Modular Type
Filter Regulator
AW Series

Filter Regulator
AW Series



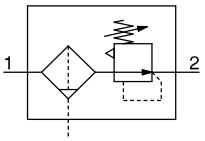
p. 113 to 129

Model	Port size	Set pressure	Options
AW20(K)-D	1/8, 1/4	0.05 to 0.85 MPa 0.02 to 0.2 MPa	Bracket Set nut (for panel mount) Float type auto drain Square embedded type pressure gauge Digital pressure switch Round type pressure gauge
AW30(K)-D	1/4, 3/8		
AW40(K)-D	1/4, 3/8, 1/2		
AW40(K)-06-D	3/4		
AW60(K)-D	3/4, 1		Bracket Float type auto drain Square embedded type pressure gauge Digital pressure switch Round type pressure gauge

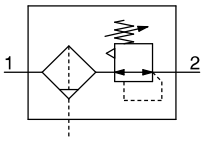
Filter Regulator
AW20-D to AW60-D
Filter Regulator with Backflow Function
AW20K-D to AW60K-D

Symbol

Filter Regulator

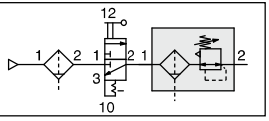


Filter Regulator with Backflow Function



- **Integrated filter and regulator units save space and require less piping.**
- **Models with the backflow function include a mechanism which allows for the air pressure in the outlet side to be released to the inlet side.**

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.



How to Order

AW 30 ❶ ❷ – ❸ ❹ 03 ❺ BE – ❻ – D

Option and Semi-standard Symbol Selection

- Select one each for **a** to **i**.
- When more than one specification is required, indicate in alphanumeric order.

Example) AW30K-F03BE-1NR-D

			Symbol	Description	❶ Body size 20	30	40	60
❷	With backflow function		**Nil**	Without backflow function	●	●	●	●
			K*1	With backflow function	●	●	●	●
			+					
❸	Pipe thread type		**Nil**	Rc	●	●	●	●
			N	NPT	●	●	●	●
			F	G	●	●	●	●
			+					
❹	Port size		**01**	1/8	●	—	—	—
			02	1/4	●	●	●	—
			03	3/8	—	●	●	—
			04	1/2	—	—	●	—
			06	3/4	—	—	●	●
			10	1	—	—	—	●
			+					
❺	Option*2	**a** Mounting	**Nil**	Without mounting option	●	●	●	●
			B*3	With bracket	●	●	●	●
			H	With set nut (for panel mount)	●	●	●	—
			+					
		b Float type auto drain*4	**Nil**	Without auto drain	●	●	●	●
			C*5	N.C. (Normally closed) Drain port is closed when pressure is not applied.	●	●	●	●
			D*6	N.O. (Normally open) Drain port is open when pressure is not applied.	—	●	●	●
			+					
		c Pressure gauge*7, *8	**Nil**	Without pressure gauge	●	●	●	●
			E	Square embedded type pressure gauge (with limit indicator)	●	●	●	●
			G	Round type pressure gauge (with limit indicator)	●	●	●	●
			M	Round type pressure gauge (with color zone)	●	●	●	●
		c Digital pressure switch*9	**E1**	Output: NPN output, Electrical entry: Wiring bottom entry	●	●	●	●
			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 top entry	●	●	●	●
			+					
❻	Semi-standard	**d** Set pressure*10	**Nil**	0.05 to 0.85 MPa setting	●	●	●	●
			1	0.02 to 0.2 MPa setting	●	●	●	●
			+					
		e Bowl*11	**Nil**	Polycarbonate bowl	●	●	●	●
			2	Metal bowl	●	●	●	●
			6	Nylon bowl	●	●	●	●
			8	Metal bowl with level gauge	—	●	●	●
			C	With bowl guard	●	—*12	—*12	—*12
			6C	With bowl guard (Nylon bowl)	●	—*13	—*13	—*13
			+					
		f Drain port*14	**Nil**	With drain cock	●	●	●	●
			J*15	Drain guide 1/8	●	—	—	—
				Drain guide 1/4	—	●	●	●
			W*16	Drain cock with barb fitting	—	●	●	●



AW30-D

		Symbol	Description	❶ Body size 20	30	40	60
❻ Semi-standard	g Exhaust mechanism	**Nil**	Relieving type	●	●	●	●
		N	Non-relieving type	●	●	●	●
		+					
	h Flow direction	**Nil**	Flow direction: Left to right	●	●	●	●
		R	Flow direction: Right to left	●	●	●	●
		+					
	i Unit	**Nil**	Unit on product label: MPa, °C, Pressure gauge in SI units: MPa	●	●	●	●
		Z∗17	Unit on product label: psi, °F, Pressure gauge: MPa/psi dual scale	○∗19	○∗19	○∗19	○∗19
		ZA∗18	Digital pressure switch: With unit selection function	△∗20	△∗20	△∗20	△∗20

∗1 Set the inlet pressure to at least 0.05 MPa higher than the set pressure.
∗2 Options B, G, H, and M are not assembled and supplied loose at the time of shipment.
∗3 The assembly consists of a bracket and set nuts (applicable to the AW20(K)-D to AW40(K)-D).
For the AW60(K)-D, the assembly consists of 2 types of the bracket and 2 mounting screws.
∗4 The auto drain port is ø10 One-touch fitting (❸ Pipe thread type: Rc, G) or ø3/8" One-touch fitting (❸ Pipe thread type: NPT)
∗5 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.
∗6 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 the start of operations. N.C. type is recommended.
∗7 When the pressure gauge is attached, a 1.0 MPa pressure gauge will be fitted for standard (0.85 MPa) type. 0.4 MPa pressure gauge for 0.2 MPa type.
∗8 When the type without a backflow function + no pressure gauge or pressure gauge "G" or "M" is selected, it is not possible to change to an "E," "J," "E1," "E2," "E3," or "E4" later.
When the type with a backflow function is selected, it is possible to change the pressure gauge later.
∗9 When choosing with H (panel mount), the installation space for lead wires will not be secured. In this case, select "wiring bottom entry" for the electrical entry.
∗10 Pressure can be set higher than the specification pressure in some cases, but use pressure within the specification range.
∗11 Refer to chemical data on page 129 for chemical resistance of the bowl.
∗12 A bowl guard is provided as standard equipment (polycarbonate).
∗13 A bowl guard is provided as standard equipment (nylon).
∗14 The combination of float type auto drain C and D is not available.
∗15 Without a valve function. The mounting screws are the same as the thread of ❸.
∗16 The combination of metal bowl 2 and 8 is not available.
∗17 For the pipe thread type: NPT. This product is for overseas use only according to the New Measurement Act. (The SI unit type is provided for use in Japan.)
Cannot be used with M: Round type pressure gauge (with color zone). Available by request for special. The digital pressure switch will be equipped with the unit selection function, setting to psi initially.
∗18 For options: E1, E2, E3, E4
This product is for overseas use only according to the New Measurement Act. (The SI unit type is provided for use in Japan.)
∗19 ○: For the pipe thread type: NPT only
∗20 △: Select with options: E1, E2, E3, E4.

AW20-D to AW60-D Series
AW20K-D to AW60K-D Series

Standard Specifications

Model		AW20-D	AW30-D	AW40-D	AW40-06-D	AW60-D
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[*1]		1/8				
Fluid		Air				
Ambient and fluid temperatures[*2]		–5 to 60°C (No freezing)				
Proof pressure		1.5 MPa				
Max. operating pressure		1.0 MPa				
Auto drain minimum operating pressure	**N.C.**	0.1 MPa	0.15 MPa			
	N.O.	—	0.1 MPa			
Set pressure range		0.05 to 0.85 MPa				
Nominal filtration rating[*3]		5 µm				
Compressed air purity class[*4]		ISO 8573-1:2010 [6 : 4 : 4][*5]				
Drain capacity		8 cm^3	25 cm^3	45 cm^3		
Bowl material		Polycarbonate				
Bowl guard		Semi-standard (Steel)	Standard (Polycarbonate)			
Construction		Relieving type				
Weight		0.18 kg	0.34 kg	0.64 kg	0.69 kg	1.76 kg

∗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.
∗2 –5 to 50°C for the products with the digital pressure switch
∗3 For the following conditions in accordance with [Test condition: ISO 8573-4:2001 compliant, Test method ISO 12500-3:2009 compliant]
Conditions: When a new element is used, and the flow capacity, inlet pressure, and the amount of solid bodies on the filter inlet side are stable
∗4 The compressed air purity class is indicated based on ISO 8573-1:2010 Compressed air – Part 1: Contaminants and purity classes.
For details on this standard, refer to page 131.
∗5 The compressed air quality class on the inlet side is [7 : 4 : 4].

Bowl Assembly/Part Nos.

Bowl material	Drain discharge mechanism	Drain port	Other	Model				
				AW20-D	**AW30-D**	**AW40-D**	**AW40-06-D**	**AW60-D**
Polycarbonate	Manual	With drain cock	—	C2SF-D	—	—		
			With bowl guard	C2SF-C-D	C3SF-D	C4SF-D		
		Drain cock with barb fitting	With bowl guard	—	C3SF-W-D	C4SF-W-D		
		With drain guide (without valve function)	—	C2SF□-J-D	—	—		
			With bowl guard	C2SF□-CJ-D	C3SF□-J-D	C4SF□-J-D		
	Automatic (Auto drain)	Normally closed (N.C.)	—	AD27-D	—	—		
			With bowl guard	AD27-C-D	AD37□-D	AD47□-D		
		Normally open (N.O.)	With bowl guard	—	AD38□-D	AD48□-D		
Nylon	Manual	With drain cock	—	C2SF-6-A	—	—		
			With bowl guard	C2SF-6C-A	C3SF-6-D	C4SF-6-D		
		Drain cock with barb fitting	With bowl guard	—	C3SF-6W-D	C4SF-6W-D		
		With drain guide (without valve function)	—	C2SF□-6J-A	—	—		
			With bowl guard	C2SF□-6CJ-A	C3SF□-6J-D	C4SF□-6J-D		
	Automatic (Auto drain)	Normally closed (N.C.)	—	AD27-6-A	—	—		
			With bowl guard	AD27-6C-A	AD37□-6-D	AD47□-6-D		
		Normally open (N.O.)	With bowl guard	—	AD38□-6-D	AD48□-6-D		
Metal	Manual	With drain cock	—	C2SF-2-A	C3SF-2-A	C4SF-2-A		
			With level gauge	—	C3LF-8-A	C4LF-8-A		
		With drain guide (without valve function)	—	C2SF□-2J-A	C3SF□-2J-A	C4SF□-2J-A		
			With level gauge	—	C3LF□-8J-A	C4LF□-8J-A		
	Automatic (Auto drain)	Normally closed (N.C.)	—	AD27-2-A	AD37□-2-A	AD47□-2-A		
			With level gauge	—	AD37□-8-A	AD47□-8-A		
		Normally open (N.O.)	—	—	AD38□-2-A	AD48□-2-A		
			With level gauge	—	AD38□-8-A	AD48□-8-A		

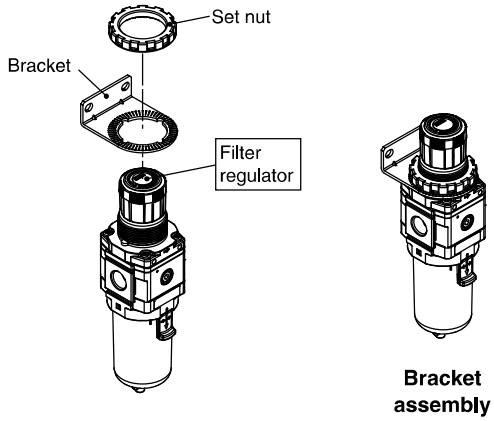
∗1 The bowl assembly comes with a bowl seal.
□ in bowl assembly part numbers indicates a pipe thread type (applicable tubing for auto drain).
No indication is necessary for Rc thread; however, indicate N for NPT thread, and F for G thread (For auto drain, Nil: ø10, N: ø3/8").
Please contact SMC separately for psi and °F unit display specifications.

Option/Part Nos.

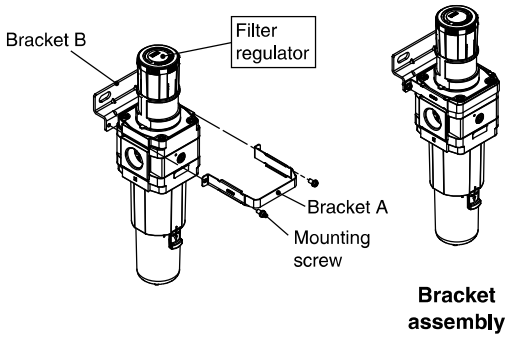
Optional specifications			Model				
			AW20(K)-D	AW30(K)-D	AW40(K)-D	AW40(K)-06-D	AW60(K)-D
Bracket assembly*1			AW23P-270AS	AR33P-270AS	AR43P-270AS		AR54P-270AS
Set nut			AR23P-260S	AR33P-260S	AR43P-260S		—*2
Pressure gauge*3	Round type	Standard	G36-10-□01		G46-10-□01		
		0.02 to 0.2 MPa setting	G36-4-□01		G46-4-□01		
	Round type (with color zone)	Standard	G36-10-□01-L		G46-10-□01-L		
		0.02 to 0.2 MPa setting	G36-4-□01-L		G46-4-□01-L		
	Square embedded type*4	Standard	GC3-10AS-D [GC3P-030AS (Pressure gauge cover only)]				
		0.02 to 0.2 MPa setting	GC3-4AS-D [GC3P-030AS (Pressure gauge cover only)]				
Digital pressure switch		NPN output, Wiring bottom entry	ISE35-N-25-MLA-X523 [ISE35-N-25-M (Switch body only)]*5				
		NPN output, Wiring top entry	ISE35-R-25-MLA-X523 [ISE35-R-25-M (Switch body only)]*5				
		PNP output, Wiring bottom entry	ISE35-N-65-MLA-X523 [ISE35-N-65-M (Switch body only)]*5				
		PNP output, Wiring top entry	ISE35-R-65-MLA-X523 [ISE35-R-65-M (Switch body only)]*5				

*1 The assembly consists of a bracket and set nuts. For the AW60(K)-D, the assembly consists of a bracket A/B and 2 mounting screws.
*2 Please contact SMC regarding the set nuts for the AW60(K)-D.
*3 □ in part numbers for a round type pressure gauge indicates a pipe thread type. No indication is necessary for R; however, indicate N for NPT. Please contact SMC regarding the pressure gauge supply for both MPa and psi unit specifications.
*4 Including one O-ring and 2 mounting screws. [ ]: Pressure gauge cover only
*5 In addition to the pressure switch body, lead wire with connector (2 m), adapter, lock pin, O-ring (1 pc.), mounting screws (2 pcs.) are attached.
[ ]: Switch body only (Regarding how to order the digital pressure switch, refer to page 130.)

AW20(K)-D to AW40(K)-06-D



AW60(K)-D



Replacement Parts

Description		Part no.				
		AW20(K)-D	AW30(K)-D	AW40(K)-D	AW40(K)-06-D	AW60(K)-D
Valve assembly		AW24P-060AS	AW34P-060AS	AW44P-060AS	AW49P-060AS	AW64P-060AS
Filter element		AF20P-060S	AF30P-060S	AF40P-060S		AW60P-060S
Baffle		AF24P-040S	AF34P-040S	AF44P-040S		AW64P-030S
Diaphragm assembly	Relieving type	AR24P-150AS	AR34P-150AS	AR44P-150AS		AR54P-150AS
	Non-relieving type	AR24P-150AS-N	AR34P-150AS-N	AR44P-150AS-N		AR54P-150AS-N
Bowl seal		C2SFP-260S	C32FP-260S	C42FP-260S		
Bowl assembly*1, *2		Refer to "Bowl Assembly/Part Nos."				
Check valve assembly*3		AR24KP-020AS				

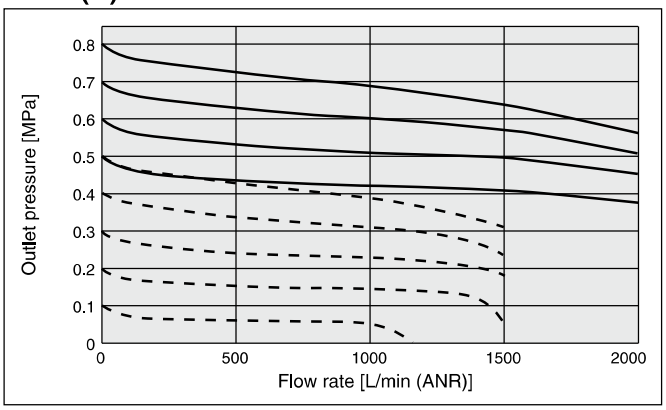
*1 The bowl assembly comes with a bowl seal.
*2 Please contact SMC separately for psi and °F unit display specifications.
*3 The check valve assembly is applicable for a filter regulator with backflow function (AW20K-D to AW60K-D) only. The assembly consists of a check valve cover, check valve body assembly, and 2 mounting screws.

Flow Rate Characteristics (Representative values)

——— Inlet pressure: 1.0 MPa
- - - - Inlet pressure: 0.7 MPa

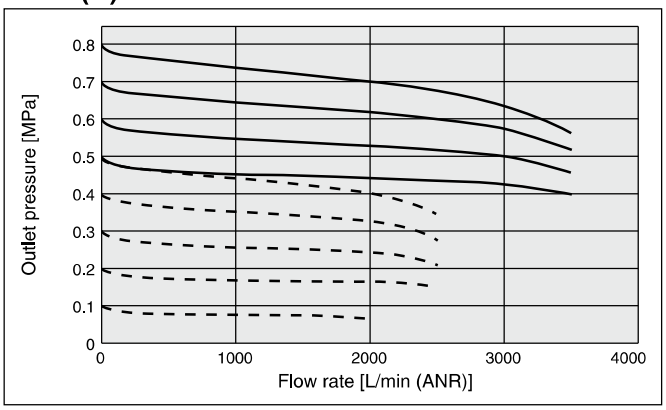
AW20(K)-D

Rc1/4



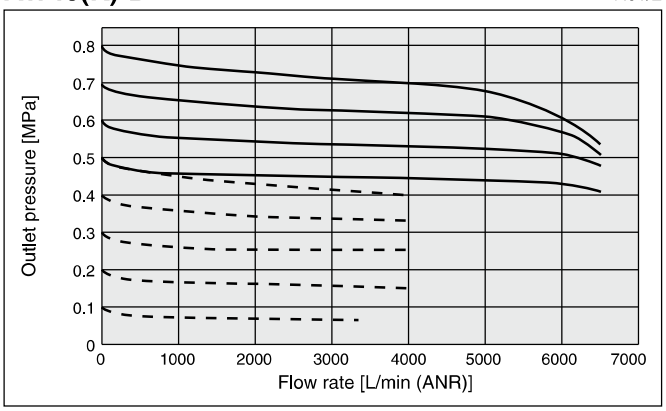
AW30(K)-D

Rc3/8



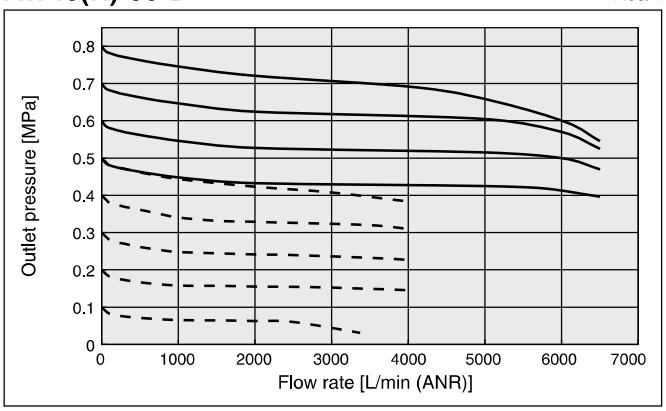
AW40(K)-D

Rc1/2



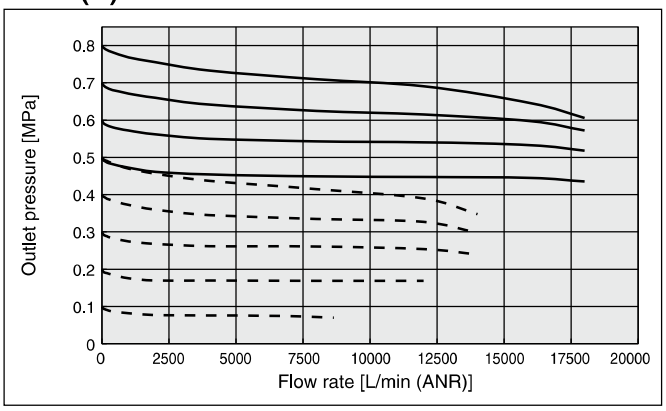
AW40(K)-06-D

Rc3/4



AW60(K)-D

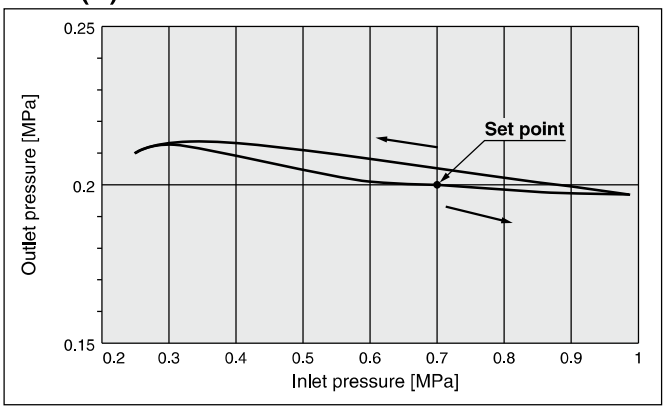
Rc1



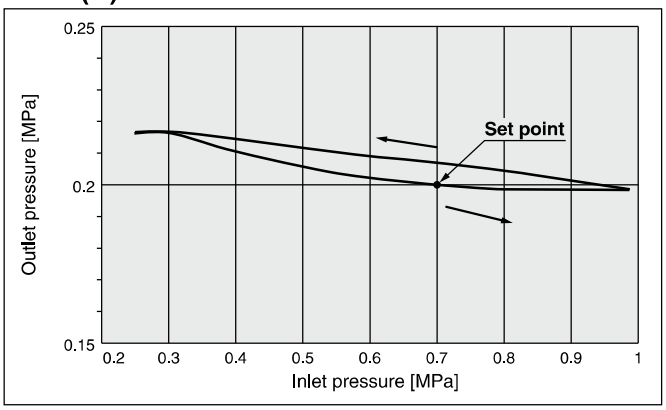
Pressure Characteristics (Representative values)

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

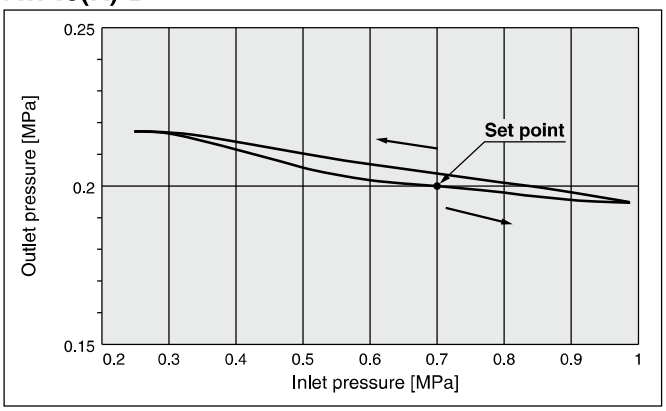
AW20(K)-D



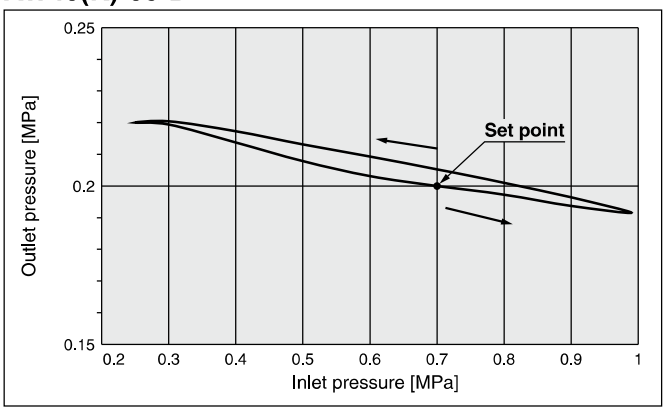
AW30(K)-D



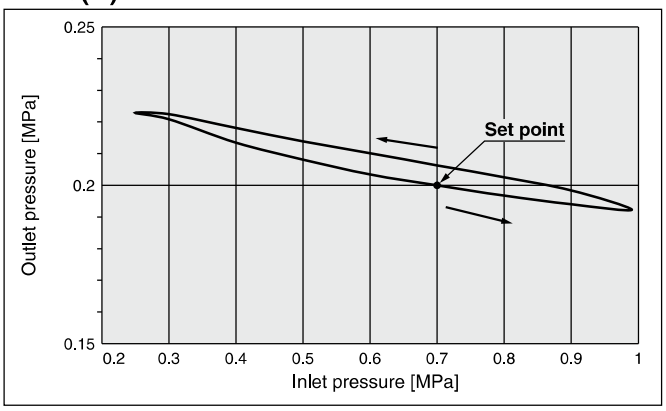
AW40(K)-D



AW40(K)-06-D



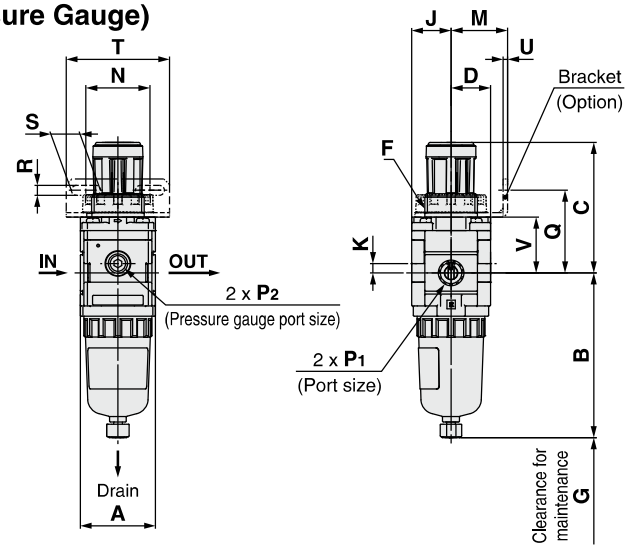
AW60(K)-D



Dimensions

Standard (Round Type Pressure Gauge)

AW20-D



Panel cutout dimensions

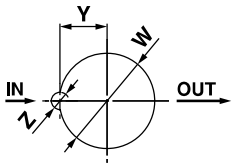
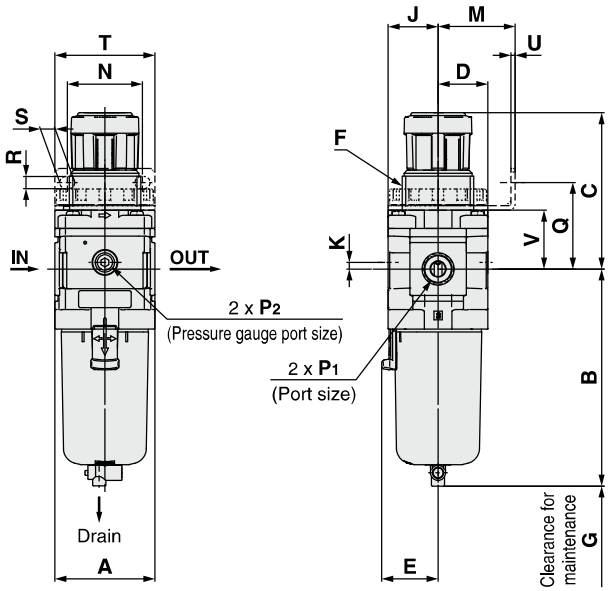
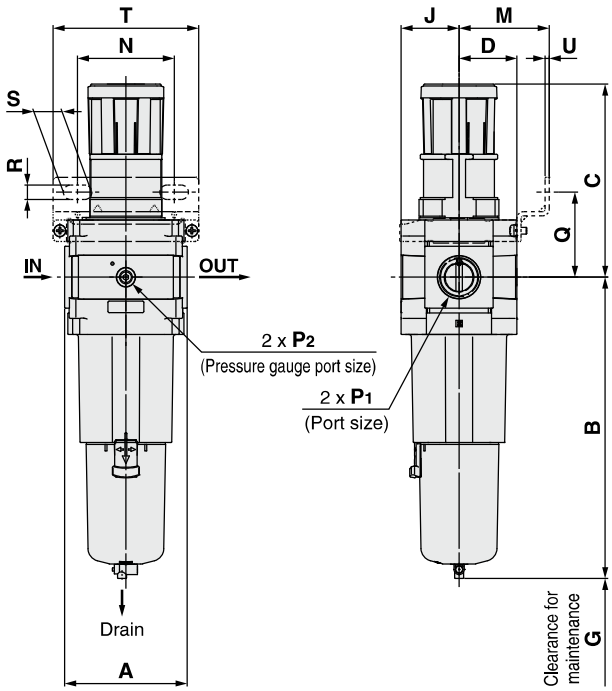


Plate thickness
AW20-D to AW30-D : Max. 3.5
AW40-D to AW40-06-D: Max. 5

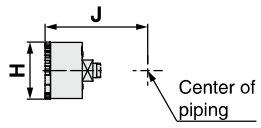
AW30-D to AW40-06-D

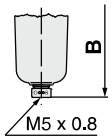
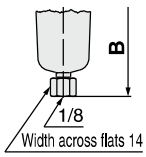
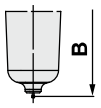
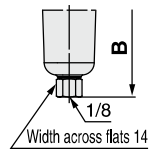
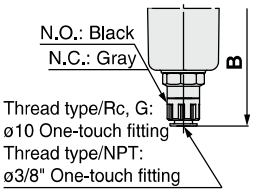
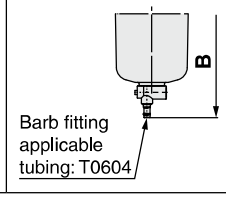
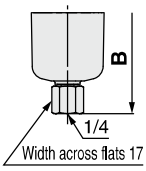
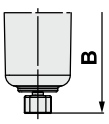
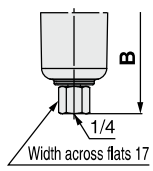
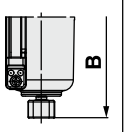
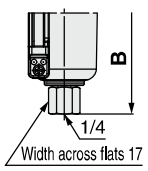


AW60-D



Round type pressure gauge



Applicable model	Optional specifications	Semi-standard					
	With auto drain	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
		Drain cock with barb fitting	With drain guide	With drain cock	With drain guide	With drain cock	With drain guide
AW20-D							
AW30-D to AW60-D							

Model	Standard specifications											Optional specifications			
												Round type pressure gauge		Round type pressure gauge (with color zone)	
	P_1	P_2	A	B	C*1	D	E	F	G	J	K	H	J	H	J
AW20-D	1/8, 1/4	1/8	40	87.6	71.8	21	—	M28 x 1	40	21	5	ø37.5	57.5	ø37.5	58.5
AW30-D	1/4, 3/8	1/8	53	115.4	86.5	26.5	30	M38 x 1.5	55	26.5	3.5	ø37.5	63	ø37.5	64
AW40-D	1/4, 3/8, 1/2	1/8	70	147.1	91.5	35.5	38.4	M42 x 1.5	80	35.5	—	ø42.5	73	ø42.5	73
AW40-06-D	3/4	1/8	75	149.1	93	35.5	38.4	M42 x 1.5	80	35.5	—	ø42.5	73	ø42.5	73
AW60-D	3/4, 1	1/8	95	234.1	155	45	—	—	30	45	—	ø42.5	82.5	ø42.5	82.5

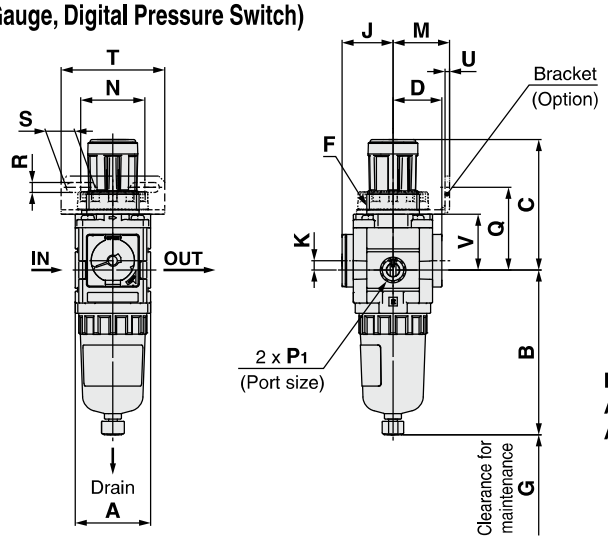
Model	Optional specifications												Semi-standard					
	Bracket mount							Panel mount				With auto drain	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
													With barb fitting	With drain guide	With drain cock	With drain guide	With drain cock	With drain guide
	M	N	Q	R	S	T	U	V	W	Y	Z	B	B	B	B	B	B	B
AW20-D	30	34	43.9	5.4	15.4	55	2.3	29.7	28.5	14	6	104.9	—	91.4	87.4	93.9	—	—
AW30-D	41	40	46	6.5	8	53	2.3	31.3	38.5	19	7	157.1	123.9	122.2	117.8	122.3	137.8	142.3
AW40-D	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7	186.9	155.6	153.9	149.5	154	169.5	174
AW40-06-D	50	54	55.5	8.5	10.5	70	2.3	37	42.5	21	7	188.9	157.6	155.9	151.5	156	171.5	176
AW60-D	70	75	66	11	22	113	3.2	—	—	—	—	273.9	242.6	240.9	236.5	241	256.5	261

*1 The dimension of C is the length when the filter regulator knob is unlocked.

Dimensions

Standard (Square Embedded Type Pressure Gauge, Digital Pressure Switch)

AW20-□□□ E / E1 / E2 / E3 / E4 -D



Panel cutout dimensions

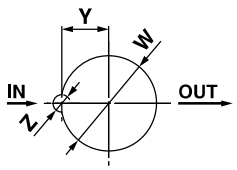
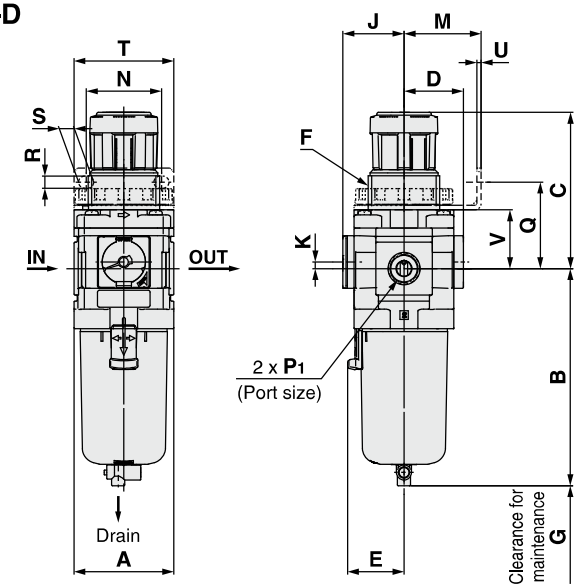
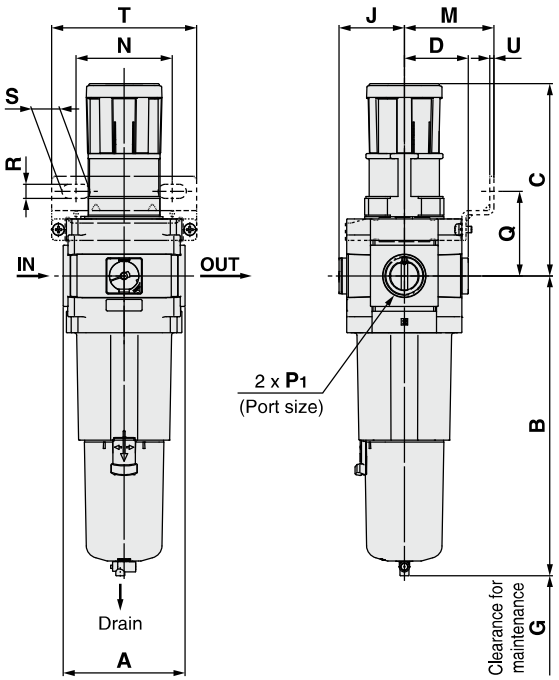


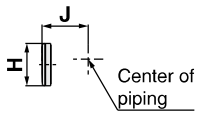
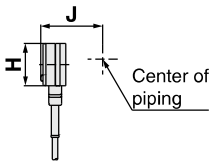
Plate thickness
AW20-D to AW30-D : Max. 3.5
AW40-D to AW40-06-D: Max. 5

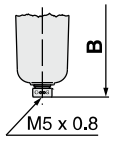
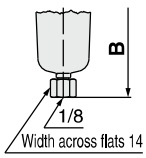
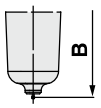
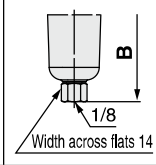
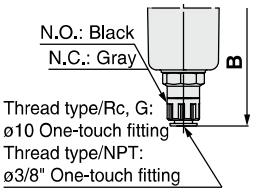
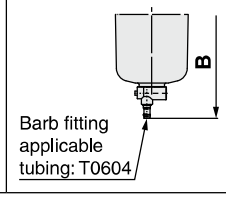
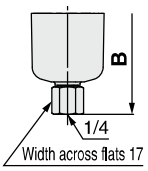
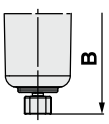
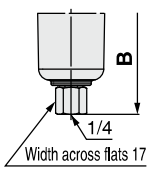
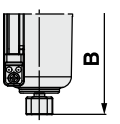
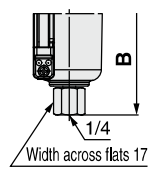
AW30-□□□ E / E1 / E2 / E3 / E4 -D to AW40-□□□ E / E1 / E2 / E3 / E4 -D



AW60-□□□ E / E1 / E2 / E3 / E4 -D



Square embedded type pressure gauge	Digital pressure switch
	

Applicable model	Optional specifications	Semi-standard					
	With auto drain	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
		Drain cock with barb fitting	With drain guide	With drain cock	With drain guide	With drain cock	With drain guide
AW20-D							
AW30-D to AW60-D							

Model	Standard specifications									Optional specifications			
										Square embedded type pressure gauge		Digital pressure switch	
	P_1	A	B	C*1	D	E	F	G	K	H	J	H	J
AW20-D	1/8, 1/4	40	87.6	71.8	26	—	M28 x 1	40	5	□28	27	□27.8	37.5
AW30-D	1/4, 3/8	53	115.4	86.5	31.5	30	M38 x 1.5	55	3.5	□28	32.5	□27.8	43
AW40-D	1/4, 3/8, 1/2	70	147.1	91.5	40.5	38.4	M42 x 1.5	80	—	□28	41.5	□27.8	52
AW40-06-D	3/4	75	149.1	93	40.5	38.4	M42 x 1.5	80	—	□28	41.5	□27.8	52
AW60-D	3/4, 1	95	234.1	155	50	—	—	30	—	□28	51	□27.8	61.5

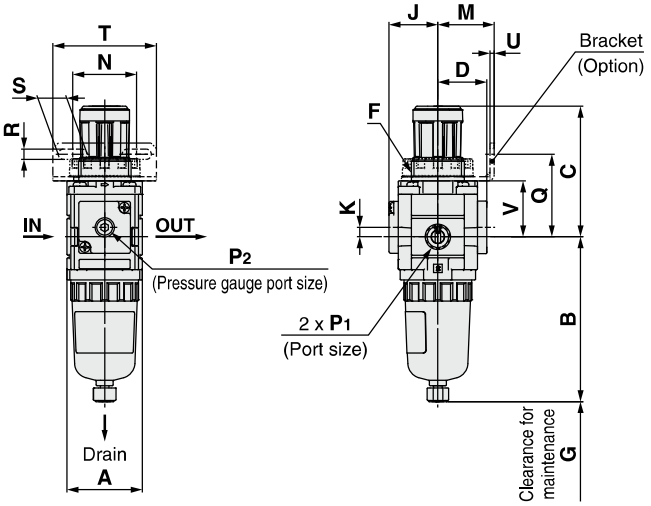
Model	Optional specifications												Semi-standard					
	Bracket mount							Panel mount				With auto drain	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
													With barb fitting	With drain guide	With drain cock	With drain guide	With drain cock	With drain guide
	M	N	Q	R	S	T	U	V	W	Y	Z	B	B	B	B	B	B	B
AW20-D	30	34	43.9	5.4	15.4	55	2.3	29.7	28.5	14	6	104.9	—	91.4	87.4	93.9	—	—
AW30-D	41	40	46	6.5	8	53	2.3	31.3	38.5	19	7	157.1	123.9	122.2	117.8	122.3	137.8	142.3
AW40-D	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7	186.9	155.6	153.9	149.5	154	169.5	174
AW40-06-D	50	54	55.5	8.5	10.5	70	2.3	37	42.5	21	7	188.9	157.6	155.9	151.5	156	171.5	176
AW60-D	70	75	66	11	22	113	3.2	—	—	—	—	273.9	242.6	240.9	236.5	241	256.5	261

*1 The dimension of C is the length when the filter regulator knob is unlocked.

Dimensions

With Backflow Function (Round Type Pressure Gauge, Square Embedded Type Pressure Gauge, Digital Pressure Switch)

AW20K-D



Panel cutout dimensions

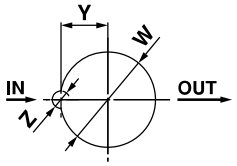
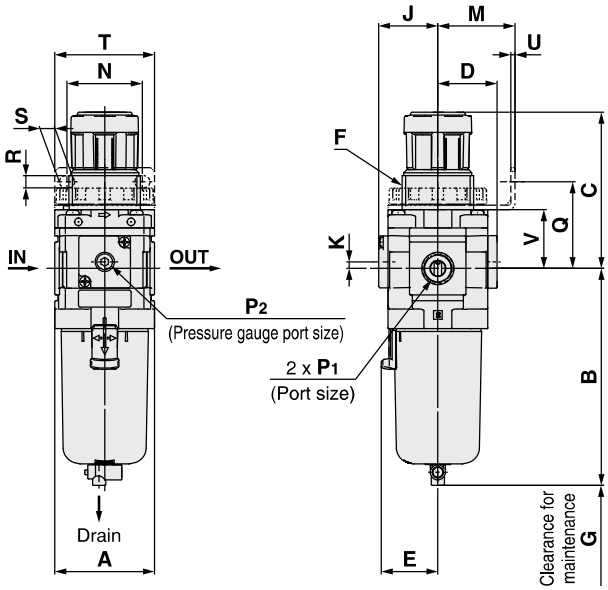
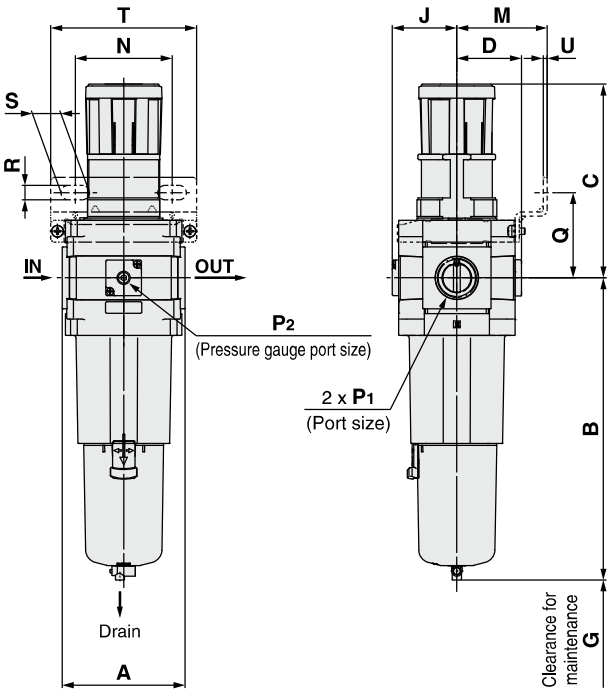


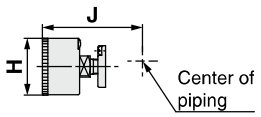
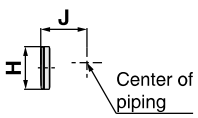
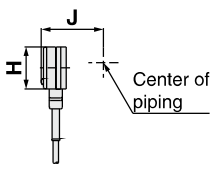
Plate thickness
AW20K-D to AW30K-D : Max. 3.5
AW40K-D to AW40K-06-D: Max. 5

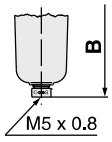
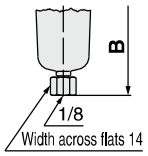
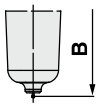
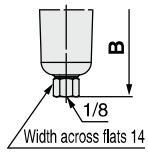
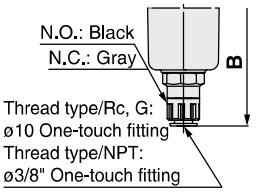
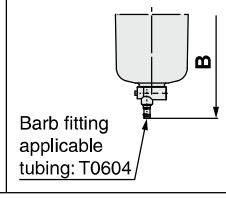
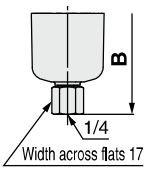
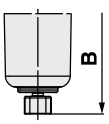
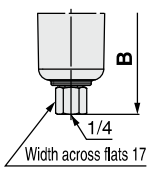
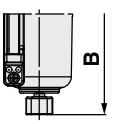
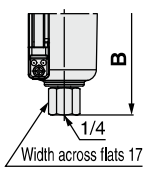
AW30K-D to AW40K-06-D



AW60K-D



Round type pressure gauge	Square embedded type pressure gauge	Digital pressure switch
		

Applicable model	Optional specifications	Semi-standard					
	With auto drain	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
		Drain cock with barb fitting	With drain guide	With drain cock	With drain guide	With drain cock	With drain guide
AW20K-D							
AW30K-D to AW60K-D							

Model	Standard specifications											Optional specifications					
												Square embedded type pressure gauge		Digital pressure switch		Round type pressure gauge	
	P_1	P_2	A	B	C*1	D	E	F	G	J	K	H	J	H	J	H	J
AW20K-D	1/8, 1/4	1/8	40	87.6	71.8	26	—	M28 x 1	40	26	5	□28	27	□27.8	37.5	ø37.5	62.5
AW30K-D	1/4, 3/8	1/8	53	115.4	86.5	31.5	30	M38 x 1.5	55	31.5	3.5	□28	32.5	□27.8	43	ø37.5	68
AW40K-D	1/4, 3/8, 1/2	1/8	70	147.1	91.5	40.5	38.4	M42 x 1.5	80	40.5	—	□28	41.5	□27.8	52	ø42.5	78
AW40K-06-D	3/4	1/8	75	149.1	93	40.5	38.4	M42 x 1.5	80	40.5	—	□28	41.5	□27.8	52	ø42.5	78
AW60K-D	3/4, 1	1/8	95	234.1	155	50	—	—	30	50	—	□28	51	□27.8	61.5	ø42.5	87.5

Model	Optional specifications													With auto drain	Semi-standard					
	Round type pressure gauge (with color zone)		Bracket mount							Panel mount					PC/PA bowl		Metal bowl		Metal bowl with level gauge	
															With barb fitting	With drain guide	With drain cock	With drain guide	With drain cock	With drain guide
	H	J	M	N	Q	R	S	T	U	V	W	Y	Z	B	B	B	B	B	B	B
AW20K-D	ø37.5	63.5	30	34	43.9	5.4	15.4	55	2.3	29.7	28.5	14	6	104.9	—	91.4	87.4	93.9	—	—
AW30K-D	ø37.5	69	41	40	46	6.5	8	53	2.3	31.3	38.5	19	7	157.1	123.9	122.2	117.8	122.3	137.8	142.3
AW40K-D	ø42.5	78	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7	186.9	155.6	153.9	149.5	154	169.5	174
AW40K-06-D	ø42.5	78	50	54	55.5	8.5	10.5	70	2.3	37	42.5	21	7	188.9	157.6	155.9	151.5	156	171.5	176
AW60K-D	ø42.5	87.5	70	75	66	11	22	113	3.2	—	—	—	—	273.9	242.6	240.9	236.5	241	256.5	261

*1 The dimension of C is the length when the filter regulator knob is unlocked.

Filter Regulator/*AW20-D* to *AW60-D*
Filter Regulator with Backflow Function/*AW20K-D* to *AW60K-D*
Made to Order

Please contact SMC for detailed dimensions, specifications, and lead times.

Made to Order

① 0.4 MPa Setting

The setting specification is 0.4 MPa.

When a pressure gauge is included, the display will show a range from 0 to 0.7 MPa.

Specifications

Made-to-order part no.	-X406
Proof pressure [MPa]	1.5
Max. operating pressure [MPa]	1.0
Set pressure range [MPa]∗1	0.05 to 0.4

∗1 Pressure can be set higher than the specification pressure in some cases, but use pressure within the specification range.

Applicable Models

Model	AW20(K)-D	AW30(K)-D	AW40(K)-D	AW40(K)-06-D	AW60(K)-D
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1

② Long Bowl

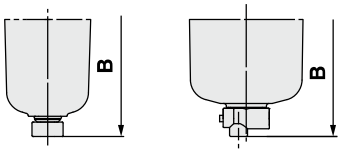
Drain capacity is greater than that of standard models.

Applicable Models/Drain Capacity

Model	AW20(K)-D	AW30(K)-D	AW40(K)-D	AW40(K)-06-D	AW60(K)-D
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1
Drain capacity [cm³]	19	43	88		
B dimension [mm]∗1	108.1	137.3	167.2	169.2	254.2

∗1 For polycarbonate bowls. Please contact SMC for other bowl materials.

AW20-D **AW30 to 60-D**



How to Order

AW 30 ❶ ❷ – ❸ 03 ❹ ❺ – ❻ – D – X406

X406	0.4 MPa setting
X64	Long bowl

Option and Semi-standard Symbol Selection

· Select one each for **a** to **i**.
· When more than one specification is required, indicate in alphanumeric order.
Example) AW30K-F03BE-2NR-D-X406

		Symbol	Description	❶ Body size 20	30	40	60	❶ Body size 20	30	40	60
				0.4 MPa Setting				**Long Bowl**			
❷	With backflow function	**Nil**	Without backflow function	●	●	●	●	●	●	●	●
		K∗1	With backflow function	●	●	●	●	●	●	●	●
		+									
❸	Pipe thread type	**Nil**	Rc	●	●	●	●	●	●	●	●
		N	NPT	●	●	●	●	●	●	●	●
		F	G	●	●	●	●	●	●	●	●
		+									
❹	Port size	**01**	1/8	●	—	—	—	●	—	—	—
		02	1/4	●	●	●	—	●	●	●	—
		03	3/8	—	●	●	—	—	●	●	—
		04	1/2	—	—	●	—	—	—	●	—
		06	3/4	—	—	●	●	—	—	●	●
		10	1	—	—	—	●	—	—	—	●
		+									
❺	Option∗2 **a** Mounting	**Nil**	Without mounting option	●	●	●	●	●	●	●	●
		B∗3	With bracket	●	●	●	●	●	●	●	●
		H	With set nut (for panel mount)	●	●	●	—	●	●	●	—
		+									
	b Float type auto drain∗4	**Nil**	Without auto drain	●	●	●	●	—	—	—	—
		C∗5	Float type auto drain (N.C.): Drain port is closed when pressure is not applied.	●	●	●	●	—	—	—	—
		D∗6	Float type auto drain (N.O.): Drain port is open when pressure is not applied.	—	●	●	●	—	—	—	—
		+									
	c Pressure gauge∗7	**Nil**	Without pressure gauge	●	●	●	●	●	●	●	●
		E	Square embedded type pressure gauge (with limit indicator)	●	●	●	●	●	●	●	●
		G	Round type pressure gauge (with limit indicator)	●	●	●	●	●	●	●	●
		M	Round type pressure gauge (with color zone)	●	●	●	●	●	●	●	●
	c Digital pressure switch∗8	**E1**	Output: NPN output, Electrical entry: Wiring bottom entry	●	●	●	●	●	●	●	●
		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 top entry	●	●	●	●	●	●	●	●

∗1 Set the inlet pressure to at least 0.05 MPa higher than the set pressure.
∗2 Options B, G, H, and M are not assembled and supplied loose at the time of shipment.
∗3 The assembly consists of a bracket and set nuts (applicable to the AW20(K)-D to AW40(K)-D). The AR60(K)-D assembly includes 2 types of brackets and 2 mounting screws.
∗4 The auto drain port is ø10 One-touch fitting (❸ Pipe thread type: Rc, G) or ø3/8" One-touch fitting (❸ Pipe thread type: NPT)
∗5 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.
∗6 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 the start of operations. N.C. type is recommended.
∗7 When the pressure gauge is attached, a 1.0 MPa pressure gauge will be fitted for standard (0.85 MPa) type. 0.4 MPa pressure gauge for 0.2 MPa type. 0.7 MPa pressure gauge for 0.4 MPa type (-X406).
∗8 When choosing with H (panel mount), the installation space for lead wires will not be secured. In this case, select "wiring bottom entry" for the electrical entry.

		Symbol	Description	0.4 MPa Setting ❶ Body size 20	30	40	60	Long Bowl ❶ Body size 20	30	40	60
❻ Semi-standard	d Set pressure*9	Nil	0.05 to 0.85 MPa setting	—	—	—	—	●	●	●	●
		1	0.02 to 0.2 MPa setting	—	—	—	—	●	●	●	●
	+										
	e Bowl*10	Nil	Polycarbonate bowl	●	●	●	●	●	●	●	●
		2	Metal bowl	●	●	●	●	●	●	●	●
		6	Nylon bowl	●	●	●	●	●	●	●	●
		8	Metal bowl with level gauge	—	●	●	●	—	—	—	—
		C	With bowl guard	●	—*11	—*11	—*11	●	—*11	—*11	—*11
		6C	With bowl guard (Nylon bowl)	●	—*12	—*12	—*12	●	—*12	—*12	—*12
	+										
	f Drain port*13	Nil	With drain cock	●	●	●	●	●	●	●	●
		J*14	Drain guide 1/8	●	—	—	—	●	—	—	—
			Drain guide 1/4	—	●	●	●	—	●	●	●
		W*15	Drain cock with barb fitting	—	●	●	●	—	●	●	●
	+										
	g Exhaust mechanism	Nil	Relieving type	●	●	●	●	●	●	●	●
		N	Non-relieving type	●	●	●	●	●	●	●	●
	+										
	h Flow direction	Nil	Flow direction: Left to right	●	●	●	●	●	●	●	●
		R	Flow direction: Right to left	●	●	●	●	●	●	●	●
	+										
	i Unit	Nil	Unit on product label: MPa, °C, Pressure gauge in SI units: MPa	●	●	●	●	●	●	●	●
		Z*16	Unit on product label: psi, °F, Pressure gauge: MPa/psi dual scale	○*18	○*18	○*18	○*18	○*18	○*18	○*18	○*18
		ZA*17	Digital pressure switch: With unit selection function	△*19	△*19	△*19	△*19	△*19	△*19	△*19	△*19

*9 Pressure can be set higher than the specification pressure in some cases, but use pressure within the specification range.
*10 Refer to chemical data on page 129 for chemical resistance of the bowl.
*11 A bowl guard is provided as standard equipment (polycarbonate).
*12 A bowl guard is provided as standard equipment (nylon).
*13 The combination of float type auto drain C and D is not available.
*14 Without a valve function. The mounting screws are the same as the thread of ❸.
*15 The combination of metal bowl 2 and 8 is not available.
*16 For the pipe thread type: NPT
This product is for overseas use only according to the New Measurement Act. (The SI unit type is provided for use in Japan.) Cannot be used with M: Round type pressure gauge (with color zone). Available by request for special. The digital pressure switch will be equipped with the unit selection function, setting to psi initially.
*17 For options: E1, E2, E3, E4
This product is for overseas use only according to the New Measurement Act. (The SI unit type is provided for use in Japan.)
*18 ○: For the pipe thread type: NPT only
*19 △: Select with options: E1, E2, E3, E4.

AW30-B to AW60-B Filter Regulator
Made to Order

Made to Order

Please contact SMC for detailed dimensions, specifications and lead times.

① Special Temperature Environment

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.

Specifications

Made-to-order part no.		-X430	-X440
Environment		Low temperature	High temperature
Ambient temperature [°C]		–30 to 60	–5 to 80
Fluid temperature [°C]		–5 to 60 (with no freezing)	
Material	Rubber parts	Special NBR	FKM
	Main parts	Metal (Aluminum die-cast, etc.)	



AW30-03-2-B-X440

Applicable Model

Model	AW30-B	AW40-B	AW40-06-B	AW60-B
Port size	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1

AW ❶30 – ❷ ❸03 ❹BG – ❺2 ❻ – B – ❼X430

For high/low temperature

X430	Low temperature
X440	High temperature

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

Example) AW30-03BG-2N-B-X430

			Symbol	Description	❶ Body size 30	40	60
❷	Pipe thread type		Nil	Rc	●	●	●
			N	NPT	●	●	●
			F	G	●	●	●
❸	Port size		02	1/4	●	●	—
			03	3/8	●	●	—
			04	1/2	—	●	—
			06	3/4	—	●	●
			10	1	—	—	●
❹	Option*1	a Mounting	Nil	Without mounting option	●	●	●
			B*2	With bracket	●	●	●
			H	With set nut (for panel mount)	●	●	—
		b Pressure gauge	Nil	Without pressure gauge	●	●	●
			G*3	Round type pressure gauge (without limit indicator)	●	●	●
❺	Bowl *4		2	Metal bowl	●	●	●
❻	Semi-standard	c Set pressure	Nil	0.05 to 0.85 MPa setting	●	●	●
			1*5	0.02 to 0.2 MPa setting	●	●	●
		d Drain port	Nil	With drain cock	●	●	●
			J*6	Drain guide 1/4	●	●	●
		e Exhaust mechanism	Nil	Relieving type	●	●	●
			N	Non-relieving type	●	●	●
		f Flow direction	Nil	Flow direction: Left to right	●	●	●
			R	Flow direction: Right to left	●	●	●
		g Pressure unit	Nil	Name plate, caution plate for bowl, and pressure gauge in SI units: MPa	●	●	●
			Z*7	Name plate, caution plate for bowl, and pressure gauge in imperial units: psi, °F	○*8	○*8	○*8

*1 Options B, G, H are not assembled and supplied loose at the time of shipment.
*2 Assembly of a bracket and set nuts (AW30-B to AW40-B)
Including 2 mounting screws for the AW60-B
*3 Mounting thread for pressure gauge: 1/8, Pressure gauge type: G43
*4 Only metal bowl 2 is available.
*5 The only difference from the standard specifications is the spring for the regulator. It does not restrict the setting of 0.2 MPa or more. When the pressure gauge is attached, a 0.4 MPa pressure gauge will be fitted.
*6 Without a valve function
*7 For pipe thread type: NPT. This product is for overseas use only according to the new Measurement Act. (The SI unit type is provided for use in Japan.)
*8 ○: For pipe thread type: NPT only

AW20-B to AW60-B Filter Regulator
Made to Order

Please contact SMC for detailed dimensions, specifications and lead times.

Made to Order

② High Pressure

Strong materials are used in the manufacturing of filter regulators intended for high pressure operation. Also, construction modification allows a wider set pressure range.

Specifications

Made-to-order part no.	-X425
Proof pressure [MPa]	3.0
Maximum operating pressure [MPa]	2.0
Set pressure range [MPa]	0.1 to 1.7
Ambient and fluid temperature [°C]	–5 to 60°C (with no freezing)

Applicable Model

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



AW30-03-2-B-X425

AW 30 – □ 03 BG – 2 □ – B – X425

❶ ❷ ❸ ❹ ❺ ❻

For high pressure

- 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) AW30-03BG-2N-B-X425

			Symbol	Description	❶ Body size 20	30	40	60
❷	Pipe thread type		**Nil**	Rc	●	●	●	●
			N	NPT	●	●	●	●
			F	G	●	●	●	●
❸	Port size		**01**	1/8	●	—	—	—
			02	1/4	●	●	●	—
			03	3/8	—	●	●	—
			04	1/2	—	—	●	—
			06	3/4	—	—	●	●
			10	1	—	—	—	●
❹	Option *1	**a** Mounting	**Nil**	Without mounting option	●	●	●	●
			B*2	With bracket	●	●	●	●
			H	With set nut (for panel mount)	●	●	●	—
		b Pressure gauge	**Nil**	Without pressure gauge	●	●	●	●
			G*3	Round type pressure gauge (with limit indicator)	●	●	●	●
❺	Bowl *4		**2**	Metal bowl	●	●	●	●
			8	Metal bowl with level gauge	—	●	●	●
❻	Semi-standard	**c** Exhaust mechanism	**Nil**	Relieving type	●	●	●	●
			N	Non-relieving type	●	●	●	●
		d Drain port	**Nil**	With drain cock	●	●	●	●
			J*5	Drain guide 1/8	●	—	—	—
				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, caution plate for bowl, and pressure gauge in SI units: MPa	●	●	●	●
			Z*6	Name plate, caution plate for bowl, and pressure gauge in imperial units: psi, °F	○*7	○*7	○*7	○*7

*1 Options B, G, H are not assembled and supplied loose at the time of shipment.
*2 Assembly of a bracket and set nuts (AW20-B to AW40-B)
Including 2 mounting screws for the AW60-B
*3 Mounting thread for pressure gauge: 1/8, Pressure gauge type: G46-20-□
*4 Only metal bowl 2 and 8 are available.
*5 Without a valve function
*6 For pipe thread type: NPT. This product is for overseas use only according to the new Measurement Act. (The SI unit type is provided for use in Japan.)
*7 ○: For pipe thread type: NPT only

Filter Regulator/*AW20-D to AW60-D*
Filter Regulator with Backflow Function/*AW20K-D to AW60K-D*
Made to Order

Please contact SMC for detailed dimensions, specifications, and lead times.

Made to Order



Without backflow function | With backflow function

③ Clean Series

For details, refer to the Clean Series/Low Particle Generation section of the **Web Catalog**.

10 – **Standard model no.**

• **Clean Series**

④ Copper, Fluorine and Silicone-free + Low Particle Generation

For details, refer to the Clean Series/Low Particle Generation section of the **Web Catalog**.

21 – **Standard model no.**

• **Copper, Fluorine and Silicone-free + Low Particle Generation**

AR-D/AW-D Series
Option

Knob Cover

Can be mounted on the knob of a regulator or filter regulator in order to prevent the accidental operation of the knob

AR 34 P – 580AS

● Size

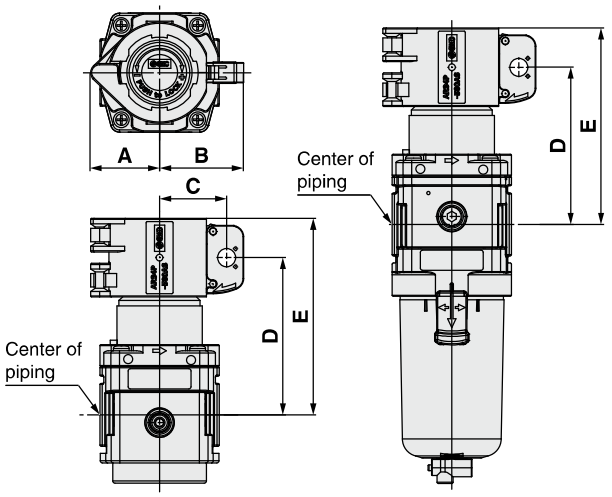
24
34
44
54



Standard Specifications

Ambient temperature	–5 to 60°C

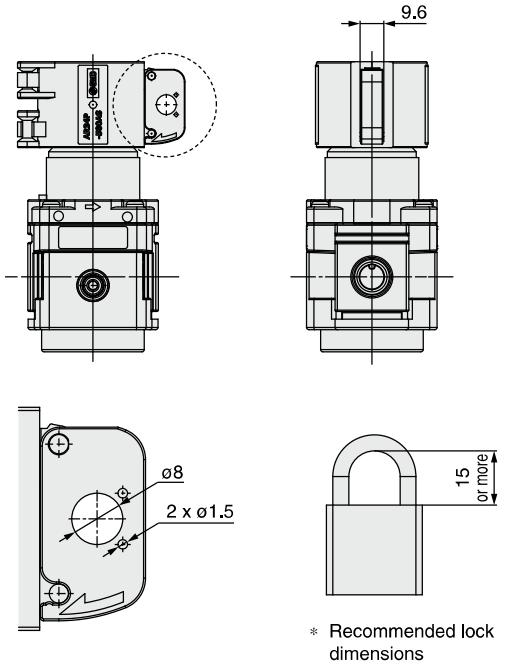
Dimensions



AR-D Series **AW-D Series**

Part no.	A	B	C	D	E	Applicable model
AR24P-580AS	23.5	32.1	24.5	53.1	69.1	**AR20-D**
				58.1	74.1	**AW20-D**
AR34P-580AS	30.7	37.4	29.8	70	87.5	**AR30-D, AW30-D**
AR44P-580AS	32.8	39.4	31.8	74.5	97	**AR40-D, AW40-D**
				76	98.5	**AR40-06-D, AW40-06-D**
AR54P-580AS	42	48.9	41.3	99.6	133.6	**AR50-D**
				129.6	163.6	**AW60-D, AW60-D**

Detailed dimensions of the lock hole

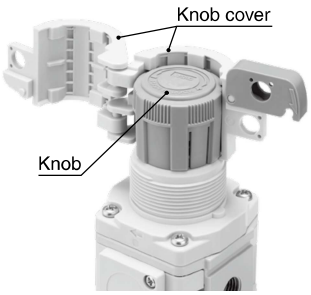


* Recommended lock dimensions

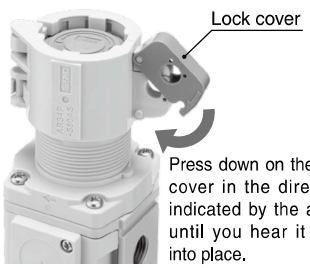
Mounting Precautions

Before mounting the knob cover, confirm that the knob is in the locked state (in which the orange line is not visible).
Mount the cover in accordance with the mounting instructions below.

1 Mount the knob cover on the knob.



2 Close the lock cover.



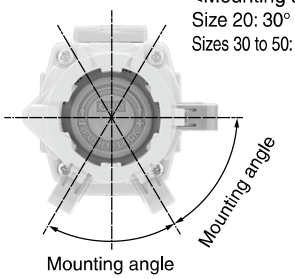
Press down on the lock cover in the direction indicated by the arrow until you hear it click into place.

3 Secure with a lock (provided by the customer).



The knob cover can be mounted facing each mounting angle in relation to the knob.

<Mounting angle>
Size 20: 30° (12 directions)
Sizes 30 to 50: 60° (6 directions)



AW(K)-D Series
Specific Product Precautions

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For F.R.L. units precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

Design / Selection

⚠ Warning

1. Residual pressure disposal (outlet pressure removal) is not possible for the AW20-D to AW60-D even though the inlet pressure is exhausted. When the residual pressure disposal is performed, use the filter regulator with backflow function (AW20K-D to AW60K-D).
2. **The bowl material of the standard filter regulator is 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.**

Chemical resistance of polycarbonate or nylon bowl

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 Sodium carbonate	Degreasing of metals Industrial salts Water-soluble cutting oil	×	○
Inorganic salts	Sodium sulfide Potassium nitrate Sodium sulfate	—	×	△
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.

⚠ Caution

1. When operating at an inlet pressure lower than the inlet pressure used in the flow rate characteristics graph, the pressure drop on the outlet side may be greater. Therefore, be sure to conduct testing using the actual equipment.
   For pressure control equipment selection, refer to the "Product Selection Guide."

Maintenance

⚠ Warning

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

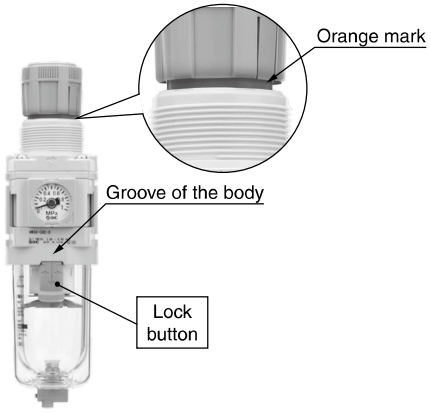
Mounting / Adjustment

⚠ Warning

1. Set the filter 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.

⚠ Caution

1. 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).



2. When the bowl is installed on the AW30-D to AW60-D, 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.

Piping

⚠ Warning

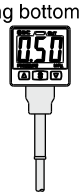
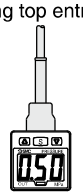
1. To screw the pressure gauge and piping materials into the pressure gauge port on the product, tighten to the recommended torque (3 to 5 N·m) while securely holding the AW(K)-D in place. Additionally, when mounting a One-touch fitting to the pressure gauge port, refer to the Fittings and Tubing Precautions.

Digital Pressure Switch/*ISE35-X523*
Related Product

How to Order

ISE35 – N – 25 – M L A – X523

Electrical entry

N	Wiring bottom entry 
R	Wiring top entry 

Output specification

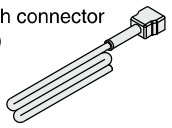
25	NPN output
65	PNP output

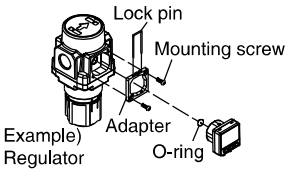
Unit specification

Nil	Units selection function*1
M	SI units only*2
P	Pressure unit: psi (Initial value), Units selection function*1

*1 Under the New Measurement Act, switches with the units selection function are no longer allowed for use in Japan.
*2 Fixed unit: MPa

Option 1

Nil	None
L	Lead wire with connector (Length: 2 m) 

A	AR/AW-D series mounting kit 

Options/Part Nos.

When only optional parts are required, order with the part numbers listed below.

Description	Part no.	Note
Lead wire with connector	ZS-32-A	Length: 2 m (With rubber cover)
Mounting kit	ZS-32-C-X473	For ISE35-□-A-X523 (AR/AW-D series) Set screw (3 x 8 L, 2 pcs.), adapter, lock pin, and O-ring are attached.

Applicable Series

Product series that this product can be installed in

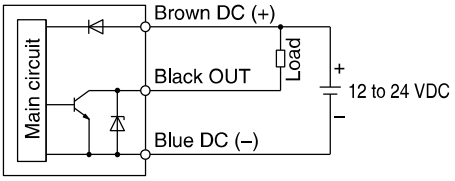
Product series	Model
F.R.L. units	AC20-D, AC30-D, AC40-D, AC50-D, AC60-D
	AC20A-D, AC30A-D, AC40A-D, AC50A-D, AC60A-D
	AC20B-D, AC30B-D, AC40B-D, AC50B-D, AC60B-D
	AC20C-D, AC30C-D, AC40C-D
	AC20D-D, AC30D-D, AC40D-D
Regulator	AR20(K)-D, AR30(K)-D, AR40(K)-D, AR50(K)-D, AR60(K)-D
Filter regulator	AW20(K)-D, AW30(K)-D, AW40(K)-D, AW60(K)-D
Mist separator regulator	AWM20-D, AWM30-D, AWM40-D
Micro mist separator regulator	AWD20-D, AWD30-D, AWD40-D

Specifications

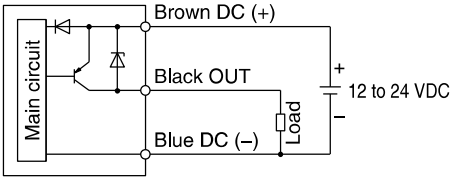
Rated pressure range		0 to 1 MPa
Display/Set pressure range		–0.1 to 1 MPa
Withstand pressure		1.5 MPa
Display/Smallest settable increment		0.01 MPa
Applicable fluid		Air, Non-corrosive gas, Non-flammable gas
Power supply voltage		12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)
Current consumption		55 mA or less (at no load)
Switch output		NPN or PNP open collector output: 1 output
	Max. load current	80 mA
	Max. applied voltage	30 V (With NPN output)
	Residual voltage	1 V or less (With load current of 80 mA)
	Response time	1 s (0.25, 0.5, 2, 3 s selections)
Short circuit protection		Yes
Repeatability		±1% F.S.
Hysteresis	**Hysteresis mode**	Adjustable (Can be set from 0)
	Window comparator mode	
Display type		3-digit, 7-segment indicator, 2-color display (Red/Green) A switch can be operated simultaneously.
Display accuracy		±2% F.S. ±1 digit (at 25°C ±3°C ambient temperature)
Indicator light		Lights up when output is turned ON (Green)
Environmental resistance	**Enclosure**	IP40
	Operating temperature range	–5 to 50°C (No condensation or freezing)
Lead wire with connector (Option: L)		Oilproof heavy-duty vinyl cable 3 cores, ø3.4, 2 m Conductor cross section: 0.2 mm² (AWG25) Insulator O.D.: 1.16 mm
Weight		Approx. 14 g (Body only), Approx. 38 g (Including lead wire with connector)
Standards		CE/UKCA marking, UL/CSA (E216656)

Internal Circuits and Wiring Examples

-25
NPN (1 output)



-65
PNP (1 output)



International Standard ISO 8573-1:2010
Compressed Air Purity Classes

Compressed air is used in a variety of manufacturing processes. In this age, compressed air with a high degree of purity is becoming increasingly necessary.
For this reason, it is necessary to remove contaminants from systems which supply compressed air and to secure the quality. The standard which stipulates the class according to the quantities of contaminants in compressed air is ISO 8573-1.

[Outline]
Stipulates the purity class of contaminants (particles, water, oil) mixed in with the compressed air

[Scope]
Can be used in various places in compressed air systems

[Terms and Definitions]
- Purity class: An index assigned for each classification obtained by dividing the concentration of each contaminant into ranges
- Particle: Small discrete mass of solid or liquid matter
- Humidity and liquid water: Water vapor (gas), Water droplets
- Oil: Liquid oil, Oil mist, Vapor

[Purity Classes]

Class	Particles				Humidity and liquid water		Oil
	Maximum number of particles per cubic meter as a function of particle size d [μm]			Mass concentration Cp	Pressure dew point	Concentration of liquid water Cw	Concentration of total oil
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0	[mg/m³]	[°C]	[g/m³]	[mg/m³]
0	As specified by the equipment user or supplier and more stringent than class 1						
1	≤ 20000	≤ 400	≤ 10	—	≤ −70	—	≤ 0.01
2	≤ 400000	≤ 6000	≤ 100	—	≤ −40	—	≤ 0.1
3	—	≤ 90000	≤ 1000	—	≤ −20	—	≤ 1
4	—	—	≤ 10000	—	≤ +3	—	≤ 5
5	—	—	≤ 100000	—	≤ +7	—	—
6	—	—	—	0 < Cp ≤ 5	≤ +10	—	—
7	—	—	—	5 < Cp ≤ 10	—	Cw ≤ 0.5	—
8	—	—	—	—	—	0.5 < Cw ≤ 5	—
9	—	—	—	—	—	5 < Cw ≤ 10	—
x	—	—	—	Cp > 10	—	Cw > 10	> 5

[How to Perform a Test to Check the Performance]
ISO 12500, which sets out the test method to be used in order to check the filter performance for each of the three kinds of contaminants, is indicated below.
- Particle: ISO 12500-3:2009
- Liquid water: ISO 12500-4:2009
- Oil: ISO 12500-1:2007

* Measured using a dedicated evaluation system which has been certified according to ISO 12500-□ and also by a third party (Certified)

[Purity Class Designation Example]

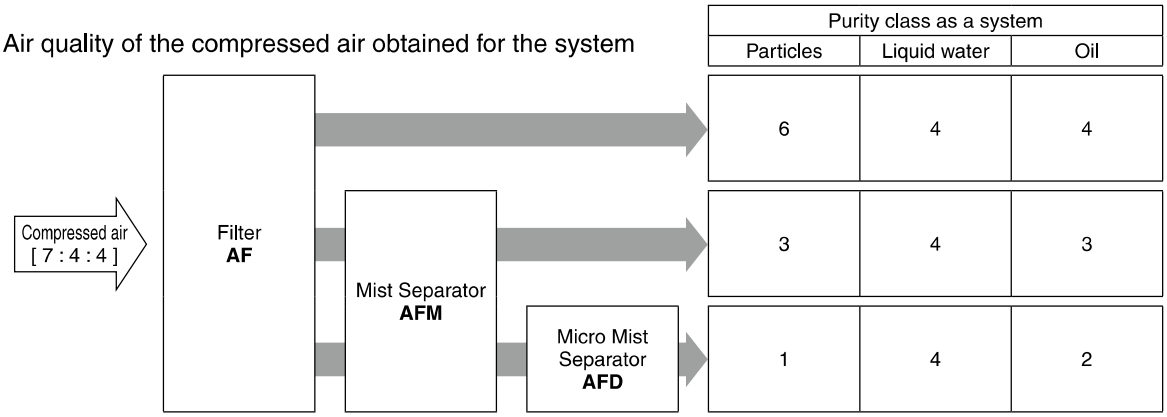
ISO 8573-1:2010 [4 : 6 : 2]

Oil class
2	Concentration of total oil ≤ 0.1 mg/m³

Particle class
4	1.0 μm < d ≤ Particles of 5.0 μm ≤ 10000 particles/m³

Humidity and liquid water class
6	Pressure dew point ≤ +10°C

Air quality of the compressed air obtained for the system



Purity class as a system		
Particles	Liquid water	Oil
6	4	4
3	4	3
1	4	2

The class indicates the compressed air purity according to ISO 8573-1:2010 (JIS B 8392-1:2012) and indicates the maximum purity class which can be obtained using that system. Note, however, that this value will differ according to the inlet air conditions.

⚠ 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)*1), and other safety regulations.

⚠ Caution: **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

⚠ Warning: **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ Danger : **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

*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 10218-1: Manipulating industrial robots – Safety.
etc.

⚠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.

1. 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.
2. 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.
3. 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.

⚠Caution

1. 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

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
   Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. 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.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

*2) **Vacuum pads are excluded from this 1 year warranty.**
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Revision History

Edition B
* Attachments have been added.
* The number of pages has been increased from 72 to 104. YV

Edition C
* Sizes 40-06, 50, and 60 have been added to the AC series.
* Sizes 40-06, 50, and 60 have been added to the AF, AR(K), and AL.
* The VHS40-06 and 50 have been added.
* Size 40-06 has been added to the AFM/AFD.
* Sizes 40-06 and 60 have been added to the AW(K).
* Made to order options have been added.
* The number of pages has been increased from 104 to 112. ZQ

Edition D
* A right angle square type pressure gauge has been added.
* Various attachments have been added:
  Right angle/Reducing/Cross adapter, End plate
* Made to order options have been added: Clean Series, Copper, fluorine and silicone-free + Low particle generation (AF, AR, AW)
* A knob cover (option) has been added.
* Connectable modular components have been added.
* The number of pages has been increased from 112 to 136.