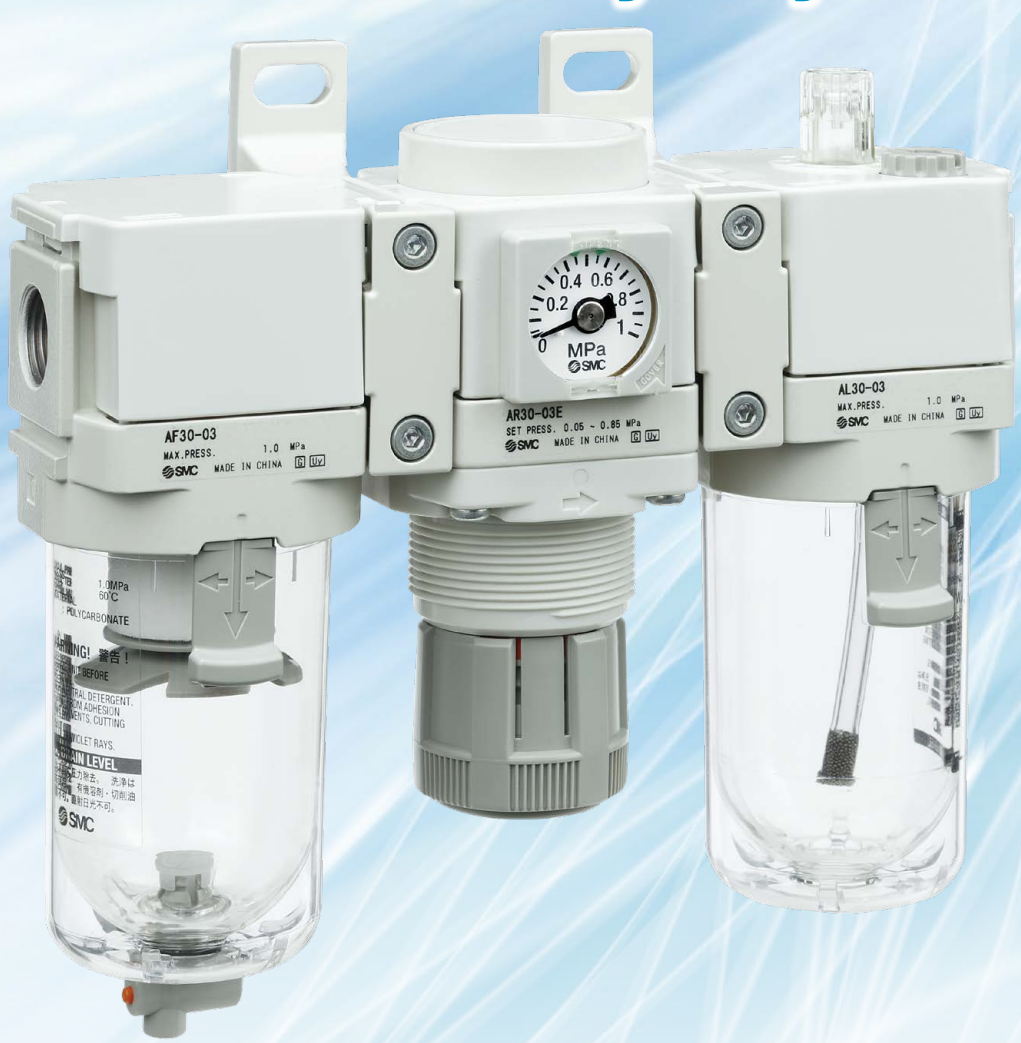
Modular F.R.L. Units

New

RoHS

Modular Design with Uniform Body Style



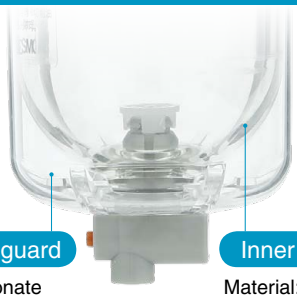
Better visibility & environmental resistance

2-layer construction

The bowl is covered with a transparent bowl guard!

＊ Body size 30 or more

- The inside is visible from 360°.
- The bowl is completely protected from the environment. Safety improved



AC Series

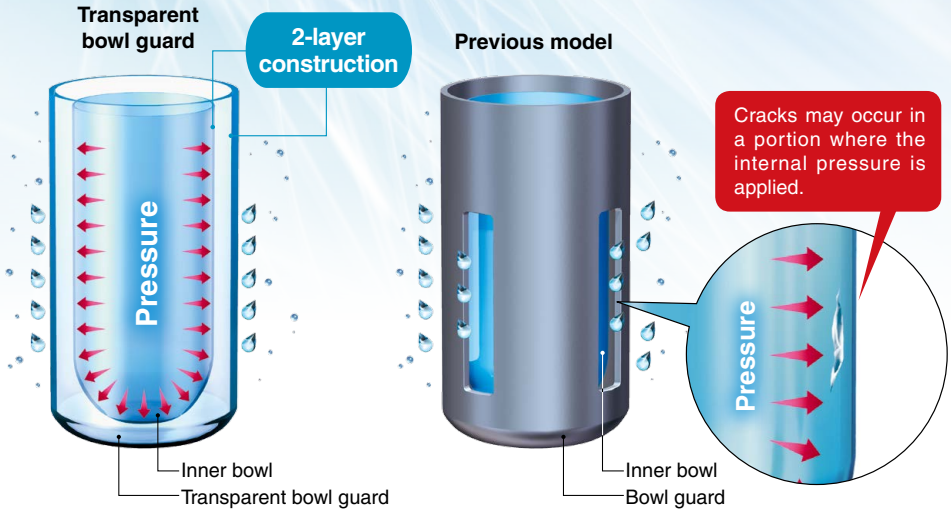
SMC

CAT.ES40-69A

Transparent bowl guard

Better environmental resistance: Transparent bowl guard can protect the inner bowl!

Windows on the bowl guard have been removed and the inner bowl is instead covered with a polycarbonate transparent bowl guard. Now, even if the environment changes and the bowl is exposed to corrosive chemical or oil splash, the foreign matter will not stick directly to the pressurized bowl. This can reduce risk of bowl breakage.



Better visibility: 360°

Use of transparent bowl guard makes it possible to check the condensate inside the filter bowl and the remaining oil amount in the lubricator from the entire periphery.

Applicable model

＊ Body size 30 or more

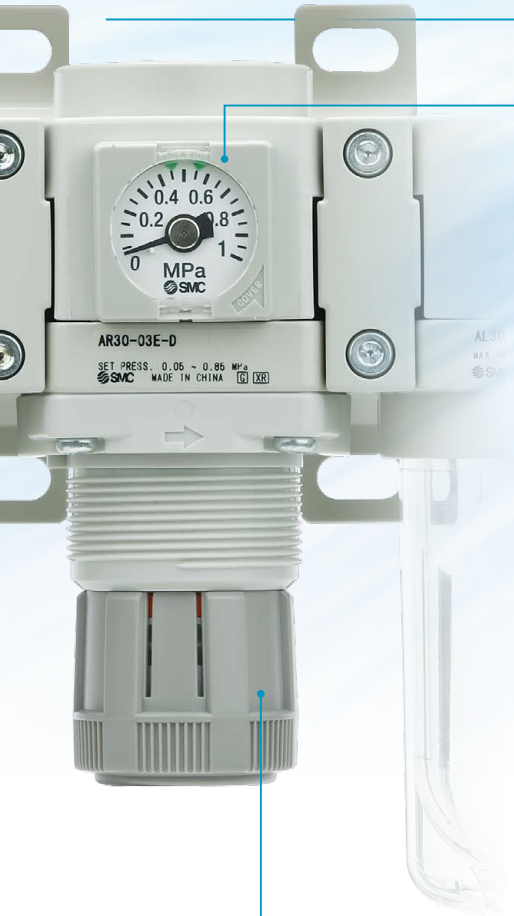
Air Filter **AF**	Mist Separator **AFM**	Micro Mist Separator **AFD**	Filter Regulator **AW□0(K)**	Lubricator **AL**
				

No tools are required.

Easier replacement of the element

＊ AF-D only

SMC



Selection of pressure gauges

Square embedded type pressure gauge

Round type pressure gauge

Digital pressure switch

Open/close type gauge cover

❶ Open the gauge cover.

Open the gauge cover in the direction of the arrow with fingertips.

❷ Adjust the indicator to a specified position.

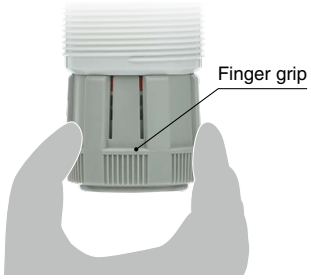
Adjust the indicator using a flat blade screwdriver.

❸ Close the gauge cover.

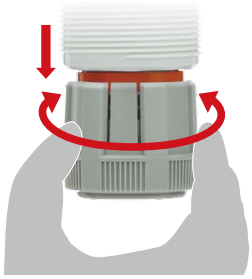
Close the gauge cover in the direction of the arrow and push it in until it clicks in place.

Easy to handle

Easy to hold when unlocked



Locked



Pressure regulation while unlocked

AR-B

Interchangeability is maintained.

- The mounting pitch for panel mounting is interchangeable between AR(K) and AR(K)-B, and AW(K) and AW(K)-B.
- Brackets and set nuts are common to existing and new products.

AR(K) Series

AW(K) Series

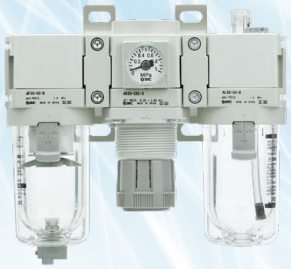
Series Configuration

AC20 to AC40 Series

p. 5

Air Filter + Regulator + Lubricator

AF AR AL



	Port size			
	1/8	1/4	3/8	1/2
Size 20	●	●		
Size 30		●	●	
Size 40		●	●	●

AC20A to AC40A Series

p. 11

Filter Regulator + Lubricator

AW AL

	Port size			
	1/8	1/4	3/8	1/2
Size 20	●	●		
Size 30		●	●	
Size 40		●	●	●

AC20B to AC40B Series

p. 15

Air Filter + Regulator

AF AR

	Port size			
	1/8	1/4	3/8	1/2
Size 20	●	●		
Size 30		●	●	
Size 40		●	●	●

AC20C to AC40C Series

p. 19

Air Filter + Mist Separator + Regulator

AF AFM AR

	Port size			
	1/8	1/4	3/8	1/2
Size 20	●	●		
Size 30		●	●	
Size 40		●	●	●

AC20D to AC40D Series

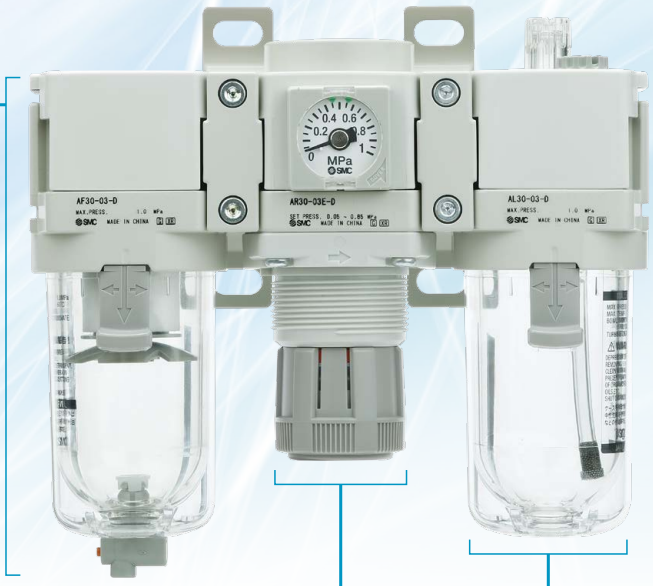
p. 23

Filter Regulator + Mist Separator

AW AFM

	Port size			
	1/8	1/4	3/8	1/2
Size 20	●	●		
Size 30		●	●	
Size 40		●	●	●

Table of Modular Combinations of F.R.L. Units for AC Assembly



Air Filter
AF Series

p. 30

	Port size			
	1/8	1/4	3/8	1/2
Size 20	●	●		
Size 30		●	●	
Size 40		●	●	●

Mist Separator
Micro Mist Separator
AFM/AFD Series

p. 30

	Port size			
	1/8	1/4	3/8	1/2
Size 20	●	●		
Size 30		●	●	
Size 40		●	●	●

Regulator
AR Series

p. 44

Regulator with Backflow Function
AR□K Series

p. 44

	Port size				Port size			
	1/8	1/4	3/8	1/2	1/8	1/4	3/8	1/2
Size 20	●	●			●	●		
Size 30		●	●			●	●	
Size 40		●	●	●		●	●	●

Filter Regulator
AW Series

p. 60

Filter Regulator with Backflow Function
AW□K Series

p. 60

	Port size				Port size			
	1/8	1/4	3/8	1/2	1/8	1/4	3/8	1/2
Size 20	●	●			●	●		
Size 30		●	●			●	●	
Size 40		●	●	●		●	●	●

New Spacer

Interchangeable with existing model

- New spacer can be connected to the existing AF-A, AR-B, AL-A, AW-B series.
- Existing spacer can be connected to the new AF-D, AR(K)-D, AL-D, AW(K)-D series.

Lubricator
AL Series

p. 54

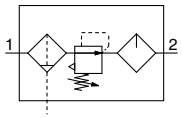
	Port size			
	1/8	1/4	3/8	1/2
Size 20	●	●		
Size 30		●	●	
Size 40		●	●	●

Air Combination

Air Filter + Regulator + Lubricator

AC20-D to AC40-D

Symbol



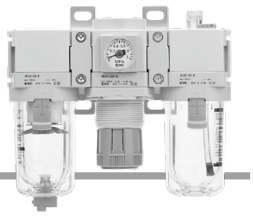
How to Order

AC 30 – ❷ 03 DE – ❺ – D

❶ ❷ ❸ ❹ ❺

· Option/Semi-standard: Select one each for **a** to **i**.
· Option/Semi-standard symbol:
When more than one specification is required, indicate in alphanumeric order.
Example) AC30-F03DE1-16NR-D

			Symbol	Description	❶ Body size 20	30	40
❷	Pipe thread type		**Nil**	Rc	●	●	●
			N[*1]	NPT	●	●	●
			F[*2]	G	●	●	●
			+				
❸	Port size		**01**	1/8	●	—	—
			02	1/4	●	●	●
			03	3/8	—	●	●
			04	1/2	—	—	●
			+				
❹	Option[*3]	**a** Float type auto drain	**Nil**	Without auto drain	●	●	●
			C[*4]	N.C. (Normally closed) Drain port is closed when pressure is not applied.	●	●	●
			D[*5]	N.O. (Normally open) Drain port is open when pressure is not applied.	—	●	●
			+				
		b Pressure gauge[*6]	**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)	●	●	●
		b Digital pressure switch	**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	●	●	●
			+				
❺	Semi-standard	**c** Set pressure[*7]	**Nil**	0.05 to 0.85 MPa setting	●	●	●
			1	0.02 to 0.2 MPa setting	●	●	●
			+				
		d Bowl[*8]	**Nil**	Polycarbonate bowl	●	●	●
			2	Metal bowl	●	●	●
			6	Nylon bowl	●	●	●
			8	Metal bowl with level gauge	—	●	●
			C	With bowl guard	●	—[*9]	—[*9]
			6C	With bowl guard (Nylon bowl)	●	—[*10]	—[*10]
			+				
		e Air filter drain port[*11]	**Nil**	With drain cock	●	●	●
			J[*12]	Drain guide 1/8	●	—	—
				Drain guide 1/4	—	●	●
			W[*13]	Drain cock with barb fitting (for ø6 x ø4 nylon tube)	—	●	●
			+				
		f Lubricator lubricant exhaust port	**Nil**	Without drain cock	●	●	●
			3[*14]	Lubricator with drain cock	●	●	●



AC30-D

			Symbol	Description	❶ Body size 20	30	40
❺ 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∗15	Unit on product label: psi, °F, Pressure gauge: MPa/psi dual scale	○∗17	○∗17	○∗17
			ZA∗16	Digital pressure switch: With unit selection function	△∗18	△∗18	△∗18

∗1 Drain guide is NPT1/8 (applicable to the AC20-D) and NPT1/4 (applicable to the AC30-D to AC40-D). The auto drain port comes with a ø3/8" One-touch fitting (applicable to the AC30-D to AC40-D).
∗2 Drain guide is G1/8 (applicable to the AC20-D) and G1/4 (applicable to the AC30-D to AC40-D).
∗3 Options G and M are not assembled and supplied loose at the time of shipment.
∗4 When pressure is not applied, condensate which does not start the auto drain mechanism will be left in the bowl. Releasing the residual condensate before ending operations for the day is recommended.
∗5 If the compressor is small (0.75 kW, discharge flow is less than 100 L/min (ANR)), air leakage from the drain cock may occur during the start of operations. N.C. type is recommended.
∗6 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.
∗7 Pressure can be set higher than the specification pressure in some cases, but use pressure within the specification range.
∗8 Refer to chemical data on pages 38 and 59 for chemical resistance of the bowl.
∗9 A bowl guard is provided as standard equipment (polycarbonate).
∗10 A bowl guard is provided as standard equipment (nylon).
∗11 The combination of float type auto drain C and D is not available.
∗12 Without a valve function
∗13 The combination of metal bowl 2 and 8 is not available.
∗14 When choosing with W: Air filter drain port, the drain cock of a lubricator will be with barb fittings.
∗15 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.)
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.
∗16 For options: E1, E2, E3, E4
This product is for overseas use only according to the new Measurement Act. (The SI unit is provided for use in Japan.)
∗17 ○: For pipe thread type: NPT only
∗18 △: Select with options: E1, E2, E3, E4.

Standard Specifications

Model			AC20-D	AC30-D	AC40-D
Component	Air Filter	[AF]	AF20-D	AF30-D	AF40-D
	Regulator	[AR]	AR20-D	AR30-D	AR40-D
	Lubricator	[AL]	AL20-D	AL30-D	AL40-D
Port size			1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Pressure gauge port size∗1		[AR]	1/8		
Fluid			Air		
Ambient and fluid temperatures∗2			–5 to 60°C (with no freezing)		
Proof pressure			1.5 MPa		
Max. operating pressure			1.0 MPa		
Auto drain minimum operating pressure	N.C.	[AF]	0.1 MPa	0.15 MPa	
	N.O.	[AF]	—	0.1 MPa	
Set pressure range		[AR]	0.05 to 0.85 MPa		
Nominal filtration rating∗3		[AF]	5 μm		
Compressed air purity class∗4			ISO 8573-1:2010 [6 : 4 : –]∗5		
Drain capacity		[AF]	8 cm^3	25 cm^3	45 cm^3
Minimum dripping flow rate∗6		[AL]	15 L/min (ANR)	Port size 1/4: 30 L/min (ANR) Port size 3/8: 40 L/min (ANR)	Port size 1/4: 30 L/min (ANR) Port size 3/8: 40 L/min (ANR) Port size 1/2: 50 L/min (ANR)
Oil capacity		[AL]	25 cm^3	55 cm^3	135 cm^3
Recommended lubricant		[AL]	Class 1 turbine oil (ISO VG32)		
Bowl material		[AF/AL]	Polycarbonate		
Bowl guard		[AF/AL]	Semi-standard (Steel)	Standard (Polycarbonate)	
Construction		[AR]	Relieving type		
Weight			0.38 kg	0.75 kg	1.42 kg

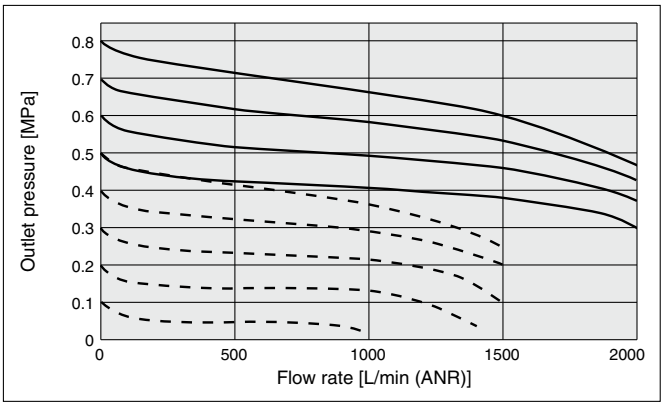
∗1 Pressure gauge connection threads are not available for F.R.L. unit with a square embedded type pressure gauge or with a digital pressure switch.
∗2 –5 to 50°C for the products with the digital pressure switch
∗3 [Compliant to test condition ISO 8573-4:2001 and test method ISO 12500-3:2009]
Conditions: New element. Flow capacity, inlet pressure, and the amount of solid bodies at the filter inlet 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 37.
∗5 The compressed air quality class on the inlet side is [7 : 4 : 4].
∗6 · The flow rate is 5 drops or greater/min under the following conditions: Inlet pressure of 0.5 MPa; Class 1 turbine oil (ISO VG32); Temperature at 20°C; Oil adjustment valve fully open.
· For a circuit that repeatedly turns ON and OFF on the outlet side, make the adjustment so that the average air consumption per minute becomes the minimum dripping flow rate or more.

Flow Rate Characteristics (Representative values)

Inlet pressure of 0.1 MPa
Inlet pressure of 0.7 MPa

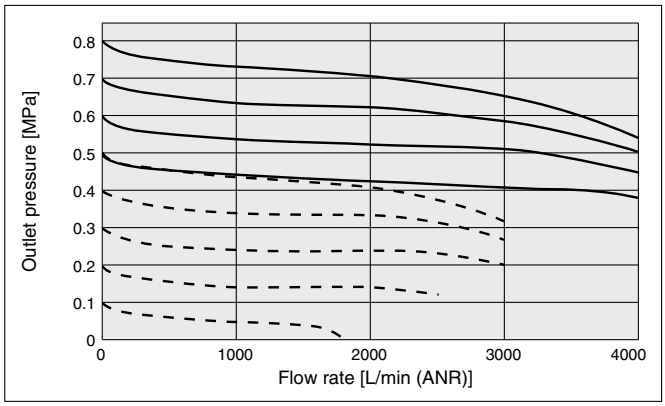
AC20-D

Rc1/4



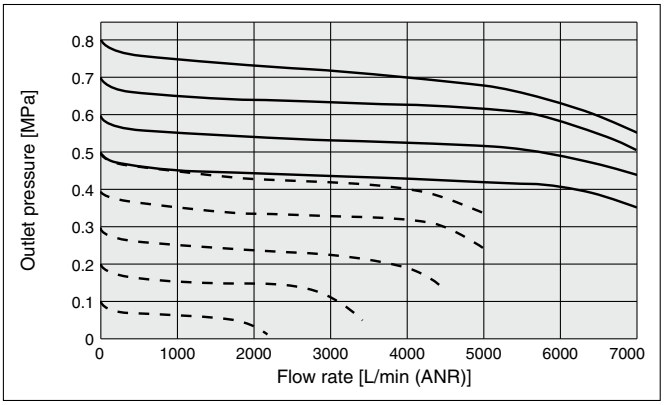
AC30-D

Rc3/8



AC40-D

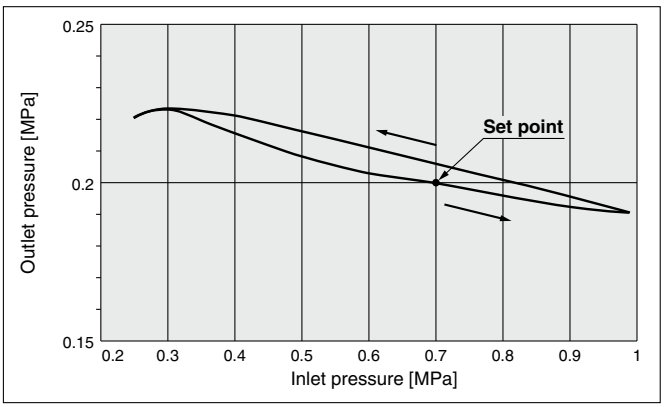
Rc1/2



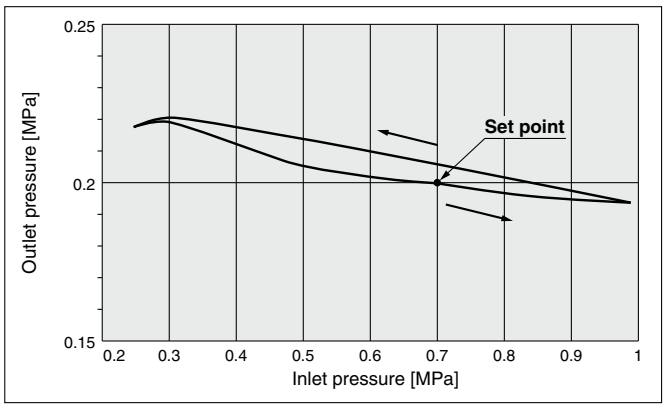
Pressure Characteristics (Representative values)

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

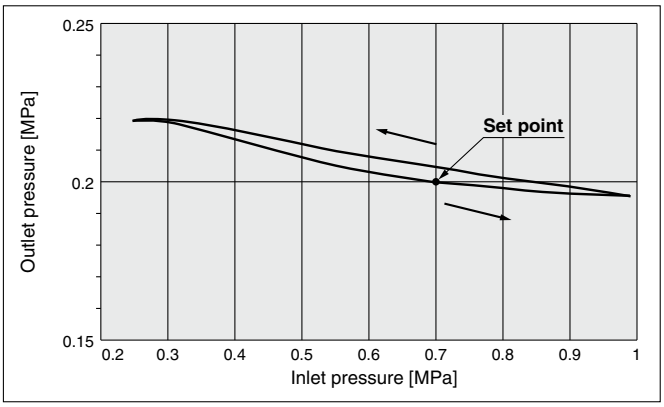
AC20-D



AC30-D



AC40-D



⚠ 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", https://www.smcworld.com

Air Supply

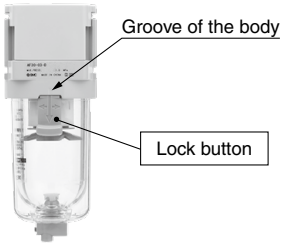
⚠ Caution

1. Use an air filter with 5 μm or less filtration rating on the inlet side of the valve to avoid any damage to the seat caused by dust when mounting a pressure relief 3-port valve on the inlet side.

Mounting/Adjustment

⚠ Caution

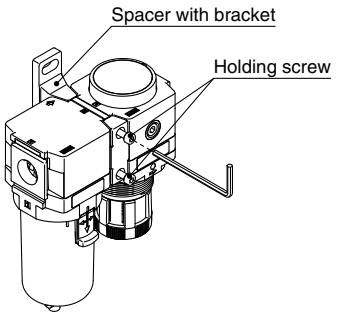
1. When the bowl is installed on the air filter, filter regulator, lubricator, mist separator, or micro mist separator (AC20-D to AC40-D), install them so that the lock button lines up to the groove of the front (or the back) of the body to avoid drop or damage of the bowl.



2. Tighten the two set screws on the spacer with bracket and spacer evenly.
Tighten them to the recommended tightening torque.
Insufficient tightening torque may cause loosening or defective sealing. Excessive tightening torque may damage the thread, etc.

Recommended Torque Unit: N·m

Applicable model	**AC20□**	**AC30□**	**AC40□**
Spacer with bracket part no.	**Y200T-D**	**Y300T-D**	**Y400T-D**
Spacer part no.	**Y200-D**	**Y300-D**	**Y400-D**
Torque	0.33 to 0.39	1.0 to 1.2	1.0 to 1.2



Selection

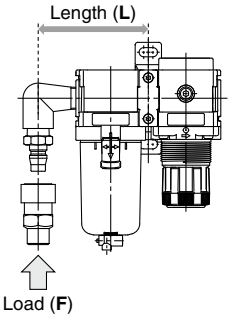
⚠ Warning

1. Piping load and moment
Avoid excessive torsional moment or bending moment other than those caused by the equipment's own weight, as this can cause damage.
Support external piping separately.
If moment applied to the equipment is unavoidable during operation, the moment should be lower than the maximum moment shown below.
Piping materials without flexibility, such as steel tube piping, are prone to be affected by excess moment loads and vibrations from the piping side. Use flexible tubing in between to avoid such effects.

Unit: N·m

Applicable model	**AC20□**	**AC30□**	**AC40□**
Maximum moment (**M**)	14.5	16	19.5

Maximum moment (**M**) = Length (**L**) x Load (**F**)



2. Float type auto drain
Operate under the following conditions to avoid malfunction.
<N.O. type>
- Operating compressor: 0.75 kW (100 L/min (ANR)) or more
  When using 2 or more auto drains, multiply the value above by the number of auto drains to find the capacity of the compressors you will need.
  For example, when using 2 auto drains, 1.5 kW (200 L/min (ANR)) of the compressor capacity is required.
- Operating pressure: 0.1 MPa or more

<N.C. type>
- Operating pressure for AD27-D: 0.1 MPa or more
  Operating pressure for AD37-D/AD47-D: 0.15 MPa or more

3. Use a regulator or filter regulator with backflow function when mounting a pressure relief 3-port valve on the inlet side to ensure the release of the residual pressure. Otherwise, residual pressure will not be fully released.

⚠ Caution

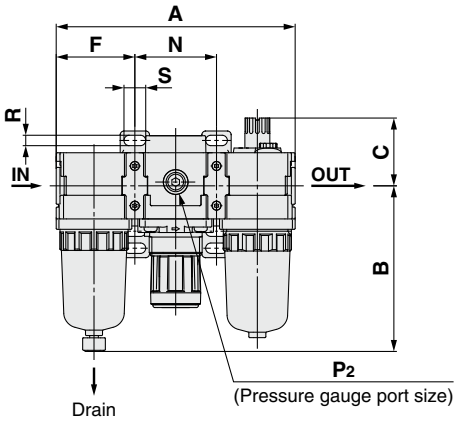
1. When releasing air at the intermediate position using a T-spacer on the inlet side of the lubricator, lubricant may backflow. Therefore, releasing air that does not contain traces of lubricant is not possible. To release air that does not contain traces of lubricant, use a check valve (AKM series) on the inlet side of the lubricator to prevent a backflow of the lubricant.

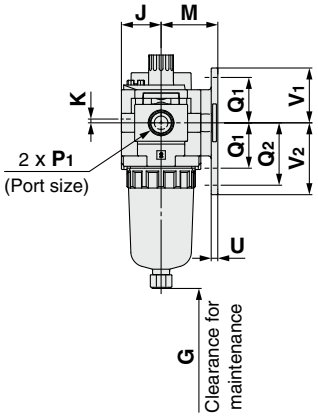
2. If a pressure relief 3-port valve is mounted on the inlet side of the lubricator, causing a backflow of air, it can result in a backflow of oil or damage to internal parts. Do not use it in this manner.

3. An F.R.L. unit shipped from the plant has its model number labeled. However, components that are combined together during the distribution process do not have a label on them.

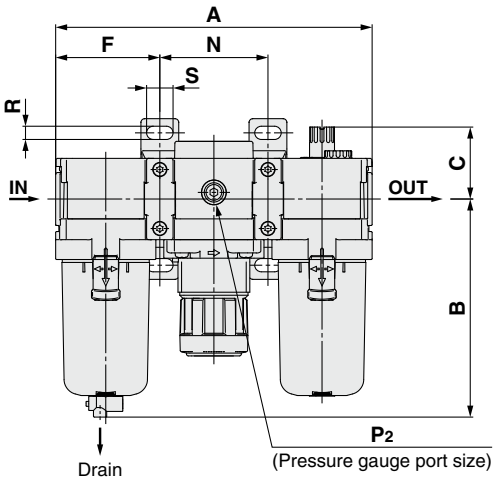
Dimensions

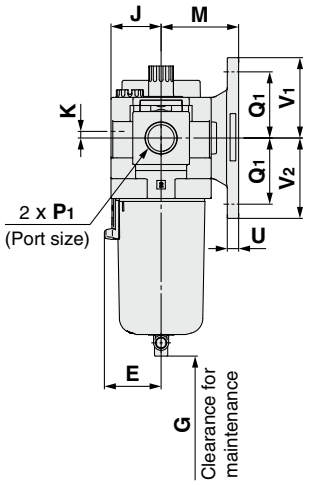
AC20-D



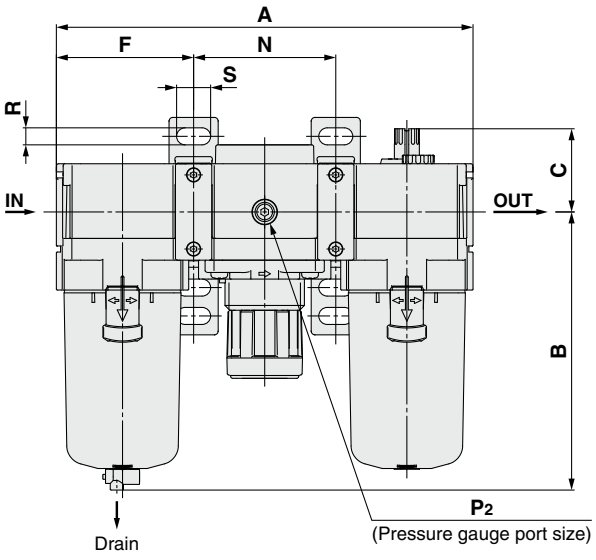


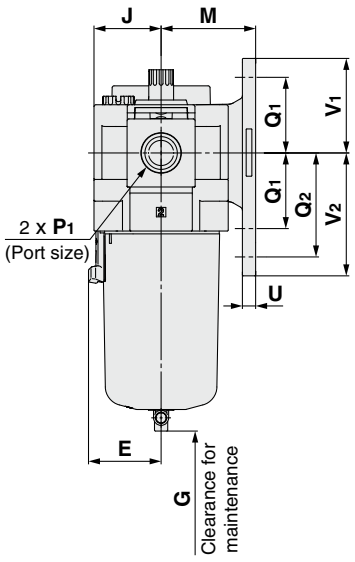
AC30-D

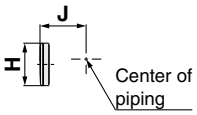
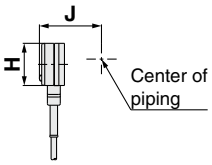
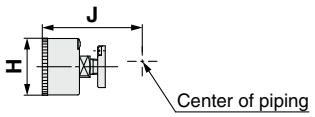


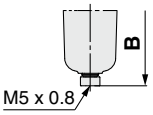
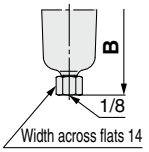
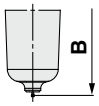
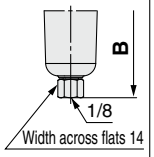
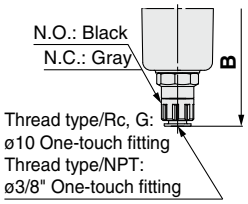
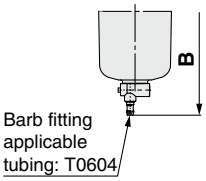
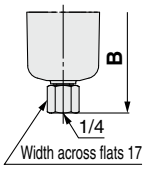
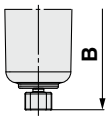
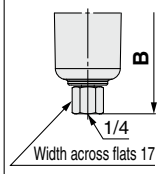
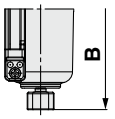
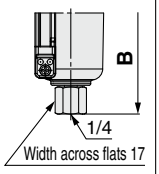


AC40-D





Applicable model	Optional specifications			
	Square embedded type pressure gauge	Digital pressure switch	Round type pressure gauge	Round type pressure gauge (with color zone)
AC20-D to AC40-D				

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
AC20-D							
AC30-D to AC40-D							

Model	Standard specifications																		
											Bracket mount								
	P_1	P_2	A	B	C	E	F	G	J	K	M	N	Q_1	Q_2	R	S	U	V_1	V_2
AC20-D	1/8, 1/4	1/8	126.4	87.6	35.9	—	41.6	60	21	2	30	43.2	24	33	5.5	11.5	3.5	29	38
AC30-D	1/4, 3/8	1/8	167.4	115.4	38.1	30	55.1	80	26.5	3.5	41	57.2	35	—	7	14	6	42.5	42.5
AC40-D	1/4, 3/8, 1/2	1/8	220.4	147.1	44	38.4	72.6	110	35.5	0	50	75.2	40	55	9	18	7	50	65

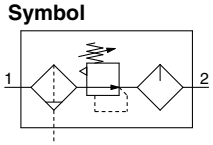
Model	Optional specifications											Semi-standard specifications					
	Square embedded type pressure gauge		Digital pressure switch		Round type pressure gauge		Round type pressure gauge (Semi-standard: Z)		Round type pressure gauge (with color zone)		With auto drain	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
												With barb fitting	With drain guide	With drain cock	With drain guide	With drain cock	With drain guide
	H	J	H	J	H	J	H	J	H	J	B	B	B	B	B	B	B
AC20-D	□28	27	□27.8	37.5	ø37.5	57.5	ø37.5	58.5	ø37.5	58.5	104.9	—	91.4	87.4	93.9	—	—
AC30-D	□28	32.5	□27.8	43	ø37.5	63	ø37.5	64	ø37.5	64	157.1	123.9	122.2	117.8	122.3	137.8	142.3
AC40-D	□28	41.5	□27.8	52	ø42.5	73	ø42.5	73	ø42.5	73	186.9	155.6	153.9	149.5	154	169.5	174

Air Combination

Filter Regulator + Lubricator

AC20A-D to AC40A-D

Symbol



How to Order

AC ❶ A – ❷ ❸ ❹ – ❺ – D

· Option/Semi-standard: Select one each for **a** to **i**.
· Option/Semi-standard symbol:
When more than one specification is required, indicate in alphanumeric order.
Example) AC30A-F03DE1-16NR-D

			Symbol	Description	❶ Body size 20	30	40
❷	Pipe thread type		**Nil**	Rc	●	●	●
			N[*1]	NPT	●	●	●
			F[*2]	G	●	●	●
			+				
❸	Port size		**01**	1/8	●	—	—
			02	1/4	●	●	●
			03	3/8	—	●	●
			04	1/2	—	—	●
			+				
❹	Option[*3]	**a** Float type auto drain	**Nil**	Without auto drain	●	●	●
			C[*4]	N.C. (Normally closed) Drain port is closed when pressure is not applied.	●	●	●
			D[*5]	N.O. (Normally open) Drain port is open when pressure is not applied.	—	●	●
			+				
		b Pressure gauge[*6]	**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)	●	●	●
		b Digital pressure switch	**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	●	●	●
			+				
❺	Semi-standard	**c** Set pressure[*7]	**Nil**	0.05 to 0.85 MPa setting	●	●	●
			1	0.02 to 0.2 MPa setting	●	●	●
			+				
		d Bowl[*8]	**Nil**	Polycarbonate bowl	●	●	●
			2	Metal bowl	●	●	●
			6	Nylon bowl	●	●	●
			8	Metal bowl with level gauge	—	●	●
			C	With bowl guard	●	—[*9]	—[*9]
			6C	With bowl guard (Nylon bowl)	●	—[*10]	—[*10]
			+				
		e Filter regulator drain port[*11]	**Nil**	With drain cock	●	●	●
			J[*12]	Drain guide 1/8	●	—	—
				Drain guide 1/4	—	●	●
			W[*13]	Drain cock with barb fitting (for ø6 x ø4 nylon tube)	—	●	●
			+				
		f Lubricator lubricant exhaust port	**Nil**	Without drain cock	●	●	●
			3[*14]	Lubricator with drain cock	●	●	●
			+				
		g Exhaust mechanism	**Nil**	Relieving type	●	●	●
			N	Non-relieving type	●	●	●

AC30A-D

		Symbol	Description	❶ Body size 20	30	40
❺ Semi-standard	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∗15	Unit on product label: psi, °F, Pressure gauge: MPa/psi dual scale	○∗17	○∗17	○∗17
		ZA∗16	Digital pressure switch: With unit selection function	△∗18	△∗18	△∗18

∗1 Drain guide is NPT1/8 (applicable to the AC20A-D) and NPT1/4 (applicable to the AC30A-D to AC40A-D). The auto drain port comes with a ø3/8" One-touch fitting (applicable to the AC30A-D to AC40A-D).
∗2 Drain guide is G1/8 (applicable to the AC20A-D) and G1/4 (applicable to the AC30A-D to AC40A-D).
∗3 Options G and M are not assembled and supplied loose at the time of shipment.
∗4 When pressure is not applied, condensate which does not start the auto drain mechanism will be left in the bowl. Releasing the residual condensate before ending operations for the day is recommended.
∗5 If the compressor is small (0.75 kW, discharge flow is less than 100 L/min (ANR)), air leakage from the drain cock may occur during the start of operations. N.C. type is recommended.
∗6 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.
∗7 Pressure can be set higher than the specification pressure in some cases, but use pressure within the specification range.
∗8 Refer to chemical data on pages 59 and 68 for chemical resistance of the bowl.
∗9 A bowl guard is provided as standard equipment (polycarbonate).
∗10 A bowl guard is provided as standard equipment (nylon).
∗11 The combination of float type auto drain C and D is not available.
∗12 Without a valve function
∗13 The combination of metal bowl 2 and 8 is not available.
∗14 When choosing with W: Filter regulator drain port, the drain cock of a lubricator will be with barb fittings.
∗15 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.)
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.
∗16 For options: E1, E2, E3, E4
This product is for overseas use only according to the new Measurement Act. (The SI unit is provided for use in Japan.)
∗17 ○: For pipe thread type: NPT only
∗18 △: Select with options: E1, E2, E3, E4.

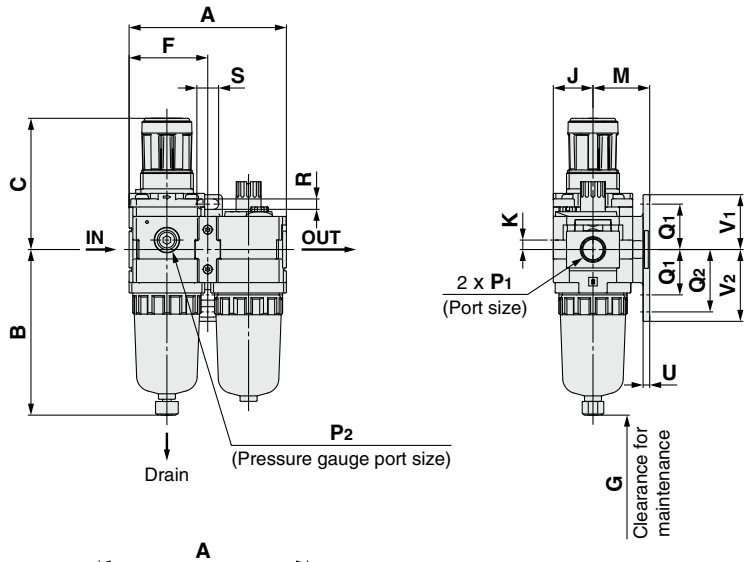
Standard Specifications

Model			AC20A-D	AC30A-D	AC40A-D
Component	Filter Regulator	[AW]	AW20-D	AW30-D	AW40-D
	Lubricator	[AL]	AL20-D	AL30-D	AL40-D
Port size			1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Pressure gauge port size∗1		[AW]	1/8		
Fluid			Air		
Ambient and fluid temperatures∗2			–5 to 60°C (with no freezing)		
Proof pressure			1.5 MPa		
Max. operating pressure			1.0 MPa		
Auto drain minimum operating pressure	N.C.	[AW]	0.1 MPa	0.15 MPa	
	N.O.	[AW]	—	0.1 MPa	
Set pressure range		[AW]	0.05 to 0.85 MPa		
Nominal filtration rating∗3		[AW]	5 μm		
Compressed air purity class∗4			ISO 8573-1:2010 [6 : 4 : –]∗5		
Drain capacity		[AW]	8 cm^3	25 cm^3	45 cm^3
Minimum dripping flow rate∗6		[AL]	15 L/min (ANR)	Port size 1/4: 30 L/min (ANR) Port size 3/8: 40 L/min (ANR)	Port size 1/4: 30 L/min (ANR) Port size 3/8: 40 L/min (ANR) Port size 1/2: 50 L/min (ANR)
Oil capacity		[AL]	25 cm^3	55 cm^3	135 cm^3
Recommended lubricant		[AL]	Class 1 turbine oil (ISO VG32)		
Bowl material		[AW/AL]	Polycarbonate		
Bowl guard		[AW/AL]	Semi-standard (Steel)	Standard (Polycarbonate)	
Construction		[AW]	Relieving type		
Weight			0.31 kg	0.58 kg	1.12 kg

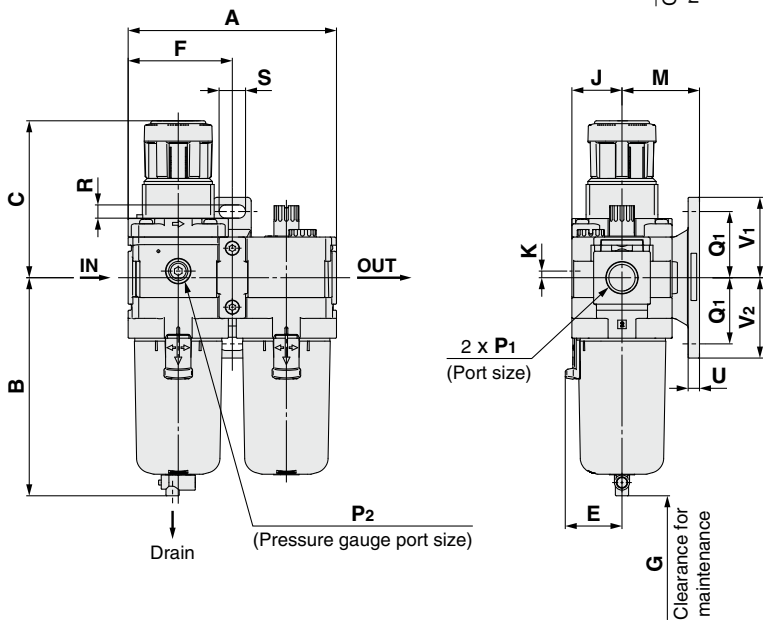
∗1 Pressure gauge connection threads are not available for F.R.L. unit with a square embedded type pressure gauge or with a digital pressure switch.
∗2 –5 to 50°C for the products with the digital pressure switch
∗3 [Compliant to test condition ISO 8573-4:2001 and test method ISO 12500-3:2009]
Conditions: New element. Flow capacity, inlet pressure, and the amount of solid bodies at the filter inlet 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 37.
∗5 The compressed air quality class on the inlet side is [7 : 4 : 4].
∗6 · The flow rate is 5 drops or greater/min under the following conditions: Inlet pressure of 0.5 MPa; Class 1 turbine oil (ISO VG32); Temperature at 20°C; Oil adjustment valve fully open.
· For a circuit that repeatedly turns ON and OFF on the outlet side, make the adjustment so that the average air consumption per minute becomes the minimum dripping flow rate or more.

Dimensions

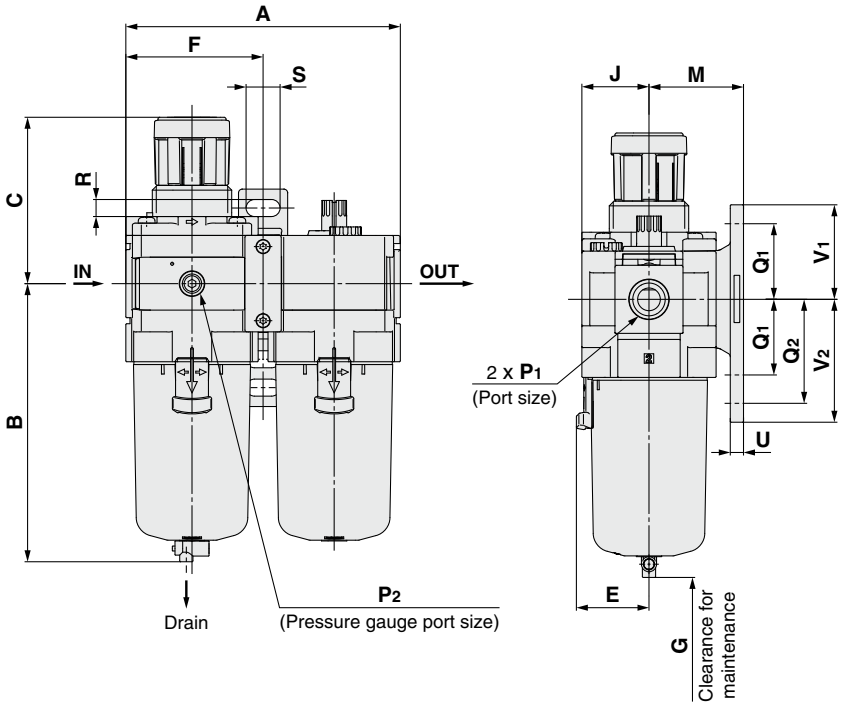
AC20A-D

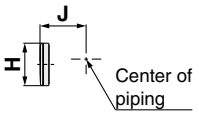
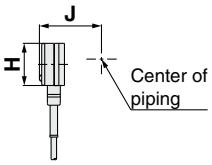
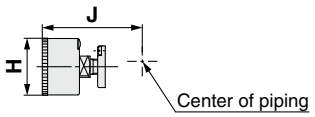


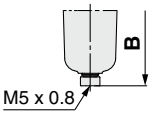
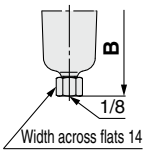
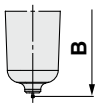
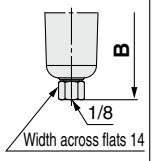
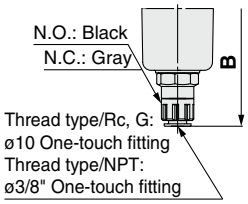
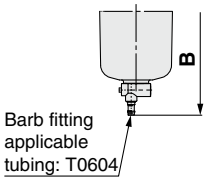
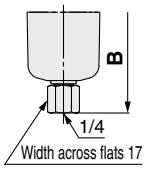
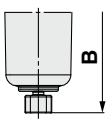
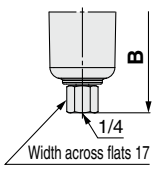
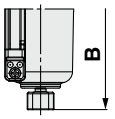
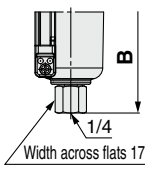
AC30A-D



AC40A-D



Applicable model	Optional specifications			
	Square embedded type pressure gauge	Digital pressure switch	Round type pressure gauge	Round type pressure gauge (with color zone)
AC20A-D to AC40A-D				

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
AC20A-D							
AC30A-D to AC40A-D							

Model	Standard specifications																	
											Bracket mount							
	P_1	P_2	A	B	C	E	F	G	J	K	M	Q_1	Q_2	R	S	U	V_1	V_2
AC20A-D	1/8, 1/4	1/8	83.2	87.6	71.8	—	41.6	60	21	5	30	24	33	5.5	11.5	3.5	29	38
AC30A-D	1/4, 3/8	1/8	110.2	115.3	86.5	30	55.1	80	26.5	3.5	41	35	—	7	14	6	42.5	42.5
AC40A-D	1/4, 3/8, 1/2	1/8	145.2	147.1	91.5	38.4	72.6	110	35.5	0	50	40	55	9	18	7	50	65

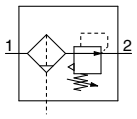
Model	Optional specifications											Semi-standard specifications					
	Square embedded type pressure gauge		Digital pressure switch		Round type pressure gauge		Round type pressure gauge (Semi-standard: Z)		Round type pressure gauge (with color zone)		With auto drain	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
												With barb fitting	With drain guide	With drain cock	With drain guide	With drain cock	With drain guide
	H	J	H	J	H	J	H	J	H	J	B	B	B	B	B	B	B
AC20A-D	□28	27	□27.8	37.5	ø37.5	57.5	ø37.5	58.5	ø37.5	58.5	104.9	—	91.4	87.4	93.9	—	—
AC30A-D	□28	32.5	□27.8	43	ø37.5	63	ø37.5	64	ø37.5	64	157.1	123.9	122.2	117.8	122.3	137.8	142.3
AC40A-D	□28	41.5	□27.8	52	ø42.5	73	ø42.5	73	ø42.5	73	186.9	155.6	153.9	149.5	154	169.5	174

Air Combination

Air Filter + Regulator

AC20B-D to AC40B-D

Symbol



How to Order

AC 30 B– ❷ 03 DE – ❺ – D

❶ ❷ ❸ ❹ ❺

· Option/Semi-standard: Select one each for **a** to **h**.
· Option/Semi-standard symbol:
When more than one specification is required, indicate in alphanumeric order.
Example) AC30B-F03DE1-16NR-D

				Symbol	Description	❶ Body size 20	30	40
❷	Pipe thread type			**Nil**	Rc	●	●	●
				N[*1]	NPT	●	●	●
				F[*2]	G	●	●	●
				+				
❸	Port size			**01**	1/8	●	—	—
				02	1/4	●	●	●
				03	3/8	—	●	●
				04	1/2	—	—	●
				+				
❹	Option[*3]	**a**	Float type auto drain	**Nil**	Without auto drain	●	●	●
				C[*4]	N.C. (Normally closed) Drain port is closed when pressure is not applied.	●	●	●
				D[*5]	N.O. (Normally open) Drain port is open when pressure is not applied.	—	●	●
				+				
		b	Pressure gauge[*6]	**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)	●	●	●
			Digital pressure switch	**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	●	●	●
				+				
❺	Semi-standard	**c**	Set pressure[*7]	**Nil**	0.05 to 0.85 MPa setting	●	●	●
				1	0.02 to 0.2 MPa setting	●	●	●
				+				
		d	Bowl[*8]	**Nil**	Polycarbonate bowl	●	●	●
				2	Metal bowl	●	●	●
				6	Nylon bowl	●	●	●
				8	Metal bowl with level gauge	—	●	●
				C	With bowl guard	●	—[*9]	—[*9]
				6C	With bowl guard (Nylon bowl)	●	—[*10]	—[*10]
				+				
		e	Air filter drain port[*11]	**Nil**	With drain cock	●	●	●
				J[*12]	Drain guide 1/8	●	—	—
					Drain guide 1/4	—	●	●
				W[*13]	Drain cock with barb fitting (for ø6 x ø4 nylon tube)	—	●	●
				+				
		f	Exhaust mechanism	**Nil**	Relieving type	●	●	●
				N	Non-relieving type	●	●	●

AC30B-D

		Symbol	Description	❶ Body size 20	30	40
❺ Semi-standard	g Flow direction	Nil	Flow direction: Left to right	●	●	●
		R	Flow direction: Right to left	●	●	●
		+				
	h Unit	Nil	Unit on product label: MPa, °C, Pressure gauge in SI units: MPa	●	●	●
		Z∗14	Unit on product label: psi, °F, Pressure gauge: MPa/psi dual scale	○∗16	○∗16	○∗16
		ZA∗15	Digital pressure switch: With unit selection function	△∗17	△∗17	△∗17

∗1 Drain guide is NPT1/8 (applicable to the AC20B-D) and NPT1/4 (applicable to the AC30B-D to AC40B-D). The auto drain port comes with a ø3/8" One-touch fitting (applicable to the AC30B-D to AC40B-D).
∗2 Drain guide is G1/8 (applicable to the AC20B-D) and G1/4 (applicable to the AC30B-D to AC40B-D).
∗3 Options G and M are not assembled and supplied loose at the time of shipment.
∗4 When pressure is not applied, condensate which does not start the auto drain mechanism will be left in the bowl. Releasing the residual condensate before ending operations for the day is recommended.
∗5 If the compressor is small (0.75 kW, discharge flow is less than 100 L/min (ANR)), air leakage from the drain cock may occur during the start of operations. N.C. type is recommended.
∗6 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.
∗7 Pressure can be set higher than the specification pressure in some cases, but use pressure within the specification range.
∗8 Refer to chemical data on page 38 for chemical resistance of the bowl.
∗9 A bowl guard is provided as standard equipment (polycarbonate).
∗10 A bowl guard is provided as standard equipment (nylon).
∗11 The combination of float type auto drain C and D is not available.
∗12 Without a valve function
∗13 The combination of metal bowl 2 and 8 is not available.
∗14 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.)
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.
∗15 For options: E1, E2, E3, E4
This product is for overseas use only according to the new Measurement Act. (The SI unit is provided for use in Japan.)
∗16 ○: For pipe thread type: NPT only
∗17 △: Select with options: E1, E2, E3, E4.

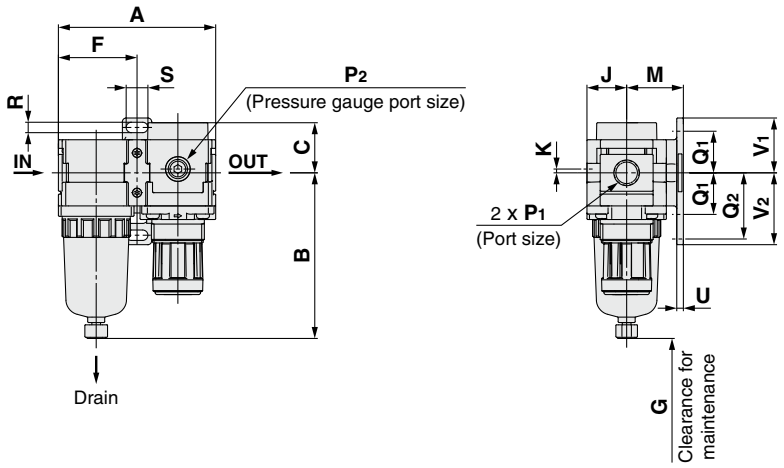
Standard Specifications

Model			AC20B-D	AC30B-D	AC40B-D
Component	Air Filter	[AF]	AF20-D	AF30-D	AF40-D
	Regulator	[AR]	AR20-D	AR30-D	AR40-D
Port size			1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Pressure gauge port size∗1		[AR]	1/8		
Fluid			Air		
Ambient and fluid temperatures∗2			–5 to 60°C (with no freezing)		
Proof pressure			1.5 MPa		
Max. operating pressure			1.0 MPa		
Auto drain minimum operating pressure	N.C.	[AF]	0.1 MPa	0.15 MPa	
	N.O.	[AF]	—	0.1 MPa	
Set pressure range		[AR]	0.05 to 0.85 MPa		
Nominal filtration rating∗3		[AF]	5 µm		
Compressed air purity class∗4			ISO 8573-1:2010 [6 : 4 : 4]∗5		
Drain capacity		[AF]	8 cm^3	25 cm^3	45 cm^3
Bowl material		[AF]	Polycarbonate		
Bowl guard		[AF]	Semi-standard (Steel)	Standard (Polycarbonate)	
Construction		[AR]	Relieving type		
Weight			0.25 kg	0.51 kg	0.95 kg

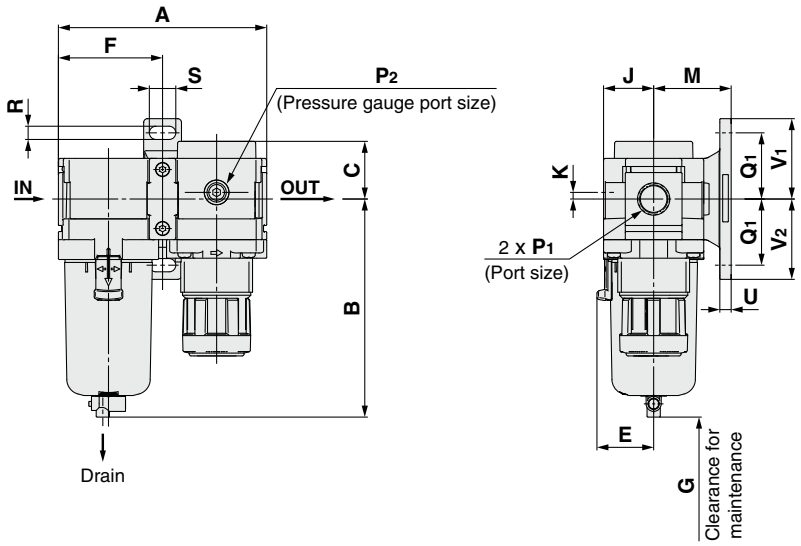
∗1 Pressure gauge connection threads are not available for F.R.L. unit with a square embedded type pressure gauge or with a digital pressure switch.
∗2 –5 to 50°C for the products with the digital pressure switch
∗3 [Compliant to test condition ISO 8573-4:2001 and test method ISO 12500-3:2009]
Conditions: New element. Flow capacity, inlet pressure, and the amount of solid bodies at the filter inlet 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 37.
∗5 The compressed air quality class on the inlet side is [7 : 4 : 4].

Dimensions

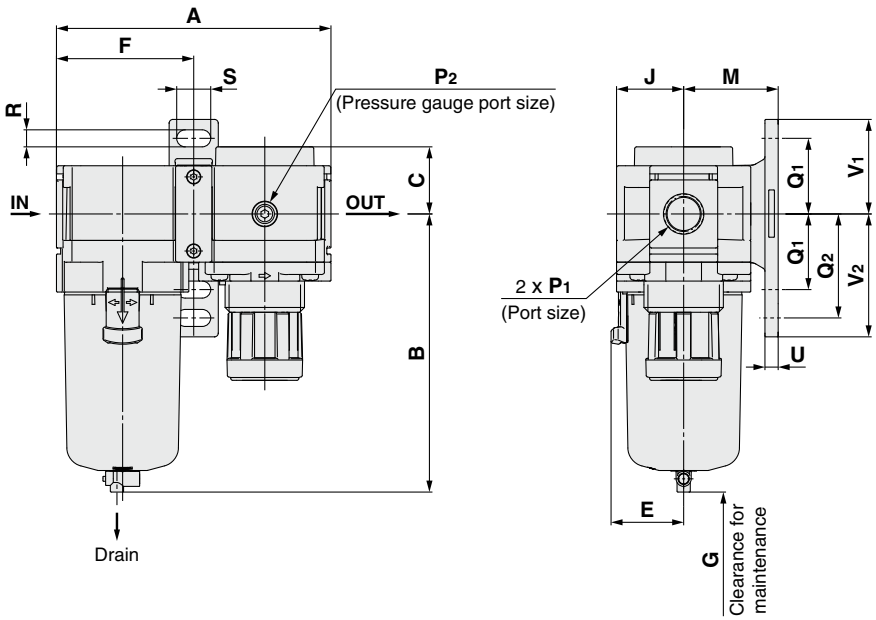
AC20B-D

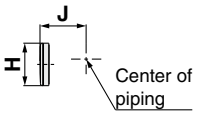
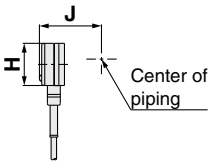
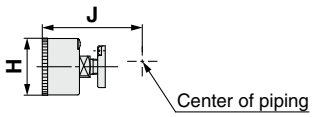


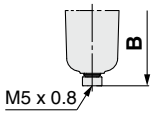
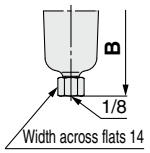
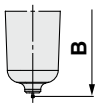
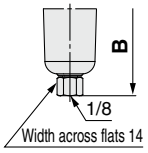
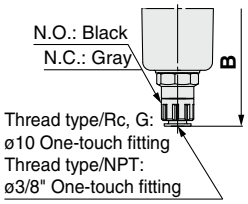
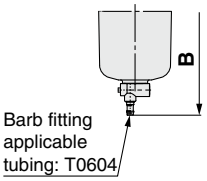
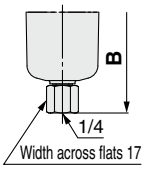
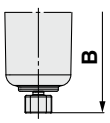
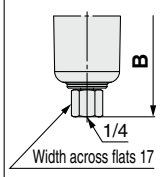
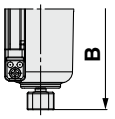
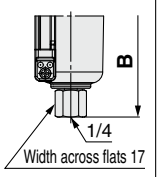
AC30B-D



AC40B-D



Applicable model	Optional specifications			
	Square embedded type pressure gauge	Digital pressure switch	Round type pressure gauge	Round type pressure gauge (with color zone)
AC20B-D to AC40B-D				

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
AC20B-D							
AC30B-D to AC40B-D							

Model	Standard specifications										Bracket mount							
	P_1	P_2	A	B	C	E	F	G	J	K	M	Q_1	Q_2	R	S	U	V_1	V_2
AC20B-D	1/8, 1/4	1/8	83.2	87.6	26.5	—	41.6	25	21	2	30	24	33	5.5	11.5	3.5	29	38
AC30B-D	1/4, 3/8	1/8	110.2	115.4	30.5	30	55.1	35	26.5	3.5	41	35	—	7	14	6	42.5	42.5
AC40B-D	1/4, 3/8, 1/2	1/8	145.2	147.1	35.5	38.4	72.6	40	35.5	0	50	40	55	9	18	7	50	65

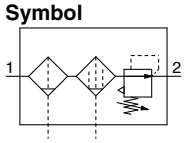
Model	Optional specifications											Semi-standard specifications					
	Square embedded type pressure gauge		Digital pressure switch		Round type pressure gauge		Round type pressure gauge (Semi-standard: Z)		Round type pressure gauge (with color zone)		With auto drain	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
												With barb fitting	With drain guide	With drain cock	With drain guide	With drain cock	With drain guide
	H	J	H	J	H	J	H	J	H	J	B	B	B	B	B	B	B
AC20B-D	□28	27	□27.8	37.5	ø37.5	57.5	ø37.5	58.5	ø37.5	58.5	104.9	—	91.4	87.4	93.9	—	—
AC30B-D	□28	32.5	□27.8	43	ø37.5	63	ø37.5	64	ø37.5	64	157.1	123.9	122.2	117.8	122.3	137.8	142.3
AC40B-D	□28	41.5	□27.8	52	ø42.5	73	ø42.5	73	ø42.5	73	186.9	155.6	153.9	149.5	154	169.5	174

Air Combination

Air Filter + Mist Separator + Regulator

AC20C-D to AC40C-D

Symbol



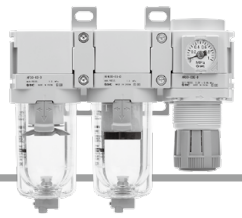
How to Order

AC 30 C– ❷ 03 ❸ DE ❹ – ❺ – D

❶

· Option/Semi-standard: Select one each for **a** to **h**.
· Option/Semi-standard symbol:
When more than one specification is required, indicate in alphanumeric order.
Example) AC30C-F03DE1-16NR-D

			Symbol	Description	❶ Body size 20	30	40
❷	Pipe thread type		**Nil**	Rc	●	●	●
			N*1	NPT	●	●	●
			F*2	G	●	●	●
			+				
❸	Port size		**01**	1/8	●	—	—
			02	1/4	●	●	●
			03	3/8	—	●	●
			04	1/2	—	—	●
			+				
❹	Option*3	**a** Float type auto drain	**Nil**	Without auto drain	●	●	●
			C*4	N.C. (Normally closed) Drain port is closed when pressure is not applied.	●	●	●
			D*5	N.O. (Normally open) Drain port is open when pressure is not applied.	—	●	●
			+				
		b Pressure gauge*6	**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)	●	●	●
		b Digital pressure switch	**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	●	●	●
			+				
❺	Semi-standard	**c** Set pressure*7	**Nil**	0.05 to 0.85 MPa setting	●	●	●
			1	0.02 to 0.2 MPa setting	●	●	●
			+				
		d Bowl*8	**Nil**	Polycarbonate bowl	●	●	●
			2	Metal bowl	●	●	●
			6	Nylon bowl	●	●	●
			8	Metal bowl with level gauge	—	●	●
			C	With bowl guard	●	—*9	—*9
			6C	With bowl guard (Nylon bowl)	●	—*10	—*10
			+				
		e Air filter Mist separator drain port*11	**Nil**	With drain cock	●	●	●
			J*12	Drain guide 1/8	●	—	—
				Drain guide 1/4	—	●	●
			W*13	Drain cock with barb fitting (for ø6 x ø4 nylon tube)	—	●	●
			+				
		f Exhaust mechanism	**Nil**	Relieving type	●	●	●
			N	Non-relieving type	●	●	●



AC30C-D

		Symbol	Description	❶ Body size 20	30	40
❺ Semi-standard	g Flow direction	Nil	Flow direction: Left to right	●	●	●
		R	Flow direction: Right to left	●	●	●
		+				
	h Unit	Nil	Unit on product label: MPa, °C, Pressure gauge in SI units: MPa	●	●	●
		Z∗14	Unit on product label: psi, °F, Pressure gauge: MPa/psi dual scale	○∗16	○∗16	○∗16
		ZA∗15	Digital pressure switch: With unit selection function	△∗17	△∗17	△∗17

∗1 Drain guide is NPT1/8 (applicable to the AC20C-D) and NPT1/4 (applicable to the AC30C-D to AC40C-D). The auto drain port comes with a ø3/8" One-touch fitting (applicable to the AC30C-D to AC40C-D).
∗2 Drain guide is G1/8 (applicable to the AC20C-D) and G1/4 (applicable to the AC30C-D to AC40C-D).
∗3 Options G and M are not assembled and supplied loose at the time of shipment.
∗4 When pressure is not applied, condensate which does not start the auto drain mechanism will be left in the bowl. Releasing the residual condensate before ending operations for the day is recommended.
∗5 If the compressor is small (0.75 kW, discharge flow is less than 100 L/min (ANR)), air leakage from the drain cock may occur during the start of operations. N.C. type is recommended.
∗6 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.
∗7 Pressure can be set higher than the specification pressure in some cases, but use pressure within the specification range.
∗8 Refer to chemical data on pages 38 and 43 for chemical resistance of the bowl.
∗9 A bowl guard is provided as standard equipment (polycarbonate).
∗10 A bowl guard is provided as standard equipment (nylon).
∗11 The combination of float type auto drain C and D is not available.
∗12 Without a valve function
∗13 The combination of metal bowl 2 and 8 is not available.
∗14 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.)
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.
∗15 For options: E1, E2, E3, E4
This product is for overseas use only according to the new Measurement Act. (The SI unit is provided for use in Japan.)
∗16 ○: For pipe thread type: NPT only
∗17 △: Select with options: E1, E2, E3, E4.

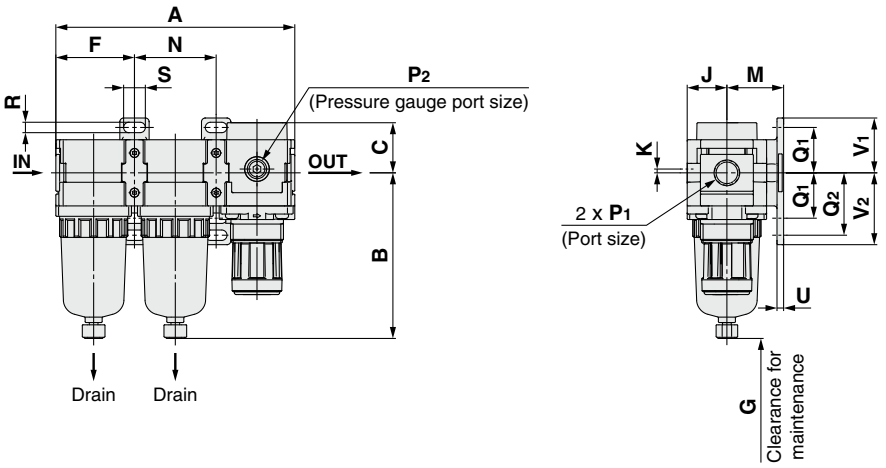
Standard Specifications

Model			AC20C-D	AC30C-D	AC40C-D
Component	Air Filter	[AF]	AF20-D	AF30-D	AF40-D
	Mist Separator	[AFM]	AFM20-D	AFM30-D	AFM40-D
	Regulator	[AR]	AR20-D	AR30-D	AR40-D
Port size			1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Pressure gauge port size∗1		[AR]	1/8		
Fluid			Air		
Ambient and fluid temperatures∗2			–5 to 60°C (with no freezing)		
Proof pressure			1.5 MPa		
Max. operating pressure			1.0 MPa		
Auto drain minimum operating pressure	N.C.	[AF/AFM]	0.1 MPa	0.15 MPa	
	N.O.	[AF/AFM]	—	0.1 MPa	
Set pressure range		[AR]	0.05 to 0.85 MPa		
Max. flow capacity∗3		[AFM]	200 L/min (ANR)	450 L/min (ANR)	1100 L/min (ANR)
Nominal filtration rating∗4		[AF]	5 μm		
		[AFM]	0.3 μm (99.9% filtered particle size)		
Outlet side oil mist concentration∗5, ∗6		[AFM]	Max. 1.0 mg/m^3 (≈ 0.8 ppm)		
Compressed air purity class∗7			ISO 8573-1:2010 [3 : 4 : 3]∗8		
Drain capacity		[AF/AFM]	8 cm^3	25 cm^3	45 cm^3
Bowl material		[AF/AFM]	Polycarbonate		
Bowl guard		[AF/AFM]	Semi-standard (Steel)	Standard (Polycarbonate)	
Construction		[AR]	Relieving type		
Weight			0.38 kg	0.75 kg	1.42 kg

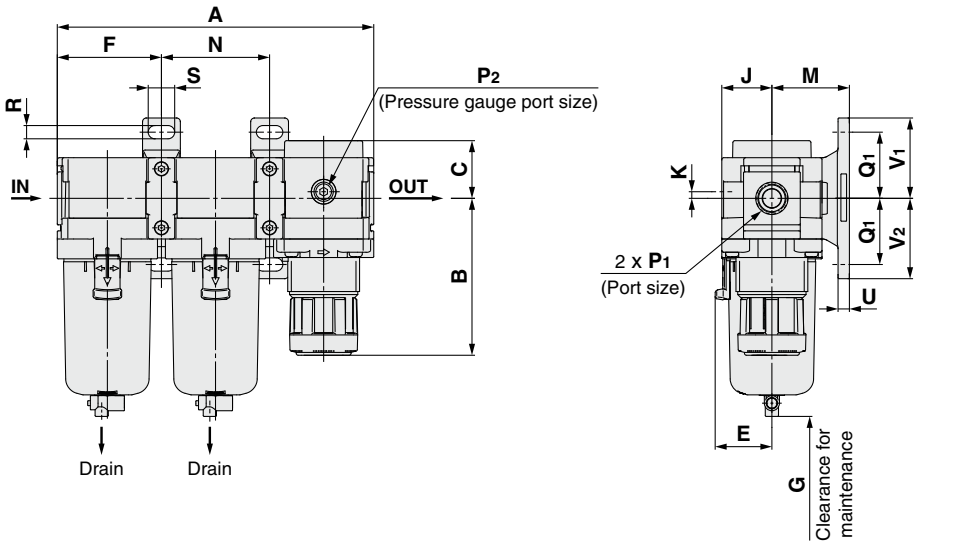
∗1 Pressure gauge connection threads are not available for F.R.L. unit with a square embedded type pressure gauge or with a digital pressure switch.
∗2 –5 to 50°C for the products with the digital pressure switch
∗3 Mist separator inlet pressure: 0.7 MPa. Flow at 20°C, atmospheric pressure, and 65% of relative humidity
The maximum flow capacity varies depending on the inlet pressure.
Keep the air flow within the maximum flow capacity to prevent an outflow of lubricant to the outlet side.
∗4 Conditions in accordance with [Test condition: ISO 8573-4:2001, Test method ISO 12500-3:2009 compliant] in addition to the conditions above.
Conditions: New element. Flow capacity, inlet pressure, and the amount of solid bodies at the filter inlet are stable.
∗5 The outlet oil mist condensation in accordance with the condition [Test condition: ISO 8573-2:2007, Test method ISO 12500-1:2007 compliant] in addition to the conditions above.
Conditions: New element. Filter inlet oil mist condensation is 10 mg/m^3. Flow capacity, inlet pressure, and the amount of filter inlet oil mist condensation are stable.
∗6 Bowl seal and other O-rings are slightly lubricated.
∗7 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 37.
∗8 The compressed air quality class on the inlet side is [7 : 4 : 4].

Dimensions

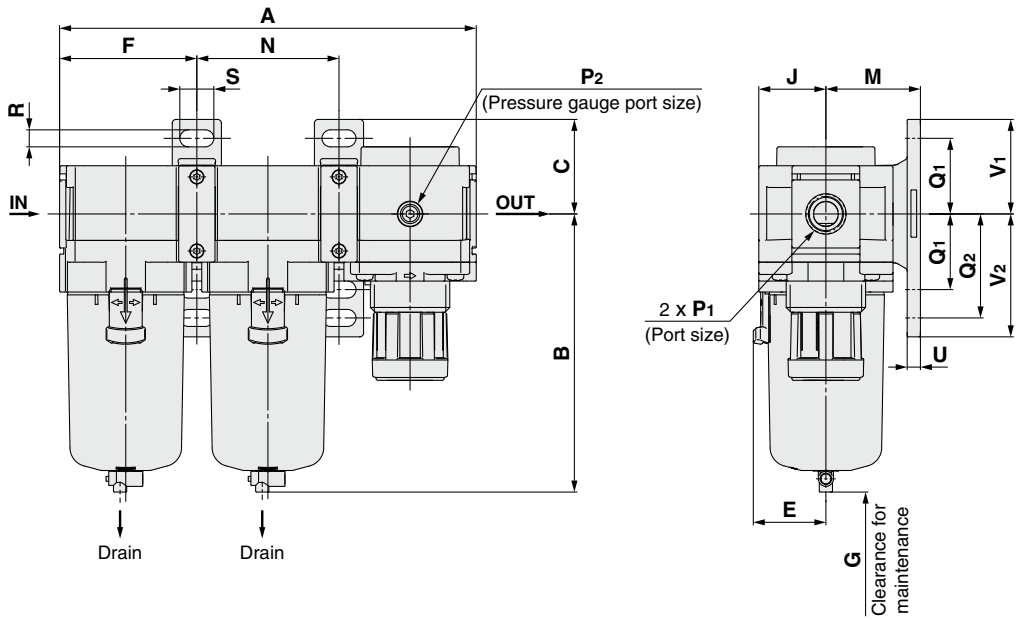
AC20C-D

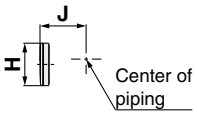
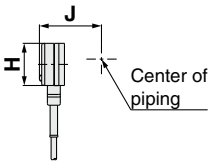
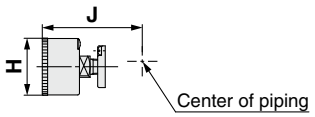


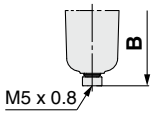
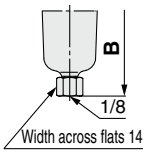
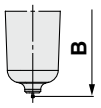
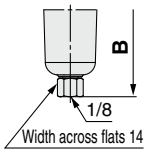
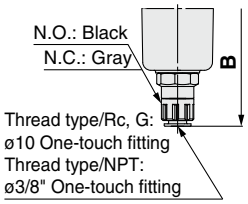
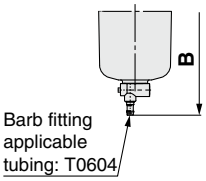
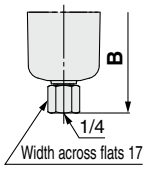
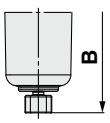
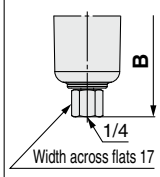
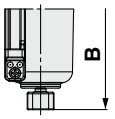
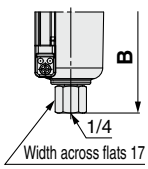
AC30C-D



AC40C-D



Applicable model	Optional specifications			
	Square embedded type pressure gauge	Digital pressure switch	Round type pressure gauge	Round type pressure gauge (with color zone)
AC20C-D to AC40C-D				

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
AC20C-D							
AC30C-D to AC40C-D							

Model	Standard specifications																		
											Bracket mount								
	P_1	P_2	A	B	C	E	F	G	J	K	M	N	Q_1	Q_2	R	S	U	V_1	V_2
AC20C-D	1/8, 1/4	1/8	126.4	87.6	26.5	—	41.6	40	21	2	30	43.2	24	33	5.5	11.5	3.5	29	38
AC30C-D	1/4, 3/8	1/8	167.4	115.4	30.5	30	55.1	50	26.5	3.5	41	57.2	35	—	7	14	6	42.5	42.5
AC40C-D	1/4, 3/8, 1/2	1/8	220.4	147.1	35.5	38.4	72.6	75	35.5	0	50	75.2	40	55	9	18	7	50	65

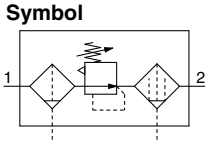
Model	Optional specifications											Semi-standard specifications					
	Square embedded type pressure gauge		Digital pressure switch		Round type pressure gauge		Round type pressure gauge (Semi-standard: Z)		Round type pressure gauge (with color zone)		With auto drain	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
												With barb fitting	With drain guide	With drain cock	With drain guide	With drain cock	With drain guide
	H	J	H	J	H	J	H	J	H	J	B	B	B	B	B	B	B
AC20C-D	□28	27	□27.8	37.5	ø37.5	57.5	ø37.5	58.5	ø37.5	58.5	104.9	—	91.4	87.4	93.9	—	—
AC30C-D	□28	32.5	□27.8	43	ø37.5	63	ø37.5	64	ø37.5	64	157.1	123.9	122.2	117.8	122.3	137.8	142.3
AC40C-D	□28	41.5	□27.8	52	ø42.5	73	ø42.5	73	ø42.5	73	186.9	155.6	153.9	149.5	154	169.5	174

Air Combination

Filter Regulator + Mist Separator

AC20D-D to AC40D-D

Symbol

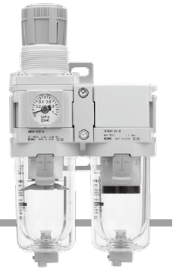


How to Order

AC ❶30 D− ❷ ❸03 ❹DE − ❺ −D

· Option/Semi-standard: Select one each for **a** to **h**.
· Option/Semi-standard symbol:
When more than one specification is required, indicate in alphanumeric order.
Example) AC30D-F03DE1-16NR-D

			Symbol	Description	❶ Body size 20	30	40
❷	Pipe thread type		**Nil**	Rc	●	●	●
			N*1	NPT	●	●	●
			F*2	G	●	●	●
			+				
❸	Port size		**01**	1/8	●	—	—
			02	1/4	●	●	●
			03	3/8	—	●	●
			04	1/2	—	—	●
			+				
❹	Option*3	**a** Float type auto drain	**Nil**	Without auto drain	●	●	●
			C*4	N.C. (Normally closed) Drain port is closed when pressure is not applied.	●	●	●
			D*5	N.O. (Normally open) Drain port is open when pressure is not applied.	—	●	●
			+				
		b Pressure gauge*6	**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)	●	●	●
		b Digital pressure switch	**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	●	●	●
			+				
❺	Semi-standard	**c** Set pressure*7	**Nil**	0.05 to 0.85 MPa setting	●	●	●
			1	0.02 to 0.2 MPa setting	●	●	●
			+				
		d Bowl*8	**Nil**	Polycarbonate bowl	●	●	●
			2	Metal bowl	●	●	●
			6	Nylon bowl	●	●	●
			8	Metal bowl with level gauge	—	●	●
			C	With bowl guard	●	—*9	—*9
			6C	With bowl guard (Nylon bowl)	●	—*10	—*10
			+				
		e Filter regulator Mist separator drain port*11	**Nil**	With drain cock	●	●	●
			J*12	Drain guide 1/8	●	—	—
				Drain guide 1/4	—	●	●
			W*13	Drain cock with barb fitting (for ø6 x ø4 nylon tube)	—	●	●
			+				
		f Exhaust mechanism	**Nil**	Relieving type	●	●	●
			N	Non-relieving type	●	●	●
			+				
		g Flow direction	**Nil**	Flow direction: Left to right	●	●	●
			R	Flow direction: Right to left	●	●	●



AC30D-D

	Symbol	Description	❶ Body size 20	30	40
❺ Semi-standard h Unit	**Nil**	Unit on product label: MPa, °C, Pressure gauge in SI units: MPa	●	●	●
	Z∗14	Unit on product label: psi, °F, Pressure gauge: MPa/psi dual scale	○∗16	○∗16	○∗16
	ZA∗15	Digital pressure switch: With unit selection function	△∗17	△∗17	△∗17

∗1 Drain guide is NPT1/8 (applicable to the AC20D-D) and NPT1/4 (applicable to the AC30D-D to AC40D-D). The auto drain port comes with a ø3/8" One-touch fitting (applicable to the AC30D-D to AC40D-D).
∗2 Drain guide is G1/8 (applicable to the AC20D-D) and G1/4 (applicable to the AC30D-D to AC40D-D).
∗3 Options G and M are not assembled and supplied loose at the time of shipment.
∗4 When pressure is not applied, condensate which does not start the auto drain mechanism will be left in the bowl. Releasing the residual condensate before ending operations for the day is recommended.
∗5 If the compressor is small (0.75 kW, discharge flow is less than 100 L/min (ANR)), air leakage from the drain cock may occur during the start of operations. N.C. type is recommended.
∗6 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.
∗7 Pressure can be set higher than the specification pressure in some cases, but use pressure within the specification range.
∗8 Refer to chemical data on pages 43 and 68 for chemical resistance of the bowl.
∗9 A bowl guard is provided as standard equipment (polycarbonate).
∗10 A bowl guard is provided as standard equipment (nylon).
∗11 The combination of float type auto drain C and D is not available.
∗12 Without a valve function
∗13 The combination of metal bowl 2 and 8 is not available.
∗14 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.)
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.
∗15 For options: E1, E2, E3, E4
This product is for overseas use only according to the new Measurement Act. (The SI unit is provided for use in Japan.)
∗16 ○: For pipe thread type: NPT only
∗17 △: Select with options: E1, E2, E3, E4.

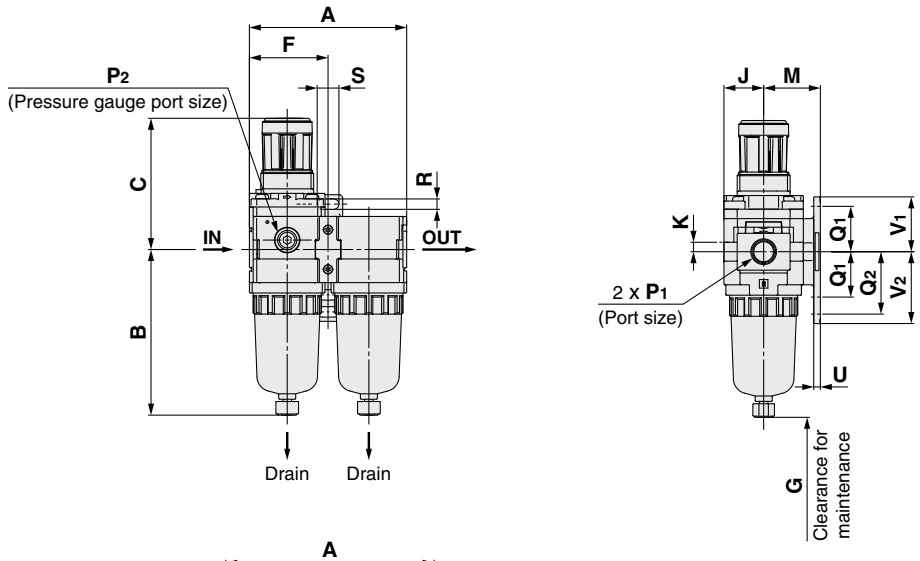
Standard Specifications

Model			AC20D-D	AC30D-D	AC40D-D
Component	Filter Regulator	[AW]	AW20-D	AW30-D	AW40-D
	Mist Separator	[AFM]	AFM20-D	AFM30-D	AFM40-D
Port size			1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Pressure gauge port size∗1		[AW]	1/8		
Fluid			Air		
Ambient and fluid temperatures∗2			–5 to 60°C (with no freezing)		
Proof pressure			1.5 MPa		
Max. operating pressure			1.0 MPa		
Auto drain minimum operating pressure	N.C.	[AW/AFM]	0.1 MPa	0.15 MPa	
	N.O.	[AW/AFM]	—	0.1 MPa	
Set pressure range		[AW]	0.05 to 0.85 MPa		
Max. flow capacity∗3		[AFM]	200 L/min (ANR)	450 L/min (ANR)	1100 L/min (ANR)
Nominal filtration rating∗4		[AW]	5 μm		
		[AFM]	0.3 μm (99.9% filtered particle size)		
Outlet side oil mist concentration∗5, ∗6		[AFM]	Max. 1.0 mg/m^3 (≈ 0.8 ppm)		
Compressed air purity class∗7			ISO 8573-1:2010 [3 : 4 : 3]∗8		
Drain capacity		[AW/AFM]	8 cm^3	25 cm^3	45 cm^3
Bowl material		[AW/AFM]	Polycarbonate		
Bowl guard		[AW/AFM]	Semi-standard (Steel)	Standard (Polycarbonate)	
Construction		[AW]	Relieving type		
Weight			0.30 kg	0.58 kg	1.12 kg

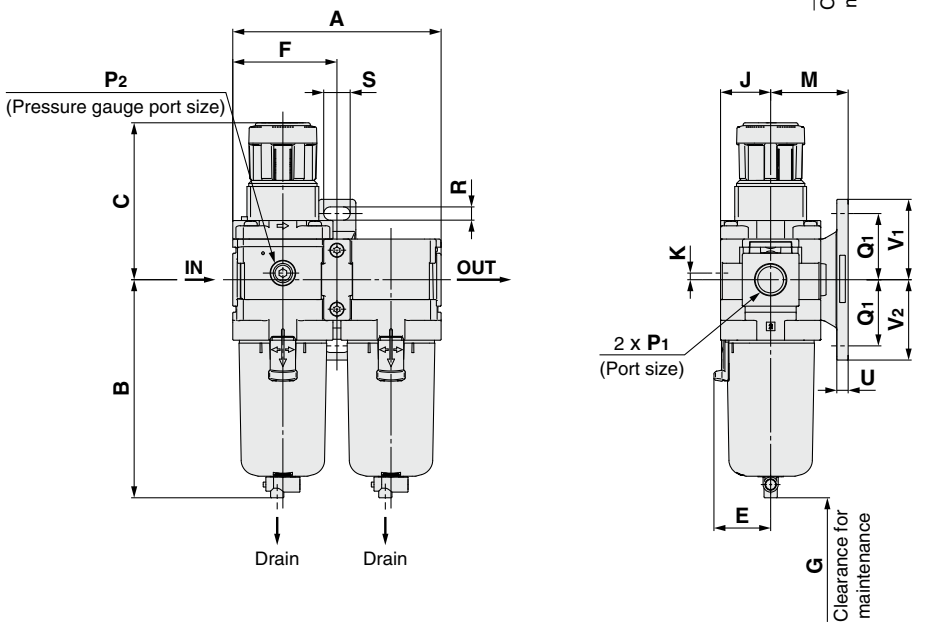
∗1 Pressure gauge connection threads are not available for F.R.L. unit with a square embedded type pressure gauge or with a digital pressure switch.
∗2 –5 to 50°C for the products with the digital pressure switch
∗3 Mist separator inlet pressure: 0.7 MPa. Flow at 20°C, atmospheric pressure, and 65% of relative humidity
The maximum flow capacity varies depending on the inlet pressure.
Keep the air flow within the maximum flow capacity to prevent an outflow of lubricant to the outlet side.
∗4 Conditions in accordance with [Test condition: ISO 8573-4:2001, Test method ISO 12500-3:2009 compliant] in addition to the conditions above.
Conditions: New element. Flow capacity, inlet pressure, and the amount of solid bodies at the filter inlet are stable.
∗5 The outlet oil mist condensation in accordance with the condition [Test condition: ISO 8573-2:2007, Test method ISO 12500-1:2007 compliant] in addition to the conditions above.
Conditions: New element. Filter inlet oil mist condensation is 10 mg/m^3. Flow capacity, inlet pressure, and the amount of filter inlet oil mist condensation are stable.
∗6 Bowl seal and other O-rings are slightly lubricated.
∗7 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 37.
∗8 The compressed air quality class on the inlet side is [7 : 4 : 4].

Dimensions

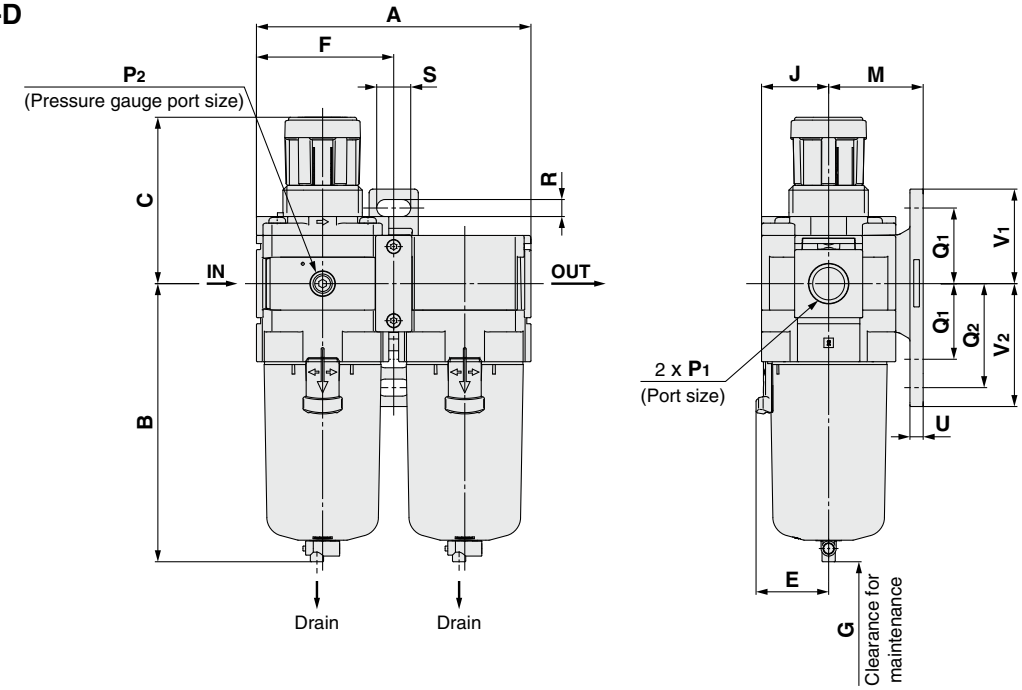
AC20D-D

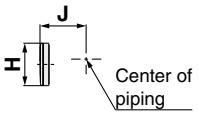
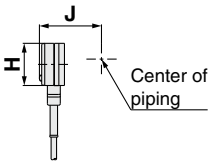
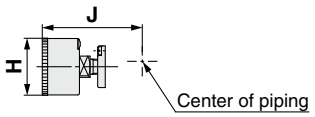


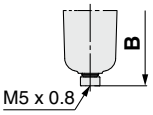
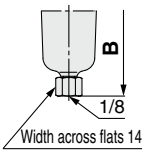
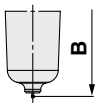
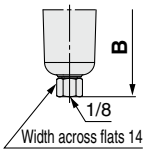
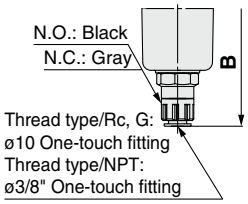
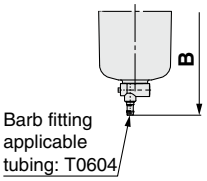
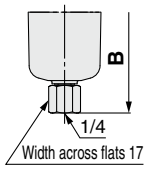
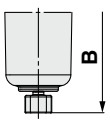
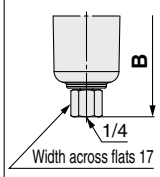
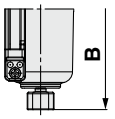
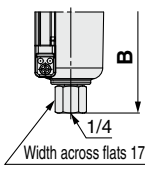
AC30D-D



AC40D-D



Applicable model	Optional specifications			
	Square embedded type pressure gauge	Digital pressure switch	Round type pressure gauge	Round type pressure gauge (with color zone)
AC20D-D to AC40D-D				

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
AC20D-D							
AC30D-D to AC40D-D							

Model	Standard specifications																	
											Bracket mount							
	P_1	P_2	A	B	C	E	F	G	J	K	M	Q_1	Q_2	R	S	U	V_1	V_2
AC20D-D	1/8, 1/4	1/8	83.2	87.6	71.8	—	41.6	40	21	5	30	24	33	5.5	11.5	3.5	29	38
AC30D-D	1/4, 3/8	1/8	110.2	115.3	86.5	30	55.1	55	26.5	3.5	41	35	—	7	14	6	42.5	42.5
AC40D-D	1/4, 3/8, 1/2	1/8	145.2	147.1	91.5	38.4	72.6	80	35.5	0	50	40	55	9	18	7	50	65

Model	Optional specifications											Semi-standard specifications					
	Square embedded type pressure gauge		Digital pressure switch		Round type pressure gauge		Round type pressure gauge (Semi-standard: Z)		Round type pressure gauge (with color zone)		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
	H	J	H	J	H	J	H	J	H	J	B	B	B	B	B	B	B
AC20D-D	□28	27	□27.8	37.5	ø37.5	57.5	ø37.5	58.5	ø37.5	58.5	104.9	—	91.4	87.4	93.9	—	—
AC30D-D	□28	32.5	□27.8	43	ø37.5	63	ø37.5	64	ø37.5	64	157.1	123.9	122.2	117.8	122.3	137.8	142.3
AC40D-D	□28	41.5	□27.8	52	ø42.5	73	ø42.5	73	ø42.5	73	186.9	155.6	153.9	149.5	154	169.5	174

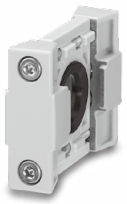
AC-D Series
Options/Accessories

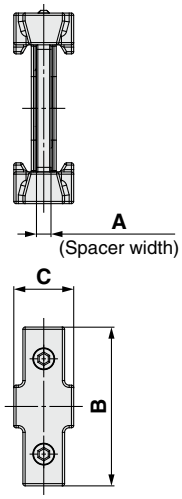
Section	Description / Model			Part no.		
				For AC20-D	**For AC30-D**	**For AC40-D**
				For AC20A-D	**For AC30A-D**	**For AC40A-D**
				For AC20B-D	**For AC30B-D**	**For AC40B-D**
				For AC20C-D	**For AC30C-D**	**For AC40C-D**
				For AC20D-D	**For AC30D-D**	**For AC40D-D**
Option	∗1 **Pressure gauge**	**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∗2	**Standard**	GC3-10AS-D [136150A (Pressure gauge cover only)]		
			0.02 to 0.2 MPa setting	GC3-4AS-D [136150A (Pressure gauge cover only)]		
	Digital pressure switch		**NPN output, Wiring bottom entry**	ISE35-N-25-MLA-X523 [ISE35-N-25-M (Switch body only)]∗3		
			NPN output, Wiring top entry	ISE35-R-25-MLA-X523 [ISE35-R-25-M (Switch body only)]∗3		
			PNP output, Wiring bottom entry	ISE35-N-65-MLA-X523 [ISE35-N-65-M (Switch body only)]∗3		
			PNP output, Wiring top entry	ISE35-R-65-MLA-X523 [ISE35-R-65-M (Switch body only)]∗3		
	Float type auto drain∗4		**N.C.**	AD27-D	AD37-D	AD47-D
			N.O.	—	AD38-D	AD48-D
Accessory	**Spacer**			Y200-D	Y300-D	Y400-D
	Spacer with bracket			Y200T-D	Y300T-D	Y400T-D

∗1 □ 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 connection thread NPT and pressure gauge supply for psi unit specifications.
∗2 Including one O-ring and 2 mounting screws
∗3 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 the **Web Catalog**.
∗4 Minimum operating pressure: N.O. type–0.1 MPa; N.C. type–0.1 MPa (AD27-D) and 0.15 MPa (AD37-D/AD47-D). Please consult with SMC separately for psi and °F unit display specifications.

Accessories (Spacers/Spacer with Bracket)

Spacer





Standard Specifications

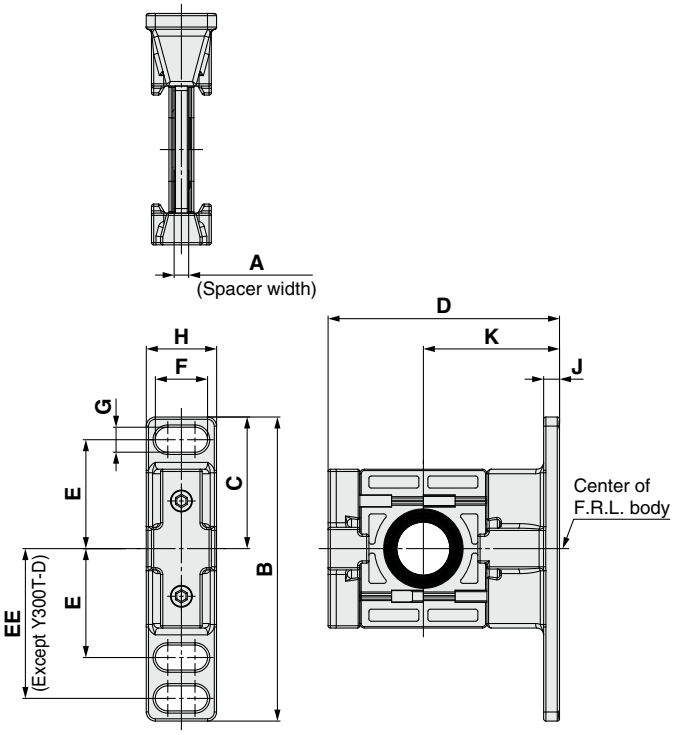
Fluid	Air
Ambient and fluid temperatures	–5 to 60°C (with no freezing)
Proof pressure	1.5 MPa
Max. operating pressure	1.0 MPa

Replacement Parts

Description	Material	Part no.		
		Y200-D	**Y300-D**	**Y400-D**
Seal	HNBR	Y220P-050S	Y320P-050S	Y420P-050S

Model	A	B	C	D	E	Applicable model
Y200-D	3.2	35	13.2	42	0.6	**AC20-D**
Y300-D	4.2	43	16.2	53	—	**AC30-D**
Y400-D	5.2	51	19.2	71	—	**AC40-D**

Spacer with Bracket



Standard Specifications

Fluid	Air
Ambient and fluid temperatures	–5 to 60°C (with no freezing)
Proof pressure	1.5 MPa
Max. operating pressure	1.0 MPa

Replacement Parts

Description	Material	Part no.		
		Y200T-D	**Y300T-D**	**Y400T-D**
Seal	HNBR	Y220P-050S	Y320P-050S	Y420P-050S

Model	A	B	C	D	E	EE	F	G	H	J	K	Applicable model
Y200T-D	3.2	67	29	51	24	33	11.5	5.5	15.5	3.5	30	**AC20-D**
Y300T-D	4.2	85	42.5	67.5	35	—	14	7	20	6	41	**AC30-D**
Y400T-D	5.2	115	50	85.5	40	55	18	9	26	7	50	**AC40-D**

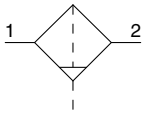
Modular Type
Air Filters
AF/AFM/AFD Series

	Model	Port size	Filtration µm	Options
Air Filter AF Series  **p. 31 to 38**	**AF20-D**	1/8, 1/4	5	Bracket Float type auto drain
	AF30-D	1/4, 3/8		
	AF40-D	1/4, 3/8, 1/2		
Mist Separator AFM Series  **p. 39 to 43**	**AFM20-D**	1/8, 1/4	0.3	Bracket Float type auto drain
	AFM30-D	1/4, 3/8		
	AFM40-D	1/4, 3/8, 1/2		
Micro Mist Separator AFD Series  **p. 39 to 43**	**AFD20-D**	1/8, 1/4	0.01	Bracket Float type auto drain
	AFD30-D	1/4, 3/8		
	AFD40-D	1/4, 3/8, 1/2		

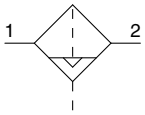
Air Filter
AF20-D to AF40-D

Symbol

Air Filter



Air Filter with Auto Drain



AF30-D

How to Order

AF **30** – ❷ **03** **BD** – ❺ **–D**

❶ ❷ ❸ ❹ ❺

· Option/Semi-standard: Select one each for **a** to **f**.
· Option/Semi-standard symbol:
When more than one specification is required, indicate in alphanumeric order.
Example) AF30-03BD-R-D

				Symbol	Description	❶ Body size 20	30	40
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	—	—	●
				+				
❹	Option	**a**	Mounting	**Nil**	Without mounting option	●	●	●
				B∗1	With bracket	●	●	●
				+				
		b	Float type auto drain∗2	**Nil**	Without auto drain	●	●	●
				C∗3	N.C. (Normally closed) Drain port is closed when pressure is not applied.	●	●	●
				D∗4	N.O. (Normally open) Drain port is open when pressure is not applied.	—	●	●
				+				
❺	Semi-standard	**c**	Bowl∗5	**Nil**	Polycarbonate bowl	●	●	●
				2	Metal bowl	●	●	●
				6	Nylon bowl	●	●	●
				8	Metal bowl with level gauge	—	●	●
				C	With bowl guard	●	—∗6	—∗6
				6C	With bowl guard (Nylon bowl)	●	—∗7	—∗7
				+				
		d	Drain port∗8	**Nil**	With drain cock	●	●	●
				J∗9	Drain guide 1/8	●	—	—
					Drain guide 1/4	—	●	●
				W∗10	Drain cock with barb fitting	—	●	●
				+				
		e	Flow direction	**Nil**	Flow direction: Left to right	●	●	●
				R	Flow direction: Right to left	●	●	●
				+				
		f	Unit	**Nil**	Unit on product label: MPa, °C	●	●	●
				Z∗11	Unit on product label: psi, °F	○∗12	○∗12	○∗12

∗1 Option B is included in the package with the product but does not come assembled. Assembly of 2 types of the bracket and mounting screws (2 pcs.)
∗2 The auto drain port is ø10 One-touch fitting (❷ Pipe thread type: Rc, G) or ø3/8" One-touch fitting (❷ Pipe thread type: NPT)
∗3 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.
∗4 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.
∗5 Refer to chemical data on page 38 for chemical resistance of the bowl.
∗6 A bowl guard is provided as standard equipment (polycarbonate).
∗7 A bowl guard is provided as standard equipment (nylon).
∗8 The combination of float type auto drain C and D is not available.
∗9 Without a valve function. The mounting screws are the same as the thread of ❷.
∗10 The combination of metal bowl 2 and 8 is not available.
∗11 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.)
∗12 ○: For pipe thread type: NPT only

Standard Specifications

Model		AF20-D	AF30-D	AF40-D
Port size		1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Fluid		Air		
Ambient and fluid temperatures		–5 to 60°C (with 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	
Nominal filtration rating∗1		5 μm		
Compressed air purity class∗2		ISO 8573-1:2010 [6 : 8 : 4]∗3		
Drain capacity		8 cm^3	25 cm^3	45 cm^3
Bowl material		Polycarbonate		
Bowl guard		Semi-standard (Steel)	Standard (Polycarbonate)	
Weight		0.09 kg	0.17 kg	0.35 kg

∗1 [Compliant to test condition ISO 8573-4:2001 and test method ISO 12500-3:2009]
Conditions: New element. Flow capacity, inlet pressure, and the amount of solid bodies at the filter inlet are stable.
∗2 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 37.
∗3 The compressed air quality class on the inlet side is [7 : 9 : 4].

Bowl Assembly/Part No.

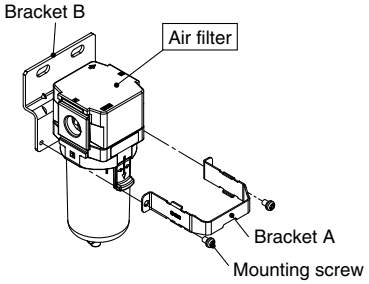
Bowl material	Drain discharge mechanism	Drain port	Other	Model		
				AF20-D	**AF30-D**	**AF40-D**
Polycarbonate	Manual	With drain cock	—	C2SF-D	—	—
			With bowl guard	C2SF-C-D	C3SF-D	C4SF-D
		Drain cock with barb fitting	With bowl guard	—	C3SF-W-D	C4SF-W-D
		With drain guide (without valve function)	—	C2SF□-J-D	—	—
			With bowl guard	C2SF□-CJ-D	C3SF□-J-D	C4SF□-J-D
	Automatic∗1 (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-A	C4SF-6-A
		Drain cock with barb fitting	With bowl guard	—	C3SF-6W-A	C4SF-6W-A
		With drain guide (without valve function)	—	C2SF□-6J-A	—	—
			With bowl guard	C2SF□-6CJ-A	C3SF□-6J-A	C4SF□-6J-A
	Automatic∗1 (Auto drain)	Normally closed (N.C.)	—	AD27-6-A	—	—
			With bowl guard	AD27-6C-A	AD37□-6-A	AD47□-6-A
		Normally open (N.O.)	With bowl guard	—	AD38□-6-A	AD48□-6-A
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∗1 (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

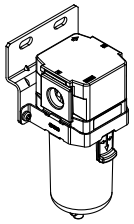
∗1 Bowl assembly comes with a bowl seal.
□ in bowl assembly part numbers indicates a pipe thread type (applicable tubing for auto drain).
No indication is necessary for Rc thread; however, indicate N for NPT thread, and F for G thread. (For auto drain, Nil: ø10, N: ø3/8")
Please consult with SMC separately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

Option/Part No.

Optional specifications	Model		
	AF20-D	**AF30-D**	**AF40-D**
Bracket assembly∗1	AF24P-070AS	AF34P-070AS	AF44P-070AS
Auto drain	Refer to "Bowl Assembly/Part No."		

∗1 Assembly of a bracket A/B and 2 mounting screws





Bracket assembly

Replacement Parts

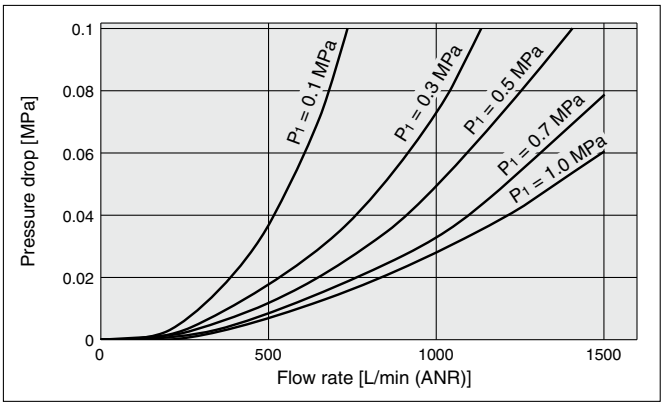
Description	Part no.		
	AF20-D	**AF30-D**	**AF40-D**
Filter element	AF20P-060S	AF30P-060S	AF40P-060S
Baffle	AF24P-040S	AF34P-040S	AF44P-040S
Bowl seal	C2SFP-260S	C32FP-260S	C42FP-260S
Bowl assembly∗1, ∗2	Refer to "Bowl Assembly/Part No."		

∗1 Bowl assembly comes with a bowl seal.
∗2 Please consult with SMC separately for psi and °F unit display specifications.

Flow Rate Characteristics (Representative values)

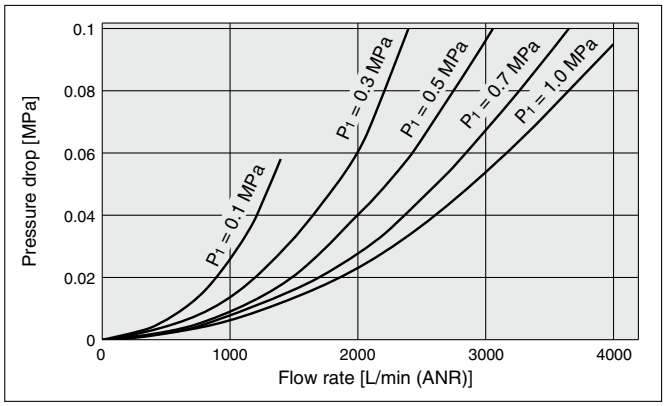
AF20-D

Rc1/4



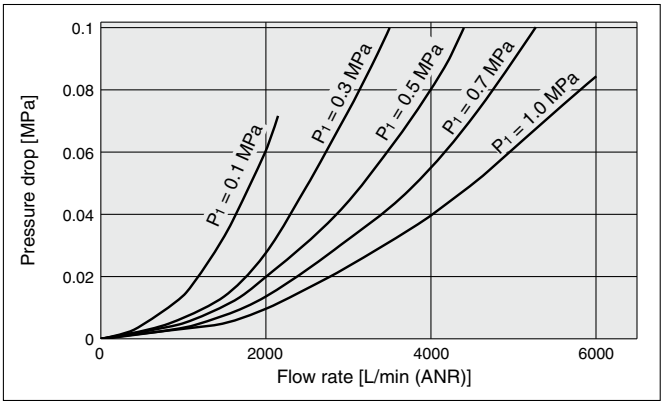
AF30-D

Rc3/8



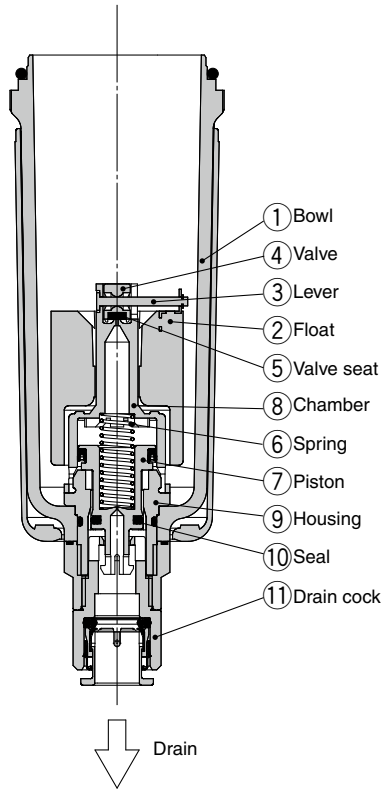
AF40-D

Rc1/2



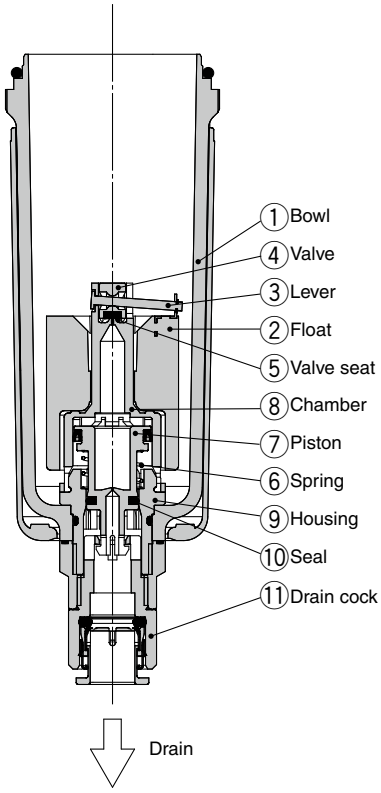
Working Principle: Float Type Auto Drain

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



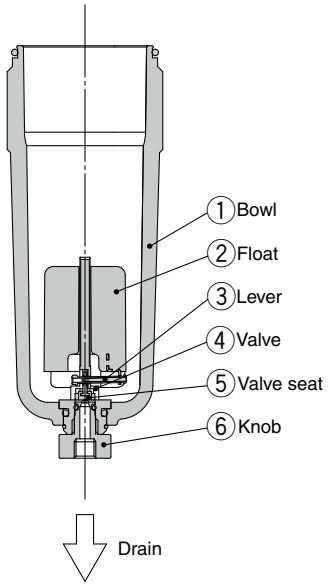
- **When pressure inside the bowl is released:**
  When pressure is released from the bowl ①, the piston ⑦ is lowered by the spring ⑥.
  The sealing action of the seal ⑩ is interrupted, and the outside air flows inside the bowl ① through the housing hole ⑨ and the drain cock ⑪.
  Therefore, if there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

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



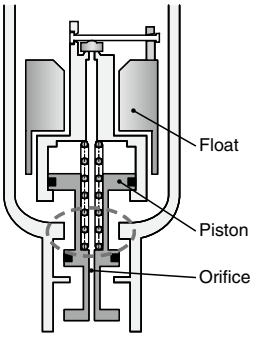
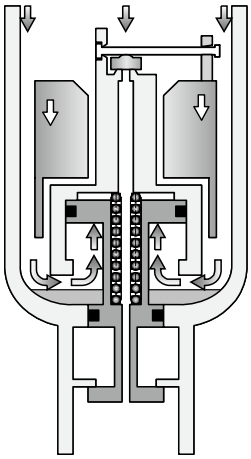
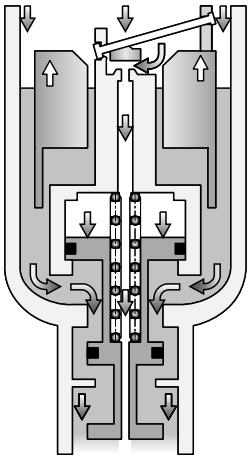
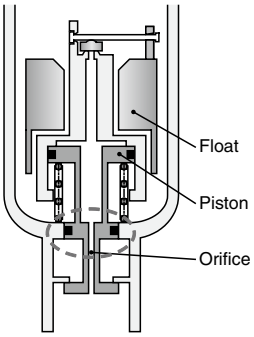
- **When pressure inside the bowl is released:**
  Even when pressure inside the bowl ① is released, spring ⑥ keeps the piston ⑦ in its upward position.
  This keeps the seal created by the seal ⑩ in place; thus, the inside of the bowl ① is shut off from the outside air.
  Therefore, even if there is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

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

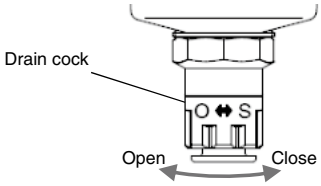


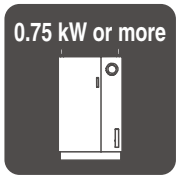
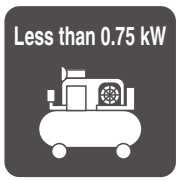
- **When pressure inside the bowl is released:**
  Even when pressure inside the bowl ① is released, the weight of the float ② causes the valve ④, which is connected to the lever ③, to seal the valve seat ⑤. As a result, the inside of the bowl ① is shut off from the outside air.
  Therefore, even if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

Operating State and Proper Use of Float Type Auto Drain

Auto drain	When pressure is not applied (After exhausting residual pressure)	When pressure is applied		Minimum operating pressure (Outlet pressure)
		Before condensate accumulates	When condensate accumulates	
N.O. Normally open	Condensate discharged (Open) 	Condensate not discharged (Close) 	Condensate discharged (Open) 	**0.1 MPa or more** AF30-D to AF40-D
N.C. Normally closed	Condensate not discharged (Close) 			**0.1 MPa or more** AF20-D **0.15 MPa or more** AF30-D to AF40-D

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

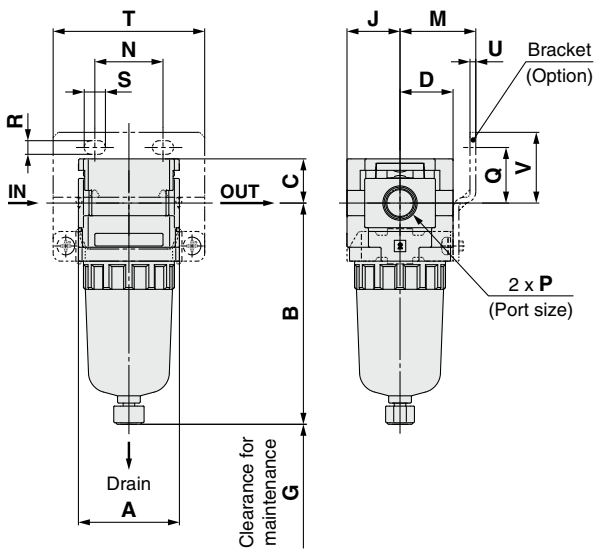


Proper Use			Recommended auto drain
Compressor	When pressure is not applied (After exhausting residual pressure)	Cold climates	
	**Condensate not accumulated** Do not want to accumulate condensate generated at the inlet side when pressure is not applied.	**Want to prevent troubles caused by freezing.**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

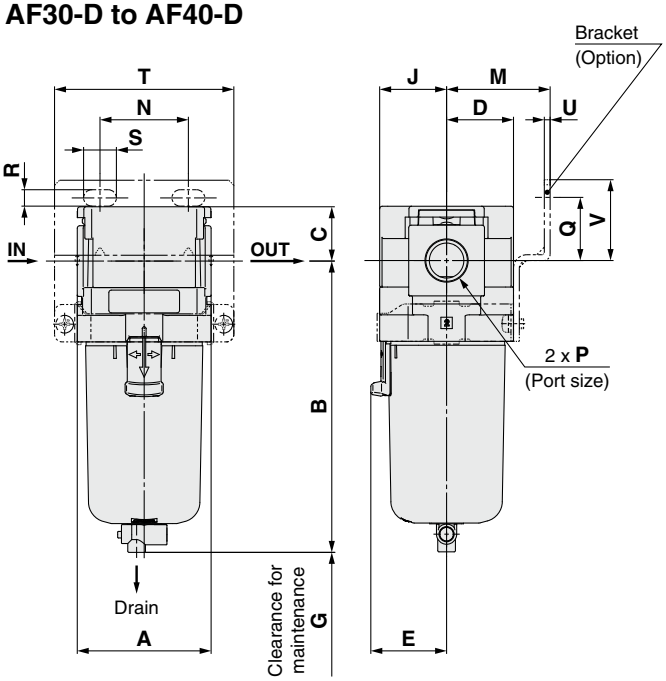
*1 For N.O. (Normally open) type, the condensate discharge passage is open when pressure is not applied. For this reason, the drain port is not closed completely in a compressor with a small supply amount (less than 0.75 kW) and the air will ceaselessly blow out.

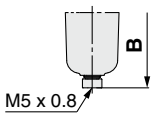
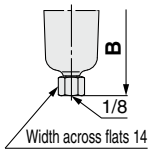
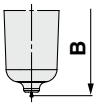
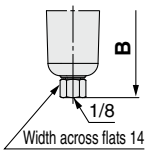
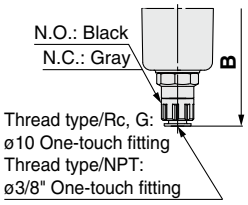
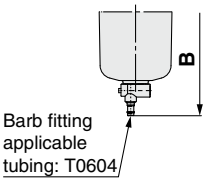
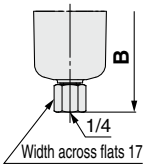
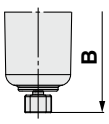
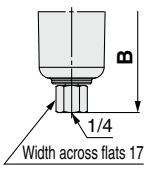
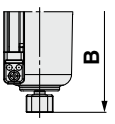
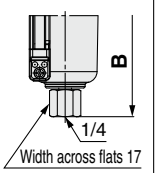
Dimensions

AF20-D



AF30-D to AF40-D



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
AF20-D							
AF30-D to AF40-D							

Model	Standard specifications								Optional specifications								
									Bracket mount								With auto drain
	P	A	B	C	D	E	G	J	M	N	Q	R	S	T	U	V	B
AF20-D	1/8, 1/4	40	87.6	17.5	21	—	25	21	30	27	22	5.4	8.4	60	2.3	28	104.9
AF30-D	1/4, 3/8	53	115.4	21.5	26.5	30	35	26.5	41	35	25	6.5	13	71	2.3	32	157.1
AF40-D	1/4, 3/8, 1/2	70	147.1	25.5	35.5	38.4	40	35.5	50	52	30	8.5	12.5	88	2.3	39	186.9

Model	Semi-standard specifications					
	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
	B	B	B	B	B	B
AF20-D	—	91.4	87.4	93.9	—	—
AF30-D	123.9	122.2	117.8	122.3	137.8	142.3
AF40-D	155.6	153.9	149.5	154	169.5	174

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

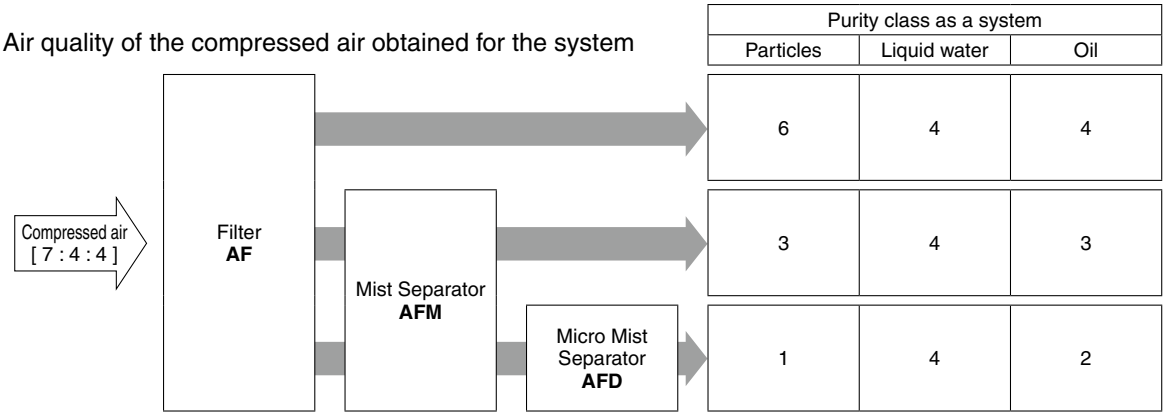
Particle class

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.

⚠ 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", https://www.smcworld.com

Design/Selection

⚠ Warning

1. The bowl material of the standard air filter 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 Carbonate of soda	Degreasing of metals Industrial salts Water-soluble cutting oil	×	○
Inorganic salts	Sodium sulfide Potassium nitrate Sulfate of soda	—	×	△
Chlorine solvents	Carbon tetrachloride Chloroform Ethylene chloride Methylene chloride	Cleansing liquid for metals Printing ink Dilution	×	△
Aromatic series	Benzene Toluene Paint thinner	Coatings Dry cleaning	×	△
Ketone	Acetone Methyl ethyl ketone Cyclohexane	Photographic film Dry cleaning Textile industries	×	×
Alcohol	Ethyl alcohol IPA Methyl alcohol	Antifreeze Adhesives	△	×
Oil	Gasoline Kerosene	—	×	○
Ester	Phthalic acid dimethyl Phthalic acid diethyl Acetic acid	Synthetic oil Anti-rust additives	×	○
Ether	Methyl ether Ethyl ether	Brake oil additives	×	○
Amino	Methyl amino	Cutting oil Brake oil additives Rubber accelerator	×	×
Others	Thread-lock fluid Seawater Leak tester	—	×	△

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

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

Maintenance

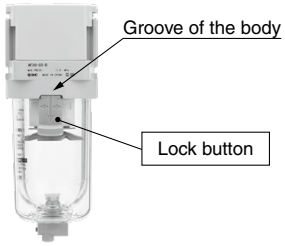
⚠ Warning

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

Mounting/Adjustment

⚠ Caution

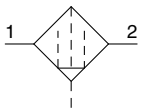
1. When the bowl is installed on the air filter (AF30-D to AF40-D), install them so that the lock button lines up to the groove of the front (or the back) of the body to avoid drop or damage of the bowl.



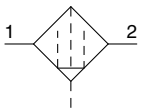
Mist Separator
AFM20-D to AFM40-D
Micro Mist Separator
AFD20-D to AFD40-D

Symbol

Mist Separator



Micro Mist Separator



AFM30-D **AFD30-D**

How to Order

AFM **30** – □ **03** **BD** – □ –D

AFD **30** – □ **03** **BD** – □ –D

❶ ❷ ❸ ❹ ❺

· Option/Semi-standard: Select one each for **a** to **f**.
· Option/Semi-standard symbol:
When more than one specification is required, indicate in alphanumeric order.
Example) AFM30-03BD-R-D

				Symbol	Description	❶ Body size 20	30	40
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	—	—	●
				+				
❹	Option	**a**	Mounting	**Nil**	Without mounting option	●	●	●
				B∗1	With bracket	●	●	●
				+				
		b	Float type auto drain∗2	**Nil**	Without auto drain	●	●	●
				C∗3	N.C. (Normally closed) Drain port is closed when pressure is not applied.	●	●	●
				D∗4	N.O. (Normally open) Drain port is open when pressure is not applied.	—	●	●
				+				
❺	Semi-standard	**c**	Bowl∗5	**Nil**	Polycarbonate bowl	●	●	●
				2	Metal bowl	●	●	●
				6	Nylon bowl	●	●	●
				8	Metal bowl with level gauge	—	●	●
				C	With bowl guard	●	—∗6	—∗6
				6C	With bowl guard (Nylon bowl)	●	—∗7	—∗7
				+				
		d	Drain port∗8	**Nil**	With drain cock	●	●	●
				J∗9	Drain guide 1/8	●	—	—
					Drain guide 1/4	—	●	●
				W∗10	Drain cock with barb fitting	—	●	●
				+				
		e	Flow direction	**Nil**	Flow direction: Left to right	●	●	●
				R	Flow direction: Right to left	●	●	●
				+				
		f	Unit	**Nil**	Unit on product label: MPa, °C	●	●	●
				Z∗11	Unit on product label: psi, °F	○∗12	○∗12	○∗12

∗1 Option B is included in the package with the product but does not come assembled. Assembly of 2 types of the bracket and mounting screws (2 pcs.)
∗2 The auto drain port is ø10 One-touch fitting (❷ Pipe thread type: Rc, G) or ø3/8" One-touch fitting (❷ Pipe thread type: NPT)
∗3 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.
∗4 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.
∗5 Refer to chemical data on page 43 for chemical resistance of the bowl.
∗6 A bowl guard is provided as standard equipment (polycarbonate).
∗7 A bowl guard is provided as standard equipment (nylon).
∗8 The combination of float type auto drain C and D is not available.
∗9 Without a valve function. The mounting screws are the same as the thread of ❷.
∗10 The combination of metal bowl 2 and 8 is not available.
∗11 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.)
∗12 ○: For pipe thread type: NPT only

Standard Specifications

Model			AFM20-D/AFD20-D	AFM30-D/AFD30-D	AFM40-D/AFD40-D
Port size			1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/4
Fluid			Air		
Ambient and fluid temperatures			–5 to 60°C (with no freezing)		
Proof pressure			1.5 MPa		
Max. operating pressure			1.0 MPa		
Min. operating pressure			0.05 MPa		
Auto drain minimum operating pressure	**N.C.**		0.1 MPa	0.15 MPa	
	N.O.		—	0.1 MPa	
Max. flow capacity∗1		**[AFM]**	200 L/min (ANR)	450 L/min (ANR)	1100 L/min (ANR)
		[AFD]	120 L/min (ANR)	240 L/min (ANR)	600 L/min (ANR)
Nominal filtration rating∗2		**[AFM]**	0.3 μm (99.9% filtered particle size)		
		[AFD]	0.01 μm (99.9% filtered particle size)		
Outlet side oil mist concentration∗3, ∗4		**[AFM]**	Max. 1.0 mg/m^3 (≈ 0.8 ppm)		
		[AFD]	Max. 0.1 mg/m^3 (Before saturated with oil 0.01 mg/m^3 or less ≈ 0.008 ppm)		
Compressed air purity class∗5		**[AFM]**	ISO 8573-1:2010 [3 : 7 : 3]∗6		
		[AFD]	ISO 8573-1:2010 [1 : 7 : 2]∗7		
Drain capacity			8 cm^3	25 cm^3	45 cm^3
Bowl material			Polycarbonate		
Bowl guard			Semi-standard (Steel)	Standard (Polycarbonate)	
Weight			0.10 kg	0.18 kg	0.37 kg

∗1 Inlet pressure: 0.7 MPa. Flow at 20°C, atmospheric pressure, and 65% of relative humidity
The maximum flow capacity varies depending on the inlet pressure.
Keep the air flow within the maximum flow capacity to prevent an outflow of lubricant to the outlet side.

∗2 Conditions in accordance with [Test condition: ISO 8573-4:2001, Test method ISO 12500-3:2009 compliant] in addition to the conditions above.
Conditions: New element. Flow capacity, inlet pressure, and the amount of solid bodies at the filter inlet are stable.

∗3 The outlet oil mist condensation in accordance with the condition [Test condition: ISO 8573-2:2007, Test method ISO 12500-1:2007 compliant] in addition to the conditions above.
Conditions: New element. Filter inlet oil mist condensation is 10 mg/m^3. Flow capacity, inlet pressure, and the amount of filter inlet oil mist condensation are stable.

∗4 Bowl seal and other O-rings are slightly lubricated.

∗5 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 37.

∗6 The compressed air quality class on the inlet side is [6 : 8 : 4].

∗7 The compressed air quality class on the inlet side is [3 : 7 : 3].

Bowl Assembly/Part No.

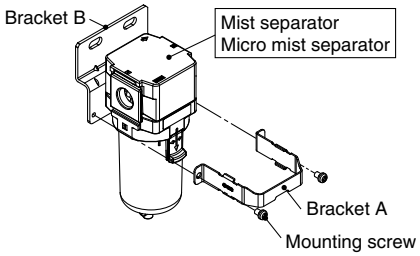
Bowl material	Drain discharge mechanism	Drain port	Other	Model		
				AFM20-D/AFD20-D	**AFM30-D/AFD30-D**	**AFM40-D/AFD40-D**
Polycarbonate	Manual	With drain cock	—	C2SF-D	—	—
			With bowl guard	C2SF-C-D	C3SF-D	C4SF-D
		Drain cock with barb fitting	With bowl guard	—	C3SF-W-D	C4SF-W-D
		With drain guide (without valve function)	—	C2SF□-J-D	—	—
			With bowl guard	C2SF□-CJ-D	C3SF□-J-D	C4SF□-J-D
	Automatic∗1 (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-A	C4SF-6-A
		Drain cock with barb fitting	With bowl guard	—	C3SF-6W-A	C4SF-6W-A
		With drain guide (without valve function)	—	C2SF□-6J-A	—	—
			With bowl guard	C2SF□-6CJ-A	C3SF□-6J-A	C4SF□-6J-A
	Automatic∗1 (Auto drain)	Normally closed (N.C.)	—	AD27-6-A	—	—
			With bowl guard	AD27-6C-A	AD37□-6-A	AD47□-6-A
		Normally open (N.O.)	With bowl guard	—	AD38□-6-A	AD48□-6-A
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∗1 (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

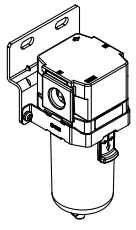
∗1 Bowl assembly comes with a bowl seal.
□ in bowl assembly part numbers indicates a pipe thread type (applicable tubing for auto drain).
No indication is necessary for Rc thread; however, indicate N for NPT thread, and F for G thread. (For auto drain, Nil: ø10, N: ø3/8")
Please consult with SMC separately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

Option/Part No.

Optional specifications	Model		
	AFM20-D AFD20-D	**AFM30-D AFD30-D**	**AFM40-D AFD40-D**
Bracket assembly∗1	AF24P-070AS	AF34P-070AS	AF44P-070AS
Auto drain	Refer to "Bowl Assembly/Part No."		

∗1 Assembly of a bracket A/B and 2 mounting screws





Bracket assembly

Replacement Parts

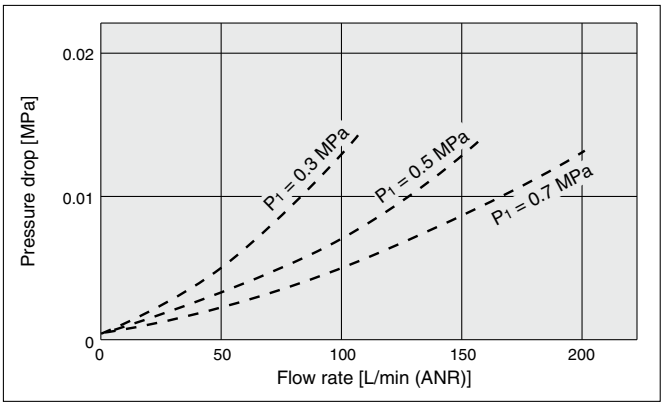
Description		Part no.		
		AFM20-D AFD20-D	**AFM30-D AFD30-D**	**AFM40-D AFD40-D**
Element assembly	**AFM20 to 40-D**	AFM20P-060AS	AFM30P-060AS	AFM40P-060AS
	AFD20 to 40-D	AFD20P-060AS	AFD30P-060AS	AFD40P-060AS
Bowl seal		C2SFP-260S	C32FP-260S	C42FP-260S
Bowl assembly∗1, ∗2		Refer to "Bowl Assembly/Part No."		

∗1 Bowl assembly comes with a bowl seal.
∗2 Please consult with SMC separately for psi and °F unit display specifications.

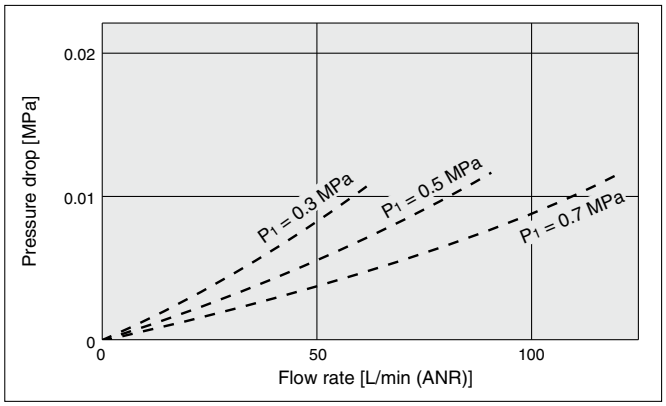
Flow Rate Characteristics (Representative values)

- - - - Initial state

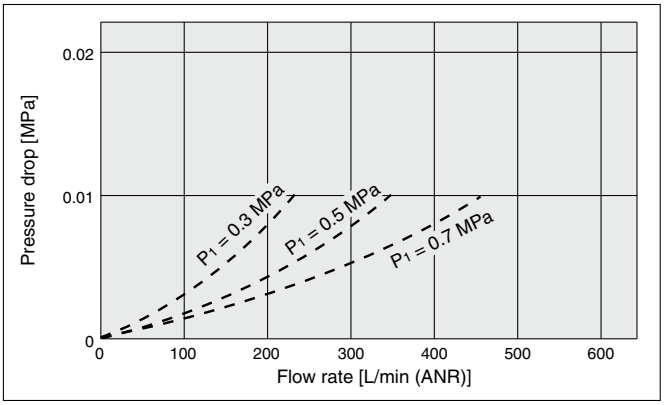
AFM20-D



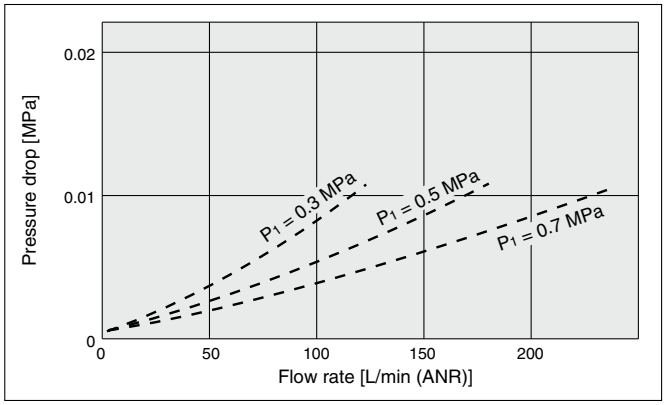
AFD20-D



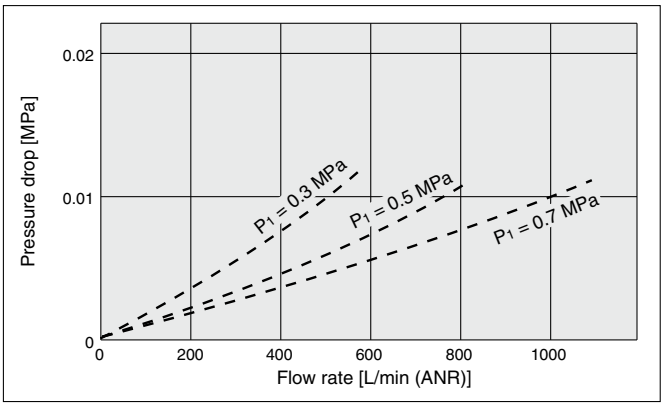
AFM30-D



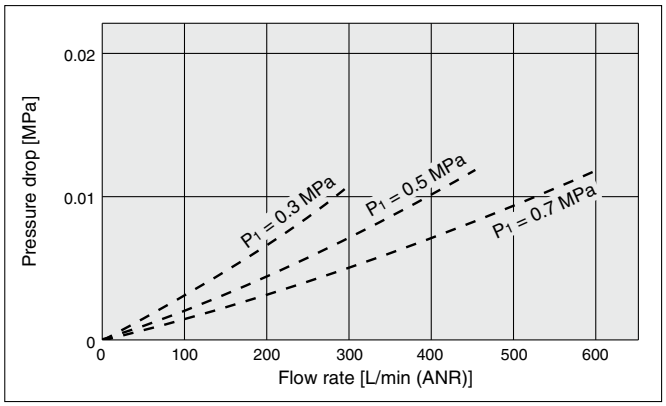
AFD30-D



AFM40-D

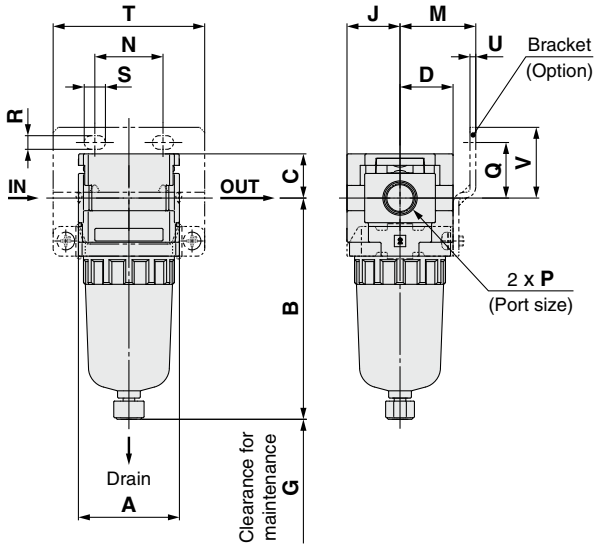


AFD40-D

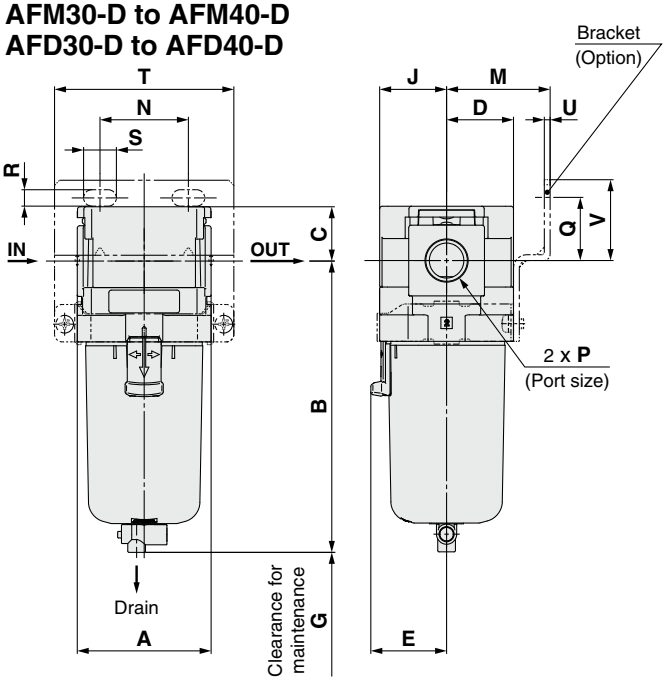


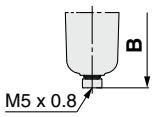
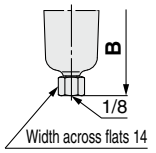
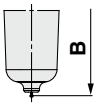
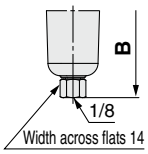
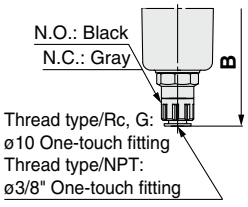
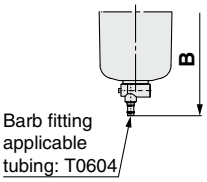
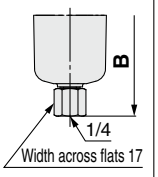
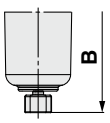
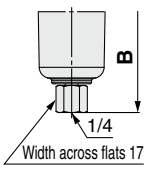
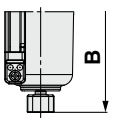
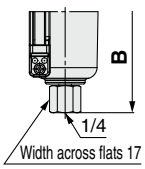
Dimensions

AFM20-D
AFD20-D



AFM30-D to AFM40-D
AFD30-D to AFD40-D



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
AFM20-D **AFD20-D**							
AFM30-D to AFM40-D **AFD30-D to AFD40-D**							

Model	Standard specifications								Optional specifications								
									Bracket mount								With auto drain
	P	A	B	C	D	E	G	J	M	N	Q	R	S	T	U	V	B
AFM20-D/AFD20-D	1/8, 1/4	40	87.6	17.5	21	—	40	21	30	27	22	5.4	8.4	60	2.3	28	104.9
AFM30-D/AFD30-D	1/4, 3/8	53	115.4	21.5	26.5	30	50	26.5	41	35	25	6.5	13	71	2.3	32	157.1
AFM40-D/AFD40-D	1/4, 3/8, 1/2	70	147.1	25.5	35.5	38.4	75	35.5	50	52	30	8.5	12.5	88	2.3	39	186.9

Model	Semi-standard specifications					
	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
	B	B	B	B	B	B
AFM20-D/AFD20-D	—	91.4	87.4	93.9	—	—
AFM30-D/AFD30-D	123.9	122.2	117.8	122.3	137.8	142.3
AFM40-D/AFD40-D	155.6	153.9	149.5	154	169.5	174

⚠ 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", https://www.smcworld.com

Design/Selection

⚠ Warning

1. The bowl material of the standard mist separator and micro mist separator 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 Carbonate of soda	Degreasing of metals Industrial salts Water-soluble cutting oil	×	○
Inorganic salts	Sodium sulfide Potassium nitrate Sulfate of soda	—	×	△
Chlorine solvents	Carbon tetrachloride Chloroform Ethylene chloride Methylene chloride	Cleansing liquid for metals Printing ink Dilution	×	△
Aromatic series	Benzene Toluene Paint thinner	Coatings Dry cleaning	×	△
Ketone	Acetone Methyl ethyl ketone Cyclohexane	Photographic film Dry cleaning Textile industries	×	×
Alcohol	Ethyl alcohol IPA Methyl alcohol	Antifreeze Adhesives	△	×
Oil	Gasoline Kerosene	—	×	○
Ester	Phthalic acid dimethyl Phthalic acid diethyl Acetic acid	Synthetic oil Anti-rust additives	×	○
Ether	Methyl ether Ethyl ether	Brake oil additives	×	○
Amino	Methyl amino	Cutting oil Brake oil additives Rubber accelerator	×	×
Others	Thread-lock fluid Seawater Leak tester	—	×	△

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

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

Air Supply

⚠ Caution

1. Install an air filter (AF series) as a pre-filter on the inlet side of the mist separator to prevent premature clogging.
2. Install a mist separator (AFM series) as a pre-filter on the inlet side of the micro mist separator to prevent premature clogging.
3. Do not install on the inlet side of the dryer as this can cause premature clogging of the element.

Maintenance

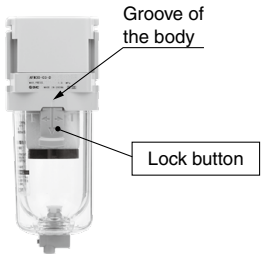
⚠ Warning

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

Mounting/Adjustment

⚠ Caution

1. When the bowl is installed on the mist separator (AFM30-D/AFM40-D), or micro mist separator (AFD30-D/AFD40-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.



Design

⚠ Caution

1. Design the system so that the mist separator or micro mist separator is installed in a pulsation-free location. The difference between internal and external pressure inside the element should be kept within 0.1 MPa, as exceeding this value could cause damage.

Selection

⚠ Caution

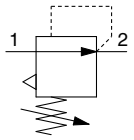
1. Do not allow air flow that exceeds the rated flow. If the air flow is allowed outside the range of the rated flow even momentarily, drainage and lubricant may splash at the outlet side or cause damage to the component.
2. Do not use in a low pressure application (such as a blower). An F.R.L. unit has its own minimum operating pressure depending on the equipment and is designed specifically to function with compressed air. If used below the minimum operating pressure, a loss of performance and malfunction can occur. Please contact SMC if an application under such conditions cannot be avoided.

Modular Type Regulator
AR Series

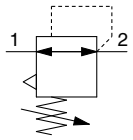
Regulator AR Series	Model	Port size	Set pressure	Options
 p. 45 to 52	**AR20(K)-D**	1/8, 1/4	0.05 to 0.85 MPa 0.02 to 0.2 MPa	Bracket Set nut (for panel mount) Square embedded type pressure gauge Digital pressure switch Round type pressure gauge
	AR30(K)-D	1/4, 3/8		
	AR40(K)-D	1/4, 3/8, 1/2		

Regulator
AR20-D to AR40-D
Regulator with Backflow Function
AR20K-D to AR40K-D

Symbol
Regulator

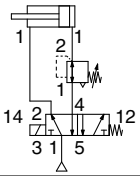


Regulator with Backflow Function

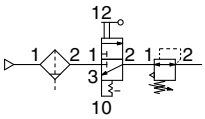


· Models with the backflow function include a mechanism which allows for the air pressure in the outlet side to be released to the inlet side.

Example 1)
When the pressure in the rear and the front of the cylinder differs:



Example 2)
When the air supply is cut off and releasing the inlet pressure to the atmosphere, the residual pressure release of the outlet side can be ensured for a safety purpose.



How to Order

AR 30 ❶ ❷ – ❸ 03 ❹ BE ❺ – ❻ – D

· 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) AR30K-03BE-1NR-D

			Symbol	Description	❶ Body size 20	30	40
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	—	—	●
			+				
❺	Option*2	**a** Mounting	**Nil**	Without mounting option	●	●	●
			B*3	With bracket	●	●	●
			H	With set nut (for panel mount)	●	●	●
			+				
		b Pressure gauge*4	**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)	●	●	●
		b Digital pressure switch*5	**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	●	●	●

AR30-D

			Symbol	Description	❶ Body size 20	30	40
❻	Semi-standard	**c** Set pressure[*6]	**Nil**	0.05 to 0.85 MPa setting	●	●	●
			1	0.02 to 0.2 MPa setting	●	●	●
		+					
		d Exhaust mechanism	**Nil**	Relieving type	●	●	●
			N	Non-relieving type	●	●	●
		+					
		e Flow direction	**Nil**	Flow direction: Left to right	●	●	●
			R	Flow direction: Right to left	●	●	●
		+					
		f Knob	**Nil**	Downward	●	●	●
			Y	Upward	●	●	●
		+					
		g Unit	**Nil**	Unit on product label: MPa, Pressure gauge in SI units: MPa	●	●	●
			Z[*7]	Unit on product label: psi, Pressure gauge: MPa/psi dual scale	○[*9]	○[*9]	○[*9]
			ZA[*8]	Digital pressure switch: With unit selection function	△[*10]	△[*10]	△[*10]

∗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 Assembly of a bracket and set nuts (applicable to the AR20(K)-D to AR40(K)-D).
∗4 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.
∗5 When choosing with H (panel mount), the installation space for lead wires will not be secured. In this case, select "wiring top entry" for the electrical entry. (Select "wiring bottom entry" when the semi-standard Y is chosen simultaneously.)
∗6 Pressure can be set higher than the specification pressure in some cases, but use pressure within the specification range.
∗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.) 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.
∗8 For options: E1, E2, E3, E4
∗9 ○: For pipe thread type: NPT only
∗10 △: Select with options: E1, E2, E3, E4.

AR20-D to AR40-D Series
AR20K-D to AR40K-D Series

Standard Specifications

Model	AR20(K)-D	AR30(K)-D	AR40(K)-D
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Pressure gauge port size∗1	1/8		
Fluid	Air		
Ambient and fluid temperatures∗2	–5 to 60°C (with no freezing)		
Proof pressure	1.5 MPa		
Max. operating pressure	1.0 MPa		
Set pressure range	0.05 to 0.85 MPa		
Construction	Relieving type		
Weight	0.14 kg	0.27 kg	0.48 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

Option/Part No.

Optional specifications			Model		
			AR20(K)-D	**AR30(K)-D**	**AR40(K)-D**
Bracket assembly∗1			AR23P-270AS	AR33P-270AS	AR43P-270AS
Set nut			AR23P-260S	AR33P-260S	AR43P-260S
Pressure gauge∗2	**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∗3	**Standard**	GC3-10AS-D [136150A (Pressure gauge cover only)]		
		0.02 to 0.2 MPa setting	GC3-4AS-D [136150A (Pressure gauge cover only)]		
Digital pressure switch		**NPN output, Wiring bottom entry**	ISE35-N-25-MLA-X523 [ISE35-N-25-M (Switch body only)]∗4		
		NPN output, Wiring top entry	ISE35-R-25-MLA-X523 [ISE35-R-25-M (Switch body only)]∗4		
		PNP output, Wiring bottom entry	ISE35-N-65-MLA-X523 [ISE35-N-65-M (Switch body only)]∗4		
		PNP output, Wiring top entry	ISE35-R-65-MLA-X523 [ISE35-R-65-M (Switch body only)]∗4		

∗1 Assembly of a bracket and set nuts
∗2 □ in part numbers for a round 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.
∗3 Including one O-ring and 2 mounting screws. [ ]: Pressure gauge cover only
∗4 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 specifications the digital pressure switch, refer to the **Web Catalog**.)

Replacement Parts

Description		Part no.		
		AR20(K)-D	**AR30(K)-D**	**AR40(K)-D**
Valve assembly		AR24P-060AS	AR34P-060AS	AR44P-060AS
Diaphragm assembly	**Relieving type**	AR24P-150AS	AR34P-150AS	AR44P-150AS
	Non-relieving type	AR24P-150AS-N	AR34P-150AS-N	AR44P-150AS-N
Valve guide assembly		AR24P-050AS	AR34P-050AS	AR44P-050AS
Check valve assembly∗1		AR24KP-020AS		

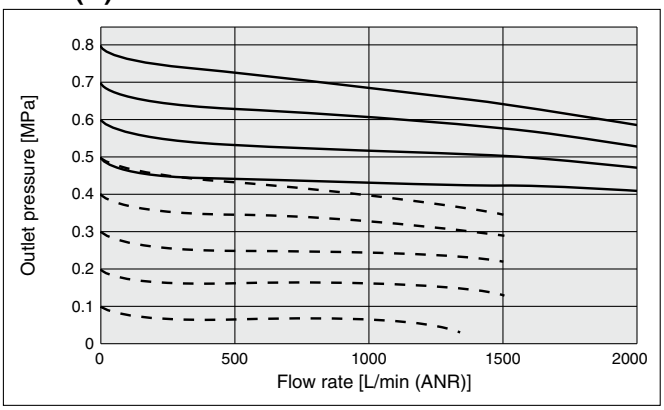
∗1 Check valve assembly is applicable for a regulator with backflow function (AR20K-D to AR40K-D) only.
Assembly of a check valve cover, check valve body assembly and 2 mounting screws

Flow Rate Characteristics (Representative values)

Inlet pressure of 0.1 MPa
Inlet pressure of 0.7 MPa

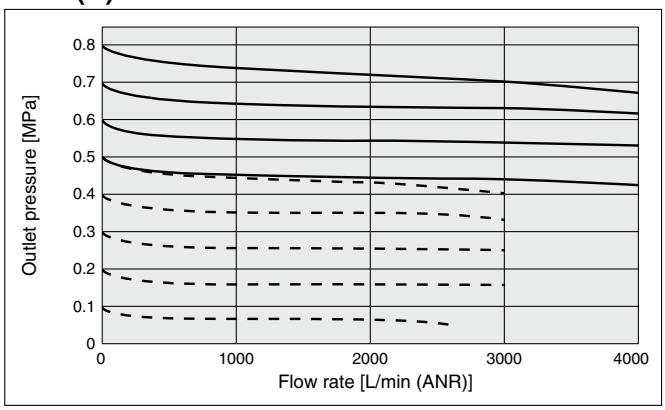
AR20(K)-D

Rc1/4



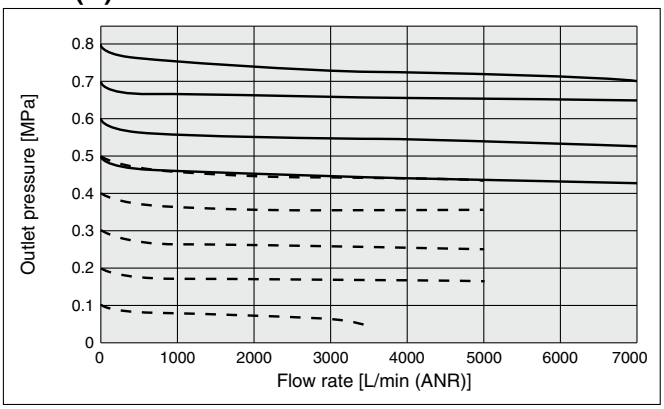
AR30(K)-D

Rc3/8



AR40(K)-D

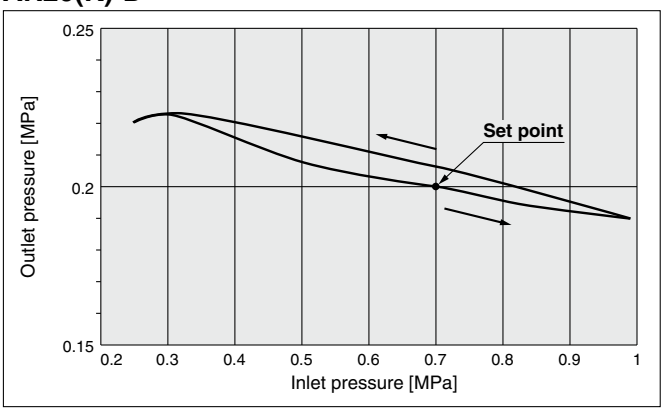
Rc1/2



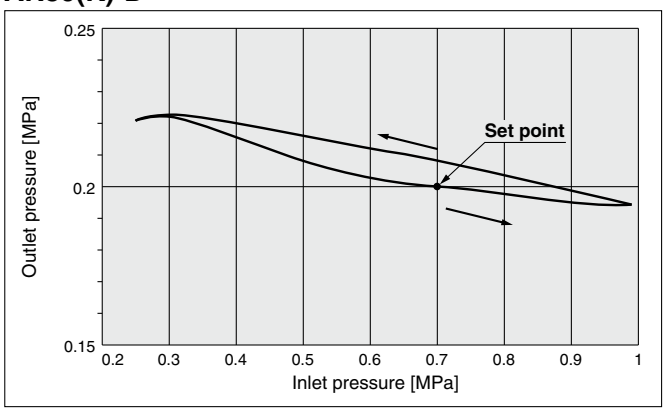
Pressure Characteristics (Representative values)

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

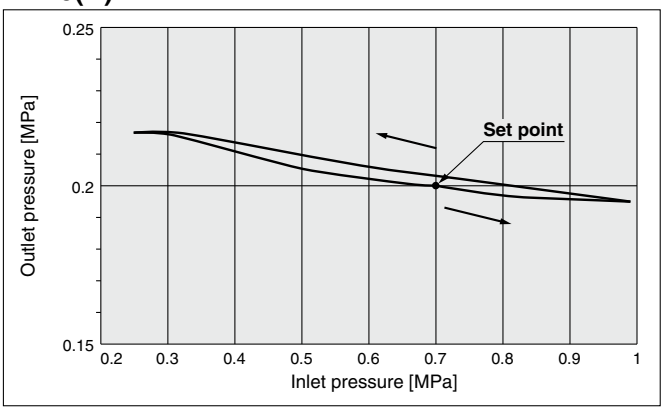
AR20(K)-D



AR30(K)-D

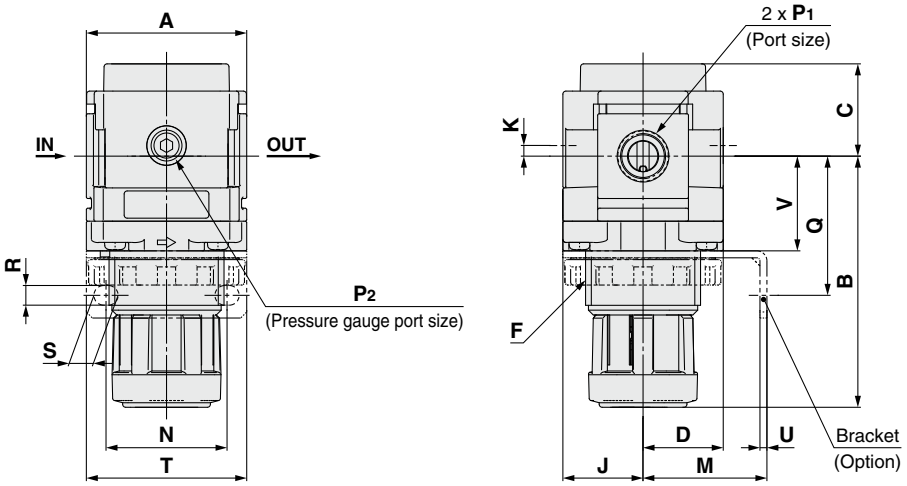


AR40(K)-D



Dimensions

Standard (Round Type Pressure Gauge)
AR20-D to AR40-D



Panel mounting dimensions

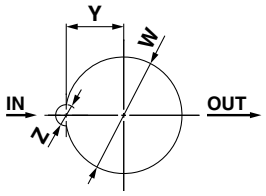
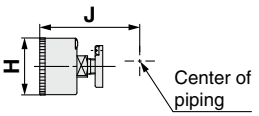


Plate thickness
AR20-D to AR30-D: Max. 3.5
AR40-D : Max. 5

Round type pressure gauge



Model	Standard specifications									Optional specifications					
										Round type pressure gauge		Round type pressure gauge (Semi-standard: Z)		Round type pressure gauge (with color zone)	
	P1	**P2**	**A**	**B**∗1	**C**	**D**	**F**	**J**	**K**	**H**	**J**	**H**	**J**	**H**	**J**
AR20-D	1/8, 1/4	1/8	40	66.8	26.5	21	M28 x 1	21	2	ø37.5	57.5	ø37.5	58.5	ø37.5	58.5
AR30-D	1/4, 3/8	1/8	53	86.5	30.5	26.5	M38 x 1.5	26.5	3.5	ø37.5	63	ø37.5	64	ø37.5	64
AR40-D	1/4, 3/8, 1/2	1/8	70	91.5	35.5	35.5	M42 x 1.5	35.5	0	ø42.5	73	ø42.5	73	ø42.5	73

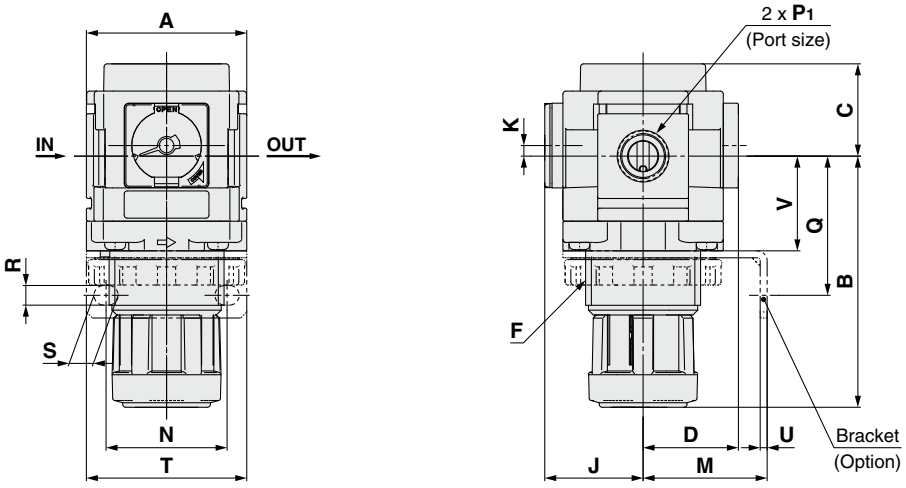
Model	Optional specifications										
	Bracket mount							Panel mount			
	M	**N**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**Y**	**Z**
AR20-D	30	34	43.9	5.4	15.4	55	2.3	24.7	28.5	14	6
AR30-D	41	40	46	6.5	8	53	2.3	31.3	38.5	19	7
AR40-D	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7

∗1 The dimension of B is the length when the regulator knob is unlocked.

Dimensions

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

AR20-□□□ E / E1 / E2 / E3 / E4 -D to AR40-□□□ E / E1 / E2 / E3 / E4 -D



Panel mounting dimensions

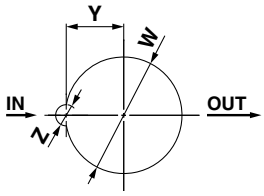
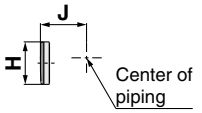
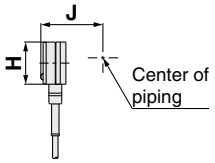


Plate thickness
AR20-D to AR30-D: Max. 3.5
AR40-D : Max. 5

Square embedded type pressure gauge	Digital pressure switch
	

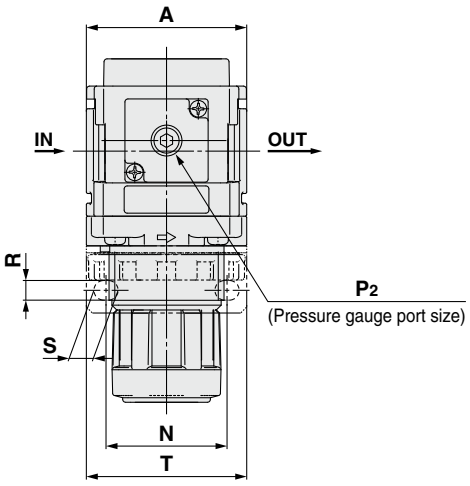
Model	Standard specifications							Optional specifications			
								Square embedded type pressure gauge		Digital pressure switch	
	P1	A	B*1	C	D	F	K	H	J	H	J
AR20-D	1/8, 1/4	40	66.8	26.5	26	M28 x 1	2	□28	27	□27.8	37.5
AR30-D	1/4, 3/8	53	86.5	30.5	31.5	M38 x 1.5	3.5	□28	32.5	□27.8	43
AR40-D	1/4, 3/8, 1/2	70	91.5	35.5	40.5	M42 x 1.5	0	□28	41.5	□27.8	52

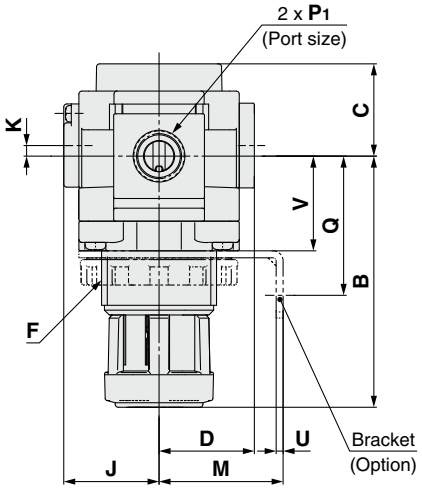
Model	Optional specifications										
	Bracket mount							Panel mount			
	M	N	Q	R	S	T	U	V	W	Y	Z
AR20-D	30	34	43.9	5.4	15.4	55	2.3	24.7	28.5	14	6
AR30-D	41	40	46	6.5	8	53	2.3	31.3	38.5	19	7
AR40-D	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7

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

Dimensions

With Backflow Function
(Round Type Pressure Gauge, Square Embedded Type Pressure Gauge, Digital Pressure Switch)
AR20K-D to AR40K-D





Panel mounting dimensions

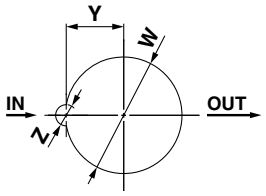
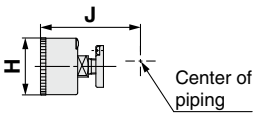
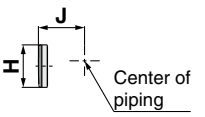
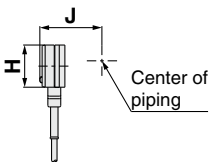


Plate thickness
AR20K-D to AR30K-D: Max. 3.5
AR40K-D : Max. 5

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

Model	Standard specifications									Optional specifications					
										Round type pressure gauge		Round type pressure gauge (Semi-standard: Z)		Round type pressure gauge (with color zone)	
	P1	P2	A	B*1	C	D	F	J	K	H	J	H	J	H	J
AR20K-D	1/8, 1/4	1/8	40	66.8	26.5	26	M28 x 1	26	2	ø37.5	62.5	ø37.5	63.5	ø37.5	63.5
AR30K-D	1/4, 3/8	1/8	53	86.5	30.5	31.5	M38 x 1.5	31.5	3.5	ø37.5	68	ø37.5	69	ø37.5	69
AR40K-D	1/4, 3/8, 1/2	1/8	70	91.5	35.5	40.5	M42 x 1.5	40.5	0	ø42.5	78	ø42.5	78	ø42.5	78

Model	Optional specifications														
	Square embedded type pressure gauge		Digital pressure switch		Bracket mount							Panel mount			
	H	J	H	J	M	N	Q	R	S	T	U	V	W	Y	Z
AR20K-D	□28	27	□27.8	37.5	30	34	43.9	5.4	15.4	55	2.3	24.7	28.5	14	6
AR30K-D	□28	32.5	□27.8	43	41	40	46	6.5	8	53	2.3	31.3	38.5	19	7
AR40K-D	□28	41.5	□27.8	52	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7

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

⚠ 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", https://www.smcworld.com

Design/Selection

⚠ Warning

1. Residual pressure disposal (outlet pressure removal) is not possible for the AR20-D to AR40-D even though the inlet pressure is exhausted. When the residual pressure disposal is performed, use the regulator with a backflow function (AR20K-D to AR40K-D).

Maintenance

⚠ Warning

1. When using the regulator with backflow function between a solenoid valve and an actuator, check the pressure gauge periodically. Sudden pressure fluctuations may shorten the durability of the pressure gauge. A digital pressure gauge is recommended for such situation or as deemed necessary.

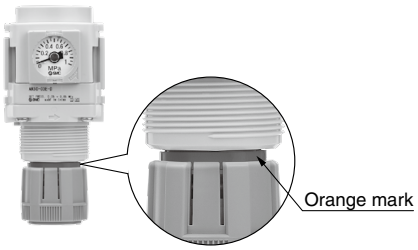
Mounting/Adjustment

⚠ Warning

1. 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.

⚠ 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).



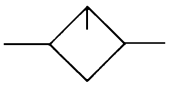
Modular Type Lubricator

AL Series

Lubricator AL Series	Model	Port size	Options
 p. 55 to 59	**AL20-D**	1/8, 1/4	Bracket
	AL30-D	1/4, 3/8	
	AL40-D	1/4, 3/8, 1/2	

Lubricator
AL20-D to AL40-D

Symbol



AL30-D

How to Order

AL **30** – ❷ **03** **B** – ❺ **–D**

❶ ❷ ❸ ❹ ❺

· Option/Semi-standard: Select one each for **a** to **d**.
· Option/Semi-standard symbol:
When more than one specification is required, indicate in alphanumeric order.
Example) AL30-03B-3RW-D

			Symbol	Description	❶ Body size 20	30	40
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	—	—	●
			+				
❹	Option (Mounting)		**Nil**	Without mounting option	●	●	●
			B∗1	With bracket	●	●	●
			+				
❺	Semi-standard	**a** Bowl∗2	**Nil**	Polycarbonate bowl	●	●	●
			2	Metal bowl	●	●	●
			6	Nylon bowl	●	●	●
			8	Metal bowl with level gauge	—	●	●
			C	With bowl guard	●	—∗3	—∗3
			6C	With bowl guard (Nylon bowl)	●	—∗4	—∗4
			+				
		b Lubricant exhaust port	**Nil**	Without drain cock	●	●	●
			3	With drain cock	●	●	●
			3W∗5	Drain cock with barb fitting	—	●	●
			+				
		c Flow direction	**Nil**	Flow direction: Left to right	●	●	●
			R	Flow direction: Right to left	●	●	●
			+				
		d Unit	**Nil**	Unit on product label: MPa	●	●	●
			Z∗6	Unit on product label: psi	○∗7	○∗7	○∗7

∗1 Option B is included in the package with the product but does not come assembled. Assembly of 2 types of the bracket and mounting screws (2 pcs.)
∗2 Refer to chemical data on page 59 for chemical resistance of the bowl.
∗3 A bowl guard is provided as standard equipment (polycarbonate).
∗4 A bowl guard is provided as standard equipment (nylon).
∗5 The combination of metal bowl 2 and 8 is not available.
∗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

Standard Specifications

Model	AL20-D	AL30-D	AL40-D
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Fluid	Air		
Ambient and fluid temperatures	−5 to 60°C (with no freezing)		
Proof pressure	1.5 MPa		
Max. operating pressure	1.0 MPa		
Minimum dripping flow rate∗1	15 L/min (ANR)	Port size 1/4: 30 L/min (ANR) Port size 3/8: 40 L/min (ANR)	Port size 1/4: 30 L/min (ANR) Port size 3/8: 40 L/min (ANR) Port size 1/2: 50 L/min (ANR)
Oil capacity	25 cm^3	55 cm^3	135 cm^3
Recommended lubricant	Class 1 turbine oil (ISO VG32)		
Bowl material	Polycarbonate		
Bowl guard	Semi-standard (Steel)	Standard (Polycarbonate)	
Weight	0.10 kg	0.18 kg	0.37 kg

∗1 The flow rate is 5 drops or greater/min under the following conditions: Inlet pressure of 0.5 MPa; Class 1 turbine oil (ISO VG32); Temperature at 20°C; Oil adjustment valve fully open. For a circuit that repeatedly turns ON and OFF on the outlet side, make the adjustment so that the average air consumption per minute becomes the minimum dripping flow rate or more.

Bowl Assembly/Part No.

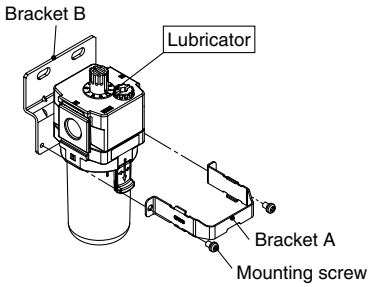
Bowl material	Lubricant exhaust port	Other	Model		
			AL20-D	**AL30-D**	**AL40-D**
Polycarbonate	Without drain cock	—	C2SL-D	—	—
		With bowl guard	C2SL-C-D	C3SL-D	C4SL-D
	With drain cock	—	C2SL-3-D	—	—
		With bowl guard	C2SL-3C-D	C3SL-3-D	C4SL-3-D
	Drain cock with barb fitting	With bowl guard	—	C3SL-3W-D	C4SL-3W-D
Nylon	Without drain cock	—	C2SL-6-A	—	—
		With bowl guard	C2SL-6C-A	C3SL-6-A	C4SL-6-A
	With drain cock	—	C2SL-36-A	—	—
		With bowl guard	C2SL-36C-A	C3SL-36-A	C4SL-36-A
	Drain cock with barb fitting	With bowl guard	—	C3SL-36W-A	C4SL-36W-A
Metal	Without drain cock	—	C2SL-2-A	C3SL-2-A	C4SL-2-A
		With level gauge	—	C3LL-8-A	C4LL-8-A
	With drain cock	—	C2SL-23-A	C3SL-23-A	C4SL-23-A
		With level gauge	—	C3LL-38-A	C4LL-38-A

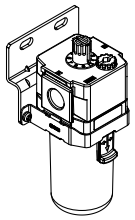
∗1 Bowl assembly comes with a bowl seal. Please consult with SMC separately for psi and °F unit display specifications.

Option/Part No.

Optional specifications	Model		
	AL20-D	**AL30-D**	**AL40-D**
Bracket assembly∗1	AF24P-070AS	AF34P-070AS	AF44P-070AS

∗1 Assembly of a bracket A/B and 2 mounting screws





Bracket assembly

Replacement Parts

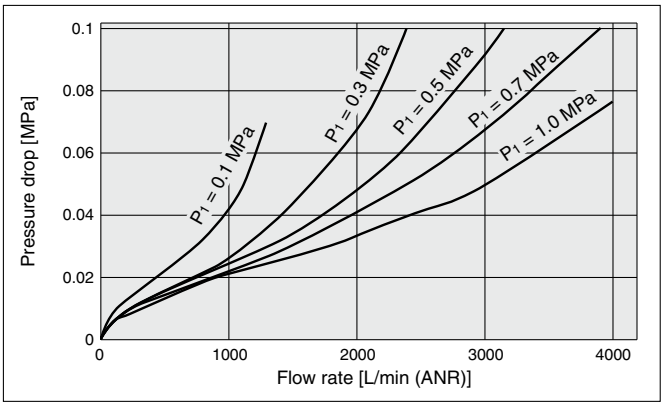
Description	Part no.		
	AL20-D	**AL30-D**	**AL40-D**
Sight dome assembly	AL20P-080AS		
Lubrication plug assembly	AL24P-060AS	AL34P-060AS	AL44P-060AS
Bumper retainer assembly	AL20P-030AS	AL30P-030AS	AL40P-030AS
Bumper	AL20P-040S	AL30P-040S	AL44P-040S
Bowl seal	C2SFP-260S	C32FP-260S	C42FP-260S
Bowl assembly∗1, ∗2	Refer to “Bowl Assembly/Part No.”		

∗1 Bowl assembly comes with a bowl seal.
∗2 Please consult with SMC separately for psi and °F unit display specifications.

Flow Rate Characteristics (Representative values)

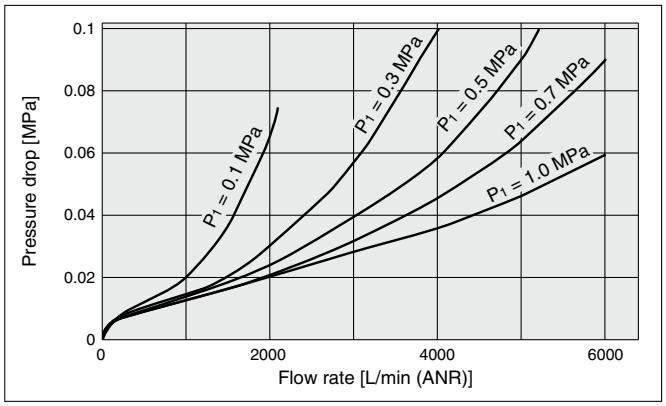
AL20-D

Rc1/4



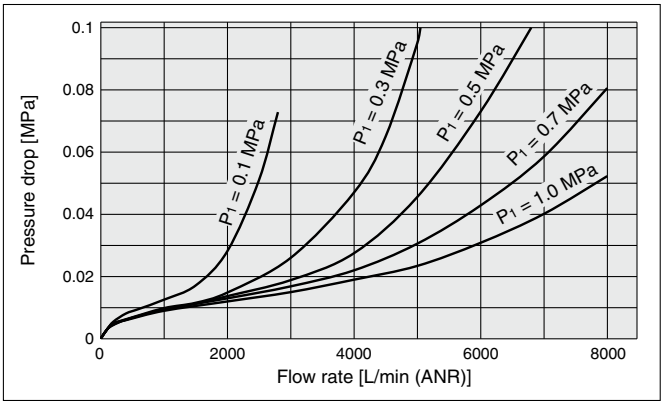
AL30-D

Rc3/8



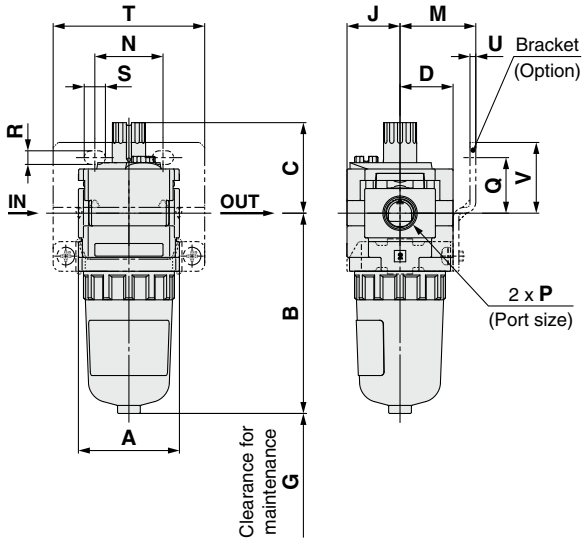
AL40-D

Rc1/2

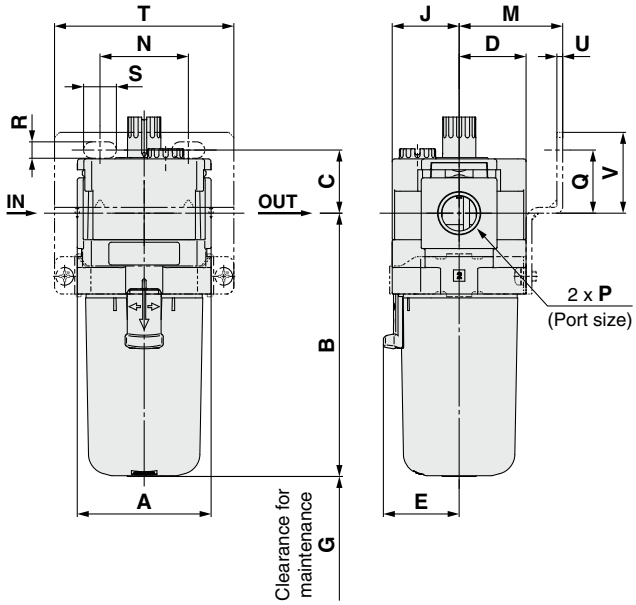


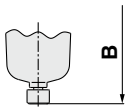
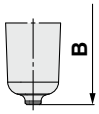
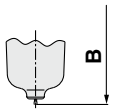
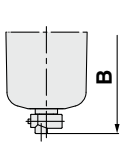
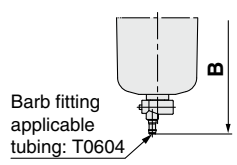
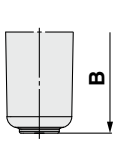
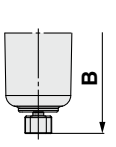
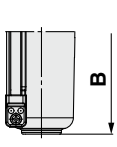
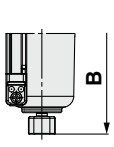
Dimensions

AL20-D



AL30-D to AL40-D



Applicable model	Semi-standard					
	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
	With drain cock	Drain cock with barb fitting	Without drain cock	With drain cock	Without drain cock	With drain cock
AL20-D						
AL30-D to AL40-D		 Barb fitting applicable tubing: T0604				

Model	Standard specifications								Optional specifications							
									Bracket mount							
	P	A	B	C	D	E	G	J	M	N	Q	R	S	T	U	V
AL20-D	1/8, 1/4	40	79.3	35.9	21	—	60	21	30	27	22	5.4	8.4	60	2.3	28
AL30-D	1/4, 3/8	53	104.3	38.1	26.5	30	80	26.5	41	35	25	6.5	13	71	2.3	32
AL40-D	1/4, 3/8, 1/2	70	136.1	44	35.5	38.4	110	35.5	50	52	30	8.5	12.5	88	2.3	39

Model	Semi-standard specifications					
	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
	With drain cock	With barb fitting	Without drain cock	With drain cock	Without drain cock	With drain cock
	B	B	B	B	B	B
AL20-D	87.6	—	84.5	87.4	—	—
AL30-D	115.4	123.9	104.3	117.8	124.3	137.8
AL40-D	147.1	155.6	136	149.5	156.1	169.5

⚠ 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", https://www.smcworld.com

Design/Selection

⚠ Warning

1. Do not introduce air from the outlet side as this can damage the bumper.

2. The standard bowl and sight dome of the lubricator 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 bowl with sight dome and nylon bowl with sight dome

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

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

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

Design/Selection

⚠ Caution

1. When the piping is branched on the inlet side, install a check valve to prevent the lubricant from back flowing.

Maintenance

⚠ Warning

1. For the AL20-D, replenish the lubricant after releasing the inlet pressure. Lubrication cannot take place under a pressurized condition.

2. Tighten the lubrication plug to the recommended tightening torque. Insufficient tightening torque may cause loosening or defective sealing. Excessive tightening torque may damage the thread, etc.

Recommended Torque Unit: N·m

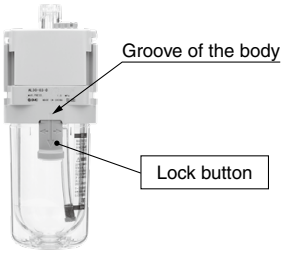
Model	AL20-D	AL30-D	AL40-D
Torque	0.25 to 0.35	0.35 to 0.45	0.5 to 0.6

3. Adjustment of the oil regulating valve for models from the AL20-D to AL40-D should be carried out manually. Turning it counterclockwise increases the dripping amount, and turning it clockwise reduces the dripping amount. The use of tools can result in damage to the unit. From the fully closed position, three rotations will bring it to the fully open position. Do not rotate it any further than this. Note that the numbered scale markings are guidelines for adjusting the position, and not indicators of the dripping amount.

Mounting/Adjustment

⚠ Caution

1. When the lubricator bowl is installed on the AL30-D to AL40-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.

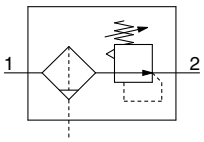


Modular Type
Filter Regulator
AW Series

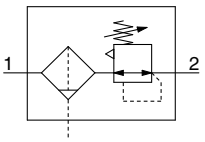
Filter Regulator AW Series	Model	Port size	Set pressure	Options
 p. 61 to 68	**AW20(K)-D**	1/8, 1/4	0.05 to 0.85 MPa 0.02 to 0.2 MPa	Bracket Set nut (for panel mount) Float type auto drain Square embedded type pressure gauge Digital pressure switch Round type pressure gauge
	AW30(K)-D	1/4, 3/8		
	AW40(K)-D	1/4, 3/8, 1/2		

Filter Regulator
AW20-D to AW40-D
Filter Regulator with Backflow Function
AW20K-D to AW40K-D

Symbol
Filter Regulator

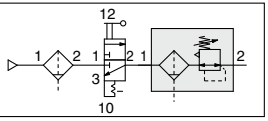


Filter Regulator with Backflow Function



- **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 for a safety purpose.



How to Order

AW 30 ❶ – ❷ 03 ❸ BE ❹ – ❺ – D

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

Example) AW30K-03BE-1NR-D

				Symbol	Description	❶ Body size 20	30	40
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	—	—	●
				+				
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]	**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)	●	●	●
			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	●	●	●
				+				
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]
				6C	With bowl guard (Nylon bowl)	●	—[*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	—	●	●

AW30-D

			Symbol	Description	❶ Body size 20	30	40
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, Pressure gauge in SI units: MPa	●	●	●
			Z∗16	Unit on product label: psi, °F, Pressure gauge: MPa/psi dual scale	○∗18	○∗18	○∗18
			ZA∗17	Digital pressure switch: With unit selection function	△∗19	△∗19	△∗19

∗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 Assembly of a bracket and set nuts (applicable to the AR20(K)-D to AR40(K)-D).
∗4 The auto drain port is ø10 One-touch fitting (❷ Pipe thread type: Rc, G) or ø3/8" One-touch fitting (❷ 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 choosing with H (panel mount), the installation space for lead wires will not be secured. In this case, select "wiring top entry" for the electrical entry. (Select "wiring bottom entry" when the semi-standard Y is chosen simultaneously.)
∗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 68 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 ❷.
∗15 The combination of metal bowl 2 and 8 is not available.
∗16 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.) 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
∗18 ○: For pipe thread type: NPT only
∗19 △: Select with options: E1, E2, E3, E4.

Standard Specifications

Model		AW20-D	AW30-D	AW40-D
Port size		1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Pressure gauge port size∗1		1/8		
Fluid		Air		
Ambient and fluid temperatures∗2		–5 to 60°C (with 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

∗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 [Compliant to test condition ISO 8573-4:2001 and test method ISO 12500-3:2009]
Conditions: New element. Flow capacity, inlet pressure, and the amount of solid bodies at the filter inlet 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 37.
∗5 The compressed air quality class on the inlet side is [7 : 4 : 4].

AW20-D to AW40-D Series
AW20K-D to AW40K-D Series

Bowl Assembly/Part No.

Bowl material	Drain discharge mechanism	Drain port	Other	Model		
				AW20-D	**AW30-D**	**AW40-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*1 (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-A	C4SF-6-A
		Drain cock with barb fitting	With bowl guard	—	C3SF-6W-A	C4SF-6W-A
		With drain guide (without valve function)	—	C2SF□-6J-A	—	—
			With bowl guard	C2SF□-6CJ-A	C3SF□-6J-A	C4SF□-6J-A
	Automatic*1 (Auto drain)	Normally closed (N.C.)	—	AD27-6-A	—	—
			With bowl guard	AD27-6C-A	AD37□-6-A	AD47□-6-A
		Normally open (N.O.)	With bowl guard	—	AD38□-6-A	AD48□-6-A
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*1 (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 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 consult with SMC separately for psi and °F unit display specifications.

Option/Part No.

Optional specifications			Model		
			AW20(K)-D	**AW30(K)-D**	**AW40(K)-D**
Bracket assembly*1			AW23P-270AS	AR33P-270AS	AR43P-270AS
Set nut			AR23P-260S	AR33P-260S	AR43P-260S
Pressure gauge*2	**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*3	**Standard**	GC3-10AS-D [136150A (Pressure gauge cover only)]		
		0.02 to 0.2 MPa setting	GC3-4AS-D [136150A (Pressure gauge cover only)]		
Digital pressure switch		**NPN output, Wiring bottom entry**	ISE35-N-25-MLA-X523 [ISE35-N-25-M (Switch body only)]*4		
		NPN output, Wiring top entry	ISE35-R-25-MLA-X523 [ISE35-R-25-M (Switch body only)]*4		
		PNP output, Wiring bottom entry	ISE35-N-65-MLA-X523 [ISE35-N-65-M (Switch body only)]*4		
		PNP output, Wiring top entry	ISE35-R-65-MLA-X523 [ISE35-R-65-M (Switch body only)]*4		

*1 Assembly of a bracket and set nuts
*2 □ 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 psi unit specifications.
*3 Including one O-ring and 2 mounting screws. [ ]: Pressure gauge cover only
*4 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 the **Web Catalog**.)

Replacement Parts

Description	Part no.		
	AW20(K)-D	**AW30(K)-D**	**AW40(K)-D**
Valve assembly	AW24P-060AS	AW34P-060AS	AW44P-060AS
Filter element	AF20P-060S	AF30P-060S	AF40P-060S
Baffle	AF24P-040S	AF34P-040S	AF44P-040S
Diaphragm assembly	AR24P-150AS	AR34P-150AS	AR44P-150AS
Bowl seal	C2SFP-260S	C32FP-260S	C42FP-260S
Bowl assembly*1, *2	Refer to "Bowl Assembly/Part No."		
Check valve assembly*3	AR24KP-020AS		

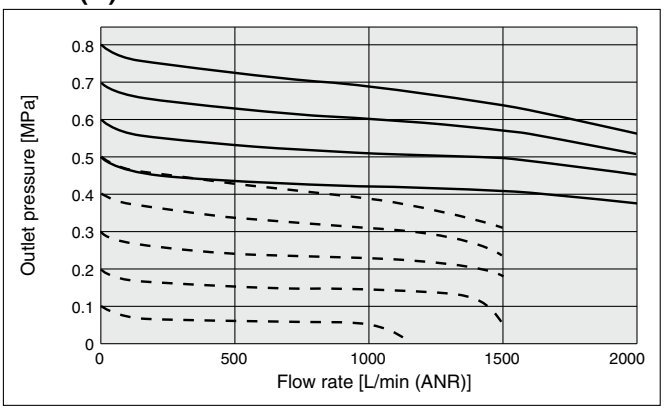
*1 Bowl assembly comes with a bowl seal.
*2 Please consult with SMC separately for psi and °F unit display specifications.
*3 Check valve assembly is applicable for a filter regulator with backflow function (AW20K-D to AW40K-D) only. Assembly of a check valve cover, check valve body assembly and 2 mounting screws

Flow Rate Characteristics (Representative values)

Inlet pressure of 0.1 MPa
Inlet pressure of 0.7 MPa

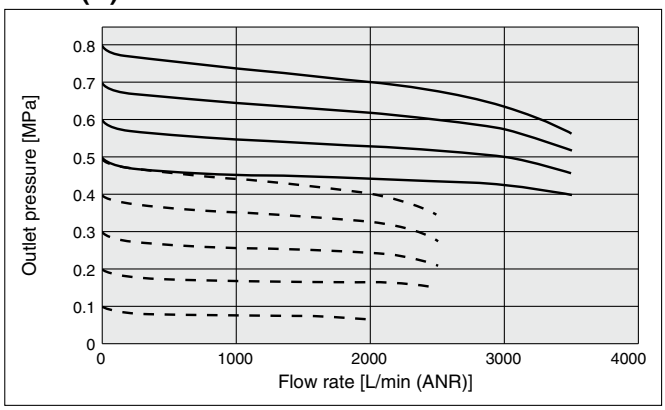
AW20(K)-D

Rc1/4



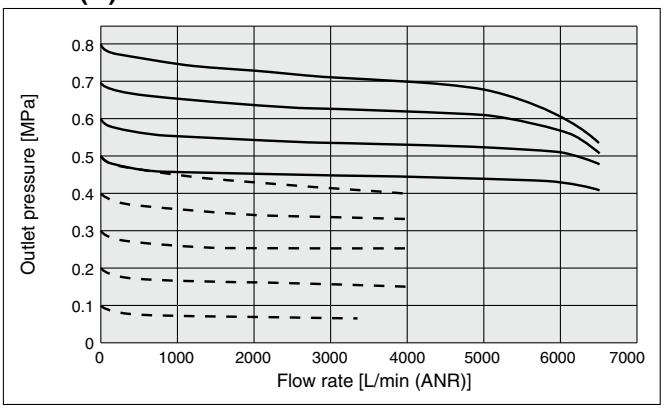
AW30(K)-D

Rc3/8



AW40(K)-D

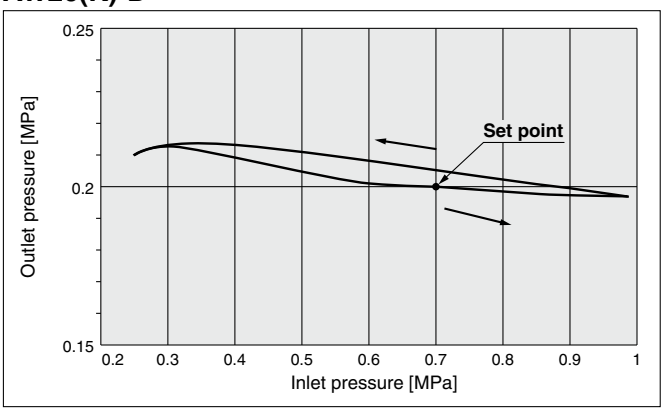
Rc1/2



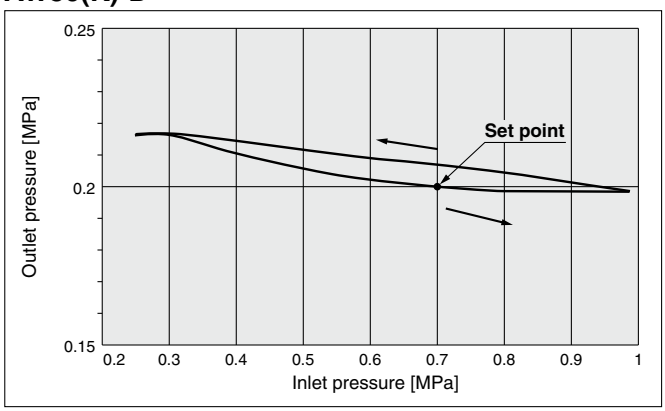
Pressure Characteristics (Representative values)

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

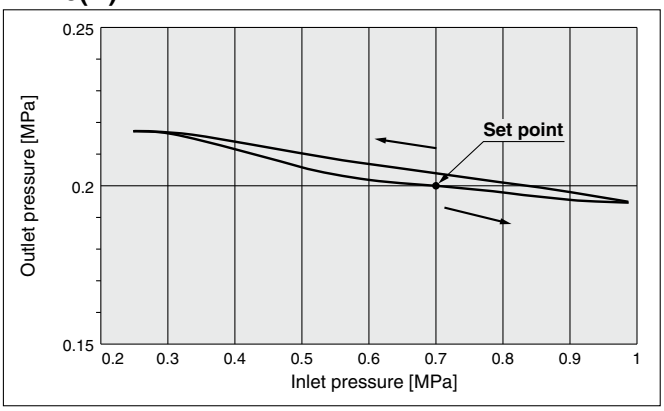
AW20(K)-D



AW30(K)-D



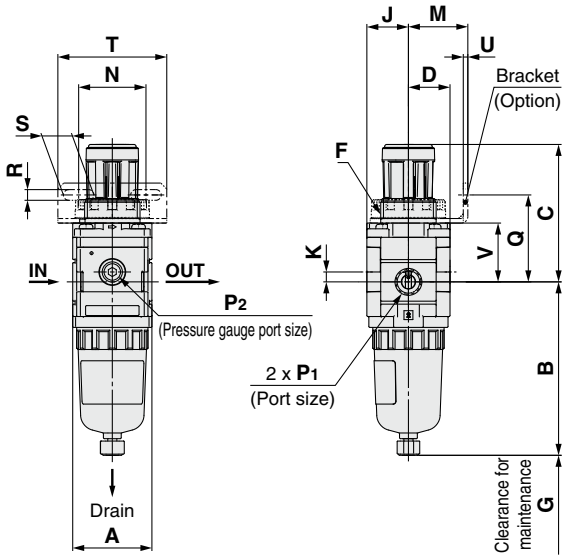
AW40(K)-D



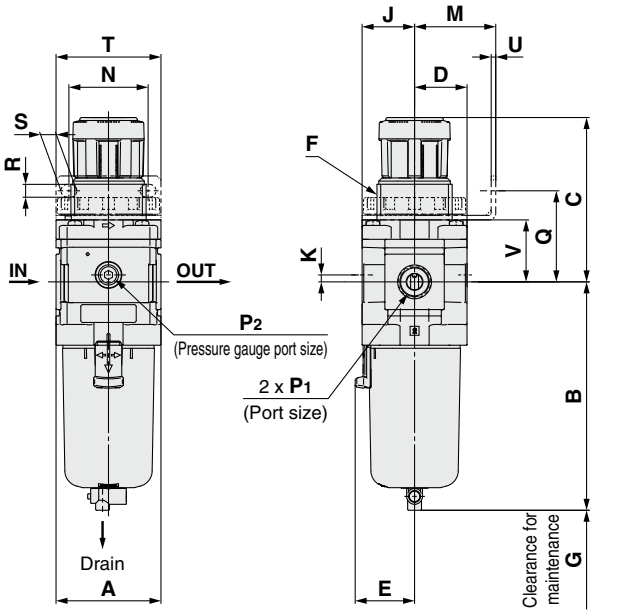
Dimensions

Standard (Round Type Pressure Gauge)

AW20-D



AW30-D, AW40-D



Panel mounting dimensions

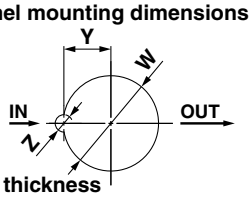
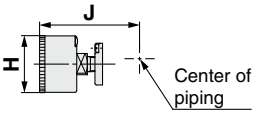
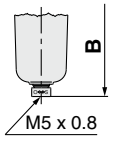
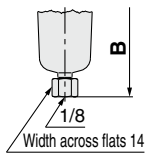
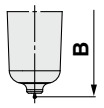
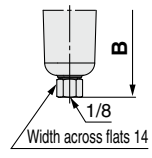
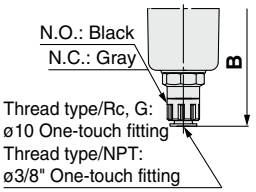
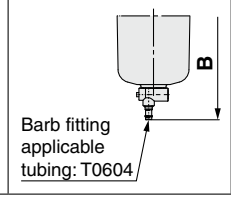
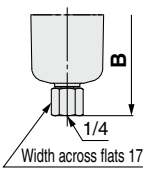
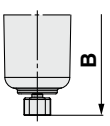
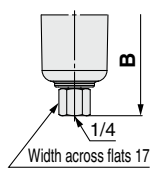
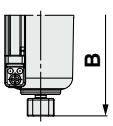
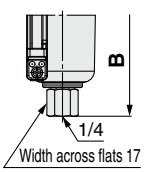


Plate thickness
AW20-D to AW30-D: Max. 3.5
AW40-D : Max. 5

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 AW40-D							

Model	Standard specifications											Optional specifications					
												Round type pressure gauge		Round type pressure gauge (Semi-standard: Z)		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	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	ø37.5	58.5
AW30-D	1/4, 3/8	1/8	53	115.3	86.5	26.5	30	M38 x 1.5	55	26.5	3.5	ø37.5	63	ø37.5	64	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	0	ø42.5	73	ø42.5	73	ø42.5	73

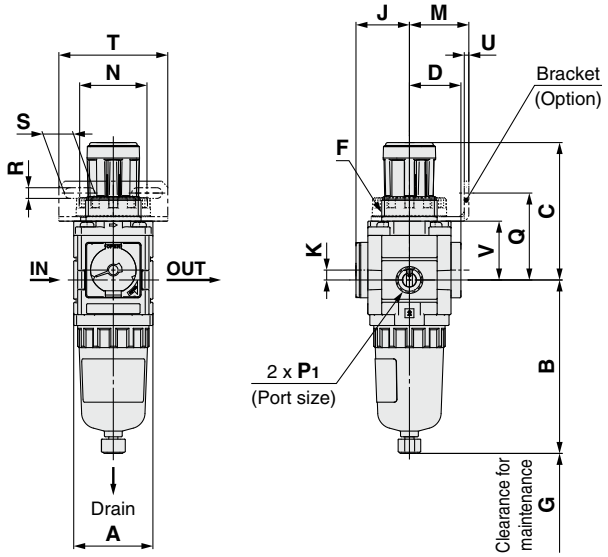
Model	Optional specifications												Semi-standard					
	Bracket mount							Panel mount				With auto drain	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
													With barb fitting	With drain guide	With drain cock	With drain guide	With drain cock	With drain guide
	M	N	Q	R	S	T	U	V	W	Y	Z	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	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

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

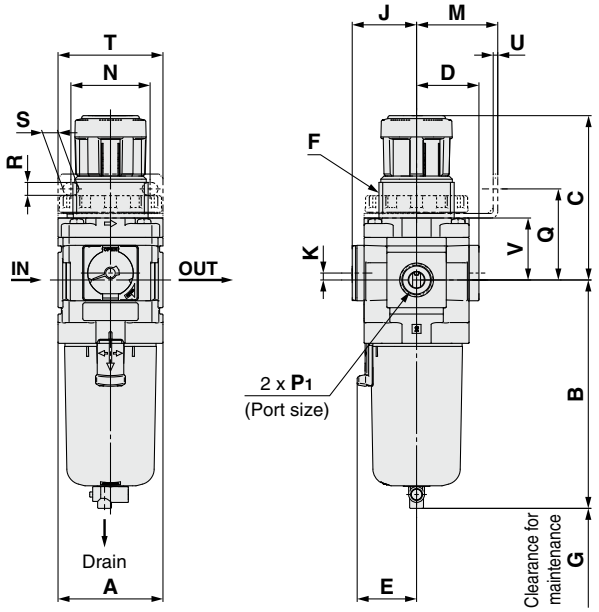
Dimensions

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

AW20-□□□ E / E1 / E2 / E3 / E4 -D



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



Panel mounting dimensions

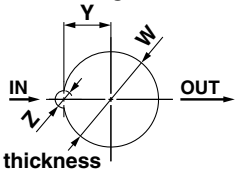
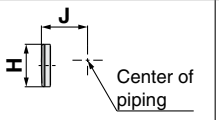
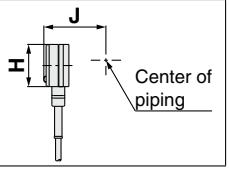
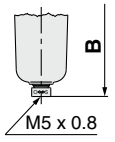
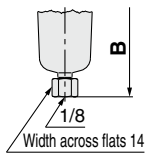
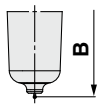
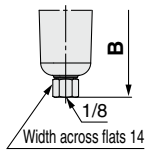
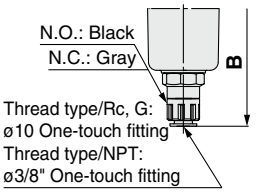
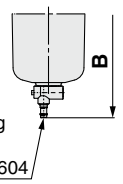
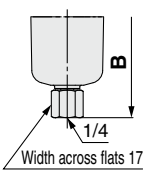
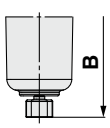
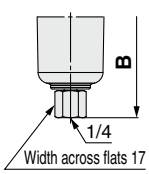
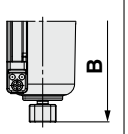
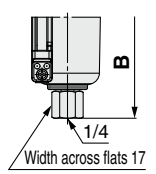


Plate thickness
AW20-D to AW30-D: Max. 3.5
AW40-D : Max. 5

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 AW40-D							

Model	Standard specifications									Optional specifications			
										Square embedded type pressure gauge		Digital pressure switch	
	P1	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	115.3	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	0	□28	41.5	□27.8	52

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	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

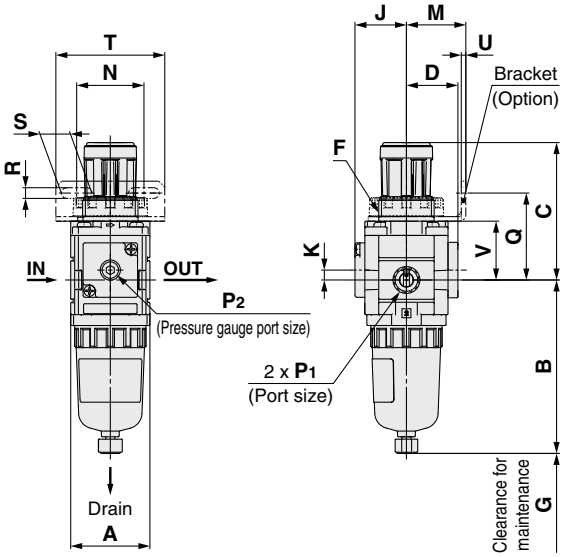
*1 The dimension of C is the length when the filter regulator knob is unlocked.

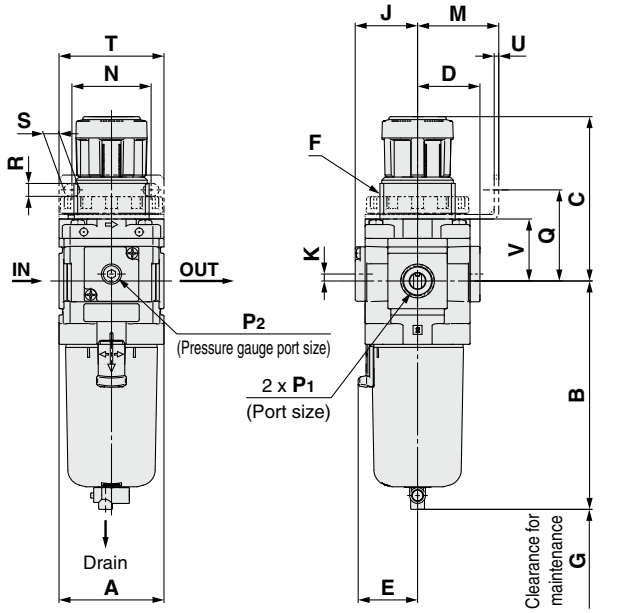
AW20-D to AW40-D Series
AW20K-D to AW40K-D Series

Dimensions

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

AW20K-D **AW30K-D, AW40K-D**





Panel mounting dimensions

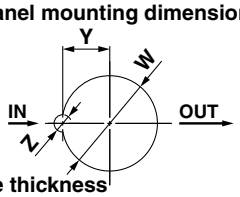
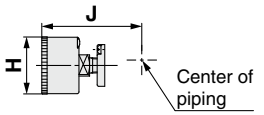
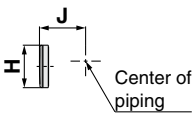
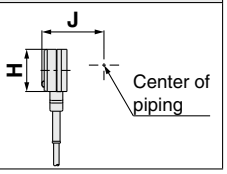
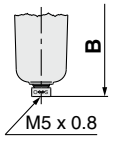
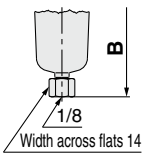
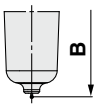
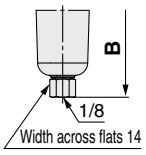
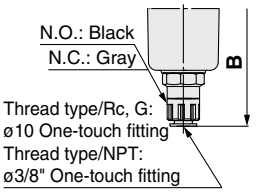
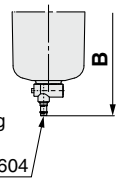
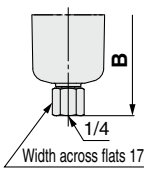
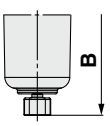
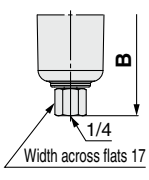
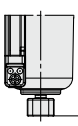
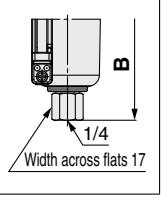


Plate thickness
AW20K-D to AW30K-D: Max. 3.5
AW40K-D : Max. 5

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 AW40K-D							

Model	Standard specifications											Optional specifications							
												Square embedded type pressure gauge		Digital pressure switch		Round type pressure gauge		Round type pressure gauge (Semi-standard: Z)	
	P1	P2	A	B	C*1	D	E	F	G	J	K	H	J	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	ø37.5	63.5
AW30K-D	1/4, 3/8	1/8	53	115.3	86.5	31.5	30	M38 x 1.5	55	31.5	3.5	□28	32.5	□27.8	43	ø37.5	68	ø37.5	69
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	0	□28	41.5	□27.8	52	ø42.5	78	ø42.5	78

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	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

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

⚠ 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", https://www.smcworld.com

Design/Selection

⚠ Warning

1. Residual pressure disposal (outlet pressure removal) is not possible for the AW20-D to AW40-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 AW40K-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 Carbonate of soda	Degreasing of metals Industrial salts Water-soluble cutting oil	×	○
Inorganic salts	Sodium sulfide Potassium nitrate Sulfate of soda	—	×	△
Chlorine solvents	Carbon tetrachloride Chloroform Ethylene chloride Methylene chloride	Cleansing liquid for metals Printing ink Dilution	×	△
Aromatic series	Benzene Toluene Paint thinner	Coatings Dry cleaning	×	△
Ketone	Acetone Methyl ethyl ketone Cyclohexane	Photographic film Dry cleaning Textile industries	×	×
Alcohol	Ethyl alcohol IPA Methyl alcohol	Antifreeze Adhesives	△	×
Oil	Gasoline Kerosene	—	×	○
Ester	Phthalic acid dimethyl Phthalic acid diethyl Acetic acid	Synthetic oil Anti-rust additives	×	○
Ether	Methyl ether Ethyl ether	Brake oil additives	×	○
Amino	Methyl amino	Cutting oil Brake oil additives Rubber accelerator	×	×
Others	Thread-lock fluid Seawater Leak tester	—	×	△

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

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

Maintenance

⚠ Warning

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

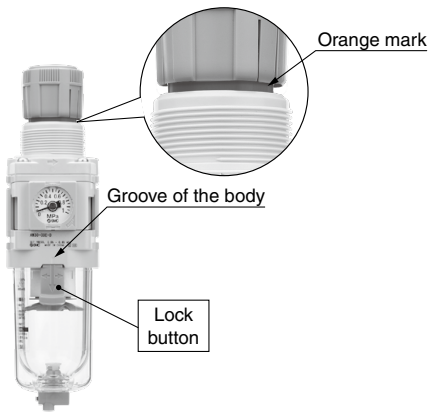
Mounting/Adjustment

⚠ 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 AW40-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.

⚠ 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.