




Modular Type Air Filters

AF/AFM/AFD Series

Air Filter AF Series	Model	Port size	Filtration μm	Options
 P.430 to 438	AF10-A	M5 x 0.8	5	Bracket (Except AF10-A) Float type auto drain
	AF20-A	1/8, 1/4		
	AF30-A	1/4, 3/8		
	AF40-A	1/4, 3/8, 1/2		
	AF40-06-A	3/4		
	AF50-A	3/4, 1		
	AF60-A	1		
Mist Separator AFM Series  P.440 to 447	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 AFD Series  P.440 to 447	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		

- AC-A
- AF-A
- AF□-A
- AR-A
- AL-A
- AW-A
- AC-B
- AF-A
- AF□-A
- AR-^g
- AL-A
- AW-^g
- AW□
- A□G
- E□
- AV
- AF

Made to Order

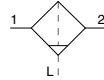
①	Long Bowl (-X64) Drain capacity is greater than that of standard models.	AF: P.437 to 439-1 AFM/AFD: P.446, 448
②	With Element Service Indicator (-X2141) Clogging status of elements can be checked visually.	
③	Special Temperature Environment (-X430/-X440) Special materials are used in the manufacturing of seals and resin parts to allow them to withstand various temperature conditions in cold or tropical (hot) climates.	
④	High Pressure (-X425) Strong materials are used in the manufacturing of air filters intended for high pressure operation.	
⑤	Clean Series (10-)	
⑥	Copper, Fluorine and Silicone-free + Low Particle Generation (21-)	

Air Filter

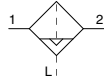
AF10-A to AF60-A

Symbol

Air Filter



Air Filter with Auto Drain



AF10-A

AF20-A

AF40-A

How to Order

AF **30** - **03** **BD** - **A** - **1**

① ② ③ ④ ⑤ Made to Order

(Refer to pages 437 and 438 for details.)

- 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-R-A

	Symbol	Description	① Body size					
			10	20	30	40	50	60
②	Pipe thread type	Nil	Metric thread (M5)					
		N ^{Note 1)}	Rc					
		F ^{Note 2)}	NPT					
			G					
③	Port size	M5	M5 x 0.8					
		01	1/8					
		02	1/4					
		03	3/8					
		04	1/2					
		06	3/4					
④	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. (Normally closed) Drain port is closed when pressure is not applied.					
	D ^{Note 5)}	N.O. (Normally open) Drain port is open when pressure is not applied.						
⑤	c	Bowl ^{Note 6)}	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 ^{Note 9)}	Nil	With drain cock					
		J ^{Note 10)}	Drain guide 1/8					
		W ^{Note 11)}	Drain guide 1/4					
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 12)}	Name plate and caution plate for bowl in imperial units: psi, °F					

Note 1) Drain guide is NPT1/8 (applicable to the AF20-A) and NPT1/4 (applicable to the AF30-A to AF60-A).

The auto drain port comes with ø3/8" One-touch fitting (applicable to the AF30-A to AF60-A).

Note 2) Drain guide is G1/8 (applicable to the AF20-A) and G1/4 (applicable to the AF30-A to AF60-A).

The auto drain port comes with ø10 One-touch fitting (applicable to the AF30-A to AF60-A).

Note 3) Option B is not assembled and supplied loose at the time of shipment. Assembly of a bracket and 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 433 for chemical resistance of the bowl.

Note 7) A bowl guard is provided as standard equipment (polycarbonate).

Note 8) A bowl guard is provided as standard equipment (nylon).

Note 9) The combination of float type auto drain: C and D is not available.

Note 10) Without a valve function

Note 11) The combination of metal bowl: 2 and 8 is not available.

Note 12) For pipe thread type: M5, 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 13) ○: For pipe thread type: M5, NPT only

Air Filter **AF10-A to AF60-A Series**

Standard Specifications

Model	AF10-A	AF20-A	AF30-A	AF40-A	AF40-06-A	AF50-A	AF60-A
Port size	M5 x 0.8	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1	1
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)	2.5	8	25	45			
Bowl material	Polycarbonate						
Bowl guard	—	Semi-standard (Steel)	Standard (Polycarbonate)				
Weight (kg)	0.06	0.08	0.18	0.36	0.41	0.87	1.00

Options/Part No.

Optional specifications	Model						
	AF10-A	AF20-A	AF30-A	AF40-A	AF40-06-A	AF50-A	AF60-A
Bracket assembly <small>Note)</small>	—	AF22P-050AS	AF32P-050AS	AF42P-050AS	AF42P-070AS	AF52P-050AS	

Note) Assembly of a bracket and 2 mounting screws

Bowl Assembly/Part No.

Bowl material	Drain discharge mechanism	Drain port	Other	Model							
				AF10-A	AF20-A	AF30-A	AF40-A	AF40-06-A	AF50-A	AF60-A	
Polycarbonate bowl	Manual discharge	With drain cock	—	C1SF-A	C2SF-A	—	—				
		With bowl guard	—	—	C2SF-C-A	C3SF-A	C4SF-A				
		Drain cock with barb fitting	With bowl guard	—	—	C3SF-W-A	C4SF-W-A				
		With drain guide (without valve function)	With bowl guard	—	—	C2SF□-J-A	—	—			
	Automatic discharge <small>Note)</small> (Auto drain)	Normally closed (N.C.)	With bowl guard	—	AD17-A	AD27-A	—				
		Normally open (N.O.)	With bowl guard	—	AD27-C-A	AD37□-A	AD47□-A				
		With bowl guard	—	—	AD38□-A	AD48□-A					
		With bowl guard	—	—	AD38□-A	AD48□-A					
Nylon bowl	Manual discharge	With drain cock	—	C1SF-6-A	C2SF-6-A	—	—				
		With bowl guard	—	—	C2SF-6C-A	C3SF-6-A	C4SF-6-A				
		Drain cock with barb fitting	With bowl guard	—	—	C3SF-6W-A	C4SF-6W-A				
		With drain guide (without valve function)	With bowl guard	—	—	C2SF□-6J-A	—	—			
	Automatic discharge <small>Note)</small> (Auto drain)	Normally closed (N.C.)	With bowl guard	—	AD17-6-A	AD27-6-A	—				
		Normally open (N.O.)	With bowl guard	—	—	AD37□-6-A	AD47□-6-A				
		With bowl guard	—	—	AD38□-6-A	AD48□-6-A					
		With bowl guard	—	—	AD38□-6-A	AD48□-6-A					
Metal bowl	Manual discharge	With drain cock	—	C1SF-2-A	C2SF-2-A	C3SF-2-A	C4SF-2-A				
		With level gauge	—	—	—	C3LF-8-A	C4LF-8-A				
		With drain guide (without valve function)	With level gauge	—	—	C2SF□-2J-A	C3SF□-2J-A	C4SF□-2J-A			
		With level gauge	—	—	AD17-2-A	AD27-2-A	AD37□-2-A				
	Automatic discharge <small>Note)</small> (Auto drain)	Normally closed (N.C.)	With level gauge	—	—	AD37□-8-A	AD47□-8-A				
		Normally open (N.O.)	With level gauge	—	—	AD38□-2-A	AD48□-2-A				
		With level gauge	—	—	AD38□-8-A	AD48□-8-A					
		With level gauge	—	—	AD38□-8-A	AD48□-8-A					

Note) Minimum operating pressure: N.O. type-0.1 MPa (AD38-A, AD48-A); N.C. type-0.1 MPa (AD17-A, AD27-A) and 0.15 MPa (AD37-A, AD47-A).

Bowl assembly for the AF20-A to AF60-A models comes with a bowl seal.

□ in bowl assembly part numbers indicates a pipe thread type (applicable tubing for auto drain).

No indication is necessary for Rc thread; however, indicate N for NPT thread, and F for G thread. (For auto drain, Nil: ø10, N: ø3/8")

Please consult with SMC separately for psi and °F unit display specifications.

AC-A

AF-A

AF□-A

AR-A

AL-A

AW-A

AC-B

AF-A

AF□-A

AR-^ø

AL-A

AW-^ø

AW□

AC-G

E□

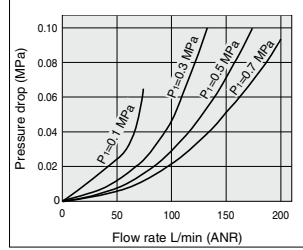
AV

AF

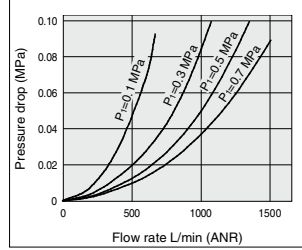
AF10-A to AF60-A Series

Flow Rate Characteristics (Representative values)

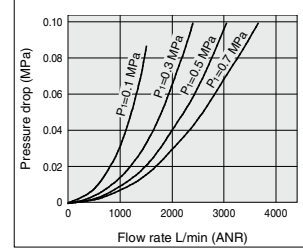
AF10-A M5



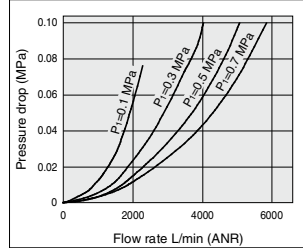
AF20-A Rc1/4



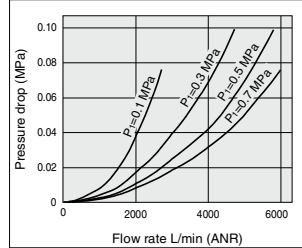
AF30-A Rc3/8



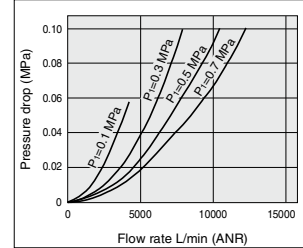
AF40-A Rc1/2



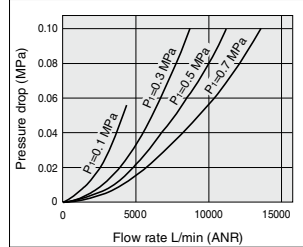
AF40-06-A Rc3/4



AF50-A Rc1



AF60-A Rc1



Air Filter **AF10-A to AF60-A Series**

⚠ Specific Product Precautions

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 387 to 391 for F.R.L. Precautions.

Design/Selection

⚠ Warning

- The standard bowl for the air filter, filter regulator, and lubricator, as well as the sight dome for the lubricator 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	Nylon
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 diethyl Acetic acid	Synthetic oil Anti-rust additives	×	○
Ether	Methyl ether Ethyl ether	Brake oil additives	×	○
Amino	Methyl amino	Cutting oil Brake oil additives Rubber accelerator	×	×
Others	Thread-lock fluid Seawater Leak tester	—	×	△

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

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

Maintenance

⚠ Warning

- 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/Adjustment

⚠ Caution

- When the bowl is installed on the air filter (AF30-A to AF60-A), 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.



AC-A

AF-A

AF-A

AR-A

AL-A

AW-A

AC-B

AF-A

AF-A

AR-B

AL-A

AW-B

AW

AG

E

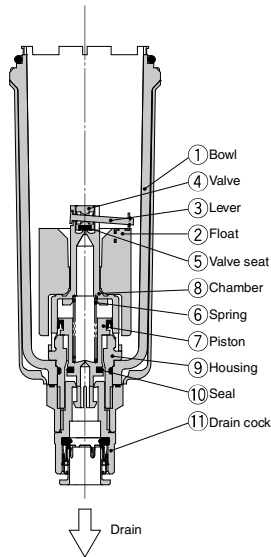
AV

AF

AF10-A to AF60-A Series

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, the piston ⑦ is lowered by the spring ⑥.

The sealing action of the seal ⑩ is interrupted, and the outside air flows inside the bowl ① through the housing hole ⑨ and the 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 is 0.1 MPa or more, the force of the piston ⑦ surpasses the force of the 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, the float ② will be pulled down by its own weight, causing the valve ④, which is connected to the lever ③, to seal the valve seat ⑤.

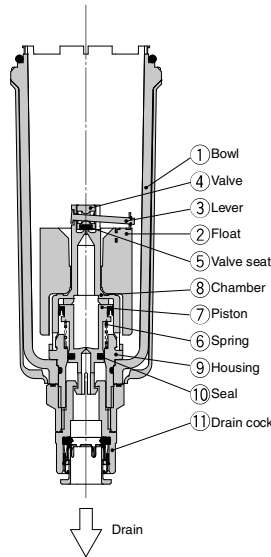
• When there is an accumulation of condensate in the bowl:

The float ② rises due to its own buoyancy and the seal at the valve seat ⑤ is interrupted.

This allows the pressure inside the bowl ① to enter the chamber ⑧. The result is that the combined pressure inside the chamber ⑧ and the force of the spring ⑥ lowers the piston ⑦. This causes the sealing action of the seal ⑩ to be interrupted, and the accumulated condensate in the bowl ① drains out through the drain cock ⑪.

Turning the drain cock ⑪ manually counterclockwise lowers the piston ⑦, and causes the seal created by the seal ⑩ to be interrupted, 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 the 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 the spring ⑥ and the pressure inside the bowl ① keeps the 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, the float ② will be pulled down by its own weight, causing the valve ④, which is connected to the lever ③, to seal the valve seat ⑤.

• When there is an accumulation of condensate in the bowl:

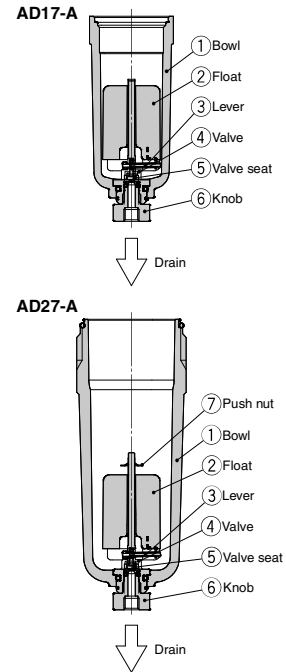
The float ② rises due to its own buoyancy and the seal at the valve seat ⑤ is interrupted. This allows the pressure inside the bowl ① to enter the chamber ⑧.

The result is that the pressure inside the chamber ⑧ surpasses the force of the spring ⑥ and pushes the piston ⑦ downward.

This causes the sealing action of the seal ⑩ to be interrupted and the accumulated condensate in the bowl ① drains out through the drain cock ⑪.

Turning the drain cock ⑪ manually counterclockwise lowers the piston ⑦, and causes the seal created by the seal ⑩ to be interrupted, thus allowing the condensate to drain out.

Compact auto drain N.C. type: AD17-A, 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 the valve ④, which is connected to the lever ③, to seal the 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 the valve ④ cause the valve ④ to seal the valve seat ⑤, and the outside air is shut off from the inside of the bowl ①.

• When there is an accumulation of condensate in the bowl:

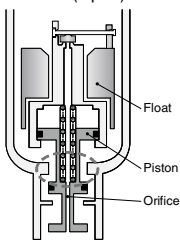
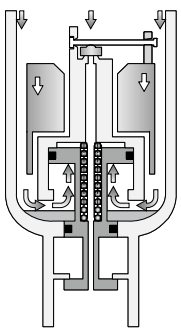
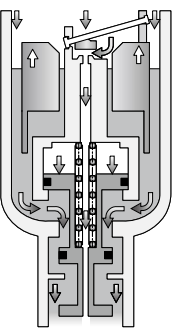
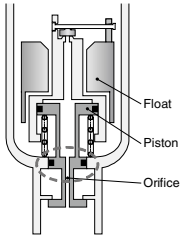
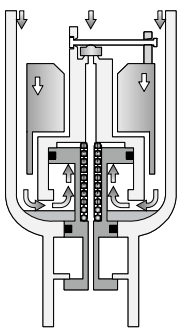
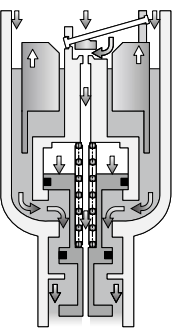
The float ② rises due to its own buoyancy and the seal at the valve seat ⑤ is interrupted.

The condensate inside the bowl ① drains out through the knob ⑥.

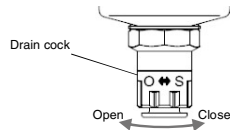
Turning the knob ⑥ manually counterclockwise lowers it and causes the sealing action of the valve seat ⑤ to be interrupted, which allows the condensate to drain out.

Air Filter **AF10-A to AF60-A Series**


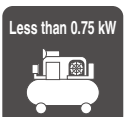
Operating State and Proper Use of Float Type Auto Drain

Auto drain	When pressure is not applied (After exhausting residual pressure)	When pressure is applied		Minimum operating pressure
		Before drain accumulates	When drain accumulates	
N.O. Normally open	Drain discharged (Open) 	Drain not discharged (Close) 	Drain discharged (Open) 	0.1 MPa or more AF30-A to AF60-A
N.C. Normally closed	Drain not discharged (Close) 			0.1 MPa or more AF10-A to AF20-A 0.15 MPa or more AF30-A to AF60-A

◆ For both N.O. and N.C., the drain can be discharged manually by turning the drain cock to the "O" position.



- AC-A
- AF-A
- AF-A
- AR-A
- AL-A
- AW-A
- AC-B
- AF-A
- AF-A
- AR-B
- AL-A
- AW-B
- AW
- AG
- E
- AV
- AF

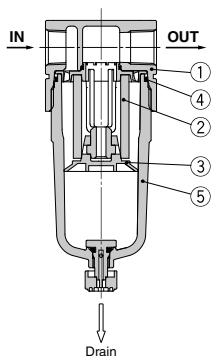
Proper Use			Recommended auto drain
Compressor	When pressure is not applied (After exhausting residual pressure)	Cold climates	
0.75 kW or more 	Drain not accumulated Do not want to accumulate drain generated at the inlet side when pressure is not applied.	Want to prevent troubles caused by freezing.	N.O.*1 Normally open
Less than 0.75 kW 	Drain accumulated	—	N.C. Normally closed

*1 For N.O. (Normally open) type, the drain discharge passage is open when pressure is not applied. For this reason, the drain exhaust port is not closed completely in a compressor with a small supply amount (less than 0.75 kW) and the air will ceaselessly blow out.

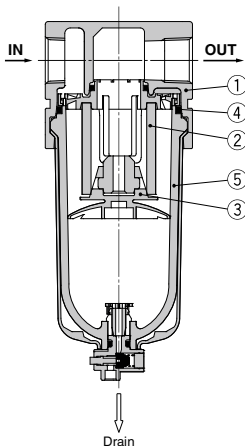
Air Filter **AF10-A to AF60-A Series**

Construction

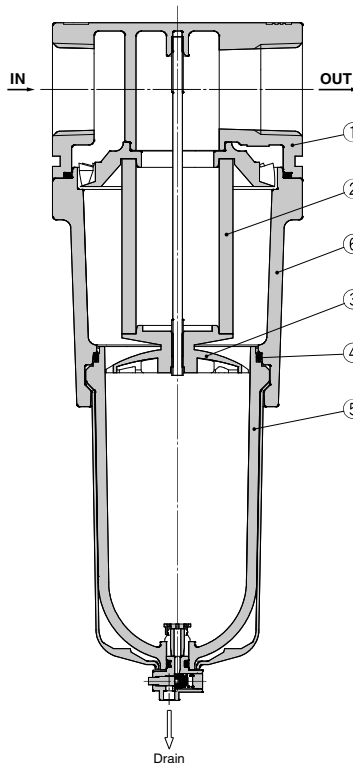
AF10-A/AF20-A



AF30-A to AF40-06-A



AF50-A/AF60-A



AC-A
AF-A
AF□-A
AR-A
AL-A
AW-A
AC-B
AF-A
AF□-A
AR-B
AL-A
AW-B
AW□
A□G
E□
AV
AF

Component Parts

No.	Description	Material	Model	Color
1	Body	Zinc die-cast	AF10-A	White
		Aluminum die-cast	AF20-A to AF60-A	
6	Housing	Aluminum die-cast	AF50-A/AF60-A	White

Replacement Parts

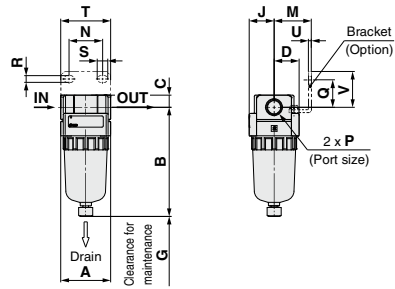
No.	Description	Material	Part no.					
			AF10-A	AF20-A	AF30-A	AF40-A	AF40-06-A	AF50-A
2	Filter element	Non-woven fabric	AF10P-060S	AF20P-060S	AF30P-060S	AF40P-060S	AF50P-060S	AF60P-060S
3	Baffle	PBT	AF10P-040S ^{Note 2)}	AF22P-040S	AF32P-040S	AF42P-040S	AF50P-040S	AF60P-040S
4	Bowl seal	NBR	C1SFP-260S	C2SFP-260S	C32FP-260S	C42FP-260S		
5	Bowl assembly ^{Note 1)}	Polycarbonate	C1SF-A	C2SF-A	C3SF-A	C4SF-A		

Note 1) Bowl seal is included for the AF20-A to AF60-A. Please contact SMC regarding the supply of bowl assembly with psi and °F unit display specifications.
 Note 2) The baffle material for the AF10-A (AF10P-040S) only is polyacetal.

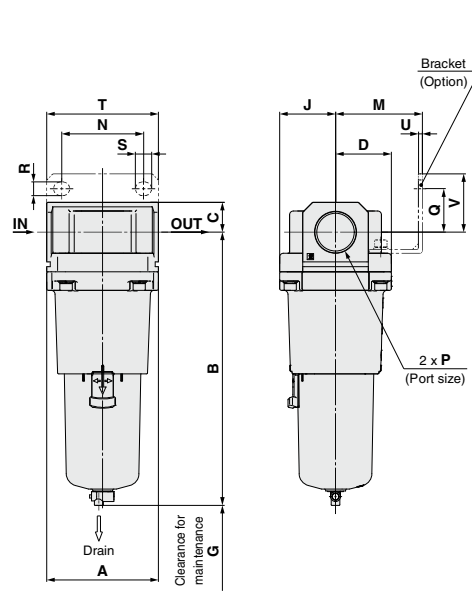
AF10-A to AF60-A Series

Dimensions

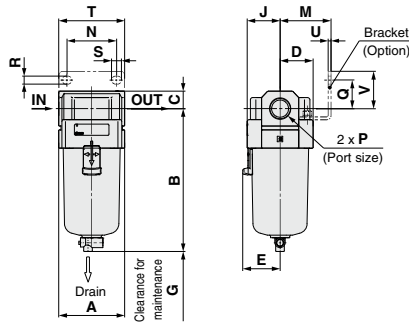
AF10-A/AF20-A



AF50-A/AF60-A



AF30-A to AF40-06-A



Applicable model	AF10-A/AF20-A		AF20-A		AF30-A to AF60-A
Optional/Semi-standard specifications	With auto drain (N.C.)	Metal bowl	With drain guide	Metal bowl with drain guide	With auto drain (N.O./N.C.)
Dimensions					 N.O.: Black N.C.: Gray Thread type: Rc, G, ø10 One-touch fitting Thread type: NPT, ø3/8" One-touch fitting

Applicable model	AF30-A to AF60-A					
Optional/Semi-standard specifications	Metal bowl	Metal bowl with drain guide	Metal bowl with level gauge	Metal bowl with level gauge, with drain guide	With drain guide	Drain cock with barb fitting
Dimensions						 Barb fitting applicable tubing: T0604

Model	Standard specifications																Optional specifications				Semi-standard specifications						
																	Bracket mount				With auto drain	With barb fitting	With drain guide	Metal bowl	Metal bowl with drain guide	Metal bowl with level gauge	Metal bowl with level gauge, with drain guide
	P	A	B	C	D	E	G	J	M	N	Q	R	S	T	U	V	B	B	B	B	B	B	B	B			
AF10-A	M5 x 0.8	25	59.9	7	12.5	—	25	12.5	—	—	—	—	—	—	—	—	77.9	—	—	—	—	59.3	—	—	—	—	
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	—	—	91.4	87.4	93.9	—	—	—	—	
AF30-A	1/4, 3/8	53	115.1	14	26.7	30	35	26.7	41	35	23	6.5	13	53	2.3	30	156.8	123.6	121.9	117.6	122.1	137.6	142.1	—	—	—	
AF40-A	1/4, 3/8, 1/2	70	147.1	18	35.5	38.4	40	35.5	50	52	26	8.5	12.5	70	2.3	35	186.9	155.6	153.9	149.6	154.1	169.6	174.1	—	—	—	
AF40-06-A	3/4	75	149.1	20	35.5	38.4	40	35.5	50	52	25	8.5	12.5	70	2.3	34	188.9	157.6	155.9	151.6	156.1	171.6	176.1	—	—	—	
AF50-A	3/4, 1	90	220.1	24	45	—	30	45	70	66	35	11	13	90	3.2	47	259.9	228.6	226.9	222.6	227.1	242.6	247.1	—	—	—	
AF60-A	1	95	234.1	24	47.5	—	30	47.5	70	66	35	11	13	90	3.2	47	273.9	242.6	240.9	236.6	241.1	256.6	261.1	—	—	—	