

IAVB	MVB	A/VB	AGD	Other Gas Components	High Durability	LGD	MGD	OGD	AGD
Vacu Press Control Sys	High Vacuum Valve		Integrated System						

PGM

Regulator for Process Gas

Overview

This is a regulator for process gas that uses a metal diaphragm. We meet various needs from single piping to integrated types.

Features

Wide variety of options available

- Negative pressure to 0.7 MPa
- 20 L/min to 200 L/min
- High corrosion resistance specification

Free poppet structure prevents supply pressure creep and enables negative pressure control.



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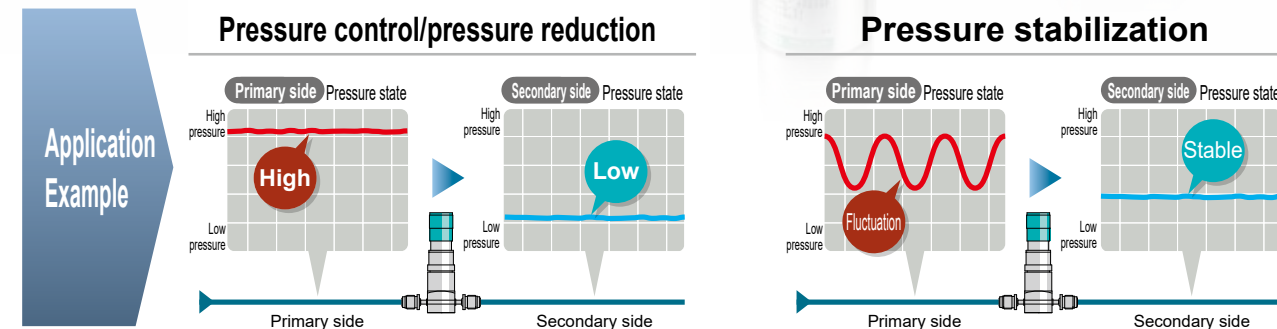
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Taking Process Control to a New Dimension

CKD's process gas regulators boast industry-leading sealing performance, hysteresis, and repeatability. Achieves a stable process through high-precision pressure/flow control of the supply gas.



High-precision control of process gases in etching and deposition equipment

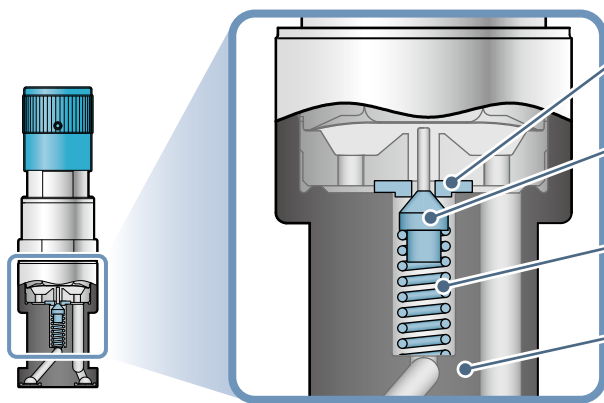


High Corrosion Resistance & High Quality Materials

- High corrosion-resistant material adopted
- Perform electrolytic polishing, ultra-precision machining, and ultra-precision cleaning.

Optimal Design

- Reduced sliding parts to the limit
- Optimized diaphragm structure
- Smooth operation is achieved by optimizing the material



Seat	PFA
Poppet	SUS316L
Spring	SUS316
Body	SUS316L

Change to different high corrosion resistance materials is also possible.

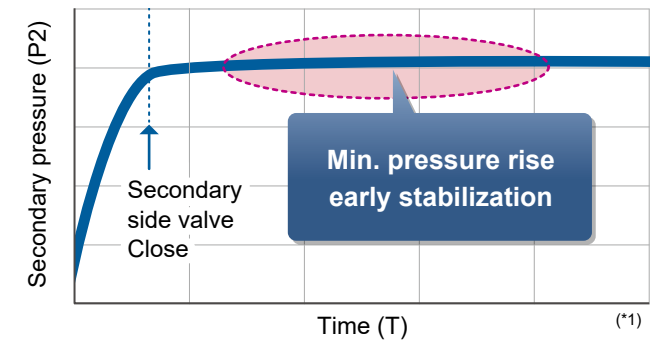
Achieves proven durability of over 3 million cycles with high-spec materials & design.
Maintains high controllability and cleanliness even after long-term use.

High Sealing Performance

Contributes to process stabilization

- Optimum design of valve seat and ultra-precise machining
- Prevents leakage (outflow) to the secondary side while the valve is closing

*1. Image of secondary pressure rise assuming valve closing operation to maintain secondary pressure at zero flow.

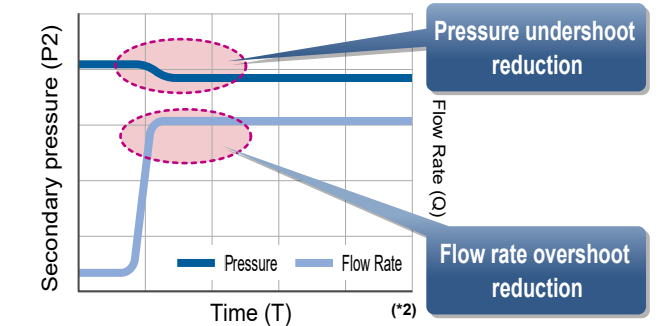


High controllability at minute flow rates

Achieves stable and smooth operation

- Optimized design of valve seat shape
- Stable control even at very small flow rates

*2. Image of pressure fluctuation when controlling at a flow rate of 10 sccm.

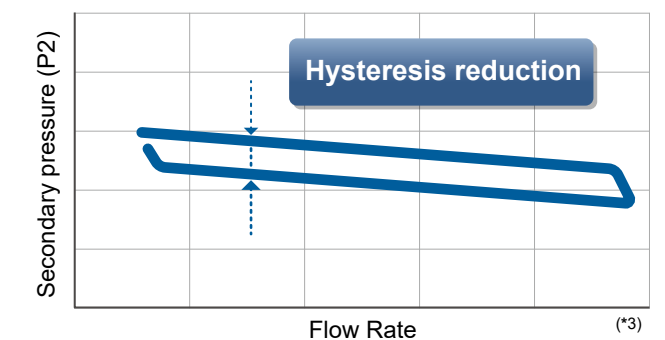


Reduced Hysteresis

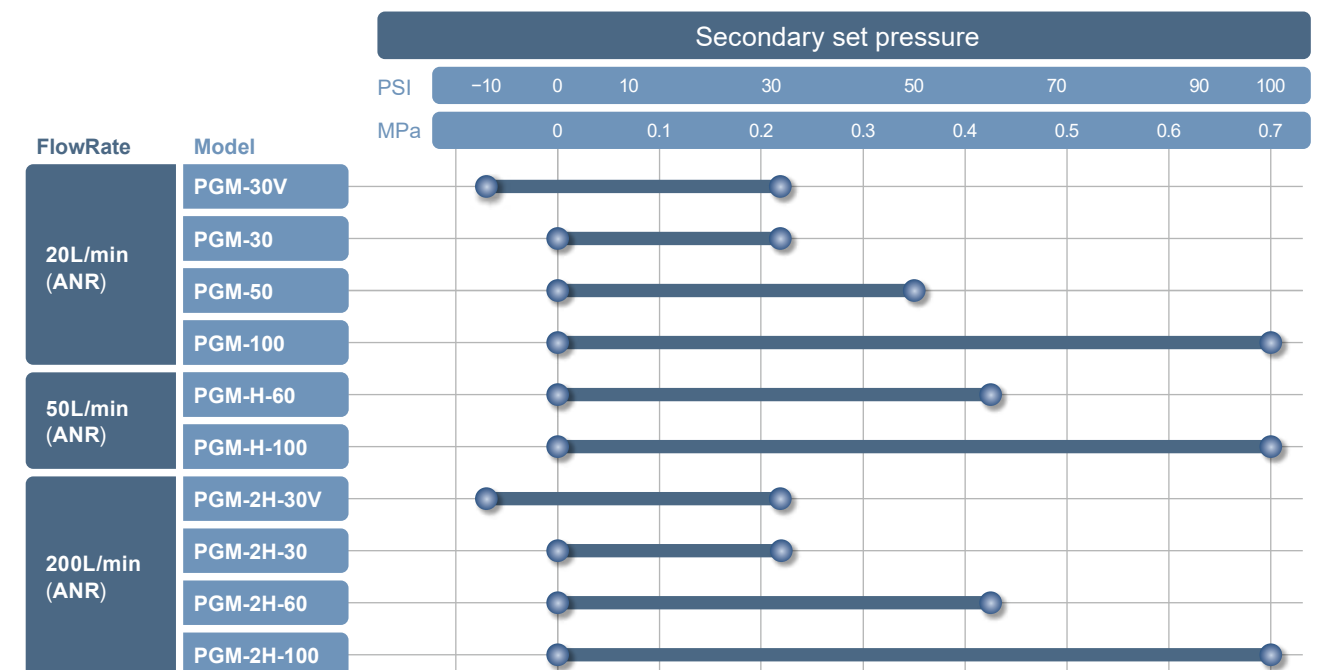
Reliably meets the target pressure.

- High-quality materials
- Ultra-precise machining

*3. Image of secondary pressure fluctuation when flow is increased then decreased.



Extensive Product Lineup



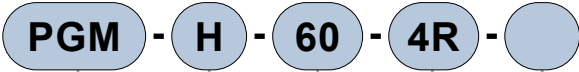


Regulator for Process Gas

PGM Series





Model No. Notation Method



- 1 Flow Rate Series
- 2 Secondary Side Setting Pressure
- 3 Fitting Type: Connection Method/Integrated Type: Body size (sealing method)
- 4 Option

		1 Flow Rate Series		
		20 L/min	50 L/min	200 L/min
2 Secondary Side Setting Pressure		Blank	H	2H
Code	Content			
30V	-0.07 to 0.21 MPa [-10 to 30 psi]	●		●
30	0 to 0.21 MPa [0 to 30 psi]	●		●
50	0 to 0.35 MPa [0 to 50 psi]	●		
60	0 to 0.42 MPa [0 to 60 psi]		●	●
100	0 to 0.7 MPa [0 to 100 psi]	●	●	●

Note) Flow rates are nominal values. Please check the pressure conditions from the flow characteristics graph.

			1 Flow Rate Series		
			20 L/min	50 L/min	200 L/min
3 Fitting Type: Connection Method / Integrated Type: Body size (sealing method)			Blank	H	2H
Fitting Type	Content	Code			
	1/4"	JXR Female Fitting	4R	●	●
		JXR Male Fitting	4RM	●	●
		JXR Male to Female Fitting	4MF	●	●
		JXR Female to Male Fitting	4FM	●	●
	3/8"	JXR Female Fitting	6R		●
		JXR Male Fitting	6RM		●
	1.125"	JXR Male to Female Fitting	6MF		●
		JXR Female to Male Fitting	6FM		●
	Integrated Type				
	□ 1.125" (1.125" C-Seal)		1	●	●
	□ 1.5" (1.5" C-Seal)		2	●	●
	□ 1.5" (1.5" CS-Seal)		3	●	●
	□ 1.5" (1.5" W-Seal)		4	●	●
	□ 1.125" (1.125" W-Seal)		5	●	●
	□ 1.5" (1.5" High-Flow C-Seal)		6		●
	□ 55 mm (3/8" W-Seal)		7		●

4 Option		Content
Code		
Blank	No Option	
S	Poppet Hastelloy® C-22	1 Selectable only for "Blank" 20 L/min flow rate series
	Spring: Ni-Co Alloy	
P	Valve Seat: PI	

Note) Please inquire about types with gauge ports, anti-mishandling covers, and panel mounts.

PGM Series

Specifications, Internal Structure, and Materials

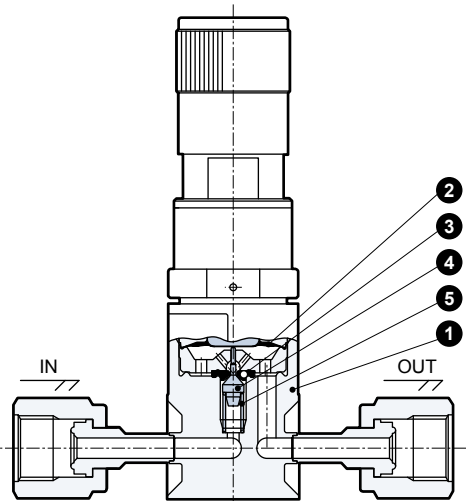
Specifications

Item	PGM-	30V	30	50	-	100
	PGM-H-	-	—	-	60	100
	PGM-2H-	30V	30	-	60	100
Applicable Fluid		Inert gas / Process gas				
Max. working pressure	MPa	1.0				
Setting Pressure	MPa	-0.07 to 0.21	0 to 0.21	0 to 0.35	0 to 0.42	0 to 0.7
Fluid temperature	°C	-5 to 40 (2H is 20 to 50) *1				
Valve Seat Leakage	Pa·m³/s (He)	1.0x10 ⁻⁸ or less (2 H is 2.0x10 ⁻⁸ or less)				
External Leakage	Pa·m³/s (He)	2.8x10 ⁻¹² or less				
Proof Pressure	MPa	1.5				
Ambient Temperature	°C	-5 to 40 (2H is 20 to 50)				
Storage Ambient Temperature	°C	-5 to 60				
Gas-wetted Surface Treatment		Electrolytic polishing specification				
Connection Method	PGM, PGM-H : Integrated system compatible (PGM- □ -1, 2, 3, 4, 5) 1/4"JXR Su (*2) (PGM- □ -4R, 4RM, 4MF, 4FM)					
	PGM-2H- : Integrated System Compatible (PGM-2H- □ -6, 7) 3/8" JXR Fitting (*2) (PGM-2H- □ 6R, 6RM, 6MF, 6FM)					
Weight	kg	0.39 (PGM- □ -4) 0.82 (PGM-2H- □ -7)				

*1: Customers desiring high-temperature specifications, please contact our sales office.

*2: JXR fittings are compatible with VCR fittings.

Internal Structure Diagram and Materials



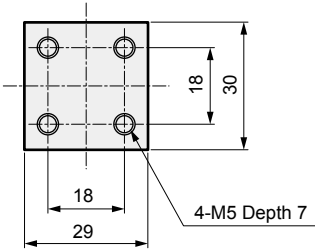
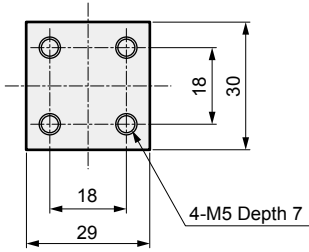
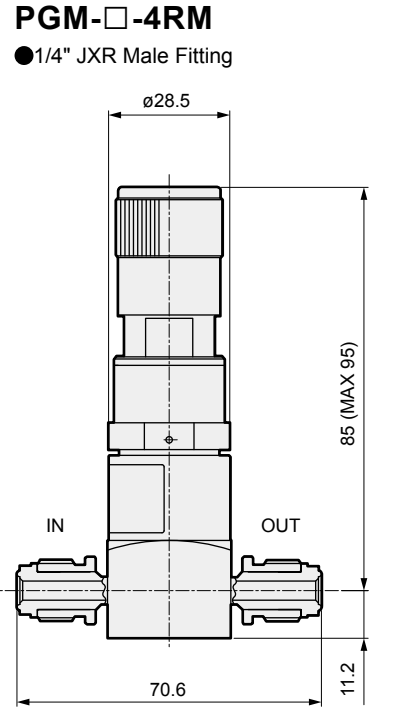
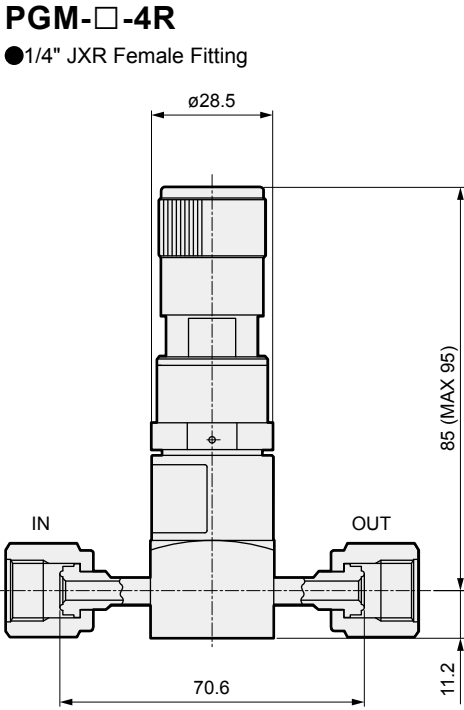
Gas-wetted Materials

Part No.	Part Name	Material
1	Body	SUS316L
2	Diaphragm	Hastelloy® C-22
3	Seat	PFA or PI (Option)
4	Poppet	SUS316L or Hastelloy® C-22 (Option)
5	Spring	SUS316 or Ni-Co Alloy (Option)

Hastelloy® is a registered trademark of Haynes International, Inc.

External Dimensions: Fitting Type

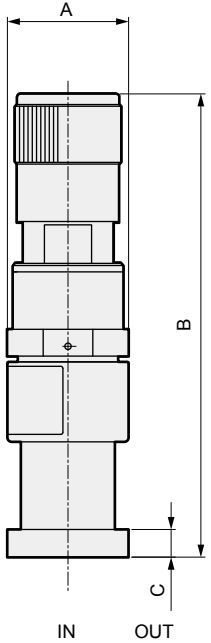
Note) Flow direction is indicated by an arrow on the body.



External Dimensions

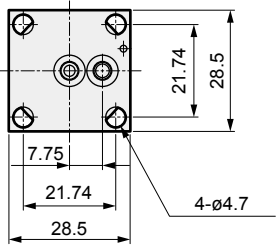
External Dimensions: Integrated Type

Note) Flow direction is indicated by an arrow on the body.

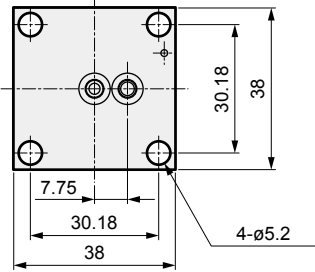


Model No.		A	B	C
PGM-□-1	1.125" C-Seal	$\phi 28.5$	99 (MAX 109)	6.5
PGM-□-2	1.5" C-Seal	$\phi 28.5$	104 (MAX 114)	8
PGM-□-3	1.5" CS-Seal	$\phi 28.5$	104 (MAX 114)	8
PGM-□-4	1.5" W-Seal	$\phi 28.5$	104 (MAX 114)	8
PGM-□-5	1.125" W-Seal	$\phi 28.5$	99 (MAX 109)	6.5

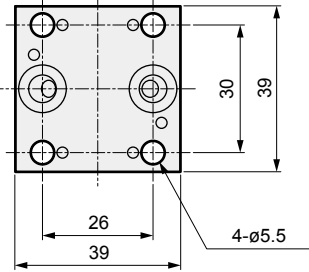
PGM-□-1
●1.125" C-Seal



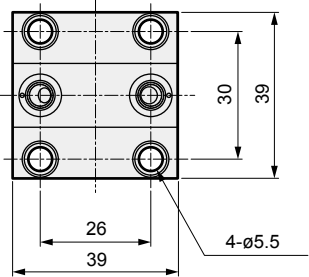
PGM-□-2
●1.5" C-Seal



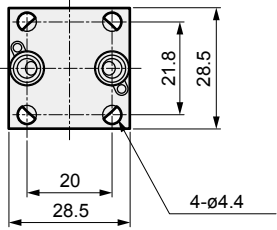
PGM-□-3
●1.5" CS-Seal



PGM-□-4
●1.5" W-Seal



PGM-□-5
●1.125" W-Seal



AGD	OGD	MGD	LGD	High Durability	Other Gas Components	Regulator	Integrated System	AVB	MVB	I/VB
Process Gas Valve						PGM	Integrated System	High Vacuum Valve	Vacu Press Control Sys	

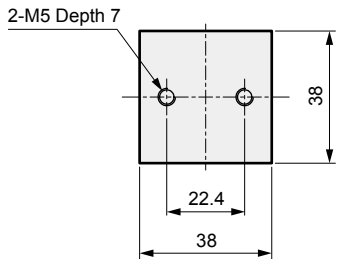
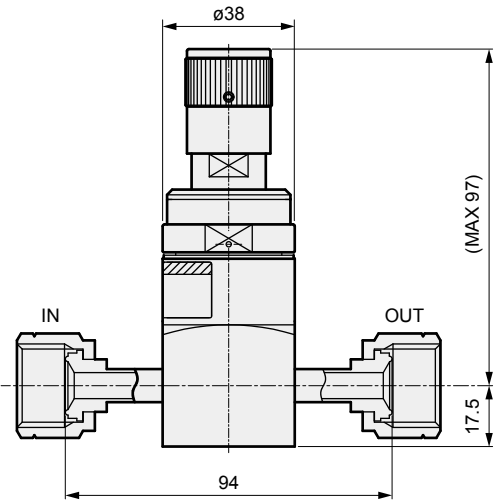
Ending

External Dimensions: Fitting Type

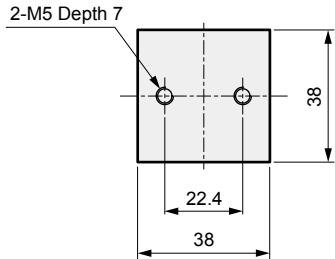
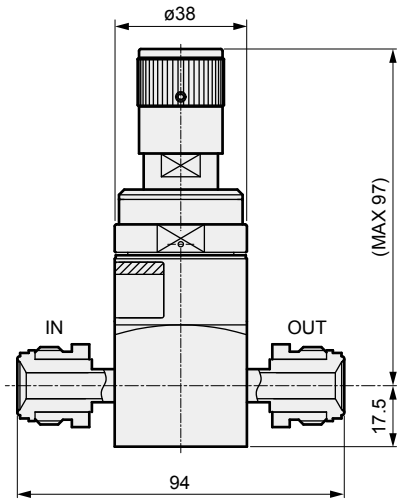
Note) Flow direction is indicated by an arrow on the body.



PGM-2H-□-6R
●3/8" JXR Female Fitting



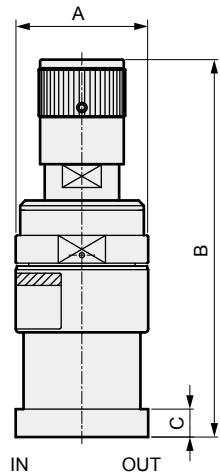
PGM-2H-□-6RM
●3/8" JXR Male Fitting



External Dimensions

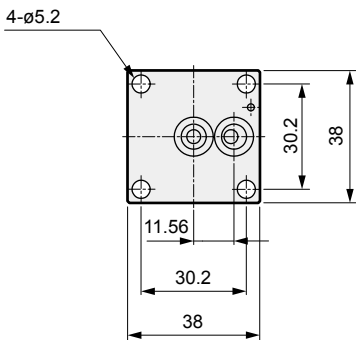
External Dimensions: Integrated Type

Note) Flow direction is indicated by an arrow on the body.

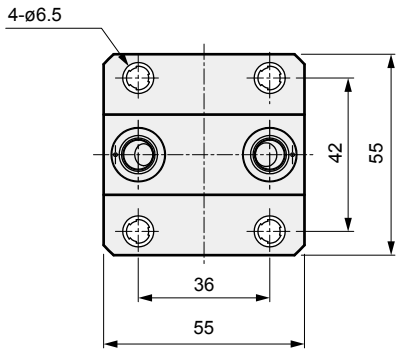


Model No.		A	B	C
PGM-2H-□-6	1.5" High-Flow C-Seal	38	(MAX 108)	8
PGM-2H-□-7	3/8" W-Seal	38	(MAX 121)	15

PGM-2H-□-6
●1.5" High-Flow C-Seal



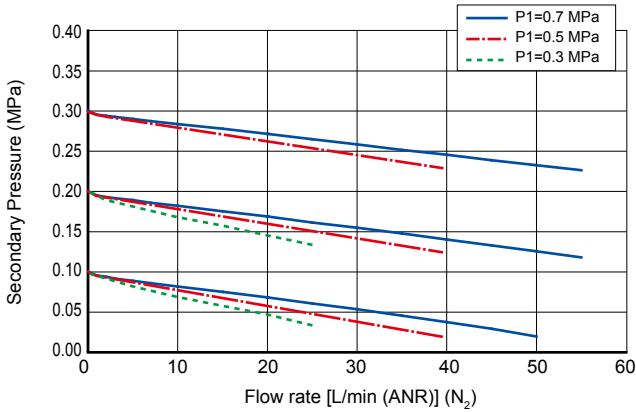
PGM-2H-□-7
●3/8" W-Seal



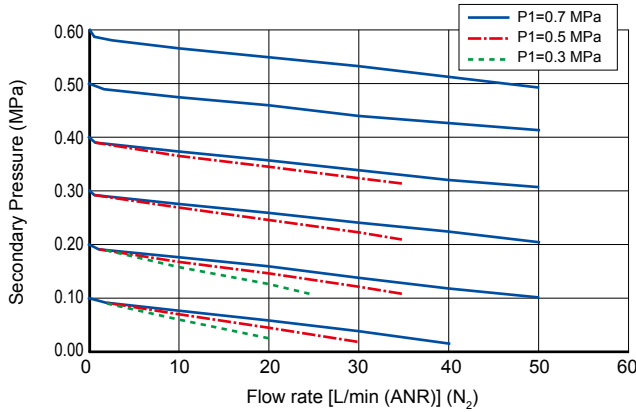
Flow Characteristics

*Based on our company's test data

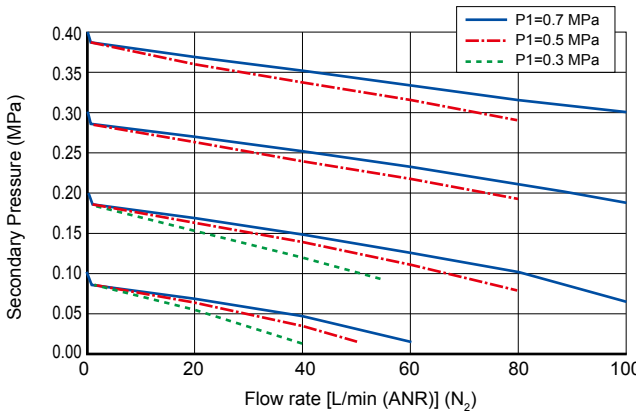
●PGM-30V, 30, 50



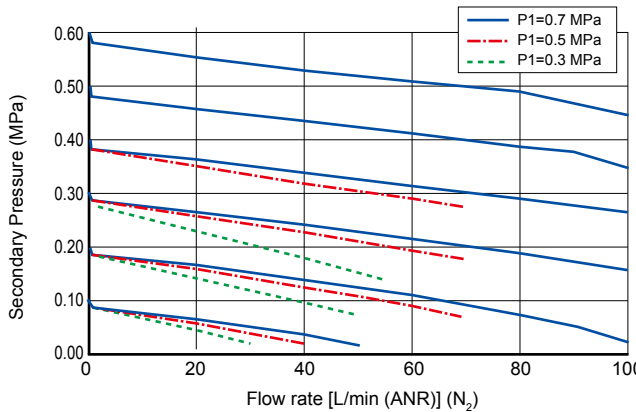
●PGM-100



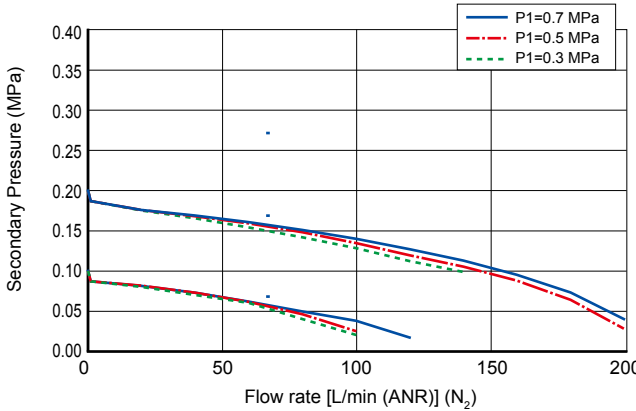
●PGM-H-60



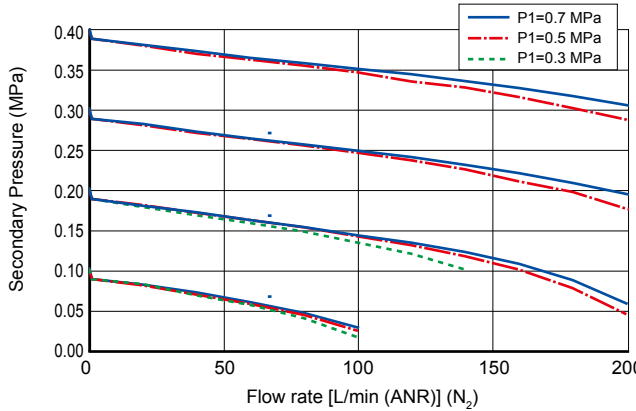
●PGM-H-100



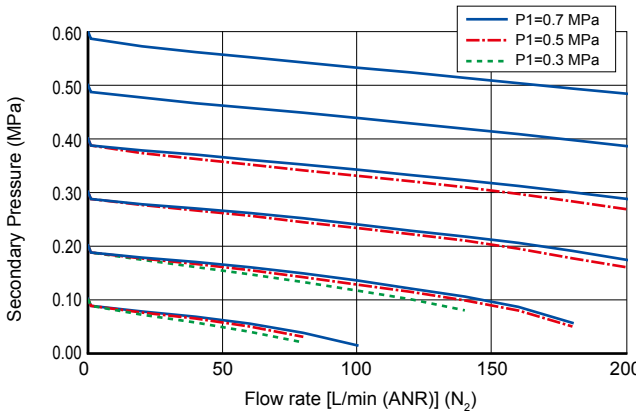
●PGM-2H-30V, 30



●PGM-2H-60



●PGM-2H-100



Regulator for Process Gas

Optional Products

PGM Series

RoHS

Special Specifications

●Type with Gauge Port



- Gauge port connection
JXR male, JXR female, and double ferrule fittings can be manufactured.

- Port size 1/4"

●Panel Mount Type



- Panel mount diameter ø31

- Panel thickness 5 mm or less

●Anti-Mishandling Type



- Prevents fluctuations of set pressure due to misoperation.
- Misoperation prevention type has total height 108 mm and diameter ø32.



Components for Process Gas

To Use This Product Safely

Please be sure to read this before use.
For General Precautions refer to Intro 9.

Individual Precautions: Regulator for Process Gas, PGM Series

Design / Selection

1. Confirmation of Specifications

Warning

- This product is not designed to function as a safety valve, such as an emergency shut-off valve. If such a function is required, please implement other reliable safety measures.
- Incorrect equipment selection and handling can cause problems not only in this product, but also to your system. Product selection and handling should be performed after confirming the product specifications and their suitability for the customer's system, at the customer's own responsibility.
- Check the compatibility between the gas contact part materials and working fluid before use.
- Use within the specified fluid temperature and pressure range.
- Refer to the flow characteristics to select an appropriate flow rate series and set pressure model No. The performance may be unstable if the flow rate is extremely small, or if the unit is used in a high flow rate range outside the plot range. Use in a range where the flow characteristics tilt is gradual.

2. Ambient Environment

Caution

- Do not use in atmospheres containing corrosive gases or in locations where substances that may affect the product such as chemicals, salt water, water or steam could make contact. Use within the specified ambient temperature range.

3. Securing Space

Caution

- Secure sufficient space for maintenance and inspection.

4. Piping

Warning

- Foreign materials or burrs in the piping and piping work could damage the valve seat or diaphragm seal, and lead to leaks. Before installing the valve, be sure to remove any debris or burrs and take measures such as installing a primary side filter.

- Output pressure exceeding the Regulators' set pressure could result in damage or faulty operation of the secondary side devices. Be sure to install a safety device.

- When installing, ensure that the piping is performed so that the flow of the fluid is consistent with the direction of the arrow.

Caution

- Make sure not to use the wrong connecting port when connecting the pipes to the product.
- When piping, do not apply tension, compression, bending or other forces to the valve body from the piping.
- If the tube for piping is bent, it will cause malfunctions; pipe with suitable tube lengths.

5. Purging

Caution

- When removing valves using toxic, combustible or corrosive gases, purge with an inert gas such as nitrogen gas before removal.

6. During Use

Caution

- Do not use valves as a footing or place any heavy objects on top of the valves.
- Before supplying gas to this product, completely loosen the pressure adjustment knob in the counterclockwise direction (DEC).
- Open the inlet side supply valve slowly and operate so as to be able to close it immediately if there is abnormal pressure rise or leakage.
- After supplying inlet side pressure, check that there is no outflow.
- Do not use as a residual pressure exhaust valve.
- Outlet pressure may wobble violently with metallic noises during use. (vibration phenomenon) After confirming this phenomenon, immediately close the inlet supply valve and cease use.
- Store unused products in a location where they are not exposed to direct sunlight or high temperatures.

For cautions about mounting, installation, adjustment, use, and maintenance, refer to CKD components Product Site (<https://www.ckd.co.jp/kiki/jp/>) → "Model No." [Instruction Manuals](#)

MEMO