Restek GC Accessories

# Gas Management

## Supplies for GC Labs

- Gas Generators
- Pressure Regulators
- Tubing and Fittings
- Gas Purifiers


RESTEK Pure Chromatography www.restek.com

# Gas Management for Your Lab

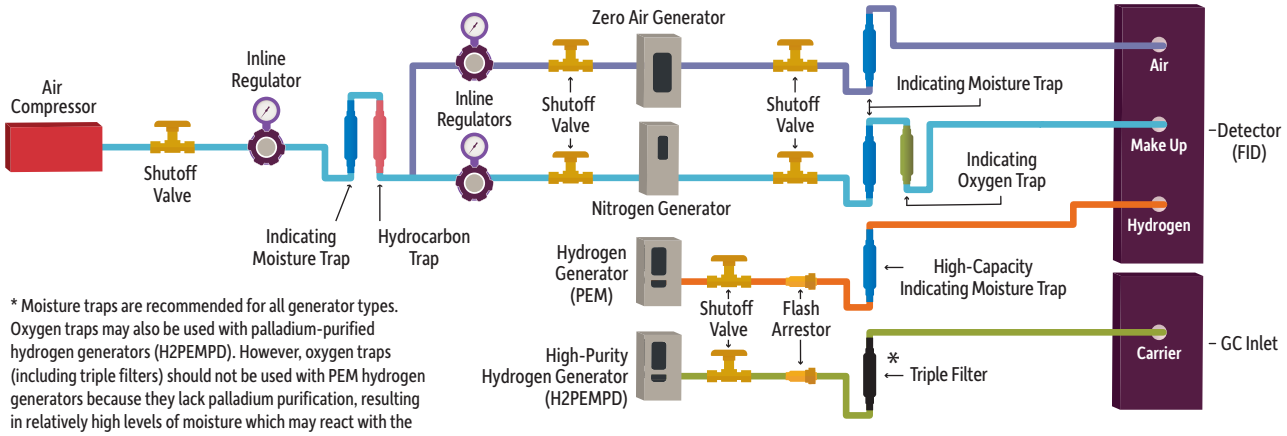
A clean gas stream is critical to the quality of your GC analysis and the reliability of your analytical results. Carrier gas must contain less than 1 ppm of oxygen, water vapor, and other trace contaminants for stable baselines on all detectors and to prevent column degradation, shortened column lifetime, and increased stationary phase bleed. Clean fuel gases and make-up gases are also essential for stable detector baselines. Your gas management system must deliver a high-purity gas stream from your source to your instrumentation without introducing contaminants. Restek offers the products you need to assure a clean, leak-free gas management system. If you need assistance in configuring your system, contact your Restek representative to discuss your application requirements.

## Questions to consider when building your gas management system:

1. **What gases do you require and at what purity?**
2. **What flow rates and/or pressures are required?**
3. **Are you using gas generators or high-pressure cylinders?**
4. **What type of tubing and fittings are needed to build your system?**
5. **What type of gas purifiers should you install in your system?**

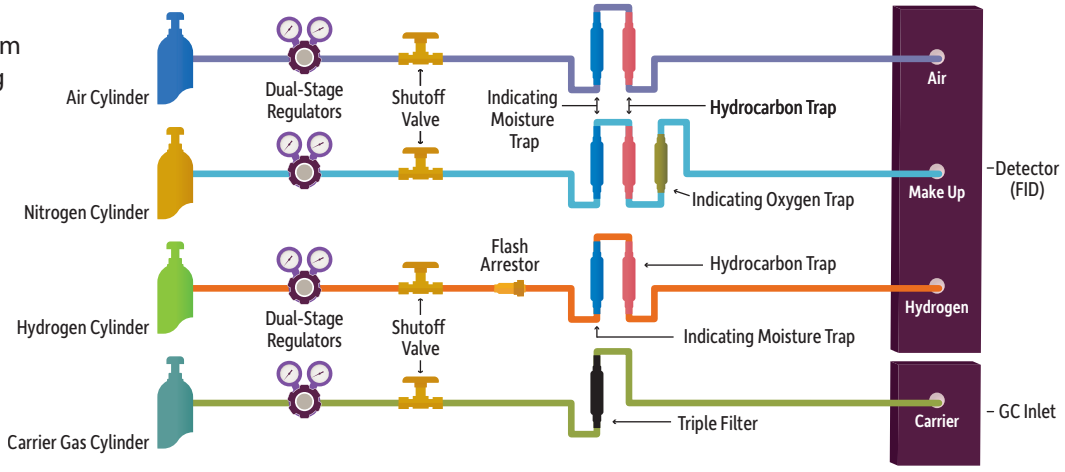
Once the components needed for your system are established, you will need to determine the most appropriate way to configure your gas management system. Figures 1 and 2 are typical configurations: Figure 1 illustrates a system that uses gas generators and Figure 2 shows a system configured for use with high-pressure cylinders.

**Figure 1:** Gas management system configuration using gas generators.




* Moisture traps are recommended for all generator types. Oxygen traps may also be used with palladium-purified hydrogen generators (H2PEMPD). However, oxygen traps (including triple filters) should not be used with PEM hydrogen generators because they lack palladium purification, resulting in relatively high levels of moisture which may react with the trapping and indicating media, damaging the filter.

**Figure 2:** Gas management system configuration using gas cylinders.



# Gas Generators

## Dependable gas supply • Consistent gas purity • Safe and economical

Gas generators eliminate the downtime, constant monitoring, and routine maintenance associated with using cylinders. Gas generators produce gas continuously and reliably, without the interruptions that can be experienced during cylinder changes or delays in delivery when using gas cylinders.

A pure and consistent gas supply is needed for reproducible analytical results, but gas purity can vary from cylinder to cylinder in a way that is difficult to control. Dirty or rusted cylinders can also introduce contaminants and particulates into your gas stream. Gas generators eliminate these problems by continuously generating clean and pure gas.

Gas generators are a safe, compact, and virtually maintenance-free source of high-purity gas. Routine maintenance is minimal and since generators don't store gas at high pressures, they are not as hazardous as gas cylinders. Gas generators can be placed in your lab in close proximity to your instruments, eliminating the need for a remote, isolated storage area. Depending on your specific analytical flow requirements, most gas generators can supply gas to multiple GCs in your lab.

Gas generators are typically less expensive than gas cylinders in the long term. Gas generators offer an unlimited source of high-purity gas, which is available on demand. Cylinders appear to be less expensive initially but, if used continuously, have a significant replacement and resupply cost.

### Hydrogen Gas Generators

Hydrogen gas generators produce hydrogen through the electrolysis of water. For operation, these generators require an electrical outlet and a source of deionized water. Restek offers a number of Parker Balston hydrogen generators that can produce flow rates from 100 mL/minute up to 1,300 mL/minute at maximum pressures of 175 psig.

### FID Gas Stations

FID gas stations combine a hydrogen generator and zero air generator into one unit. Parker Balston FID gas stations provide both ultra-high purity grade hydrogen gas and zero air for flame ionization detectors. Different models are available and can supply fuel gases for up to six FIDs.

### Zero Air Gas Generators

High-purity air is essential as a fuel gas for flame ionization detectors (FID) in order to produce stable, low-level baselines. Zero air gas generators from Parker Balston can turn in-house compressed air into ultra-pure air with less than 0.1 ppm hydrocarbon levels. Varying models are available with flow rates from 1,000 mL/minute up to 30,000 mL/minute at pressures ranging from 40 to 125 psig.

### Nitrogen Gas Generators

Nitrogen gas generators produce pure nitrogen from compressed air. Parker Balston nitrogen gas generators produce ultra-pure nitrogen for use as GC carrier gases, make-up gases, and low-flow sample concentrators. Models are available to supply nitrogen at flows from 1 to 75 liters per minute.

## Need help selecting a gas generator?

Contact your local Restek representative or our Technical Service group at **support@restek.com** or **1-814-353-1300, ext. 4**.

# HYDROGEN GAS GENERATORS

Safer alternative to high-pressure gas cylinders!

## Parker Balston PEM Hydrogen Generators

- Proton exchange membrane (PEM) cell eliminates the need for liquid electrolytes.
- Reliably generate 99.9999% pure hydrogen—for better chromatography.
- Eliminates high-pressure cylinders—greater convenience and improved lab safety.
- Compact unit, requiring only one square foot of bench space.
- Quick and easy to service and maintain; unique display lighting changes color for easy status checks and water level indication.
- Comes with a set of universal power adapters for U.S., European, and Asian plug types.
- Automatic safety feature shuts the generator down if a hydrogen leak is detected.
- Warranty: one year from date of purchase on system and two years from date of purchase on cell life.

**Specifications**
Purity: 99.9999% pure hydrogen
Delivery Pressure: 5-100 psig ± 0.5 psig (69-689 kPa ± 7kPa)
Outlet Port: 1/8" compression
Electrical Requirements: 100-230 VAC/50-60 Hz
Physical Dimensions: 17.12" h x 13.46" w x 17.95" d (43.48 x 34.19 x 45.6 cm)
Shipping Weight: 59 lb (27 kg) dry

| Description | Model # | Capacity | Certification | qty. | cat.# |
|---|---|---|---|---|---|
| Hydrogen Generator | H2PEM-100 | 100 cc/min | CE, CSA, UL, cUL | ea. | 23065 |
| Hydrogen Generator | H2PEM-165 | 165 cc/min | CE, CSA, UL, cUL | ea. | 23066 |
| Hydrogen Generator | H2PEM-260 | 260 cc/min | CE, CSA, UL, cUL | ea. | 23067 |
| Hydrogen Generator | H2PEM-510 | 510 cc/min | CE, CSA, UL, cUL | ea. | 23068 |

## Parker Balston H2PEMPD Hydrogen Generators

- Proton exchange membrane (PEM) cell eliminates the need for liquid electrolytes.
- Maintenance-free palladium purifier removes oxygen to <0.01 ppm and moisture to <1.0 ppm.
- Produces continuous supply of 99.99999+% pure hydrogen gas.
- Does not require downstream gas filters.
- Maximum outlet pressures of 100 or 175 psig (690 or 1,200 kPa).
- Automatic safety feature shuts the generator down if a hydrogen leak is detected.
- Compact unit, requires only one square foot of bench space.
- Warranty: one year from date of purchase on system and three years from date of purchase on cell life.

**Specifications:**
Purity: 99.99999+% pure hydrogen
Outlet Port: 1/4" compression
Electrical Requirements: 100 to 230 VAC, 50/60Hz
Physical Dimensions: 17.1" h x 13.5" w x 21" d
Shipping Weight: 60 lb

| Description | Model # | Capacity | Delivery Pressure | qty. | cat.# |
|---|---|---|---|---|---|
| Hydrogen Generator | H2PEMPD-510 | 510 cc/min | 100 psig | ea. | 22144 |
| Hydrogen Generator | H2PEMPD-510 | 510 cc/min | 175 psig | ea. | 22145 |
| Hydrogen Generator | H2PEMPD-650 | 650 cc/min | 100 psig | ea. | 22146 |
| Hydrogen Generator | H2PEMPD-650 | 650 cc/min | 175 psig | ea. | 22147 |
| Hydrogen Generator | H2PEMPD-850 | 850 cc/min | 100 psig | ea. | 22148 |
| Hydrogen Generator | H2PEMPD-850 | 850 cc/min | 175 psig | ea. | 22149 |
| Hydrogen Generator | H2PEMPD-1100 | 1,100 cc/min | 100 psig | ea. | 22150 |
| Hydrogen Generator | H2PEMPD-1100 | 1,100 cc/min | 175 psig | ea. | 22151 |
| Hydrogen Generator | H2PEMPD-1300 | 1,300 cc/min | 100 psig | ea. | 22152 |
| Hydrogen Generator | H2PEMPD-1300 | 1,300 cc/min | 175 psig | ea. | 22153 |

## ZERO AIR GAS GENERATORS

### Parker Balston Zero Air Generators

- Turn in-house compressed air into ultra-pure air (<0.1 ppm total hydrocarbons).
- Remove hydrocarbons to less than 0.1 ppm by catalytic oxidation.
- Operate at 40–125 psi (276–862 kPa).
- Typical payback is less than one year, based on cylinder costs.
- Install easily and take up little bench space.*
- Maintenance kits include a one-year supply of prefilters and final filter.

| Description | Model # | Capacity | Certification | qty. | cat. # |
|---|---|---|---|---|---|
| Zero Air Generator | 75-83NA | 1,000 cc/min | CE | ea. | 20684 |
| Zero Air Generator | HPZA-3500 | 3,500 cc/min | CE | ea. | 20680 |
| Zero Air Generator | HPZA-7000 | 7,000 cc/min | CE | ea. | 20681 |
| Zero Air Generator | HPZA-18000 | 18,000 cc/min | CE | ea. | 20682 |
| Zero Air Generator | HPZA-30000 | 30,000 cc/min | CE | ea. | 20683 |

*Parker Model 75-83NA (Restek cat.# 20684) is a wall-mount model, and its dimensions are 12" w x 10" h x 3" d.

International power cords are available.
Contact Customer Service to order.

## FID GAS STATIONS

### Parker Balston Model FID-1000 and FID-2500 Gas Stations

- Single unit produces UHP zero air from house compressed air and 99.9995% pure hydrogen from deionized water.
- Ideal for supplying up to 5-6 FIDs.
- Eliminates inconvenient and dangerous gas cylinders.
- Silent operation, minimal operator attention required.
- 12-month warranty from date of purchase.

**Specifications - FID Gas Stations:**

Hydrogen Purity: 99.9995%
Zero Air Purity: < 0.1 ppm total hydrocarbons as methane
Max. Hydrogen Flow Rate: FID-1000: 90 cc/min, FID-2500: 250 cc/min
Max. Zero Air Flow Rate: FID-1000: 1000 cc/min, FID-2500: 2500 cc/min
Power: 120 VAC/amp, 60 Hz, 480 watts

Hydrogen Outlet Pressure: 60 psig (414 kPa)
Zero Air Outlet Pressure: 40-125 psig* (276-862 kPa)
Inlet Connection: 1/4" NPT (female)
Outlet: 1/8" compression
Dimensions: 16.5" h x 10.5" w x 17" d (42 cm x 27 cm x 43 cm)
Weight: 53 lb (24 kg)

| Description | Model # | Certification | qty. | cat. # |
|---|---|---|---|---|
| Gas Station | Model FID-1000 (ideal for 1-2 FIDs) | CE | ea. | 20177 |
| Gas Station | Model FID-2500 (ideal for 5-6 FIDs) | CE | ea. | 24913 |

*Zero air inlet requires minimum of 40 psig (276 kPa) compressed air pressure.
* Filters should be changed every year; resin and desiccant cartridges can be replaced every 2 years.

**Produce zero air and pure hydrogen from one unit!**

## NITROGEN GAS GENERATORS

### Parker Balston Nitrogen Gas Generators

- Produces ultra-pure nitrogen (up to 99.9999%).
- Requires only a compressed air source and 110 volt AC power.
- Typical applications include GC carrier gas, make-up gas, and low-flow sample concentrators.
- Maintenance kits include replacement filters.
- 12-month warranty from date of purchase.

| Description | Model # | Certification | qty. | cat.# |
|---|---|---|---|---|
| Nitrogen Generator | UHPN2-1100 (ultra-high purity zero grade) | CE | ea. | 20697 |

# Gas Cylinder Accessories

When using high-pressure gas cylinders, there are a number of accessories that should be used in order to safely handle and install cylinders in your gas management system.

## Handling Gas Cylinders

When using high-pressure gas cylinders, there are a number of accessories that should be used in order to safely handle and install cylinders in your gas management system. Dropped gas cylinders are very dangerous and can become flying projectiles if the cylinder valve is damaged. A cylinder holder will safely secure your cylinder to a wall in your lab, preventing it from accidentally toppling over and discharging its contents. Restek also offers protocol wall mounts for gas regulators, tools, and flame arrestors.

## Manifolds and Switchover Systems

High-purity automatic switchover systems provide a continuous supply of high-purity gas to your gas management system. Continuous gas supply is achieved by setting the two regulators at slightly different pressures and discharging one side of the system at a time. This allows for the replacement of a depleted gas cylinder without interrupting the gas supply.

21333

21321

21334

21347

| Description | qty. | cat.# |
|---|---|---|
| Wall Mounted Cylinder Holders | | |
| Cylinder Holder, Wall Mounted, Single | ea. | 21333 |
| Cylinder Holder, Wall Mounted, Double | ea. | 23400 |
| Cylinder Holder, Wall Mounted, Triple | ea. | 23401 |
| Cylinder Holder, Wall Mounted, Quadruple | ea. | 23402 |
| Tools | | |
| Cylinder Valve Wrench | ea. | 21321 |
| Universal Cylinder Wrench | ea. | 21322 |
| Flexible Stainless Steel Hose, 1/4" Female NPT, 36" | ea. | 21339 |
| Flexible Stainless Steel Hose, 1/4" Female NPT, 18" | ea. | 21340 |
| Flash Arrestors | | |
| Hydrogen Flashback Arrestor, Brass Body, 1/4" Female NPT | ea. | 21334 |
| Protocol Wall Mounts for Gas Regulators* | | |
| Chrome-Plated Brass, CGA 580 ($N_2$, He, Ar) | ea. | 21347 |
| Chrome-Plated Brass, CGA 350 ($H_2$, $P_5$) | ea. | 21348 |
| Chrome-Plated Brass, CGA 590 (Air) | ea. | 21349 |
| Stainless Steel, CGA 580 ($N_2$, He, Ar) | ea. | 21327 |

*Pressure regulator not included. Order separately.

# Pressure Regulators

The job of a pressure regulator is simple: it reduces the pressure of a gas source to a safe working pressure. However, there are many variables that need to be considered when choosing a pressure regulator. Does your application require a stainless steel or brass regulator? Do you need a single or dual stage regulator? What type of gas are you regulating and what is the desired delivery pressure? Your choice in a pressure regulator will depend on your application and where the regulator will be placed in your gas management system.

## Ultra-High Purity Regulators

Restek offers ultra-high purity (UHP) pressure regulators in chrome-plated brass and stainless steel bodies. Both are ideal for applications requiring gas purities of 99.995% or greater, such as those used in carrier and fuel gas supplies. These pressure regulators are made from cold drawn bar stock, which results in smooth, reduced internal dead-volumes, making them ideal for high-purity applications. In situations where corrosive gases are used or where the regulator is in a corrosive environment, stainless steel bodies are required.

## Dual-Stage Pressure Regulators

A dual-stage pressure regulator provides more precise pressure control by reducing the gas source pressure to the desired delivery pressure in two steps. They are recommended for supplying gas where constant delivery pressure is critical, especially if your gas source is a high-pressure cylinder. As the cylinder gas is used, the inlet pressure to the regulator from the cylinder decreases. A dual-stage regulator compensates for the decrease and maintains a constant delivery pressure; whereas, a single-stage regulator does not.

## Single-Stage Pressure Regulators

A single-stage pressure regulator reduces the pressure of the gas source to the desired delivery pressure in one step. It does not provide the precise control of delivery pressure that can be achieved with a dual-stage pressure regulator. Single-stage pressure regulators should be used for applications where you can monitor and regulate the pressure downstream.

## In-Line Regulators

Line regulators are single-stage pressure regulators that are used to provide point-of-use pressure monitoring and control. These pressure regulators are installed directly into gas lines, immediately before your instrumentation, to ensure the appropriate gas pressure is being delivered to your instrument. A dual-stage or single-stage pressure regulator should always be installed upstream of the inline regulator to ensure adequate pressure control.

## Pressure Regulator Connections

Restek ultra-high purity pressure regulators come with a variety of different connection fittings for attachment to different high-pressure gas cylinders. In the United States, Compressed Gas Association (CGA) fittings are used and designed for different gas service. In the European Union, German Institute for Standardization (DIN) fittings are used to make these connections, and British Standard (BS) fittings are used in the United Kingdom. Table I indicates the appropriate fitting for each type of gas typically used in setting up your gas management system. We recommend you confirm the fitting needed with your gas cylinder provider prior to ordering fittings.

**Table I:** Choose fittings for your pressure regulator based on gas type.

| | CGA | DIN 477 | BS341 |
|---|---|---|---|
| Helium | 580 | #6 | #3 |
| Hydrogen | 350 | #1 | #4 |
| Nitrogen | 580 | #10 | #3 |
| Air | 590 | #9 | #3 |
| Argon | 580 | #6 | #3 |
| P5 (Argon:Methane) | 350 | #1 | #4 |

Need help selecting a pressure regulator?

# ULTRA-HIGH PURITY (UHP) BRASS BODY GAS REGULATORS


21667

All regulators are rated to 3,000 psig (20,684 kPa) maximum inlet pressure.
Inlet gauge: 0 to 4,000 psig (0–27,579 kPa)
Outlet assembly: 316L stainless steel diaphragm valve, 1/4" tube fitting

## Dual-Stage Ultra-High Purity Chrome-Plated Brass Gas Regulators

- Oxidation resistant, chrome plated.
- Most stable outlet pressure control.
- Secondary pressure regulation not needed.
- Most widely used regulator.

| Fitting | Outlet Pressure | Outlet Gauge | qty. | cat.# |
|---|---|---|---|---|
| CGA 580 ($N_2$, He, Ar) | 0 to 150 psig (0–1,034 kPa) | 30", 0 to 200 psig (0–1,379 kPa) | ea. | 21667 |
| CGA 350 ($H_2$, $P_5$) | 0 to 150 psig (0–1,034 kPa) | 30", 0 to 200 psig (0–1,379 kPa) | ea. | 21668 |
| CGA 590 (Air) | 0 to 150 psig (0–1,034 kPa) | 30", 0 to 200 psig (0–1,379 kPa) | ea. | 21669 |
| DIN 477 #1 ($H_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22369 |
| DIN 477 #6 (He, Ar) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22368 |
| DIN 477 #9 (Air) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22370 |
| DIN 477 #10 ($N_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22371 |
| BS 341 #3 (He, Ar, Air, $N_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22136 |
| BS 341 #4 ($H_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22137 |

Note: CGA fittings are for U.S. use; DIN fittings are for European use; BS fittings are for use in the UK.


20647

## Single-Stage Ultra-High Purity Chrome-Plated Brass Gas Regulators

- Oxidation resistant, chrome plated.
- Use when there is secondary pressure regulation downstream.
- Identical gas purity protection as with dual-stage gas regulators.

| Fitting | Outlet Pressure | Outlet Gauge | qty. | cat.# |
|---|---|---|---|---|
| CGA 580 ($N_2$, He, Ar) | 0 to 150 psig (0–1,034 kPa) | 30", 0 to 200 psig (0–1,379 kPa) | ea. | 20646 |
| CGA 350 ($H_2$, $P_5$) | 0 to 150 psig (0–1,034 kPa) | 30", 0 to 200 psig (0–1,379 kPa) | ea. | 20647 |
| CGA 590 (Air) | 0 to 150 psig (0–1,034 kPa) | 30", 0 to 200 psig (0–1,379 kPa) | ea. | 20648 |
| DIN 477 #1 ($H_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22373 |
| DIN 477 #6 (He, Ar) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22372 |
| DIN 477 #9 (Air) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22374 |
| DIN 477 #10 ($N_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22375 |
| BS 341 #3 (He, Ar, Air, $N_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22138 |
| BS 341 #4 ($H_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22139 |

Note: CGA fittings are for U.S. use; DIN fittings are for European use; BS fittings are for use in the UK.

# PRESSURE REGULATOR CONNECTIONS

20668580

Switching pressure: 200 psig/170 psig (1,379/1,172 kPa)
Inlet connections: flexible SS pigtails (36")
Line regulator: 0 to 150 psig (0–1,034 kPa)

## Automatic Switchover System for Noncorrosive Gases

High-purity automatic switchover systems provide a continuous supply of high-purity gas to the laboratory, process, or instrument to allow you to replace a depleted gas source without interruption in the gas supply. Continuous gas supply is achieved by setting the two regulators at slightly different pressures and discharging one side of the system at a time. These models include flexible, all-stainless-steel pigtails with armor casing. The CGA connection on each pigtail has a check valve in the gland to prevent contamination and minimize purging requirements.

| Brass Automatic Switchover System with Line Regulator | qty. | cat.# |
|---|---|---|
| CGA 580 ($N_2$, He, Ar) | ea. | 20668580 |
| CGA 350 ($H_2$, $P_5$) | ea. | 20668350 |
| CGA 590 (Air) | ea. | 20668590 |
| **Stainless Steel Automatic Switchover System with Line Regulator** | **qty.** | **cat.#** |
| CGA 580 ($N_2$, He, Ar) | ea. | 21593580 |

# ULTRA-HIGH PURITY (UHP) STAINLESS STEEL BODY GAS REGULATORS

### Dual-Stage Ultra-High Purity Stainless Steel Gas Regulators

- Most stable outlet pressure control.
- Secondary pressure regulation not needed.

| Fitting | Outlet Pressure | Outlet Gauge | qty. | cat.# |
|---|---|---|---|---|
| CGA 580 ($N_2$, He, Ar) | 0 to 150 psig (0–1,034 kPa) | 30", 0 to 200 psig (0–1,379 kPa) | ea. | 20662 |
| CGA 350 ($H_2$, $P_5$) | 0 to 150 psig (0–1,034 kPa) | 30", 0 to 200 psig (0–1,379 kPa) | ea. | 20663 |
| CGA 590 (Air) | 0 to 150 psig (0–1,034 kPa) | 30", 0 to 200 psig (0–1,379 kPa) | ea. | 20664 |
| DIN 477 #1 ($H_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22377 |
| DIN 477 #6 (He, Ar) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22376 |
| DIN 477 #9 (Air) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22378 |
| DIN 477 #10 ($N_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22379 |
| BS 341 #3 (He, Ar, Air, $N_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22140 |
| BS 341 #4 ($H_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22141 |

Note: CGA fittings are for U.S. use; DIN fittings are for European use; BS fittings are for use in the UK.


20663

All regulators are rated to 3,000 psig (20,684 kPa) maximum inlet pressure.
Inlet gauge: 0 to 4,000 psig (0–27,579 kPa)
Outlet assembly: 316L stainless steel diaphragm valve, 1/4" tube fitting

### Single-Stage Ultra-High Purity Stainless Steel Gas Regulators

- Use when there is secondary pressure regulation downstream.
- Identical gas purity protection as with dual-stage gas regulators.

| Fitting | Outlet Pressure | Outlet Gauge | qty. | cat.# |
|---|---|---|---|---|
| CGA 580 ($N_2$, He, Ar) | 0 to 150 psig (0–1,034 kPa) | 30", 0 to 200 psig (0–1,379 kPa) | ea. | 20665 |
| CGA 350 ($H_2$, $P_5$) | 0 to 150 psig (0–1,034 kPa) | 30", 0 to 200 psig (0–1,379 kPa) | ea. | 20666 |
| CGA 590 (Air) | 0 to 150 psig (0–1,034 kPa) | 30", 0 to 200 psig (0–1,379 kPa) | ea. | 20667 |
| DIN 477 #6 (He, Ar) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22380 |
| DIN 477 #1 ($H_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22445 |
| DIN 477 #9 (Air) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22446 |
| DIN 477 #10 ($N_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22447 |
| BS 341 #3 (He, Ar, Air, $N_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22142 |
| BS 341 #4 ($H_2$) | 0 to 10 bar (0–150 psig) | 30", 0 to 14 bar (0–200 psig) | ea. | 22143 |

Note: CGA fittings are for U.S. use; DIN fittings are for European use; BS fittings are for use in the UK.


20665

# IN-LINE GAS REGULATORS

### Ultra-High Purity Chrome-Plated Brass Line Gas Regulator

- Oxidation-resistant, chrome plated.
- Use where you need to reduce the line pressure by 20 psig (138 kPa) or more.
- Same purity protection as high-pressure cylinder regulators.

| Fitting | Outlet Pressure | Outlet Gauge | qty. | cat.# |
|---|---|---|---|---|
| 1/4" female NPT ports* | 0 to 50 psig (0–345 kPa) | 30", 0 to 100 psig (0–689 kPa) | ea. | 21666 |
| 1/4" female NPT ports* | 0 to 150 psig (0–1,034 kPa) | 30", 0 to 200 psig (0–1,379 kPa) | ea. | 22452 |

*Order appropriate male connector, pipe-to-tube fittings.


21666

Inlet connections: 1/4" FPT
Outlet assembly: 1/4" FPT port

# Tubing and Fittings

## Precleaned Tubing from Restek

The integrity of a gas management system can be compromised by using tubing that has not been precleaned. Residual dirt, machine oil, and polycyclic aromatic hydrocarbons from the manufacturing process often found in different types of tubing will lead to problems later on. Restek uses proprietary cleaning methods to preclean copper and stainless steel tubing for plumbing your gas management system.

## Tubing

Restek offers both stainless steel and copper tubing precleaned and ready to use. The best choice for plumbing your gas management system is stainless steel tubing, which should always be used for hydrogen gas lines. Type 304 stainless steel tubing is the most commonly used variety. Copper tubing is also available and is the most economical choice for plumbing your gas management system.

## Fittings

When assembling your gas management system, all of your connections should be metal-to-metal connections. This ensures a leak-free connection, which is important for preventing contaminants from entering the gas stream. O-rings, gaskets, and sealing reagents should be avoided when plumbing your system to avoid contamination of the tubing and gas chromatograph. Swagelok compression fittings are ideal for making your connections, and both stainless steel and brass fittings are offered in $\frac{1}{4}$", $\frac{1}{8}$", and $\frac{1}{16}$" sizes.

## Setting Gas Flows and Checking for Leaks

Once your gas management system is assembled, it should be checked for leaks. Leaks allow moisture, oxygen, and other airborne contaminants to enter your system, as well as accelerating the consumption your gas supply. Detecting leaks with soap-based liquids should be avoided as they can contaminate your gas stream and gas chromatograph. The Restek electronic leak detector is the ideal accessory for inspecting your gas management system for leaks. The Restek leak detector can be used to determine if your system is leaking helium, hydrogen, argon, nitrogen, and carbon dioxide.

Once you have determined that your system is leak-free, you can set your gas flows with the Restek ProFLOW 6000 electronic flowmeter. This flowmeter measures flow from 0.5 mL/min up to 500 mL/min with an accuracy of ± 2% or ± 0.2 mL/min, whichever is greater. The ProFLOW 6000 flowmeter is even Ex rated so that it can be used to measure flow rates of flammable gases, such as hydrogen.

Need help selecting tubing and fittings?

# PRE-CLEANED TUBING FROM RESTEK

## Rinsed and Cleaned 304 Stainless Steel Tubing

- Use for providing carrier, fuel, make-up, or auxiliary gases to laboratory instruments.
- Proprietary cleaning process used to remove residual organics.

| | | Length | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 6 Feet | 10 Feet | 15 Feet | 20 Feet | 25 Feet | 50 Feet | 100 Feet | >100 Feet |
| ID (in.) | OD (in.) | cat.# | cat.# | cat.# | cat.# | cat.# | cat.# | cat.# | cat.#* |
| 0.01" | 1/16" | 29000 | 29001 | 29002 | 29003 | 21500 | 29004 | 29005 | 21502 |
| 0.02" | 1/16" | 29006 | 29007 | 29008 | 29009 | 21503 | 29010 | 29011 | 21505 |
| 0.03" | 1/16" | 29012 | 29013 | 29014 | 29015 | 21506 | 29017 | 29018 | 21508 |
| 0.04" | 1/16" | 29019 | 29020 | 29021 | 29022 | 21509 | 29023 | 29024 | 21511 |
| 0.085" | 1/8" | 29025 | 29026 | 29027 | 29028 | 21512 | 29029 | 29030 | 21514 |
| 0.21" | 1/4" | 29031 | 29032 | 29033 | 29034 | 21515 | 29035 | 29036 | 21517 |

*Pricing is on a per foot basis. Maximum continuous lengths are: 2,000 ft (1/16" OD), 1,500 ft (1/8" OD), and 750 ft (1/4" OD). The availability of long lengths is subject to inventory constraints. Lead times may vary depending on the continuous length needed. Please inquire before ordering.


## Cleaned Copper Tubing

- Use for plumbing GC systems.
- Proprietary cleaning process used to remove residual organics.

| ID | OD | Wall | Max Operating Pressure | qty. | cat.# |
|---|---|---|---|---|---|
| 0.065" | 1/8" | 0.030" | 2,800 psig | 50 ft | 22628 |
| 0.190" | 1/4" | 0.030" | 1,000 psig | 50 ft | 22629 |


# FITTINGS

## Swagelok Fittings (Brass & Stainless Steel)

| | | Brass | | | 316 Grade Stainless Steel | | |
|---|---|---|---|---|---|---|---|
| Fitting Type | Size | Swagelok # | qty. | cat.# | Swagelok # | qty. | cat.# |
| Nut & Ferrule Set | 1/16" | — | 10-pk. | 23109 | — | 2-pk. | 23159 |
| | 1/8" | — | 20-pk. | 23110 | — | 5-pk. | 23160 |
| | 1/4" | — | 20-pk. | 23111 | — | 5-pk. | 23161 |
| Union | 1/16" | B-100-6 | 3-pk. | 23115 | SS-100-6 | ea. | 23165 |
| | 1/8" | B-200-6 | 5-pk. | 23116 | SS-200-6 | 2-pk. | 23166 |
| | 1/4" | B-400-6 | 5-pk. | 23117 | SS-400-6 | 2-pk. | 23167 |
| Tee | 1/16" | B-100-3 | 2-pk. | 23121 | SS-100-3 | ea. | 23171 |
| | 1/8" | B-200-3 | 2-pk. | 23122 | SS-200-3 | ea. | 23172 |
| | 1/4" | B-400-3 | 2-pk. | 23123 | SS-400-3 | ea. | 23173 |


## Shutoff Gas Valves Swagelok

| | 1/8" Brass | 1/4" Brass | 1/8" Stainless Steel | 1/4" Stainless Steel |
|---|---|---|---|---|
| Valve Type | cat.# | cat.# | cat.# | cat.# |
| Toggle Valve | 23142 | 23143 | 23198 | 23199 |
| Ball Valve | 23144 | 23145 | 23200 | 23201 |
| Ball Valve, 3-Way | 23219 | 23220 | 23217 | 23218 |
| Plug Valve | 23146 | 23147 | 23202 | 23203 |

**Note**: Restek strongly recommends using a filter between these valves and the instrument. The filter will capture any potential volatile components released from the lubricant used in the valve.


**Leak Detector Specifications**

| |
|---|
| Detectable Gases: Helium, nitrogen, argon, carbon dioxide, hydrogen |
| Battery: Rechargeable lithium ion internal battery pack (12 hours normal operation) |
| Operating Temperature Range: 32–120 °F (0–48 °C) |
| Humidity Range: 0–97% |
| Warranty: One year |
| Certifications: CE, Ex, Japan |
| Compliance: WEEE, RoHS, China RoHS 2 |

**Limits of Detection**

These gases can be detected with the Restek electronic leak detector at the following leak rates:

| Minimum Detectable Gas Limits and Indicating LED Color: |
|---|
| Helium, 1.0 x $10^{-5}$, red LED |
| Hydrogen*, 1.0 x $10^{-5}$, red LED |
| Nitrogen, 1.4 x $10^{-3}$, yellow LED |
| Argon, 1.0 x $10^{-4}$, yellow LED |
| Carbon dioxide, 1.0 x $10^{-4}$, yellow LED |

Gas detection limits measured in atm cc/sec.


**Flowmeter Specifications:**

| |
|---|
| Type of Flowmeter: Volumetric |
| Battery: 2-AA |
| Operating Temp. Range: 32–120 °F (0–48 °C) |
| Warranty: One-year warranty (excludes recalibration) |
| Certifications: CE, Ex |
| Compliance: WEEE, RoHS 2, China RoHS 2 2, China RoHS 2 |

## CHECKING FOR LEAKS

**Restek Electronic Leak Detector** Don't let a small leak turn into a costly repair—protect your analytical column by using a Restek leak detector.

Features & benefits include:

- Audible tone indicates the severity of a leak.
- Redesigned circuitry offers 12 hours of operation between charges.
- Detects a broad range of gases; Ex rated for use with hydrogen and other explosive gases.*
- Ergonomic, handheld design.
- Rugged side grips for added durability.
- Handy probe storage for cleanliness and convenience.
- Automatic shutoff.
- A convenient carrying and storage case.
- Easy-to-clean probe assembly.
- A universal charger set (U.S., European, UK, and Australian plugs included).

Backed by a one-year warranty, the Restek leak detector is the industry standard for performance and affordability in handheld leak detectors.

| Description | qty. | cat.# |
|---|---|---|
| Leak Detector with Hard-Sided Carrying Case and Universal Charger Set (U.S., UK, European, Australian) | ea. | 22655 |
| Small Probe Adaptor for Leak Detector | ea. | 22658 |
| Dynamic Duo Combo Pack (Restek Leak Detector and ProFLOW 6000 Flowmeter) | kit | 22654 |
| Soft-Sided Storage Case for Leak Detector or ProFLOW 6000 Flowmeter | ea. | 22657 |
| Car Charger/Adaptor | ea. | 22652 |
| Universal AC Power Adaptor | ea. | 22653 |

Avoid using liquid leak detectors on a GC! Liquids can be drawn into the system and/or into the leak detector.

*Caution: The Restek electronic leak detector is designed to detect trace amounts of hydrogen in a noncombustible environment. It is NOT designed for determining leaks in a combustible environment. A combustible gas detector should be used for determining combustible gas leaks under any condition. When using it to detect hydrogen, the Restek electronic leak detector may only be used for determining trace amounts in a GC environment.

## SETTING GAS FLOWS

### Restek ProFLOW 6000 Electronic Flowmeter

State-of-the-art features include:

- Measures volumetric flow for gases across a range of 0.5–500 mL/min.
- NIST traceable calibration.
- Ex rating (electrical apparatus for explosive gas atmospheres) for hydrogen and related gas types.
- Accuracy of ± 2% of flow reading or ± 0.2 mL/min, whichever is greater.
- Over-range warning indicator.
- Auto shutoff feature.
- Use as a benchtop or handheld unit.
- Ergonomic design and side grips for comfort.
- Measures most gas types.*
- Convenient carrying/storage case included.
- Uses two AA batteries (included).
- Data output via USB port.
- One-year warranty (excludes recalibration).
- Recalibration service available.

| Description | qty. | cat.# |
|---|---|---|
| Restek ProFLOW 6000 Electronic Flowmeter with Hard-Sided Carrying Case | ea. | 22656 |
| Soft-Sided Storage Case for Leak Detector or ProFLOW 6000 Flowmeter | ea. | 22657 |

*The flowmeter is designed to measure clean, dry, noncorrosive gases.
Patented

# Gas Purifiers

Gas purification is essential in your gas management system. Carrier gases must contain less than 1 ppm of oxygen, water vapor, or any other trace contaminant to prevent column degradation, shortened column lifetime, and increased stationary phase bleed. Contaminants cause ghost peaks to appear during temperature programming and degrade the quality of analytical data. The expense of using high-purity gases in combination with carrier gas purifiers will be offset by longer column lifetime and less instrument maintenance along with better instrument sensitivity. Gas purifiers are available for specific types of contamination (moisture, hydrocarbon, or oxygen) or as a combination of filters that provides broader protection. These purifiers can be installed in-line or using a quick-install baseplate system.

## Moisture Removal

Moisture in carrier gas lines will prematurely degrade oxygen and hydrocarbon traps and increase detector noise (particularly with ECDs). As a precaution, you should install a moisture trap before the hydrocarbon and oxygen traps on all carrier gas lines. Moisture traps should also be installed on fuel gas lines, especially if using a gas generator.

## Hydrocarbon Removal

Use a hydrocarbon trap if your gas has a potential source of hydrocarbon contaminants (e.g., an oil pump in an air compressor) or if you suspect you are observing carrier gas ghost peaks. Install the hydrocarbon trap after the moisture trap to prevent moisture from degrading the hydrocarbon-trapping ability of the activated carbon in the hydrocarbon trap.

## Oxygen Removal

Oxygen is a GC column killer and it can enter the system at any connection that is leaking. Because oxygen can enter a gas line at any fitting, the oxygen trap should be the last connection before the gas line enters the chromatograph. Oxygen traps should only be used to clean fuel and carrier gas streams with very low moisture content because water can react with the oxygen trapping and indicating media. They are recommended for use with high-purity gas cylinders and palladium-purified hydrogen generators (H2PEMPD). Palladium purification lowers oxygen and moisture concentrations in the hydrogen gas to levels compatible with oxygen traps. Oxygen traps should not be used with PEM hydrogen generators because they lack palladium purification and, thus, the hydrogen gas they produce through the electrolysis of water can contain a high concentration (percent levels) of water. Oxygen traps (including triple filters) are not suitable for gas streams with moisture concentrations greater than part-per-million levels and damage can result if they are used under high moisture conditions. In addition, oxygen traps should never be used on air gas lines.

## Leak Checking

To prevent column degradation, increase column lifetime, and decrease stationary phase bleed, carrier gas supply lines need to be leak-free to prevent the introduction of oxygen. This can be monitored by frequently leak checking all carrier gas system connections using the Restek electronic leak detector.

## Rely on Restek for Gas Management

An effective gas management system is essential to obtaining accurate, reliable GC results. Restek offers the products and expertise to help you set up and maintain the right system for your lab. Whether you use gas generators or freestanding cylinders, we have the equipment you need to ensure a reliable, high-purity gas stream to your GC instruments.

Need help
selecting a gas purifier?

# SUPER-CLEAN BASEPLATE GAS FILTERS


22019

**All traps measure:**
10 5/8" x 1 3/4"
(27 x 4.4 cm)

**Each baseplate unit measures:**
4" x 4" x 1 7/8" (10.2 x 10.2 x 4.8 cm)
Standard baseplate inlet/outlet fittings accept 1/8" tubing. To adapt to 1/4" tubing, order 1/8" to 1/4" tube end reducers.


22026

22025

## Restek Super Clean Gas Filter Kits

- High-purity output ensures 99.9999% pure gas (at max. flow of 2 L/min).
- Designed for easy, hassle-free cartridge changes.
- Glass inside to prevent diffusion; polycarbonate housing outside for safety.

| Description | qty. | cat.# |
|---|---|---|
| Carrier Gas Cleaning Kit<br>Includes: Mounting Baseplate; 1/8" Inlet/Outlet Fittings; and Oxygen/Moisture/Hydrocarbon Triple Gas Filter | kit | 22019 |
| Fuel Gas Purification Kit<br>Includes: Mounting Baseplate, 1/8" Inlet/Outlet Fittings, and Hydrocarbon/Moisture Fuel Gas Filter | kit | 22021 |
| Gas Filter Bundle Kit Includes: Triple Gas Filter (1), (cat.# 22020); and Fuel Gas Filters (2), (cat.# 22022) | kit | 22031 |
| Super Clean Gas Filter Kit, 1/4" Brass<br>Includes: Replacement $CO_2$, Sulfur, Moisture Filter, Baseplate with 1/4" Brass Fittings | kit | 23844 |
| Super Clean Gas Filter Kit, 1/8" Brass<br>Includes: Replacement $CO_2$, Sulfur, Moisture Filter, Baseplate with 1/8" Brass Fittings | kit | 23845 |
| Super Clean Gas Filter Kit, 1/4" SS<br>Includes: Replacement $CO_2$, Sulfur, Moisture Filter, Baseplate with 1/4" SS Fittings | kit | 23846 |
| Super Clean Gas Filter Kit, 1/8" SS<br>Includes: Replacement $CO_2$, Sulfur, Moisture Filter, Baseplate with 1/8" SS Fittings | kit | 23847 |
| Helium-Specific Carrier Gas Cleaning Kit<br>Includes: Mounting Baseplate; 1/8" Inlet/Outlet Fittings; and Oxygen/Moisture/Hydrocarbon Helium-Specific Filter | kit | 21983 |
| **Gas Filters and Replacement Traps** | | |
| Ultra-High Capacity Hydrocarbon Filter | ea. | 22030 |
| Ultra-High Capacity Moisture Filter | ea. | 22028 |
| Ultra-High Capacity Oxygen Filter | ea. | 22029 |
| Replacement Triple Gas Filter (removes oxygen, moisture, and hydrocarbons) | ea. | 22020 |
| Replacement Fuel Gas Filter (removes moisture and hydrocarbons) | ea. | 22022 |
| Replacement Helium-Specific Gas Filter (removes oxygen, moisture, and hydrocarbons) | ea. | 21982 |
| Replacement $CO_2$, Sulfur, Moisture Filter (Ideal for TOC analyzers and zero air generators.) | ea. | 23843 |

## Restek Filter Baseplates

- End fittings available in brass or stainless steel.
- Baseplates fit all stand-alone Super Clean gas filters offered.

| | | Brass | | Stainless Steel | |
|---|---|---|---|---|---|
| Description | Dimensions | qty. | cat.# | qty. | cat.# |
| Filter Baseplate, Single-Position | 4" x 4" x 1 7/8" (10.2 x 10.2 x 4.8 cm) | ea. | 22025 | ea. | 22344 |
| Filter Baseplate, 2-Position | 8" x 4" x 1 7/8" (20.3 x 10.2 x 4.8 cm) | ea. | 22026 | ea. | 22345 |
| Filter Baseplate, 3-Position | 12" x 4" x 1 7/8" (30.5 x 10.2 x 4.8 cm) | ea. | 22027 | ea. | 22346 |

# IN-LINE SUPER-CLEAN PURIFICATION GAS TRAPS


Click-On traps measure:
8 1/2" x 1 1/4" (21.6 x 3.2 cm)

## Restek Click-On In-Line Super Clean Gas Traps and Connector Kits

- High-purity output ensures 99.9999% pure gas.
- Click-On fittings for easy, leak-tight cartridge changes; brass or stainless steel, 1/4" or 1/8".
- Triple gas trap is ideal for purifying carrier gas—it contains oxygen, moisture, and hydrocarbon scrubbers in one cartridge.
- Fuel gas trap is ideal for purifying flame ionization detector (FID) fuel gases, removing both moisture and hydrocarbons.
- Helium-specific triple gas trap is ideal for GC-MS—it contains oxygen, moisture, and hydrocarbon scrubbers in one cartridge.

| Description | qty. | cat.# |
|---|---|---|
| **Carrier Gas Purification Kit** | | |
| Includes: 1/8" SS connectors (2) and oxygen/moisture/hydrocarbon triple trap (1) | kit | 22456 |
| Includes: 1/8" brass connectors (2) and oxygen/moisture/hydrocarbon triple trap (1) | kit | 22457 |
| Includes: 1/4" SS connectors (2) and oxygen/moisture/hydrocarbon triple trap (1) | kit | 22458 |
| Includes: 1/4" brass connectors (2) and oxygen/moisture/hydrocarbon triple trap (1) | kit | 22459 |
| **Fuel Gas Purification Kit** | | |
| Includes: 1/8" SS connectors (4) and hydrocarbon/moisture traps (2) | kit | 22460 |
| Includes: 1/8" brass connectors (4) and hydrocarbon/moisture traps (2) | kit | 22461 |
| Includes: 1/4" SS connectors (4) and hydrocarbon/moisture traps (2) | kit | 22462 |
| Includes: 1/4" brass connectors (4) and hydrocarbon/moisture traps (2) | kit | 22463 |

# IN-LINE GAS TRAPS

## Indicating Oxygen Trap

- Indicator changes from light green to grey as oxygen is trapped.
- Heavy-walled glass body, protected by polycarbonate sleeve, prevents oxygen and water infusion.
- Prepurged for fast stabilization.
- 100 psi (689 kPa) maximum operating pressure.
- Reduces oxygen to 0.1 ppm.
- 10 µm frits at inlet and outlet.
- Optimal flow rate: < 150 mL/min.


| Description | Fittings | Dimensions | qty. | cat.# |
|---|---|---|---|---|
| Indicating Oxygen Trap | 1/8" Brass | 10" x 1 1/4" (25.4 x 3.2 cm) | ea. | 22010 |
| Indicating Oxygen Trap | 1/4" Brass | 10" x 1 1/4" (25.4 x 3.2 cm) | ea. | 22011 |

## Indicating Moisture Trap

- Reduces water to less than 10 ppb; indicator changes from yellowish-green to blue at 5% relative humidity.
- Prepurged for fast stabilization.
- Reduces noise from high-sensitivity detectors.
- Heavy-walled glass body prevents oxygen and water infusion.
- 10 µm frit prevents microparticulate damage to needle valves and flow controllers.
- Maximum operating pressure: 100 psi (689 kPa).


Moisture capacity: 6 g of water
Maximum flow: 1 L/min

| Description | Fittings | Dimensions | qty. | cat.# |
|---|---|---|---|---|
| Indicating Moisture Trap | 1/8" Brass | 13" x 2" (33 x 5.1 cm) | ea. | 22014 |
| Indicating Moisture Trap | 1/4" Brass | 13" x 2" (33 x 5.1 cm) | ea. | 22015 |

## High-Capacity Oxygen Trap

- Removes up to 135 ml of oxygen or 2 g of water.
- Long life—typically purifies more than 480 cu ft of inert gas.
- Reduces oxygen to 15 ppb.
- Maximum operating pressure: 250 psi (1,724 kPa).
- Flow: 3 L/min @ 32 psi (221 kPa).

| Description | Fittings | Dimensions | qty. | cat.# |
|---|---|---|---|---|
| High-Capacity Oxygen Trap | 1/8" Nickel-Plated Brass | 11" x 1 1/2" (27.9 x 3.8 cm) | ea. | 20601 |
| High-Capacity Oxygen Trap | 1/4" Nickel-Plated Brass | 11" x 1 1/2" (27.9 x 3.8 cm) | ea. | 20600 |

## High-Capacity Moisture Trap

- Purged with ultra-high-purity helium; ready to use with any carrier gas including hydrogen.
- Reduces water to less than 15 ppb.
- Maximum operating pressure: 250 psi (1,724 kPa).
- Maximum flow: 1.25 L/min.

Moisture capacity: 16 g of water

| Description | Fittings | Dimensions | qty. | cat.# |
|---|---|---|---|---|
| High-Capacity Moisture Trap | 1/8" Nickel-Plated Brass | 11" x 1 1/2" (27.9 x 3.8 cm) | ea. | 21997 |
| High-Capacity Moisture Trap | 1/4" Nickel-Plated Brass | 11" x 1 1/2" (27.9 x 3.8 cm) | ea. | 20638 |

## Capillary-Grade Hydrocarbon Trap

- Packed with an extremely high surface area, baked coconut shell–based activated carbon.
- Purged with ultra-high-purity helium; ready to use with any carrier gas including hydrogen.
- Reduces organics to 0.1 ppm (assuming 100 ppm input).
- Maximum operating pressure: 250 psi (1,724 kPa).

| Description | Fittings | Dimensions | qty. | cat.# |
|---|---|---|---|---|
| Capillary-Grade Hydrocarbon Trap | 1/8" Nickel-Plated Brass | 11" x 1 1/2" (27.9 x 3.8 cm) | ea. | 21991 |
| Capillary-Grade Hydrocarbon Trap | 1/4" Nickel-Plated Brass | 11" x 1 1/2" (27.9 x 3.8 cm) | ea. | 21992 |

# Chromatography is what we do and who we are.

We are an independent, international, and diverse team of employee-owners not bound to a specific brand of instrument or geographic region. We live and breathe phase chemistry, peak separations, resolution, and inertness because while chromatography may be a necessary tool in your business, it is our business. And it is a business that we directly serve across 100+ countries and six continents with unrivaled Plus 1 service, applications, and expertise.

From LC and GC columns to sample prep, reference standards to accessories, Restek is your first and best choice for chromatography.

RESTEK
Pure Chromatography

Rxi GC Columns

Raptor LC Columns

Topaz INLET LINERS

RESTEK
Pure Chromatography

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