

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



H2PEM Hydrogen Generator with Agilent 7890 GC-FID

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.

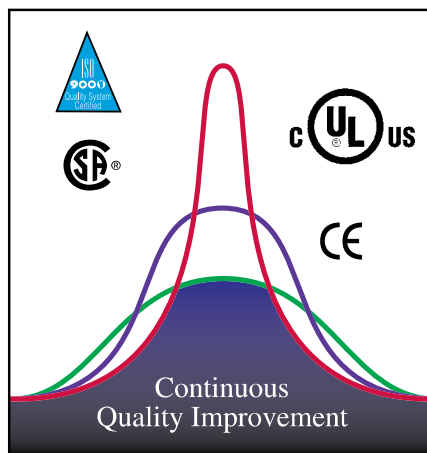
Simply change the filters every six months and the desiccant cartridge whenever it turns dark brown.

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

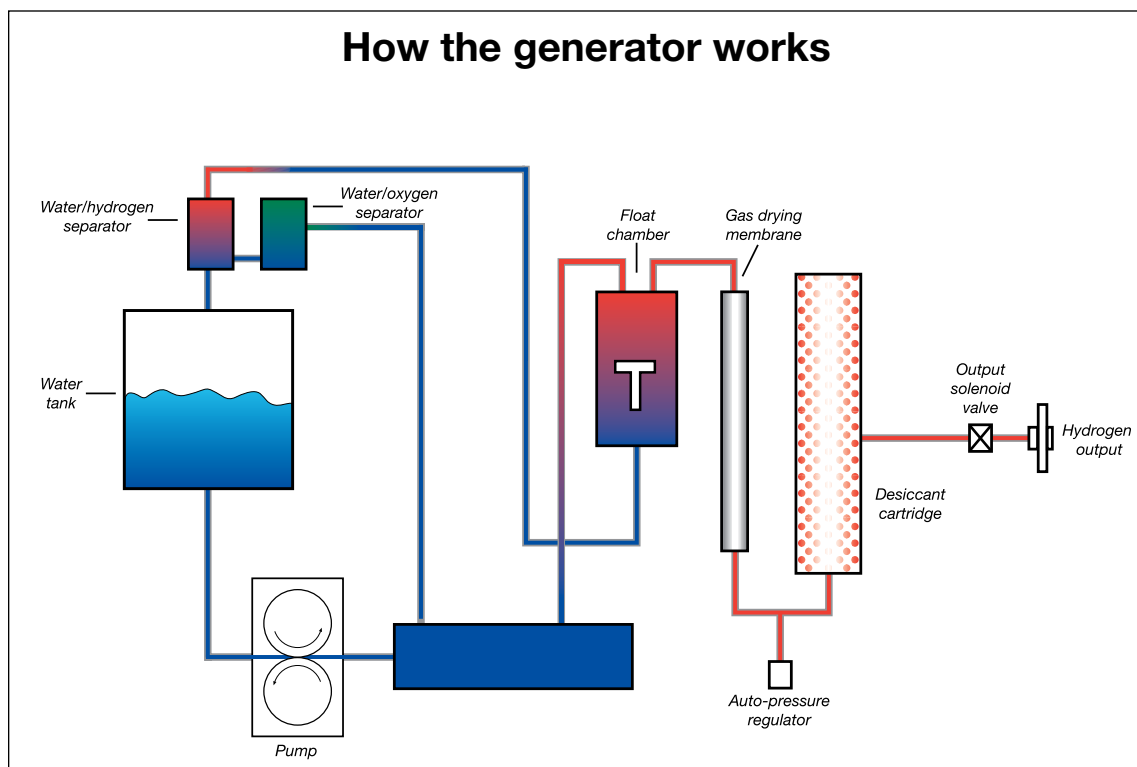
Principal Specifications

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

Ordering Information for assistance, call 800-343-4048, 8 to 5 Eastern Time

Model	Description
MKH2PEM-D	Dessicant Cartridge (1 each)
MKH2PEM-6M	6 Month Service Kit
MKH2PEM-24M	24 Month Service Kit
H2PEM-100-PM, H2PEM-165-PM, H2PEM-510-PM	Preventive Maintenance Plan
H2PEM-100-INST, H2PEM-165-INST, H2PEM-260-INST, H2PEM-510-INST	Installation Service
604970894	USB Remote Control Accessory

How the generator works



Hydrogen Technology

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



Model H2PD-300 Hydrogen Generator

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
- Emmissions 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

Principal Specifications

Hydrogen Generators	Models	Specifications
Hydrogen Purity		99.99999+%
Oxygen Content		<.01 ppm
Moisture Content		<1.0 ppm
Max Hydrogen Flow Rate	H2PD-150 H2PD-300	150 cc/min 300 cc/min
Electrical Requirements		120 VAC/60 Hz, 3.15 Amps (1)
Hydrogen Outlet Pressure		Adjustable, 0 to 60 psig
Certifications		IEC 1010-1; CSA UL 3101; CE Mark
Dimensions		12" w x 12" d x 22" h (30cm x 33cm x 58cm)
Outlet Port		1/8" Compression
Shipping Weight		58 lbs (26 kg)

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.

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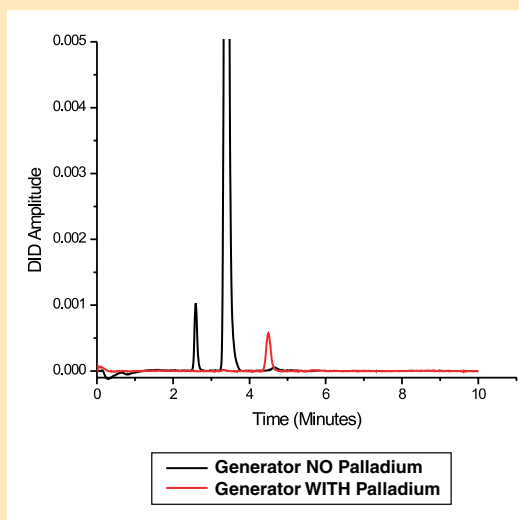
Description	Model Number
Hydrogen Gas Generator	H2PD-150, H2PD-300
Electrolyte Solution	920071
Pressure Regulator	W-425-4032-000
Installation Kit	IK7532
Preventive Maintenance plan	H2PD-150-PM, H2PD-300-PM
Extended Support with 24 Month Warranty	H2PD-150-DN2, H2PD-300-DN2

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



Model H2-1200NA Hydrogen Generator

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 99.99999% 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.

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Hydrogen Generators for Fuel and Carrier Gas

Principal Specifications

Hydrogen Generators	Specifications
Purity	99.99999+% pure H2 Oxygen < .01 ppm Moisture < 1 ppm
Max Hydrogen Flow Rate	H2-500NA 500 cc/min* H2-800NA 800 cc/min H2-1200NA 1200 cc/min
Delivery Pressure	0 to 100 psig
Electrical Requirement	60Hz, 100 - 130 VAC (1)
Power Consumption	5.3 Amp @ 120 VAC
Certifications	IEC 1010-1; CSA; UL 3101, CE Mark
Dimensions, H2-800NA and H2-1200NA	13"w x 17"d x 15.5"h
Dimensions, H2-500NA	15"w x 18"d x 13"h
Outlet Port	1/4" Compression
Shipping Weight	45 lbs (20.4 kg)

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.

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Description	Model Number
UHP Hydrogen Gas Generator	H2-500NA*
UHP Hydrogen Gas Generator	H2-800NA
UHP Hydrogen Gas Generator	H2-1200NA
Deionizer Bags (2 each)	7601132
Preventative Maintenance Plan	H2-500-PM, H2-800-PM
Extended Support with 24 Month Warranty	H2-500-DN2, H2-800-DN2, H2-1200-DN2

*Does not include automatic waterfeed feature and has maximum pressure output of 90 psig. Outlet port is 1/8" compression.

(1) Refer to voltage appendix for electrical and plug configurations for outside North America.

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.

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