

# Outstanding performance in extremely low pressure and low pressure ranges from 0.003 to 0.1 MPa.

Realizing high performance, energy saving, and compact size. Realize precise pressure control in a pressure range of 0.003 to 0.4 MPa.

Pilot pressure control with a nozzle flapper enables highly precise, stable precision pressure control in a setting pressure range between 0.003 and 0.4 MPa. Control performance is especially outstanding in extremely low to low pressure ranges between 0.003 and 0.1 MPa. The relief flow is high even with the  $\square 42\text{mm}$  compact size. This energy saving type also has low air consumption.

- **High precision pressure control**  
Pressure control within  $\pm 0.5\%$  of repeatability full scale and within  $0.1\%$  of the sensitivity full scale is possible.
- **Set extremely low pressures**  
A pressure as low as **0.003MPa** can be set. (RP1000-8-02)
- **High relief flow**
- **Energy saving with small air consumption**

- **Stable flow characteristics with small pressure drop**

■ **Pressure control**

- **Extremely smooth pressure setting**
- **Compact  $\square 42\text{mm}$ , lightweight 250g**  
Compact and light design incorporates aluminum.
- **Module type**  
Connect with the C1000 Series filter and oil mist filter.
- **Highly reliable material for moving sections**  
Ozone resistant material is used as a standard for the moving section's rubber material to prevent deterioration.
- **Nongrease specification fluid passage section**

## High performance, energy saving, compact **RP1000 Series**

# Maximum 0.85 MPa pressure setting Long-life, high flow perfect for balancer applications

Realizing high performance, long service, and high exhaust flow. Realize precise pressure control in a pressure range of 0.03 to 0.85 MPa.

The RP2000 Series incorporates pilot pressure control using a nozzle flapper similar to the 1000 Series. However, this  $\square 50\text{mm}$  compact high exhaust flow has high relief. Low sliding packing is used for moving parts, extending parts life. This type has outstanding durability and sufficient supply/discharge at optimum high frequency and high response required for devices such as balancers.

- **High precision pressure control**  
Pressure control within  $\pm 0.5\%$  of repeatability full scale and within  $0.2\%$  of the sensitivity full scale is possible.
- **$\square 50\text{mm} \cdot 470\text{g}$**   
Compact aluminum body with high flow.
- **Foreign matter entry prevention**  
A mesh filter is installed as a standard on the IN side.
- **Module type**  
Connect with the C3000 or C4000 Series filter and oil mist filter.
- **Long service life**  
Low sliding packing is adopted for moving sections, and strong grease is used for dry air.
- **Stable flow characteristics with small pressure drop**
- **Large relief flow**

- **Cylinder bore size and corresponding speed (guide)**

<b>80 dia.</b>	<b>1000mm/s</b>
<b>100 dia.</b>	<b>900mm/s</b>
<b>125 dia.</b>	<b>600mm/s</b>

● **Balancer**

Read safety precautions on pages 468 to 469 to ensure that this product is used correctly and safely.

## High performance, long service life, and high exhaust flow. **RP2000 Series**

Refrigerating type dryer  
 Desiccant type dryer  
 High-polymer membrane dryer  
 Air filter  
 Automatic drain other  
 F.R.L (Module)  
 F.R.L (Separate)  
 Small F.R.  
 Precise R.  
 Electro pneumatic R.  
 Auxiliary  
 Flow control valve  
 Silencer  
 Check valve / others  
 Joint / tube  
 Vacuum F.  
 Vacuum R.  
 Vacuum generator  
 Vacuum auxiliary / pad  
 Mechanical pressure SW  
 Electronic pressure SW  
 Electronic dif. pres. SW  
 Sealing / close contact conf. SW  
 Pressure SW for coolant  
 Flow sensor for air  
 Total air system  
 Water cooling refrigerator  
 Flow sensor for water  
 F.R.L. unit  
 Precision regulator



Pneumatic components (F.R.L Unit (Precision))

# Safety Precautions

Read this before starting use.

Please refer to Intro 43 for general details on the pneumatic components, and to "▲ Safety Precautions" in this section for detailed cautions pertaining to each series.

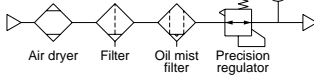
Precision regulator RP1000/2000 Series

## WARNING

### Design & Selection

**1 Use within the product's specific specification range.**

**2 Working fluid must be clean air from which solids,**  
[Recommended air circuit]



water and oil have been sufficiently removed using a dryer, filter and oil mist filter. Never supply oiled air. When secondary pressure, etc., is turned OFF, air on the secondary side will pass through the regulator and be discharged from the EXH port. Thus, if secondary piping or inside of the load side is dirty, performance is adversely affected so characteristics will deteriorate. Keep the inside of pipes clean.

## CAUTION

### Design & Selection

**1 Keep the pressure difference between the primary and secondary sides to 0.1 MPa and over. Note that if the set pressure is 0.3 MPa and over, keep the pressure difference at 0.2 MPa and over.**

[Precautions for RP1000]

When using under conditions with a small pressure difference between the primary and secondary sides, the secondary pressure could pulsate. In this case, decrease the pressure setting (high pressure → low pressure). Another method is to set the primary pressure to an extremely high level or to somewhat lower the setting pressure, and restrict the secondary side line. Consult with CKD if the pulsation still does not cease. When using with a low friction cylinder having a constant leak, secondary pressure may pulsate depending on working conditions. In this case, restrict the secondary side line and decrease the pressure setting (high pressure → low pressure) to attenuate pulsation. Consult with CKD if pulsation still does not cease.

[Precautions for RP2000]

If the pressure difference between primary and secondary sides is large and secondary side piping is large, secondary pressure could pulse during low flow. In this case, set the primary side to the secondary pressure +0.1 to 0.2 MPa, or restrict the secondary side line. Consult with CKD if the pulsation still does not cease.

**2 If the regulator is repeatedly turned ON and OFF with the directional control valve on the primary side, the set pressure may change greatly. Thus, the directional control valve should be installed on the secondary side.**

**3 Install a safety device where an output pressure exceeding the regulator's set pressure value could result in damage or faulty operation of secondary side devices.**

**4 Do not operate the pressure adjustment knob while the primary side is released to the atmosphere as performance could deteriorate.**

## CAUTION

### Installation & Adjustment

**1 Check IN and OUT indications indicating the air inlet and outlet before connecting. A reverse connection could result in improper operation.**

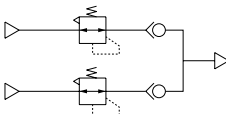
**2 Do not move or swing the product holding the adjustment knob on the regulator.**

**3 Avoid installing this product where vibration and impact are present.**

**4 Flush air pipes before connecting the regulator.**

**5 Check that sealing tape is not caught when piping.**

**6 When using regulators in parallel as shown below, do not use the OUT side as a closed circuit. If a closed circuit is required, set a check valve at the regulator's OUT side.**



**7 Install the regulator so that the EXH port is not plugged.**

**8 When installing on a panel, completely loosen the pressure adjustment knob, and insert the body into the 12.5 diameter panel hole. Then, fix to the tightening panel with the panel mounting nut. Next, turn the pressure adjustment knob, and assembly it onto the body.**

[Precautions for RP2000]

If the product is installed on the panel in a horizontal direction, the panel could be damaged by the product weight and vibration.

**9 Tighten pipes with the appropriate torque.**

- Pipes must be connected with the appropriate torque to prevent air leakages and screw damage.
- First tighten the screw by hand to prevent damage to screw threads, then use a tool. [Recommended value]

Set screw	Tightening torque N·m
Rc1/8	3 to 5
Rc1/4	6 to 8
Rc3/8	13 to 15

Refrigerating type dryer
Desiccant type dryer
High polymer membrane dryer
Air filter
Automatic drain other
F.R.L. (Module)
F.R.L. (Separate)
Small F.R.
Precision R.
Electro pneumatic R.
Auxiliary
Flow control valve
Silencer
Check valve / others
Joint / tube
Vacuum F.
Vacuum R.
Vacuum generator
Vacuum auxiliary / pad
Mechanical pressure SW
Electronic pressure SW
Electronic dif. pres. SW
Seating / close contact conf. SW
Pressure SW for coolant
Flow sensor for air
Total air system
Water cooling refrigerator
Flow sensor for water

F.R.L. unit  
Precision regulator



## CAUTION

## During use & Maintenance

### 1 Working pressure

- Use only compressed air. Air containing corrosive gases, fluids or chemicals could result in improper pressure adjustment due to body damage or rubber deterioration.

### 2 Working environment

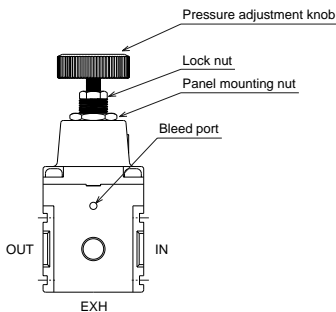
- Avoid using the regulator in the following environment.
- Place where the ambient temperature exceeds -5 to 60°C.
- Where air freezes.
- Where water drops or coolant may come in contact.
- Highly humid places where dew condenses due to temperature fluctuations.
- Where sea breeze or salt water could come in contact.
- Where corrosive gases, fluids or chemicals are present.
- Where regulator is subject to direct sunlight.
- With the precision regulator RP1000, the setting pressure fluctuates by approx. 0.12 kPa/°C. The temperature tends to drop when the temperature rises.

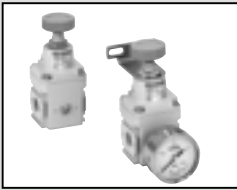
### 3 Use

- Air constantly leaks from the bleed port. This is necessary for precise pressure control, so do not plug the hole.
- Check primary pressure before setting pressure.
- Do not set a pressure higher than primary pressure.
- Turn the pressure adjustment knob clockwise to increase secondary pressure, and counterclockwise to lower pressure.
- Pressure is set in the depressurizing direction (high pressure → low pressure), so a highly precise setting can be made.
- After adjusting pressure, tighten the lock nut, and then fix the knob.

### 4 Maintenance

- The pneumatic component must be disassembled and assembled by a qualified worker.
- Personnel involved in this step must have passed the Pneumatic Pressure Skill Test Class 2 or higher.
- Read the relevant product instruction manual thoroughly and fully familiarize yourself with work before disassembling or assembling the pneumatic component.
- Personnel must be fully familiar with pneumatic component structure and operational principles and safety requirements.
- Before servicing the product, turn power OFF, stop the compressed air supply, and check that there is no residual pressure.





Precision regulator

# RP1000 Series

• Port size: Rc1/4

JIS symbol



CAD DATA AVAILABLE.

## Specifications

Descriptions	RP1000-8-02	RP1000-8-04
Working fluid	Clean compressed air (refer to Page 468 for recommended air circuit. )	
Max. working pressure	MPa	1.0
Min. working pressure	MPa	Set pressure +0.1 Note 1
Withstanding pressure	MPa	1.5
Ambient temperature / fluid temperature	°C -5 to 60 (to be unfrozen)	
Set pressure range	MPa 0.003 to 0.2	0.005 to 0.4
Sensitivity	Within 0.1% of full scale	
Repeatability	Within ± 0.5% of full scale	
Air consumption	ℓ / min(ANR)	1.3 or less Note 2
Port size	Rc1/4	
Pressure gauge port size	Rc1/8	
Mass	g 250	

Note 1. Flow rate of the secondary side is to be zero. If the set pressure is 0.3MPa and over, increase +0.2MPa in the set pressure.

Note 2. The primary pressure is to be 0.7MPa. Air is released to atmosphere normally.

## How to order



Model  
RP1000: Precision regulator

A Port size		B Set pressure range		C Attachment (attached)	
8	Rc1/4	02	MAX.0.2MPa	Blank	None
		04	MAX.0.4MPa	G49P	Pressure gauge (G49D-6*)
				B3	L type bracket

Note 1: Max. 0.7MPa setting type is also available.

Note 2: A pressure gauge and a bracket are attached.

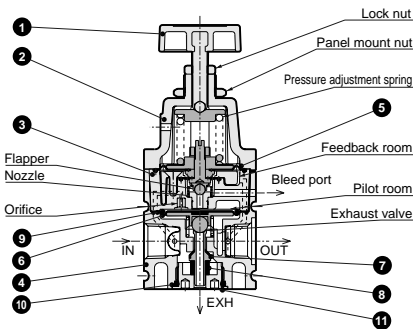
Note 3: A pressure gauge as same pressure range as the regulator is attached.

Note 4: One R1/8 plug is attached to the product.

## Discrete attachment model No.

Model	Discrete attachment model no.
RP1000-8-02-G49P	G49D-6-P02
RP1000-8-04-G49P	G49D-6-P04
RP1000-8- <sup>02</sup> / <sub>04</sub> -B3	B131

### Internal structure and parts list



No.	Parts name	Material
1	Pressure adjustment knob	Polyacetal resin and stainless steel
2	Cover	Aluminum ally die casting
3	Pilot body assembly	Aluminum ally die casting, etc.
4	Body	Aluminum ally die casting
5	Pilot diaphragm	Special nitrile rubber
6	Main diaphragm	Special nitrile rubber
7	Valve	Special nitrile rubber and stainless steel
8	Bottom rubber	Silicon rubber
9	O ring	Nitrile rubber
10	O ring	Nitrile rubber
11	Bottom plug	Brass and electroless nickel plating


### Operational explanation

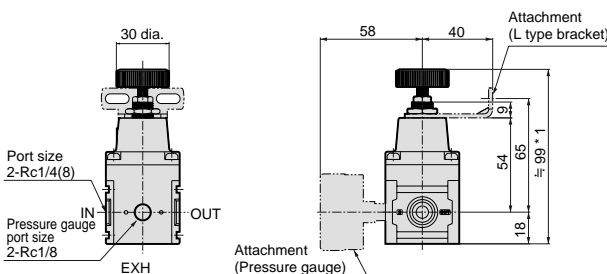
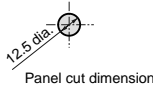
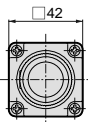
Air supplied from IN side is stopped its flow to OUT side by the 7 valve. Some supplied air passes through the orifice to flow into the pilot room. If the 1 pressure adjustment knob is rotated, the pressure adjustment spring is compressed, and the 5 pilot diaphragm and the flapper are pushed down to close the nozzle. If the pressure in the pilot room rises, 6 main diaphragm is forced lower to open 7 valve, and to supply air to OUT side. The entrained air is flowed into the feedback room, and functions to the 5 pilot diaphragm. If the diaphragm is forced upward until reach the pressure of regulator spring, the 5 pilot diaphragm and flapper is forced upward to open the nozzle, and extremely small air is released to the atmosphere to reduce pressure in the pilot room. At the same time, Out side pressure functions to the 6 main diaphragm to force upward, the 7 valve is closed and set pressure is maintained. Air is consumed and the pressure drops in OUT side, the pressure in feedback room also drops. The 5 pilot diaphragm and the flapper are forced lower to close the nozzle. If the pressure in the pilot room rises, and the pressure functions to the 6 main diaphragm to open the 7 valve. This compensates pressure drop. If OUT side pressure increases higher than the set pressure, the pressure in feedback room also increases. The 5 pilot diaphragm and the flapper are forced upward to open the nozzle. This allows the pressure in the pilot room to decrease, and the 6 main diaphragm is forced upward to open the exhaust valve, and the surplus pressure is exhausted from EXH port in OUT side to the atmosphere. This pilot pressure control method with precise pressure control enables precise pressure control following extremely small pressure deviation.

### Repair parts list

No.	Parts name	Model no.
3	Pilot body assembly	RP1000-PILOT-ASSY
5	Pilot diaphragm	RP1000-DIAPHRAGM-ASSY
6	Main diaphragm	RP1000-DIAPHRAGM-ASSY
7	Valve	RP1000-VALVE-ASSY
8	Bottom rubber	RP1000-VALVE-ASSY
10	O ring	RP1000-VALVE-ASSY

### Dimensions

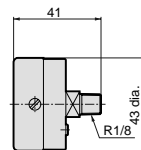
- RP1000  (File name: Page 479 or Ending 19)



- \* 1: Dimension at set pressure 0MPa
- \* 2: Pressure gauge and bracket are optional.

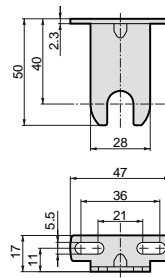
### Pressure gauge

- G49D-6-<sup>P02</sup>/<sub>P04</sub>



### L type bracket

- B131



Refrigerating type dryer  
Desiccant type dryer  
High polymer membrane dryer  
Air filter  
Automatic drain other  
F.R.L. (Module)  
F.R.L. (Separate)  
Small F.R.  
Precise R.  
Electro pneumatic R.  
Auxiliary  
Flow control valve  
Silencer  
Check valve / others  
Joint / tube  
Vacuum F.  
Vacuum R.  
Vacuum generator  
Vacuum auxiliary / pad  
Mechanical pressure SW  
Electronic pressure SW  
Electronic dif. pres. SW  
Sealing / close contact conf. SW

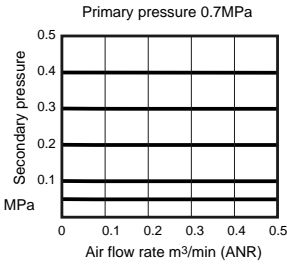
Pressure SW for coolant  
Flow sensor for air  
Total air system

Water cooling refrigerator  
Flow sensor for water

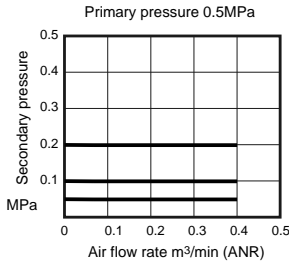
F.R.L. unit  
Precision regulator

## Flow characteristics

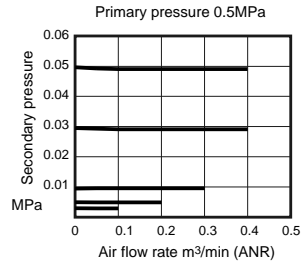
• RP1000-8-04



• RP1000-8-02

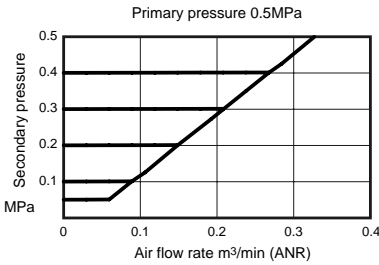


• RP1000-8-02 (flow characteristics at low pressure)

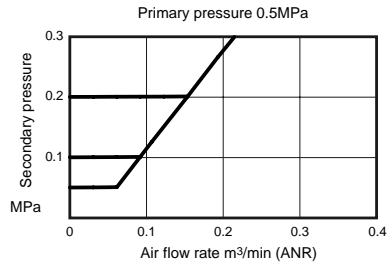


## Relief flow characteristics

• RP1000-8-04

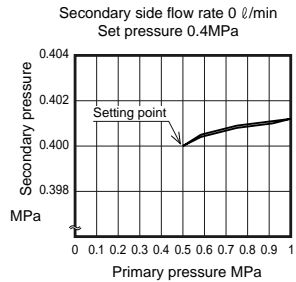
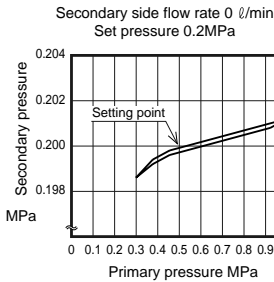
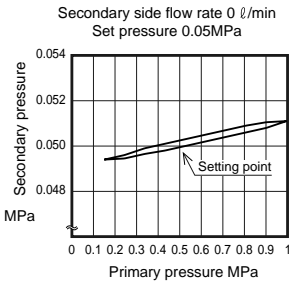


• RP1000-8-02

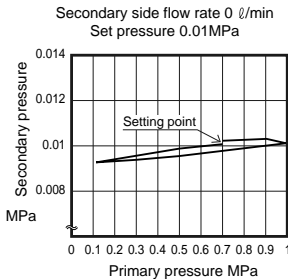
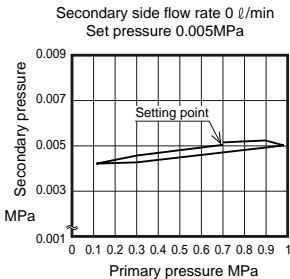


## Pressure characteristics

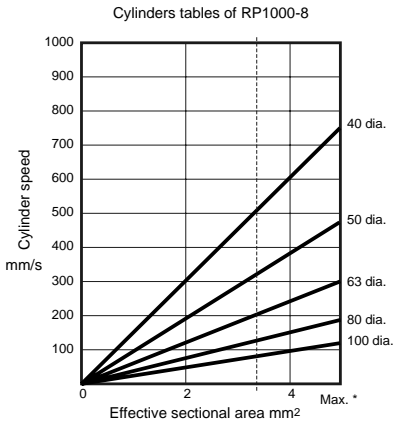
• RP1000-8-04



• RP1000-8-02



### Cylinder speed range of RP1000

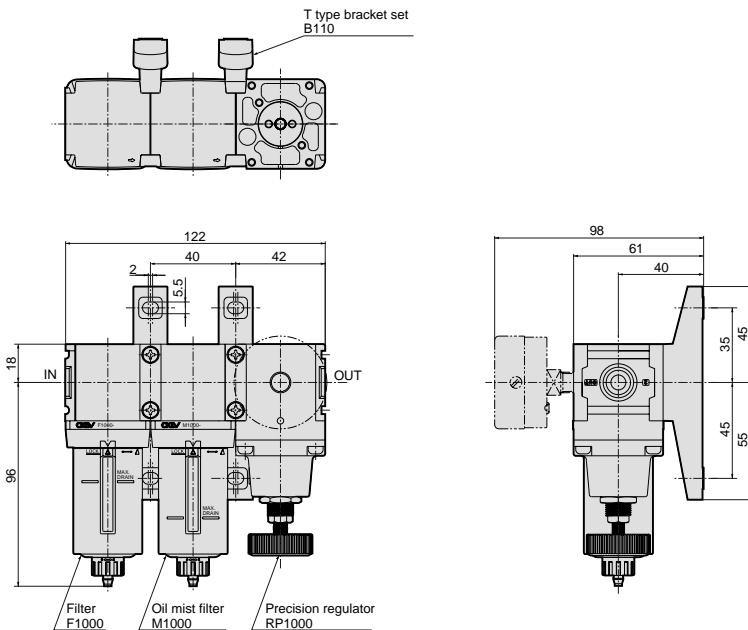


This cylinder table shows available range according to air supply / exhaust flow rate of precision regulator and required consumption flow rate at cylinder PUSH / PULL .

----- Recommended cylinder line (70% of max. flow rate is recommended.)

\* Max. cylinder line (Cylinder directly installed)

### Precise pressure control system e.g.



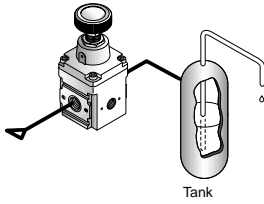
\*If required for assembly, please consult with CKD.

Applicable model	Filter	Oil mist filter	Precision regulator	T type bracket set
Model	F1000	M1000	RP1000	B110 (two)

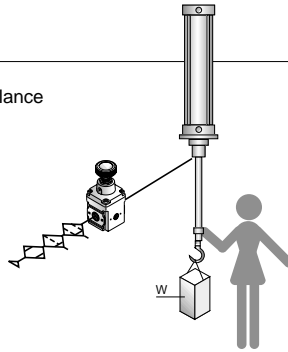
- Refrigerating type dryer
- Desiccant type dryer
- High polymer membrane dryer
- Air filter
- Automatic drain other
- F.R.L (Module)
- F.R.L (Separate)
- Small F.R.
- Precise R.**
- Electro pneumatic R.
- Auxiliary
- Flow control valve
- Silencer
- Check valve / others
- Joint / tube
- Vacuum F.
- Vacuum R.
- Vacuum generator
- Vacuum auxiliary / pad
- Mechanical pressure SW
- Electronic pressure SW
- Electronic dif. pres. SW
- Seating / close contact conf. SW
- Pressure SW for coolant
- Flow sensor for air
- Total air system
- Water cooling refrigerator
- Flow sensor for water
- F.R.L. unit**
- Precision regulator**

## Major applications

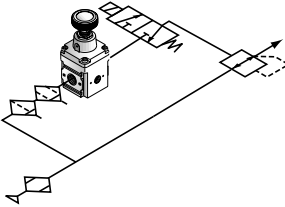
\*Liquid discharge control



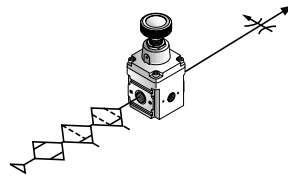
\*Balance



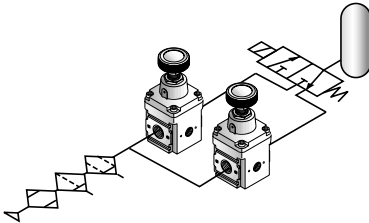
\*Pilot pressure control



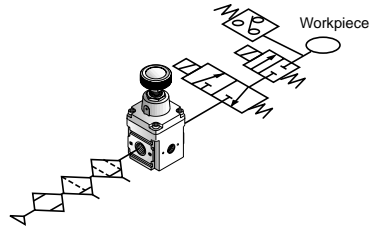
\*Extremely low pressure blow



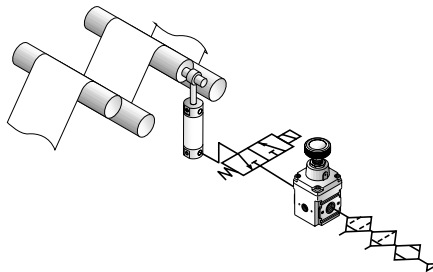
\*Quick pressure adjustment in tank



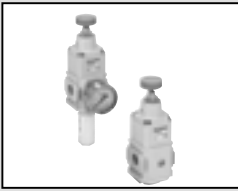
\*Leak test



\*Tension control







Precision regulator

# RP2000 Series

• Port size: Rc1/4 Rc3/8

JIS symbol



CAD DATA AVAILABLE.

## Specifications

Descriptions	RP2000-8-08	RP2000-10-08
Working fluid	Clean compressed air (refer to Page 468 for recommended air circuits. )	
Max. working pressure	MPa	1.0
Min. working pressure	MPa	Set pressure +0.1 Note 1
Withstanding pressure	MPa	1.5
Ambient temperature / fluid temperature	°C	-5 to 60 (to be unfrozen )
Set pressure range	MPa	0.03 to 0.85
Sensitivity	Within 0.2% of full scale	
Repeatability	Within ± 0.5% of full scale	
Air consumption	ℓ / min(ANR)	5 or less Note 2
Port size	Rc1/4	Rc3/8
Exhaust side port size	Rc3/8	
Pressure gauge port size	Rc1/8	
Mass	g	470

Note 1. Flow rate of the secondary side is to be zero.

Note 2. Conditions where the primary pressure is 0.7MPa and set pressure is 0.3MPa. Consumed air is normally released to the atmosphere from the bleed port and EXH port.

So, air consumption is the total of consumption volume released from the bleed port and EXH port. Air 1ℓ/min (ANR) or less is released from EXH port.

## How to order



Model  
RP2000: Precision regulator

A Port size		B Set pressure range		C Attachment (attached)	
8	Rc1/4	08	MAX.0.85MPa	Blank	None
10	Rc3/8			G49P	Pressure gauge
				B	C type bracket
				E	Silencer

Note 1: If the port size Rc1/2 is required, use a piping adapter set (model no. : A400-15).

Note 2: Attachment is attached.

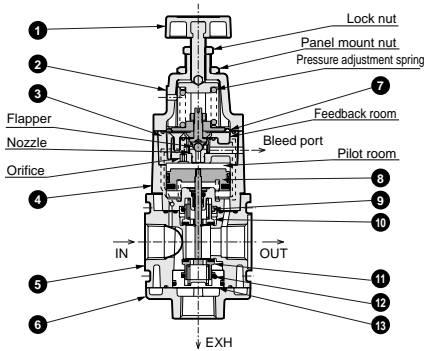
Note 3: A piping adapter set and C type bracket can not be used together.

Note 4: One R1/8 plug is attached to the product.

## Discrete attachment model No.

Attachment symbol	Discrete attachment model no.
G49P	G49D-6-P10
B	B220
E	SLW-10A

### Internal structure and parts list



No.	Parts name	Material
1	Pressure adjustment knob	Polycetal resin and stainless steel
2	Cover	Aluminum ally die casting
3	Pilot body assembly	Aluminum ally die casting, etc.
4	Top body assembly	Aluminum ally die casting, etc.
5	Body	Aluminum ally die casting
6	Exhaust adaptor	Aluminum ally die casting
7	Pilot diaphragm	Special nitrile rubber
8	Piston assembly	Aluminum and stainless steel, etc.
9	O ring	Nitrile rubber
10	Exhaust valve	Brass and special nitrile rubber
11	Air supply valve	Brass and special nitrile rubber
12	O ring	Nitrile rubber
13	Bottom cap	Brass

### Operational explanation

Air supplied from IN side is stopped its flow to OUT side by the air supply valve. Some supplied air passes through the orifice to flow into the pilot room. If the ① pressure adjustment knob is rotated, the pressure adjustment spring is compressed, and the ⑦ pilot diaphragm and the flapper are pushed down to close the nozzle. If the pressure in the pilot room rises, the piston is forced lower to open ⑩ air supply valve, and to supply air to OUT side. The entrained air is flowed into the feedback room, and functions to the ⑦ pilot diaphragm. If the diaphragm is forced upward until reach the pressure of regulator spring, the ⑦ pilot diaphragm and flapper is forced upward to open the nozzle, and extremely small air is released to the atmosphere to reduce pressure in the pilot room. At the same time, Out side pressure functions to the main diaphragm to force upward, the valve is closed and set pressure is maintained. Out side pressure functions to the piston to lower at the same time, while ⑪ air supply valve is closed to maintain the set pressure. Air is consumed and the pressure drops in OUT side, the pressure in feedback room also drops. The ⑦ pilot diaphragm and the flapper are forced lower to close the nozzle. If the pressure in the pilot room rises, and the pressure functions to the piston to open the ⑩ air supply valve. This compensates pressure drop. If OUT side pressure increases higher than the set pressure, the pressure in feedback room also increases. The ⑦ pilot diaphragm and the flapper are forced upward to open the nozzle. This allows the pressure in the pilot room to decrease, and the piston is forced upward to open the ⑩ exhaust valve, and the surplus pressure is exhausted from EXH port in OUT side to the atmosphere. This precise pressure control method with precise pressure control enables precise pressure control following extremely small pressure deviation.

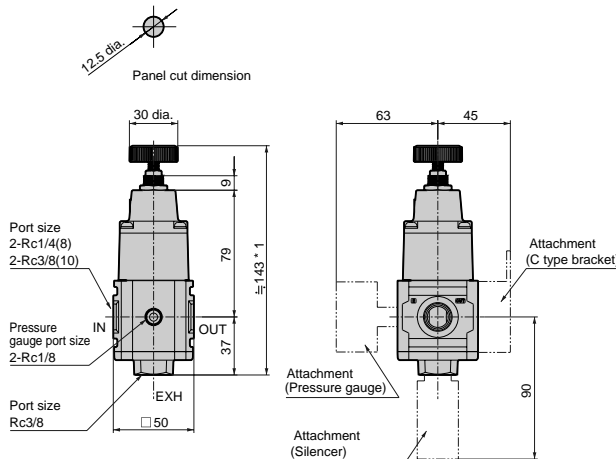
### Repair parts list

No.	Parts name	Model no.
3	Pilot body assembly	RP2000 -PILOT-ASSY
7	Pilot diaphragm	
4	Top body assembly	RP2000 -TOP-BODY-ASSY
11	Air supply valve	RP2000 -BTM-VALVE-ASSY
12	O ring	
13	Bottom cap	

Note: Part No. ⑧, ⑨ and ⑫ are contained in top body assembly ④.

### Dimensions

- RP2000 (File name: Page 479 or Ending 19)

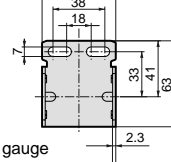


\* 1: Dimension at set pressure 0MPa

\* 2: Pressure gauge, C type bracket and silencer are optionally attached.

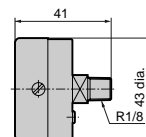
### C type bracket

- B220



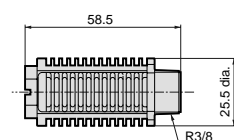
### Pressure gauge

- G49D-6-P10



### Silencer

- SLW-10A



Refrigerating type dryer

Desiccant type dryer  
High polymer membrane dryer

Air filter

Automatic drain other

F.R.L. (Module)

F.R.L. (Separate)

Small F.R.

Precise R.

Electro pneumatic R.

Auxiliary

Flow control valve

Silencer

Check valve / others

Joint / tube

Vacuum F.

Vacuum R.

Vacuum generator

Vacuum auxiliary / pad

Mechanical pressure SW

Electronic pressure SW

Electronic dif. pres. SW

Sealing / close contact conf. SW

Pressure SW for coolant

Flow sensor for air

Total air system

Water cooling refrigerator

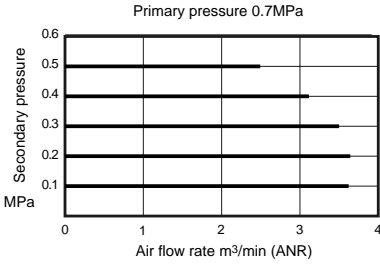
Flow sensor for water

F.R.L. unit

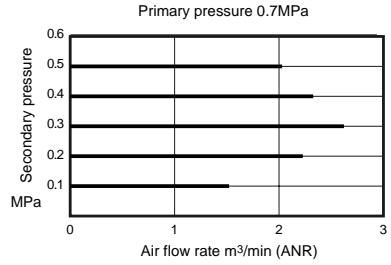
Precision regulator

## Flow characteristics

• RP2000-10-08

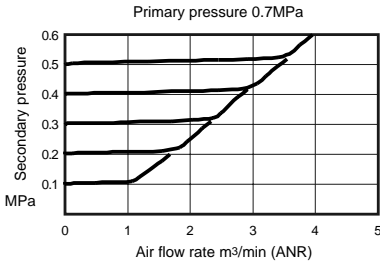


• RP2000-8-08

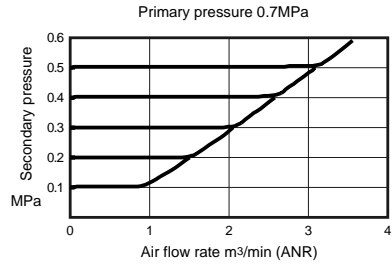


## Relief flow characteristics

• RP2000-10-08

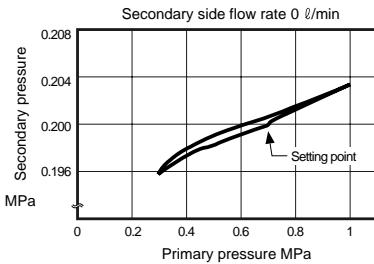


• RP2000-8-08

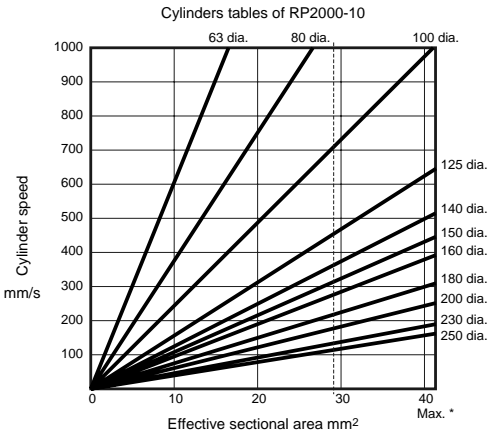


## Pressure characteristics

• RP2000-\*-08



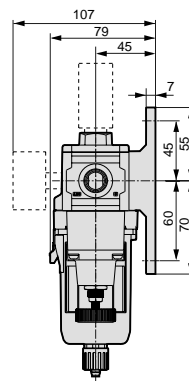
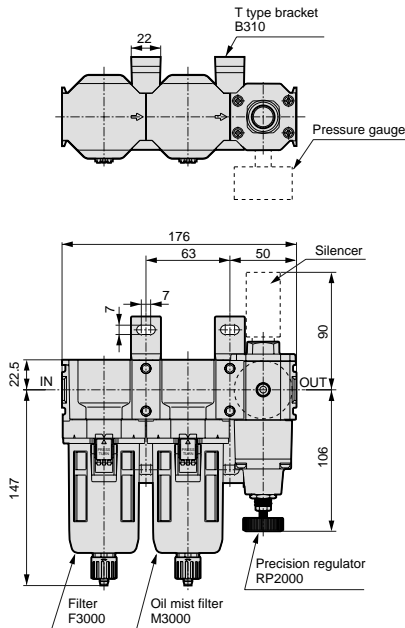
### Cylinder speed range of RP2000



This cylinder table shows available range according to air supply / exhaust flow rate of precision regulator and required consumption flow rate at cylinder PUSH / PULL .

----- Recommended cylinder line  
(70% of max. flow rate is recommended.)  
\* Max. cylinder line  
(Cylinder directly installed)

### Precise pressure control system e.g.



\*If required for assembly, please consult with CKD.

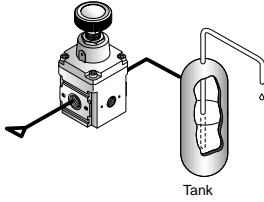
Applicable model	Filter	Oil mist filter	Precision regulator	T type bracket set
Model	F3000	M3000	RP2000	B310 (two)

Refrigerating type dryer  
Desiccant type dryer  
High polymer membrane dryer  
Air filter  
Automatic drain other  
F.R.L. (Module)  
F.R.L. (Separate)  
Small F.R.  
Precision R.  
Electro pneumatic R.  
Auxiliary  
Flow control valve  
Silencer  
Check valve / others  
Joint / tube  
Vacuum F.  
Vacuum R.  
Vacuum generator  
Vacuum auxiliary / pad  
Mechanical pressure SW  
Electronic pressure SW  
Electronic dif. pres. SW  
Seating / close contact conf. SW  
Pressure SW for coolant  
Flow sensor for air  
Total air system  
Water cooling refrigerator  
Flow sensor for water

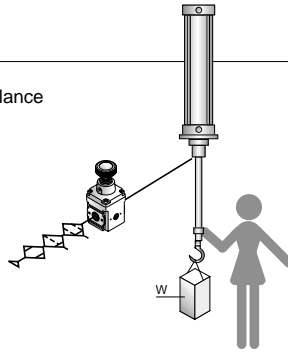
F.R.L. unit  
Precision regulator

## Major applications

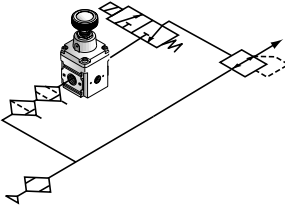
\*Liquid discharge control



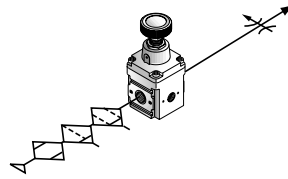
\*Balance



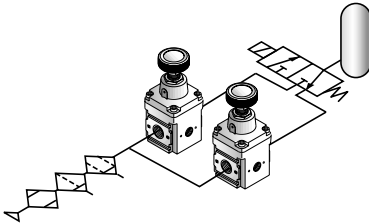
\*Pilot pressure control



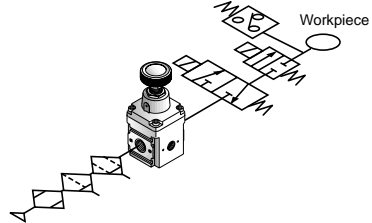
\*Extremely low pressure blow



\*Quick pressure adjustment in tank



\*Leak test



\*Tension control

