## Precision Regulator
### Series IR1000/2000/3000

<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><strong>Basic Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Series IR1000</td>
<td>IR1000</td>
<td>0.005 to 0.2 MPa</td>
<td>1/8</td>
<td>553</td>
</tr>
<tr>
<td></td>
<td>IR1010</td>
<td>0.01 to 0.4 MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IR1020</td>
<td>0.01 to 0.8 MPa</td>
<td></td>
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<tr>
<td>Series IR2000</td>
<td>IR2000</td>
<td>0.005 to 0.2 MPa</td>
<td>1/4</td>
<td>553</td>
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<td></td>
<td>IR2010</td>
<td>0.01 to 0.4 MPa</td>
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<td></td>
<td>IR2020</td>
<td>0.01 to 0.8 MPa</td>
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<tr>
<td>Series IR3000</td>
<td>IR3000</td>
<td>0.01 to 0.2 MPa</td>
<td>1/4, 3/8, 1/2</td>
<td>553</td>
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<tr>
<td></td>
<td>IR3010</td>
<td>0.01 to 0.4 MPa</td>
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<tr>
<td></td>
<td>IR3020</td>
<td>0.01 to 0.8 MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Air Operated Type</strong></td>
<td></td>
<td></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>553</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>553</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 mass 140 g
IR2000 width 50 mm mass 300 g
IR3000 width 66 mm mass 640 g

Manifolding is possible 8 stations at the maximum
Made to order specifications (Except Series IR2120, IR3000)
Compatible with new modular connection brackets (-X120)
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

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Model</th>
<th>Basic type</th>
<th>Air operated type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum set pressure</td>
<td>R10</td>
<td>R20</td>
<td>R30</td>
</tr>
<tr>
<td>0.2 MPa</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>0.4 MPa</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>0.8 MPa</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Port size</td>
<td>Rc 1/8</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Rc 1/4</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Rc 3/8</td>
<td>—</td>
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</tr>
<tr>
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<td>Rc 1/2</td>
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Made to Order Specifications

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Specifications/Content</th>
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<tbody>
<tr>
<td>10-</td>
<td>Clean Series</td>
</tr>
<tr>
<td>20-</td>
<td>Copper-free and fluorine-free</td>
</tr>
<tr>
<td>80-</td>
<td>Ozone resistant</td>
</tr>
<tr>
<td>-T</td>
<td>For high temperature</td>
</tr>
<tr>
<td>-L</td>
<td>For low temperature</td>
</tr>
<tr>
<td>-X1</td>
<td>Non-grease specifications</td>
</tr>
<tr>
<td>-X46</td>
<td>With digital pressure switch (ISE30)</td>
</tr>
<tr>
<td>IRM</td>
<td>Manifold (Except Series IR2120, IR3000)</td>
</tr>
</tbody>
</table>

* For details, refer to page 560.
**Series IR1000/2000/3000**

**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**
# Standard Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Basic type</th>
<th>Air operated type</th>
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<tbody>
<tr>
<td>IR1000</td>
<td>IR1000: 0.005 to 0.2 MPa</td>
<td>IR1000: 0.005 to 0.2 MPa</td>
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<tr>
<td>IR2000</td>
<td>IR2000: 0.01 to 0.4 MPa</td>
<td>IR2000: 0.01 to 0.4 MPa</td>
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<tr>
<td>IR3000</td>
<td>IR3000: 0.01 to 0.8 MPa</td>
<td>IR3000: 0.01 to 0.8 MPa</td>
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<td>IR1000</td>
<td>IR1000: 0.005 to 0.2 MPa</td>
<td>IR1000: 0.005 to 0.2 MPa</td>
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<tr>
<td>IR2000</td>
<td>IR2000: 0.01 to 0.4 MPa</td>
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</tr>
<tr>
<td>IR3000</td>
<td>IR3000: 0.01 to 0.8 MPa</td>
<td>IR3000: 0.01 to 0.8 MPa</td>
</tr>
</tbody>
</table>

## How to Order

**Port size**
- **IR1000**
  - 1/8
  - 1/4
- **IR2000**
  - 1/4
  - 3/8
- **IR3000**
  - 1/4
  - 3/8

**Pressure gauge port**
- **IR1000**
  - 1/8
- **IR2000**
  - 1/4
- **IR3000**
  - 1/4

**Regulating range**
- **IR1000**
  - 0.005 to 0.2 MPa
- **IR2000**
  - 0.01 to 0.4 MPa
- **IR3000**
  - 0.01 to 0.8 MPa

**Input signal pressure**
- **IR1000**
  - 0.005 to 0.2 MPa
- **IR2000**
  - 0.01 to 0.4 MPa
- **IR3000**
  - 0.01 to 0.8 MPa

**Air consumption**
- **IR1000**
  - 0.01 to 0.8 MPa
- **IR2000**
  - 0.01 to 0.8 MPa
- **IR3000**
  - 0.01 to 0.8 MPa

**Ambient and fluid temperature**
- **IR1000**
  - –5 to 60°C (No freezing)
- **IR2000**
  - –5 to 60°C (No freezing)
- **IR3000**
  - –5 to 60°C (No freezing)

**Max. supply pressure**
- **IR1000**
  - 1.0 MPa
- **IR2000**
  - 1.0 MPa
- **IR3000**
  - 1.0 MPa

**Internal and external temperature**
- **IR1000**
  - –5 to 60°C
- **IR2000**
  - –5 to 60°C
- **IR3000**
  - –5 to 60°C

**Sensitivity**
- **IR1000**
  - Within ±0.5% of full span
- **IR2000**
  - Within ±1% of full span
- **IR3000**
  - Within ±1% of full span

## Notes
1. With the condition of no flow on the output side. Together with the set pressure, be sure to maintain a minimum difference 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. Indicates the linearity of the output pressure with respect to the input signal pressure.
4. Air is normally being discharged to the atmosphere from a bleed hole or an exhaust port.
# Series IR1000/2000/3000

## Specification Combinations

<table>
<thead>
<tr>
<th>Specifications</th>
<th>IR1000</th>
<th>IR1010</th>
<th>IR1020</th>
<th>IR2000</th>
<th>IR2010</th>
<th>IR2020</th>
<th>IR3000</th>
<th>IR3010</th>
<th>IR3020</th>
<th>IR3120</th>
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<tbody>
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<tr>
<td>Set pressure Max. 0.4 MPa</td>
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<tr>
<td>Set pressure Max. 0.8 MPa</td>
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<tr>
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<td>Connection G 1/8</td>
<td>F01</td>
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<td>Connection G 3/8</td>
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<td></td>
</tr>
<tr>
<td>Connection G 1/2</td>
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</tbody>
</table>

## Modular and Accessory Combinations

<table>
<thead>
<tr>
<th>Description</th>
<th>Applicable model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Air filter</td>
<td>IR100 DAN-X120</td>
</tr>
<tr>
<td>2. Mist separator</td>
<td>AF20</td>
</tr>
<tr>
<td>3. Interface</td>
<td>AF30</td>
</tr>
<tr>
<td>4. Interface with bracket</td>
<td>AFM20</td>
</tr>
<tr>
<td></td>
<td>AFM30</td>
</tr>
<tr>
<td></td>
<td>AFM40</td>
</tr>
<tr>
<td>5. Interface</td>
<td>Y200</td>
</tr>
<tr>
<td>6. Interface with bracket</td>
<td>Y300T</td>
</tr>
<tr>
<td>7. Interface</td>
<td>Y400</td>
</tr>
<tr>
<td>8. Interface with bracket</td>
<td>Y2200T</td>
</tr>
<tr>
<td>9. Interface with bracket</td>
<td>Y300T</td>
</tr>
<tr>
<td>10. Interface with bracket</td>
<td>Y400T</td>
</tr>
</tbody>
</table>

Note 1) Use the made-to-order product (IR/L/L/L-X120) for modular connections.
Note 2) Use a conventional connection interface when connecting the standard type with modular connections.

### Combination example

1. Interface
2. Interface with bracket

### Accessory (Option)/Part No.

<table>
<thead>
<tr>
<th>Description</th>
<th>IR1000</th>
<th>IR1010</th>
<th>IR1020</th>
<th>IR2000</th>
<th>IR2010</th>
<th>IR2020</th>
<th>IR3000</th>
<th>IR3010</th>
<th>IR3020</th>
<th>IR3120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket</td>
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<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></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 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).
Note 2) Accuracy ±3% (Full span)
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. If 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 Qty</th>
<th>IR2000 Qty</th>
<th>IR3000 Qty</th>
<th>IR2120 Qty</th>
<th>IR3120 Qty</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Diaphragm assembly</td>
<td>NBR, other</td>
<td>P362010-1</td>
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<td>P362020-1</td>
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<td>P362020-1</td>
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<tr>
<td>2</td>
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<td>NBR, other</td>
<td>P362010-2</td>
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<td>P362020-2</td>
<td>1</td>
<td>P362020-2</td>
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<td>Diaphragm</td>
<td>NBR, other</td>
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<td>Valve</td>
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<td>P36202068#1</td>
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<td>8</td>
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<td>ø2.5 x 1.05</td>
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<td>1.42 x 1.52</td>
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<td>O-ring NBR</td>
<td>ø4.5 x 1</td>
<td>3</td>
<td>ø4.5 x 1</td>
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<td>ø4.5 x 1</td>
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</tr>
</tbody>
</table>

Note) Use mini-flick type.

Repair kit no. (A set of above nos. 1 to 15.)

KT-IR1000  KT-IR2000  KT-IR3000  KT-IR2120  KT-IR3120
**Dimensions**

**IR10-0-01**

- Mounting hole
- Panel mounting hole
- Bracket (Option)
- Pressure gauge (Option)
- Panel
- Bleed
- SUP(1)
- OUT(2)
- 2 x Rc 1/8 Pressure gauge port
- M5 x P0.5
- Max.4
- Panel mounting hole

**IR120-0-02**

- Mounting hole
- Panel mounting hole
- Bracket (Option)
- Pressure gauge (Option)
- Panel
- Bleed
- SUP(1)
- OUT(2)
- 2 x Rc 1/8 Pressure gauge port
- M6 x P0.5
- Max.4
- Panel mounting hole

**IR30-0-0-0**

- Mounting hole
- Panel mounting hole
- Bracket (Option)
- Pressure gauge (Option)
- Panel
- Bleed
- SUP(1)
- OUT(2)
- 2 x Rc 1/8 Pressure gauge port
- M6 x P0.5
- Max.4
- Panel mounting hole

**IR2120-02**

- Mounting hole
- Panel mounting hole
- Bracket (Option)
- Pressure gauge (Option)
- Panel
- Bleed
- SUP(1)
- OUT(2)
- 2 x Rc 1/8 Pressure gauge port
- M6 x P0.5
- Max.4
- Panel mounting hole

**IR3120-0-0**

- Mounting hole
- Panel mounting hole
- Bracket (Option)
- Pressure gauge (Option)
- Panel
- Bleed
- SUP(1)
- OUT(2)
- 2 x Rc 1/8 Pressure gauge port
- M6 x P0.5
- Max.4
- Panel mounting hole

*When mounting on a panel, refer to page 561 in Specific Product Precautions.
Precision Regulator *Series IR1000/2000/3000*

### 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

**IR1000-01**

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

**IR1010-01**

- Supply pressure: 0.7 MPa
- Set point

**IR1020-01**

- Supply pressure: 1.0 MPa
- Set point
Series IR1000/2000/3000

Series IR2000

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

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

Supply pressure: 0.7 MPa
Set pressure: 0.2 MPa

Supply pressure: 1.0 MPa
Set pressure: 0.2 MPa

Supply pressure: 1.0 MPa
Set pressure: 0.2 MPa

Relief flow rate (l/min (ANR))

Supply pressure P1 (MPa)

Set pressure P2 (MPa)

Set point

Supply pressure P1 (MPa)

Set pressure P2 (MPa)

Set point

Supply pressure P1 (MPa)

Set pressure P2 (MPa)

Set point

Supply pressure P1 (MPa)
Series IR3000

Flow Characteristics

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))
Series IR1000/2000/3000
Made to Order Specifications:
Please contact SMC regarding detailed dimensions, specifications, and delivery times.

1 Clean Series

10 Standard model no.
Note) Please contact SMC if a product with pressure gauge is desired.

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: Teflon 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.

Specifications
- Copper-free and Fluorine-free

3 Ozone Resistant
Fluoro rubber is used for rubber seal materials.

80 Standard model no.

Specifications
- Ozone resistant

4 For High/Low Temperature Environments

Standard model no.
For high/low temperature environments

 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 | Fluoro rubber | 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.

Specifications
- Non-grease specifications

6 With Digital Pressure Switch
With digital pressure switch (model no: ISE30A-01-C/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.
- Pressure switch
- Set pressure range (MPa): 0.1 to 1
- Desaturation 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

7 Manifold Specifications
(Except type IR2120 and series IR3000)

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

IRM 10

- G

Set pressure and quantity
- 0.2 MPa setting 1 to n pcs.
- 0.4 MPa setting 1 to n pcs.
- 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-G5-021221

- Accessory (Pressure gauge)*

- N
- G
G33-□-01
G43-□-01
IR1000: 1/8, IR2000: 1/4
IR2000: 1/2, IR3000: 1/4
IRM1000: 1/4, IR2000: 1/2

- Accessory (pressure gauge) is included, (but not assembled).

- Body size
2 stations
- 8 stations

- Nil
N
RFT
F
G

Manifold type regulator

Specifications
- Stations: 2 to 8 stations
- Port
- Common SUP
- Individual OUT
- 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 stations 5 is of 0.8 MPa setting.
Note 3) Please consult with SMC when a blanking plate is needed.
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 automatic 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 555) 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”.

**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.

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. 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.

6. Make sure to tighten the lock nut after pressure adjustment.

---

**Precautions for IR1000 only**

**Warning**
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.

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**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.

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**Handling**

**Caution**
1. When the valve guide (refer to construction drawing on page 555) 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”.

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**Precautions for IR12□10, IR3120**

**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.

3. When the valve guide (refer to construction drawing on page 555) is to be removed during maintenance, first reduce the set pressure to “0” and completely shut off the supply pressure.

4. When a pressure gauge is to be mounted, remove the plug after reducing the set pressure to “0”.

5. 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.

6. Make sure to tighten the lock nut after pressure adjustment.

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**Precautions for IR1000, IR2000, IR3000**

**Recommended Proper Torque** (N·m)

<table>
<thead>
<tr>
<th>Model</th>
<th>IR1000</th>
<th>IR2000</th>
<th>IR3000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>12.5</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>

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2. 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.

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**Precautions for IR3□□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.

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**Precautions for IR2120, IR3120**

**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.