

Uniform Procedures For Collision Repair

FU11-Lines

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v.2.3



1. Description

This procedure describes methods for the removal and installation of fuel lines. 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 fuel lines. 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

- EL11 Troubleshooting
- EL21 Self-Diagnostics
- FU01 Tank Assembly
- FU02 Pump, In-Tank
- HM01 Hazardous Materials
- PS01 Personnel Safety

3.2 Other Information

Vehicle-specific repair information



4. Equipment And Material Requirements

4.1 Special Tools

Special tools may be required for removing quick-connect fuel line fittings.



5. Damage Analysis

5.1 General Damage

Inspect fuel lines for these conditions:

- visible damage
- leaks
- corrosion
- loose fittings



Except for straightening of minor bends that have not resulted in a **kink**, damaged fuel lines must be replaced. Verify the availability of replacement parts.



6. Personnel Safety

6.1 General Safety

General safety information is in **PS01**.

6.2 Fuel Safety

To prevent injury when working with fuel systems:

- Have the proper fire extinguisher available.
- Quickly open shop doors and windows if there is a leak.
- Always relieve fuel pressure before performing any repairs to the fuel system.
- Keep fuel, fuel tanks, and fuel containers away from any sparks, flames, or other heat sources.
- Do not turn the ignition switch ON or crank the engine with a fuel line disconnected.
- Store fuel only in approved containers.
- Do not fill containers completely with liquid fuel. Leave about 25 mm (1") for expansion.

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6. Personnel Safety (cont'd)

- If filled containers must be transported, make sure they are secured to prevent tipping.
- Do not store a partially filled container for long periods of time.
- Never leave containers open after filling or pouring from the container.
- Do not prime an engine with fuel while cranking the engine.
- Never use any type of fuel as a cleaning agent.
- Wear gloves made of fuel-resistant material, such as **nitrile rubber**, when handling fuels. If fuel gets on your skin, wash it off immediately.
- When fuel is present, work in a well-ventilated area.
- Identify air-conditioning and fuel-rail access ports before attaching equipment.
- Ground fuel transfer equipment to the vehicle when pumping fuel into or out of the tank, or into storage containers.
- Whenever possible, use a battery powered drop lamp to light the work area.



7. Environmental Safety

7.1 Hazardous Materials

Hazardous material safety information is in **HM01**.

7.2 Fuel

To protect the environment from fuel spills:

- Plug or cap disconnected hoses and lines to prevent fuel spillage.
- Properly collect and dispose of fuel.
- Treat spilled fuel as hazardous waste.



8. Vehicle Protection

8.1 Adjacent Parts

To protect adjacent parts when working with fuel lines:

- Ensure that the ignition switch is in the LOCK position, and the key is removed.
- Cover adjacent **cosmetic surfaces** to protect them from spilled fuel. Even if the fuel pressure is relieved, there may be some pressure when disconnecting fuel lines.
- Plug or cap hoses and lines to prevent fuel spillage.
- Carefully handle removed parts to avoid spilling any fuel.
- Immediately rinse off any spilled fuel with water and clean the surface.



9. Repair Procedure

9.1 Fuel Line Removal

To remove a fuel line:

- 1. Open the fuel filler cap to relieve pressure from the tank.
- 2. Relieve the fuel pressure from the fuel lines. Follow the vehicle maker's recommendations.
- 3. Disconnect and isolate the negative battery cable, if required. Follow the vehicle maker's recommendations for recording and resetting **electronic memories**.
- 4. Properly lift and support the vehicle.
- 5. Properly drain the fuel into an approved container marked for the customer's vehicle.
- 6. Remove covers or protectors, if required.
- 7. Lower the fuel tank, if required for access. Properly support the tank before releasing the straps.
- 8. Disconnect and remove the fuel line.

9.2 Fuel Line Installation

To install a replacement fuel line:

- 1. Replace the in-line fuel filter, if applicable.
- 2. Position the fuel line under the vehicle, duplicating the original mounting method.
- 3. Reconnect the line connectors. Torque the fasteners to the vehicle maker's recommendations.

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9. Repair Procedure (cont'd)

- 4. Raise the fuel tank into position, if lowered for access.
- 5. Reinstall any covers or protectors. Ensure that the mounting straps are properly positioned. Torque the fasteners to the vehicle maker's recommendations.
- 6. Install any labels previously removed.
- 7. Lower the vehicle.
- 8. Transfer the customer's fuel back into the tank. Replace contaminated fuel with fresh, clean fuel.
- 9. Reinstall the fuel filler cap.
- 10. Reconnect the battery, if disconnected. Reset electronic memories.
- 11. Start the vehicle and check for leaks.
- 12. Road-test the vehicle to check the fuel system performance.
- 13. Perform a visual inspection to ensure that fuel system parts do not improperly contact adjacent parts.



10. Use Of Recycled (Salvage) Parts

Do not install **salvage** fuel lines.



11. Inspection And Testing

11.1 Inspection Of Repaired Or Replaced Fuel Lines

After installation, inspect fuel lines for these conditions:

- absence of kinks
- proper attachment
- absence of fuel leaks
- proper installation of all labels
- proper installation of in-line fuel filter, if applicable

Road-test the vehicle to check for proper fuel-system performance. Verify that no stored trouble codes indicate a fuel system problem. See **EL21**.

Correct any defects.