



# AFV Collision Repair



As of 2015, there were nearly 23 million cars and light-duty trucks powered by propane, natural gas, biodiesel, ethanol, hydrogen, and electric on U.S. roads. As AFV use grows, more and more of these vehicles will require collision repair services. While these vehicles may look like their traditional counterparts, there are key differences and collision repair technicians should be familiar with them.

## Identification

Before beginning to work on a vehicle, determine what type of AFV it is by:

- Noting vehicle badging and nonstandard dash indicators;
- Checking inside fuel doors for nonstandard fuel ports;
- Looking for specialized components such as orange cables under the hood or pressurized fuel tanks that can be in different locations.

## Inspecting the Vehicle

When starting the repair process it is important to ask a few questions first:

- Was the vehicle driven into the repair facility, or was it brought in on a flatbed truck?
- Does the vehicle have high-voltage electrical systems?
- Does the vehicle have a pressurized fuel system?
- Is the vehicle damaged severely enough to affect any high-voltage cables, or pressurized fuel lines?
- Are there any leaking fluids or frost buildup on any piping?
- Proper maintenance and inspection is key to safe AFV repairs.

## Special Concerns for Pressurized Fuel Systems

Most pressurized alternative fuel vehicles—including propane, liquid natural gas, and compressed natural gas—are constructed with stronger components than gasoline systems, so they are less likely to be damaged in a collision. However, keep in mind:

- The smell of odorant or frost buildup on the system indicates a leak and the vehicle should be shut down and moved to a ventilated area.
- Before working on pressurized systems it is important to make sure the fuel cylinders are emptied either through burning them off or a fuel transfer process.
- The tank or fuel cylinder's shut off valve must be closed when the vehicle is being repaired.
- Fuel lines can trap pressurized fuel—always purge the entire fuel system.
- Cylinders should be inspected for any cracks, leaks, bulging, denting, or damage before being returned to service.
- Vehicles need to be inspected and leak tested for system integrity and function before returning the vehicle to service.

- When repainting vehicles that have pressurized fuel systems, make sure the fuel tanks are completely empty and the manual relief valve is in the open position before baking the vehicle.

### Special Concerns for Electric Vehicles

When repairing electric vehicles there are several issues that need to be taken into consideration.

- High-voltage cables are orange and should be inspected for damage.
- After the high-voltage battery is disconnected, wait a minimum of 5 minutes for the system to completely discharge before attempting to move the vehicle for repair or inspection.
- When starting repairs or moving the vehicle into the repair facility, the technician should always wear insulated rubber gloves because vehicles can be energized if damaged steel is contacting the high-voltage components.
- Vehicles with high-voltage systems should be moved on wheel dollies to prevent them from producing electrical power through the drivetrain.
- When repainting electric vehicles, excessive heat should not be used because it can damage the high-voltage batteries.

### Safety

As with conventional fuels, when working with AFVs there are key safety considerations. Fuels used in alternative fuel vehicles have properties different from gasoline and diesel:

- Some alternative fuels react adversely to water;
- Fuels such as hydrogen and natural gas are asphyxiates. Make sure the work area is well ventilated;
- Propane is heavier than air, and a leak can cause propane to pool in low lying areas;
- Fuels such as propane, liquefied natural gas, and hydrogen can cause instant frostbite;
- Breathing battery electrolyte vapors can cause severe respiratory problems;
- ALWAYS assume an electric drive vehicle has power and that high-voltage exists.

Use proper personal protective clothing and equipment when working with alternative fuel vehicles.

**REGARDLESS OF YOUR ROLE IN AFV REPAIR, SAFETY IS EVERYONE’S JOB!**

#### For More Information:

[Coalition training info here]



National Alternative Fuels  
Training Consortium

A Program of



<http://www.naftc.wvu.edu/cleancitiesprojects>  
<https://cleancities.energy.gov>

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