



Operation Manual

PRODUCT NAME

AIR FILTER

MODEL / Series / Product Number

(E, N) AF800- (F, N) 12~14 (-1, 2, 6, 7, 8, 9, -※) (-D, J□, R)

(E, N) AF900- (F, N) 20 (-1, 2, 6, 7, 8, 9, -※) (-D, J□, R)

SMC Corporation

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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)^{*)}, and other safety regulations.

*) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots
etc.



Danger

Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.



Warning

Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



Caution

Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate 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 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. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.



Safety Instructions

Caution

We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries. Use in non-manufacturing industries is not covered.

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

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 catalog 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.

Precautions for Design

Warning

1. If no leakage is allowed due to the environment, it cannot be used. Or operating fluid is not air, it cannot be used.
2. The bowl material of the standard air filter is polycarbonate. Do not use in an environment where they are exposed to or come in contact with organic solvents such as thinner, acetone, alcohol and ethylene chloride, chemicals such as sulfuric acid, nitric acid and hydrochloric acid, cutting oil, synthetic oil, ester-based compressor oil, alkali, kerosene, gasoline and thread lock solutions.

Effects 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 Sulphuric 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 sulphide Sulphate of potash Sulphate of soda	—	×	△
Chlorine solvents	Carbon tetrachloride Chloroform Ethylene chloride Methylene chloride	Cleaning 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 dim ethyl 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	×	×
Other	Thread -lock fluid Seawater Leak tester	—	×	△

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

When the above factors are present, or there is some doubt, use a metal case for safety.

3. Avoid the application where charge and discharge of pressure to bowl is switched frequently. This may damage the bowl. A metal bowl is recommended in these cases.
4. Protect from ultra violet ray and radiation heat by shield.

Selection

 **Warning**

1. Grease used seals may flow to the outlet side.

Installation

 **Warning**

1. Do not drop nor apply impact during transportation or installation. This can cause damage to the product.
2. Do not install in areas of high humid or high temperature. It causes damage of the product and malfunction.
3. Connect the air filter ensuring the direction of "IN" and "OUT" for air direction or an arrow. Wrong connection may cause malfunction.
4. Install vertically so that outlet of drain would turned downward. Use with the outlet of drain turned horizontal or upward causes malfunction.
5. Make a space to provide easy access at the bottom when replacing element or draining bowl. The required space is shown on 「11. Dimensions」 (P14).
6. When attaching the bowl, ensure the lock button position aligns with the matchmark in the spacer on the front (or back). Misalignment may cause the bowl to detach or damage.

Piping

 **Warning**

1. Blow out or clean piping before piping to eliminate swarf, cutting oil, solid foreign material. Contamination of piping may cause damage or malfunction.
2. When installing piping, avoid chips and sealing materials from piping screws entering the inside of equipment. Or malfunction may occur. When use sealing tapes, leave 1 thread of the end of thread exposed.
3. Hold the female screw side and screw in piping with recommended tightening torque. Insufficient tightening torque lead to cause loose piping or sealing failure. Excessive torque may lead to cause screw breakage. Tightening without holding female screw side applies excessive force to the piping bracket which lead to cause breakage.

Recommended torque unit: N·m

Screw	1/4	1 1/4	1 1/2	2
Torque	8 to12	40 to 42	48 to 50	48 to 50

4. Do not apply any torsional moment, or bending moment except the weight of the air filter itself. External piping needs to be supported separately. Hard piping like steel tube is susceptible to excessive moment load or vibration. Insert the flexible tube to cancel the influence.
5. Before using an SMC fitting and S coupler, please refer to "Tightening the threaded portion of the connection thread" of the Fittings & Tubing Precautions.
6. Drain guide is not equipped with valve function. Be sure to connect piping for drain. No piping for drain allows the drain and compressed air to exhaust freely. Also, the piping should be performed with drain guide held by spanner to prevent breakage of bowl.

Air Source

Warning

1. Use clean air. Compressed air containing chemicals, organic solvent, synthetic oil or corrosive gas may lead to cause breakage of parts or malfunction.
2. Air containing too much moisture may cause malfunction. Install the air drier or the aftercooler before the air filter.

Maintenance

Warning

1. Release the pressure in the product to the atmosphere when replacing parts or removing piping.
2. Maintenance and checks should be done by following the procedure in the operation manual. Incorrect handling of the product may cause breakage or malfunction of the equipment or device.
3. Perform periodical check to find cracks, flaws or other deterioration on resin bowl. If any of them is seen, as malfunction is caused, replace with new bowl.
4. Check for dirt in resin bowl periodically. If any dirt is seen, replace with new bowl. And if removing off the dirt by washing instead of using a replacement, never use washing material other than neutral detergent. Otherwise, the bowl is damaged.
5. Open and close drain cock manually. Open and close too much may damage the drain cock.
6. Replace the element before 2 years passed since purchase or pressure drop from initial outlet pressure reaches 0.1MPa. Or the element is broken.
7. When removing the bowl, ensure the lock button pushes down from the matchmark in the spacer to release the lock before proceeding. It may damage the lock button.

Caution

1. Drain the bowl by opening drain cock before the drain level in the bowl reaches baffle.
2. Check the element periodically and replace it with new one if necessary.
If it is found that secondary pressure lowers or the flow is restricted, check the condition of element.

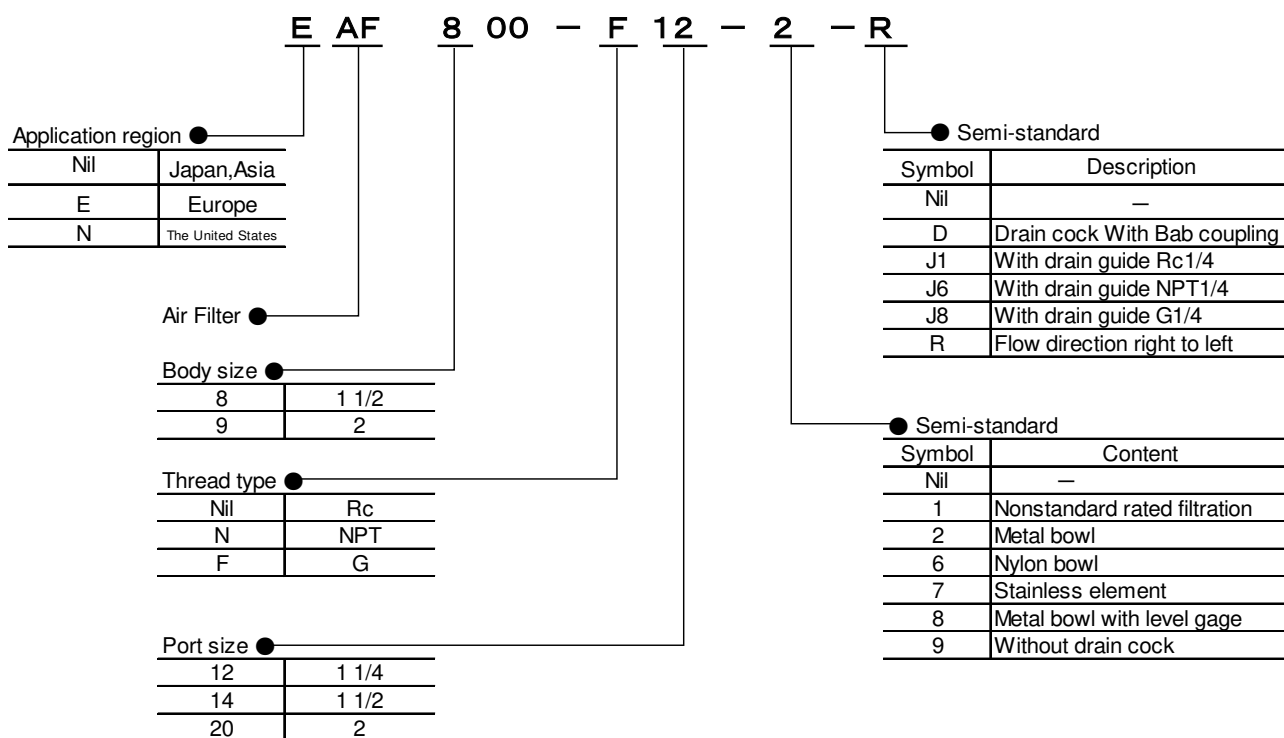
2. APPLICATION

This instrument aims at eliminating excess saturated water of the air line and solid foreign material of air lines.

3. SPECIFICATIONS

Model	AF800	AF900
Port size	1 1/4, 1 1/2	2
Fluid	Air	
Proof pressure	1.5MPa	
Max.Operating pressure	1.0MPa	
Fluid temperature	-5 TO 60°C (No freezing)	
Amount of drain storage (cm ³)	45	
Filtration	AF Standard: 5µm Semi-standard: 2,10,20,40,70,100µm	
	EAF Standard: 10µm Semi-standard: 2,5,20,40,70,100µm	
	NAF Standard: 40µm Semi-standard: 2,5,10,20,70,100µm	
Weight (kg)	3	7.3
Accessory (Standard equipment)	Bowl guard	

4. HOW TO ORDER



※ Please refer to the catalog when you select the model.

5. OPERATION PRINCIPLE

Air entered the body passes through the deflector first. Deflector is a metal part which has a number of blades with a certain angle on the circumference. When passing these blades, air swirls.

As a result centrifugal force separates relatively large water and oil drops, and foreign matter with large specific gravity from the air flow. They drop to the bottom via the wall of the bowl.

At this first separation, most of foreign matter is separated from the air.

Then the air passes the element in the middle which filters the residual foreign matter and goes to the outlet.

There is a baffle like upside down bowl at the under the element which prevents the drainage pooled in the bottom of the bowl from entraining due to air current.

Refer to the 「7.CONSTRUCTION/PART LIST」(P9) for numbers and part names.

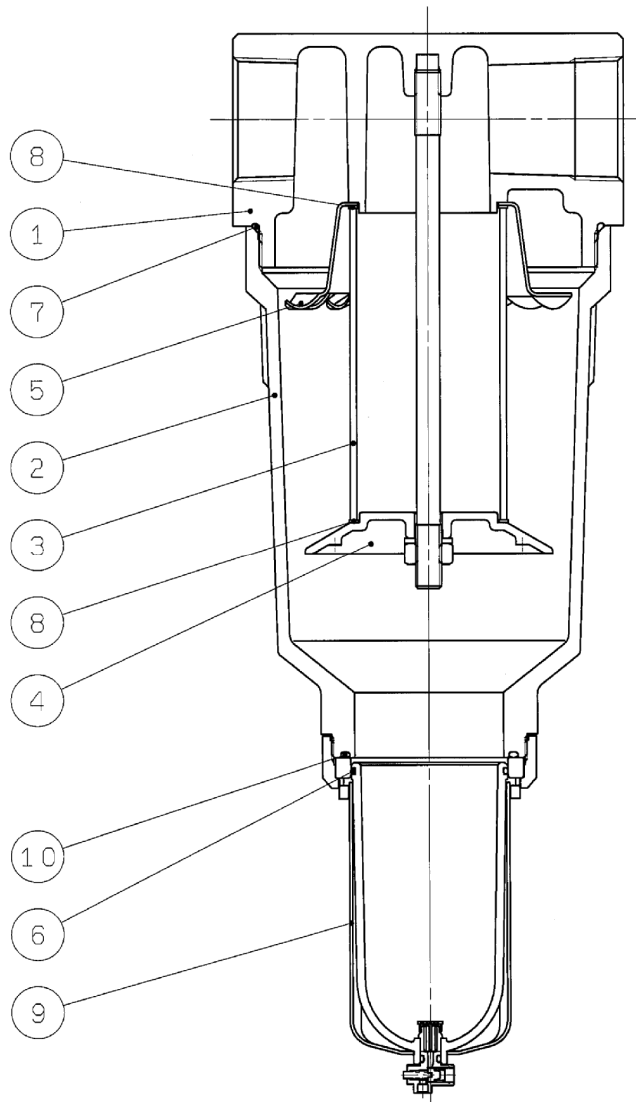
6. TROUBLESHOOTING

TROUBLE		POSSIBLE CAUSE	REMEDY
Demarcation	Phenomenon		
Flow rate	Large air resistance reduces flow rate.	1.Clog of the element.	1.Replace the element.
Air leaks	Air leaks from the bowl and the body.	1.Breakage of "O" ring.	1.Replace the "O" ring. Grease up before assembling.
		2.The clamp ring is loosened.	2.Tighten the clamp ring.
	Air leaks from the bowl.	1.Breakage of bowl.	1.Replace the bowl assembly.
	Air leaks from the drain cock.	1.The foreign matter caught in the valve of the drain cock.	1.Open the drain cock for a few seconds for blowing.
2.Breakage of the seating part of the drain cock.		2.Replace the bowl assembly.	
Operational	Draining isn't perfumed though the drain cock is opened.	1.Clock of outlet of the drain cock due to solid foreign matter etc.	1.Replace the bowl assembly.
	Too much drain comes from the piping of secondary side.	1.Drain level reaches the baffle plate.	1.Open the drain cock for draining and replace the element.

Refer to 「7.CONSTRUCTION/PART LIST」(P9), 「10.DISASSEMBLY DRAWING」 (P13).

Note) The grease used recommends multipurpose No.2.

7. CONSTRUCTION / PARTS LIST



Component Parts

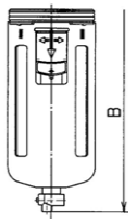
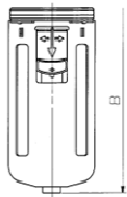
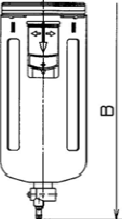
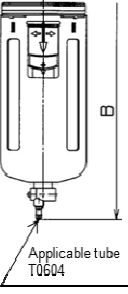
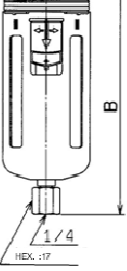
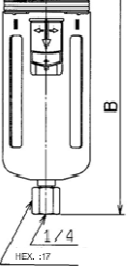
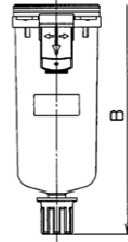
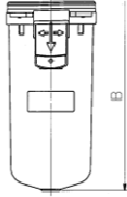
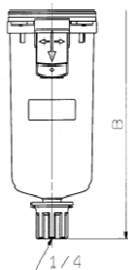
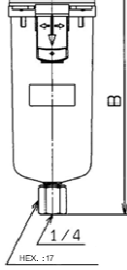
No.	Description	Material		Remarks
		AF800	AF900	
①	Body	Aluminum die cast	Aluminum die cast	Platinum Silver coating
②	Housing	Aluminum die cast	Aluminum casting	Platinum Silver coating

Option/Replacement Parts

No.	Description	Material	Part No.						
			AF800	EAF800	NAF800	AF900	EAF900	NAF900	
③	Element	Standard	BC	11345-5B	11345-10B	11345-40B	11352-5B	11352-10B	11352-40B
		-7	Stainless steel	11345-5S	11345-10S	11345-40S	11352-5S	11352-10S	11352-40S
		-1	BC	11345-*B	11345-*B	11345-*B	11352-*B	11352-*B	11352-*B
		-17	Stainless steel	11345-*S	11345-*S	11345-*S	11352-*S	11352-*S	11352-*S
④	Baffle	Aluminum die cast	11344			—			
		Aluminum die cast	—			11354			
⑤	Deflector	Aluminum	11346			11355			
⑥	Bowl O ring	NBR	C4SFP-260S						
⑦	Housing O ring	NBR	KA00788			630332			
⑧	Element packing	NBR	11217			112310			
⑨	Bowl assembly	PC	Refer to 「8. SPECIFICATIONS OF BOWL ASSEMBLY」 (P10-11).						
⑩	O ring	NBR	113136						

Note) The number in the table is corresponding to the number in structural drawing (above-mentioned figure) and 「8. SPECIFICATIONS OF BOWL ASSEMBLY」(P10-11),「10.DISASSEMBLY DRAWING」 (P13)

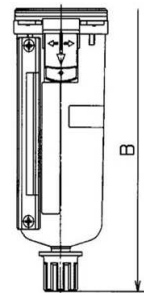
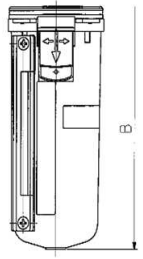
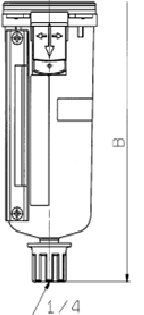
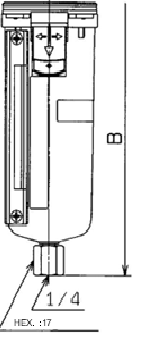
8. SPECIFICATIONS OF BOWL ASSEMBLY

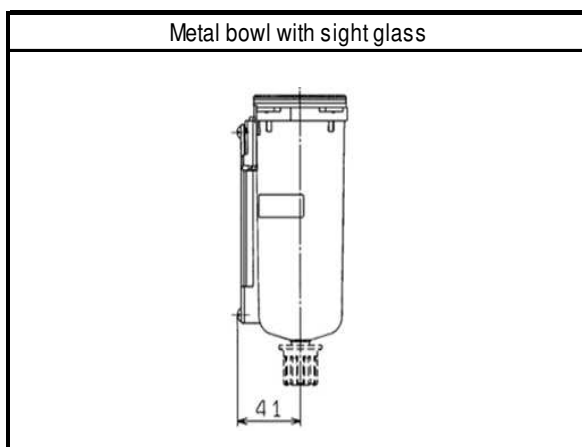
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Note 1) B in the table shows full dimensions of the product. Refer to F11. DIMENSIONS_J (P14).

Note 2) The part with no. ⑥ includes ⑨ Bowl O ring. Refer to F10. DISASSEMBLY DRAWING_J (P13).

Note 3) The symbol for option and semi-standard are described as F4. HOW TO ORDER_J(P7).

Option	8	89																
External appearance drawing Part no.	<p>Option「8」</p> <table border="1"> <tr> <td>Port thread</td> <td>⑨Part no.</td> </tr> <tr> <td>Rc</td> <td rowspan="3">C4LF-8</td> </tr> <tr> <td>NPT</td> </tr> <tr> <td>G</td> </tr> </table> 	Port thread	⑨Part no.	Rc	C4LF-8	NPT	G	<p>Option「89」</p> <table border="1"> <tr> <td>Port thread</td> <td>⑨Part no.</td> </tr> <tr> <td>Rc</td> <td rowspan="3">C4LF-8-X401</td> </tr> <tr> <td>NPT</td> </tr> <tr> <td>G</td> </tr> </table> 	Port thread	⑨Part no.	Rc	C4LF-8-X401	NPT	G				
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Note 1) B in the table shows full dimensions of the product. Refer to 「11. DIMENSIONS」 (P14).

Note 2) The part with no. ⑥ includes ⑨ Bowl O ring. Refer to 「10. DISASSEMBLY DRAWING」 (P13).

Note 3) The symbol for option and semi-standard are described as 「4. HOW TO ORDER」 (P7).

9. REPLACEMENT PROCEDURE

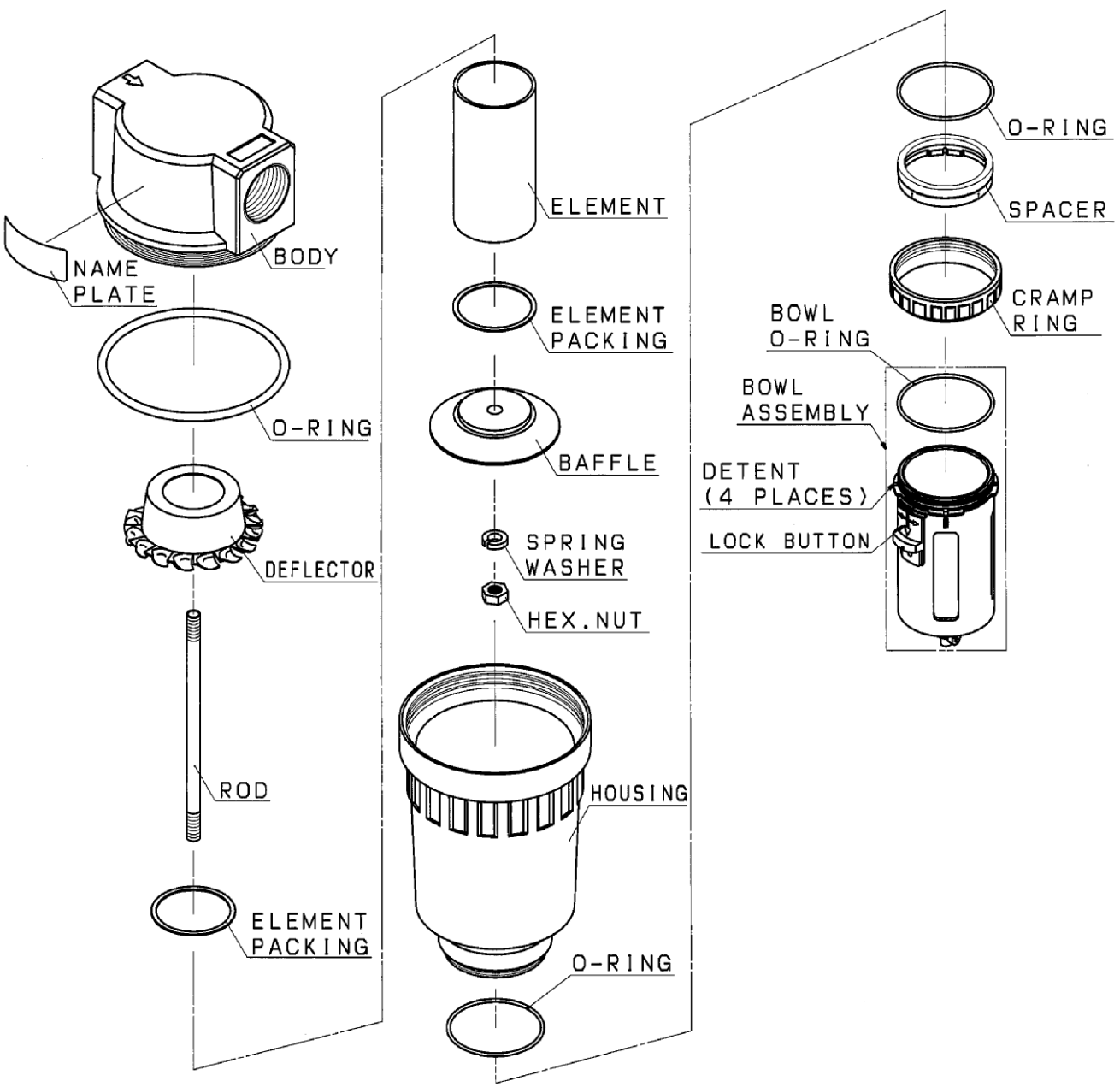
Warning

Before replacement, ensure that the regulator is not pressurized.

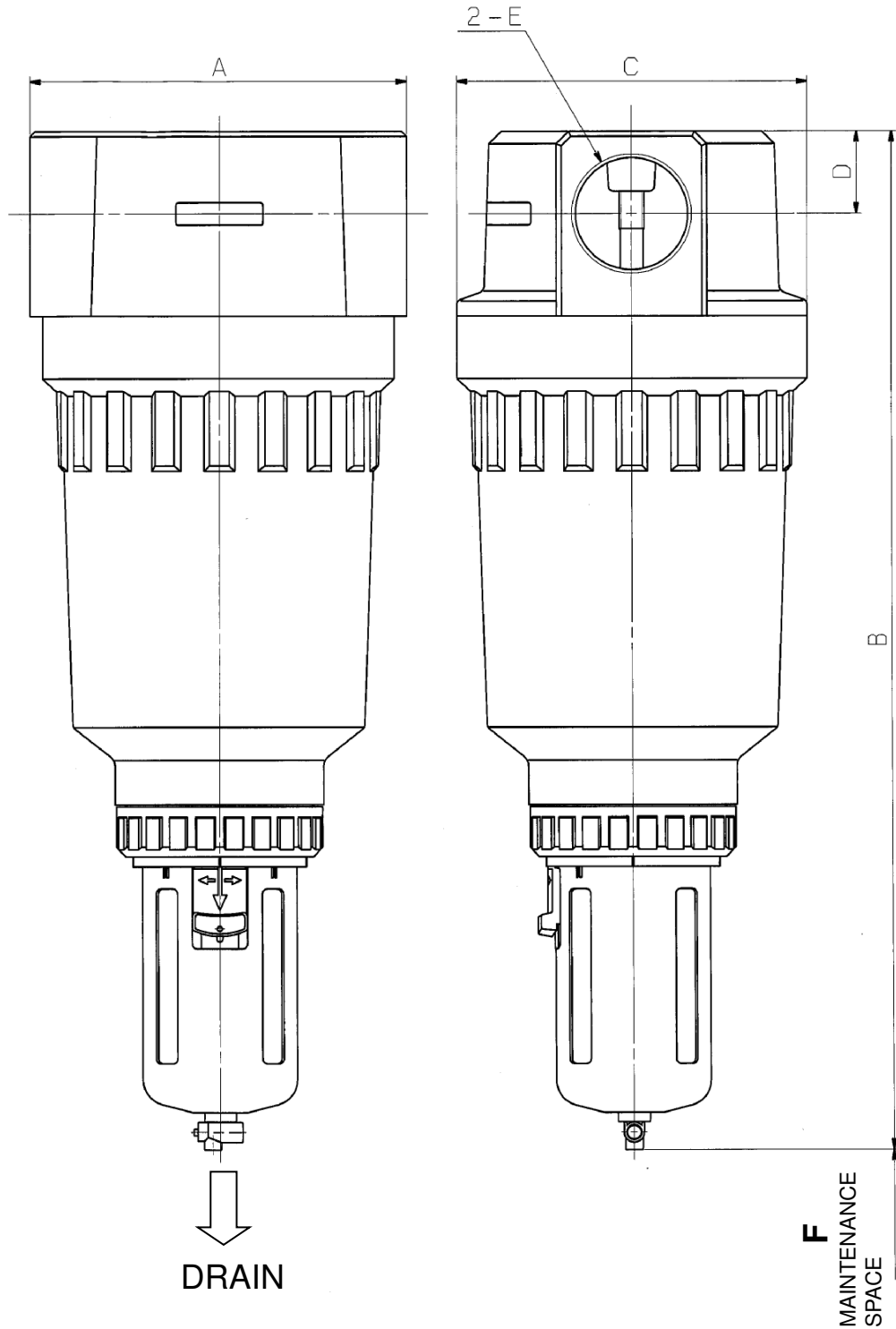
After replacement, ensure that specified function is satisfied and external leakage is not found before starting operation.

Process	Procedure	Tools	Check item
Disassembly	1. Remove the bowl assembly. Push the float type auto drain lock button. Lifting the float type auto drain, rotate the assembly 45 degree(right or left) to pull out the assembly.	—	—
	2. Remove the housing with a special tool by turning it in a counterclockwise direction to loose it.	Hook spanner AF800 Nominal : 120/130 AF900 Nominal : 155/165	—
	3. Remove the deflector, baffle and element. When the hexagon nut is turned in a counterclockwise, it comes off. When replacing the element, use the designated one. When elements for other models or elements with different diameter are used, the product will not operate properly, or it may break.	—	—
Assembly	1. Mount the deflector. Careful to the direction (concave to the element side) of mount and set the body assembly.	—	Direction of deflector. For element concave side. Refer to disassembly drawing.
	2. Mount the element and element packing. Insert the element to the concave of the deflector.	—	—
	3. Mount the baffle and element packing. Careful to the direction (convex to the element side) of mount and insert the baffle to the element of element packing.	—	Direction of baffle. For element convex side. Refer to disassembly drawing.
	4. It fixes with hexagon nut. Hold the screw with washer and fix to the baffle, element, and deflector Rotate the screw with washer clockwise with cross pointed driver to mount the screw with washer, baffle, element and deflector.	—	Tightening torque : 26±3 N·m
	5. The housing is turned with the specialized tool right and it fixes.	Hook spanner AF800 Nominal : 120/130 AF900 Nominal : 155/165	—
	6. Mount the bowl assembly. Match the mating mark of the housing and the bowl assembly to insert the assembly to the housing. Rotate the assembly 45 degree(right or left) until the lock button is tossed up to mount the bowl assembly. Ensure the lock button is up.	—	Lock button is up.

10. DISASSEMBLY DRAWING



11. DIMENSIONS



Model No.	Port size E	A	B	C	D	F
(E,N)AF800	1 1/4, 1 1/2	150	408	140	33	150
(E,N)AF900	2	200	484	170	42	210

Dimension B for semi-standard bowl

Model \ Option												J1	2-J1	6-J1	8-J1
	2	6	8	9	69	29	89	D	2-D	6-D	8-D	J6	2-J6	6-J6	8-J6
												J8	2-J8	6-J8	8-J8
(E,N)AF800	421	408	441	397	397	397	417	417	421	417	441	415	415	415	435
(E,N)AF900	497	484	517	473	473	473	493	493	497	493	517	491	491	491	511

Note 1) The specifications of auto-drain and optional bowl assembly are described in 「8. SPECIFICATIONS OF BOWL ASSEMBLY」 (P10-11).

Revision history

A	P8 Option/Replacement Parts Bowl O- ring part No. change, O-ring part No. is added.	'19.2
B	Change : Safety Instructions, Back cover	'22.11
C	Change : P2,3 Safety Instructions P5 Recommended tightening torque P9 AF900 Body, Baffle Material P14 AF900 DIMENSION (B,D)	'25.8
D	Add : P5,6 Safety Instructions Bowl installation, Bowl removal	'25.10

SMC Corporation

Tel: + 81 3 5207 8249 Fax: +81 3 5298 5362

URL <https://www.smcworld.com>

Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
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