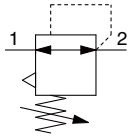


Regulator AR10-A

Symbol
Regulator



AR10-A

How to Order

Refer to page 67 for size 20 to 60.

AR10-M5 - -A
 1 2

- 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) AR10-M5BG-1NR-A

		Symbol	Description		
1	Option #1	a	Mounting	Nil	Without mounting option
				B*2	With bracket
				H	With set nut (for panel mount)
	+				
	b	Pressure gauge	Nil	Without pressure gauge	
			G*3	Round type pressure gauge (without limit indicator)	
+					
2	Semi-standard	c	Set pressure *4	Nil	0.05 to 0.7 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	Pressure unit	Nil	Name plate and pressure gauge in SI units: MPa		
		Z*5	Name plate and pressure gauge in imperial units: psi		

*1 Options are not assembled and supplied loose at the time of shipment.

*2 Assembly of a bracket and set nuts

*3 A 1.0 MPa pressure gauge will be fitted. It is not assembled and supplied loose at the time of shipment.

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

*5 This product is for overseas use only according to the new Measurement Act. (The SI unit type is provided for use in Japan.)

Standard Specifications

Port size	M5 x 0.8
Pressure gauge port size *1	1/16
Fluid	Air
Ambient and fluid temperature	-5 to 60°C (with no freezing)
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Set pressure range	0.05 to 0.7 MPa
Construction	Relieving type
Weight [kg]	0.06

*1 Use a bushing (part no.: 131368) when connecting the R1/8 pressure gauge to the Rc1/16.

Options/Part No.

Bracket assembly *1	AR12P-270AS
Set nut	AR12P-260S
Round type pressure gauge *2	G27-10-R1

*1 Assembly of a bracket and set nuts

*2 1.0 MPa pressure gauge

⚠ 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", <http://www.smcworld.com>

Selection

⚠ Warning

- Although exhaust of the residual pressure to the inlet side is possible when eliminating the inlet pressure, exhaust is not possible when the set pressure is 0.15 MPa or less.

Maintenance

⚠ Warning

- When using the regulator 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

- 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.
- Do not use tools on the pressure regulator knob as this may cause damage. It must be operated manually.

⚠ Caution

- Be sure to unlock the knob before adjusting the pressure and lock it after setting the pressure. Failure to follow this procedure can cause damage to the knob and the outlet pressure may fluctuate.
 - Pull the pressure regulator knob to unlock. (You can visually verify this with the "orange mark" that appears in the gap.)
 - Push the pressure regulator knob to lock. When the knob is not easily locked, turn it left and right a little and then push it (when the knob is locked, the "orange mark", i.e., the gap will disappear).
- Pulsation will be generated when the difference between the inlet and the outlet pressure is large. In this case, reduce the pressure difference between the inlet and the outlet. Please consult with SMC if the pulsation problem is not resolved.

AC

AF+AR+AL

AW+AL

AF+AR

AF+AFM+AR

AW+AFM

Attachment

AF

AFM / AFD

AR

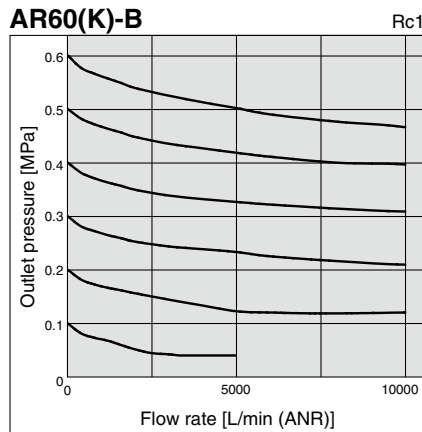
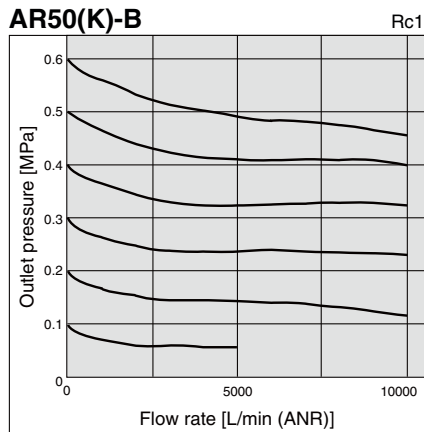
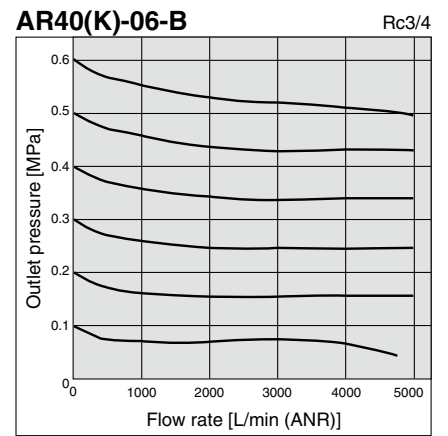
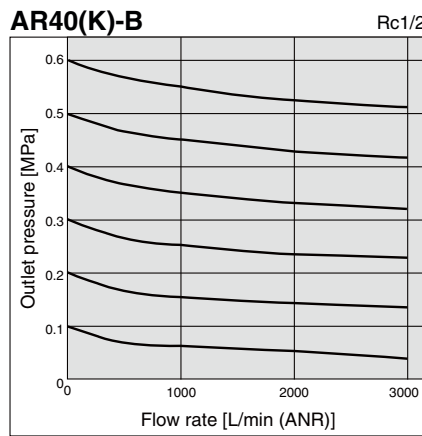
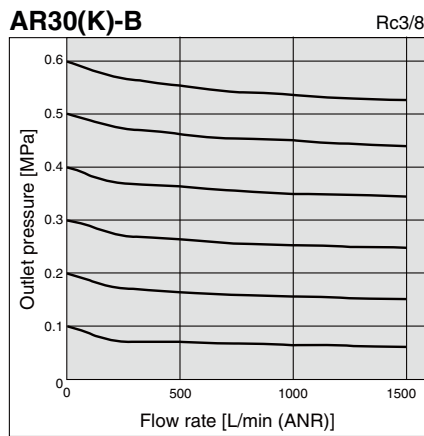
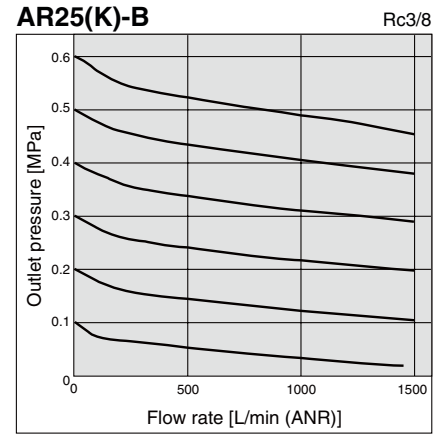
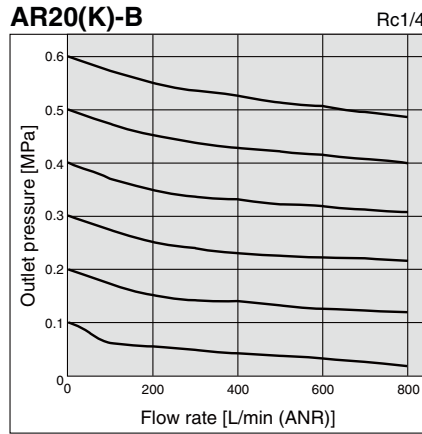
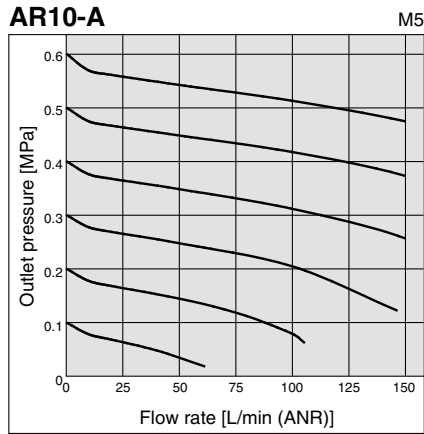
AL

AW

Regulator **AR10-A Series**
 Regulator **AR20-B to AR60-B Series**
 Regulator with Backflow Function **AR20K-B to AR60K-B Series**

Flow Rate Characteristics (Representative values)

Condition: Inlet pressure of 0.7 MPa



AC

AF+AR+AL

AW+AL

AF+AR

AF+AFM+AR

AW+AFM

Attachment

AF

AFM / AFD

AR

AL

AW

AR10-A Series

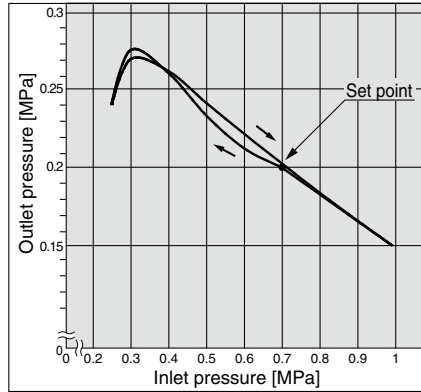
AR20-B to AR60-B Series

AR20K-B to AR60K-B Series

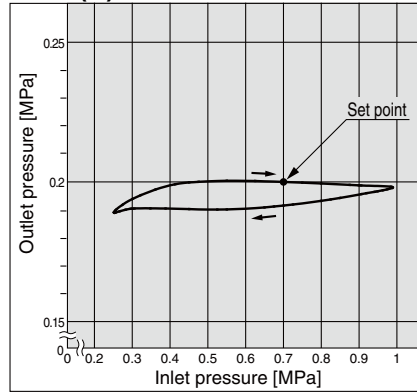
Pressure Characteristics (Representative values)

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

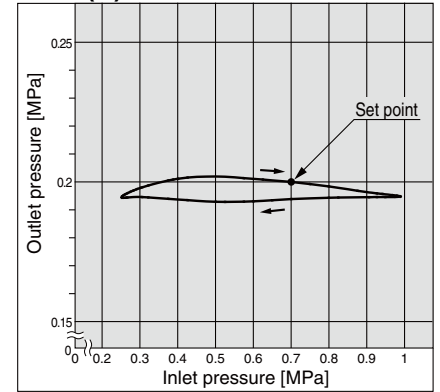
AR10-A



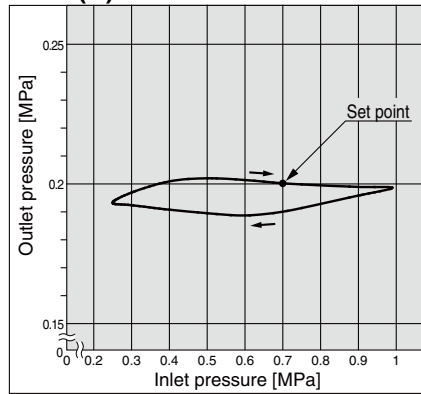
AR20(K)-B



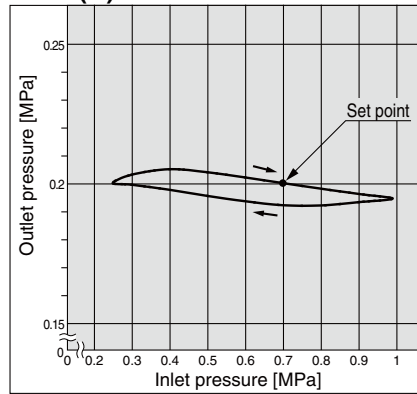
AR25(K)-B



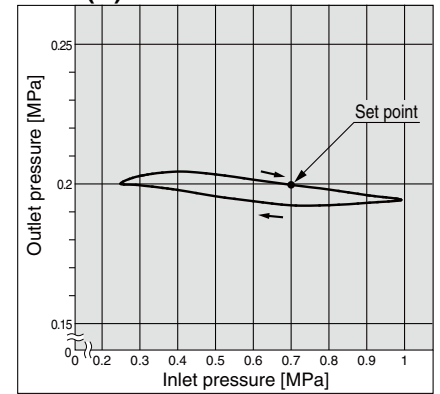
AR30(K)-B



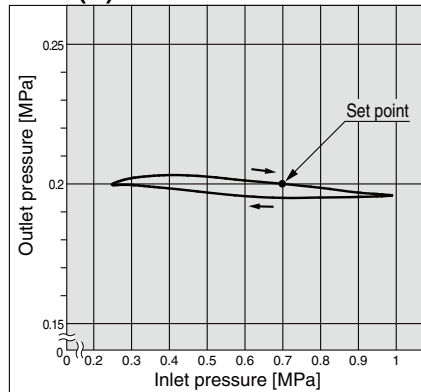
AR40(K)-B



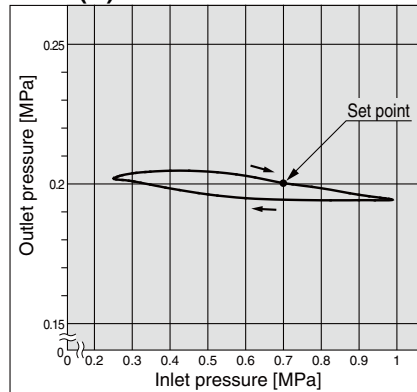
AR40(K)-06-B



AR50(K)-B



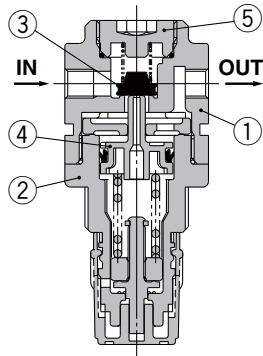
AR60(K)-B



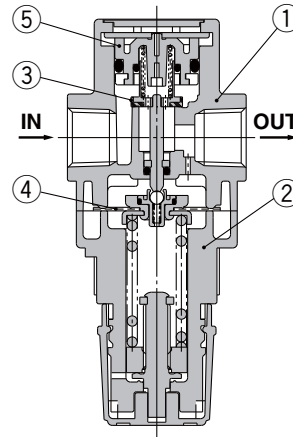
Regulator **AR10-A Series**
 Regulator **AR20-B to AR60-B Series**
 Regulator with Backflow Function **AR20K-B to AR60K-B Series**

Construction

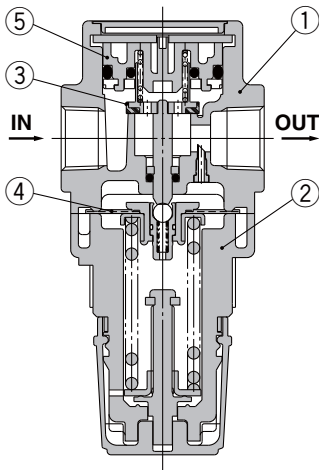
AR10-A



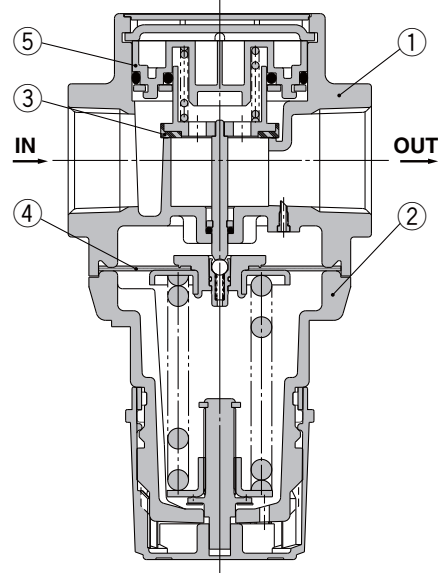
AR20(K)-B/AR25(K)-B



AR30(K)-B/AR40(K)-B



AR50(K)-B/AR60(K)-B



Component Parts

No.	Description	Material	Model	Color
1	Body	Zinc die-cast	AR10-A	White
		Aluminum die-cast	AR20(K)-B to AR60(K)-B	
2	Bonnet	Polyacetal	AR10-A	White
			AR20(K)-B to AR40(K)-B	
		Aluminum die-cast	AR50(K)-B/AR60(K)-B	

Replacement Parts

[AR10-A]

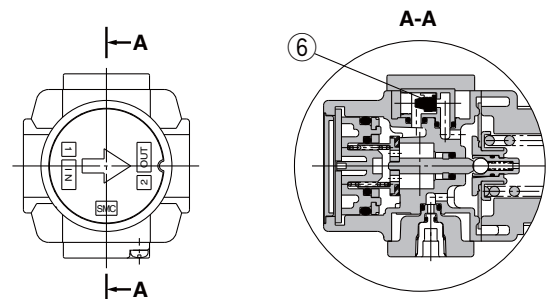
No.	Description	Material	Part no.
3	Valve	HNBR	AR10P-090S
4	Piston assembly	Polyacetal	AR10P-150AS
5	Valve guide assembly	Polyacetal	131329

[AR20(K)-B to AR60(K)-B]

No.	Description	Material	Part no.					
			AR20(K)-B	AR25(K)-B	AR30(K)-B	AR40(K)-B	AR40(K)-06-B	AR50(K)-B
3	Valve	Brass, HNBR	AR20P-410S	AR25P-410S	AR30P-410S	AR40P-410S	AR50P-410S	AR60P-410S
4	Diaphragm assembly	Weatherable NBR	AR20P-150AS	AR25P-150AS	AR30P-150AS	AR40P-150AS	AR50P-150AS	
5	Valve guide assembly	Polyacetal	AR20P-050AS	AR25P-050AS	AR30P-050AS	AR40P-050AS	AR50P-050AS	AR60P-050AS
6	Check valve assembly *1	—	AR23KP-020AS					

*1 Check valve assembly is applicable for a regulator with backflow function (AR20K-B to AR60K-B) only.
 Assembly of a check valve cover, check valve body assembly and 2 mounting screws

AR20K-B to AR60K-B
 (Regulator with Backflow Function)



AC
AF+AR+AL
AW+AL
AF+AR
AF+AFM+AR
AW+AFM
Attachment
AF
AFM / AFD
AR
AL
AW

AR10-A Series

AR20K-B to AR60K-B Series

Working Principle (Regulator with Backflow Function)

AR10-A

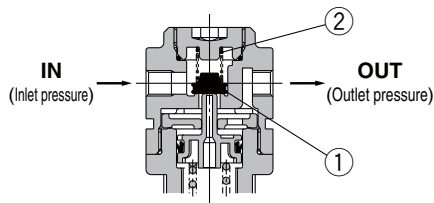


Figure 1

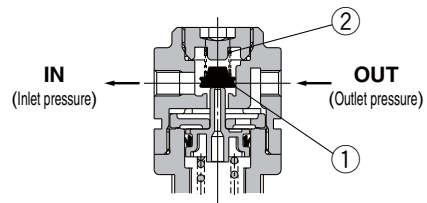


Figure 2

When the inlet pressure is higher than the regulating pressure, the check valve operates as a normal regulator (Figure 1). When the inlet pressure is shut off and exhausted, any inlet pressure applied to the valve ① will be lost. The force for seating the valve ① is the valve spring force ② only. When the valve ① is opened using the outlet force, the outlet pressure will be exhausted at the inlet side (Figure 2). When the set pressure is 0.15 MPa or less, the valve ① may not open due to the valve spring ② force.

AR20K-B to AR60K-B

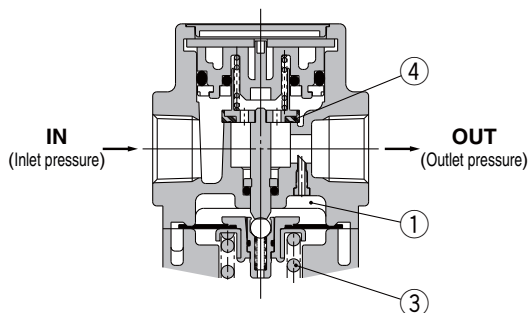
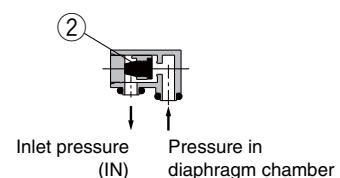
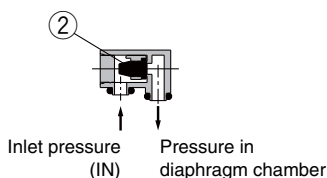
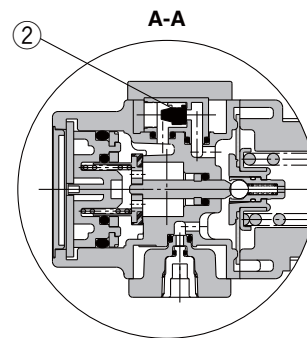
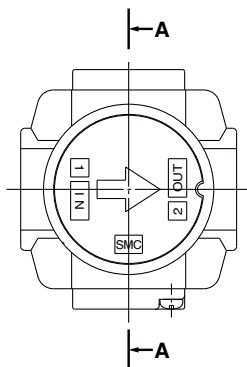


Figure 1 Normal

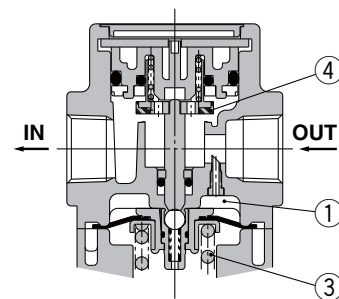


Figure 2 Backflow

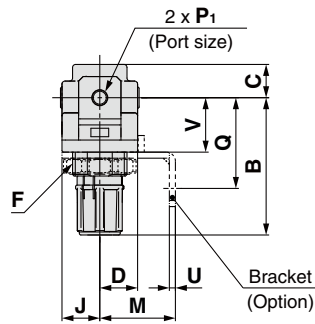
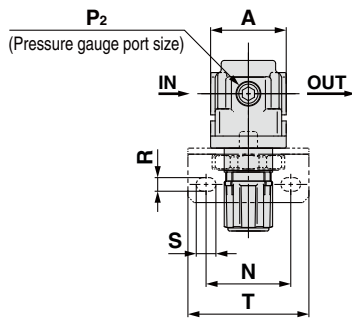
When the inlet pressure is higher than the regulating pressure, the check valve ② closes and operates as a normal regulator (Figure 1). When the inlet pressure is shut off and released, the check valve ② opens and the pressure in the diaphragm chamber ① is released into the inlet side (Figure 2). This lowers the pressure in the diaphragm chamber ① and the force generated by the spring ③ lifts the diaphragm. The valve ④ opens through the stem, and the outlet pressure is released to the inlet side (Figure 2).

AW
AL
AR
AFM / AFD
AF
Attachment
AW + AFM
AF + AFM + AR
AF + AR
AW + AL
AF + AR + AL
AC

AR10-A Series AR20-B to AR60-B Series AR20K-B to AR60K-B Series

Dimensions

AR10-A

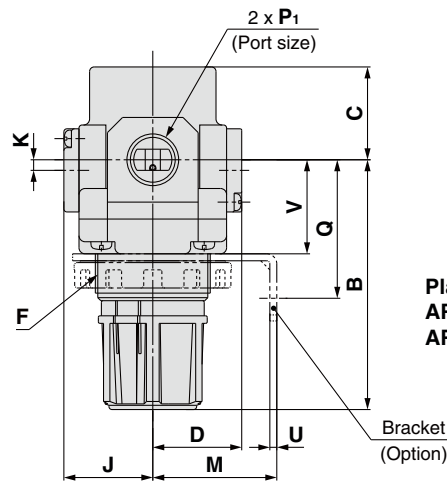
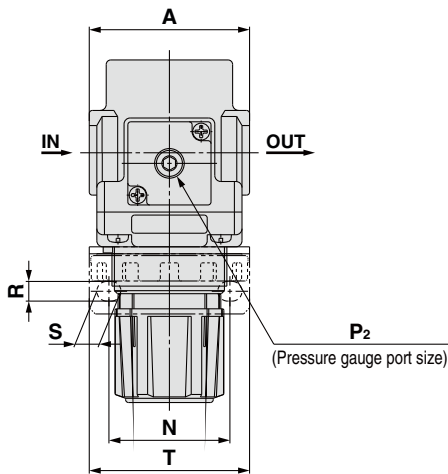


Panel mounting dimensions



Plate thickness
AR10-A: Max. 3.5

AR20(K)-B to AR40(K)-06-B



Panel mounting dimensions

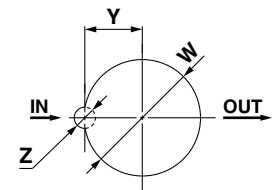
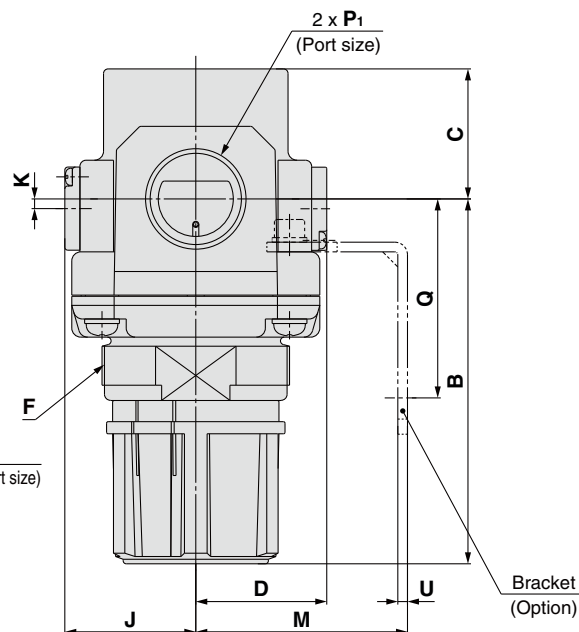
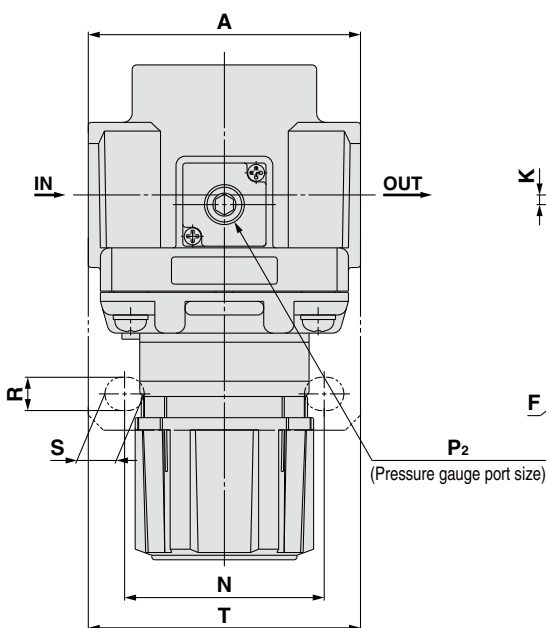
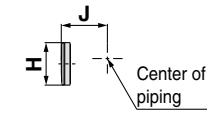
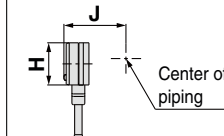
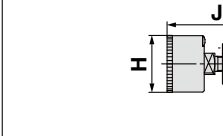
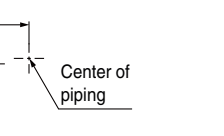


Plate thickness
AR20(K)-B to AR30(K)-B: Max. 3.5
AR40(K)-B : Max. 5

AR50(K)-B/AR60(K)-B



Regulator **AR10-A Series**
 Regulator **AR20-B to AR60-B Series**
 Regulator with Backflow Function **AR20K-B to AR60K-B Series**

Option	Square embedded type pressure gauge	Digital pressure switch	Round type pressure gauge	Round type pressure gauge (with color zone)
Dimensions				

Model	Standard specifications										Optional specifications						
	P ₁	P ₂	A	B* ¹	C	D	F	J	K	H	J	H	J	H	J	H	J
AR10-A	M5 x 0.8	1/16	25	47.4	11	12.5	M18 x 1	12.5	—	—	—	—	—	ø26	26	—	—
AR20(K)-B	1/8, 1/4	1/8	40	67.4	26.5	28.5	M28 x 1	28.5	2* ²	□28	29.5	□27.8	40	ø37.5	65	ø37.5	66
AR25(K)-B	1/4, 3/8	1/8	53	71.9	28	27.5	M32 x 1.5	27.5	0	□28	28.5	□27.8	39	ø37.5	64	ø37.5	65
AR30(K)-B	1/4, 3/8	1/8	53	85.6	30.7	29.4	M38 x 1.5	29.4	3.5	□28	30.4	□27.8	40.9	ø37.5	65.9	ø37.5	66.9
AR40(K)-B	1/4, 3/8, 1/2	1/8	70	91.7	35.8	33.8	M42 x 1.5	33.8	3.5	□28	34.8	□27.8	45.3	ø42.5	71.3	ø42.5	71.3
AR40(K)-06-B	3/4	1/8	75	93.2	35.8	33.8	M42 x 1.5	33.8	3	□28	34.8	□27.8	45.3	ø42.5	71.3	ø42.5	71.3
AR50(K)-B	3/4, 1	1/8	90	125.2	43	43.3	M62 x 1.5	43.3	3.2	□28	44.3	□27.8	54.8	ø42.5	80.8	ø42.5	80.8
AR60(K)-B	1	1/8	95	129.6	46	43.3	M62 x 1.5	43.3	3.2	□28	44.3	□27.8	54.8	ø42.5	80.8	ø42.5	80.8

Model	Optional specifications										
	Bracket mount							Panel mount			
	M	N	Q	R	S	T	U	V	W	Y	Z
AR10-A	25	28	30	4.5	6.5	40	2	18	18.5	—	—
AR20(K)-B	30	34	43.9	5.4	15.4	55	2.3	24.7	28.5	14	6
AR25(K)-B	30	34	43.9	5.4	15.4	55	2.3	25.7	32.5	16	6
AR30(K)-B	41	40	45.8	6.5	8	53	2.3	31.1	38.5	19	7
AR40(K)-B	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7
AR40(K)-06-B	50	54	55.5	8.5	10.5	70	2.3	37	42.5	21	7
AR50(K)-B	70	66	65.8	11	13	90	3.2	—	—	—	—
AR60(K)-B	70	66	65.8	11	13	90	3.2	—	—	—	—

*1 The dimension of B is the length when the filter regulator knob is unlocked.
 *2 For the AR20(K)-B only, the position of the pressure gauge is above the center of the piping.

AC
 AF+AR+AL
 AW+AL
 AF+AR
 AF+AFM+AR
 AW+AFM
 Attachment
 AF
 AFM/AFD
 AR
 AL
 AW