

Pilot-operated Diaphragm Type for Steam Application- GP-2000 series

GP-2000 is suitable for:

- Building facilities;
- Plant facilities;
- Steam main;
- Equipment requiring large flow rate/high accuracy/high pressure reduction ratio/low-pressure control

GP-2000 has large main diaphragm that accurately responds to even small fluctuation in the reduced pressure. It also can be used in low-pressure lines presenting high capacity and stable control.

STRAINER

Built-in strainer of 200 mesh

Free of scale troubles at pilot valve.

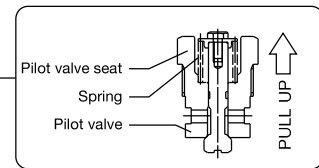
DIAPHRAGM

Patented ACDC (Anti-crack diaphragm case)

Highly durable because of ACDC that makes the pressure equally transmitted onto the bottom side of the main diaphragm (10 times more durable than equivalent products of other manufacturers.)

NEW PILOT VALVE

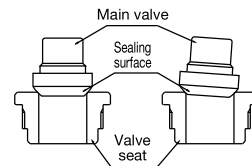
PPV: Pull-up pilot valve



PPV ensures tight sealing even during long-time service.

MAIN VALVE

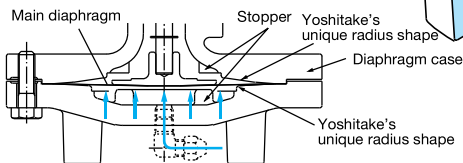
Hemispherical main valve ensures tight shut-off, meeting ANSI Class IV.



* Hemispherical sealing surface ensures tightness even if the valve closes at an angle.

FCD PARTS

Parts subject to pressure including body, diaphragm case are made of FCD of high strength.



Screwed type



Flanged type

GP-1000, 1000EN

Direct type	Pilot type	Piston	Diaphragm
Bellows	Internal sensing	External sensing	Stainless steel
With handle	Built-in strainer	Low pressure	Remote
Valve leakage 0	Nylon		

■Features

1. Significantly improved workability and durability compared with conventional pressure reducing valves.
2. Spherical main valve offers great sealability and great reduction of valve seat leakage (compliant with ANSI Class IV).
3. Compliant with SHASE-S106 Pressure Reducing Valves (by the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan).
4. Simple and robust internal structure.



GP-1000 · 1002



GP-1200



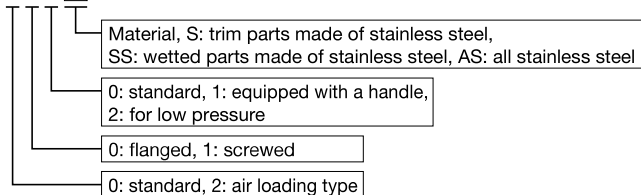
GP-1010



GP-1001

Description of GP-1000 Series model code

GP-1000



■Specifications

For low pressure

Model	GP-1000 · 1001	GP-1002	GP-1010	GP-1200	GP-1210	GP-1000EN
Application	Steam					
Inlet pressure	0.1-1.0 MPa	0.1-0.5 MPa	0.1-1.0 MPa			
Reduced pressure	0.05-0.9 MPa	0.03-0.15 MPa	0.05-0.9 MPa			
	90% or less of inlet pressure (gauge pressure)					
Minimum differential pressure	0.05 MPa					
Maximum pressure reduction ratio	20:1					
Maximum temperature	220°C					
Valve seat leakage	0.01% or less of rated flow					
Material	Body	Ductile cast iron				
	Valve, valve seat	Stainless steel				
	Piston, cylinder	Brass or bronze				
Connection	JIS 10K FF flanged	JIS Rc screwed	JIS 10K FF flanged	JIS Rc screwed	EN PN16 flanged	

· Available with trim parts (piston and cylinder) made of stainless steel (GP-□□□□S).

GP-1000SS,AS



- Direct type **Pilot type** **Piston** Diaphragm
- Bellows **Internal sensing** External sensing **Stainless steel**
- With handle **Built-in strainer** Low pressure **Remote**
- Valve leakage 0 Nylon



GP-1000AS

Pressure Reducing Valve

■Features

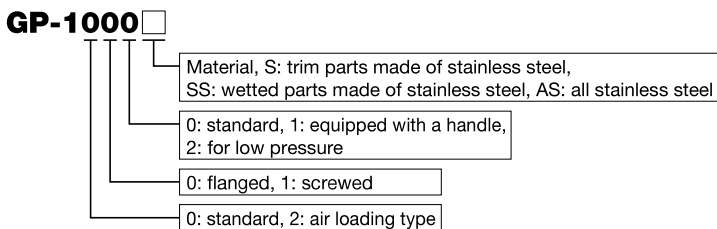
1. Improved corrosion resistance by stainless steel wetted parts (GP-1000SS) or all stainless steel made (GP-1000AS).
2. Spherical main valve offers great sealability and great reduction of valve seat leakage (compliant with ANSI Class IV).
3. Compliant with SHASE-S106 Pressure Reducing Valves (by the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan).

■Specifications

Stainless steel wetted parts All stainless steel made

Model	GP-1000SS	GP1000AS
Application	Steam	
Inlet pressure	0.1-1.0 MPa	
Reduced pressure	0.05-0.9 MPa	
	90% or less of inlet pressure (gauge pressure)	
Minimum differential pressure	0.05 MPa	
Maximum pressure reduction ratio	20:1	
Maximum temperature	220°C	
Valve seat leakage	0.01% or less of rated flow	
Material	Body	Cast stainless steel
	Valve, valve seat	Stainless steel
	Piston, cylinder	Stainless steel
Connection	JIS 10K FF flanged	

Description of GP-1000 Series model code

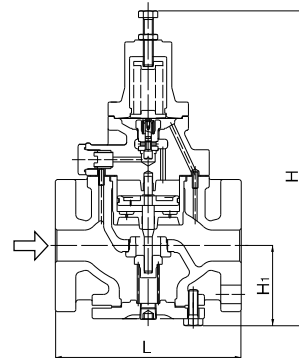


GP-1000 Series

■ Dimensions (mm) and Weights (kg)

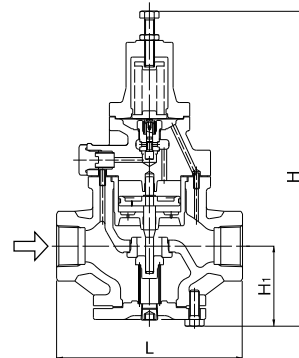
· GP-1000 · 1002

Nominal size	L	H ₁	H	Weight
15A	150	64	285	8.0
20A	155	64	285	8.5
25A	160	67	300	10.0
32A	190	82	323	14.0
40A	190	82	323	14.5
50A	220	93	347	20.0
65A	245	100	357	30.0
80A	290	122	404	35.0
100A	330	144	450	52.5



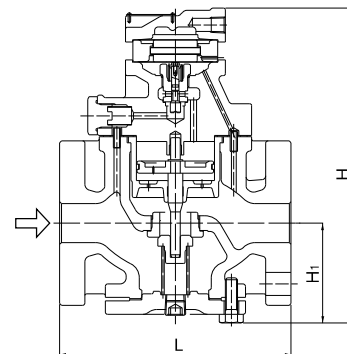
· GP-1010

Nominal size	d	L	H ₁	H	Weight
15A	Rc 1/2	150	64	285	7.0
20A	Rc 3/4	155	64	285	7.0
25A	Rc 1	160	67	300	8.5
32A	Rc 1-1/4	190	82	323	12.0
40A	Rc 1-1/2	190	82	323	12.5
50A	Rc 2	220	93	347	18.0



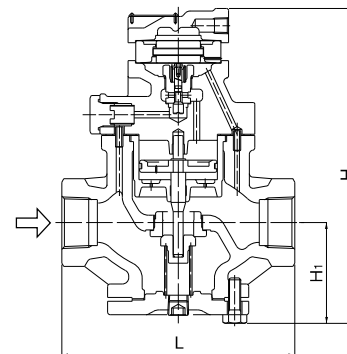
· GP-1200

Nominal size	L	H ₁	H	Weight
15A	150	64	220	8.0
20A	155	64	220	8.5
25A	160	67	235	10.0
32A	190	82	258	14.0
40A	190	82	258	14.5
50A	220	93	282	20.0
65A	245	100	292	30.0
80A	290	122	339	35.0
100A	330	144	385	52.5



· GP-1210

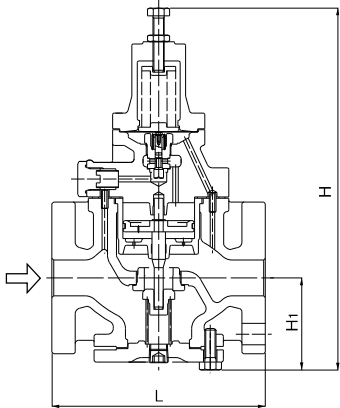
Nominal size	d	L	H ₁	H	Weight
15A	Rc 1/2	150	64	220	7.0
20A	Rc 3/4	155	64	220	7.0
25A	Rc 1	160	67	235	8.5
32A	Rc 1-1/4	190	82	258	12.0
40A	Rc 1-1/2	190	82	258	12.5
50A	Rc 2	220	93	282	18.0



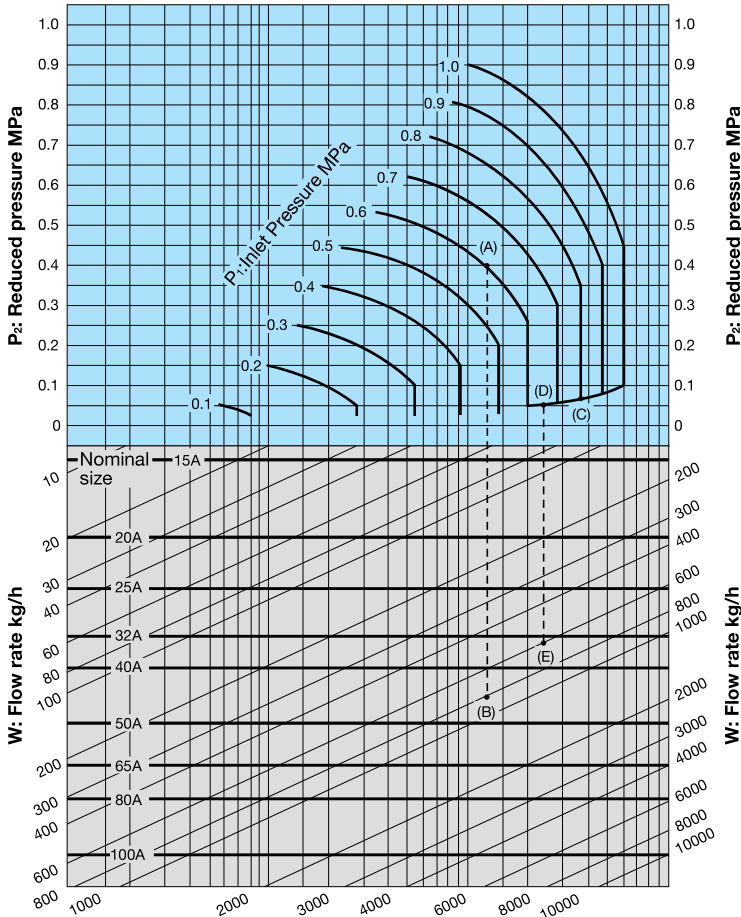
GP-1000SS · 1000AS

Nominal size	L	H ₁	H	Weight
15A	150	67	288 (298)	8.3 (8.5)
20A	155	67	288 (298)	8.8 (9.0)
25A	160	70	303 (313)	10.5 (10.7)
32A	190	85	326 (336)	14.8 (15.0)
40A	190	85	326 (336)	15.3 (15.5)
50A	220	96	350 (360)	20.8 (21.0)
65A	245	103	360 (370)	27.4 (27.6)
80A	290	125	407 (417)	38.8 (39.0)
100A	330	148	454 (464)	54.5 (54.7)

* The values in parentheses are the dimensions and weights of the GP-1000AS.



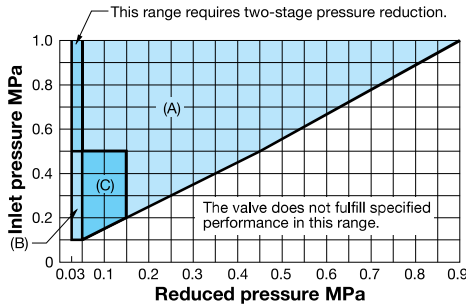
Nominal Sizes Selection Chart (For Steam)



[Example 1]
 When selecting the nominal size of a pressure reducing valve whose inlet pressure (P₁), reduced pressure (P₂), and steam flow rate are 0.6 MPa, 0.4 MPa, and 800 kg/h, respectively, first find intersection point (A) of the inlet pressure of 0.6 MPa and the reduced pressure of 0.4 MPa. Trace down vertically from this intersection point to find intersection point (B) with the flow rate of 800 kg/h. Since intersection point (B) lies between nominal sizes 40A and 50A, select the larger one, 50A.

[Example 2]
 When selecting the nominal size of a pressure reducing valve whose inlet pressure (P₁), reduced pressure (P₂), and steam flow rate are 0.8 MPa, 0.05 MPa, and 600 kg/h, respectively, first find intersection point (C) of the inlet pressure of 0.8 MPa and the diagonal line. Trace down to the left from this intersection point to find intersection point (D) with the reduced pressure of 0.05 MPa. Trace down vertically from intersection point (D) to find intersection point (E) with the flow rate of 600 kg/h. Since intersection point (E) lies between nominal sizes 32A and 40A, select the larger one, 40A.
 · Set the safety factor at 80 to 90%.

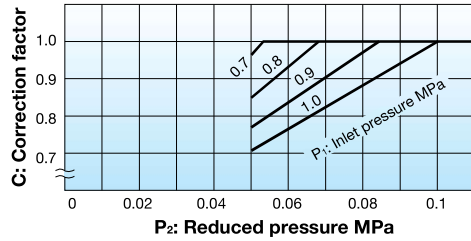
Specifications Selection Chart



Find the intersection point of the inlet and reduced pressures. If the intersection point is within any of the ranges shown in the chart above, the pressures are controllable.

- Range (A) and (C): GP-1000 Series except GP-1002 and 1012
- Range (B) and (C): GP-1002 and 1012

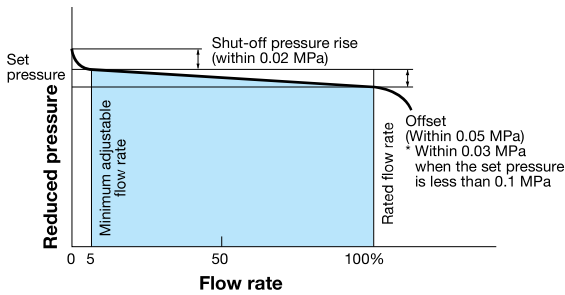
Corrected Cv value



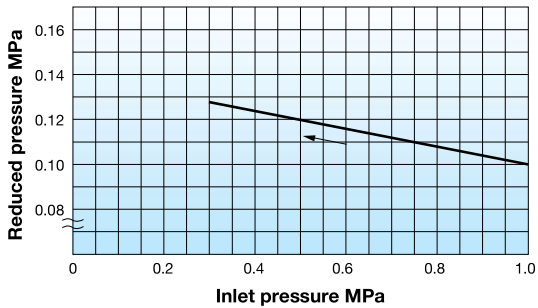
Example

Take a pressure reducing valve whose inlet pressure is 0.8 MPa, the reduced pressure is 0.05 MPa. Find the inlet and reduced pressure intersection point (A) at the above chart, then draw a horizontal line in the leftward direction to point (B) which indicates a correction coefficient of 0.85. For a nominal size of 25A, the corrected Cv value would be calculated as follows:
 $4 \text{ (rated Cv value)} \times 0.85 \text{ (correction coefficient)} = 3.4$

Flow Characteristic Chart

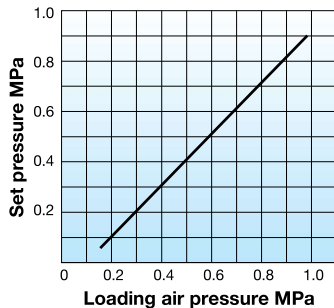


Pressure Characteristic Chart



This chart shows variation in reduced pressure when the inlet pressure of 1.0 MPa is changed between 0.3 MPa and 1.0 MPa while the reduced pressure is set at 0.1 MPa.

Loading Air Pressure-set Pressure Chart



Basically, the set pressure to the loading air pressure is as shown on the left.

The set pressure is slightly different depending on the conditions. For the actual use, adjust the loading air pressure suitable for necessary set pressure.

- Set pressure of safety valve for alarm use at the outlet side of the pressure reducing valve for steam

Set pressure of pressure reducing valve (MPa)	Set pressure of safety valve (MPa)
0.1 or less	Set pressure of the pressure reducing valve + 0.05 or more
0.11-0.4	Set pressure of the pressure reducing valve + 0.08 or more
0.41-0.6	Set pressure of the pressure reducing valve + 0.1 or more
0.61-0.8	Set pressure of the pressure reducing valve + 0.12 or more
More than 0.8	Set pressure of the pressure reducing valve + 15%

- When a safety valve is installed for alarm use at the outlet side of a pressure reducing valve for steam and there are no laws or regulations specified to comply with, select a safety valve whose blowout capacity is around 10% of the maximum flow rate of the pressure reducing valve.

■GP-1000 Flow Rate Table

		(kg/h)								
P ₁ (MPa)	P ₂ (MPa)	15A	20A	25A	32A	40A	50A	65A	80A	100A
1	0.05 *	92	212	369	600	831	1,478	2,310	3,326	5,913
	0.1-0.4	132	303	528	858	1,188	2,112	3,300	4,752	8,448
	0.5	127	292	508	825	1,143	2,033	3,176	4,574	8,132
	0.6	116	268	467	760	1,052	1,871	2,923	4,210	7,484
	0.7	104	239	416	676	936	1,664	2,601	3,745	6,659
	0.8	87	200	348	566	784	1,394	2,179	3,137	5,578
	0.9	63	145	252	410	568	1,010	1,578	2,273	4,042
0.9	0.1-0.4	120	276	480	780	1,080	1,920	3,000	4,320	7,680
	0.5	110	253	441	716	992	1,764	2,756	3,969	7,056
	0.6	98	226	393	639	885	1,574	2,460	3,543	6,299
	0.7	82	190	330	537	744	1,323	2,067	2,976	5,292
	0.8	60	138	240	390	540	961	1,501	2,162	3,844
0.8	0.1-0.3	108	248	432	702	972	1,728	2,700	3,888	6,912
	0.4	103	237	412	670	928	1,650	2,578	3,712	6,600
	0.5	92	212	369	600	832	1,479	2,311	3,328	5,916
	0.6	77	179	311	506	701	1,247	1,949	2,806	4,989
	0.7	56	130	227	369	511	909	1,420	2,045	3,636
0.7	0.1-0.3	96	220	384	624	864	1,536	2,400	3,456	6,144
	0.4	86	197	344	559	774	1,377	2,151	3,098	5,508
	0.5	72	167	291	474	656	1,166	1,823	2,625	4,667
	0.6	53	122	213	346	480	854	1,334	1,921	3,416
0.6	0.1-0.2	84	193	336	546	756	1,344	2,100	3,024	5,376
	0.3	79	182	316	514	712	1,266	1,979	2,850	5,067
	0.4	67	155	270	438	607	1,080	1,687	2,430	4,321
	0.5	49	114	198	322	447	795	1,242	1,788	3,180
0.5	0.1-0.2	72	165	288	468	648	1,152	1,800	2,592	4,608
	0.3	61	141	246	400	554	986	1,540	2,218	3,944
	0.4	45	105	182	297	411	731	1,142	1,645	2,925
0.4	0.1	60	138	240	390	540	960	1,500	2,160	3,840
	0.2	55	126	220	358	496	882	1,378	1,984	3,528
	0.3	41	95	165	268	372	661	1,033	1,488	2,646
0.3	0.1	48	110	192	312	432	768	1,200	1,728	3,072
	0.2	36	83	145	237	328	583	911	1,312	2,333
0.2	0.1	30	70	123	200	277	493	770	1,109	1,972
0.1	0.05	18	41	72	118	164	291	455	656	1,166

* When the inlet pressure is more than 0.7 MPa and the pressure reduction ratio is more than 10:1, calculate the corrected Cv value multiplying the rated Cv value by the correction factor C obtained from Fig.1.