GAS PURIFIERS

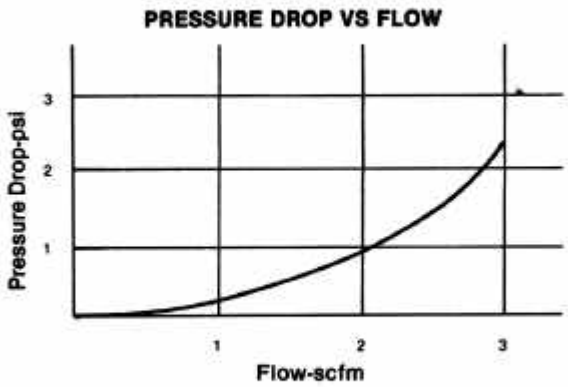
Model 8010 (for pressure applications up to 3000 psig)

DESCRIPTION

The model 8010 replaceable cartridge gas purifier is useful in many laboratory and industrial applications where the introduction of oil and/or water can result in poor performance or equipment shut-down. It is not uncommon to find varying levels of these impurities in some industrial gases and occasionally even in specialty carrier gases. The small daily operating costs are easily justified by the prevention of a system shut-down and the subsequent cleaning and/or repair costs.

The units are especially useful in GC carrier gas lines to ensure that undesirable moisture does not enter the instrument. Water can contribute to inaccurate results and the rapid deterioration of expensive chromatography column separation phases.

The model 8010 purifier shell must be used in conjunction with specially designed replaceable cartridges. Models 8010-1, 8010-2, or 8010-3 are filled with various adsorbents. Model 8010-4 contains a 5 micron sintered bronze filter element. These are described below. These cartridges are shipped in hermetically sealed cans with convenient pull-tab tops for easy opening. This improved packaging ensures full retention of capacity in storage until the time of use.



MATERIALS OF CONSTRUCTION

Shell body: anodized aluminum
Shell: head: nickel plated brass
O-ring seal: buna-N
Cartridges: 8010-1 Molecular Sieve 13x
8010-2 Molecular Sieve 4A
8010-3 Activated Charcoal
8010-4 Sintered Bronze

SPECIFICATIONS

Max. Operating Pressure: 3000 psig(500 psig for oxygen)
Operating Temperature: -400°F to +165°F
Inlet and Outlet Ports: 1/4" NPT female
Dimensions: 2" dia. x 5 3/4" long
Weight with Cartridge: 1.5 lbs. Dew Point Achievable: -100°F.

HOW TO ORDER

Model	Description	Absorption	General Application
8010	Purifier Shell Only		
8010-1	Molecular Sieve 13x	6.5 grams water	Removal of oil & water
8010-2	Molecular Sieve 4A	7.2 grams water	Removal of water
8010-3	Activated Charcoal (Warning: Do not use with oxygen concentrations in excess of 21%)		Removal of heavy hydrocarbons acetone level control in acetylene used for atomic absorption
8010-4	5 micron sintered bronze element		Particulate removal

GAS PURIFIERS
Model 8000 (high capacity units)

DESCRIPTION

The model 8000 replaceable cartridge gas purifier is similar to the Model 8010 but is designed for higher capacities and a lower working pressure. The Model 8000 is constructed of an aluminum shell that accepts a large capacity cartridge. This shell may be permanently mounted when installed in the gas line and can be serviced without disturbing the line connections. Spring pressure holds the replaceable cartridge tightly against the bottom gasket to prevent the gas to be purified from bypassing the cartridge. The side inlet is located at the bottom of the unit oriented 90° from the outlet located at the top of the unit.

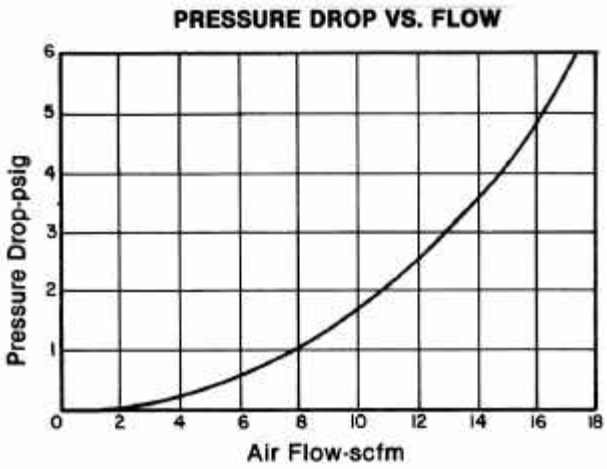
The model 8000 purifier shell must be used in conjunction with specially designed replaceable cartridges (Model 8000-1, 8000-2, or 8000-3) filled with various adsorbents. These are described below. These cartridges are shipped in hermetically sealed cans with convenient pull-tab ends for easy opening. This improved packaging ensures full retention of capacity in storage until the time of use.

MATERIALS OF CONSTRUCTION

Shell body: anodized aluminum
Strainer Assembly: Monel ® and brass
Gaskets: Neoprene
Cartridges: 8000-1 Molecular Sieve 13x
8000-2 Molecular Sieve 4A
8000-3 Activated Charcoal

SPECIFICATIONS

Max. Operating Pressure: 350 psig Operating Temperature: -400 to +2000F.
Inlet and Outlet Ports: 1/4" NPT male
Dimensions: 4 3/4" dia. x 15 5/8" long
Weight with Cartridge: 14.3 lbs.
Dew Point Achievable: -100°F



HOW TO ORDER

Model	Description	Absorption	General Application
8000	Purifier Shell Only		
8000-1	Molecular Sieve 13x	126 grams water	Removal of oil & water
8000-2	Molecular Sieve 4A	134 grams water	Removal of water
8000-3	Activated Charcoal(Warning: Do not use with oxygen concentrations in excess of 21%)		Removal of heavy hydrocarbons acetone level control in acetylene used for atomic absorption

Gas Equipment

OXYGEN TRAPS
Series 6300

Gas traps should be mounted in a vertical position to ensure proper contact of the gas with the adsorbent. Use model 8012C mounting clip with 6300 Series oxygen trap.

DESCRIPTION

These Series 6300 oxygen traps contain a highly active, metal-containing, inert supported reagent filled into a one piece aluminum container. The trap is capable of reducing the oxygen content of a gas stream down to 99.99998% of its original concentration. Each unit is filled under a heated flow of ultra high purity helium to eliminate the need for extensive purging prior to GC or GC/MS operation.

The Series 6300 units are ideal for use with hydrogen and inert carrier gases commonly used with TC and FID gas chromatographs as well as argon-methane mixtures used with electron capture gas chromatographs. The all-metal housing virtually eliminates contamination and resultant signal noise that often occur with traps constructed of other materials. These units can also be used to treat carbon monoxide, carbon dioxide, alkanes, alkenes, aliphatic hydrocarbon gases and low boiling point aromatics, like benzene and toluene

FEATURES

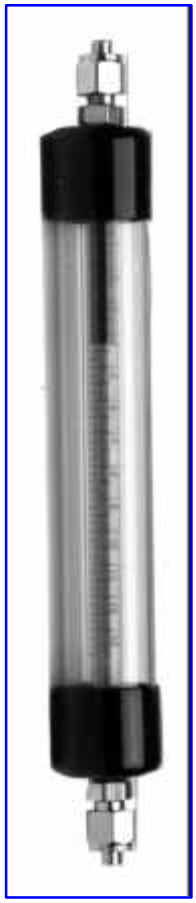
- Reduces oxygen levels to less than 15 ppb
- Scrubbing agent sphere size optimized to achieve maximum surface area and capacity to provide twice the surface area and capacity of "look-alike" units. Filter design and aspect ratio prevents channeling and promotes even flow and efficient scrubbing
- Inlet and outlet fitted with 40 micron stainless steel frits
- All metal construction
- Bed material treated with ultra high purity helium
- Operating pressure: 250 psig
- Oxygen removal capacity: 6300 630 mg
  6350 3200 mg
  Dimensions: 6300 1.25" O.D. x 11.25" long
  6350 2 3/8" O.D. x 17" long

HOW TO ORDER

Model	Connections
6300-2*	1/8" tubing compression
6300-4	1/4" tubing compression
6350-8*	1/2" tubing compression p
80112C	mounting clip
8050C	clip mounting clip for 6350

*Available with stainless steel compression fittings - add "SS" to part number

INDICATING OXYGEN TRAP
Series 6200



DESCRIPTION

This unit is a step above other indicating oxygen traps. The unit comes to you completely assembled and ready for installation. It is ideal for use in-line directly after our Series 6300 oxygen removing trap to determine when to replace the larger unit. Used in this way the 6200 unit will last a considerable time if it is monitored regularly. A centimeter scale on the tube helps you to monitor the condition of the reactants.

The 6200 Series actually removes oxygen rather than convert it to another form of contamination. Oxygen reacts with the activated bed material to form manganese oxide that has a deep brown color providing a dramatic and progressive color change. The presence of moisture does not affect the oxygen removing capacity of the unit.

FEATURES

- Reduces oxygen to less than 15 ppb
- Reactive materials are contained in a glass tube protected by a clear plastic outer tube. The reactive materials are only in contact with glass and metal
- Centimeter scale on reaction tube helps to monitor activity
- The expended reactant material is non-hazardous, non toxic, non-flammable, and non-reactive
- Mounting clip available for convenient installation
- Oxygen removing capacity: 6200 30mg
  6250 150mg

- Working pressure: 100 psig
- Dimensions: 6200 1.125" O.D. x 9.5" long
  6250 1.5" O.D. x 10.25" long

Gas traps should be mounted in a vertical position to ensure proper contact of the gas with the adsorbent. Use model 6200C mounting clip with 6200 Series hydrocarbon trap

HOW TO ORDER

Model	Connections
6200-2*	1/8" tubing compression
6200-4	1/4" tubing compression
6250-2*	1/8" tubing compression
6250-4*	1/4" tubing compression
6200C	Mounting clip for 6200
8012C	Mounting clip for 6250

*Available with stainless steel compression fittings - add "SS" to part number

OXYGEN REMOVING PURIFIER FOR HYDROGEN
Series 6210

DESCRIPTION

The Series 6210 Purifiers remove oxygen from hydrogen by catalytic action. They are capable of removing up to 1 % oxygen from a hydrogen stream down to a level of less than 1 ppm. This reaction is normally accomplished at room temperature. At higher oxygen impurity concentrations, somewhat elevated temperatures may be experienced depending on operating conditions.

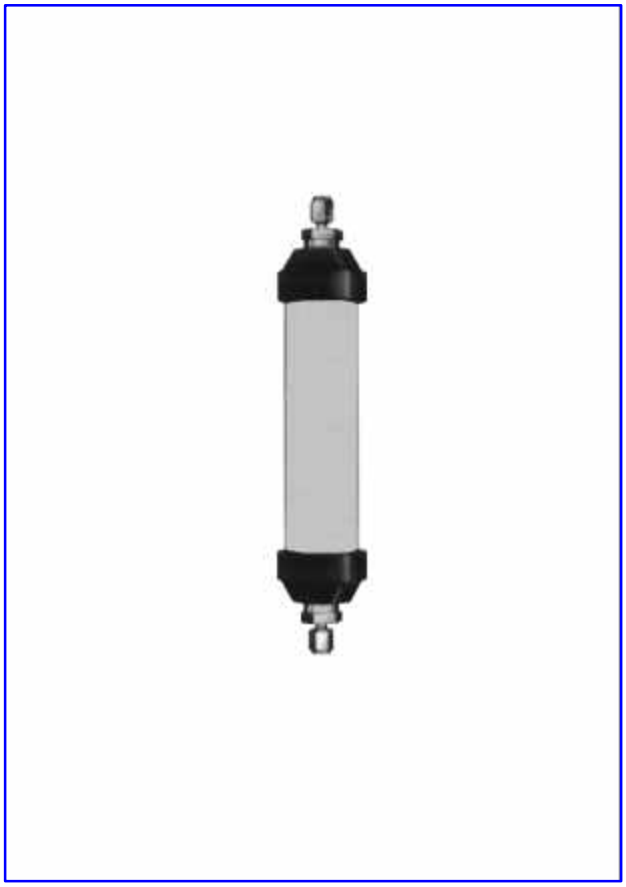
The purification is carried out by the formation of water from the oxygen impurity and the hydrogen background. If water presents a problem in your system it is suggested that a Model 8010 or 8000 purifier be installed in the system after the Series 6210 unit (see pages 40 and 41.)

The catalytic materials do not require regeneration and will function indefinitely providing that they are not contaminated. Sulfur and halogens are the primary contaminants of concern.

HOW TO ORDER

Model	Max. Flow SCFH	Max. Oper. Press. Psig	Connections female	Dimensions inches
6210-10	10	2000	1/411 compression	1.05" dia. x 9.5" long
6210-25	25	2200	1/4" compression	1.32" dia. x 14.5" long
6210-50	50	1200	1/4" compression	1.66" dia. x 15" long
6210-100	100	1400	1/4" compression	2.38" dia. x 15.5" long
6210-200	200	1300	1/4" compression	2.88" dia. x 19.5" long
6210-500	500	900	1/2" compression	4.0" dia. x 23" long

C02 TRAP
Series 6400



DESCRIPTION

The 6400 Series carbon dioxide trap is designed to remove C02 gas from air, argon, helium, hydrogen, or nitrogen. The trap body is constructed of Lexan@ with aluminum end caps and stainless steel end fittings with 40 micron stainless steel sintered frits. The absorption media is a formulation of sodium hydroxide and calcium hydroxide with an high absorptive capacity and indicating properties. Typically, this material will absorb 15-20% of its weight in carbon dioxide before the material is saturated and needs to be replaced. Replacement is indicated when the normally white color of the material turns violet. If moisture is detrimental to your system, a moisture trap should be installed down stream from this unit to adsorb water evolved from the absorption of the carbon dioxide (see page XX.) These C02 traps are refillable, but caution must be exercised due to the caustic nature of the absorbent

FEATURES

- Removes carbon dioxide to less than 0.5 ppm
- Inlet and outlet fitted with 40-micron stainless steel frits.
- Reaction with carbon dioxide indicted by color change from white to violet.
- C02 removing capacity:
  - 6412 54 grams C02
  - 6420 90 grams C02
  - 6440 180 grams C02
- Dimensions:
  - 6412 1.5" O.D. x 9.5" long
  - 6420 1.5" O.D. x 12.5" long
  - 6440 1.75" O.D. x 17" long

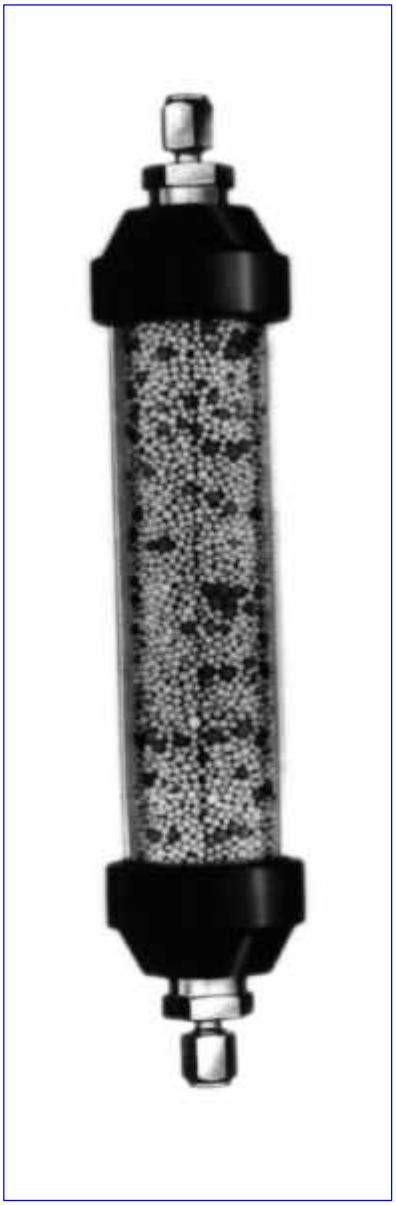
Gas traps should be mounted in a vertical position to ensure proper contact of the gas with the adsorbent. Use model 8012C or 8040C mounting clip with 6400 Series carbon dioxide trap

HOW TO ORDER

Model	Description	End Fittings
6412-2	carbon dioxide trap - 120 cc	1/8" compression
6412-4	carbon dioxide trap - 120 cc	1/4" compression
6420-2	carbon dioxide trap - 200 cc	1/8" compression
6420-4	carbon dioxide trap - 200 cc	1/4" compression
6440-2	carbon dioxide trap - 400 cc	1/8" compression
6440-4	carbon dioxide trap - 400 cc	1/4" compression
8012C	mounting clip for 6412 and 6420 trap	
8040C	mounting clip for 6440 trap	
640OR	carbon dioxide trap refill 400 cc	

Gas Equipment

INDICATING MOISTURE TRAPS
Series 8012, 8020, and 8040, 8050



DESCRIPTION

These units are designed to remove water, oil and organics from gases commonly used as gas chromatography carrier gases. They are constructed from Lexan@ polycarbonate tubing with aluminum end caps sealed with Viton@ o-rings, except for the 8050 which has a solid aluminum housing and is thus non-indicating. All units are filled with a mixture of molecular sieve 13X and indicating molecular sieve 4A. These are the highest capacity molecular sieves available and the preferred choice for gas drying. The blue indicating sieves turn buff color at 20% relative humidity.

FEATURES

- Reduces water to less than 20 ppb
- Available in 3 sizes (120cc, 200cc, 400cc, 1600cc) that can easily be refilled
- Inlet and outlet o-ring sealed connectors are equipped with 40 micron sintered stainless steel frits to prevent particulates from entering your system.
- Mixed spherically shaped 13X and 4A adsorbents makes improper orientation at installation impossible while providing superior bed packing during operation with less resistance to flow.

- Mounting clip available for convenient installation
- Moisture removal capacity: 8012 21.6 grams
  8020 36.0 grams
  8040 72.0 grams
  8050 288 grams

- Dimensions: 8012-2 or –4 1.5" O.D. x 9.0" long
  8020-2 or –4 1.5" O.D. x 12.5" long
  8040-2 or –4 1.75" O.D. x 17.5" long
  8050-8 2 3/8" O.D. x 17" long

- Working Pressure: 8012, 8020, 8040 125 psig
  - 8050 250 psig

HOW TO ORDER

Model	Capacity	Connections
8012-2*	120 cc	1/8" tubing compression fittings
8012-4*	120 cc	1/4" tubing compression fittings
8020-2*	200 cc	1/8" tubing compression fittings
8020-4*	200 cc	1/4" tubing compression fittings
8040-2*	400 cc	1/8" tubing compression fittings
8040-4*	400 cc	1/4" tubing compression fittings
804OR	400 cc	Provides enough for three 120 cc, two 200 cc, or one 400 cc refill
8050-8*+	1600 cc	1/2" tubing compression fitting
805OR	1600 cc	provides enough for one refill
8012C		for mounting 8012 and 8020 units
8040C		for mounting 8040 units only
8050C		for mounting 8050 units only

+8050 is a non-indicating trap

*Available with stainless steel compression fittings - add "SS" to part number

Gas traps should be mounted in a vertical position to ensure proper contact of the gas with the adsorbent. Use model 8012C, 8040C or 8050C mounting clip with 8012, 8020 and 8040 Series moisture traps.

HYDROCARBON TRAPS
Series 8200

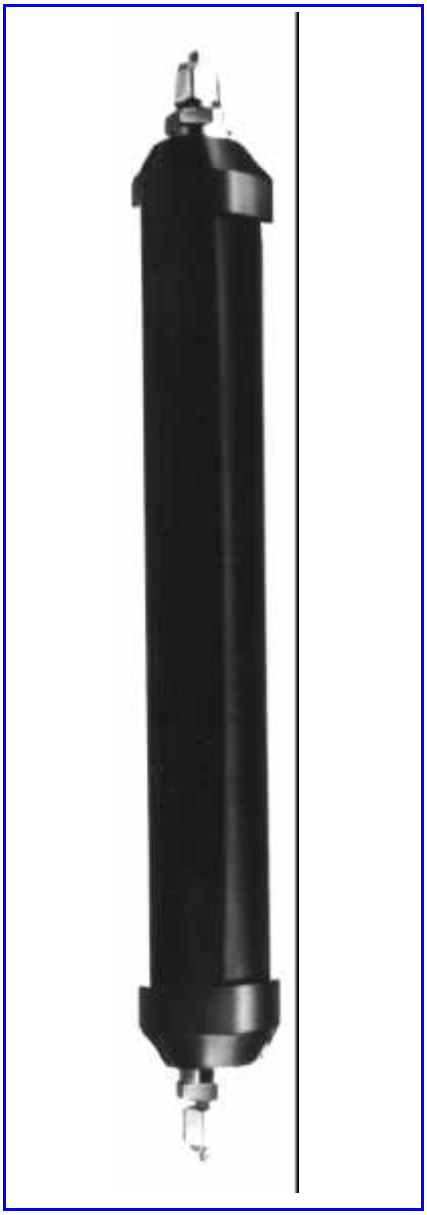
DESCRIPTION

These units are designed to remove organics, such as alcohols, aromatics, chlorinated hydrocarbons, esters, ethers, hydrocarbons, and ketones from air, hydrogen, and inert carrier gases used in gas chromatography. They are constructed of aluminum and filled with extremely high surface area coconut shell based activated carbon.

The 8200 is a refillable purifier. Since impregnated carbons do not readily desorb all compounds, we recommend that the units be changed or refilled on a regular schedule using our 820OR refill kit that provides enough material for two charges of an 8200 or the 8250R which provides one charge of an 8250.

FEATURES

- Removes organics from air, hydrogen, and inert carrier gases
- Highly active coconut shell based carbon efficiently removes many types of hydrocarbon compounds
- All metal housing
- Refillable 200 cc or 1600 cc capacity
- 40 micron filters on the inlet and outlet
- Mounting clip available for convenient installation
- Working pressure: 250 psig
- Dimensions: 8200 1.5" O.D. x 12.5" overall length
  8250 2 3/8" O.D. x 17" overall length



Gas traps should be mounted in a vertical position to ensure proper contact of the gas with the adsorbent. Use model 8012C mounting clip with 8200 Series hydrocarbon trap.

HOW TO ORDER

Model	Connections
8200-2*	1/8" tubing compression fittings
8200-4*	1/4" tubing compression fittings
8250-8*	1/2" tubing compression fittings
8250R	Refill kit - contains 1 charge
820OR	Refill kit - contains 2 charges
8012C	Mounting clip
8050C	Mounting clip for 8250

*Available with stainless steel compression fittings - add "SS" to part number

Gas Equipment

FILTER APPLICATIONS

GAS CHROMATOGRAPHY
Particulates in an instrument carrier gas stream can reduce the overall performance of laboratory analytical work. Removing particles can reduce background noise levels and enhance instrument accuracy and precision.

PHARMACEUTICAL MANUFACTURING
The capability of these filters to remove bacteria and other particulate matter enables pharmaceutical manufacturers to install a filter in gas lines to those systems requiring process, purge, or blanket gases, thus ensuring a virtually sterile gas atmosphere.

PNEUMATIC OPERATED DEVICES
Because of the small orifices normally associated with these devices, they often malfunction and require frequent servicing. Installation of a particulate filter in the air or nitrogen feed lines helps to ensure longer trouble free operation, thus reducing down-time.

SEMICONDUCTOR MANUFACTURING
With increasing levels of device density the effect of particulate contamination becomes more damaging to potential yields. Semiconductor manufacturers install these filters in virtually all their gas lines to reduce the effects of particulates and improve their production yields.

TEFLON â MEMBRANE GAS LINE FILTER 0.01 MICRONS
Series 5000

The Teflon®n medium in this filter efficiently traps particles down to 0.01 microns. These units may be installed in gas lines supplied by cylinders or bulk sources. Both the materials and manner of construction render the Series 5000 units compatible with a wide variety of gases.

FEATURES
- 100% efficient at 0.01 micron level.
- Filter medium - porous PTFE Teflon® membrane.
- All welded 316L stainless steel construction.
- Internal finish - less than 15 Ra.
- 0.5 sq. ft. filter area provides high particle retention capacity.
- Excellent compatibility with a wide variety of gases.

SPECIFICATIONS
Filtration: 100% @ 0.01 microns
Max. Operating Pressure: 1000 psig @ 70°F.
Max. Operating Temperature: 100'F.
Max. Flow: 250 slpm @ 15 psi AP

HOW TO ORDER

		Connection Size		Dimensions			
				Length		Diameter	
Type of End Connection	Model Number	Inlet**	Outlet**	Incn	mm	Inch	mm
Standard Pipe	5000-P4FF	1/4 " NPT female	1/4" NPT female	4.75	120.6	2.20	55.9
Tubing	51 00-T4FF	1/4" tubing compression	1/4" tubing compression	5.56	141.2	2.20	55.9
Compression	51 00-T8FF	1/2" tubing compression	1/2" tubing compression	5.81	147.6	2.20	55.9
VCR® Compatible Face Seal	520044MM	1/4" face seal male	1/4" face seal male	5.62	142.7	2.20	55.9
**Other end fitting configurations available on request.							

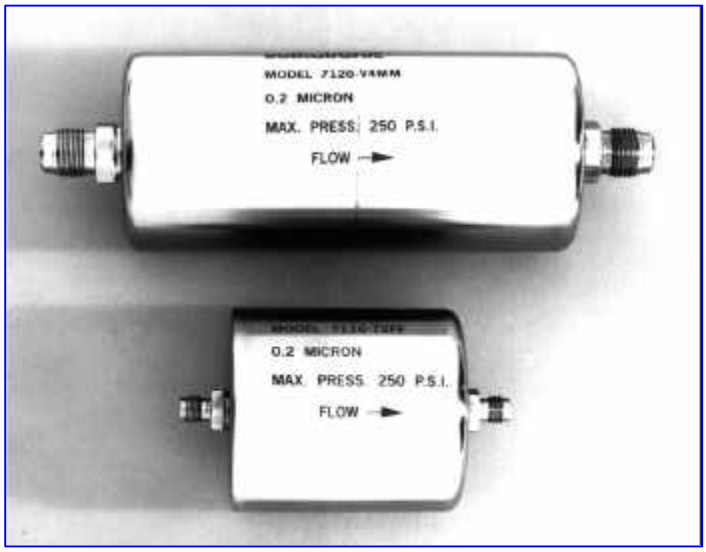
Gas Equipment

DEPTH GAS FILTERS - 0.2

DESCRIPTION

The Series 7100 depth filters are the workhorses of laboratories and many high purity industrial processes. They are routinely used in critical gas lines and as pre-filters to extend the lifetime of more expensive filtration units. They are designed to provide high filtration efficiency at an economical cost.

The Series 7100 filters employ a microporous fiberglass media held in a 316 stainless steel all welded housing. They are available in two sizes that accommodate most flow requirements



FEATURES

- 100% filtration efficiency at 0.2 micron level.
- All welded 316 stainless steel construction provides compatibility with a variety of gases.
- Long service life - particles are collected in the filter matrix throughout the depth of the filter.

MICRONS
Series 7100

SPECIFICATIONS

Filtration: 100% @ 0.2 microns Max. Operating Pressure: 250 psig Operating Temperature: 0° to 165°F.

HOW TO ORDER

		Connection Size		Dimensions Inches		Max. Flow @ 15PSIG Inlet SLPM
Type of End Connection	Model Number	Inlet**	Outlet**	Length	Dia.	
Standard Pipe	711 O-P4FF 7120-P8FF	1/4 " NPT female 1/2 " NPT female	1/4 " NPT female 1/2 " NPT female	3.00 4.07	1.66 2.38	100 500
Tubing Compression	711 0-T4FF 7120-T6FF	1/4" tubing compression 3/8" tubing compression 1/2" tubing compression	1/4" tubing compression 3/8" tubing compression 1/2" tubing compression	4.09 5.02 5.30	1.66 2.38 2.38	100 400 500
VCR® Compatible Face Seal	7120-T8FF 711044MM	1/4" face seal male	1/4" face seal male	3.74	1.66	100

**Other end fitting configurations available on request.

Gas Equipment

IN-LINE FILTER
Series 7500

FEATURES

- Compact in-line design with large filtration area
- Sintered 316 stainless steel element
- Choice of 1, 2, 5, 10, 50, or 100 micron filter element

SPECIFICATIONS

Operating Pressure: Brass: 3000 psig
316 SS: 6000 psig*
Operating Temp.: Brass: -30O°F to 275°F
316SS: -15°F to 400°F

MATERIALS OF CONSTRUCTION

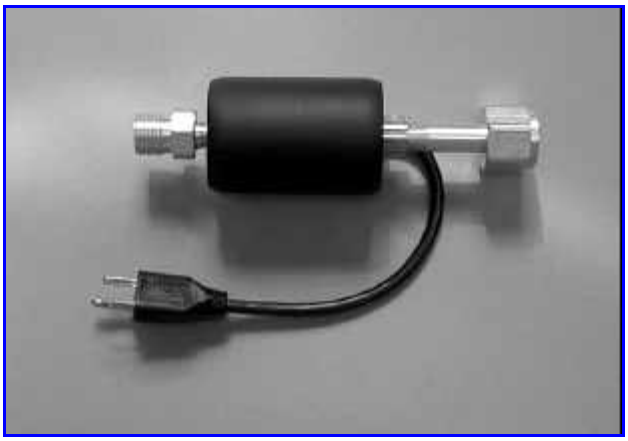
Model	Body	Seals	Filter Element
7510	brass	Buna-N	316 stainless steel
7520		316SS	Viton
		316 stainless steel	

HOW TO ORDER

Model	Inlet and Outlet Connections
7510-X-P4MM	1/4" NPT male x 1/4" NPT male
751 0-X-P4FF	1/4" NPT female x 1/4" NPT female
7510-X-T4FF	1/4" compression x 1/4" compression
7520-X-P4MM	1/4" NPT male x 1/4" NPT male
7520-X-P4FF	1/4" NPT female x 1/4" NPT female
7520-X-T4FF	1/4" compression x 1/4" compression

Other end fitting configurations are available.
X - Specify filter element 1, 2, 5, 10, 50, or 100 microns.
* 2 micron filter operating pressure is 3000 psig

GAS HEATERS
Series 6284



DESCRIPTION

The series 6284 gas heaters when installed between the cylinder and the regulator are designed to reduce the problem of regulator icing that is associated with high flow withdrawal rates of some gases due to their expansion from high pressure to low pressure.

This thermostatically controlled heater will not overheat the gas and can be left unattended without any gas flow.

SPECIFICATIONS

Material:	Steel case with black oxide finish covering a solid brass body
Max. flow:	90 cubic feet/hour
Voltage:	115 volt single phase 60 hz, 200 watts provided through a foot grounded cord with molded plug.
Heating Range:	Thermostat between 160°F - 190°F Outer case temperature 850F
Dimensions:	6 5/8" overall length, 2 1/2" diameter.
Weight:	2 pounds

HOW TO ORDER

Model	Application
6284-320	Carbon Dioxide
6284-326	Nitrous Oxide
6284-580	Argon