






# Precision Regulator

## Series IR1000/2000/3000

	Series	Model	Regulating pressure range	Port size	Page
Basic Type	<b>Series IR1000</b> 	<b>IR1000</b>	0.005 to 0.2 MPa	1/8	717
		<b>IR1010</b>	0.01 to 0.4 MPa		
		<b>IR1020</b>	0.01 to 0.8 MPa		
	<b>Series IR2000</b> 	<b>IR2000</b>	0.005 to 0.2 MPa	1/4	717
		<b>IR2010</b>	0.01 to 0.4 MPa		
		<b>IR2020</b>	0.01 to 0.8 MPa		
	<b>Series IR3000</b> 	<b>IR3000</b>	0.01 to 0.2 MPa	1/4, 3/8, 1/2	717
		<b>IR3010</b>	0.01 to 0.4 MPa		
		<b>IR3020</b>	0.01 to 0.8 MPa		
Air Operated Type	<b>Series IR2000</b> 	<b>IR2120</b>	0.01 to 0.8 MPa	1/4	717
	<b>Series IR3000</b> 	<b>IR3120</b>	0.01 to 0.8 MPa	1/4, 3/8, 1/2	717

ARJ

AR425  
to 935

ARX

AMR

ARM

ARP

IR

IRV

VEX

SRH

SRP

SRF

VCHR

ITV

IC

ITVX

PVQ

VEF

VEP

VER

VEA

VY1

VBA

VBAT

AP100

## Precision Regulator

# Series IR1000/2000/3000

### Bracket and pressure gauge can be mounted from 2 directions

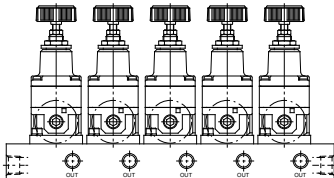
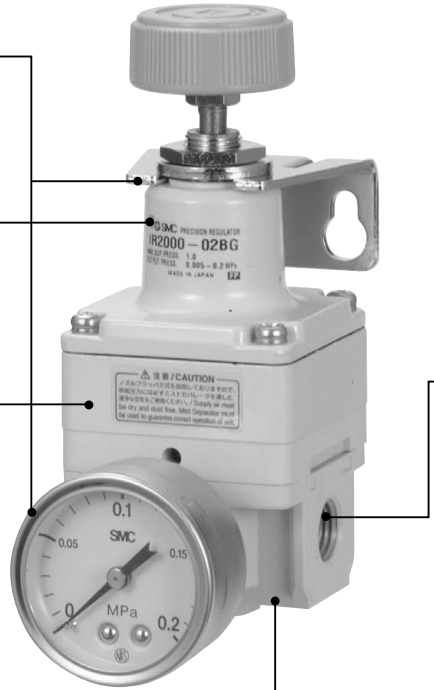
Mounting is possible on either the front or the back.

### Expanded regulating pressure range

The maximum set pressure has been expanded from the conventional 0.7 MPa to 0.8 MPa.

### Compact and lightweight

IR1000 width 35 mm weight 140 g  
IR2000 width 50 mm weight 300 g  
IR3000 width 66 mm weight 640 g

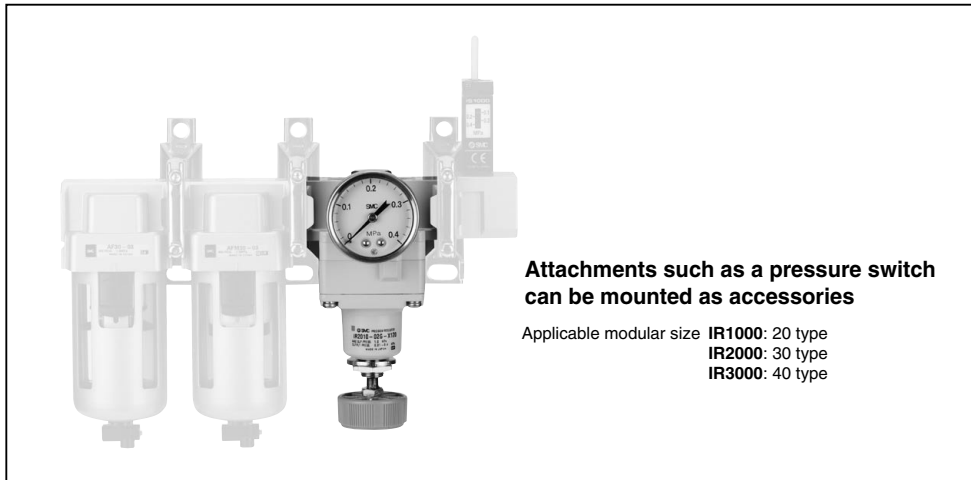


### Manifolding is possible 8 stations at the maximum

Made to order specifications  
(Except Series IR2120, IR3000)

# Compatible with new modular connection brackets (-X170)

Can be combined with AF (Air filter) and AFM (Mist separator).



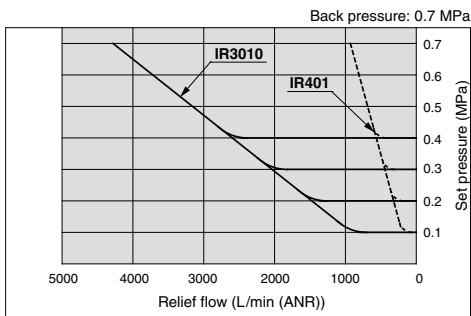
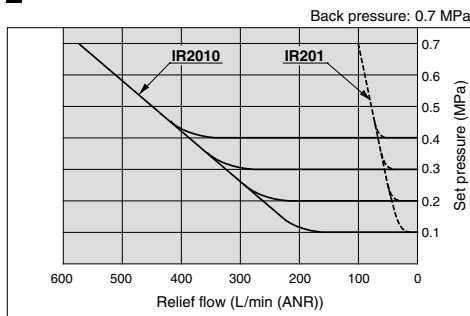
**Attachments such as a pressure switch can be mounted as accessories**

Applicable modular size **IR1000**: 20 type  
**IR2000**: 30 type  
**IR3000**: 40 type

\* Mount the standard type with a conventional connection bracket.

## Relief flow characteristics

Possible to relieve (exhaust) air ranged 50 to 4000 L/min (ANR)



### Series Variations

Specifications	Model	Basic type		Air operated type		
		IR10□□	IR20□□	IR30□□	IR2120	IR3120
Maximum set pressure	0.2 MPa	●	●	●	—	—
	0.4 MPa	●	●	●	—	—
	0.8 MPa	●	●	●	●	●
Port size	Rc 1/8	●	—	—	—	—
	Rc 1/4	—	●	●	●	●
	Rc 3/8	—	—	●	—	●
	Rc 1/2	—	—	●	—	●

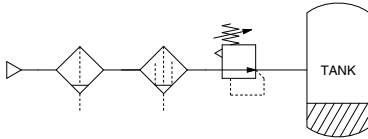
### Made to Order Specifications

Symbol	Specifications/Content
<b>10-</b>	Clean Series
<b>20-</b>	Copper-free and fluorine-free
<b>80-</b>	Ozone resistant
<b>-T</b>	For high temperature
<b>-L</b>	For low temperature (Except IR1000 type)
<b>-X1</b>	Non-grease specifications
<b>-X170</b>	Compatible with modular connection brackets (With modular adapter)
<b>-X465□</b>	With digital pressure switch (ISE30A)
<b>IRM□□</b>	Manifold (Except Series IR2120, IR3000)

Note 1) For details, refer to page 724.

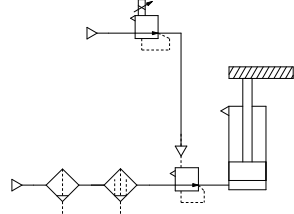
Note 2) For part number combinations, consult SMC or its sales representative.

### Constant fluid pressure



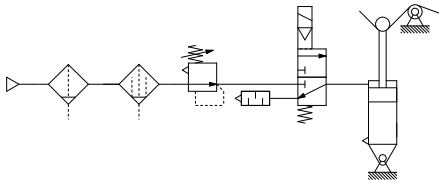
- Since there is a large effective area for supply and exhaust pressure, setting can be done quickly.

### Balance and drive Accurate balance pressure setting

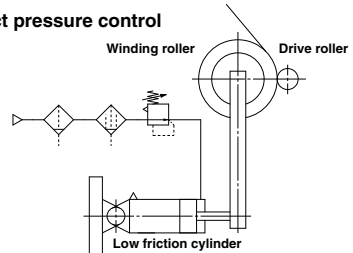


- Limits pressure fluctuation when driving a cylinder, maintaining excellent static and dynamic balance.

### Accurate pressure setting — Sensitivity within 0.2% F.S. (Full Span) Tension control

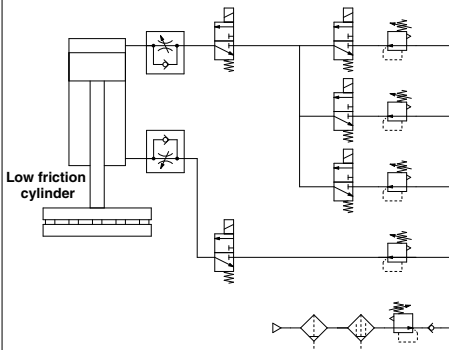


### Contact pressure control

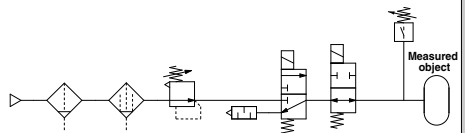


- Adapts to the cylinder's piston displacement, maintaining a constant pressure.

### Multistage control of pressing force for workpiece (Wrapping machine)



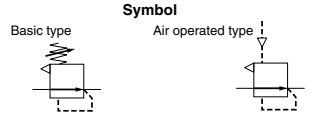
### Leak test circuit



# Precision Regulator



# Series IR1000/2000/3000



## Standard Specifications

Model	Basic type			Air operated type	
	IR10□0	IR20□0	IR30□0	IR2120	IR3120
Max. supply pressure	Max. 1.0 MPa			Max. 1.0 MPa	
Min. supply pressure (1)	Set pressure + 0.05 MPa			Set pressure + 0.1 MPa	
Regulating pressure range	IR1000: 0.005 to 0.2 MPa IR1010: 0.01 to 0.4 MPa IR1020: 0.01 to 0.8 MPa	IR2000: 0.005 to 0.2 MPa IR2010: 0.01 to 0.4 MPa IR2020: 0.01 to 0.8 MPa	IR3000: 0.01 to 0.2 MPa IR3010: 0.01 to 0.4 MPa IR3020: 0.01 to 0.8 MPa	0.01 to 0.8 MPa	0.01 to 0.8 MPa
Input signal pressure (2)	—			0.01 to 0.8 MPa	0.01 to 0.8 MPa
Sensitivity (3)	Within 0.2% of full span				
Repeatability (3)	Within ±0.5% of full span				
Linearity (4)	—			Within ±1% of full span	
Air consumption (5) (At supply pressure of 1.0 MPa)	4.4 L/min (ANR) or less	4.4 L/min (ANR) or less	11.5 L/min (ANR) or less	4.4 L/min (ANR) or less	11.5 L/min (ANR) or less
Port size	Rc 1/8	Rc 1/4	Rc 1/4, 3/8, 1/2	Rc 1/4	Rc 1/4, 3/8, 1/2
Pressure gauge port	Rc 1/8 (2 locations)				
Ambient and fluid temperature	-5 to 60°C (No freezing)				
Weight (kg)	0.14	0.30	0.64	0.35	0.71

Note 1) With the condition of no flow on the output side. Together with the set pressure, be sure to maintain a minimum differential pressure of 0.05 MPa for models IR1000 and IR2000, and 0.1 MPa for model IR3000.

Note 2) Applicable only to air operated types IR2120 and IR3120. The basic type is excepted.

Note 3) Characteristic values do not contain any secular change and temperature change.

Note 4) Indicates the linearity of the output pressure with respect to the input signal pressure.

Note 5) Air is normally being discharged to the atmosphere from a bleed hole or an exhaust port.

## How to Order

**IR 2000 0-02**

**Precision regulator**

**Body size**

1	IR1000
2	IR2000
3	IR3000

**Type of setting**

0	Basic type (Handle)
1	Air operated type (Series IR2000/3000 only)

**Regulating pressure range**

**For series IR1000/2000**

0	0.005 to 0.2 MPa
1	0.01 to 0.4 MPa
2	0.01 to 0.8 MPa

Note) Air operated type is model IR2120 only.

**For series IR3000**

0	0.01 to 0.2 MPa
1	0.01 to 0.4 MPa
2	0.01 to 0.8 MPa

Note) Air operated type is model IR3120 only.

**Thread type**

NII	Rc
N	NPT*
F	G*

\* Option

**Port size**

Symbol	size	IR1000	IR2000	IR3000
01	1/8	●		●
02	1/4		●	●
03	3/8			●
04	1/2			●

**Suffix 1**

NII	—
T	For high temp. environments (-5 to 100°C) (Max. 80°C with pressure gauge.)
L	For low temp. environments (-30 to 60°C)

Note) Except IR1000 type. For IR3000 type, the combination of "L" and "X1" is not available.

**Suffix 2**

NII	—
R	Pressure gauge, Bracket, Name plate, Mounting on the opposite side

Note) The standard mounting position of the pressure gauge is on the front, when viewing the regulator with the SUP side to the left and OUT side to the right.

### Made to Order Specifications (Refer to page 724)

Symbol	Specifications/Content
X1	Non-grease specifications
X170	Compatible with modular connection brackets (Refer to page 718)
X465□	With digital pressure switch (ISE30A)

- \* 1 Add prefix (10-) for the clean room specification.
- \* 2 Add prefix (20-) for the copper-free and fluorine-free specification.
- \* 3 Add prefix (80-) for the ozone-resistant specification.
- \* 4 Manifold specification is available for IR1000 and IR2000. (Except IR2120 and IR3000)

\* Pressure gauge is included, (but not assembled).

**Accessory**

NII	None
B	With bracket
G	With pressure gauge*

Note) For the low temperature environment, no combinations with the pressure gauge "G" are available.

ARJ

AR425  
to 935

ARX

AMR

ARM

ARP

IR

IRV

VEV

SRH

SRP

SRF

VCHR

ITV

IC

ITVX

PVQ

VEF  
VEP

VER

VEA

VY1

VBA  
VBAT

AP100

# Series IR1000/2000/3000

## Specification Combinations

○: Standard specifications ○: Combination possible □: Combination not possible



Series IR3000



Series IR2000



Series IR1000

Specifications		Symbol	Applicable model					
			IR1000 IR1010 IR1020	IR2000 IR2010 IR2020	IR2120	IR3000 IR3010 IR3020	IR3120	
Standard specifications	Set pressure Max. 0.2 MPa	0	○	○	○	○	○	
	Set pressure Max. 0.4 MPa	1	○	○	○	○	○	
	Set pressure Max. 0.8 MPa	2	○	○	○	○	○	
	Connection Rc 1/8	01	○	○	○	○	○	
Standard specifications	Connection Rc 1/4	02	○	○	○	○	○	
	Connection Rc 3/8	03	○	○	○	○	○	
	Connection Rc 1/2	04	○	○	○	○	○	
	Bracket	B	○	○	○	○	○	
Accessory	Pressure gauge	G	○	○	○	○	○	
	Pressure gauge reverse mounted	R	○	○	○	○	○	
Option	Connection NPT 1/8	N01	○	○	○	○	○	
	Connection NPT 1/4	N02	○	○	○	○	○	
	Connection NPT 3/8	N03	○	○	○	○	○	
	Connection NPT 1/2	N04	○	○	○	○	○	
	Connection G 1/8	F01	○	○	○	○	○	
	Connection G 1/4	F02	○	○	○	○	○	
	Connection G 3/8	F03	○	○	○	○	○	
	Connection G 1/2	F04	○	○	○	○	○	

## Modular and Accessory Combinations

Description	Applicable model		
	IR1000-□-X170	IR2000-□-X170	IR3000-□-X170
1. Air filter	AF20	AF30	AF40
2. Mist separator	AFM20	AFM30	AFM40
3. Interface	Y200	Y300	Y400
4. Interface with bracket	Y200T	Y300T	Y400T

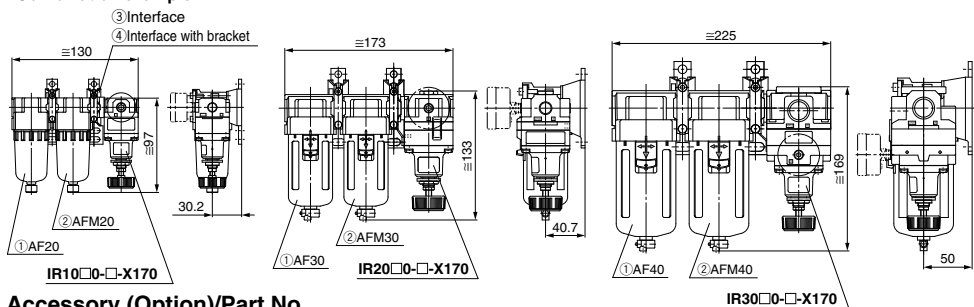
Note 1) Use the Made-to-Order product (IR□□-X170) for modular connections.

The interface and bracket listed above cannot be connected to the standard type. Use a conventional connection interface when connecting the standard type with modular connections.

Note 2) The Made-to-Order product (IR□□-X170) is the product number with the modular adaptor attached to the standard product. The modular adaptor that has not been assembled to the product is shipped together. For the recommended tightening torque necessary to connect the modular adaptor, refer to page 591. When connecting the modular adaptor, please order applicable products or accessories separately.

Note 3) Product numbers with the bracket are not available for IR□□-X170. As the interface with the bracket is used, it is not necessary to attach the bracket to the IR.

### <Combination example>



## Accessory (Option)/Part No.

Description	Part no.								
	IR1000	IR1010	IR1020	IR2000	IR2010	IR2020/2120	IR3000	IR3010	IR3020/3120
Bracket	P36201023			P36202028			P362030-20 <sup>*1</sup>		
Pressure gauge <sup>*2,3</sup>	G33-2-01	G33-4-01	G33-10-01	G43-2-01	G43-4-01	G43-10-01	G43-2-01	G43-4-01	G43-10-01

\*1 A bracket and two mounting screws (M5 x 35)

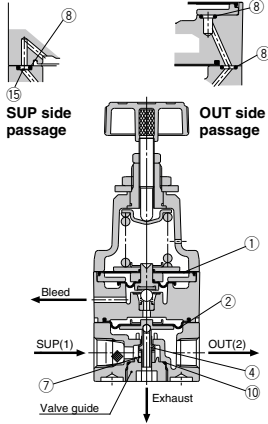
To mount the bracket, remove two body screws (M5 x 30) on the name plate on the opposite side and replace the attached two bracket mounting screws (M5 x 35).

\*2 Accuracy ±3% (Full span), Accuracy guarantee temperature range: 23±5°C

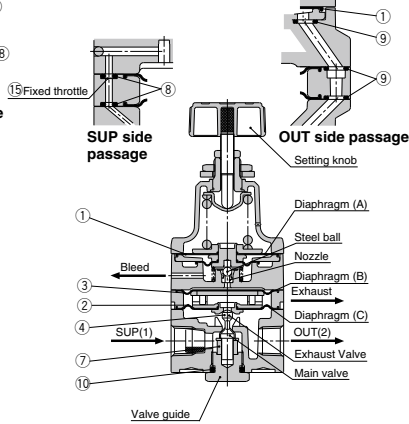
\*3 When ordering this pressure gauge individually, the sealant is not applied to the connection male thread. So, apply the sealing tape or sealant to the screw thread before use.

## Construction

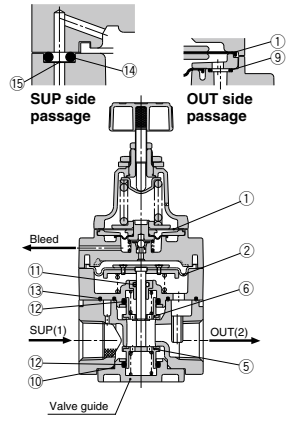
### IR1000



### IR2000



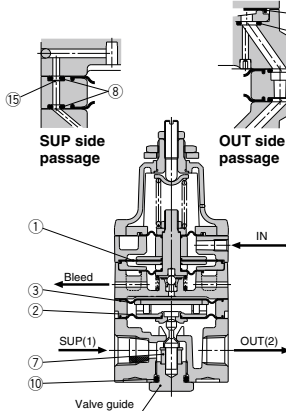
### IR3000



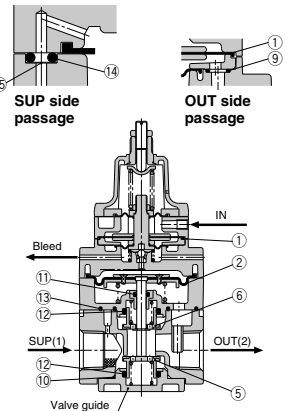
### Working principle (For IR2000)

When the setting knob is turned, the nozzle is closed by the flapper allowing the supply air that flows in from the upstream side to pass through the fixed throttle. It then acts on diaphragm B as nozzle back pressure, the main valve is pushed down by the generated force, and the supply pressure flows out to the downstream side. The air pressure that flows in acts on diaphragm A. While opposing the force generated by diaphragm B it also acts on diaphragm A, opposing the compression force of the setting spring and becomes the set pressure. If the set pressure rises too high, diaphragm A is pushed up, the interval between the flapper and the nozzle widens, the nozzle back pressure drops, the balance of diaphragms B and C is broken, the main valve closes, the exhaust valve opens and the excess pressure from the downstream side is discharged to the atmosphere. In this way fine pressure variations are detected by the nozzle/flapper type pilot mechanism, and precise pressure adjustment is performed.

### IR2120



### IR3120



## Replacement Parts

No.	Description	Material	IR10□0		IR20□0		IR30□0		IR2120		IR3120	
			Part no.	Qty.	Part no.	Qty.	Part no.	Qty.	Part no.	Qty.	Part no.	Qty.
1	Diaphragm assembly	NBR, other	P362010-1	1	P362020-2	1	P362020-2	1	P362020-13	1	P362020-13	1
2	Diaphragm assembly	NBR, other	P362010-2	1	P362020-5	1	P362030-1	1	P362020-5	1	P362030-1	1
3	Diaphragm	NBR, other	—	—	P36202019	1	—	—	P36202019	1	—	—
4	Valve	Stainless steel, NBR	P36201058	1	P36202068#1	1	—	—	P36202068#1	1	—	—
5	Valve	Brass, NBR	—	—	—	—	P36203009#1	1	—	—	P36203009#1	1
6	Valve	Brass, NBR	—	—	—	—	P36203010#1	1	—	—	P36203010#1	1
7	Damper	NBR, other	P36201021	1	P36202026	1	—	—	P36202026	1	—	—
8	O-ring	H-NBR	ø2.5 x 1.05	3	ø1.42 x 1.52	2	—	—	ø1.42 x 1.52	2	—	—
9	O-ring	NBR	—	—	ø4.5 x 1	3	ø4.5 x 1	1	ø4.5 x 1	3	ø4.5 x 1	1
10	O-ring	NBR	—	—	—	—	ø27.8 x 1.5	1	JISB2401P11	1	ø27.8 x 1.5	1
11	O-ring	NBR	—	—	—	—	—	—	—	—	JISB2401P5 Note 2)	1
12	O-ring	NBR	—	—	—	—	—	—	—	—	JISB2401P16 Note 2)	2
13	Seal (A)	NBR	—	—	—	—	P36203015	1	—	—	P36203015	1
14	Seal (B)	NBR	—	—	—	—	P36203016	3	—	—	P36203016	3
15	Fixed throttle	Stainless steel	P36202018	1	P36202018	1	P36203017	1	P36202018	1	P36203017	1

Repair kit no. (A set of above nos. ① to ⑮.)      KT-IR1000      KT-IR2000      KT-IR3000      KT-IR2120      KT-IR3120

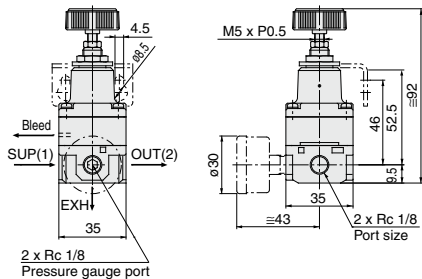
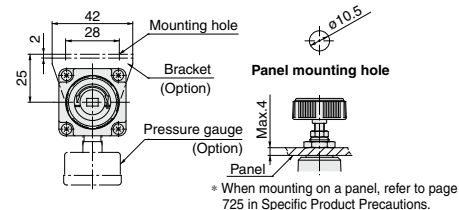
Note 1) The replacement parts are shipped with the repair kit number.  
 Note 2) Use mini-flick type.

ARJ  
 AR425 to 935  
 ARX  
 AMR  
 ARM  
 ARP  
**IR**  
 IRV  
 VEX  
 SRH  
 SRP  
 SRF  
 VCHR  
 ITV  
 IC  
 ITVX  
 PVQ  
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 VEP  
 VER  
 VEA  
 VY1  
 VBA  
 VBAT  
 AP100

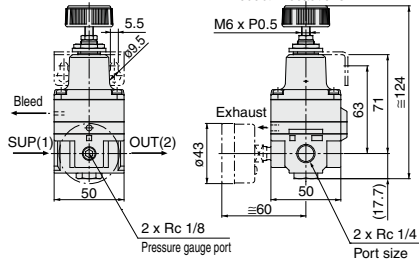
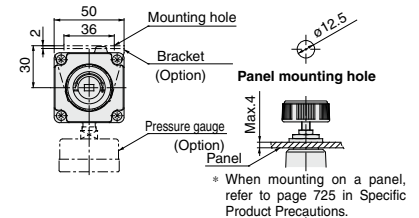
# Series IR1000/2000/3000

## Dimensions

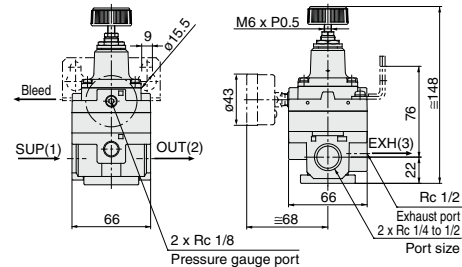
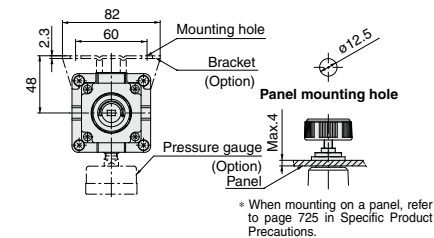
### IR10□0-01□



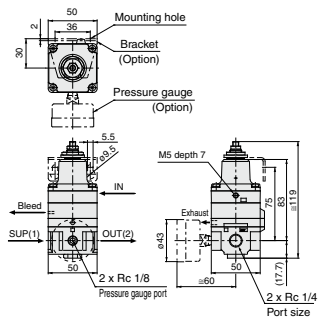
### IR20□0-02□



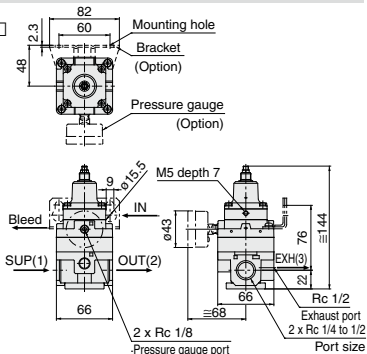
### IR30□0-0□□



### IR2120-02□



### IR3120-0□□





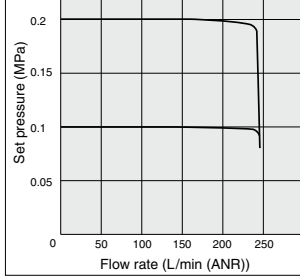
## Series IR1000

\* The operating conditions or external disturbance may affect each of the characteristics. So, the characteristic values shown below are not guaranteed.

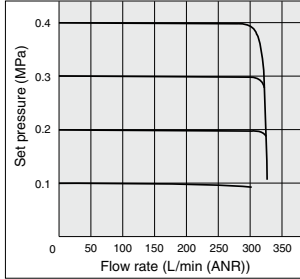
### Flow Characteristics

\* Testing methods conform to JIS B 8372.

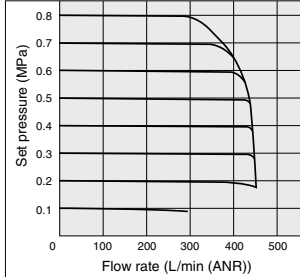
**IR1000-01** Supply pressure: 0.5 MPa



**IR1010-01** Supply pressure: 0.7 MPa

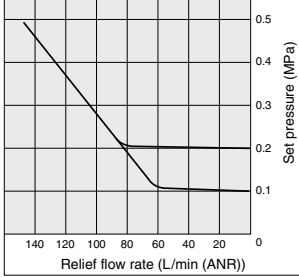


**IR1020-01** Supply pressure: 1.0 MPa

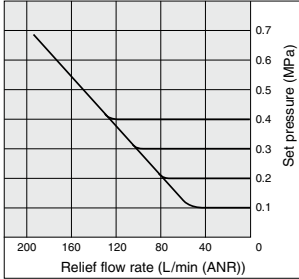


### Relief Characteristics

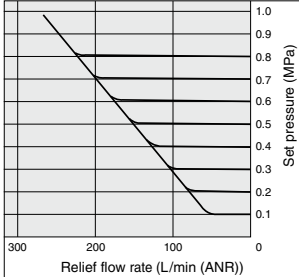
**IR1000-01** Back pressure: 0.5 MPa



**IR1010-01** Back pressure: 0.7 MPa



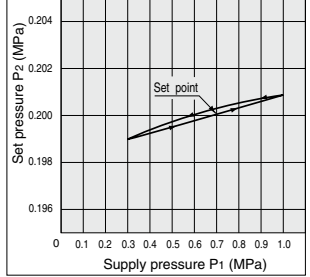
**IR1020-01** Back pressure: 1.0 MPa



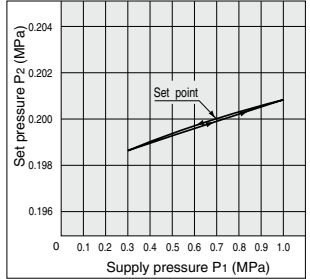
### Pressure Characteristics

Supply pressure: 0.7 MPa  
Set pressure: 0.2 MPa  
Flow rate: 0 L/min (ANR)

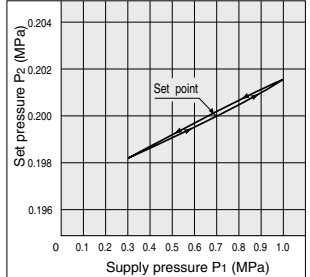
**IR1000-01**



**IR1010-01**



**IR1020-01**



ARJ

AR425  
to 935

ARX

AMR

ARM

ARP

IR

IRV

VEV

SRH

SRP

SRF

VCHR

ITV

IC

ITVX

PVQ

VEF  
VEP

VER

VEA

VY1

VBA  
VBAT

AP100

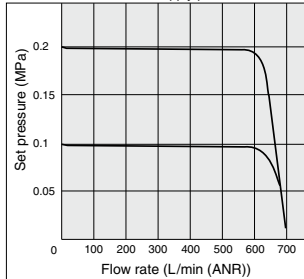
## Series IR2000

\* The operating conditions or external disturbance may affect each of the characteristics. So, the characteristic values shown below are not guaranteed.

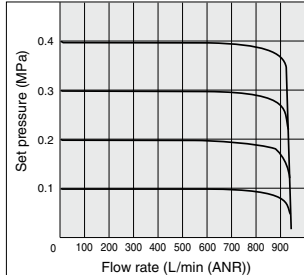
### Flow Characteristics

\* Testing methods conform to JIS B 8372.

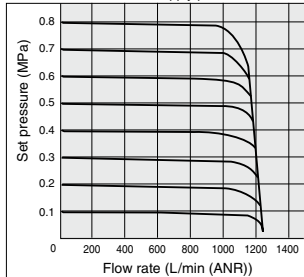
**IR2000-02** Supply pressure: 0.5 MPa



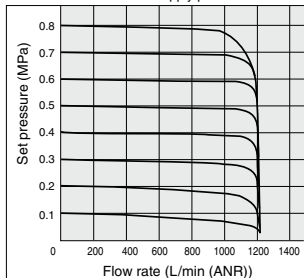
**IR2010-02** Supply pressure: 0.7 MPa



**IR2020-02** Supply pressure: 1.0 MPa

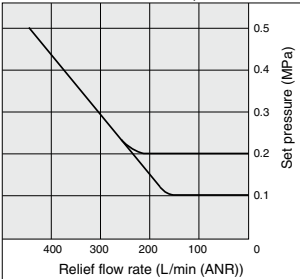


**IR2120-02** Supply pressure: 1.0 MPa

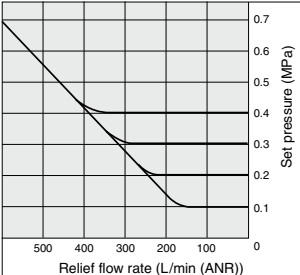


### Relief Characteristics

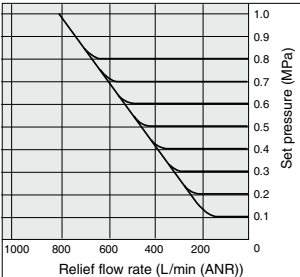
**IR2000-02** Back pressure: 0.5 MPa



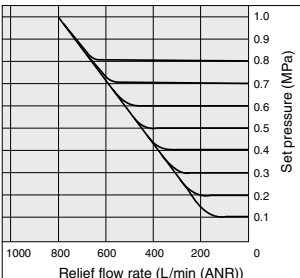
**IR2010-02** Back pressure: 0.7 MPa



**IR2020-02** Back pressure: 1.0 MPa

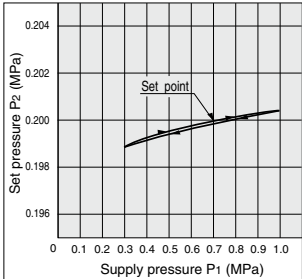


**IR2120-02** Back pressure: 1.0 MPa

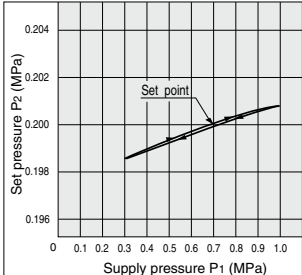


### Pressure Characteristics

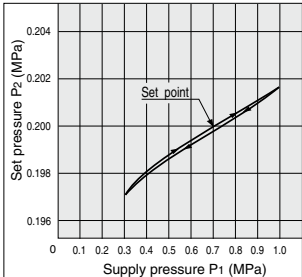
**IR2000-02** Supply pressure: 0.7 MPa  
Set pressure: 0.2 MPa  
Flow rate: 0 L/min (ANR)



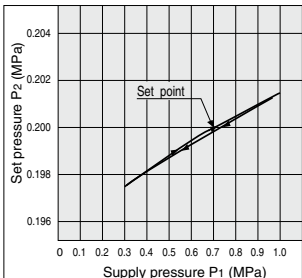
**IR2010-02**



**IR2020-02**



**IR2120-02**



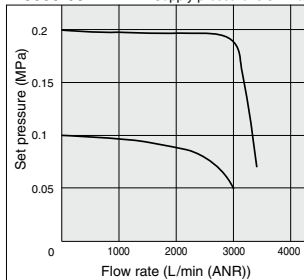
## Series IR3000

\* The operating conditions or external disturbance may affect each of the characteristics. So, the characteristic values shown below are not guaranteed.

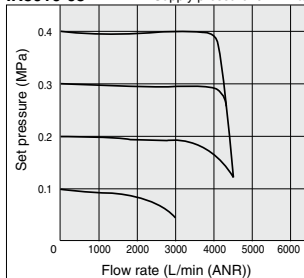
### Flow Characteristics

\* Testing methods conform to JIS B 8372.

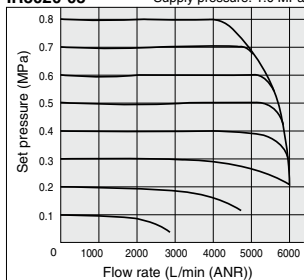
**IR3000-03** Supply pressure: 0.5 MPa



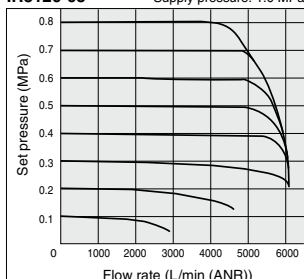
**IR3010-03** Supply pressure: 0.7 MPa



**IR3020-03** Supply pressure: 1.0 MPa

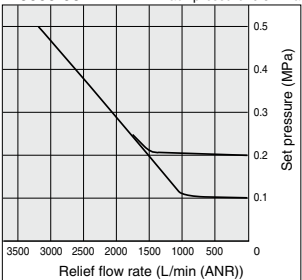


**IR3120-03** Supply pressure: 1.0 MPa

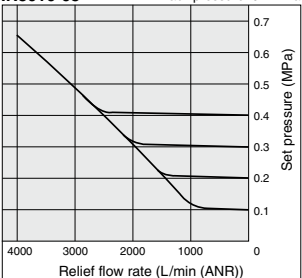


### Relief Characteristics

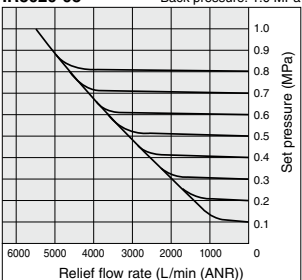
**IR3000-03** Back pressure: 0.5 MPa



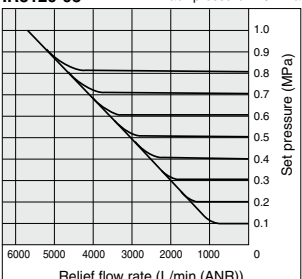
**IR3010-03** Back pressure: 0.7 MPa



**IR3020-03** Back pressure: 1.0 MPa



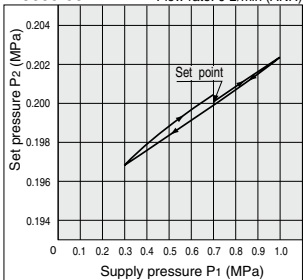
**IR3120-03** Back pressure: 1.0 MPa



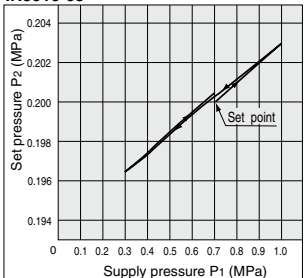
### Pressure Characteristics

Supply pressure: 0.7 MPa  
Set pressure: 0.2 MPa  
Flow rate: 0 L/min (ANR)

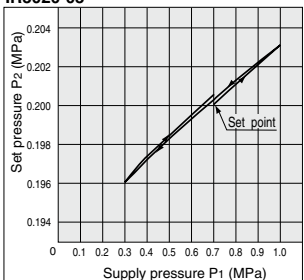
**IR3000-03**



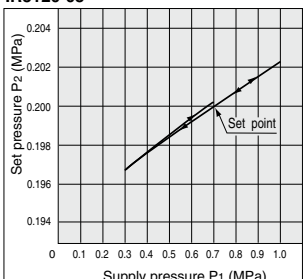
**IR3010-03**



**IR3020-03**



**IR3120-03**



ARJ

AR425  
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VEF

VEP

VER

VEA

VY1

VBA

VBAT

AP100

# Series IR1000/2000/3000

## Made to Order Specifications:

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



### 1 Clean Series

#### 10— Standard model no.

Note) Please contact SMC if a product with pressure gauge is desired.

#### ● Clean Series

#### Specifications

Cleanliness	Class 10000
Bleed hole	With M5 fitting (Applicable tubing O.D. ø6)
EXH port	IR1000/2000: With M5 fitting (Applicable tubing O.D. ø6) IR3000: Rc 1/2 female thread
Grease	Fluorine grease

### 2 Copper-free and Fluorine-free

External and internal copper parts are changed to stainless steel or aluminum.

#### 20— Standard model no.

Note) Please contact SMC if a product with pressure gauge is desired.

#### ● Copper-free and Fluorine-free

### 3 Ozone Resistant

Fluoro rubber is used for rubber seal materials.

#### 80— Standard model no.

#### ● Ozone resistant

### 4 For High/Low Temperature Environments

#### Standard model no. — T

#### ● For high/low temperature environments

T	For high temperature
L <sup>Note)</sup>	For low temperature

Note) Except IR1000 type. For IR3000 type, the combination of "L" and "X1" is not available.

#### Specifications

Symbol	T	L
Environment	For high temp. environments	For low temp. environments
Ambient temperature	-5 to 100°C	-30 to 60°C
Rubber material	Fluororubber	Special NBR

### 5 Non-grease Specifications

Assembly is performed in an ordinary environment without using grease. However, since parts are not washed, they are not completely oil-free.

#### Standard model no. — X1

#### ● Non-grease specifications

### 6 With Digital Pressure Switch

With digital pressure switch (model no: ISE30A-01-□-ML). Mount a digital pressure switch into the connection port for pressure gauge, as it is not mounted at the time of shipment.



#### Specifications

Made to order part no.	—X465□
Set pressure range (MPa)	-0.1 to 1
Resolution of setting and display (MPa)	0.001
Power supply voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With reverse connection protection)
Current consumption	40 mA or less

#### How to Order

#### Standard model no. <sup>Note)</sup> — X465 A

Note) Except for symbol "G"

Note 1) Please contact SMC separately for details about the external dimensions, etc.

Note 2) For details on handling digital pressure switch and specifications, refer to page 767 of Best Pneumatics No.6.

Note 3) Digital pressure switch is packed together.

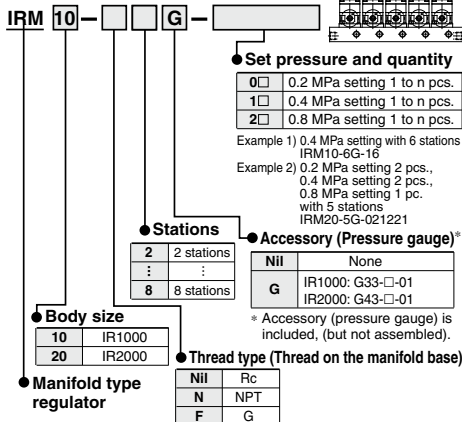
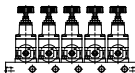
#### ● With digital pressure switch

#### ● Switch specifications

Symbol	Output specifications
A	NPN open collector 1 output
B	PNP open collector 1 output
C	NPN open collector 1 output + Analog voltage output
D	NPN open collector 1 output + Analog current output

### 7 Manifold Specifications (Except type IR2120 and series IR3000)

2 to 8 station manifold type regulators.  
(Please contact SMC regarding 9 or more stations.)



#### Specifications

Stations	2 to 8 stations
Port	Common SUP IR1000: 1/4, IR2000: 1/2
	Individual OUT IR1000: 1/8, IR2000: 1/4
	Individual EXH (From IR body)
Set pressure	0.2 MPa, 0.4 MPa and 0.8 MPa settings can be combined.
Accessory (Pressure gauge)	G33-□-01 (IR1000), G43-□-01 (IR2000)

Note 1) Regulators to be manifolded are counted starting from stations 1 on the left side with the OUT ports in front.

Note 2) When regulators with a different set pressure are manifolded, viewing OUT ports from front, the low pressure range is installed on the left side and high pressure range is on the right side. In case of the "Example 2)" above mentioned, stations 1 and 2 are of 0.2 MPa setting, stations 3 and 4 are of 0.4 MPa setting, and station 5 is of 0.8 MPa setting.

Note 3) Please consult with SMC when a blanking plate is needed.



# Series IR1000/2000/3000 Specific Product Precautions

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

## Air Supply

### Warning

1. If the drain removal from air filter and mist separator is missed, drain will be flown out to the outlet side and may result in a malfunction of the pneumatic equipment.

When removing drain is difficult, use of a filter with an auto-drain is recommended.

### Caution

1. If the supply pressure line contains drain or particulate, etc., the fixed throttle can become clogged leading to malfunction, and therefore, in addition to an air filter (SMC Series AF) be sure to use a mist separator (SMC Series AM, AFM).  
Refer to pages 2 and 3 regarding air quality.
2. Never use a lubricator on the supply side of the regulator, as this will positively cause the fixed throttle to become clogged and result in a malfunction. If lubrication is required for terminal devices, connect a lubricator on the output side of the regulator.

## Maintenance

### Warning

1. When the valve guide (refer to construction drawing on page 719) is to be removed during maintenance, first reduce the set pressure to "0" and completely shut off the supply pressure.
2. When a pressure gauge is to be mounted, remove the plug after reducing the set pressure to "0".

## Precautions for IR10□0 only

### Warning

1. When remounting the valve guide after removing it for maintenance, use a tightening torque of no more than 0.6 N·m.  
Since the valve guide on this product is made of resin, there is a danger of damage if tightened with a torque exceeding the prescribed value.

## Handling

### Caution

1. Do not apply force when transferring, mounting and dropping the regulator with a pressure gauge.  
This may cause misalignment of the pressure gauge pointer.

## Operation

### Caution

1. Do not use a precision regulator outside the range of its specifications as this can cause failure. (Refer to specifications.)
2. When mounting is performed, make connections while confirming port indications.
3. Screw a panel nut with the recommended proper torque when mounting onto a panel.  
Looseness or faulty sealing will occur if tightening torque is insufficient, while thread damage will result if the torque is excessive.

#### Recommended Proper Torque

(N·m)

IR1000	IR2000	IR3000
12.5	21	21

4. If a directional switching valve (solenoid valve, mechanical valve, etc.) is mounted on the supply side of the regulator and repeatedly switched ON and OFF, wear of the nozzle/flapper section will be accelerated and a discrepancy in the setting value may occur. Therefore, avoid using a directional switching valve on the supply side. In the event a directional switching valve will be used, install it on the output side of the regulator.
5. The accessory pressure gauge is supplied with the regulator in the unassembled status. Before using the regulator, be sure to install the pressure gauge at the gauge port of the regulator. At this time, the recommended tightening torque of the pressure gauge is 7 to 9 N·m.
6. Air is normally released from the bleed hole (the hole on the side of the body's mid-section). This is a necessary consumption of air based on the construction of the precision regulator, and is not an abnormality.
7. Make sure to tighten the lock nut after pressure adjustment.

## Precautions for IR30□0, IR3120 only

### Caution

1. The supply pressure is relatively high (approx. 0.5 MPa or more), the set pressure is low (approx. 0.1 MPa or less), and when operated with the output side released to the atmosphere, there may be pulsations in the setting pressure. In this kind of situation, operate with the supply pressure reduced as much as possible, or increase the set pressure somewhat and restrict the output line (add and adjust a stop valve, etc.).
2. The capacity of the output side is large, and when used for the purpose of a relief function, the exhaust sound will be loud when being relieved. Therefore, operate with a silencer (SMC Series AN) mounted on the exhaust port (EXH port). The connection is Rc 1/2.

## Precautions for IR2120, IR3120 (air operated type) only

### Caution

1. Since the output types of IR2120 and IR3120 are the same pressure as the input signal pressure, select a type of regulator (general purpose or precision type) for input signal pressure adjustment according to the application.
2. The screw on the topmost section is a zero point adjustment screw which is locked at the factory and requires no adjustment for operation.

ARJ

AR425  
to 935

ARX

AMR

ARM

ARP

IR

IRV

VEV

SRH

SRP

SRF

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ITV

IC

ITVX

PVQ

VEF  
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VER

VEA

VY1

VBA  
VBAT

AP100