First Responder Reference

CNG and LNG Vehicle Fuel Systems

Hexagon® Agility® provides fuel systems for compressed natural gas (CNG) semi-tractors, straight trucks, refuse vehicles, terminal tractors, transit buses, street sweepers, and medium-duty delivery vans. Liquified natural gas (LNG) vehicles include semi-tractors, refuse trucks, and municipal buses.

Key visual identifiers of CNG and LNG vehicle fuel systems

CNG

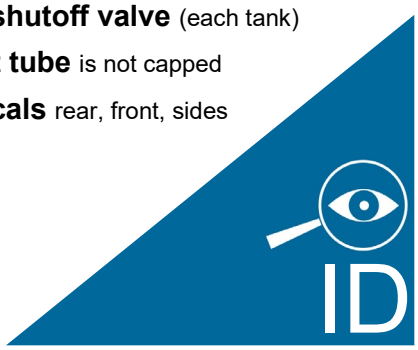
3600 psi / 250 bar

- **Fuel storage cabinets**
  behind the cab (BTC)
  side mount (SM)
  roof mounted (RM) – bus and refuse
  front of body (FOB) – refuse
  tailgate (TG) – refuse
  beneath body
- **Fuel management module (FMM)** with **1/4-turn manual shutoff valve**
- **PRD vent tubes** with **caps**
- **CNG diamond decals** rear, front, sides

LNG

230 psi / 16 bar **–259°F / –161°C**

- **Large stainless steel side mount tank(s)**
  typically longer and greater diameter than diesel tanks
- **Red manual fuel shutoff valve** (each tank)
- **Primary PRV vent tube** is not capped
- **LNG diamond decals** rear, front, sides



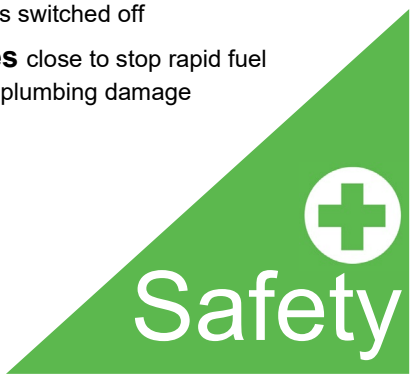
CNG and LNG fuel system pressure and thermal safety design features

CNG

- **Fuel storage cabinets** internal structure and covers protect against impact and environmental exposure
- **Pressure relief devices (PRDs)** open at 212-220°F (100-104°C) to vent high-pressure CNG to prevent cylinder rupture
- **Blue iQ™ thermistors** alert operator if temperature around cylinder exceeds 165°F (74°C)
- **Supply solenoid valve (SSV)** automatically stops fuel flow to regulator when ignition is switched off
- **One-way check valves** prevent fuel flow out of receptacles
- **1/4-turn manual shutoff valve** isolates fuel storage from rest of fuel system
- **Drive Away Protection (DAP)** prevents engine start if fuel cap(s) are not installed after fueling
- **Cylinder testing and design**
  1) PRDs are **bonfire tested** to vent entire contents when exposed to a thermal event; 2) .30 caliber **penetration test**; round must penetrate without cylinder rupture; 3) **burst test** to 2.25X normal 3600 psi operating pressure w/o rupture; 4) **exposure trials** to severe chemicals

LNG

- **Primary pressure relief valve (PRV)** releases excess tank vapor during normal operation
- **Secondary pressure relief valve (PRV)** releases pressure in the event of damage or LNG system malfunction
- **Manual fuel shutoff valve** on each tank
- **Pressure gauge** on each tank
- **One-way fill check valve** prevents fuel flow out of receptacle
- **Supply solenoid valve (SSV)** automatically stops fuel flow when ignition is switched off
- **Excess flow valves** close to stop rapid fuel release in event of fuel plumbing damage



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