Clean Gas Filter

SF Series

Cartridge Type/Disposable Type

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
• Clean room: M5.5 (ISO class 7)* • Clean booth: M3.5 (ISO class 5)*

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

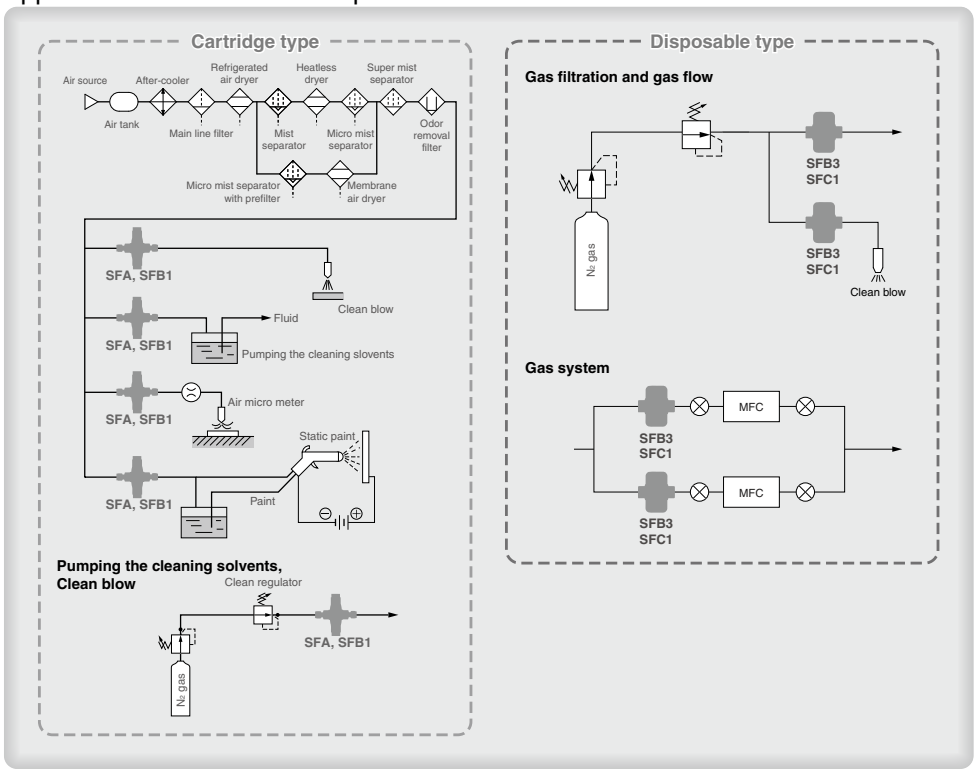
High precision filtration

0.01 μm filtration (filtering efficiency of 99.99%) is realized with the PTFE membrane cartridge element. (Clean gas strainer: Nominal filtration of 120 μm)

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	Disc type 	**SFA10□**	0.01 μm (Filtering efficiency 99.99%) (Membrane element)	26	0.99	5 to 80	Replaceable	P. 299
		SFA20□		70				
		SFA30□		140				
	Straight type 	**SFB10□**		45				P. 302
		SFB20□ (Strainer)	Nominal 120 μm (Sintered metallic element)	400				P. 303
Disposable type	Straight type 	**SFB30□**	0.01 μm (Filtering efficiency 99.99%) (Membrane element)	45	0.99	5 to 120	Nonreplaceable	P. 306
	Multiple disc type 	**SFC10□**		240	0.99			P. 309
	Made to Order	• Case/Cover material: Aluminum alloy (**SFB100**) • Strainer with other nominal filtration: 1, 2, 5, 10, 20, 40, 70, 100 μm (**SFB200**)						P. 312

SF□ Series
Model Selection

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

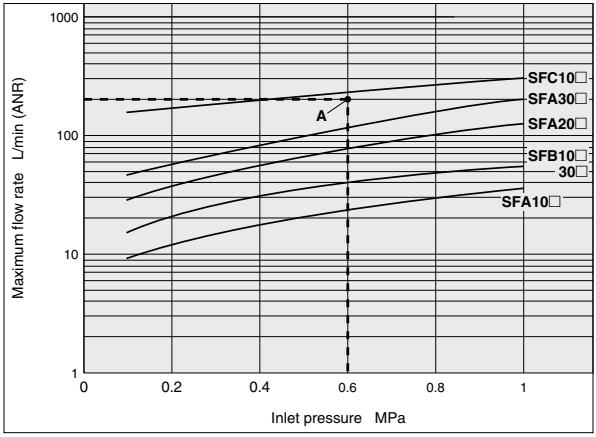
Example) Inlet pressure: 0.6 MPa
Maximum flow rate: 200 L/min (ANR)

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.

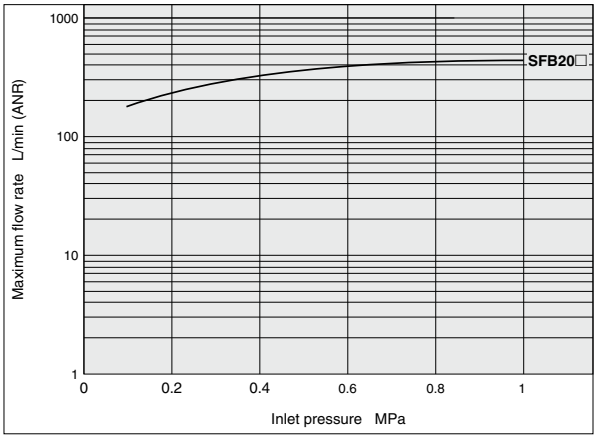
Note) Please be sure to select a model with a maximum flow rate line which is above the obtained intersection A. If the obtained intersection A is below the maximum flow rate line, overflow will occur. This will cause a nonconformance in which the specification will not be satisfied.

Maximum Flow Rate Lines

Clean Gas Filter



Clean Gas Strainer



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

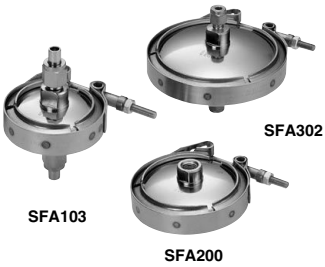
RoHS

Precision filtration for compressed air, nitrogen, etc. 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)

Model size

Symbol	Rated flow rare 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

Port size

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

Model

Model	Rated flow rate L/min (ANR) Note 1)	Connection	Filtration area cm²	Element part no. Note 2)	Weight kg
SFA100-02	26	Rc 1/4 (Female thread)	13.85	ED001S-X10V	0.34
SFA101-02		NPT 1/4 (Female thread)			
SFA200-02	70	Rc 1/4 (Female thread)	33.18	ED101S-X10V	0.44
SFA201-02		NPT 1/4 (Female thread)			
SFA300-02	140	Rc 1/4 (Female thread)	56.75	ED201S-X10V	0.66
SFA301-02		NPT 1/ 4 (Female thread)			
SFA102-02	26	TSJ 1/4 Tube Swage Joint	13.85	ED001S-X10V	0.38
SFA202-02	70		33.18	ED101S-X10V	0.49
SFA302-02	140		56.75	ED201S-X10V	0.70
SFA103-02	26	UOJ 1/4 Union O-ring Joint	13.85	ED001S-X10V	0.42
SFA203-02	70		33.18	ED101S-X10V	0.53
SFA303-02	140		56.75	ED201S-X10V	0.75

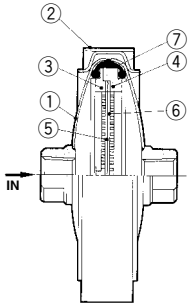
Note 1) Inlet pressure 0.7 MPa, at pressure drop 0.02 MPa
Note 2) Element part numbers include numbers 3 to 7 in the construction figure. (Refer to page 300.)

Specifications

Fluid		Air, Nitrogen
Operating pressure Note 1)		Max. 0.99 MPa, Vacuum 1.3 x 10^{-6} kPa
Operating temperature		5 to 80°C
Element proof differential pressure		Max. 0.1 MPa
Element reverse differential pressure		Max. 0.05 MPa
Filtration Note 2)		0.01 μm (Filtering efficiency 99.99%)
Purification in the outlet side Note 2)		Particle with 0.1 μm or larger 1 pc./6 L or less
Main material	**Case**	Stainless steel 316 (Interior/Exterior: Electrolytic polishing)
	Filter medium	PTFE membrane
	Seal	Fluororubber (FKM)
Packaging		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.
Note 2) Based on SMC's measuring conditions.

Construction

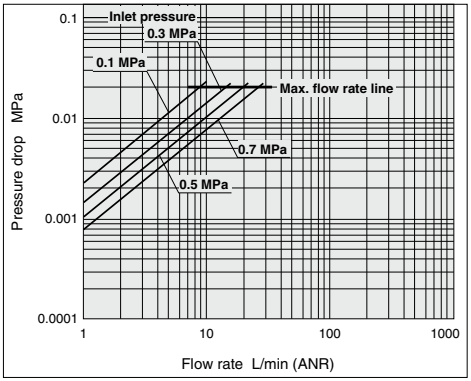


No.	Description	Material	Note
1	**Case**	Stainless steel 316	Electrolytic polishing (Interior/Exterior)
2	**V-clamp**	Stainless steel 304	—
3	**Holder 1**	Polyester	Element
4	**Holder 2**		
5	**Filter medium**	PTFE	
6	**Seal**	FKM	
7	**V-seal**		

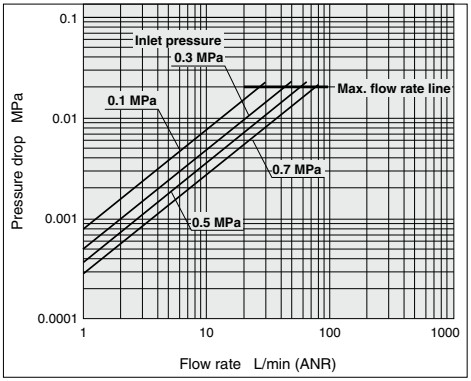
Flow Rate Characteristics

Fluid: Compressed air Inlet temperature: 20°C

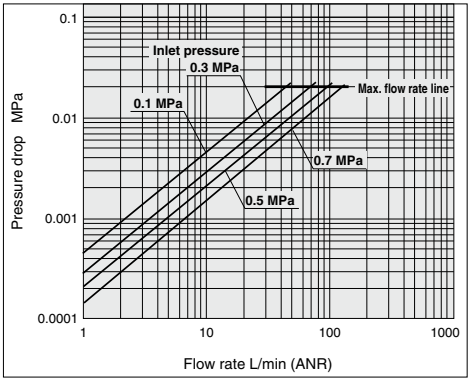
SFA10□



SFA20□

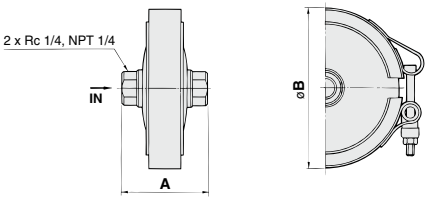


SFA30□



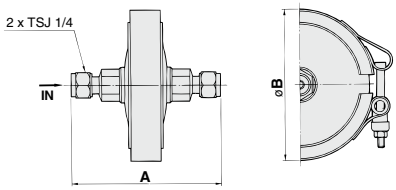
Dimensions

SFA100/101, SFA200/201, SFA300/301



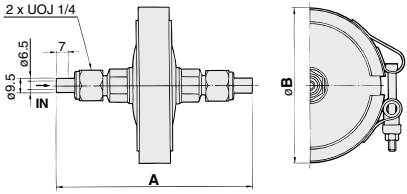
Model	Connection	A	øB
SFA100-02	Rc 1/4	46	76
SFA101-02	NPT 1/4		
SFA200-02	Rc 1/4	51	96
SFA201-02	NPT 1/4		
SFA300-02	Rc 1/4	59	120
SFA301-02	NPT 1/4		

SFA102, SFA202, SFA302



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

SFA103, SFA203, SFA303



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

Clean Gas Filter:
Cartridge Type/Straight Type
SFB100 Series

RoHS

Precision filtration for compressed air, nitrogen, etc. 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)

Model type

Symbol	Type
10	Cartridge

Connection

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

Port size

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

Made to Order

Symbol	Description
Nil	—
X8	Aluminum case (Refer to page 312.)

Specifications

Fluid		Air, Nitrogen
Operating pressure Note 1)		Max. 0.99 MPa, Vacuum 1.3 x 10^{-6} kPa
Operating temperature		5 to 80°C
Element proof differential pressure		Max. 0.5 MPa
Element reverse differential pressure		Max. 0.07 MPa
Filtration Note 2)		0.01 μm (Filtering efficiency 99.99%)
Purification in the outlet side Note 2)		Particle with 0.1 μm or larger 1 pc./6 L or less
Main material	**Case/Cover**	Stainless steel 316 (Interior/Exterior: Electrolytic polishing)
	Filter medium	PTFE membrane
	Seal	Fluororubber (FKM)
Packaging		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.
Note 2) Based on SMC's measuring conditions.

Model

Model	Rated flow rate L/min (ANR) Note)	Connection	Filtration area cm^2	Element part no.	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			0.16
SFB103-02		UOJ 1/4			0.19
SFB104-M5		M5 (Female thread)			0.16

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

SFB 20 0 – 02 – □

Clean gas strainer (Straight type)

Model type

Symbol	Type
20	Cartridge (Strainer)

Connection

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

Port size

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

Made to Order

Symbol	Description
Nil	—
X40	Optional filtration (Refer to page 312.)

Specifications

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

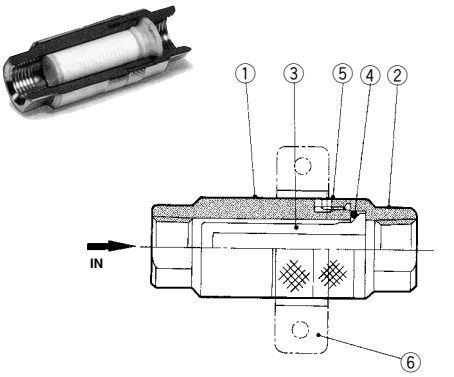
∗ The optional filtration is available as Made to Order. For details, refer to page 312.

Model

Model	Rated flow rate L/min (ANR) Note)	Connection	Filtration area cm²	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			0.17
SFB203-02		UOJ 1/4			0.20

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

Construction

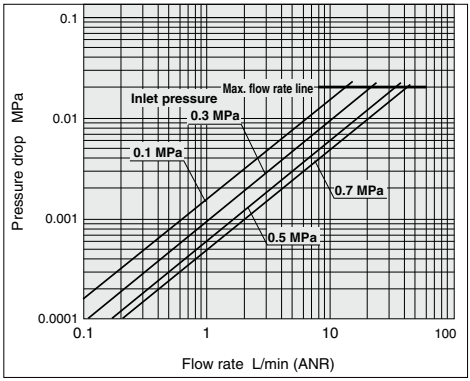


No.	Description		Material	Note
1	Case		Stainless steel 316	Electrolytic polishing (Interior/Exterior)
2	Cover			
3	Element	Clean gas filter	PTFE membrane	For SFB10□
		Clean gas strainer	Stainless steel 316 sintered metal	For SFB20□
4	O-ring		FKM	—
5	Hexagon socket head cap screw		Stainless steel 304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

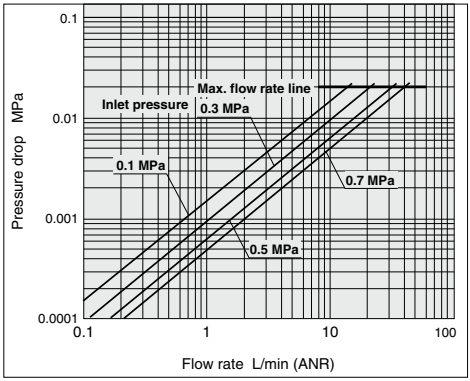
Flow Rate Characteristics

Fluid: Compressed air Inlet temperature: 20°C

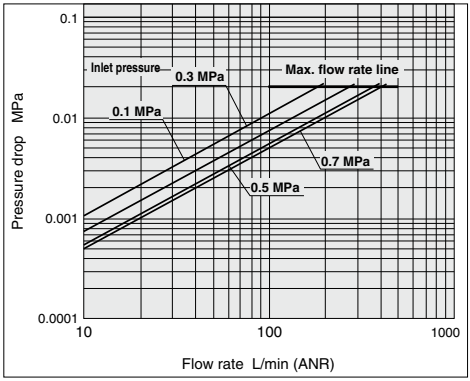
SFB104-M5



SFB10□-02

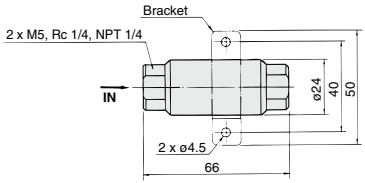


SFB20□-02



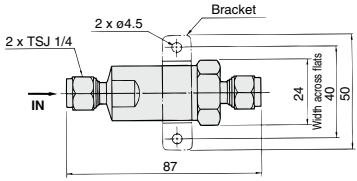
Dimensions

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

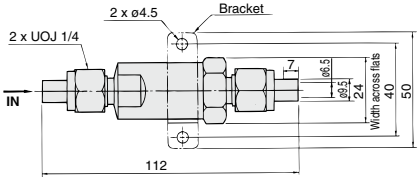


Model	Connection
SFB100-02, 200-02	Rc 1/4
SFB101-02, 201-02	NPT 1/4
SFB104-M5	M5

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, etc. used in the semiconductor process

PTFE membrane with high reliability

Filtration 0.01 μm (Filtering efficiency 99.99%)

Bracket is included as a standard.

How to Order

SFB 30 0 – 02

Clean gas filter (Straight type)

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.

Port size

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

Model

Model	Rated flow rate L/min (ANR) Note)	Connection	Filtration area cm²	Weight kg
SFB300-02	45	Rc 1/4 (Female thread)	10	0.14
SFB302-02		TSJ 1/4		0.15
SFB305-02		URJ 1/4		0.14
SFB315-02		URJ 1/4		0.15

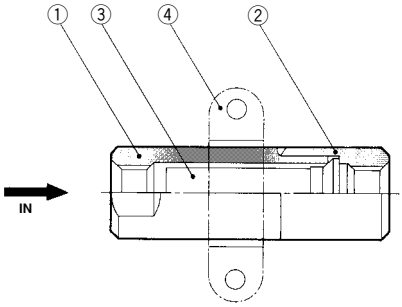
Note) Inlet pressure 0.7 MPa, at pressure drop 0.02 MPa

Specifications

Fluid		Air, Nitrogen
Operating pressure Note 1)		Max. 0.99 MPa, Vacuum 1.3 x 10^{-6} kPa
Operating temperature		5 to 120°C
Element proof differential pressure		Max. 0.5 MPa
Element reverse differential pressure		Max. 0.07 MPa
Filtration Note 2)		0.01 μm (Filtering efficiency 99.99%)
Purification in the outlet side Note 2)		Particle with 0.1 μm or larger 1 pc./6 L
Helium leak volume		4.0 x 10^{-9} Pa·m^3/sec or less
Main material	**Case/Cover**	Stainless steel 316 (Interior/Exterior: Electrolytic polishing)
	Filter medium	PTFE membrane
	Bracket	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.
Note 2) Based on SMC's measuring conditions.

Construction

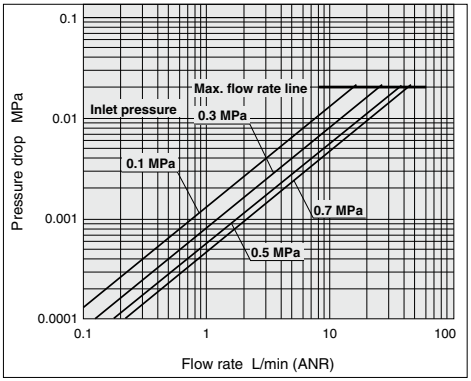


No.	Description	Material	Note
1	**Case**	Stainless steel 316	Electrolytic polishing (Interior/Exterior)
2	**Cover**		
3	**Element**	PTFE membrane	
4	**Bracket**	Stainless steel 304	

Flow Rate Characteristics

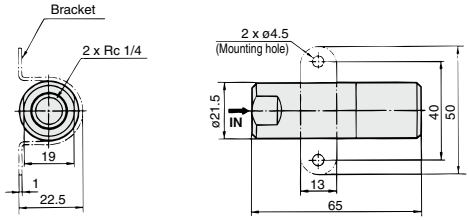
Fluid: Compressed air Inlet temperature: 20°C

SFB30□-02

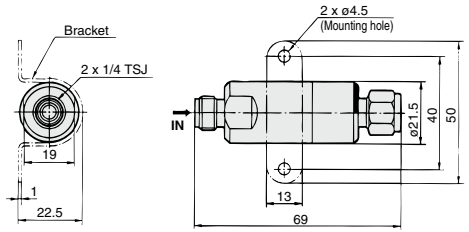


Dimensions

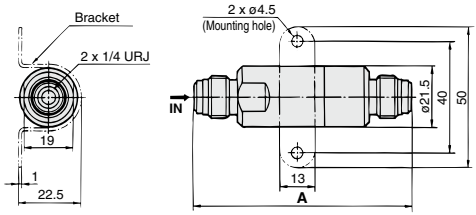
SFB300-02: Rc 1/4



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, etc. used in the semiconductor process

PTFE membrane with high reliability

Filtration 0.01 μm (Filtering efficiency 99.99%)

How to Order

SFC 10 0 – 02

Clean gas filter
Disposable type
(Multiple disc type)

Model type

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

Connection

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

Port size

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

Model

Model	Rated flow rate L/min (ANR) Note)	Connection	Filtration area cm²	Weight kg
SFC100-02	240	Rc 1/4 (Female thread)	300	0.35
SFC100-03		Rc 3/8 (Female thread)		0.36
SFC102-02		TSJ 1/4		0.40
SFC102-03		TSJ 3/8		0.41
SFC105-02		URJ 1/4		0.44
SFC105-03		URJ 3/8		0.49

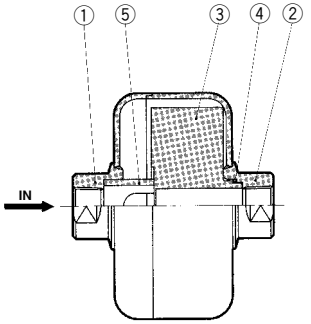
Note) Inlet pressure 0.7 MPa, at pressure drop 0.02 MPa

Specifications

Fluid		Air, Nitrogen
Operating pressure Note 1)		Max. 0.99 MPa, Vacuum 1.3 x 10^{-6} kPa
Operating temperature		5 to 120°C
Element proof differential pressure		Max. 0.42 MPa
Element reverse differential pressure		Max. 0.07 MPa
Filtration Note 2)		0.01 μm (Filtering efficiency 99.99%)
Purification in the outlet side Note 2)		Particle with 0.1 μm or larger 1 pc./6 L or less
Helium leak volume		4.0 x 10^{-9} Pa·m^3/sec or less
Main material	**Case/Cover**	Stainless steel 316 (Interior/Exterior: Electrolytic polishing)
	Filter medium	PTFE membrane
	Seal	PTFE

Note 1) The maximum operating pressure is 0.99 MPa since this product does not conform to the High Pressure Gas Safety Law.
Note 2) Based on SMC's measuring conditions.

Construction

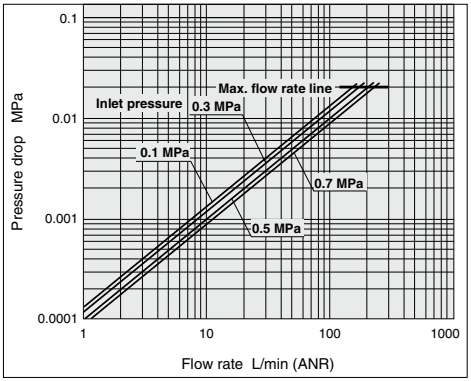


No.	Description	Material	Note
1	**Case 1**	Stainless steel 316	Electrolytic polishing (Interior/Exterior)
2	**Case 2**		
3	**Element**	PTFE, PVDF	
4	**O-ring**	PTFE	
5	**Spacer**	PVDF	

Flow Rate Characteristics

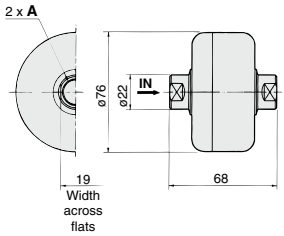
Fluid: Compressed air Inlet temperature: 20°C

SFC10□



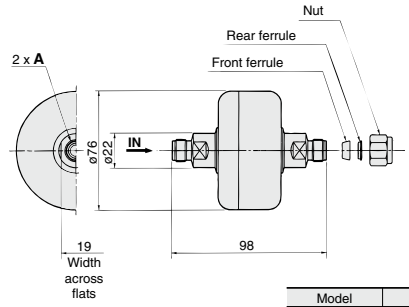
Dimensions

SFC100-02: Rc 1/4
SFC100-03: Rc 3/8



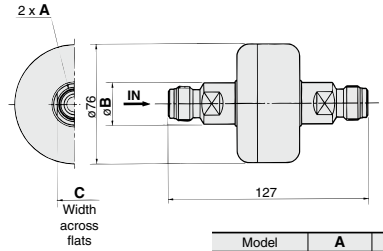
Model	A
SFC100-02	Rc 1/4
SFC100-03	Rc 3/8

SFC102-02: TSJ 1/4 (Tube Swage Joint)
SFC102-03: TSJ 3/8 (Tube Swage Joint)



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

SFC105-02: URJ 1/4 (Union Ring Joint)
SFC105-03: URJ 3/8 (Union Ring Joint)



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

Made to Order

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

Case/Cover material: Aluminum alloy

Part No.: SFB100-02X8

Specifications

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

Dimensions are identical to the standard models. For details, refer to page 305.
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 Note 1)	Rated flow rate L/min (ANR) Note 2)
001	1	5
002	2	10
005	5	15
010	10	30
020	20	50
040	40	80
070	70	130
100	100	250

O-ring

Symbol	Material
N	NBR
V	FKM
T	PTFE

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 303 and 305.

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 back page 50 for Safety Instructions and pages 6 to 8 for Air Preparation Equipment Precautions.

Selection

⚠Warning

1. Confirm the specifications.

This product is designed for only general gases such as compressed air or Nitrogen.

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

Mounting

⚠Warning

1. Operation manual

Mount the product after reading and understanding the instruction manual. Keep it in a location where it can easily be found.

2. Provide enough space for maintenance.

Provide space for maintenance because the IN/OUT pipings have to be removed when the elements are replaced.

3. Follow the piping instructions on the back of pages 314 and 315 when a screw is tightened.

Operating Environment

⚠Warning

1. Do not use the product in a place where corrosive gas, chemicals, brine, water and/or water steam are present or can splash on it.

2. Insulate the product if it is used under direct sunlight.

3. Avoid using the product in a place where vibration or impact can occur.

4. Do not use the product in the vicinity of a heat source or under radiant heat.

Maintenance

⚠Warning

1. Follow the maintenance procedures in the operation manual. If handled incorrectly equipment or device can be damaged or cause a malfunction.

2. Maintenance

Product specifications must be oberved, because mishandling compressed air and/or Nitrogen can cause a dangerous situation. Maintenance such as replacing elements has to be performed by a well-experienced and knowledgeable person.

3. Pre-maintenance inspection

When removing the product, turn off the electrical power, and be sure to shut off the supply pressure and exhaust the compressed air in the system. Proceed only after confirming that all pressure has been released to the atmosphere.

Maintenance

⚠Warning

4. Post maintenance inspection

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

5. Modification is prohibited.

Do not disassemble or modify the product.

Caution on Design

⚠Caution

1. If the pressure difference (pressure drop) between the inlet and the outlet exceeds 0.1 MPa, it can cause damage to the product.

2. Do not install the product in a place where it can be affected by a pulsation of over 0.1 MPa.

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 the system to prevent reverse pressure and reverse flow.

Reverse pressure and reverse flow can damage the element.

5. 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.

6. 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.

SF□ Series
Specific Product Precautions 2

Be sure to read this before handling the products.
Refer to back page 50 for Safety Instructions and pages 6 to 8 for Air Preparation Equipment Precautions.

Selection

⚠ Warning

1. Thoroughly and carefully confirm the purpose of use, required specifications and operating conditions (fluid, pressure, flow rate and environment) then select a model within the specifications.

2. Contact SMC beforehand when the product will be used in applications such as a caisson shield, and breathing and/or medical treatment that affects the human body directly or indirectly.

3. 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.

4. 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 high, its service life will be shorten due to clogging.

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. Winding of sealant tape

When screwing together pipes and fittings, etc., 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.

6. Connection

1) Rc and NPT connection

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

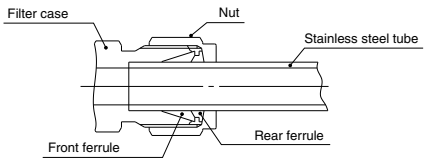
Also, when sealant tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.

Piping

⚠ Caution

2) TSJ connection

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



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

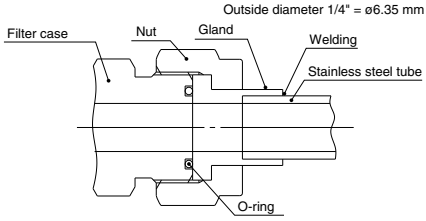
In the event of replacing the body, a space (20 mm or longer) for extending the stainless steel tubes from the IN and OUT side will be required.

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

Specific Product Precautions 3

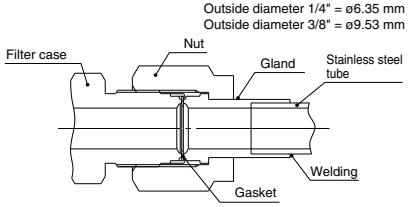
Be sure to read this before handling the products.
Refer to back page 50 for Safety Instructions and pages 6 to 8 for Air Preparation Equipment Precautions.

Piping

⚠ Caution

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

Piping

⚠ Caution

7. 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.

When general gases (excluding toxic, corrosive and flammable gases) are used after mounting the filter, sufficiently flush the line with a dry inert gas such as Nitrogen gas. This should be followed by a helium leak test on the fittings before actually running the product.

8. Filter replacement (or element replacement)

Release the gas from the piping to reduce the internal pressure to 0.

Also, when Nitrogen gas is used, replace it with dry Nitrogen gas by purging it in advance.

Replace the filter (or element) when a differential pressure of 0.1 MPa (pressure drop) between IN and OUT is reached and/or when 1 year has elapsed.

9. Filter replacement should be performed according to the operation manual to maintain the filter performance and safety.

The operation manual is contained in the replacement element. However, if the manual is lost, another one can be requested by inquirying to our company.

Fluid

⚠ Warning

1. Do not use the clean gas filter with fluids other than inert gas such as compressed air and Nitrogen gas.

Using this product with fluids other than inert gas such as compressed air and Nitrogen gas can cause damage and leaks in the seals and O-rings, depending on the operating fluid.

Confirm the seal material in the specifications and the compatibility with the operating fluid.

SF□ Series
Specific Product Precautions 4

Be sure to read this before handling the products.
Refer to back page 50 for Safety Instructions and pages 6 to 8 for Air Preparation Equipment Precautions.

Operating Environment

⚠Caution

1. When the product is used for blowing, use caution to prevent the workpiece 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

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

2. Service life of element

The service life of the element ends when either of the following two 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. Unpacking the sealed package

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