

# Vacuum Filter

New

RoHS

## Prevents vacuum equipment trouble!

Nominal filtration rating

**5, 40, 80**  $\mu\text{m}$

Large flow capacity

**Max. 660** l/min (ANR)

\* Large flow type ( $\Delta P=4$  kPa)

- Elements can be reused by washing them.
  - \* For 40  $\mu\text{m}$  and 80  $\mu\text{m}$
- Water drops can be removed.\*
  - \* Water drop removal ratio: 80 %. At recommended flow rate (representative values).
  - \* For water drop removal type



**Better environmental resistance with 2 layer construction**

Transparent bowl guard

Inner bowl

Material: Polycarbonate

**The bowl is covered with a transparent bowl guard!**

\* Body size 30 or more

There are no windows on the bowl guard and the inner bowl is instead covered with a **polycarbonate transparent bowl guard**. Now, even if the environment changes and the bowl is exposed to corrosive chemical or oil splash, **the foreign matter will not stick directly to the pressurized bowl. This can reduce risk of bowl breakage.**

Model	Flow rate [l/min (ANR)]						Port size				Nominal filtration rating [ $\mu\text{m}$ ]	
	100	200	300	400	500	600	1/8	1/4	3/8	1/2		
AFJ20	Max. 180						●	●				5, 40, 80
AFJ30	Max. 380						●	●	●			
AFJ40	Max. 660						●	●	●	●		

Large flow type ( $\Delta P=4$  kPa)

Series **AFJ**



CAT.EUS100-116A-UK

## 2 types are available for different applications.

### Large flow type Dust removal



Air coming from the IN side is filtered by the element after passing through the deflector.

### Water drop removal type Water drop removal + Dust removal



Air coming from the IN side is rotated when passing through the fans in the deflector. Moisture is separated by centrifugal force.

### Selectable filtration rating



### Easy to handle

The element and the bowl are in one piece. Replacement can be done in hand.



### Superior visibility: 360°

Use of a transparent bowl guard makes it possible to check the element inside the case from the entire periphery.



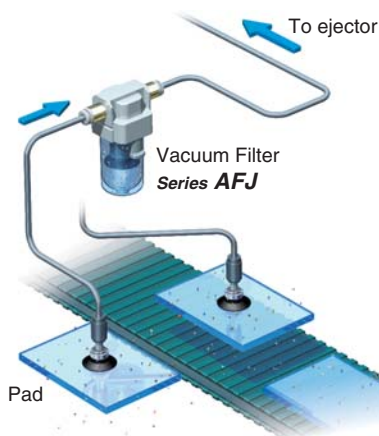
### Metal related corrosion does not occur.

Resin body does not rust.

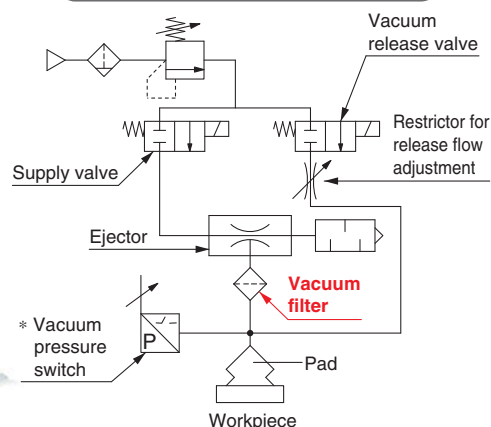


### Application Examples

- Collect particles before the ejector to lengthen the ejector life.
- To prevent cleaning water left on the workpiece from entering into the ejector when the pad picks up the workpiece.



#### Application to ejector system

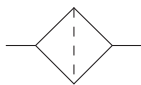


\* If water droplets enter to the vacuum pressure switch, use a vacuum pressure switch for general fluid. For handling, refer to Common Precautions and the Operation Manual.

# Vacuum Filter

## AFJ20 to AFJ40

Symbol  
Vacuum filter



AFJ20

AFJ30

AFJ40

### How to Order

AFJ **30** - **03** **B** - **80** - **T** - **6**

① ② ③ ④ ⑤ ⑥ ⑦

· Option/Nominal filtration rating/Type/Semi-standard: Select one of each for a to f.  
· Semi-standard: When more than one specification is required, indicate in alphanumeric order.

		Symbol	Description	① Body size				
				20	30	40		
②	Pipe thread type	—	Rc	●	●	●		
		N	NPT	●	●	●		
		F	G	●	●	●		
+								
③	Port size	01	1/8	●	—	—		
		02	1/4	●	●	●		
		03	3/8	—	●	●		
		04	1/2	—	—	●		
+								
④	Option a	Mounting	—	Without mounting option	●	●	●	
			B <small>Note 1)</small>	With bracket	●	●	●	
+								
⑤	Nominal filtration rating	b	Element	5	5 μm	●	●	●
				40	40 μm	●	●	●
				80	80 μm	●	●	●
+								
⑥	Type c	Water drop removal type/ Large flow type	S	Water drop removal type	●	●	●	
			T	Large flow type	●	●	●	
+								
⑦	Semi-standard	d	Bowl <small>Note 2)</small>	—	Polycarbonate bowl	●	●	●
				6	Nylon bowl	●	●	●
		+						
		e	Flow direction	—	Flow direction: Left to right	●	●	●
				R	Flow direction: Right to left	●	●	●
		+						
f	Pressure unit	—	Name plate and caution plate in imperial units: MPa/°C	●	●	●		
		Z	Name plate and caution plate in imperial units: psi/°F	○ <small>Note 3)</small>	○ <small>Note 3)</small>	○ <small>Note 3)</small>		

Note 1) Option B is not assembled and supplied loose at the time of shipment.  
Assembly of a bracket and 2 mounting screws.

Note 3) ○: For pipe thread type NPT only

Note 2) Refer to Chemical data on page 7 for chemical resistance of the bowl.

# Series AFJ20 to AFJ40

## Standard Specifications

Model			AFJ20		AFJ30		AFJ40		
Port size			1/8	1/4	1/4	3/8	1/4	3/8	1/2
Fluid			Air						
Ambient and fluid temperature			-5 to 60 °C (No freezing)						
Proof pressure			0.5 MPa						
Operating pressure range			-100 to 0 kPa						
Nominal filtration rating <small>Note 1) to Note 4)</small>			5 µm, 40 µm, 80 µm						
Drain capacity [cm <sup>3</sup> ]			8		25		45		
Bowl material			Polycarbonate						
Bowl guard			—		Standard (Polycarbonate)				
Recommended flow rate <small>Note 5)</small> [l/min (ANR)]	Water drop removal type (-S)	5 µm	80	100	180	230	200	310	370
		40 µm	100	130	210	340	230	390	500
		80 µm							
	Large flow type (-T)	5 µm	100	140	190	250	210	350	440
		40 µm	120	180	230	380	250	480	660
		80 µm							
Weight [kg]			0.08		0.18		0.36		

Note 1) The size of solid particles collectable by the element 40 µm (80 µm) shall be 40 µm (80 µm) or more in depth x height x width.

Note 2) 5 µm elements use fibre type element which filtrate 5 µm.

Note 3) The element for 40 µm uses a resin mesh with openings of 40 µm in height and width.

Note 4) The element for 80 µm uses a resin mesh with openings of 80 µm in height and width.

Note 5) The amount of processed air when the initial pressure loss is 4 kPa.

## Options/Part No.

Model	AFJ20	AFJ30	AFJ40
Bracket assembly <small>Note)</small>	AF22P-050AS	AF32P-050AS	AF42P-050AS

Note) Assembly of a bracket and 2 mounting screws

## Bowl Assembly/Part No.

Bowl material	Model		
	AFJ20	AFJ30	AFJ40
Polycarbonate	C2SJ	C3SJ	C4SJ
Nylon	C2SJ-6	C3SJ-6	C4SJ-6

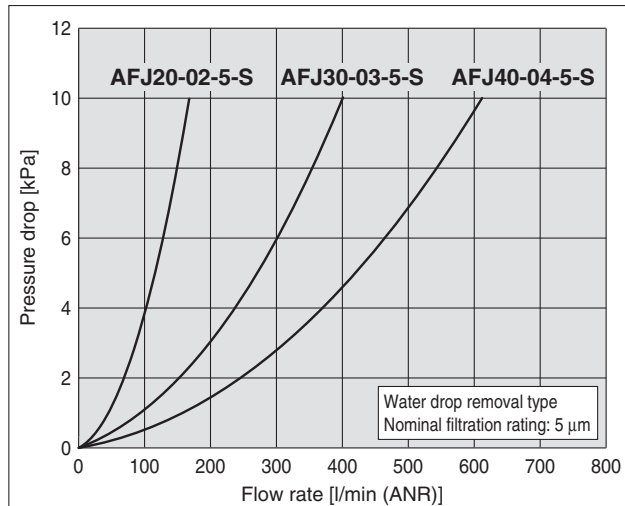
Note) Bowl assembly includes the bowl O-ring.

## Flow-rate Characteristics (Representative values)

### Water Drop Removal Type

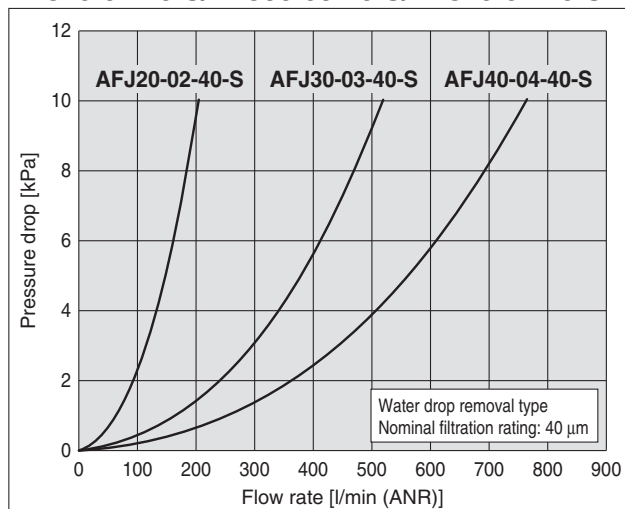
5 μm

AFJ20-02-5-S/AFJ30-03-5-S/AFJ40-04-5-S



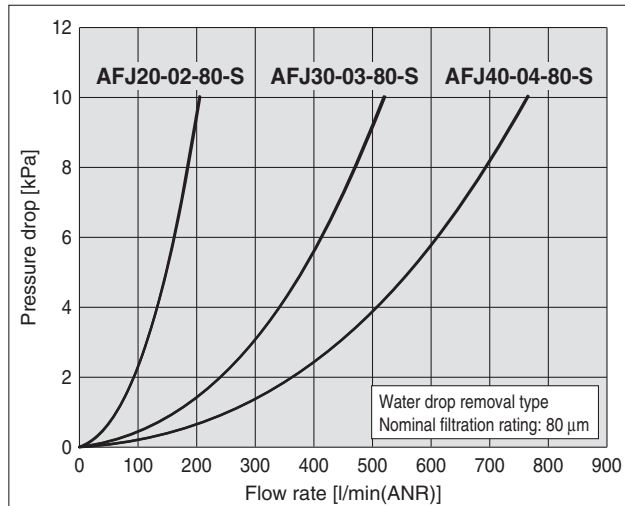
40 μm

AFJ20-02-40-S/AFJ30-03-40-S/AFJ40-04-40-S



80 μm

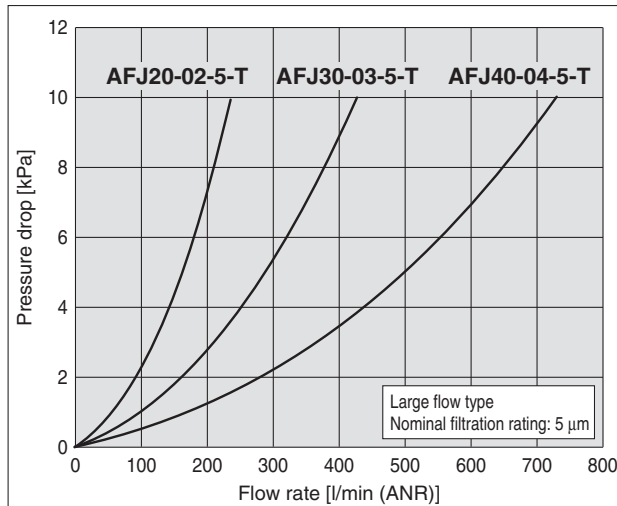
AFJ20-02-80-S/AFJ30-03-80-S/AFJ40-04-80-S



### Large Flow Type

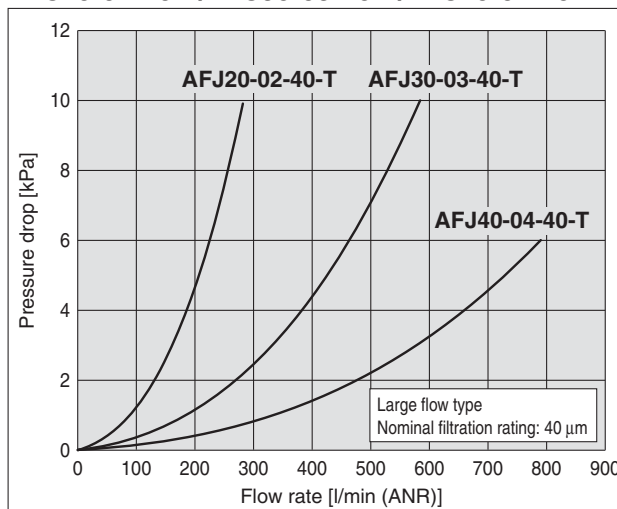
5 μm

AFJ20-02-5-T/AFJ30-03-5-T/AFJ40-04-5-T



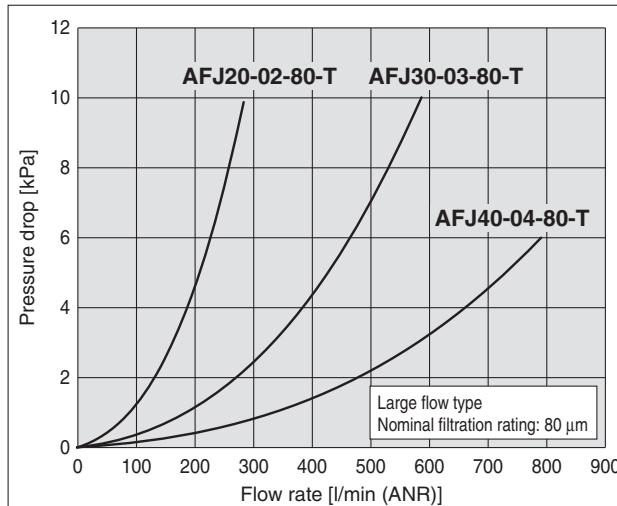
40 μm

AFJ20-02-40-T/AFJ30-03-40-T/AFJ40-04-40-T



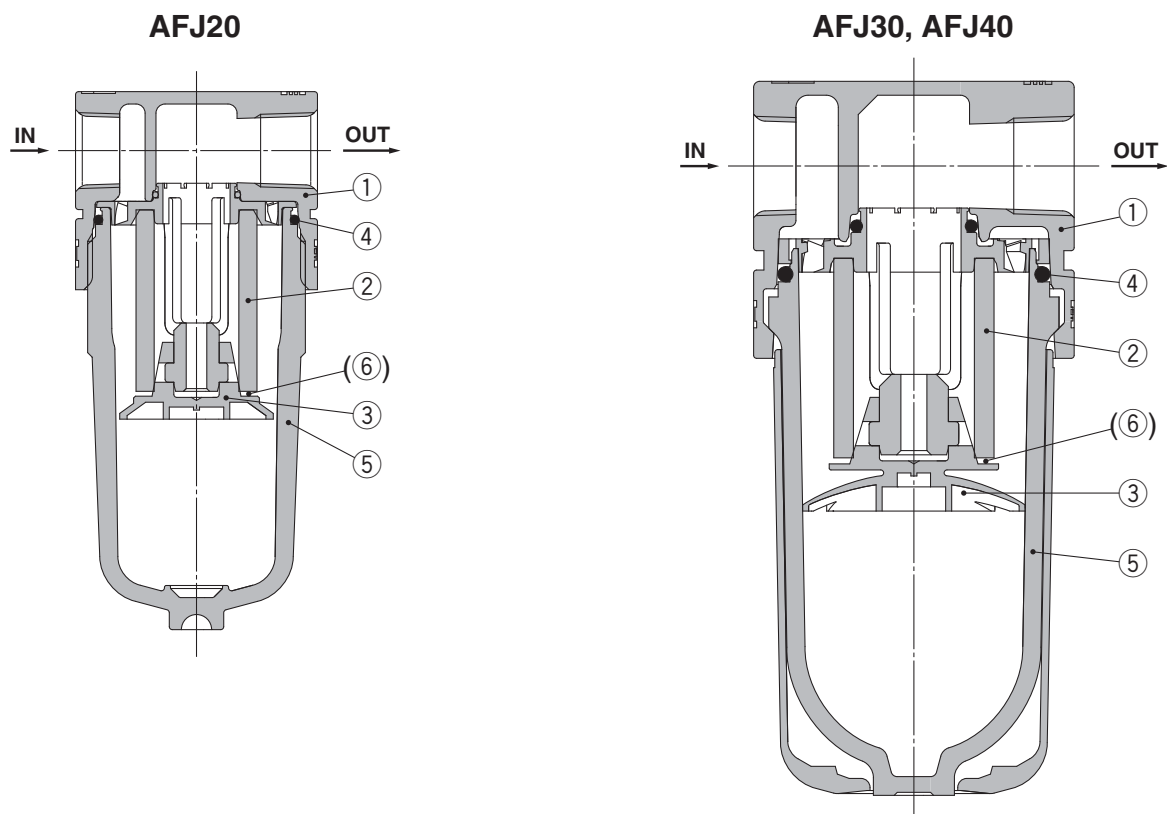
80 μm

AFJ20-02-80-T/AFJ30-03-80-T/AFJ40-04-80-T



# Series AFJ20 to AFJ40

## Construction



### Component Parts

No.	Description	Material	Model	Note
1	<b>Body</b>	Aluminium die-cast	AFJ20 to AFJ40	White

### Replacement Parts

No.	Description	Material	Part number			
			AFJ20	AFJ30	AFJ40	
2	<b>Filter element</b>	5 µm	Non-woven fabric	AF20P-060S	AF30P-060S	AF40P-060S
		40 µm	PA	AF22P-820S	AF32P-820S	AF42P-820S
		80 µm	PA	AF22P-830S	AF32P-830S	AF42P-830S
3	<b>Baffle</b>	PBT	AF22P-040S	AF32P-040S	AF42P-040S	
4	<b>Bowl O-ring</b>	NBR	C2SFP-260S	C32FP-260S	C42FP-260S	
5	<b>Bowl assembly</b> <sup>Note 1)</sup>	Polycarbonate	C2SJ	C3SJ	C4SJ	
6	<b>Seal</b> <sup>Note 2)</sup>	NBR	AW22P-070S	AW32P-070S	AW42P-070S	

Note 1) Bowl assembly includes the bowl O-ring.

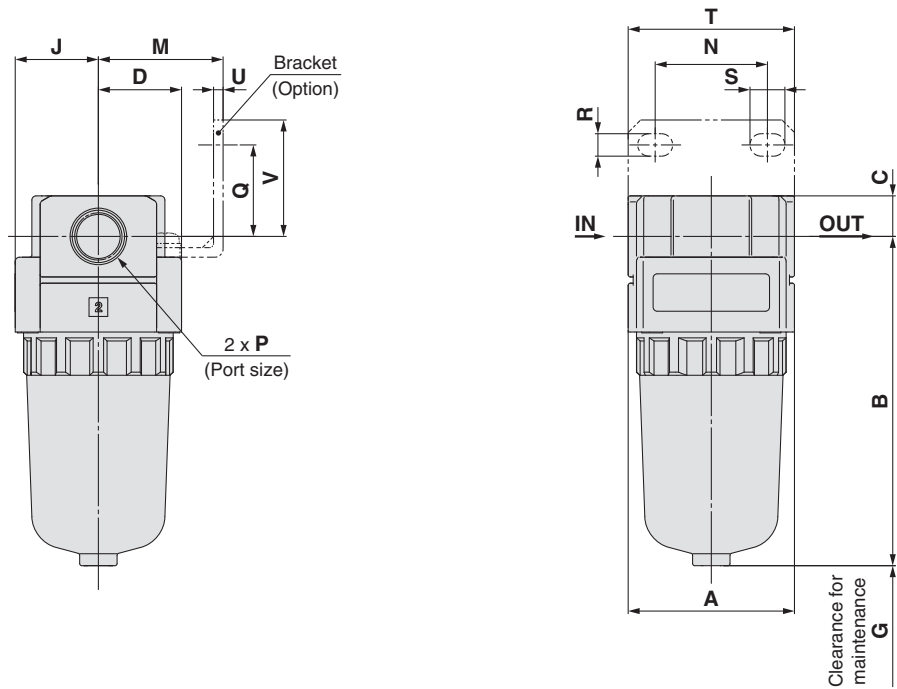
Please consult with SMC separately for psi and °F unit display specifications.

Bowl assembly for the AFJ30 and AFJ40 models comes with a bowl guard (Material: Polycarbonate).

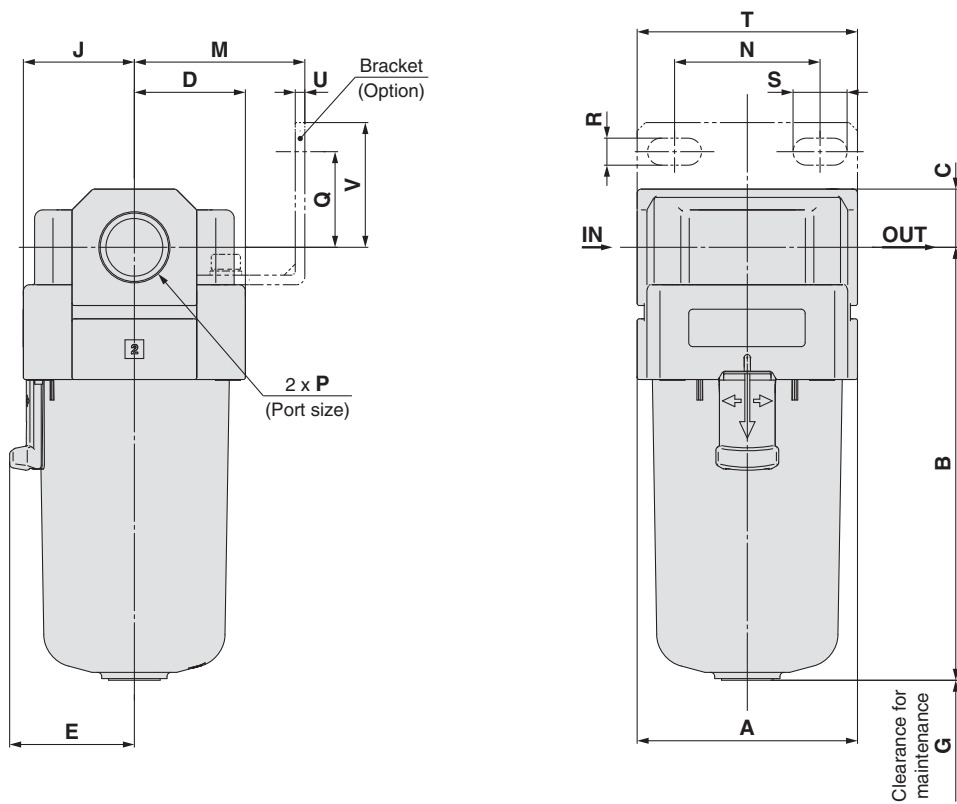
Note 2) The seal is for 40 µm and 80 µm elements.

## Dimensions

### AFJ20



### AFJ30, AFJ40



Model	Standard specifications								Optional specifications							
	P	A	B	C	D	E	G	J	Bracket mount							
									M	N	Q	R	S	T	U	V
<b>AFJ20</b>	1/8, 1/4	40	79.2	9.8	20	—	25	20	30	27	22	5.4	8.4	40	2.3	28
<b>AFJ30</b>	1/4, 3/8	53	104.1	14	26.7	30	35	26.7	41	35	23	6.5	13	53	2.3	30
<b>AFJ40</b>	1/4, 3/8, 1/2	70	136.1	18	35.4	38.4	40	35.4	50	52	26	8.5	12.5	70	2.3	35



# Series AFJ Specific Product Precautions 1

Be sure to read this before handling.  
Refer to the back cover for Safety Instructions.

## Design / Selection

### Warning

1. The standard bowl for the vacuum filter is made of polycarbonate. Do not use in an environment where they are exposed to or come in contact with organic solvents, chemicals, cutting oil, synthetic oil, alkali, and thread lock solutions.

Effects of atmosphere of organic solvents and chemicals, and where these elements are likely to adhere to the equipment.

Chemical data for substances causing degradation (Reference)

Type	Chemical name	Application examples	Material	
			Polycarbonate	Nylon
Acid	Hydrochloric acid Sulfuric acid, Phosphoric acid Chromic acid	Acid washing liquid for metals	△	×
Alkaline	Sodium hydroxide (Caustic soda) Potash Calcium hydroxide (Slack lime) Ammonia water Carbonate of soda	Degreasing of metals Industrial salts Water-soluble cutting oil	×	○
Inorganic salts	Sodium sulfide Sulfate of potash Sulfate of soda	—	×	△
Chlorine solvents	Carbon tetrachloride Chloroform Ethylene chloride Methylene chloride	Cleansing liquid for metals Printing ink Dilution	×	△
Aromatic series	Benzene Toluene Paint thinner	Coatings Dry cleaning	×	△
Ketone	Acetone Methyl ethyl ketone Cyclohexane	Photographic film Dry cleaning Textile industries	×	×
Alcohol	Ethyl alcohol IPA Methyl alcohol	Antifreeze Adhesives	△	×
Oil	Gasoline Kerosene	—	×	○
Ester	Phthalic acid dimethyl Phthalic acid diethyl Acetic acid	Synthetic oil Anti-rust additives	×	○
Ether	Methyl ether Ethyl ether	Brake oil additives	×	○
Amino	Methyl amino	Cutting oil Brake oil additives Rubber accelerator	×	×
Others	Thread-lock fluid Sea water Leak tester	—	×	△

○: Essentially safe △: Some effects may occur. ×: Effects will occur.

2. Do not use the product under pressure except momentary pressure (0.5 MPa or less) such as pressure release.
3. Avoid use exposed to direct sunlight.
4. Oil included in the compressed air cannot be separated.
5. If a more powerful moisture separator of moist is necessary, the vacuum drain separator AMJ series is recommended.
6. Do not disassemble the product or make any modifications, including additional machining.

It may cause human injury and/or an accident.

## Maintenance

### Warning

1. Replace the element every 2 years or when the pressure drop becomes 20 kPa, whichever comes first, to prevent damage to the element.
2. Perform periodic inspection, cleaning and replacement of the filter element.
3. When a filter element is used repeatedly, clean it with air blow or wash it with a neutral detergent. (For 40 μm, For 80 μm) Check the condition of the element and replace the element with a new one when the specifications are not satisfied.
4. Filter element may peel off the mesh. Do not apply excessive force to the mesh.
5. Drainage should be discharged before it reaches the upper limit. If drainage flows out to the outlet side, it can cause malfunction.

Furthermore, when drainage is to be discharged or the element replaced, first confirm that all equipment etc is stopped, and return the interior of the bowl to atmospheric pressure before proceeding.

## Mounting / Adjustment

### Caution

1. When the bowl is installed on the AFJ30 or AFJ40, install it so that the lock button lines up to the groove of the front (or the back) of the body to avoid drop or damage of the bowl.



2. The products must be installed vertically with the bowl downward.

There should be adequate space for mounting and removing of the bowl. Refer to the Dimensions section of each part for necessary space.



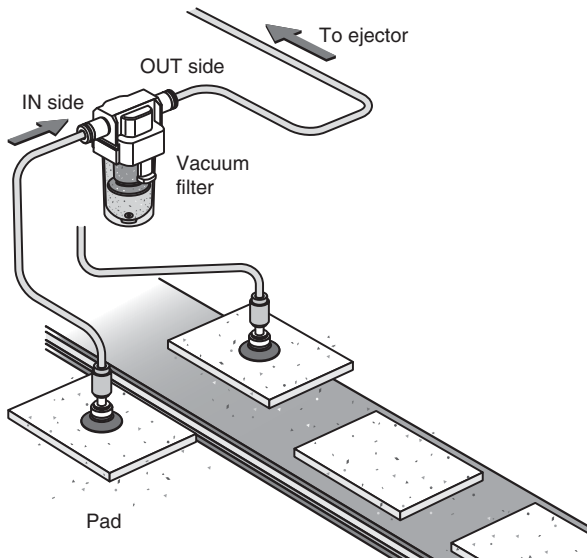
# Series AFJ Specific Product Precautions 2

Be sure to read this before handling.  
Refer to the back cover for Safety Instructions.

## Mounting / Adjustment

### ⚠ Caution

3. When piping is being installed, connect IN for work side and OUT for ejector. Incorrect connections may cause malfunction.



### 4. 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.

## Piping

### ⚠ Warning

1. To screw a piping material into a component, tighten with the recommended tightening torque while holding the female thread side. If the tightening torque is not enough, looseness and seal failure can occur. On the other hand, excess tightening torque can cause damage to the threads. Furthermore, tightening without holding the female thread side can cause damage due to the excess force that is applied directly to the piping bracket.

#### Recommended Tightening Torque

Connection thread	Proper tightening torque [N·m]
1/8	7 to 9
1/4	12 to 14
3/8	22 to 24
1/2	28 to 30

2. Before using an SMC fitting and S coupler, please refer to "Tightening the threaded portion of the connection thread" of the Fittings & Tubing Precautions.
3. Piping materials without flexibility such as steel tube piping, are prone to be effected by excess moment load and vibration from the piping side. Use flexible tubing in between to avoid such an effect.

### ⚠ Caution

#### 1. Preparation before piping

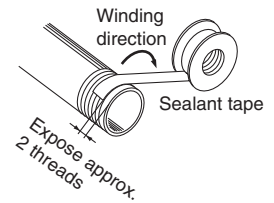
Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

## Piping

### ⚠ Caution

#### 2. Wrapping of sealant tape

When screwing piping or fittings into ports, ensure that chips from the pipe threads or sealing material do not enter the valve. Also, if sealant tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.



#### 3. Piping to products

When piping to a product, refer to the Operation Manual to avoid mistakes regarding the IN/OUT port.

## Air Supply

### ⚠ Warning

#### 1. Type of fluids

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

### ⚠ Caution

#### 1. Ensure that the fluid and ambient temperature are within the specified range.

When using at low temperatures, drain or moisture could solidify or freeze, causing damage to the seals and equipment malfunction. Therefore, take appropriate measures to prevent freezing.

## Operating Environment

### ⚠ Warning

#### 1. Do not use in an atmosphere having corrosive gases, chemicals, sea water, water, water vapour, or where there is direct contact with any of these.

Refer to each drawing on the material of the AFJ.

2. Do not expose the product to direct sunlight for an extended period of time.
3. Do not use in a place subject to heavy vibration and/or shock.
4. Do not mount the product in locations where it is exposed to radiant heat.

## Maintenance

### ⚠ Warning

#### 1. Perform periodical inspections to detect any cracks, scratches, or other deterioration of the transparent resin bowl.




Replace with a new bowl when any kind of deterioration is found. Otherwise, damage may occur.

#### 2. Perform periodical inspections to detect dirt on the transparent resin bowl.

When you find dirt on the bowl, clean with a mild household cleanser. Do not use other cleaning agents. Otherwise, this can cause damage.

## 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.

- \*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.  
ISO 4413: Hydraulic fluid power – General rules relating to systems.  
IEC 60204-1: Safety of machinery – Electrical equipment of machines.  
(Part 1: General requirements)  
ISO 10218-1: Manipulating industrial robots - Safety.  
etc.

### 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 catalogue 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 assembly, operation and maintenance of machines or equipment including our products must 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 falling 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 catalogue.
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.

## Limited warranty and Disclaimer/ Compliance Requirements

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

Read and accept them before using the product.

### 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 catalogue for the particular products.

#### \*2) 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

#### 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.

### 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.

## Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.