# Service Bulletin

File In Section: 08 - Body and Accessories
Bulletin No.: 02-08-98-001
Date: May, 2002

# INFORMATION

**Subject: Metal Panel Bonding**

**Models: 2003 and Prior Passenger Cars and Trucks**

This bulletin is intended to provide general guidelines for repair shops that wish to use adhesive bonding of exterior panels as an alternative to MIG welding. Panel bonding may be seen as an alternative to MIG welding to provide full panel replacement in regards to collision repair procedures. The benefits of panel bonding include the following:

- No heat or burn damage when additional welding is not required
- Corrosion protection
- Can act as a sealant
- Improved process for complicated shapes (wheelhouse area)

The General Motors specification for metal bonding adhesives is GM 6449G and provides test and standards information to adhesive manufacturers and suppliers. The scope of this specification is intended to provide the performance guidelines of structural adhesive systems used to repair (metallic) automotive bodies in the aftermarket. These types of adhesives are intended for use when bonding replacement body panels as an option to welding as the attachment means. GM guidelines outline the use of room temperature cure acrylic adhesives that contain glass bead technology.

Bonding procedures in general are applicable only to a “factory seams” type approach. Sectioning or “partial paneling” of full panels is not supported by General Motors unless specifically documented in a Service Bulletin or Manual.

Applicable components for this technology are EXTERIOR PANELS ONLY, including door skins, tail panels, roof outer panels and quarter panels.

**Important:** Do not use adhesives for vehicle underbody or upper body structure type repairs (structural rails, shock/strut towers, floor pans, upper fender rails, body side pillars, door rings [side or rear], etc.) unless specifically documented in a GM Service Bulletin or Manual. If in doubt, use only the procedures referenced in the Service Manual for the specific vehicle being repaired.

Adhesives currently meeting the performance requirements include General Motors materials and products manufactured by Lord Adhesives. At this time, ONLY the adhesive products listed below meet this guideline:

| GM Goodwrench® | GMSPO of Canada | Lord Fusor* | Product Type |
|---|---|---|---|
| 12378567 | 88901675 | 108B/109B | Medium Set |
| 12378566 | 88901674 | 110B/111B | Fast Set |
| Canadian applications may use U.S. part numbers. Refer to your GM Dealer Parts Department for the correct part number applications. | | | |

GM may, as time, resources and vehicle designs allow, provide additional vehicle specific procedures for exterior panels as previously outlined in this bulletin. Examples of those procedures follow.

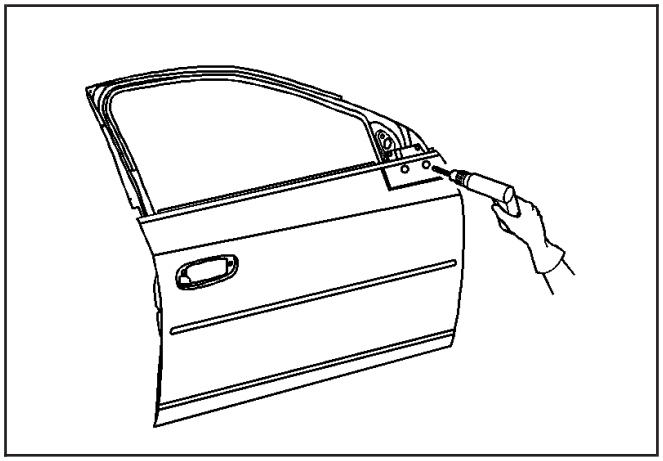
*We believe this source and their products to be reliable. General Motors does not endorse, indicate any preference for or assume any responsibility for the products from this firm or for any such items which may be available from other sources.

## Panel Replacement — Door Outer (Example: 2003 Cadillac CTS)

***Caution: When working with any type of glass or sheet metal with exposed or rough edges, wear approved safety glasses and gloves in order to reduce the chance of personal injury.***

### Removal Procedure

1. Remove the door from the vehicle.
2. Cut a hole in the outer door panel in order to access the welds on the belt reinforcement.



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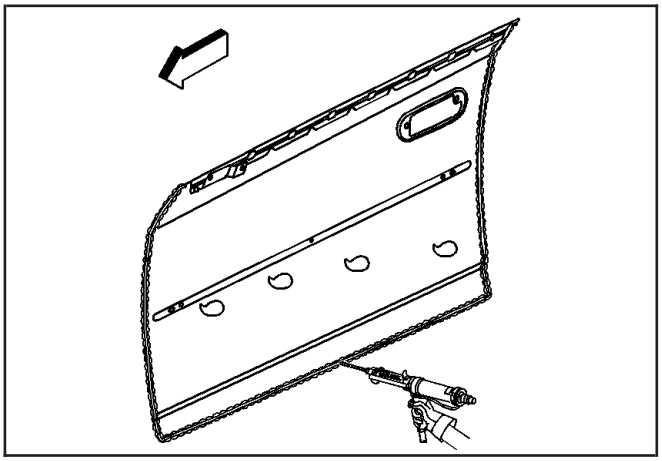
3. Drill out the spot welds that attach the outer belt reinforcement to the outer door panel flange.
4. The door outer panel is folded (hemmed) over the inner door shell. Grind off the edges of the door outer panel and remove it from the inner shell.
5. Remove the sealers and anti-corrosion materials from the repair area as necessary.
6. Straighten the edges of the door inner shell.

### Installation Procedure

1. Prepare all attaching surfaces by following these steps:
   - 1.1. Grind the surface of the inner shell mating flanges to bare steel.
   - 1.2. Scuff the opposing mating surfaces of the door outer panel (skin) in order to remove the gloss of the E-coat.
   - 1.3. Clean all of the surfaces to be bonded of dust and debris.
2. Dry fit the outer panel to the shell in order to ensure proper alignment. Then remove the panel and place it on a work stand.
3. Prepare the adhesive by following these steps:
   - 3.1. Prior to installing the mixing tip, dispense a small amount of material to level the plungers and ensure an even flow of both components.
   - 3.2. Attach the mixing tip and dispense a mixer's tip length of adhesive material to ensure a good mix of both components.
   - 3.3. Once the prior two steps have been completed, you will have approximately 40 to 50 minutes to apply and assemble the components.
4. Apply a 3 mm to 6 mm (1/8 in to 1/4 in) bead of Metal Panel Bonding Adhesive to the bare metal mating surfaces of the door inner shell. Using an acid brush, spread a coat of the adhesive to cover all of the bare metal surfaces to ensure corrosion protection.
5. Apply a 3 mm to 6 mm (1/8 in to 1/4 in) bead of Metal Panel Bonding Adhesive to all mating surfaces of the new door outer panel (skin).

**Important:** After the panel has been positioned, do not pull it away from the vehicle. If positioning is necessary, slide the panels against one another.

6. Properly position the new door outer panel (skin) on the door inner shell and clamp the parts together.
7. Fold (re-hem) the front, rear and bottom edges of the outer panel around the flanges of the door inner shell using a hammer and dolly.



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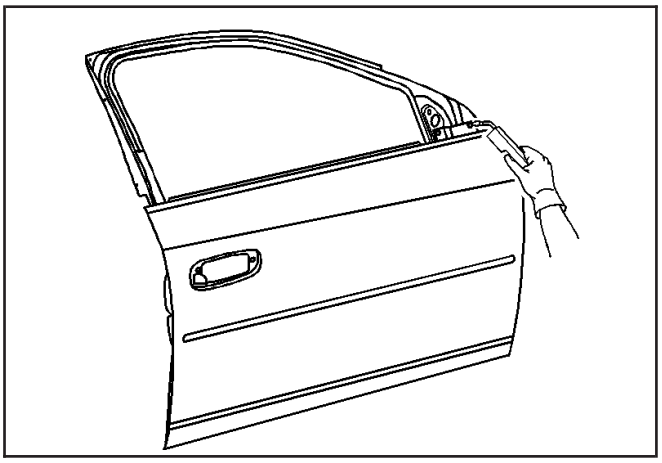
8. Apply expandable foam sealer between the door outer panel and the inner safety beam in 4 to 5 evenly spaced locations.
9. Where possible, and to save time later, wipe the excess adhesive from the squeeze out areas before it cures.
10. Install the door to the vehicle. Verify proper alignment and adjust as necessary before the adhesive cures.



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11. MIG weld the door outer panel to the belt reinforcement.
12. Apply sealers and anti-corrosion materials to the repair area as necessary. Refer to Anti-Corrosion Treatment and Repair in the Paint/Coatings sub-section of the appropriate Service Manual.
13. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems in the Paint/Coatings sub-section of the appropriate Service Manual.

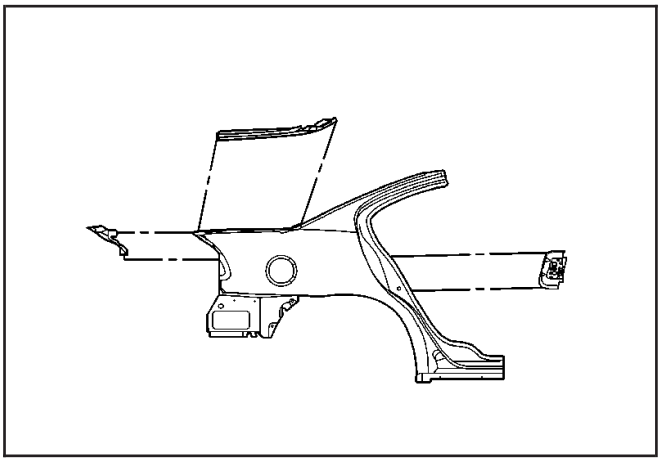
## Panel Replacement — Quarter Outer (Example: 2002 Alero coupe)

The quarter panel is a service assembly that includes the gutter, lock striker cage nut and the extension panel for the taillamp pocket. THE TAILLAMP POCKETS ARE SERVICED SEPARATELY.

***Caution: When working with any type of glass or sheet metal with exposed or rough edges, wear approved safety glasses and gloves in order to reduce the chance of personal injury.***

### Removal Procedure

1. Remove the back glass and quarter glass from the vehicle.



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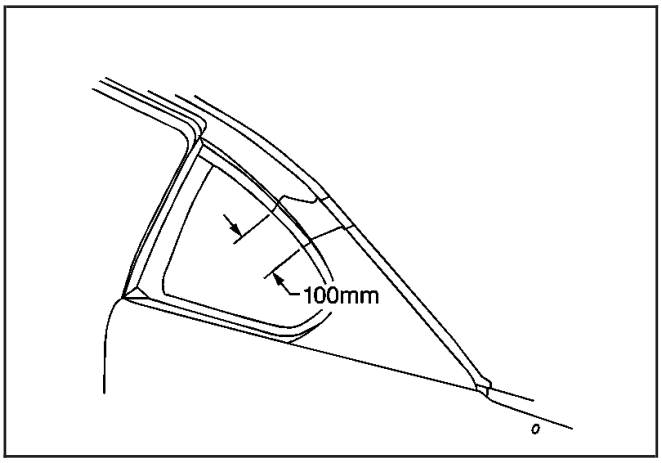
2. Remove all of the necessary components covering the weld flanges of the quarter panel to the body (taillamps, fascias, moldings, etc.).

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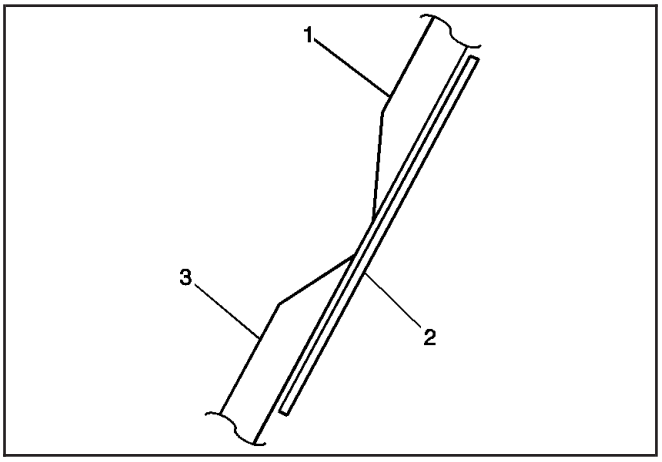
3. Using a cut off wheel or similar tool, cut the quarter from the roof panel in the sail panel area 100 mm (4 in) from the step at the top edge of the service part as shown in the illustration.
4. Using a spot weld cutter, drill out the spot welds from all of the quarter panel flanges on the body and remove the quarter panel.
5. Remove the sealers, sound deadeners and anti-corrosion materials present in the repair areas.

### Installation Procedure

This procedure can be applied using either a backer plate or simple overlap technique at the joint area. Both methods are explained below.

**Important:** Care must be taken to ensure that the fuel filler neck is properly sealed when replacing the right side quarter panel. Use a sealing strip, P/N 12399117, between the quarter panel and the fuel filler neck. Install the strip according to the provided instruction sheet.

1. Prepare all the attaching surfaces by following these steps:
   1.1. Grind the surface of the body mating flanges to bare steel.
   1.2. Carefully grind the new quarter panel mating flanges to remove the E-coat, any paint or galvanized metal. Take care not to damage the corners or thin the metal during the grinding operation.
   1.3. Clean all of the surfaces that are to be bonded of dust and debris.

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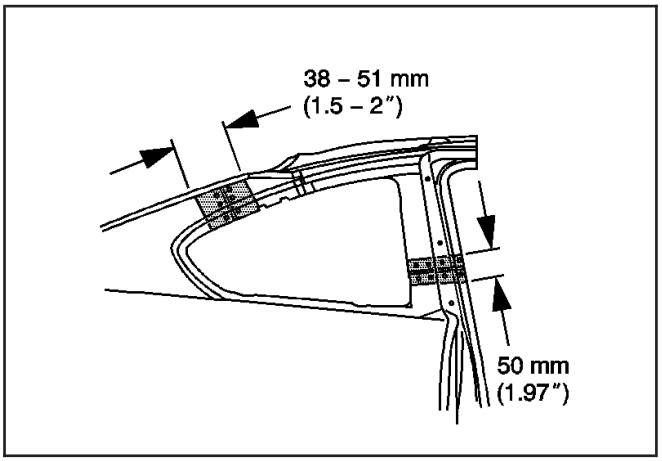
**Legend**

(1) Roof
(2) Backer Plate
(3) Quarter Panel

2. To use a backer plate, follow these steps:

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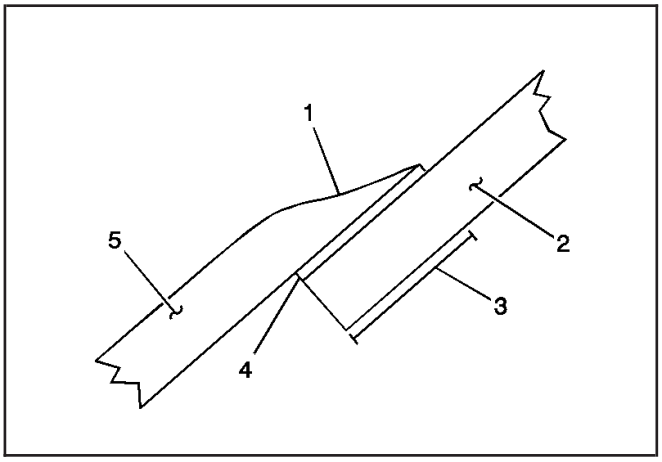
2.1. Fabricate a 38 mm to 51 mm (1-1/2 in to 2 in [maximum]) backer plate to span the repair area from the quarter to the roof panel and a 50 mm (2 in) backer plate at the lock pillar as shown in the illustration.

2.2. Pre-bevel the roof and quarter panel edges at the joint to approximately 10 degrees or, as an option, an overlap procedure may be used.

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**Legend**

(1) Less than 10 degree bevel
(2) Original Panel
(3) 25 mm (1 in) Overlap (maximum
(4) Metal Bonding Adhesive
(5) New Panel

3. To use the overlap procedure, follow these steps:

3.1. Grind a 25 mm (1 in) area of the outer surface of the original panel to remove any corrosion, E-coat, primers, coatings and galvanizing that may be present.

3.2. At the section joint edge of the new panel, grind a 25 mm (1 in) area of the back side to remove any corrosion, E-coat, primers, coatings and galvanizing that may be present. Take care not to damage the corners of the thin metal.

4. Dry fit the quarter panel to the body to ensure proper alignment. Then remove the panel and place it on a work stand.

5. Prepare the adhesive following these steps:

5.1. Prior to installing the mixing tip, dispense a small amount of material to level the plungers and ensure an even flow of both components.

5.2. Attach the mixing tip and dispense a mixer's tip length of adhesive material to ensure a good mix of both components.

5.3. Once the prior two steps have been completed, you will have approximately 40 to 50 minutes to apply and assemble the components.

6. Apply a 3 mm to 6 mm (1/8 in to 1/4 in) bead of Metal Panel Bonding Adhesive to the bare metal mating surfaces of the body and the quarter panel. Using an acid brush, spread a coat of the adhesive to cover all of the bare metal surfaces to ensure corrosion protection.
7. Apply a 6 mm to 10 mm (1/4 in to 3/8 in) bead of Metal Panel Bonding Adhesive to all mating surfaces of the new quarter panel.
8. Apply adhesive to the roof portion of the backer plate and install to the roof using screws.

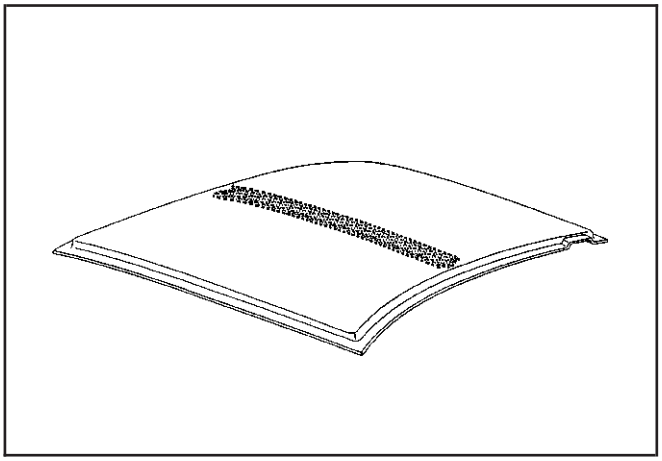
**Important:** After the panel has been positioned, do not pull it away from the vehicle. If positioning is necessary, slide the panels against one another.

9. Properly position the new quarter panel on the body and clamp the parts together.
10. Apply screws through the flange and into the body in hard to clamp areas as well as the quarter panel surface to the backer plate at the roof joint.
11. Where possible, and to save time later, wipe the excess adhesive from the squeeze out areas before it cures.
12. Allow the adhesive to cure for 1-1/2 to 2 hours. Expect the adhesive to be “tacky” on the surface. This is normal. Clean the sheet metal and adhesive surface with a solvent wipe.
13. Remove any remaining adhesive where body filler will be applied.
14. Apply a fiberglass filled body filler for the sectioned area and screw holes for your first coat. Let cure, then sand.
15. Apply a lightweight body filler to the sectioning locations for your second coat. Cure and sand. Additional coats may be required.
16. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems in the Paint/Coatings sub-section of the appropriate Service Manual.

**Important:** The stationary glass bonding area should present a “primer only” surface and should be masked prior to top coat applications.

17. Install the stationary glass per approved GM procedures in the appropriate Service Manual.
18. Install previously removed hardware items.

## Panel Replacement — Roof Outer (Example: 2002 Sunfire coupe)



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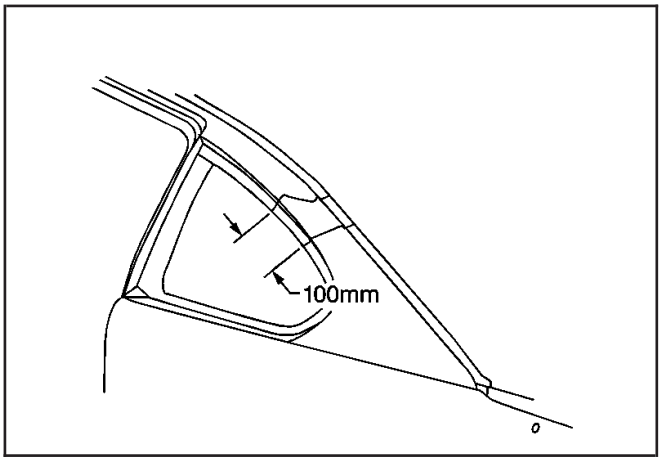
The roof is made of steel and is supplied as part of an assembly that includes the center roof support. The roof assemblies are unique to coupe and sedan models.

This procedure can be applied using either a backer plate or simple overlap technique at the joint area. Both methods are explained below.

***Caution: When working with any type of glass or sheet metal with exposed or rough edges, wear approved safety glasses and gloves in order to reduce the chance of personal injury.***

### Removal Procedure

1. Remove the windshield and back glass from the vehicle.
2. Remove all of the necessary components (headliner, sun visors, quarter glass, appliques, etc.).

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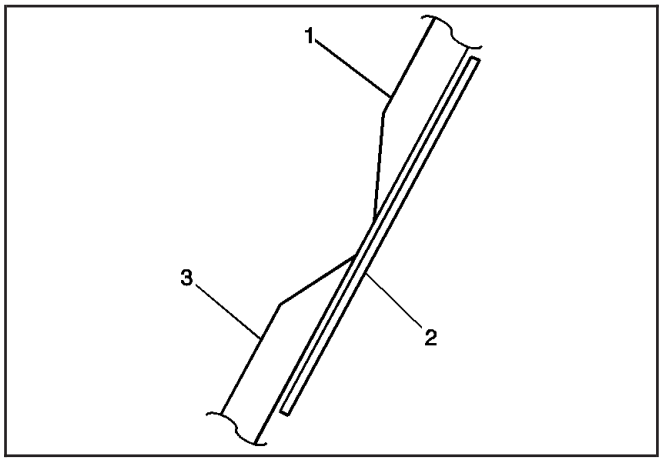
3. Using a cut off wheel or similar tool, cut the quarter from the roof panel in the sail panel area 100 mm (4 in) from the step at the top edge of the service part as shown in the illustration.
4. Locate and mark the factory welds. Using a spot-weld cutter, drill out the spot welds for the installation of the service part.
5. Remove the roof outer panel.

**Installation Procedure**

1. Prepare all the attaching surfaces by following these steps:
   1.1. Grind the surface of the body mating flanges to bare steel.
   1.2. Carefully grind the new roof panel mounting flanges to remove the E-coat, any paint or galvanized metal. Take care not to damage the corners or thin the metal during the grinding operation.
   1.3. Clean all of the surfaces that are to be bonded of dust and debris using compressed air.

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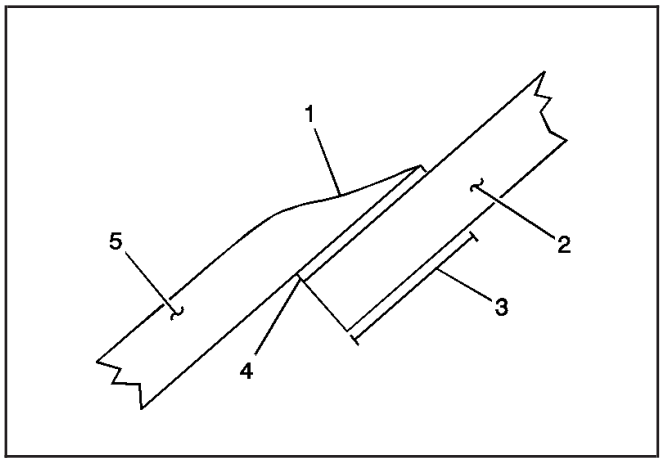
**Legend**

(1) Roof
(2) Backer Plate
(3) Quarter Panel

2. To use a backer plate, follow these steps:
   2.1. Fabricate a 100 mm (4 in) backer plate to span the repair area from the quarter to the roof panel.
   2.2. Pre-bevel the roof and quarter panel edges at the joint to approximately 10 degrees.

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**Legend**

(1) Less than 10 degree bevel
(2) Original Panel
(3) 25 mm (1 in) Overlap (maximum
(4) Metal Bonding Adhesive
(5) New Panel

3. To use the overlap procedure, follow these steps:
   3.1. Grind a 25 mm (1 in) area of the outer surface of the original panel to remove any corrosion, E-coat, primers, coatings and galvanizing that may be present.
   3.2. At the section joint edge of the new panel, grind a 25 mm (1 in) area of the back side to remove any corrosion, E-coat, primers, coatings and galvanizing that may be present. Take care not to damage the corners of the thin metal.
4. Dry fit the roof outer panel to the body to ensure proper alignment. Then remove the panel and place it on a work stand.
5. Prepare the adhesive following these steps:
   5.1. Prior to installing the mixing tip, dispense a small amount of material to level the plungers and ensure an even flow of both components.
   5.2. Attach the mixing tip and dispense a mixer's tip length of adhesive material to ensure a good mix of both components.
   5.3. Once the prior two steps have been completed, you will have approximately 40 to 50 minutes to apply and assemble the components.

6. Apply a 3 mm to 6 mm (1/8 in to 1/4 in) bead of Metal Panel Bonding Adhesive to the bare metal mating surfaces of the body and the roof panel. Using an acid brush, spread a coat of the adhesive to cover all of the bare metal surfaces to ensure corrosion protection.
7. Apply adhesive to the roof portion of the backer plate and install the plate to the roof using screws.
8. Apply a 6 mm to 10 mm (1/4 in to 3/8 in) bead of Metal Panel Bonding Adhesive to all mating surfaces of the new roof panel.

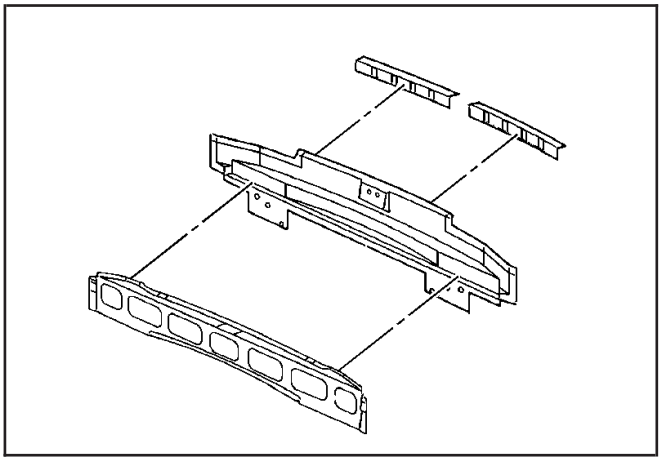
**Important:** After the panel has been positioned, do not pull it away from the vehicle. If positioning is necessary, slide the panels against one another.

9. Properly position the new roof panel on the body and clamp the parts together.
10. Apply screws through the flange and into the body in hard to clamp areas and the backer plate at the quarter panel joint.
11. Where possible, and to save time later, wipe the excess adhesive from the squeeze out areas before it cures.
12. Allow the adhesive to cure for 1-1/2 to 2 hours. Expect the adhesive to be “tacky” on the surface. This is normal. Clean the sheet metal and adhesive surface with a solvent wipe.
13. Remove any remaining adhesive where body filler will be applied.
14. Apply a fiberglass filled body filler for the sectioned area and screw holes for your first coat. Let cure, then sand.
15. Apply a lightweight body filler to the sectioning locations for your second coat. Cure and sand. Additional coats may be required.
16. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems in the Paint/Coatings sub-section of the appropriate Service Manual.

**Important:** The stationary glass bonding area should present a “primer only” surface and should be masked prior to top coat applications.

17. Install the stationary glass per approved GM procedures in the appropriate Service Manual.
18. Install previously removed trim and hardware items.

## Panel Replacement — Tail Panel (Example: 2002 Alero coupe)



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The rear end panel is supplied as a complete assembly consisting of three inner reinforcements and one outer panel. The rear end panel on the coupe has a single inner reinforcement. Taillamp mounting panels, which attach to the outside corners of the rear end panel assembly, are available separately. Service for all these panels is performed at factory seams.

***Caution: When working with any type of glass or sheet metal with exposed or rough edges, wear approved safety glasses and gloves in order to reduce the chance of personal injury.***

### Removal Procedure

1. Remove the rear compartment weatherstrip from the vehicle.
2. Remove all of the necessary components covering the weld flanges of the quarter panel to the tail panel (taillamps, fascias, moldings, etc.).
3. Using a spot-weld cutter, drill out the spot welds from the quarter panel flange and remove the panel.
4. Remove the sealers, sound deadeners and anti-corrosion materials present in the repair areas.

### Installation Procedure

1. Prepare all the attaching surfaces by following these steps:
   1.1. Grind the surface of the body mating flanges to bare steel.
   1.2. Carefully grind the new tail panel mounting flanges to remove the E-coat, any paint or galvanized metal. Take care not to damage the corners or thin the metal during the grinding operation.
   1.3. Clean all of the surfaces that are to be bonded of dust and debris.

2. Dry fit the tail panel to the body to ensure proper alignment. Then remove the panel and place it on a work stand.
3. Prepare the adhesive following these steps:
   3.1. Prior to installing the mixing tip, dispense a small amount of material to level the plungers and ensure an even flow of both components.
   3.2. Attach the mixing tip and dispense a mixer's tip length of adhesive material to ensure a good mix of both components.
   3.3. Once the prior two steps have been completed, you will have approximately 40 to 50 minutes to apply and assemble the components.
4. Apply a 3 mm to 6 mm (1/8 in to 1/4 in) bead of Metal Panel Bonding Adhesive to the bare metal mating surfaces of the tail panel and the quarter panel. Using an acid brush, spread a coat of the adhesive to cover all of the bare metal surfaces to ensure corrosion protection.
5. Apply a 6 mm to 10 mm (1/4 in to 3/8 in) bead of Metal Panel Bonding Adhesive to all mating surfaces of the new tail panel.

**Important:** After the panel has been positioned, do not pull it away from the vehicle. If positioning is necessary, slide the panels against one another.

6. Properly position the new tail panel on the body and clamp the parts together.
7. Apply screws through the flange and into the body in hard to clamp areas.
8. Where possible, and to save time later, wipe the excess adhesive from the squeeze out areas before it cures.
9. Allow the adhesive to cure for 1-1/2 to 2 hours. Expect the adhesive to be "tacky" on the surface. This is normal. Clean the sheet metal and adhesive surface with a solvent wipe.
10. Remove any remaining adhesive where body filler will be applied.
11. Apply a seam sealer to the flange areas as required.
12. Paint the repaired area. Refer to Basecoat/Clearcoat Paint Systems in the Paint/Coatings sub-section of the appropriate Service Manual.
13. Install previously removed hardware items.