In-line Air Filter

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

Positive pressure: 1.0 MPa
   e.g.) Protection of solenoid valves

Vacuum pressure: -100 kPa
   Protects equipment under dusty environments

Variations: 4 sizes 18 models

<table>
<thead>
<tr>
<th>Series</th>
<th>Applicable tubing O.D.</th>
<th>Maximum flow rate under vacuum pressure [L/min (ANR)]</th>
<th>Maximum flow rate under positive pressure [L/min (ANR)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZFC1</td>
<td>Metric: ø2, ø3.2, ø4, ø6, ø8, ø10, ø12 Inch: ø1/8, ø5/32, ø1/4, ø5/16, ø3/8</td>
<td>5 45</td>
<td>10 80</td>
</tr>
<tr>
<td>ZFC3</td>
<td>Metric: ø2, ø3.2, ø4, ø6, ø8, ø10, ø12 Inch: ø1/8, ø5/32, ø1/4, ø5/16, ø3/8</td>
<td>10 80</td>
<td>20 200</td>
</tr>
<tr>
<td>ZFC5</td>
<td>Metric: ø2, ø3.2, ø4, ø6, ø8, ø10, ø12 Inch: ø1/8, ø5/32, ø1/4, ø5/16, ø3/8</td>
<td>20 200</td>
<td>100 650</td>
</tr>
<tr>
<td>ZFC7</td>
<td>Metric: ø2, ø3.2, ø4, ø6, ø8, ø10, ø12 Inch: ø1/8, ø5/32, ø1/4, ø5/16, ø3/8</td>
<td>100 650</td>
<td></td>
</tr>
</tbody>
</table>

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

---

**With lock mechanism**
During positive pressure, prevents components from being scattered when loosened.

**2 element colors are available.**

- No adhesion of foreign matter
- White element (Standard)
- Blue element (Made to order)
- Adhesion of foreign matter

**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.

<table>
<thead>
<tr>
<th>Series</th>
<th>Filtration area [mm²]</th>
<th>Applicable tubing O.D. (Upper/Metric, Lower/Inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZFC1☐</td>
<td>140</td>
<td>ø2 ø3.2 ø4 ø6 ø8 ø10 ø12</td>
</tr>
<tr>
<td>ZFC3☐</td>
<td>470</td>
<td>- ø1/8” ø5/32” ø1/4” ø5/16” ø3/8” -</td>
</tr>
<tr>
<td>ZFC5☐</td>
<td>750</td>
<td>-</td>
</tr>
<tr>
<td>ZFC7☐</td>
<td>1260</td>
<td>-</td>
</tr>
</tbody>
</table>

**2 types of transparent case materials are available.**
- Polycarbonate (Standard)
- Nylon (Made to order)

**Possible to degrease with alcohol.**

**Available with different bores on IN and OUT sides!**

**Made to Order**

**With One-touch fitting**

- Metric size: ø2, ø3.2, ø4, ø6, ø8, ø10, ø12

**Easy to visually check white foreign matter**

**Improvement in air quality of air blow**

**Flexible mounting orientation**
For positive pressure

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

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

<table>
<thead>
<tr>
<th>Applicable tubing O.D.</th>
<th>ZFC1</th>
<th>ZFC3</th>
<th>ZFC5</th>
<th>ZFC7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric</td>
<td>New</td>
<td>New</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inch</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ø3.2</td>
<td>Space-saving</td>
<td>or</td>
<td>Long service life</td>
<td>—</td>
</tr>
<tr>
<td>ø4</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>ø6</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Space-saving or Long service life (Filtration area: 1.5 times or more)†

Filter Variations

Easy to install to the line!

Flexible mounting orientation

For vacuum pressure

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

AF10
Approx. Up to 120 L/min (ANR)
AF20
Approx. Up to 850 L/min (ANR)

ZFC12
New
ZFC33
New
ZFC54
ZFC77
ZFA
ZFB
AF Series

Up to 100 L/min (ANR)
Up to 200 L/min (ANR)
Up to 650 L/min (ANR)
Up to 5 L/min (ANR)
Up to 45 L/min (ANR)
Up to 10 L/min (ANR)
Up to 80 L/min (ANR)
Up to 20 L/min (ANR)
Up to 100 L/min (ANR)
Up to 200 L/min (ANR)

Space-saving

+1 Compared with the same tubing O.D.
**In-line Air Filter**

**ZFC Series**

---

**How to Order**

ZFC 5 4 - B -

---

**Body size**

*Made to order*

Refer to page 8 for details.

---

**Applicable tubing O.D.**

**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" | — | — | — | ●

---

**Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>ZFC1</th>
<th>ZFC3</th>
<th>ZFC5</th>
<th>ZFC7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port size (Applicable tubing O.D.) Metric size</td>
<td>ø2</td>
<td>ø3.2</td>
<td>ø3.2</td>
<td>ø4</td>
</tr>
<tr>
<td>Fluid</td>
<td>Air, Nitrogen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating pressure</td>
<td>−100 kPa to 1.0 MPa (at 20°C)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow rate (Positive pressure) [L/min] *1</td>
<td>15</td>
<td>45</td>
<td>50</td>
<td>80</td>
</tr>
<tr>
<td>Flow rate (Vacuum pressure) [L/min]</td>
<td>5</td>
<td>7</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Proof pressure [MPa]</td>
<td>1.5 (at 20°C)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating and ambient temperature range [°C]</td>
<td>0 to 60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filtration [μm]</td>
<td>5 (Filtration efficiency 95%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element replacement differential pressure [MPa]</td>
<td>0.1 (Vacuum pressure 20 kPa)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filtration area [mm²]</td>
<td>140</td>
<td>470</td>
<td>750</td>
<td>1260</td>
</tr>
<tr>
<td>Applicable tubing material</td>
<td>Nylon, Soft nylon, Polyurethane</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight [g]</td>
<td>2.5</td>
<td>4.5</td>
<td>10.5</td>
<td>20.0</td>
</tr>
<tr>
<td>Internal capacity [cm³]</td>
<td>0.5</td>
<td>1.7</td>
<td>4.5</td>
<td>6.0</td>
</tr>
<tr>
<td>Total length (mm)</td>
<td>45.0</td>
<td>60.5</td>
<td>53.9</td>
<td>68.3</td>
</tr>
<tr>
<td>Total width (mm)</td>
<td>8.5</td>
<td>11.2</td>
<td>19.0</td>
<td>23.6</td>
</tr>
<tr>
<td>Bracket total length (mm)</td>
<td>10.0</td>
<td>11.5</td>
<td>23.0</td>
<td>27.3</td>
</tr>
<tr>
<td>Case material</td>
<td>Polycarbonate</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

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

**ZFC11 ø2**

**ZFC12/1A ø3.2, ø1/8"**

**ZFC32/3A ø3.2, ø1/8"**

**ZFC33/3B ø4, ø5/32"**

**ZFC53/5B ø4, ø5/32"**

**ZFC54/5D ø6, ø1/4"**

**ZFC74/7D ø6, ø1/4"**

**ZFC75/7E ø8, ø5/16"**

**ZFC76/7F ø10, ø3/8"**

**ZFC77 ø12**
## Construction

### Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Case</td>
<td>PC</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Cover</td>
<td>Resin PBT</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Element</td>
<td>Sintered resin</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>O-ring</td>
<td>HNBR</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Bracket</td>
<td>Resin PBT</td>
<td>1</td>
</tr>
</tbody>
</table>

### Replacement Element Part No. (10 elements included)

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Applicable filter</th>
<th>Element size</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZFC-EL-1</td>
<td>ZFC1</td>
<td>ø5 x ø3 x L11</td>
<td>10</td>
</tr>
<tr>
<td>ZFC-EL-2</td>
<td>ZFC3</td>
<td>ø6 x ø4 x L25</td>
<td>10</td>
</tr>
<tr>
<td>ZFC-EL-3</td>
<td>ZFC5</td>
<td>ø12 x ø8 x L20</td>
<td>10</td>
</tr>
<tr>
<td>ZFC-EL-4</td>
<td>ZFC7</td>
<td>ø16 x ø12 x L25</td>
<td>10</td>
</tr>
</tbody>
</table>

### Replacement Bracket Part No.

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Applicable filter</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZFC-BR001</td>
<td>ZFC1</td>
<td>1</td>
</tr>
<tr>
<td>ZFC-BR002</td>
<td>ZFC3</td>
<td>1</td>
</tr>
<tr>
<td>ZFC-BR003</td>
<td>ZFC5</td>
<td>1</td>
</tr>
<tr>
<td>ZFC-BR004</td>
<td>ZFC7</td>
<td>1</td>
</tr>
</tbody>
</table>

## 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
(Ø2, Ø3.2, Ø1/8")

- 2 x Mounting hole for M3 countersunk head screw
- Applicable tubing O.D. (Ø2, Ø3.2, Ø1/8")

ZFC3
(Ø3.2, Ø4, Ø1/8", Ø5/32")

- 2 x Mounting hole for M3 countersunk head screw
- Applicable tubing O.D. (Ø3.2, Ø4, Ø1/8", Ø5/32")

ZFC5
(Ø4, Ø6, Ø5/32", Ø1/4")

- Applicable tubing O.D. (Ø4, Ø6, Ø5/32", Ø1/4")
ZFC Series

Dimensions

ZFC7
(ø6, ø8, ø1/4", ø5/16")

ZFC7
(ø10, ø12, ø3/8")
**ZFC Series**

**Made to Order**

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

---

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

IN side applicable tubing O.D. (Metric size): ø2 to ø4
OUT side applicable tubing O.D. (Metric size): ø3.2 to ø6

**Applicable tubing O.D.**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>IN port</th>
<th>OUT port</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>ø2</td>
<td>ø3.2</td>
</tr>
<tr>
<td>32</td>
<td>ø3.2</td>
<td>ø4</td>
</tr>
<tr>
<td>53</td>
<td>ø4</td>
<td>ø6</td>
</tr>
</tbody>
</table>

---

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

IN side applicable tubing O.D. (Metric size): ø8 to ø12
OUT side applicable tubing O.D. (Metric size): ø6 to ø10

**Applicable tubing O.D.**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>IN side</th>
<th>OUT side</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>ø8</td>
<td>ø6</td>
</tr>
<tr>
<td>6</td>
<td>ø10</td>
<td>ø8</td>
</tr>
<tr>
<td>7</td>
<td>ø12</td>
<td>ø10</td>
</tr>
</tbody>
</table>

---

**3 Blue element Symbol -X03**

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

**Standard product -X03**

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

<table>
<thead>
<tr>
<th>Series</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZFC1</td>
<td>ZFC-EL019</td>
</tr>
<tr>
<td>ZFC3</td>
<td>ZFC-EL020</td>
</tr>
<tr>
<td>ZFC5</td>
<td>ZFC-EL015</td>
</tr>
<tr>
<td>ZFC7</td>
<td>ZFC-EL016</td>
</tr>
</tbody>
</table>

---

**4 Filtration: 10 μm Symbol -X04**

**Standard product -X04**

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

<table>
<thead>
<tr>
<th>Series</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZFC1</td>
<td>ZFC-EL021</td>
</tr>
<tr>
<td>ZFC3</td>
<td>ZFC-EL022</td>
</tr>
<tr>
<td>ZFC5</td>
<td>ZFC-EL017</td>
</tr>
<tr>
<td>ZFC7</td>
<td>ZFC-EL018</td>
</tr>
</tbody>
</table>

---

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

**Standard product -X05**

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

---

**6 Case material: Nylon Symbol -X06**

**Standard product -X06**

**Case material: Nylon**
### Warning

1. **Operating Environment**
   - 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.
   - Do not use in a place subject to heavy vibration and/or impact.
   - 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.

2. **Air Supply**
   - **Type of fluids**
     - Please consult with SMC when using the product in applications other than compressed air.
   - **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.
   - **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.
   - **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.

3. **Mounting**
   - **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.
   - **Maintenance space**
     - Allow sufficient space for maintenance and inspection.
   - **Observe the tightening torque for screws.**
     - Tighten the screws to the recommended torque for mounting the product.
   - **Connect tubing to the IN and OUT One-touch fittings in accordance with the precautions for One-touch fittings.**

4. **Caution**

   - **Design**
     - 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.
   - **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**
     - 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.

   - **Warning**
     - **Operating Environment**
       - 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.
**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

![Diagram of piping system](image)

**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.

![Diagram of ejector system](image)

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.
### Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)\(^1\), and other safety regulations.

|Caution:| Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury. |
|Warning:| Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury. |
|Danger:| Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury. |

### Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

   Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

   The product specified here may become unsafe if handled incorrectly. The inspection and maintenance of machinery/equipment should only be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

   1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent failing or runaway of the driven objects have been confirmed.
   2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
   3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

   1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
   2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
   3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
   4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

### Caution

1. The product is provided for use in manufacturing industries.

   The product herein described is basically provided for peaceful use in manufacturing industries. If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary. If anything is unclear, contact your nearest sales branch.

### Limited warranty and Disclaimer

#### Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

#### Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.\(^2\)

   Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.

   This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.

3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

   *\(\text{Vacuum pads are excluded from this 1 year warranty.}\)

   A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

### Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.

2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

### Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

### Revision History

- Added ZFC1
- Change in the maximum flow rate conditions.

### Safety Instructions

Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.