ELIMINATOR™ CA

Room Temperature Purifiers for Inert Gases and Hydrogen

NuPure™ Eliminator™ Model 600 CA

APPLICATIONS

- Semiconductor Industry
- High Purity Welding
- Inert Gas Purge
- Gas Cylinder Cabinets
- Gas Analyzer Carts
- Research and Development

FEATURES

- Removal of impurities to <1 ppb
- No heaters or power required
- Room-temperature operation
- 316L SS (<10 Ra EP) vessel
- Factory regenerable for up to 10 year life
- Field regenerable for up to 10 year life
- Improved process equipment performance
- Optional built-in 0.003 µm filter (PF type)
- High Flow - up to 2500 slpm
- Lowest cost (initial and operating)

NuPure's Eliminator™ CA Gas Purifiers reduce gaseous impurities to sub-ppb levels at room temperature operation. The Eliminator™ removes H_2O, O_2, CO, CO_2, H_2 and NMHC's to <1 ppb from any inert gas (Nitrogen, Argon, Helium, Krypton, Neon and Xenon) and H_2O, O_2 and CO_2 from Hydrogen. They are ideally suited to purifying gases from liquid sources.

The NuPure™ Eliminator™ Catalyst/Absorber (CA) chemistry represents a major improvement over catalyst-only purifiers. For example, the moisture capacity of the NuPure™ Model 600 CA is more than *twice* the moisture capacity of the Aeronex Model 500!

The NuPure Eliminator™ CA gas purifiers come in standard size ranges from 0 to 2500 slpm, with the high-flow purifier versions especially suitable for applications such as welding or purging. The use of optional factory-installed inlet isolation valve (shown in photo) is recommended for elimination of possible operator error during installation.

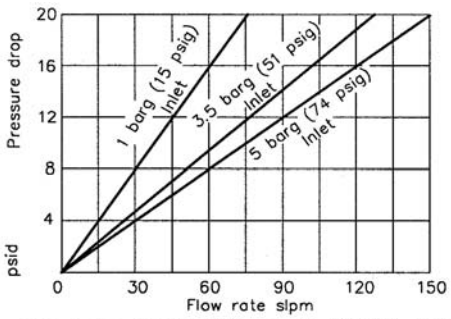
IMPURITIES REMOVED

Gas	Version	H_2O	O_2	CO_2	CO	N_2	H_2	NMHCs	Particles
N_2	PF or XL	<1 ppb	<1 ppb	<1 ppb	<1 ppb	-	<1 ppb	<1 ppb	0.003 µm or 1 µm
Noble	PF or XL	<1 ppb	<1 ppb	<1 ppb	<1 ppb	N / R[1]	<1 ppb	<1 ppb	0.003 µm or 1 µm
H_2	PF or XL	<1 ppb	<1 ppb	<1 ppb	N / R[1]	N / R[1]	-	<1 ppb	0.003 µm or 1 µm

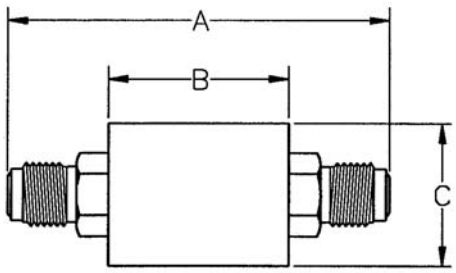
1 - N /R = Not Removed. Removal of all impurities can be accomplished using ***heated getter*** gas purifiers.
See brochures for NuPure™ PF Series® and Omni™ Series Gas Purifiers.

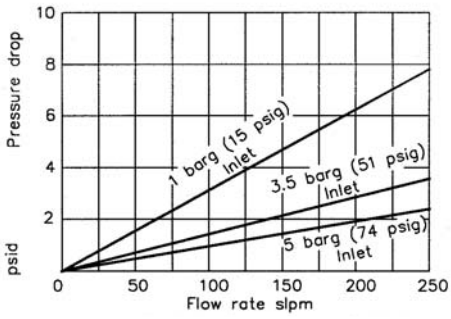
NuPure™ ELIMINATOR™ CA

Dimensional and Perfomance Specifications

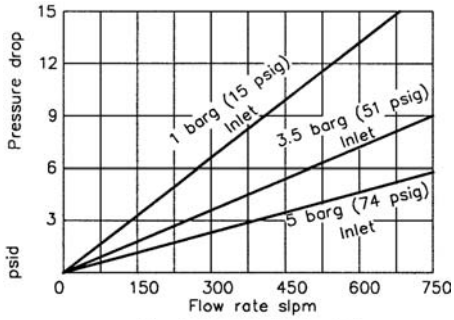


Models 1200 CA and 3000 CA (VR4)

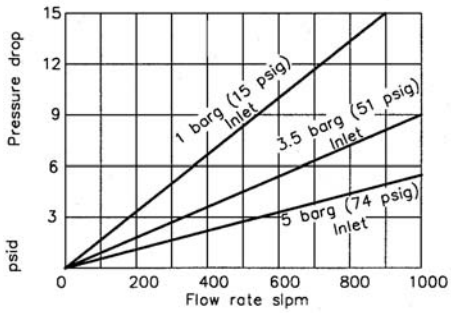




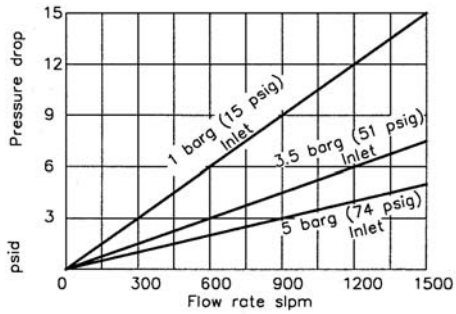
Models 3000 CA (VR2) and 5000 CA



Model 10000 CA



Model 15000 CA



Model 25000 CA

Purifier Model	A in (mm)	B in (mm)	C in (mm)	Particle Filtration Level	Max Flow	Part Number[2]
Mini CA	4.5 (114)	2.7 (69)	1.0 (25)	0.003 µm[1] or 1 µm	4 slpm	00040-CA-VR4-***GAS***-PF[1] or XL
100 CA	4.5 (114)	2.7 (69)	1.5 (38)	0.003 µm[1] or 1 µm	12 slpm	00100-CA-VR4-***GAS***-PF[1] or XL
200 CA	6.0 (152)	4.2 (107)	1.5 (38)	0.003 µm[1] or 1 µm	25 slpm	00200-CA-VR4-***GAS***-PF[1] or XL
500 CA	7.9 (202)	6.1 (156)	2.0 (51)	0.003 µm[1] or 1 µm	50 slpm	00500-CA-VR4-***GAS***-PF[1] or XL
600 CA	8.2 (208)	6.5 (167)	2.0 (51)	0.003 µm[1] or 1 µm	75 slpm	00600-CA-VR4-***GAS***-PF[1] or XL
1000 CA[3]	12.9 (328)	11.1 (283)	2.0 (51)	0.003 µm[1] or 1 µm	125 slpm	01000-CA-VR4-***GAS***-PF[1] or XL
1200 CA	7.9 (202)	6.1 (156)	3.0 (76)	0.003 µm[1] or 1 µm	150 slpm	01200-CA-VR4-***GAS***-PF[1] or XL
2000 CA	17.7 (449)	15.9 (402)	2.5 (63)	0.003 µm[1] or 1 µm	250 slpm	02000-CA-VR4-***GAS***-PF[1] or XL
3000 CA	17.3 (439)	15.5 (394)	3.0 (76)	0.003 µm[1] or 1 µm	300 slpm	03000-CA-VR4-***GAS***-PF[1] or XL
3000 CA	17.7 (449)	15.6 (396)	3.0 (76)	0.003 µm[1] or 1 µm	500 slpm	03000-CA-VR2-***GAS***-PF[1] or XL
5000 CA[4]	25.3 (643)	23.2 (590)	3.0 (76)	0.003 µm[1] or 1 µm	850 slpm	05000-CA-VR2-***GAS***-PF[1] or XL
10000 CA[4]	35.9 (913)	33.8 (860)	4.0 (101)	0.003 µm[1] or 1 µm	1200 slpm	10000-CA-VR2-***GAS***-PF[1] or XL
15000 CA[4]	35.9 (913)	33.8 (860)	5.0 (127)	0.003 µm[1] or 1 µm	1800 slpm	15000-CA-VR2-***GAS***-PF[1] or XL
25000 CA[4]	35.9 (913)	33.8 (860)	6.0 (152)	0.003 µm[1] or 1 µm	2500 slpm	25000-CA-VR2-***GAS***-PF[1] or XL

Maximum Pressure	250 psig (USA) / 9.9 kg/cm^{2}G (Japan)	**Materials**	316L SS (<10 Ra EP)
Operating Temperature	Room Temperature	**Fittings**	1/4" MVCR[5] available on sizes Mini-3000
Leak Rate	<2 x 10^{-9} atm cc/sec He		1/2" MVCR[5] available on sizes 600-25000

1 - Sub-micron filtration only with PF version. 2 - Instead of ***"GAS"*** put "I" for Inert Gases (e.g. 00600-CA-VR4-I-PF), or "H2" (e.g. 01000-CA-VR4-H2-PF) for Hydrogen or Hydrogen Mixes (e.g. N_2/H_2, Ar/H_2).

3 - For model 1000 dimension "A" has changed from 12.1 in to 12.9 in, dimension "B" has changed from 10.3 in to 11.1 in.

4 - For models 5000 and larger - the printed dimensions are subject to change. Please check with factory prior to ordering.

5 - VCR-compatible standard. VCR is Registered Trademark of Cajon Corporation. Special fittings on request.

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ELIMINATOR™ CAG

Room Temperature Purifiers for Inert Gases

NuPure™ Eliminator™ Model 600 CAG

FEATURES

- Removal of impurities to <0.5 ppb[1]
- No heaters or power required
- Room-temperature operation
- 316L SS (<10 Ra EP) vessel
- Factory/Field regenerable for up to 10 year life - *no need for H_2 in regeneration gas*
- Improved process equipment performance
- Optional built-in 0.003 µm filter (PF type)
- High Flow - up to 300 slpm
- Low cost (initial and operating)

APPLICATIONS

- APIMS Zero and Calibration
- Semiconductor Industry
- Semiconductor Process Equipment
- Gas Cylinder Cabinets
- Gas Analyzer Carts
- Analytical Industry
- Research and Development

The NuPure™ Eliminator™ CAG uses a new, patented Catalyst/Absorber/Getter (CAG) purifier technology, which represents a major improvement over all other inert gas chemistries. This results in the best outlet purity guarantees of <0.5 ppb[1] per impurity[2]. The CAG purifiers achieve this outstanding performance at *room temperature.* They are ideally suited to purifying inert gases from liquid sources.

The NuPure™ Eliminator™ CAG gas purifiers come in standard size ranges from 0 to 300 slpm, with the XL version especially suitable for high flow applications. The use of factory-installed inlet isolation valve is recommended for ease of installation, and elimination of possible operator error.

With the purchase of the newly-introduced Field Regeneration Kit, the purifier's operating cost can be reduced to almost zero. Field regeneration is particularly simple and convenient because the CAG can be regenerated *without need for hydrogen!*

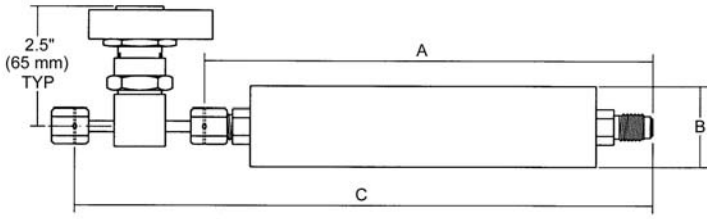
IMPURITIES REMOVED[1]

Gas	Version	H_2O	O_2	CO_2	CO	H_2	NMHCs	CH_4	Particles[2]
N_2	PF or XL	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	< 1 pcf down to 0.01 µm
Noble	PF or XL	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	< 1 pcf down to 0.01 µm

1 - Based on VLSI Grade Liquid Gas source. Nitrogen not removed from noble gases. Removal of nitrogen can be accomplished using ***heated getter*** purifiers. See brochures for NuPure™ PF Series® and Omni™ Series Gas Purifiers.
2 - Particle removal is guaranteed with PF version only

NuPure™ ELIMINATOR™ CAG

Dimensional and Perfomance Specifications

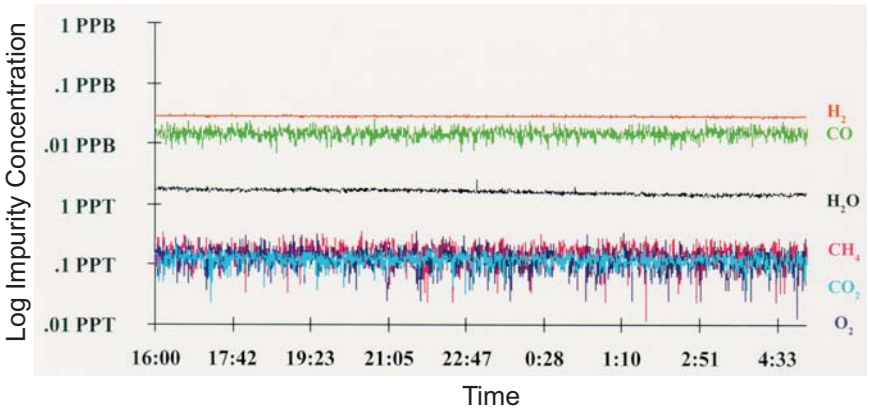


Model	A in (mm)	B in (mm)	C in (mm)	Average Flow @1 yr regeneration	Max Flow[1] @130 psig
E 40 CAG	5.7 (145)	1.0 (25)	8.5 (216)	0.3 slpm	3 slpm
E 100 CAG	5.7 (145)	1.5 (38)	8.5 (216)	0.8 slpm	8 slpm
E 200 CAG	10 (254)	1.5 (38)	12.8 (325)	2 slpm	20 splm
E 600 CAG	14.6 (371)	2.0 (51)	17.4 (442)	6 slpm	60 slpm
E 1000 CAG	22.1 (561)	2.0 (51)	24.9 (632)	10 slpm	100 slpm
E 2000 CAG	33.1 (841)	2.5 (63)	35.9 (912)	20 slpm	200 slpm

Maximum Pressure	250 psig (USA) / 9.9 kg/cm^{2}G (Japan)	**Materials**	316L SS (<10 Ra EP)
Operating Temperature	Room Temperature	**Fittings**	1/4" VCR[2]
Leak Rate	< 2 x 10^{-9} atm cc/sec He	**Gas Inlet**	VLSI grade (99.9995% minimum)

1 - Operation at high flow may result in a high pressure drop. Contact factory for technical assistance.
2 - VCR compatible fitting standard. VCR is a Registered Trademark of Cajon Corporation.

NuPure™ ELIMINATOR™ Nitrogen Purifier
Model 200 CAG @ 5 slpm, 130 psig
Outlet Purity data as measured by APIMS*



*Tested by a VG Gas Analysis Systems APIMS.

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ELIMINATOR™ CG

Room Temperature Purifier for Inert Gases

NuPure Eliminator™ Model 600 CG

FEATURES

- Removal of impurities to <0.5 ppb[1]
- Removes *all* hydrocarbons, including CH_4
- No heaters or power required
- Room-temperature operation
- 316L SS (<10 Ra EP) vessel
- Factory regenerable for up to 10 year life
- Field regenerable for up to 10 year life
- Improved process equipment performance
- Optional built-in 0.003 µm filter (PF type)
- High Flow - up to 2500 slpm
- Low cost (initial and operating)

APPLICATIONS

- Zero-Hydrocarbon UHP Gas Purge
- APIMS Zero and Calibration
- Semiconductor Process Equipment
- Gas Cylinder Cabinets
- Gas Analyzer Carts
- Analytical Industry
- Research and Development

NuPure's Eliminator™ CG Gas Purifier is designed to purify Inert Gases (Nitrogen or Noble Gases) to state-of-the-art purity, using a ***patented*** design and process. It removes ***all*** hydrocarbons (including methane), and all other gaseous impurities found in Inert gases, to PPT levels using *room temperature operation.* The Eliminator™ CG is ideal for ***critical process and purging*** applications.

The NuPure™ Eliminator™ CG contains a new patented combination of catalyst and metal getter. It contains no hydrocarbon or sulfur compounds. The Eliminator™ CG Purifier incorporates a new unique internal filter design combined with a short purifier geometry, allowing a ***very high flow*** combined with a ***very low pressure drop.***

The Eliminator™ CG gas purifiers come in standard size ranges from 0 to 2500 slpm. The use of optional factory-installed inlet isolation valve (shown in photo) is recommended for elimination of possible operator error during installation. Optional high Cv valves are available to ensure a low system pressure drop.

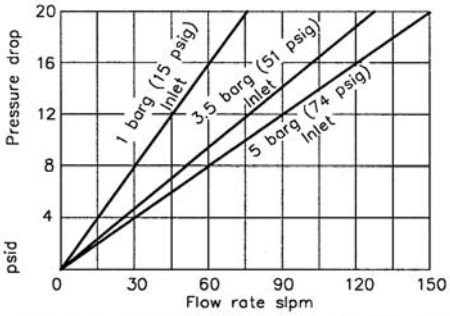
IMPURITIES REMOVED[1]

Gas	Version	H_2O	O_2	CO_2	CO	H_2	NMHCs	CH_4	Particles
N_2	PF or XL	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<1.0 ppb	0.003 µm or 1 µm
Noble	PF or XL	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<1.0 ppb	0.003 µm or 1 µm

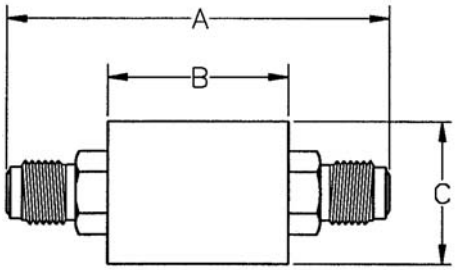
1 - Based on a VLSI Grade Liquid Gas source. Nitrogen not removed from noble gases. Removal of nitrogen can be accomplished using ***heated getter*** purifiers. See brochures for NuPure™ PF Series® and Omni™ Series Gas Purifiers.

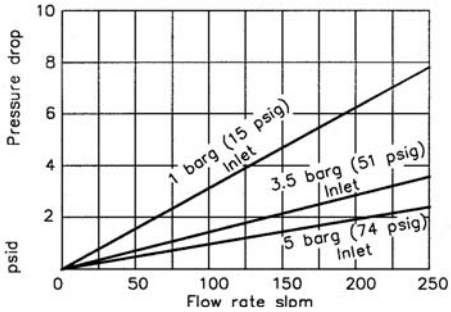
ELIMINATOR™ CG

Dimensional and Perfomance Specifications

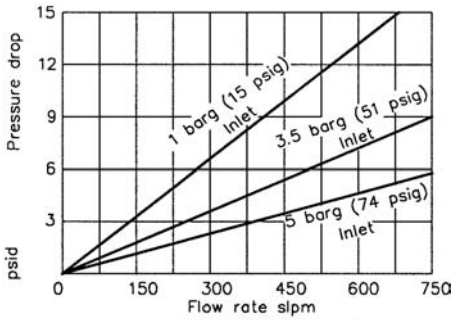


Models 1200 CG and 3000 CG (VR4)

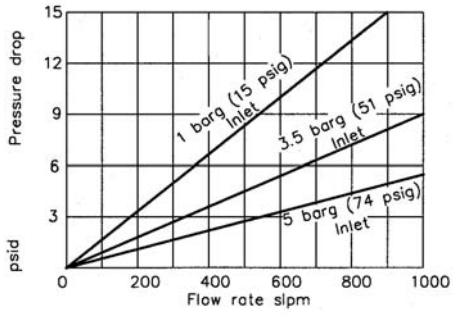




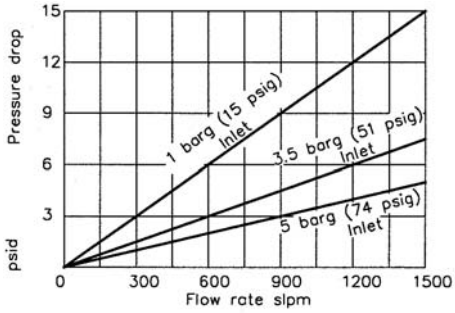
Models 3000 CG (VR2) and 5000 CG



Model 10000 CG



Model 15000 CG



Model 25000 CG

Purifier Model	A in (mm)	B in (mm)	C in (mm)	Particle Filtration Level	Max Flow	Part Number
Mini CG	4.5 (114)	2.7 (69)	1.0 (25)	0.003 µm[1] or 1 µm	4 slpm	00040-CG-VR4-PF[1] or XL
100 CG	4.5 (114)	2.7 (69)	1.5 (38)	0.003 µm[1] or 1 µm	12 slpm	00100-CG-VR4-PF[1] or XL
200 CG	6.0 (152)	4.2 (107)	1.5 (38)	0.003 µm[1] or 1 µm	25 slpm	00200-CG-VR4-PF[1] or XL
500 CG	7.9 (202)	6.1 (156)	2.0 (51)	0.003 µm[1] or 1 µm	50 slpm	00500-CG-VR4-PF[1] or XL
600 CG	8.2 (208)	6.5 (167)	2.0 (51)	0.003 µm[1] or 1 µm	75 slpm	00600-CG-VR4-PF[1] or XL
1000 CG[2]	12.9 (328)	11.1 (282)	2.0 (51)	0.003 µm[1] or 1 µm	85 slpm	01000-CG-VR4-PF[1] or XL
1200 CG	7.9 (202)	6.1 (156)	3.0 (76)	0.003 µm[1] or 1 µm	150 slpm	01200-CG-VR4-PF[1] or XL
2000 CG	17.7 (449)	15.9 (402)	2.5 (63)	0.003 µm[1] or 1 µm	250 slpm	02000-CG-VR4-PF[1] or XL
3000 CG	17.3 (439)	15.5 (394)	3.0 (76)	0.003 µm[1] or 1 µm	300 slpm	03000-CG-VR4-PF[1] or XL
3000 CG	17.7 (449)	15.6 (396)	3.0 (76)	0.003 µm[1] or 1 µm	500 slpm	03000-CG-VR2-PF[1] or XL
5000 CG[3]	25.3 (643)	23.2 (590)	3.0 (76)	0.003 µm[1] or 1 µm	850 slpm	05000-CG-VR2-PF[1] or XL
10000 CG[3]	35.9 (913)	33.8 (860)	4.0 (101)	0.003 µm[1] or 1 µm	1200 slpm	10000-CG-VR2-PF[1] or XL
15000 CG[3]	35.9 (913)	33.8 (860)	5.0 (127)	0.003 µm[1] or 1 µm	1800 slpm	15000-CG-VR2-PF[1] or XL
25000 CG[3]	35.9 (913)	33.8 (860)	6.0 (152)	0.003 µm[1] or 1 µm	2500 slpm	25000-CG-VR2-PF[1] or XL

Maximum Pressure	250 psig (USA) / 9.9 kg/cm^{2}G (Japan)	**Materials**	316L SS (<10 Ra EP)
Operating Temperature	Room Temperature	**Fittings**	1/4" MVCR[4] available on sizes Mini-3000
Leak Rate	<2 x 10^{-9} atm cc/sec He		1/2" MVCR[4] available on sizes 600-25000

1 - Sub-micron filtration only with PF version.
2 - For model 1000 dimension "A" has changed from 12.1 in to 12.9 in, dimension "B" has changed from 10.3 in to 11.1 in.
3 - For models 5000 and larger - printed dimensions are subject to future change. Please check with factory prior to ordering.
4 - VCR-compatible standard. VCR is Registered Trademark of Cajon Corporation. Special fittings on request.

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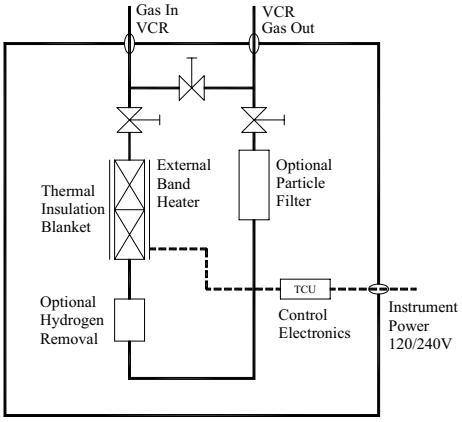
UltraPure® High Flow Gas Purifiers and Bulk Gas Component Sets



Typical Installation

FEATURES

- Cost effective alternative to a turnkey system
- Easy-to-assemble.
- Sub-ppb removal of impurities from Inert gases, Nitrogen, Hydrogen, Acid Gases, and Oxygen.
- Certified temperature control unit and electronics box designed for simple operation and reliability.
- 316L stainless steel (< 15Ra) electropolished wetted surface finish
- In-Situ regeneration and bakeable to 450°C

APPLICATIONS

- Semiconductor Industry
- High Purity Welding
- Fab Construction
- Temporary Gas Purifier
- Purge Gases

UltraPure® High Flow Gas Purifiers and Bulk Gas Component Sets (BGCS) allow for the simple fabrication of Gas Purifier Systems for flows ranging from 30 - 2250 slpm, for most process gases including Nitrogen, Argon, Helium, Hydrogen and Oxygen. The UltraPure® High Flow Gas Purifiers and BGCS will reduce gaseous impurities, H_2O, O_2, CO, N_2, CO_2, CH_4 and $(H_2)^1$ to sub-ppb levels.

High pressure purifiers (max 3000 psig) are available upon request, ideal for gas bottle filling plants and other similar high pressure applications.

LISTING OF GASES PURIFIED / FILTERED

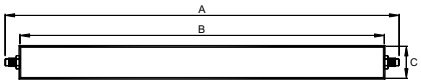
Inert Gases	Hydrogen / Hydrides	Acid Gases	Oxygen
Impurities Removed H_2O, O_2, CO, CO_2, H_2^1 $(N_2, CH_4)^2$	Impurities Removed H_2O, O_2, CO_2, CO, $(N_2)^3$	Impurities Removed H_2O	Impurities Removed H_2O, CO_2, $(H_2$, CO,$CH_4)^4$
Argon Helium Nitrogen	Hydrogen Argon/Hydrogen Nitrogen/Hydrogen Ammonia Silane	Hydrogen Chloride	Oxygen Air Nitrious Oxide

1 - Only with purchase of -H model. 2 - Additional impurities removed from Ar, He & N_2 only using heated getter.
3 - Nitrogen and Methane removed from Hydrogen, Argon/Hydroge and Nitrogen/Hydrogen, using heated getter.
4 - Only with purchase of optional heated catalyst.

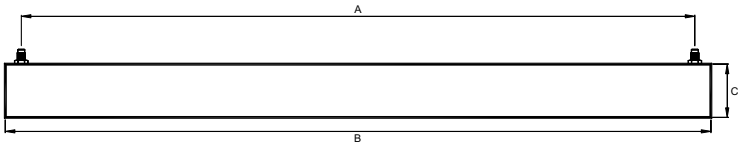
UltraPure® High Flow Purifier Vessels

Dimensional and Performance Specifications

Model 3,500 - 10,000



Model 20,000 - 50,000



Model	A inches	B inches	C inches	Fittings inches	Average Flows (slpm)[1] 1 year lifetime (removal of impurities per chart page 1)	Max Flow (slpm) @ 150 psig Heated	Max Flow (slpm) @ 150 psig Room Temp
3500	13.5”	11.0”	3.5"	1/2”	30	160	280
5000	32.4”	30.4”	3.0”	1/2”	45	225	395
10,000	47.0”	45.0”	4.0”	1/2”	90	450	790
20,000	63.0”	66.0”	5.0”	1/2”	180	900	1,575
30,000	63.0”	66.0”	6.0”	1/2”	270	1,350	2,376
50,000	63.0”	66.0”	7.5”	3/4”	450	2,250	4,000

Maximum Pressure	250 psig (USA)/9.9 kg/cm^{3}G (Japan)	**Materials**	316L S.S. (< 15 Ra Max)
Operating Temperature	Room Temperature or 375-450^{o}C	**Fittings**	MVCR
Leak Rate	< 2 x 10^{-10} atm cc/sec He	**Gas Inlet**	VLSI grade (99.9995% nominal)[1]

1 - Lifetime is inversely proportional to the total inlet impurity level and to the average flow. Lifetime for H_2O/O_2 removal only using getter purifiers is approx. **4 years** at the stated flows / inlet gas. Room temperature getter purifiers require periodic regeneration to achieve this total lifetime

Optional Accessories

- UHP High Flow Gas Valves
- 0.003 µm Ceramic or Metal Particle Filter
- Pressure Transducer with digital display
- High Pressure Vessels (ASME Code)
- Heat Exchanger
- External Band Heater (See note below)
- Thermal Insulation Blanket
- High Flow Mass Flow Meters
- TCU Electronics Assembly
- APIMS testing for all impurities

Note: For regeneration and for applications requiring removal of all impurities, an external band heater TCU electronics assembly is required.

NuPure

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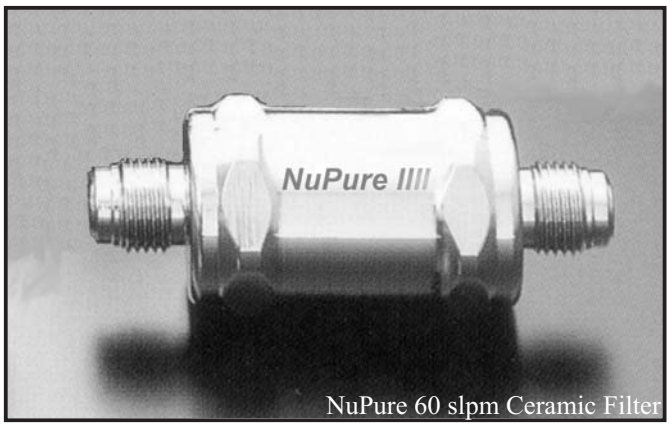
Or Contact:

Ceramic and Metal Gas Particle Filters



NuPure 60 slpm Ceramic Filter

APPLICATIONS

- Semiconductor Industry
- Zero for Particle Testing
- Gas Cabinets
- Valve Manifold Boxes
- Process Tool Gas Panels
- Research and Development
- Specialty Gas Mixing

In today's demanding semiconductor industry, there is a greater need for the removal of particles suspended in the gas phase to increase product yield and protect expensive tooling. In addition to the extensive gas purification product line, NuPure offers a broad selection of both Ceramic and Metal particle filters giving the semiconductor industry and process equipment manufacturers a total solution to the delivery of Ultra-Clean gases to the point-of-use.

FEATURES

- Ultra fine filtration down to 0.003 µm
- Particle retention up to 99.9999999% (9 log)
- Flow rates up to 360 slpm (at 5 atm operating)
- Inert and corrosive gas applications
- No shedding
- 316L SS VAR (<5 Ra EP) surface finish
- Hastelloy C-22 housing for corrosive gases
- Bakeable 450°C (SS) / 120°C (Ceramic)
- High Pressure Rating (to 3000 psig)
- Leak rate tested to $<2 \times 10^{-10}$ atm cc/sec He

C3 Ceramic Filter: NuPure's C3 Series Ceramic Gas Filters employ tube-type ceramic filter media that features 20% less surface area than competitors hexagonal multichannel media. As a result these filters demonstrate excellent out-gassing characteristics and extremely rapid gas displacement. The use of rigid ceramic media eliminates particle shedding during pressure or flow fluctuations. Three layer construction, each layer with successively smaller pores, provides 99.9999999% retention efficiency at removing particles down to .003µm in size, while maintaining good flow characteristics.

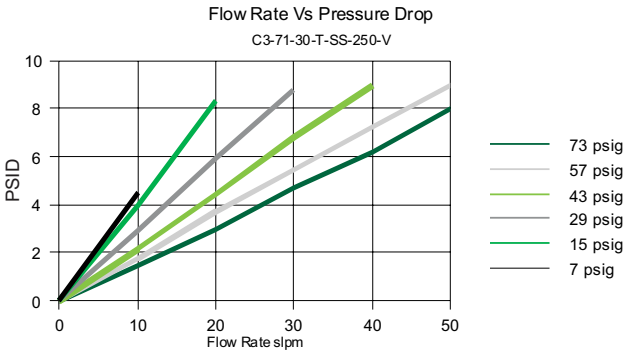
C2 Ceramic Filter: NuPure's C2 Series Ceramic Gas Filters utilize a new two-layer tube type ceramic media. The C2 combines exceptionally low pressure drop at high flows with a 99.99999% particle retention efficiency down to 0.003µm, making it especially suitable for high-flow applications.

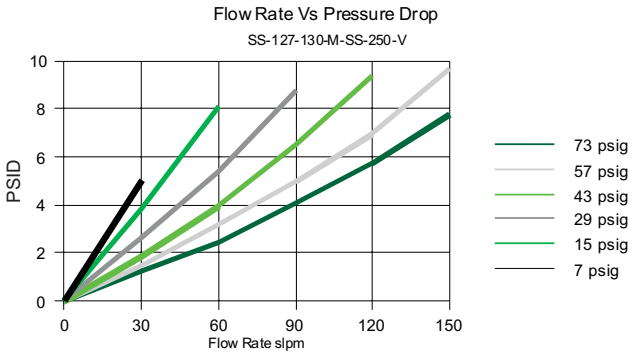
SS All-Metal Filter: The SS Series Gas Filter features all 316L stainless steel construction. The all metal design of this filter allows for operation at temperatures as high as 450°C. This high performance gas filter combines excellent particle removal efficiency, low out-gassing and low pressure drop in an extremely compact design. Factory bake-out is standard.

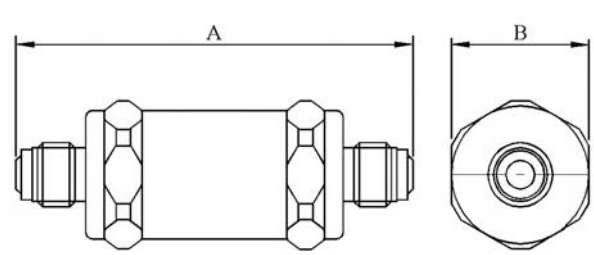
All the above series are available with either MVCR fittings, Swagelok type, or Surface Mount interface (per SEMI 2787.1, .2, .3, .4, .5). The Surface Mount configurations are available in both the 1.5" and 1.125" sizes.

NuPure™ Gas Particle Filters

Typical Perfomance and Dimensional Specifications







Part Number	Max Flow (slpm)	A (inches)	B (inches)	Filter Media	Housing Material	Maximum Pressure	Standard Fitting
C3-84-10-T-SS-250-V-B**	10 @ 9 LRV	3.31	0.83	Ceramic	316L SS/VAR	2500 psig	1/4" VCR*
C3-71-30-T-SS-250-V-B**	30 @ 9 LRV	2.80	1.18	Ceramic	316L SS/VAR	2500 psig	1/4" VCR*
C3-84-40-T-SS-250-V-B**	40 @ 9 LRV	3.31	1.18	Ceramic	316L SS/VAR	2500 psig	1/4" VCR*
C3-130-80-T-SS-250-V-B**	80 @ 9 LRV	5.12	1.18	Ceramic	316L SS/VAR	2500 psig	1/4" VCR*
C2-84-60-T-SS-250-V-B**	60 @ 7 LRV	3.31	1.18	Ceramic	316L SS/VAR	2500 psig	1/4" VCR*
C2-146-120-T-SS-375-V-B**	120 @ 7 LRV	5.75	1.67	Ceramic	316L SS/VAR	2500 psig	3/8" VCR*
C2-284-360-T-SS-500-V-B**	360 @ 7 LRV	11.18	1.67	Ceramic	316L SS/VAR	2500 psig	1/2" VCR*
SS-65-10-M-SS-250-V	10 @ 6 LRV	2.56	1.06	316L SS	316L SS/VAR	3000 psig	1/4" VCR*
SS-84-30-M-SS-250-V	30 @ 6 LRV	3.31	1.18	316L SS	316L SS/VAR	3000 psig	1/4" VCR*
SS-127-130-M-SS-250-V	130 @ 6 LRV	5.0	1.06	316L SS	316L SS/VAR	3000 psig	1/4" VCR*
Contact Factory	10, 40, 80	-	-	Ceramic	316L SS/VAR	3000 psig	Surface Mount
Contact Factory	10, 40, 80, 120	-	-	316L SS	316L SS/VAR	3000 psig	Surface Mount

* VCR and Swagelok are the trademarks of Swagelok Co. For Swagelok fittings, replace "V" by "S" in the Part Number.

** *- B denotes ceramic filter to be supplied with optional bake-out and shipped with 316L SS Caps.*

NOTE: Baking and capping is included at no charge in all NuPure metal filters.

To order a particle filter with Hastelloy C-22 housing, please replace "SS" with "HS".

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Or Contact:

NuPure IIII **Request For Quotation**

Gas:	
Flow (slpm):	Average: Max:
Pressure (psig):	Operating: Max:
Inlet Purity (ppm):	Total: /H_2O: O_2: CO: CO_2: N_2: H_2: THC:
Outlet Purity (ppb):	Total: /H_2O: O_2: CO: CO_2: N_2: H_2: THC:
Particle Removal:	Yes ☐ 0.003 µm No ☐
Operating Time:	Hours/Day: Days/Week: Weeks/Year:
Style:	Point of use: Component Set: Bulk System: Wall Mounted:
Voltage:	100 V ☐ 115 V ☐ 230 V ☐ 208 V/3 PH ☐
Options:	Automatic Bypass: ☐ Manual Bypass: ☐ Spare Vessel: ☐ End-Point Detector - Visual: ☐ End-Point Detector – Electronic/Alarm: ☐

Name:_____Title:_____

Company: _____

Address:_____

Tel._____Fax:_____Email:_____

Additional Comments:_____

_____

_____

_____

_____

_____

NuPure IIII
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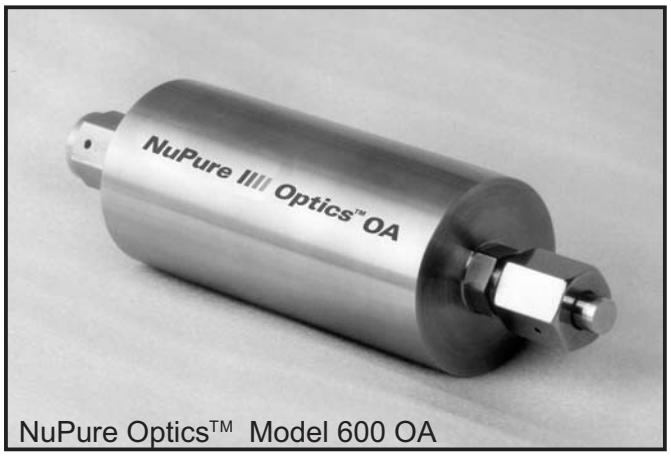
Or Contact:

Optics™ OA

Room Temperature Purifier for Optics Purge Gases



NuPure Optics™ Model 600 OA

FEATURES

- Removal of impurities to <0.5 ppb[1]
- No heaters or power required
- Room-temperature operation
- 316L SS (<10 Ra EP) vessel
- Factory regenerable for up to 10 year life
- Field regenerable for up to 10 year life
- Improved process equipment performance
- Optional built-in 0.003 µm filter (PF type)
- High Flow - up to 2500 slpm
- Lowest cost (initial and operating)

APPLICATIONS

- Photolithography
- Lens Purging
- Removal of hydrocarbons
- Removal of sulfur compounds
- Manufacturing of flat panel displays
- Metrology

NuPure's Optics™ OA Gas Purifier is designed to purify CDA, Inerts (e.g. Nitrogen or Helium), O_2 , and O_2/Inert gas mixtures. It reduces hydrocarbons and other gaseous impurities commonly found in N_2 and CDA to PPT levels using *room temperature operation.* The Optics™ OA is ideally suited to purifying gases for lens purging.

The NuPure™ Optics™ OA contains a new proprietary combination of non-reactive inorganic absorber media containing no hydrocarbons or sulfur compounds. Because the Optics™ OA does not react with oxygen, complicated temperature sensing equipment is not required and because no heat generated during our purification process, the Optics™ OA purifier can be located at the point-of-use with no effect on temperature sensitive processes.

The NuPure™ Optics™ OA gas purifiers come in standard size ranges from 0 to 2500 slpm. The use of optional factory-installed inlet isolation valve is recommended for elimination of possible operator error during installation.

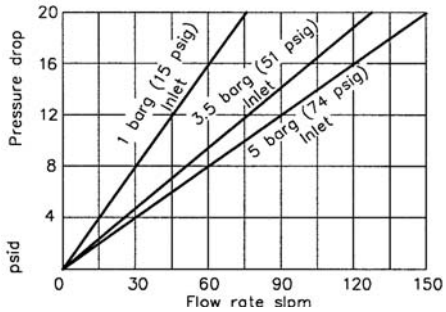
IMPURITIES REMOVED[1]

Version	SO_2/SO_x	H_2S	Toluene	CO_2/CO	NH_3	H_2O	NMHCs	Particles
PF or XL	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	0.003 µm or 1 µm

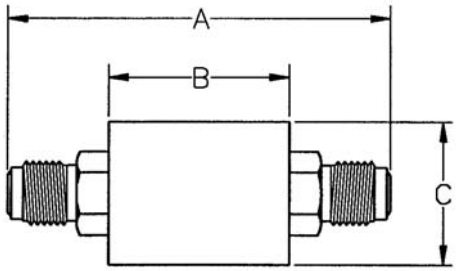
1 - Removes: acid gases, alcohols, amines, ammonia, CO/CO_2, all hydrocarbons, H_2O, H_2S, NO_x, SO_2, SO_x, siloxanes and toluene.

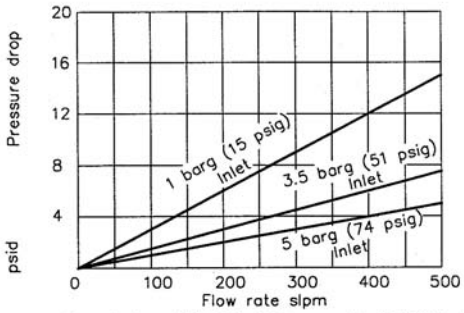
OPTICS™ OA

Dimensional and Perfomance Specifications

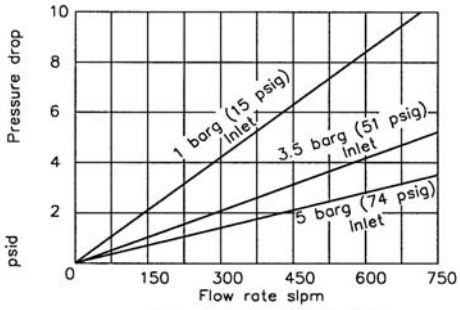


Models 1200 OA and 3000 OA (VR4)

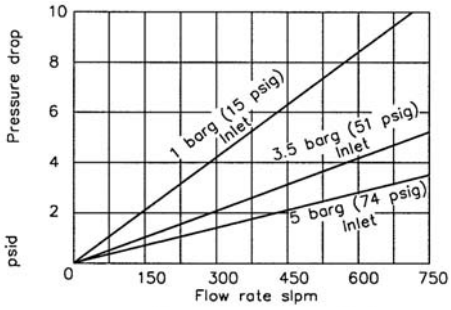




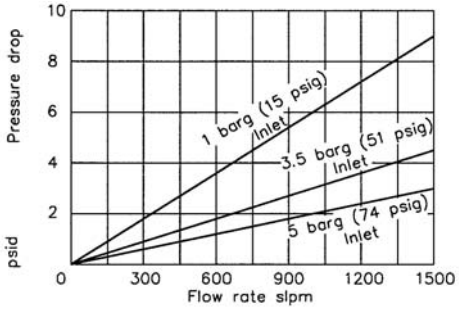
Model 3000 OA(VR2)



Models 10000 OA



Models 15000 OA



Models 25000 OA

Purifier Model	A in (mm)	B in (mm)	C in (mm)	Particle Filtration Level	Max Flow @90 psig	Part Number
Mini OA	3.3 (84)	1.5 (38)	1.0 (25)	0.003 µm[1] or 1 µm	4 slpm	00040-OA-VR4-PF[1] or XL
100 OA	3.3 (84)	1.5 (38)	1.5 (38)	0.003 µm[1] or 1 µm	12 slpm	00100-OA-VR4-PF[1] or XL
200 OA	4.8 (122)	3.0 (76)	1.5 (38)	0.003 µm[1] or 1 µm	25 slpm	00200-OA-VR4-PF[1] or XL
600 OA	6.3 (160)	4.5 (114)	2.0 (51)	0.003 µm[1] or 1 µm	75 slpm	00600-OA-VR4-PF[1] or XL
1000 OA	8.8 (224)	7.0 (178)	2.0 (51)	0.003 µm[1] or 1 µm	125 slpm	01000-OA-VR4-PF[1] or XL
1200 OA	7.9 (202)	6.1 (156)	3.0 (76)	0.003 µm[1] or 1 µm	150 slpm	01200-OA-VR4-PF[1] or XL
2000 OA	12.5 (317)	10.7 (272)	2.5 (63)	0.003 µm[1] or 1 µm	250 slpm	02000-OA-VR4-PF[1] or XL
3000 OA	17.3 (439)	15.5 (394)	3.0 (76)	0.003 µm[1] or 1 µm	350 slpm	03000-OA-VR4-PF[1] or XL
3000 OA	17.7 (449)	15.6 (396)	3.0 (76)	0.003 µm[1] or 1 µm	500 slpm	03000-OA-VR2-PF[1] or XL
10000 OA[2]	24.9 (632)	22.8 (579)	4.0 (101)	0.003 µm[1] or 1 µm	1200 slpm	10000-OA-VR2-PF[1] or XL
15000 OA[2]	24.9 (632)	22.8 (579)	5.0 (127)	0.003 µm[1] or 1 µm	1800 slpm	15000-OA-VR2-PF[1] or XL
25000 OA[2]	24.9 (632)	22.8 (579)	6.0 (152)	0.003 µm[1] or 1 µm	2500 slpm	25000-OA-VR2-PF[1] or XL

Maximum Pressure	250 psig (USA) / 9.9 kg/cm^{2}G (Japan)	**Materials**	316L SS (<10 Ra EP)
Operating Temperature	Room Temperature	**Fittings**	1/4" MVCR[3] available on sizes Mini-3000
Leak Rate	<2 x 10^{-9} atm cc/sec He		1/2" MVCR[3] available on sizes 600-25000

1 - Sub-micron filtration only with PF version.
2 - For models 10000 and larger - the printed dimensions are subject to future change. Please check with factory prior to ordering.
3 - VCR-compatible standard. VCR is Registered Trademark of Cajon Corporation. Special fittings on request.

NuPure
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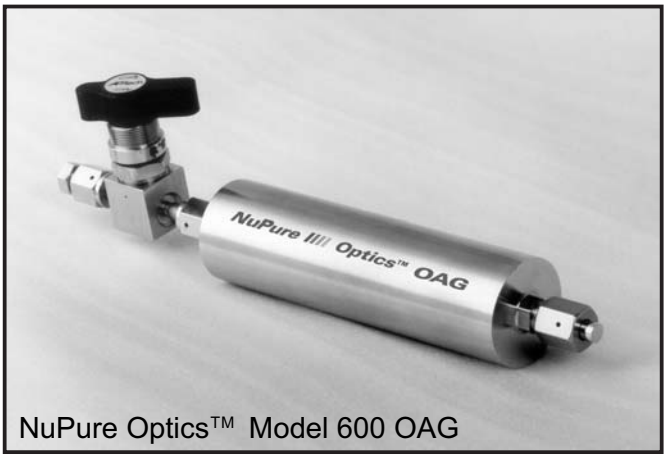
Or Contact:

Optics™ OAG

Room Temperature Purifier for Optics Purge Gases



NuPure Optics™ Model 600 OAG

APPLICATIONS

- Photolithography
- Lens Purging
- Removal of all hydrocarbons
- Removal of sulfur compounds
- Manufacturing of flat panel displays
- Metrology
- Research and Development

FEATURES

- Removal of impurities to <0.5 ppb[1]
- Removes *all* hydrocarbons, including CH_4
- No heaters or power required
- Room-temperature operation
- 316L SS (<10 Ra EP) vessel
- Factory regenerable for up to 10 year life
- Field regenerable for up to 10 year life
- Improved process equipment performance
- Optional built-in 0.003 µm filter (PF type)
- High Flow - up to 2500 slpm
- Low cost (initial and operating)

NuPure's Optics™ OAG Gas Purifier is designed to purify CDA, Inert Gases (Nitrogen or Helium), O_2, and O_2/Inert Gas mixtures. It removes ***all*** hydrocarbons (including methane) and all other gaseous impurities commonly found in purge gases to PPT levels using *room temperature operation.* The Optics™ OAG is ideal for the ***most critical applications*** in lens purging.

The NuPure™ Optics™ OAG contains a new proprietary combination of non-reactive inorganic absorber media and oxygen-stabilized metal getter *(patent pending)*. It contains no hydrocarbon or sulfur compounds. Because the Optics™ OAG does not react with oxygen, complicated temperature sensing equipment is not required, and it can be located at the point-of-use with no effect on temperature sensitive processes.

The NuPure™ Optics™ OAG gas purifiers come in standard size ranges from 0 to 2500 slpm. The use of optional factory-installed inlet isolation valve (shown in photo) is recommended for elimination of possible operator error during installation. Optional high Cv valves are available to ensure a low system pressure drop.

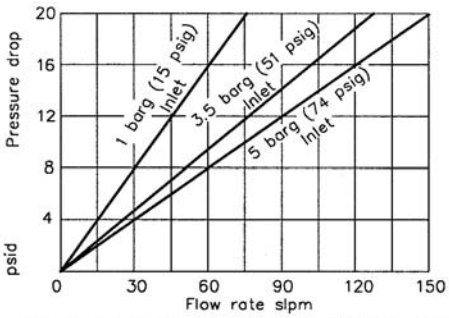
IMPURITIES REMOVED[1]

Version	SO_2/SO_x	Toluene	CO_2/CO	NH_3	H_2O	CH_4	NMHCs	Particles
PF or XL	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	<0.5 ppb	0.003 µm or 1 µm

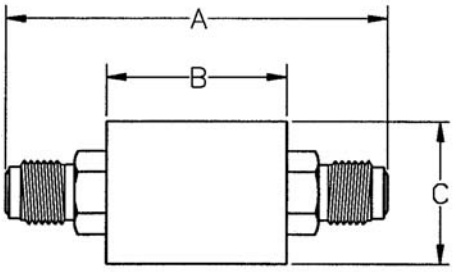
1 - Removes: acid gases, alcohols, amines, ammonia, CO/CO_2, all hydrocarbons, H_2O, H_2S, NO_x, SO_2, SO_x, siloxanes and toluene.

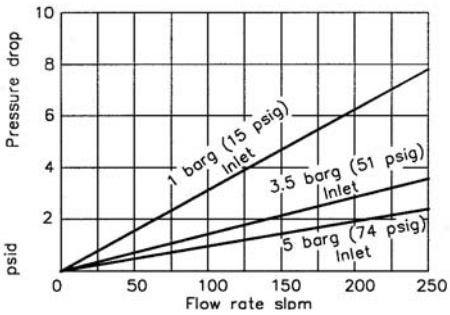
OPTICS™ OAG

Dimensional and Perfomance Specifications

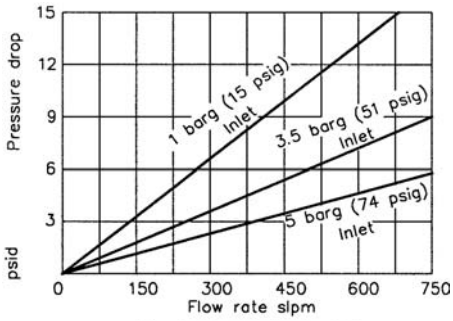


Models 1200 OAG and 3000 OAG (VR4)

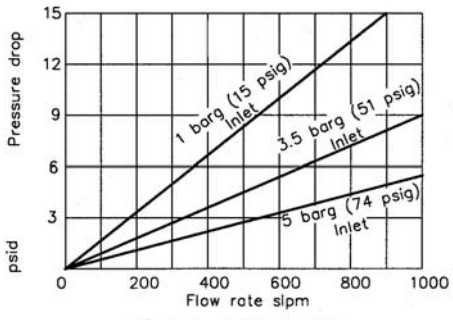




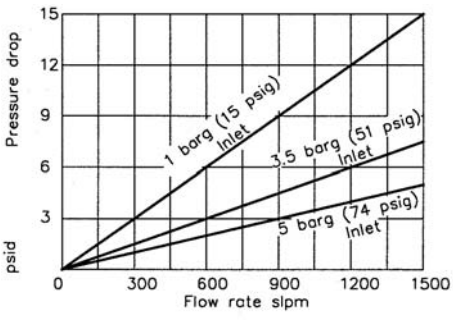
Models 3000 OAG (VR2) and 5000 OAG



Model 10000 OAG



Model 15000 OAG



Model 25000 OAG

Purifier Model	A in (mm)	B in (mm)	C in (mm)	Particle Filtration Level	Max Flow	Part Number
Mini OAG	4.5 (114)	2.7 (69)	1.0 (25)	0.003 µm[1] or 1 µm	4 slpm	00040-OAG-VR4-PF[1] or XL
100 OAG	4.5 (114)	2.7 (69)	1.5 (38)	0.003 µm[1] or 1 µm	12 slpm	00100-OAG-VR4-PF[1] or XL
200 OAG	6.0 (152)	4.2 (107)	1.5 (38)	0.003 µm[1] or 1 µm	25 slpm	00200-OAG-VR4-PF[1] or XL
500 OAG	7.9 (202)	6.1 (156)	2.0 (51)	0.003 µm[1] or 1 µm	50 slpm	00500-OAG-VR4-PF[1] or XL
600 OAG	8.2 (208)	6.5 (167)	2.0 (51)	0.003 µm[1] or 1 µm	75 slpm	00600-OAG-VR4-PF[1] or XL
1000 OAG[2]	12.9 (328)	11.1 (282)	2.0 (51)	0.003 µm[1] or 1 µm	125 slpm	01000-OAG-VR4-PF[1] or XL
1200 OAG	7.9 (202)	6.1 (156)	3.0 (76)	0.003 µm[1] or 1 µm	150 slpm	01200-OAG-VR4-PF[1] or XL
2000 OAG	17.7 (449)	15.9 (402)	2.5 (63)	0.003 µm[1] or 1 µm	250 slpm	02000-OAG-VR4-PF[1] or XL
3000 OAG	17.3 (439)	15.5 (394)	3.0 (76)	0.003 µm[1] or 1 µm	300 slpm	03000-OAG-VR4-PF[1] or XL
3000 OAG	17.7 (449)	15.6 (396)	3.0 (76)	0.003 µm[1] or 1 µm	500 slpm	03000-OAG-VR2-PF[1] or XL
5000 OAG[3]	25.3 (643)	23.2 (590)	3.0 (76)	0.003 µm[1] or 1 µm	850 slpm	05000-OAG-VR2-PF[1] or XL
10000 OAG[3]	35.9 (913)	33.8 (860)	4.0 (101)	0.003 µm[1] or 1 µm	1200 slpm	10000-OAG-VR2-PF[1] or XL
15000 OAG[3]	35.9 (913)	33.8 (860)	5.0 (127)	0.003 µm[1] or 1 µm	1800 slpm	15000-OAG-VR2-PF[1] or XL
25000 OAG[3]	35.9 (913)	33.8 (860)	6.0 (152)	0.003 µm[1] or 1 µm	2500 slpm	25000-OAG-VR2-PF[1] or XL

Maximum Pressure	250 psig (USA) / 9.9 kg/cm^{2}G (Japan)	**Materials**	316L SS (<10 Ra EP)
Operating Temperature	Room Temperature	**Fittings**	1/4" MVCR[4] available on sizes Mini-3000
Leak Rate	<2 x 10^{-9} atm cc/sec He		1/2" MVCR[4] available on sizes 600-25000

1 - Sub-micron filtration only with PF version.
2 - For model 1000 dimension "A" has changed from 12.1 in to 12.9 in, dimension "B" has changed from 10.3 in to 11.1 in.
3 - For models 5000 and larger - the printed dimensions are subject to future change. Please check with factory prior to ordering.
4 - VCR-compatible standard. VCR is Registered Trademark of Cajon Corporation. Special fittings on request.

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Or Contact:

UltraPure® PF Series®
Point-of-Use UHP Gas Purifiers

UltraPure® PF Series® Model 600 Purifier

APPLICATIONS

- Semiconductor Industry
- High Purity Welding
- Gas Analyzer Carts
- Analytical Industry
- Research and Development
- Gas Bottle Filling Plants

FEATURES

- Purifier / Particle Filter combination
- Improves Equipment perfomance and process economy
- Sub-ppb removal of impurities from Inert Gases, Nitrogen, Hydrogen, Acid Gases, Oxygen and Hydride Speciality Gases
- Integral 0.003 µm Sintered Stainless Steel Filter Media (9 log reduction)
- 316L stainless steel (<10 Ra) or 316L VAR (<5 Ra) electropolished wetted surface finish
- Optional Hastelloy C-22 filter media / housing or Nickel filter media
- In-Situ regeneration and bakeable to 450° C

The PF Series® Purifier-Filter reduces a wide range of gaseous impurities (see chart below) to sub-ppb levels from Inert Gases, Hydrogen and Hydrides, Acid Gases and Oxygen, and includes filtration to 0.003 µm in one single unit.

The PF Series® gas purifiers come in a standard range of 0 - 100 slpm. High flow purifier units (XL-Series) are available for components sets and bulk purifier systems.

High pressure purifiers (max 3000 psig) available upon request, are ideal for gas bottle filling plants and other similar high pressure applications.

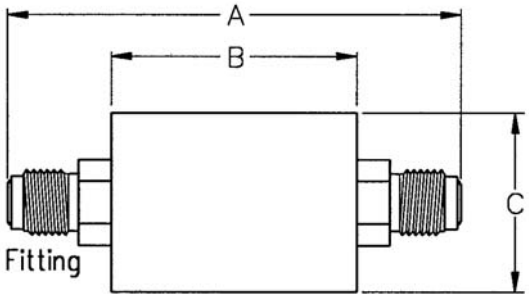
LISTING OF GASES PURIFIED / FILTERED

Inert Gases		Hydrogen / Hydrides		Acid Gases	Oxygen
Impurities Removed H_2O, O_2, CO, CO_2, H_2[1] (N_2, CH_4)[2]		Impurities Removed H_2O, O_2, CO_2, CO, (N_2)[3]		Impurities Removed H_2O	Impurities Removed H_2O, CO_2, (H_2, CO, CH_4)[4]
Ar	Ar/CH_4	H_2	AsH_3	HBr	O_2
He	CH_4	Ar/H_2	PH_3	HCl	Air
Ne	CF_4	N_2/H_2	NH_3	BCl_3	N_2O
Kr	CCl_4	SiH_4	B_2H_6	BF_3	
Xe	SF_6	Si_2H_6	H_2Se	Cl_2	
N_2	Freons	D.C.S.	GeH_4	HF	

1 - Only with purchase of -H model. 2 - Additional impurities removed from He, Ne, Ar, Kr, Xe and N_2 only, using heated getter.
3 - Additional impurities removed from Hydrogen only, using heated getter. 4 - Only with purchase of optional heated catalyst.

UltraPure® PF Series®

Dimensional and Perfomance Specifications



Model	A in (mm)	B in (mm)	C in (mm)	Average Flow (slpm)[1] for 1 year lifetime (removal of impurities per chart page 1)	Max Flow (slpm) @150 psig PF Series	Max Flow (slpm) @ 150 psig XL Series Room Temp
Mini PF	3.3" (84)	1.5" (38)	1.0" (25)	0.3	1.5	4.5
100 PF	3.3" (84)	1.5" (38)	1.5" (38)	1	5	15
200 PF	4.8" (122)	3.0" (76)	1.5" (38)	2	10	30
600 PF	6.3" (160)	4.5" (114)	2.0" (51)	6	30	90
1000 PF	8.8" (224)	7.0" (178)	2.0" (51)	10	50	150
2000 PF	12.5" (317)	10.7" (272)	2.5" (63)	20	100	300

Maximum Pressure	250 psig (USA) / 9.9 kg/cm^{2}G (Japan)	**Materials**	316L SS (<10 Ra) or 316L VAR (< 5 Ra)
Operating Temperature	Room Temperature or 375-450^{o}C	**Fittings**	1/4" VCR[2] / Compression / Tubing
Leak Rate	< 2 x 10^{-10} atm cc/sec He	**Gas Inlet**	VLSI grade (99.9995% minimum)[1]

1 - Lifetime is inversely proportional to the total inlet impurity level and to average flow. Lifetime for H_2O/O_2 removal only using getter purifiers is approx **4 years** at the stated flows / inlet gas. Room temperature getter purifiers will require periodic regeneration to achieve this total lifetime.

2 - VCR compatible fitting standard. VCR® is a registered trademark of Cajon Corporation.

UltraPure®XL Series

The XL Series of Gas Purifiers are available in the above dimensions for applications requiring < 1 ppb with high flow performance. For Semiconductor Applications, a sub-micron filter should be installed downstream of the purifier. See NuPure Metal and Ceramic Filter data sheet for a full selection of Gas Particle Filters.

UltraPure®Standard Series

The Standard Series of Gas Purifiers are available in the above dimensions. They are recommended for Industrial, Research and Analytical applications requiring <10 ppb with high flow performance.

For regeneration and for applications requiring removal of all impurities, an external band heater, digital temperature controller with solid state relay and thermal insulation blanket is recommended.

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