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181CE-Products catalogue-02-2002-1000 ①

Products Catalogue

ITO Corporation

Products Catalogue

Governors
Regulators
Auto-Changeovers
Hoses & Valves
Safety Devices
Vaporisers
SNG Generator

ITO Corporation
Innovation Technology Origination

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NG & Other Gases

User Guide

Terminology and Advice

Pressure Tiers of City Gas in Japan and Product Category

High pressure city gas which is sent from the production plant is reduced to medium pressure using pressure governors and distributed to large-scale plants and facilities. The pressure is further reduced to low or intermediate pressure for distribution to regular households and commercial facilities. Relative city gas facilities including our governors are typically designed based on following pressure tiers in Japan.

Full Form	Condensed Description	Pressures
High Pressure	HP	1.00MPa or more
Medium Pressure A	MPA	0.30MPa~0.99MPa
Medium Pressure B	MPB	Approx. 0.05~0.30MPa
Low Intermediate Pressure	LM	Approx.10.0~20.0kPa
Low Pressure	LP	1.00kPa~2.50kPa

The product category is expressed in condensed description.
E.g. AB Governor = A reducing governor from Medium Pressure A to B.

Connections

Described by a condensed description, the complete description is given as table 1.

Condensed Description	Table 1: Connection Full Description	JIS Code
Union	A union joint assembled at product outlet connection. PT threaded for connection. See description below.	B 2301 MOD:ISO 49
Rc-R PT Thread	JIS taper pipe threads. Shown as R for male/external thread and Rc for female/internal thread in short.	B 0203 MOD:ISO 7
Flange	JIS flange connections. A welded neck flange pipe screwed into the regulator or a regulator that has an end face finished to match a declared flange specifications. FF for a flat face flange or RF for a raised face flange shown in the description.	B 2220

Dimensions in mm

Expressed in mm in this catalogue. See table 2 for your conversion.

Outlet Pressure in MPa, kPa

A regulator delivers a stable outlet pressure within the declared range.
Interchangeable springs are available for some models.

Manual-Reset OPSO (MR-OPSO) in MPa, kPa

The ITO "MR-OPSO", a manual-reset type OPSO, shuts off gas upstream of pressure governor to avoid abnormal pressure increases. Manual reset type overpressure shut-off valve to be reset by pushing or pulling a reset button.

Auto-Reset OPSO (AR-OPSO) in MPa, kPa

The ITO "AR-OPSO", an inner auto-reset type over pressure shut-off valve incorporated additionally, works to avoid outlet pressure rises if any foreign object is caught between the main valve disc and the main orifice, inner sealing failed.

Safety Relief Valve in MPa, kPa

A valve that opens and releases overpressure into the air to prevent abnormal pressure increases.

Strainer Incorporated

Incorporated with a net-like part to filter any foreign bodies such as pipe scale or rust coming from the upstream pipework.

Table 2 : Length

cm	mm	in
100.0	1000.0	39.4
1.0	10.0	0.394
0.1	1.0	0.0394
2.54	25.4	1.0
30.5	305.0	12.0

Table 3 : Pressure Conversion

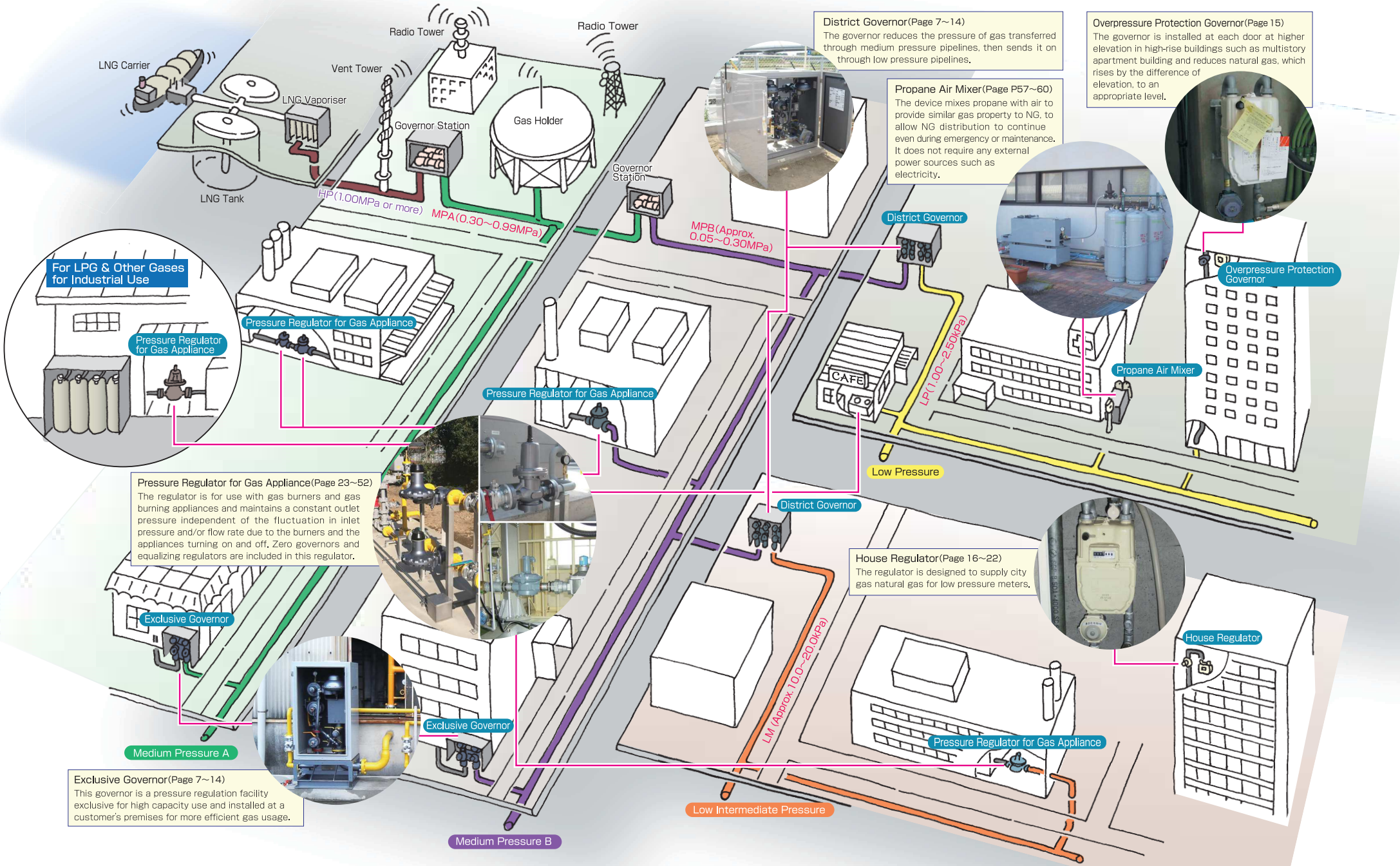
MPa	kPa	kgf/cm²	mm H_2O	in H_2O	PSI	bar	mbar
1.0	1000.0	10.197	1.02×10^5	4010.05	145.0	10	10,000
0.001	1.0	0.0102	102.0	4.02	0.145	0.01	10
0.098	98.0	1.0	10000.0	394.0	14.2	0.9807	980.7
9.8×10^{-6}	0.0098	0.0001	1.0	0.0394	0.00142	0.0001	0.1
2.49×10^{-4}	0.249	0.00254	25.4	1.0	0.0361	0.00249	2.49
0.0069	6.9	0.0703	703.0	27.7	1.0	0.06895	68.95
0.1	100	1.0197	10197	401.76	14.5	1.0	1,000
0.0001	0.1	0.00102	10.21	0.402	0.0145	0.001	1.0

Selection Parameters

To order our governors, provide the 7 items below to your ITO sales representatives.

1. Model
2. Inlet Pressure Range (P1)
3. Outlet Pressure Range (P2)
4. Maximum Flow Rate (Q)
5. Gas Type and Specific Gravity
6. Gas Temperature
7. Type of Connection and Face-to-Face Dimensions

City Gas Natural Gas Solutions in Application Map



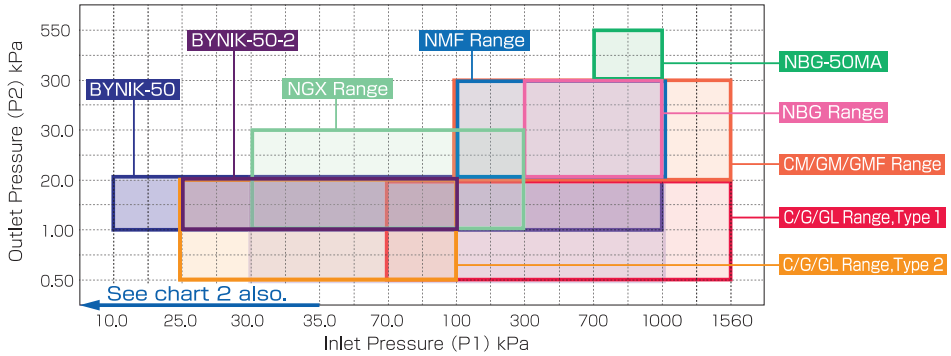
*See page 53~56 regarding accessories and other equipment.

Selection Guide for Governors

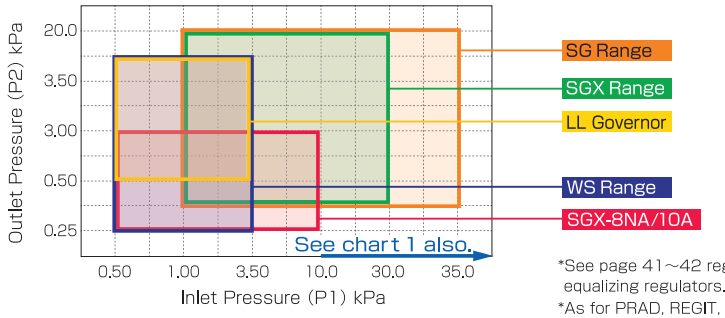
Step 1 : Selecting Model Code

See the charts below and select a model code (range) based on your required inlet (P1) and outlet pressures (P2).

●Chart 1 (For Medium Pressure Inlet)



●Chart 2 (For Low Intermediate or Low Pressure Inlet)



*See page 41~42 regarding zero governors and equalizing regulators.
*As for PRAD, REGIT, WGX and meter regulators, contact our local branch or agency.

Step2 : Selecting Size

Check the maximum flow rate on the selected model code page and choose a governor to meet your requirement.

Step3 : Gas Application

See page 5~6 and ensure the gas to be used is applicable for the model. At the same time, confirm if the governor can fit your other conditions of use such as our declared hydrostatic and air-tightness pressure and working temperature range, to satisfy all requirements.

Step 4 : Checking Piping Details

Confirm that the type of connection and face-to-face dimension of the governor to fit in the piping atthe installation site.

⚠ Pressure losses due to length of piping, valves, pipe joints and flow meters and so on shall be taken into consideration.

⚠ This catalogue indicates flow rates measured under static conditions. Select the governor with a margin for your required capacity especially when there is a momentary pressure fluctuation due to solenoid valves rapidly turning on and off.

Converting the Flow Rate and Reading the Performance Curve

Converting the Flow Rate

Flow rate is expressed in m³/h (normal) of 0.6 specific gravity natural gas in this catalogue.
If you use any other gas, please convert it using the following formula. Substitute the coefficient of conversion of your gas type into K in the conversion formula below to convert the flow rate.

Converting the Flow Rate of Gas into the Flow Rate of Air

$$\underset{(N\text{m}^3/\text{h})}{Q_{Air}} = \underset{(N\text{m}^3/\text{h})}{Q} \times K$$

(Air Flow Rate; Gas Flow Rate; Coefficient of Conversion)

Converting the Flow Rate of Air into the Flow Rate of Gas

$$\underset{(N\text{m}^3/\text{h})}{Q} = \frac{Q_{Air}\ (N\text{m}^3/\text{h})}{K}$$

(Gas Flow Rate; Air Flow Rate; Coefficient of Conversion)

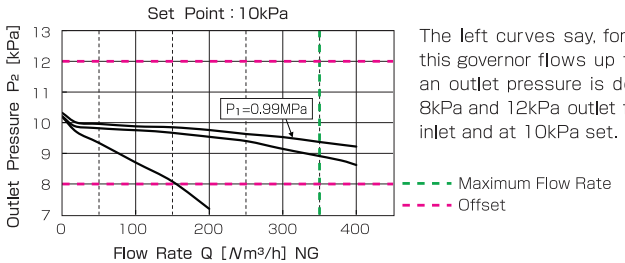
Gas Type	City Gas		Natural Gas*	Propane	Nitrogen	Carbon Dioxide	Argon	Helium	Hydrogen	Ammonia
	13A	PA-13A	NG	C_3H_8	N_2	CO_2	Ar	He	H_2	NH_3
K Coefficient of Conversion	0.81	1.16	0.81	1.23	0.98	1.24	1.17	0.37	0.26	0.77

*Based on the specific gravity of 0.6.
If you use gas not listed above, see page 5~6 to find the specific gravity and calculate the coefficient of conversion (K) with the formula below.

$$\text{Coefficient of Conversion } K = \sqrt{\text{Specific Gravity}}$$

Reading the Performance Curve

The flow rates will vary depending on different inlet pressures and maximum & minimum limits on outlet pressures even at the same set point. You can see how much gas flows through your selected governor with in your acceptable pressure range (= offset).
The curves represent the characteristic of a governor at each inlet pressure .



The left curves say, for example, we guarantee this governor flows up to 350 Nm³/h for which an outlet pressure is delivered stably between 8kPa and 12kPa outlet for the 0.50MPa or more inlet and at 10kPa set.

Nm³/h, m³/h(normal) ····· Meters cubed per hour (normal) ; measurement of volume rate of a gas at atmospheric pressure and 0°C.

Specific Gravity ····· The rate of weight of a given volume fluid to the weight of equal volume of liquid/gas at stated temperature.

Offset ····· The deviation from set point for a given flow.

Flow Rate ····· The rate of flow through the regulator specified by the manufacturer for a given inlet & outlet pressure and offset.

Maximum Flow Rate ····· Our guaranteed flow rate at maximum for which the governor performs at its optimum at the declared outlet pressure for the declared inlet pressures within the range of delivery (=offset).

Usable Gases

If you request gas type not listed in the table below, contact our local branch or agency.

Category		Governor																	Regulator						
		SGF Range			NBG Range		NMF Range		BINIK Range		WGX Range		NGX Range		SG Range	SGX Range		LL Governor	WS Range	Medium Pressure			Low Pressure		Stainless Steel	
Model Code		SGF-15 SGF-15L SGF-15S	SGF-20L SGF-20S SGF-25	H5-EX(S) -NR /H-5EX	NBG-50-MA	NBG-50 NBG-50H	NMF-20 NMF-25 NMF-25-40	NMF-40 NMF-50 NMF-50-2 NMF-80 NMF-100	BINIK-50	BINIK-50-2	WGX-20 WGX-25		NGX-80 NGX-100	NGX-20 NGX-25 NGX-25-2 NGX-32 NGX-50 NGX-50-2	SG-24A SG-32B SG-36A	SGX-8NA SGX-10A	SGX-15N/SGX-20N SGX-25N/SGX-40N SGX-40/SGX-50N SGX-50/SGX-80 SGX-100	GZ-20 G-3B ARO-406A GX-4 GY-6	WS-100 WS-101 WS-102 WS-103 WS-104	CM-100	GMF-70 GMF-100 GMF-200	GMF-300 GMF-400 GMF-500 GMF-1000	C-10A C-20 GL-50 GL-70	G-32A G-36C GL-300 GL-400 GL-500	AC-15	AM-150
Body Material		ADC12		ADC12	Type L: FCD450 Type S: AC4C-T6		FCD-S		AC4C-T6		FCD400		AC4C-T6 (NGX-80/NGX-100:FCD-S)		FCD400 (SG-32B:FCD-S)	ADC12 (SGX-40/SGX-50:FCD450 SGX-80/SGX-100:FCD-S)		ADC12	ADC12	ZDC2	FCD-S		ADC12	FCD-S	SCS13	
Hydrostatic Test	Inlet	—	—	H5-EX : 0.50MPa H-5EX : 0.80MPa	1.50MPa		1.50MPa		1.50MPa		0.60MPa		1.50MPa		0.07MPa	—		—	10.0kPa (WS-103/WS-104 : 20.0kPa)	2.70MPa			Type1 : 2.70MPa Type2 : 0.80MPa		0.80MPa	3.30MPa
	Outlet	—	—	0.30MPa	0.99MPa	0.60MPa	0.45MPa		0.30MPa		0.40MPa		0.30MPa		0.03MPa	—		—		0.80MPa			0.30MPa		0.30MPa	0.80MPa
Air-Tightness Test	Inlet	20.0kPa		H5-EX : 0.40MPa H-5EX : 0.50MPa	1.10MPa		1.10MPa (NMF-50-2:0.33MPa)		1.10MPa	0.40MPa	0.44MPa		0.40MPa		0.04MPa	11.0kPa	33.0kPa (SGX-80/SGX-100 : 66.0kPa)	10.0kPa	10.0kPa	1.80MPa			Type1 : 1.80MPa Type2 : 0.50MPa		0.50MPa	2.10MPa
	Outlet	20.0kPa		5.50kPa	0.73MPa	0.44MPa	0.33MPa (NMF-50-2 : 55.0kPa)		55.0kPa		15.0kPa		55.0kPa		5.50kPa			10.0kPa	10.0kPa	0.30MPa			5.50kPa		5.50kPa	0.30MPa
Maximum Outlet Pressure		—	—	—	0.55MPa	0.30MPa	0.30MPa		20.0kPa		10.0kPa		20.0kPa	30.0kPa	20.0kPa	3.00kPa	20.0kPa	3.00kPa	2.70kPa	0.30MPa			20.0kPa		20.0kPa	0.30MPa
Working Temperature Range *1		−15~60℃	−10~60℃	−25~60℃	Type L: 0~60℃ Type S: −15~60℃		−5~60℃		−15~60℃		−10~60℃		−15~60℃ (NGX-80/NGX-100 : −5~60℃)		−5~60℃	−15~60℃ (SGX-80/SGX-100 : −5~60℃)		−5~60℃	−5~55℃	−5~60℃ (CM-100 : −25~60℃)			−5~60℃ (C-10A/C-20 : −25~60℃)		−5~60℃	
Argon Gas (Ar) S.G. : 1.38		✓	✓	✓	✓		✓		✓		✓		✓		✓	✓	✓	✓	✓	✓			✓		✓	
Ammonia Gas (NH_3) S.G. : 0.60		×	×	×	×		×		×		×		×		×	×	×	×	×	×	M	×	×		✓	
Ethane Gas (C_2H_6) S.G. : 1.05		✓	✓	✓	✓		✓		✓		✓		✓		✓	✓	✓	✓	✓	✓			✓		R	
Air S.G. : 1.00		×	×	×	R*4		R		×		×		R		R	×	R	×	×	R			R		R	
Coke-Oven Gas*3 (COG) S.G. : 0.3~0.8*2		×	×	×	R*4 M		R M		×		×		×		R M	×	Use Type C	×	×	R M			R M		×	
Hydrogen Gas (H_2) S.G. : 0.07		※	※	※	He		He		He		※		He		He	He	He	He	He	He			He		He	
Nitrogen Gas (N_2) S.G. : 0.97		✓	✓	✓	✓		✓		✓		✓		✓		✓	✓	✓	✓	✓	✓			✓		✓	
Natural Gas (NG) S.G. : 0.65~0.7 *2		✓	✓	✓	✓		✓		✓		✓		✓		✓	✓	✓	✓	✓	✓			✓		R	
City Gas (13A)		✓	✓	✓	✓		✓		✓		✓		✓		✓	✓	✓	✓	✓	✓			✓		R	
Carbon Dioxide (CO_2) S.G. : 1.54		✓	✓	✓	✓		✓		✓		✓		✓		✓	✓	✓	✓	✓	✓			✓		✓	
Biogas *2 *3		×	×	×	M		M		×		×		M		M	M	M	×	×	M			M		R	
Butane Gas (C_4H_{10}) S.G. : 2.01		✓	✓	✓	×		✓		×	✓	✓		✓		✓	✓	✓	✓	✓	✓			✓		R	
Propane Gas (C_3H_8) S.G. : 1.56		✓	✓	✓	×		✓		×	✓	✓		✓		✓	✓	✓	✓	✓	✓			✓		R	
Helium Gas (He) S.G. : 0.14		※	※	※	He		He		He		※		He		He	He	He	He	He	He			He		He	
Methane Gas (CH_4) S.G. : 0.55		✓	✓	✓	✓		✓		✓		✓		✓		✓	✓	✓	✓	✓	✓			✓		R	
Sulfur Hexafluoride Gas (SF_6) S.G. : 5.11		✓	✓	✓	✓		✓		✓		✓		✓		✓	✓	✓	✓	✓	✓			✓		R	
Prohibited Gases		Acetylene Gas, Sulfurous Acid Gas, Carbon Monoxide Gas, Chlorine Gas, Ozone Gas, Butadiene Gas, Butylene Gas, Hydrogen Sulfide Gas, Oxygen Gas, Propylene Gas and so on.																								

*1 During continuous operation.
*2 The specific gravity of COG, NG and biogas varies depending on the application. Please specify the specific gravity of the gas when placing your order.
*3 The content of hydrogen sulfide shall be 10 ppm or less in fluid.
*4 If alternative rubber parts of NBG-50H are required, contact your ITO sales representative.

✓ : Use standard product.
× : Cannot be used.
R : Change rubber parts.
M : Change materials used for main parts.
He : Carry out air-tightness test using helium.
※ : Contact your ITO sales representative.

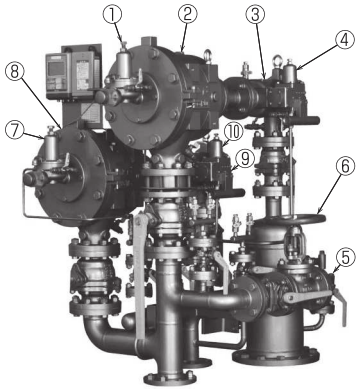
(If alternative raw material is required, please inform our local branch or agency when placing your order.)

PRAD-AB Range

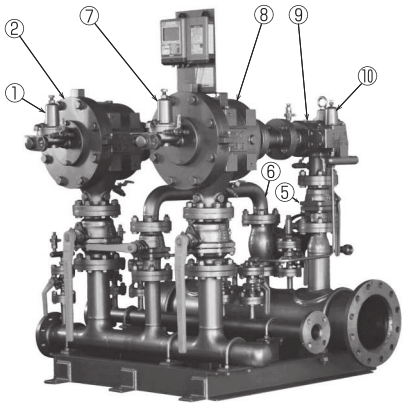
AB Governor Unit

Incorporated: (Relief) (MR-OPSO) (Strainer)

- The PRAD-AB range is a unit of pressure reducing governors from *Medium Pressure A* to *Medium Pressure B* and multiple safety devices into one same compact body.
- Widely used as an *Exclusive Governor* or a *District Governor*.
- Pilot-operated governors used, which provides outstanding stability of outlet pressure.
- The easily removable and attachable main valve to the main governor and the combined SOV and strainer filter make maintenance easier.
- 2 options, large flow rate type with an adjustable restrictor, or the high stability type with a fixed restrictor.
- The inlet and outlet directions of PRAD-AB-H can be selected from 4 options. Please specify your required mounting position when placing your order.



PRAD-AB-V Height:1185
Width :1174
Depth : 970



PRAD-AB-H Height:1385
Width :1275
Depth :1180

Main Components

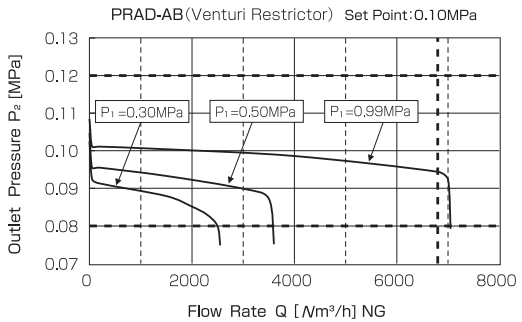
No.	Item Name
①	Main Manual-Rest OPSO
②	Main Filter
③	Main Regulator
④	Main Pilot Regulator
⑤	Safety Relief Valve
⑥	Bypass V-Port Valve
⑦	Sub Manual-Rest OPSO
⑧	Sub Filter
⑨	Sub Regulator
⑩	Sub Pilot Regulator

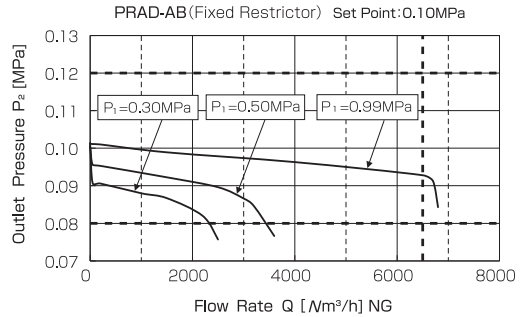
Specifications

Model		PRAD-AB-V(Vertical Type) PRAD-AB-H(Horizontal Type)				
Set Point(MPa)		0.06	0.10	0.15	0.18	0.20
Maximum Flow Rate(Nm^3/h)		Venturi Restrictor:6800 Fixed Restrictor:6500				
Inlet Pressure(MPa)		0.30~0.99				
Outlet Pressure (MPa)	Main Line	0.06	0.10	0.15	0.18	0.20
	Sub Line	0.04	0.08	0.13	0.16	0.18
Lockup Pressure (MPa)	Main Line	0.08	0.12	0.17	0.20	0.22
	Sub Line	0.06	0.10	0.15	0.18	0.20
Safety Relief Valve(MPa)	Start-to-Discharge	0.12±0.01	0.16±0.01	0.21±0.01	0.24±0.01	0.26±0.01
	Stop-to-Discharge	0.09~0.13	0.13~0.17	0.18~0.22	0.21~0.25	0.23~0.27
MR-OPSO (MPa)	Main Line	0.10	0.14	0.19	0.22	0.24
	Sub Line	0.16	0.20	0.25	0.28	0.30
	Reset Method	Manual by Pulling the Red Indicator				
Inlet Connection		JIS 10K 80A Flange (FF)				
Outlet Connection		JIS 10K 200A Flange (FF)				
Sensing Line Connection		JIS 10K 50A Flange (FF)				
Strainer Mesh Gauge		400 Mesh				

*A fine mesh strainer to prevent particles from dusty gas is also available.

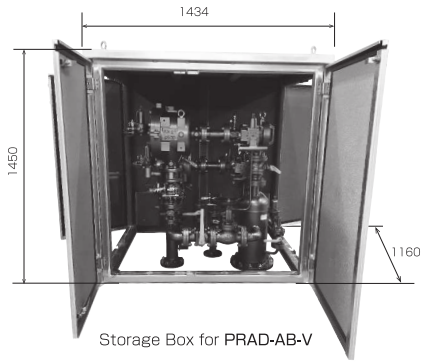
Flow Rate



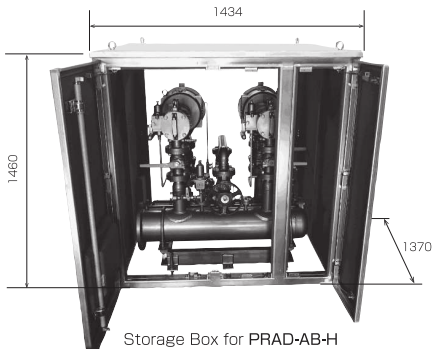


Storage Box

A dedicated aesthetically designed storage box offers additional protection from rain, wind and noise and providing full security.



Storage Box for PRAD-AB-V



Storage Box for PRAD-AB-H

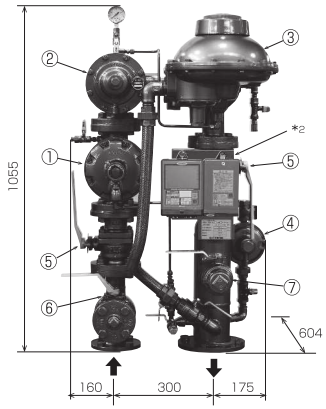
REGIT50 Range

AL/ALM BL/BLM Governor Unit

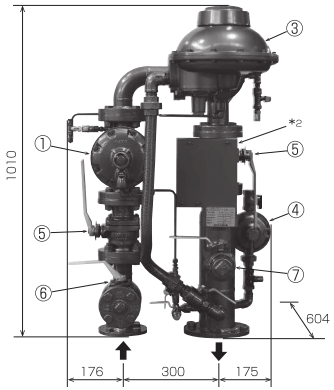
Incorporated : (AR-OPSO*) (Relief) (MR-OPSO) (Strainer) *AL/BL only.

- The REGIT50 Range is a unit of pressure reducing governors from *Medium Pressure* ***A*** or ***B*** to ***L****ow Pressure* or ***L****ow Inter****m****ediate Pressure* and multiple safety devices into one compact body.
- Widely used as an *Exclusive Governor* or small-scale *District Governor.*
- Only direct-operated governors used, which provides outstanding quick response and easy maintenance. *The ITO Active Venturi System (AVS)**1 enables flat flow rate characteristics different from conventional direct-operated type.

*1:Patented



REGIT50-AL
REGIT50-ALM



REGIT50-BL
REGIT50-BLM

Main Components

No.	Item Name	Quantity REGIT50-AL REGIT50-ALM	Quantity REGIT50-BL REGIT50-BLM
①	Manual-Reset OPSO	1	1
②	Medium Pressure A to B Governor	1	
③	Medium Pressure B to Low Pressure Governor/ Medium Pressure B to Intermediate Pressure Governor	1	1
④	Safety Relief Valve	1	1
⑤	Ball Valve	2	2
⑥	Ball Valve	1	1
⑦	Ball Valve	1	1

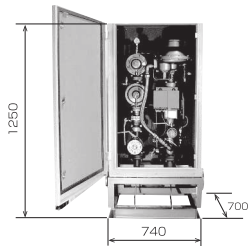
*2 Auto-recording pressure gauge is available as a separate accessory.

Specifications

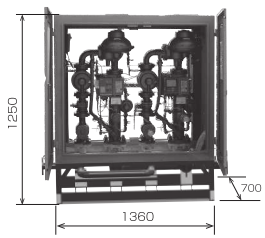
Model		REGIT50-AL	REGIT50-BL	REGIT50-ALM	REGIT50-BLM
Maximum Flow Rate(Nm³/h)		550	800	730	634
Inlet Pressure(MPa)		0.30～0.99	0.06～0.30	0.30～0.99	0.06～0.30
Outlet Pressure(kPa)		1.90～2.30		9.00～20.0 *3	
Lockup Pressure(kPa)		≦2.50		≦Set Point ×1.2	
Safety Relief Valve Working Pressure		2.70～8.00 kPa *3		9.00～30.0 kPa *3	
Auto-Reset OPSO	Working Pressure	≦5.00 kPa			
	Reset Method	Resets automatically after outlet pressure resumes its normal range.			
Manual-Reset OPSO	Working Pressure	8.00～13.0 kPa *3		9.00～30.0 kPa *3	
	Reset Method	Manual Operation by the Reset Button			
Inlet Connection		JIS 10K 50A Flange(FF)			
Outlet Connection		JIS 10K 100A Flange(FF)			
Strainer Mesh Gauge		100 Mesh *4			

*3 Interchangeable springs are available.
*4 The strainer with 200 mesh is also available.

Mounting pipework and storage box are available as separate accessories.

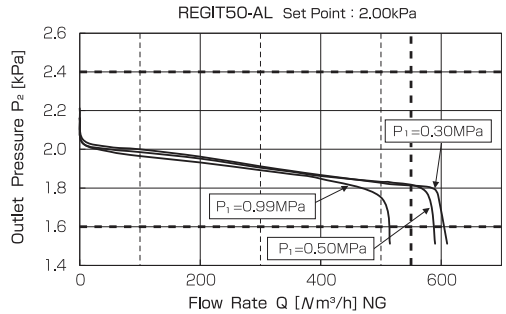


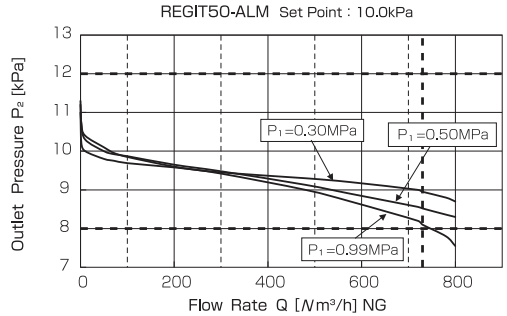
Single Unit

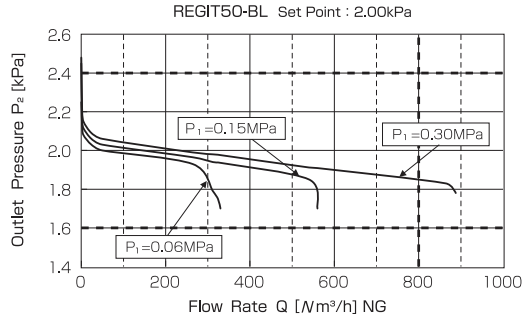


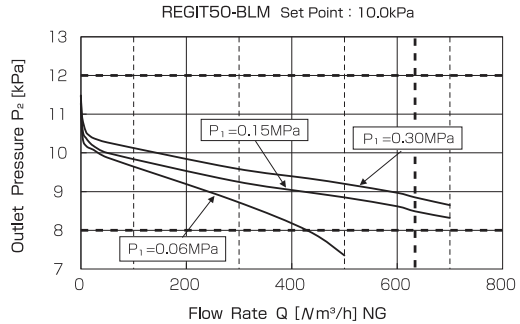
Double Unit

Flow Rate









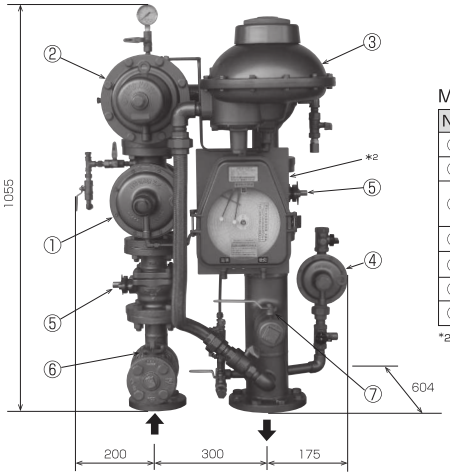
REGIT50-EX Range

AL/ALM Governor Unit

Incorporated : (AR-OPSO*) (Relief) (MR-OPSO) (Strainer) *AL only.

- The REGIT50-EX range is a unit of pressure reducing governors from *Medium Pressure* ***A*** to ***L****ow Pressure* or ***L****ow Intermediate Pressure* and multiple safety devices into one compact body.
- Simplified REGIT (see page 9～10 for more description) to achieve larger flow rate, AL 700N/m³/h*1
  ALM 1,000N/m³/h

*1 : AL with SGX-100 also up to 1,000m³/h at max.



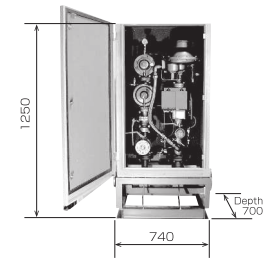
REGIT50-AL-EX
REGIT50-ALM-EX

Main Components

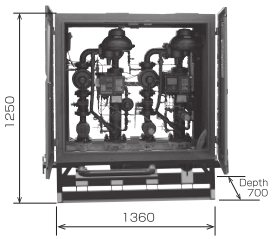
No.	Item Name	Quantity
①	Manual-Reset OPSO	1
②	Medium Pressure A to B Governor	1
③	Medium Pressure B to Low Pressure Governor/ Medium Pressure B to Intermediate Pressure Governor	1
④	Safety Relief Valve	1
⑤	Ball Valve	2
⑥	Ball Valve	1
⑦	Ball Valve	1

*2 Auto-recording pressure gauge is available as a separate accessory.

Mounting pipework and storage box are available as separate accessories.



Single Unit



Double Unit

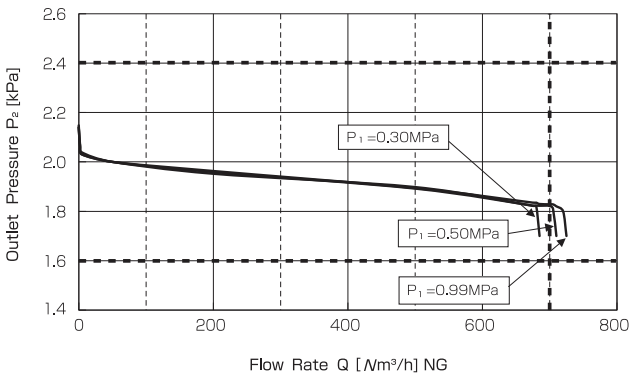
Specifications

Model		REGIT50-AL-EX	REGIT50-ALM-EX
Maximum Flow Rate (N/m³/h)		700	1000
Inlet Pressure (MPa)		0.30～0.99	
Outlet Pressure (kPa)		1.90～2.30	9.00～20.0 *3
Lockup Pressure (kPa)		≦2.50	≦Set Point ×1.2
Safety Relief Valve Working Pressure		2.70～8.00kPa *3	9.00～30.0kPa *3
Auto-Reset OPSO	Working Pressure	≦5.00 kPa	
	Reset Method	Resets automatically after outlet pressure resumes its normal range.	
Manual-Reset OPSO	Working Pressure	8.00～13.0kPa *3	9.00～30.0kPa *3
	Reset Method	Manual Operation by the Reset Button	
Inlet Connection		JIS 10K 50A Flange(FF)	
Outlet Connection		JIS 10K 100A Flange(FF)	
Strainer Mesh Gauge		100 Mesh *4	

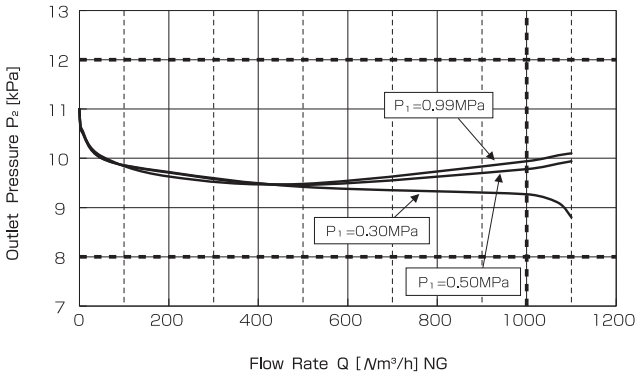
*3 Interchangeable springs are available.
*4 The strainer with 200 mesh is also available.

Flow Rate

REGIT50-AL-EX Set Point : 2.00kPa



REGIT50-ALM-EX Set Point : 10.0kPa

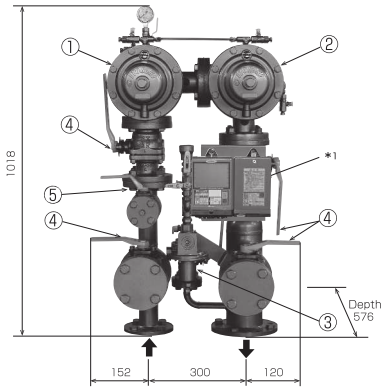


REGIT-AB Range

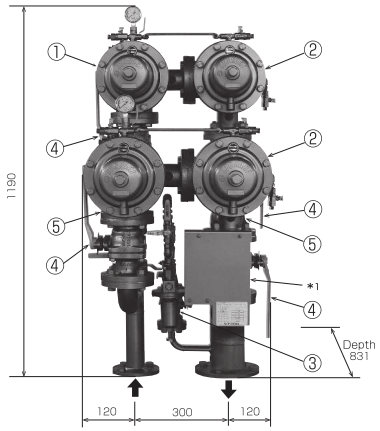
AB Governor Unit

Incorporated : (AR-OPSO) (Relief) (Strainer)

- The REGIT-AB range is a unit of pressure reducing governors from *Medium Pressure* ***A*** to *Medium Pressure* ***B*** and multiple safety devices into one same compact body regardless of the single (REGIT-AB-S) or double unit (REGIT-AB-W).
- Widely used as an *Exclusive Governor* or small-scale *District Governor*.
- Only direct-operated governors used, which provides outstanding quick response and easy maintenance.
- The REGIT-AB-W has a double line structure, which allows its use without suspending gas supply during maintenance and so does not require installation of temporary governors.



REGIT-AB-S



REGIT-AB-W

Main Components

No.	Item Name	Quantity
①	Auto-Reset OPSO	1
②	Medium Pressure A to B Governor	1
③	Safety Relief Valve	1
④	Ball Valve	4
⑤	Ball Valve	2

*Auto-recording pressure gauge is available as a separate accessory.

Main Components

No.	Item Name	Quantity
①	Auto-Reset OPSO	2
②	Medium Pressure A to B Governor	2
③	Safety Relief Valve	1
④	Ball Valve	4
⑤	Ball Valve	2

*Auto-recording pressure gauge is available as a separate accessory.

Specifications

Model		REGIT-AB-S/REGIT-AB-W		
Set Point(MPa)		0.10	0.15	0.20
Maximum Flow Rate(Nm³/h)		1000		
Inlet Pressure(MPa)		0.30 ~ 0.99		
Outlet Pressure (MPa)	Main Line	0.10±0.01	0.15±0.015	0.20±0.02
	Sub Line*1	0.07±0.01	0.12±0.015	0.17±0.02
Lockup Pressure (MPa)	Main Line	≦0.12	≦0.18	≦0.24
	Sub Line	≦0.084	≦0.144	≦0.204
Safety Relief Valve (MPa)	Start-to-Discharge	0.23~0.25		0.27~0.29
	Stop-to-Discharge	0.21~0.25		0.25~0.29
Auto-Reset OPSO	Working Pressure	0.15MPa	0.20MPa	0.25MPa
	Reset Method	Resets automatically after outlet pressure resumes its normal range.		
Inlet Connection		JIS 10K 50A Flange (FF)		
Outlet Connection		JIS 10K 100A Flange (FF)		
Strainer Mesh Gauge		100 Mesh*2		

*1 For REGIT-AB-W only.
*2 The strainer with 200 mesh is also available.

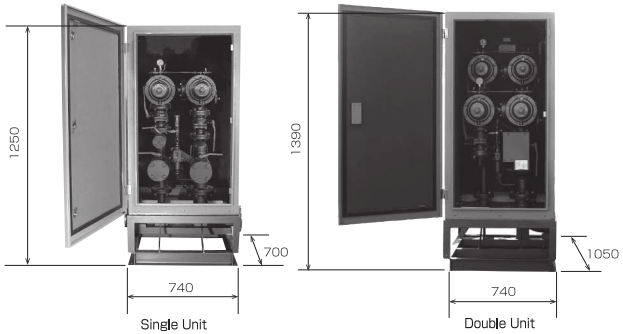
○Auto-Reset OPSO (AR-OPSO)

The ITO "AR-OSPO", an inner auto-reset type over pressure shut-off valve incorporated additionally, works to avoid outlet pressure rises if any foreign object is caught between the main valve disc and the main orifice, inner sealing failed.

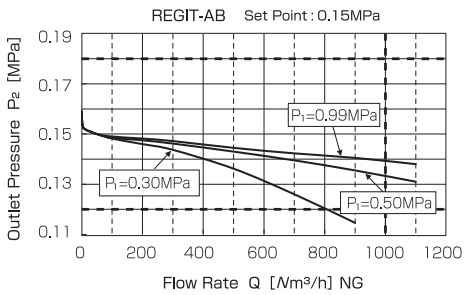
○Safety Relief Valve

A valve that opens and releases overpressure into the air to prevent abnormal pressure increases.

Mounting pipework and storage box are available as separate accessories.



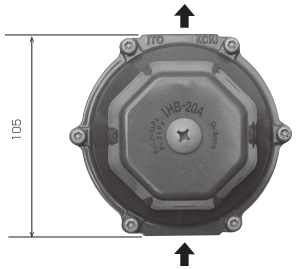
Flow Rate



IHB-20A

Overpressure Protection Governor

- IHB-20A reduces *Low Pressure* city gas natural gas, which rises by the difference of elevation, to an appropriate level declared in the contract that supply pressure is less than 2.50 kPa for domestic meters in Japan.
- It is installed at each door at higher elevation in high-rise buildings such as multistory apartment building.



IHB-20A

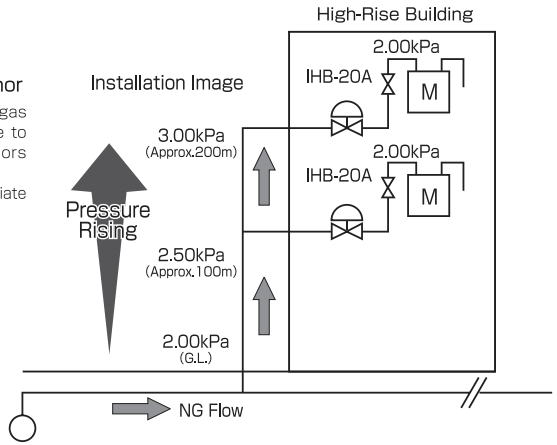
Specifications

Model	IHB-20A
Maximum Flow Rate(Nm³/h)	9.5
Inlet Pressure(kPa)	1.70~5.00
Outlet Pressure(kPa)	1.90±0.40
Lockup Pressure(kPa)	≦2.50
Connection	Rc 3/4
Mounting Position (Direction of the Gas Flow)	Vertical(↑)/Horizontal

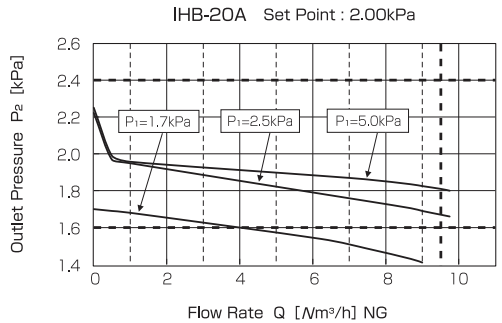
●Overpressure Protection Governor

The specific gravity of city gas natural gas is lighter than air so the pressure will rise to supply city gas natural gas to higher floors in high-rise buildings.
IHB-20A reduces the pressure to an appropriate level.

Installation Image



Flow Rate

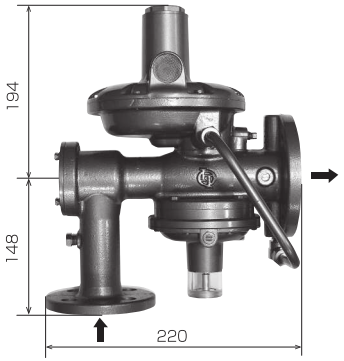


MHR-25

House Regulator

Incorporated : (Relief) (MR-OPSO) (Strainer)

- MHR-25 is a meter regulator from *Medium Pressure* ***B*** to *Low Pressure* or *Low Intermediate Pressure* and muitiple safety devices into one compact body.
- Designed to supply city gas natural gas for meters with outstanding qick response and flat flow rate cahracteristics.



MHR-25

Spacifications

Model		MHR-25
Maximum Flow Rate(Nm³/h)		140
Inlet Pressure		0.05~0.30MPa
Outlet Pressure		1.50~20.0kPa*1
Lockup Pressure		≦2.50kPa*2
Safety Relief Valve	Start-to-Discharge	3.20±0.40kPa*2
	Stop-to-Discharge	2.52~3.60kPa*2
Manual-Reset OPSO	Working Pressure	4.20±0.40kPa*2
	Reset Method	Manual by Pulling the Indicator
Inlet Connection		JIS 10K 25A Flange (FF)
Outlet Connection		JIS 10K 40A Flange (FF)
Strainer Mesh Gauge		150 Mesh

*1 Interchangeable springs are available.
*2 Based on 2.00 kPa set point.

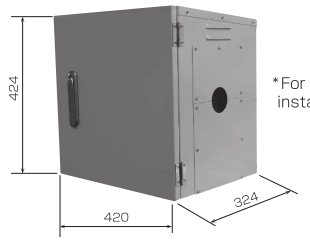
Interchangeable Spring Selection

No.	②	③	④
Set Point Range(kPa)	1.50~3.00	3.00~5.00	5.00~8.00

No.	⑤	⑥
Set Point Range(kPa)	8.00~13.0	13.0~20.0

shows the standard spring.

Storage Box for MHR-25



*For horizontal installation only.

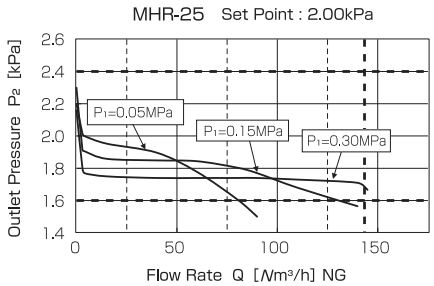
○Safety Relief Valve

A valve that opens and releases overpressure into the air to prevent abnormal pressure increases.

○Manual-Reset OPSO (MR-OPSO)

The *ITO "MR-OPSO"*, a manual-reset type OPSO, shuts off gas upstream of pressure governor to avoid abnormal pressure increases. Manual reset type overpressure shut-off valve to be reset by pulling the indicator.

Flow Rate



IGL Range

House Regulator

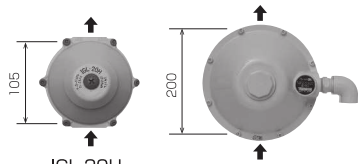
Incorporated : (AR-OPSO*1) or (Relief*2) (Strainer)

*1 IGL-H range for indoor installation only.
*2 IGL-S range for outdoor installation only.

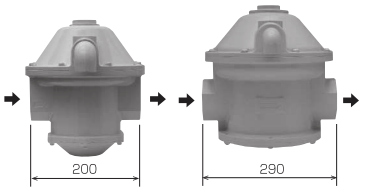
- The IGL range is a meter regulator from *Low Pressure* or *Low Intermediate Pressure* to *Low Pressure*.
- The (AR-OPSO) incorporated for H type for indoor use.
- The (Relief) incorporated for the S type for outdoor use.
- Designed to supply city gas natural gas for low pressure meters.

*IGL-50S-F combines both AR-OPSO and safety relief valve.

IGL-H type

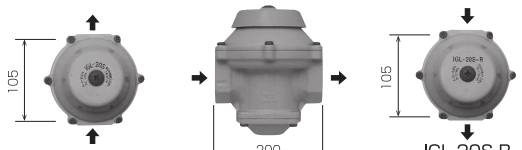


IGL-20H　IGL-32H

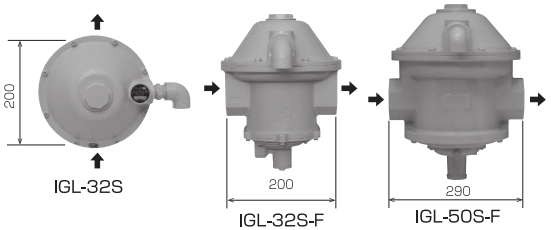


IGL-32H-F　IGL-50H-F

IGL-S type



IGL-20S　IGL-20S-F　IGL-20S-R



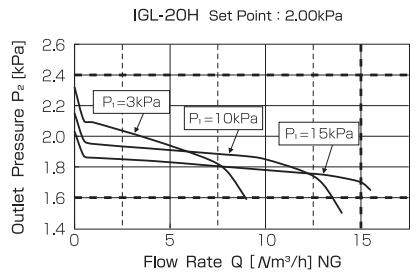
IGL-32S　IGL-32S-F　IGL-50S-F

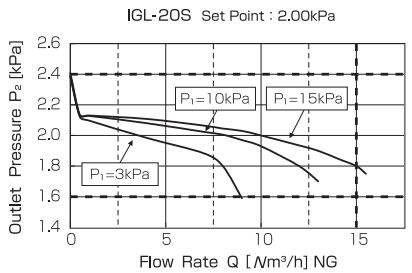
Specifications

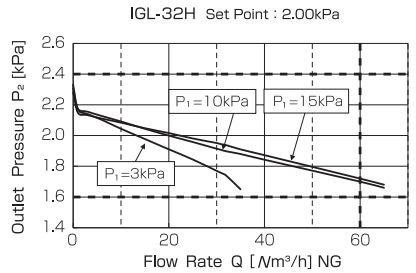
Model		IGL-20H	IGL-32H	IGL-32H-F	IGL-50H-F	IGL-20S	IGL-20S-F	IGL-20S-R	IGL-32S	IGL-32S-F	IGL-50S-F
Maximum Flow Rate (Nm^3/h)		15	60		200	15			70		200
Inlet Pressure		3.00～15.0kPa									
Outlet Pressure		2.00±0.30kPa									
Lockup Pressure		≦2.50kPa									
Auto-Reset OPSO	Working Pressure	≦5.00kPa									≦5.00kPa
Safety Relief Valve	Start-to-Discharge					5.60～8.40kPa					
	Stop-to-Discharge					5.04～8.40kPa					
Connection		Rc3/4	Rc1 1/4		Rc2	Rc3/4			Rc11/4		Rc2
Strainer Mesh Gauge		125 Mesh	150 Mesh			125 Mesh			150 Mesh		
Installation Site		Indoor				Outdoor					
Mounting Position (Direction of the Gas Flow) *3		Vertical (↑)		Horizontal		Vertical (↑)	Horizontal	Vertical (↓)	Vertical (↑)	Horizontal	

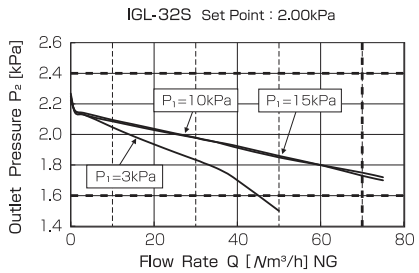
*3 If you need to change the standard mounting position, please inform us when placing your order.
It is essential to adjust the setting pressure and to change the direction of the waterproof vent protector.

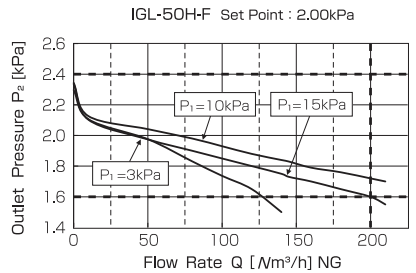
Flow Rate

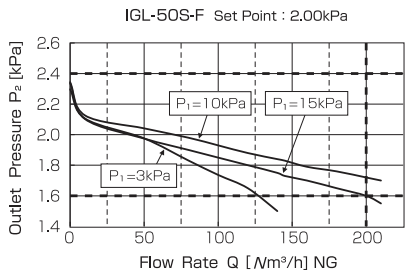








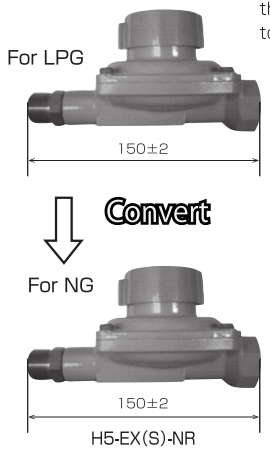


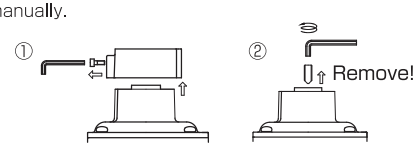


H5-EX(S)-NR

House Regulator

- H5-EX(S)-NR is a meter regulator from medium pressure to low pressure.
- Designed to supply gas for low pressure meters.
- Even if you convert a gas from LPG to NG after installation, you can change the set point from LPG to NG by an easy operation. To do this remove an inner adjusting screw and it will still ensure a proper and stable gas supply, there is no need to exchange your fixed-type meter regulator and no need to adjust it manually.



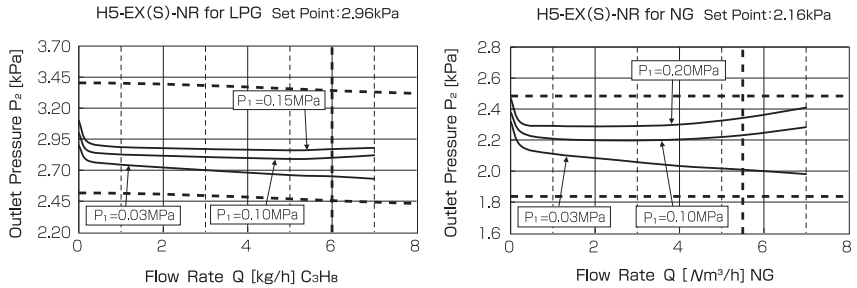


Specifications

Model	H5-EX(S)-NR	
Gas Type	LPG	NG
Maximum Flow Rate	6kg/h	5.5m³/h(normal)
Inlet Pressure	0.03~0.15MPa	0.03~0.20MPa
Outlet Pressure	2.96±0.44kPa	2.16±0.32kPa
Lockup Pressure	≦3.50kPa	≦2.70kPa
Inlet Connection	R1/2	
Outlet Connection	Rc1/2	

*An inner safety relief valve is not incorporated.
*Unless otherwise specified, the product is preset at the factory for LPG use.

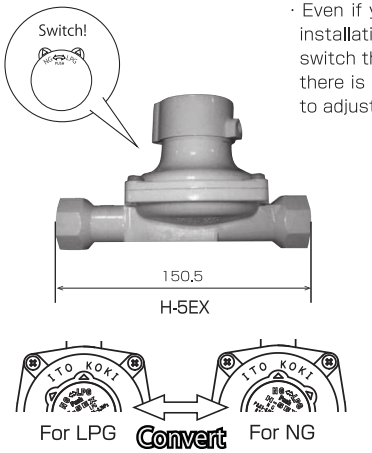
Flow Rate



H-5EX

House Regulator

- H-5EX is a meter regulator from medium pressure to low pressure.
- Designed to supply gas for low pressure meters.
- Even if you convert a gas from LPG to NG or from NG to LPG after installation, you can change the set point by an easy operation. To do this switch the cover cap and it will still ensure a proper and stable gas supply, there is no need to exchange your fixed-type meter regulator and no need to adjust it manually.

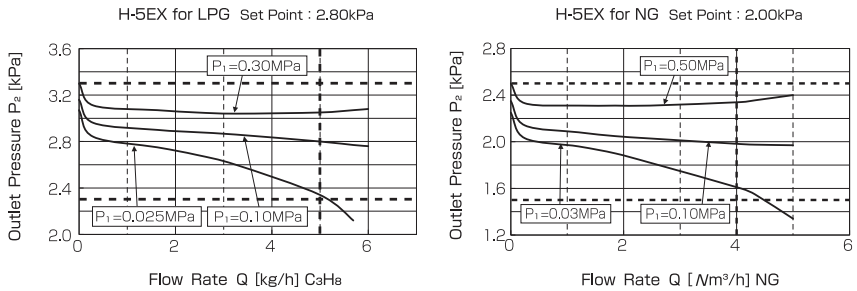


Specifications

Model	H-5EX	
Gas Type	LPG	NG
Maximum Flow Rate	5.0kg/h	4.0m³/h(normal)
Inlet Pressure	0.025~0.30MPa	0.03~0.5MPa
Outlet Pressure	2.80±0.50kPa	2.00±0.50kPa
Lockup Pressure	≦3.50kPa	≦2.70kPa
Inlet Connection	Rc1/2	
Outlet Connection	Rc1/2	

* Please specify with or without a safety relief valve when placing your order.
* Unless otherwise specified, the product is preset at the factory for LPG use.

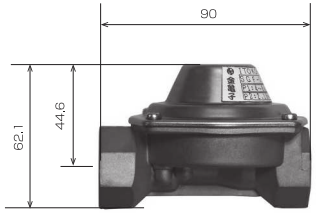
Flow Rate



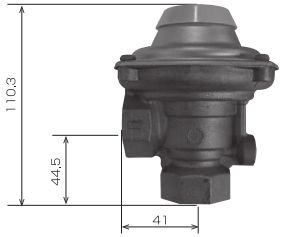
SGF Range

House Regulator

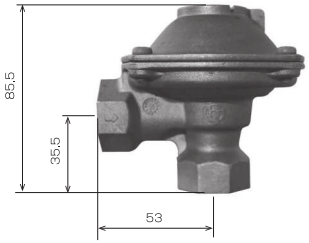
- The SGF range is a meter regulator from low pressure to low pressure with a large capacity driven by low differential pressure for city gas natural gas.
- Indoor installation only.
- Installed at each door at higher elevation in high-rise buildings such as multistory apartment building and reduces low pressure city gas natural gas, which rises by the difference of elevation, to an a propriate level.



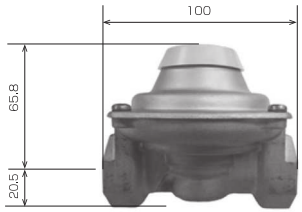
SGF-15



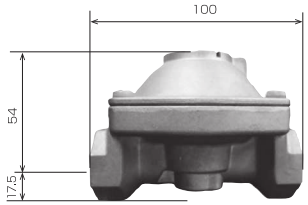
SGF-20L



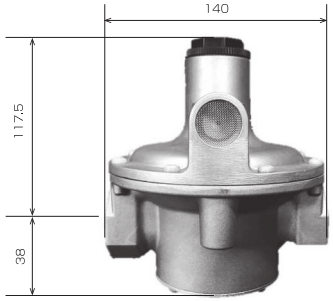
SGF-15L



SGF-20S



SGF-15S

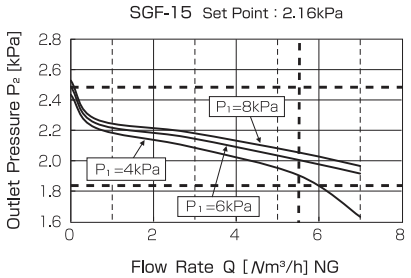


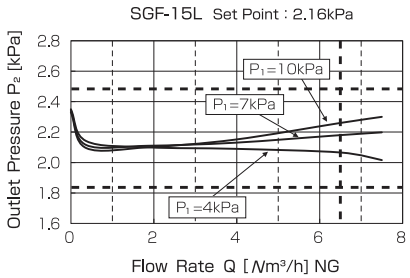
SGF-25

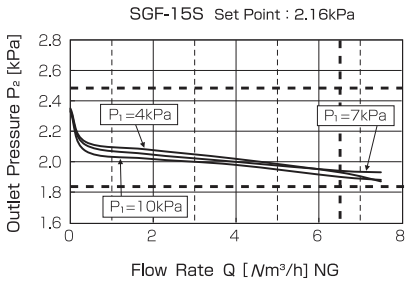
Specifications

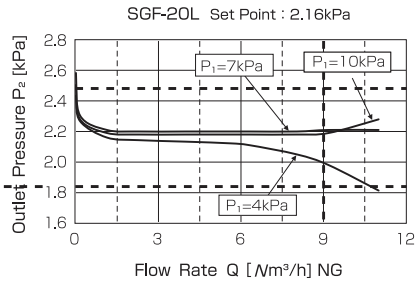
Model	SGF-15	SGF-15L	SGF-15S	SGF-20L	SGF-20S	SGF-25
Maximum Flow Rate(Nm^3/h)	5.5	6.5	6.5	9	9	48.3
Inlet Pressure(kPa)	4.00~8.00	2.30~10.0	2.30~10.0	2.30~10.0	2.30~10.0	5.00~10.0
Outlet Pressure(kPa)	2.16±0.32					
Lockup Pressure(kPa)	≦2.70					
Connection	Rc 1/2			Rc3/4		Rc1
Strainer Mesh Gauge	N/A	60 Mesh				

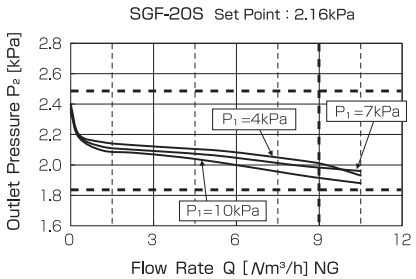
Flow Rate

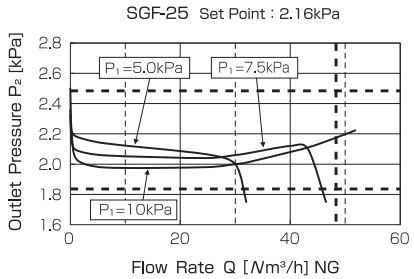












NBG Range

AA Governor

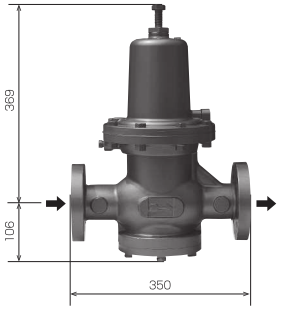
Incorporated: (Strainer)

- The NBG-50-MA range is a direct-operated governor from *Medium Pressure **A*** to *Medium Pressure **A***.
- The NBG-50MA with a higher outlet capability of 0.30~0.55 MPa is newly added to our product line. This product can correspond to the co-generation system incorporating a 2000~5000 kW gas engine, which are used in factories or large-scale commercial use, such as hospitals and hotels.

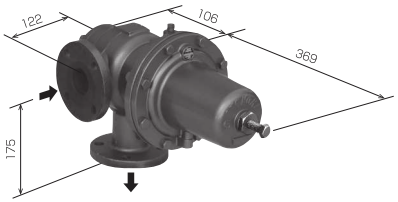
Specifications

Model	NBG-50-MA-S	NBG-50-MA-L
Type	Straight Type	Angle Type
Maximum Flow Rate(N m³/h)	1600	
Inlet Pressure(MPa)	0.70~0.99	
Outlet Pressure(MPa)	0.30~0.55	
Lockup Pressure(MPa)	≦Set Point+0.05	
Connection	JIS 10K 50A Flange (FF)	
Vent Connection	Rc1/4	
Strainer Mesh Gauge	100 Mesh*1	

*1 The strainer with 200 mesh is also available.



NBG-50-MA-S



NBG-50-MA-L

AB Governor

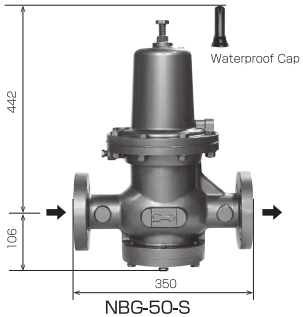
Incorporated: (AR-OPSO*) (Strainer)
*NBG-50H only.

- The NBG range is a direct-operated governor from *Medium Pressure **A*** to *Medium Pressure **B***, which provides outstanding quick response and easy maintenance.
- The NBG-50 incorporates *the ITO balancing piston system*, which minimises any outlet pressure fluctuations caused by differing inlet pressures. This system allows the NBG range to give accurate and stable pressure control.
- Since this model has the simple structure of a direct-operated regulator, it gives quick responses and is easy to handle and maintain.

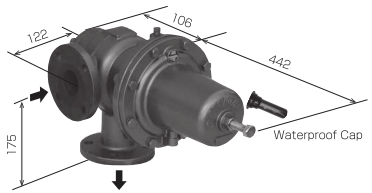
Specifications

Model		NBG-50-S	NBG-50-L	NBG-50H-S	NBG-50H-L
Type		Straight Type	Angle Type	Straight Type	Angle Type
Maximum Flow Rate (N m³/h)		1000			
Inlet Pressure(MPa)		0.30~0.99			
Outlet Pressure(MPa)		0.02~0.30*2			
Lockup Pressure (MPa)		≦Set Point ×1.3 (Minimum: Set Point+0.012)		≦Set Point ×1.2 (Minimum: Set Point+0.012)	
Auto-Reset OPSO	Working Pressure			≦Lockup Pressure+0.03MPa	
	Reset Method			Resets automatically after outlet pressure resumes its normal range.	
Connection		JIS 10K 50A Flange (FF)			
Vent Connection		Rc1/4			
Strainer Mesh Gauge		100 Mesh*3			

*2 Interchangeable springs are available.
*3 The strainer with 200 mesh is also available.



NBG-50-S
NBG-50H-S



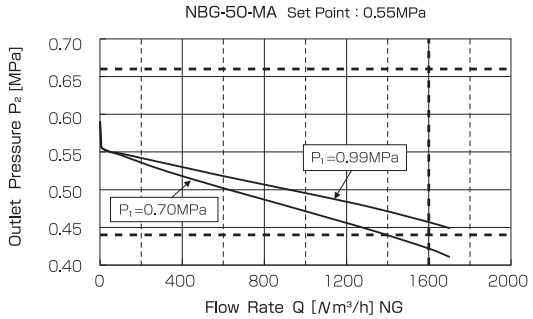
NBG-50-L
NBG-50H-L

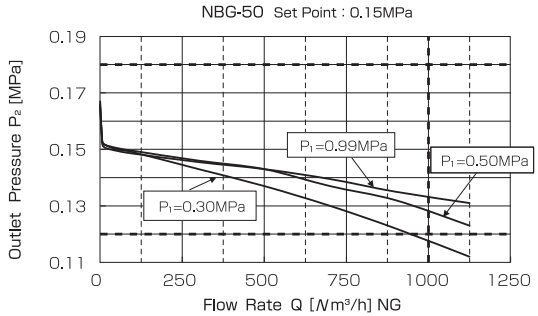
Interchangeable Spring Selection

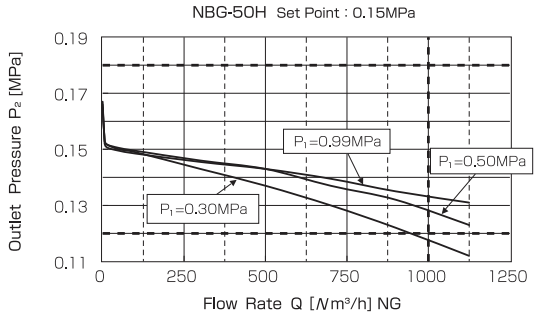
No.	⑤	①	②	②+④	③+④	⑥+⑦
Colour	Green	Red	Blue	Blue+Black	Yellow+Black	White+White
Set Point Range(MPa)	0.02~0.03	0.03~0.06	0.06~0.10	0.10~0.15	0.15~0.20	0.20~0.30

shows the standerd spring.

Flow Rate





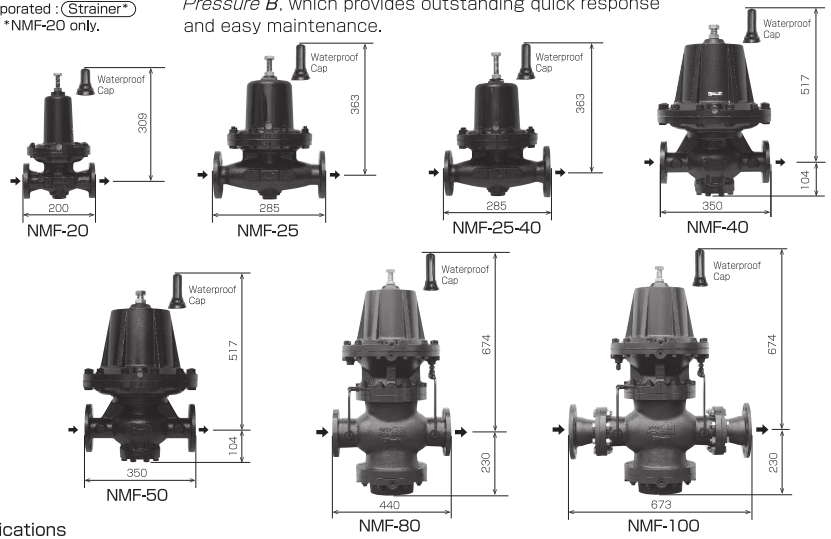


NMF Range

AB Governor

Incorporated : Strainer*
*NMF-20 only.

・The NMF range is a direct-operated governor from *Medium Pressure A* to *Medium Pressure B*, which provides outstanding quick response and easy maintenance.

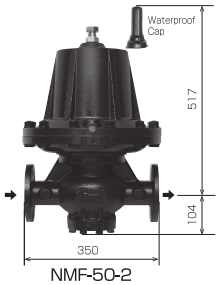


Specifications

Model	NMF-20	NMF-25	NMF-25-40	NMF-40	NMF-50	NMF-80	NMF-100
Maximum Flow Rate (Nm^3/h)	130	190	380	580	950	1600	1600
Inlet Pressure	0.10~0.99MPa						
Outlet Pressure	0.02~0.30MPa*1						
Lockup Pressure	≦Set Point×1.3MPa (Minimum : Set Point+0.012MPa)						
Inlet Connection	JIS 10K 20A Flange(FF)	JIS 10K 25A Flange(FF)	JIS 10K 25A Flange(FF)	JIS 10K 40A Flange(FF)	JIS 10K 50A Flange(FF)	JIS 10K 80A Flange(FF)	JIS 10K 100A Flange(FF)
Outlet Connection	JIS 10K 20A Flange(FF)	JIS 10K 25A Flange(FF)	JIS 10K 40A Flange(FF)	JIS 10K 40A Flange(FF)	JIS 10K 50A Flange(FF)	JIS 10K 80A Flange(FF)	JIS 10K 100A Flange(FF)
Vent Connection	Rc1/4						

*1 Interchangeable springs are available.

BB Governor



NMF-50-2 is a direct-operated governor from *Medium Pressure B* to *Medium Pressure B* with a large capacity driven by low differential pressure.

Specifications

Model	NMF-50-2
Maximum Flow Rate (Nm^3/h)	300
Inlet Pressure	50.0~100kPa
Outlet Pressure	10.0~30.0kPa
Lockup Pressure	≦Set Point+12.0kPa
Connection	JIS 10K 50A Flange (FF)

Interchangeable Spring Selection

Set Point Range(MPa)		0.02~0.03	0.02~0.06	0.02~0.10	0.02~0.15	0.02~0.20	0.02~0.30
No.	NMF-20	④	⑤	①		②	③
	NMF-25~NMF-100	A0	A1	A1+B1	A2	A2+B1	A2+B2

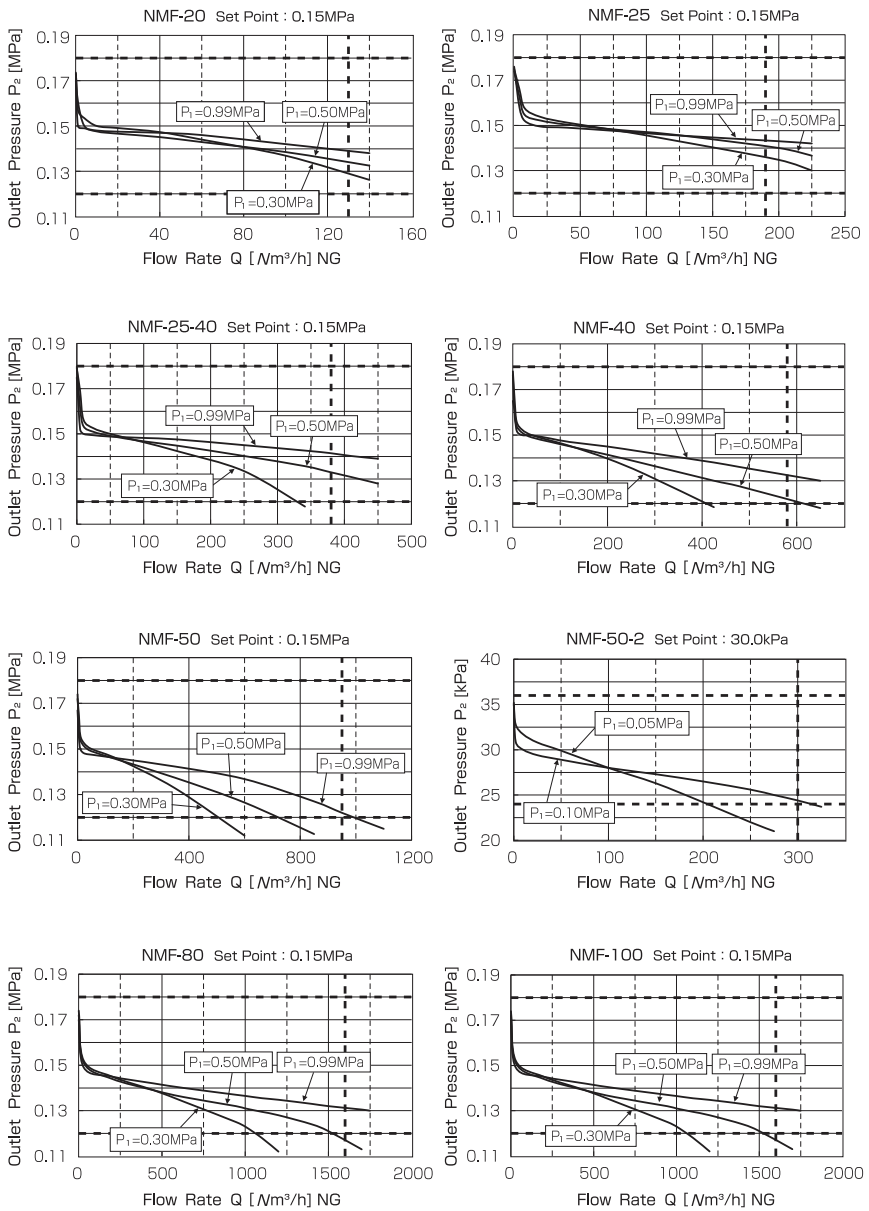
shows the standard sping.

NMF-W

NMF-W unit is also available, which doubled NMF connected in series with additional AR-OPSO function.
The upstream NMF as an OPSO shuts off gas to avoid pressure rises at outlet of this unit if inner sealing of the downstream NMF failed. Of course, the upstream NMF will function as a back-up governor even if the downstream NMF fails, and the outlet pressure abnormally rises at the unit outlet, and keep stable supply at the pre-set pressure.

As an AR-OPSO NMF-W As a Governor

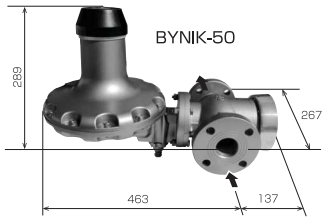
Flow Rate

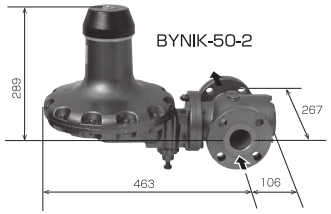


BYNIK-50 Range

AL/ALM BL/BLM Governor

Incorporated : (AR-OPSO) (Strainer)





- The BYNIK-50 range is the most advanced direct-operated governor from *Medium Pressure A* or *B* to *Low Pressure* or *Low Intermediate Pressure.*
- The ITO innovations minimise any outlet pressure fluctuation despite varying inlet pressures. This allows the BYNIK-50 more accurate and stable pressure control for use in multiple inlet pressure tiers.
- External adjusting parts allow an on-site adjustment of the static and dynamic characteristics.

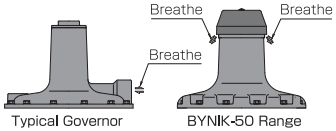
Specifications

Model		BYNIK-50	BYNIK-50-2
Maximum Flow Rate		350Nm^3/h	200Nm^3/h
Inlet Pressure		0.01~0.99MPa	0.025~0.15MPa
Outlet Pressure		1.00~20.0kPa *1 *2	
Lockup Pressure		≦Set Point×1.25 kPa	
Auto-Reset OPSO	Working Pressure	Lockup Pressure + (Inlet Pressure×0.015kPa (Minimum 5.00kPa))	
	Reset Method	Resets automatically after outlet pressure resumes its normal range.	
Connection		JIS 10K 50A Flange (FF)	
Strainer Mesh Gauge		200 Mesh	

*1 Interchangeable springs are available.
*2 The outlet pressure varies depending on the mounting position. Please specify your required mounting position when placing your order.

● Waterproof Cover Cap

It can be installed outdoors as the vent of the BYNIK-50 is not on the cover and can breathe through a space between the cover cap covering the vent and top of thecover. No storage box or waterproof vent protector is required.



●Extra Relief Valve Mountable (Other Available Accessory)

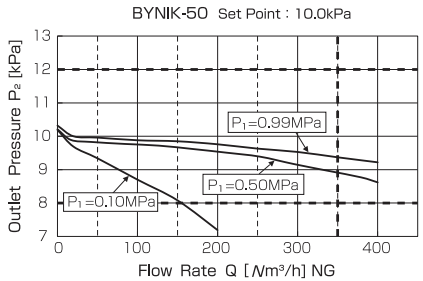
An additional relief valve can be mounted directly onto the body instead of installing independently on the pipeline, this enables savings in piping construction cost.

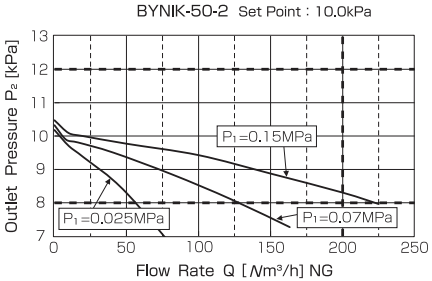
Interchangeable Spring Selection

No.	①	②	③	④	⑤	⑥	⑦
Colour	—	—	Yellow	Silver	Red	Green	Blue
Set Point Range(kPa)	1.00~1.90	1.90~2.30	2.30~3.00	3.00~5.00	5.00~8.00	8.00~13.0	13.0~20.0

shows the standard spring.

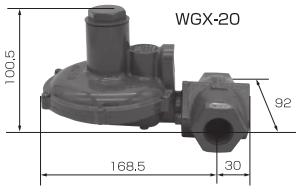
Flow Rate

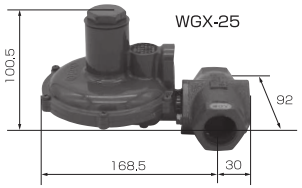




WGX Range

Low Pressure Governor





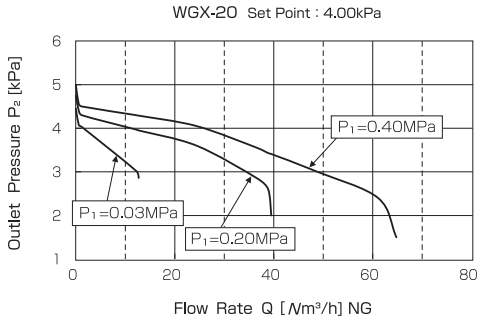
- The WGX range is a direct-operated governor from medium pressure to low pressure.
- Designed for city gas natural gas and LP gas use. *The ITO Air Stabiliser Rubber* (vent rubber) gives quick responses.
- Easy maintenance, flexible mounting position, offers a wide range of applications.

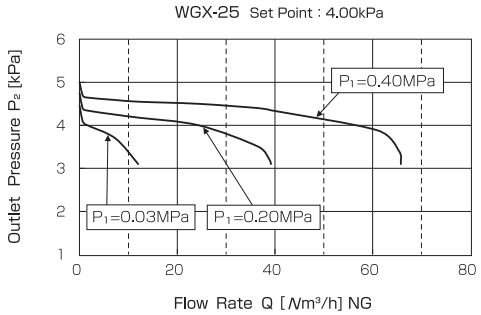
Specifications

Model	WGX-20	WGX-25
Maximum Flow Rate	64m^3/h(normal)	65m^3/h(normal)
Inlet Pressure	0.03~0.40MPa	
Outlet Pressure	2.00~10.0kPa*1	
Lockup Pressure	≦Set Point×1.25kPa	
Connection	Rc3/4	Rc1

*1 Interchangeable springs are available.

Flow Rate



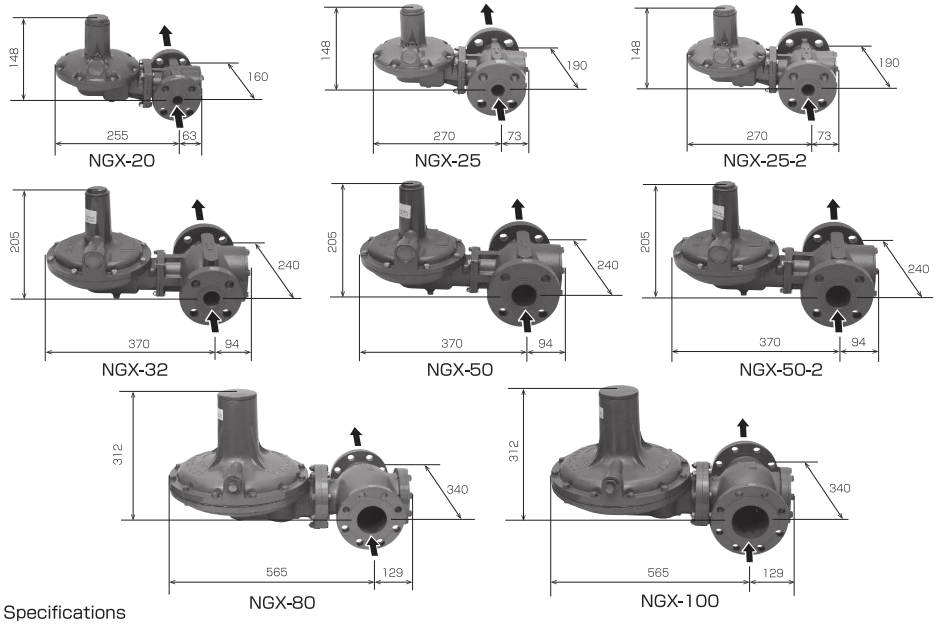


NGX Range

BL/BLM Governor

Incorporated: (AR-OPSO) (Strainer)

- The NGX range is a direct-operated governor from *Medium Pressure B* to *Low Pressure or Low Intermediate Pressure*.
- It is the high performance governor with built-in strainers, and integrated JIS flanges.
- It is suitable to install it indoors since the safety relief valve is not incorporated.



Specifications

Model		NGX-20	NGX-25	NGX-25-2	NGX-32	NGX-50	NGX-50-2	NGX-80	NGX-100
Maximum Flow Rate (Nm³/h)		85	185	155	330	330	185	845	905
Inlet Pressure(MPa)		0.03~0.30*1		0.03~0.10	0.03~0.30*1		0.03~0.10	0.03~0.30*2	
Outlet Pressure(kPa)		1.00~30.0*3*4						1.00~20.0*3*4	
Lockup Pressure(kPa)		≦Set Point×1.25							
Auto-Reset OPSO	Working Pressure	Lockup Pressure + (Inlet Pressure×0.015kPa (Minimum 5.00kPa))							
	Reset Method	Resets automatically after outlet pressure resumes its normal range.							
Inlet Connection		JIS 10K 20A Flange(FF)	JIS 10K 25A Flange(FF)		JIS 10K 32A Flange(FF)	JIS 10K 50A Flange(FF)		JIS 10K 80A Flange(RF)	JIS 10K 100A Flange(RF)
Outlet Connection		JIS 10K 20A Flange(FF)	JIS 10K 32A Flange(FF)		JIS 10K 50A Flange(FF)	JIS 10K 50A Flange(FF)		JIS 10K 80A Flange(RF)	JIS 10K 100A Flange(RF)
Vent Connection		Rc3/4			Rc1			Rc3/8	
Strainer Mesh Gauge		100 Mesh*5							

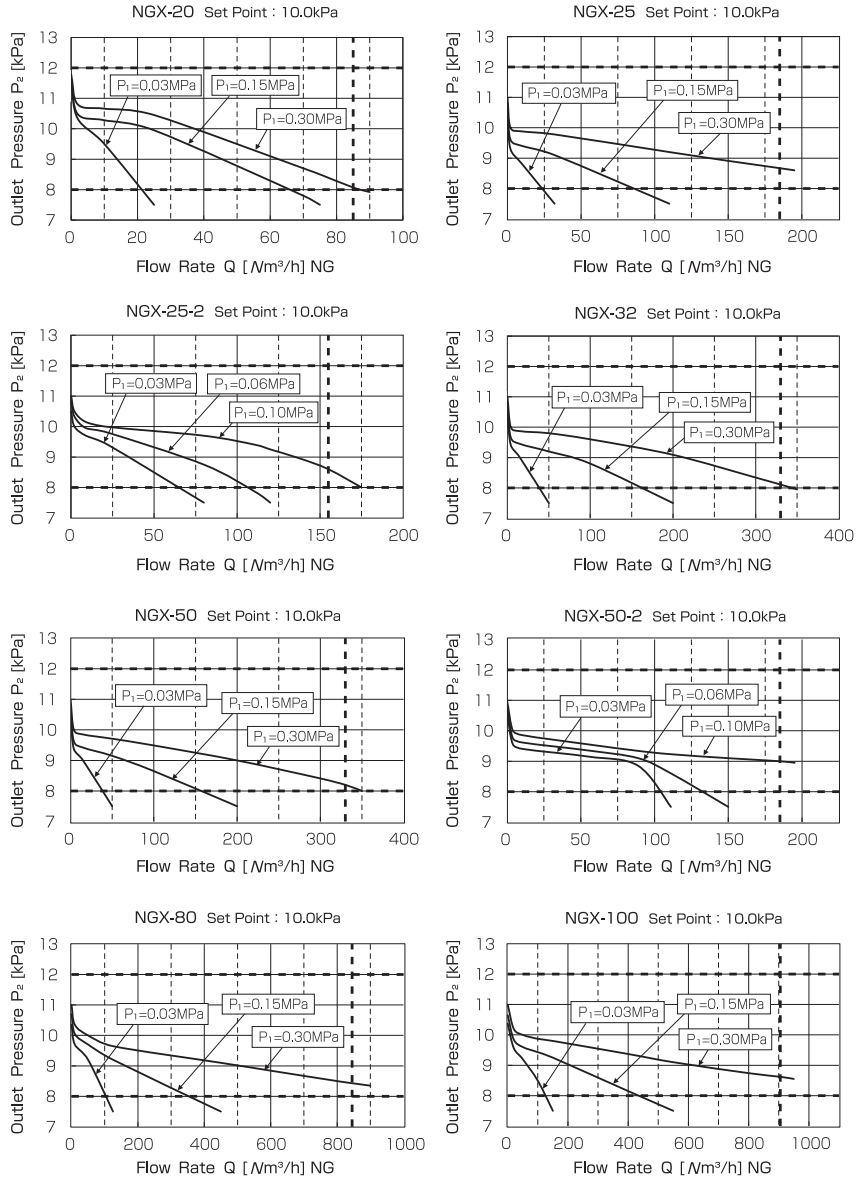
*1 Custom-made products for inlet pressure 0.30~1.00MPa are also available.
*2 Custom-made products for inlet pressure 0.30~0.50MPa are also available.
*3 Interchangeable springs are available.
*4 The outlet pressure varies depending on the mounting position. Please specify your required mounting position when placing your order.
*5 The strainer with 200 mesh is also availabie

Interchangeable Spring Selection

Model	NGX-20/25/25-2/32/50/50-2							NGX-80/100				
No.	①	②	③	④	⑤	⑥	⑦	①	②	③	④	⑤
Spring Colour	White	Red	Blue	Yellow	Green	Black	–	–	–	–	–	–
Set Point Range (kPa)	1.00~1.50	1.50~3.00	3.00~5.00	5.00~8.00	8.00~13.0	13.0~20.0	20.0~30.0	1.00~2.00	2.00~4.00	4.00~10.0	10.0~16.0	16.0~20.0

shows the standard spring.

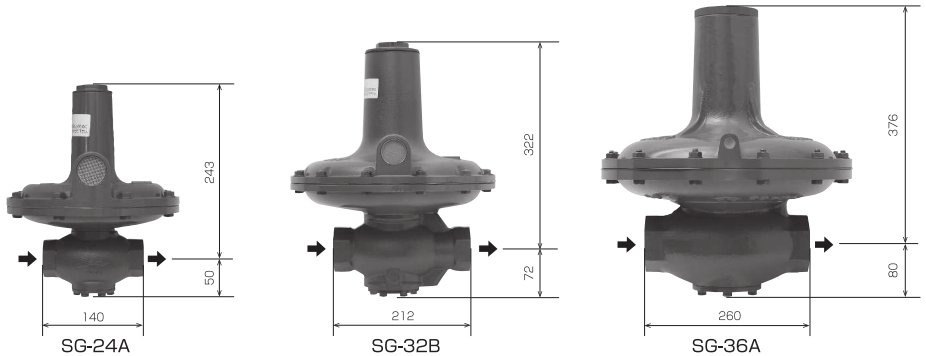
Flow Rate



Governor for Low Differential Pressures

Incorporated: (Relief)

· The SG range is a direct-operated governor from ***L**ow Pressure* or ***L**ow Inter**m**ediate Pressure* to ***L**ow Pressure* or ***L**ow Inter**m**ediate Pressure* with a large capacity driven by low differential pressures.



Specifications

Model		SG-24A	SG-32B	SG-36A
Maximum Flow Rate (Nm^3/h)		120	300	460
Inlet Pressure(kPa)		1.00~35.0		
Outlet Pressure(kPa)		0.50~20.0*1		
Lockup Pressure(kPa)		≦3.40		
Connection		Rc1	Rc11/2	Rc2
Safety Relief Valve (kPa)	Start-to-Discharge	5.60~8.40		
	Stop-to-Discharge	5.04~8.40		
Vent Connection		Rc1		Rc1/4

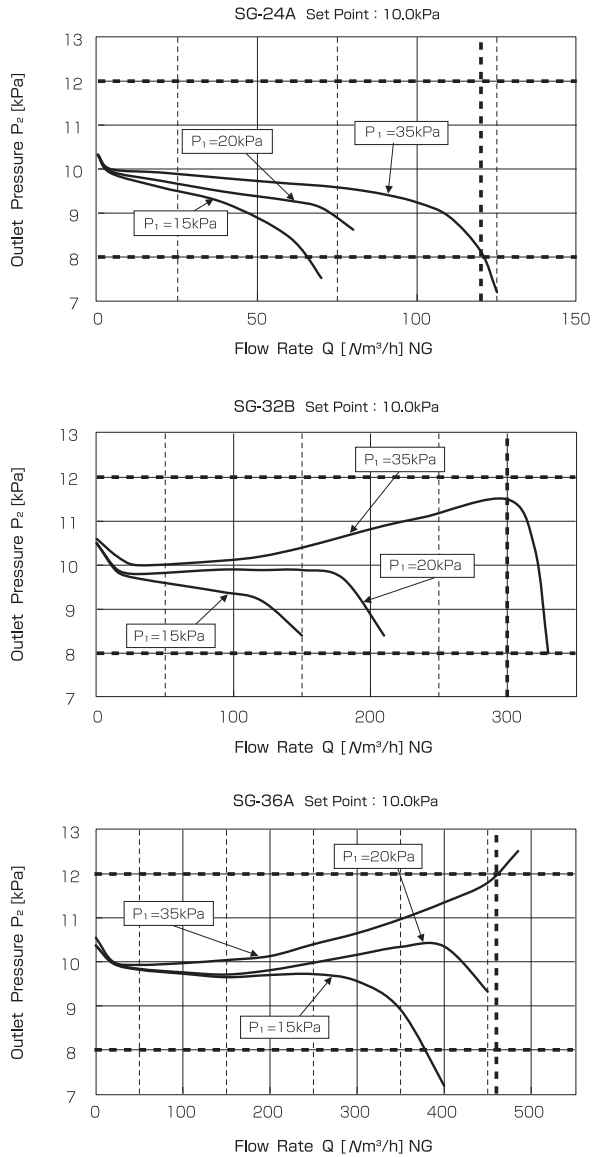
*1 Interchangeable springs are available.

Interchangeable Spring Selection

No.		①	②	③	④	⑤	⑥	⑦	⑧	⑨
Set Point Range (kPa)	SG-24A	1.00~4.00	3.50~10.0	5.00~15.0	10.0~20.0	15.0~20.0		0.30~1.00	0.50~2.00	6.00~12.0
	SG-32B	1.30~3.70	0.80~1.50		8.00~16.0	3.00~10.5	14.0~20.0	2.00~8.00	6.00~12.0	
	SG-36A	1.00~4.00	3.50~10.0	5.00~15.0	10.0~20.0	15.0~20.0				

shows the standard spring. requires additional supporting diaphragm disc.

Flow Rate

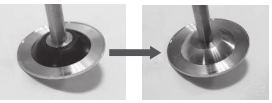
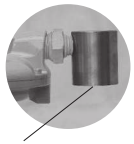


Available Configurations and Options

Model Reference Guide

SGX– [ ] – [ ]

Model	Connection
8NA	Rc1/4
10A	Rc3/8
15N	Rc1/2
20N	Rc3/4
25N	Rc1
40N	Rc1 1/2
40	Rc1 1/2
50N	Rc2
50	Rc2
80	JIS 10K 80A
100	JIS 10K 100A

Code	Function
A	**No Lockup Function (Aluminum Valve Disc Type)**  NBR Aluminum This type governor has no lockup function and regulates pressure by using an aluminum valve disc instead of a regular rubber (NBR) disc.
C	**High Temperature Resistance Governor for COG** Use this type governor if you use a gas that can corrode copper alloy, such as coke oven gas (COG), or if a governor becomes too hot due to hot fluid gas or extremely high ambient temperatures. Inner rubber parts or some metal parts will be exchanged. Working Temperature Range: 0 ~80 ℃
H	**Variable Governor with External Handle** This type governor has an external handle to make the outlet pressure setting easier. Set Point Range: 0.50~4.00 kPa
Q	**Quick Response Governor** This type governor gives quick responses. Its fast stroking keeps the outlet pressure stable even if the flow rate changes rapidly after solenoid valves are operated on the line by changing the vent diameters on the body or the cover. * The maximum inlet pressure will be lower than the standard unit; Model / Maximum Inlet Pressure SGX-15NQ~SGX-50Q: 10.0kPa SGX-40NQ/SGX-50NQ: 15.0kPa  An external stabiliser (enclosed) to be fitted onto the vent of SGX-40NQ, SGX-50NQ.
W	**With Auto-Reset OPSO Valve** Doubled SGX connected in series with additional AR-OPSO function. The upstream SGX as an OPSO shuts off gas to avoid pressure rises at outlet of this unit if inner sealing of the downstream SGX failed. Also the upstream SGX will function as a back-up governor even if the downstream SGX fails, and the outlet pressure abnormally rises at the unit outlet, and keep stable supply at the pre-set pressure.

R …Safety Relief Valve, Z …Zero Governor/ Equalizing Regulator, ZT …Equalizing Regulator
For more details, see each description within this catalogue.

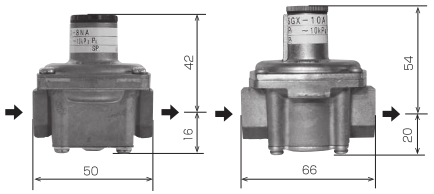
Available Configurations at a Glance

Model		SGX-8NA	SGX-10A	SGX-15N	SGX-20N	SGX-25N	SGX-40N	SGX-40	SGX-50N	SGX-50	SGX-80	SGX-100
Type A	No Lockup Function (Aluminum Valve Disc Type)	✓*1	✓*1	×	✓	✓	✓	✓	✓	✓	×	×
Type C	High Temperature Resistance Governor for COG	×	×	✓	✓	✓	×	✓	×	✓	✓	✓
Type H	Variable Governor with External Handle	×	×	✓	✓	✓	×	×	×	×	×	×
Type Q	Quick Response Governor	×	×	✓	✓	✓	✓	✓	✓	✓	×	×
Type W	With Auto-Reset OPSO Valve	×	×	×	✓	✓	✓	✓	✓	✓	×	×

*1 The standard model of SGX-8NA and SGX-10A is Type A.

Governor for Low Differential Pressures

The SGX range is a direct-operated governor from ***L**ow Pressure* or ***L**ow Inter**m**ediate Pressure* to ***L**ow Pressure* or ***L**ow Inter**m**ediate Pressure* with a large capacity driven by low differential pressure.



SGX-8NA SGX-10A

Specifications

Model	SGX-8NA	SGX-10A
Maximum Flow Rate	4.3Nm³/h	7.4Nm³/h
Inlet Pressure	0.50~10.0kPa	
Outlet Pressure	0.25~3.00kPa*1	
Connection	Rc1/4	Rc3/8
Vent Connection	Rc1/8	

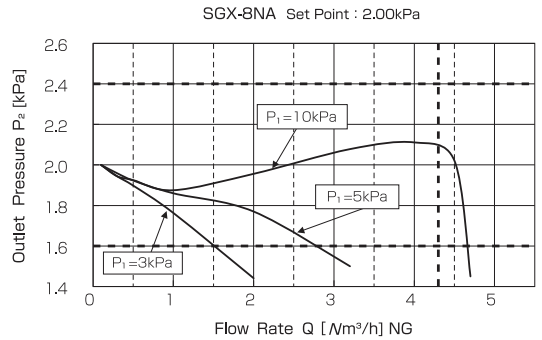
* No lockup function.
*1 Interchangeable springs are available.

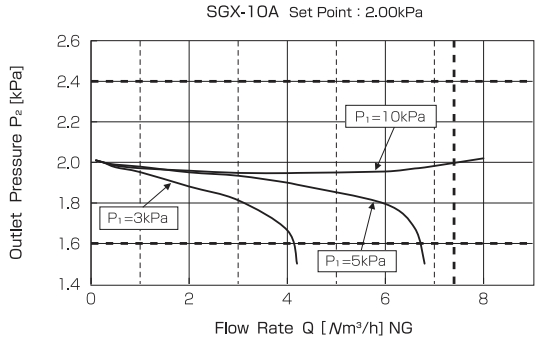
Interchangeable Spring Selection

Model	SGX-8NA/10A				
No.	①	②	③	④	⑤
Set Point Range(kPa)	0.25~0.50	0.50~1.00	1.00~1.50	1.50~2.00	2.00~3.00

shows the standard spring.

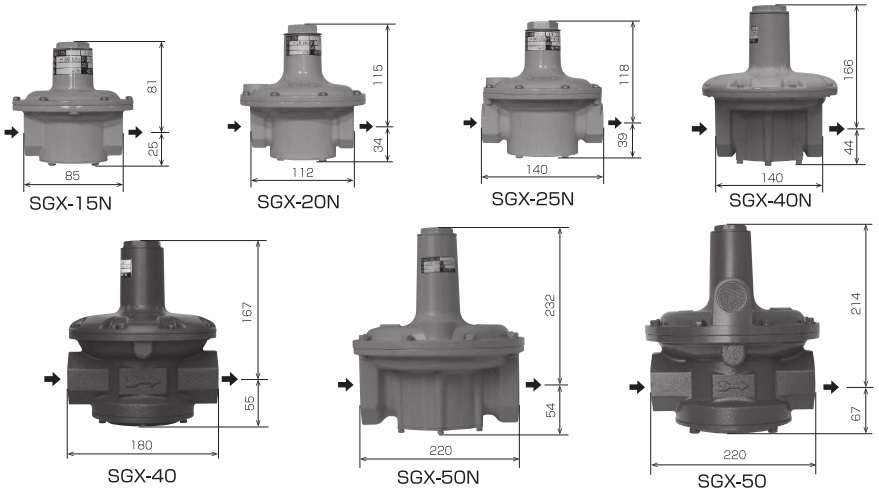
Flow Rate





Governor for Low Differential Pressures

The SGX series is a direct-operated governor from ***L**ow Pressure* or ***L**ow Inter**m**ediate Pressure* to ***L**ow Pressure* or ***L**ow Inter**m**ediate Pressure* with a large capacity driven by low differential pressures.



Specifications

Model	SGX-15N	SGX-20N	SGX-25N	SGX-40N	SGX-40	SGX-50N	SGX-50
Maximum Flow Rate (Nm^3/h)	32	50	70	200	215	390	430
Inlet Pressure	1.00~30.0kPa						
Outlet Pressure	0.50~20.0kPa*1						
Lockup Pressure	≦2.95kPa						
Connection	Rc1/2	Rc3/4	Rc 1	Rc1 1/2		Rc 2	
Vent Connection	Rc1/2	Rc1/4		Rc 3/4		Rc 1	

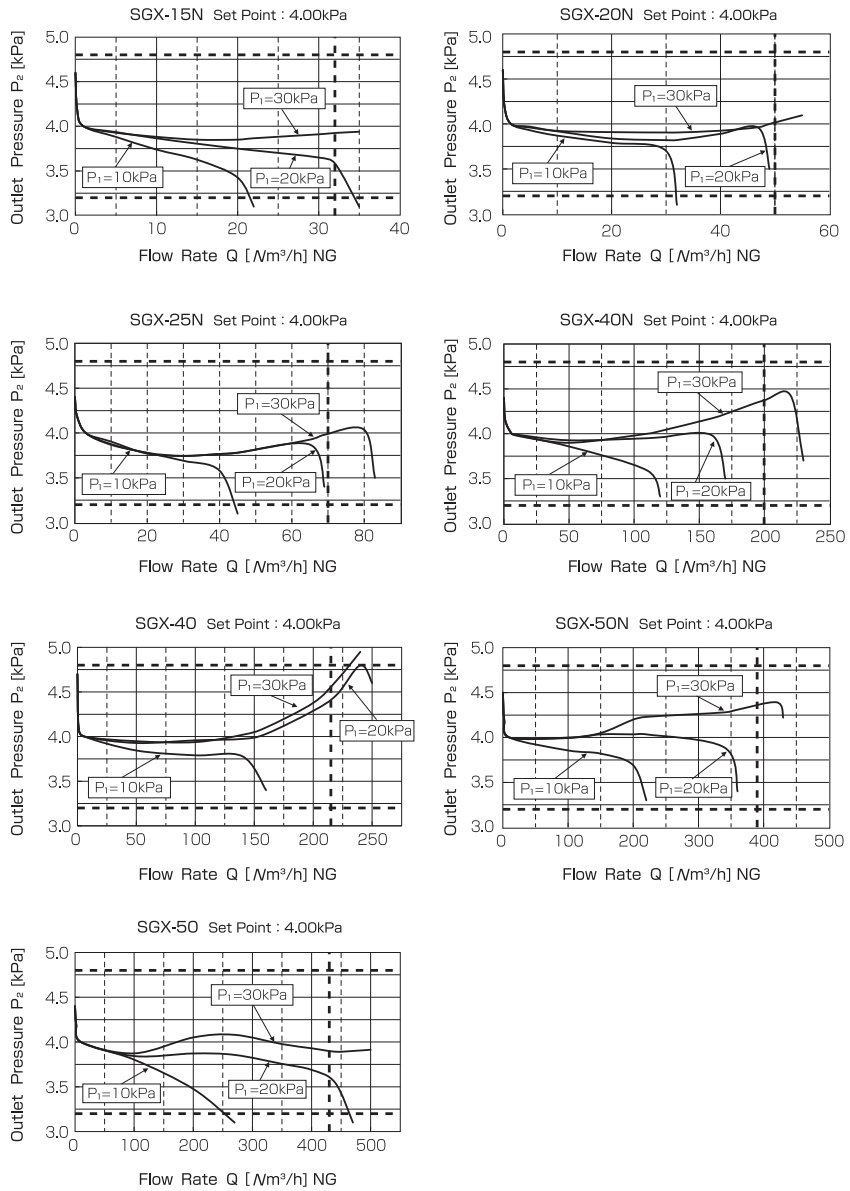
*1 Interchangeable springs are available.

Interchangeable Spring Selection

Model	SGX-15N/20N/25N/40N/40/50N/50					
No.	①	②	③	④	⑤	⑥
Spring Colour	White	Red	Blue	Yellow	Green	Black
Set Point Range(kPa)	0.50~1.50	1.50~3.00	3.00~5.00	5.00~8.00	8.00~13.0	13.0~20.0

shows the standard spring.

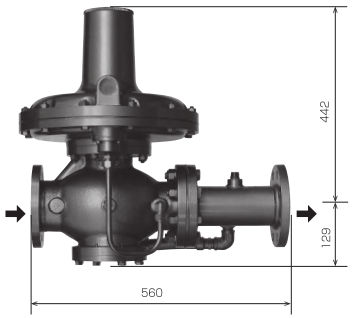
Flow Rate



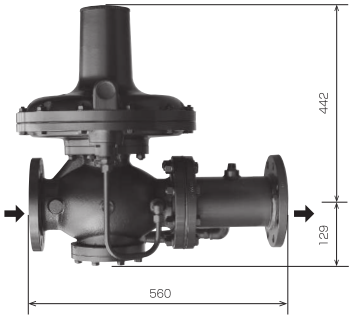
SGX Range

Governor for Low Differential Pressures

- The SGX-80 and SGX-100 incorporate a feedback mechanism that loads pressure to the diaphragm chamber of the main governor from the outlet side by the auxiliary adjusting governor. This allows stable pressure control despite their large capacity.
- This product is a large capacity regulator driven by low differential pressures, suitable for installation on the low pressure line.



SGX-80



SGX-100

Specifications

Model	SGX-80	SGX-100
Maximum Flow Rate(Nm^3/h)	865	1300
Inlet Pressure(kPa)	1.50～60.0 *1	
Outlet Pressure(kPa)	1.00～20.0 *1 *2	
Lockup Pressure(kPa)	≦2.95	
Inlet Connection	JIS 10K 80A Flange(RF)	JIS 10K 100A Flange(RF)
Outlet Connection	JIS 10K 80A Flange(FF)	JIS 10K 100A Flange(FF)
Vent Connection	Rc1	

*1 The differential pressure between inlet and outlet shall be 40.0kPa or less.
*2 Interchangeable springs are available.

Interchangeable Spring Selection

Model	SGX-80/100					
No.	①	②	③	④	⑤	⑥
Set Point Range(kPa)	1.00～1.50	1.50～4.00	4.00～8.00	8.00～11.0	11.0～16.0	16.0～20.0

shows the standard spring.

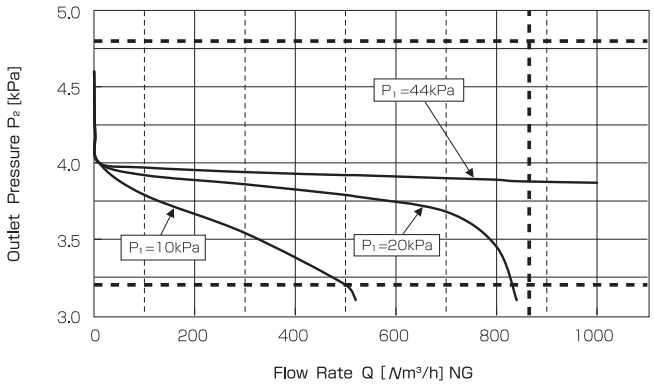
* When changing the adjusting spring of the main governor, it is also essential to change the adjusting spring of the auxiliary adjusting governor.

Model	Auxiliary Adjusting Valve(SGX-20NRTG)					
Colour	White	Red	Blue	Yellow	Green	Black
Set Point Range(kPa)	1.00～1.50	1.50～3.00	3.00～5.00	5.00～8.00	8.00～13.0	13.0～20.0

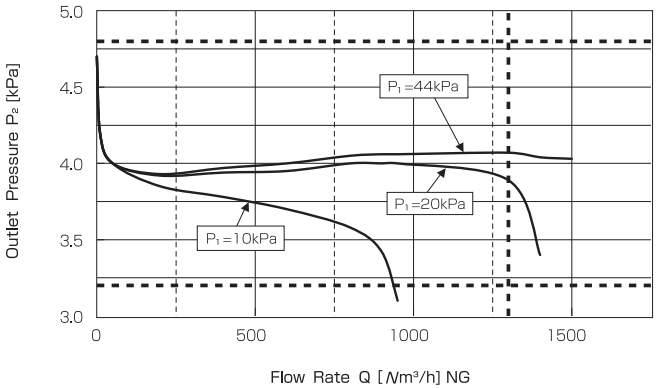
shows the standard spring.

Flow Rate

SGX-80 Set Point : 4kPa

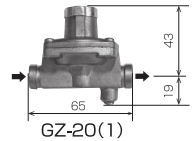


SGX-100 Set Point : 4kPa

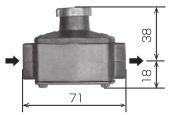


GZ/G/ARO/GX/GY

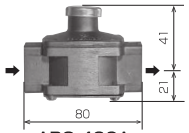
LL Governor



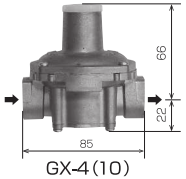
GZ-20(1)



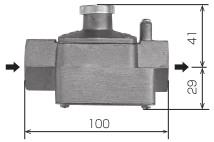
G-3B(20)



ARO-406A



GX-4(10)



GY-6(20)

- GZ, G, ARO, GX and GY are for use with gas burners within a gas appliance using low pressure natural gas city gas or LP gas.
- Maintains a constant outlet pressure independent of the fluctuation in inlet pressure and/or flow rate due to gas appliance burners in appliance turning on and off.

Specifications

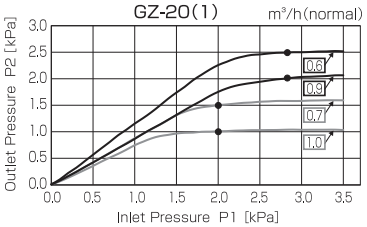
Model	GZ-20	G-3B	ARO-406A	GX-4	GY-6
Inlet Pressure(kPa)	≦3.50				
Connection	Rc1/8	Rc3/8	Rc1/2	Rc1/2	Rc3/4
Mounting Position	Horizontal				

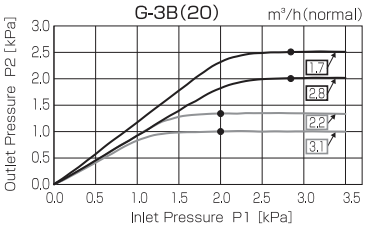
* No lockup function.
* Do not install the product where negative pressure may occur at the inlet and/or the outlet

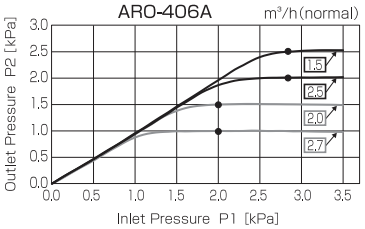
Outlet Pressure Stability within a Rated Capacity

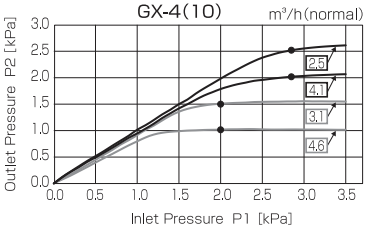
—— P1=2.80kPa set point —— P1=2.00kPa set point

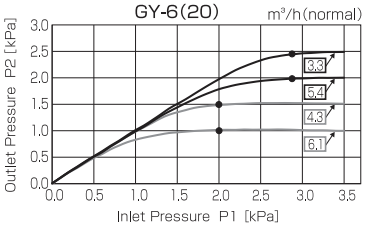
Numbers in each ☐ ☐ indicate guaranteed maximum flow rate with in specific gravity of 1.









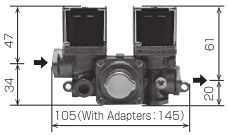


<How to read the curves>
For example, see the lowest curve for GZ-20(1). This shows;
Preset outlet to 1.0kPa at 2.0kPa inlet at 1.0Nm³/h flow rate.
And delivery will be less than 1.0kPa at 1.5kPa inlet at 1.0Nm³/h flow rate.

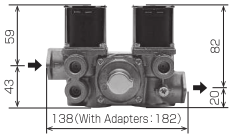
WS Range

Solenoid Valve

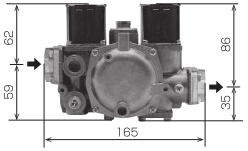
- Solenoid technology is an electro-mechanical device that controls the gas flow by opening or closing the valve orifices.
- The WS range is a unit of double solenoid valves and a pressure regulator for gas appliance in one compact body to reduce installation space, cost and decrease assembly process and possible gas leakage points .



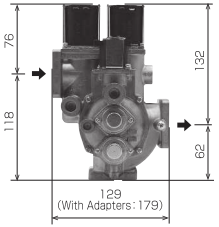
WS-100、WS-101



WS-102



WS-103



WS-104

WS - [ ] [ ] - [ ]

Connection | Pilot Solenoid Valve | Control Method

Code	Connection
100	Rc1/4
101	Rc3/8
102	Rc1/2
103	Rc3/4
104	Rc1

Code	Pilot Solenoid Valve
	Not Included*1
P	Included

*1 Only WS-104-100 incorporates the pilot solenoid valve without 'P' code in the model.

Code	Control Method
100	ON-OFF
300	HI-LOW-OFF
400	Equalization Proportional

Range Specification

Inlet Pressure(kPa)	≦3.50

Selectable Specifications

Voltage	DC90V
	AC100V
	AC200V
Coil Connection	FASTON Terminal (187 Series)
	Lead Wire

Specifications

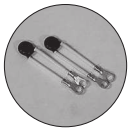
Model	Connection	Power Consumption Per One Solenoid Valve	Pilot Solenoid Valve	Mounting Position
WS-100-100	Rc1/4	5W±1W	N/A	Any Position
WS-101-100	Rc3/8		N/A	
WS-102-100	Rc1/2	9.5W±2W	N/A	
WS-102P-100		5W±1W	Included	
WS-103-100	Rc3/4	9.5W±2W	N/A	
WS-103P-100		5W±1W	Included	
WS-103-400		9.5W±2W	N/A	
WS-104-100	Rc1	5W±2W	Included	*2
WS-104-300			N/A	
WS-104-400		10W±2W	N/A	

* Strainer Mesh Gauge:60 Mesh
*2 Any position except one with the adjusting screw facing downward. If the adjusting screw is required to face upward, please inform us when placing your order.

FASTON Terminal

Lead Wire

Other Available Accessories

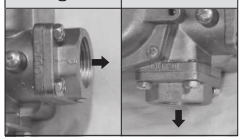

Surge Absorber as a Countermeasure of Reverse Voltage

An adapter set for inlet and outlet are provided with the kit of WS-100,101,102 and 104 range if requested.

An Example of an Adapter Set

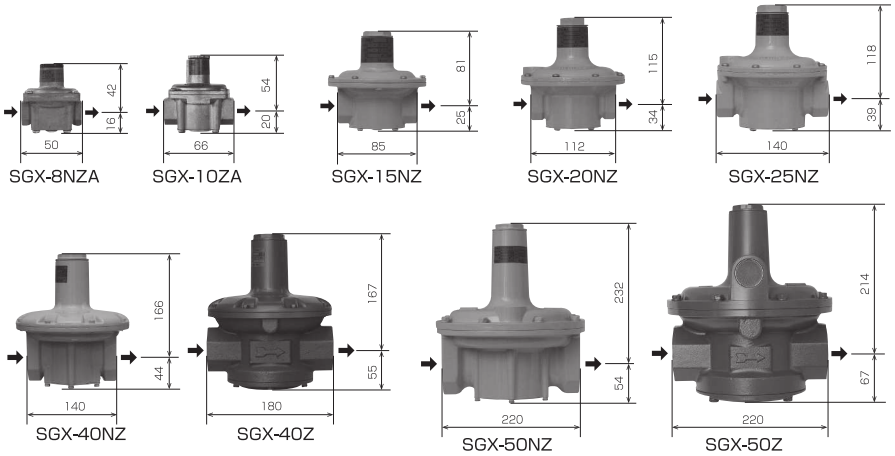
Outlet direction of WS-103 range is selectable. Please specify when placing your order.

Right	Downward



Zero Governor

Zero governors maintain a constant outlet pressure regardless of changes to the condition of the inlet pressure and flow rate. Moreover, by combining with other devices, this product keeps a constant mixture ratio of air and gas, and this can make it easy to control combustion temperature automatically.



Specifications

Model	SGX-8NZA	SGX-10ZA	SGX-15NZ	SGX-20NZ	SGX-25NZ	SGX-40NZ	SGX-40Z	SGX-50NZ	SGX-50Z
Inlet Pressure	≦5.00kPa	≦10.0kPa							
Outlet Pressure	0±0.10 kPa	0±0.05 kPa	0±0.10 kPa				0±0.05 kPa	0±0.10 kPa	0±0.05 kPa
Lockup Pressure	–	–	0.60 kPa						
Connection	Rc1/4	Rc3/8	Rc1/2	Rc3/4	Rc1	Rc11/2		Rc2	
Vent Connection	Rc1/8		Rc1/2	Rc1/4		Rc3/4		Rc1	

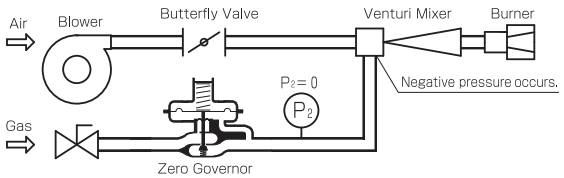
Available Configurations at a Glance

Model		SGX-8NZA	SGX-10ZA	SGX-15NZ	SGX-20NZ	SGX-25NZ	SGX-40NZ	SGX-40Z	SGX-50NZ	SGX-50Z
Type A	No Lockup Function (Aluminum Valve Disc Type)	✓*1	✓*1	×	✓	✓	✓	✓	✓	✓
Type C	High Temperature Resistance Governor for COG	×	×	✓	✓	✓	×	✓	×	✓

*1 The standard model of SGX-8NZA and SGX-10ZA is Type A.

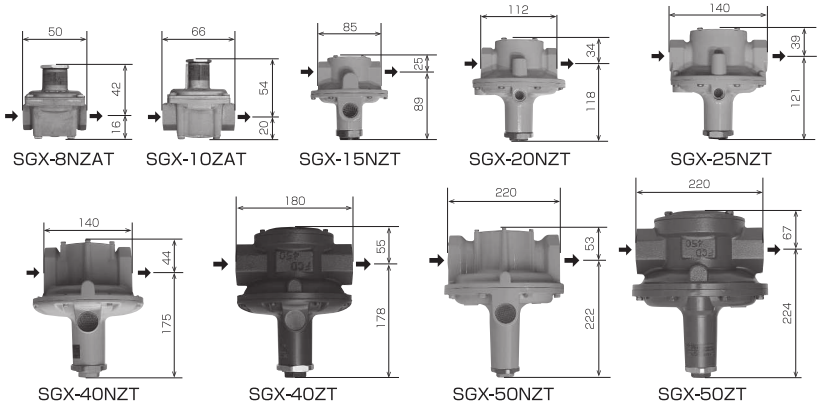
Gas Mixing by Venturi Mixer

The venturi mixer draws in gas by ejecting air at high pressure through the inner nozzle. The gas pressure is reduced to zero (atmospheric pressure) by the zero governor & makes gas proportional to the amount of air drawn in.
The governor maintains constant air and gas ratio even if the amount of air changes due to the opening and closing of the butterfly valve.



Equalizing Regulator

Equalizing regulators can regulate the outlet pressure regardless of changes of condition and gas flow of the inlet pressure. By adding air pressure (loading pressure) from the vent in the cover, the outlet pressure is in proportion to loading pressure. By installing together with other equipment and/or appliances, this product keeps a constant mixture ratio of air and gas, and this can make it easy to control combustion temperature automatically.



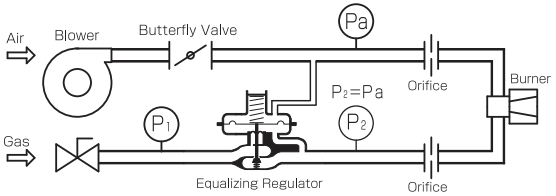
Specifications

Model	SGX-8NZAT / SGX-8NZA	SGX-10ZAT / SGX-10ZA	SGX-15NZT / SGX-15NZ	SGX-20NZT / SGX-20NZ	SGX-25NZT / SGX-25NZ	SGX-40NZT / SGX-40NZ	SGX-40ZT / SGX-40Z	SGX-50NZT / SGX-50NZ	SGX-50ZT / SGX-50Z
Inlet Pressure	≦ 10.0kPa		≦15.0kPa						
Loading Pressure Range	≦ 9.00kPa		≦14.0kPa						
Outlet Pressure	Loading Pressure ±0.10kPa	Loading Pressure ±0.05kPa	Loading Pressure±0.10kPa						
Lockup Pressure	–	–	≦Loading Pressure±0.60kPa						
Connection	Rc1/4	Rc3/8	Rc1/2	Rc3/4	Rc1	Rc11/2		Rc2	
Loading Connection	Rc1/8		Rc1/2	Rc1/4		Rc3/4		Rc1	
Mounting Position	Horizontal		SGX-Z:Horizontal SGX-NZT:Inverse Horizontal(Cover faces downward.)						

* No lockup function type and high temperature resistance for COG type are also available. Please refer to page 41 for details of available configurations and options.
* Please use air for loading.

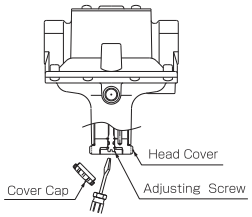
Gas Mixing by Equalizing Regulator

The equalizing regulator keeps the upstream pressure of the orifices on the gas line as the same as an air line by loading the air to the regulator cover vent from the air line. It fixes the air ratio to be mixed.
The regulator maintains constant air and gas ratio even if the amount of air changes due to the opening and closing of the butterfly valve.



■With External Adjusting Knob

SGX-ZT range has an external knob fitted on the cover cap to make small adjustments to the set point without removing the head cover thus keeping the original loading pressure sealed in the cover.

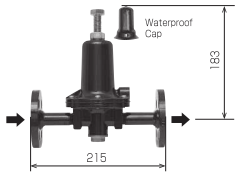


CM/GM/GMF Range

Medium Pressure Regulator

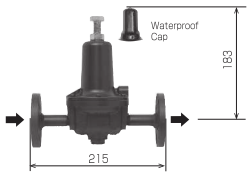
Incorporated: Strainer*
*CM-100, CM-100A and GMF-70 only.

- The CM, GM, GMF range is of direct-operated regulators to be used with high inlet pressure up to 1.56MP, and reduce outlet pressure to the range of 0.02~0.30 MPa.
- The JIS 20K flanged connection for high pressure inlet.



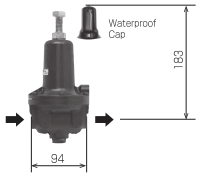
CM-100

Maximum Flow Rate (Nm³/h)	37
Inlet	JIS 20K 15A Flange (RF)
Outlet	JIS 10K 15A Flange (FF)
Strainer Mesh Gauge	110 Mesh



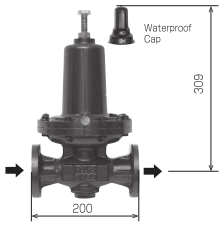
CM-100A

Maximum Flow Rate (Nm³/h)	37
Inlet	JIS 20K 15A Flange (RF)
Outlet	JIS 10K 15A Flange (FF)
Strainer Mesh Gauge	110 Mesh



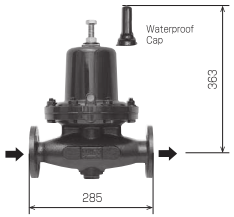
CM-100A (without Flange)

Maximum Flow Rate (Nm³/h)	37
Inlet	Rc1/2
Outlet	Rc1/2
Strainer Mesh Gauge	110 Mesh



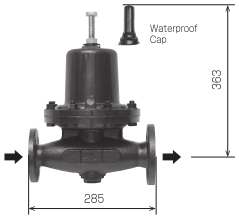
GMF-70

Maximum Flow Rate (Nm³/h)	130
Inlet	JIS 20K 20A Flange (RF)
Outlet	JIS 10K 20A Flange (FF)
Strainer Mesh Gauge	60 Mesh



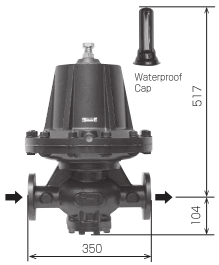
GMF-100

Maximum Flow Rate (Nm³/h)	190
Inlet	JIS 20K 25A Flange (RF)
Outlet	JIS 10K 25A Flange (FF)



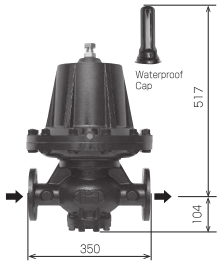
GMF-200

Maximum Flow Rate (Nm³/h)	380
Inlet	JIS 20K 25A Flange (RF)
Outlet	JIS 10K 40A Flange (FF)



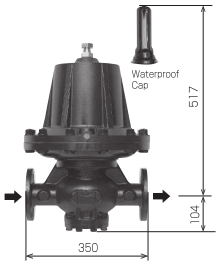
GMF-300

Maximum Flow Rate (Nm³/h)	580
Inlet	JIS 20K 40A Flange (RF)
Outlet	JIS 10K 40A Flange (FF)



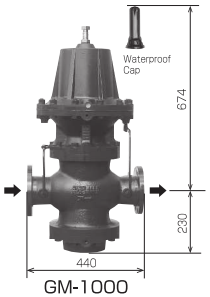
GMF-400

Maximum Flow Rate (Nm³/h)	950
Inlet	JIS 20K 50A Flange (RF)
Outlet	JIS 10K 50A Flange (FF)



GMF-500

Maximum Flow Rate (Nm³/h)	950
Inlet	JIS 20K 50A Flange (RF)
Outlet	JIS 10K 50A Flange (FF)



GM-1000

Maximum Flow Rate (Nm³/h)	1600
Inlet	JIS 20K 80A Flange (RF)
Outlet	JIS 10K 80A Flange (FF)

Range Specification

Inlet	0.10~1.56MPa
Outlet	0.02~0.30 MPa*1
Lockup Pressure (MPa)	≦Set Point×1.3 (Minimum: Set Point+0.012)

*1 Interchangeable springs are available.

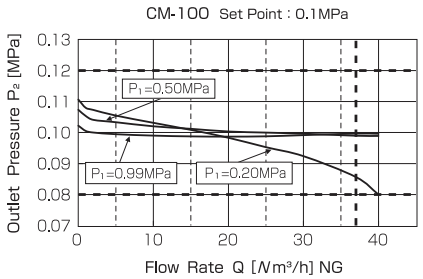
Interchangeable Spring Selection

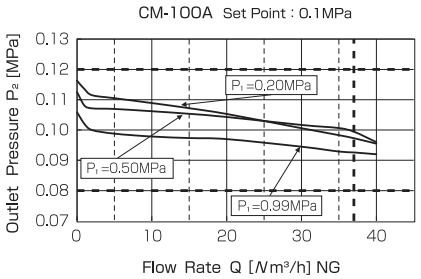
Set Point Range(MPa)		0.02~0.03	0.02~0.07	0.02~0.15	0.02~0.20	0.02~0.30
No.	CM-100	⑤	⑥	①	②	③
	GMF-70	④	⑤	①	②	③

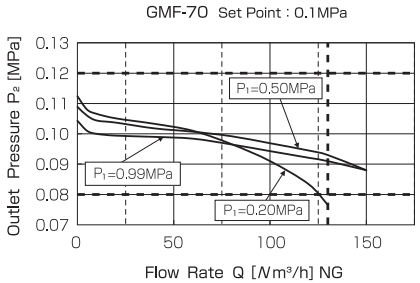
Set Point Range(MPa)		0.02~0.03	0.02~0.06	0.02~0.10	0.02~0.15	0.02~0.20	0.02~0.30
No.	GMF-100~200	B1	A0	A1	A1+B1	A2+B1	A2+B2
	GMF-300~500			A1	A1+B1		
	GM-1000			A1	A1+B1		

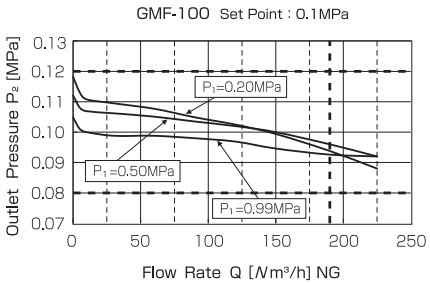
shows the standard spring.

Flow Rate





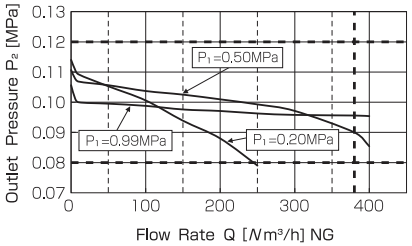




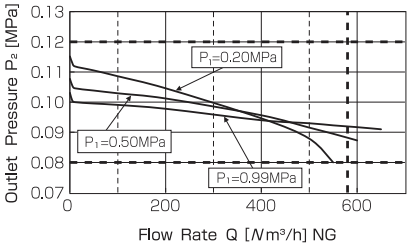
CM/GM/GMF Range

Flow Rate

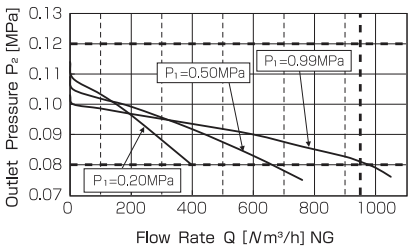
GMF-200 Set Point : 0.1MPa



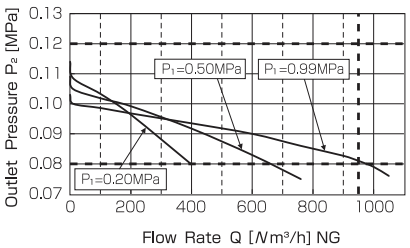
GMF-300 Set Point : 0.1MPa



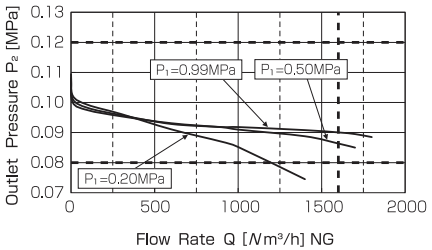
GMF-400 Set Point : 0.1MPa



GMF-500 Set Point : 0.1MPa



GMF-1000 Set Point : 0.1MPa



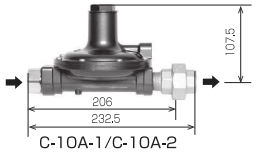
C/G/GL Range

Low Pressure Regulator

Incorporated : (Relief) (Strainer*)

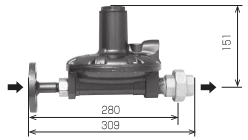
*C-10A, C-20, GL-50, GL-70 and G-32A only.

- The C, G, GL range is a direct-operated regulator to reduce outlet pressure to 20kPa or less.
- Available for type 1 or type 2 according to the inlet pressure. Type 1 for high pressure pipe line use up to 1.56MPa with a JIS 20K flanged connection at inlet, and Type 2 for medium pressure pipe line use between 0.025~0.10MPa with JIS 10K flanged connection at inlet.



C-10A-1/C-10A-2

Maximum Flow Rate(N m³/h)	C-10A-1: 12 C-10A-2: 18
Inlet	Rc 1/2
Outlet	Rc3/4 Union
Vent Connection	Rc1/4
Strainer Mesh Gauge	60 Mesh

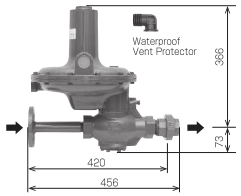


C-20-1/C-20-2

Maximum Flow Rate(N m³/h)	C-20-1 : 24 C-20-2 : 37
Inlet	Type1 : JIS20K15A Flange(RF) Type2 : JIS10K15A Flange(FF)
Outlet	Rc1 Union
Vent Connection	Rc 3/4
Strainer Mesh Gauge	60 Mesh

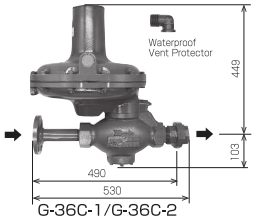
GL-50-1/GL-50-2
GL-70-1/GL-70-2

Maximum Flow Rate(N m³/h)	GL-50-1/2 : 60 GL-70-1/2 : 85
Inlet	Type1 : JIS20K25A Flange(RF) Type2 : JIS10K25A Flange(FF)
Outlet	Rc11/4 Union
Vent Connection	Rc 1
Strainer Mesh Gauge	60 Mesh



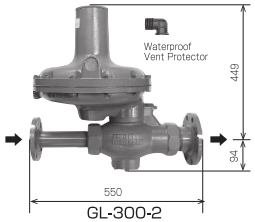
G-32A-1/G-32A-2

Maximum Flow Rate(N m³/h)	120
Inlet	Type 1 : JIS20K25A Flange(RF) Type 2 : JIS10K25A Flange(FF)
Outlet	Rc 1 1/2Union
Vent Connection	Rc 1
Strainer Mesh Gauge	60 Mesh



G-36C-1/G-36C-2

Maximum Flow Rate(N m³/h)	245
Inlet	Type 1 : JIS20K40A Flange(RF) Type 2 : JIS10K40A Flange(FF)
Outlet	Rc 2 Union
Vent Connection	Rc 1



GL-300-2

Maximum Flow Rate(N m³/h)	370
Inlet	JIS10K50A Flange(FF)
Outlet	JIS10K80A Flange(FF)
Vent Connection	Rc 1

Range Specification

Regulation Type		Type 1	Type 2
Inlet Pressure(MPa)		0.07~1.56	0.025~0.10
Outlet Pressure(kPa)	C-10A~GL-70	0.50~20.0*1	
	G-32A~GL-500	0.80~20.0*1	
Lockup Pressure(kPa)		≦Set Point×1.3	

*1 Interchangeable springs are available.

Interchangeable Spring Selection

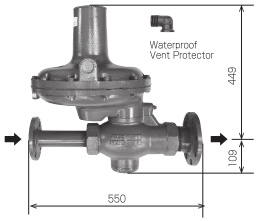
Set Point Range(kPa)

No.	①	②	③	④	⑤
C-10A	2.30~3.60	1.50~2.30	3.60~5.50	7.50~10.0	9.00~15.0
C-20	1.60~3.40	5.00~10.0	9.00~15.0	14.0~20.0	0.80~1.80
GL-50 GL-70	1.00~4.00	3.50~10.0	5.00~15.0	10.0~20.0	15.0~20.0
G-32A	1.30~3.70	0.80~1.50		8.00~16.0	3.00~10.5
G-36C GL-300 GL-400 GL-500	1.50~3.50	3.20~10.5	1.25~2.50	0.80~1.50	8.00~16.0

No.	⑥	⑦	⑧	⑨	SGX No.1(White)
C-10A	14.0~20.0	5.50~8.00	4.00~8.00	9.00~12.0	0.50~1.50
C-20	1.30~3.00	3.00~6.00	16.0~20.0	8.00~12.0	0.50~1.50
GL-50 GL-70		0.30~1.00	0.50~2.00	6.00~12.0	
G-32A	14.0~20.0	2.00~8.00	6.00~12.0		
G-36C GL-300 GL-400 GL-500	14.0~20.0	3.00~6.00		8.00~12.0	

shows the standard spring.

requires additional supporting diaphram disc.

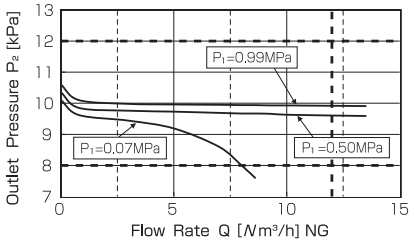


GL-400-2/GL-500-2

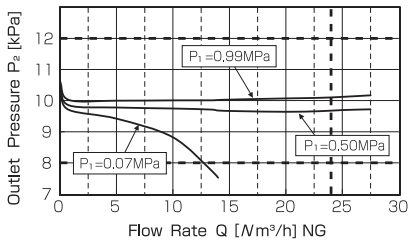
Maximum Flow Rate(N m³/h)	GL-400-2 : 495 GL-500-2 : 620
Inlet	JIS10K50A Flange(FF)
Outlet	JIS10K80A Flange(FF)
Vent Connection	Rc 1

Flow Rate

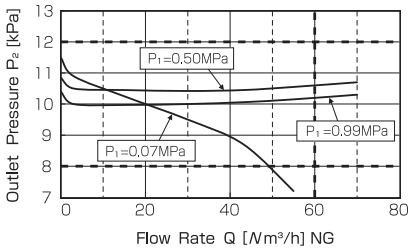
C-10A-1 Set Point : 10.0kPa



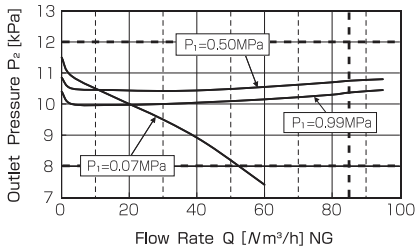
C-20-1 Set Point : 10.0kPa



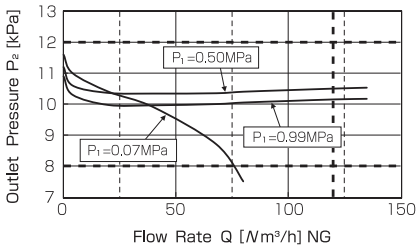
GL-50-1 Set Point : 10.0kPa



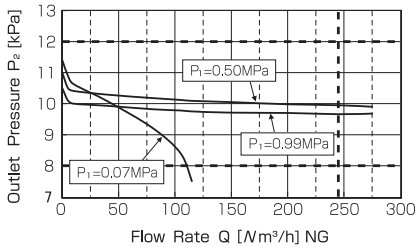
GL-70-1 Set Point : 10.0kPa



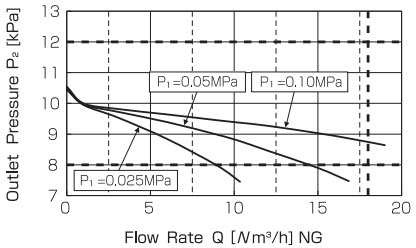
G-32A-1 Set Point : 10.0kPa



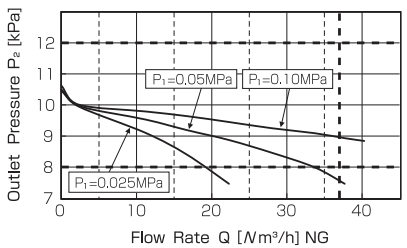
G-36C-1 Set Point : 10.0kPa



C-10A-2 Set Point : 10.0kPa

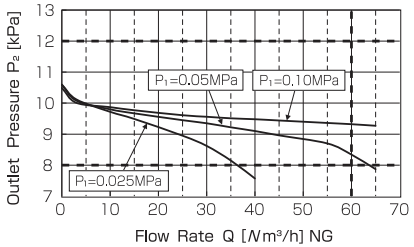


C-20-2 Set Point : 10.0kPa

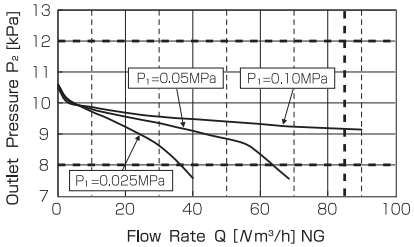


Flow Rate

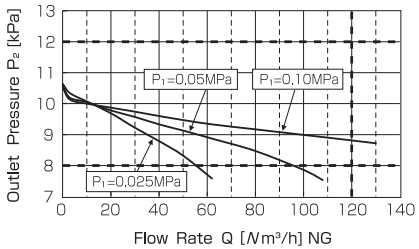
GL-50-2 Set Point : 10.0kPa



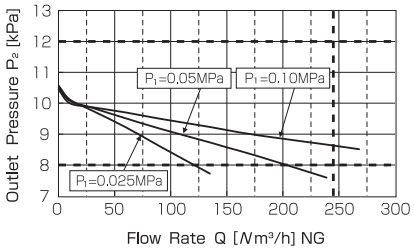
GL-70-2 Set Point : 10.0kPa



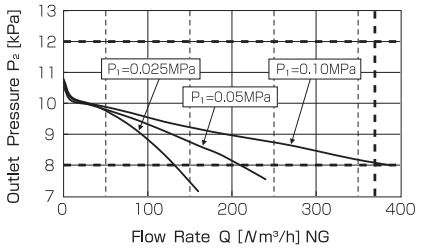
G-32A-2 Set Point : 10.0kPa



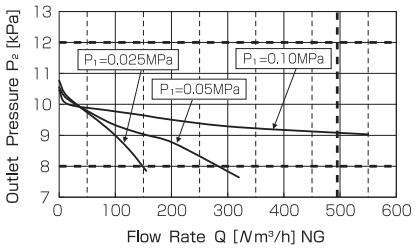
G-36C-2 Set Point : 10.0kPa



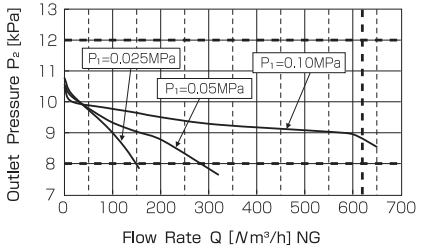
GL-300-2 Set Point : 10.0kPa



GL-400-2 Set Point : 10.0kPa



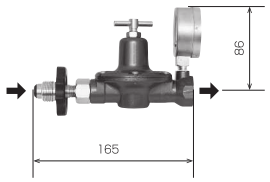
GL-500-2 Set Point : 10.0kPa



Variable Type Pressure Regulator

Incorporated : Strainer

· The variable type pressure regulator has an external handle linked to the adjusting screw to make the outlet pressure setting easier without using a wrench or other tools.

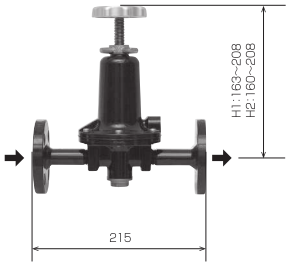


I-72-1/I-72-2/I-72-3

Specifications

Model	I-72-1/I-72-2/I-72-3
Maximum Flow Rate	6.2 Nm^3/h
Inlet Connection	JIS POL with Handwheel*
Outlet Connection	Rc 1/2
Strainer Mesh Gauge	200 Mesh

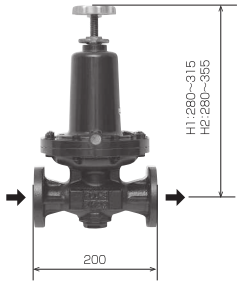
* According to JIS B 8245.



CM-100-H1/CM-100-H2

Specifications

Model	CM-100-H1/CM-100-H2
Maximum Flow Rate	37Nm^3/h
Inlet Connection	JIS 20K 15A Flange (RF)
Outlet Connection	JIS 10K 15A Flange (FF)
Strainer Mesh Gauge	110 Mesh



GMF-70-H1/GMF-70-H2

Specifications

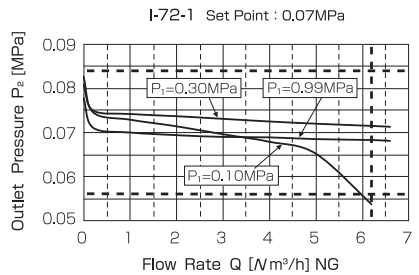
Model	GMF-70-H1/GMF-70-H2
Maximum Flow Rate	85Nm^3/h
Inlet Connection	JIS 20K 20A Flange (RF)
Outlet Connection	JIS 10K 20A Flange (FF)
Strainer Mesh Gauge	60 Mesh

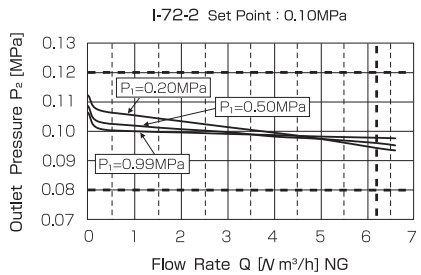
Specifications

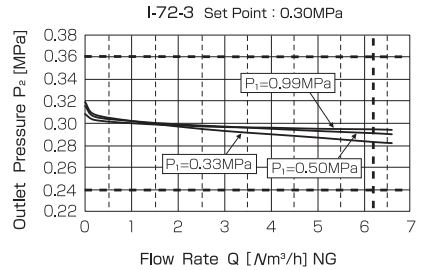
Model	I-72-1	I-72-2	I-72-3	CM-100-H1	CM-100-H2	GMF-70-H1	GMF-70-H2
Inlet Pressure(MPa)	0.13~1.56	0.17~1.56	0.40~1.56	0.10~1.56	0.07~0.40	0.10~1.56	0.10~0.40
Variable Outlet Pressure Range(MPa)	0.01~0.07	0.01~0.16	0.01~0.35	0.02~0.30*1	0~0.04	0.02~0.30*1	0~0.04

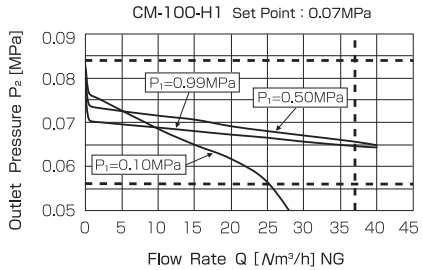
*1 Interchangeable springs are available.
See page 44 regarding the springs of CM-100 and GMF-70.

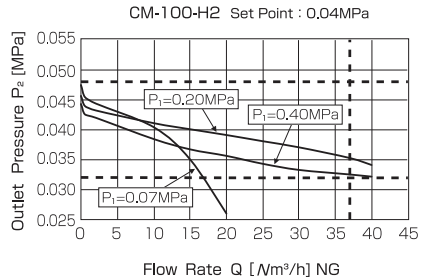
Flow Rate

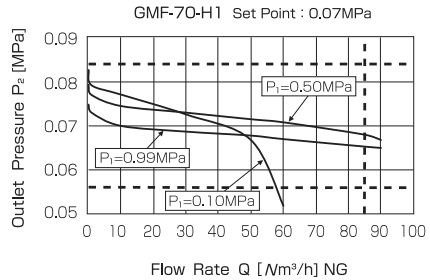


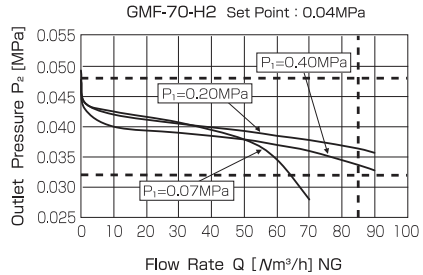








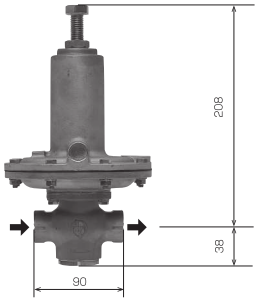




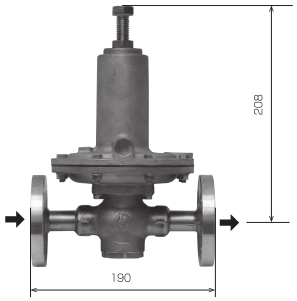
Stainless Steel Regulator

Incorporated: (Strainer*) *AM-150 and AM-150F only

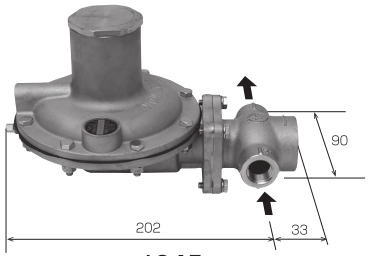
·Regulators with key components manufactured from stainless steel for use with various fluids such as a compressed gas including ammonia, nitrogen, or hydrogen.



AM-150



AM-150F



AC-15

Specifications

Model	AM-150	AM-150F	AC-15
Maximum Flow Rate	28Nm^3/h		19Nm^3/h
Inlet Pressure	0.10~1.80MPa		0.07~0.15MPa
Outlet Pressure	0.03~0.30MPa*1		0.50~15.0kPa*1
Lockup Pressure	≦0.095MPa		≦3.50kPa
Safety Relief Valve	N/A		Working Pressure : 7±1.4kPa
Connection	Rc1/2	JIS 20K 15A Flange	Rc 1/2
Vent Connection	Rc1/4		
Strainer Mesh Gauge	80 Mesh		N/A

*1 Interchangeable springs are available.

AM-150 Interchangeable Spring Selection

No.	①	②	③	④
Set Point Range (MPa)	0.03~0.20	0.05~0.30	0.00~0.09	0.00~0.02

shows the standard spring.

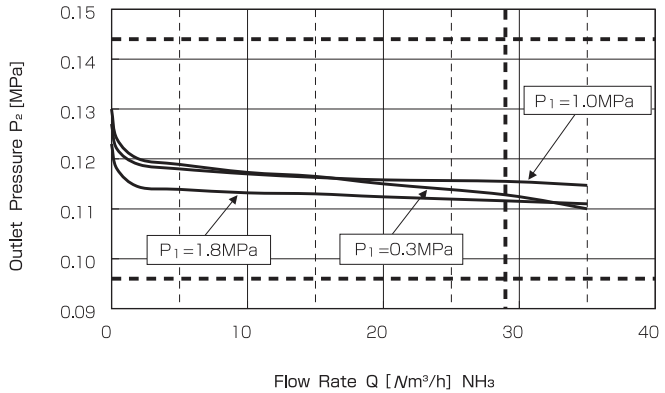
AC-15 Interchangeable Spring Selection

No.	①	②	③	④	⑤
Set Point Range (kPa)	2.50~4.00	4.00~10.0	9.00~15.0	0.50~1.00	1.00~3.00

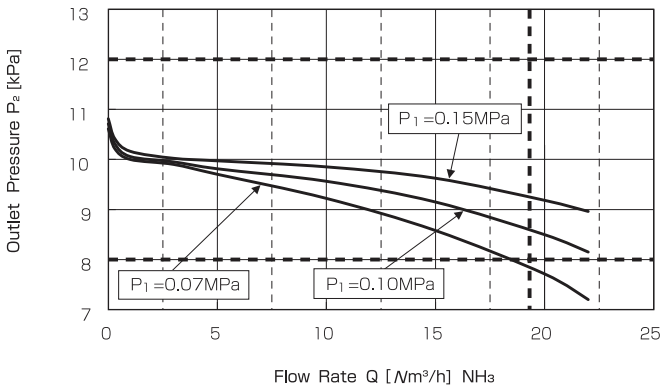
shows the standard spring.

Flow Rate

AM-150 Set Point : 0.12MPa



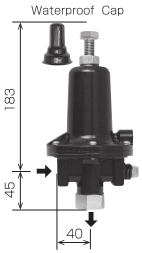
AC-15 Set Point : 10kPa



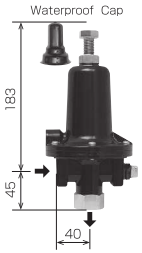
CM-R/GMF-R/SGX-R/SG-R Range

Safety Relief Valve

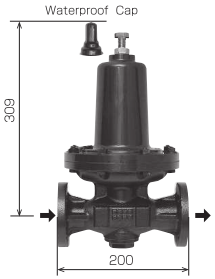
- Overpressure relief to prevent abnormal pressure increases if the inner sealing failed or temperature increased in the pipeline.
- Simply install it on the pipeline and this direct-operated valve performs its function.
- The large diaphragm in these valves gives extremely sensitive and stable operation.
- Resets automatically after outlet pressure resumes its normal range.



CM-100R



CM-100RH

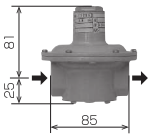


GMF-70R

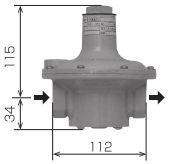
Specifications

Model	CM-100R	CM-100RH	GMF-70R
Start-to-Discharge	0.02~0.15MPa*1	0.02~0.28MPa	0.02~0.15MPa*1
Connection	Rc1/2		JIS 10K 20A Flange(FF)

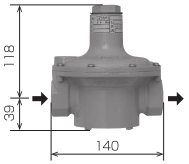
*1 Interchangeable springs are available.



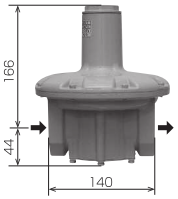
SGX-15NR



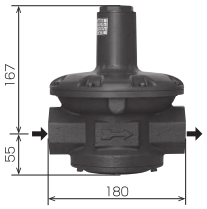
SGX-20NR



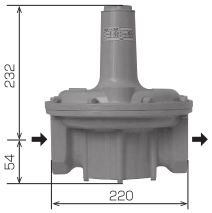
SGX-25NR



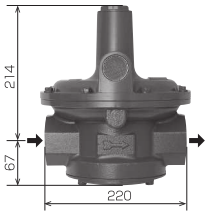
SGX-40NR



SGX-40R



SGX-50NR

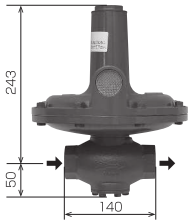


SGX-50R

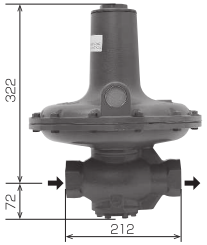
Specifications

Model	SGX-15NR	SGX-20NR	SGX-25R	SGX-40NR	SGX-40R	SGX-50NR	SGX-50R
Start-to-Discharge	1.00~20.0kPa *2						
Connection	Rc 1/2	Rc 3/4	Rc1	Rc11/2		Rc2	

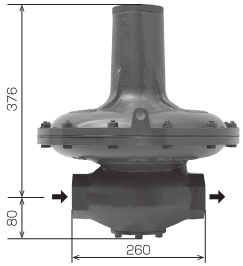
*2 Interchangeable springs are available.



SG-24AR



SG-32BR



SG-36ARA

Specifications

Model	SG-24AR	SG-32BR	SG-36ARA
Start-to-Discharge	1.00~20.0kPa*3		
Connection	Rc 1	Rc1 1/2	Rc 2

*3 Interchangeable springs are available.

Interchangeable Spring Selection

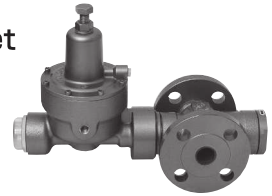
See the following pages for further information regarding springs.

CM-100R → CM-100 (Page 44)
GMF-70R → GMF-70 (Page 44)
SGX-R Range → SGX Range (Page 35)
SG-R Range → SG Range(Page 31)

HCV Range

Manual-Reset OPSO

Incorporated: Strainer



- A manual-reset type OPSO, shuts off gas to avoid abnormal pressure increases at the regulator outlet in case of regulator failure.
- Reset by pushing a reset button.
- Activated by gas pressure loading to the diaphragm chamber.

Specifications

Model		HCV-20-M	HCV-25-M	HCV-50	HCV-50-M	HCV-50-MA-L	HCV-50-MA-S
Pressure Range		0.20~1.56MPa		0.06~0.99MPa			
Adjustable Operating Pressure Range		0.08~0.30MPa		0.003~0.03 MPa*1	0.06~0.30 MPa	0.30~0.85MPa	
Air-Tightness Test	Body	1.80MPa		1.10MPa			
	Diaphragm	0.33MPa		0.033MPa	0.33MPa	1.10MPa	
Hydrostatic Test	Body	2.70MPa		1.50MPa			
	Diaphragm	0.80MPa		0.045MPa	0.45MPa	1.50MPa	
Connection		JIS 20K 20A Flange(RF)	JIS 20K 25A Flange(RF)	JIS 10K 50A Flange(FF)			
Impulse Line Connector		Rc1/4					
Face-to-Face Dimension		130㎜		260㎜		122㎜×175㎜	260㎜
Working Temperature Range		−5~60℃		−15~60℃			
Strainer Mesh Gauge		60 Mesh		100 Mesh			
Mounting Position		Horizontal or Vertical *2					

*1 Interchangeable springs are available.
*2 If the mounting position is known, please inform us when placing your order. It is essential to change the direction of the cover to prevent rainwater ingress.

Interchangeable Spring Selection

No.	①	②	③	④	⑤	⑥
Set Point Range(kPa)	6.80~8.00	8.00~13.0	12.0~21.0	21.0~30.0	28.0~40.0	3.00~5.00

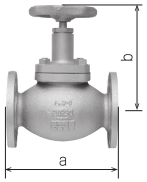
shows the standard spring.

High Pressure Valves

High Pressure Valves

· We offer a wide range of valves to meet various usage.

Incorporated: (Strainer*)
*D7 range only.



D1 Range

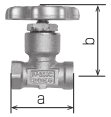
Specifications

Model	D1-15F	D1-20F	D1-25F	D1-40F	D1-50F
Pressure Range	≦2.40MPa				
Air-Tightness Test	2.50MPa				
Hydrostatic Test	4.00MPa				
Connection	JIS 20K Flange(RF)				
	15A	20A	25A	40A	50A
Dimensions(a×b)(mm)	110×118	120×126	130×156	180×183	220×205
Working Temperature Range	−5~60℃				

D7 Range

Specifications

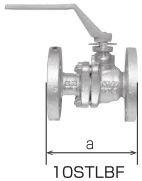
Model	D7-15F	D7-20F	D7-25F
Pressure Range	≦2.40MPa		
Air-Tightness Test	2.50MPa		
Hydrostatic Test	4.00MPa		
Connection	JIS 20K Flange (RF)		
	15A	20A	25A
Dimensions(a×b×c)(mm)	110×118×78	120×127×94	130×155×110
Working Temperature Range	−5~60℃		
Strainer Mesh Gauge	100 Mesh		



IV Range

Specifications

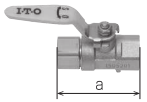
Model	IV-206C	IV-215B
Pressure Range	≦2.40MPa	
Air-Tightness Test	2.50MPa	
Hydrostatic Test	4.00MPa	
Connection	Rc1/4	Rc1/2
Dimensions (a×b)(mm)	45×51	65×65
Working Temperature Range	−35~60℃	



10STLBF
*Supplied by ITO.

Specifications

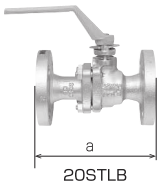
Model	10STLBF					
Pressure Range	≦1.18MPa					
Air-Tightness Test	1.28MPa					
Hydrostatic Test	2.06MPa					
Connection	JIS 10K Frange(FF)					
	15A	20A	25A	32A	40A	50A
Dimension (a)(mm)	108	117	127	140	165	178
Working Temperature Range	−5~80℃					



BV Range

Specifications

Model	BV-206	BVC-06
Pressure Range	≦1.56MPa	
Air-Tightness Test	1.80MPa	
Hydrostatic Test	2.70MPa	
Connection	Rc1/4	Rc1/4
Dimension (a)(mm)	52	53
Working Temperature Range	−25~60℃	



20STLB
*Supplied by ITO.

Specifications

Model	20STLB				
Pressure Range	≦2.40MPa				
Air-Tightness Test	2.50MPa				
Hydrostatic Test	3.60MPa				
Connection	JIS 20K Frange(RF)				
	15A	20A	25A	40A	50A
Dimension (a)(mm)	140	152	165	178	190
Working Temperature Range	−10~80℃				

Accessories & Other Equipment

Y-Type Strainers

· Filters any foreign bodies such as pipe scale or rust coming from the upstream pipework.
· Designed so that collected solids can be disposed of and the filter cleaned without having to be removed from the line.

10FDY

Specifications

Model	10FDY									
Connection	Rc1/4	Rc3/8	Rc1/2	Rc3/4	Rc1	Rc1 1/4	Rc1 1/2	Rc2	Rc2 1/2	Rc3
Dimension(a)(mm)	65	70	85	100	115	135	150	180	220	250

*Supplied by ITO.

10FDYBF

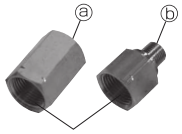
Specifications

Model	10FDYBF													
Connection	JIS 10K Flange(FF)													
	15A	20A	25A	32A	40A	50A	65A	80A	100A	125A	150A	200A	250A	300A
Dimension(a)(mm)	125	140	150	170	190	230	305	360	415	465	515	580	680	800

*Supplied by ITO.

POL Adapters

·Male JIS POL×PT thread adapter



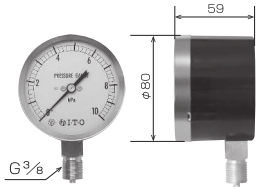
Female JIS POL

Model	PC-106	PC-112	PC-115
Connection ⓐ	Rc1/4	Rc3/8	Rc1/2

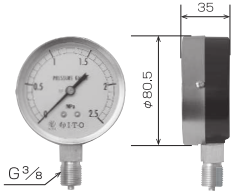
Model	PC-206	PC-212	PC-215
Connection ⓑ	R1/4	R3/8	R1/2

Pressure Gauges

·We offer pressure gauges in a wide range.



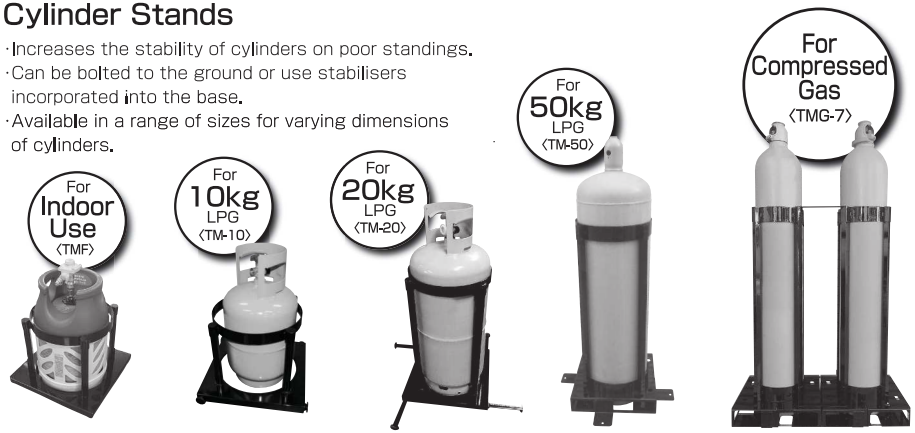
Maximum Scale Value
10.0kPa
20.0kPa
50.0kPa



Maximum Scale Value
0.10MPa
0.20MPa
0.40MPa
1.00MPa
2.00MPa
2.50MPa
3.50MPa

Cylinder Stands

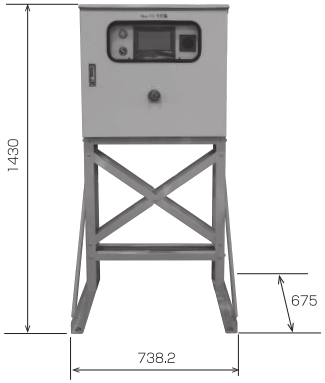
·Increases the stability of cylinders on poor standings.
·Can be bolted to the ground or use stabilisers incorporated into the base.
·Available in a range of sizes for varying dimensions of cylinders.



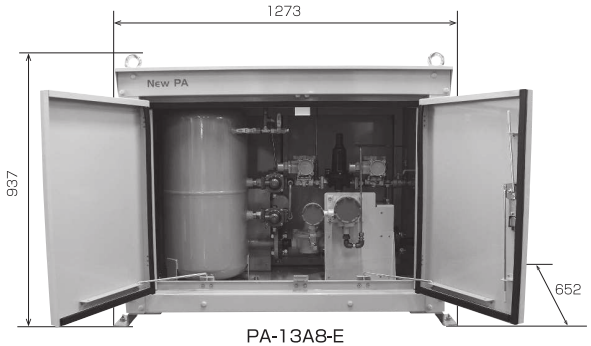
Propane Air Mixer—New PA Package

New PA Pakage

- This device temporarily supplies "City Gas"(Natural Gas) when emergencies shut down gas supply lines.
- Mixing propane with air to create a synthetic gas identical to city gas.
- Easy operation. Touch the screen to start-up with the audio guidance.
- For your safety and security, automatically performs gas leakage test.



Control Panel

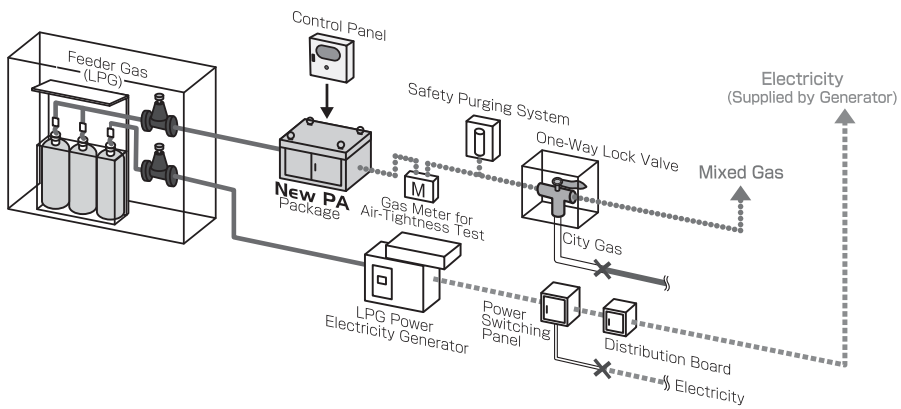


PA-13A8-E

Specifications

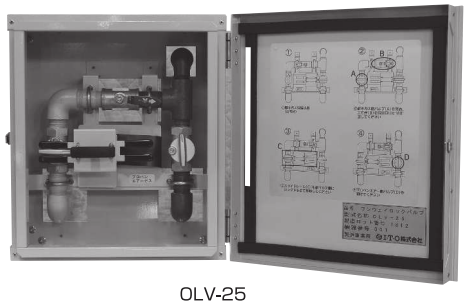
Capacity	8m³/h(normal)(139.6kW)
Feeder Gas	LPG containing 95% or more propane
Total Calorific Value of Mixed Gas	62.8MJ/m³(15000kcal)
Outlet Pressure (kPa)	1.50~2.50
Power Consumption (W)	40

Flow Chart



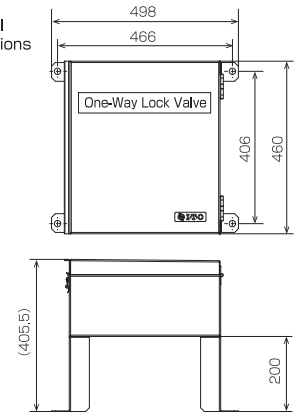
One-Way Lock Valve

- It switches gas supply from city gas sourced to mixed gas by the New PA.
  "One-way lock valve" system prevents improper valve operation occurring.
- A locking panel fixes a valve in closed status should another valve be opened at the same time.



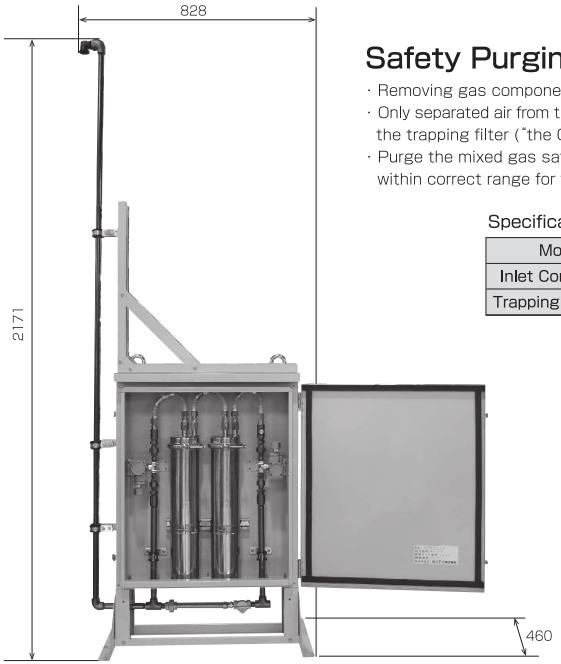
OLV-25

External Dimensions



Specifications

Model	OLV-25
Connection	Rc 1
Anchor Bolt Diameter	φ17mm
Installation Method	Floor Mounted



PU-15

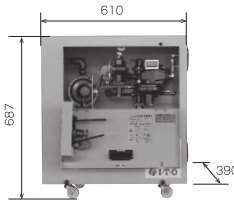
Safety Purging System

- Removing gas component and odorant from the mixed gas.
- Only separated air from the mixed gas released to the atmosphere, though the trapping filter ("the Column").
- Purge the mixed gas safely to the atmosphere, to keep the gas density within correct range for the internal piping of the New PA.

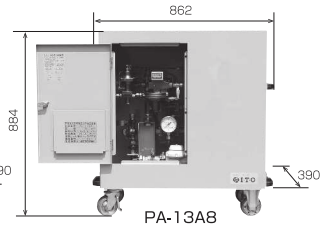
Specifications

Model	PU-15
Inlet Connection	Rc 1/2
Trapping Capability	25A×20m (Propane Air Mixed Gas)

Propane Air Mixers—PA System Range

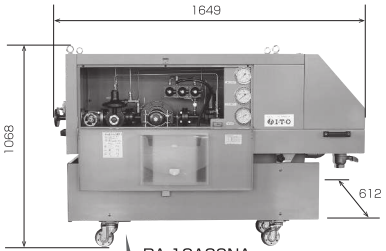


PA-13A4NA

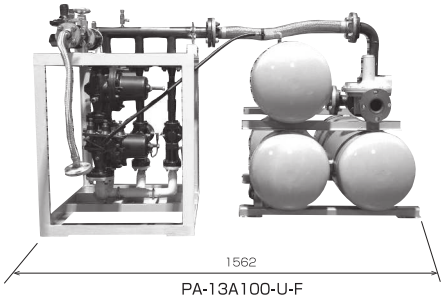


PA-13A8

- Mixes propane with air to provide similar gas property to NG, to allow NG distribution to continue even during emergency or maintenance.
- Does not required any external power sources such as electricity.
- Safety devices ensure total security of the system without any complicated calorific value adjustments.
- Compact & lightweight body allows easy portability.

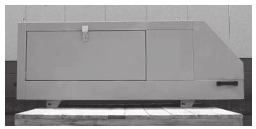


PA-13A30NA



PA-13A100-U-F

Easily transportable in 3 sections.



Approx. 80kg

Approx. 60kg

Approx.10kg

Specifications

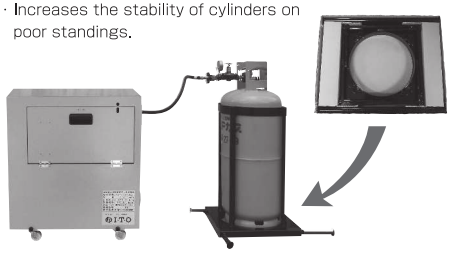
Model	PA-13A4NA	PA-13A8	PA-13A30NA	PA-13A100-U-F
Capacity	4m³/h(normal) (69.8kW)	8m³/h(normal) (139.6kW)	30m³/h(normal) (523kW)	100m³/h(normal) (1743kW)
Feeder Gas	LPG containing 95% or more propane.			
Total Calorific Value of Mixed Gas	62.8MJ/m³ (15000kcal)			
Outlet Pressure(kPa)	1.50~2.50	1.70~2.30	1.50~2.50	1.50~2.50

* There are wide country differences in mix within LPG and also the blend of natural gas in use.
The PA requires exact matching of both source and target gas to ensure correct, most efficient, safe and highest quality burning. Please contact your ITO sales representative to enable us to carry out this match.

Other Available Accessories

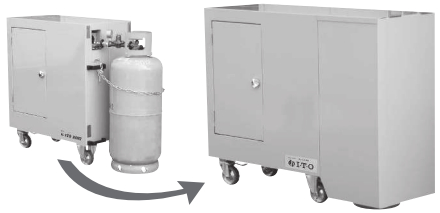
◎LPG Cylinder Stand

- Easy to assemble and highly portable.
- Increases the stability of cylinders on poor standings.



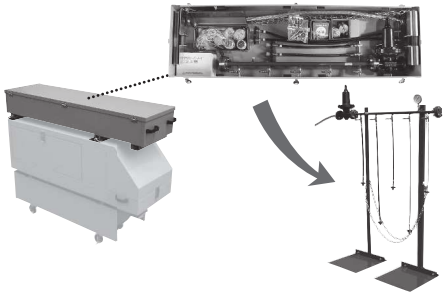
◎LPG Cylinder Cover

- To be attached to the PA-13A8 and hides the LPG cylinder.



◎Equipment Cabinet

- All the equipment required for start-up procedure is packed into an easy- transportable cabinet mounted on the PA-13A30NA.



◎Cylinder Cage

- Increases the stability of cylinders even in places without walls.
- Able to install five 50kg cylinders.
- Easy-assembly only with 1~2 people.

◎Portable Gas Detector

- For leakage test at the start-up.

◎Gas Densitometer

- For checking purging at the start of operation.

◎Gas Alarm

- Installed within 30 cm from the floor to inspect gas leakage of propane air mixed gas heavier than air.

◎Cylinder Cabinet

- Storage and protection for LPG cylinders and/or PA system.
- Offered in a wide range of sizes to meet various cylinder installations.

Propane Air Mixer–MX-500W

- Mixes LPG with air to provide similar gas property to NG, to allow NG distribution to continue even during emergency or maintenance.
- The control panel stabilises mixed gas properties, keeps the fluctuation within the preset value based on the feedback from the calorimeter when the feeder gas composition remains constant.
- This will be achieved even with the butane rich LPG.

MX-500W

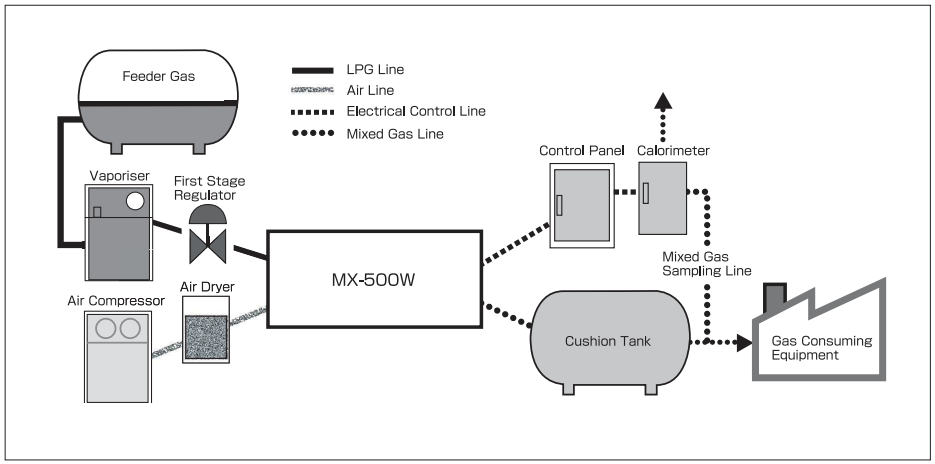
Control Panel

Calorimeter

Specifications

Model	MX-500W
Capacity	370m³/h(normal)
Feeder Gas	C_3H_8 : C_4H_{10}=50:50
Total Calorific Value of Mixed Gas	62.8MJ/m³(15000kcal/m³)
Outlet Pressure	0.20~0.30MPa

* This item can be manufactured to your specific request.
Please contact your ITO sales representative.



Notes

LPG

User Guide

Terminology and Advice

Connections

The inlet or outlet connections are described by:
- A code, which is from the ITO codification system.
- A condensed description, the complete description is given as table 1.

Condensed Description	Table 1 : Connection Full Description	JIS Code
With Union	A union joint assembled at product outlet connection unless otherwise specified. PT threaded for connection. See description below.	B 2301 MOD:ISO 49
Without Flange	The product provided without any flanged connections. Typically PT thread connection provided instead.	B 0203 MOD:ISO 7
With Ball Valve	A ball valve assembled at the product outlet unless otherwise specified.	B 0203 MOD:ISO 7
Rc−R PT Thread	JIS taper pipe threads. Shown as R for male / external thread and Rc for female / internal thread in short.	B 0203 MOD:ISO 7
Flange	JIS Flange connections. A welded neck flange pipe screwed into the regulator or a regulator that has an end face finished to match a declared flange specification.	B 2220
JIS POL	JIS POL connections. Most widely used in this industry, POL is the common name of cylinder valve-to-hose or cylinder valve-to-regulator connections. JIS POL thread specification is left-hand, W22.5, 14 threads per inch, internal or external thread.	B 8245

Dimensions in mm

Expressed in mm in this catalogue. See table 2 for your conversion.

Inlet Pressure(P_1) in MPa, kPa

Range of inlet pressure ($P_{1\,min}$~$P_{1\,max}$) which allows the regulator to deliver a stable outlet pressure (P_2) within the declared range for whatever capacity less than the declared one. See table 2 for your pressure unit conversion.

Outlet Pressure(P_2) in MPa, kPa

If (ADJ) mark is noted, it's an adjustable regulator which P_2 can be re-adjusted. Typically interchangeable springs are available, contact your ITO sales representative for further information.

Capacity(Q) in kg/ h

This is our guaranteed flow rate at minimum with propane for which a P_2 is delivered stably within the declared range ($P_{2\,min}$~$P_{2\,max}$) for whatever P_1 in declared range ($P_{1\,min}$~$P_{1\,max}$) unless otherwise specified.

Safety Relief Valves in MPa, kPa

If a safety relief valve working pressure is shown in the specification table, the product incorporates an internal relief valve, a small-spring loaded pressure relief valve contained within the regulator at the centre of diaphragm to prevent the outlet pressure from exceeding a predetermined pressure.

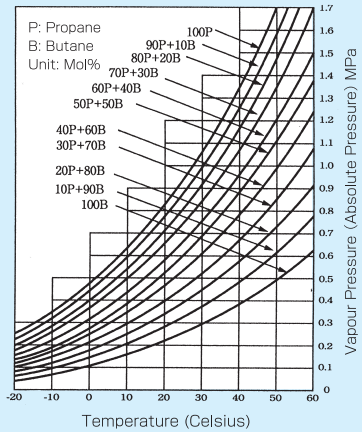
Table 2 : Length

cm	mm	in
100.0	1000.0	39.4
1.0	10.0	0.394
0.1	1.0	0.0394
2.54	25.4	1.0
30.5	305.0	12.0

Table 3 : Pressure Conversion

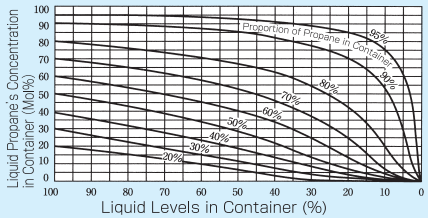
MPa	kPa	kgf/cm²	mm H_2O	in H_2O	PSI	bar	mbar
1.0	1000.0	10.197	1.02×10^5	4010.05	145.0	10	10,000
0.001	1.0	0.0102	102.0	4.02	0.145	0.01	10
0.098	98.0	1.0	10000.0	394.0	14.2	0.9807	980.7
9.8×10^{-6}	0.0098	0.0001	1.0	0.0394	0.00142	0.0001	0.1
2.49×10^{-4}	0.249	0.00254	25.4	1.0	0.0361	0.00249	2.49
0.0069	6.9	0.0703	703.0	27.7	1.0	0.06895	68.95
0.1	100	1.0197	10197	401.76	14.5	1.0	1,000
0.0001	0.1	0.00102	10.21	0.402	0.0145	0.001	1.0

Propane and Butane Gas Vaporisation Pressure



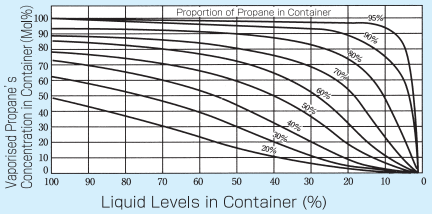
Changes in the Composition of Residual Liquid in the Container During the Consumption of LP Gas

Mixture of Propane and Butane (Temp. of Composition: 15℃)

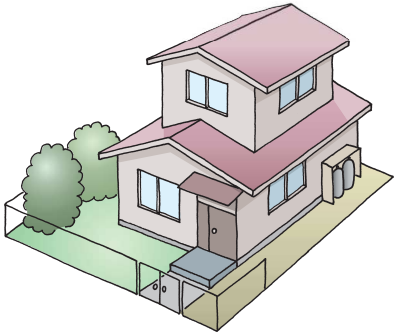


Change of Vaporised LP Gas Composition in Container for Various Liquid Levels

Mixture of Propane and Butane (Temp. of Composition: 15℃)



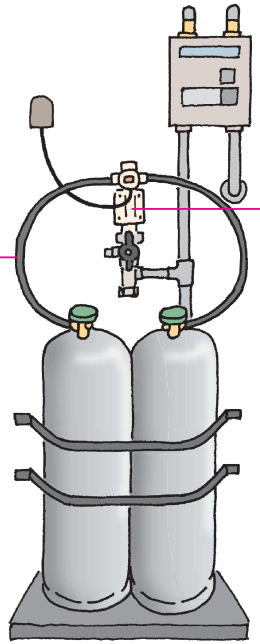
Residential Supply
(Independent Housing)



Supply LPG for a household, typically to a house building in Japan. Install a cylinder, or 2(～ 4) cylinders with a single stage or an automatic changeover regulator for up to 10kg/h capacity. Upstream equipment inc. a gas meter and a high or low pressure rubber hose(s) (excl. meter downstream hose) which belongs to an LPG distributor as "supply equipment". Also, LIA-700; high durability supply equipment approved by *the Japan L.P.Gas Instrument Inspection Association* under Japanese LPG Law, to ensure 10 year lifetime.

High Pressure Hoses Page 100

High pressure rubber hose with JIS POL for inlet cylinder connection(s). Variable additional functions are also available with model LIHS, with liquid non-return, TIH with tensile trigger SOV etc.

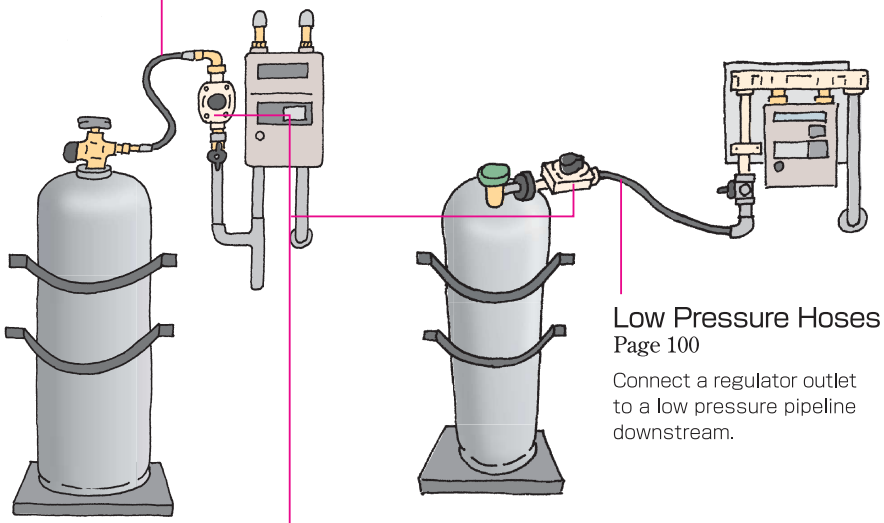


Double Stage Automatic Changeover Regulators Page 73～76
(with Signal Transmitting Function)

First and second stage regulator combined into one compact body and automatically changes to the "reserve" cylinders when the "service" cylinders are empty or vaporising capacity is not sufficient. With a signal transmitting function, interlocking a signal to an information sender enables cylinders replacement without discontinuation of gas supply & a delivery in a planned way.

High Pressure Hoses Page 100

High pressure rubber hose with JIS POL for inlet cylinder connection(s). Variable additional functions are also available with model LIHS, with liquid non-return, TIH with tensile trigger SOV etc.

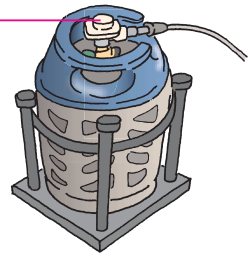


Low Pressure Hoses Page 100

Connect a regulator outlet to a low pressure pipeline downstream.

Single Stage Regulators Page 89～90

It reduces the pressure from the cylinder pressure directly down to the appliance pressure.



Clip-On Regulators Page 89

A single stage regulator directly mounted on a cylinder with dedicated quick-coupling connectors.The safety SOV incorporated in outlet for additional safety.

Residential Supply

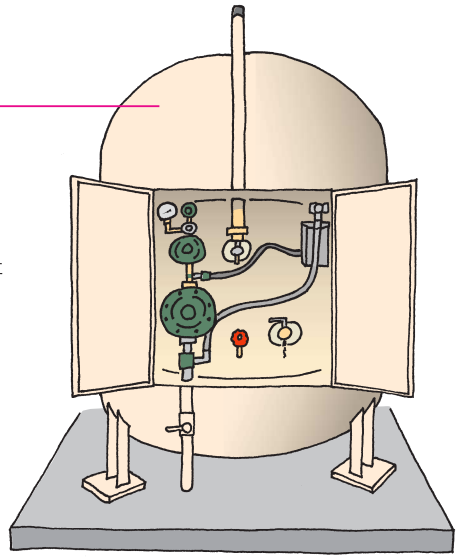
(Small-Medium Size Area Distribution)

Supply LPG to 2～70 households, typically for a condominium, apartment or small-medium size housing complex. Put cylinders, or a bulk tank with an ACO capacity range from 10～70kg/h. Typically in Japan, it's a double stage, which delivers LPG to whole-installation at low pressure. Smart meter shut-off and/or alert if preset "abnormal" situation is found after the meter at any dwelling. An automatic changeover incorporating leakage detecting system can also check for risk of gas leakage on whole downstream pipelines from the ACO outlet.

Bulk Tank Supply Systems

Page 113

A skid-based factory pre-assembled unit containing all necessary equipment, requiring simple fitting to low pressure piping at site.



Gas Leakage Detecting Kits

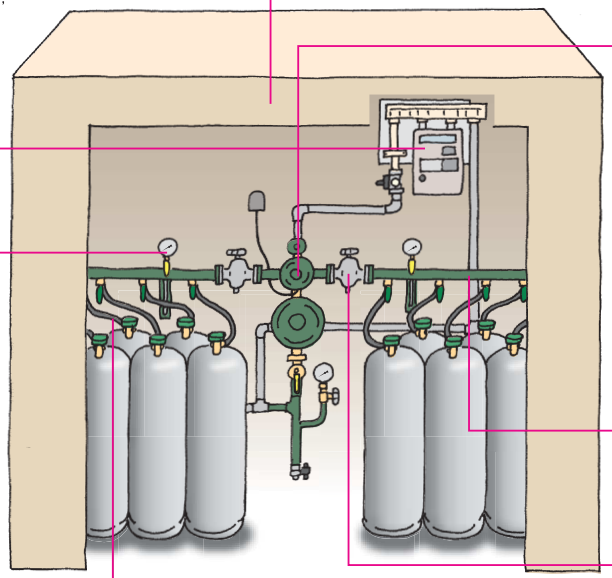
Page 97

Install with an ACO, monitoring whether gas keeps flowing during period of no gas consumption. No flow detected proves no leakage. But if gas flows for 24 hours x 30 days, a gas flow recorder in the kit shows an alert of a gas leaking risk at downstream piping.

Cylinder Cabinets

Page 105

Storage & protection of cylinders.



Double Stage Automatic Changeover Regulators

Page 77～85

(with Signal Transmitting Function)
(Incorporating Gas Leakage Detecting System)

1st & 2nd stage regulator combined into one compact body and automatically changes to the "reserve" cylinders when the "service" cylinders are empty or vaporising ability is not sufficient. With a signal transmitting function, interlocking a signal to an information sender, ACO enables cylinders replacement without discontinuation of gas supply & a delivery in a planned way. With a gas detecting kit, ACO can recognise a risk of gas leakage on whole downstream pipelines from the ACO outlet. Detectable even with a small leakage, this is recommended for underground piping inspection.

Pressure Gauges

Page 105

We offer pressure gauges in a wide range.
PG installation kit includes gauge adaptors & fittings and highly recommended to connect manifolds.

High Pressure Manifold Assembly Kits

Page 101～102

Manifolding cylinders using HP hoses. Non-return valves assembled to the manifold piping, and HP hoses and accessories packed in the kit.

Valves

Page 103～104

We offer a range of valves for LPG supply equipment.

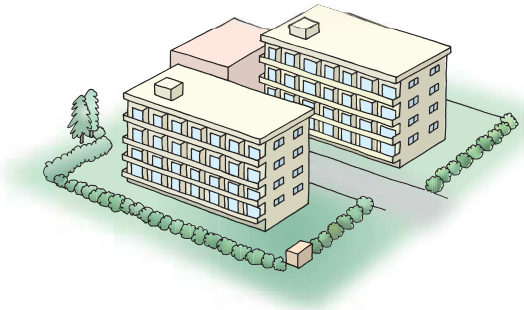
High Pressure Hoses

Page 100

High pressure rubber hose with JIS POL for inlet cylinder connection(s). Variable additional functions are also available with model LIHS, with liquid non-return, TIH with tensile trigger SOV etc.

Residential Supply

(Area Distibution for 70~300 Households)



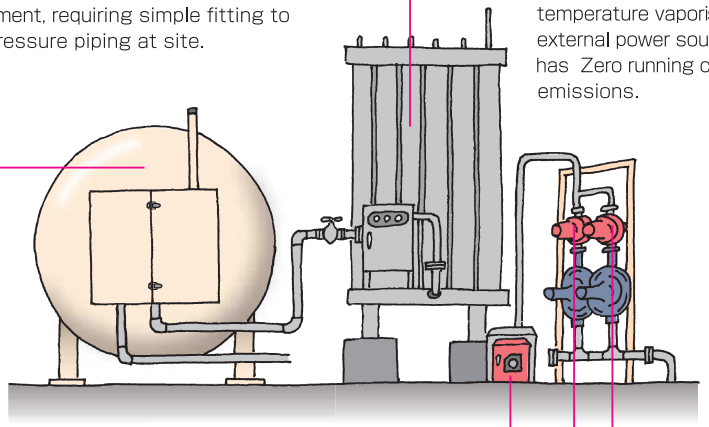
Supply LPG to 70 or more households typically large size housing complex or estate.
A kind of a "city (town) gas" distribution, therefore typically managed under strict authority controls. Install a bulk tank with regulators and an earthquake-actuated shut-off system.
Sometimes used with a vaporiser(s), the air heating type is commonly used in Japan to reduce costs and sustainable area supply against black out risk.Typically installed in 2 ways, "Double LP Regulators" or "a HP Bypass" installation.

Bulk Tank Supply Systems Page 113

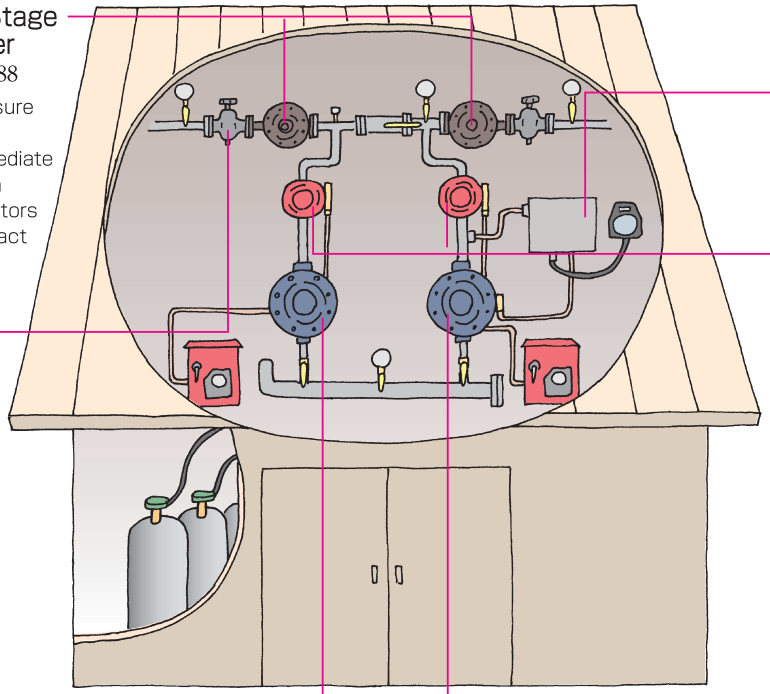
A skid-based factory pre-assembled unit containing all necessary equipment, requiring simple fitting to low pressure piping at site.

Air Heating Type Vaporisers (ecoRiser) Page 111~112

Vaporises liquid LPG using only air movement. This ambient temperature vaporiser uses no external power source, therefore has Zero running costs & Zero emissions.



Double LP Regulators Installation



Separate Type First Stage Automatic Changeover Regulators Page 87~88

The ACO reduces the pressure from the cylinder/vessel pressure down to an intermediate pressure. It's a combination of 2 units of 1st stage regulators or combined into one compact body.

Valves Page 103~104

We offer a range of valves for LPG supply equipment.

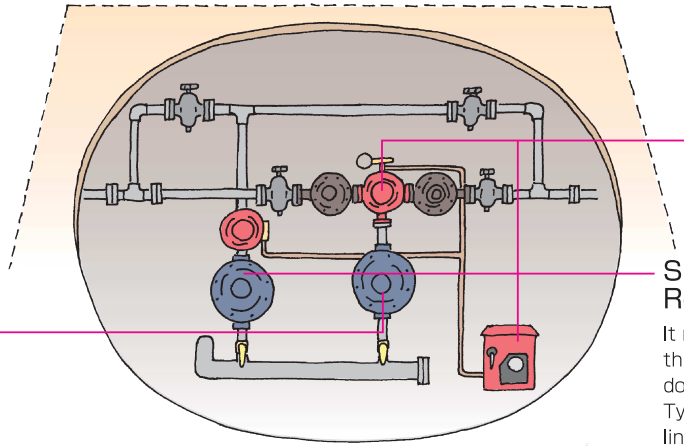
Pressure Monitoring Type Gas Leakage Detecting Cabinets Page 98

Install with a regulator monitoring & recording downstream pressure changes. When no gas is consumed, it records the regulator locking up to the pre-set pressure and proves no leakage on the downstream piping.

Earthquake-Actuated Shut-Off System Page 107~108

A totally mechanical(no electricity required), highly accurate valve which shuts off gas supplies when an earthquake occurs.

High Pressure Bypass Installation



Second Stage Regulators Page 93~94

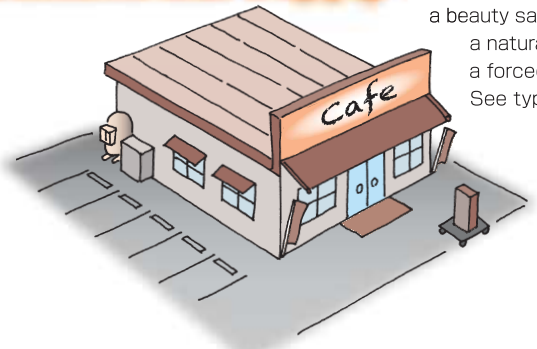
It reduces the pressure from intermediate pressure down to the appliance pressure.

Single Stage Regulators Page 89~90

It reduces the pressure from the cylinder pressure directly down to a low pressure. Typically installed at a bypass line.

Commercial Supply

Supply to LP gas commercial users such as a restaurant, a hospital, a school, a hotel or a beauty salon etc. There are two installations, a natural vaporisation supply, and a forced vaporisation supply. See typical installations below.



Double Stage Automatic Changeover Regulators Page 77～85
(with Signal Transmitting Function)

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Valves Page 103～104

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Pressure Gauges
Page 105

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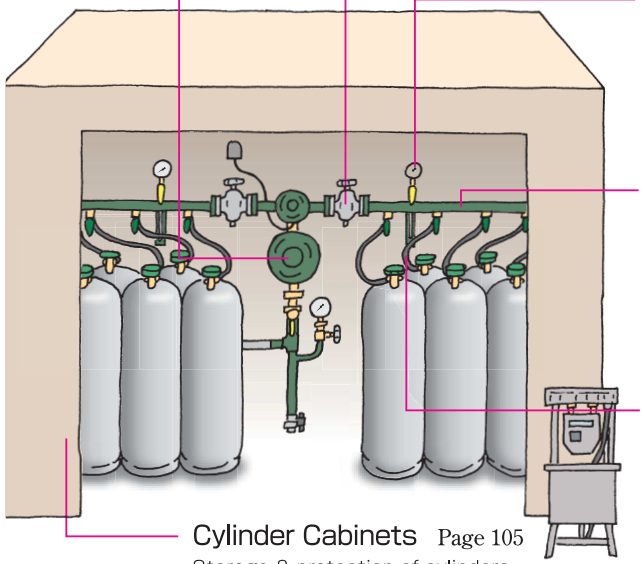


High Pressure Manifold Assembly Kits
Page 101～102

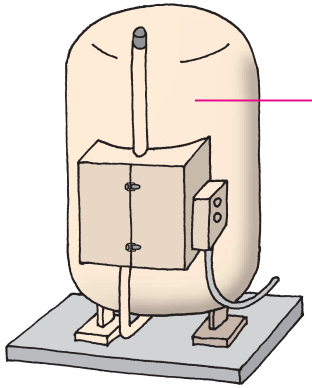
Manifolding cylinders using high pressure hoses. Non-return valves assembled to the manifold piping, and HP hoses and accessories packed in the kit.

High Pressure Hoses Page 100

High pressure rubber hose with JIS POL for inlet cylinder connection(s). Variable additional functions are also available with model LIHS, with liquid non-return, TIH with tensile trigger SOV etc.

Cylinder Cabinets Page 105

Storage & protection of cylinders.

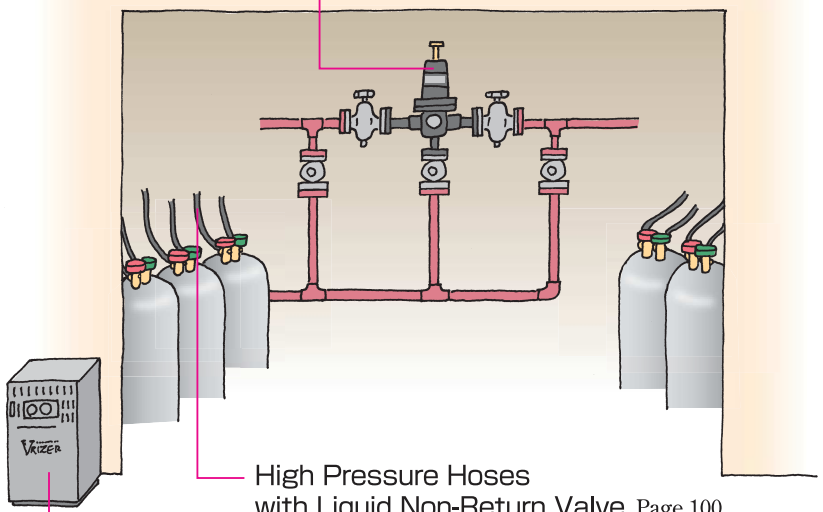


Bulk Tank Supply Systems Page 113

A skid-based factory pre-assembled unit containing all necessary equipment, requiring simple fitting to low pressure piping at site.

Liquid Automatic Changeover Devices
Page 109

Automatically changes liquid LPG supply from "service" cylinders or tanks to "reserve" side when the "service" side is empty. It eliminates gas run outs and ensures a continuous liquid LPG flow.



High Pressure Hoses with Liquid Non-Return Valve Page 100

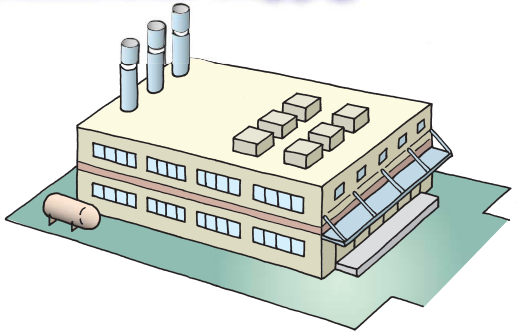
Liquid non-release valve is incorporated.

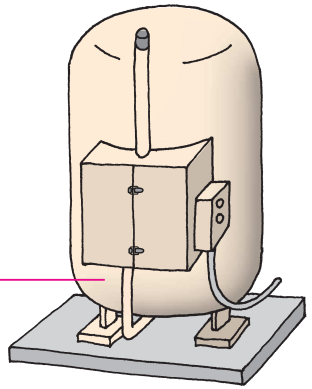
Electrical Heating Type Vaporisers Page 110

Heats up internal water storage by an electrical heater(s), the heated water forces the liquid LPG to vaporise. This minimises supply facilities and its installation space.

Industrial Supply

LPG supply for industrial use. Typically installed with tanks and large size regulators.





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Liquid Automatic Changeover Devices Page 109

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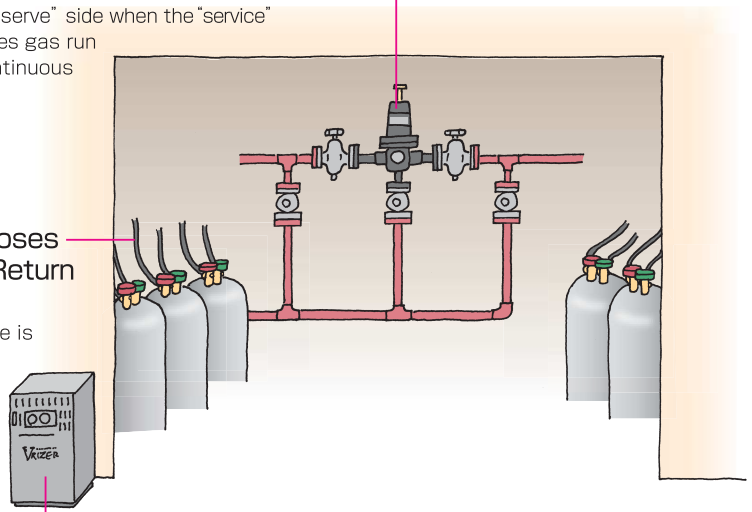

High Pressure Hoses with Liquid Non-Return Valve Page 100

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Electrical Heating Type Vaporisers Page 110

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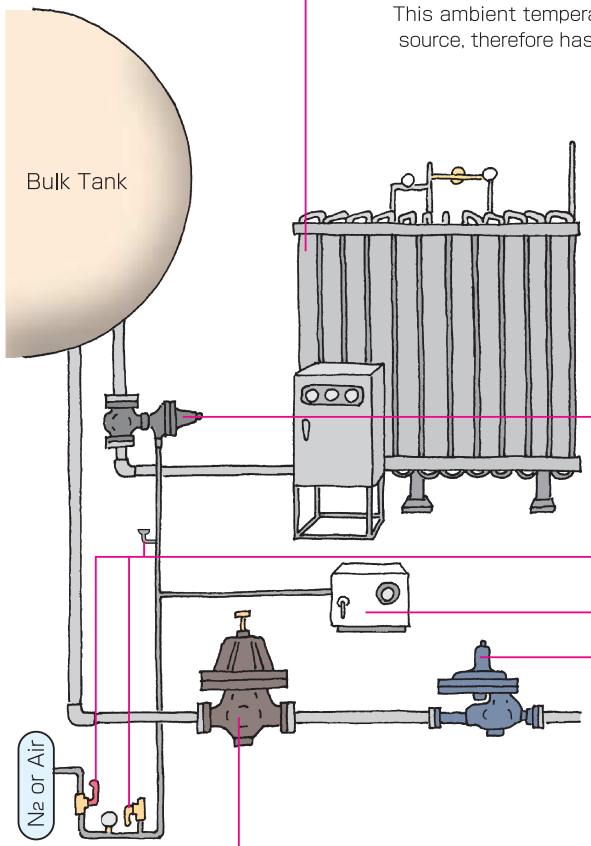
Air Heating Type Vaporisers (ecoRiser) Page 111～112

Vaporises liquid LPG using only air movement.
This ambient temperature vaporiser uses no external power source, therefore has Zero running costs & Zero emissions.



Emergency Shut-Off System Page 106

Shuts off LPG in emergency.
An air-actuated model – when installed on the impulse line the earthquake-actuated sensor, the fire-fusible valve, and the manual operated blow valve will shut off automatically when a fire and/or earthquake emergency occurs, and/or manually when required.

Second Stage Regulators Page 93～94

It reduces the pressure from intermediate pressure down to the appliance pressure.

First Stage Regulators Page 91～92

It reduces the pressure from the vessel pressure down to an intermediate pressure.

8kg/h Double Stage Automatic Changeover Regulators

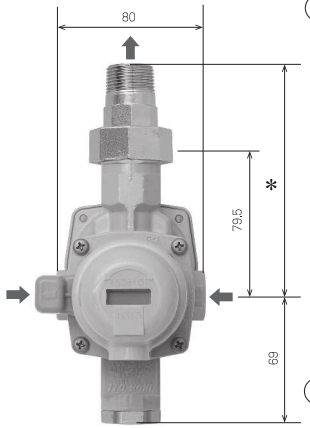
Model Reference Guide

AXS-8UA
TAXS-8UA

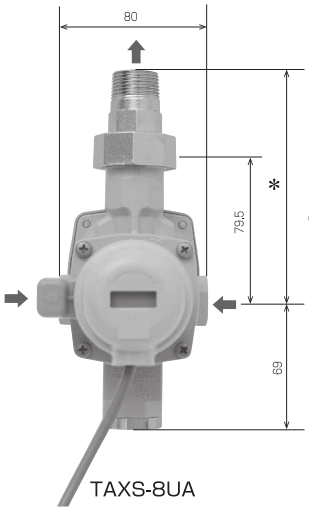
Model Code

① [ ] – ② [ ] ③ [ ]

① Outlet Connection ② Inlet Connection ③ HP Hose Connector



AXS-8UA



TAXS-8UA

With Signal Transmitting Function

①

Code	Outlet Connection	
	R1/2 Union	*122
BN	MB-40CU By Nippou corp. Rc1/2 Gas Ball Valve with Inspection Port	*139
BG	G73PZU By KOYO SANGYO Co., Ltd. Rc1/2 Gas Ball Valve with Inspection Port	*138
MR	M35×2	79.5

*Connectors provided with kit, not assembled.

②

Code	Inlet Connection		Accs.
2	JIS POL- 2 cyls. Kit Inc. 2 Hoses(L:600mm)		N/A
4J	JIS POL- 4 cyls. Kit Inc. 2 Hoses(L:600mm), 2 Hoses(L:1000mm), Manifolds (Compact Model)	317	Inc.

*Hoses provided with kit, not assembled.

③

Code	High Pressure Hose Connector	
H	Handwheel	
S	Mechanical	
TH	Handwheel Inc.Tensile Trigger Shut-Off Valve	
TS	Mechanical Inc.Tensile Trigger Shut-Off Valve	

Range Specification

Capacity(Propane)	8kg/h
Inlet Pressure	0.15～1.56MPa
Outlet Pressure	2.55～3.30kPa
Lockup Pressure	≦3.50kPa
Safety Relief Valve Working Pressure	5.60～8.40kPa
Starting Pressure of Replenishment	0.07≦P＜0.15MPa

Accessories

Bracket×2
15A U-bolt×2
M5 Butterfly Nut×4
M5 Flat Washer×4
Tapping Screw×4

Model Reference Guide

*If the specification you require is not offered in the table below, contact our local branch or agency.

ACO without Signal Transmitting Function	ACO with Signal Transmitting Function
Model	Model
AXS-8UA-2H	TAXS-8UA-2H
AXS-8UA-2S	TAXS-8UA-2S
AXS-8UA-2TH	TAXS-8UA-2TH
AXS-8UA-2TS	TAXS-8UA-2TS
AXS-8UA-4JH	TAXS-8UA-4JH
AXS-8UA-4JS	TAXS-8UA-4JS
AXS-8UA-4JTH	TAXS-8UA-4JTH
AXS-8UA-4JTS	TAXS-8UA-4JTS
AXS-8UABN-2H	TAXS-8UABN-2H
AXS-8UABN-2S	TAXS-8UABN-2S
AXS-8UABN-2TH	TAXS-8UABN-2TH
AXS-8UABN-2TS	TAXS-8UABN-2TS
AXS-8UABN-4JH	TAXS-8UABN-4JH
AXS-8UABN-4JS	TAXS-8UABN-4JS
AXS-8UABN-4JTH	TAXS-8UABN-4JTH
AXS-8UABN-4JTS	TAXS-8UABN-4JTS
AXS-8UABG-2H	TAXS-8UABG-2H
AXS-8UABG-2S	TAXS-8UABG-2S
AXS-8UABG-2TH	TAXS-8UABG-2TH
AXS-8UABG-2TS	TAXS-8UABG-2TS
AXS-8UABG-4JH	TAXS-8UABG-4JH
AXS-8UABG-4JS	TAXS-8UABG-4JS
AXS-8UABG-4JTH	TAXS-8UABG-4JTH
AXS-8UABG-4JTS	TAXS-8UABG-4JTS
AXS-8UAMR-2H	TAXS-8UAMR-2H
AXS-8UAMR-2S	TAXS-8UAMR-2S
AXS-8UAMR-2TH	TAXS-8UAMR-2TH
AXS-8UAMR-2TS	TAXS-8UAMR-2TS
AXS-8UAMR-4JH	TAXS-8UAMR-4JH
AXS-8UAMR-4JS	TAXS-8UAMR-4JS
AXS-8UAMR-4JTH	TAXS-8UAMR-4JTH
AXS-8UAMR-4JTS	TAXS-8UAMR-4JTS

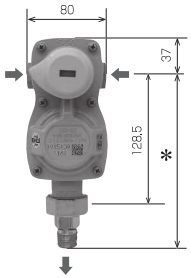
8kg/h Double Stage Automatic Changeover Regulators

Model Reference Guide

AXS-8C
TAXS-8C
Model Code

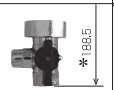
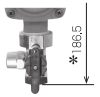
① [ ] – ② [ ] ③ [ ]

Outlet Connection | Inlet Connection | HP Hose Connector

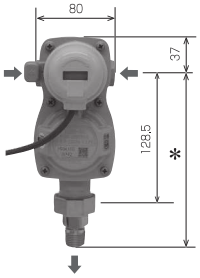


AXS-8C

① Outlet Connection

Code	Hose Assembled		Cylinder Mounted	
	R1/2 Union	*170.5	Rc1/2 or M35×2	128.5
BN	MB-40CU By Nippou corp. Rc1/2 Gas Ball Valve with Inspection Port	 *188.5		
BG	G73PZU By KOYO SANGYO Co.,Ltd. Rc1/2 Gas Ball Valve with Inspection Port	 *186.5		

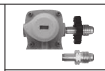
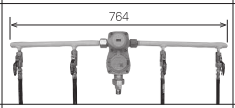
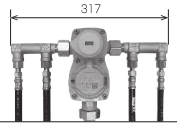
*Connectors provided with kit, not assembled.



TAXS-8C

With Signal Transmitting Function

② Inlet Connection

Code	Hose Assembled		Accs.	Cylinder Mounted		Accs.
				JIS POL Inc. 1 Hose(L:600mm)	 *Interchangeable Inlet Connecters.	N/A
2	JIS POL- 2 cyls. Kit Inc. 2 Hoses(L:600mm)					
4	JIS POL- 4 cyls. Kit Inc. 4 Hoses(L:600mm), Manifolds	 764				
4J	JIS POL- 4 cyls. Kit Inc. 2 Hoses(L:600mm), 2 Hoses(L:1000mm), Manifolds (Compact Model)	 317				

*Hoses provided with kit, not assembled.

③

Code	H	S	TH	TS
High Pressure Hose Connector	Handwheel	Mechanical	Handwheel Inc. Tensile Trigger Shut-Off Valve	Mechanical Inc. Tensile Trigger Shut-Off Valve

Range Specification

Capacity(Propane)	8kg/h
Inlet Pressure	0.15~1.56MPa
Outlet Pressure	2.55~3.30kPa
Lockup Pressure	≦3.50kPa
Safety Relief Valve Working Pressure	5.60~8.40kPa
Starting Pressure of Replenishment	0.07≦P<0.15MPa

Accessories

Bracket×2
15A U-bolt×2
M5 Butterfly Nut×4
M5 Flat Washer×4
Tapping Screw×4

Model Reference Guide

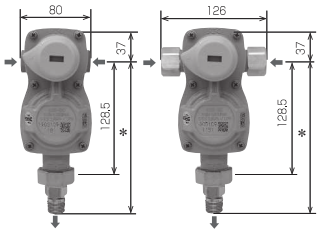
*If the specification you require is not offered in the table below, contact our local branch or agency.

Hose Assembled
Model
AXS-8C-2H, AXS-8C-2S, AXS-8C-2TH, AXS-8C-2TS
AXS-8C-4H, AXS-8C-4S, AXS-8C-4TH, AXS-8C-4TS
AXS-8C-4JH, AXS-8C-4JS, AXS-8C-4JTH, AXS-8C-4JTS
AXS-8CBN-2H, AXS-8CBN-2S, AXS-8CBN-2TH, AXS-8CBN-2TS
AXS-8CBN-4H, AXS-8CBBN-4S, AXS-8CBN-4TH, AXS-8CBBN-4TS
AXS-8CBN-4JH, AXS-8CBN-4JS, AXS-8CBN-4JTH, AXS-8CBN-4JTS
AXS-8CBG-2H, AXS-8CBG-2S, AXS-8CBG-2TH, AXS-8CBG-2TS
AXS-8CBG-4H, AXS-8CBG-4S, AXS-8CBG-4TH, AXS-8CBG-4TS
AXS-8CBG-4JH, AXS-8CBG-4JS, AXS-8CBG-4JTH, AXS-8CBG-4JTS

*The TAXS range for telemetry is also available.
*Hoses provided with kit, not assembled.

Cylinder Mounted
Model
AXS-8C-H, AXS-8C-S, AXS-8C-TH, AXS-8C-TS

*Signal transmitting function is not available.
*Hoses provided with kit, not assembled.

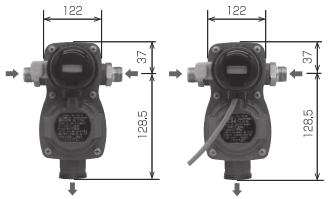


AXS-8CW(Rc1/4) AXS-8CW(Rc1/2)

*The TAXS range for telemetry is also available.

Specifications

Model	AXS-8CW(Rc1/4)	AXS-8CW(Rc1/2)
(With Signal Transmitting Function)	TAXS-8CW(Rc1/4)	TAXS-8CW(Rc1/2)
Capacity(Propane)	8kg/h	
Inlet Pressure	0.10~1.56MPa	
Outlet Pressure	2.55~3.30kPa	
Lockup Pressure	≦ 3.50kPa	
Safety Relief Valve Working Pressure	5.60~8.40kPa	
Inlet Connection	Rc1/4	Rc1/2
Outlet Connection	R1/2 Union	
Starting Pressure of Replenishment	<0.10MPa	



AX-8-GB
AX-6-GB

TAX-8-GB
TAX-6-GB

With Signal Transmitting Function

Specifications

Model	AX-8-GB	AX-6-GB
(With Signal Transmitting Function)	TAX-8-GB	TAX-6-GB
Capacity(Propane)	8kg/h	6kg/h
Inlet Pressure	0.10~1.60MPa	
Outlet Pressure	2.70kPa~4.50kPa	
Lockup Pressure	≦ 5.00kPa	
Safety Relief Valve Working Pressure	7.40~15.0kPa	
Inlet Connection	M20×1.5	
Outlet Connection	Rp1/2	
Starting Pressure of Replenishment	≧ 50.0kPa	

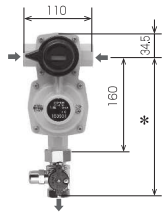
10kg/h Double Stage Automatic Changeover Regulators

Model Reference Guide

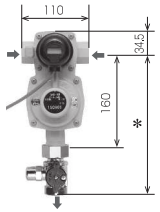
AXS-10B
TAXS-10B
AX-10BHL
TAX-10BHL
Model Code

① ② ③

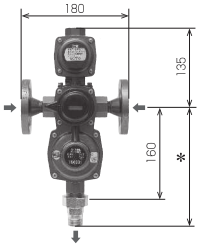
① Inlet Connection	② HP Hose Connector	③ Outlet Connection



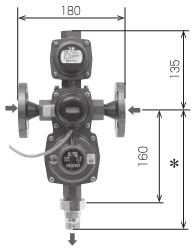
AXS-10B



TAXS-10B
With Signal Transmitting Function

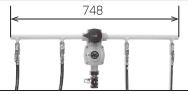
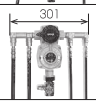
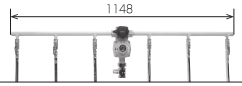
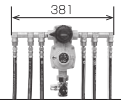


AX-10BHL
Inc. Leakage Detecting System



TAX-10BHL
With Signal Transmitting Function
Inc. Leakage Detecting System

① Inlet Connection

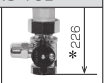
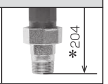
Code	(T)AXS-10B		Accs.	(T)AX-10BHL		Accs.
	Rc1/2		N/A	JIS20K 15A Flange		Ⓐ
Without Flange				Rc1/2		N/A
F	JIS20K 15A Flange		Ⓐ			
2	JIS POL-2 cyls. Kit Inc. 2 Hoses (L:600mm)					N/A
4	JIS POL-4 cyls. Kit Inc. 4 Hoses (L:600mm), Manifolds					Ⓑ
4J	JIS POL-4 cyls. Kit Inc. 2 Hoses (L:600mm), 2 Hoses (L:1000mm), Manifolds (Compact Model)					Ⓑ
6	JIS POL-6 cyls. Kit Inc. 4 Hoses (L:600mm), 2 Hoses (L:1000mm), Manifolds					Ⓒ
6J	JIS POL-6 cyls. Kit Inc. 2 Hoses (L:600mm), 4 Hoses (L:1000mm), Manifolds (Compact Model)					Ⓑ

*Hoses provided with kit, not assembled.

② High Pressure Hose Connector

Code	High Pressure Hose Connector	
H	Handwheel	
S	Mechanical	
TH	Handwheel Inc. Tensile Trigger Shut-Off Valve	
TS	Mechanical Inc. Tensile Trigger Shut-Off Valve	

③ Outlet Connection

Code	(T)AXS-10B	
	MB-60CU Rc 3/4 Gas Ball Valve with Inspection Port	
With Union	R3/4 Union	
	(T)AX-10BHL	
	R3/4 Union	

*The outlet connector of (T)AXS-10B provided with kit, not assembled.

Range Specification

Capacity (Propane)	10kg/h
Inlet Pressure	0.10~1.56MPa
Outlet Pressure	2.55~3.30kPa
Lockup Pressure	≦3.50kPa
Safety Relief Valve Working Pressure	5.60~8.40kPa
Starting Pressure of Replenishment	<0.10MPa

Accessories

Ⓐ	Ⓑ	Ⓒ
15A Flange Gasket×2	Bracket×2 15A U-Bolt×2 M5 Butterfly Nut×4 M5 Flat Washer×4 Tapping Screw×4	Bracket×4 15A U-Bolt×4 M5 Butterfly Nut×8 M5 Flat Washer×8 Tapping Screw×8

Model Reference Guide

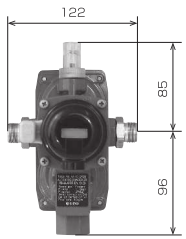
*If the specification you require is not offered in the table below, contact our local branch or agency.

ACO without Leakage Detecting System
Model
AXS-10B
AXS-10B (with Union)
AXS-10BF
AXS-10BF (without Flange)
AXS-10B-2H, AXS-10B-2S, AXS-10B-2TH, AXS-10B-2TS
AXS-10B-4H, AXS-10B-4S, AXS-10B-4TH, AXS-10B-4TS
AXS-10B-6H, AXS-10B-6S, AXS-10B-6TH, AXS-10B-6TS
AXS-10B-4JH, AXS-10B-4JS, AXS-10B-4JTH, AXS-10B-4JTS
AXS-10B-6JH, AXS-10B-6JS, AXS-10B-6JTH, AXS-10B-6JTS

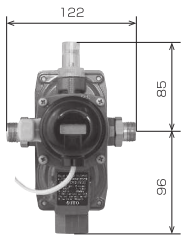
*The TAXS range for telemetry is also available.

ACO Incorporating Leakage Detecting System
Model
AXS-10BHL
AXS-10BHL (without Flange)
AXS-10BHL-2H, AXS-10BHL-2S, AXS-10BHL-2TH, AXS-10BHL-2TS
AXS-10BHL-4H, AXS-10BHL-4S, AXS-10BHL-4TH, AXS-10BHL-4TS
AXS-10BHL-6H, AXS-10BHL-6S, AXS-10BHL-6TH, AXS-10BHL-6TS
AXS-10BHL-4JH, AXS-10BHL-4JS, AXS-10BHL-4JTH, AXS-10BHL-4JTS
AXS-10BHL-6JH, AXS-10BHL-6JS, AXS-10BHL-6JTH, AXS-10BHL-6JTS

*The TAXS range for telemetry is also available.
*See page 97 regarding gas flow recorders.



AX-10-OPSO



TAX-10-OPSO
With Signal Transmitting Function

Specifications

Capacity (Propane)	10kg/h
Inlet Pressure	0.10~1.60MPa
Outlet Pressure	2.70~4.50kPa
Lockup Pressure	≦5.00kPa
Safety Relief Valve Working Presure	7.40~8.90kPa
OPSO Working Pressure	9.00~11.0kPa
Working Pressure of Replenishmnent	≧50.0kPa

15kg/h Double Stage Automatic Changeover Regulators

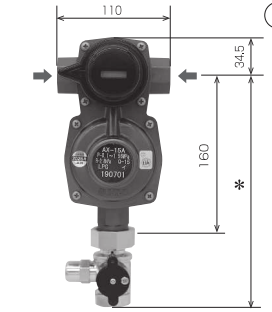
Model Reference Guide

AX-15A
TAX-15A
Model Code

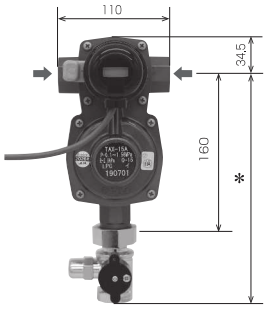
① ② ③

– ( )

Inlet Connection | HP Hose Connector | Outlet Connection



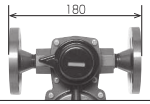
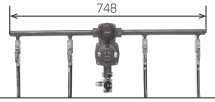
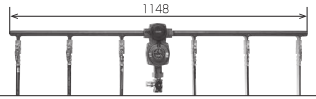
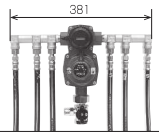
AX-15A



TAX-15A

With Signal Transmitting Function

①

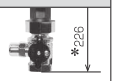
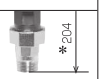
Code	Inlet Connection		Accs.
	Rc1/2		N/A
F	JIS20K 15A Flange		Ⓐ
4	JIS POL-4 cyls. Kit Inc. 4 Hoses(L:600mm), Manifolds		Ⓑ
4J	JIS POL-4 cyls. Kit Inc. 2 Hoses(L:600mm), 2 Hoses(L:1000mm), Manifolds (Compact Model)		Ⓑ
6	JIS POL-6 cyls. Kit Inc. 4 Hoses(L:600mm), 2 Hoses(L:1000mm), Manifolds		Ⓒ
6J	JIS POL-6 cyls. Kit Inc. 2 Hoses(L:600mm), 4 Hoses(L:1000mm), Manifolds (Compact Model)		Ⓑ

*Hoses provided with kit, not assembled.

②

Code	High Pressure Hose Connector	
H	Handwheel	
S	Mechanical	
TH	Handwheel Inc. Tensile Trigger Shut-Off Valve	
TS	Mechanical Inc. Tensile Trigger Shut-Off Valve	

③

Code	Outlet Connection	
	MB-60CU Rc3/4 Gas Ball Valve with Inspection Port	
With Union	R3/4 Union	

*Connectors provided with kit, not assembled.

Range Specification

Capacity(Propane)	15kg/h
Inlet Pressure	0.10～1.56MPa
Outlet Pressure	2.55～3.30kPa
Lockup Pressure	≦ 3.50kPa
Safety Relief Valve Working Pressure	5.60～8.40kPa
Replenishment of Starting Pressure	< 0.10MPa

Accessories

Ⓐ	Ⓑ	Ⓒ
15A Flange Gasket×2	Bracket×2 15A U-Bolt×2 M5 Butterfly Nut×4 M5 Flat Washer×4 Tapping Screw×4	Bracket×4 15A U-Bolt×4 M5 Butterfly Nut×8 M5 Flat Washer×8 Tapping Screw×8

Model Reference Guide

*If the specification you require is not offered in the table below, contact our local branch or agency.

ACO without Signal Transmitting Function	ACO with Signal Transmitting Function
Model	Model
AX-15A	TAX-15A
AX-15A(with Union)	TAX-15A(with Union)
AX-15AF	TAX-15AF
AX-15AF(with Union)	TAX-15AF(with Union)
AX-15A-4H	TAX-15A-4H
AX-15A-4S	TAX-15A-4S
AX-15A-4TH	TAX-15A-4TH
AX-15A-4TS	TAX-15A-4TS
AX-15A-6H	TAX-15A-6H
AX-15A-6S	TAX-15A-6S
AX-15A-6TH	TAX-15A-6TH
AX-15A-6TS	TAX-15A-6TS
AX-15A-4JH	TAX-15A-4JH
AX-15A-4JS	TAX-15A-4JS
AX-15A-4JTH	TAX-15A-4JTH
AX-15A-4JTS	TAX-15A-4JTS
AX-15A-6JH	TAX-15A-6JH
AX-15A-6JS	TAX-15A-6JS
AX-15A-6JTH	TAX-15A-6JTH
AX-15A-6JTS	TAX-15A-6JTS

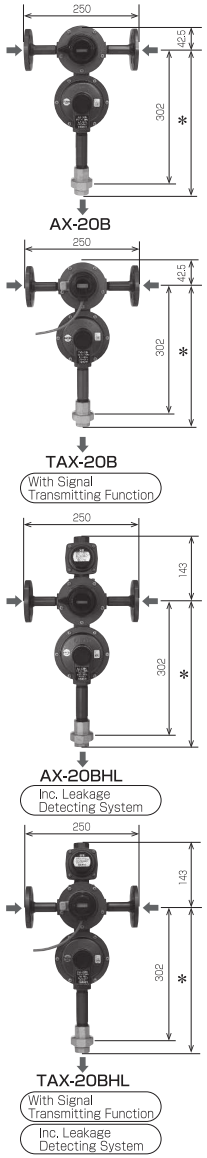
20kg/h Double Stage Automatic Changeover Regulators

Model Reference Guide

AX-20B
TAX-20B
AX-20BHL
TAX-20BHL

Model Code

① Inlet Connection — ② HP Hose Connector — ③ Outlet Connection



①

Code	Inlet Connection		Accs.
	JIS20K15A Flange		Ⓐ
Without Flange	Rc1/2	110	N/A
4	JIS POL- 4 cyls. Kit Inc. 4 Hoses(L:600mm), Manifolds	748	Ⓑ
4J	JIS POL- 4 cyls. Kit Inc. 2 Hoses(L:600mm), 2 Hoses(L:1000mm), Manifolds (Compact Model)	301	Ⓑ
6	JIS POL- 6 cyls. Kit Inc. 4 Hoses(L:600mm), 2 Hoses(L:1000mm), Manifolds	1148	Ⓒ
6J	JIS POL- 6 cyls. Kit Inc. 2 Hoses(L:600mm), 4 Hoses(L:1000mm), Manifolds (Compact Model)	381	Ⓑ

*Hoses provided with kit, not assembled.

②

Code	High Pressure Hose Connector	
H	Handwheel	
S	Mechanical	
TH	Handwheel Inc. Tensile Trigger Shut-Off Valve	
TS	Mechanical Inc. Tensile Trigger Shut-Off Valve	

③

Code	Outlet Connection	
	Rc 3/4 Union	*328.5
With BV	MB-60CU Rc3/4 Ball Valve for Union	*362

*MB-60CU provided with kit, not assembled.

Range Specification

Capacity(Propane)	20kg/h
Inlet Pressure	0.10~1.56MPa
Outlet Pressure	2.55~3.30kPa
Lockup Pressure	≦ 3.50kPa
Safety Relief Valve Working Pressure	5.60~8.40kPa
Replenishment of Starting Pressure	< 0.10MPa

Accessories

Ⓐ	Ⓑ	Ⓒ
15A Flange Gasket×2	Bracket×2 15A U-Bolt×2 M5 Butterfly Nut×4 M5 Flat Washer×4 Tapping Screw×4	Bracket×4 15A U-Bolt×4 M5 Butterfly Nut×8 M5 Flat Washer×8 Tapping Screw×8

Model Reference Guide

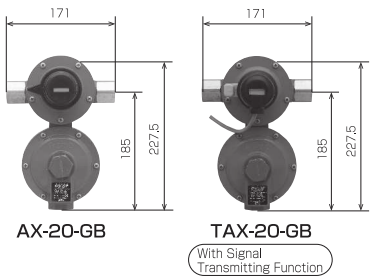
*If the specification you require is not offered in the table below, contact our local branch or agency.

ACO without Leakage Detecting System
Model
AX-20B
AX-20B(with BV)
AX-20B (without Flange)
AX-20B-4H, AX-20B-4S, AX-20B-4TH, AX-20B-4TS
AX-20B-4H(with BV), AX-20B-4S(with BV), AX-20B-4TH(with BV), AX-20B-4TS(with BV)
AX-20B-6H, AX-20B-6S, AX-20B-6TH, AX-20B-6TS
AX-20B-6H(with BV), AX-20B-6S(with BV), AX-20B-6TH(with BV), AX-20B-6TS(with BV)
AX-20B-4JH, AX-20B-4JS, AX-20B-4JTH, AX-20B-4JTS
AX-20B-4JH(with BV), AX-20B-4JS(with BV), AX-20B-4JTH(with BV), AX-20B-4JTS(with BV)
AX-20B-6JH, AX-20B-6JS, AX-20B-6JTH, AX-20B-6JTS
AX-20B-6JH(with BV), AX-20B-6JS(with BV), AX-20B-6JTH(with BV), AX-20B-6JTS(with BV)

*The TAXS range for telemetry is also available.

ACO Incorporating Leakage Detecting System
Model
AX-20BHL
AX-20BHL(without Flange)
AX-20BHL-4H, AX-20BHL-4S, AX-20BHL-4TH, AX-20BHL-4TS
AX-20BHL-6H, AX-20BHL-6S, AX-20BHL-6TH, AX-20BHL-6TS
AX-20BHL-4JH, AX-20BHL-4JS, AX-20BHL-4JTH, AX-20BHL-4JTS
AX-20BHL-6JH, AX-20BHL-6JS, AX-20BHL-6JTH, AX-20BHL-6JTS

*The TAXS range for telemetry is also available.
*See page 97 regarding gas flow recorders.



AX-20-GB

TAX-20-GB
With Signal Transmitting Function

Specifications

Capacity(Propane)	20kg/h
Inlet Pressure	0.10~1.60MPa
Outlet Pressre	2.70~4.50kPa
Lockup Pressure	≦ 5.00kPa
Safety Relief Valve Working Pressure	7.40~8.90kPa
Starting Pressure of Replenishment	≧ 50.0kPa

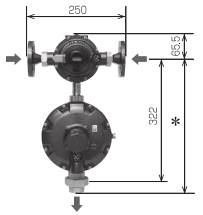
30kg/h Double Stage Automatic Changeover Regulators

Model Reference Guide

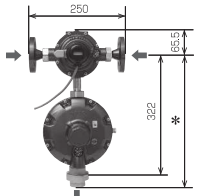
AX-30A
TAX-30A
AX-30HLU
TAX-30HLU
Model Code

① ② ③

Inlet Connection | HP Hose Connector | Outlet Connection

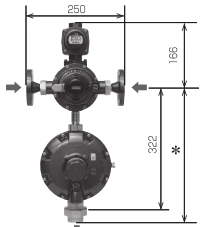


AX-30A



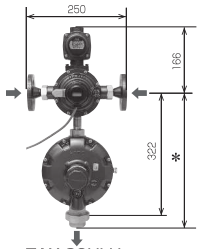
TAX-30A

With Signal Transmitting Function



AX-30HLU

Inc. Leakage Detecting System

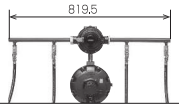
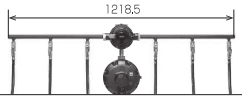
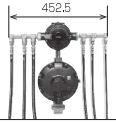


TAX-30HLU

Inc. Leakage Detecting System

With Signal Transmitting Function

①

Code	Inlet Connection		Accs.
	JIS20K15A Flange		Ⓐ
Without Flange	Rc1/2		N/A
4	JIS POL- 4 cyls. Kit Inc. 4 Hoses(L:600mm), Manifolds		Ⓑ
4J	JIS POL- 4 cyls. Kit Inc. 2 Hoses(L:600mm), 2 Hoses(L:1000mm), Manifolds (Compact Model)		Ⓑ
6	JIS POL- 6 cyls. Kit Inc. 4 Hoses(L:600mm), 2 Hoses(L:1000mm), Manifolds		Ⓒ
6J	JIS POL- 6 cyls. Kit Inc. 2 Hoses(L:600mm), 4 Hoses(L:1000mm), Manifolds (Compact Model)		Ⓑ

*Hoses provided with kit, not assembled.

②

Code	High Pressure Hose Connector	
H	Handwheel	
S	Mechanical	
TH	Handwheel Inc. Tensile Trigger Shut-Off Valve	
TS	Mechanical Inc. Tensile Trigger Shut-Off Valve	

③

Code	Outlet Connection	
	Rc1 Union	
With BV	BV-25U Rc1 Ball Valve for Union	

*If the code of inlet connection is 4J or 6J, the union is provided with kit, not assembled.
* BV-25U provided with kit, not assembled.

Range Specification

Capacity(Propane)	30kg/h
Inlet Pressure	0.10~1.56MPa
Outlet Pressure	2.55~3.30kPa
Lockup Pressure	≦3.50kPa
Safety Relief Valve Working Pressure	5.60~8.40kPa
Starting Pressure of Replenishment	<0.10MPa

Accessories

Ⓐ

15A Flange Gasket×2

Ⓑ

Bracket×2
15A U-Bolt×2
M5 Butterfly Nut×4
M5 Flat Washer×4
Tapping Screw×4

Ⓒ

Bracket×4
15A U-Bolt×4
M5 Butterfly Nut×8
M5 Flat Washer×8
Tapping Screw×8

Model Reference Guide

*If the specification you require is not offered in the table below, contact our local branch or agency.

ACO Without Leakage Detecting System	
ACO without Signal Transmitting Function	ACO with Signal Transmitting Function
Model	Model
AX-30A	TAX-30A
AX-30A(with BV)	TAX-30A(with BV)
AX-30A(without Flange)	TAX-30A(without Flange)
AX-30A-4H	TAX-30A-4H
AX-30A-4S	TAX-30A-4S
AX-30A-4H(with BV)	TAX-30A-4H(with BV)
AX-30A-4S(with BV)	TAX-30A-4S(with BV)
AX-30A-4TH	TAX-30A-4TH
AX-30A-4TS	TAX-30A-4TS
AX-30A-4TH(with BV)	TAX-30A-4TH(with BV)
AX-30A-4TS(with BV)	TAX-30A-4TS(with BV)
AX-30A-6H	TAX-30A-6H
AX-30A-6S	TAX-30A-6S
AX-30A-6H(with BV)	TAX-30A-6H(with BV)
AX-30A-6S(with BV)	TAX-30A-6S(with BV)
AX-30A-6TH	TAX-30A-6TH
AX-30A-6TS	TAX-30A-6TS
AX-30A-6TH(with BV)	TAX-30A-6TH(with BV)
AX-30A-6TS(with BV)	TAX-30A-6TS(with BV)
AX-30A-4JH	TAX-30A-4JH
AX-30A-4JS	TAX-30A-4JS
AX-30A-4JH(with BV)	TAX-30A-4JH(with BV)
AX-30A-4JS(with BV)	TAX-30A-4JS(with BV)
AX-30A-4JTH	TAX-30A-4JTH
AX-30A-4JTS	TAX-30A-4JTS
AX-30A-4JTH(with BV)	TAX-30A-4JTH(with BV)
AX-30A-4JTS(with BV)	TAX-30A-4JTS(with BV)
AX-30A-6JH	TAX-30A-6JH
AX-30A-6JS	TAX-30A-6JS
AX-30A-6JH(with BV)	TAX-30A-6JH(with BV)
AX-30A-6JS(with BV)	TAX-30A-6JS(with BV)
AX-30A-6JTH	TAX-30A-6JTH
AX-30A-6JTS	TAX-30A-6JTS
AX-30A-6JTH(with BV)	TAX-30A-6JTH(with BV)
AX-30A-6JTS(with BV)	TAX-30A-6JTS(with BV)

ACO Incorporating Leakage Detecting System	
ACO without Signal Transmitting Function	ACO with Signal Transmitting Function
Model	Model
AX-30HLU	TAX-30HLU
AX-30HLU(without Flange)	TAX-30HLU(without Flange)
AX-30HLU-4H	TAX-30HLU-4H
AX-30HLU-4S	TAX-30HLU-4S
AX-30HLU-4TH	TAX-30HLU-4TH
AX-30HLU-4TS	TAX-30HLU-4TS
AX-30HLU-6H	TAX-30HLU-6H
AX-30HLU-6S	TAX-30HLU-6S
AX-30HLU-6TH	TAX-30HLU-6TH
AX-30HLU-6TS	TAX-30HLU-6TS
AX-30HLU-4JH	TAX-30HLU-4JH
AX-30HLU-4JS	TAX-30HLU-4JS
AX-30HLU-4JTH	TAX-30HLU-4JTH
AX-30HLU-4JTS	TAX-30HLU-4JTS
AX-30HLU-6JH	TAX-30HLU-6JH
AX-30HLU-6JS	TAX-30HLU-6JS
AX-30HLU-6JTH	TAX-30HLU-6JTH
AX-30HLU-6JTS	TAX-30HLU-6JTS

*See page 97 regarding gas flow recorders.

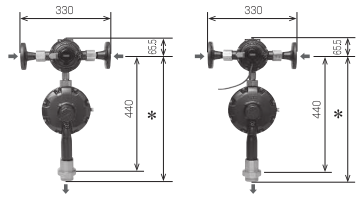
50kg/h Double Stage Automatic Changeover Regulators

Model Reference Guide

AX-50A
TAX-50A
AX-50AHL
TAX-50AHL
Model Code

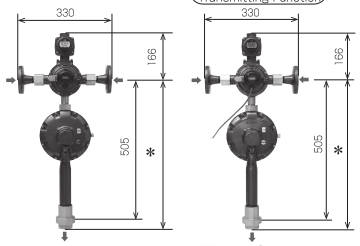
① Code	Outlet Connection	
	(T)AX-50A	(T)AX-50AHL
	Rc1 1/4 Union	*472 / *537
With BV	BV-32U Rc1 1/4 Ball Valve for Union	*520

※BV-32U provided with kit, not assembled.



AX-50A

TAX-50A
With Signal Transmitting Function



AX-50AHL
Inc. Leakage Detecting System

TAX-50AHL
With Signal Transmitting Function
Inc. Leakage Detecting System

Range Specification

Capaciy(Propane)	50kg/h
Inlet Pressure	0.10~1.56MPa
Outlet Pressure	2.55~3.30kPa
Lockup Pressure	≦3.50kPa
Safety Relief Valve Working Pressure	5.60~8.40kPa
Starting Pressure of Replenishment	< 0.10MPa
Inlet Connection	JIS20K20A Flange

Accessories

20A Flange Gasket×2

Model Reference Guide

*If the specification you require is not offered in the table below, contact our local branch or agency.

ACO Without Leakage Detecting System	
ACO without Signal Transmitting Function	ACO with Signal Transmitting Function
Model	Model
AX-50A	TAX-50A
AX-50A(with BV)	TAX-50A(with BV)

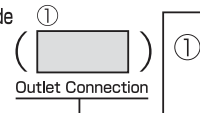
ACO Incorporating Leakage Detecting System	
ACO without Signal Transmitting Function	ACO with Signal Transmitting Function
Model	Model
AX-50AHL	TAX-50AHL

*See page 97 regarding gas flow recorders.

70kg/h Double Stage Automatic Changeover Regulators

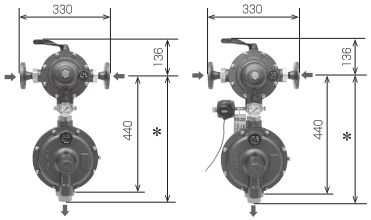
Model Reference Guide

AX-70
TAX-70
Model Code



① Code	Outlet Connection	
	Rc1 1/4 Union	*473
With BV	BV-32U Rc1 1/4 Ball Valve for Union	*520

* BV-32U provided with kit, not assembled.



AX-70

TAX-70
With Signal Transmitting Function

Range Specification

Capacity(Propane)	70kg/h
Inlet Pressure	0.10~1.56MPa
Outlet Pressure	2.55~3.30kPa
Lockup Pressure	≦3.50kPa
Safety Relief Valve Working Pressure	5.60~8.40kPa
Starting Pressure of Replenishment	< 0.10MPa
Inlet Connection	JIS20K20A Flange

Accessories

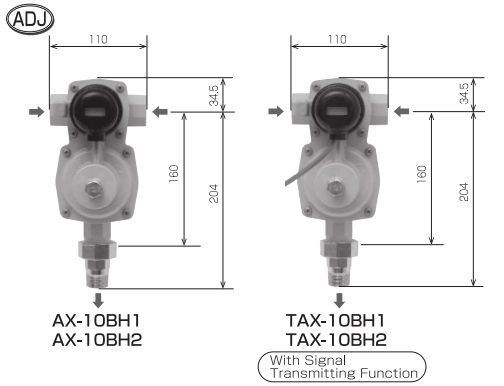
20A Flange Gasket×2

Model Reference Guide

*If the specification you require is not offered in the table below, contact our local branch or agency.

ACO without Signal Transmitting Function	ACO with Signal Transmitting Function
Model	Model
AX-70A	TAX-70A
AX-70A(with BV)	TAX-70A(with BV)

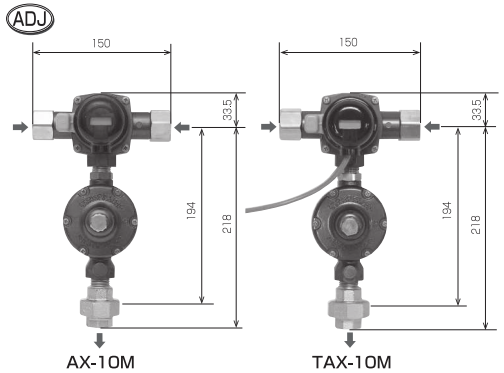
Variable Type Double Stage Automatic Changeover Regulators



AX-10BH1
AX-10BH2

TAX-10BH1
TAX-10BH2
With Signal Transmitting Function

Model	AX-10BH1	AX-10BH2
ACO with Signal Transmitting Function	TAX-10BH1	TAX-10BH2
Capacity(Propane)	10kg/h	
Inlet Pressure	0.10~1.56MPa	
Variable Outlet Pressure Range	3.50~5.50kPa	5.50~10.0kPa
Outlet Pressure	Set Point±20% kPa	
Lockup Pressure	≦Set Point+30% kPa	
Safety Relief Valve Working Pressure	Set Point+3.50~6.50kPa	
Inlet Connection	Rc1/2	
Outlet Connection	R3/4 Union	

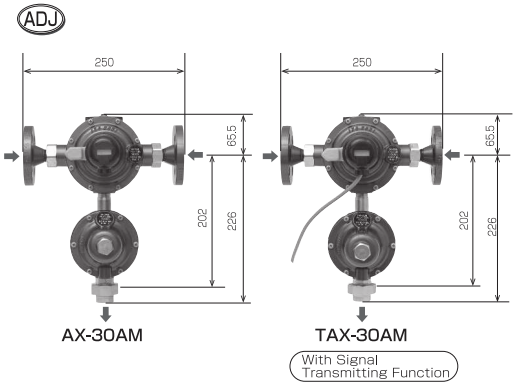


AX-10M

TAX-10M
With Signal Transmitting Function

Model	AX-10M
ACO with Signal Transmitting Function	TAX-10M
Capacity (Propane)	10kg/h
Inlet Pressure	0.20~1.56MPa
Variable Outlet Pressure Range	0.01~0.09MPa
Outlet Pressure	Set Point±20% MPa
Lockup Pressure	≦Set Point+30% MPa
Inlet Connection	Rc1/2 *
Outlet Connection	Rc1/2 Union

*The 4 or 6 cyls. kit is also available.



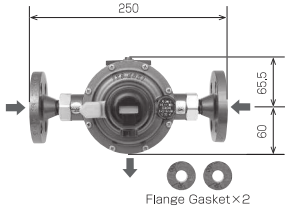
AX-30AM

TAX-30AM
With Signal Transmitting Function

Model	AX-30AM
ACO with Signal Transmitting Function	TAX-30AM
Capacity(Propane)	30kg/h
Inlet Pressure	0.20~1.56MPa
Variable Outlet Pressure Range	0.02~0.10MPa
Outlet Pressure	Set Point±20% MPa
Lockup Pressure	≦Set Point+30% MPa
Inlet Connection	JIS20K15A Flange
Outlet Connection	Rc1/2 Union
Accessories	15A Flange Gasket×2

Separate Type First Stage Automatic Changeover Regulators

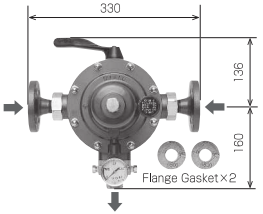
30kg/h



AX-30A-0

Inlet	JIS20K15A Flange
Outlet	Rc1/2

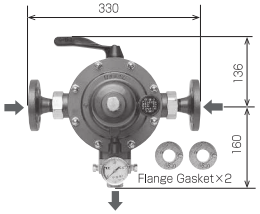
50kg/h



AX-50-0

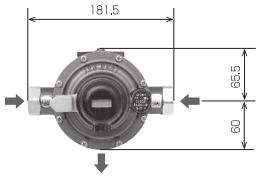
Inlet	JIS20K20A Flange
Outlet	R1

70kg/h



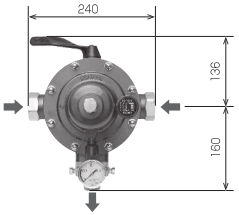
AX-70-0

Inlet	JIS20K20A Flange
Outlet	R1



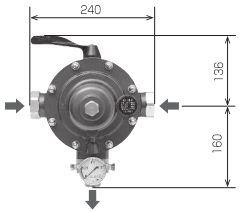
AX-30A-0 (without Flange)

Inlet	Rc1/2
Outlet	Rc1/2



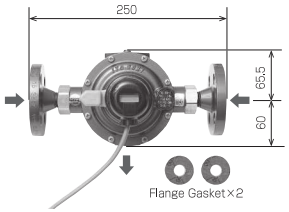
AX-50-0 (without Flange)

Inlet	Rc3/4
Outlet	R1



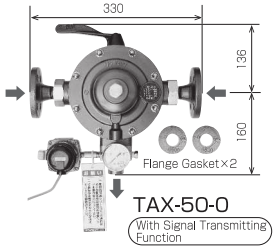
AX-70-0 (without Flange)

Inlet	Rc3/4
Outlet	R1



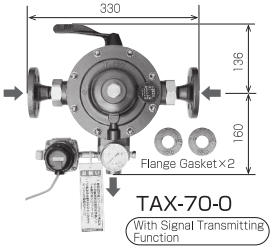
TAX-30A-0 (With Signal Transmitting Function)

Inlet	JIS20K15A Flange
Outlet	Rc1/2



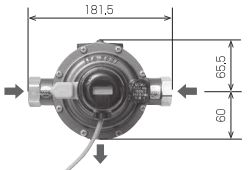
TAX-50-0 (With Signal Transmitting Function)

Inlet	JIS20K20A Flange
Outlet	R1



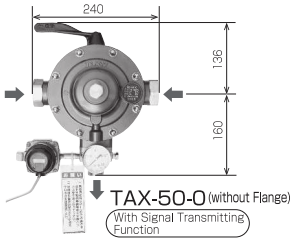
TAX-70-0 (With Signal Transmitting Function)

Inlet	JIS20K20A Flange
Outlet	R1



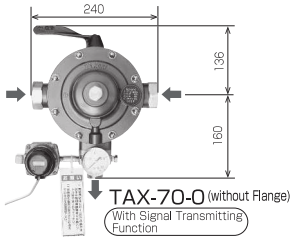
TAX-30A-0 (without Flange) (With Signal Transmitting Function)

Inlet	Rc1/2
Outlet	Rc1/2



TAX-50-0 (without Flange) (With Signal Transmitting Function)

Inlet	Rc3/4
Outlet	R1



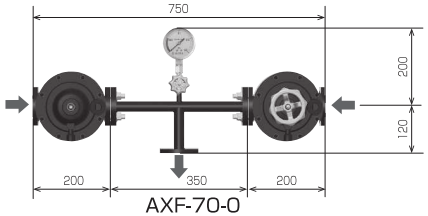
TAX-70-0 (without Flange) (With Signal Transmitting Function)

Inlet	Rc3/4
Outlet	R1

Range Specification

Inlet Pressure	0.10~1.56MPa	Outlet Pressure	0.032~0.083MPa	Lockup Pressure	≦0.095MPa

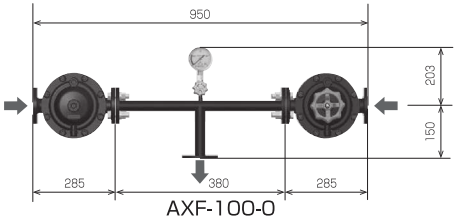
70kg/h



AXF-70-0

Inlet	JIS20K20A Flange
Outlet	JIS10K25A Flange

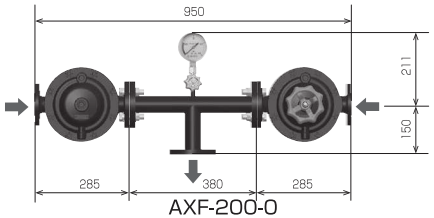
100kg/h



AXF-100-0

Inlet	JIS20K25A Flange
Outlet	JIS10K25A Flange

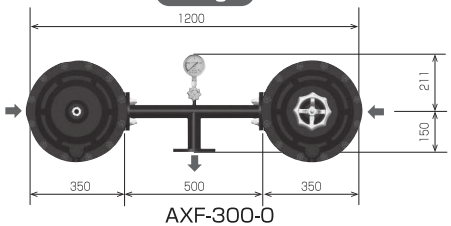
200kg/h



AXF-200-0

Inlet	JIS20K25A Flange
Outlet	JIS10K40A Flange

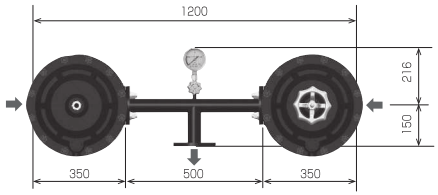
300kg/h



AXF-300-0

Inlet	JIS20K40A Flange
Outlet	JIS10K50A Flange

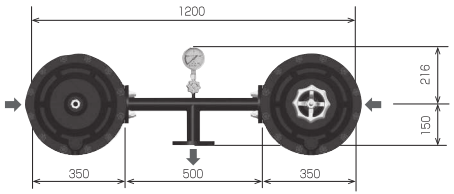
400kg/h



AXF-400-0

Inlet	JIS20K50A Flange
Outlet	JIS10K50A Flange

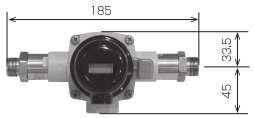
500kg/h



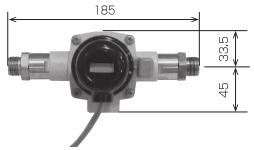
AXF-500-0

Inlet	JIS20K50A Flange
Outlet	JIS10K50A Flange

12kg/h



AX-12HP



TAX-12HP (With Signal Transmitting Function)

Specifications

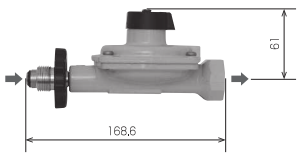
Inlet Pressure	0.20~1.60MPa
Outlet Pressure	0.12~0.18MPa
Lockup Pressure	≦0.195MPa
Inlet Connection	M20×1.5
Outlet Connection	Rp1/2

Single Stage Regulators

Range Specification

Inlet Pressure	0.07~1.56MPa	Outlet Pressure	2.30~3.30kPa
Lockup Pressure	≦3.50kPa	Safety Relief Valve Working Pressure	5.60~8.40kPa

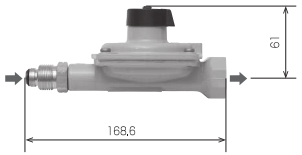
5kg/h



HS-5B (H)

Inlet	JIS POL Handwheel
Outlet	Rc1/2

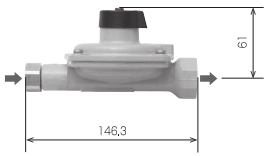
5kg/h



HS-5B (S)

Inlet	JIS POL Mechanical
Outlet	Rc1/2

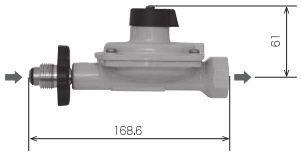
5kg/h



HS-5B (Rc1/4)

Inlet	Rc1/4
Outlet	Rc1/2

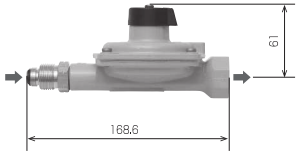
7kg/h



HS-7A (H)

Inlet	JIS POL Handwheel
Outlet	Rc1/2

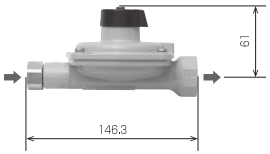
7kg/h



HS-7A (S)

Inlet	JIS POL Mechanical
Outlet	Rc1/2

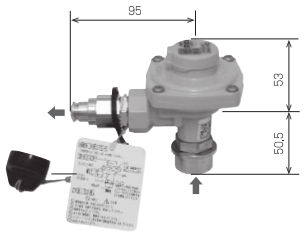
7kg/h



HS-7A (Rc1/4)

Inlet	Rc1/4
Outlet	Rc1/2

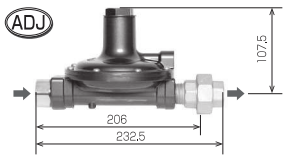
1kg/h



SHT-1B

Inlet	Clip On Connector
Outlet	Quick Coupling Adapter

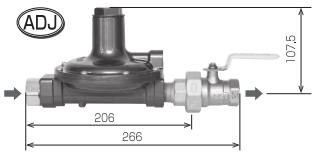
10kg/h



C-10A-1

Inlet	Rc1/2
Outlet	Rc3/4 Union

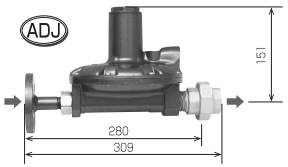
10kg/h



C-10A-1 (with BV)

Inlet	Rc1/2
Outlet	Rc3/4 Ball Valve for Union

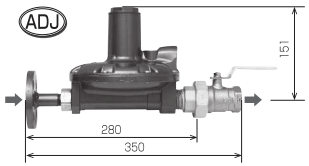
20kg/h



C-20-1

Inlet	JIS20K15A Flange
Outlet	Rc1 Union

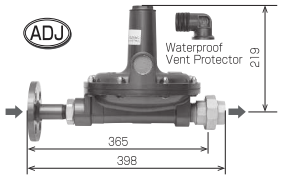
20kg/h



C-20-1 (with BV)

Inlet	JIS20K15A Flange
Outlet	Rc1 Ball Valve for Union

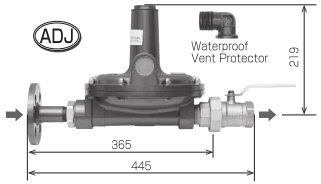
50kg/h



GL-50-1

Inlet	JIS20K25A Flange
Outlet	Rc1 1/4 Union

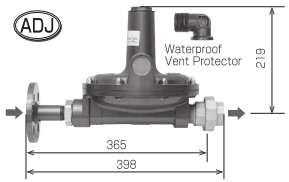
50kg/h



GL-50-1 (with BV)

Inlet	JIS20K25A Flange
Outlet	Rc1 1/4 Ball Valve for Union

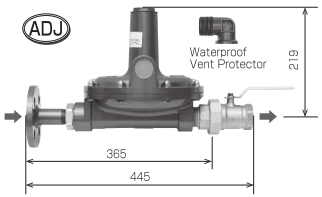
70kg/h



GL-70-1

Inlet	JIS20K25A Flange
Outlet	Rc1 1/4 Union

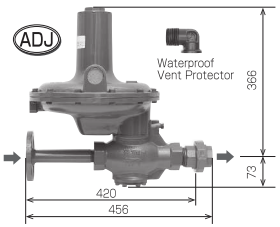
70kg/h



GL-70-1 (with BV)

Inlet	JIS20K25A Flange
Outlet	Rc1 1/4 Ball Valve for Union

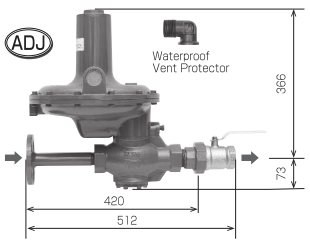
100kg/h



G-32A-1

Inlet	JIS20K25A Flange
Outlet	Rc1 1/2 Union

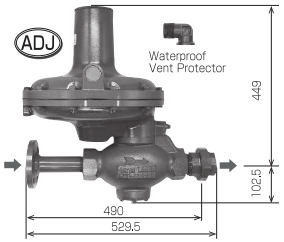
100kg/h



G-32A-1 (with BV)

Inlet	JIS20K25A Flange
Outlet	Rc1 1/2 Ball Valve for Union

200kg/h



G-36C-1

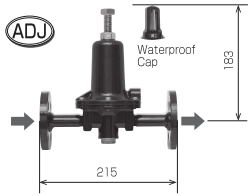
Inlet	JIS20K40A Flange
Outlet	Rc2 Union

First Stage Regulators

Range Specification

Inlet Pressure	0.10~1.56MPa	Outlet Pressure	0.057~0.083MPa	Lockup Pressure	≦0.095MPa

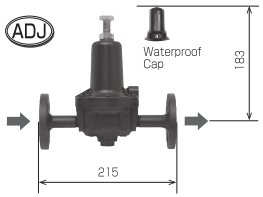
30kg/h



CM-100

Inlet	JIS20K15A Flange
Outlet	JIS10K15A Flange

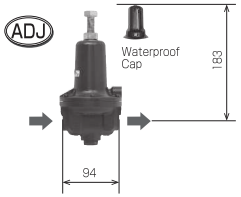
30kg/h



CM-100A

Inlet	JIS20K15A Flange
Outlet	JIS10K15A Flange

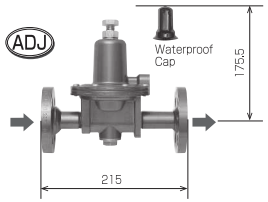
30kg/h



CM-100A (without Flange)

Inlet	Rc1/2
Outlet	Rc1/2

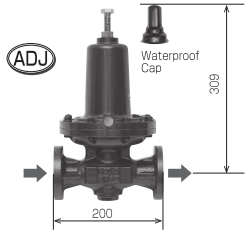
50kg/h



GM-50

Inlet	JIS20K20A Flange
Outlet	JIS10K20A Flange

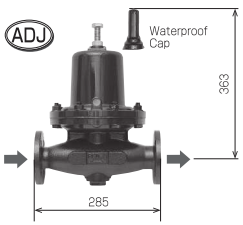
70kg/h



GMF-70

Inlet	JIS20K20A Flange
Outlet	JIS10K20A Flange

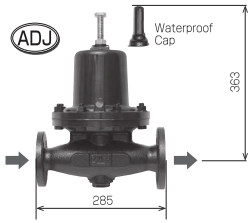
100kg/h



GMF-100

Inlet	JIS20K25A Flange
Outlet	JIS10K25A Flange

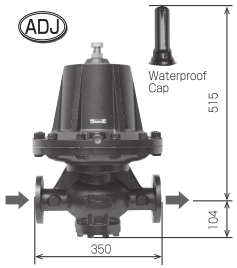
200kg/h



GMF-200

Inlet	JIS20K25A Flange
Outlet	JIS10K40A Flange

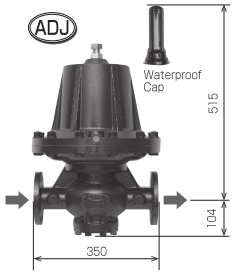
300kg/h



GMF-300

Inlet	JIS20K40A Flange
Outlet	JIS10K40A Flange

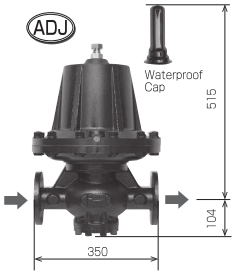
400kg/h



GMF-400

Inlet	JIS20K50A Flange
Outlet	JIS10K50A Flange

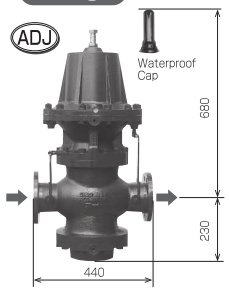
500kg/h



GMF-500

Inlet	JIS20K50A Flange
Outlet	JIS10K50A Flange

1000kg/h



GM-1000

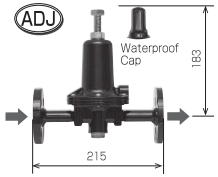
Inlet	JIS20K80A Flange
Outlet	JIS10K80A Flange

For 0.30MPa Outlet

Range Specification

Inlet Pressure	0.40~1.56MPa	Outlet Pressure	0.24~0.36MPa	Lockup Pressure	≦0.39MPa

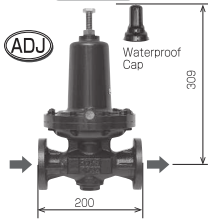
30kg/h



CM-100 3K

Inlet	JIS20K15A Flange
Outlet	JIS10K15A Flange

70kg/h



GMF-70 3K

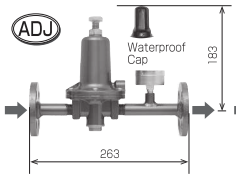
Inlet	JIS20K20A Flange
Outlet	JIS10K20A Flange

For Vaporiser (SMV)

Range Specification

Inlet Pressure	0.07~0.96MPa	Outlet Pressure	0.032~0.083MPa	Lockup Pressure	≦0.095MPa

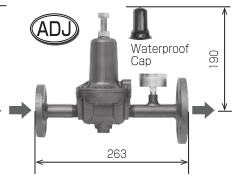
30kg/h



CM-30VS

Inlet	JIS10K15A Flange
Outlet	JIS10K15A Flange

50kg/h



CM-50VS

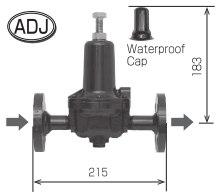
Inlet	JIS10K20A Flange
Outlet	JIS10K25A Flange

For Vaporiser

Range Specification

Inlet Pressure	0.10~1.56MPa	Outlet Pressure	0.032~0.083MPa	Lockup Pressure	≦0.095MPa

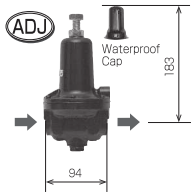
50kg/h



CM-50V

Inlet	JIS20K20A Flange
Outlet	JIS10K20A Flange

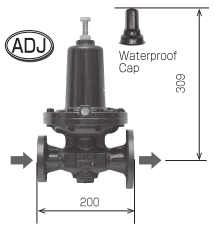
50kg/h



CM-50V (without Flange)

Inlet	Rc3/4
Outlet	Rc3/4

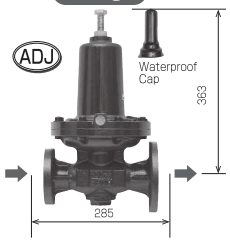
100kg/h



GMF-100V

Inlet	JIS20K20A Flange
Outlet	JIS10K25A Flange

300kg/h



GMF-300V

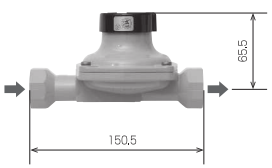
Inlet	JIS20K25A Flange
Outlet	JIS10K40A Flange

Second Stage Regulators

Range Specification

Inlet Pressure	0.025~0.10MPa	Outlet Pressure	2.30~3.30kPa	Lockup Pressure	≦ 3.50kPa	Safety Relief Valve Working Pressure	5.60~8.40kPa

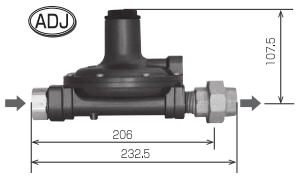
4kg/h



H-4A-2

Inlet	Rc1/2
Outlet	Rc1/2

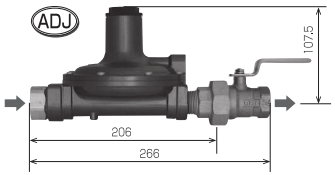
15kg/h



C-10A-2

Inlet	Rc1/2
Outlet	Rc3/4 Union

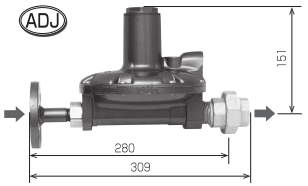
15kg/h



C-10A-2 (with BV)

Inlet	Rc1/2
Outlet	Rc3/4 Ball Valve for Union

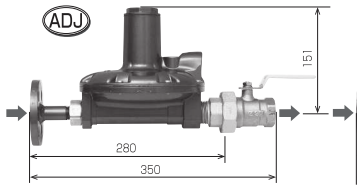
30kg/h



C-20-2

Inlet	JIS10K15A Flange
Outlet	Rc1 Union

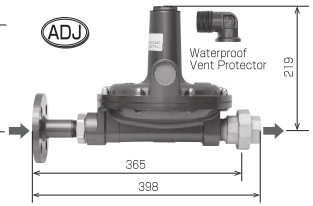
30kg/h



C-20-2 (with BV)

Inlet	JIS10K15A Flange
Outlet	Rc1 Ball Valve for Union

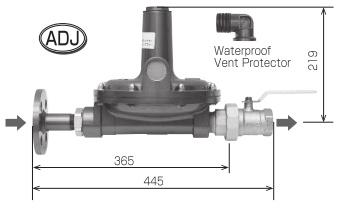
50kg/h



GL-50-2

Inlet	JIS10K25A Flange
Outlet	Rc1 1/4 Union

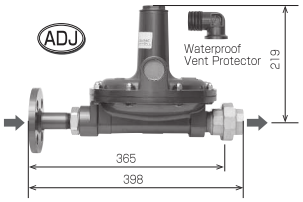
50kg/h



GL-50-2 (with BV)

Inlet	JIS10K25A Flange
Outlet	Rc1 1/4 Ball Valve for Union

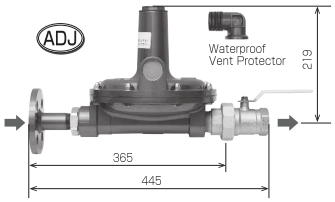
70kg/h



GL-70-2

Inlet	JIS10K25A Flange
Outlet	Rc1 1/4 Union

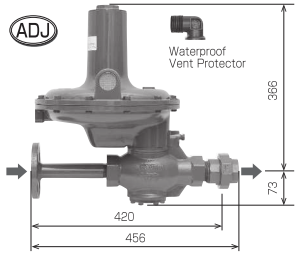
70kg/h



GL-70-2 (with BV)

Inlet	JIS10K25A Flange
Outlet	Rc1 1/4 Ball Valve for Union

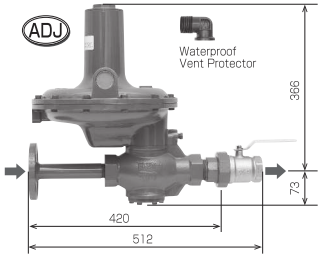
100kg/h



G-32A-2

Inlet	JIS10K25A Flange
Outlet	Rc1 1/2 Union

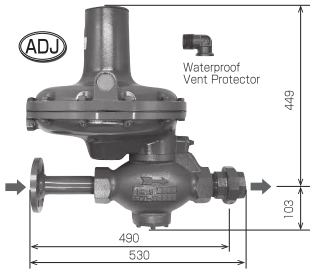
100kg/h



G-32A-2 (with BV)

Inlet	JIS10K25A Flange
Outlet	Rc1 1/2 Ball Valve for Union

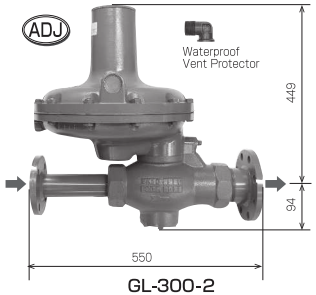
200kg/h



G-36C-2

Inlet	JIS10K40A Flange
Outlet	Rc2 Union

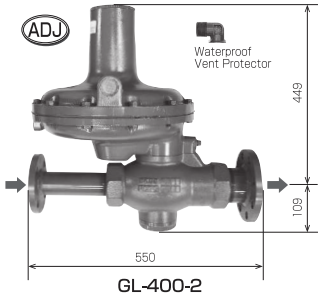
300kg/h



GL-300-2

Inlet	JIS10K50A Flange
Outlet	JIS10K80A Flange

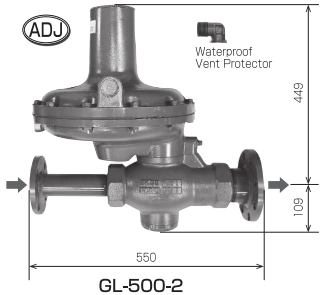
400kg/h



GL-400-2

Inlet	JIS10K50A Flange
Outlet	JIS10K80A Flange

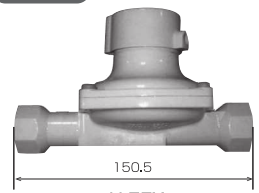
500kg/h



GL-500-2

Inlet	JIS10K50A Flange
Outlet	JIS10K80A Flange

5kg/h Convertible to (4.0N/m³/h in NG)

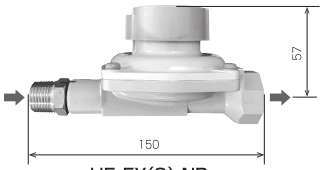


H-5EX

Specifications

Gas Type	LPG	NG
Inlet Pressure	0.025~0.30MPa	0.03~0.5MPa
Outlet Pressure	2.80±0.50kPa	2.00±0.50kPa
Lockup Pressure	≦3.50kPa	≦2.70kPa
Inlet	Rc1/2	
Outlet	Rc1/2	

6kg/h Convertible to (5.5N/m³/h in NG)

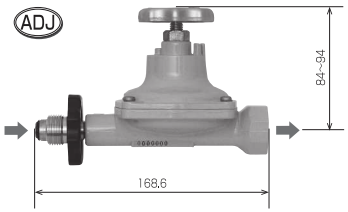


H5-EX(S)-NR

Specifications

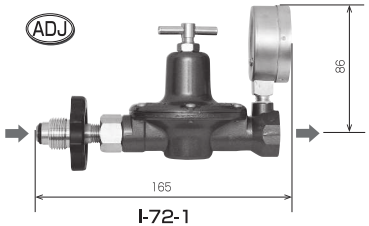
Gas Type	LPG	NG
Inlet Pressure	0.03~0.15 MPa	0.03~0.20 MPa
Outlet Pressure	2.52~3.4 kPa	1.84~2.48 kPa
Lockup Pressure	≦3.50kPa	≦2.70kPa
Inlet	R1/2	
Outlet	Rc1/2	

Variable Type Pressure Regulators



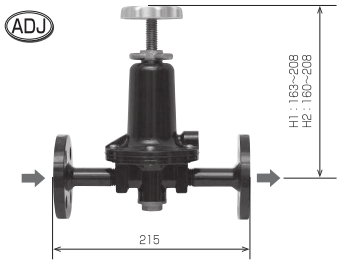
H-4A-H·H

Model	H-4A-H·H
Capacity(Propane)	4kg/h
Inlet Pressure	0.07~1.56MPa
Variable Outlet Pressure Range	4.50~7.00kPa
Outlet Pressure	Set Point±20% kPa
Lockup Pressure	≦Set Point+30% kPa
Safety Relief Valve Working Pressure	Set Point +4.30~4.80kPa
Inlet Connection	JIS POL with Handwheel
Outlet Connection	Rc1/2



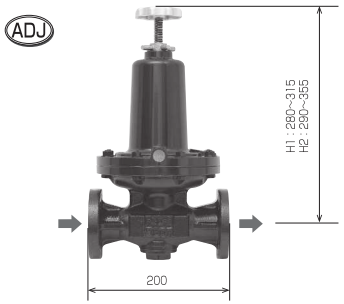
I-72-1
I-72-2
I-72-3

Model	I-72-1	I-72-2	I-72-3
Capacity(Propane)	5kg/h		
Inlet Pressure	0.13~1.56MPa	0.17~1.56MPa	0.40~1.56MPa
Variable Outlet Pressure Range	0.01~0.07MPa	0.01~0.16MPa	0.01~0.35MPa
Outlet Pressure	Set Point±20% MPa		
Lockup Pressure	≦Set Point+30% MPa		
Inlet Connection	JIS POL with Handwheel		
Outlet Connection	Rc1/2		



CM-100-H1
CM-100-H2

Model	CM-100-H1	CM-100-H2
Capacity(Propane)	30kg/h	
Inlet Pressure	0.10~1.56MPa	0.07~0.40MPa
Variable Outlet Pressure Range	0.03~0.15MPa	0.00~0.04MPa
Outlet Pressure	Set Point±20% MPa	
Lockup Pressure	≦Set Point+30% MPa	
Inlet Connection	JIS20K15A Flange	
Outlet Connection	JIS10K15A Flange	

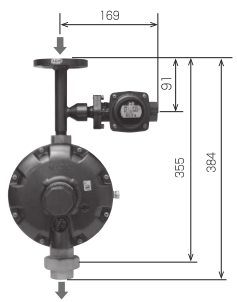


GMF-70-H1
GMF-70-H2

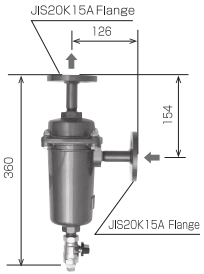
Model	GMF-70-H1	GMF-70-H2
Capacity(Propane)	70kg/h	
Inlet Pressure	0.10~1.56MPa	0.07~0.40MPa
Variable Outlet Pressure Range	0.03~0.15MPa	0.00~0.04MPa
Outlet Pressure	Set Point±20% MPa	
Lockup Pressure	≦Set Point+30% MPa	
Inlet Connection	JIS20K20A Flange	
Outlet Connection	JIS10K20A Flange	

Second Stage Regulators Incorporating Leakage Detecting System

30kg/h



GL-30HL

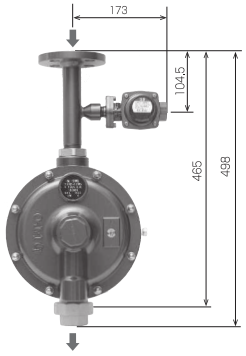


Drainage Trap
DPM-15A
Supplied by ITO.

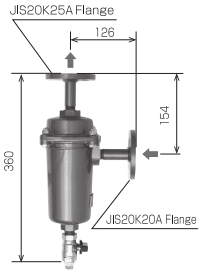
Model		GL-30HL
Capacity(Propane)		30kg/h
Inlet Pressure		0.025~0.15MPa
Outlet Pressure		2.30~3.30kPa
Lockup Pressure		≦3.50kPa
Safety Relief Valve Working Pressure		5.60~8.40kPa
Minimum Working Flow Rate of Main Regulator		0.4±0.38kg/h
Maximum Flow Rate of Sub Regulator		0.5kg/h
Inlet Connection		JIS10K15A Flange
Outlet Connection	Main Reg.	Rc1 Union
	Sub Reg.	Rc1/2

*See page 97 regarding gas flow recorders.

50kg/h 70kg/h



GL-50HL、GL-70HL

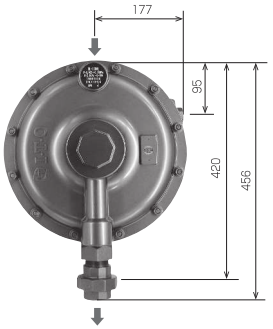


Drainage Trap
DPM-20A
Supplied by ITO.

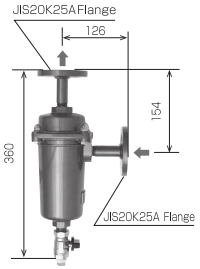
Model		GL-50HL	GL-70HL
Capacity(Propane)		50kg/h	70kg/h
Inlet Pressure		0.025~0.15MPa	
Outlet Pressure		2.30~3.30kPa	
Lockup Pressure		≦3.50kPa	
Safety Relief Valve Working Pressure		5.60~8.40kPa	
Minimum Working Flow Rate of Main Regulator		0.4±0.38kg/h	
Maximum Flow Rate of Sub Regulator		0.5kg/h	
Inlet Connection		JIS10K25A Flange	
Outlet Connection	Main Reg.	Rc1 1/4 Union	
	Sub Reg.	Rc1/2	

*See page 97regarding gas flow recorders.

100kg/h



GL-100HL



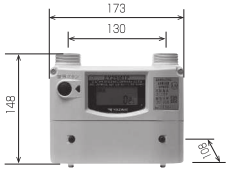
Drainage Trap
DPM-25A
Supplied by ITO.

Model		GL-100HL
Capacity(Propane)		100kg/h
Inlet Pressure		0.025~0.15MPa
Outlet Pressure		2.30~3.30kPa
Lockup Pressure		≦3.50kPa
Safety Relief Valve Working Pressure		5.60~8.40kPa
Minimum Working Flow Rate of Main Regulator		0.4±0.38kg/h
Maximum Flow Rate of Sub Regulator		0.5kg/h
Inlet Connection		JIS10K25A Flange
Outlet Connection	Main Reg.	Rc1 1/2 Union
	Sub Reg.	Rc1/2

*See page 97 regarding gas flow recorders.

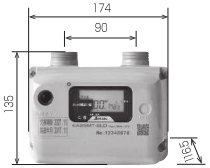
Gas Flow Recorders

By Yazaki Energy System Corp.

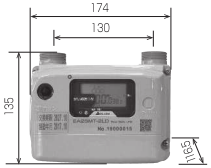


EY25MTP-YL

By Aichi Tokei Denki Co., Ltd.



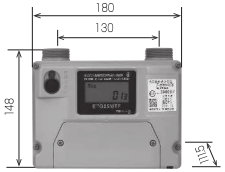
RicomirE



Ricomir II E

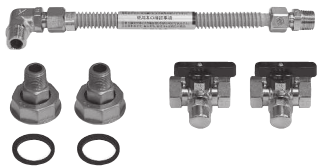
EA25MT-2LD

By TOYO GAS METER Co., Ltd.



ETG25MTF

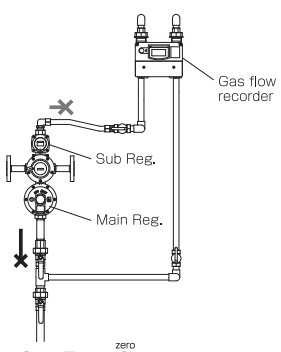
Accessories



Flexible Metal Hose(15A)×1
Gas Meter Union(15A)& Gasket×2
Gas Ball Valve with Inspection Port(15A)×2

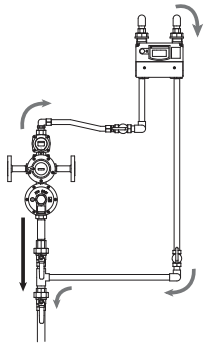
Made By	Yazaki Energy System Corp.	Aichi Tokei Denki Co., Ltd.		TOYO GAS METER Co., Ltd.
Model	EY25MTP-YL	EA25MT-2LD		ETG25MTF
		RicomirE	Ricomir II E	
Connector Spacing	130mm	90mm	130mm	130mm
Connections	M36×2			
Air-Tightness Test	10.0kPa			
Working Pressure	≦ 3.50kPa			
Alert When	1. Small Gas Leak Detected 2. Lockup Pressure over Limit 3. Supply Pressure out of Range 4. Low Battery 5. Approval Certification Expired			
Auto Shut-Off When	1. Pressure Too Low 2. Safety Check, On-Going Reset Procedure 3. Functional Test 4. Low Battery 5. Approval Certification Expired			
Alert & Shut-Off Indication	LCD and Red Diode Flashing			

How to Detect Gas Leakage in the Underground Pipeline

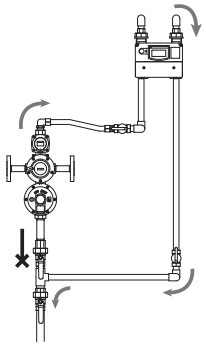


Gas Flow: 0 (zero)

Main: Open / Sub: Close

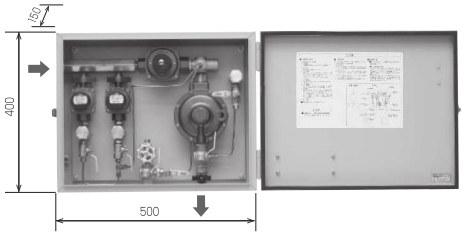


Gas Flow : High
(Gas is consumed)
Main: Open / Sub: Open

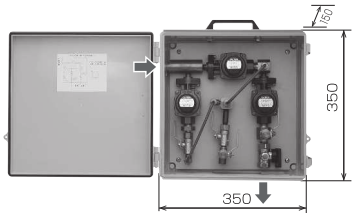


Gas Flow : Low
(Monitoring Gas Leakage)
The gas flow recorder constantly monitors gas flow through sub reg. When the gas flow is low, only the valve of sub regulator is open.

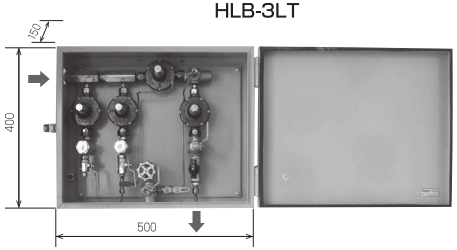
Pressure Monitoring Type Gas Leakage Detecting Cabinets



HLB-3
HLB-5
*Only include the cabinet dimensions.



HLB-3LT



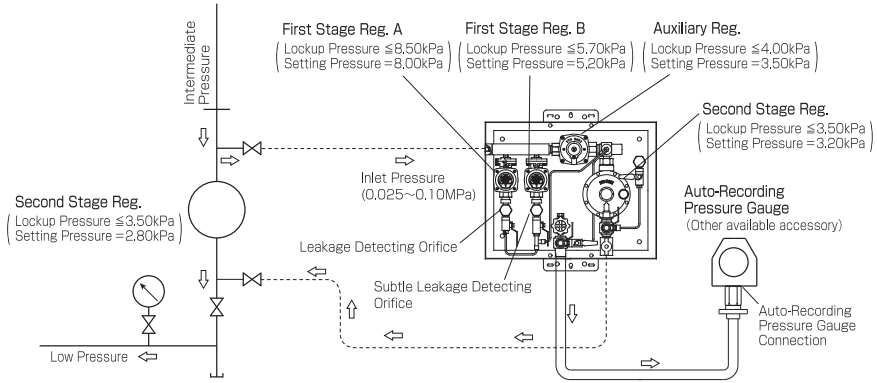
HLB-6M

Model		HLB-3 HLB-3LT	HLB-5
Inlet Pressure		0.025~0.10MPa	
Outlet Pressure		3.20±0.10kPa	
Capacity(Propane)		0.2kg/h	
Lockup Pressure		≦ 3.50kPa	
Minimum Detectable Leak Rate		3ℓ/h	5ℓ/h
Detected Pressure	No Leakage	8.00±0.50kPa	
	Min. Gas Leakage	6.00±0.25kPa	
	10ℓ/h Gas Leakage	5.25±0.25kPa	5.35±0.25kPa
	18ℓ/h Gas Leakage	4.40±0.40kPa	4.60±0.40kPa
Inlet Connection		Rc1/4	
Outlet Connection		Rc1/2	
Auto-Recording Pressure Gauge Connection		G3/8	
Installation Method		Wall Mounted	

Model		HLB-6M
Inlet Pressure		0.20~0.40MPa
Applicable Outlet Pressure Range		10.0~150kPa*1
Capacity(Propane)		0.2kg/h
Lockup Pressure		≦ 37.0kPa*2
Minimum Detectable Leak Rate		6ℓ/h
Detected Pressure	No Leakage	180±15.0kPa
	Min. Gas Leakage	150±10.0kPa
	18ℓ/h Gas Leakage	115±10.0kPa
Inlet Connection		Rc1/4
Outlet Connection		Rc1/2
Auto-Recording Pressure Gauge Connection		Rc1/4
Installation Method		Wall Mounted

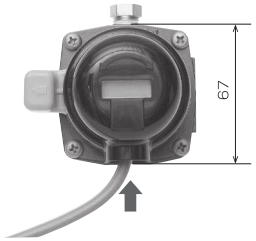
*1 Interchangeable springs are available.
*2 Based on 25.0kPa setting pressure.

Flow Chart of HLB-3,HLB-5



Signal Transmitting System, Relay Barrier

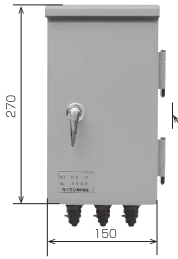
Changeover Indicator

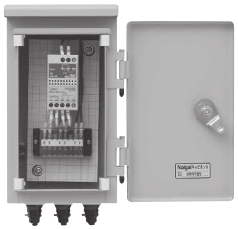


PS-05K

Working Pressure	≦ 0.20MPa
Signal Set Point	55.0±2.00kPa
Connection	Rc1/4
Contact Form	Non-Voltage, Normally Open Cotact
Max. Allowable Voltage	DC200V
Max. Allowable Current	DC0.5A
Contact Resistance	≦ 1.0Ω
Lead Wire	VCTF0.5mm²(2 conductors)×1m

Relay Barrier

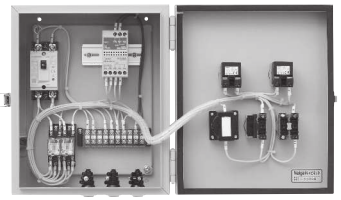




RS-2

Type of Protection	Intrinsic Safety
Rated Voltage	AC100V～240V 50/60Hz
Power Consumption	9.6VA

Changeover Alarm Box Incorporating with a Relay Barrier

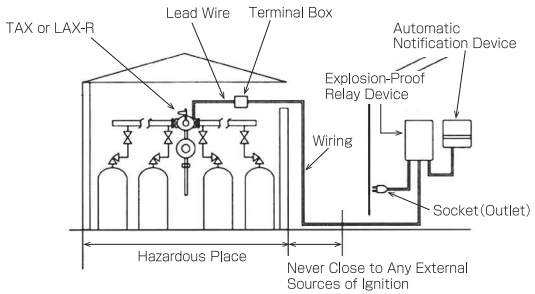


IB-EXA

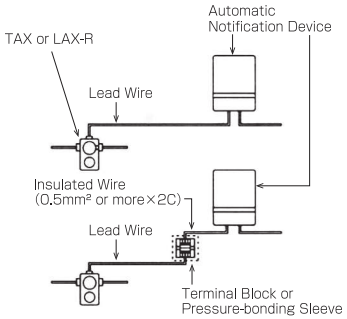
Type of Protection	Intrinsic Safety
Rated Voltage	AC100V(AC200V) 50/60Hz
Power Consumption	100V : 11VA 200V : 11.9V

Application

Installation in a Hazardous Place

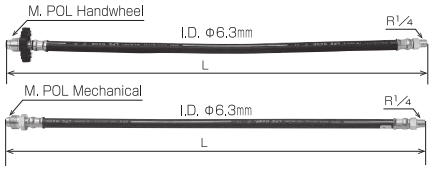


Installation in a Non-Hazardous Place



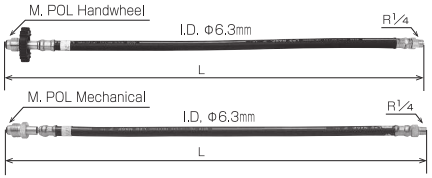
Hoses

High Pressure Hose(HP)



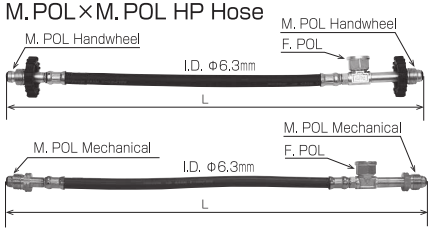
Model				
	Handwheel	IHS-6-6HQ	IHS-6-10HQ	IHS-6-12HQ
	Mechanical	IHS-6-6S	IHS-6-10S	IHS-6-12S
Length(L)		650mm	1050mm	1200mm

Tensile Triggered HP Hose



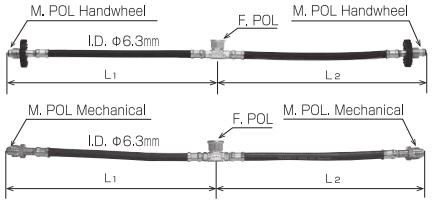
Model				
	Handwheel	TIH-6-6HQ	TIH-6-10HQ	TIH-6-12HQ
	Mechanical	TIH-6-6S	TIH-6-10S	TIH-6-12S
Length(L)		650mm	1050mm	1200mm

M. POL×M. POL HP Hose



Model	NCH-1	NC-1	NCH-2	NC-2	NCH-8	NC-8
Length(L)	550mm		750mm		1200mm	

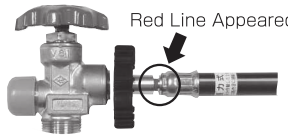
Supplied by ITO.



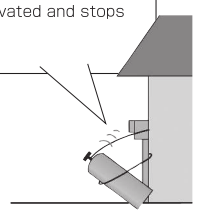
Model	NCH-3	NC-3	NCH-4	NC-4
Length(L1×L2)	400×400mm	400×400mm	600×600mm	600×600mm

Supplied by ITO.

Tensile Trigger Shut-Off Valve (Shut-Off Situation)



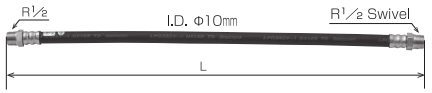
When abnormal tension is applied to the hose, the stop valve built in the connector body is activated and stops the gas supply.



HP Hose with Liquid Non-Return Valve

Model	LIHS-6-6HH	LIHS-6-10HH	LIHS-6-15HH
Length(L)	650mm	1050mm	1500mm

Outdoor Low Pressuer Hose



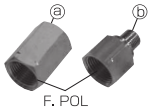
Model	10×600FS	10×900FS
Length(L)	600mm	900mm

Supplied by ITO.

HP Hose O-Ring

POL Adapters

Model	PC-106	PC-112	PC-115
Connection ⓐ	Rc1/4	Rc3/8	Rc1/2



Model	PC-206	PC-212	PC-215	PC-220
Connection ⓑ	R1/4	R3/8	R1/2	R3/4

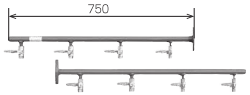
*All the POL connections are JIS POL according to JIS B 8245.

High Pressure Manifold Assembly Kits

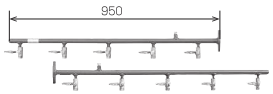
15A Unilateral Flange Type

PHW-4B

PHW-6B

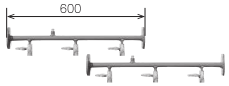


PHW-8B

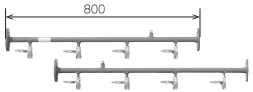


PHW-10B

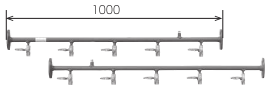
15A Bilateral Flange Type



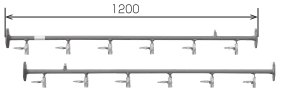
PHW-6FB



PHW-8FB



PHW-10FB



PHW-12FB

With High Pressure Hoses

Model	High Pressure Hose(Provided with Kit) L×q'ty	Connector	Accs.
PHW-4B-H	600mm×4	Handwheel	Ⓐ
PHW-4B-S	600mm×4	Mechanical	
PHW-4B-TH	600mm×4	Handwheel Inc.Tensile Trigger Shut-Off Valve	
PHW-4B-TS	600mm×4	Mechanical Inc.Tensile Trigger Shut-Off Valve	

Model	High Pressure Hose(Provided with Kit) L×q'ty	Connector	Accs.
PHW-6B-H	600mm ×4 1000mm×2	Handwheel	Ⓑ
PHW-6B-S	600mm ×4 1000mm×2	Mechanical	
PHW-6B-TH	600mm ×4 1000mm×2	Handwheel Inc.Tensile Trigger Shut-Off Valve	
PHW-6B-TS	600mm ×4 1000mm×2	Mechanical Inc.Tensile Trigger Shut-Off Valve	

Model	High Pressure Hose(Provided with Kit) L×q'ty	Connector	Accs.
PHW-8B-H	600mm ×4 1000mm×4	Handwheel	Ⓑ
PHW-8B-S	600mm ×4 1000mm×4	Mechanical	
PHW-8B-TH	600mm ×4 1000mm×4	Handwheel Inc.Tensile Trigger Shut-Off Valve	
PHW-8B-TS	600mm ×4 1000mm×4	Mechanical Inc.Tensile Trigger Shut-Off Valve	

Model	High Pressure Hose(Provided with Kit) L×q'ty	Connector	Accs.
PHW-10B-H	600mm ×6 1000mm×4	Handwheel	Ⓑ
PHW-10B-S	600mm ×6 1000mm×4	Mechanical	
PHW-10B-TH	600mm ×6 1000mm×4	Handwheel Inc.Tensile Trigger Shut-Off Valve	
PHW-10B-TS	600mm ×6 1000mm×4	Mechanical Inc.Tensile Trigger Shut-Off Valve	

Model	High Pressure Hose(Provided with Kit) L×q'ty	Connector	Accs.
PHW-6FB-H	600mm ×4 1000mm×2	Handwheel	Ⓒ
PHW-6FB-S	600mm ×4 1000mm×2	Mechanical	
PHW-6FB-TH	600mm ×4 1000mm×2	Handwheel Inc.Tensile Trigger Shut-Off Valve	
PHW-6FB-TS	600mm ×4 1000mm×2	Mechanical Inc.Tensile Trigger Shut-Off Valve	

Model	High Pressure Hose(Provided with Kit) L×q'ty	Connector	Accs.
PHW-8FB-H	600mm ×4 1000mm×4	Handwheel	Ⓒ
PHW-8FB-S	600mm ×4 1000mm×4	Mechanical	
PHW-8FB-TH	600mm ×4 1000mm×4	Handwheel Inc.Tensile Trigger Shut-Off Valve	
PHW-8FB-TS	600mm ×4 1000mm×4	Mechanical Inc.Tensile Trigger Shut-Off Valve	

Model	High Pressure Hose(Provided with Kit) L×q'ty	Connector	Accs.
PHW-10FB-H	600mm ×6 1000mm×4	Handwheel	Ⓒ
PHW-10FB-S	600mm ×6 1000mm×4	Mechanical	
PHW-10FB-TH	600mm ×6 1000mm×4	Handwheel Inc.Tensile Trigger Shut-Off Valve	
PHW-10FB-TS	600mm ×6 1000mm×4	Mechanical Inc.Tensile Trigger Shut-Off Valve	

Model	High Pressure Hose(Provided with Kit) L×q'ty	Connector	Accs.
PHW-12FB-H	600mm ×6 1000mm×6	Handwheel	Ⓒ
PHW-12FB-S	600mm ×6 1000mm×6	Mechanical	
PHW-12FB-TH	600mm ×6 1000mm×6	Handwheel Inc.Tensile Trigger Shut-Off Valve	
PHW-12FB-TS	600mm ×6 1000mm×6	Mechanical Inc.Tensile Trigger Shut-Off Valve	

Accessories

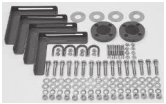
Ⓐ

Bracket×2
Anchor Bolt with Nut×4
15A U Bolt with Nut×2
M12 Bolt×8
M12 Nut×8
M12 Spring Washer×8
M12 Flat Washer×16
15A Flange Gasket×2

Ⓑ

Bracket×4
Anchor Bolt with Nut×8
15A U Bolt with Nut×4
M12 Bolt×8
M12 Nut×8
M12 Spring Washer×8
M12 Flat Washer×16
15A Flange Gasket×2

Ⓒ



Bracket×4
Anchor Bolt with Nut×8
15A U Bolt with Nut×4
M12 Bolt×16
M12 Nut×16
M12 Spring Washer×16
M12 Flat Washer×32
15A Flange Gasket×4
15A Cap Flange×2

Other Available Accessories

Flange Gasket

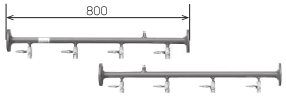
Model
15A Flange Gasket
20A Flange Gasket
25A Flange Gasket
40A Flange Gasket
50A Flange Gasket

Bolt, Nut, Washer

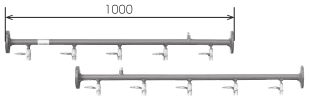
Model
15A U-Bolt with Nut for PHW
20A U-Bolt with Nut for PHW

Model
M12×55mm Bolt/ Nut/Spring Washer
M12×55mm Bolt/ Nut/ Spring Washer/ Flat Washer
M12 Flat Washer
M16×55mm Bolt/ Nut/ Spring Washer

20A Bilateral Flange Type

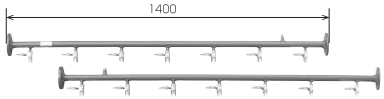


PHW-20-8F

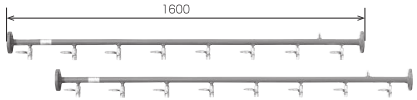


PHW-20-10F

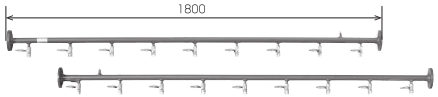
PHW-20-12F



PHW-20-14F



PHW-20-16F



PHW-20-18F

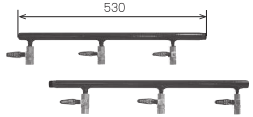
Bracket×4
Anchor Bolt with Nut×8
U Bolt with Nut×4
M12 Bolt×16
M12 Nut×16
M12 Spring Washer×16
M12 Flat Washer×32
20A Flange Gasket×4
20A Cap Flange ×2

PHW-20 Accessories
(Other Available Accessories)

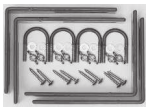
15A Thread Type

PHW-4R

Accessories
Bracket×2
15A U Bolt×2
M5 Butterfly Nut×4
M5 Flat Washer×4
Tapping Screw×4

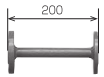


PHW-6R

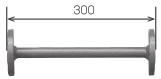


Accessories
Bracket×4
15A U Bolt×4
M5 Butterfly Nut×8
M5 Flat Washer×8
Tapping Screw×8

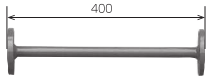
15A Straight Flange Connector



PHW Ⅰ-200

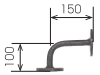


PHW Ⅰ-300

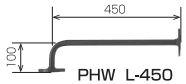


PHW Ⅰ-400

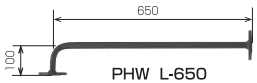
15A Angle Flange Connector



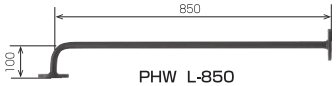
PHW L-150



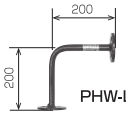
PHW L-450



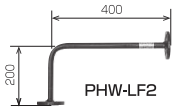
PHW L-650



PHW L-850



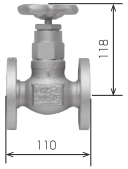
PHW-LF



PHW-LF2

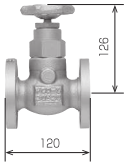
Valves

Globe Valve



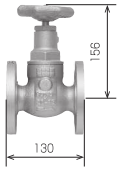
D1-15F

Conn.	JIS20K15A Flange



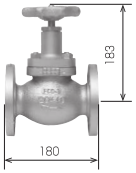
D1-20F

Conn.	JIS20K20A Flange



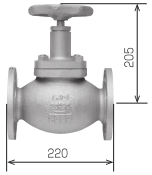
D1-25F

Conn.	JIS20K25A Flange



D1-40F

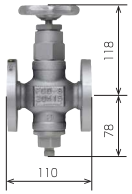
Conn.	JIS20K40A Flange



D1-50F

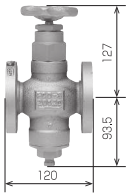
Conn.	JIS20K50A Flange

Strainer Incorporated



D7-15F

Conn.	JIS20K15A Flange



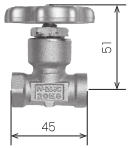
D7-20F

Conn.	JIS20K20A Flange

D7-25F

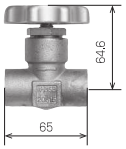
Conn.	JIS20K25A Flange

As Stop Valve



IV-206C

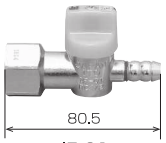
Conn.	Rc1/4



IV-215B

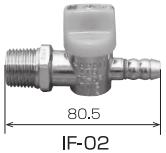
Conn.	Rc1/2

Gas Valve



IF-01
IF-01E

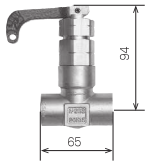
Model	Inlet	Outlet	Excess Flow Valve
IF-01	Rc1/2	Φ9.5 Hose Nozzle	N/A
IF-01E	Rc1/2	Φ9.5 Hose Nozzle	✓



IF-02
IF-02E

Model	Inlet	Outlet	Excess Flow Valve
IF-02	R1/2	Φ9.5 Hose Nozzle	N/A
IF-02E	R1/2	Φ9.5 Hose Nozzle	✓

Orifice Valve

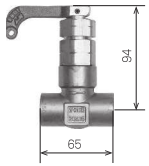


IV-215BE

Conn.	Rc1/2

*See page 106.

Blow Valve

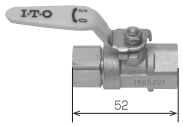


IV-215BU

Conn.	Rc1/2

*See page 106.

Ball Valve

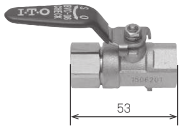


BV-206

Conn.	Rc1/4

*NPT connection is also available.

Inc. Check Valve

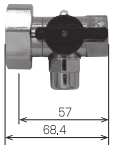


BVC-06

Conn.	Rc1/4

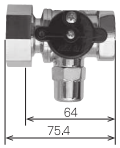
*NPT connection is also available.

With Inspection Port



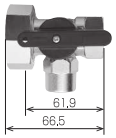
MB-40CU

Inlet	M35×2
Outlet	Rc1/2



MB-60CU

Inlet	M35×2
Outlet	Rc3/4

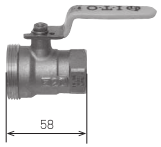


G73PZU

Inlet	M35×2
Outlet	Rc1/2

Supplied by ITO.

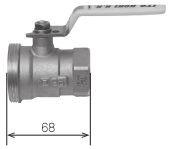
Ball Valve for Union



BV-20U

Inlet	M42×2
Outlet	Rc3/4

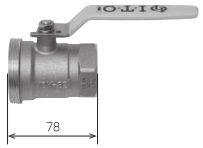
Supplied by ITO.



BV-25U

Inlet	M51×2
Outlet	Rc1

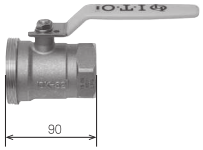
Supplied by ITO.



BV-32U

Inlet	M60×2
Outlet	Rc1 1/4

Supplied by ITO.

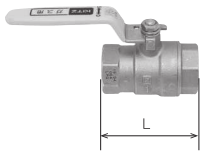


BV-40U

Inlet	M68×2
Outlet	Rc1 1/2

Supplied by ITO.

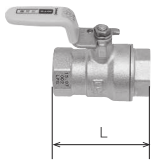
Ball Valve



GT(N)

Conn.	L
Rc1	72
Rc11/4	82
Rc11/2	94
Rc 2	107

Supplied by ITO.

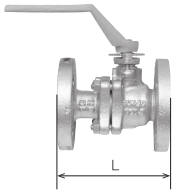


GTM(N)

Conn.	L
Rc 1/2	52
Rc 3/4	66

Supplied by ITO.

Ductile Iron 10K Flange Ball Valve

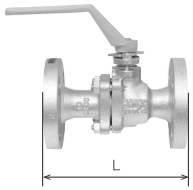


10STLBF

Connection	L
10K15A Flange	108
10K20A Flange	117
10K25A Flange	127
10K32A Flange	140
10K40A Flange	165
10K50A Flange	178

Supplied by ITO.

Ductile Iron 20K Flange Ball Valve



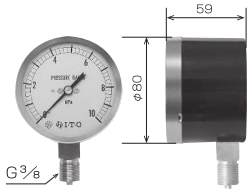
20STLB

Connection	L
20K15A Flange	140
20K20A Flange	152
20K25A Flange	165
20K40A Flange	178
20K50A Flange	190

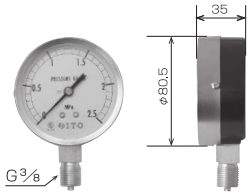
Supplied by ITO.

Pressure Gauges

Pressure Gauge

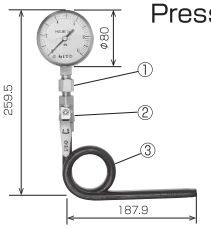


Maximum Scale Value
10kPa
20kPa
50kPa



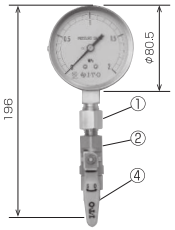
Maximum Scale Value
0.1MPa
0.2MPa
0.4MPa
1.0MPa
2.0MPa
2.5MPa
3.5MPa

Pressure Gauge Kit



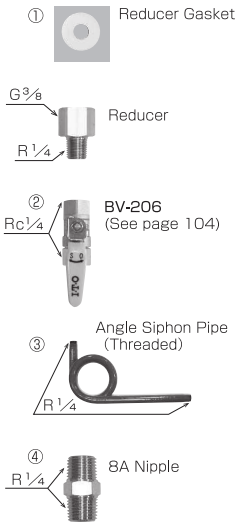
Model	Pressure Gauge
IPG-1000	10KPa
IPG-2000	20KPa

*A set provieded with each kit. (Unassembled)



Model	Pressure Gauge
IPG-20	2.0MPa
IPG-25	2.5MPa
IPG-35	3.5MPa

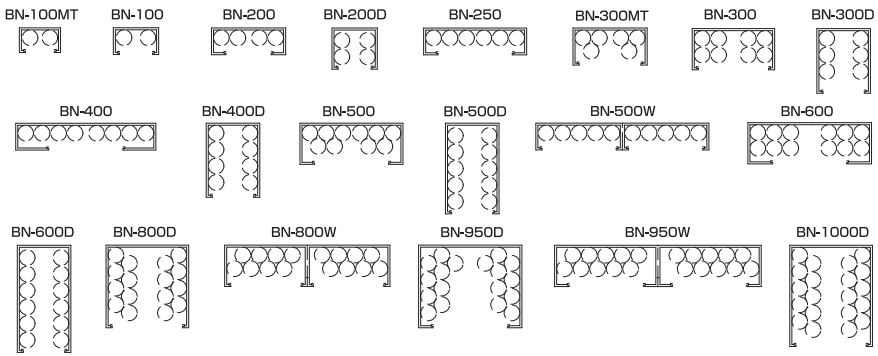
*2 sets provieded with each kit. (Unassembled)



Cylinder Cabinets

Model		
BN−100MT	BN−300D	BN−600D
BN−100	BN−400	BN−800D
BN−200	BN−400D	BN−800W
BN−200D	BN−500	BN−950D
BN−250	BN−500D	BN−950W
BN−300MT	BN−500W	BN−1000D
BN−300	BN−600	

Supplied by ITO.



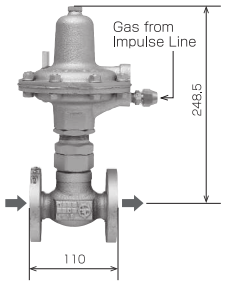
Emergency Shut-Off System

Operating Pressure

Model \ Pressure Range	0.30MPa	0.50MPa	0.70MPa	1.00MPa	1.50MPa	2.00MPa
CV-15F~CV-40AF	0.10MPa	0.11MPa	0.13MPa	0.15MPa	0.20MPa	0.25MPa
CV-50AF	0.10MPa	0.13MPa	0.15MPa	0.20MPa	0.30MPa	0.35MPa

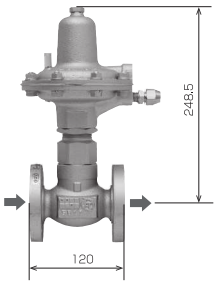
*Use compressed air or nitrogen for the impulse line.

Air-Acutuated Shut-Off Valve



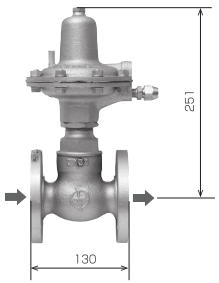
CV-15F

Connection	JIS20K15A Flange



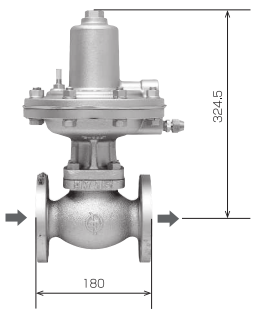
CV-20F

Connection	JIS20K20A Flange



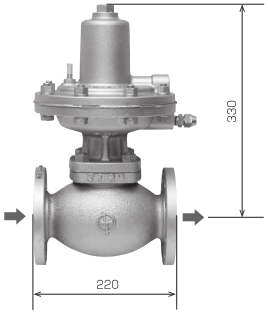
CV-25F

Connection	JIS20K25A Flange



CV-40AF

Connection	JIS20K40A Flange



CV-50AF

Connection	JIS20K50A Flange

For the SOV Control Orifice Valve

*Use for reset.

IV-215BE

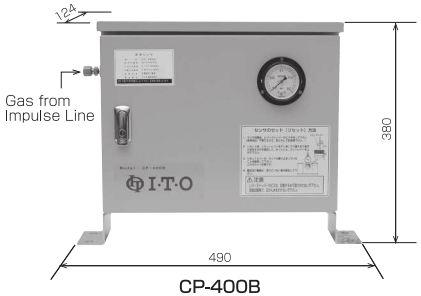
Blow Valve

*Use for manual shut-off.

IV-215BU

*See page 103.

Earthquake-Actuated Sensor



CP-400B

Model	CP-400B
Vibration Acceleration	320~400gal
Vibration Frequency	1.4~3.3Hz
Tripping Method	Steel Ball Dropping Type +Magnet & Heavy Bob Dropping Type
Operatingt Pressure Range	0.10~0.35MPa
Activation Display	Pressure Gauge
Reset Method	Manual Operation by the Reset Lever
Installation Method	Ground Line Installation
Connection	Copper Pipe(Φ8 Outer Diameter)

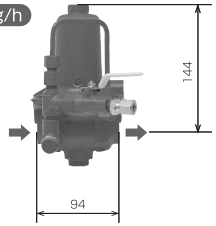
*Use compressed air or nitrogen for the impulse line.

Earthquake-Actuated Shut-Off System

Shut-Off Valve

EQ Range
(Pressure Range : 0.025～0.20MPa)

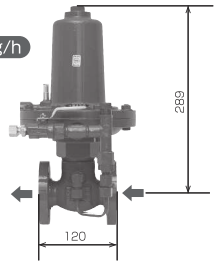
30kg/h



EQ-15

Connection	Rc1/2
Accessories	N/A

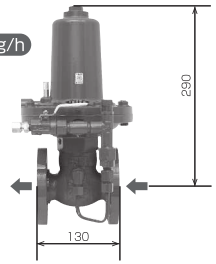
70kg/h



EQ-20

Connection	JIS20K20A Flange
Accessories	Ⓐ

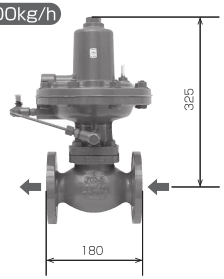
100kg/h



EQ-25

Connection	JIS20K25A Flange
Accessories	Ⓑ

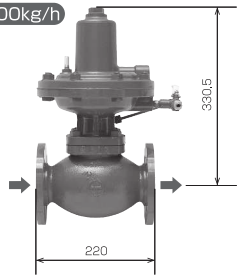
300kg/h



EQ-40

Connection	JIS20K40A Flange
Accessories	N/A

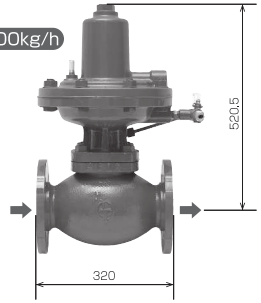
500kg/h



EQ-50

Connection	JIS10K50A Flange
Accessories	N/A

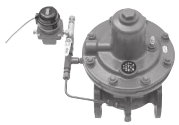
800kg/h



EQ-80

Connection	JIS10K80A Flange
Accessories	N/A

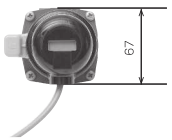
With Signal Transmitting Function



EQ-40

Model
EQ-15
EQ-20
EQ-25
EQ-40
EQ-50
EQ-80

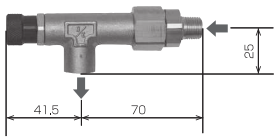
Changeover Indicator



PS-05K (For Shut-Off Valve)

Connection	Rc1/4

Reset Valve
Inc. Excess Flow Valve

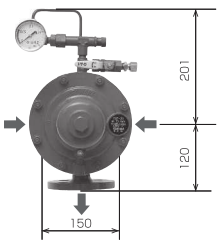


ERV-8

Connection	R1/4×Rc1/4

EQT Range(Dual Inlets for 1st Stage Reg. of Separated ACO)
(Pressure Range : 0.025 ～ 0.20MPa)

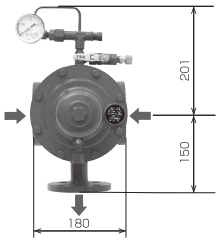
70kg/h



EQT-20

Connection	JIS10K20A Flange JIS10K25A Flange
Accessories	ⒶⒷ

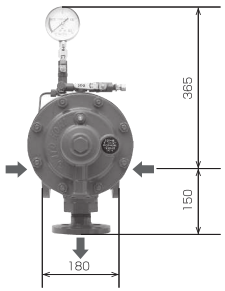
100kg/h



EQT-25

Connection	JIS10K25A Flange
Accessories	N/A

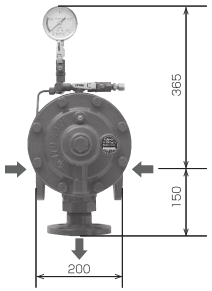
300kg/h



EQT-40

Connection	JIS10K40A Flange
Accessories	N/A

500kg/h

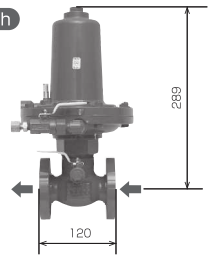


EQT-50

Connection	JIS10K50A Flange
Accessories	N/A

EQH Range
(Pressure Range : 0.07～1.56MPa)

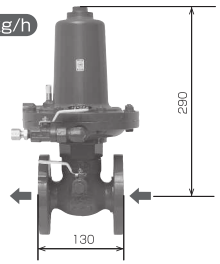
70kg/h



EQH-20

Connection	JIS20K20A Flange
Accessories	Ⓐ

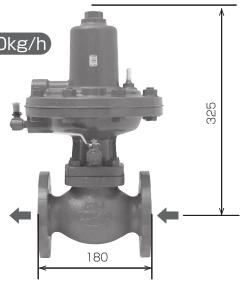
100kg/h



EQH-25

Connection	JIS20K25A Flange
Accessories	Ⓑ

300kg/h



EQH-40

Connection	JIS20K40A Flange
Accessories	N/A

Accessories

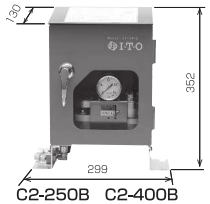
Ⓐ

M12 Stud Bolt×2
M12 Hexgon Nut×4
M12 Spring Washer×4

Ⓑ

M16 Stud Bolt×2
M16 Hexgon Nut×4
M16 Spring Washer×4

Earthquake-Actuated Sensor

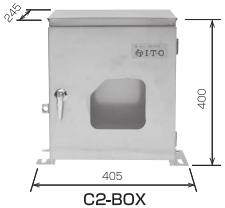


C2-250B C2-400B

Model	C2-250B	C2-400B
Vibration Acceleration	200～250gal	320～400gal
Vibration Frequency	1.4～3.3Hz	
Tripping Method	Steel Ball Dropping Type +Magnet & Heavy Bob Dropping Type	
Operating Pressure Range	0.025～0.20MPa	
Activation Display	Pressure Gauge	
Reset Method	Manual Operation by the Reset Lever	
Installation Method	Ground Line Installation	
Connection	Copper Pipe(Φ8 Outer Diameter)	

Accessories	M12 Flat Washer ×3 M8 Flat Washer ×6 M8 Anchor Bolt×3 Insect Screen×1

Sensor Cabinet



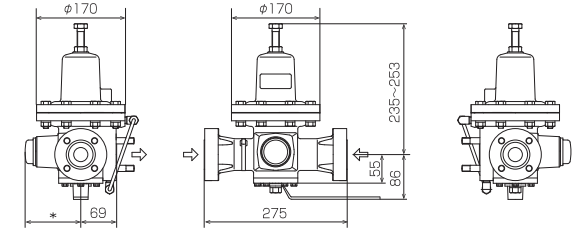
C2-BOX

Model	C2-BOX
Accessories	M8 Anchor Bolt×4

Liquid Automatic Changeover Devices

LAX-20C

External Dimensions



* LAX-20C : 107
LAX-20C-R : 118.5

Accessories

M12 Bolt×8 | Spring Washer×12 Nut×4 | 1/4B Tube End Plug×1 | Insert Ball for φ6 Copper Pipe×2

Specifications

Gas Type	LPG(Liquid LPG)
Maximum Flow Rate	300kg/h
Changeover Pressure	0.05~0.15MPa
Changeover Operating Pressure Allowance	±0.01MPa
Required Inlet Pressure (Minimum Pressure at Reserve Side)	(Changeover Pressure +△P)~ 1.56MPa The values for △P are shown below;

Q:Flow Rate(kg/h)	100	150	200	250	300
△P(MPa)	0.03	0.07	0.11	0.14	0.18

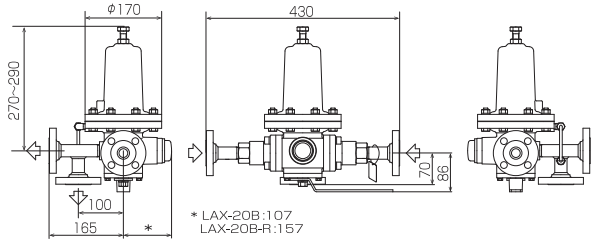
Connection	Equivalent to JIS20K20A Flange

LAX-20C-R

With Signal Transmitting Function

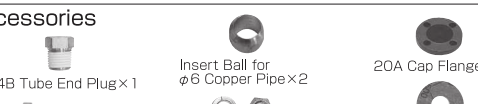
LAX-20B

External Dimensions



* LAX-20B : 107
LAX-20B-R : 157

Accessories



1/4B Tube End Plug×1 | Insert Ball for φ6 Copper Pipe×2 | 20A Cap Flange×1

M12 Bolt×4 | Spring Washer×4 Nut×4 | 20A Flange Gasket×1

Specifications

Gas Type	LPG(Liquid LPG)
Maximum Flow Rate	300kg/h
Changeover Pressure	0.05~0.15MPa
Changeover Operating Pressure Allowance	±0.01MPa
Required Inlet Pressure (Minimum Puressure at Reserve Side)	(Changeover Pressure +△P)~ 1.56MPa The values for △P are shown below;

Q:Flow Rate(kg)/h	100	150	200	250	300
△P(MPa)	0.03	0.07	0.11	0.14	0.18

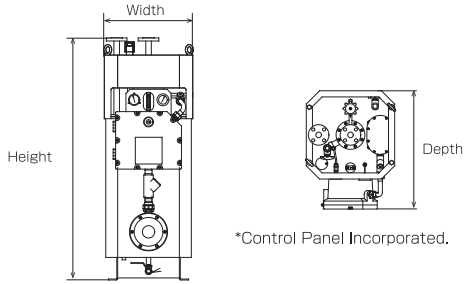
Connection	JIS20K20A Flange

LAX-20B-R

With Signal Transmitting Function

Electrical Heating Type Vaporisers

f RIZER Type S

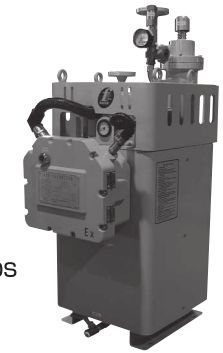


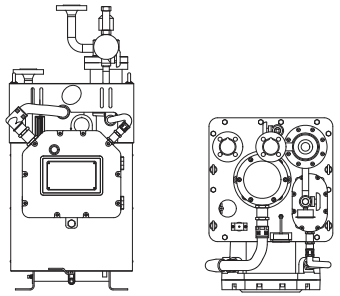
*Control Panel Incorporated.

Specifications

Items / Model		S-50	S-100	S-150	S-200	S-300
Vaporisation Capacity(LPG)		50kg/h	100kg/h	150kg/h	200kg/h	300kg/h
Heat Source	Heater Capacity	7.5kW	15kW	22.5kW	30kW	45kW
	Rated Voltage	220/380/440V 3-Phase				
Hot Water Control Temprature		60~75℃(70℃ Set Point)				
Hot Water Superheat Prevention		80℃				
Liquid Carryover Protection		By means of Float Valve				
Working Pressure for Safety Valve		1.80MPa				
Inlet Pressure		0.10~1.56MPa				
Connection	Liquid Inlet Flange	Equivalent to JIS 20K20A				
	Gas Outlet Flange	Equivalent to JIS 20K20A		Equivalent to JIS 20K25A		
External Dimensions	Width	420mm	420mm	480mm	580mm	580mm
	Depth	570mm	570mm	630mm	740mm	740mm
	Height	1115mm	1183mm	1253mm	1215mm	1315mm

f RIZER ITOS



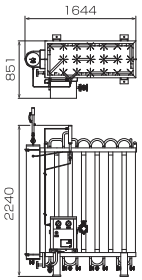


Specifications

Items / Model		ITOS-30	ITOS-50	ITOS-100	ITOS-150	ITOS-200	ITOS-300
Vaporisation Capacity (LPG)		30kg/h	50kg/h	100kg/h	150kg/h	200kg/h	300kg/h
Heat Source	Heater Capacity	4.5kW	7.5kW	15kW	22.5kW	30kW	45kW
	Rated Voltage	220V Single-Phase 220/380/440V 3-Phase		220/380/440V 3-Phase			
Hot Water Control Temprature		60~80℃(75℃ Set Point)					
Hot Water Superheat Prevention		85℃					
Liquid Carryover Protection		By means of Float Valve					
Working Pressure for Safety Valve		1.75MPa					
Inlet Pressure		0.10~1.60MPa					
Connection	Liquid Inlet Flange	DN20(PN25)			DN25(PN25)		
	Gas Outlet Flange	DN20(PN25)		DN25(PN25)			

Air Heating Type Vaporiser SR-SK Range
for LPG Bulk Supply System

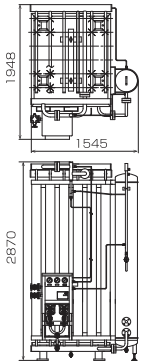
SR-50ASK



Model	SR-50ASK
Nominal Vaporising Ability Propane	50kg/h
Atmospheric Temperature	≧ -5℃
Outlet Gas Temperature	≧ -10℃
Nominal Continuous Operating Time*	4hours
Inlet Pressure	0.15～1.56MPa
Outlet Pressure	0.06～0.10MPa
Lockup Pressure	≦ 0.96MPa
Liquid Carryover Protection	Temperature Sensing Shut-Off (-20℃ Set Point)
Working Pressure for Safety Valve	0.96MPa
Liquid Inlet	JIS 20K15A Flange
Gas Outlet	JIS 20K20A Flange

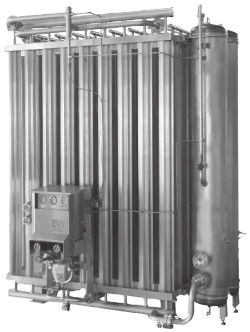
*Declared at being around 1m/sec. of wind speed.

SR-100BSK

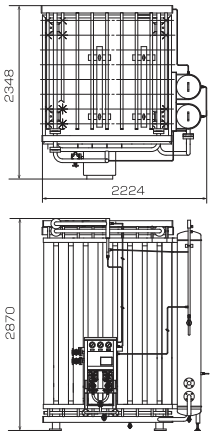


Model		SR-100BSK
Nominal Vaporising Ability Propane		100kg/h
Atmospheric Temperature		≧-5℃
Outlet Gas Temperature		≧-10℃
Nominal Continuous Operating Time*		10hours
Inlet Pressure		0.15～1.56MPa
Outlet Pressure	Service Side	0.09～0.11MPa
	Reserve Side	0.06～0.08MPa
Lockup Pressure		≦ 0.96MPa
Liquid Carryover Protection		Temperature Sensing Shut-Off (-20℃ Set Point)
Working Pressure for Safety Valve		0.96MPa
Liquid Inlet		JIS 20K15A Flange
Gas Outlet		JIS 20K25A Flange

*Declared at being around 1m/sec. of wind speed.



SR-200ASK



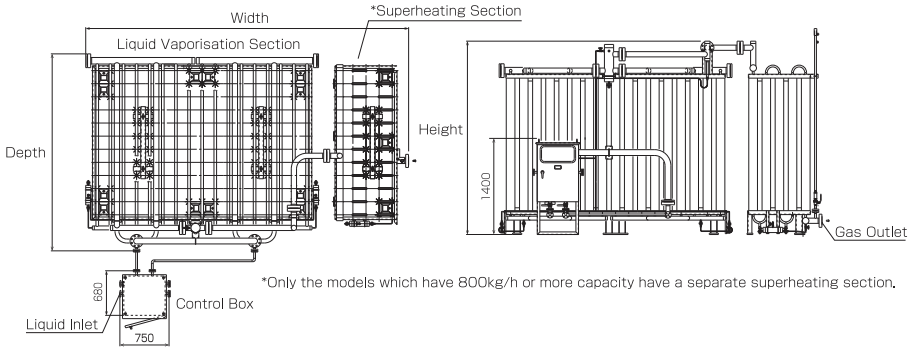
Model		SR-200ASK
Nominal Vaporising Ability Propane		200kg/h
Atmospheric Temperature		≧-5℃
Outlet Gas Temperature		≧-10℃
Nominal Continuous Operating Time*		10hours
Inlet Pressure		0.15～1.56MPa
Outlet Pressure	Service Side	0.09～0.11MPa
	Reserve Side	0.06～0.08MPa
Lockup Pressure		≦0.96MPa
Liquid Carryover Protection		Temperature Sensing Shut-Off (-20℃ Set Point)
Working Pressure for Safety Valve		0.96MPa
Liquid Inlet		JIS 20K15A Flange
Gas Outlet		JIS 20K40A Flange

*Declared at being around 1m/sec. of wind speed.

Air Heating Type Vaporiser SR-W Range

*Long fin type, SR-WL is also available, which a minimal space requires.

External Dimensions



*Only the models which have 800kg/h or more capacity have a separate superheating section.

Specifications

Model		100W	150W	200W	300W	400W	500W	600W	700W	800W	1000W	1500W
Nominal Vaporising Ability Propane, kg/h		100	150	200	300	400	500	600	700	800	1000	1500
Atmospheric Temperature		≧-5℃										
Outlet Gas Temperature		≧-10℃										
Nominal Continuous Operating Time*		≦5hours										
Inlet pressure		0.15～1.56MPa										
Outlet Pressure	Service Side	0.10～0.12MPa										
	Reserve Side	0.07～0.09MPa										
Liquid Carryover Protection		Temperature Sensing Shut-Off (-20℃ Set Point)										
Working Pressure for Safety Valve		1.56MPa										
Liquid Inlet		JIS20K20A Flange										
Gas Outlet		JIS20K Flange										
		25A	40A			50A			80A			
External Dimensions(mm)	Width	2032	2832		3032	2832	3632	4232	4432	4932	5812	5760
	Depth	1080	1140	1340	1740	2340		2540	2750	2950		5394
	Height	2850						2900	2950			3131

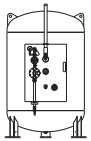
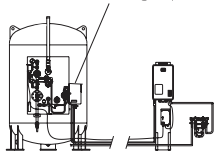
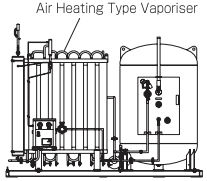
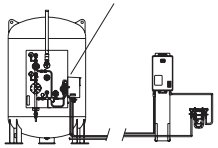
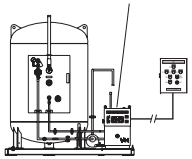
*Declared at being around 1m/sec. of wind speed. This vaporising ability is greatly affected by various factors. Please feel free to ask us for further information.

Bulk Tank Supply Systems

298T 298Y
498T 498Y
980T 980Y
2900T 2900Y

①	②	③	④
Vaporising Method	Capacity	Supply Method	Low Pressure Line

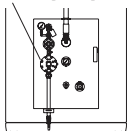
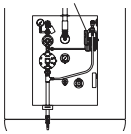
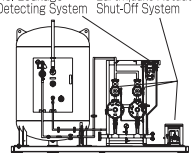
① Vaporising Method

Code		Vaporising Method
0	Natural Vaporisation	
3K	Dual Vaporisation	Hot Water Circulating Vaporiser  *The numbers show the vaporising ability. (3 : 30kg/h, 5 : 50kg/h, 10 : 100kg/h)
5K		
10K		
R	Forced Vaporisation	Air Heating Type Vaporiser 
3M		Hot Water Circulating Vaporiser  *The numbers show the vaporising ability. (3 : 30kg/h, 5 : 50kg/h, 10 : 100kg/h)
5M		
10M		
V		Electrical Heating Type Vaporiser 

② Capacity

Code	Capacity (Regulator or Vaporiser)
1	10kg/h
2	20kg/h
3	30kg/h
5	50kg/h
10	100kg/h

③ Supply Method

Code		Supply Method
1	Simplified Type	Double Stage Regulator 
2	General Type	Inc. Leakage Detecting System 
4	Multifunctional Type	Inc. Leakage Detecting System / Earthquake-Actuated Shut-Off System 

④ Low Pressure Line

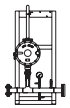
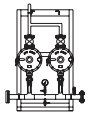
Code		
	Single	
W	Double	

*Image for illustration purposes.

Notes

If the specifications you need is not offered on this catalogue, contact your ITO sales representative.
Specifications and appearance of the products discribed here may be changed without prior notice.