<table>
<thead>
<tr>
<th>Series</th>
<th>Model</th>
<th>Regulating pressure range</th>
<th>Port size</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series IR1000</td>
<td>IR1000</td>
<td>0.005 to 0.2 MPa</td>
<td></td>
<td>717</td>
</tr>
<tr>
<td></td>
<td>IR1010</td>
<td>0.01 to 0.4 MPa</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IR1020</td>
<td>0.01 to 0.8 MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Series IR2000</td>
<td>IR2000</td>
<td>0.005 to 0.2 MPa</td>
<td></td>
<td>717</td>
</tr>
<tr>
<td></td>
<td>IR2010</td>
<td>0.01 to 0.4 MPa</td>
<td>1/4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IR2020</td>
<td>0.01 to 0.8 MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Series IR3000</td>
<td>IR3000</td>
<td>0.01 to 0.2 MPa</td>
<td></td>
<td>717</td>
</tr>
<tr>
<td></td>
<td>IR3010</td>
<td>0.01 to 0.4 MPa</td>
<td>1/4, 3/8, 1/2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IR3020</td>
<td>0.01 to 0.8 MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Series IR2000</td>
<td>IR2120</td>
<td>0.01 to 0.8 MPa</td>
<td>1/4</td>
<td>717</td>
</tr>
<tr>
<td>Series IR3000</td>
<td>IR3120</td>
<td>0.01 to 0.8 MPa</td>
<td>1/4, 3/8, 1/2</td>
<td>717</td>
</tr>
</tbody>
</table>
 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)

<table>
<thead>
<tr>
<th>Series Variations</th>
<th>Specifications/Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum set pressure</td>
<td>0.2 MPa</td>
</tr>
<tr>
<td>Port size</td>
<td>0.4 MPa</td>
</tr>
<tr>
<td></td>
<td>0.8 MPa</td>
</tr>
<tr>
<td></td>
<td>Rc 1/8</td>
</tr>
<tr>
<td></td>
<td>Rc 1/4</td>
</tr>
<tr>
<td></td>
<td>Rc 3/8</td>
</tr>
<tr>
<td></td>
<td>Rc 1/2</td>
</tr>
</tbody>
</table>

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**

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

**Contact pressure control**

- Winding roller
- Drive roller
- Low friction cylinder

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

**Leak test circuit**

- Measured object
# Precision Regulator

## Series IR1000/2000/3000

**RoHS**

### Standard Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Basic type</th>
<th>Air operated type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. supply pressure</td>
<td>Set pressure + 0.05 MPa</td>
<td>Set pressure + 0.1 MPa</td>
</tr>
<tr>
<td>Min. supply pressure</td>
<td>Set pressure + 0.05 MPa</td>
<td>Set pressure + 0.1 MPa</td>
</tr>
</tbody>
</table>

#### Regulating pressure range

<table>
<thead>
<tr>
<th>Pressure Type</th>
<th>IR1000: 0.005 to 0.2 MPa</th>
<th>IR2000: 0.005 to 0.2 MPa</th>
<th>IR3000: 0.01 to 0.8 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR1010:</td>
<td>0.01 to 0.4 MPa</td>
<td>0.01 to 0.4 MPa</td>
<td>0.01 to 0.4 MPa</td>
</tr>
<tr>
<td>IR1020:</td>
<td>0.01 to 0.8 MPa</td>
<td>0.01 to 0.8 MPa</td>
<td>0.01 to 0.8 MPa</td>
</tr>
<tr>
<td>IR2010:</td>
<td></td>
<td></td>
<td>0.01 to 0.4 MPa</td>
</tr>
<tr>
<td>IR2020:</td>
<td></td>
<td></td>
<td>0.01 to 0.8 MPa</td>
</tr>
<tr>
<td>IR3010:</td>
<td></td>
<td></td>
<td>0.01 to 0.4 MPa</td>
</tr>
<tr>
<td>IR3020:</td>
<td></td>
<td></td>
<td>0.01 to 0.8 MPa</td>
</tr>
</tbody>
</table>

#### Input signal pressure

<table>
<thead>
<tr>
<th>Pressure Type</th>
<th>0.01 to 0.8 MPa</th>
</tr>
</thead>
</table>

#### Sensitivity

<table>
<thead>
<tr>
<th>Pressure Type</th>
<th>Within 0.2% of full span</th>
</tr>
</thead>
</table>

#### Repeatability

<table>
<thead>
<tr>
<th>Pressure Type</th>
<th>Within ±0.5% of full span</th>
</tr>
</thead>
</table>

#### Linearity

<table>
<thead>
<tr>
<th>Pressure Type</th>
<th>Within ±1% of full span</th>
</tr>
</thead>
</table>

#### Air consumption

<table>
<thead>
<tr>
<th>Pressure Type</th>
<th>4.4 L/min (ANR) or less</th>
<th>11.5 L/min (ANR) or less</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR2000:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IR3000:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IR2010:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IR3010:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IR2020:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IR3020:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Port size

<table>
<thead>
<tr>
<th>Pressure Type</th>
<th>Rc 1/8, 3/8, 1/2</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR2000:</td>
<td>Rc 1/8</td>
</tr>
<tr>
<td>IR3000:</td>
<td>Rc 1/8, 3/8, 1/2</td>
</tr>
</tbody>
</table>

#### Ambient and fluid temperature

<table>
<thead>
<tr>
<th>Pressure Type</th>
<th>–5 to 60°C (No freezing)</th>
</tr>
</thead>
</table>

#### Weight (kg)

<table>
<thead>
<tr>
<th>Pressure Type</th>
<th>0.14</th>
<th>0.30</th>
<th>0.64</th>
<th>0.35</th>
<th>0.71</th>
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</thead>
<tbody>
<tr>
<td>IR1000:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IR2000:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IR3000:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes

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.

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

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

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

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

### How to Order

**Symbol Specifications/Content**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Specifications/Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>Non-grease specifications</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Specifications/Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>X170</td>
<td>Compatible with modular connection brackets (Refer to page 718)</td>
</tr>
<tr>
<td>X465</td>
<td>With digital pressure switch (ISE30A)</td>
</tr>
<tr>
<td>X207</td>
<td>Add prefix (20-) for the copper-free and fluorine-free specification.</td>
</tr>
<tr>
<td>X212</td>
<td>Add prefix (80-) for the ozone-resistant specification.</td>
</tr>
<tr>
<td>X408</td>
<td>Manifold specification is available for IR1000 and IR2000. (Except IR2120 and IR3000)</td>
</tr>
</tbody>
</table>

**Symbol**

- **IR**
- **2000**
- **02**
- **01**
- **03**
- **04**

**Body size**

1. IR1000
2. IR2000
3. IR3000

**Type of setting**

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

**Thread type**

- Nil
- Rc
- N
- NPT
- G

**Port size**

- Rc 1/8, 3/8, 1/2

**Accessory**

- Nil
- B
- G

*Pressure gauge is included, (but not assembled).
## Specification Combinations

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Symbol</th>
<th>IR1000</th>
<th>IR1010</th>
<th>IR1020</th>
<th>IR2000</th>
<th>IR2010</th>
<th>IR2020</th>
<th>IR2120</th>
<th>IR3000</th>
<th>IR3010</th>
<th>IR3020</th>
<th>IR3120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set pressure Max. 0.2 MPa</td>
<td>0</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
</tr>
<tr>
<td>Set pressure Max. 0.4 MPa</td>
<td>1</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
</tr>
<tr>
<td>Set pressure Max. 0.8 MPa</td>
<td>2</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
</tr>
<tr>
<td>Connection Rc 1/8</td>
<td>01</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Connection Rc 1/4</td>
<td>02</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
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<td>☐</td>
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<td>☐</td>
</tr>
<tr>
<td>Connection Rc 3/8</td>
<td>03</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
</tr>
<tr>
<td>Connection G 1/8</td>
<td>04</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Accessory</td>
<td></td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Pressure gauge</td>
<td>G</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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</tbody>
</table>

### Modular and Accessory Combinations

<table>
<thead>
<tr>
<th>Description</th>
<th>Applicable model</th>
<th>IR1000-X170</th>
<th>IR2000-X170</th>
<th>IR3000-X170</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Air filter</td>
<td></td>
<td>AF20</td>
<td>AF30</td>
<td>AF40</td>
</tr>
<tr>
<td>2. Mist separator</td>
<td></td>
<td>AFM20</td>
<td>AFM30</td>
<td>AFM40</td>
</tr>
<tr>
<td>3. Interface</td>
<td></td>
<td>Y200</td>
<td>Y300</td>
<td>Y400</td>
</tr>
<tr>
<td>4. Interface with bracket</td>
<td></td>
<td>Y200T</td>
<td>Y300T</td>
<td>Y400T</td>
</tr>
</tbody>
</table>

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

### Accessory (Option)/Part No.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket</td>
<td>P36201023</td>
</tr>
<tr>
<td></td>
<td>P36202028</td>
</tr>
<tr>
<td>Pressure gauge</td>
<td>P362030-20+1</td>
</tr>
</tbody>
</table>

+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 C. 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.

Replacement Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>IR1000</th>
<th>IR2000</th>
<th>IR3000</th>
<th>IR2120</th>
<th>IR3120</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Diaphragm assembly</td>
<td>NBR, other</td>
<td>P3620101-1</td>
<td>P362020-2</td>
<td>P362020-5</td>
<td>P362020-10</td>
<td>P362020-13</td>
</tr>
<tr>
<td>2</td>
<td>Diaphragm assembly</td>
<td>NBR, other</td>
<td>P362010-2</td>
<td>P362020-5</td>
<td>P362030-1</td>
<td>P362020-5</td>
<td>P362030-1</td>
</tr>
<tr>
<td>3</td>
<td>Diaphragm</td>
<td>NBR, other</td>
<td>—</td>
<td>—</td>
<td>P362020-11</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>4</td>
<td>Valve</td>
<td>Stainless steel, NBR</td>
<td>P36201058</td>
<td>P362020-68</td>
<td>—</td>
<td>—</td>
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<tr>
<td>5</td>
<td>Valve</td>
<td>Brass, NBR</td>
<td>—</td>
<td>—</td>
<td>P36203009</td>
<td>—</td>
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<tr>
<td>6</td>
<td>Valve</td>
<td>Brass, NBR</td>
<td>—</td>
<td>—</td>
<td>P36203010</td>
<td>—</td>
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<tr>
<td>7</td>
<td>Damper</td>
<td>NBR, other</td>
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<td>P362020-26</td>
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<tr>
<td>8</td>
<td>O-ring</td>
<td>H-NBR</td>
<td>ø2.5 x 1.05</td>
<td>ø1.42 x 1.52</td>
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<td>—</td>
<td>—</td>
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<tr>
<td>9</td>
<td>O-ring</td>
<td>NBR</td>
<td>—</td>
<td>ø4.5 x 3</td>
<td>P362020-11</td>
<td>—</td>
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<tr>
<td>10</td>
<td>O-ring</td>
<td>NBR</td>
<td>ø10 x 1.3</td>
<td>—</td>
<td>JISB2401P11</td>
<td>ø27.8 x 1.5</td>
<td>JISB2401P11</td>
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<td>11</td>
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<td>—</td>
<td>JISB2401P15</td>
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<td>—</td>
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<tr>
<td>12</td>
<td>O-ring</td>
<td>NBR</td>
<td>—</td>
<td>—</td>
<td>JISB2401P16</td>
<td>—</td>
<td>—</td>
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<tr>
<td>13</td>
<td>Seal (A)</td>
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<tr>
<td>14</td>
<td>Seal (B)</td>
<td>NBR</td>
<td>—</td>
<td>—</td>
<td>P36203016</td>
<td>—</td>
<td>—</td>
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<tr>
<td>15</td>
<td>Fixed throttle</td>
<td>Stainless steel</td>
<td>P36202018</td>
<td>P36202018</td>
<td>P36203017</td>
<td>P36202018</td>
<td>P36203017</td>
</tr>
</tbody>
</table>

Note 1) The replacement parts are shipped with the repair kit number.
Note 2) Use mini-flick type.
Series IR1000/2000/3000

Dimensions

IR10□-01□

- Mounting hole
- Bracket (Option)
- Panel mounting hole
- Pressure gauge (Option)
- Panel

* When mounting on a panel, refer to page 725 in Specific Product Precautions.

IR20□-02□

- Mounting hole
- Bracket (Option)
- Panel mounting hole
- Pressure gauge (Option)
- Panel

* When mounting on a panel, refer to page 725 in Specific Product Precautions.

IR30□-0□□

- Mounting hole
- Bracket (Option)
- Panel mounting hole
- Pressure gauge (Option)
- Panel

* When mounting on a panel, refer to page 725 in Specific Product Precautions.

IR2120-02□

- Mounting hole
- Bracket (Option)
- Pressure gauge (Option)

IR3120-□□

- Mounting hole
- Bracket (Option)
- Pressure gauge (Option)
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

<table>
<thead>
<tr>
<th>Model</th>
<th>Supply pressure (MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR1000-01</td>
<td>0.5 MPa</td>
</tr>
<tr>
<td>IR1010-01</td>
<td>0.7 MPa</td>
</tr>
<tr>
<td>IR1020-01</td>
<td>1.0 MPa</td>
</tr>
</tbody>
</table>

### Relief Characteristics

<table>
<thead>
<tr>
<th>Model</th>
<th>Back pressure (MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR1000-01</td>
<td>0.5 MPa</td>
</tr>
<tr>
<td>IR1010-01</td>
<td>0.7 MPa</td>
</tr>
<tr>
<td>IR1020-01</td>
<td>1.0 MPa</td>
</tr>
</tbody>
</table>

### Pressure Characteristics

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

---

**Note:** Testing methods conform to JIS B 8372.

---

<table>
<thead>
<tr>
<th>Model</th>
<th>Supply pressure P1 (MPa)</th>
<th>Supply pressure P2 (MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR1000-01</td>
<td>0.7 MPa</td>
<td>1.0 MPa</td>
</tr>
<tr>
<td>IR1010-01</td>
<td>0.7 MPa</td>
<td>1.0 MPa</td>
</tr>
<tr>
<td>IR1020-01</td>
<td>1.0 MPa</td>
<td>2.0 MPa</td>
</tr>
</tbody>
</table>
Series **IR1000/2000/3000**

**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

<table>
<thead>
<tr>
<th>IR2000-02</th>
<th>Supply pressure: 0.5 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="flow1.png" alt="" /></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IR2010-02</th>
<th>Supply pressure: 0.7 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="flow2.png" alt="" /></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IR2020-02</th>
<th>Supply pressure: 1.0 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="flow3.png" alt="" /></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IR2120-02</th>
<th>Supply pressure: 1.0 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="flow4.png" alt="" /></td>
<td></td>
</tr>
</tbody>
</table>

### Relief Characteristics

<table>
<thead>
<tr>
<th>IR2000-02</th>
<th>Back pressure: 0.5 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="relief1.png" alt="" /></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IR2010-02</th>
<th>Back pressure: 0.7 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="relief2.png" alt="" /></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IR2020-02</th>
<th>Back pressure: 1.0 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="relief3.png" alt="" /></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IR2120-02</th>
<th>Back pressure: 1.0 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="relief4.png" alt="" /></td>
<td></td>
</tr>
</tbody>
</table>

### Pressure Characteristics

<table>
<thead>
<tr>
<th>IR2000-02</th>
<th>Supply pressure: 0.7 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="pressure1.png" alt="" /></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IR2010-02</th>
<th>Back pressure: 0.7 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="pressure2.png" alt="" /></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IR2020-02</th>
<th>Back pressure: 1.0 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="pressure3.png" alt="" /></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IR2120-02</th>
<th>Back pressure: 1.0 MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="pressure4.png" alt="" /></td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Model</th>
<th>Supply pressure (MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR3000-03</td>
<td>0.5</td>
</tr>
<tr>
<td>IR3010-03</td>
<td>0.7</td>
</tr>
<tr>
<td>IR3020-03</td>
<td>1.0</td>
</tr>
</tbody>
</table>

### Relief Characteristics

<table>
<thead>
<tr>
<th>Model</th>
<th>Back pressure (MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR3000-03</td>
<td>0.5</td>
</tr>
<tr>
<td>IR3010-03</td>
<td>0.7</td>
</tr>
<tr>
<td>IR3120-03</td>
<td>1.0</td>
</tr>
</tbody>
</table>

### Pressure Characteristics

<table>
<thead>
<tr>
<th>Model</th>
<th>Set pressure (MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR3000-03</td>
<td>0.5</td>
</tr>
<tr>
<td>IR3010-03</td>
<td>0.7</td>
</tr>
<tr>
<td>IR3120-03</td>
<td>1.0</td>
</tr>
</tbody>
</table>

**Testing methods conform to JIS B 8372.**
**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)
- **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**: For low temperature

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

**Specifications**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Environment</th>
<th>Ambient temperature</th>
<th>Rubber material</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>For high temp. environments</td>
<td>–5 to 100°C (Max. 80°C with pressure gauge)</td>
<td>Fluororubber</td>
</tr>
<tr>
<td>L</td>
<td>For low temp. environments</td>
<td>–30 to 60°C</td>
<td>Special NBR</td>
</tr>
</tbody>
</table>

5 Non-grease Specifications

Assembly is performed in an ordinary environment without using grease. However, since parts are not washed, they are not completely grease-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-
- **Pressure switch**: 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.**: — **X465**

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.

7 Manifold Specifications (Except type IR2120 and series IR3000)

2 to 8 station manifold type regulators.

( Please contact SMC regarding 9 or more stations.)

**Standard model no.:** — **T**

**IRM 10 G**

**Set pressure and quantity**

- **0**: 0.2 MPa setting 1 to n pcs.
- **1**: 0.4 MPa setting 1 to n pcs.
- **2**: 0.8 MPa setting 1 to n pcs.

**Example 1)** 0.4 MPa setting with 6 stations IRM10-6G-16

**Example 2)** 0.2 MPa setting 2 pcs., 0.4 MPa setting 2 pcs., 0.8 MPa setting 1 pc. with 5 stations IRM20-5G-021221

**Stations**

- **2**: 2 stations
- **8**: 8 stations

**Body size**

- **10 IR1000**
- **20 IR2000**

**Thread type (Thread on the manifold base)**

**Nil**

**N**

**NPT**

**F**

**G**

**Manifold type regulator**

**Nil**

**Rc**

**None**

**Accessory (Pressure gauge)**

**Nil**

**G**

**IR1000: G33-01**

**IR2000: G43-01**

**IR3000: Rc 1/2 female thread**

**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.

### Warning

1. **Caution**
   - 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.

2. **Caution**
   - 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.

3. **Precautions for IR10□0 only**
   - **Warning**
     - 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.

4. **Caution**
   - Do not use a precision regulator outside the range of its specifications as this can cause failure. (Refer to specifications.)
   - When mounting is performed, make connections while confirming port indications.
   - 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.

5. **Recommended Proper Torque (N·m)***
   - IR1000: 12.5
   - IR2000: 21
   - IR3000: 21

6. **Precautions for IR30□0, IR3120 only**
   - **Warning**
     - 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.

7. **Caution**
   - 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.).
   - 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.

8. **Caution**
   - 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.
   - The screw on the topmost section is a zero point adjustment screw which is locked at the factory and requires no adjustment for operation.
**Precision Regulator**

**Reduced by**

**Up to approx. 90%**

<table>
<thead>
<tr>
<th>New IR</th>
<th>Current model</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.04 [1] or less</td>
<td>0.16 [4.4]</td>
<td>IR1000-A/IR2000-A</td>
</tr>
<tr>
<td>0.04 [1] or less</td>
<td>0.41 [11.5]</td>
<td>IR3000-A</td>
</tr>
</tbody>
</table>

* Compared with the current IR1000/2000/3000

**High flow rate**

**Up to approx. twice**

<table>
<thead>
<tr>
<th>New IR</th>
<th>Current model</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.4 [720]</td>
<td>11.3 [320]</td>
<td>IR1000-A</td>
</tr>
<tr>
<td>67.1 [1900]</td>
<td>33.2 [940]</td>
<td>IR2000-A</td>
</tr>
</tbody>
</table>

* Compared with the current IR1000/2000

**Lightweight**

**Reduced by up to approx. 27%**

<table>
<thead>
<tr>
<th>New IR</th>
<th>Current model</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.13</td>
<td>0.14</td>
<td>IR1000-A</td>
</tr>
<tr>
<td>0.23</td>
<td>0.30</td>
<td>IR2000-A</td>
</tr>
<tr>
<td>0.47</td>
<td>0.64</td>
<td>IR3000-A</td>
</tr>
</tbody>
</table>

* Compared with the current IR1000/2000/3000

**Space saving**

New structure without fixed throttle does not require a mist separator.

**Reduced by**

**Digital pressure switch standardized**

**Sensitivity:** 0.2% (Full span)

**Repeatability:** ±0.5% (Full span)

**Series** **IR1000-A/2000-A/3000-A**

**CAT.NAS60-22A**
Reduction in air consumption

Air consumption is reduced with a new original structure.

With this new original structure, running costs are reduced.

No fixed throttle in the new design.

- Poor quality of air may cause operation failure. Select a model that is suitable for the desired air cleanliness by referring to “Air Preparation Equipment Model Selection Guide” (Best Pneumatics No. 5) for air quality.

Flow rate: Up to approx. twice (Compared to the current SMC product)

<table>
<thead>
<tr>
<th>Current model</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.3 [320]</td>
<td>IR1000-A</td>
</tr>
<tr>
<td>33.2 [940]</td>
<td>IR2000-A</td>
</tr>
<tr>
<td>25.4 [720]</td>
<td>IR1010-A</td>
</tr>
<tr>
<td>67.1 [1900]</td>
<td>IR1000-A</td>
</tr>
<tr>
<td>33.2 [940]</td>
<td>IR2000-A</td>
</tr>
</tbody>
</table>

Supply pressure: 102 psi [0.7 MPa]
**Exhaust (EXH) directions can be selected.** (Series IR3000-A)

New IR can be used between a cylinder and solenoid valve.

Sensitivity: 0.2% (Full span)
Repeatability: ±0.5% (Full span)

Mounting is interchangeable with the current SMC model.

Hexagon panel nut mounting
* Interchangeable with the current SMC product

Weight
Reduced up to approx. 27% [kg]

<table>
<thead>
<tr>
<th>New IR</th>
<th>Current model</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.13</td>
<td>0.14</td>
<td>IR1000-A</td>
</tr>
<tr>
<td>0.23</td>
<td>0.30</td>
<td>IR2000-A</td>
</tr>
<tr>
<td>0.47</td>
<td>0.64</td>
<td>IR3000-A</td>
</tr>
</tbody>
</table>

Not) The set pressure may vary depending on the elapsed time and change in ambient temperature after pressure setting. If the setting value varies, adjust the pressure with the knob.
**Application Examples**

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

- **TANK**

- **Balance and drive**
  - Accurate balance pressure setting
  - Note)
  - 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
  - Note)
  - Adapts to the cylinder's piston displacement, maintaining a constant pressure.

- **Multistage control of pressing force for workpiece**
  - (Wrapping machine)
  - Note)

- **Contact pressure control**
  - Note)

- **Leak test circuit**
  - Note)

- **Residual pressure relief**
  - Note)
  - Residual pressure is exhausted by relief function.

- **Usage between a cylinder and solenoid valve**
  - Note)
  - It can be used between a cylinder and solenoid valve.

---

**Precision Regulator Series IR1000-A/2000-A/3000-A**

**Series Variations**

<table>
<thead>
<tr>
<th>Model</th>
<th>Pressure Range (psi)</th>
<th>Pressure Range (MPa)</th>
<th>Port Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR1000-A</td>
<td>0.73 to 29</td>
<td>[0.005 to 0.2]</td>
<td>1/8</td>
</tr>
<tr>
<td>IR1010-A</td>
<td>1.5 to 58</td>
<td>[0.01 to 0.4]</td>
<td></td>
</tr>
<tr>
<td>IR1020-A</td>
<td>1.5 to 116</td>
<td>[0.01 to 0.8]</td>
<td></td>
</tr>
<tr>
<td>IR2000-A</td>
<td>0.73 to 29</td>
<td>[0.005 to 0.2]</td>
<td>1/4, 3/8, 1/2</td>
</tr>
<tr>
<td>IR2010-A</td>
<td>1.5 to 58</td>
<td>[0.01 to 0.4]</td>
<td></td>
</tr>
<tr>
<td>IR2020-A</td>
<td>1.5 to 116</td>
<td>[0.01 to 0.8]</td>
<td></td>
</tr>
<tr>
<td>IR3000-A</td>
<td>1.5 to 29</td>
<td>[0.01 to 0.2]</td>
<td>1/4, 3/8, 1/2</td>
</tr>
<tr>
<td>IR3010-A</td>
<td>1.5 to 58</td>
<td>[0.01 to 0.4]</td>
<td></td>
</tr>
<tr>
<td>IR3020-A</td>
<td>1.5 to 116</td>
<td>[0.01 to 0.8]</td>
<td></td>
</tr>
</tbody>
</table>
Adjustment of blow-line pressure  Note)

Outlet pressure is less affected by fluctuation of inlet pressure. New IR offers consistent pressure control.

Note) The set pressure may vary depending on the elapsed time and change in ambient temperature after pressure setting. If the setting value varies, adjust the pressure with the knob.

### Series Variations

<table>
<thead>
<tr>
<th>Series</th>
<th>Model</th>
<th>Set pressure range psi (MPa)</th>
<th>Port size</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR1000-A</td>
<td>IR1000-A</td>
<td>0.73 to 29 [0.005 to 0.2]</td>
<td>1/8</td>
</tr>
<tr>
<td></td>
<td>IR1010-A</td>
<td>1.5 to 58 [0.01 to 0.4]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IR1020-A</td>
<td>1.5 to 116 [0.01 to 0.8]</td>
<td></td>
</tr>
<tr>
<td>IR2000-A</td>
<td>IR2000-A</td>
<td>0.73 to 29 [0.005 to 0.2]</td>
<td>1/4</td>
</tr>
<tr>
<td></td>
<td>IR2010-A</td>
<td>1.5 to 58 [0.01 to 0.4]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IR2020-A</td>
<td>1.5 to 116 [0.01 to 0.8]</td>
<td></td>
</tr>
<tr>
<td>IR3000-A</td>
<td>IR3000-A</td>
<td>1.5 to 29 [0.01 to 0.2]</td>
<td>1/4, 3/8, 1/2</td>
</tr>
<tr>
<td></td>
<td>IR3010-A</td>
<td>1.5 to 58 [0.01 to 0.4]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IR3020-A</td>
<td>1.5 to 116 [0.01 to 0.8]</td>
<td></td>
</tr>
</tbody>
</table>
Precision Regulator
Series IR1000-A/2000-A/3000-A

Standard Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Basic type (Knob)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IR100-A</td>
</tr>
<tr>
<td>Fluid</td>
<td>Air</td>
</tr>
<tr>
<td>Proof pressure</td>
<td>218 psi [1.5 MPa]</td>
</tr>
<tr>
<td>Max. supply pressure</td>
<td>145 psi [1.0 MPa]</td>
</tr>
<tr>
<td>Min. supply pressure</td>
<td>Note 1)</td>
</tr>
<tr>
<td>Set pressure range [psi [MPa]]</td>
<td>IR1000-A: 0.73 to 29 [0.005 to 0.2]</td>
</tr>
<tr>
<td>IR1010-A: 1.5 to 58 [0.01 to 0.4]</td>
<td>IR2010-A: 1.5 to 58 [0.01 to 0.4]</td>
</tr>
<tr>
<td>IR1020-A: 1.5 to 116 [0.01 to 0.8]</td>
<td>IR2020-A: 1.5 to 116 [0.01 to 0.8]</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>Within 0.2% of full span</td>
</tr>
<tr>
<td>Repeatability</td>
<td>Note 2)</td>
</tr>
<tr>
<td>Air consumption</td>
<td>Note 3)</td>
</tr>
<tr>
<td>Port size</td>
<td>1/8</td>
</tr>
<tr>
<td>Pressure gauge port</td>
<td>1/8 (2 locations)</td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>Note 4)</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Note 1) When there is no flow rate on the outlet.
Note 2) Other characteristics such as aging deterioration and temperature characteristics are not included.
Note 3) Measuring conditions: supply pressure 145 psi [1.0 MPa], set pressure 29 psi [0.2 MPa].
Note 4) 23 to 140°F [−5 to 60°C] for the products with the digital pressure switch.
Note 5) Without accessories.

Modular Products and Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>IR100-A</th>
<th>IR200-A</th>
<th>IR300-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket assembly</td>
<td>Note 1)</td>
<td>IR10P-501AS</td>
<td>IR20P-501AS</td>
</tr>
<tr>
<td>Hexagon panel nut</td>
<td>IR10P-600S</td>
<td>IR20P-600S</td>
<td>IR30P-600S</td>
</tr>
<tr>
<td>Round type pressure gauge</td>
<td>Note 2)</td>
<td>0.2 MPa setting</td>
<td>G33-2-□01</td>
</tr>
<tr>
<td></td>
<td>0.4 MPa setting</td>
<td>G33-4-□01</td>
<td>G43-4-□01</td>
</tr>
<tr>
<td></td>
<td>0.8 MPa setting</td>
<td>G33-10-□01</td>
<td>G43-10-□01</td>
</tr>
<tr>
<td>Digital pressure switch</td>
<td>Note 3)</td>
<td>NPN 1 output</td>
<td>ISE30A-□01-N-ML</td>
</tr>
<tr>
<td></td>
<td>PNP 1 output</td>
<td>ISE30A-□01-P-ML</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NPN 1 output/ Voltage output</td>
<td>ISE30A-□01-C-ML</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NPN 1 output/ Current output</td>
<td>ISE30A-□01-D-ML</td>
<td></td>
</tr>
</tbody>
</table>

Note 1) This is an assembly of the bracket and resin panel nut.
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.
A 1.0 MPa pressure gauge is fitted for 0.8 MPa setting. Please contact SMC regarding the supply of pressure gauge with psi unit specifications.
Note 3) □ in part numbers for a digital pressure switch indicates a type of connection thread. No indication is necessary for R; however, indicate N for NPT. For details on handling digital pressure switch and specifications, refer to the WEB catalog or the Best Pneumatics No. 6. Please contact SMC regarding the supply of digital pressure switch with unit conversion function.

Refer to the WEB catalog for details of the modular applicable products and accessories. The former modular and mounting brackets can be used.
## How to Order

**Series IR1000-A/2000-A/3000-A**

### Symbol Description

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body size</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set pressure range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.73 to 29 psi (0.005 to 0.2 MPa)</td>
</tr>
<tr>
<td>1</td>
<td>1.5 to 58 psi (0.01 to 0.4 MPa)</td>
</tr>
<tr>
<td>2</td>
<td>1.5 to 116 psi (0.01 to 0.8 MPa)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exhaust direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Bottom exhaust</td>
</tr>
<tr>
<td>1</td>
<td>Front exhaust</td>
</tr>
<tr>
<td>2</td>
<td>Rear exhaust</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pipe thread type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nill</td>
<td>Rc</td>
</tr>
<tr>
<td>N</td>
<td>NPT</td>
</tr>
<tr>
<td>F</td>
<td>G</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Port size</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>1/8</td>
</tr>
<tr>
<td>02</td>
<td>1/4</td>
</tr>
<tr>
<td>03</td>
<td>3/8</td>
</tr>
<tr>
<td>04</td>
<td>1/2</td>
</tr>
</tbody>
</table>

### Option/Semi-standard

- **Option Note 1:** Select one each for a to f.
- **Option/Semi-standard symbol:** When more than one specification is required, indicate in alphanumeric order.

### Order Format

**IR** 1 0 0 0 - 01 BG - A

### Notes

- **Note 1:** Options are shipped together with the product, but not assembled. B and H cannot be selected at the same time. The current bracket cannot be used for this product.
- **Note 2:** Assembly of a bracket and set nuts.
- **Note 3:** See pressure unit table below.
- **Note 4:** For pipe thread type: NPT
- **Note 5:** For options: EA, EB, EC, ED
- **Note 6:** According to the new Measurement Law, only the SI unit type is provided for use in Japan.
### Series IR1000-A/2000-A/3000-A

#### Flow-rate Characteristics

**IR1020-01-A**
Supply pressure: 102 psi [0.7 MPa]

![Flow-rate Characteristics Graph](image)

#### Relief Characteristics

**IR1020-01-A**
Back pressure: 102 psi [0.7 MPa]

![Relief Characteristics Graph](image)

#### Pressure Characteristics

**IR1000-A**
Supply pressure: 44 to 145 psi [0.3 to 1.0 MPa]
Set pressure: 29 psi [0.2 MPa]
Flow rate: 0 L/min (ANR)

![Pressure Characteristics Graph](image)

**IR1020-A**
Supply pressure: 44 to 145 psi [0.3 to 1.0 MPa]
Set pressure: 29 psi [0.2 MPa]
Flow rate: 0 L/min (ANR)

![Pressure Characteristics Graph](image)

**IR1010-A**
Supply pressure: 44 to 145 psi [0.3 to 1.0 MPa]
Set pressure: 29 psi [0.2 MPa]
Flow rate: 0 L/min (ANR)

![Pressure Characteristics Graph](image)

* The data shown below are representative values, and are not guaranteed.

---

**Series IR1000-A**

The data shown below are representative values, and are not guaranteed.
Series IR2000-A

**Flow-rate Characteristics**

<table>
<thead>
<tr>
<th>IR2020-02-A</th>
<th>Supply pressure: 102 psi [0.7 MPa]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set pressure [psi] [MPa]</td>
<td>Flow rate scfm [L/min (ANR)]</td>
</tr>
<tr>
<td>102 [0.7]</td>
<td>0</td>
</tr>
<tr>
<td>87 [0.6]</td>
<td>18</td>
</tr>
<tr>
<td>73 [0.5]</td>
<td>35</td>
</tr>
<tr>
<td>58 [0.4]</td>
<td>53</td>
</tr>
<tr>
<td>44 [0.3]</td>
<td>71</td>
</tr>
<tr>
<td>29 [0.2]</td>
<td>15</td>
</tr>
<tr>
<td>15 [0.1]</td>
<td>0</td>
</tr>
</tbody>
</table>

**Relief Characteristics**

<table>
<thead>
<tr>
<th>IR2020-02-A</th>
<th>Back pressure: 102 psi [0.7 MPa]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set pressure [psi] [MPa]</td>
<td>Flow rate scfm [L/min (ANR)]</td>
</tr>
<tr>
<td>102 [0.7]</td>
<td>0</td>
</tr>
<tr>
<td>87 [0.6]</td>
<td>1000</td>
</tr>
<tr>
<td>73 [0.5]</td>
<td>1500</td>
</tr>
<tr>
<td>58 [0.4]</td>
<td>2000</td>
</tr>
<tr>
<td>44 [0.3]</td>
<td>35</td>
</tr>
<tr>
<td>29 [0.2]</td>
<td>11</td>
</tr>
<tr>
<td>15 [0.1]</td>
<td>0</td>
</tr>
</tbody>
</table>

**Pressure Characteristics**

<table>
<thead>
<tr>
<th>IR2000-A</th>
<th>Supply pressure: 44 to 145 psi [0.3 to 1.0 MPa]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set pressure [psi] [MPa]</td>
<td>Supply pressure psi [MPa]</td>
</tr>
<tr>
<td>30.5 [0.210]</td>
<td>29</td>
</tr>
<tr>
<td>29.7 [0.205]</td>
<td>44</td>
</tr>
<tr>
<td>29.0 [0.200]</td>
<td>58</td>
</tr>
<tr>
<td>28.3 [0.195]</td>
<td>73</td>
</tr>
<tr>
<td>27.6 [0.190]</td>
<td>87</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IR2010-A</th>
<th>Supply pressure: 44 to 145 psi [0.3 to 1.0 MPa]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set pressure [psi] [MPa]</td>
<td>Supply pressure psi [MPa]</td>
</tr>
<tr>
<td>30.5 [0.210]</td>
<td>29</td>
</tr>
<tr>
<td>29.7 [0.205]</td>
<td>44</td>
</tr>
<tr>
<td>29.0 [0.200]</td>
<td>58</td>
</tr>
<tr>
<td>28.3 [0.195]</td>
<td>73</td>
</tr>
<tr>
<td>27.6 [0.190]</td>
<td>87</td>
</tr>
</tbody>
</table>

The data shown below are representative values, and are not guaranteed.

Supply pressure: 44 to 145 psi [0.3 to 1.0 MPa]  
Set pressure: 29 psi [0.2 MPa]  
Flow rate: 0 L/min (ANR)
Series IR1000-A/2000-A/3000-A

Flow-rate Characteristics

IR3020-04-A  Supply pressure: 102 psi (0.7 MPa)

<table>
<thead>
<tr>
<th>Set pressure psi [MPa]</th>
<th>102 [0.7]</th>
<th>87 [0.6]</th>
<th>73 [0.5]</th>
<th>60 [0.4]</th>
<th>44 [0.3]</th>
<th>29 [0.2]</th>
<th>15 [0.1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate scfm [L/min (ANR)]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Relief Characteristics

IR3020-04-A  Supply pressure: 102 psi (0.7 MPa)

<table>
<thead>
<tr>
<th>Set pressure psi [MPa]</th>
<th>102 [0.7]</th>
<th>87 [0.6]</th>
<th>73 [0.5]</th>
<th>60 [0.4]</th>
<th>44 [0.3]</th>
<th>29 [0.2]</th>
<th>15 [0.1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate scfm [L/min (ANR)]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pressure Characteristics

IR3000-A  Supply pressure: 44 to 145 psi [0.3 to 1.0 MPa]
Set pressure: 29 psi [0.2 MPa]
Flow rate: 0 L/min (ANR)

IR3020-A  Supply pressure: 44 to 145 psi [0.3 to 1.0 MPa]
Set pressure: 29 psi [0.2 MPa]
Flow rate: 0 L/min (ANR)

IR3010-A  Supply pressure: 44 to 145 psi [0.3 to 1.0 MPa]
Set pressure: 29 psi [0.2 MPa]
Flow rate: 0 L/min (ANR)

* The data shown below are representative values, and are not guaranteed.
Construction

Basic type (Knob): IR20-A

Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>IR1000-A</th>
<th>IR2000-A</th>
<th>IR3000-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bonnet</td>
<td>Aluminum die-casted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Nozzle diaphragm assembly</td>
<td>Aluminum, Weather resistant NBR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Seal</td>
<td>HNBR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Seal</td>
<td>NBR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Diaphragm spacer</td>
<td>Polycetal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Supply diaphragm</td>
<td>Weather resistant NBR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Exhaust diaphragm assembly</td>
<td>Steel, Aluminum, Weather resistant NBR</td>
<td>Aluminum, Weather resistant NBR, HNBR</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Valve assembly</td>
<td>Stainless steel, Aluminum, HNBR</td>
<td>Aluminum, HNBR</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Body</td>
<td>Aluminum die-casted</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Working principle
When the knob is rotated, the flapper is pushed through the spring, and a gap is generated between the nozzle and flapper. The supply pressure flows to the inlet passes through the path between the nozzle and flapper and acts on the supply diaphragm as nozzle back pressure. The force generated by the diaphragm pushes down the valve, and the supply pressure flows to the outlet. The discharged air pressure acts on the exhaust diaphragm, and counteracts against the force generated by the supply diaphragm. The air pressure acts on the nozzle diaphragm at the same time, and counteracts against the compression force of the spring to adjust the set pressure. When the set pressure increases too much, the nozzle diaphragm is pushed up, and a gap is generated between the flapper and nozzle diaphragm after the flapper is closed. The balance of the supply diaphragm and exhaust diaphragm is lost when the nozzle back pressure flows into the atmosphere. The exhaust valve is open after the valve is closed, and excess pressure on the outlet is released to the air. Due to this pilot mechanism, fine pressure variations are detected and precise pressure adjustment is possible.
Series IR1000-A/2000-A/3000-A

Construction

Basic type (Knob): IR10□0-A

Basic type (Knob): IR30□0-A

Basic type (Knob): IR30□1⁄2-A
Dimensions

Basic type (Knob): IR10□0-01□-A

When connecting to the EXH port, contact your SMC sales representative separately.

With digital pressure switch: IR10□0-01□E□-A
### Series IR1000-A/2000-A/3000-A

#### Dimensions

**Basic type (Knob): IR20□-02□-A**

When connecting to the EXH port, contact your SMC sales representative separately.

**With digital pressure switch: IR20□-02□E□-A**
Dimensions

Basic type (Knob): IR30□-0-□□-A

With digital pressure switch: IR30□-0-□□-E□-A

Pressure gauge (Option)
Bracket (Option)
Mounting hole for hexagon panel nut
Mounting hole
Pressure gauge port
IN OUT

2 x 1/8
Port size

M12 x 1
M28 x 1.5

2 x 1/4 to 1/2
Port size

EXH

Bracket

Mounting hole for hexagon panel nut

BLEED

Pressure gauge port

2 x 1/8

Port size

EXH

Bracket
**Series IR1000-A/2000-A/3000-A**

**Dimensions**

**Basic type (Knob): IR30 3/4-0□□-A**

- **Bracket (Option)**
- **Pressure gauge (Option)**

**With digital pressure switch: IR30 3/4-0□□E□□-A**

- **Bracket**
- **Mounting hole for hexagon panel nut**
- **Mounting hole**
- **Pressure gauge port**
- **Port size**: 2 x 1/8
- **Pressure gauge port**: ø12.5
- **Mounting hole for hexagon panel nut**: Ø12.5

**Dimensions**

- **IN**
- **OUT**
- **EXH**
- **Max. 4**
- **Panel**

**Port size**:
- 2 x 1/2
- 2 x 1/4 to 1/2
- M12 x 1
- M28 x 1.5

**Bracket**:
- 76 x 53
- 48 x 68.5
- 65.3 x 91.7

**Panel**:
- 48 x 68.5

**Mounting hole for hexagon panel nut**:
- Ø12.5
**Warning**

1. Screw piping together with the recommended proper torque while holding the side with the female threads.
Looseness or faulty sealing will occur if tightening torque is insufficient, while thread damage will result if the torque is excessive. Furthermore, if the side with the female threads is not held while tightening, excessive force will be applied directly to piping brackets, etc., causing damage or other problems.

<table>
<thead>
<tr>
<th>Connection thread</th>
<th>1/8</th>
<th>1/4</th>
<th>3/8</th>
<th>1/2 (Note)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque</td>
<td>5.2 to 6.6</td>
<td>8.9 to 10.3</td>
<td>16.2 to 17.7</td>
<td>20.7 to 22.1</td>
</tr>
</tbody>
</table>

Note) Tightening force for connecting to the EXH port of IR30 -A is 5.9 to 7.4 lbf·ft (8 to 10 N·m).

2. Do not allow twisting or bending moment to be applied other than the weight of the equipment.
Provide separate support for external piping, as damage may otherwise occur.

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

**Caution**

1. Preparation before piping
Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

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

3. Operating Environment

   1. Do not use in an atmosphere having corrosive gases, chemicals, sea water, water, water steam, or where there is direct contact with any of these.
   2. Do not operate in locations where vibration or impact occurs.
   3. In locations which receive direct sunlight, provide a protective cover, etc.
   4. In locations near heat sources, block off any radiated heat.
   5. In locations where there is contact with spatter from water, oil or solder, etc., implement suitable protective measures.

4. Air Supply

   1. Condensate or dust, etc. in the supply pressure line can cause malfunctions. In addition to an air filter (SMC Series AF, etc.), please use a mist separator (SMC Series AM, AFM) depending on the conditions.
   2. When a lubricator is used at the supply side of the product, it can cause malfunctions. Do not use a lubricator at the supply side of the product.
When lubrication is required for terminal devices, connect a lubricator on the output side of the regulator.


### Warning

1. When the product is removed for maintenance, reduce the set pressure to “0” and shut off the supply pressure completely beforehand.
2. When a pressure gauge is to be mounted, remove the plug after reducing the set pressure to “0”.
3. When using the regulator between a solenoid valve and an actuator, check the pressure gauge periodically. Sudden pressure fluctuations may shorten the durability of the pressure gauge.

### Caution

1. When the precision regulator with pressure gauge is used, do not apply impact to the product by dropping it, etc. during transportation or installation. This may cause misalignment of the pressure gauge pointer.

### Maintenance

#### Handling

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

See Recommended Proper Torque for more information.

#### Operation

5. When pressure is applied to the inlet of a regulator, make sure that the output is connected to the circuit. Air blow occurs from the outlet and it depends on the operating conditions.
6. The set pressure may vary depending on the elapsed time and change in ambient temperature after pressure setting. If the setting value varies, adjust with the knob.
7. If the directional control valve (solenoid valve, mechanical valve, etc.) is mounted and ON-OFF is repeated for a long time, the set pressure may vary. If the setting value varies, adjust with the knob.

### Caution

8. There may be pulsation or noise depending on the pressure conditions, piping conditions and ambient environment. In this case, it is possible to improve the problem by changing the pressure conditions and piping conditions. If the problem is not improved, contact your SMC sales representative.

9. 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, etc.) mounted on the exhaust port (EXH port).

When using the IR1000-A and 2000-A series, contact your SMC sales representative.

10. When installing a pressure gauge to the product, do not apply pressure more than the maximum display pressure. This will cause a malfunction.

#### Recommended Proper Torque

**Set nut (for bracket)**

<table>
<thead>
<tr>
<th>IR1000-A</th>
<th>IR2000-A</th>
<th>IR3000-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5±0.15 (2.0±0.2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hexagon panel nut (for knob type only)**

<table>
<thead>
<tr>
<th>IR1000-A</th>
<th>IR2000-A</th>
<th>IR3000-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6±0.39 (3.5±0.5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. After pressure adjustment, be sure to tighten the lock nut. When tightening the nut, tighten so that the knob does not move due to friction caused by tightening.
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)*1, and other safety regulations.

**Caution:** Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

**Warning:** Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

**Danger:** Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

### Safety Instructions

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.

### 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, whichever is first.**
   
   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 products other than those for which SMC provides a warranty.

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

   - 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

1. **The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.**

2. **The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.**

### Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

---

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.
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SMC Corporation

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SMC Corporation of America

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International inquiries: www.smccorporation.com

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All reasonable efforts to ensure the accuracy of the information detailed in this catalog were made at the time of publishing. However, SMC can in no way warrant the information herein contained as specifications are subject to change without notice.
Regulator

Air Bleed “0”

Air consumption

Lightweight

High flow rate

Reduced by up to approx. 27% compared with the current IR1000/2000/3000

Up to approx. twice scfm [L/min (ANR)]

New IR Current model Series
25.4 [720] 11.3 [320] IR1200-A
67.1 [1900] 33.2 [940] IR2200-A
177 [5000] 141 [4000] IR3200-A

* Compared with the current IR1000/2000/3000

Space saving
New structure without fixed throttle does not require a mist separator.

Reduced by 71 mm (For IR2200-A)

Digital pressure switch standardized

Series IR1200-A/2200-A/3200-A

Cat. NAS60-24A
Reduction in air consumption

Air consumption is reduced with a new original structure.

With this new original structure, running costs are reduced.

No fixed throttle in the new design.

- Poor quality of air may cause operation failure. Select a model that is suitable for the desired air cleanliness by referring to “Air Preparation Equipment Model Selection Guide” (Best Pneumatics No. 5) for air quality.

Flow rate: Up to approx. twice

(Compared to the current SMC product) scfm [L/min (ANR)]

<table>
<thead>
<tr>
<th>IR</th>
<th>Current model</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.4 [720]</td>
<td>11.3 [320]</td>
<td>IR1200-A</td>
</tr>
<tr>
<td>67.1 [1900]</td>
<td>33.2 [940]</td>
<td>IR2200-A</td>
</tr>
<tr>
<td>177 [5000]</td>
<td>141 [4000]</td>
<td>IR3200-A</td>
</tr>
</tbody>
</table>

Supply pressure: 102 psi (0.7 MPa)

Annual cost reduction effect

New Comparison between IR3200-A and the current IR3000

Current model

Series IR3000

Approx. 100% reduction

$1067 reduction

New

Series IR3200-A

When 20 units are used

New

Comparison between IR1200-A/IR2200-A and the current IR1000/IR2000

Current model

Series IR1000

Series IR2000

New

Series IR1200-A

Series IR2200-A

Approx. 100% reduction

$408 reduction

New

IR1210-A

Current model IR1010

≤ 4.4 to 11.5 L/min (ANR)

Regulator Series IR1200-A/2200-A/3200-A
Regulator  Series IR1200-A/2200-A/3200-A

**Weight**
Reduced by up to approx. 27% [kg]

<table>
<thead>
<tr>
<th>New IR</th>
<th>Current model</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.13</td>
<td>0.14</td>
<td>IR1200-A</td>
</tr>
<tr>
<td>0.23</td>
<td>0.30</td>
<td>IR2200-A</td>
</tr>
<tr>
<td>0.47</td>
<td>0.64</td>
<td>IR3200-A</td>
</tr>
</tbody>
</table>

**Hexagon panel nut mounting**
*Interchangeable with the current SMC product

**New IR can be used between a cylinder and solenoid valve.**

**Repeatability:** ±1% (Full span)

Mounting is interchangeable with the current SMC model.

**Exhaust (EXH) directions can be selected.** (Series IR3200-A)
*Bottom and front exhaust added.*

- **Bottom exhaust**
- **Front exhaust**
- **Rear exhaust**

**Note:** The set pressure may vary depending on the elapsed time and change in ambient temperature after pressure setting. If the setting value varies, adjust the pressure with the knob.

Digital pressure switch standardized

Pressure gauge

New IR can be used between a cylinder and solenoid valve.
Application Examples

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

**Contact pressure control**  
Adapts to the cylinder’s piston displacement, maintaining a constant pressure.

**Balance and drive**  
Accurate balance pressure setting  
Limits pressure fluctuation when driving a cylinder, maintaining excellent static and dynamic balance.

**Multistage control of pressing force for workpiece**  
(Wrapping machine)  
Adapts to the cylinder’s piston displacement, maintaining a constant pressure.

**Residual pressure relief**  
Ex.) Backflow from the tank  
Residual pressure is exhausted by relief function.  
It can be used between a cylinder and solenoid valve.

**Adjustment of blow-line pressure**  
Outlet pressure is less affected by fluctuation of inlet pressure. New IR offers consistent pressure control.

Note) The set pressure may vary depending on the elapsed time and change in ambient temperature after pressure setting. If the setting value varies, adjust the pressure with the knob.
<table>
<thead>
<tr>
<th>Series</th>
<th>Model</th>
<th>Set pressure range psi (MPa)</th>
<th>Port size</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR1200-A</td>
<td>IR1200-A</td>
<td>2.9 to 29 [0.02 to 0.2]</td>
<td>1/8</td>
</tr>
<tr>
<td></td>
<td>IR1210-A</td>
<td>2.9 to 58 [0.02 to 0.4]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IR1220-A</td>
<td>2.9 to 116 [0.02 to 0.8]</td>
<td></td>
</tr>
<tr>
<td>IR2200-A</td>
<td>IR2200-A</td>
<td>2.9 to 29 [0.02 to 0.2]</td>
<td>1/4</td>
</tr>
<tr>
<td></td>
<td>IR2210-A</td>
<td>2.9 to 58 [0.02 to 0.4]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IR2220-A</td>
<td>2.9 to 116 [0.02 to 0.8]</td>
<td></td>
</tr>
<tr>
<td>IR3200-A</td>
<td>IR3200-A</td>
<td>2.9 to 29 [0.02 to 0.2]</td>
<td>1/4, 3/8, 1/2</td>
</tr>
<tr>
<td></td>
<td>IR3210-A</td>
<td>2.9 to 58 [0.02 to 0.4]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IR3220-A</td>
<td>2.9 to 116 [0.02 to 0.8]</td>
<td></td>
</tr>
</tbody>
</table>
Standard Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>IR12₁₀⁻₀⁻₀</th>
<th>IR22₁₀⁻₀⁻₀</th>
<th>IR32₁₀⁻₀⁻₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proof pressure</td>
<td>218 psi (1.5 MPa)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. supply pressure</td>
<td>145 psi (1.0 MPa)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. supply pressure</td>
<td>Set pressure + 7.3 psi (0.05 MPa)</td>
<td>Set pressure + 15 psi (0.1 MPa)</td>
<td></td>
</tr>
<tr>
<td>Set pressure range</td>
<td>IR1200-A: 2.9 to 29 psi (0.02 to 0.2 MPa)</td>
<td>IR2200-A: 2.9 to 29 psi (0.02 to 0.2 MPa)</td>
<td>IR3200-A: 2.9 to 29 psi (0.02 to 0.2 MPa)</td>
</tr>
<tr>
<td>IR1210-A: 2.9 to 58 psi (0.02 to 0.4 MPa)</td>
<td>IR2210-A: 2.9 to 58 psi (0.02 to 0.4 MPa)</td>
<td>IR3210-A: 2.9 to 58 psi (0.02 to 0.4 MPa)</td>
<td></td>
</tr>
<tr>
<td>IR1220-A: 2.9 to 116 psi (0.02 to 0.8 MPa)</td>
<td>IR2220-A: 2.9 to 116 psi (0.02 to 0.8 MPa)</td>
<td>IR3220-A: 2.9 to 116 psi (0.02 to 0.8 MPa)</td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>Note 2) Within ±1% of full span</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port size</td>
<td>1/8</td>
<td>1/4</td>
<td>1/4, 3/8, 1/2</td>
</tr>
<tr>
<td>Pressure gauge port</td>
<td>1/8 (2 locations)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>Note 3) 23 to 140°F (~−5 to 60°C) (No freezing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>Note 4) 0.13</td>
<td>0.23</td>
<td>0.47</td>
</tr>
</tbody>
</table>

Note 1) When there is no flow rate on the outlet.
Note 2) Other characteristics such as aging deterioration and temperature characteristics are not included.
Note 3) 23 to 140°F (~−5 to 60°C) for the products with the digital pressure switch.
Note 4) Without accessories

Accessories (Option)/Part No.

<table>
<thead>
<tr>
<th>Description</th>
<th>IR12₁₀⁻₀⁻₀</th>
<th>IR22₁₀⁻₀⁻₀</th>
<th>IR32₁₀⁻₀⁻₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket assembly Note 1)</td>
<td>IR10P-501AS</td>
<td>IR20P-501AS</td>
<td>IR30P-501AS</td>
</tr>
<tr>
<td>Hexagon panel nut</td>
<td>IR10P-600S</td>
<td>IR20P-600S</td>
<td>IR20P-600S</td>
</tr>
<tr>
<td>Round type pressure gauge</td>
<td>Note 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.2 MPa setting</td>
<td>G33-2-01</td>
<td>G43-2-01</td>
<td>G43-2-01</td>
</tr>
<tr>
<td>0.4 MPa setting</td>
<td>G33-4-01</td>
<td>G43-4-01</td>
<td>G43-4-01</td>
</tr>
<tr>
<td>0.8 MPa setting</td>
<td>G33-10-01</td>
<td>G43-10-01</td>
<td>G43-10-01</td>
</tr>
<tr>
<td>Digital pressure switch Note 3)</td>
<td>ISE30A-01-N-ML</td>
<td>ISE30A-01-P-ML</td>
<td>ISE30A-01-C-ML</td>
</tr>
<tr>
<td>NPN 1 output</td>
<td>ISE30A-01-N-ML</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PNP 1 output</td>
<td>ISE30A-01-P-ML</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPN 1 output/ Voltage output</td>
<td>ISE30A-01-C-ML</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPN 1 output/ Current output</td>
<td>ISE30A-01-D-ML</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1) This is an assembly of the bracket and resin panel nut.
Note 2) /L50132 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.
A 145 psi (1.0 MPa) pressure gauge is fitted for 116 psi (0.8 MPa) setting.
Please contact SMC regarding the supply of pressure gauge with psi unit specifications.
Note 3) /L50132 in part numbers for a digital pressure switch indicates a type of connection thread. No indication is necessary for R; however, indicate N for NPT. For details on handling digital pressure switch and specifications, refer to the WEB catalog or the Best Pneumatics No. 6.
Please contact SMC regarding the supply of digital pressure switch with unit conversion function.

Modular Products and Accessories

<table>
<thead>
<tr>
<th>Applicable products and accessories</th>
<th>Series IR1200-A</th>
<th>Series IR2200-A</th>
<th>Series IR3200-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter</td>
<td>AF20-A</td>
<td>AF30-A</td>
<td>AF40-A</td>
</tr>
<tr>
<td>Spacer</td>
<td>Y200-A</td>
<td>Y300-A</td>
<td>Y400-A</td>
</tr>
<tr>
<td>Spacer with bracket</td>
<td>Y200T-A</td>
<td>Y300T-A</td>
<td>Y400T-A</td>
</tr>
</tbody>
</table>

Refer to the WEB catalog for details of the modular applicable products and accessories. The former modular and mounting brackets can be used.
How to Order

**Regulator Series IR1200-A/2200-A/3200-A**

**IR 1 2 0 0 - [ ] [ ] [ ] A**

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

### Symbols and Descriptions

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>q</td>
<td>Body size</td>
</tr>
<tr>
<td>w</td>
<td>Set pressure range</td>
</tr>
<tr>
<td>e</td>
<td>Exhaust direction</td>
</tr>
<tr>
<td>r</td>
<td>Pipe thread type</td>
</tr>
<tr>
<td>t</td>
<td>Port size</td>
</tr>
<tr>
<td>a</td>
<td>Mounting</td>
</tr>
<tr>
<td>b</td>
<td>Pressure gauge</td>
</tr>
<tr>
<td>c</td>
<td>With digital pressure switch</td>
</tr>
<tr>
<td>d</td>
<td>Flow direction</td>
</tr>
<tr>
<td>e</td>
<td>Knob</td>
</tr>
<tr>
<td>f</td>
<td>Pressure unit</td>
</tr>
</tbody>
</table>

### Body size

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Set pressure range

- **0**: 2.9 to 29 psi (0.02 to 0.2 MPa)
- **1**: 2.9 to 58 psi (0.02 to 0.4 MPa)
- **2**: 2.9 to 116 psi (0.02 to 0.8 MPa)

### Exhaust direction

- **0**: Bottom exhaust
- **1**: Front exhaust
- **2**: Rear exhaust

### Pipe thread type

- **Nil**: Nil
- **Rc**: Rc
- **N**: NPT
- **F**: G

### Port size

- **01**: 1/8
- **02**: 1/4
- **03**: 3/8
- **04**: 1/2

### Mounting

- **Nil**: Without mounting option
- **B**: With bracket
- **H**: With hexagon panel nut (for panel mount)

### Pressure gauge

- **Nil**: Without pressure gauge
- **G**: Round type pressure gauge
- **EA**: NPN open collector 1 output
- **EB**: PNP open collector 1 output
- **EC**: NPN open collector 1 output + Analog voltage output
- **ED**: NPN open collector 1 output + Analog current output

### Flow direction

- **Nil**: Flow direction: Left to right
- **R**: Flow direction: Right to left

### Knob

- **Nil**: Upward
- **V**: Downward

### Pressure unit

- **Nil**: Name plate and pressure gauge in imperial units: MPa
- **Z**: Name plate and pressure gauge in imperial units: psi
- **ZA**: Digital pressure switch: With unit conversion function

### Table of Pressure Gauge in Imperial Units

<table>
<thead>
<tr>
<th>Pipe thread type</th>
<th>Name plate in imperial units</th>
<th>Pressure gauge in imperial units</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPT</td>
<td>MPa</td>
<td>MPa</td>
<td>Japan, Overseas</td>
</tr>
<tr>
<td>G</td>
<td>Fixed SI unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z (Note 4)</td>
<td>psi</td>
<td>psi</td>
<td>Only overseas</td>
</tr>
<tr>
<td>NPT</td>
<td>With unit conversion function (Initial value psi)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZA (Note 5)</td>
<td>MPa</td>
<td>With unit conversion function</td>
<td>Only overseas</td>
</tr>
</tbody>
</table>

**Note 1)** Options are shipped together with the product, but not assembled. B and H cannot be selected at the same time. The current bracket cannot be used for this product.
**Note 2)** Assembly of a bracket and set nuts.
**Note 3)** See pressure unit table below.

**Note 4)** For pipe thread type: NPT
**Note 5)** For options: EA, EB, EC, ED
**Note 6)** According to the new Measurement Law, only the SI unit type is provided for use in Japan.
**Series IR1200-A/2200-A/3200-A**

* The data shown below are representative values, and are not guaranteed.

### Flow-rate Characteristics

**IR1220-01-A**  
Supply pressure: 102 psi [0.7 MPa]

### Relief Characteristics

**IR1220-01-A**  
Back pressure: 102 psi [0.7 MPa]

### Pressure Characteristics

**IR1200-A**  
Supply pressure: 44 to 145 psi [0.3 to 1.0 MPa]  
Set pressure: 29 psi [0.2 MPa]  
Flow rate: 0.71 scfm [0 L/min (ANR)]

**IR1210-A**  
Supply pressure: 44 to 145 psi [0.3 to 1.0 MPa]  
Set pressure: 29 psi [0.2 MPa]  
Flow rate: 0.71 scfm [0 L/min (ANR)]
Regulator  Series IR1200-A/2200-A/3200-A

Series IR2200-A

* The data shown below are representative values, and are not guaranteed.

Flow-rate Characteristics

IR2220-02-A  Supply pressure: 102 psi [0.7 MPa]

Relief Characteristics

IR2220-02-A  Back pressure: 102 psi [0.7 MPa]

Pressure Characteristics

IR2200-A

IR2220-A

IR2210-A
**Series IR1200-A/2200-A/3200-A**

**Series IR3200-A**

*The data shown below are representative values, and are not guaranteed.*

---

**Flow-rate Characteristics**

**IR3220-04-A**  
Supply pressure: 102 psi [0.7 MPa]

**Relief Characteristics**

**IR3220-04-A**  
Back pressure: 102 psi [0.7 MPa]

**Pressure Characteristics**

**IR3200-A**  
Supply pressure: 44 to 145 psi [0.3 to 1.0 MPa]  
Set pressure: 29 psi [0.2 MPa]  
Flow rate: 0.71 scfm [0 L/min (ANR)]

**IR3220-A**  
Supply pressure: 44 to 145 psi [0.3 to 1.0 MPa]  
Set pressure: 29 psi [0.2 MPa]  
Flow rate: 0.71 scfm [0 L/min (ANR)]

---

**IR3210-A**  
Supply pressure: 44 to 145 psi [0.3 to 1.0 MPa]  
Set pressure: 29 psi [0.2 MPa]  
Flow rate: 0.71 scfm [0 L/min (ANR)]

---

The data shown below are representative values, and are not guaranteed.
Regulator Series IR1200-A/2200-A/3200-A

Construction

Basic type (Knob): IR22□0-A

![Regulator diagram]

Inlet (IN) (OUT) Outlet

**Component Parts**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>IR1200-A IR2200-A IR3200-A</td>
</tr>
<tr>
<td>1</td>
<td>Bonnet</td>
<td>Aluminum die-casted</td>
</tr>
<tr>
<td>2</td>
<td>Nozzle diaphragm assembly</td>
<td>Aluminum, Weather resistant NBR</td>
</tr>
<tr>
<td>3</td>
<td>Seal</td>
<td>HNBR</td>
</tr>
<tr>
<td>4</td>
<td>Seal</td>
<td>NBR</td>
</tr>
<tr>
<td>5</td>
<td>Diaphragm spacer</td>
<td>Polycetal</td>
</tr>
<tr>
<td>6</td>
<td>Supply diaphragm</td>
<td>Weather resistant NBR</td>
</tr>
<tr>
<td>7</td>
<td>Exhaust diaphragm assembly</td>
<td>Steel, Aluminum, Weather resistant NBR</td>
</tr>
<tr>
<td>8</td>
<td>Valve assembly</td>
<td>Stainless steel, Aluminum, HNBR</td>
</tr>
<tr>
<td>9</td>
<td>Body</td>
<td>Aluminum die-casted</td>
</tr>
</tbody>
</table>

**Working principle**

When the knob is rotated, the flapper is pushed through the spring, and a gap is generated between the nozzle and flapper. The supply pressure flows to the inlet passes through the path between the nozzle and flapper and acts on the supply diaphragm as nozzle back pressure. The force generated by the diaphragm pushes down the valve, and the supply pressure flows to the outlet. The discharged air pressure acts on the exhaust diaphragm, and counteracts against the force generated by the supply diaphragm. The air pressure acts on the nozzle diaphragm at the same time, and counteracts against the compression force of the spring to adjust the set pressure. When the set pressure increases too much, the nozzle diaphragm is pushed up, and a gap is generated between the flapper and nozzle diaphragm after the flapper is closed. The balance of the supply diaphragm and exhaust diaphragm is lost when the nozzle back pressure flows into the atmosphere. The exhaust valve is open after the valve is closed, and excess pressure on the outlet is released to the air. Due to this pilot mechanism, pressure variations are detected and pressure adjustment is possible.
Series IR1200-A/2200-A/3200-A

Construction

Basic type (Knob): IR1200-A

Basic type (Knob): IR3200-A

Basic type (Knob): IR3212-A
Regulator Series IR1200-A/2200-A/3200-A

Dimensions

Basic type (Knob): IR12□0-01□-A

With digital pressure switch: IR12□0-01□E□-A

When connecting to the EXH port, contact your SMC sales representative separately.
Series IR1200-A/2200-A/3200-A

**Dimensions**

Basic type (Knob): IR22□0-02□-A

---

**With digital pressure switch: IR22□0-02□E□-A**

---

When connecting to the EXH port, contact your SMC sales representative separately.
Regulator Series IR1200-A/2200-A/3200-A

Dimensions

Basic type (Knob): IR32□-0-□-□-A

With digital pressure switch: IR32□-0-□-□E-□-A
Series IR1200-A/2200-A/3200-A

Dimensions

Basic type (Knob): IR32□□□-□□□-□-

With digital pressure switch: IR32□□□-□□□-□□□□-□-

[Diagram showing dimensions and components]
Series IR1200-A/2200-A/3200-A
Specific Product Precautions 1

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For F.R.L. Units Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smcworld.com

⚠️ Warning

1. Screw piping together with the recommended proper torque while holding the side with the female threads. Looseness or faulty sealing will occur if tightening torque is insufficient, while thread damage will result if the torque is excessive. Furthermore, if the side with the female threads is not held while tightening, excessive force will be applied directly to piping brackets, etc., causing damage or other problems.

Recommended Proper Torque [lbf·ft [N·m]]

<table>
<thead>
<tr>
<th>Connection thread</th>
<th>1/8</th>
<th>1/4</th>
<th>3/8</th>
<th>1/2 (Note)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque</td>
<td>5.2 to 6.6</td>
<td>8.9 to 10.3</td>
<td>16.2 to 17.7</td>
<td>20.7 to 22.1</td>
</tr>
<tr>
<td></td>
<td>{7 to 9}</td>
<td>{12 to 14}</td>
<td>{22 to 24}</td>
<td>{28 to 30}</td>
</tr>
</tbody>
</table>

Note) Tightening force for connecting to the EXH port of IR32-A is 5.9 to 7.4 lbf·ft (8 to 10 N·m).

2. Do not allow twisting or bending moment to be applied other than the weight of the equipment. Provide separate support for external piping, as damage may otherwise occur.

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

⚠️ Caution

1. Preparation before piping
Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

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

Operating Environment

⚠️ Warning

1. Do not use in an atmosphere having corrosive gases, chemicals, sea water, water, water steam, or where there is direct contact with any of these.
2. Do not operate in locations where vibration or impact occurs.
3. In locations which receive direct sunlight, provide a protective cover, etc.
4. In locations near heat sources, block off any radiated heat.
5. In locations where there is contact with spatter from water, oil or solder, etc., implement suitable protective measures.

Air Supply

⚠️ Warning

1. Please consult with SMC when using the product in applications other than compressed air.
2. Do not use compressed air which includes chemicals, synthetic oils containing organic solvents, salt or corrosive gases, etc., as this can cause damage or malfunction.
3. If condensate in the drain bowl is not emptied on a regular basis, the bowl will overflow and allow the condensate to enter the outlet side. This will cause a malfunction of pneumatic equipment.

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

⚠️ Caution

1. Condensate or dust, etc. in the supply pressure line can cause malfunctions. In addition to an air filter (SMC Series AF, etc.), please use a mist separator (SMC Series AM, AFM) depending on the conditions.

Refer to "Air Preparation Equipment Model Selection Guide" (Best Pneumatics No. 5) for air quality.

2. When a lubricator is used at the supply side of the product, it can cause malfunctions. Do not use a lubricator at the supply side of the product.

If lubrication is required for terminal devices, connect a lubricator on the output side of the regulator.
Series IR1200-A/2200-A/3200-A
Specific Product Precautions 2
Be sure to read this before handling. Refer to the back cover for Safety Instructions. For F.R.L. Units Precautions, refer to “Handling Precautions for SMC Products” and the Operation Manual on SMC website, http://www.smcworld.com

Manipulation

⚠️ Warning

1. When the product is removed for maintenance, reduce the set pressure to “0” and shut off the supply pressure completely beforehand.
2. When a pressure gauge is to be mounted, remove the plug after reducing the set pressure to “0”.
3. When using the regulator between a solenoid valve and an actuator, check the pressure gauge periodically. Sudden pressure fluctuations may shorten the durability of the pressure gauge.
A digital pressure gauge is recommended for such situations or as deemed necessary.

Handling

⚠️ Caution

1. When the regulator with pressure gauge is used, do not apply impact to the product by dropping it, etc. during transportation or installation.
This may cause misalignment of the pressure gauge pointer.

Operation

⚠️ Caution

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

Recommended Proper Torque lbf·ft (N·m)
Set nut (for bracket)

<table>
<thead>
<tr>
<th>IR12 – 0-A</th>
<th>IR22 – 0-A</th>
<th>IR32 – 0-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5±0.15 (2.0±0.2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hexagon panel nut (for knob type only)

<table>
<thead>
<tr>
<th>IR12 – 0-A</th>
<th>IR22 – 0-A</th>
<th>IR32 – 0-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6±0.37 (3.5±0.5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. To set the pressure using the knob, turn the knob in the direction that increases pressure and be sure to tighten the lock nut after the pressure is adjusted. When tightening the nut, tighten so that the knob does not move due to friction caused by tightening.
5. If the pressure is set 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.
6. When pressure is applied to the inlet of a regulator, make sure that the output is connected to the circuit. Air blow occurs from the outlet and it depends on the operating conditions.
7. The set pressure may vary depending on the elapsed time and change in ambient temperature after pressure setting. If the setting value varies, adjust with the knob.
8. If the directional control valve (solenoid valve, mechanical valve, etc.) is mounted and ON-OFF is repeated for a long time, the set pressure may vary. If the setting value varies, adjust with the knob.
9. There may be pulsation or noise depending on the pressure conditions, piping conditions and ambient environment. In this case, it is possible to improve the problem by changing the pressure conditions and piping conditions.
If the problem is not improved, contact your SMC sales representative.
10. 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, etc.) mounted on the exhaust port (EXH port).
When using the IR1200-A and 2200-A series, contact your SMC sales representative.
11. When installing a pressure gauge to the product, do not apply pressure more than the maximum display pressure. This will cause a malfunction.
**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)*1, and other safety regulations.

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**Caution:**
- Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

**Warning:**
- Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

**Danger:**
- Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

---

**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.

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**Caution**

1. 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.

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**Limited warranty and Disclaimer/Compliance Requirements**

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

**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, whichever is first. *2)

   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.

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

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**Compliance Requirements**

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.

2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

---

**Caution**

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

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**Safety Instructions**

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.
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