Air Suction Filter / In-line Type With One-touch Fittings

Series ZFC

RoHS

The ZFC050/100/200 series have been discontinued. Please select the New ZFC1□ to 7□ series instead.

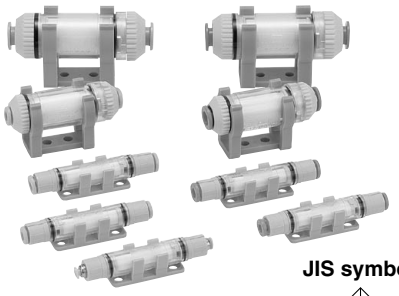
In-line type air suction filter is used to prevent vacuum equipment trouble from occurring due to dust in the air

IN/OUT straight piping

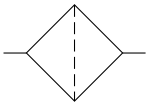
Easy installation and removal with one-touch fittings

Light and compact molded resin parts

Cartridge type allows element replacement



JIS symbol



Made to Order **Made to Order**
(Refer to page 1115 for details.)

Model

Model		Port size (Applicable tubing O.D.) IN side, OUT side	Recommended flow rate Note) (ℓ/min (ANR))	Mass (g)	Internal capacity (cm^3)
Metric size	**ZFC050-02**	ø2	2	4.9	1.7
	ZFC050-23	ø3.2	7	4.3	1.7
	ZFC050-04	ø4	10		
	ZFC100-04	ø4	10	11.5	4.5
	ZFC100-06	ø6	20		
	ZFC200-06	ø6	30	21.5	6
	ZFC200-08	ø8	50		
Inch size	**ZFC051-01**	ø1/8"	7	4.3	1.7
	ZFC051-03	ø5/32"	10		
	ZFC101-03	ø5/32"	10	11.5	4.5
	ZFC101-07	ø1/4"	20		
	ZFC201-07	ø1/4"	30	21.5	6
	ZFC201-09	ø5/16"	50		

Note) Flow rate when the initial pressure drop is 3 kPa or less.

Specifications

Fluid Note 1)	Air, Nitrogen
Operating pressure	–100 to 0 kPa
Vacuum release pressure Note 2)	Max. 0.5 MPa (Unable to hold when pressurized)
Operating and ambient temperature range	0 to 60°C (No freezing)
Filtration	10 μm (Filtration efficiency 95%)
Element differential pressure resistance	[ZFC10□, 20□] 0.15 MPa [ZFC05□] 0.10 MPa
Applicable tubing material Note 3)	Nylon, Soft nylon, Polyurethane, Soft polyurethane

Note 1) Do not use in atmospheres of chemicals, or where there is direct contact with it since the body may be damaged. (Alcohol, acetone, etc. may cause damage to the product.)
Note 2) Do not use in a line where a pressurized condition is maintained since the body may be damaged.
Note 3) Polyurethane is only applicable for the ZFC050-02.

How to Order

Metric size
(Release button: Light gray)

Metric size ZFC **05** **0** – **02** **B** ☐

Inch size ZFC **05** **1** – **01** **B** ☐

Applicable tubing size

Made to Order

X17	Metal case

Refer to page 1115 for details.

Body type

Symbol	Flow rate (ℓ/min (ANR))	Filtration area (mm^2)
05	10	470
10	20	750
20	50	1255

Option (With/Without bracket)

Symbol	Option
Nil	None (Without bracket)
B	With bracket

Inch size
(Release button: Orange)

Metric size

Symbol	Bore size	Applicable model		
		ZFC05	**ZFC10**	**ZFC20**
02	ø2	●	—	—
23	ø3.2	●	—	—
04	ø4	●	●	—
06	ø6	—	●	●
08	ø8	—	—	●

Inch size

Symbol	Bore size	Applicable model		
		ZFC05	**ZFC10**	**ZFC20**
01	ø1/8"	●	—	—
03	ø5/32"	●	●	—
07	ø1/4"	—	●	●
09	ø5/16"	—	—	●

Replacement Element Part No.

Part no.	Applicable filter model	Element size (mm)	Set description	
			Spare element	O-ring for cover
I-68S-A	**ZFC05**	ø6 x ø4 x L25	10 pcs.	—
I-62S-A	**ZFC10**	ø12 x ø8 x L20	10 pcs.	10 pcs.
I-63S-A	**ZFC20**	ø16 x ø12 x L25	10 pcs.	10 pcs.

Note) Spare elements and O-rings for the cover (Applicable filter: ZFC10, 20) are sold in sets of 10 pieces each.

Principal Parts Material

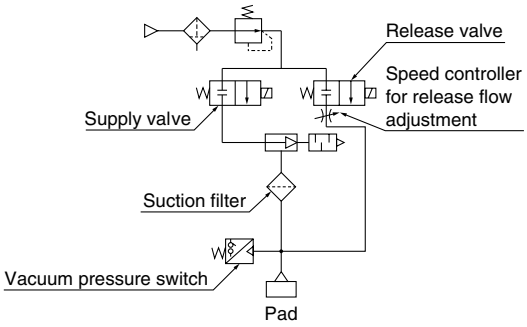
Description	Material
Case	Special clear nylon*
Cover	PBT
Element	PVF
O-ring, Seal	NBR

* Do not wipe with alcohol, etc. It may cause damage to the parts.

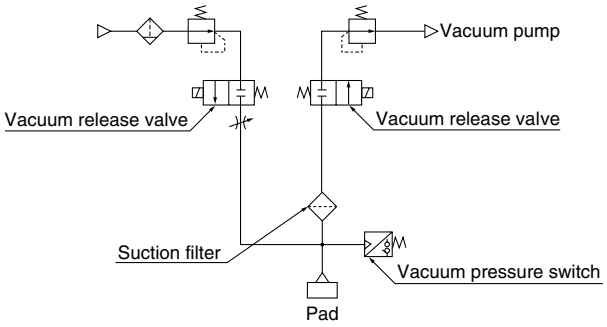
Application Example

Fields: Semiconductor and electrical, automobile assembly, food and medical equipment, and various types of manufacturing and assembly equipment
Machines: Robotic hand/material handling, automotive assembling machines, automatic transfer equipment, pick and place, printing machinery
Applications: Vacuum adsorption transfer, vacuum adsorption retention, vacuum generated air flow

Application to ejector system

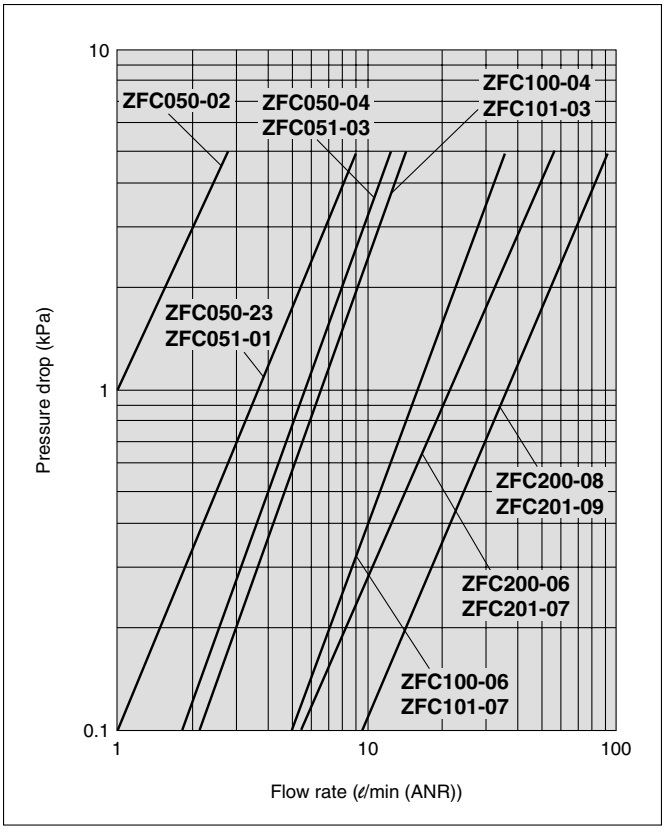


Application to vacuum pump system



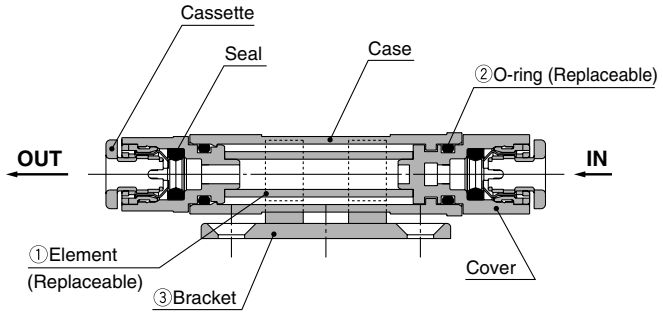
Flow Characteristics (Piping tube: Metric size, Inch size)

Fluid: Air
Temperature: Room temperature
Measured pressure:
Downstream release to atmosphere (pressurized)

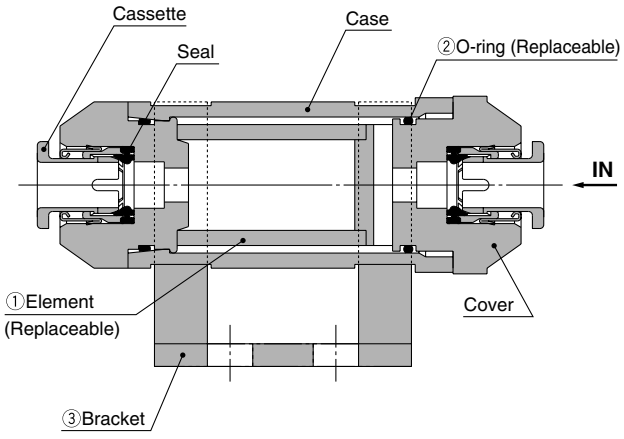


Construction

ZFC05



ZFC10, 20

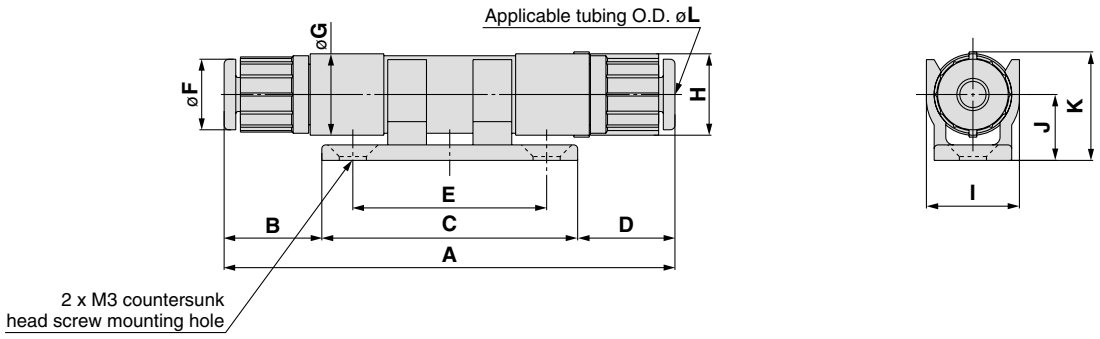


Replacement Parts

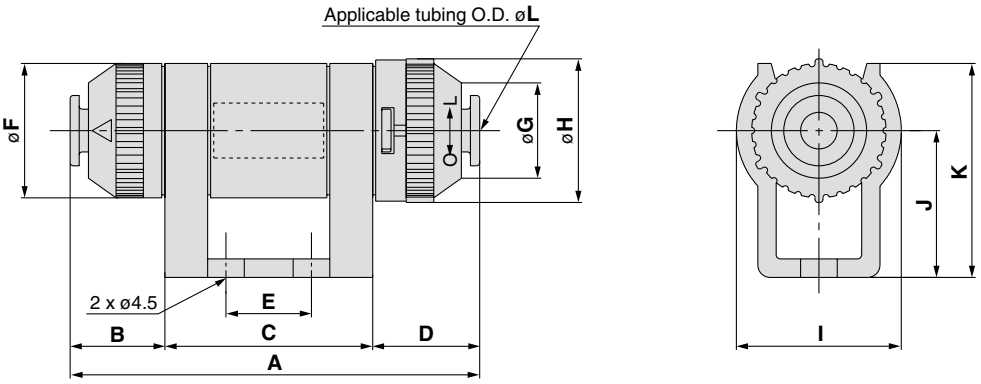
No.	Description	Part no.		
		ZFC05	ZFC10	ZFC20
1	Element	Refer to the replacement element part number on page 1111.		
2	O-ring			
3	Bracket	BP-25S	BP-16S	BP-17S

Dimensions

ZFC05



ZFC10, 20



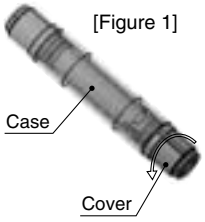
Model	A	B	C	D	E	F	G	H	I	J	K	L
ZFC050-02	58.5	12.75		12.75								2
ZFC050-23												3.2
ZFC050-04	58	12.5	33	12.5	25	10	10.5	10.5	12	8.5	13.75	4
ZFC051-01												1/8"
ZFC051-03												5/32"
ZFC100-04												4
ZFC100-06	53.2	9.1	30	14.1	10	18	11.6	19.5	23	20	29	6
ZFC101-03												5/32"
ZFC101-07												1/4"
ZFC200-06												6
ZFC200-08	67	15.5	34	17.5	14	22	15.6	23.1	27	24	35	8
ZFC201-07												1/4"
ZFC201-09												5/16"

Element Replacement

Element replacement procedure

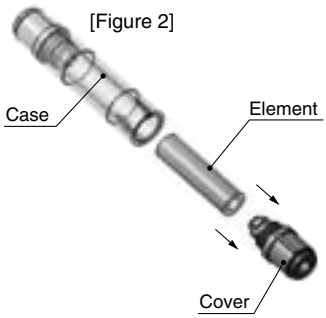
1. Stop operation and reduce the filter's internal pressure to atmosphere.
2. Rotate the cover counterclockwise (“O” on the cover ⇔ L marking). Refer to Figure 1.

[Figure 1]

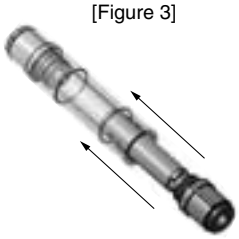


3. Pull the cover out of the case to remove the element. Remove dust and other debris remaining inside the case by blowing it out with air, etc. (Also, confirm that the O-ring is not damaged.)
4. Install a new element on cover and insert it into the case. Refer to Figure 2 and 3.

[Figure 2]



[Figure 3]

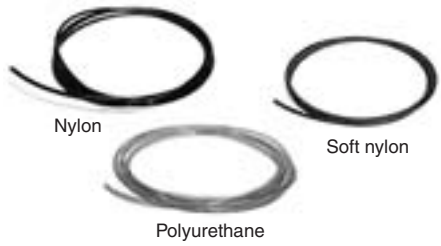


5. Adjust the protrusion on the cover and the slit on the case so that they match up, then push the cover into the end of the case. Next, confirm that the cover is locked by attempting to rotate it clockwise (“O” on the cover ⇔ L marking).
6. Restart operation.
   [Figure: ZFC05□. The procedures for the ZFC10□, 20□ are alike.]

Related Products/Tubing: Nylon, Soft Nylon, Polyurethane

Use the kind of tubing indicated at the right for suction filter with one-touch fitting (Series ZFC).

Refer to “Best Pneumatics No. 6” for details on valves.



How to Order Tubing

T 0604 B – 20

Tubing material

	Symbol	Material
Metric size	T	Nylon
	TS	Soft nylon
	TU	Polyurethane

	Symbol	Material
Inch size	TI	Nylon
	TIS	Soft nylon
	TIU	Polyurethane

Length per roll (m)

Symbol	Length
20	20 m (Standard)

Color

	Symbol	Color
Metric size	B	Black
	W	White
	R	Red
	BU	Blue
	Y	Yellow
	G	Green
	C Note)	Clear

	Symbol	Color
Inch size	B	Black
	BU	Blue
	W	White

Tubing size

	Symbol	Size	O.D.	Bore size
Metric size	0425		ø4	ø2.5
	0604		ø6	ø4
	0805		ø8	ø5
	0806		ø8	ø6
	1065		ø10	ø6.5
	1075		ø10	ø7.5

	Symbol	Size	O.D.	Bore size
Inch size	A05	3/16"	4.76	3.48
	A07	1/4"	6.35	4.57
	A11	3/8"	9.53	6.99
	A13	1/2"	12.7	9.56
	B05	3/16"	4.76	3.18
	B07	1/4"	6.35	4.23
	B11	3/8"	9.53	6.35
	B13	1/2"	12.7	8.46

Note) Polyurethane only. For polyurethane tubes, 22 colors other than the ones above are available.

Made to Order Specifications

Please contact SMC for detailed specifications, dimensions and delivery.

1 Air Suction Filter with Metal Case



Max. operating pressure 0.5 MPa

For the standard type, the max. operating pressure is up to 0 kPa.

Case is made of metal (aluminum)

The standard-type case is made of nylon.

How to Order

ZFC 100 – 04 X17

- **ZFC**: In-line type air suction filter with one-touch fittings
- **100**: Type (Recommended flow rate)

Tubing size	Symbol	Flow rate ℓ/min (ANR)
Metric size (Release bushing: Light gray)	**100**	Max. 20
	200	Max. 50

- **04**: IN/OUT applicable tubing O.D.

Metric size

Symbol	Tubing size	Applicable model
04	ø4	ZFC100
06	ø6	ZFC100
		ZFC200
08	ø8	ZFC200

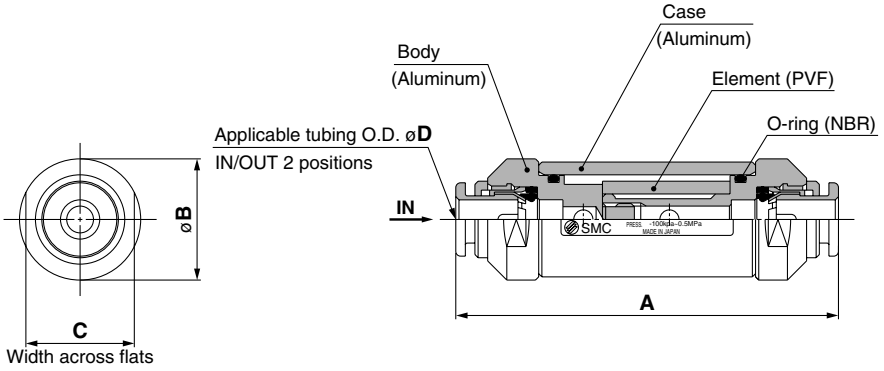
- **X17**: Air suction filter with metal case

Specifications

Model	ZFC100-04X17	ZFC100-06X17	ZFC200-06X17	ZFC200-08X17
Connecting tube O.D. (IN/OUT sides)	ø4	ø6	ø6	ø8
Recommended flow rate ℓ/min (ANR) Note)	10	20	30	50
Fluid	Air			
Operating pressure	–100 kPa to 0.5 MPa			
Withstand pressure	0.75 MPa			
Ambient operating fluid temperature	0 to 60°C (No freezing)			
Nominal filtration	10 μm			
Element differential pressure resistance	0.15 MPa			
Element replacement differential pressure	0.02 MPa			
Applicable tubing material	Nylon, Soft nylon, Polyurethane, Soft polyurethane			

Note) Flow rate when initial pressure drop is 3 kPa or less.

Construction/Dimensions



Dimensions

Model			A	B	C	D
ZFC100-	04	X17	60	19	17	4
	06		60	19	17	6
ZFC200-	06		68	23.5	21	6
	08		68	23.5	21	8

Series ZFC
Specific Product Precautions

Be sure to read before handling.
Refer to front matters 38 and 39 for Safety Instructions and pages 844 to 846 for Vacuum Equipment Precautions.

Selection

⚠Warning

1. Do not use in a line where a pressurized condition is maintained since the body may be damaged.

Mounting

⚠Warning

1. Connect tubing to the IN and OUT one-touch fittings in accordance with the precautions for one-touch fittings.

⚠Caution

1. Connect the piping in accordance with the flow direction marked on the case. Proper sealing of the element cannot be guaranteed if connections are reversed.

Maintenance

⚠Warning

1. When the element becomes clogged, stop operation and adjust the internal pressure of the filter to atmospheric pressure before replacing the element.

⚠Caution

1. As a rule, replace the element when the pressure drops by 20 kPa.
2. During disassembly and assembly, confirm that there are no scratches or damage, etc, on the O-ring.
3. Before using, confirm there is no leakage after replacing elements.

Operating Environment

⚠Warning

1. Do not use tubings in atmospheres of corrosive gases, chemicals, salt water, water steam, or where there is direct contact with any of these.
2. Do not wipe the product with alcohol, acetone, etc. or use it in an atmosphere and place where these elements are likely to adhere to the equipment.

Handling of One-touch Fittings

⚠Caution

1. Tubing attachment/detachment for one-touch fittings
1) Installing of tubing
(1) Use tubing with no flaws on its periphery and cut it off at a right angle. When cutting the tubing, use a tube cutter, TK-1, 2 or 3. Do not use pinchers, nippers or scissors, etc. If cutting is done with tools other than tube cutters, the tubing may be cut diagonally or become flattened, etc. This can make a secure installation impossible, and cause problems such as the tubing pulling out after installation or air leakage. Allow some extra length in the tubing.
(2) The outside diameter of the polyurethane tubing swells when internal pressure is applied to it. Therefore, it may not be possible that the tubing can be re-inserted into the one-touch fitting. Confirm the tubing outside diameter, and when the accuracy of the outside diameter is +0.15 or larger, re-insert the tubing into the one-touch fitting without cutting it. When the tubing is re-inserted into the one-touch fitting, confirm that the tubing goes through the release button smoothly.
(3) Grasp the tubing and push it in slowly, inserting it securely all the way into the fitting.
(4) After inserting the tubing, pull on it lightly to confirm that it will not come out. If it is not installed securely all the way into the fitting, this can cause problems such as air leakage or the tubing pulling out.
2) Removal of tubing
(1) Push in the release button sufficiently. When doing this, push the collar evenly.
(2) Pull out the tubing while holding down the release button so that it does not come out. If the release button is not pressed down sufficiently, there will be increased bite on the tubing and it will become more difficult to pull it out.
(3) When the removed tubing is to be used again, cut off the portion which has been chewed before reusing it. If the chewed portion of the tubing is used as it is, this can cause trouble such as air leakage or difficulty in removing the tubing.

2. Do not install the SMC's KQ one-touch fitting series with a metal rod into the ZFC05/10 series fittings. The metal rod will not be held and the fitting will shoot out.

Other Tube Brands

⚠Caution

1. When tubing of brands other than SMC's are used, verify that the tubing O.D. satisfies the following accuracy;
1) Nylon tubing : Within ±0.1 mm
2) Soft nylon tubing : Within ±0.1 mm
3) Polyurethane tubing: Within +0.15 mm, within –0.2 mm
Do not use tubing which does not meet these outside diameter tolerances.
It may not be possible to connect them, or they may cause other trouble, such as air leakage or the tube pulling out after connection.

2. Tubing O.D: ø2
Other tube brands cannot be used. It may not be possible to connect them, or they may cause other trouble, such as air leakage or the tube pulling out after connection.