Regulator with Built-in Pressure Gauge
Filter Regulator with Built-in Pressure Gauge

Series ***ACG/ARG/AWG***

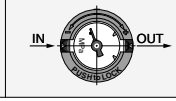
Visibility of pressure gauge is improved in various installation places

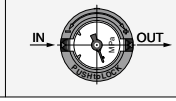
Installation and removal of pressure gauge cover is possible with one-touch.

Easy to adjust limit indicator.

Mounting angle of pressure gauge is selectable depending on the piping direction

∗ Mounting angle can be changed as desired. For details, refer to "Procedure for replacing or changing the mounting angle of a pressure gauge" on page 584.

Mounting angle	0°	90°
Mounting angle view		

Mounting angle	180°	270°
Mounting angle view		

Pressure gauge anti-revolving mechanism

∗ Pressure gauge will not be revolved even after the handle is operated.

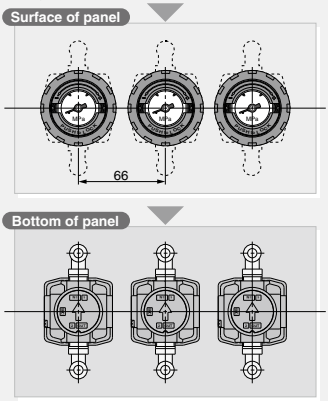
Space saving, Labor saving

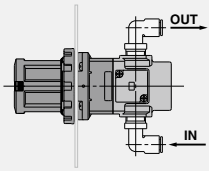
Panel-cut for pressure gauge is not necessary.

In the case of panel mounting, the number of holes for taking out the products (pressure gauge plus regulator handle parts) can be reduced into one location. By changing the angle of pressure gauge, the internal volume of a panel can be used effectively.

■ Mounting example: In the case of aligning three ARG30s in line.

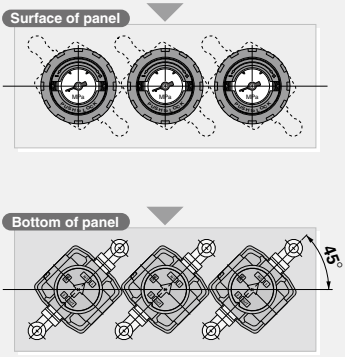
Mounting at **90°** (In the case of restricted in side direction)





Mounting at **45°** (In the case of considering the effectiveness of panel)

∗ Contact SMC separately, since it will be made to order. (Refer to page 572.)



In the case of ARG30, dimension in height can be reduced by approx. 30 mm.

Standard Combinations

Combination	Model	Port size	Components: Air filter AF (P. 477)	Components: Regulator with Built-in Pressure Gauge ARG (P. 561)	Components: Filter Regulator with Built-in Pressure Gauge AWG (P. 573)	Components: Lubricator AL (P. 507)	Components: Mist separator AFM (P. 488)
AF + ARG + AL (P. 546)	ACG20	1/8, 1/4	AF20	ARG20		AL20	
	ACG30	1/4, 3/8	AF30	ARG30		AL30	
	ACG40	1/4, 3/8, 1/2	AF40	ARG40		AL40	
AWG + AL (P. 549)	ACG20A	1/8, 1/4			AWG20	AL20	
	ACG30A	1/4, 3/8			AWG30	AL30	
	ACG40A	1/4, 3/8, 1/2			AWG40	AL40	
AF + ARG (P. 551)	ACG20B	1/8, 1/4	AF20	ARG20			
	ACG30B	1/4, 3/8	AF30	ARG30			
	ACG40B	1/4, 3/8, 1/2	AF40	ARG40			
AF + AFM + ARG (P. 553)	ACG20C	1/8, 1/4	AF20	ARG20			AFM20
	ACG30C	1/4, 3/8	AF30	ARG30			AFM30
	ACG40C	1/4, 3/8, 1/2	AF40	ARG40			AFM40
AWG + AFM (P. 555)	ACG20D	1/8, 1/4			AWG20		AFM20
	ACG30D	1/4, 3/8			AWG30		AFM30
	ACG40D	1/4, 3/8, 1/2			AWG40		AFM40

INDEX

■ Air Combination

Air Filter + Regulator with Built-in Pressure Gauge + Lubricator
ACG20/30/40 ---------- P. 546

Filter Regulator with Built-in Pressure Gauge + Lubricator
ACG20A/30A/40A ---------- P. 549

Air Filter + Regulator with Built-in Pressure Gauge
ACG20B/30B/40B ---------- P. 551

Air Filter + Mist Separator + Regulator with Built-in Pressure Gauge
ACG20C/30C/40C ---------- P. 553

Filter Regulator with Built-in Pressure Gauge + Mist Separator
ACG20D/30D/40D ---------- P. 555

■ Regulator with Built-in Pressure Gauge

Regulator with Built-in Pressure Gauge
ARG20/30/40 ---------- P. 562

Regulator with Built-in Pressure Gauge with Back Flow Mechanism
ARG20K/30K/40K ---------- P. 566

■ Filter Regulator with Built-in Pressure Gauge

Filter Regulator with Built-in Pressure Gauge
AWG20/30/40 ---------- P. 574

Filter Regulator with Built-in Pressure Gauge with Back Flow Mechanism
AWG20K/30K/40K ---------- P. 578

How to Order

ACG 30 □ – □ 03 □ G1 – □ – □

Body size

Symbol	Port size
20	1/8
30	3/8
40	1/2

Model combination

Symbol	Combination				
	Air filter	Regulator with Built-in Pressure Gauge	Lubricator	Filter Regulator with Built-in Pressure Gauge	Mist separator
Nil	(1)	(2)	(3)	—	—
A	—	—	(2)	(1)	—
B (1)	(1)	(2)	—	—	—
C	(1)	(3)	—	—	(2)
D	—	—	—	(1)	(2)

Note 1) Wall mount is not available for size 20 regulator with downward facing handle in B combination. Contact SMC when wall mount is needed.
Note 2) The number inside ( ) indicates the combination order counted from the inlet side.

Thread type

Symbol	Type
Nil	Rc
N (3)	NPT
F (4)	G

Note 3) Drain guide is NPT1/8 for ACG20 and NPT1/4 for ACG30 and 40. Auto-drain port is provided with ø3.8" One-touch fitting (applicable to ACG30 and 40).
Note 4) Drain guide is G1/8 for ACG20 and G1/4 for ACG30 and 40.

Port size

Symbol	Port size	Body size		
		20	30	40
01	1/8	●	—	—
02	1/4	●	●	●
03	3/8	—	●	●
04	1/2	—	—	●

Option

Symbol	Description	Applicable model
Nil	—	—
C	Float type auto-drain (Normally closed)	ACG20□ to 40□
D	Float type auto-drain (Normally open)	ACG30□, 40□

Mounting angle of pressure gauge °0

Note 5) Mounting angle of pressure gauge is G1 only.
If other mounting angles are needed, contact SMC.
∗ Possible to change to the optional mounting angles.
For details, refer to page 584, "Procedure for replacing or changing the mounting angle of a pressure gauge".

Semi-standard

Symbol	Description	Applicable model
Nil	—	—
1 (8)	0.02 to 0.2 MPa setting	ACG20□ to 40□
2	Metal bowl	ACG20□ to 40□
3	Lubricator with drain cock	ACG20□ to 40□
6	Nylon bowl	ACG20□ to 40□
8	Metal bowl with level gauge	ACG30□, 40□
C	With bowl guard	ACG20□
J (9)	Filter case with drain guide	ACG20□ to 40□
N	Non-relieving type	ACG20□ to 40□
R	Flow direction: Right to left	ACG20□ to 40□
W	Drain cock with barb fitting: ø6 x ø4 nylon tubing	ACG30□, 40□
Y	Regulator with upward facing handle	ACG20□ to 40□
Z (10)	Name plate and pressure gauge in imperial units (psi), caution plate for bowl (psi・°F)	ACG20□ to 40□

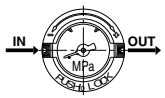
∗ When more than one specification is required, indicate in ascending alphanumeric order.
Note 8) Adjusting spring and pressure gauge (full-span 0.3 MPa) are different from those for the standard specification. Outlet pressure may increase by 0.2 MPa or more.
Note 9) Without a valve function.
Note 10) 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.) Both MPa and psi are used for the pressure switch unit.

Attachment

Symbol	Description	Attachment mounting position	Applicable model	Port size for intermediate air release
Nil	—	—	—	—
K	**Check valve**	AF + ARG + [K] + AL	ACG20 to 40	ACG20□: 1/8 ACG30□: 1/4 ACG40□: 3/8
		AWG + [K] + AL	ACG20A to 40A	
S (7)	**Pressure switch**	AF + ARG + [S] + AL	ACG20 to 40	—
		AF + [S] + ARG	ACG20B to 40B	
		AF + AFM + [S] + ARG	ACG20C to 40C	
V	**Residual pressure relief 3 port valve**	AF + ARG + AL + [V]	ACG20 to 40	—
		AWG + AL + [V]	ACG20A to 40A	
		AF + ARG + [V]	ACG20B to 40B	
		AF + AFM + ARG + [V]	ACG20C to 40C	
		AWG + AFM + [V]	ACG20D to 40D	

Note 6) When more than one attachment is required, order in alphabetical order.
Note 7) Pressure switch cannot be mounted on the inlet and outlet sides of an ARG with an upward facing handle (optional specification: -Y).

Mounting Angle of Pressure Gauge

Symbol	G1
Mounting angle	0°
Mounting angle view	
Mounting angle view (-R specification)	

Option/Semi-standard Combinations

◎: Combination available ▭: Combination not available ○: Varies depending on a model △: Available only with NPT thread

Combination / Option/ Semi-standard specifications	Symbol	Option		Semi-standard												F.R.L. unit applicable model									
		C	D	1	2	3	6	8	C	J	N	R	W	Y	Z	ACG20	ACG20A	ACG20B	ACG20C	ACG20D	ACG30 ACG40	ACG30A ACG40A	ACG30B ACG40B	ACG30C ACG40C	ACG30D ACG40D
Float type auto drain (N.C.)	C			◎	◎	◎	◎	○	○		◎	◎		○	△	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Float type auto drain (N.O.)	D			◎	◎	◎	◎	◎			◎	◎		○	△						◎	◎	◎	◎	◎
0.02 to 0.2 MPa setting	-1	◎	○		◎	◎	◎	○	○	◎	◎	◎	○	○	△	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Metal bowl	-2	◎	○	◎		◎				◎	◎	◎		○	△	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Lubricator with drain cock	-3	◎	○	◎	◎		◎	○	○	◎	◎	◎	○	○	△	◎	◎				◎	◎			
Nylon bowl	-6	◎	○	◎		◎			○	◎	◎	◎	○	○	△	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Metal bowl with level gauge	-8	◎	○	◎		◎				◎	◎	◎		○	△						◎	◎	◎	◎	◎
With bowl guard	-C	◎		◎		◎	◎			◎	◎	◎		○	△	◎	◎	◎	◎	◎					
Drain guide	-J			◎	◎	◎	◎	○	○		◎	◎		○	△	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Non-relieving type	-N	◎	○	◎	◎	◎	◎	○	○	◎		◎	○	○	△	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Flow direction: Right to left	-R	◎	○	◎	◎	◎	◎	○	○	◎	◎		○	○	△	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
Drain cock with barb fitting	-W			◎		◎	◎				◎	◎		○	△						◎	◎	◎	◎	◎
Regulator upward facing handle	-Y	◎	○	◎	◎	◎	◎	○	○	◎	◎	◎	○		△	◎		◎	◎		◎		◎	◎	
Name plate, caution plate for bowl, and pressure gauge in imperial units (psi, °F)	-Z	△	△	△	△	△	△	△	△	△	△	△	△	△		△	△	△	△	△	△	△	△	△	△

Attachments

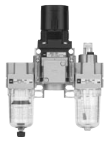
	Port size	Function	
Check valve	1/8, 1/4, 3/8	Prevents back flow from lubricator.	P. 557
Pressure switch	—	Compact switch	P. 558
Residual pressure relief 3 port valve	1/8, 1/4, 3/8, 1/2	Releases residual pressure in lines.	P. 559

Accessories
Refer to page 560 for spacers and brackets.

Air Combination

Air Filter + Regulator + Lubricator

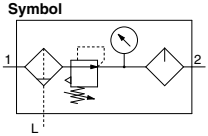
Series ACG20/30/40



ACG20

ACG40

Symbol



Air filter Regulator Lubricator

Standard Specifications

Model		ACG20	ACG30	ACG40
Component	Air filter	AF20	AF30	AF40
	Regulator	ARG20	ARG30	ARG40
	Lubricator	AL20	AL30	AL40
Port size		1/8 1/4	1/4 3/8	1/4 3/8 1/2
Fluid		Air		
Proof pressure		1.5 MPa		
Maximum operating pressure		1.0 MPa		
Regulating pressure range		0.05 to 0.85 MPa		
Relief pressure		Set pressure + 0.05 MPa (at relief flow rate of 0.1 L/min (ANR))		
Ambient and fluid temperature		–5 to 60°C (With no freezing)		
Nominal filtration rating		5 μm		
Recommended lubricant		Class 1 turbine oil (ISO VG32)		
Regulator construction		Relieving type		
Bowl material		Polycarbonate		
Bowl guard		Semi-standard	Standard	
Sight dome material		Polycarbonate		
Weight (kg)		0.51	1.11	1.87

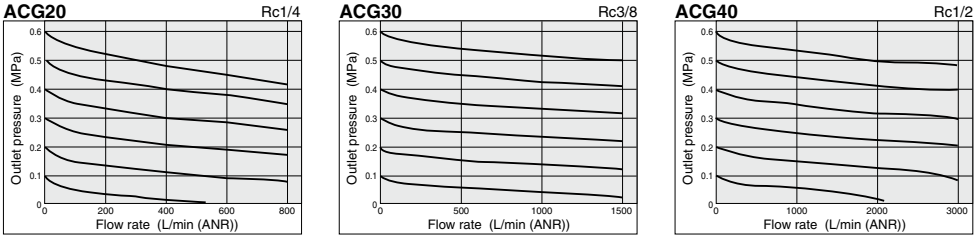
Attachment/Option Part No.

Description			Model	Attachment/Option part no. ACG20	ACG30	ACG40
Pressure gauge (1)		Standard	0 to 1.0 MPa	GB2-10AS	GB3-10AS	GB4-10AS
		Semi-standard	0 to 0.3 MPa	GB2-3AS	GB3-3AS	GB4-3AS
Option	Float type auto drain (2)		Normally closed	AD27	AD37	AD47
			Normally open	—	AD38	AD48
Attachment	Spacer			Y200	Y300	Y400
	Spacer with bracket			Y200T	Y300T	Y400T
	Check valve (3) (4)			AKM2000-□01, (□02)	AKM3000-(□01), □02	AKM4000-(□02), □03
	Pressure switch (4) (5)			IS10M-20	IS10M-30	IS10M-40
	Residual pressure relief 3 port valve (4)			VHS20-□01, □02	VHS30-□02, □03	VHS40-□02, □03, □04

Note 1) Contact SMC regarding the connection thread NPT and pressure gauge supply for psi unit specifications.
Note 2) Minimum operating pressure: 0.1 MPa for N.O. type, 0.1 MPa for N.C. type (AD27) and 0.15 MPa for N.C. type (AD37 and 47). Contact SMC for psi and °F specifications.
Note 3) For F.R.L. units, port sizes not in ( ) are for standard application.
Note 4) Separate spacers are required for modular unit.
Note 5) Pressure switch cannot be mounted on the inlet and outlet sides of an ARG with an upward facing handle (semi-standard specification: -Y).

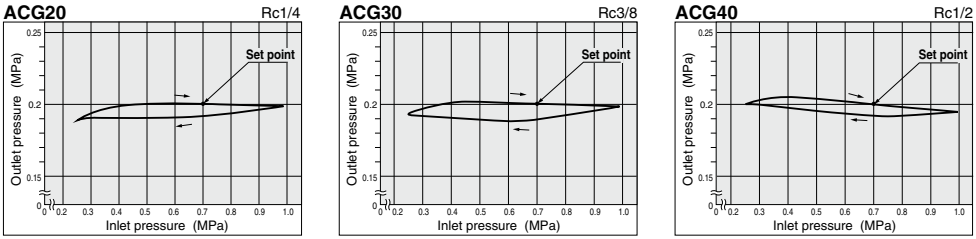
Flow Characteristics

Condition: Inlet pressure 0.7 MPa



Pressure Characteristics

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



⚠ 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.

Piping

⚠ Warning

1. When mounting a check valve, make sure the arrow (IN side) points in the correct direction of air flow.

Selection

⚠ Warning

1. 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: 0.1 MPa or more.
- Operating pressure for AD37/47: 0.15 MPa or more.

2. Use a regulator or filter regulator with a back flow mechanism when mounting a 3 port valve for residual pressure release on the IN side to ensure the release of the residual pressure. Otherwise, residual pressure will not be fully released.

Selection

⚠ Caution

1. Mounting a 3 port valve for residual pressure release on the IN side of the lubricator can cause lubricant to back flow. Take measures to prevent lubricant from splashing by installing a filter on the EXH port.

2. 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.

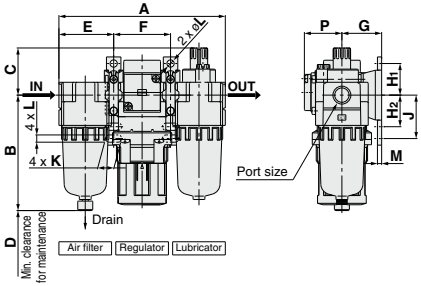
Air Supply

⚠ Caution

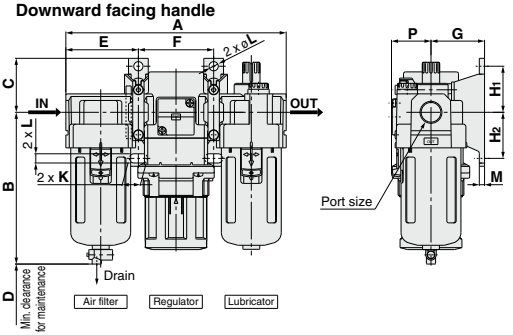
1. Use an air filter with 5 μm or less filtration rating on the inlet side of the valve to avoid any damage to the seat caused by dust when mounting a 3 port valve for residual pressure release on the inlet side.

Dimensions

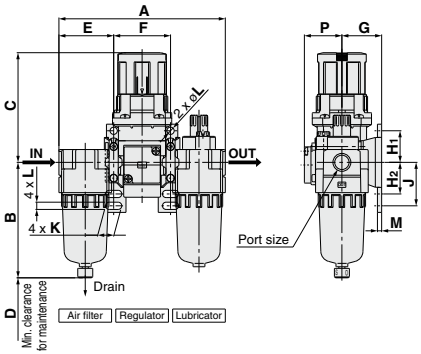
ACG20 Standard
Downward facing handle



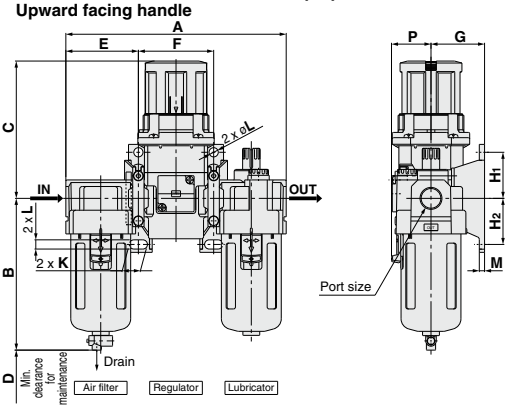
ACG30/40 Standard
Downward facing handle

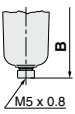
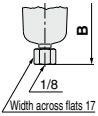
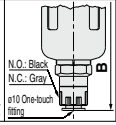
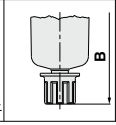
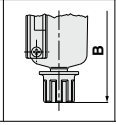
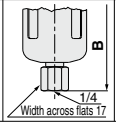
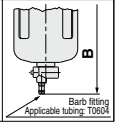


ACG20 Semi-standard (-Y)
Upward facing handle



ACG30/40 Semi-standard (-Y)
Upward facing handle



Applicable model	ACG20			ACG30/40				
Option/Semi-standard specifications	With auto drain (N.C.)	Metal bowl	With drain guide	With auto drain (N.O./N.C.)	Metal bowl	Metal bowl with level gauge	With drain guide	Drain cock with barb fitting
Dimensions								

Model	Port size	Standard specifications														
		A	B	C	D	P	Bracket mount									
							E	F	G	H1	H2	J	K	L	øL	M
ACG20	1/8, 1/4	126	87	36	60	28.5	41.5	43	30	24	— (1)	— (1)	— (1)	— (1)	5.5	3.2
ACG30	1/4, 3/8	167	115	41	80	30	55	57	41	35	35	—	14	7	7	4
ACG40	1/4, 3/8, 1/2	220	147	48	110	38	72.5	75	50	40	40	—	18	9	9	4

Model	Option/Semi-standard specifications									
	Upward facing handle (2)					With auto drain (3)	With barb fitting (3)	With drain guide (3)	Metal bowl (3)	Metal bowl with level gauge (3)
	C	H2	J	K	L	B	B	B	B	B
ACG20	87	24	33	12	5.5	105	—	91	87	—
ACG30	108.5	35	—	14	7	156	123	122	128	148
ACG40	114.5	40	—	18	9	186	155	154	160	180

Note 1) In the case of the ACG20's standard specification (downward facing handle), the wall mounting is not possible using the lower side mounting hole on the spacer with a bracket. Use the upper side mounting hole when wall mounting.
Note 2) In the case of the upward facing handle in the semi-standard specification, the C dimension will change. Also, in the case of the ACG20, wall mounting is possible by using the lower side mounting hole on the spacer with a bracket.
Note 3) For the option/semi-standard specifications (with auto drain, with barb fitting, with drain guide, metal bowl, or metal bowl with level gauge), the total length (B dimension) will vary.

Air Combination

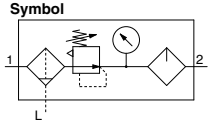
Filter Regulator + Lubricator

Series ACG20A/30A/40A

ACG20A

ACG40A

Symbol



Standard Specifications

Model		ACG20A	ACG30A	ACG40A
Component	Filter regulator	AWG20	AWG30	AWG40
	Lubricator	AL20	AL30	AL40
Port size		1/8 1/4	1/4 3/8	1/4 3/8 1/2
Fluid		Air		
Proof pressure		1.5 MPa		
Maximum operating pressure		1.0 MPa		
Regulating pressure range		0.05 to 0.85 MPa		
Relief pressure		Set pressure + 0.05 MPa (at relief flow rate of 0.1 L/min (ANR))		
Ambient and fluid temperature		–5 to 60°C (With no freezing)		
Nominal filtration rating		5 μm		
Recommended lubricant		Class 1 turbine oil (ISO VG32)		
Filter regulator construction		Relieving type		
Bowl material		Polycarbonate		
Bowl guard		Semi-standard	Standard	
Sight dome material		Polycarbonate		
Weight (kg)		0.44	0.86	1.55

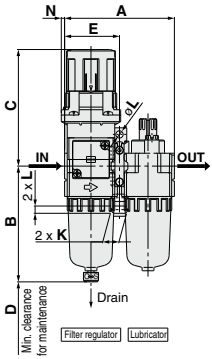
Attachment/Option Part No.

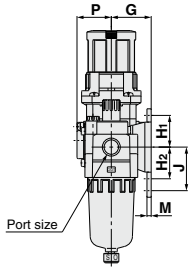
Description			Model	Attachment/Option part no.		
				ACG20A	ACG30A	ACG40A
Pressure gauge (1)		Standard	0 to 1.0 MPa	GB2-10AS	GB3-10AS	GB4-10AS
		Semi-standard	0 to 0.3 MPa	GB2-3AS	GB3-3AS	GB4-3AS
Option	Float type auto drain (2)		Normally closed	AD27	AD37	AD47
			Normally open	—	AD38	AD48
Attachment	Spacer			Y200	Y300	Y400
	Spacer with bracket			Y200T	Y300T	Y400T
	Check valve (3)(4)			AKM2000-□01, (□02)	AKM3000-(□01), □02	AKM4000-(□02), □03
	Residual pressure relief 3 port valve (4)			VHS20-□01, □02	VHS30-□02, □03	VHS40-□02, □03, □04

Note 1) Contact SMC regarding the connection thread NPT and pressure gauge supply for psi unit specifications.
Note 2) Minimum operating pressure: 0.1 MPa for N.O. type, 0.1 MPa for N.C. type (AD27) and 0.15 MPa for N.C. type (AD37 and 47). Contact SMC for psi and °F specifications.
Note 3) For F.R.L. units, port sizes not in ( ) are for standard application.
Note 4) Separate spacers are required for modular unit.

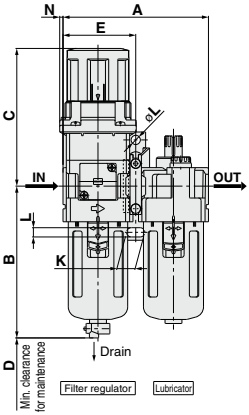
Dimensions

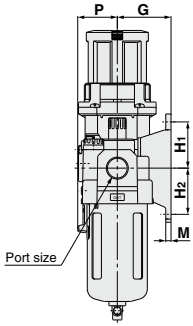
ACG20A

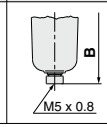
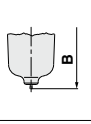
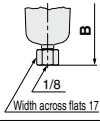
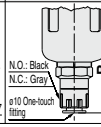
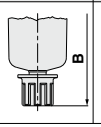
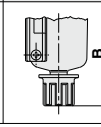
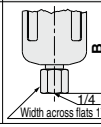
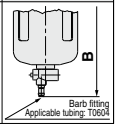




ACG30A/40A





Applicable model	ACG20A			ACG30A/40A				
Option/Semi-standard specifications	With auto drain (N.C.)	Metal bowl	With drain guide	With auto drain (N.O./N.C.)	Metal bowl	Metal bowl with level gauge	With drain guide	Drain cock with barb fitting
Dimensions								

Model	Port size	Standard specifications														
								Bracket mount								
		A	B	C	D	N	P	E	G	H1	H2	J	K	L	øL	M
ACG20A	1/8, 1/4	83	87	91	60	2.5	26	41.5	30	24	24	33	12	5.5	5.5	3.2
ACG30A	1/4, 3/8	110	115	108.5	80	2.5	30	55	41	35	35	—	14	7	7	4
ACG40A	1/4, 3/8, 1/2	145	147	114.5	110	0	38	72.5	50	40	40	—	18	9	9	4

Model	Option/Semi-standard specifications Note)				
	With auto drain	With barb fitting	With drain guide	Metal bowl	Metal bowl with level gauge
	B	B	B	B	B
ACG20A	105	—	91	87	—
ACG30A	156	123	122	128	148
ACG40A	186	155	154	160	180

Note) For the option/semi-standard specifications (with auto drain, with barb fitting, with drain guide, metal bowl, or with level gauge), the total length (B dimension) will vary.

Air Combination

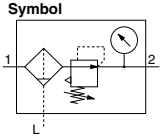
Air Filter + Regulator

Series ACG20B/30B/40B

ACG20B

ACG40B

Symbol



Air filter Regulator

Standard Specifications

Model		ACG20B	ACG30B	ACG40B
Component	Air filter	AF20	AF30	AF40
	Regulator	ARG20	ARG30	ARG40
Port size		1/8 1/4	1/4 3/8	1/4 3/8 1/2
Fluid		Air		
Proof pressure		1.5 MPa		
Maximum operating pressure		1.0 MPa		
Regulating pressure range		0.05 to 0.85 MPa		
Relief pressure		Set pressure + 0.05 MPa (at relief flow rate of 0.1 L/min (ANR))		
Ambient and fluid temperature		–5 to 60°C (With no freezing)		
Nominal filtration rating		5 μm		
Regulator construction		Relieving type		
Bowl material		Polycarbonate		
Bowl guard		Semi-standard	Standard	
Weight (kg)		0.38	0.74	1.25

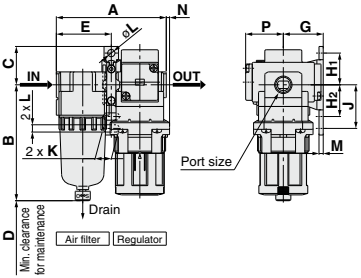
Attachment/Option Part No.

Description			Model	Attachment/Option part no. ACG20B	ACG30B	ACG40B
	Pressure gauge (1)	Standard	0 to 1.0 MPa	GB2-10AS	GB3-10AS	GB4-10AS
		Semi-standard	0 to 0.3 MPa	GB2-3AS	GB3-3AS	GB4-3AS
Option	Float type auto drain (2)		Normally closed	AD27	AD37	AD47
			Normally open	—	AD38	AD48
Attachment	Spacer			Y200	Y300	Y400
	Spacer with bracket			Y200T	Y300T	Y400T
	Pressure switch (3) (4)			IS10M-20	IS10M-30	IS10M-40
	Residual pressure relief 3 port valve (3)			VHS20-□01, □02	VHS30-□02, □03	VHS40-□02, □03, □04

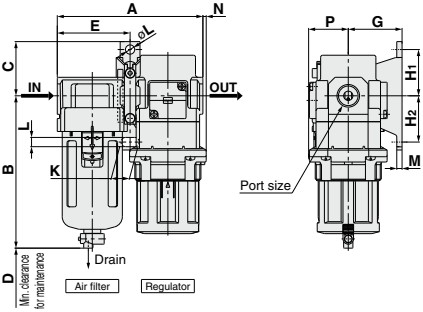
Note 1) Contact SMC regarding pressure gauge supply for psi unit specifications.
Note 2) Minimum operating pressure: 0.1 MPa for N.O. type, 0.1 MPa for N.C. type (AD27) and 0.15 MPa for N.C. type (AD37 and 47). Contact SMC for psi and °F specifications.
Note 3) Separate spacers are required for modular unit.
Note 4) Pressure switch cannot be mounted on the inlet and outlet sides of an ARG with an upward facing handle (semi-standard specification: -Y).

Dimensions

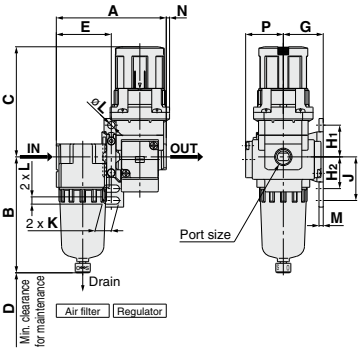
ACG20B Standard
Downward facing handle



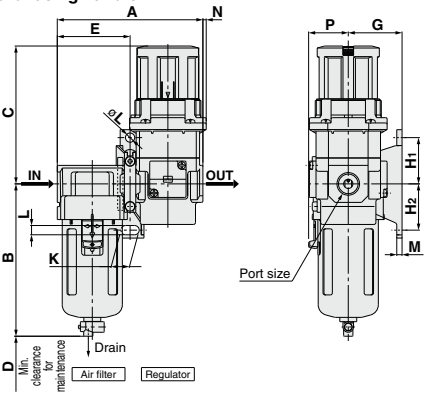
ACG30B/40B Standard
Downward facing handle

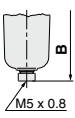
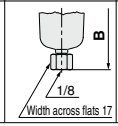
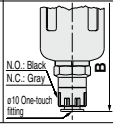
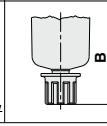
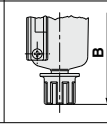
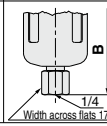
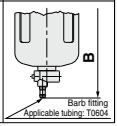


ACG20B Semi-standard (-Y)
Upward facing handle



ACG30B/40B Semi-standard (-Y)
Upward facing handle



Applicable model	ACG20B			ACG30B/40B				
Option/Semi-standard specifications	With auto drain (N.C.)	Metal bowl	With drain guide	With auto drain (N.O./N.C.)	Metal bowl	Metal bowl with level gauge	With drain guide	Drain cock with barb fitting
Dimensions								

Model	Port size	Standard specifications														
		A	B	C	D	N	P	Bracket mount								
								E	G	H1	H2	J	K	L	øL	M
ACG20B	1/8, 1/4	83	87	29	60	2.5	28.5	41.5	30	— (1)	— (1)	— (1)	— (1)	— (1)	— (1)	3.2
ACG30B	1/4, 3/8	110	115	41	80	2.5	29.5	55	41	35	35	—	14	7	7	4
ACG40B	1/4, 3/8, 1/2	145	147	48	110	0	38	72.5	50	40	40	—	18	9	9	4

Model	Option/Semi-standard specifications											
	Upward facing handle (2)							With auto drain (3)	With barb fitting (3)	With drain guide (3)	Metal bowl (3)	Metal bowl with level gauge (3)
	C	H1	H2	J	K	L	øL	B	B	B	B	B
ACG20B	87	24	24	33	12	5.5	5.5	105	—	91	87	—
ACG30B	108.5	35	35	—	14	7	7	156	123	122	128	148
ACG40B	114.5	40	40	—	18	9	9	186	155	154	160	180

Note 1) In the case of the ACG20B's standard specification (downward facing handle), the wall mounting is not possible using the lower side mounting hole on the spacer with a bracket. Contact SMC.
Note 2) In the case of the upward facing handle in the semi-standard specification, the C dimension will change. Also, in the case of the ACG20B, wall mounting is possible by using the lower side mounting hole on the spacer with a bracket.
Note 3) For the optional/semi-standard specifications (with auto drain, with barb fitting, with drain guide, metal bowl, or metal bowl with level gauge), the total length (B dimension) will vary.

Air Combination

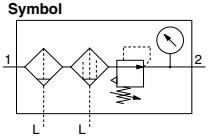
Air Filter + Mist Separator + Regulator

Series ACG20C/30C/40C

ACG20C

ACG40C

Symbol



Standard Specifications

Model		ACG20C	ACG30C	ACG40C
Component	Air filter	AF20	AF30	AF40
	Mist separator	AFM20	AFM30	AFM40
	Regulator	ARG20	ARG30	ARG40
Port size		1/8 1/4	1/4 3/8	1/4 3/8 1/2
Fluid		Air		
Proof pressure		1.5 MPa		
Maximum operating pressure		1.0 MPa		
Regulating pressure range		0.05 to 0.85 MPa		
Rated flow (L/min (ANR)) (1)		200	450	1100
Relief pressure		Set pressure + 0.05 MPa (at relief flow rate of 0.1 L/min (ANR))		
Ambient and fluid temperature		–5 to 60°C (With no freezing)		
Nominal filtration rating		AF: 5 µm; AFM: 0.3 µm (Filtration efficiency 99.9 %)		
Outlet side oil mist concentration		Maximum 1.0 mg/m³ (ANR) (approx. 0.8 ppm) (2)(3)		
Regulator construction		Relieving type		
Bowl material		Polycarbonate		
Bowl guard		Semi-standard	Standard	
Weight (kg)		0.53	1.06	1.89

Note 1) Condition: Mist separator inlet pressure 0.7 MPa. The rated flow varies depending on the inlet pressure. Keep the air flow within the rated flow to prevent an outflow of lubricant to the outlet side.
Note 2) At compressor discharge 30 mg/m³ (ANR).
Note 3) Bowl O-ring and other O-rings are slightly lubricated.

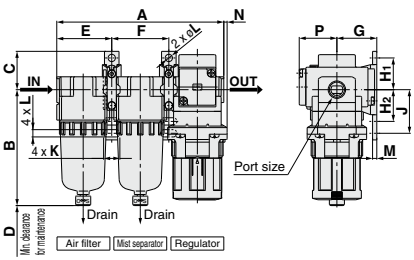
Attachment/Option Part No.

Description			Model	Attachment/Option part no. ACG20C	ACG30C	ACG40C
Pressure gauge (1)		Standard	0 to 1.0 MPa	GB2-10AS	GB3-10AS	GB4-10AS
		Semi-standard	0 to 0.3 MPa	GB2-3AS	GB3-3AS	GB4-3AS
Option	Float type auto drain (2)		Normally closed	AD27	AD37	AD47
			Normally open	—	AD38	AD48
Attachment	Spacer			Y200	Y300	Y400
	Spacer with bracket			Y200T	Y300T	Y400T
	Pressure switch (3)(4)			IS10M-20	IS10M-30	IS10M-40
	Residual pressure relief 3 port valve (3)			VHS20-□01, □02	VHS30-□02, □03	VHS40-□02, □03, □04

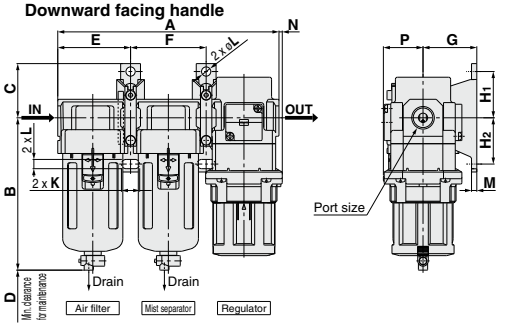
Note 1) Contact SMC regarding pressure gauge supply for psi unit specifications.
Note 2) Minimum operating pressure: 0.1 MPa for N.O. type, 0.1 MPa for N.C. type (AD27) and 0.15 MPa for N.C. type (AD37 and 47). Contact SMC for psi and °F specifications.
Note 3) Separate spacers are required for modular unit.
Note 4) Pressure switch cannot be mounted on the inlet and outlet sides of an ARG with an upward facing handle (semi-standard specification: -Y).

Dimensions

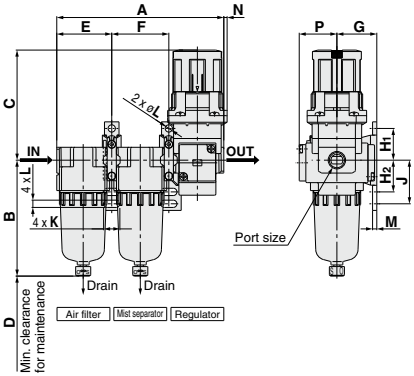
ACG20C Standard
Downward facing handle



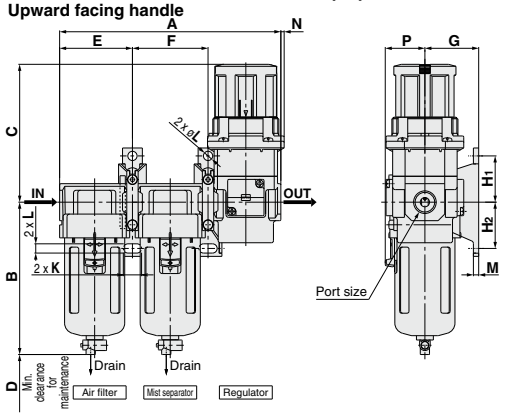
ACG30C/40C Standard
Downward facing handle

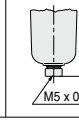
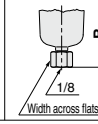
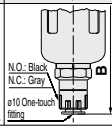
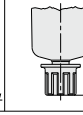
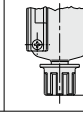
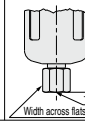
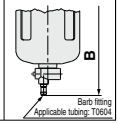


ACG20C Semi-standard (-Y)
Upward facing handle



ACG30C/40C Semi-standard (-Y)
Upward facing handle



Applicable model	ACG20C			ACG30C/40C				
Option/Semi-standard specifications	With auto drain (N.C.)	Metal bowl	With drain guide	With auto drain (N.O./N.C.)	Metal bowl	Metal bowl with level gauge	With drain guide	Drain cock with barb fitting
Dimensions								

Model	Port size	Standard specifications															
		A	B	C	D	N	P	Bracket mount									
								E	F	G	H1	H2	J	K	L	øL	M
ACG20C	1/8, 1/4	126	87	29	60	2.5	28.5	41.5	43	30	24	— (1)	— (1)	— (1)	— (1)	5.5	3.2
ACG30C	1/4, 3/8	167	115	41	80	2.5	30	55	57	41	35	35	—	14	7	7	4
ACG40C	1/4, 3/8, 1/2	220	147	48	110	0	38	72.5	75	50	40	40	—	18	9	9	4

Model	Option/Semi-standard specifications									
	Upward facing handle (2)					With auto drain (3)	With barb fitting (3)	With drain guide (3)	Metal bowl (3)	Metal bowl with level gauge (3)
	C	H2	J	K	L	B	B	B	B	B
ACG20C	87	24	33	12	5.5	105	—	91	87	—
ACG30C	108.5	35	—	14	7	156	123	122	128	148
ACG40C	114.5	40	—	18	9	186	155	154	160	180

Note 1) In the case of the ACG20C's standard specification (downward facing handle), the wall mounting is not possible using the lower side mounting hole on the spacer with a bracket. Use the upper side mounting hole when wall mounting.
Note 2) In the case of the upward facing handle in the semi-standard specification, the C dimension will change. Also, in the case of the ACG20C, wall mounting is possible by using the lower side mounting hole on the spacer with a bracket.
Note 3) For the option/semi-standard specifications (with auto drain, with barb fitting, with drain guide, metal bowl, or metal bowl with level gauge), the total length (B dimension) will vary.

Air Combination

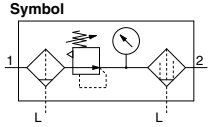
Filter Regulator + Mist Separator

Series ACG20D/30D/40D

ACG20D

ACG40D

Symbol



Filter regulator Mist separator

Standard Specifications

Model		ACG20D	ACG30D	ACG40D
Component	Filter regulator	AWG20	AWG30	AWG40
	Mist separator	AFM20	AFM30	AFM40
Port size		1/8 1/4	1/4 3/8	1/4 3/8 1/2
Fluid		Air		
Proof pressure		1.5 MPa		
Maximum operating pressure		1.0 MPa		
Regulating pressure range		0.05 to 0.85 MPa		
Rated flow (L/min (ANR)) (1)		150	330	800
Relief pressure		Set pressure + 0.05 MPa (at relief flow rate of 0.1 L/min (ANR))		
Ambient and fluid temperature		–5 to 60°C (With no freezing)		
Nominal filtration rating		AWG: 5 μm; AFM: 0.3 μm (Filtration efficiency 99.9 %)		
Outlet side oil mist concentration		Maximum 1.0 mg/m^3 (ANR) (approx. 0.8 ppm) (2)(3)		
Regulator construction		Relieving type		
Bowl material		Polycarbonate		
Bowl guard		Semi-standard	Standard	
Weight (kg)		0.43	0.85	1.52

Note 1) Condition: Mist separator inlet pressure 0.5 MPa. The rated flow varies depending on the inlet pressure. Keep the air flow within the rated flow to prevent an outflow of lubricant to the outlet side.
Note 2) At compressor discharge 30 mg/m^3 (ANR).
Note 3) Bowl O-ring and other O-rings are slightly lubricated.

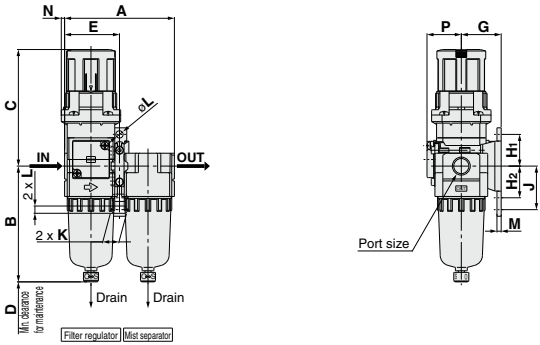
Attachment/Option Part No.

Description			Model	Attachment/Option part no. ACG20D	ACG30D	ACG40D
	Pressure gauge (1)	Standard	0 to 1.0 MPa	GB2-10AS	GB3-10AS	GB4-10AS
		Semi-standard	0 to 0.3 MPa	GB2-3AS	GB3-3AS	GB4-3AS
Option	Float type auto drain (2)		Normally closed	AD27	AD37	AD47
			Normally open	—	AD38	AD48
Attachment	Spacer			Y200	Y300	Y400
	Spacer with bracket			Y200T	Y300T	Y400T
	Residual pressure relief 3 port valve (3)			VHS20-□01, □02	VHS30-□02, □03	VHS40-□02, □03, □04

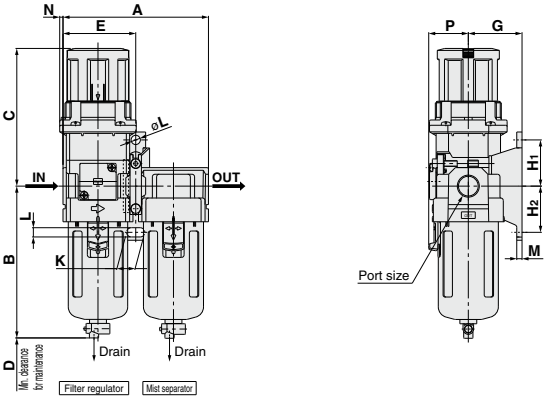
Note 1) Contact SMC regarding pressure gauge supply for psi unit specifications.
Note 2) Minimum operating pressure: 0.1 MPa for N.O. type, 0.1 MPa for N.C. type (AD27) and 0.15 MPa for N.C. type (AD37 and 47). Contact SMC for psi and °F specifications.
Note 3) Separate spacers are required for modular unit.

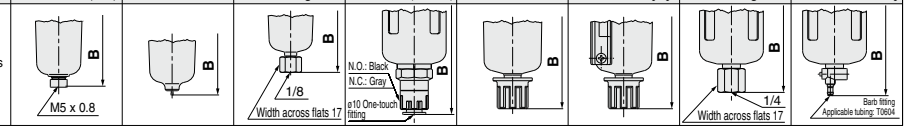
Dimensions

ACG20D



ACG30D/40D



Applicable model	ACG20D			ACG30D/40D				
Option/Semi-standard specifications	With auto drain (N.C.)	Metal bowl	With drain guide	With auto drain (N.O./N.C.)	Metal bowl	Metal bowl with level gauge	With drain guide	Drain cock with barb fitting
Dimensions								

Model	Port size	Standard specifications														
								Bracket mount								
		A	B	C	D	N	P	E	G	H_1	H_2	J	K	L	øL	M
ACG20D	1/8, 1/4	83	87	91	60	2.5	26	41.5	30	24	24	33	12	5.5	5.5	3.2
ACG30D	1/4, 3/8	110	115	108.5	80	2.5	30	55	41	35	35	—	14	7	7	4
ACG40D	1/4, 3/8, 1/2	145	147	114.5	110	0	38	72.5	50	40	40	—	18	9	9	4

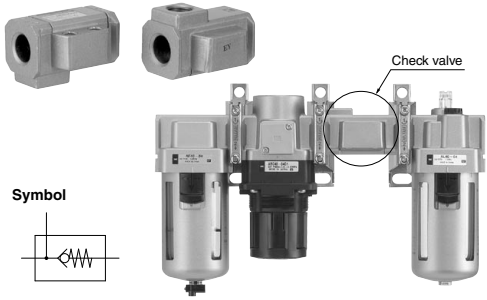
Model	Option/Semi-standard specifications Note)				
	With auto drain	With barb fitting	With drain guide	Metal bowl	Metal bowl with level gauge
	B	**B**	**B**	**B**	**B**
ACG20D	105	—	91	87	—
ACG30D	156	123	122	128	148
ACG40D	186	155	154	160	180

Note) For the option/semi-standard specifications (with auto drain, with barb fitting, with drain guide, metal bowl, or metal bowl with level gauge), the total length (B dimension) will vary.

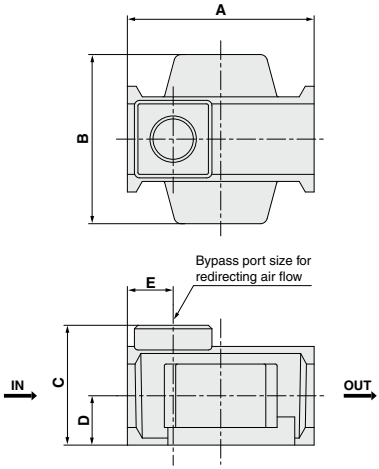
Check Valve (K): 1/8, 1/4, 3/8

RoHS

A check valve with intermediate air release port can be easily installed to prevent a back flow of lubricant when redirecting the air flow and releasing the air on the outlet side of the regulator.



Symbol



Specifications

Model	Effective area (mm²)
AKM2000	28
AKM3000	55
AKM4000	111

Be sure to use above check valves when redirecting the air flow on the inlet side of the lubricator. Threads for IN and OUT ports are not machined.

Model	Bypass port size	A	B	C	D	E	Applicable model
AKM2000	1/8, 1/4	40	40	28	11	11	**ACG20/ACG20A**
AKM3000	1/8, 1/4	53	48	34	14	13	**ACG30/ACG30A**
AKM4000	1/4, 3/8	70	54	42	18	15	**ACG40/ACG40A**

∗ Refer to the Standard Specifications and Attachment on page 546 or 549 for the standard bypass port size when the check valve is used with ACG.

How to Order

AKM 30 00 - □ 01

Check valve

Body size

20	30	40

Bypass port size for redirecting air flow

Symbol	Port size	Body size 20	30	40
01	1/8	●	●	—
02	1/4	●	●	●
03	3/8	—	—	●

Thread type

Nil	Rc
N	NPT
F	G

Pressure Switch (S)

A compact integrated pressure switch can be easily installed and facilitates the pressure detection of the line.

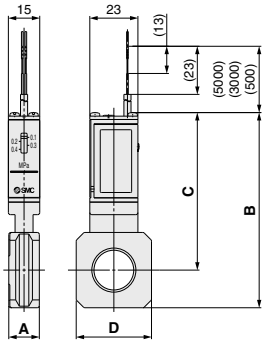
IS10M – 30 – ☐

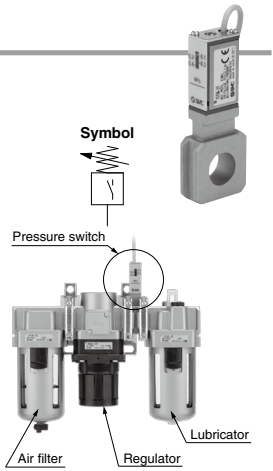
❶ ❷

Semi-standard: Select one each for a to c.
Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.
Example) IS10M-30-6LP

		Symbol	Description	❶ Body size 20	30	40
❷ Semi-standard	a Set pressure range	Nil	0.1 to 0.4MPa	●	●	●
		6 Note 1)	0.1 to 0.6MPa	●	●	●
	+					
	b Lead wire length	Nil	0.5m	●	●	●
		L	3m	●	●	●
		Z	5m	●	●	●
	+					
	c Pressure unit of the scale plate	Nil	MPa	●	●	●
		P Note 2)	MPa/psi dual scale	●	●	●

Note 1) Set pressure range of 6P (L, Z) is 0.2 to 0.6MPa (30 to 90psi).
Note 2) This product is for overseas use only according to the new Measurement Law.
(The SI unit type is provided for use in Japan.)





Model	A	B	C	D	Applicable model
IS10M-20	11	74	64	28	**ACG20, ACG20B, ACG20C**
IS10M-30	13	85	71	30	**ACG30, ACG30B, ACG30C**
IS10M-40	15	93	75	36	**ACG40, ACG40B, ACG40C**

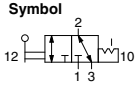
Note) Separate spacers are required for modular unit.

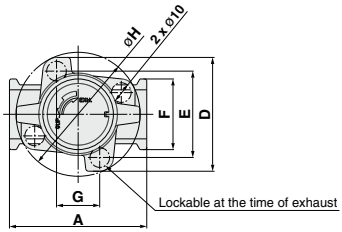
Note) For detailed specifications on the IS10 series, please refer to series IS10 in Best Pneumatics No.6.

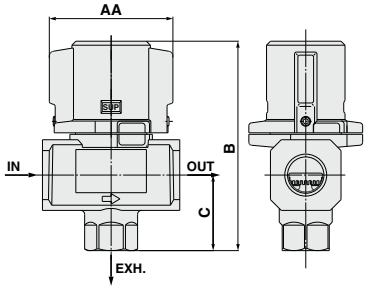
Pressure Relief 3 Port Valve (V)

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

Symbol







Specifications

Model	Port size		Effective area (mm²) ( ): Effective Area mm² (Cv)	
	IN,OUT	EXH.	IN → OUT	OUT → EXH.
VHS20	1/8	1/8	10 (0.54)	11 (0.60)
	1/4		14 (0.76)	16 (0.87)
VHS30	1/4	1/4	16 (0.87)	14 (0.76)
	3/8		31 (1.68)	29 (1.57)
VHS40	1/4	3/8	27 (1.46)	36 (1.95)
	3/8		38 (2.06)	40 (2.17)
	1/2		55 (2.98)	42 (2.28)

Note) Use an air filter on the IN side for operating protection.

(mm)

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

Caution

1. If a tube, 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

How to Order

VHS 30 - □ 03 - □

Pressure relief 3 port valve

Body size

Symbol	Applicable model
20	ACG20
30	ACG30
40	ACG40

Thread type

Nil	Rc
N	NPT
F	G

Port size

Symbol	Port size	Body size		
		20	30	40
01	1/8	●	—	—
02	1/4	●	●	●
03	3/8	—	●	●
04	1/2	—	—	●

Semi-standard

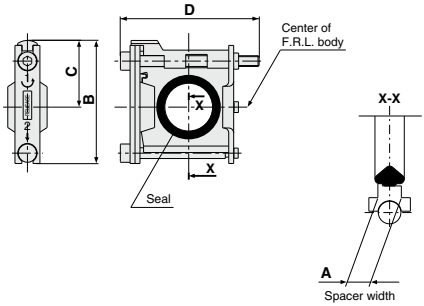
Code	Description
R	Flow direction: Right to left
Z (1)	Name plate in imperial units (psi, °F)

Note 1) Only for the NPT thread.
This product is for overseas use only according to the new Measurement Law.
(The SI unit type is provided for use in Japan.)

Spacer

Y200

Y400



Model	A	B	C	D	Applicable model
Y200	3	35.5	18.5	48	**ACG20□**
Y300	4	47	26	59	**ACG30□**
Y400	5	57	31	65	**ACG40□**

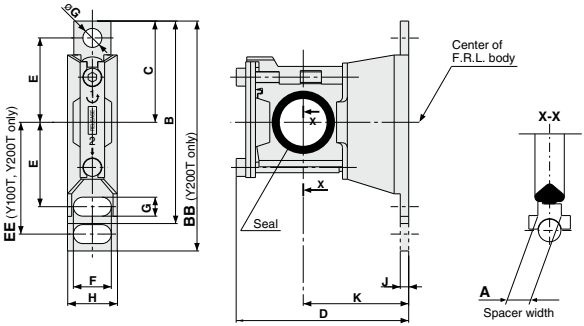
Replacement Parts

Description	Material	Part no.		
		Y200	**Y300**	**Y400**
Seal	HNBR	Y200P-061S	Y300P-060S	Y400P-060S

Spacer with Bracket

Y200T

Y400T



Model	A	B	BB	C	D	E	EE	F	G	øG	H	J	K	Applicable model
Y200T	3	—	67	29	53	24	33	12	5.5	5.5	19	3.2	30	**ACG20□**
Y300T	4	82	—	41	68	35	—	14	7	7	21	4	41	**ACG30□**
Y400T	5	96	—	48	81.5	40	—	18	9	9	26	4	50	**ACG40□**

Replacement Parts

Description	Material	Part no.		
		Y200T	**Y300T**	**Y400T**
Seal	HNBR	Y200P-061S	Y300P-060S	Y400P-060S

Modular Type
Regulator with Built-in Pressure Gauge
Series ARG

	Model	Port size	Accessory
Regulator with Built-in Pressure Gauge Series ARG **Pages 562 to 565**	**ARG20**	1/8, 1/4	Bracket Set nut for changing the mounting angle of pressure gauges
	ARG30	1/4, 3/8	
	ARG40	1/4, 3/8, 1/2	
Regulator with Built-in Pressure Gauge with Backflow Function Series ARG□K **Pages 566 to 570**	**ARG20K**	1/8, 1/4	
	ARG30K	1/4, 3/8	
	ARG40K	1/4, 3/8, 1/2	

Regulator with Built-in Pressure Gauge
Series ARG20/30/40

ARG20

ARG40

How to Order

ARG 20 – ☐ 01 ☐ G1 ☐ – ☐ – ☐

Body size

Symbol	Port size
20	1/8
30	3/8
40	1/2

Thread type

Symbol	Type
Nil	Rc
N	NPT
F	G

Port size

Symbol	Port size	Body size		
		20	30	40
01	1/8	●	—	—
02	1/4	●	●	●
03	3/8	—	●	●
04	1/2	—	—	●

Option (1)

Symbol	Description
Nil	—
B	With bracket (With set nuts)

Made to Order
(Refer to pages 571 and 572 for details.)

Symbol	Specification
X406	Setting and pressure gauge full span 0.4 MPa
X2101☐	Special pressure gauge mounting angle (45°, 135°, 225°, 315°)

Semi-standard

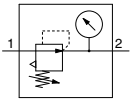
Symbol	Description
Nil	—
1 (2)	0.02 to 0.2 MPa setting
N	Non-relieving type
Z (3)	Name plate and pressure gauge in imperial units (psi)

∗ When more than one specification is required, indicate in ascending alphanumeric order.
Note 2) Adjusting spring and pressure gauge (full-span 0.3 MPa) are different from those for the standard specification.
All products can be set at 0.2 MPa or more.
Note 3) 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.)

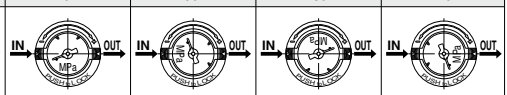
Option (2)

Symbol	Description
Nil	—
H	With set nuts

Symbol



Mounting Angle of Pressure Gauge

Symbol	G1	G2	G3	G4
Mounting angle	0°	90°	180°	270°
Mounting angle view				

∗ Mounting angles other than 45°, 135°, 225° and 315° are available through the Made to Order (page 572).
∗ Possible to change to the optional mounting angles.
For details, refer to page 584, "Procedure for replacing or changing the mounting angle of a pressure gauge".

◎: Combination available
☐: Combination not available
△: Available only with NPT thread

Option/Semi-standard Combinations

Option/Semi-standard specifications \ Combination		Symbol	Option		Semi-standard			Applicable regulator
			B	H	1	N	Z	ARG20 to 40
Option	**With bracket**	**B**			◎	◎	△	◎
	With set nut	**H**			◎	◎	△	◎
Semi-standard	**0.02 to 0.2 MPa setting**	**-1**	◎	◎		◎	△	◎
	Non-relieving type	**-N**	◎	◎	◎		△	◎
	Name plate and pressure gauge in imperial units (psi)	**-Z**	△	△	△	△		△

Standard Specifications

Model	ARG20	ARG30	ARG40
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Fluid	Air		
Proof pressure	1.5 MPa		
Maximum operating pressure	1.0 MPa		
Regulating pressure range	0.05 to 0.85 MPa		
Relief pressure	Set pressure + 0.05 MPa (at relief flow rate of 0.1 L/min (ANR))		
Ambient and fluid temperature	–5 to 60°C (With no freezing)		
Construction	Relieving type		
Weight (kg)	0.21	0.40	0.57

Option Part No.

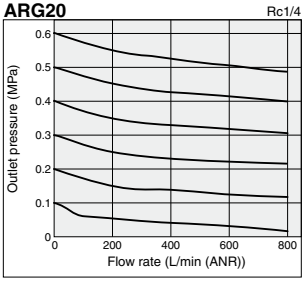
Option \ Applicable model				ARG20	ARG30	ARG40
Bracket assembly (1)				ARG20P-270AS	ARG30P-270AS	ARG40P-270AS
Set nut				ARG20P-260S	ARG30P-260S	ARG40P-260S
Pressure gauge	**Pressure gauge display range**	**Standard**	0 to 1.0 MPa	GB2-10AS	GB3-10AS	GB4-10AS
			0 to 0.3 MPa	GB2-3AS	GB3-3AS	GB4-3AS
		Semi-standard	0 to 150 psi	GB2-P10AS	GB3-P10AS	GB4-P10AS
			0 to 45 psi	GB2-P3AS	GB3-P3AS	GB4-P3AS

Note 1) Assembly includes a bracket and set nuts.

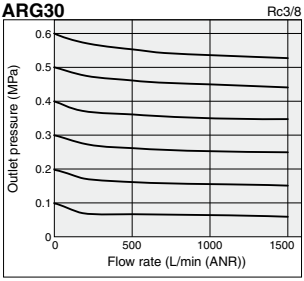
Flow Characteristics (Representative Values)

Condition: Inlet pressure 0.7 MPa

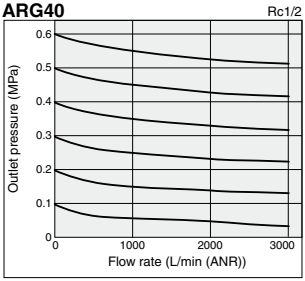
ARG20 Rc1/4



ARG30 Rc3/8



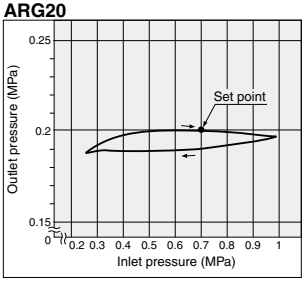
ARG40 Rc1/2



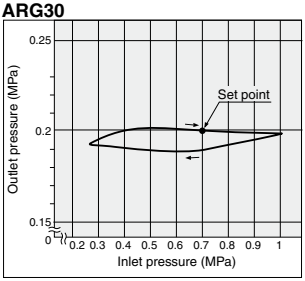
Pressure Characteristics (Representative Values)

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

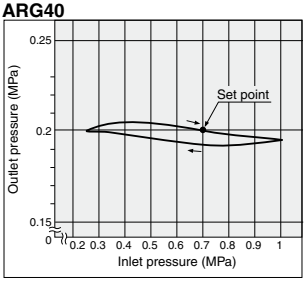
ARG20



ARG30



ARG40



⚠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. Releasing the inlet pressure does not mean that all residual pressure is released (the outlet pressure cannot be released). When releasing residual pressure, use a regulator with a backflow function.

Mounting and Adjustment

⚠Warning

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

⚠Caution

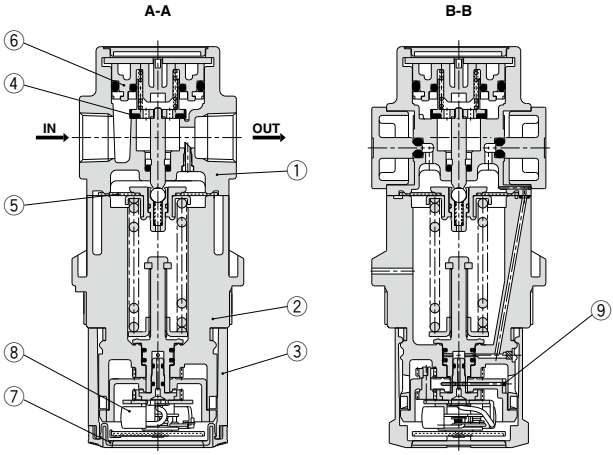
1. Be sure to unlock the handle before adjusting the pressure and lock it after setting the pressure.

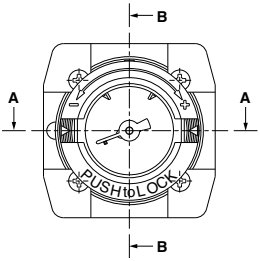
   Failure to follow this procedure can cause damage to the handle and the outlet pressure may fluctuate.

   - Pull the pressure regulator handle to unlock. (You can visually verify this with the “orange mark” that appears in the gap.)
   - Push the pressure regulator handle to lock. When the handle is not easily locked, turn it left and right a little and then push it (when the handle is locked, the “orange mark”, i.e., the gap will disappear).

2. When using the regulator between a solenoid valve and an actuator, check the pressure gauge periodically.

Construction





Component Parts

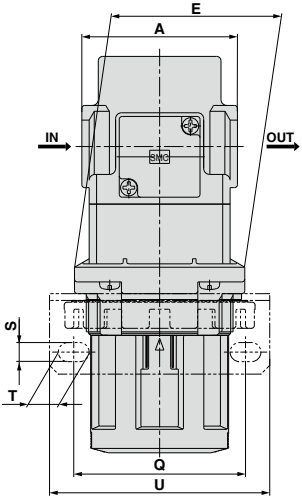
No.	Description	Material			Note
		ARG20	ARG30	ARG40	
1	**Body**	ADC			Platinum silver
2	**Bonnet**	PBT			Black
3	**Handle**	POM			Black

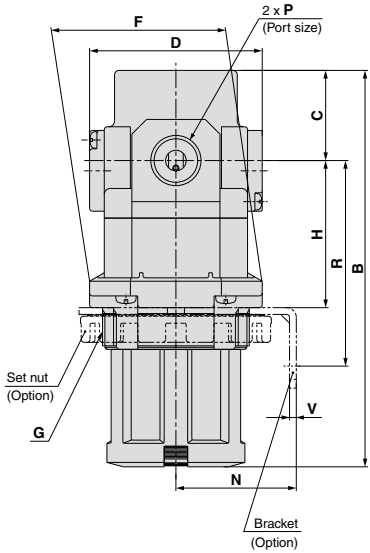
Replacement Parts

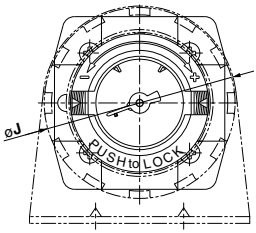
No.	Description	Material	Qty.	Part no.		
				ARG20	ARG30	ARG40
4	**Valve**	Brass, HNBR	1	AR20P-410S	AR30P-410S	AR40P-410S
5	**Diaphragm assembly**	Weatherability NBR	1	AR20P-150AS	AR30P-150AS	AR40P-150AS
6	**Valve guide assembly**	POM, NBR	1	AR20P-050AS	AR30P-050AS	AR40P-050AS
7	**Pressure gauge cover**	PC	1	ARG20P-400S	ARG30P-400S	ARG40P-400S
8	**Pressure gauge**	—	1	GB2-10AS	GB3-10AS	GB4-10AS
9	**Clip**	Stainless steel	1	ARG20P-420S	ARG30P-420S	ARG40P-420S

Note) Only the standard part numbers are listed in the pressure gauges. For the optional part numbers, refer to page 563.

Dimensions







Panel fitting dimension

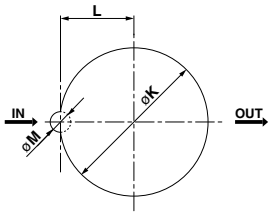


Plate thickness
ARG20 to 40: Max. 3.5

Model	Standard specifications								Option specifications											
									Panel mount					Bracket mount						
	P	A	B Note)	C	D	E	F	G	H	J	K	L	M	Q	U	T	S	R	V	N
ARG20	1/8, 1/4	40	114	26.5	57	45	47	M39 x 1.5	38	52.5	39.5	19.5	6	48	65	10.4	5.4	60	2.3	35
ARG30	1/4, 3/8	53	138.5	31	59	58	59	M50 x 1.5	50	65	50.5	25	7	58.5	75	10.5	6.5	70	2.3	45
ARG40	1/4, 3/8, 1/2	70	150.5	36	68	70	70	M55 x 1.5	54	70	55.5	27.5	7	65.5	85	12.5	8.5	75	2.3	50

Note) Full length dimension B is measured when the handle is unlocked.

Regulator with Built-in Pressure Gauge with Backflow Function

Series ARG20K/30K/40K

How to Order

ARG 20 K – □ 01 □ G1 □ – □ – □

ARG20K

ARG40K

Body size

Symbol	Port size
20	1/8
30	3/8
40	1/2

With backflow function

Thread type

Symbol	Type
Nil	Rc
N	NPT
F	G

Port size

Symbol	Port size	Body size		
		20	30	40
01	1/8	●	—	—
02	1/4	●	●	●
03	3/8	—	●	●
04	1/2	—	—	●

Option (1)

Symbol	Description
Nil	—
B	With bracket (With set nuts)

Made to Order
(Refer to pages 571 and 572 for details.)

Symbol	Specifications
X406	Setting and pressure gauge full span 0.4 MPa
X2101□	Special pressure gauge mounting angle (45°, 135°, 225°, 315°)

Semi-standard

Symbol	Description
Nil	—
1 (2)	0.02 to 0.2 MPa setting
N	Non-relieving type
Z (3)	Name plate and pressure gauge in imperial units (psi)

∗ When more than one specification is required, indicate in ascending alphanumeric order.

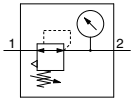
Note 2) Adjusting spring and pressure gauge (full-span 0.3 MPa) are different from those for the standard specification.
All products can be set at 0.2 MPa or more.

Note 3) 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.)

Option (2)

Symbol	Description
Nil	—
H	With set nuts

Symbol



Mounting Angle of Pressure Gauge

Symbol	G1	G2	G3	G4
Mounting angle	0°	90°	180°	270°
Mounting angle view	IN OUT	IN OUT	IN OUT	IN OUT

∗ Mounting angles other than 45°, 135°, 225° and 315° are available through the Made to Order (page 572).
∗ Possible to change to the optional mounting angles.
For details, refer to page 584, "Procedure for replacing or changing the mounting angle of a pressure gauge".

Option/Semi-standard Combinations

◎: Combination available
▭: Combination not available
△: Available only with NPT thread

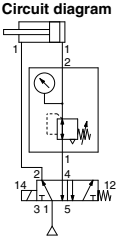
Option/Semi-standard specifications \ Combination		Symbol	Option		Semi-standard			Applicable regulator
			B	H	1	N	Z	ARG20 to 40
Option	With bracket	B	▭	▭	◎	◎	△	◎
	With set nut	H	▭	▭	◎	◎	△	◎
Semi-standard	0.02 to 0.2 MPa setting	-1	◎	◎	▭	◎	△	◎
	Non-relieving type	-N	◎	◎	◎	▭	△	◎
	Name plate and pressure gauge in imperial units (psi)	-Z	△	△	△	△	▭	△

Application examples of a regulator with a backflow function

With a built-in mechanism which enables reliable discharge of air pressure from outlet to inlet

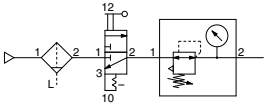
Example 1)
When the pressure in the rear and the front of the cylinder differs:

Circuit diagram



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.

Circuit diagram



Standard Specifications

Model	ARG20K	ARG30K	ARG40K
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Fluid	Air		
Proof pressure	1.5 MPa		
Maximum operating pressure	1.0 MPa		
Regulating pressure range (1)	0.05 to 0.85 MPa		
Relief pressure	Set pressure + 0.05 MPa (at relief flow rate of 0.1 L/min (ANR))		
Ambient and fluid temperature	–5° to 60°C (With no freezing)		
Construction	Relieving type		
Weight (kg)	0.21	0.40	0.57

Note 1) Set the inlet pressure to 0.05 MPa or higher than the set pressure.

Option Part No.

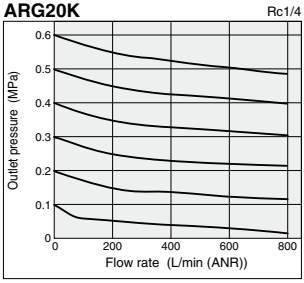
Option \ Applicable model				ARG20K	ARG30K	ARG40K
Bracket assembly (1)				ARG20P-270AS	ARG30P-270AS	ARG40P-270AS
Set nut				ARG20P-260S	ARG30P-260S	ARG40P-260S
Pressure gauge	Pressure gauge display range	Standard	0 to 1.0 MPa	GB2-10AS	GB3-10AS	GB4-10AS
		Semi-standard	0 to 0.3 MPa	GB2-3AS	GB3-3AS	GB4-3AS
			0 to 150 psi	GB2-P10AS	GB3-P10AS	GB4-P10AS
			0 to 45 psi	GB2-P3AS	GB3-P3AS	GB4-P3AS

Note 1) Assembly includes a bracket and set nuts.

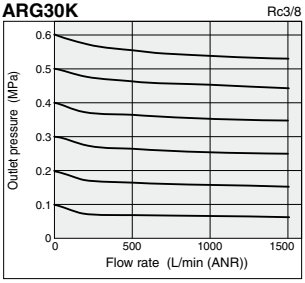
Flow Characteristics (Representative Values)

Condition: Inlet pressure 0.7 MPa

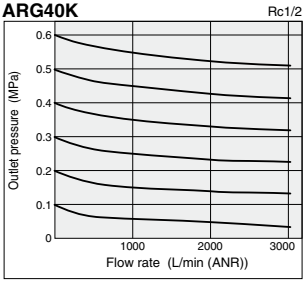
ARG20K Rc1/4



ARG30K Rc3/8



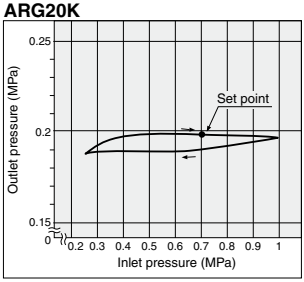
ARG40K Rc1/2



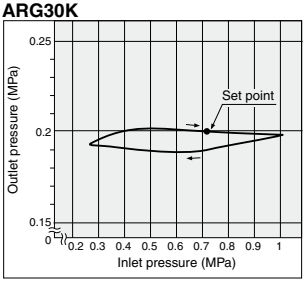
Pressure Characteristics (Representative Values)

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

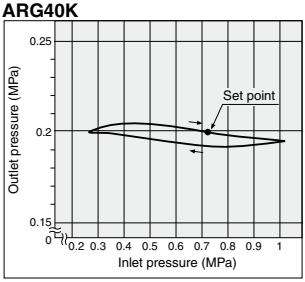
ARG20K



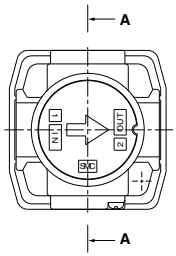
ARG30K

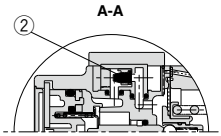


ARG40K



Working Principle





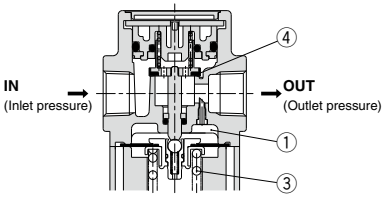


Figure 1

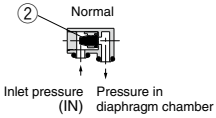


Figure 3

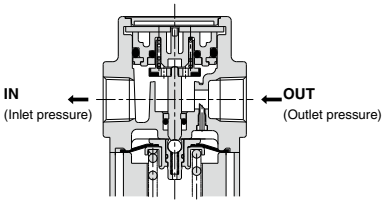
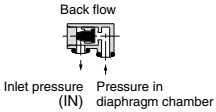


Figure 2



When the inlet pressure (P1) is higher than the regulating pressure, the check valve ② closes and operates as a normal regulator (Figure 1).
When the inlet pressure (P1) 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 3).

⚠ 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.

Mounting and Adjustment

⚠ Warning

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

⚠ Caution

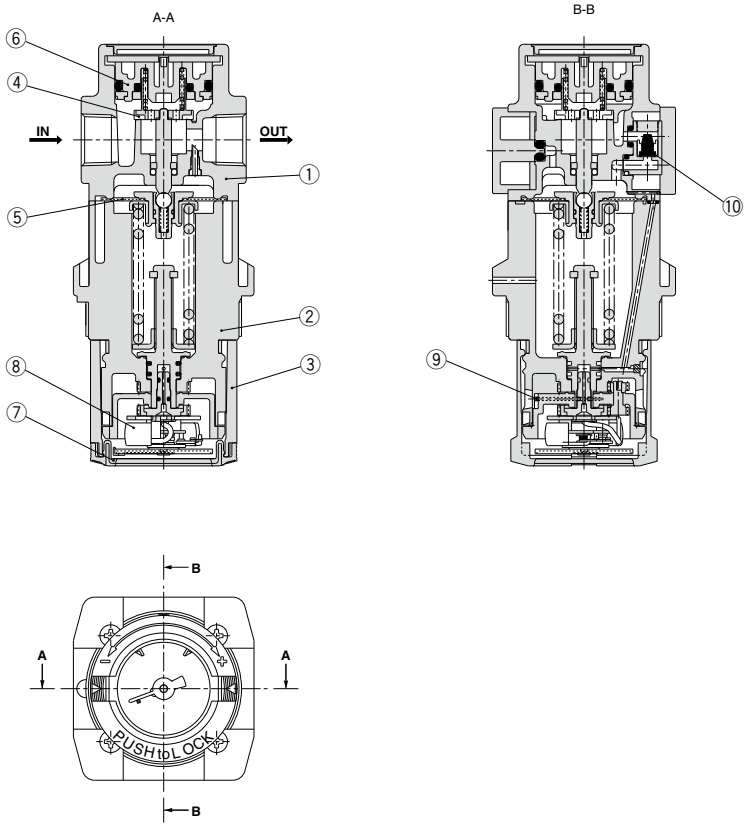
1. Be sure to unlock the handle before adjusting the pressure and lock it after setting the pressure.
   Failure to follow this procedure can cause damage to the handle and the outlet pressure may fluctuate.
   - Pull the pressure regulator handle to unlock. (You can visually verify this with the “orange mark” that appears in the gap.)
   - Push the pressure regulator handle to lock. When the handle is not easily locked, turn it left and right a little and then push it (when the handle is locked, the “orange mark”, i.e., the gap will disappear).

Maintenance

⚠ Warning

1. 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.

Construction



Component Parts

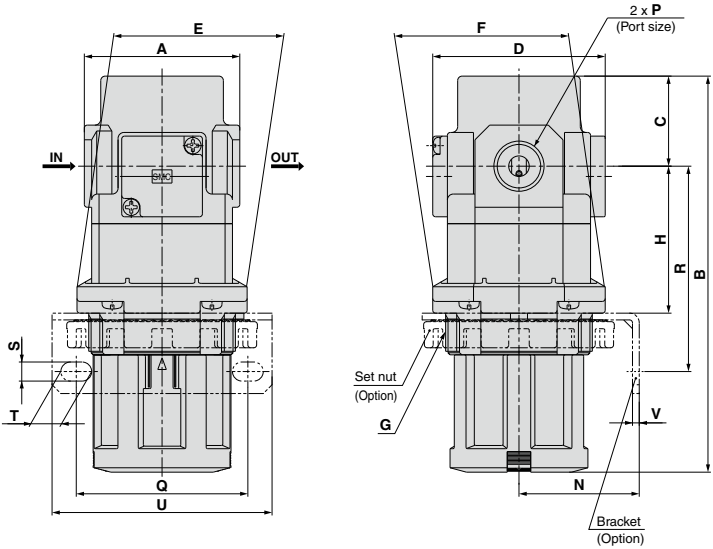
No.	Description	Material			Note
		ARG20K	ARG30K	ARG40K	
1	**Body**	ADC			Platinum silver
2	**Bonnet**	PBT			Black
3	**Handle**	POM			Black

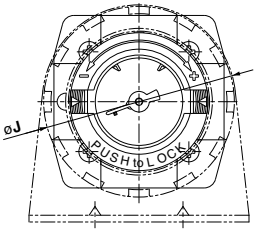
Replacement Parts

No.	Description	Material	Qty.	Part no.		
				ARG20K	ARG30K	ARG40K
4	**Valve**	Brass, HNBR	1	AR20P-410S	AR30P-410S	AR40P-410S
5	**Diaphragm assembly**	Weatherability NBR	1	AR20P-150AS	AR30P-150AS	AR40P-150AS
6	**Valve guide assembly**	POM, NBR	1	AR20P-050AS	AR30P-050AS	AR40P-050AS
7	**Pressure gauge cover**	PC	1	ARG20P-400S	ARG30P-400S	ARG40P-400S
8	**Pressure gauge** (1)	—	1	GB2-10AS	GB3-10AS	GB4-10AS
9	**Clip**	Stainless steel	1	ARG20P-420S	ARG30P-420S	ARG40P-420S
10	**Check valve assembly** (2)	—	1	AR20KP-020AS		

Note 1) Only the standard part numbers are listed for the pressure gauges. For the optional part numbers, refer to page 567.
Note 2) Check valve assembly contains check valve, check valve cover and its screws (2 pcs).

Construction





Panel fitting dimension

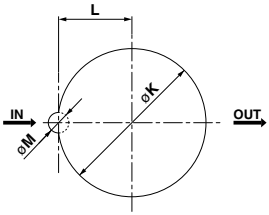


Plate thickness
ARG20K to 40K: Max. 3.5

Model	Standard specifications								Option specifications											
									Panel mount					Bracket mount						
	P	A	B Note)	C	D	E	F	G	H	J	K	L	M	Q	U	T	S	R	V	N
ARG20K	1/8, 1/4	40	114	26.5	57	45	47	M39 x 1.5	38	52.5	39.5	19.5	6	48	65	10.4	5.4	60	2.3	35
ARG30K	1/4, 3/8	53	138.5	31	59	58	59	M50 x 1.5	50	65	50.5	25	7	58.5	75	10.5	6.5	70	2.3	45
ARG40K	1/4, 3/8, 1/2	70	150.5	36	68	70	70	M55 x 1.5	54	70	55.5	27.5	7	65.5	85	12.5	8.5	75	2.3	50

Note) Full length dimension B is measured when the handle is unlocked.

Regulator with Built-in Pressure Gauge *ARG20/30/40*
Made to Order Specifications:

Made to Order

Contact SMC for detailed dimensions, specifications, and lead times.

① Setting and Pressure Gauge Full Span 0.4 MPa

ARG 20 □ – □ 01 □ G1 □ – □ – X406

ARG20

ARG40

Body size

Symbol	Port size
20	1/8
30	3/8
40	1/2

Thread type

Symbol	Type
Nil	Rc
N	NPT
F	G

Port size

Symbol	Port size	Body size		
		20	30	40
01	1/8	●	—	—
02	1/4	●	●	●
03	3/8	—	●	●
04	1/2	—	—	●

With back flow mechanism

Symbol	Description
Nil	—
K	With back flow mechanism

Option (1)

Symbol	Description
Nil	—
B	With bracket (With set nuts)

Option (2)

Symbol	Description
Nil	—
H	With set nuts

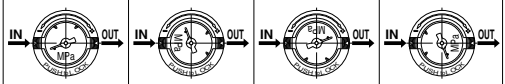
Semi-standard

Symbol	Description
Nil	—
N	Non-relieving type
Z (2)	Name plate and pressure gauge in imperial units (psi)

∗ When more than one specification is required, indicate in ascending alphanumeric order.

Note 2) 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.)

Mounting Angle of Pressure Gauge

Symbol	G1	G2	G3	G4
Mounting angle	0°	90°	180°	270°
Mounting angle view				

∗ Mounting angles other than 45°, 135°, 225° and 315° are available through the Made to Order (page 572).
∗ Possible to change to the optional mounting angles.
For details, refer to page 584, "Procedure for replacing or changing the mounting angle of a pressure gauge".

Option/Semi-standard Combinations

◎: Combination available ▭: Combination not available △: Available only with NPT thread

Option/Semi-standard specifications \ Combination		Symbol	Option		Semi-standard		Applicable regulator
			B	H	N	Z	ARG20(K) to 40(K)
Option	With bracket	B			◎	△	◎
	With set nut	H			◎	△	◎
Semi-standard	Non-relieving type	-N	◎	◎		△	◎
	Name plate and pressure gauge in imperial units (psi)	-Z	△	△	△		△

Regulator with Built-in Pressure Gauge
ARG20/30/40
Made to Order Specifications:

Made to Order

Contact SMC for detailed dimensions, specifications, and lead times.

②Special Mounting Angle Specification of Pressure Gauge (45°, 135°, 225°, 315°)

ARG 20 □ – □ 01 □ G5 □ – □ –X2101 A

Body size

Symbol	Port size
20	1/8
30	3/8
40	1/2

With back flow mechanism

Symbol	Description
Nil	—
K	With back flow mechanism

Thread type

Symbol	Type
Nil	Rc
N	NPT
F	G

Port size

Symbol	Port size	Body size		
		20	30	40
01	1/8	●	—	—
02	1/4	●	●	●
03	3/8	—	●	●
04	1/2	—	—	●

Option (2)

Symbol	Description
Nil	—
H	With set nuts

Special pressure gauge mounting angle

Option (1)

Symbol	Description
Nil	—
B	With bracket (With set nuts)

Mounting angle of pressure gauge

Symbol	Description
A	45°
B	135°
C	225°
D	315°

∗ Refer to the table below.

Semi-standard

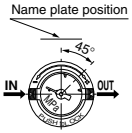
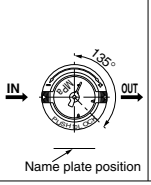
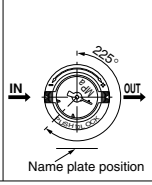
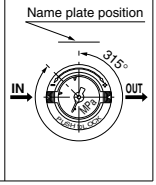
Symbol	Description
Nil	—
1 (1)	0.02 to 0.2 MPa setting
N	Non-relieving type
Z (2)	Name plate and pressure gauge in imperial units (psi)

∗ When more than one specification is required, indicate in ascending alphanumeric order.

Note 1) Adjusting spring and pressure gauge (full-span 0.3 MPa) are different from those for the standard specification.
All products can be set at 0.2 MPa or more.

Note 2) 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.)

Mounting Angle of Pressure Gauge

Symbol	X2101A	X2101B	X2101C	X2101D
Mounting angle	45°	135°	225°	315°
Mounting angle view				

◎: Combination available
▭: Combination not available
△: Available only with NPT thread

Option/Semi-standard Combinations

	Combination / Option/Semi-standard specifications	Symbol	Option		Semi-standard			Applicable regulator
			B	H	1	N	Z	ARG20(K) to 40(K)
Option	**With bracket**	**B**	▭	▭	◎	◎	△	◎
Option	**With set nut**	**H**	▭	▭	◎	◎	△	◎
Semi-standard	**0.02 to 0.2 MPa setting**	**-1**	◎	◎	▭	◎	△	◎
Semi-standard	**Non-relieving type**	**-N**	◎	◎	◎	▭	△	◎
Semi-standard	**Name plate and pressure gauge in imperial units (psi)**	**-Z**	△	△	△	△	▭	△

Modular Type
Filter Regulator with Built-in Pressure Gauge
Series AWG

	Model	Port size	Nominal filtration rating	Option
Filter Regulator with Built-in Pressure Gauge Series AWG **Pages 574 to 577**	**AWG20**	1/8, 1/4	5 µm	Bracket Float type auto drain Set nut for changing the mounting angle of pressure gauges
	AWG30	1/4, 3/8		
	AWG40	1/4, 3/8, 1/2		
Filter Regulator with Built-in Pressure Gauge with Backflow Function Series AWG□K **Pages 578 to 582**	**AWG20K**	1/8, 1/4		
	AWG30K	1/4, 3/8		
	AWG40K	1/4, 3/8, 1/2		

Filter Regulator with Built-in Pressure Gauge

Series AWG20/30/40

AWG20 AWG40

How to Order

AWG 30 – □ 03 □ G1 □ – □ – □

Made to Order
(Refer to page 583 for details.)

Symbol	Specifications
X406	Setting and pressure gauge full span 0.4 MPa

Semi-standard

Symbol	Description	Applicable model
Nil	—	—
1 (3)	0.02 to 0.2 MPa setting	AWG20 to 40
2	Metal bowl	AWG20 to 40
6	Nylon bowl	AWG20 to 40
8	Metal bowl with level gauge	AWG30, 40
C	With bowl guard	AWG20
J (4)	With drain guide	AWG20 to 40
N	Non-relieving	AWG20 to 40
W	Drain cock with barb fitting: ø6 x ø4 nylon tubing	AWG30, 40
Z (5)	Name plate, caution plate for bowl, and pressure gauge in imperial units (psi, °F)	AWG20 to 40

∗ When more than one specification is required, indicate in ascending alphanumeric order.
Note 3) Adjusting spring and pressure gauge (full-span 0.3 MPa) are different from those for the standard specification.
All products can be set at 0.2 MPa or more.
Note 4) Without a valve function.
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.)

Body size

Symbol	Port size
20	1/8
30	3/8
40	1/2

Thread type

Symbol	Type
Nil	Rc
N (1)	NPT
F (2)	G

Note 1) Drain guide: NPT 1/8 (AWG20), NPT 1/4 (AWG30 to AWG40); Auto drain port: With ø3/8" One-touch fitting (AWG30 to AWG40)
Note 2) Drain guide: G 1/8 (AWG20), G 1/4 (AWG30 to AWG40)

Option (2)

Symbol	Description	Applicable model
Nil	—	—
H	With set nuts	AWG20 to 40

Port size

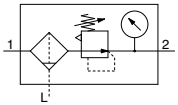
Symbol	Port size	Body size		
		20	30	40
01	1/8	●	—	—
02	1/4	●	●	●
03	3/8	—	●	●
04	1/2	—	—	●

Option (1)

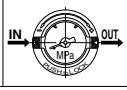
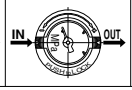
Symbol	Description	Applicable model
Nil	—	—
B	With bracket (With set nuts)	AWG20 to 40
C	Float type auto drain (Normally closed)	AWG20 to 40
D	Float type auto drain (Normally open)	AWG30, 40

When more than one specification is required, indicate in ascending alphanumeric order.

Symbol



Mounting Angle of Pressure Gauge

Symbol	G1	G2	G3	G4
Mounting angle	0°	90°	180°	270°
Mounting angle view				

∗ Possible to change to the optional mounting angles.
For details, refer to page 584, "Procedure for replacing or changing the mounting angle of a previous gauge".

Option/Semi-standard Combinations

◎: Combination available
○: Varies depending on a model
▭: Combination not available
△: Available only with NPT thread

Option/Semi-standard specifications \ Combination		Symbol	Option				Semi-standard									Applicable filter regulator	
			B	C	D	H	1	2	6	8	C	J	N	W	Z	AWG20	AWG30/40
Option	With bracket	B		◎	○		◎	◎	◎	○	○	◎	◎	○	△	◎	◎
	Float type auto drain (Normally closed)	C	◎			◎	◎	◎	◎	○	○		◎		△	◎	◎
	Float type auto drain (Normally open)	D	◎			◎	◎	◎	◎	◎			◎		△		◎
	With set nut	H		◎	○		◎	◎	◎	○	○	◎	◎	○	△	◎	◎
Semi-standard	0.02 to 0.2 MPa setting	-1	◎	◎	○	◎		◎	◎	○	○	◎	◎	○	△	◎	◎
	Metal bowl	-2	◎	◎	○	◎	◎					◎	◎		△	◎	◎
	Nylon bowl	-6	◎	◎	○	◎	◎				○	◎	◎	○	△	◎	◎
	Metal bowl with level gauge	-8	◎	◎	◎	◎	◎					◎	◎		△		◎
	With bowl guard	-C	◎	◎		◎	◎		◎			◎	◎		△	◎	
	Drain guide	-J	◎			◎	◎	◎	◎	○	○		◎		△	◎	◎
	Non-relieving type	-N	◎	◎	○	◎	◎	◎	◎	○	○	◎		○	△	◎	◎
	Drain cock with barb fitting	-W	◎			◎	◎		◎				◎		△		◎
	Name plate, caution plate for bowl, and pressure gauge in imperial units (psi, °F)	-Z	△	△	△	△	△	△	△	△	△	△	△	△		△	△

Standard Specifications

Model	AWG20	AWG30	AWG40
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Fluid	Air		
Proof pressure	1.5 MPa		
Maximum operating pressure	1.0 MPa		
Regulating pressure range	0.05 to 0.85 MPa		
Relief pressure	Set pressure + 0.05 MPa (at relief flow rate of 0.1 L/min (ANR))		
Ambient and fluid temperature	–5 to 60°C (With no freezing)		
Nominal filtration rating	5 μm		
Drain capacity (cm³)	8	25	45
Bowl material	Polycarbonate		
Bowl guard	Semi-standard	Standard	
Construction	Relieving type		
Weight (kg)	0.26	0.51	0.86

Option Part No.

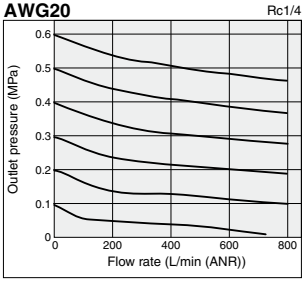
Option \ Applicable model				AWG20	AWG30	AWG40
Bracket assembly (1)				ARG20P-270AS	ARG30P-270AS	ARG40P-270AS
Set nut				ARG20P-260S	ARG30P-260S	ARG40P-260S
Pressure gauge	Pressure gauge display range	Standard	0 to 1.0 MPa	GB2-10AS	GB3-10AS	GB4-10AS
		Semi-standard	0 to 0.3 MPa	GB2-3AS	GB3-3AS	GB4-3AS
			0 to 150 psi	GB2-P10AS	GB3-P10AS	GB4-P10AS
			0 to 45 psi	GB2-P3AS	GB3-P3AS	GB4-P3AS
Float type auto drain (2)			Normally open	—	AD38	AD48
			Normally closed	AD27	AD37	AD47

Note 1) Assembly includes a bracket and set nuts.
Note 2) Minimum operating pressure: N.O. type–0.1 MPa; N.C. type–0.1 MPa (AD27) and 0.15 MPa (AD37/47). Contact SMC regarding the specifications for psi unit and °F.

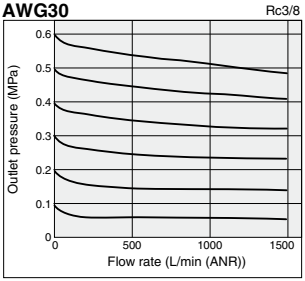
Flow Characteristics (Representative Values)

Condition: Inlet pressure 0.7 MPa

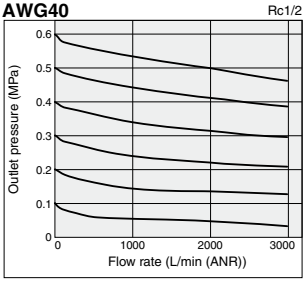
AWG20 Rc1/4



AWG30 Rc3/8



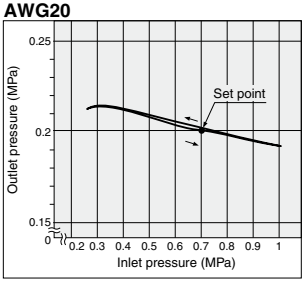
AWG40 Rc1/2



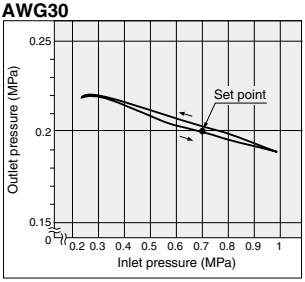
Pressure Characteristics (Representative Values)

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

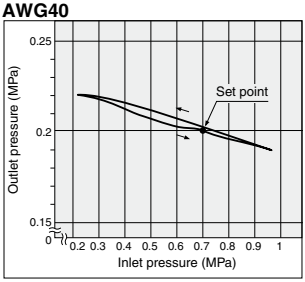
AWG20



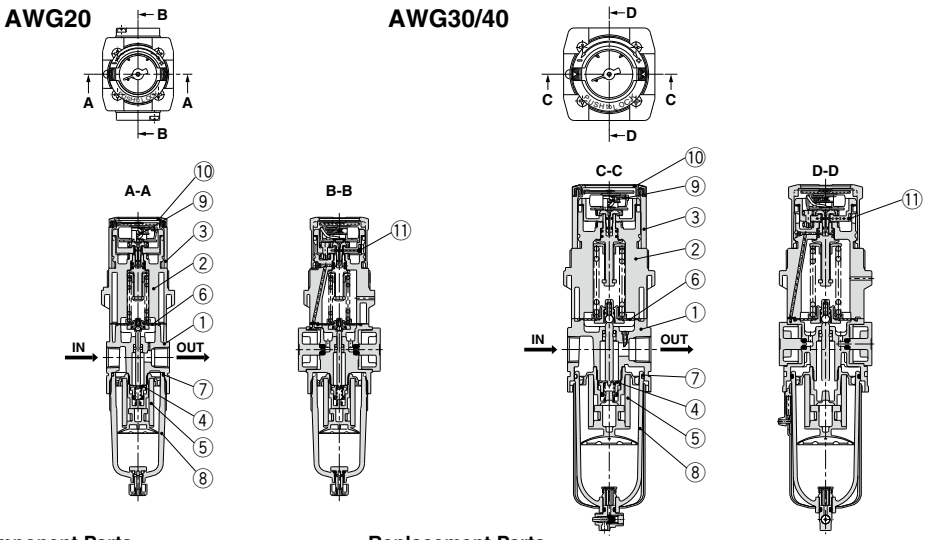
AWG30



AWG40



Construction



Component Parts

No.	Description	Material			Note
		AWG20	AWG30	AWG40	
1	**Body**	ADC			Platinum silver
2	**Bonnet**	PBT			Black
3	**Handle**	POM			Black

Replacement Parts

No.	Description	Material	Qty.	Part no.		
				AWG20	AWG30	AWG40
4	**Valve assembly**	Brass, HNBR	1	AW20P-340AS	AW30P-340AS	AW40P-340AS
5	**Filter element**	Non-woven fabric	1	AF20P-060S	AF30P-060S	AF40P-060S
6	**Diaphragm assembly**	Weatherability NBR	1	AR20P-150AS	AR30P-150AS	AR40P-150AS
7	**Bowl O-ring**	NBR	1	C2SFP-260S	C3SFP-260S	C4SFP-260S
8	**Bowl assembly** (1)	PC	1	C2SF	C3SF (2)	C4SF (2)
9	**Pressure gauge** (3)	—	1	GB2-10AS	GB3-10AS	GB4-10AS
10	**Pressure gauge cover**	PC	1	ARG20P-400S	ARG30P-400S	ARG40P-400S
11	**Clip**	Stainless steel	1	ARG20P-420S	ARG30P-420S	ARG40P-420S

Note 1) Including O-ring. Contact SMC regarding the bowl assembly supply for psi and °F unit specifications.
Note 2) Bowl assembly for AWG30/40 includes a bowl guard (steel band material).
Note 3) Only the standard part numbers are listed in the pressure gauges. For the optional part numbers, refer to page 575.

⚠ 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 release (outlet pressure release) is not completed by releasing inlet pressure. To release residual pressure, use a filter regulator with a back flow mechanism.

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 and Adjustment

⚠ Warning

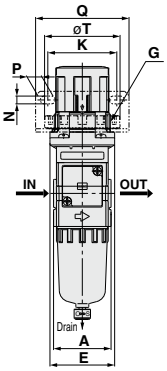
1. Set the regulator while checking the displayed values of the inlet and outlet pressure gauges. Turning the handle excessively can cause damage to the internal parts.
2. Do not use tools on the pressure regulator handle as this may cause damage. It must be operated manually.

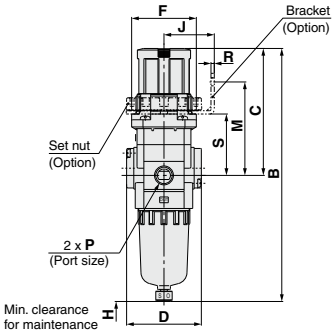
⚠ Caution

1. Be sure to unlock the handle before adjusting the pressure and lock it after setting the pressure.
   Failure to follow this procedure can cause damage to the handle and the outlet pressure may fluctuate.
   - Pull the pressure regulator handle to unlock. (You can visually verify this with the "orange mark" that appears in the gap.)
   - Push the pressure regulator handle to lock. When the handle is not easily locked, turn it left and right a little and then push it (when the handle is locked, the "orange mark" will disappear).

Dimensions

AWG20





Panel fitting dimension

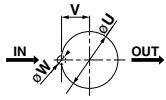
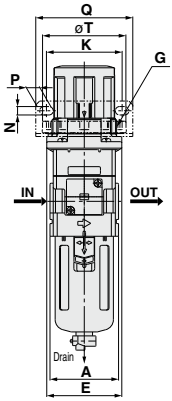
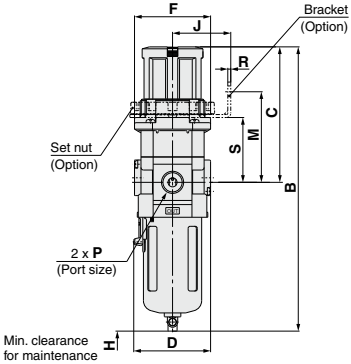


Plate thickness
AWG20: Max. 3.5

AWG30/40





Panel fitting dimension

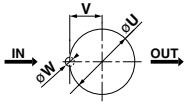
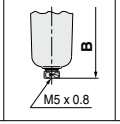
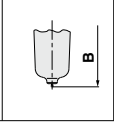
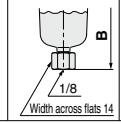
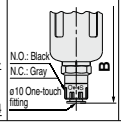
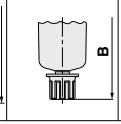
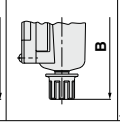
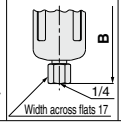
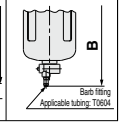


Plate thickness
AWG30/40: Max. 3.5

Applicable model	AWG20			AWG30/40				
Option/Semi-standard specifications	With auto drain (N.C.)	Metal bowl	With drain guide	With auto drain (N.O./N.C.)	Metal bowl	Metal bowl with level gauge	With drain guide	Drain cock with barb fitting
Dimensions								

Model	Standard specifications									Option specifications						
										Bracket mount						
	P	A	B Note)	C	D	E	F	G	H	J	K	M	N	P	Q	R
AWG20	1/8, 1/4	40	179	91	52	45	47	M39 x 1.5	40	35	48	65	5.4	10.4	65	2.3
AWG30	1/4, 3/8	53	223.5	108.5	59	58	59	M50 x 1.5	55	45	58.5	70	6.5	10.5	75	2.3
AWG40	1/4, 3/8, 1/2	70	261.5	114.5	75	70	70	M55 x 1.5	80	50	65.5	77	8.5	12.5	85	2.3

Model	Option specifications						Semi-standard specifications			
	Panel mount					With auto drain	With barb fitting	With drain guide	Metal bowl	Metal bowl with level gauge
	S	U	V	W	T	B	B Note)	B Note)	B Note)	B Note)
AWG20	43	39.5	19.5	6	52.5	196	—	183	179	—
AWG30	50	50.5	25	7	65	264.5	231.5	230.5	256.5	276.5
AWG40	56	55.5	27.5	7	70	300.5	269.5	268.5	274.5	294.5

Note) Full length dimension B is measured when the handle is unlocked.

Filter Regulator with Built-in Pressure Gauge with Backflow Function

Series AWG20K/30K/40K

AWG20K AWG40K

How to Order

AWG 30 K – □ 03 □ G1 □ – □ – □

Body size

Symbol	Port size
20	1/8
30	3/8
40	1/2

With backflow function

Thread type

Symbol	Type
Nil	Rc
N (1)	NPT
F (2)	G

Note 1) Drain guide: NPT 1/8 (AWG20K), NPT 1/4 (AWG30K to AWG40K); Auto drain port: With ø3/8" One-touch fitting (AWG30K to AWG40K)
Note 2) Drain guide: G 1/8 (AWG20K), G 1/4 (AWG30K to AWG40K)

Port size

Symbol	Port size	Body size		
		20	30	40
01	1/8	●	—	—
02	1/4	●	●	●
03	3/8	—	●	●
04	1/2	—	—	●

Made to Order

(Refer to page 583 for details.)

Symbol	Specifications
X406	Setting and pressure gauge full span 0.4 MPa

Semi-standard

Symbol	Description	Applicable model
Nil	—	—
1 (3)	0.02 to 0.2 MPa setting	AWG20K to 40K
2	Metal bowl	AWG20K to 40K
6	Nylon bowl	AWG20K to 40K
8	Metal bowl with level gauge	AWG30K, 40K
C	With bowl guard	AWG20K
J (4)	With drain guide	AWG20K to 40K
N	Non-relieving	AWG20K to 40K
W	Drain cock with barb fitting: ø6 x ø4 nylon tubing	AWG30K, 40K
Z (5)	Name plate, caution plate for bowl, and pressure gauge in imperial units (psi, °F)	AWG20K to 40K

∗ When more than one specification is required, indicate in ascending alphanumeric order.
Note 3) Adjusting spring and pressure gauge (full-span 0.3 MPa) are different from those for the standard specification. All products can be set at 0.2 MPa or more.
Note 4) Without a valve function.
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.)

Option (2)

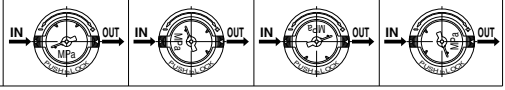
Symbol	Description	Applicable model
Nil	—	—
H	With set nuts	AWG20K to 40K

Option (1)

Symbol	Description	Applicable model
Nil	—	—
B	With bracket (With set nuts)	AWG20K to 40K
C	Float type auto drain (Normally closed)	AWG20K to 40K
D	Float type auto drain (Normally open)	AWG30K, 40K

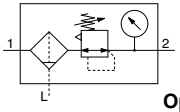
When more than one specification is required, indicate in ascending alphanumeric order.

Mounting Angle of Pressure Gauge

Symbol	G1	G2	G3	G4
Mounting angle	0°	90°	180°	270°
Mounting angle view				

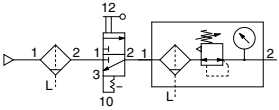
∗ Possible to change to the optional mounting angles.
For details, refer to page 584, "Procedure for replacing or changing the mounting angle of a pressure gauge".

Symbol



Application example of a filter regulator with a backflow function

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.



Filter regulator with back flow mechanism

Option/Semi-standard Combinations

◎: Combination available
○: Varies depending on a model
: Combination not available
△ : Available only with NPT thread

	Option/Semi-standard specifications / Combination	Symbol	Option				Semi-standard									Applicable filter regulator	
			B	C	D	H	1	2	6	8	C	J	N	W	Z	AWG20K	AWG30K/40K
Option	**With bracket**	**B**		◎	○		◎	◎	◎	○	○	◎	◎	○	△	◎	◎
Option	**Float type auto drain (N.C.)**	**C**	◎			◎	◎	◎	◎	○	○		◎		△	◎	◎
Option	**Float type auto drain (N.O.)**	**D**	◎			◎	◎	◎	◎	◎			◎		△		◎
Option	**With set nut**	**H**		◎	○		◎	◎	◎	○	○	◎	◎	○	△	◎	◎
Semi-standard	**0.02 to 0.2 MPa setting**	**-1**	◎	◎	○	◎		◎	◎	○	○	◎	◎	○	△	◎	◎
Semi-standard	**Metal bowl**	**-2**	◎	◎	○	◎	◎					◎	◎		△	◎	◎
Semi-standard	**Nylon bowl**	**-6**	◎	◎	○	◎	◎				○	◎	◎	○	△	◎	◎
Semi-standard	**Metal bowl with level gauge**	**-8**	◎	◎	◎	◎	◎					◎	◎		△		◎
Semi-standard	**With bowl guard**	**-C**	◎	◎		◎	◎		◎			◎	◎		△	◎	
Semi-standard	**With drain guide**	**-J**	◎			◎	◎	◎	◎	○	○		◎		△	◎	◎
Semi-standard	**Non-relieving type**	**-N**	◎	◎	○	◎	◎	◎	◎	○	○	◎		○	△	◎	◎
Semi-standard	**Drain cock with barb fitting**	**-W**	◎			◎	◎		◎				◎		△		◎
Semi-standard	**Name plate, caution plate for bowl, and pressure gauge in imperial units (psi, °F)**	**-Z**	△	△	△	△	△	△	△	△	△	△	△	△		△	△

Standard Specifications

Model	AWG20K	AWG30K	AWG40K
Port sizes	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Fluid	Air		
Proof pressure	1.5 MPa		
Maximum operating pressure	1.0 MPa		
Regulating pressure range (1)	0.05 to 0.85 MPa		
Relief pressure	Set pressure + 0.05 MPa (at relief flow rate of 0.1 L/min (ANR))		
Ambient and fluid temperature	–5 to 60°C (With no freezing)		
Nominal filtration rating	5 μm		
Drain capacity (cm³)	8	25	45
Bowl material	Polycarbonate		
Bowl guard	Semi-standard	Standard	
Construction	Relieving type		
Weight (kg)	0.26	0.51	0.86

Note 1) Set the inlet pressure so it should be 0.05 MPa or higher than the set pressure.

Option Part No.

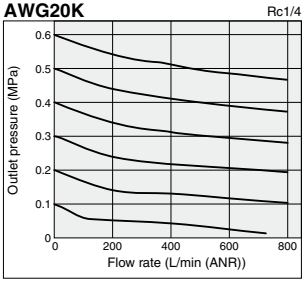
Option \ Applicable model				AWG20K	AWG30K	AWG40K
Bracket assembly (1)				ARG20P-270AS	ARG30P-270AS	ARG40P-270AS
Set nut				ARG20P-260S	ARG30P-260S	ARG40P-260S
Pressure gauge	Pressure gauge display range	Standard	0 to 1.0 MPa	GB2-10AS	GB3-10AS	GB4-10AS
		Semi-standard	0 to 0.3 MPa	GB2-3AS	GB3-3AS	GB4-3AS
			0 to 150 psi	GB2-P10AS	GB3-P10AS	GB4-P10AS
			0 to 45 psi	GB2-P3AS	GB3-P3AS	GB4-P3AS
Float type auto drain (2)			Normally open	—	AD38	AD48
			Normally closed	AD27	AD37	AD47

Note 1) Assembly includes a bracket and set nuts.
Note 2) Minimum operating pressure: N.O. type–0.1 MPa; N.C. type–0.1 MPa (AD27) and 0.15 MPa (AD37/47). Contact SMC regarding the specifications for psi unit and °F.

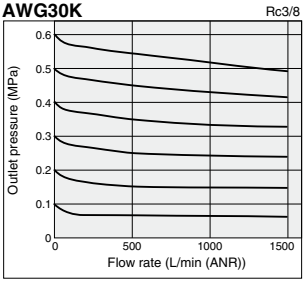
Flow Characteristics (Representative Values)

Condition: Inlet pressure 0.7 MPa

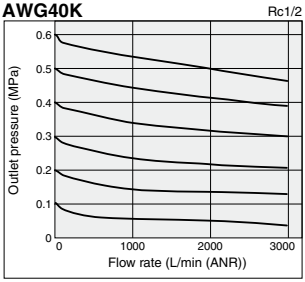
AWG20K Rc1/4



AWG30K Rc3/8



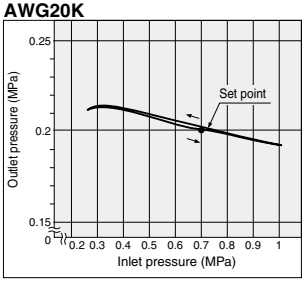
AWG40K Rc1/2



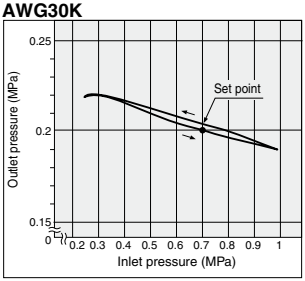
Pressure Characteristics (Representative Values)

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

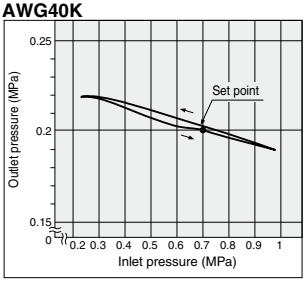
AWG20K



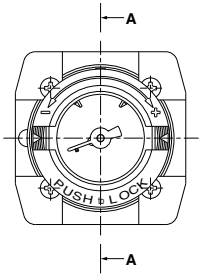
AWG30K

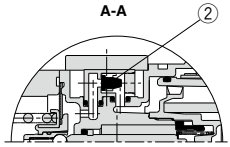


AWG40K



Working Principle





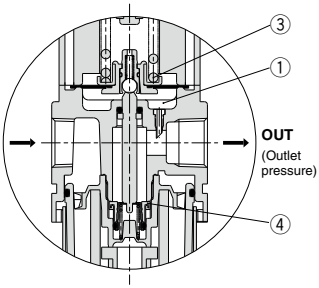


Figure 3

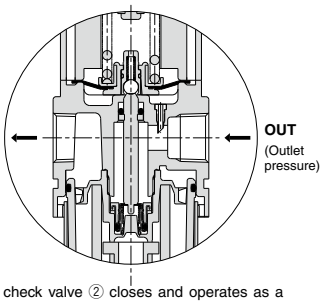


Figure 1

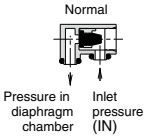
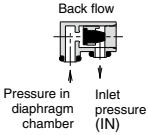


Figure 2



When the inlet pressure (P1) is higher than the regulating pressure, the check valve ② closes and operates as a normal regulator (Figure 1).
When the inlet pressure (P1) 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 3).

⚠ 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.

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 and Adjustment

⚠ Warning

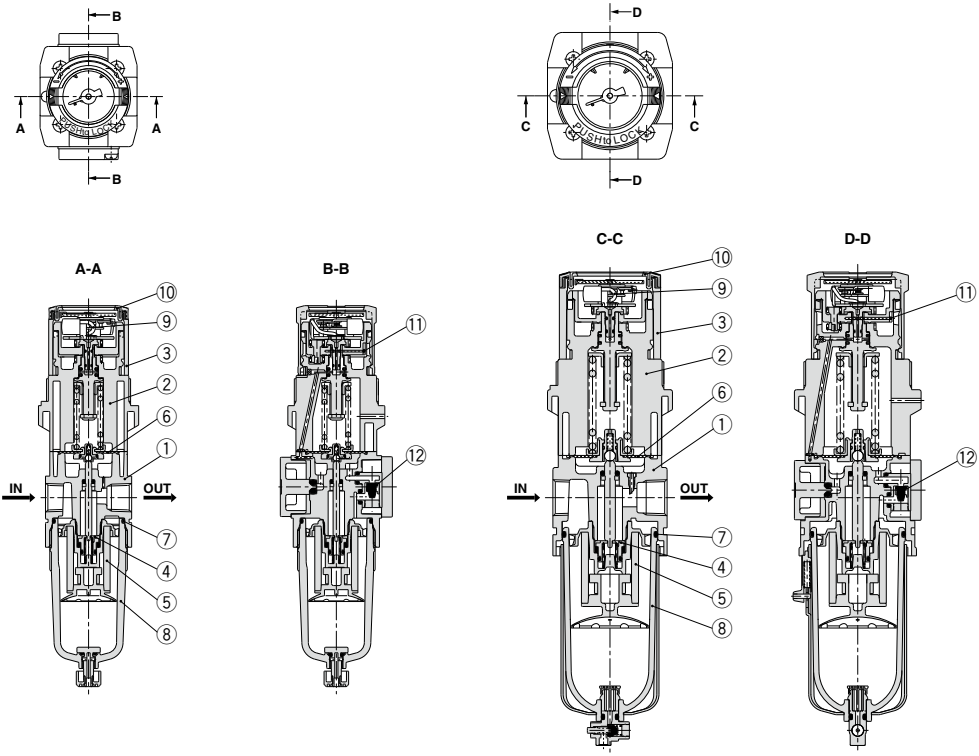
1. Set the regulator while checking the displayed values of the inlet and outlet pressure gauges. Turning the handle excessively can cause damage to the internal parts.
2. Do not use tools on the pressure regulator handle as this may cause damage. It must be operated manually.

⚠ Caution

1. Be sure to unlock the handle before adjusting the pressure and lock it after setting the pressure.
   Failure to follow this procedure can cause damage to the handle and the outlet pressure may fluctuate.
   - Pull the pressure regulator handle to unlock. (You can visually verify this with the “orange mark” that appears in the gap.)
   - Push the pressure regulator handle to lock. When the handle is not easily locked, turn it left and right a little and then push it (when the handle is locked, the “orange mark” will disappear).

Construction

AWG20K



AWG30K/40K

Component Parts

No.	Description	Material			Note
		AWG20K	AWG30K	AWG40K	
1	**Body**	ADC			Platinum silver
2	**Bonnet**	PBT			Black
3	**Handle**	POM			Black

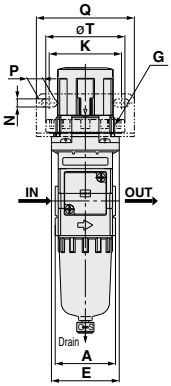
Replacement Parts

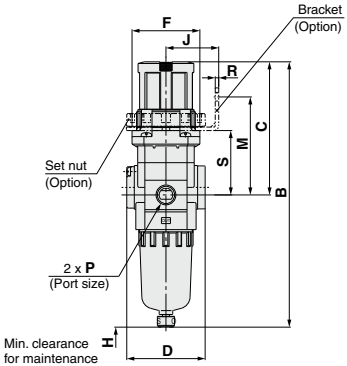
No.	Description	Material	Qty.	Part no.		
				AWG20K	AWG30K	AWG40K
4	**Valve assembly**	Brass, HNBR	1	AW20P-340AS	AW30P-340AS	AW40P-340AS
5	**Filter element**	Non-woven fabric	1	AF20P-060S	AF30P-060S	AF40P-060S
6	**Diaphragm assembly**	Weatherability NBR	1	AR20P-150AS	AR30P-150AS	AR40P-150AS
7	**Bowl O-ring**	NBR	1	C2SFP-260S	C3SFP-260S	C4SFP-260S
8	**Bowl assembly** (1)	PC	1	C2SF	C3SF (2)	C4SF (2)
9	**Pressure gauge** (3)	—	1	GB2-10AS	GB3-10AS	GB4-10AS
10	**Pressure gauge cover**	PC	1	ARG20P-400S	ARG30P-400S	ARG40P-400S
11	**Clip**	Stainless steel	1	ARG20P-420S	ARG30P-420S	ARG40P-420S
12	**Check valve assembly**	—	1	AR20KP-020AS		

Note 1) Including O-ring. Contact SMC regarding the bowl assembly supply for psi and °F unit specifications.
Note 2) Bowl assembly (AWG30K/40K) includes a bowl guard (steel band material).
Note 3) Only the standard part numbers are listed for the pressure gauges. For the optional part numbers, refer to page 579.

Dimensions

AWG20K





Panel fitting dimension

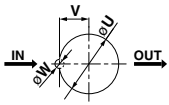
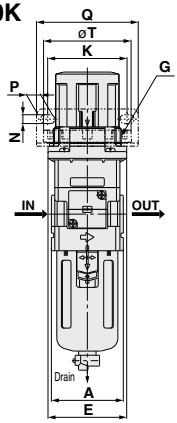
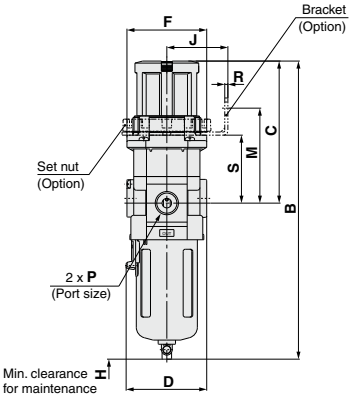


Plate thickness
AWG20K: Max. 3.5

AWG30K/40K





Panel fitting dimension

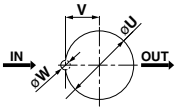
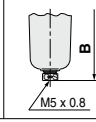
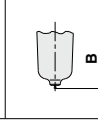
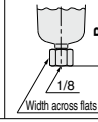
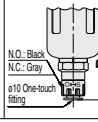
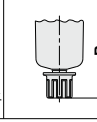
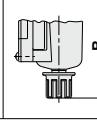
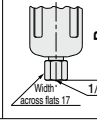
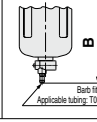


Plate thickness
AWG30K/40K: Max. 3.5

Applicable model	AWG20K			AWG30K/40K				
Option/Semi-standard specifications	With auto drain (N.C.)	Metal bowl	With drain guide	With auto drain (N.O./N.C.)	Metal bowl	Metal bowl with level gauge	With drain guide	Drain cock with barb fitting
Dimensions								

Model	Standard specifications									Option specifications						
										Bracket mount						
	P	A	B Note)	C	D	E	F	G	H	J	K	M	N	P	Q	R
AWG20K	1/8, 1/4	40	179	91	52	45	47	M39 x 1.5	40	35	48	65	5.4	10.4	65	2.3
AWG30K	1/4, 3/8	53	223.5	108.5	59	58	59	M50 x 1.5	55	45	58.5	70	6.5	10.5	75	2.3
AWG40K	1/4, 3/8, 1/2	70	261.5	114.5	75	70	70	M55 x 1.5	80	50	65.5	77	8.5	12.5	85	2.3

Model	Option specifications						Semi-standard specifications			
	Panel mount					With auto drain	With barb fitting	With drain guide	Metal bowl	Metal bowl with level gauge
	S	U	V	W	T	B Note)	B Note)	B Note)	B Note)	B Note)
AWG20K	43	39.5	19.5	6	52.5	196	—	183	179	—
AWG30K	50	50.5	25	765		264.5	231.5	230.5	256.5	276.5
AWG40K	56	55.5	27.5	7	70	300.5	269.5	268.5	274.5	294.5

Note) Full length demension B is measured when the handle is unlocked.

Filter Regulator with Built-in Pressure Gauge *AWG20(K)/30(K)/40(K)* Made to Order Specifications:

Made to Order

Contact SMC for detailed dimensions, specifications, and lead times.

① Setting and Pressure Gauge Full Span 0.4 MPa

AWG 30 □ - □ 03 □ G1 □ - □ - X406

Body size

Symbol	Port size
20	1/8
30	3/8
40	1/2

With back flow mechanism

Symbol	Description
Nil	—
K	With back flow mechanism

Thread type

Symbol	Type
Nil	Rc
N	NPT
F	G

Note 1) Drain guide: NPT 1/8 (AWG20(K)), NPT 1/4 (AWG30(K) to AWG40(K)); Auto drain port: With ø3/8" One-touch fitting (AWG30(K) to AWG40(K))
Note 2) Drain guide: G 1/8 (AWG20(K)), G 1/4 (AWG30(K) to AWG40(K))

Port size

Symbol	Port size	Body size		
		20	30	40
01	1/8	●	—	—
02	1/4	●	●	●
03	3/8	—	●	●
04	1/2	—	—	●

Semi-standard

Symbol	Description	Applicable model
Nil	—	—
2	Metal bowl	AWG20(K) to 40(K)
6	Nylon bowl	AWG20(K) to 40(K)
8	Metal bowl with level gauge	AWG30(K), 40(K)
C	With bowl guard	AWG20(K)
J (3)	With drain guide	AWG20(K) to 40(K)
N	Non-relieving	AWG20(K) to 40(K)
W	Drain cock with barb fitting: ø6 x ø4 nylon tubing	AWG30(K), 40(K)
Z (4)	Name plate, caution plate for bowl, and pressure gauge in imperial units (psi, °F)	AWG20(K) to 40(K)

∗ When more than one specification is required, indicate in ascending alphanumeric order.
Note 3) Without a valve function.
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.)

Option (2)

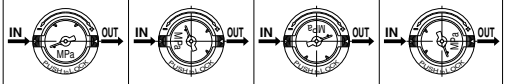
Symbol	Description	Applicable model
Nil	—	—
H	With set nuts	AWG20(K) to 40(K)

Option (1)

Symbol	Description	Applicable model
Nil	—	—
B	With bracket (With set nuts)	AWG20(K) to 40(K)
C	Float type auto drain (Normally closed)	AWG20(K) to 40(K)
D	Float type auto drain (Normally open)	AWG30(K), 40(K)

When more than one specification is required, indicate in ascending alphanumeric order.

Mounting Angle of Pressure Gauge

Symbol	G1	G2	G3	G4
Mounting angle	0°	90°	180°	270°
Mounting angle view				

∗ Possible to change to the optional mounting angles.
For details, refer to page 584, "Procedure for replacing or changing the mounting angle of a pressure gauge".

Option/Semi-standard Combinations

◎: Combination available
○: Varies depending on a model
▭: Combination not available
△: Available only with NPT thread

	Combination / Option/Semi-standard specifications	Symbol	Option				Semi-standard								Applicable filter regulator	
			B	C	D	H	2	6	8	C	J	N	W	Z	AWG20	AWG30/40
Option	With bracket	B		◎	○		◎	◎	○	○	◎	◎	○	△	◎	◎
	Float type auto drain (Normally closed)	C	◎			◎	◎	◎	○	○		◎		△	◎	◎
	Float type auto drain (Normally open)	D	◎			◎	◎	◎	◎			◎		△		◎
	With set nut	H		◎	○		◎	◎	○	○	◎	◎	○	△	◎	◎
Semi-standard	Metal bowl	-2	◎	◎	○	◎					◎	◎		△	◎	◎
	Nylon bowl	-6	◎	◎	○	◎				○	◎	◎	○	△	◎	◎
	Metal bowl with level gauge	-8	◎	◎	◎	◎					◎	◎		△		◎
	With bowl guard	-C	◎	◎		◎		◎			◎	◎		△	◎	
	Drain guide	-J	◎			◎	◎	◎	○	○		◎		△	◎	◎
	Non-relieving type	-N	◎	◎	○	◎	◎	◎	○	○	◎		○	△	◎	◎
	Drain cock with barb fitting	-W	◎			◎		◎				◎		△		◎
	Name plate, caution plate for bowl, and pressure gauge in imperial units (psi, °F)	-Z	△	△	△	△	△	△	△	△	△	△	△		△	△

Series ACG/ARG/AWG
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.

Procedure for replacing or changing the mounting angle of a pressure gauge

⚠Warning

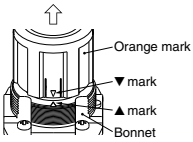
When replacing a pressure gauge and/or changing the mounting angle, release the inlet and outlet pressure completely. It is dangerous to replace the pressure gauge or change the mounting angle while it is under pressure.

1. Advance preparation

Keep the handle unlocked and completely loosened. The unlocked condition of the handle can be visually confirmed by the "Orange line" shown near the bottom of the handle.

2. Removing the handle

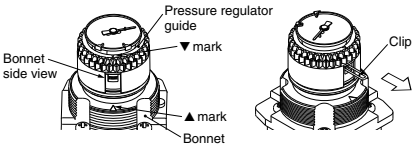
To remove the handle, align the ▼ mark on the handle and the ▲ mark on the bonnet and then pull the handle.



3. Removing the clip

When the ▲ mark on the bonnet and the ▼ mark on the pressure regulator guide are alligned, the clip can be seen from the side view of the bonnet. The clip can be picked and removed with tweezers.

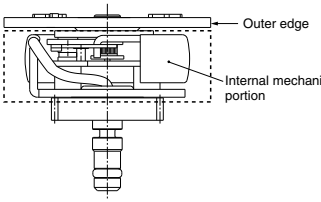
∗ When adjusting the mark, turn the pressure regulator guide clockwise for adjustment.



4. Removing the pressure gauge

Pull the pressure gauge out by holding the outer edge of the dial.

∗ Do not touch the internal mechanical portion (shown inside the dotted box). Accuracy of the pressure gauge may be adversely affected.



5. Setting the pressure gauge

After the mounting angle is adjusted as required, hold the outer edge of the pressure gauge dial and gently press down. For reference, the required clearance between the bottom of the dial and the top of the pressure regulator guide is shown in table 1.

Note 1) When the pressure gauge cannot be easily positioned, slightly rotate it. (The cog from the planet gear of the pressure regulator guide may be caught vertically in the cog from the sun gear which is mounted and integrated with the pressure gauge)

Note 2) Position the pressure gauge to the very bottom.

Note 3) Attached to the tip of the pressure gauge is an O-ring with grease applied to it. Please use caution to prevent particles and/or dust from entering the pressure gauge when it is set. Otherwise, they may cause air leakage.

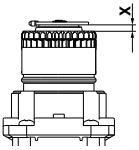


Table 1. Clearance Dimensions

	ARG20 AWG20	ARG30 AWG30	ARG40 AWG40
X dimension (reference value)	2.6 mm	3.3 mm	3.3 mm

6. Setting the clip

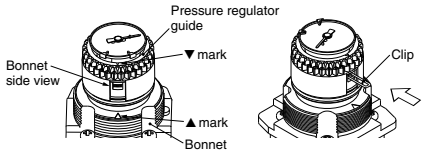
Insert the clip in the side of the bonnet when the ▼ mark on the pressure regulator guide and the ▲ mark on the bonnet are aligned. When inserting and setting the clip, use an instrument with a narrow tip, such as tweezers.

Note 1) The clip is slightly tapered towards its tip to prevent it from being released. Set the clip by slightly opening its tip.

Note 2) When the clip cannot easily be set, the cause may be as follows:

(1) The pressure regulator screw might have been in a lower position than then the current one. (The pressure regulator screw may reach a lower position if the pressing force of the pressure regulator screw is excessively applied. This occurs because there is a clearance between the pressure regulator nut and pressure spring, when the pressure regulator screw is loosened completely.)

(2) The pressure gauge is not firmly set.
Countermeasures ····· Refer to 5 "Setting the pressure gauge".



7. Setting the handle

Finished when the handle is set.