ACCESSORIES & EQUIPMENT

Collision Repair - Escalade, Suburban, Tahoe, Yukon

SPECIFICATIONS

DIMENSIONS - BODY

Rear Door Opening Dimensions

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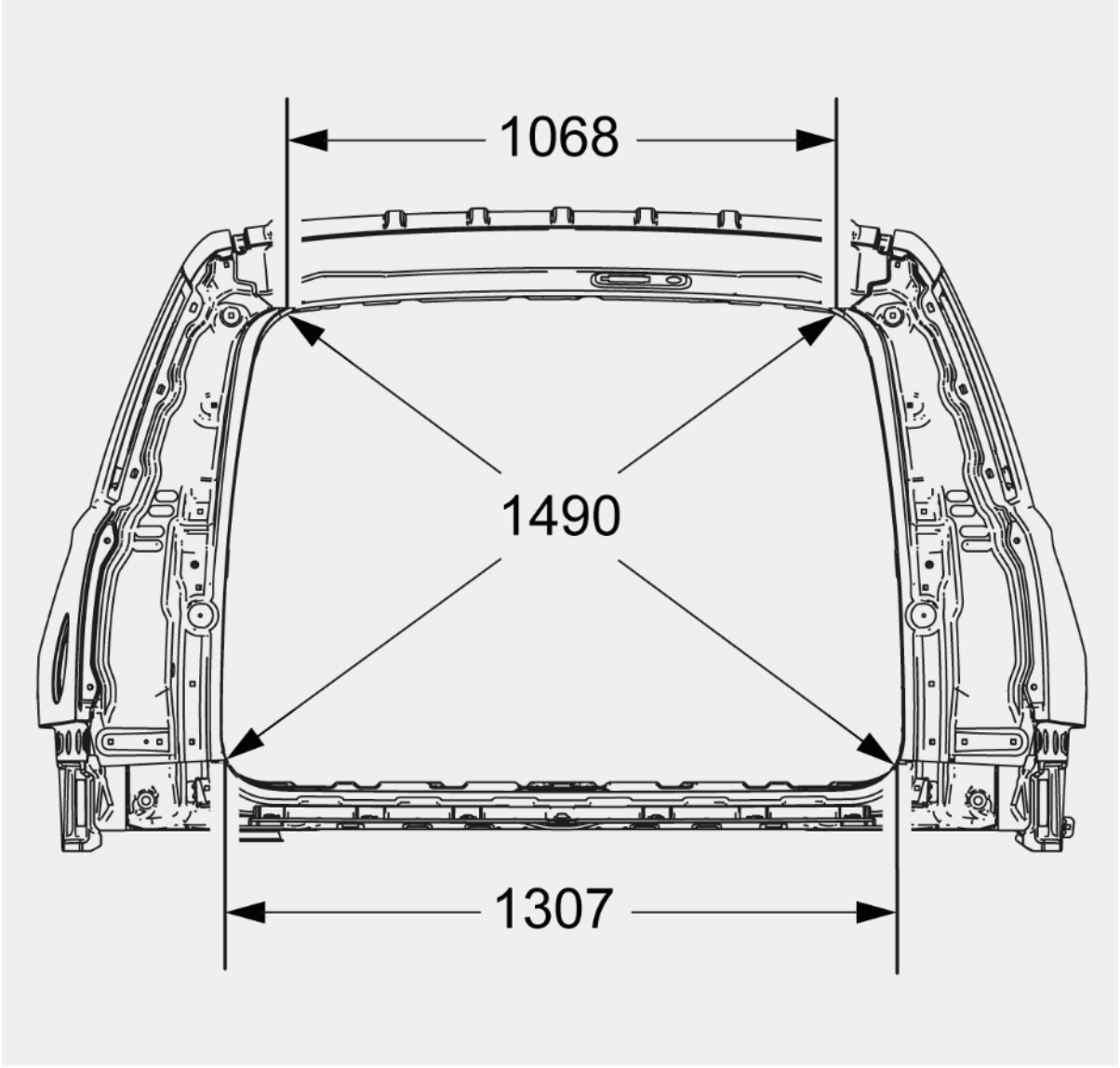


Fig. 1: Rear Door Opening Dimensions
Courtesy of GENERAL MOTORS COMPANY

Short Wheelbase

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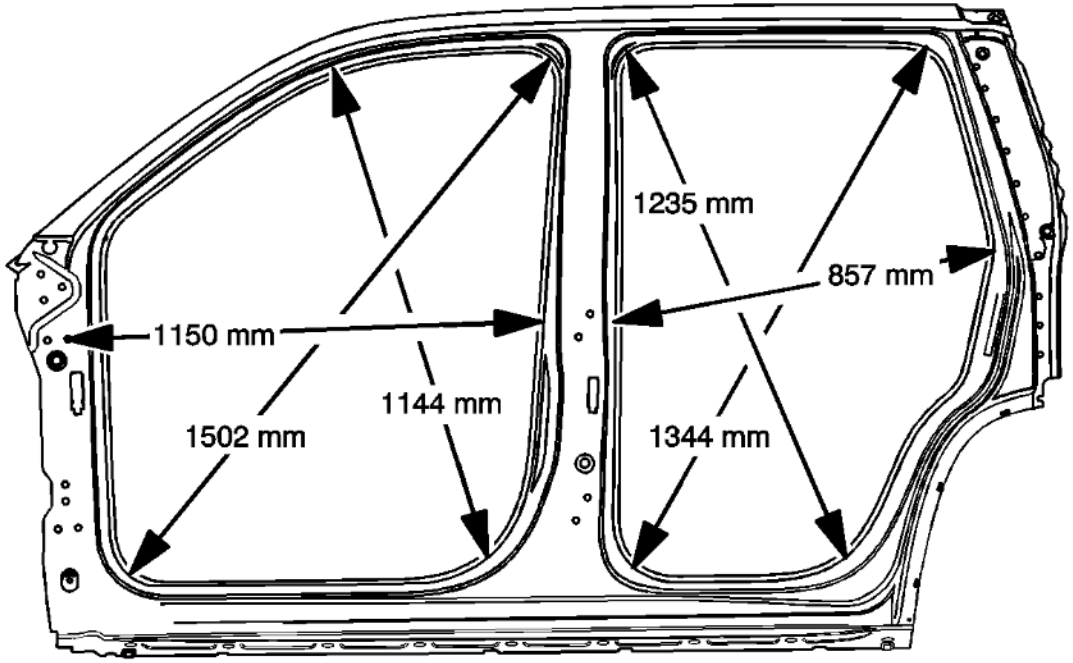


Fig. 2: Short Wheelbase
Courtesy of GENERAL MOTORS COMPANY

Long Wheelbase

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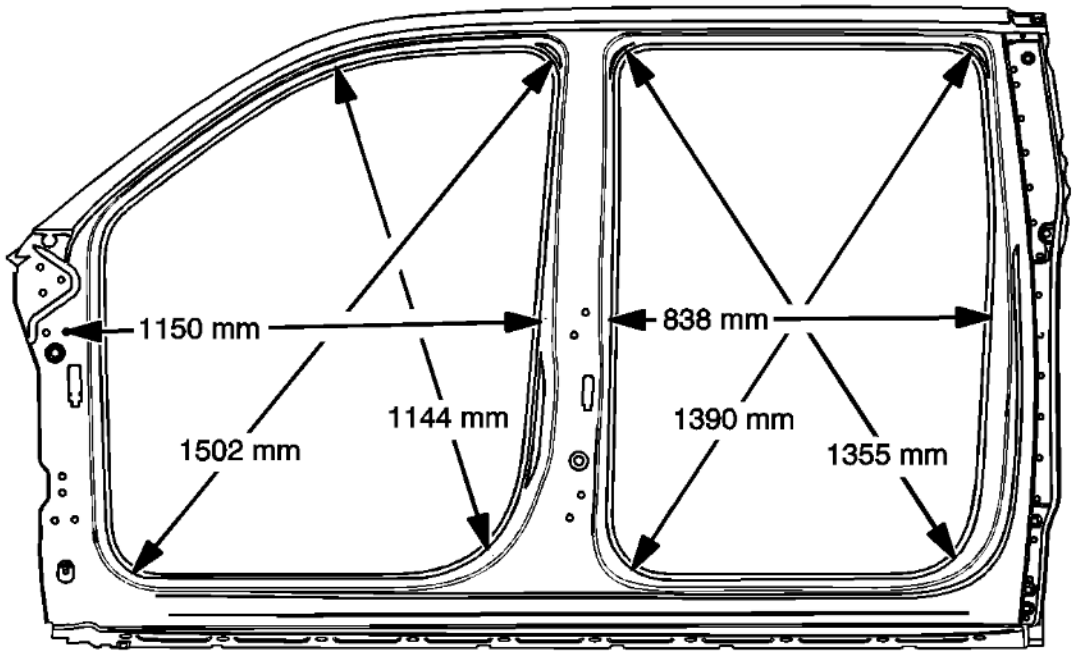
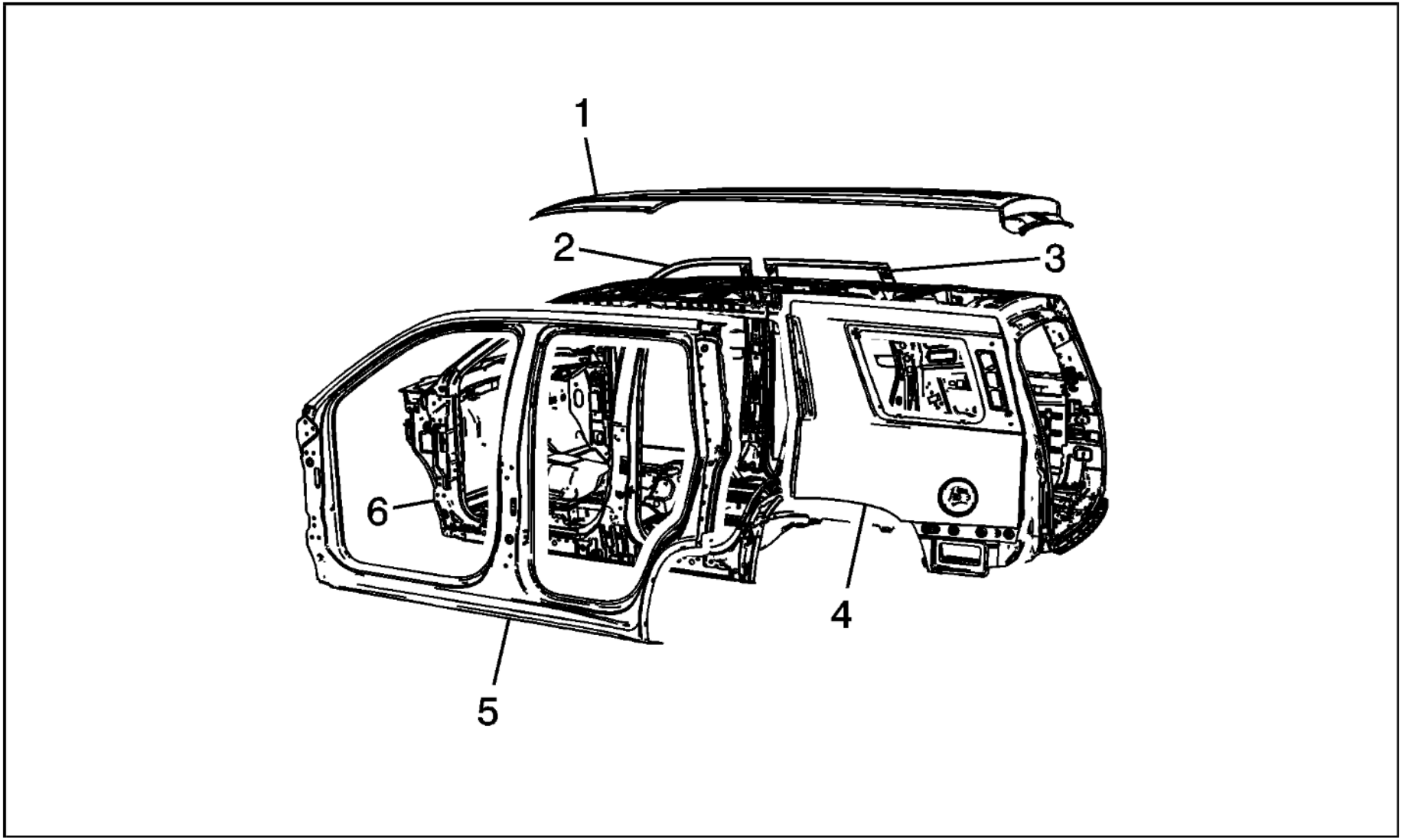


Fig. 3: Long Wheelbase
Courtesy of GENERAL MOTORS COMPANY

VISUAL IDENTIFICATION

STRUCTURE IDENTIFICATION

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Number	Description	Material	Procedure
1	Roof Panel	Mild Steel	Roof Outer Panel Replacement
2	Front Door Panel	Mild Steel	Front Side Door Outer Panel Replacement (Belt Cut)
3	Rear Door Panel	Mild Steel	Rear Side Door Outer Panel Replacement (Belt Cut)
4	Quarter Panel	Mild Steel	Quarter Outer Panel Sectioning

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Number	Description	Material	Procedure
5	Body Side Outer	Mild Steel	Front Hinge Pillar Sectioning Center Pillar Sectioning Rear Pillar Sectioning Rocker Outer Panel Sectioning
6	Body Side Inner	Ultra High Strength Steel	Center Pillar Outer Panel Reinforcement Replacement Rocker inner Panel Replacement

REPAIR INSTRUCTIONS

FRONT FULL FRAME SECTIONING (LIGHT DUTY)

Removal Procedure

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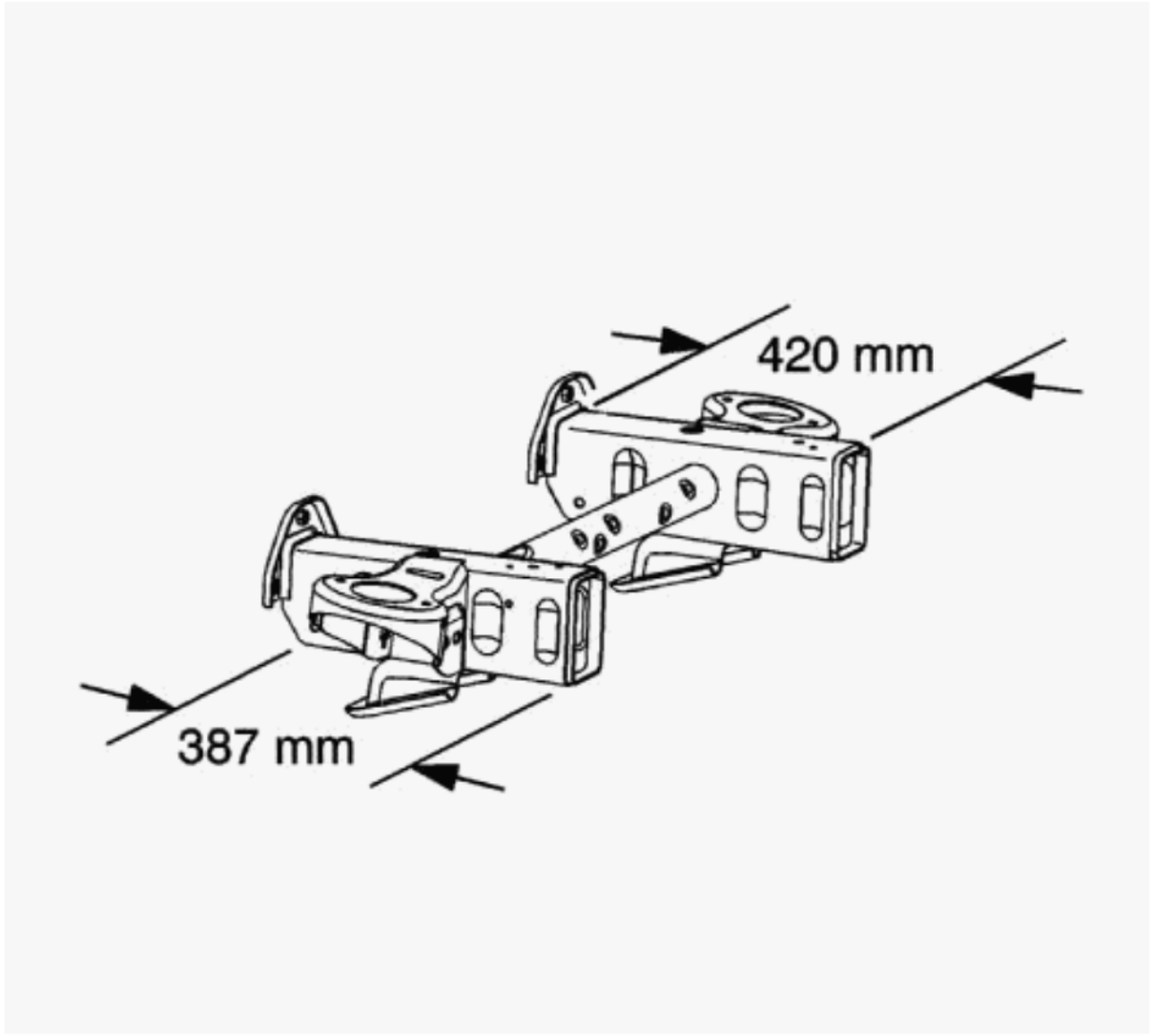


Fig. 4: Light Duty Pick-Up Front Frame Section
Courtesy of GENERAL MOTORS COMPANY

If damage permits a pre-sleeved replacement front frame service section has been developed as a cost-effective alternative to complete frame replacement. This procedure is for the light duty pick-up front frame section, the utility front frame section is similar.

WARNING: Refer to Approved Equipment for Collision Repair Warning .

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

NOTE: **Perform all of the steps on both of the rails for complete module replacement.**

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 (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .
3. Remove all of the related panels and components.

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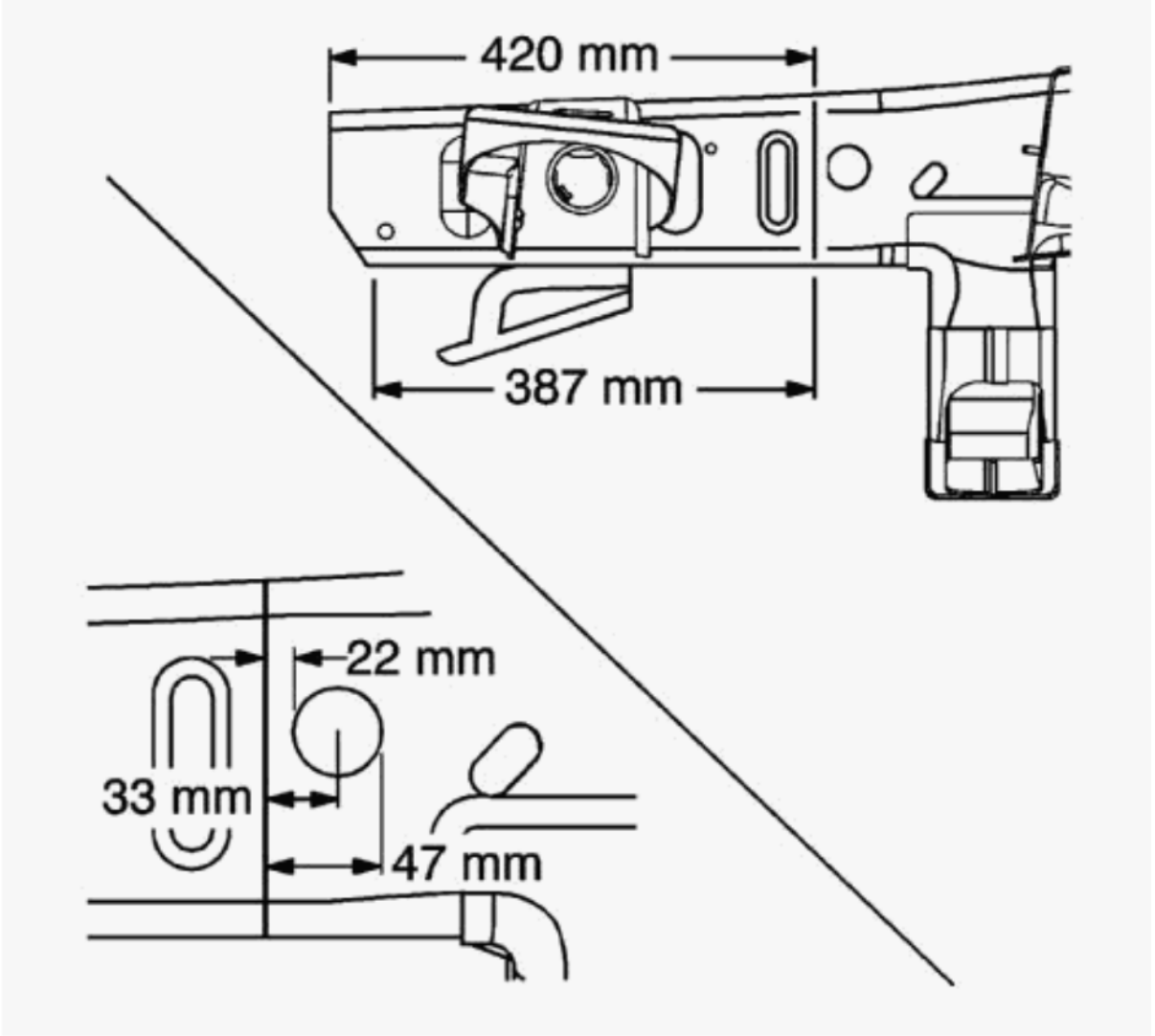


Fig. 5: Sectioning Location By Using At Least 2 Of Measurements Below For Each Frame Rail
Courtesy of GENERAL MOTORS COMPANY

4. Locate and mark the sectioning location by using at least 2 of the measurements below for each frame rail:
    - Top of the frame rail edge rearward 420 mm (16 1/2 in) (with bumper bracket removed)
    - Bottom of the frame rail edge rearward 387 mm (15 3/16 in) (with bumper bracket removed)
    - Front edge of the gauge hole forward 22 mm (7/8 in)

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- Center of the gauge hole forward 33 mm (1 1/4 in)
- Rear edge of the gauge hole forward 47 mm (1 7/8 in)

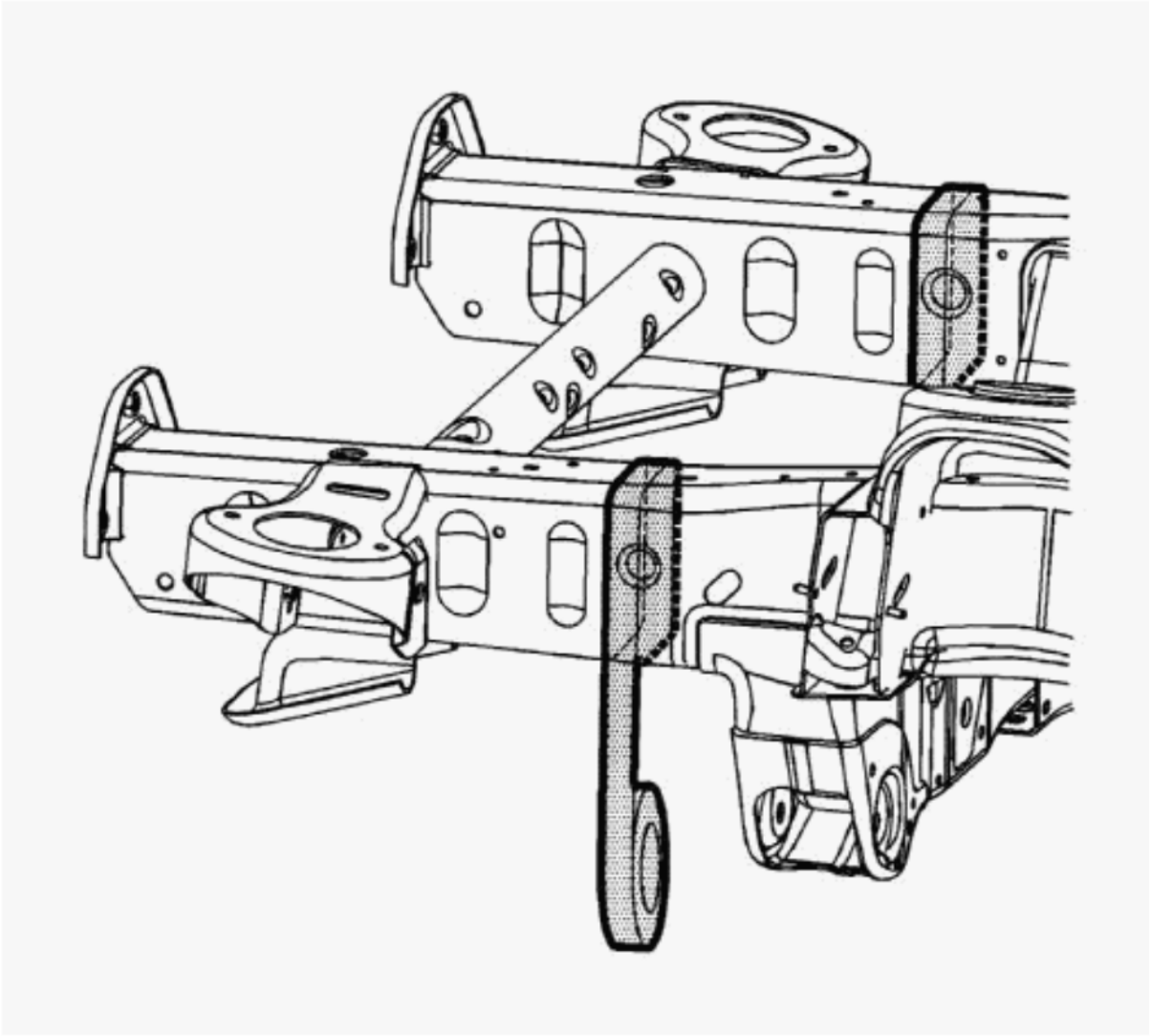


Fig. 6: Applying Masking Tape Completely Around Frame Rail Next To Sectioning Location
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Line up the masking tape with the tape edge facing the front of the vehicle on the sectioning location.**

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5. Apply masking tape completely around the frame rail next to the sectioning location as shown.

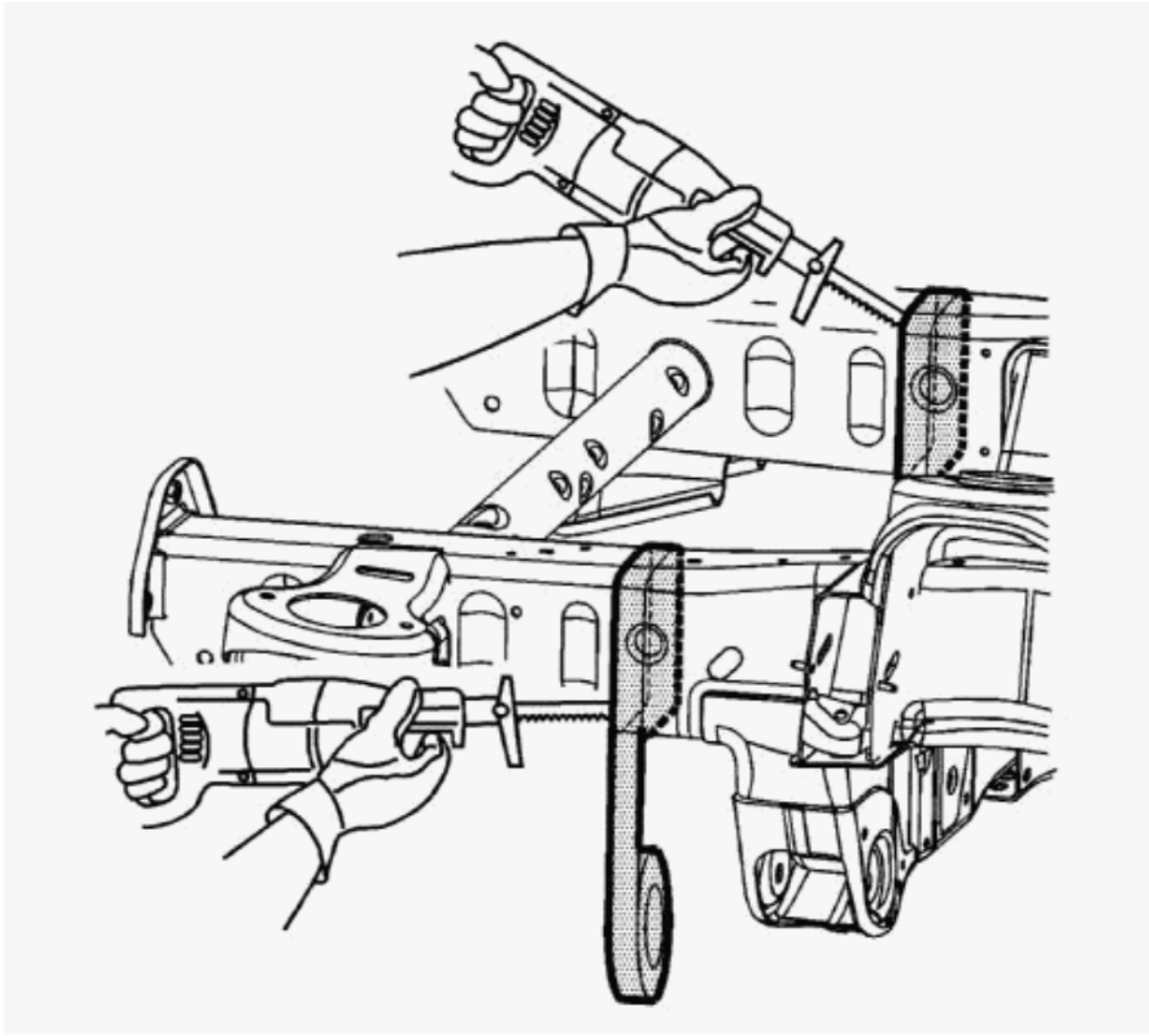


Fig. 7: Cutting Each Frame Rail At Front Edge Of Tape Line Using A Reciprocating Saw
Courtesy of GENERAL MOTORS COMPANY

NOTE: **The tape edge facing the front of the vehicle is the proper cut location.**

6. Cut each frame rail at the front edge of the tape line using a reciprocating saw or equivalent, as shown.

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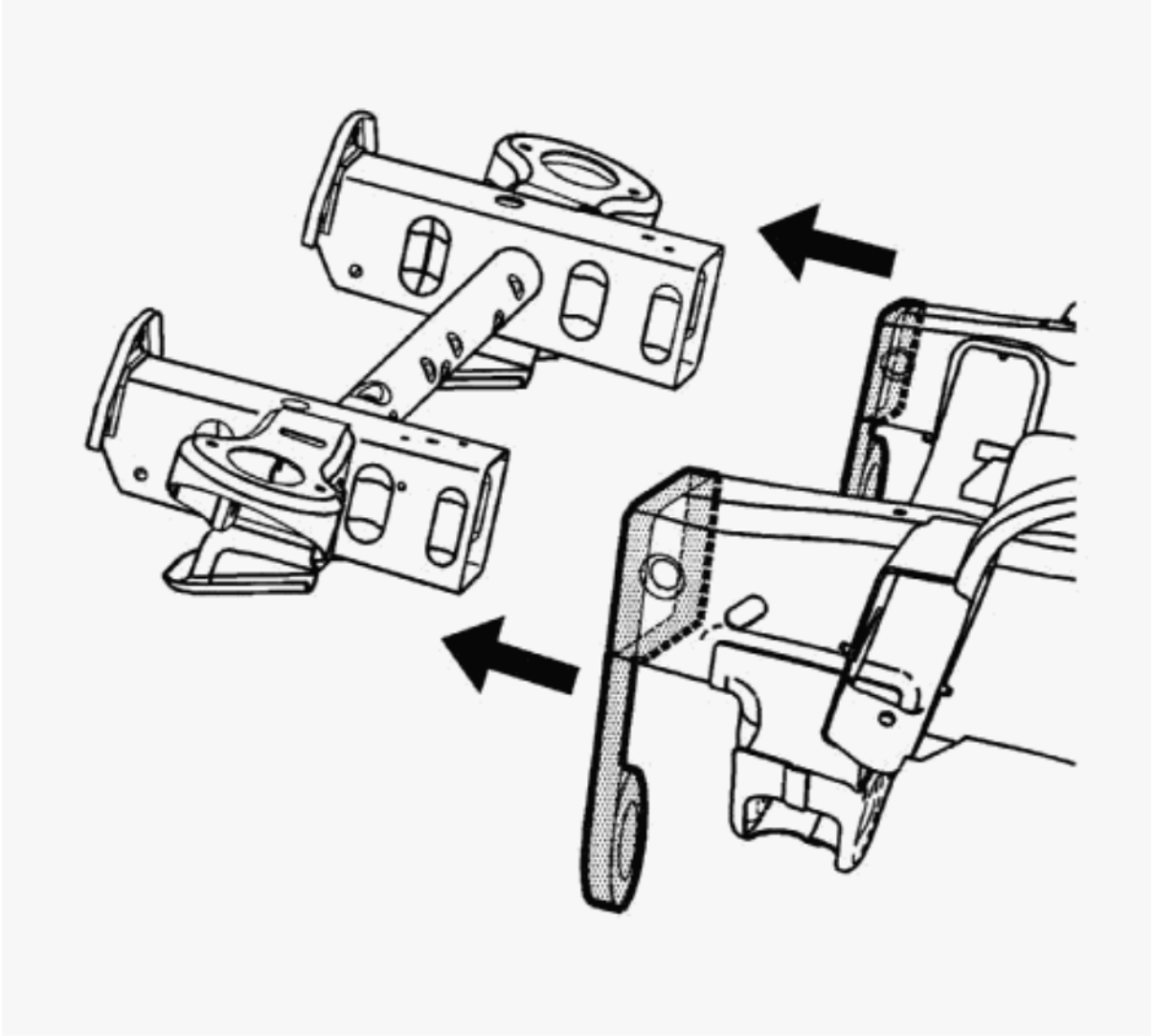


Fig. 8: Damaged Frame Section
Courtesy of GENERAL MOTORS COMPANY

7. Remove the damaged frame section.

Installation Procedure

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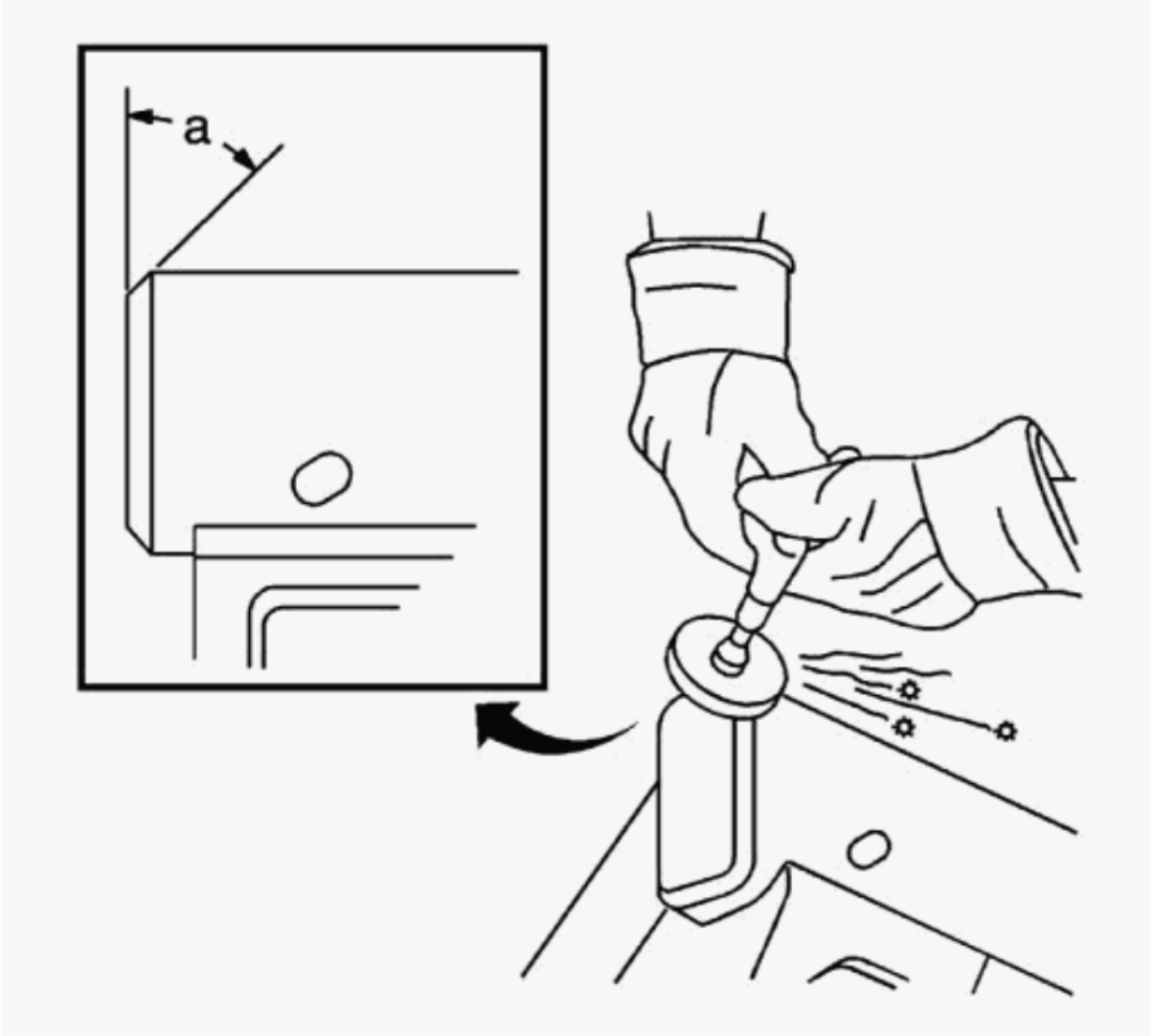


Fig. 9: Grinding Existing Frame Rail Seam To Taper Seam
Courtesy of GENERAL MOTORS COMPANY

1. Grind the existing frame rail seam to taper seam at a 45 degree angle.
2. Prepare all of the attaching surfaces as necessary.
3. Apply the weld-thru primer to all of the welded surfaces.

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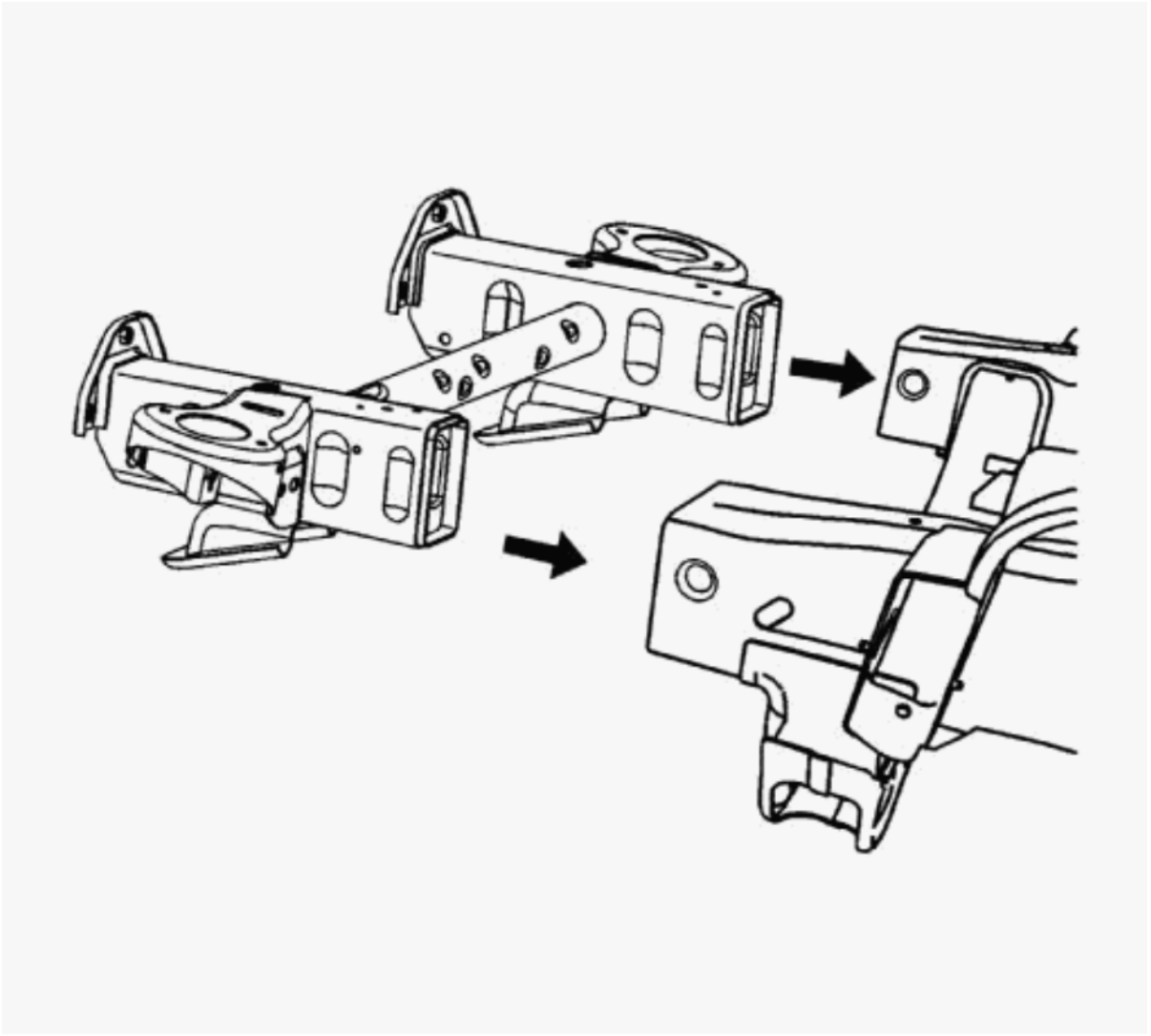


Fig. 10: Positioning Service Frame Section To Existing Frame
Courtesy of GENERAL MOTORS COMPANY

4. Position the service frame section to the existing frame and clamp in place.

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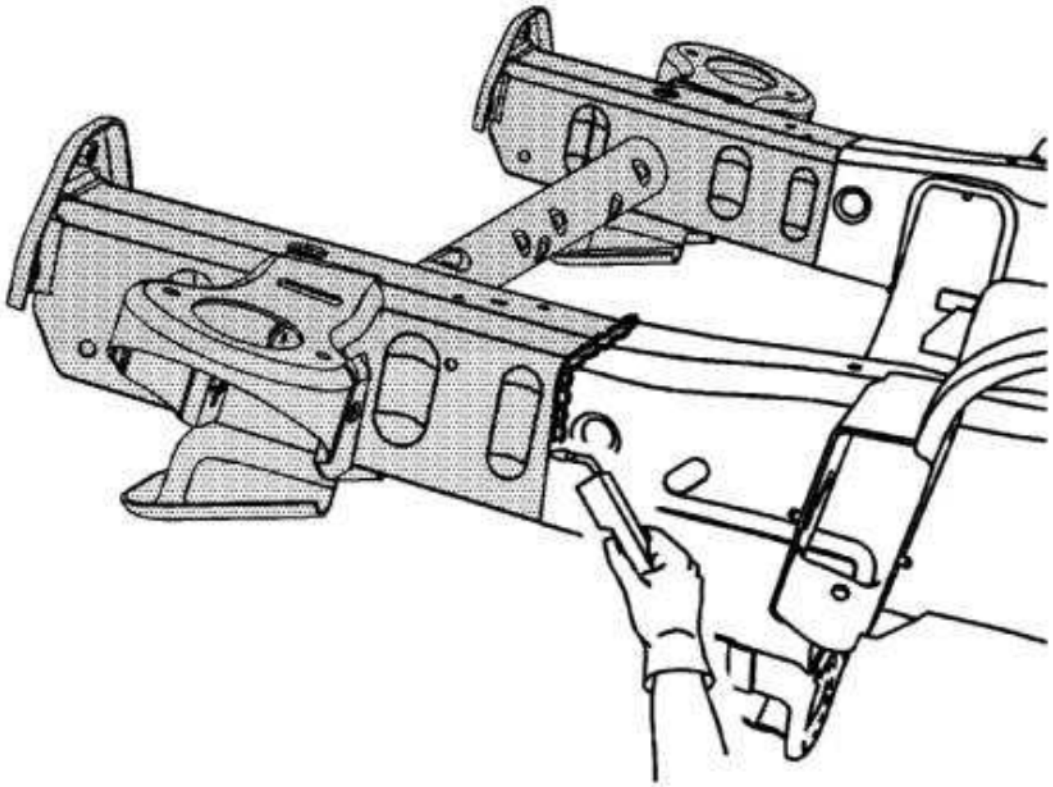


Fig. 11: Welding Upper And Lower Horizontal Joints Through Each Corner
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Verify the frame measurements 3-dimensionally to ensure proper position of the service frame.**

5. Continuous-weld the upper and lower horizontal joints through each corner.
6. Continuous-weld the inner and outer vertical joints from corner to corner.

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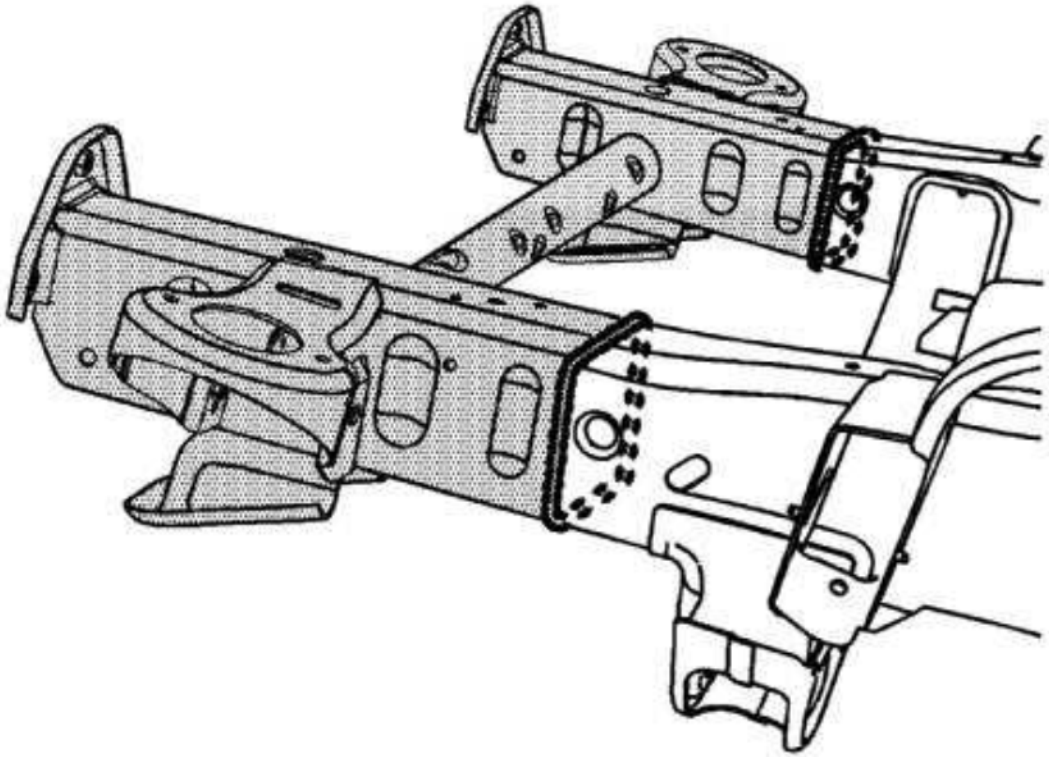


Fig. 12: Cleaning All Of Welded Surfaces
Courtesy of GENERAL MOTORS COMPANY

7. Clean and prepare all of the welded surfaces.
8. Install all of the related panels and components.
9. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .

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

ROOF OUTER PANEL REPLACEMENT

Removal Procedure

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

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

WARNING: Refer to **Battery Disconnect Warning** .

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

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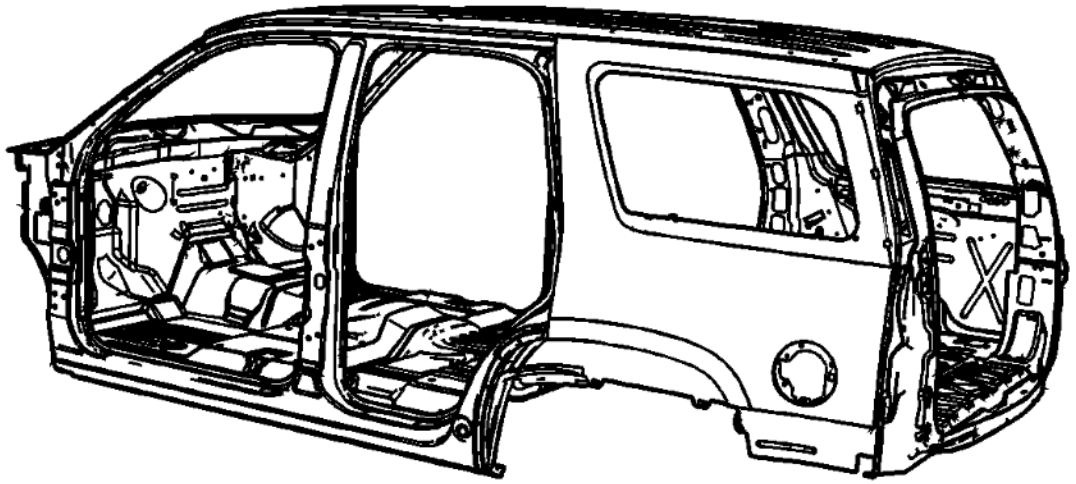


Fig. 13: Vehicle With Panels Removed
Courtesy of GENERAL MOTORS COMPANY

2. Remove all related panels and components.
3. Repair as much of the damage as possible to factory specifications.

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

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

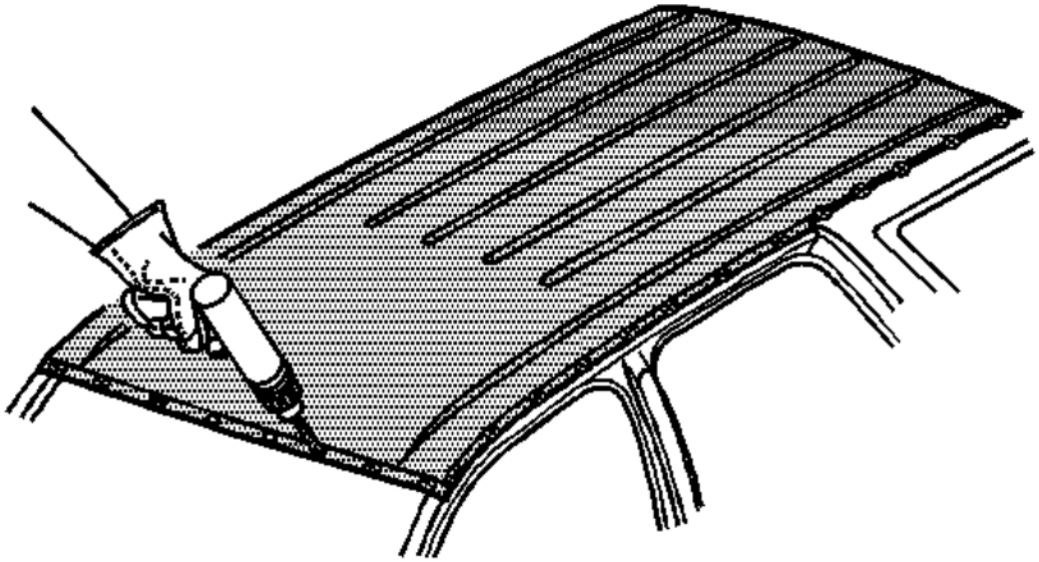


Fig. 14: Drilling Out Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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

5. Locate and drill out all factory welds. Note the number and location of the welds for installation of the roof panel.

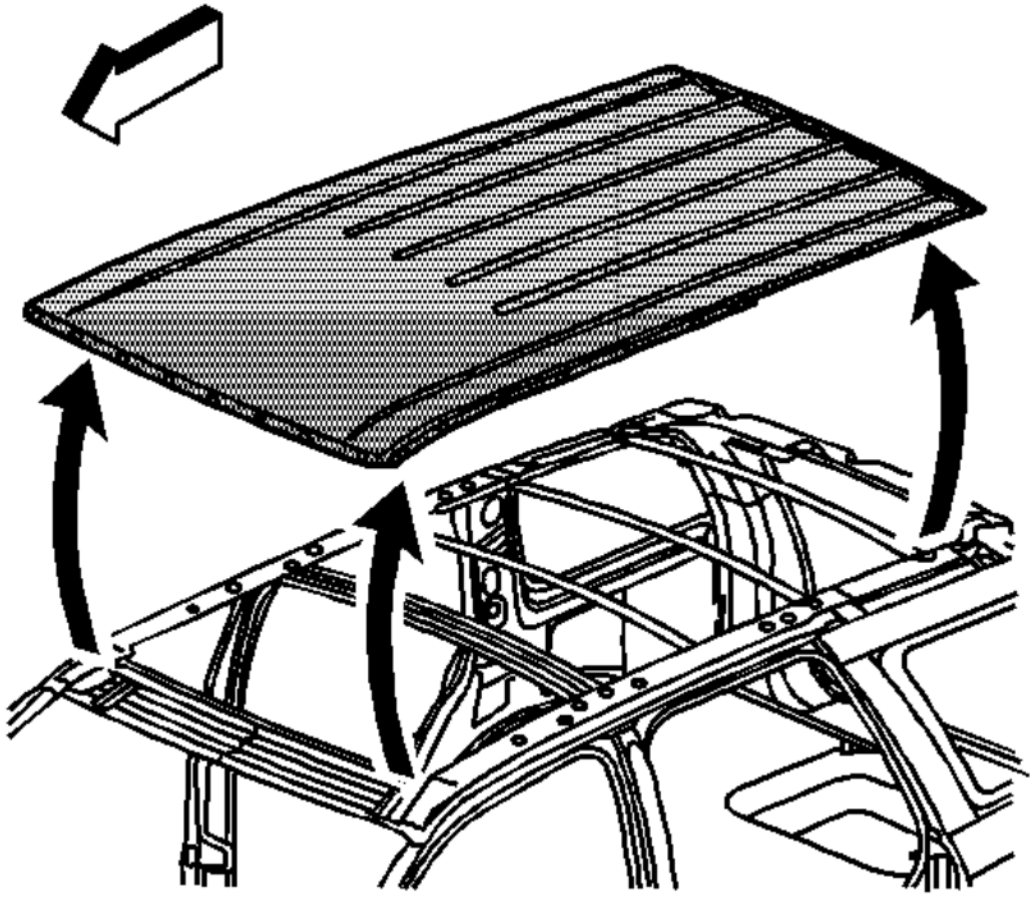


Fig. 15: Removing Damaged Outer Roof Panel
Courtesy of GENERAL MOTORS COMPANY

6. Remove the damaged roof panel.

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Installation Procedure

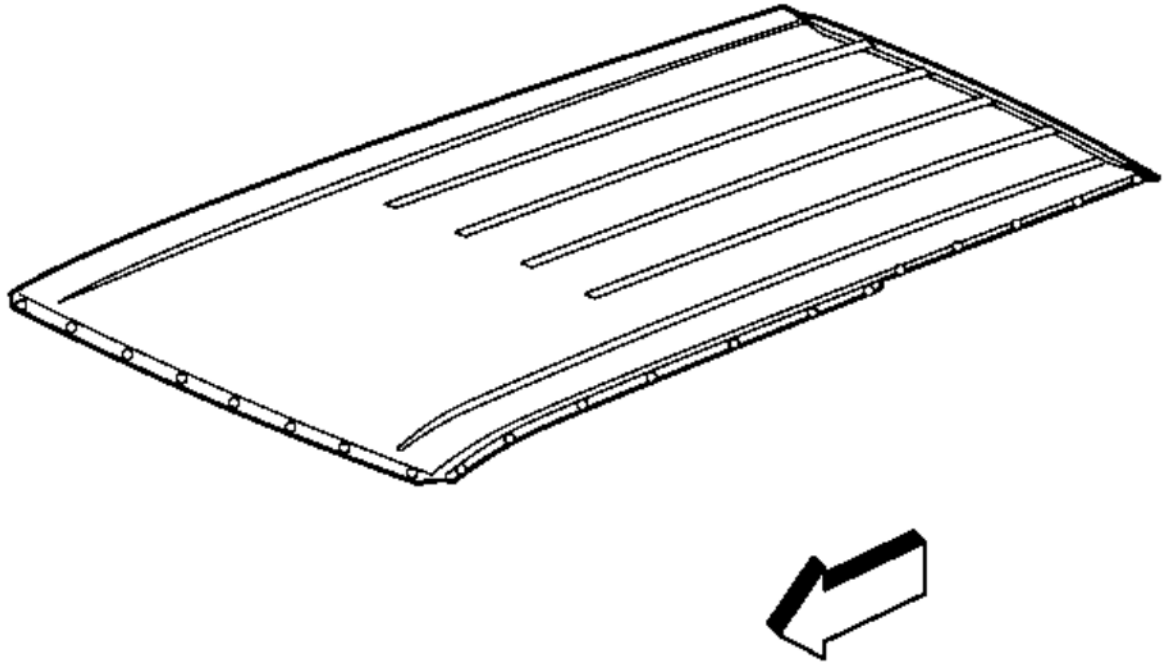


Fig. 16: Service Part With Plug Weld Holes
Courtesy of GENERAL MOTORS COMPANY

1. Prepare all attachment surfaces as necessary for welding.

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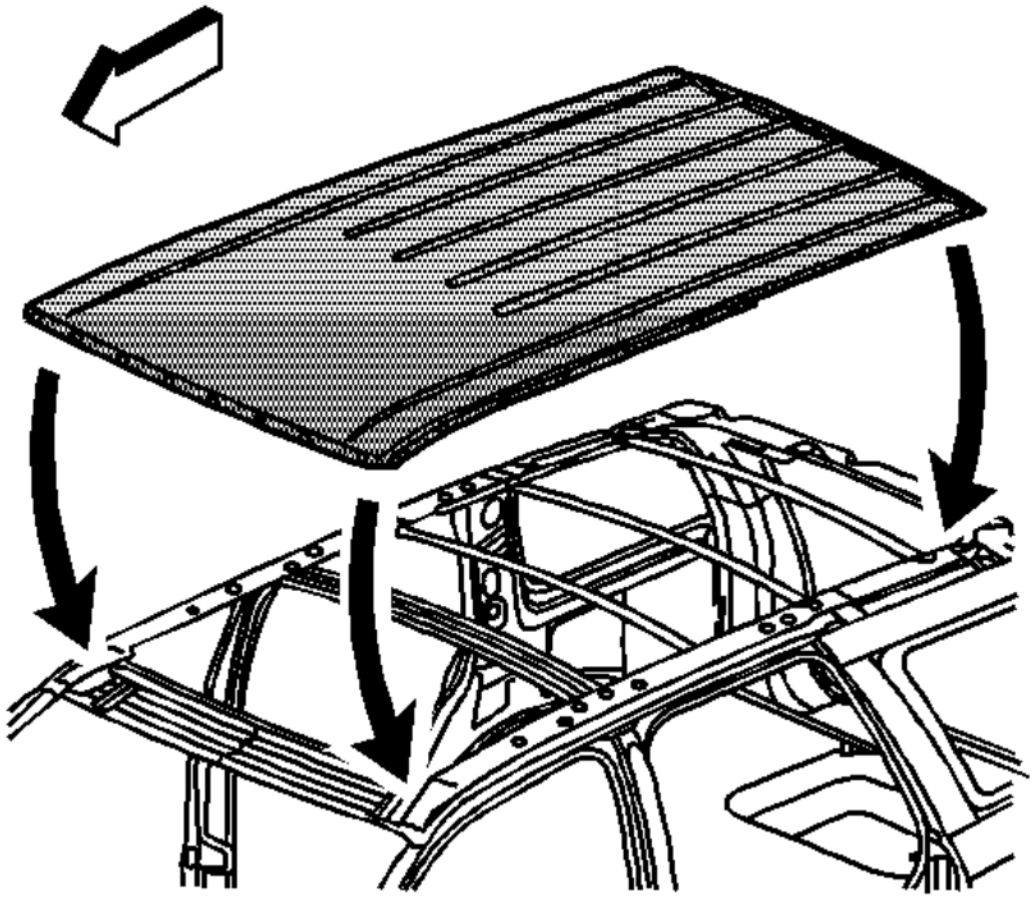


Fig. 17: Installing Outer Roof Panel
Courtesy of GENERAL MOTORS COMPANY

2. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .
3. Position the roof panel.

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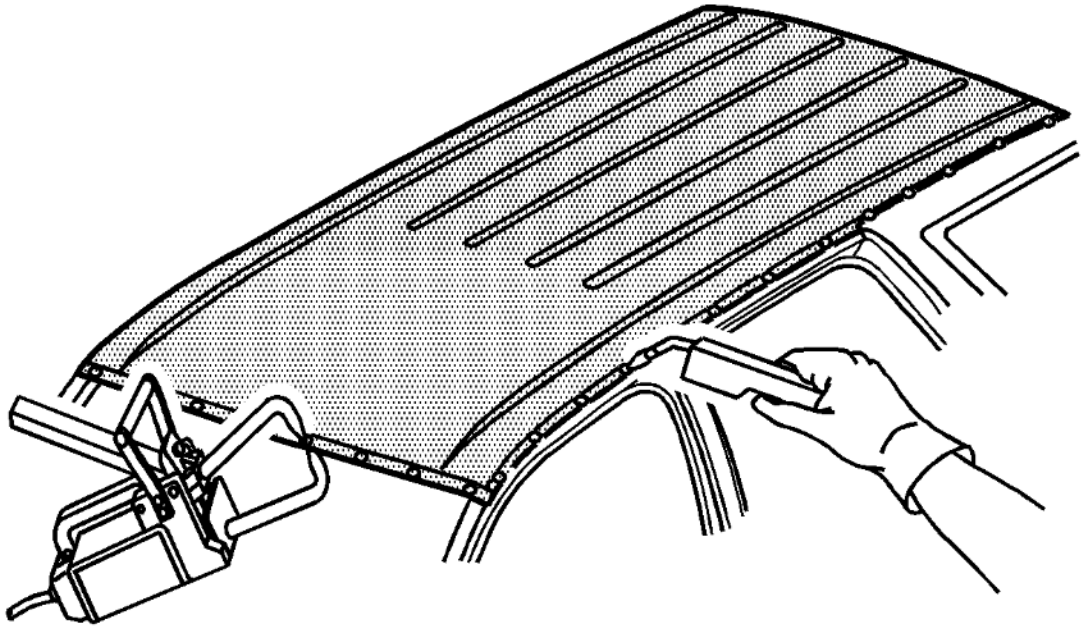


Fig. 18: Welding
Courtesy of GENERAL MOTORS COMPANY

4. Weld accordingly.

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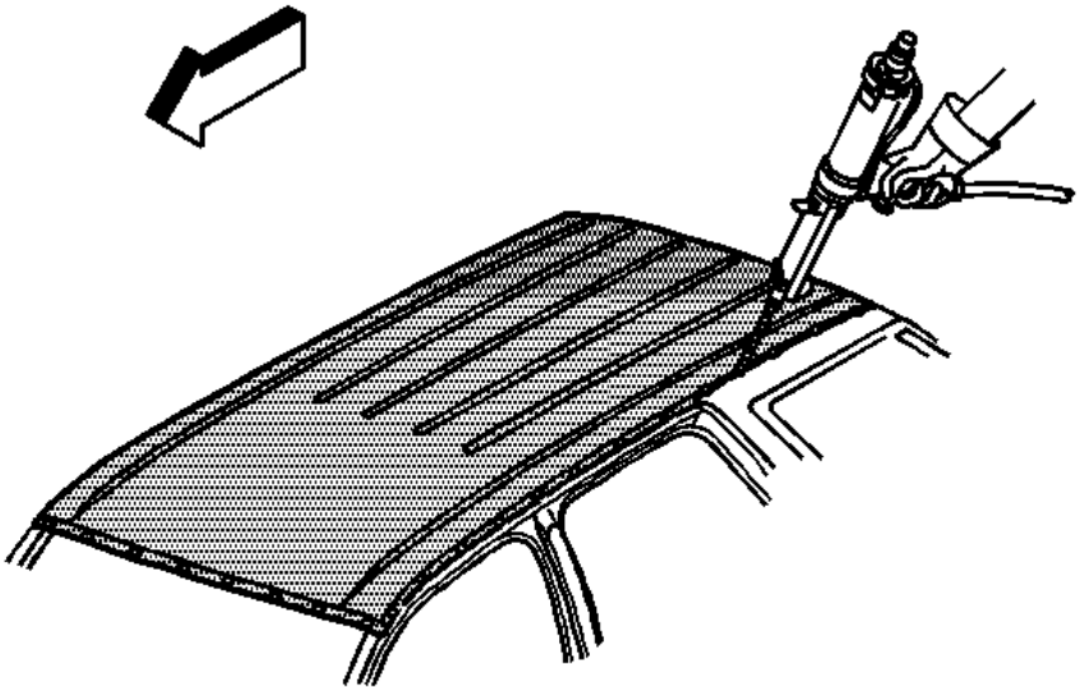


Fig. 19: Applying Sealers & Anti-Corrosion Materials
Courtesy of GENERAL MOTORS COMPANY

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.

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9. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .
10. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

ROCKER INNER PANEL REPLACEMENT

Removal Procedure

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

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

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

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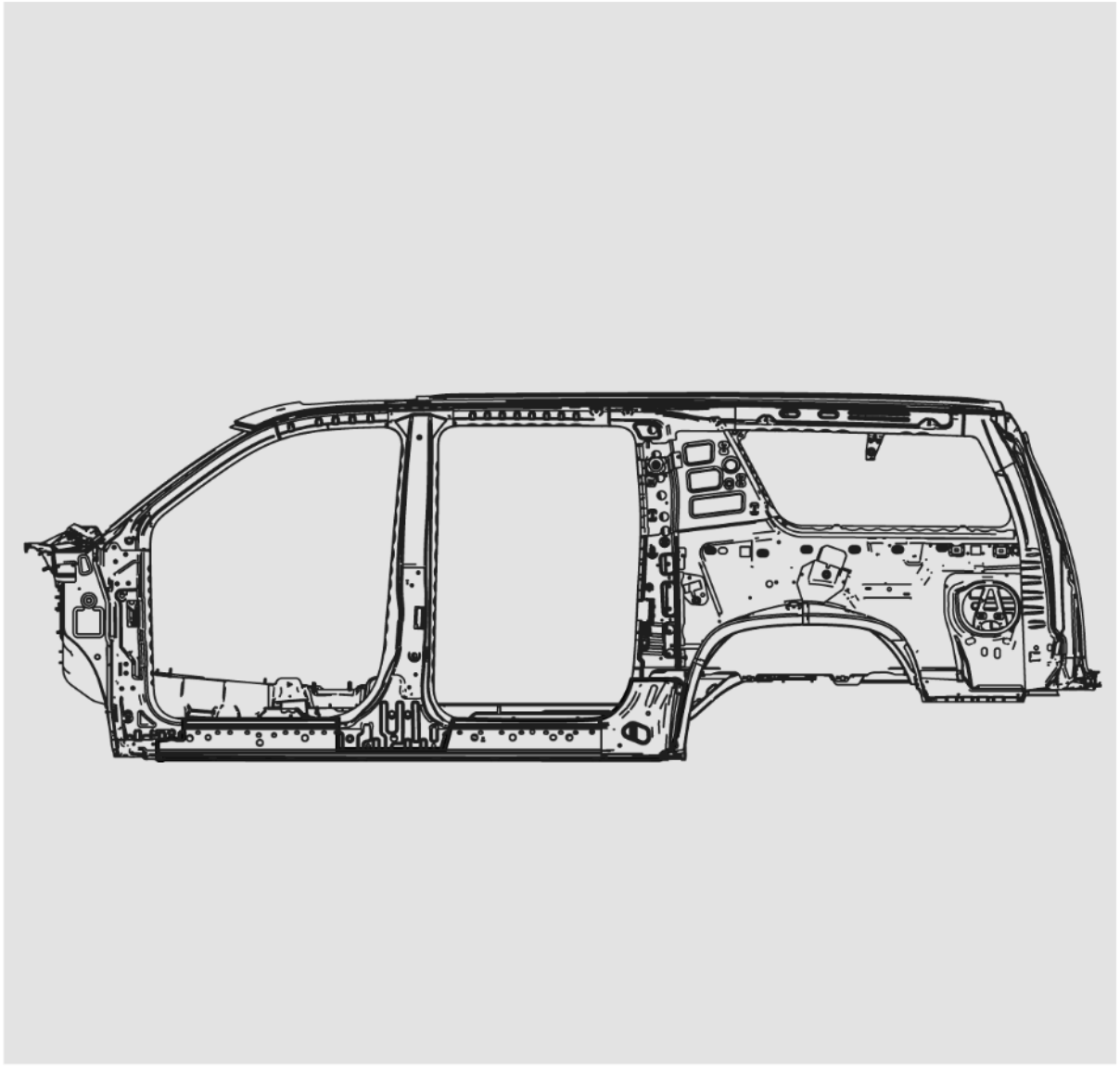


Fig. 20: Rocker Inner Panel Reinforcement Assembly
Courtesy of GENERAL MOTORS COMPANY

NOTE: **The rocker inner panel reinforcement 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 seams.**

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NOTE: **For access to the rocker inner panel reinforcement assembly, the outer door frame can be replaced at the factory seams, but requires the removal of the windshield, roof, and 1/4 panel. Sectioning procedures have been developed as a more cost-effective alternative to complete replacement. The specific area to be sectioned is determined by the extent of the damage to the vehicle. This procedure shows the outer door frame completely removed on a long wheelbase SUV, the short wheelbase SUV is similar.**

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 (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to **Dimensions - Body**.

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

5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
6. Remove outer door frame as necessary. Refer to the following procedures:
   - **Front Hinge Pillar Sectioning**
   - **Center Pillar Sectioning**
   - **Rear Pillar Sectioning**

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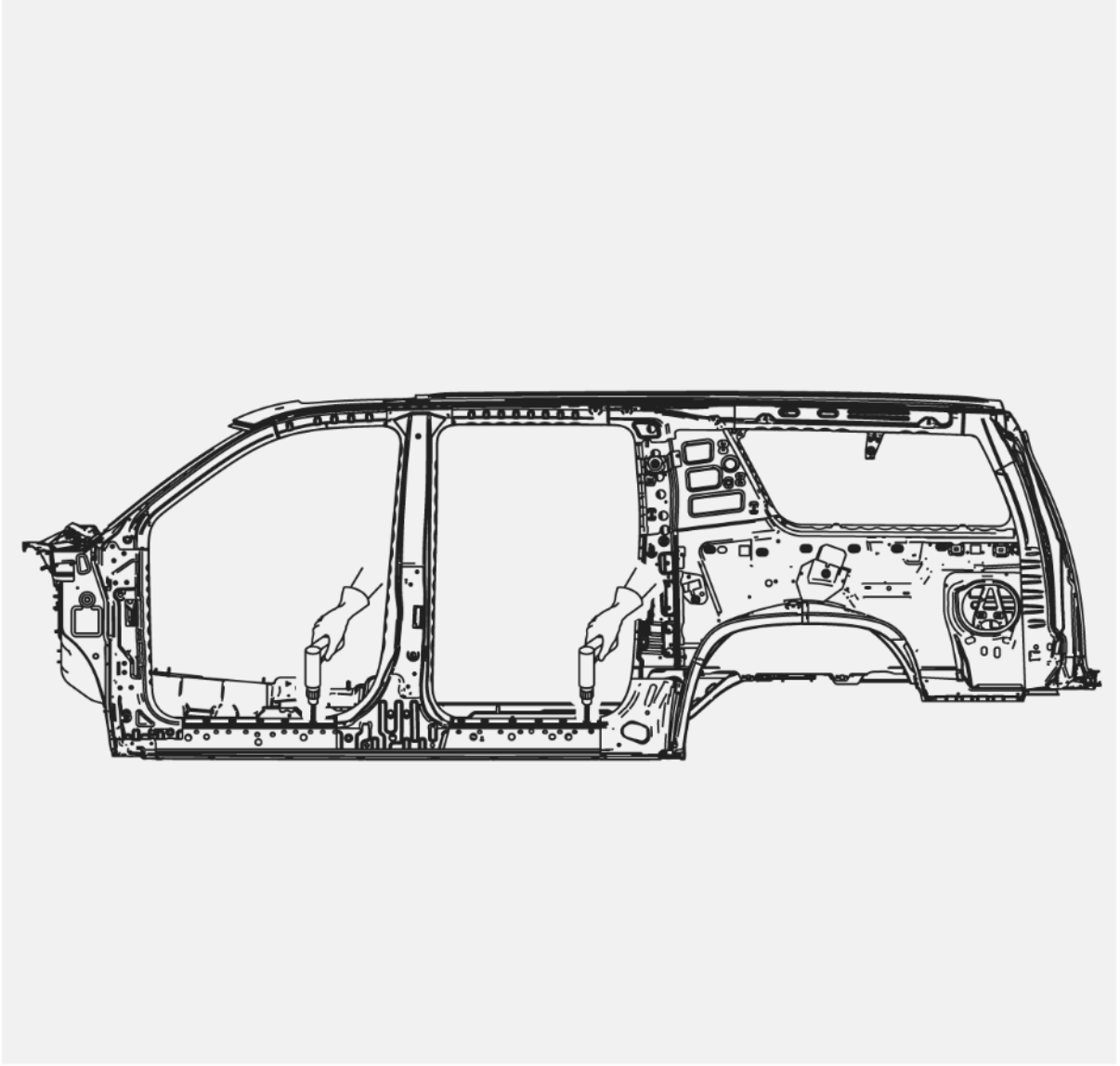


Fig. 21: Drilling Out All Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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

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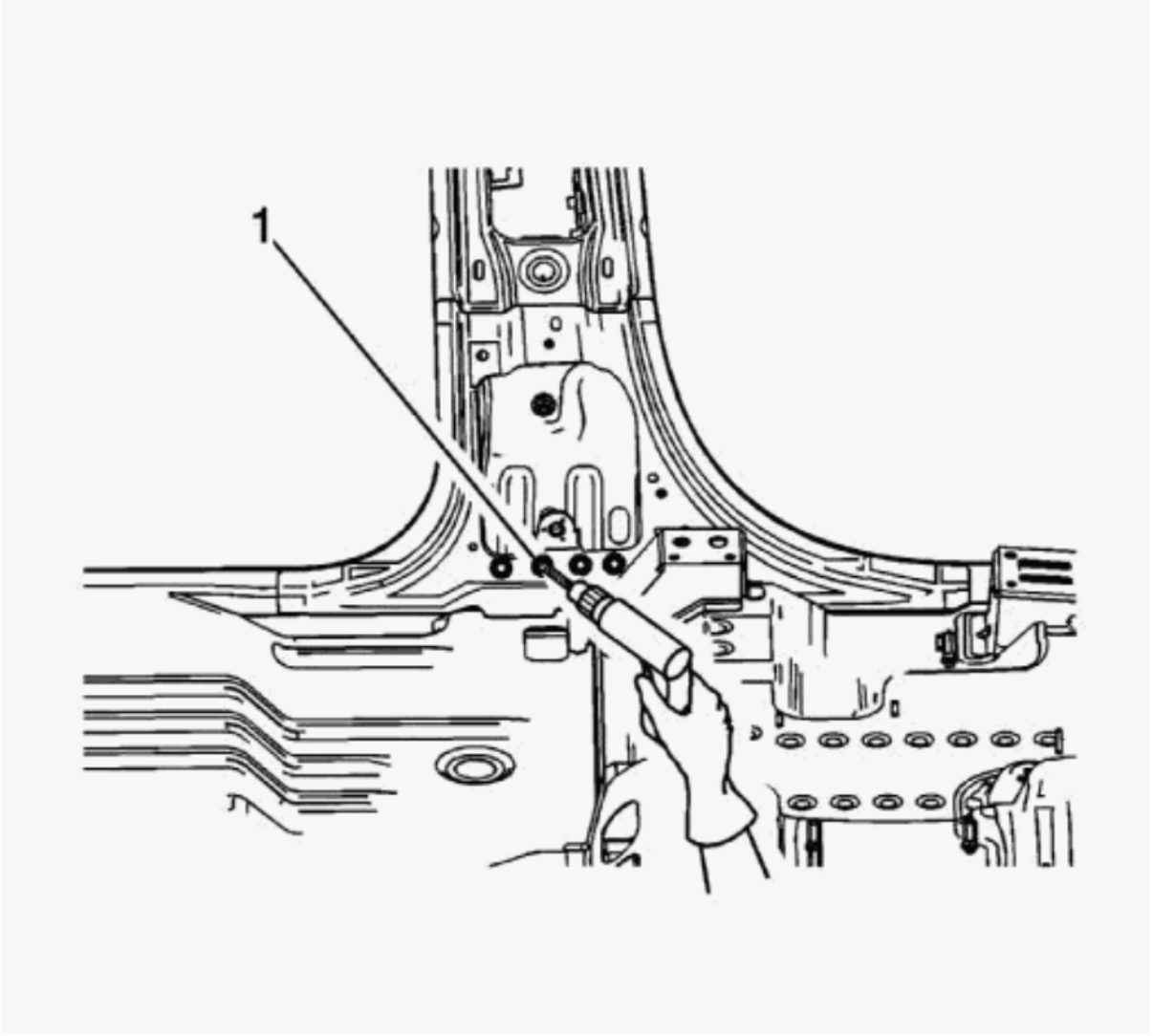


Fig. 22: Drilling Out All Factory Welds Along Inner Center Pillar
Courtesy of GENERAL MOTORS COMPANY

8. From inside of the vehicle locate and drill out the factory welds along the inner center pillar.

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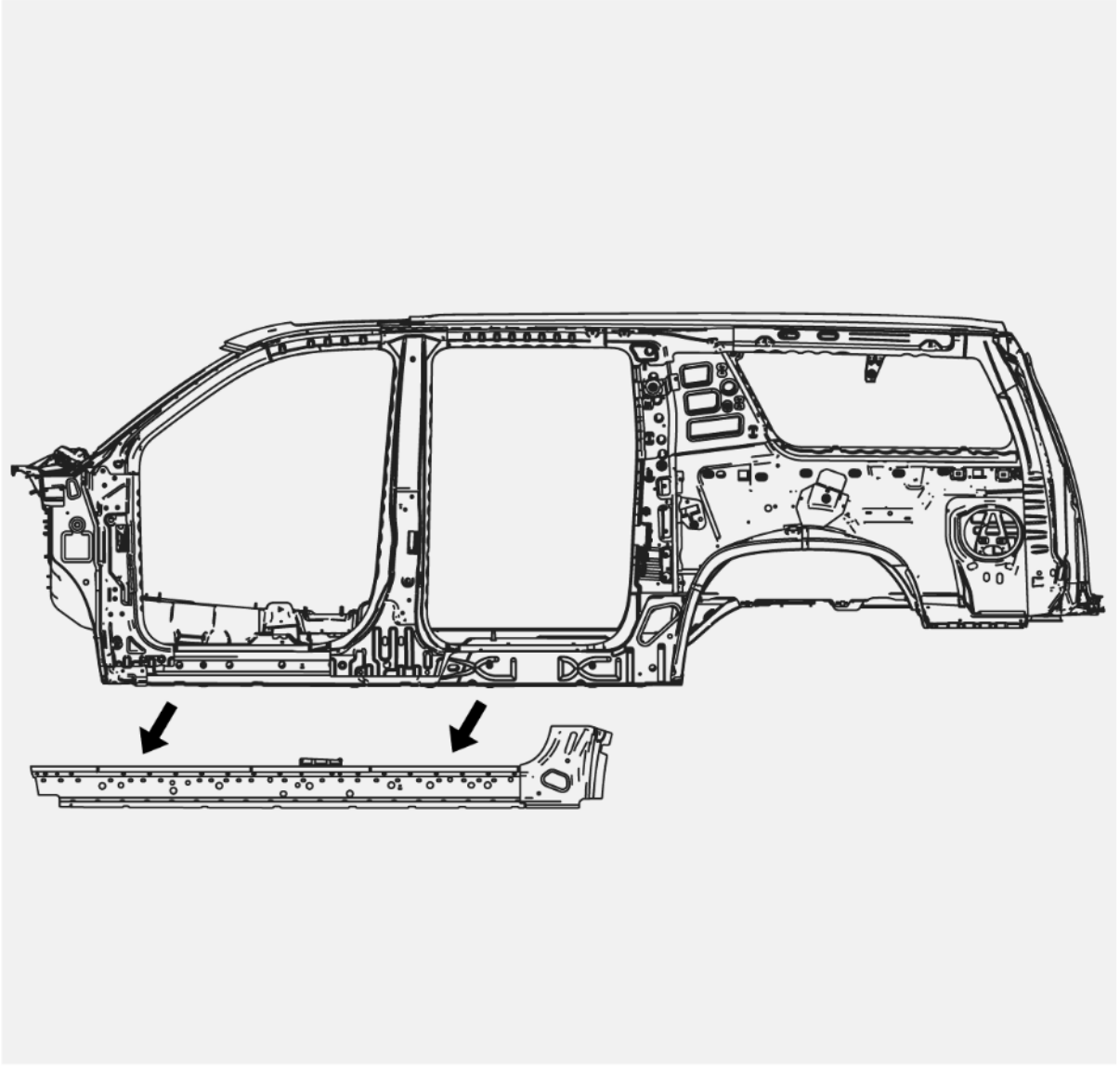


Fig. 23: Damaged Rocker Inner Panel Reinforcement Assembly
Courtesy of GENERAL MOTORS COMPANY

9. Remove the damaged rocker inner panel reinforcement assembly.

Installation Procedure

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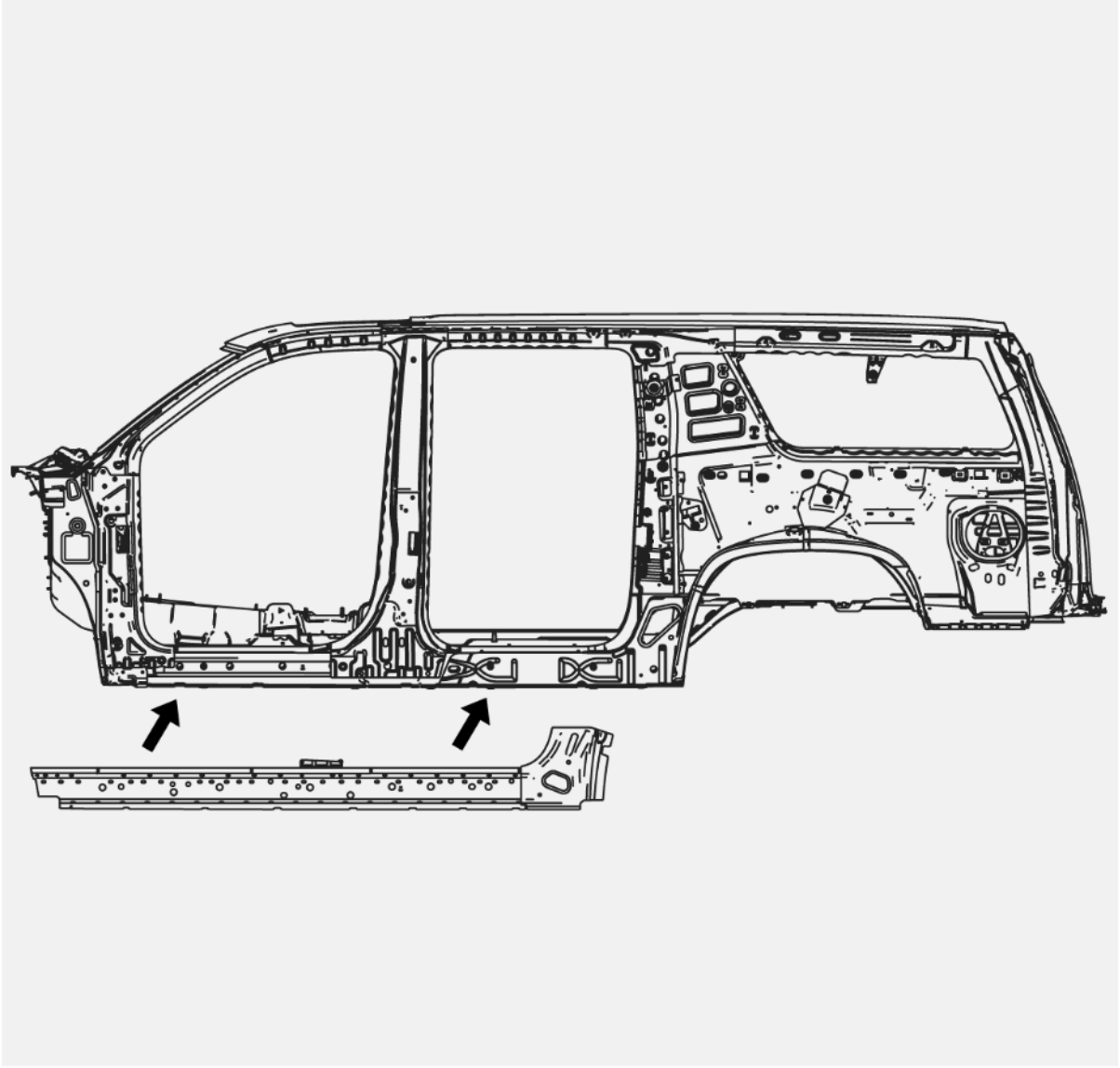


Fig. 24: Inner Rocker Reinforcement Assembly
Courtesy of GENERAL MOTORS COMPANY

1. Clean and prepare all attachment surfaces for welding.
2. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .
3. Position the inner rocker reinforcement assembly to the vehicle using 3-dimensional measuring equipment. Clamp in place.

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4. Prior to installing outer body side, replace all necessary welds, that are covered by the outer body side, weld accordingly at those original weld locations.

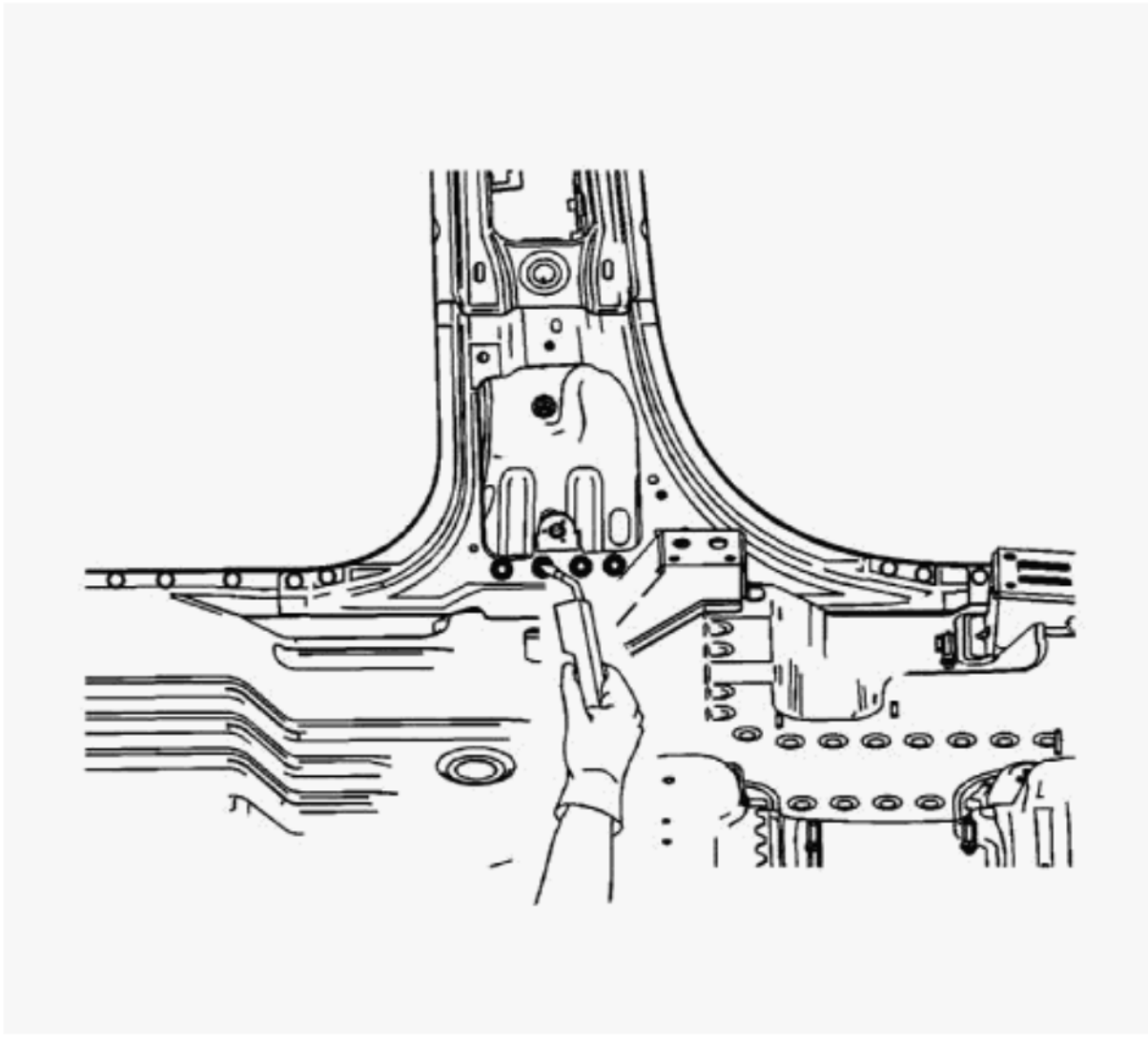


Fig. 25: Weld All Factory Welds Along Inner Center Pillar
Courtesy of GENERAL MOTORS COMPANY

5. Weld accordingly all factory welds along the inner center pillar.
6. Complete body side outer sectioning as necessary.

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7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
8. Paint the repair 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 (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

ROCKER OUTER PANEL SECTIONING

Removal Procedure

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

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

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

WARNING: **Refer to Battery Disconnect Warning .**

NOTE: **The door frame can be replaced at the factory seams, but requires the removal of the windshield, roof, and 1/4 panel. Sectioning procedures have been developed as a more cost-effective alternative to complete replacement. The specific area to be sectioned is determined by the extent of the damage to the vehicle.**

1. Disable the SIR system. Refer to **SIR Disabling and Enabling** .
2. Remove all related panels and components.
3. Repair as much of the damage as possible to factory specifications. Refer to **Dimensions - Body**.

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

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

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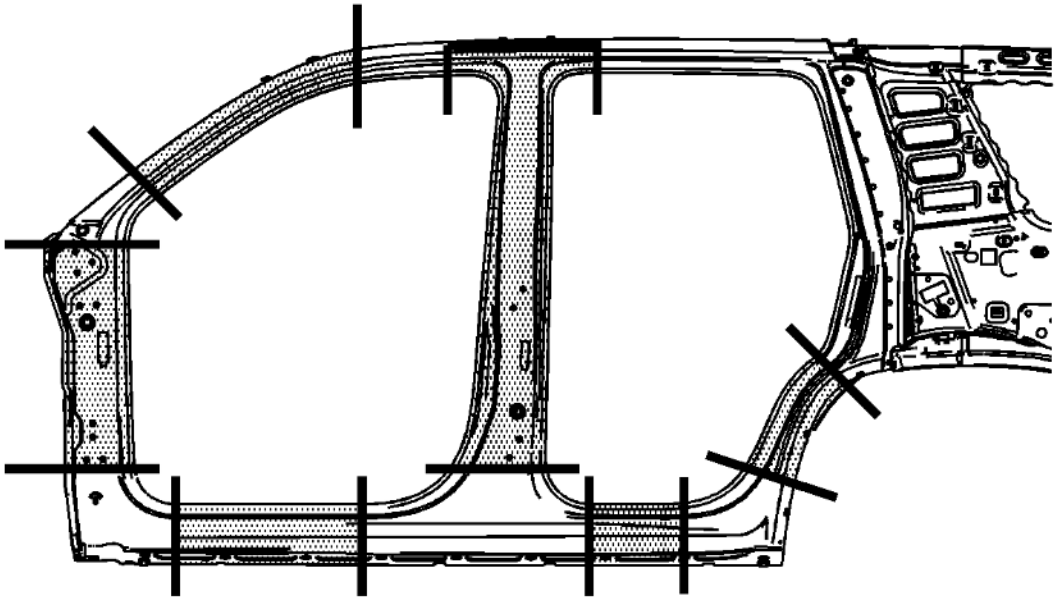


Fig. 26: Performing Additional Sectioning Procedures For Short Wheelbase
Courtesy of GENERAL MOTORS COMPANY

5. Perform additional sectioning procedures for short wheelbase as necessary. Refer to the following procedures:
   - **Front Hinge Pillar Sectioning**
   - **Center Pillar Sectioning**
   - **Rear Pillar Sectioning**

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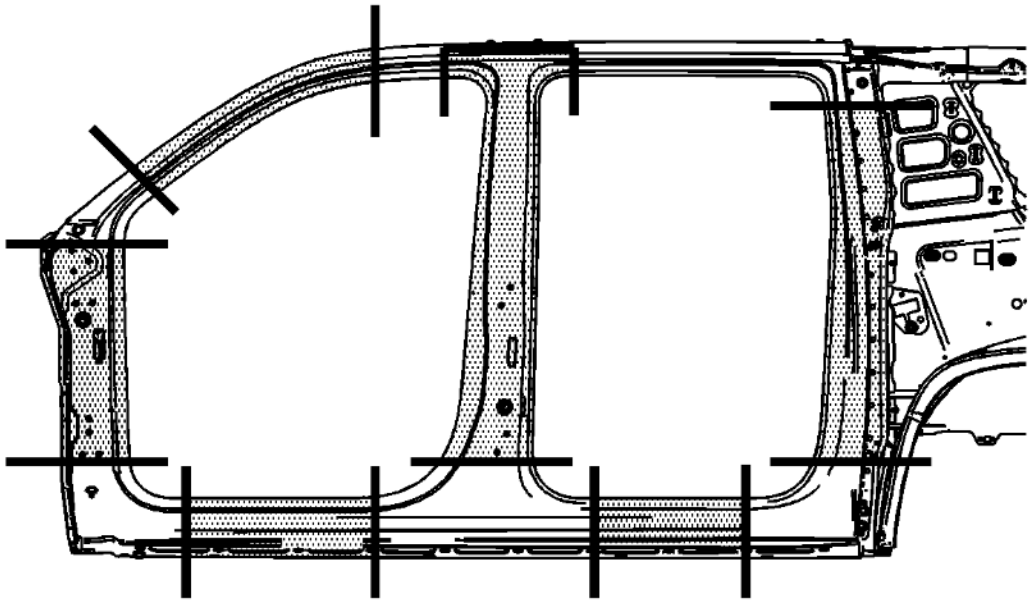


Fig. 27: Perform Additional Sectioning Procedures For Long Wheelbase As Necessary
Courtesy of GENERAL MOTORS COMPANY

6. Perform additional sectioning procedures for long wheelbase as necessary. Refer to the following procedures:
   - **Front Hinge Pillar Sectioning**
   - **Center Pillar Sectioning**
   - **Rear Pillar Sectioning**

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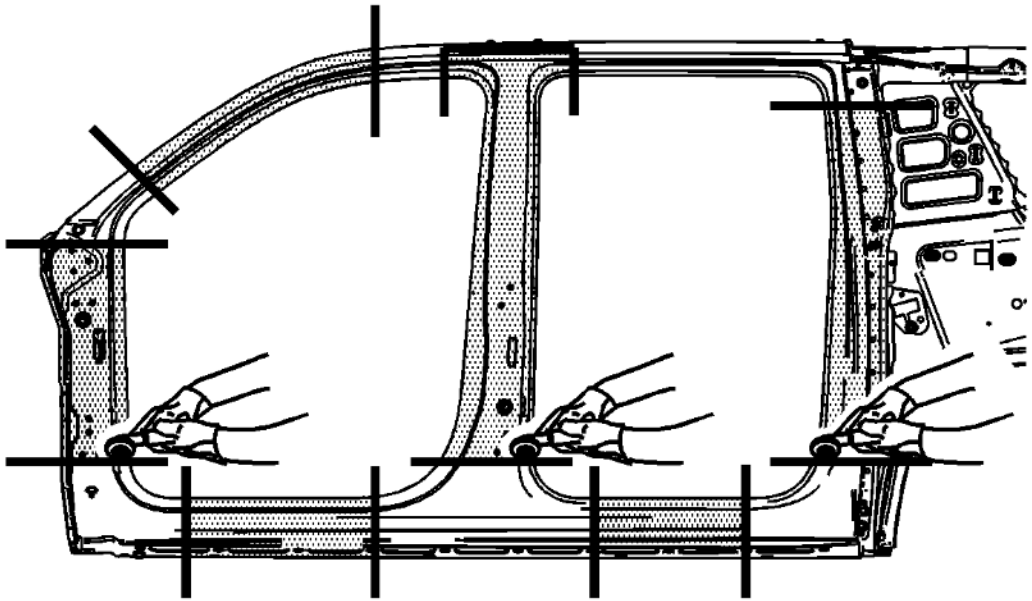


Fig. 28: Sectioning Outer Rocker At Front Hinge Pillar, Center Pillar, And Rear Pillar
Courtesy of GENERAL MOTORS COMPANY

NOTE: This procedure shows sectioning the outer rocker at the front hinge pillar, center pillar, and rear pillar, for the long wheelbase vehicles, short wheelbase vehicles are similar, the specific area to be sectioned is determined by the extent of the damage to the vehicle.

NOTE: Do not damage any inner panels or reinforcements.

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7. Mark and cut the panel in the locations where sectioning is to be performed.
8. Locate and drill out all factory welds. Note the number and location of the welds for installation of the service part.

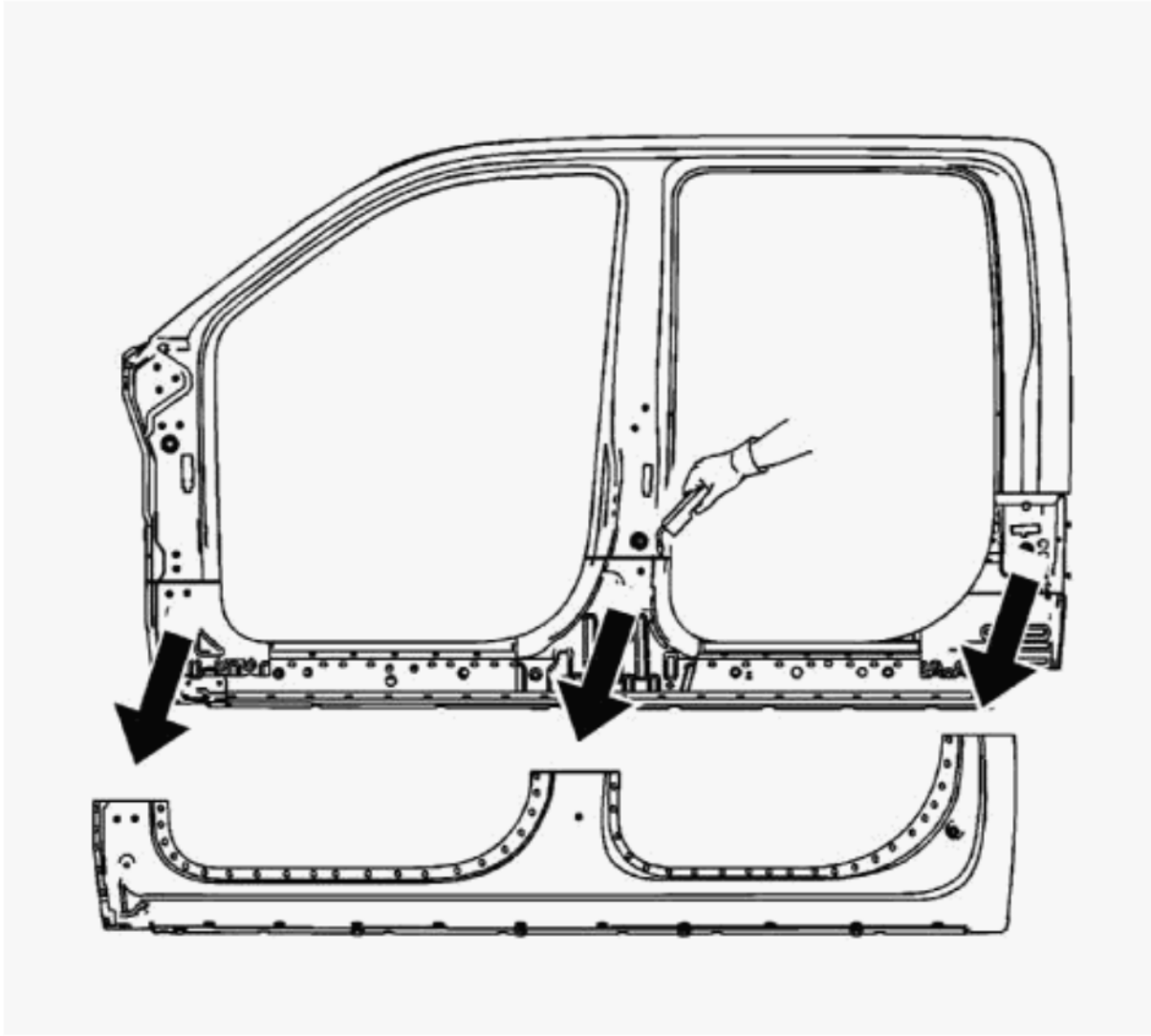


Fig. 29: Damaged Outer Rocker
Courtesy of GENERAL MOTORS COMPANY

9. Remove the damaged outer rocker.

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Installation Procedure

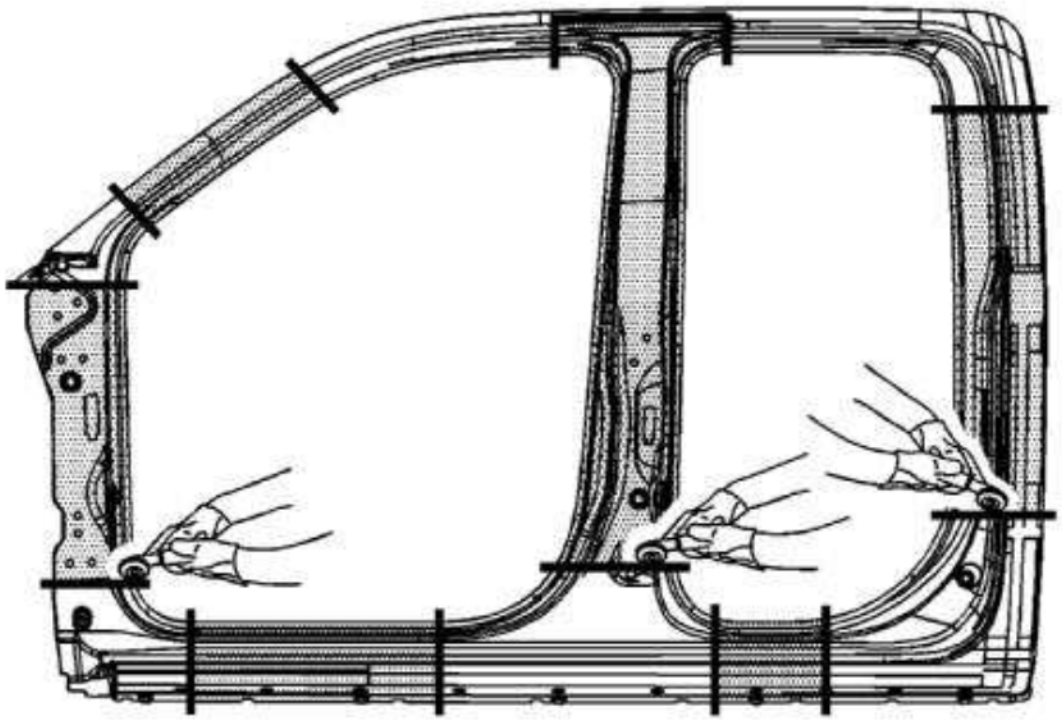


Fig. 30: Cutting Panel In Locations
Courtesy of GENERAL MOTORS COMPANY

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

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

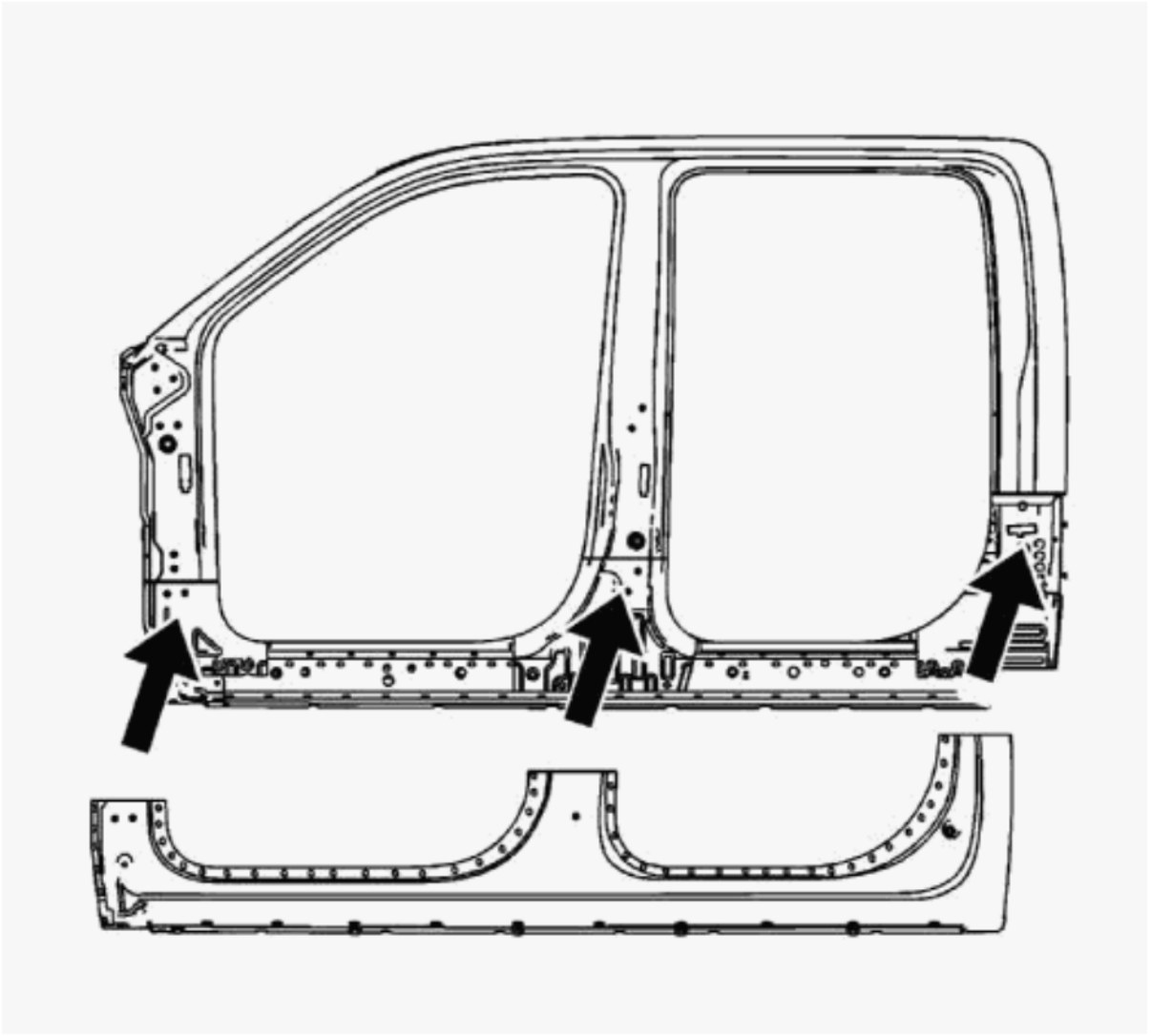


Fig. 31: Positioning Outer Rocker To Vehicle Using 3-Dimensional Measuring Equipment
Courtesy of GENERAL MOTORS COMPANY

4. Position the outer rocker to the vehicle using 3-dimensional measuring equipment. Clamp in place.
5. Weld accordingly.
6. Clean and prepare all welded surfaces.

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7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
8. Paint the repair 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 (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

FRONT SIDE DOOR OUTER PANEL REPLACEMENT (BELT CUT)

Removal Procedure

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

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

NOTE: **Complete Outer Door Panel replacement is not recommended, this procedure is for Belt Cut Only.**

1. Disconnect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .
2. Disable the SIR system. Refer to **SIR Disabling and Enabling** .
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to **Dimensions - Body**.
5. Remove the door assembly. Refer to **Front Side Door Replacement** .

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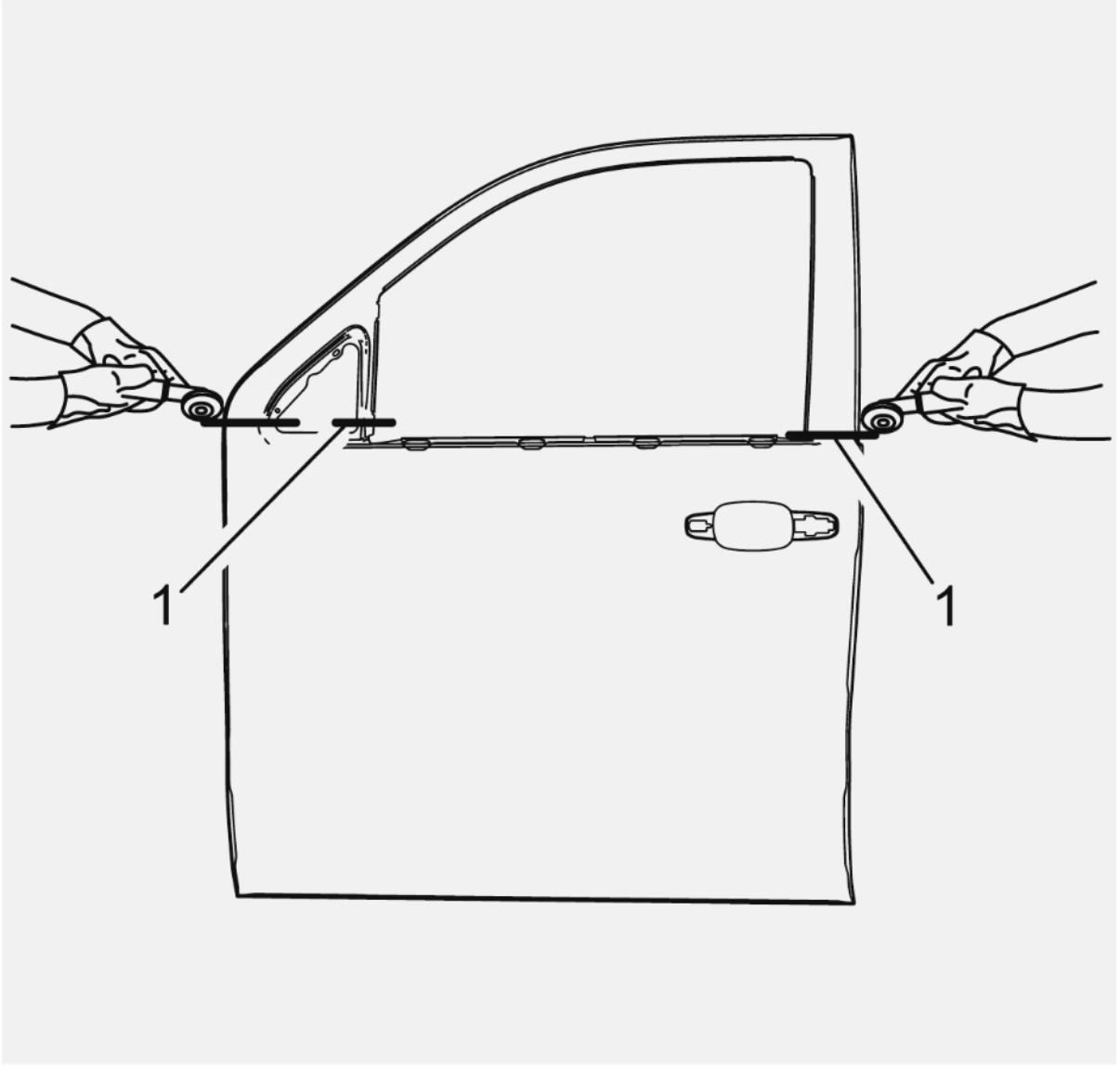


Fig. 32: Cutting Door Panel Where Sectioning Is To Be Performed
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Do not damage any window run channels or reinforcements.**

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

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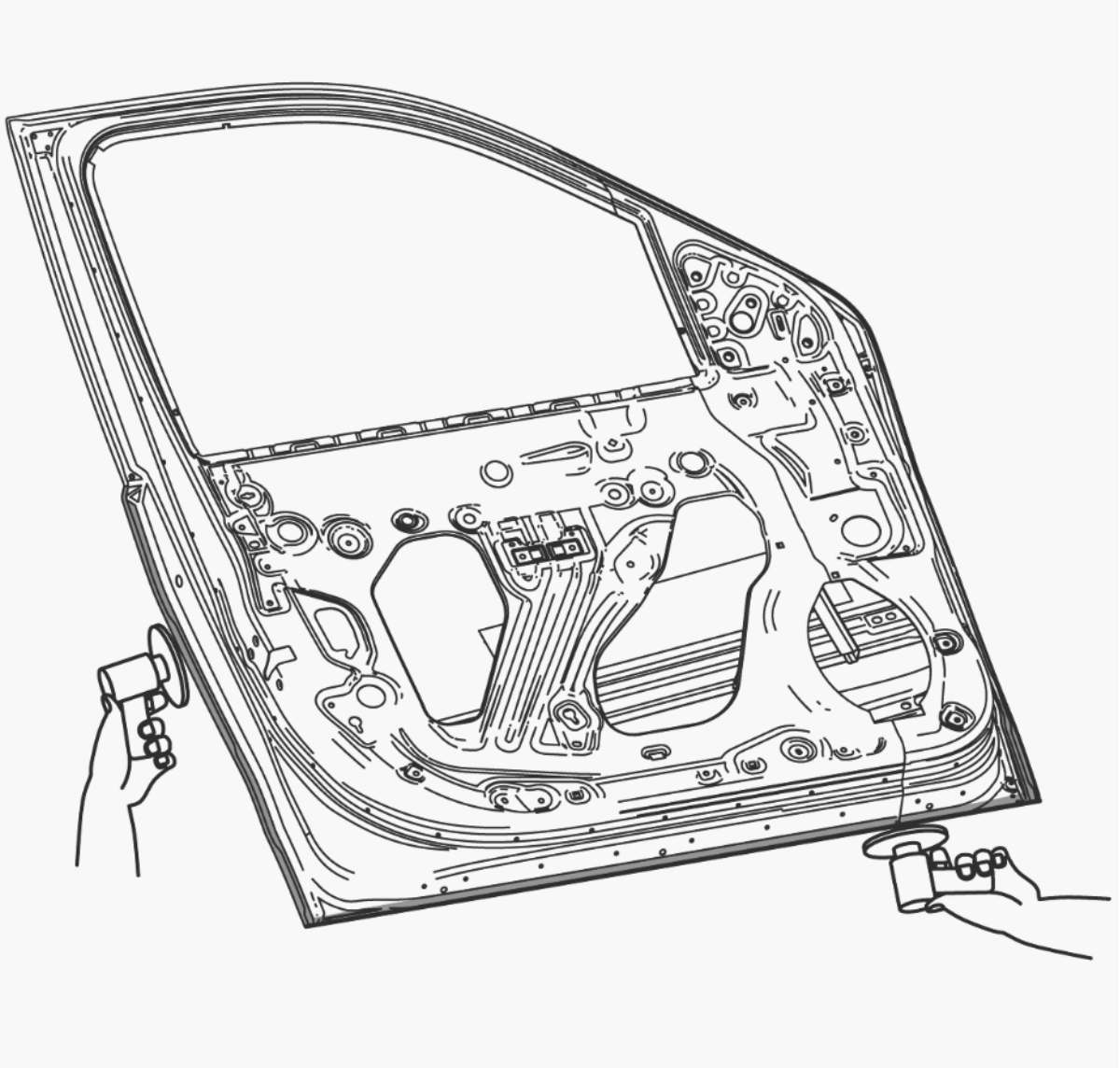


Fig. 33: Grinding Edges Of Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

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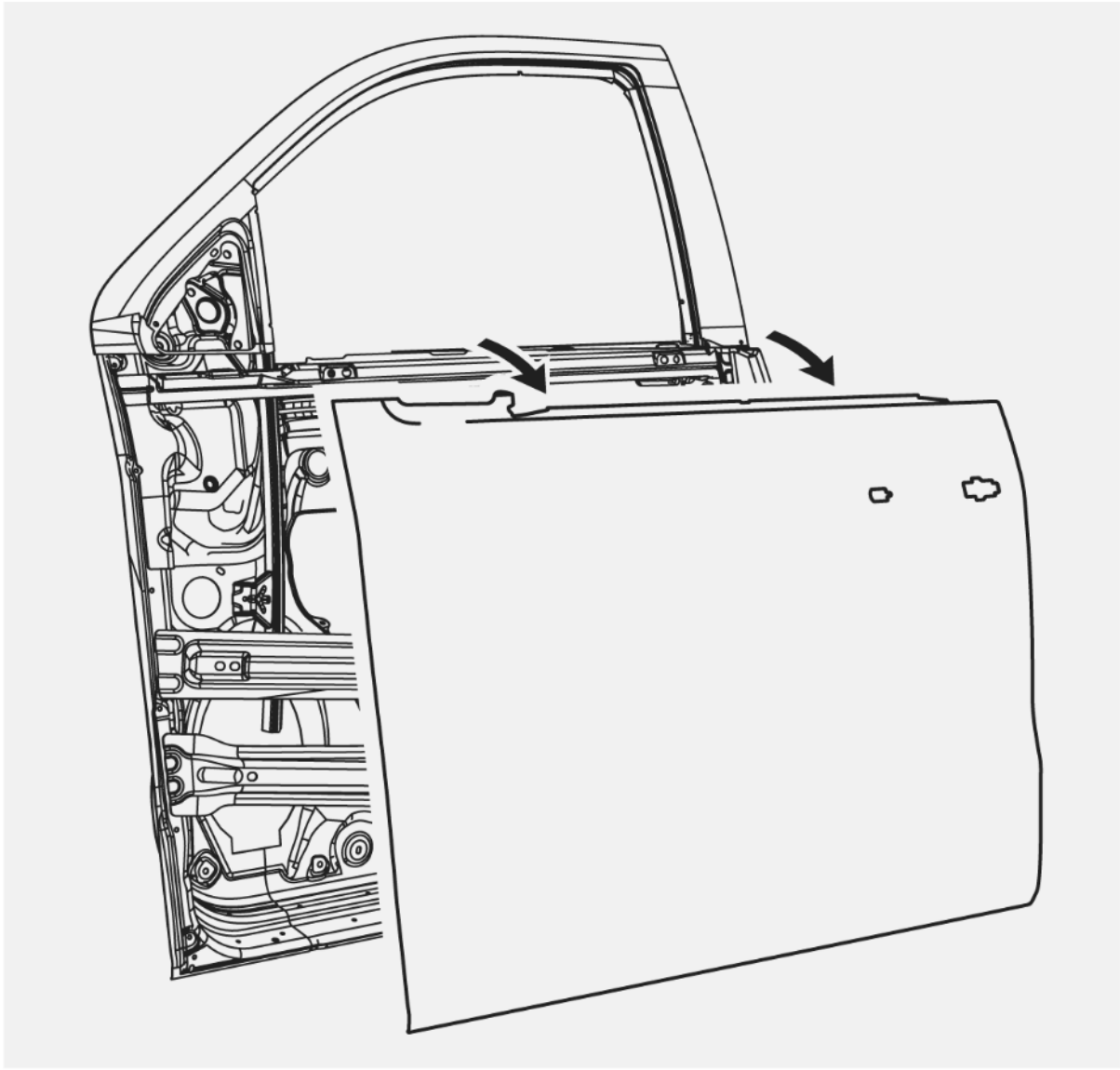


Fig. 34: Door Shell
Courtesy of GENERAL MOTORS COMPANY

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

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in a collision.

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

Installation Procedure

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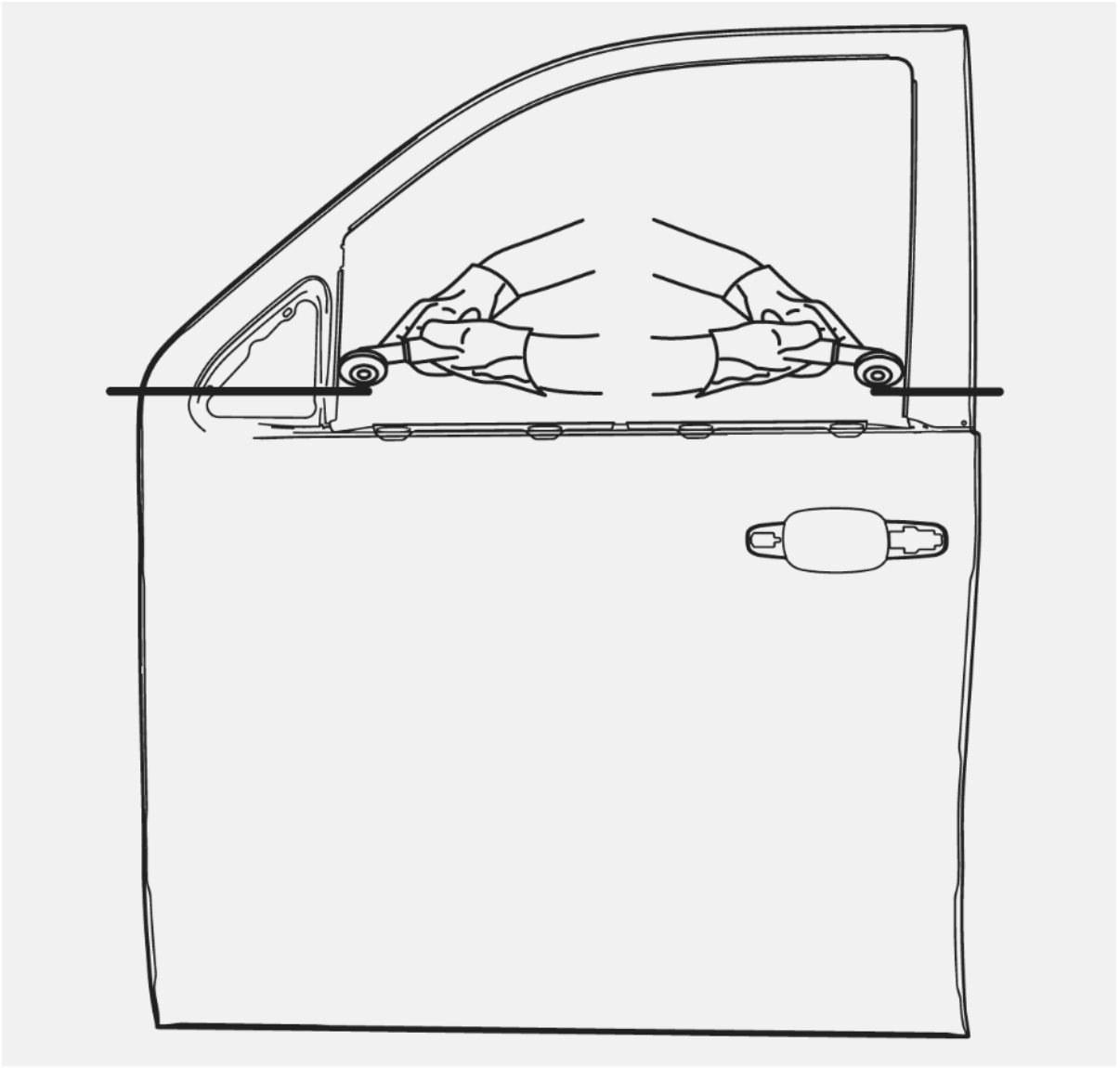


Fig. 35: Cutting Replacement Panel
Courtesy of GENERAL MOTORS COMPANY

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

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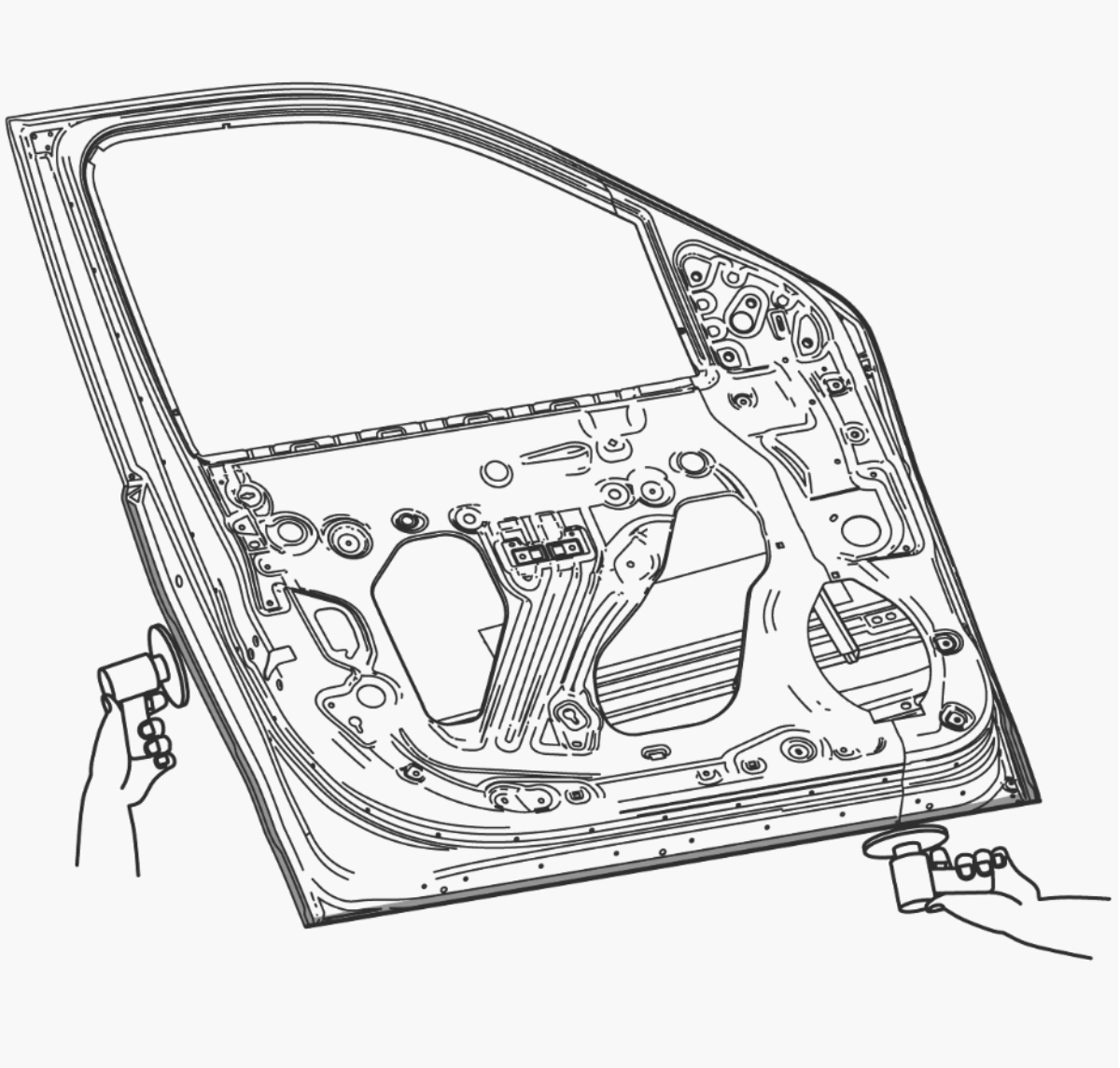


Fig. 36: Grinding Edges Of Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

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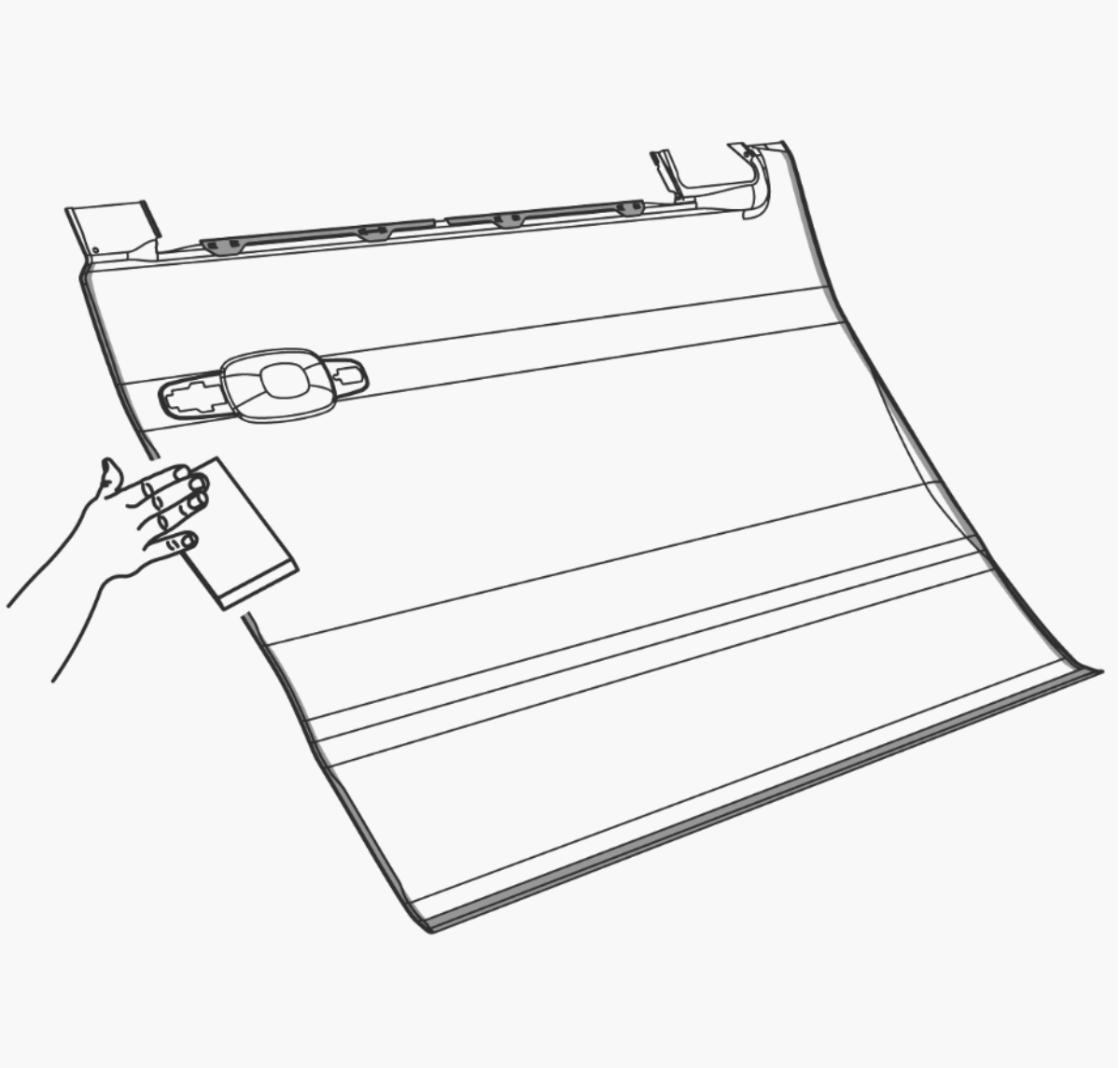


Fig. 37: Scuffing Opposing Mating Surfaces Of Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

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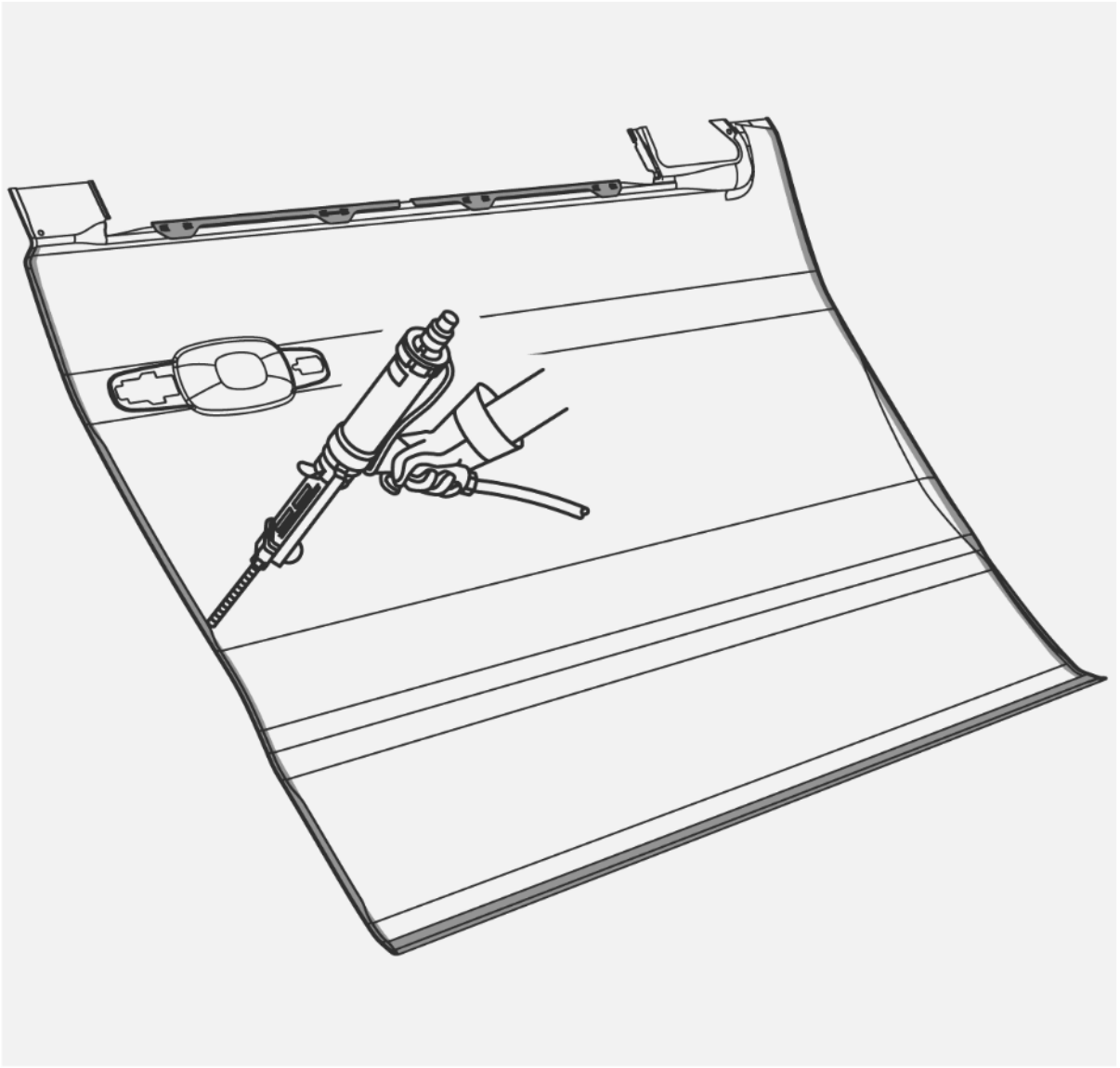


Fig. 38: Applying Bead Of Metal Panel Bonding Adhesive
Courtesy of GENERAL MOTORS COMPANY

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

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

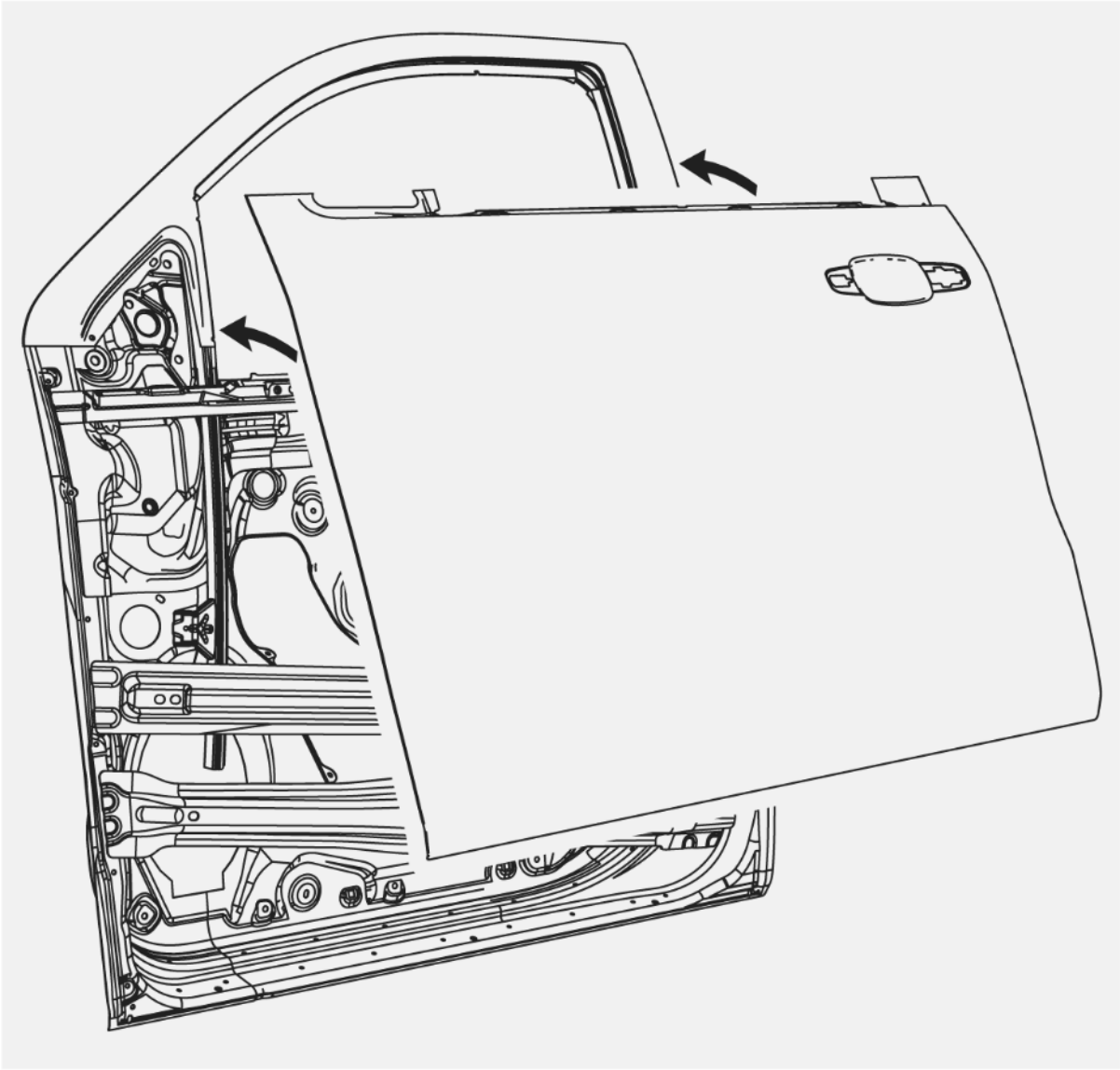
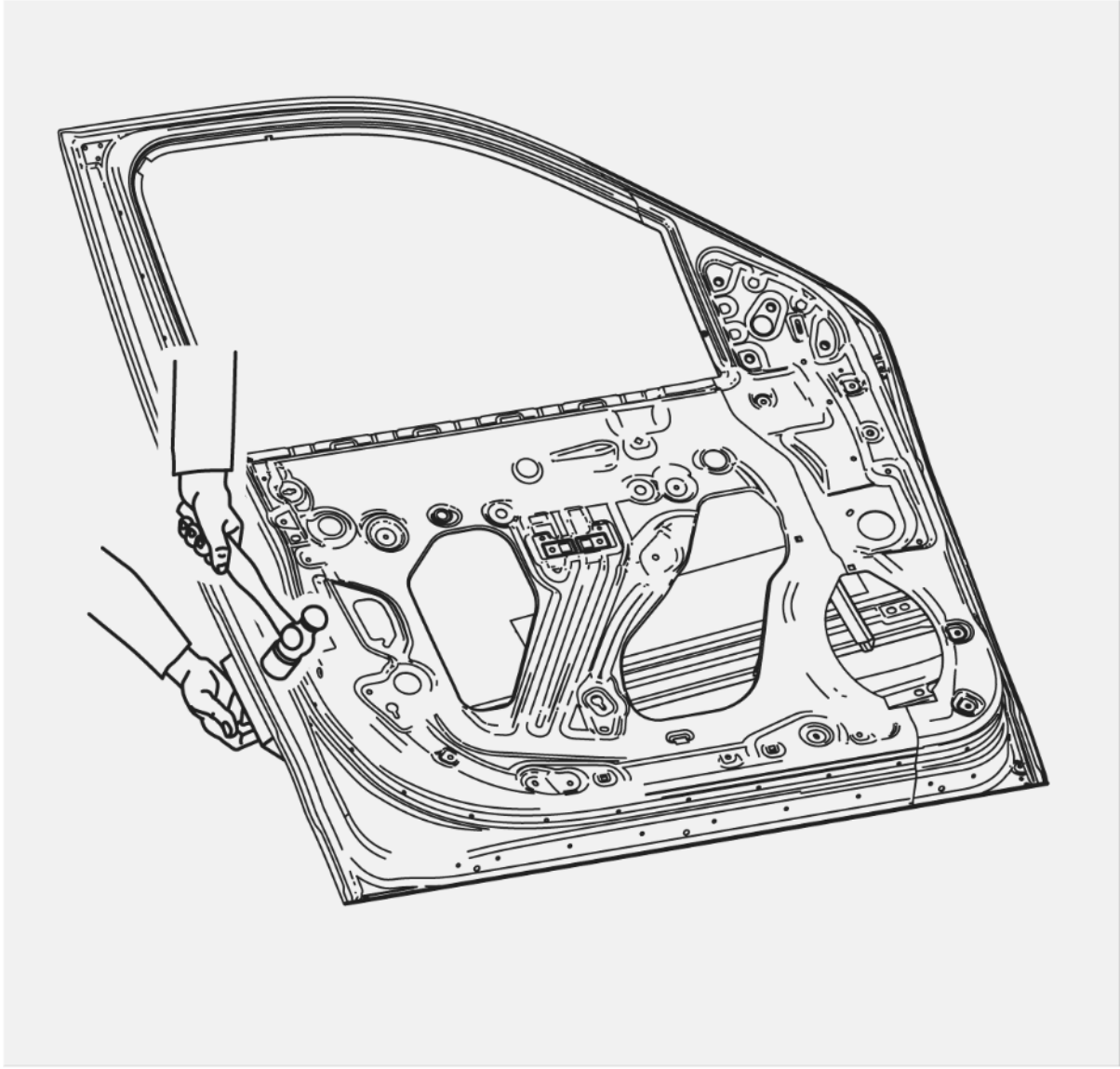


Fig. 39: Installing Door Outer Panel To Door Shell
Courtesy of GENERAL MOTORS COMPANY

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

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



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Fig. 40: Re-Hemming Flanges Around Door Shell
Courtesy of GENERAL MOTORS COMPANY

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

    Continue to hammer in stages along the hem flanges.

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

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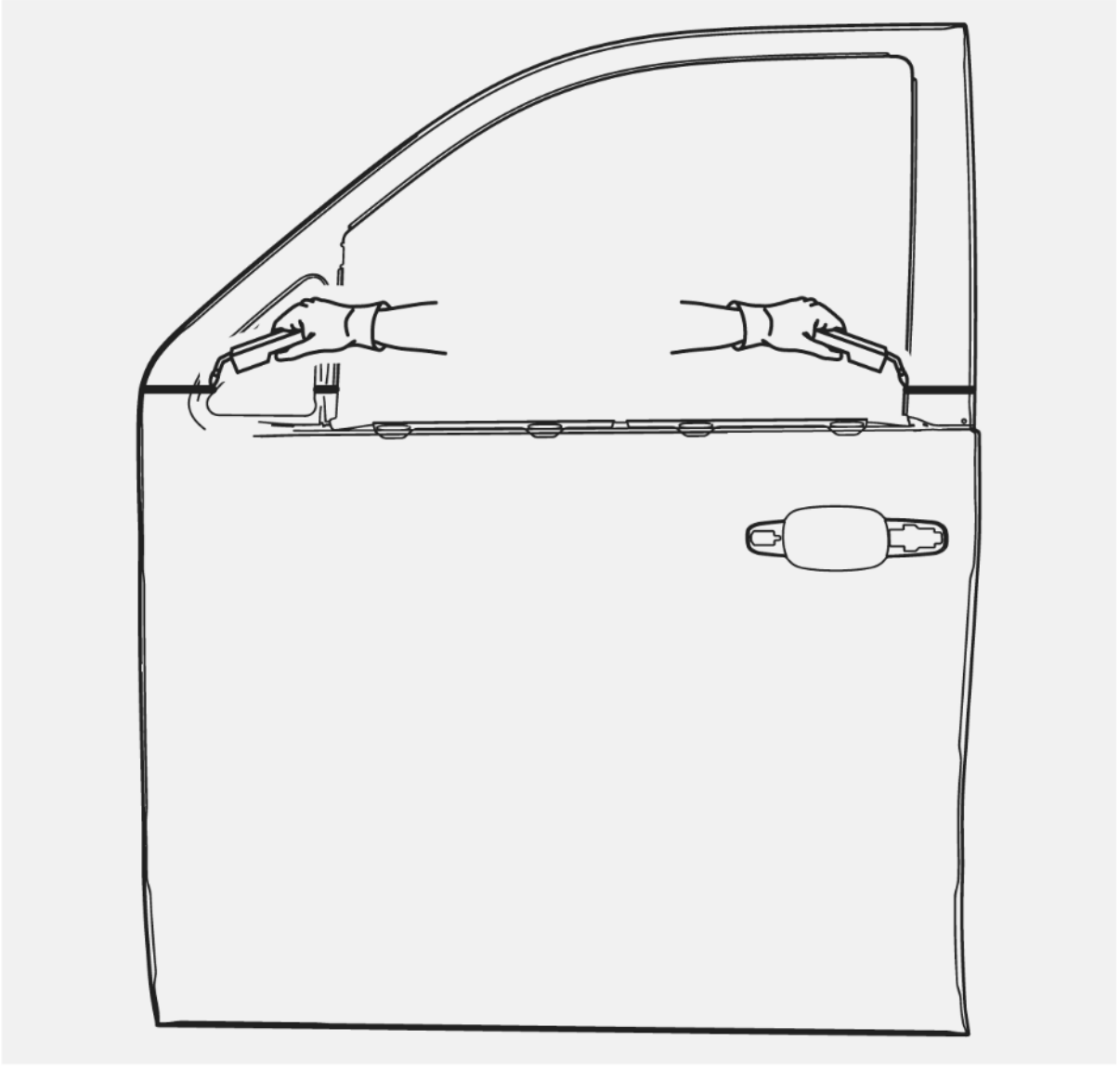


Fig. 41: Welding Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

13. Weld as necessary the door outer panel.
14. Clean and prepare all welded surfaces.

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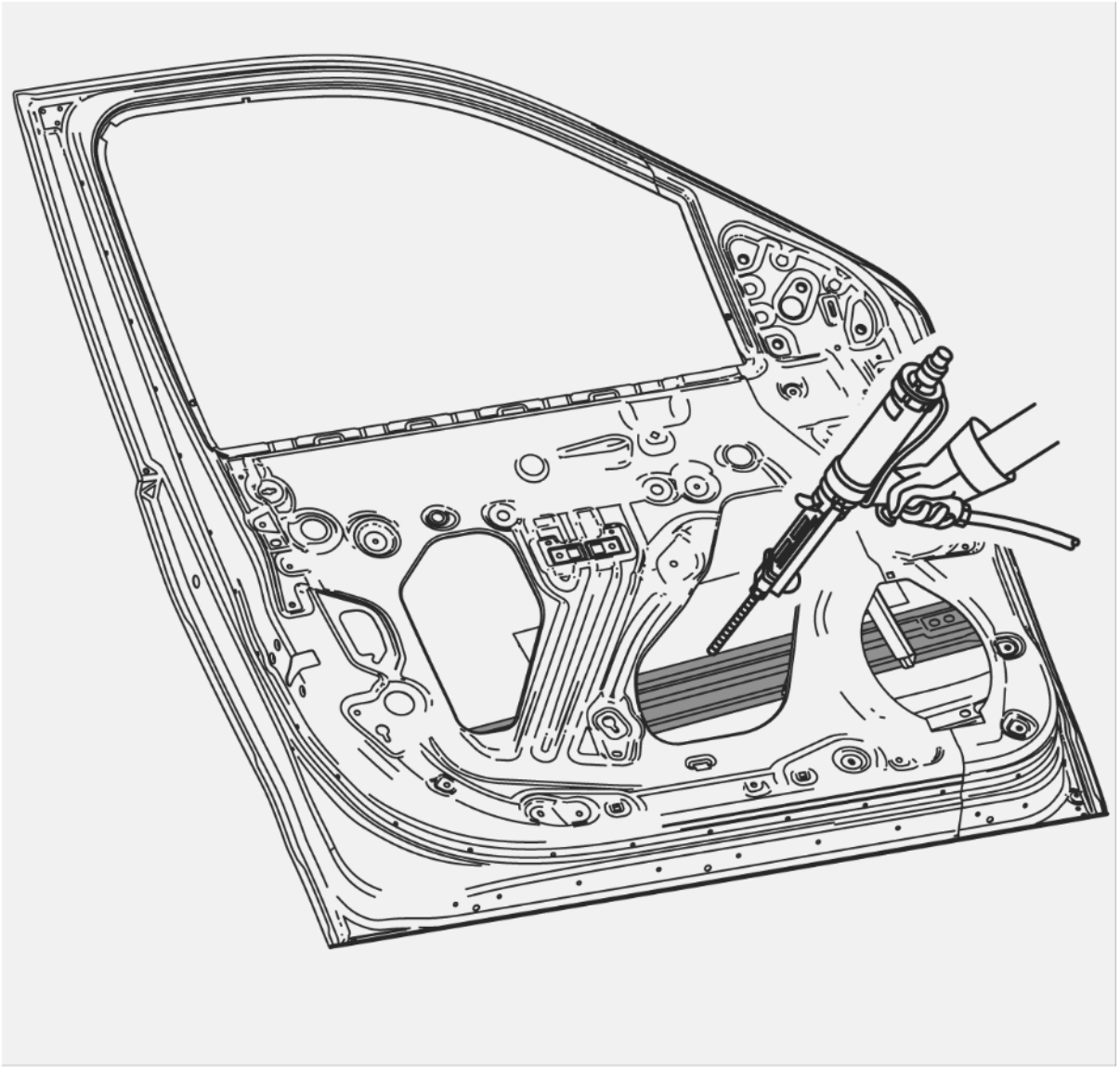


Fig. 42: Applying Fusor Super Flexible Anti-Flutter Foam-Fast Set
Courtesy of GENERAL MOTORS COMPANY

15. Apply 3M 08463 Flexible Foam, or equivalent, in a continuous bead the entire length between the beltline reinforcement and the door outer panel.
16. Apply 3M 08463 Flexible Foam, or equivalent, in a continuous bead the entire length between the door outer panel and the inner safety beam

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making multiple passes behind the side impact sensor portion of the beam as required to fill in any gaps.

17. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
18. Install all related panels and components.
19. Enable the SIR system. Refer to **SIR Disabling and Enabling** .
20. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .

REAR SIDE DOOR OUTER PANEL REPLACEMENT (BELT CUT)

Removal Procedure

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

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

NOTE: **Complete Outer Door Panel replacement is not recommended, this procedure is for Belt Cut Only.**

NOTE: **This procedure shows the Pick-Up Crew Cab Rear Door, all full size pick up and utilities rear doors are similar.**

1. Disconnect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .
2. Disable the SIR system. Refer to **SIR Disabling and Enabling** .
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to **Dimensions - Body**.
5. Remove the door assembly. Refer to **Rear Side Door Replacement** .

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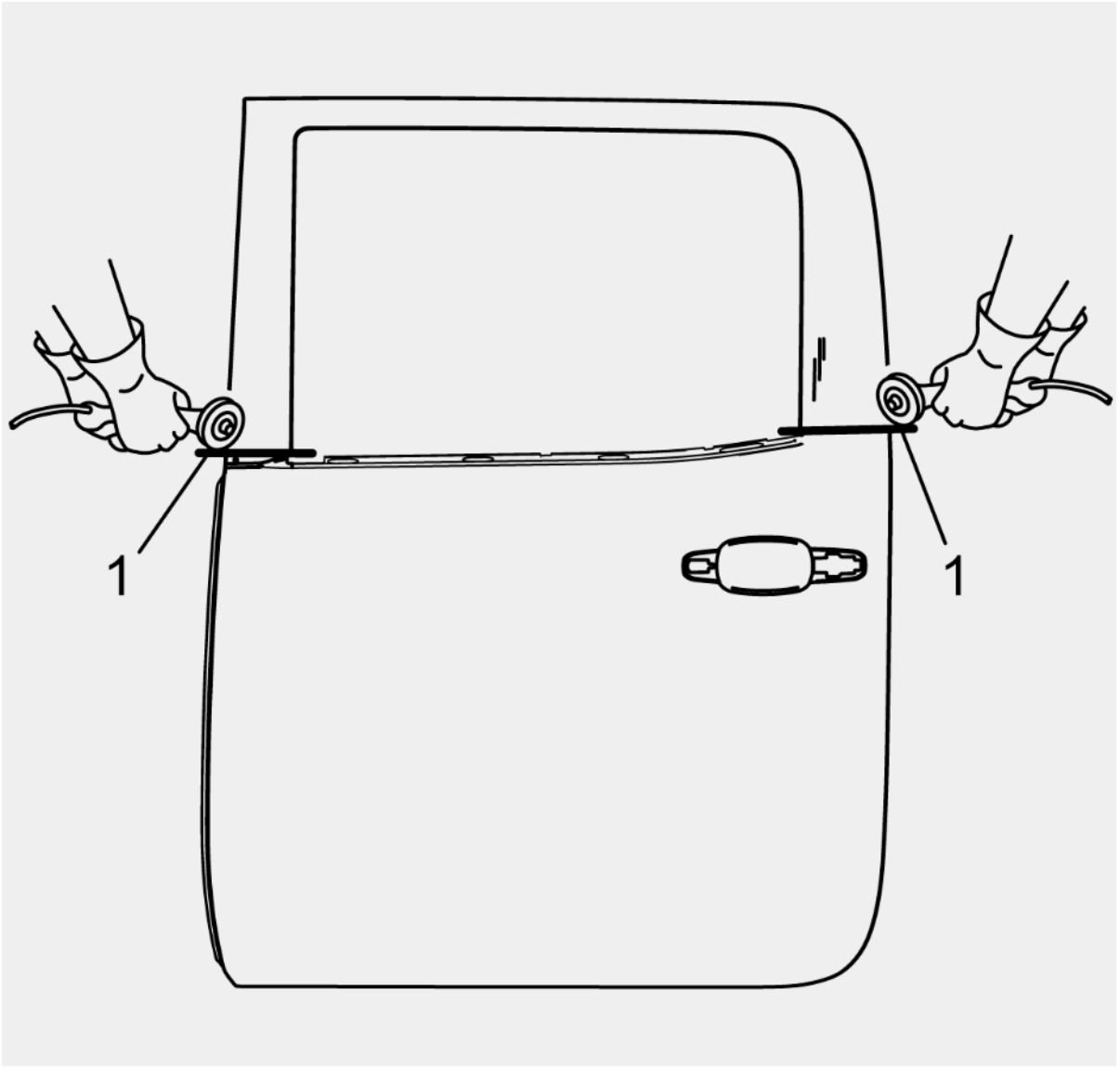


Fig. 43: Cutting Door Panel Where Sectioning Is To Be Performed
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Do not damage any window run channels or reinforcements.**

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

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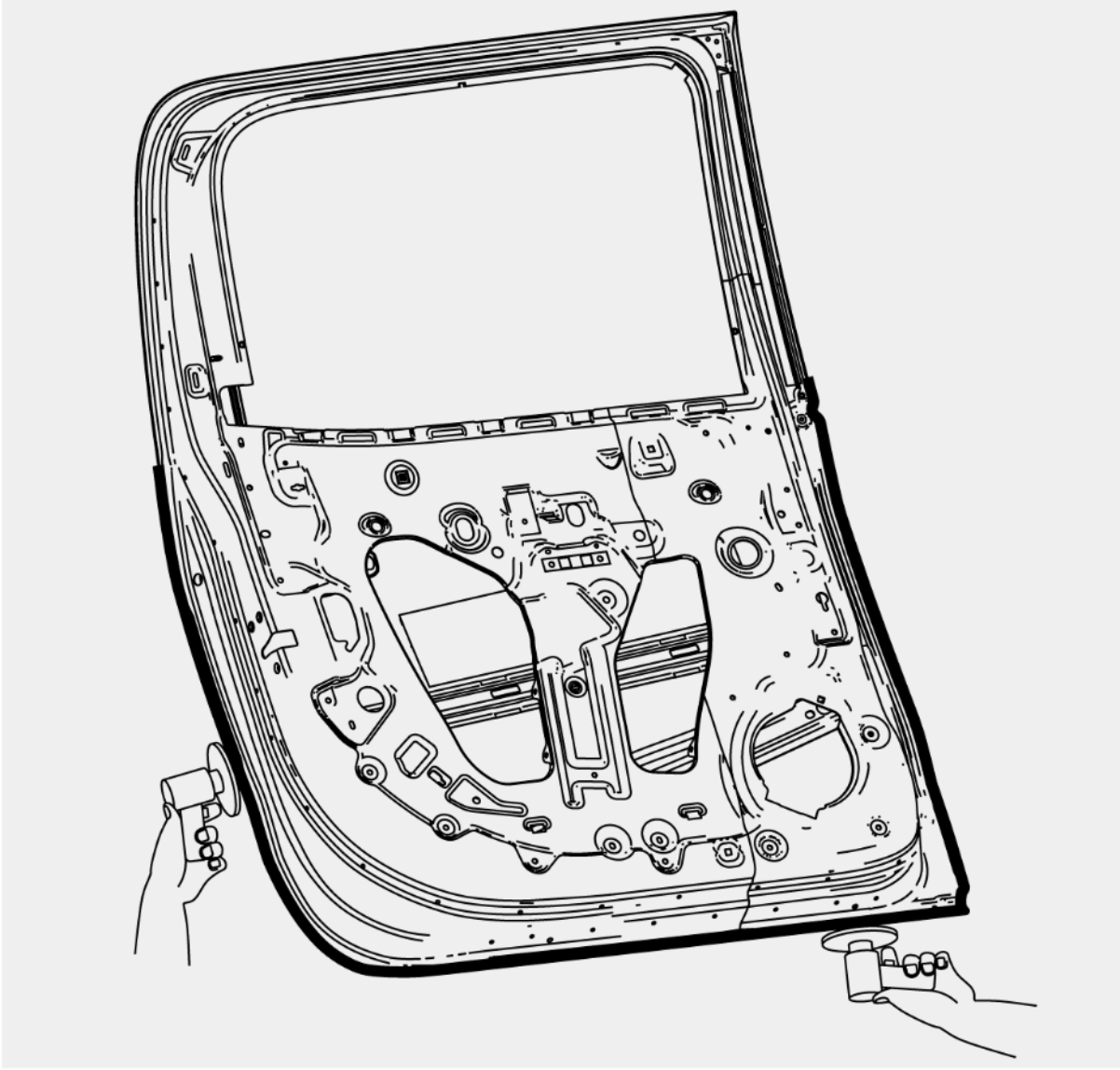


Fig. 44: Grinding Edges Of Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

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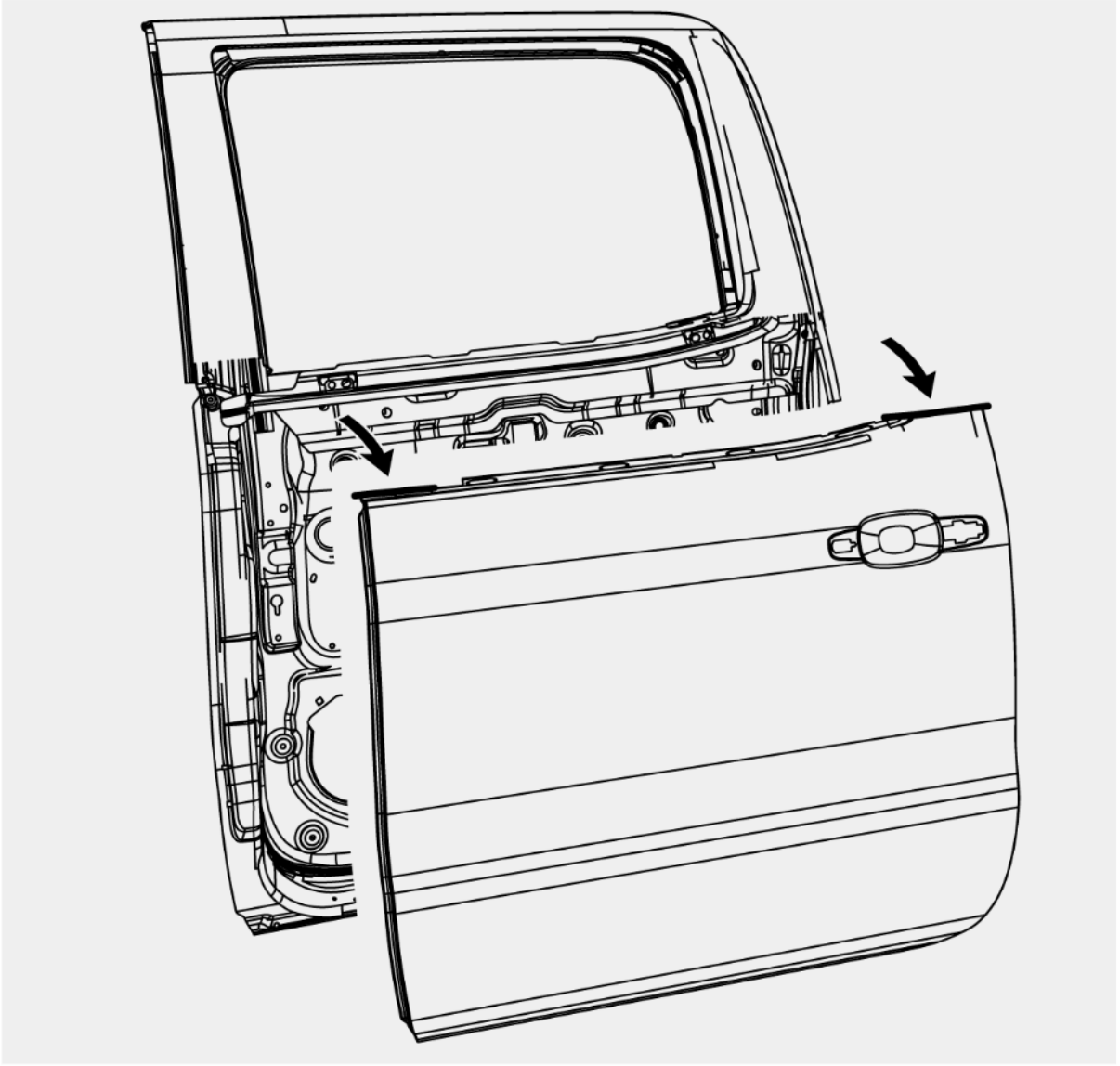


Fig. 45: Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

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in a collision.

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

Installation Procedure

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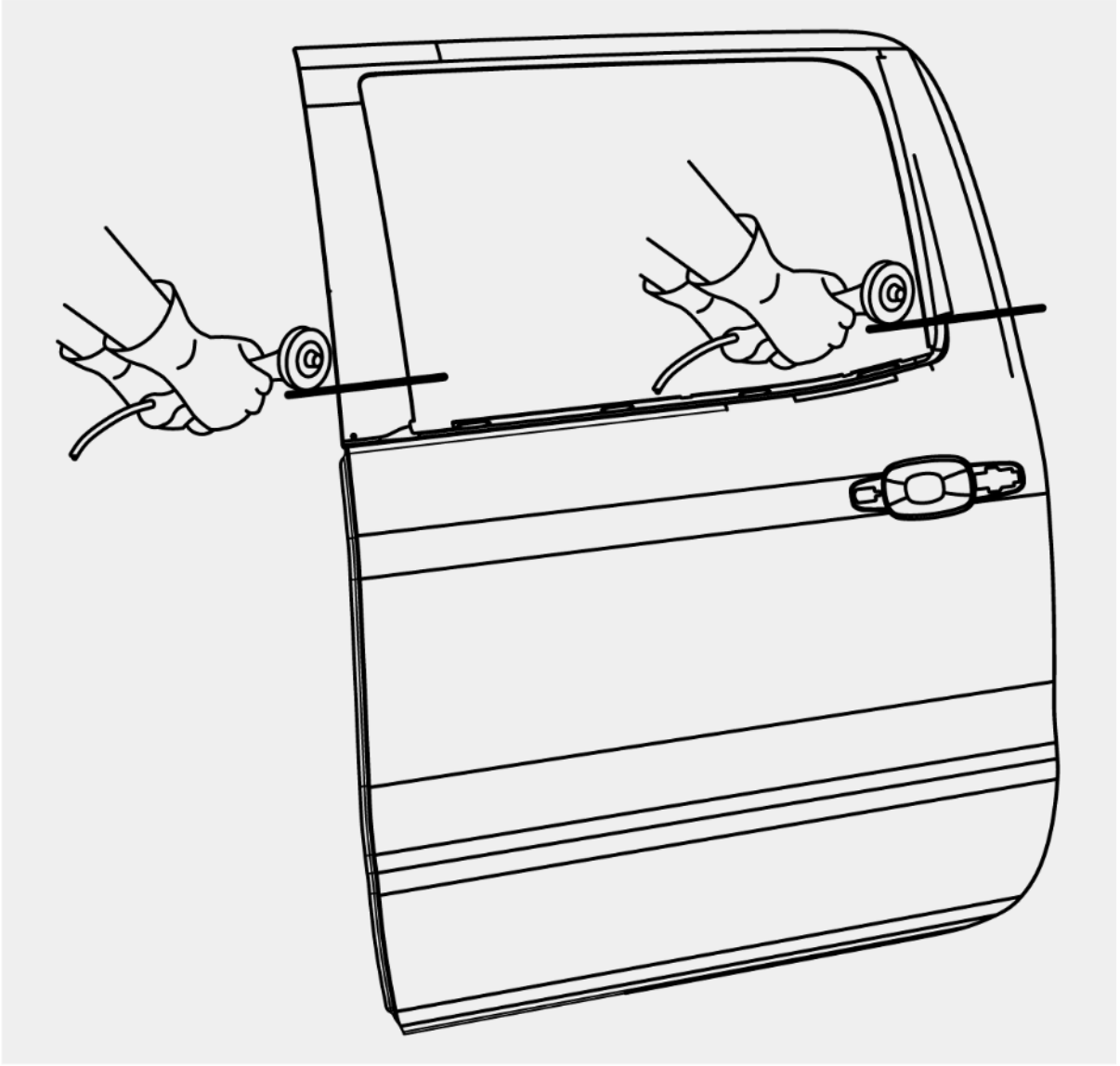


Fig. 46: Cutting Replacement Panel In Corresponding Locations
Courtesy of GENERAL MOTORS COMPANY

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

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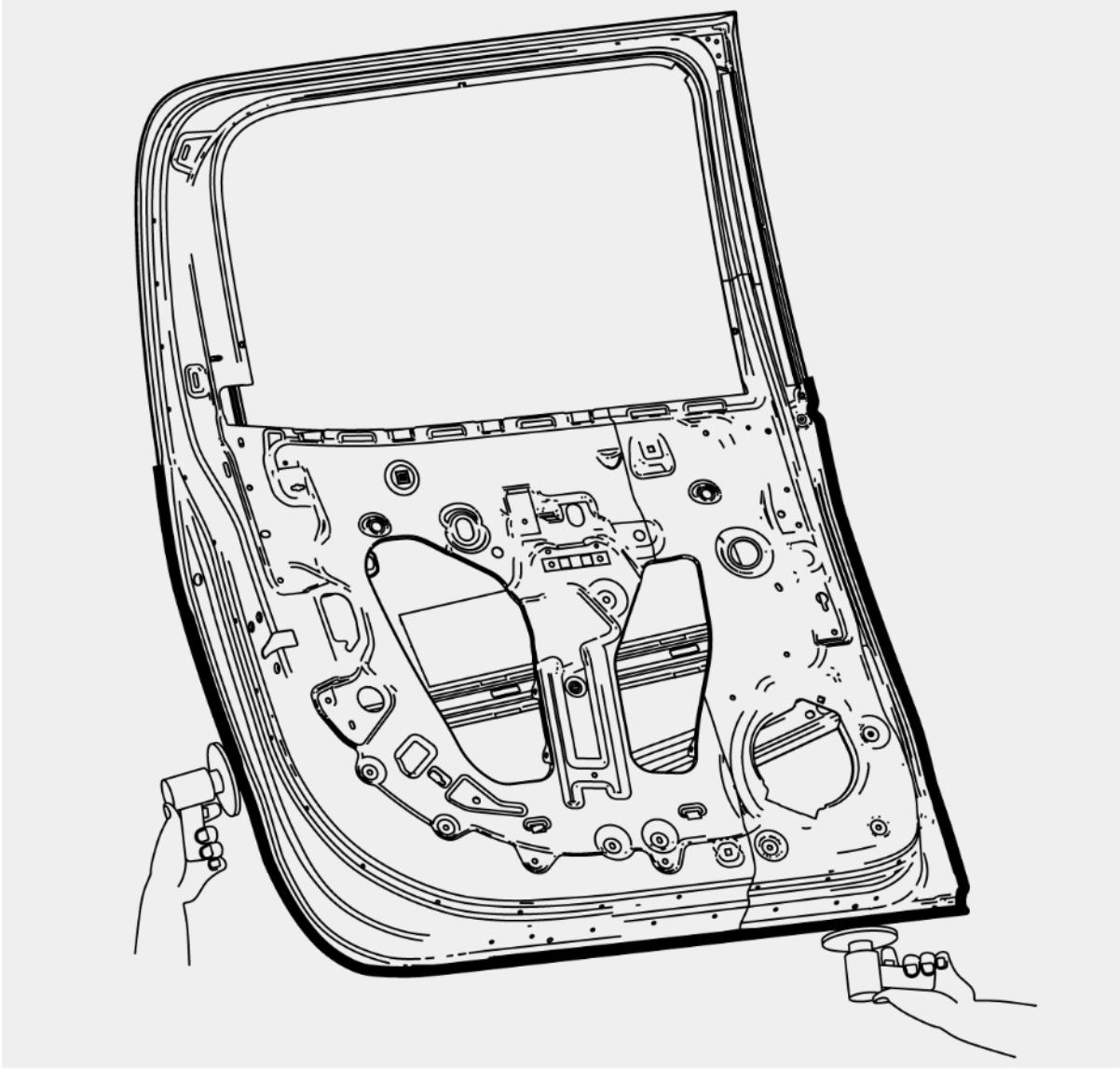


Fig. 47: Grinding Edges Of Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

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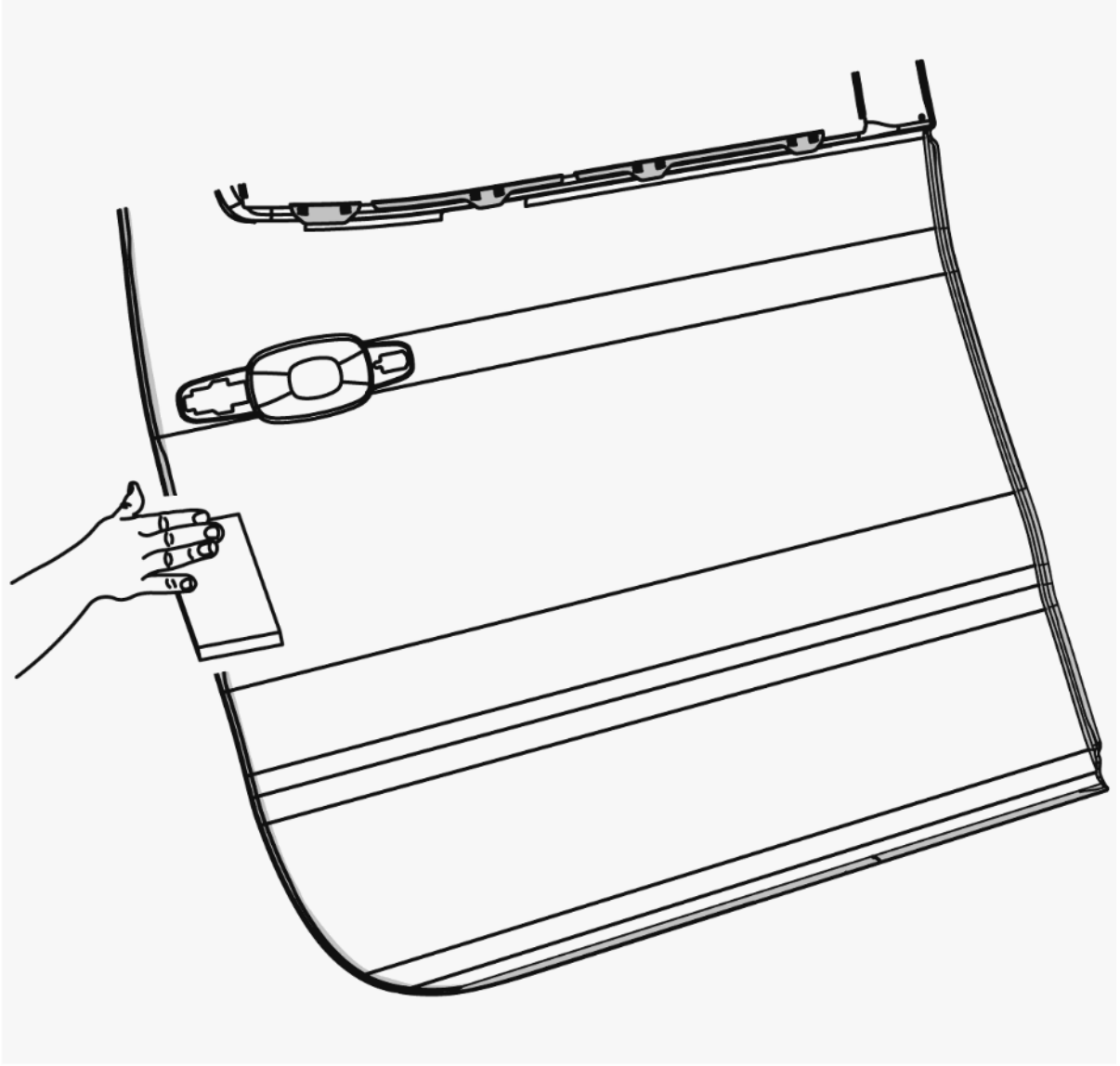


Fig. 48: Scuffing Opposing Mating Surfaces Of Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

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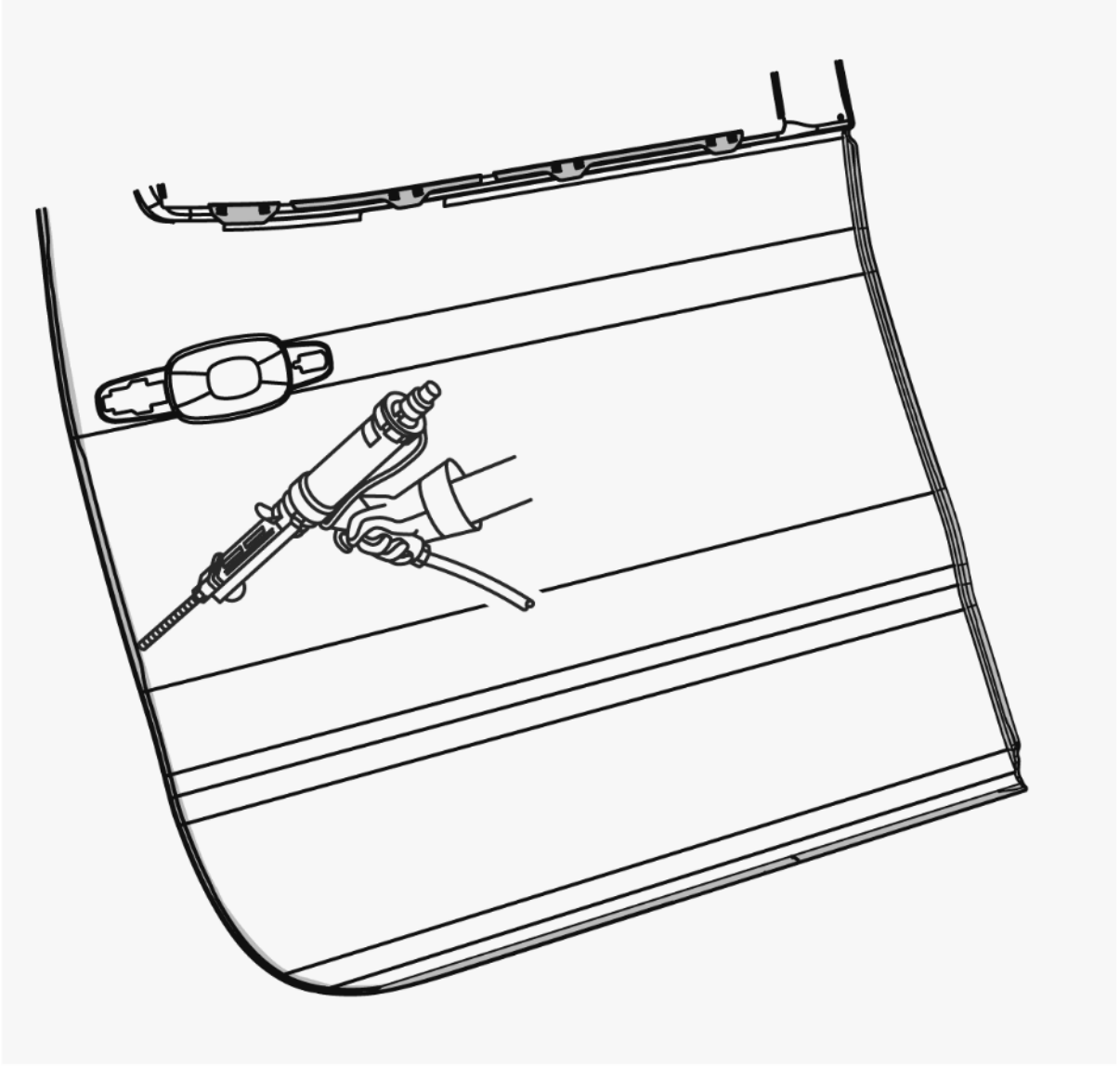


Fig. 49: Applying A Bead Of Metal Panel Bonding Adhesive
Courtesy of GENERAL MOTORS COMPANY

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

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

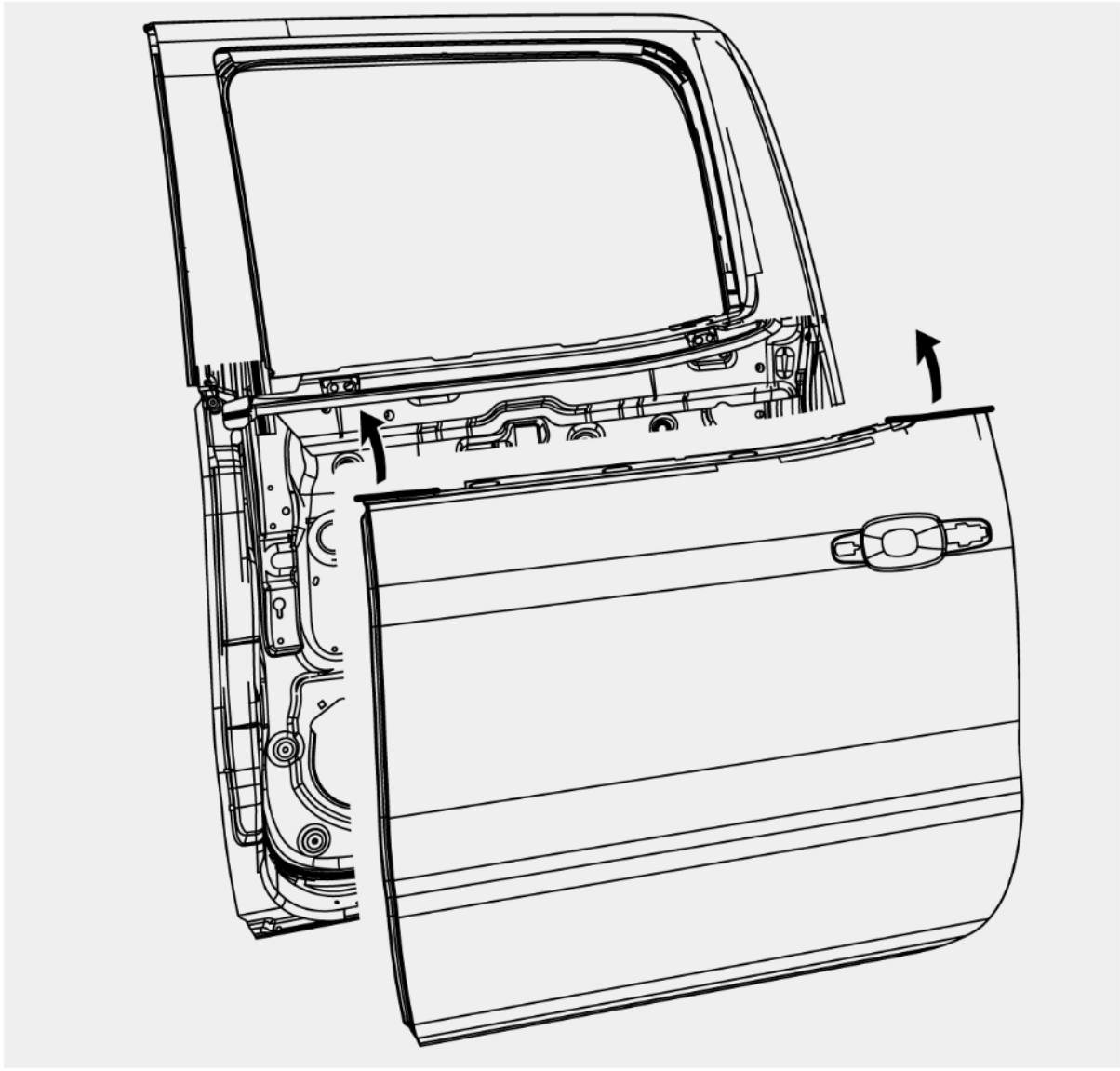
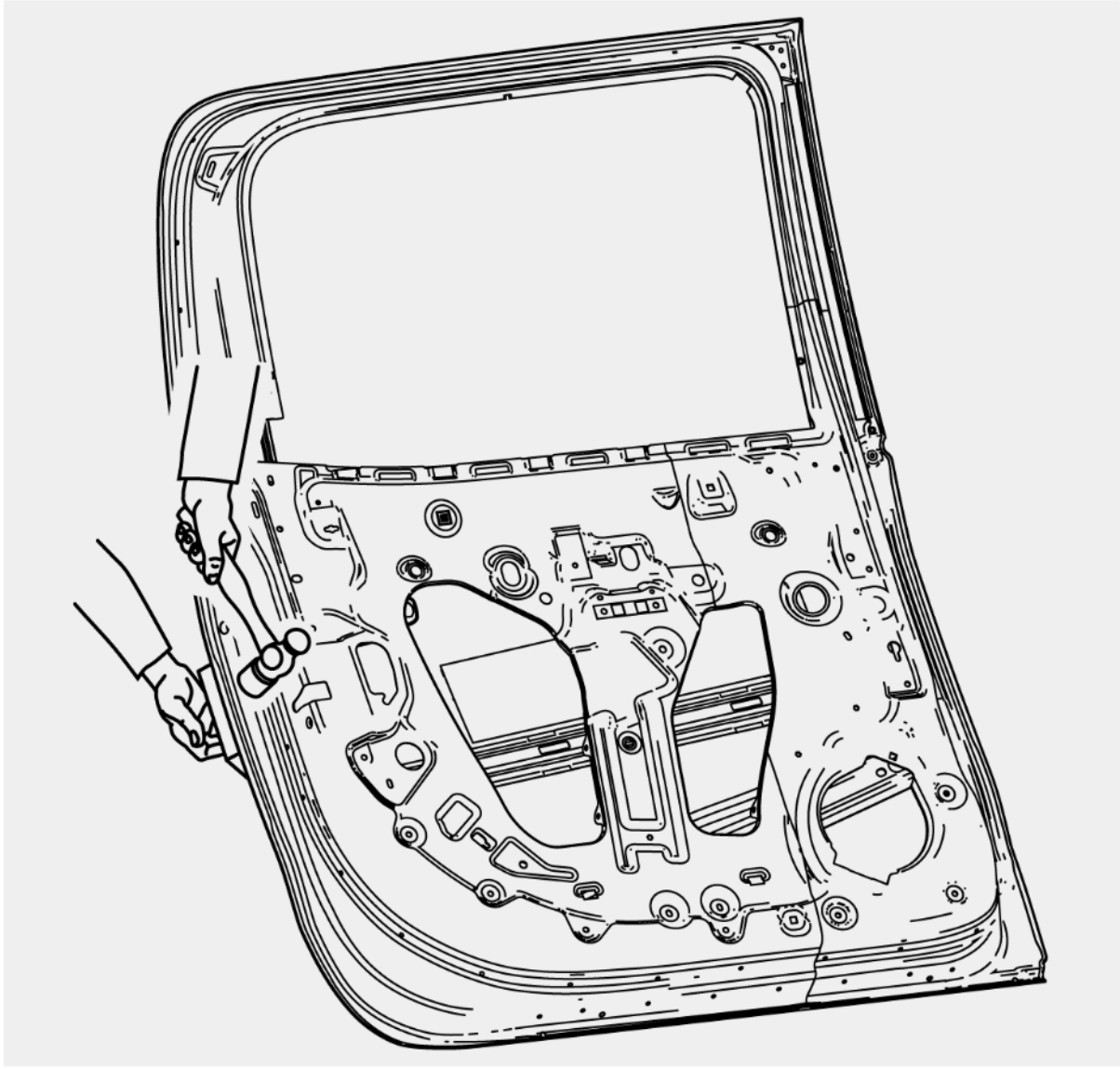


Fig. 50: Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

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

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



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Fig. 51: Re-Hemming Hem Flanges Around Door Shell
Courtesy of GENERAL MOTORS COMPANY

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

    Continue to hammer in stages along the hem flanges.

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

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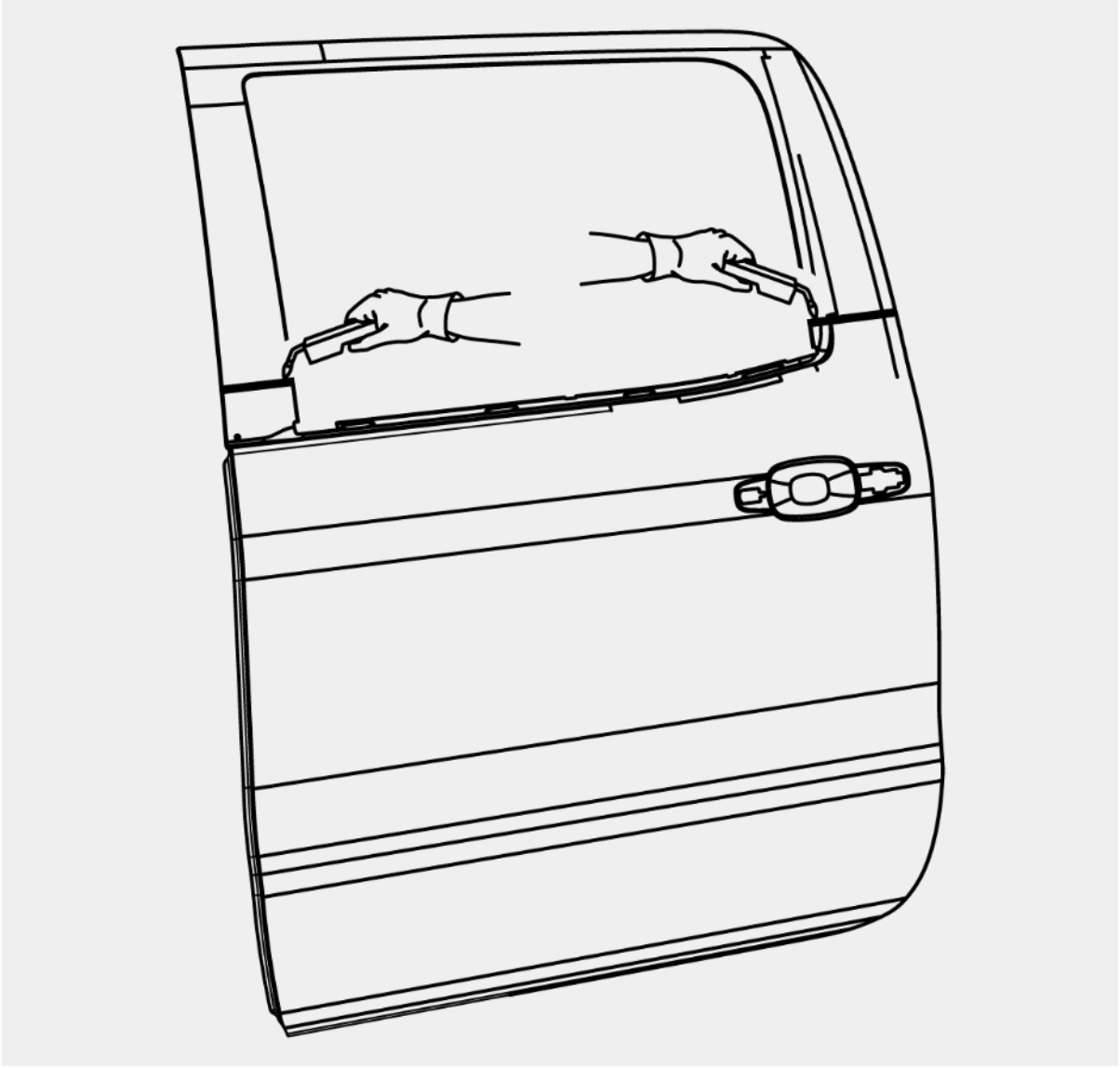


Fig. 52: Welding Door Outer Panel
Courtesy of GENERAL MOTORS COMPANY

13. Weld as necessary the door outer panel.
14. Clean and prepare all welded surfaces.

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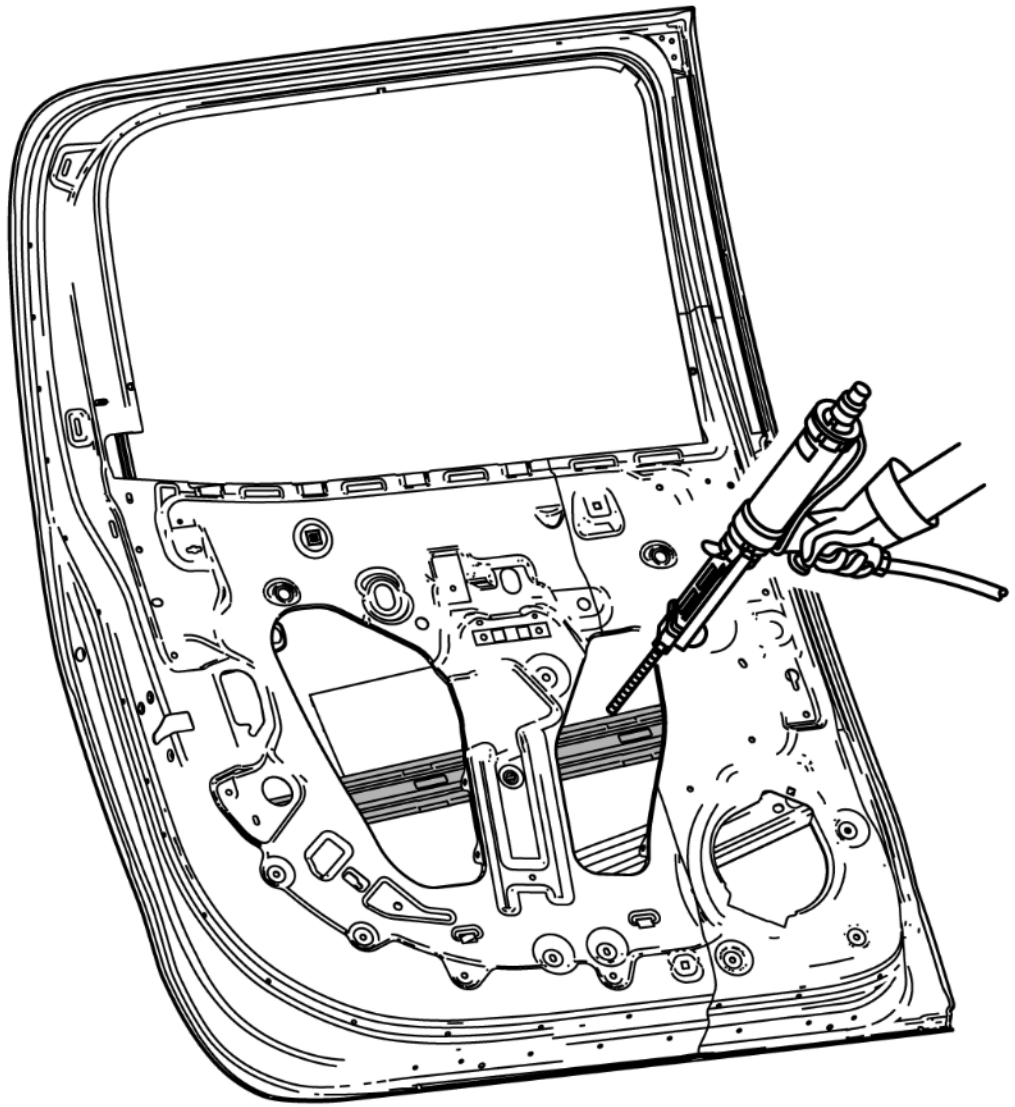


Fig. 53: Apply Fusor Super Flexible Anti-Flutter Foam-Fast Set
Courtesy of GENERAL MOTORS COMPANY

15. Apply Fusor super flexible anti-flutter foam-fast set, Fusor P/N 121/124, or equivalent, in a continuous bead the entire length between the beltline reinforcement and the door outer panel.
16. Apply Fusor super flexible anti-flutter foam-fast set, Fusor P/N 121/124, or equivalent, in a continuous bead the entire length between the door

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outer panel and the inner safety beam making multiple passes behind the side impact sensor portion of the beam as required to fill in any gaps.

17. Paint the repaired area. Refer to **Basecoat/Clearcoat Paint Systems** .
18. Install all related panels and components.
19. Enable the SIR system. Refer to **SIR Disabling and Enabling** .
20. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .

QUARTER OUTER PANEL SECTIONING

Removal Procedure

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

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

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

WARNING: **Refer to Battery Disconnect Warning .**

NOTE: **The quarter panel can be replaced at factory seams, but requires the removal of the roof panel. This sectioning procedure has been developed as a cost-effective alternative to full panel replacement. This procedures shows the long wheelbase SUV the short wheelbase SUV is similar.**

1. Disable the SIR system. Refer to **SIR Disabling and Enabling** .
2. Remove all related panels and components.
3. Repair as much of the damage as possible to factory specifications. Refer to **Dimensions - Body**.

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

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

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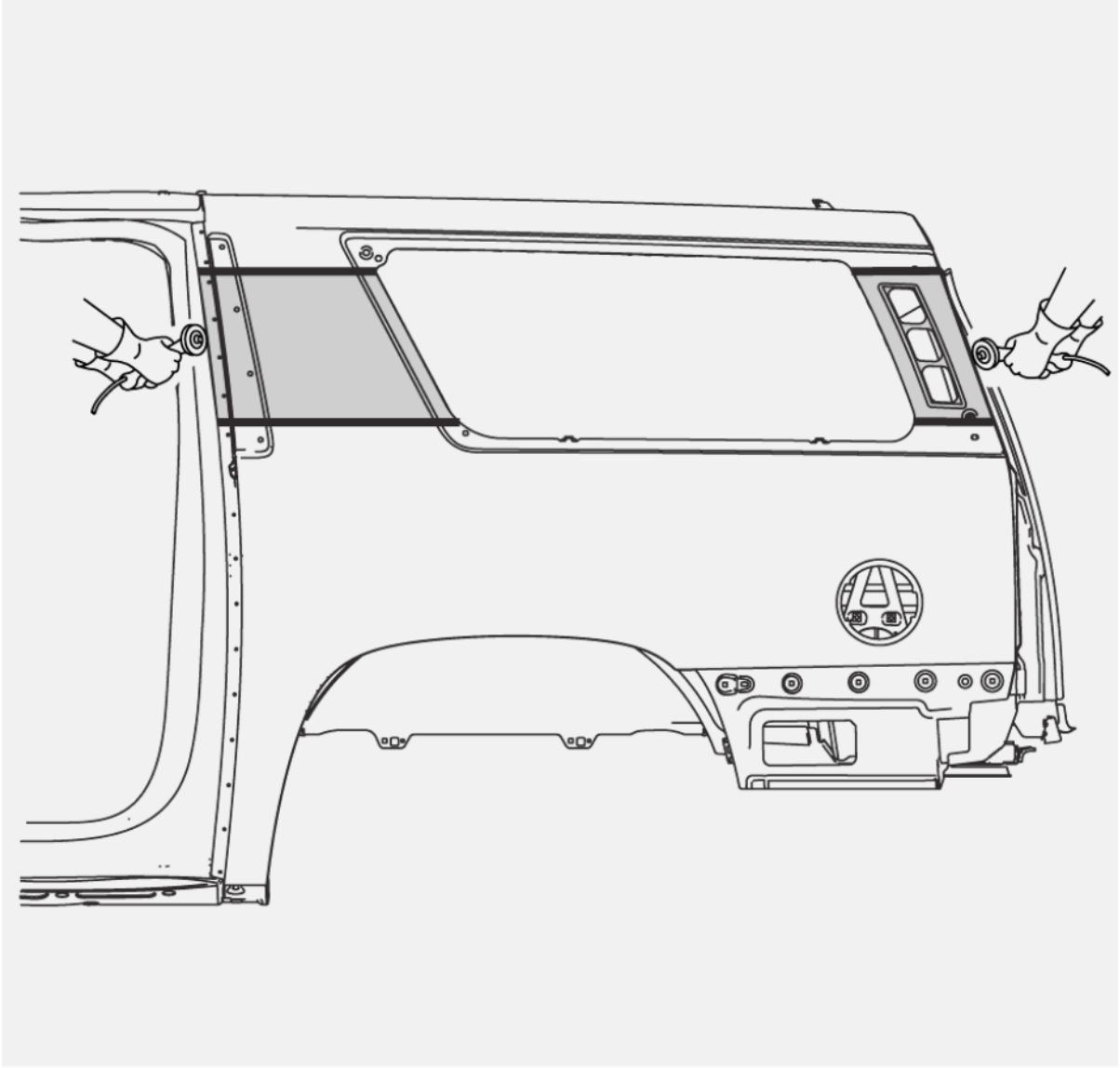


Fig. 54: Cutting Panel For Sectioning
Courtesy of GENERAL MOTORS COMPANY

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

5. Cut the panel for sectioning anywhere in the shaded locations.

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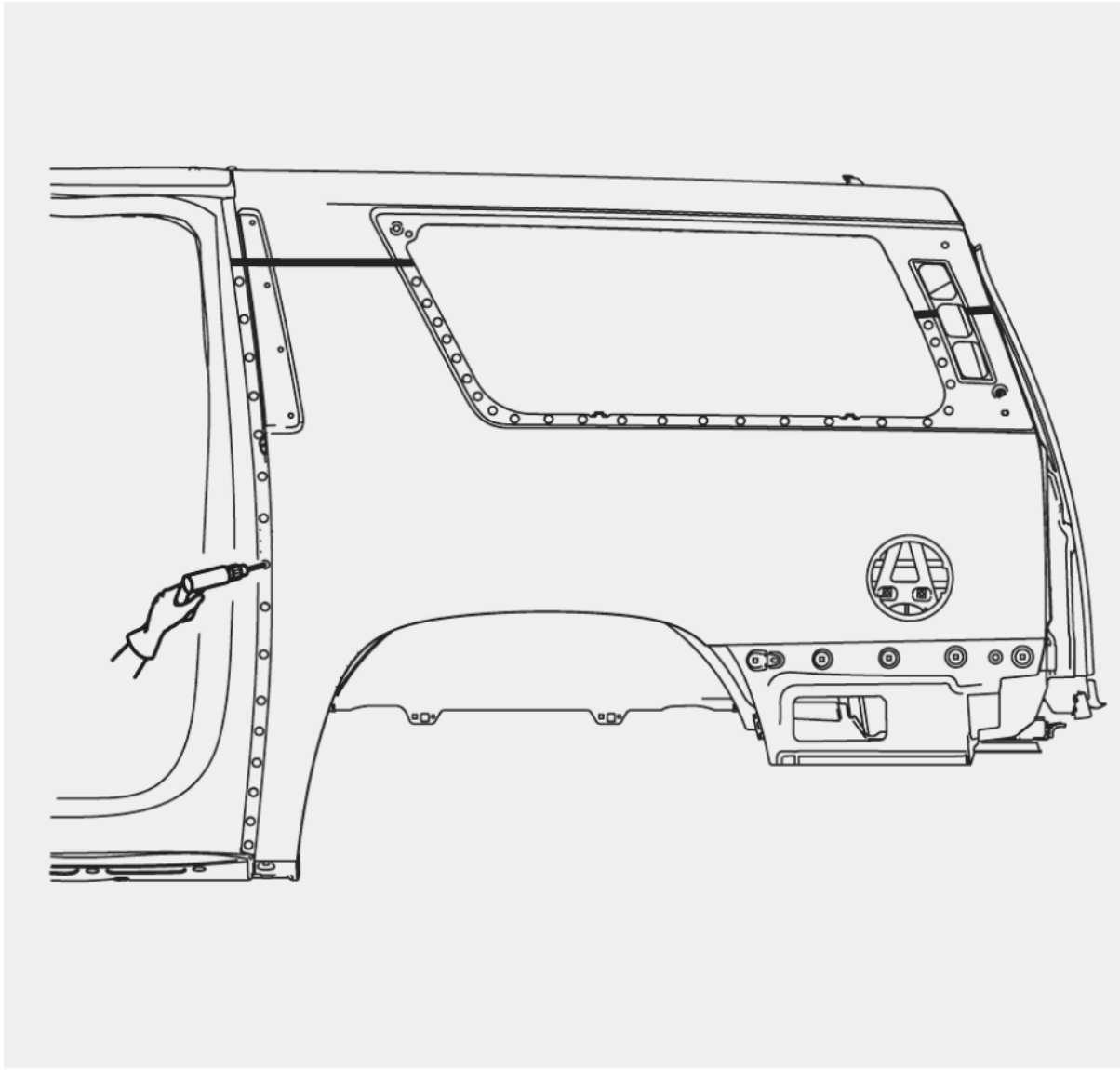


Fig. 55: Drilling Out All Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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

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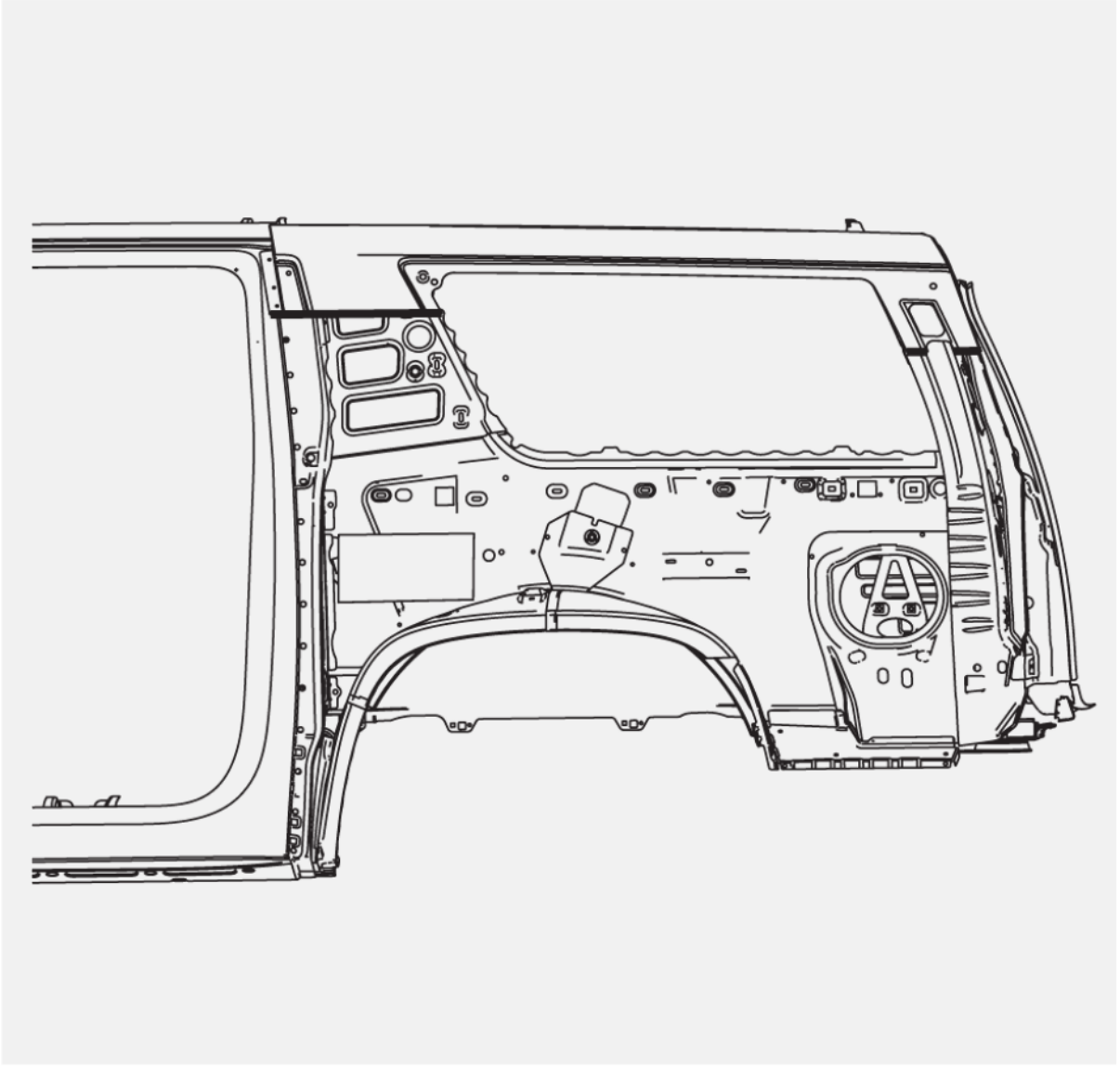


Fig. 56: Damaged Quarter Panel
Courtesy of GENERAL MOTORS COMPANY

7. Remove the damaged quarter panel

Installation Procedure

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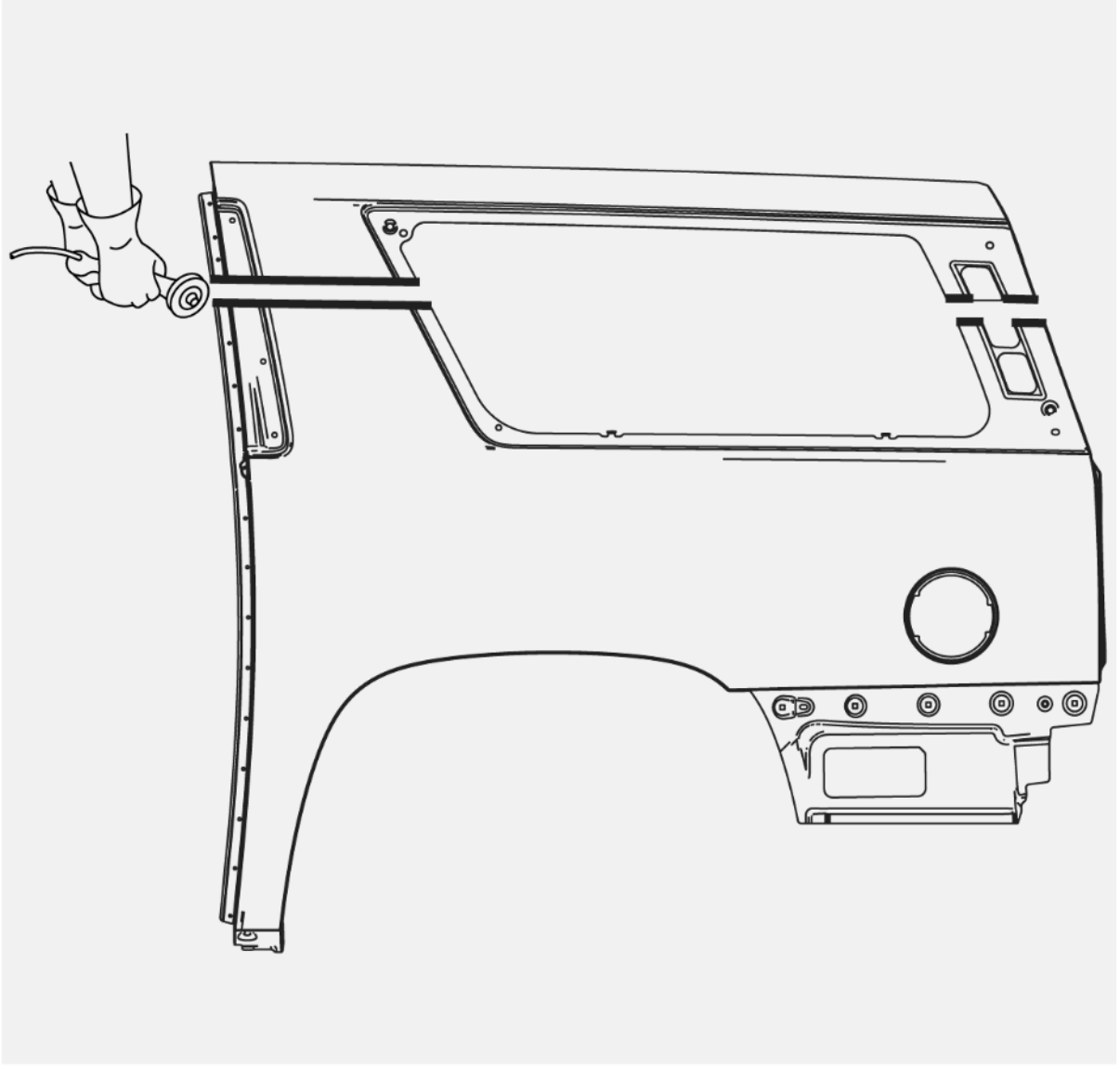


Fig. 57: Cutting Replacement Panel In Corresponding Locations
Courtesy of GENERAL MOTORS COMPANY

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

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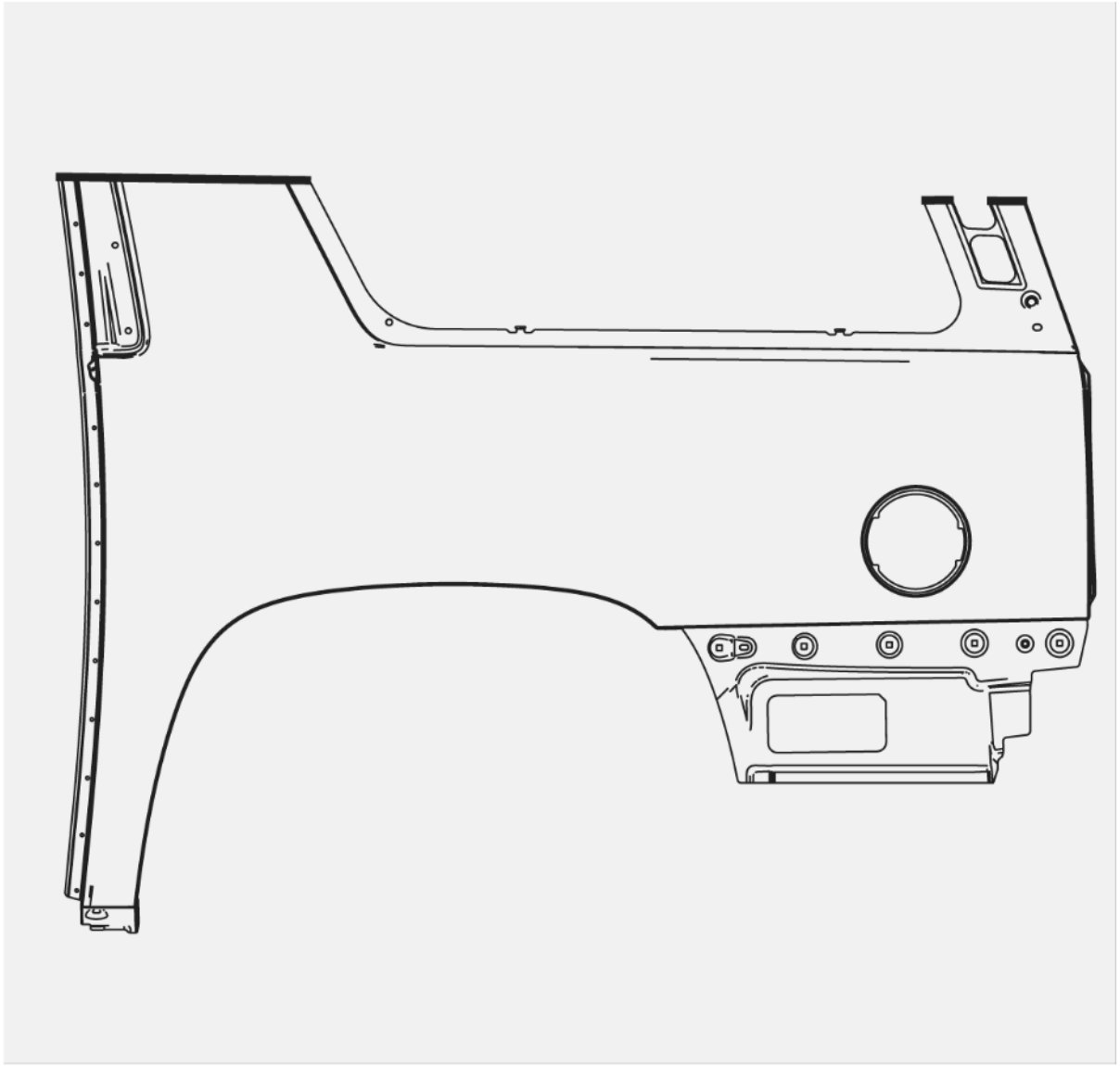


Fig. 58: Preparing All Attachment Surfaces For Welding
Courtesy of GENERAL MOTORS COMPANY

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

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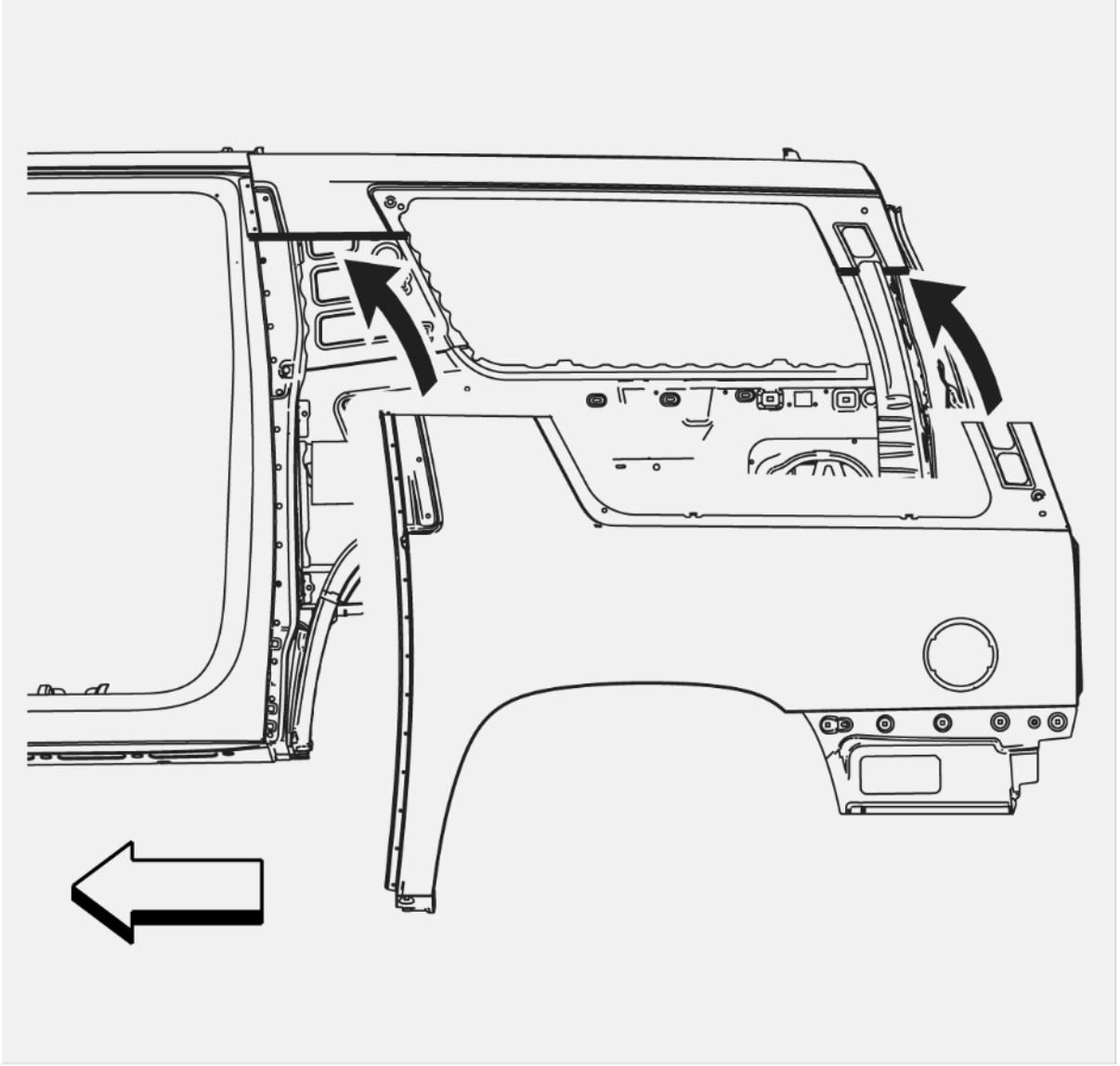


Fig. 59: Positioning Quarter Panel To Vehicle
Courtesy of GENERAL MOTORS COMPANY

WARNING: **Properly seal the fuel filler opening before you position the quarter panel. Failure to seal the opening could allow exhaust gas to leak into the interior of the vehicle, causing personal injury.**

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4. Position the quarter panel to the vehicle using 3-dimensional measuring equipment. Clamp in place.

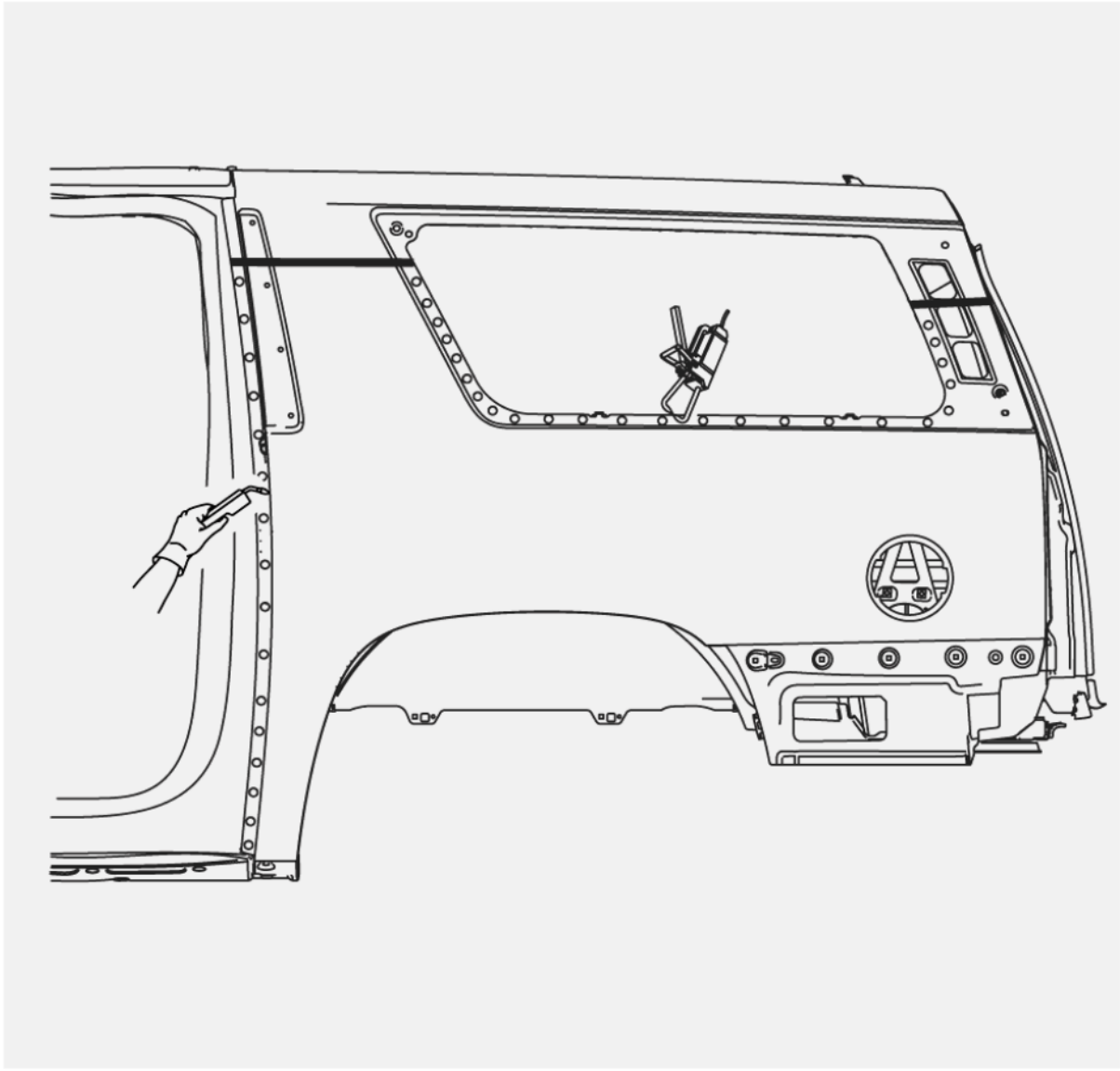


Fig. 60: Welding
Courtesy of GENERAL MOTORS COMPANY

5. Weld accordingly.

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6. Clean and prepare all welded surfaces.
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
8. Paint the repair 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 (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

FRONT HINGE PILLAR SECTIONING

Removal Procedure

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

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

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

WARNING: **Refer to Battery Disconnect Warning .**

NOTE: **The outer door frame can be replaced at the factory seams, but requires the removal of the windshield, roof, and 1/4 panel. Sectioning procedures have been developed as a more cost-effective alternative to complete replacement. The specific area to be sectioned is determined by the extent of the damage to the vehicle.**

1. Disable the SIR system. Refer to **SIR Disabling and Enabling** .
2. Remove all related panels and components.
3. Repair as much of the damage as possible to factory specifications. Refer to **Dimensions - Body**.

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

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

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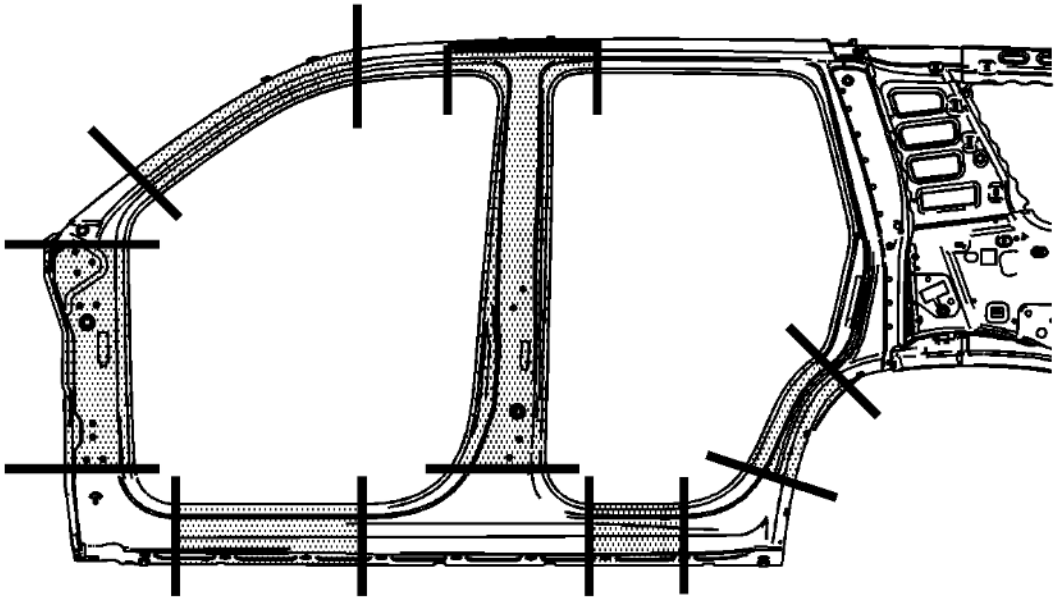


Fig. 61: Performing Additional Sectioning Procedures For Short Wheelbase
Courtesy of GENERAL MOTORS COMPANY

5. Perform additional sectioning procedures for short wheelbase as necessary. Refer to the following procedures:
   - **Rocker Outer Panel Sectioning**
   - **Center Pillar Sectioning**
   - **Rear Pillar Sectioning**

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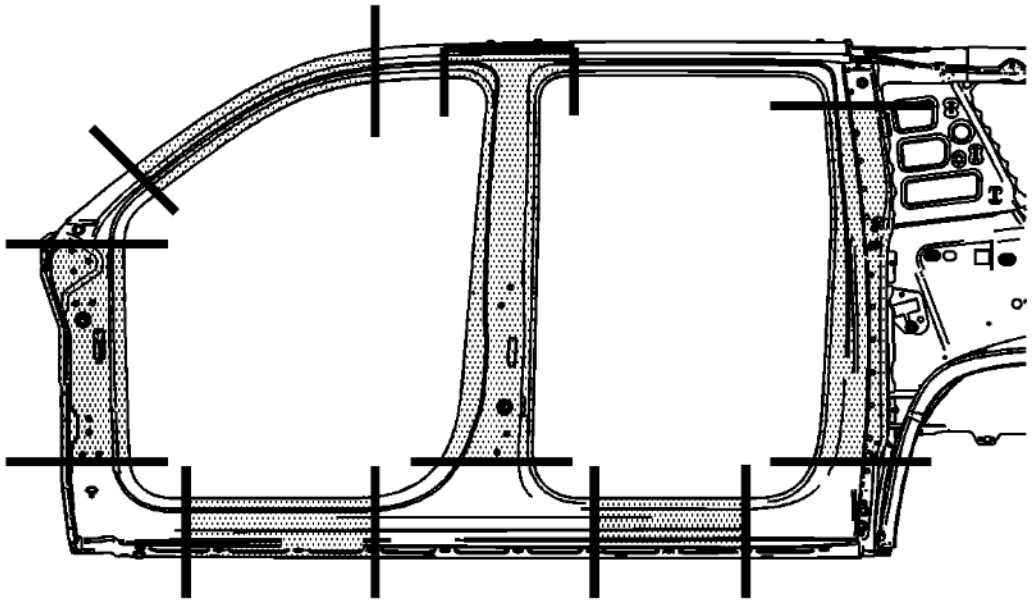


Fig. 62: Perform Additional Sectioning Procedures For Long Wheelbase
Courtesy of GENERAL MOTORS COMPANY

6. Perform additional sectioning procedures for long wheelbase as necessary. Refer to the following procedures:
   - **Rocker Outer Panel Sectioning**
   - **Center Pillar Sectioning**
   - **Rear Pillar Sectioning**

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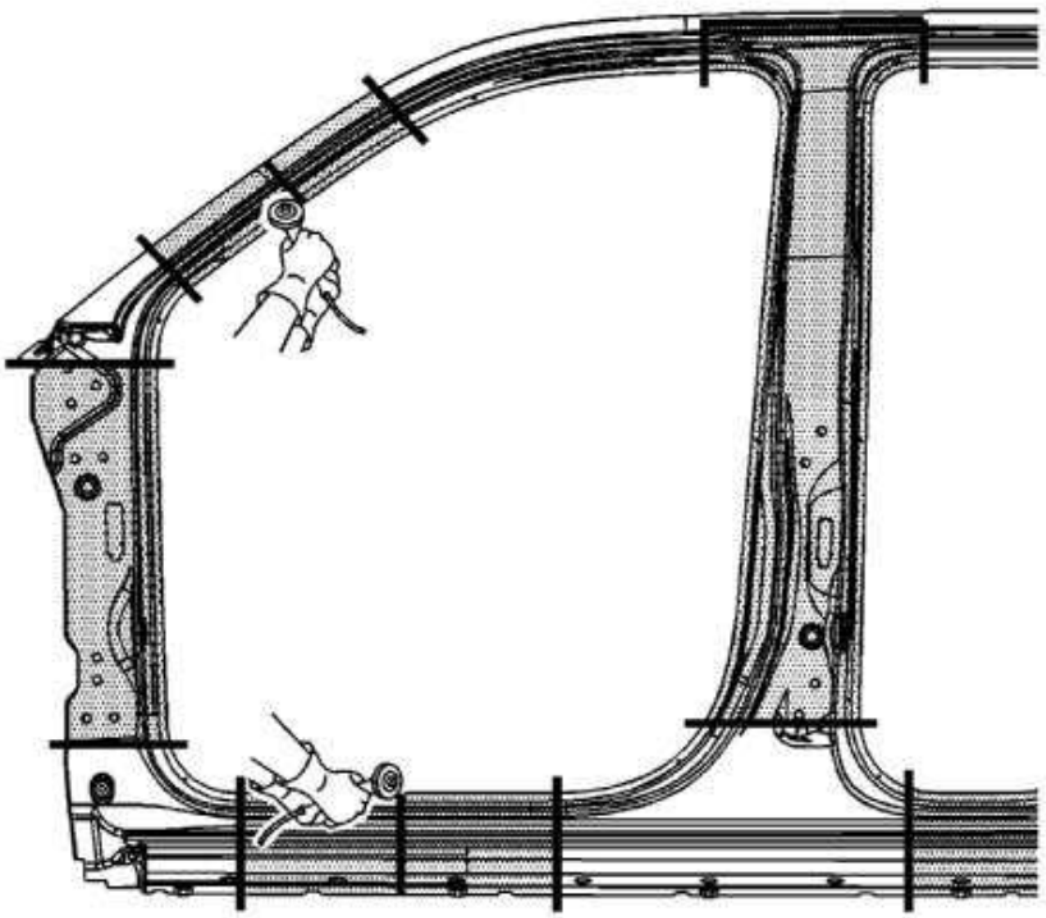


Fig. 63: Cutting Panel In Locations
Courtesy of GENERAL MOTORS COMPANY

NOTE: **This procedure shows sectioning the outer hinge pillar at the upper A pillar, and the rocker, the specific area to be sectioned is determined by the extent of the damage to the vehicle.**

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

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7. Mark and cut the panel in the locations where sectioning is to be performed.

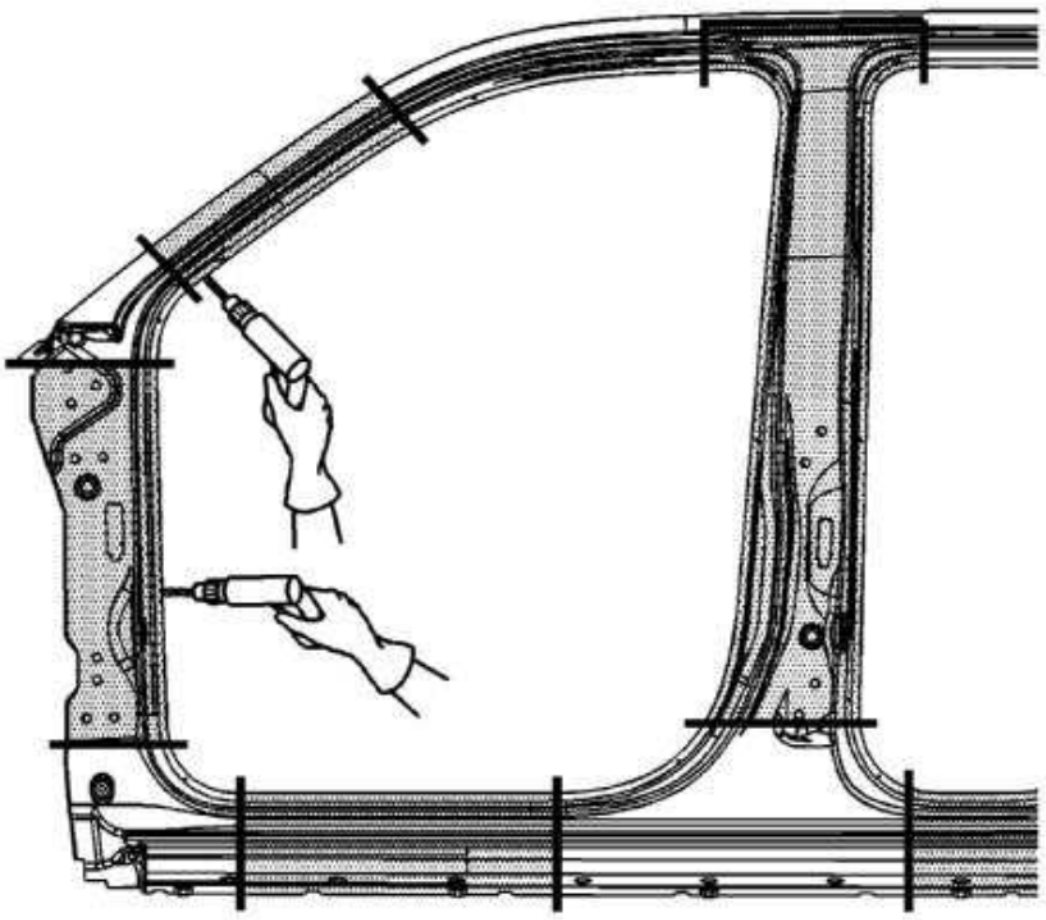


Fig. 64: Drill Out All Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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

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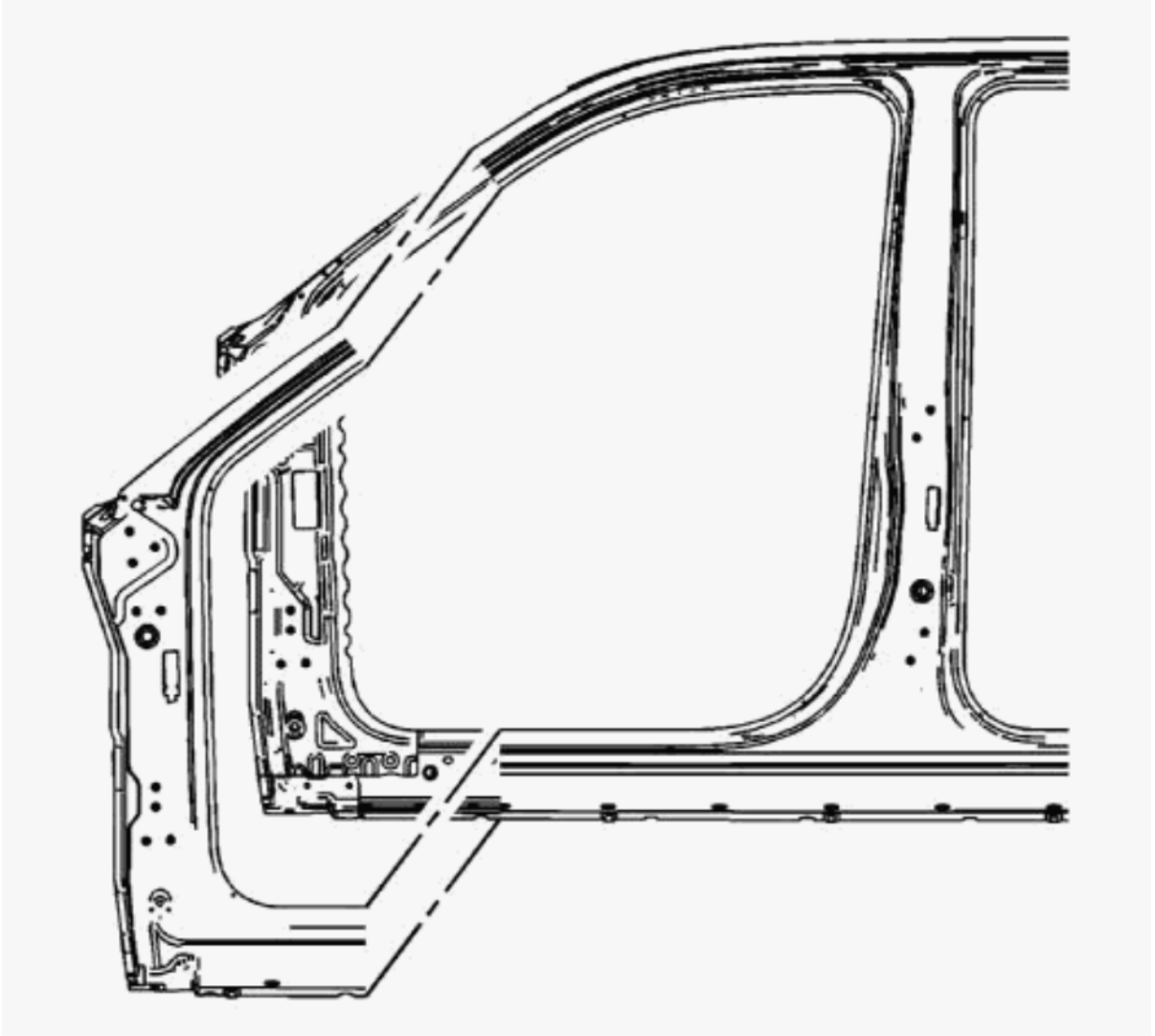


Fig. 65: Damaged Hinge Pillar
Courtesy of GENERAL MOTORS COMPANY

9. Remove the damaged hinge pillar.

Installation Procedure

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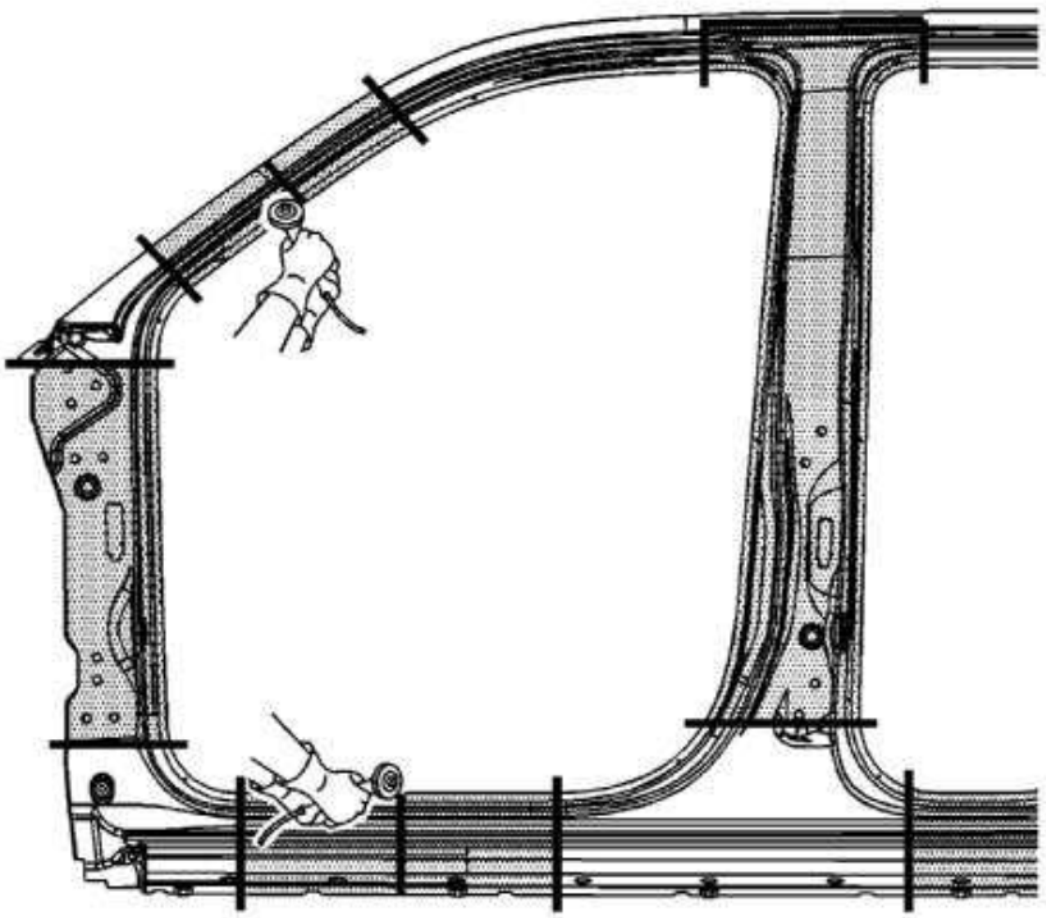


Fig. 66: Cutting Panel In Locations
Courtesy of GENERAL MOTORS COMPANY

1. From the service part, cut the replacement panel in corresponding locations to overlap the remaining original panel by 25 mm (1 inch) at each joint.
2. Prepare all attachment surfaces for welding, as necessary.
3. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

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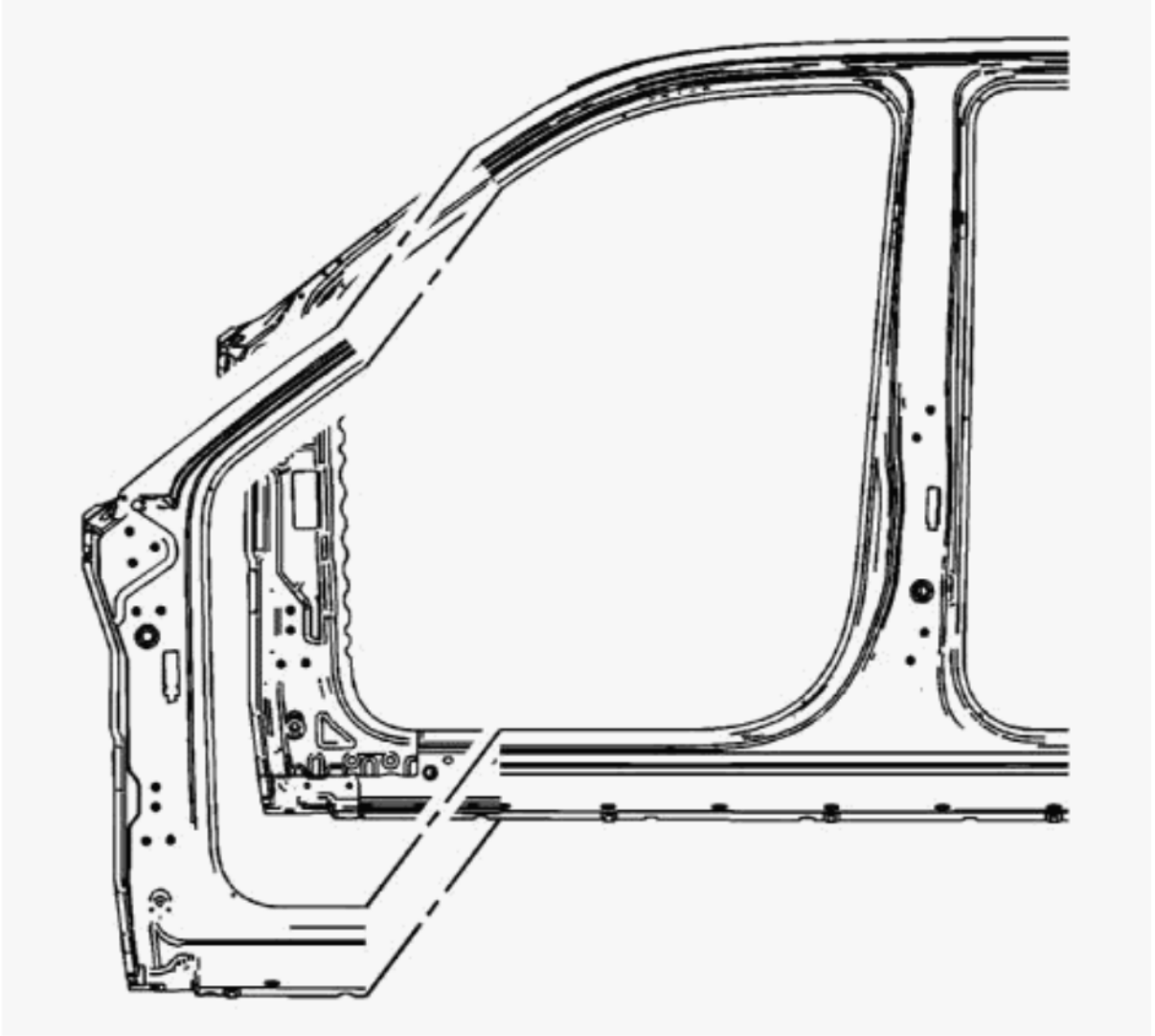


Fig. 67: Position Hinge Pillar
Courtesy of GENERAL MOTORS COMPANY

4. Position the hinge pillar to the vehicle using 3-dimensional measuring equipment. Clamp in place.
5. Weld accordingly.
6. Clean and prepare all welded surfaces.
7. Apply the sealers and anti-corrosion materials to the repair area (1), as necessary. Refer to **Anti-Corrosion Treatment and Repair** .

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8. Paint the repair 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 (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

CENTER PILLAR SECTIONING

Removal Procedure

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

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

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

WARNING: **Refer to Battery Disconnect Warning .**

NOTE: **The door frame can be replaced at the factory seams, but requires the removal of the windshield, roof, and 1/4 panel. Sectioning procedures have been developed as a more cost-effective alternative to complete replacement. The specific area to be sectioned is determined by the extent of the damage to the vehicle.**

1. Disable the SIR system. Refer to **SIR Disabling and Enabling** .
2. Remove all related panels and components.
3. Repair as much of the damage as possible to factory specifications. Refer to **Dimensions - Body**.

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

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

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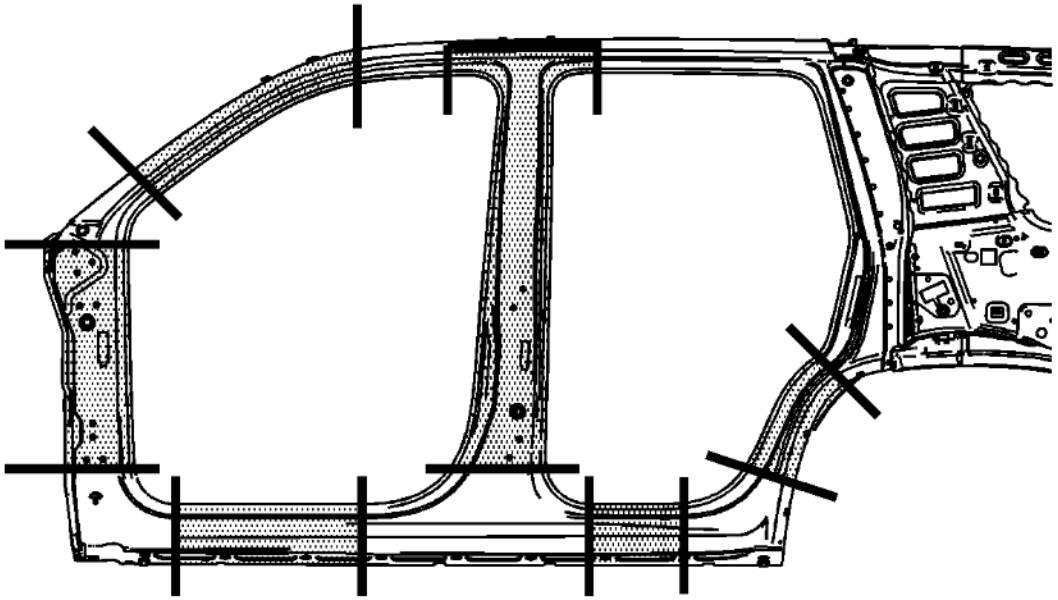


Fig. 68: Performing Additional Sectioning Procedures For Short Wheelbase
Courtesy of GENERAL MOTORS COMPANY

5. Perform additional sectioning procedures for short wheelbase as necessary. Refer to the following procedures:
   - **Front Hinge Pillar Sectioning**
   - **Rear Pillar Sectioning**
   - **Rocker Outer Panel Sectioning**

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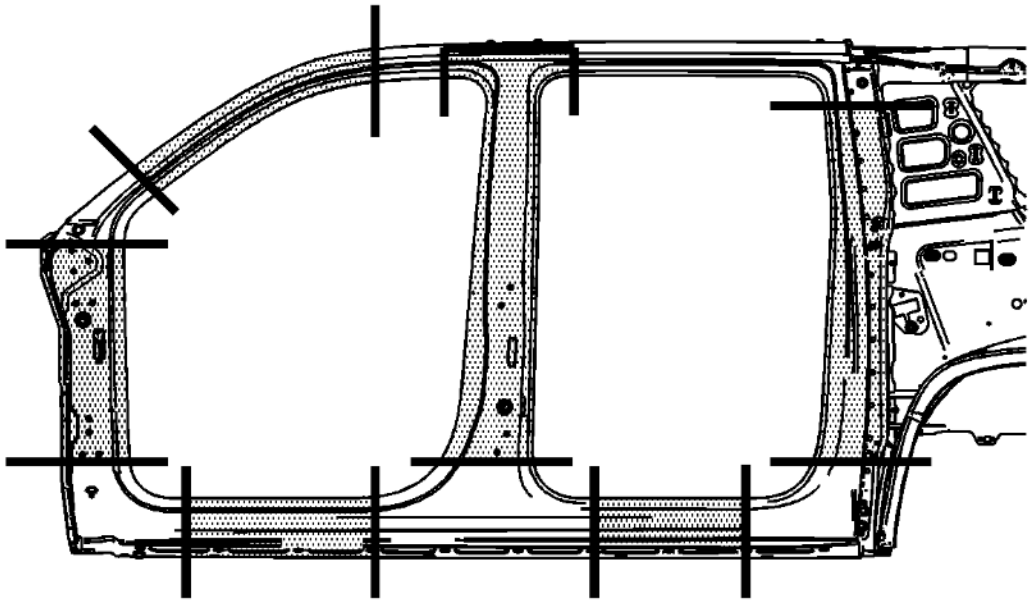


Fig. 69: Perform Additional Sectioning Procedures For Long Wheelbase
Courtesy of GENERAL MOTORS COMPANY

6. Perform additional sectioning procedures for long wheelbase as necessary. Refer to the following procedures:
   - **Front Hinge Pillar Sectioning**
   - **Rear Pillar Sectioning**
   - **Rocker Outer Panel Sectioning**

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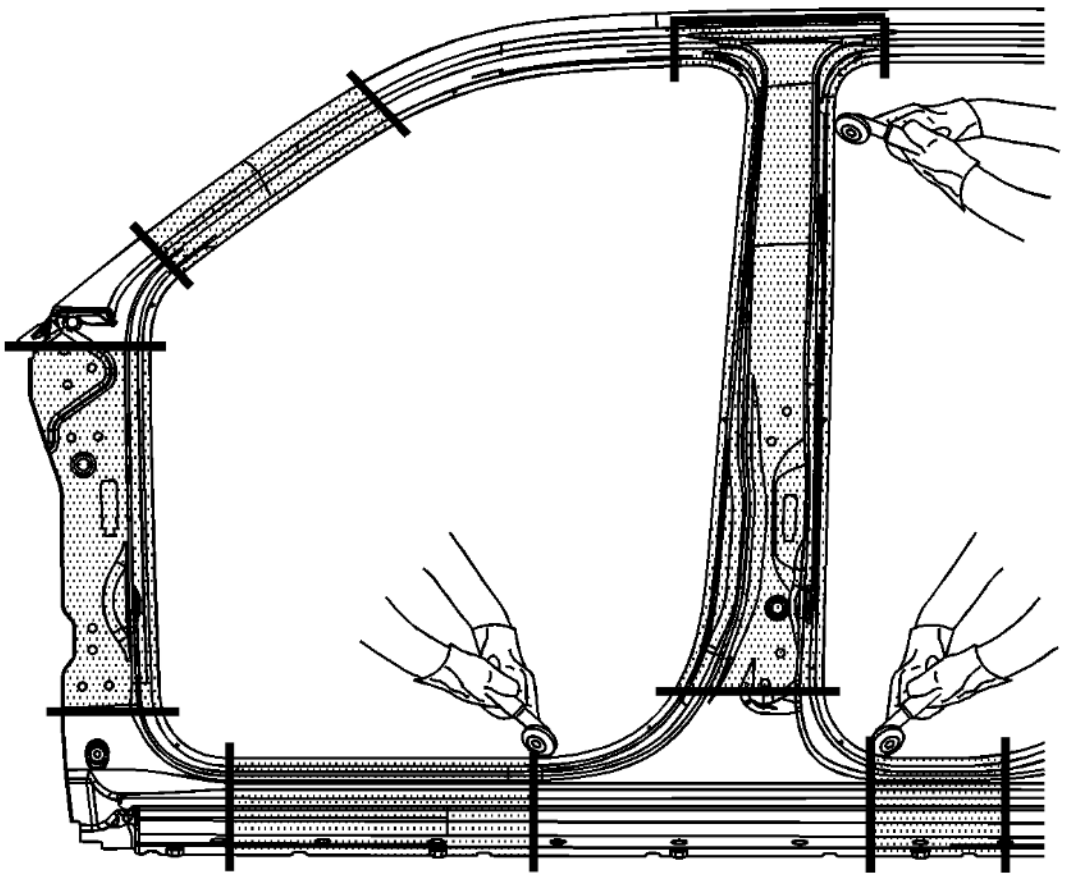


Fig. 70: Cutting Panel In Locations
Courtesy of GENERAL MOTORS COMPANY

NOTE: This procedure shows sectioning the outer center pillar at the front and rear outer rocker areas, the specific area to be sectioned is determined by the extent of the damage to the vehicle.

NOTE: Do not damage any inner panels or reinforcements.

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7. Mark and cut the panel in the locations where sectioning is to be performed.
8. Locate and drill out all factory welds. Note the number and location of the welds for installation of the service part.

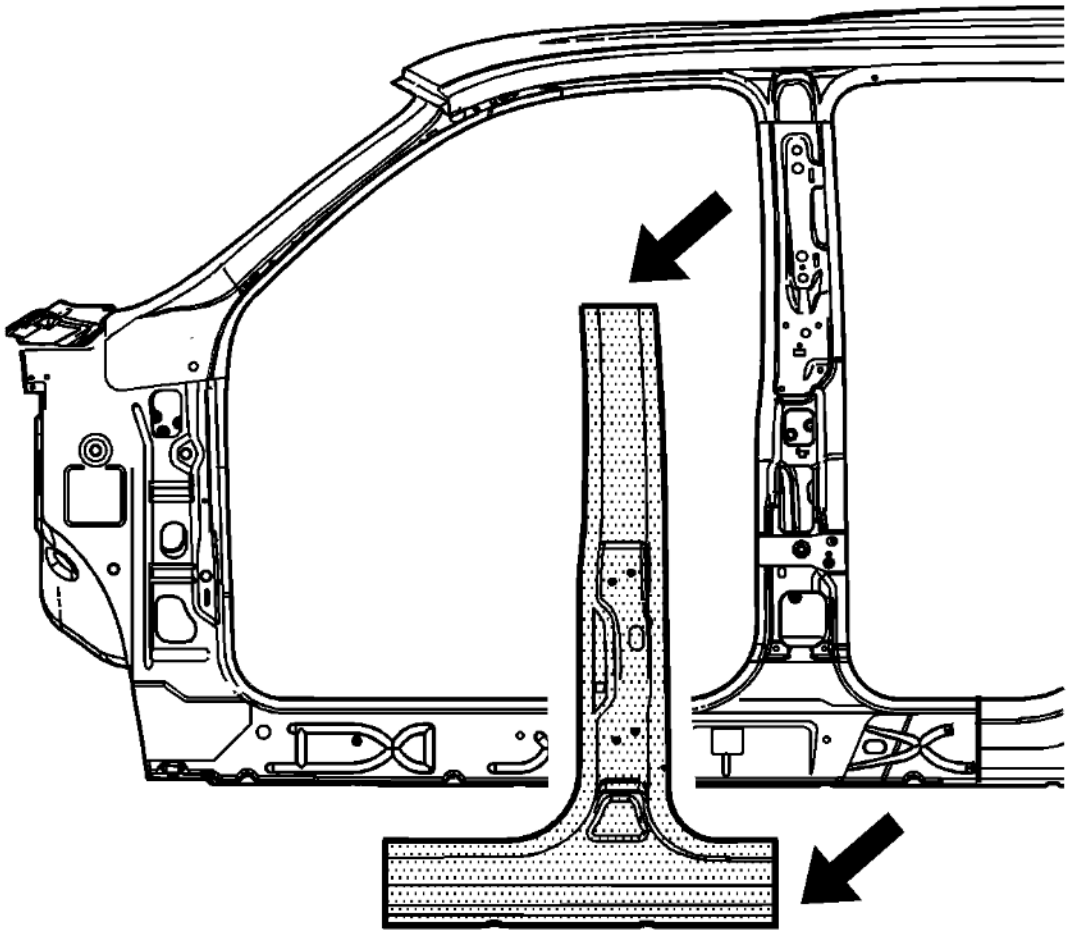


Fig. 71: Damaged Pillar Section
Courtesy of GENERAL MOTORS COMPANY

9. Remove the damaged outer center pillar.

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Installation Procedure

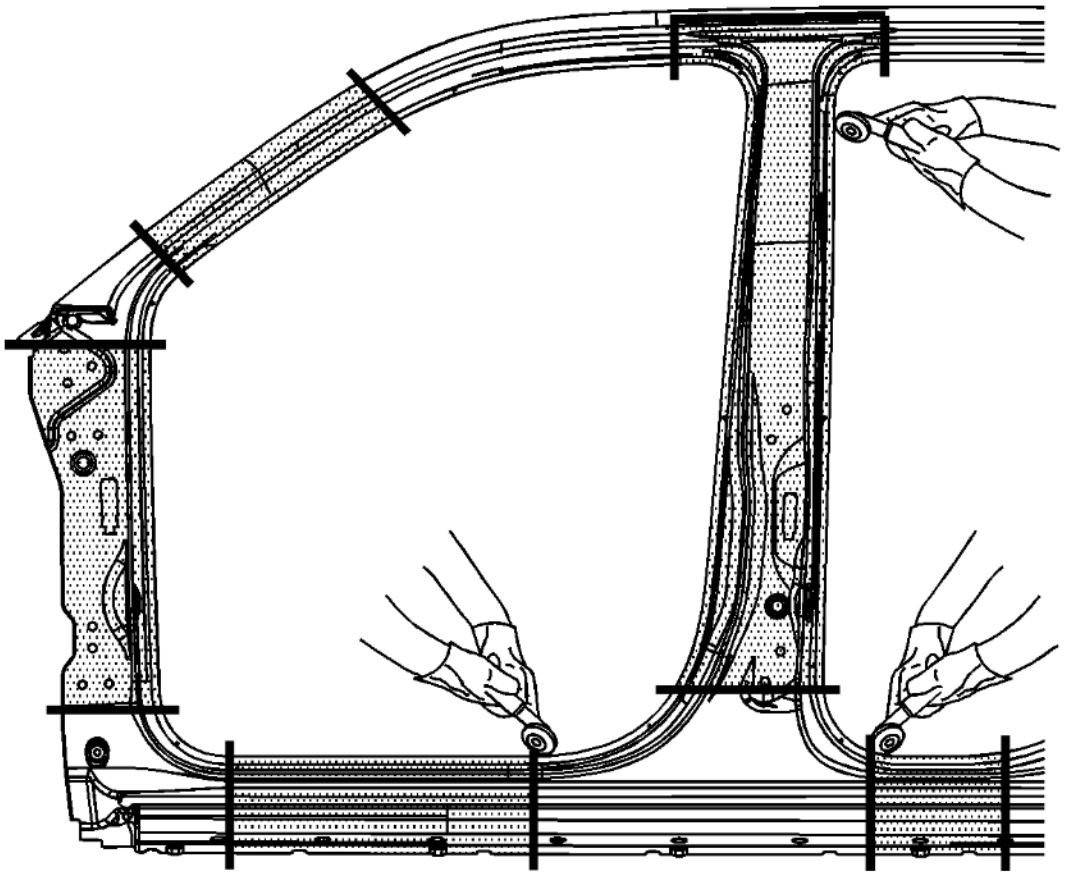


Fig. 72: Cutting Panel In Locations
Courtesy of GENERAL MOTORS COMPANY

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

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

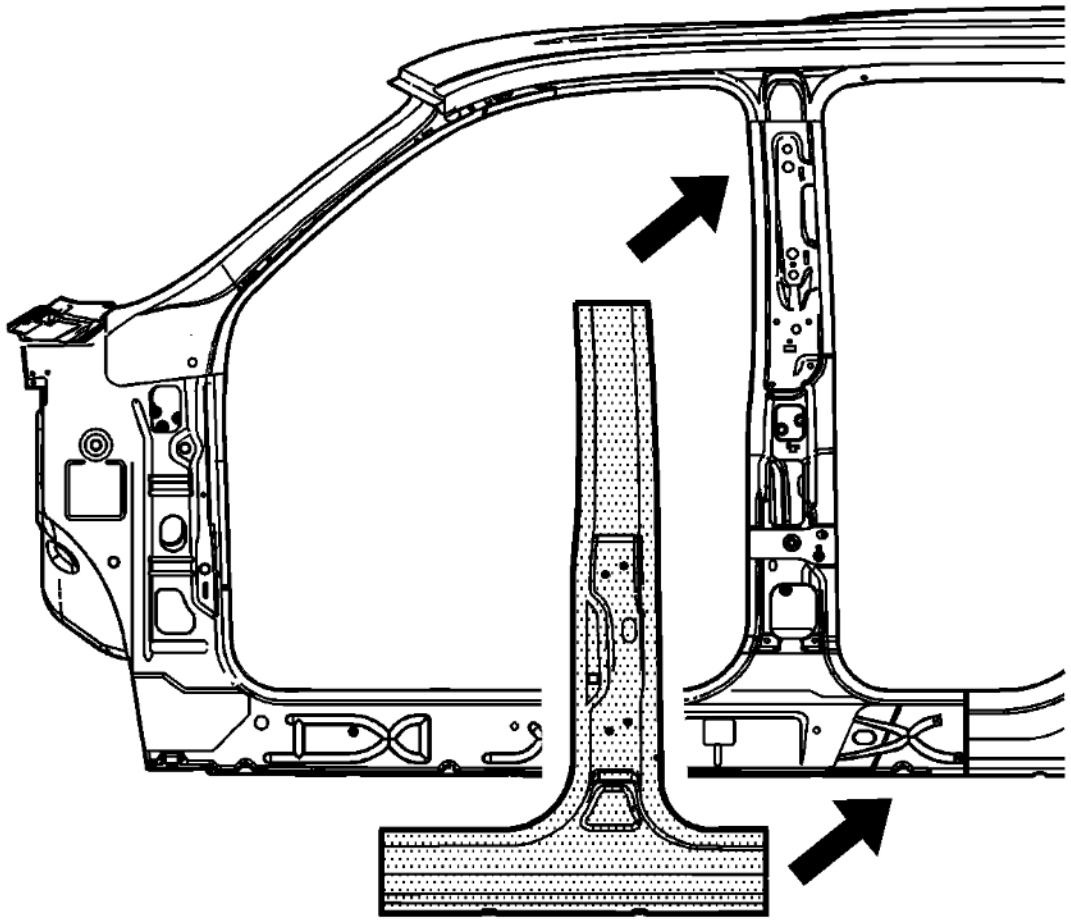


Fig. 73: Position Center Pillar
Courtesy of GENERAL MOTORS COMPANY

4. Position the outer center pillar to the vehicle using 3-dimensional measuring equipment. Clamp in place.
5. Weld accordingly.
6. Clean and prepare all welded surfaces.

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7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .
8. Paint the repair 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 (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

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. Refer to Ultra High Strength Steel.**

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 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 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** .

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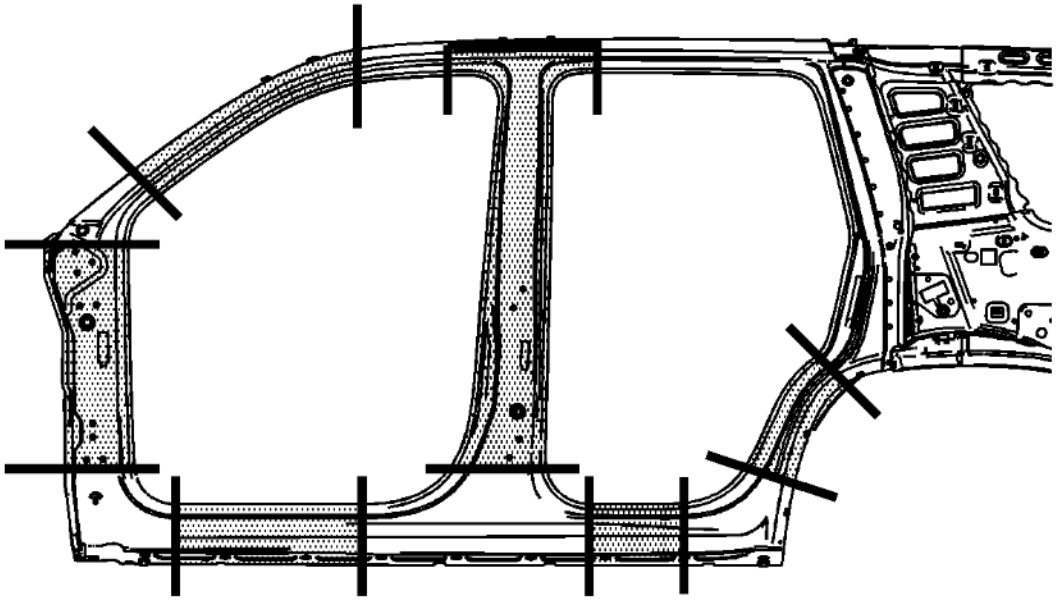


Fig. 74: Performing Additional Sectioning Procedures For Short Wheelbase
Courtesy of GENERAL MOTORS COMPANY

5. Perform additional sectioning procedures for short wheelbase as necessary. Refer to the following procedures:
   - **Front Hinge Pillar Sectioning**
   - **Center Pillar Sectioning**
   - **Rear Pillar Sectioning**

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- **Rocker Outer Panel Sectioning**

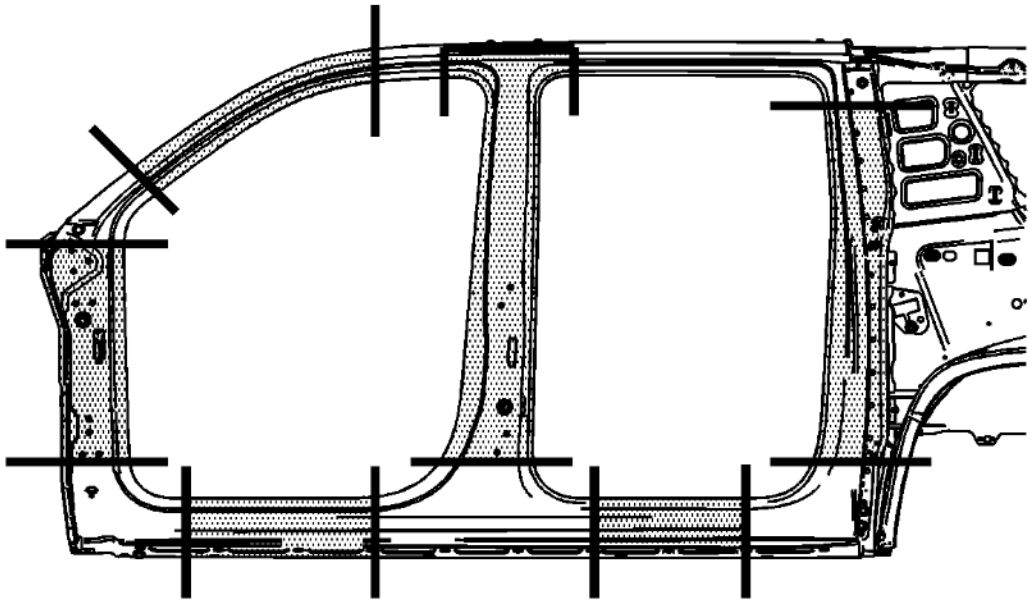


Fig. 75: Perform Additional Sectioning Procedures For Long Wheelbase
Courtesy of GENERAL MOTORS COMPANY

6. Perform additional sectioning procedures for long wheelbase as necessary. Refer to the following procedures:
   - **Front Hinge Pillar Sectioning**
   - **Center Pillar Sectioning**

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- **Rear Pillar Sectioning**
- **Rocker Outer Panel Sectioning**

7. Remove body side outer as necessary for access to the center pillar outer panel reinforcement.

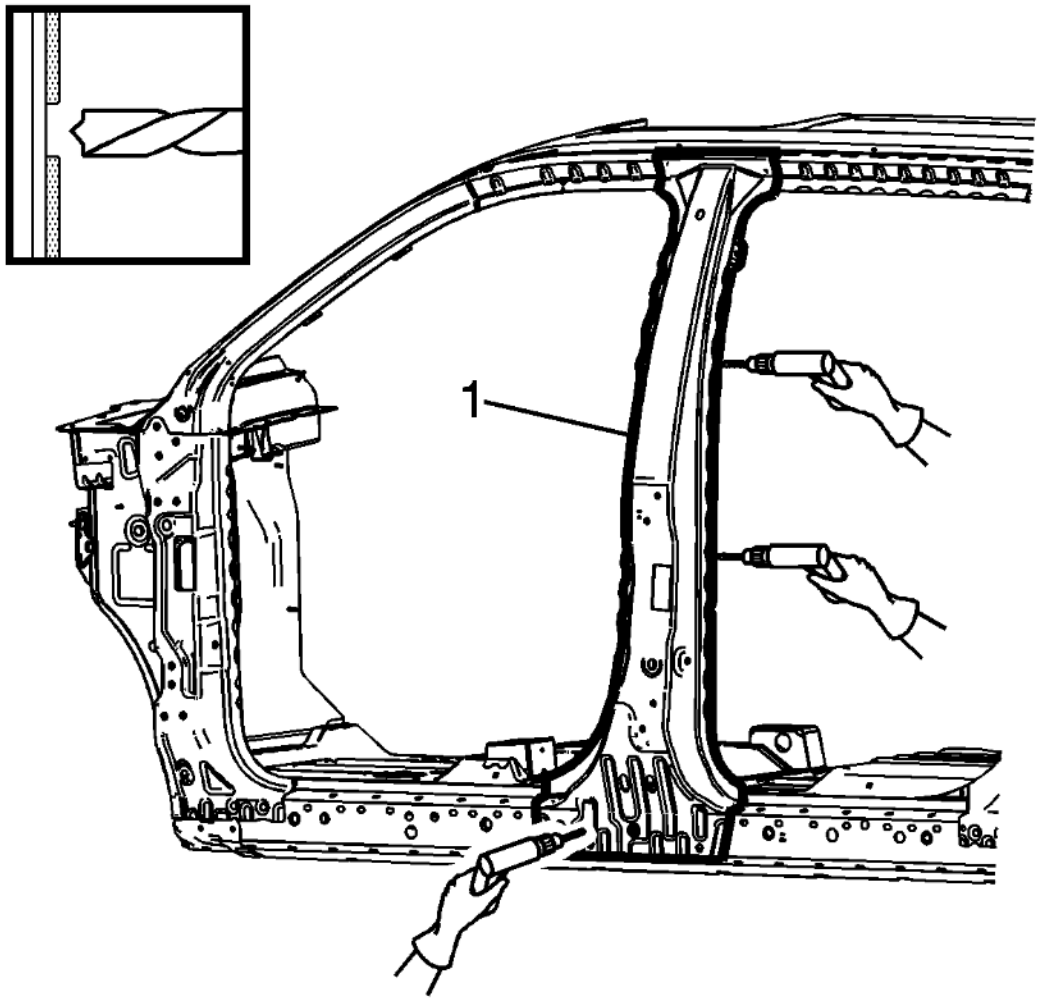


Fig. 76: Remove All Necessary Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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

8. Remove all necessary factory welds (1).

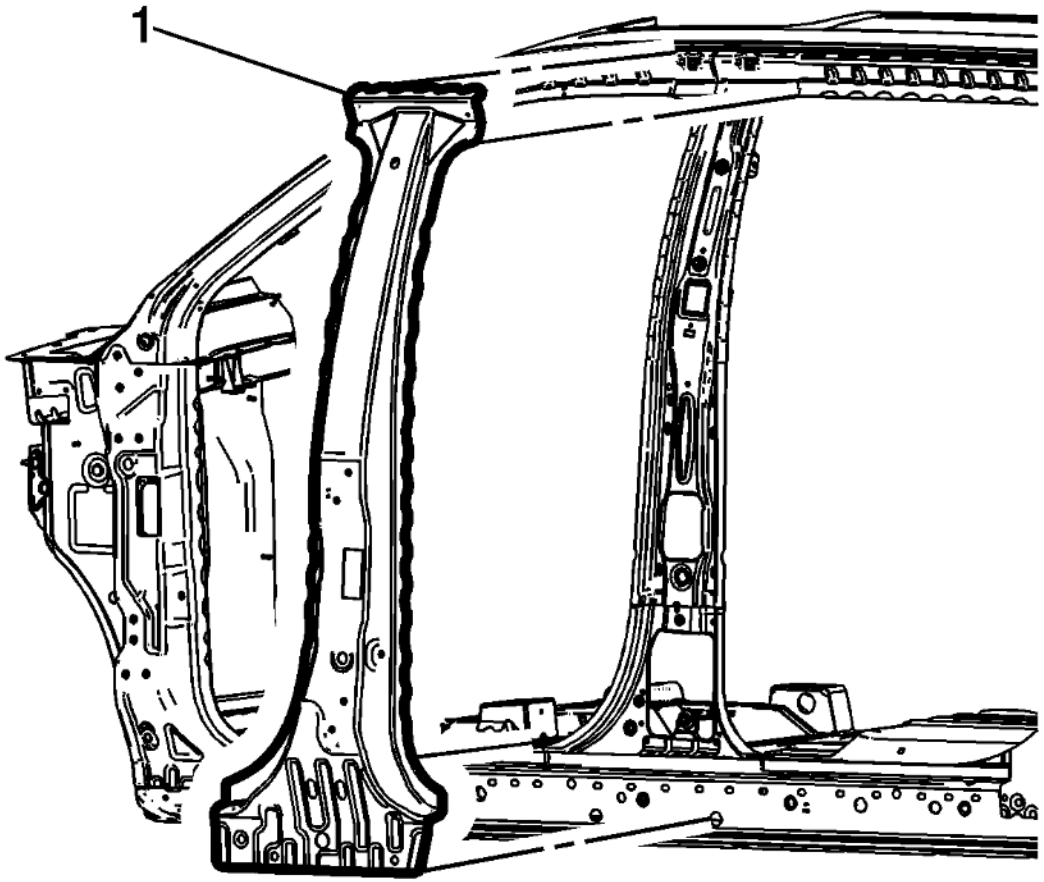


Fig. 77: Damaged Center Pillar Reinforcement
Courtesy of GENERAL MOTORS COMPANY

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

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Installation Procedure

1. Clean and prepare all mating surfaces, as necessary for welding.
2. Align the center pillar reinforcement.

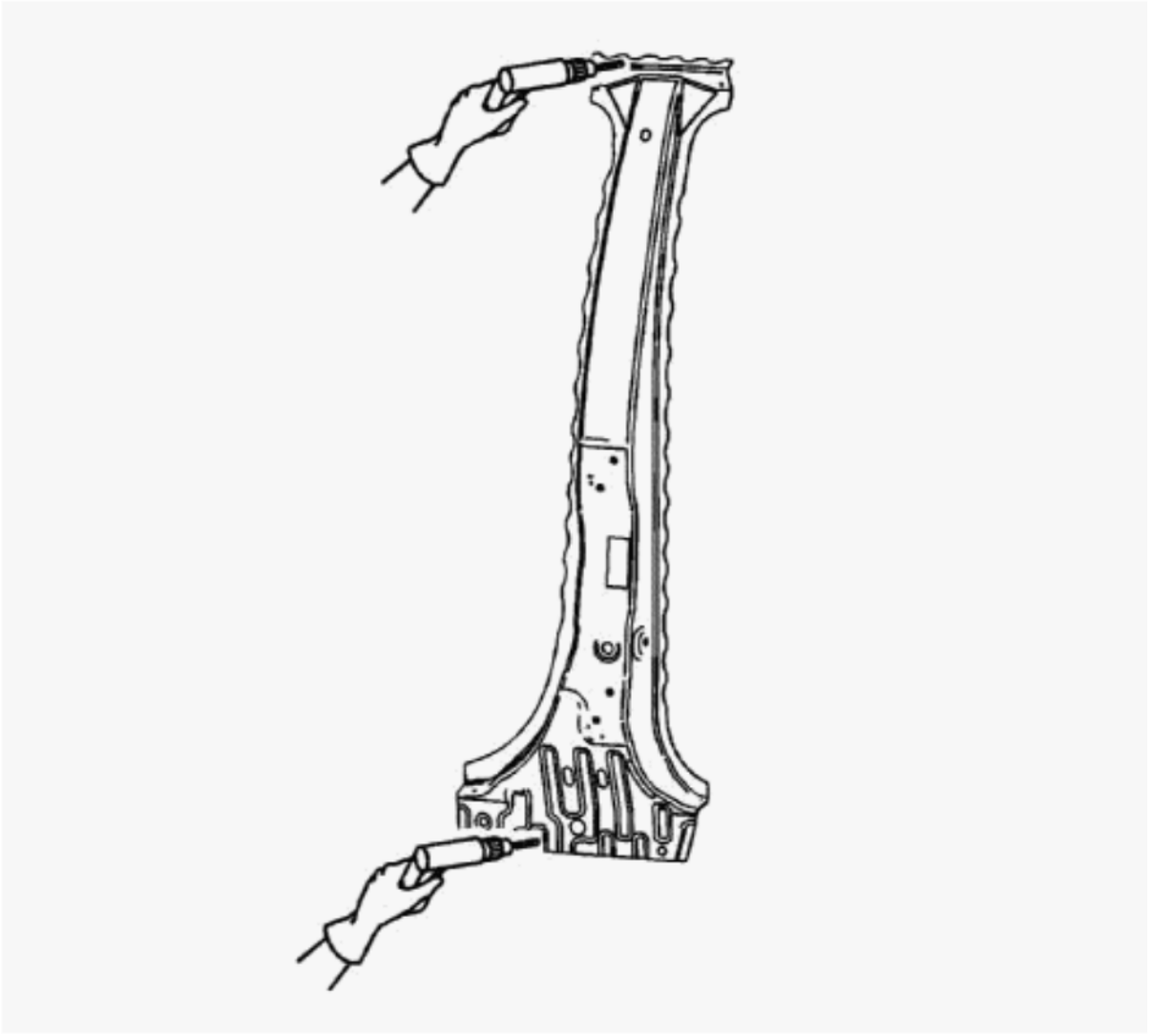


Fig. 78: Drill 8 mm (5/16 in) Holes For Plug Welding Along Top And Bottom Of Center Pillar Reinforcement
Courtesy of GENERAL MOTORS COMPANY

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3. Drill 8 mm (5/16 in) for plug welding along the top and bottom of the center pillar reinforcement (1) as noted from the original panel.

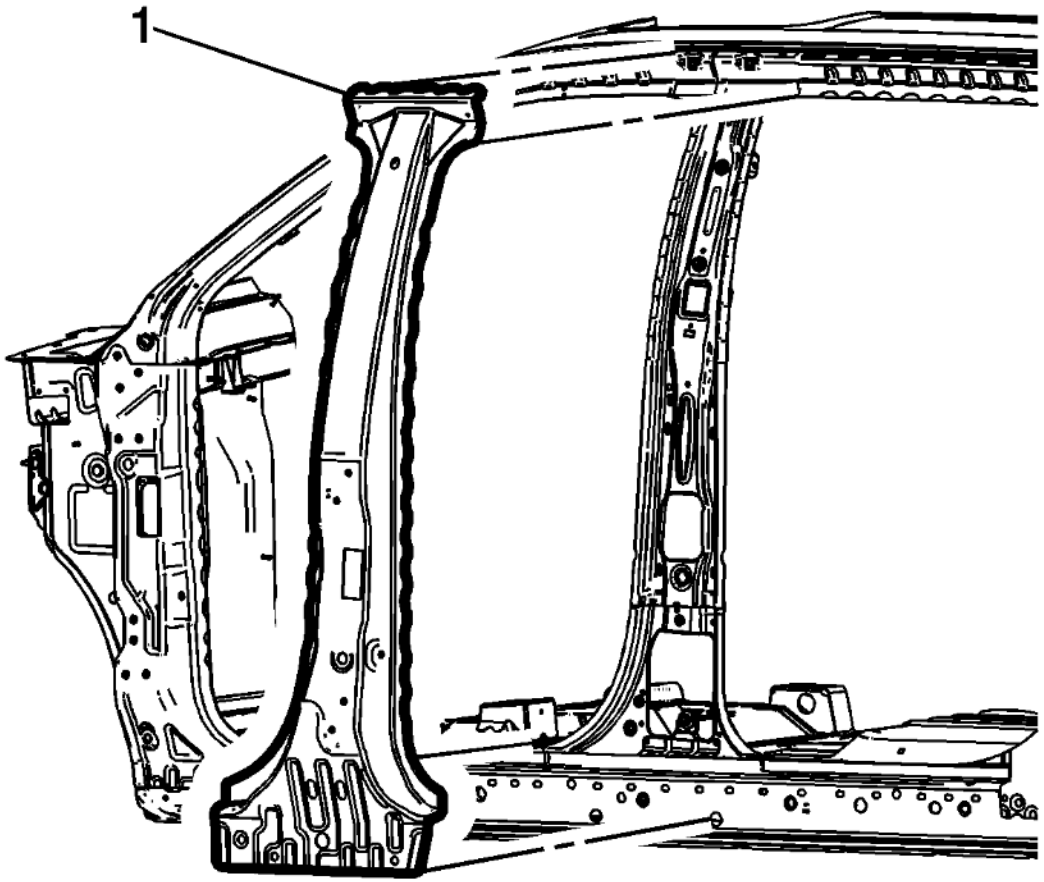


Fig. 79: Position Center Pillar Reinforcement
Courtesy of GENERAL MOTORS COMPANY

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

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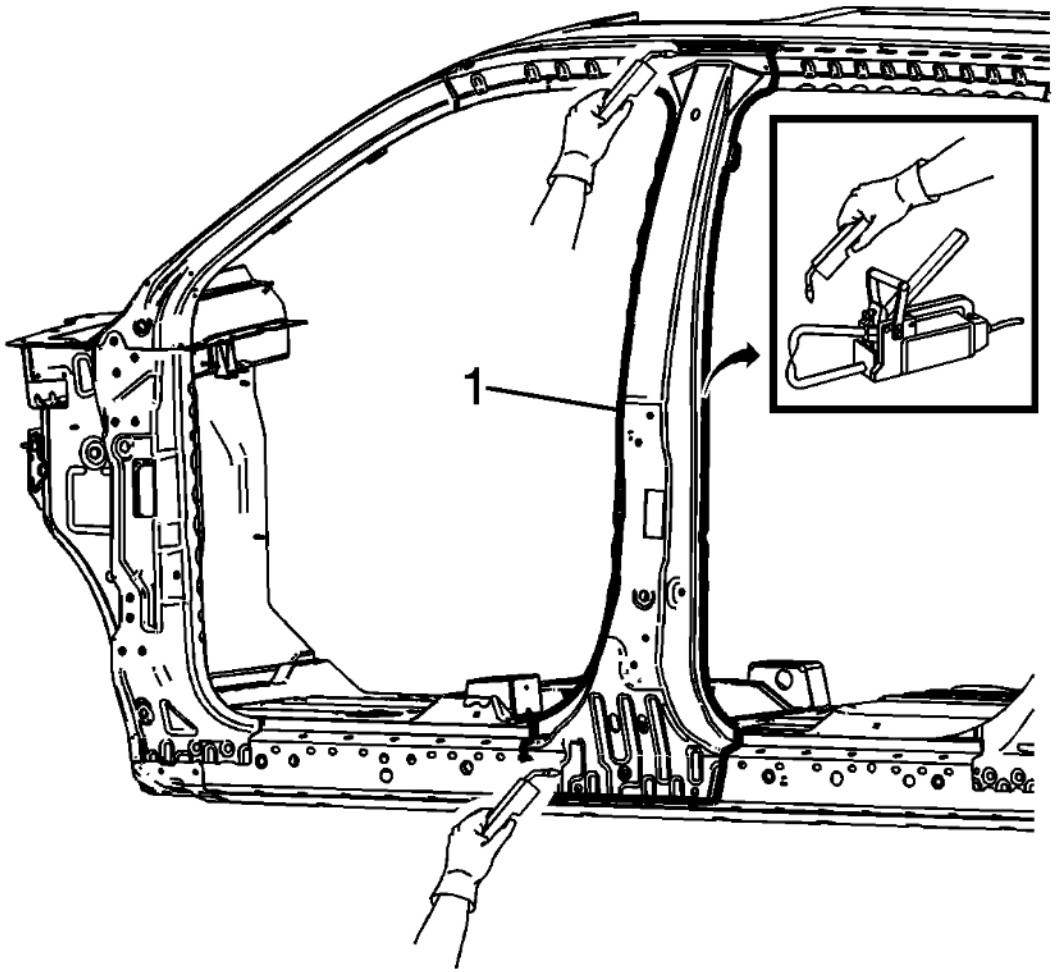


Fig. 80: Original Weld Locations
Courtesy of GENERAL MOTORS COMPANY

7. Weld accordingly at the original weld locations (1).
8. Complete body side outer sectioning as necessary.
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** .

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

REAR PILLAR SECTIONING

Removal Procedure

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

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

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

WARNING: **Refer to Battery Disconnect Warning .**

NOTE: **The door frame can be replaced at the factory seams, but requires the removal of the windshield, roof, and 1/4 Panel. Sectioning procedures have been developed as a more cost-effective alternative to complete replacement. The specific area to be sectioned is determined by the extent of the damage to the vehicle. This procedure shows the long wheelbase vehicle, the short wheelbase vehicles are similar. This procedure will require 1/4 panel removal.**

1. Disable the SIR system. Refer to **SIR Disabling and Enabling** .
2. Remove all related panels and components.
3. Repair as much of the damage as possible to factory specifications. Refer to **Dimensions - Body**.

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

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

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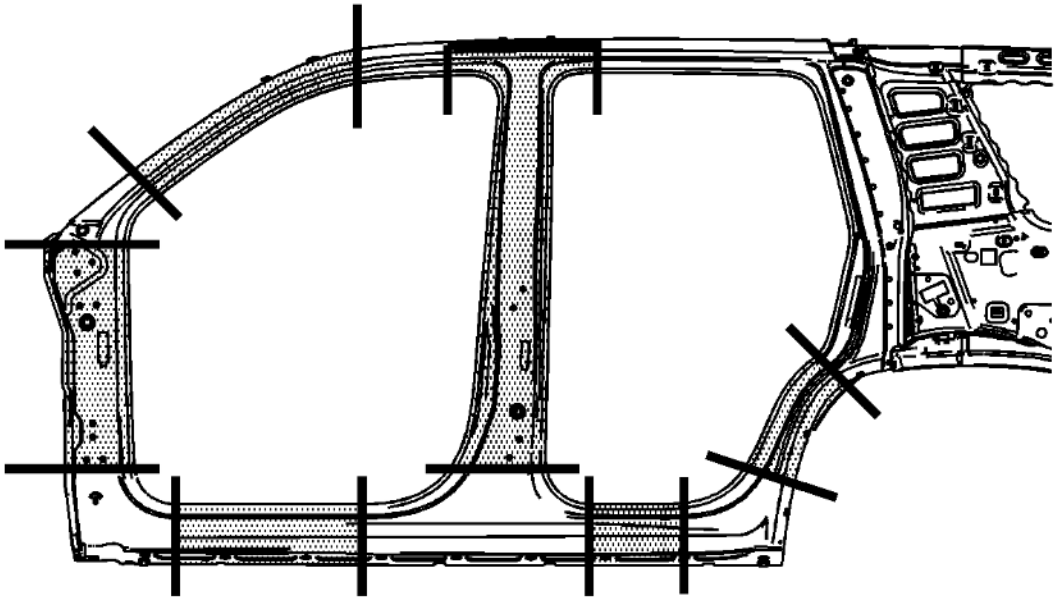


Fig. 81: Performing Additional Sectioning Procedures For Short Wheelbase
Courtesy of GENERAL MOTORS COMPANY

5. Perform additional sectioning procedures for short wheelbase as necessary. Refer to the following procedures:
   - **Front Hinge Pillar Sectioning**
   - **Rocker Outer Panel Sectioning**
   - **Center Pillar Sectioning**

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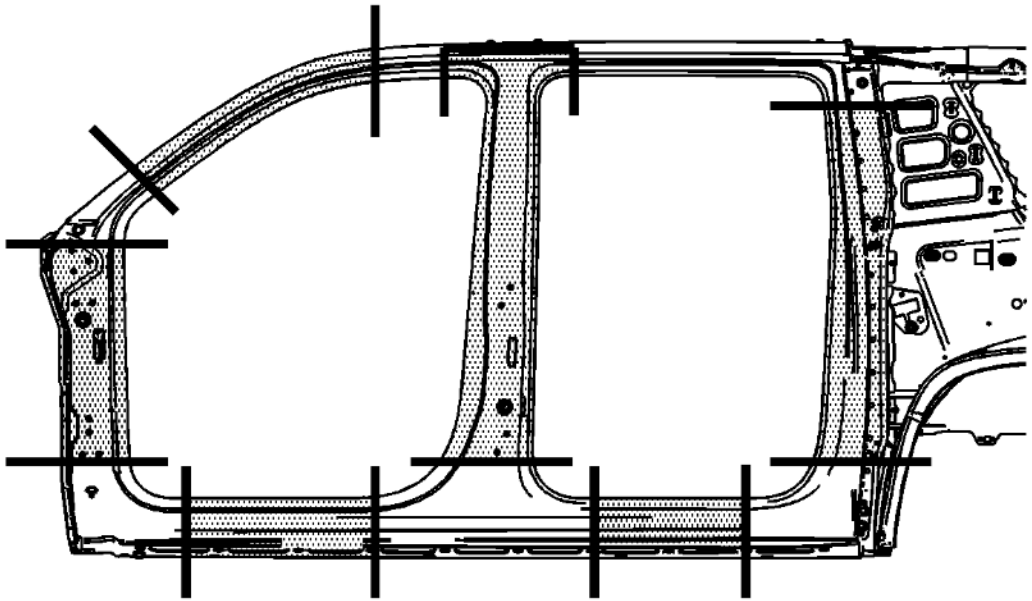


Fig. 82: Perform Additional Sectioning Procedures For Long Wheelbase
Courtesy of GENERAL MOTORS COMPANY

6. Perform additional sectioning procedures for long wheelbase as necessary. Refer to the following procedures:
   - **Front Hinge Pillar Sectioning**
   - **Rocker Outer Panel Sectioning**
   - **Center Pillar Sectioning**

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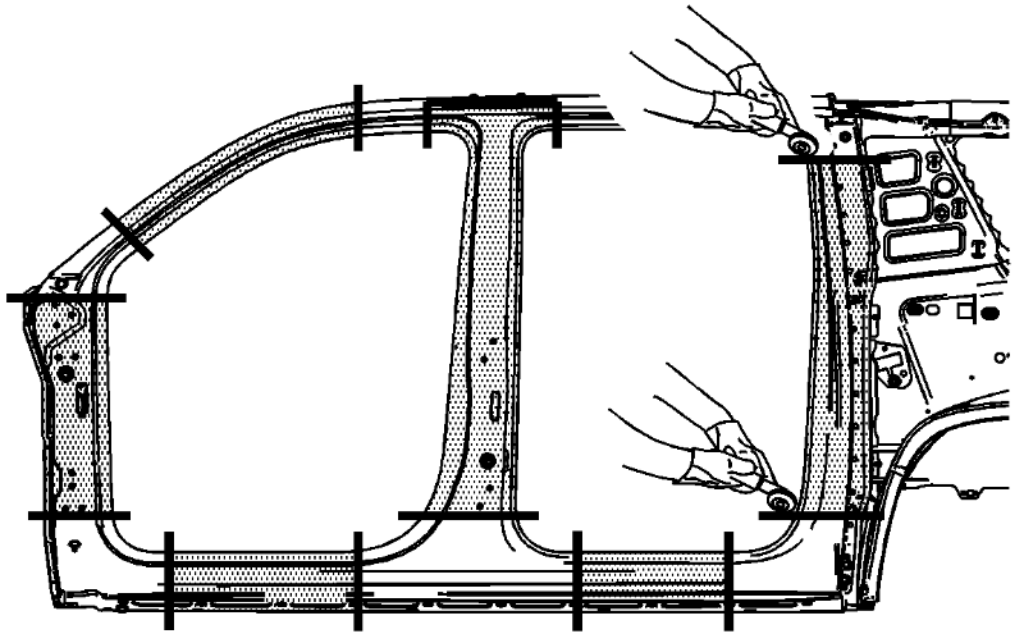


Fig. 83: Cutting Panel In Locations
Courtesy of GENERAL MOTORS COMPANY

NOTE: This procedure shows sectioning the rear pillar at the rocker, the specific area to be sectioned is determined by the extent of the damage to the vehicle.

NOTE: Do not damage any inner panels or reinforcements.

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7. Mark and cut the panel in the locations where sectioning is to be performed.

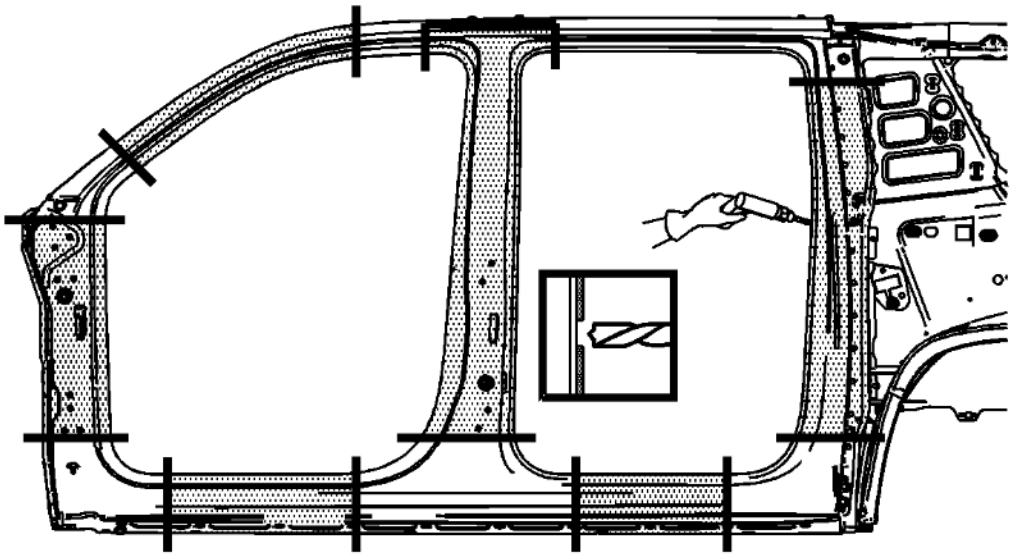


Fig. 84: Drilling Out All Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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

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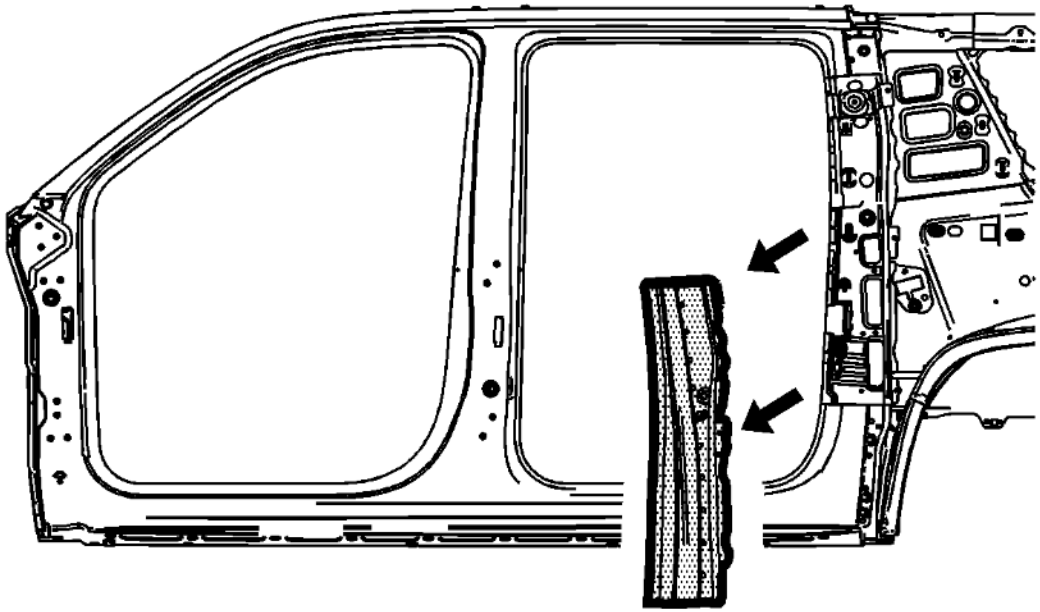


Fig. 85: Damaged Pillar Section
Courtesy of GENERAL MOTORS COMPANY

9. Remove the damaged pillar section.

Installation Procedure

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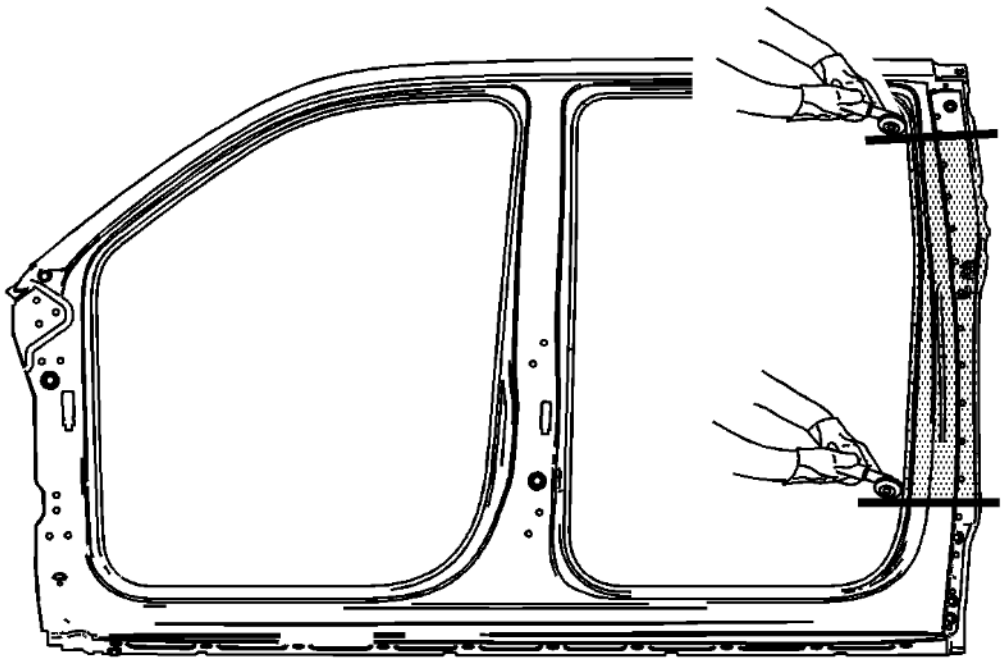


Fig. 86: Cutting Replacement Panel In Corresponding Locations
Courtesy of GENERAL MOTORS COMPANY

1. From the service part, cut the replacement panel in corresponding locations to overlap the remaining original panel by 25 mm (1 inch) at each joint.
2. Prepare all attachment surfaces for welding, as necessary.
3. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to **Anti-Corrosion Treatment and Repair** .

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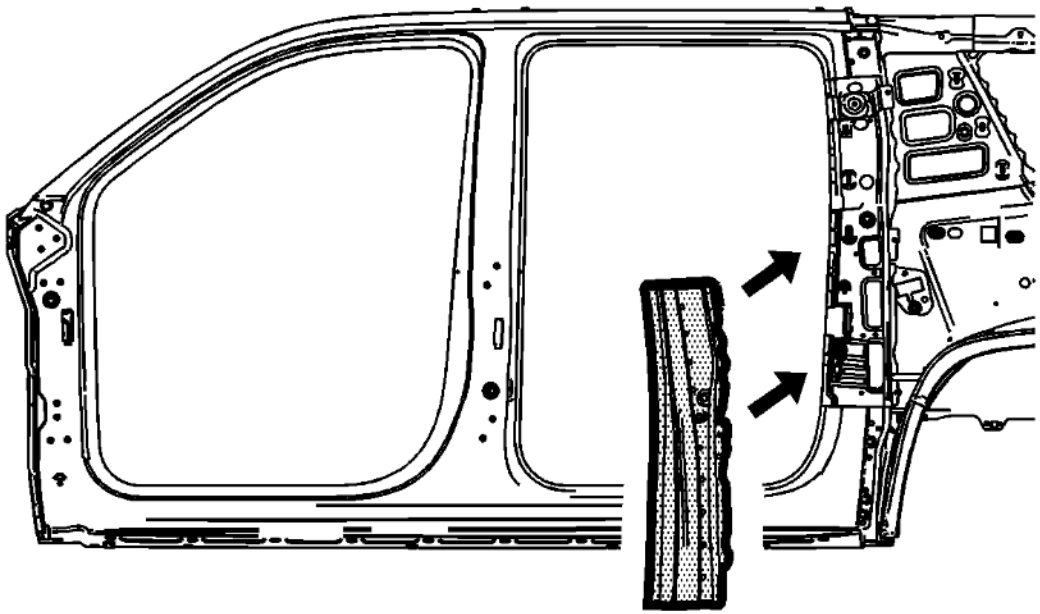


Fig. 87: Positioning Rear Pillar To Vehicle
Courtesy of GENERAL MOTORS COMPANY

4. Position the rear pillar to the vehicle using 3-dimensional measuring equipment. Clamp in place.
5. Weld accordingly.
6. Clean and prepare all welded surfaces.
7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to **Anti-Corrosion Treatment and Repair** .

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8. Paint the repair 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 (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .
11. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

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.**

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 (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .
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** .

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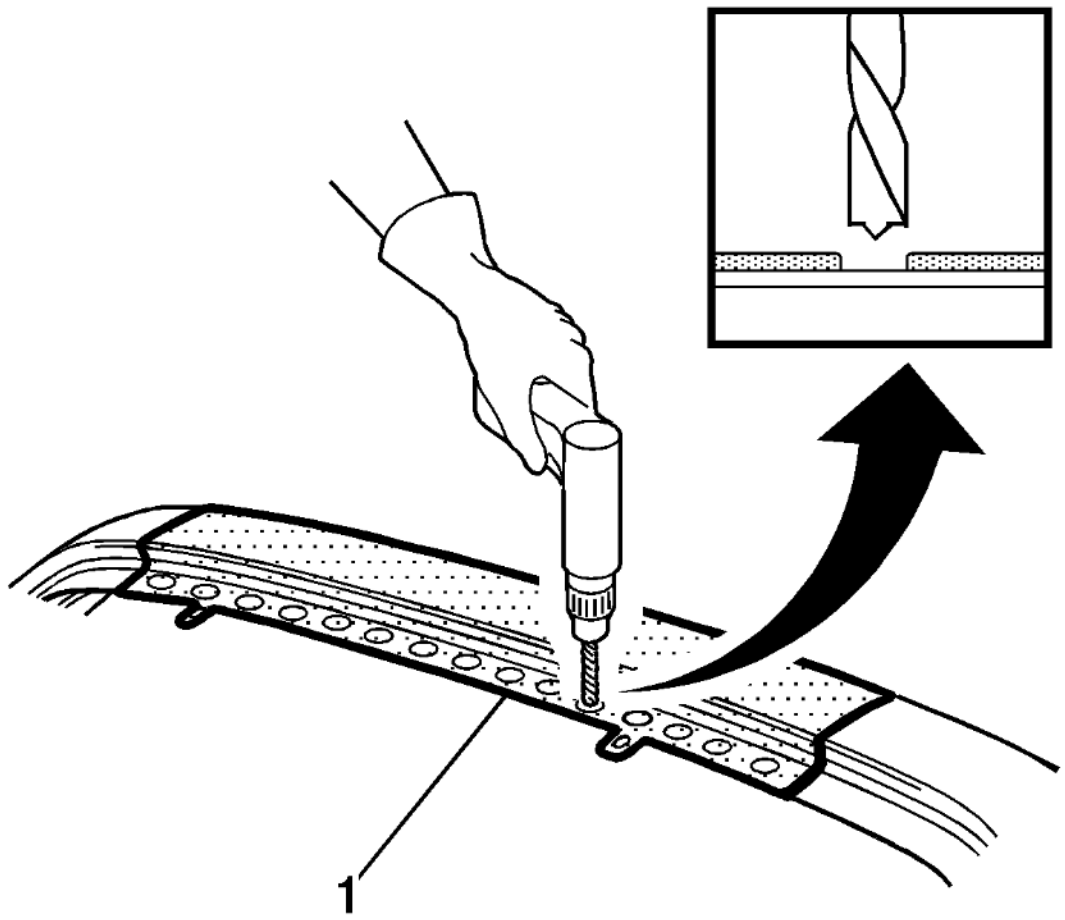


Fig. 88: Drilling Out Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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.

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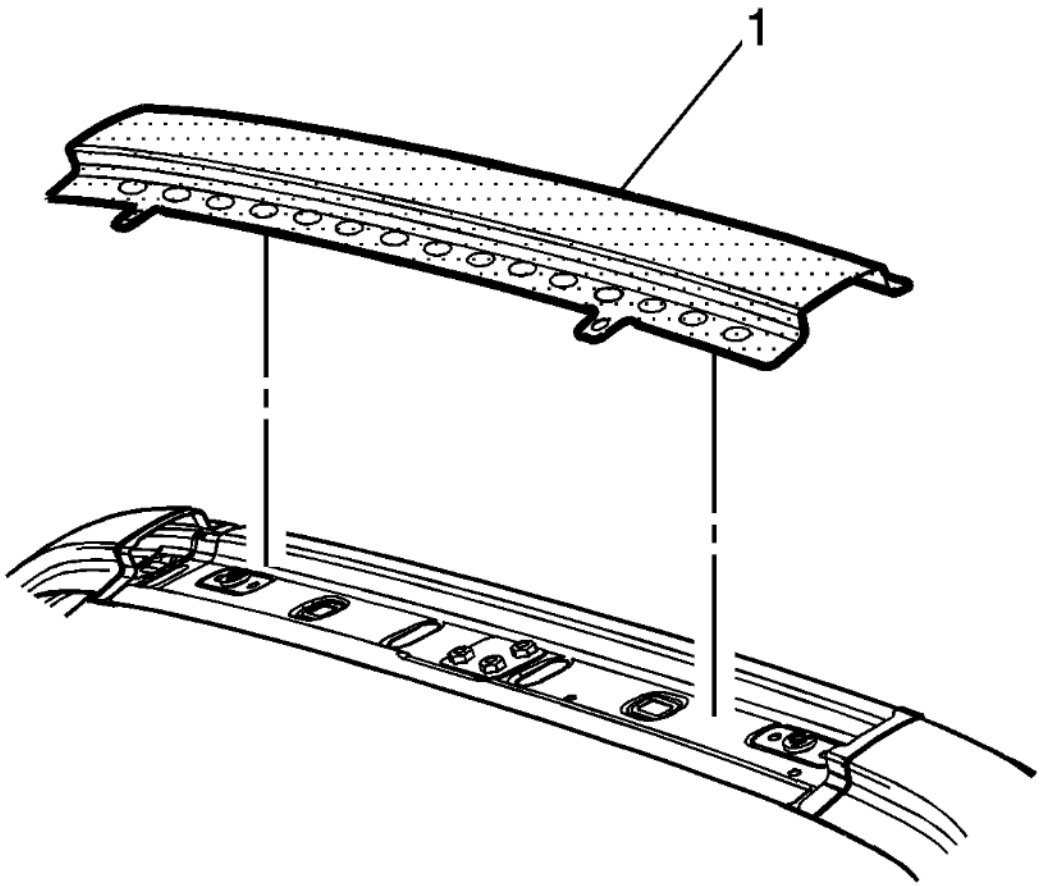


Fig. 89: Removing Damaged Part
Courtesy of GENERAL MOTORS COMPANY

7. Remove the damaged part (1).

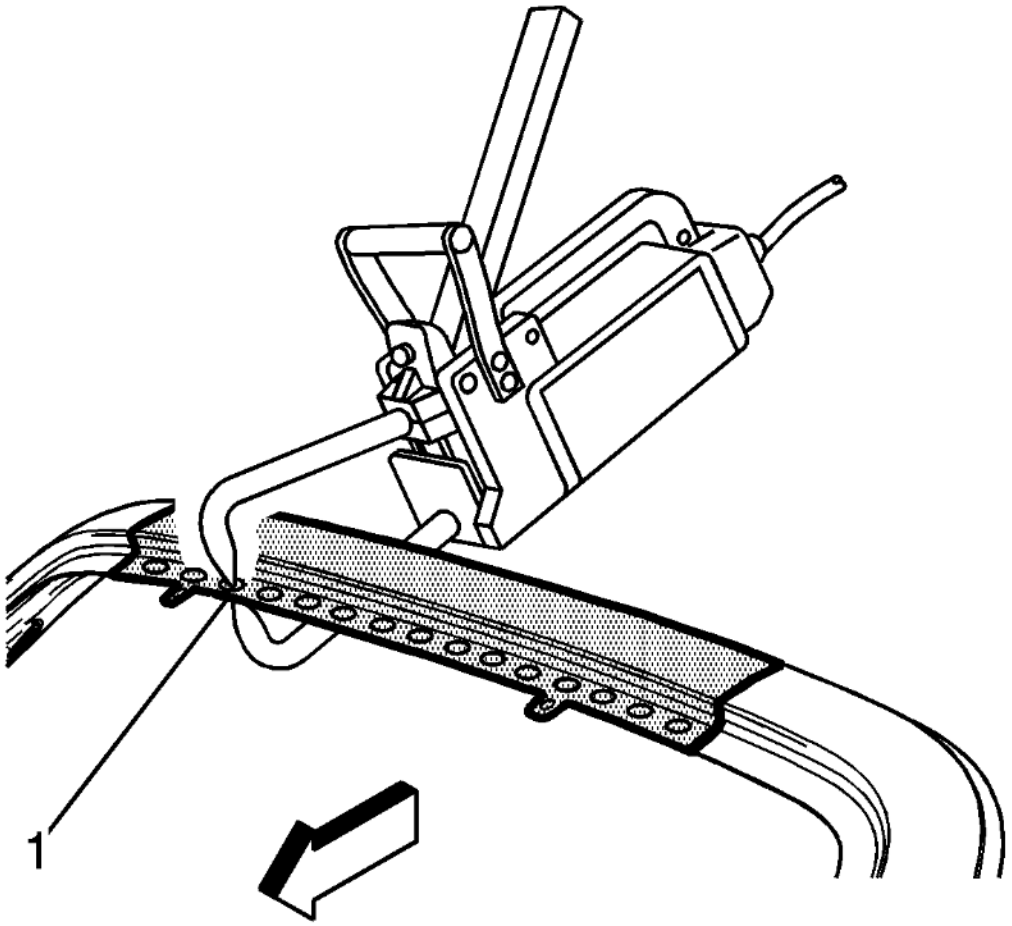
Installation Procedure

NOTE: **If the location of the original plug weld holes cannot be determined, space the plug weld holes every 40**

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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.



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Fig. 90: Applying Welds
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 (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .
10. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

MIG WELDED FULL PANEL REPLACEMENT

Removal Procedure

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

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

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

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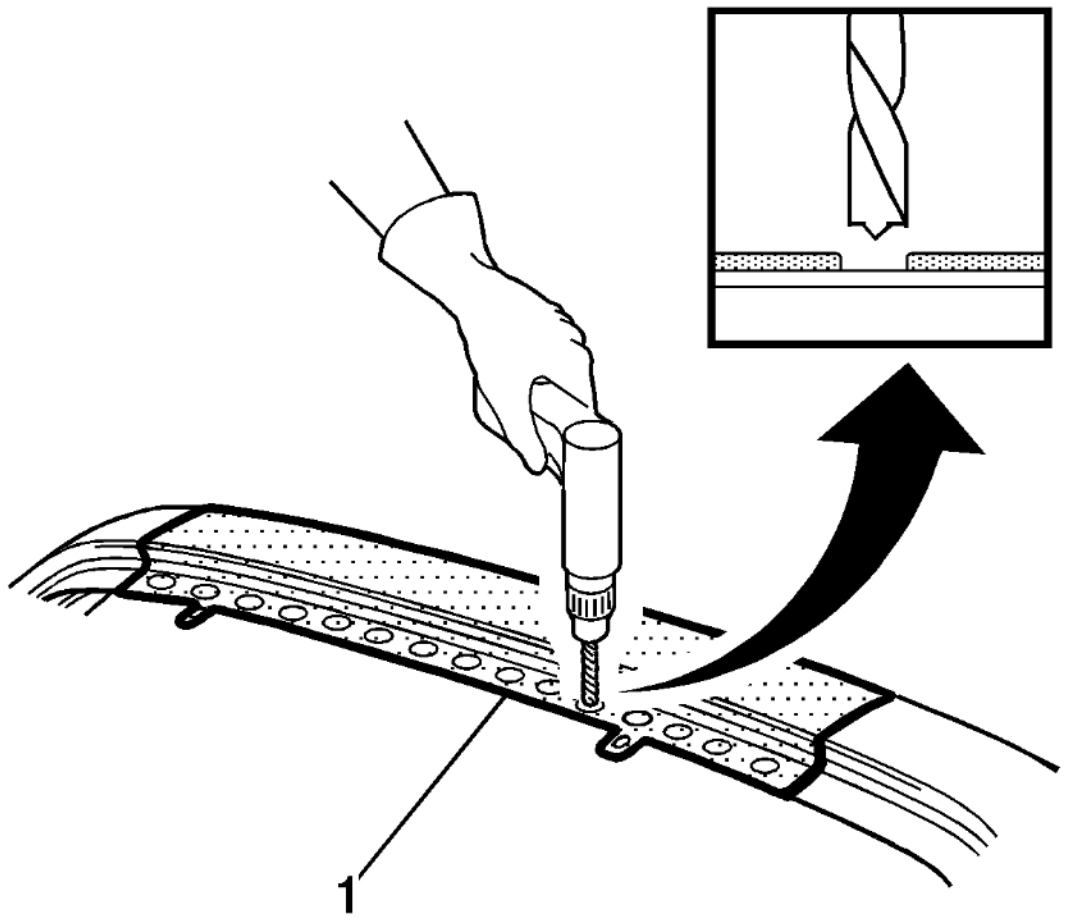


Fig. 91: Drilling Out Factory Welds
Courtesy of GENERAL MOTORS COMPANY

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.

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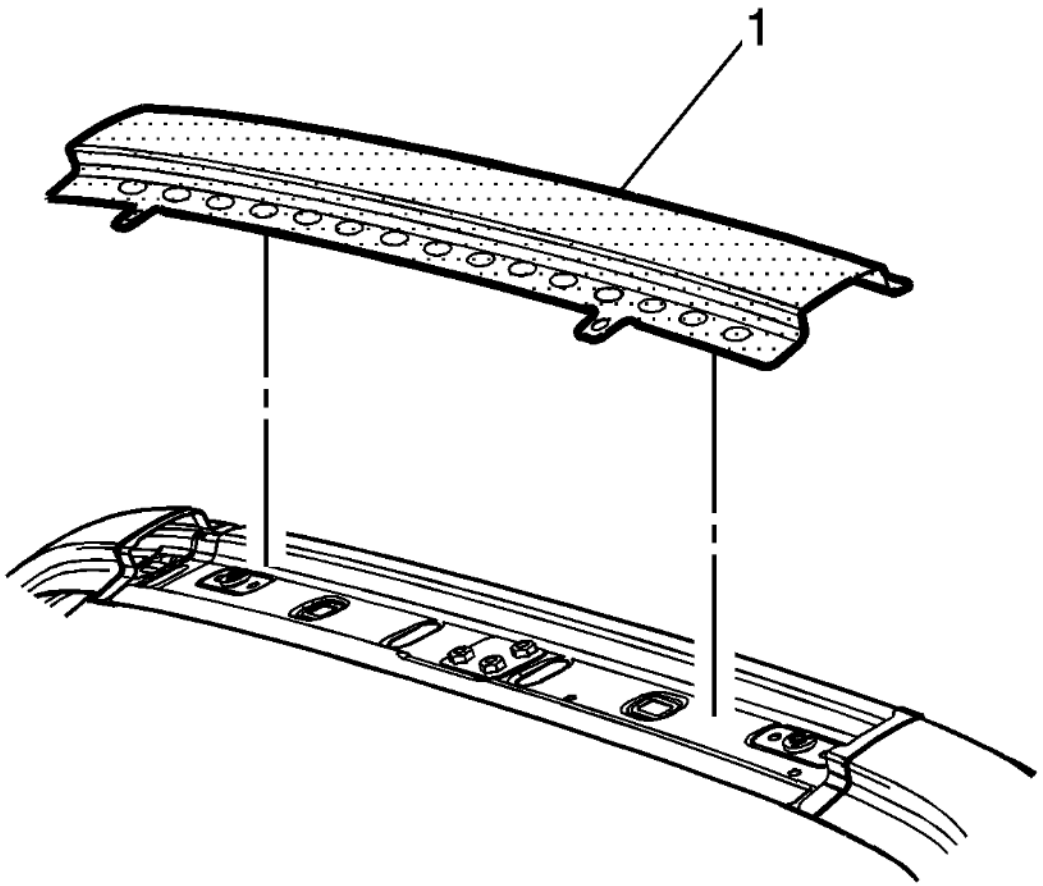


Fig. 92: Damaged Part
Courtesy of GENERAL MOTORS COMPANY

7. Remove the damaged part (1).

Installation Procedure

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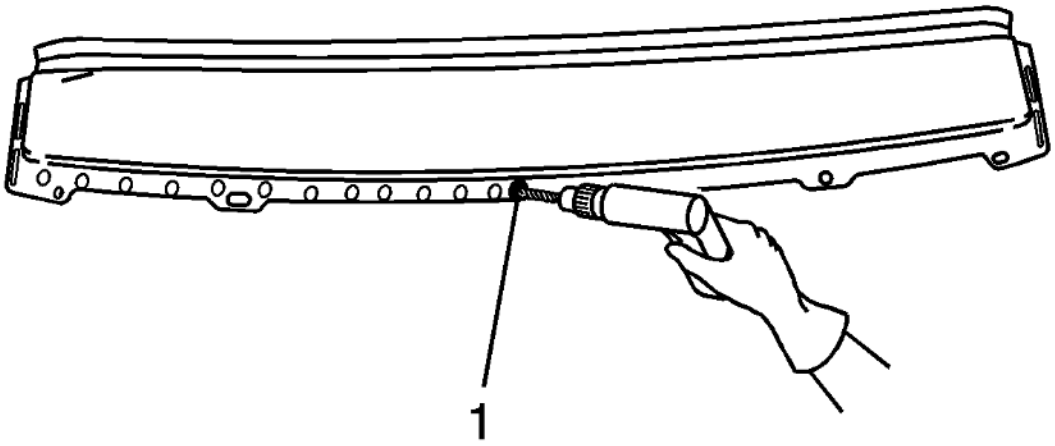


Fig. 93: Drilling Plug Weld Holes
Courtesy of GENERAL MOTORS COMPANY

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

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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.

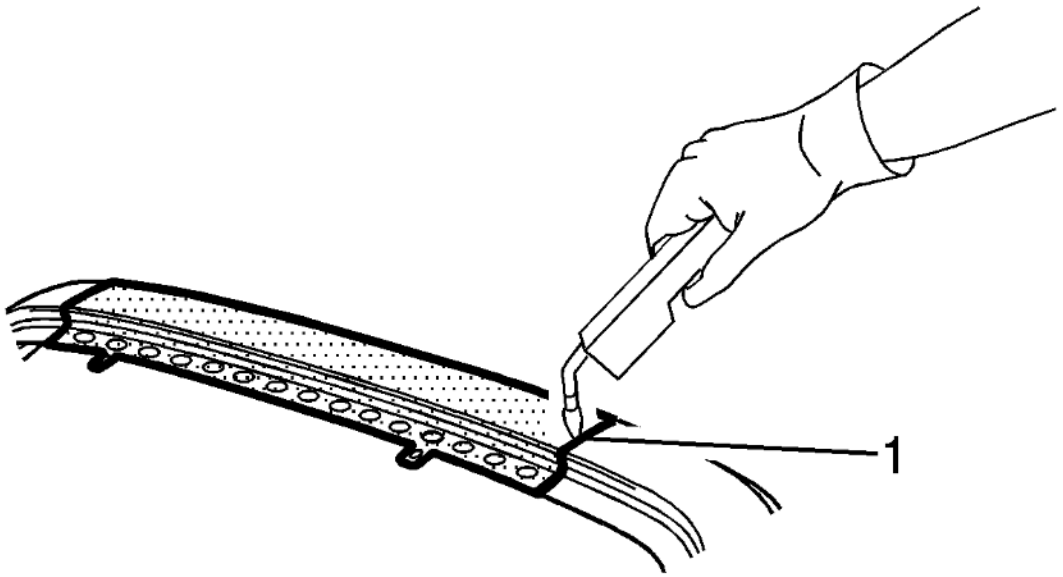


Fig. 94: Plug Welding Service Part
Courtesy of GENERAL MOTORS COMPANY

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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 (Dual Battery)** **Battery Negative Cable Disconnection and Connection (Single Battery)** .
12. Enable the SIR system. Refer to **SIR Disabling and Enabling** .

DESCRIPTION AND OPERATION

DUAL PHASE STEEL

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

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

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

Recommended Repairs:

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

HIGH STRENGTH LOW ALLOY STEEL

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

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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 650Â°C (1200Â°F). The heat should be applied a maximum of 2 times, for up to 90 seconds.
- Sectioning or partial replacement of this type of steel is recommended only at approved locations, in a specific sectioning procedure.
- When recommended in a specific sectioning procedure, this type of steel can be used as a weld plate for reinforcing the sectioning location.
- Squeeze Resistance Spot Welding can be used to replace factory spot welds, where applicable.
- MIG plug welding and MIG stitch welding can be used on this type of steel.
- MIG Brazing can be used on this type of steel.

METAL PANEL BONDING

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

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

Bonding procedures in general are applicable only at factory joints.

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

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

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

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

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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 Â©2015 General Motors. All rights reserved.	Panel Bonding Adhesive

MILD STEEL

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

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

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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 650Â°C (1200Â°F). The heat should be applied a maximum of 2 times, for up to 90 seconds.
- Sectioning or partial replacement of this type of steel is recommended only at approved locations, in a specific sectioning procedure.
- When recommended in a specific sectioning procedure, this type of steel can be used as a weld plate for reinforcing the sectioning location.
- Squeeze Resistance Spot Welding can be used to replace factory spot welds, where applicable
- MIG plug welding and MIG stitch welding can be used on this type of steel.
- MIG Brazing can be used on this type of steel.

ULTRA HIGH STRENGTH DUAL PHASE STEEL

This information provides repair recommendations and general guidelines for steel classified as Ultra High Strength Dual Phase Steel, 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.

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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.

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