Wit the	th th	A V Filter AV ated filter a he backflow tlet side re	Regu V20 and reg w func	<b>O-B to AW60-B</b> Nator with Backflow Function <b>K-B to AW60K-B</b> gulator units save space and require tion it incorporates a mechanism to and quickly.		ping.	Filter Regul Backflow Fi														
Wh	nen th	é air supply is cu		eleasing the inlet pressure to the atmosphere, the residual can be ensured for a safety purpose. <b>How to Order</b>	► 1 L'	er to page	e 85 for siz	e 10.													
AV	V	30 K -	<b>3</b>	03 BE - B 4 5 6 - B • Option/Semi-st • Option/Semi-st required, indic Example) AW30	tandard symb ate in alphanu	ol: When more umeric order.		cification is													
	Symbol Description				Body size																
2	With backflow function			Without backflow function With backflow function	20 ●	30 ●	40 •	60 •													
3	Pipe	e thread type	+ N Note 2) F Note 3)	Rc NPT G																	
4	Port size		+ 01 02 03 04 06 10 +	1/8         1/4         3/8         1/2         3/4         1																	
	a	Mounting	B Note 5)	Without mounting option With bracket With set nut (for panel mount)	•	•	•	•													
lote 4)	b	Float type auto drain	C Note 6) D Note 7)	Without auto drain N.C. (Normally closed) Drain port is closed when pressure is not applied. N.O. (Normally open) Drain port is open when pressure is not applied.	•	•	• • •	•													
Option Note 4)		- C													Pressure gauge <sup>Note 8)</sup>	E G M	Without pressure gauge Square embedded type pressure gauge (with limit indicator) Round type pressure gauge (with limit indicator) Round type pressure gauge (with colour zone)	• • •	•	• • •	•
	E1         Output: NPN output / Electrical entry: Wiring bottom entry           Digital pressure switch Note 9)         E2         Output: NPN output / Electrical entry: Wiring top entry           E3         Output: PNP output / Electrical entry: Wiring bottom entry           E4         Output: PNP output / Electrical entry: Wiring bottom entry           E4         Output: PNP output / Electrical entry: Wiring top entry					• • •	• • •	•													
	d	Set pressure Note 10)		0.05 to 0.85 MPa setting 0.02 to 0.2 MPa setting	•	•	•	•													
9 Semi-standard	e	Bowl Note 11)		Polycarbonate bowl Metal bowl Nylon bowl Metal bowl with level gauge With bowl guard Nylon bowl with bowl guard	• • • •	•     •	Note 12)     Note 13)	Note 13													
S		Drain port Note 14)	J Note 15)	With drain cock Drain guide 1/8 Drain guide 1/4 Drain cock with barb fitting	• • 	• 	•  •	•  •													

**SMC** 

# Filter Regulator Series AW20-B to AW60-B Filter Regulator with Backflow Function Series AW20K-B to AW60K-B

AW20-B, AW20K-B

Note 20) △: Select with options: E1, E2, E3, E4.

AW40-B, AW40K-B

	<u> </u>												
Symbol				Description			Body size						
									20	30	40	60	
			Exhaust	_	Relieving	ı type							
		g	mechanism	N	Non-reliev		00						
	p	+						•		•			
	nda		<b>-</b>	_	Flow dire	ction: L	eft to right						
6	Semi-standard	h	Flow direction	R	Flow dire	Flow direction: Right to left							
-			+						•	•	•	•	
				—	Name plate,	ame plate, caution plate for bowl, and pressure gauge in imperial units: MPa							
		i	Pressure unit	<b>Z</b> <sup>Note 17)</sup>	Name plate, caution plate for bowl, and pressure gauge in imperial units: psi, °F			ONote 19)	ONote 19)	ONote 19)	ONote 19)		
				ZA Note 18)	Digital pre	essure	switch: With unit cor	version function	△ <sup>Note 20)</sup>	△ <sup>Note 20)</sup>	△ <sup>Note 20)</sup>	△ <sup>Note 20)</sup>	
Note			nlet pressure to at leas	t 0.05 MPa	higher than			), air leakage from the drain	Note 13) A bowl guard is provided as standard equipment (nylon) Note 14) The combination of float type auto drain: C and D is no				
Note			essure. de is NPT1/8 (applicable	a to the ΔW	20(K)-B) and		cock may occur during sta recommended.	rt of operations. N.C. type is	Note 14) The avail		bat type auto drai	in: C and D is not	
NOLE			applicable to the AW3					ge is attached, a 1.0 MPa		out a valve function	on		
			drain port comes with					ted for standard (0.85 MPa)	Note 16) The combination of metal bowl: 2 and 8 is not available.				
	(applicable to the AW30(K)-B to AW60(K)-B). type. 0.4 MPa pressure gauge for 0.2 MPa type.							Note 17) For pipe thread type: NPT. Cannot be used with M					
Note	Note 3) Drain guide is G1/8 (applicable to the AW20(K)-B) and Note 9) When choosing with H (panel mount), the installation							Round pressure gauge (with colour zone). Available by request for special. The digital pressure switch will be					
Note 4) Option B, G, H, M are not assembled and supplied loose select "wiring top entry" for the electrical entry. (Select equipped with the unit conver "wiring bottom entry" when the semi-standard Y is chosen initially.							ion, setting to ps						
Note			of a bracket and set	nuts (appli	icable to the		simultaneously.)			ptions: E1, E2, E	3, E4.		
	AW20(K)-B to AW40(K)-B). Including 2 mounting screws Note 10) Pressure can be set higher than the specificat							gher than the specification	Note 19) O: For pipe thread type: NPT only				

- AW20(K)-B to AW40(K)-B). Including 2 mounting screws for the AW60(K)-B Note 6) 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 7) If the compressor is small (0.75 kW, discharge flow is
- Note 10) Pressure can be set higher than the specification pressure in some cases, but use pressure within the specification range.
- Note 11) Refer to Chemical data on page 90 for chemical resistance of the bowl.
- Note 12) A bowl guard is provided as standard equipment (polycarbonate).

#### **Standard Specifications**

Model	AW20-B	AW30-B	AW40-B	AW40-06-B	AW60-B			
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1			
Pressure gauge port size Note 1)			1/8					
Fluid			Air					
Ambient and fluid temperature Note 2)		—5 tr	to 60°C (with no freez	zing)				
Proof pressure		1.5 MPa						
Maximum operating pressure		1.0 MPa						
Set pressure range	0.05 to 0.85 MPa							
Nominal filtration rating	5 μm							
Drain capacity [cm <sup>3</sup> ]	8 25 45							
Bowl material	Polycarbonate							
Bowl guard	Semi-standard (Steel)	Semi-standard (Steel) Standard (Polycarbonate)						
Construction		Relieving type						
Weight [kg]	0.20	0.36	0.66	0.72	2.05			

**SMC** 

Note 1) Pressure gauge connection threads are not available for F.R.L. unit with a square embedded type pressure gauge or with a digital pressure switch. Note 2) -5 to 50°C for the products with the digital pressure switch

AFM / AFD

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# Series AW20-B to AW60-B Series AW20K-B to AW60K-B

#### **Options/Part No.**

	Optional spe	oificationa	Model						
	Optional spe	cincations	AW20(K)-B	AW30(K)-B	AW40(K)-B	AW40(K)-06-B	AW60(K)-B		
Bracket assembly Note 1)			AW23P-270AS	AR33P-270AS	AR43P-270AS		AW62P-270AS		
Set nut			AR23P-260S	AR33P-260S	AR43P-260S		Note 2)		
	Round type Note 3) Stand		G36-1	0-□01		G46-10-□01			
	nound type	0.02 to 0.2 MPa setting	G36-4	ŀ-□01	G46-4-🗆01				
Pressure	Round type Note 3)	Standard	G36-10-□01-L		G46-10-□01-L				
gauge	(with colour zone)	0.02 to 0.2 MPa setting	G36-4-01-L G46-4-01-L						
	Square embedded	Standard	GC3-10AS [GC3P-010AS (Pressure gauge cover only)]						
	type Note 4)	0.02 to 0.2 MPa setting	GC3-4AS [GC3P-010AS (Pressure gauge cover only)]						
		NPN output: Wiring bottom entry	ISE35-N-25-MLA [ISE35-N-25-M (Switch body only)]						
Digital	pressure	NPN output: Wiring top entry	y ISE35-R-25-MLA [ISE35-R-25-M (Switch body only)]						
switch	Note 5)	PNP output: Wiring bottom entry		ISE35-N-65-MLA	(ISE35-N-65-M (S	witch body only)]			
		PNP output: Wiring top entry	ISE35-R-65-MLA [ISE35-R-65-M (Switch body only)]						

Note 1) Assembly of a bracket and set nuts. Including 2 mounting screws for the AW60(K)-B

Note 2) Please consult with SMC regarding the set nuts for the AW60(K)-B.

No indication is necessary for R; however, indicate N for NPT.

Please contact SMC regarding the pressure gauge supply for psi unit specifications.

Note 4) Including one O-ring and 2 mounting screws.

Pressure gauge cover only

Note 5) In addition to the pressure switch body, lead wire with connector (2 m), adapter, lock pin, O-ring (1 pc.), mounting screw (2 pcs.) are attached.

[]: Switch body only. (Regarding how to order the digital pressure switch, please consult with SMC.

A pressure switch can be mounted on the AW60(K)-B, with a special mounting adapter (Pressure switch adapter assembly: AW63P-310AS) and mounting screws (M3 x 0.5 x 14) which are delivered with the mounting adapter.

#### **Bowl Assembly/Part No.**

David	Drain			Model					
Bowl material	discharge mechanism	Drain port	Other	AW20-B	AW30-B	AW40-B	AW40-06-B	AW60-B	
		With drain cock	—	C2SF-A	—		_		
	Manual	With train cock	With bowl guard	C2SF-C-A	C3SF-A		C4SF-A		
	Manual discharge	Drain cock with barb fitting	With bowl guard	—	C3SF-W-A		C4SF-W-A		
Polycarbonate	discharge	With drain guide	_	C2SF□-J-A	—		—		
bowl		(without valve function)	With bowl guard	C2SF□-CJ-A	C3SF□-J-A		C4SF□-J-A		
	Automatic	Normally closed (N.C.)	_	AD27-A	—		—		
	discharge Note)	Normally closed (N.C.)	With bowl guard	AD27-C-A	AD37□-A	AD47□-A			
	(Auto drain)	Normally open (N.O.)	With bowl guard	—	AD38□-A	AD48□-A			
	Manual	With drain cock		C2SF-6-A	—				
		With drain cock	With bowl guard	C2SF-6C-A	C3SF-6-A	C4SF-6-A			
	Manual discharge	Drain cock with barb fitting	With bowl guard	—	C3SF-6W-A				
Nulan baud	uischarge	With drain guide	—	C2SF□-6J-A	—		—		
Nylon bowl		(without valve function)	With bowl guard	C2SF□-6CJ-A	C3SF□-6J-A	C4SF□-6J-A			
	Automatic discharge Note)	Normally closed (N.C.)	—	AD27-6-A	—		—		
		Normally closed (N.C.)	With bowl guard	AD27-6C-A	AD37□-6-A	AD47□-6-A			
	(Auto drain)	Normally open (N.O.)	With bowl guard	—	AD38□-6-A		AD48□-6-A		
		With drain cock	—	C2SF-2-A	C3SF-2-A	C4SF-2-A			
	Manual	With train cock	With level gauge	—	C3LF-8-A	C4LF-8-A			
	discharge	With drain guide	—	C2SF□-2J-A	C3SF□-2J-A		C4SF□-2J-A		
Matal baud		(without valve function)	With level gauge	—	C3LF□-8J-A	C4LF□-8J-A			
Metal bowl		Normally closed (N.C.)	—	AD27-2-A	AD37□-2-A		AD47□-2-A		
	Automatic discharge <sup>Note)</sup>	Normally closed (N.C.)	With level gauge	—	AD37□-8-A	AD47□-8-A			
	(Auto drain)			—	AD38□-2-A		AD480-2-A		
		Normally open (N.O.)	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 (AD27-A) and 0.15 MPa (AD37-A, AD47-A). Bowl assembly 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, —: ø10, N: ø3/8")

Please consult with SMC separately for psi and  $^\circ\text{F}$  unit display specifications.

# Filter Regulator Series AW20-B to AW60-B

### Specific Product Precautions

Be sure to read this before handling. Refer to the back cover for Safety Instructions, "Handling Precautions for I SMC Products" and the Operation Manual for F.R.L. Precautions, http://www.smc.eu

#### **Design/Selection**

## \land Warning

- Residual pressure disposal (outlet pressure removal) is not possible for the AW20-B to AW60-B even though the inlet pressure is exhausted. When the residual pressure disposal is performed, use the filter regulator with backflow function (AW20K-B to AW60K-B).
- 2. 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)

				-			
			Material				
Туре	Chemical name	Application examples	Polycarbonate	Nylon			
Acid	Hydrochloric acid Sulfuric acid, Phosphoric acid Chromic acid	Acid washing liquid for metals	Δ	×			
Alkaline	Sodium hydroxide (Caustic soda) Potash Calcium hydroxide (Slack lime) Ammonia water Carbonate of soda	Degreasing of metals Industrial salts Water-soluble cutting oil	×	0			
Inorganic salts	Sodium sulfide Sulfate of potash Sulfate of soda	—	×	Δ			
Chlorine solvents	Carbon tetrachloride Chloroform Ethylene chloride Methylene chloride	Cleansing liquid for metals Printing ink Dilution	×	Δ			
Aromatic series	Benzene Toluene Paint thinner	Coatings Dry cleaning	×	Δ			
Ketone	Acetone Methyl ethyl ketone Cyclohexane	Photographic film Dry cleaning Textile industries	×	×			
Alcohol	Ethyl alcohol IPA Methyl alcohol	Antifreeze Adhesives	Δ	×			
Oil	Gasoline Kerosene		×	0			
Ester	Phthalic acid dimethyl Phthalic acid diethyl Acetic acid	Synthetic oil Anti-rust additives	×	0			
Ether	Methyl ether Ethyl ether	Brake oil additives	×	0			
Amino	Methyl amino	Cutting oil Brake oil additives Rubber accelerator	×	×			
Others	Thread-lock fluid Seawater Leak tester	_	×	Δ			
O: Esse	O: Essentially safe △: Some effects may occur. ×: Effects will occur.						

Maintenance

### \land 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

## **M** Warning

- Set the regulator while verifying the displayed values of the inlet and outlet pressure gauges. Turning the regulator knob excessively can cause damage to the internal parts.
- **2.** Do not use tools on the pressure regulator knob as this may cause damage. It must be operated manually.

## **A** Caution

- Be sure to unlock the knob before adjusting the pressure and lock it after setting the pressure. Failure to follow this procedure can cause damage to the knob and the outlet pressure may fluctuate.
  - Pull the pressure regulator knob to unlock. (You can visually verify this with the "orange mark" that appears in the gap.)
  - Push the pressure regulator knob to lock. When the knob is not easily locked, turn it left and right a little and then push it (when the knob is locked, the "orange mark", i.e., the gap will disappear).
- A knob cover is available to prevent careless operation of the knob. Refer to page 97 for details.
- When the bowl is installed on the AW30-B to AW60-B, 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.



AB

AC

AW+AL || AF+AR+AL

AF+AR

AF+AFM+AR

Attachment AW+AFM

E E

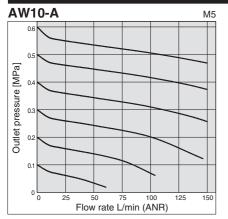
AFD

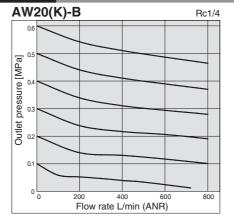
When the above factors are present, or there is some doubt, use a metal bowl for safety.



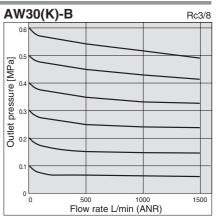
## Series AW10-A Series AW20-B to AW60-B Series AW20K-B to AW60K-B

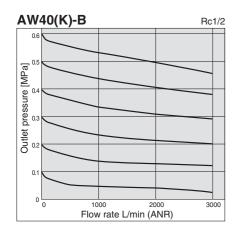
Flow-rate Characteristics (Representative values)

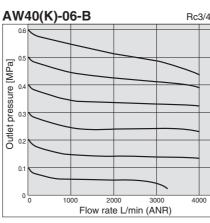


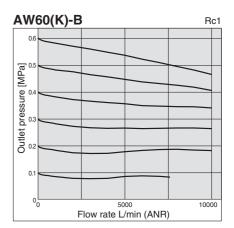


Condition: Inlet pressure 0.7 MPa

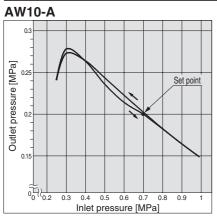


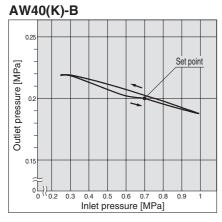


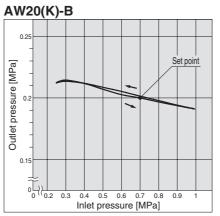


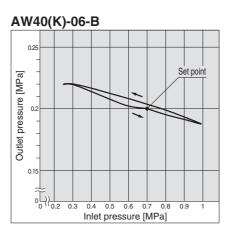


### Pressure Characteristics (Representative values)







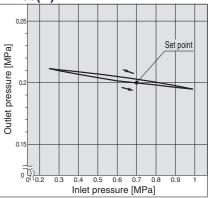


**GSMC** 

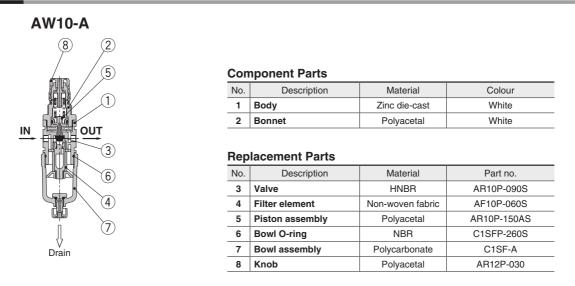


AW30(K)-B





### Construction



### Working Principle (Filter Regulator with Backflow Function)



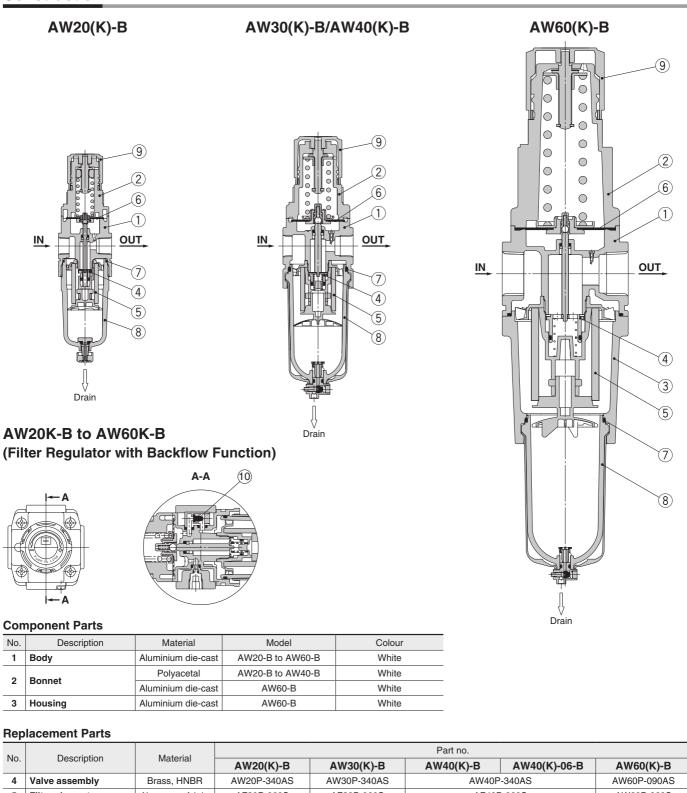
When the inlet pressure is higher than the regulating pressure, the check valve operates as a normal regulator (Figure 1). When the inlet pressure is shut off and exhausted, any inlet pressure applied to the valve ① will be lost. The force for seating the valve ① is the valve spring force ② only. When 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, the valve ① may not open due to the valve spring ③ force.

AF

AL

# Series AW20-B to AW60-B Series AW20K-B to AW60K-B

Construction



110.	Description	Iviaterial	AW20(K)-B	AW30(K)-B	AW40(K)-B	AW40(K)-06-B	AW60(K)-B		
4	Valve assembly	Brass, HNBR	AW20P-340AS	AW30P-340AS	AW40P-340AS		AW60P-090AS		
5	Filter element	Non-woven fabric	AF20P-060S	AF30P-060S	AF40P-060S		AF40P-060S AW60		AW60P-060S
6	Diaphragm assembly	Weatherable NBR	AR20P-150AS	AR30P-150AS	AR40P-150AS		AR40P-150AS AR50P-		AR50P-150AS
7	Bowl seal	NBR	C2SFP-260S	C32FP-260S	C42FP-260S				
8	Bowl assembly Note 1)	Polycarbonate	C2SF-A	C3SF-A <sup>Note 2)</sup>		C4SF-A <sup>Note 2)</sup>			
9	Knob	Polyacetal	AR23P-030	AR33P-030	AR43P-030		AR52P-030		
10	Check valve assembly Note 3)	—			AR23KP-020AS				

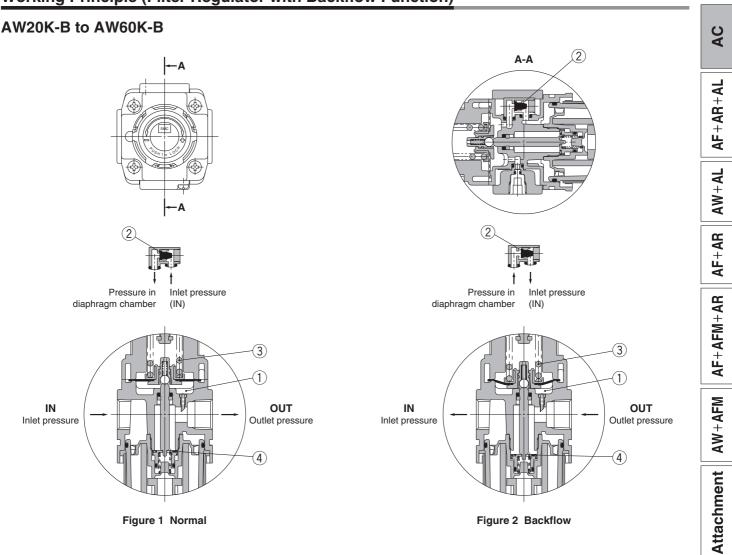
Note 1) Bowl assembly includes the bowl O-ring.

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

Note 2) Bowl assembly for the AW30(K)-B to AW60(K)-B models comes with a bowl guard (Material: Polycarbonate). Note 3) Check valve assembly is applicable for a filter regulator with backflow function (AW20(K)-B to AW60(K)-B) only.

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





### Working Principle (Filter Regulator with Backflow Function)

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. The valve (4) opens through the stem, and the outlet pressure is released to the inlet side (Figure 2).

#### 94

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## Series AW10-A Series AW20-B to AW60-B Series AW20K-B to AW60K-B

### **Dimensions**

### AW10-A

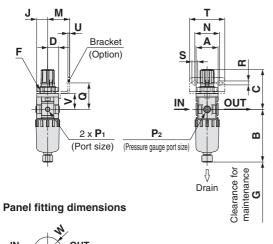
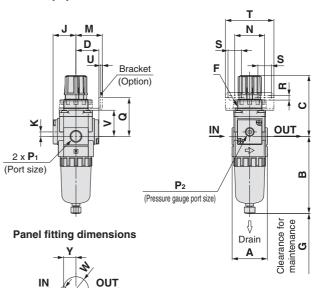




Plate thickness AW10-A: Max. 3.5

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

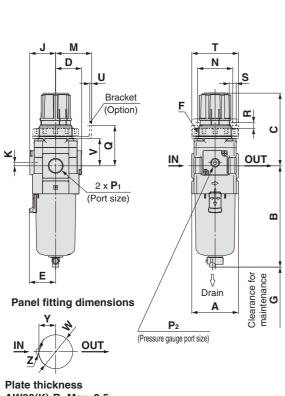


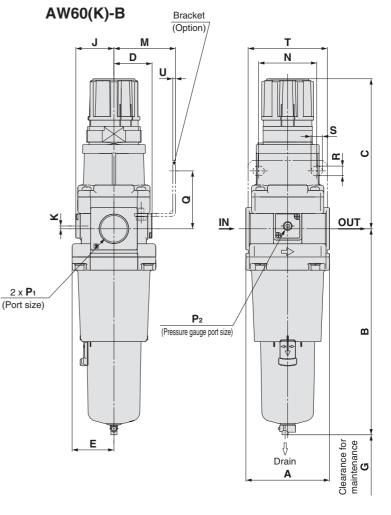


Z

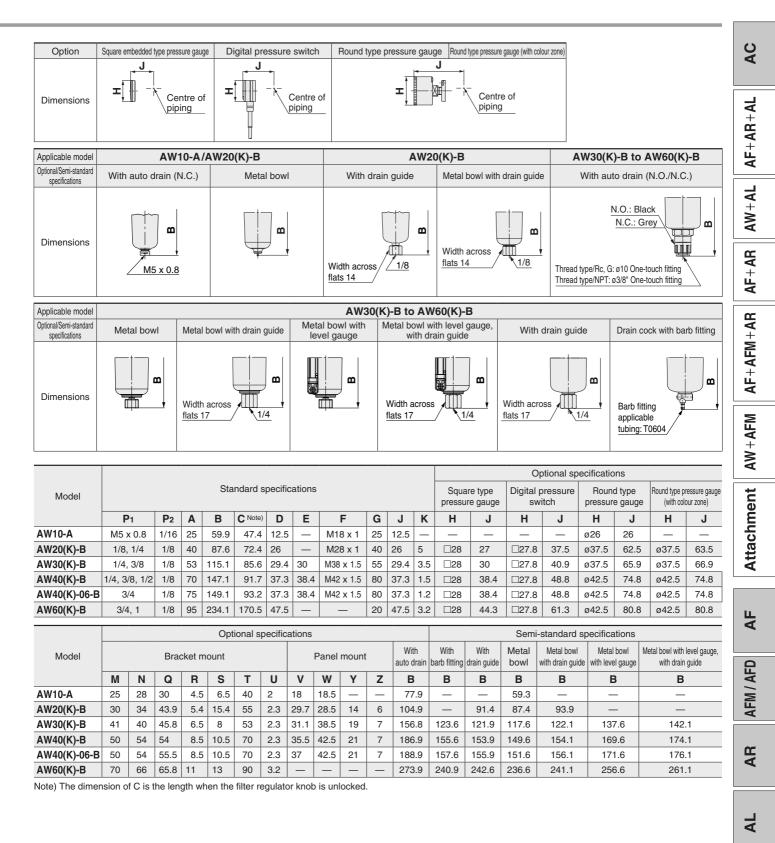
Plate thickness AW20(K)-B: Max. 3.5

IN





# Filter Regulator Series AW10-A Filter Regulator Series AW20-B to AW60-B Filter Regulator with Backflow Function Series AW20K-B to AW60K-B



**SMC** 

AV