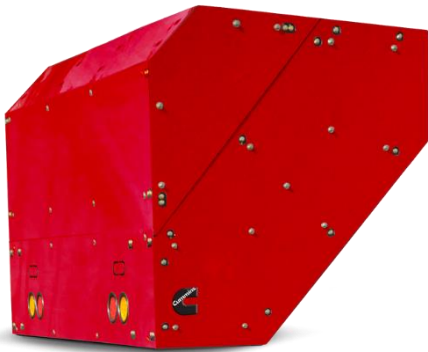




**CLEAN FUEL  
TECHNOLOGIES™**

# **First Responders Guide**

## **CNG Fuel Systems**



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# Fire (Vehicle) Quick Response Guide

## DANGER

If fire (flames) is in contact (actually touching) the CNG fuel system, or if the fire (flame) is fueled by leaking fuel from the fuel system (**DO NOT APPROACH**) allow the vehicle fire to burn and evacuate the area and establish a safety area of 100 meters 330-ft minimum. Watch for secondary hazards. **Note:** leaking fuel might make a load hissing sound or a small jet fire, natural gas has a “Rotten Egg Smell”)

## DANGER

**Always assume a CNG fuel system is full of fuel, and under pressure.** Locate the vehicle operator to verify vehicle fuel system type and status of the fuel system.

## DANGER

**Turn OFF the ignition switch, if safe to do so.** Turning OFF the ignition switch, stops fuel flow from the fuel system to engine.

## DANGER

**DO NOT use water or any other extinguishing agent on a fuel system that is in contact with fire (flame) or if the fuel system is on fire.** This could cool the PRDs preventing activation and can result in a catastrophic high pressure cylinder failure and rupture.

## DANGER

**Evacuate the area around the truck and establish a safety area of 100 meters 330-ft minimum.** Prevent people and traffic from entering the area.

## DANGER

If the cylinders are **NOT** involved in the fire (flame), use normal vehicle fire response tactics.

## DANGER

If fire (flames) is in contact with the CNG fuel system, or if the fire (flame) is fueled by leaking fuel from the fuel system (**DO NOT APPROACH**) it is best to let the vehicle burn and watch for secondary hazards, vehicles are replaceable.



This is an example of a vehicle fire where **NO WATER** was applied, and the PRDs activated safely.



This is an example of a vehicle fire and **WATER** was applied, and the PRDs **DID NOT** activate safely.

# Fire (Trash Load) Quick Response Guide

## DANGER

If fire (flames) is in contact (actually touching) the CNG fuel system, or if the fire (flame) is fueled by leaking fuel from the fuel system (**DO NOT APPROACH**) allow the vehicle fire to burn and evacuate the area and establish a safety area of 100 meters 330-ft minimum. Watch for secondary hazards. **Note:** leaking fuel might make a load hissing sound or a small jet fire, natural gas has a “Rotten Egg Smell”)

## DANGER

**Always assume a CNG fuel system is full of fuel, and under pressure.** Locate the vehicle operator to verify vehicle fuel system type and status of the fuel system.

## DANGER

**Turn OFF the ignition switch, if safe to do so.** Turning OFF the ignition switch, stops fuel flow from the fuel system to engine.

## DANGER

**DO NOT use water or any other extinguishing agent on a fuel system that is in contact with fire (flame) or if the fuel system is on fire.** This could cool the PRDs preventing activation and can result in a catastrophic high pressure cylinder failure and rupture.

## DANGER

**Evacuate the area around the truck and establish a safety area of 100 meters 330-ft minimum.** Prevent people and traffic from entering the area.

## DANGER

**If the cylinders are NOT involved in the fire (flame),** use normal vehicle fire response tactics.

## NOTICE

The driver should have packed the load to reduce oxygen to the fire or may have already discharged the burning load on the street or in an empty parking lot.

**DO NOT go on top or over the fuel system when the vehicle is on fire.** If the PRDs activate a firefighter could be severely injured.



**DO NOT go under a lifted tailgate if a vehicle is involved in a fire.** Hydraulic hoses could be damaged and fail, causing the tailgate to drop and a firefighter could be severely injured.





# Signs of PRD(s) Activation

When a PRD activates, a stream of high-pressure gas will exit the PRD vent tube at a high rate of speed causing a loud hissing sound.

Use caution as releasing gas could ignite into a 15 to 30-foot flame during a PRD release event. The result is often a jet fire which may go out and re-ignite several times.

Wait for the gas to completely vent from the CNG system before approaching the vehicle.

Static electricity could also suddenly ignite the gas.

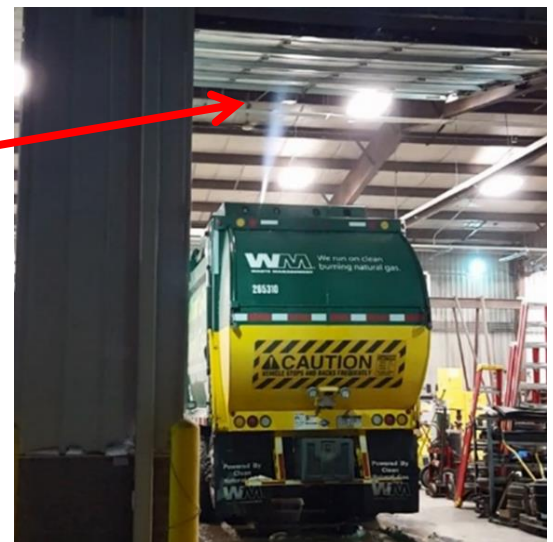
This is an example of a load fire started by combustible materials picked up from a customer's trash bin. A PRD is activated, and the escaping gas has ignited and is burning.



This is an example of a load fire started by combustible materials picked up from a customer's trash bin. A PRD is activated, and the escaping gas has ignited and is burning.



This is an example of a PRD release due to water and ice intrusion into a PRD vent tube. When the ice in the vent tube thawed, the PRD released the gas inside the maintenance shop.



# Verify No Pressure In Fuel System

## (Depressurizing Fuel System)

### DANGER

Ensure no ignition or heat sources are present, carefully inspect the area for open flames, sparks, static electricity, hot surfaces, electrical equipment, and other potential sources of heat or ignition.

### DANGER

Evacuate the area around the truck and establish a safety area of 100 meters 330-ft minimum. Prevent people and traffic from entering the area.

### DANGER

Disconnect battery cables to minimize sparking, always disconnect the negative terminal first, then the positive.

## Depressurize Fuel System

### Cylinder Shutoff Valve

Verify cylinder shutoff valves are in the OPEN position. If the valves are not in the CLOSED position, close the valve.

- **Quarter Turn:** Verify quarter turn valve is OPEN, turn the handle on the ball valve ¼ turn until the handle is in line with the valve for OPEN.
- **Stem Valve:** If equipped with a stem valve, verify the valve is in the OPEN position by rotating counterclockwise.
- **Fuel Delivery System Shutoff Valve:** Verify the fuel delivery system shutoff valve is in the ON position. If the valve is in the OFF position, rotate the handle ¼ turn clockwise to ON.

### NOTICE

Refer to page 17 and 18 for detailed instructions.

### Manual Shutoff Valve

Verify the Manual Shutoff Valve is OPEN/ON.

### NOTICE

Refer to page 16 for detailed instructions.

### Bleed Valve

1. Rotate the bleed valve cap counterclockwise to open using a 5/8-inch wrench or socket.
2. Verify the regulator and supply gauges are at 0 kPa [ 0 psi ] if still working.
3. Listen for hissing sound there should be NO hissing sound coming from the bleed valve.

**Note: Using only the Bleed Valve will NOT remove fuel or pressure on the engine.**

### NOTICE

Refer to page 19 for detailed instructions.

## Legal Disclaimer

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## Preface

This manual is for First Responders. More information and training are available by calling Cummins Clean Fuel Technologies (CCFT) at 1-844-CNG-TANK. DO NOT attempt to respond to an emergency involving a vehicle using a Cummins Clean Fuel Technologies fuel system until you have read and fully understand the information presented in this manual. If you have questions about any part of this manual, contact Cummins Clean Fuel Technologies (CCFT) at 1-844-CNG-TANK. This manual includes information that is important for the safety of the operator and First Responders (i.e., police, fire fighters) in case of an emergency. The following abbreviations are used throughout this manual:

1. **CNG**, which means Compressed Natural Gas.
2. **FMM**, which means Fuel Management Module.

## Single Word Definition

Single Word	Color	Potential Injury or Damage	Likelihood of Occurrence
<b>DANGER</b>	Red Background White Letters	Severe	<b>WILL</b> occur if warning is ignored
<b>WARNING</b>	Orange Background Black Letters	Severe	<b>COULD</b> occur if warning is ignored
<b>CAUTION</b>	Yellow Background Black Letters	Minor	<b>MAY</b> occur if warning is ignored but result will be minor
<b>NOTICE</b>	Blue Background White Letters	None	N/A label is for important instructions <b>Unrelated</b> to hazards

## CCFT Characteristic Notifications Symbols

Symbols are defined as components or procedure that has direct effects on safety of personnel, equipment, and regulatory compliance.



**Safety Characteristic**



**Regulatory Characteristic**



**Safety and Regulatory Characteristic**

## Vehicle Codes, Regulations, and Standards

**All components must meet requirements for the year the fuel system was built and installed found in:**

- CGA C-6.4 CNG System Inspection Standard (also covers installation)
- FMVSS 304 (DOT) Cylinder Standards
- NFPA 52 Vehicular Gaseous Fuel Systems Code.
- ANSI/NGV 2 CNG Vehicle Container requirements
- ANSI/IAS PRD 1 Pressure Relief Devices
- ANSI/IAS NGV 3.1 Valves, Fittings and Brackets
- Canada: CAN/CGA B109, CSA Group
- CSA/ANSI NGV 6.1:21
- North America: ANSI/AGA NGV 3.1/CGA 12.3 and NGV 12.3-M95
- Compressed Natural Gas and Liquefied Natural Gas, Railroad Commission of Texas

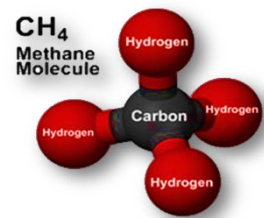


# Compressed Natural Gas (CNG) Fuel System

A compressed natural gas (CNG) fuel system is for a vehicle that uses a CNG engine. The fuel system uses fuel cylinder(s) to store high-pressure natural gas (Methane) fuel at 3,600 psi at 70°F. The fuel system contains the mechanical and electrical components to control low-pressure fuel for the engine at 80-90 psi.

## Natural Gas (Methane CH<sub>4</sub>)

- Natural Gas is naturally occurring hydrocarbon gas mixture, consists primarily of Methane.
- Lighter than air
- Colorless and Odorless
- Non-corrosive
- Non-toxic
- Dissipates quickly when released.



Two physical forms of storing for transportation use.

- Compressed Natural Gas (CNG)
- Liquefied Natural Gas (LNG)

## Compressed Natural Gas NFPA 704

Diamond-shaped sign with four quadrants, each representing a different hazard category: health, flammability, instability, and special hazards. For CNG, the ratings typically fall within the following range: health (1-2), flammability (4), instability (0-1), and special hazards (none).



## GHS Label Elements Hazard Pictograms

The Safety Data Sheet (SDS) for Compressed Natural Gas (CNG) typically includes the following pictograms, indicating the hazards associated with the gas: a compressed gas cylinder (representing the pressure hazard), a flame (indicating flammability),



## GHS Signal Word Definition

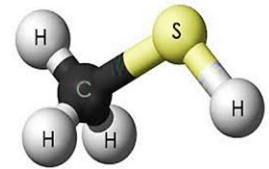
**Danger.** Hazard statements (GHS) : Extremely flammable gas.

**DANGER**

## Mercaptan “Rotten Egg Smell”

Mercaptan, is a foul-smelling gas that is added to natural gas for safety. Since natural gas is colorless and odorless, mercaptan acts as an odorant to make it easier to detect. Mercaptan is added so that leaks can be readily detected.

Mercaptan is an organic gas composed of carbon, hydrogen, and sulfur causing a “Rotten Egg Smell.”



Ethyl Mercaptan  
 $C_2H_5S$

### WARNING

**Odor Fade** (loss of Mercaptan) can occur when physical and/or chemical processes including adsorption, pressurizing and oxidation cause the level of odorant in the gas to be reduced.

### WARNING

**Odor Masking** can occur when other smells are stronger than mercaptan, examples are cleaners, solvents, paints, exhaust fumes, smoke, and wind direction.

## Compressed Natural Gas Health Hazards



### Flammable Gases

Natural Gas (Methane) is highly flammable, and explosive can easily ignite if exposed to a spark or heat.



### High Pressure

Compressed Natural Gas is stored in fuel cylinders at pressure up to 4500 psi. Any damage to the cylinders like heat, fire, impact, cuts, gouges, abrasions, and chemical damages can weaken the cylinder resulting to a sudden release of pressure causing a violent explosion.



### Inhalation (Asphyxiation) Hazard

Inhaling natural gas can be hazardous, primarily due to its ability to displace oxygen and potentially cause suffocation.



### Compounds Released During Fires

Fires release a wide variety of chemical compounds, including particulate matter, carbon monoxide, carbon dioxide, and various volatile organic compounds (VOCs). These compounds can be harmful to human health.



### Carbon Fiber Hazards

Inhaling carbon fiber dust can irritate the respiratory system, and prolonged exposure may cause respiratory problems.

## Four Types of CNG Fuel Cylinders

### Type

### Description

**1**

All Metal figure 1.



figure 1

**2**

Metal Liner reinforced with resin impregnated continuous filament “Hoop Wrapped” figure 2.



figure 2

**3**

Metal Liner reinforced with resin impregnated continuous filament “Fully Wrapped” figure 3.



figure 3

**4**

Resin impregnated continuous filament with non-metallic liner “Fully Wrapped” figure 4.

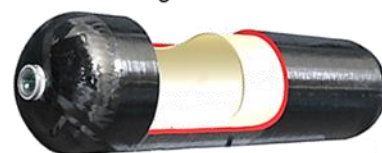


figure 4

### **WARNING**

A composite cylinder is not intended for normal use in any environment resulting in prolonged composite overwrap temperatures in excess of 82°C (180°F). Prolonged temperatures in excess of the Tg of the composite may cause discoloration and degeneration of the resin system.

### **WARNING**

NHTSA has modified the required label for visual inspection of CNG fuel containers to specify that the container should be visually inspected for damage and deterioration after a motor vehicle accident or fire, and either (a) at least every 12 months when installed on a vehicle with a GVWR greater than 4,536 kg (10,000 lbs.) or (b) at least every 36 months or 36,000 miles, whichever comes first, when installed on a vehicle with a GVWR less than or equal to 4,536 kg (10,000 lbs.).

### **NOTICE**

Cummins Clean Fuel Technologies uses Type 3 and Type 4 cylinders in the fuel system. Type 3 is made of a metal liner wrapped with carbon fiber-reinforced resin. Type 4 is made of a plastic liner wrapped with carbon fiber-reinforced resin.

## CNG Diamond Vehicle Decal



In accordance with federal law, any CNG fuel system vehicle must always be labeled to signify it as a CNG vehicle. The vehicle must be marked with a weather resistant diamond-shaped label located on an exterior vertical or near-vertical surface on the lower right rear of the vehicle. In addition to placement of the "CNG" diamond label on the right rear of the vehicle, the "CNG" diamond label shall also be affixed to both sides of the \*power unit figure 1.



If a DOT number is required to be displayed in the accordance with 49CFR 390.21, then the labels shall be affixed near the DOT numbers on each side of the \*power unit figure 1.

The CNG Diamond Decal for vehicles with a GVWR of 19,500 lb. (8869 kg) or greater shall be a minimum of 5.7 in. long x 4.2 in. high (145 mm long x 107 mm high) figure 1.

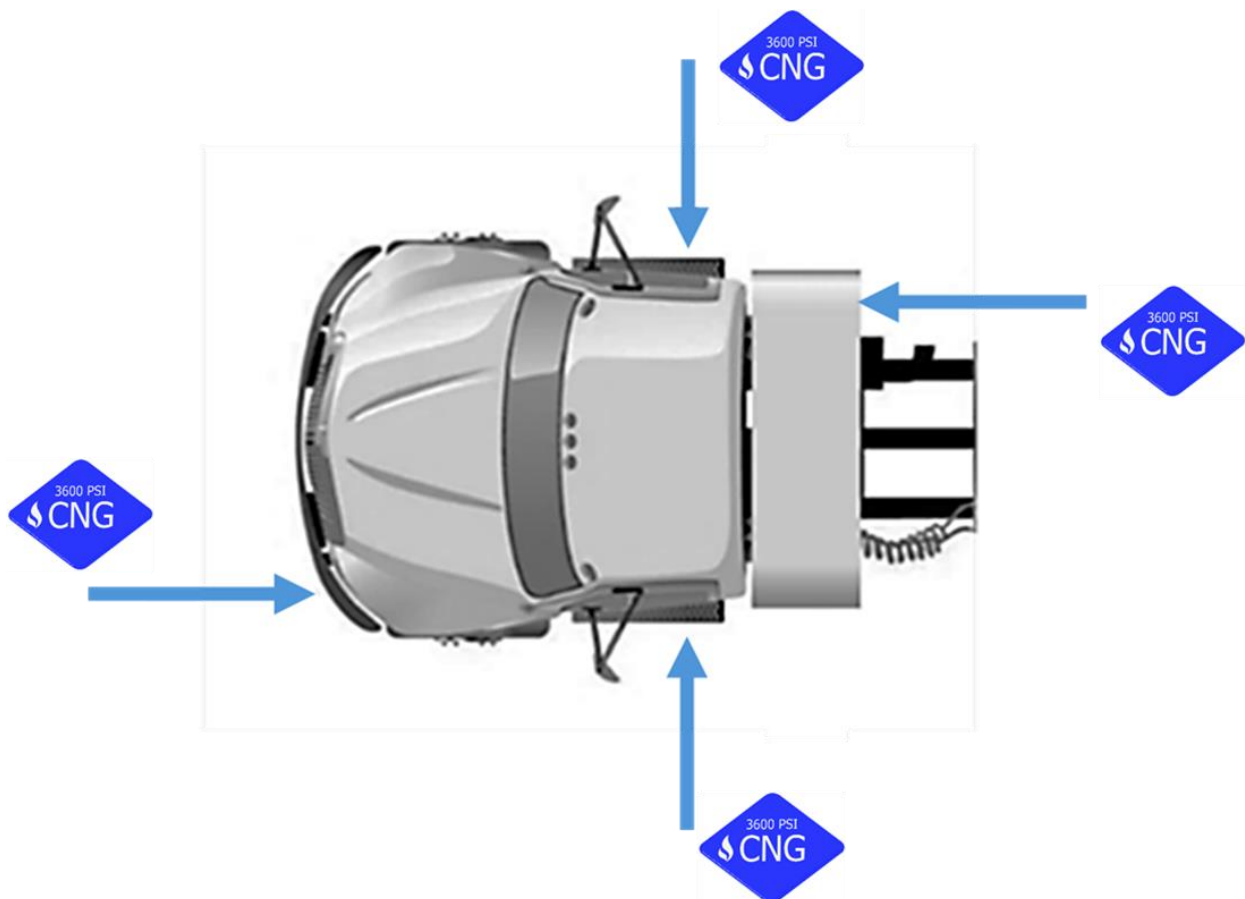
The marking in the label shall consist of a border and the letters "CNG" 1 in. (25 mm) minimum height centered in the diamond] of silver or white reflective luminous material on a blue background figure 1.

Auxiliary fueling connection receptacle shall include the following:

- Identification as a CNG fueled vehicle.
- Service pressure



**\*Power Unit** - A power unit can be a single-unit truck, also called a straight truck, or a "bob-tail" tractor. In a combination vehicle such as a tractor-trailer, the power is the tractor.





## CNG Diamond Location on Vehicle

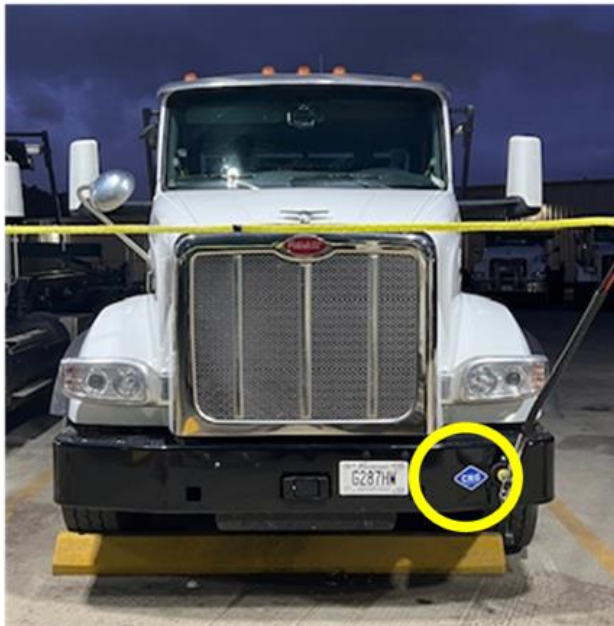
Front Left



Both Sides of Cap



Front Left Fill Receptacle



Right Rear of Cab or Fuel System



### WARNING

CNG Diamond could be damaged by heat or fire or obscured by smoke. Locate the vehicle operator to verify vehicle fuel system type and statue of the fuel system.



# Type and Location of CNG Fuel Systems

## The National Fire Protection Association (NFPA 52)

Fuel supply containers on vehicle can be permitted to be located **within, below, or above** the driver or passenger compartment, provided all connections to the container(s) are external to, or sealed and vented from, these compartments.

**Side Mount (SM)** CNG fuel system refers to a CNG fuel storage and delivery system mounted on the sides of a vehicle's frame, housing the CNG cylinders and related integrated components.



**Back Of Cab (BOC)** CNG fuel system refers to a CNG fuel storage and delivery system mounted behind the cab of a vehicle, housing the CNG cylinders and related integrated components.



**Tailgate (TG)** CNG fuel system refers to a CNG fuel storage system where the CNG cylinders are integrated into the tailgate assembly of a vehicle, typically a refuse truck, offering a low-profile design and improved weight distribution. Works with Fuel Management Module (FMM).



**Roof Mount (RM)** CNG fuel system refers to a CNG fuel storage system where the CNG cylinders are mounted on the roof of the vehicle, typically for applications like refuse trucks and buses, to maximize cargo space. Works with Fuel Management Module (FMM).



**Front Of Body (FOB)** CNG fuel system refers to a CNG fuel storage system where the CNG fuel cylinders are mounted on the front portion of the vehicle's body like refuse trucks. Works with Fuel Management Module (FMM).



**Split System (SS)** is a CNG fuel system designed for vehicles, where the fuel cylinders are split into multiple modules or units for increased range. A CNG split system consist of a Primary Module containing the Fuel Management Module (FMM) components that controls the flow of fuel to the engine. Secondary Module is an auxiliary module for storing CNG for use through the Primary Module containing the Fuel Management Module (FMM).



**Fuel Management Module (FMM)** FMM is located on the frame of the truck on the driver side. FMM holds all the mechanical and electrical components to control the flow to the engine from the cylinder(s). It supports Roof Mount Systems, Tailgate Systems, Front of Body Systems, and some Back of Cabs.



## Pressure Relief Device (PRD)

CNG Fuel System is fitted with Pressure Relief Device (PRD)s.

The Pressure Relief Devices (PRD) are **thermally activated** (Heat) valves which opens at a temperature of approximately **230°F**.

In the event of a fire, PRD(s) are designed to release the fuel stored in the cylinders at a safe distance and direction from the vehicle to prevent over-pressurizing of the fuel cylinders.

### WARNING

When the PRD(s) activate, the PRD(s) cannot be closed and will vent all gas from the fuel system.

### NOTICE

Cummins Clean Fuel Technologies fuel system all have an interconnected PRD system is protecting a group of containers.

**Side Mounts** have “2” PRDs. Located on the frame side of the unit figure 1.

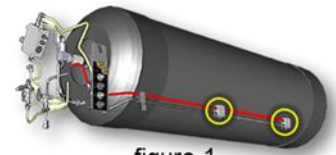


figure 1

**Back of Cabs** have “8” PRDs. 4 in the front and 4 in the back figure 2.

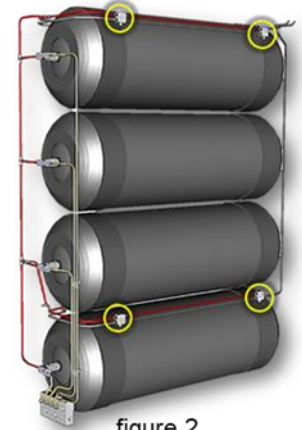


figure 2

**Roof Mounts** have a minimum of 4 with the option 1 or 2 by the hopper door figure 3.

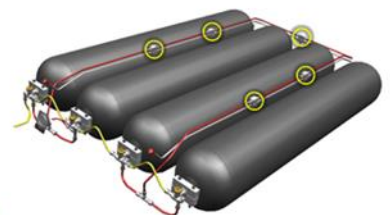


figure 3

**Tail Mounts** have a minimum of 4 figure 4.

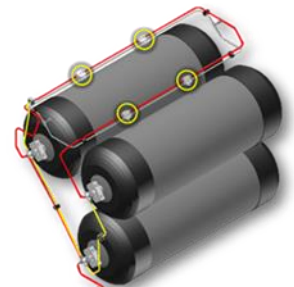


figure 4

## Pressure Relief Device (PRD) Vent System

In the event of a fire or temperature above 230°F PRDs are designed to vent fuel through the vent tubes. All PRD vent tubes are fitted with weatherproof caps to protect the system from environmental elements.

Pressure Relief Device (PRD) Vent(s) outlets shall be located vertically near the top of the vehicle.

Pressure Relief Device (PRD) Vent(s) outlets shall be orientated to direct the vent gas upward.

A label that indicates the PRD(s) vent location(s) with the following language. ATTENTION CNG Vent Location. Each safety is 3 in tall by 5 in wide and shall use 18-point sans serif font for the message text. One safety sign is located near each vent location.



figure 1

See below for PRD vent location and directions:





# Manual Shutoff Valve Location

## Location of Manual Shutoff Valves

- Back of Cab figure 1
- Side Mount figure 2
- Fuel Management Module (FMM) figure 3.

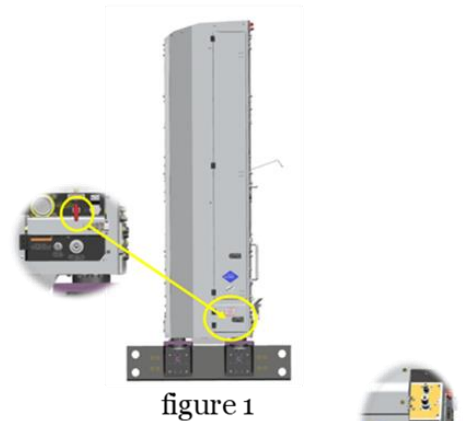


figure 1



figure 2



figure 3

## Manual Shutoff Valve Operation

### Verify Manual Shut-Off Valve is ON

Open the fuel access door and locate the red handle Manual Shut-Off Valve.

Turn the valve counterclockwise 1/4 turn to the ON position figure 1 and 2.



figure 1

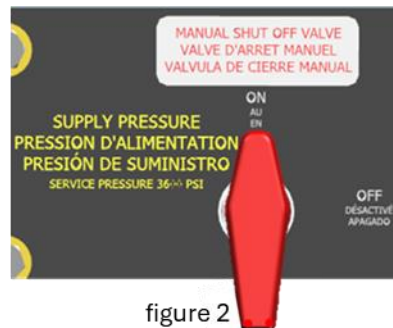
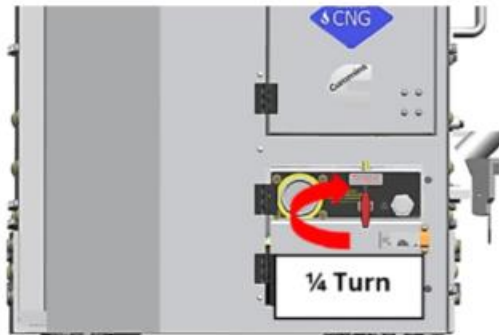


figure 2

Side Mount  
Manual Shutoff Valve



Back Of Cab  
Manual Shutoff Valve



FMM  
Manual Shutoff Valve





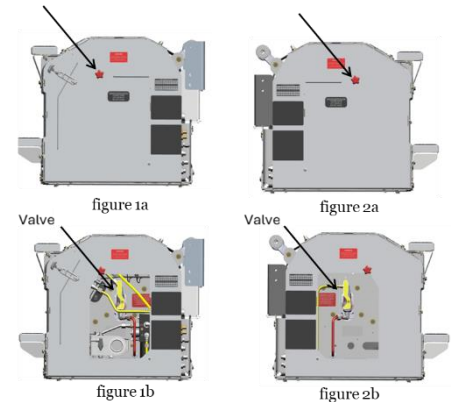
# Cylinder Shutoff Valve Location

## Side Mount

Side Mount cylinder shutoff valve(s) can be found on the driver side and passenger side of the fuel system.

To access the cylinder shutoff valve(s), open the access cover(s) by turning the knob figure 1a and 2a and rotating the access cover(s) upwards away from the knob, then downwards.

- Driver side cylinder shutoff valve figure 1b
- Passenger side cylinder shutoff valve figure 2b



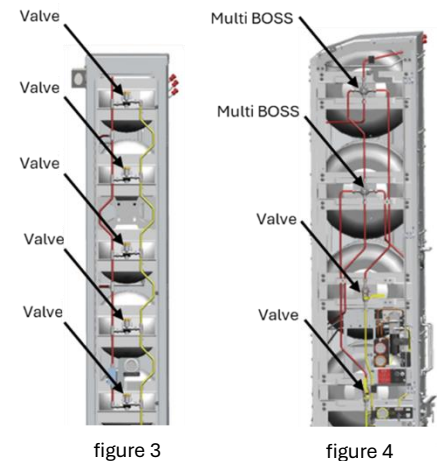
## Back of Cab and Front of Body

Back of Cab and Front of Body cylinder shutoff valve(s) can be found on the driver side of the fuel system.

To access the cylinder shutoff valve(s), open the access cover by operating the access cover latch.

Fuel cylinder cabinet configuration can have cylinders with valve on each cylinder(s) or be equipped with a Multi BOSS(s) on some cylinder(s) and controlled by cylinder shutoff valve(s) on the other cylinder(s).

- Fuel cylinder cabinet configuration with cylinder shutoff valves on each cylinder(s) figure 3.
- Fuel cylinder cabinet configuration with Multi BOSS(s) and cylinder shutoff valve(s) figure 4.



## Roof Mount

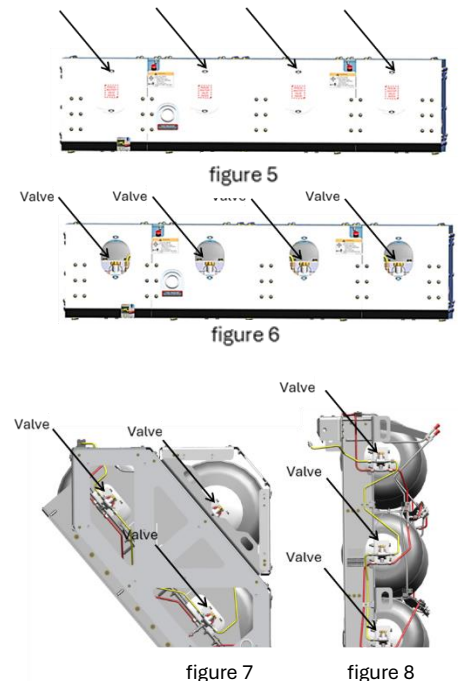
Roof Mount cylinder shutoff valve(s) can be found on the back of the fuel cylinder cabinet.

To access the cylinder shutoff valve(s), open the access cover by loosening the Butterfly Bolt(s) or remove the Lynch Pin(s) and remove access cover figure 5 and 6.

## Tailgate

Tailgate cylinder shutoff valve(s) can be found on the back of the fuel cylinder cabinet.

To access the cylinder shutoff valve(s), open the access cover by loosening the butterfly bolt(s) or remove the Lynch Pin(s) and remove access cover figure 7 and 8.



# Cylinder Shutoff Valve Operation

## Turn OFF the ¼ Turn Cylinder Shutoff Valve(s)

The cylinder shutoff valve on each tank isolates the fuel inside that tank.

NOTE: The cylinder shutoff valve is designed so that it does not turn off pressure in the Pressure Relief Devices (PRDs) lines. This is a safety design so the CNG fuel system PRDs can still activate when the valves are shut off.

- To turn OFF the ¼ turn cylinder shutoff valve:
- Open or remove the cylinder shutoff valve access cover on the fuel cylinder cabinet.
- Locate the cylinder shutoff valve in the fuel cylinder cabinet.
- Turning off (CLOSING) Ball Valve style valve, turn the valve handle clockwise until handle stops turning. Turning on (OPENING) Ball Valve style valve, turn the valve handle counterclockwise until handle stops turning. (figure 1 and 2)

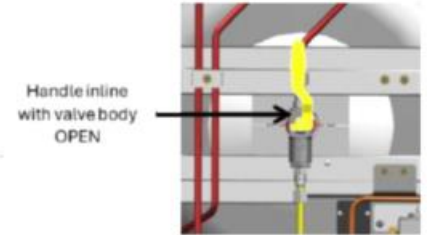


figure 1

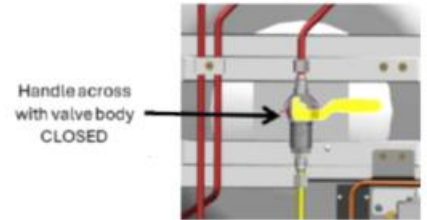


figure 2

NOTE: Use this method to turn OFF EACH cylinder shutoff valve.

## Turn OFF the Stem Valve Cylinder Shutoff Valve(s)

The cylinder shutoff valve(s) on each tank isolates the fuel inside that tank.

NOTE: The cylinder shutoff valve is designed so that it does not turn off pressure in the Pressure Relief Devices (PRDs) lines. This is a safety design so the CNG fuel system PRDs can still activate when the cylinder shutoff valve are shut off.

- To turn OFF the Stem Valve cylinder shutoff valve:
- Open or remove the cylinder shutoff valve access cover on the fuel cylinder cabinet.
- Locate the cylinder shutoff valve in the fuel cylinder cabinet.
- Turning off (CLOSING) a Stem Valve style valve, turn the valve handle clockwise until handle stops turning CLOSING the valve. (figure 3) . Turning on (OPENING) a Stem Valve style valve, turn the valve handle counterclockwise to OPEN (figure 4)



figure 3



figure 4

NOTE: Use this method to turn OFF EACH cylinder shutoff valve.

## Fuel Delivery System Shutoff Valve

The fuel delivery system shutoff valve controls fuel flow from the cylinder(s) to the regulator. The fuel system shutoff valve is used when multiboss fittings are used in place of cylinder shutoff valves.

- Open the fuel access door and locate the red Fuel Delivery System Shutoff Valve.
- Turn the valve clockwise 1/4 turn to the OFF-position figure 5.

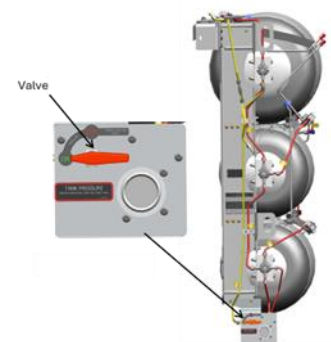


figure 5

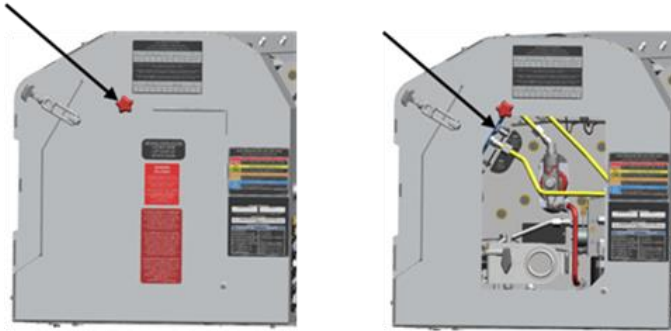
## Bleed Valve Locations and Operations

Bleed valve is manual bleed, vent, or drain valve. The knurled cap is permanently assembled to the valve body for safety figure 1.

The bleed valve is located inside the access door on the fuel system or inside the FMM access door.

To access the bleed valve on open the access door and locate the bleed valve, see below.

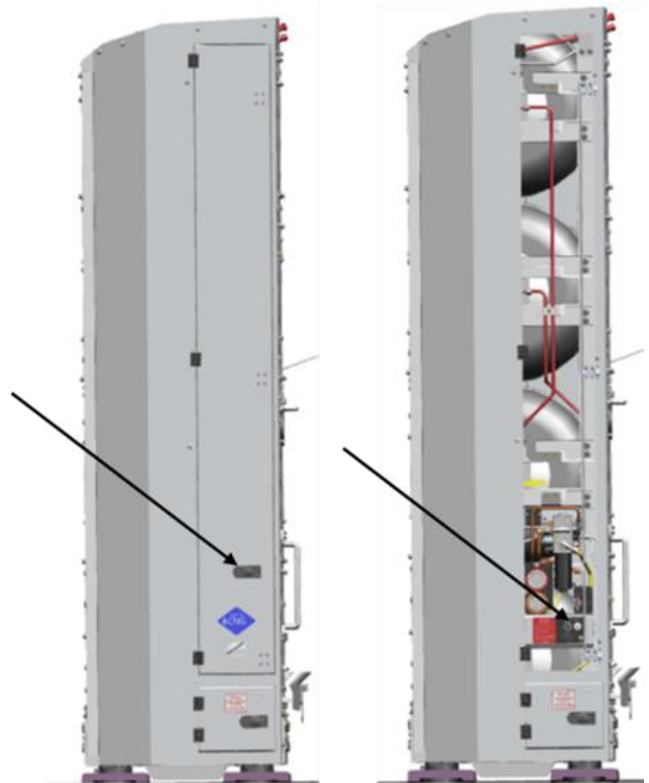
Loosen the bleed valve using a 5/8-inch wrench.



**Side Mount**



**Fuel Management Module FMM**



**Back Of Cab**

### NOTICE

The knurled cap is permanently assembled to the valve body for safety.

### NOTICE

Depressurizing will take longer for larger systems, due to the size of the fuel system. It is common for ice to build up inside the bleed valve causing it to slow or stop. Close and open bleed valve to break up the ice, if needed.

### WARNING

Using only the bleed valve will NOT remove fuel or pressure on the engine.

# CNG Vehicle Involved in an Accident

## 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, if safe to do so.
5. Turn off CNG fuel system Manual Shutoff 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. Fire fighters should be summoned, just as if gasoline were spilled.

## Three types of accident are:

- Collisions
- Natural Gas Release or Leaks
- Fires

## First Responders Should Ask:

1. Is the vehicle a CNG vehicle?
2. Where is the fuel system on the vehicle?
3. Did the fuel system receive damage during the accident?
4. Is there an odor of natural gas?
5. If there is a leak in the fuel system. Where is the leak?
6. Where is the vent system?
7. Did the fuel system vent any gas?
8. How much fuel is in the fuel system?
9. Is the Manual Shutoff Valve CLOSED/Off?
10. Is the Cylinder Shutoff Valve CLOSED?

### WARNING

Leaking fuel might make a loud hissing sound or a small jet fire, natural gas has a "Rotten Egg Smell")

### WARNING

NHTSA has modified the required label for visual inspection of CNG fuel containers to specify that the container should be visually inspected for damage and deterioration after a motor vehicle accident or fire, and either (a) at least every 12 months when installed on a vehicle with a GVWR greater than 4,536 kg (10,000 lbs.) or (b) at least every 36 months or 36,000 miles, whichever comes first, when installed on a vehicle with a GVWR less than or equal to 4,536 kg (10,000 lbs.).

### NOTICE

Refer to page 4 Depressurize Fuel System

# CNG Vehicle Recovery and Towing

Always raise the vehicle using the lifting points recommended by the vehicle manufacturer. Refer to the vehicle manufacturer's instructions for correct lifting instructions.

## Recovery Responders Should Ask:

1. Is the vehicle a CNG vehicle?
2. Where is the fuel system on the vehicle?
3. Did the fuel system receive damage during the accident?
4. Is there an odor of natural gas?
5. If there is a leak in the fuel system. Where is the leak?
6. Where is the vent system?
7. Did the fuel system vent any gas?
8. How much fuel is in the fuel system?
9. Is the Manual Shutoff Valve CLOSED/Off?
10. Is the Cylinder Shutoff Valve CLOSED?

### WARNING

NEVER attached any recovery chain, strap, or rope to CNG Fuel System.

### WARNING

NEVER lift vehicle with any part of the CNG Fuel System.

### WARNING

Stay clear of CNG components on the bumpers and frame rails. Example Front Bumper Fill, and CNG Tubing on frame rails.

### WARNING

Close Manual Shutoff Valve, if safe to do so.

### WARNING

CLOSE all cylinder shutoff valves before towing, if safe to do so.

### WARNING

If fuel system was involved in a fire or fuel system has impact damage Refer to page 4  
Depressurize Fuel System

### WARNING


Once the fuel system is shut down and safe for towing, follow the vehicle manufacturer's instructions for towing the vehicle.

### WARNING


Never use any part of the fuel system as a lifting point to raise the vehicle. Do not allow fuel system components to come into contact with any part of the lifting devices. The fuel system can become damaged, resulting in a leak. Serious personal injury can occur if the gas is ignited.

















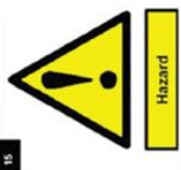




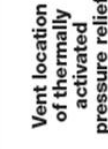


# Response Guidelines – Fire




**CLEAN FUEL TECHNOLOGIES™**



**VEHICLE FIRE OR VEHICLE TRASH FIRE RESPONSE**

DRIVER									FIRST RESPONDER							
1  <b>SWITCH OFF ENGINE</b>	2  <b>PARKING BRAKE</b> Push to engage Pull to release	3 	4 	5  <b>WARNING</b> Call 911 for emergency assistance	6 	7 	8  <b>ATTENTION</b> ATTENTION CNG vent location Emplacement de l'évent de GNC Ubicación de ventilación de GNC	9 	10  Minimum Perimeter 100 m 330 ft	11 	12  <b>GAS SHUT OFF VALVE</b>	13  <b>Possible Jet Fire</b>	14 	15  <b>Hazard</b>	16 	17  <b>WARNING</b> Refer to Operators Manual before recovery or towing
					18  <b>DANGER</b> Remove all ignition source. Do not use flares near a CNG vehicle.	19  <b>DANGER</b> CNG fuel system leak might have a hissing sound or rotten egg smell			20  <b>DANGER</b> Vent location of thermally activated pressure relief device			21  <b>NOTICE</b> Refer to Operators Manual for valve location and operations			22  <b>WARNING</b> Refer to Operators Manual before recovery or towing	


**First Responder Card: Notify First Responder and Tow Operator the vehicle is a CNG vehicle and status of the fuel system.**

** DANGER**

**IF FUEL SYSTEM WAS INVOLVED IN A FIRE, DEFUEL BEFORE TOWING.**


# Responses Guideline













## Accident and Recovery



**CLEAN FUEL TECHNOLOGIES™**

**VEHICLE ACCIDENT OR FUEL LEAK RESPONSE**



<b>1</b>  SWITCH OFF ENGINE	<b>2</b>  Turn off ignition stops fuel flow from fuel system to engine	<b>3</b>  Set the parking brake	<b>4</b>  Call 911 for emergency assistance	<b>5</b>  Remove All Ignition sources Do not use flares near the CNG Vehicle	<b>6</b>  CNG fuel system leak might have a hissing sound or rotten egg smell.
<b>7</b>  MANUAL SHUT OFF VALVE INSIDE LA VALVE POUR ÉTEINDRE MANUELLEMENT EST À L'INTÉRIEUR VÁLVULA DE CIERRE MANUAL EN EL INTERIOR	<b>8</b>  All components upstream from valve still have same pressure in fuel cylinder	<b>9</b>  Refer to Operators Manual for Valve Location and Operations	<b>10</b>  Refer to Operators Manual before recovery or towing	<b>11</b>  Turn off batteries	<b>12</b>  CNG fuel system leak might have a hissing sound or rotten egg smell.

**First Responder Card: Notify First Responder and Tow Operator the vehicle is a CNG vehicle and status of the fuel system.**

**⚠ DANGER**

**IF FUEL SYSTEM WAS INVOLVED IN A FIRE, DEFUEL BEFORE TOWING.**