

# High-precision pressure settings inside clean rooms

## PRECISION STAINLESS REGULATORS

- Allow high-precision (sensitivity of 0.001Mpa [0.15psi.]) settings for carrier gas pressure control in various kinds of solvents and pure water circuits, for blow pressure control, for clean air and gas pressure control used in liquid crystal or semiconductor-related processes.
- Contamination-controlled manufacturing process.

Clean room rating	Outside the clean room	Clean room		Outside the clean room
	—	10000 (Cleaning room)	10000 (Assembly room) 100 (Work bench)	—
Manufacturing process	Rough cleaning of parts Pass box	Special detergent used to completely decrease the parts	Assembly → Inspection	Double packaging (Bracket supplied) Pass box Shipping & Packaging pressure gauge <small>Note</small>

Note: The pressure gauge is just packed in single packaging at outside of the clean room.

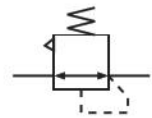
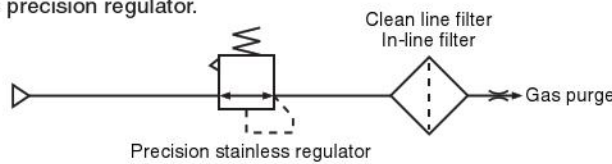


- Use uniquely developed balance configuration for main valve.
- Normally bleed type, yet achieves low consumption flow rate, less than 2 ℓ /min [0.07ft<sup>3</sup>/min.] (ANR).
- A push-lock mechanism is used in the pressure regulating knob.
- The part that contacts gas uses SUS316 or fluoro rubber materials.
- An optional pressure gauge is available.

### Application Example

#### ●Purged gas pressure control

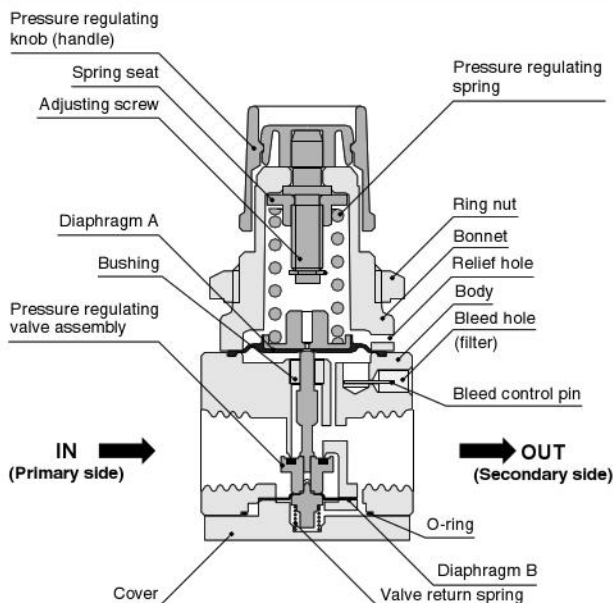
Limits purged gas flow rate fluctuations arising due to the line pressure of purged gas supplied to the precision regulator.



- ※ This circuit diagram shows the main theories of the circuit and is not the actual circuit. Moreover, the gas medium is not necessarily limited to N<sub>2</sub>.
- ※ Precision stainless regulators can also be used for fluid surface control, including air blowing, for improvement of corrosion resistance on general circuits, and for circuits with non-grease type or non-oil type.

### Symbol

### Operation Principle and Inner Construction



### Major Parts and Materials

Parts	Materials
Body	SUS316
Pressure regulating knob (handle)	Plastic (ABS)
Bonnet	Plastic (PBT)
Diaphragm A, B	Fluoro rubber (FKM)
Pressure regulating spring	Piano wire (zinc plated)
O-ring	Fluoro rubber (FKM)
Pressure regulating valve assembly	SUS316 + fluoro rubber (FKM)
Cover	SUS316
Bushing	Fluoro resin (PTFE)
Valve return spring	SUS316
Bleed control pin	SUS316
Filter	Plastic (PVA)
Adjusting screw	Brass (nickel plated)
Spring seat	Brass (nickel plated)
Ring nut	Steel (nickel plated)
Plug (supplied)	SUS316
Bracket (optional)	SPCC (nickel plated)

## Order Codes

PRS100 -  -  -

### Bracket<sup>Note</sup>

**Blank:** No bracket  
**B:** With bracket

### Pressure gauge

**Blank:** No pressure gauge  
**G3:** Low-pressure specification (0.3MPa) [44psi.]

### Port size

**M5:** M5×0.8  
**01:** Rc1/8  
**02:** Rc1/4

Precision stainless regulator

●Note: Order code for bracket only

**8 - 10 - N**

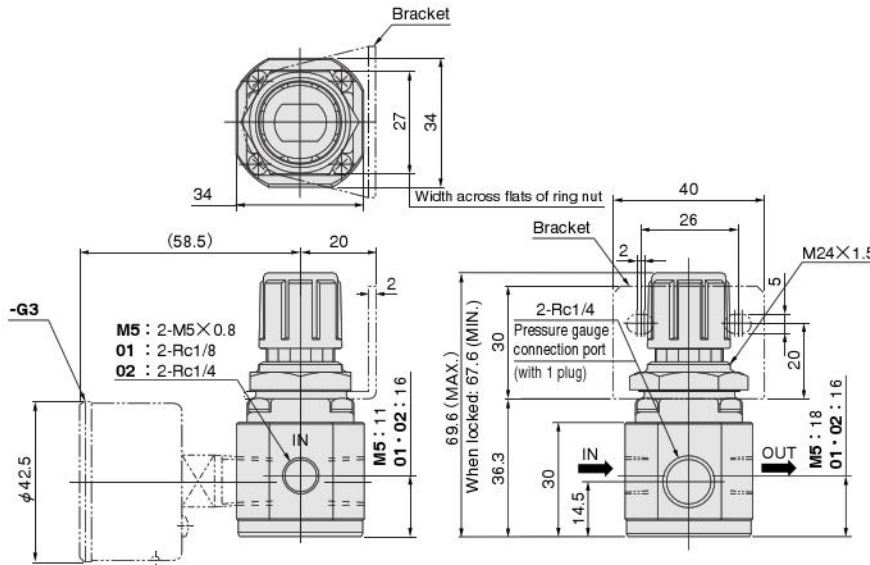
Remark: Shipped in double packaging.

## Specifications

Item	Model	PRS100
Media		Air, nitrogen, carbon dioxide, helium, argon
Operation type		Diaphragm type
Port size		M5×0.8, Rc1/8, Rc1/4
Sensitivity	MPa [psi.]	0.001 [0.15]
Pressure setting range	MPa [psi.]	0.01~0.25 [1.5~36]
Maximum operating pressure	MPa [psi.]	0.9 [131]
Proof pressure	MPa [psi.]	1.5 [218]
Operating temperature range	°C [°F]	5~60 [41~140]
Air consumption <sup>Note</sup>	ℓ/min [ft <sup>3</sup> /min.] (ANR)	Max. 2 [0.07]
Mass	kg [lb.]	0.231 [0.509] (including body, plug and hexagon nut)
Optional	Pressure gauge	G3: Low pressure specification (0.3MPa) [44psi.]
	Bracket	L-type mounting bracket (Mass 0.025kg [0.055lb.])

Note: Value when secondary air pressure is set to 0.25MPa [36psi.]

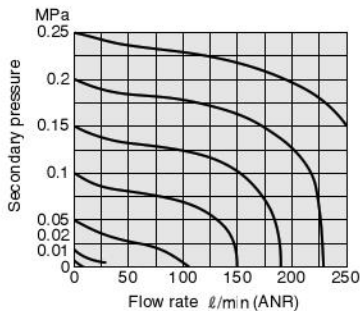
## Dimensions of Precision Stainless Regulators (mm)



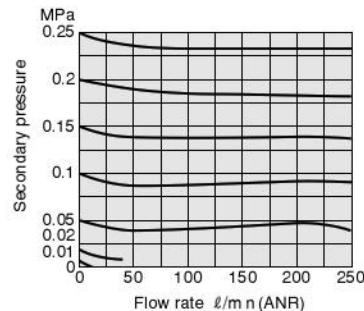
Remark: Mounting holes for the precision stainless regulator on a panel are  $\phi 24.5$ .

## Flow Rate Characteristics

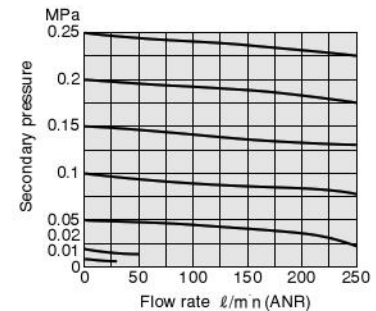
### ● PRS100-M5



### ● PRS100-01



### ● PRS100-02



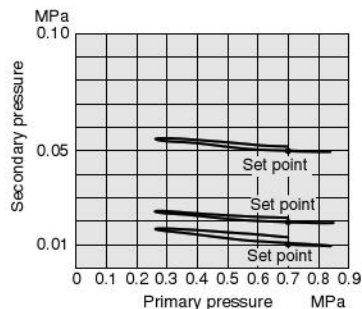
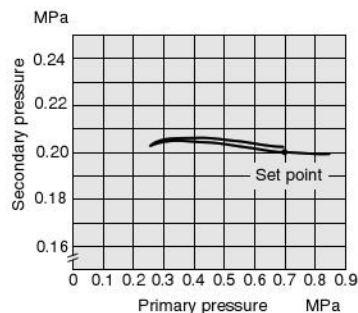
Remark: Graphs show flow rate characteristics when the primary pressure is fixed at 0.7MPa [102psi.].

1MPa = 145psi. 1ℓ/min = 0.0353ft<sup>3</sup>/min.

## Pressure Characteristics

### ● PRS100-

(Low-pressure area)



1MPa = 145psi.

### Order Code for Pressure Gauge Single Unit

#### G3S-40

Pressure indicator range  
3 : Low-pressure specifications  
0.3MPa [44psi.]



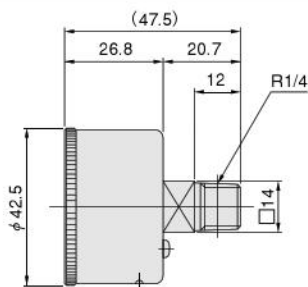
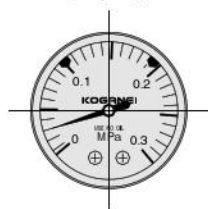
### Pressure Gauge Specifications

Item	Model	G3S-40
Media		Air, N <sub>2</sub> , CO <sub>2</sub> , He, Ar
Port size	R	1/4
Pressure indicator range	MPa [psi.]	0~0.3 [0~44]
Accuracy		F.S. ±2.5%
Outer diameter	mm [in.]	42.5 [1.673]
Maximum operating pressure	MPa [psi.]	0.25 [36]
Operating temperature range	°C [°F]	5~60 [41~140]
Mass	kg [lb.]	0.091 [0.201]

### Dimensions of Pressure Gauge (mm)

#### ● G3S-40

Low-pressure specifications  
0.3MPa [44psi.]



### Major Parts and Materials

Parts	Materials
Case	SPCC (Black painted)
Flats of nipple section	SUS316
Bourdon tube	SUS316
Transparent cover	Plastic (PC)

## Precautions for Use of Precision Stainless Regulators



### Pressure regulation

1. Always pull out the knob firmly to regulate pressure. Turning the knob to the right (clockwise) increases the pressure, while turning it to the left (counterclockwise) reduces the pressure.
2. After regulating pressure, push the knob back into the body and lock it in place.
3. While the precision stainless regulator employs the bleed type, the flow rate can be altered by secondary pressure. When the secondary pressure is 0, the consumed flow rate is also 0. Consumed flow rate is the highest when the secondary pressure is at 0.25MPa [36psi.], attaining a value of 2 l/min [0.07ft<sup>3</sup>/min] (ANR) or less.
4. The setting precision for optional pressure gauge is ±2.5% (F.S.). If more precise pressure regulation is required, use a pressure gauge of JIS class 1.5~0.5.



### Mounting and piping

1. For the body's piping connection ports, IN is stamped on the inlet port only. Please note that the corresponding port on the rear of the body is the outlet port.
2. In the case of panel mounting, the panel mounting hole diameter should be φ24.5 [0.965in.]. Do not exceed a tightening torque of 980.7N·cm [86.8 in.·lbf].
3. Bleeding air (gas) and relieving air (gas) are exhausted to the outside via the body's bleed hole (filter equipped) and the plastic bonnet respectively. Note that the air (gas) cannot be retrieved.

4. When mounting a pressure gauge, use a wrench on the square part of the pressure gauge's piping connection port.
5. For mounting of the precision stainless regulator as a single unit, use the optional bracket.



### General precautions

1. Avoid setting the valve in this product's primary side to use that repeatedly switches the primary pressure.
2. Before connecting the piping for the precision stainless regulator, always flush out the pipes.
3. Usable media includes air, nitrogen, carbon dioxide, helium, and argon. Do not use any other media. Moreover, the media is constantly consumed during pressure regulation. Become familiarized with the inner construction, etc., before use.
4. Do not use when the media or the ambient atmosphere contains the following substances: Organic solvents, acids, chlorine, etc.
5. Avoid using in locations where the ambient temperature exceeds the specified operating temperature range.
6. Avoid using when the specified maximum operating pressure is exceeded.
7. This product is for industrial use. Do not use in life-support equipment or other equipment critical to human health and life.
8. Avoid applying excessive external force on this product.
9. Do not disassemble or modify this product.
10. Do not expose this product to ultraviolet rays, wind or rain.
11. When disposing of this product, always treat it as industrial waste.