

# High Precision Filter for Liquids

## ***FGH Series***

***Filtration efficiency: 99% or more***

### **HEPO II element**

**Filtration accuracy: 2, 4, 6 or 13  $\mu\text{m}$  (Filtration efficiency 99%)**

### **Membrane element**

**Filtration accuracy: 0.2 or 0.4  $\mu\text{m}$  (Filtration efficiency 99.9%)**





# High Precision Filter for Liquids FGH Series

*Filtration efficiency: 99% or more*

## Prevents particle generation in the housing

Internal particle generation is eliminated by using stainless steel 316 and PTFE for the wetted material and adopting a clamp ring system.

## Integrity inspection conducted.

100%-integrity inspection is conducted.

## Prevents residual liquid accumulation in the case

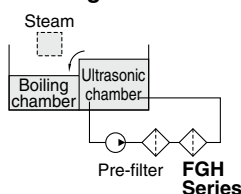
A simple structure prevents the residual liquid from accumulating in the case.

## Application examples

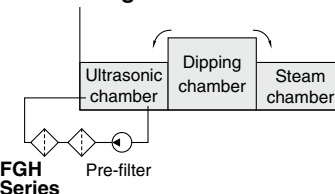
### Ultrasonic cleaning machine

- Manufacture of electric and electronic industrial components
- Manufacture of semiconductor-related components

#### Dual chamber ultrasonic cleaning machine

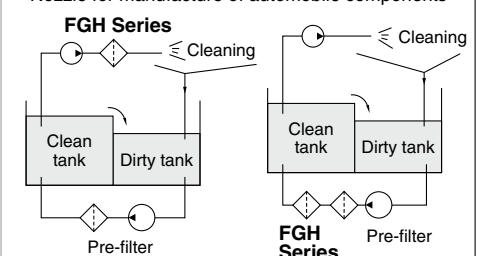


#### Triple chamber ultrasonic cleaning machine



### Jet cleaning machine

- Camera, lens and bearing for manufacture of high-precision processing components
- Nozzle for manufacture of automobile components



# HEPO II Element

*Filtration accuracy: 2, 4, 6 or 13  $\mu\text{m}$  (Filtration efficiency 99%)*

## High precision filtration:

➡ **99% or more**

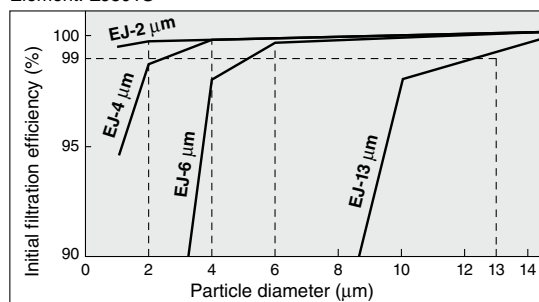
High accuracy filtration is achieved by using a HEPO II element with filtration accuracy of 2, 4, 6 or 13  $\mu\text{m}$  (Filtration efficiency 99%).

[Test conditions]

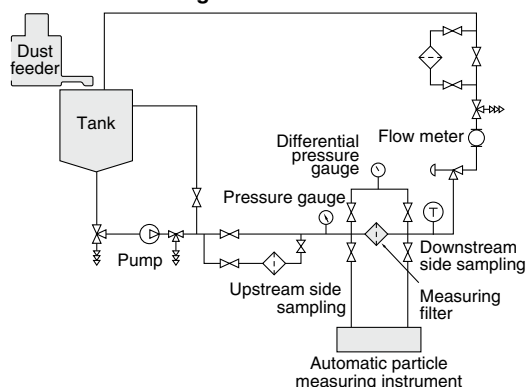
Fluid: water / Test dust: ACFTD / Flow rate: 35 L/min

Dust concentration: 10 mg/L / Temperature: 20°C

Element: EJ801S



**Schematic diagram of filtration efficiency data measuring circuit**



## No outflow of fibers or elution of components from the filter media

There is almost no outflow of fibers or elution of components from the filter media because it uses ultrafine and long polyester fiber non-woven fabric with no binder.

## Applicable for a wide range of liquids

The element is applicable for a wide range of liquids because it adopts PTFE seals.

### Applicable fluids

Classification	Description
<b>Water</b>	Industrial water, distilled water, ion-exchange water, DI water (Deionized water), ultrapure water
<b>Alcohol</b>	Isopropyl alcohol (IPA, propanol) Ethyl alcohol (ethanol) Methyl alcohol (methanol) Butyl alcohol (butanol) Ethylene glycol
<b>Hydrocarbon</b>	Petroleum ether, petroleum benzene
<b>Ester</b>	Methyl acetate, ethyl acetate, methyl acrylate
<b>Oil/fuel oil</b>	Hydraulic fluid, lubricating oil, light oil, kerosene, cutting oil, grinding oil
<b>Others</b>	Ammonia (10% solvent), ethyl ether, isopropyl ether



# Membrane Element

*Filtration accuracy: 0.2 or 0.4 μm (Filtration efficiency 99.9%)*

## High precision filtration:

► **99.9% or more**

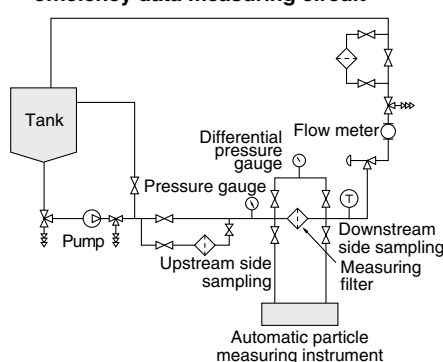
High accuracy filtration is achieved by using a membrane element with filtration accuracy of 0.2 or 0.4 μm (Filtration efficiency 99.9%)

### Test conditions

Fluid: DI water (Deionized water)  
Contaminant: polystyrene latex particles  
Particle measuring method: 0.2 μm automatic particle measuring instrument

Filtration rating (μm)	Particle diameter (μm)	Number of particles (/10 mL)		Filtration efficiency (%)
		Upstream side	Downstream side	
0.2	0.208	146380	1	99.999
0.4	0.309	103957	2727	97.4
	0.41	95019	29.9	99.97

Schematic diagram of filtration efficiency data measuring circuit



## Easy to handle

There is no need of hydrophilic treatment using IPA and the like, because the element uses a hydrophilic filter media.

## Long filtration life

The element has a long filtration life because of the high porosity and low pressure drop of the filter media.

The dust retention amount of the 0.2 μm version is 90 g.

## Pre-rinsed with ultrapure water

(0.2 μm version only)

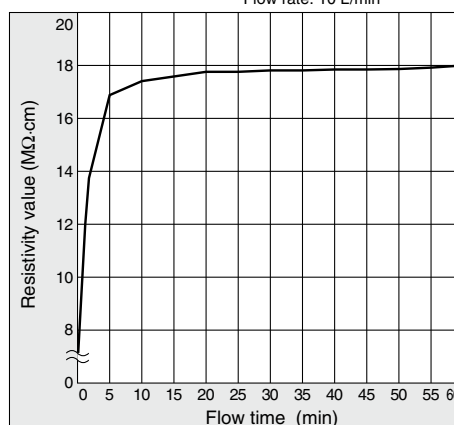
### Applicable fluids

Classification	0.2 μm	0.4 μm
Water	DI water (Deionized water), ultrapure water, ion-exchange water, distilled water	
Alkalis	Sodium hydroxide (10%) Potassium hydroxide (10%) Ammonia water (28%)	Ammonia water (28%)*
Aldehyde	Formaldehyde (35%)	Formaldehyde (35%)*
Alcohol	Methyl alcohol, butyl alcohol, ethyl alcohol, propyl alcohol	
Ether	Dioxane* Ethyl ether*	Ethyl ether*
Hydrocarbon	Benzene* Hexane*	Benzene*, toluene*, hexane*, xylene*

\* Can be used depending on temperature conditions (please consult with SMC).

### Resistivity recovery characteristics

[Measuring conditions]  
Element used: ED801S-X20  
Element size: ø70 x L247  
Filtration area: 4000 cm<sup>2</sup>  
Fluid: Ultrapure water  
(resistivity value 17.9 MΩ·cm)  
Flow rate: 10 L/min



\* Per JISK3834





# High Precision Filter for Liquids

## FGH Series

RoHS

### How to Order

**FGH 100 - 03 - J 002 T**

High precision  
filter for liquids

Body size

Symbol	Element length	Applicable element
<b>100</b>	L117	EJ701S
<b>200</b>	L246	EJ801S, ED801S
<b>300</b>	L496	EJ901S, ED901S

\* The membrane element cannot be selected for FGH100.

Port size

Symbol	Port size
<b>03</b>	Rc3/8
<b>04</b>	Rc1/2
<b>06</b>	Rc3/4
<b>10</b>	Rc1

Element seal

Symbol	Material
<b>T</b>	PTFE

Filtration accuracy

Symbol	Filtration accuracy	Applicable for:	Applicable body
<b>002</b>	2 μm	Filtration efficiency 99%	HEPO II
<b>004</b>	4 μm		
<b>006</b>	6 μm		
<b>013</b>	13 μm	Filtration efficiency 99.9%	Membrane
<b>X20</b>	0.2 μm		
<b>X40</b>	0.4 μm		

Element classification

Symbol	Element
<b>J</b>	HEPO II
<b>D</b>	Membrane

Note) Refer to pages 73 to 76 for details about specifications, models, dimensions, etc. regarding the elements.



### Specifications

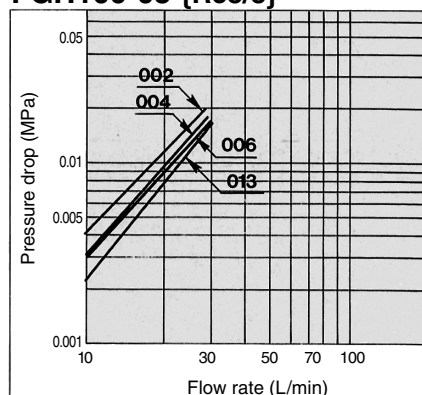
Model		FGH100	FGH200	FGH300
Number of built-in elements (element length) (mm)		1(125)	1(250)	1(500)
Operating pressure		MAX. 1 MPa		
Operating temperature		MAX. 80°C (Not above the boiling point)		
Applicable fluid		Each kind of fluid (See the table of applicable fluids on pages 66 and 67)		
Port size (Rc)		3/8, 1/2, 3/4, 1		
Material	Housing	Stainless steel 316 (Electrolytic polishing)		
	Seals			
		PTFE		
Weight (kg)		2.6	3.2	4.3
Internal capacity (L)		1.0	1.8	3.3

# FGH Series

Flow Rate Characteristics of Built-in HEPO II Elements (Fluid: water, temperature: 20°C) — 002 (2 μm) — 004 (4 μm) — 006 (6 μm) — 013 (13 μm)

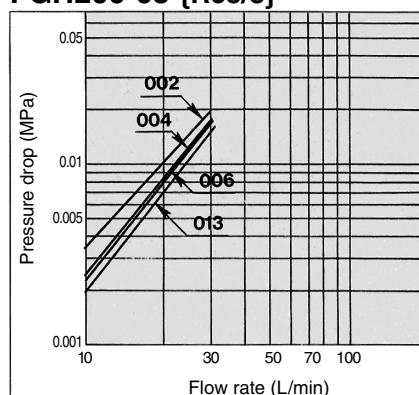
## FGH100 Series

### FGH100-03 {Rc3/8}



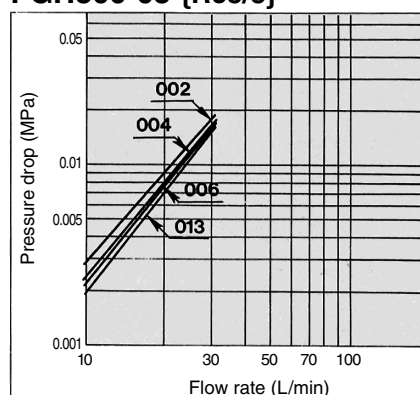
## FGH200 Series

### FGH200-03 {Rc3/8}

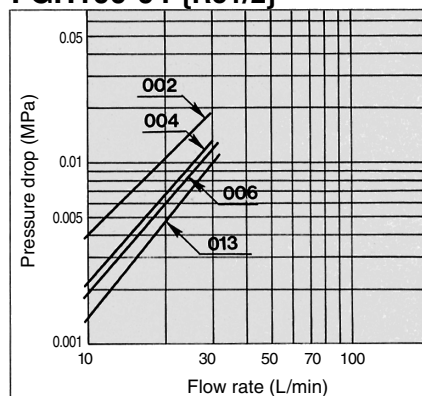


## FGH300 Series

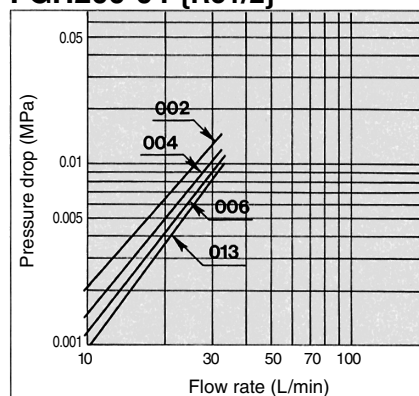
### FGH300-03 {Rc3/8}



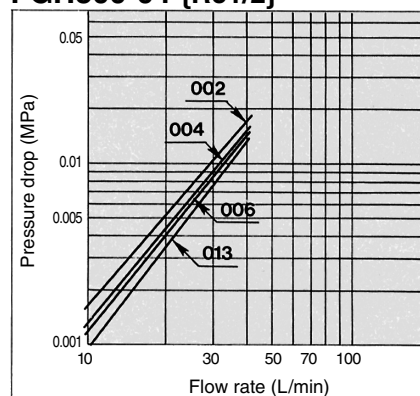
### FGH100-04 {Rc1/2}



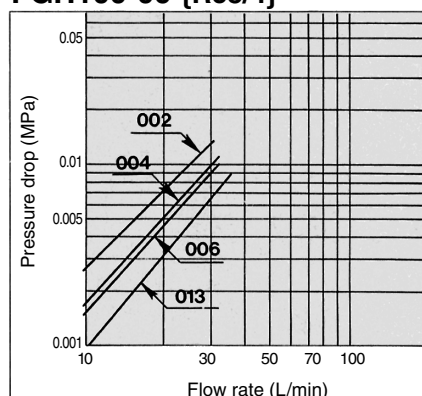
### FGH200-04 {Rc1/2}



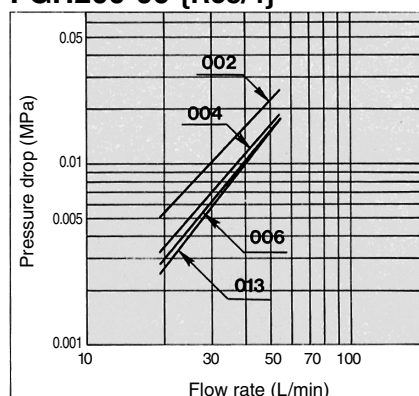
### FGH300-04 {Rc1/2}



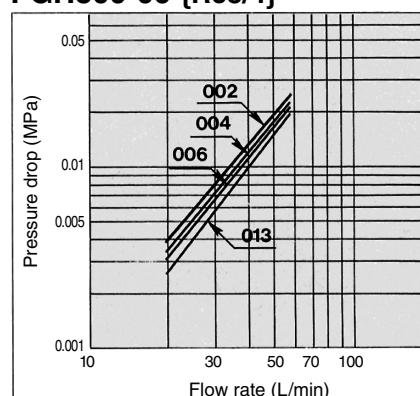
### FGH100-06 {Rc3/4}



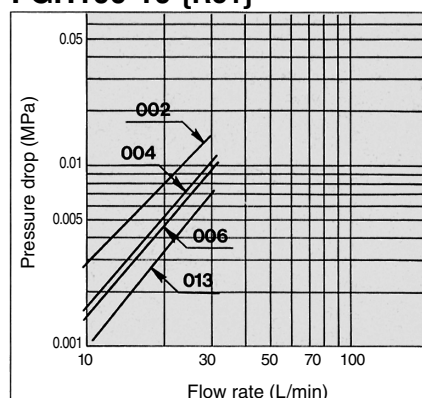
### FGH200-06 {Rc3/4}



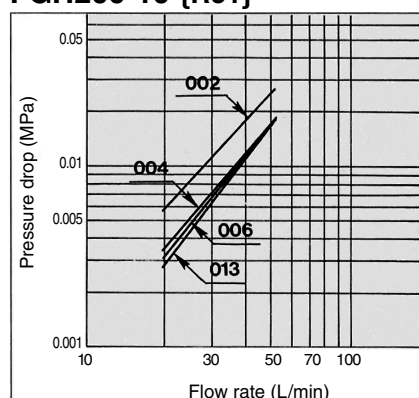
### FGH300-06 {Rc3/4}



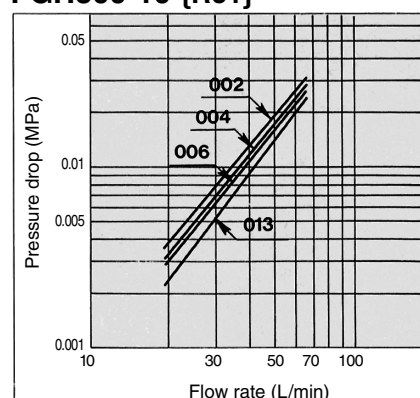
### FGH100-10 {Rc1}



### FGH200-10 {Rc1}

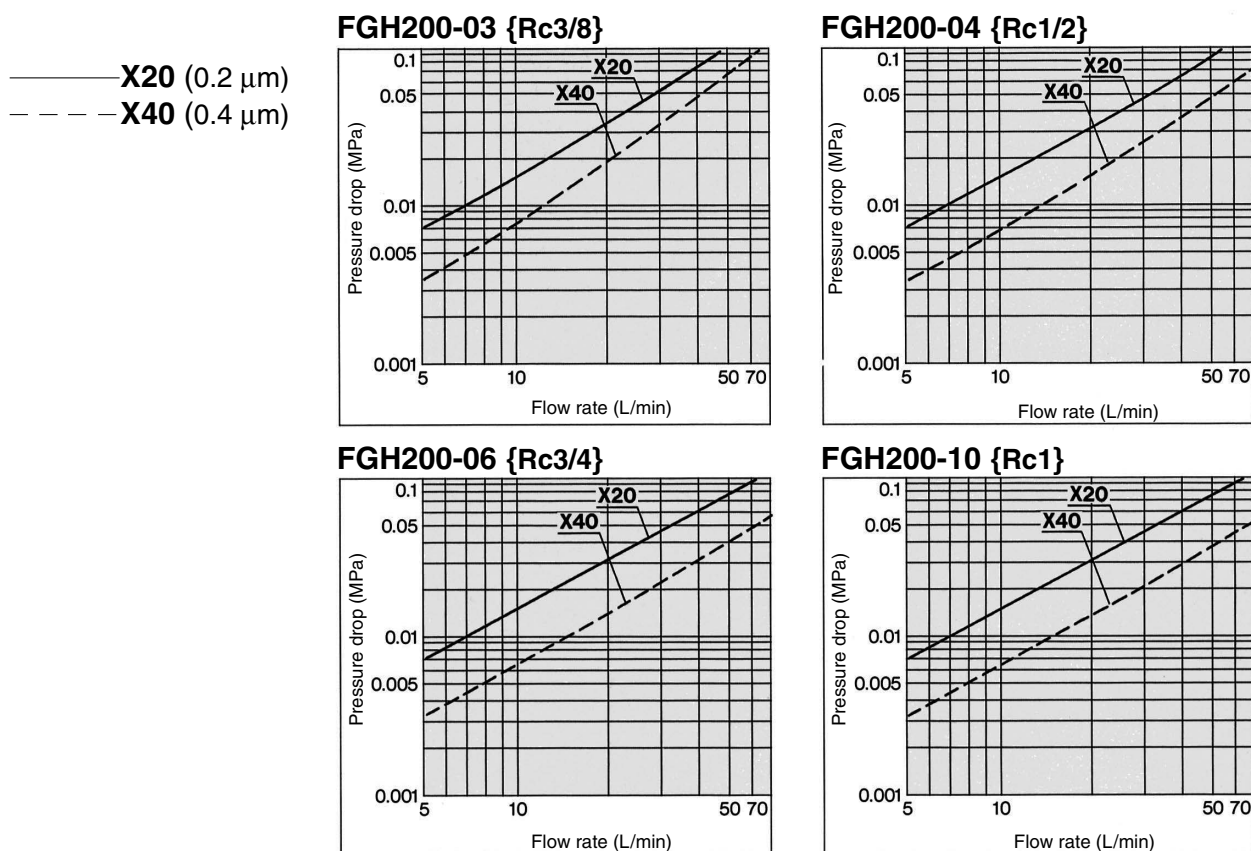


### FGH300-10 {Rc1}

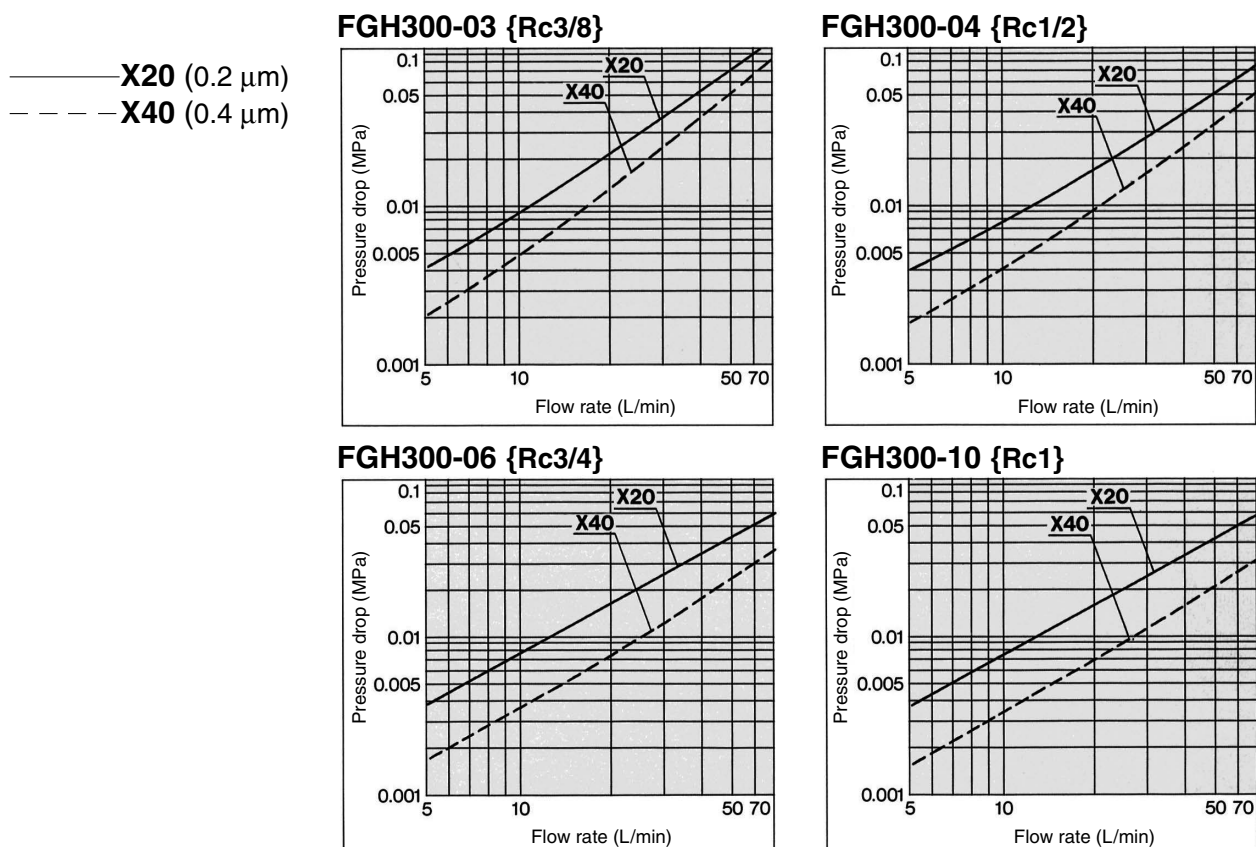


## Flow Rate Characteristics of Built-in Membrane Elements (Fluid: water, temperature: 20°C)

### FGH200 Series

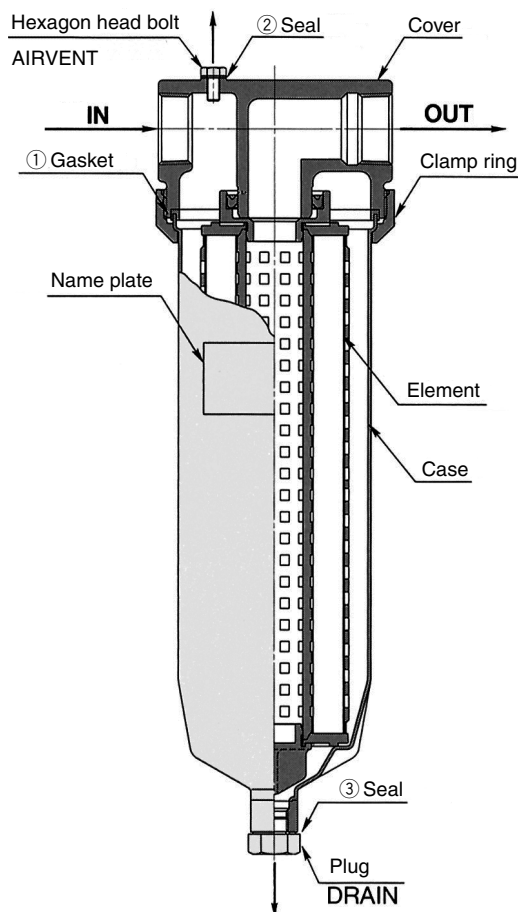


### FGH300 Series





## Construction/Spare Parts and Seal List



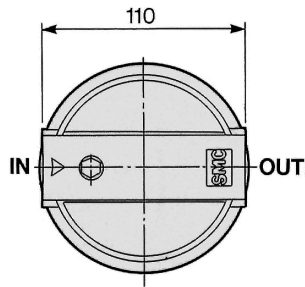
### Spare Parts and Seal List

No.	Description	Part number		
		FGH100	FGH200	FGH300
1	Gasket	AL-58S#1		
2	Seal	AL-43S		
3	Seal	AL-53S		

\* Use each one of the above parts for each filter unit.

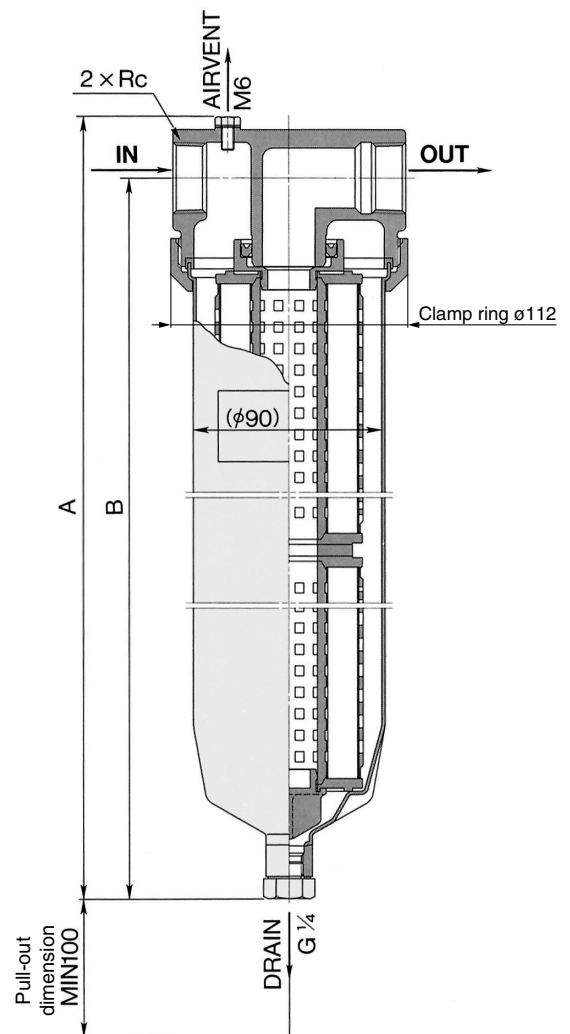
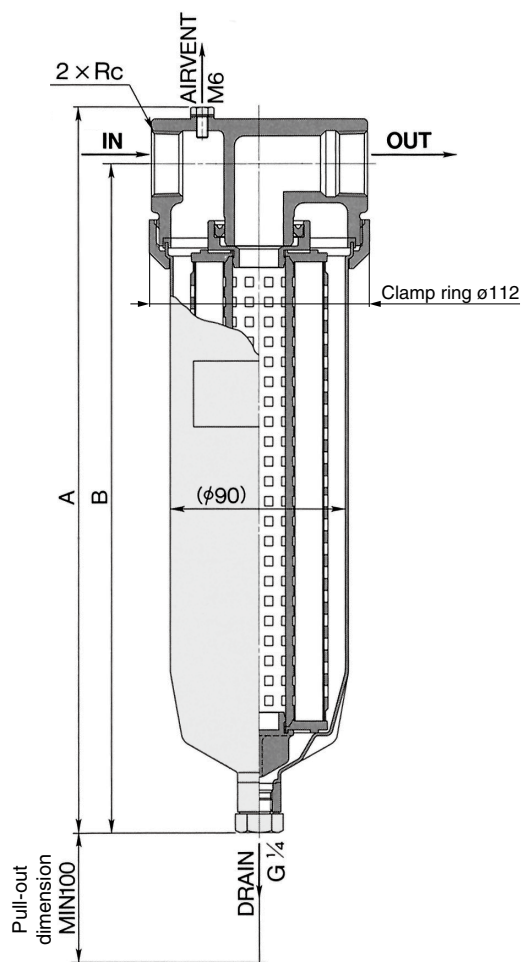
\* Use a commercially available belt wrench etc. for mounting and removing clamp rings.

## Dimensions



**FGH100/200**

**FGH300**



## Dimensions

Model	Element length	Port size (Rc)	A	B
<b>FGH100</b>	ø70 x L117	3/8, 1/2	235	211
		3/4, 1	240	
<b>FGH200</b>	ø70 x L246	3/8, 1/2	364	340
		3/4, 1	369	
<b>FGH300</b>	ø70 x L496	3/8, 1/2	615	591
		3/4, 1	620	

# HEPO II Element for FGH Series

## *EJ Series*

RoHS

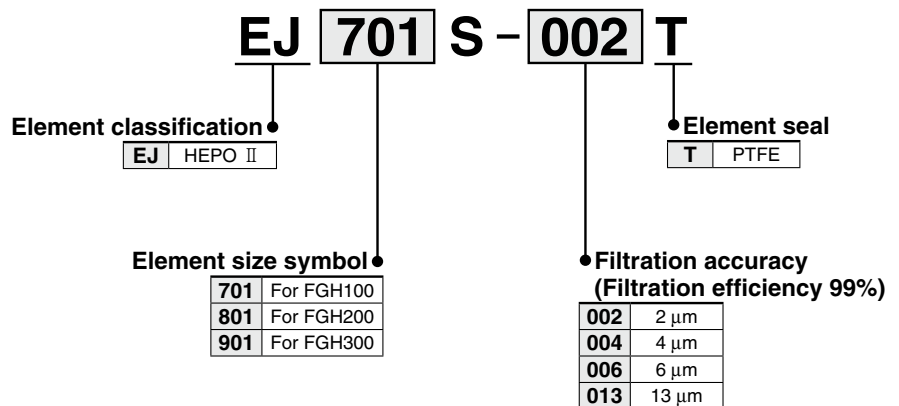


### Specifications

Model			EJ□S-002	EJ□S-004	EJ□S-006	EJ□S-013
Filtration accuracy (Filtration efficiency 99%)			2	4	6	13
Filtration area (cm <sup>2</sup> )	Length	117 mm	1890	2310	2090	2490
		246 mm	4250	5200	4700	5600
		496 mm	8500	10400	9400	11200
Heat resistant temperature (°C)			80			
Material	Filter media		Polyester			
	Reinforcement material		Polypropylene			
	Others		Polypropylene, Stainless steel 316			
Element replacement differential pressure			0.1 MPa			
Differential pressure resistance			0.5 MPa at 20°C, 0.125 MPa at 80°C			

Note) See "How to Order" below for items represented by □.

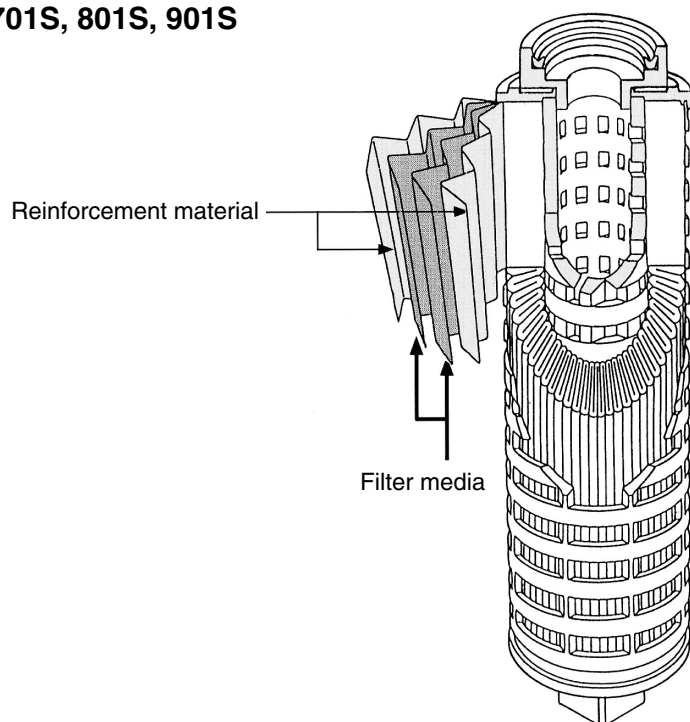
### How to Order Elements



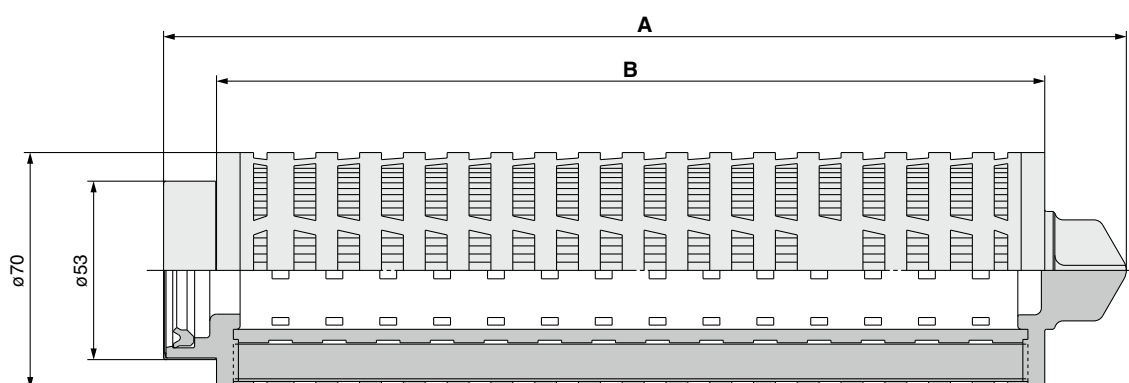


## Construction

### EJ701S, 801S, 901S



## Dimensions



### Element Dimensions

Model	A	B	Applicable container
<b>EJ701S-□T</b>	157	117	FGH100
<b>EJ801S-□T</b>	286	246	FGH200
<b>EJ901S-□T</b>	538	498	FGH300

# Membrane Element for FGH Series

## ED Series

RoHS

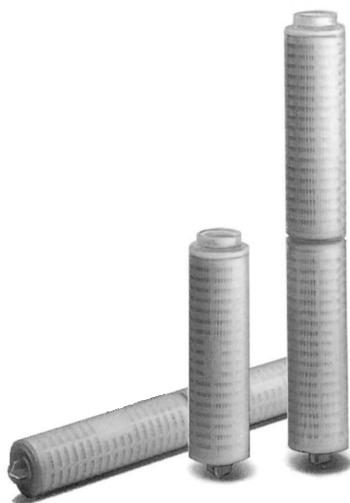
### Specifications

Model			ED□S-X20	ED□S-X40
Filtration accuracy (Filtration efficiency 99.9%) <small>Note 1)</small>			0.2	0.4
Filtration area (cm <sup>2</sup> )	Length	247 mm	4,000	6,200
		495 mm	8,000	12,400
Heat resistant temperature (°C)			80	
Material	Filter media		Polyether sulfone	Cellulose acetate & polyester
	Reinforcement material		Polypropylene	
	Others		Polypropylene	
Element replacement differential pressure			0.1 MPa	
Differential pressure resistance			0.5 MPa at 20°C, 0.125 MPa at 80°C	
Resistivity recovery <small>Note 2)</small>			60 min at 10 L/min	—
Others			100 L/4000 cm <sup>2</sup> Pure water cleaning	—

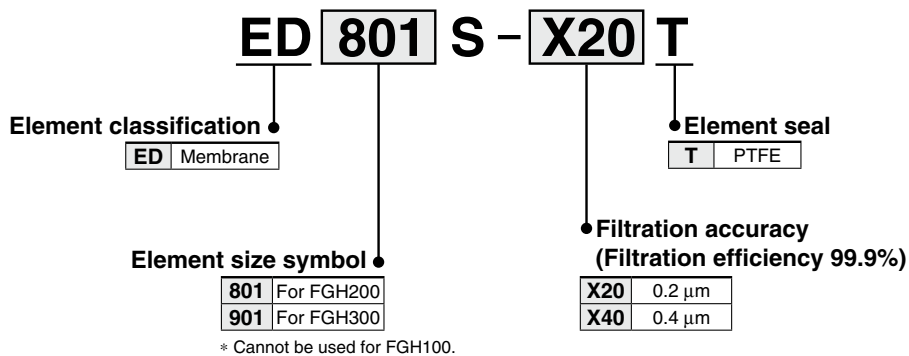
Note 1) Filtration accuracy: tested with ultrapure water, flow rate at  $\Delta P = 0.01$  MPa.

Note 2) Resistivity recovery: time taken to recover to 18 M $\Omega$ -cm with ultrapure water.

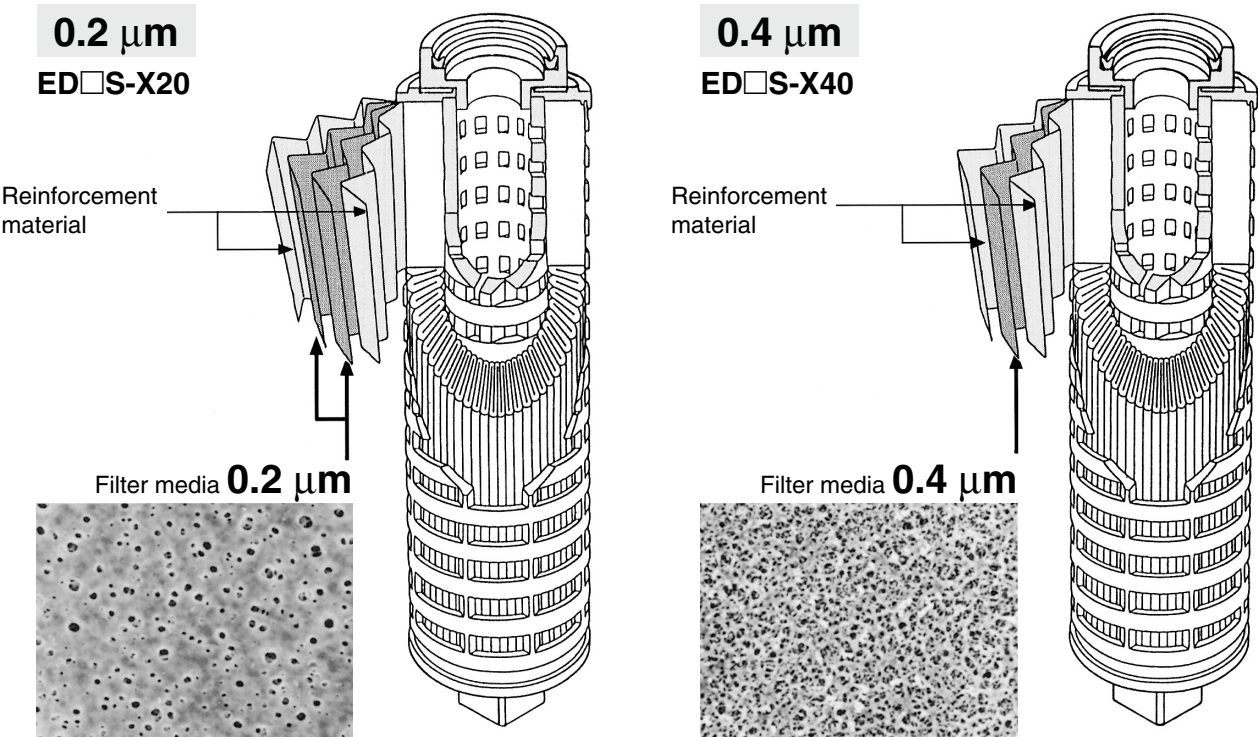
Note 3) See "How to Order" below for items represented by □.



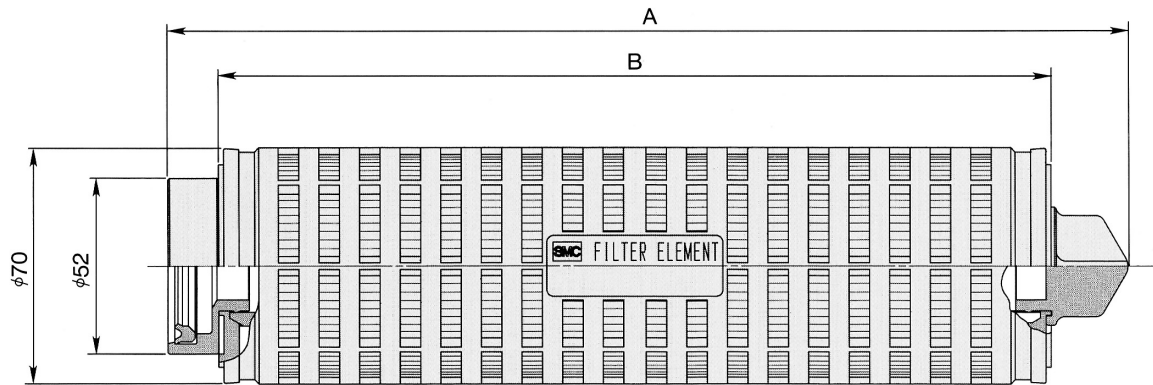
### How to Order Elements



**Construction**



**Dimensions**



**Element Dimensions**

Model	A	B	Applicable container
ED801S-X□T	285	247	FGH200
ED901S-X□T	533	495	FGH300