

# Modular Type Regulator with Built-in Pressure Gauge Series ARG

Regulator with Built-in Pressure Gauge Series ARG	Model	Port size	Accessory
 <p data-bbox="115 655 283 676">Pages 562 to 565</p>	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	
 <p data-bbox="115 975 283 995">Pages 566 to 570</p>	ARG20K	1/8, 1/4	
	ARG30K	1/4, 3/8	
	ARG40K	1/4, 3/8, 1/2	

AC-A

AF-A

AF□-A

AR-A

AL-A

AW-A

AC

AF

AF□

AR

AL

AW□

A□G

E□

AV

AF

# Regulator with Built-in Pressure Gauge

## Series ARG20/30/40

### How to Order



ARG20



ARG40

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

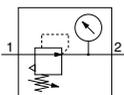
#### Port size

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)

#### Symbol



#### 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 <sup>(2)</sup>	0.02 to 0.2 MPa setting
N	Non-relieving type
Z <sup>(3)</sup>	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

#### 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		Option	Semi-standard	Applicable regulator		
		Symbol	Option					
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	△	△	△	△		△

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

## 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

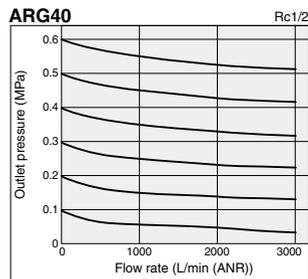
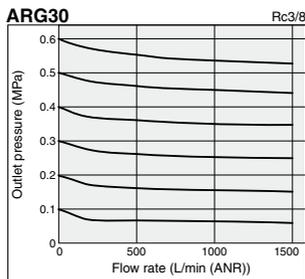
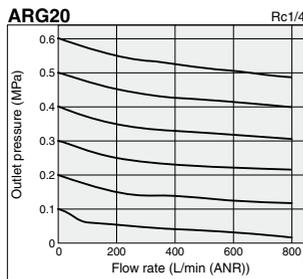
## Option Part No.

Option		Applicable model	ARG20	ARG30	ARG40	
Bracket assembly <sup>(1)</sup>			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.

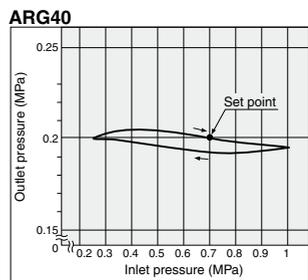
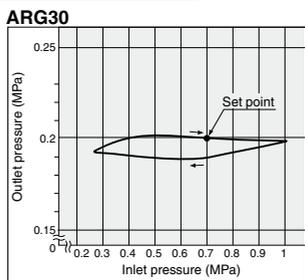
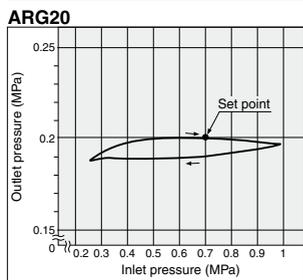
## Flow Characteristics (Representative Values)

Condition: Inlet pressure 0.7 MPa



## Pressure Characteristics (Representative Values)

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



AC-A  
AF-A  
AF□-A  
AR-A  
AL-A  
AW-A  
AC  
AF  
AF□  
AR  
AL  
AW□  
A□G  
E□  
AV  
AF

# Series ARG20/30/40

## 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.

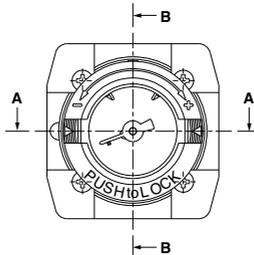
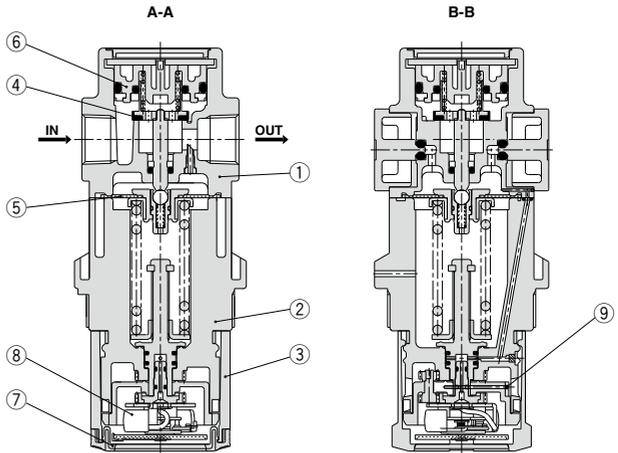
#### Caution

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

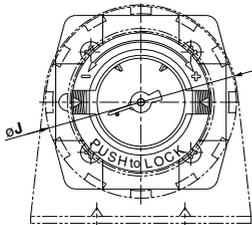
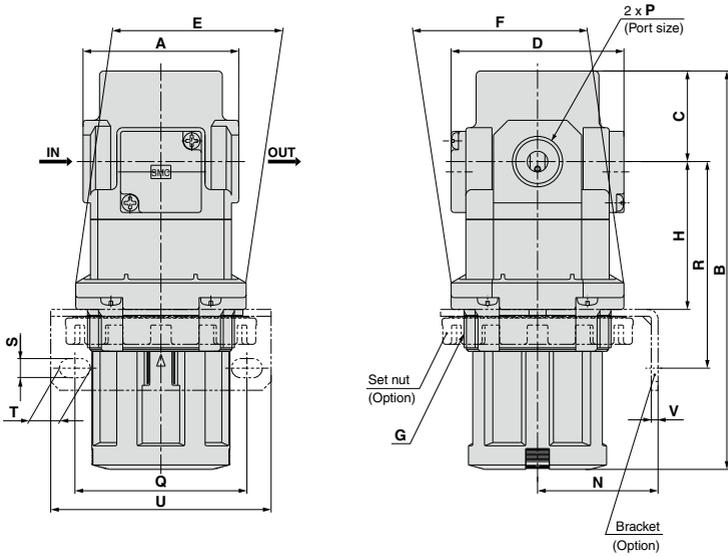
## Replacement Parts

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.

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

## Dimensions



Panel fitting dimension

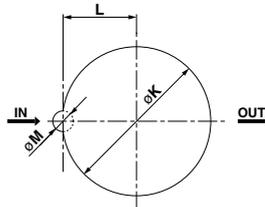


Plate thickness  
ARG20 to 40: Max. 3.5

- AC-A
- AF-A
- AF□-A
- AR-A
- AL-A
- AW-A
- AC
- AF
- AF□
- AR
- AL
- AW□
- A□G**
- E□
- AV
- AF

Model	Standard specifications								Option specifications												
	P	A	Note)		C	D	E	F	G	Panel mount						Bracket mount					
			B							H	J	K	L	M	Q	U	T	S	R	V	N
<b>ARG20</b>	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	
<b>ARG30</b>	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	
<b>ARG40</b>	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 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)

### Option (2)

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

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

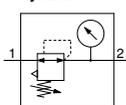
Note 2) Adjusting spring and pressure gauge (full-span 0.3 MPa) are different from those for the standard specification.

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.)

### 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".

## 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 ARG20 to 40
		B	H	1	N	Z	
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	△	△	△	△	□

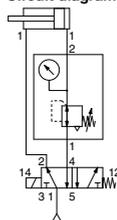
## Application examples of a regulator with a backflow function

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:

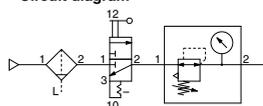
### Circuit diagram



### 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



# Regulator with Built-in Pressure Gauge with Backflow Function *Series ARG20K/30K/40K*

## 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 <sup>(1)</sup>	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.

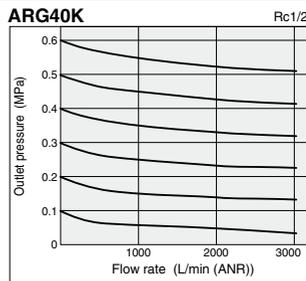
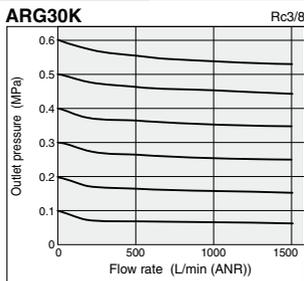
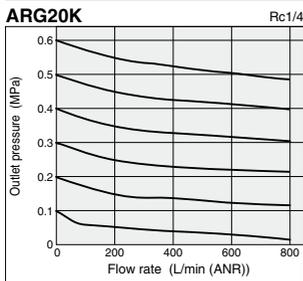
## Option Part No.

Option		Applicable model	ARG20K	ARG30K	ARG40K	
Bracket assembly <sup>(1)</sup>			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.

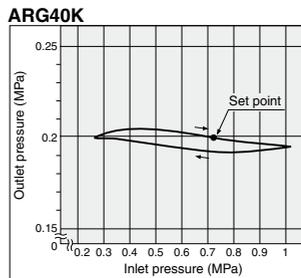
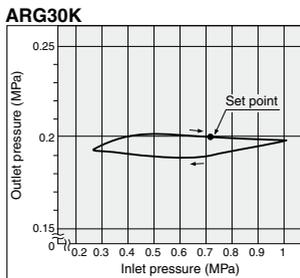
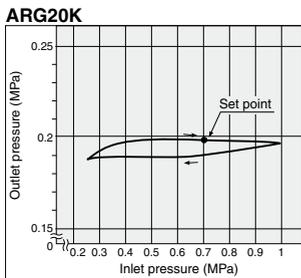
## Flow Characteristics (Representative Values)

Condition: Inlet pressure 0.7 MPa



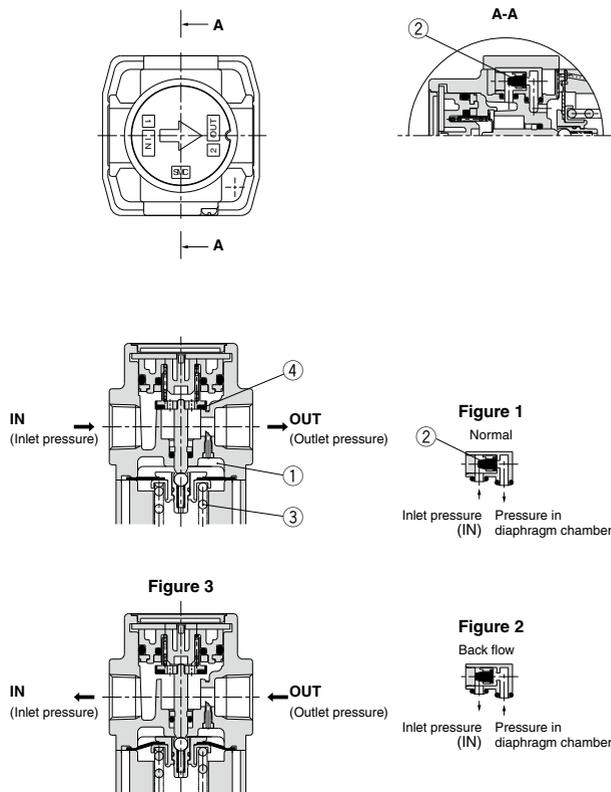
## Pressure Characteristics (Representative Values)

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



AC-A  
AF-A  
AF□-A  
AR-A  
AL-A  
AW-A  
AC  
AF  
AF□  
AR  
AL  
AW□  
A□G  
E□  
AV  
AF

## Working Principle



When the inlet pressure ( $P_1$ ) is higher than the regulating pressure, the check valve ② closes and operates as a normal regulator (Figure 1).

When the inlet pressure ( $P_1$ ) 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).



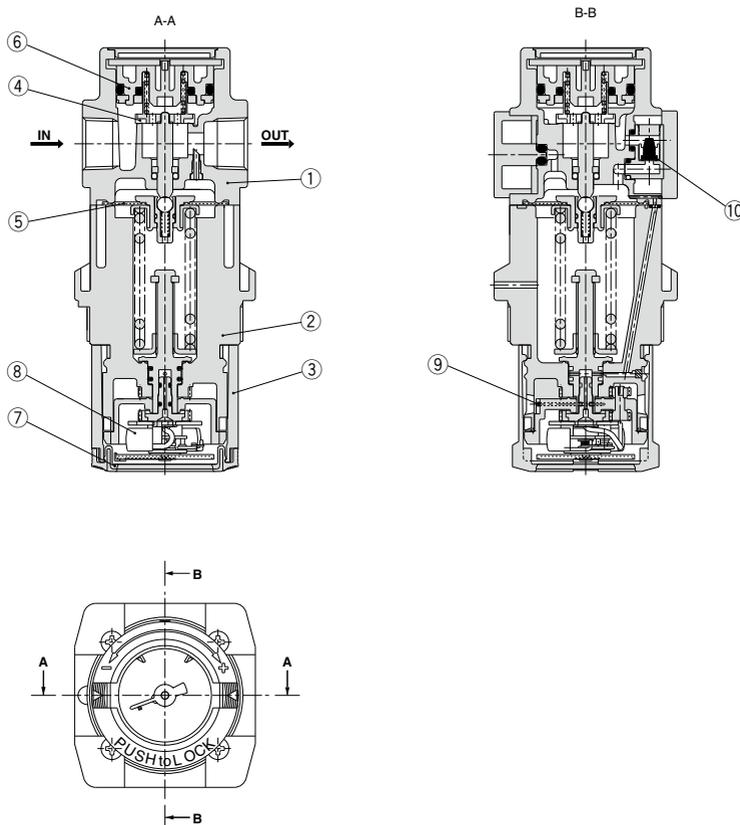
## Maintenance

### ⚠ 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.

# Regulator with Built-in Pressure Gauge with Backflow Function *Series ARG20K/30K/40K*

## Construction



AC-A
AF-A
AF□-A
AR-A
AL-A
AW-A
AC
AF
AF□
AR
AL
AW□
<b>A□G</b>
E□
AV
AF

### Component Parts

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

### Replacement Parts

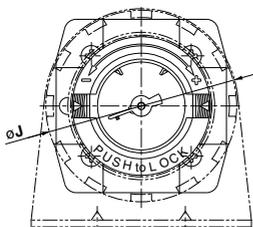
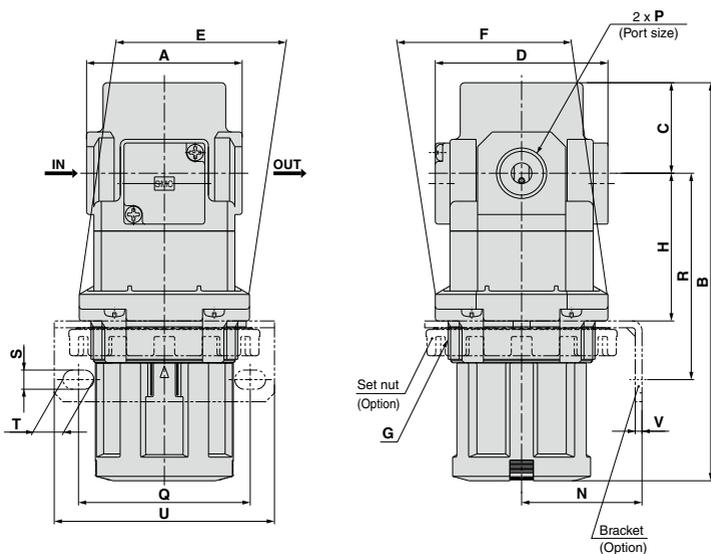
No.	Description	Material	Qty.	Part no.		
				ARG20K	ARG30K	ARG40K
4	Valve	Brass, HNBR	1	AR20P-410S	AR30P-410S	AR40P-410S
5	Diaphragm assembly	Weatherability NBR	1	AR20P-150AS	AR30P-150AS	AR40P-150AS
6	Valve guide assembly	POM, NBR	1	AR20P-050AS	AR30P-050AS	AR40P-050AS
7	Pressure gauge cover	PC	1	ARG20P-400S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

# Series ARG20K/30K/40K

## Construction



### Panel fitting dimension

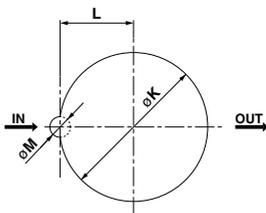


Plate thickness  
ARG20K to 40K: Max. 3.5

Model	Standard specifications								Option specifications												
	P	A	B		C	D	E	F	G	Panel mount						Bracket mount					
			Note)							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:



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

### ① Setting and Pressure Gauge Full Span 0.4 MPa



ARG 20 [ ] - [ ] 01 [ ] G1 [ ] - [ ] - X406

#### Body size

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

#### Thread type

Symbol	Type
Nll	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
Nll	—
K	With back flow mechanism

#### Semi-standard

Symbol	Description
Nll	—
N	Non-relieving type
Z <sup>(2)</sup>	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.)

#### Option (2)

Symbol	Description
Nll	—
H	With set nuts

#### Option (1)

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

#### 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	
With bracket		B	□	□	◎	△	◎
With set nut		H	□	□	◎	△	◎
Non-relieving type		-N	◎	◎	□	△	◎
Name plate and pressure gauge in imperial units (psi)		-Z	△	△	△	□	△

AC-A

AF-A

AF□-A

AR-A

AL-A

AW-A

AC

AF

AF□

AR

AL

AW□

AF□

E□

AV

AF

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

## Made to Order Specifications:



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

### ② Special 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

#### Mounting angle of pressure gauge

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

\* Refer to the table below.

#### 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	—	—	●

#### Semi-standard

Symbol	Description
Nil	—
1 <sup>(1)</sup>	0.02 to 0.2 MPa setting
N	Non-relieving type
Z <sup>(2)</sup>	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.)

#### 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	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	◐	◐	⊙	⊙	△	⊙
	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	△	△	△	△	△	△