High Precision Filter for Liquids

Series FGH

Filtration efficiency: 99% or more

HEPO Ⅱ element

Filtration accuracy: 2, 4, 6 or 13 μm (Filtration efficiency 99%)

Membrane element

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

High Precision Filter for Liquids

Series FGH

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.

High cleanliness and high quality

High cleanliness and high quality are ensured by manufacturing elements in a clean room (Class M 5.5 (ISO Class 7)*) and performing 100% inspection of integrity.

* Per FED-STD 209E (ISO14644-1).

Prevents residual liquid accumulation in the case

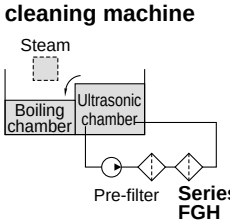
A simple structure prevents the residual liquid from accumulating in the case.

Application examples

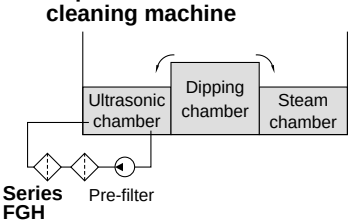
Ultrasonic cleaning machine

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

Dual chamber ultrasonic cleaning machine

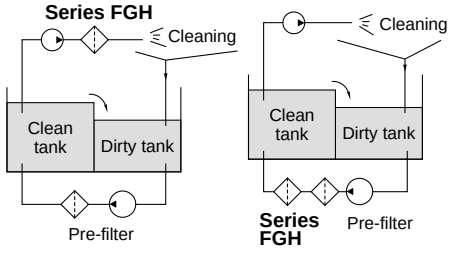


Triple chamber ultrasonic cleaning machine



Jet cleaning machine

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



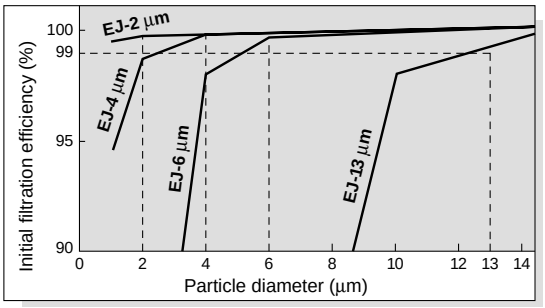
HEPO Ⅱ Element

Filtration accuracy: 2, 4, 6 or 13 μm (Filtration efficiency 99%)

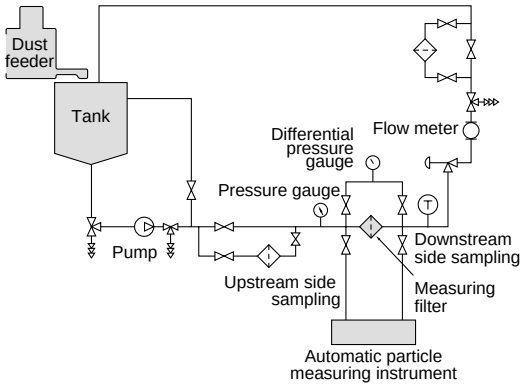
High precision filtration: 99% or more

High accuracy filtration is achieved by using a HEPO Ⅱ element with filtration accuracy of 2, 4, 6 or 13 μm (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 nonwoven 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.

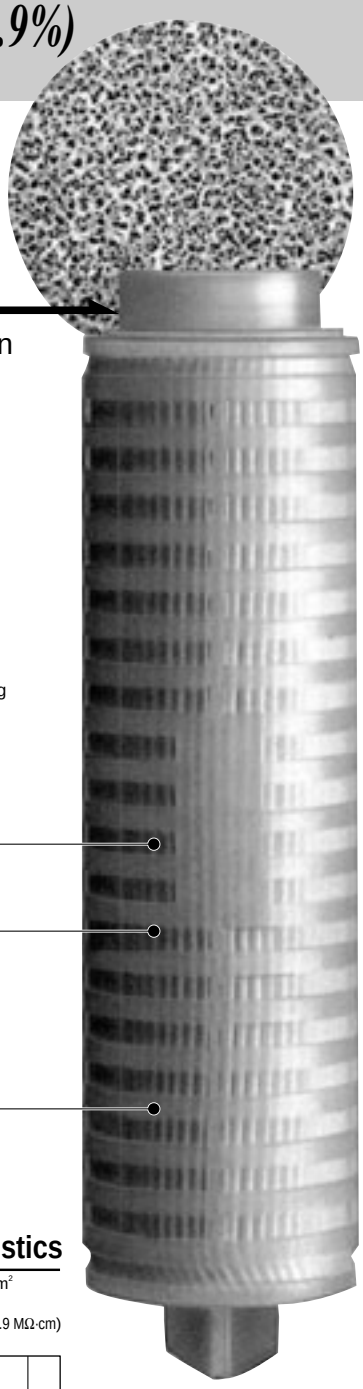
Applicable fluids

Classification	Description
Water	Tap water, industrial water, distilled water, ion-exchange water, pure water, ultrapure water
Alcohol	Isopropyl alcohol (IPA, propanol) Ethyl alcohol (ethanol) Methyl alcohol (methanol) Butyl alcohol (butanol) Ethylene glycol
Hydrocarbon	Petroleum ether, petroleum benzene
Ester	Methyl acetate, ethyl acetate, methyl acrylate
Oil/fuel oil	Hydraulic fluid, lubricating oil, light oil, kerosene, cutting oil, grinding oil
Others	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



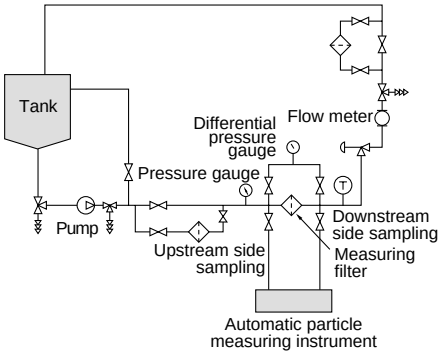
High accuracy filtration is achieved by using a membrane element with filtration accuracy of 0.2 or 0.4 μm (Filtration efficiency 99.9%)

Test conditions

Fluid: pure 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)

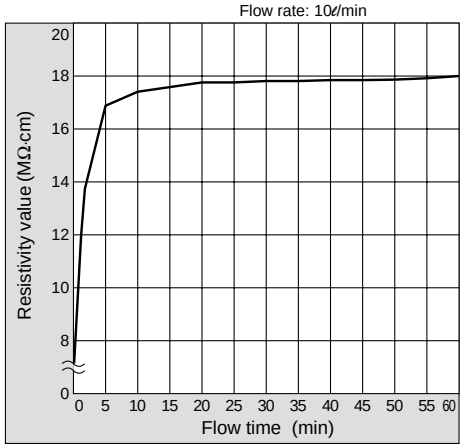
Applicable fluids

Classification	**0.2 μm**	**0.4 μm**
Water	Tap 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^2
Fluid: Ultrapure water
(resistivity value 17.9 MΩ·cm)
Flow rate: 10ℓ/min



∗ Per JISK3834

SMC

High Precision Filter for Liquids

Series FGH

How to Order

FGH 100 – 03 – J 002 T

High precision filter for liquids

Body size

Symbol	Element length	Applicable element
100	ℓ117	EJ701S
200	ℓ246	EJ801S, ED801S
300	ℓ496	EJ901S, ED901S

∗ The membrane element cannot be selected for FGH100.

Port size

03	Rc3/8
04	Rc1/2
06	Rc3/4
10	Rc1

Element classification Note)

Symbol	Element
J	HEPO Ⅱ
D	Membrane

Note) Refer to pages 806 to 809 for details about specifications, models, dimensions, etc. regarding the elements.

Filtration accuracy

Symbol	Filtration accuracy		Applicable for:	Applicable body
002	2 μm	Filtration efficiency 99%	HEPO Ⅱ	FGH100 to 300
004	4 μm			
006	6 μm			
013	13 μm			
X20	0.2 μm	Filtration efficiency 99.9%	Membrane	FGH200 to 300
X40	0.4 μm			

Element seal

Symbol	Material
T	PTFE

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 799 and 800)		
Port size (Rc)		3/8, 1/2, 3/4, 1		
Material	**Housing**	Stainless steel 316 (Electrolytic polishing)		
	Seals	PTFE		
Mass (kg)		2.6	3.2	4.3
Internal capacity (ℓ)		1.0	1.8	3.3

Accessories for FGH 100-300 (Option)

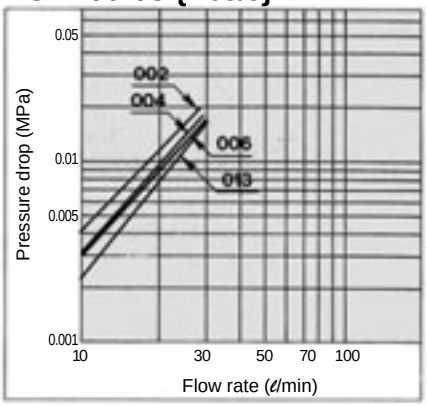
Tool for tightening clamp rings

Description	Part number
Tightening tool	FTT410S

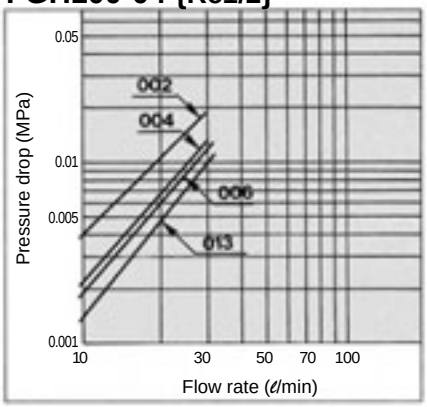
Flow Rate Characteristics of Built-in HEPO Ⅱ Elements (Fluid: water, temperature: 20°C) — 002 (2 µm) — 004 (4 µm) — 006 (6 µm) — 013 (13 µm)

Series FGH100

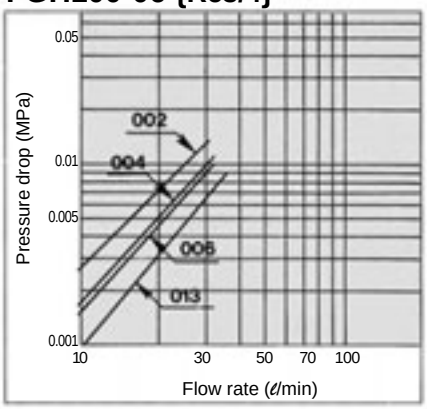
FGH100-03 {Rc3/8}



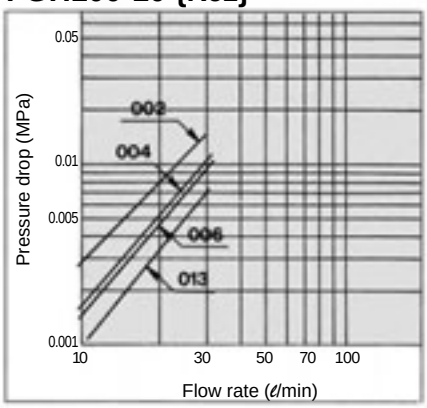
FGH100-04 {Rc1/2}



FGH100-06 {Rc3/4}

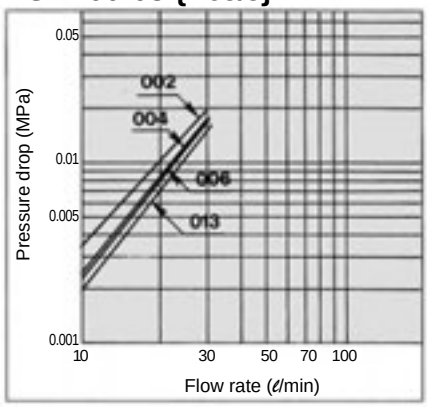


FGH100-10 {Rc1}

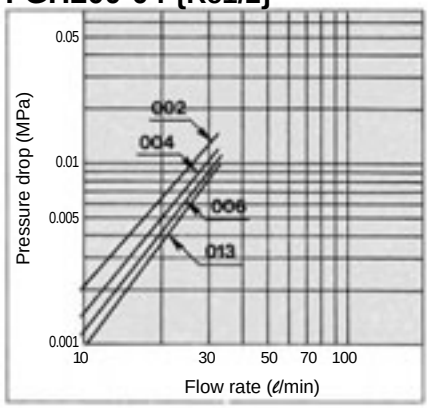


Series FGH200

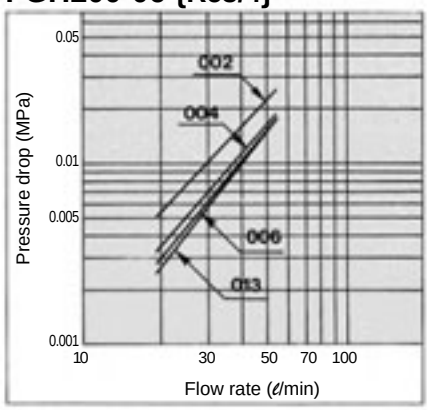
FGH200-03 {Rc3/8}



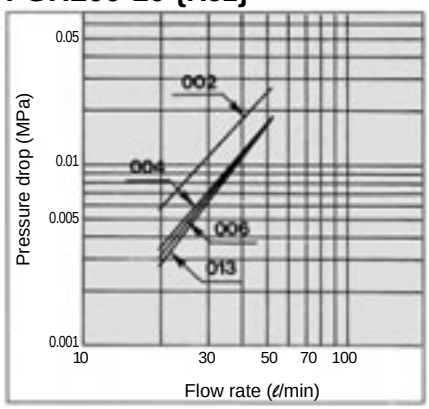
FGH200-04 {Rc1/2}



FGH200-06 {Rc3/4}

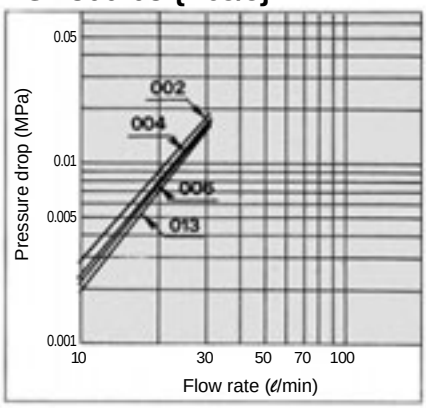


FGH200-10 {Rc1}

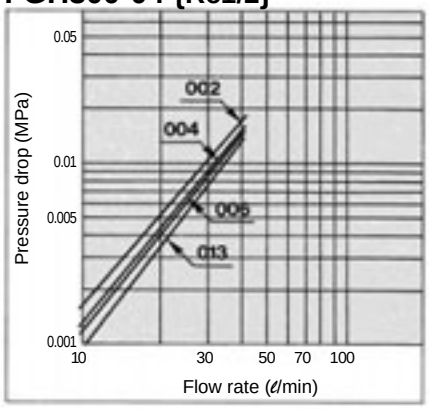


Series FGH300

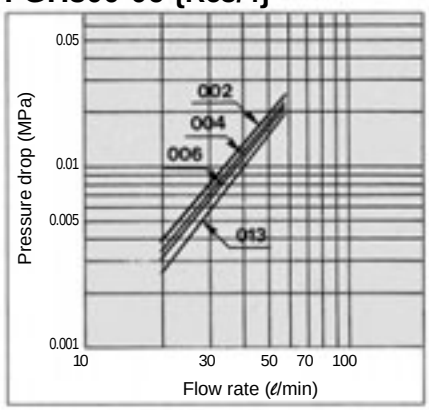
FGH300-03 {Rc3/8}



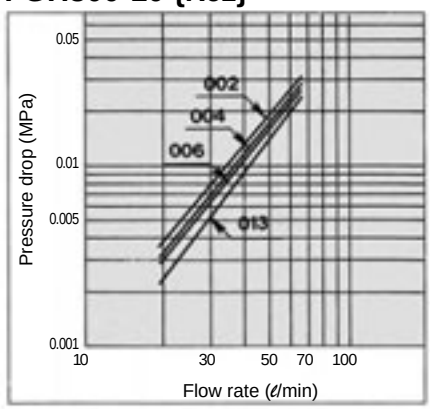
FGH300-04 {Rc1/2}



FGH300-06 {Rc3/4}



FGH300-10 {Rc1}

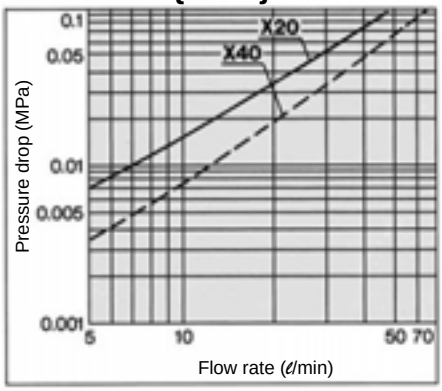


Flow Rate Characteristics of Built-in Membrane Elements (Fluid: water, temperature: 20°C)

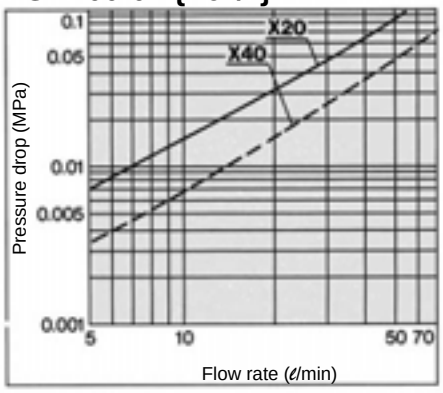
Series FGH200

——— **X20** (0.2 μm)
– – – – **X40** (0.4 μm)

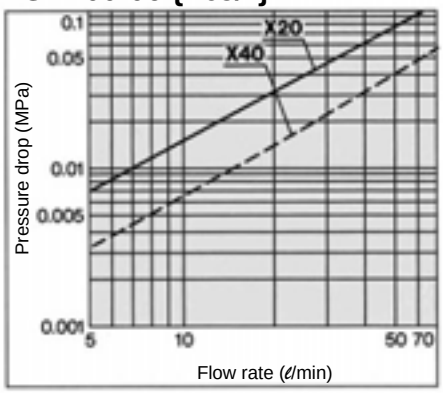
FGH200-03 {Rc3/8}



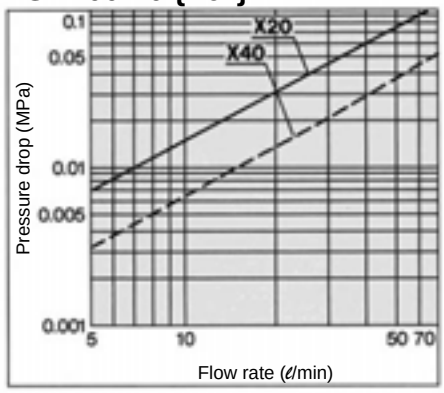
FGH200-04 {Rc1/2}



FGH200-06 {Rc3/4}



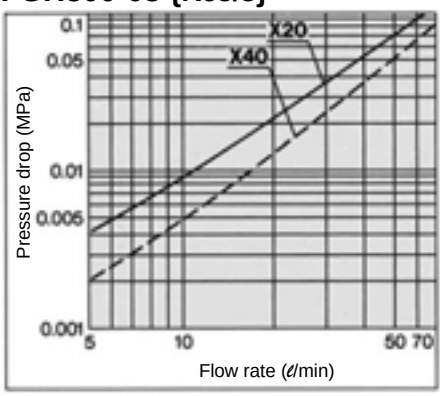
FGH200-10 {Rc1}



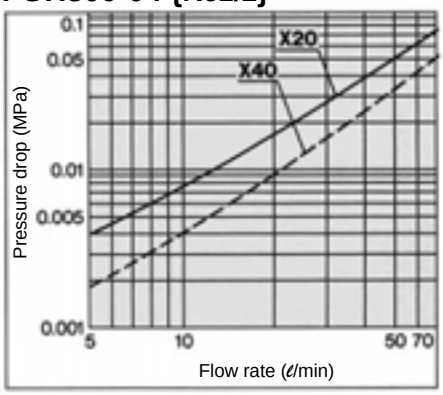
Series FGH300

——— **X20** (0.2 μm)
– – – – **X40** (0.4 μm)

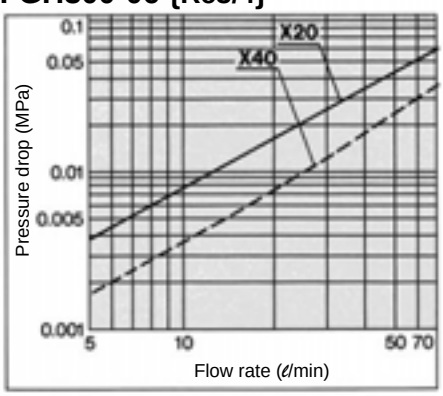
FGH300-03 {Rc3/8}



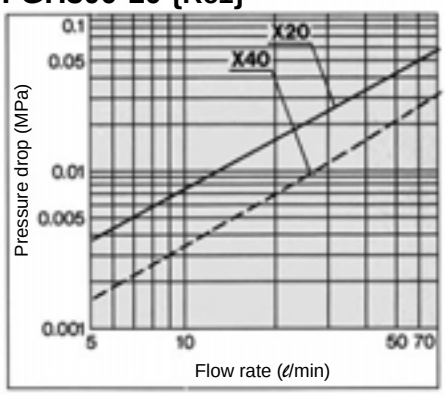
FGH300-04 {Rc1/2}



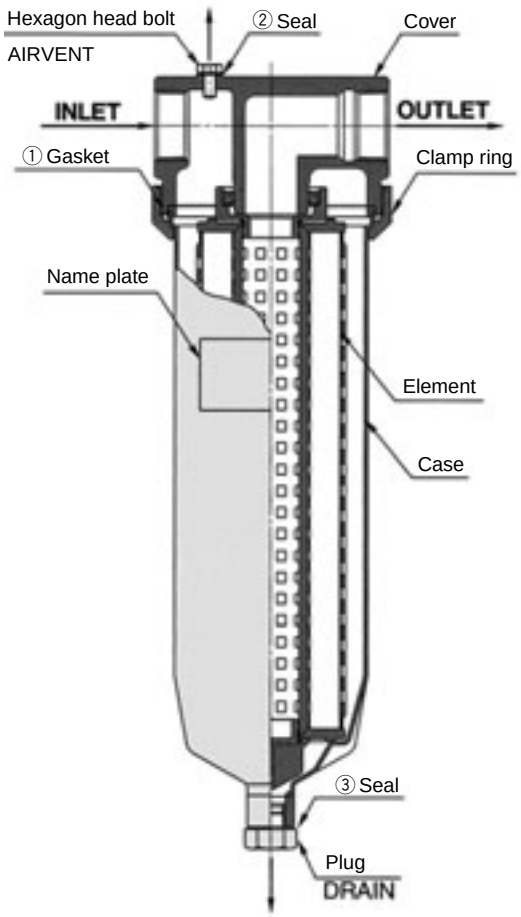
FGH300-06 {Rc3/4}



FGH300-10 {Rc1}



Construction / Spare Parts and Seal List

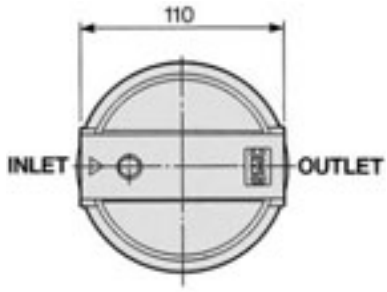


Spare Parts and Seal List

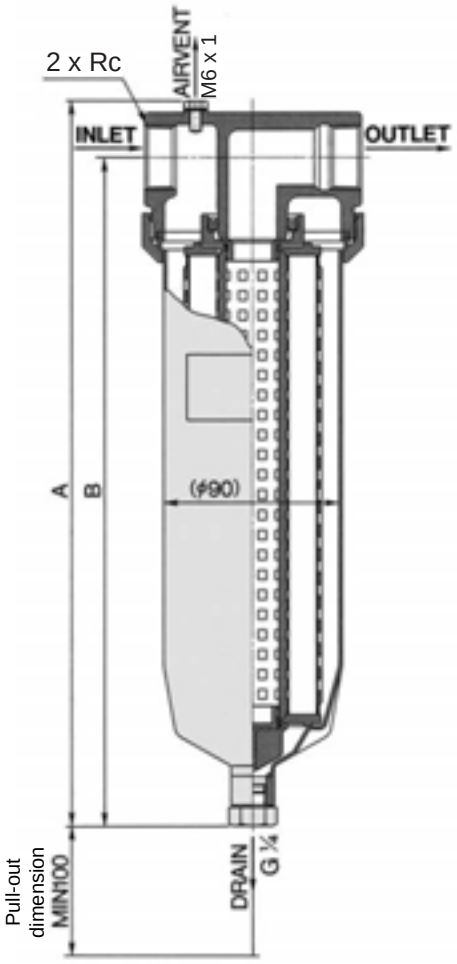
No.	Description	Part number		
		FGH100	FGH200	FGH300
1	**Gasket**	AL-58S		
2	**Seal**	AL-43S		
3	**Seal**	AL-53S		

Note) Use each one of the above parts for each filter unit.

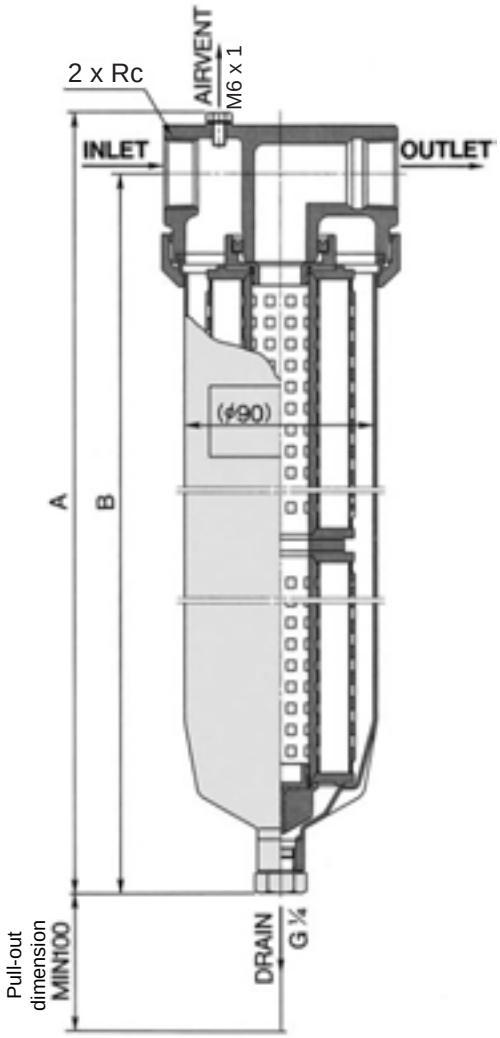
Dimensions



FGH100/200



FGH300



Dimensions

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

HEPO Ⅱ Element for Series FGH

Series EJ

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^2)	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			
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

EJ 701 S – 002 T

Element classification

EJ	HEPO Ⅱ

Element size symbol

701	For FGH100
801	For FGH200
901	For FGH300

Element seal

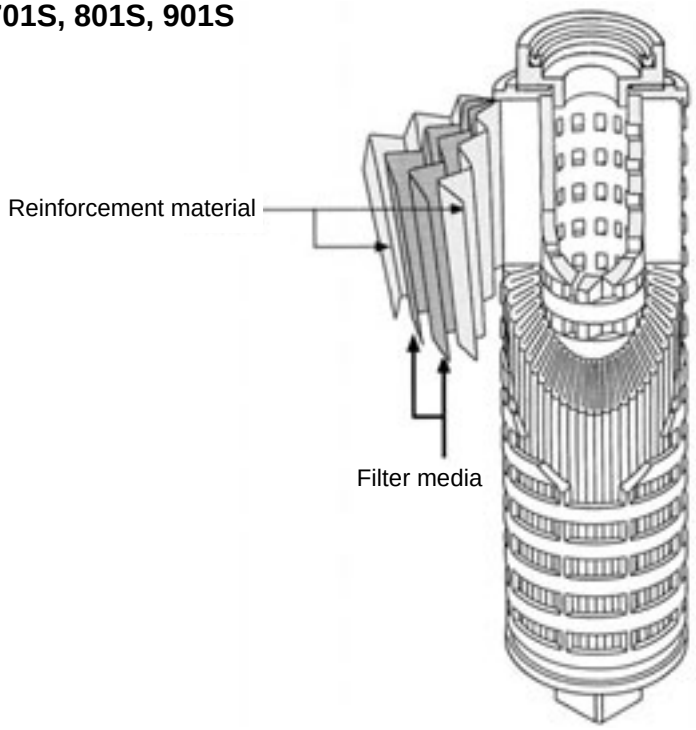
T	PTFE

Filtration accuracy (Filtration efficiency 99%)

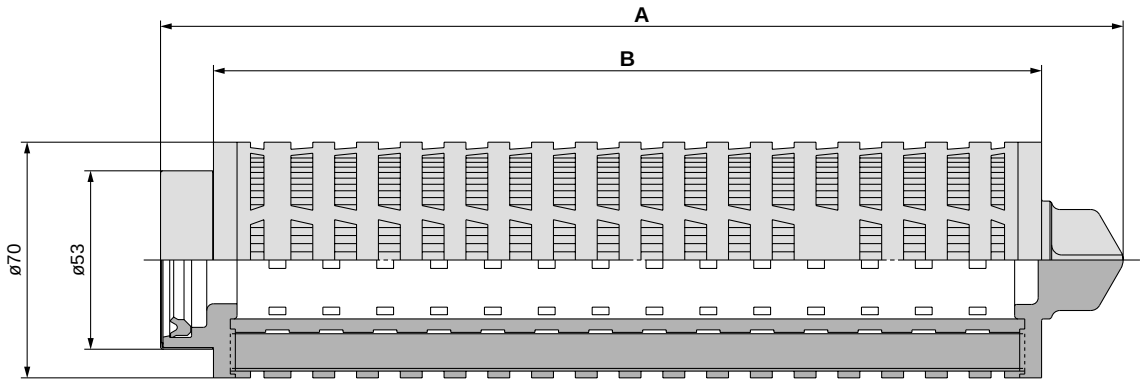
002	2 μm
004	4 μm
006	6 μm
013	13 μm

Construction

EJ701S, 801S, 901S



Dimensions



Element Dimensions

Model	A	B	Applicable container
EJ701S-□T	157	117	FGH100
EJ801S-□T	286	246	FGH200
EJ901S-□T	536	496	FGH300

Membrane Element for Series FGH

Series ED

Specifications

Model			ED□S-X20	ED□S-X40
Filtration accuracy (Filtration efficiency 99.9%) Note 1)			0.2	0.4
Filtration area (cm^2)	**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	Polyester
	Others		Polypropylene	Polypropylene
Pressure resistance			0.5 MPa at 20°C, 0.125 MPa at 80°C	
Resistivity recovery Note 2)			60 min at 10 ℓ/min	—
Others			100 ℓ/4000 cm^2 Pure water cleaning	—

Note 1) Filtration accuracy: tested with ultrapure water, flow rate at ΔP = 0.01 MPa.
Note 2) Resistivity recovery: time taken to recover to 18 MΩ·cm with ultrapure water.
Note 3) See “How to Order” below for items represented by □.

How to Order Elements

ED 801 S – X20 T

Element classification

ED	Membrane

Element size symbol

801	For FGH200
901	For FGH300

∗ Cannot be used for FGH100.

Filtration accuracy (Filtration efficiency 99.9%)

X20	0.2 μm
X40	0.4 μm

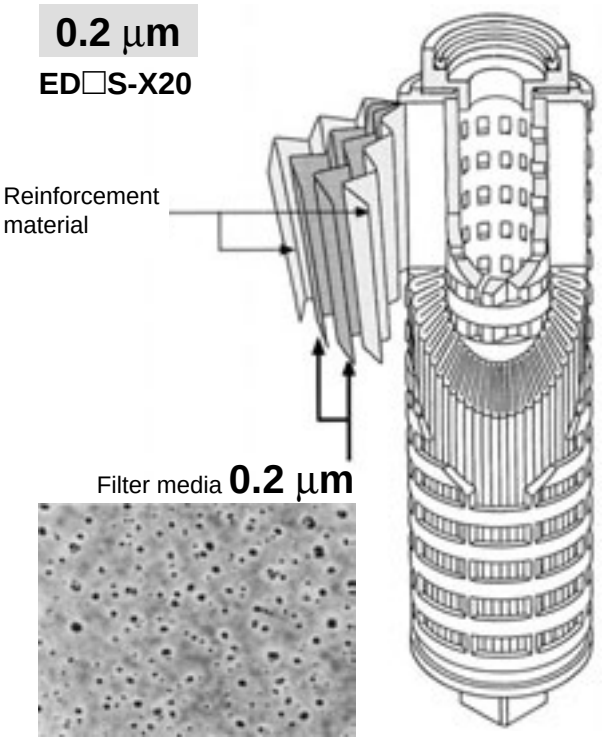
Element seal

T	PTFE

Construction

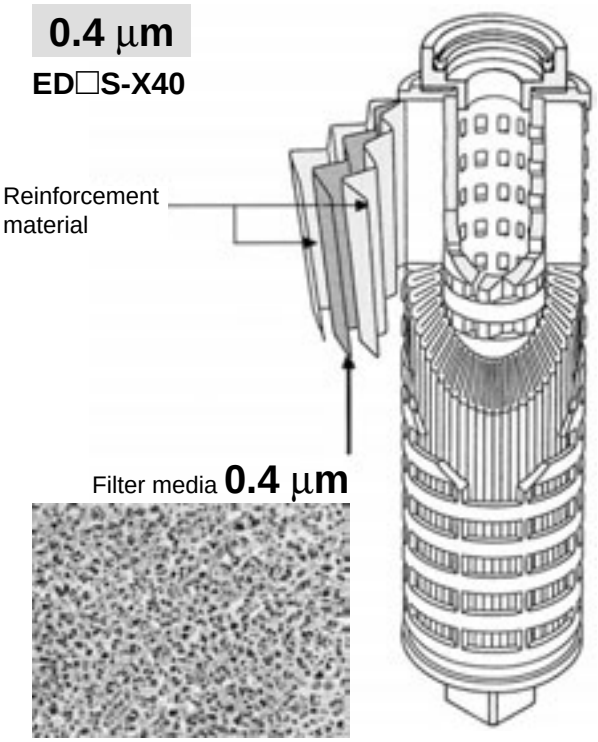
0.2 μm

ED□S-X20

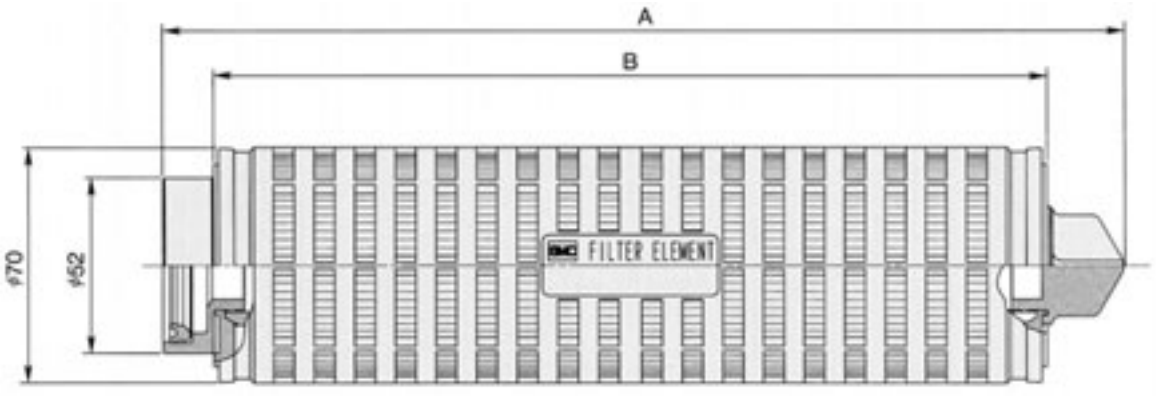


0.4 μm

ED□S-X40



Dimensions



Element Dimensions

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