Modular Type Regulators
Series AR

	Model	Port size	Options
Regulator Series AR  **Pages 496 through to 505**	**AR10**	M5 x 0.8	Bracket Square embedded type pressure gauge (except the AR10) Round type pressure gauge Digital pressure switch (except the AR10) Panel mount
	AR20	1/8, 1/4	
	AR25	1/4, 3/8	
	AR30	1/4, 3/8	
	AR40	1/4, 3/8, 1/2	
	AR40-06	3/4	
	AR50	3/4, 1	
	AR60	1	
Regulator with Backflow Function Series AR□K  **Pages 496 through to 505**	**AR20K**	1/8, 1/4	
	AR25K	1/4, 3/8	
	AR30K	1/4, 3/8	
	AR40K	1/4, 3/8, 1/2	
	AR40K-06	3/4	
	AR50K	3/4, 1	
	AR60K	1	

Regulator

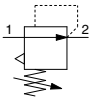
AR10 to AR60

Regulator with Backflow Function

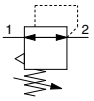
AR20K to AR60K

Symbol

Regulator

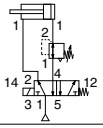


Regulator with Backflow Function

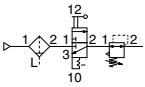


- **With the backflow function it incorporates a mechanism to exhaust the air pressure in the outlet side reliably and quickly.**

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 K – ❸ 03 BE – ❻ – ❼

❶ ❷ ❸ ❹ ❺ ❻ ❼

Made to Order

(Refer to pages 504 and 505 for details.)

- 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

		Symbol	Description	❶ Body size 10	20	25	30	40	50	60
❷	With backflow function	**Nil**	Without backflow function	●	●	●	●	●	●	●
		K Note 1)	With backflow function	—	●	●	●	●	●	●
❸	Thread type	**Nil**	Metric thread (M5)	●	—	—	—	—	—	—
			Rc	—	●	●	●	●	●	●
		N	NPT	—	●	●	●	●	●	●
		F	G	—	●	●	●	●	●	●
❹	Port size	**M5**	M5	●	—	—	—	—	—	—
		01	1/8	—	●	—	—	—	—	—
		02	1/4	—	●	●	●	●	—	—
		03	3/8	—	—	●	●	●	—	—
		04	1/2	—	—	—	—	●	—	—
		06	3/4	—	—	—	—	●	●	—
		10	1	—	—	—	—	—	●	●
❺ Option Note 2)	**a** Mounting	**Nil**	Without mounting option	●	●	●	●	●	●	●
		B Note 3)	With bracket	●	●	●	●	●	●	●
		H	With set nut (for panel fitting)	●	●	●	●	●	—	—
	b Pressure gauge	**Nil**	Without pressure gauge	●	●	●	●	●	●	●
		E	Square embedded type pressure gauge (with limit indicator)	—	●	●	●	●	●	●
		G	Round type pressure gauge (without limit indicator)	●	—	—	—	—	—	—
			Round type pressure gauge (with limit indicator)	—	●	●	●	●	●	●
		M	Round type pressure gauge (with color zone)	—	●	●	●	●	●	●
	Digital pressure switch	**E1** Note 4)	Output: NPN output / Electrical entry: Wiring bottom entry	—	●	●	●	●	●	●
		E2 Note 4)	Output: NPN output / Electrical entry: Wiring top entry	—	●	●	●	●	●	●
		E3 Note 4)	Output: PNP output / Electrical entry: Wiring bottom entry	—	●	●	●	●	●	●
		E4 Note 4)	Output: PNP output / Electrical entry: Wiring top entry	—	●	●	●	●	●	●



AR20, AR20K



AR40, AR40K

		Symbol	Description	❶ Body size 10	20	25	30	40	50	60
❻ Semi-standard	c Set pressure	Nil Note 5)	0.05 to 0.85 MPa setting	●	●	●	●	●	●	●
		1 Note 6)	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 imperial units: MPa	●	●	●	●	●	●	●
		Z Note 7)	Name plate and pressure gauge in imperial units: psi	○ Note 9)	○ Note 9)	○ Note 9)	○ Note 9)	○ Note 9)	○ Note 9)	○ Note 9)
		ZA Note 8)	Digital pressure switch: With unit conversion function	—	△ Note 10)	△ Note 10)	△ Note 10)	△ Note 10)	△ Note 10)	△ Note 10)

Note 1) The AR10 type comes with a backflow function as a standard feature. (K is not available.) When using the AR10 type as w/ backflow function, backflow may not occur with the set pressure 0.15 MPa or less. For AR20K to 60K, please set the inlet pressure to at least 0.05 MPa higher than the set pressure.
Note 2) Option B, G, H, M are not assembled and supplied loose at the time of shipment.
Note 3) Assembly of a bracket and set nuts (AR10, AR20(K) to AR40(K))
Including 2 mounting screws for the AR50(K) and AR60(K)
Note 4) 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.)
Note 5) Only the AR10 has a pressure setting of 0.05 to 0.7 MPa.
Note 6) The only difference from the standard specifications is the adjusting spring for the regulator. It does not restrict the setting of 0.2 MPa or more. When the pressure gauge is attached, a 0.2 MPa pressure gauge will be fitted.
Note 7) For thread type: M5 and NPT. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.) The digital pressure switch will be equipped with the unit conversion function, setting to psi initially.
The combination of the round type pressure gauge with color zone "M" and a psi display "Z" is not orderable as a standard product. However, this combination is available as a special.
Note 8) For options: E1, E2, E3, E4. This product is for overseas use only according to the new Measurement Law. (The SI unit is provided for use in Japan.)
Note 9) ○: For thread type: M5 and NPT only
Note 10) △: Select with options: E1, E2, E3, E4.

Standard Specifications

Model	AR10	AR20(K)	AR25(K)	AR30(K)	AR40(K)	AR40(K)-06	AR50(K)	AR60(K)
Port size	M5 x 0.8	1/8, 1/4	1/4, 3/8	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1	1
Pressure gauge port size Note 1)	1/16 Note 2)	1/8			1/4			
Fluid	Air							
Ambient and fluid temperature Note 3)	–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	0.05 to 0.85 MPa						
Relief pressure Note 4)	Set pressure + 0.05 MPa [at relief flow rate of 0.1 L/min (ANR)]							
Construction	Relieving type							
Weight (kg)	0.06	0.16	0.21	0.29	0.44	0.47	1.17	1.22

Note 1) Pressure gauge connection threads are not available for F.R.L. unit with a square embedded type pressure gauge (AR20(K) to AR60(K)).
Note 2) Use a bushing (part no:131368) when connecting the R1/8 pressure gauge to the Rc1/16.
Note 3) –5 to 50°C for the products with the digital pressure switch.
Note 4) Not applicable to the AR10.

Options/Part No.

Option \ Model			AR10	AR20(K)	AR25(K)	AR30(K)	AR40(K)	AR40(K)-06	AR50(K)	AR60(K)
Bracket assembly Note 1)			AR10P-270AS	AR20P-270AS	AR25P-270AS	AR30P-270AS	AR40P-270AS		AR50P-270AS Note 2)	
Set nut			AR10P-260S	AR20P-260S	AR25P-260S	AR30P-260S	AR40P-260S		— Note 3)	— Note 3)
Pressure gauge	**Round type** Note 4)	**Standard**	G27-10-R1	G36-10-□01			G46-10-□02			
		0.02 to 0.2 MPa setting	G27-10-R1 Note 5)	G36-2-□01			G46-2-□02			
	Round type (with color zone) Note 4)	**Standard**	—	G36-10-□01-L			G46-10-□02-L			
		0.02 to 0.2 MPa setting	—	G36-2-□01-L			G46-2-□02-L			
	Square embedded type Note 6)	**Standard**	—	GC3-10AS [GC3P-010AS (Pressure gauge cover only)]						
		0.02 to 0.2 MPa setting	—	GC3-2AS [GC3P-010AS (Pressure gauge cover only)]						
Digital pressure switch		**NPN output: Wiring bottom entry**	—	ISE35-N-25-MLA [ISE35-N-25-M (Switch body only)] Note 7)						
		NPN output: Wiring top entry		ISE35-R-25-MLA [ISE35-R-25-M (Switch body only)] Note 7)						
		PNP output: Wiring bottom entry		ISE35-N-65-MLA [ISE35-N-65-M (Switch body only)] Note 7)						
		PNP output: Wiring top entry		ISE35-R-65-MLA [ISE35-R-65-M (Switch body only)] Note 7)						

Note 1) Assembly of a bracket and set nuts
Note 2) Assembly of a bracket and 2 mounting screws
Note 3) Please consult with SMC regarding the set nuts for the AR50(K) and AR60(K).
Note 4) □ in part numbers for a round pressure gauge indicates a type of connection thread. No indication is necessary for R; however, indicate N for NPT. Please contact SMC regarding the connection thread NPT and pressure gauge supply for psi unit specifications.
Note 5) Pressure gauge for general purpose
Note 6) Including one O-ring and 2 mounting screws. [ ]: Pressure gauge cover only
Note 7) Lead wire with connector (2 m), adapter, lock pin, O-ring (1 pc.), mounting screw (2 pcs.) are attached. [ ]: Switch body only
Also, regarding how to order the digital pressure switch, please refer to page 538.

⚠ Specific Product Precautions

Be sure to read before handling. Refer to front matter 43 for Safety Instructions and pages 365 to 369 for F.R.L. Precautions.

Selection

⚠ Warning

1. Residual pressure disposal (outlet pressure removal) is not possible for the AR20 to AR60 even though the inlet pressure is exhausted. When the residual pressure disposal is performed, use the regulator with a backflow function (AR20K to AR60K).

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 and 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. The pressure gauge included with regulators for 0.02 to 0.2 MPa setting is for up to 0.2 MPa use only (except the AR10). Exceeding 0.2 MPa of pressure can damage the gauge.
3. 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).

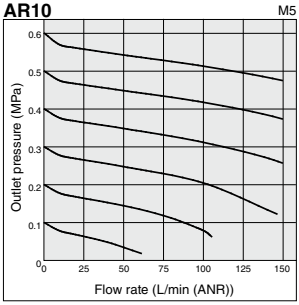


2. A knob cover is available to prevent careless operation of the knob. Refer to page 539 for details.

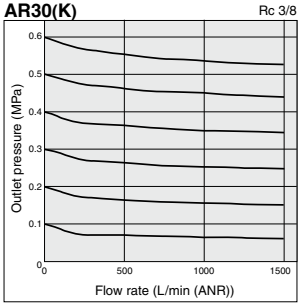
Flow Characteristics (Representative values)

Condition: Inlet pressure 0.7 MPa

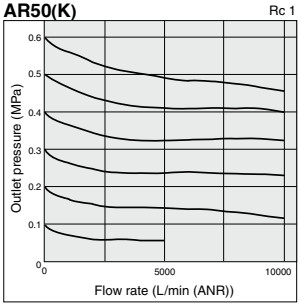
AR10 M5



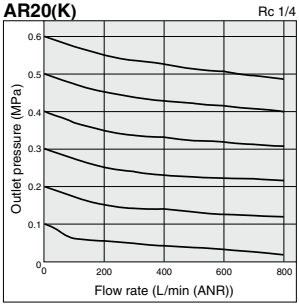
AR30(K) Rc 3/8



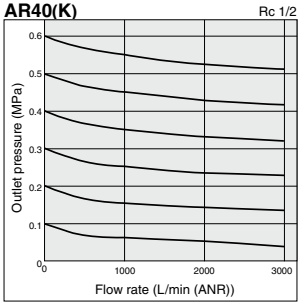
AR50(K) Rc 1



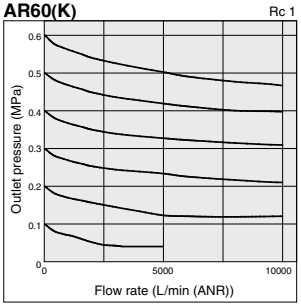
AR20(K) Rc 1/4



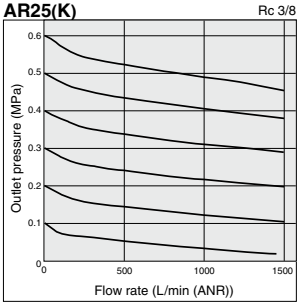
AR40(K) Rc 1/2



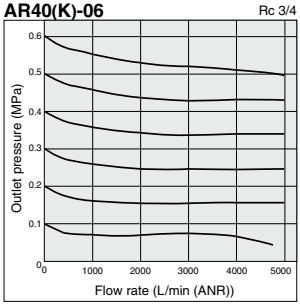
AR60(K) Rc 1



AR25(K) Rc 3/8



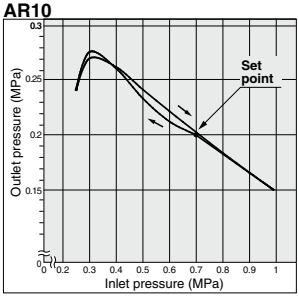
AR40(K)-06 Rc 3/4



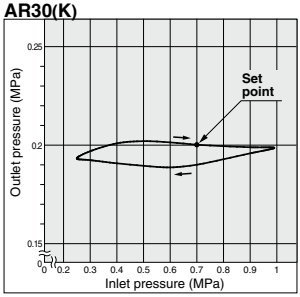
Pressure Characteristics (Representative values)

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

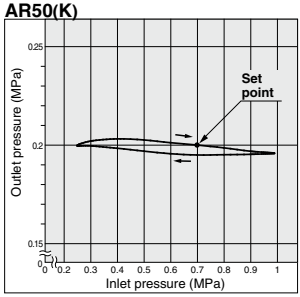
AR10



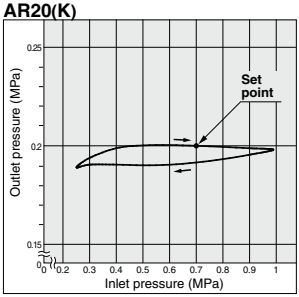
AR30(K)



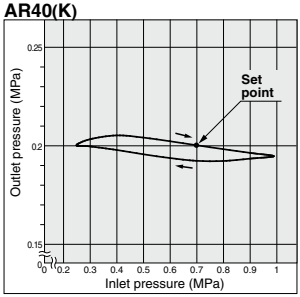
AR50(K)



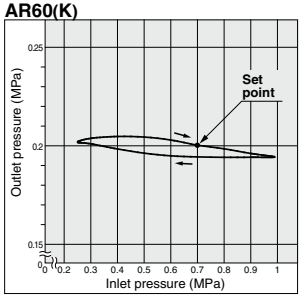
AR20(K)



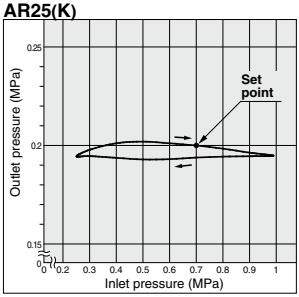
AR40(K)



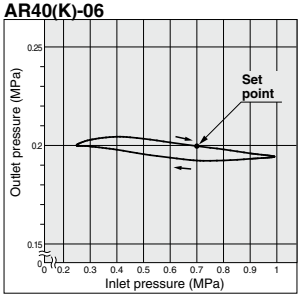
AR60(K)



AR25(K)

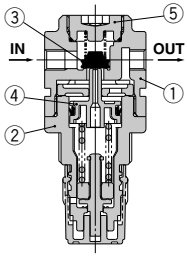


AR40(K)-06

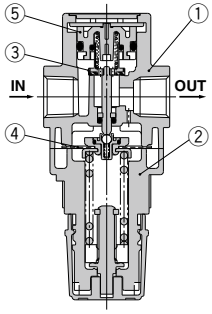


Construction

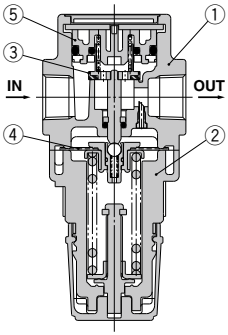
AR10



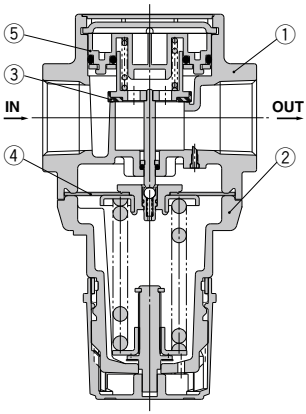
AR20(K), AR25(K)



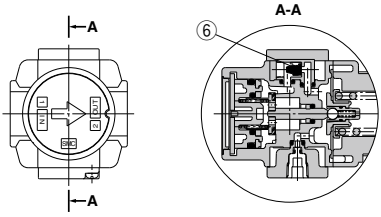
AR30(K), AR40(K)



AR50(K), AR60(K)



AR20K to AR60K (Regulator with Backflow Function)



Component Parts

No.	Description	Material	Model	Color
1	**Body**	Zinc die-cast	AR10	Platinum silver
		Aluminum die-cast	AR20(K) to AR60(K)	
2	**Bonnet**	Polyacetal	AR10, AR20(K) to AR40(K)-06	Black
		Aluminum die-cast	AR50(K), AR60(K)	

Replacement Parts

No.	Description	Material	Part no.							
			AR10	**AR20(K)**	**AR25(K)**	**AR30(K)**	**AR40(K)**	**AR40(K)-06**	**AR50(K)**	**AR60(K)**
3	**Valve assembly**	Brass, HNBR	AR10P-090S	AR20P-410S	AR25P-410S	AR30P-410S	AR40P-410S		AR50P-410S	AR60P-410S
4	**Diaphragm assembly**	Weatherable NBR	AR10P-150AS Note 1)	AR20P-150AS	AR25P-150AS	AR30P-150AS	AR40P-150AS		AR50P-150AS	
5	**Valve guide assembly**	Polyacetal	131329	AR20P-050AS	AR25P-050AS	AR30P-050AS	AR40P-050AS		AR50P-050AS	AR60P-050AS
6	**Check valve assembly** Note 2)	—	—	AR20KP-020AS						

Note 1) The AR10 is a piston type. Assembly of a piston and a seal (KSYP-13).
Note 2) Check valve assembly is applicable for a regulator with backflow function (AR20K to AR60K) only.
Assembly of a check valve cover, check valve body assembly and 2 screws

Working Principle (Regulator with Backflow Function)

AR10

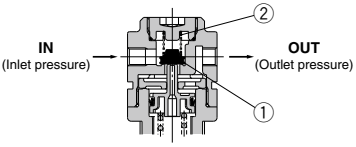


Figure 1

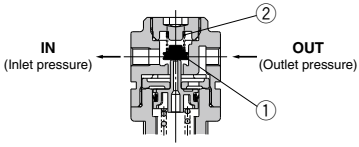


Figure 2

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, valve ① may not open due to the valve spring ② force.

AR20K to AR60K

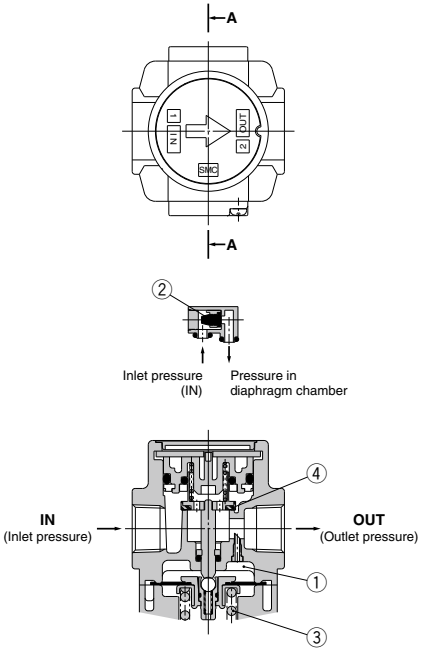


Figure 1 Normal

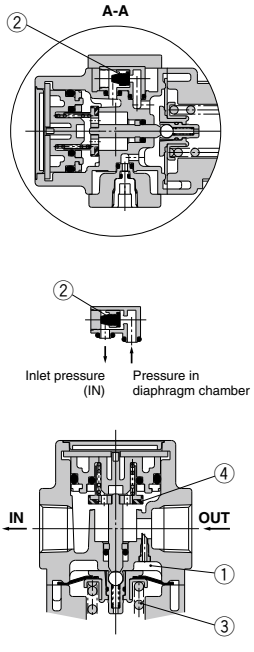
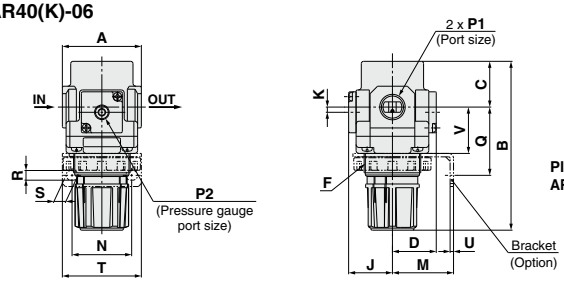


Figure 2 Backflow

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

Dimensions

AR10, AR20(K) to AR40(K)-06



Panel fitting dimension

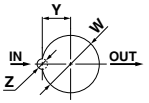
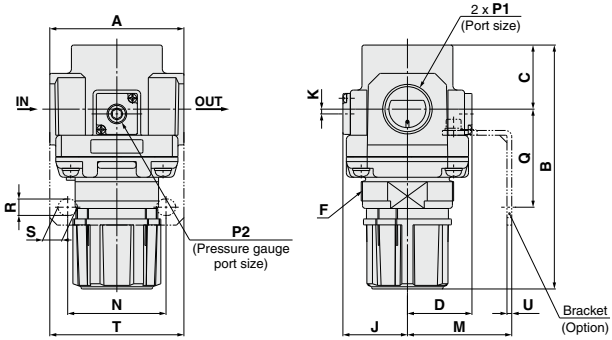
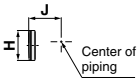
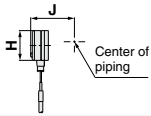
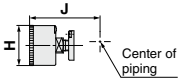


Plate thickness
AR10, AR20(K) to AR30(K): Max. 3.5
AR40(K): Max. 5

AR50(K), AR60(K)



Applicable model	AR20(K) to AR60(K)		AR10, AR20(K) to AR60(K)	AR20(K) to AR60(K)
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							
										Square type pressure gauge		Digital pressure switch		Round type pressure gauge		Round type pressure gauge (with color zone)	
	P1	P2	A	B Note 1)	C	D	F	J	K	H	J	H	J	H	J	H	J
AR10	M5 x 0.8	1/16	25	58	11	12.5	M18 x 1	12.5	0	—	—	—	—	ø26	26	—	—
AR20(K)	1/8, 1/4	1/8	40	94	26.5	28.5	M28 x 1	28.5	2 Note 2)	□28	29.5	□27.8	40	ø37.5	65	ø37.5	65
AR25(K)	1/4, 3/8	1/8	53	101	28	27.5	M32 x 1.5	27.5	0	□28	28.5	□27.8	39	ø37.5	64	ø37.5	64
AR30(K)	1/4, 3/8	1/8	53	116	31	29.5	M38 x 1.5	29.5	3.5	□28	30.5	□27.8	41	ø37.5	66	ø37.5	66
AR40(K)	1/4, 3/8, 1/2	1/4	70	128	36	34	M42 x 1.5	34	3.5	□28	35	□27.8	45	ø42.5	72.5	ø42.5	74
AR40(K)-06	3/4	1/4	75	129	36	34	M42 x 1.5	34	3	□28	35	□27.8	45	ø42.5	72.5	ø42.5	74
AR50(K)	3/4, 1	1/4	90	169	43	43.5	M62 x 1.5	43.5	3.3	□28	44.5	□27.8	55	ø42.5	82	ø42.5	84
AR60(K)	1	1/4	95	176	46	43.5	M62 x 1.5	43.5	3.3	□28	44.5	□27.8	55	ø42.5	82	ø42.5	84

Model	Optional specifications										
	Bracket mount							Panel mount			
	M	N	Q	R	S	T	U	V	W	Y	Z
AR10	25	28	30	4.5	6.5	40	2	18	18.5	—	—
AR20(K)	30	34	44	5.4	15.4	55	2.3	25	28.5	14	6
AR25(K)	30	34	44	5.4	15.4	55	2.3	26	32.5	16	6
AR30(K)	41	40	46	6.5	8	53	2.3	31	38.5	19	7
AR40(K)	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7
AR40(K)-06	50	54	56	8.5	10.5	70	2.3	37	42.5	21	7
AR50(K)	70	66	65.8	11	13	90	3.2	—	—	—	—
AR60(K)	70	66	65.8	11	13	90	3.2	—	—	—	—

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

Regulator
AR20 to AR60
Made to Order Specifications:

Made to Order

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



AR30-03G-X440 AR30-03-X425

① Special Temperature Environment

Special materials are used in the manufacturing of seals and resin parts to allow them to withstand various temperature conditions in cold or tropical (hot) climates.

Specifications

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

Applicable Model

Model	AR25	AR30	AR40	AR40-06	AR50	AR60
Port size	1/4, 3/8	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1	1

AR 30 - ❶ 03 ❸ BG ❹ - ❺ - X430

For high/low temperature

X430	Low temperature
X440	High temperature

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

Example) AR30-03BG-1NR-X430

		Symbol	Description	❶ Body size 25	30	40	50	60
❷	Thread type	Nil	Rc	●	●	●	●	●
		N	NPT	●	●	●	●	●
		F	G	●	●	●	●	●
❸	Port size	02	1/4	●	●	●	—	—
		03	3/8	●	●	●	—	—
		04	1/2	—	—	●	—	—
		06	3/4	—	—	●	●	—
		10	1	—	—	—	●	●
❹ Option (Note 1)	a Mounting	Nil	Without mounting option	●	●	●	●	●
		B (Note 2)	With bracket	●	●	●	●	●
		H	With set nut (for panel fitting)	●	●	●	—	—
	b Pressure gauge	G (Note 3)	Round type pressure gauge (without limit indicator)	●	●	●	●	●
❺ Semi-standard	c Set pressure	Nil	0.05 to 0.85 MPa setting	●	●	●	●	●
		1 (Note 4)	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 imperial units: MPa	●	●	●	●	●
		Z (Note 5)	Name plate and caution plate for bowl in imperial units: psi	○ (Note 6)	○ (Note 6)	○ (Note 6)	○ (Note 6)	○ (Note 6)

Note 1) Option B, G, H are not assembled and supplied loose at the time of shipment.
Note 2) Assembly of a bracket and set nuts (AR25 to AR40)
Including 2 mounting screws for the AR50 and AR60
Note 3) Mounting thread for pressure gauge: 1/8 for the AR25 to AR30; 1/4 for the AR40 to AR60. Pressure gauge type: G43
Note 4) The only difference from the standard specifications is the adjusting spring for the regulator. It does not restrict the setting of 0.2 MPa or more. When the pressure gauge is attached, a 0.2 MPa pressure gauge will be fitted.
Note 5) For thread type: NPT. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)
Note 6) ○: For thread type: NPT only

② High Pressure

Strong materials are used in the manufacturing of air filters intended for high pressure operation. Also, construction modification allows a wider regulating pressure range.

Specifications

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

Applicable Model

Model	AR20	AR25	AR30	AR40	AR40-06	AR50	AR60
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1	1

AR 30 - ❶ 03 ❸ BG ❹ - ❺ - X425

For high pressure

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

Example) AR30-03BG-NR-X425

		Symbol	Description	❶ Body size 20	25	30	40	50	60
❷	Thread type	Nil	Rc	●	●	●	●	●	●
		N	NPT	●	●	●	●	●	●
		F	G	●	●	●	●	●	●
❸	Port size	01	1/8	●	—	—	—	—	—
		02	1/4	●	●	●	●	—	—
		03	3/8	—	●	●	●	—	—
		04	1/2	—	—	—	●	—	—
		06	3/4	—	—	—	●	●	—
		10	1	—	—	—	—	●	●
❹ Option (Note 1)	a Mounting	Nil	Without mounting option	●	●	●	●	●	●
		B (Note 2)	With bracket	●	●	●	●	●	●
		H	With set nut (for panel fitting)	●	●	●	●	—	—
	b Pressure gauge	G (Note 3)	Round type pressure switch (with limit indicator)	●	●	●	●	●	●
❺ Semi-standard	c Exhaust mechanism	Nil	Relieving type	●	●	●	●	●	●
		N	Non-relieving type	●	●	●	●	●	●
	d Flow direction	Nil	Flow direction: Left to right	●	●	●	●	●	●
		R	Flow direction: Right to left	●	●	●	●	●	●
	e Knob	Nil	Downward	●	●	●	●	●	●
		Y	Upward	●	●	●	●	●	●
	f Pressure unit	Nil	Name plate and pressure gauge in imperial units: MPa	●	●	●	●	●	●
		Z (Note 4)	Name plate and caution plate for bowl in imperial units: psi	○ (Note 5)	○ (Note 5)	○ (Note 5)	○ (Note 5)	○ (Note 5)	○ (Note 5)

Note 1) Option B, G, H are not assembled and supplied loose at the time of shipment.
Note 2) Assembly of a bracket and set nuts (AR20 to AR40)
Including 2 mounting screws for the AR50 and AR60
Note 3) Mounting thread for pressure gauge: 1/8 for AR20 to AR30, 1/4 for AR40 to AR60. Pressure gauge type: G46-20-☐
Note 4) For thread type: NPT. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)
Note 5) ○: For thread type: NPT only

Regulator *AR10 to AR60*
Regulator with Backflow Function *AR20K to AR60K*
Made to Order Specifications:

Made to Order

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

③ 0.4 MPa Setting

The maximum set pressure is 0.4 MPa. When a pressure gauge is included, the display will show a range from 0 to 0.4 MPa.

Specifications

Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Set pressure range	0.05 to 0.4 MPa

Applicable Model

Model	AR10	AR20(K)	AR25(K)	AR30(K)	AR40(K)	AR40(K)-06	AR50(K)	AR60(K)
Port size	M5	1/8, 1/4	1/4, 3/8	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1	1

AR 30 ❶ - ❸ 03 ❺ - ❻ - X406

❷ ❹

X406: 0.4 MPa setting

• Option/Semi-standard: Select one each for **a** to **f**.
• Option/Semi-standard symbol: When more than one specification is required, indicate in alphabetic order.
Example) AR30K-03BE-NR-X406

		Symbol	Description	❶ Body size 10	20	25	30	40	50	60
❷	With backflow function	**Nil**	Without backflow function	●	●	●	●	●	●	●
		K Note 1)	With backflow function	–	●	●	●	●	●	●
❸	Thread type	**Nil**	Metric thread (M5)	●	–	–	–	–	–	–
			Rc	–	●	●	●	●	●	●
		N	NPT	–	●	●	●	●	●	●
		F	G	–	●	●	●	●	●	●
❹	Port size	**M5**	M5	●	–	–	–	–	–	–
		01	1/8	–	●	–	–	–	–	–
		02	1/4	–	●	●	●	●	–	–
		03	3/8	–	–	●	●	●	–	–
		04	1/2	–	–	–	–	●	–	–
		06	3/4	–	–	–	–	●	●	–
		10	1	–	–	–	–	–	●	●
❺ Option Note 2)	**a** Mounting	**Nil**	Without mounting option	●	●	●	●	●	●	●
		B Note 3)	With bracket	●	●	●	●	●	●	●
		H	With set nut (for panel fitting)	●	●	●	●	●	–	–
	b Pressure gauge	**Nil**	Without pressure gauge	●	●	●	●	●	●	●
		E	Square embedded type pressure gauge (with limit indicator)	–	●	●	●	●	●	●
		G	Round type pressure gauge (without limit indicator)	●	–	–	–	–	–	–
			Round type pressure gauge (with limit indicator)	–	●	●	●	●	●	●
		M	Round type pressure gauge (with color zone)	–	●	●	●	●	●	●
	b Digital pressure switch	**E1** Note 4)	Output: NPN output / Electrical entry: Wiring bottom entry	–	●	●	●	●	●	●
		E2 Note 4)	Output: NPN output / Electrical entry: Wiring top entry	–	●	●	●	●	●	●
		E3 Note 4)	Output: PNP output / Electrical entry: Wiring bottom entry	–	●	●	●	●	●	●
		E4 Note 4)	Output: PNP output / Electrical entry: Wiring top entry	–	●	●	●	●	●	●
❻ Semi-standard	**c** Exhaust mechanism	**Nil**	Relieving type	●	●	●	●	●	●	●
		N	Non-relieving type	●	●	●	●	●	●	●
	d Flow direction	**Nil**	Flow direction: Left to right	●	●	●	●	●	●	●
		R	Flow direction: Right to left	●	●	●	●	●	●	●
	e Knob	**Nil**	Downward	●	●	●	●	●	●	●
		Y	Upward	●	●	●	●	●	●	●
	f Pressure unit	**Nil**	Name plate and pressure gauge in imperial units: MPa	●	●	●	●	●	●	●
		Z Note 5)	Name plate and pressure gauge in imperial units: psi	○ Note 7) △ Note 8)	○ Note 7) △ Note 8)	○ Note 7) △ Note 8)	○ Note 7) △ Note 8)	○ Note 7) △ Note 8)	○ Note 7) △ Note 8)	○ Note 7) △ Note 8)
		ZA Note 6)	Digital pressure switch: With unit switching function	—						

Note 1) The AR10 type comes with a backflow function as a standard feature. (K is not available.) When using the AR10 type as w/ backflow function, backflow may not occur with the set pressure 0.15 MPa or less. For AR20K to 60K, please set the inlet pressure to at least 0.05 MPa higher than the set pressure.
Note 2) Option B, G, H are not assembled and supplied loose at the time of shipment.
Note 3) Assembly of a bracket and set nuts (AR10, AR20(K) to AR40(K)) Including 2 mounting screws for the AR50(K), AR60(K)
Note 4) 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.)
Note 5) For thread type: M5 and NPT. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.) The digital pressure switch will be equipped with the unit conversion function, setting to psi initially.
Note 6) For options: E1, E2, E3, E4. This product is for overseas use only according to the new Measurement Law. (The SI unit is provided for use in Japan.)
Note 7) ○: For thread type: M5 and NPT only
Note 8) △: Select with options: E1, E2, E3, E4.

Pilot Operated Regulator
Series AR425 to 935

Standard Specifications

Model	AR425	AR435	AR625	AR635	AR825	AR835	AR925	AR935
Port size	1/4, 3/8, 1/2		3/4, 1		1 ¼, 1½		2	
Fluid	Air							
Proof pressure	1.5 MPa							
Max. operating pressure	1.0 MPa							
Set pressure range (MPa) (1)	0.05 to 0.83	0.02 to 0.2	0.05 to 0.83	0.02 to 0.2	0.05 to 0.83	0.02 to 0.2	0.05 to 0.83	0.02 to 0.2
Air consumption (for bleed hole) (2)	5 L/min (ANR) (at maximum pressure)							
Pressure gauge port size	¼							
Ambient and fluid temperature	–5 to 60°C (No freezing)							
Construction	Internal pilot relieving type (Pilot air is always bleeding.)							
Weight (kg)	0.7		1.1		2.5		4.5	

Note 1) Outlet pressure range: P2 is 90% of P1 or less.
Note 2) Air consumption differs depending on the set pressure. Due to the construction, the pressure gap between inlet and outlet cannot be set within 0.03 MPa, even if the handle is set at the maximum.

Accessory (Option)/Part No.

Description \ Model	Part no. AR4□5	AR6□5	AR8□5	AR9□5
Bracket	B24P	B25P	—	—
Pressure gauge with limit indicator Note 1)	G46-10-□02 (Max. 1.0 MPa), G46-2-□02 (Max. 0.2 MPa)			

Note 1) • In the gauge part no. (e.g. G46-10-□02), □ indicate kind of the connecting thread. Put nothing for Rc and "N" for NPT thread.
• Please consult with SMC for NPT pressure gauge.
Note 2) Use caution not to tighten excessively when mounting a pressure gauge, otherwise it may result in a breakdown. Use a pipe tape for sealing. Recommended torque: 12 to 14 N·m.

Internal pilot operated relieving type regulator



AR8□5



AR6□5



AR6□5-□□BG



AR4□5-□□BG

How to Order

AR 4 25 – □ 02 BG – □

Regulator

Body size

4	½
6	1
8	1½
9	2

Regulating pressure range

25	0.05 to 0.83 MPa
35 Note)	0.02 to 0.2 MPa

Note) Compared with AR□25 type, its adjusting spring will only be changed for 0.2 MPa. It is not the product which does not allow the pressure more than 0.2 MPa.

Symbol



Thread type

Nil	Rc
N	NPT
F	G

Port size

02	¼
03	⅜
04	½
06	¾
10	1
12	1 ¼
14	1 ½
20	2

Accessory

Symbol		Description	Applicable model
Nil		—	—
B		With bracket	AR4□5 to 6□5
G	Gauge	G46-10-02	AR□25
		G46-2-02	AR□35
P Note)		G46-P10-02-X30	AR□25
		G46-P2-02-X30	AR□35

Note) Pressure display unit: MPa, psi
∗ Pressure gauges are shipped with regulator, (but not assembled).

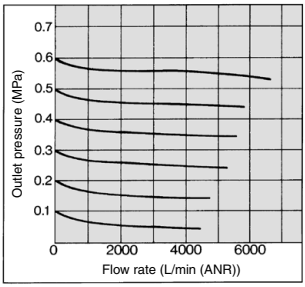
Semi-standard

Nil	None (Standard)
R	Flow direction: Right to left

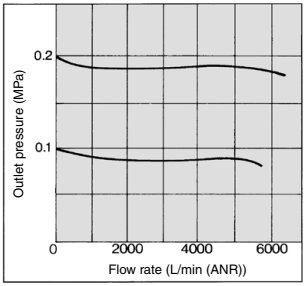
Flow Characteristics (Representative values) Inlet pressure: 0.7 MPa

Pressure Characteristics (Representative values)
Conditions:
Inlet pressure 0.7 MPa
Outlet pressure 0.2 MPa
Flow rate: 20 L/min (ANR)

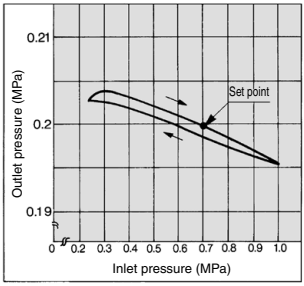
AR425 Rc 1/2



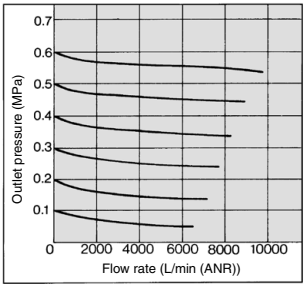
AR435 Rc 1/2



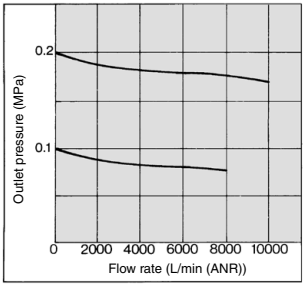
AR425/435 Rc 1/2



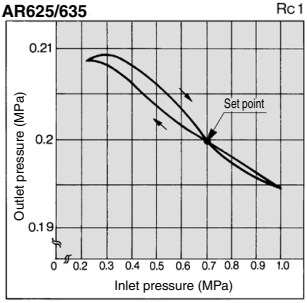
AR625 Rc 1



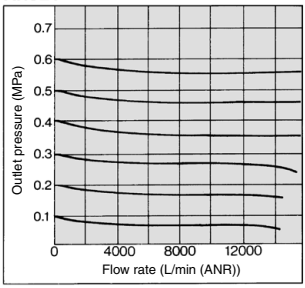
AR635 Rc 1



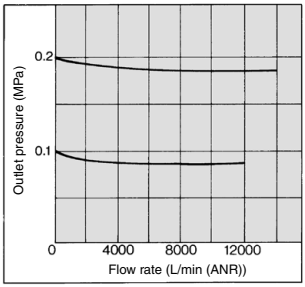
AR625/635 Rc 1



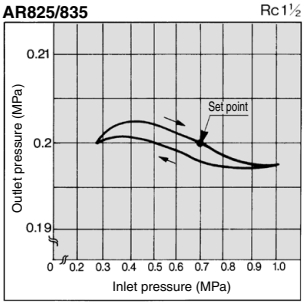
AR825 Rc 1 1/2



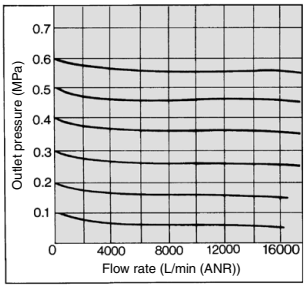
AR835 Rc 1 1/2



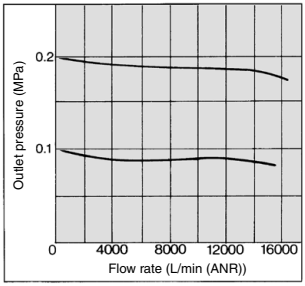
AR825/835 Rc 1 1/2



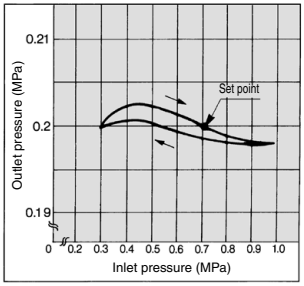
AR925 Rc 2



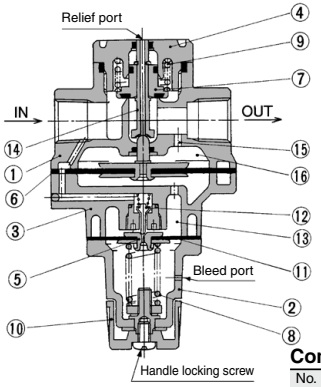
AR935 Rc 2



AR925/935 Rc 2



Construction



When handle ⑩ is turned clockwise to compress pressure adjustment spring ⑧, the pressure from the IN side passes through diaphragm ⑪ , opens pilot valve ⑫ , and enters upper pilot chamber ⑬. This pressure and the force generated by pressure adjustment spring ⑧ act as resistance, resulting in equilibrium. Then, this pressure passes through diaphragm ⑥ of the main valve and stem ⑭ , and pushes valve (main valve) ⑦ open, thus guiding the pressure to the OUT side. At the same time, the pressure passes through feedback hole ⑮ , and enters diaphragm chamber ⑯ , thus establishing the OUT side pressure (outlet pressure).

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum die-casted *	Platinum silver painted
2	**Bonnet**	Aluminum die-casted	Platinum silver painted
3	**Chamber**	Aluminum die-casted	Platinum silver painted
4	**Valve guide**	Zinc die-casted *	Platinum silver painted

* In the case of AR825/835/925/935, the material is aluminum alloy.

Replacement Parts

No.	Description	Material	Qty.	Part no.			
				AR425, 435	**AR625, 635**	**AR825, 835**	**AR925, 935**
5, 11	**Exhaust valve assembly** Note)	—	1	132586A	132586A	132586A	132586A
6	**Main valve side diaphragm assembly**	—	1	132581A	132659A	13275A	13285A
7	**Valve assembly**	—	1	132572A	132653A	132752A	132829A
8	**Adjusting spring**	Steel wire	1	135053 (AR425) 135025 (AR435)	135053 (AR625) 135025 (AR635)	135053 (AR825) 135025 (AR835)	135053 (AR925) 135025 (AR935)
9	**Valve spring**	Stainless steel	1	135211	132656	132713	13289
10	**Handle**	ABS	1	13414			

Note) Diaphragm is included.

⚠ Precautions

Be sure to read before handling. Refer to front matter 43 for Safety Instructions and pages 365 to 369 for Precautions on every series.

Mounting/Adjustment

⚠Warning

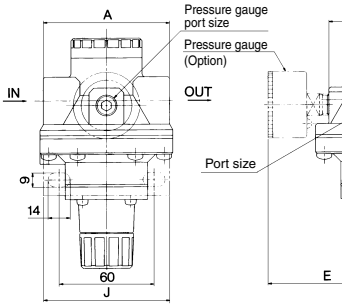
1. Install the valve guide (on the opposite side of the handle) 60 mm away from the ground surface to facilitate maintenance inspection.
2. Do not use the regulator with flow exceeding the Max. flow indicated in "Flow Characteristics" as this can cause failure in pressure adjustment.

⚠Caution

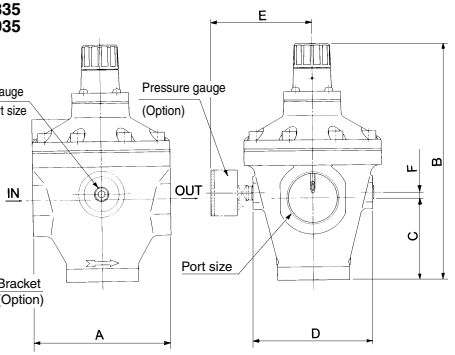
1. Release the lock to adjust the pressure. After the adjustment, engage the lock. Failure to observe this procedure could damage the handle or cause the outlet pressure to fluctuate.
   <Lock operating method>
   Loosen the handle locking screw to unlock it, and tighten it to lock it.
2. Please contact SMC if this product is to be used between solenoid valve and actuator.

Dimensions

AR425/435
AR625/635



AR825/835
AR925/935



* For products with pressure gauge, pressure gauges are shipped together with product.

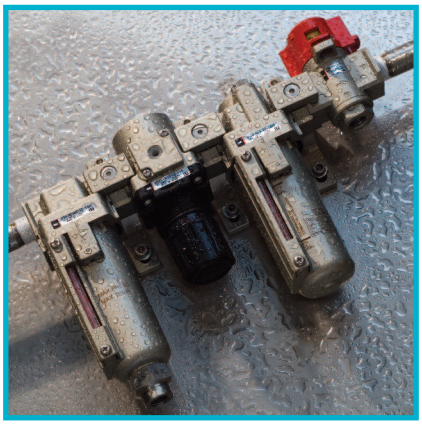
Model	Port size	Pressure gauge port size	A	B	C	D	E	F	Bracket dimensions G	H	J	Bracket part no.
AR425/435	1/4, 3/8, 1/2	1/4	80	145.5	39.5	67	73	3	50.0	48	80	B24P
AR625/635	3/4, 1	1/4	98	155	43	78	78.5	7	85	52	90	B25P
AR825/835	1 1/4, 1 1/2	1/4	126	216	75	110	94.5	5	—	—	—	—
AR925/935	2	1/4	160	241	90	140	109.5	10	—	—	—	—

Issued: Sep 2009

SMC Corporation of America
10100 SMC Boulevard
Noblesville, IN 46060
www.smcusa.com

P.G. Information

Epoxy Coated F.R.L. Units



*AC21/31/41-***-*-X2217*
*AF20/30/40-***-*-X480*
*AR20/30/40-***-*-X48*
*AL20/30/40-***-*-X480*
*AW20/30/40-***-*-X48*
*VHS20/30/40-***-*-X513*
Y20/30/40-T4*

Application: Air preparation in an environment that requires enhanced corrosion protection.

Feature 1: Die cast aluminum components are epoxy coated for improved chemical resistance.

Feature 2: Steel external hardware is replaced with stainless steel for improved chemical resistance.

Comparison with Standard Product:

1) Functional performance is equivalent to standard product.
2) Product withstood salt spray testing per ASTM B117-07A with excellent results (See test results on page 12). Improved performance vs. other chemicals is anticipated but has not been verified.

Applications:

- Marine environments
- Water splash zone in various processes
- Washdown in food plants (non-food or splash zone only)

Related Products:

- KQG Series - 316 SUS One-touch Fittings - Coming Soon: KQG2
- KQB2 Series - Ni plated brass One-touch Fittings (Coming Soon)
- ASG Series - 316 SUS One-touch Speed Controls
- CG5 Series - repairable 304 SUS Cylinder
- NCM Series with X6009 option - crimped body 304 SUS Cylinder, domestic interchange
- CJ5 Series - crimped body 304 SUS Cylinder
- HY Series - Aluminum body Hygienic Design Actuators

How To Order

AC 31 B – N 03 D – V – 8 Y Z - X2217

- **AC** — Air Combination Unit
- **31** — Body Size

Symbol	Size
21	1/8
31	3/8
41	1/2

- **B** — Model Combination

Symbol	Model / Assembly Order
Nil	AF + AR + AL
A	AW + AL
B	AF + AR

- **N** — NPT Threads
- **03** — Port Size

Symbol	Port Size	Applicable Body Size
02	1/4	21
03	3/8	31
04	1/2	41

Note: Other sizes, thread forms, options, etc. may be possible, please contact SMC for availability.

- **D** — Accessories

Symbol	Description	Applicable Body Size
Nil	None	All
C	Float Auto Drain (N.C.)	31, 41
D	Float Auto Drain (N.O.)	31, 41

- **V** — Residual Pressure Relief Valve

Symbol	Description	Applicable Model Combo
Nil	Without Valve	All
V	With Downstream Valve	All

- **8** — Bowl

Symbol	Description	Applicable Body Size
2	Metal Bowl	21
8	Metal Bowl With Sight Glass	31, 41

- **Y** — Regulator Handle Orientation

Symbol	Description
Nil	Downward Handle
Y	Upward Handle

- **Z** — Name Plate, Caution Plate On Bowl in psi, °F
- **X2217** — With External Epoxy Coating, Stainless Fasteners



Specifications

Body size	21	31	41
Operating specifications	Same as standard - see catalog ES40-42D or NC160A		
Port size	1/4" NPT	3/8" NPT	1/2" NPT
Auto drain port (AF, AW)	N/A	1/4" NPT	
Bowl type (AF, AL, AW)	Metal	Metal with sight gauge	
Body material	Die cast aluminum		
Bowl material (AF, AL, AW)	Die cast aluminum		
Body, Bowl surface treatment	Epoxy resin coating		
Bonnet (AR, AW)	Polyacetal		
Manual drain (AF, AW)	POM		
External screws	Stainless steel 410		
Individual mounting brackets	Epoxy coated steel		
Panel mount nut (AR, AW)	POM		
Connector brackets (AC)	Die cast zinc (epoxy coated)		
Fill plug (AL)	Stainless steel 304		
Sight dome (AL)	Polycarbonate		
Sight glass hardware (AF, AL, AW)	Stainless steel 304		

Dimensions - Refer to drawings on page 3

mm

AC	A*	AA**	B	C	E	F	G	J	K	M	N	Q	U	V	W
AC21	140	190	160	73	—	45.5	40	26	5	30	51	24	5	33	—
AC31	181	245	220	86	30	58.5	55	29.5	3.5	41	64	35	7	45	34.5
AC41	238	322	239	92	38	75.5	80	37.5	1.5	50	81	40	7	50	41

* Without relief valve option ** With relief valve option

mm

AC-A	A*	AA**	B	C	E	F	G	J	K	M	N	Q	U	V	W
AC21A	90	140	160	73	—	45.5	40	26	5	30	51	24	5	33	—
AC31A	117	181	220	86	30	58.5	55	29.5	3.5	41	64	35	7	45	34.5
AC41A	154	238	239	92	38	75.5	80	37.5	1.5	50	81	40	7	50	41

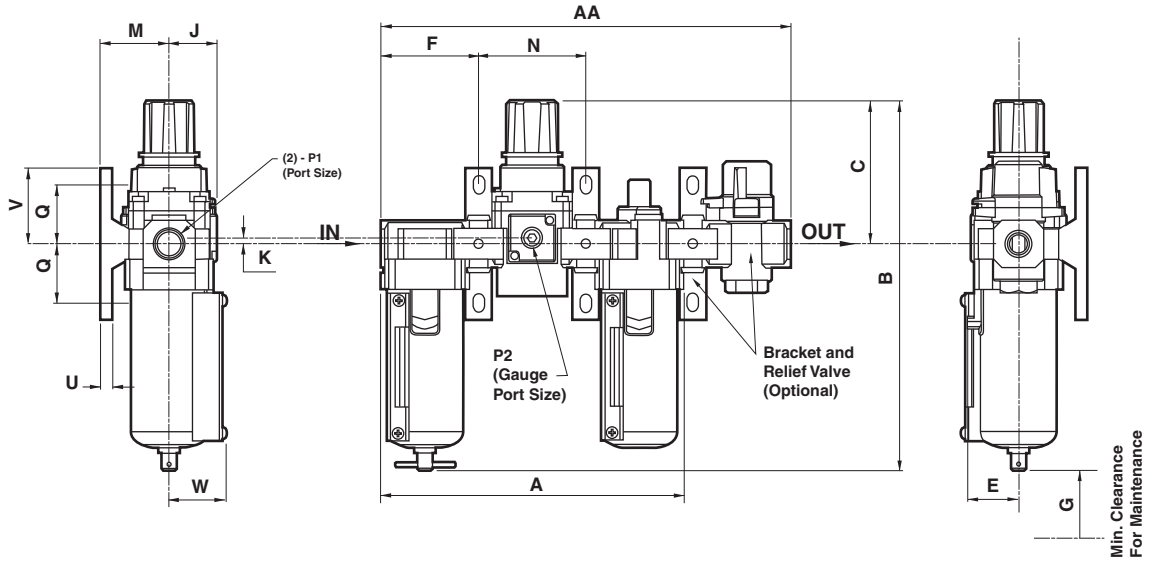
* Without relief valve option ** With relief valve option

mm

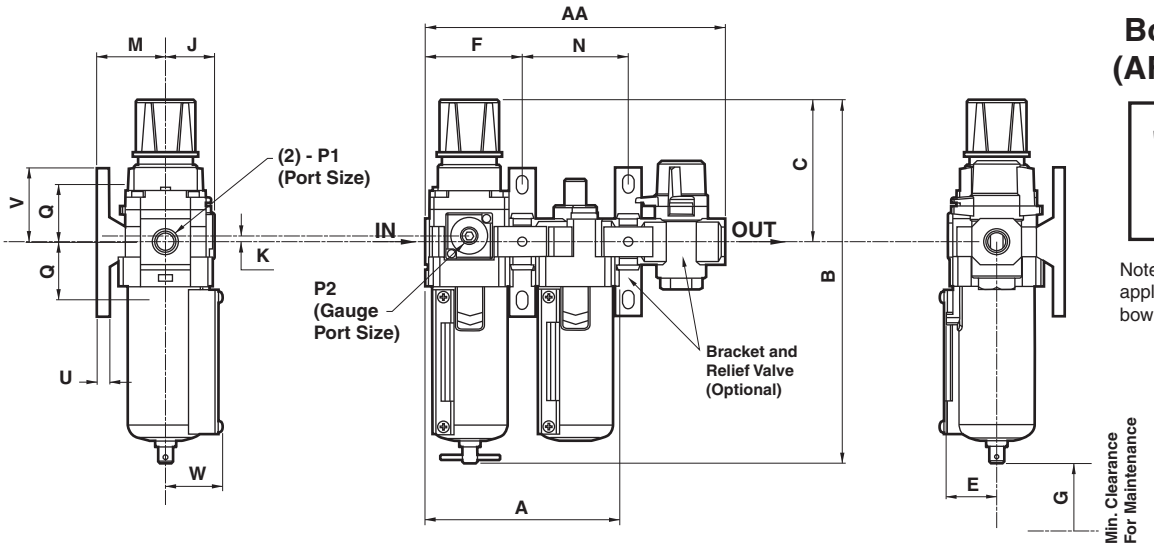
AC-B	A*	AA**	B	C	E	F	G	J	K	M	N	Q	U	V	W
AC21B	90	140	160	73	—	45.5	40	26	5	30	51	24	5	33	—
AC31B	117	181	220	86	30	58.5	55	29.5	3.5	41	64	35	7	45	34.5
AC41B	154	238	239	92	38	75.5	80	37.5	1.5	50	81	40	7	50	41

* Without relief valve option ** With relief valve option

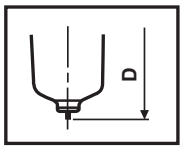
AC



AC-A

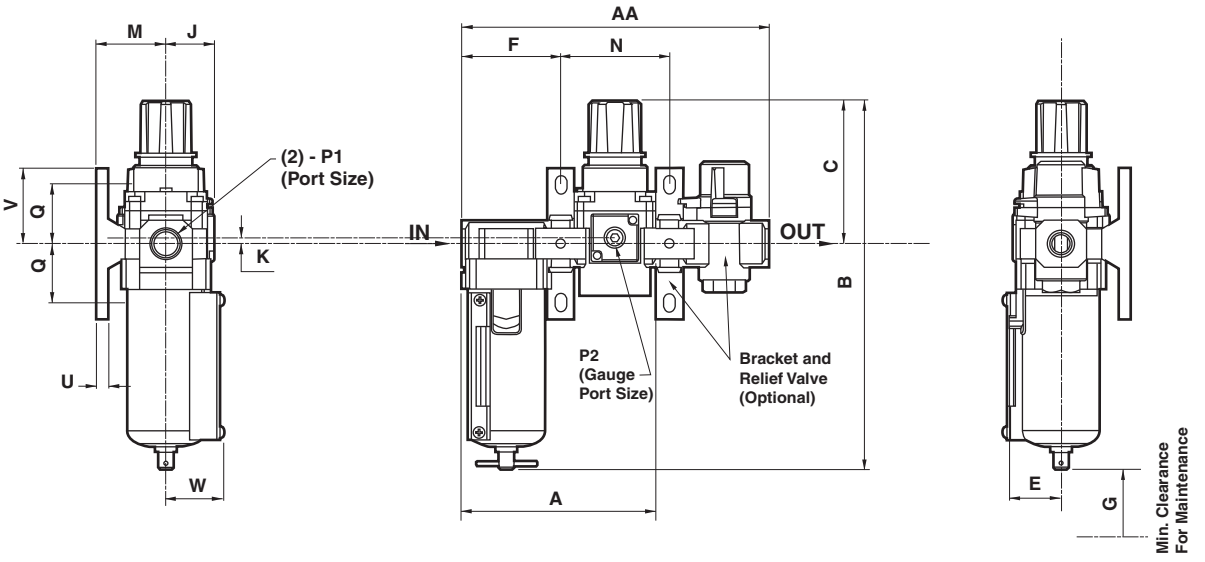


Bowl Detail (AF20/AW20)



Note: Sight glass not applicable to all size 20 bowls.

AC-B



Notes: Filter & Filter Regulator Bowls depict manual drain, see individual sections for details with auto-drain options.

How To Order

AF 30 — N 03 D — 8 Z - X480

- **Filter**
- **Body Size**

Symbol	Size
20	1/8
30	3/8
40	1/2

- **NPT Threads**
- **Port Size**

Symbol	Port Size	Applicable Body Size
02	1/4	20
03	3/8	30
04	1/2	40

Note: Other sizes, thread forms, options, etc. may be possible, please contact SMC for availability.

- **Bowl**

Symbol	Description	Applicable Body Size
2	Metal Bowl	20
8	Metal Bowl With Sight Glass	30, 40

- **Accessories**

Symbol	Description	Applicable Body Size
Nil	None	All
B*	Mounting Bracket	All
C	Float Auto Drain (N.C.)	30, 40
D	Float Auto Drain (N.O.)	30, 40

*Note: Bracket is not assembled and is supplied loose at time of shipment.

- **Name Plate, Caution Plate On Bowl in psi, °F**
- **With External Epoxy Coating, Stainless Fasteners**



Specifications

Body size	20	30	40
Operating specifications	Same as standard - see catalog ES40-42D or NC160A		
Port size	1/4" NPT	3/8" NPT	1/2" NPT
Auto drain port	N/A	1/4" NPT	
Bowl type	Metal	Metal with sight gauge	
Body material	Die cast aluminum		
Bowl material	Die cast aluminum		
Body, Bowl surface treatment	Epoxy resin coating		
Manual drain (AF, AW)	POM		
External screws	Stainless steel 410		
Individual mounting brackets	Epoxy coated steel		
Sight glass hardware	Stainless steel 304		

Dimensions - Refer to drawings on page 5

Standard

mm

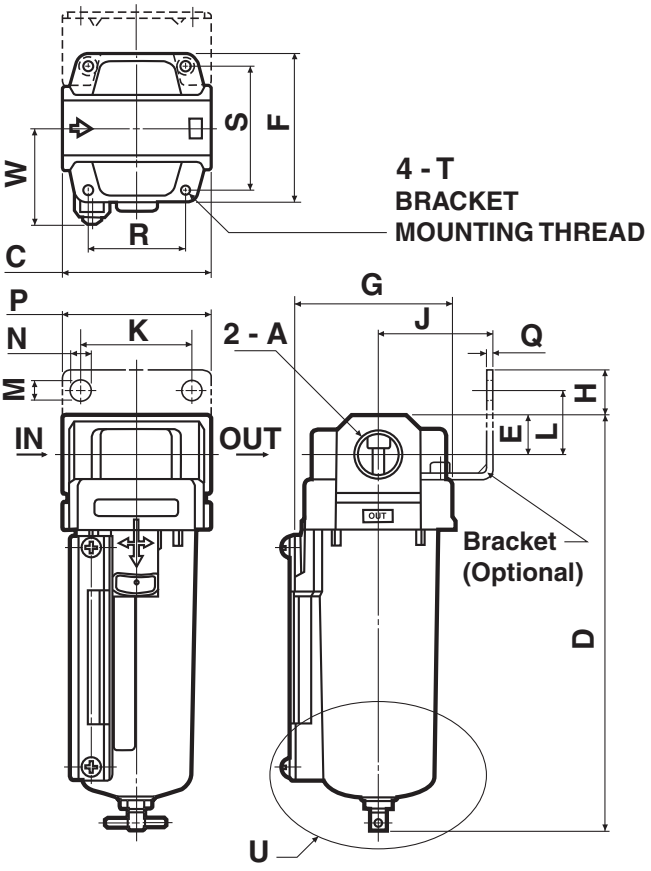
Model	Port Size	Dimensions																	Mounting Bracket Kit (Optional)
	A	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	W	
AF20	NPT 1/4	40	97	10	40	—	18	30	27	22	5.4	8.4	40	2.3	26	32	M4 X 0.7	—	AF20P-050AS-X480
AF30	NPT 3/8	53	149	14	53	57	16	41	40	23	6.5	8	53	2.3	35	44	M4 X 0.7	34.5	AF30P-050AS-X480
AF40	NPT 1/2	70	185	18	70	73	17	50	54	26	8.5	10.5	70	2.3	47	60	M5 X 0.8	41	AF40P-050AS-X480

Auto Drain

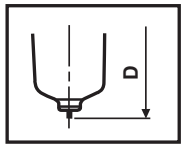
mm

Model	Port Size	Dimensions																	Mounting Bracket Kit (Optional)
	A	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	W	
AF30	NPT 3/8	53	158	14	53	57	16	41	40	23	6.5	8	53	2.3	35	44	M4 X 0.7	34.5	AF30P-050AS-X480
AF40	NPT 1/2	70	194	18	70	73	17	50	54	26	8.5	10.5	70	2.3	47	60	M5 X 0.8	41	AF40P-050AS-X480

Standard
(Manual Drain)

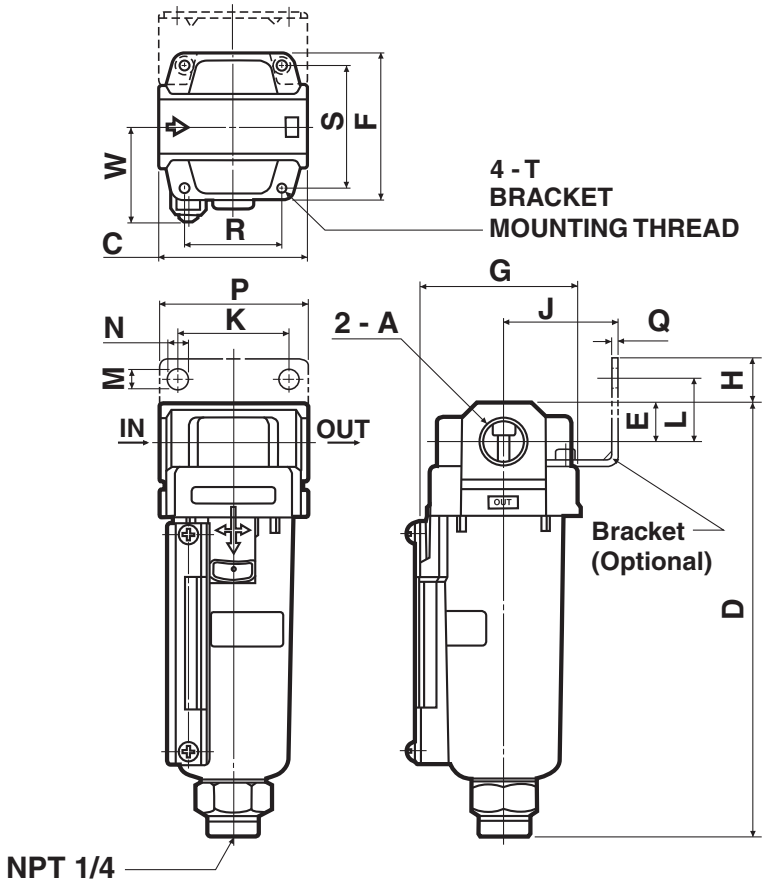


Bowl Detail U
(AF20)



Note: Sight glass not applicable to AF20.

With Auto Drain



How To Order

AW 30 — N 03 D — 8 Z - X48

- AW: Filter - Regulator
- 30: Body Size

Symbol	Size
20	1/8
30	3/8
40	1/2

- N: NPT Threads
- 03: Port Size

Symbol	Port Size	Applicable Body Size
02	1/4	20
03	3/8	30
04	1/2	40

Note: Other sizes, thread forms, options, etc. may be possible, please contact SMC for availability.

- D: Accessories

Symbol	Description	Applicable Body Size
Nil	None	All
B*	Mounting Bracket	All
C	Float Auto Drain (N.C.)	30, 40
D	Float Auto Drain (N.O.)	30, 40
H*	Panel Mount Nut	All

*Note: Bracket and/or panel mount nut are not assembled and are supplied loose at time of shipment.

- 8: Bowl

Symbol	Description	Applicable Body Size
2	Metal Bowl	20
8	Metal Bowl With Sight Glass	30, 40

- Z: Name Plate, Caution Plate On Bowl in psi, °F
- X48: With External Epoxy Coating, Stainless Fasteners



Specifications

Body size	20	30	40
Operating specifications	Same as standard - see catalog ES40-42D or NC160A		
Port size	1/4" NPT	3/8" NPT	1/2" NPT
Auto drain port	N/A	1/4" NPT	
Bowl type	Metal	Metal with sight gauge	
Body material	Die cast aluminum		
Bowl material	Die cast aluminum		
Body, Bowl surface treatment	Epoxy resin coating		
Bonnet	Polyacetal		
Manual drain (AF, AW)	POM		
External screws	Stainless steel 410		
Individual mounting brackets	Epoxy coated steel		
Panel mount nut	POM		
Sight glass hardware	Stainless steel 304		

Accessories

Model	Mounting Bracket Kit (Optional)	Panel Mounting Nut (Optional)
AW20	AW20P-270AS-X480	AR20P-260S
AW30	AR30P-270AS-X480	AR30P-260S
AW40	AR40P-270AS-X480	AR40P-260S

Dimensions - Refer to drawings on page 7

Standard

mm

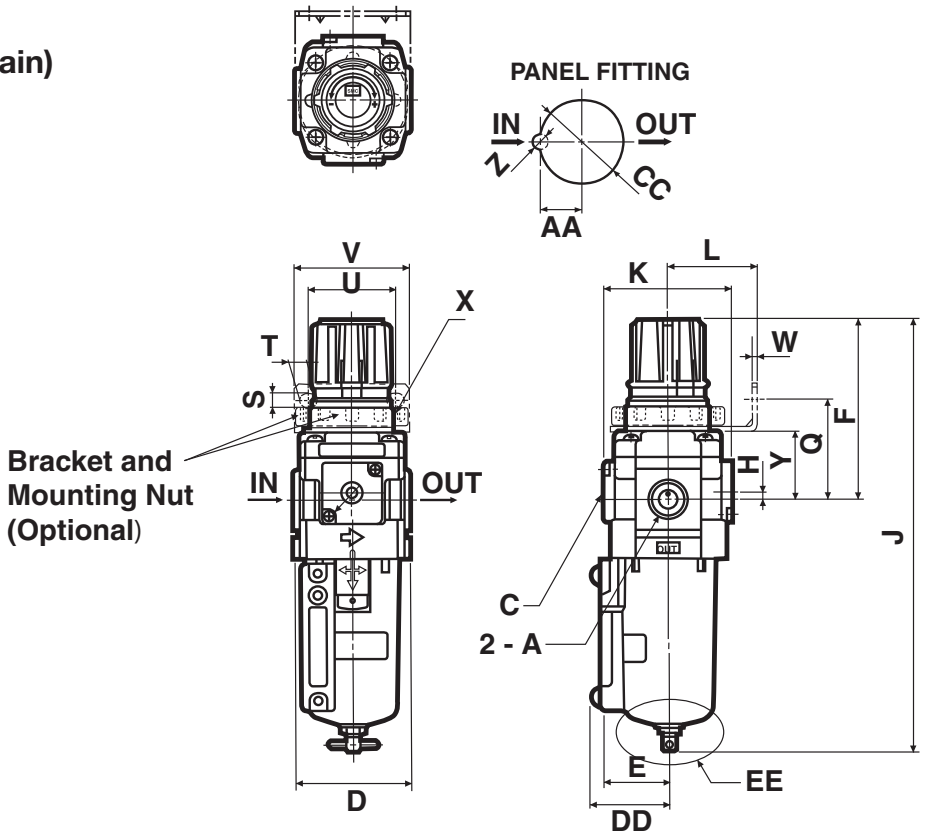
Model	Port Size	Gauge Port	Dimensions																		
	A	C	D	DD	E	F	H	J	K	L	Q	S	T	U	V	W	X	Y	Z	AA	CC
AW20	NPT 1/4	NPT 1/8	40	—	—	70(max.73)	5	157(max.160)	52	30	44	5.4	15.4	34	55	2.3	M28 X 1	30	6	14	28.5
AW30	NPT 3/8	NPT 1/8	53	34.5	30	83(max.86)	3.5	218(max.221)	59	41	46	6.5	8	40	53	2.3	M38 X 1.5	31	7	19	38.5
AW40	NPT 1/2	NPT 1/4	70	41	38	88(max.92)	1.5	255(max.259)	75	50	54	8.5	10.5	54	70	2.3	M42 X 1.5	35.5	7	21	42.5

Auto Drain

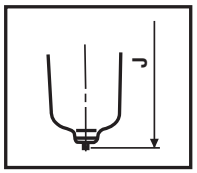
mm

Model	Port Size	Gauge Port	Dimensions																		
	A	C	D	DD	E	F	H	J	K	L	Q	S	T	U	V	W	X	Y	Z	AA	CC
AW30	NPT 3/8	NPT 1/8	53	34.5	30	83(max.86)	3.5	239(max.242)	59	41	46	6.5	8	40	53	2.3	M38 X 1.5	31	7	19	38.5
AW40	NPT 1/2	NPT 1/4	70	41	38	88(max.92)	1.5	276(max.280)	75	50	54	8.5	10.5	54	70	2.3	M42 X 1.5	35.5	7	21	42.5

Standard
(Manual Drain)

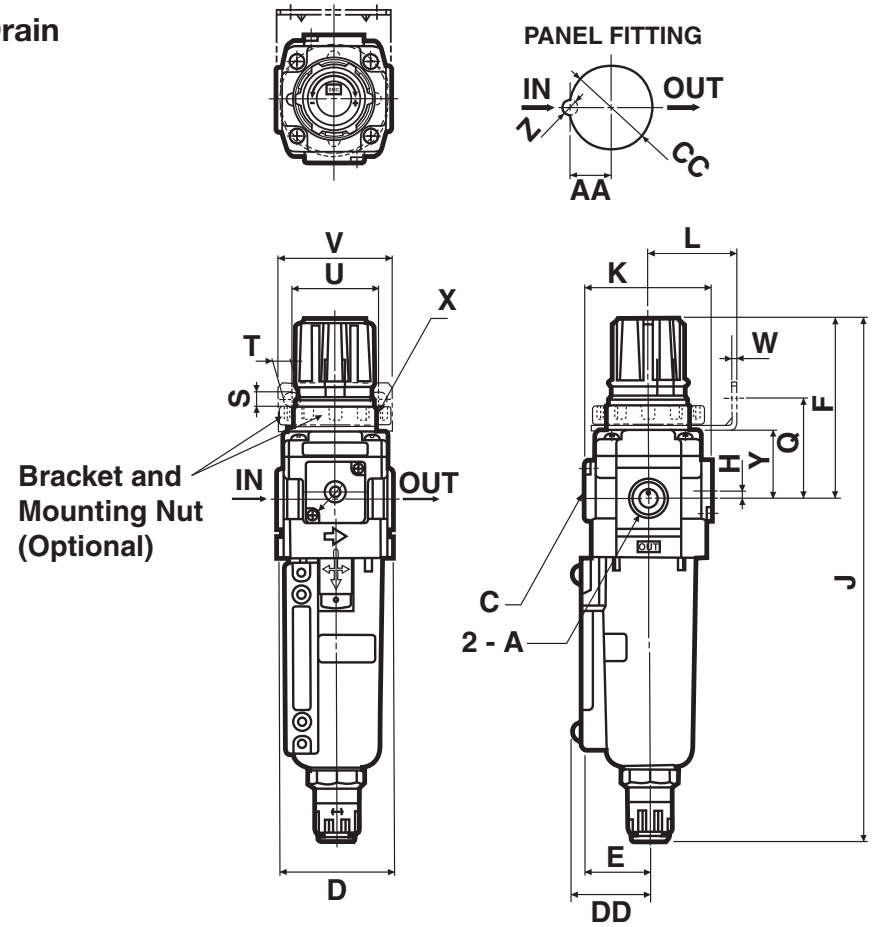


Bowl Detail EE
(AW20)



Note: Sight glass not applicable to AW20.

With Auto Drain



How To Order

AR 20 — N 02 B — Y Z - X48

- **AR** — Regulator
- **20** — Body Size

Symbol	Size
20	1/8
30	3/8
40	1/2

- **N** — NPT Threads
- **02** — Port Size

Symbol	Port Size	Applicable Body Size
02	1/4	20
03	3/8	30
04	1/2	40

- **B** — Accessories

Symbol	Description
Nil	None
B*	Mounting Bracket
H*	Panel Mount Nut

*Note: Bracket and/or panel mount nut are not assembled and are supplied loose at time of shipment.

- **Y** — Handle Orientation

Symbol	Description
Nil	Handle Down
Y	Handle Up

Note: Other sizes, thread forms, options, etc. may be possible, please contact SMC for availability.

- **Z** — Name Plate, Caution Plate On Bowl in psi, °F
- **X48** — With External Epoxy Coating, Stainless Fasteners



Specifications

Body size	20	30	40
Operating specifications	Same as standard - see catalog ES40-42D or NC160A		
Port size	1/4" NPT	3/8" NPT	1/2" NPT
Body material	Die cast aluminum		
Body, Bowl surface treatment	Epoxy resin coating		
Bonnet	Polyacetal		
Individual mounting brackets	Epoxy coated steel		
Panel mount nut	POM		

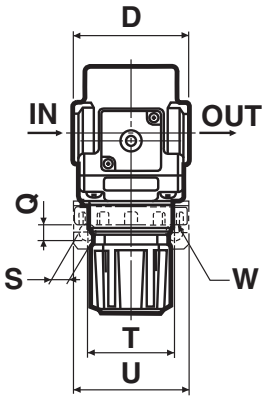
Dimensions

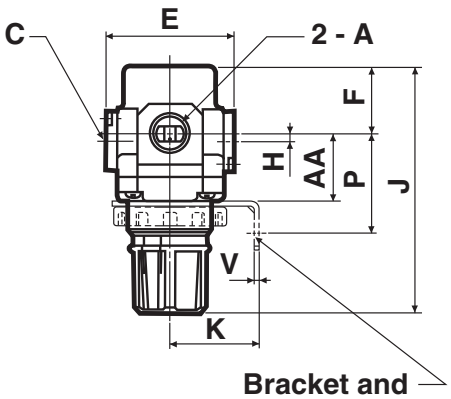
mm

Model	Port Size	Gauge Port	Dimensions																		
	A	C	D	E	F	H	J	K	L	M	P	Q	S	T	U	V	W	X	Y	Z	AA
AR20	NPT 1/4	NPT 1/8	40	57	26.5	-2	91(max.94)	30	65	37.5	44	5.4	15.4	34	55	2.3	M28 X 1	6	14	28.5	25
AR30	NPT 3/8	NPT 1/8	53	59	31	3.5	113(max.116)	41	66	37.5	46	6.5	8	40	53	2.3	M38 X 1.5	7	19	38.5	31
AR40	NPT 1/2	NPT 1/4	70	68	36	3.5	124(max.128)	50	74	42.5	54	8.5	10.5	54	70	2.3	M42 X 1.5	7	21	42.5	35.5

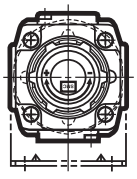
Accessories

Model	Mounting Bracket Kit (Optional)	Panel Mounting Nut (Optional)
AR20	AR20P-270AS-X48	AR20P-260S
AR30	AR30P-270AS-X48	AR30P-260S
AR40	AR40P-270AS-X48	AR40P-260S





Bracket and Mounting Nut (Optional)



PANEL FITTING

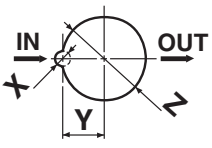


Plate Thickness
AR20, 30: Max 3.5
AR40: Max 5

How To Order

AL 20 — N 02 B — 2 Z - X480

- AL: Lubricator
- 20: Body Size

Symbol	Size
20	1/8
30	3/8
40	1/2

- N: NPT Threads
- 02: Port Size

Symbol	Port Size	Applicable Body Size
02	1/4	20
03	3/8	30
04	1/2	40

- B: Accessories

Symbol	Description	Applicable Body Size
Nil	None	All
B*	Mounting Bracket	All

*Note: Bracket is not assembled and is supplied loose at time of shipment.

- 2: Bowl

Symbol	Description	Applicable Body Size
2	Metal Bowl	20
8	Metal Bowl With Sight Glass	30, 40

- Z: Name Plate, Caution Plate On Bowl in psi, °F
- X480: With External Epoxy Coating, Stainless Fasteners

Note: Other sizes, thread forms, options, etc. may be possible, please contact SMC for availability.



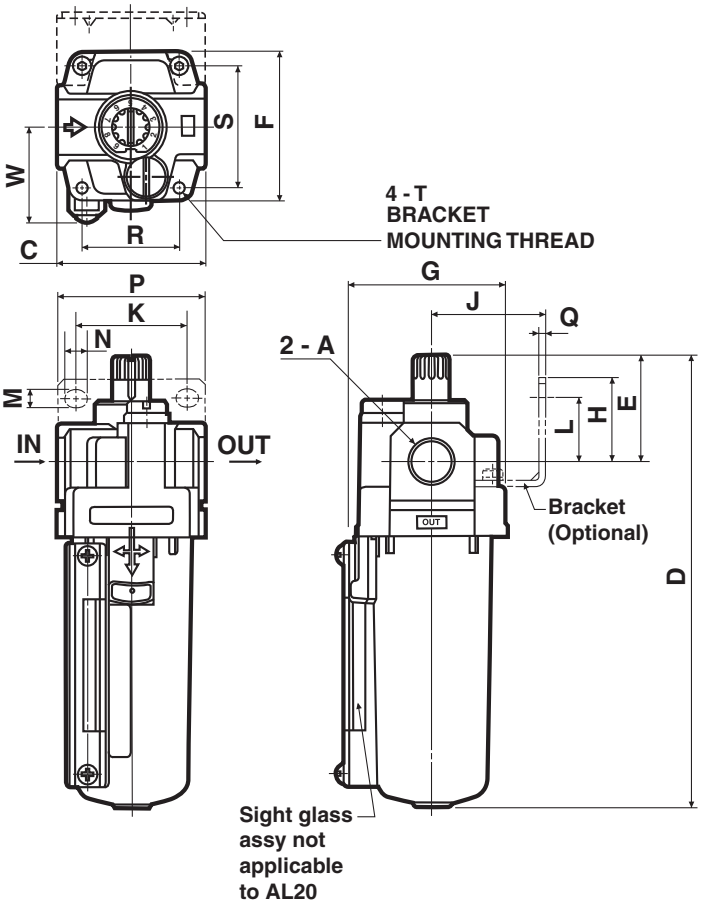
Specifications

Body size	20	30	40
Operating specifications	Same as standard - see catalog ES40-42D or NC160A		
Port size	1/4" NPT	3/8" NPT	1/2" NPT
Bowl type	Metal	Metal with sight gauge	
Body material	Die cast zinc	Die cast aluminum	
Bowl material	Die cast aluminum		
Body, Bowl surface treatment	Epoxy resin coating		
Individual mounting brackets	Epoxy coated steel		
Fill plug	Stainless steel 304		
Sight dome	Polycarbonate		
Sight glass hardware	Stainless steel 304		

Dimensions

mm

Model	Port Size	Dimensions																	Mounting Bracket Kit (Optional)
	A	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	W	
AL20	NPT 1/4	40	121	36	40	—	28	30	27	22	5.4	8.4	40	2.3	26	32	M4 X 0.7	—	AF20P-050AS-X480
AL30	NPT 3/8	53	162	38	53	57	30	41	40	23	6.5	8	53	2.3	35	44	M4 X 0.7	34.5	AF30P-050AS-X480
AL40	NPT 1/2	70	196	40	70	73	35	50	54	26	8.5	10.5	70	2.3	47	60	M5 X 0.8	41	AF40P-050AS-X480



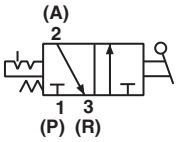
Residual Pressure Relief 3 Port Valve (V)

With the use of a 3 port valve for residual pressure release, pressure left in the line can be easily exhausted.





JIS Symbol



Model	Port Size		Effective area mm² (Cv)	
	IN, OUT	EXH	IN to OUT	OUT to EXH
VHS20	1/4	1/8	14 (0.76)	16 (0.87)
VHS30	3/8	1/4	31 (1.68)	29 (1.57)
VHS40	1/2	3/8	55 (2.98)	42 (2.28)

Paint color (Standard) Handle: Red Body: Platinum silver
Use an air filter on the IN side for operating protection.

How To Order

VHS 30 — N 02 — Z - X513

Residual Pressure Relief 3 Port Valve

Body Size

Symbol	Applicable Model
20	AC21
30	AC31
40	AC41

Thread Type

N	NPT

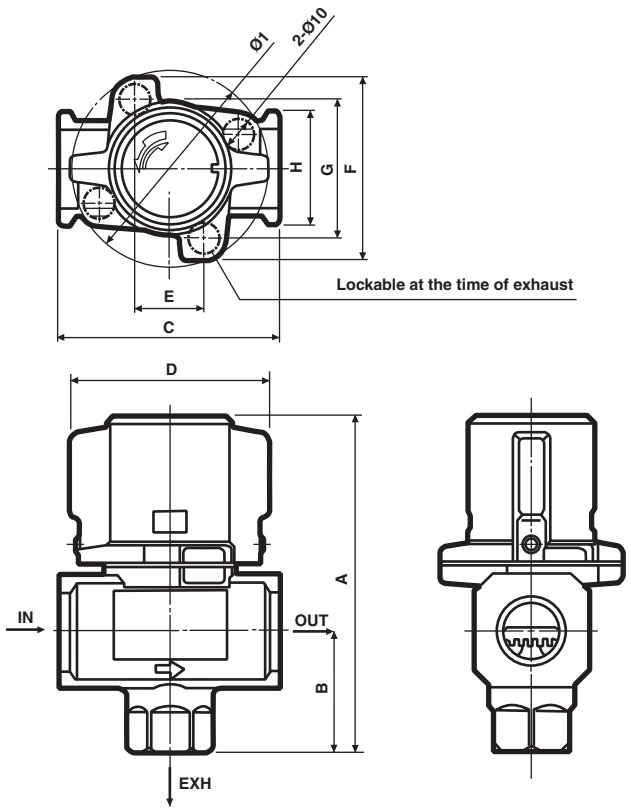
Body Size

Symbol	Port Size	Body Size		
		20	30	40
02	1/4	●		
03	3/8		●	
04	1/2			●

With External Epoxy Coating, Stainless Fasteners

Name Plate In Imperial Units (PSI, °F)

Note: Other sizes, thread forms, options, etc. may be possible, please contact SMC for availability.



Dimensions

mm

Model	A	B	C	D	E	F	G	H	I
VHS20	59	20	40	34	—	45	33	28	45
VHS30	78	29	53	46	—	55	42	30	55
VHS40	107	39	70	63	22	58	44	36	63

Caution

- If a stop valve or a silencer is connected to the exhaust port of VHS20/30, the effective sectional area should be larger than the figure indicated in the following table, to prevent malfunction caused by back pressure. (This is not applicable to VHS40)

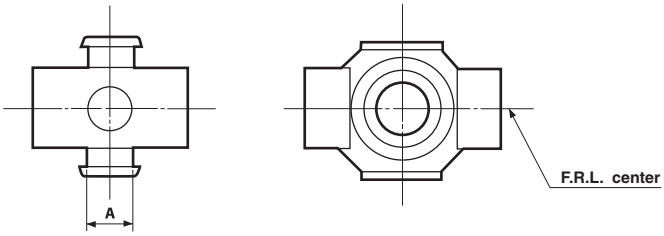
Model	Effective area (mm²)
VHS20	5
VHS30	5

- If unit is to be used in a washdown application, avoid directing fluid into the exhaust port.

Spacer

Epoxy Coated Aluminum,
Stainless Screws,
NBR Seals





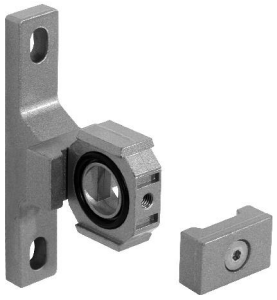
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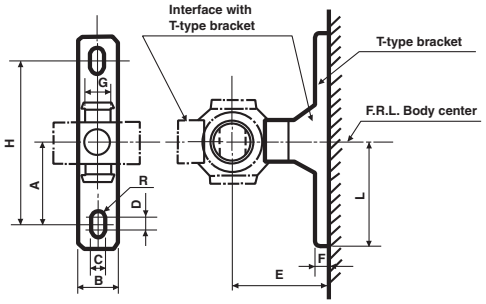
mm

Model	A
Y20-T4	10
Y30-T4	11
Y40-T4	14

Interface With T Bracket

Epoxy Coated Aluminum, Stainless Screws,
NBR Seals





Dimensions

mm

Interface With T Bracket	A	B	C	D	E	F	G	H	R	L	Applicable Models
Y20T-T4	24	15	5.5	3	30	5	10	48	2.75	33	AC21*-X2217
Y30T-T4	35	16	7	4	41	7	11	70	3.5	45	AC31*-X2217
Y40T-T4	40	22	9	4	50	7	14	80	4.5	50	AC41*-X2217

Other Available Air Line Products with Epoxy Coating/Stainless Hardware

Series	Description	Option Code
(N)AV	Soft Start Valve	X480
AMG	Water Removal Filter	X229
AR20-60	Regulator with Stainless T-handle, aluminum bonnet for UV resistance	X480
AVL	Soft Start Valve with Pilot Lock-Out	X480
AW20-40	Filter-Regulator with Stainless T-handle, aluminum bonnet for UV resistance	X480
E*00	Piping Adapter	X480
Y*10	T Interface	X480
Y*4	Cross Interface	T3

Please contact SMC for ordering information

Salt Spray Test Results (for reference)

1. Test Conditions

1) Method: In compliance with ASTM B117-07a (JIS Z 2371), leave parts in a salt spray test chamber, and compare rust generation.

2) Conditions: Temperature: 95˚F (35˚C) Salt Water Concentration: 5%

3) Time: 1000 hours [Frequency: 0hr, 24hrs, 48hrs, 72hrs, 96hrs, 168hrs, 240hrs, 480hrs, 720hrs, 1000hrs]

4) Samples: Parts for AF and AW30 (See Figure 1.)

- Part descriptions: 4 parts (1) Body (2) Drain cock (3) Small screw for level gauge (4) Bonnet screw
- Types: 2 Types A) Standard B) Special X480 (Coated with epoxy resin [External metal parts are made of SUS])
- Refer to Table 1 for part materials and treatments. *Quantity; 2 pieces for each

2. Test Results Table 1 Salt spray resistance test results

No.	Description	Type		Material & Treatment	Results
1	Body	A	Standard	Material: Die Cast Aluminum Treatment: Platinum Coating	Rusted in 480hrs Part of coating swelled
		B	Special X480	Material: Die Cast Aluminum Treatment: Platinum & Epoxy Coating	Not rusted in 1000hrs Part of coating swelled
2	Drain cock	A	Standard	Material: Die Cast Aluminum Treatment: Zinc Chromate	Rusted in 24hrs
		B	Special X480	Material: SUS	Not rusted in 1000hrs
3	Cross recessed round head screw for metal bowl with level gauge	A	Standard	Material: Steel Treatment: Nickel Plating	Rusted in 24hrs
		B	Special X480	Material: SUS	Not rusted in 1000hrs
4	Self-tapping screw for AR and AW bonnet	A	Standard	Material: Steel Treatment: Zinc Chromate	Rusted in 24hrs
		B	Special X480	Material: SUS	Not rusted in 1000hrs

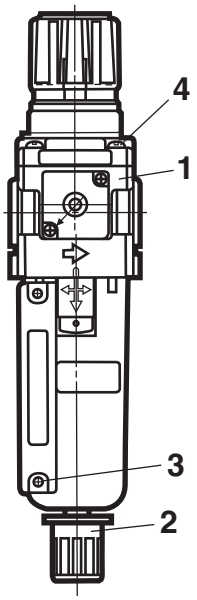
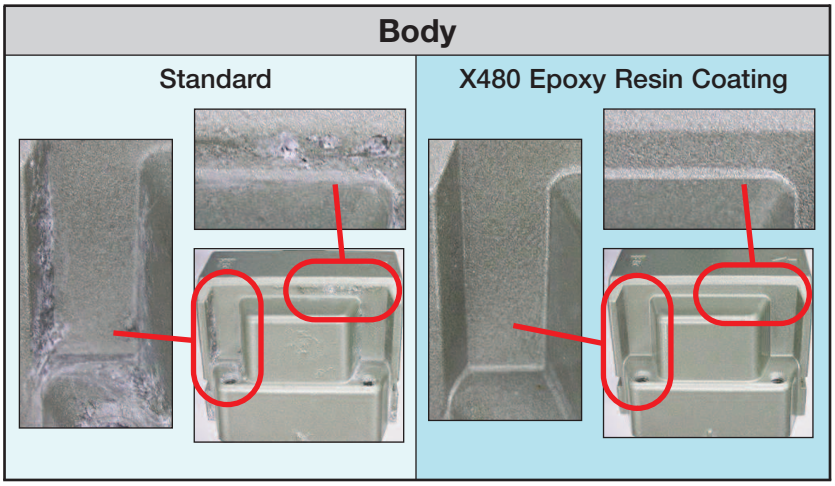
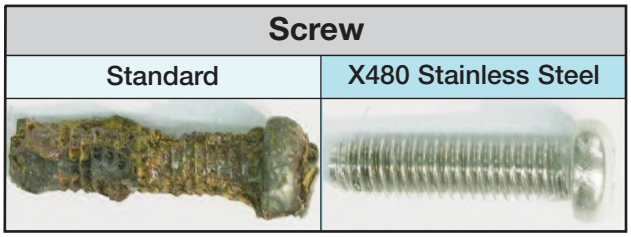
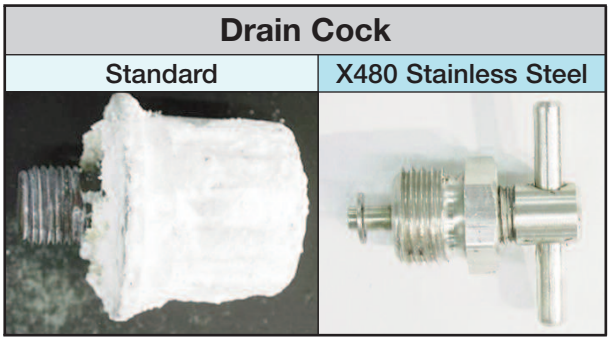


Figure 1







Caution! To ensure the safest possible operation of this product, please be sure to read thoroughly the “Safety Instructions” in our “Best Pneumatics” catalog before use.

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