UHP Zero Air and Hydrogen Generators for Fuel Gas

Bulletin M1084A Distr.

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The most complete line of research grade purity hydrogen generators:
Model 9090: 0 to 90 cc/minute
Model 9150: 0 to 160 cc/minute
Model 9200: 0 to 250 cc/minute
Model 9400: 0 to 500 cc/minute
Model 9800: 0 to 1200 cc/minute
Delivery pressure: selectable 0-100 psig
Hydrogen purity: 99.99999%

Hydrogen On Demand, Up to 1200 cc/minute
ChromGas ultra high purity (UHP) hydrogen generators from Parker are designed as hazard-free alternatives to high pressure gas cylinders. They can be used with any instrumentation requiring high purity hydrogen — anywhere a standard electrical supply is available.

Deionized water is all that is required to generate hydrogen for weeks of continuous operation.

With an output capacity of up to 1200 cc/minute, one generator can now supply 99.99999% pure carrier gas to several GC’s, and fuel gas to 12 FID’s. Based on cylinder gas savings alone, a ChromGas hydrogen generator pays for itself in less than a year.

Certified Safety
Parker’s hydrogen generators use an exclusive Proton Exchange Membrane to produce UHP hydrogen on demand. Only 100 mL is stored in the system at any time and at low pressure. A built-in sensing circuit shuts the generator down if a hydrogen leak is detected.

That’s why Parker hydrogen generators meet the strict, safety guidelines of the National Fire Protection Agency (NFPA) and the regulations of the Occupational Safety and Health Association (OSHA - 1910.103). Most importantly, they are the only hydrogen generators certified for laboratory use by CSA, UL and IEC 1010.

99.99999% Pure
The exclusive proton exchange membrane has been complemented with a scrubber to generate 99.99999% pure hydrogen. That’s why Parker hydrogen generators are recommended by GC and column manufacturers.

Proton Exchange Electrolyzers are also extensively used in Navy submarines and NASA supplemental fuel systems. This reliable, high quality hydrogen generation technology is also being considered to fuel the Ultra Low Emission and Zero Emission Vehicles (ULEV/ZEV) of the future.
Built to International Standards
Produced and supported by an ISO 9001 registered organization, Parker’s hydrogen generators are the first built to meet the toughest laboratory standards in the world: CSA, UL, and IEC 1010.

Meet OSHA and NFPA Requirements
All Parker hydrogen generators meet NFPA requirements and OSHA 1910.103 regulations governing the storage of hydrogen.
99.99999% Pure Hydrogen as Carrier Gas

Until now, running your gas chromatograph on hydrogen carrier gas was a trade-off: excellent results versus high pressure gas cylinders in the laboratory. Not any longer.

The availability of Parker’s high capacity, 100 psi pressure, 99.99999% pure hydrogen means gas chromatographers can exploit the benefits of using hydrogen as carrier gas.

Parker has a system to fit your lab with four different models with flow capacities ranging from 90 to 1200 cc/minute. Each system provides research grade hydrogen to give you superior results for high speed, micro bore capillary GC applications.

* Data provided courtesy of Air Products and Chemicals, Inc.

UHP Zero Air for GC-FID

Combine the hydrogen generator with Parker’s UHP zero air generator and there is no longer a need to use cylinder gas in your GC laboratory.

A continuous, uninterrupted supply of pure gas also means predictable GC performance, less recalibrations and improved baseline stability. That’s why major GC and gas suppliers are recommending Parker’s ChromGas UHP gas generators. Typical payback periods are less than one year.

Now you can exploit the benefits of hydrogen carrier gas without using hazardous cylinders.
Hydrocarbon-Free Air Generators
Parker’s zero air generators produce a continuous flow of ultra pure zero grade air from an existing compressed air supply. When used in conjunction with a Parker hydrogen generator, gas chromatographers can totally automate and control their gas supply for GC-FID’s.

The UHP zero air generator reduces the total hydrocarbon content (THC) to less than 0.1 ppm measured as methane. The generator produces lower, more stable baselines than cylinders, thus significantly enhancing the sensitivity of GC-FID analysis.

Simple
Now you can convert house air or compressed air into UHP zero air in just three easy steps: 1) supply standard AC electrical power to the system; 2) wait just a few minutes to warm up the catalytic converter — an operating light indicates when the system is ready; and 3) supply air flow and begin using your instrument.

The zero air generator produces gas equivalent to UHP zero air cylinder gas at a fraction of the cost. An inlet 0.5 micron coalescing filter removes particles, oil and water from the air supply. Hydrocarbons are removed when the compressed air is passed over a convertor containing a heated catalyst. And, after the air is cooled, a 0.01 micron membrane filter is used to remove any residual particles.

Cost Effective
Parker’s zero air generators produce up to 3500 cc/minute of UHP zero air, at low pressures of 2 to 125 psig — on demand. They afford the advantage of on-site gas generation. In gas savings alone, a UHP zero air generator can pay for itself in as little as six months of operation.

In addition to cost savings, there are valuable time savings. Now you can eliminate changing gas cylinders and save the time required to recalibrate your instrument after each cylinder change.

Low, Stable Baselines
ChromGas generators provide years of stable and reliable UHP zero air supply and GC operation. Unlike other zero air generators, Parker’s 3500 UHP zero air generators have a built-in electronic control to maintain the convertor and its optimum operating temperature. Line voltage and ambient temperature variations will not affect the absolute temperature of the heated catalyst. The quality of the produced hydrocarbon-free air is maintained for years.

System maintenance is minimal. We recommend changing the inlet and outlet filters every six months.

Small, compact units:
Model 1000: 0-1000 cc/minute
Model 3500: 0-3500 cc/minute
Delivery pressure: 2 to 125 psig

This worry-free operation will also give you years of predictable GC performance. UHP zero air generators increase the accuracy of the analysis by producing a cleaner baseline readout. They also significantly reduce the cleaning requirement of the FID.

Parker ChromGas Zero Air Generators (ZAG) are temperature compensated to maintain consistent low THC impurity levels. The graph illustrates the performance of the model 3500. THC levels are stable over time, shortly after powering up the system.
Purity: 99.99999% pure clean hydrogen gas.  
Oxygen <1 ppm  
Moisture <1 ppm  
Hydrocarbons/halocarbons, 1 ppb

Delivery Pressure:  
2 to 30 psig ±3%  
30 to 100 psig ±2%

Pressure Control:  
5 to 20 psig ±0.5%  
20 to 100 psig ±0.2%

Zero Air Generator Series

Electrical:
60 Hz system:  
Voltage (Vac) 100 to 125  
Amperage (Amps) 1.0  
Fuse (Amps) 1.5  
Wattage (Watts) 100

50 Hz system:  
Voltage (Vac) 200 to 250  
Amperage (Amps) 0.5  
Fuse (Amps) 0.8  
Wattage (Watts) 100

Dimensions:  
Model 3500:  
Height: 12 inches (29.2 cm)  
Width: 6.75 inches (17.8 cm)  
Depth: 15 inches (39.4 cm)  
Model 1000:  
Height: 9.75 inches (25 cm)  
Width: 5.75 inches (14.7 cm)  
Depth: 12 inches (30.8 cm)

Weight:  
Model 3500: 20 lbs (9.1 kg)  
Model 1000: 11 lbs (5 kg)

Flow Rates:  
Model 3500: 3500 cc/minute  
Model 1000: 1000 cc/minute

Specifications

Hydrogen Generator  
9000 Series

Electrical:  
117 Vac/234 Vac

Dimensions:  
Model 9090, 9150, 9200 and 9400:  
Height: 14.75 inches (37.8 cm)  
Width: 13 inches (33.3 cm)  
Depth: 14 inches (35.9 cm)  
Model 9800:  
Height: 14.5 inches (37.2 cm)  
Width: 13 inches (33.3 cm)  
Depth: 17 inches (43.6 cm)

Weight:  
40 lbs (18 kg) dry

Flow Rates:  
Model 9090: 90 cc/minute  
Model 9150: 160 cc/minute  
Model 9200: 250 cc/minute  
Model 9400: 500 cc/minute  
Model 9800: 1200 cc/minute

Suggested Replacement Parts:  
Model 1647727: Dessicant cartridge  
(1 each)  
Model 7601132: Deionizer bags  
(2 each)
### Filtration Group Technical Sales & Service Locations

#### Filtration and Separation Division
Distributed By Chrom Tech, Inc.
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