



Operation Manual

PRODUCT NAME

Line filter

MODEL / Series / Product Number

AFF20-(F, N)01 ~ (F, N)02(B, C)(-2, 6, C, J, R, Z)-D

AFF30-(F,N)02 ~ (F, N)03(B, C, D)(-2, 6, 8, J, R, W, Z)-D

AFF40-(F, N)02 ~ (F, N)04(B, C, D)(-2, 6, 8, J, R, W, Z)-D

SMC Corporation

Contents

	Page
1. Safety Instructions	2 to 7
<hr/>	
2. Application	8
<hr/>	
3. Standard specifications	8
<hr/>	
4. How to order	9
<hr/>	
5. Construction / Options / Replacement parts	10
<hr/>	
6. Bowl assembly specifications	11 to 18
<hr/>	
7. Assembly of Optional parts	19
<hr/>	
8. Operation and Adjustment	20 to 21
<hr/>	
9. Troubleshooting	22
<hr/>	
10. Replacement work procedure	23 to 29
1) Element assembly (AFF20)	23 to 24
2) Bowl assembly (AFF20)	25
1) Element assembly (AFF30/AFF40)	26 to 27
2) Bowl assembly (AFF30/AFF40)	28 to 29
<hr/>	
11. Exploded Drawing	30
<hr/>	
12. Dimensions	31



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.

*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: Manipulating industrial robots -Safety.

etc.



Caution

Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.



Warning

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



Danger

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

Warning

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

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results.

The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product.

This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

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

The product specified here may become unsafe if handled incorrectly.

The 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 catalog.

3. An application which could have negative effects on people, property, or animals requiring special safety analysis.

4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.



Safety Instructions

Caution

The product is provided for use in manufacturing industries.

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

If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/Compliance Requirements

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

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 regulation of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Caution

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

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.

Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Precautions for Design

Warning

- 1) Consult SMC if no leakage is allowed due to the environment, or if the operating fluid is not air.
- 2) Polycarbonate resin is used for the external parts including the bowl. Organic solvents including thinner, acetone, alcohol and ethylene chloride; chemicals including sulphuric acid, nitric acid and hydrochloric acid; cutting oil, synthetic oils, ester-based compressor oil, alkali, kerosene, gasoline, lock material of screw are harmful. Do not use the product where these are present.

Type	Chemical name	Application examples	Material	
			Polycarbonate	Nylon
Acid	Hydrochloric acid Sulphuric acid, Phosphoric acid Acetic acid Chromic acid	Acid washing liquid for metals	△	×
Alkaline	Sodium hydroxide (Caustic soda) Potash Calcium hydroxide (Slacked lime) Ammonia water Carbotane 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 I P A Methyl alcohol	Antifreeze Adhesives	△	×
Oil	Gasoline Kerosene	-	×	○
Ester	Phthalic acid dim ethyl Phthalic acid diethyl	Synthetic oil Anti-rust additives	×	○
Ether	Methyl ether Ethyl ether	Brake oil additives	×	○
Amino	Methyl amine	Cutting oil Brake oil additives Rubber accelerator	×	×
Others	Thread-lock fluid Sea water 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 bowl for safety.

- 3) Avoid the application where charge and discharge of pressure to/from a standard 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.

- 5) If the air equipment is mounted on the outlet of the product, particles will be generated from the equipment and required cleanliness may not be obtained. Instead, install the air equipment at the inlet.

Caution

AD27-D with auto drain may have leakage of accumulated drain during pressure exhaust (this leakage is allowed in their constructions and not considered failure). Be sure to connect piping for drain.

Selection

Warning

- 1) Grease is used on the internal sliding parts and seals. The grease may flow to the outlet side. If this is not acceptable, please consult SMC.
- 2) Select the model so that the maximum discharge value (instantaneous) of the flow rate will not exceed the rated air capacity.
- 3) N.O. type auto drain should be operated under the following conditions to avoid operating failure.
Operating compressor: 0.75kW or more.
Discharged flow rate: 100 L/min (ANR) or more. When using 2 or more auto drains, multiply the value above by the number of auto drains to find the capacity of the compressors you will need. For example, when using 2 auto drains, 1.5 kW (200 L/min (ANR)) of the compressor capacity is required. The operating pressure should be 0.1 MPa or more.
- 4) N.C. type auto drain should be used under the following requirements to avoid operating failure.
AD27: Operating pressure 0.1MPa or more.
AD37, AD47: Operating pressure 0.15MPa or more.

Mounting

Warning

- 1) Do not drop or apply impact during transportation or installation; It will cause damage to the product and result in operation failure.
- 2) Do not install in areas of high humidity or high temperature. Operation outside of the product specification range may cause damage to the product or operation failure, or shorten the product life.
- 3) Connect the product ensuring the direction of "1"(IN) and "2"(OUT) for air direction or an arrow. Incorrect connections may cause malfunction.
- 4) Install with adequate space for maintenance beneath the product. Refer to 12. Dimensions (page 31) for necessary space.
- 5) Install vertically so that outlet of drain is facing downward. It cannot be used in horizontal or upward direction as it may cause operation failure.

Piping

Warning:

- 1) Before piping, perform flushing or cleaning of the piping, etc. to remove any cutting chips, cutting oil, solid foreign matter, etc. from the piping. Contamination of piping may cause damage or malfunction.
- 2) When screwing together pipes and fittings, etc., be certain that chips from the pipe threads and sealant do not get inside the pipe. When a sealant tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.

- 3) Connect piping/fittings using the recommended torque while holding the female thread side tightly. Insufficient tightening torque can cause loose piping or sealing failure. Excess tightening torque may cause damage to threads. If the female side is not held while tightening, excessive force will be applied to the bracket directly, causing breakage.

Recommended tightening torque (Unit: Nm)

Thread	1/8	1/4	3/8	1/2
Torque	7 to 9	12 to 14	22 to 24	28 to 30

- 4) When a one-touch fitting of SMC is used, refer to the operation manual for the one-touch fitting.
- 5) Do not apply torsion or bending moment other than the weight of the product itself. External piping needs to be supported separately as it may cause damage. Non-flexible piping like steel tube is susceptible to excessive moment load or vibration. Insert flexible tubes to prevent this.
- 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..
- 7) The piping for drain from auto drain should be connected under the following requirements to avoid operating failure.
 - Tubing for AD27-D: I.D. ϕ 2.5 (ϕ 3/32") or larger, Length 5 m (200 inch) or shorter
 - Tubing for AD37, 47(N)-D: I.D. ϕ 4 (ϕ 3/16") or larger, Length 5 m (200 inch) or shorter
 - Tubing for AD38, 48(N)-D: I.D. ϕ 6.5 (ϕ 1/4") or larger, Length 5 m (200 inch) or shorter
- 8) Pipework for auto drain discharge which rises higher than the auto drain outlet should be avoided. It may cause the auto drain operation to fail.

Air Supply

Warning

- 1) Use clean air. Do not use compressed air containing chemicals, organic solvent, synthetic oil or corrosive gas as it may be cause of breakage of components or operation failure.
- 2) Air containing too much moisture may deteriorate the performance. Install the refrigerated air dryer or aftercooler before the line filter.
- 3) Make sure that the supply pressure is not below the minimum operating pressure. If it is used at the minimum operating pressure or less, pressure resistance increases, leading to the decrease of operation life or operation failure.

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 operation failure of the equipment or device.
- 3) Do not touch the product when operating at high temperature (40 to 60°C). The operators may get burnt. Be sure to confirm that the temperature of the container or operating part is reduced to 40 degrees or less to prevent burns.
- 4) 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 or metal bowl. Investigate and/or review the operating conditions if necessary.

- 5) Check for dirt in resin bowl periodically. If any dirt is seen, replace with new bowl. If removing dirt by washing the resin bowl, never use washing material other than neutral detergent. Otherwise, the bowl is damaged.
- 6) Open and close drain cock by hand. The use of tools can result in damage to the product.
- 7) Replace the element before 2 years passed from start of use or pressure drop (difference between the inlet pressure and outlet pressure) reaches 0.1MPa. Or if the element is broken.
- 8) Check the bowl regularly. Discharge it before drain reaches the element. Refer to 8. Operation and Adjustment (P20 to 21) for discharging of drain. When a resin bowl or a bowl with level gauge is used, discharge the drain before the drain reaches the MAX. DRAIN LEVEL.

 **Caution**

- 1) Check the element periodically and replace it with a new one if necessary. If it is found that outlet pressure drops or the flow is restricted, check the condition of the element.
- 2) For the N.O. type auto drain, when there is no pressure, condensate which does not operate the auto drain mechanism will remain in the bowl. It is recommended to release the residual condensate manually at the end of the working day.

2. Application

This product aims at eliminating excess saturated water and solid foreign matter in the air line.

3. Standard specifications

Model No.		AFF20	AFF30	AFF40
Port size		1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Fluid		Air		
Ambient and o fluid temperature		-5 to 60 °C (No freezing)		
Proof pressure		1. 5MPa		
Max. operating pressure		1. 0MPa		
Min. operating pressure		0.05MPa		
Min. operating pressure of auto drain	N.C.	0.1MPa	0.15 MPa	
	N.O.	-	0.1MPa	
Nominal filtration rating ^{Note 1)}		1 μm (99% filtered particle size)		
Water droplet removal ratio ^{Note2)}		99%		
Max. flow capacity ^{Note 3)}		300 L/min (ANR)	750L/min(ANR)	1500L/min(ANR)
Compressed air purity class ^{Note 4)}		ISO8573-1: 2010[4: 7: 4]		
Drain capacity		8cm ³	25cm ³	45cm ³
Bowl material		Polycarbonate		
Bowl guard		Semi-standard (Steel)	Standard (Polycarbonate)	
Weight		0. 19kg	0. 39kg	0. 79kg

Note 1) Conditions in accordance with [Test condition: ISO 8573-4:2001, Test method ISO 12500-3:2009 compliant] in addition to the conditions above.

- Flow capacity, inlet pressure, and the amount of solid bodies at the filter inlet are stable.
- New element

Note 2) Conditions in accordance with [Test condition: ISO 8573-4:2001, Test method ISO 12500-3:2009 compliant] in addition to the conditions above.

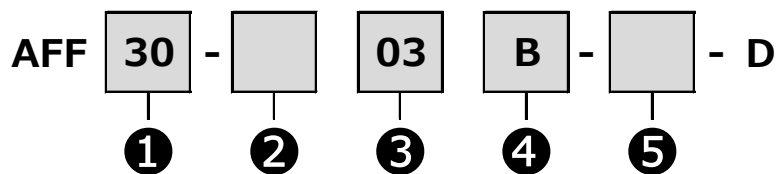
- Flow capacity, inlet pressure, and the amount of solid bodies at the filter inlet are stable.
- New element

Note 3) Conditions: Inlet pressure: 0.7 MPa.

Note 4) Based on ISO8573-1:2010 Compressed air - Part1: Contaminants and purity classes.

The compressed air quality class on the inlet side is [6:8:4].

4. How to Order

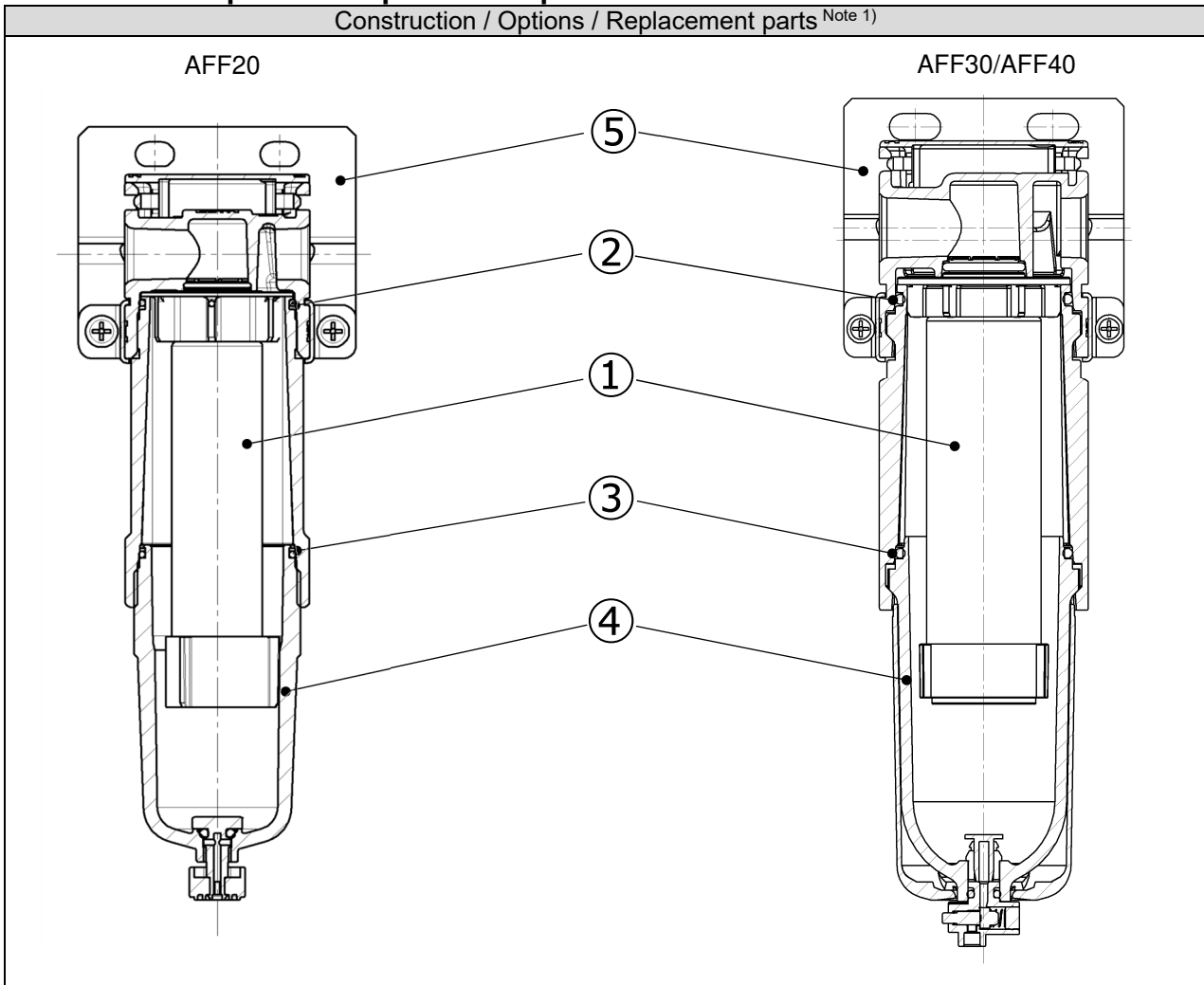


		Symbol	Details	(1)				
				Body size				
				20	30	40		
②	Thread type	Nil	Rc	●	●	●		
		N	NPT	●	●	●		
		F	G	●	●	●		
③	Port size	01	1/8	●	-	-		
		02	1/4	●	●	●		
		03	3/8	-	●	●		
		04	1/2	-	-	●		
④	Options	a	Mounting	Nil	Without mounting option	●	●	●
				B	With bracket	●	●	●
	b	Float type auto drain	Nil	Without auto drain	●	●	●	
			C	N.C. (Normally close) Drain port is closed when pressure is not supplied.	●	●	●	
		D	N.O. (Normally open) Drain port is open when pressure is not supplied.	-	●	●		
⑤	Semi-standard	c	Bowl	Nil	Polycarbonate bowl	●	●	●
				2	Metal bowl	●	●	●
				6	Nylon bowl	●	●	●
				8	Metal bowl with level gauge	-	●	●
				C	With bowl guard	●	-	-
				6C	With bowl guard (Nylon bowl)	●	-	-
		d	Drain port	Nil	With drain cock	●	●	●
				J	Drain guide 1/8	●	-	-
					Drain guide 1/4	-	●	●
		W	With drain cock and barb fitting	-	●	●		
		e	Flow direction	Nil	Flow direction: left to right	●	●	●
				R	Flow direction: Right to left	●	●	●
		f	Pressure unit Temperature unit	Nil	Pressure unit: MPa Temp. unit: °C	●	●	●
Z	Pressure unit: psi Temp. unit: °F			○Note 2)	○Note 2)	○Note 2)		

Note 1) ④ Option and ⑤ Semi-standard: Select one each for a to f.

Note 2) ○: For NPT thread type only.

5. Construction / Options / Replacement parts



Replacement parts

Component No.	Parts description	Component number		
		AFF20	AFF30	AFF40
①	Element	AFF24P-060AS	AFF34P-060AS	AFF44P-060AS
②	Bowl seal	C2SFP-260S	C32FP-260S	C42FP-260S
③				
④	Bowl assembly	Refer to [6.Bowl assembly specifications] (P11 to P18).		
	Auto drain (N.C.)			
	Auto drain (N.O.)			

Note 1) The numbers in the table and construction are consistent with the number in [10. Replacement work procedure] (P23-29) and 11. Disassembly Drawing](P30).

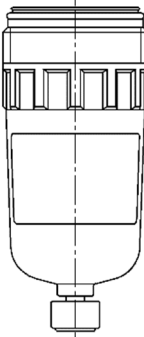
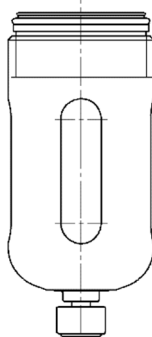
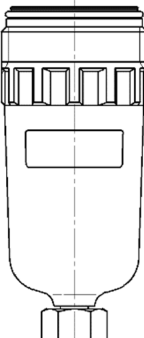
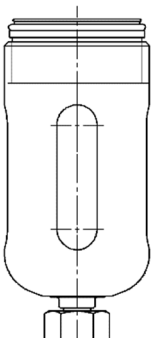
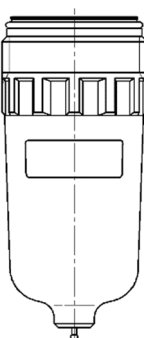
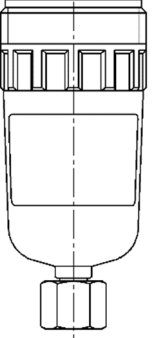
Options

Component number	Parts description	Component number		
		AFF20	AFF30	AFF40
⑤	Bracket assembly <small>Note 2)</small>	AF24P-070AS	AF34P-070AS	AF44P-070AS

Note 2) Refer to the 7. Assembly of Optional parts (P19) for mounting the bracket assembly.

6. Bowl assembly specifications

1) Bowl assembly / auto drain for AFF20

Option symbol	-		-																			
Semi-standard symbol	-	6	C	6C																		
Appearance and part No.	Semi-standard: "-" (Standard) <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td>C2SF-D</td> </tr> <tr> <td>G</td> <td>C2SF(-Z)-D</td> </tr> <tr> <td>NPT</td> <td>C2SF(-Z)-D</td> </tr> </table>		Port thread type	④ Part No.	Rc	C2SF-D	G	C2SF(-Z)-D	NPT	C2SF(-Z)-D		Semi-standard: "C" (Standard) <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td>C2SF-C-D</td> </tr> <tr> <td>G</td> <td>C2SF-C(Z)-D</td> </tr> <tr> <td>NPT</td> <td>C2SF-C(Z)-D</td> </tr> </table>		Port thread type	④ Part No.	Rc	C2SF-C-D	G	C2SF-C(Z)-D	NPT	C2SF-C(Z)-D	
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G	C2SF-C(Z)-D																					
NPT	C2SF-C(Z)-D																					
Semi-standard: "6" (Standard) <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td>C2SF-6-A</td> </tr> <tr> <td>G</td> <td>C2SF-6(Z)-A</td> </tr> <tr> <td>NPT</td> <td>C2SF-6(Z)-A</td> </tr> </table>		Port thread type	④ Part No.	Rc	C2SF-6-A	G	C2SF-6(Z)-A	NPT	C2SF-6(Z)-A	Semi-standard: "6C" (Standard) <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td>C2SF-(6)C-A</td> </tr> <tr> <td>G</td> <td>C2SF-6C(Z)-A</td> </tr> <tr> <td>NPT</td> <td>C2SF-6C(Z)-A</td> </tr> </table>		Port thread type	④ Part No.	Rc	C2SF-(6)C-A	G	C2SF-6C(Z)-A	NPT	C2SF-6C(Z)-A			
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NPT	C2SF-6C(Z)-A																					
Option symbol	-		-																			
Semi-standard symbol	J	6J	CJ	6CJ																		
Appearance and part No.	Semi-standard: "J" (Standard) <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td>C2SF-J-D</td> </tr> <tr> <td>G</td> <td>C2SFN-J(Z)-D</td> </tr> <tr> <td>NPT</td> <td>C2SFN-J(Z)-D</td> </tr> </table>		Port thread type	④ Part No.	Rc	C2SF-J-D	G	C2SFN-J(Z)-D	NPT	C2SFN-J(Z)-D		Semi-standard: "CJ" (Standard) <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td>C2SF-CJ-D</td> </tr> <tr> <td>G</td> <td>C2SFN-CJ(Z)-D</td> </tr> <tr> <td>NPT</td> <td>C2SFN-CJ(Z)-D</td> </tr> </table>		Port thread type	④ Part No.	Rc	C2SF-CJ-D	G	C2SFN-CJ(Z)-D	NPT	C2SFN-CJ(Z)-D	
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Semi-standard: "6J" (Standard) <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td>C2SF-6J-A</td> </tr> <tr> <td>G</td> <td>C2SFN-6J(Z)-A</td> </tr> <tr> <td>NPT</td> <td>C2SFN-6J(Z)-A</td> </tr> </table>		Port thread type	④ Part No.	Rc	C2SF-6J-A	G	C2SFN-6J(Z)-A	NPT	C2SFN-6J(Z)-A	Semi-standard: "6CJ" (Standard) <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td>C2SF-6CJ-A</td> </tr> <tr> <td>G</td> <td>C2SFN-6CJ(Z)-A</td> </tr> <tr> <td>NPT</td> <td>C2SFN-6CJ(Z)-A</td> </tr> </table>		Port thread type	④ Part No.	Rc	C2SF-6CJ-A	G	C2SFN-6CJ(Z)-A	NPT	C2SFN-6CJ(Z)-A			
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Rc	C2SF-6J-A																					
G	C2SFN-6J(Z)-A																					
NPT	C2SFN-6J(Z)-A																					
Port thread type	④ Part No.																					
Rc	C2SF-6CJ-A																					
G	C2SFN-6CJ(Z)-A																					
NPT	C2SFN-6CJ(Z)-A																					
Option symbol	-		-																			
Semi-standard symbol	2		2J																			
Appearance and part No.	Semi-standard: "2" (Standard) <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td>C2SF-2-A</td> </tr> <tr> <td>G</td> <td>C2SF-2(Z)-A</td> </tr> <tr> <td>NPT</td> <td>C2SF-2(Z)-A</td> </tr> </table>		Port thread type	④ Part No.	Rc	C2SF-2-A	G	C2SF-2(Z)-A	NPT	C2SF-2(Z)-A		Semi-standard: "2J" (Standard) <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td>C2SF-2J-A</td> </tr> <tr> <td>G</td> <td>C2SFN-2J(Z)-A</td> </tr> <tr> <td>NPT</td> <td>C2SFN-2J(Z)-A</td> </tr> </table>		Port thread type	④ Part No.	Rc	C2SF-2J-A	G	C2SFN-2J(Z)-A	NPT	C2SFN-2J(Z)-A	
	Port thread type	④ Part No.																				
	Rc	C2SF-2-A																				
	G	C2SF-2(Z)-A																				
NPT	C2SF-2(Z)-A																					
Port thread type	④ Part No.																					
Rc	C2SF-2J-A																					
G	C2SFN-2J(Z)-A																					
NPT	C2SFN-2J(Z)-A																					

Option symbol	C Note 1)		C Note 1)	
Semi-standard symbol	-	6	C	6C
Appearance and part No.	Semi-standard: "-" (Standard)		Semi-standard: "C" (Standard)	
	Port thread type	④ Part No.	Port thread type	④ Part No.
	Rc	AD27-D	Rc	AD27-C-D
	G		NPT	
Semi-standard: "6C" (Standard)		Semi-standard: "6C" (Standard)		
Port thread type	④ Part No.	Port thread type	④ Part No.	
Rc	AD27-6-A	Rc	AD27-6C-A	
G		NPT		AD27N-6(Z)-A
Option symbol	C Note 1)			
Semi-standard symbol	2			
Appearance and part No.	Semi-standard: "2" (Standard)			
	Port thread type	④ Part No.		
	Rc	AD27-2-A		
	G	AD27-2(Z)-A		

Note 1) Minimum operating pressure is 0.1 MPa.

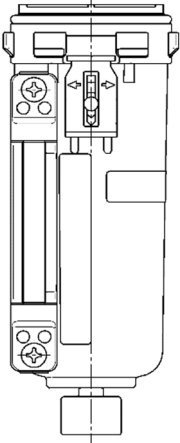
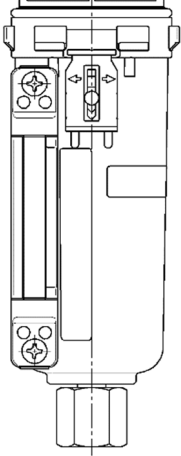
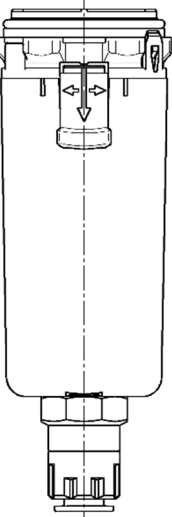
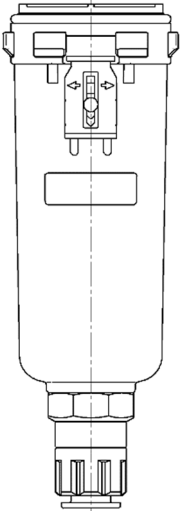
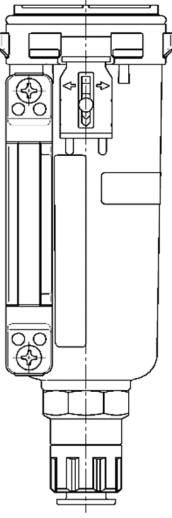
Note 2) Part No. ④ includes Bowl seal ③. Refer to [11. Disassembly Drawing](P30).

Note 3) "Z" in Part No. ④ indicates standard specifications. The pressure unit: psi. The temperature unit: °F.

Note 4) Refer to [4. How to Order] (P9) for option and semi-standard symbols.

2) AFF30 bowl assembly / auto drain

Option symbol	-		-	
Semi-standard symbol	-	6	J	6J
Appearance and part No.	Semi-standard: "-" (Standard)		Semi-standard: "2" (Standard)	
	Port thread type	④ Part No.	Port thread type	④ Part No.
	Rc	C3SF-D	Rc	C3SF-J-D
	G		NPT	
Semi-standard: "6" (Standard)		Semi-standard: "6J" (Standard)		
Port thread type	④ Part No.	Port thread type	④ Part No.	
Rc	C3SF-6-A	Rc	C3SF-6J-A	
G		NPT		C3SFN-6J(Z)-A
Option symbol	-		-	
Semi-standard symbol	W	6W		
Appearance and part No.	Semi-standard: "W" (Standard)			
	Port thread type	④ Part No.		
	Rc	C3SF-W-D		
	G		NPT	C3SF-W(Z)-D
Semi-standard: "6W" (Standard)				
Port thread type	④ Part No.			
Rc	C3SF-6W-A			
G		NPT	C3SF-6W(Z)-A	
Option symbol	-		-	
Semi-standard symbol	2		2J	
Appearance and part No.	Semi-standard: "2" (Standard)		Semi-standard: "2J" (Standard)	
	Port thread type	④ Part No.	Port thread type	④ Part No.
	Rc	C3SF-2-A	Rc	C3SF-2J-A
	G		NPT	

Option symbol	-		-																									
Semi-standard symbol	8		8J																									
Appearance and part No.	<p>Semi-standard: "8" (Standard)</p> <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td rowspan="3">C3LF-8-A</td> </tr> <tr> <td>G</td> </tr> <tr> <td>NPT</td> </tr> <tr> <td>NPT</td> <td>C3LF-8(Z)-A</td> </tr> </table> 		Port thread type	④ Part No.	Rc	C3LF-8-A	G	NPT	NPT	C3LF-8(Z)-A	<p>Semi-standard: "8J" (Standard)</p> <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td rowspan="3">C3LF-8J-A</td> </tr> <tr> <td>G</td> </tr> <tr> <td>NPT</td> </tr> <tr> <td>NPT</td> <td>C3LFN-8J(Z)-A</td> </tr> </table> 		Port thread type	④ Part No.	Rc	C3LF-8J-A	G	NPT	NPT	C3LFN-8J(Z)-A								
Port thread type	④ Part No.																											
Rc	C3LF-8-A																											
G																												
NPT																												
NPT	C3LF-8(Z)-A																											
Port thread type	④ Part No.																											
Rc	C3LF-8J-A																											
G																												
NPT																												
NPT	C3LFN-8J(Z)-A																											
Option symbol	C Note 1)		C Note 1)																									
Semi-standard symbol	-	6	2																									
Appearance and part No.	<p>Semi-standard: "-" (Standard)</p> <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td rowspan="3">AD37-D</td> </tr> <tr> <td>G</td> </tr> <tr> <td>NPT</td> </tr> <tr> <td>NPT</td> <td>AD37N(-Z)-D</td> </tr> </table> <p>Semi-standard: "6" (Standard)</p> <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td rowspan="3">AD37-6-A</td> </tr> <tr> <td>G</td> </tr> <tr> <td>NPT</td> </tr> <tr> <td>NPT</td> <td>AD37N-6(Z)-A</td> </tr> </table> 		Port thread type	④ Part No.	Rc	AD37-D	G	NPT	NPT	AD37N(-Z)-D	Port thread type	④ Part No.	Rc	AD37-6-A	G	NPT	NPT	AD37N-6(Z)-A	<p>Semi-standard: "2" (Standard)</p> <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td rowspan="3">AD37-2-A</td> </tr> <tr> <td>G</td> </tr> <tr> <td>NPT</td> </tr> <tr> <td>NPT</td> <td>AD37N-2(Z)-A</td> </tr> </table> 		Port thread type	④ Part No.	Rc	AD37-2-A	G	NPT	NPT	AD37N-2(Z)-A
Port thread type	④ Part No.																											
Rc	AD37-D																											
G																												
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NPT	AD37N(-Z)-D																											
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Rc	AD37-6-A																											
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NPT	AD37N-2(Z)-A																											
Option symbol	C Note 1)																											
Semi-standard symbol	8																											
Appearance and part No.	<p>Semi-standard: "8" (Standard)</p> <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td rowspan="3">AD37-8-A</td> </tr> <tr> <td>G</td> </tr> <tr> <td>NPT</td> </tr> <tr> <td>NPT</td> <td>AD37N-8(Z)-A</td> </tr> </table> 		Port thread type	④ Part No.	Rc	AD37-8-A	G	NPT	NPT	AD37N-8(Z)-A	<p>Note 1) Minimum operating pressure is 0.1 5MPa. Note 2) Part No. ④ includes Bowl seal ③. Refer to [11. Disassembly Drawing](P30). Note 3) "Z" in Part No. ④ indicates standard specifications. The pressure unit: psi. The temperature unit: °F. Note 4) Refer to [4. How to Order] (P9) for option and semi-standard symbols.</p>																	
Port thread type	④ Part No.																											
Rc	AD37-8-A																											
G																												
NPT																												
NPT	AD37N-8(Z)-A																											
Option symbol	D note 1)		D note 1)																									

Semi-standard symbol	-	6	2		
Appearance and part No.	Semi-standard: "-" (Standard)		Semi-standard: "2" (Standard)		
	Port thread type	④ Part No.		Port thread type	④ Part No.
	Rc	AD38-D		Rc	AD38-2-A
	G			NPT	
Semi-standard: "6" (Standard)		Semi-standard: "2(Z)- A			
Port thread type	④ Part No.	Port thread type	④ Part No.		
Rc	AD38-6-A	Rc	AD38N-2(Z)- A		
G		NPT		AD38N-6(Z)-A	
Option symbol	D ^{note 1)}				
Semi-standard symbol	8				
Appearance and part No.	Semi-standard: "8" (Standard)		Semi-standard: "8" (Standard)		
	Port thread type	④ Part No.		Port thread type	④ Part No.
	Rc	AD38-8-A		Rc	AD38N-8(Z)-A
	G			NPT	

Note 1) Minimum operating pressure is 0.1 MPa.

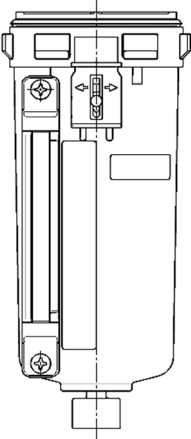
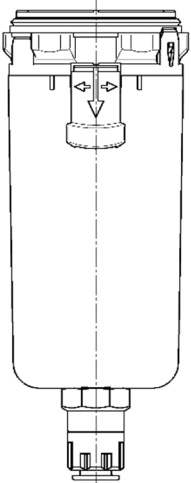
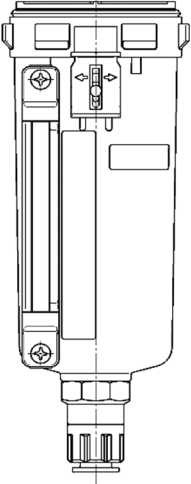
Note 2) Part No. ④ includes Bowl seal ③. Refer to [11. Disassembly Drawing](P30).

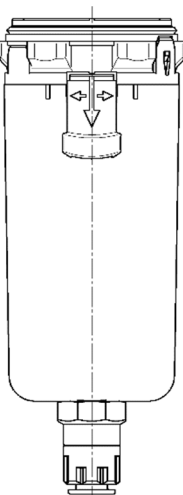
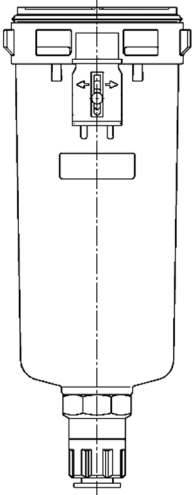
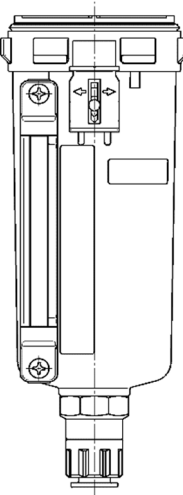
Note 3) "Z" in Part No. ④ indicates standard specifications. The pressure unit: psi. The temperature unit: °F.

Note 4) Refer to [4. How to Order] (P9) for option and semi-standard symbols..

3) AFF40 bowl assembly / auto drain

Option symbol	-		-	
Semi-standard symbol	-	6	J	6J
Appearance and part No.	Semi-standard: "-" (Standard)		Semi-standard: "J" (Standard)	
	Port thread type	④ Part No.	Port thread type	④ Part No.
	Rc	C4SF-D	Rc	C4SF-J-D
	G		NPT	
Semi-standard: "6" (Standard)		Semi-standard: "6J" (Standard)		
Port thread type	④ Part No.	Port thread type	④ Part No.	
Rc	C4SF-6-A	Rc	C4SF-6J-A	
G		NPT		C4SF-6(Z)-A
Option symbol	-		-	
Semi-standard symbol	W	6W		
Appearance and part No.	Semi-standard: "W" (Standard)			
	Port thread type	④ Part No.		
	Rc	C4SF-W-D		
	G		NPT	C4SF-W(Z)-D
Semi-standard: "6W" (Standard)				
Port thread type	④ Part No.			
Rc	C4SF-6W-A			
G		NPT	C4SF-6W(Z)-A	
Option symbol	-		-	
Semi-standard symbol	2		2J	
Appearance and part No.	Semi-standard: "2" (Standard)		Semi-standard: "2J" (Standard)	
	Port thread type	④ Part No.	Port thread type	④ Part No.
	Rc	C4SF-2-A	Rc	C4SF-2J-A
	G		NPT	

Option symbol	-		-														
Semi-standard symbol	8		8J														
Appearance and part No.	Semi-standard: "8" (Standard)		Semi-standard: "8J" (Standard)														
	<table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td rowspan="2">C4LF-8-A</td> </tr> <tr> <td>G</td> </tr> <tr> <td>NPT</td> <td>C4LF-8(Z)-A</td> </tr> </table>	Port thread type	④ Part No.	Rc	C4LF-8-A	G	NPT	C4LF-8(Z)-A		<table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td rowspan="2">C4LF-8J-A</td> </tr> <tr> <td>G</td> </tr> <tr> <td>NPT</td> <td>C4LFN-8J(Z)-A</td> </tr> </table>	Port thread type	④ Part No.	Rc	C4LF-8J-A	G	NPT	C4LFN-8J(Z)-A
Port thread type	④ Part No.																
Rc	C4LF-8-A																
G																	
NPT	C4LF-8(Z)-A																
Port thread type	④ Part No.																
Rc	C4LF-8J-A																
G																	
NPT	C4LFN-8J(Z)-A																
Option symbol	C Note 1)		C Note 1)														
Semi-standard symbol	-	6	2														
Appearance and part No.	Semi-standard: "-" (Standard)		Semi-standard: "2" (Standard)														
	<table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td rowspan="2">AD47-D</td> </tr> <tr> <td>G</td> </tr> <tr> <td>NPT</td> <td>AD47N(-Z)-D</td> </tr> </table>	Port thread type	④ Part No.	Rc	AD47-D	G	NPT	AD47N(-Z)-D		<table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td rowspan="2">AD47-2-A</td> </tr> <tr> <td>G</td> </tr> <tr> <td>NPT</td> <td>AD47N-2(Z)-A</td> </tr> </table>	Port thread type	④ Part No.	Rc	AD47-2-A	G	NPT	AD47N-2(Z)-A
Port thread type	④ Part No.																
Rc	AD47-D																
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NPT	AD47N(-Z)-D																
Port thread type	④ Part No.																
Rc	AD47-2-A																
G																	
NPT	AD47N-2(Z)-A																
Option symbol	C Note 1)																
Semi-standard symbol	8																
Appearance and part No.	Semi-standard: "8" (Standard)		Note 1) Minimum operating pressure is 0.1 5MPa. Note 2) Part No. ④ includes Bowl seal ③. Refer to [11. Disassembly Drawing](P30). Note 3) "Z" in Part No. ④ indicates standard specifications. The pressure unit: psi. The temperature unit: oF. Note 4) Refer to [4. How to Order] (P9) for option and semi-standard symbols..														
	<table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td rowspan="2">AD47-8-A</td> </tr> <tr> <td>G</td> </tr> <tr> <td>NPT</td> <td>AD47N-8(Z)-A</td> </tr> </table>	Port thread type	④ Part No.	Rc	AD47-8-A	G	NPT	AD47N-8(Z)-A									
Port thread type	④ Part No.																
Rc	AD47-8-A																
G																	
NPT	AD47N-8(Z)-A																

Option symbol	D ^{note 1)}		D ^{note 1)}																			
Semi-standard symbol	-	6	2																			
Appearance and part No.	Semi-standard: "-" (Standard) <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td>AD48-D</td> </tr> <tr> <td>G</td> <td></td> </tr> <tr> <td>NPT</td> <td>AD48N(-Z)-D</td> </tr> </table>		Port thread type	④ Part No.	Rc	AD48-D	G		NPT	AD48N(-Z)-D		Semi-standard: "2" (Standard) <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td>AD48-2-A</td> </tr> <tr> <td>G</td> <td></td> </tr> <tr> <td>NPT</td> <td>AD48N-2(Z)-A</td> </tr> </table>		Port thread type	④ Part No.	Rc	AD48-2-A	G		NPT	AD48N-2(Z)-A	
	Port thread type	④ Part No.																				
Rc	AD48-D																					
G																						
NPT	AD48N(-Z)-D																					
Port thread type	④ Part No.																					
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Port thread type	④ Part No.																					
Rc	AD48-6-A																					
G																						
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Option symbol	D ^{note 1)}																					
Semi-standard symbol	8																					
Appearance and part No.	Semi-standard: "8" (Standard) <table border="1"> <tr> <td>Port thread type</td> <td>④ Part No.</td> </tr> <tr> <td>Rc</td> <td>AD48-8-A</td> </tr> <tr> <td>G</td> <td></td> </tr> <tr> <td>NPT</td> <td>AD48N-8(Z)-A</td> </tr> </table>		Port thread type	④ Part No.	Rc	AD48-8-A	G		NPT	AD48N-8(Z)-A												
	Port thread type	④ Part No.																				
Rc	AD48-8-A																					
G																						
NPT	AD48N-8(Z)-A																					

Note 1) Minimum operating pressure is 0.1 MPa.

Note 2) Part No. ④ includes Bowl seal ③. Refer to [11. Disassembly Drawing](P30).

Note 3) "Z" in Part No. ④ indicates standard specifications. The pressure unit: psi. The temperature unit: °F.

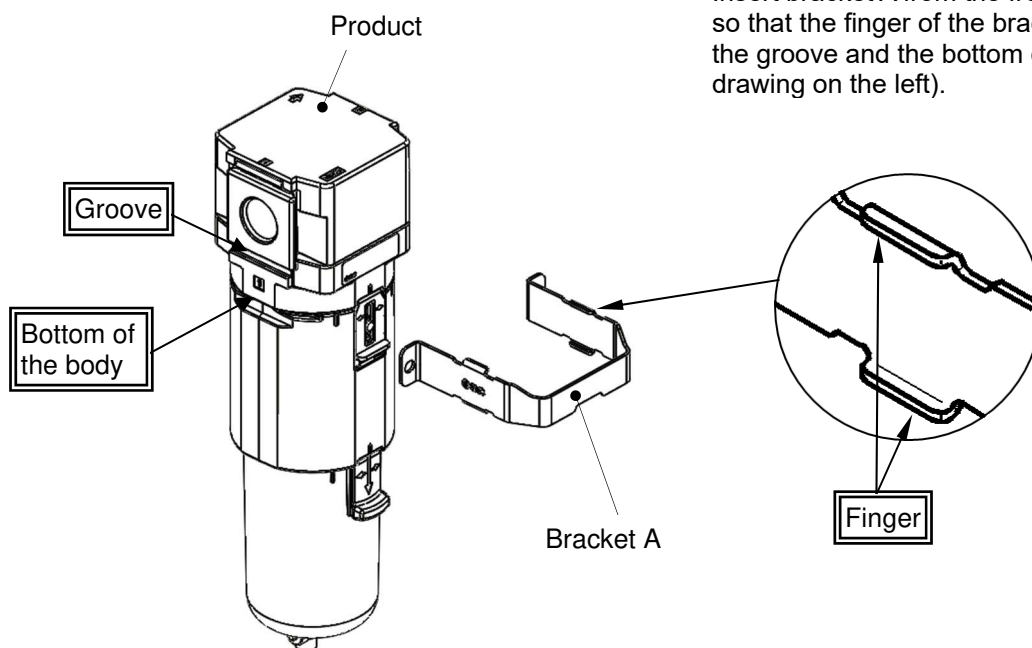
Note 4) Refer to [4. How to Order] (P9) for option and semi-standard symbols.

7. Assembly of Optional parts

1) Bracket

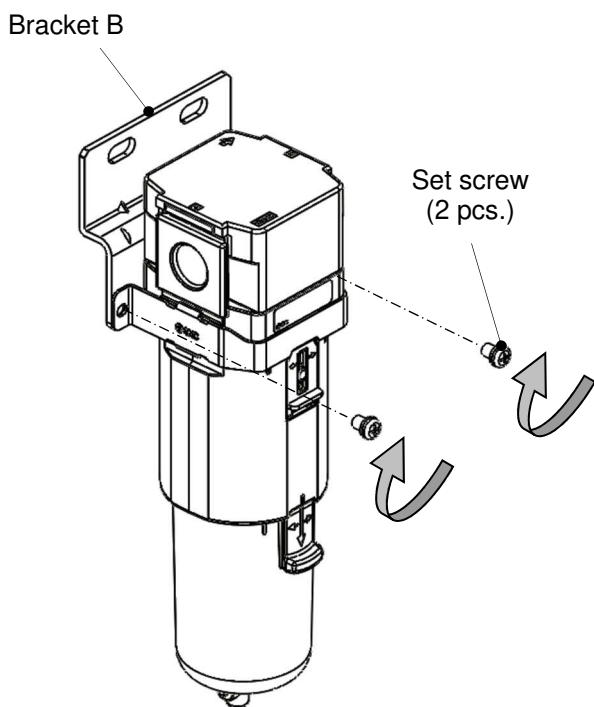
1) Mounting of bracket A

Insert bracket A from the front side of the product so that the finger of the bracket A engages with the groove and the bottom of the body (see drawing on the left).



2) Mounting of bracket B

Fix the bracket B with the set screw (2 pcs.) included in the package. Refer to the table below for the tightening torque.



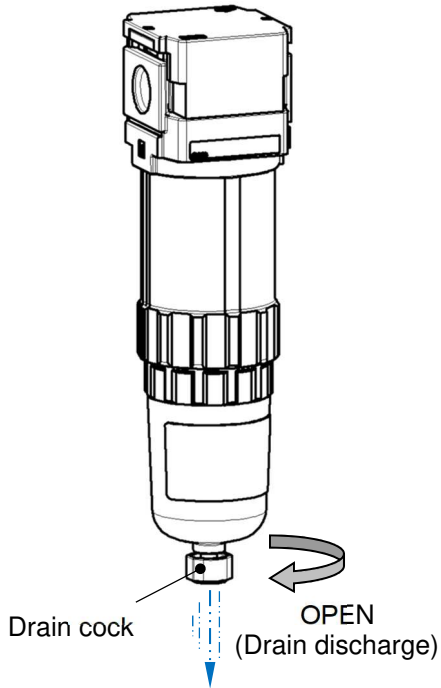
Line filter	Tools	Tightening torque
AFF20	Phillips screwdriver(+)	0.75+/-0.2 N · m
AFF30		
AFF40		

8. Operation and Adjustment

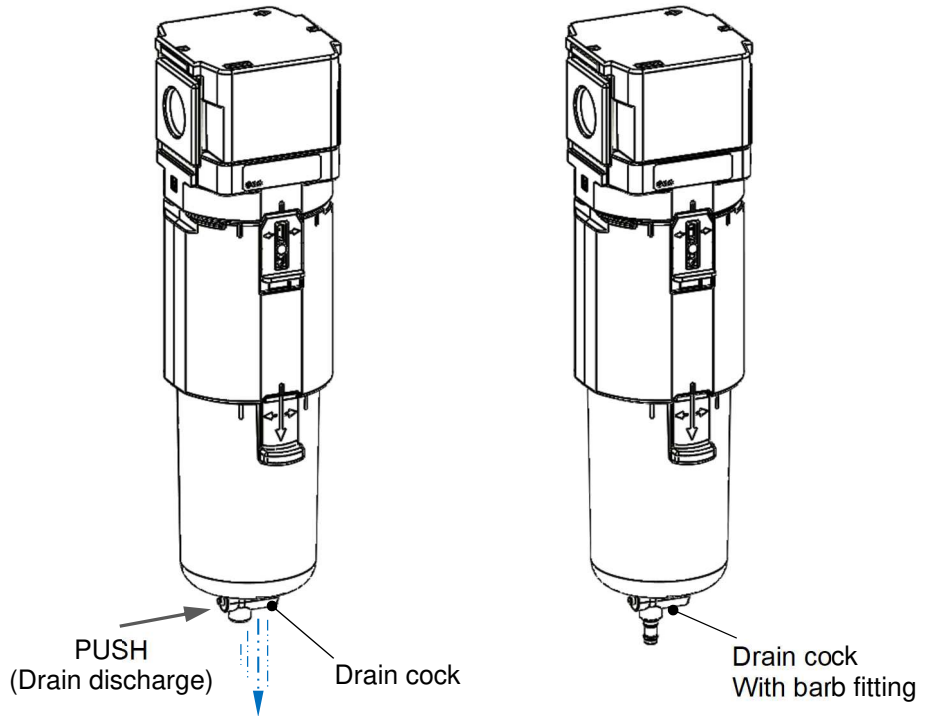
1) Discharging the product with drain cock

- Pressurize the inside of the air filter when discharging drain. Drain will not be discharged properly if not pressurized.
- Drain discharge mechanism is different depending on the bowl assembly. Check the bowl assembly and discharge the drain following the method below.
Rotation type: After discharging the drain, tighten the drain cock to the opposite direction by hand until the seal inside seals correctly.
Use of a tool can damage the product.

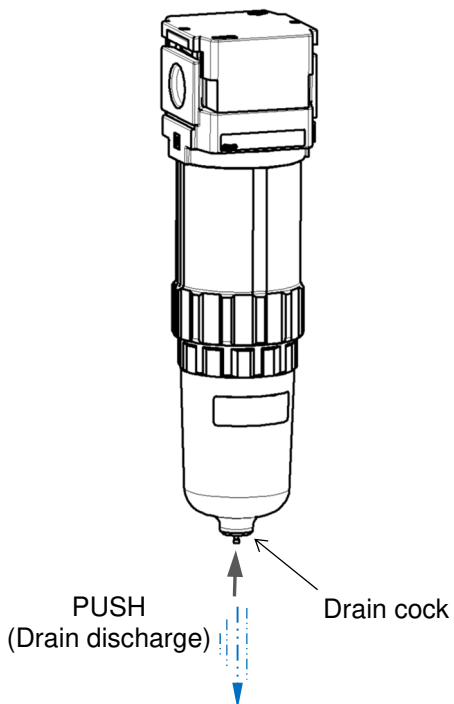
AFF20: Drain cock (rotation type)
(Polycarbonate bowl / Nylon bowl)



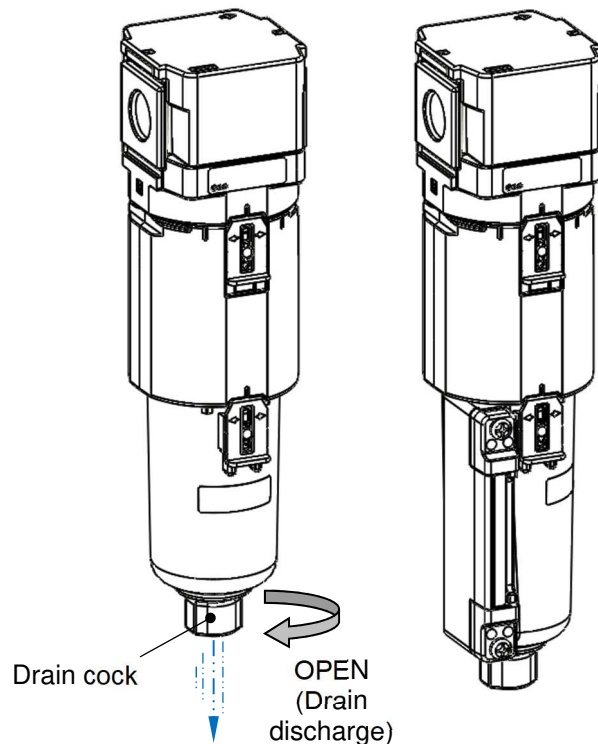
AFF30/AFF40: With drain cock and barb fitting (push type)
(Polycarbonate bowl / Nylon bowl)



AFF20: With drain cock (push type)
(Metal bowl)



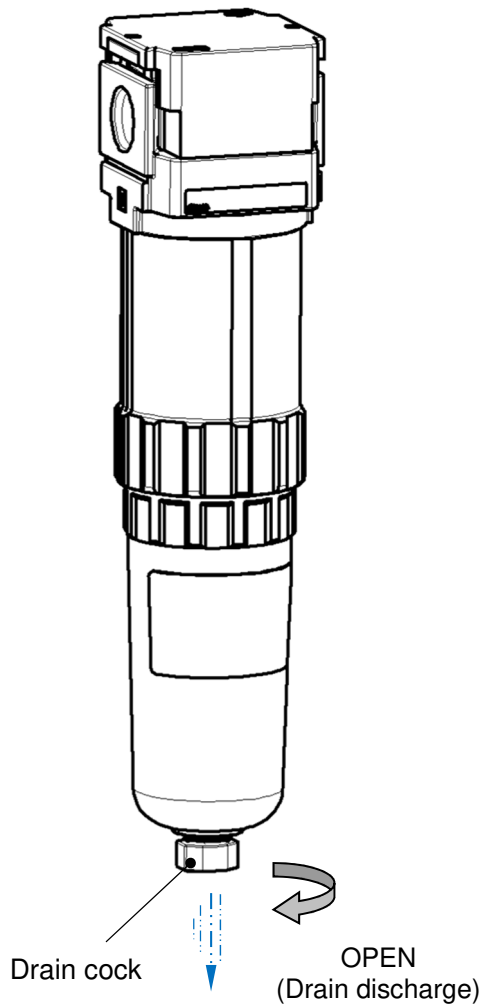
AFF30/AFF40: Drain cock (rotation type)
(Metal bowl / metal bowl with level gauge)



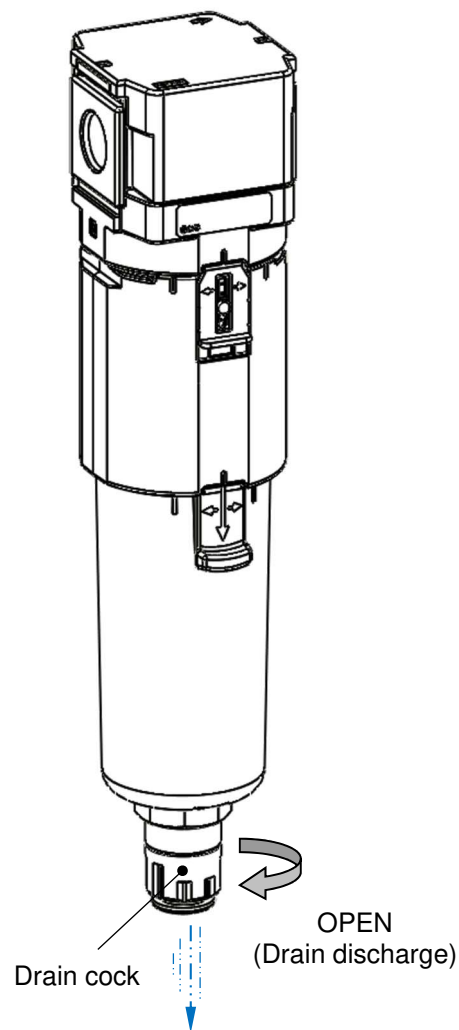
2) Manual drain discharge of the auto drain

- Pressurize the inside of the air filter when discharging drain. Drain will not be discharged properly if not pressurized.
- To discharge the auto drain manually, follow the procedure below. After discharging the drain, rotate the cock to the opposite direction by hand to close the drain valve. Use of a tool can damage the product.

AFF20: Auto drain



AFF30/AFF40: Auto drain



9. Troubleshooting

Refer to [10. Replacement work procedure](P23 to 29) and 11. Disassembly Drawing](P30).

Problem		Possible causes	Countermeasure	Page for reference
Category	Failure			
Flow rate	As pressure drop is large, fluid does not flow.	1. Clog of the element.	Replace the element.	P23 to 24 P26 to 27
Air leakage	Air leaks between the body and joint.	1. Breakage of joint seal.	Replace the bowl seal.	P23 to 24 P26 to 27
	Air leaks between the joint and the bowl.	1. Breakage of the bowl seal.	Replace the bowl seal.	P25 P28 to 29
	Air leakage from the bowl.	1. Bowl is damaged.	Replace the bowl assembly. (If the solvent is considered to be harmful, replacement to the metal bowl is recommended)	P25 P28 to 29
	Air leakage from the drain cock.	1. Foreign matter caught in the valve of the drain cock.	Open the drain cock for a few seconds for blowing.	P20 to 21
		2. Seating part of the drain cock is damaged.	Replace the bowl assembly.	P25 P28 to 29
	Drainage or air continues blowing out of the drain discharge of the float type auto drain.	1. Low supply pressure	Check the minimum operating pressure of the auto drain.	P11 to 18
		2. The product is not mounted correctly.	Install the drain exhaust so that it will face vertically downward.	-
3. Foreign matter is caught at the main valve of the auto drain.		Remove the dust by manual drain discharge.	P20 to 21	
4. Main valve of the auto drain is broken.		Replace the bowl assembly.	P25 P28 to 29	
5. Drain piping is long, or I.D. of the piping is small. (Back pressure is applied.)		Be sure to connect the appropriate piping for drain.	P5 to 6	
6. Drain exhaust and bowl seat are broken.		Replace the bowl assembly.	P25 P28 to 29	
Operability	Drain is not discharging when the drain cock opens.	1. Blockage of outlet of the drain cock due to solid foreign matter etc.	Replace the bowl assembly.	P25 P28 to 29
	Too much drain comes from the piping of outlet side.	1. Drain level reaches the bottom of the element.	Open the drain cock for draining and replace the element.	P20 to 21 P23 to 24 P26 to 27

Note) Fluorine grease is recommended when applying additional grease.

10. How to Replace the Components

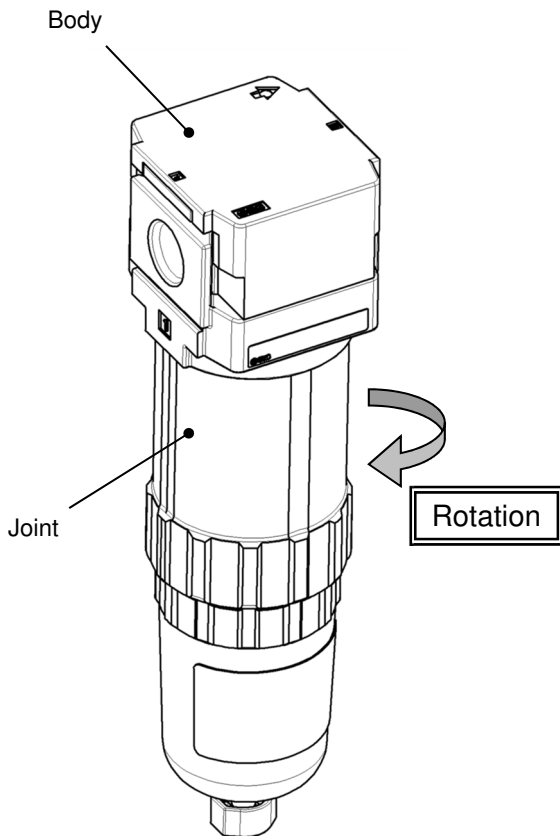
Warning

Before replacement, make sure that no pressure remains in the equipment.
After replacement, confirm that the product satisfies specific functions and no external leakage occurs before operating it.

1.1) Element disassembly [AFF20]

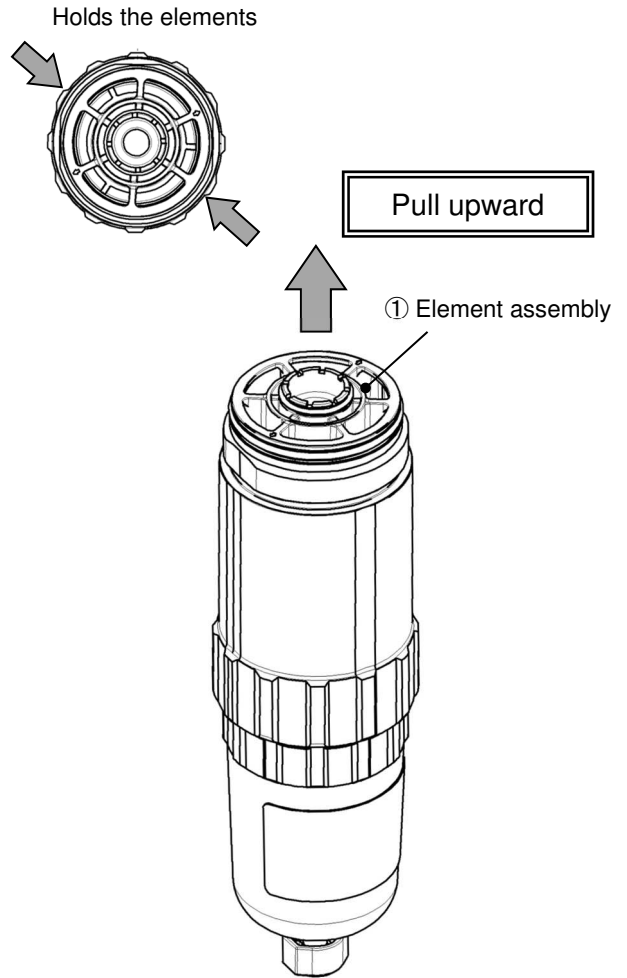
Step 1

Remove the joint from the product.
If the joint is tightened too much to be removed, use a hook spanner until it can be loosened by hand.



Step 2

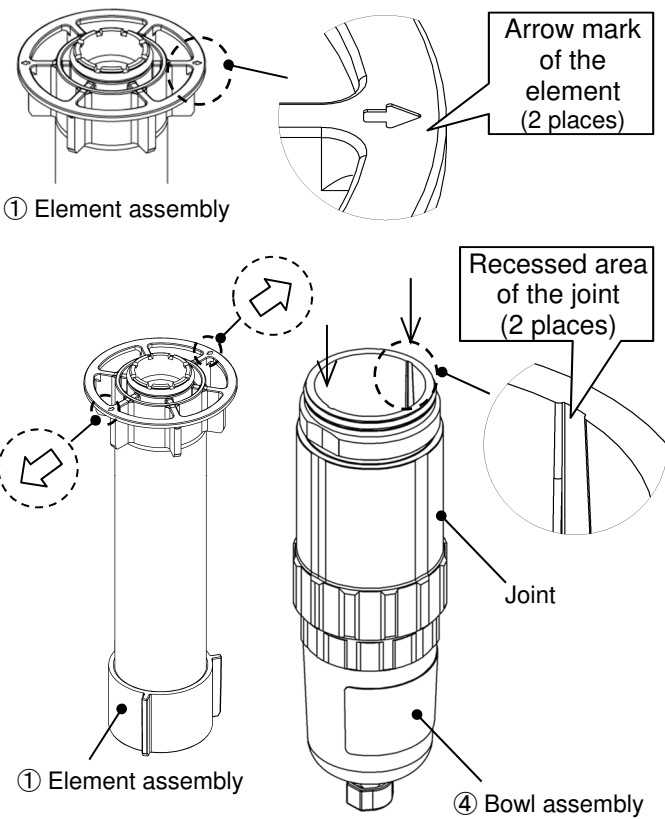
Remove the element assembly by the holding part of the element assembly (shown by the arrows below).



1.2) Element assembly [AFF20]

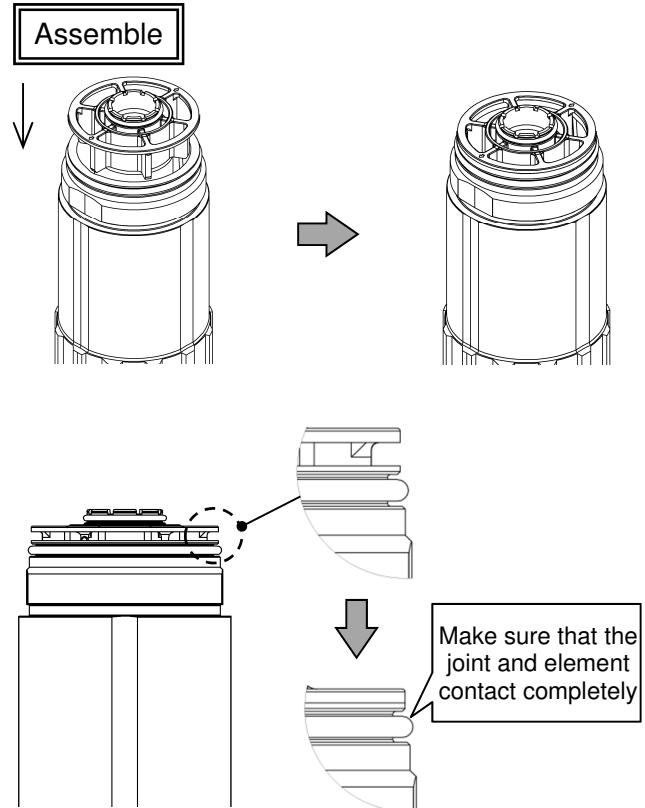
Step 1

Align 2 arrow marks and 2 recessed areas of the joint.



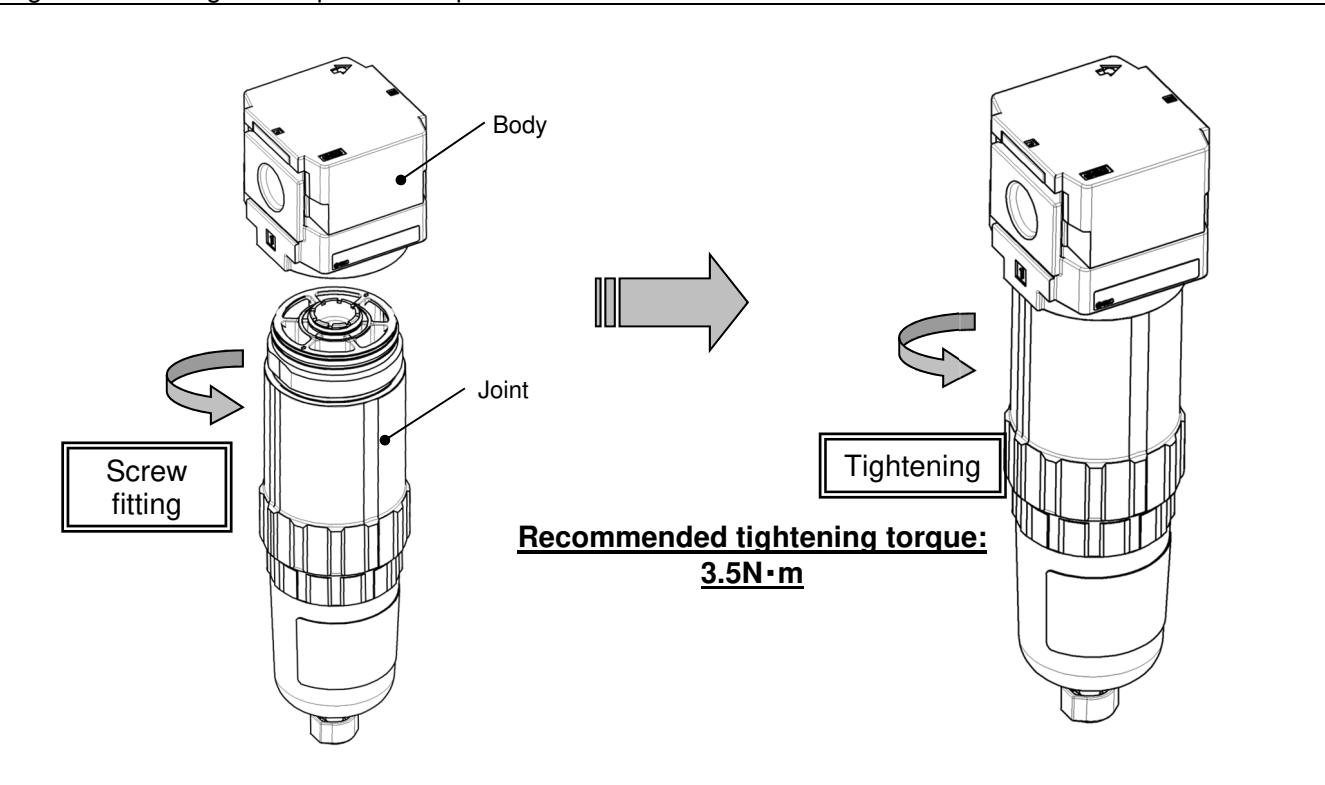
Step 2

Press the element downward until the element and joint come into contact with each other completely. If they are forced to be inserted without aligning, the element will break.



Step 3

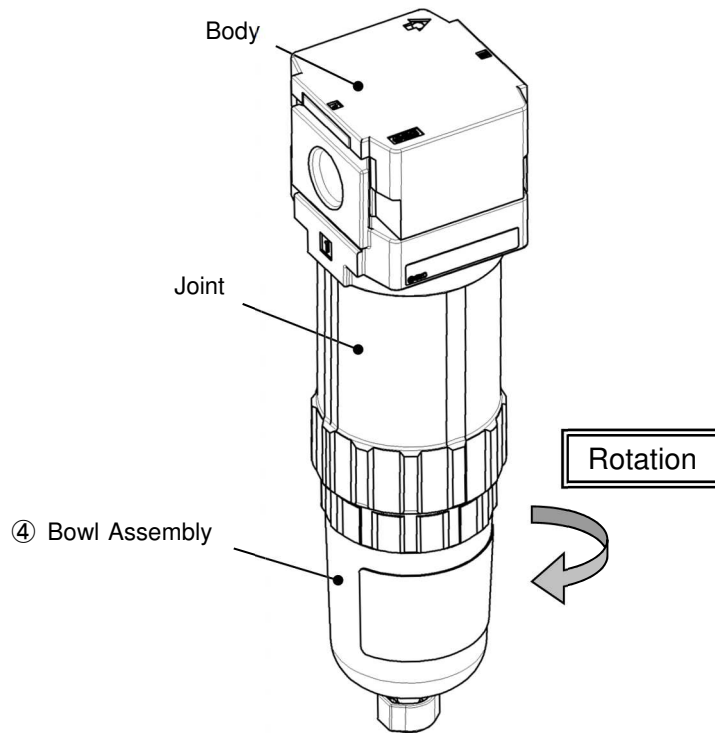
Screw the bowl assembly into the product. Tighten it referring to the specified torque below.



2.1) Bowl disassembly [AFF20]

Step 1

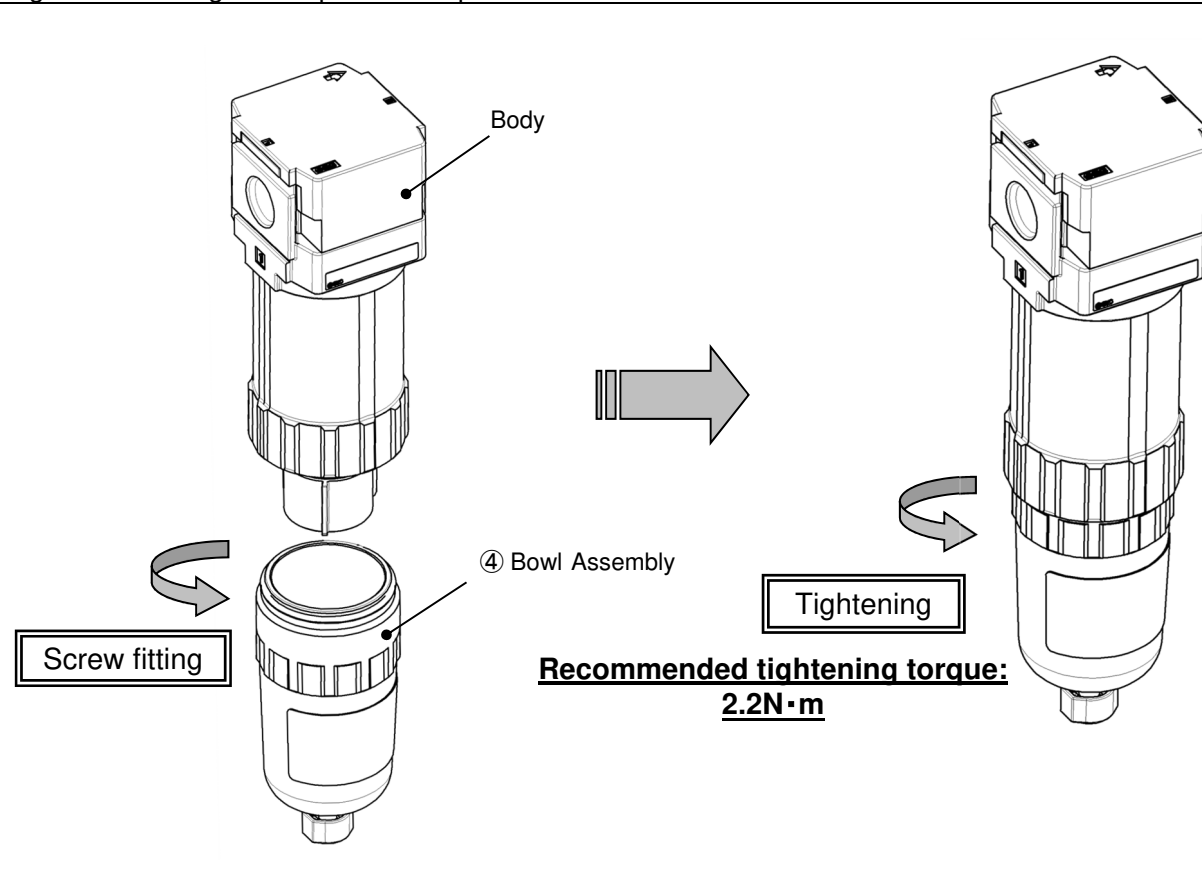
Remove the bowl assembly from the product.
If the bowl assembly is tightened too much to be removed, use a hook spanner until it can be loosened by hand.



2.2) Bowl assembly [AFF20]

Step 2

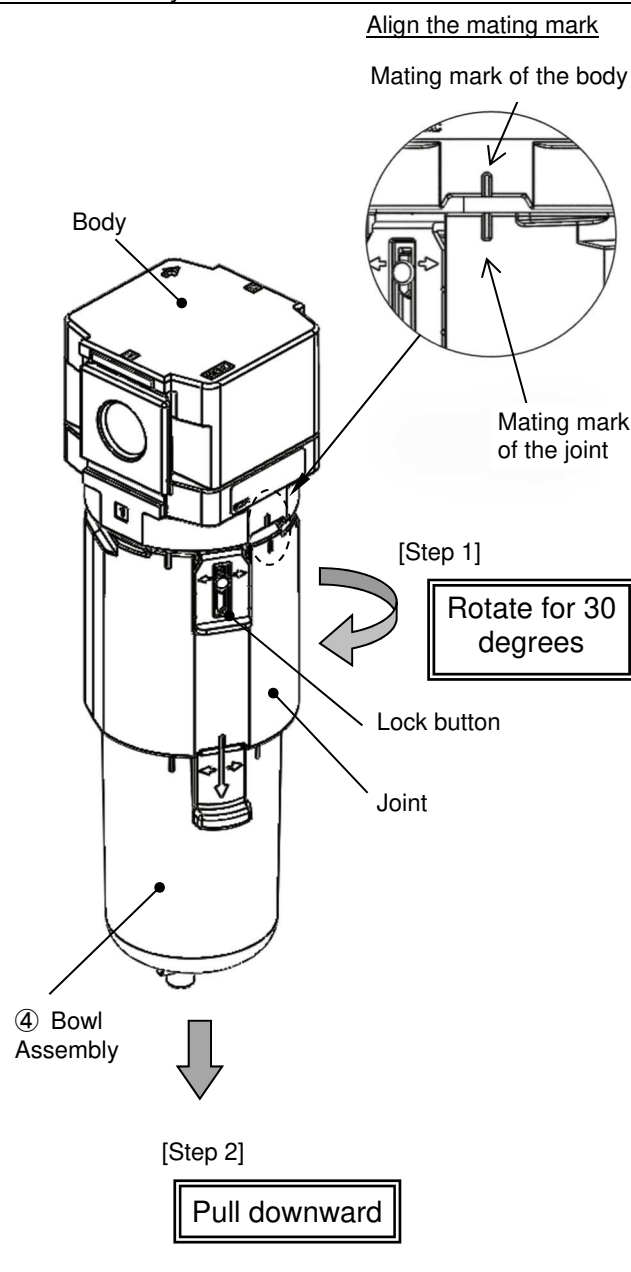
Screw the bowl assembly into the product.
Tighten it referring to the specified torque below.



3.1) Element disassembly [AFF30, AFF40]

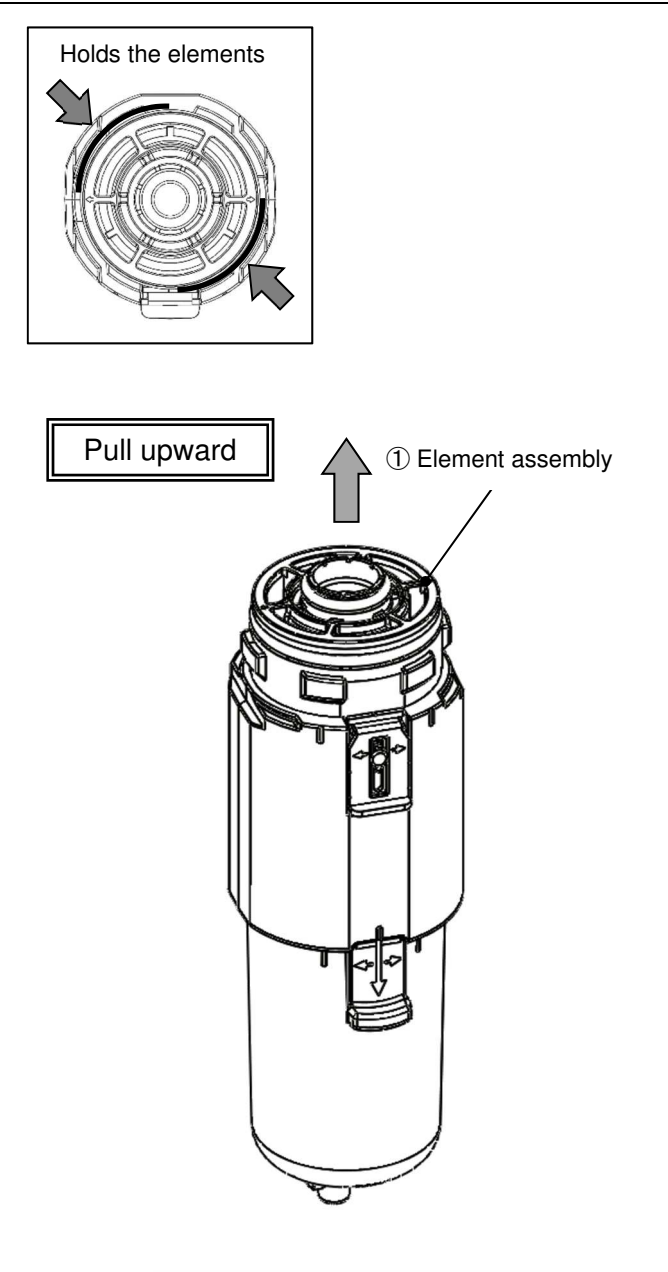
Step 1

To remove the joint from the body, rotate for approx. 30 degrees with the lock button held down. Align the mating mark of the body and joint and pull down the bowl assembly to remove it.



Step 2

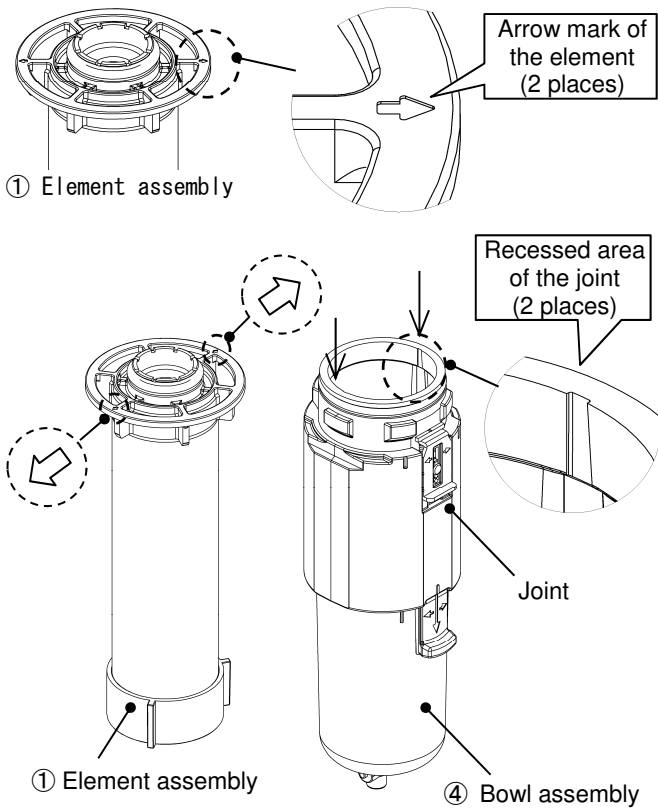
Hold the element as shown below and pull upward to remove the element assembly.



3.2) Element assembly - assembly [AFF30, AFF40]

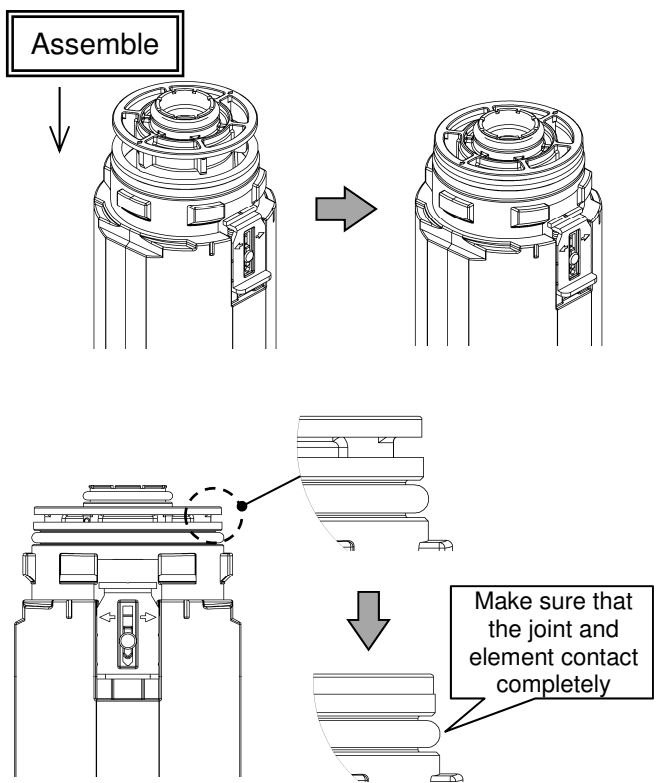
Step 1

Align 2 arrow marks and 2 recessed areas of the joint.



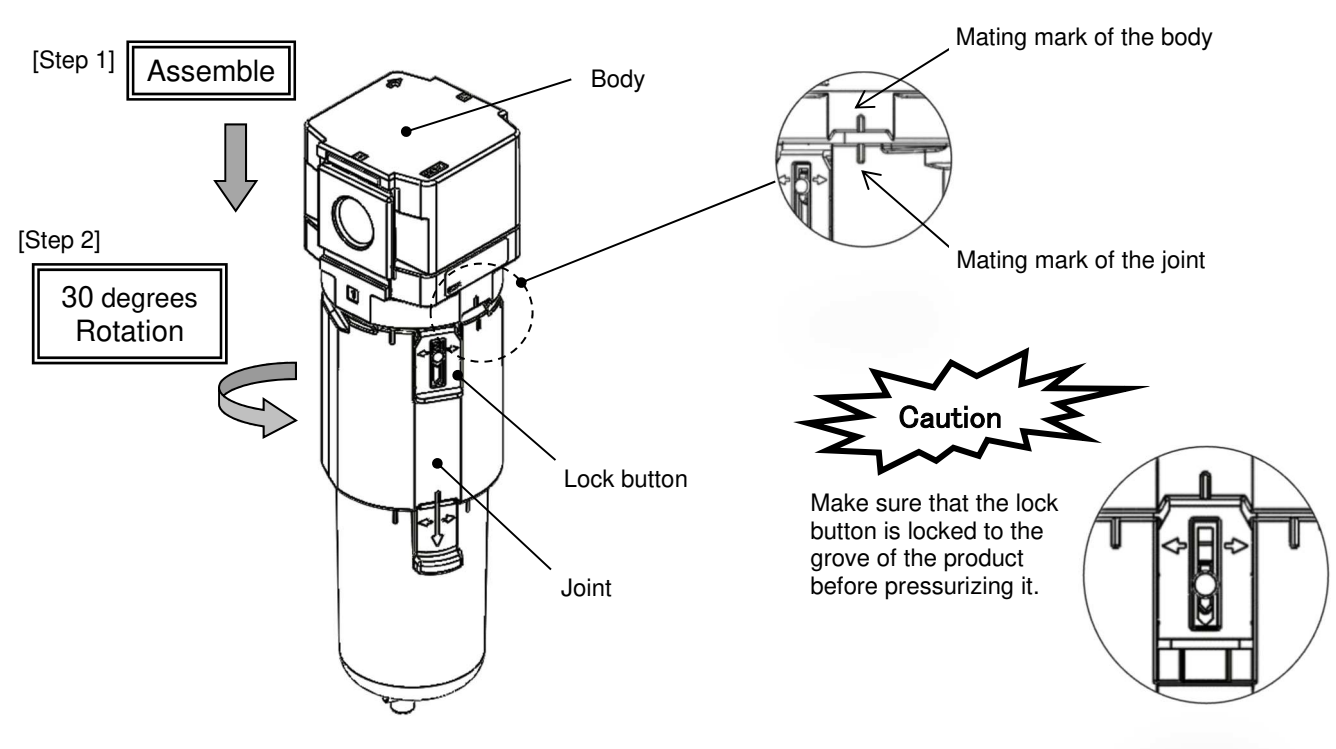
Step 2

Press the element downward until the element and joint come into contact with each other completely. If they are forced to be inserted without aligning, the element will break.



Step 3

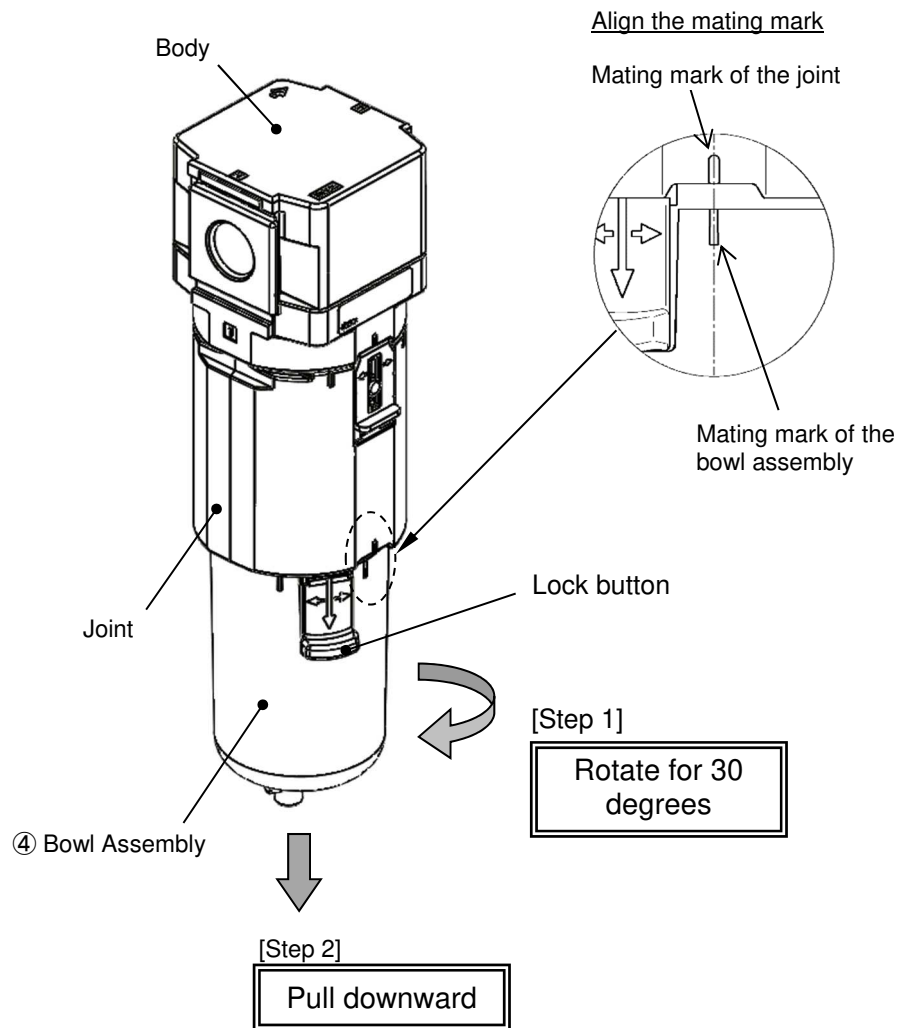
While the lock button is held down, mount the body and joint where their marks meet. Rotate the joint until the lock button meets the body groove (approx. 30 degrees).



4.1) Bowl disassembly [AFF30, AFF40]

Step 1

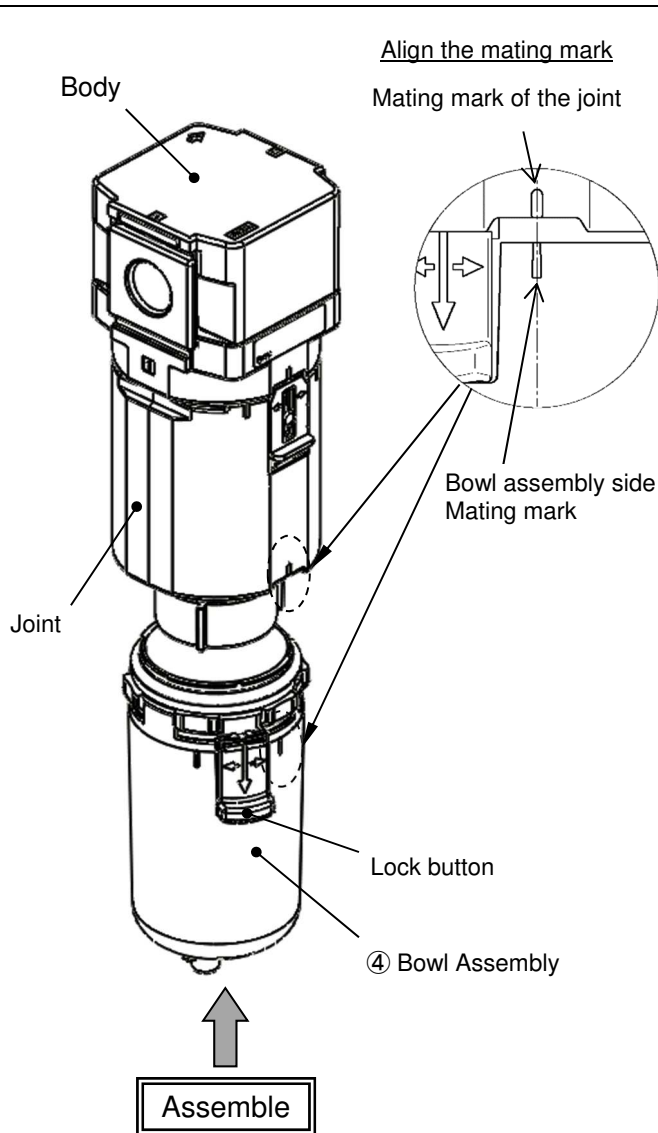
To remove the bowl assembly from the product, rotate for approx. 30 degrees while the lock button is held down. Align the mating mark of the joint and bowl assembly and pull the bowl assembly down to remove it.



4.2) Bowl assembly [AFF30, AFF40]

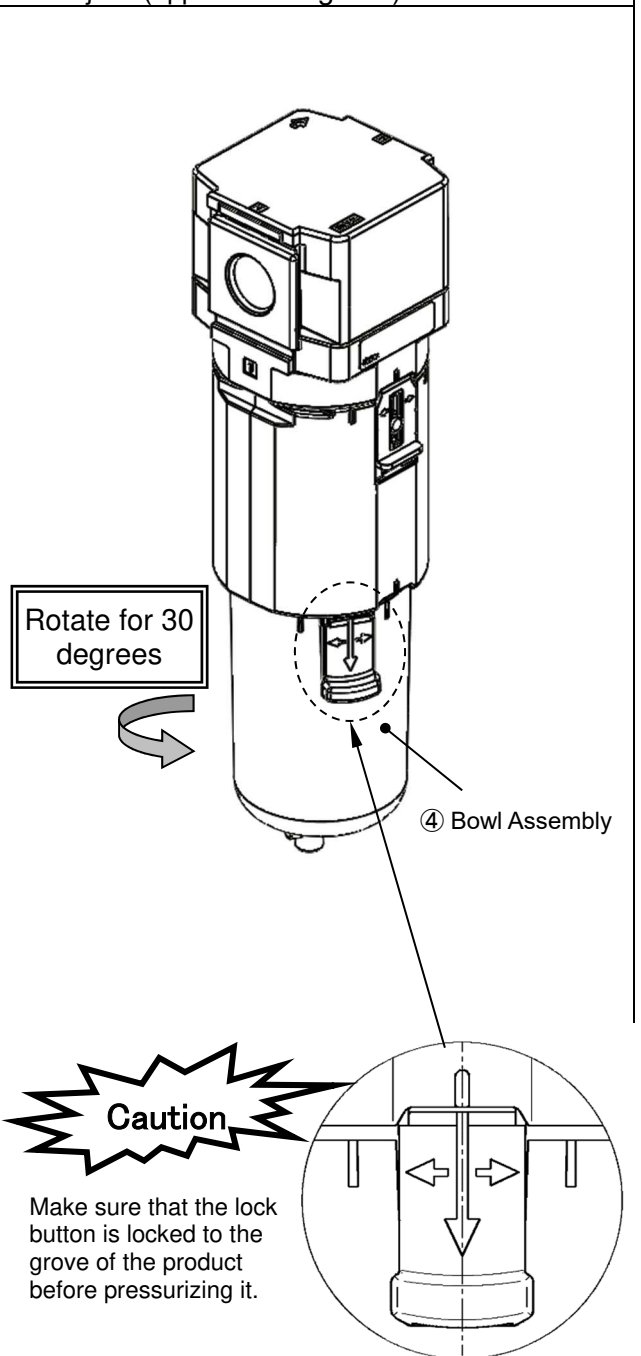
Step 1

Mount the bowl assembly at the position where the mating mark of the joint and bowl assembly meet.



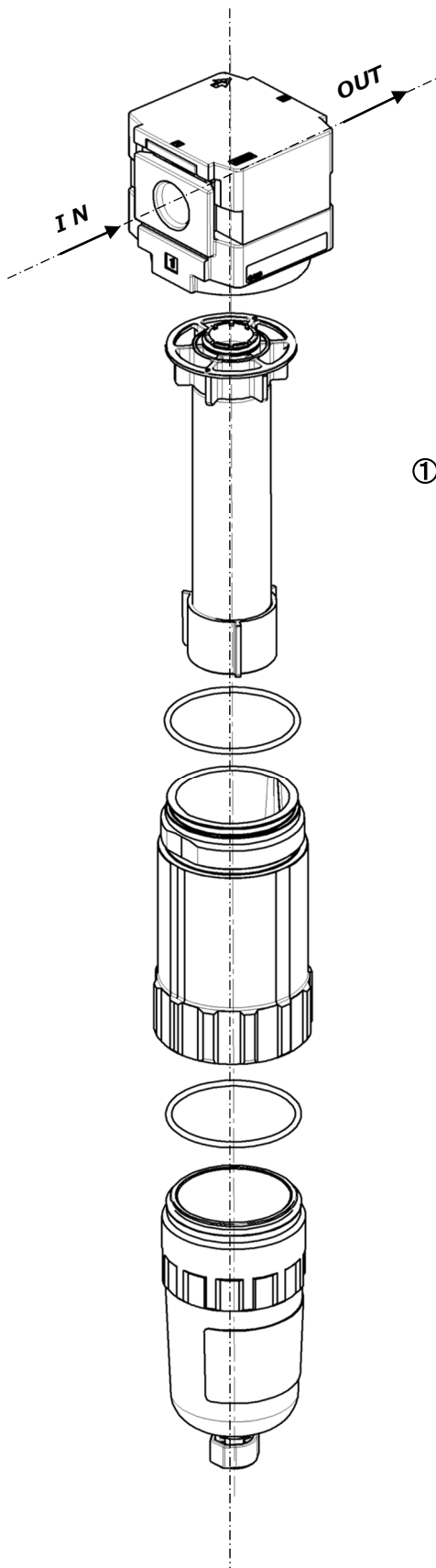
Step 2

While the lock button is held down, rotate the bowl assembly so that the lock button meets the groove of the joint (approx. 30 degrees).

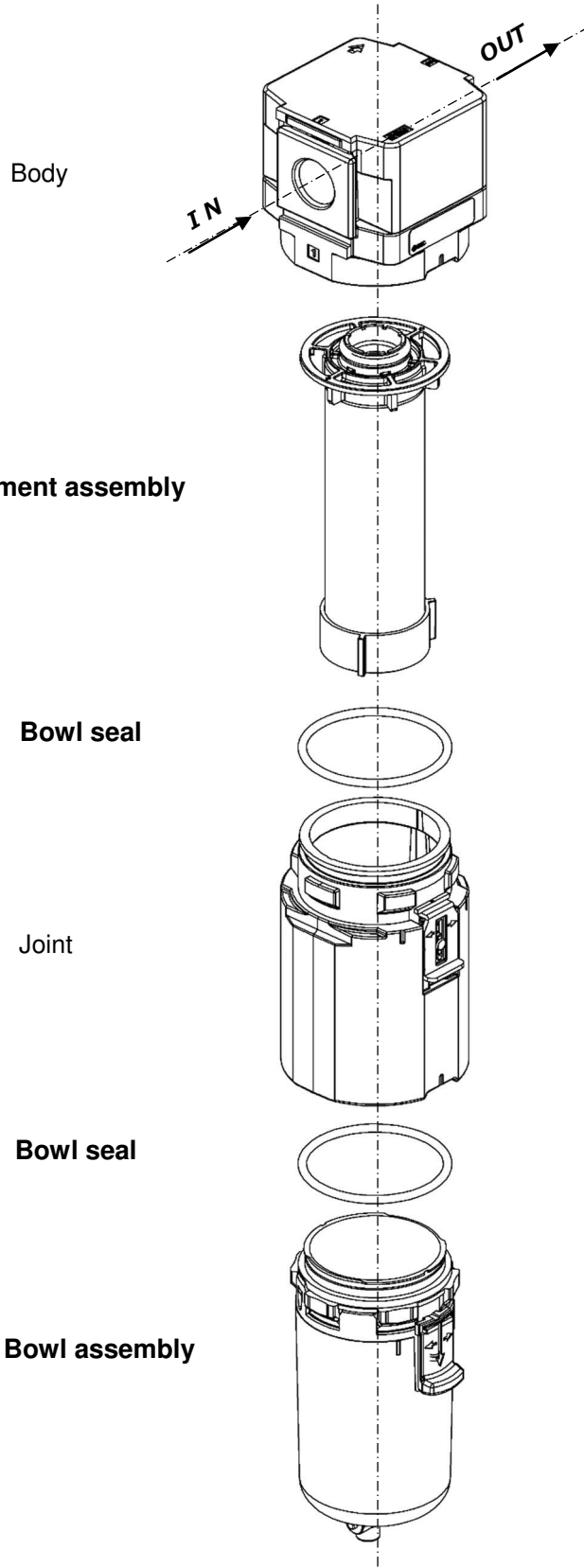


11. Disassembly Drawing

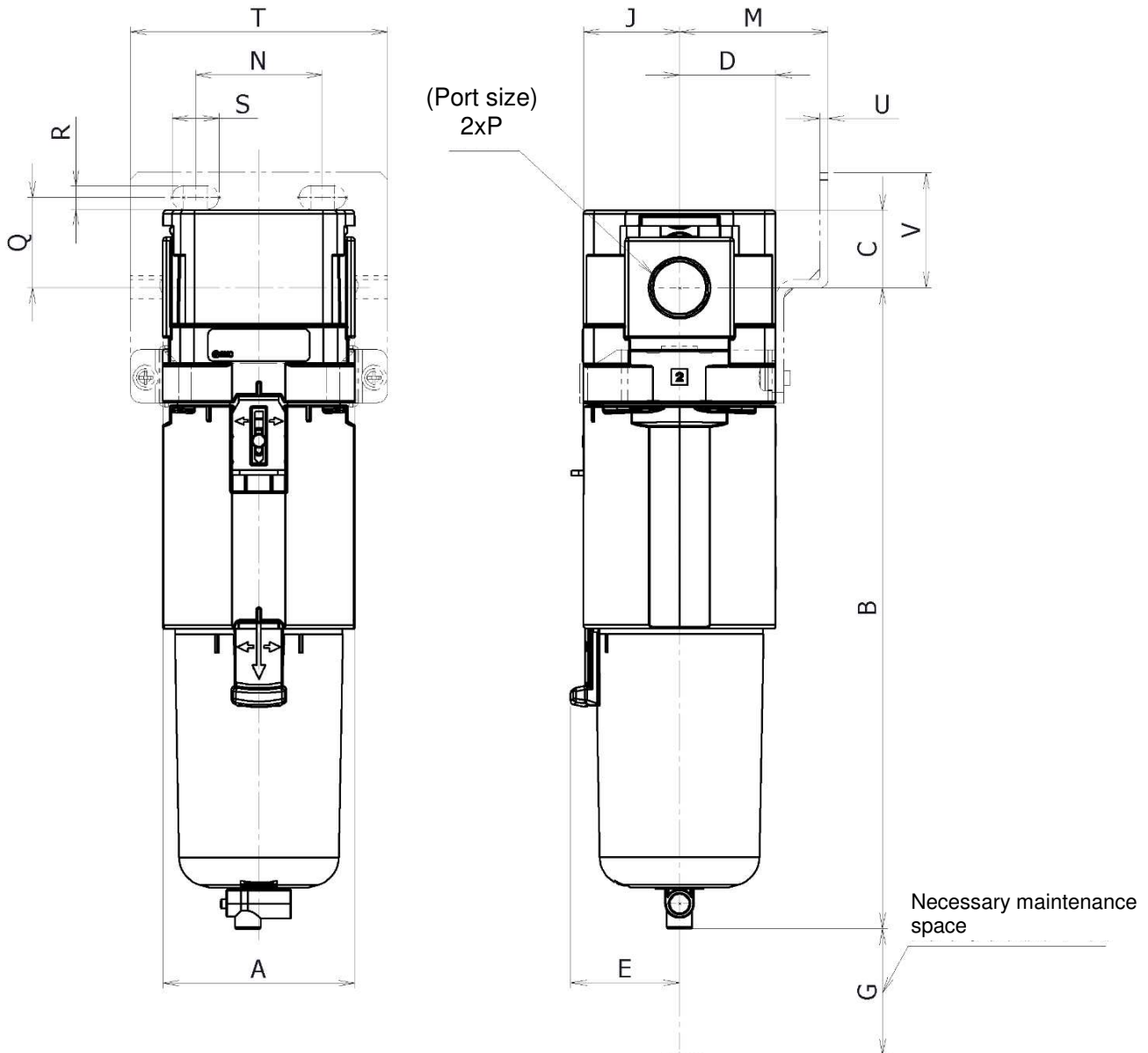
1) Exploded drawing of AFF20



2) Exploded drawing of AFF30, AFF40



12. Dimensions



Model No.	Standard specifications								Bracket mount							
	P	A	B	C	D	E	G	J	M	[N]	Q	R	S	T	U	V
AFF20	1/8, 1/4	40	142.3	17.5	21	-	25	21	30	27	22	5.4	8.4	60	2.3	28
AFF30	1/4, 3/8	53	178.1	21.5	26.5	30	35	26.5	41	35	25	6.5	13	71	2.3	32
AFF40	1/4 · 3/8 · 1/2	70	223.7	25.5	35.5	38.4	40	35.5	50	52	30	8.5	12.5	88	2.3	39

Auto drain / semi-standard bowl

Model No.	Auto drain			Semi-standard specifications					
	PC/PA bowl	Metal bowl	Metal bowl with level gauge	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
				Barb fitting.	With drain guide	With drain cock	With drain guide	With drain cock	With drain guide
	B	B	B	B	B	B	B	B	B
AFF20	159.6	159.6	159.6	-	146.1	142.1	148.6	-	-
AFF30	219.8	219.8	219.8	186.6	184.9	180.6	185.1	200.6	205.1
AFF40	263.5	263.5	263.5	232.2	230.5	226.1	230.6	246.1	250.6

Revision history
Revision A: September 2020 Addition of the Series 20 and 40

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