



R002S

Bonded Roof Panel

**Uniform
Procedures For
Collision Repair
UPCR**

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v.4.0



1. Description

This procedure describes the repair and complete replacement of a steel, bonded-on roof panel. Inspection and evaluation requirements are also included.



2. Purpose

The purpose of this procedure is to provide industry-accepted requirements for performing high-quality repair of steel, bonded-on roof panels. This procedure is intended for use by professionals who are qualified through training and experience.



3. Referenced Documents

The following documents are considered part of this procedure by reference.

3.1 Procedures

- CP01S Corrosion Protection
- MG31 Sun- And Moon-Roof
- PS01 Personnel Safety
- RF01S Surface Preparation
- RF41 Finish Application
- SG01 Adhesively Bonded
- SG02 Mechanically Fastened
- SG11 Gasket-Mounted
- ST01S Stress-Relieving Heat Limitations
- ST21S Metal Repair
- ST31 Body Fillers

3.2 Other Information

- Product-specific information
- Recycled parts information
- Vehicle-specific repair information



4. Equipment And Material Requirements

4.1 Adhesive Material

The use of these types of adhesive materials is included in this procedure:

- urethane
- epoxy
- acrylic



5. Damage Analysis

5.1 General Damage

Inspect a bonded roof panel for these types of damage:

- visible damage
- misalignment with adjacent panels
- improper previous repairs
- separation from the roof rails or reinforcements
- cracked seam sealers
- air and water leaks
- damage to sun- or moon-roof or mounting parts (see **MG31**)

It may be necessary to plan to remove or reposition interior trim panels or the headliner to perform a complete inspection. Determine if the roof panel will be repaired or replaced. Verify the availability of replacement parts.



6. Personnel Safety

6.1 General Safety

General safety information is in **PS01**.

6.2 Adhesive Safety

To prevent injury when using adhesives:

- Do not allow the adhesive to contact eyes, skin, or clothing.
- Work in a well-ventilated area.
- Avoid inhaling the fumes.
- Always wear proper eye and respiratory protection.



7. Environmental Safety

Does not apply.



8. Vehicle Protection

8.1 Stress-Relieving

If heat is used for stress-relieving, use temperature-measuring methods as described in **ST01S**.

Note: Some vehicle makers recommend against the use of heat for stress-relieving.

8.2 Roof Panel And Adjacent Areas

Protect the roof panel, glass, upholstery, and other cosmetic surfaces from damage. Remove interior trim and adjacent parts that cannot be protected.



9. Repair Procedure

Only use adhesive bonding for replacing panels when recommended by the vehicle maker. If recommendations for replacing a panel do not exist, replace the part using the same method that was used by the vehicle maker.

9.1 Straightening

To straighten a bonded roof panel:

- 1. Remove glass, trim, and the headliner, if required.
- 2. Repair damage using metal repair and heat shrinking procedures. Weld tears or punctures in the roof panel as required. If heat is used for relieving stress, follow the vehicle maker's temperature and time recommendations. If the part cannot be identified as mild steel, treat it like high-strength steel (HSS).
Note: Some vehicle makers do not recommend the use of heat for stress-relieving. Do not apply heat to the bonding adhesive.
- 3. Apply corrosion-resistant primer to all interior and exterior surfaces and other areas damaged by the collision or repairs.
- 4. Apply seam sealers to seal the joints and restore the appearance. Reprime if required by the product maker.
- 5. Replace any damaged or missing sound-deadening pads.
- 6. Refinish areas damaged by the collision, repairs, or anchoring, as required to restore the appearance. Refinish cosmetic surfaces after all body repairs are complete.
- 7. Reinstall any glass. To avoid damage, it may be necessary to place semi-rigid headliners inside the vehicle before reinstalling the glass.
- 8. Test for air and water leaks.
- 9. Reinstall the headliner and trim.
- 10. Continue vehicle reassembly.

(cont'd)



9. Repair Procedure (cont'd)

9.2 Bonded Roof Panel Removal

To remove a bonded roof panel for complete replacement:

- 1. Protect the interior and adjacent panels.
- 2. Remove the windshield and backlite, if required.
- 3. Remove the headliner and adjacent trim.
- 4. Remove any roof-mounted glass parts.
- 5. Disconnect and remove any electrical accessories, if required.
- 6. Make sure all adjacent parts are in alignment before removing the roof panel.
- 7. Cut a center section out of the roof panel, if required for access. Avoid cutting into the roof bows or reinforcements, unless a replacement roof panel is available with roof bows and reinforcements pre-installed.
- 8. Remove any fasteners securing the roof panel, if applicable.
- 9. Separate the roof panel bond from the roof rails. Do not damage the roof rails.
- 10. Remove the damaged roof panel.
- 11. Remove any loose adhesive remaining on the roof rails.
- 12. Level the remaining adhesive. Avoid damaging the finish or removing any zinc coating.
- 13. Straighten the roof rail mating panel edges, if required to ensure a proper fit-up with the replacement roof panel.

9.3 Bonded Roof Panel Installation

To install a replacement bonded roof panel:

- 1. Perform a trial fit of the replacement roof panel. Mark for proper positioning.
- 2. Test-fit the windshield and backlite. Mark for proper positioning.
- 3. Remove the glass and roof panel from the vehicle.
- 4. Clean the roof panel. Avoid removing any zinc coating.
- 5. Apply the proper corrosion-resistant primer to the mating surfaces, as required. Follow the vehicle and product makers' recommendations.
- 6. Properly clean and prime the mating surfaces with the recommended bonding primer.
- 7. Apply the proper adhesive to the roof panel. Follow the vehicle maker's recommendations.
- 8. Position the roof panel on the vehicle, aligning it to the position marks.
- 9. Verify that the roof panel is properly aligned to the opening. Adjust if required.
- 10. Install the required mechanical fasteners. Torque to the vehicle maker's recommendations, if applicable.
- 11. If no mechanical fasteners are required by the vehicle maker, clamp or securely hold the roof panel in position until the adhesive cures.
Note: To ensure that the clamping pressure allows the proper thickness of adhesive to remain, spacing blocks should be used in the bonding area.
- 12. Apply corrosion-resistant primer to all interior and exterior surfaces and other areas damaged by the collision or repairs.

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9. Repair Procedure (cont'd)

- 13. Apply seam sealers to seal the joints and restore the appearance. Reprime if required by the product maker.
- 14. Replace any damaged or missing sound-deadening pads.
- 15. Refinish areas damaged by the collision, repairs, or anchoring, as required to restore the appearance. Refinish cosmetic surfaces after all body repairs are complete.
- 16. Reinstall any electrical accessories.
- 17. Reinstall any roof-mounted glass parts.
- 18. Reinstall the windshield and backlite. To avoid damage, it may be necessary to place semi-rigid headliners inside the vehicle before reinstalling the glass.
- 19. Test for air and water leaks.
- 20. Reinstall the headliner and adjacent trim.
- 21. Continue vehicle reassembly.



10. Use Of Recycled (Salvage) Parts

10.1 Condition Of Salvage Parts

Do not install a salvage bonded roof panel having any of these defects:

- unrepairable damage
- corrosion that has caused pitting
- improper previous repairs
- missing mounting locations

10.2 Preparation Of Salvage Parts

To prepare a salvage bonded roof panel for installation:

- Clean the part to remove bonding adhesive, dirt, wax, grease, corrosion, excess paint build-up, etc.



11. Inspection And Testing

11.1 Inspection Of A Repaired Or Replaced Bonded Roof Panel

After replacement or repair, inspect a bonded roof panel for these conditions:

- proper alignment with adjacent panels
- no exposed adhesive
- no air or water leaks
- proper application of corrosion protection
- proper application of sound-deadening material
- proper alignment and operation of roof-mounted glass systems
- proper operation of the dome light and other electrical parts
- proper installation of the headliner and attaching parts
- proper finish appearance and film thickness
- proper windshield and backlite alignment

Correct any defects.