

# Vacuum Filter

## AFJ Series

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 [ $\mu\text{m}$ ]
		1/8	1/4	3/8	1/2	
AFJ20	Max. 180	●	●	●	●	5, 40, 80
AFJ30	Max. 380	●	●	●	●	5, 40, 80
AFJ40	Max. 660	●	●	●	●	5, 40, 80

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



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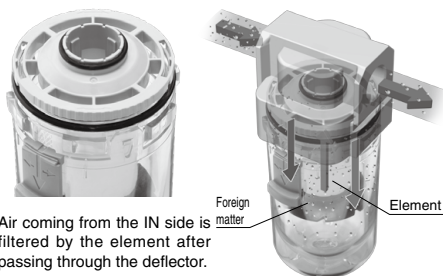
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Related

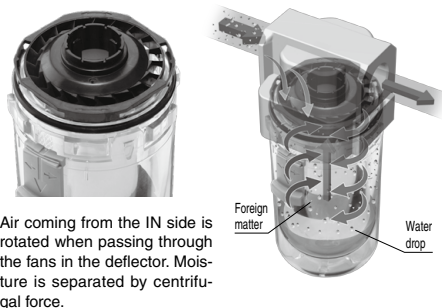
Products

## 2 types are available for different applications.

### Large flow type



### Water drop removal type +



### 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.



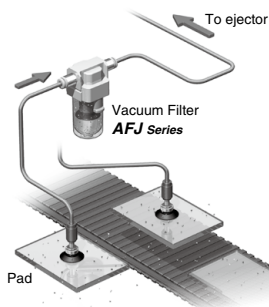
### Metal related corrosion does not occur.

Resin body does not rust.

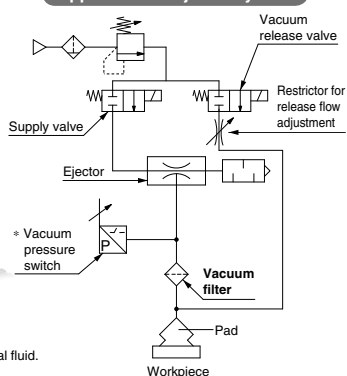


### Application Examples

- 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

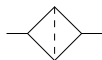


\* If water droplets enter to the vacuum pressure switch, use a vacuum pressure switch for general fluid.  
For handling, refer to Common Precautions and the Operation Manual.

# Vacuum Filter

# AFJ20 to AFJ40

Symbol  
Vacuum filter



AFJ20



AFJ30



AFJ40

## How to Order

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

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	Nil	Rc	●	●	●			
		N	NPT	●	●	●			
		F	G	●	●	●			
		+		●	●	●			
③	Port size	01	1/8	●	—	—			
		02	1/4	●	●	●			
		03	3/8	—	●	●			
		04	1/2	—	—	●			
+									
④	Option	a	Mounting	Nil	Without mounting option	●	●	●	
		B	Note 1)	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	Note 2)	Nil	Polycarbonate bowl	●	●	●
		6	Nylon bowl	●	●	●			
		+							
		e	Flow direction	Nil	Flow direction: Left to right	●	●	●	
	R	Flow direction: Right to left	●	●	●				
	+								
	f	Pressure unit	Nil	Name plate and caution plate in imperial units: MPa/°C		●	●	●	
	Z	Note 3)	Name plate and caution plate in imperial units: psi/°F		○	Note 4)	○	Note 4)	○

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

Note 2) Refer to Chemical data on page 786 for chemical resistance of the bowl.

Note 3) For pipe thread type NPT. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)

Note 4) ○: For pipe thread type NPT only

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# AFJ20 to AFJ40 Series

## 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						
Vacuum release pressure			0.5 MPa or less <sup>Note 6)</sup>						
Nominal filtration rating <sup>Note 1) to Note 4)</sup>			5 μm, 40 μm, 80 μm						
Drain capacity [cm³]			8		25		45		
Bowl material			Polycarbonate						
Bowl guard			—		Standard (Polycarbonate)				
Recommended flow rate <sup>Note 5)</sup> [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 fiber 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.

Note 6) Do not use the product under pressure except momentary pressure, such as pressure release.

## Options/Part No.

Model	AFJ20	AFJ30	AFJ40
Bracket assembly <sup>Note)</sup>	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

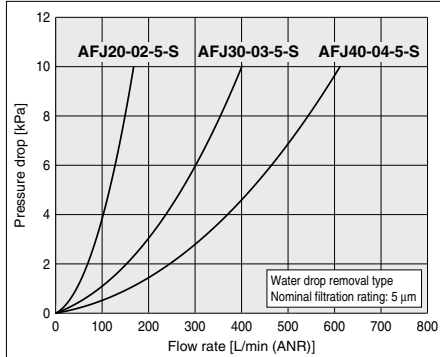
Note) Bowl assembly includes the bowl O-ring.

## Flow Rate Characteristics (Representative values)

### Water Drop Removal Type

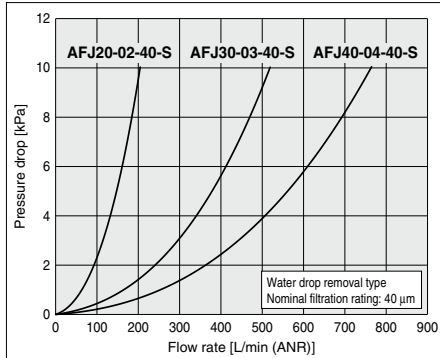
5  $\mu\text{m}$

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



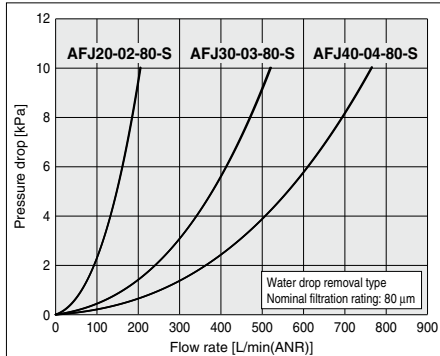
40  $\mu\text{m}$

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



80  $\mu\text{m}$

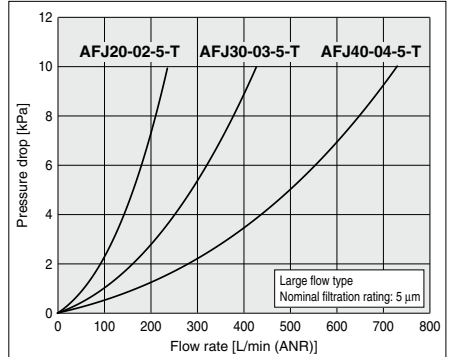
AFJ20-02-80-S/AFJ30-03-80-S/AFJ40-04-80-S



### Large Flow Type

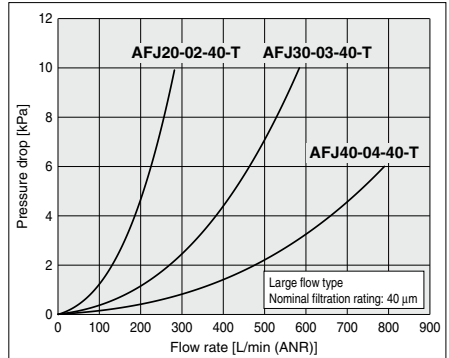
5  $\mu\text{m}$

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



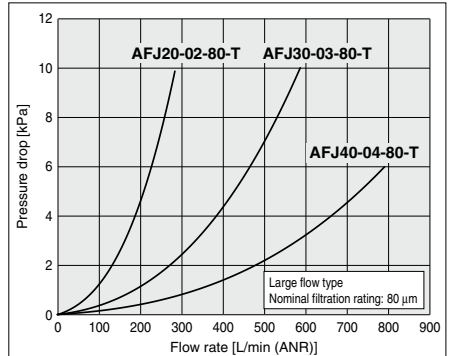
40  $\mu\text{m}$

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



80  $\mu\text{m}$

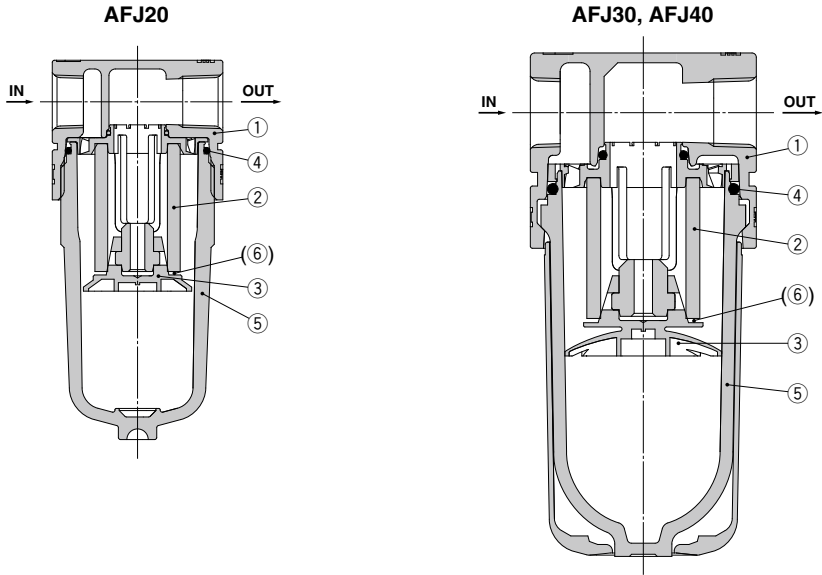
AFJ20-02-80-T/AFJ30-03-80-T/AFJ40-04-80-T



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# AFJ20 to AFJ40 Series

## Construction



### Component Parts

No.	Description	Material	Model	Note
1	Body	Aluminum die-cast	AFJ20 to AFJ40	White

### Replacement Parts

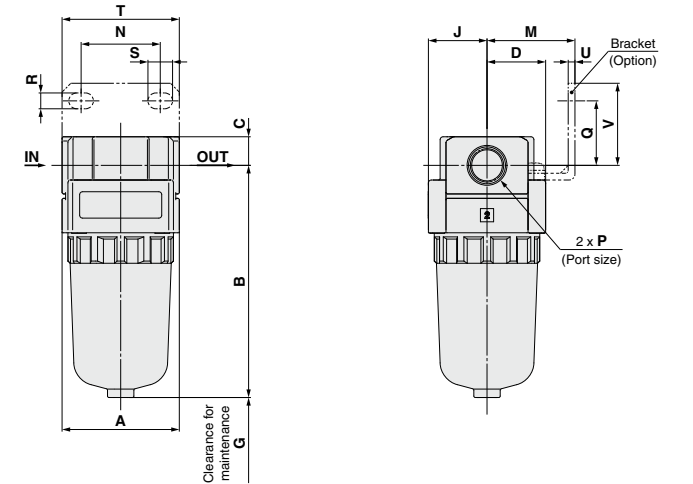
No.	Description	Material	Part number		
			AFJ20	AFJ30	AFJ40
2	Filter element	5 µm	AF20P-060S	AF30P-060S	AF40P-060S
		40 µm	AF22P-820S	AF32P-820S	AF42P-820S
		80 µm	AF22P-830S	AF32P-830S	AF42P-830S
3	Baffle	PBT	AF22P-040S	AF32P-040S	AF42P-040S
4	Bowl O-ring	NBR	C2SFP-260S	C32FP-260S	C42FP-260S
5	Bowl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

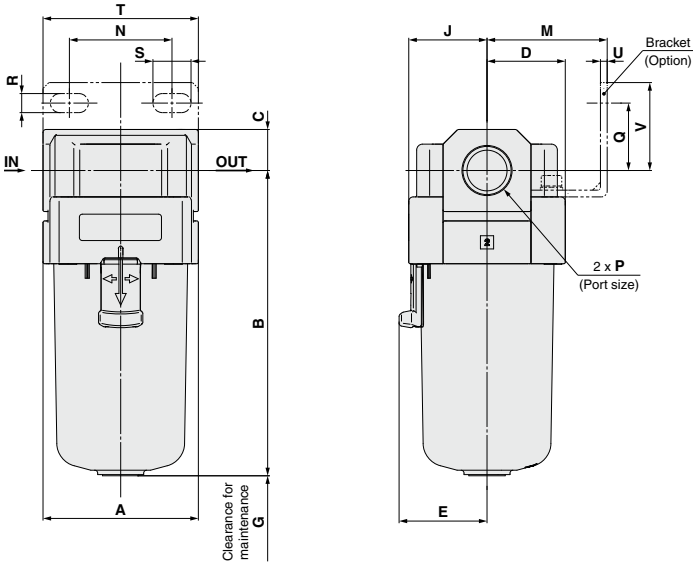
Note 2) The seal is for 40 µm and 80 µm elements.

**Dimensions**

**AFJ20**



**AFJ30, AFJ40**



Model	Standard specifications								Optional specifications							
	P	A	B	C	D	E	G	J	Bracket mount							
AFJ20	1/8, 1/4	40	79.2	9.8	20	—	25	20	M	N	Q	R	S	T	U	V
AFJ30	1/4, 3/8	53	104.1	14	26.7	30	35	26.7	41	35	23	6.5	13	53	2.3	30
AFJ40	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

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## AFJ Series

# Specific Product Precautions 1

Be sure to read this before handling the products.  
Refer to back page 50 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 (Cautic 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.

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### 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.





## AFJ Series

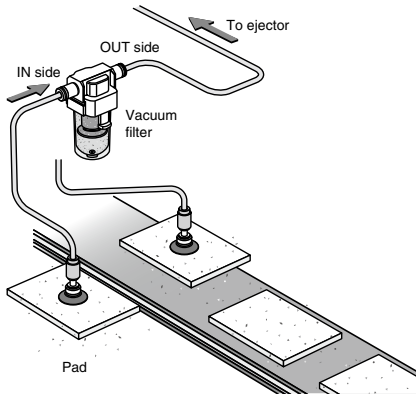
# Specific Product Precautions 2

Be sure to read this before handling the products.  
Refer to back page 50 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

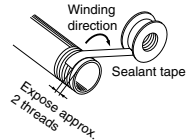
Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

### Piping

#### ⚠ Caution

##### 2. Winding 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. For compressed air quality, refer to Air Preparation Equipment Selection Guide (Best Pneumatics No. 6).

### Operating Environment

#### ⚠ Warning

1. Do not use in an atmosphere having corrosive gases, chemicals, sea water, water, water vapor, 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.

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