Hydrogen Generators for Fuel Gas

▲ Ideal for fuel gas, up to 14 FID’s
▲ Eliminates dangerous and expensive hydrogen gas cylinders from the laboratory
▲ Exclusive water management system and control circuitry maximize uptime
▲ Unique display lighting changes color for easy status checks and water level indication
▲ Remote control and remote monitoring capable by adding USB options bay controller
▲ Compact and reliable - only one square foot of bench space required
▲ Certified for laboratory use by CSA, UL, IEC, 1010, and CE Mark
▲ No liquid caustics

Parker Balston’s Proton Exchange Membrane (PEM) Cell eliminates the use of liquid electrolytes with hydrogen generators. Proven in over 40,000 GC installations worldwide. Parker Balston’s generators are the most reliable hydrogen generators on the market. Maintenance requires only a few moments per year - no inconvenient, extended downtime.

Simply change the filters every six months and the desiccant cartridge whenever it turns dark brown.

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

With an output capacity of up to 510 cc/minute, one generator can supply 99.9995% pure hydrogen for up to several FID’s. Based on cylinder gas savings alone, a Parker Balston® hydrogen generator pays for itself in less than a year.

All Parker Balston hydrogen generators meet NFPA requirements and OSHA 1910.103 regulations governing the storage of hydrogen.

Produced and supported by an ISO 9001 registered organization, Parker Balston’s hydrogen generators are the first built to meet the toughest laboratory standards in the world: CSA, UL, CE and IEC 1010.
# Hydrogen Generators for Fuel Gas

## Principal Specifications

<table>
<thead>
<tr>
<th>Model Number</th>
<th>H2PEM-100</th>
<th>H2PEM-165</th>
<th>H2PEM-260</th>
<th>H2PEM-510</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity</td>
<td>99.9995%</td>
<td>99.9995%</td>
<td>99.9995%</td>
<td>99.9995%</td>
</tr>
<tr>
<td>Flow Rates</td>
<td>100 cc/min</td>
<td>165 cc/min</td>
<td>260 cc/min</td>
<td>510 cc/min</td>
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<tr>
<td>Outlet Port</td>
<td>1/8” compression</td>
<td>1/8” compression</td>
<td>1/8” compression</td>
<td>1/8” compression</td>
</tr>
<tr>
<td>Electrical</td>
<td>100 Vac/230 Vac</td>
<td>100 Vac/230 Vac</td>
<td>100 Vac/230 Vac</td>
<td>100 Vac/230 Vac</td>
</tr>
<tr>
<td>Delivery Pressure</td>
<td>5-100 psig ± 0.5 psig</td>
<td>5-100 psig ± 0.5 psig</td>
<td>5-100 psig ± 0.5 psig</td>
<td>5-100 psig ± 0.5 psig</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>59 lb (27 kg) dry</td>
<td>59 lb (27 kg) dry</td>
<td>59 lb (27 kg) dry</td>
<td>59 lb (27 kg) dry</td>
</tr>
<tr>
<td>Dimensions</td>
<td>17.12”H x 13.46”W x 17.95”D (43.48cm x 34.19cm x 456cm)</td>
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</table>

## Ordering Information

For assistance, call 800-343-4048, 8 to 5 Eastern Time

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKH2PEM-D</td>
<td>Dessicant Cartridge (1 each)</td>
</tr>
<tr>
<td>MKH2PEM-6M</td>
<td>6 Month Service Kit</td>
</tr>
<tr>
<td>MKH2PEM-24M</td>
<td>24 Month Service Kit</td>
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<tr>
<td>H2PEM-100-PM, H2PEM-165-PM, H2PEM-510-PM</td>
<td>Preventive Maintenance Plan</td>
</tr>
<tr>
<td>604970894</td>
<td>USB Remote Control Accessory</td>
</tr>
</tbody>
</table>

## How the generator works

![Diagram of Hydrogen Generator](image)

Hydrogen Technology

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1-800-343-4048  www.labgasgenerators.com
Hydrogen Generators for Fuel and Carrier Gas

▲ Eliminates dangerous and expensive hydrogen gas cylinders from the laboratory
▲ Exceeds OSHA 1910.103 and NFPA 50A safety guidelines
▲ Safe - produces only as much gas as you need
▲ Produces a continuous supply of 99.99999+% pure hydrogen gas without snap on downstream purifiers
▲ Compact and reliable - only one square foot of bench space required and designed to run continuously 24 hours/day - includes automatic water fill
▲ Unique (NM) no maintenance palladium membrane prevents baseline drift unlike auto-drying technologies
▲ Certified for laboratory use by CSA, UL, IEC 1010, and CE Mark

Parker Balston® Hydrogen Generators eliminate the need for expensive, dangerous, high pressure cylinders of hydrogen in the laboratory. It is no longer necessary to interrupt important analysis to change cylinders.

Generator flow capacities of up to 300 cc/min. of ultra high purity hydrogen are available.

Parker Balston Hydrogen Generators are compact benchtop units designed for use in the laboratory or in the field.

Hydrogen gas is produced by electrolytic dissociation of water. The resultant hydrogen stream then passes through a palladium membrane to assure carrier grade purity. Only hydrogen and its isotopes can penetrate the palladium membrane; therefore, the purity of the output gas is guaranteed to be 99.99999+% consistently. This technology produces hydrogen at a guaranteed purity two orders of magnitude greater than desiccant or silica gel technologies.

Parker Balston Hydrogen Generators offer many special features to ensure safe and convenient operation. These features include smart-display technology system status at a glance and automatic water fill for endless operation.

Applications
Gas Chromatographs
Emissions Test Equipment
Hydrogenation Reactors
ICP-MS Collision Gas
Fuel Cells

“Our H2 generator has saved us time, space, and money over a traditional tank configuration. We realized a return on our investment in less than one year and no longer have to manage bulky and unsightly tanks in the lab.”

John Ross
Director Corporate Quality
Ungerer & Company
Hydrogen Generators for Fuel and Carrier Gas

The Parker Balston® Hydrogen Generator is an excellent source of ultra pure, dry hydrogen for a wide range of laboratory uses. The generator is used extensively with Gas Chromatographs, as a fuel gas for Flame Ionization Detectors (FID), as a reaction gas for Hall Detectors, and as a carrier gas to ensure absolute repeatability of retention times. In high sensitivity Trace Hydrocarbon Analyzers and air pollution monitors, the hydrogen produced ensures the lowest possible background noise.

Other applications include using hydrogen for hydrogenation reactions and for FID’s used in the analysis of engine gas emissions in the automobile industry.

In all applications the Parker Balston Hydrogen Generator sets the standard for safety, operational performance, and dependability.

Simple Experimental: The two merged baselines in the right chromatogram were created using a Gow-Mac Gas Chromatograph Series 590 equipped with a (DID) discharge ionization detector with hydrogen separator. In creating both baselines (black and red) the gas sample is hydrogen from a hydrogen generator. Both generators are the same - as hydrogen gas is produced from water via electrolytic disassociation, but differ slightly as one generator incorporates a desiccant drying tube as a final purifier while the second generator has a palladium membrane as the final purifier.

The large black peak represents a combined 12 ppm concentration of oxygen and nitrogen, suitable for hydrogen fuel gas while the corresponding point in the red baseline represents a combined 12 ppb concentration of oxygen and nitrogen, suitable for either fuel or carrier gas.

(1) Refer to voltage appendix to select correct part number and plug for Japan and 220vac/50hz configurations.
Hydrogen Generators for Fuel and Carrier Gas

▲ Flow capacity to 1,200 cc/min
▲ Ideal for high speed and fast GC applications
▲ Eliminates dangerous and expensive helium and hydrogen gas cylinders from the laboratory
▲ Safe - produces only as much gas as you need
▲ Produces a continuous supply of 99.99999% pure hydrogen gas at 100 psig, palladium membrane prevents baseline drift unlike auto-drying technologies
▲ Compact and reliable - only one square foot of bench space required and designed to run continuously 24 hours/day
▲ Automatic water feed for continuous operation
▲ Simple maintenance, without Snap-on downstream purifiers
▲ Certified for laboratory use by CSA, IEC 1010, and CE Mark

The Parker Balston® Hydrogen Generator is designed as a hazard-free alternative to high pressure gas cylinders. The generator 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 1,200 cc/minute, one generator can supply 99.9999% pure carrier gas, at 100 psig, to multiple GCs, and fuel gas up to 40 FIDs. Based on cylinder gas savings alone, a Parker Balston hydrogen generator pays for itself in less than one year.

The Parker Balston H2-500NA, H2-800NA and H2-1200NA Hydrogen generators use a Proton Exchange Membrane (PEM) to produce hydrogen on demand. Each generator incorporates a palladium purifier module to remove oxygen down to less than 0.01 ppm and moisture down to <1.0 ppm. Only 100 mL of hydrogen gas is stored in the system at any time and at a maximum of 140 psig. That’s why the Parker Balston hydrogen generator meets the strict, safety guidelines of the National Fire Protection Agency (NFPA) and the regulations of the Occupational Safety and Health Association (OSHA). Most importantly, the Parker Balston hydrogen generator is certified for laboratory use by CSA, IEC 1010, and CE. Proven in over 40,000 GC installations worldwide, Parker Balston’s generators are the most reliable hydrogen generators on the market. Maintenance requires only a few moments per year - no inconvenient, extended downtime. Simply change the deionizer bag every six months. If contaminated water or low water level is detected, the system activates a warning light and shuts off the generator - avoiding harm to the system.

“Our H2 generator has saved us time, space, and money over a traditional tank configuration. We realized a return on our investment in less than one year and no longer have to manage bulky and unsightly tanks in the lab.”

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Director Corporate Quality
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