Roadside Emergency Guidelines

Involved in an Accident

- 1. Turn off the ignition switch.
- 2. Set parking brake.
- 3. Eliminate all sources of ignition.
- 4. Turn off electrical system (electrical disconnect)
- 5. Turn off Manual Shut Off Valve, If safe to do so.
- 6. Turn off all cylinder valves, If safe to do so.
- 7. Turn off hydraulics, If safe to do so.
- 8. If there is a leak in the fuel system. First Responders should be summoned, just as if gasoline were spilled.
- 9. Hand First Responder the Vehicle Fire and Accident Response Card.
- 10. Do Not use Road Flares.

Vehicle Fire

- 1. Turn off the ignition switch.
- 2. Set parking brake.
- 3. Call 911 report a CNG vehicle fire.
- 4. Notify all emergency responders that the vehicle is powered by CNG.
- 5. Hand First Responder the Vehicle Fire Response Card.
- 6. Establish a Safety perimeter of 100 meters (330 feet).
- 7. Point out the vent system.
- 8. Inform fire department of the status of the fuel system, i.e., how much fuel is in cylinder, valve positions, and key position.
- 9. If fuel system is in contact with the fire DO NOT approach the vehicle and DO NOT put water, or any other extinguishing agent on the fuel system. This could prevent the PRDs form activating.
- 10. If a PRD activates the result is often a jet fire, which could go out and re-ignite several times.

Gas Leak

- 1. Turn off the ignition switch.
- 2. Set parking brake.
- 3. Eliminate all sources of ignition.
- 4. Turn off electrical system (electrical disconnect)
- 5. Turn off Manual Shut Off Valve, If safe to do so.
- 6. Turn off all cylinder valves, If safe to do so.
- 7. If there is a leak in the fuel system. First Responders should be summoned, just as if gasoline were spilled.
- 8. Hand First Responder the Vehicle Fire and Accident Response Card.
- 9. Do Not use Road Flares.

Fueling Guidelines

Fuel Station Guidelines

- 1. Turn off vehicle, stop smoking, locate emergency shutoffs, locate fire extinguishers, follow safety instructions.
- 2. Read and follow all fuel station instructions before fueling.
- 3. Attach fuel nozzle to fuel receptacle, pull back on fuel nozzle to ensure its locked on.
- 4. In the event of an emergency, close the manual shut off valve on the dispenser, turn the ¼ valve to the off position, and press one of the ESD (Emergency Shutdown Device) at the fuel island.
- 5. Evacuate the area on foot, leave vehicle.
- PAY ATTENTION Keeping your eyes, ears, and nose open while at the station can help prevent accidents and injury. If you see, hear, or smell gas, be sure to use the emergency shutoff and call 911. Even minor leaks can cause major damage.

Fueling Temperature and Pressure

- CNG fueling system pressure is 3,600 psi. Some systems in the U.S. and many systems overseas are rated at 3,000 psi.
- These fill pressures are based on a 70°F ambient temperature.
- The cylinders are designed to hold up to 125% of their operating pressure. So, a 3,000-psi tank can be filled to 3,750 psi and a 3,600 tank can be filled to 4,500 psi. This makes it possible to fill a tank to a higher pressure on hot days when the gas is expanding, as well as compensate for the heat of compression.
- A good rule of thumb is that for every 1°F plus or minus 70°F, the pressure will change by 16 psi.
- Note: If the vehicle is not getting the fuel range for the size DGE system, verify that all the cylinder valves are open. Range is all about volume, and not pressure.

3 600 nsi service pressure calculated from	the standard gas composition used to create the gasoline gallo
equivalent	
Gas Temperature, Degrees F	Pressure in Full 3,600 psi CNG Container, psig
123.6	4,500
120.0	4,455
110.0	4,272
100.0	4,105
90.0	3,936
80.0	3,768
70.0	3,600
60.0	3,432
50.0	3,263
40.0	3,094
30.0	2,926
20.0	2,757
10.0	2,589
0.0	2,421
-10.0	2,253
-20.0	2,086
-30.0	1,919
-40.0	1.753



Operators CCFT CNG Fuel System Quick Reference Guide







Roof Mount



Back Of Cab



Tailgate Mount

Fuel Management Module (FMM)

Pre-Trip

- 1. Check gas detection system, if equipped.
- 2. Check for damage to fuel system housing.
- 3. Check for damage to fuel system tubing and hoses on the chassis frame.
- 4. Listen and smell for any leaks (Rotten Egg Smell).
- 5. Check for legible and correct location of CNG decal.
- 6. Vent Cap is attached and free from damage and debris.
- Vent location decal legible and correct location marking the vent exit.

supplies tubes.

- 8. Open all Cylinder Shutoff Valve(s).
- 9. Open Manual Shutoff Valve.
- 10. Check all fuel gauges.



Drange Regulated Pressure Gauge reads the fuel pressure between the regulator and engine The gauge has a range 0 to 200 psi. With key on, the pressure reading normal operating pressure will be approximately 80 - 90 psi.

Supply Pressure Gauge has a

range of 0 to 6000 psi. The supply pressure gauge will read pressure in

Red Pressure Relief Device (PRD) Gauge will read the cylinder pressure and PRD tubes regardless of the valve position.

- 11. Inspect fuel receptacle O-ring for damage or missing.
- 12. Check bumper fill cap is installed.
- 13. Check fuel door is closed.
- 14. Drain low pressure fuel filter in the engine compartment.
- 15. Start vehicle following OEM starting instructions.
- 16. Check digital fuel gauge for proper operations on the three menu screens.

Pressure Relief Valve (PRV)

The fuel system regulator has a Pressure Relief Valve (PRV). The (PRV) is in place to protect the engine from high pressure gas if the regulator fails. The (PRV) is spring loaded and should close once the regulated pressure drops below the set pressure or key is turn off.

If the PRV activates and starts venting gas, find a safe place to park and shutdown vehicle and DO NOT operate.

No Crank

The first item to check is that all the fuel doors are closed, and all the kill caps are installed. If any of the fuel doors or kill caps are not installed, several truck models will have a message on the dash that reads FUEL DOOR OPEN. This is a sign that the CCFT Fuel System in preventing the cranking.

Check the digital fuel gauge and verify that Pressure, Miles to Empty, and Fuel Level are reading values and are not all dashes (----). If the parameters on the digital fuel gauge are all dashes, then the ECU is not getting power or ground.



Note: If the engine dies without the key being shut off, such as idle shutdown or an accident, the key must be cycled off and then back on to re-enable the cranking operation

Crank No Start

The CCFT fuel system's only job to allow the engine to run is to provide fuel within the operating pressure range of the engine. Pressure can be verified by looking at the Regulated Pressure Gauge "Orange" on the CCFT fuel system. With key on, the pressure reading normal operating pressure will be approximately 80 - 90 psi.

°Click

The vehicle provides 12 volts to the fuel system regulator with key ON. When the key is turned ON there should be a "CLICK" sound from the regulator.

If NO "CLICK" sound, system might have a bad Fuel Relay or bad Solenoid Coil.

Recovery and Towing

- 1. Notify Tow Truck Operator that the vehicle has a CNG fuel system, and any known damage to fuel system.
- 2. Hand Tow Truck Operator Vehicle Accident Response Card
- 3. NEVER attached any recovery chain, strap, or rope to CNG Fuel System or components.
- 4. Stay clear of CNG components on the bumpers and frame rails.
- 5. Shut all fuel cylinder valves before towing, if safe to do so.

A DANGER

Defuel CNG fuel system if vehicle was involved in a fire to prevent possible cylinder rupture during towing operations.

Digital Gauge

Digital Gauge

The Digital Gauge displays fuel system information using a 3-button interface. Pressing either one of the outside buttons, to select desired fuel reading display.



Fuel Reading Displays:

Fuel Level – Usable fuel remaining in percentage until empty. Note: 250 psi is empty (zero percent fuel level).

Fuel Pressure - Current supply (Yellow) pressure in fuel system at current temperature.

Miles to Empty – Estimated miles remaining until empty.



Miles to Empty Defined

Miles to Empty calculates the approximate distance you can drive with the amount of fuel remaining in the fuel system. This calculation is based off the Average Fuel Economy since Last Trip Reset broadcast by the engine multiplied by the remaining useable fuel in the fuel system.

The Average Fuel Economy is calculated by the engine and only includes drive times. It does not include idle or PTO times. The engine broadcasts this value over the engine data bus, and the fuel delivery system reads this value.

The useable fuel remaining is calculated by the fuel delivery system based on fuel system capacity, fuel pressure, and fuel temperature in the fuel delivery system. The amount of fuel in the fuel delivery system at a given pressure varies significantly with temperature. This means the miles to empty for a given pressure will vary with every temperature reading.

Note: to reset Miles to Empty a technician must reset use Cummins Insite.

Cummins Clean Fuel Technologies 1-817-767-6020 1-844-CNG-TANK https://www.cumminscleantech.com/