

# Clean Gas Filter

## SF Series

### Cartridge Type/Disposable Type



# SMC Clean Gas Filter (SF series)

## ■ Integrated production in a clean environment

Under a clean environment, cleaning, assembly, inspection and antistatic double packaging processes are done in an integrated production system.

Assembly environment
<ul style="list-style-type: none"> <li>• Clean room: M5.5 (ISO class 7)*</li> <li>• Clean booth: M3.5 (ISO class 5)*</li> </ul>

\* Fed.std.209E ( ): based on ISO 14644-1

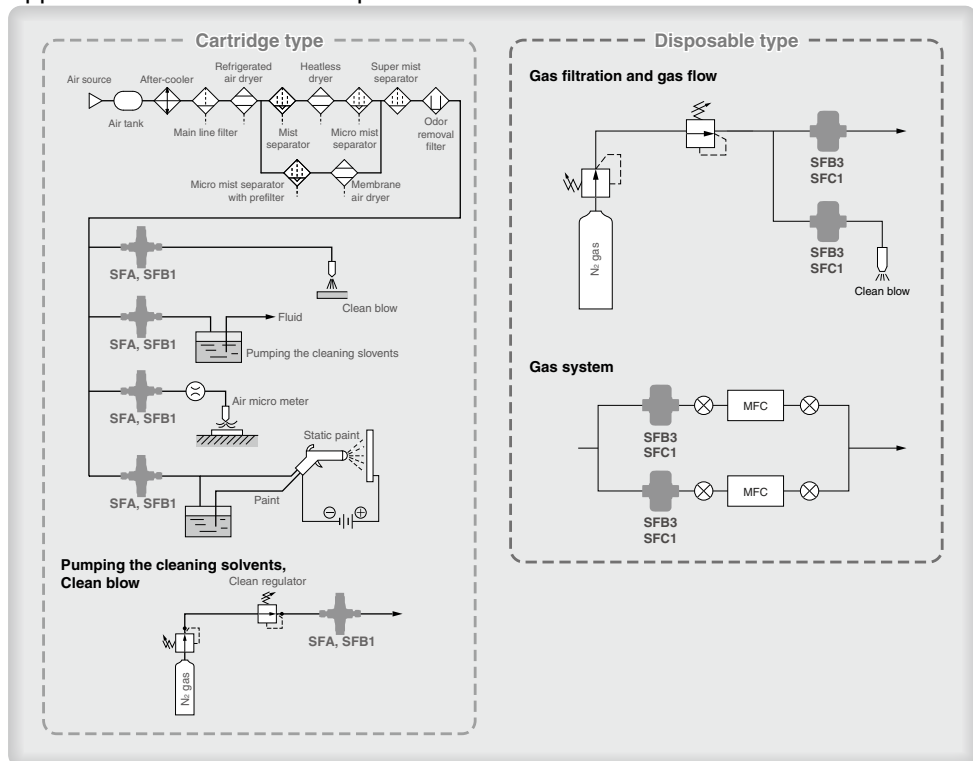
## ■ High precision filtration

0.01 $\mu\text{m}$  filtration (filtering efficiency of 99.99%) is realized with the PTFE membrane cartridge element. (Clean gas strainer: Nominal filtration of 120  $\mu\text{m}$ )



## ■ Can be used under different environments

This filter can be used under different environments with chemical resistant and heat resistant materials (Refer to specifications for each series.).

## Applications and Circuit Examples



# Variations

	Series	Filtration	Flow rate L/min (ANR) (Inlet pressure is 0.7 MPa, at pressure drop of 0.02 MPa)	Pressure MPa	Temperature °C	Replacement of element	Page	
Cartridge type	<b>Disc type</b> 		<b>SFA10</b> □  <b>SFA20</b> □  <b>SFA30</b> □ 0.01 μm (Filtering efficiency 99.99%) (Membrane element)	0.99	5 to 80	Replaceable	P. 405	
								26
								70
	<b>Straight type</b> 		<b>SFB10</b> □  <b>SFB20</b> □ (Strainer) Nominal 120 μm (Sintered metallic element)	45				P. 408
			400				P. 409	
Disposable type	<b>Straight type</b> 		<b>SFB30</b> □  0.01 μm (Filtering efficiency 99.99%) (Membrane element)	0.99	5 to 120	Nonreplaceable	P. 412	
	<b>Multiple disc type</b> 							<b>SFC10</b> □
Made to Order		<ul style="list-style-type: none"> <li>Case/Cover material: Aluminum alloy (<b>SFB100</b>)</li> <li>Strainer with other nominal filtration: 1, 2, 5, 10, 20, 40, 70, 100 μm (<b>SFB200</b>)</li> </ul>					P. 418	

# SF Series Model Selection

Determine the model by using the following procedures involving the inlet pressure and the maximum flow rate.

Example) Inlet pressure: 0.6 MPa

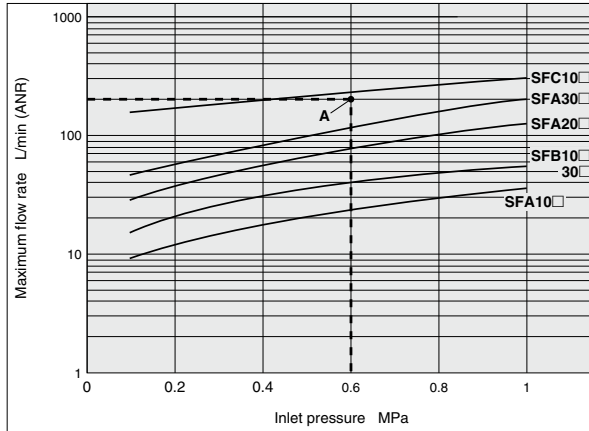
Maximum flow rate: 200 L/min (ANR)

1. Determine intersection A for the inlet pressure and the maximum flow rate by using the maximum flow rate graph.
2. If the obtained intersection A is above the maximum flow rate line, SFC10  is selected.

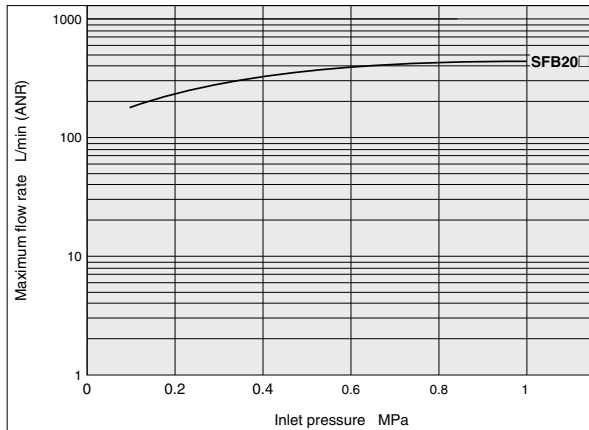
Note) Please be sure to select a model with a maximum flow rate line which is above the obtained intersection A.  
If the obtained intersection A is below the maximum flow rate line, overflow will occur. This will cause a nonconformance in which the specification will not be satisfied.

## Maximum Flow Rate Lines

### Clean Gas Filter



### Clean Gas Strainer



# Clean Gas Filter: Cartridge Type/Disc Type **SFA100/200/300 Series**

RoHS

Precision filtration for compressed air, nitrogen, used in the electronic industry, etc.

PTFE membrane element is made into a cartridge. (Filtration 0.01 μm (Filtering efficiency 99.99%))

Made into a cartridge by polyester holder and fluororubber (FKM) gasket.

Elements are replaceable.



## How to Order

**SFA 10 0 - 02**

Clean gas filter  
Cartridge type  
(Disc type)

Port size

Symbol	Port size
02	Rc, NPT, TSJ, UOJ 1/4

Model size

Symbol	Rated flow rate L/min(ANR)
10	Up to 26
20	Up to 70
30	Up to 140

Connection

Symbol	Connection (IN, OUT)
0	Rc
1	NPT
2	TSJ
3	UOJ

## Model

Model	Rated flow rate L/min (ANR) <sup>Note 1)</sup>	Connection	Filtration area cm <sup>2</sup>	Element part no. <sup>Note 2)</sup>	Weight kg
<b>SFA100-02</b>	26	Rc 1/4 (Female thread)	13.85	ED001S-X10V	0.34
<b>SFA101-02</b>		NPT 1/4 (Female thread)			
<b>SFA200-02</b>	70	Rc 1/4 (Female thread)	33.18	ED101S-X10V	0.44
<b>SFA201-02</b>		NPT 1/4 (Female thread)			
<b>SFA300-02</b>	140	Rc 1/4 (Female thread)	56.75	ED201S-X10V	0.66
<b>SFA301-02</b>		NPT 1/4 (Female thread)			
<b>SFA102-02</b>	26	TSJ 1/4 Tube Swage Joint	13.85	ED001S-X10V	0.38
<b>SFA202-02</b>	70		33.18	ED101S-X10V	0.49
<b>SFA302-02</b>	140		56.75	ED201S-X10V	0.70
<b>SFA103-02</b>	26	UOJ 1/4 Union O-ring Joint	13.85	ED001S-X10V	0.42
<b>SFA203-02</b>	70		33.18	ED101S-X10V	0.53
<b>SFA303-02</b>	140		56.75	ED201S-X10V	0.75

Note 1) Inlet pressure 0.7 MPa, at pressure drop 0.02 MPa

Note 2) Element part numbers include numbers 3 to 7 in the construction figure. (Refer to page 406.)

# SFA100/200/300 Series

## Specifications

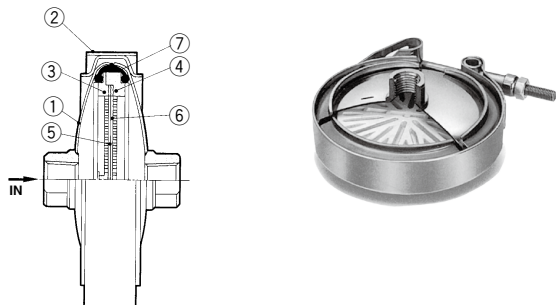
<b>Fluid</b>		Air, Nitrogen
<b>Operating pressure</b> <small>Note 1)</small>		Max. 0.99 MPa, Vacuum $1.3 \times 10^{-6}$ kPa
<b>Operating temperature</b>		5 to 80°C
<b>Element proof differential pressure</b>		Max. 0.1 MPa
<b>Element reverse differential pressure</b>		Max. 0.05 MPa
<b>Filtration</b> <small>Note 2)</small>		0.01 $\mu\text{m}$ (Filtering efficiency 99.99%)
<b>Main material</b>	<b>Case</b>	Stainless steel 316 (Interior/Exterior: Electrolytic polishing)
	<b>Filter medium</b>	PTFE membrane
	<b>Seal</b>	Fluororubber (FKM)
<b>Packaging</b>		Antistatic sealed double package

Note 1) The maximum operating pressure is 0.99 MPa since this product does not conform to the High Pressure Gas Safety Law.

Use under conditions where pressure fluctuations (pulsations) exceeding 0.1 MPa do not occur.

Note 2) Based on SMC's measuring conditions.

## Construction

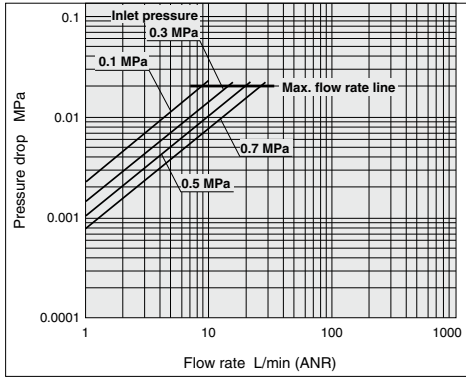


No.	Description	Material	Note
1	<b>Case</b>	Stainless steel 316	Electrolytic polishing (Interior/Exterior)
2	<b>V-clamp</b>	Stainless steel 304	—
3	<b>Holder 1</b>	Polyester	Element
4	<b>Holder 2</b>		
5	<b>Filter medium</b>	PTFE	
6	<b>Seal</b>	FKM	
7	<b>V-seal</b>		

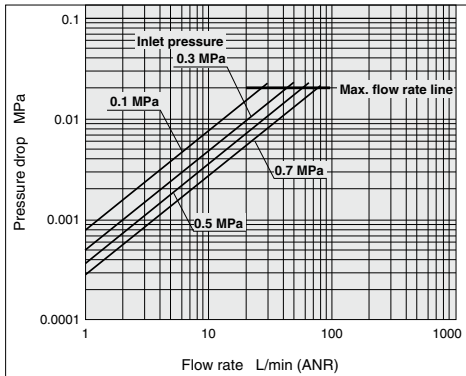
# Clean Gas Filter: Cartridge Type/Disc Type **SFA100/200/300 Series**

**Flow Rate Characteristics** Fluid: Compressed air Inlet temperature: 20°C

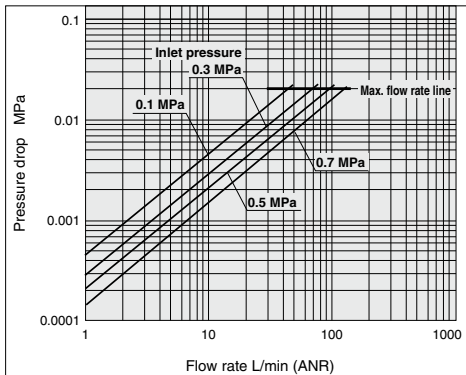
## SFA10□



## SFA20□

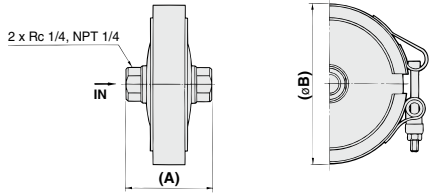


## SFA30□



## Dimensions

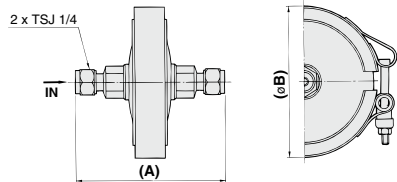
SFA100/101, SFA200/201, SFA300/301



Model	Connection	(A)	(B)
SFA100-02	Rc 1/4	46	76
SFA101-02	NPT 1/4		
SFA200-02	Rc 1/4	51	96
SFA201-02	NPT 1/4		
SFA300-02	Rc 1/4	59	120
SFA301-02	NPT 1/4		

( ): Reference dimensions

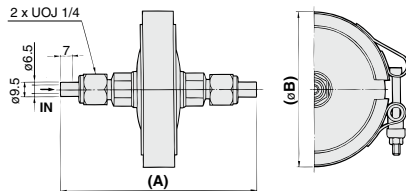
SFA102, SFA202, SFA302



Model	Connection	(A)	(B)
SFA102-02	TSJ 1/4 (Tube Swage Joint)	89	76
SFA202-02		93	96
SFA302-02		101	120

( ): Reference dimensions

SFA103, SFA203, SFA303



Model	Connection	(A)	(B)
SFA103-02	UOJ 1/4 (Union O-ring Joint)	117	76
SFA203-02		122	96
SFA303-02		130	120

( ): Reference dimensions

# Clean Gas Filter: Cartridge Type/Straight Type **SFB100 Series**

RoHS

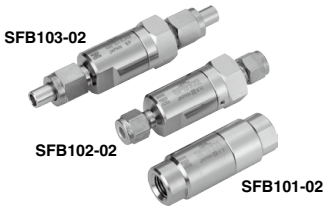
Precision filtration for compressed air, nitrogen, used in the electronic industry, etc.

PTFE membrane element is made into a cartridge. (Filtration 0.01 μm (Filtering efficiency 99.99%))

Made into a cartridge by fluoropolymer holder and fluororubber (FKM) gasket.

Elements are replaceable.

Bracket is included as a standard.



## How to Order

**SFB 10 0 - 02** □

Clean gas filter  
(Straight type)

Symbol	Type
10	Cartridge

Model type

Symbol	Connection (IN, OUT)
0	Rc
1	NPT
2	TSJ
3	UOJ
4	M5 (Female thread)

Connection

Made to Order

Symbol	Description
NII	—
X8	Aluminum case (Refer to page 418.)

Port size

Symbol	Port size
02	Rc, NPT, TSJ, UOJ 1/4
M5	Female thread M5

## Specifications

<b>Fluid</b>		Air, Nitrogen
<b>Operating pressure</b> <small>Note 1)</small>		Max. 0.99 MPa, Vacuum 1.3 x 10 <sup>-6</sup> kPa
<b>Operating temperature</b>		5 to 80°C
<b>Element proof differential pressure</b>		Max. 0.5 MPa
<b>Element reverse differential pressure</b>		Max. 0.07 MPa
<b>Filtration</b> <small>Note 2)</small>		0.01 μm (Filtering efficiency 99.99%)
<b>Main material</b>	<b>Case/Cover</b>	Stainless steel 316 (Interior/Exterior: Electrolytic polishing)
	<b>Filter medium</b>	PTFE membrane
	<b>Seal</b>	Fluororubber (FKM)
<b>Packaging</b>		Antistatic sealed double package

Note 1) The maximum operating pressure is 0.99 MPa since this product does not conform to the High Pressure Gas Safety Law.  
Use under conditions where pressure fluctuations (pulsations) exceeding 0.1 MPa do not occur.

Note 2) Based on SMC's measuring conditions.

## Model

Model	Rated flow rate L/min (ANR) <small>Note)</small>	Connection	Filtration area cm <sup>2</sup>	Element part no. (Including O-rings)	Weight kg
SFB100-02	45	Rc 1/4 (Female thread)	10	ED301S-X10V (Including O-rings)	0.15
SFB101-02		NPT 1/4 (Female thread)			
SFB102-02		TSJ 1/4			
SFB103-02		UOJ 1/4			
SFB104-M5		M5 (Female thread)			

Note) Inlet pressure 0.7 MPa, at pressure drop 0.02 MPa



# Clean Gas Strainer: Cartridge Type/Straight Type **SFB200 Series**

**Cartridge made of stainless steel 316 sintered metallic element (Nominal filtration: 120 μm)**

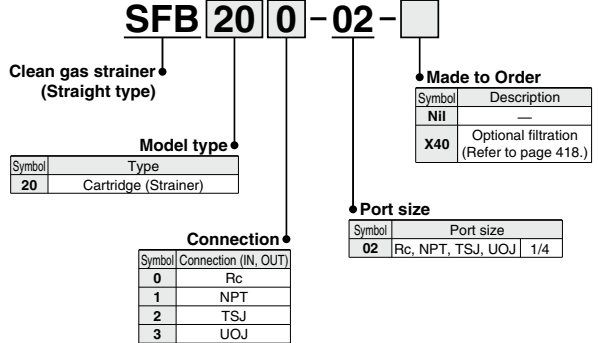
Clean gas strainers made of an element (120 μm, stainless steel 316 sintered metal) to protect regulators and vacuum regulators are also available.

**Elements are replaceable.  
Bracket is included as a standard.**



SFB200-02

## How to Order



## Specifications

<b>Fluid</b>	Air, Nitrogen	
<b>Operating pressure</b>	Max. 0.99 MPa, Vacuum 1.3 x 10 <sup>-6</sup> kPa	
<b>Operating temperature</b> <small>Note</small>	5 to 80°C	
<b>Element proof differential pressure</b>	Max. 1.0 MPa	
<b>Element reverse differential pressure</b>	Max. 1.0 MPa	
<b>Nominal filtration</b> *	120 μm	
<b>Main material</b>	<b>Case/Cover</b>	Stainless steel 316 (Interior/Exterior: Electrolytic polishing)
	<b>Seal</b>	Fluororubber (FKM)
	<b>Filter medium</b>	Stainless steel 316 sintered metal
<b>Packaging</b>	Antistatic sealed double package	

Note) The maximum operating pressure is 0.99 MPa since this product does not conform to the High Pressure Gas Safety Law.

\* Options other than standard filtration are available as made to order. For details, refer to page 418.

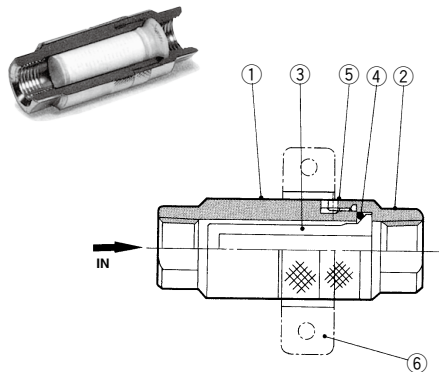
## Model

Model	Rated flow rate L/min (ANR) <small>Note</small>	Connection	Filtration area cm <sup>2</sup>	Element part no.	Weight kg
SFB200-02	400	Rc 1/4 (Female thread)	10	ES001S-120V (Including O-rings)	0.16
SFB201-02		NPT 1/4 (Female thread)			
SFB202-02		TSJ 1/4			
SFB203-02		UOJ 1/4			

Note) Inlet pressure 0.7 MPa, at pressure drop 0.02 MPa

# SFB100/200 Series

## Construction

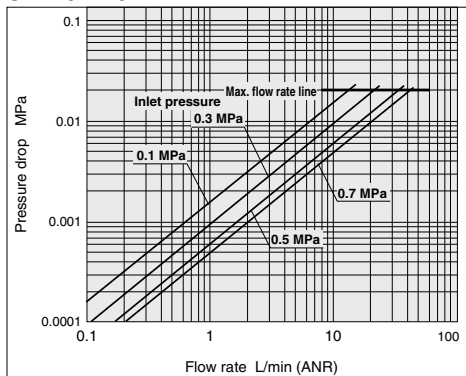


No.	Description	Material	Note
1	Case	Stainless steel 316	Electrolytic polishing (Interior/Exterior)
2	Cover	Stainless steel 316	Electrolytic polishing (Interior/Exterior)
3	Clean gas filter	PTFE membrane	For SFB10□
	Clean gas strainer	Stainless steel 316 sintered metal	For SFB20□
4	O-ring	FKM	—
5	Hexagon socket head cap screw	Stainless steel 304	M3
6	Bracket	Stainless steel 304	—

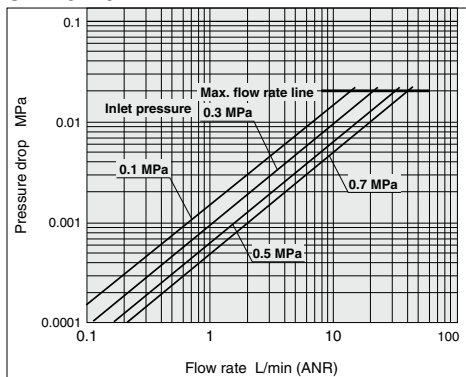
## Flow Rate Characteristics

Fluid: Compressed air Inlet temperature: 20°C

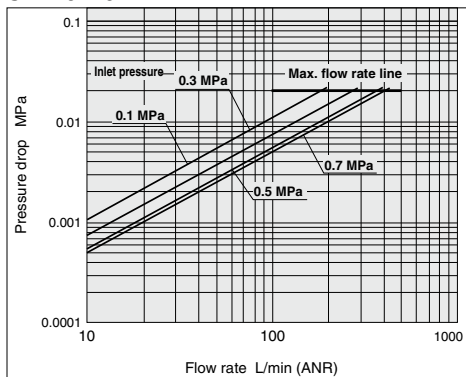
### SFB104-M5



### SFB10□-02

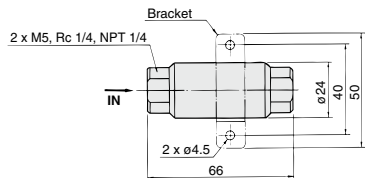


### SFB20□-02



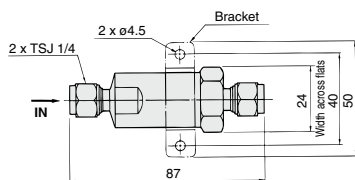
## Dimensions

**SFB100/200:** Rc 1/4  
**SFB101/201:** NPT 1/4  
**SFB104:** M5

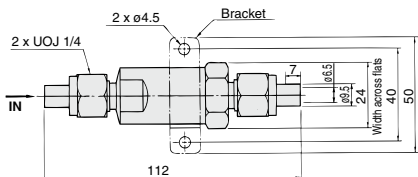


Model	Connection
<b>SFB100-02, 200-02</b>	Rc 1/4
<b>SFB101-02, 201-02</b>	NPT 1/4
<b>SFB104-M5</b>	M5

**SFB102-02, SFB202-02:** TSJ 1/4 (Tube Swage Joint)



**SFB103-02, SFB203-02:** UOJ 1/4 (Union O-ring Joint)



# Clean Gas Filter: Disposable Type/Straight Type **SFB300 Series**



Precision filtration for compressed air, nitrogen, used in the semiconductor process

PTFE membrane with high reliability

Filtration 0.01  $\mu\text{m}$  (Filtering efficiency 99.99%)

Bracket is included as a standard.



## How to Order

**SFB 30 0 - 02**

Clean gas filter  
(Straight type)

Port size

Symbol	Port size
02	Rc, NPT, TSJ, UOJ   1/4

Model type

Symbol	Type
30	Disposable (Narrow size)
31	Disposable (Long size)

Connection

Symbol	Connection (IN, OUT)
0	Rc
2	TSJ
5	URJ

\* SFB31: Only 5 is selectable.

## Model

Model	Rated flow rate L/min (ANR) <sup>Note)</sup>	Connection	Filtration area cm <sup>2</sup>	Weight kg
<b>SFB300-02</b>	45	Rc 1/4 (Female thread)	10	0.14
<b>SFB302-02</b>		TSJ 1/4		0.15
<b>SFB305-02</b>		URJ 1/4		0.14
<b>SFB315-02</b>		URJ 1/4		0.15

Note) Inlet pressure 0.7 MPa, at pressure drop 0.02 MPa

## Specifications

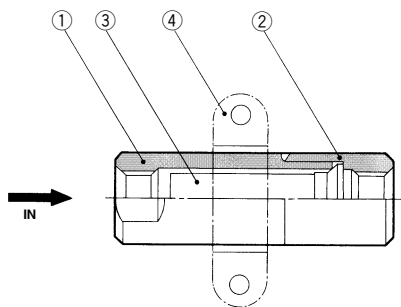
<b>Fluid</b>		Air, Nitrogen
<b>Operating pressure</b> <small>Note 1)</small>		Max. 0.99 MPa, Vacuum $1.3 \times 10^{-6}$ kPa
<b>Operating temperature</b>		5 to 120°C
<b>Element proof differential pressure</b>		Max. 0.5 MPa
<b>Element reverse differential pressure</b>		Max. 0.07 MPa
<b>Filtration</b> <small>Note 2)</small>		0.01 $\mu\text{m}$ (Filtering efficiency 99.99%)
<b>Helium leak volume</b>		$4.0 \times 10^{-9}$ Pa·m <sup>3</sup> /sec or less
<b>Main material</b>	<b>Case/Cover</b>	Stainless steel 316 (Interior/Exterior: Electrolytic polishing)
	<b>Filter medium</b>	PTFE membrane
	<b>Bracket</b>	Stainless steel 304

Note 1) The maximum operating pressure is 0.99 MPa since this product does not conform to the High Pressure Gas Safety Law.

Use under conditions where pressure fluctuations (pulsations) exceeding 0.1 MPa do not occur.

Note 2) Based on SMC's measuring conditions.

## Construction

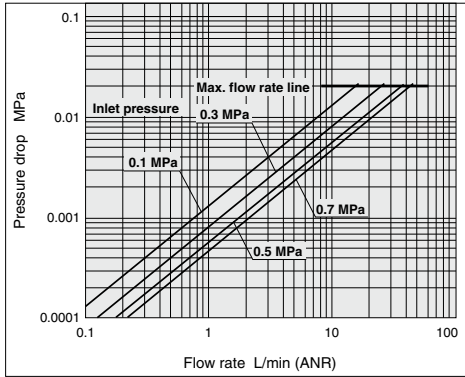


No.	Description	Material	Note
1	<b>Case</b>	Stainless steel 316	Electrolytic polishing (Interior/Exterior)
2	<b>Cover</b>		
3	<b>Element</b>	PTFE membrane	
4	<b>Bracket</b>	Stainless steel 304	

# SFB300 Series

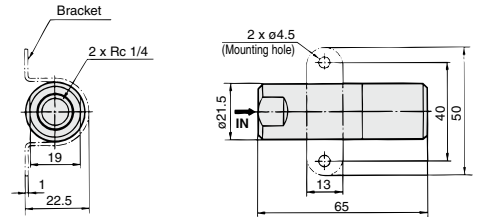
**Flow Rate Characteristics** Fluid: Compressed air Inlet temperature: 20°C

## SFB300-02

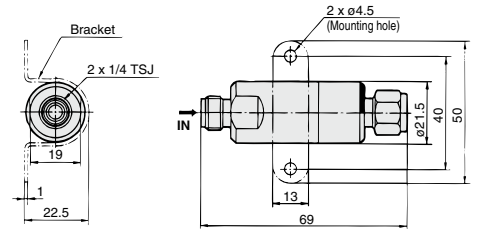


## Dimensions

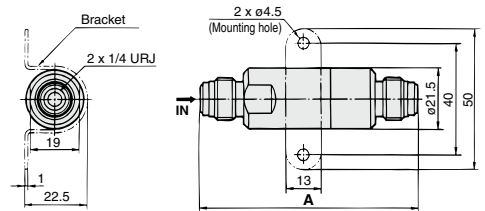
### SFB300-02: Rc 1/4



### SFB302-02: TSJ 1/4 (Tube Swage Joint)



### SFB305-02, SFB315-02: URJ 1/4 (Union Ring Joint)



Model	A
SFB305-02	79
SFB315-02	84

# Clean Gas Filter: Disposable Type/Multiple Disc Type **SFC100 Series**

RoHS

Precision filtration for compressed air, nitrogen, used in the semiconductor process

PTFE membrane with high reliability

Filtration 0.01  $\mu\text{m}$  (Filtering efficiency 99.99%)



## How to Order

**SFC 10 0 - 02**

Clean gas filter  
Disposable type  
(Multiple disc type)

Port size

Symbol	Port size
02	Rc, TSJ, URJ 1/4
03	Rc, TSJ, URJ 3/8

Model type

Symbol	Rated flow rate L/min (ANR)
10	Up to 240

Connection

Symbol	Connection (IN, OUT)
0	Rc
2	TSJ
5	URJ

## Model

Model	Rated flow rate L/min (ANR) <small>Note)</small>	Connection	Filtration area $\text{cm}^2$	Weight kg
<b>SFC100-02</b>	240	Rc 1/4 (Female thread)	300	0.35
<b>SFC100-03</b>		Rc 3/8 (Female thread)		0.36
<b>SFC102-02</b>		TSJ 1/4		0.40
<b>SFC102-03</b>		TSJ 3/8		0.41
<b>SFC105-02</b>		URJ 1/4		0.44
<b>SFC105-03</b>		URJ 3/8		0.49

Note) Inlet pressure 0.7 MPa, at pressure drop 0.02 MPa

# SFC100 Series

## Specifications

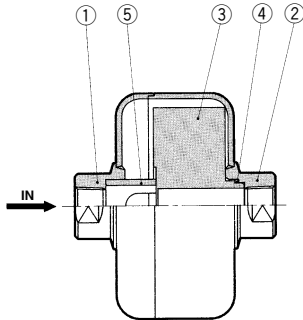
<b>Fluid</b>	Air, Nitrogen	
<b>Operating pressure</b> <small>Note 1)</small>	Max. 0.99 MPa, Vacuum $1.3 \times 10^{-6}$ kPa	
<b>Operating temperature</b>	5 to 120°C	
<b>Element proof differential pressure</b>	Max. 0.42 MPa	
<b>Element reverse differential pressure</b>	Max. 0.07 MPa	
<b>Filtration</b> <small>Note 2)</small>	0.01 $\mu\text{m}$ (Filtering efficiency 99.99%)	
<b>Helium leak volume</b>	$4.0 \times 10^{-9}$ Pa·m <sup>3</sup> /sec or less	
<b>Main material</b>	<b>Case/Cover</b>	Stainless steel 316 (Interior/Exterior: Electrolytic polishing)
	<b>Filter medium</b>	PTFE membrane
	<b>Seal</b>	PTFE

Note 1) The maximum operating pressure is 0.99 MPa since this product does not conform to the High Pressure Gas Safety Law.

Use under conditions where pressure fluctuations (pulsations) exceeding 0.1 MPa do not occur.

Note 2) Based on SMC's measuring conditions.

## Construction



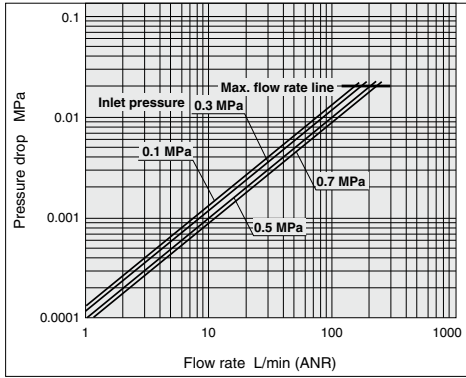
No.	Description	Material	Note
1	<b>Case 1</b>	Stainless steel 316	Electrolytic polishing (Interior/Exterior)
2	<b>Case 2</b>		
3	<b>Element</b>	PTFE, PVDF	
4	<b>O-ring</b>	PTFE	
5	<b>Spacer</b>	PVDF	



# Clean Gas Filter: Disposable Type/Multiple Disc Type **SFC100 Series**

**Flow Rate Characteristics** Fluid: Compressed air Inlet temperature: 20°C

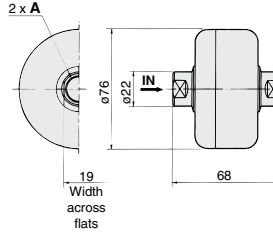
## SFC10□



## Dimensions

**SFC100-02:** Rc 1/4

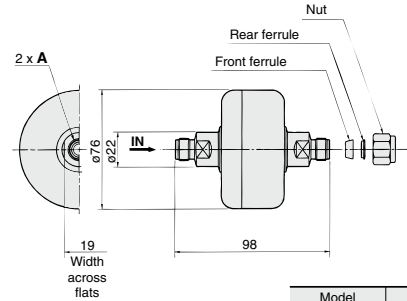
**SFC100-03:** Rc 3/8



Model	A
<b>SFC100-02</b>	Rc 1/4
<b>SFC100-03</b>	Rc 3/8

**SFC102-02:** TSJ 1/4 (Tube Swage Joint)

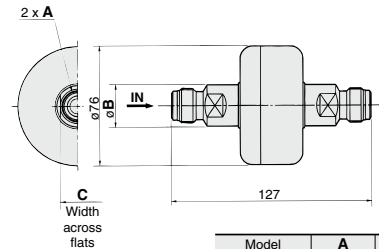
**SFC102-03:** TSJ 3/8 (Tube Swage Joint)



Model	A
<b>SFC102-02</b>	TSJ 1/4
<b>SFC102-03</b>	TSJ 3/8

**SFC105-02:** URJ 1/4 (Union Ring Joint)

**SFC105-03:** URJ 3/8 (Union Ring Joint)



Model	A	B	C
<b>SFC105-02</b>	URJ 1/4	22	19
<b>SFC105-03</b>	URJ 3/8	26.5	22

# SF Series

# Made to Order

Please contact SMC for detailed dimensions, specifications and lead times.



**Case/Cover material: Aluminum alloy**

**Part No.: SFB100-02X8**

## Specifications

<b>Fluid</b>	Air	
<b>Operating pressure</b>	Max. 0.99 MPa	
<b>Max. operating temperature</b>	80°C	
<b>Element proof differential pressure</b>	Max. 0.5 MPa	
<b>Element reverse differential pressure</b>	Max. 0.07 MPa	
<b>Filtration <sup>Note)</sup></b>	0.01 μm (Filtering efficiency 99.99%)	
<b>Connection</b>	Rc 1/4	
<b>Filtration area</b>	10 cm <sup>2</sup>	
<b>Element part no.</b>	ED301S-X10V	
<b>Weight</b>	0.06 kg	
<b>Main material</b>	<b>Case/Cover</b>	A2017 (Clear anodized)
	<b>Seal</b>	Fluororubber (FKM)
	<b>Element</b>	PTFE membrane

Dimensions are identical to the standard models. For details, refer to page 411.  
Note) Based on SMC's measuring conditions.

**Strainer with other nominal filtration (1,2,5,10,20,40,70,100 μm)**

The filtration other than the standard filtration accuracy, 120 μm, is available with the clean gas strainer.

**Part No.: SFB200-02-S** **002** **V** **-X40**

### Nominal filtration

Symbol	Nominal filtration μm <sup>Note 1)</sup>	Rated flow rate L/min (ANR) <sup>Note 2)</sup>
001	1	5
002	2	10
005	5	15
010	10	30
020	20	50
040	40	80
070	70	130
100	100	250

Note 1) Nominal filtration refers to value used to categorize raw material.

Note 2) Maximum flow rate at inlet pressure 0.7 MPa.  
Other specifications and dimensions are identical to the standard models. For details, refer to pages 409 and 411.

### O-ring

Symbol	Material
N	NBR
V	FKM
T	PTFE

## Element Part No.

**Part No.: ES001S-** **002** **N** **X25**

### Nominal filtration

Symbol	Nominal filtration μm
001	1
002	2
005	5
010	10
020	20
040	40
070	70
100	100

### O-ring

Symbol	Material
N	NBR
V	FKM
T	PTFE



## SF□ Series

# Specific Product Precautions 1

Be sure to read this before handling the products.

Refer to page 9 for safety instructions and pages 10 to 12 for air preparation equipment precautions.

### Caution on Design/Selection

## ⚠ Warning

### 1. Confirm the specifications.

The clean gas filter is designed for use with only compressed air or nitrogen.

Do not use this product with fluid, pressure or temperature beyond the specifications. Otherwise, they could cause damage to the product.

### 2. Determine the product by the maximum consumption flow rate.

When using compressed air for an air blow application, calculate the maximum volume of air that will be consumed before selecting the SF□ series product size. (Using a product which exceeds the maximum air flow and running excessive compressed air can cause the cleanliness of the compressed air to deteriorate and/or its element to be damaged.)

### 3. Set the air flow capacity with an initial pressure drop of 0.02 MPa or less. If the initial pressure drop is set to be too high, the product's replacement cycle will become much shorter due to clogging.

## ⚠ Caution

### 1. Do not use under conditions where a pressure difference exceeding 0.1 MPa is present between the inlet side and the outlet side.

Use under such conditions may lead to not only a decline in cleanliness but also element damage.

### 2. Install in a location where the product will not be subject to pulsations or pressure fluctuations exceeding 0.1 MPa.

Pulsations and pressure fluctuations exceeding 0.1 MPa may damage the product.

### 3. Use caution regarding the particles that may be emitted from the outlet side of a pneumatic equipment.

Installation of a pneumatic equipment on the outlet side of the SF□ series can deteriorate the cleanliness because a particle will be generated from the equipment. In the case of installing the pneumatic equipment in the outlet side of the SF□ series, dusts can be generated from the equipment, and the degree of cleanliness can be deteriorated.

The mounting position of the pneumatic equipment needs to be considered depending on the degree of cleanliness of a required operating fluid.

### 4. Design that the piping load should not be applied on the product body.

Mount a bracket for the piping and the other connecting equipment so that the piping load is not applied to the product body.

### Caution on Design/Selection

## ⚠ Caution

### 5. Generally, the following pollutant particles are contained in compressed air, although the degree of cleanliness of the compressed air is different depending on the compressor type and specifications.

[Pollutant particle substances contained in the compressed air]

- Moisture (drainage)
- Dusts and particles which are in the surrounding air
- Deteriorated oil which is discharged from the compressor
- Solid foreign matter such as rust and/or oil in the piping

- 1) The SF□ series is not compatible with compressed air which contains fluids such as water and/or oil.
- 2) Install a dryer (IDF, IDG, ID series), mist separator (AM series), micro mist separator (AMD series), super mist separator (AME series), or odor removal filter (AMF series), etc., for the source of the air for the SF□ series.

### Piping

## ⚠ Caution

### 1. Unpacking the sealed package

Since the filter is sealed in an antistatic double bag, the inner package should be unpacked in a clean atmosphere (such as a clean room).

### 2. Confirm that there is enough space for maintenance before installing and piping this product.

### 3. Apply a wrench to 2 chamfered flats on the IN side or the OUT side to prevent the housing from rotating.

### 4. Confirm the IN and the OUT before piping. The product should not be used with the wrong connection.

### 5. Connection

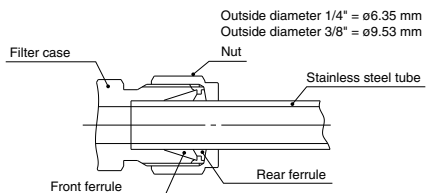
#### 1) Rc and NPT connection

Confirm that chips from the pipe threads and sealing material do not enter the piping.

Also, when sealant tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.

#### 2) TSJ connection

The TSJ fitting is a kind of a self-align fittings. Set it as shown in the figure.





# SF □ Series

## Specific Product Precautions 2

Be sure to read this before handling the products.

Refer to page 9 for safety instructions and pages 10 to 12 for air preparation equipment precautions.

### Piping

#### ⚠ Caution

Regarding the TSJ fittings, after tightening the nut by hand, add another 1 1/4 to 1 1/2 turns with a wrench to seal the fitting. In case the fitting is re-installed after filter replacement, first tighten the nut by hand and add another 1/4 to 1/2 turns for sealing. Use the following parts as piping and fittings.

- Piping      Outside diameter 1/4" = ø6.35 mm  
                  Stainless steel tube  
                  or  
                  Outside diameter 3/8" = ø9.53 mm  
                  Stainless steel tube

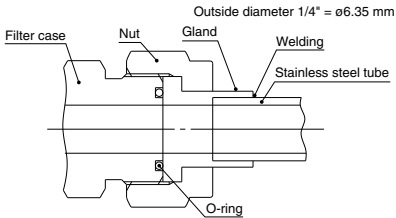
- Nut
- Front ferrule } Attached to product (2 pcs each)
- Rear ferrule }

In the event of replacing the body, a space (20 mm or longer) for extending the stainless steel tubes from the IN and OUT side will be required.

When using similar fittings of other brands, be sure to conduct a helium leak test to confirm there is no leakage before using.

#### 3) UOJ fittings

The UOJ fitting is a union type fitting using a O-ring seal. Install it as illustrated below.



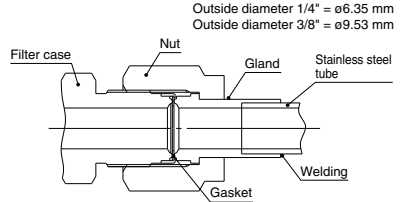
Weld the gland and piping when the fitting is used. At the time of welding, supply inert gas such as Nitrogen to the piping to prevent the formation of an oxide film. Also, remove the oxide film on the external surface through electrolytic polishing or acid cleaning.

After tightening the nut by hand, add another 1/8 turn with a wrench to seal the fitting. Use the following parts for piping and fittings.

- Piping      Outside diameter 1/4" = ø6.35 mm  
                  Stainless steel tube
- Nut
- Gland } Attached to product (2 pcs each)
- O-ring }

#### 4) URJ fittings

The URJ fitting is a union type fitting using a metal gasket. Install it as illustrated below.



Weld the gland and piping when the fitting is used. At the time of welding, supply inert gas such as Nitrogen to the piping to prevent the formation of an oxide film. Also, remove the oxide film on the external surface through electrolytic polishing or acid cleaning.

After tightening the nut by hand, add another 1/8 turn with a wrench to seal the fitting. Use the following parts for piping and fittings.

<1/4">

- Nut      Swagelok® fittings by Swagelok Company  
            VCR female nut  
            (SS-4-VCR-1)
- Gland    Swagelok® fittings by Swagelok Company  
            VCR gland  
            (SS-4-VCR-3)
- Gasket   Swagelok® fittings by Swagelok Company  
            VCR gasket retainer assembly  
            (SS-4-VCR-2-GR)

<3/8">

- Piping    O.D. 3/8" = ø9.53 mm  
            Stainless steel tube
- Nut      Swagelok® fittings by Swagelok Company  
            VCR female nut  
            (SS-8-VCR-1)
- Gland    Swagelok® fittings by Swagelok Company  
            VCR gland  
            (SS-6-VCR-3)
- Gasket   Swagelok® fittings by Swagelok Company  
            VCR gasket retainer assembly  
            (SS-8-VCR-2-GR)

Be sure to conduct a helium leak test before using similar fittings from other companies.

Note) Swagelok is a registered trademark of Swagelok Company



## Specific Product Precautions 3

Be sure to read this before handling the products.

Refer to page 9 for safety instructions and pages 10 to 12 for air preparation equipment precautions.

### Piping

#### Caution

##### 6. Line flushing

Flush the piping line when the filter is used for the first time or has been replaced. In the event of connecting such as piping, flush (air blow) when using this product for the first time or replacing its elements in order to reduce the affect of the dust generated from the connection, etc.

Flushing the line is also required to eliminate contamination resulting from the piping line installation. Therefore, be sure to flush the line before actually running the system.

### Operating Environment

#### Caution

##### 1. Use caution in order to prevent workpieces from being damaged by entrained air from the surrounding area.

When the compressed air is used for air blow, the exhausted air from the blow nozzle may have taken in airborne foreign matter (such as solid particle, fluid particle) from the surround air. The foreign matter will be sprayed on the workpiece, and the airborne foreign matter may adhere to it. Therefore, use caution for the surrounding environment.

### Maintenance

#### Caution

##### 1. When the element comes to the end of its life, immediately replace it with a new filter or replacement element.

##### 2. Timing of element replacement

The replacement time for elements is when one of the following conditions occurs.

- 1) After 1 year of usage has elapsed.
- 2) When the pressure drop reaches 0.1 MPa even though the operating period has been less than 1 year.

##### 3. Post maintenance inspection

After installation or repair, perform an appropriate function and leakage test.