

# Direct Operated Precision Regulator Modular Style

## Series *ARP3000*

- Setting sensitivity: 0.001 MPa
- Can be connected as a module to a mist separator.  
(AFM30 + ARP3000)  
(AFD30 + ARP3000)
- Direct-driven, bleed type  
(With relieving function)

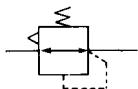


ARP3000-02



ARP3000-02BG

JIS Symbol



### Standard Specifications

Model	ARP3000
Port size	1/4
Fluid	Air
Proof pressure	1.2 MPa
Maximum operating pressure	0.8 MPa
Regulating pressure range	0.005 to 0.3 MPa
Setting sensitivity	0.001 MPa
Repeatability	±0.003 MPa
Air consumption <sup>Note)</sup>	4 to 6 l/min (ANR) (0.3 MPa)
Pressure gauge port size	1/8
Ambient and fluid temperature	-5 to 60°C (No freezing)
Construction	Bleed type
Weight (kg)	0.42

Note) Air consumption differs depending on the set pressure.

### Accessory (Option)/Part No.

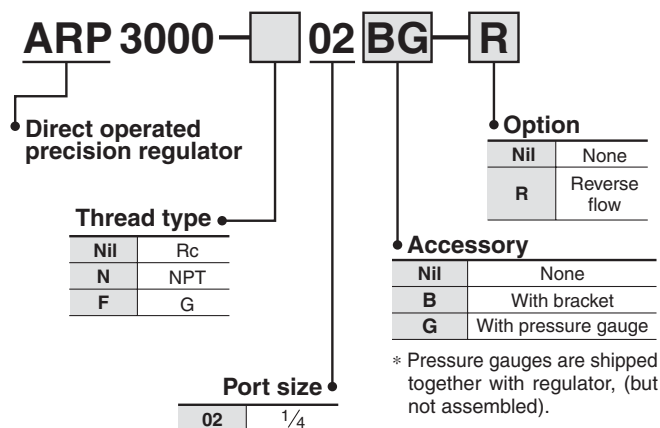
Description	Part no.
Bracket	B320
Pressure gauge <sup>(1)</sup>	0.4 MPa G36-4-□01

Note 1) • □ in the gauge part no. indicates the threads used for connection. For Rc, leave the symbol blank, and for NPT, enter "N".

• Please contact SMC concerning the supply of NPT pressure gauges.

Note 2) Use caution not to tighten excessively when mounting a pressure gauge, otherwise it will may result in a breakdown. (Fastening torque recommended: 7 to 9 N·m.) For sealing, use a pipe tape.

### How to Order



F.R.L.

AV

AU

AF

AR

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AMR

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VY1

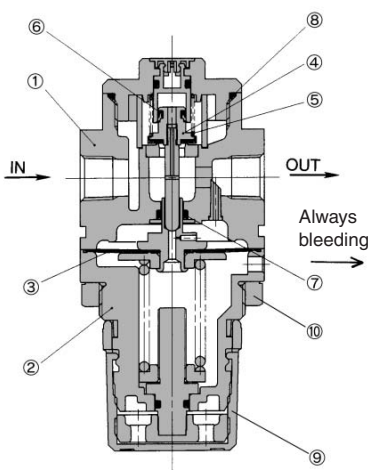
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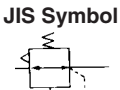
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# Series ARP3000

## Construction



**JIS Symbol**



**Component Parts**

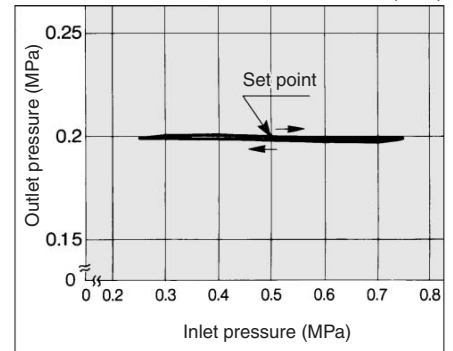
No.	Description	Material	Note
①	Body	Aluminum die-casted	Platinum silver painted
②	Bonnet	Aluminum die-casted	Black painted

**Replacement Parts**

No.	Description	Material	Part no.
③	Diaphragm assembly	Weather resistant NBR	1315510A
④	Valve assembly	Brass, HNBR	1315506A
⑤	Valve spring	Stainless steel	1315516-2
⑥	Valve mini Y packing	NBR	MYN-5
⑦	O-ring	NBR	JIS B 2401P6
⑧	O-ring	NBR	131545
⑨	Handle	Polyacetal	1315513
⑩	Set nut	Zinc die-casted	131532

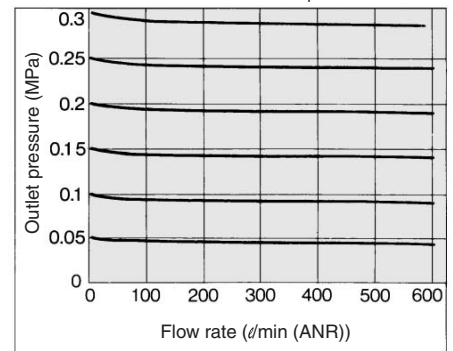
## Pressure Characteristics

Inlet pressure: 0.5 MPa  
Outlet pressure: 0.2 MPa  
Flow rate: 0 ℓ/min (ANR)

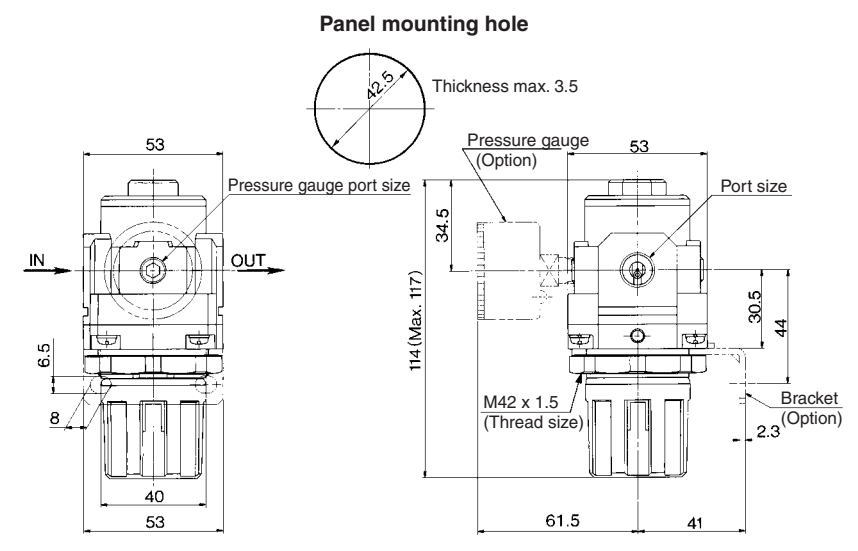


## Flow Characteristics

Inlet pressure: 0.7 MPa



## Dimensions



Set nut: Width across flats 50

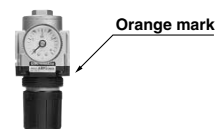
## ⚠ Caution

1. Release the lock to adjust the pressure. After the adjustment, engage the lock.

Failure to observe this procedure could damage the handle or cause the outlet pressure to fluctuate.

1) Pull the adjustment handle to release the lock. (An orange colored line is provided at the bottom of the adjustment handle for visual checking.)

Push the adjustment handle to engage the lock. If it does not lock easily, turn the handle slightly clockwise or; then, push it until the orange colored line is no longer visible.



## ⚠ Precautions

Be sure to read before handling. Refer to pages 14-21-3 to 14-21-4 for Safety Instructions and Common Precautions.

### Selection

#### ⚠ Caution

1. Set the output pressure to 90% or less of the inlet pressure.  
Failure to observe this procedure could result in an excessive pressure drop.

### Air Supply

#### ⚠ Warning

1. Use a mist separator on the inlet side. If the air contains drain or debris, it could clog the bleed holes and lead to a malfunction.

2. Do not use a lubricator on the inlet side because it could clog the bleed holes and lead to a malfunction.

2) Install the valve guide (on the opposite side of the handle) 60 mm away from the ground surface. Maintenance and inspection will be facilitated.

3) Air is normally released from the bleed hole.  
This is necessary for direct-operated precision regulator construction.

4) Please contact SMC if this product is to be used between solenoid valve and actuator.

5) Fasten the main body with a set nut tightly and fix it.  
Recommended torque for set nut:  $22.5 \pm 4.5$  N·m

Precision Regulator  
NARP 3000

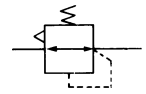


NARP3000-02



NARP3000-02BG

ANSI Symbol



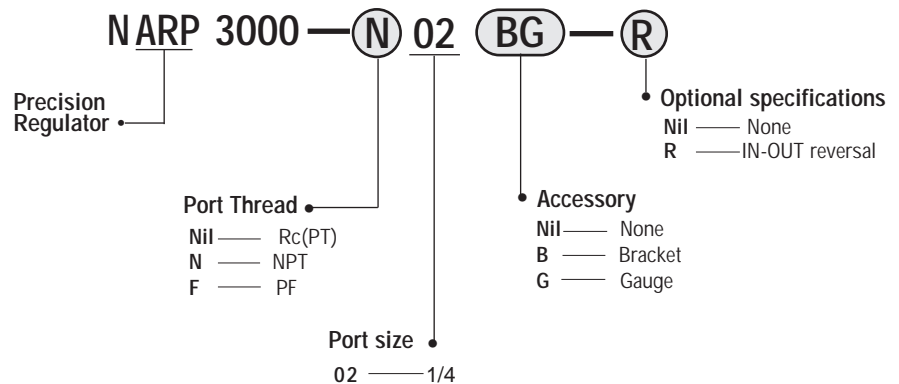
## Specifications

Model	NARP3000
Port size	1/4
Proof pressure psig (MPa)	174 (1.2)
Max. working pressure psig (MPa)	115 (0.8)
Set pressure psig (MPa)	0.7 ~ 45 (0.005 ~ 0.3)
Sensitivity psig (MPa)	0.15 (0.001)
Repeatability psig (MPa)	±.45 (±0.003)
Air consumption scfm	0.20 @ 45 psig
Ambient and fluid temperature	40° ~ 140° F (-5° ~ 60° C)
Construction	Relieving style
Weight lbs (Kgf)	0.93 (0.42)

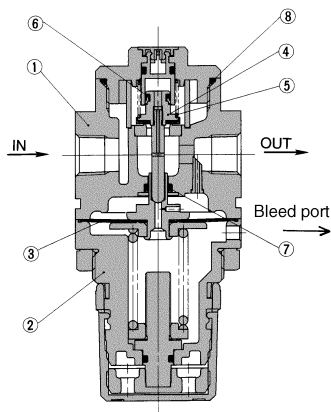
## Accessories (Optional)

Option	Part Number
Bracket	B320
Gauge 0 ~ 60 psig (0 ~ 0.4 MPa)	K40-MP0.4-N01S

## How To Order



Construction/Parts List



Component Parts

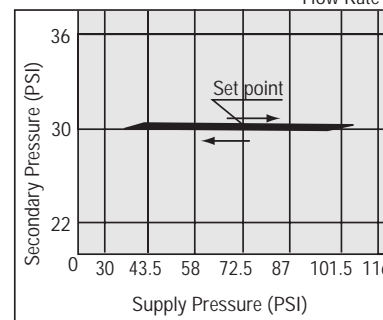
No.	Name	Material	Note
①	Body	ADC	Platinum silver painting
②	Bonnet	ADC	Black painting

Replacement Parts

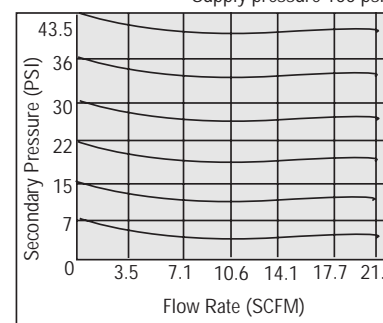
No.	Name	Material	Part number
③	Diaphragm Ass'y	NBR	1315510A
④	Valve Ass'y	Brass+NBR	1315506A
⑤	Valve Spring	SUS	1315516-2
⑥	Packing	NBR	MYN-5
⑦	O-ring	NBR	P6
⑧	O-ring	NBR	131545

Pressure/Flow Characteristics

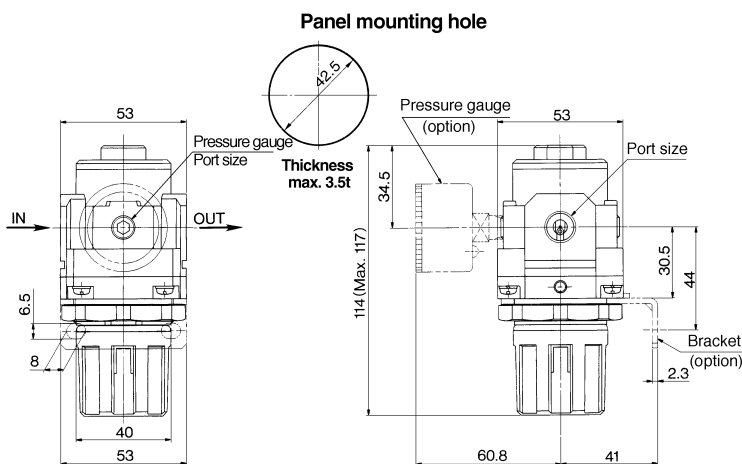
Supply pressure 72 psig  
Secondary pressure 30 psig  
Flow Rate 0



Supply pressure 100 psig



Dimensions



Setting

- ① The adjustment knob is the locking type. Pull the knob away from the body until the orange band is visible. Adjust as necessary and push the knob back into its locked position to prevent accidental setting change.



- ② Turning the adjustment knob clockwise increases the pressure and turning the knob counter clockwise will reduce the pressure.
- ③ Check supply pressure before adjusting pressure.


Precautions


- <Installation>
- ① Air flush piping before installation.
  - ② Install with at least 2.5 in. of free space below the unit to allow easy access.




# Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by labels of "Caution", "Warning" or "Danger". To ensure safety, be sure to observe ISO 4414 <sup>Note 1)</sup>, JIS B 8370 <sup>Note 2)</sup> and other safety practices.

 **Caution** : Operator error could result in injury or equipment damage.

 **Warning** : Operator error could result in serious injury or loss of life.

 **Danger** : In extreme conditions, there is a possible result of serious injury or loss of life.

Note 1) ISO 4414: Pneumatic fluid power--General rules relating to systems.

Note 2) JIS B 8370: General Rules for Pneumatic Equipment

## Warning

### **1. The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.**

Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements. The expected performance and safety assurance will be the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified, referring to the latest catalog information with a view to giving due consideration to any possibility of equipment failure when configuring a system.

### **2. Only trained personnel should operate pneumatically operated machinery and equipment.**

Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.

### **3. Do not service machinery/equipment or attempt to remove components until safety is confirmed.**

1. Inspection and maintenance of machinery/equipment should only be performed once measures to prevent falling or runaway of the driver objects have been confirmed.
2. When equipment is to be removed, confirm the safety process as mentioned above. Cut the supply pressure for this equipment and exhaust all residual compressed air in the system.
3. Before machinery/equipment is restarted, take measures to prevent shooting-out of cylinder piston rod, etc.

### **4. Contact SMC if the product is to be used in any of the following conditions:**

1. Conditions and environments beyond the given specifications, or if product is used outdoors.
2. Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverages, recreation equipment, emergency stop circuits, clutch and brake circuits in press applications, or safety equipment.
3. An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.



# Common Precautions

Be sure to read before handling.

For detailed precautions on every series, refer to main text.

## Selection

### Warning

#### 1. Confirm the specifications.

Products represented in this catalog are designed for use in compressed air applications only (including vacuum), unless otherwise indicated.

Do not use the product outside their design parameters.

Please contact SMC when using the products in applications other than compressed air (including vacuum).

## Mounting

### Warning

#### 1. Instruction manual

Install the products and operate them only after reading the instruction manual carefully and understanding its contents. Also keep the manual where it can be referred to as necessary.

#### 2. Securing the space for maintenance

When installing the products, please allow access for maintenance.

#### 3. Tightening torque

When installing the products, please follow the listed torque specifications.

## Piping

### Caution

#### 1. Before piping

Make sure that all debris, cutting oil, dust, etc., are removed from the piping.

#### 2. Wrapping of pipe tape

When screwing piping or fittings into ports, ensure that chips from the pipe threads or sealing material do not get inside the piping. Also, when the pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.

## Air Supply

### Warning

#### 1. Operating fluid

Please consult with SMC when using the product in applications other than compressed air (including vacuum).

Regarding products for general fluid, please ask SMC about applicable fluids.

#### 2. Install an air dryer, aftercooler, etc.

Excessive condensate in a compressed air system may cause valves and other pneumatic equipment to malfunction.

Installation of an air dryer, after cooler etc. is recommended.

#### 3. Drain flushing

If condensate in the drain bowl is not emptied on a regular basis, the bowl will over flow and allow the condensate to enter the compressed air lines.

If the drain bowl is difficult to check and remove, it is recommended that a drain bowl with the auto-drain option be installed.

For compressed air quality, refer to "Air Preparation Equipment" catalog.

#### 4. Use clean air

If the compressed air supply is contaminated with chemicals, synthetic materials, corrosive gas, etc., it may lead to break down or malfunction.

## Operating Environment

### Warning

1. Do not use in environments where the product is directly exposed to corrosive gases, chemicals, salt water, water or steam.

2. Do not expose the product to direct sunlight for an extended period of time.

3. Do not use in a place subject to heavy vibrations and/or shocks.

4. Do not mount the product in locations where it is exposed to radiant heat.

## Maintenance

### Warning

1. Maintenance procedures are outlined in the operation manual.

Not following proper procedures could cause the product to malfunction and could lead to damage to the equipment or machine.

#### 2. Maintenance work

If handled improperly, compressed air can be dangerous.

Assembly, handling and repair of pneumatic systems should be performed by qualified personnel only.

#### 3. Drain flushing

Remove drainage from air filters regularly. (Refer to the specifications.)

#### 4. Shut-down before maintenance

Before attempting any kind of maintenance make sure the supply pressure is shut of and all residual air pressure is released from the system to be worked on.

#### 5. Start-up after maintenance and inspection

Apply operating pressure and power to the equipment and check for proper operation and possible air leaks. If operation is abnormal, please verify product set-up parameters.

#### 6. Do not make any modifications to be product.

Do not take the product apart.

# Quality Assurance Information (ISO 9001, ISO 14001)

## Reliable quality of products in the global market

To enable our customers throughout the world to use our products with even greater confidence, SMC has obtained certification for international standards “ISO 9001” and “ISO 14001”, and created a complete structure for quality assurance and environmental controls. SMC products pursue to meet its customers’ expectations while also considering company’s contribution in society.

### Quality management system ISO 9001

This is an international standard for quality control and quality assurance. SMC has obtained a large number of certifications in Japan and overseas, providing assurance to our customers throughout the world.

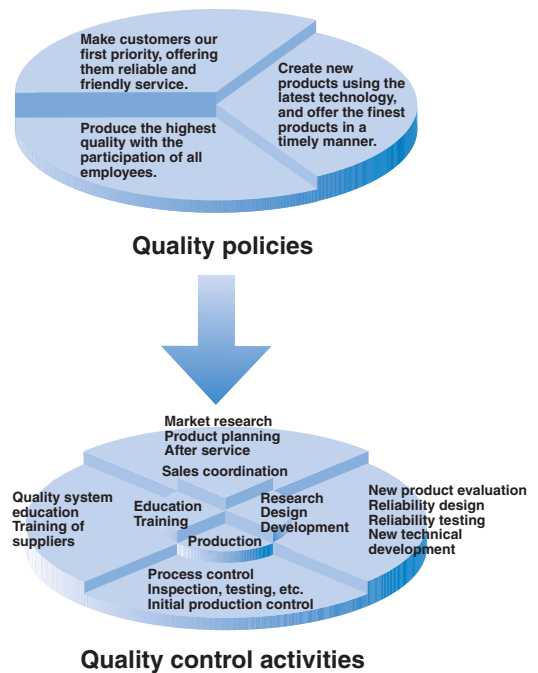


### Environmental management system ISO 14001

This is an international standard related to environmental management systems and environmental inspections. While promoting environmentally friendly automation technology, SMC is also making diligent efforts to preserve the environment.



## SMC’s quality control system



# SMC Product Conforming to Inter

SMC products complying with EN/ISO, CSA/UL standards are supporting



The CE mark indicates that machines and components meet essential requirements of all the EC Directives applied.

It has been obligatory to apply CE marks indicating conformity with EC Directives when machines and components are exported to the member Nations of the EU.

Once “A manufacturer himself” declares a product to be safe by means of CE marking (declaration of conformity by manufacturer), free distribution inside the member Nations of the EU is permissible.

## ■ CE Mark

SMC provides CE marking to products to which EMC and Low Voltage Directives have been applied, in accordance with CETOP (European hydraulics and pneumatics committee) guide lines.

## ■ As of February 1998, the following 18 countries will be obliged to conform to CE mark legislation

Iceland, Ireland, United Kingdom, Italy, Austria, Netherlands, Greece, Liechtenstein, Sweden, Spain, Denmark, Germany, Norway, Finland, France, Belgium, Portugal, Luxembourg

## ■ EC Directives and Pneumatic Components

### • Machinery Directive

The Machinery Directive contains essential health and safety requirements for machinery, as applied to industrial machines e.g. machine tools, injection molding machines and automatic machines. Pneumatic equipment is not specified in Machinery Directive. However, the use of SMC products that are certified as conforming to EN Standards, allows customers to simplify preparation work of the Technical Construction File required for a Declaration of Conformity.

### • Electromagnetic Compatibility (EMC) Directive

The EMC Directive specifies electromagnetic compatibility. Equipment which may generate electromagnetic interference or whose function may be compromised by electromagnetic interference is required to be immune to electromagnetic affects (EMS/immunity) without emitting excessive electromagnetic affects (EMI/emission).

### • Low Voltage Directive

This directive is applied to products, which operate above 50 VAC to 1000 VAC and 75 VDC to 1500 VDC operating voltage, and require electrical safety measures to be introduced.

### • Simple Pressure Vessels Directive

This directive is applied to welded vessels whose maximum operating pressure (PS) and volume of vessel (V) exceed 50 bar/L. Such vessels require EC type examination and then CE marking.

# national Standards

you to comply with EC directives and CSA/UL standards.



## ■ CSA Standards & UL Standards

UL and CSA standards have been applied in North America (U.S.A. and Canada) symbolizing safety of electric products, and are defined to mainly prevent danger from electric shock or fire, resulting from trouble with electric products. Both UL and CSA standards are acknowledged in North America as the first class certifying body. They have a long experience and ability for issuing product safety certificate. Products approved by CSA or UL standards are accepted in most states and governments beyond question.

Since CSA is a test certifying body as the National Recognized Testing Laboratory (NRTL) within the jurisdiction of Occupational Safety and Health Administration (OSHA), SMC was tested for compliance with CSA Standards and UL Standards at the same time and was approved for compliance with the two Standards. The above CSA NRTL/C logo is described on a product label in order to indicate that the product is approved by CSA and UL Standards.

## ■ TSSA (MCCR) Registration Products

TSSA is the regulation in Ontario State, Canada. The products that the operating pressure is more than 5 psi (0.03 MPa) and the piping size is bigger than 1 inch. fall into the scope of TSSA regulation.

## Products conforming to CE Standard

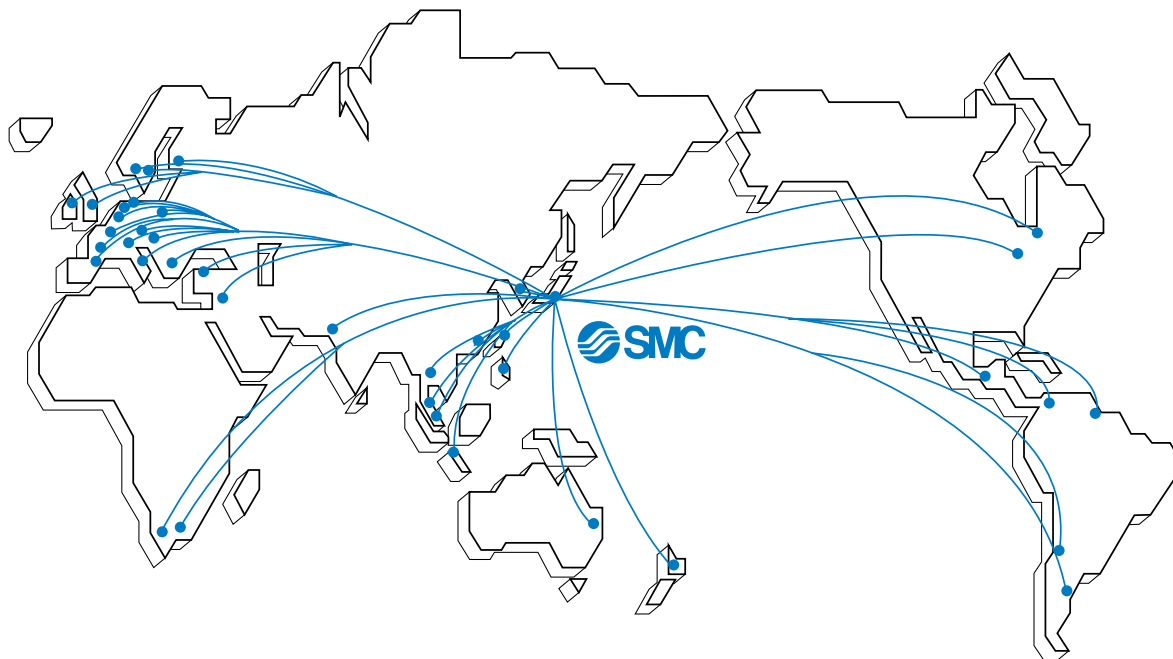


With CE symbol for simple visual recognition

In this catalog each accredited product series is indicated with a CE mark symbol. However, in some cases, every available models may not meet CE compliance. Please visit our web site for the latest selection of available models with CE mark.

<http://www.smcworld.com>

# SMC's Global Service Network



## America

### U.S.A. **SMC Corporation of America**

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### CANADA **SMC Pneumatics (Canada) Ltd.**

6768 Financial Drive Mississauga, Ontario, L5N 7J6 Canada  
TEL: 905-812-0400 FAX: 905-812-8686

### MEXICO **SMC Corporation (Mexico), S.A. DE C.V.**

Carr. Silao-Trejo K.M. 2.5 S/N, Predio San Jose del Duranzo  
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### CHILE **SMC Pneumatics (Chile) S.A.**

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### PERU (Distributor) **IMPECO Automatizacion Industrial S.A.**

AV. Canevaro 752, Lince, Lima, Peru  
TEL: 1-471-6002 FAX: 1-471-0935

### URUGUAY (Distributor) **BAKO S.A.**

Galicia 1650 esq. Gaboto C.P. 11200, Montevideo, Uruguay  
TEL: 2-401-6603 FAX: 2-409-4306

### BRAZIL **SMC Pneumaticos Do Brasil Ltda.**

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### SWEDEN **SMC Pneumatics Sweden AB**

Ekhagsvägen 29-31, S-141 05 Huddinge, Sweden  
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### SWITZERLAND **SMC Pneumatik AG**

Dorfstrasse 7, Postfach 117, CH-8484 Weisslingen, Switzerland  
TEL: 052-396-3131 FAX: 052-396-3191

### AUSTRIA **SMC Pneumatik GmbH (Austria)**

Girakstrasse 8, A-2100 Korneuburg, Austria  
TEL: 0-2262-6228-0 FAX: 0-2262-62285

### SPAIN **SMC España, S.A.**

Zuazobidea 14 Pol. Ind. Júndiz 01015 Vitoria, Spain  
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### IRELAND **SMC Pneumatics (Ireland) Ltd.**

2002 Citywest Business Campus, Naas Road, Saggart, Co. Dublin, Ireland  
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### NETHERLANDS (Associated company) **SMC Pneumatics BV**

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TEL: 020-5318888 FAX: 020-5318880

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## Europe

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TEL: 03-355-1464 FAX: 03-355-1466

**POLAND SMC Industrial Automation Polska Sp.z.o.o.**

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TEL: 021-511-7021 FAX: 021-511-4456

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## Oceania/Asia

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TEL: 02-9354-8222 FAX: 02-9894-5719

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8C Sylvia Park Road Mt.Wellington Auckland, New Zealand  
TEL: 09-573-7007 FAX: 09-573-7002

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17, Lane 205, Nansan Rd., Sec.2, Luzhu-Hsiang, Taoyuan-Hsien, TAIWAN  
TEL: 03-322-3443 FAX: 03-322-3387

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TEL: 010-67882111 FAX: 010-67881837

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TEL: 02-963-7099 FAX: 02-501-2937

**INDIA SMC Pneumatics (India) Pvt. Ltd.**

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TEL: (0120)-4568730 FAX: 0120-4568933

**INDONESIA (Distributor) P.T. Riyadi Putera Makmur**

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**SAUDI ARABIA (Distributor) Assaggaff Trading Est.**

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TEL: 02-6761574 FAX: 02-6708173

# Direct Operated Precision Regulator

● **Sensitivity: Within 0.2% F.S.**

● **Energy saving, Air consumption:**

**80% reduction** (SMC comparison)

Reduced to 0.8 ℓ/min from 4 to 6 ℓ/min in the existing product (ARP3000).

\* Comparison under the same condition of P2 = 0.3 MPa

● **Repeatability: Within ±1% F.S. (or within ±3 kPa\*)**

\* For 0.2 MPa setting

● **With backflow function (ARP20K/30K/40K)**

Installable between a solenoid valve and a cylinder

● **Expanded lineup** ●

3 types of set pressure and the body size allow more freedom in designing a circuit.

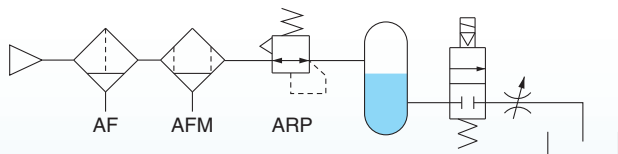
Model	ARP20(K)	ARP30(K)	ARP40(K)	
Setting	0.2 MPa	▲	▲	▲
	0.4 MPa	●	●	●
	0.6 MPa	▲	▲	▲
Port size	1/8	●	—	—
	1/4	●	●	●
	3/8	—	●	●
	1/2	—	—	●

● : Standard ▲ : Semi-standard

## Direct operated precision regulator now available as a series!! (ARP20/30/40)

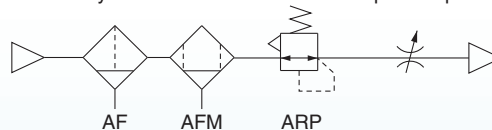
### Applications

**a Apply a constant pressure to fluid.**



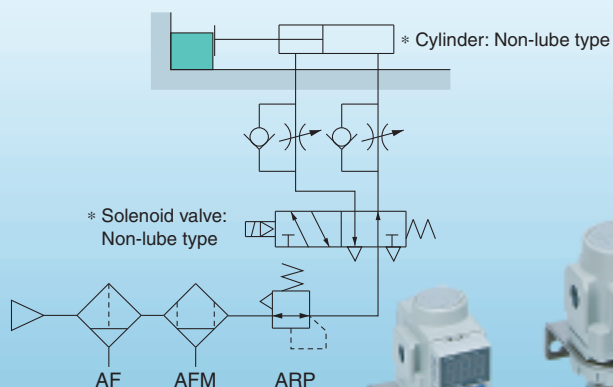
**b Adjust the blow-line pressure.**

Sensitivity within 0.2% F.S. allows more precise pressure adjustment.



**c Control a clamping force by precise pressure control.**

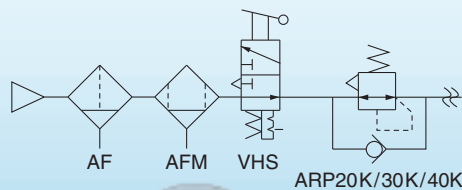
Sensitivity within 0.2% F.S. allows more precise pressure adjustment. Repeatability within ±1% F.S. (or within ±0.3 kPa) allows constant clamping force.



**d Release residual pressure with the backflow function.**

● **Residual pressure circuit**

Also exhausts residual pressure completely.



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.



Series **ARP20/30/40**



CAT.ES40-52A

# Direct Operated Precision Regulator/Modular Style

# ARP20 to ARP40

# Direct Operated Precision Regulator with Backflow Function/Modular Style

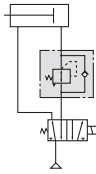
# ARP20K to ARP40K

JIS symbol

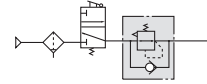
Regulator      Regulator with backflow function

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

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



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



## How to Order

ARP **30** **K** - **03** **BE** -

①    ②    ③    ④    ⑤    ⑥

- Option / Semi-standard: Select one each for a to f.
- Option / Semi-standard symbol: Enter them alphanumerically.  
Example) ARP30K-03BE-1RY

		Symbol	Description	①			
				Body size			
				20	30	40	
②	With backflow function	Nil	Without backflow function	●	●	●	
		K	With backflow function	●	●	●	
		+					
③	Thread type	Nil	Rc	●	●	●	
		N	NPT	●	●	●	
		F	G	●	●	●	
		+					
④	Port size	01	1/8	●	—	—	
		02	1/4	●	●	●	
		03	3/8	—	●	●	
		04	1/2	—	—	●	
		+					
⑤ Option <small>Note 1)</small>	a	Mounting	Nil	Without mounting option	●	●	●
			B <small>Note 2)</small>	With bracket	●	●	●
			H	With set nut (For panel mount)	●	●	●
			+				
	b	Pressure gauge	Nil	Without pressure gauge	●	●	●
			E	Square embedded type pressure gauge (With limit indicator)	●	●	●
			G	Round type pressure gauge (With limit indicator)	●	●	●
		Digital pressure switch	E1 <small>Note 3)</small>	Output: NPN output / Electrical entry: Wiring bottom entry	●	●	●
			E2 <small>Note 3)</small>	Output: NPN output / Electrical entry: Wiring top entry	●	●	●
			E3 <small>Note 3)</small>	Output: PNP output / Electrical entry: Wiring bottom entry	●	●	●
E4 <small>Note 3)</small>			Output: PNP output / Electrical entry: Wiring top entry	●	●	●	

# Direct Operated Precision Regulator/Modular Style *Series ARP20 to ARP40*

## Direct Operated Precision Regulator with Backflow Function/Modular Style *Series ARP20K to ARP40K*



ARP20/ARP20K

ARP30/ARP30K

ARP40/ARP40K

		Symbol	Description	①			
				Body size			
				20	30	40	
⑥	c	Set pressure	Nil	0.005 to 0.4 MPa setting	●	●	●
			1 <sup>Note 4)</sup>	0.005 to 0.2 MPa setting	●	●	●
			3 <sup>Note 4)</sup>	0.008 to 0.6 MPa setting	●	●	●
	+						
	d	Flow direction	Nil	Flow direction: Left to right	●	●	●
			R	Flow direction: Right to left	●	●	●
	+						
	e	Knob	Nil	Downward facing knob	●	●	●
			Y	Upward facing knob	●	●	●
	+						
	f	Pressure unit	Nil	Name plate and pressure gauge in imperial units: MPa	●	●	●
			Z <sup>Note 5)</sup>	Name plate and pressure gauge in imperial units: psi	○ <sup>Note 7)</sup>	○ <sup>Note 7)</sup>	○ <sup>Note 7)</sup>
ZA <sup>Note 6)</sup>			Digital pressure switch: With unit conversion function	△ <sup>Note 8)</sup>	△ <sup>Note 8)</sup>	△ <sup>Note 8)</sup>	

Note 1) Options B, G, H are shipped together, (but not assembled).

Note 2) Set nut is included for bracket.

Note 3) When choosing with H (panel mount), the installation space for lead wires will not be secured. In this case, select "wiring top entry" for the lead wire entry. (Select "wiring bottom entry" when the semi-standard Y is chosen simultaneously.)

Note 4) The only difference from the standard specifications is the pressure regulator spring.  
It does not restrict the setting of 0.2 MPa/0.6 MPa or more.  
When the pressure gauge is attached, a 0.2 MPa pressure gauge for 0.2 MPa setting will be fitted, and a 0.7 MPa pressure gauge for 0.6 MPa setting will be fitted.  
When a digital pressure switch is attached, the pressure display is fixed to 1.0 MPa.

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.) The digital pressure switch will be equipped with the unit conversion function, setting to psi initially.

Note 6) For options: E1, E2, E3, E4. This product is for overseas use only according to the new Measurement Law. (The SI unit is provided for use in Japan.)

Note 7) ○: For thread type: NPT only

Note 8) △: Combination available for options: E1, E2, E3, E4.

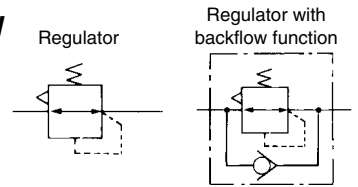
# Direct Operated Precision Regulator/Modular Style (For Special Applications)

## <sup>10</sup>/<sub>21</sub>-ARP20 to <sup>10</sup>/<sub>21</sub>-ARP40

# Direct Operated Precision Regulator with Backflow Function/Modular Style (For Special Applications)

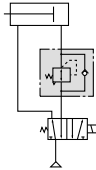
## <sup>10</sup>/<sub>21</sub>-ARP20K to <sup>10</sup>/<sub>21</sub>-ARP40K

JIS symbol

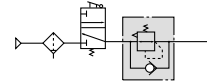


- Clean room compliant (10-ARP).
- Copper-free, fluorine-free (20-ARP).
- Clean room compliant, copper-free, fluorine-free, silicon-free (21-ARP).
- With the backflow function it incorporates a mechanism to exhaust the air pressure in the outlet side reliably and quickly.

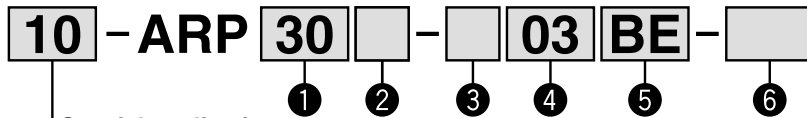
Example 1)  
When the pressure in the rear and the front of the cylinder differs:



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



### How to Order



#### Special applications

10	Clean room compliant
20	Copper-free, fluorine-free
21	Clean room compliant, copper-free, fluorine-free, silicon-free

Clean room compliant	<ul style="list-style-type: none"> <li>• Less particle generation in a clean room</li> <li>• Grease: Fluorine type</li> <li>• Packaging: Double packaging</li> </ul>
Copper-free, fluorine-free	<ul style="list-style-type: none"> <li>• Wetted parts: Aluminum die-cast, Stainless steel, HNBR, NBR</li> <li>• Grease: Lithium soap base type</li> </ul>
Clean room compliant, copper-free, fluorine-free, silicon-free	<ul style="list-style-type: none"> <li>• Less particle generation in a clean room</li> <li>• Wetted parts: Aluminum die-cast, Stainless steel, HNBR, NBR</li> <li>• Grease: Lithium soap base type</li> </ul>

- Option / Semi-standard: Select one each for a to f.
  - Option / Semi-standard symbol: Enter them alphanumerically.
- Example) 10-ARP30K-03BE-1RY

Clean room compliant	Copper-free, fluorine-free	Clean room compliant, copper-free, fluorine-free, silicon-free
----------------------	----------------------------	--

	Symbol	Description	① Body size			① Body size			① Body size			
			20	30	40	20	30	40	20	30	40	
② With backflow function	Nil	Without backflow function	●	●	●	●	●	●	●	●	●	
	K	With backflow function	●	●	●	●	●	●	●	●	●	
③ Thread type	Nil	Rc	●	●	●	●	●	●	●	●	●	
	N	NPT	●	●	●	●	●	●	●	●	●	
	F	G	●	●	●	●	●	●	●	●	●	
④ Port size	01	1/8	●	—	—	●	—	—	●	—	—	
	02	1/4	●	●	●	●	●	●	●	●	●	
	03	3/8	—	●	●	—	●	●	—	●	●	
	04	1/2	—	—	●	—	—	●	—	—	●	
a Mounting	Nil	Without mounting option	●	●	●	●	●	●	●	●	●	
	B Note 2)	With bracket	●	●	●	●	●	●	●	●	●	
	H	With set nut (For panel mount)	●	●	●	●	●	●	●	●	●	
⑤ Option	b Pressure gauge	Nil	Without pressure gauge	●	●	●	●	●	●	●	●	●
		G	Round type pressure gauge (Without limit indicator)	●	●	●	—	—	—	●	●	●
			Round type pressure gauge (With limit indicator)	—	—	—	●	●	●	—	—	—
	Digital pressure switch	E1 Note 3)	Output: NPN output / Electrical entry: Wiring bottom entry	●	●	●	—	—	—	—	—	—
		E2 Note 3)	Output: NPN output / Electrical entry: Wiring top entry	●	●	●	—	—	—	—	—	—
E3 Note 3)		Output: PNP output / Electrical entry: Wiring bottom entry	●	●	●	—	—	—	—	—	—	
E4 Note 3)		Output: PNP output / Electrical entry: Wiring top entry	●	●	●	—	—	—	—	—	—	

# Direct Operated Precision Regulator *Series* <sup>10</sup>/<sub>20</sub>-ARP20 to <sup>10</sup>/<sub>21</sub>-ARP40 (For Special Applications)

# Direct Operated Precision Regulator with Backflow Function (For Special Applications) *Series* <sup>10</sup>/<sub>21</sub>-ARP20K to <sup>10</sup>/<sub>21</sub>-ARP40K



<sup>10</sup>/<sub>20</sub>-ARP20/ARP20K

<sup>10</sup>/<sub>20</sub>-ARP30/ARP30K

<sup>10</sup>/<sub>20</sub>-ARP40/ARP40K

		Symbol	Description	①			
				Body size			
				20	30	40	
⑥	c	Set pressure	Nil	0.005 to 0.4 MPa setting	●	●	●
			1 <small>Note 4)</small>	0.005 to 0.2 MPa setting	●	●	●
			3 <small>Note 4)</small>	0.008 to 0.6 MPa setting	●	●	●
	+						
	d	Flow direction	Nil	Flow direction: Left to right	●	●	●
			R	Flow direction: Right to left	●	●	●
	+						
	e	Knob	Nil	Downward facing knob	●	●	●
			Y	Upward facing knob	●	●	●
	+						
	f	Pressure unit	Nil	Name plate and pressure gauge in imperial units: MPa	●	●	●
			Z <small>Note 5)</small>	Name plate and pressure gauge in imperial units: psi	○ <small>Note 7)</small>	○ <small>Note 7)</small>	○ <small>Note 7)</small>
ZA <small>Note 6)</small>			Digital pressure switch: With unit conversion function	△ <small>Note 8)</small>	△ <small>Note 8)</small>	△ <small>Note 8)</small>	

Note 1) Options B, G, H are shipped together, (but not assembled).

Note 2) Set nut is included for bracket.

Note 3) When choosing with H (panel mount), the installation space for lead wires will not be secured. In this case, select "wiring top entry" for the lead wire entry. (Select "wiring bottom entry" when the semi-standard Y is chosen simultaneously.)

Note 4) The only difference from the standard specifications is the pressure regulator spring.

It does not restrict the setting of 0.2 MPa/0.6 MPa or more.

When the pressure gauge is attached, a 0.2 MPa pressure gauge for 0.2 MPa setting will be fitted, and a 0.7 MPa pressure gauge for 0.6 MPa setting will be fitted.

Note 5) For thread type: NPT. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.) The digital pressure switch will be equipped with the unit conversion function, setting to psi initially.

Note 6) For options: E1, E2, E3, E4. This product is for overseas use only according to the new Measurement Law. (The SI unit is provided for use in Japan.)

Note 7) ○: For thread type: M5 and NPT only

Note 8) △: Combination available for options: E1, E2, E3, E4.

# Series ARP20/30/40

## Specifications

Model			ARP20(K)	ARP30(K)	ARP40(K)
Port size			1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Fluid			Air		
Proof pressure			1.2 MPa		
Max. operating pressure			0.7 MPa		
Set pressure range <small>Note 1)</small>	For 0.4 MPa setting	Ex.) ARP30-02BG	0.005 to 0.4 MPa		
	For 0.2 MPa setting	Ex.) ARP30-02BG-1	0.005 to 0.2 MPa		
	For 0.6 MPa setting	Ex.) ARP30-02BG-3	0.008 to 0.6 MPa		
Sensitivity			Within 0.2% F.S.		
Repeatability <small>Note 2)</small>			Within $\pm 1\%$ F.S. (or $\pm 3$ kPa)		
Air consumption	For 0.4 MPa setting	Ex.) ARP30-02BG	1 $\ell$ /min (ANR) or less (at P2 = 0.4 MPa)		
	For 0.2 MPa setting	Ex.) ARP30-02BG-1	0.6 $\ell$ /min (ANR) or less (at P2 = 0.2 MPa)		
	For 0.6 MPa setting	Ex.) ARP30-02BG-3	1.4 $\ell$ /min (ANR) or less (at P2 = 0.6 MPa)		
Pressure port size <small>Note 3)</small>			1/8	1/8	1/4
Ambient and fluid temperature			-5 to 60°C (No freezing)		
	With digital pressure switch	Ex.) ARP30-02BE1	-5 to 50°C (No freezing)		
Construction			Bleed type		
Weight (kg) <small>Note 4)</small>			0.2	0.3	0.5

Note 1) When a product with backflow function (ARP20K to 40K) is chosen, set the inlet pressure 0.05 MPa or higher than the set pressure.

Note 2) For the type set to 0.2 MPa only, repeatability will be within  $\pm 3$  kPa.

Note 3) Port thread is not provided for products with square embedded-type pressure gauges.

Note 4) Weight shown is for product without any options.

## Optional Parts

### Standard

Model		ARP20(K)	ARP30(K)	ARP40(K)	
Bracket assembly <sup>Note 1)</sup>		ARP20P-270AS	ARP30P-270AS	ARP40P-270AS	
Set nut		ARP20P-260S	ARP30P-260S	ARP40P-260S	
Pressure gauge	0.4 MPa	Round type <sup>Note 2)</sup>	G36-4-□01		
		Square embedded type <sup>Note 3)</sup>	GC3-4AS [GC3P-010AS (Pressure gauge cover only)]		
	0.2 MPa	Round type <sup>Note 2)</sup>	G36-2-□01	G46-2-□02	
		Square embedded type <sup>Note 3)</sup>	GC3-2AS [GC3P-010AS (Pressure gauge cover only)]		
	0.7 MPa	Round type <sup>Note 2)</sup>	G36-7-□01	G46-7-□02	
		Square embedded type <sup>Note 3)</sup>	GC3-7AS [GC3P-010AS (Pressure gauge cover only)]		
	Digital type <sup>Note 4)</sup>	NPN output / Wiring bottom entry		ISE35-N-25-MLA [ISE35-N-25-M (Switch body only)]	
		NPN output / Wiring top entry		ISE35-R-25-MLA [ISE35-R-25-M (Switch body only)]	
PNP output / Wiring bottom entry		ISE35-N-65-MLA [ISE35-N-65-M (Switch body only)]			
PNP output / Wiring top entry		ISE35-R-65-MLA [ISE35-R-65-M (Switch body only)]			

### Clean Room Compliant (10-)

Model		10-ARP20(K)	10-ARP30(K)	10-ARP40(K)	
Bracket assembly <sup>Note 1)</sup>		ARP20P-270AS	ARP30P-270AS	ARP40P-270AS	
Set nut		ARP20P-260S	ARP30P-260S	ARP40P-260S	
Pressure gauge	0.4 MPa	Round type <sup>Note 2)</sup>	G49-4-□01		
	0.2 MPa		G49-2-□01		
	0.7 MPa		G49-7-□01		
	Digital type <sup>Note 4)</sup>	NPN output / Wiring bottom entry		ISE35-N-25-MLA [ISE35-N-25-M (Switch body only)]	
		NPN output / Wiring top entry		ISE35-R-25-MLA [ISE35-R-25-M (Switch body only)]	
		PNP output / Wiring bottom entry		ISE35-N-65-MLA [ISE35-N-65-M (Switch body only)]	
		PNP output / Wiring top entry		ISE35-R-65-MLA [ISE35-R-65-M (Switch body only)]	

### Copper-free, Fluorine-free (20-)

Model		20-ARP20(K)	20-ARP30(K)	20-ARP40(K)
Bracket assembly <sup>Note 1)</sup>		ARP20P-270AS	ARP30P-270AS	ARP40P-270AS
Set nut		ARP20P-260S	ARP30P-260S	ARP40P-260S
Pressure gauge	0.4 MPa	Round type <sup>Note 2)</sup>	G46-4-□01-X3	
	0.2 MPa		G46-2-□01-X3	
	0.7 MPa		G46-7-□01-X3	

### Clean Room Compliant, Copper-free, Fluorine-free (21-)

Model		21-ARP20(K)	21-ARP30(K)	21-ARP40(K)
Bracket assembly <sup>Note 1)</sup>		ARP20P-270AS	ARP30P-270AS	ARP40P-270AS
Set nut		ARP20P-260S	ARP30P-260S	ARP40P-260S
Pressure gauge	0.4 MPa	Round type <sup>Note 2)</sup>	G49-4-□01MS-X3	
	0.2 MPa		G49-2-□01MS-X3	
	0.7 MPa		G49-7-□01MS-X3	

Note 1) Assembly includes a bracket and set nuts.

Note 2) □ in part numbers for a round-type pressure gauge indicates a type of connection thread. No indication is necessary for R; however, indicate N for NPT. The G thread is unavailable. If it is required, select the R thread type (Nil) instead. Please contact SMC regarding the connection thread NPT and pressure gauge supply for psi unit specifications.

Note 3) Includes one O-ring and 2 mounting screws. [ ]: Pressure gauge cover only.

Note 4) Lead wire with connector (2 m), adapter, lock pin, O-ring (1 pc.), and mounting screws (2 pcs.) are included. [ ]: Switch body only.  
For how to order the digital pressure switch, refer to the following specific page for the digital pressure switch.

# Series ARP20/30/40

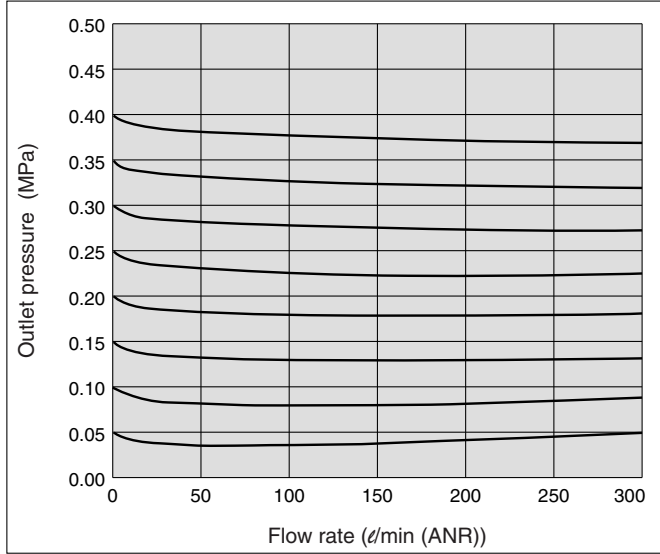
Condition:  
Inlet pressure 0.7 MPa

Conditions:  
Inlet pressure 0.5 MPa  
Outlet pressure 0.2 MPa  
Flow rate 20 ℓ/min (ANR)

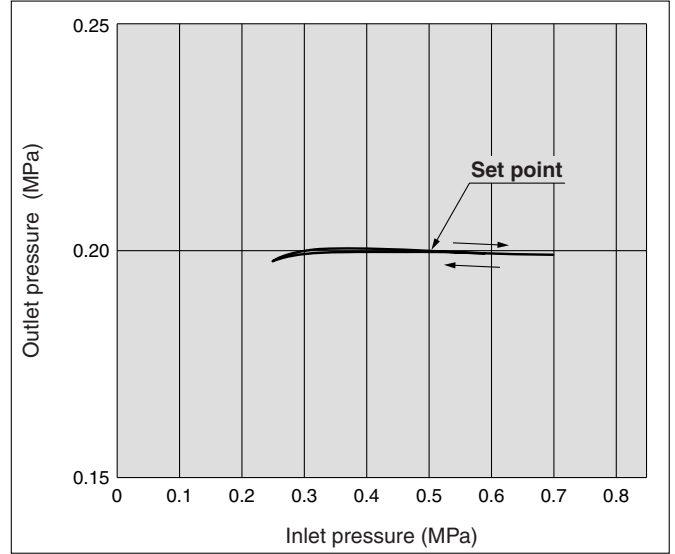
## Flow Characteristics (Representative values)

### ARP20(K)

Rc1/4

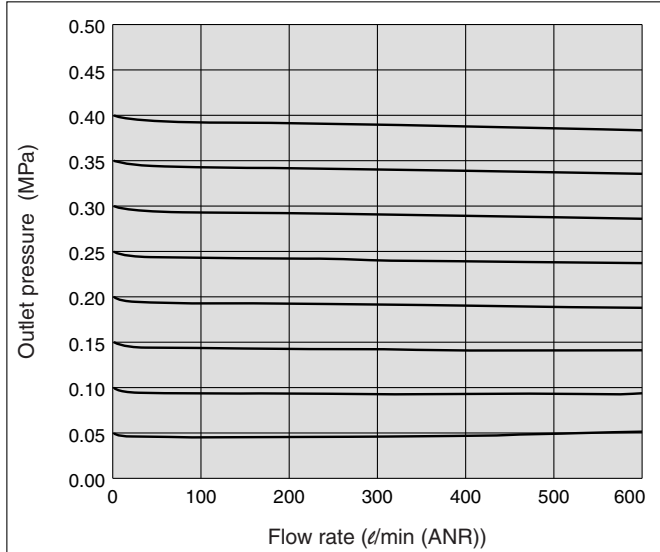


### ARP20(K)

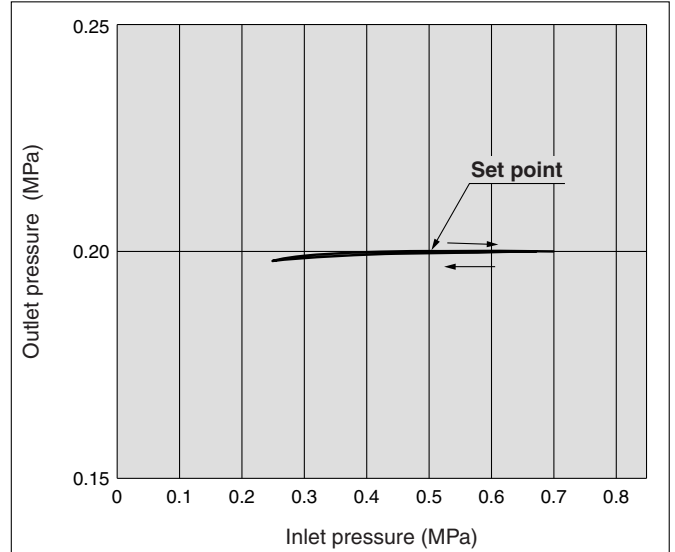


### ARP30(K)

Rc3/8

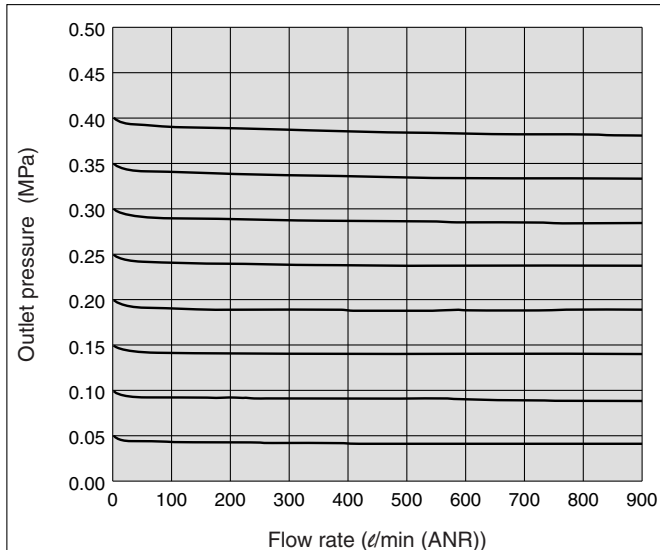


### ARP30(K)

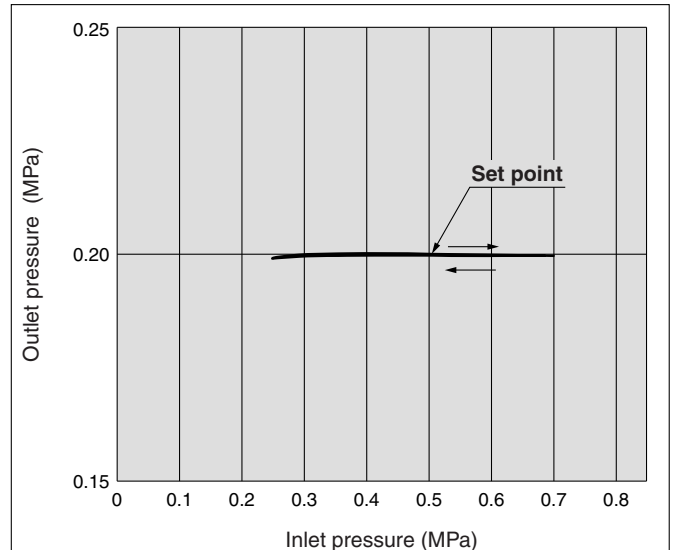


### ARP40(K)

Rc1/2



### ARP40(K)

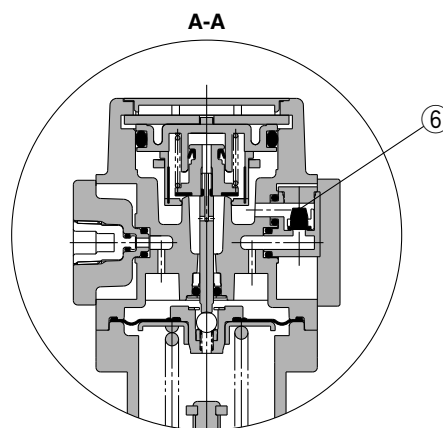
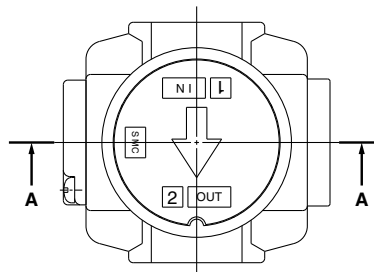
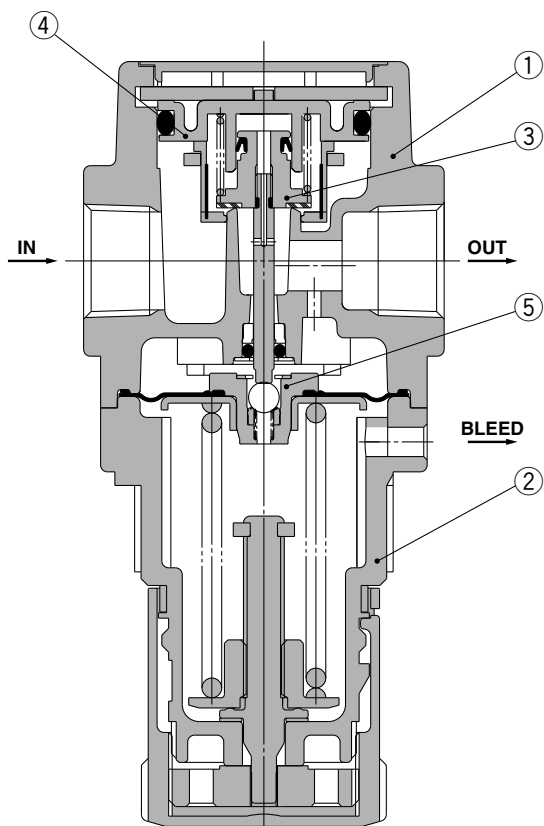


# Direct Operated Precision Regulator/Modular Style *Series ARP20/30/40*

## Construction

ARP20(K)/30(K)/40(K)

ARP20K/30K/40K (With backflow function)



### Component Parts

No.	Description	Material	Note
1	Body	Aluminum die-casted	External color: White
2	Bonnet	Polyacetal	External color: White

### Replacement Parts

No.	Description	Material	Part no.		
			ARP20(K)	ARP30(K)	ARP40(K)
3	Valve assembly	Brass, HNBR, NBR	ARP20P-330AS	ARP30P-330AS	ARP40P-330AS
4	Valve guide assembly	Polyacetal, NBR	ARP20P-050AS	ARP30P-050AS	ARP40P-050AS
5	Diaphragm assembly	HNBR, Stainless steel, Brass	ARP20P-151AS	ARP30P-151AS	ARP40P-151AS
6 Note)	Check valve assembly	—	AR20KP-020AS		

Note) Check valve assembly is the replacement part for a regulator with backflow function (ARP20K to 40K).

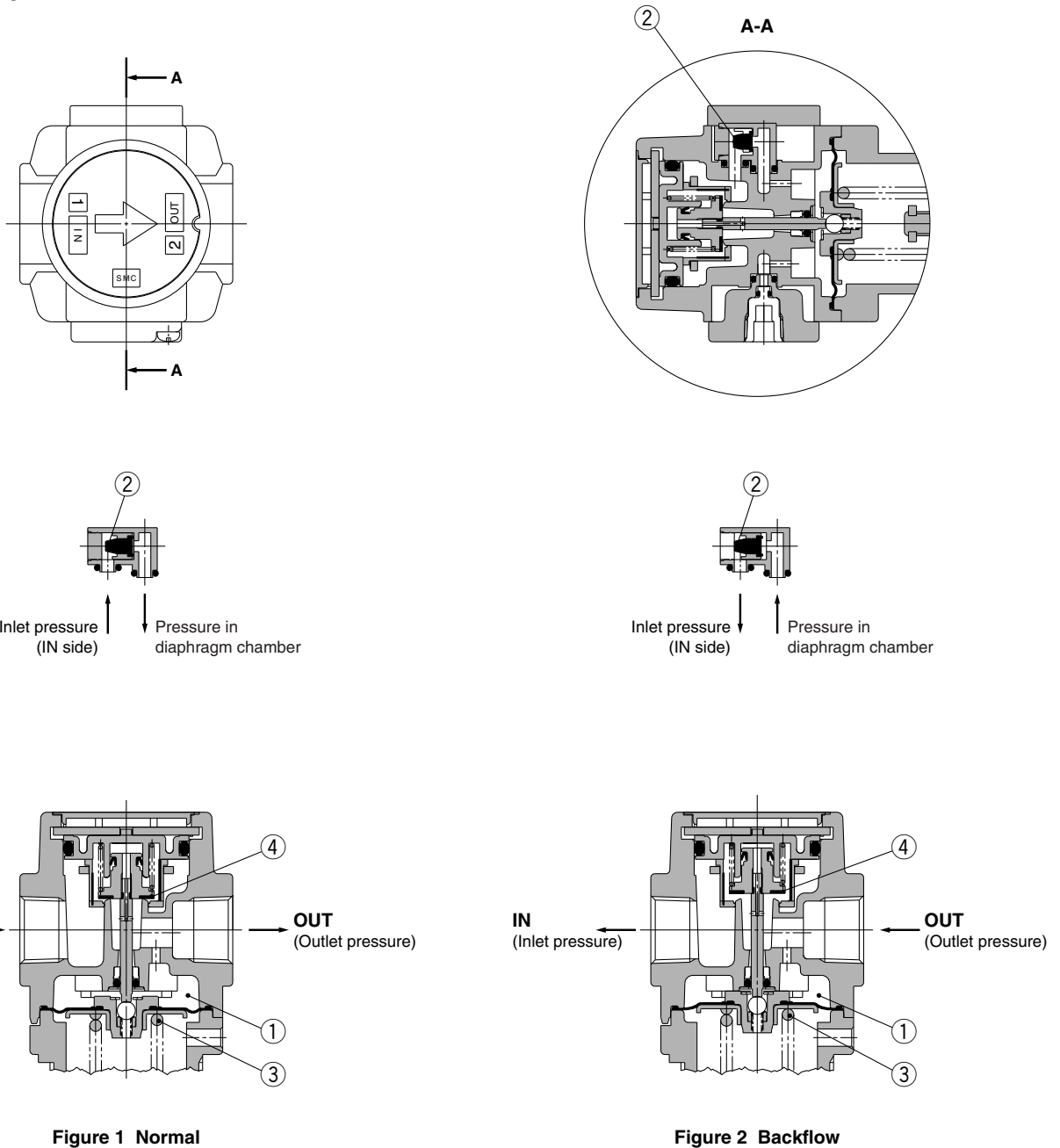
Assembly of check valve body assembly, check valve cover and 2 screws

\* Please consult SMC for special application specifications.

# Series ARP20/30/40

## Working Principle (Regulator with Backflow Function)

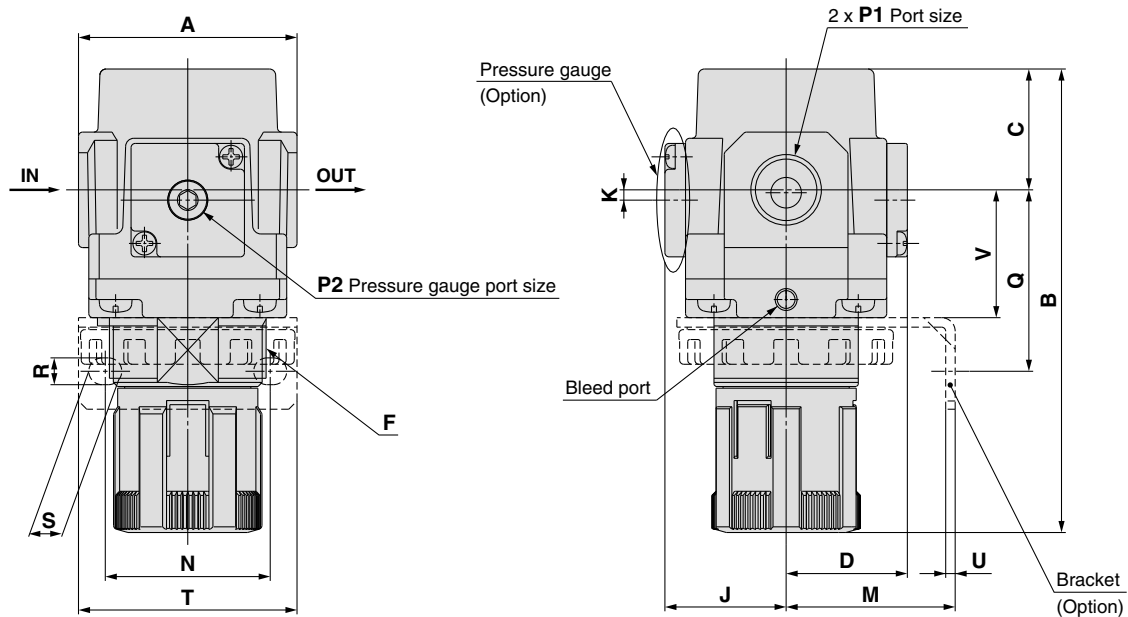
ARP20K/30K/40K



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

# Direct Operated Precision Regulator/Modular Style **Series ARP20/30/40**

## Dimensions



Panel fitting dimension

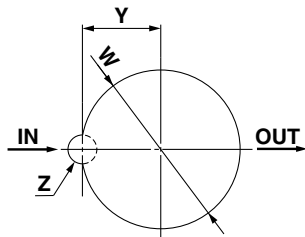


Plate thickness  
 ARP20(K), ARP30(K): Max. 3.5  
 ARP40(K): Max. 5

\* The dimensions for special applications (not including round-type pressure gauge). The dimensions for special applications are the same as those of the standard product. However, as for the 10-, 20-series, a fitting is attached to the bleed port and it protrudes from the face with the OUT port by approx. 11 mm.

### Pressure Gauge Option

Option	Square embedded type pressure gauge	Digital pressure switch (Electrical entry: Wiring bottom entry)	Digital pressure switch (Electrical entry: Wiring top entry)	Round type pressure gauge
Dimensions				

Model	Standard specifications								
	P1	P2	A	B <sup>Note 1)</sup>	C	D	F	J	K
<b>ARP20(K)</b>	1/8, 1/4	1/8	40	98	27	28.5	M28 x 1	28.5 <sup>Note 2)</sup>	2
<b>ARP30(K)</b>	1/4, 3/8	1/8	53	117	29	29.5	M38 x 1.5	29.5	2.5
<b>ARP40(K)</b>	1/4, 3/8, 1/2	1/4	70	148	41	34	M42 x 1.5	34	1

Model	Optional specifications																
	Square embedded type pressure gauge		Digital pressure switch		Round type pressure gauge <sup>Note 3)</sup>		Bracket mount dimension							Panel mount			
	H	J	H	J	H	J	M	N	Q	R	S	T	U	V	W	Y	Z
<b>ARP20(K)</b>	□28	29.5	□27.8	40	∅37.5	66	30	34	47	5.4	15.4	55	2.3	28	28.5	14	6
<b>ARP30(K)</b>	□28	30.5	□27.8	41	∅37.5	67	41	40	44	6.5	8	53	2.3	31	38.5	19	7
<b>ARP40(K)</b>	□28	35	□27.8	45	∅42.5	74	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7

Note 1) The total length of B direction is the length when the filter regulator knob is unlocked.

Note 2) For ARP20(K) only, the position of the pressure gauge is above the center of the piping.

Note 3) For dimensions of round-type pressure gauge for special application, please contact SMC.

# Options

# Digital Pressure Switch

ISE35-**N**-**25**-**M****L****A**

① ② ③ ④ ⑤

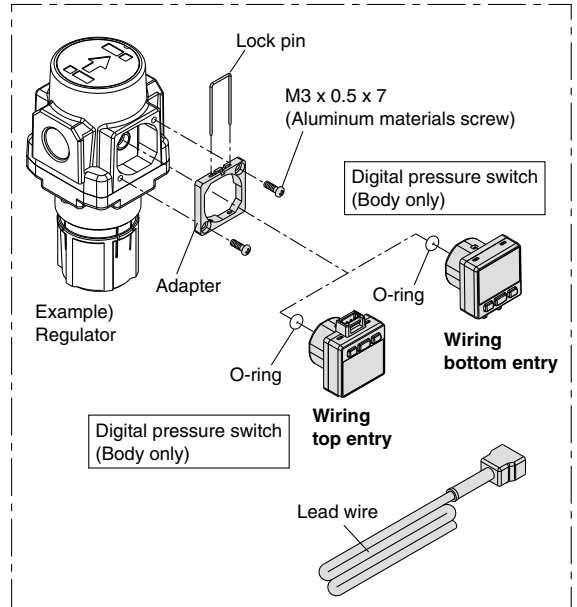
	Symbol	Description
① Electrical entry	<b>N</b>	Wiring bottom entry
	<b>R</b>	Wiring top entry
② Output	<b>25</b>	NPN output
	<b>65</b>	PNP output
③ Unit <small>Note 1)</small>	<b>Nil</b> <small>Note 2)</small>	With unit conversion function
	<b>M</b>	Fixed SI unit
	<b>P</b> <small>Note 2)</small>	Pressure unit: psi (Initial value), with unit conversion function
④ Lead wire	<b>Nil</b>	Without lead wire
	<b>L</b>	Lead wire with connector (2 m)
⑤ Accessories	<b>Nil</b>	Without accessories (Switch body only)
	<b>A</b>	With accessories (Adapter, O-ring: 1 pc., Mounting screw: 2 pcs., Lock pin)

Note 1) Under the New Measurement Law, sales of switches with the unit switching function have not been allowed for use in Japan.  
 Note 2) Unit name plate is attached.  
 Note 3) Operation manual is included.  
 Note 4) When ordering the body only, select the symbol from ① to ⑤ respectively.

## Specifications

<b>Rated pressure range</b>	0 to 1 MPa
<b>Set pressure range</b>	-0.1 to 1 MPa
<b>Withstand pressure</b>	1.5 MPa
<b>Set pressure resolution</b>	0.01 MPa
<b>Power supply voltage</b>	12 to 24 VDC, Ripple (p-p) 10% or less (with power supply polarity protection)
<b>Current consumption</b>	55 mA or less (at no load)
<b>Switch output</b>	NPN or PNP open collector 1 output
<b>Maximum load current</b>	80 mA
<b>Maximum applied voltage</b>	30 V (at NPN output)
<b>Residual voltage</b>	1 V or less (with load current of 80 mA)
<b>Response time</b>	1 s
<b>Anti-chattering function</b>	(0.25, 0.5, 2, 3)
<b>Short-circuit protection</b>	Yes
<b>Repeatability</b>	±1% F.S. or less
<b>Hysteresis</b>	
<b>Hysteresis mode</b>	Variable (0 or above)
<b>Window comparator mode</b>	
<b>Display</b>	3-digit, 7-segment indicator, 2-color display (Red/Green) can be interlocked with the switch output.
<b>Display accuracy</b>	±2% F.S.±1 digit (25°C±3°C)
<b>Indicator light</b>	Light up when output is turned ON. (Green)
<b>Environment resistance</b>   <b>Enclosure</b>	IP40
<b>Lead wire with connector</b>	φ3.4 3-wire 25AWG 2 m

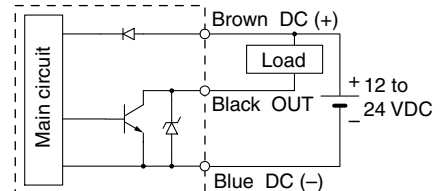
## Digital Pressure Switch Construction



## Output Specifications

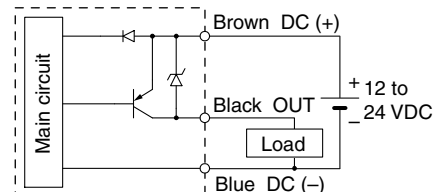
### NPN open collector output

Max. 30 V, 80 mA  
Residual voltage 1 V or less



### PNP open collector

Max. 80 mA  
Residual voltage 1 V or less








# Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC), Japan Industrial Standards (JIS)\*1) and other safety regulations\*2).

- \* 1) ISO 4414: Pneumatic fluid power – General rules relating to systems.  
ISO 4413: Hydraulic fluid power – General rules relating to systems.  
IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)  
ISO 10218-1992: Manipulating industrial robots -Safety.  
JIS B 8370: General rules for pneumatic equipment.  
JIS B 8361: General rules for hydraulic equipment.  
JIS B 9960-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)  
JIS B 8433-1993: Manipulating industrial robots - Safety.  
etc.
- \* 2) Labor Safety and Sanitation Law, etc.

 **Caution:** Operator error could result in injury or equipment damage.

 **Warning:** Operator error could result in serious injury or loss of life.

 **Danger :** In extreme conditions, there is a possibility of serious injury or loss of life.

## Warning

### **1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

### **2. Only personnel with appropriate training should operate machinery and equipment.**

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

### **3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.

2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.

3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

### **4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.

2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.

3. An application which could have negative effects on people, property, or animals requiring special safety analysis.

4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.



# Safety Instructions

## Caution

**The product is provided for use in manufacturing industries.**

The product herein described is basically provided for peaceful use in manufacturing industries.

If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary. If anything is unclear, contact your nearest sales branch.

## Limited Warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited Warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

### Limited Warranty and Disclaimer

**1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.\*3)**

**Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.**

**2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.**

**This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.**

**3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.**

**\* 3) Vacuum pads are excluded from this 1 year warranty.**

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.

Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

### Compliance Requirements

**When the product is exported, strictly follow the laws required by the Ministry of Economy, Trade and Industry (Foreign Exchange and Foreign Trade Control Law).**



## Series ARP20/30/40

# Specific Product Precautions 1

Be sure to read this before handling. Refer to the back of pages 1 and 2 for Safety Instructions and “Precautions for Handling Pneumatic Devices” (M-03-E3A) for Common Precautions.

### Design

#### ⚠ Warning

1. Be sure to install a safety device to prevent damage or malfunction of the outlet side components when the output pressure exceeds the set pressure value.
2. Please consult with SMC if the intended application calls for absolutely zero leakage due to special atmospheric requirements, or if the use of a fluid other than air is required.

#### ⚠ Caution

1. Select a model that is suitable for the desired cleanliness by referring to the SMC’s Best Pneumatics catalog.
2. Components cannot be used for applications that are outside the range of specifications.  
Please consult with SMC when you anticipate using the component outside the range of its specifications (such as temperature and pressure).
3. Even when the product is used in the specified range, it may chatter depending on the operating conditions. Please contact SMC for the details of this chattering.

### Selection

#### ⚠ Warning

1. The mineral grease used on internal sliding parts and seals may run down to outlet side components.  
Please consult with SMC if this is not desirable.
2. Residual pressure release (outlet pressure release) is not complete by releasing the inlet pressure.  
To release residual pressure, select a model with a backflow function. Using a model without a backflow function makes for inconsistent residual pressure release (i.e., residual pressure may or may not be released) depending upon the operating conditions.
3. Please contact SMC if air will not be consumed in the system for a long period of time, or if the outlet side will be used with a sealed circuit and a balanced circuit, as this may cause the set pressure of the outlet side to fluctuate.
4. Set the regulating pressure range for the outlet pressure of the regulator in a range that is 90% or less of the inlet pressure.  
If set to above 90%, the outlet pressure will be easily affected by fluctuations in the flow rate and inlet pressure, and become unstable.
5. A safety margin is calculated into the maximum regulating pressure range appearing in the catalog’s specification table.  
However, the outlet pressure may exceed the set pressure due to a delay in the valve’s closing.
6. Please contact SMC when a circuit requires the use of a regulator having relief sensitivity with high precision and setting accuracy.

### Mounting

#### ⚠ Caution

1. To avoid reversed connections of the air inlet/outlet, make connections after confirming the “IN/OUT” mark or arrows that indicate the direction of air flow. Reversed connections can cause malfunction.
2. Leave a space of 100 mm or more for maintenance on the valve guide side (opposite side from the knob).
3. When the product is installed between a solenoid valve and an actuator, select a backflow function type.

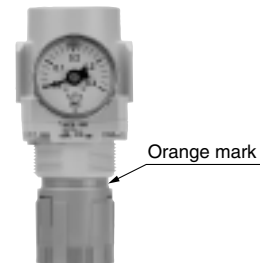
### Adjustment

#### ⚠ Warning

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

#### ⚠ Caution

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



3. To set the pressure using the knob, turn the knob in the direction that increases pressure and lock the knob after the pressure is set.  
If this is done in the direction that decreases pressure, the pressure may drop from the original set pressure. Turning the knob clockwise increases the outlet pressure, and turning it counterclockwise reduces the pressure.
4. Do not apply pressure exceeding the range of specifications.  
It can damage the pressure gauge.



# Series ARP20/30/40

## Specific Product Precautions 2

Be sure to read this before handling. Refer to the back of pages 1 and 2 for Safety Instructions and “Precautions for Handling Pneumatic Devices” (M-03-E3A) for Common Precautions.

### Adjustment

#### Caution

5. **The product consumes a small amount of fluid from the bleed port.**

The product is designed to have a bleed mechanism for highly accurate pressure adjustment, and consumes a small amount of fluid from the bleed port. This should not be considered abnormal.

### Air Supply

#### Warning

1. **Use a mist separator on the inlet side of the product.**

If the supplied air contains condensate or dust, the bleed mechanism can malfunction.

2. **Do not use a lubricator on the inlet side of the product, as the bleed mechanism can malfunction.**

### Piping

#### Warning

1. **To screw piping materials into components, tighten with a recommended tightening torque while holding the female thread side.**

If the minimum tightening torque is not observed, this can cause a looseness and seal failure. On the other hand, excess tightening torque can cause damage to the threads. Furthermore, tightening without holding the female thread side can cause damage due to the excess force that is applied directly to the piping bracket.

#### Recommended Tightening Torque

Unit: N·m

Connection thread	1/8	1/4	3/8	1/2
Torque	7 to 9	12 to 14	22 to 24	28 to 30

2. **Avoid excessive torsional moment or bending moment other than those caused by the equipment’s own weight as this can cause damage.**

Support external piping separately.

3. **Piping materials without flexibility such as steel tube piping are prone to be affected by excess moment load and vibration from the piping side. Use flexible tubing in between to avoid such an effect.**

### Maintenance

#### Warning

1. **When disassembly or installation is required during the maintenance, repair, or replacement of a device, be sure to follow the instructions provided in the operation manual or safety instructions in this catalog.**

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

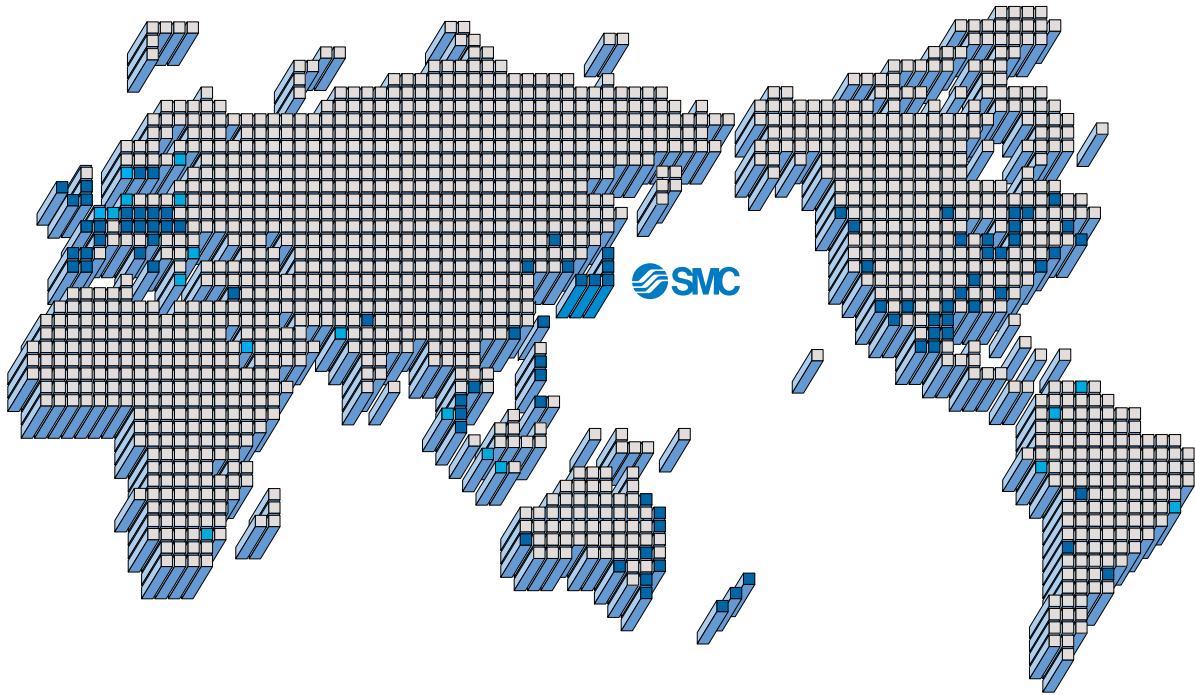
Sudden pressure fluctuations may shorten the durability of the pressure gauge. A digital pressure gauge is recommended for such situation or as deemed necessary.

#### Caution

1. **For emergency action in the event of setting failure or leakage from the relief port, refer to “Troubleshooting” in the Operation Manual of the product.**



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### Safety Instructions

Be sure to read "Precautions for Handling Pneumatic Devices" (M-03-E3A) before using.

## SMC Corporation

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