CKD

Anti-bacterial Pre-Filter

SFC□10-FP2 Series

INSTRUCTION MANUAL

SM-A61746-A

- Read this Instruction Manual before using the product.
- Read the safety notes carefully.
- Keep this Instruction Manual in a safe and convenient place for future reference.

CKD Corporation

PREFACE

Thank you for purchasing CKD's **" SFC□10-FP2 Series" Anti-bacterial Pre-Filter**.
This Instruction Manual contains basic matters such as installation and usage instructions in order to ensure optimal performance of the product. Please read this Instruction Manual thoroughly and use the product properly.
Keep this Instruction Manual in a safe place and be careful not to lose it.

Product specifications and appearances presented in this Instruction Manual are subject to change without notice.

- The product is intended for users who have basic knowledge about materials, piping, electricity, and mechanisms of pneumatic components. CKD shall not be responsible for accidents caused by persons who selected or used the product without knowledge or sufficient training.
- Since there are a wide variety of customer applications, it is impossible for CKD to be aware of all of them. Depending on the application or usage, the product may not be able to exercise its full performance or an accident may occur due to fluid, piping, or other conditions. It is the responsibility of the customer to check the product specifications and decide how the product shall be used in accordance with the application and usage.

SAFETY INFORMATION

When designing and manufacturing any device incorporating the product, the manufacturer has an obligation to ensure that the device is safe. To that end, make sure that the safety of the machine mechanism of the device, the pneumatic or water control circuit, and the electric system that controls such mechanism is ensured.

To ensure the safety of device design and control, observe organization standards, relevant laws and regulations, which include the following:

ISO 4414, JIS B 8370, JFPS 2008 (the latest edition of each standard), the High Pressure Gas Safety Act, the Industrial Safety and Health Act, other safety rules, organization standards, relevant laws and regulations

In order to use our products safely, it is important to select, use, handle, and maintain the products properly.
Observe the warnings and precautions described in this Instruction Manual to ensure device safety.

Although various safety measures have been adopted in the product, customer's improper handling may lead to an accident. To avoid this:

Thoroughly read and understand this Instruction Manual before using the product.

To explicitly indicate the severity and likelihood of a potential harm or damage, precautions are classified into three categories: "DANGER", "WARNING", and "CAUTION".

⚠ **DANGER**	Indicates an imminent hazard. Improper handling will cause death or serious injury to people.
⚠ **WARNING**	Indicates a potential hazard. Improper handling may cause death or serious injury to people.
⚠ **CAUTION**	Indicates a potential hazard. Improper handling may cause injury to people or damage to property.

Precautions classified as "CAUTION" may still lead to serious results depending on the situation.
All precautions are equally important and must be observed.

Other general precautions and tips on using the product are indicated by the following icon.

	Indicates general precautions and tips on using the product.

Precautions on Product Use

⚠ WARNING

The product must be handled by a qualified person who has extensive knowledge and experience.

The product is designed and manufactured as a device or part for general industrial machinery.

Use the product within the specifications.

The product must not be used beyond its specifications. Also, the product must not be modified and additional work on the product must not be performed.
The product is intended for use in devices or parts for general industrial machinery. It is not intended for use outdoors or in the conditions or environment listed below.

- In applications for nuclear power, railroad system, aviation, ship, vehicle, medical equipment, and equipment that directly touches beverage or food.
- For special applications that require safety including amusement equipment, emergency shut-off circuit, press machine, brake circuit, and safety measures.
- For applications where life or properties may be adversely affected and special safety measures are required.

(Exception is made if the customer consults with CKD prior to use and understands the specifications of the product. However, even in that case, safety measures must be taken to avoid danger in case of a possible failure.)

Do not handle the product or remove pipes and devices until confirming safety.

- Inspect and service the machine and devices after confirming the safety of the entire system. Also, turn off the energy source (air supply or water supply) and power to the relevant facility. Release compressed air and fluid from the system and use extreme care to avoid water or electric leakage.
- Since there may be hot or live parts even after operation has stopped, use extreme care when handling the product or removing pipes and devices.
- When starting or restarting a machine or device that incorporates pneumatic components, make sure that a safety measure (such as a pop-out prevention mechanism) is in place and system safety is secured.

Although the product is not intended for use in applications or equipment that directly touches beverage or food, FP2 Series products can be used for such applications as long as the product is used within its specifications.

CONTENTS

1. PRODUCT OVERVIEW

1.1 Model Number Indication

SFC310 - 10 ( ) - X1 - FP2

- Ⓐ Model No.
- Ⓑ Port size
- Ⓒ Port thread
- Ⓓ Flow direction

Code	Description	Ⓐ Model No. SFC310	SFC410	SFC810
Ⓑ Port size				
8	1/4	●	●	
10	3/8	●	●	
15	1/2		●	
20	3/4			●
25	1			●
Ⓒ Port thread				
Blank	Rc thread	●	●	●
N	NPT thread	●	●	●
G	G thread	●	●	●
Ⓓ Flow direction				
Blank	Standard flow (left → right)	●	●	●
X1	Reverse flow (right → left)	●	●	●

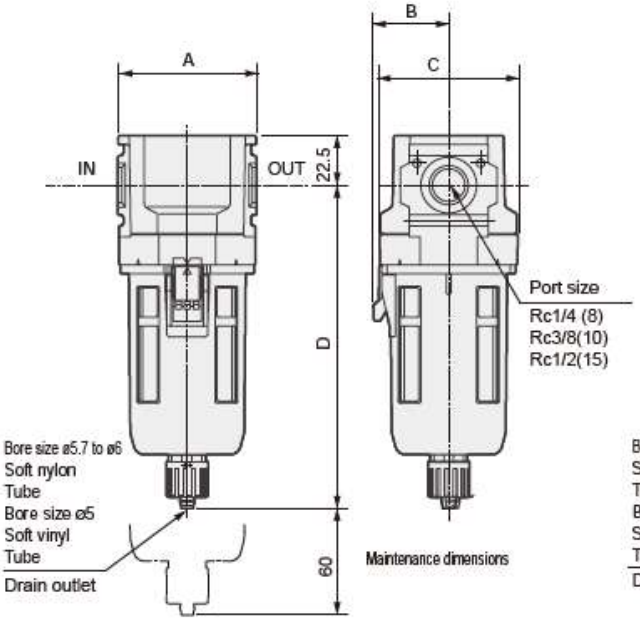
1.2 Specifications

Item		SFC310	SFC410	SFC810
Working fluid		Compressed air, nitrogen gas (N_2) and carbon dioxide (CO_2)		
Working pressure range	MPa	0.1 to 1.0		
Proof pressure	MPa	1.5		
Ambient/fluid temperatures	°C	5 to 45		
Filtration rating	μm	5 (removal efficiency 90% and over)		
Max. processing flow rate *1	L/min (ANR)	360	700	2200
Port size	Rc, NPT, G	1/4, 3/8	1/4, 3/8, 1/2	3/4, 1
Weight	Kg	0.28	0.52	1.16
Standard accessories		Maintenance label (included)		
Element replacement		1 year (6000 hours) or pressure drop 0.1MPa		

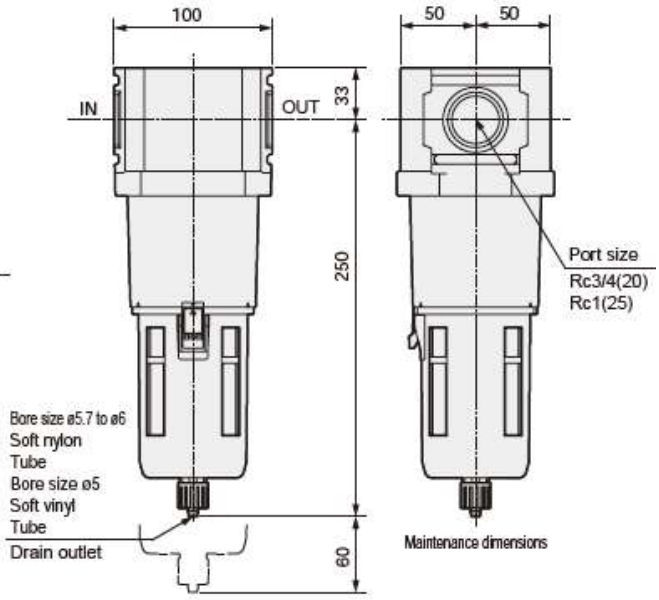
*1: Use within the max. processing flow rate. This is the value when primary pressure is 0.7 MPa.

1.3 Dimensions

● SFC310, SFC410



● SFC810



Model No.	A	B	C	D
SFC310	63	34.5	63	148
SFC410	80	42.5	79	171

2. INSTALLATION

2.1 Environment

⚠ WARNING

Do not use the product in an atmosphere where sodium hypochlorite, synthetic oil, organic solvent, chemicals, cutting oil, screw lock agent, leak detection agent, hot water, or other hazardous factors are present or in a place where they may adhere to the product.

Deterioration may occur since the plastic bowl is made of polyamide.

Avoid using the product if compressed air contains chemicals, in an atmosphere where chemicals are present, or in a place where chemicals may adhere.

When used in the above environment, the plastic bowl may become damaged and this may lead to accidents.

For more information about the chemical resistance of the plastic bowl, refer to the table "Chemical resistance of plastic".

Prevent the generated ozone from passing through the filter.

Deterioration of the filter element may occur. Use extreme care when using the product in combination with equipment which generates ozone (such as an ionizer).

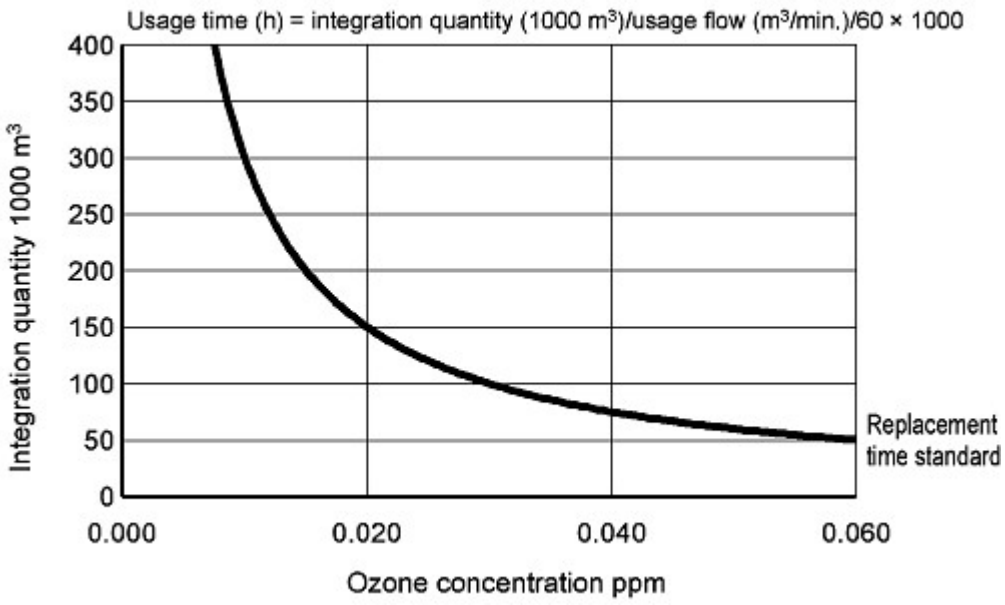
If the hollow fiber membrane in the bacteria removing filter suffers oxidative degradation from ozone or ultraviolet in the fluid, it may be damaged and allow flow over to the secondary side. Implement periodic inspections and exchange.

Consult the graph below for standard replacement times.

Relation between ozone concentration

and integration quantity

Filter element replacement time

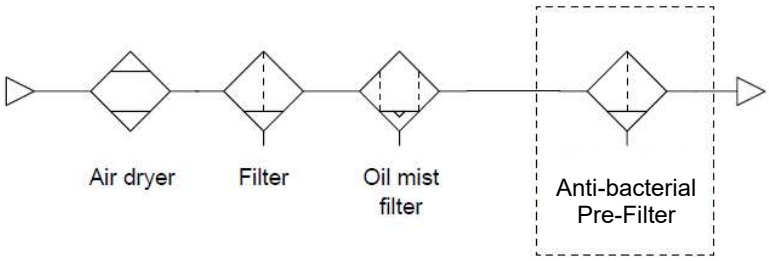


⚠ CAUTION

Observe the following precautions regarding the ambient environment.

- Do not use the product where there is direct irradiation of ultraviolet rays.
- Avoid installing the product where it is exposed to direct sunlight.
- Avoid installing the product where it is subject to vibrations and shocks.

Install an air dryer, an air filter, and an oil mist filter on the primary side to remove moisture and oil.



Make sure that substances such as chlorine do not become mixed with the compressed air when using a water lubricated type compressor circuit.

Install an air dryer and a drain separator before the air filter if there is a large amount of drainage.

The odor removal filter does not remove drainage. An excessive amount of drainage from the compressor may cause the air to become hot and highly humid and this may lead to lower durability or corrosion of the product.

Do not use the product in an environment where:

- Ambient temperature is outside the range of 5°C to 45°C
- Air can freeze
- Water drop or cutting oil can splash onto the product
- Condensation may occur due to high humidity and temperature change
- Sea breeze or seawater can splash onto the product
- Atmosphere contains corrosive gas, fluids, or chemicals
- Atmosphere contains a lot of dust
- Atmosphere contains spatter
- It is exposed to direct sunlight, rain, wind, or water
- There is a heat source in the surrounding area and heat is radiated
- Ozone is produced

Chemical resistance of plastic

Type of chemicals	Classification	Major chemical products	Example of general use	Nylon bowl
Inorganic chemicals	Acid	Sodium hypochlorite, hydrochloric acid, sulfuric acid, hydrofluoric acid, phosphoric acid, and chromic acid	Pickling solution for metal, acidic degreasing solution, and film treatment solution	N
	Alkali	Alkaline substances such as caustic soda, caustic potash, slaked lime, ammonia water, and sodium carbonate	Alkaline degreasing solution for metal, water-soluble cutting oil agent, and leak detection agent	Y
	Inorganic salt	Sodium sulfide, sodium nitrate, potassium dichromate, and sodium sulfate		Y
Organic chemicals	Aromatic hydrocarbon	Benzene, toluene, xylene, ethylbenzene, and styrene	Included in paint thinner (benzene, toluene, and xylene)	N
	Chlorinated aliphatic hydrocarbon	Methyl chloride, ethylene chloride, methylene chloride, acetylene chloride, chloroform, trichlene, berklene, and carbon tetrachloride	Organic solvent cleaning solution for metal (trichlene, berklene, carbon tetrachloride, etc.)	Y
	Chlorinated aromatic hydrocarbon	Chloro-benzene, dichloro-benzene, and benzene hexachloride (B, H, C)	Agricultural chemicals	Y
	Petroleum composition	Solvent naphtha, gasoline, and kerosene		Y
	Alcohol	Methyl alcohol, ethyl alcohol, cyclohexanol, and benzyl alcohol	Anti-freezing agent and leak detection agent	N
	Phenol	Carbolic acid, cresol, and naphthol	Antiseptic solution	N
	Ether	Methyl ether, ethyl methyl ether, and ethyl ether	Additive for brake oil	Y
	Ketone	Acetone, methyl ethyl ketone, Cyclohexanone, and acetophenone		N
	Carboxylic acid	Formic acid, acetic acid, butyric acid, acrylic acid, oxalic acid, and phthalic acid	Stain, aluminum treatment agent (oxalic acid), base material for paint (phthalic acid), and leak detection agent	N
	Ester	Dimethyl phthalate (DMP), diethyl phthalate (DEP), dibutyl phthalate (DBP), and dioctyl phthalate (DOP)	Additive for lubrication oil, synthetic oil, and rust preventive oil Plasticizer for synthetic resins	Y
	Hydroxy acid	Glycolic acid, lactic acid, malic acid, citric acid, and tartaric acid		N
	Nitro compound	Nitromethane, nitroethane, nitroethylene, and nitrobenzene		Y
	Amine	Methylamine, dimethylamine, ethylamine, aniline, and acetanilide	Additive for brake oil	N
	Nitrile	Acetonitrile, acrylonitrile, benzonitrile, and acetisonitrile	Raw material for nitrile rubber	Y

Y: Resistant; N: Not resistant (Plastic will break.)

2.2 Unpacking

⚠ CAUTION

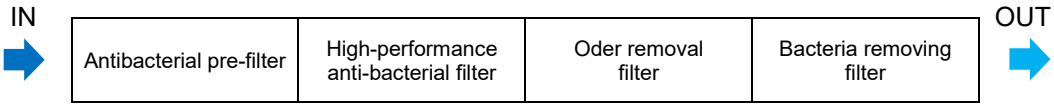
Do not open the packing of the product until just before piping to prevent foreign matters from entering the product.

- Check that the model number ordered and the model number indicated on the product are the same.
- Check the exterior of the product for any damage.

2.3 Mounting

■ Filter installation order

Install the filters in the order shown below.



2.4 Piping

⚠ WARNING

Do not apply pipe loads or torque to the body and the pipes.

<Piping load torque>

Series	SFC310	SFC410	SFC810
Max. torque (N·m)	50	50	100

⚠ CAUTION

Fully flush and clean the pipes before use.
Residual dust or foreign matter in a pipe may cause operation fault.

Connect the pipes correctly according to the direction of flow by checking the direction of the arrow.

Prevent foreign matters from entering the pipes while piping and connecting the fitting.
Be careful not to allow cutting chips from the piping screw and seal material from entering the pipes while piping and connecting the fitting.
Residual dust or foreign matter in a pipe may cause lower performance of the product.

Tighten the pipes with the appropriate tightening torque.

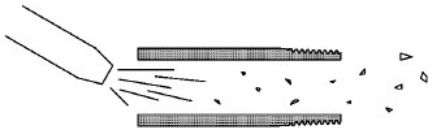
Do not subject the body and the pipes to a bending moment that is due to pipe loads.

Firmly secure and install the product with the specified bracket, a stand, or a pipe support.

Do not apply high pressure suddenly when supplying compressed air for the first time after connecting the pipes/tubes.
Sudden introduction of highly-pressurized air may cause the tubes to become disconnected and jump around and an accident may occur.

2.4.1 Pipe cleaning

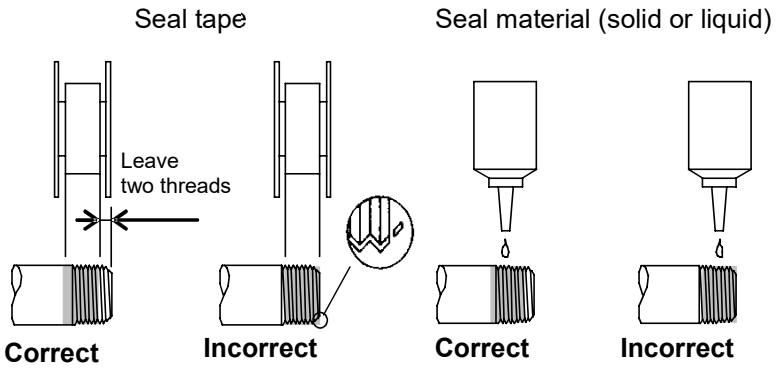
Before piping, blow air into the pipes to clean the interior and to remove cutting chips and foreign matters.



2.4.2 Seal material

Apply a seal tape or seal material to the screw threads leaving two or more threads at the pipe end uncovered or uncoated. If the pipe end is fully covered or coated, a shred of seal tape or residue of seal material may enter inside of the pipes or device and cause a failure.

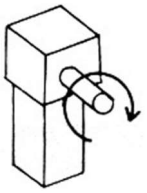
When using a seal tape, wind it around the screw threads in the direction opposite from the screw threads and press it down with your fingers to attach it firmly.
When using a liquid seal material, be careful not to apply it to resin parts. The resin parts can become damaged and this may lead to a failure or malfunction.
Also, do not apply seal material to the internal threads.



2.4.3 Pipe screwing torqueeal material

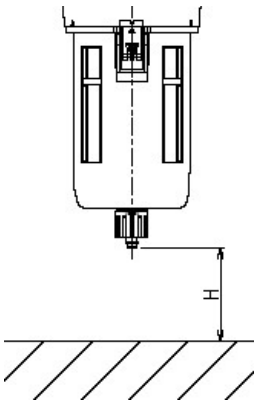
Do not apply excessive torque to the body and the pipes when piping.

Series	SFC310	SFC410	SFC810
Max. torque (N·m)	30	30	70



2.4.4 Maintenance space

Secure sufficient space under the bowl for taking out parts when disassembling and cleaning.



Series	SFC310	SFC410	SFC810
Maintenance space (H)	At least 60	At least 60	At least 60

3. USAGE

⚠ WARNING

Use the product within the specifications.

Ventilate sufficiently when using the product with nitrogen gas (N2) or carbon dioxide (CO2).

Do not use the product for medical purposes or in any equipment or circuit that concerns human life.

The product is designed for industrial use.

⚠ CAUTION

Check the working circuit and the working fluid.

Do not subject the product to vibration, impact, or other external forces such as those caused by swinging tubes.

Use the product within the maximum processing flow rate.

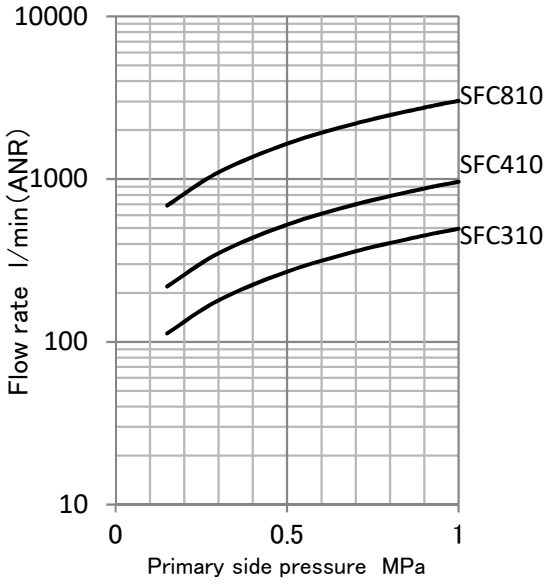
Use the product within the maximum working pressure.

Use the product so that the pressure difference between the IN side and the OUT side does not exceed 0.1 MPa.

- This product is manufactured and packaged in an environment where particles are managed and monitored but suppression of bacterial adhesion and generation is not considered.
- The product itself is not subjected to any special sterilization/bacteria-removing treatment (such as autoclave sterilization).

■ Maximum processing flow rate

Make sure the flow rate does not exceed the values shown in the graph below.



4. MAINTENANCE AND INSPECTION

⚠ WARNING

Stop supplying the pressure and make sure that there is no residual pressure before maintenance.

Perform periodic inspections at least once every six months to detect cracks, scratches, and other deteriorations on the plastic bowl.
Cracks, scratches, or other deteriorations may cause damage. Replace the bowl with a new plastic bowl or a product.

Check for dirt on the plastic bowl periodically.
If the bowl is dirty, replace the bowl.
When cleaning, remove dirt using a diluted household detergent and then rinse well with clean water to prevent damage to the product.

Remove plastic bowl drain.
Components could malfunction if drainage flows into the secondary side.
The resin bowl must not be filled above the "upper drain limit" or "MAX LEVEL" markings stamped on the bowl guard.

Before removing the bowl assembly, stop supplying the compressed air, release the pressure from the bowl, and check that there is no residual pressure in the bowl.

⚠ CAUTION

Thoroughly read and understand the Instruction Manual supplied with the product before use and maintenance.

Inspect and replace the filter element periodically.
Performance degradation may occur if the filter element is clogged. Make sure your hands are clean when attaching the new element.

When replacing the element, make sure not to let bacteria, dusts, and foreign matters that have adhered on the primary side flow into the secondary side.

Do not hold the filter paper when attaching or removing the filter element.
The product may become damaged or may not be able to exercise its full performance.

Do not use alcohol to disinfect or clean the product.
Deterioration or damage of the plastic parts may occur.

Do not modify the product.

4.1 Daily Inspection

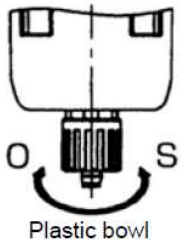
- Thoroughly read and understand this Instruction Manual before maintenance and inspection.
- Check that the product operates properly before starting use.

4.2 Periodic Inspection

- In order to use the product under optimum conditions, perform a periodic inspection every six months.
- It is recommended to check that there is no leakage from the pipes.

4.3 How to release drainage

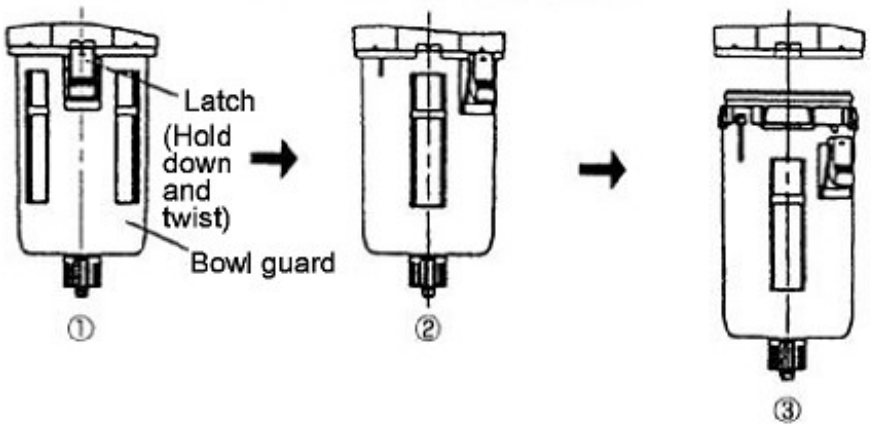
Drainage starts when the cock is turned to O side, and the discharge stops when the Tighten by hand in the S direction.



4.4 Maintenance

4.4.1 Plastic bowl

■ **Detaching the plastic bowl**



4.4.2 Element

Affix the maintenance label to the product to serve as a reminder of when to replace the element.
Replace the element with a new one after one year of use (6,000 hours) or when the pressure drop reaches 0.1 MPa.
This replacement period is for reference only. The service life of the product may be shortened depending on the condition of use and the environment.

<Replacement element>

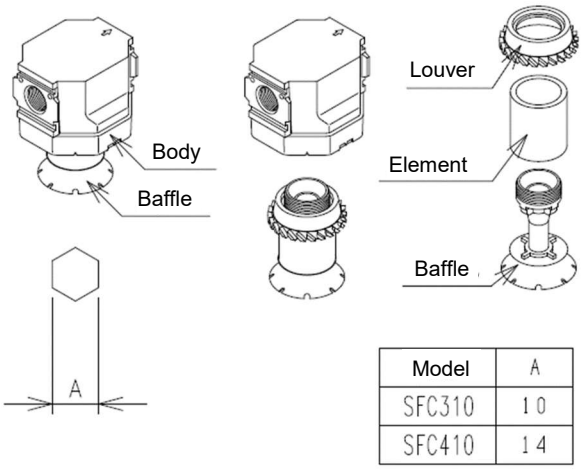
Element model No / Model	Anti-bacterial pre-filter element
SFC310	SFC310-ELEMENT
SFC410	SFC410-ELEMENT
SFC810	SFC810-ELEMENT

Washing and cleaning will not make the element reusable.

■ Removing the anti-bacterial pre-filter element

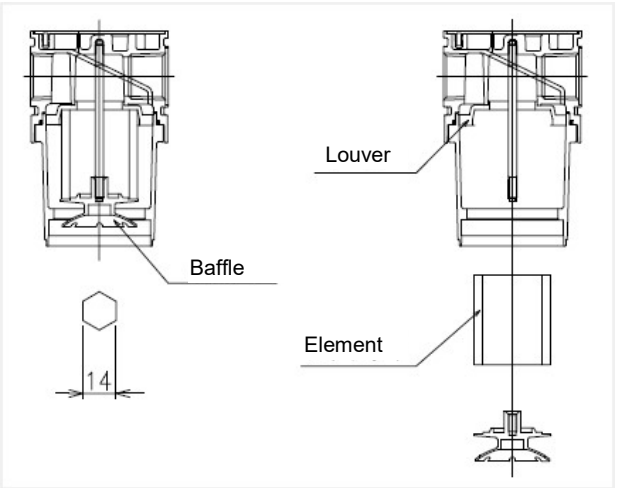
1 Turn the baffle to remove it from the body.

<SFC310,SFC410 element >



Model	A
SFC310	10
SFC410	14

<SFC810 element >



If it is difficult to turn by hand, you can also use a hex wrench to turn the hex hole at the bottom of the baffle.
The louver, element, and baffle can be disassembled by pulling out the louvers by hand.

■ Attaching the anti-bacterial pre-filter Model element

1 Follow the reverse procedure for disassembly.

2 When assembling to the body, please hold the baffle.

3 Appropriate torque when installing the baffle to the body is about 1N･m for SFC310 and 2N･m for SFC410 and 1.3N･m for SFC810.

5. TROUBLESHOOTING

5.1 Problems, Causes, and Solutions

If the product does not operate as intended, check the table below for a possible solution.

Problem	Cause	Solution
Fluid does not flow. Pressure drop is large.	Element has reached the end of its service life.	Stop supplying the compressed air, remove the bowl assembly, and replace the element.
Drainage does not discharge when drain cock is opened.	Foreign matter in the discharge port is clogged.	Stop supplying the compressed air, remove the bowl assembly, and clean or replace the bowl assembly.
Air leaks from drain port.	Drain is damaged, or drain port is clogged with foreign matters.	Stop supplying the compressed air, remove the bowl assembly, and clean the inside of the bowl. If the problem persists after cleaning, replace the bowl assembly.
Air leaks from where bowl is mounted.	There are scratches or foreign matters on O-ring for bowl sealing.	Stop supplying the compressed air, remove the bowl assembly, and clean or replace the O-ring.
	Bowl is damaged.	Stop supplying the compressed air, remove the bowl assembly, and replace the bowl assembly.

If you have any other questions or concerns, contact your nearest CKD sales office or distributor.

6. WARRANTY PROVISIONS

6.1 Warranty Conditions

■ Warranty coverage

If the product specified herein fails for reasons attributable to CKD within the warranty period specified below, CKD will promptly provide a replacement for the faulty product or a part thereof or repair the faulty product at one of CKD's facilities free of charge.
However, following failures are excluded from this warranty:

- Failure caused by handling or use of the product under conditions and in environments not conforming to those stated in the catalog, the Specifications, or the Instruction Manual.
- Failure caused by use of the product exceeding its durability (cycles, distance, time, etc.) or caused by consumable parts.
- Failure not caused by the product.
- Failure caused by use not intended for the product.
- Failure caused by modifications/alterations or repairs not carried out by CKD.
  Failure caused by reasons unforeseen at the level of technology available at the time of delivery.
- Failure caused by acts of nature and disasters beyond control of CKD.

The warranty stated herein covers only the delivered product itself. Any loss or damage induced by failure of the delivered product is excluded from this warranty

■ Confirmation of product compatibility

It is the responsibility of the customer to confirm compatibility of the product with any system, machinery, or device used by the customer.

■ Others

The terms and conditions of this warranty stipulate basic matters.
When the terms and conditions of the warranty described in individual specification drawings or the Specifications are different from those of this warranty, the specification drawings or the Specifications shall have a higher priority.

6.2 Warranty Period

The product specified herein is warranted for one 1 year from the date of delivery to the location specified by the customer.