

# Ultramet-L® 4000 Series Filter Assembly



## Description

The Ultramet-L® 4000 Series Filter Assembly is a unique, all 316L stainless steel filter designed for  $\geq 3$  nanometer ( $0.003 \mu\text{m}$ ) filtration of semiconductor process gases.

- All 316L stainless steel construction
- State-of-the-art 316L stainless steel media
- Excellent particle removal efficiency vs. pressure drop
- Accommodates extremely high flow rates for the assembly size
- Excellent gas displacement and desorption characteristics
- High temperature and pressure capabilities
- Compact size for ease of installation
- Wide variety of fitting options available
- 100% helium leak tested
- Cleanroom manufactured and packaged
- VAR PLUS housing material meets or exceeds VIM VAR specifications

## Specifications

### Materials

- Electropolished 316L stainless steel housing
- $\leq 7 \mu\text{in} / 0.18 \mu\text{m} R_a$  internal surface finish
- Cr:Fe (1:1) Chromium enriched internal surface chemistry
- Housing material meets or exceeds VIM/VAR specifications
- 316L stainless steel filter media

### Removal Rating

- $\geq 0.003 \mu\text{m}$

### Connections

- $\frac{1}{4}$ ",  $\frac{1}{2}$ " Gasket Seal, Male/Male (VCR<sup>1</sup> or compatible)
- $\frac{1}{4}$ " Compression Seal, Male/Male (Swagelok<sup>1</sup> or compatible)
- $\frac{1}{4}$ " Butt Weld ( $0.035$ " /  $0.89 \text{ mm}$  wall)

### Operating Conditions

- Maximum Operating Pressure:  
3000 psig @  $100^\circ\text{F}$  / 207 bar @  $38^\circ\text{C}$ ;  
1685 psig @  $840^\circ\text{F}$  / 116 bar @  $450^\circ\text{C}$
- Maximum Allowable Differential Pressure:  
125 psid @  $100^\circ\text{F}$  / 8.6 bar @  $38^\circ\text{C}$ ;  
60 psid @  $840^\circ\text{F}$  / 4.1 bar @  $450^\circ\text{C}$

### Particle Removal Characteristics

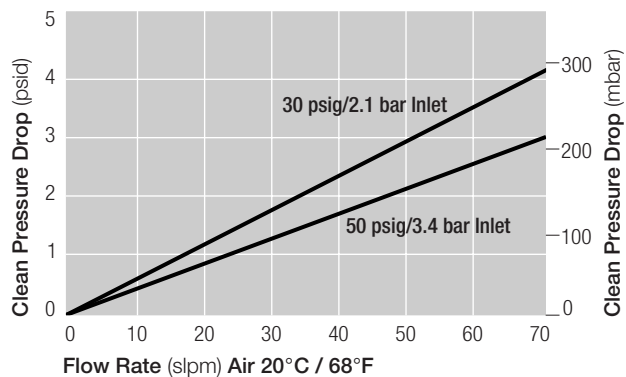
- $10^9$  particle reduction up to 6 slpm / 0.2 scfm
- $10^4$  particle reduction up to 75 slpm / 2.6 scfm

### Leak Rating

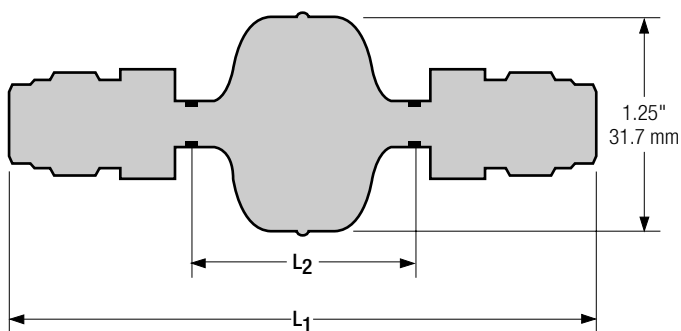
- 100% helium leak tested to  $10^{-9} \text{ atm}\cdot\text{cc/s}$
- Design validated to  $10^{-11} \text{ atm}\cdot\text{cm}^3/\text{s}$

<sup>1</sup>VCR and Swagelok are trademarks of Swagelok Co.

## Pressure Drop vs. Gas Flow Rate



## Dimensions



## Part Numbers/Ordering Information

Part Number	Description	Length (L) (in / mm)
GLFF4000VM4	¼" Gasket Seal (VCR or Compatible) Male/Male	3.31 / 84 (L <sub>1</sub> )
GLFF4000SM4	¼" Compression Seal (Swagelok or Compatible) Male/Male	2.88 / 73 (L <sub>1</sub> )
GLFF4000BW4	¼" Butt Weld, 0.035" / 0.89 mm wall	1.75 / 45 (L <sub>2</sub> )
GLFF4000VMM8	½" Gasket Seal (VCR or Compatible) Male/Male	3.35 / 85 (L <sub>1</sub> )

Unit conversion: 1 bar = 100 kilopascals




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