



## Safety, Service & Maintenance

FuelMaker is the world leader in the development and manufacture of Vehicle Refueling Appliances (VRA). This unique product combines gas compression with controls, electronics, and software into a simple compact package that can be installed anywhere to fuel vehicles powered by gaseous alternative fuels. The VRA has been certified and listed as being so safe that it can be installed at commercial establishments or in residential homes.

The core technology was developed around a series of modules that are used to build up the various VRA models. Each model is a complete self-contained appliance that takes a gaseous fuel, natural gas or hydrogen, from a low-pressure supply, compresses it to between 3000 and 5000 psi and delivers it to a vehicle. The modules and VRAs make use of 94 patents held by or licensed to FuelMaker. The patents cover features in each of the 4 primary modules as well as the arrangement of the modules within the VRA.

In the case of natural gas, we offer 5 different VRA models with a variety of pressures and flow rates. These can be used to time-fill vehicles, or if combined with a storage/dispenser system, can fast-fill vehicles in 2 – 3 minutes.

A range of accessories has also been developed with a focus on the highest reliability and flexibility for the lowest cost. We offer fast-fill storage systems, auxiliary fueling panels, gas detectors, and components for automatic starting and remote monitoring. All accessories have been standardized so that any of our "FuelMaker Authorized" dealers can quickly configure a fueling system tailor-made to the customer's needs and fleet configuration, whether it consists of 1 or 100 vehicles. An economical and convenient way to refuel fleets of natural gas vehicles, forklifts, and ice resurfacers. Our VRAs can be installed separately or together with other VRAs and accessories to meet your specific refueling needs.

### Service Interval

The VRA compression module has a scheduled service interval to ensure periodic inspection and replacement of all parts that are susceptible to wear. The modular design of the VRA makes the swap out of compression modules quick and cost effective. The modules are factory serviced at FuelMaker, while the independent dealers provide the diagnostic and module swap-out service at the customer's premises.

The service interval of the VRA compression module is currently set at **4,000** hours and accordingly, the FuelMaker VRA is programmed to provide the customer with a service notice at 3,900 hours.

### Benefits

- Low capital cost allows fleets of any size to realize the convenience & economic benefits of on-site natural gas refueling.
- Proven reliability, with thousands of satisfied customers worldwide.
- Quiet, automated and simple to operate.
- Built-in performance monitoring & diagnostics.
- Ongoing 4,000-hour scheduled service intervals warranted for the life of the FuelMaker.
- Modular design for easy field servicing.
- Oil-free compression delivers uncontaminated fuel to the vehicle.
- Simple, inexpensive installation and site permit requirements.
- Accommodates applications for time-fill, fast-fill, or both.
- Indoor and outdoor refueling options.

## Oil Free Operation

By using advanced materials such as high temperature plastics and ceramics, the FuelMaker System does not require the use of oil to lubricate the cylinders. This provides for smooth, efficient operation during temperature extremes, and maximum engine performance.

## SAFETY FEATURES

- Certified as an appliance by the Canadian Gas Association, American Gas Association (International Approval Services) and other leading agencies around the world.
- Automatic shut-off in the event of a leak, hose damage or inadvertent drive-away.
- Electronic self-diagnostics to constantly monitor the FuelMaker's operation, such as inlet pressure, outlet pressure, operating temperature and running time and to automatically shut down the refueling process if any abnormalities or faults are detected.
- Automatic electronic ambient temperature/pressure compensation to prevent overfilling of the vehicle cylinder.
- Many redundant electronic and mechanical measurement controls to ensure safe, unattended, reliable operation.

## Certifications

As the leading authority on the Natural Gas Vehicle Refueling Appliance standard, our products are of the highest quality and reliability. Our experienced team of engineers took a lead role in developing the VRA standards for the USA (AGA 290) and Canada (CGA 12.6-M94). They also played a key role in the development of the Natural Gas Fueling Station Installation Code NFPA 52 (USA) and CSA-B108-99 (Canada).

## Condition Monitoring and Leak Detection

The FuelMaker monitors operating parameters to ensure long periods of safe, unattended operation but also provides for a series of safety shutdowns under certain conditions. In most cases the user can reset the unit after a shutdown if the condition which triggered it is corrected.

As an additional safety feature against leaks, each VRA has been equipped with a unique pressure-rise monitor which constantly "reads" the rate of pressure rise over time. If the rate is too low or if the pressure drops dramatically, the unit will sense a "leak" and will immediately shut itself down.



Authorized Dealer For Arizona:

**CNG Services of Arizona**

480-461-5166

[www.CNGaz.com](http://www.CNGaz.com)