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

Realizing high performance, energy saving, and compact size. Enables 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 precise pressure control in a setting pressure range between 0.003 to 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 rate is high even with the □42 mm compact size. This energy saving type also has low air consumption.

High precision pressure control

Regardless of the flow rate, pressure control is performed with repeatability within ±0.5% of full scale and sensitivity within 0.1% of full scale.

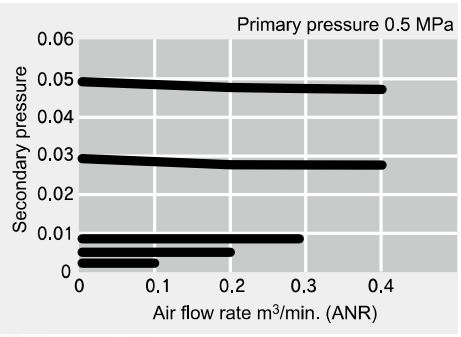
Set extremely low pressures

Pressure as low as 0.003 MPa can be set (RP1000-8-02).

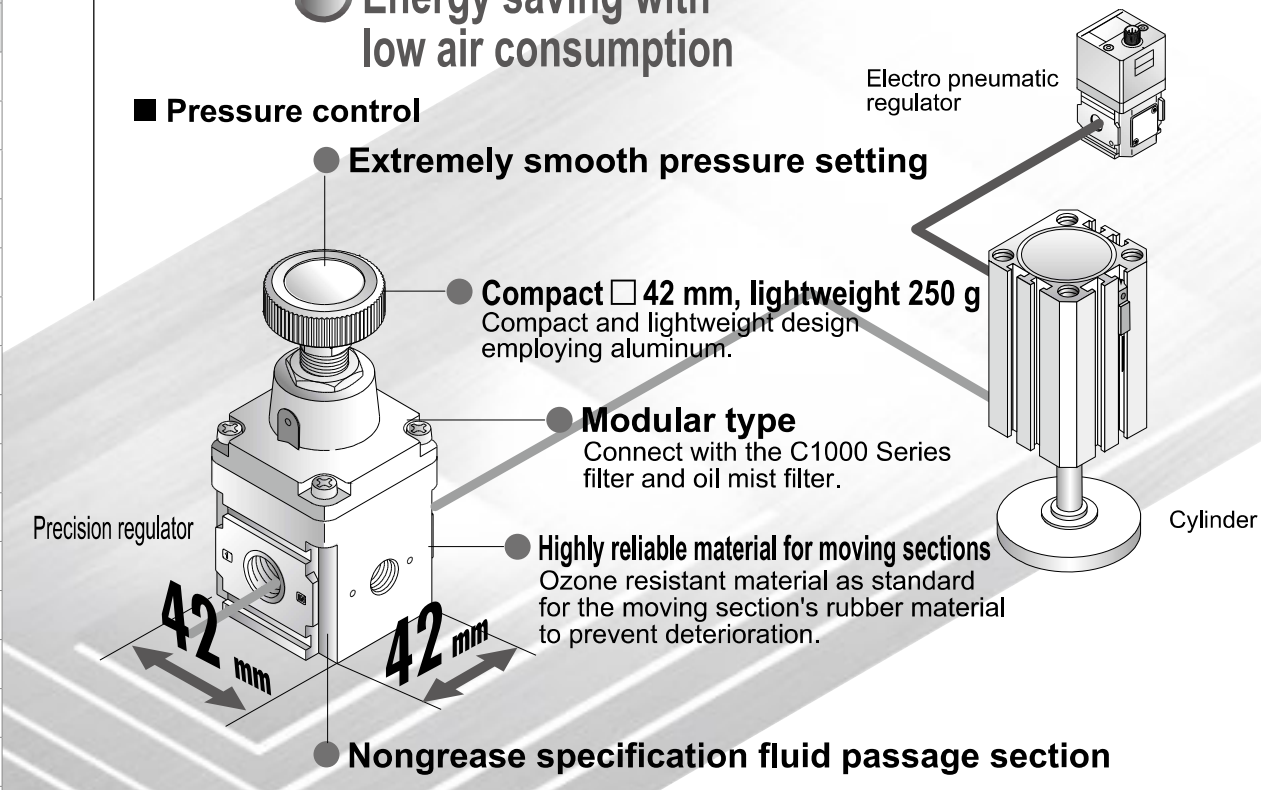
High relief flow rate

Energy saving with low air consumption

Stable flow characteristics with small pressure drop



■ **Pressure control**



High performance, energy saving, compact

RP1000 Series

CKD

Pressure setting: Max. 0.85 MPa

Long-life, high flow perfect for balancer applications.

Realizing high performance, long service, and high exhaust flow.
Enables 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 □50 mm compact high exhaust flow rate 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.

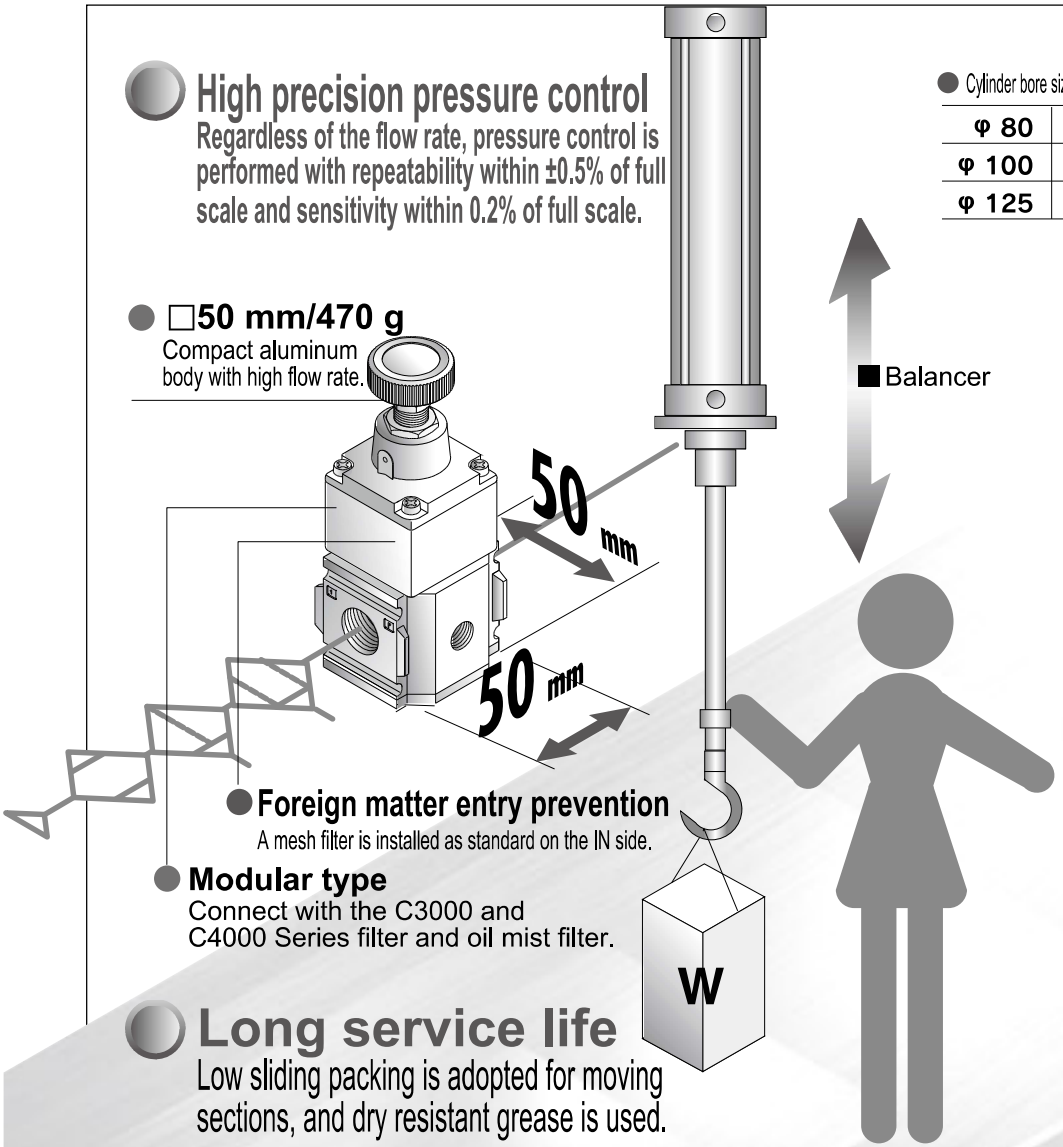
High precision pressure control

Regardless of the flow rate, pressure control is performed with repeatability within ±0.5% of full scale and sensitivity within 0.2% of full scale.

● Cylinder bore size and corresponding speed (guide)

φ 80	1000 mm/s
φ 100	900 mm/s
φ 125	600 mm/s

● **□50 mm/470 g**
Compact aluminum body with high flow rate.



● **Foreign matter entry prevention**
A mesh filter is installed as standard on the IN side.

● **Modular type**
Connect with the C3000 and C4000 Series filter and oil mist filter.

Long service life

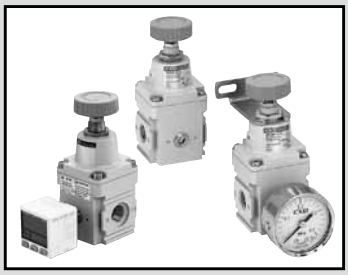
Low sliding packing is adopted for moving sections, and dry resistant grease is used.

Stable flow characteristics with small pressure drop

High relief flow rate

High performance, long service life, and high exhaust flow rate

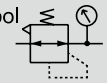
RP2000 Series



Precision regulator

RP1000 Series

● Port size: Rc1/4

JIS symbol 

RoHS CAD

Specifications

1 MPa = 10 bar

Descriptions		RP1000-8-02	RP1000-8-04	RP1000-8-07
Working fluid		Compressed clean air (refer to recommended air circuit on page 453)		
Max. working pressure	MPa	1.0 (≈150 psi, 10 bar)		
Min. working pressure	MPa	Set pressure +0.1 (≈15 psi, 1 bar) *1		
Proof pressure	MPa	1.5 (≈220 psi, 15 bar)		
Ambient / fluid temperatures	°C	-5 (23°F) to 60 (140°F) (no freezing) *3		
Set pressure	MPa	0.003 (≈0.44 psi) to 0.2 (≈29 psi)	0.005 (≈0.73 psi) to 0.4 (≈58 psi)	0.005 (≈0.73 psi) to 0.7 (≈100 psi)
Sensitivity		Within 0.1% of full scale		
Repeatability		Within ±0.5% of full scale		
Air consumption *2	ℓ/min(ANR)	1.3 or less		3.4 or less
Port size		Rc1/4		
Pressure gauge port size		Rc1/8		
Weight	g	250		

*1: Flow rate of the secondary side is to be zero. For RP1000-8-04, if the set pressure is 0.3 MPa and over, increase +0.2 MPa in the set pressure.
*2: Conditions where the primary pressure is 0.7 MPa. Air is released to the atmosphere normally.
*3: The range is -5 to 50°C when a digital pressure sensor is used.

How to order

RP1000 - 8 - 02 - G49PB3
(A) (B) (C)

Model
RP1000: Precision regulator

(A) Port size		(B) Set pressure range		(C) Other attachments	
8	Rc1/4	02	MAX.0.2 MPa	Blank	Without attachment
		04	MAX.0.4 MPa	G49P	Pressure gauge (G49D-6-□)
		07	MAX.0.7 MPa	B3	L type bracket
				R2	Digital pressure sensor

*1: A pressure gauge, a digital pressure sensor and a bracket are enclosed.
*2: A pressure gauge with the same pressure range as the regulator is enclosed.
*3: One R1/8 plug is enclosed with the product.

Discrete attachment model No.

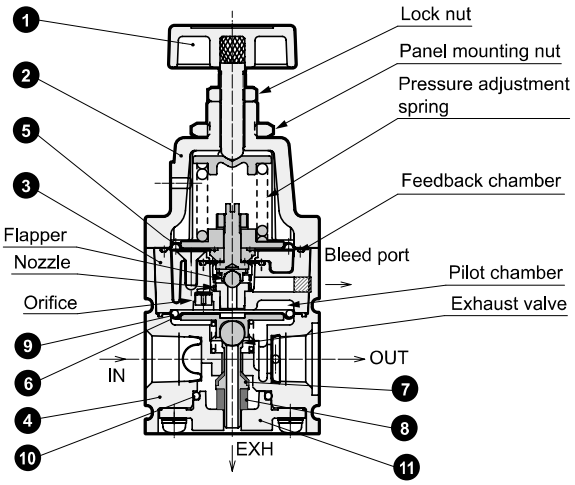
Model	Discrete attachment model No.
RP1000-8-02-G49P	G49D-6-P02
RP1000-8-04-G49P	G49D-6-P04
RP1000-8-07-G49P	G49D-6-P10
RP1000-8-02/04/07-B3	B131
RP1000-8-02/04/07-R2	PPX-R10N-6M

Clean-room specifications (Catalog No. CB-033SA)

● Anti-dust generation structure for use in cleanrooms

RP1000-.....-P70

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	Hydrogenated nitrile rubber
6	Main diaphragm	Hydrogenated nitrile rubber
7	Valve	Hydrogenated nitrile rubber, stainless steel
8	Bottom rubber	Silicone rubber
9	O-ring	Nitrile rubber
10	O-ring	Hydrogenated nitrile rubber
11	Bottom plug	Polybutylene terephthalate resin

Operational explanation

Air supplied from the IN side is prevented from flowing to the OUT side by the ❼ valve. Some supplied air passes through the orifice to flow into the pilot chamber.
When the ❶ pressure adjustment knob is rotated, the pressure adjustment spring is compressed, and the ❺ pilot diaphragm and the flapper are pushed down to close the nozzle.
If the pressure in the pilot chamber rises, the ❻ main diaphragm is forced lower to open the ❼ valve, and to supply air to the OUT side. The intake air flows into the feedback chamber, and works on the ❺ pilot diaphragm. If the diaphragm is forced upward until the air reaches the pressure of the regulator spring, the ❺ pilot diaphragm and flapper are forced upward to open the nozzle, and an extremely small amount of air is released to the atmosphere to reduce pressure in the pilot chamber. At the same time, the OUT side pressure works on the ❻ main diaphragm to force it upward, and the ❼ valve is closed and the set pressure is maintained. When the air is consumed and the pressure drops on the OUT side, the pressure in the feedback chamber also drops. The ❺ pilot diaphragm and the flapper are forced lower to close the nozzle. Pressure in the pilot chamber rises, causing the ❻ main diaphragm to operate and open the ❼ valve, compensating for any drop in pressure. If the OUT side pressure increases further than the set pressure, the pressure in the feedback chamber also increases. The ❺ pilot diaphragm and the flapper are forced upward to open the nozzle. This allows the pressure in the pilot chamber to decrease, and the ❻main 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 using the nozzle and flapper can follow up a minimal pressure change, which enables the high precision pressure control.

Repair parts list

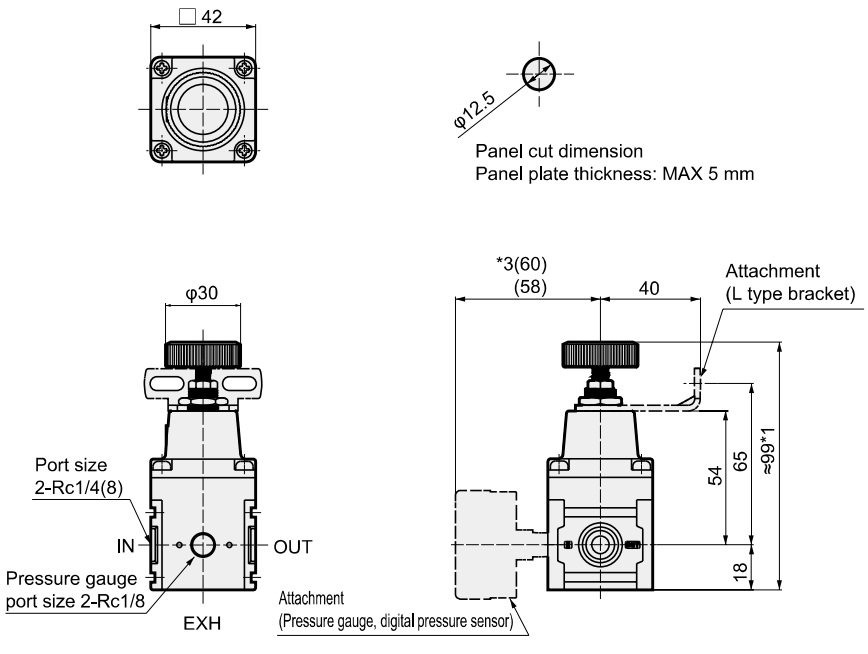
For 0.2 and 0.4 MPa

Model No.	No.
RP1000-PILOT-ASSY	❸, ❺
RP1000-DIAPHRAGM-ASSY	❻, ❾
RP1000-VALVE-ASSY	❼, ❽, ❿

For 0.7 MPa

Model No.	No.
RP1000-PILOT-ASSY-07	❸, ❺
RP1000-DIAPHRAGM-ASSY-07	❻, ❾
RP1000-VALVE-ASSY-07	❼, ❽, ❿

Dimensions CAD

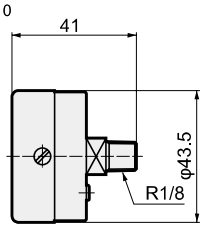


*1: Dimensions at the setting pressure of 0 MPa
*2: Pressure gauge, digital pressure sensor and bracket are optional.
*3. Dimensions when the digital pressure sensor is assembled.

Pressure gauge

· G49D-6-P02 P04 P10

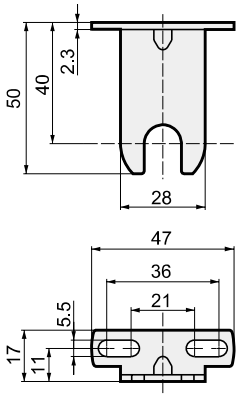
Weight: 86g



L type bracket

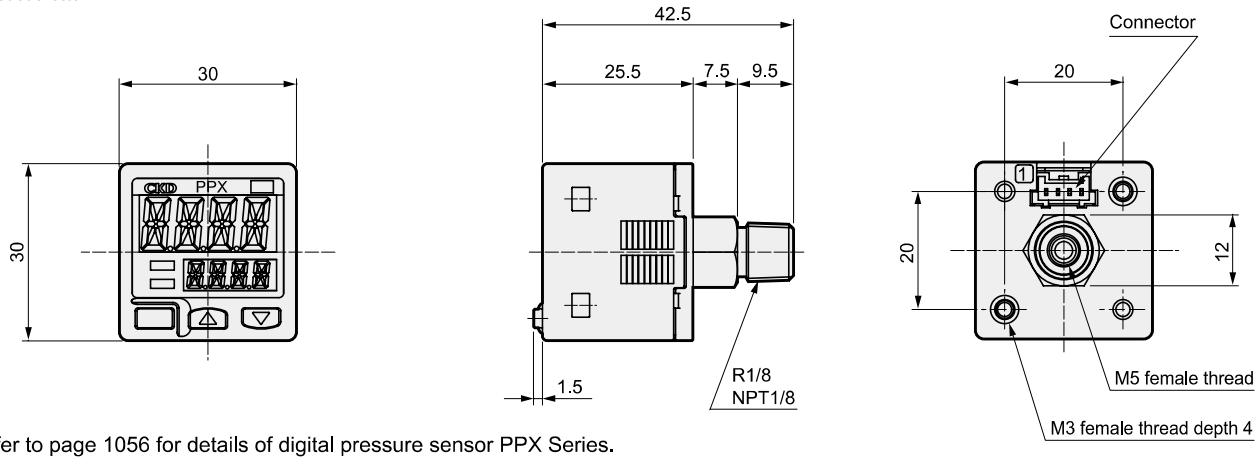
· B131

Weight: 29 g
Material:
Steel
Nickel plated



Dimensions

● PPX-R10N-6M

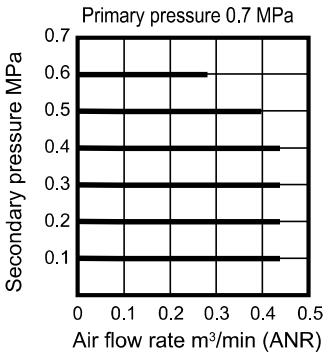


Note: Refer to page 1056 for details of digital pressure sensor PPX Series.

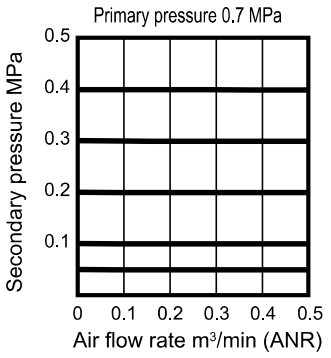
Weight: 40g

Flow characteristics

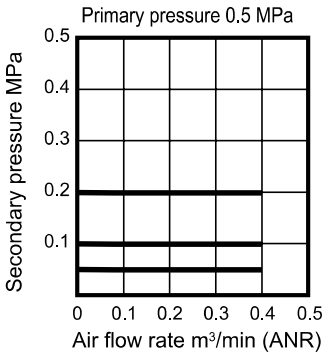
● RP1000-8-07



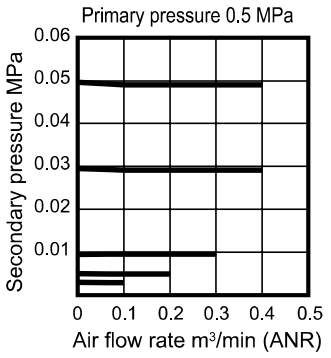
● RP1000-8-04



● RP1000-8-02

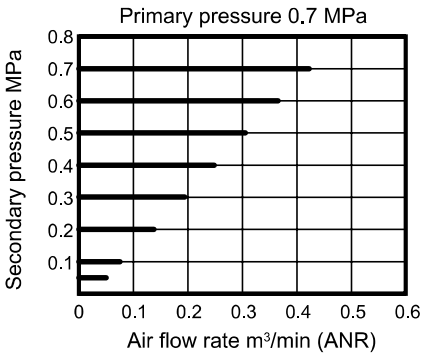


● RP1000-8-02
(Flow characteristics at low pressure)

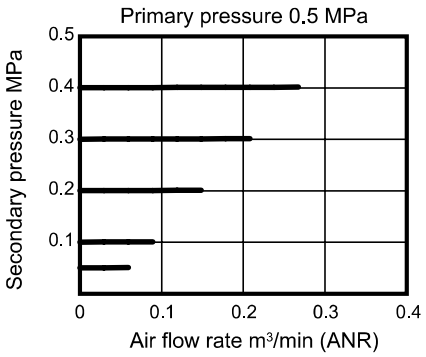


Relief flow characteristics

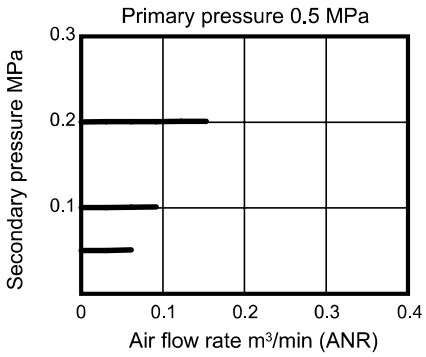
● RP1000-8-07



● RP1000-8-04

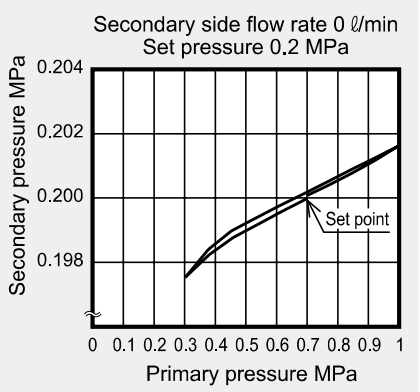


● RP1000-8-02

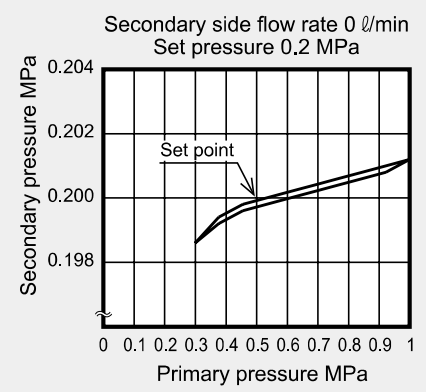


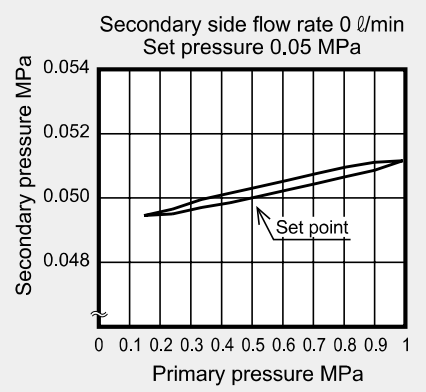
Pressure characteristics

● RP1000-8-07



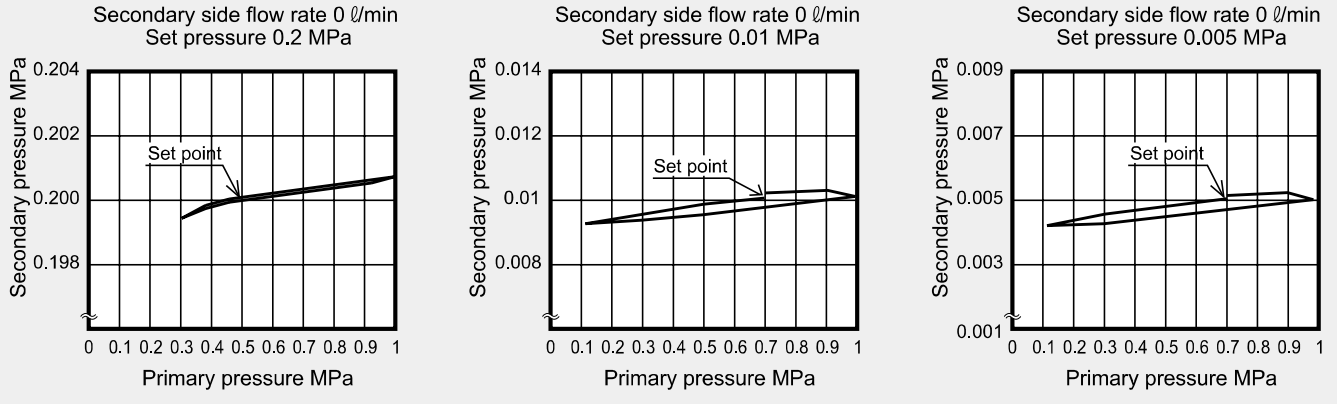
● RP1000-8-04



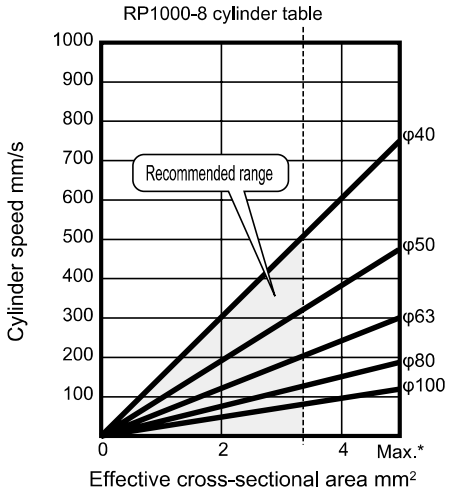


Pressure characteristics

● RP1000-8-02



Cylinder speed range of RP1000



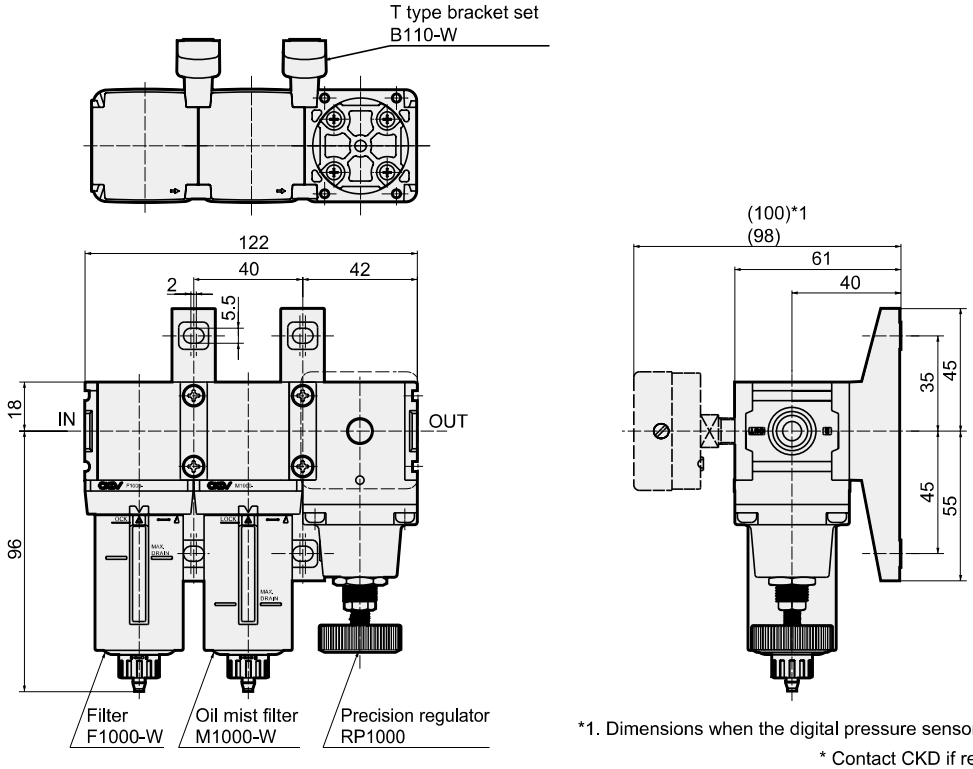
This cylinder table shows the available range according to the air supply and exhaust flow rate of the precision regulator and the required consumption flow rate at the cylinder PUSH/PULL.

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

* Max. cylinder line
(Cylinder directly installed)

Note: Using at a speed higher than the maximum could cause relief malfunctions.

Example of precise pressure control system



*1. Dimensions when the digital pressure sensor is assembled.

* Contact CKD if required for assembly.

Compatible model	Filter	Oil mist filter	Precision regulator	T type bracket set
Product model No.	F1000-W	M1000-W	RP1000	B110-W (2 pcs.)