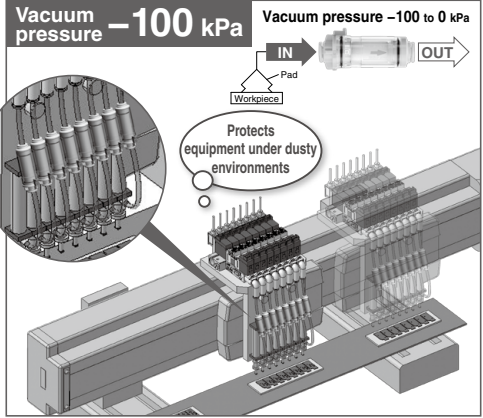
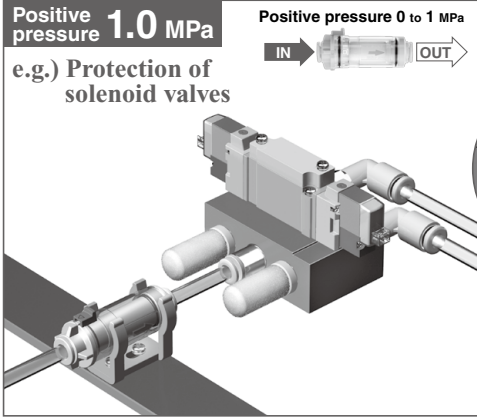


In-line Air Filter

ZFC Series



Operating pressure range **-100 kPa to 1.0 MPa (20°C)**
Both positive pressure and vacuum pressure can be used with one unit! Filtration **5 μm**



Variations 4 sizes 18 models

Series	Applicable tubing O.D.							Maximum flow rate under vacuum pressure [L/min (ANR)]	Maximum flow rate under positive pressure [L/min (ANR)]
	Metric	ø2	ø3.2 ø1/8"	ø4 ø5/32"	ø6 ø1/4"	ø8 ø5/16"	ø10 ø3/8"		
ZFC1□		●	●					5	45
ZFC3□			●	●				10	80
ZFC5□				●	●			20	200
ZFC7□					●	●	●	100	650

At 0.7 MPa with a pressure drop of 30 kPa. The required flow rate may not be obtained due to piping resistance.

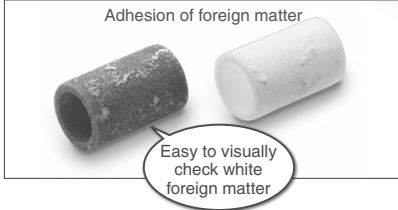
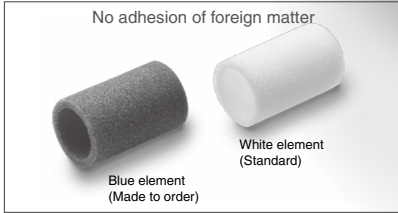


ZFC Series

With lock mechanism

During positive pressure, prevents components from being scattered when loosened.

2 element colors are available.



2 types of transparent case materials are available.

- Polycarbonate (Standard)
Possible to degrease with alcohol.



- Nylon (Made to order)
Resistant to coolant oil

With One-touch fitting

Metric size **Light gray** : $\phi 2$, $\phi 3.2$, $\phi 4$, $\phi 6$, $\phi 8$, $\phi 10$, $\phi 12$
 Inch size **Orange** : $\phi 1/8"$, $\phi 5/32"$, $\phi 1/4"$, $\phi 5/16"$, $\phi 3/8"$

2 levels of filtration rating are available.

- 5 μm
- 10 μm (Made to order)

Selectable piping port sizes

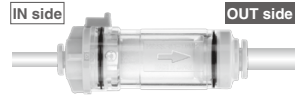
Up to four types of piping port sizes can be selected with the same filtration area.

Series	Filtration area [mm ²]	Applicable tubing O.D. (Upper/Metric, Lower/Inch)						
		$\phi 2$	$\phi 3.2$	$\phi 4$	$\phi 6$	$\phi 8$	$\phi 10$	$\phi 12$
ZFC1□	140	●	●					
ZFC3□	470		●	●				
ZFC5□	750			●	●			
ZFC7□	1260				●	●	●	●

Available with different bores on IN and OUT sides! **Made to Order**

IN side < OUT side

Applicable tubing O.D. [mm]	
IN port size	OUT port size
$\phi 2$	$\phi 3.2$
$\phi 3.2$	$\phi 4$
$\phi 4$	$\phi 6$



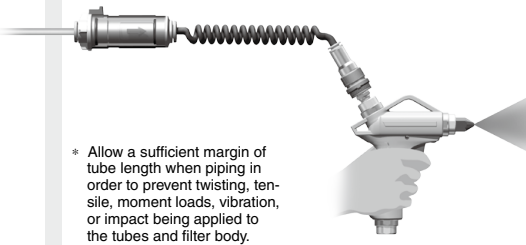
IN side > OUT side

Applicable tubing O.D. [mm]	
IN port size	OUT port size
$\phi 8$	$\phi 6$
$\phi 10$	$\phi 8$
$\phi 12$	$\phi 10$



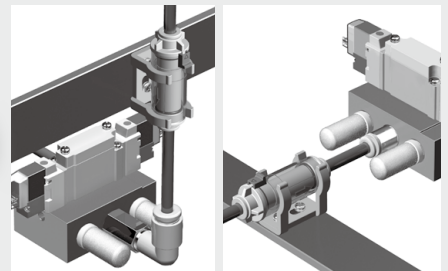
Application examples

Improvement in air quality of air blow



* Allow a sufficient margin of tube length when piping in order to prevent twisting, tensile, moment loads, vibration, or impact being applied to the tubes and filter body.





Flexible mounting orientation



Space-saving!

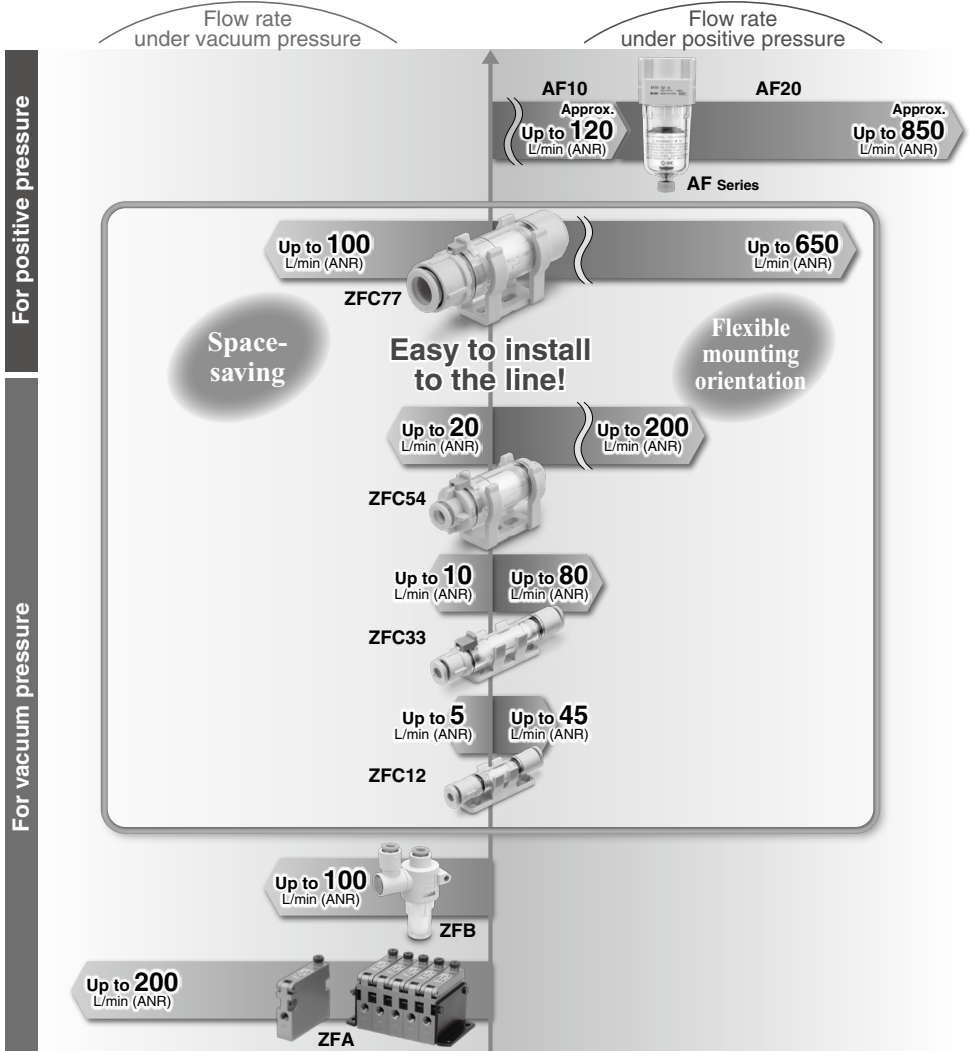
Long service life!

Two types of bodies can be selected with the same piping size.

Applicable tubing O.D.		ZFC1□ 	ZFC3□ 	ZFC5□ 	ZFC7□ 
Metric	Inch				
ø3.2	ø1/8"	Space-saving	or Long service life (Filtration area: 1.5 times or more)*1	—	—
ø4	ø5/32"	—	Space-saving	or Long service life (Filtration area: 1.5 times or more)*1	—
ø6	ø1/4"	—	—	Space-saving	or Long service life (Filtration area: 1.5 times or more)*1

*1 Compared with the same tubing O.D.

Filter Variations



Flow rate (positive pressure) conditions: Supply pressure of 0.7 MPa, Pressure drop of 30 kPa

In-line Air Filter

ZFC Series

RoHS

How to Order

ZFC 5 4 - B -

Body size

Symbol	Body size	Filtration area
1	5 L/min	140 mm ²
3	10 L/min	470 mm ²
5	20 L/min	750 mm ²
7	100 L/min	1260 mm ²

Applicable tubing O.D.

Metric size

Symbol	Applicable tubing O.D.	ZFC1	ZFC3	ZFC5	ZFC7
1	ø2	●	—	—	—
2	ø3.2	●	●	—	—
3	ø4	—	●	—	—
4	ø6	—	—	●	●
5	ø8	—	—	—	●
6	ø10	—	—	—	●
7	ø12	—	—	—	●

Inch size

A	ø1/8"	●	●	—	—
B	ø5/32"	—	●	●	—
D	ø1/4"	—	—	●	●
E	ø5/16"	—	—	—	●
F	ø3/8"	—	—	—	●

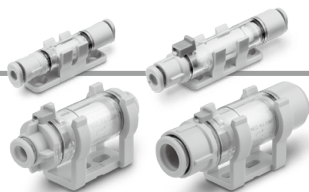
Made to order

Refer to page 809 for details.

Symbol	Specifications
X01	Different diameters (IN side < OUT side)
X02	Different diameters (IN side > OUT side)
X03	Blue element
X04	Filtration: 10 µm
X05	FKM/Oil free (Seal)
X06	Nylon

Option

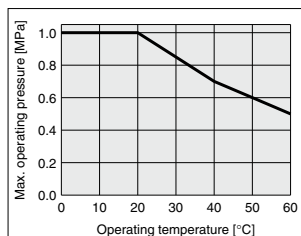
Nil	None
B	With bracket



Specifications

Model		ZFC1□	ZFC3□	ZFC5□	ZFC7□
Port size (Applicable tubing O.D.)	Metric size	ø2	ø3.2	ø4	ø6
	Inch size	—	ø1/8"	ø5/32"	ø1/4"
Fluid	Air, Nitrogen				
Operating pressure	-100 kPa to 1.0 MPa (at 20°C)				
Flow rate (Positive pressure) [L/min] *1	15	45	50	80	100
Flow rate (Vacuum pressure) [L/min]	2	5	7	10	10
Proof pressure [MPa]	1.5 (at 20°C)				
Operating and ambient temperature range [°C]	0 to 60				
Filtration [µm]	5 (Filtration efficiency 95%)				
Element replacement differential pressure [MPa]	0.1 (Vacuum pressure 20 kPa)				
Filtration area [mm ²]	140	470	750	1260	
Applicable tubing material	Nylon, Soft nylon, Polyurethane				
Weight [g]	2.5	4.5	10.5	20.0	25.0
Internal capacity [cm ³]	0.5	1.7	4.5	6.0	7.0
Total length [mm]	45.0	60.5	53.9	68.3	79.6
Total width [mm]	8.5				
Bracket total length [mm]	10.0				
Case material	Polycarbonate				

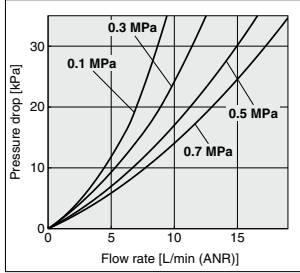
Max. Operating Pressure and Operating Temperature



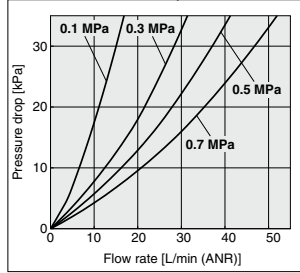
*1 Flow rate (positive pressure) conditions: Supply pressure of 0.7 MPa, Pressure drop of 30 kPa

Flow Rate Characteristics

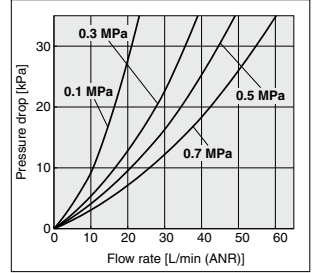
ZFC11 $\varnothing 2$



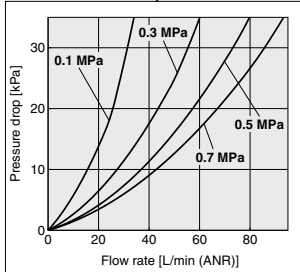
ZFC12/1A $\varnothing 3.2, \varnothing 1/8"$



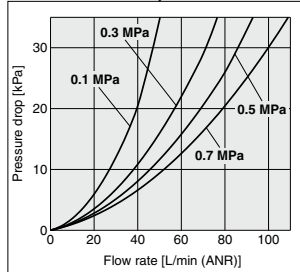
ZFC32/3A $\varnothing 3.2, \varnothing 1/8"$



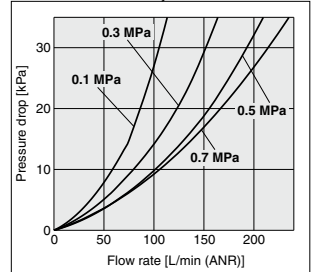
ZFC33/3B $\varnothing 4, \varnothing 5/32"$



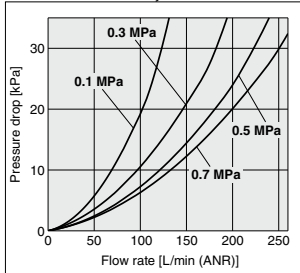
ZFC53/5B $\varnothing 4, \varnothing 5/32"$



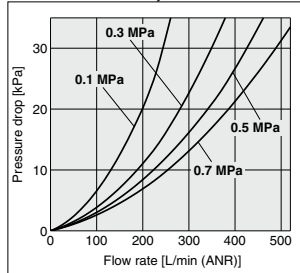
ZFC54/5D $\varnothing 6, \varnothing 1/4"$



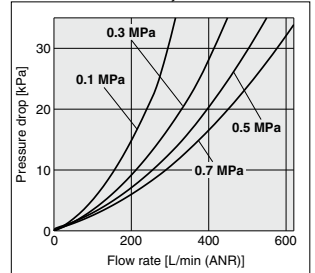
ZFC74/7D $\varnothing 6, \varnothing 1/4"$



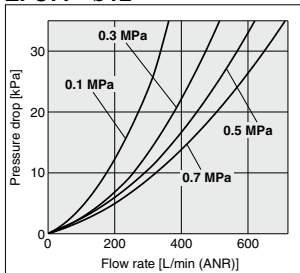
ZFC75/7E $\varnothing 8, \varnothing 5/16"$



ZFC76/7F $\varnothing 10, \varnothing 3/8"$



ZFC77 $\varnothing 12$



ZFC Series

Construction

Component Parts

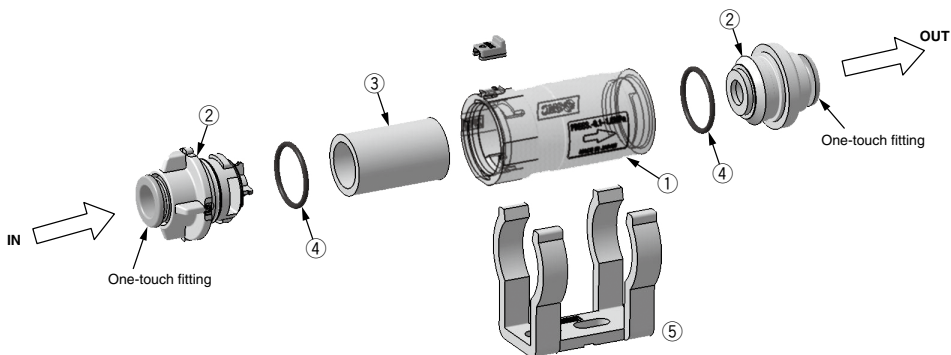
No.	Description	Material	Quantity
1	Case	PC	1
2	Cover	Resin PBT	2
3	Element	Sintered resin	1
4	O-ring	HNBR	2
5	Bracket	Resin PBT	1

Replacement Element Part No. (10 elements included)

Part no.	Applicable filter	Element size	Quantity
ZFC-EL-1	ZFC1	ø5 x ø3 x L11	10
ZFC-EL-2	ZFC3	ø6 x ø4 x L25	10
ZFC-EL-3	ZFC5	ø12 x ø8 x L20	10
ZFC-EL-4	ZFC7	ø16 x ø12 x L25	10

Replacement Bracket Part No.

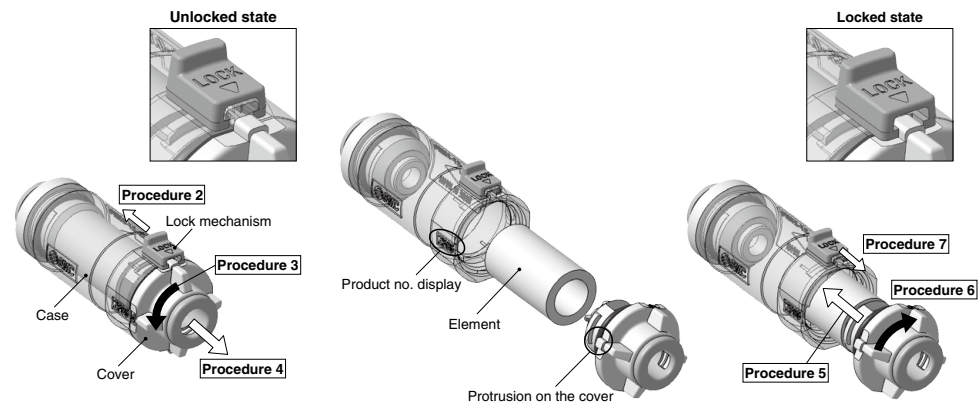
Part no.	Applicable filter	Quantity
ZFC-BR001	ZFC1	1
ZFC-BR002	ZFC3	1
ZFC-BR003	ZFC5	1
ZFC-BR004	ZFC7	1



Element Replacement

Procedure

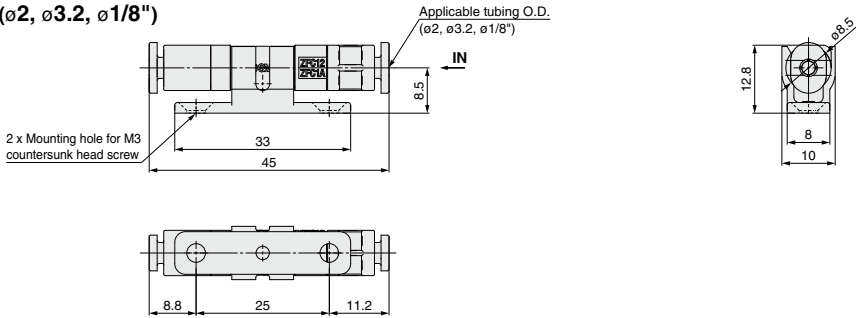
1. Stop operation and reduce the filter's internal pressure to atmosphere.
2. Slide the lock mechanism in the direction of the arrow to release the lock. (The ZFC1 series is not equipped with a lock mechanism.)
3. Rotate the cover counterclockwise at least 90 degrees.
4. Pull the cover out of the case 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.)
5. Attach the new element to the cover and insert it into the case.
6. Align the raised part of the cover with the product no. display of the body, and push the cover to the end of the body. Rotate it clockwise until it stops.
7. Set the lock mechanism and check that the cover is locked completely.



Dimensions

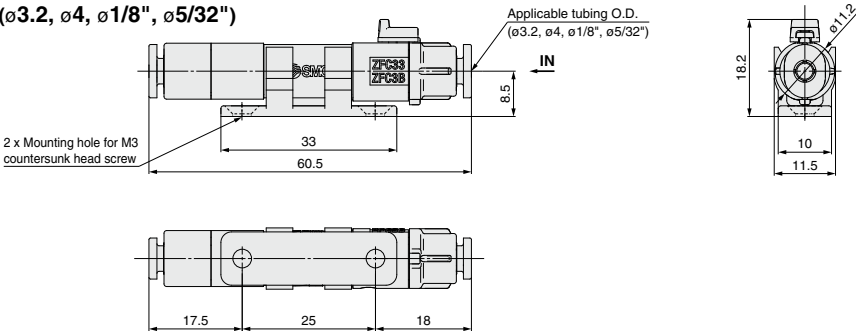
ZFC1

($\phi 2$, $\phi 3.2$, $\phi 1/8"$)



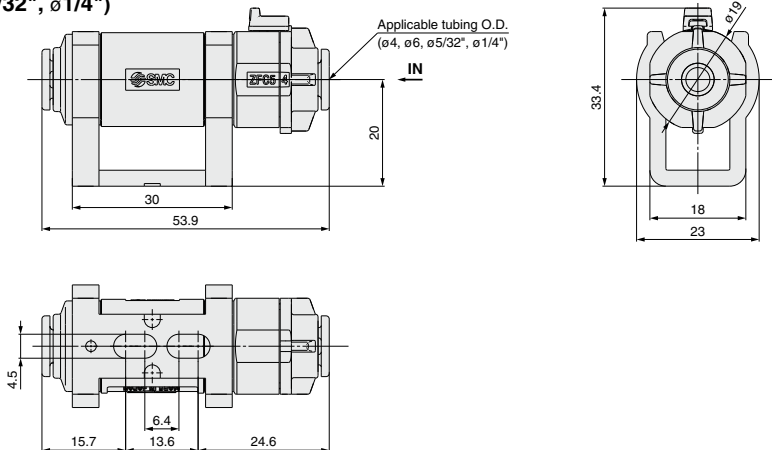
ZFC3

($\phi 3.2$, $\phi 4$, $\phi 1/8"$, $\phi 5/32"$)



ZFC5

($\phi 4$, $\phi 6$, $\phi 5/32"$, $\phi 1/4"$)

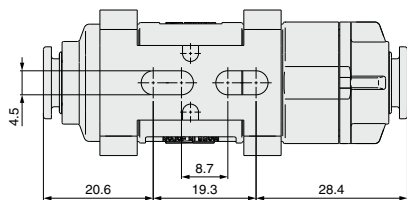
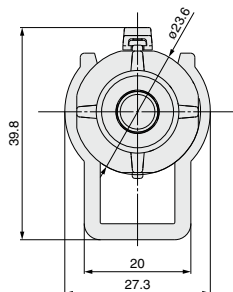
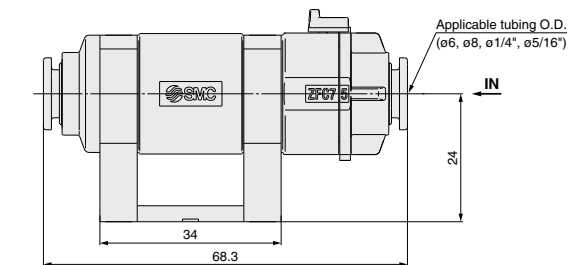


ZFC Series

Dimensions

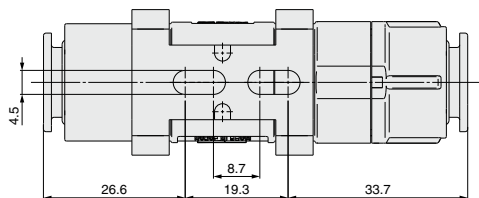
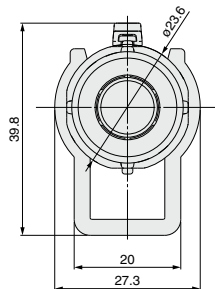
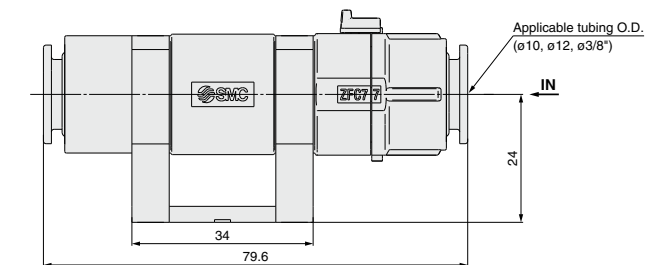
ZFC7

($\phi 6$, $\phi 8$, $\phi 1/4$ ", $\phi 5/16$ ")



ZFC7

($\phi 10$, $\phi 12$, $\phi 3/8$ ")



ZFC Series

Made to Order

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



1 Different diameters (IN side < OUT side) **-X01**

IN side applicable tubing O.D. (Metric size): $\phi 2$ to $\phi 4$
 OUT side applicable tubing O.D. (Metric size): $\phi 3.2$ to $\phi 6$

ZFC **53** - **X01**

• IN side < OUT side

Applicable tubing O.D.

Symbol	IN port	OUT port
11	$\phi 2$	$\phi 3.2$
32	$\phi 3.2$	$\phi 4$
53	$\phi 4$	$\phi 6$

• Option

Nil	None
B	With bracket



2 Different diameters (IN side > OUT side) **-X02**

IN side applicable tubing O.D. (Metric size): $\phi 8$ to $\phi 12$
 OUT side applicable tubing O.D. (Metric size): $\phi 6$ to $\phi 10$

ZFC7 **5** - **X02**

• IN side > OUT side

Applicable tubing O.D.

Symbol	IN side	OUT side
5	$\phi 8$	$\phi 6$
6	$\phi 10$	$\phi 8$
7	$\phi 12$	$\phi 10$

• Option

Nil	None
B	With bracket



3 Blue element **-X03**

Easy to recognize white foreign matter on the element by coloring the element.

Standard product - **X03**

• Blue element

Replacement Element Part No.
(Element: 1 pc.)

Series	Part no.
ZFC1□-□- X03	ZFC-EL019
ZFC3□-□- X03	ZFC-EL020
ZFC5□-□- X03	ZFC-EL015
ZFC7□-□- X03	ZFC-EL016

4 Filtration: 10 μ m **-X04**

Standard product - **X04**

• Filtration: 10 μ m

Replacement Element Part No.
(Element: 1 pc.)

Series	Part no.
ZFC1□-□- X04	ZFC-EL021
ZFC3□-□- X04	ZFC-EL022
ZFC5□-□- X04	ZFC-EL017
ZFC7□-□- X04	ZFC-EL018

5 Seal material: FKM Oil free: Seal **-X05**

Standard product - **X05**

(Note) Applicable only to the body sizes 5 and 7.

6 Case material: Nylon **-X06**

Standard product - **X06**

• Case material: Nylon



ZFC Series

Specific Product Precautions 1

Be sure to read this before handling the products.

Refer to page 33 for safety instructions and pages 34 to 36 for vacuum equipment precautions.

Design

Warning

1. Confirm the specifications.

Products represented in this catalog are designed only for use in compressed air systems (including vacuum).

Do not operate at pressures, temperatures, etc., beyond the range of specifications, as this can cause damage or malfunction. (Refer to the specifications.)

Please contact SMC when using a fluid other than compressed air (including vacuum).

We do not guarantee against any damage if the product is used outside of the specification range.

2. Modification prohibited

Do not make any modifications, including additional machining. It may cause human injury and/or an accident and will void the warranty.

Caution

1. When vacuum adsorption and release are used on the same line, the dust trapped by the vacuum adsorption scatters again during vacuum release. Therefore, both vacuum pressure and positive pressure cannot be used together on the same line.

Mounting

Warning

1. Operation manual

Install the products and operate them only after reading the operation manual carefully and understanding its contents. Also, keep the manual where it can be referred to as necessary.

2. Maintenance space

Allow sufficient space for maintenance and inspection.

3. Observe the tightening torque for screws.

Tighten the screws to the recommended torque for mounting the product.

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

Caution

1. Connect the piping after checking the arrow indication showing the flow direction on the body. If the piping is connected the other way around, it is not possible to seal the element.
2. Allow a sufficient margin of tube length when piping in order to prevent twisting, tensile, moment loads, vibration, or impact being applied to the tubes and filter body.

Air Supply

Warning

1. Type of fluids

Please consult with SMC when using the product in applications other than compressed air.

2. When there is a large amount of drainage

Compressed air containing a large amount of drainage can cause the malfunction of pneumatic equipment. An air dryer or water separator should be installed upstream from filters.

3. Drain flushing

If condensation in the drain bowl is not emptied on a regular basis, the bowl will overflow and allow the condensation to enter the compressed air lines. This causes the malfunction of pneumatic equipment. If the drain bowl is difficult to check and remove, the installation of a drain bowl with an auto drain option is recommended.

Refer to "SMC Air Preparation System" for further details on compressed air quality.

4. Use clean air.

Do not use compressed air that contains chemicals, synthetic oils that include organic solvents, salt, corrosive gases, etc., as they can cause damage or malfunction.

Operating Environment

Warning

1. Do not use in an atmosphere where corrosive gases, chemicals, sea water, water, or water steam is present. Do not use in cases where there is direct contact with any of the above.
2. Do not use in a place subject to heavy vibration and/or impact.
3. Do not use in an environment where flammable gas or explosive gas is present. Usage may cause a fire or explosion. The products do not have an explosion proof construction.
4. The valve should not be exposed to prolonged sunlight. Use a protective cover if necessary.
5. Remove any sources of excessive heat.
6. In locations where there is contact with water, oil, weld spatter, etc., take suitable protective measures.



ZFC Series

Specific Product Precautions 2

Be sure to read this before handling the products.

Refer to page 33 for safety instructions and pages 34 to 36 for vacuum equipment precautions.

Handling Precautions

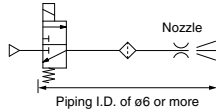
Warning

Use of intermittent air blow may increase piping temperatures. Therefore, observe the temperature for several hours during the trial operation. Also, pay attention to the product temperature during inspection.

The flow rate is throttled in the nozzle. If compressed air is supplied repeatedly, the air inside the piping may cause adiabatic compression. As a result, the temperature inside the piping increases. In this case, if the heat radiation to surroundings is not sufficient, the product temperature may exceed its operating temperature range. If compressed air is supplied under conditions where the product temperature exceeds its operating temperature range, this may cause the product to break. Take the preventive measures shown below.

- 1) Design to reduce piping capacity.
- 2) Build materials or mechanisms with high heat radiation ability into the areas around the nozzle.
- 3) Select a product with a wide operating temperature range.

Example of circuit when piping temperatures increase:
Pressure of 0.5 MPa or more, Ten times per minute



Maintenance

Warning

1. Perform maintenance inspections according to the procedures indicated in the operation manual.

If handled improperly, malfunction and damage of machinery or equipment may occur.

2. Maintenance work

If handled improperly, compressed air can be dangerous.

The assembly, handling, repair, and element replacement of pneumatic systems should be performed by a knowledgeable and experienced person.

3. Drain flushing

Remove drainage from air filters regularly.

4. Removal of equipment and supply/exhaust of compressed air

When components are removed, first confirm that measures are in place to prevent workpieces from dropping, run-away equipment, etc. Then, cut off the supply pressure and electric power, and exhaust all compressed air from the system using the residual pressure release function.

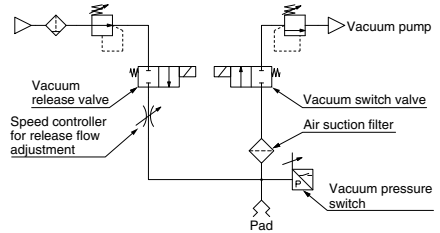
When the equipment is operated after remounting or replacement, confirm that the equipment is operating normally.

Maintenance

Warning

5. The performance of an ejector will deteriorate due to clogged suction filters and silencers.

High flow filters should be used, especially in dusty locations.



If a filter is required on the release pressure side, a different filter should be prepared.

* It is not possible to use vacuum pressure and positive pressure together on the same line.

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

Caution

1. Element should be replaced in either of the two cases below.

- 1) When pressure drop reaches 0.1 MPa of positive pressure or 20 kPa of vacuum pressure.
- 2) When the set values (flow rate, vacuum reaching time) change.

2. During disassembly and assembly, confirm that there are no scratches, damage, etc, to the O-ring.

3. Before using, confirm there is no leakage after replacing elements.

4. Be sure to check that the lock mechanism is locked securely before use.