

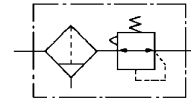
# Filter Regulator

# AW10 to AW60

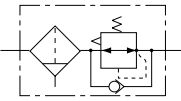
## Filter Regulator with Backflow Function

# AW20K to AW60K

JIS Symbol  
Filter Regulator



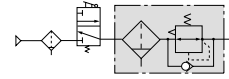
Filter Regulator with  
Backflow Function



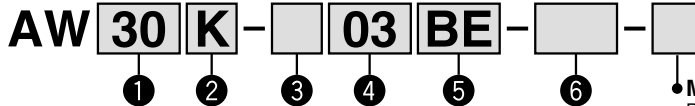
- Integrated filter and regulator units save space and require less piping.
- With the backflow function it incorporates a mechanism to exhaust the air pressure in the outlet side reliably and quickly.

Example)

When the air supply is cut off and releasing the inlet pressure to the atmosphere, the residual pressure release of the outlet side can be ensured for a safety purpose.



## How to Order



• Made to Order  
Refer to pages 374 through to 377 for details.

• Option/Semi-standard: Select one each for a to i.  
• Option/Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.  
Example) AW30K-03BE-1N

	Symbol	Description	① Body size					
			10	20	30	40	60	
② With backflow function	Nil	Without backflow function	●	●	●	●	●	
	K <sup>Note 1)</sup>	With backflow function	—	●	●	●	●	
+								
③ Thread type	Nil	Metric thread (M5)	●	—	—	—	—	
	N <sup>Note 2)</sup>	Rc	—	●	●	●	●	
		NPT	—	●	●	●	●	
	F <sup>Note 3)</sup>	G	—	●	●	●	●	
+								
④ Port size	M5	M5	●	—	—	—	—	
	01	1/8	—	●	—	—	—	
	02	1/4	—	●	●	●	—	
	03	3/8	—	—	●	●	—	
	04	1/2	—	—	—	●	—	
	06	3/4	—	—	—	●	●	
+								
⑤ Option	a Mounting	Nil	Without mounting option	●	●	●	●	●
		B <sup>Note 5)</sup>	With bracket	●	●	●	●	●
		H	With set nut (for panel fitting)	●	●	●	●	—
	b Float type auto drain	Nil	Without auto drain	●	●	●	●	●
		C	Float type auto drain (N.C.)	●	●	●	●	●
		D	Float type auto drain (N.O.)	—	—	●	●	●
	c Pressure gauge	Nil	Without pressure gauge	●	●	●	●	●
		E	Square embedded type pressure gauge (with limit indicator)	—	●	●	●	●
		G	Round type pressure gauge (without limit indicator)	●	—	—	—	—
			Round type pressure gauge (with limit indicator)	—	●	●	●	●
M		Round type pressure gauge (with color zone)	—	●	●	●	●	
Digital pressure switch		E1 <sup>Note 6)</sup>	Output: NPN output / Electrical entry: Wiring bottom entry	—	●	●	●	●
	E2 <sup>Note 6)</sup>	Output: NPN output / Electrical entry: Wiring top entry	—	●	●	●	●	
	E3 <sup>Note 6)</sup>	Output: PNP output / Electrical entry: Wiring bottom entry	—	●	●	●	●	
	E4 <sup>Note 6)</sup>	Output: PNP output / Electrical entry: Wiring top entry	—	●	●	●	●	
+								
⑥ Semi-standard	d Set pressure	Nil <sup>Note 7)</sup>	0.05 to 0.85 MPa setting	●	●	●	●	●
		1 <sup>Note 8)</sup>	0.02 to 0.2 MPa setting	●	●	●	●	●
+								
e Bowl <sup>Note 9)</sup>	Nil	Polycarbonate bowl	●	●	●	●	●	
	2	Metal bowl	●	●	●	●	●	
	6	Nylon bowl	●	●	●	●	●	
	8	Metal bowl with level gauge	—	—	●	●	●	
	C	With bowl guard	—	●	—	—	—	
	6C	Nylon bowl with bowl guard	—	●	—	—	—	

# Filter Regulator *Series AW10 to AW60*

## Filter Regulator with Backflow Function *Series AW20K to AW60K*



**AW20, AW20K    AW40, AW40K**

	Symbol	Description	① Body size						
			10	20	30	40	60		
<b>6</b> Semi-standard	<b>f</b> Drain port <small>Note 10</small>	<b>Nil</b>	With drain cock		●	●	●	●	●
		<b>J</b> <small>Note 11</small>	Drain guide 1/8		—	●	—	—	—
		<b>W</b> <small>Note 12</small>	Drain guide 1/4		—	—	●	●	●
		<b>+</b>	Drain cock with barb fitting: For $\phi 6 \times \phi 4$ nylon tube		—	—	●	●	●
	<b>g</b> Exhaust mechanism	<b>Nil</b>	Relieving type		●	●	●	●	●
		<b>N</b>	Non-relieving type		●	●	●	●	●
	<b>h</b> Flow direction	<b>Nil</b>	Flow direction: Left to right		●	●	●	●	●
		<b>R</b>	Flow direction: Right to left		●	●	●	●	●
	<b>i</b> Pressure unit	<b>Nil</b>	Name plate, caution plate for bowl, and pressure gauge in imperial units: MPa		●	●	●	●	●
		<b>Z</b> <small>Note 13</small>	Name plate, caution plate for bowl, and pressure gauge in imperial units: psi, °F		○ <small>Note 15</small>	○ <small>Note 15</small>	○ <small>Note 15</small>	○ <small>Note 15</small>	○ <small>Note 15</small>
<b>ZA</b> <small>Note 14</small>		Digital pressure switch: With unit conversion function		—	△ <small>Note 16</small>	△ <small>Note 16</small>	△ <small>Note 16</small>	△ <small>Note 16</small>	

**Note 1)** The AW10 type comes with a backflow function as a standard feature. (K is not available.) When using the AW10 type as w/ backflow function, backflow may not occur with the set pressure 0.15 MPa or less. Please set the inlet pressure to at least 0.05 MPa higher than the set pressure.

**Note 2)** Drain guide is NPT 1/8 (applicable to the AW20(K)) and NPT 1/4 (applicable to the AW30(K) to AW60(K)). The auto drain port comes with  $\phi 3/8"$  one-touch fitting (applicable to the AW30(K) to AW60(K)).

**Note 3)** Drain guide is G 1/8 (applicable to the AW20(K)) and G 1/4 (applicable to the AW30(K) to AW60(K)).

**Note 4)** Option B, G, H, M are not assembled and supplied loose at the time of shipment.

**Note 5)** Assembly of a bracket and set nuts (AW10,

AW20(K) to AW40(K)) Including 2 mounting screws for the AW60(K)

**Note 6)** When choosing with H (panel mount), the installation space for lead wires will not be secured. In this case, select "wiring top entry" for the electrical entry.

**Note 7)** Only the AW10 has a pressure setting of 0.05 to 0.7 MPa.

**Note 8)** The only difference from the standard specifications is the adjusting spring for the regulator. It does not restrict the setting of 0.2 MPa or more. When the pressure gauge is attached, a 0.2 MPa pressure gauge will be fitted.

**Note 9)** Refer to Chemical Data on page 287 when selecting a case material.

**Note 10)** Float type auto drain: The combination of C and

D is not possible.

**Note 11)** Without a valve function

**Note 12)** Metal bowl: The combination of 2 and 8 is not possible.

**Note 13)** For thread type: M5 and NPT. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.) The digital pressure switch will be equipped with the unit conversion function, setting to psi initially.

**Note 14)** For options: E1, E2, E3, E4. This product is for overseas use only according to the new Measurement Law. (The SI unit is provided for use in Japan.)

**Note 15)** ○: For thread type: M5 and NPT only

**Note 16)** △: Select with options: E1, E2, E3, E4.

### Standard Specifications

Model	AW10	AW20(K)	AW30(K)	AW40(K)	AW40(K)-06	AW60(K)
<b>Port size</b>	M5 x 0.8	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1
<b>Pressure gauge port size</b> <small>Note 1)</small>	1/16 <small>Note 2)</small>	1/8		1/4		
<b>Fluid</b>	Air					
<b>Ambient and fluid temperature</b> <small>Note 3)</small>	-5 to 60°C (with no freezing)					
<b>Proof pressure</b>	1.5 MPa					
<b>Maximum operating pressure</b>	1.0 MPa					
<b>Set pressure range</b>	0.05 to 0.7 MPa	0.05 to 0.85 MPa				
<b>Relief pressure</b> <small>Note 4)</small>	Set pressure + 0.05 MPa [at relief flow rate of 0.1 $\ell$ /min (ANR)]					
<b>Nominal filtration rating</b>	5 $\mu$ m					
<b>Drain capacity (cm<sup>3</sup>)</b>	2.5	8	25	45	45	45
<b>Bowl material</b>	Polycarbonate					
<b>Bowl guard</b>	—	Semi-standard	Standard			
<b>Construction</b>	Relieving type					
<b>Mass (kg)</b>	0.09	0.32	0.40	0.72	0.75	2.00

**Note 1)** Pressure gauge connection threads are not available for F.R.L. unit with a square embedded type pressure gauge (AW20(K) to AW60(K)).

**Note 2)** Use a bushing (part no:131368) when connecting the R1/8 pressure gauge to the Rc 1/16.

**Note 3)** -5 to 50°C for the products with the digital pressure switch

**Note 4)** Not applicable to the AW10.



販促課

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A

A

AC

AF□

AR

AL

AW□

A□G

AV

AF800

AF900

# Series AW10 to AW60

## Series AW20K to AW60K

### Options/Part No.

Optional specifications			Model						
			AW10(K)	AW20(K)	AW30(K)	AW40(K)	AW40(K)-06	AW60(K)	
Bracket assembly <sup>Note 1)</sup>			AR10P-270AS	AW20P-270AS	AR30P-270AS	AR40P-270AS		AW60P-270AS <sup>Note 6)</sup>	
Set nut			AR10P-260S	AR20P-260S	AR30P-260S	AR40P-260S		— <sup>Note 7)</sup>	
Pressure gauge	Round type <sup>Note 2)</sup>	Standard	G27-10-R1	G36-10-□01		G46-10-□02			
		0.02 to 0.2 MPa setting	G27-10-R1 <sup>Note 3)</sup>	G36-2-□01		G46-2-□02			
	Round type <sup>Note 2)</sup> (with color zone)	Standard	—	G36-10-□01-L		G46-10-□02-L			
		0.02 to 0.2 MPa setting	—	G36-2-□01-L		G46-2-□02-L			
	Square embedded type <sup>Note 4)</sup>	Standard	—	GC3-10AS [GC3P-010AS (Pressure gauge cover only)]					
		0.02 to 0.2 MPa setting	—	GC3-2AS [GC3P-010AS (Pressure gauge cover only)]					
Digital pressure switch <sup>Note 5)</sup>	NPN output / Wiring bottom entry		—	ISE35-N-25-MLA [ISE35-N-25-M (Switch body only)]					
	NPN output / Wiring top entry			ISE35-R-25-MLA [ISE35-R-25-M (Switch body only)]					
	PNP output / Wiring bottom entry			ISE35-N-65-MLA [ISE35-N-65-M (Switch body only)]					
	PNP output / Wiring top entry			ISE35-R-65-MLA [ISE35-R-65-M (Switch body only)]					
Float type auto drain <sup>Note 8) Note 9)</sup>	N.C.		AD17	AD27	AD37	AD47			
	N.O.		—	—	AD38	AD48			

### Semi-standard/Bowl Assembly Part No.

Semi-standard specifications					Model						
Bowl material	Float type auto drain <sup>Note 8) Note 9)</sup>		With drain guide <sup>Note 9)</sup>	With barb fitting	With bowl guard	AW10(K)	AW20(K)	AW30(K)	AW40(K)	AW40(K)-06	AW60(K)
	N.C.	N.O.									
Polycarbonate	—	—	—	—	●	—	C2SF-C	—	—		
	●	—	—	—	●	—	AD27-C	—	—		
	—	—	●	—	—	—	C2SF-J	C3SF-J	C4SF-J		
	—	—	—	●	—	—	—	C3SF-W	C4SF-W		
	—	—	●	—	●	—	C2SF-CJ	—	—		
Nylon	—	—	—	—	—	C1SF-6	C2SF-6	C3SF-6	C4SF-6		
	—	—	—	—	●	—	C2SF-6C	—	—		
	●	—	—	—	—	AD17-6	AD27-6	AD37-6	AD47-6		
	—	●	—	—	—	—	—	AD38-6	AD48-6		
	●	—	—	—	●	—	AD27-6C	—	—		
	—	—	●	—	—	—	C2SF-6J	C3SF-6J	C4SF-6J		
	—	—	—	●	—	—	—	C3SF-6W	C4SF-6W		
Metal	—	—	—	—	—	C1SF-2	C2SF-2	C3SF-2	C4SF-2		
	●	—	—	—	—	AD17-2	AD27-2	AD37-2	AD47-2		
	—	●	—	—	—	—	—	AD38-2	AD48-2		
	—	—	●	—	—	—	C2SF-2J	C3SF-2J	C4SF-2J		
Metal bowl with level gauge	—	—	—	—	—	—	—	C3LF-8	C4LF-8		
	●	—	—	—	—	—	—	AD37-8	AD47-8		
	—	●	—	—	—	—	—	AD38-8	AD48-8		
	—	—	●	—	—	—	—	C3LF-8J	C4LF-8J		

Note 1) Assembly of a bracket and set nuts

Note 2) □ in part numbers for a round pressure gauge indicates a type of connection thread. No indication is necessary for R; however, indicate N for NPT. Please contact SMC regarding the connection thread NPT and pressure gauge supply for psi unit specifications.

Note 3) Standard pressure gauge

Note 4) Including one O-ring and 2 mounting screws. [ ]: Pressure gauge cover only

Note 5) Lead wire with connector (2 m), adapter, lock pin, O-ring (1 pc.), mounting screw (2 pcs.) are attached. [ ]: Switch body only. Also, regarding how to order the digital pressure switch, please refer to page 388. A pressure switch adapter assembly (AW60P-310AS) will be additionally required for the AW60(K) only. Use the attached mounting screw (M3 x 0.5 x 14) for mounting. The mounting screw (M3 x 0.5 x 7) attached to the digital pressure switch assembly will not be required.

Note 6) Assembly of a bracket and 2 mounting screws

Note 7) Please consult SMC regarding the set nuts for the AW60(K).

Note 8) Minimum operating pressure: N.O. type—0.1 MPa; N.C. type—0.1 MPa (AD27) and 0.15 MPa (AD37/47). Please contact SMC for psi and °F unit specifications.

Note 9) Please consult SMC for details on drain piping to fit NPT or G port sizes.

Note) • Bowl O-ring is included for the AW20(K) to AW60(K).

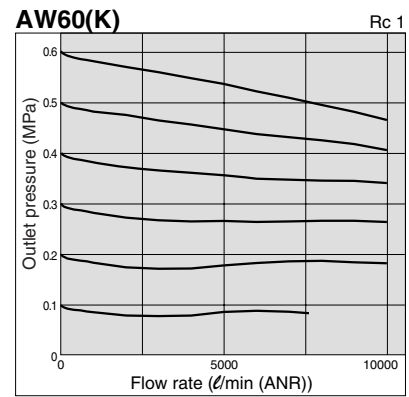
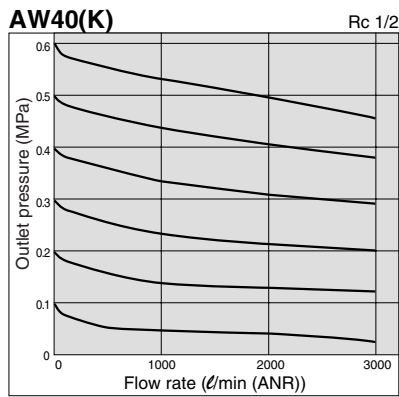
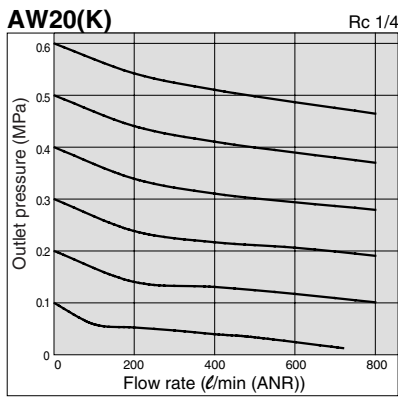
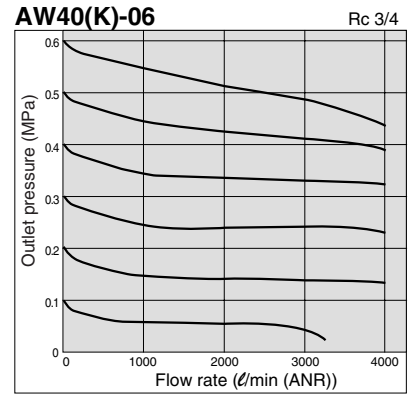
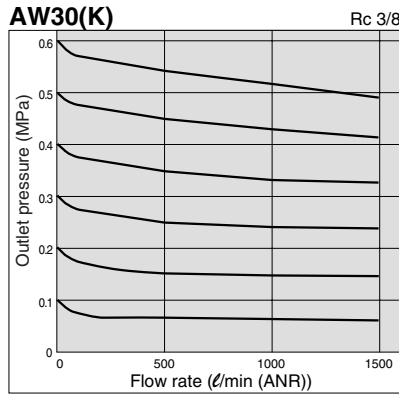
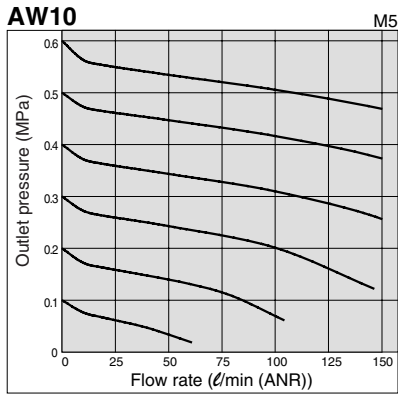
• Bowl assembly for the AW30(K) to AW60(K) models comes with a bowl guard (steel band material). (except when the bowl material is metal)

# Series AW10 to AW60

# Series AW20K to AW60K

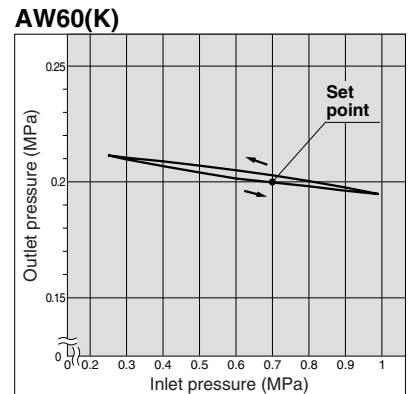
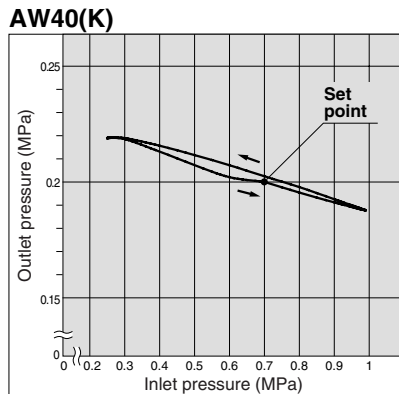
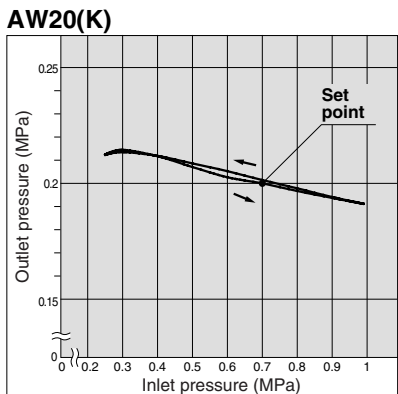
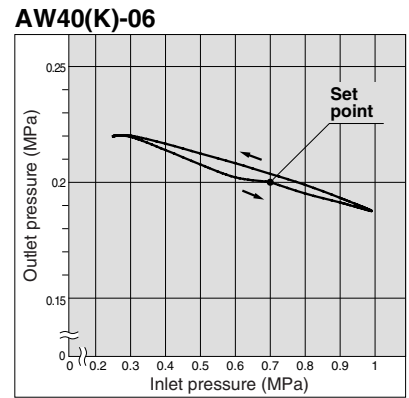
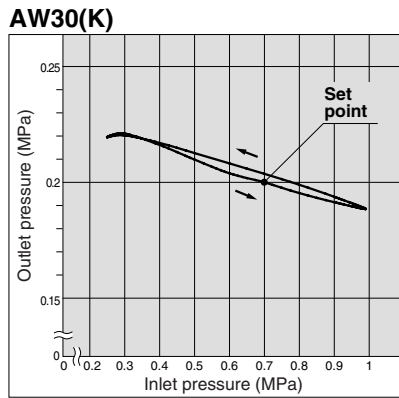
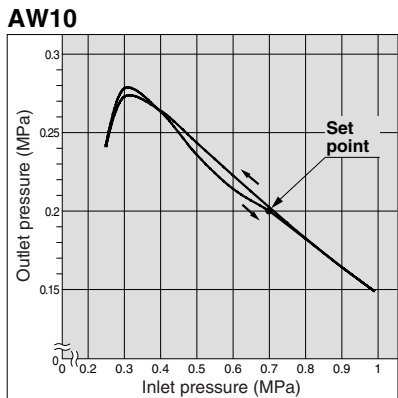
## Flow Characteristics (Representative values)

Condition: Inlet pressure 0.7 MPa



## Pressure Characteristics (Representative values)

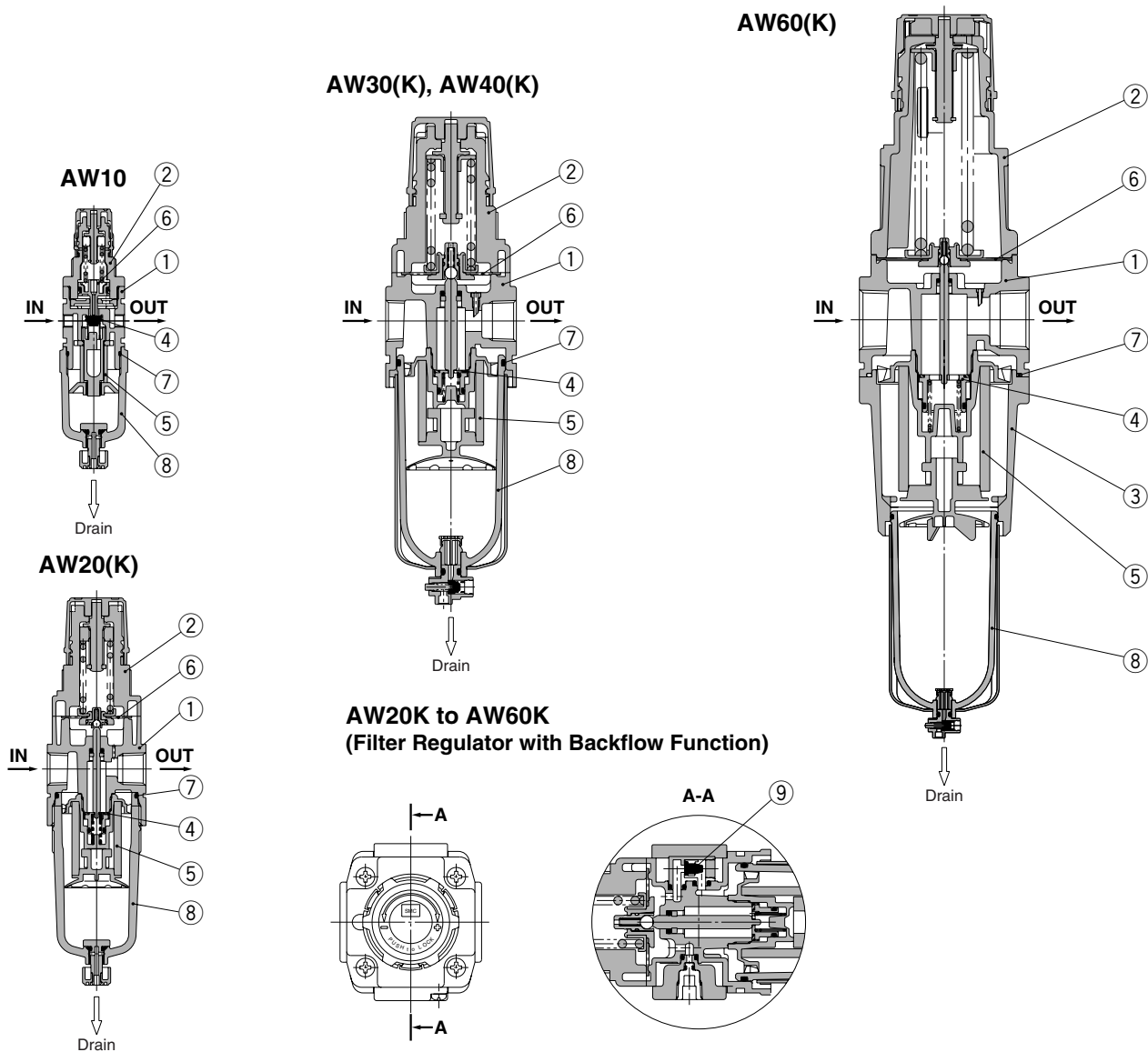
Conditions: Inlet pressure 0.7 MPa, Outlet pressure 0.2 MPa, Flow rate 20 l/min (ANR)



# Filter Regulator *Series AW10 to AW60*

## Filter Regulator with Backflow Function *Series AW20K to AW60K*

### Construction



#### Component Parts

No.	Description	Material	Model	Color
1	Body	Zinc die-cast	AW10, AW20	Platinum silver
		Aluminum die-cast	AW30 to AW60	
2	Bonnet	Polyacetal	AW10 to AW40	Black
		Aluminum die-cast	AW60	
3	Housing	Aluminum die-cast	AW60	Platinum silver

#### Replacement Parts

No.	Description	Material	Part no.					
			AW10	AW20(K)	AW30(K)	AW40(K)	AR40(K)-06	AW60(K)
4	Valve assembly	Brass, HNBR	AR10P-090S	AW20P-340AS	AW30P-340AS	AW40P-340AS	AR40P-060S	AW60P-090AS
5	Filter element	Non-woven fabric	AF10P-060S	AF20P-060S	AF30P-060S	AF40P-060S		AW60P-060S
6	Diaphragm assembly	Weatherable NBR	AR10P-150AS <sup>Note 1)</sup>	AR20P-150AS	AR30P-150AS	AR40P-150AS		AR50P-150AS
7	Bowl O-ring	NBR	C1SFP-260S	C2SFP-260S	C3SFP-260S	C4SFP-260S		
8	Bowl assembly <sup>Note 2)</sup>	Polycarbonate	C1SF	C2SF	C3SF <sup>Note 3)</sup>	C4SF <sup>Note 3)</sup>		
9	Check valve assembly <sup>Note 4)</sup>	—	—	AR20KP-020AS				

Note 1) The AW10 is a piston type. Assembly of a piston and a seal (KSYP-13).

Note 2) Bowl O-ring is included for the AW20(K) to AW60(K). Please contact SMC regarding the bowl assembly supply for psi and °F unit specifications.

Note 3) Bowl assembly for the AW30(K) to AW60(K) models comes with a bowl guard (steel band material).

Note 4) Check valve assembly is applicable for a filter regulator with backflow function (AW20K to AW60K) only.

Assembly of a check valve cover, check valve body assembly and 2 screws



# Series AW10 to AW60

# Series AW20K to AW60K

## Working Principle (Filter Regulator with Backflow Function)

### AW10



When the inlet pressure is higher than the regulating pressure, the check valve operates as a normal regulator (Figure 1).

When the inlet pressure is shut off and exhausted, any inlet pressure applied to the valve ① will be lost. The force for seating the valve ① is the valve spring force ② only. When the valve ① is opened using the outlet force, the outlet pressure will be exhausted at the inlet side. (Figure 2)

When the set pressure is 0.15 MPa or less, valve ① may not open due to the valve spring ② force.

### AW20K to AW60K

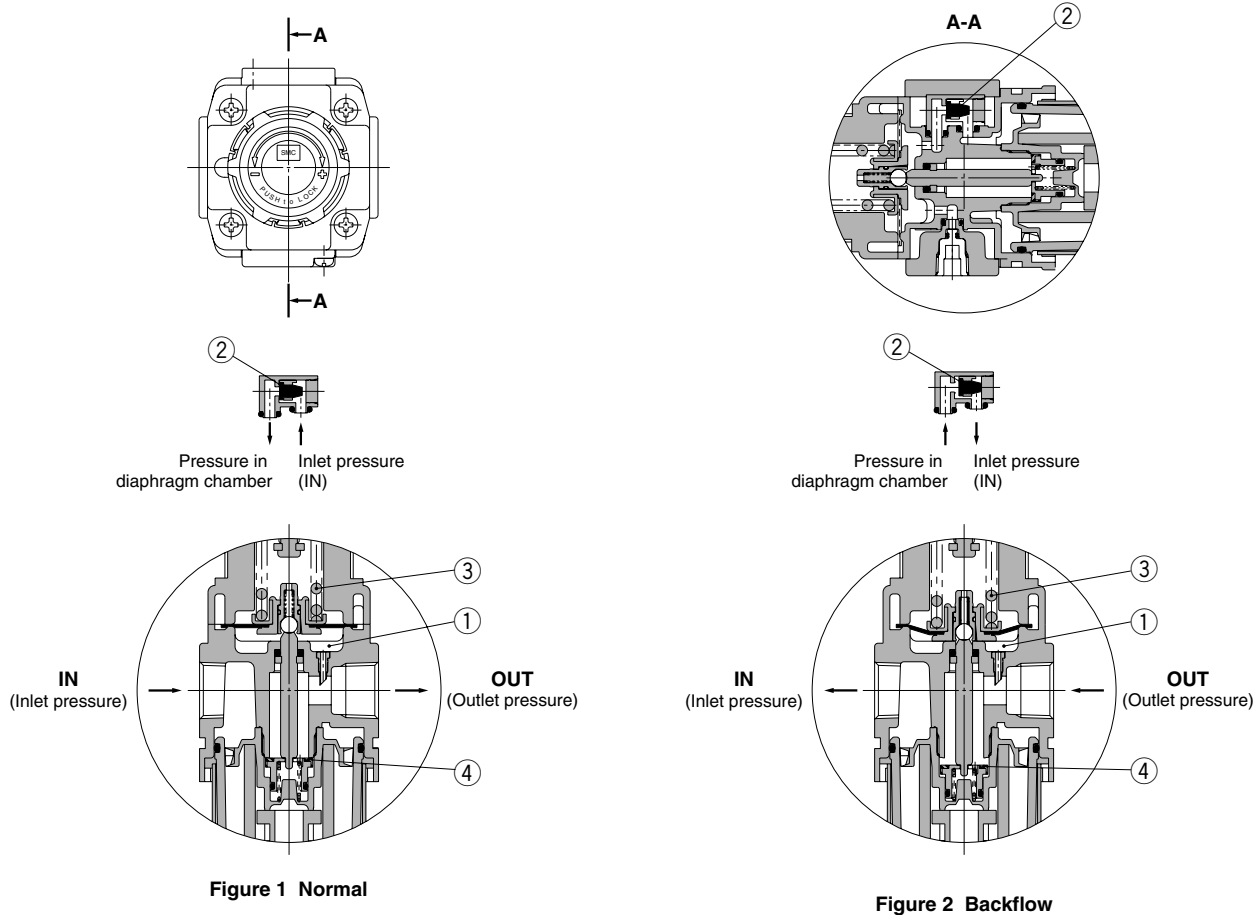


Figure 1 Normal

Figure 2 Backflow

When the inlet pressure is higher than the regulating pressure, the check valve ② closes and operates as a normal regulator (Figure 1). When the inlet pressure is shut off and released, the check valve ② opens and the pressure in the diaphragm chamber ① is released into the inlet side (Figure 2).

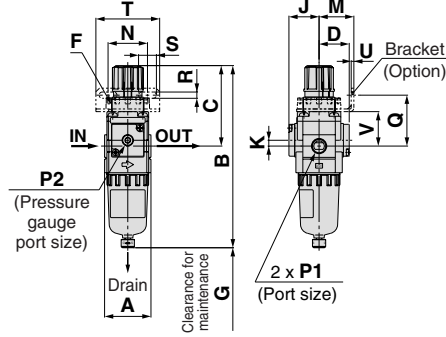
This lowers the pressure in the diaphragm chamber ① and the force generated by the pressure regulator spring ③ lifts the diaphragm. Valve ④ opens through the stem, and the outlet pressure is released to the inlet side (Figure 2).

# Filter Regulator *Series AW10 to AW60*

## Filter Regulator with Backflow Function *Series AW20K to AW60K*

### Dimensions

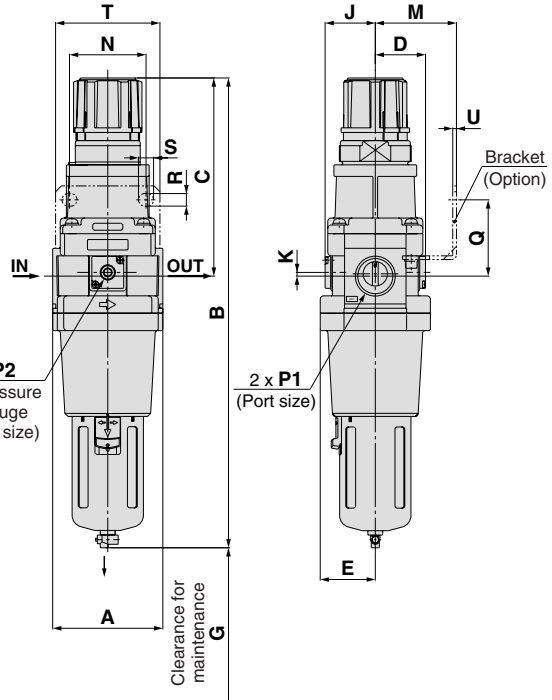
#### AW10, AW20(K)



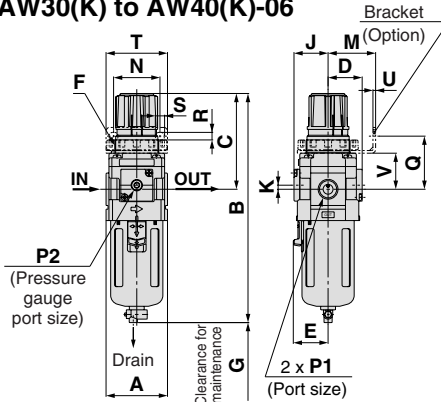
Panel fitting dimension

Plate thickness  
AW10, AW20(K): Max. 3.5

#### AW60(K)



#### AW30(K) to AW40(K)-06



Panel fitting dimension

Plate thickness  
AW30(K): Max. 3.5  
AW40(K): Max. 5

Applicable model	AW20(K) to AW60(K)		AW10, AW20(K) to AW60(K)	AW20(K) to AW60(K)
Option	Square embedded type pressure gauge	Digital pressure switch	Round type pressure gauge	Round type pressure gauge (with color zone)
Dimensions				

Applicable model	AW10, AW20(K)		AW20(K)	AW30(K) to AW60(K)				
	Optional/Semi-standard specifications	With auto drain (N.C.)	Metal bowl	With drain guide	With auto drain (N.O./N.C.)	Metal bowl	Metal bowl with level gauge	With drain guide
Dimensions								

Model	Standard specifications											Optional specifications								
	P1		P2		A	B (Note)	C	D	E	F	G	J	K	H	J	H	J	H	J	
	Pressure gauge	Port size	Port size	Port size	Port size	Port size	Port size	Port size	Port size	Port size	Port size	Port size	Port size	Pressure gauge	Digital pressure switch	Round type pressure gauge	Round type pressure gauge (with color zone)	Round type pressure gauge	Round type pressure gauge (with color zone)	
AW10	M5 x 0.8	1/16	25	108	48	12.5	—	M18 x 1	25	13	0	—	—	—	—	—	—	—	—	—
AW20(K)	1/8, 1/4	1/8	40	160	73	26	—	M28 x 1	40	26	5	□28	27	□27.8	37.5	□37.5	63	□37.5	63	63
AW30(K)	1/4, 3/8	1/8	53	201	86	29.5	30	M38 x 1.5	55	29.5	3.5	□28	30.5	□27.8	41	□37.5	66	□37.5	66	66
AW40(K)	1/4, 3/8, 1/2	1/4	70	239	92	37.5	38	M42 x 1.5	80	37.5	1.5	□28	38.5	□27.8	49	□42.5	76	□42.5	76	76
AW40(K)-06	3/4	1/4	75	242	93	37.5	38	M42 x 1.5	80	37.5	1.2	□28	38.5	□27.8	49	□42.5	76	□42.5	76	76
AW60(K)	3/4, 1	1/4	95	409	175	43.5	47.5	—	20	43.5	3.2	□28	44.5	□27.8	61.5	□42.5	84	□42.5	84	84

Model	Optional specifications											Semi-standard specifications				
	Bracket mount					Panel mount						With auto drain	With barb fitting	With drain guide	Metal bowl	Metal bowl with level gauge
	M	N	Q	R	S	T	U	V	W	Y	Z	B (Note)	B (Note)	B (Note)	B (Note)	B (Note)
AW10	25	28	30	4.5	6.5	40	2	18	18.5	—	—	125	—	—	107	—
AW20(K)	30	34	44	5.4	15.4	55	2.3	30	28.5	14	6	177	—	164	160	—
AW30(K)	41	40	46	6.5	8	53	2.3	31	38.5	19	7	242	209	208	214	234
AW40(K)	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7	278	247	246	252	272
AW40(K)-06	50	54	56	8.5	10.5	70	2.3	37	42.5	21	7	282	251	249	255	275
AW60(K)	70	66	66	11	13	90	3.2	—	—	—	—	448	417	416	422	442

Note) The total length of B dimension is the length when the filter regulator knob is unlocked.

