



# Operation Manual

PRODUCT NAME

**AIR FILTER**

MODEL/ Series

AF10-M5 (C) (-2, 6, R, Z)

AF20- (F, N) 01 ~ (F, N) 02 (B, C) (-2, 6, C, J, R, Z)

AF30- (F, N) 02 ~ (F, N) 03 (B, C, D) (-2, 6, 8, J, R, W, Z)

AF40- (F, N) 02 ~ (F, N) 04 (B, C, D) (-2, 6, 8, J, R, W, Z)

AF40- (F, N) 06 (B, C, D) (-2, 6, 8, J, R, W, Z)

AF50- (F, N) 06 ~ (F, N) 10 (B, C, D) (-2, 6, 8, J, R, W, Z)

AF60- (F, N) 10 (B, C, D) (-2, 6, 8, J, R, W, Z)

**SMC Corporation**

# Contents

	PAGE
1. PRECAUTIONS FOR SAFETY	1~4
2. APPLICATION	5
3. SPECIFICATIONS	5
4. HOW TO ORDER	5
5. TROUBLE SHOOTING	6
6. CONSTRUCTION / PARTS LIST	7
7. SPECIFICATIONS OF BOWL ASSEMBLY	8~10
8. REPLACEMENT PROCEDURE	11~12
9. DISASSEMBLY DRAWING	13~15
10. DIMENSIONS	16



# AIR FILTER

## 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), Japan Industrial Standards (JIS)\*1) and other safety regulations\*2).

- \*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 10218-1992: Manipulating industrial robots -- Safety  
JIS B 8370: General rules for pneumatic equipment.  
JIS B 8361: General rules for hydraulic equipment.  
JIS B 9960-1: Safety of machinery -- Electrical equipment for machines. (Part 1: General requirements)  
JIS B 8433-1993: Manipulating industrial robots - Safety. etc.

\*2) Labor Safety and Sanitation Law, etc.



### Caution

Operator error could result in injury or equipment damage.



### Warning

Operator error could result in serious injury or loss of life.



### Danger

In extreme conditions, there is a possibility of serious injury or loss of life.

### 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.

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.

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.

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.



# *AIR FILTER*

## **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**

**The warranty period of the product is 1 year in service or 1.5 years after the product is delivered. Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.**

**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.**

**Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.**

#### **Compliance Requirements**

When the product is exported, strictly follow the laws required by the Ministry of Economy, Trade and Industry (Foreign Exchange and Foreign Trade Control Law).

## Precautions for design



### WARNING

- ① External parts including the bowl are made of resin. Organic solvents including synthetic fluid, chemicals including acetone, alcohol, ethylene chloride, sulphuric acid, nitrate, hydrochloric acid, cutting oil, kerosene, gasoline, lock material of screw are harmful. Don't use the regulator where containing those.
- ② Avoid the application where charge and discharge of pressure to standard bowl is switched frequently. The bowl may be broken. For this kind of application, the metal bowl is recommended.
- ③ Consult SMC if no leakage is allowed due to the environment, or operating fluid is not air
- ④ Protect from ultra violet ray and radiation heat by shield.



### CAUTION

- ① AD17 and 27 with auto drain may leak the drain pooled there during exhaust of pressure. (This leakage is allowed in their constructions and not failure.) Be sure to connect piping for drain.

## Selection



### WARNING

- ① Mineral grease used for internal packing may leak to the outlet. Please contact SMC if this is a problem.
- ② N.O type auto drain should be used under the following requirements to avoid operating failure.  
Output of compressor: 0.75kW or more.  
Discharged flow rate: 100L/min (ANR) or more.  
If multiple auto drains are used, confirm used compressor has capacity over the result of multiplying the above capacity and the number of used auto drains.  
[For example, in case of two auto drain, the compressor need the capacity over 1.5kW [200L/min (ANR)].]
- ③ N.C. type auto drain should be used under the following requirements to avoid operating failure.  
Operating pressure: 0.1MPa at min. for AD17 and 27, 0.15MPa at min. for AD37 and 47.

## Installation



### CAUTION

- ① Don't drop nor apply impact during transportation or installation. It causes damage of the product and malfunction.
- ② Don't install where highly humid or temperature is high. It causes damage of the product and malfunction.
- ③ Connect the regulator ensuring the direction of "IN" and "OUT" for air direction or an arrow. Wrong connection lead to cause malfunction.
- ④ Install vertically so that outlet of drain would turned downward. Use with the outlet of drain turned lateral or upward causes malfunction.
- ⑤ Make a space to provide easy access at the bottom when replacing element or draining. For dimensions of the space, refer to Outside dimensions.

## Piping



### WARNING

- ① Flash or clean piping before piping to eliminate swarf, cutting oil, solid foreign material. Remaining of these lead to cause malfunction.
- ② When screw in piping or fitting, avoid entering of chips and sealing materials from piping screws into the inside of equipment. Or malfunction is led to occur. When use sealing tapes, leave 1.5~2 threads of a screw and starts taping.

## Piping

- 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	M5	1/8	1/4	3/8	1/2	3/4	1
Torque	*1	7~9	12~14	22~24	28~30	28~30	36~38

\*1: First, tighten it by hand, then give it an additional 1/6 turn with a wrench.

- ④ Don't apply any torsional moment, or bending moment except the weight of the regulator itself. External pipings need its support separately. Hard piping like steel tube is susceptible to excessive moment load or vibration. Insert the flexible tube to cancel the influence
- ⑤ 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.
- ⑥ The piping for drain from auto drain should be connected under the following requirements to avoid operating failure.  
 AD17, 27: I.D.  $\phi$  2.5 ( $\phi$  3/32") at min., Length 5m (200") at max.  
 AD37, 47(N): I.D.  $\phi$  4 ( $\phi$  3/16") at min., Length 5m (200") at max.  
 AD38, 48(N): I.D.  $\phi$  6.5 ( $\phi$  1/4") at min., Length 5m (200") at max.

## 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 much drain lead to cause malfunction. Install the air drier or the after-cooler before the air filter.

## Maintenance



### WARNING

- ① Maintenance or check 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.
- ② Perform periodical check to find crack, flaw or other deterioration on resin bowl. If any of them is seen, as malfunction is caused, replace with new bowl or metal bowl.
- ③ Check the dirt of resin bowl periodically. If any dirt is seen, replace with new bowl. And if removing off the dirt by washing instead of replacement, never use washing material other than neutral detergent. Otherwise, the bowl is damaged.
- ④ Open and close drain cock manually. Open and close by a too may damage the drain cock.
- ⑤ Replace the element before 2 years passed since purchase or pressure drop from initial outlet pressure reaches 0.1MPa. Or the element is broken.



### 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.
- ③ The manual exhaust for emergency case can be performed by counterclockwise rotation of the handle in AD17 and 27. (O ← direction)  
For AD37, 38, 47 and 48, rotate the drain cock counterclockwise in that case. (O ← direction)

## 2. APPLICATION

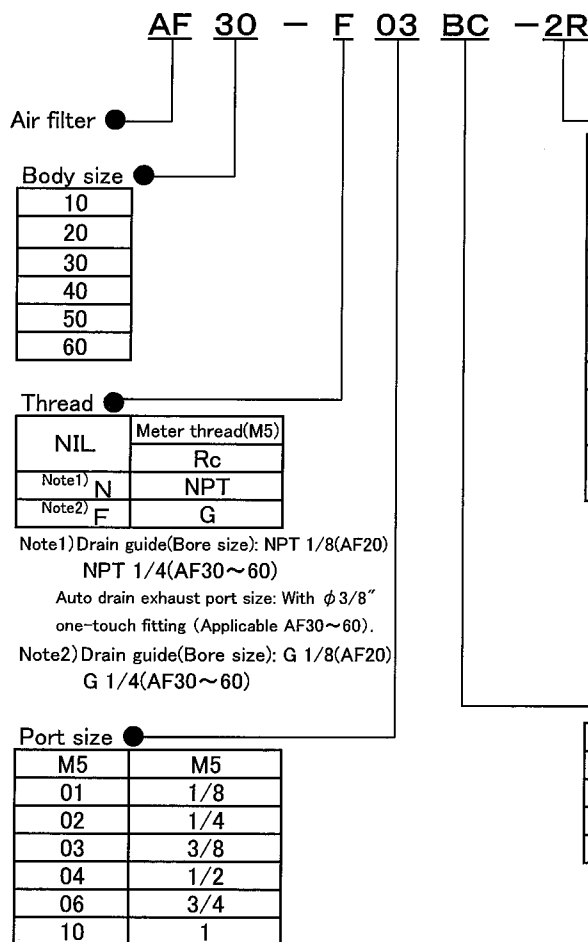
This instrument aims at eliminating excess saturated water of the air line and solid foreign material of air lines.

## 3. SPECIFICATIONS

Model	AF10	AF20	AF30	AF40	AF40-06	AF50	AF60
Port size	M5	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1	1
Fluid	Air						
Proof pressure	1.5MPa						
Max. operating pressure	1.0MPa						
Ambient and fluid temperature	-5~60°C(Should be no freezing)						
Filtration	5 μm						
Drain capacity (cm <sup>3</sup> )	2.5	8	25	45	45	45	45
Mass (kg)	0.06	0.10	0.22	0.45	0.49	0.99	1.05
Note) Bowl guard	×	△	○	○	○	○	○

Note) ○ : Combinable to standard    △ : Combinable to option    × : Impossible

## 4. HOW TO ORDER



### ● Option

Symbol	Description	Applicable model
NIL	—	—
2	Metal bowl	AF10~60
6	Nylon bowl	AF10~60
8	Metal bowl with sight glass	AF30~60
C	Bowl guard	AF20
Note4) J	With drain guide 1/8	AF20
	With drain guide 1/4	AF30~60
R	Flow direction: From right to left	AF10~60
W	With drain cock and barb fitting (For nylon φ 6 × φ 4)	AF30~60
Note5) Z	Nameplate, Bowl note Unit: psi · ° F	AF10~60

When specifying more than one option, indicate symbols numerically then alphabetically.

Note4) Without valve function.

Note5) Thread: M5, NPT

Z is applicable to only overseas because of new measurement law in Japan(SI unit).

### ● Accessory Note3)

Symbol	Description	Applicable model
Nil	—	—
Note3) B	With Bracket	AF20~60
C	With float auto drain (N.C.)	AF10~60
D	With float auto drain (N.O.)	AF30~60

Note3) Bracket is packed together and is not mounted.

## 5. TROUBLESHOOTING

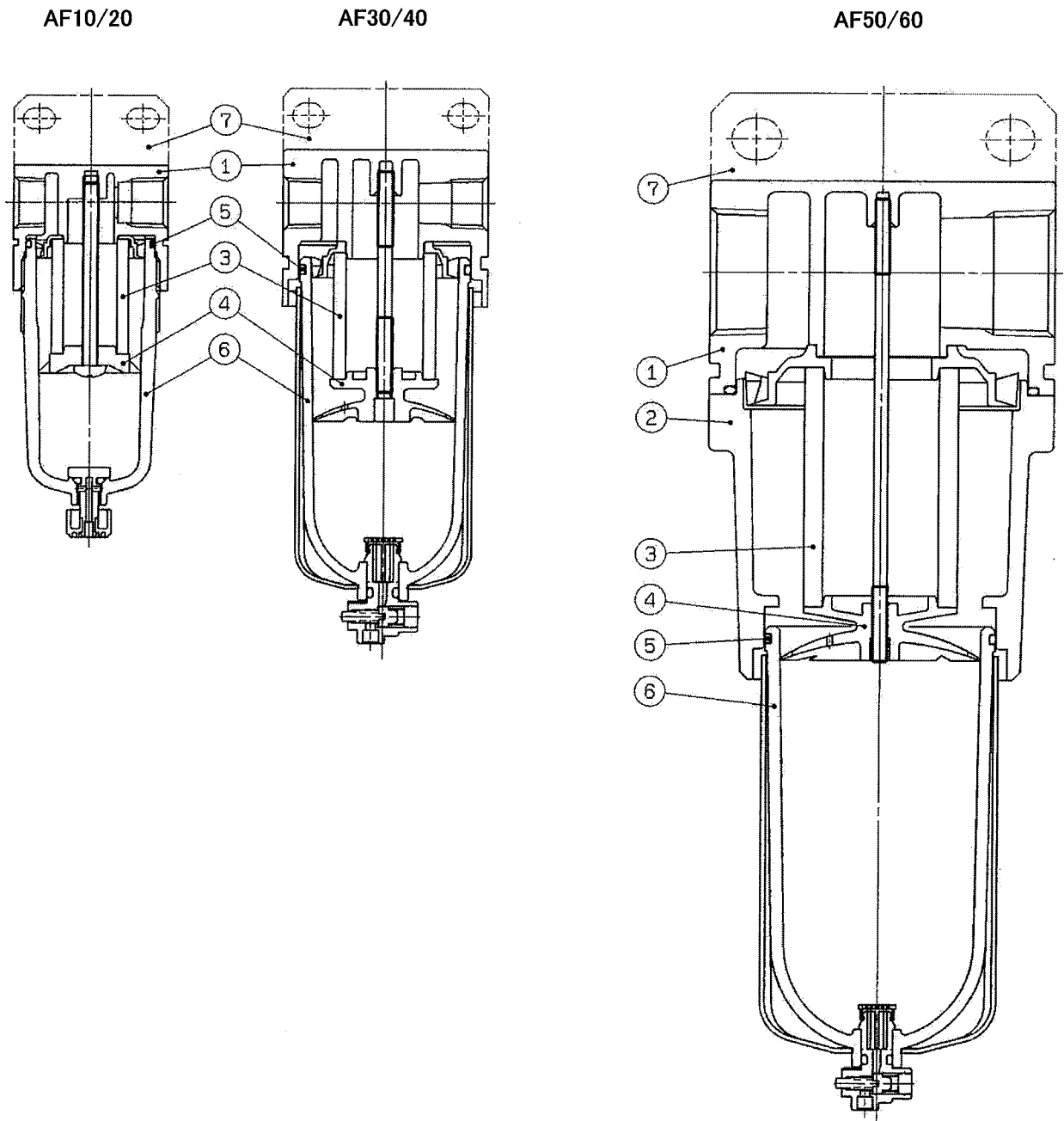
Refer to 「6.CONSTRUCTION」(P7),「9.DISASSEMBLY DRAWING」(P13~P15).

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 from the bowl and the body.	1. Breakage of "O" ring.	1. Replace the "O" ring. Grease up before assembling.
Air leaks	Air leaks from the bowl.	1. Breakage of bowl.	1. Replace the bowl assembly or with metal bowl.
	Air leaks from the drain cock.	1. The foreign matter caught in the valve of the drain cock. the drain cock. 2. Breakage of the seating part of the drain cock	1. Open the drain cock for a few seconds for blowing. 2. Replace the bowl assembly.
Operational	Draining isn't perfumed though the drain cock is opened.	1. Clog 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 outlet side.	1. Drain level reaches the baffle plate.	1. Open the drain cock for draining and replace the element.

Note) The grease used recommends JX Nippon oil & Energy corporation diamond multipurpose No.2.



## 6. CONSTRUCTION/PARTS LIST



### Component Parts

	Description	Material			Note
		AF10	AF20,30,40(-06)	AF50,60	
①	Body	Zinc die cast	Aluminium die cast		Painted platinum silver
②	Housing	—		Aluminium die cast	Painted platinum silver

### Option/Replacement Parts

	Description	Material	Part no.						
			AF10	AF20	AF30	AF40	AF40-06	AF50	AF60
③	Filter element	POLYOLEFIN		AF20P-060S	AF30P-060S	AF40P-060S	AF40P-060S	AF50P-060S	AF60P-060S
④	Baffle	PBT	Note1) AF10P-040S	AF20P-040S	AF30P-040S	AF40P-040S	AF40P-040S	AF50P-040S	AF60P-040S
⑤	Bowl O ring	NBR	C1SFP-260S	C2SFP-260S	C3SFP-260S	C4SFP-260S	C4SFP-260S	C4SFP-260S	C4SFP-260S
⑥	Bowl assembly	PC	Refer to 「7. SPECIFICATIONS OF BOWL ASSEMBLY」(P8~P10).						
	Auto drain(N.C.)	PC							
	Auto drain(N.O.)	PC							
⑦	Note2) Bracket assembly	Steel plate	—	AF20P-050AS	AF30P-050AS	AF40P-050AS	AF40P-070AS	AF50P-050AS	AF50P-050AS

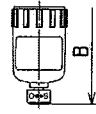
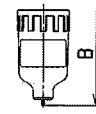
Note1) For AF10 baffle material : POM (AF10-040S only).

Note2) Bracket with mounting screws.(2pcs)

Note3) The number in the table is corresponding to the number in structural drawing (above-mentioned figure) and 「7.SPECIFICATIONS OF BOWL ASSEMBLY」(P8~P10),「9.DISASSEMBLY DRAWING」(P13~P15)

## 7. SPECIFICATIONS OF BOWL ASSEMBLY

### 1) Bowl assembly/Auto drain for AF10

Accessory	—		Note2) C
Option	—	6	6
External appearance drawing	Option 「-」 (Standard) ⒺPart no. C1SF(-Z)		Option 「-」 (Standard) ⒺPart no. AD17(-Z)
	Option 「6」 ⒺPart no. C1SF-6(Z)		Option 「6」 ⒺPart no. AD17-6(Z)
Part no.			M5X0.8
Accessory	—		Note2) C
Option	2		2
External appearance drawing	ⒺPart no. C1SF-2(Z)		ⒺPart no. AD17-2(Z)
			M5X0.8

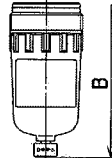
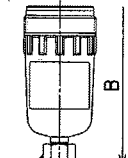
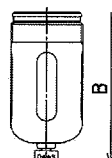
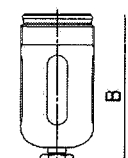
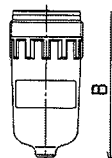
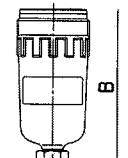
Note1) B in the table shows the total length of the product. Refer to 「10. DIMENSIONS」(P16).

Note2) Min. operating pressure is 0.1MPa .

Note3) "Z" in the part numberⒺ is a option, and the unit of the pressure and the temperature are psi and ° F.

Note4) Refer to 「4. HOW TO ORDER」(P5) for an accessories symbol and option symbol.

### 2) Bowl assembly/Auto drain for AF20

Accessory	—		Note2) C	—	
Option	—	6	6	J	6J
External appearance drawing	Option 「-」 (Standard) Port thread ⒺPart no. Rc C2SF G C2SF NPT C2SF(-Z)		Option 「-」 Port thread ⒺPart no. Rc AD27 G AD27 NPT AD27(-Z)	Option 「J」 Port thread ⒺPart no. Rc C2SF-J G C2SFF-J NPT C2SFN-J(Z)	
	Option 「6」 Port thread ⒺPart no. Rc C2SF-6 G C2SF-6 NPT C2SF-6(Z)		Option 「6」 Port thread ⒺPart no. Rc AD27-6 G AD27-6 NPT AD27-6(Z)	Option 「6J」 Port thread ⒺPart no. Rc C2SF-6J G C2SFF-6J NPT C2SFN-6J(Z)	
Part no.			M5X0.8	1/8 HEX.14	
Accessory	—		Note2) C	—	
Option	C	6C	C	CJ	6CJ
External appearance drawing	Option 「C」 Port thread ⒺPart no. Rc C2SF-C G C2SF-C NPT C2SF-C(Z)		Option 「C」 Port thread ⒺPart no. Rc AD27-C G AD27-C NPT AD27-C(Z)	Option 「CJ」 Port thread ⒺPart no. Rc C2SF-CJ G C2SFF-CJ NPT C2SFN-CJ(Z)	
	Option 「6C」 Port thread ⒺPart no. Rc C2SF-6C G C2SF-6C NPT C2SF-6C(Z)		Option 「6C」 Port thread ⒺPart no. Rc AD27-6C G AD27-6C NPT AD27-6C(Z)	Option 「6CJ」 Port thread ⒺPart no. Rc C2SF-6CJ G C2SFF-6CJ NPT C2SFN-6CJ(Z)	
Part no.			M5X0.8	1/8 HEX.14	
Accessory	—		Note2) C	—	
Option	2		2	2J	
External appearance drawing	Port thread ⒺPart no. Rc C2SF-2 G C2SF-2 NPT C2SF-2(Z)		Port thread ⒺPart no. Rc AD27-2 G AD27-2 NPT AD27-2(Z)	Port thread ⒺPart no. Rc C2SF-2J G C2SFF-2J NPT C2SFN-2J(Z)	
			M5X0.8		1/8 HEX.14

Note 1) B in the table shows full dimensions of the product. Refer to 「10. DIMENSIONS」(P16).

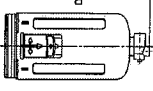
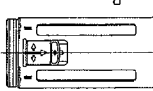
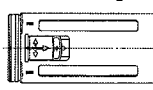

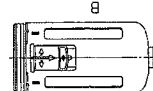
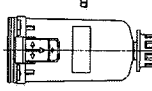
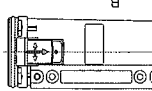
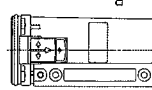
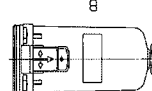

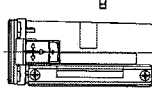
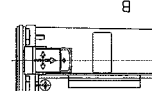
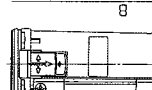
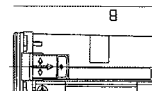

Note 2) Min. operating pressure is 0.1MPa .

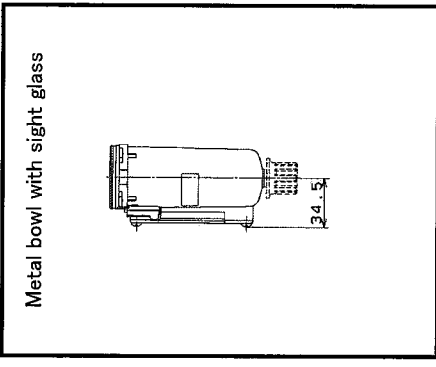
Note 3) The part with no. Ⓔ includes Ⓔ Bowl O ring. Refer to 「9. DISASSEMBLY DRAWING」(P13~P15).

Note 4) "Z" of the part with no. Ⓔ is semi-standard for indicated unit of pressure and temperature, which is psi and ° F

Note 5) The symbol for option and semi-standard are described as 「4. HOW TO ORDER」(P5).

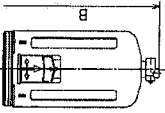
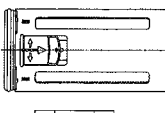

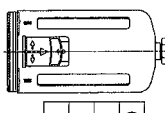
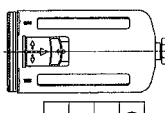
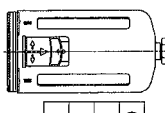
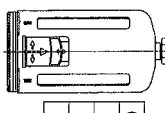
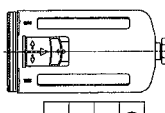
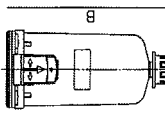
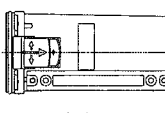
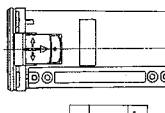
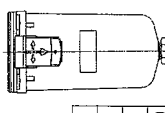
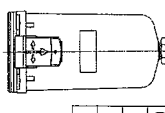
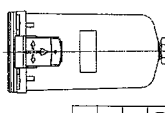
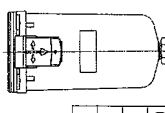
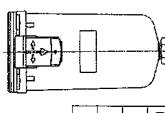
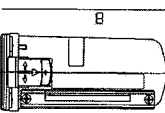
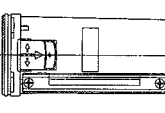
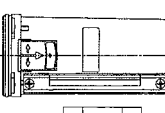
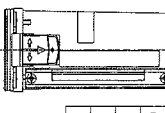
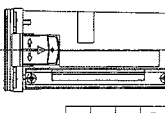
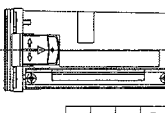
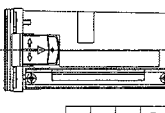
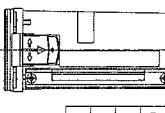
### 3) Bowl assembly/Auto drain for AF30

Accessory	C		D		J		W	
Option	6		6		6J		6W	
External appearance drawing								
Part no.	Option [J] (Standard) Port thread    Part no. Rc            C3SF G            C3SF(-Z) NPT        C3SF(-Z)	Option [6] Port thread    Part no. Rc            C3SF-6 G            C3SF-6(Z) NPT        C3SF-6(Z)	Option [J] (Standard) Port thread    Part no. Rc            AD37 G            AD37N(-Z) NPT        AD37N(-Z)	Option [6] Port thread    Part no. Rc            AD37-6 G            AD37N-6(Z) NPT        AD37N-6(Z)	Option [6J] Port thread    Part no. Rc            C3SF-J G            C3SFF-J NPT        C3SFN-J(Z)	Option [6W] Port thread    Part no. Rc            C3SF-W G            C3SF-W(Z) NPT        C3SF-W(Z)	D: APPLICABLE TUBE	D: APPLICABLE TUBE
Accessory	2		2		2J		2J	
Option	6		6		6J		6J	
External appearance drawing								
Part no.	Option [J] (Standard) Port thread    Part no. Rc            C3SF-2 G            C3SF-2(Z) NPT        C3SF-2(Z)	Option [6] Port thread    Part no. Rc            AD37-2 G            AD37N-2(Z) NPT        AD37N-2(Z)	Option [J] (Standard) Port thread    Part no. Rc            AD38-2 G            AD38N-2(Z) NPT        AD38N-2(Z)	Option [6] Port thread    Part no. Rc            AD38-6 G            AD38N-6(Z) NPT        AD38N-6(Z)	Option [6J] Port thread    Part no. Rc            C3SF-2J G            C3SFF-2J NPT        C3SFN-2J(Z)	D: APPLICABLE TUBE	D: APPLICABLE TUBE	
Accessory	8		8		8J		8J	
Option	6		6		6J		6J	
External appearance drawing								
Part no.	Option [J] (Standard) Port thread    Part no. Rc            C3LF-8 G            C3LF-8(Z) NPT        C3LF-8(Z)	Option [6] Port thread    Part no. Rc            AD37-8 G            AD37N-8(Z) NPT        AD37N-8(Z)	Option [J] (Standard) Port thread    Part no. Rc            AD38-8 G            AD38N-8(Z) NPT        AD38N-8(Z)	Option [6] Port thread    Part no. Rc            AD38-6 G            AD38N-6(Z) NPT        AD38N-6(Z)	Option [6J] Port thread    Part no. Rc            C3LF-8J G            C3LFF-8J NPT        C3LFN-8J(Z)	D: APPLICABLE TUBE	D: APPLICABLE TUBE	

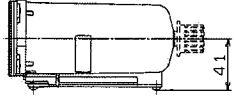


Note 1) B in the table shows full dimensions of the product. Refer to [10. DIMENSIONS] (P16).  
 Note 2) Min. operating pressure is 0.15MPa for N.C. type and 0.1MPa for N.O. type.  
 Note 3) The part with no. ⑤ includes ⑤ Bowl O ring. Refer to [9. DISASSEMBLY DRAWING] (P13~P15).  
 Note 4) "Z" of the part with no. ⑥ is semi-standard for indicated unit of pressure and temperature, which is psi and ° F.  
 Note 5) The symbol for option and semi-standard are described as 14. HOW TO ORDER] (P5).

### 4) Bowl assembly/Auto drain for AF40~60

Accessory	C		D		J		W	
Option	6		6		6J		6W	
External appearance drawing								
Part no.	Option [J] (Standard) Port thread    ⒺPart no. Rc            C4SF G NPT        C4SF-(Z)	Option [J] Port thread    ⒺPart no. Rc            AD47 G            AD47N-(Z) NPT        AD47N-(Z) D: APPLICABLE TUBE EXTERNAL DIAMETER	Option [J] Port thread    ⒺPart no. Rc            AD48 G            AD48N-(Z) NPT        AD48N-(Z) D: APPLICABLE TUBE EXTERNAL DIAMETER	Option [J] Port thread    ⒺPart no. Rc            AD48 G            AD48N-(Z) NPT        AD48N-(Z) D: APPLICABLE TUBE EXTERNAL DIAMETER	Option [J] Port thread    ⒺPart no. Rc            C4SF-J G            C4SFF-J NPT        C4SFN-(Z)	Option [J] Port thread    ⒺPart no. Rc            C4SF-2J G            C4SFF-2J NPT        C4SFN-2(Z)	Option [W] Port thread    ⒺPart no. Rc            C4SF-W G            C4SF-(WZ) NPT        C4SF-(WZ) D: APPLICABLE TUBE	Option [W] Port thread    ⒺPart no. Rc            C4SF-6W G            C4SF-(6WZ) NPT        C4SF-(6WZ) D: APPLICABLE TUBE
Accessory	2		2		2J		2	
Option	8		8		8J		8	
External appearance drawing								
Part no.	Option [J] Port thread    ⒺPart no. Rc            C4SF-2 G            C4SF-2(Z)	Option [J] Port thread    ⒺPart no. Rc            AD47-2 G            AD47N-2(Z) NPT        AD47N-2(Z) D: APPLICABLE TUBE EXTERNAL DIAMETER	Option [J] Port thread    ⒺPart no. Rc            AD48-2 G            AD48N-2(Z) NPT        AD48N-2(Z) D: APPLICABLE TUBE EXTERNAL DIAMETER	Option [J] Port thread    ⒺPart no. Rc            AD48-2 G            AD48N-2(Z) NPT        AD48N-2(Z) D: APPLICABLE TUBE EXTERNAL DIAMETER	Option [J] Port thread    ⒺPart no. Rc            C4SF-2J G            C4SFF-2J NPT        C4SFN-2(Z)	Option [J] Port thread    ⒺPart no. Rc            C4SF-2J G            C4SFF-2J NPT        C4SFN-2(Z)	Option [W] Port thread    ⒺPart no. Rc            C4SF-W G            C4SF-(WZ) NPT        C4SF-(WZ) D: APPLICABLE TUBE	Option [W] Port thread    ⒺPart no. Rc            C4SF-6W G            C4SF-(6WZ) NPT        C4SF-(6WZ) D: APPLICABLE TUBE
Accessory	8		8		8J		8	
Option	8		8		8J		8	
External appearance drawing								
Part no.	Option [J] Port thread    ⒺPart no. Rc            C4LF-8 G            C4LF-8(Z)	Option [J] Port thread    ⒺPart no. Rc            AD47-8 G            AD47N-8(Z) NPT        AD47N-8(Z) D: APPLICABLE TUBE EXTERNAL DIAMETER	Option [J] Port thread    ⒺPart no. Rc            AD48-8 G            AD48N-8(Z) NPT        AD48N-8(Z) D: APPLICABLE TUBE EXTERNAL DIAMETER	Option [J] Port thread    ⒺPart no. Rc            AD48-8 G            AD48N-8(Z) NPT        AD48N-8(Z) D: APPLICABLE TUBE EXTERNAL DIAMETER	Option [J] Port thread    ⒺPart no. Rc            C4LF-8J G            C4LFF-8J NPT        C4LFN-8J(Z)	Option [J] Port thread    ⒺPart no. Rc            C4LF-8J G            C4LFF-8J NPT        C4LFN-8J(Z)	Option [W] Port thread    ⒺPart no. Rc            C4SF-W G            C4SF-(WZ) NPT        C4SF-(WZ) D: APPLICABLE TUBE	Option [W] Port thread    ⒺPart no. Rc            C4SF-6W G            C4SF-(6WZ) NPT        C4SF-(6WZ) D: APPLICABLE TUBE

Metal bowl with sight glass



Note 1) B in the table shows full dimensions of the product. Refer to [10. DIMENSIONS] (P16).

Note 2) Min. operating pressure is 0.15MPa for N.C. type and 0.1MPa for N.O. type.

Note 3) The part with no. Ⓔ includes Ⓔ Bowl O ring. Refer to [9. DISASSEMBLY DRAWING] (P13~P15).

Note 4) "Z" of the part with no. Ⓔ is semi-standard for indicated unit of pressure and temperature, which is psi and ° F.

Note 5) The symbol for option and semi-standard are described as [4. HOW TO ORDER] (P5).

## 8. 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.

#### 1) Bowl assembly/element

Applicable model	Process	Procedure	Tools	Check item
AF10	Disassembly	1) Remove the bowl assembly Hold the bowl assembly by hand and rotate counterclockwise to remove the bowl assembly. If the bowl assembly is tightened too much to be removed, use hook spanner until it can be loosened by hand.	( Hook spanner Nominal: 25/28 )	—
		2) Remove the baffle element Rotate the baffle by hand and counterclockwise to remove the baffle and element.	—	—
	Assembly	3) Mount the element. Mount the element to the element guide.	—	—
		4) Mount the baffle. Hold the baffle by hand to rotate it clockwise and mount the element. Baffle has mount direction. See disassembly drawing. For baffle tightening torque, see check item.	—	Tightening torque: $0.35 \pm 0.05 \text{ N} \cdot \text{m}$
		5) Mount the bowl assembly. Hold the bowl assembly by hand and rotate clockwise. Do not use tool for mounting because the bowl may be damaged. See check item for referential tightening torque.	—	Referential tightening torque: $1.5 \text{ N} \cdot \text{m}$
AF20	Disassembly	1) Remove the bowl assembly Hold the bowl assembly by hand and rotate counterclockwise to remove the bowl assembly. If the bowl assembly is tightened too much to be removed, use hook spanner until it can be loosened by hand.	( Hook spanner Nominal: 34/38 )	—
		2) Remove the screw with washer, baffle, element and deflector. Rotate the screw with washer counterclockwise with cross pointed driver to remove the screw with washer, baffle, element and deflector.	Cross pointed driver	—
	Assembly	3) 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.
		4) Mount the element. Insert the element to the concave of the deflector.	—	—
		5) Mount the baffle. Careful to the direction (convex to the element side) of mount and insert the baffle to the element.	—	Direction of baffle. For element convex side. Refer to disassembly drawing.
		6) 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. See check item for the tightening torque.	Cross pointed driver	Tightening torque: $0.35 \pm 0.05 \text{ N} \cdot \text{m}$
		7) Mount the bowl assembly. Hold the bowl assembly by hand and rotate clockwise. Do not use tool for mounting because the bowl may be damaged. See check item for referential tightening torque.	—	Referential tightening torque: $2.2 \text{ N} \cdot \text{m}$

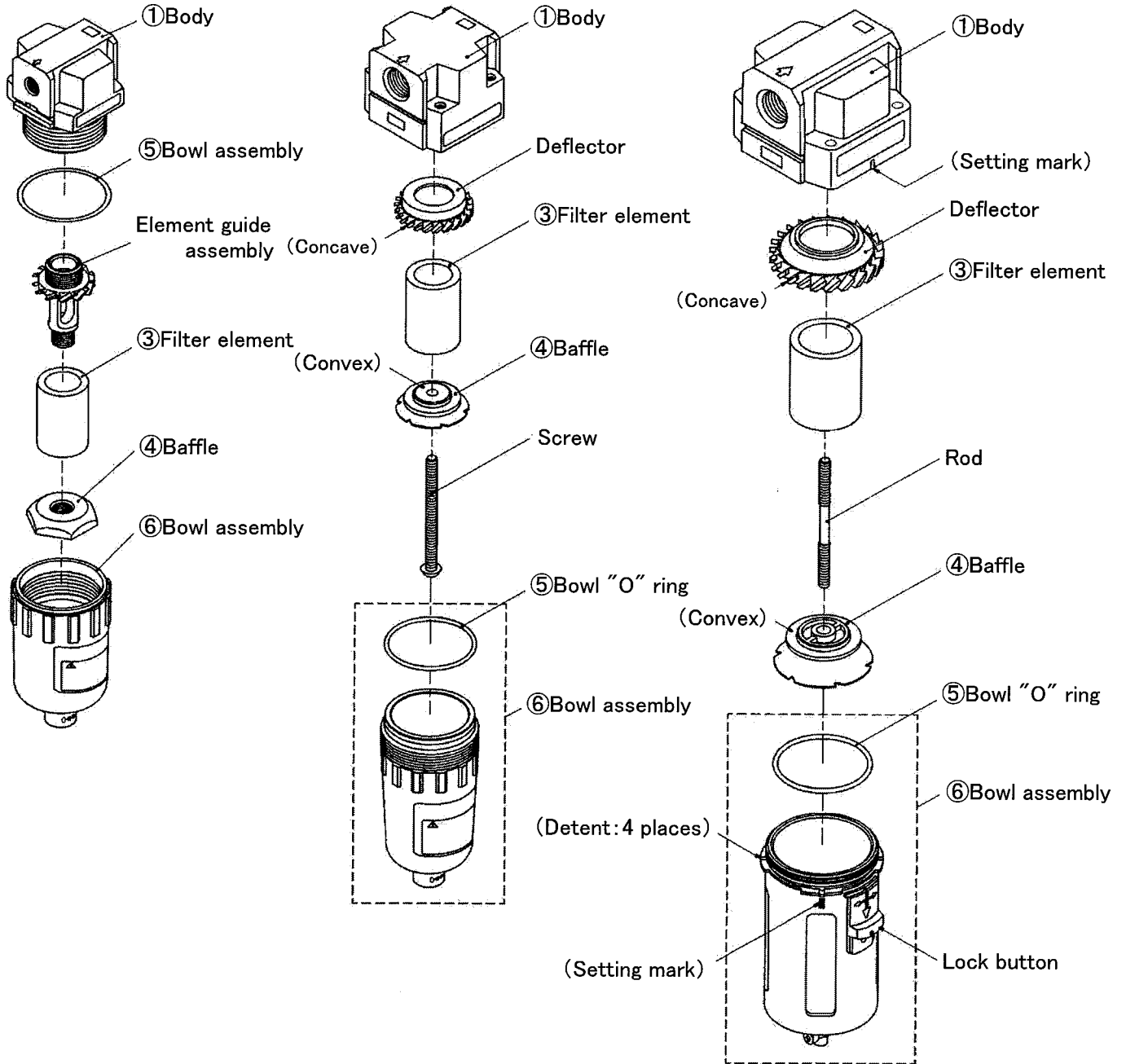
Applicable model	Process	Procedure	Tools	Check item
AF30 AF40	Disassembly	1) Remove the bowl assembly. Push the bowl assembly lock button. Lifting the bowl assembly, rotate the assembly 45 degree(right or left) to pull out the assembly.	—	—
		2) Remove the baffle, element and deflector. Rotate the baffle by hand and counterclockwise to remove the baffle, element and deflector.	—	—
	Assembly	3) 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.
		4) Mount the element. Insert the element to the concave of the deflector.	—	—
		5) Mount the baffle. Careful to the direction (convex to the element side) of mount and insert the baffle to the element.	—	Direction of baffle. For element convex side. Refer to disassembly drawing.
		6) Hold the baffle and fix to the baffle, element, and deflector Rotate it right with a hand till baffle will join element and deflector lightly. After that, rotate it right about 1/2 to tight it up. See check item for referential tightening torque.	—	Referential tightening torque: AF30: 0.5 N·m AF40: 0.9 N·m
		7) Mount the bowl assembly. Match the mating mark of the body and the bowl assembly to insert the assembly to the body. 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.
AF50 AF60	Disassembly	1) Remove the bowl assembly Push the bowl assembly lock button. Lifting the bowl assembly, rotate the assembly 45 degree(right or left) to pull out the assembly.	—	—
		2) Remove the baffle and element. Rotate the baffle by hand and counterclockwise to remove the baffle nad element.	—	—
	Assembly	3) Mount the element. Insert the element to the concave of the deflector.	—	—
		4) Mount the baffle. Careful to the direction (convex to the element side) of mount and insert the baffle to the element.	—	Direction of baffle. For element convex side. Refer to disassembly drawing.
		5) Hold the baffle and fix to the baffle and element. Rotate it right with a hand till baffle will join element and deflector lightly. After that, rotate it right about 1/2 to tight it up. See check item for referential tightening torque.	—	Referential tightening torque: 1.8 N·m
		6) Mount the bolw 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.

## 2) Bracket assembly

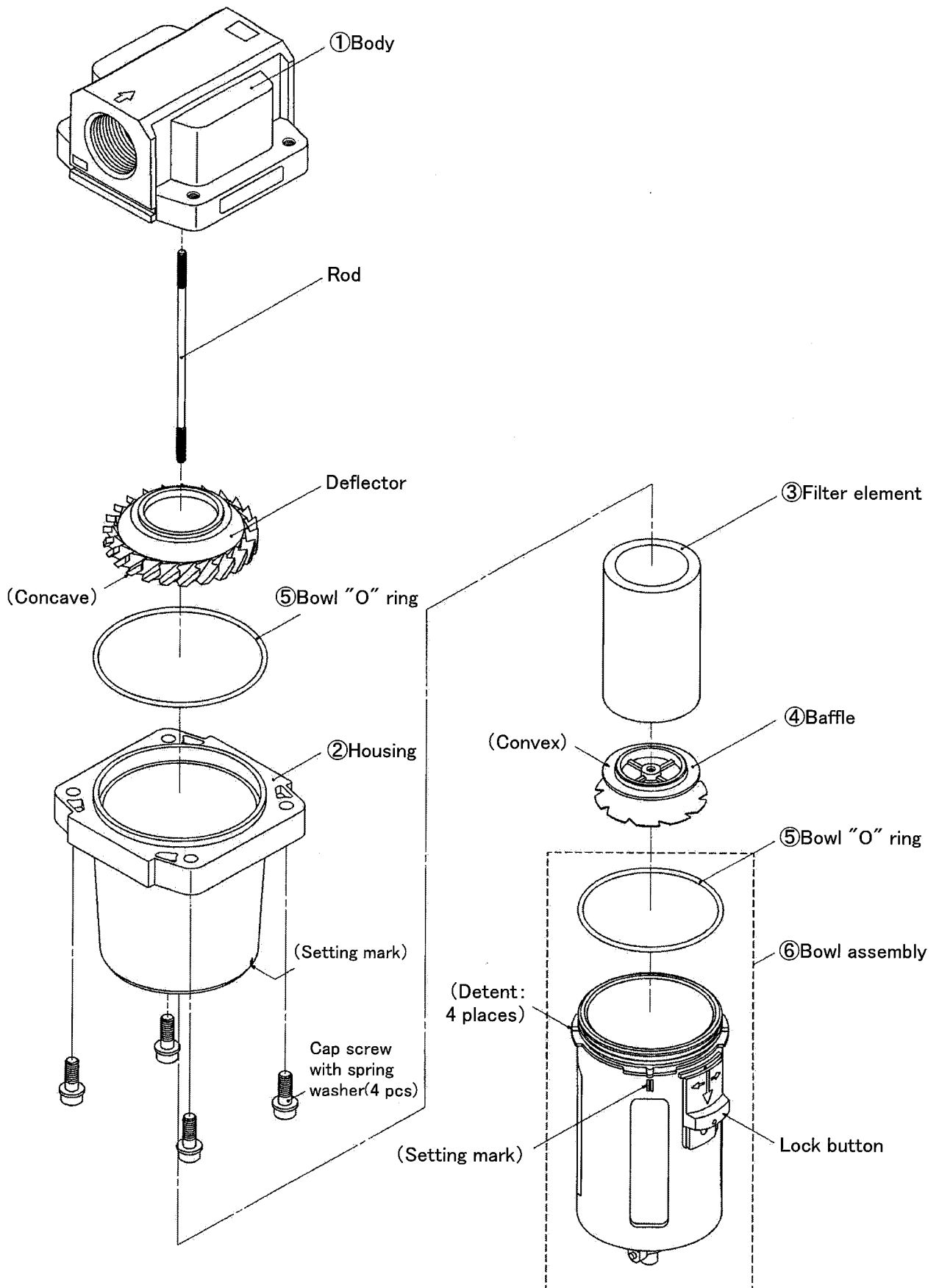
Applicable model	Process	Procedure	Tools	Check items																		
AF20 AF30 AF40 AF50 AF60	Assembly	1) Mount the product to the bracket. Two mounting screws are tightened by cross pointed driver or hexagon spanner for holding. See check item for tightening torque.	cross pointed driver or hexagon spanner Nominal: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>AF20</td> <td>cross pointed driver</td> </tr> <tr> <td>AF30</td> <td>3</td> </tr> <tr> <td>AF40</td> <td>4</td> </tr> <tr> <td>AF50</td> <td rowspan="2">5</td> </tr> <tr> <td>AF60</td> </tr> </table>	AF20	cross pointed driver	AF30	3	AF40	4	AF50	5	AF60	Tightening torque: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>AF20</td> <td><math>0.75 \pm 0.2 \text{ N} \cdot \text{m}</math></td> </tr> <tr> <td>AF30</td> <td><math>0.75 \pm 0.2 \text{ N} \cdot \text{m}</math></td> </tr> <tr> <td>AF40</td> <td><math>1.5 \pm 0.2 \text{ N} \cdot \text{m}</math></td> </tr> <tr> <td>AF50</td> <td rowspan="2"><math>2.6 \pm 0.3 \text{ N} \cdot \text{m}</math></td> </tr> <tr> <td>AF60</td> </tr> </table>	AF20	$0.75 \pm 0.2 \text{ N} \cdot \text{m}$	AF30	$0.75 \pm 0.2 \text{ N} \cdot \text{m}$	AF40	$1.5 \pm 0.2 \text{ N} \cdot \text{m}$	AF50	$2.6 \pm 0.3 \text{ N} \cdot \text{m}$	AF60
AF20	cross pointed driver																					
AF30	3																					
AF40	4																					
AF50	5																					
AF60																						
AF20	$0.75 \pm 0.2 \text{ N} \cdot \text{m}$																					
AF30	$0.75 \pm 0.2 \text{ N} \cdot \text{m}$																					
AF40	$1.5 \pm 0.2 \text{ N} \cdot \text{m}$																					
AF50	$2.6 \pm 0.3 \text{ N} \cdot \text{m}$																					
AF60																						

# 9. DISASSEMBLY DRAWING

1) AF10 Disassembly drawing. 2) AF20 Disassembly drawing. 3) AF30/40 Disassembly drawing.

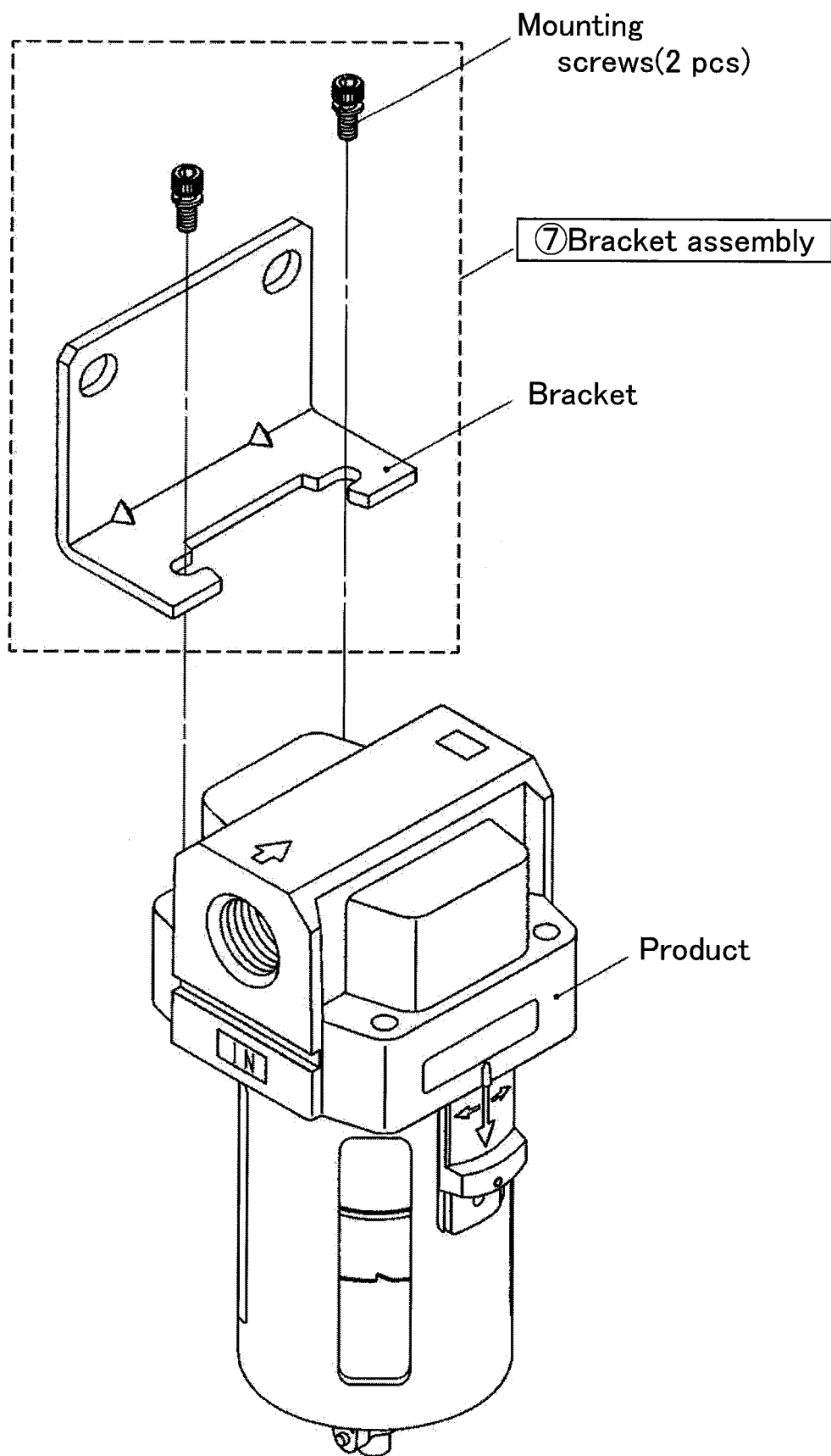


4) AF50/60 Disassembly drawing.

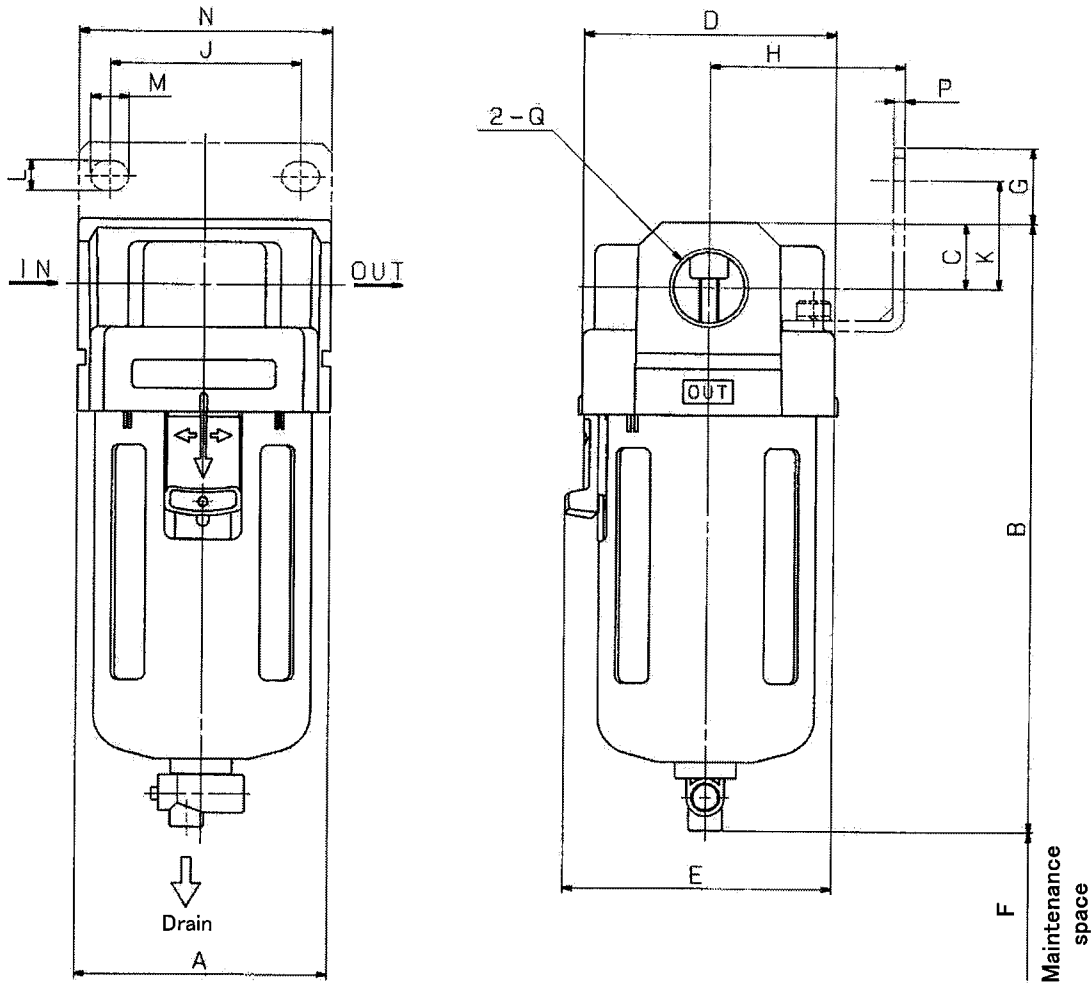




5)AF20~60 Bracket assembly disassembly drawing.



# 10. DIMENSIONS



## Dimensions

Model	Port size Q	Standard						Accessory									
		A	Note1) B	C	D	E	F	Bracket mounting dimensions									
			G					H	J	K	L	M	N	P			
AF10	M5×0.8	25	67	7	25	28	25	—	—	—	—	—	—	—	—	—	—
AF20	1/8·1/4	40	97	10	40	—	40	18	30	27	22	5.4	8.4	40	2.3	—	—
AF30	1/4·3/8	53	129	14	53	57	50	16	41	40	23	6.5	8	53	2.3	—	—
AF40	1/4·3/8·1/2	70	165	18	70	73	75	17	50	54	26	8.5	10.5	70	2.3	—	—
AF40-06	3/4	75	169	20	70	73	75	14	50	54	25	8.5	10.5	70	2.3	—	—
AF50	3/4·1	90	245	24	90	—	20	23	70	66	35	11	13	90	3.2	—	—
AF60	1	95	258	24	95	—	20	23	70	66	35	11	13	90	3.2	—	—

## B for Auto-drain / Optional bowl assembly

Model	Accessory												C				D							
	2	6	8	C	6C	J	2J	6J	8J	CJ	6CJ	W	6W	—	2	6	8	C	6C	—	2	6	8	
AF10	66	67	—	—	—	—	—	—	—	—	—	—	—	85	85	85	—	—	—	—	—	—	—	—
AF20	97	97	—	97	97	101	104	101	—	101	101	—	—	115	115	115	—	115	115	—	—	—	—	—
AF30	142	129	162	—	—	136	136	136	156	—	—	137	137	170	171	170	171	—	—	170	171	170	171	—
AF40	178	165	198	—	—	172	172	172	192	—	—	173	173	204	207	204	207	—	—	204	207	204	207	—
AF40-06	182	169	202	—	—	176	176	176	196	—	—	177	177	208	211	208	211	—	—	208	211	208	211	—
AF50	258	245	278	—	—	252	252	252	272	—	—	253	253	284	286	284	286	—	—	284	286	284	286	—
AF60	271	258	291	—	—	265	265	265	285	—	—	266	266	297	300	297	300	—	—	297	300	297	300	—

Note 1) The specifications of auto-drain and optional bowl assembly are described in 「7. SPECIFICATIONS OF BOWL ASSEMBLY」 (P8~P10).

Revision history

A	The overall revision (New format, Material change of AF20 body) March. 2012
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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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