Body Repair

Collision Repair

Specifications

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Repair Instructions
Front Full Frame Sectioning (Light Duty)

Removal Procedure

The re-designed frame assembly for the new Pick-Up and Utility Trucks is a mild steel, hydroformed frame assembly. A pre-sleeved replacement front frame service section, consisting of the left and right frame rail ends, body, mounting brackets and front connecting cross tube is available. Replacement bolt-on front bumper brackets are available and must be ordered separately.

Warning: Refer to Approved Equipment for Collision Repair Warning.

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 (TP2). Battery Negative Cable Disconnection and Connection (Single Battery).
3. Remove all of the related panels and components.

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)
   - Center of the gauge hole forward 33 mm (1 1/4)
   - Rear edge of the gauge hole forward 47 mm (1 7/8 in)
Note: Line up the masking tape with the tape edge facing the front of the vehicle on the sectioning location.

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

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.

7. Remove the damaged frame section.
Installation Procedure

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.
4. Position the service frame section to the existing frame and clamp in place.
Note: Verify the frame measurements 3-dimensionally to ensure proper position of the service frame.

5. Continuous-weld the upper and lower horizontal joints threw each corner.

6. Continuous-weld the inner and outer vertical joints from corner to corner.

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 (TP2) Battery Negative Cable Disconnection and Connection (Single Battery).

10. Enable the SIR system. Refer to SIR Disabling and Enabling.
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 heavy duty pick-up front frame service section.

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

**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 (TP2)
3. Remove all of the related panels and components.

**Note:** Perform the following steps on both of the rails for complete module replacement.

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 approximately 550 mm (with bumper bracket removed)
   - Front edge of the gauge hole rearward approximately 5 mm
   - Back edge of the lower control arm crossmember, rearward approximately 20 mm
   - Approximately 50 mm rearward of shock tower bracket
   - Approximately 55 mm rearward of shock tower bracket (inboard side rail)
Note: Line up the masking tape with the tape edge facing the front of the vehicle on the sectioning location.

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

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

6. Using a reciprocating saw or equivalent cut each frame rail approximately 5 mm forward of the front edge of the tape line. This will allow for final trimming of each rail rearward to the proper sectioning location.

7. Remove the damaged frame section.

Installation Procedure
1. Grind the existing frame rail (at the proper sectioning location) at a 45 degree angle (a) as shown.
2. Prepare all of the attaching surfaces as necessary.
3. Apply the weld-thru primer to all of the welded surfaces.

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

**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.
7. Clean and prepare all of the welded surfaces.
8. Apply sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
10. Install all of the related panels and components.
11. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (TP2) Battery Negative Cable Disconnection and Connection (Single Battery).
12. Enable the SIR system. Refer to SIR Disabling and Enabling.
Outer Windshield Frame 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.

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

1. Disable the SIR system. Refer to SIR Disabling and Enabling.
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (TP2).
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. Perform additional sectioning procedures as necessary. Refer to the following procedures:
   - Rocker Outer Panel Sectioning
   - Front Hinge Pillar Sectioning
   - Center Pillar Sectioning
• Rear Pillar Sectioning

7. 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.

Note: Perform the sectioning in the windshield area 30 mm (1 3/16 in) above the third trim mounting hole (1).

Note: Do not damage any inner panels or reinforcements.
9. Remove the damaged body side.

**Installation Procedure**

1. Cut the replacement body side in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to allow a gap of 1½ times the metal thickness at the sectioning joint.

![Diagram 1](image1.png)

2. Create a 50 mm (2 in) backing plate from the unused portion of the service part. Trim the backing plate as necessary to fit behind the sectioning joint.

![Diagram 2](image2.png)

3. Drill 8 mm (5/16 in) plug weld holes along the sectioning cut on the remaining original part. Locate these holes approximately 25 mm (1 in) (a) from the
edge and spaced 40 mm (1 ½ in) apart.

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

4. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel and along the sectioning cut.

5. Prepare all attachment surfaces as necessary.

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

7. Fit the backing plate (2) halfway into the sectioning joint, clamp and plug weld to the vehicle (3).
8. Position the body side to the vehicle using 3-dimensional measuring equipment. Clamp in place.


   **Note:** 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. Complete the stitch weld.

10. Clean and prepare all welded surfaces.

11. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.


13. Install all related panels and components.

14. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (TP2)Battery Negative Cable Disconnection and Connection (Single Battery).

15. 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.

Note: This procedure shows the crew cab pickup; the extended cab and the regular cab are 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 (TP2) 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.

Note: Do not damage any inner panels or reinforcements.

6. Locate and drill out all factory welds. Note the number and location of the welds for installation of the roof panel.
7. Remove the damaged roof panel.

**Installation Procedure**

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

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

4. Position the roof panel.

5. Plug weld accordingly.

6. Clean and prepare all welded surfaces.

7. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.

9. Install all related panels and components.

10. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (TP2). 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.

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

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

2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (TP2).

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. Perform additional sectioning procedures as necessary. Refer to the following procedures:

   - Outer Windshield Frame Pillar Sectioning
   - Front Hinge Pillar Sectioning
   - Center Pillar Sectioning
Rear Pillar Sectioning

Note: Do not damage any inner panels or reinforcements.

7. 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.

9. Remove the damaged body side.

Installation Procedure
1. Cut the replacement body side in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to allow a gap of 1½ times the metal thickness at the sectioning joint.

2. Create a 100 mm (4 in) (a) backing plate from the unused portion of the service part. Trim the backing plate as necessary to fit behind the sectioning joint where there is no reinforcement.

3. Drill 8 mm (5/16 in) plug weld holes along the sectioning cut on the remaining original part. Locate these holes approximately 25 mm (1 in) from the edge and spaced 40 mm (1 1/2 in) apart.
Note: If the location of the original plug weld holes can not be determined, or if structural weld-thru adhesive was present, space the plug weld holes every 40 mm (1 1/2 in) apart.

4. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel and along the sectioning cut.

5. Prepare all attachment surfaces as necessary.

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

7. Fit the backing plate halfway into the sectioning joint, clamp and plug weld to the vehicle.

8. Position the body side to the vehicle using 3-dimensional measuring equipment. Clamp in place.
Note: 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. Complete the stitch weld.

9. Clean and prepare all welded surfaces.

10. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.


12. Install all related panels and components.

13. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (TP2) Battery Negative Cable Disconnection and Connection (Single Battery).

14. Enable the SIR system. Refer to SIR Disabling and Enabling.
Front Side Door Outer Panel Replacement

Removal Procedure

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

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

1. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (TP2). 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.

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

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

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

1. Using a grinding disk grind the surface of the door shell mating flanges to bare steel.
2. Scuff the opposing mating surfaces of the door outer panel to remove the gloss of the E-Coat.

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

   **Note:** In any area damaged beyond recognition, space plug weld holes every 40 mm (1 in) apart.

4. Clean the mating surfaces.

   **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.
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.

**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.

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.
13. Using metal-inert gas (MIG), weld the door outer panel to the door frame in the locations noted at the upper door frame.

14. Clean and prepare all welded surfaces.

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 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 (TP2)Battery Negative Cable Disconnection and Connection (Single Battery).
Warning: Refer to Approved Equipment for Collision Repair Warning.

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

1. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (TP2).

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 Door Replacement (Extended Cab).

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

Note: Remove the hem flange at the upper belt reinforcement.

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

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

1. Using a grinding disk grind the surface of the door shell mating flanges to bare steel.
2. Scuff the opposing mating surfaces of the door outer panel to remove the gloss of the E-Coat.

3. Drill 8 mm (5/16 in) plug weld holes, as necessary, in the locations noted from the original panel.
   
   **Note:** In any area damaged beyond recognition, space plug weld holes every 40 mm (1 in) apart.

4. Clean the mating surfaces.

   **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.
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.

8. Install the door outer panel to the door shell.

9. Clamp the door outer panel into position, as required.

10. Using a hammer re-hem the hem flanges around the door shell.
    Continue to hammer in stages along the hem flanges.

11. 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 Door Replacement (Extended Cab) Rear Door Replacement (Crew Cab).
13. Using metal-inert gas (MIG), weld the door outer panel to the door frame in the locations noted at the upper door frame.

14. Clean and prepare all welded surfaces.

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 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 (TP2) Battery Negative Cable Disconnection and Connection (Single Battery).
**Warning:** Refer to Approved Equipment for Collision Repair Warning.

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

1. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (TP2/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 Door Replacement (Extended Cab)/Rear Door Replacement (Crew Cab).

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

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

**Note:** Remove the hem flange at the upper belt reinforcement.
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**

1. Using a grinding disk grind the surface of the door shell mating flanges to bare steel.
2. Scuff the opposing mating surfaces of the door outer panel to remove the gloss of the E-Coat.

3. Drill 8 mm (5/16 in) plug weld holes, as necessary, in the locations noted from the original panel.
   
   **Note:** In any area damaged beyond recognition, space plug weld holes every 40 mm (1 in) apart.

4. Clean the mating surfaces.

**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.

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.
8. Apply a 3–6 mm (1/8–1/4 in) bead of metal bonding adhesive along the front portion of the door shell (1).

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

9. Install the door outer panel to the door shell.

10. Clamp the door outer panel into position, as required.

11. Using a hammer re-hem the hem flanges around the door shell.
    Continue to hammer in stages along the hem flanges.
12. Remove the excess adhesive from the door panel area.

13. Install the door to the vehicle. Inspect the door outer panel for proper alignment; then adjust the alignment, as required. Refer to Rear Door Replacement (Extended Cab) Rear Door Replacement (Crew Cab).

14. Using metal-inert gas (MIG), weld the door outer panel to the door frame in the locations noted at the upper door frame.

15. Clean and prepare all welded surfaces.

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 beltline reinforcement and the door outer panel.

17. 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 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.

18. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems.

19. Install all related panels and components.

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

21. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (TP2) Battery Negative Cable Disconnection and Connection (Single Battery).
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.

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

1. Disable the SIR system. Refer to SIR Disabling and Enabling.
2. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (TP2) 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. Perform additional sectioning procedures as necessary. Refer to the following procedures:
   - Outer Windshield Frame Pillar Sectioning
   - Rocker Outer Panel Sectioning
   - Center Pillar Sectioning
7. Measure 70 mm (2 3/4 in) down from the large wiring harness hole in the hinge pillar (1). Mark a horizontal line.

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

8. Cut the panel in the locations where sectioning is to be performed.

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

11. Cut and remove 30 mm (1 3/16 in) from the flanges on either side of the remaining section of the original pillar. Cut 5 mm (3/16 in) wide gaps in the bottom corners.

12. Step the tabs (1) inward to allow the door frame opening service section to fit over the original hinge pillar.

Installation Procedure

1. On the service body side, measure 40 mm (1 9/16 in) down from the large wiring harness hole in the hinge pillar. Mark a horizontal line. Cut the hinge
pillar (1) along this line.

2. Perform additional sectioning procedures as necessary to remove the unused areas of the service part.

3. Drill 8 mm (5/16 in) plug weld holes along the sectioning cut on the remaining original part (2). Locate these holes approximately 25 mm (1 in) (a) from the edge and spaced 40 mm (1 ½ in) apart.

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

4. Drill 8 mm (5/16 in) plug weld holes in the service part, as necessary, in the locations noted from the original panel and along the sectioning cut.

5. Prepare all attachment surfaces, as necessary.

6. Apply GM-approved Weld-Thru Coating or equivalent to all mating surfaces. Refer to Anti-Corrosion Treatment and Repair.
7. Position the hinge pillar to the vehicle using 3-dimensional measuring equipment. Clamp in place.

8. Plug weld accordingly.

   **Note:** To create a solid weld with minimum heat distortion, make 25 mm (1 in) stitch welds along the seam (2) with 25 mm (1 in) gaps between them. Complete the stitch weld.

9. Clean and prepare all welded surfaces.

10. Apply the sealers and anti-corrosion materials to the repair area (1), as necessary. Refer to [Anti-Corrosion Treatment and Repair](#).

11. Paint the repair area. Refer to [Basecoat/Clearcoat Paint Systems](#).

12. Install all related panels and components.

13. Connect the negative battery cable. Refer to [Battery Negative Cable Disconnection and Connection (TP2)](#) or [Battery Negative Cable Disconnection and Connection (Single Battery)](#).

14. 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.

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 (TP2). 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. Perform additional sectioning procedures as necessary. Refer to the following procedures:
   - Outer Windshield Frame Pillar Sectioning
   - Front Hinge Pillar Sectioning
   - Rocker Outer Panel Sectioning
   - Rear Pillar Sectioning
Note: Do not damage any inner panels or reinforcements.

7. 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.

9. Remove the damaged pillar section.

Installation Procedure
1. Cut the replacement body side in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to allow a gap of 1½ times the metal thickness at the sectioning joint.

2. Create a 50 mm (2 in) (1) backing plate from the unused portion of the service part. Trim the backing plate as necessary to fit behind the sectioning joint where there is no reinforcement.

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

4. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel and along the sectioning cut.

5. Prepare all attachment surfaces, as necessary.

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

7. Fit the backing plate (3) halfway into the sectioning joint, clamp and plug weld to the vehicle.

8. Position the center pillar to the vehicle using 3-dimensional measuring equipment. Clamp in place.

   **Note:** 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. Complete the stitch weld.

10. Clean and prepare all welded surfaces.

11. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.


13. Install all related panels and components.

14. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (TP2). Battery Negative Cable Disconnection and Connection (Single Battery).

15. Enable the SIR system. 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.

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 (TP2).
3. Remove all related panels and components.
4. Repair as much of the damage as possible to factory specifications. Refer to Dimensions - Body.
5. Note the location and remove the sealers and anti-corrosion materials from the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
6. Perform additional sectioning procedures, as necessary. Refer to the following procedures:
   - Outer Windshield Frame Pillar Sectioning
   - Front Hinge Pillar Sectioning
   - Rocker Outer Panel Sectioning
   - Center Pillar Sectioning
Note: Do not damage any inner panels or reinforcements.

7. 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.

9. Remove the damaged pillar section.
1. Cut the replacement body side in corresponding locations to fit the remaining original panel. The sectioning joint should be trimmed to allow a gap of $1\frac{1}{2}$ times the metal thickness at the sectioning joint.

2. Create a 50 mm (2 in) (1) backing plate from the unused portion of the service part. Trim the backing plate as necessary to fit behind the sectioning joint where there is no reinforcement.

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

4. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original panel and along the sectioning cut.

5. Prepare all attachment surfaces, as necessary.

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

7. Fit the backing plate (3) halfway into the sectioning joint, clamp and plug weld to the vehicle.

8. Position the rear pillar to the vehicle using 3-dimensional measuring equipment. Clamp in place.

   **Note:** 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. Complete the stitch weld.

10. Clean and prepare all welded surfaces.

11. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.


13. Install all related panels and components.

14. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (TP2). Battery Negative Cable Disconnection and Connection (Single Battery).

15. Enable the SIR system. Refer to SIR Disabling and Enabling.
Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

1. Remove the pickup box assembly. Refer to Pickup Box Replacement.
2. Restore as much damage as possible.
3. Note the location and remove the sealers and anti-corrosion materials from the repair area as necessary. Refer to Anti-Corrosion Treatment and Repair.
4. Locate and drill out all factory welds. Note the location of the welds for installation of the service part.
5. Remove the front panel.

Installation Procedure

1. Drill 8 mm (5/16 in) plug weld holes in the service part as necessary in the locations noted from the original part. 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. Align the service part to the pickup box.
4. Plug weld into position.
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 and repair the area. Refer to Basecoat/Clearcoat Paint Systems.
8. Install the pickup box assembly. Refer to Pickup Box Replacement.
Description
This procedure shows illustrations for the 6.6L box. The 5.8, 8.0, and dually pickup boxes are similar. This procedure may be used for all pickup box sizes.

Removal Procedure

Warning: Refer to Approved Equipment for Collision Repair Warning.

1. Remove the box assembly. Refer to Pickup Box Replacement.
2. Remove all related panels and components.
3. Repair as much of the damage as possible, according to factory specifications.
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.
5. Locate and drill out spot welds on the inside of the panel.
6. Locate and drill out the spot welds along the front bed panel.
Note: Structural adhesive is used to bond the front stake pocket reinforcement to the mating cross sill.

7. Use a heat gun or a chisel to separate the stake pocket reinforcement from the cross sill (1).

8. Remove the side panel.

Installation Procedure

1. Drill 8 mm (5/16 in) plug weld holes in the service part as noted.
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.

   Note: Before you begin the repair, refer to Metal Panel Bonding for proper adhesive preparation and general information.

4. Grind the surface of the pickup box cross sill and the front stake pocket reinforcement mating flanges to bare steel.
Note: Do not allow the adhesive to cure prior to installing the service side panel.

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 both of the mating surfaces. Cover all of the bare metal to ensure corrosion protection.

7. Apply three 9–13 mm (3/8–1/2 in) beads of metal panel bonding adhesive as shown.

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

8. Position the service side panel to the bed assembly.
9. Plug weld as necessary
10. Clean and prepare all welded surfaces.
11. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
13. Install all related panels and components.
14. Install the box assembly. Refer to Pickup Box Replacement.
Pickup Box Outer Side Panel Replacement (Bond-On)

Removal Procedure

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

**Note:** This adhesive bonding procedure represents one manufacturer's installation application. Other manufacturers' procedures may vary, including MIG welding in some areas of the repair. Always follow the system manufacturer's instructions for application, handling, and curing.

**Note:** Before you begin the repair, refer to Metal Panel Bonding for proper adhesive preparations and general information.

1. Remove the box assembly. Refer to Pickup Box Replacement.
2. Remove all related panels and components.
3. Repair as much of the damage as possible, according to factory specifications.
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.

5. Locate and drill out the spot welds attaching the front panel, the wheelhouse, and the tail lamp pocket area.

6. Locate and drill out spot welds on the upper rail and the rear sill area.
7. Structural adhesive is present between the upper inner panel (1) and the outer panel. If necessary, use a chisel to separate the outer panel from the inner panel.

8. Remove the side panel.

**Installation Procedure**

1. Grind the surface of the bed assembly mating flanges to bare steel. Do not damage the corners or thin the metal during the grinding process.
2. Grind the mating flanges of the service side panel to remove the E-coating. Do not damage the corners or thin the metal during the grinding operation.

3. Clean the mating surfaces.

**Note:** Do not allow the adhesive to cure prior to installing the service side panel.

4. Apply a 3–6 mm (1/8–1/4 in) bead of metal panel bonding adhesive to both of the mating surfaces.

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

**Note:** Do NOT pull the panels apart after you have joined the panels together. Slide the panels against each other to realign the panels.

7. Position the service side panel to the bed assembly.

8. Clamp the service side panel into position.

9. Using lacquer thinner remove the excess adhesive from the bed side panel area.

10. Apply the sealers and anti-corrosion materials to the repair area, as necessary. Refer to Anti-Corrosion Treatment and Repair.
12. Install all related panels and components.
13. Install the box assembly. Refer to Pickup Box Replacement.
Removal Procedure

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

**Important:** Before you begin the repair, refer to Metal Panel Bonding for proper adhesive preparations and general information.

1. Remove the box assembly. Refer to Pickup Box Replacement.
2. Remove all related panels and components.
3. Repair as much of the damage as possible, according to factory specifications.
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.
5. Note the number and location of all spot welds to be drilled out for installation of the service part.
6. Locate and drill out the spot welds attaching the front panel wheelhouse and the tail lamp pocket area.
7. Locate and drill out the spot welds attaching the front panel, the wheelhouse and the tail lamp pocket area.
8. Locate and drill out the spot welds along the upper rail and the rear sill area.
9. Structural adhesive is present between the upper inner panel (1) and the outer panel. If necessary, use a chisel to separate the outer panel from the inner panel.

10. Remove the side panel.

Installation Procedure

1. Drill 8-mm (5/16-in) plug weld holes in the service part as noted.
2. Prepare all mating surfaces as necessary.
3. Apply Weld-Thru Coating to all mating surfaces.

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

**Important:** Do not pull the panels apart after the panels have been joined together. Slide the panels against each other to align the panels.

5. Position the service part onto the bed assembly.

6. Plug weld as necessary

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.


10. Install all related panels and components.

11. Install the box assembly. Refer to Pickup Box Replacement.
Removal Procedure

1. Locate and drill out the spot welds.
2. Remove the tie down loop.

Installation Procedure

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 tie down loop.
4. Plug weld accordingly.
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 and repair the area. Refer to Basecoat/Clearcoat Paint Systems.

Warning: Refer to Approved Equipment for Collision Repair Warning.
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 (TP2) 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.
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. Locate and drill out all factory welds (1). Note the number and location of the welds for installation of the service part.

**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.

**Installation Procedure**

**Note:** If the location of the original plug weld holes cannot be determined, space the plug weld holes every 40 mm (1½ 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.

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 (TP2) 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 (TP2)*
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.*

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

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 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.

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.
10. Install all related panels and components.
11. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection (TP2) Battery Negative Cable Disconnection and Connection (Single Battery).
12. Enable the SIR system. Refer to SIR Disabling and Enabling.
Description and Operation

**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.

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

### Steel Panel Bonding Impact Resistant

<table>
<thead>
<tr>
<th>Manufacturer and Part Number</th>
<th>Description</th>
</tr>
</thead>
</table>
| 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

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

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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.