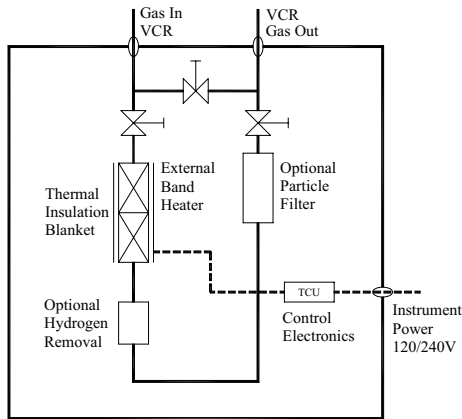


### UltraPure® High Flow Gas Purifiers and Bulk Gas Component Sets



**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<sub>2</sub>O, O<sub>2</sub>, CO, N<sub>2</sub>, CO<sub>2</sub>, CH<sub>4</sub> and (H<sub>2</sub>)<sup>1</sup> 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 <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub> , H <sub>2</sub> <sup>1</sup> (N <sub>2</sub> , CH <sub>4</sub> ) <sup>2</sup>	Impurities Removed H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> , CO, (N <sub>2</sub> ) <sup>3</sup>	Impurities Removed H <sub>2</sub> O	Impurities Removed H <sub>2</sub> O, CO <sub>2</sub> , (H <sub>2</sub> , CO, CH <sub>4</sub> ) <sup>4</sup>
Argon Helium Nitrogen	Hydrogen Argon/Hydrogen Nitrogen/Hydrogen Ammonia Silane	Hydrogen Chloride	Oxygen Air Nitrous Oxide

1 - Only with purchase of -H model. 2 - Additional impurities removed from Ar, He & N<sub>2</sub> only using heated getter.

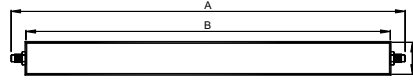
3 - Nitrogen and Methane removed from Hydrogen, Argon/Hydrogen and Nitrogen/Hydrogen, using heated getter.

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

<sup>1</sup> - Lifetime is inversely proportional to the total inlet impurity level and to the average flow. Lifetime for H<sub>2</sub>O/O<sub>2</sub> 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 IIII**

67 Iber Road, Unit 107,  
Ottawa ON K2S 1E7 Canada  
Tel: (613) 836-0336 Fax: (613) 836-0297  
E-mail: sales@nupure.com Web-site: www.nupure.com

Or Contact:

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



UltraPure® PF Series® Model 600 Purifier

## FEATURES

- ◆ Purifier / Particle Filter combination
- ◆ Improves Equipment performance 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

## APPLICATIONS

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

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.

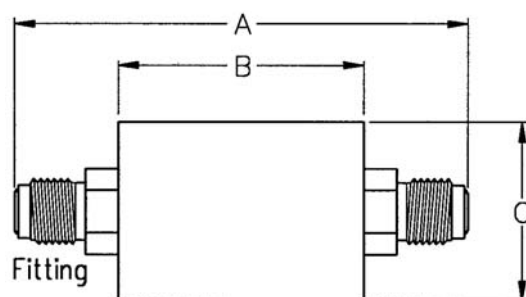
## LISTING OF GASES PURIFIED / FILTERED

Inert Gases		Hydrogen / Hydrides		Acid Gases	Oxygen
Impurities Removed H <sub>2</sub> O, O <sub>2</sub> , CO, CO <sub>2</sub> , H <sub>2</sub> <sup>1</sup> (N <sub>2</sub> , CH <sub>4</sub> ) <sup>2</sup>		Impurities Removed H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> , CO, (N <sub>2</sub> ) <sup>3</sup>		Impurities Removed H <sub>2</sub> O	Impurities Removed H <sub>2</sub> O, CO <sub>2</sub> , (H <sub>2</sub> , CO, CH <sub>4</sub> ) <sup>4</sup>
Ar	Ar/CH <sub>4</sub>	H <sub>2</sub>	AsH <sub>3</sub>	HBr	O <sub>2</sub>
He	CH <sub>4</sub>	Ar/H <sub>2</sub>	PH <sub>3</sub>	HCl	Air
Ne	CF <sub>4</sub>	N <sub>2</sub> /H <sub>2</sub>	NH <sub>3</sub>	BCl <sub>3</sub>	N <sub>2</sub> O
Kr	CCl <sub>4</sub>	SiH <sub>4</sub>	B <sub>2</sub> H <sub>6</sub>	BF <sub>3</sub>	
Xe	SF <sub>6</sub>	Si <sub>2</sub> H <sub>6</sub>	H <sub>2</sub> Se	Cl <sub>2</sub>	
N <sub>2</sub>	Freons	D.C.S.	GeH <sub>4</sub>	HF	

1 - Only with purchase of -H model. 2 - Additional impurities removed from He, Ne, Ar, Kr, Xe and N<sub>2</sub> 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 Performance Specifications



Model	A in (mm)	B in (mm)	C in (mm)	Average Flow (slpm) <sup>1</sup> 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

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

1 - Lifetime is inversely proportional to the total inlet impurity level and to average flow. Lifetime for H<sub>2</sub>O/O<sub>2</sub> 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.

<p><b>NuPure III</b>          67 Iber Road, Unit 107,          Ottawa ON K2S 1E7 Canada          Tel: (613) 836-0336 Fax: (613) 836-0297          E-mail: sales@nupure.com Web-site: www.nupure.com</p>	<p>Or Contact:</p>
---	--------------------