

# Uniform Procedures For Collision Repair

# FE01 S—Front-End Assembly

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v.2.3



## 1. Description

This procedure describes the complete replacement of a steel, bolted-on front-end assembly on a body-over-frame vehicle. Inspection and evaluation requirements are also included.



## 2. Purpose

The purpose of this procedure is to provide repair processes and other industry-accepted requirements for performing high-quality repair of bolted-on front-end assemblies. This procedure is intended for use by professionals who are qualified through training and experience.



### **3. Referenced Documents**

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

#### **3.1 Procedures**

- AC01 Air Conditioning
- CS11 Radiator Core Support, Bolted-On
- CO01 Radiator Assembly
- FR01S Fender, Bolted-On
- HO01 Hinge, Bolted-On
- HO11 Hinge, Welded-On
- HO21S Hood
- ME01 Three-Dimensional Measuring
- PS01 Personnel Safety
- RF01S Surface Preparation
- RF41 Finish Application
- ST21S Metal Repair

#### **3.2 Other Information**

- Recycled parts information
- Vehicle-specific repair information



## 4. Equipment And Material Requirements

Use measuring equipment as described in **ME01**.

Use a film thickness gauge when determining whether the assembly has been previously repaired or refinished.



## 5. Damage Analysis

### 5.1 Alignment

Check for even gap width and alignment of lamps, hood, fenders, etc.

### 5.2 Labels

Determine which engine and body labels must be transferred or replaced before disassembly.

### 5.3 Mounting Locations

Inspect bolt-on sheet metal mounting locations for these types of damage:

- visible damage or distortion
- misalignment
- damage to fasteners or clips
- improper previous repairs
- damage to mounting spacers
- damaged finish
- corrosion**



Measure adjacent areas, such as door openings, for proper alignment and possible secondary structural damage.



## 6. Personnel Safety

### 6.1 General Safety

General safety information is in **PS01**.

### 6.2 Safety With Sheet Metal Parts

To prevent injury when handling sheet metal front-end assemblies:

- Use proper lifting techniques.
- Get help from other technicians.
- Use hydraulic or mechanical lifting devices to aid in lifting.
- Wear cotton or leather gloves.

### 6.3 Pulling Safety

Pulling safety information is in **ST11**.



## 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 welding or 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.



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## 8. Vehicle Protection (cont'd)

- ❑ 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 welded or heated.

### 8.2 Adjacent Areas

To protect adjacent areas:

- ❑ Protect the edges of adjacent panels and trim, to avoid scratches or chips.
- ❑ Cover the windshield and other **cosmetic surfaces** when removing or installing the hood or front-end assembly.
- ❑ Plug and protect any open lines, hoses, and electrical connectors.



## 9. Repair Procedure

### 9.1 Front-End Assembly Removal

To remove a body-over-frame front-end assembly:

- ❑ 1. Record the routing and locations of fasteners, wiring harnesses, hoses, hood release cable, electronic and mechanical parts, fluid reservoirs, and other parts being disassembled. Use labels, diagrams, photos, video tape, service manuals, or other methods.
- ❑ 2. Disconnect and remove the battery.
- ❑ 3. Straighten the damaged outer sheet metal and structure as necessary for access to fasteners, parts, wiring harnesses, etc.
- ❑ 4. Recover any refrigerant from the air conditioning system, if necessary. Cap open lines.
- ❑ 5. Drain the cooling system, if necessary, and collect or recycle the **coolant**.
- ❑ 6. Disconnect the radiator hoses, and automatic transmission cooling lines, if necessary. Cap open lines.
- ❑ 7. Disconnect all electrical wiring and mechanical parts in the engine compartment that are attached to the inner fenders, inner skirts, and radiator core support. Move the parts to locations which will not interfere with the repair. Cover open connectors.
- ❑ 8. Remove any rocker panel moldings, **valances**, or ground-effect panels.
- ❑ 9. Remove the front bumper assembly.

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## 9. Repair Procedure (cont'd)

- 10. Remove the cowl vent panel, if necessary, for access to fasteners for the fenders or hood hinges.
- 11. Unbolt the radiator core support from the frame.
- 12. Unbolt the front fenders, inner skirts, and fender aprons at the cowl.
- 13. Remove the front end as an assembly. Removal of the hood may be necessary before removing the front-end assembly.

### 9.2 Front-End Assembly Installation

Before installing, carefully inspect the replacement assembly. If the assembly has had previous repairs, verify that all fasteners are properly installed.

To install a body-over-frame front-end assembly:

- 1. Verify the structural dimensions.
- 2. Clean and refinish all panel edges to match the vehicle.
- 3. Install the front-end assembly and align it to the doors.
- 4. Repair any sheet metal damage.
- 5. Install and align the hood, if separate from the assembly.
- 6. Make final adjustments to the hood and fenders. Torque the fasteners to the vehicle maker's recommendations.
- 7. Transfer and reinstall all electrical and mechanical parts in the engine compartment that were repositioned or removed during disassembly.
- 8. Connect the radiator hoses and transmission cooling lines, if necessary.
- 9. Reinstall the battery.
- 10. Evacuate and recharge the air conditioning system, if necessary. It may be necessary to replace the accumulator or receiver-drier, if the system has been open to the atmosphere.
- 11. Fill and bleed the cooling system. Follow the vehicle maker's recommendations.
- 12. Check and fill the automatic transmission, if necessary.
- 13. Route and connect the wiring removed or repositioned during disassembly.
- 14. Check the operation of all electrical systems. Reset any electronic memories.
- 15. Prepare the exterior surfaces for refinishing.
- 16. Refinish the assembly, as required to restore appearance.
- 17. Apply anti-corrosion materials, to restore corrosion protection.
- 18. Install and align the front bumper assembly.

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## 9. Repair Procedure (cont'd)

- 19. Install the inner splash panels, **bezels**, lamp assemblies, moldings, emblems, stripes, decals, antenna, labels, and any other exterior trim and parts removed for refinishing.
- 20. Install any valance and ground-effect panels.
- 21. Aim the headlamps.
- 22. Replace all removed labels for paint codes, belt routing, emissions, etc.
- 23. Recheck the fluid levels.



## 10. Use Of Recycled (Salvage) Parts

### 10.1 Condition Of **Salvage Parts**

Do not install a salvage front-end assembly having any of these defects:

- unrepairable damage
- corrosion that has caused pitting
- improper previous repairs



## 11. Inspection And Testing

### 11.1 Inspection Of A Repaired Or Replaced Front-End Assembly

Inspect a repaired or replaced front-end assembly for these conditions

- dimensional alignment
- fasteners torqued to the vehicle maker's recommendations
- proper routing, installation, and operation of mechanical parts
- proper finish appearance and film thickness
- proper installation of all labels
- proper fluid levels
- proper operation of electrical parts
- proper application of corrosion protection

Correct any defects.