

Precision Regulator Air Saving Type **RPE Series**

PRECISION REGULATOR RPE SERIES

Large “**Air Saving**”



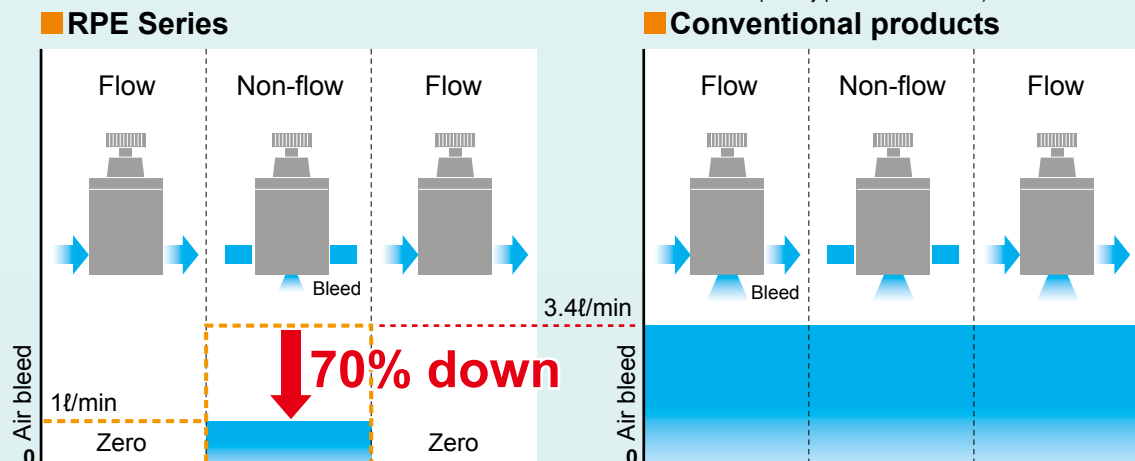
Air Consumption 70% Down.

New Type Eco-friendly Precision Regulator RPE Series.

Special structure realizes a large cut in the air consumption (compared to our company's products).

And excellent in control performance with high precision and downsizing. Various application, such as accurate tension control.

● Air Consumption 70% Down



Compared to our company's products, the quantity of air bleed has been reduced dramatically. (Comparison under the same conditions at a primary pressure of 0.7MPa)

Image drawing
The actual position of bleed is different.

● High precision pressure control

Repeat accuracy: Within $\pm 0.5\%$ of full scale
Sensitivity: Within 0.2% of full scale

● Small size □ 42mm·Lightweight 250g

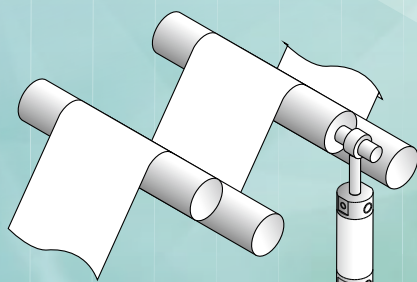
Aluminum material used, compact light design.

● Module type

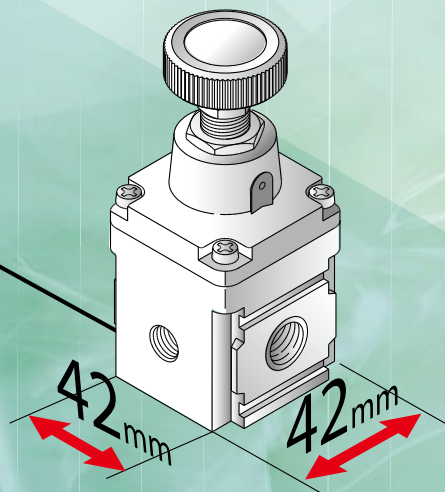
Connectable to the filter of C1000 series, oil mist filter.

● Anti-ozone material used as standard for moving parts

● Non grease fluid passage spec



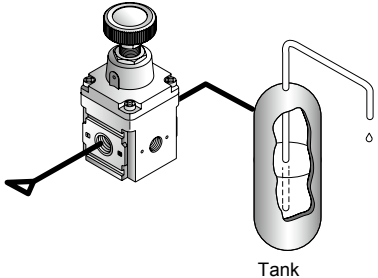
■ Tension control



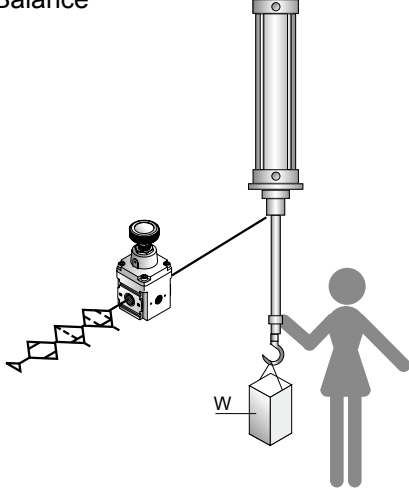
RPE Series

Major applications

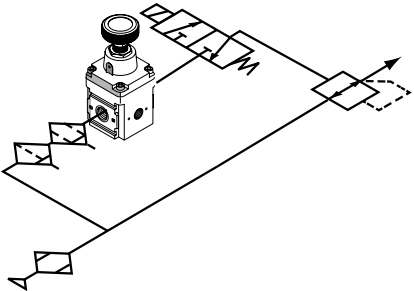
■ Control of liquid discharge quantity



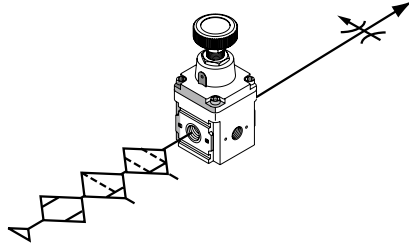
■ Balance



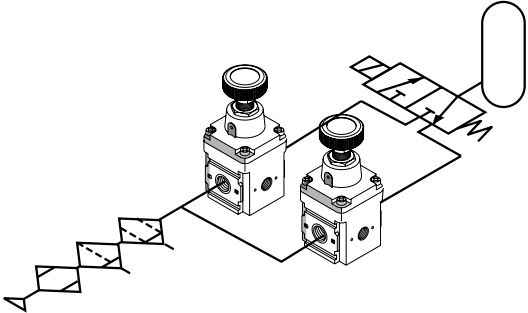
■ Pilot pressure control



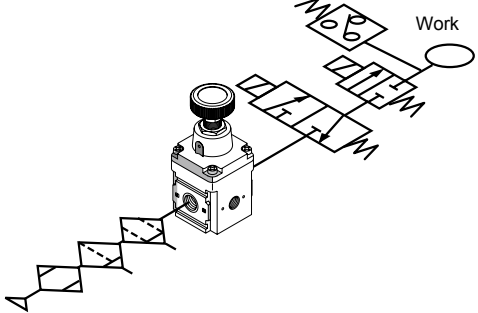
■ Low pressure blow

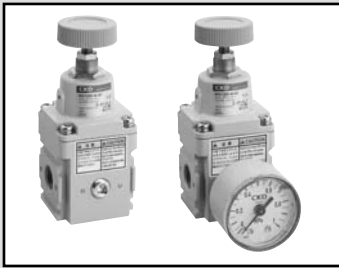


■ Rapid adjustment of tank pressure



■ Leak test





Precision regulator

RPE1000 Series

● Port size: Rc1/4

JIS Symbol



Specifications

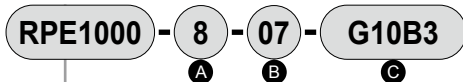
Descriptions		RPE1000-8-07
Working fluid		Clear compressed air (refer to recommended air circuit on page 6)
Max. working pressure	MPa	1.0
Min. working pressure	MPa	Setting pressure +0.1 Note 1
Withstanding pressure	MPa	1.5
Ambient temperature, fluid temperature	°C	-5 to 60 (No freezing)
Set pressure range	MPa	0.01 to 0.7
Sensitivity		Within 0.2% of full scale
Repeatability		Within +/-0.5% of full scale
Air consumption	Note 2 ℓ/min (ANR)	0.2 or less
Port size		Rc1/4
Pressure gauge port size		Rc1/8
Weight	g	250 Note 3

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

Note 2: The condition when primary pressure is 0.7MPa with secondary air consumed. When air is not consumed, air of 1 ℓ/min or less is released to the atmosphere from the EXH port.

Note 3: For the weight with ● attachment, add the following weight. Pressure gauge : 74g, Bracket : 30g

How to order



Model
RPE1000:
Precision Regulator

A Port size		B Setting pressure range		C Attachment (attached)	
8	Rc1/4	07	MAX.0.7MPa	No symbol	Without attachment
				G02	Pressure gauge (G45D-6-P02)
				G04	Pressure gauge (G45D-6-P04)
				G10	Pressure gauge (G45D-6-P10)
				B3	L type bracket (B131)

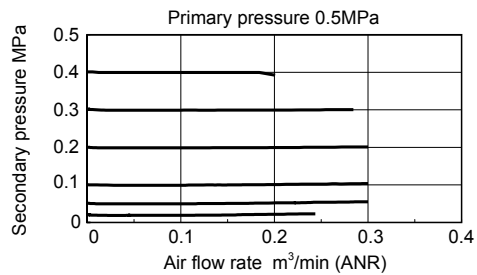
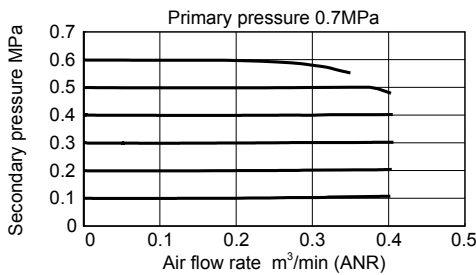
Note 1: Pressure gauge and bracket are attached.

Note 2: Pressure range of pressure gauge is optional. Do not apply pressure more than MAX range of pressure gauge.

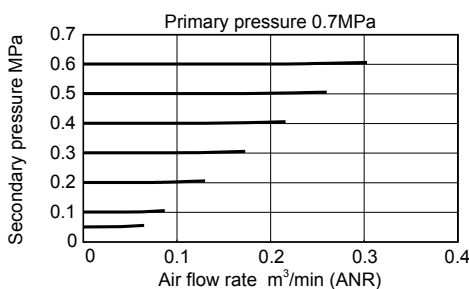
Note 3: One R1/8 plug is attached to the product.

Note 4: G threads and NPT threads are available. (customer order)

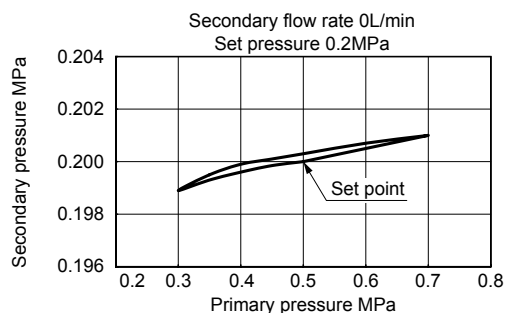
Flow characteristics



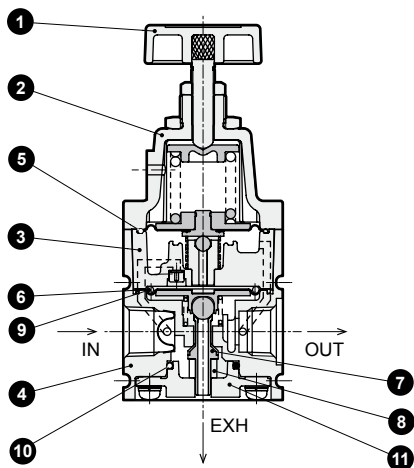
Relief flow characteristics



Pressure characteristics

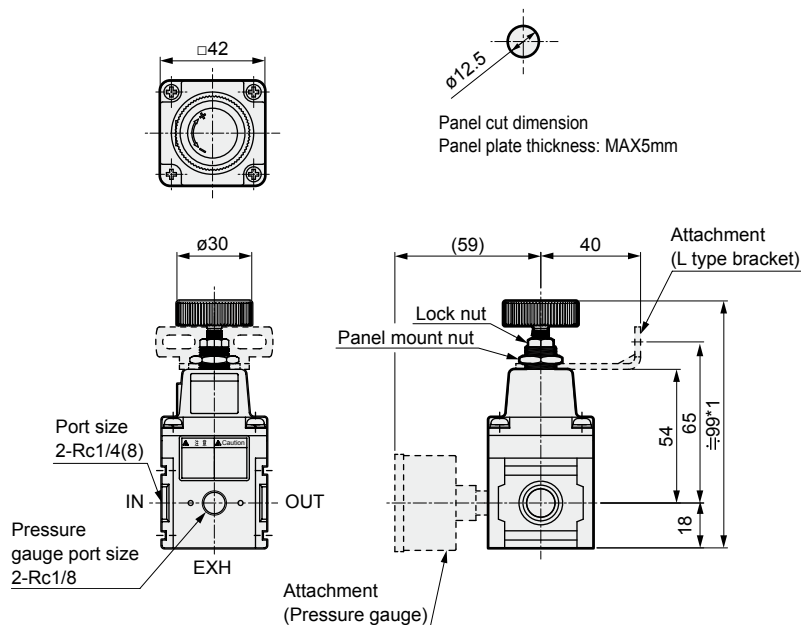


Internal structure and parts list



No.	Part name	Material
1	Pressure adjustment knob	Polyacetal resin, stainless steel
2	Cover	Aluminum alloy die-casting
3	Pilot body assembly	Aluminum alloy die-casting etc.
4	Body	Aluminum alloy die-casting
5	Pilot diaphragm assembly	Hydrogen nitrile rubber, zinc alloy die-casting
6	Main diaphragm assembly	Hydrogen nitrile rubber, zinc alloy die-casting
7	Valve	Hydrogen nitrile rubber, stainless steel
8	Bottom rubber	Silicone rubber
9	O ring	Nitrile rubber
10	O ring	Hydrogen nitrile rubber
11	Bottom plug	Polybutylene terephthalate

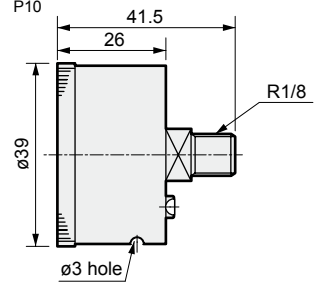
Dimensions



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

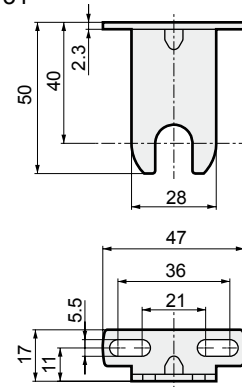
Pressure gauge

• G45D-6-
P02
P04
P10



L type bracket

• B131



(Reference) Rough standard for operation speed of cylinder

Cylinder bore size (mm)	Recommended operation speed (mm/s)
ø40	500 or less
ø50	320 or less
ø63	200 or less
ø80	130 or less
ø100	80 or less

These values show rough standards for operation speed of cylinder. They are calculated from air supply and exhaust flow rate with the precision regulator attached directly to the cylinder and consumption flow rate necessary for PUSH-PULL of a cylinder. Use beyond the capability of precision regulator may lead to failure.



Safety precautions

Always read this section before starting use.

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.

It is important to select, use, handle, and maintain the product appropriately to ensure that the CKD product is used safely. Observe warnings and precautions to ensure device safety.

Check that device safety is ensured, and manufacture a safe device.

WARNING




- 1** This product is designed and manufactured as a general industrial machine part. It must be handled by an operator having sufficient knowledge and experience in handling.
- 2** Use this product in accordance of specifications.

This product must be used within its stated specifications. It must not be modified or machined. This product is intended for use as a general-purpose industrial device or part. It is not intended for use outdoors or for use under the following conditions or environment.
(Note that this product can be used when CKD is consulted prior to use and the customer consents to CKD product specifications. The customer must provide safety measures to avoid risks in the event of problems.)

 - ① Use for special applications including nuclear energy, railway, aircraft, marine vessel, vehicle, medicinal devices, devices or applications coming into contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.
 - ② Use for applications where life or assets could be adversely affected, and special safety measures are required.
- 3** Observe corporate standards and regulations, etc., related to the safety of device design and control, etc.

ISO4414, JIS B 8370 (pneumatic system rules)
JFPS2008 (principles for pneumatic cylinder selection and use)
Including High Pressure Gas Maintenance Law, Occupational Safety and Sanitation Laws, other safety rules, body standards and regulations, etc.
- 4** Do not handle, pipe, or remove devices before confirming safety.
 - ① Inspect and service the machine and devices after confirming safety of the entire system related to this product.
 - ② Note that there may be hot or charged sections even after operation is stopped.
 - ③ When inspecting or servicing the device, turn off the energy source (air supply or water supply), and turn off power to the facility. Discharge any compressed air from the system, and pay enough attention to possible water leakage and leakage of electricity.
 - ④ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.
- 5** Observe warnings and cautions on the pages below to prevent accidents.

■ The precautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

-  **DANGER:** When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, or when there is a high degree of emergency to a warning.
-  **WARNING:** When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries.
-  **CAUTION:** When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as "CAUTION" may lead to serious results depending on the situation. In any case, important information that must be observed is explained.

Limited Warranty and Disclaimer

- 1** "Warranty Period" is one (1) year from the first delivery to the customer.
- 2** In case any defect attributable to CKD is found during Warranty Period, CKD shall, at its own discretion, repair the defect or replace the relevant product in whole or in part, according to its own judgment. In no event CKD shall never be liable for the costs in relation to and the damages resulting from the (de)installation of the product.

This Limited Warranty will not apply to:

 - (1) Product abuse/misuse contrary to conditions/environment recommended in its catalogs/specifications.
 - (2) Failure due to other causes.
 - (3) Use other than original design purposes.
 - (4) Third-party repair/modification.
 - (5) Failure due to causes not foreseeable with technology at the time of delivery.
 - (6) Failure attributable to force majeure.
- 3** IN NO EVENT SHALL CKD BE LIABLE FOR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, notwithstanding any disclosure to CKD of the use to which the product is to be put.



Pneumatic components (F. R.L Unit precision type)

Safety precautions

Always read this section before use.

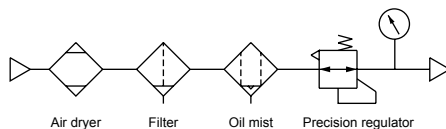
Refer to “Pneumatic, Vacuum, and Auxiliary Components No. CB-24SA for general precautions of pneumatic component.”

Precision regulator RPE1000 Series

Design & Selection

⚠ WARNING

- Use this product in accordance with the specifications range.
- Working fluid must be clean air from which solids, 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.



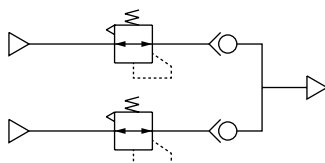
⚠ CAUTION

- Keep the pressure difference between the primary and secondary sides to 0.1 MPa and over.
Depending on the use circuit or use conditions, resonance with air flow may cause pulsation or sound (especially during air blow). In such a case, the primary pressure should be minimized or the secondary side volume should be increased.
- 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.
- 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.
- Do not operate the pressure adjustment knob while the primary side is released to the atmosphere as performance could deteriorate.
- Select RP2000 series, in case that the maximal flow or maximum relief flow of the regulator is exceeded.

Installation & Adjustment

⚠ CAUTION

- Check IN and OUT indications indicating the air inlet and outlet before connecting. Reverse connection could result in improper operation. If connected reversely, malfunction may be caused.
- Do not move or swing the product holding the adjustment knob on the regulator.
- Avoid installing this product where vibration and impact are present.
- Flush air pipes before connecting the regulator.
- Check that sealing tape is not caught when piping.
- When using regulator 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.



- Install the regulator so that the EXH is not plugged.
- 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 assemble it onto the body. Panel mount nut's recommended tightening torque: 2 or 3 N•m
- Apply adequate torque when connecting pipes.
 - To prevent air leak and to protect thread.
 - Tighten by hand first, then use a tool, to prevent screw thread damage.

[Recommended values]

Connection screw	Tightening torque N•m
Rc1/8	3 to 5
Rc1/4	6 to 8

During use & Maintenance

⚠ CAUTION

■ Working fluid

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

■ Working environment

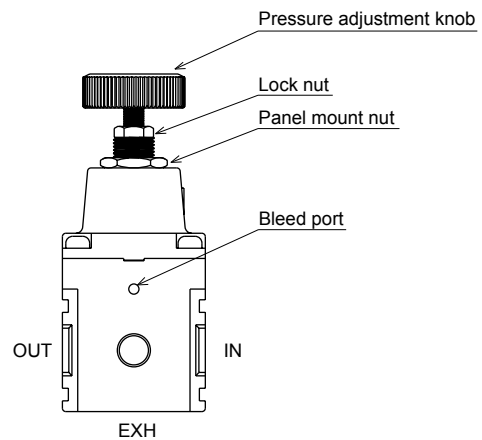
- This product is for indoor use. Avoid using the regulator in:
- Place where the ambient temperature exceeds -5 to 60°C.
 - Where air freezes.
 - Where water drip and cutting lubricant contact to the product.
 - Highly humid places where dew condenses due to temperature fluctuations.
 - Where sea breeze or salt water could come in contact.
 - If there is atmosphere of corrosive gas and liquid and chemical material.
 - Where the product is exposed to direct sun lay.
 - Places with vibration or impact.
 - Dusty places.

■ Use

- When air is not consumed at secondary side, air is released from EXH port. This is needed for precise pressure control. Do not block the EXH port. Air of 1 ℓ/min or less is released to the atmosphere from the EXH port.
- 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.
- After adjusting pressure, tighten the lock nut, and then fix the knob.
- Since set pressure changes with ambient temperature change, use at constant temperature is recommended.
- Even if the pressure adjusting knob is completely loosened, the secondary pressure may not be set to 0MPa due to product structure.

■ Maintenance

- Pneumatic components 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.



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