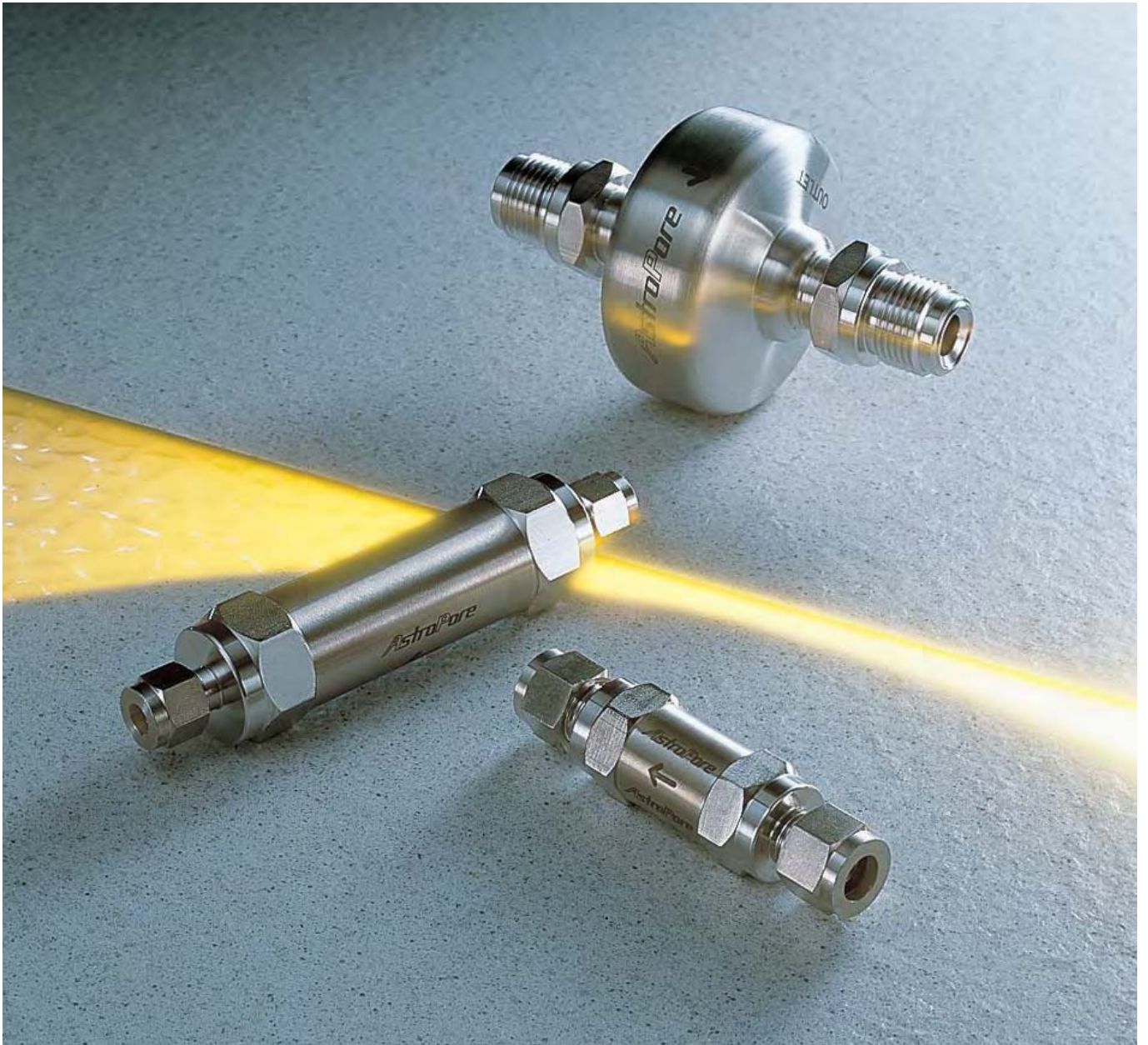


AstroPore Fujifilm Micro Filter

Gas Line Filter

PTFE Membrane Type



For Semiconductor Industry



For the purification of process gases that is of growing importance for the semiconductor industry, the AstroPore Gas Line Filters capture contaminant particles in a gas line, contributing to meeting needs of high integration, high capability and high quality of semiconductor devices.

AstroPore Fujifilm Micro Filter

Capturing particles in gas supply pipes in a clean room and providing raw gas to the end-use point without reducing its purity.

The extremely high purification of gases for semiconductor processes can be achieved by implementing complete cleaning of all processes involved, not only for gas production, but also in filling, transport, storage, and gas supply systems.

The AstroPore Gas Line Filters are high-performance filters that are installed in gas supply pipes in a clean room to feed raw gas to end-use points without detracting from its purity. By eliminating fine metal particles generated by the action of pressure regulators, pressure gauges, valves, etc. in a gas line, they prevent adhesion of contaminant particles to semiconductor devices to meet the semiconductor industry's exacting requirement of high integration, high capability and high quality.

The AstroPore Gas Line Filters are available in three types: high pressure, low flow rate type, high pressure, medium flow rate type, and low pressure, high flow rate type. Select the filter best suited for your application depending on the pressure and flow rate of the gas to be filtered.

Specific Features

1. Maximum reliability in high retention performance and stable filtration operation with laminate PTFE (polytetrafluoroethylene) membrane.

The microfiltration membrane of the AstroPore Gas Line Filters consists of a two-layer PTFE laminate membrane that does not stretch under high differential pressure or vibration to ensure maximum reliability in stable operation.

The AstroPore Gas Line Filters provide extraordinary retention performance in microfiltration because they can capture 99.999999% of 0.01 μm particles (confirmed by one of reliable condensed nuclear particle counters).

2. High flow rate and small pressure drop.

By adopting a two-layer laminate membrane with a high porosity, a high flow rate has been achieved with a reduced pressure drop. The stacked disc type filter, in particular, provides a low-resistance flow channel for a reduced pressure drop, thus making it possible to design a long gas line or a multi-stage filtration system.

3. Chemical-resistant components insensitive to active gases.

All components are made of highly resistant materials: membrane, support and O ring by a chemically stable fluororesin and housing by SUS316L. They offer high chemical resistance and temperature resistance suited for baking treatment.

4. Ultracleaning for quick use.

Because all production processes take place in the clean room and all components are subjected to ultracleaning, adhering particles are negligible and the filter is quickly ready for use.

5. Mirror-finished inner surface of the housing; Welding that does not cause burn on the inner surface.

The inner surface of the housing is mirror finished by electropolishing to form a passive film on it for excellent corrosion resistance and cleanness. The welding technique is designed to ensure proper vent control of the inert gas and does not cause "burn" on the inner surface, thereby eliminating the risk of dust generated inside the housing.

6. Consistent quality control.

An integrity test, pressure test and gastightness test are performed on each unit of the AstroPore Gas Line Filters and the serial number is marked on it.

(Inlet Side)



(Outlet Side)

Photograph of PTFE membrane section by Electron Microscope



Major Applications

Purification of various process gases (for general use and special) for semiconductor production as well as vacuum systems in the semiconductor industry. Installed in the gas supply line, the filter can capture fine metal particles generated by the action of pressure gauges, valves, etc.

Table of Performance Characteristics

Item		Unit	Low Flow Rate	Medium Flow Rate	High Flow Rate	Remarks	
Configuration	Filter Element		Cylindrical	Cylindrical	Stacked Disc		
Object			Various gases (general and special) for semiconductor production and vacuum systems.				
Connections	Type		Compression (C) Gasket (G)			(Note 1)	
	Size		1/4 (6.35mm) 3/8 (9.53mm)				
Membrane	Material		PTFE				
	Effective Filtration Area	cm ²	12	34	300	(Note 2)	
Body	Material		SUS316L				
	Overall Length	mm	84 (1/4"G) 73 (1/4"C) 76 (3/8"C)	127 (1/4"G) 133 (3/8"G) 116 (1/4"C) 119 (3/8"C)	127 (1/4"G) 127 (3/8"G) 112 (1/4"C) 112 (3/8"C)	(Note 3)	
	Inner Surface Finishing		Electropolishing				
Support	Material		PFA	PFA	ECTFE		
O Ring	Material		PTFE				
Retention Rate			99.999999% or higher for 0.01 μm particles			(Note 4)	
Max. differential pressure	Body Design Pressure		MPa	0.97	0.97	0.97	
	Membrane	Forward Pressure	MPa	<0.39			
		Backward Pressure	MPa	<0.07			
Gastightness	Helium Gas	μPa·L/s	<5				
Cleanness	Particles	pcs./cf	<10 (particles of 0.1 μm or larger)				
Max. heat resistance		°C	120				
Package			Anti-static double layer bag				

(Note 1) Compression type compatible with Swagelok®, and Gasket type compatible with VCR®.

(Note 2) Other sizes may also be available on request.

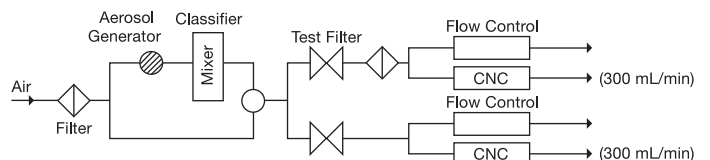
(Note 3) See dimensional outline drawing.

(Note 4) Testing Method: Evaluation of ultrafine particle removal performance with condensed nuclear particle counter.

Measuring Instruments

- Electrostatic Aerosol Classifier, Model 3071 (by TSI)
- Condensed Nuclear Particle Counter, Model 3020 (by TSI)

Measurement Flow Chart



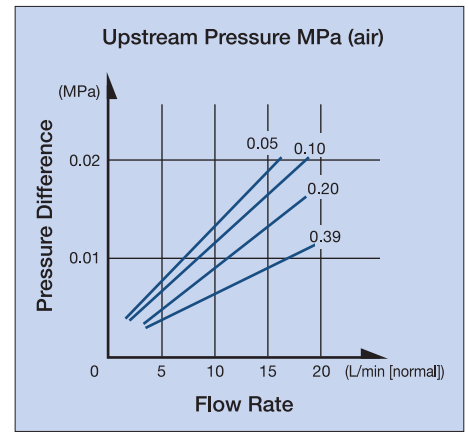
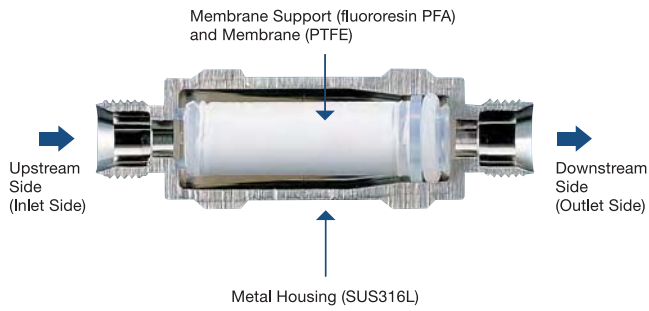
Construction

Flow Rate Characteristics

Low Flow Rate Type

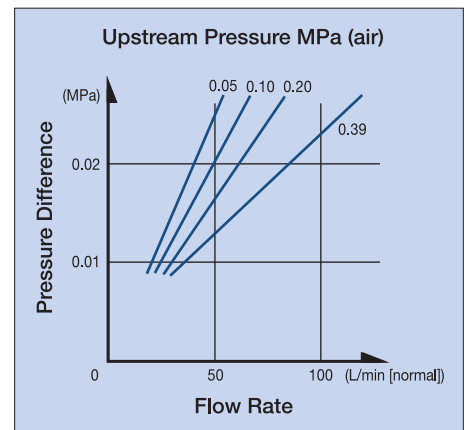
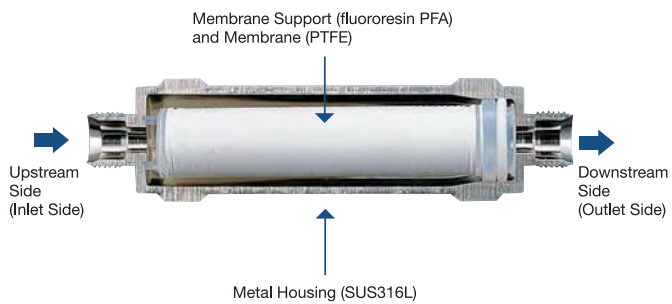
CY12

Connector Size (1/4)



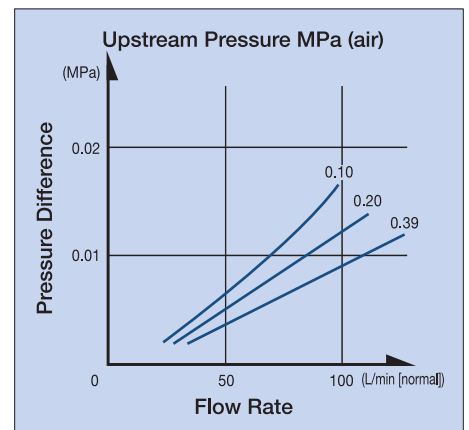
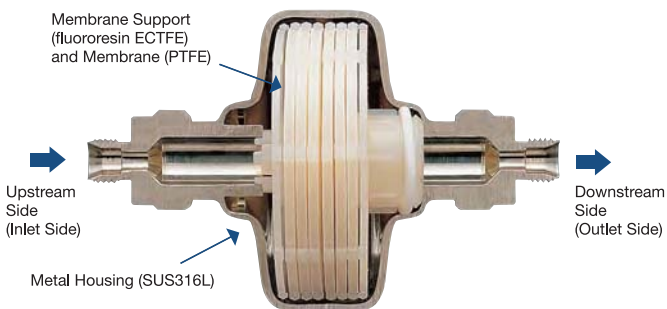
Medium Flow Rate Type

CY34



High Flow Rate Type

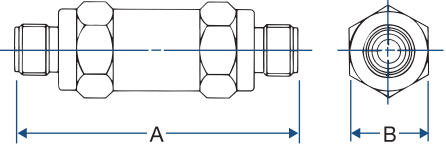
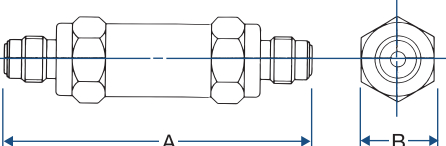
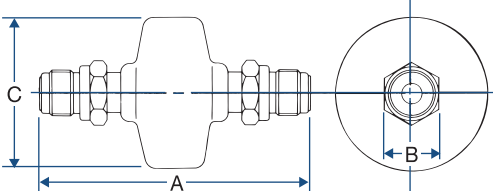
MD



Product Codes

Connector		Gasket Type		Compression Type	
		1/4	3/8	1/4	3/8
Flow Rate Type					
High Pressure, Low Flow Rate (Cylindrical Type)		CY VC A 12 ST	—	CY SW A 12 ST	CY SW B 12 ST
High Pressure, Medium Flow Rate (Cylindrical Type)		CY VC A 34 ST	CY VC B 34 ST	CY SW A 34 ST	CY SW B 34 ST
Low Pressure, High Flow Rate (Stacked Disk Type)		MD VC A 300 ST	MD VC B 300 ST	MD SW A 300 ST	MD SW B 300 ST

Outlook Dimensions (Unit: mm)

Flow Rate Type	Code	Dimensions		
		Overall Length (A)	Hexagonal Section (B)	Outer Diameter (C)
Low Flow Rate Type (Cylindrical Type) CY12 	CY VC A 12 ST	84	22	—
	CY SW A 12 ST	73	22	—
	CY SW B 12 ST	76	22	—
Medium Flow Rate Type (Cylindrical Type) CY34 	CY VC A 34 ST	127	27	—
	CY VC B 34 ST	133	27	—
	CY SW A 34 ST	116	27	—
	CY SW B 34 ST	119	27	—
High Flow Rate Type (Stacked Disk Type) MD 	MD VC A 300 ST	127	22	72
	MD VC B 300 ST	127	27	72
	MD SW A 300 ST	112	22	72
	MD SW B 300 ST	112	27	72

MCG® and JSK® Types may also be available on request.