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Modular Type
Air Filters
Series AF/AFM/AFD

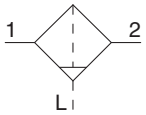
	Model	Port size	Filtration μm	Options
Air Filter Series AF  **P.29 to 35**	**AF20-A**	1/8, 1/4	5	Bracket Float type auto drain
	AF30-A	1/4, 3/8		
	AF40-A	1/4, 3/8, 1/2		
	AF40-06-A	3/4		
Mist Separator Series AFM  **P.37 to 42**	**AFM20-A**	1/8, 1/4	0.3	Bracket Float type auto drain
	AFM30-A	1/4, 3/8		
	AFM40-A	1/4, 3/8, 1/2		
	AFM40-06-A	3/4		
Micro Mist Separator Series AFD  **P.37 to 42**	**AFD20-A**	1/8, 1/4	0.01	Bracket Float type auto drain
	AFD30-A	1/4, 3/8		
	AFD40-A	1/4, 3/8, 1/2		
	AFD40-06-A	3/4		

Air Filter

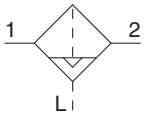
AF20-A to AF40-A

JIS Symbol

Air Filter



Air Filter with Auto Drain





AF20-A



AF40-A

How to Order

AF 30 – ❷ 03 BD – ❺ –A

❶ ❷ ❸ ❹ ❺

- Option/Semi-standard: Select one each for **a** to **f**.
- Option/Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.

Example) AF30-03BD-CR-A

			Symbol	Description	❶ Body size 20	30	40
❷	Thread type		**Nil**	Rc	●	●	●
			N Note 1)	NPT	●	●	●
			F Note 2)	G	●	●	●
			+				
❸	Port size		**01**	1/8	●	—	—
			02	1/4	●	●	●
			03	3/8	—	●	●
			04	1/2	—	—	●
			06	3/4	—	—	●
			+				
❹	Option	**a** Mounting	**Nil**	Without mounting option	●	●	●
			B Note 3)	With bracket	●	●	●
			+				
		b Float type auto drain	**Nil**	Without auto drain	●	●	●
			C Note 4)	N.C. (Normal close) Drain port is closed when pressure is not applied.	●	●	●
			D Note 5)	N.O. (Normal open) Drain port is open when pressure is not applied.	—	●	●
			+				
❺	Semi-standard	**c** Bowl Note 6)	**Nil**	Polycarbonate bowl	●	●	●
			C	With bowl guard	●	—Note 7)	—Note 7)
			+				
		d Drain port	**Nil**	With drain cock	●	●	●
			J Note 8)	Drain guide1/8	●	—	—
				Drain guide1/4	—	●	●
			W	Drain cock with barb fitting (for ø6 x ø4 nylon tube)	—	●	●
			+				
		e Flow direction	**Nil**	Flow direction: Left to right	●	●	●
			R	Flow direction: Right to left	●	●	●
			+				
		f Pressure unit	**Nil**	Name plate and caution plate for bowl in imperial units: MPa	●	●	●
			Z Note 9)	Name plate and caution plate for bowl in imperial units: psi, °F	○Note 10)	○Note 10)	○Note 10)

Note 1) Drain guide is NPT1/8 (applicable to the AF20-A) and NPT1/4 (applicable to the AF30-A to AF40-A).
The auto drain port comes with ø3/8" One-touch fitting (applicable to the AF30-A to AF40-A).

Note 2) Drain guide is G1/8 (applicable to the AF20-A) and G1/4 (applicable to the AF30-A to AF40-A).

Note 3) A bracket is not assembled and supplied loose at the time of shipment. Including 2 mounting screws.

Note 4) When pressure is not applied, condensate which does not start the auto drain mechanism will be left in the bowl. Releasing the residual condensate before ending operations for the day is recommended.

Note 5) If the compressor is small (0.75 kW, discharge flow is less than 100 L/min[ANR]), air leakage from the drain cock may occur during start of operations. N.C. type is recommended.

Note 6) Refer to Chemical data on page 32 for chemical resistance of the bowl.

Note 7) Standard material (polycarbonate)

Note 8) Without a valve function.

Note 9) For thread type: NPT. This product is for overseas use only according to the new Measurement Law.
(The SI unit type is provided for use in Japan.)

Note 10) ○: For thread type: NPT only

Standard Specifications

Model	AF20-A	AF30-A	AF40-A	AF40-06-A
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4
Fluid	Air			
Ambient and fluid temperature	–5 to 60°C (with no freezing)			
Proof pressure	1.5 MPa			
Maximum operating pressure	1.0 MPa			
Nominal filtration rating	5 μm			
Drain capacity (cm³)	8	25	45	
Bowl material	Polycarbonate			
Bowl guard	Semi-standard (Steel)	Standard (Polycarbonate)		
Weight (kg)	0.08	0.18	0.36	0.41

Options/Part No.

Optional specifications		Model			
		AF20-A	**AF30-A**	**AF40-A**	**AF40-06-A**
Bracket assembly[Note 1)]		AF22P-050AS	AF32P-050AS	AF42P-050AS	AF42P-070AS
Float type auto drain[Note 2) Note 3)]	**N.C.**	AD27-A	AD37-A	AD47-A	
	N.O.	—	AD38-A	AD48-A	

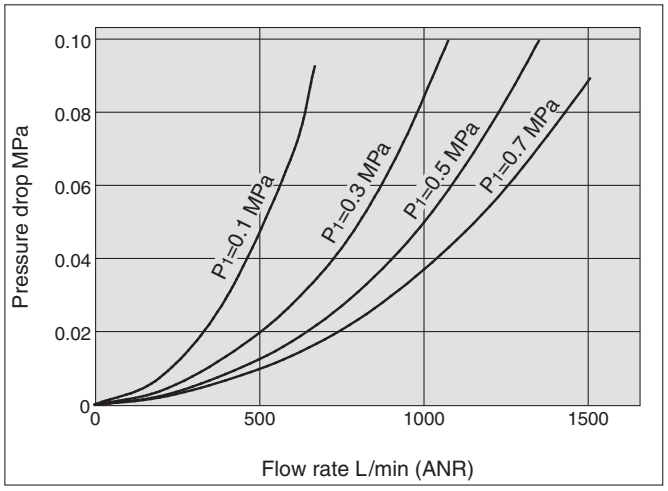
Semi-standard/Bowl Assembly Part No.

Semi-standard specifications						Model			
Bowl material	Float type auto drain[Note 2) Note 3)]		With drain guide[Note 3)]	With barb fitting	With bowl guard	**AF20-A**	**AF30-A**	**AF40-A**	**AF40-06-A**
	N.C.	N.O.							
Polycarbonate bowl	—	—	—	—	●	C2SF-C-A	—	—	
	●	—	—	—	●	AD27-C-A	—	—	
	—	—	●	—	—	C2SF-J-A	C3SF-J-A	C4SF-J-A	
	—	—	—	●	—	—	C3SF-W-A	C4SF-W-A	
	—	—	●	—	●	C2SF-CJ-A	—	—	

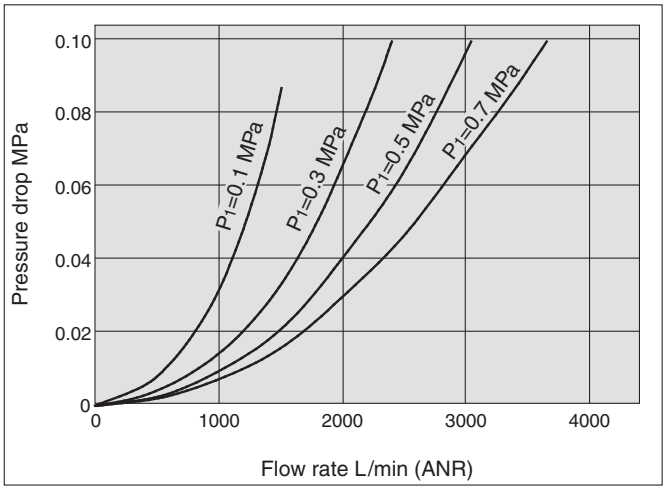
Note 1) Assembly of a bracket and 2 mounting screws.
Note 2) Minimum operating pressure: N.O. type–0.1 MPa; N.C. type–0.1 MPa (AD27-A) and 0.15 MPa (AD37-A/47-A).
Please consult with SMC separately for psi and °F unit display specifications.
Note 3) Please consult with SMC for details on drain piping to fit NPT or G port sizes.
Note) Bowl assembly for the AF20-A to AF40-A models comes with a bowl O-ring.

Flow Characteristics (Representative values)

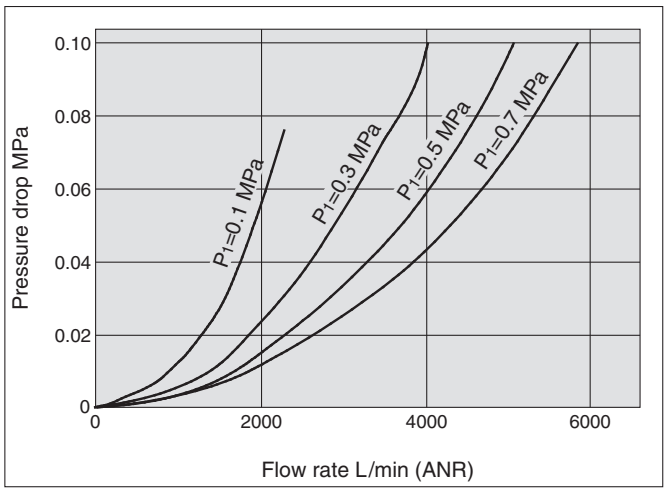
AF20-A Rc1/4



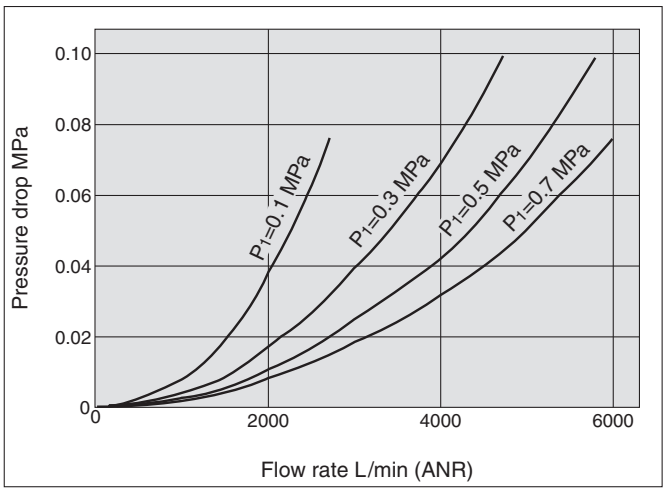
AF30-A Rc3/8



AF40-A Rc1/2



AF40-06-A Rc3/4



⚠ Specific Product Precautions

Be sure to read before handling. Refer to back cover for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) and the Operation Manual for F.R.L. Precautions.
Please download it via our website, http://www.smcworld.com

Design / Selection

⚠ Warning

1. The standard bowl for the air filter, filter regulator, and lubricator, as well as the sight dome for the lubricator and bowl guard are made of polycarbonate. Do not use in an environment where they are exposed to or come in contact with organic solvents, chemicals, cutting oil, synthetic oil, alkali, and thread lock solutions.

Effects of atmosphere of organic solvents and chemicals, and where these elements are likely to adhere to the equipment.
Chemical data for substances causing degradation (Reference)

Type	Chemical name	Application examples	Material
			Polycarbonate
Acid	Hydrochloric acid Sulfuric acid, Phosphoric acid Chromic acid	Acid washing liquid for metals	△
Alkaline	Sodium hydroxide (Caustic soda) Potash Calcium hydroxide (Slack lime) Ammonia water Carbonate of soda	Degreasing of metals Industrial salts Water-soluble cutting oil	×
Inorganic salts	Sodium sulfide Sulfate of potash Sulfate of soda	—	×
Chlorine solvents	Carbon tetrachloride Chloroform Ethylene chloride Methylene chloride	Cleansing liquid for metals Printing ink Dilution	×
Aromatic series	Benzene Toluene Paint thinner	Coatings Dry cleaning	×
Ketone	Acetone Methyl ethyl ketone Cyclohexane	Photographic film Dry cleaning Textile industries	×
Alcohol	Ethyl alcohol IPA Methyl alcohol	Antifreeze Adhesives	△
Oil	Gasoline Kerosene	—	×
Ester	Phthalic acid dimethyl Phthalic acid dimethyl Acetic acid	Synthetic oil Anti-rust additives	×
Ether	Methyl ether Ethyl ether	Brake oil additives	×
Amino	Methyl amino	Cutting oil Brake oil additives Rubber accelerator	×
Other	Thread-lock fluid Seawater Leak tester	—	×

△ : Some effects may occur × : Effects will occur

Maintenance

⚠ Warning

1. Replace the element every 2 years or when the pressure drop becomes 0.1 MPa, whichever comes first, to prevent damage to the element.

Mounting and Adjustment

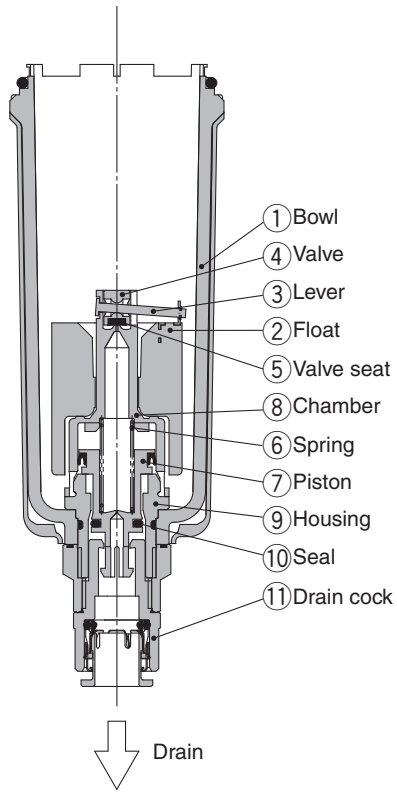
⚠ Caution

1. When the bowl is installed on the air filter, install them so that the lock button lines up to the groove of the front (or the back) of the body to avoid drop or damage of the bowl.



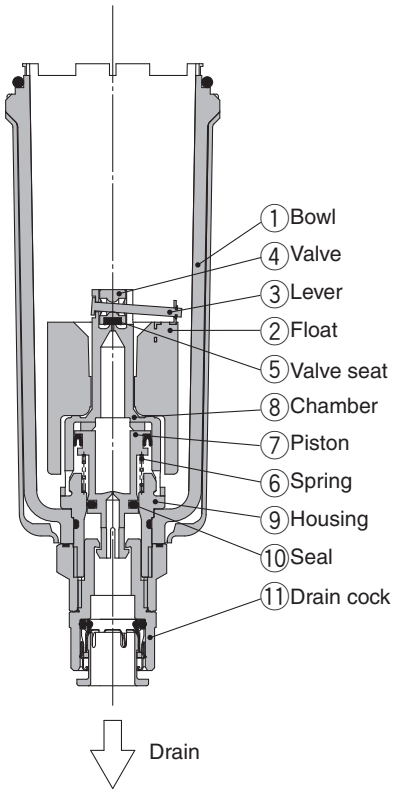
Working Principle: Float Type Auto Drain

N.O.type: AD38-A, AD48-A



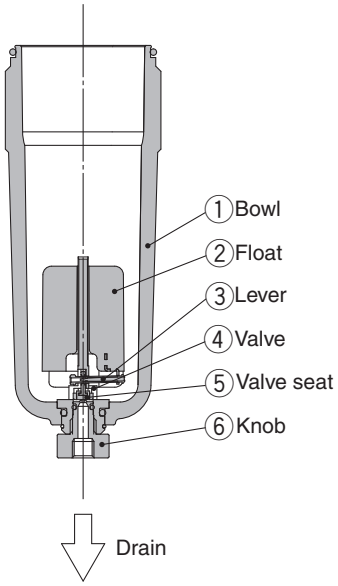
- **When pressure inside the bowl is released:**
  When pressure is released from the bowl ①, piston ⑦ is lowered by spring ⑥.
  The sealing action of seal ⑩ is interrupted, and the outside air flows inside the bowl ① through housing hole ⑨ and drain cock ⑪.
  Therefore, if there is an accumulation of condensate in the bowl ①, it will drain out through the drain cock.
- **When pressure is applied inside the bowl:**
  When pressure exceeds 0.1 MPa, the force of piston ⑦ surpasses the force of spring ⑥, and the piston goes up.
  This pushes seal ⑩ up so that it creates a seal, and the inside of the bowl ①, is shut off from the outside air.
  If there is no accumulation of condensate in the bowl ① at this time, float ② will be pulled down by its own weight, causing valve ④, which is connected to lever ③, to seal valve seat ⑤.
- **When there is an accumulation of condensate in the bowl:**
  Float ② rises due to its own buoyancy and pushes open the seal created by the valve seat ⑤.
  This allows the pressure inside the bowl ① to enter the chamber ⑧. The result is that the combined pressure inside chamber ⑧ and the force of the spring ⑥ lowers the piston ⑦.
  This causes the sealing action of seal ⑩ to be interrupted, and the accumulated condensate in the bowl ① drains out through the drain cock ⑪.
  Turning drain cock ⑪ manually counterclockwise lowers piston ⑦, which pushes open the seal created by seal ⑩, thus allowing the condensate to drain out.

N.C.type: AD37-A, AD47-A



- **When pressure inside the bowl is released:**
  Even when pressure inside the bowl ① is released, spring ⑥ keeps piston ⑦ in its upward position.
  This keeps the seal created by the seal ⑩ in place; thus, the inside of the bowl ① is shut off from the outside air.
  Therefore, even if there is an accumulation of condensate in the bowl ①, it will not drain out.
- **When pressure is applied inside the bowl:**
  Even when pressure is applied inside the bowl ①, the combined force of spring ⑥ and the pressure inside the bowl ① keeps piston ⑦ in its upward position.
  This maintains the seal created by the seal ⑩ in place; thus, the inside of the bowl ① is shut off from the outside air.
  If there is no accumulation of condensate in the bowl ① at this time float ② will be pulled down by its own weight, causing valve ④, which is connected to lever ③, to seal valve seat ⑤.
- **When there is an accumulation of condensate in the bowl:**
  Float ② rises due to its own buoyancy and pushes open the seal created by the valve seat ⑤. Pressure passes from the bowl ① to chamber ⑧.
  The result is that the pressure inside chamber ⑧ surpasses the force of the spring ⑥ and pushes piston ⑦ downwards.
  This causes the sealing action of seal ⑩ to be interrupted and the accumulated condensate in the bowl ① drains out through the drain cock ⑪.
  Turning drain cock ⑪ manually counterclockwise lowers piston ⑦, which pushes open the seal created by seal ⑩, thus allowing the condensate to drain out.

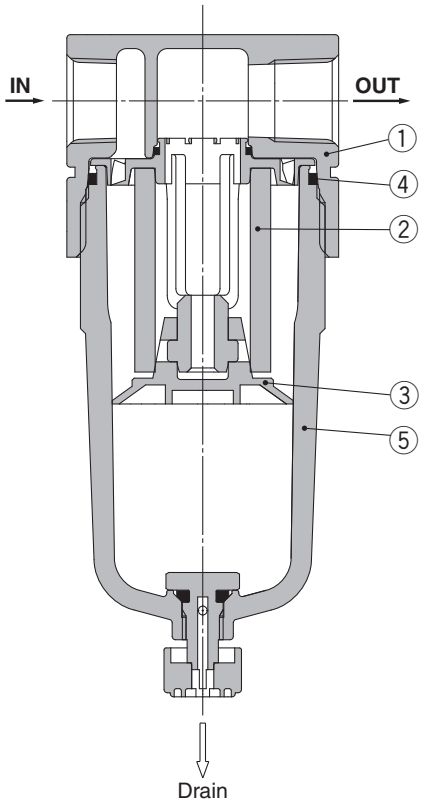
Compact auto drain N.C. type: AD27-A



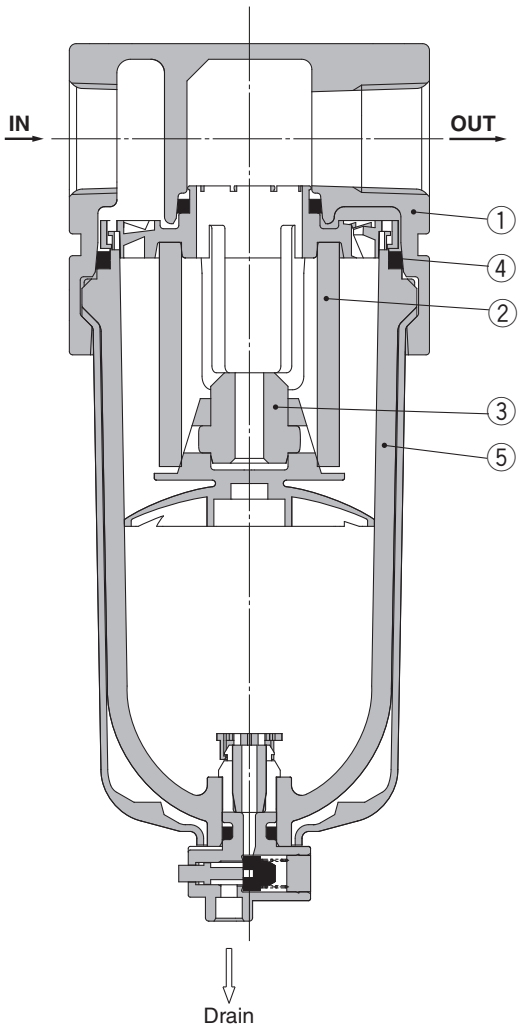
- **When pressure inside the bowl is released:**
  Even when pressure inside the bowl ① is released, the weight of the float ② causes valve ④, which is connected to lever ③, to seal valve seat ⑤. As a result, the inside of the bowl ① is shut off from the outside air.
  Therefore, even if there is an accumulation of condensate in the bowl ①, it will not drain out.
- **When pressure is applied inside the bowl:**
  Even when pressure is applied inside the bowl ①, the weight of the float ② and the differential pressure that is applied to valve ④ cause valve ④ to seal valve seat ⑤, and the outside air is shut off from the inside of the bowl ①.
- **When the drain is accumulated in the bowl:**
  Float ② rises due to its own buoyancy and the seal at valve seat ⑤ is interrupted.
  The condensate inside the bowl ① drains out through the knob ⑥.
  Turning knob ⑥ manually counterclockwise lowers it and causes the sealing action of valve seat ⑤ to be interrupted, which allows the condensate to drain out.

Construction

AF20-A



AF30-A to AF40-06-A



Component Parts

No.	Description	Material	Color
1	**Body**	Aluminum die-cast	White

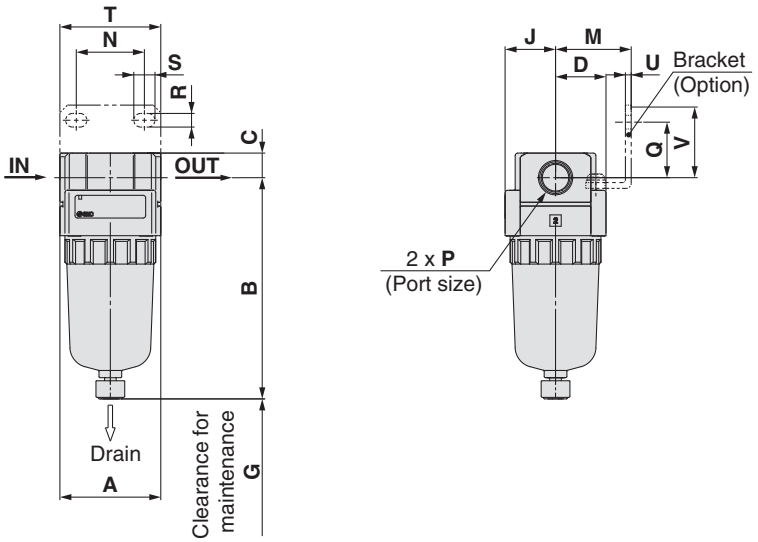
Replacement Parts

No.	Description	Material	Part no.			
			AF20-A	**AF30-A**	**AF40-A**	**AF40-06-A**
2	**Filter element**	Non-woven fabric	AF20P-060S	AF30P-060S	AF40P-060S	
3	**Baffle**	PBT	AF22P-040S	AF32P-040S	AF42P-040S	
4	**Bowl O-ring**	NBR	C2SFP-260S	C32FP-260S	C42FP-260S	
5	**Bowl assembly** Note)	Polycarbonate	C2SF-A	C3SF-A	C4SF-A	

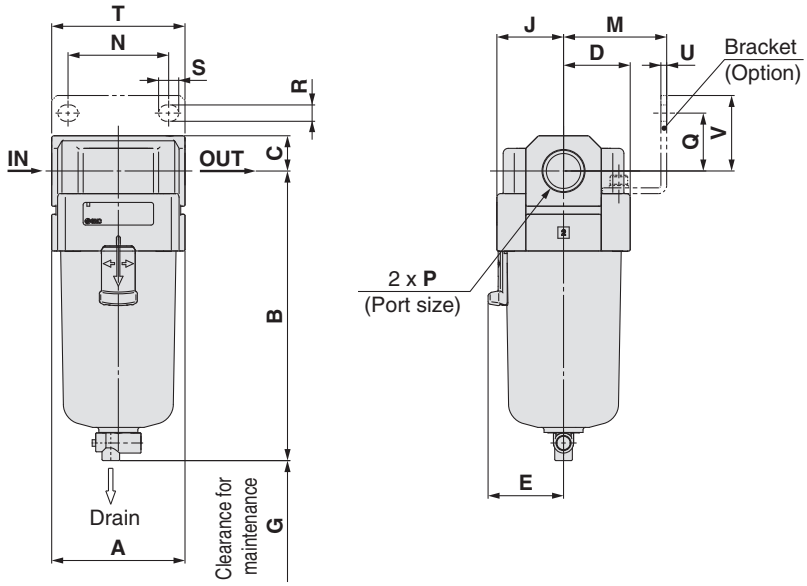
Note) Bowl O-ring is included. Please contact SMC regarding the bowl assembly supply for psi and °F unit specifications.

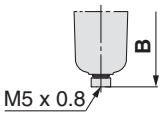
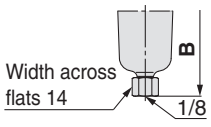
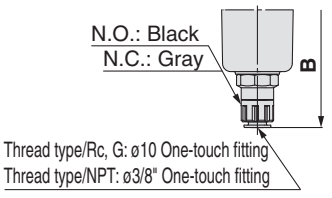
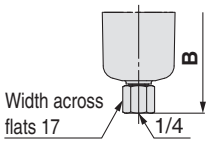
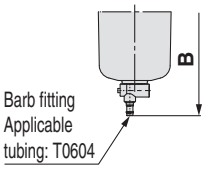
Dimensions

AF20-A



AF30-A to AF40-06-A



Applicable model	AF20-A		AF30-A to AF40-06-A		
Optional/Semi-standard specifications	With auto drain (N.C.)	With drain guide	With auto drain (N.O./N.C.)	With drain guide	Drain cock with barb fitting
Dimensions					

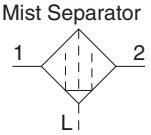
Model	Standard specifications								Optional specifications								
									Bracket mount								With auto drain
	P	A	B	C	D	E	G	J	M	N	Q	R	S	T	U	V	B
AF20-A	1/8, 1/4	40	87.6	9.8	20	—	25	20	30	27	22	5.4	8.4	40	2.3	28	104.9
AF30-A	1/4, 3/8	53	115.1	14	26.7	30	35	26.7	41	40	23	6.5	8	53	2.3	30	156.8
AF40-A	1/4, 3/8, 1/2	70	147.1	18	35.5	38.4	40	35.5	50	54	26	8.5	10.5	70	2.3	35	186.9
AF40-06-A	3/4	75	149.1	20	35.5	38.4	40	35.5	50	54	25	8.5	10.5	70	2.3	34	188.9

Model	Semi-standard specifications	
	With barb fitting	With drain guide
	B	B
AF20-A	—	91.4
AF30-A	123.6	121.9
AF40-A	155.6	153.9
AF40-06-A	157.6	155.9

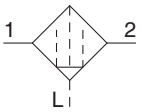
Mist Separator
AFM20-A to AFM40-A
Micro Mist Separator
AFD20-A to AFD40-A

JIS Symbol

Mist Separator



Micro Mist Separator





AFM20-A



AFM40-A



AFD20-A



AFD40-A

- **Series AFM Nominal filtration rating: 0.3 μm**
- **Series AFD Nominal filtration rating: 0.01 μm**

How to Order

AFM 30 – ❷ 03 BD – ❺ –A

AFD 30 – ❷ 03 BD – ❺ –A

❶ ❷ ❸ ❹ ❺

- Option/Semi-standard: Select one each for **a** to **f**.
- Option/Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.

Example) AFM30-03BD-CR-A

			Symbol	Description	❶ Body size 20	30	40
❷	Thread type		**Nil**	Rc	●	●	●
			N Note 1)	NPT	●	●	●
			F Note 2)	G	●	●	●
❸	Port size		**01**	1/8	●	—	—
			02	1/4	●	●	●
			03	3/8	—	●	●
			04	1/2	—	—	●
			06	3/4	—	—	●
❹ Option	**a**	Mounting	**Nil**	Without mounting option	●	●	●
			B Note 3)	With bracket	●	●	●
	b	Float type auto drain	**Nil**	Without auto drain	●	●	●
			C Note 4)	N.C. (Normal close) Drain port is closed when pressure is not applied.	●	●	●
			D Note 5)	N.O. (Normal open) Drain port is open when pressure is not applied.	—	●	●
❺ Semi-standard	**c**	Bowl Note 6)	**Nil**	Polycarbonate bowl	●	●	●
			C	With bowl guard	●	— Note 7)	— Note 7)
	d	Drain port	**Nil**	With drain cock	●	●	●
			J Note 8)	Drain guide 1/8	●	—	—
				Drain guide 1/4	—	●	●
			W	Drain cock with barb fitting (for ø6 x ø4 nylon tube)	—	●	●
	e	Flow direction	**Nil**	Flow direction: Left to right	●	●	●
			R	Flow direction: Right to left	●	●	●
	f	Pressure unit	**Nil**	Name plate and caution plate for bowl in imperial units: MPa	●	●	●
			Z Note 9)	Name plate and caution plate for bowl in imperial units: psi, °F	○ Note 10)	○ Note 10)	○ Note 10)

Note 1) Drain guide is NPT1/8 (applicable to the AFM20-A, AFD20-A) and NPT1/4 (applicable to the AFM30-A/40-A, AFD30-A/40-A). The auto drain port comes with ø3/8" One-touch fitting (applicable to the AFM30-A/40-A, AFD30-A/40-A).

Note 2) Drain guide is G1/8 (applicable to the AFM20-A, AFD20-A) and G1/4 (applicable to the AFM30-A/40-A, AFD30-A/40-A).

Note 3) A bracket is not assembled and supplied loose at the time of shipment. Including 2 mounting screws

Note 4) When pressure is not applied, condensate which does not start the auto drain mechanism will be left in the bowl. Releasing the residual condensate before ending operations for the day is recommended.

Note 5) If the compressor is small (0.75 kW, discharge flow is less than 100 L/min[ANR]), air leakage from the drain cock may occur during start of operations. N.C. type is recommended.

Note 6) Refer to Chemical data on page 40 for chemical resistance of the bowl.

Note 7) Standard material (polycarbonate)

Note 8) Without a valve function.

Note 9) For thread type: NPT. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)

Note 10) ○: For thread type: NPT only

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