



**WAFERGARD® II F MICRO, II F MINI,
F MINI IN-LINE GAS FILTERS**

Installation and use manual



Table of Contents

Introduction	2
Features and Benefits	2
Applications	2
Specifications	2
Installation and Use	3
Step 1: Unpack the Filter	3
Step 2: Install the Filter	3
Step 3: Prepare the Filter for Use	3
Filter Replacement	3
Performance Data	3
Dimensions	4
Warranty Information	5

Introduction

Wafergard® II F Micro, II F Mini and F Mini in-line gas filters are the filters of choice for ultrapure gas system filtration. These fully sealed filter units are suitable for flow rates up to 30 SLPM when ultraclean conditions are required. Recommended for inert and reactive gases, these filters offer excellent compatibility with all classes of semiconductor process gases.

Features and Benefits

- Compact unit reduces overall gas box footprint
- Low pressure drop reduces risk of condensation in low-vapor pressure gases

- Cleanroom manufactured and tested for high reliability
- Teflon® PTFE membranes provide high-efficiency filtration

Applications

- Ozone applications (gas)
- Gas cabinets
- Ultrapure gas systems
- Valve manifold boxes
- Gas panels

Specifications

		Wafergard II F Micro	Wafergard II F Mini	Wafergard F Mini
Materials:	Filter element	Hydrophobic Teflon PTFE membrane supported by molded Teflon PFA structure		
	O-ring	None	Teflon PTFE seal	
	Housing	Electropolished VAR 316L stainless steel, 100% penetration fusion-welded with a sulfur content of 0.005-0.017%	Electropolished 316L	
Downstream cleanliness:	Particles*	<0.03 particles/liter (<1 particle/ft ³) >0.01 µm @ 30 SLPM		
	Volatiles	<10 ppb H ₂ O		
Surface finish interior:		≤7 µin Ra	≤10 µin Ra	≤20 µin Ra
Total flow area:	10 cm ²			
Helium leak rating:	Qualified	2 × 10 ⁻¹⁰ atm-cc/sec		
	Tested	1 × 10 ⁻⁹ atm-cc/sec		
Operating conditions:	Maximum inlet pressure	210 bar (3000 PSIG) @ 23°C		
	Maximum forward differential pressure	4 bar (60 PSID) @ 23°C		
	Maximum reverse differential pressure	0.7 bar (10 PSID) @ 23°C		
	Maximum operating temperature	120°C (248°F)		
Particle rating:	Greater than 99.9999999% removal of all particles @ 30 SLPM (referenced at the most penetrating particle size); verified retention rating at 0.003 µm (referenced at the smallest particles measured)			
Flow rating:	See performance data			

* Particle cleanliness qualified following SEMASPEC Test Method for Particle Shedding (#93021511A-STD).

Installation and Use

Step 1: Unpack the Filter

The filter is double-bagged for cleanroom service and should remain packaged until installation.

NOTE: Do not remove the filter from the protective bag unless you are in a clean environment.

1. Remove the filter from the box and carry it into the gray area.
2. Remove the outer protective bag and discard.
3. Carry the filter (sealed in the inner bag), into the clean area.

Step 2: Install the Filter

1. Prepare the connection fitting in place on the gas line. Any other fitting components, such as stainless steel gaskets, should be blown clean with filtered gas before use.
2. Maintain a flow of at least 1 SLPM (0.05 SCFM) of inert gas during installation to minimize tubing and filter contamination from environmental moisture and particles. The recommended purge gas is electronic-grade nitrogen.

NOTE: For all connections other than butt weld tube, proceed to steps 3–4. For butt weld tube, proceed to the next section, "Butt Weld Tube Welding."

3. Open the inner bag and remove the filter. Remove the fitting protection caps and seat the filter on the mating connections.
4. Tighten the nuts by hand, then 1/8 turn past hand-tight by wrench for VCR[®]-compatible fittings. **DO NOT overtighten.**

NOTE: Refer to specific technical guides furnished by fitting manufacturers for additional specifications.

Butt Weld Tube Welding

1. Prepare the proper orbital TIG welding head for the tube size to be welded.

NOTE: The recommended purge gas is electronic-grade purified argon.

2. Set the proper welding schedule. Refer to specific technical guides furnished by the welding equipment manufacturer for additional specifications.
3. Open the inner, transparent bag and remove the filter. Remove the fitting protection caps.

4. Prepare the outlet connection for welding. Flow purge gas from the inlet of the filter at 5 SLPM for 5 minutes prior to weld startup. Complete weld.
5. Prepare the inlet connection for welding. Flow purge gas from the outlet of the filter at 5 SLPM for 5 minutes prior to weld startup. Maintain pressure drop across filter to less than 5 PSI. Complete weld.

Step 3: Prepare the Filter for Use

1. Verify integrity of the seal by appropriate helium leak-testing procedures.
2. Turn the gas flow **ON**, then **OFF**, 10 times to remove any particles generated during installation. (The flow rate used should at least equal the process flow specifications.)
3. Installation is complete. Initiate startup procedures for process gases.

Filter Replacement

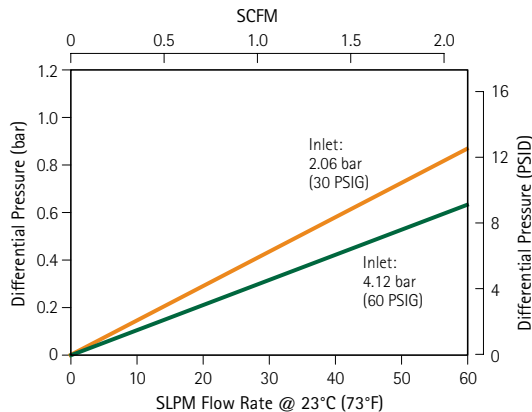
1. Turn off the process gas.

CAUTION! Purge the system with inert gas for a minimum of 4 hours at full gas flow when using toxic, corrosive or pyrophoric gases.

2. Remove the existing filter from the gas line and seal with fitting caps.
3. Install a replacement filter as outlined above.

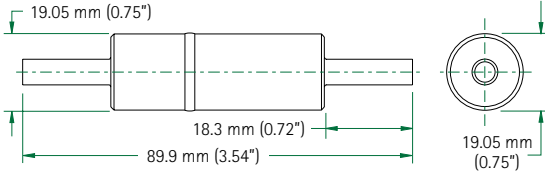
CAUTION! Dispose of the used filter in compliance with local regulations.

Performance Data

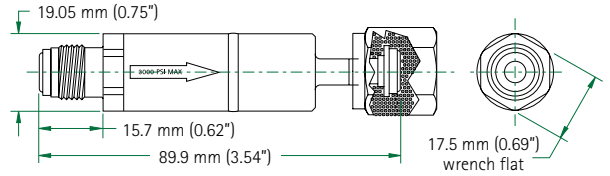


Dimensions

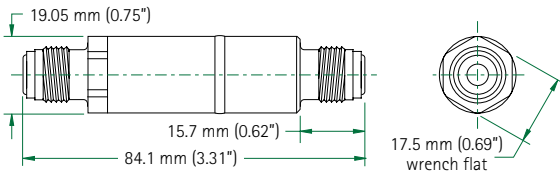
WG2F T1 BW2 Butt Weld Tube



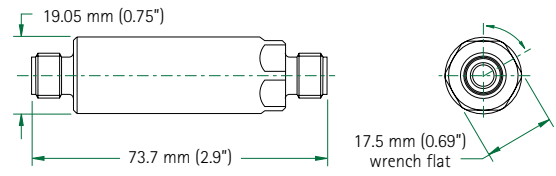
WG2F T1 RF2 1/4" Gasket Seal (VCR-compatible) Male/Female



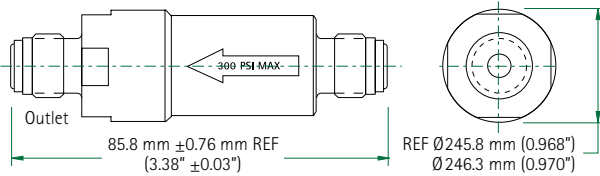
WG2F T1 RR2 1/4" Gasket Seal (VCR-compatible), Male



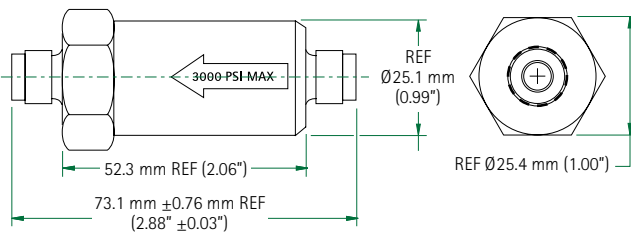
WG2F T1 SS2 1/4" Swagelok Fitting, Male



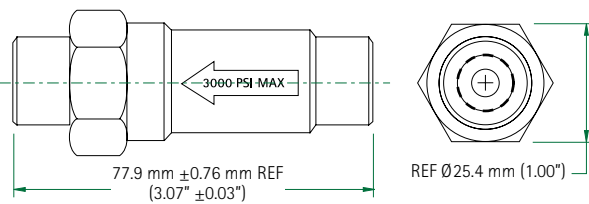
WGFG 01 RH2 1/4" MFC Gasket Seal, Male Inlet; BOSS Seal, Male Outlet



WG2F 01 HS1 1/4" Compression Seal (Swagelok-compatible)



WGFG 01 HB1 1/4" NPTF Seal, Female



Product Warranties

For Product Warranties, visit www.entegris.com and select the Legal Notices link from the footer.

Terms and Conditions of Sale

All purchases are subject to Entegris' Terms and Conditions of Sale. To view and print this information, visit www.entegris.com and select the Legal Notices link from the footer.

For More Information

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit www.entegris.com and select the Customer Service link for the center nearest you.

Entegris®, Wafergard® and FluoroPure® are registered trademarks of Entegris, Inc.
Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.
VCR® and Swagelok® are registered trademarks of Swagelok Company.

ENTEGRIS, INC.

Corporate Headquarters | 129 Concord Road | Billerica, MA 01821 USA
Customer Service Tel. +1 952 556 4181 | Customer Service Fax +1 952 556 8022
In North America 800 394 4083 | www.entegris.com