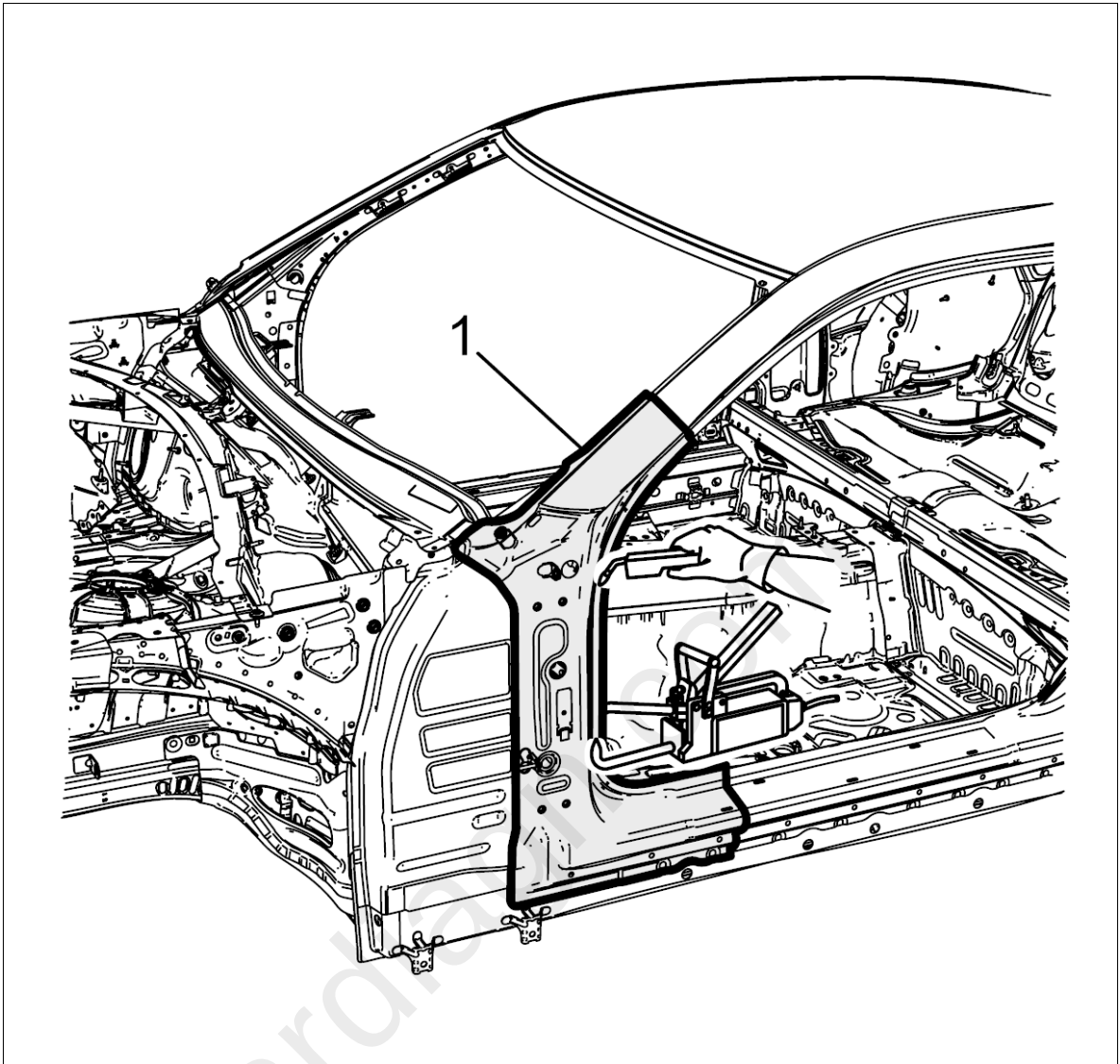
Fig 2: Front Hinge Pillar Body



Courtesy of GENERAL MOTORS COMPANY

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

Fig 3: Weld Perimeter Of Part



Courtesy of GENERAL MOTORS COMPANY

5. Weld the perimeter of the part at the original spot weld locations. To create a solid weld with minimum heat distortion, make stitch welds along the 25 mm overlap joints, with equal gaps between the welds. Then go back and complete the welds, to create a solid weld joint (1).
6. Install the front compartment upper side rail for access to welds and to remove the front hinge pillar outer panel. Refer to Front Compartment Upper Side Rail Replacement .
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 .
9. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
10. Install all of the related panels and components.
11. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .

12. Enable the SIR system. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > BODY HINGE PILLAR LOWER REINFORCEMENT REPLACEMENT > REMOVAL PROCEDURE

 WARNING:

Refer to Approved Equipment for Collision Repair Warning .

 WARNING:

Refer to Foam Sound Deadeners Warning .

 WARNING:

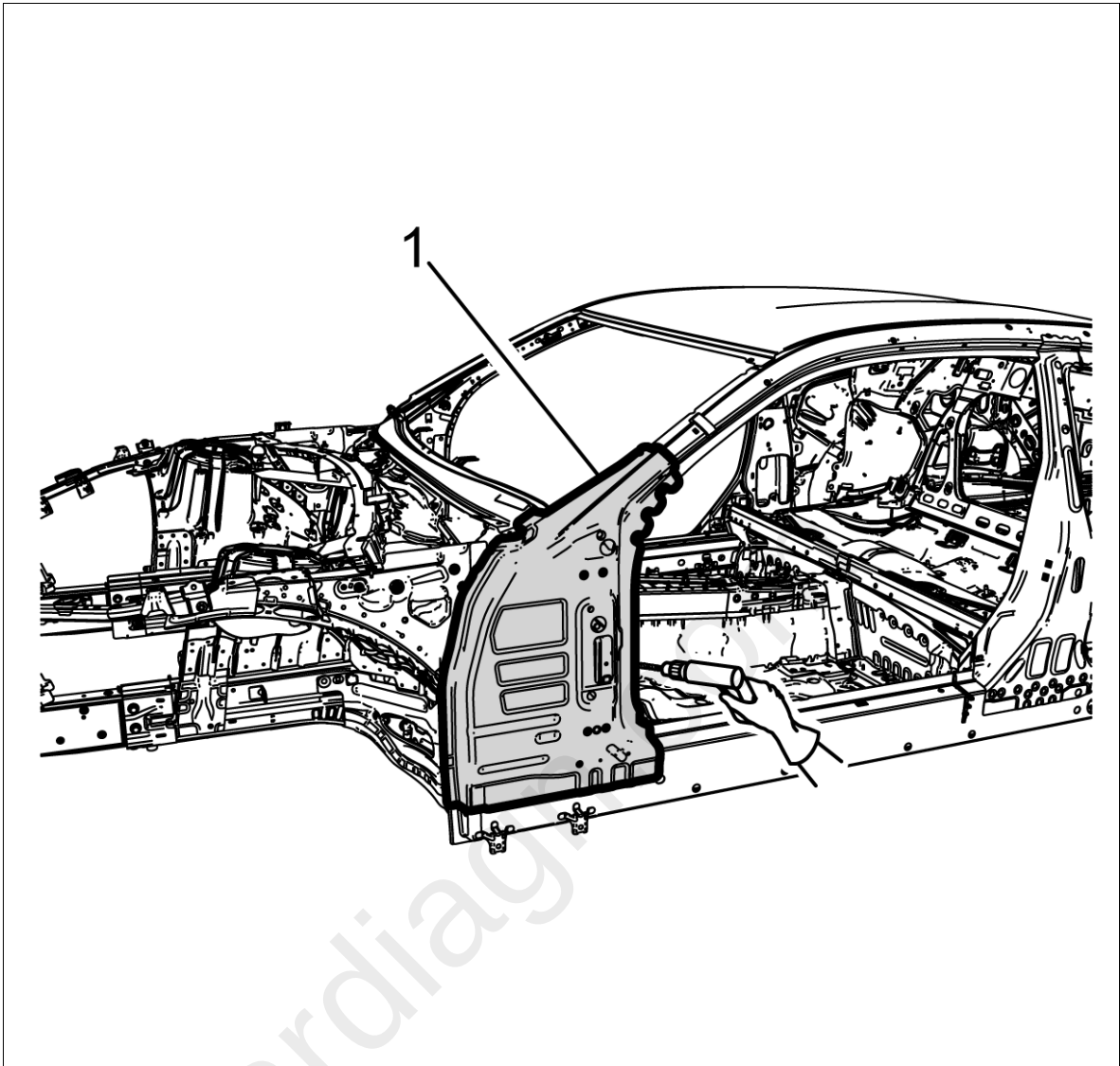
Refer to Battery Disconnect Warning .

 WARNING:

Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system and then disconnect the negative battery cable. Refer to SIR Disabling and Enabling .
2. Remove all related panels and components.
3. Visually inspect the damage. Repair as much of the damage as possible. Refer to Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
5. Remove the front compartment upper side rail. Refer to Front Compartment Upper Side Rail Replacement .
6. Section the front hinge pillar. Refer to Front Hinge Pillar Body Sectioning (Lower) Front Hinge Pillar Body Sectioning (Upper) .

Fig 1: Sectioning



Courtesy of GENERAL MOTORS COMPANY

 NOTE:

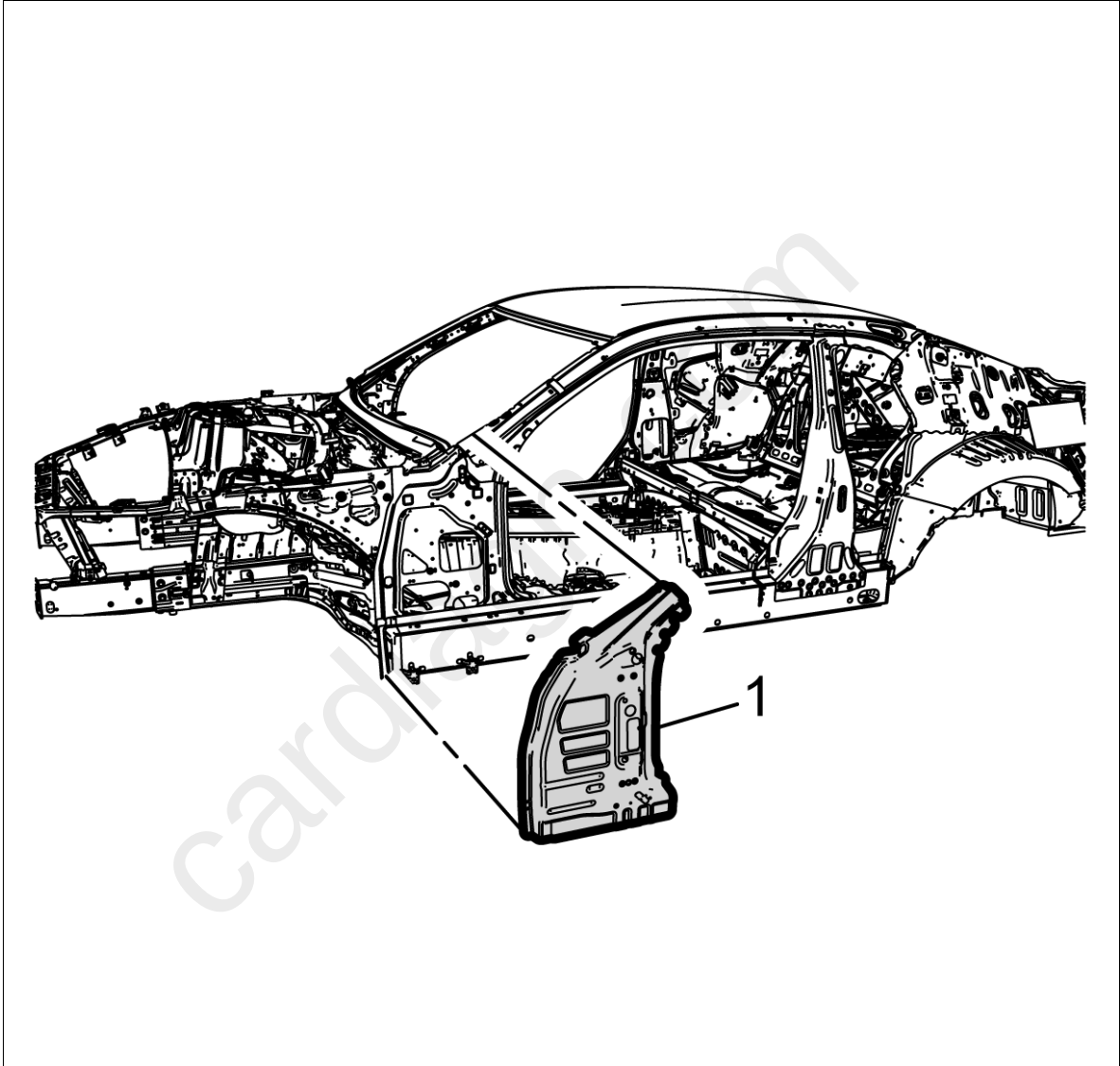
There are sectioning procedures available for various locations of the body side outer panel. The sectioning procedure and location should be chosen based on the extent of damage to the vehicle and other inner reinforcements that need to be replaced. Sectioning should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle. Refer to other service procedures for additional sectioning locations.

 **NOTE:**

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

7. Remove factory welds as required from the front hinge pillar reinforcement (1).

Fig 2: Damaged Body Hinge Pillar Lower Reinforcement



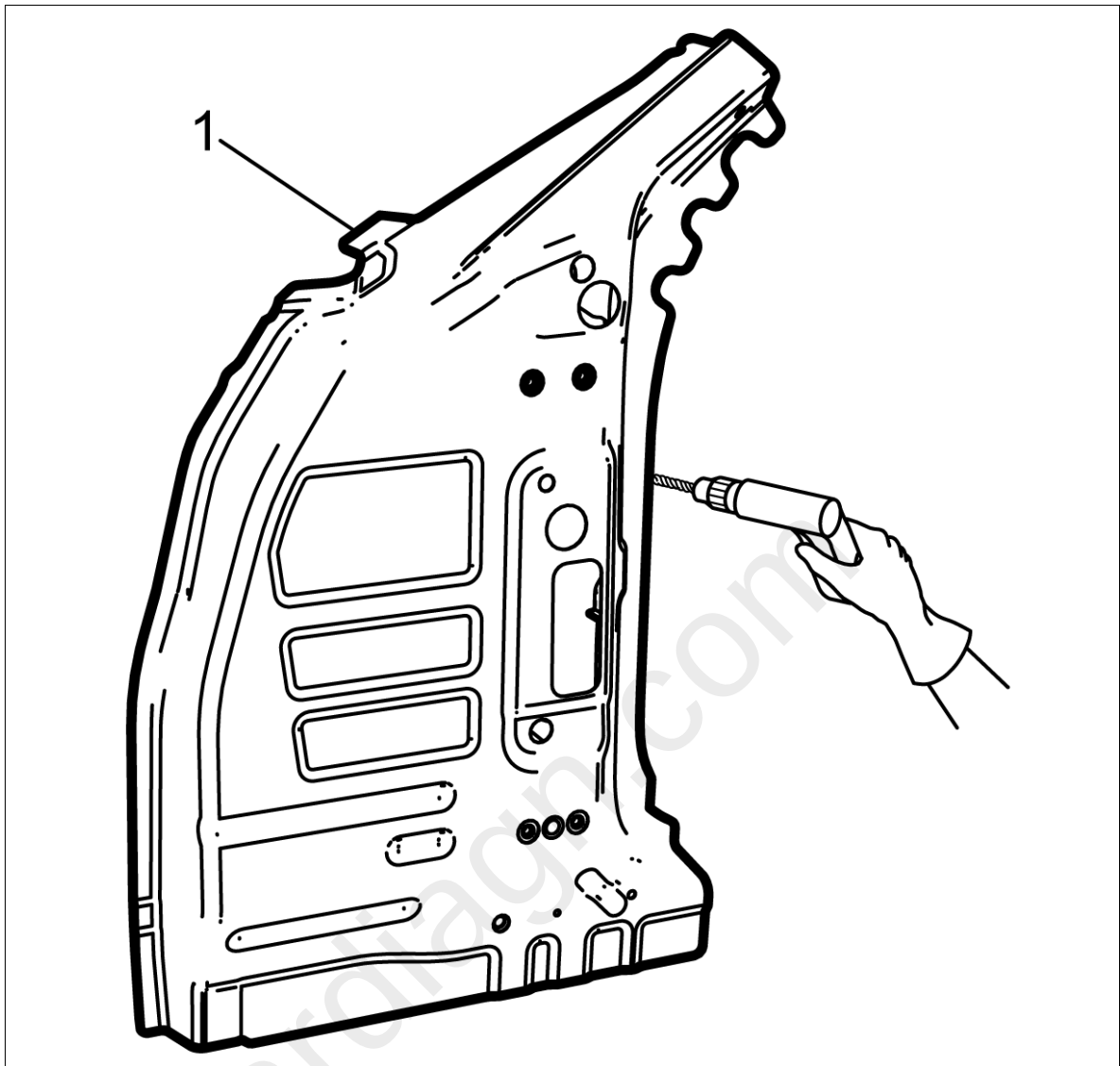
Courtesy of GENERAL MOTORS COMPANY

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

REPAIR INSTRUCTIONS > BODY HINGE PILLAR LOWER REINFORCEMENT REPLACEMENT > INSTALLATION PROCEDURE

1. Prepare all mating surfaces as necessary.

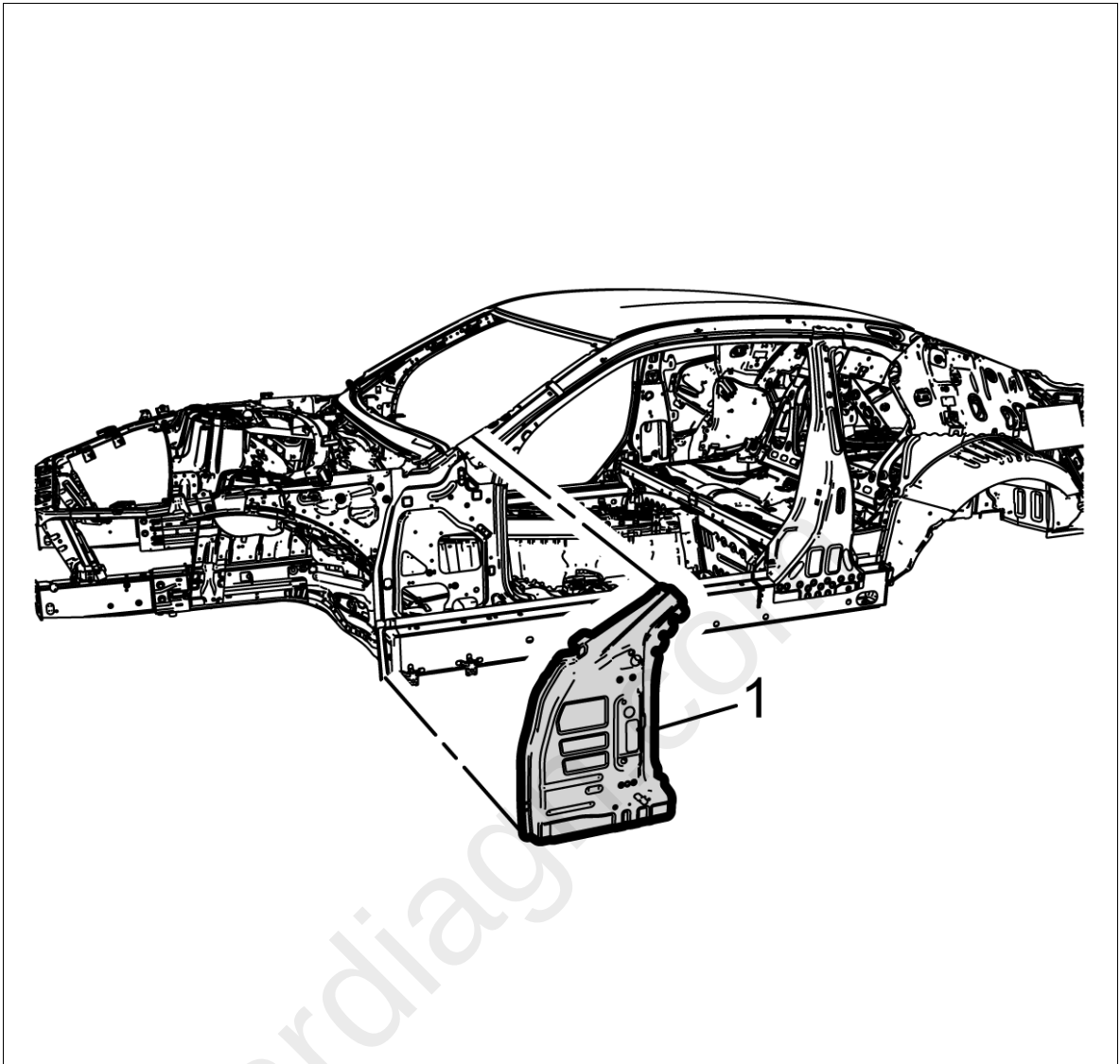
Fig 1: Attaching Surfaces



Courtesy of GENERAL MOTORS COMPANY

2. Clean and prepare the attaching surfaces for welding (1).

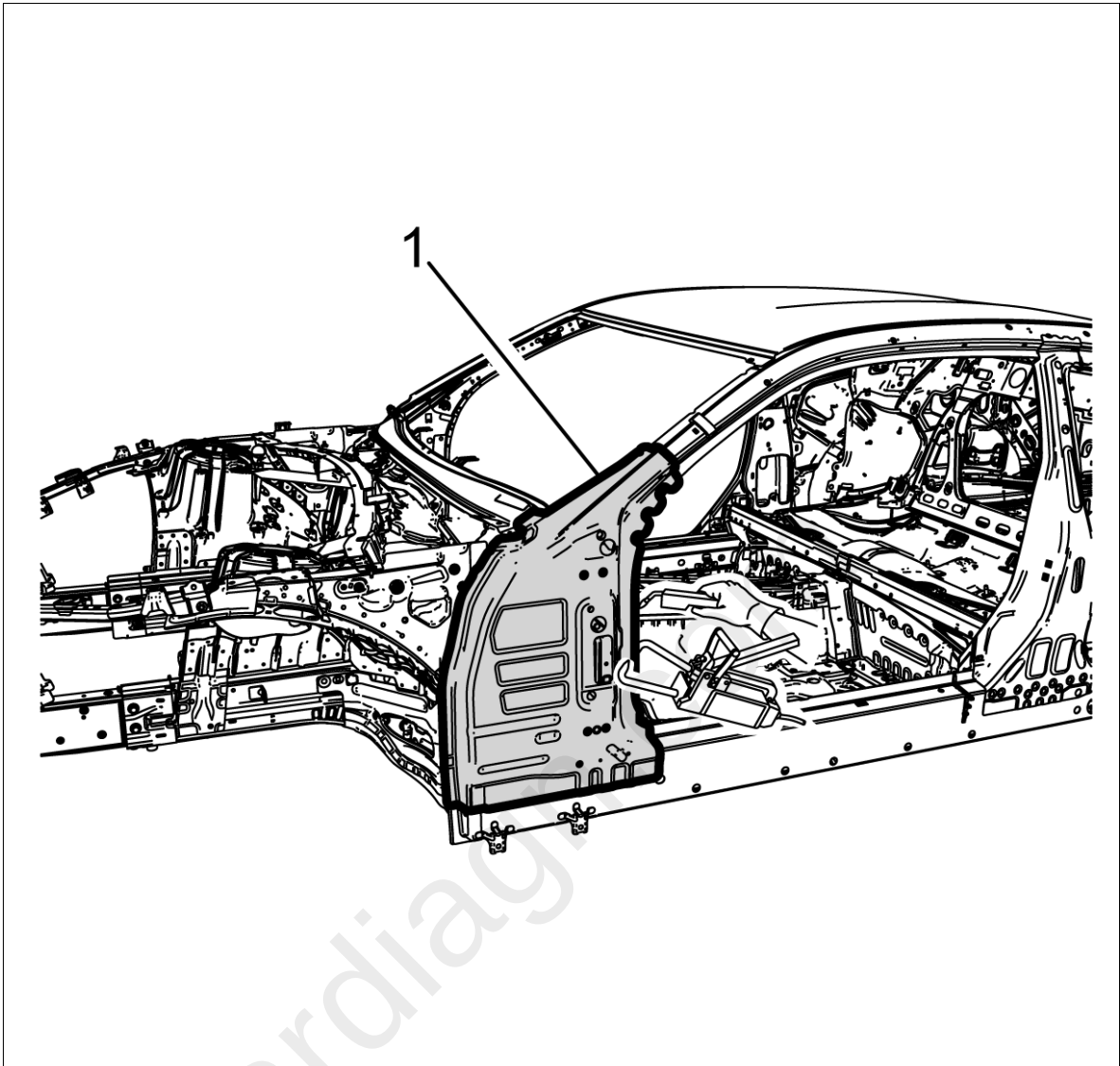
Fig 2: Body Hinge Pillar Lower Reinforcement



Courtesy of GENERAL MOTORS COMPANY

3. Position the body hinge pillar lower reinforcement (1) on the vehicle.
4. Verify the fit of the body hinge pillar lower reinforcement.

Fig 3: Welding Body Hinge Pillar Lower Reinforcement



Courtesy of GENERAL MOTORS COMPANY

5. Weld the body hinge pillar lower reinforcement (1) accordingly at original weld locations.
6. Clean all of the welded surfaces.
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Install the body side outer panel. Refer to the appropriate service procedures as required based on the specific amount of vehicle damage.
9. Install the front compartment upper side rail. Refer to Front Compartment Upper Side Rail Replacement .
10. Install the front hinge pillar section. Refer to Front Hinge Pillar Body Sectioning (Lower) Front Hinge Pillar Body Sectioning (Upper) .
11. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems

12. Install all of the related panels and components.
13. Enable the SIR system and then connect the negative battery cable. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > ROOF OUTER PANEL REPLACEMENT > REMOVAL PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .

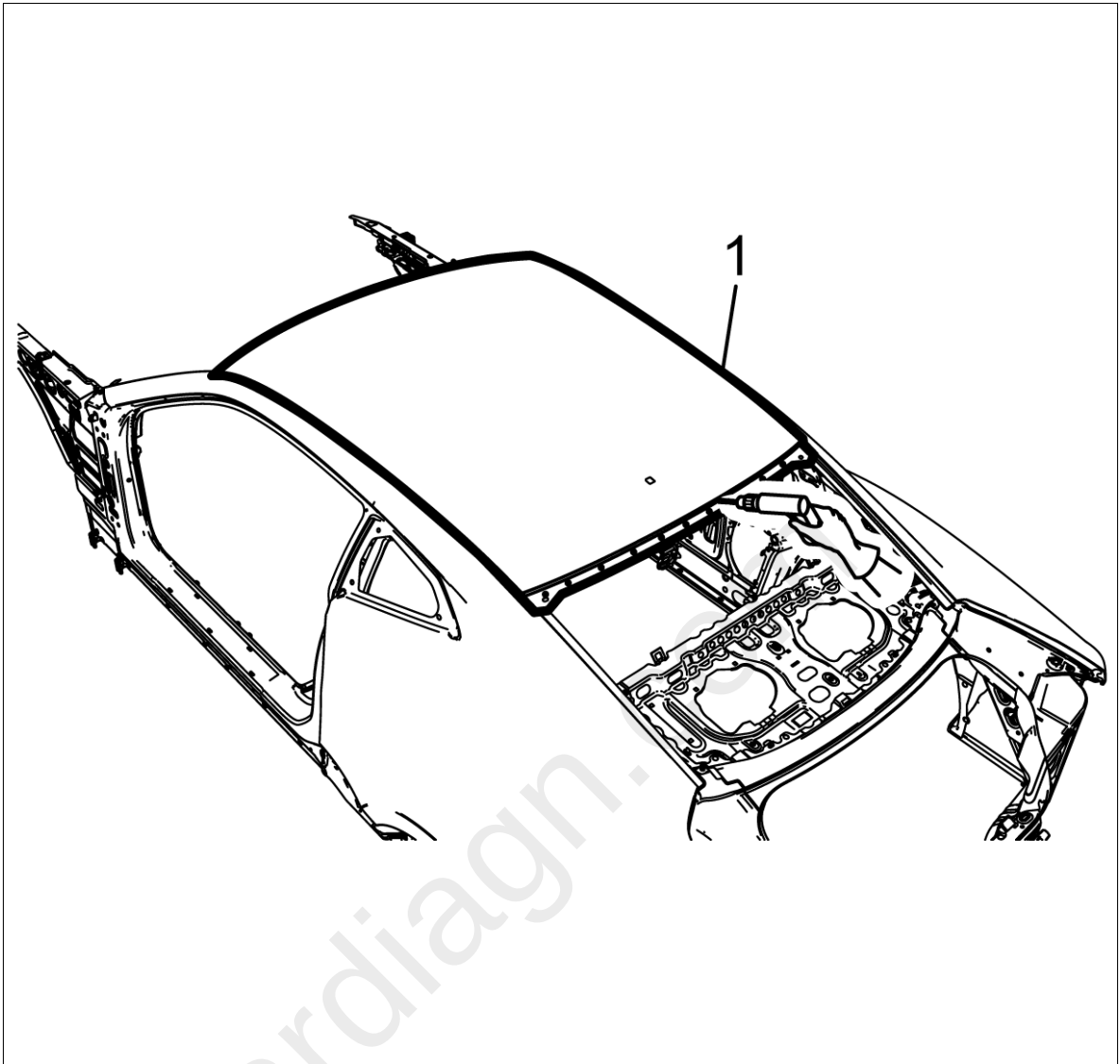


WARNING:

Refer to Battery Disconnect Warning .

1. Disable the SIR system and then disconnect the negative battery cable. Refer to SIR Disabling and Enabling .
2. Remove all related panels and components.
3. Repair as much of the damaged area as possible. Refer to Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .

Fig 1: Welds At Front And Rear Window Opening Of Roof Panel



Courtesy of GENERAL MOTORS COMPANY

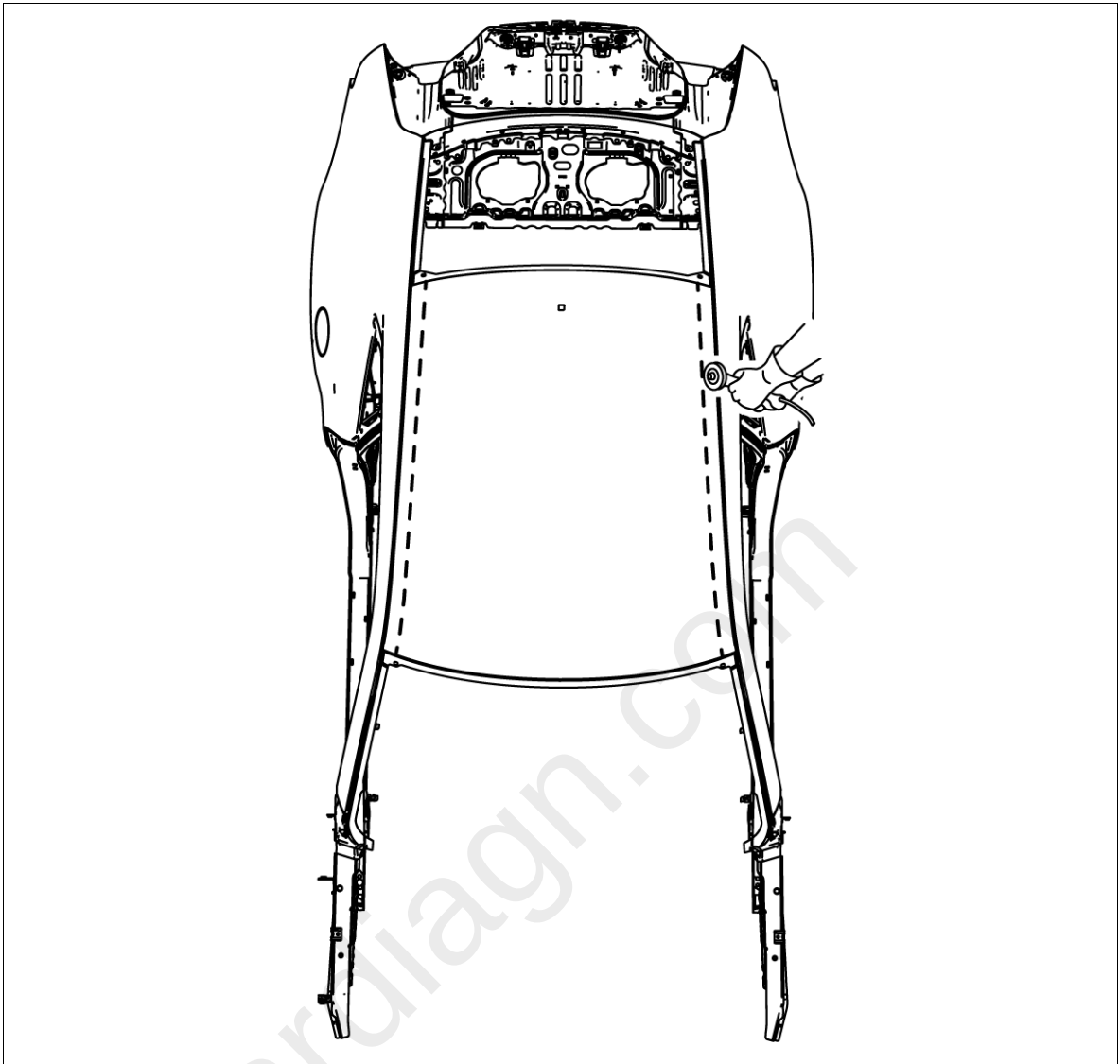


NOTE:

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

5. Remove welds at the front and rear window opening of the roof panel (1).

Fig 2: Cutting To Protect Adjacent Panels



Courtesy of GENERAL MOTORS COMPANY

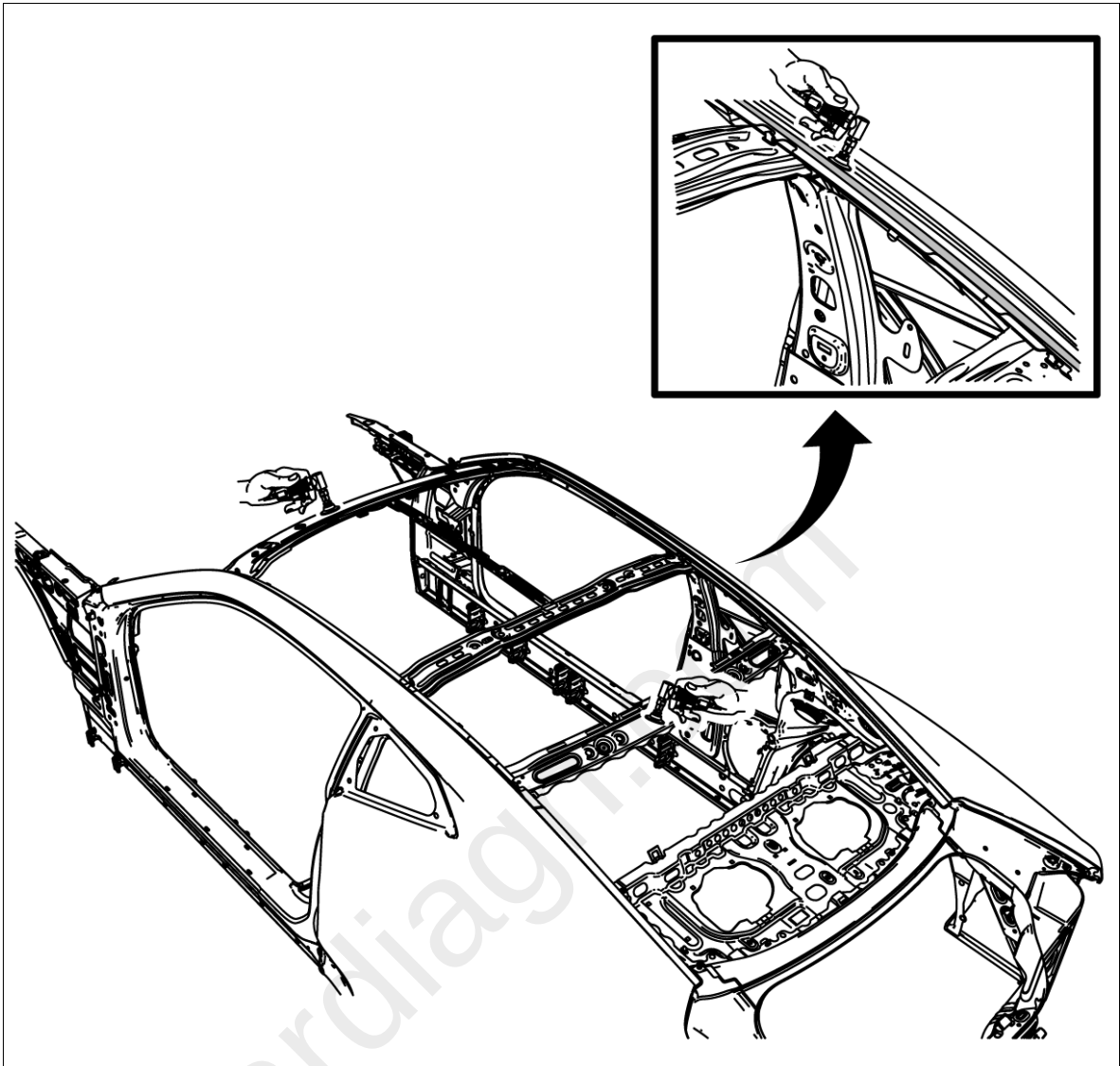


NOTE:

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

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

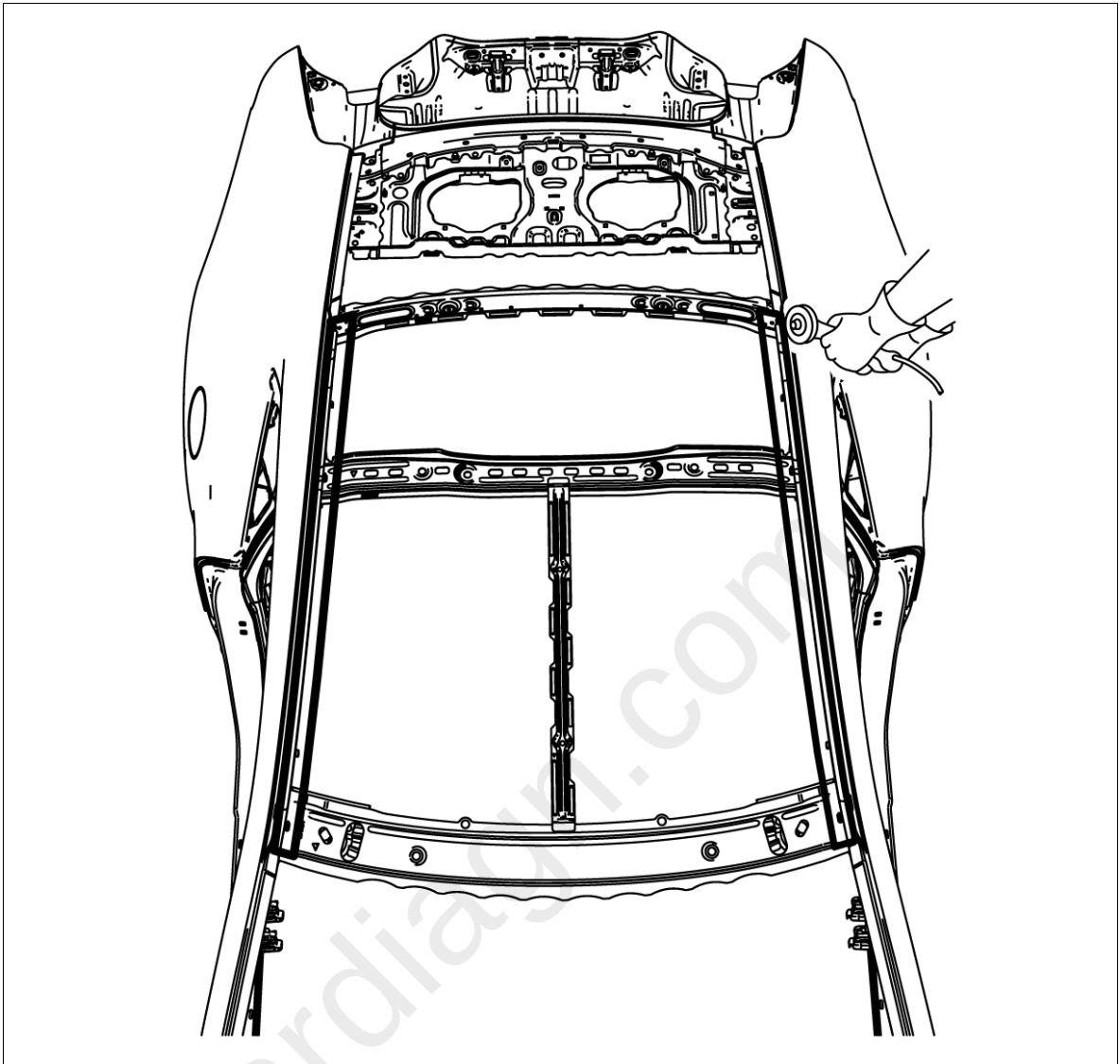
Fig 3: Mig Braze Joint



Courtesy of GENERAL MOTORS COMPANY

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

Fig 4: Original Panel

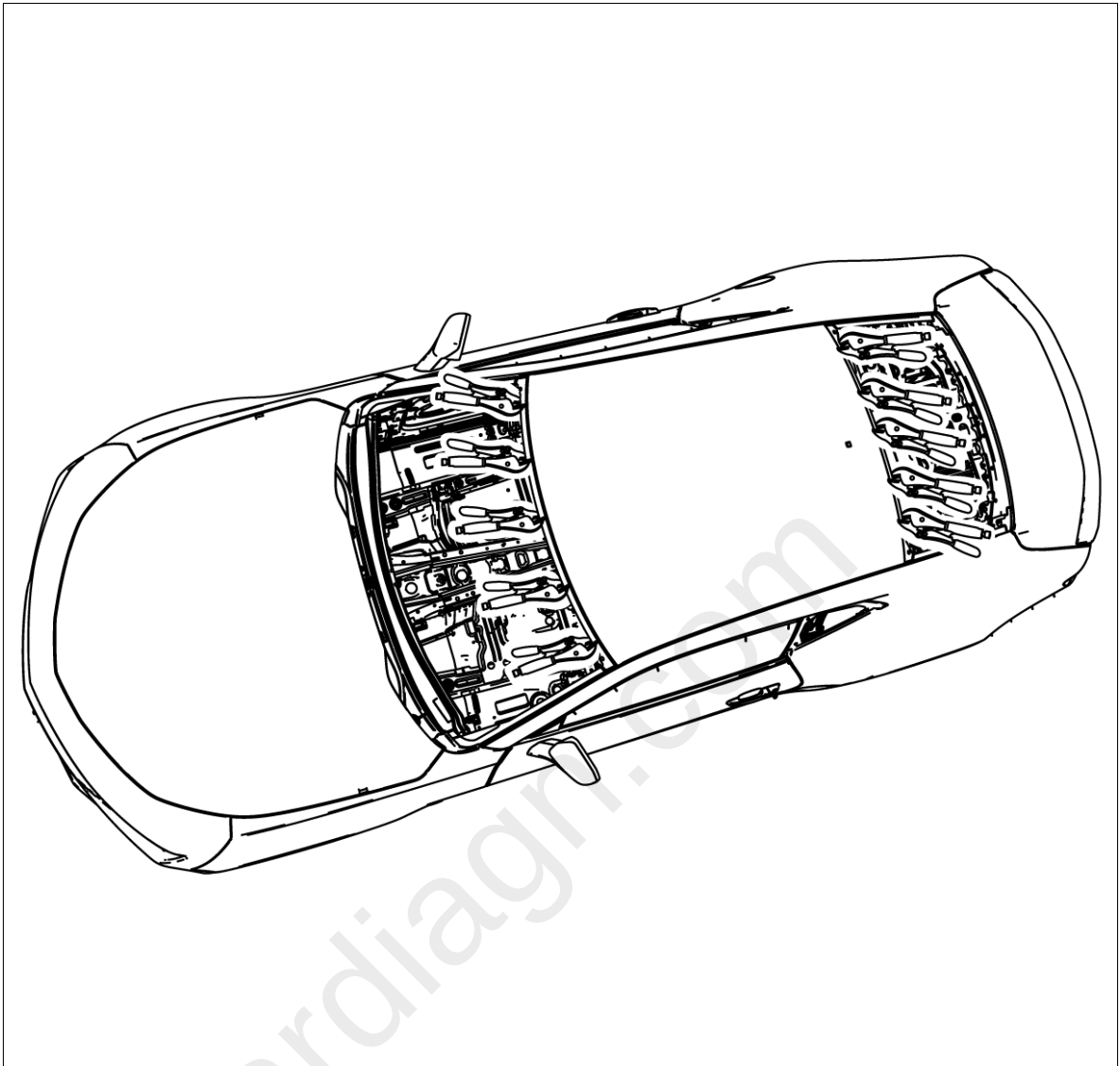


Courtesy of GENERAL MOTORS COMPANY

9. Remove the remaining portion of the original panel.

REPAIR INSTRUCTIONS > ROOF OUTER PANEL REPLACEMENT > INSTALLATION PROCEDURE

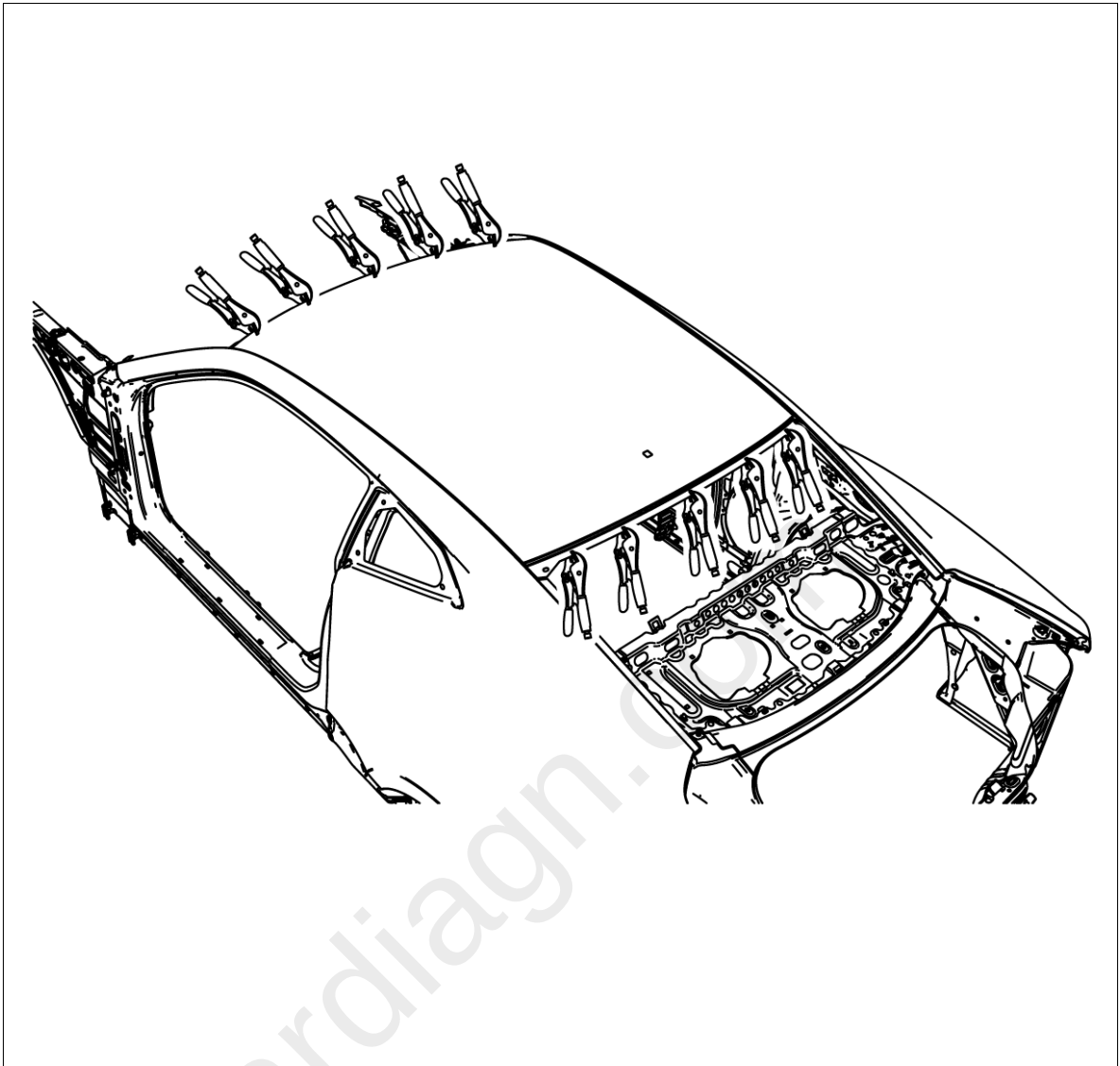
Fig 1: Test Fit Service Panel



Courtesy of GENERAL MOTORS COMPANY

1. Test fit the service panel to the vehicle, to create locating holes for accurate location of the panel.

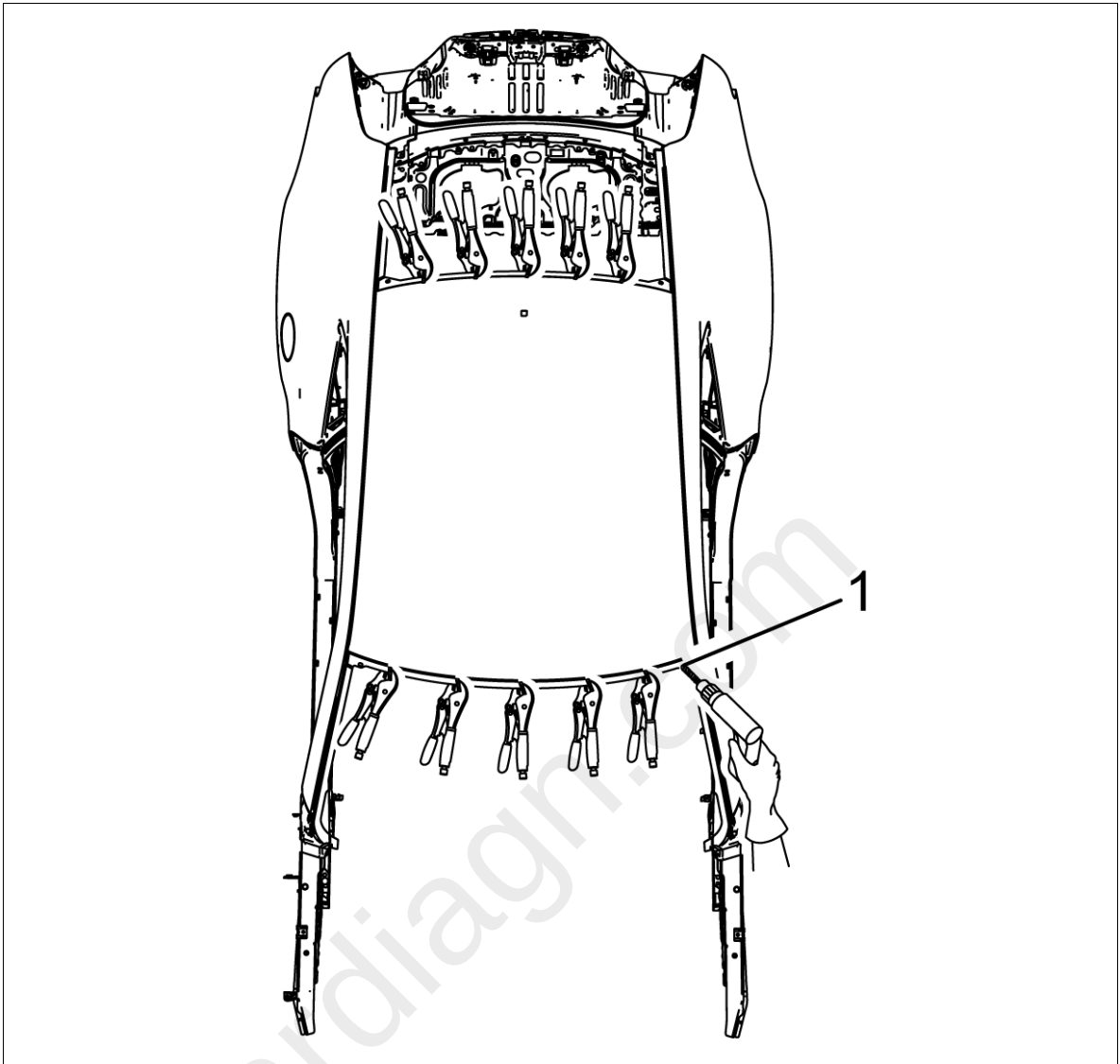
Fig 2: Panel Clamps



Courtesy of GENERAL MOTORS COMPANY

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

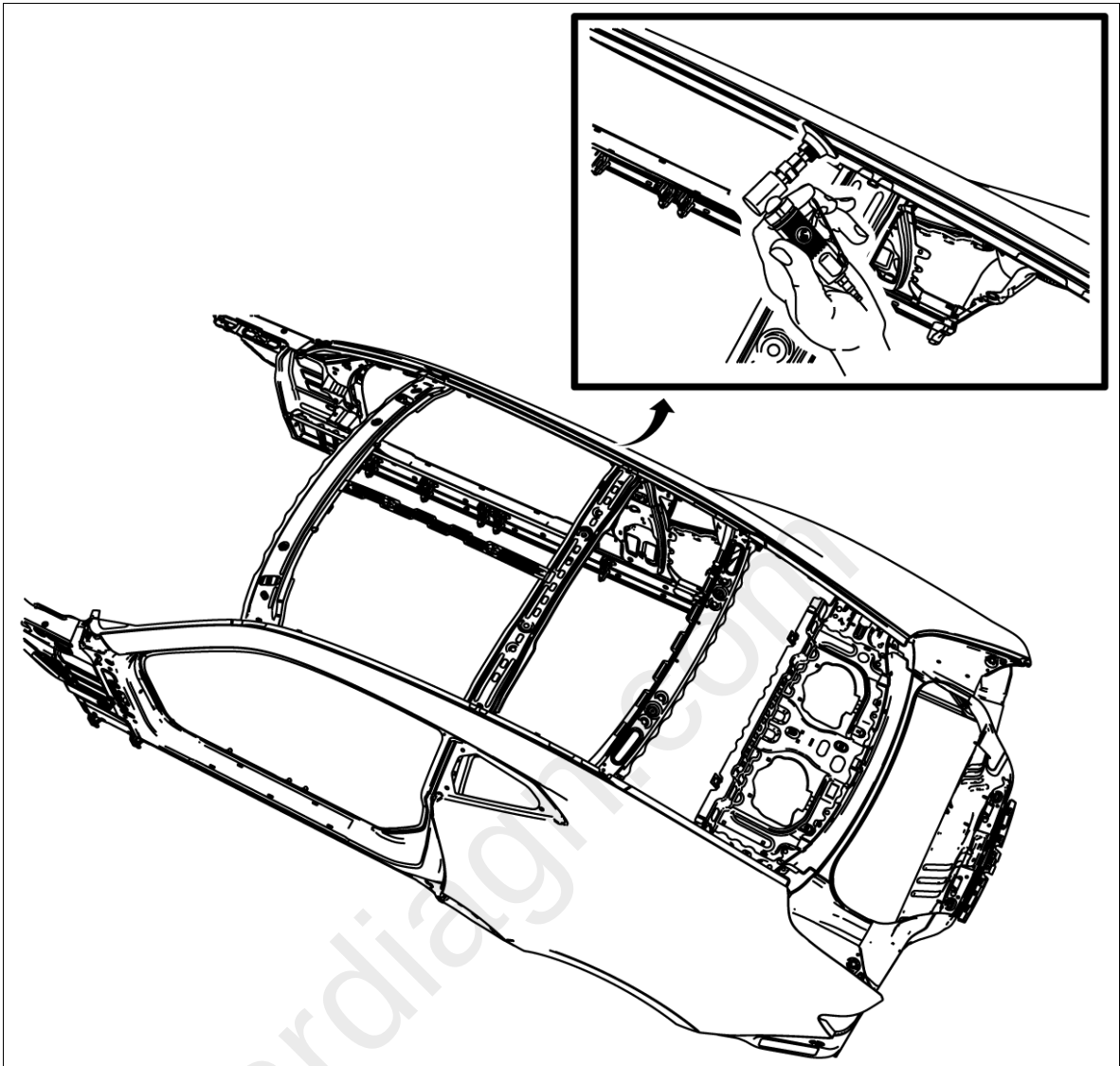
Fig 3: Panel Into Position In Rear Window Opening



Courtesy of GENERAL MOTORS COMPANY

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

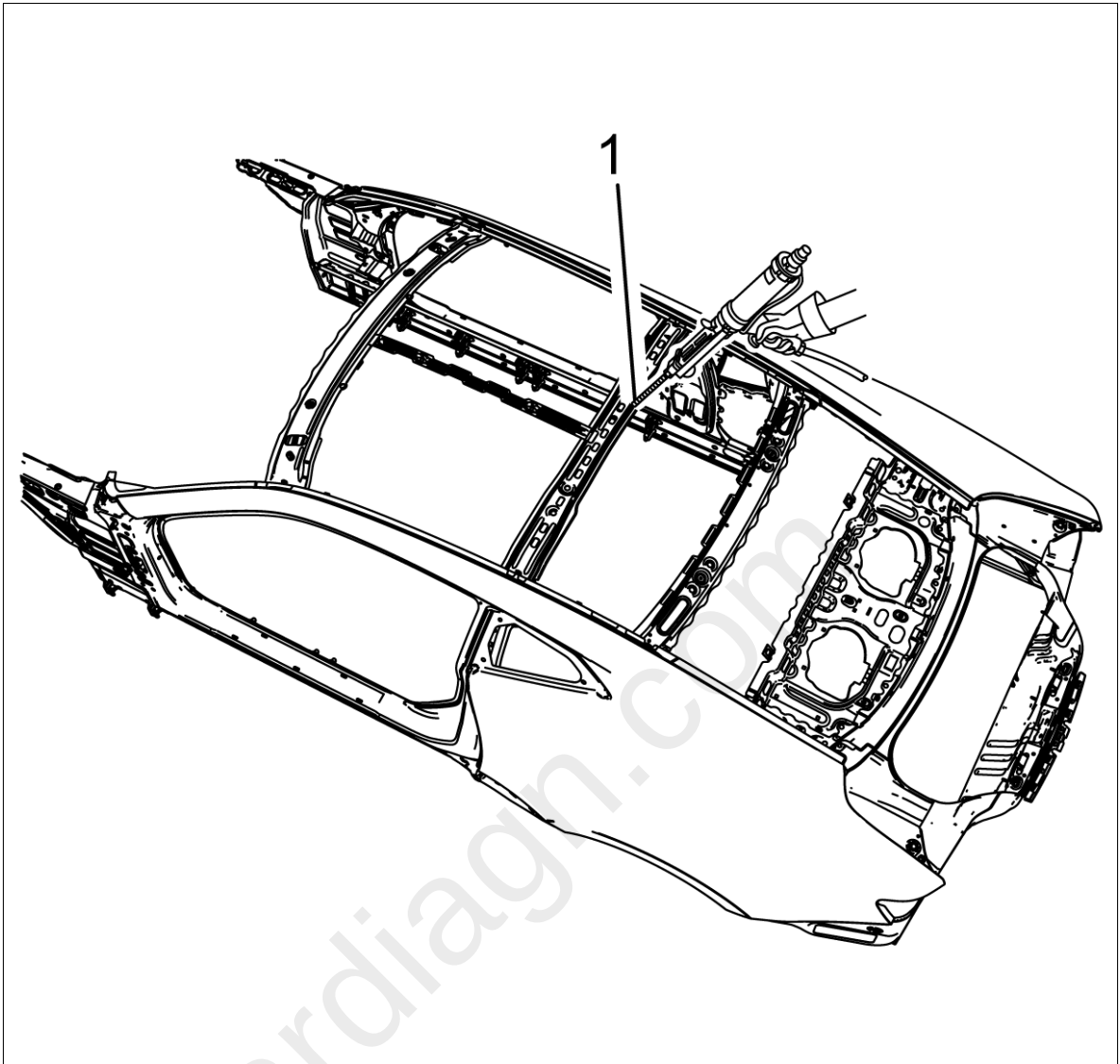
Fig 4: Prepare Roof Rail Area Of Vehicle With Abrasive Wheel Or Equivalent



Courtesy of GENERAL MOTORS COMPANY

5. Prepare the roof rail area of the vehicle with an abrasive wheel or equivalent (1).
6. Clean and prepare the front and rear window attaching surfaces for welding. Refer to Anti-Corrosion Treatment and Repair .
7. Prepare the roof side rail bond areas. Refer to adhesive manufacturers preparation instructions.

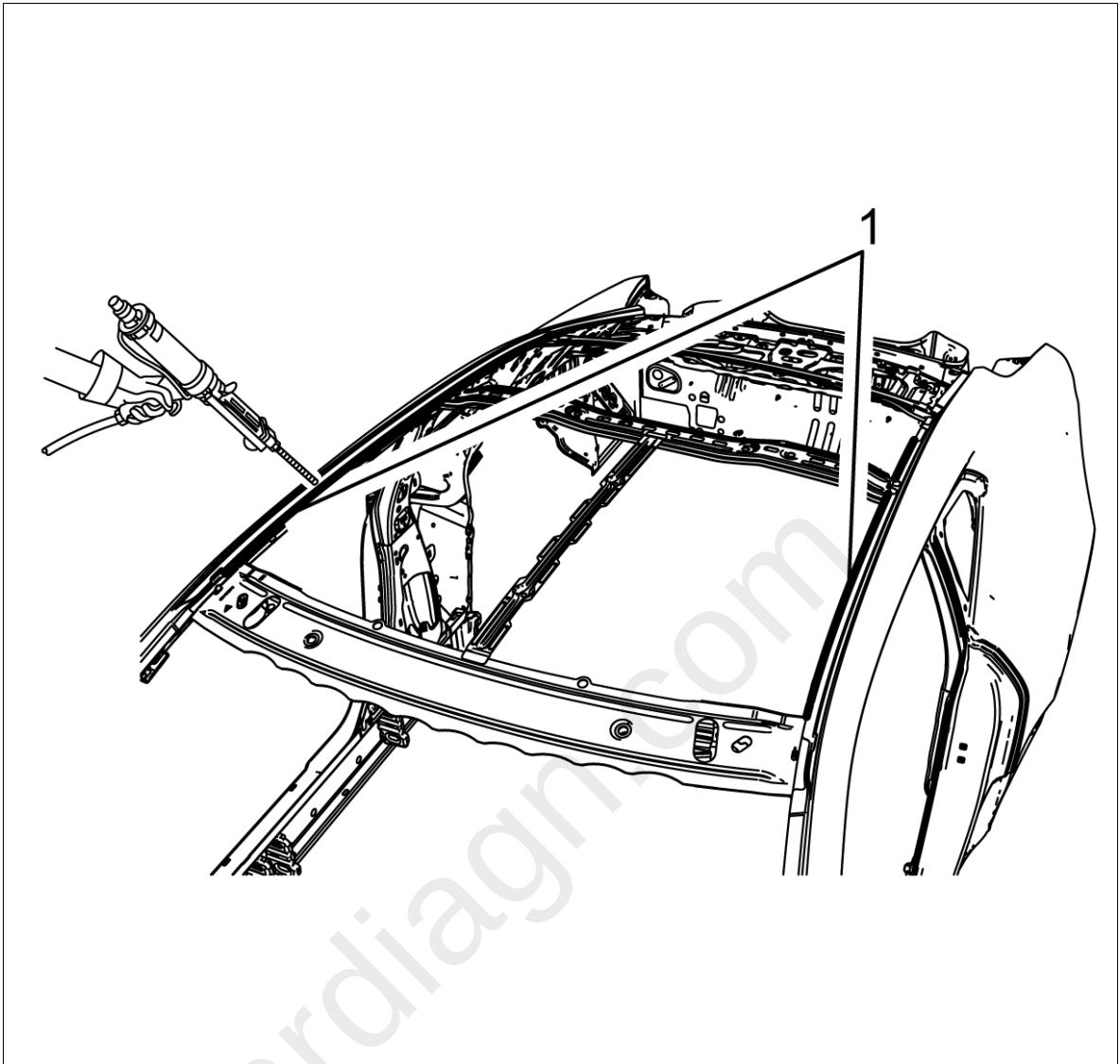
Fig 5: Flexible Anti-Flutter Foam To Roof Bows



Courtesy of GENERAL MOTORS COMPANY

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

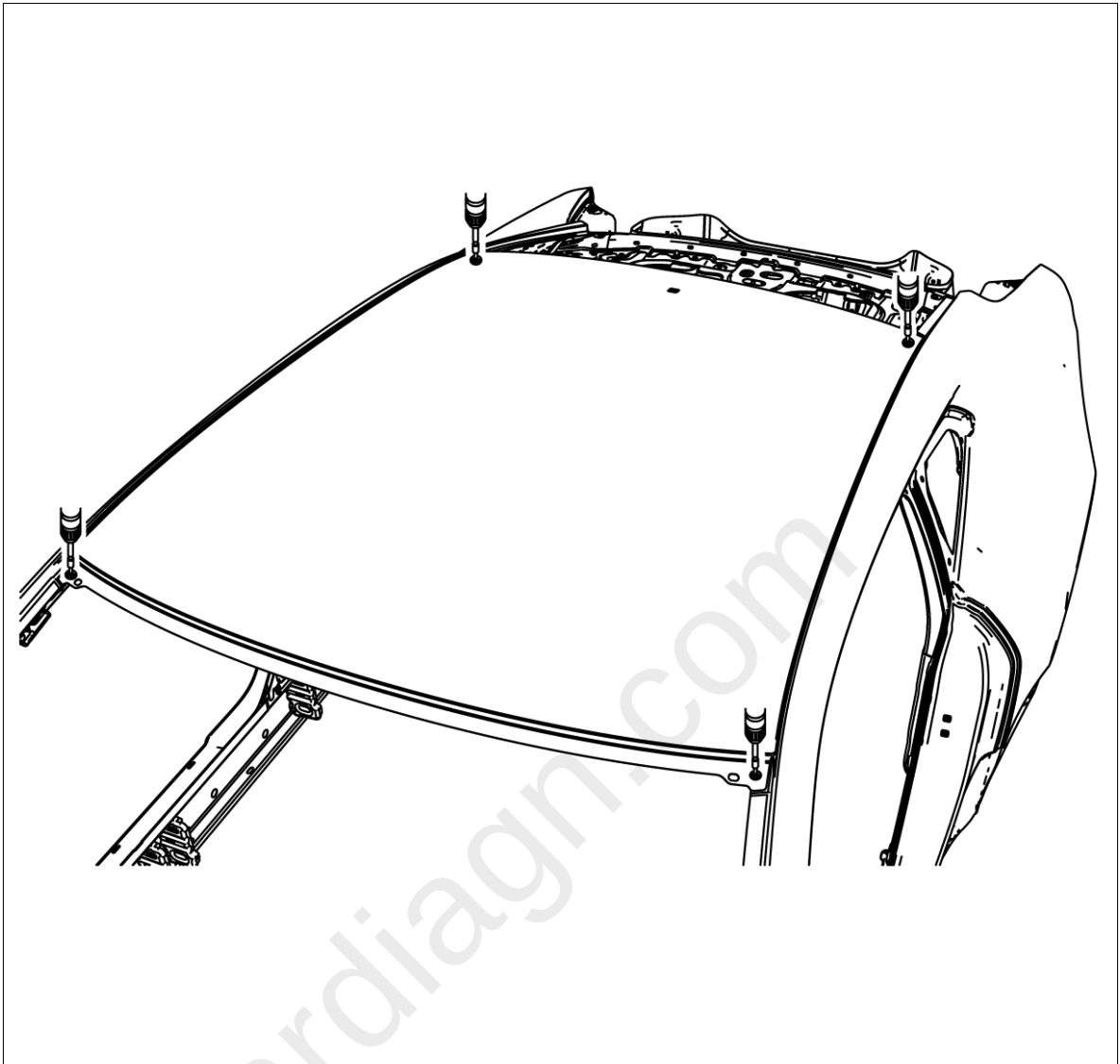
Fig 6: 12mm (1/2in) Bead Of Metal Panel Bonding Adhesive To Left And Right Roof Rails



Courtesy of GENERAL MOTORS COMPANY

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

Fig 7: Awl Or Equivalent Tool Into Four Holes Drilled



Courtesy of GENERAL MOTORS COMPANY

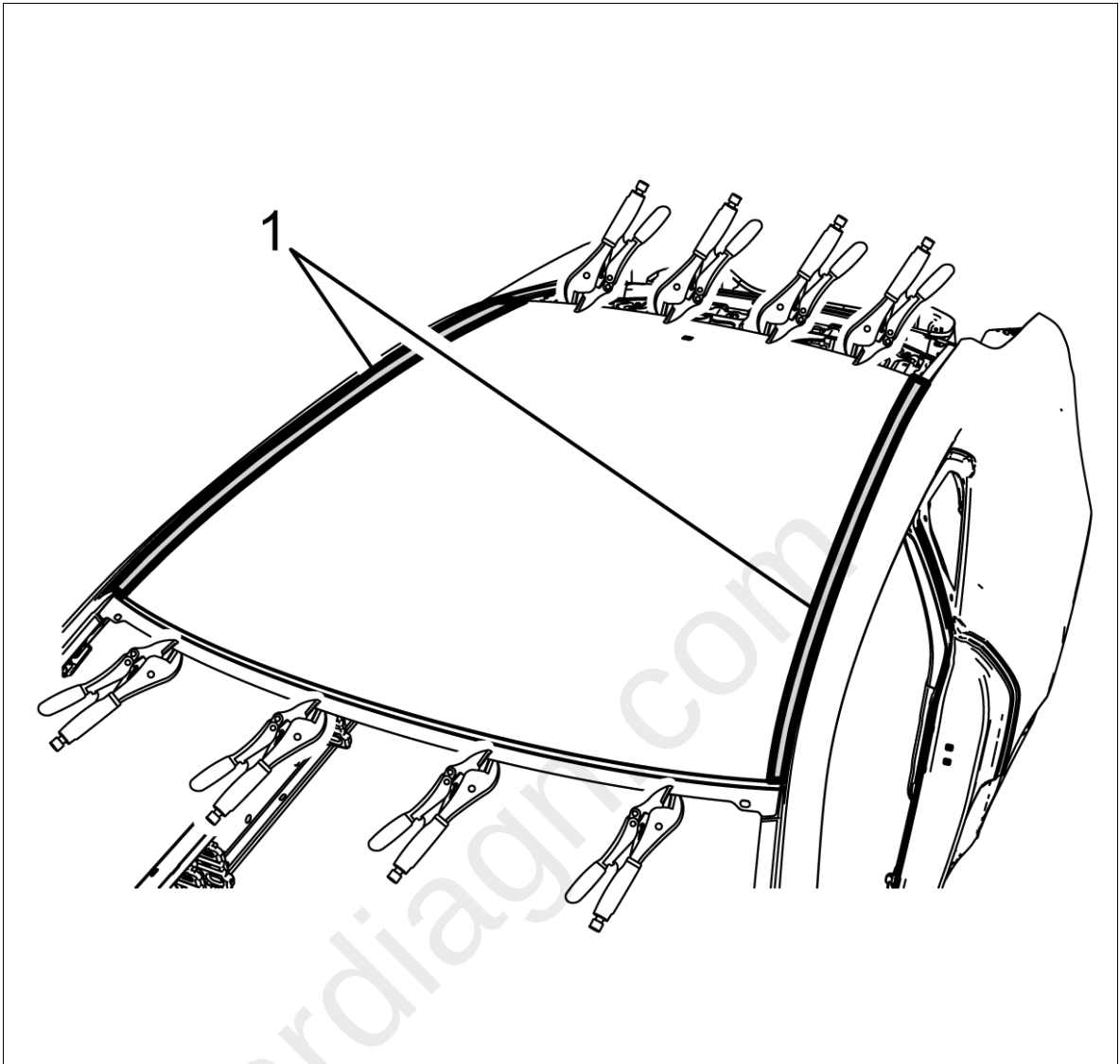


NOTE:

This step will insure the proper location and contour to the vehicle.

11. Insert an awl or equivalent tool into the four holes drilled in the window openings in step 3 (1).
12. Clamp the roof in place in the front and rear window openings.
13. Clean up the excess adhesive from the surface.

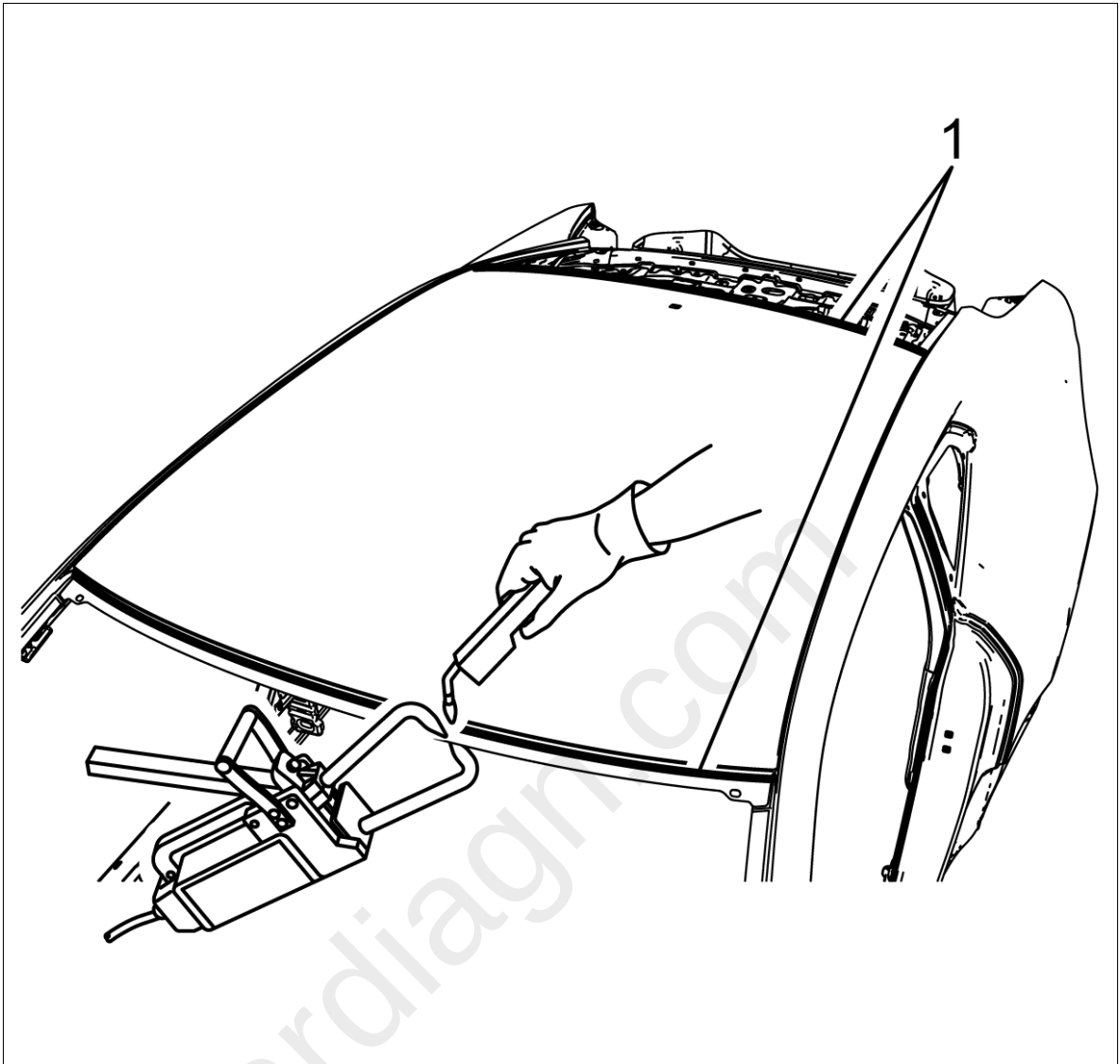
Fig 8: Ratchet Strap Or Equivalent Across Roof Inboard Of Bond Area



Courtesy of GENERAL MOTORS COMPANY

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

Fig 9: Plug Weld Or Weld Bond Using Resistance Spot Welding



Courtesy of GENERAL MOTORS COMPANY

16. Plug weld or weld bond using Resistance Spot Welding while the adhesive is still uncured along window openings (1) accordingly.
17. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
18. Use a high quality seam sealer to fill the gap between the outer roof panel and the body side roof rail. Follow the manufacturers instructions.
19. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
20. Install all of the related panels and components.
21. Enable the SIR system and then connect the negative battery cable. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > WINDSHIELD FRAME HEADER FRONT PANEL REPLACEMENT > REMOVAL PROCEDURE

 WARNING:

Refer to Approved Equipment for Collision Repair Warning .

 WARNING:

Refer to Foam Sound Deadeners Warning .

 WARNING:

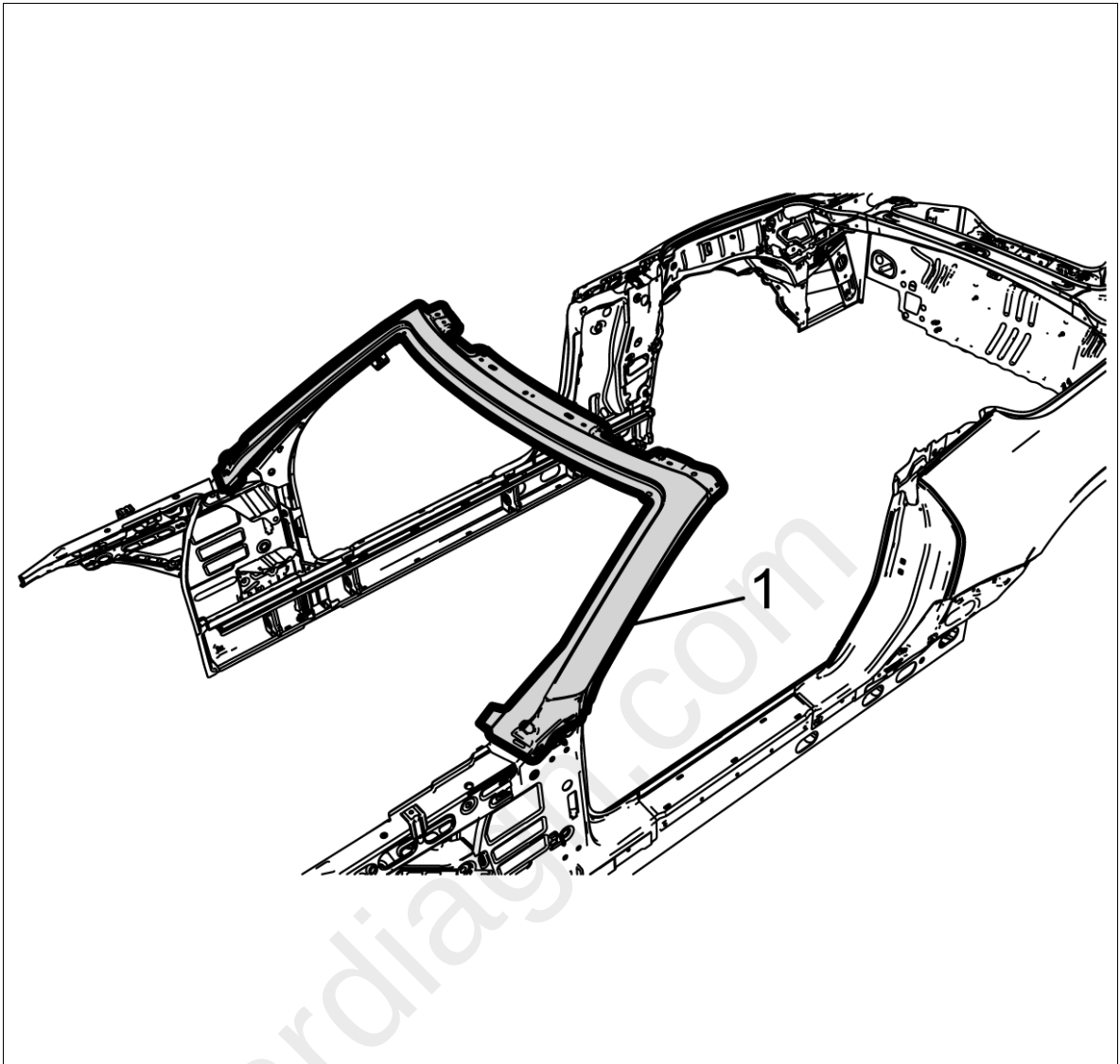
Refer to Battery Disconnect Warning .

 WARNING:

Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system and then disconnect the negative battery cable. SIR Disabling and Enabling .
2. Remove windshield and all related panels and components.
3. Visually inspect the damage. Repair as much of the damage as possible. Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area as necessary. Anti-Corrosion Treatment and Repair .

Fig 1: Fit Of Windshield Frame Header Front Panel



Courtesy of GENERAL MOTORS COMPANY

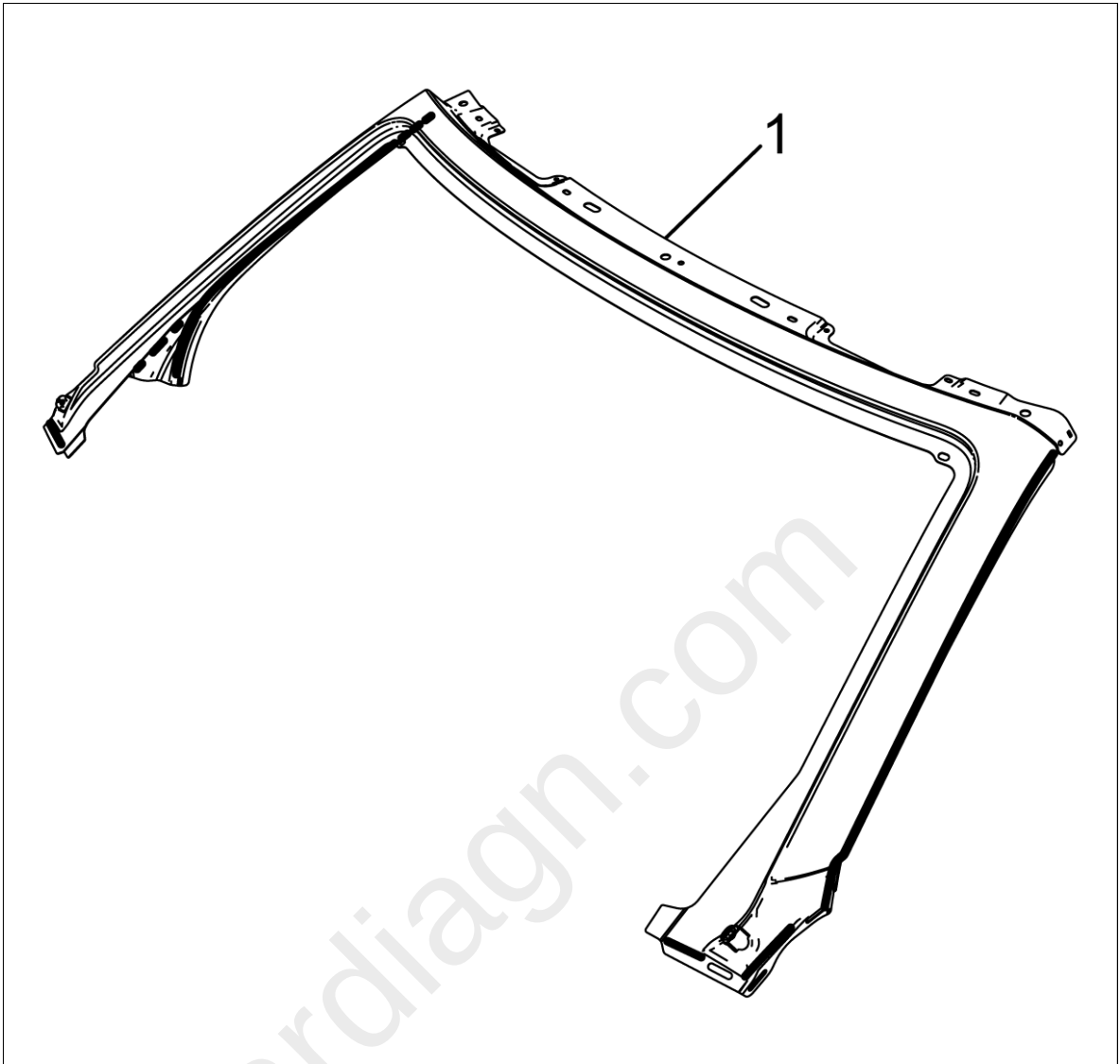


NOTE:

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

5. Remove factory welds as required from the windshield frame header front panel (1).

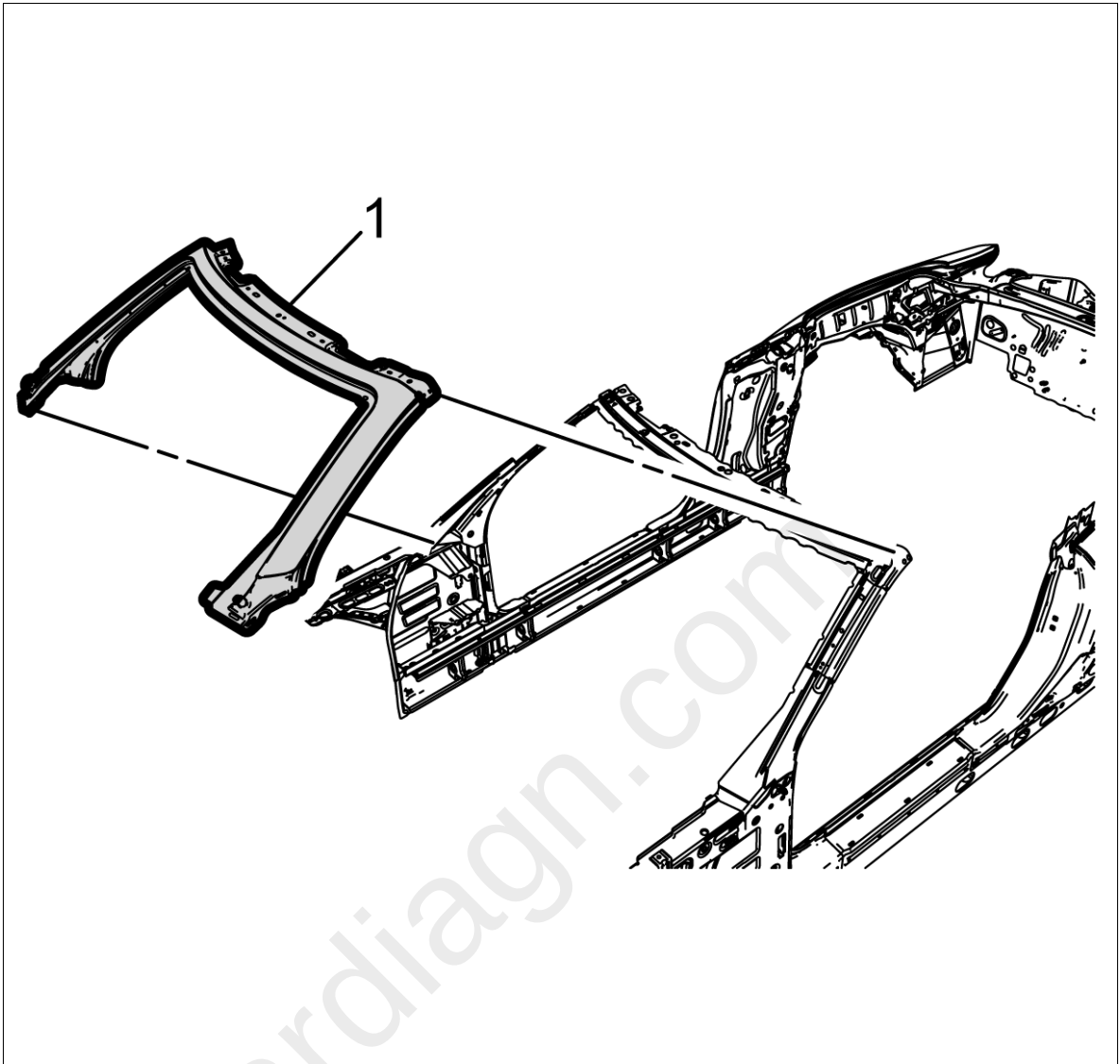
Fig 2: Windshield Frame Header Front Panel



Courtesy of GENERAL MOTORS COMPANY

6. Heat the outer edges of the windshield frame header front panel to release the factory impact resistant adhesive.

Fig 3: Removing/Installing Windshield Frame Header Front Panel



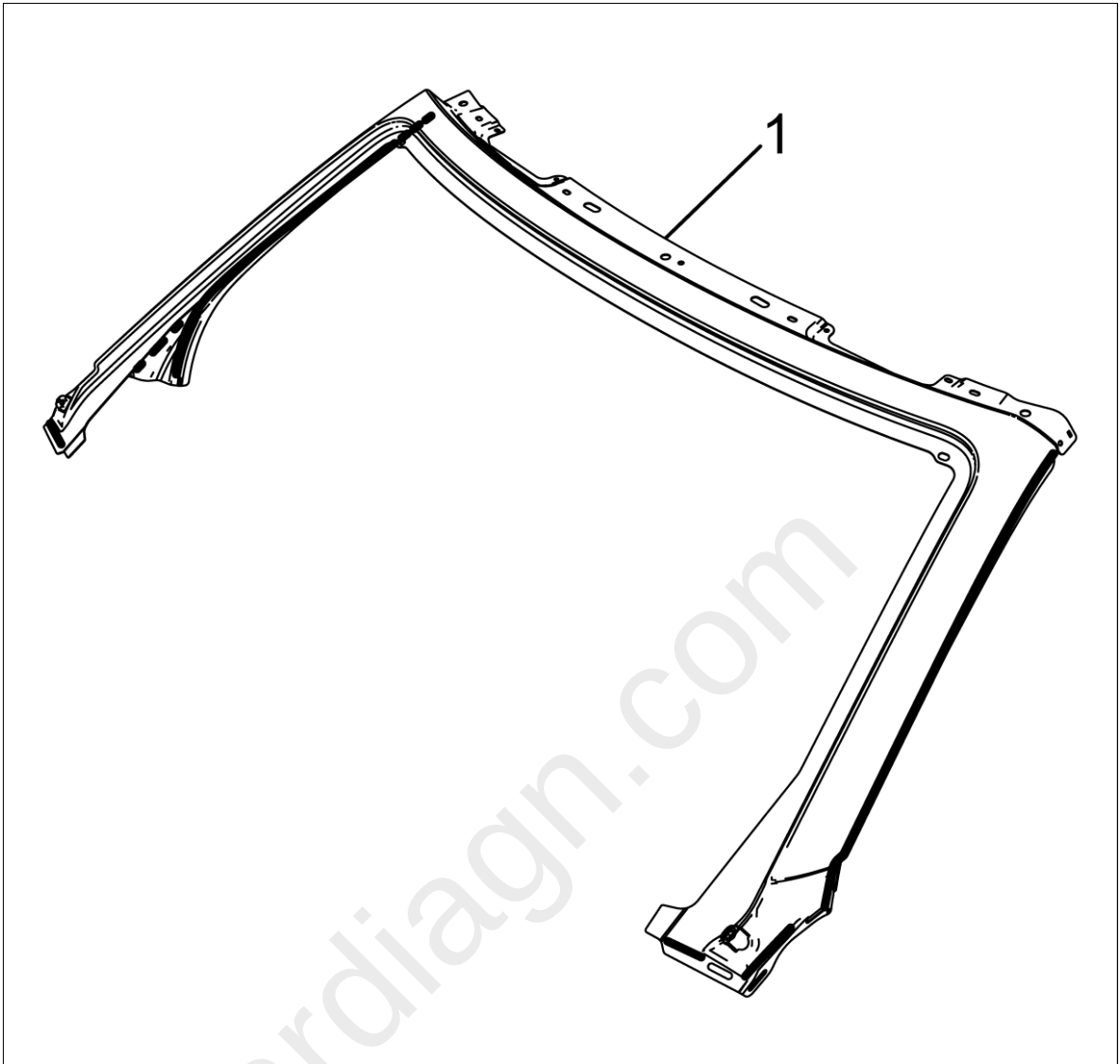
Courtesy of GENERAL MOTORS COMPANY

7. Remove the damaged windshield frame header front panel (1).

REPAIR INSTRUCTIONS > WINDSHIELD FRAME HEADER FRONT PANEL REPLACEMENT > INSTALLATION PROCEDURE

1. Prepare all mating surfaces as necessary using 80 grit abrasive.

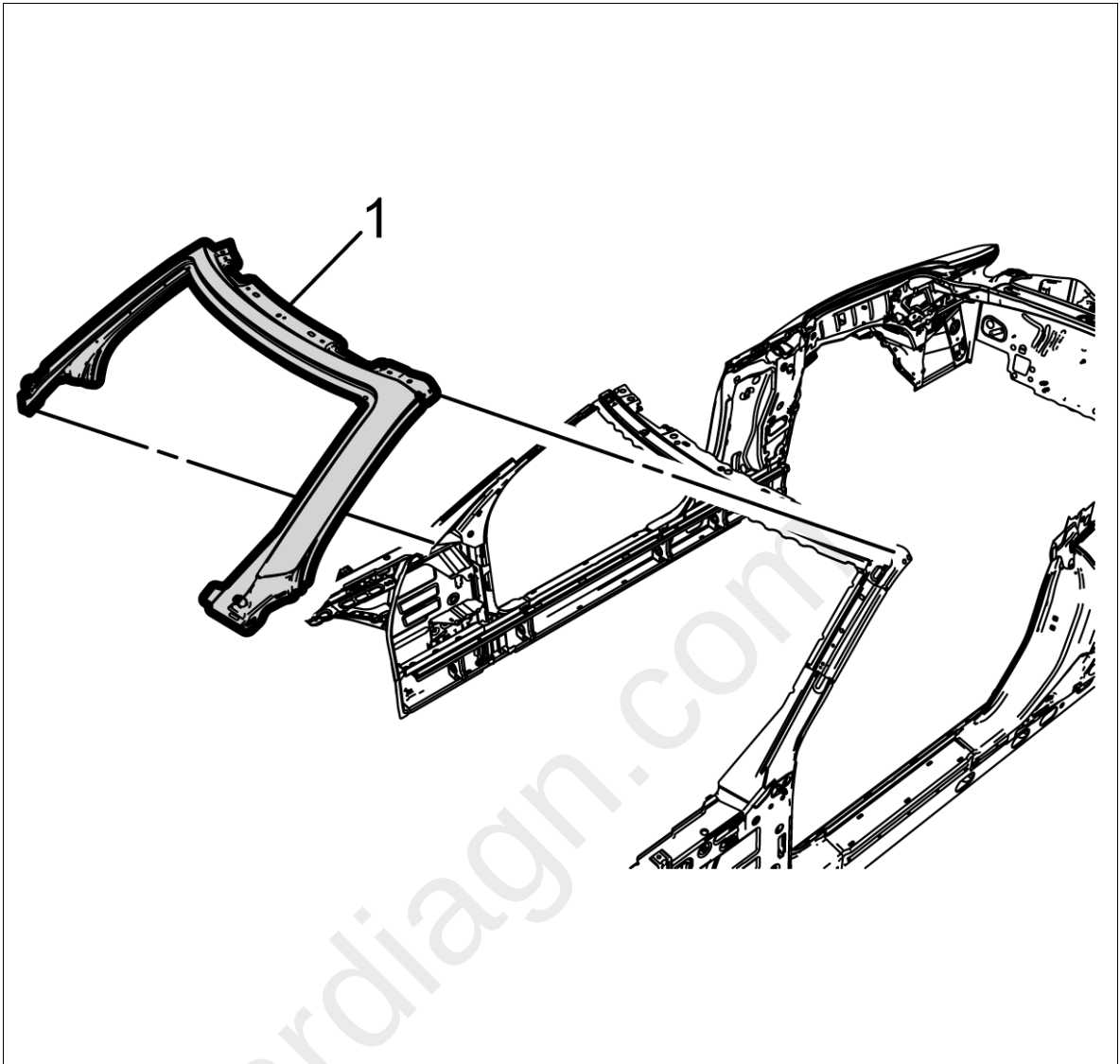
Fig 1: Windshield Frame Header Front Panel



Courtesy of GENERAL MOTORS COMPANY

2. Clean and prepare the attaching surfaces for welding/bonding (1).

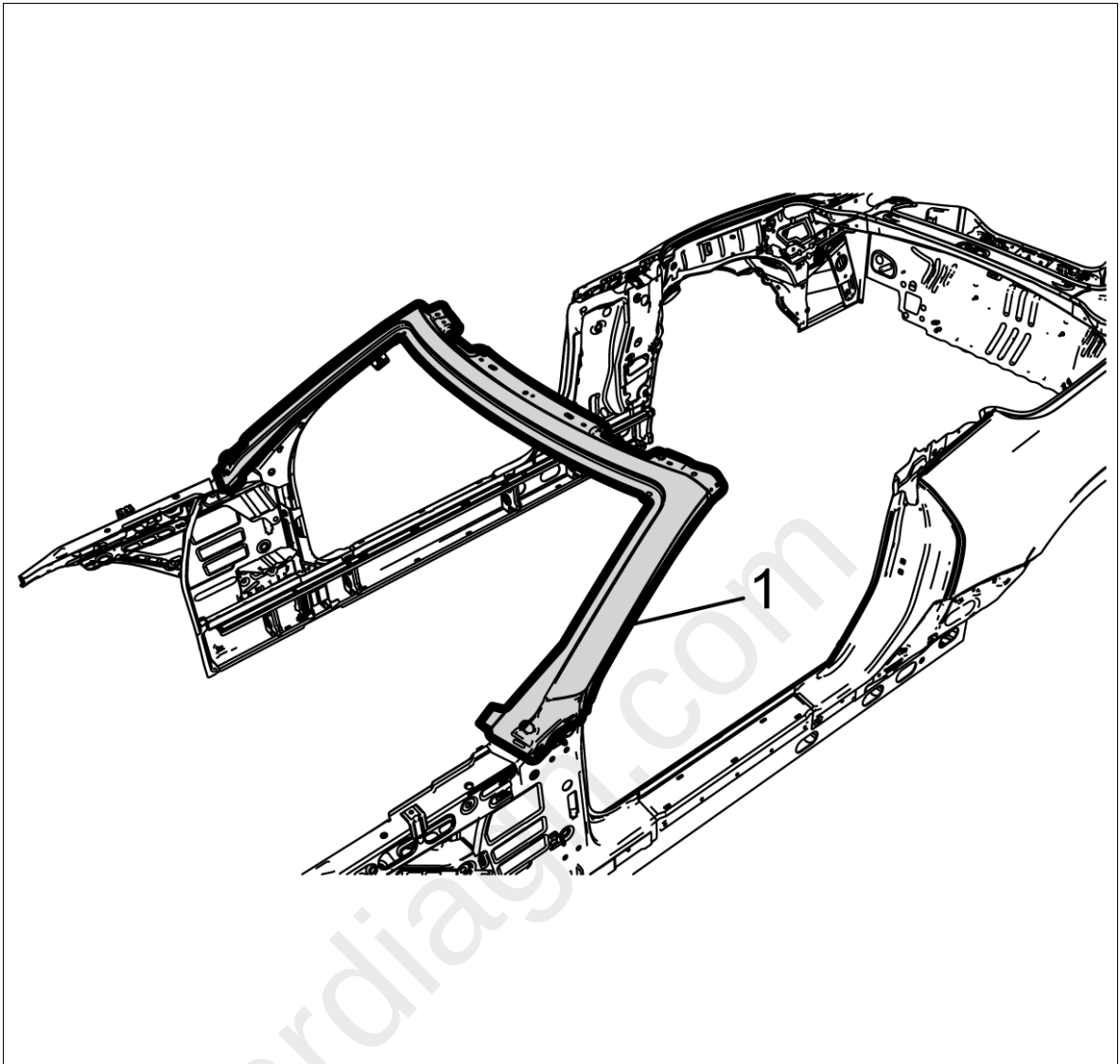
Fig 2: Removing/Installing Windshield Frame Header Front Panel



Courtesy of GENERAL MOTORS COMPANY

3. Position the windshield frame header front panel (1) on the vehicle.

Fig 3: Fit Of Windshield Frame Header Front Panel



Courtesy of GENERAL MOTORS COMPANY

4. Verify the fit of the windshield frame header front panel and apply impact resistant adhesive to all mating surfaces where factory impact resistant adhesive was applied. Metal Panel Bonding (Steel) .
5. Weld/weld-bond the windshield frame header front panel (1) accordingly at original weld locations.
6. Clean and prepare all welded surfaces.
7. Apply the sealers and anti-corrosion materials to the repair area as necessary. Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Basecoat/Clearcoat Paint Systems .
9. Install windshield and all related panels and components.
10. Enable the SIR system and then connect the negative battery cable. SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > ROOF REAR HEADER PANEL REPLACEMENT > REMOVAL PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .



WARNING:

Refer to Battery Disconnect Warning .

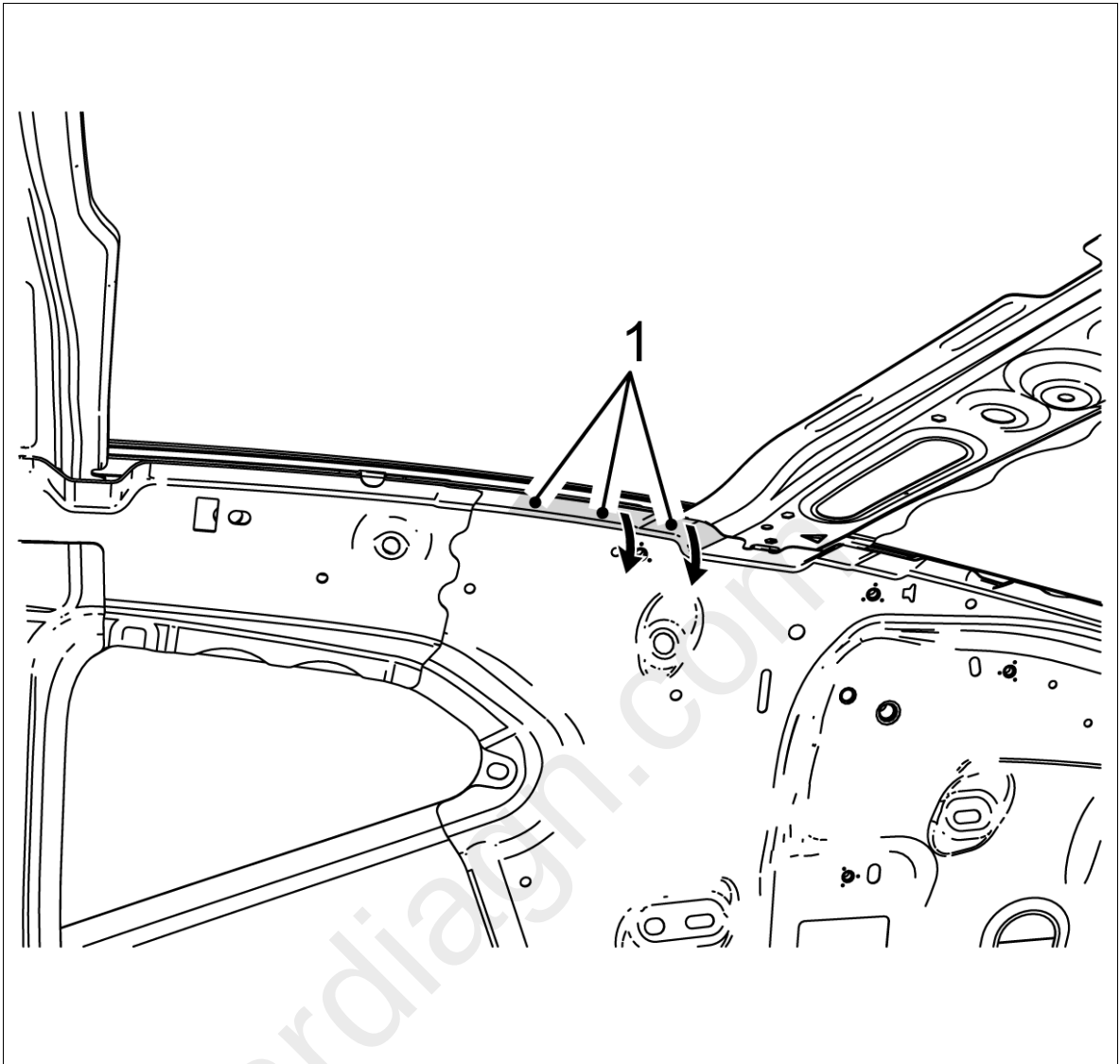


WARNING:

Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system and then disconnect the negative battery cable. SIR Disabling and Enabling .
2. Remove rear window and all related panels and components.
3. Visually inspect the damage. Repair as much of the damage as possible. Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area as necessary. Anti-Corrosion Treatment and Repair .
5. Remove the roof panel. .

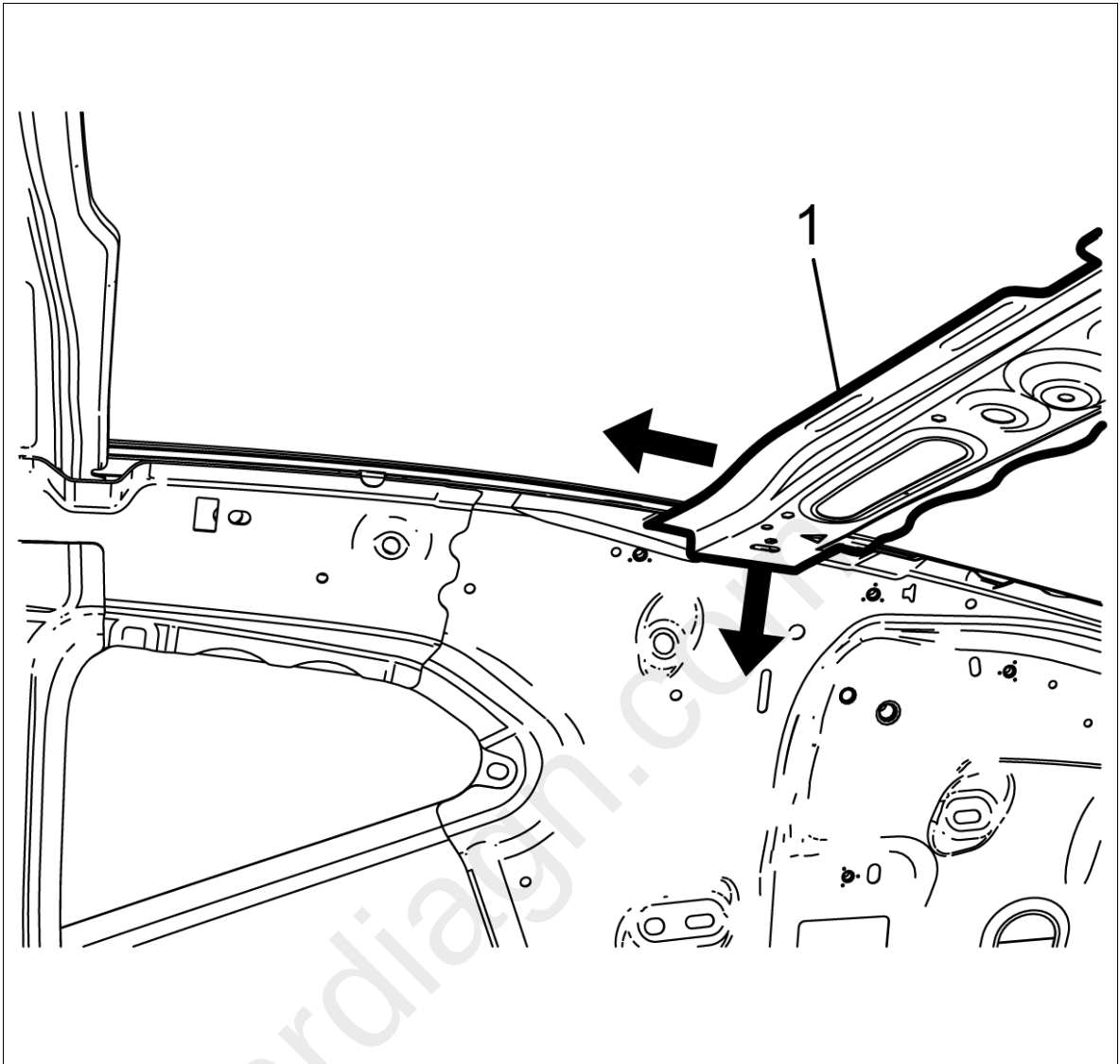
Fig 1: Roof Outer Panel



Courtesy of GENERAL MOTORS COMPANY

6. Remove factory welds as required from the quarter inner panel (1).

Fig 2: Roof Rear Header Panel



Courtesy of GENERAL MOTORS COMPANY

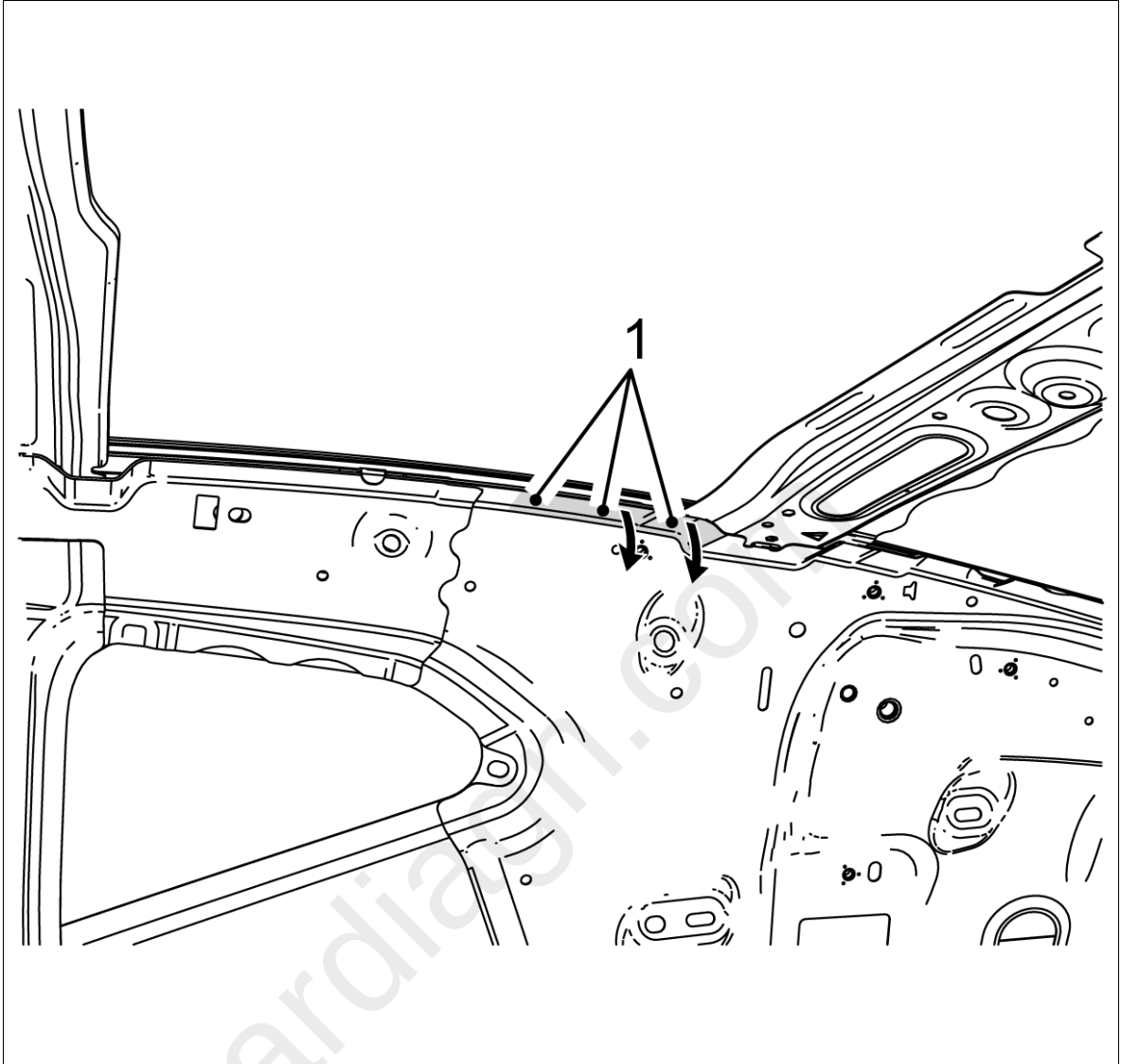
7. Bend the quarter inner upper panel top flange down enough to clear a removal path for the roof rear header panel.
8. Remove the damaged roof rear header panel (1).

REPAIR INSTRUCTIONS > ROOF REAR HEADER PANEL REPLACEMENT > INSTALLATION PROCEDURE

1. Prepare all mating surfaces as necessary using 80 grit abrasive.
2. Clean and prepare the attaching surfaces for welding/bonding (1).
3. Position the roof rear header panel (1) on the vehicle.
4. Verify the fit of the roof rear header panel and install the roof rear header panel. With roof rear

header installed, straighten the quarter inner upper panel top flange, weld and finish it.

Fig 1: Roof Outer Panel



Courtesy of GENERAL MOTORS COMPANY

5. Install the roof outer panel. Roof Outer Panel Replacement .
6. Clean and prepare all welded surfaces.
7. Apply the sealers and anti-corrosion materials to the repair area as necessary. Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Basecoat/Clearcoat Paint Systems .
9. Install the rear window and all related panels and components
10. Enable the SIR system and then connect the negative battery cable. SIR Disabling and Enabling .

REPLACEMENT > REMOVAL PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .



WARNING:

Refer to Battery Disconnect Warning .

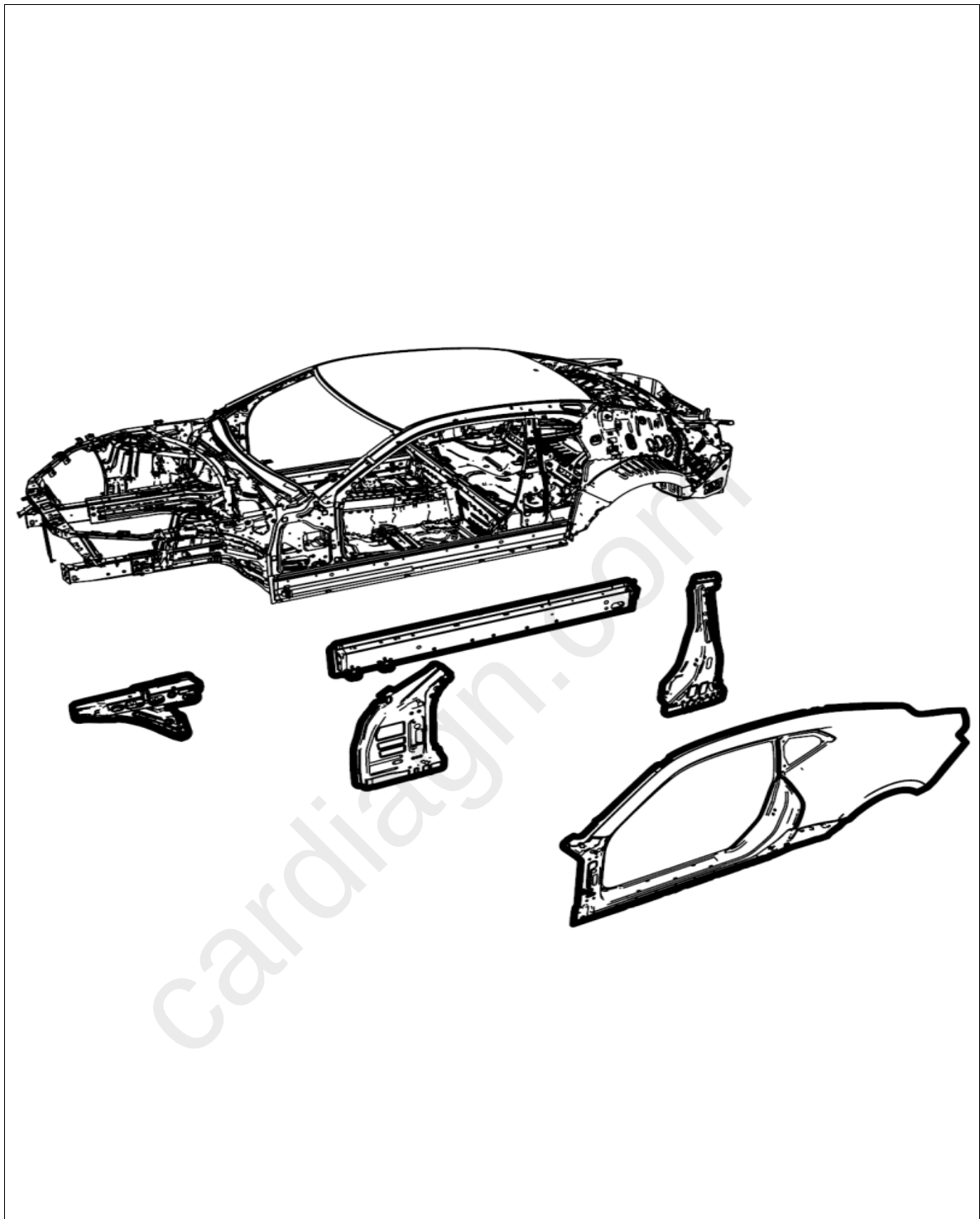


NOTE:

The rocker inner panel reinforcement is made of Ultra High Strength Steel. Sectioning, or repair of Ultra High Strength Steel is not recommended. It should be replaced as a complete assembly at factory locations. Refer to Ultra High Strength Steel

1. Disable the SIR system and then disconnect the negative battery cable. Refer to SIR Disabling and Enabling .
2. Remove all related panels and components.
3. Repair as much of the damaged area as possible. Refer to Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .

Fig 1: Sectioning Procedures



Courtesy of GENERAL MOTORS COMPANY



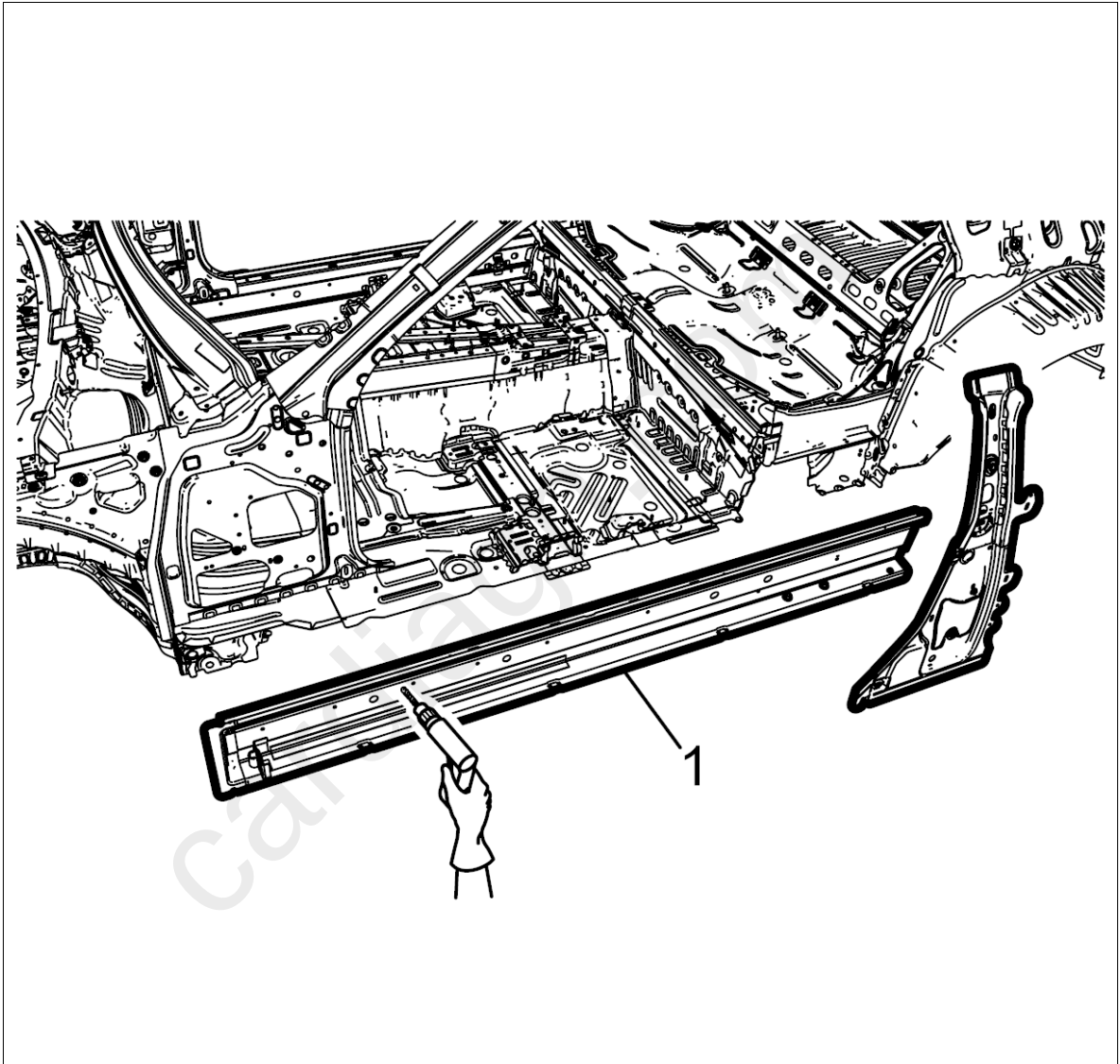
NOTE:

There are sectioning procedures available for various locations of the body side outer panel. The sectioning procedure and location should be chosen based on the extent of damage to the vehicle and other inner reinforcements that need to be replaced. Sectioning should be performed only in the recommended areas. Failure

to do so may compromise the structural integrity of the vehicle. Refer to service procedures for recommended sectioning locations.

5. The body side outer panel, center pillar reinforcement, rocker panel outer reinforcement and front hinge pillar reinforcement will need to be removed to gain access to the rocker inner panel reinforcement (1). Refer to the appropriate service procedures as required based on the specific amount of vehicle damage.

Fig 2: Removing Factory Welds



Courtesy of GENERAL MOTORS COMPANY

 NOTE:

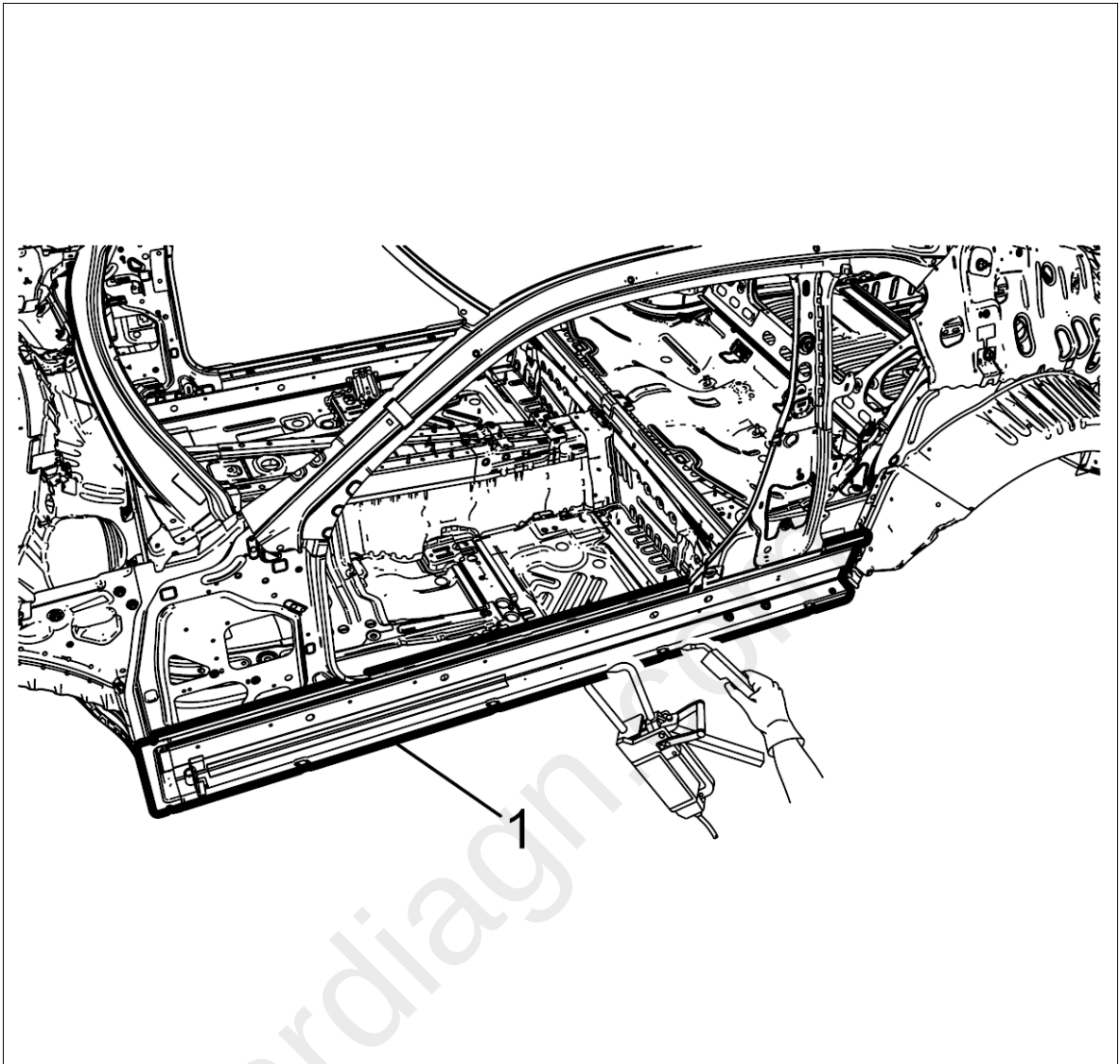
Record the number and location of welds for installation of the service assembly. The rocker inner panel reinforcement is made of ultra high strength steel. A pneumatic belt sanding tool using a 40 grit 3M Cubitron II sanding belt or a Krto-Cobalt drill bit are the best tools to remove the spot welds attaching ultra high strength steel.

6. Remove all the necessary factory welds (1).
7. Remove the damaged rocker inner panel reinforcement.

REPAIR INSTRUCTIONS > ROCKER INNER PANEL REINFORCEMENT REPLACEMENT > INSTALLATION PROCEDURE

1. Prepare the mating surfaces as necessary.
2. Apply Weld-Thru Coating to all mating surfaces without adhesive. Apply Impact Resistant Adhesive to all mating surfaces that were originally assembled with Impact Resistant Adhesive. Refer to Anti-Corrosion Treatment and Repair , and Metal Panel Bonding (Steel) .
3. Position the rocker reinforcement in place, use 3-dimensional measuring equipment, clamp in place.

Fig 1: Weld, Weld-Bond Or Rivet Bond



Courtesy of GENERAL MOTORS COMPANY

4. Weld, weld-bond or rivet bond accordingly at the original weld locations (1).
5. Install the body side outer panel, center pillar reinforcement, rocker panel outer reinforcement and front hinge pillar reinforcement. Refer to the appropriate service procedures as required based on the specific amount of vehicle damage.
6. Clean all of the welded surfaces.
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems
9. Install all of the related panels and components.
10. Enable the SIR system and then connect the negative battery cable. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > ROCKER OUTER PANEL REINFORCEMENT REPLACEMENT > REMOVAL PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .



WARNING:

Refer to Battery Disconnect Warning .

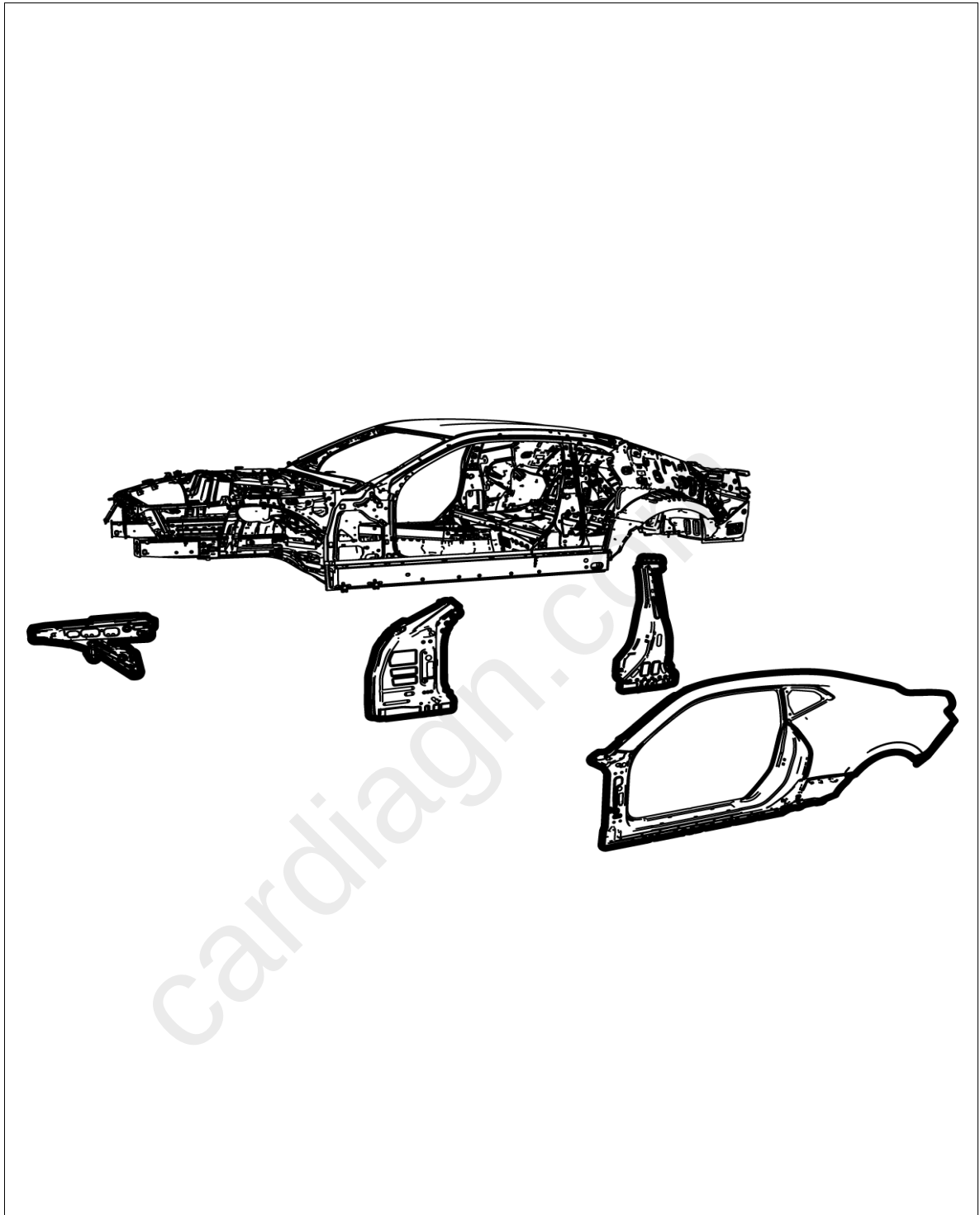


NOTE:

The rocker outer panel reinforcement is made of Ultra High Strength Steel. Sectioning, or repair of Ultra High Strength Steel is not recommended. It should be replaced as a complete assembly at factory locations. Ultra High Strength Steel .

1. Disable the SIR system and then disconnect the negative battery cable. SIR Disabling and Enabling .
2. Remove all related panels and components.
3. Repair as much of the damaged area as possible. Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Anti-Corrosion Treatment and Repair .

Fig 1: Sectioning Procedures



Courtesy of GENERAL MOTORS COMPANY



NOTE:

There are sectioning procedures available for various locations of the body side outer panel. The sectioning procedure and location should be chosen based on the extent of damage to the vehicle and other inner reinforcements that need to be replaced. Sectioning should be performed only in the recommended areas. Failure

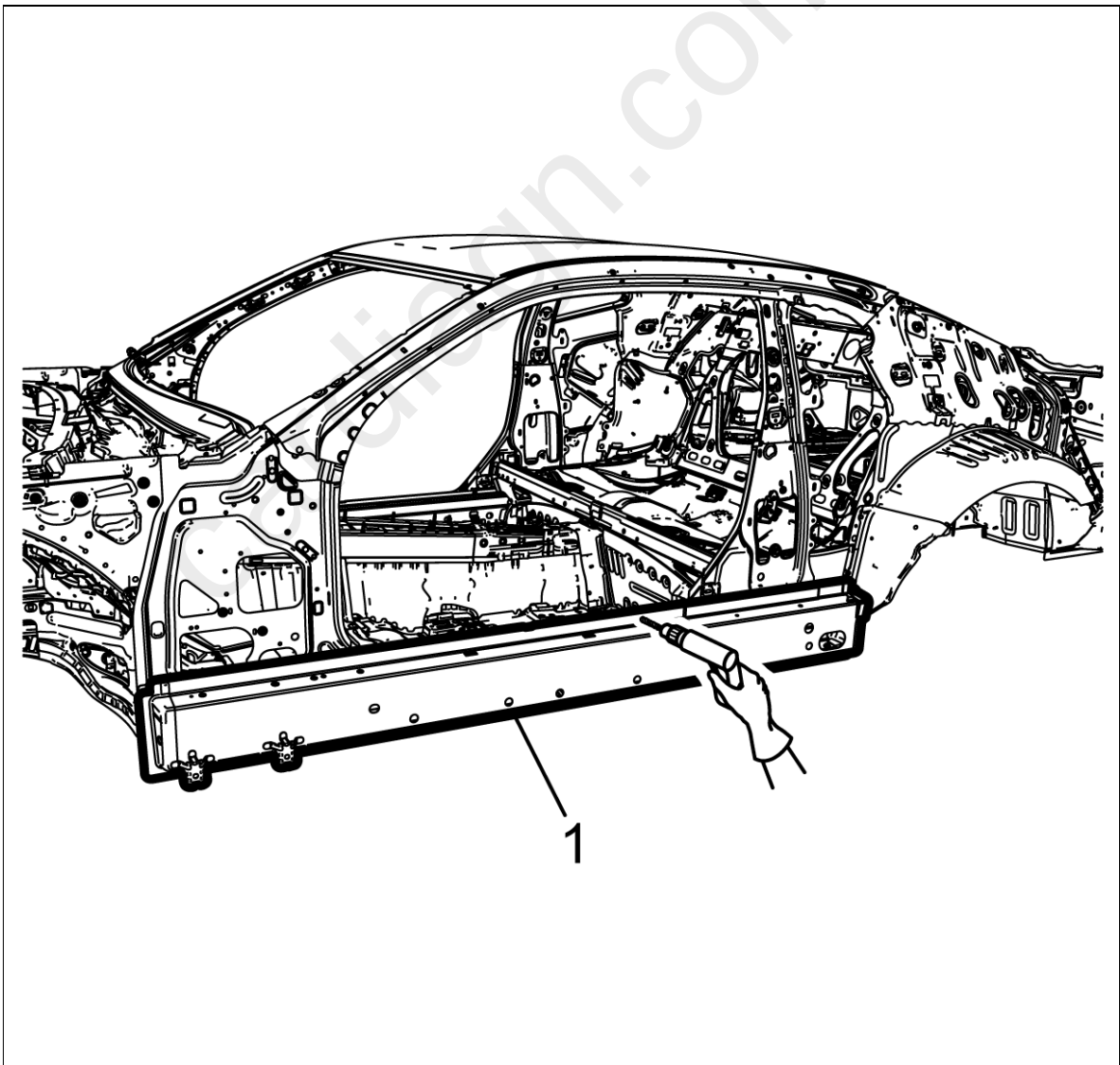
to do so may compromise the structural integrity of the vehicle. Refer to service procedures for recommended sectioning locations.

 NOTE:

Record the number and location of welds for installation of the service assembly. The Center Pillar Outer Panel Reinforcement is made of ultra high strength steel. A pneumatic belt sanding tool using a 40 grit 3M Cubitron II sanding belt or a Kryo-Cobalt drill bit are the best tools to remove the spot welds attaching ultra high strength steel.

5. The body side outer panel, center pillar reinforcement and front hinge pillar reinforcement will need to be removed to gain access to the rocker outer panel reinforcement. Refer to the appropriate service procedures as required based on the specific amount of vehicle damage.

Fig 2: Removing All Necessary Welds Of Body Side Outer Panel Reinforcement

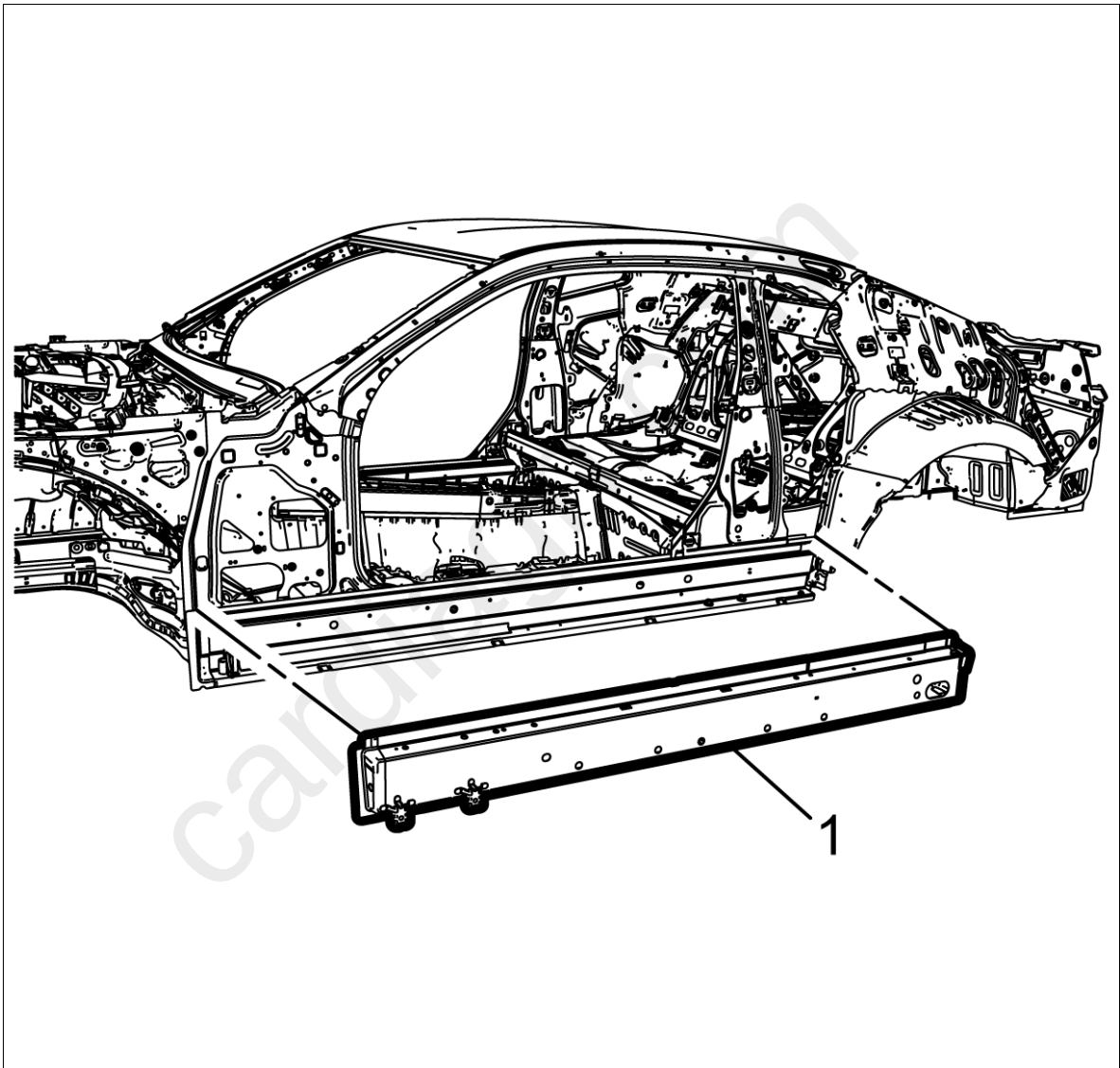


 NOTE:

Do not damage or cut the inner rocker panel reinforcement. The inner rocker panel reinforcement is made of Ultra High Strength Steel. Sectioning, or repair of Ultra High Strength Steel is not recommended. Ultra High Strength Steel .

6. Remove all necessary welds of the body side outer panel reinforcement (1).

Fig 3: Body Side Outer Panel Reinforcement



Courtesy of GENERAL MOTORS COMPANY

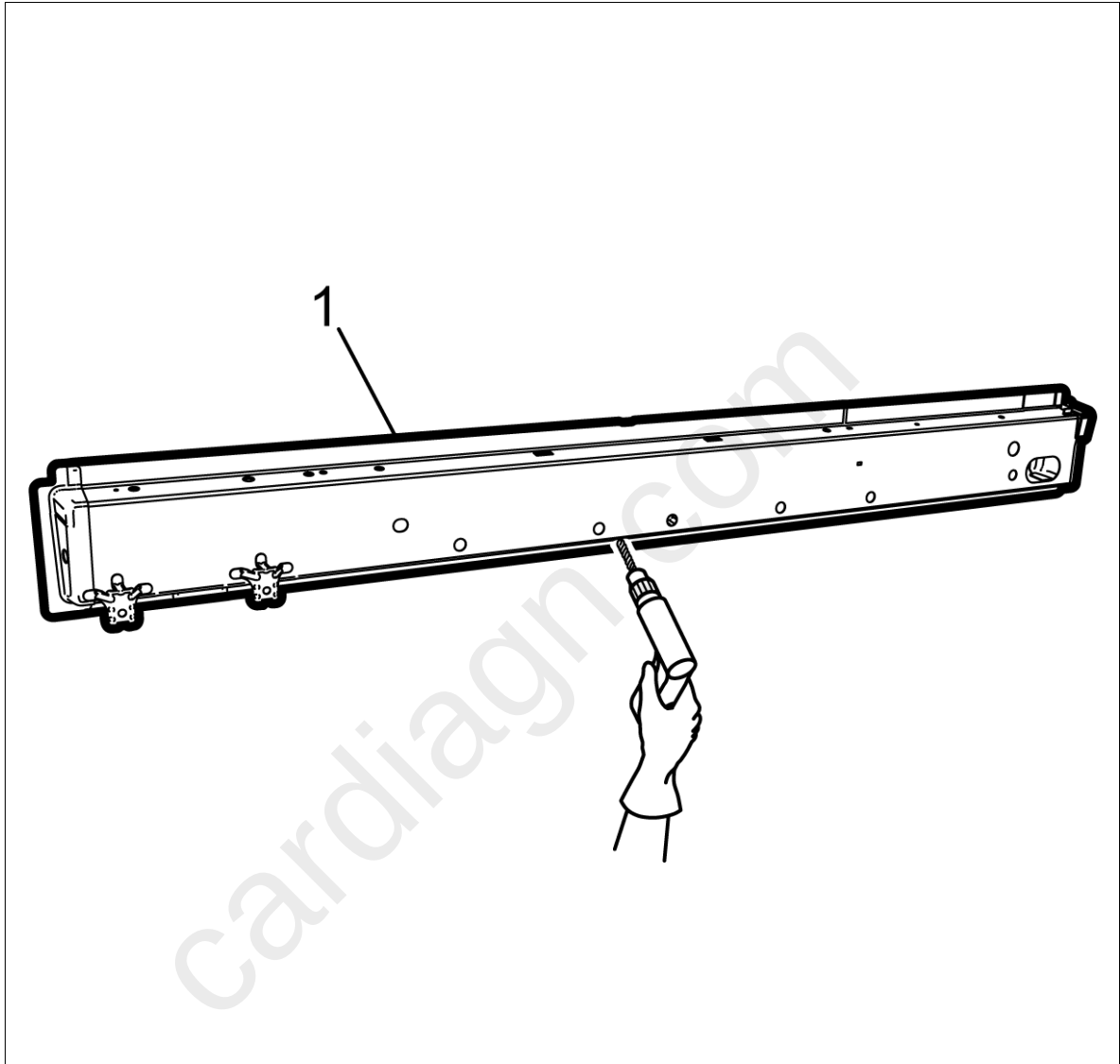
 NOTE:

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

7. Remove the damaged body side outer panel reinforcement (1).

REPAIR INSTRUCTIONS > ROCKER OUTER PANEL REINFORCEMENT REPLACEMENT > INSTALLATION PROCEDURE

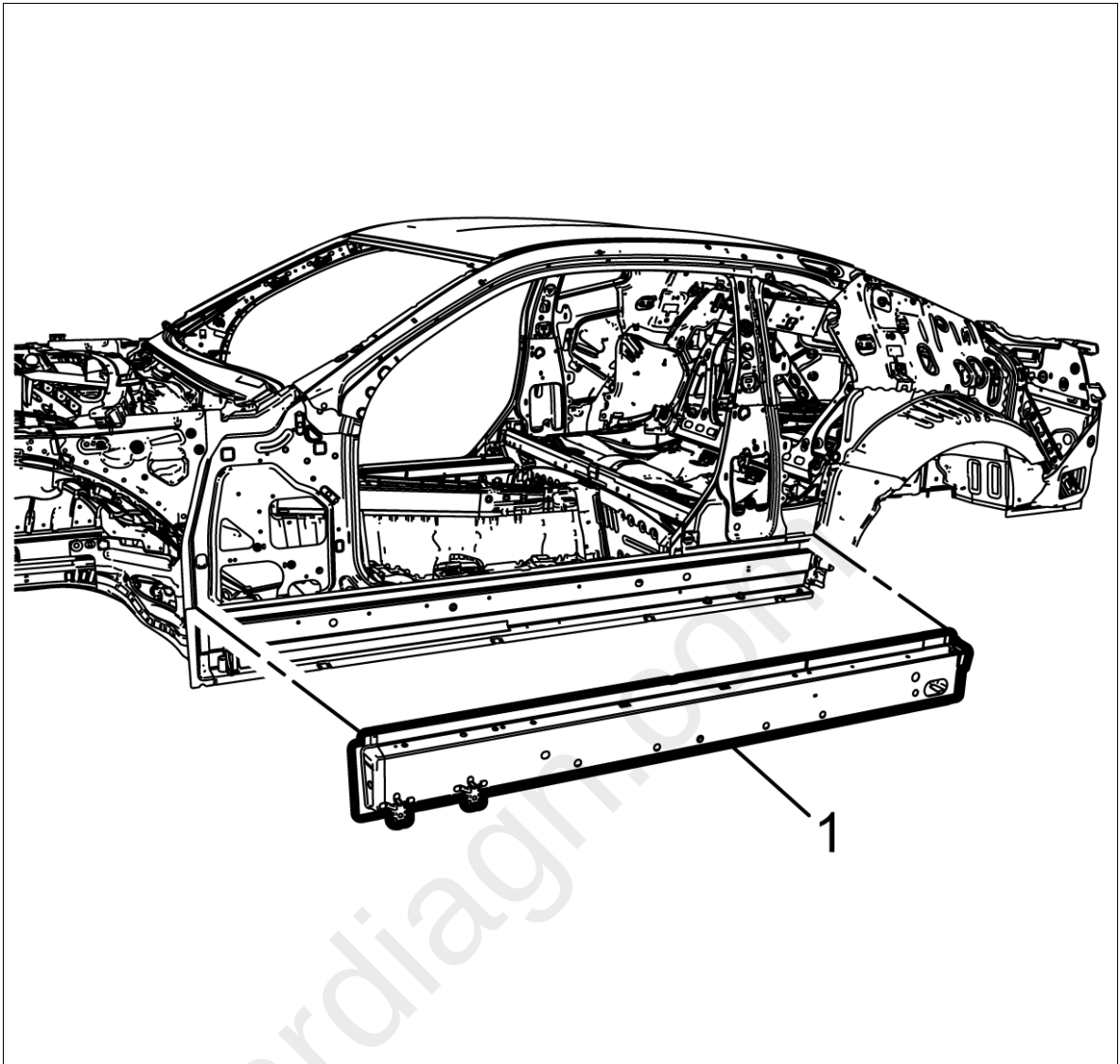
Fig 1: Clean And Prepare Attaching Surfaces For Welding



Courtesy of GENERAL MOTORS COMPANY

1. Clean and prepare the attaching surfaces for welding.

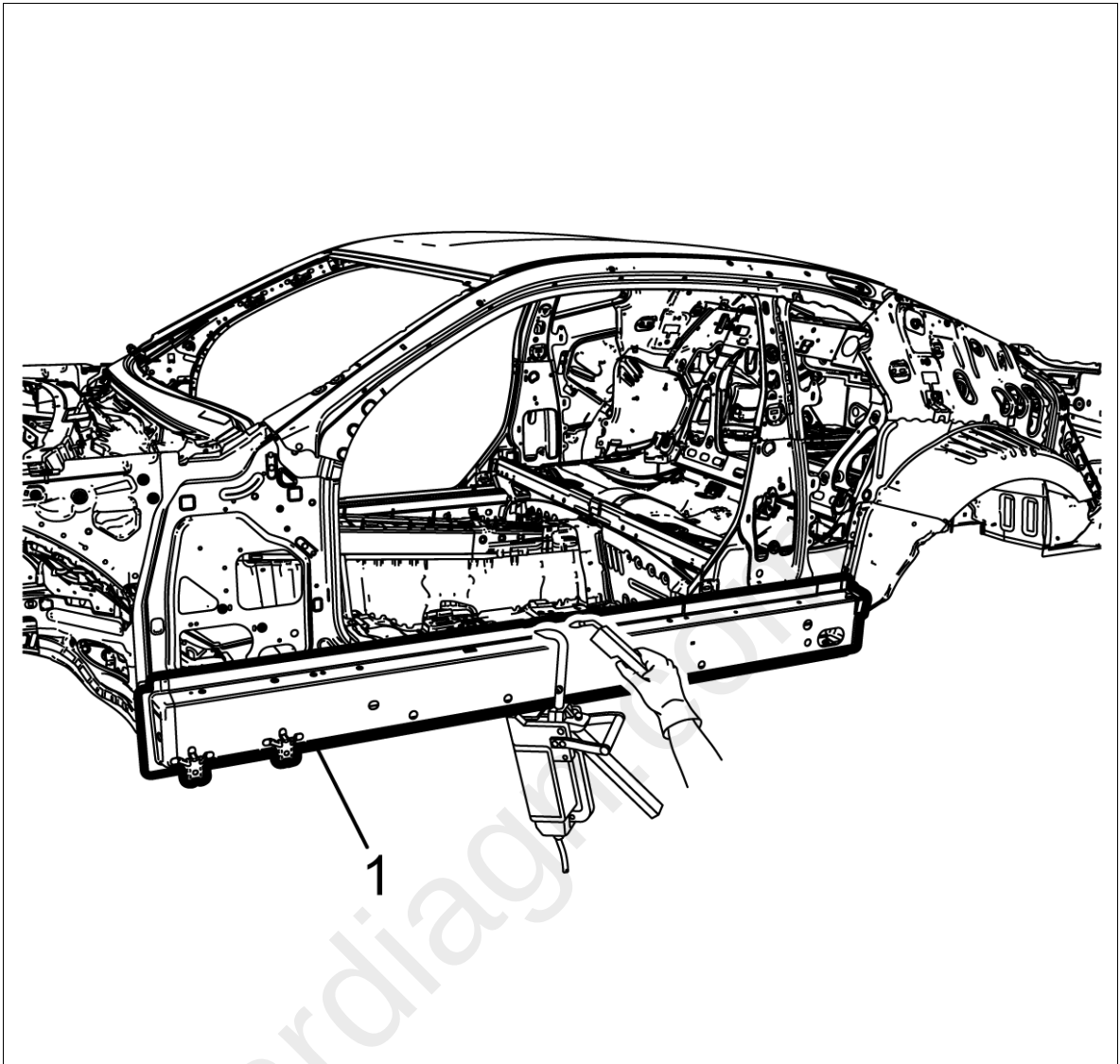
Fig 2: Body Side Outer Panel Reinforcement



Courtesy of GENERAL MOTORS COMPANY

2. Position the body side outer panel reinforcement (1) on the vehicle.
3. Verify the fit of the body side outer panel reinforcement.
4. Clamp the body side outer panel reinforcement into position.

Fig 3: Weld, Weld-Bond Or Rivet Bond



Courtesy of GENERAL MOTORS COMPANY

5. Weld, weld-bond or rivet bond accordingly at the original weld locations (1).
6. Clean all of the welded surfaces.
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Anti-Corrosion Treatment and Repair .
8. Install the body side outer panel, center pillar reinforcement and front hinge pillar reinforcement. Refer to the appropriate service procedures as required based on the specific amount of vehicle damage.
9. Paint the repaired area. Basecoat/Clearcoat Paint Systems .
10. Install all of the related panels and components.
11. Enable the SIR system and then connect the negative battery cable. SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > ROCKER OUTER PANEL SECTIONING > REMOVAL PROCEDURE

 WARNING:

Refer to Approved Equipment for Collision Repair Warning .

 WARNING:

Refer to Foam Sound Deadeners Warning .

 WARNING:

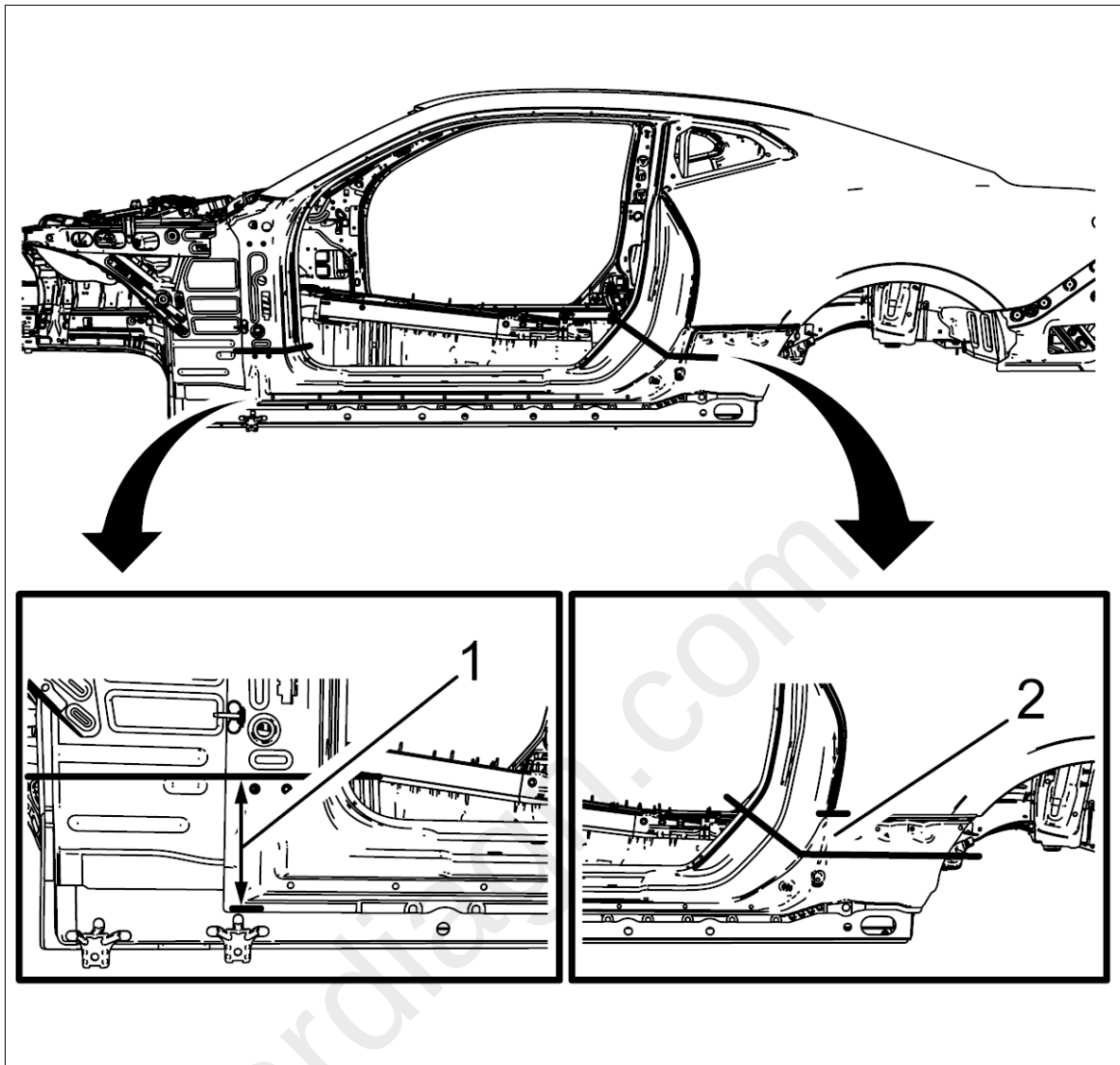
Refer to Battery Disconnect Warning .

 NOTE:

This procedure was developed to allow access for the complete replacement of the rocker outer panel reinforcement. There are sectioning procedures available for various locations of the body side outer panel. The sectioning procedure and location should be chosen based on the extent of damage to the vehicle and other inner reinforcements that need to be replaced. Sectioning should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle. Refer to other service procedures for additional sectioning locations.

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

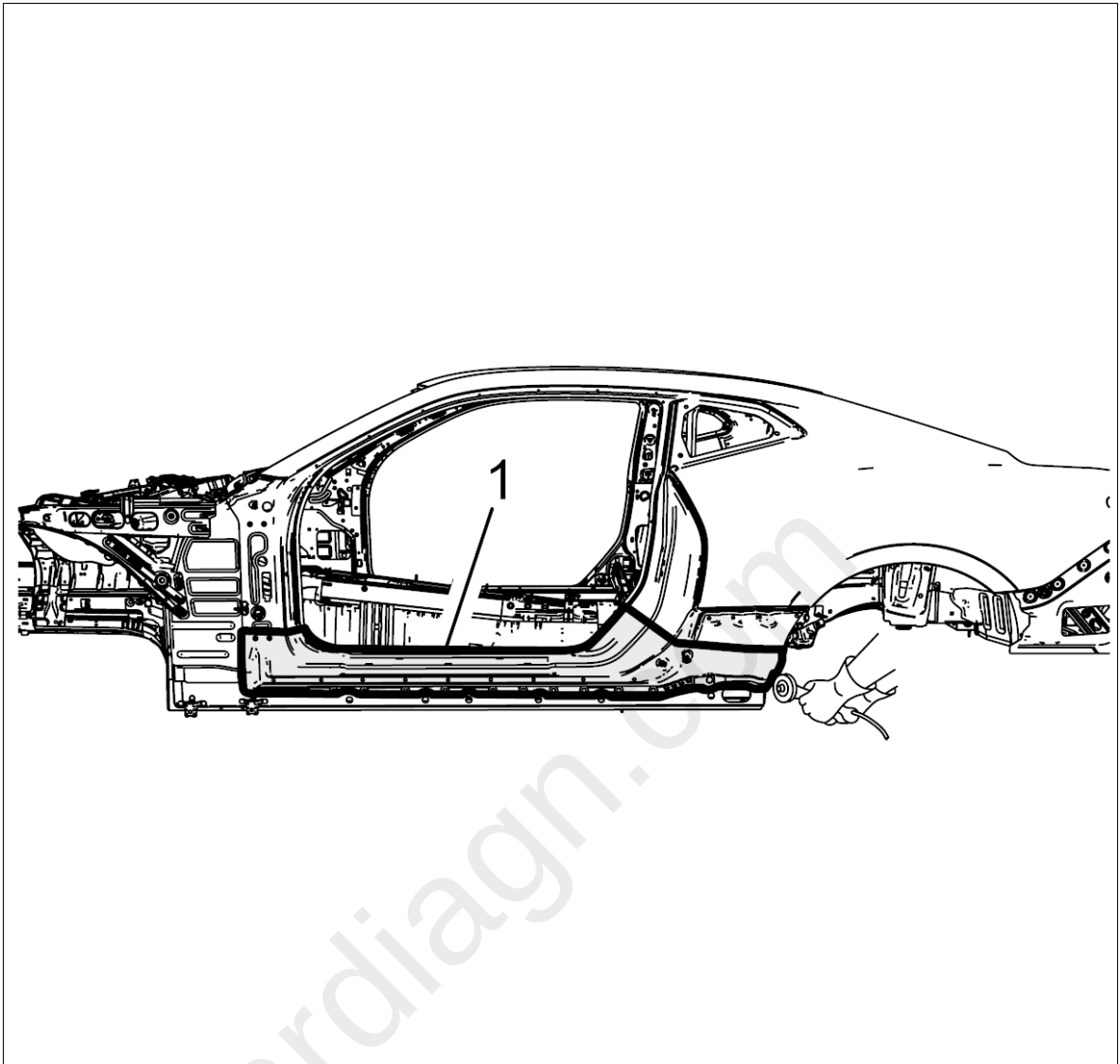
Fig 1: Mark A Cut Line Horizontally In Bodyside Outer



Courtesy of GENERAL MOTORS COMPANY

6. Measure upward from the lower edge of the bodyside panel at the rocker edge 200 mm and mark a cut line horizontally in the bodyside outer just above the lower door hinge mount point (1). Measure down from the front lower corner of the show surface of the quarter outer panel 100 mm and scribe a horizontal line (2).
7. Perform additional sectioning procedures as needed, depending on damage to vehicle. Refer to Quarter Outer Panel Sectioning , Front Hinge Pillar Body Sectioning (Lower) Front Hinge Pillar Body Sectioning (Upper) , or Center Pillar Sectioning - Outer .

Fig 2: Rocker Outer Panel



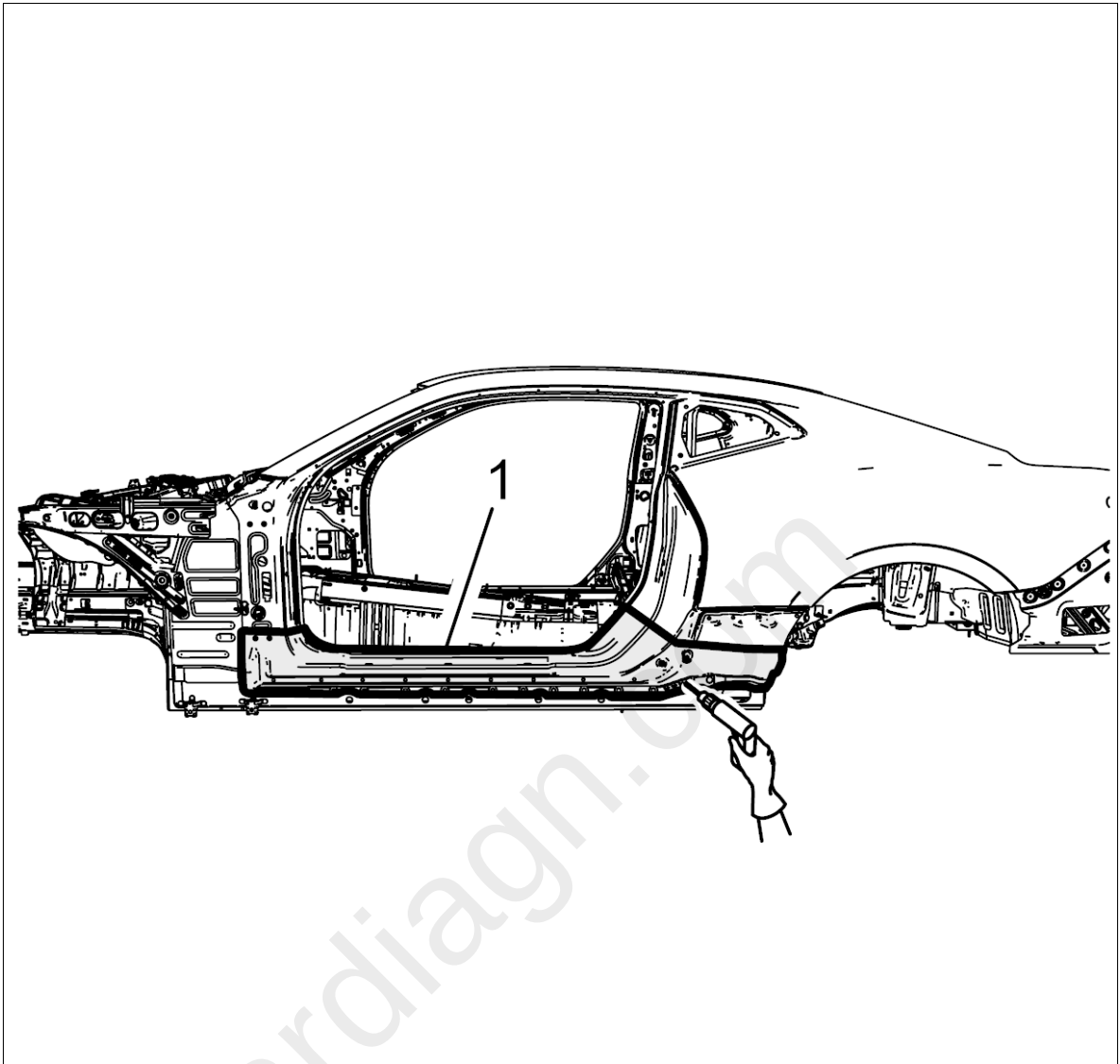
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

Do not damage or cut the front hinge pillar reinforcements, or outer rocker panel reinforcements. The front hinge pillar reinforcements and outer rocker panel reinforcements are made of Ultra High Strength Steel. Sectioning, or repair of Ultra High Strength Steel, is not recommended. Refer to Ultra High Strength Steel .

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

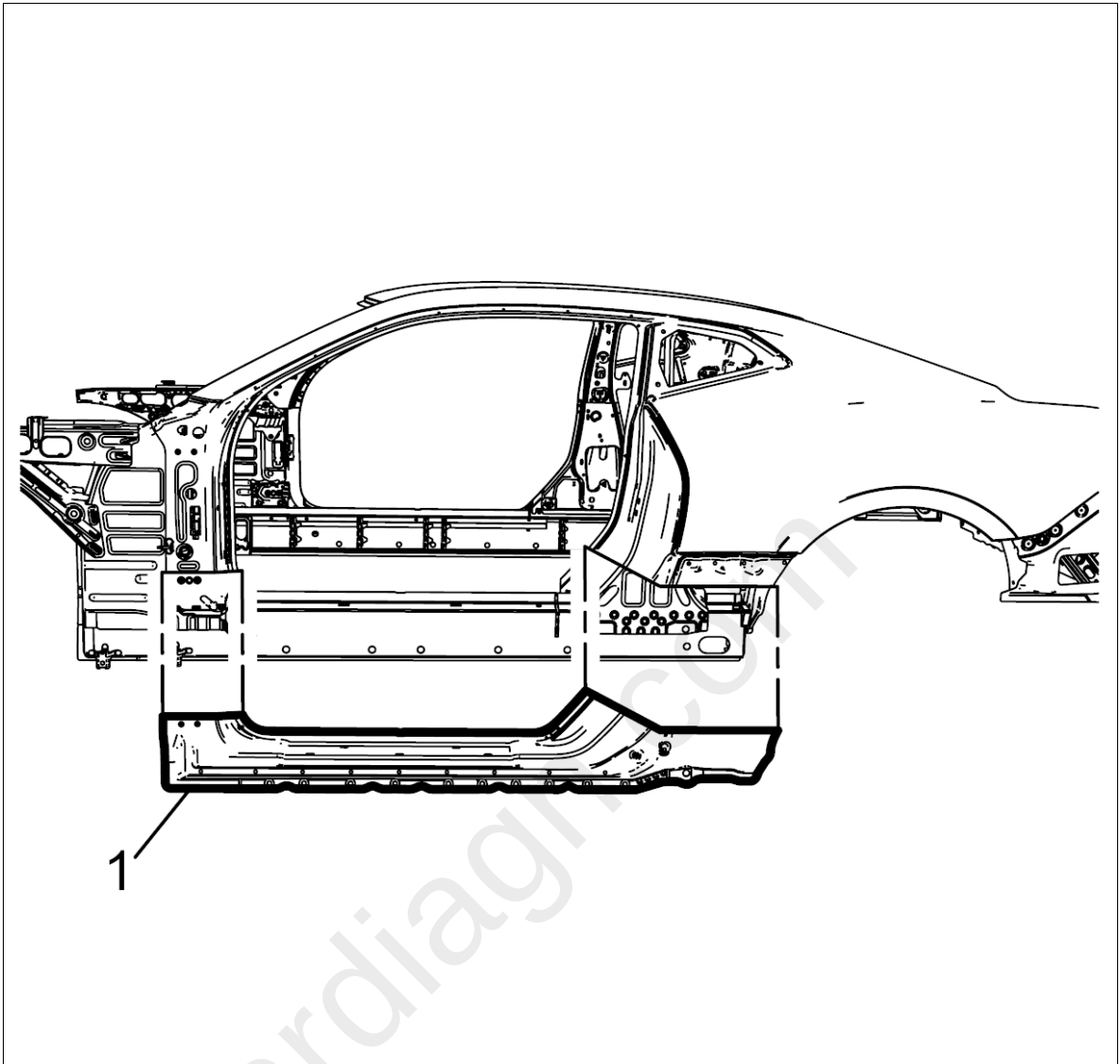
Fig 3: Removing Factory Welds



Courtesy of GENERAL MOTORS COMPANY

9. Remove all the necessary factory welds of the rocker outer panel (1).

Fig 4: Rocker Outer Panel Section



Courtesy of GENERAL MOTORS COMPANY

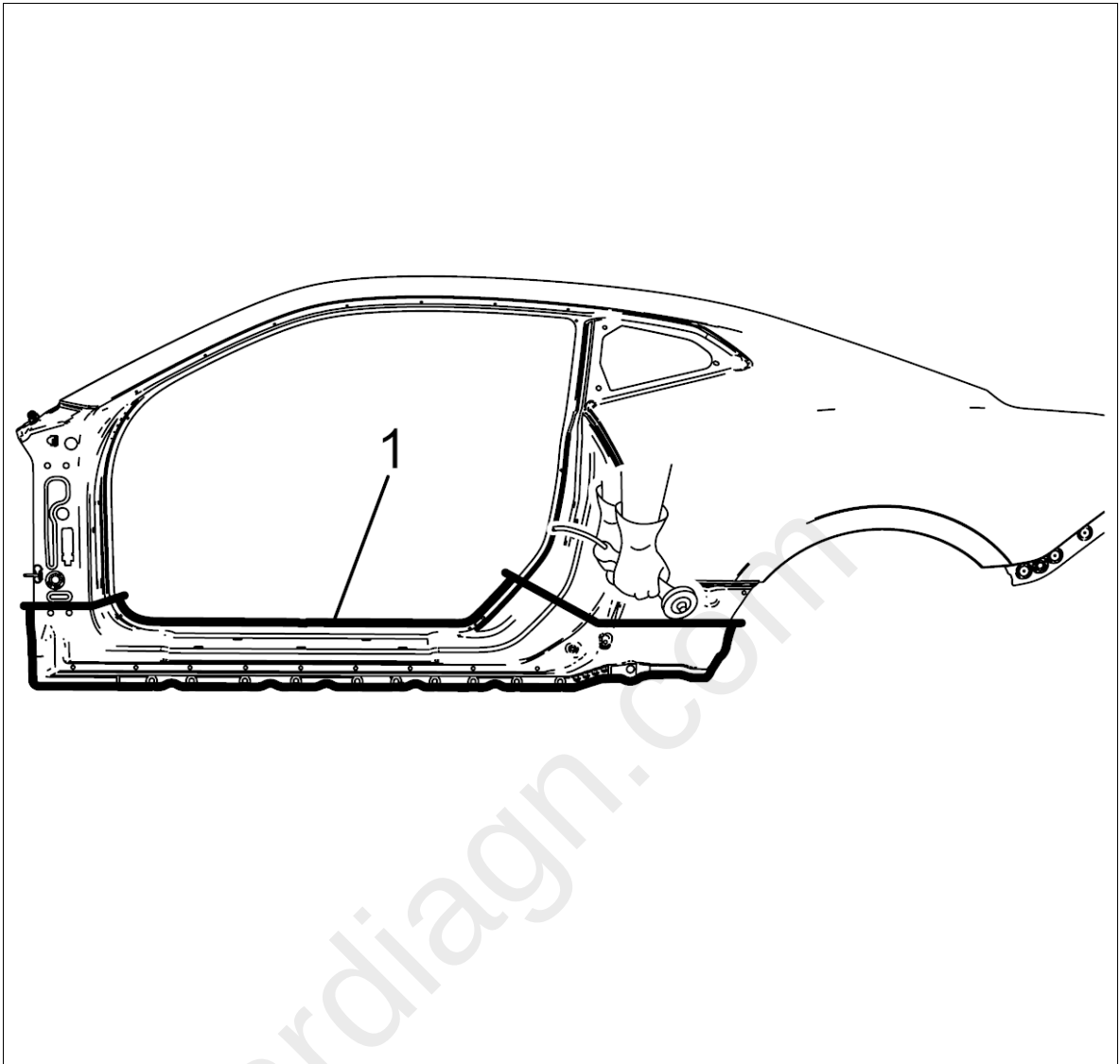
 NOTE:

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

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

**REPAIR INSTRUCTIONS > ROCKER OUTER PANEL SECTIONING > INSTALLATION
PROCEDURE**

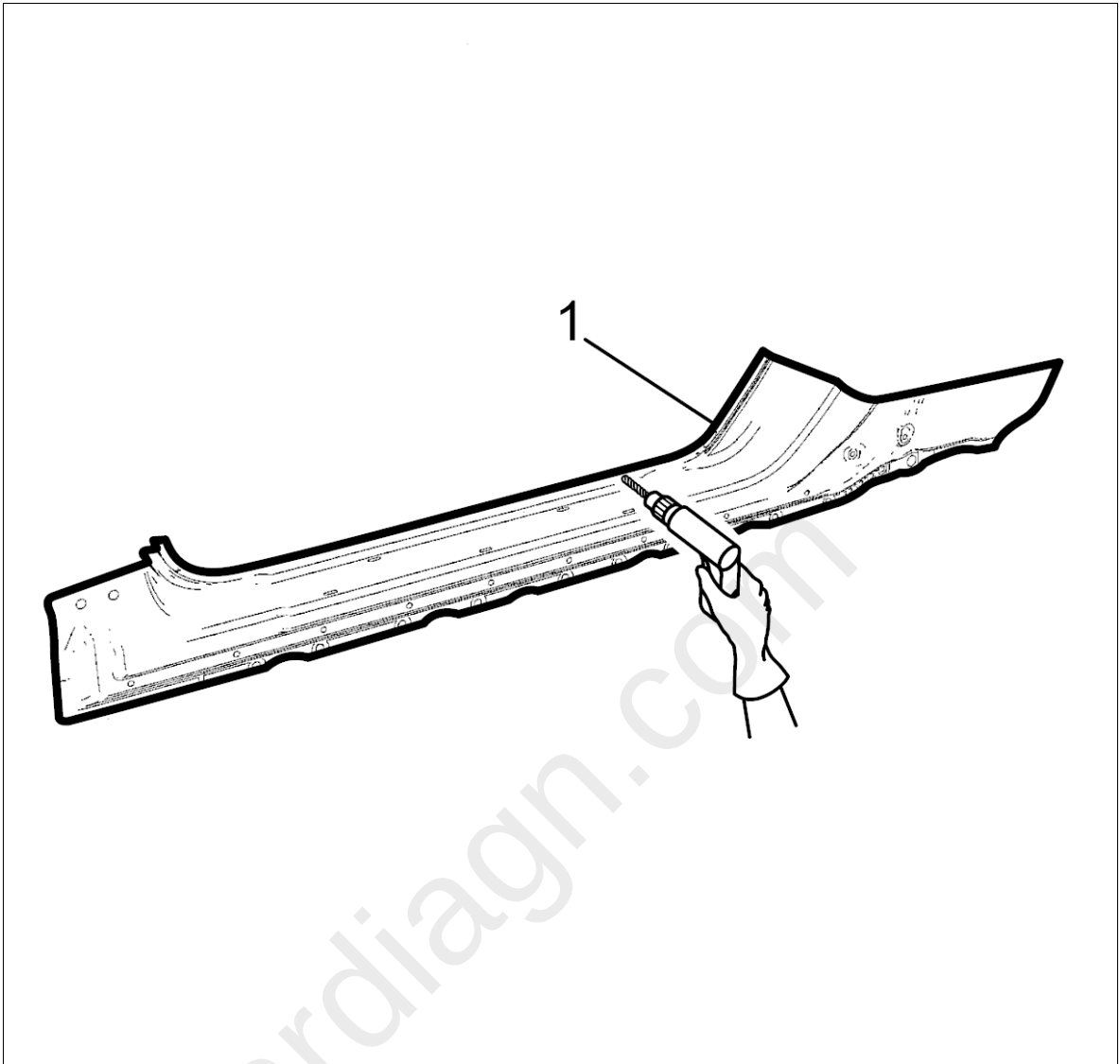
Fig 1: Service Part



Courtesy of GENERAL MOTORS COMPANY

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

Fig 2: Cleaning And Preparing Attaching Surfaces

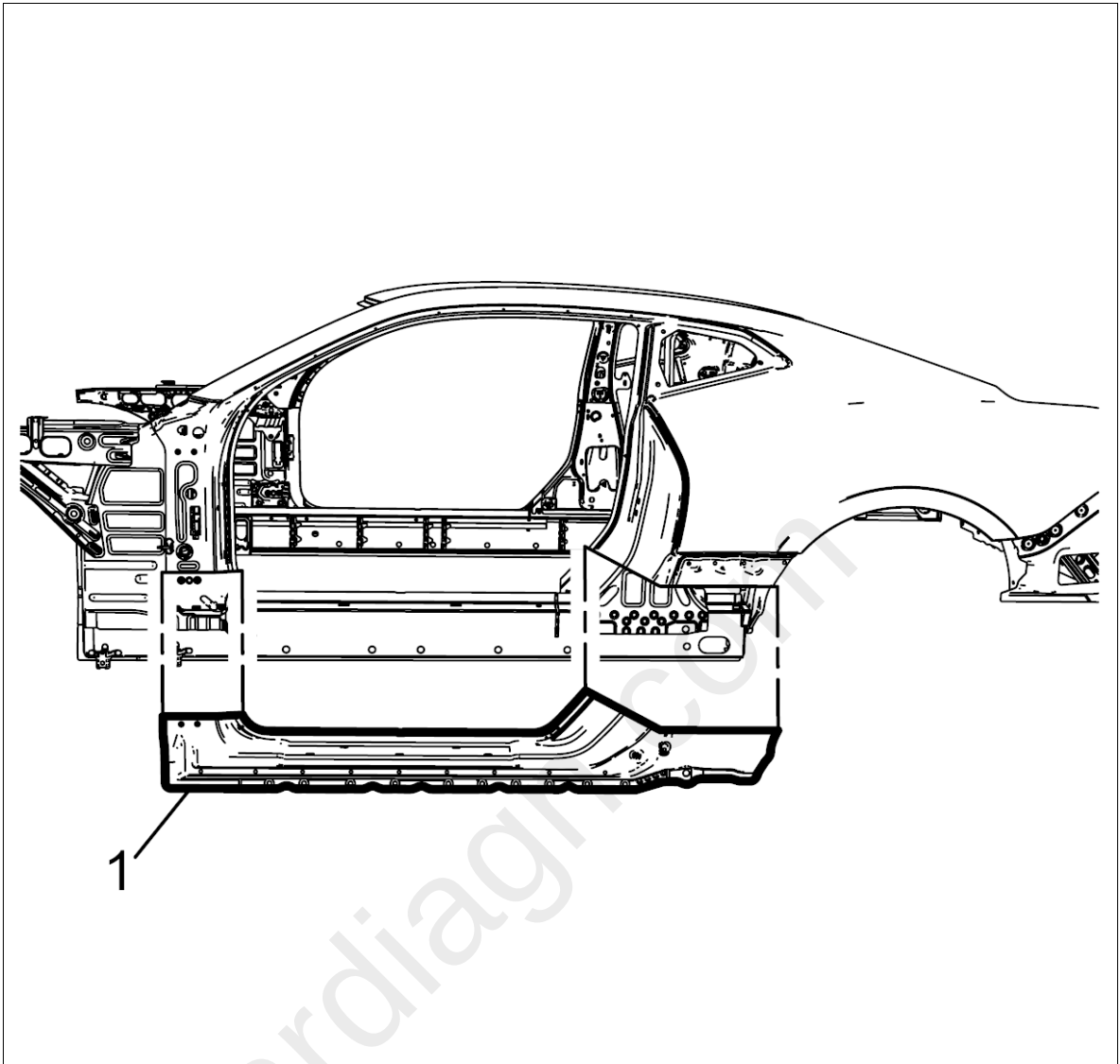


Courtesy of GENERAL MOTORS COMPANY

3. Clean and prepare the attaching surfaces for welding.
4. Apply Weld-Thru Coating to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair .

Unless weld bonding will be used. Do not apply weld thru primer to areas that will be weld bonded.

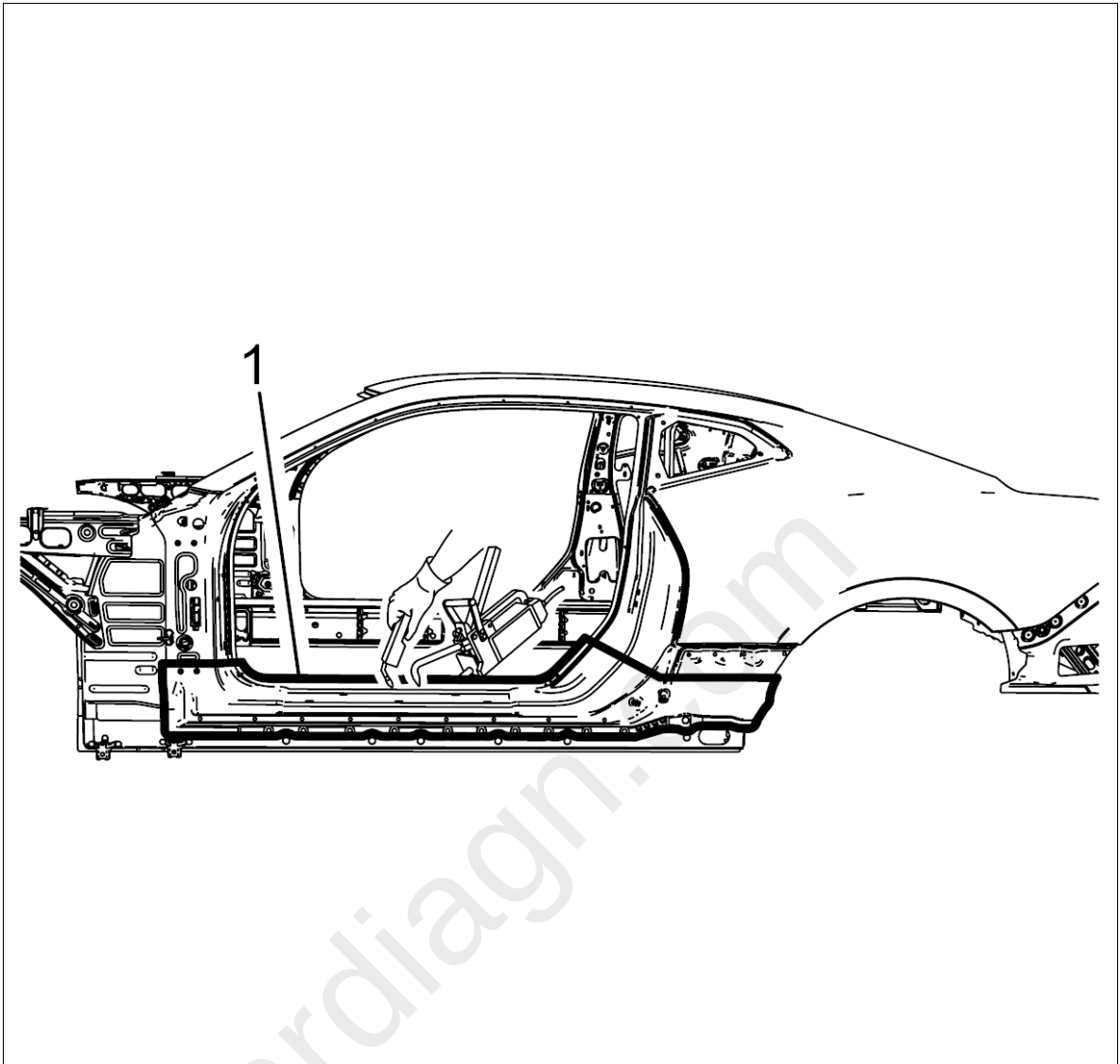
Fig 3: Rocker Outer Panel Section



Courtesy of GENERAL MOTORS COMPANY

5. Position the rocker outer panel section (1) to the vehicle using 3-dimensional measuring equipment. Clamp the pillar in place.
6. Weld or weld bond the perimeter of the part at the original weld locations (1).

Fig 4: Solid Weld Joint



Courtesy of GENERAL MOTORS COMPANY

7. To create a solid weld with minimum heat distortion, make stitch welds along the 25 mm overlap joints, with equal gaps between the welds. Then go back and complete the welds, to create a solid weld joint (1).
8. Clean and prepare all welded surfaces.
9. Apply the sealers and anti-corrosion materials to the repair area as necessary. Refer to Anti-Corrosion Treatment and Repair .
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 .
13. Enable the SIR System. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > REAR COMPARTMENT FLOOR PANEL SECTIONING > REMOVAL PROCEDURE

 WARNING:

Refer to Approved Equipment for Collision Repair Warning .

 WARNING:

Refer to Foam Sound Deadeners Warning .

 WARNING:

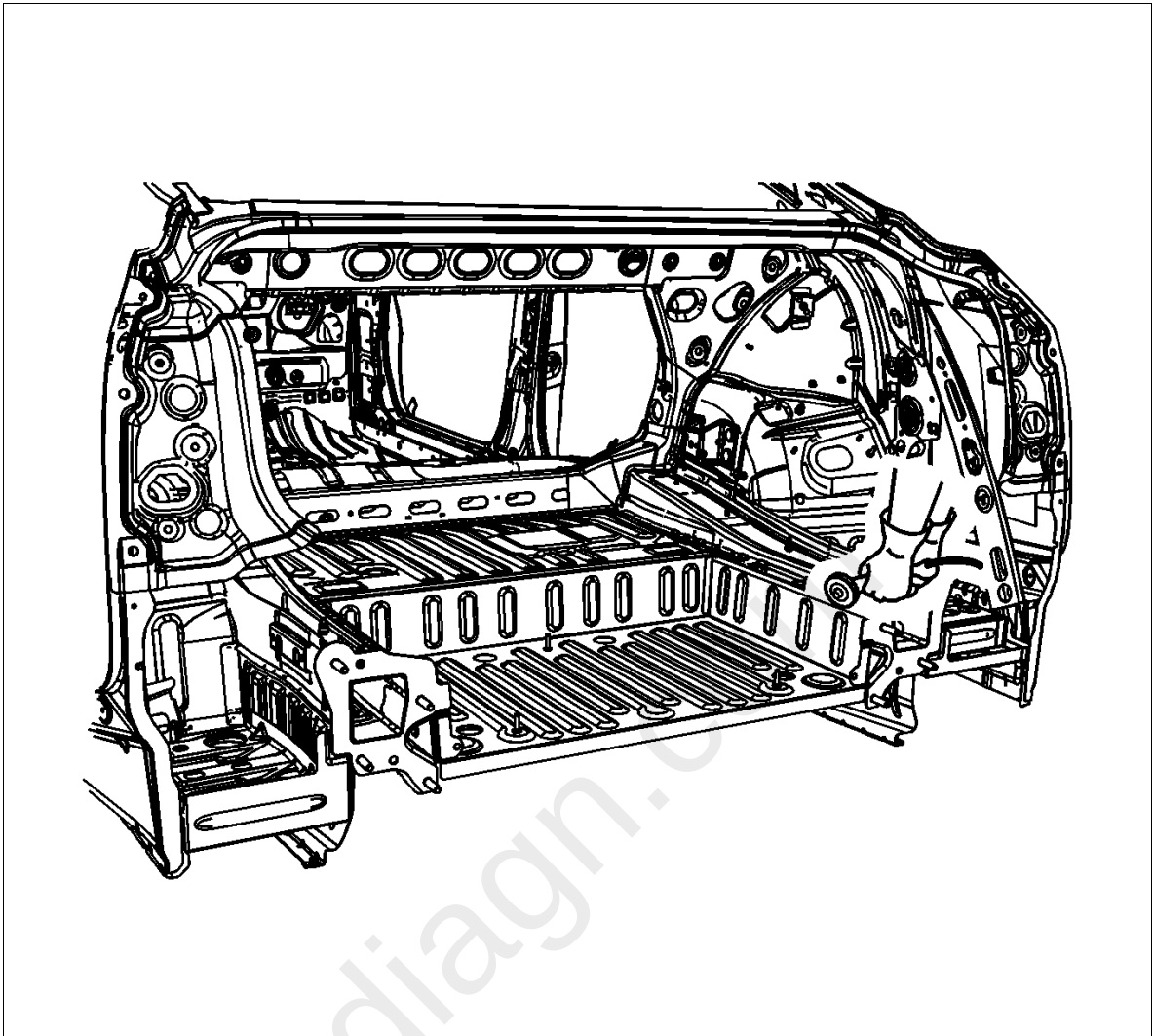
Refer to Battery Disconnect Warning .

 NOTE:

The upper flanges of the rear compartment floor panel are trapped between the rear lower frame rail and rear frame rail upper reinforcement, on both sides of the panel. This procedure describes how to perform a partial replacement of the rear compartment floor panel, by creating a 25 mm (1 in) flange on both sides of the original panel and should be used when the rear frame rail and frame rail reinforcement do not require replacement. Complete panel replacement can be done when the rear frame rails, or frame rail reinforcements have been removed.

1. Disable the SIR system and then disconnect the negative battery cable. Refer to SIR Disabling and Enabling .
2. Remove all related panels and components.

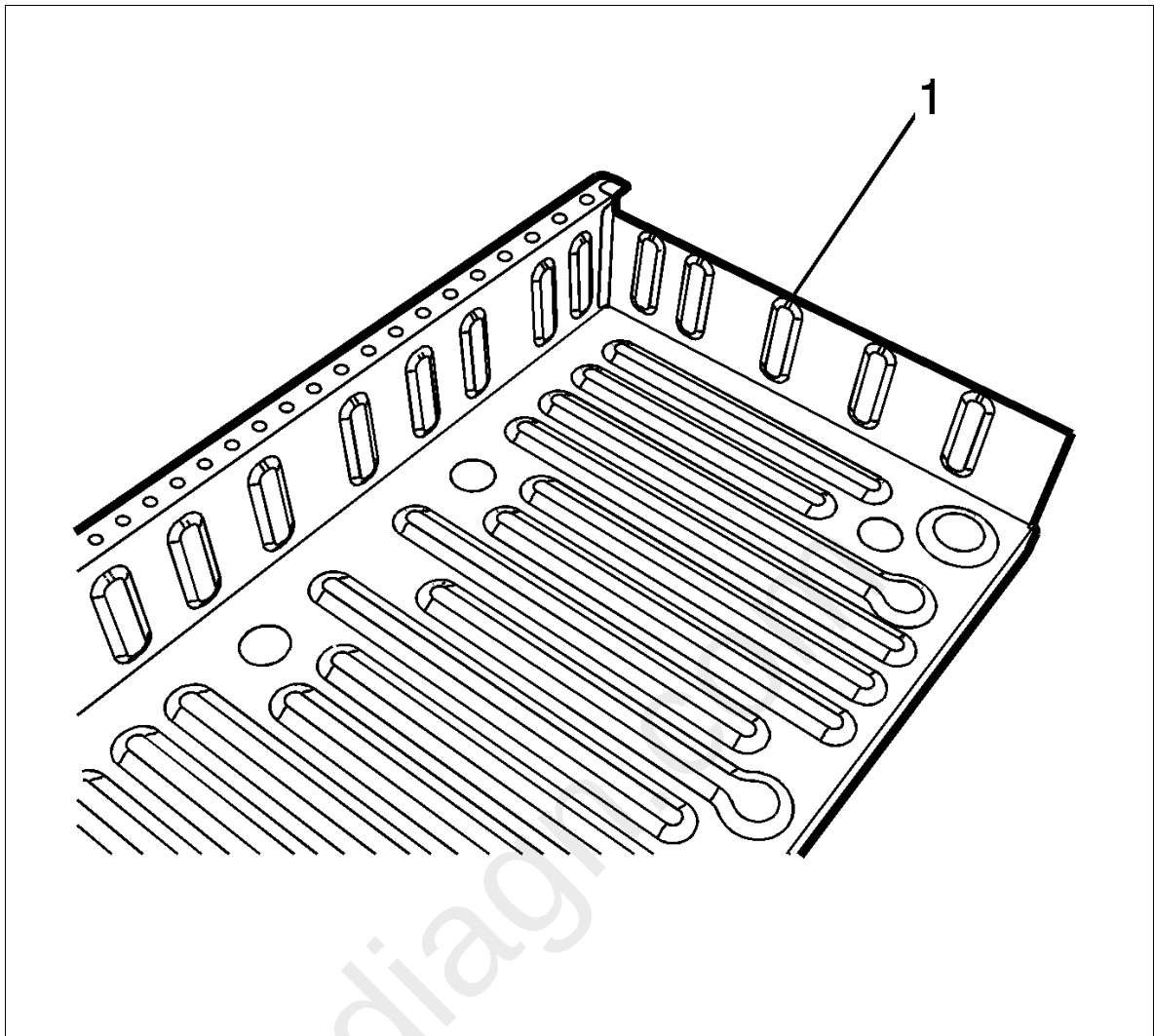
Fig 1: Body Rear End Panel



Courtesy of GENERAL MOTORS COMPANY

3. Repair as much of the damage as possible. Refer to Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
5. Remove the body rear end panel (1). Refer to Body Rear End Panel Replacement .

Fig 2: Rear Frame Rail Upper Extension



Courtesy of GENERAL MOTORS COMPANY

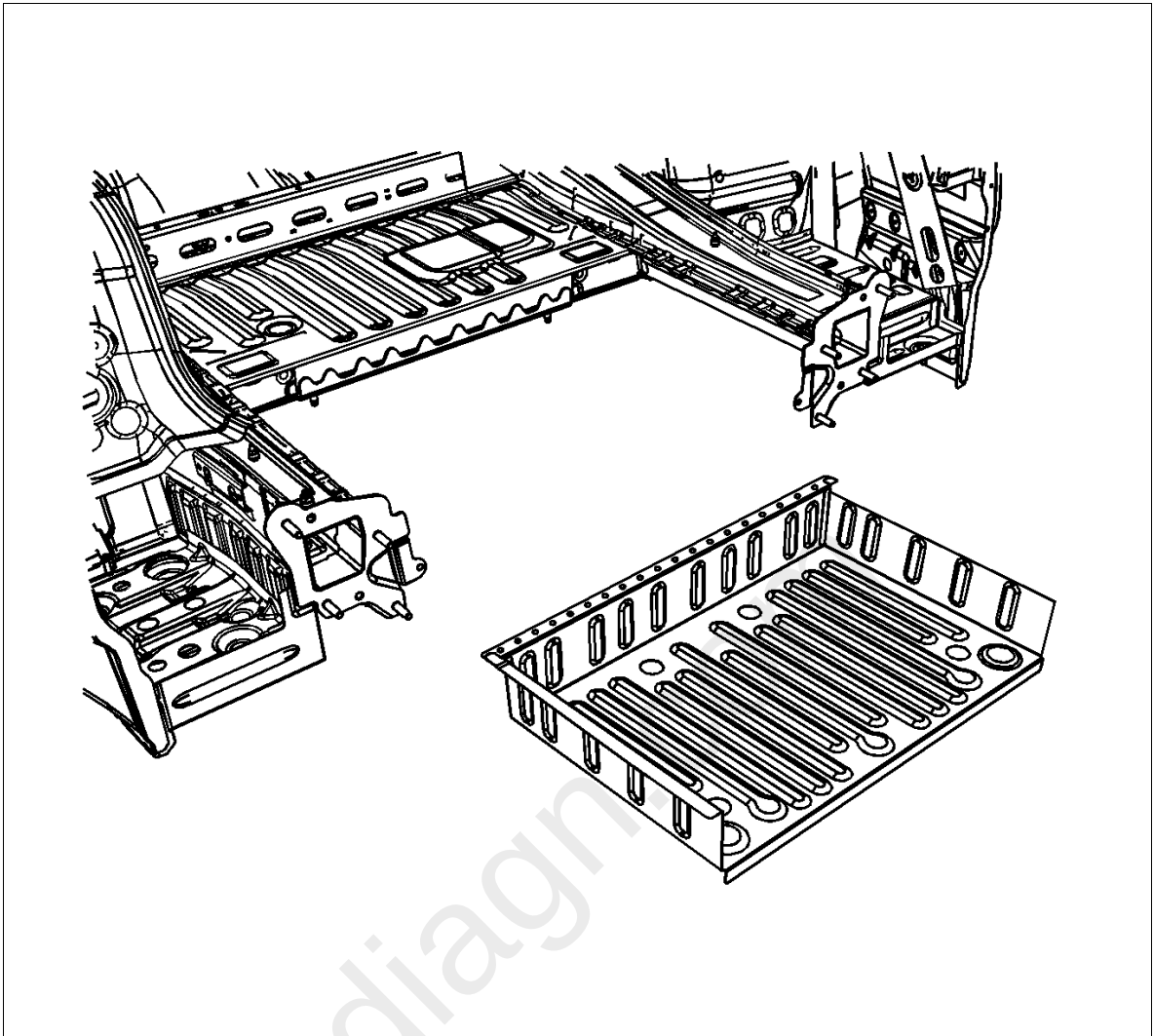
6. Apply a 25 mm (1 in) wide piece of masking tape to the rear compartment panel along the top side of the panel, below the rear frame rail upper extension, on both sides (1).
7. Create a 25 mm (1 in) weld flange on both sides of the floor panel, to attach the replacement panel. Cut along the bottom of the tape, below the rear frame rail upper reinforcement (1).

 NOTE:

Do not damage any inner panels or reinforcements.

8. Cut the rear compartment panel, vertically at the forward corners, leaving two 25 mm (1 in) flanges to attach the replacement floor.

Fig 3: Rear Floor Panel



Courtesy of GENERAL MOTORS COMPANY

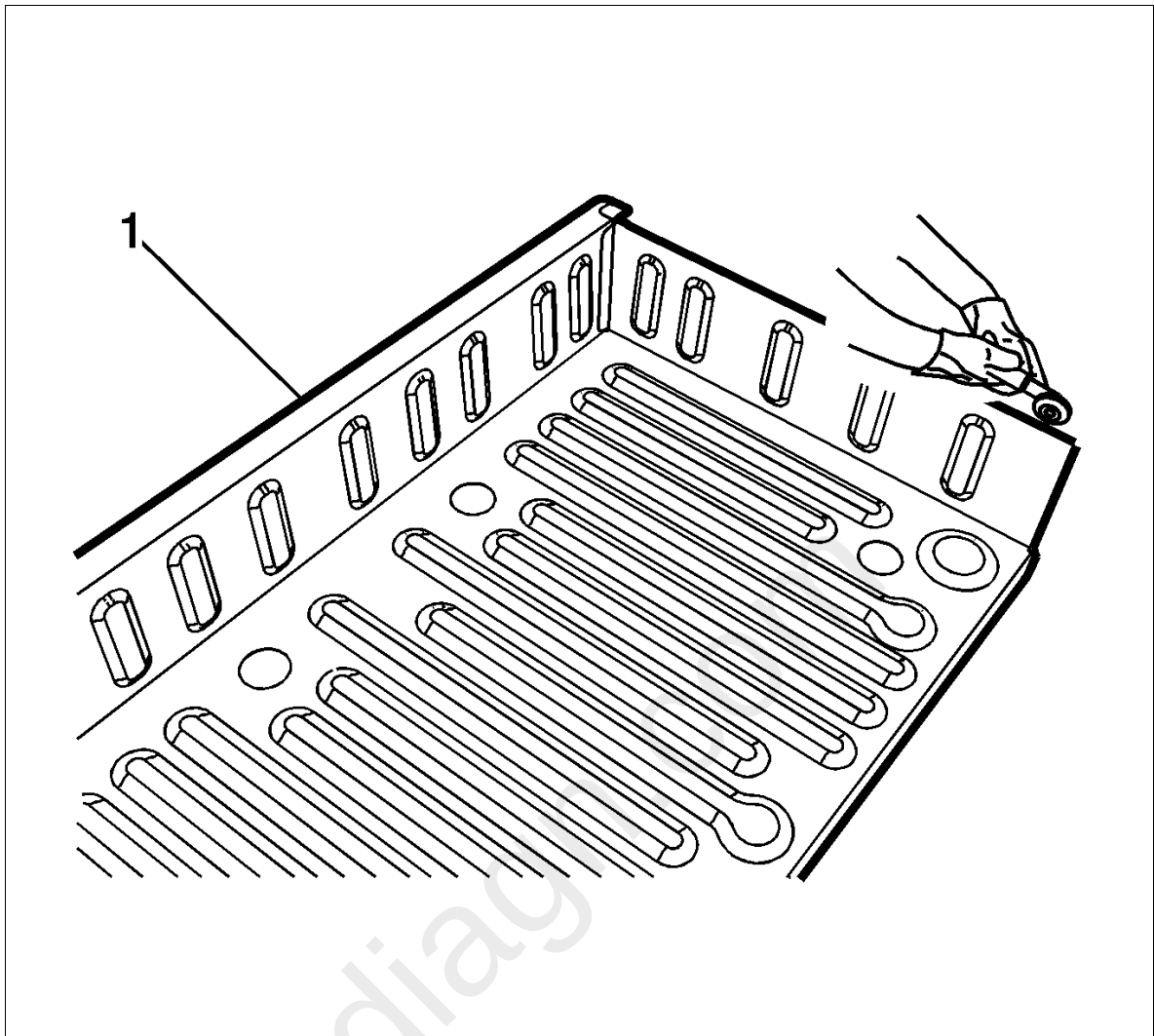
 NOTE:

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

9. Locate, mark, and remove the factory weld along the forward edge of the rear floor panel.
10. Remove the damaged rear compartment panel from the vehicle.

**REPAIR INSTRUCTIONS > REAR COMPARTMENT FLOOR PANEL SECTIONING >
INSTALLATION PROCEDURE**

Fig 1: Cutting Top Flange Off Rear Compartment Panel



Courtesy of GENERAL MOTORS COMPANY

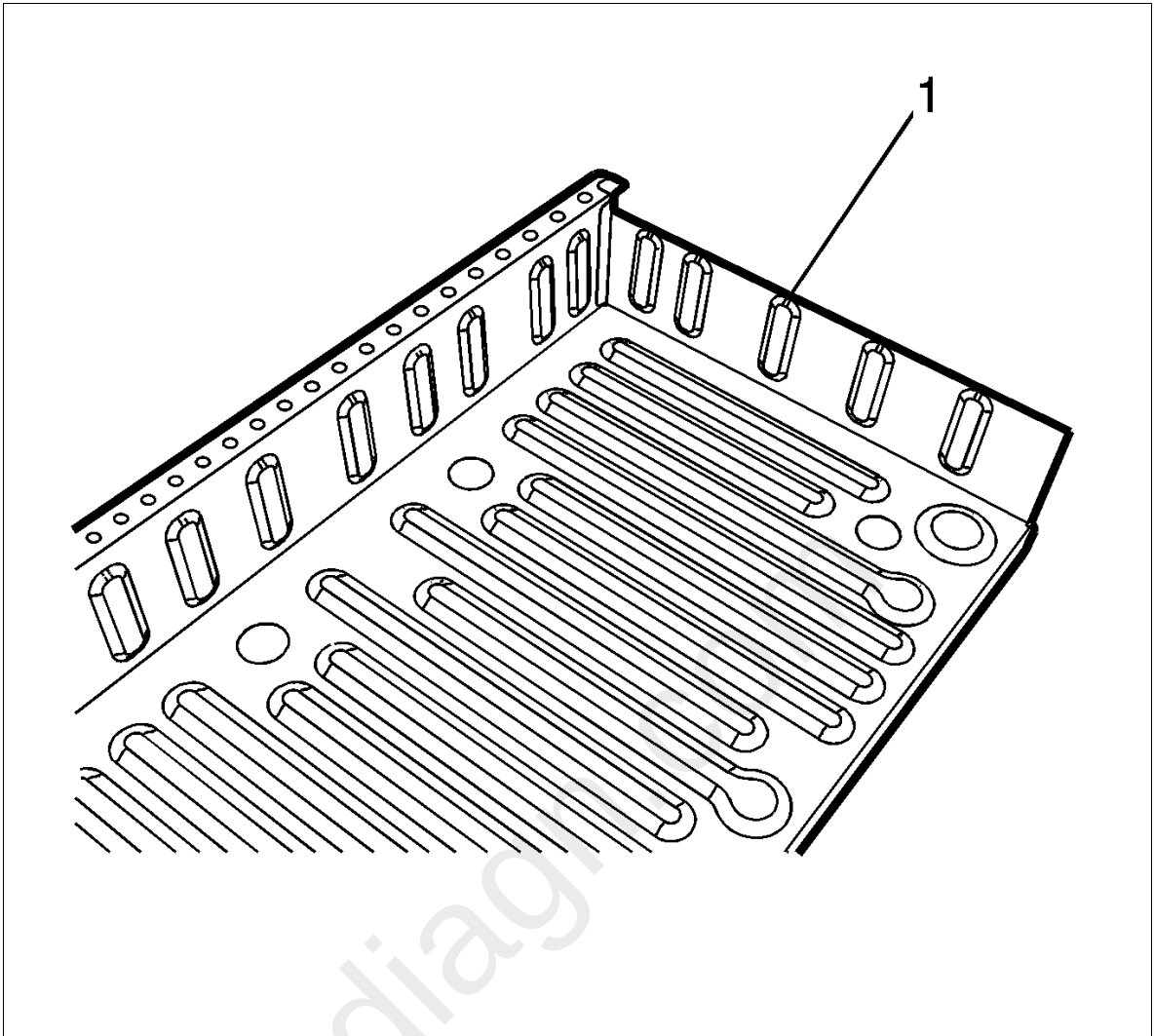


NOTE:

To create the service part to fit properly, the upper edge of the replacement floor panel will need to be removed on both sides.

1. Cut the top flange off of the rear compartment panel replacement part, along the sides only (1). This will create a 25 mm (1 in) overlap joint to fit over the flange that was left from the original panel.

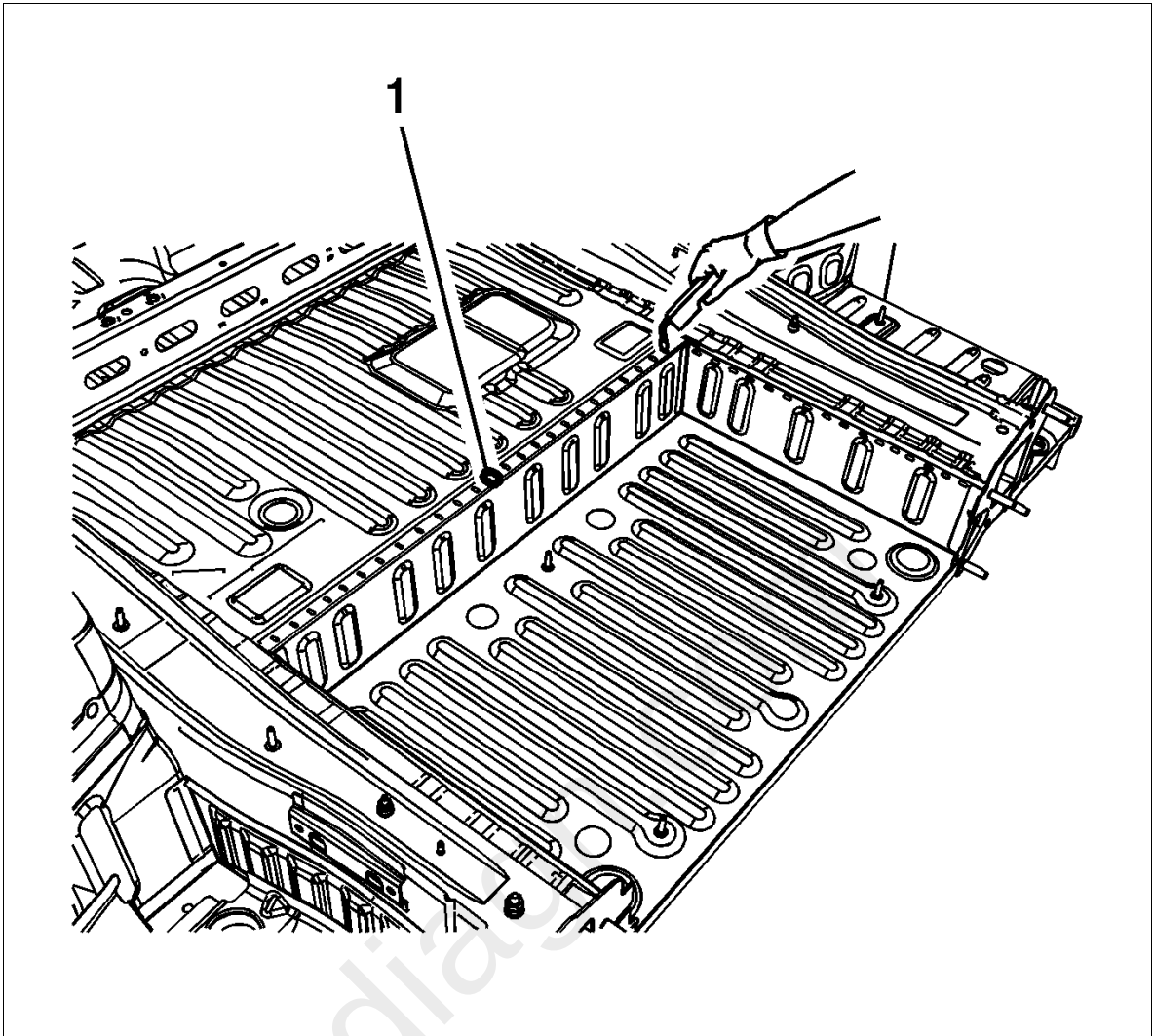
Fig 2: Rear Frame Rail Upper Extension



Courtesy of GENERAL MOTORS COMPANY

2. Clean and prepare all welding surfaces (1). Place 8 mm (5/16 in) holes 40 mm (1 1/2 in) apart along the sides of the panel that will overlap the flanges left from the original panel, to MIG plug weld the replacement part.
3. Install and align the service part as necessary.

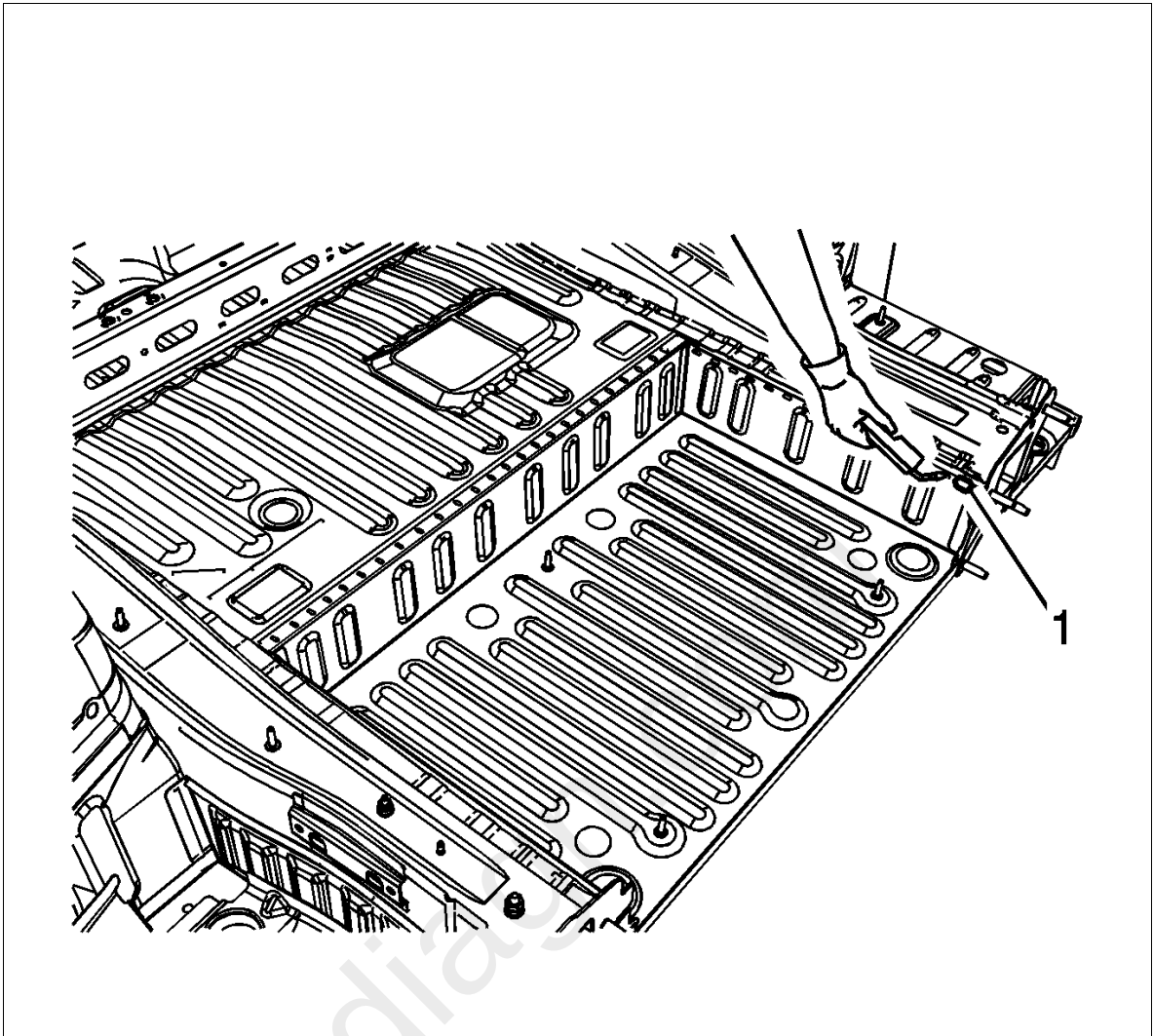
Fig 3: Welding Service Part



Courtesy of GENERAL MOTORS COMPANY

4. Weld the service part along the front edge, at the original weld locations (1).

Fig 4: MIG Plug Weld Overlap Joint



Courtesy of GENERAL MOTORS COMPANY

5. MIG plug weld on the sides of the replacement part, along the 25 mm (1 in) overlap joint (1).
6. Replace the body rear end panel. Refer to Body Rear End Panel Replacement .
7. Clean and prepare all welded surfaces.

 NOTE:

Apply sealer along the top edge of the 25 mm (1 in) overlap joint, where the rear compartment panel was sectioned.

8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
9. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
10. Install all related panels and components.

11. Enable the SIR system and then connect the battery negative cable. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > REAR WHEELHOUSE INNER PANEL REPLACEMENT > REMOVAL PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .

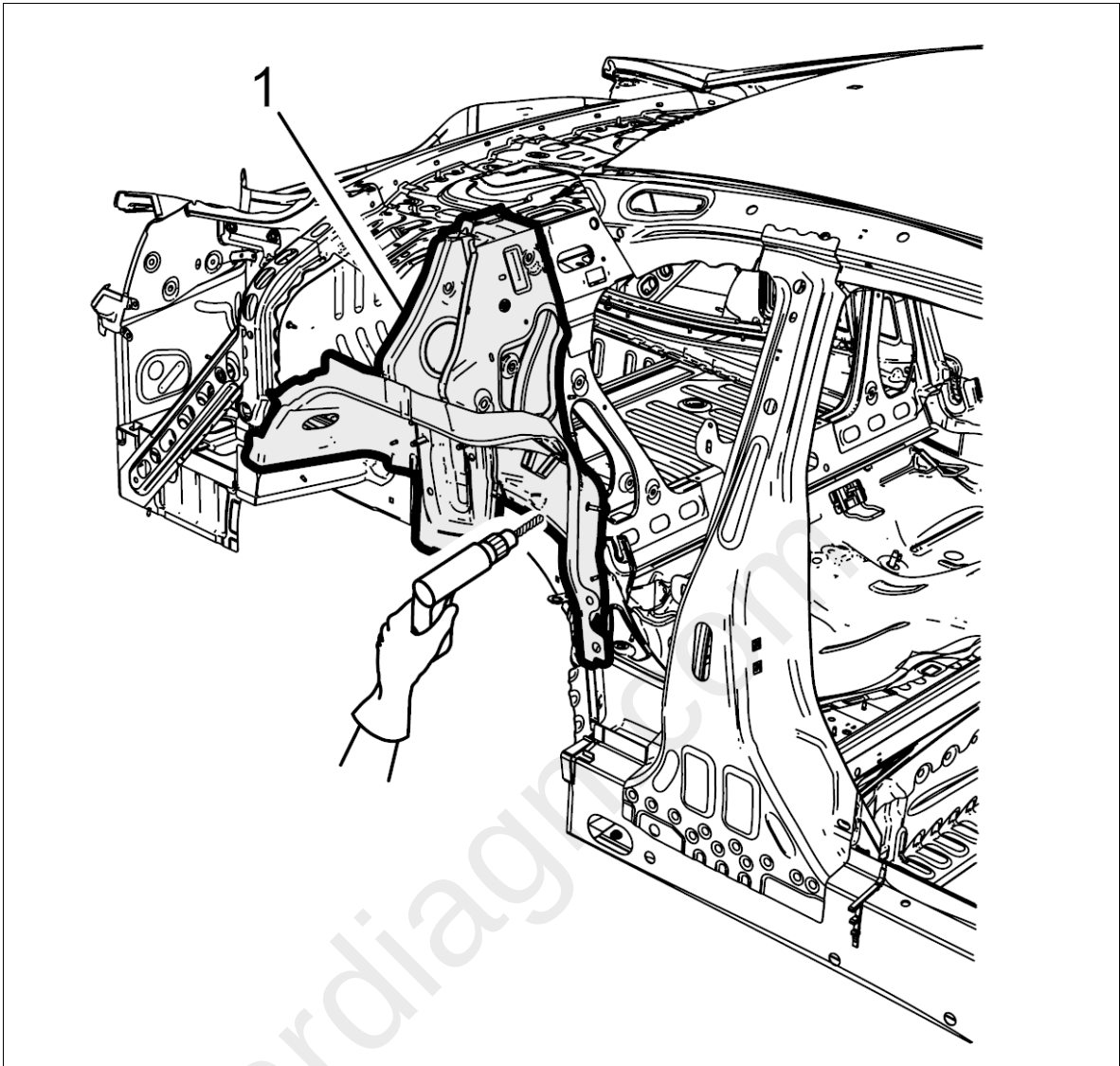


WARNING:

Refer to Battery Disconnect Warning .

1. Disable the SIR system and then disconnect the negative battery cable. Refer to SIR Disabling and Enabling .
2. Remove all related panels and components. Refer to Quarter Outer Panel Sectioning , Quarter Inner Panel Sectioning , Quarter Inner Upper Panel Removal.
3. Repair as much of the damaged area as possible. Refer to Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .

Fig 1: Rear Wheel House Inner Assembly



Courtesy of GENERAL MOTORS COMPANY

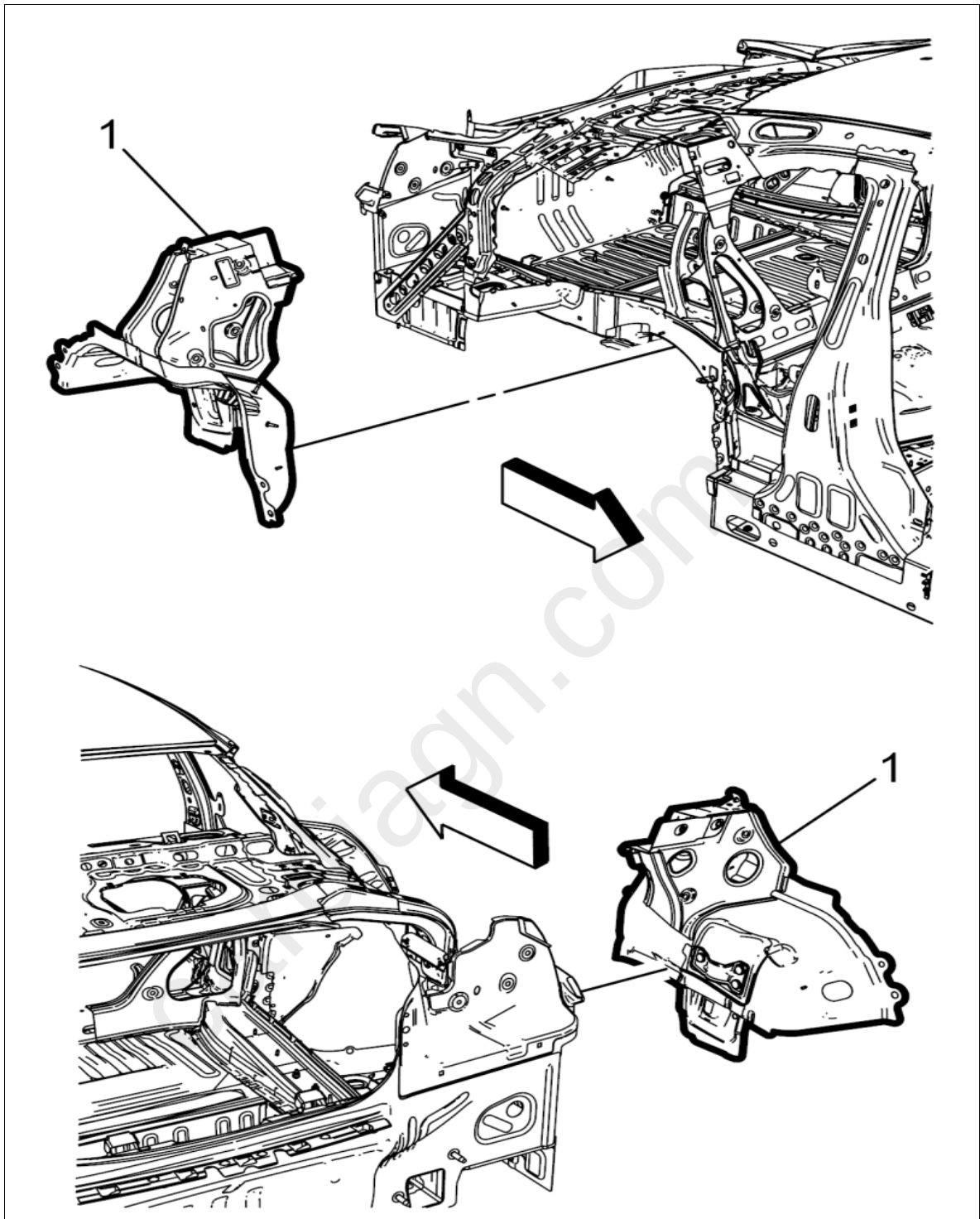


NOTE:

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

5. Remove all the necessary factory welds from the rear wheel house inner assembly (1). Heat the joints with purple adhesive to approximately 425°F to release the adhesive.

Fig 2: Removing/Installing Rear Wheel House Inner Assembly

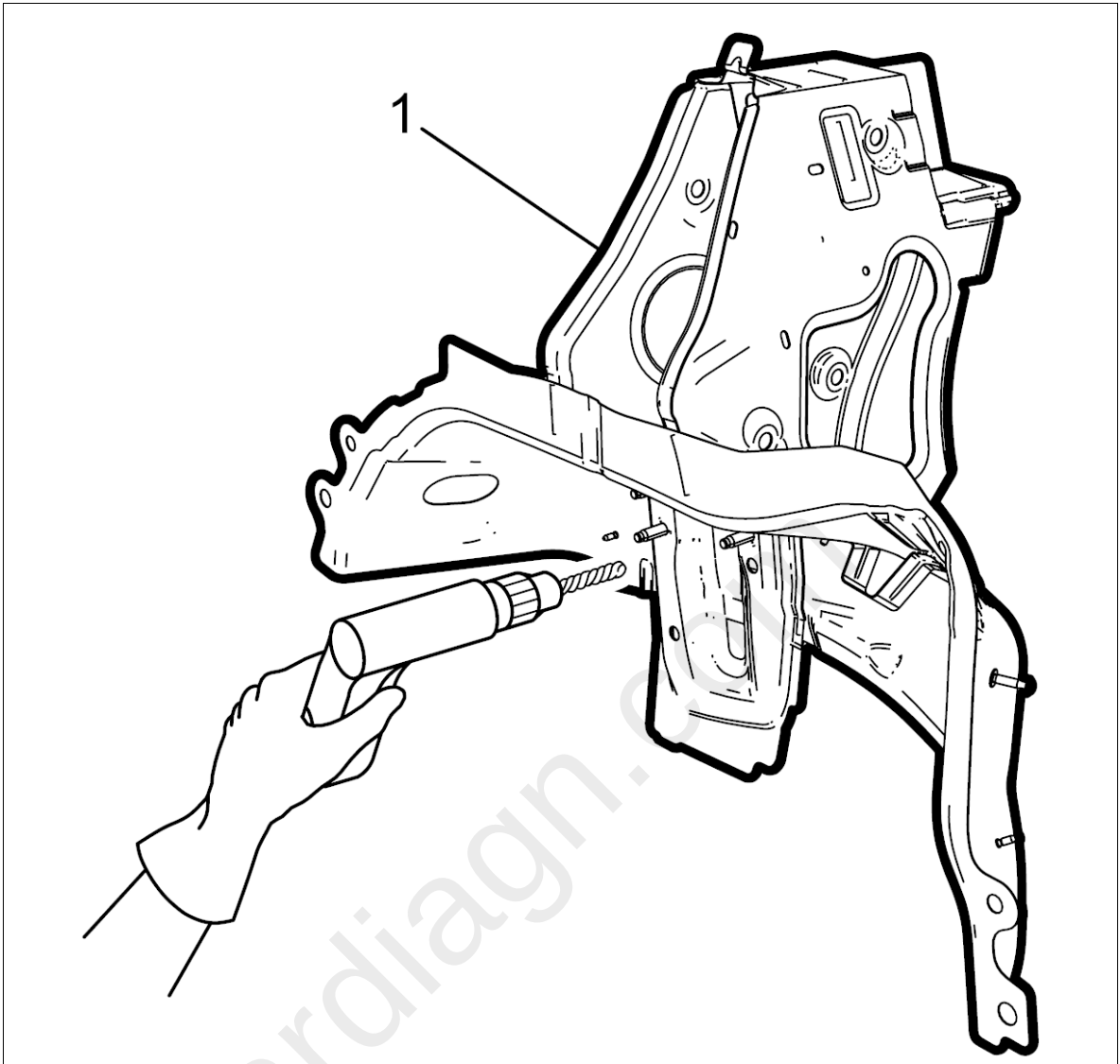


Courtesy of GENERAL MOTORS COMPANY

6. Remove the rear wheel house inner assembly (1).

**REPAIR INSTRUCTIONS > REAR WHEELHOUSE INNER PANEL REPLACEMENT >
INSTALLATION PROCEDURE**

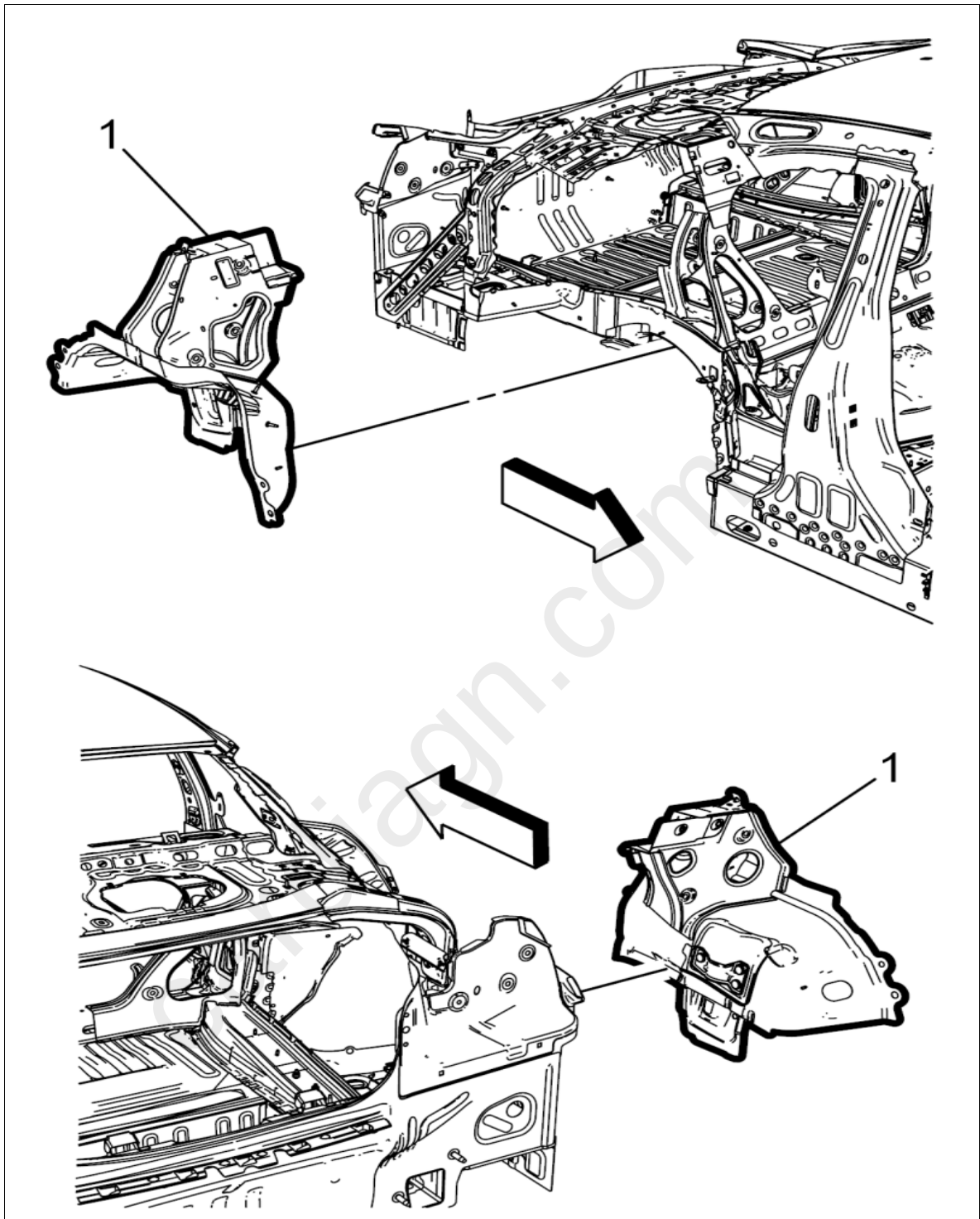
Fig 1: Prepare All Mating Surfaces For Welding



Courtesy of GENERAL MOTORS COMPANY

1. Prepare all mating surfaces for welding as necessary (1).
2. Apply Weld-Thru Coating to all mating surfaces except in areas where adhesive will be applied. Refer to Anti-Corrosion Treatment and Repair .

Fig 2: Removing/Installing Rear Wheel House Inner Assembly



Courtesy of GENERAL MOTORS COMPANY

3. Position the rear inner wheelhouse to the vehicle (1) to ensure a proper fit.
4. Apply impact resistant adhesive to all joints originally equipped with purple glue. Refer to Metal Panel Bonding (Steel) . Apply the adhesive according to manufacturer's recommendations.
5. Weld accordingly at the original weld locations. Resistance spot welding can be performed through uncured adhesive.

6. Clean all of the welded surfaces.
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems
9. Install all of the related panels and components.
10. Enable the SIR system and then connect the negative battery cable. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > QUARTER OUTER PANEL REPLACEMENT > REMOVAL PROCEDURE

 WARNING:

Refer to Approved Equipment for Collision Repair Warning .

 WARNING:

Refer to Foam Sound Deadeners Warning .

 WARNING:

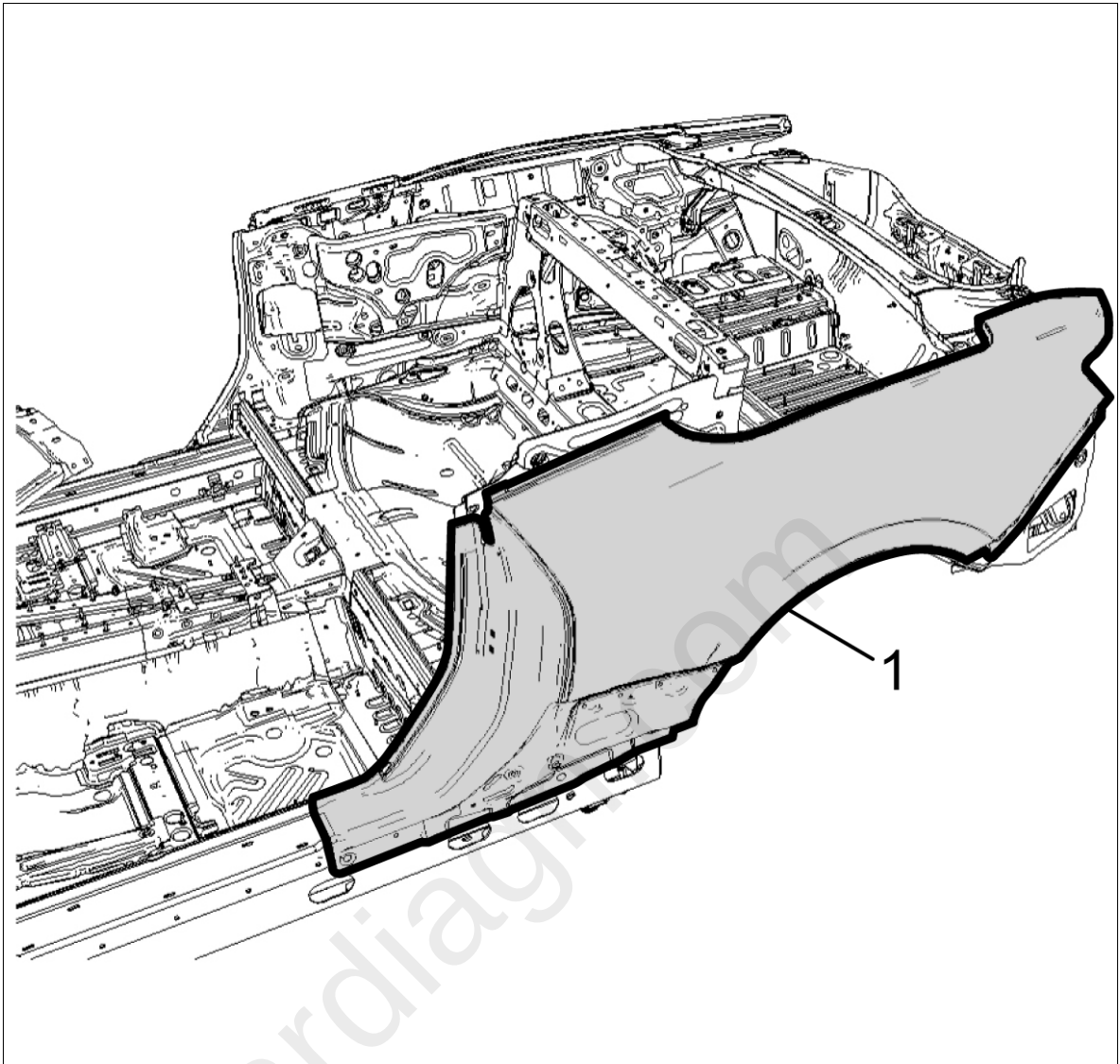
Refer to Battery Disconnect Warning .

 WARNING:

Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system and then disconnect the negative battery cable. SIR Disabling and Enabling .
2. Remove all related panels and components.
3. Visually inspect the damage. Repair as much of the damage as possible. Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area as necessary. Anti-Corrosion Treatment and Repair .

Fig 1: Quarter Outer Panel



Courtesy of GENERAL MOTORS COMPANY

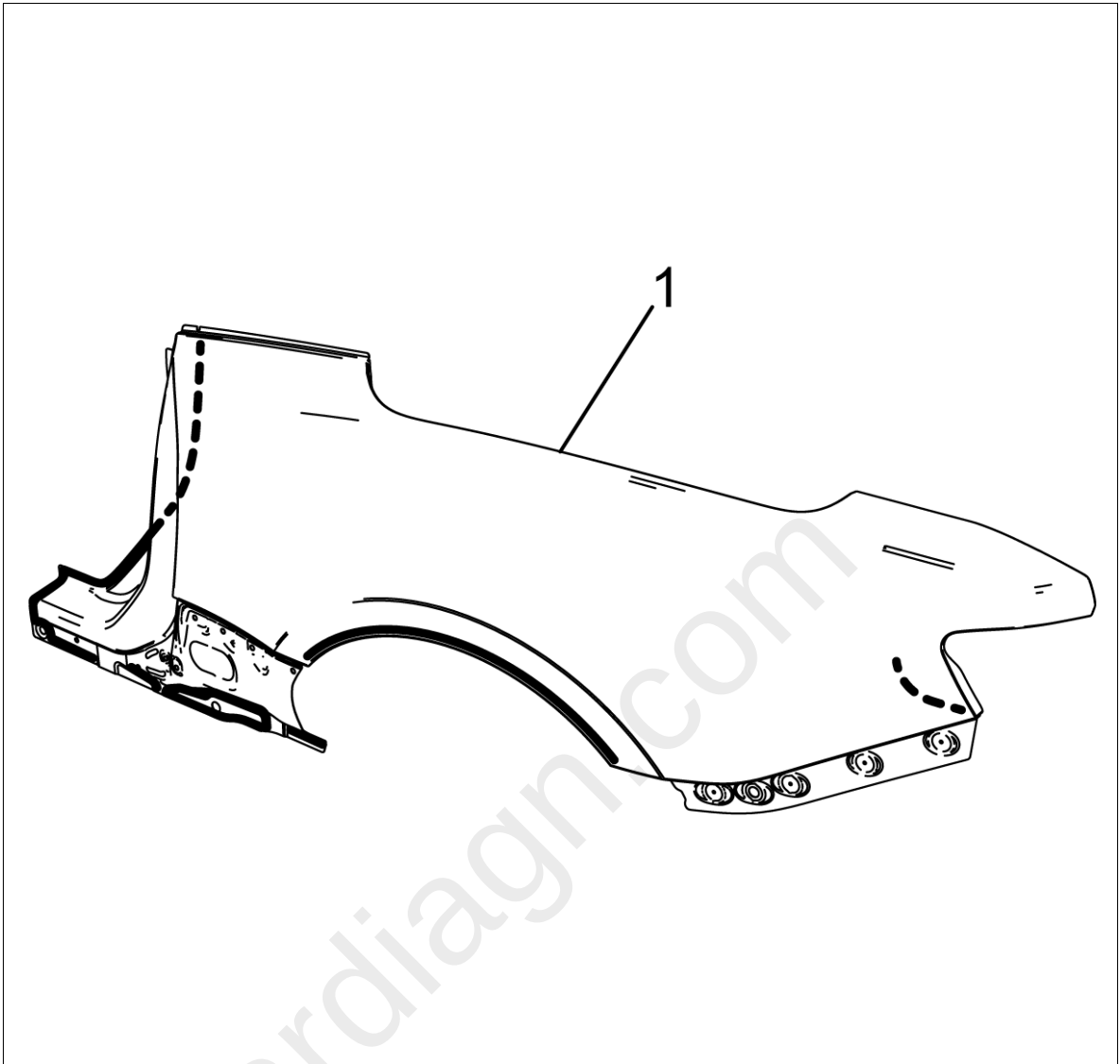


NOTE:

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

5. Remove factory welds as required from the quarter outer panel (1).

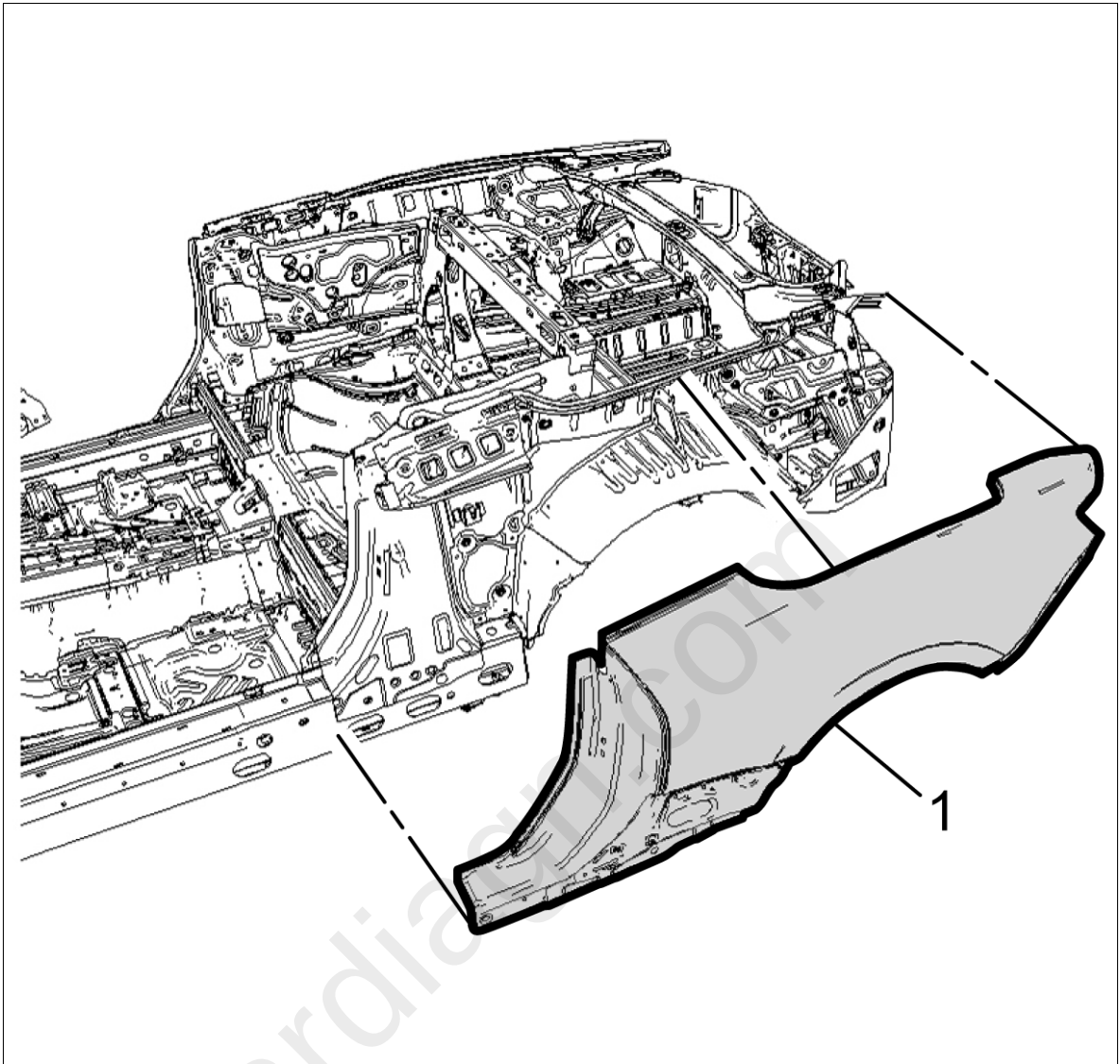
Fig 2: Heat Wheel Opening, Rocker Panel, Door Opening And Tail Lamp Opening Areas



Courtesy of GENERAL MOTORS COMPANY

6. Heat the wheel opening, rocker panel, door opening and tail lamp opening areas to release the factory impact resistant adhesive.

Fig 3: Quarter Outer Panel



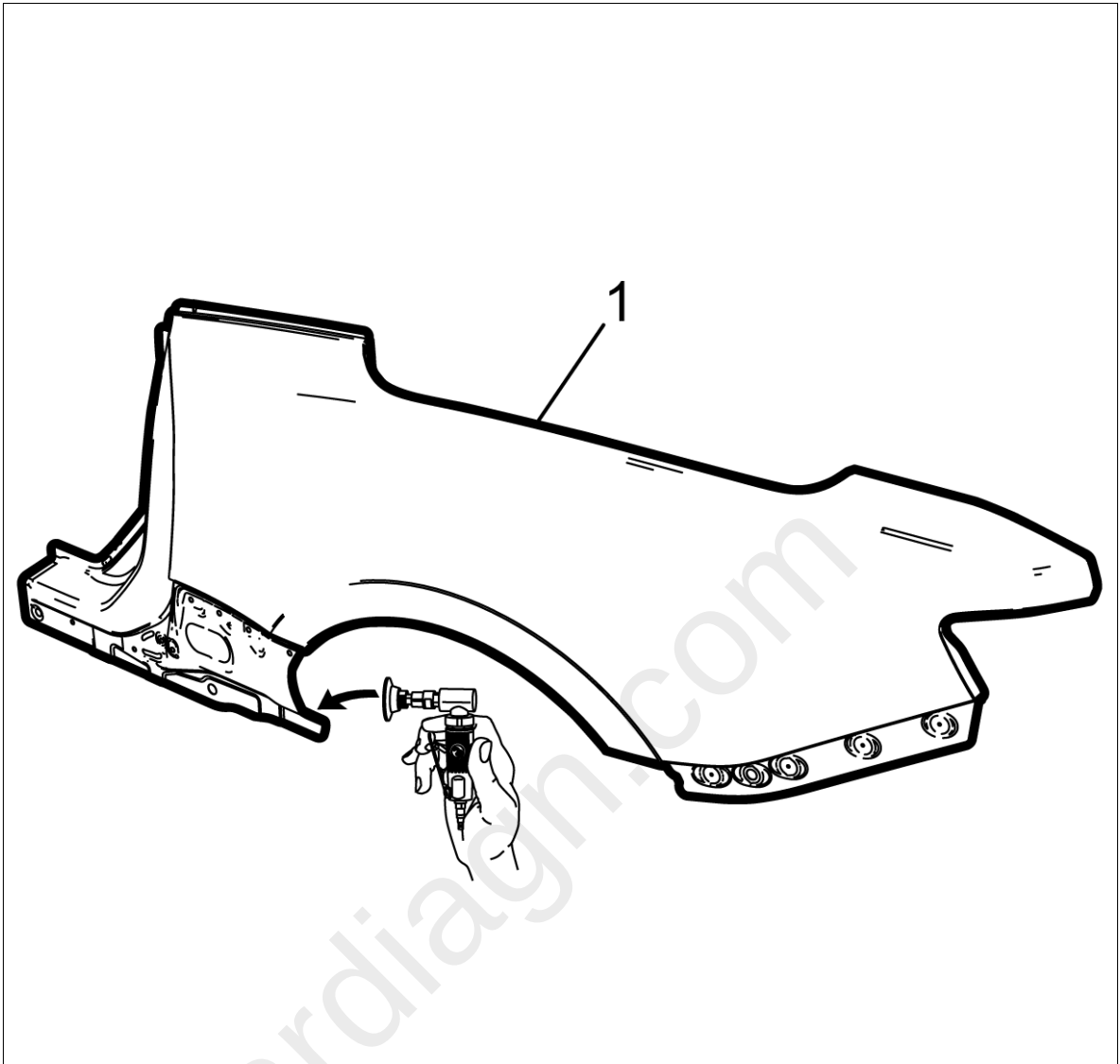
Courtesy of GENERAL MOTORS COMPANY

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

REPAIR INSTRUCTIONS > QUARTER OUTER PANEL REPLACEMENT > INSTALLATION PROCEDURE

1. Prepare all mating surfaces as necessary using 80 grit abrasive.

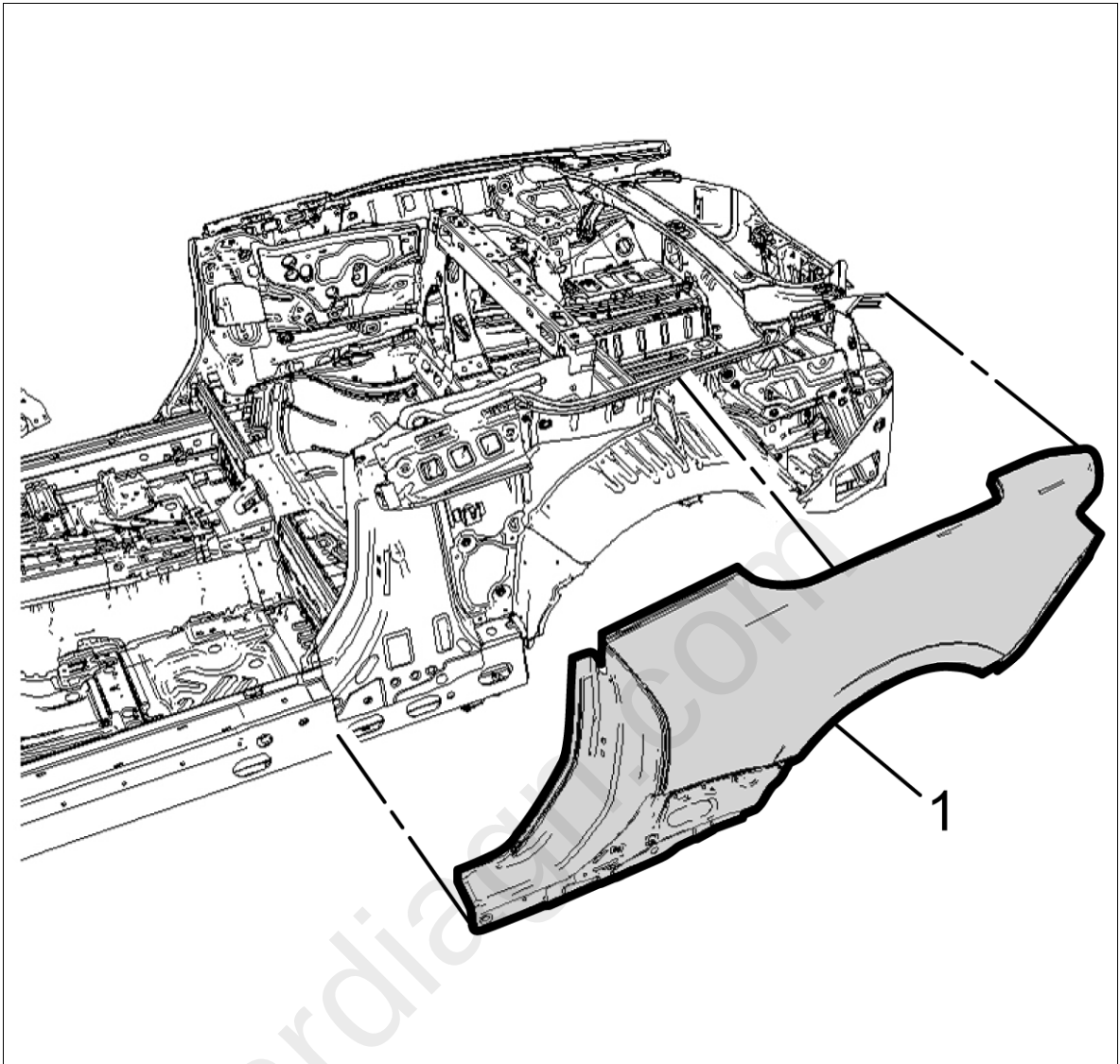
Fig 1: Clean And Prepare Attaching Surfaces



Courtesy of GENERAL MOTORS COMPANY

2. Clean and prepare the attaching surfaces for welding/bonding (1).

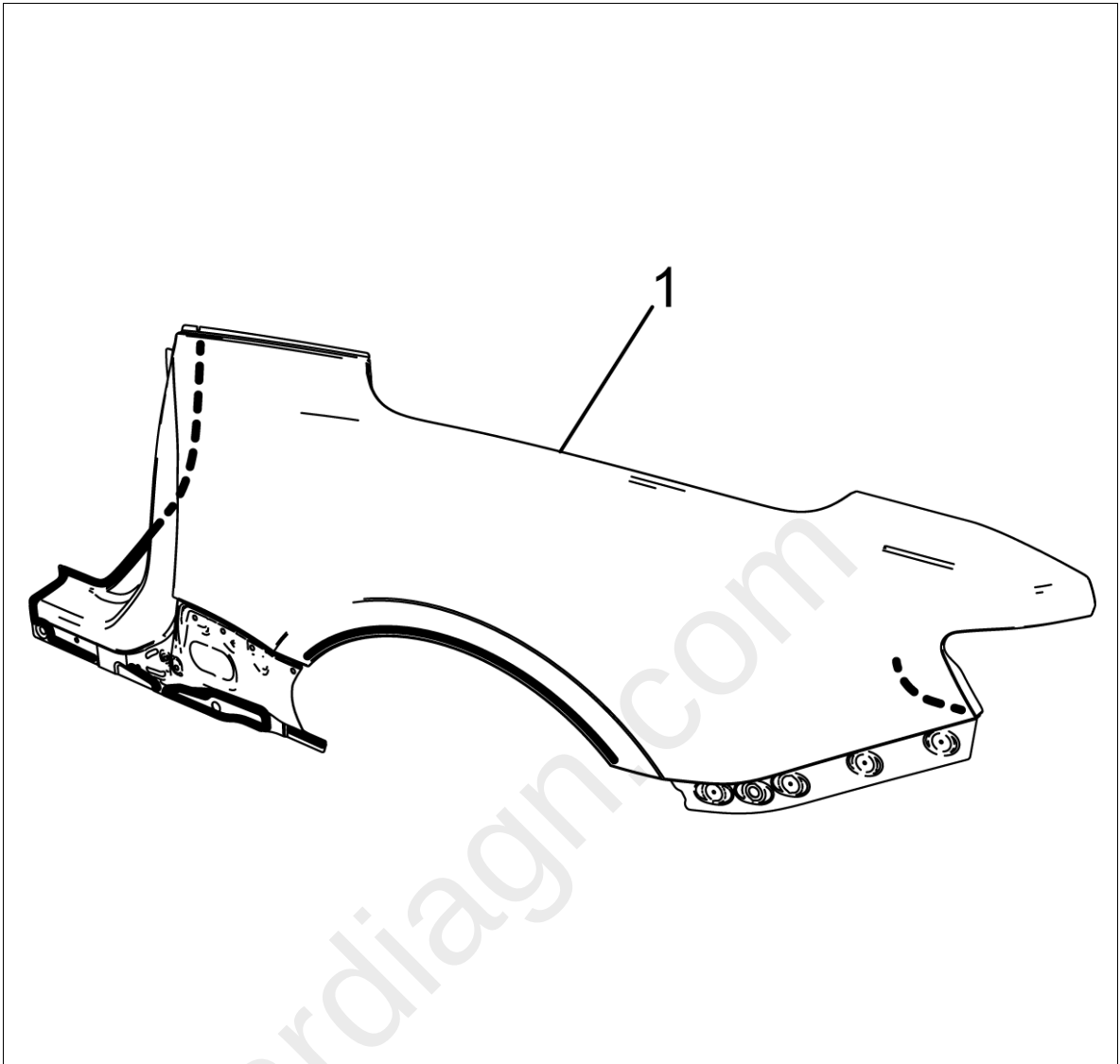
Fig 2: Quarter Outer Panel



Courtesy of GENERAL MOTORS COMPANY

3. Position the quarter outer panel (1) on the vehicle.

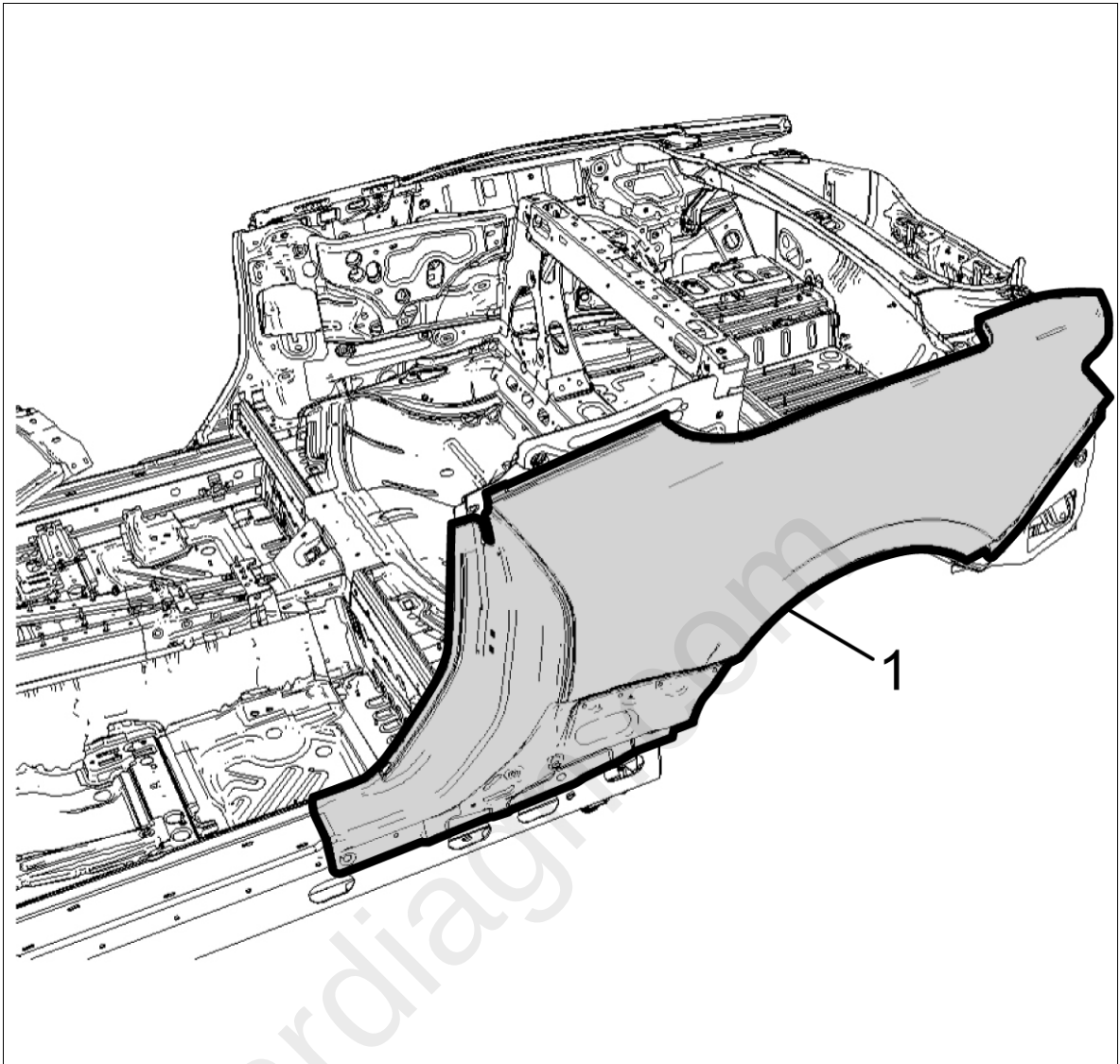
Fig 3: Fit Of Quarter Outer Panel



Courtesy of GENERAL MOTORS COMPANY

4. Verify the fit of the quarter outer panel and apply impact resistant adhesive to all mating surfaces where factory impact resistant adhesive was applied. Metal Panel Bonding (Steel) .

Fig 4: Quarter Outer Panel



Courtesy of GENERAL MOTORS COMPANY

5. Weld/weld-bond the quarter outer panel (1) accordingly at original weld locations.
6. Clean and prepare all welded surfaces.
7. Apply the sealers and anti-corrosion materials to the repair area as necessary. Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Basecoat/Clearcoat Paint Systems .
9. Install all related panels and components.
10. Enable the SIR system and then connect the negative battery cable. SIR Disabling and Enabling .

PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .

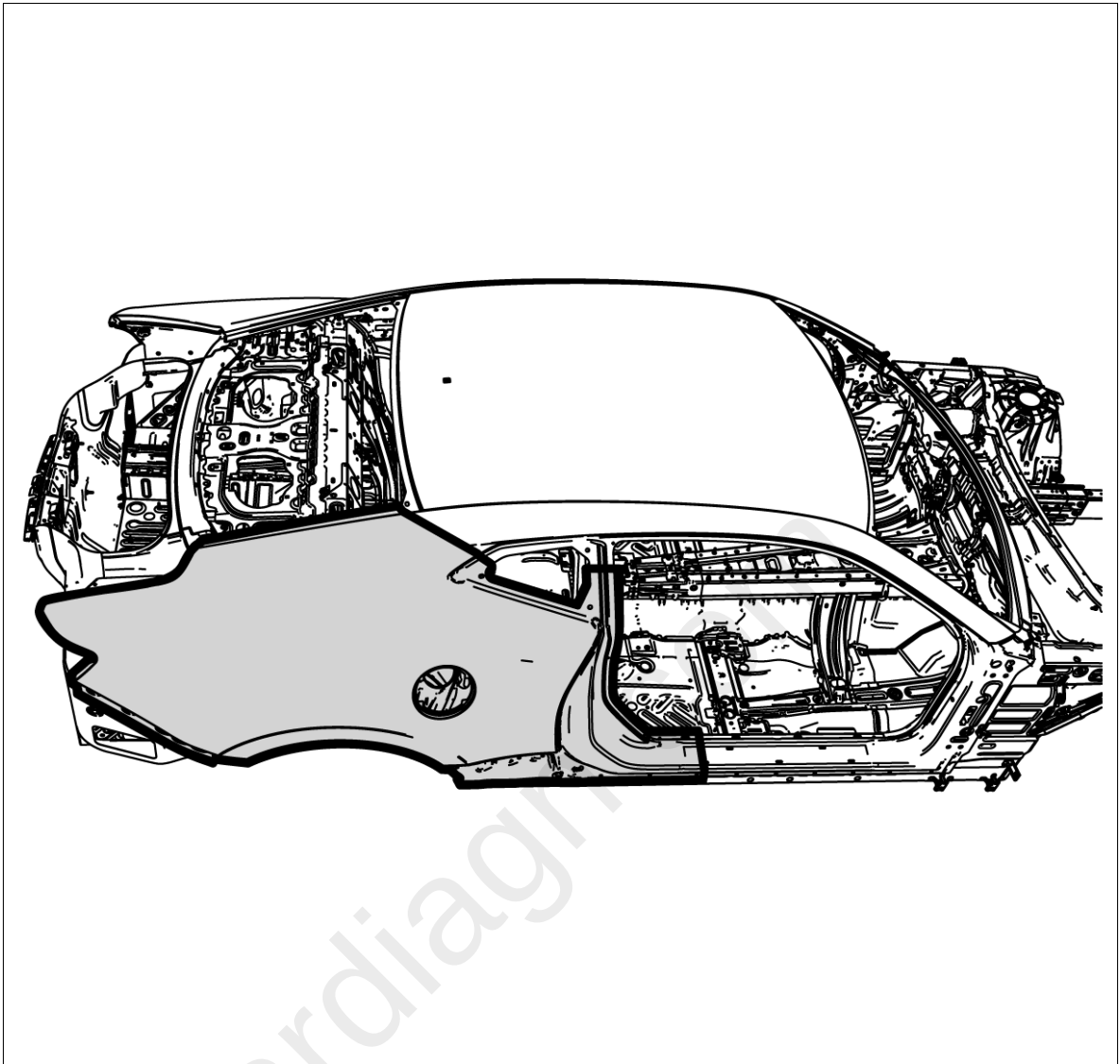


WARNING:

Refer to Battery Disconnect Warning .

1. Disable the SIR system and then disconnect the negative battery cable. Refer to SIR Disabling and Enabling .
2. Repair as much of the damaged area as possible.
3. Visually inspect the damage. Repair as much of the damage as possible. Refer to Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area as necessary. Refer to Anti-Corrosion Treatment and Repair .

Fig 1: Body Side Outer Panel

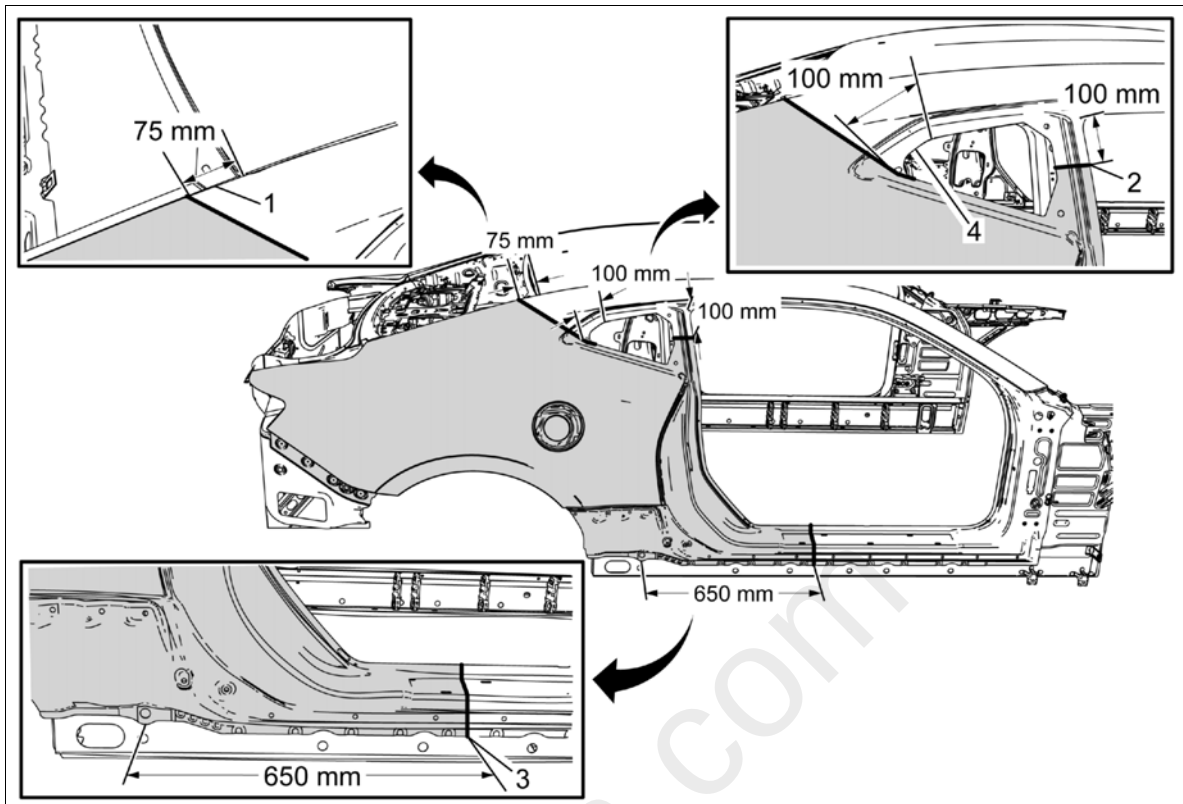


Courtesy of GENERAL MOTORS COMPANY

 NOTE:

There are sectioning procedures available for quarter panel replacement and other locations on the body side outer panel (1). The sectioning procedure and location should be chosen based on the extent of damage to the vehicle and other inner reinforcements that need to be replaced. Sectioning should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle. Refer to service procedures for recommended sectioning locations.

Fig 2: Sail Panel Quarter Window Opening And Rocker Panel

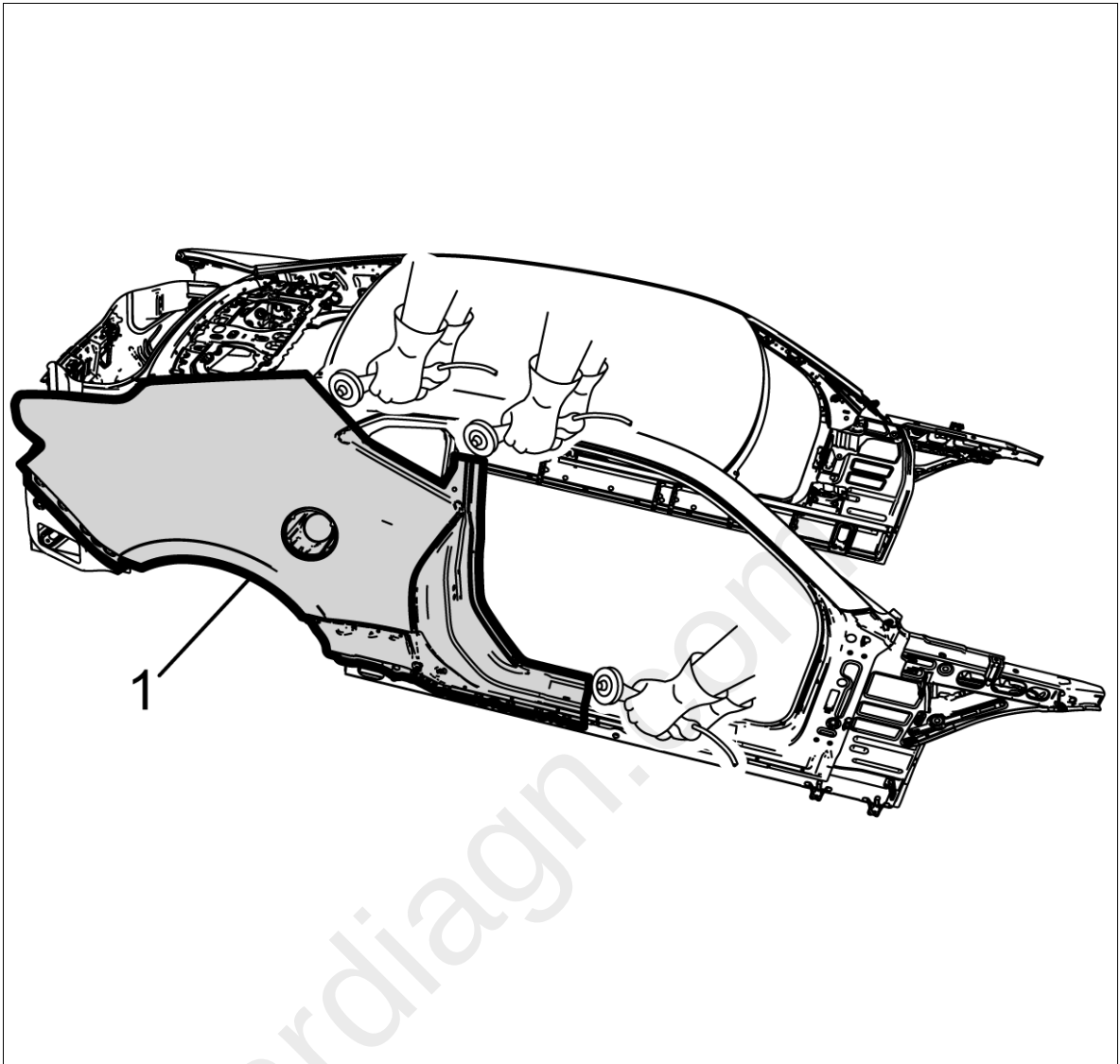


Courtesy of GENERAL MOTORS COMPANY

5. Section the sail panel quarter window opening and the rocker panel.

1. At the sail panel, measure from the top outer corner of the back glass opening down 75 mm. Scribe a mark as the top location of a line that will be drawn across the sail panel in the last part of this step. This is location (1).
2. Scribe a vertical line in the door opening 650 mm forward of the round hole in the lower edge of the quarter panel. This is the cut location (3).
3. Scribe a horizontal line 100 mm down from top front corner of the quarter window opening edge of the body side panel. This is cut location (2).
4. Make a mark for the other end of the sail panel cut line in the quarter window opening at the radius at the rear of the opening 100 mm down from the top corner of the window opening (4) and connect a line to the mark made in the rear window opening. This will be the sail panel cut.

Fig 3: Cut Panel At Marked Locations



Courtesy of GENERAL MOTORS COMPANY

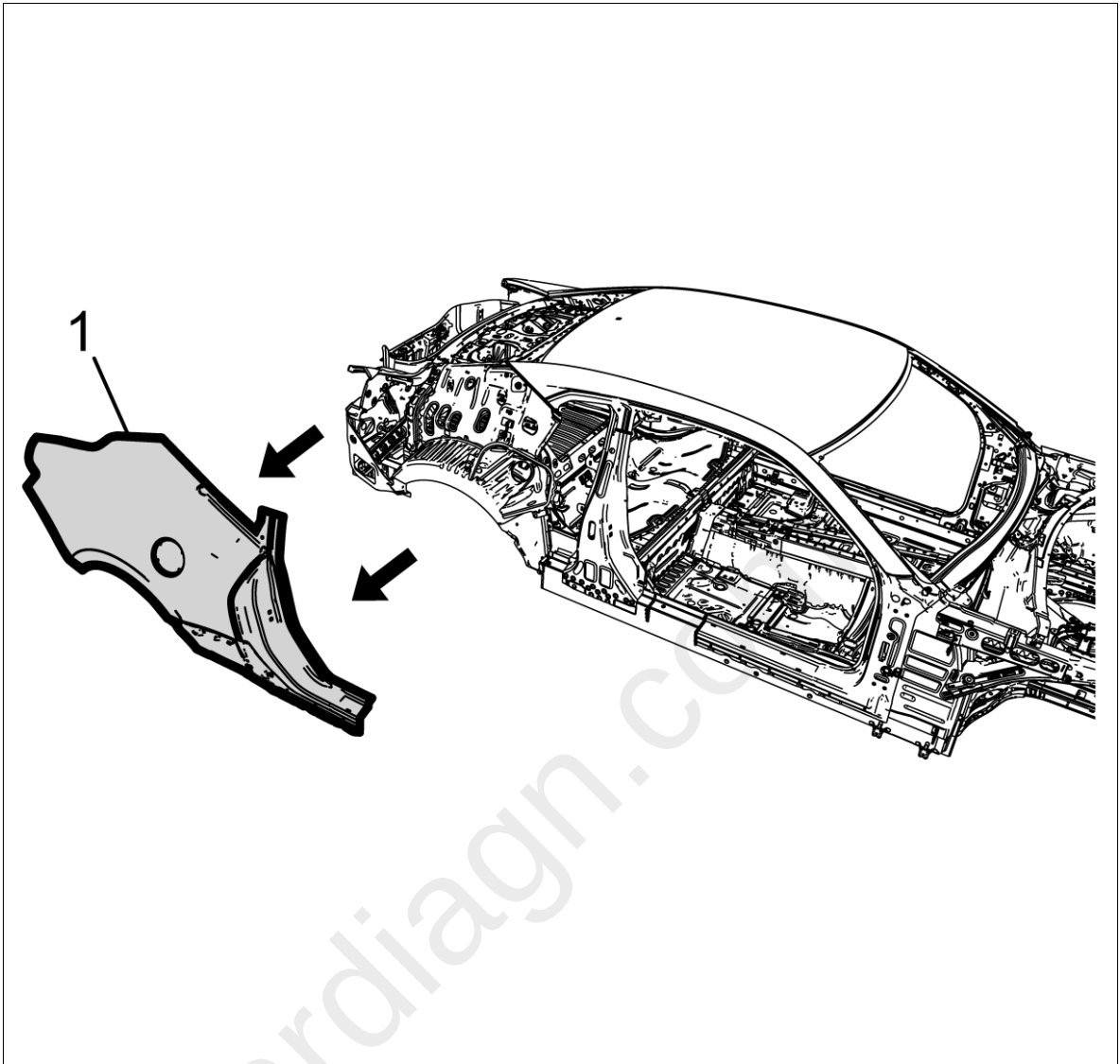


NOTE:

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

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

Fig 4: Separate All Impact Resistant Bond Joints



Courtesy of GENERAL MOTORS COMPANY

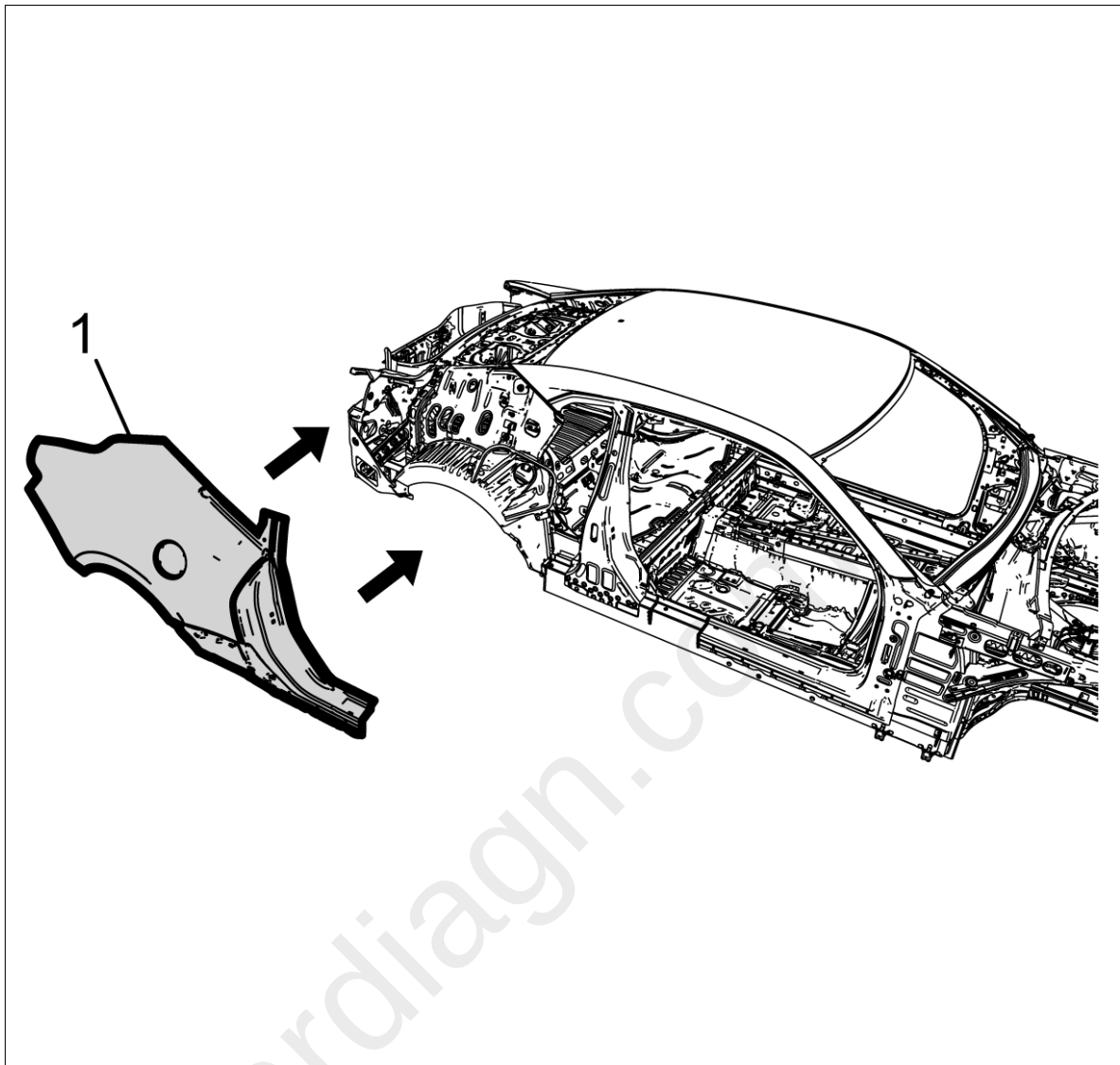


NOTE:

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

7. Remove all factory welds and separate all Impact Resistant Bond Joints (1).

Fig 5: Removing/Installing Lower Quarter Panel



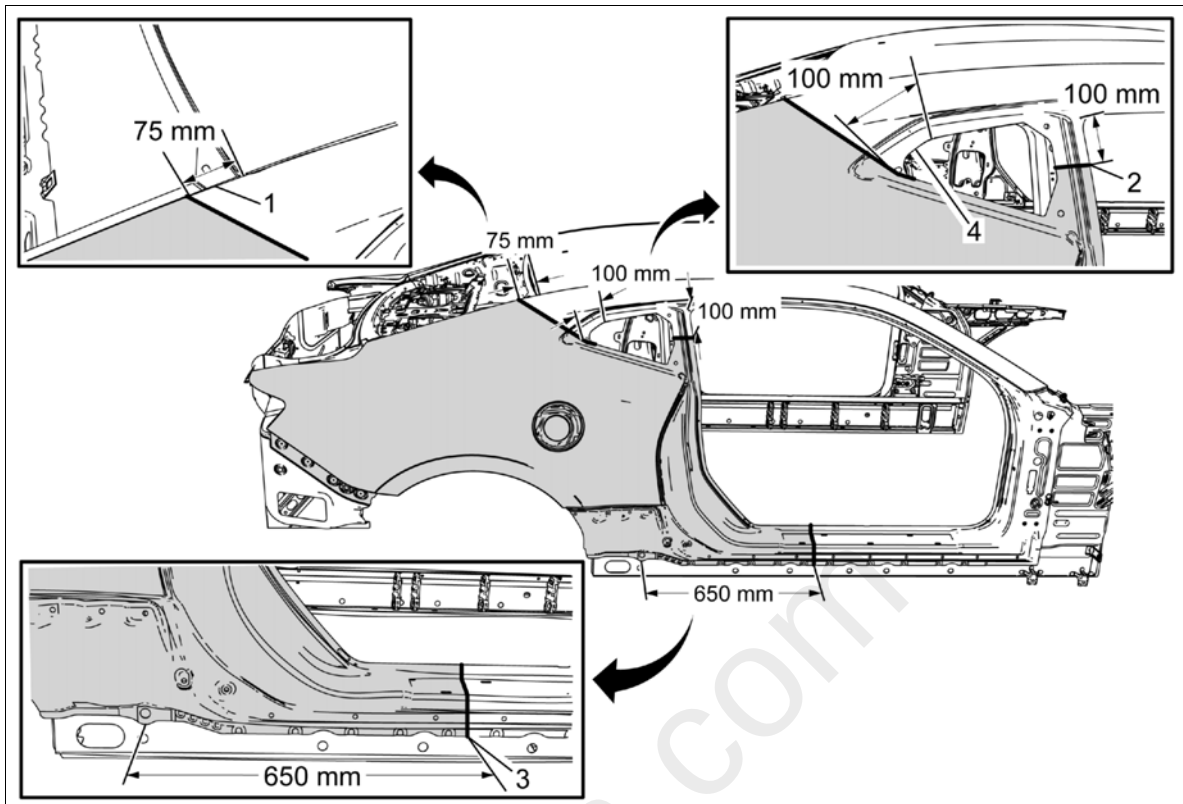
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

There is high strength adhesive attaching the quarter outer panel to the outer wheel house along the entire length of the quarter panel wheel opening. Heat must be used to release this adhesive. It will make an audible noise when it releases. Any joint with Purple Impact Resistant Adhesive must be repaired with Impact Resistant Adhesive. Refer to Metal Panel Bonding (Steel) .

8. Remove the lower quarter panel (1).

Fig 1: Sail Panel Quarter Window Opening And Rocker Panel



Courtesy of GENERAL MOTORS COMPANY

1. From the service part, cut the panel in corresponding locations to overlap the remaining original panel by 25 mm (1 in) at each joint location (1, 2 and 3).

Fig 2: Drill 8mm (5/16in) Plug Weld Holes



Courtesy of GENERAL MOTORS COMPANY

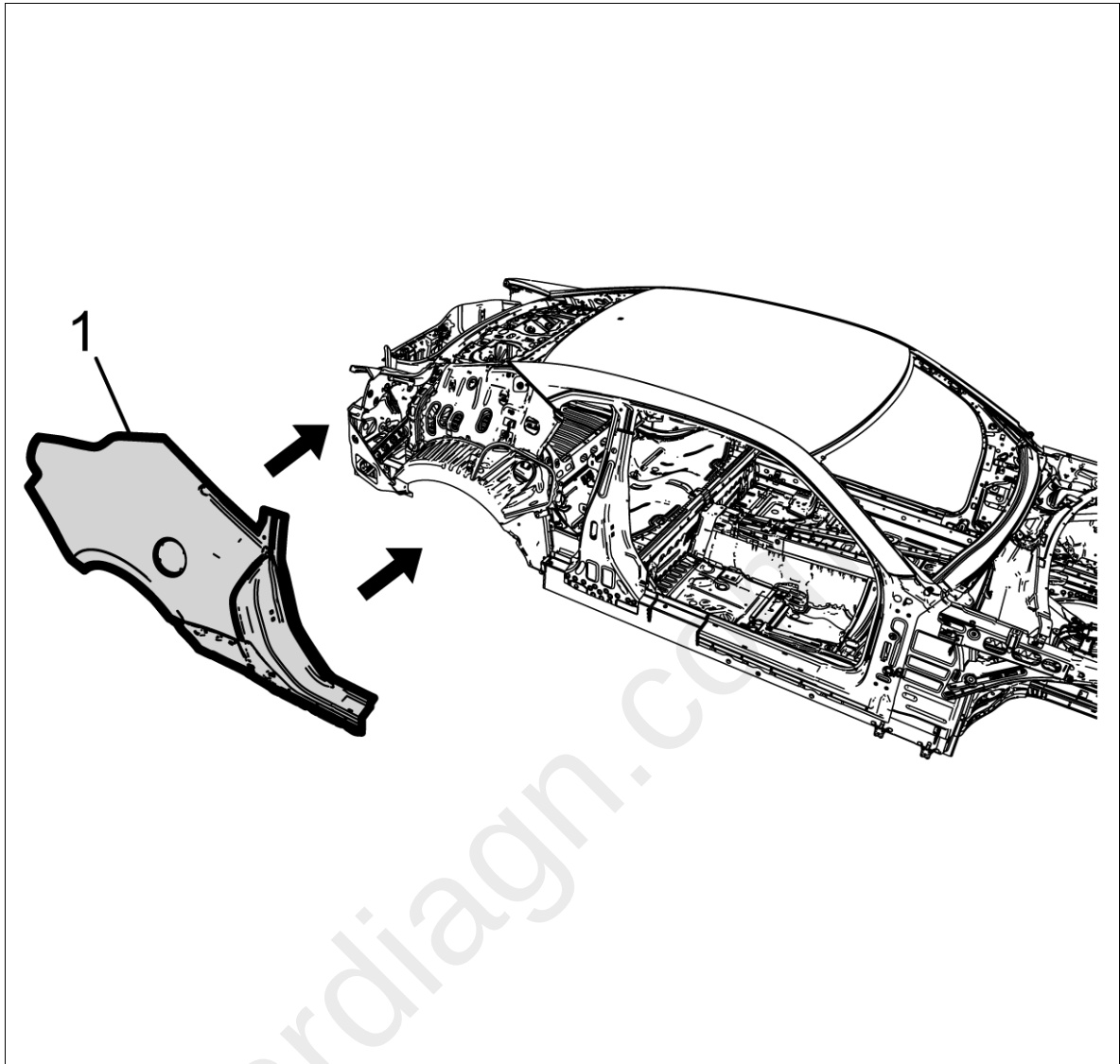
2. Drill 8 mm (5/16 in) plug weld holes as necessary in locations noted from the original quarter panel (1).

 NOTE:

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

3. Prepare all mating surfaces for welding, as necessary.
4. Apply GM approved Weld-Thru coating or equivalent to all mating surfaces except in areas that will be bonded. Refer to Anti-Corrosion Treatment and Repair .

Fig 3: Removing/Installing Lower Quarter Panel



Courtesy of GENERAL MOTORS COMPANY

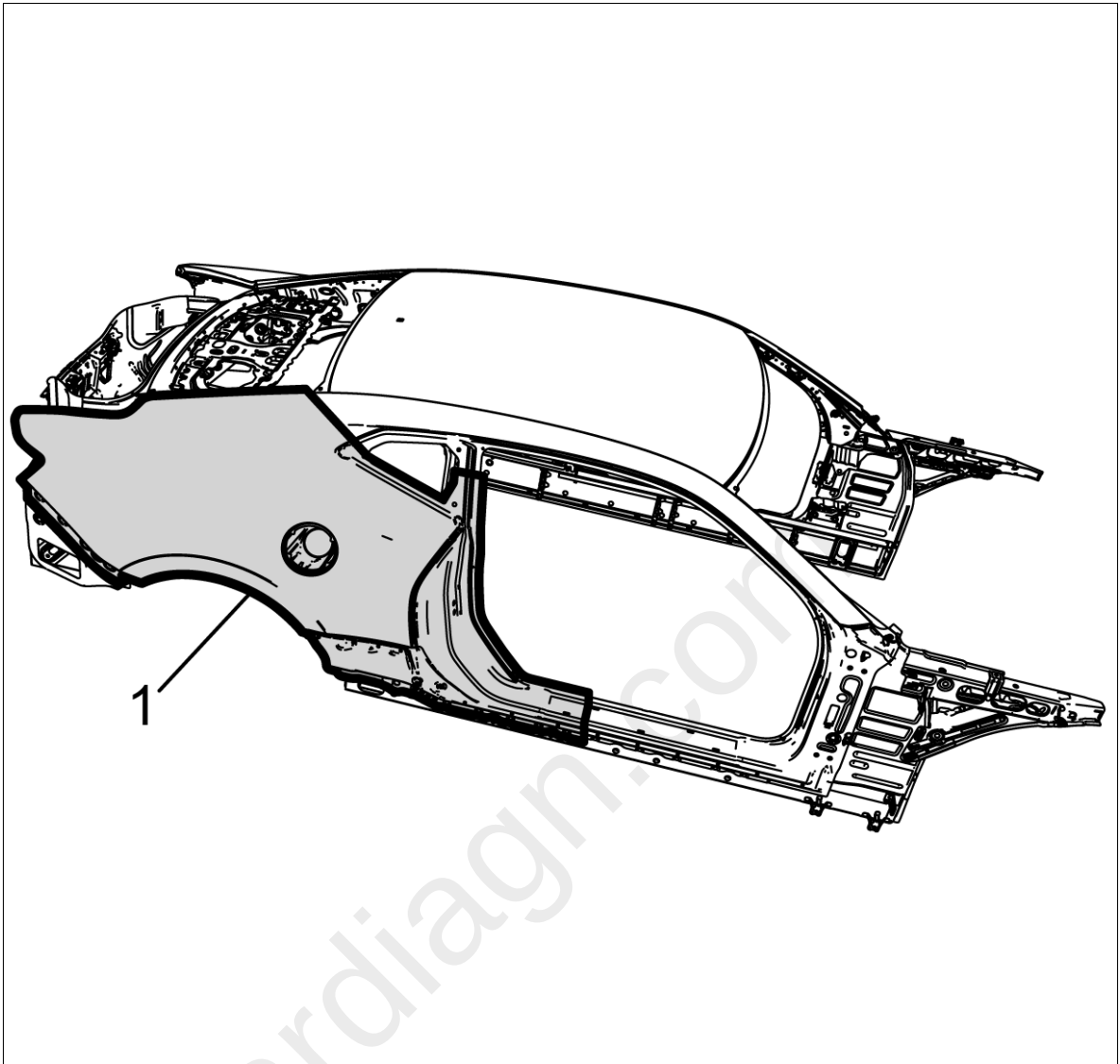


NOTE:

Apply panel bonding adhesive to the entire joint between the outer wheelhouse panel and the quarter outer panel.

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

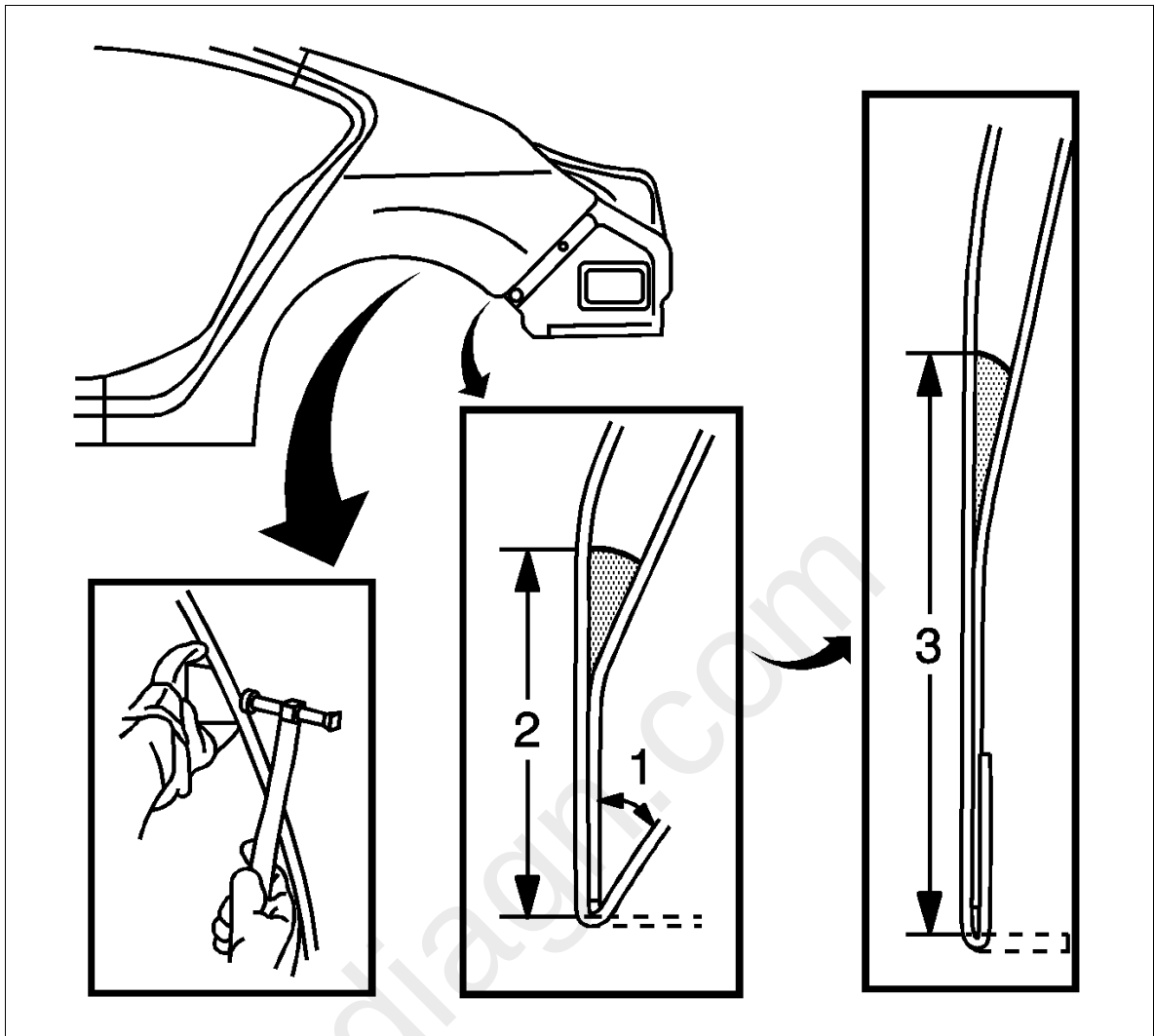
Fig 4: Original Weld Locations



Courtesy of GENERAL MOTORS COMPANY

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

Fig 5: Pre-Flanging Wheel Housing



Courtesy of GENERAL MOTORS COMPANY

10. Pre-flange wheel housing. Using a flat faced body hammer or door skin hemming tool, bend over the flanged edge 45 degrees (1) and at the same time holding a hard rubber block against it. Use Impact Resistant adhesive in the area (2). Refer to Metal Panel Bonding (Steel) .
11. Bend the wheel arch (3).
12. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
13. Paint the repair area. Refer to Basecoat/Clearcoat Paint Systems .
14. Install all related panels and components.
15. Enable the SIR system and then connect the negative battery cable. Refer to SIR Disabling and Enabling .

PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .



WARNING:

Refer to Battery Disconnect Warning .



WARNING:

Refer to Collision Sectioning Warning .



WARNING:

Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system and then disconnect the negative battery cable. SIR Disabling and Enabling .
 2. Remove all related panels and components.
 3. Repair as much of the damage as possible.
 4. Remove the sealers and anti-corrosion materials from the repair area, as necessary.
- Dimensions - Body

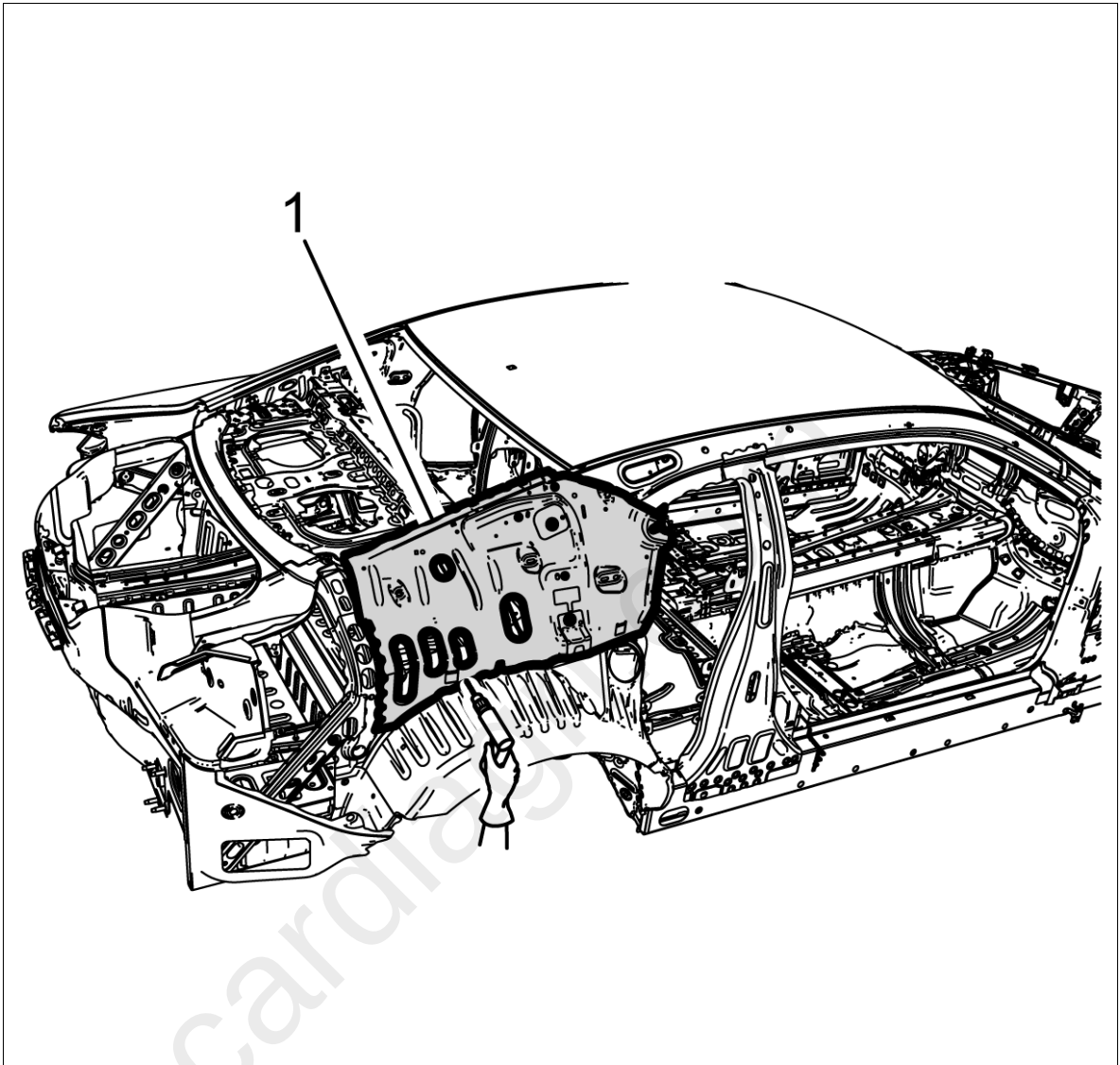


NOTE:

There are sectioning procedures available for various locations of the body side outer panel and the quarter panel. The sectioning procedure and location should be chosen based on the extent of damage to the vehicle and other inner reinforcements that need to be replaced. Sectioning should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle. Refer to service procedures for recommended sectioning locations.

5. The quarter outer panel will need to be removed to perform the quarter inner upper panel replacement procedure. Refer to the appropriate service procedures to remove the body side outer panel, based on the specific amount of vehicle damage.

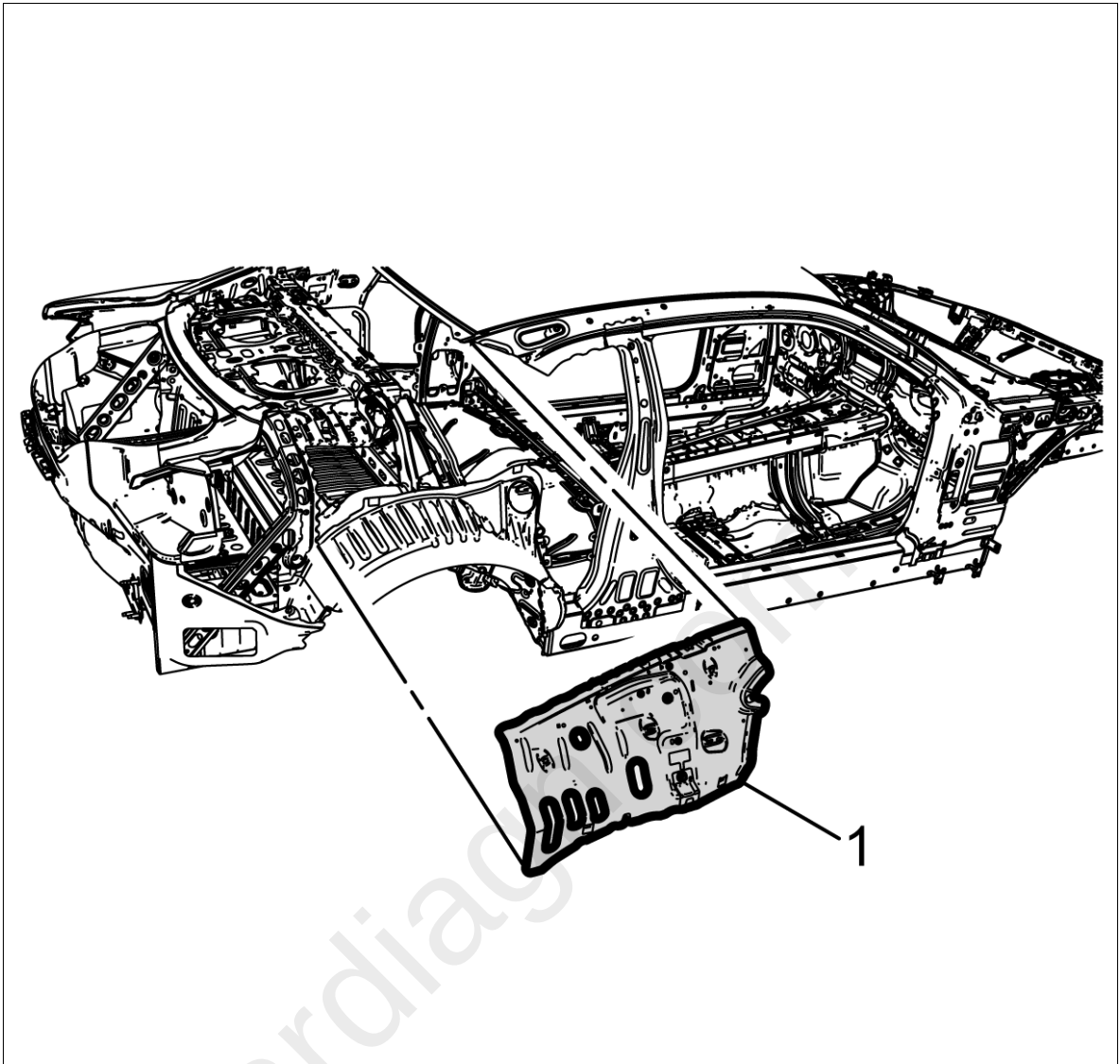
Fig 1: Remove Factory Welds For Quarter Inner Panel Upper Reinforcement



Courtesy of GENERAL MOTORS COMPANY

6. Remove factory welds for the quarter inner panel upper reinforcement, as required (1).

Fig 2: Quarter Inner Panel Upper Reinforcement

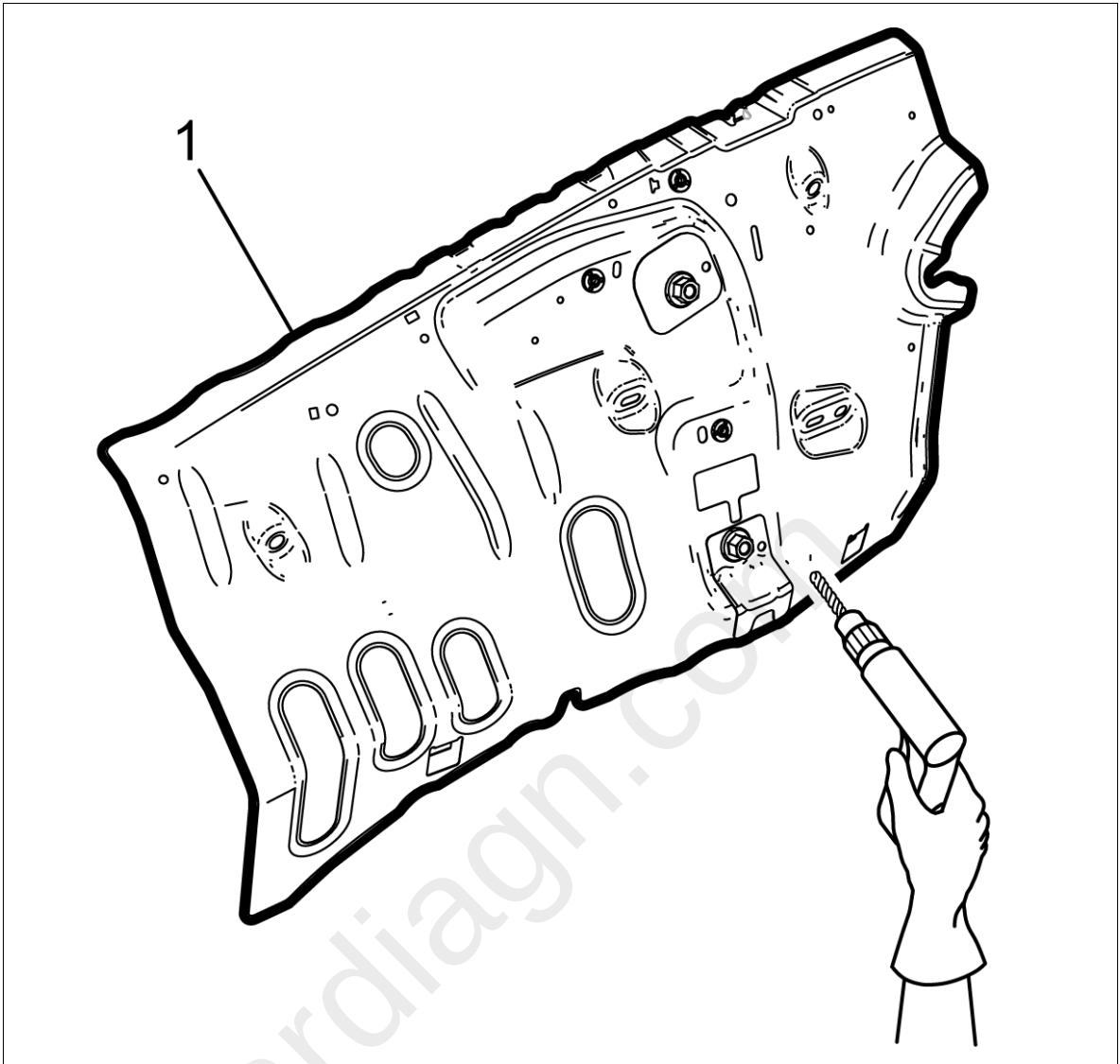


Courtesy of GENERAL MOTORS COMPANY

7. Remove the damaged quarter inner panel upper reinforcement (1).

**REPAIR INSTRUCTIONS > QUARTER INNER PANEL REPLACEMENT >
INSTALLATION PROCEDURE**

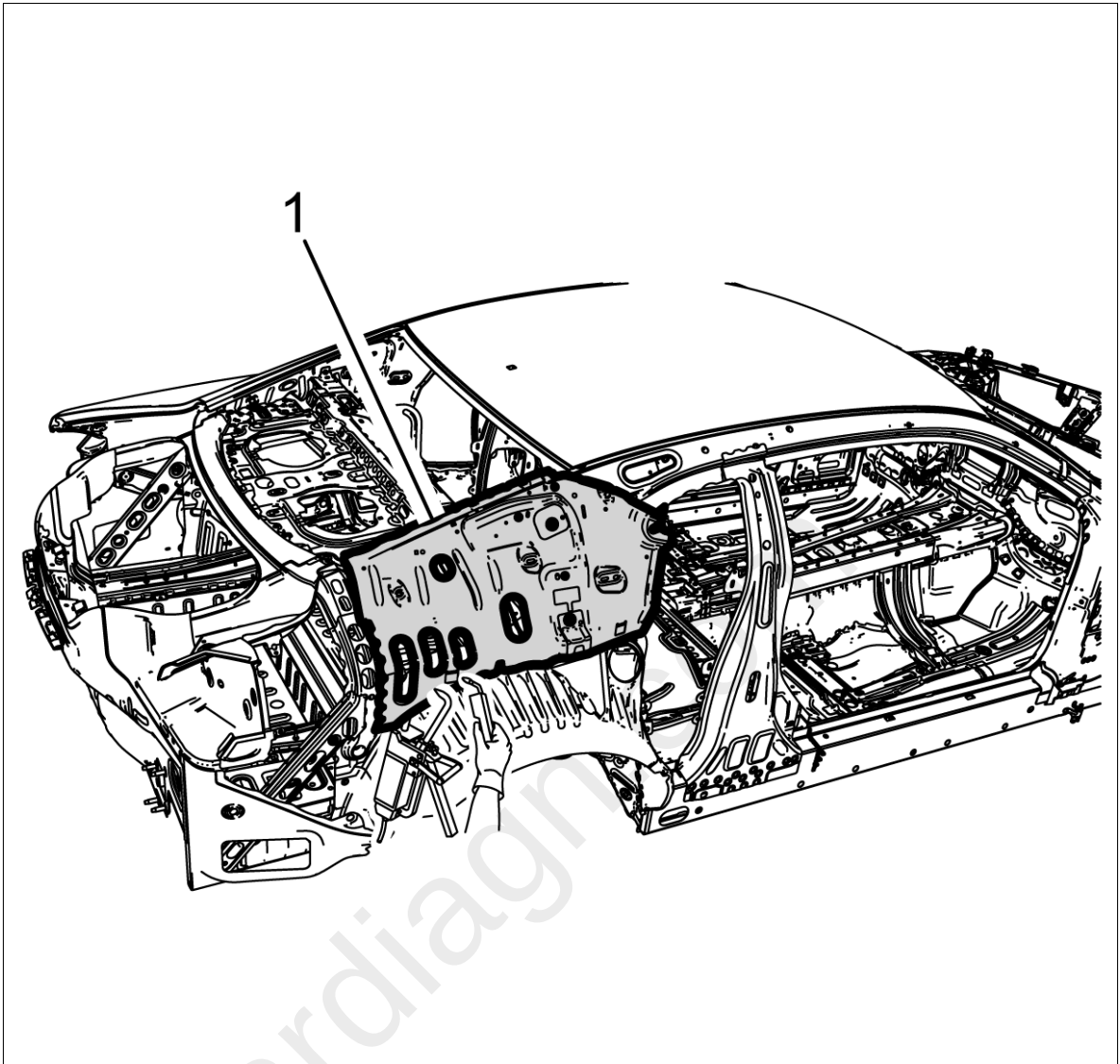
Fig 1: Prepare All Mating Surfaces For Welding



Courtesy of GENERAL MOTORS COMPANY

1. Prepare all mating surfaces for welding, as necessary.
2. Position the quarter inner panel to the vehicle.
3. Clamp the part in place and verify that it is the correct location.

Fig 2: Weld Perimeter Of Part At Original Weld Locations



Courtesy of GENERAL MOTORS COMPANY

4. Weld the perimeter of the part at the original weld locations (1).
5. Clean and prepare all welded surfaces.
6. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Anti-Corrosion Treatment and Repair .
7. Paint the repaired area. Basecoat/Clearcoat Paint Systems .
8. Install all related panels and components.
9. Enable the SIR system and then connect the negative battery cable. SIR Disabling and Enabling .

PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .



WARNING:

Refer to Battery Disconnect Warning .



WARNING:

Refer to Collision Sectioning Warning .



WARNING:

Refer to Glass and Sheet Metal Handling Warning .

1. Disable the SIR system and then disconnect the negative battery cable. SIR Disabling and Enabling .
2. Remove all related panels and components.
3. Repair as much of the damage as possible.
4. Remove the sealers and anti-corrosion materials from the repair area as necessary. Anti-Corrosion Treatment and Repair .

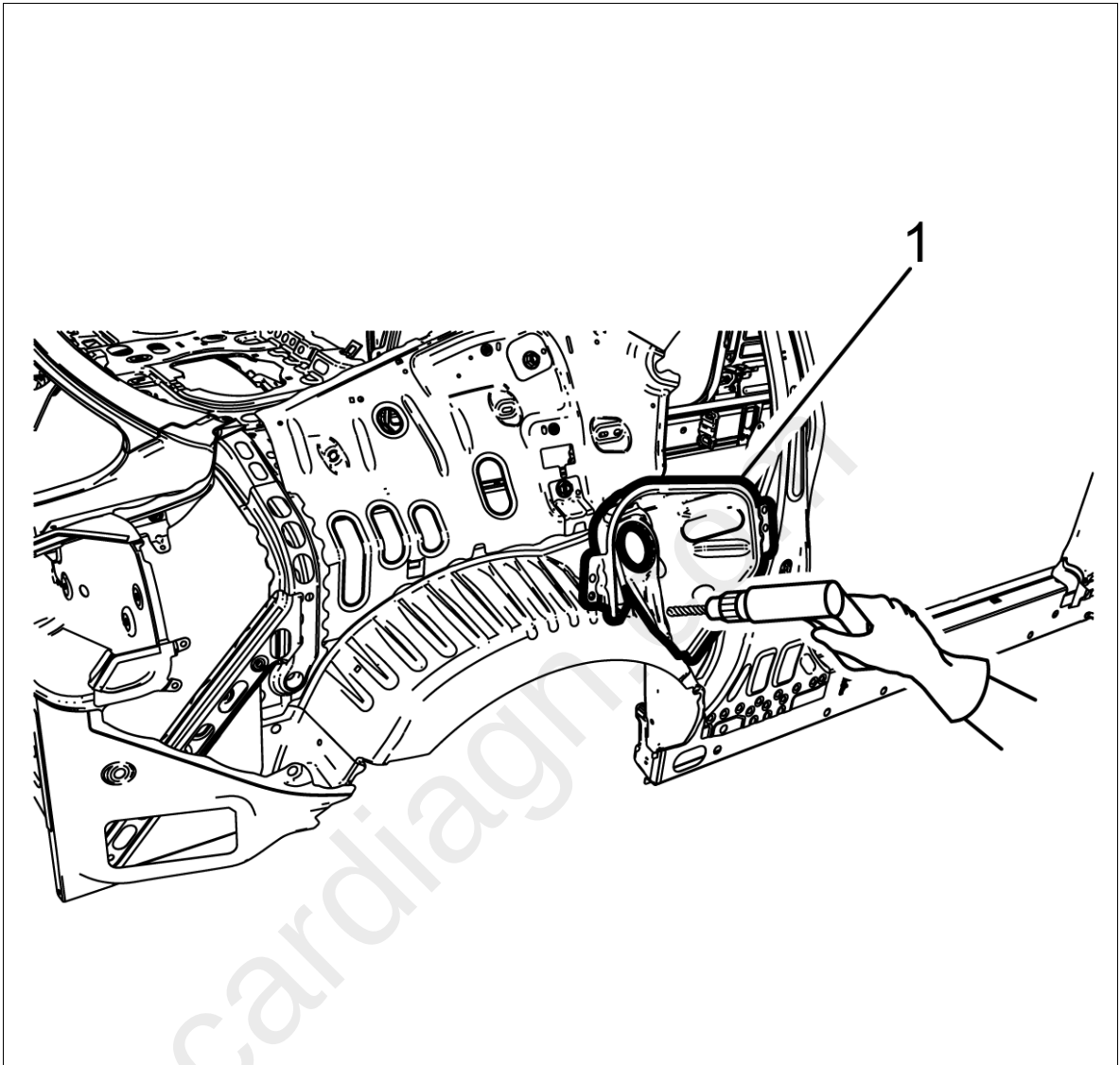


NOTE:

There are sectioning procedures available for various locations of the body side outer panel. The sectioning procedure and location should be chosen based on the extent of damage to the vehicle and other inner reinforcements that need to be replaced. Sectioning should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle. Refer to service procedures for recommended sectioning locations.

5. The quarter outer panel will need to be removed to perform the quarter inner panel lower sectioning procedure. Refer to the appropriate service procedures to remove the quarter outer panel, based on the specific amount of vehicle damage.

Fig 1: Remove Factory Welds For Body Side Inner Panel Filler



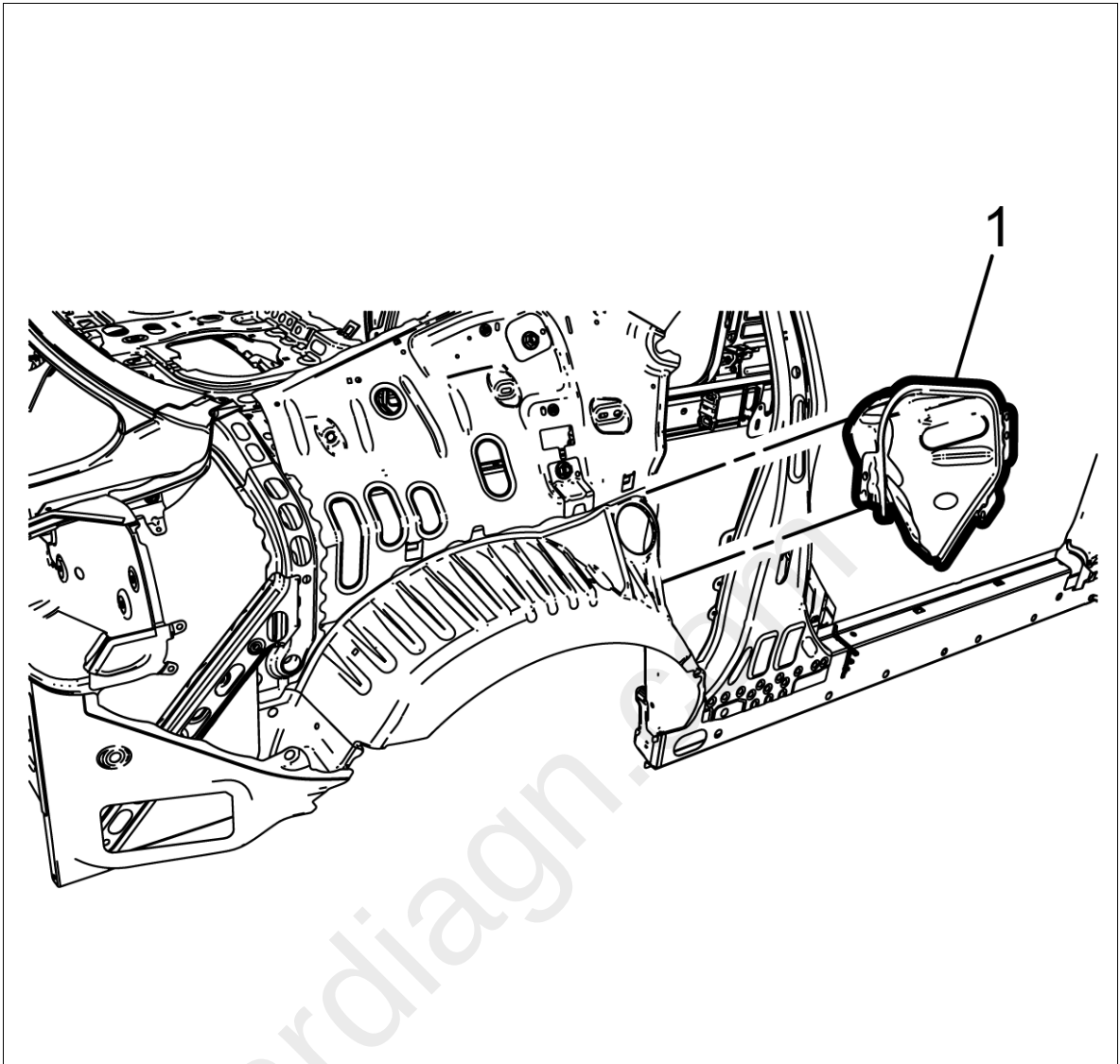
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

The body side inner panel filler will need to be removed (RH side only) to perform the sectioning procedure. If the filler is damaged during removal it may need to be replaced. Record the number and location of welds for installation of the part.

6. Remove factory welds for the body side inner panel filler, as required (1).

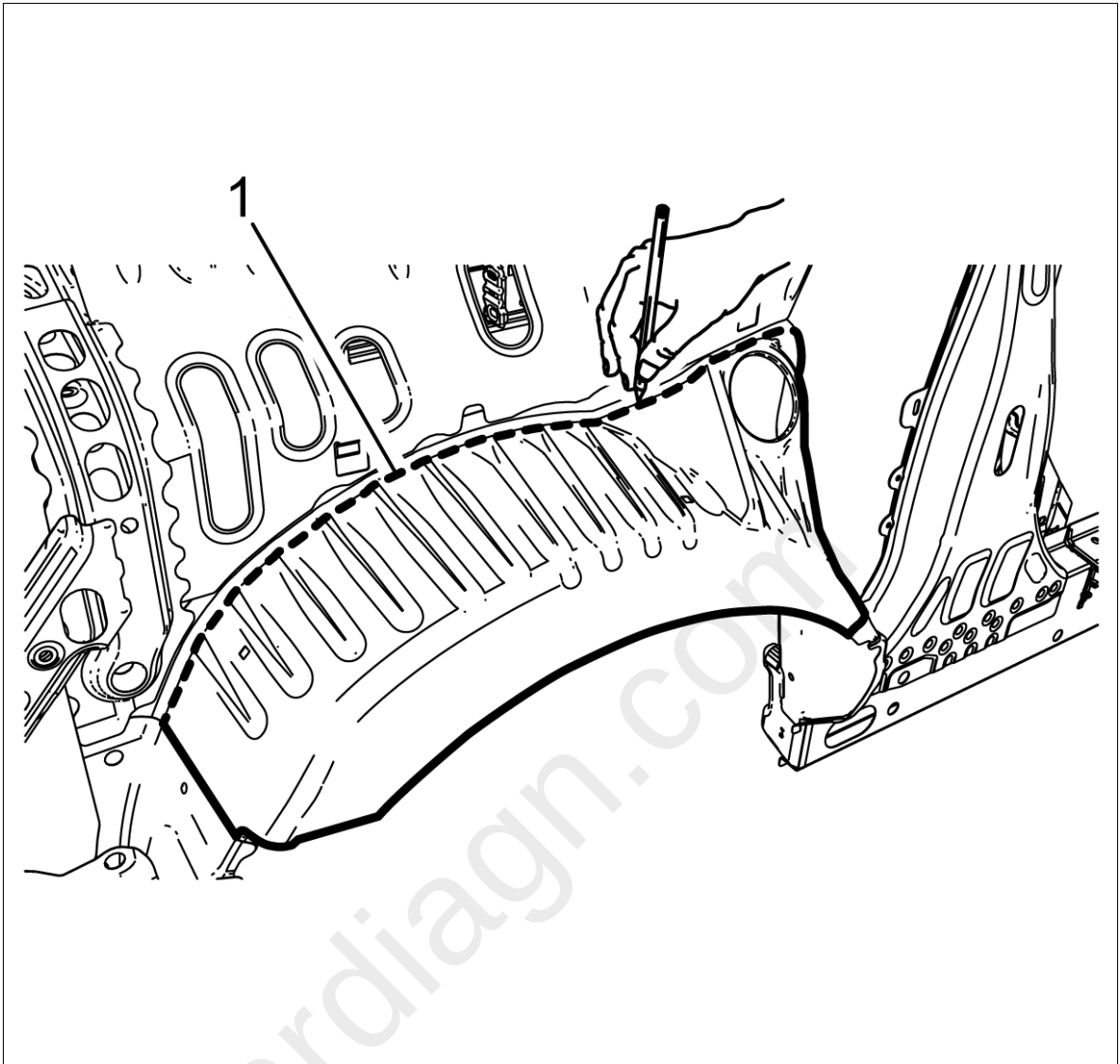
Fig 2: Body Side Inner Panel Filler



Courtesy of GENERAL MOTORS COMPANY

7. Remove the body side inner panel filler (1).

Fig 3: Mark Outer Wheelhouse

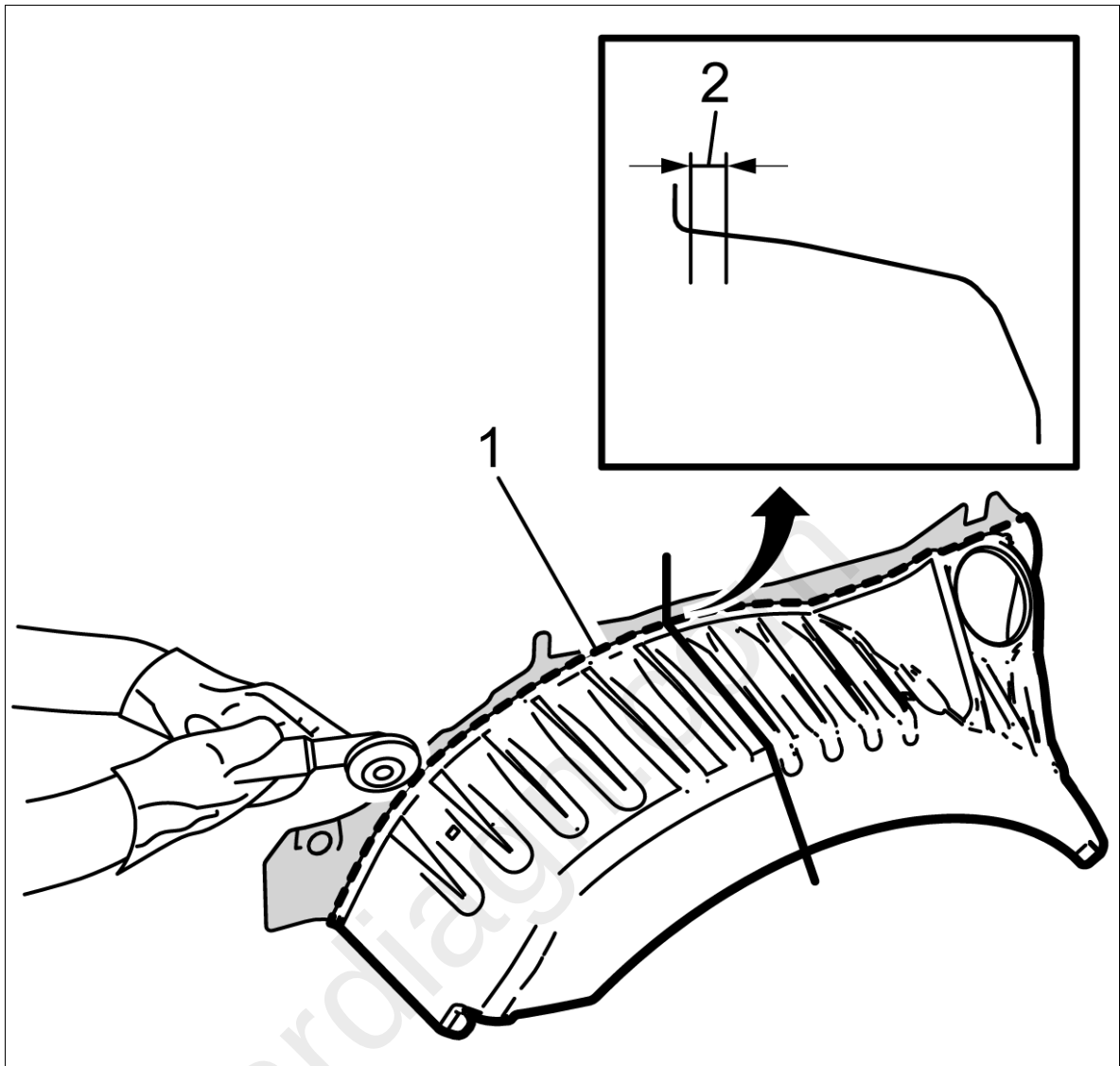


Courtesy of GENERAL MOTORS COMPANY

8. Mark the outer wheelhouse to leave approximately 25 mm (1 in) flange (1) then, cut the inner panel along the mark made on the outer wheelhouse.
9. Remove the damaged section of the wheelhouse.

REPAIR INSTRUCTIONS > QUARTER INNER PANEL SECTIONING > INSTALLATION PROCEDURE

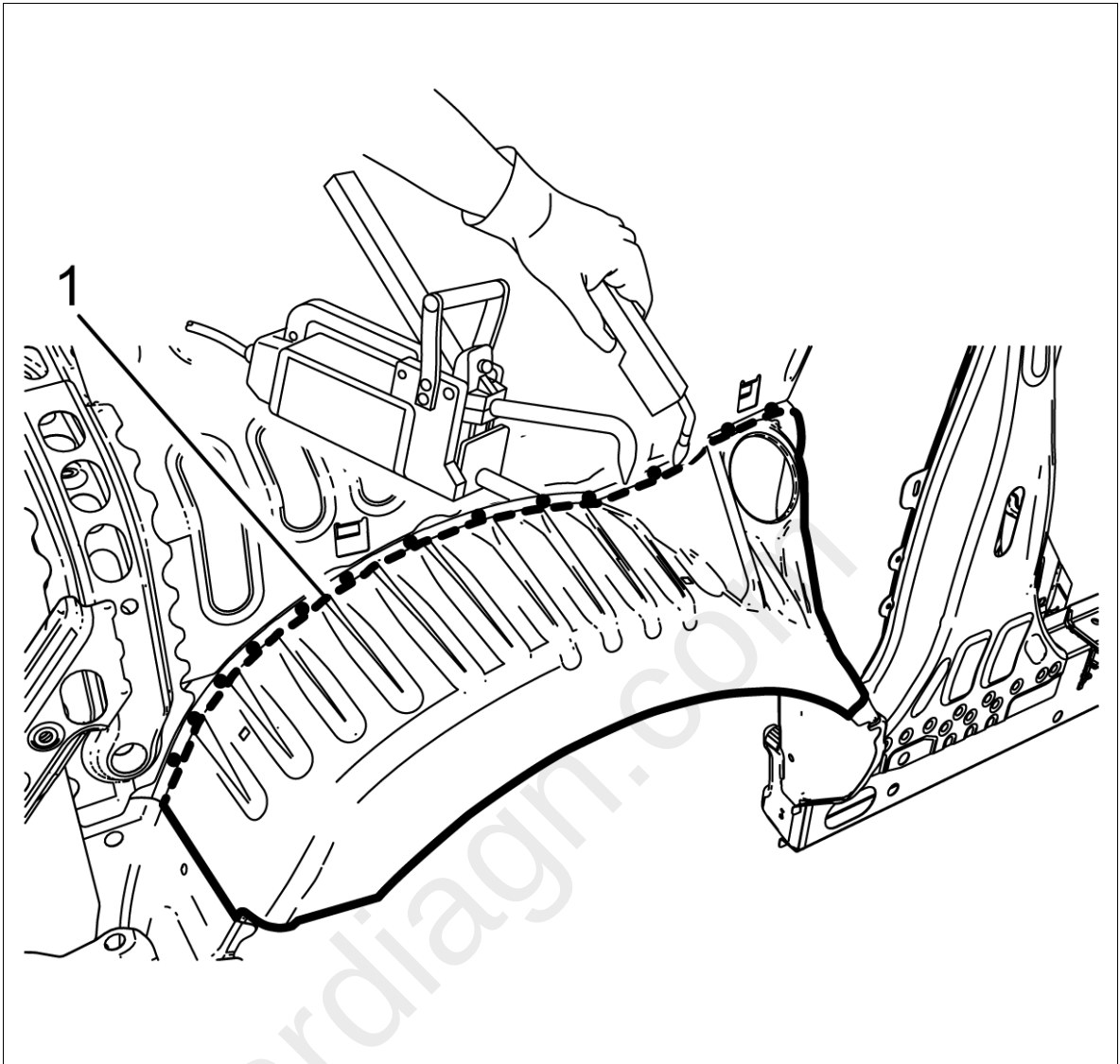
Fig 1: Trim Service Part



Courtesy of GENERAL MOTORS COMPANY

1. Trim the service part to leave approximately 25 mm (1 in) vertical flange (1).
2. Prepare all mating surfaces for welding as necessary.
3. Position the rear wheelhouse portion of the inner panel on the vehicle.
4. Clamp the part in place and verify that it is the correct location.

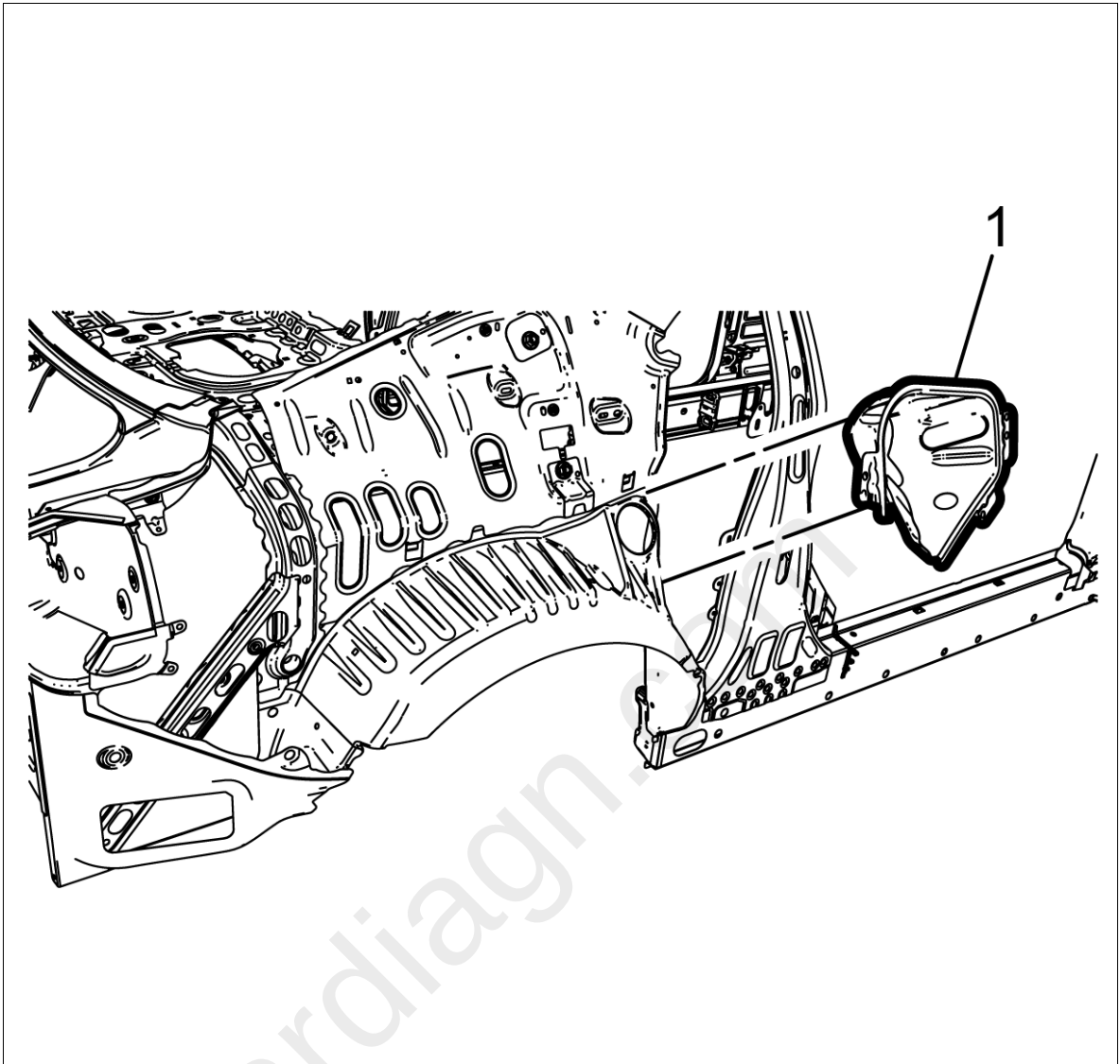
Fig 2: Bond, Weld-Bond Or Weld Part



Courtesy of GENERAL MOTORS COMPANY

5. Bond, Weld-Bond or Weld the part accordingly (1). If using MIG plug welds, welds should be approximately 40 mm apart.

Fig 3: Body Side Inner Panel Filler



Courtesy of GENERAL MOTORS COMPANY

6. Install the body side inner panel filler (1).
7. Clean and prepare all welded surfaces.
8. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Anti-Corrosion Treatment and Repair .
9. Paint the repaired area. Basecoat/Clearcoat Paint Systems .
10. Install all related panels and components.
11. Enable the SIR system and then connect the negative battery cable. SIR Disabling and Enabling .

REMOVAL PROCEDURE

 WARNING:

Refer to Approved Equipment for Collision Repair Warning .

 WARNING:

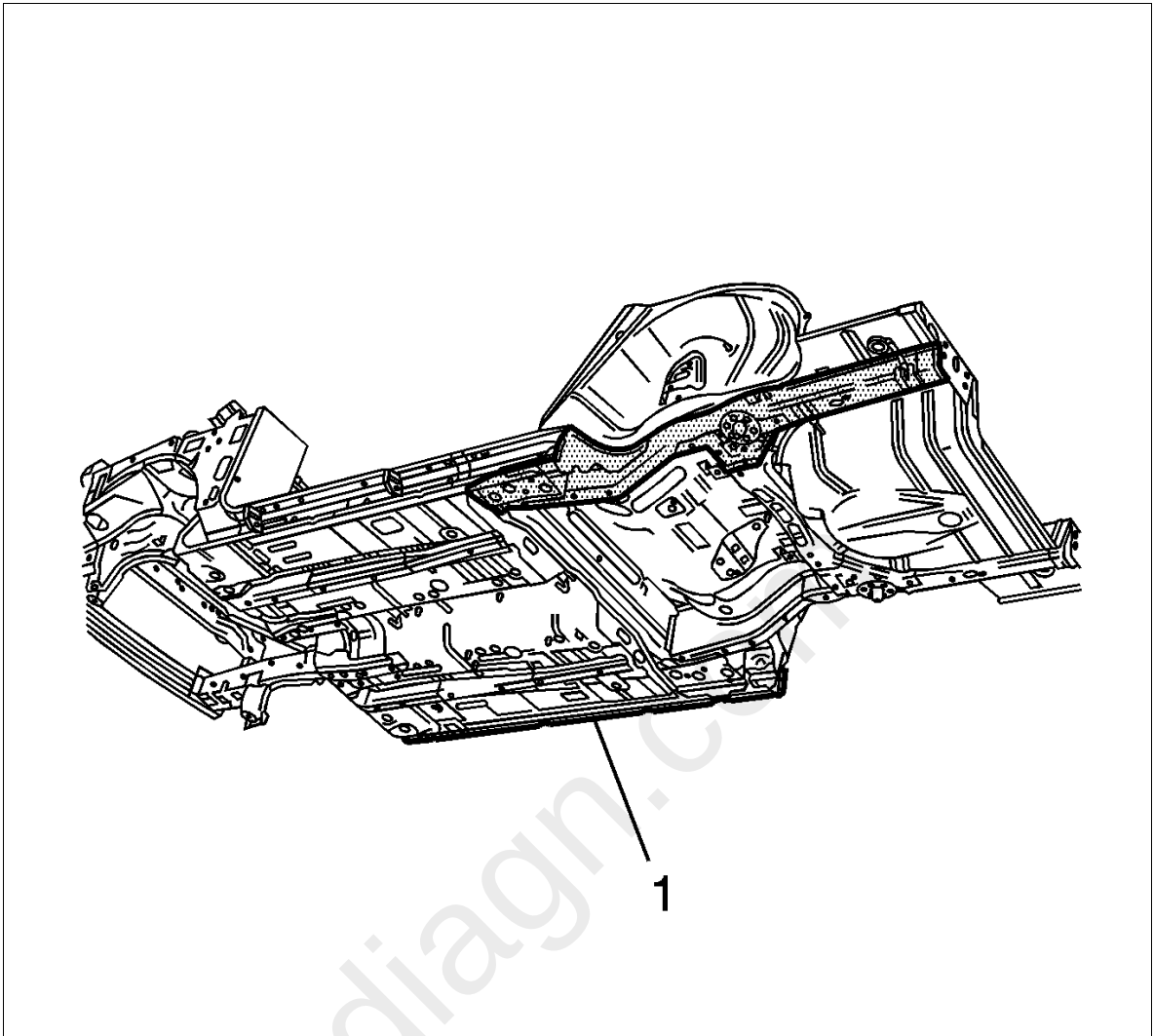
Refer to Foam Sound Deadeners Warning .

 WARNING:

Refer to Battery Disconnect 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 .

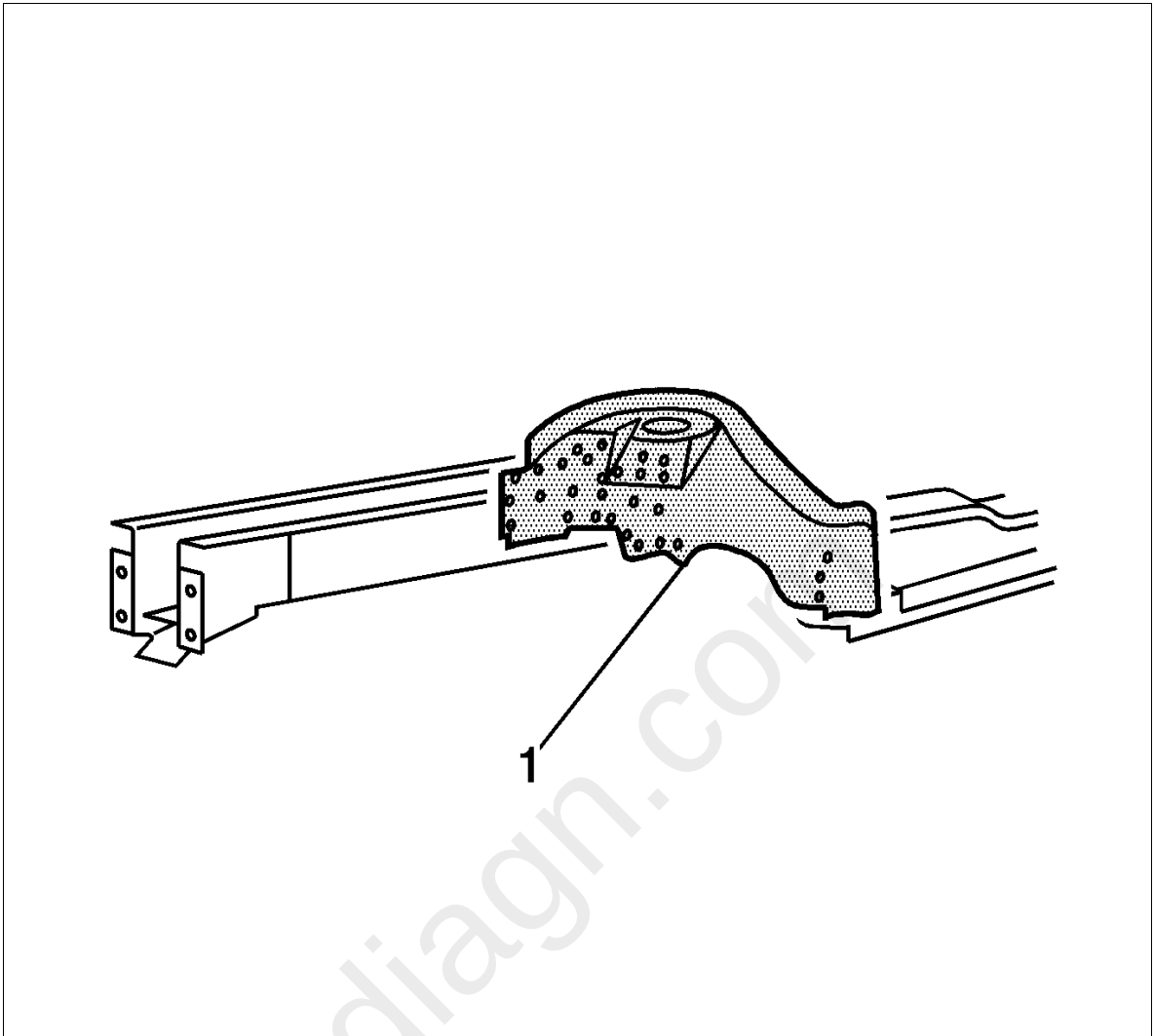
Fig 1: Underbody Rear Side Rail



Courtesy of GENERAL MOTORS COMPANY

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

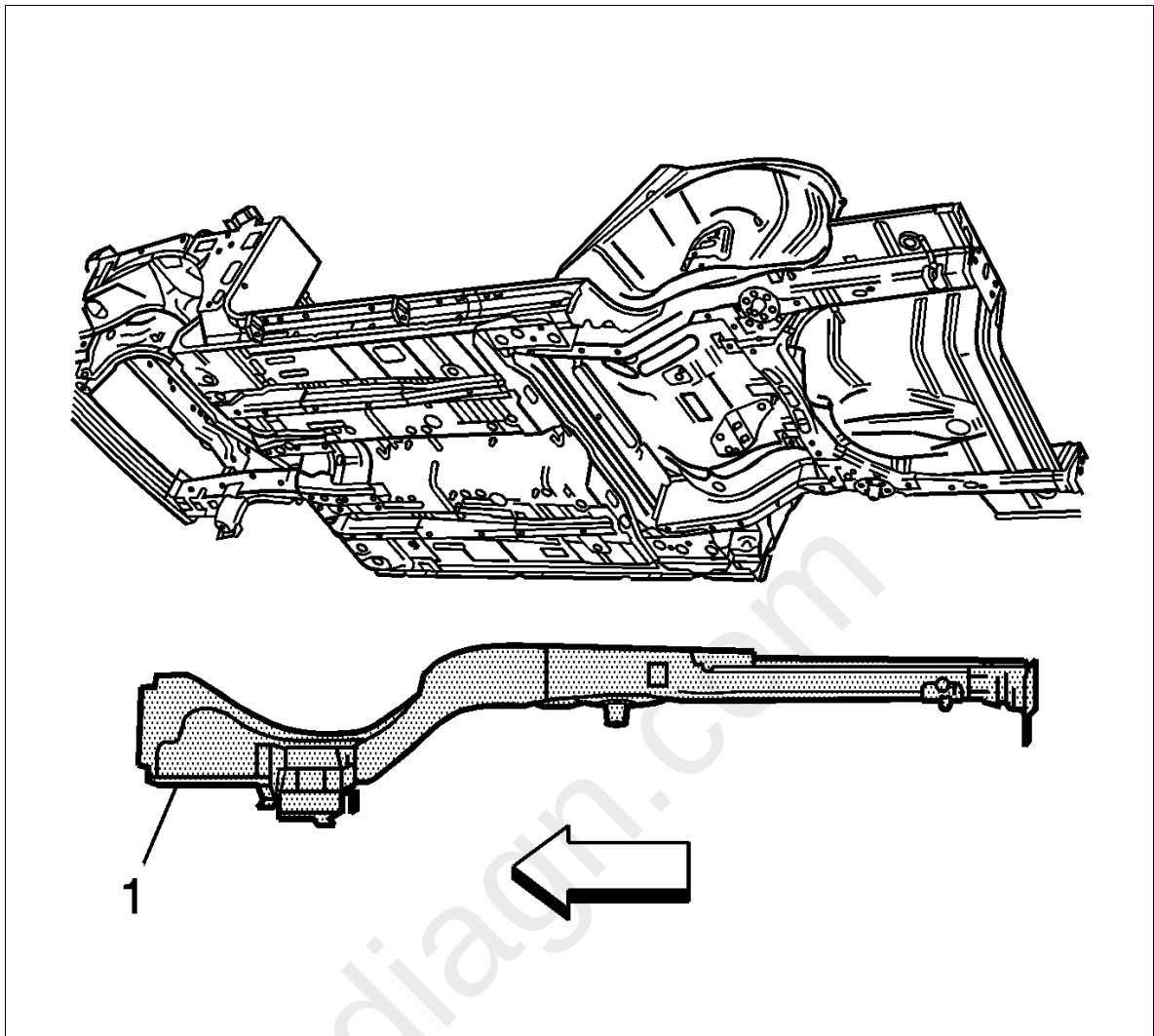
Fig 2: Removing Shock Reinforcement Wheel House Extension



Courtesy of GENERAL MOTORS COMPANY

6. Remove the shock reinforcement wheel house extension (1).

Fig 3: Underbody Rear Side Rail



Courtesy of GENERAL MOTORS COMPANY



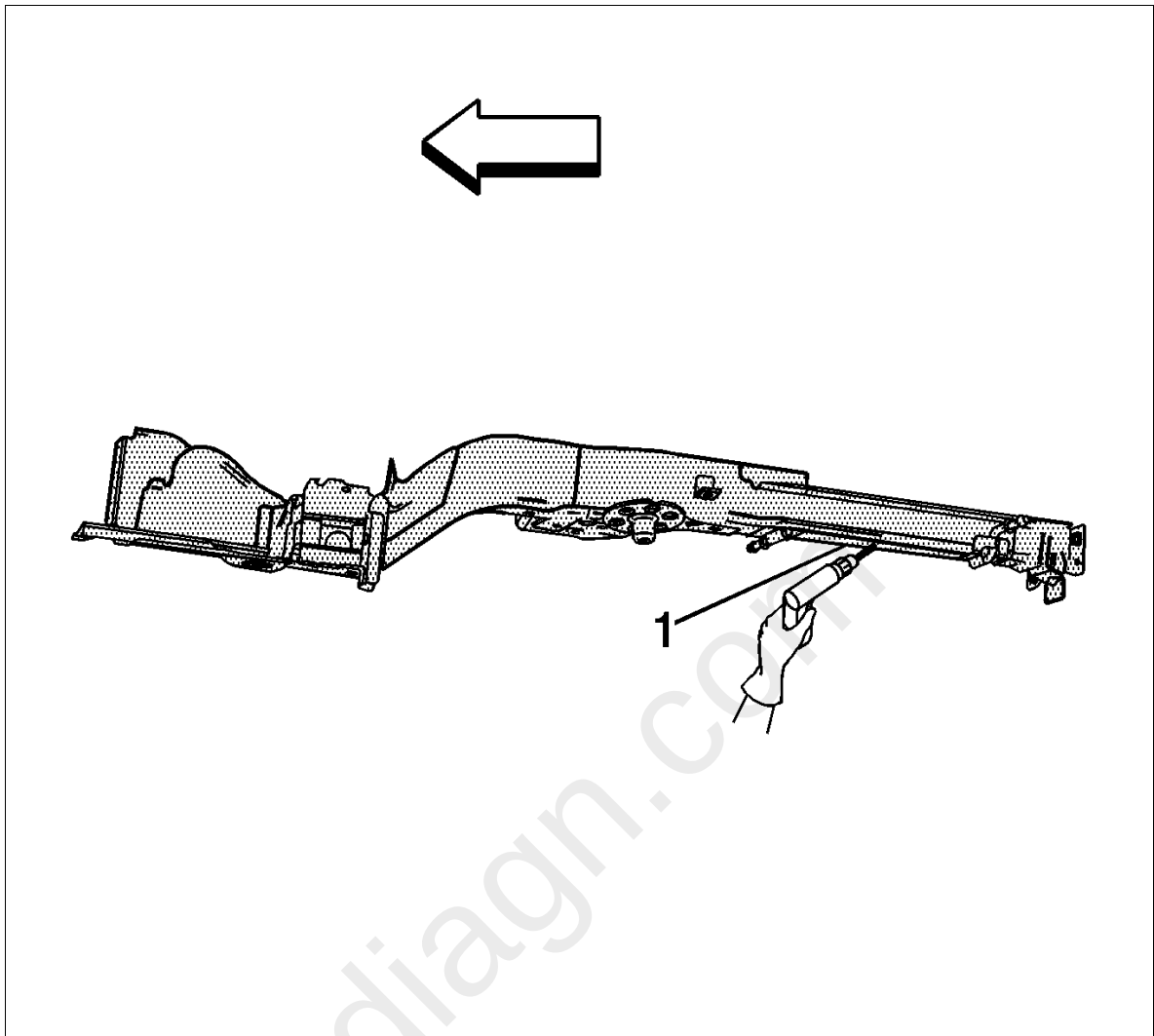
NOTE:

Note the number and location of the factory welds for installation of the full rail service part.

7. Remove the rear rail (1).

REPAIR INSTRUCTIONS > UNDERBODY REAR SIDE RAIL REPLACEMENT > INSTALLATION PROCEDURE

Fig 1: Drilling Plug Weld Holes In Replacement Underbody Rear Side Rail



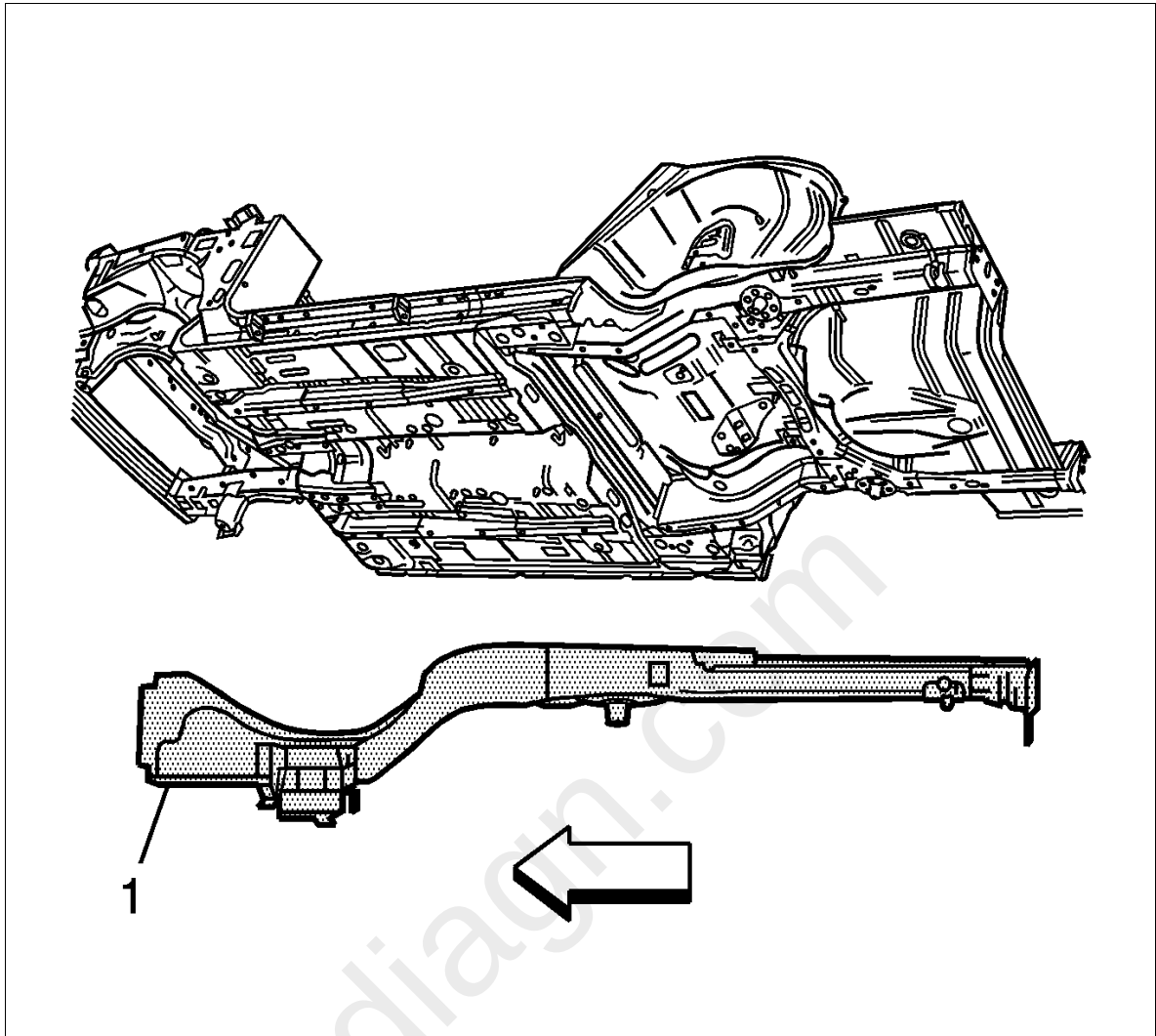
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

If the location of the original welds cannot be determined, space the replacement welds every 40 mm (1 1/2 in) apart.

1. Prepare all mating surfaces as necessary.
2. Apply GM-approved weld-thru coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair

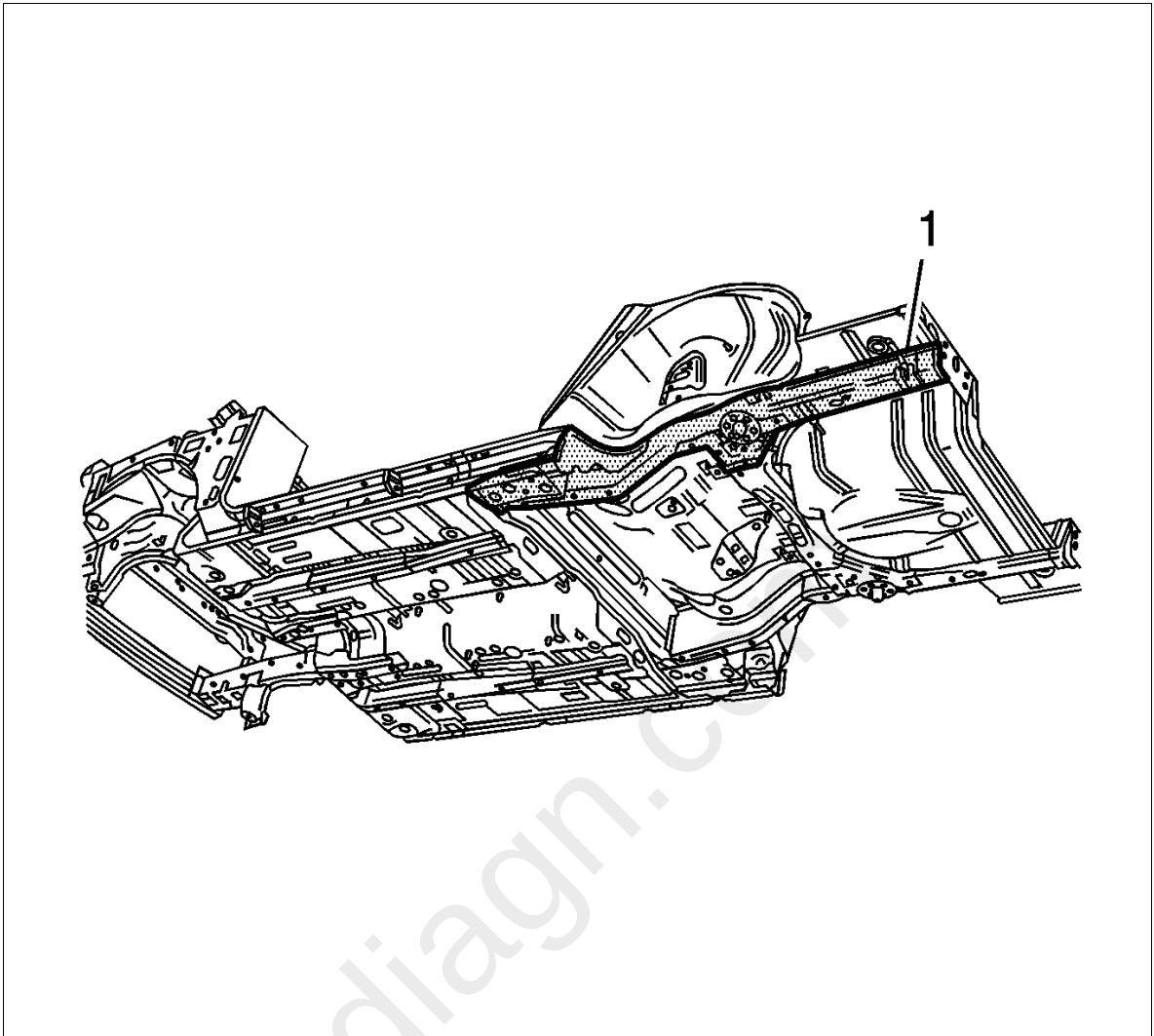
Fig 2: Underbody Rear Side Rail



Courtesy of GENERAL MOTORS COMPANY

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

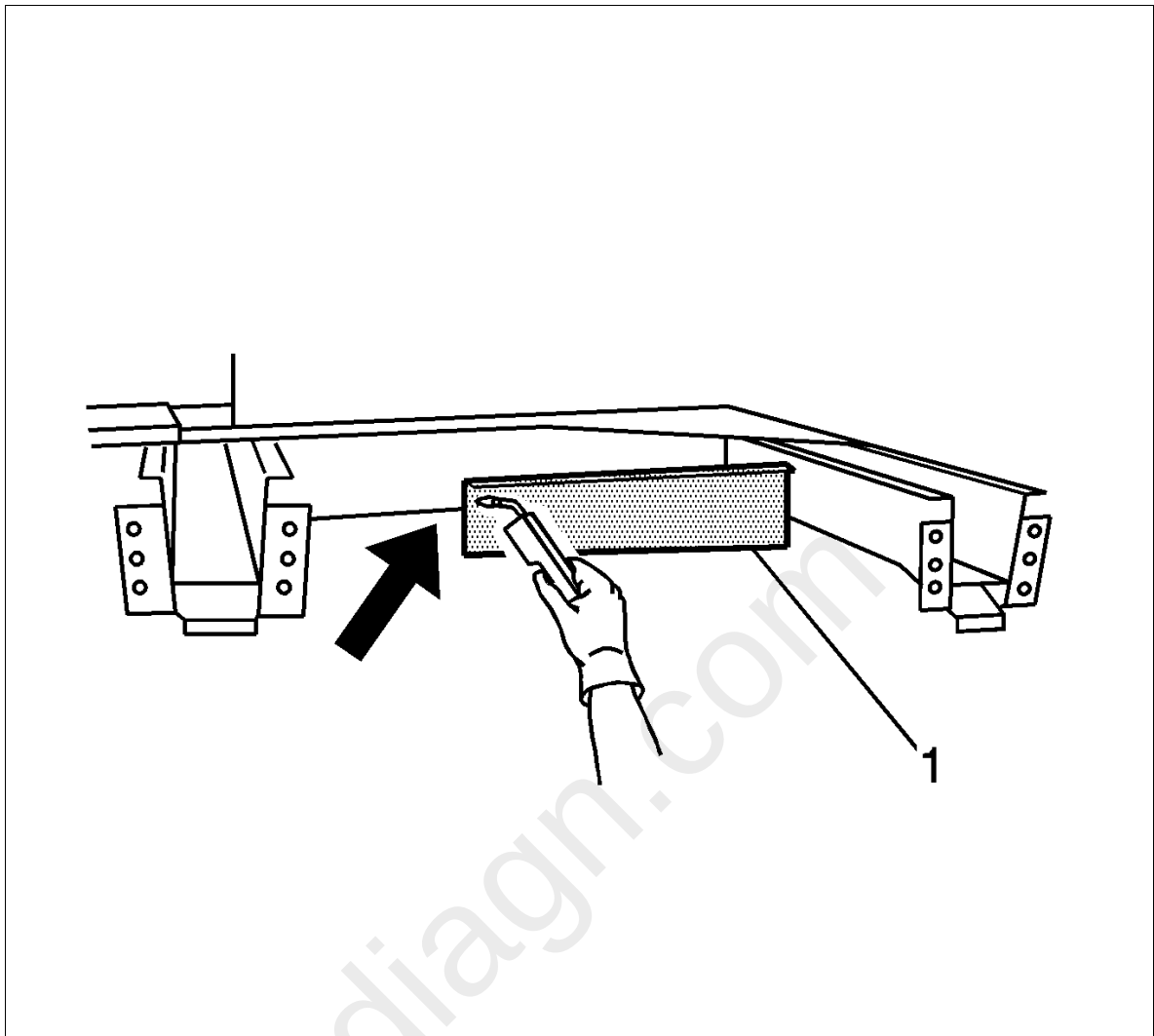
Fig 3: Underbody Rear Side Rail In Position For Welding



Courtesy of GENERAL MOTORS COMPANY

4. Weld the perimeter of the part at the original weld locations (1).

Fig 4: Install Five Bar - Rear Side Underbody Rail



Courtesy of GENERAL MOTORS COMPANY

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

PROCEDURE

 WARNING:

Refer to Approved Equipment for Collision Repair Warning .

 WARNING:

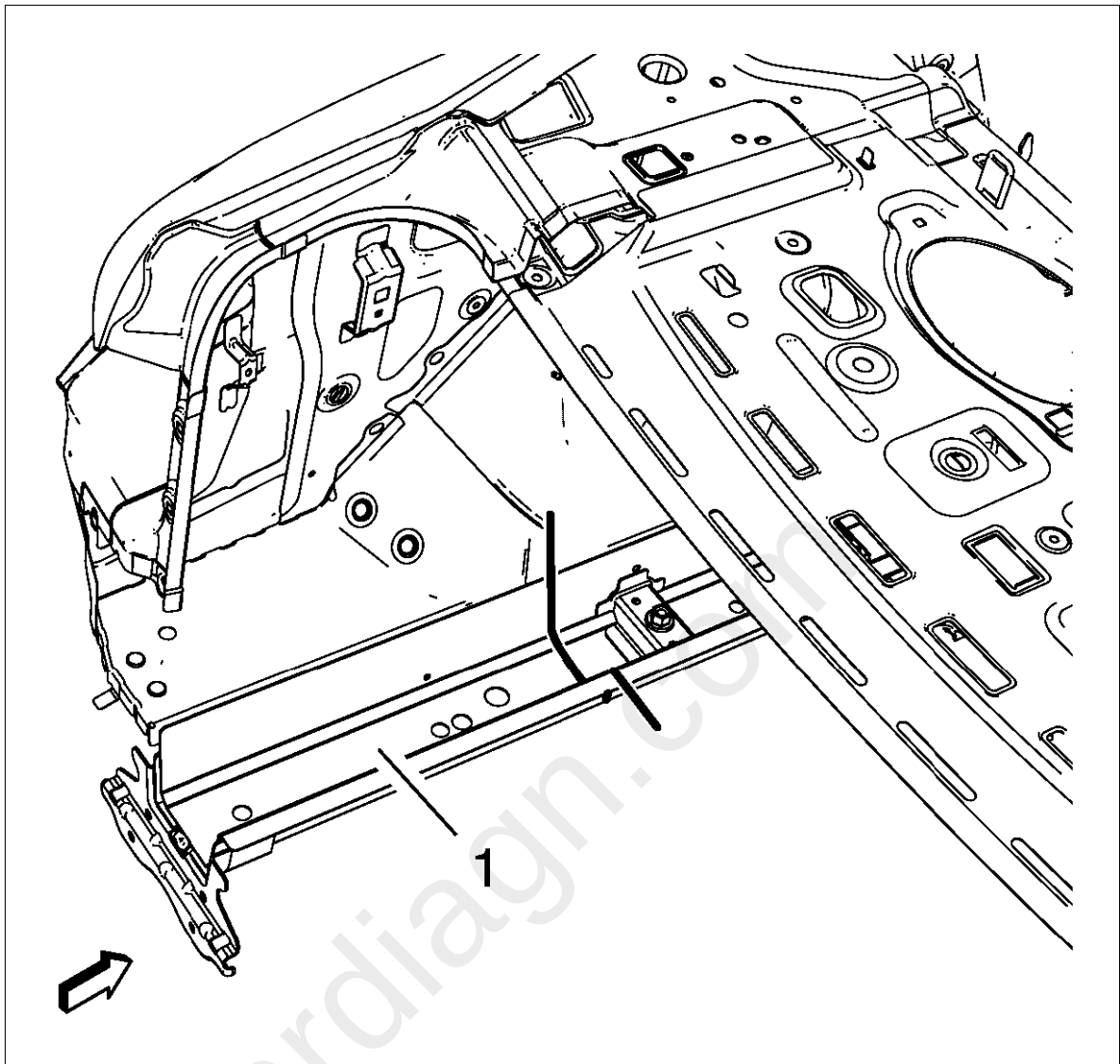
Refer to Foam Sound Deadeners Warning .

 WARNING:

Refer to Battery Disconnect Warning .

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

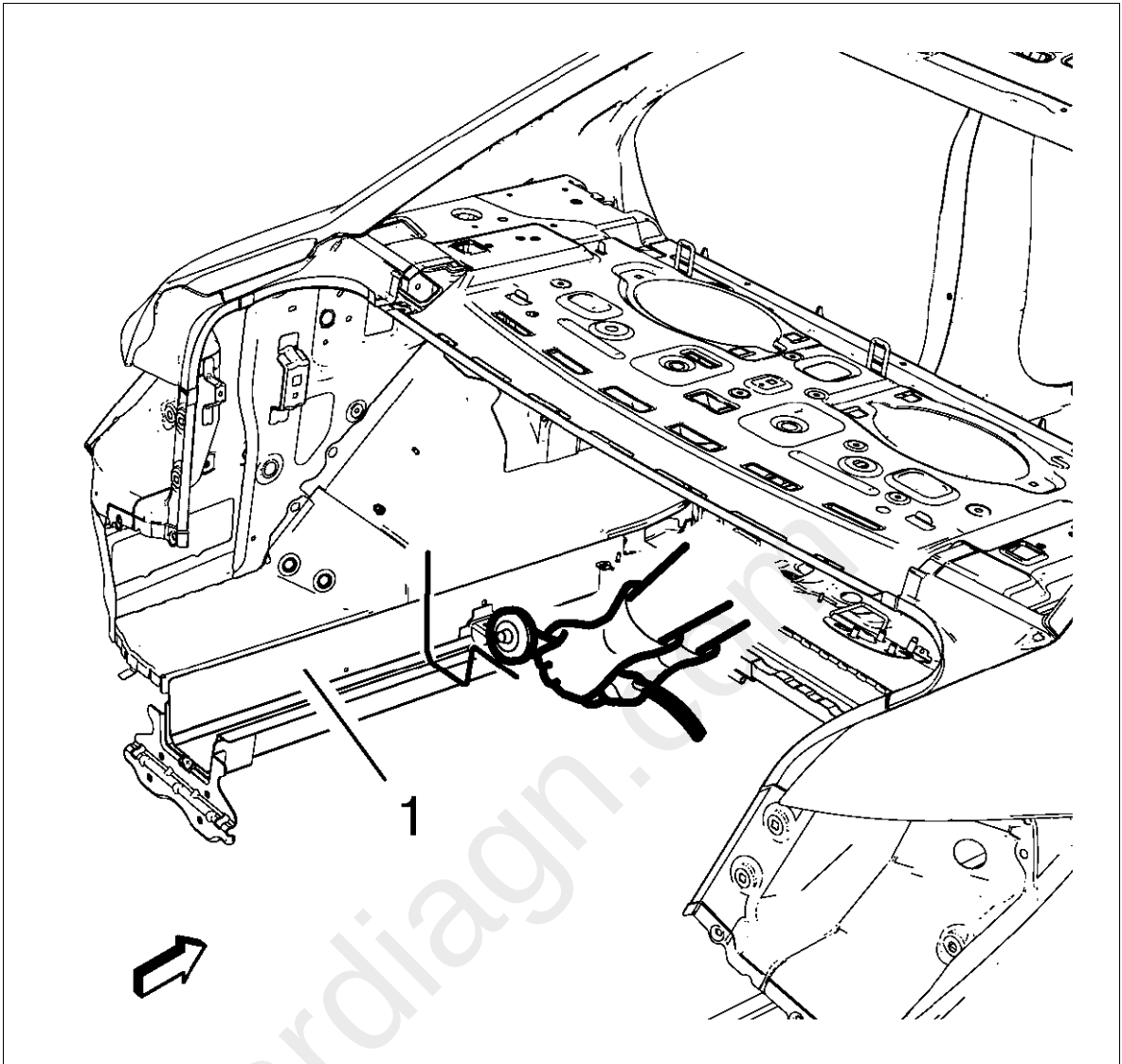
Fig 1: Locating Cut Lines On Rear Side Rail



Courtesy of GENERAL MOTORS COMPANY

6. Create cut lines on the rear side rail (1).

Fig 2: Cutting Rear Side Rail



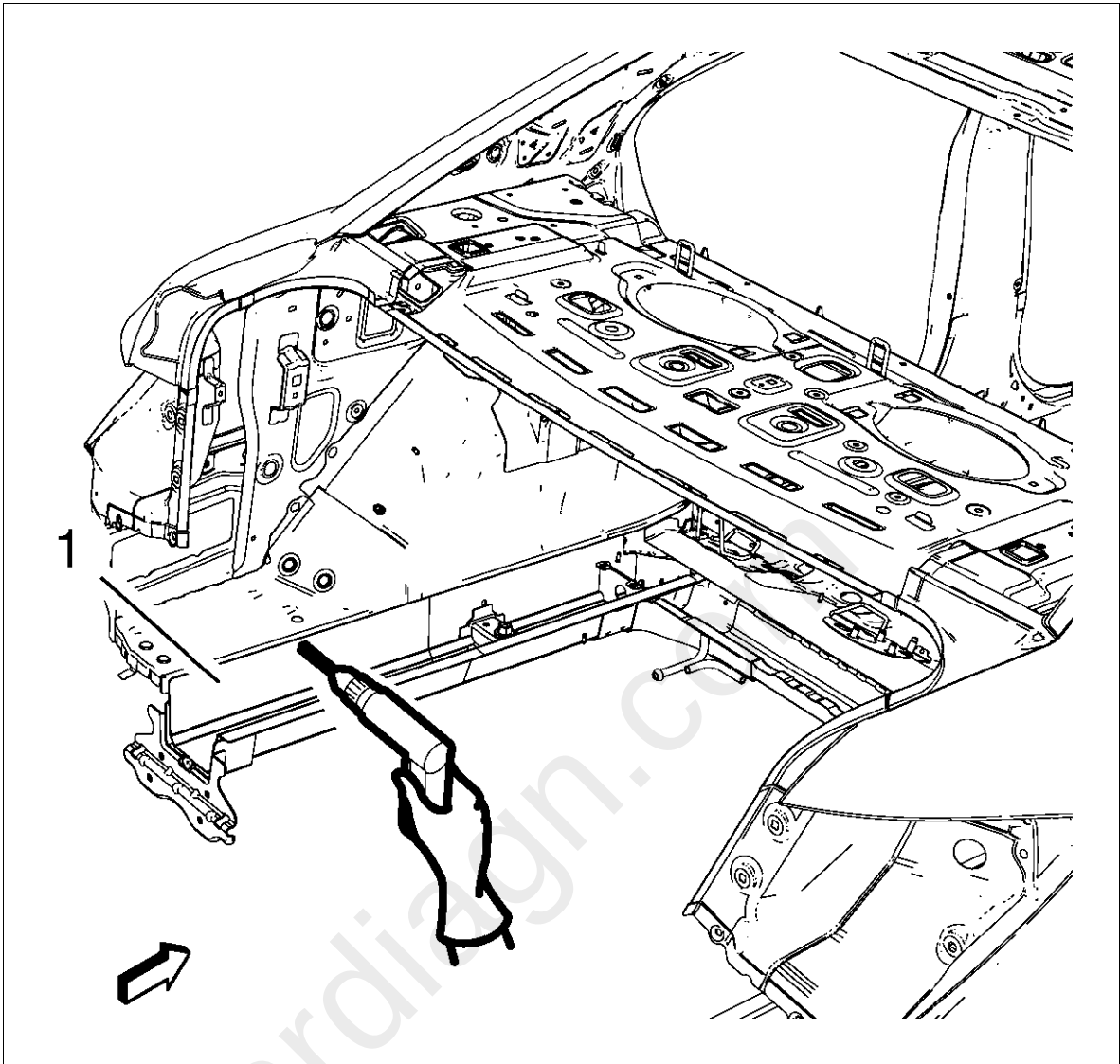
Courtesy of GENERAL MOTORS COMPANY

 **NOTE:**

Do not damage any other panels or reinforcements.

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

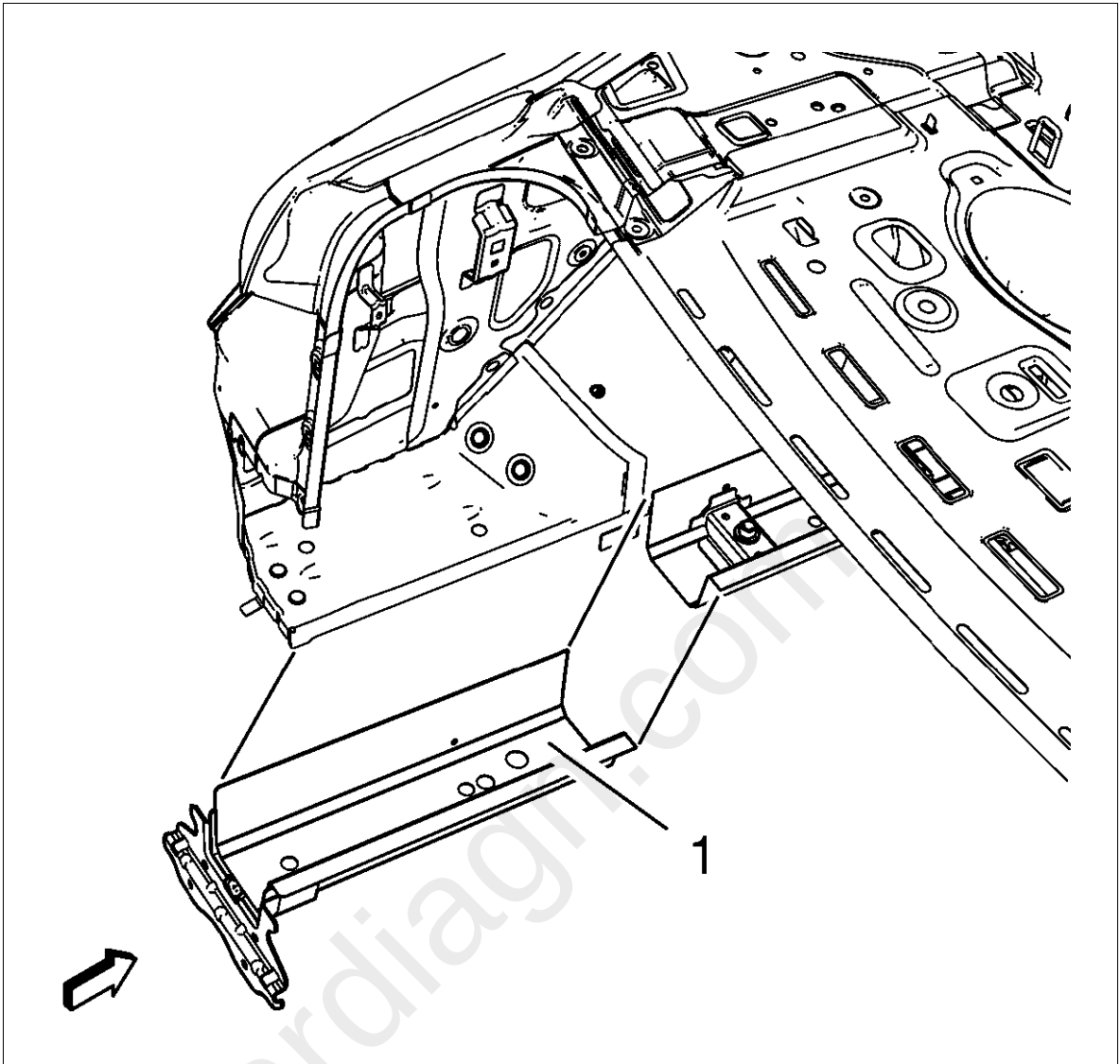
Fig 3: Drilling Factory Welds Of Rear Side Rail



Courtesy of GENERAL MOTORS COMPANY

8. Note the number and location of the factory welds for installation of the rail service part (1).

Fig 4: Rear Side Rail

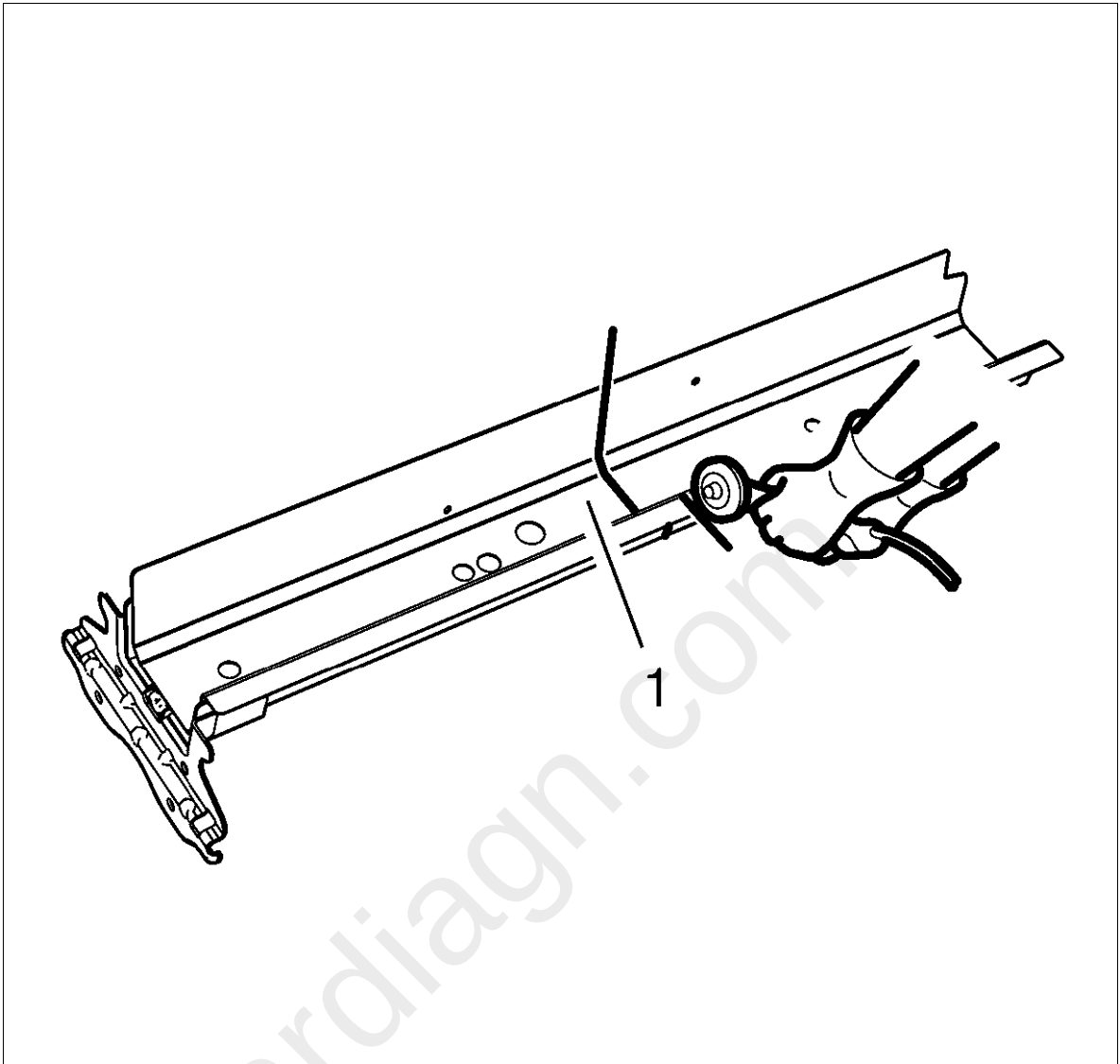


Courtesy of GENERAL MOTORS COMPANY

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

REPAIR INSTRUCTIONS > UNDERBODY REAR SIDE RAIL SECTIONING > INSTALLATION PROCEDURE

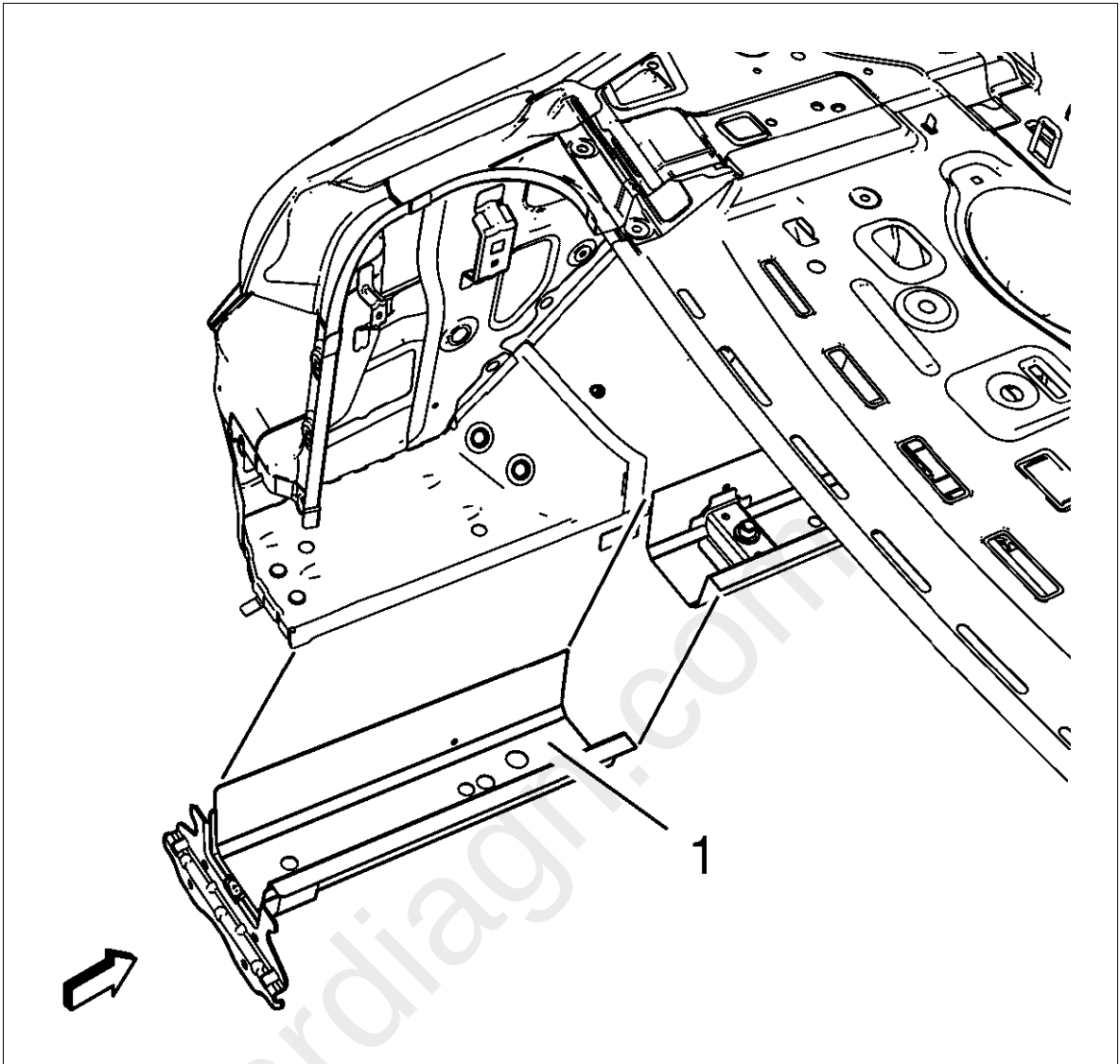
Fig 1: Cutting New Rear Side Rail



Courtesy of GENERAL MOTORS COMPANY

1. Cut the rear side rail (1) in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to allow a gap of one-and-one-half-times the metal thickness at the sectioning joint.
2. Prepare all mating surfaces as necessary.
3. Apply GM-approved weld-thru coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair

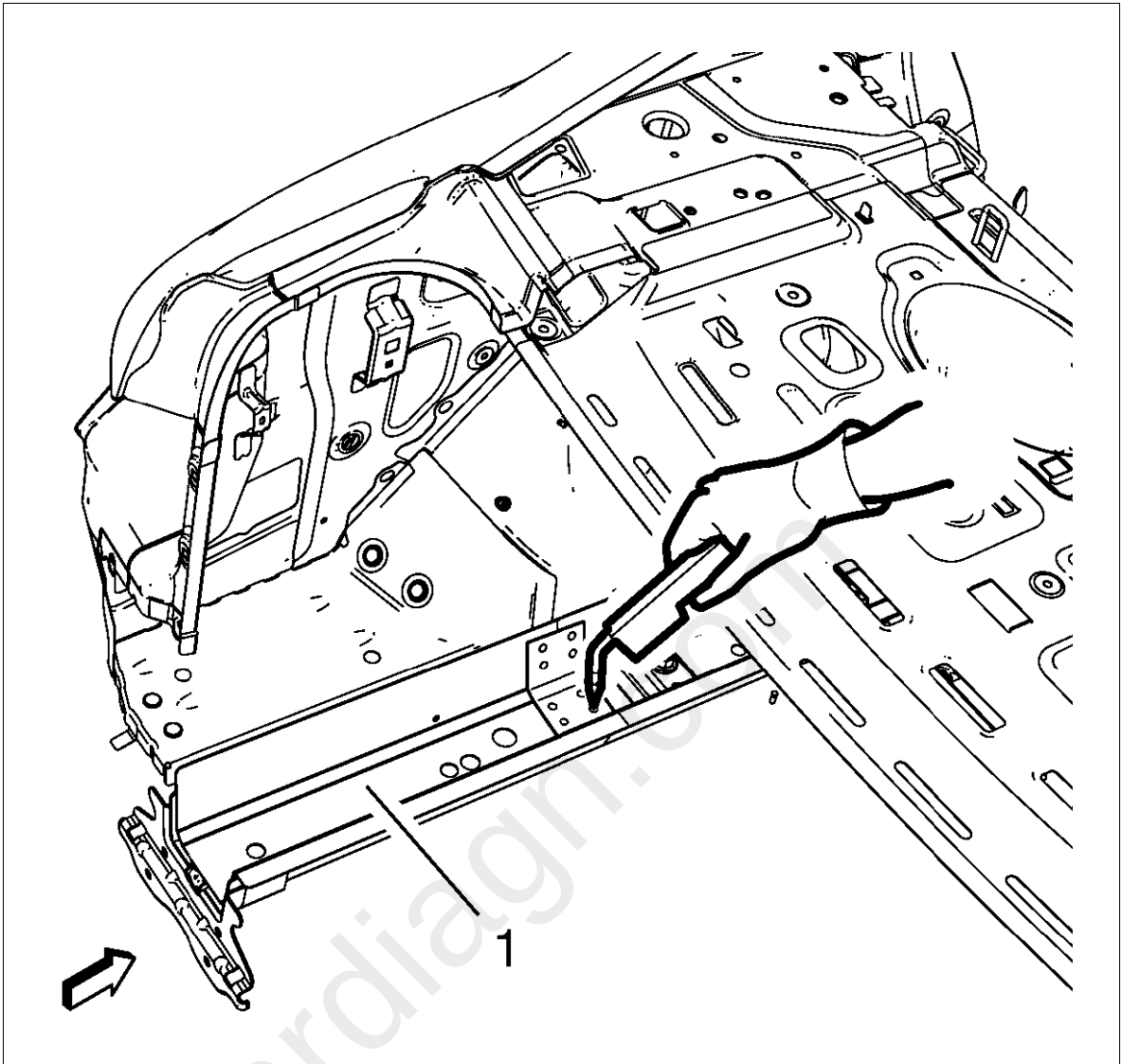
Fig 2: Rear Side Rail



Courtesy of GENERAL MOTORS COMPANY

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

Fig 3: Welding Rear Side Rail



Courtesy of GENERAL MOTORS COMPANY

5. Position the backing plate inside the rail (1). Weld accordingly.
6. 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.
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
9. Install all related panels and components.
10. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
11. Enable the SIR system. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > BODY REAR END PANEL REPLACEMENT > REMOVAL PROCEDURE

 WARNING:

Refer to Approved Equipment for Collision Repair Warning .

 WARNING:

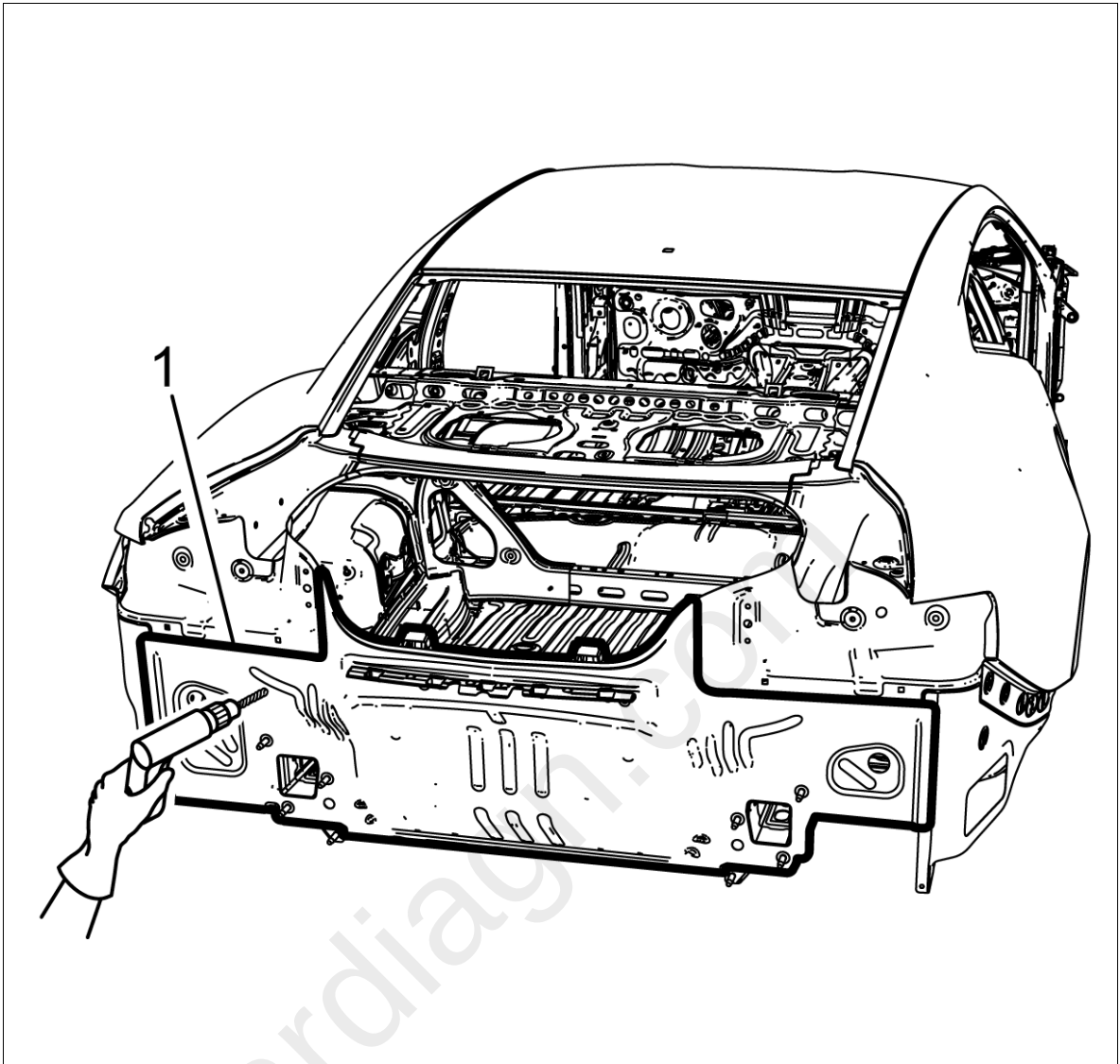
Refer to Foam Sound Deadeners Warning .

 WARNING:

Refer to Battery Disconnect Warning .

1. Disable the SIR system and then disconnect the negative battery cable. Refer to SIR Disabling and Enabling .
2. Remove all related panels and components.
3. Repair as much of the damaged area as possible. Refer to Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .

Fig 1: Remove All Necessary Factory Welds



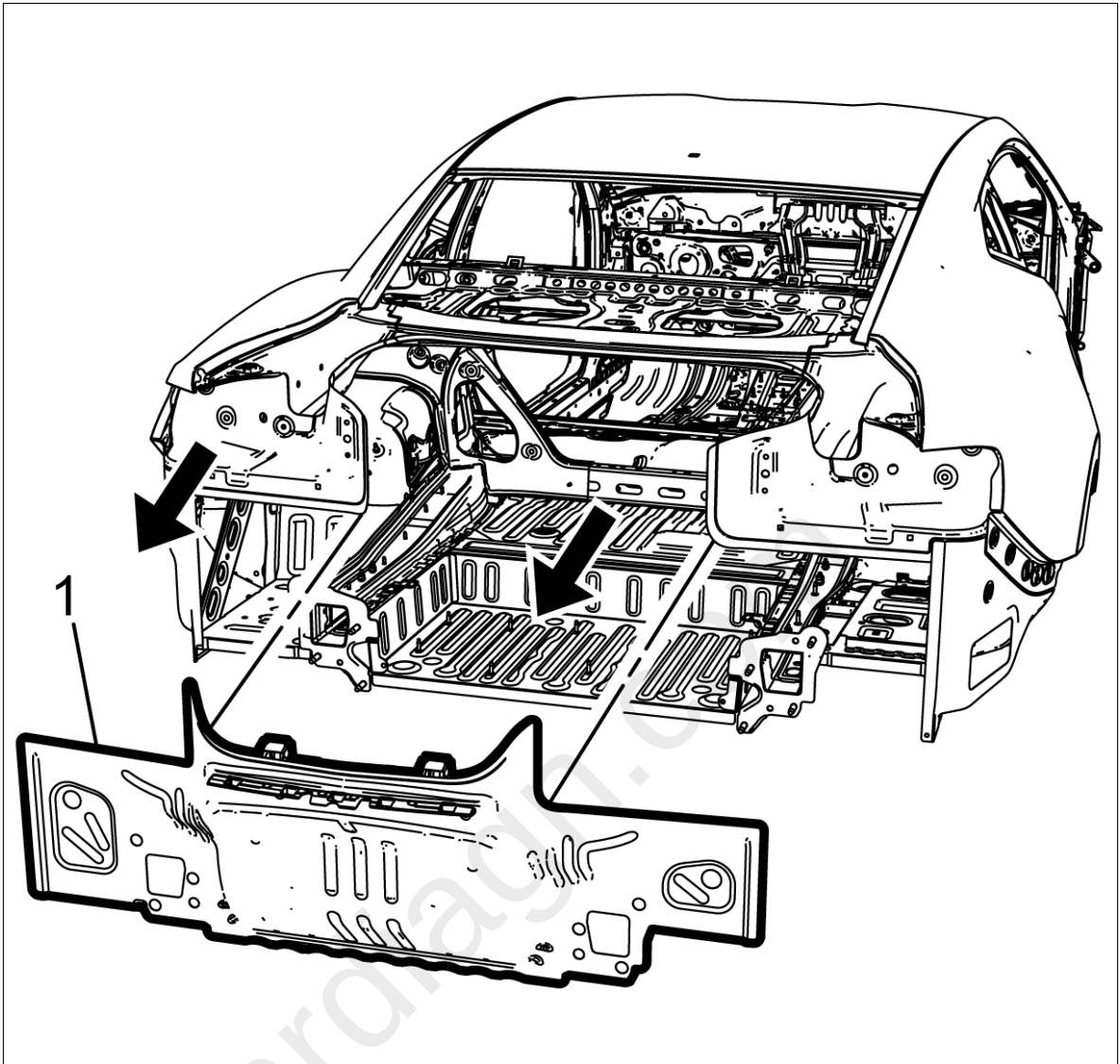
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

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

5. Remove all the necessary factory welds (1).

Fig 2: Remove Rear End Panel

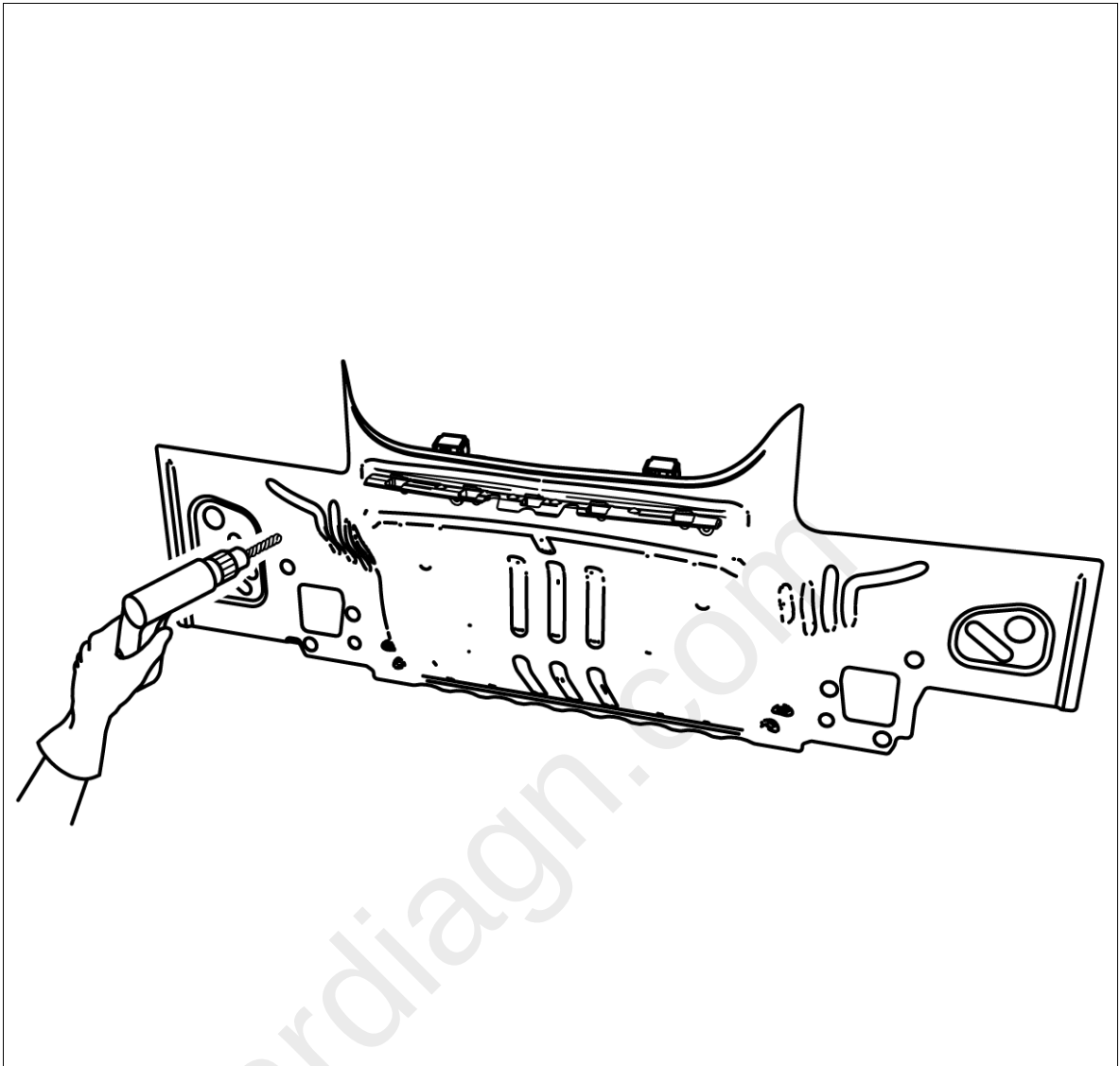


Courtesy of GENERAL MOTORS COMPANY

6. Remove the rear end panel (1).

**REPAIR INSTRUCTIONS > BODY REAR END PANEL REPLACEMENT >
INSTALLATION PROCEDURE**

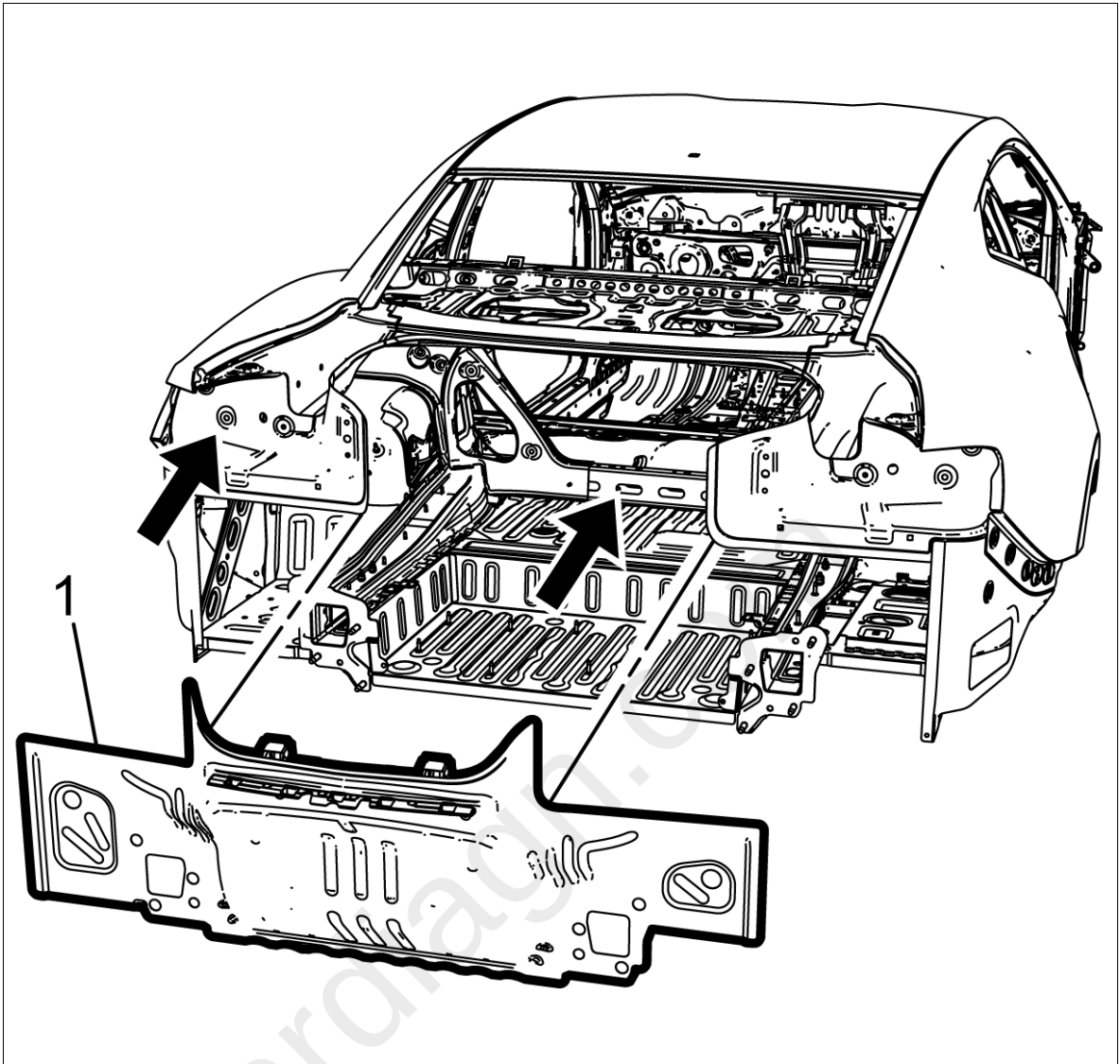
Fig 1: Clean And Prepare All Matting Surfaces



Courtesy of GENERAL MOTORS COMPANY

1. Clean and prepare all matting surfaces as necessary.
2. Apply Weld-Thru Coating or Panel bonding adhesive to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair , or Metal Panel Bonding (Steel) .

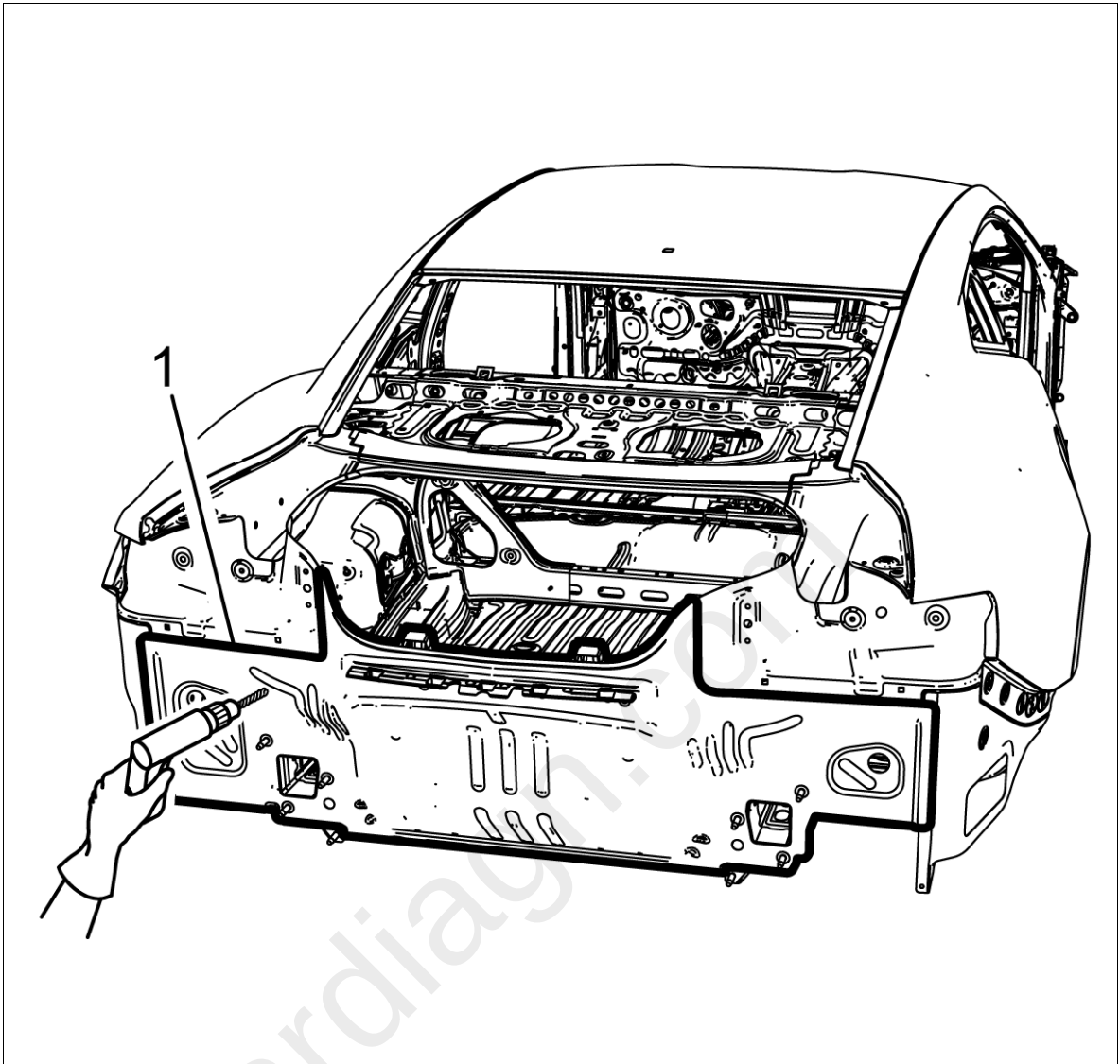
Fig 2: Install Rear End Panel



Courtesy of GENERAL MOTORS COMPANY

3. Position the rear end panel on the vehicle. Use 3-dimensional measuring equipment to inspect the panel (1).

Fig 3: Weld Or Weld Bond Accordingly



Courtesy of GENERAL MOTORS COMPANY

4. Weld or weld bond accordingly at the original weld locations (1).
5. Clean all of the welded surfaces.
6. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
7. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems
8. Install all of the related panels and components.
9. Enable the SIR system and then connect the negative battery cable. Refer to SIR Disabling and Enabling .

REMOVAL PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .



WARNING:

Refer to Battery Disconnect Warning .

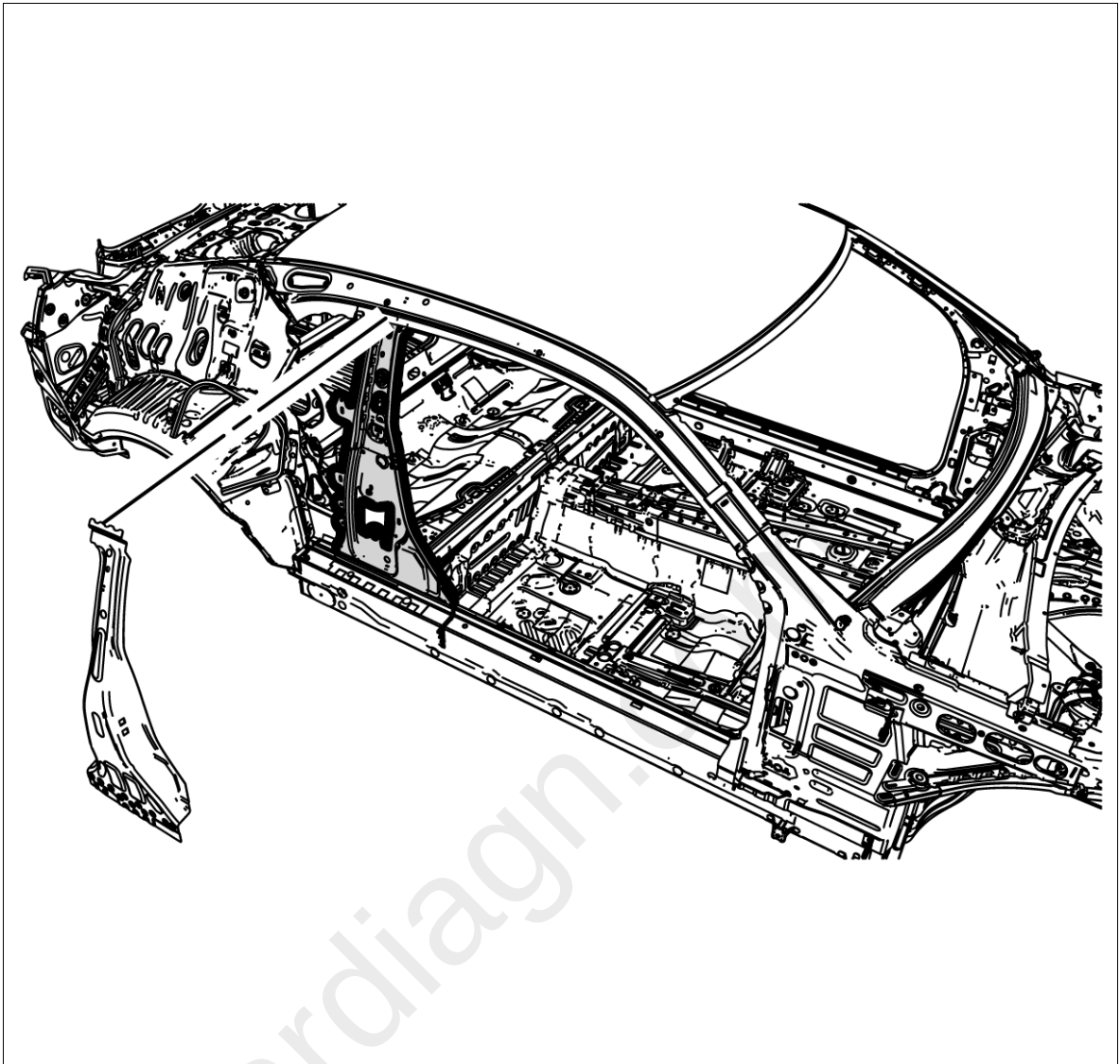


NOTE:

The center pillar inner panel reinforcement is made of Ultra High Strength Steel. Sectioning, or repair of Ultra High Strength Steel is not recommended. It should be replaced as a complete assembly at factory locations. Ultra High Strength Steel

1. Disable the SIR system and then disconnect the negative battery cable. SIR Disabling and Enabling .

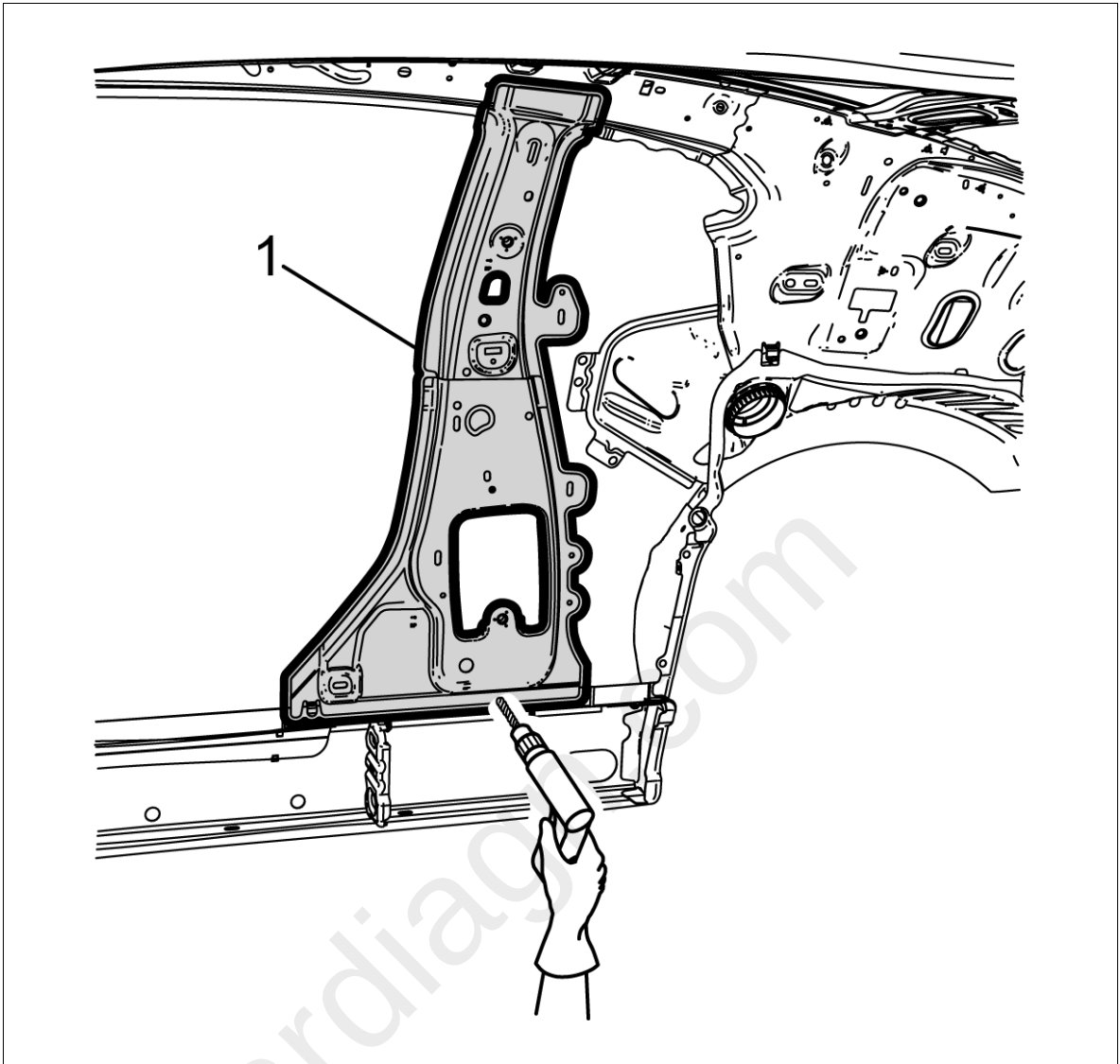
Fig 1: Related Panels And Components



Courtesy of GENERAL MOTORS COMPANY

2. Remove all related panels and components.
3. Repair as much of the damaged area as possible. Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area, as necessary.
Anti-Corrosion Treatment and Repair .

Fig 2: Remove All Necessary Factory Welds



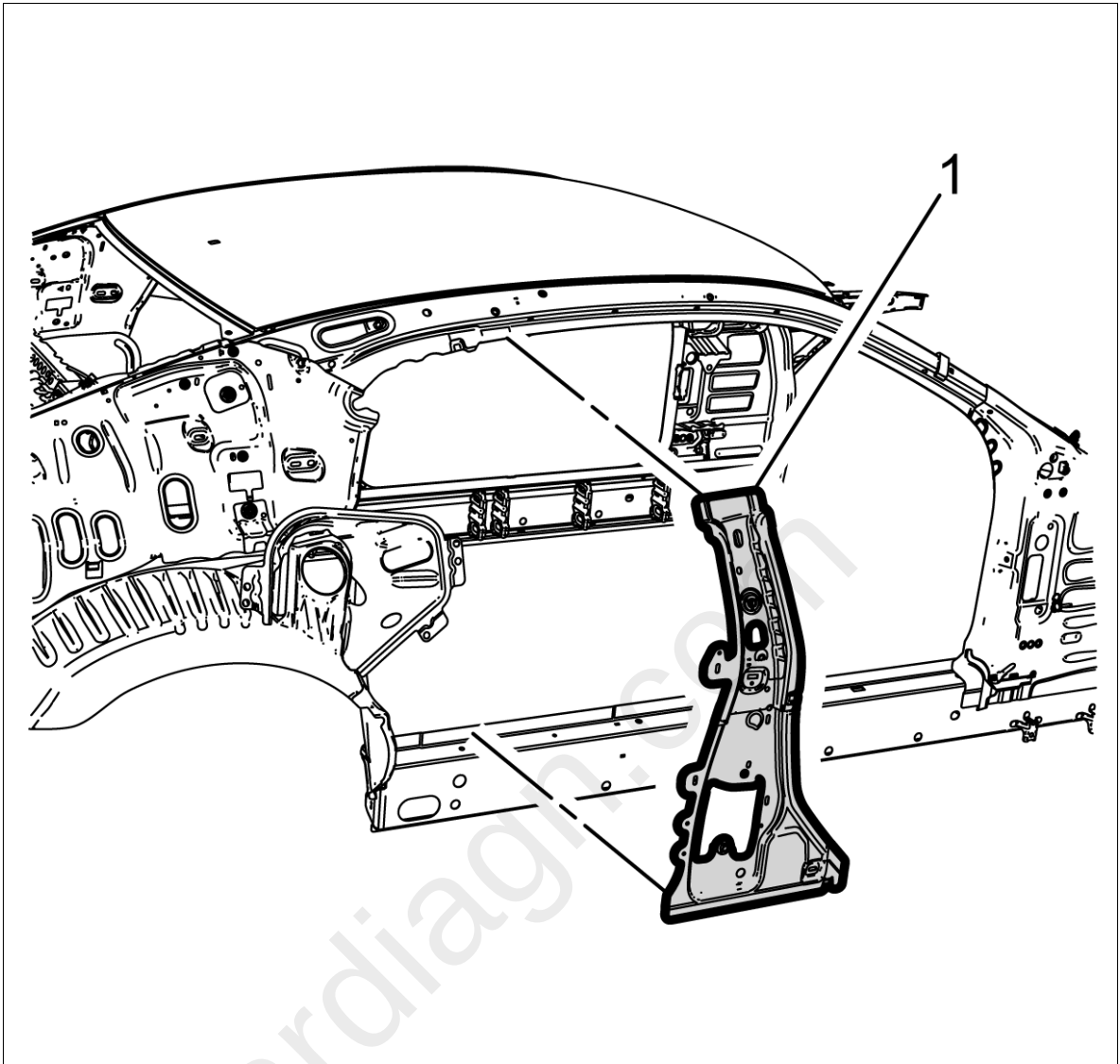
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

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

5. Remove all the necessary factory welds (1).

Fig 3: Center Pillar Inner Panel

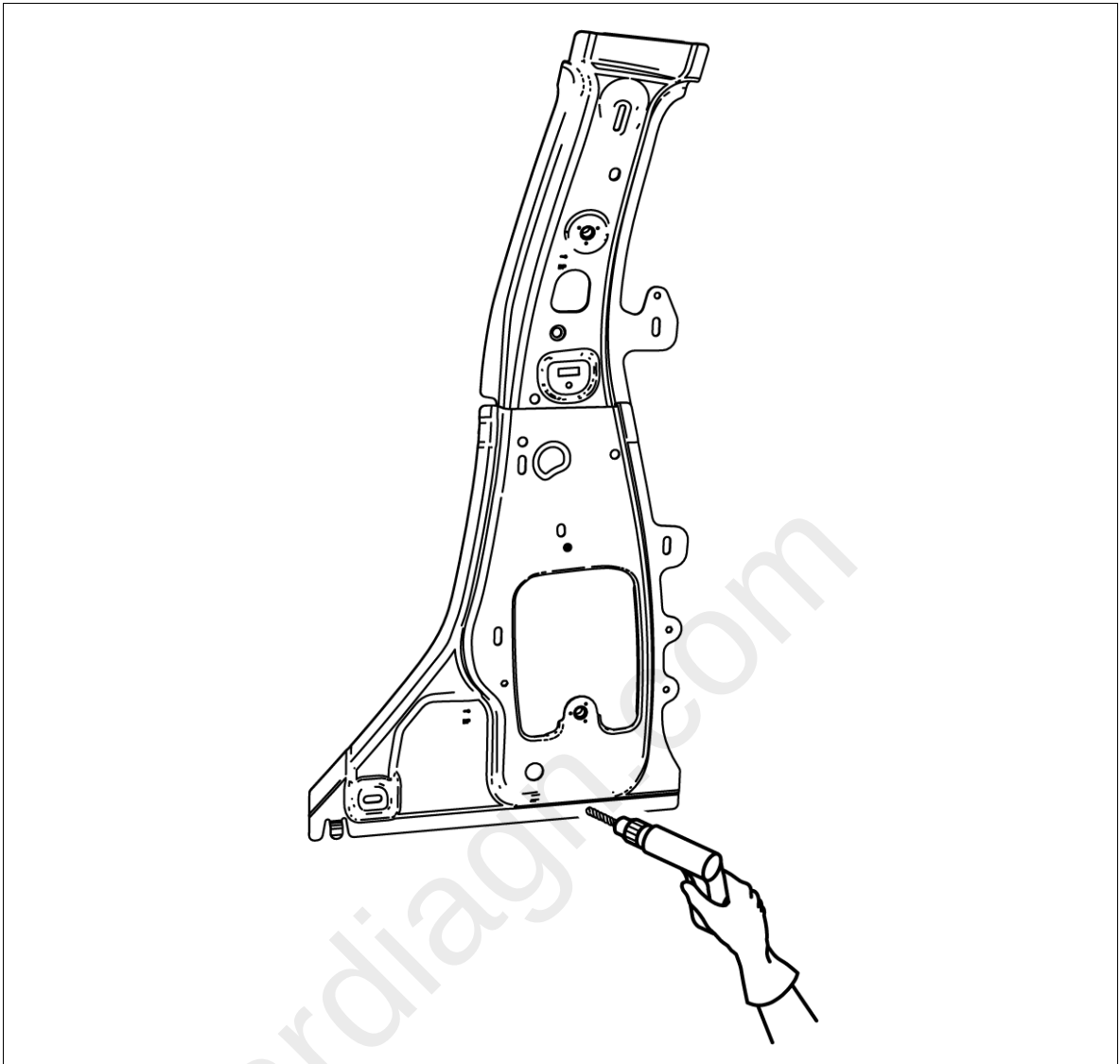


Courtesy of GENERAL MOTORS COMPANY

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

**REPAIR INSTRUCTIONS > CENTER PILLAR INNER PANEL REPLACEMENT >
INSTALLATION PROCEDURE**

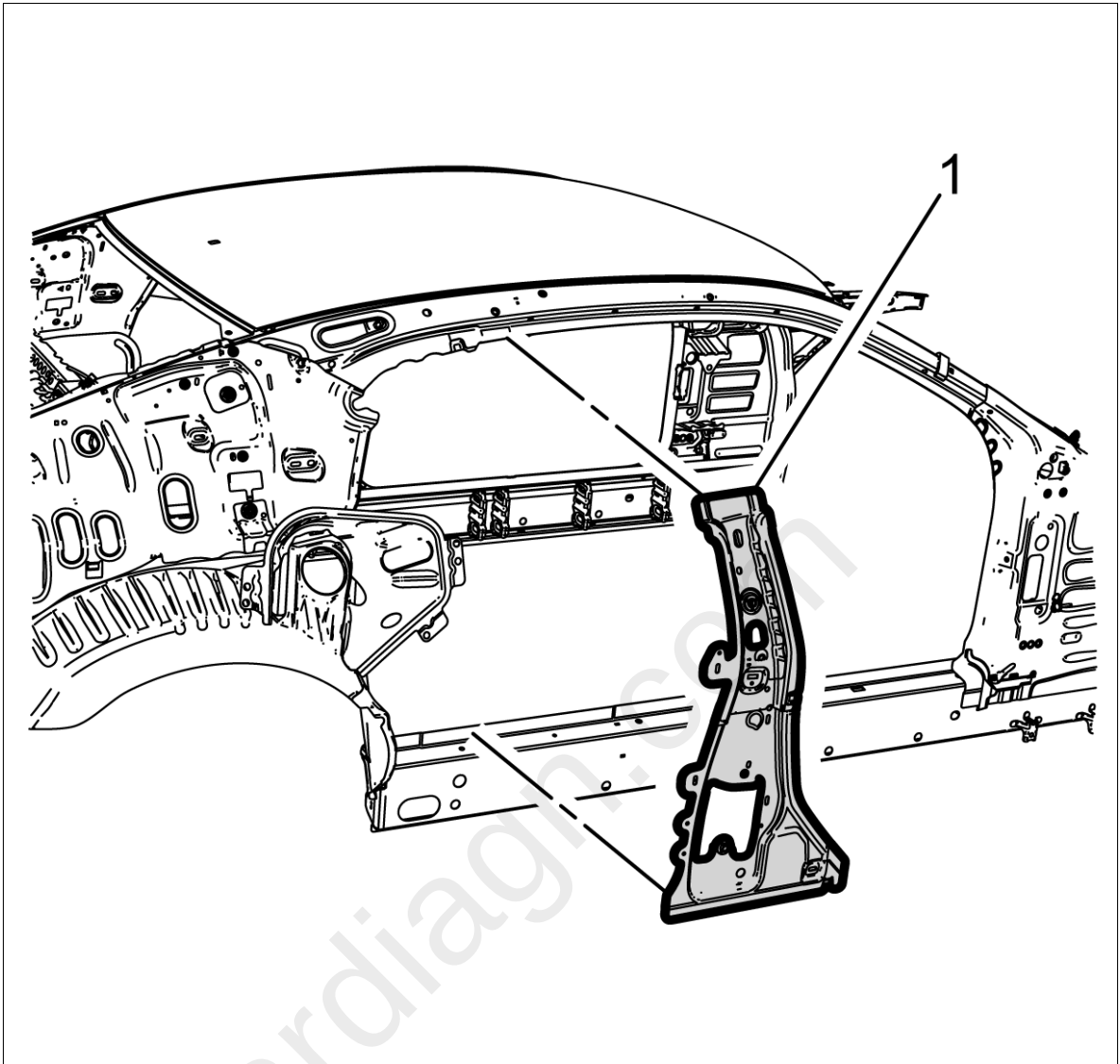
Fig 1: Clean And Prepare Attaching Surfaces For Welding



Courtesy of GENERAL MOTORS COMPANY

1. Clean and prepare the attaching surfaces for welding.

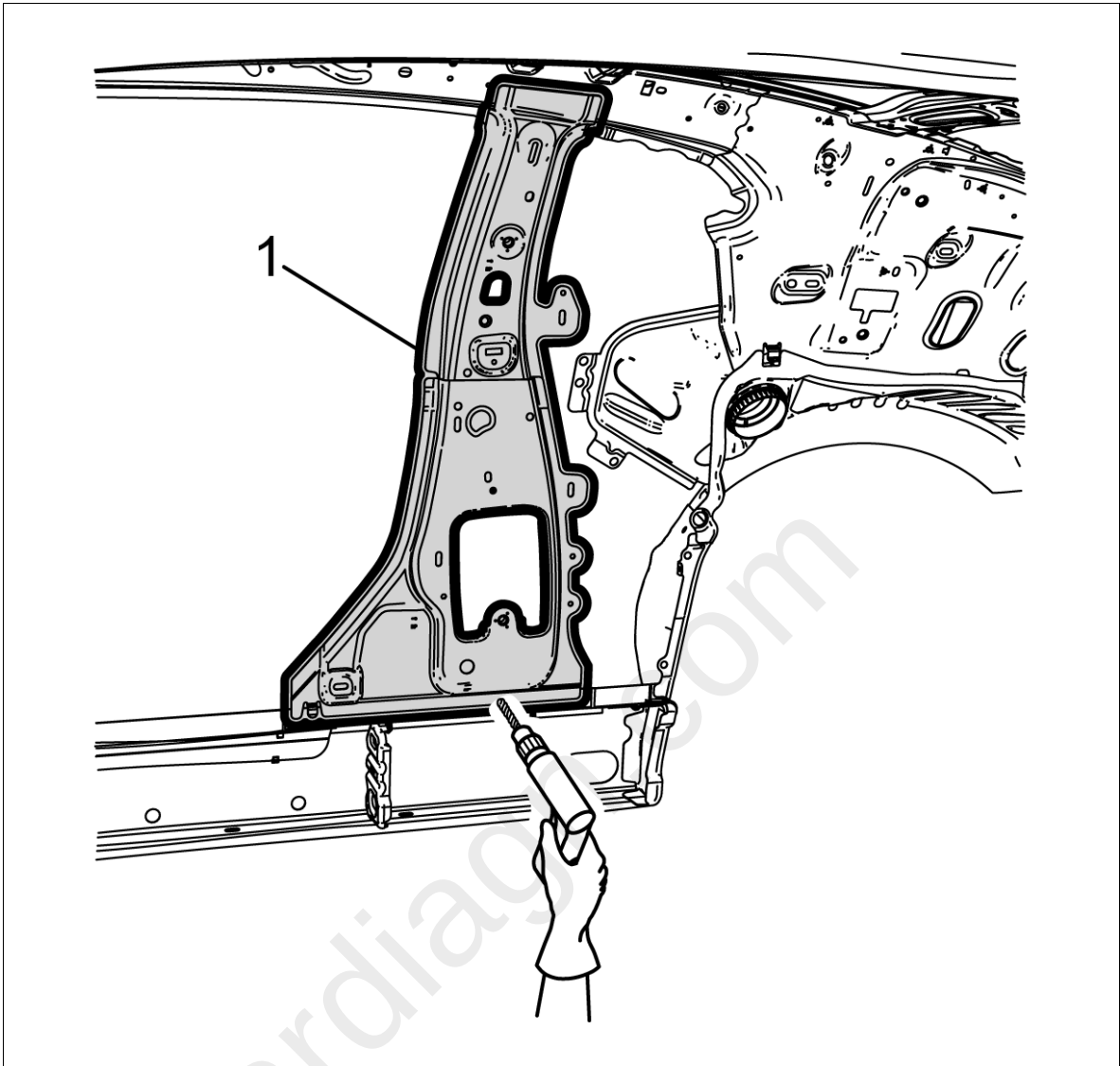
Fig 2: Center Pillar Inner Panel



Courtesy of GENERAL MOTORS COMPANY

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

Fig 3: Weld Accordingly At Original Weld Locations



Courtesy of GENERAL MOTORS COMPANY

5. Weld accordingly at original weld locations (1).
6. Clean all of the welded surfaces.
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Basecoat/Clearcoat Paint Systems .
9. Install all related panels and components.
10. Enable the SIR system and then connect the negative battery cable. SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > CENTER PILLAR OUTER PANEL REINFORCEMENT

REPLACEMENT > REMOVAL PROCEDURE

 WARNING:

Refer to Approved Equipment for Collision Repair Warning .

 WARNING:

Refer to Foam Sound Deadeners Warning .

 WARNING:

Refer to Battery Disconnect Warning .

 NOTE:

The center pillar outer panel reinforcement is made of Ultra High Strength Steel. Sectioning, or repair of Ultra High Strength Steel is not recommended. It should be replaced as a complete assembly at factory locations. Ultra High Strength Steel .

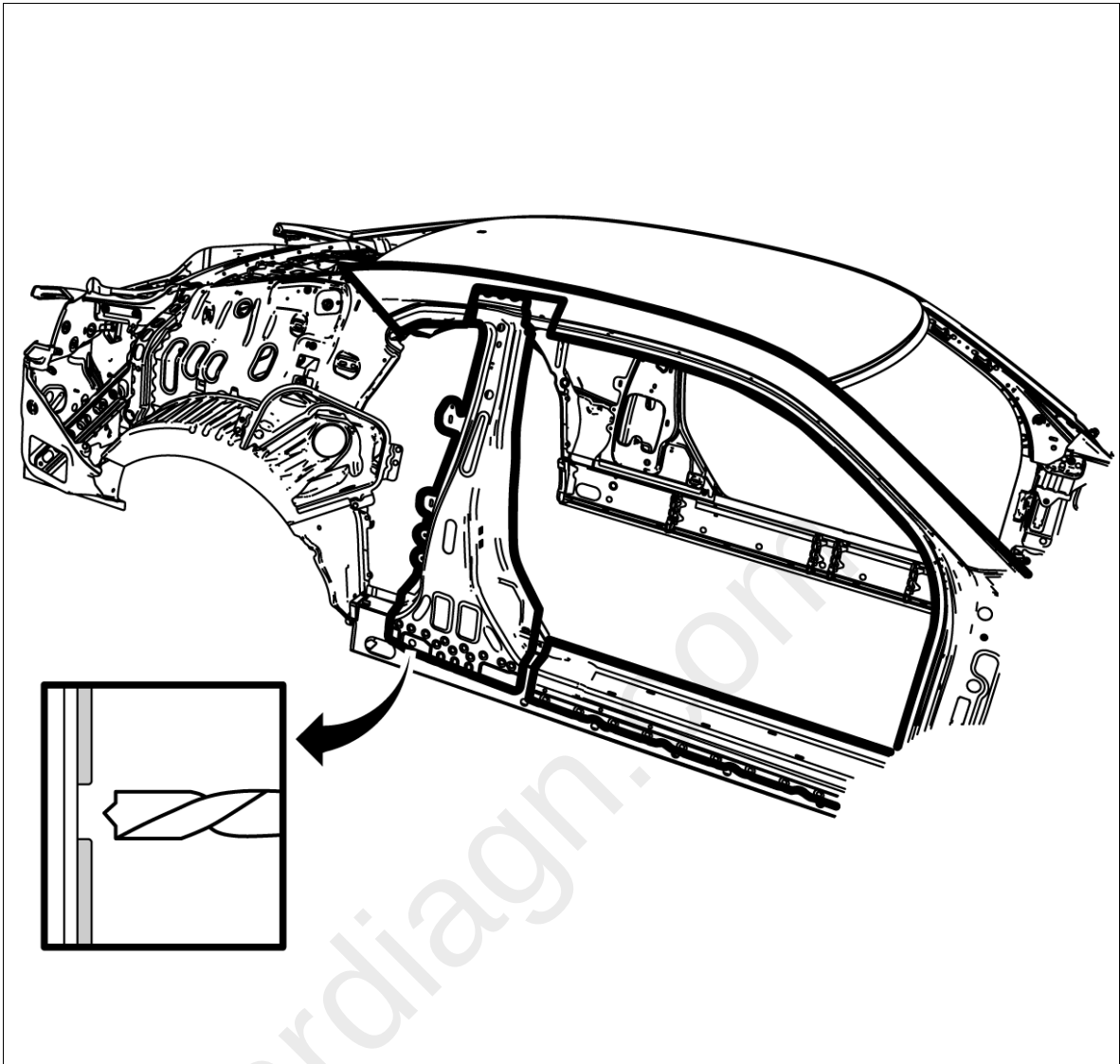
1. Disable the SIR System and then disconnect the negative battery cable. SIR Disabling and Enabling .
2. Remove all related panels and components.
3. Repair as much of the damaged area as possible. Dimensions - Body .
4. Remove the sealers and anti-corrosion materials from the repair area, as necessary. Anti-Corrosion Treatment and Repair .

 NOTE:

There are sectioning procedures available for various locations of the body side outer panel. The sectioning procedure and location should be chosen based on the extent of damage to the vehicle and other inner reinforcements that need to be replaced. Sectioning should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle. Refer to service procedures for recommended sectioning locations.

5. Remove body side center pillar and quarter panel section. Center Pillar Sectioning - Outer .

Fig 1: Remove All Necessary Factory Welds



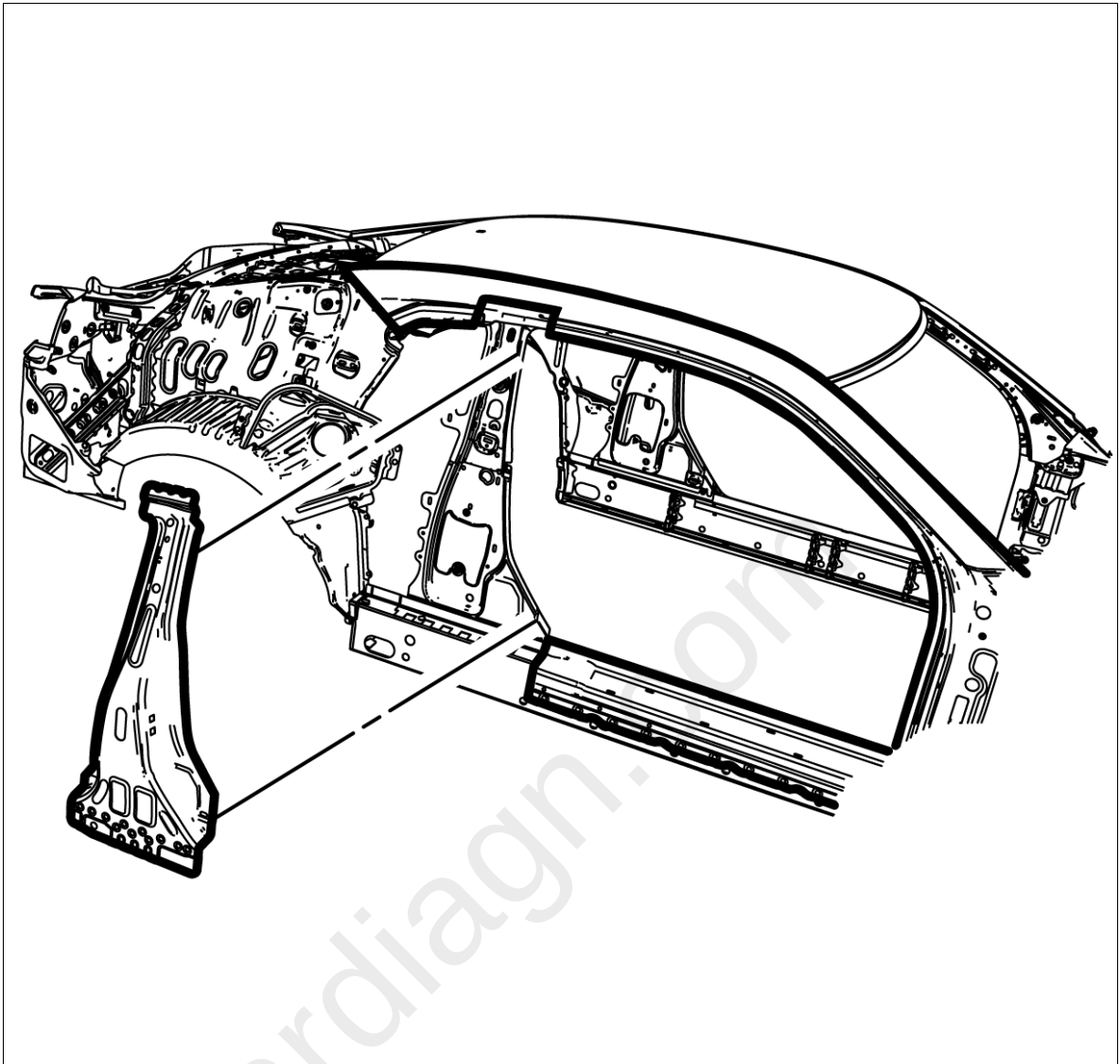
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

Record the number and location of welds for installation of the service assembly. The Center Pillar Outer Panel Reinforcement is made of ultra high strength steel. A pneumatic belt sanding tool using a 40 grit 3M Cubitron II sanding belt or a Kryo-Cobalt drill bit are the best tools to remove the spot welds attaching ultra high strength steel.

6. Remove all necessary factory welds (1).

Fig 2: Center Pillar Reinforcement



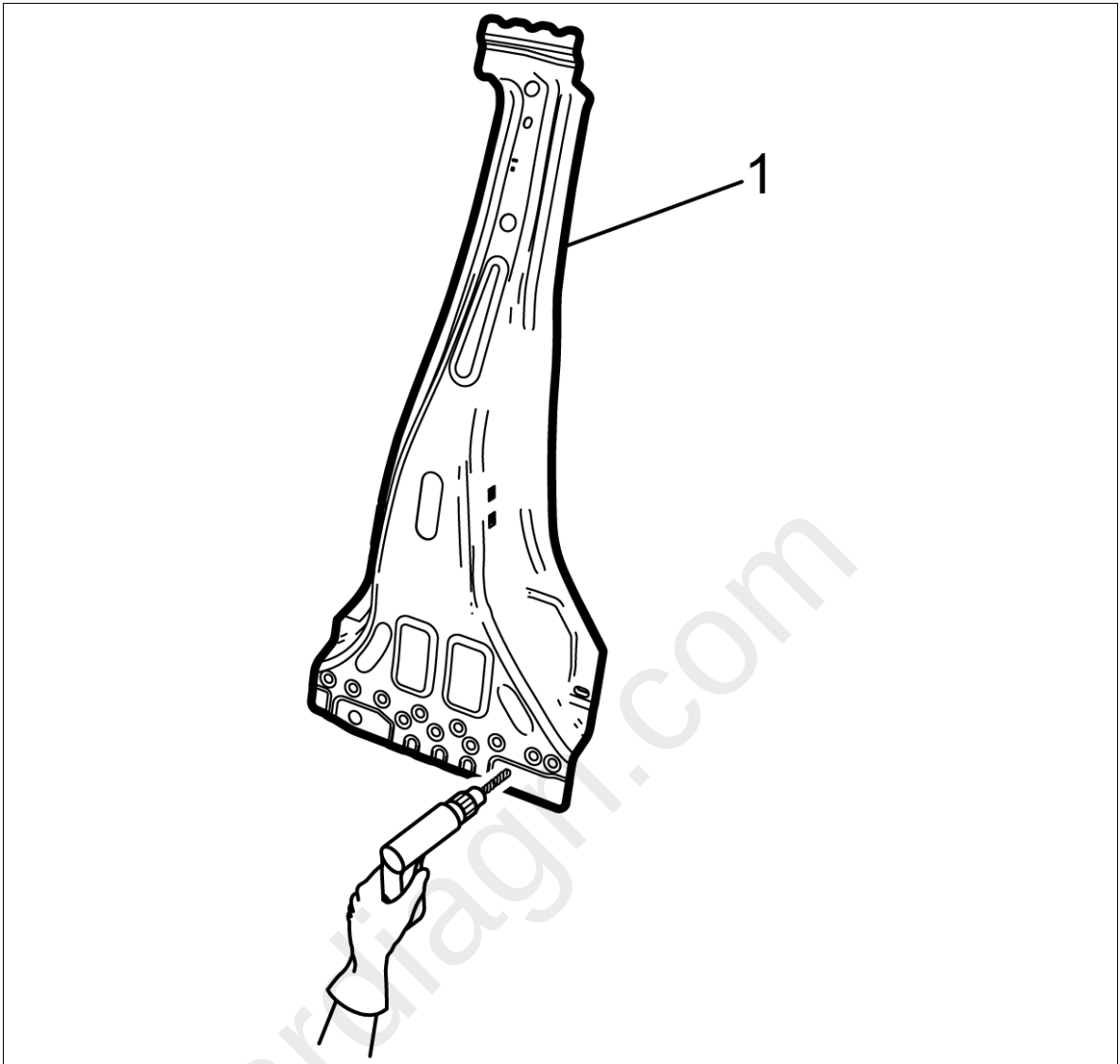
Courtesy of GENERAL MOTORS COMPANY

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

REPAIR INSTRUCTIONS > CENTER PILLAR OUTER PANEL REINFORCEMENT REPLACEMENT > INSTALLATION PROCEDURE

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

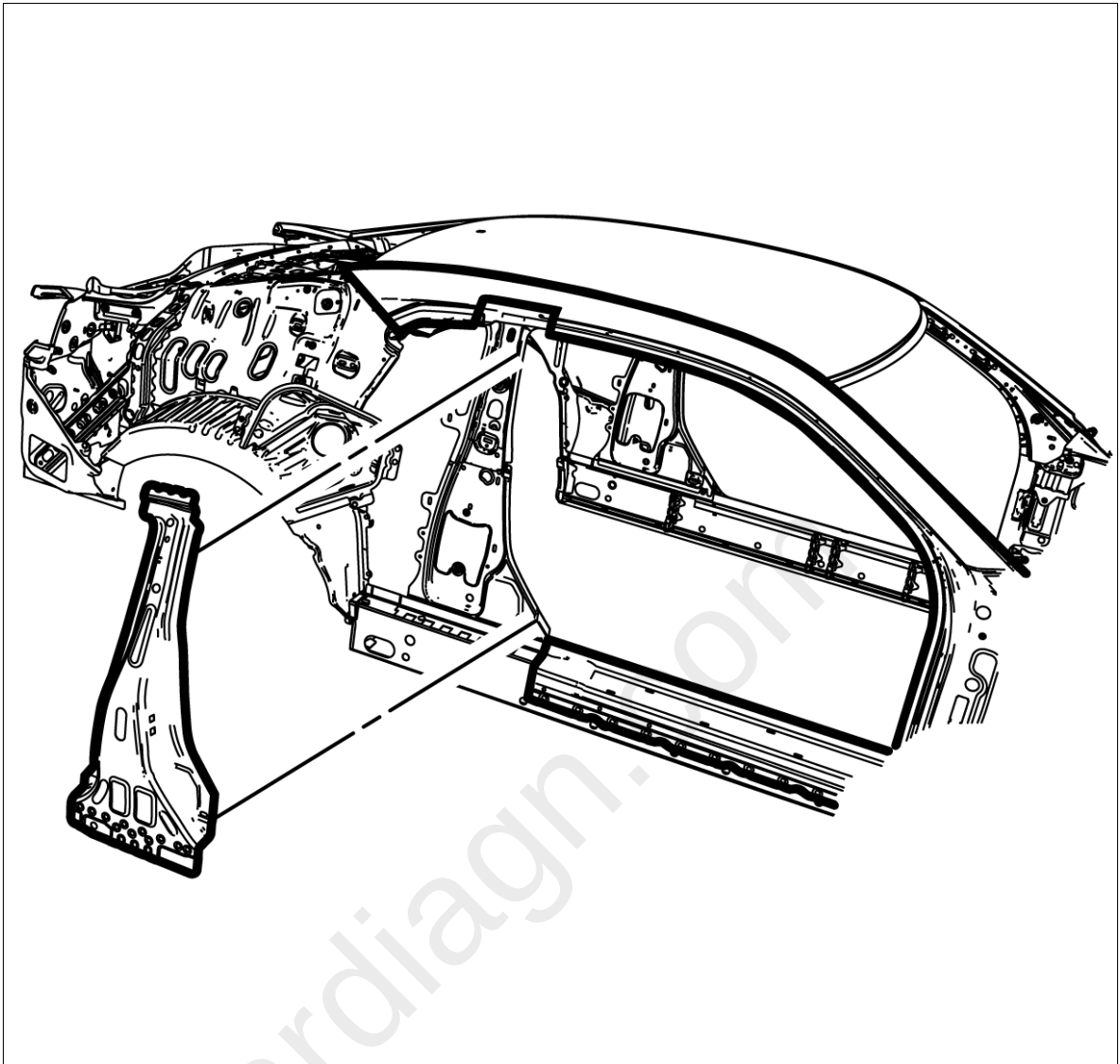
Fig 1: Drill 8mm (5/16in) For Plug Welding



Courtesy of GENERAL MOTORS COMPANY

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

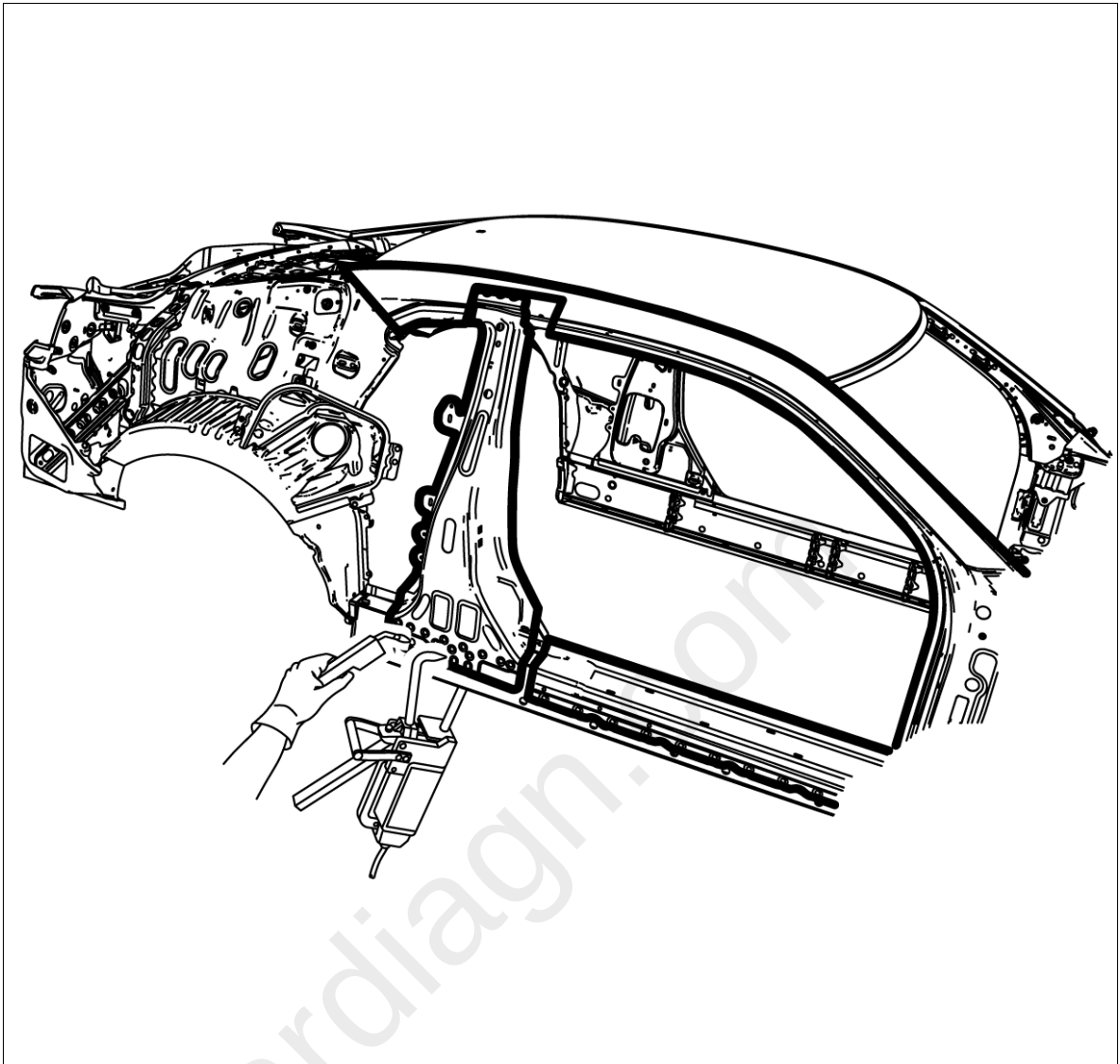
Fig 2: Center Pillar Reinforcement



Courtesy of GENERAL MOTORS COMPANY

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

Fig 3: Weld Accordingly At Original Weld Locations



Courtesy of GENERAL MOTORS COMPANY

8. Weld accordingly at the original weld locations (1).
9. Complete body side center pillar sectioning. Center Pillar Sectioning - Outer .
10. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Anti-Corrosion Treatment and Repair .
11. Paint the repaired area. Basecoat/Clearcoat Paint Systems .
12. Install all related panels and components.
13. Enable the SIR system and then connect the negative battery cable. SIR Disabling and Enabling .

PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .



WARNING:

Refer to Battery Disconnect Warning .

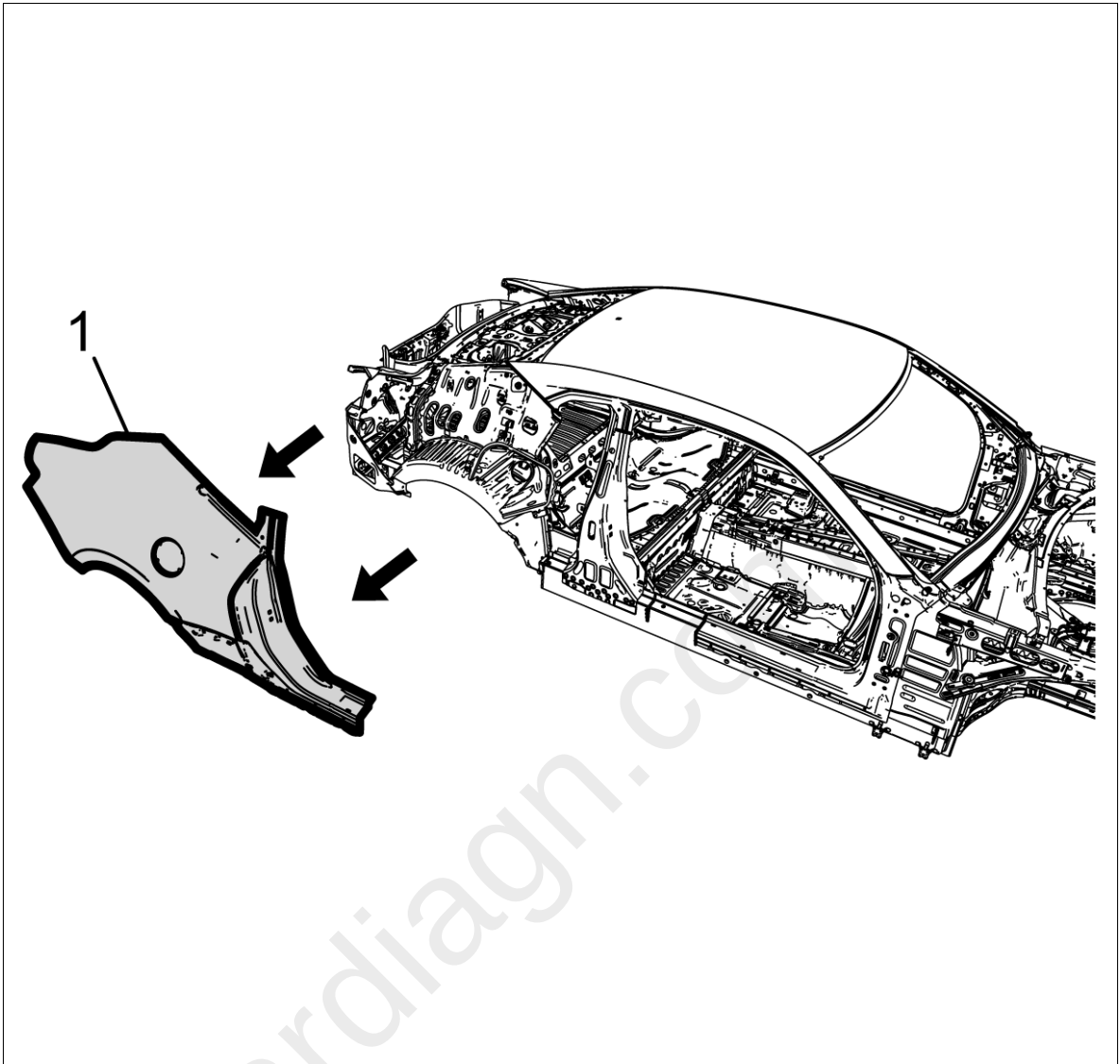


NOTE:

This procedure was developed to allow access for the complete replacement of the center pillar outer panel reinforcement without removing the roof panel. There are sectioning procedures available for various locations of the body side outer panel. The sectioning procedure and location should be chosen based on the extent of the damage to the vehicle and other inner reinforcements that need to be replaced. Sectioning should be performed only in the recommended areas. Failure to do so may compromise the structural integrity of the vehicle. Refer to other service procedures for additional sectioning locations.

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

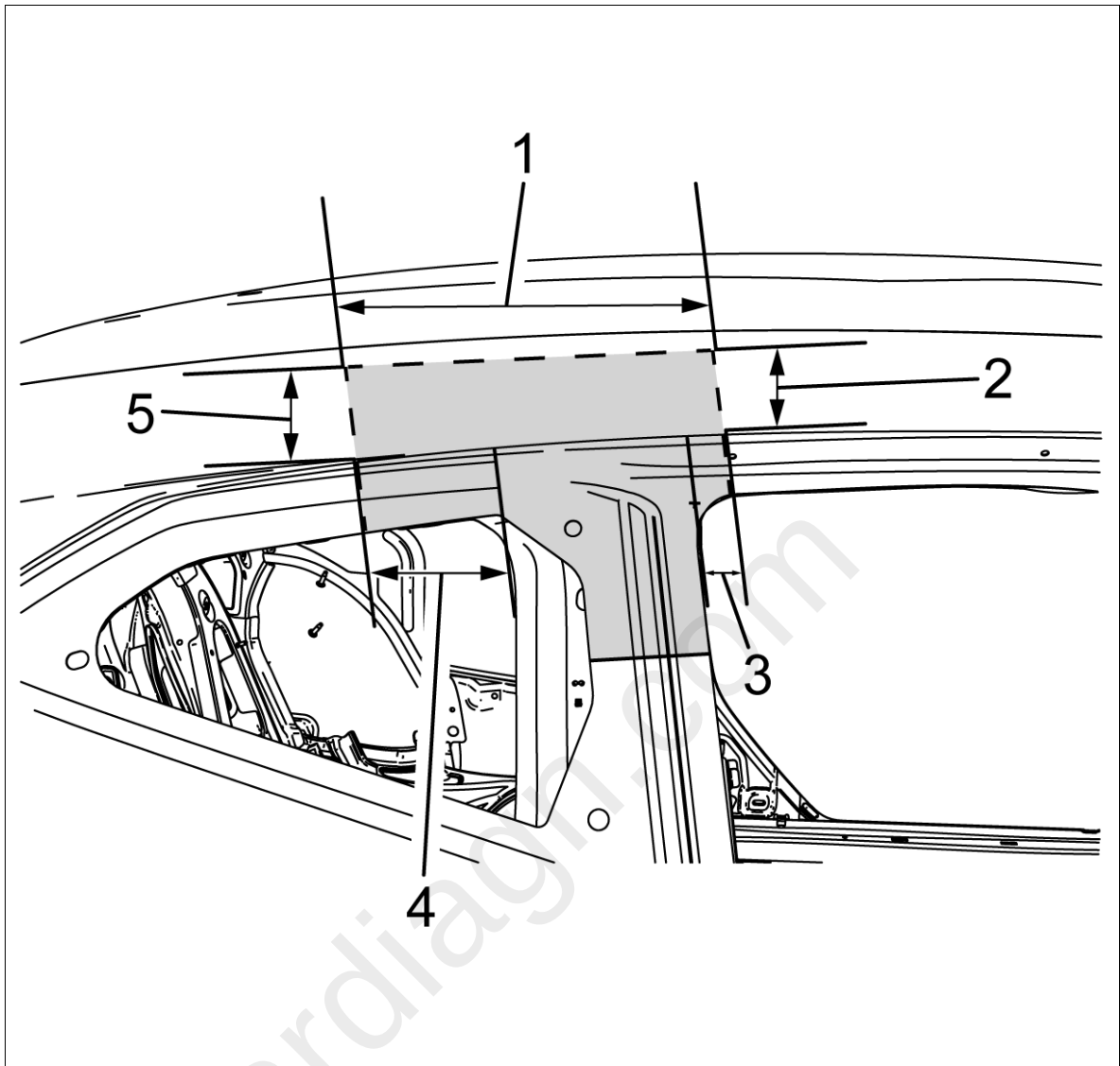
Fig 1: Remove Quarter Outer Panel



Courtesy of GENERAL MOTORS COMPANY

6. Remove the quarter outer panel. Refer to Quarter Outer Panel Sectioning .

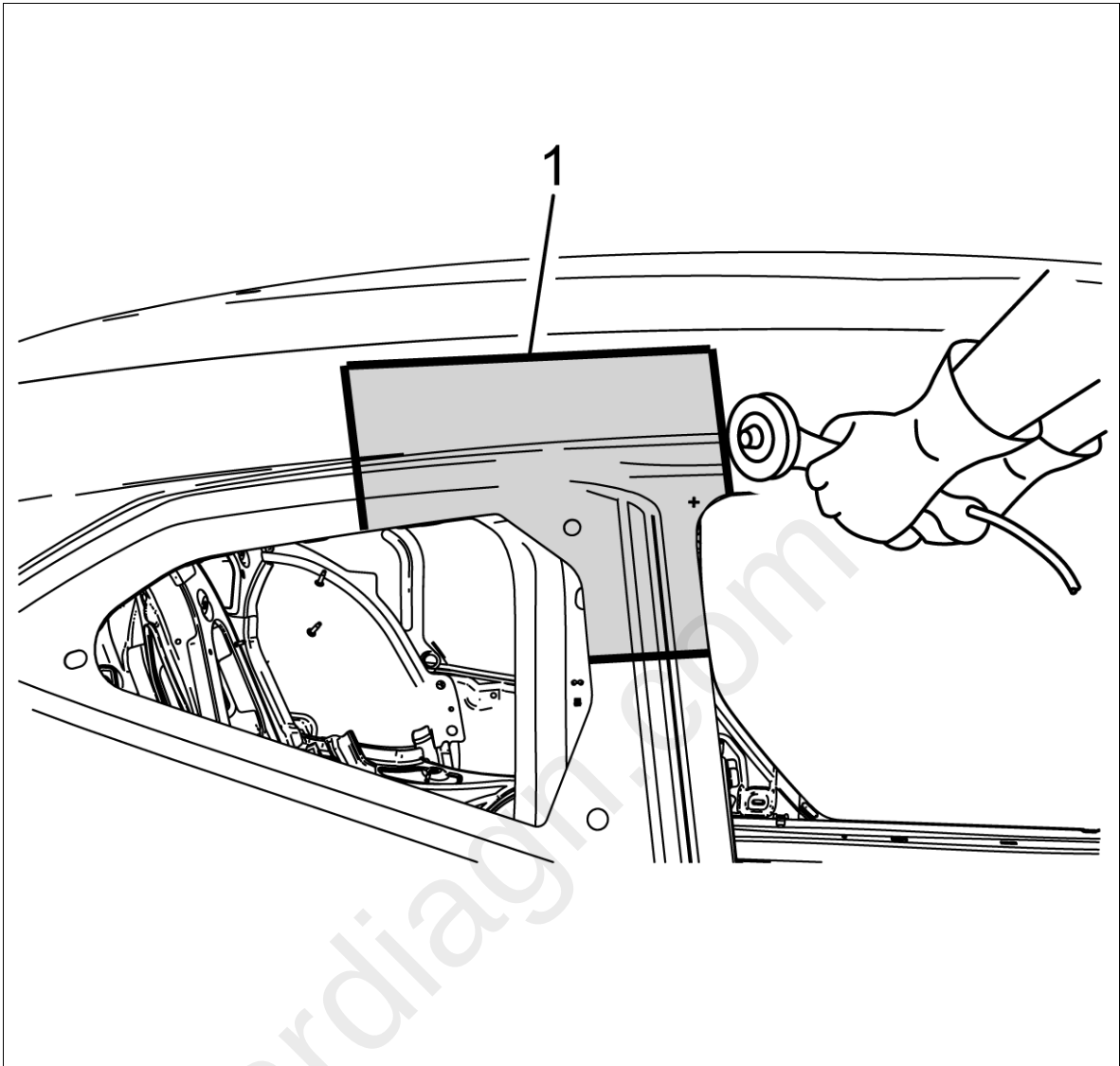
Fig 2: Measure Rearward From Front Edge Of Quarter Window



Courtesy of GENERAL MOTORS COMPANY

7. Measure rearward from the front edge of the quarter window opening 80 mm and mark a vertical line on the bodyside (4). Then measure forward from door opening flange 20 mm and mark a second vertical line on the bodyside panel (3). Measure up from lower show surface edge of bodyside 40 mm ahead of the center pillar and make a mark (2). Then measure up from lower show surface edge of bodyside 50 mm from the rear of the center pillar and make mark (5) Mark a line from marks 2 and 5 that is 210 mm long which is the top edge of the cut (1).

Fig 3: Cut Access Window To Center Pillar Reinforcement



Courtesy of GENERAL MOTORS COMPANY

 NOTE:

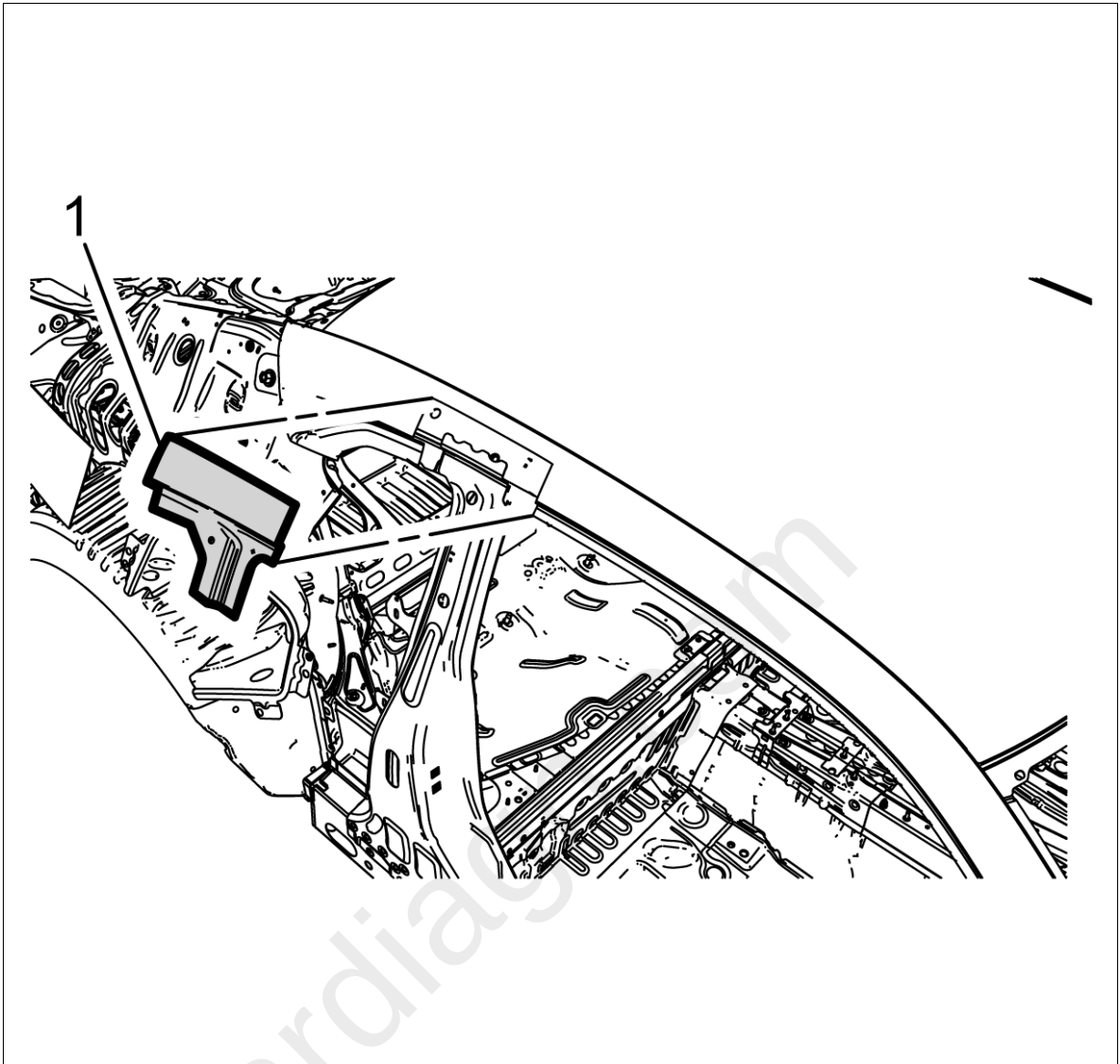
Record the number and location of the original welds for installation of the service assembly.

 NOTE:

Do not damage or cut the upper roof pillar reinforcements. The upper roof pillar reinforcement is made of Ultra High Strength Steel. Sectioning or repair of Ultra High Strength Steel is not recommended. Refer to Dimensions - Body .

8. Using the cut lines made in step 7, cut the access window to the center pillar reinforcement.

Fig 4: Center Pillar Reinforcement Access Panel

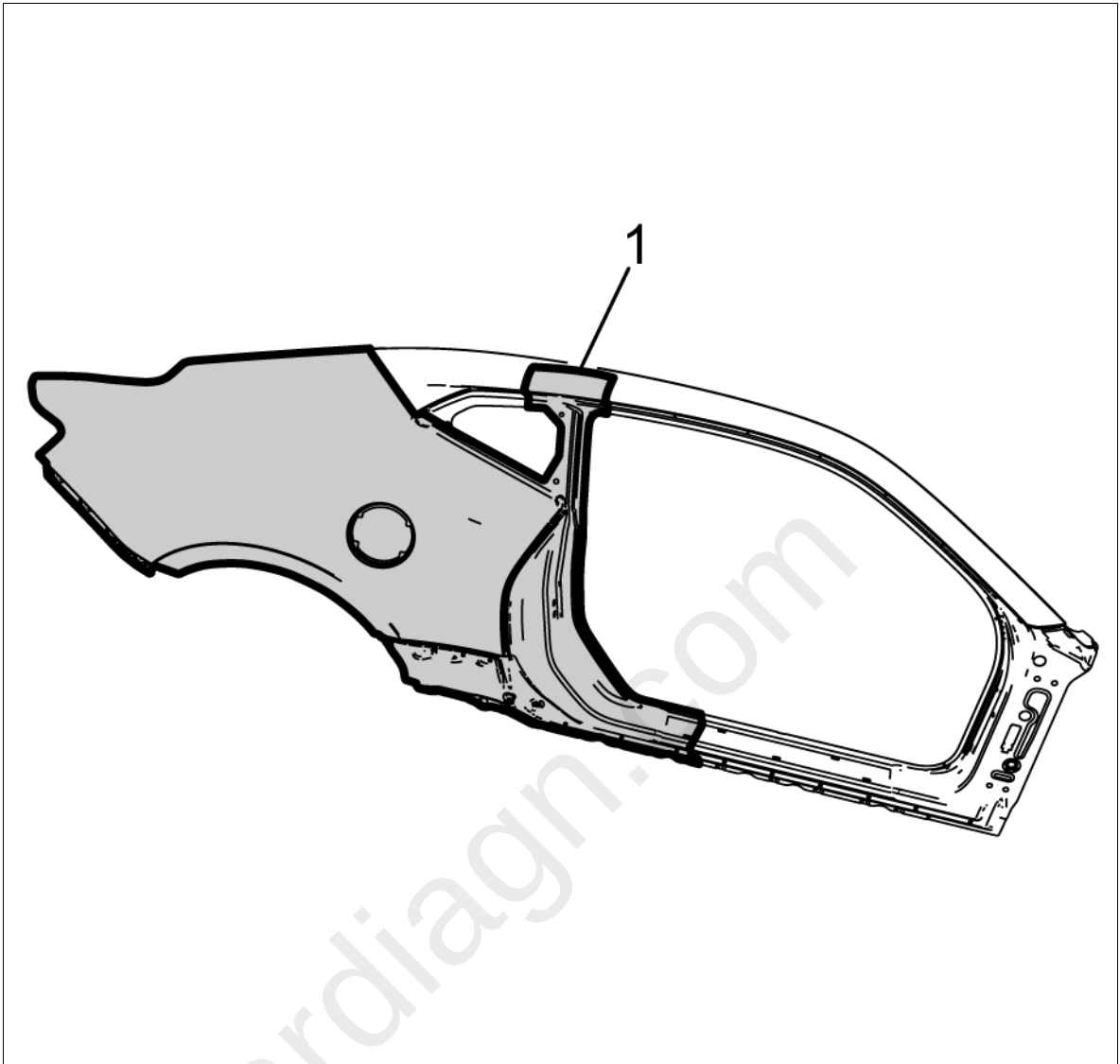


Courtesy of GENERAL MOTORS COMPANY

9. Remove center pillar reinforcement access panel.

**REPAIR INSTRUCTIONS > CENTER PILLAR SECTIONING - OUTER > INSTALLATION
PROCEDURE**

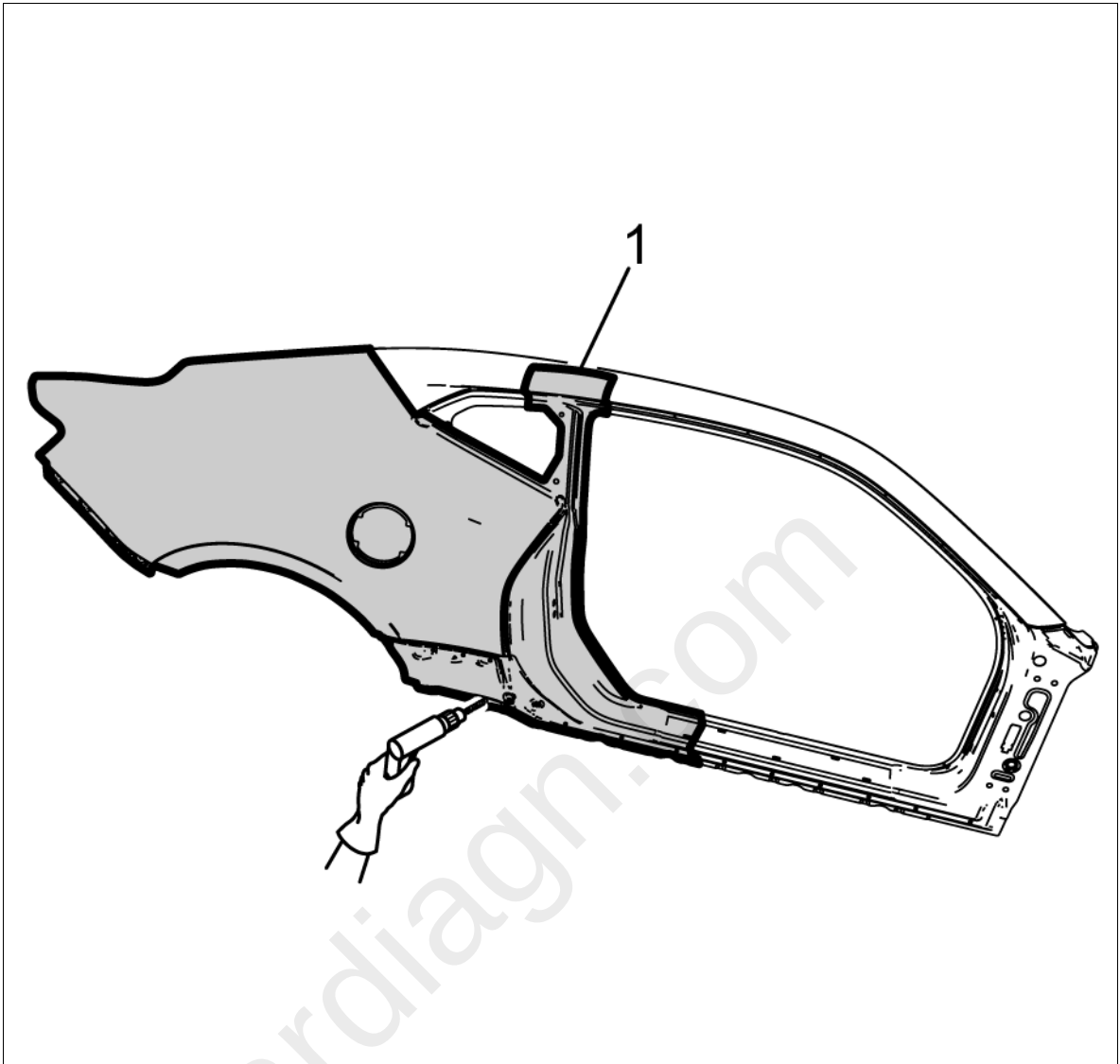
Fig 1: Quarter Panel And Access Panel



Courtesy of GENERAL MOTORS COMPANY

1. When replacing quarter panel and Center Pillar access panel, include quarter panel and access panel in one piece for the installation to eliminate an additional joint (1).

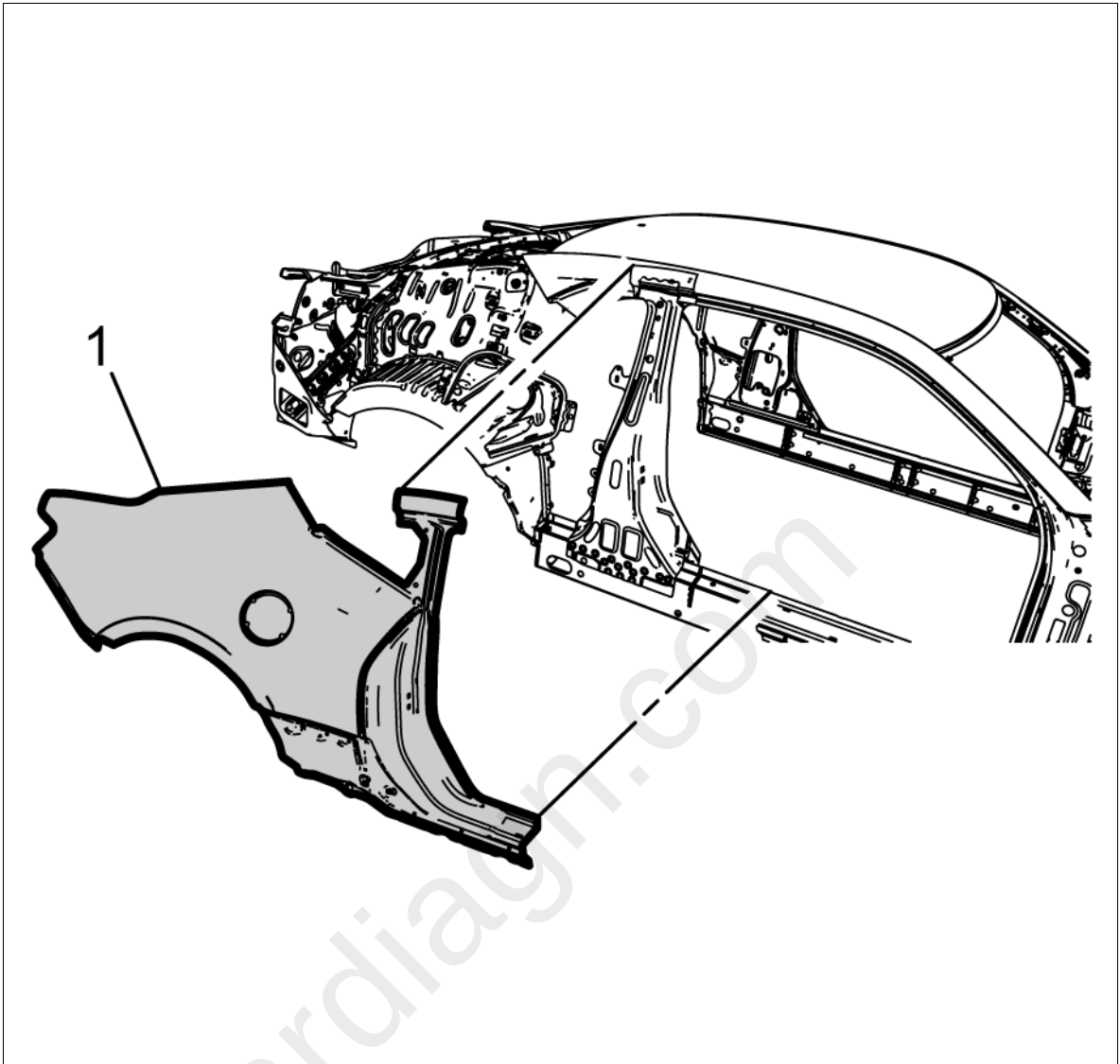
Fig 2: Prepare All Mating Surfaces For Welding



Courtesy of GENERAL MOTORS COMPANY

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

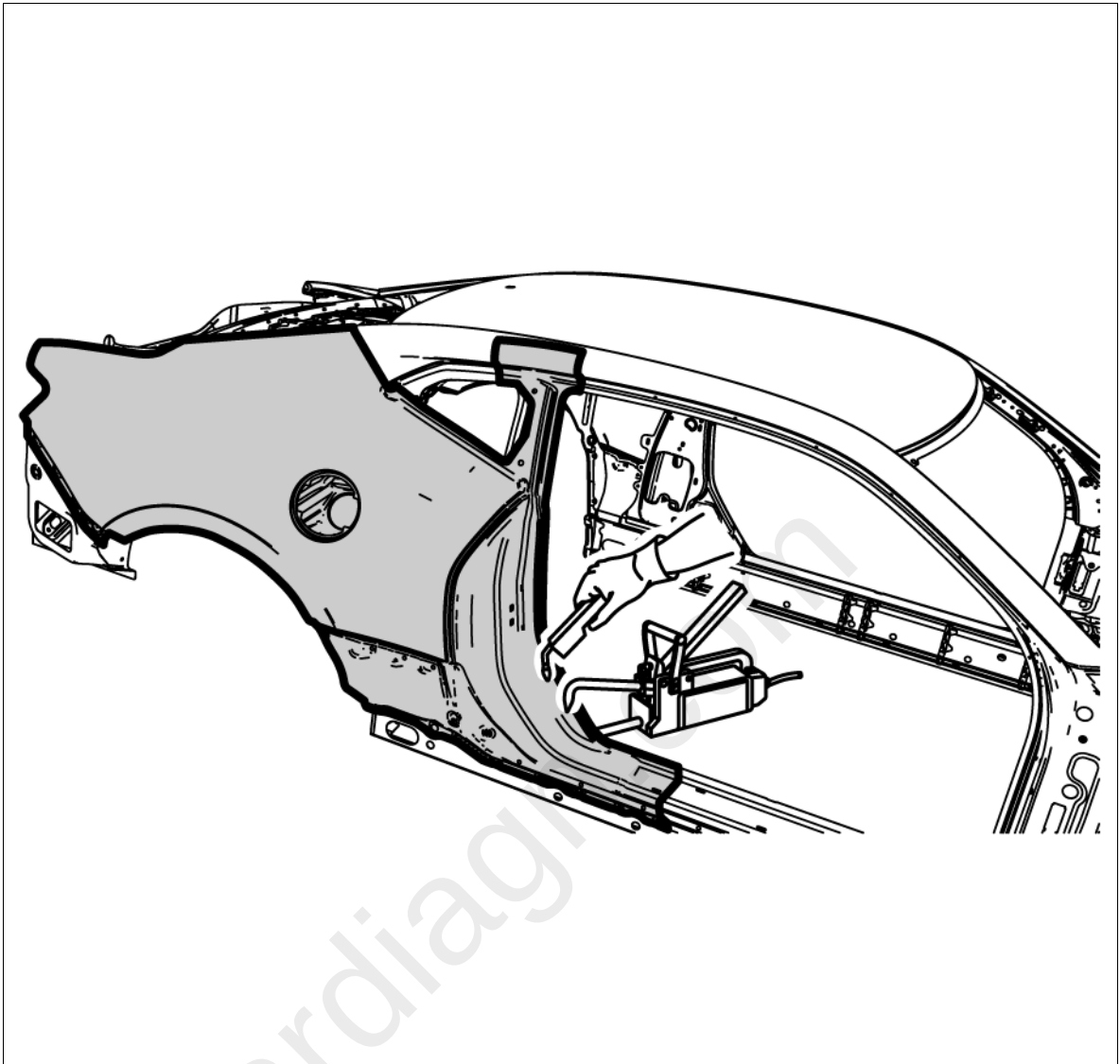
Fig 3: Quarter Panel Section With Center Pillar Access Panel



Courtesy of GENERAL MOTORS COMPANY

4. Position the Quarter Panel section with the Center Pillar Access panel attached (1) to the vehicle using 3-dimensional measuring equipment. Clamp the panel in place.

Fig 4: Weld Perimeter Of Part At Original Spot Weld Locations



Courtesy of GENERAL MOTORS COMPANY

5. Weld the perimeter of the part at the original spot weld locations. To create a solid weld with minimum heat distortion, make stitch welds along the 25 mm overlap joints with equal gaps between the welds. Then go back and complete the welds to create a solid weld joint (1).
6. Clean and prepare all of the welded surfaces.
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair .
8. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems .
9. Install all of the related panels and components.
10. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection
11. Enable the SIR system. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > FRONT SIDE DOOR OUTER PANEL REPLACEMENT > REMOVAL PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .



WARNING:

Refer to Foam Sound Deadeners Warning .



WARNING:

Refer to Battery Disconnect Warning .

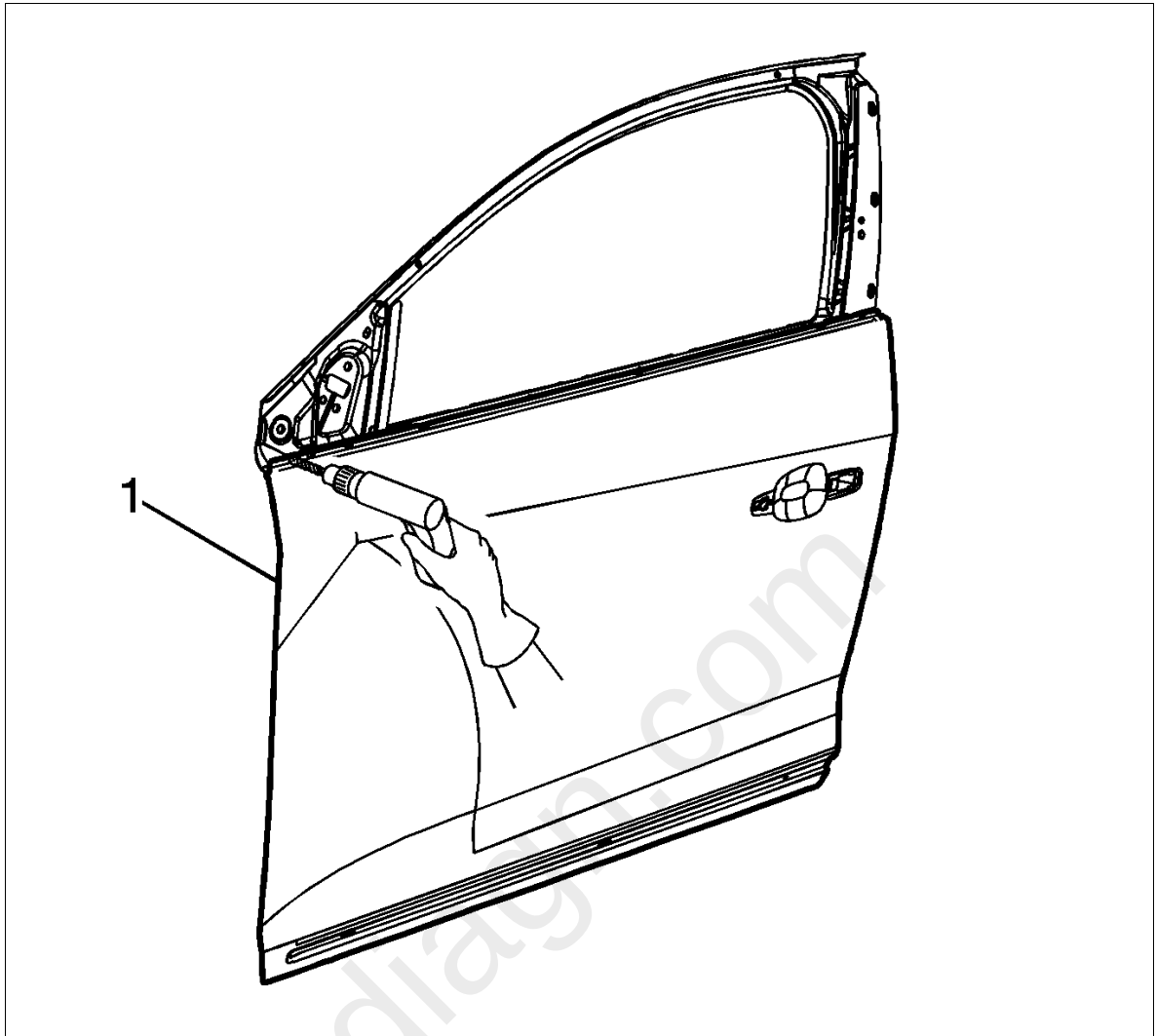


NOTE:

Before beginning the repair, refer to Metal Panel Bonding (Steel) for proper adhesive applicator preparations and general information.

1. Disable the SIR system and then disconnect the negative battery cable. Refer to SIR Disabling and Enabling .
2. Remove the door from the vehicle. Refer to Front Side Door Replacement .
3. Remove all related panels and components.

Fig 1: Drilling Holes in Side Door Outer Panel



Courtesy of GENERAL MOTORS COMPANY

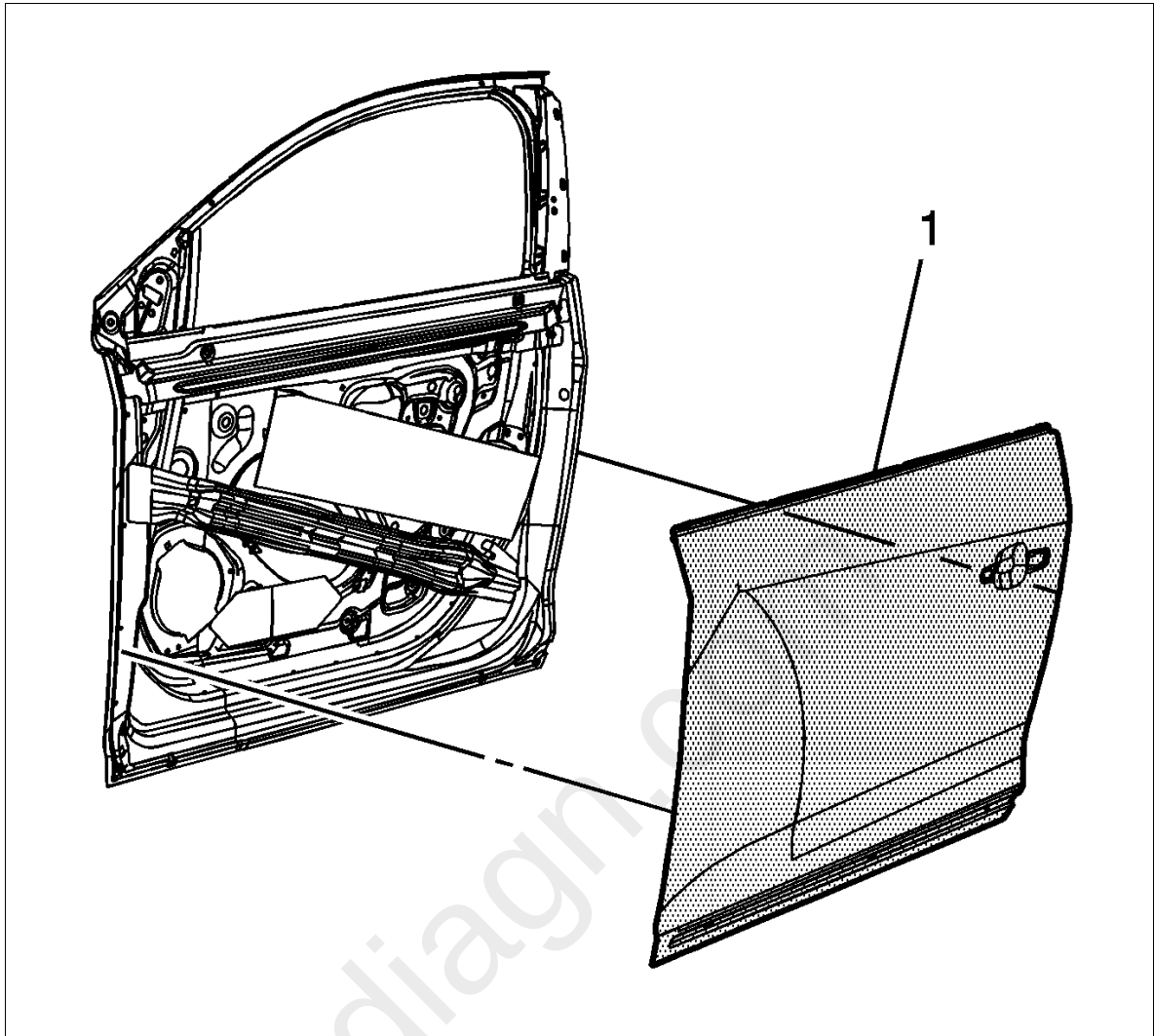


NOTE:

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

4. Remove factory welds as necessary (1).
5. Grind the edges of the door outer panel to separate the outer door panel from the door shell.

Fig 2: Front Side Door Outer Panel



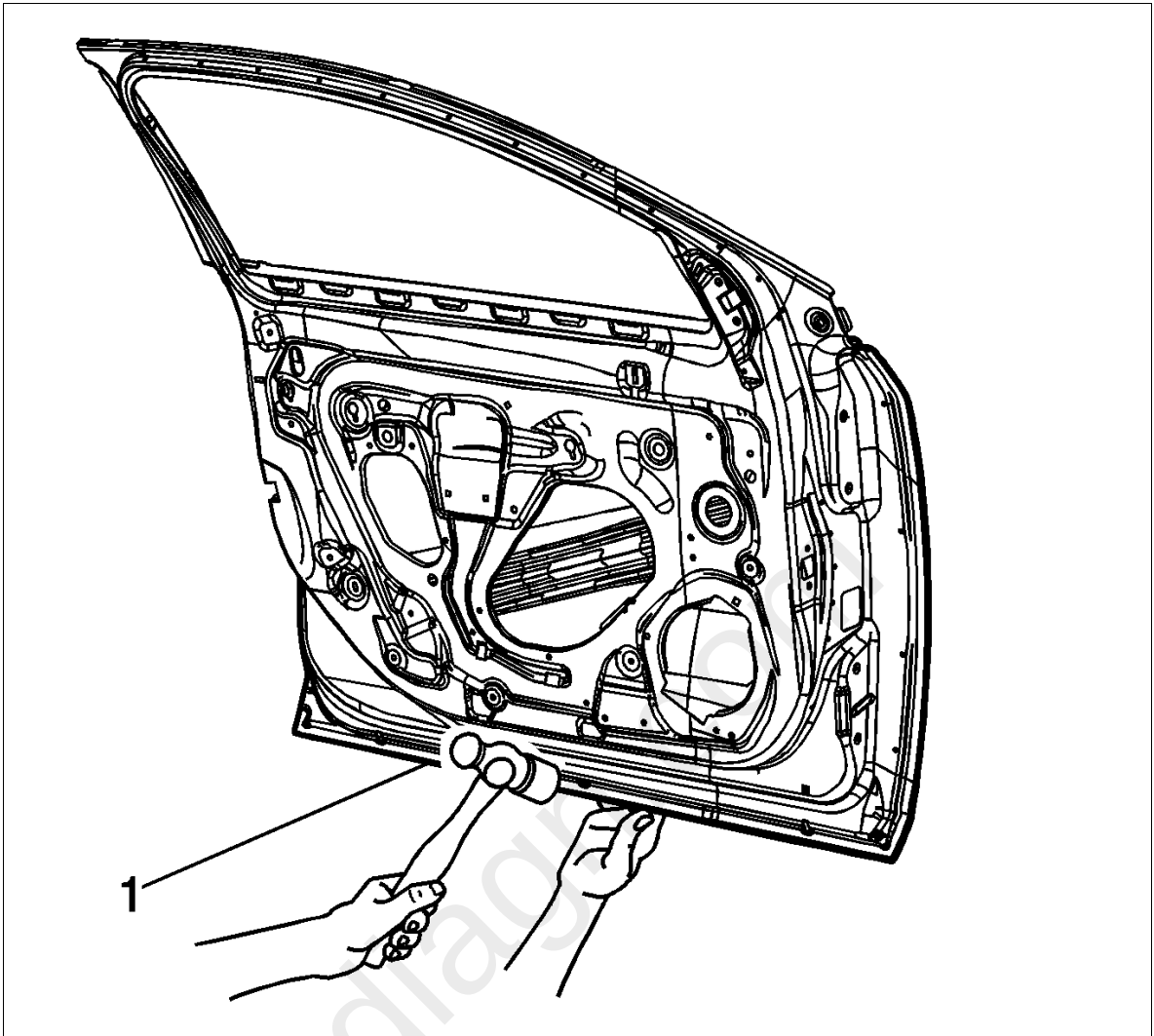
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

Inspection of the door guard beam for damage must be performed before replacement of the door outer panel. The door guard beam is made of Ultra High Strength Steel. If damage to the door guard beam is found the complete door assembly must be replaced. Failure to do so may compromise the structural integrity of the vehicle and may cause personal injury if the vehicle is involved in a collision. Refer to Ultra High Strength Steel .

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

Fig 3: Straightening Edges Of Front Side Door Outer Panel

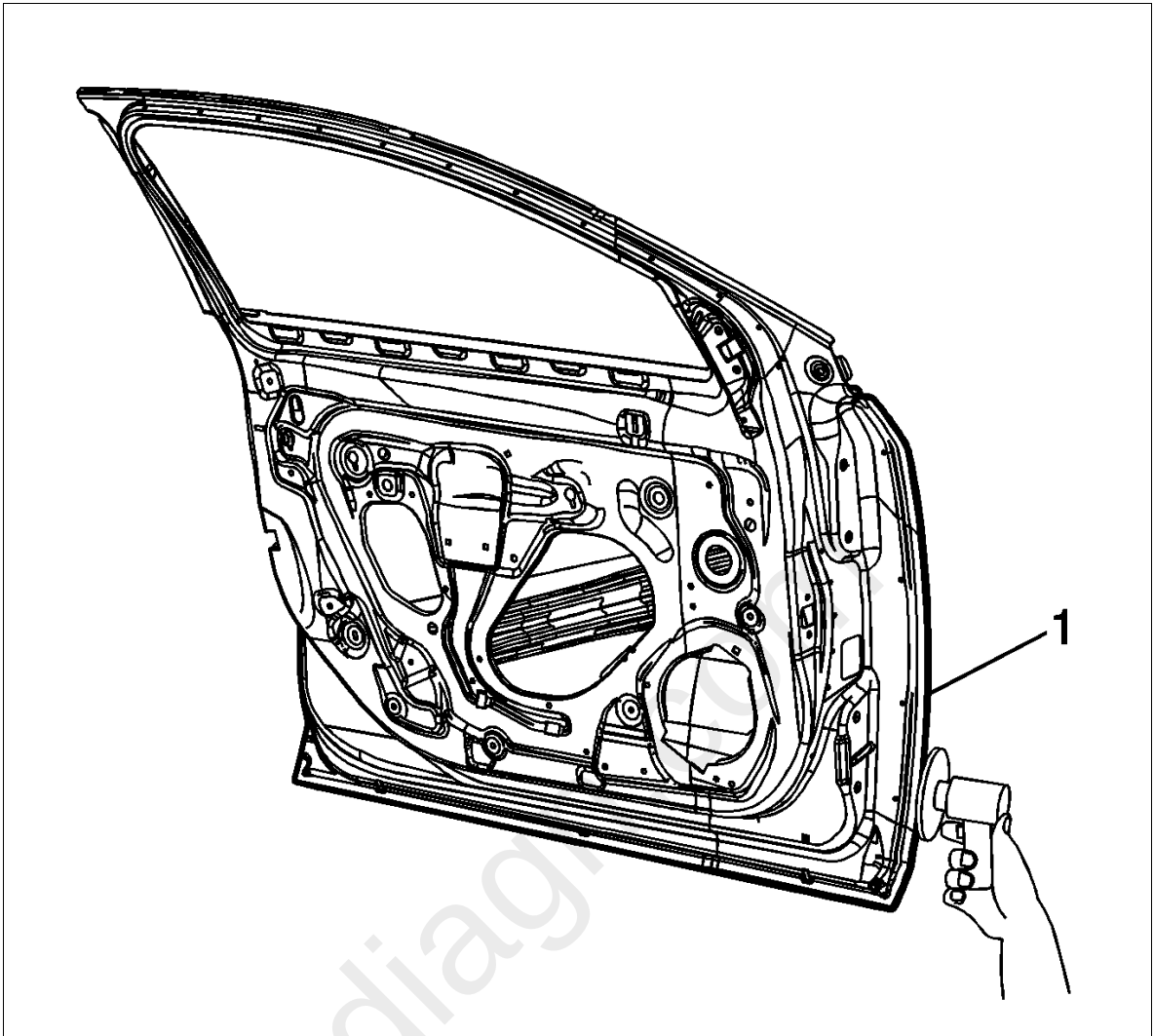


Courtesy of GENERAL MOTORS COMPANY

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

**REPAIR INSTRUCTIONS > FRONT SIDE DOOR OUTER PANEL REPLACEMENT >
INSTALLATION PROCEDURE**

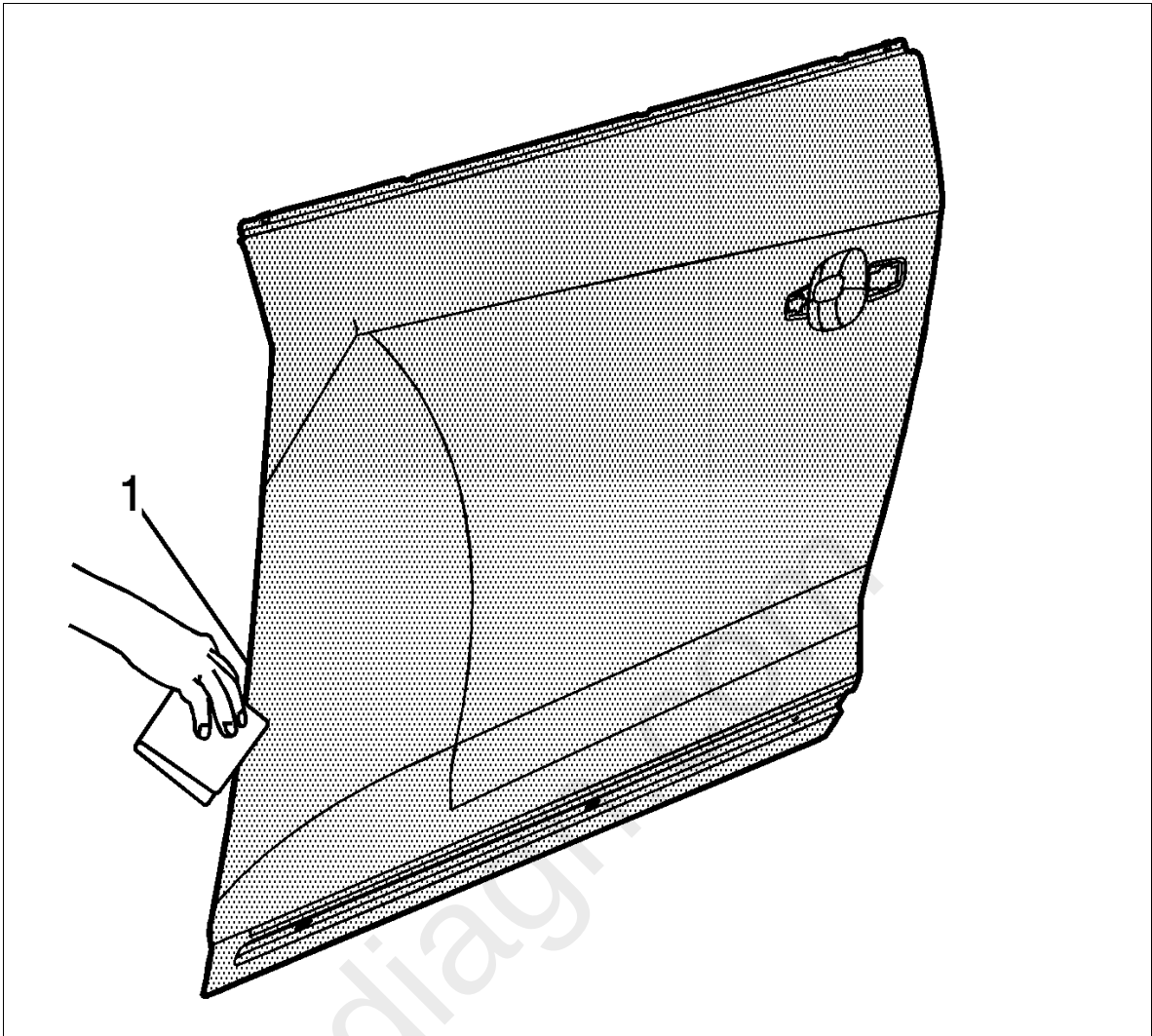
Fig 1: Grinding Front Side Door Outer Panel Mating Flanges



Courtesy of GENERAL MOTORS COMPANY

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

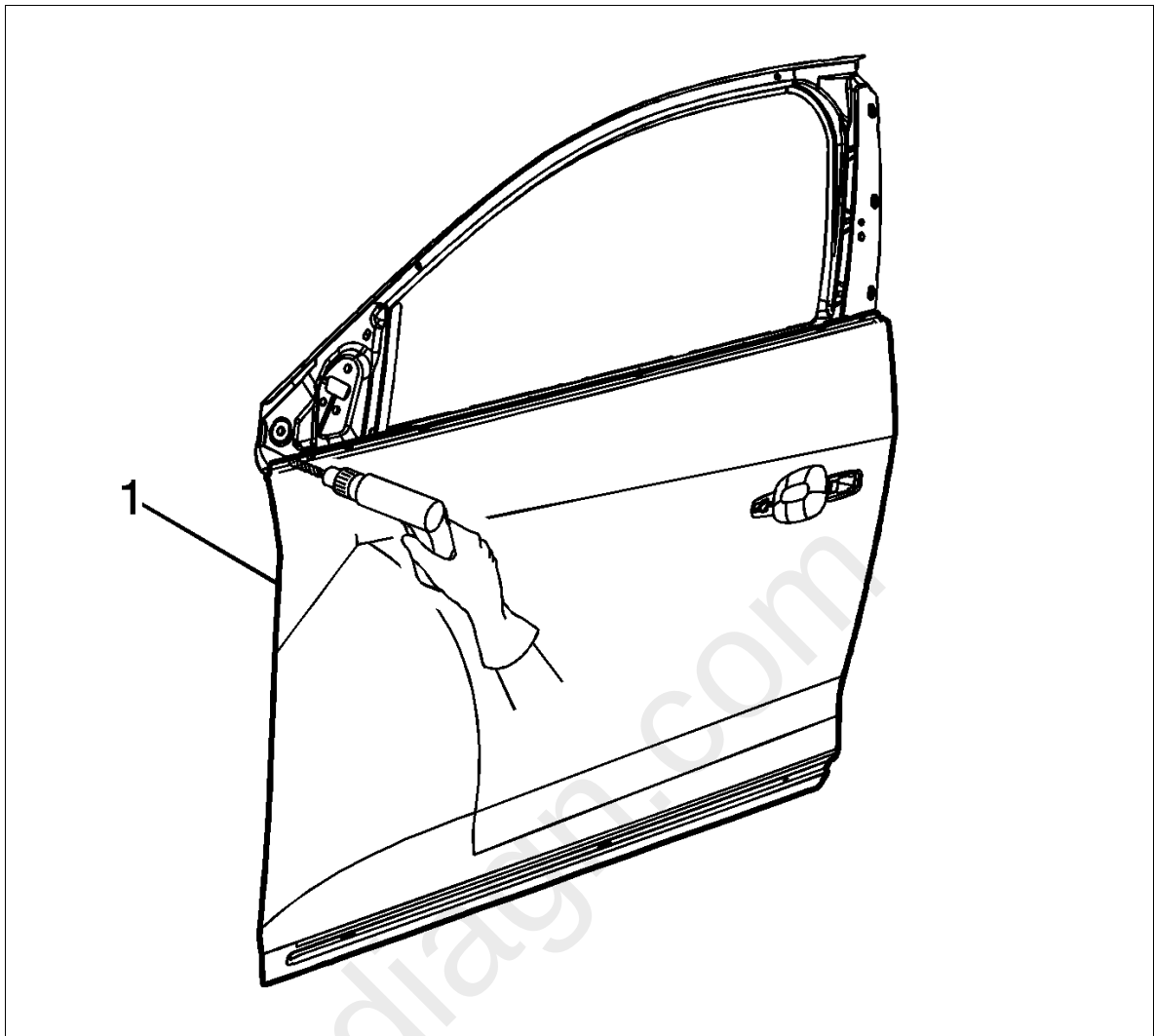
Fig 2: Scuffing Front Side Door Outer Panel Opposing Mating Surfaces



Courtesy of GENERAL MOTORS COMPANY

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

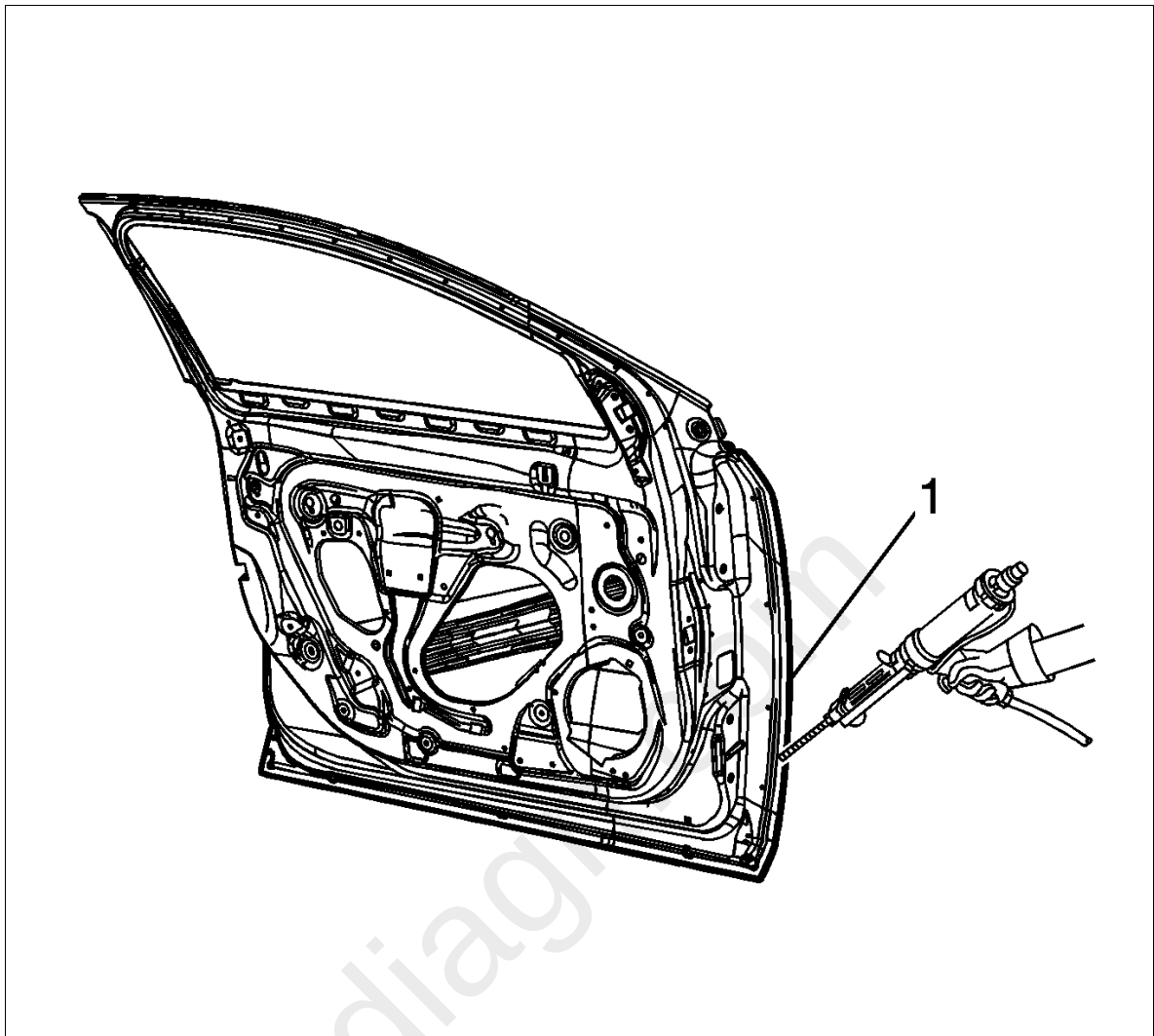
Fig 3: Drilling Holes in Side Door Outer Panel



Courtesy of GENERAL MOTORS COMPANY

3. Clean and prepare the mating surfaces.

Fig 4: Applying Bead Of Metal Panel Bonding Adhesive To Front Side Door Outer Panel



Courtesy of GENERAL MOTORS COMPANY

 NOTE:

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

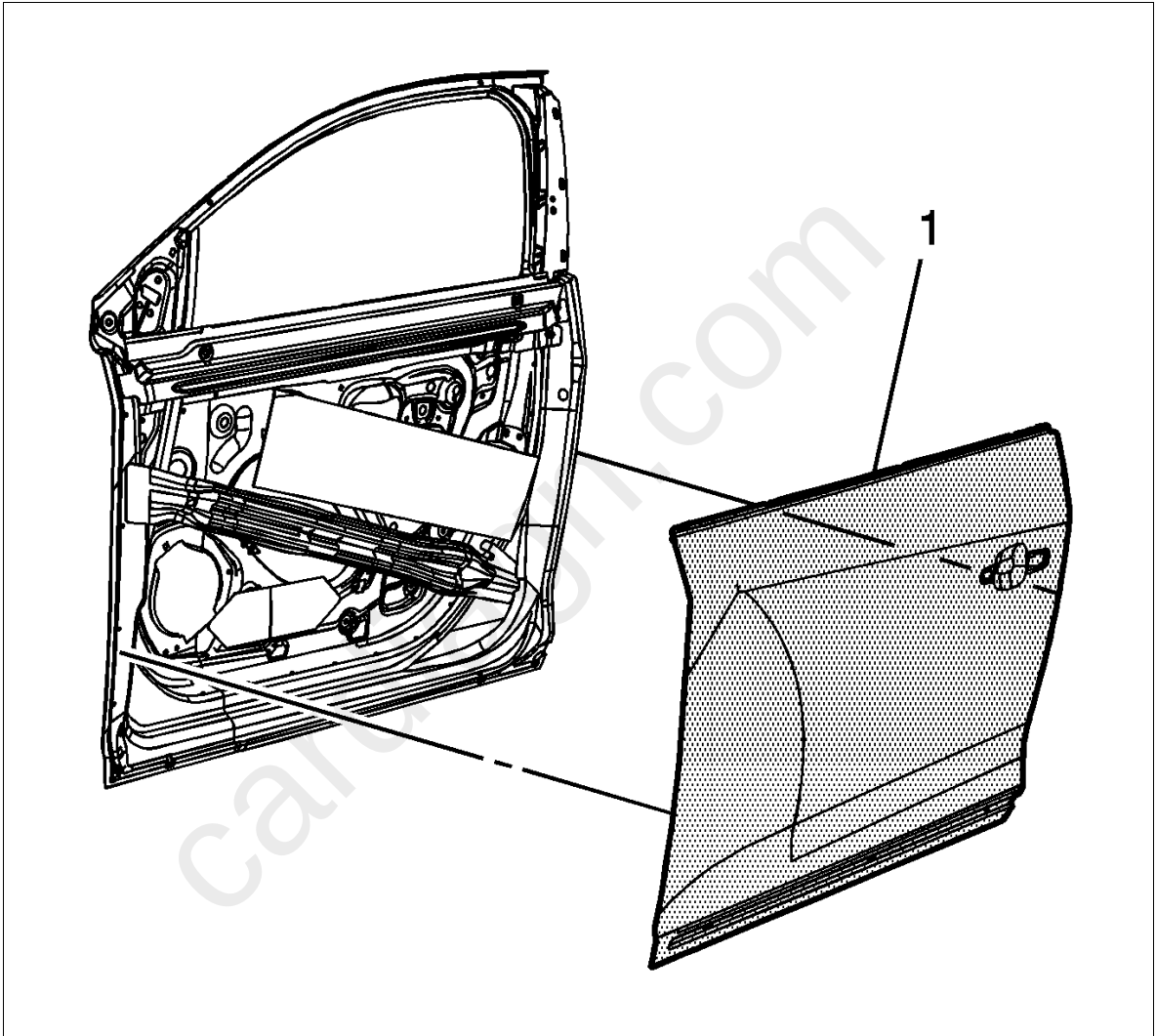
4. Apply a 3-6 mm (1/8-1/4 in) bead of metal panel bonding adhesive to both of the mating surfaces (1).
5. Using a small brush, spread a coat of adhesive to cover all of the bare metal surfaces to ensure proper corrosion protection.

 NOTE:

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

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

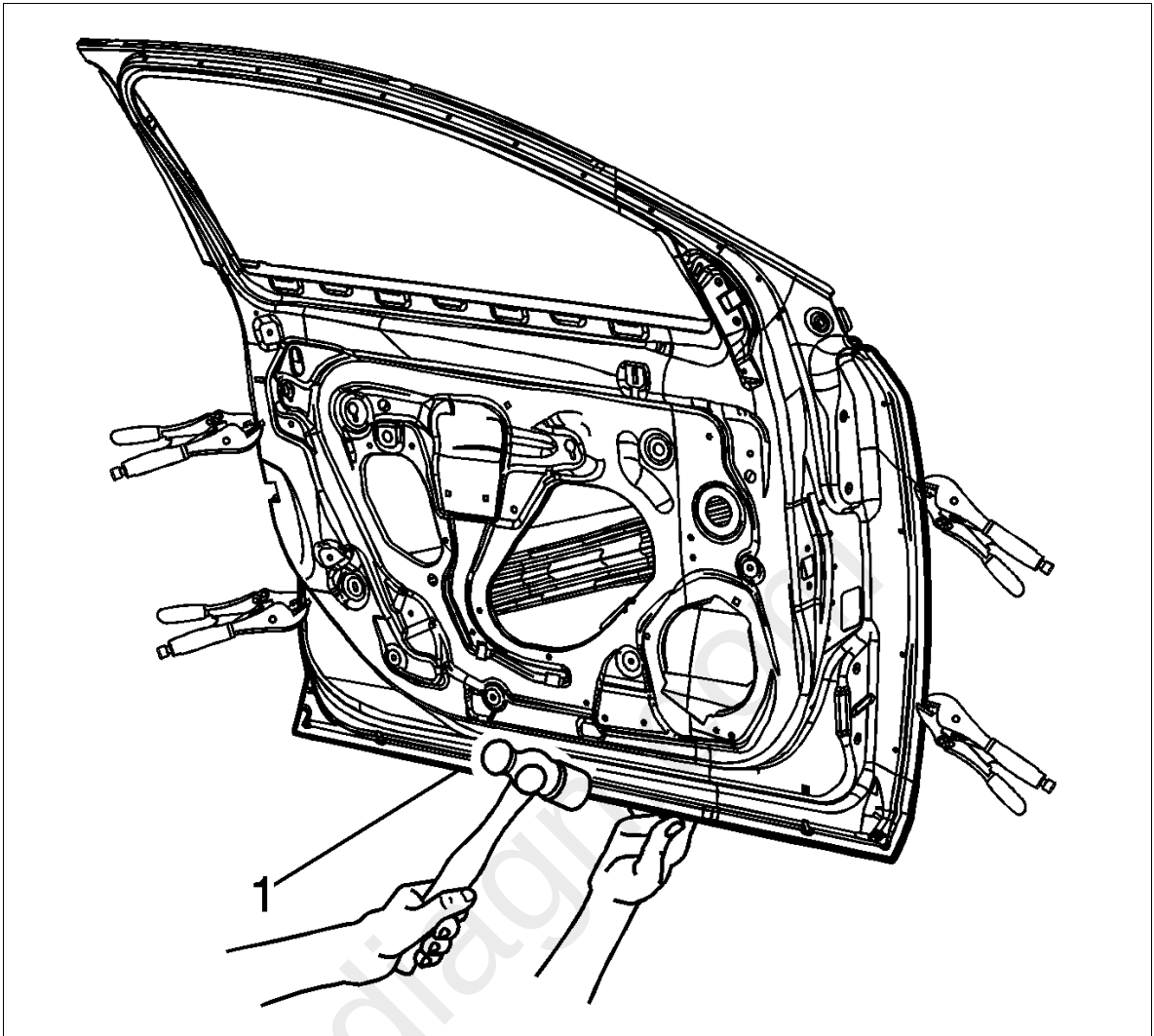
Fig 5: Front Side Door Outer Panel



Courtesy of GENERAL MOTORS COMPANY

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

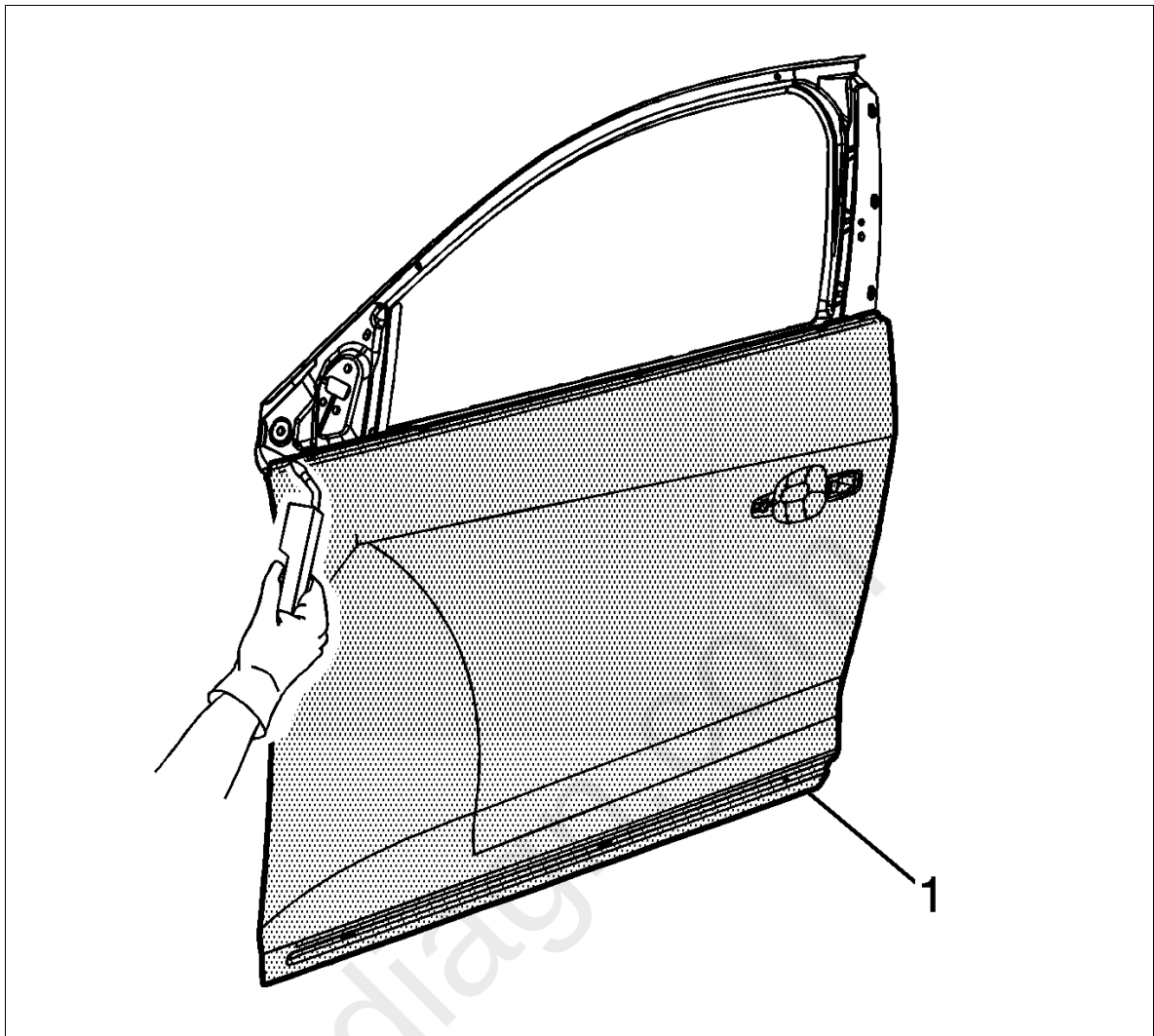
Fig 6: Re-Hemming Hem Flanges Around Front Side Door Outer Panel



Courtesy of GENERAL MOTORS COMPANY

9. Using a hammer re-hem the hem flanges around the door shell.
Continue to hammer in stages along the hem flanges (1).
10. Remove the excess adhesive from the door panel area.
11. Install the door to the vehicle. Inspect the door outer panel for proper alignment. Adjust the alignment as required. Refer to Front Side Door Replacement .

Fig 7: Welding Front Side Door Outer Panel



Courtesy of GENERAL MOTORS COMPANY

12. Weld the door outer panel to the door frame in the locations noted at the upper door frame (1).
13. Clean all welded surfaces.
14. Apply flexible anti-flutter foam, or equivalent, in 4-5 evenly spaced locations between the door outer panel and the inner safety beam and the upper belt reinforcement.
15. Apply sealers and anti-corrosion materials to the repair area as necessary. Refer to Paint the repaired area. Refer to Anti-Corrosion Treatment and Repair .
16. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems
17. Install the door to the vehicle. Refer to Front Side Door Replacement .
18. Install all related panels and components.
19. Enable the SIR system and then connect the negative battery cable. Refer to SIR Disabling and Enabling .

REPAIR INSTRUCTIONS > RESISTANCE SPOT WELDED FULL PANEL REPLACEMENT



NOTE:

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

REPAIR INSTRUCTIONS > RESISTANCE SPOT WELDED FULL PANEL REPLACEMENT > REMOVAL PROCEDURE



WARNING:

Refer to Approved Equipment for Collision Repair Warning .

1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications.

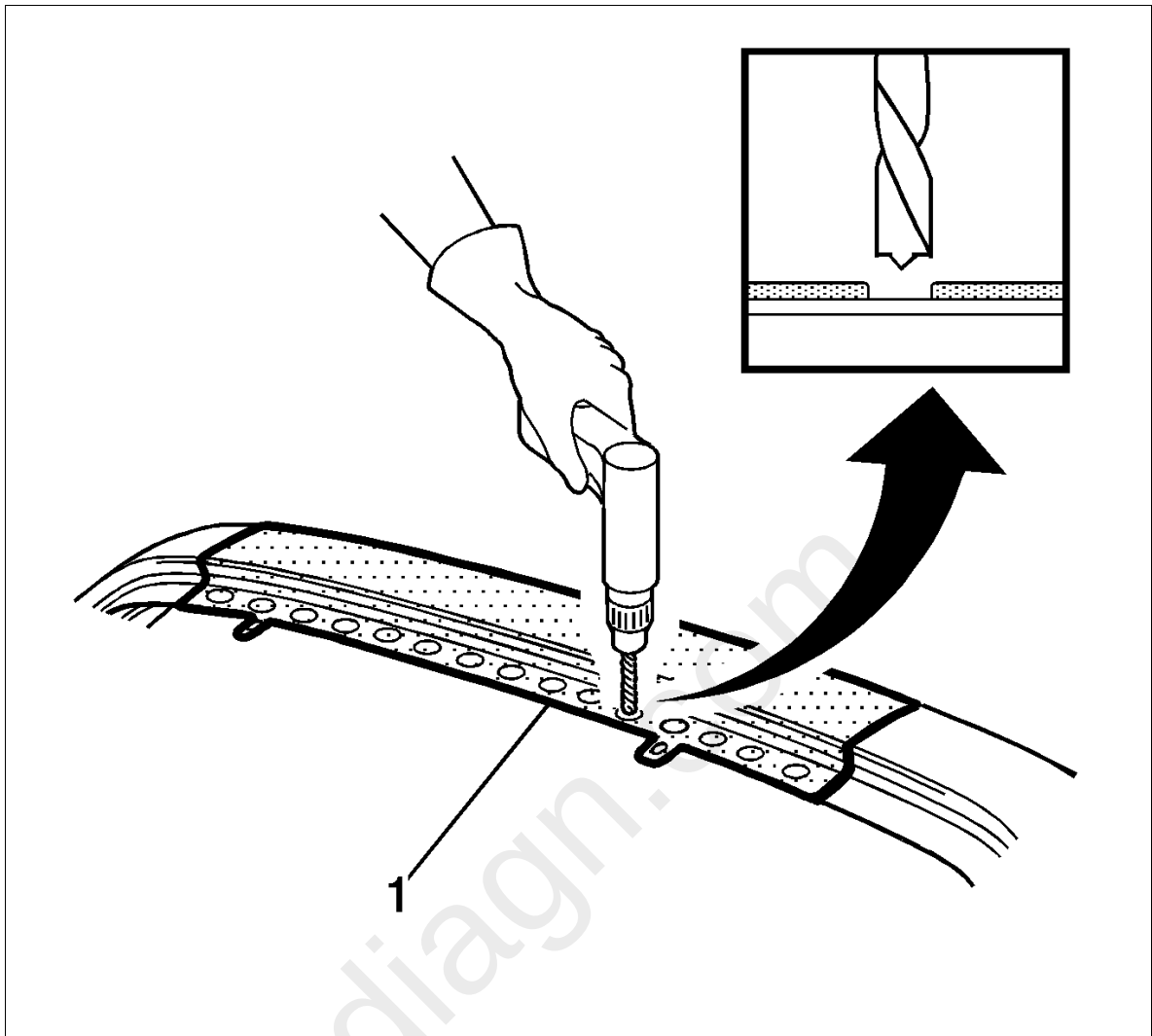


WARNING:

Refer to Foam Sound Deadeners Warning .

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

Fig 1: Drilling Out Factory Welds (Full Panel)



Courtesy of GENERAL MOTORS COMPANY

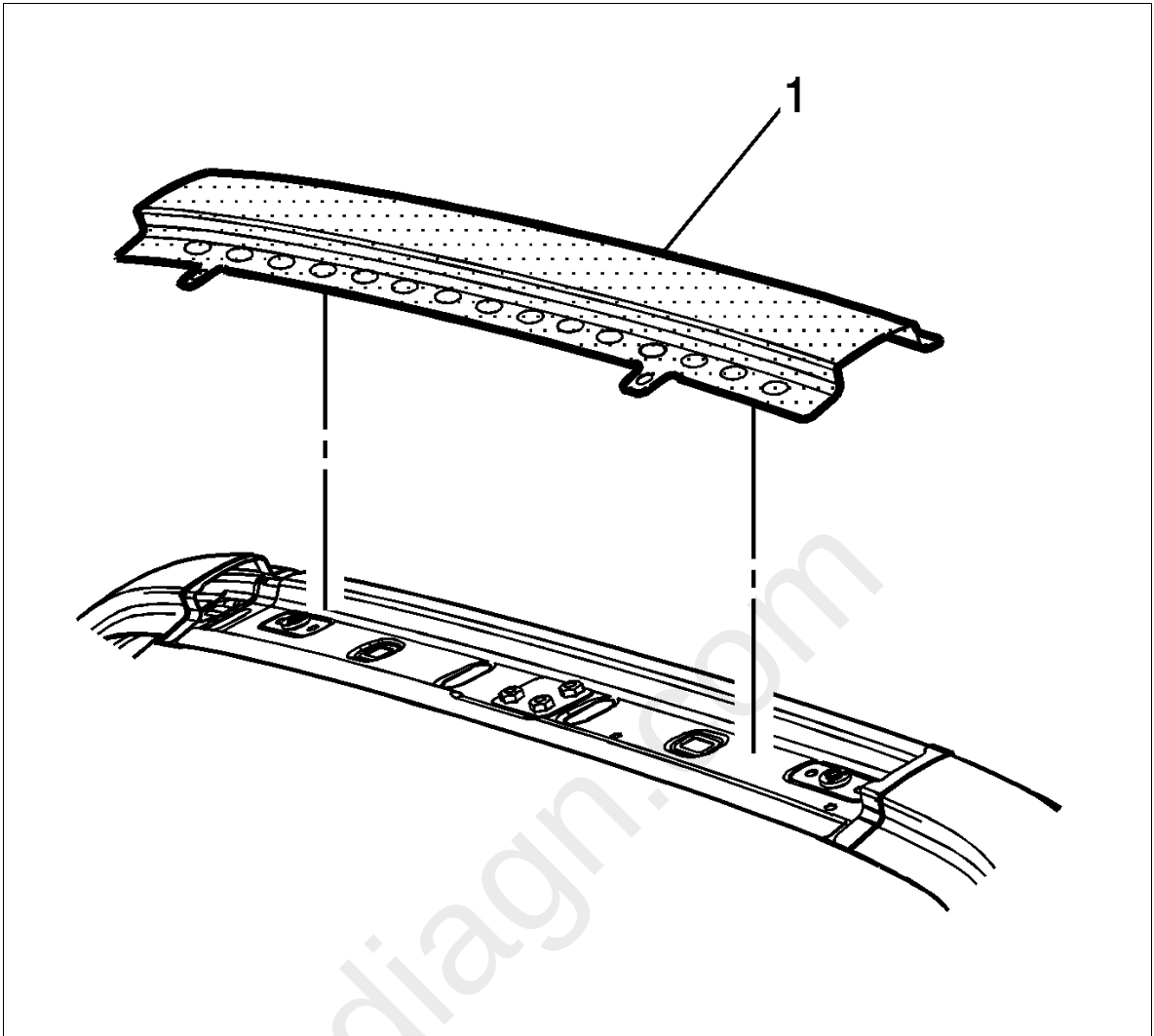


NOTE:

Do not damage any inner panels or reinforcements.

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

Fig 2: Damaged Part (Full Panel)



Courtesy of GENERAL MOTORS COMPANY

7. Remove the damaged part (1).

REPAIR INSTRUCTIONS > RESISTANCE SPOT WELDED FULL PANEL REPLACEMENT > INSTALLATION PROCEDURE

NOTE:

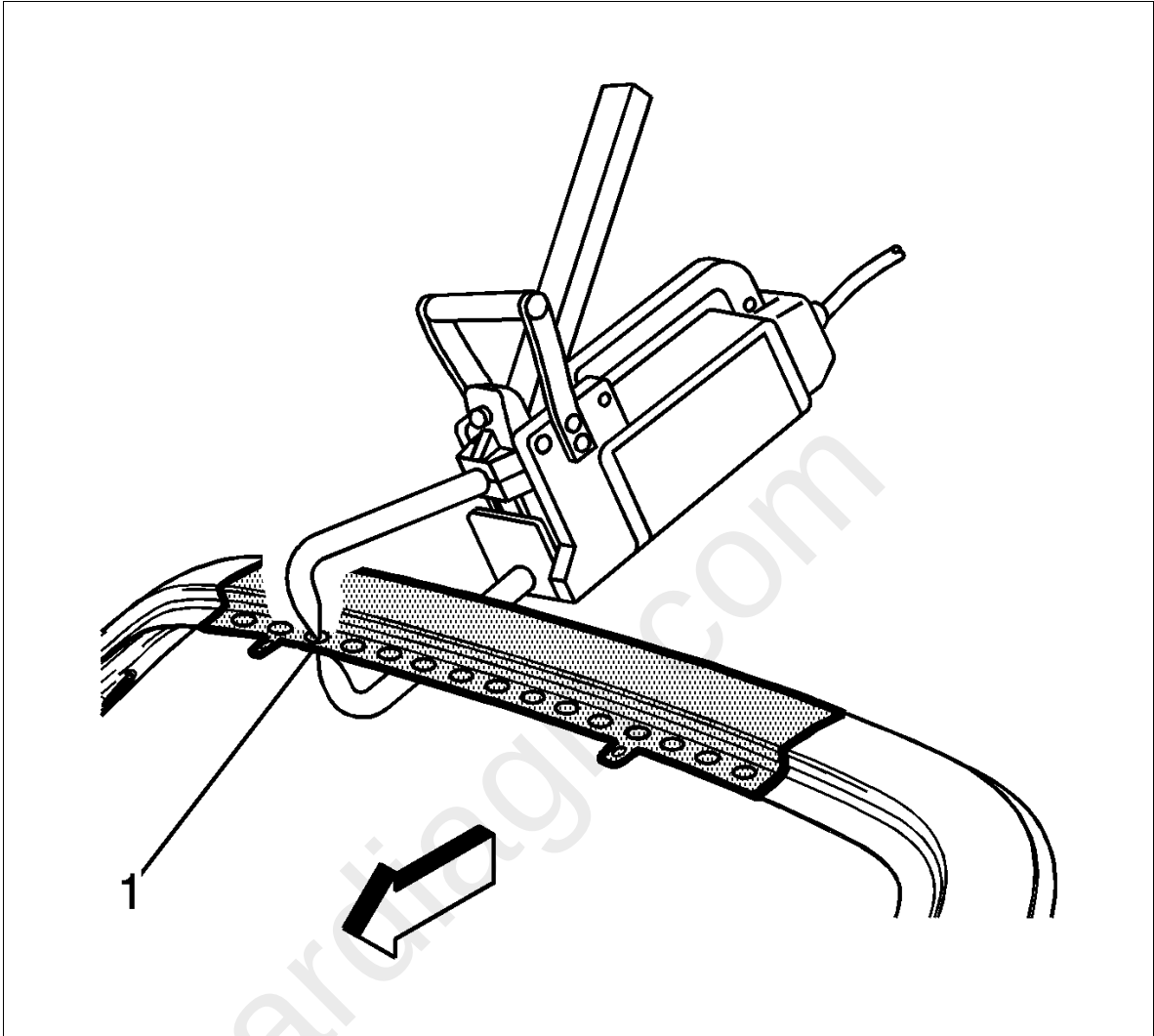
If the location of the original plug weld holes cannot be determined, space the plug weld holes every 40 mm (1 1/2 in) apart. Where structural adhesive was present, space the plug weld holes every 20 mm (3/4 in) apart.

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

Anti-Corrosion Treatment and Repair .

3. Position the service part. Clamp in place.

Fig 1: Welding New Part (Full Panel)



Courtesy of GENERAL MOTORS COMPANY

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

REPAIR INSTRUCTIONS > MIG WELDED FULL PANEL REPLACEMENT > REMOVAL PROCEDURE

 WARNING:

Refer to Approved Equipment for Collision Repair Warning .



NOTE:

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

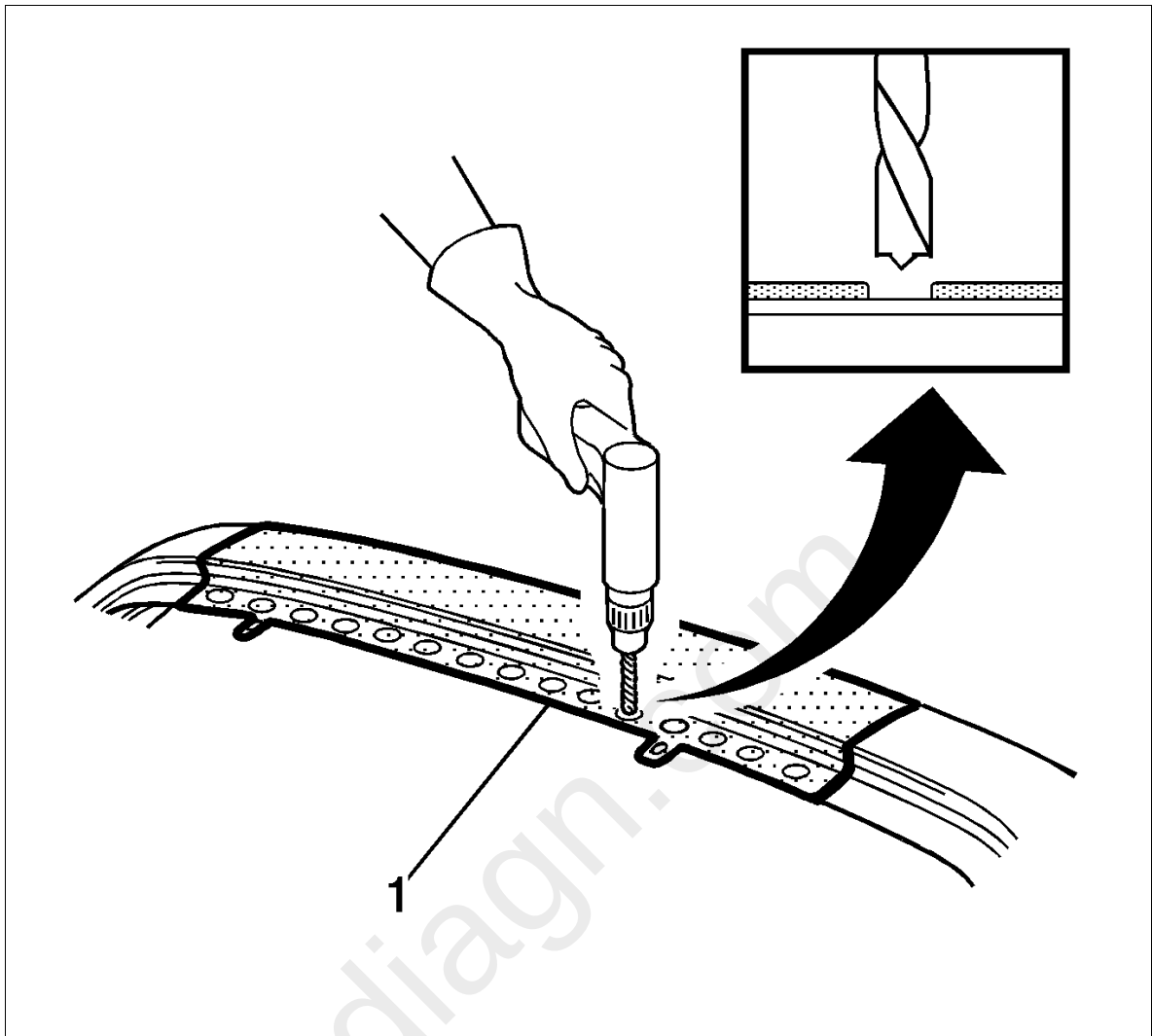
1. Disable the SIR system. Refer to SIR Disabling and Enabling .
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications.

 WARNING:

Refer to Foam Sound Deadeners Warning .

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

Fig 1: Drilling Out Factory Welds (Full Panel)



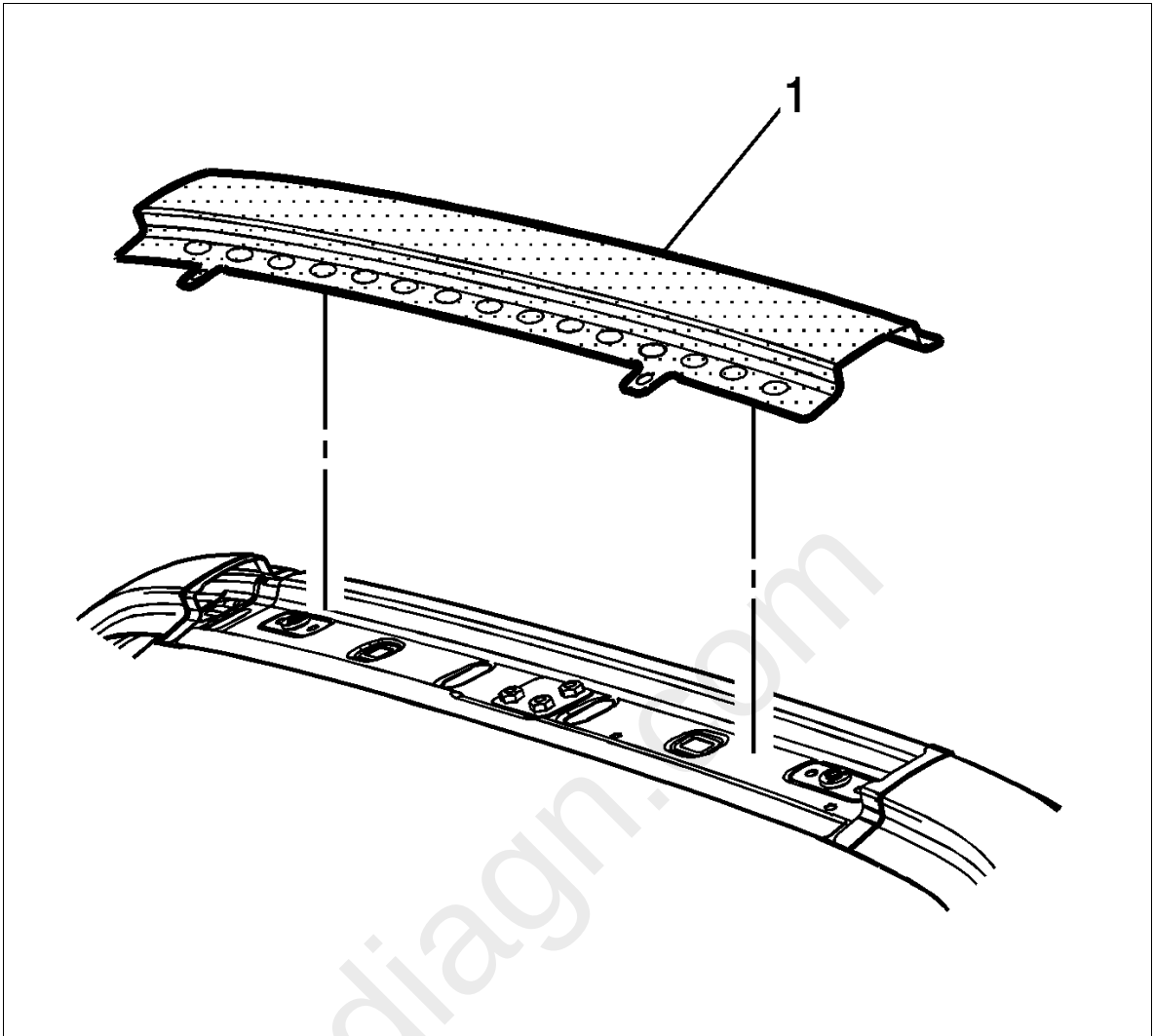
Courtesy of GENERAL MOTORS COMPANY

 **NOTE:**

Do not damage any inner panels or reinforcements.

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

Fig 2: Damaged Part (Full Panel)

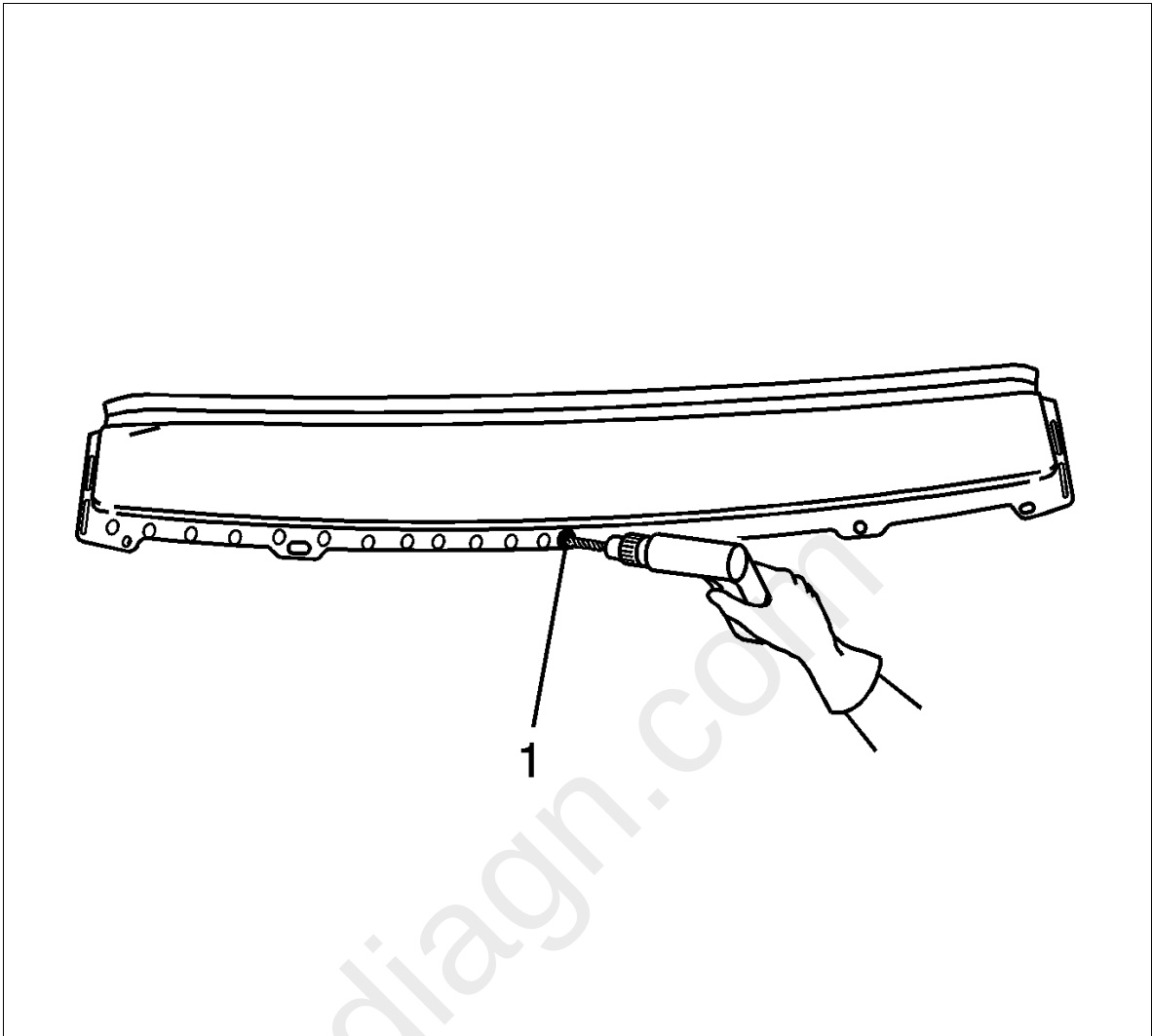


Courtesy of GENERAL MOTORS COMPANY

7. Remove the damaged part (1).

**REPAIR INSTRUCTIONS > MIG WELDED FULL PANEL REPLACEMENT >
INSTALLATION PROCEDURE**

Fig 1: Drilling Plug Weld Holes (Full Panel)



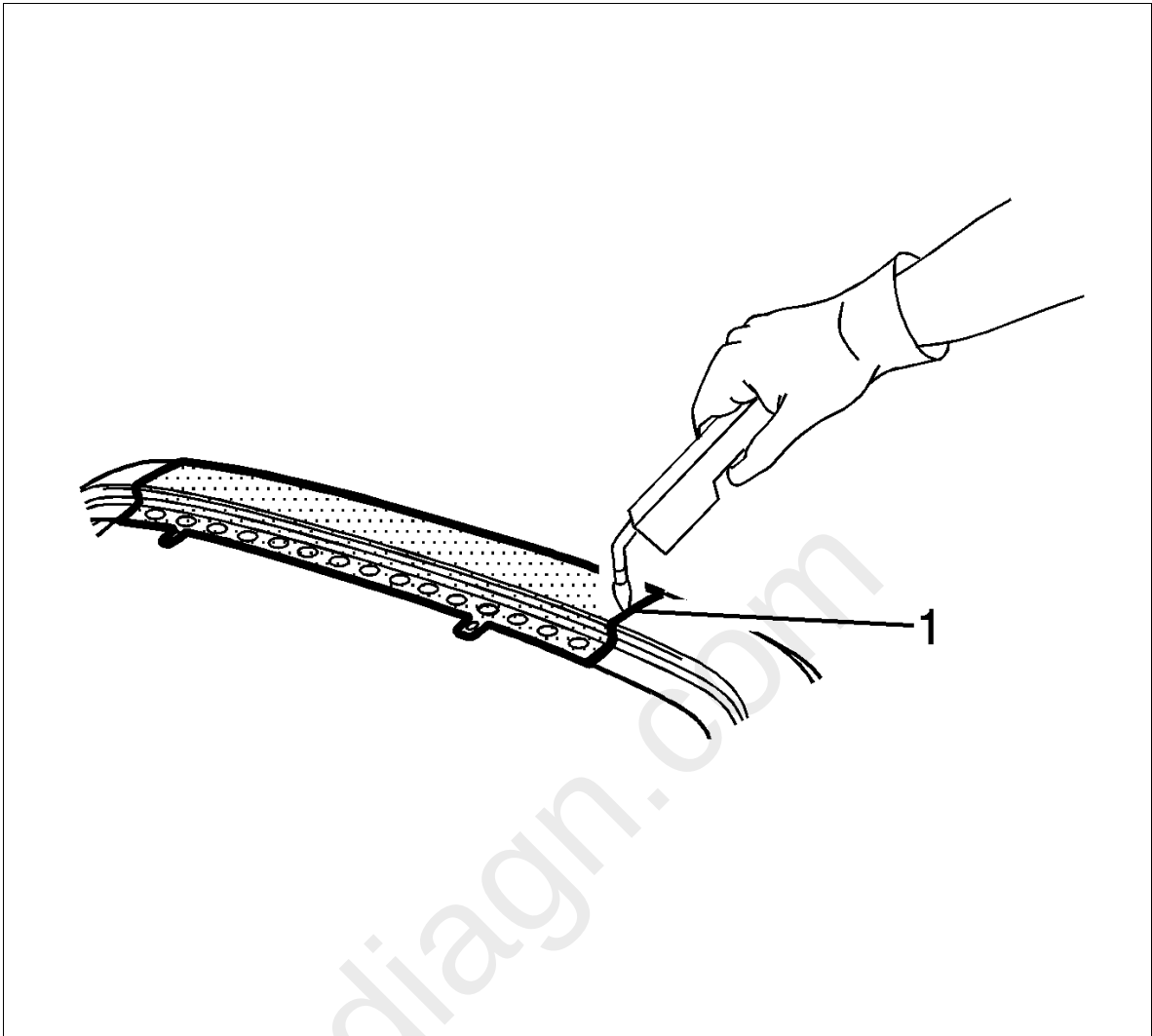
Courtesy of GENERAL MOTORS COMPANY

 NOTE:

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

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

Fig 2: Plug Welding Service Part (Full Panel)



Courtesy of GENERAL MOTORS COMPANY

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 .
9. Paint the repair area. Refer to Basecoat/Clearcoat Paint Systems .
10. Install all related panels and components.
11. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection .
12. Enable the SIR system. Refer to SIR Disabling and Enabling .

DESCRIPTION AND OPERATION > ALUMINUM PANEL BONDING

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

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

Bonding procedures in general are applicable only at factory joints.

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

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

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



NOTE:

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

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

Aluminum Panel Bonding Impact Resistant

Manufacturer and Part Number	Description
Fusor 2098	Fusor 2098 Impact Resistant Adhesive Available from Lord Fusor 800-234-3876 www.fusor.com
3M 07333	3M Impact Resistant Structural Adhesive Available from 3M www.3MCollision.com
Pliogrip 5770P	Pliogrip 5770P Structural Impact Durable Adhesive Available from Ashland 800-PLIOGRIP www.ashland.com/products/pliogrip-structural-adhesives

DESCRIPTION AND OPERATION > DUAL PHASE STEEL

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

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



NOTE:

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

Recommended Repairs

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

DESCRIPTION AND OPERATION > 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.

DESCRIPTION AND OPERATION > METAL PANEL BONDING (STEEL)

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

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

Bonding procedures in general are applicable only at factory joints.

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

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

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



NOTE:

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

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

Steel Panel Bonding Impact Resistant

Manufacturer and Part Number	Description
Pliogrip 5770P	Pliogrip 5770P Structural Impact Durable Adhesive Available from Ashland 800-PLIOGRIP www.ashland.com/products/pliogrip-structural-adhesives
Fusor 2098	Fusor 2098 Impact Resistant Adhesive Available from Lord Fusor 800-234-3876 www.fusor.com
3M 07333	3M Impact Resistant Structural Adhesive Available from 3M www.3MCollision.com

Steel Panel Bonding

Manufacturer and Part Number	Description
GM P/N 12378566 (US)	Fast Set Panel Bonding Adhesive
GM P/N 88901674 (Canada)	
Lord Fusor P/N 110B/111B	
GM P/N 12378567 (US)	Medium Set Panel Bonding Adhesive
GM P/N 88901675 (Canada)	
Lord Fusor P/N 108B/109B	
3M P/N 8116	Panel Bonding Adhesive
Ashland Plio Grip Panel 60 ©2015 General Motors. All rights reserved.	Panel Bonding Adhesive

DESCRIPTION AND OPERATION > 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.

DESCRIPTION AND OPERATION > ULTRA HIGH STRENGTH DUAL PHASE STEEL

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

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



NOTE:

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

DESCRIPTION AND OPERATION > ULTRA HIGH STRENGTH STEEL

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

This includes the common steel names of

- Ultra High Strength Dual Phase Steel (DPX)
- Martensitic Steel (M)
- Boron/Press Hardened Steel (B)
- Multi-Phase Steel (MP)
- TRIP Steel (TR)

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



NOTE:

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

Recommended Repairs

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