

**Uniform
Procedures
For Collision
Repair**

FR01A—Fender, Bolted-On

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v.3.1



1. Description

This procedure describes the repair and complete replacement of a bolted-on aluminum fender. 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 bolted-on aluminum fenders. 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

- CP01A Corrosion Protection
- HO01 Hinge, Bolted-On
- PS01 Personnel Safety
- RF41 Finish Application
- ST01A Stress-Relieving Heat Limitations
- ST21A Metal Repair
- ST31 Body Fillers

3.2 Other Information

- Product-specific information
- Vehicle-specific repair information



4. Equipment And Material Requirements

4.1 Special Equipment

Use tools and materials, such as abrasives, that are designated for use only on aluminum, to avoid surface contamination.



5. Damage Analysis

5.1 General Damage

Inspect bolted-on fenders for these types of damage:

- visible damage
- corrosion
- misalignment with adjacent panels
- improper previous repairs

Note: Some vehicle makers recommend against welding tears in aluminum alloys.

Verify the availability of replacement parts.



6. Personnel Safety

6.1 General Safety

General safety information is in **PS01**.

6.2 Metal Repair Safety

Metal repair safety information is in **ST21A**.

6.3 Safety With Power Tools And Electrical Equipment

Power tool and electrical equipment safety information is in **ST21A**.



7. Environmental Safety

Does not apply.



8. Vehicle Protection

8.1 Electronic Parts

To protect computers and other sensitive parts from damage:

- Follow the vehicle maker's recommendations for recording and resetting **electronic memories**.
- Ensure that the ignition switch is in the LOCK position, and the key is removed.
- Disconnect and isolate the negative battery cable, and disarm the **passive restraint system**. Follow the vehicle maker's recommendations.
- Carefully remove computer modules when heating within 300 mm (12"), or a greater distance when recommended by the vehicle maker.
- Protect computer modules, connectors, and wiring from dirt, heat, static electricity, and moisture.
- Loosen or remove any wiring harnesses or electrical parts that could be damaged during the repair process.

Remove the battery if it is near an area to be heated.

8.2 Adjacent Areas

To protect adjacent areas when working on a fender:

- Protect glass, upholstery, and other adjacent **cosmetic surfaces** during repairs, removal, or installation.
- Protect the door and hood while working on the fender.

8.3 Anti-Theft Label

Protect the anti-theft label during repair and refinishing operations.

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8. Vehicle Protection (cont'd)

8.4 Aluminum Surfaces

To prevent damaging aluminum surfaces:

- Ensure that all tools are cleaned before, or are dedicated for, use on aluminum.
- Use an orbital or dual-action sander. Do not use a hand-held grinder.
- Use 80-grit or finer, open-coat sanding discs.
- Use foam backing pads instead of stiff backing pads.
- Apply less pressure than when sanding steel.
- Do not operate a sander continuously in the same area.
- Keep sanding discs and other abrasives separate from those used for steel repairs.
- Make sure the faces and edges of metal hammers and dollies are smooth and polished and have rounded edges.
- Make sure the points of picks do not have sharp points. File or grind the tips until they are rounded or flat. An option is to use a tip made of rubber or plastic, or cover the tip with tape.
- Use a dull file.
- Do not use shrinking hammers.

8.5 Galvanic Corrosion

To prevent galvanic corrosion when straightening aluminum parts:

- Thoroughly remove steel particles from power tools before use.
- Keep hand tools separate from those used for steel repairs.
- Keep sanding discs and other abrasives separate from those used for steel repairs.

8.6 Use Of Heat

The application of heat on aluminum alloys can greatly reduce their strength. Determine if the vehicle maker recommends against the use of heat for aluminum parts. If heat is used during aluminum repairs, stay within the recommended temperatures to prevent permanent loss of strength. Use a minimum of 200°C (400°F), and a maximum of 300°C (570°F), unless otherwise directed by the vehicle maker. Use temperature-measuring methods as described in **ST01A**.



9. Repair Procedure

9.1 Fender Repairs

To straighten a bolted-on aluminum fender:

- 1. Remove or reposition the bumper, bumper cover, lamps, inner splash panels, moldings, and other parts required for access or to prevent damage.
- 2. Remove the fuel tank, if required for safety.
- 3. Repair damage using aluminum repair and heat shrinking procedures. If heat is to be used, see **8.6**.
Note: Some vehicle makers recommend against welding tears in aluminum alloys.
- 4. Replace trim mounting studs or drill holes.
- 5. Apply **body fillers**, if required. The panel must be within 3 mm ($1/8$ "") of its original contour for most body filler applications. Follow the filler maker's recommendations. Ensure that the body filler used is compatible with aluminum. Some vehicle and product makers recommend the application of a two-part epoxy primer before applying body fillers to aluminum.
- 6. Apply corrosion-resistant **primer** to all interior and exterior surfaces and other areas damaged by the collision or repairs.
- 7. Apply anti-corrosion compounds.
- 8. Apply seam sealers to seal the joints and restore the appearance. Reprime if required by the product maker.
- 9. Refinish areas damaged by the collision, repairs, or anchoring, if required to restore the appearance.
- 10. Continue vehicle reassembly.
- 11. Refinish cosmetic surfaces after all body repairs are complete.
- 12. Complete the final reassembly after refinishing is complete. See **9.4**.

9.2 Fender Removal

To remove a bolted-on aluminum fender:

- 1. Make sure all adjacent panels are in alignment before removing the fender.
- 2. Loosen or remove the bumper, header panel, or headlamp, if required.
- 3. Loosen or remove the inner splash panel.
- 4. Remove the fuel tank, if applicable.
- 5. Loosen, remove, or support the hood or deck lid, if required.
- 6. Reposition or remove any attached mechanical parts, wiring, computers, or electronic parts.

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9. Repair Procedure (cont'd)

- 7. Remove moldings and trim, if required.
- 8. Loosen and remove the mounting fasteners. Discard any damaged fasteners.
- 9. Remove any shims. Note the placement and number of shims.
- 10. Remove the bolted-on fender. Plan to transfer or replace any spacers, washers, isolators, etc., used to prevent contact between dissimilar metals.
- 11. Make any required repairs according to the type of damage. See **9.1**.

9.3 Fender Installation

To install a bolted-on aluminum fender:

- 1. Verify that the proper parts are being installed by checking the part number and performing a trial fit.
- 2. Prepare the fender for any vehicle options such as antenna, trim, etc.
- 3. Install any trim mounting studs or drill required holes.
- 4. Apply corrosion-resistant primer to all interior and exterior bare metal surfaces.
- 5. Apply **topcoat** to panel edges to restore appearance.
- 6. Position and hold the fender in place. Reinstall any spacers, washers, isolators, etc., used to prevent contact between dissimilar metals.
- 7. Install the fasteners. If the fasteners are being replaced, use fasteners that are the same size, type, and strength as the original fasteners, and have an equivalent anti-corrosion coating.
- 8. Install any required shims.
- 9. Adjust the fender to obtain proper alignment to attached and adjacent parts.
- 10. Torque all fasteners to the vehicle maker's recommendations.
- 11. Apply corrosion protection.
- 12. Refinish areas damaged by the collision, repairs, or anchoring, if required to restore the appearance.
- 13. Continue vehicle reassembly.
- 14. Refinish cosmetic surfaces after all body repairs are complete.
- 15. Complete the final reassembly after refinishing is complete. See **9.4**.

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9. Repair Procedure (cont'd)

9.4 Final Reassembly

To complete the reassembly after refinishing is complete:

- 1. Reinstall the fuel tank, if required.
- 2. Install the bumper, bumper cover, lamps, inner splash panels, moldings and other parts that were removed or repositioned.
- 3. Ensure that final reassembly steps are completed in all appropriate procedures.



10. Use Of Recycled (Salvage) Parts

10.1 Condition Of Salvage Parts

Do not install salvage, bolted-on, aluminum fenders having any of these defects:

- unrepairable damage
- corrosion that has caused pitting
- improper previous repairs
- excessive filler thickness

10.2 Preparation Of Salvage Parts

To prepare a salvage, bolted-on, aluminum fender for installation:

- Make any required repairs.
- Remove any trim or moldings that are to be reused or replaced.
- Remove any corrosion.
- Drill or fill trim-attachment holes, if required.
- Apply corrosion protection as necessary.



11. Inspection And Testing

11.1 Inspection Of A Repaired Or Replaced Aluminum Fender

After installation, inspect a bolted-on aluminum fender for these conditions:

- proper alignment with attached and adjacent parts
- proper operation of adjacent hinged parts
- proper installation of all fasteners
- proper installation of the fuel tank and filler neck
- proper finish appearance and film thickness
- proper application of corrosion protection
- proper operation of attached electrical and electronic parts
- proper installation of any spacers, washers, isolators, etc., required to prevent contact between dissimilar metals

Correct any defects.