

SAFETY RELIEF VALVE
PRESSURE REDUCING & REGULATING VALVE
STEAM TRAP
STRAINER
OTHER VALVES



## **YNV Corperation Vision**

# We assure you that we will be a company that promotes your best value and happiness

Greetings! This is the CEO of YNV CO.,Ltd.

Ever since my company was established, we have been supplying various specialized valve products to shipyards, shipbuilding equipment manufacturers, industrial plants and construction sites with my innovative quality management system.

Based on our quality assurance policy, we aim to maintain customer satisfying products, acquire ppm certification for all of my products and achieve the best quality in the industry. By realizing reasonable cost on high-quality products, we would like to contribute in providing eco-friendly and energy saving environment to customers.





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# Safety Relief Valve



### Lift Type Safety Relief Valve

LSV-1S	6
HSV-3S/4S	7
HSV-3S1 VSV-1S	g



### Full Bore Type Safety Relief Valve

FSV-1S(L) 9	FSV-3F 12
FSV-1F 10	BFSV-2F 13
FSV-2F 11	BFSV-3F 14

### Safety Relief Valve Approved by KGS

GSV-3S/4S ·····15
GSV-2F/3F16
BGSV-2F17
BGSV-3F18



### \* Lift Type Safety Relief Valve

When the lift of the safety valve is opened more than 1/40 and less than 1/4 of inlet diameter of valve seat, flow path area of valve seat is the smallest among the flow path area

#### \* Full Bore Type Safety Relief Valve

Flow path area of valve seat gains larger lift than neck area of the exposure at the lower part on the valve body and seat

## **Safety Relief Valve**

- · Angle type spring loaded lift safety relief valve for steam, air, water, oil.
- · Suitable for small and medium capacity.
- · Quickly popping reaction and correct re-setting.
- · Easy adjustment of set pressure and blow-down pressure.
- Since this valve is produced with compact design, this is easy to install by small size and light weight.
- The simple structure of this valve allows to operating accurately and maintaining easily.

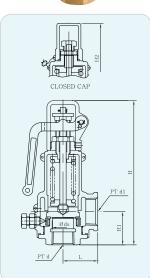
### LSV-1S | Low Lift Type Safety Relief Valve

### Specifications

Type	Working	Setting	Working	Mate	erials	Connection
туре	Fluid	Pressure (kgf/cm²)	Temperature (℃)	Bonnet	Trim	Connection
Lever	Steam, Air	0.5~11	220	Cast	Forged	PT Screwed
No Lever	Water, Oil	0.5/911	220	Bronze	Brass	r i Screwed



Size	Part	d	ds	L	H1	Н	Lift	Inlet	Outlet		
15A ×	20A	15	21	33.5	40	149	1.0				
20A ×	20A	20	21	33,5	40	149	1.0				
25A ×	25A	25	26	43	46	164	1.7	PT Screwed	ewed PT Screwed		
32A ×	32A	32	33	45	48	177	2.2				
40A ×	40A	40	41	50	54	196	2.3				
50A ×	50A	50	51	62	62	213	2.5				



## HSV-3S/4S | High Lift Type Safety Relief Valve

- By separating the spring by pressure, the operation is sure and the function is excellent.
- Disc and sheet material is stainless steel + PTFE, there is no corrosion or leakage.
- It is used as Safety Relief Valve for high pressure refrigerant gas.

### ► Specifications(HSV-3S)

Туре	Working	Setting	Working	I	Materials	\$	Connection
туре	Fluid	Pressure (kgf/cm²)	Temperature (℃)	Body	Bonnet	Trim	Connection
Lever	Steam, Air	0.5~33	220	Stainless	Cast	Stainless	PT Screwed
No Lever	Water, Oil	0.5/~33	220	Steel	Bronze	Steel	P1 Screwed



HSV-3S

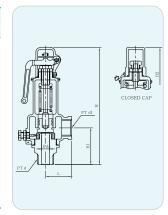
### ► Specifications(HSV-4S)

Type	Working	Setting	Working	I	Materials	3	Connection
туре	Fluid	Pressure (kgf/cm²)	Temperature (℃)	Body	Bonnet	Trim	Connection
Lever	Steam, Air	0.50,22	220	Stainless	Stainless	Stainless	PT Screwed
No Lever	Water, Oil	0.5~33 220	Steel	Steel	Steel	P1 Screwed	



HSV-4S

Size Part	d	ds	L	H1	Н	Lift	Inlet	Outlet
15A × 20A	15	14	42	60	192	1.0		
20A × 20A	20	14	42	63	195	1.0		
25A × 25A	25	19	44	69	211	1.7	DT Carravia d	PT Screwed
32A × 32A	32	24	45	71	200	2.0	PT Screwed	
40A × 40A	40	26	50	79	221	2,2		
50A × 50A	50	33	62	93	244	4.5		



## **HSV-351** | High Lift Type Safety Relief Valve

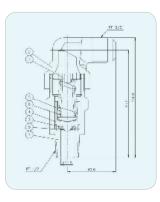
### Specifications

Type	Working	Setting	Working	l	Materials	6	Connection	
Type	Fluid	Pressure (kgf/cm²)	Temperature (℃)	Body	Bonnet	Trim	Connection	
No Lever	Gas	0.5~33	100	Forged Brass	Forged Brass	Stainless Steel	PT Screwed	



### Dimensions

Size	Part	d	ds	L	H1	Н	Lift	Inlet	Outlet
15.	А	11.5	11.5	42	95	106	1.0	PT 1/2"	PF 5/8"



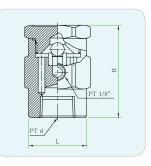
## VSV-15 | Vacuum Breaker

### Specifications

Туре	Setting	Working	Mate	erials	Connection
	Pressure (kgf/cm²)	Temperature (℃)	Body	Trim	Connection
Steam	_	220	Brass	Stainless Steel	PT Screwed



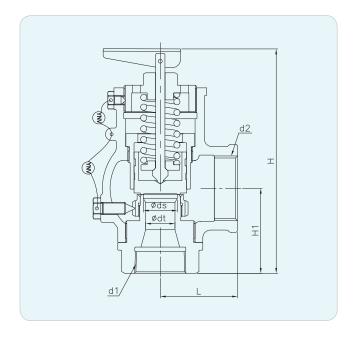
Size	Part	d	L	Н	Inlet	
15A		PT 1/2"	35	55	DT Corowod	
20A		PT 3/4"	35	55	PT Screwed	



## FSV-1S(L) | Full Bore Type Safety Valve For Steam

- It is used exclusively for steam boiler systems
- · Larger discharge than low life type and high lift type
- It is sealed not to adjust pressure arbitrarily





### **▶** Specifications

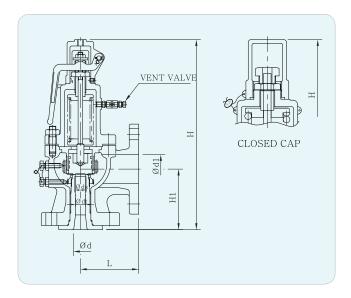
Model	FSV-1S(L)					
Working Fluid	Steam					
Setting Pressure	5∼10 kgf/cm²g					
Working Temperature (°c)	MAX. 220°C					
Туре	Full Bore Type					
Connection	PT Screwed					
Materials	Body : Ductile Iron					
Waterials	Trim: Stainless Steel					

Size Pa	rt Ødt	Øds	L	H1	Н	d1	d2	Lift
20A X 25A	15.0	18.0	45.0	50.0	127.0	PT 3/4"	PT 1"	3.5
25A X 32A	19.0	22.0	50.0	55.0	145.0	PT 1"	PT 1¼"	4.5
32A X 40A	24.0	29.0	55.0	62.0	160.0	PT 1¼"	PT 1½"	6.0
40A X 50A	30.0	35.0	65.0	70.0	180.0	PT 1½"	PT 2"	7.0

### FSV-1F | Full Bore Safety Relief Valve

- This is generally used for large-size steam boiler, various pressure vessels and tracing equipment as safety valve and relief valve in pump.
- · Suitable for large capacity.
- · The main parts are made of the good materials in accurate.
- Lever type could execute the discharge inspection manually at over 75% of discharge pressure.
- · ANSI, DIN Flanges are avaliable upon request.





### Specifications

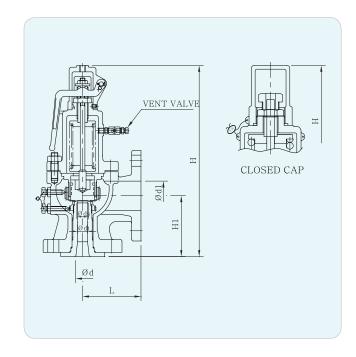
Туре	Working	Setting	Working	Mate	Connection	
	Fluid	Pressure (kgf/cm²)	Temperature (℃)	Body Trim		Connection
Lever	Steam, Air	0.5~11	220	Ductile Iron	Stainless Steel	JIS Flanged
No Lever	Water, Oil	0.5/ = 11	220	Ductile Iron	Stairliess Steel	

Size Part	d	dt	ds	L	H1	Н	Lift	Inlet	Outlet
15A × 25A	15	11.5	14.5	95	85	282	3.0		
20A × 25A	20	15	17.5	95	85	282	3.8		
25A × 40A	25	19	22	100	104	324	4.8		
32A × 65A	32	30	35	115	123	419	7.5		JIS 10K FF Flanged
40A × 65A	40	30	35	115	123	419	7.5		
50A × 80A	50	38	44	128	130	478	9.5	JIS 10K RF Flanged	
65A × 100A	65	49	57	145	145	544	12.3	riarigoa	
80A × 125A	80	61	71	162	168	600	15.2		
100A × 150A	100	76	88	190	197	725	19.0		
125A × 200A	125	95	114	220	222	900	24.0		
150A × 200A	150	115	133	225	230	961	28.7		

<sup>\*</sup> KS B6216 Flange is available upon request

## FSV-2F | Full Bore Safety Relief Valve





### Specifications

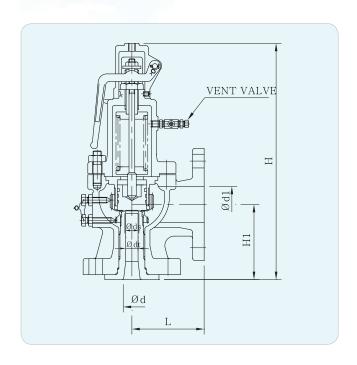
Туре	Working	Setting Pressure	Working	Mate	Connection		
туре	Fluid		Temperature (℃)	Body	Trim	Connection	
Lever	Steam, Air	0.5~22	250	Cast Steel	Otainlana Otaal	JIS Flanged	
No Lever	Water, Oil	0,5 <sup>, ©</sup> 22	230	Stainless Steel	Stainless Steel	ANSI Flanged	

Size Part	d	dt	ds	L	H1	Н	Lift	Inlet	Outlet
15A × 25A	15	11.5	14.5	95	85	282	3.0		
20A × 25A	20	15	17.5	95	85	282	3.8		
25A × 40A	25	19	22	100	104	320	4.8		
32A × 65A	32	30	35	115	123	386	7.5		
40A × 65A	40	30	35	115	123	386	7.5		JIS 10K FF Flanged
50A × 80A	50	38	44	128	130	476	9.5		
65A × 100A	65	49	57	145	150	547	12,3	JIS 10K, 20K RF Flanged	
80A × 125A	80	61	71	162	168	598	15.2	1 131 130	
100A × 150A	100	76	88	190	197	725	19.0		
125A × 200A	125	95	114	220	222	895	24.0		
150A × 200A	150	115	133	225	230	953	28.7		
200A × 250A	200	150	175	270	255	1121	37.5		
250A × 300A	250	200	230	410	350	1720	50.0		

<sup>\*</sup> KS B6216, ANSI and DIN Flange are available upon request (more than 235°C, manufacturing open bonnet type -Korea Occupational Safety & Health Agency)

## FSV-3F | Full Bore Safety Relief Valve





### Specifications

Type	Working	Setting Pressure	Working	Mate	Connection	
туре	Type Fluid		Temperature (℃)	Body	Body Trim	
Lever	Steam, Air	22~33	250	Cast Steel	Stainless Steel	JIS Flanged
No Lever	Water, Oil	22/~33	250	Stainless Steel	Starniess Steel	ANSI Flanged

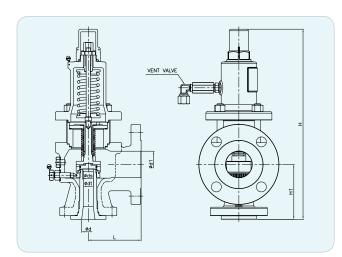
Size Part	d	dt	ds	L	H1	Н	Lift	Inlet	Outlet
15A × 25A	15	11.5	14.5	95	85	282	3.0		JIS 10K FF Flanged
20A × 25A	20	15	17.5	95	85	282	3,8	JIS 30K RF	
25A × 40A	25	19	22	100	105	320	4.8		
40A × 65A	40	30	35	115	123	386	7.5		
50A × 80A	50	38	44	128	130	476	9.5	Flanged	
65A × 100A	65	49	57	145	150	547	12,3		
80A × 125A	80	61	71	162	168	598	15.2		
100A × 150A	100	76	88	190	197	725	19.0		

<sup>\*</sup> KS B6216, ANSI and DIN Flange are available upon request (more than 235°C, manufacturing open bonnet type -Korea Occupational Safety & Health Agency)

## BFSV-2F | Balanced Bellows Type Safety Relief Valve

- · This is generally used for various measuring machines and piping at petroleum, gas and chemical plants
- It is used in locations affected by back pressure of outlet and the fluid is not allowed external safety relief valve to flow
- · It is used in locations where springs are to corrode or deform by the corrosion of the fluid or temperature
- · Internal materials are STS316 which provides excellent erosion resistance





### Specifications

Model	BFSV-2F					
Working Fluid	Gas, Hot Oil					
Setting Pressure	0.5~22kgf/cm²g					
Working Temperature (°c)	MAX. 400°C					
Туре	Balanced Bellows Type					
Connection	JIS Flanged , ANSI Flanged					
Materials	Body: Cast Steel, Stainless Steel					
Materiais	Trim: Stainless Steel					
Cap Type	No Lever(STD.) or Lever					

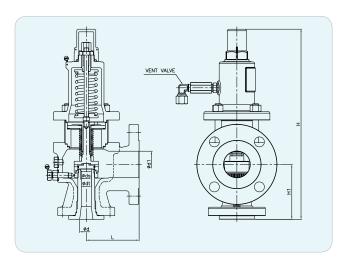
Size Part	d	dt	ds	L	H1	Н	Lift	Inlet	Outlet
15A X 25A	15.0	11.5	14.5	95.0	85.0	317.0	3.00		
20A X 25A	20.0	15.0	17.5	95.0	85.0	317.0	3.75		
25A X 40A	25.0	19.0	22.0	100.0	104.0	360.0	4.75		
32A X 65A	32.0	30.0	35.0	115.0	123.0	452.0	7.5		JIS 10K FF Flanged
40A X 65A	40.0	30.0	35.0	115.0	123.0	452.0	7.5	JIS 10K.	
50A X 80A	50.0	38.0	44.0	128.0	130.0	514.0	9.5	20K RF	
65A X 100A	65.0	49.0	57.0	145.0	145.0	594.0	12,25	Flanged	
80A X 125A	80.0	61.0	71.0	162.0	168.0	642.0	15.25		
100A X 150A	100.0	76.0	88.0	190.0	197.0	0.008	19.0		
150A X 200A	150.0	115.0	133.0	225.0	230.0	1015.0	28.75		
200A X 250A	200.0	150.0	175.0	270.0	270.0	1164.0	37.5		

 $<sup>\</sup>pm$  KS B6216, ANSI,and DIN Flange are available upon request (more than 400  $^{\circ}$ C is also available to manufacture)

### BFSV-3F | Balanced Bellows Type Safety Relief Valve

- · This is generally used for various measuring machines and piping at petroleum, gas and chemical plants
- It is used in locations affected by back pressure of outlet and the fluid is not allowed external safety relief valve to flow
- It is used in locations where springs are to corrode or deform by the corrosion of the fluid or temperature
- Internal materials are STS316 which provides excellent erosion resistance





### Specifications

Model	BFSV-3F
Working Fluid	Gas, Hot Oil
Setting Pressure	22~33kgf/cm²g
Working Temperature (°c)	MAX. 400°C
Type	Balanced Bellows Type
Connection	JIS Flanged , ANSI Flanged
Materials	Body: Cast Steel, Stainless Steel
Materials	Trim: Stainless Steel
Сар Туре	No Lever(STD.) or Lever

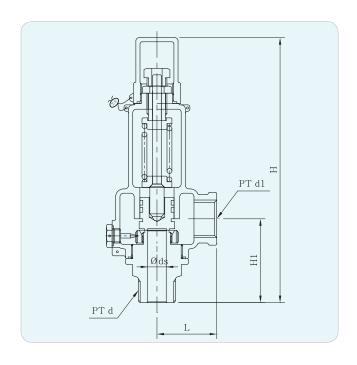
### Dimensions

Size Part	d	dt	ds	L	H1	Н	Lift	Inlet	Outlet
15A X 25A	15.0	11.5	14.5	95.0	85.0	317.0	3.00		
20A X 25A	20.0	15.0	17.5	95.0	85.0	317.0	3.80		
25A X 40A	25.0	19.0	22.0	100.0	104.0	360.0	4.80	JIS 30K RF	JIS 10K FF Flanged
32A X 65A	32.0	30.0	35.0	115.0	123.0	452.0	7.50	Flanged	
40A X 65A	40.0	30.0	35.0	115.0	123.0	452.0	7.50		
50A X 80A	50.0	38.0	44.0	128.0	130.0	514.	9.50		

 $\times$  KS B6216, ANSI and DIN Flange are available upon request (more than 400  $^{\circ}$ C is also available to manufacture)

## GSV-3S/4S | High Lift Type Safety Relief Valve





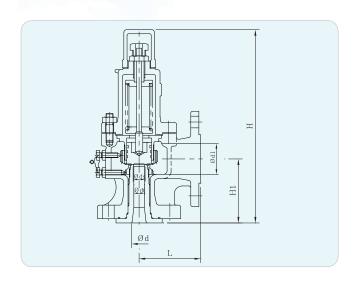
### Specifications

Type	Working	Setting	•		Materials			
туре	Fluid	Pressure (MPa)	Temperature	Body	Bonnet	Trim	Connection	
GSV-3S	Gas	0.05~3.3	−196~220	Stainless Steel	Cast Bronze	Stainless Steel	PT Screwed	
GSV-4S	Gas	0.05~8.0	-190° °220	Stainless Steel	Stainless Steel	Stainless Steel	PT Screwed	

Size Part	d	ds	L	H1	Н	Lift	Inlet	Outlet
15A × 20A	15	14	42	60	184	1.5		
20A × 20A	20	14	42	63	187	1.5		
25A × 25A	25	19	44	69	204	2.0	DT Coverna	DT Coverned
32A × 32A	32	24	45	71	192	3.0	PT Screwed	PT Screwed
40A × 40A	40	27	50	79	213	3.0		
50A × 50A	50	33	62	93	236	4.7		

## **GSV-2F/3F** | Full Bore Type Safety Relief Valve





### Specifications

Type	Working	Setting	Working	Mate	Connection		
туре	Fluid	Pressure (MPa)	Temperature	Body	Trim	Connection	
GSV-2F	Gas	0.05~2.2	−196~250	Cast Steel	Stainless Steel	JIS Flanged	
GSV-3F	Gas	2.2~5.0	-190 <sup>, 0</sup> 250	Stainless Steel	Stall liess steel	ANSI Flanged	

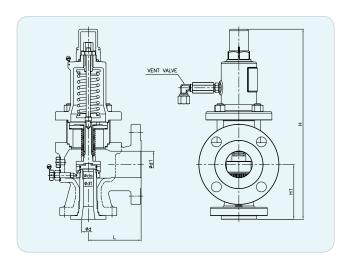
Model	Size	d	dt	ds	L	H1	Н	Lift	Inlet	Outlet
	15A × 25A	15	11.5	14.5	95	85	282	3.0		
	20A × 25A	20	15	17.5	95	85	282	3,8		
	25A × 40A	25	19	22	100	104	320	4.8		
	32A × 65A	32	30	35	115	123	386	7.5		
	40A × 65A	40	30	35	115	123	386	7.5		
	50A × 80A	50	38	44	128	130	476	9.5	110 4014 0014 DE	110 4017 EE
GSV-2F	65A × 100A	65	49	57	145	150	547	12,3	JIS 10K, 20K RF Flanged	JIS 10K FF Flanged
	80A × 125A	80	61	71	162	168	598	15.2	riangea	rialigeu
	100A × 150A	100	76	88	190	197	725	19.0		
	125A × 200A	125	95	114	220	222	895	24.0		
	150A × 200A	150	115	133	225	230	953	28.7		
	200A × 250A	200	150	175	270	255	1121	37.5		
	250A × 300A	250	200	230	410	350	1720	50.0		
	15A × 25A	15	11,5	14.5	95	85	282	3.0		
	20A × 25A	20	15	18	95	85	280	3.8		
	25A × 40A	25	19	22	100	104	320	4.8		
GSV-3F	40A × 65A	40	30	35	115	123	386	7.5	JIS 30K RF Flanged	JIS 10K FF
G5V-3F	50A × 80A	50	38	44	128	130	476	9.5		Flanged
	65A × 100A	65	49	57	145	150	547	12.3		
	80A × 125A	80	61	71	162	168	598	15.2		
	100A × 150A	100	76	88	190	197	725	19.0		

 $<sup>\</sup>times$  KS B6216, ANSI and DIN Flange are available upon request (more than 400  $^{\circ}$ C is also available to manufacture)

## BGSV-2F | Balanced Bellows Type Safety Relief Valve

- · This is generally used for various measuring machines and piping at petroleum, gas and chemical plants
- It is used in locations affected by back pressure of outlet and the fluid is not allowed external safety relief valve to flow
- It is used in locations where springs are to corrode or deform by the corrosion of the fluid or temperature
- Internal materials are STS316 which provides excellent erosion resistance





### Specifications

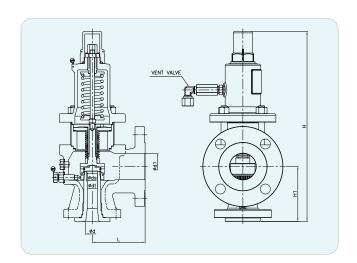
Model	BGSV-2F
Working Fluid	Gas, Hot Oil
Setting Pressure	0.05~2.2MPa
Working Temperature (℃)	MAX. 400°C
Туре	Balanced Bellows Type
Connection	JIS Flanged, ANSI Flanged
Materials	Body: Cast Steel, Stainless Steel
Materials	Trim: Stainless Steel
Cap Type	No Lever(STD.) or Lever

Size Part	d	dt	ds	L	H1	Н	Lift	Inlet	Outlet
15A X 25A	15.0	11.5	14.5	95.0	85.0	317.0	3.00		
20A X 25A	20.0	15.0	17.5	95.0	85.0	317.0	3.75		
25A X 40A	25.0	19.0	22.0	100.0	104.0	360.0	4.75		
32A X 65A	32.0	30.0	35.0	115.0	123.0	452.0	7.5		JIS 10K FF Flanged
40A X 65A	40.0	30.0	35.0	115.0	123.0	452.0	7.5	JIS 10K.	
50A X 80A	50.0	38.0	44.0	128.0	130.0	514.0	9.5	20K RF	
65A X 100A	65.0	49.0	57.0	145.0	145.0	594.0	12,25	Flanged	
80A X 125A	80.0	61.0	71.0	162.0	168.0	642.0	15.25		
100A X 150A	100.0	76.0	88.0	190.0	197.0	0.008	19.0		
150A X 200A	150.0	115.0	133.0	225.0	230.0	1015.0	28.75		
200A X 250A	200.0	150.0	175.0	270.0	270.0	1164.0	37.5		

## **BGSV-3F** | Balanced Bellows Type Safety Relief Valve

- · This is generally used for various measuring machines and piping at petroleum, gas and chemical plants
- It is used in locations affected by back pressure of outlet and the fluid is not allowed external safety relief valve to flow
- It is used in locations where springs are to corrode or deform by the corrosion of the fluid or temperature
- Internal materials are STS316 which provides excellent erosion resistance





### Specifications

Model	BGSV-3F			
Working Fluid	Gas, Hot Oil			
Setting Pressure	2,2~3,3MPa			
Working Temperature (℃)	MAX. 400°C			
Туре	Balanced Bellows Type			
Connection	JIS Flanged , ANSI Flanged			
Materials	Body: Cast Steel, Stainless Steel			
Materials	Trim: Stainless Steel			
Cap Type	No Lever(STD.) or Lever			

Size Part	d	dt	ds	L	H1	Н	Lift	Inlet	Outlet
15A X 25A	15.0	11.5	14.5	95.0	85.0	317.0	3.00		
20A X 25A	20.0	15.0	17.5	95.0	85.0	317.0	3.75		
25A X 40A	25.0	19.0	22.0	100.0	104.0	360.0	4.75	JIS 30K, RF	JIS 10K FF Flanged
32A X 65A	32.0	30.0	35.0	115.0	123.0	452.0	7.50	Flanged	
40A X 65A	40.0	30.0	35.0	115.0	123.0	452.0	7.50		
50A X 80A	50.0	38.0	44.0	128.0	130.0	514.0	9.50		

 $<sup>\</sup>times$  KS B6216, ANSI,DIN Flange are available upon request (more than 400  $^{\circ}$ C is also available to manufacture)

## **Engineering Data**

## ■ KS B 6216, HPGCL

Code of application and specifications	Caculation	Symbol description
KS B 6216 For steam and gas Spring Safety relief valve	1. Gas $W = C' \cdot Kd \cdot A \cdot P_1 \cdot \sqrt{\frac{M}{ZT}} \times 0.9$ 2. Steam $W = 0.5145 \cdot A \cdot (P+1) \cdot K \cdot C \times 0.9$ Lift type: $A = \pi D\ell$ $D = Diameter of valve seat$ $\ell = Lift$ Full bore type: $A = \frac{\pi}{4} dt_2 dt = Diameter of neck$ $P = Total \ Pressre$ when set pressure over than 1.0kgf/cm2 at required flow through the device, 1.03 times of set pressure. when set pressure is less than 1.0 1.0kgf/cm², add add 0.2 kgf/cm2 to the set pressure  • If $Ps \leq 1$ $P = (P_S + 0.2) + 1.033$ • If $Ps > 1$	W = Required flow through the device (kg/h)  C' = adiabatic constant of gas  Kd = Effective coefficient of discharge  A = Required effective discharge area of the device(mm²)  P <sub>1</sub> = relieving pressure(kgf/cm²,a) = (1.1×Set pressure+1.033)  P <sub>2</sub> = back pressure(kgf/cm²,a)  M = Molecular weight of Gas  Z = Compressibility factor  T = Relieving temperature(°K)  P = upstream relieving pressure(kgf/cm²)  C = Ratio of specific heats
HPGCL High-pressure gas safety management	1. Gas $ \frac{W = C \cdot Kd \cdot P \cdot Kb \cdot Kc \cdot A \cdot \sqrt{M}}{13160 \times \sqrt{Z \cdot T}} $ 2. Liquid $ \frac{W = Kd \cdot Kw \cdot Kc \cdot Kv \cdot Kp \cdot A}{11.78} \times \sqrt{\frac{1.25P - Pb}{G}} $	W = Required flow through the device(lb/h) A = Required effective discharge area of the device(mm²) C = Ratio of specific heats Kd = Effective coefficient of discharge P = upstream relieving pressure(kPa,a) = (Set pressure + Over pressure)+101.3 Pb = M = Molecular weight of Gas T = Relieving temperature(°R) Z = Compressibility factor T = Relieving temperature(°K) Kb = capacity correction factor due to back pressure Kc = combination correction factor for installations with a rupture disk upstream of the pressure (Installation with any safety relief valve 1.0) Kw = correction factor due to back pressure Kv = correction factor due to viscosity Kp = correction factor due to overpressure G = Specific gravity of liquid(water=1.0)

## **Engineering Data**

## **ASME SEC. VIII, API RP 520**

Code of application and specifications	Caculation	Symbol description
ASME SEC. VIII	Steam $W = 51.5 \cdot A \cdot P \cdot K \times 0.9$ Gas $W = C \cdot Kd \cdot A \cdot P \cdot \sqrt{\frac{M}{ZT}}$ Liquid $W = 2407A \sqrt{(P-P_b)G}$	W = Required flow through the device(lb/h) A = Required effective discharge area of the device(in²) P = (Setpressure×110)+atmospheric pressure(lb/in²) : SEC VIII Kd = Effective coefficient of discharge C = Ratio of specific heats M = Molecular weight T = Relieving temperature( ° R) Z = Compressibility factor Pb = Constant back pressure(lb/in²) G = Specific gravity of liquid(water=1,0)
API RP 520	$\begin{aligned} &\text{Steam} \\ &W = 51.5 \cdot A \cdot P_1 \cdot \text{Kd} \cdot \text{Kb} \cdot \text{Kc} \cdot \text{Kn} \cdot \text{Ksh} \end{aligned}$ Gas $&W = \frac{C \cdot \text{Kd} \cdot A \cdot P_1 \cdot \text{Kb} \cdot \text{Kc} \sqrt{M}}{\sqrt{Z \cdot T}}$ Liquid $&Q = \frac{38 \cdot A \cdot \text{Kd} \cdot \text{Kp} \cdot \text{Kw} \cdot \text{Kv} \cdot \text{Kc} \sqrt{1.25(P-P_b)}}{\sqrt{G}}$	<ul> <li>W = Required flow through the device(lb/h). A = Required effective discharge area of the device(in²)</li> <li>P₁ = relieving pressure     = set pressure ×1.10+atmospheric pressure(lbh/in²g)</li> <li>KSH = superheat steam correction factor C = Ratio of specific heats</li> <li>Kd = Effective coefficient of discharge</li> <li>M = Molecular weight</li> <li>T = Relieving temperature(°R)</li> <li>Z = Compressibility factor</li> <li>Kb = capacity correction factor due to back pressure</li> <li>Q = Required flow through the device(gal/min)</li> <li>P = Set pressure(lbf/in²g)</li> <li>Pb = Constant back pressure(lb/in²)</li> <li>G = Specific gravity of liquid(water=1.0)</li> <li>Kn = correction factor for Napier equation (P≤1,500psia : 1</li> <li>P&gt;1,500psia and P≤3,200psia : Kn=0.1906P-1,000/0.2292P-1,061)</li> <li>Kp = correction factor due to overpressure</li> <li>Kw = correction factor due to back pressure</li> <li>Kv = correction factor due to viscosity</li> <li>Kc = combination correction factor for installations with a rupture disk upstream of the pressure (Installation with an only safety relief valve 1.0)</li> </ul>

# Pressure Reducing V a l v e



## Pressure Reducing Valve for Gas and Liquid

Dite 16(Bileot / total g 1)po/	
DRE-1F/2F(Direct Acting Type) ······	23
DRE-3F	26
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## Pressure Reducing Valve for Steam

PIR-1S(Direct Acting Type)	30	)
PIR-1F/2F(Pilot Type) ·······	31	



## Pressure Reducing Valve for Fire-fight system

HRE-1F(Hydrant Reducing Valve) ··· 33

#### \* Direct Acting Type

Direct acting type of pressure reducing valve is consist of the spring of the secondary pressure regulating and main valve, main valve directly operates by diaphragm connected to spring or bellows.

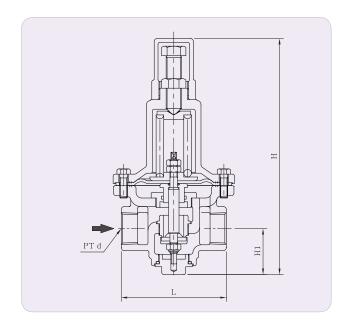
#### \* Pilot Type

Pilot type of pressure reducing valve is consist of pilot part detects the secondary pressure and main valve. Depending on main valve operation, it can be divided into Diaphragm type and Pilot piston type.

## **Pressure Reducing Valve**

## DRE-15 | Pressure Reducing Valve-Direct Acting Type





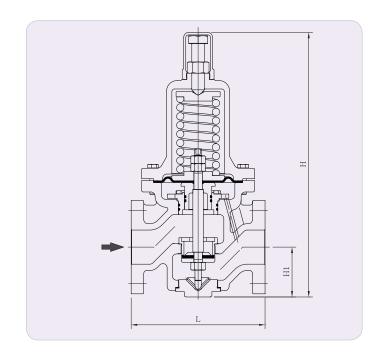
### Specifications

Inlet Pressure (kgf/orig)	Outlet Pressure (kgf/cm²g)	Max Reducing Ratio	Working Temperature (°c)	Working Fluid	Connection	Materials
10	0.5~5	10 : 1	80	Air(Gas) Water(Liquid)	PT Screwed	Body: Ductile Iron Trim: Stainless Steel, Synthetic Rubber

Size	Part	d	L	H1	Н
15A		PT 1/2"	100	47	222
20A		PT 3/4"	100	47	222
25A		PT 1"	110	51	231
32A		PT 1 1/4"	150	70	290
40A		PT 1 1/2"	160	70	290

## DRE-1F/2F | Pressure Reducing Valve-Direct Acting Type





### Specifications

Model	DRE-1F	DRE-2F
Inlet Pressure (kgf/cm²g)	10	20
Outlet Pressure (kgf/orig)	0.5~7	0.5~7
Туре	Diaphragm Type	Diaphragm Type
Max Reducing Ratio	10 : 1	10 : 1
Working Temperature (℃)	80	80
Working Fluid	Air(Gas), Water(Liquid)	Air(Gas), Water(Liquid)
Connection	JIS 10K Flanged	JIS 20K Flanged
Materials	Body: Ductile Iron	Body: Cast Steel, Stainless Steel
iviateriais	Trim: Stainless Steel, Synthetic Rubber	Trim: Stainless Steel, Synthetic Rubber

Size Part	15A	20A	25A	32A	40A	50A	65A	80A	100A	125A	150A	200A
L	160	160	160	180	180	190	230	250	300	370	400	484
H1	65	65	65	76	76	78	95	107	127	148	163	163
Н	335	335	335	400	400	407	505	525	598	728	764	764

<sup>\*</sup> DRE-2F - ANSI and DIN Flange are available upon request

## Table for Sizing | DRE-1F(For Water)

#### How to use the chart

where,

Primary pressure  $: 5.5 \text{kgf/cm}^2 \text{g} \{0.55 \text{Mpa}\}$ Secondary pressure  $: 2 \text{kgf/cm}^2 \text{g} \{0.2 \text{Mpa}\}$ Pressure differential  $: 3.5 \text{kgf/cm}^2 \text{g} \{0.35 \text{Mpa}\}$ 

Specific gravity : 1 (water) Flow :  $24m^2/h$ 

Obtain a cross point "A" by tracing down vertically from the pressure differential of  $3.5 \text{kgf/cm}^2$  {0.35Mpa} L on the top up to the line of Flow  $24 \text{m}^3$ /h. As the point "A" is between size 50 and 65mm. select safer size 65mm.

where,

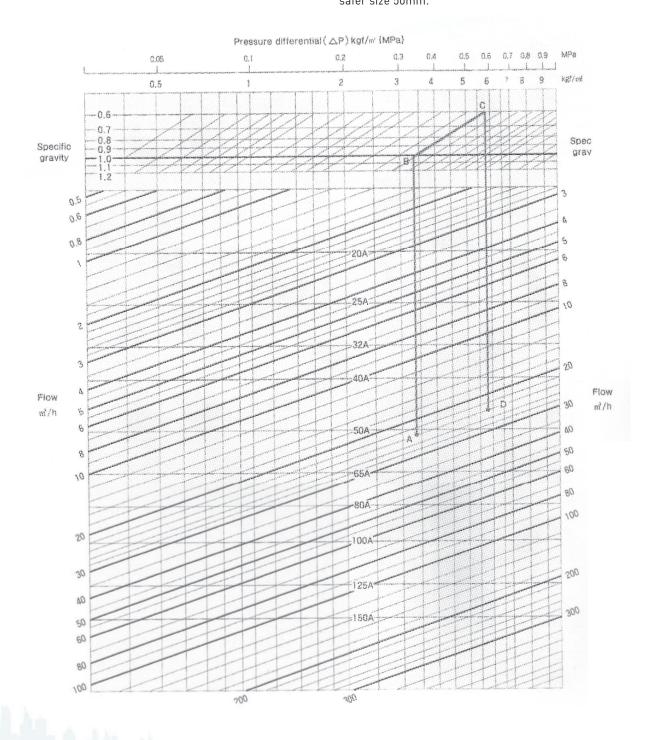
Same conditions except

Specific gravity : 0.6

Obtain a cross point "B" by tracing down vertically from the pressure differential of  $3.5 kgf/cm^2 \ \{0.35 Mpa\}$  up to the

line of specific gravity 1.0

and move in paralled with the slant line up to the cross point "C" on the line of the specific gravity 0.6 Trace down vertically to the point "D" on the cross line of Flow 24m³/h. As the point "D" is between size 40 and 50mm. select safer size 50mm.



## Table for Sizing | DRE-1F(For Air)

#### How to use the chart

where,

Primary pressure

 $: 5 \text{kgf/cm}^2 \text{g} \{0.5 \text{Mpa}\}$ 

Secondary pressure Pressure differential  $: 2.5 \text{kgf/cm}^2 \text{g} \{0.2 \text{Mpa}\}$  $: 3.5 \text{kgf/cm}^2 \text{g} \{0.35 \text{Mpa}\}$ 

Specific gravity Flow

: 1 (water) : 24m<sup>2</sup>/h

Obtain a cross point "A" by tracing down vertically from the pressure differential of 3.5kgf/cm² {0.35Mpa} L on the top up to the line of Flow 24m<sup>3</sup>/h. As the point "A" is between

size 50 and 65mm. select safer size 65mm.

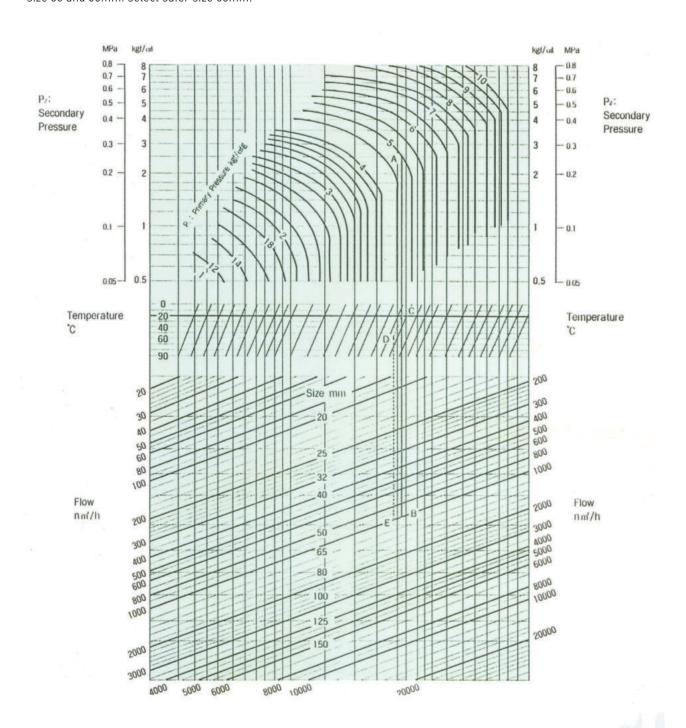
where,

Same conditions except

Specific gravity

: 0.6

Obtain a cross point "B" by tracing down vertically from the pressure differential of 3.5kgf/cm<sup>2</sup> {0.35Mpa} up to the line of specific gravity 1.0 and move in paralled with the slant line up to the cross point "C" on the line of the specific gravity 0.6 Trace down vertically to the point "D" on the cross line of Flow 24m³/h. As the point "D" is between size 40 and 50mm. select safer size 50mm.



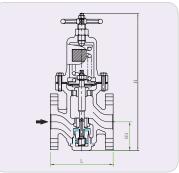
## DRE-3F | Pressure Reducing Valve-Direct Acting Type

### Specifications

Inlet Pressure (kgf/am²g)	30~40		
Outlet Pressure (kgf/am²g)	0.5~10		
Max Reducing Ratio	10 : 1		
Working Temperature (℃)	80		
Working Fluid	Air(Gas), Water(Liquid)		
Connection	JIS 30K, 40K Flanged		
Matariala	Body: Cast Steel, Stinless Steel		
Materials	Trim: Stainless Steel, Synthetic Rubber		



Size Part	Connection	L	H1	Н
15A		145	76	366
20A		145	76	366
25A	JIS 30K, 40K	150	76	366
32A	RF Flanged	180	87	407
40A		180	82	407
50A		280	82	407



<sup>\*</sup> ANSI, DIN Flanges are available upon request

## Table for Sizing | DRE-3F(For Air)

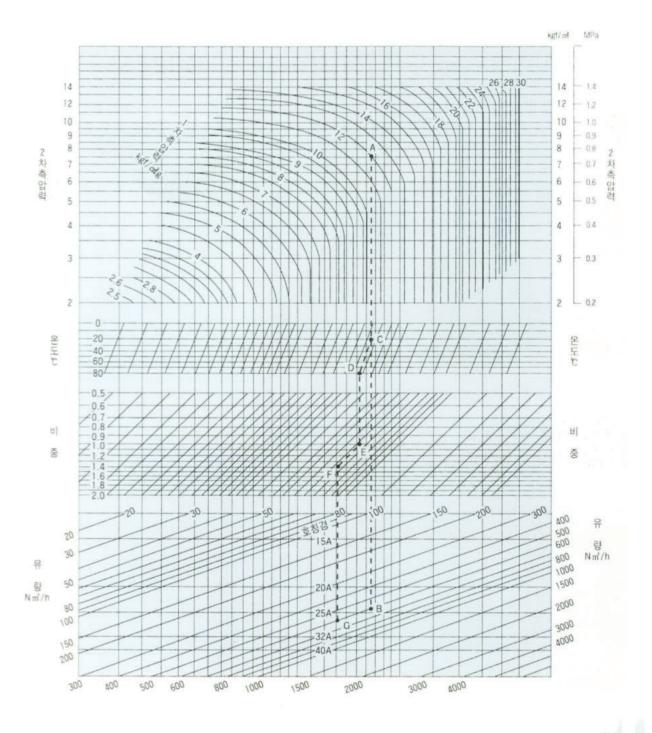
#### How to use the chart

where.

Primary pressure  $: 4kgf/cm^2g \{0.4Mpa\}$  $: 2kgf/cm^2g \{0.2Mpa\}$ Secondary pressure

Flow (Saturated steam) : 800kg/h Obtain a cross point "A" on the vertically line of primary pressure  $4kgf/cm^2$  {0.4Mpa} with horizontal line of secondary pressure  $2kgf/cm^2$  {0.2Mpa}.

Obtain a cross point "B" on the vertical line down from the point "A" with the oblique line og flow 800kg/h. As the point "B" is between size 40 and 50mm. select safer size 50mm.



## PRE-1F/2F | Pressure Reducing Valve-Piston Type

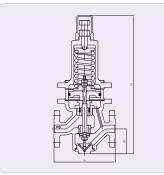
### Specifications

Model	PRE-1F	PRE-2F
Inlet Pressure (kgf/cm²g)	10~16	10~20
Outlet Pressure (kgf/cm²g)	0.5~12	0.5~15
Type	Piston Type	Piston Type
Max Reducing Ratio	10:1	10:1
Working Temperature (℃)	150	150
Working Fluid	Air(Gas), Water(Liquid)	Air(Gas), Water(Liquid)
Connection	JIS 10K, 16K Flanged	JIS 16K, 20K Flanged
Materials	Body: Ductile Iron	Body: Cast Steel, Stainless Steel
water iais	Trim: Stainless Steel, Synthetic Rubber	Trim: Stainless Steel, Synthetic Rubber



### Dimensions

Size	15A	20A	25A	32A	40A	50A	65A	80A	100A	125A	150A	200A
L	160	160	160	180	180	190	251	270	300	370	400	484
H1	65	65	65	65	76	78	95	107	127	148	163	163
Н	361	361	361	361	436	445	554	574	656	796	832	832



## PRE-3F | Pressure Reducing Valve-Piston Type

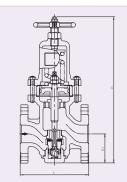
### Specifications

Inlet Pressure (kgf/cm²g)	30~40
Outlet Pressure (kgf/cm²g)	0.5~24
Max Reducing Ratio	10 : 1
Working Temperature (೮)	150
Working Fluid	Air(Gas), Water(Liquid)
Connection	JIS 30K, 40K Flanged
Materials	Body: Cast Steel, Stainless Steel
materials	Trim: Stainless Steel, Synthetic Rubber



Size Pa	Connection	L	H1	Н
15A		145	76	316
20A		145	76	316
25A	JIS 30K, 40K	150	76	316
32A	RF Flanges	180	87	346
40A		180	82	351
50A		280	82	351



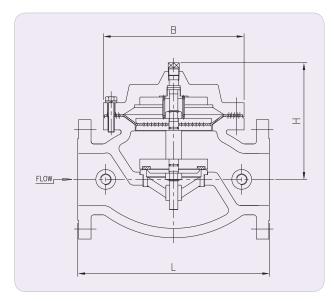


<sup>\*</sup> PRE-2F - ANSI and DIN Flange are available upon request

### FRE-1F/2F | Pressure Reducing Valve-Direct Acting Type

- · Superior performance and durability with large-capacity pressure reducing valve.
- The range of adjustable flow is wide and stable flow condition can be maintained and the minimum adjustable fflow rate is excellent.
- · Only one adjustment keeps constant pressure at all times.





### Specifications

Model	FRE-1F	FRE-2F		
Inlet Pressure (kgf/arig)	10	20		
Outlet Pressure (kgf/om²g)	0.5~7	0.5~7		
Max Reducing Ratio	10 : 1	10 : 1		
Working Temperature (℃)	80	80		
Working Fluid	Air(Gas), Water(Liquid), Oil	Air(Gas), Water(Liquid), Oil		
Туре	Diaphragm Type	Diaphragm Type		
Connection	JIS 10K Flanged	JIS 10K, 20K Flanged		
Materials	Body: Ductile Iron	Body: Cast Steel, Stainless Steel		
Waterials	Trim: Stainless Steel, Synthetic Rubber	Trim: Stainless Steel, Synthetic Rubber		

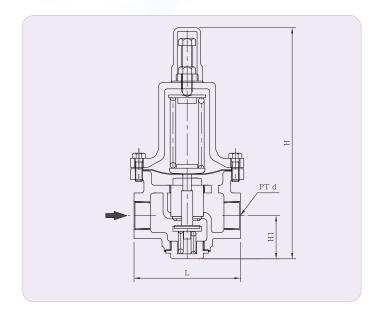
Size Part	50A	65A	80A	100A	125A	150A	200A	250A	300A	400A
L	240	290	290	360	360	460	560	760	800	1100
Н	145	180	180	230	230	270	335	390	445	765
В	170	210	210	270	270	370	455	600	650	820

<sup>\*</sup> FRE-2F - ANSI and DIN Flange are available upon request

<sup>\*</sup> Piston Type is available from 7K to 12K

## PIR-15 | Pressure Reducing Valve For Steam-Direct Acting Type





### Specifications

Inlet Pressure (kgf/org)	10			
Outlet Pressure (kgf/org)	0.5~5			
Max Reducing Ratio	10:1			
Working Temperature (°c)	220			
Working Fluid	Steam			
Connection	PT Screwed			
Materials	Body: Ductile Iron			
Materials	Trim: Stainless Steel			

### Dimensions

Size Part	d	L	H1	Н
15A	PT 1/2"	120	55	260
20A	PT 3/4"	120	55	260
25A	PT 1"	120	55	260
32A	32A PT 1 1/4"		62	318
40A	PT 1 1/2"	150	62	318

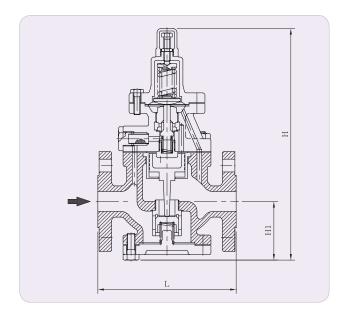
### ► CV

Model Size	15A	20A	25A	32A	40A	50A	65A	80A	100A	125A	150A
DRE-1F	1	2	3.5	5.5	8	14	22	32	48	75	108
DRE-1S	0.8	0.8	1								
PIR-1F	1	2.5	4	6.5	9	16	25	36	64	100	144
DRE-3F	1	2.5	4	6.3	8						

### PIR-1F/2F | Pressure Reducing Valve For Steam-Pilot Type

- · The mechanism that automatically adjusts the pressure in pressure reducing valves uses the balance between the steam pressure and the adjustment spring.
- · The steam flowing through the pilot valve is controlled by the balance between the adjustment spring and the secondary pressure.
- This steam causes the piston to fall and rise, which controls the amount of opening of the main valve.





### Specifications

Model	PIR-1F	PIR-2F		
Inlet Pressure (kgf/arig)	10	20		
Outlet Pressure (kgf/om²g)	0.5~7	0.5~15		
Max Reducing Ratio	10 : 1	10 : 1		
Working Temperature (℃)	220	250		
Working Fluid	Steam	Steam		
Connection	JIS 10K Flanged	JIS 20K Flanged		
Materials	Body: Ductile Iron	Body: Cast Steel, Stainless Steel		
Materials	Trim: Stainless Steel	Trim: Stainless Steel		

Size P	art	15A	20A	25A	32A	40A	50A	65A	80A	100A	125A	150A	200A	250A
L		165	165	170	200	200	220	250	290	320	350	395	560	650
H1		75	75	75	85	85	95	105	125	130	148	466	620	267
Н		357	357	357	375	375	395	415	440	465	459	181	250	685

<sup>\*</sup> PIR-2F - ANSI and DIN Flange are available upon request

## Nominal diameter chart | PIR-1F(For Steam)

#### How to use the chart

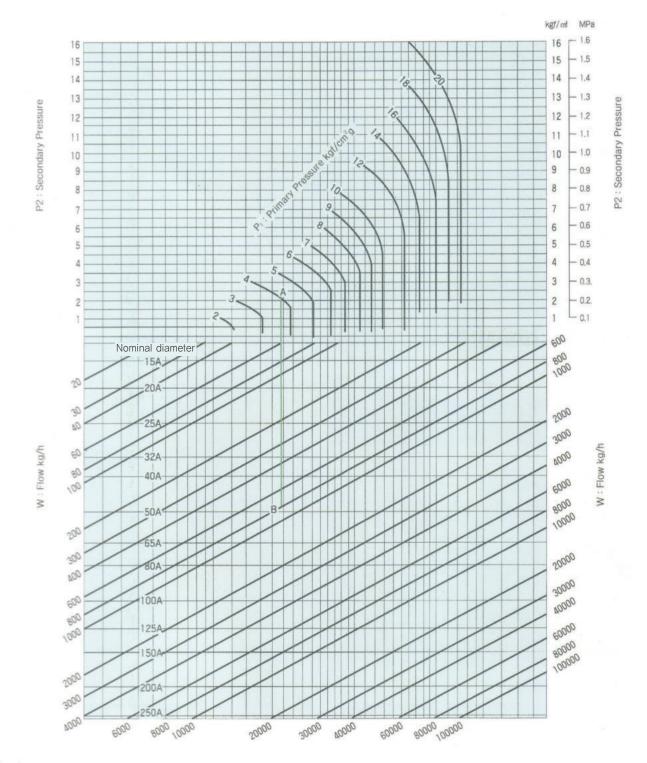
where,

 $\begin{array}{ll} \text{Primary pressure} & : 4 \text{kgf/cm}^2 \text{g} \left\{0.4 \text{Mpa}\right\} \\ \text{Secondary pressure} & : 2 \text{kgf/cm}^2 \text{g} \left\{0.2 \text{Mpa}\right\} \end{array}$ 

Flow (Saturated steam) : 800kg/h

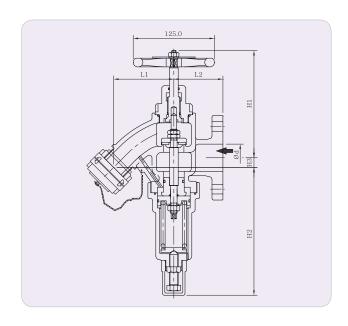
Obtain a cross point "A" on the vertically line of primary pressure  $4kgf/cm^2$  {0.4Mpa} with horizontal line of secondary pressure  $2kgf/cm^2$  {0.2Mpa}.

Obtain a cross point "B" on the vertical line down from the point "A" with the oblique line og flow 800kg/h. As the point "B" is between size 40 and 50mm. select safer size 50mm.



## HRE-1F | Hydrant Reducing Valve





### Specifications

Inlet Pressure (kgf/air)	16			
Outlet Pressure (kgf/gir)	5~7			
Working Temperature (℃)	80			
Working Fluid	Sea Water			
Connection	ANSI 150#, 300# Flanged			
Туре	Globe Type, Angle Type			
	Body : Cast Bronze			
Materials	Trim: Stainless Steel			
Materials	Disc : Teplon			
	Coupling: Cast Bronze			

Size	d	L1	L2	H1	H2	Н3
50A	50	110	90	200	260	17
65A	65	140	117	240	290	23

# Primary Regulating Valve



Primary Regulating Valve for Gas and Liquid

DRG-1F/2F(Direct Acting Type) ...... 35

Primary Regulating Valve for Steam



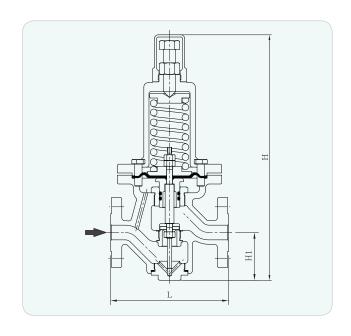
\* If the pressure exceeds certain pressure, the valve is opened to allow the fluid to be flowed, keeping constantly the pressure at the top of the valve.

## **Primary Regulating Valve**

### DRG-1F/2F | Primary Regulating Valve-Direct Acting Type

- · Self operated pressure regulating valve for discharging the over pressure to maintain a regular pressure at the pipe arrangement so it is a kind of relief valve.
- · It is used for air regulating equipment.





### Specifications

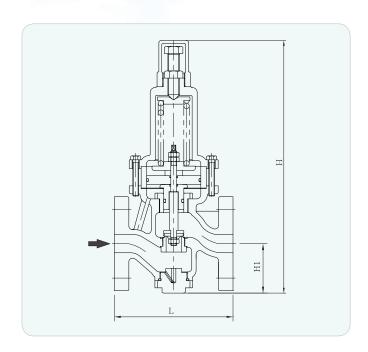
Model	DRG-1F	DRG-2F		
Inlet Pressure (kgf/cm²g)	10	20		
Outlet Pressure (kgf/orig)	0.5~7	0.5~7		
Туре	Diaphragm Type	Diaphragm Type		
Working Temperature (°)	80	80		
Working Fluid	Air(Gas), Water(Liquid)	Air(Gas), Water(Liquid)		
Connection	JIS 10K Flanged	JIS 20K Flanged		
Materials	Body: Ductile Iron	Body: Cast Steel, Stainless Steel		
ivialeriais	Trim: Stainless Steel, Synthetic Rubber	Trim: Stainless Steel, Synthetic Rubber		

Size Part	15A	20A	25A	32A	40A	50A	65A	80A	100A	125A	150A	200A
L	160	160	160	180	180	190	251	270	300	370	400	484
H1	65	65	65	76	76	78	95	107	127	148	163	163
Н	335	335	335	400	400	407	505	525	598	728	764	764

<sup>\*</sup> DRG-2F - ANSI and DIN Flange are available upon request

## PRG-1F/2F | Primary Regulating Valve-Piston Type





### Specifications

Model	PRG-1F	PRG-2F		
Inlet Pressure (kgf/org)	16	20		
Outlet Pressure (kgf/ai/g)	0.5~12	0.5~15		
Туре	Piston Type	Piston Type		
Working Temperature (°c)	150	150		
Working Fluid	Air(Gas), Water(Liquid)	Air(Gas), Water(Liquid)		
Connection	JIS 10K(16K) Flanged	JIS 20K Flanged		
Materials	Body : Ductile Iron	Body: Cast Steel, Stainless Steel		
waterials	Trim: Stainless Steel, Synthetic Rubber	Trim: Stainless Steel, Synthetic Rubber		

### Dimensions

Size Part	15A	20A	25A	32A	40A	50A	65A	80A	100A	125A	150A	200A
L	160	160	160	180	180	190	251	270	300	370	400	484
H1	65	65	65	76	76	78	95	107	127	148	163	163
Н	361	361	361	436	436	445	554	574	656	796	832	832

\* PRG-2F - ANSI and DIN Flange are available upon request

# Table for Sizing | DRG-1F, PRG-1F(For Liquid)

#### How to use the chart

where,

 $: 5.5 \text{kgf/cm}^2 \text{g} \{0.55 \text{Mpa}\}$ Primary pressure : 2kgf/cm<sup>2</sup>g {0.2Mpa} Secondary pressure Pressure differential  $: 3.5 \text{kgf/cm}^2 \text{g} \{0.35 \text{Mpa}\}$ 

Specific gravity : 1 (water) : 24m<sup>2</sup>/h Flow

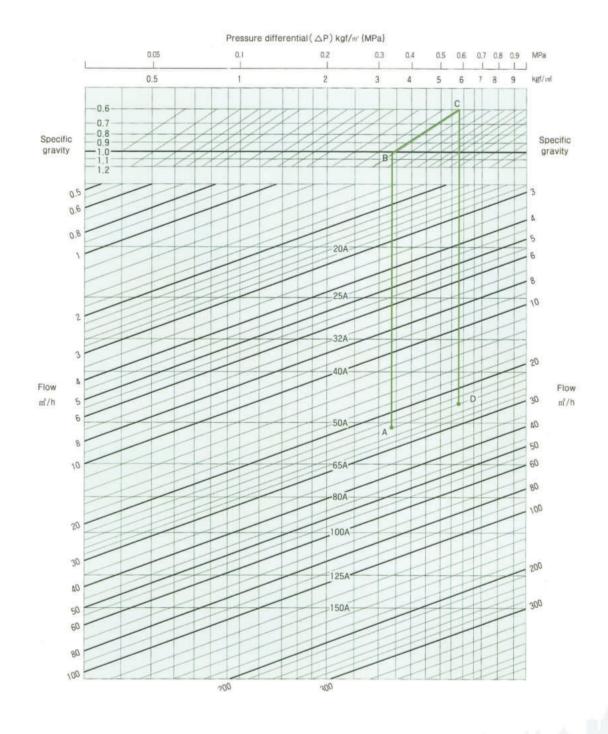
Obtain a cross point "A" by tracing down vertically from the pressure differential of 3.5kgf/cm<sup>2</sup> {0.35Mpa} L on the top up to the line of Flow 24m<sup>3</sup>/h. As the point "A" is between size 50 and 65mm. select safer size 65mm.

where,

Same conditions except

: 0.6 Specific gravity

Obtain a cross point "B" by tracing down vertically from the pressure differential of 3.5kgf/cm<sup>2</sup> {0.35Mpa} up to the line of specific gravity 1.0 and move in paralled with the slant line up to the cross point "C" on the line of the specific gravity 0.6 Trace down vertically to the point "D" on the cross line of Flow 24m3/h. As the point "D" is between size 40 and 50mm. select safer size 50mm.



# Steam Trap



# Thermodynamic Type of Steam Trap

DST-3S(Disc Type)
DST-1S/1F/2F(Disc Type)40
DST-4S/4F(Disc Type)41
RST-1S(Rypass Type)

# Mechanical Type of Steam Trap

BKT-1S/1F(Bucket Type) ·····	43
FLT-1S/1F/2F(Float Type) ·····	44
PST-2F(Piston Type)	45



# **Steam Trap**

Steam traps are automatic valves that release condensed steam (condensate) from a steam space while preventing the loss of live steam. They also remove air and non-condensable from the steam space. Steam traps are design to maintain steam energy efficiency by performing specific tasks such as heating a building or maintaining heat for process.

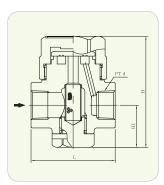
# Type of Steam Traps

- 1. Thermodynamic Typs
- 2. Mechanical Type
- 3. Thermostatic Type

# **DST-35** | Disc Type Steam Trap

- · Simple and Small constrution.
- · No trouble & low repair cost owing to integral construction of body & seat.
- Excellent durability owing to the heat-treated disc and seat.

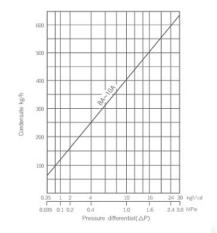




#### Specifications

Working Pressure (kgf/cm²)	Max. 20			
WOIKING Plessure (kgi/aii)	Min. 0.35			
Working Temperature (°c)	250			
Connection	PT Screwed			
Materials	Body: Stainless Steel			
Materials	Trim: Stainless Steel			

Size	d	L	H1	Н	Connection
8A	PT 1/4"	50	25	65	PT Screwed
10A	PT 3/8"	50	25	65	PT Screwed



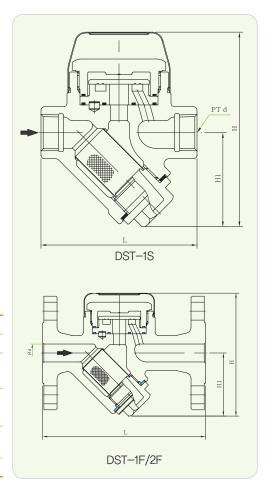
# DST-1S/1F/2F | Disc Type Steam Trap

- Insulation chambr(air warm) is adopted to lessen the affect of atmosphere and to improve the most suitable working conditions.
- The maintenance and repair of disc and seat are easy owing to its material of high-hardness-treated stainless steel and its replaceable seat.

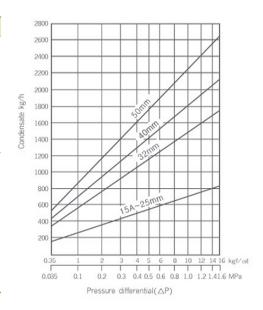




Working	Max. 16	Max. 20	
Pressure (kgf/cm²)	Min. 0.35	Min. 0.35	
Working Temperature (℃)	220	220	
Connection	DST-1S: PT Screwed	DST-2F: JIS Flanged	
Connection	DST-1F: JIS Flanged	DST-ZF . JIS Flariged	
Materials	Body: Ductile Iron	Body : Cast Steel, Stainless Steel	
	Trim: Stainless Steel	Trim: Stainless Steel	



Model	Size	d	L	H1	Н	Connection
	15A	PT 1/2"	90	54	104	
	20A	PT 3/4"	95	56	108	
DST-1S	25A	PT 1"	100	58	112	PT Screwed
	32A	PT 1 1/4"	180	100	180	
	40A	PT 11/2"	180	110	205	
	15A	15	136	53	103	JIS 5K Flanged JIS 16K Flanged (DST-1F) JIS 20K Flanged
	20A	20	140	55	108	
DST-1F	25A	25	150	58	113	
DST-2F	32A	32	190	103	185	
	40A	40	260	112	206	(DST-2F)
	50A	50	260	112	206	



\* DST-2F - ANSI and DIN Flange are available upon request

# **DST-4S/4F** | Disc Type Steam Trap

Steam trap is designed for high temperature - pressure steam. And for integral body with the saet.

- · Small and compact design.
- · Easy maintenance and replacement.
- Internal strainer bult in.
- · Insulation cap adopted.



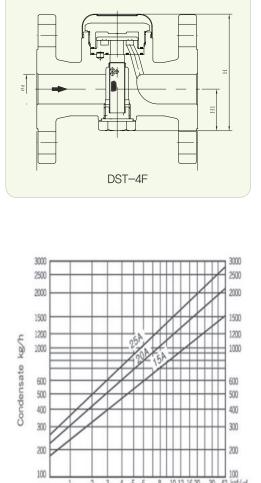
DST-4F

# Specifications

Working Processo (ket/e²)	Max, 20			
Working Pressure (kgf/cm²)	Min. 0,35			
Working Temperature (°c)	250			
Connection	DST-4S: PT Screwed			
Connection	DST-4F: JIS 10K, 20K Flanged			
Materials	Body: Stainless Steel			
iviateriais	Trim: Stainless Steel			

# Dimensions

Model	Size	d	L	H1	Н	Connection
	15A	PT 1/2"	80	34	90	
DST-4S	20A	PT 3/4"	80	34	94	PT Screwed
	25A	PT 1"	90	34	97	
	15A	15	130	35	98	JIS 10K, 20K Flanged
DST-4F	20A	20	130	35	98	
	25A	25	135	35	98	



02 03 04 05 06 08 1012 Pressure differential(△P)

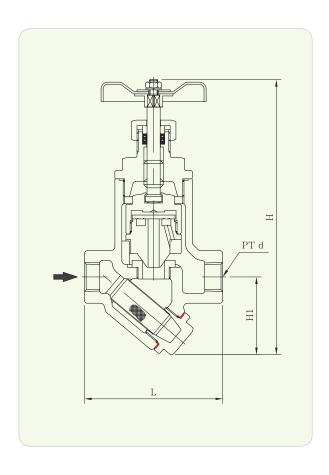
DST-4S

<sup>\*</sup> DST-4F - ANSI and DIN Flange are available upon request

# **BST-15** | By Pass Type Steam Trap

- A built—in—pass valve allows to easily blow—off larger flow at initial operating and/or admissible fl ow into trap while opening the valve by handle.
- · This type is useful to steam mains, especially suitable for laundry machines, and dyeing machines.

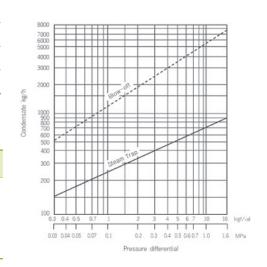




# Specifications

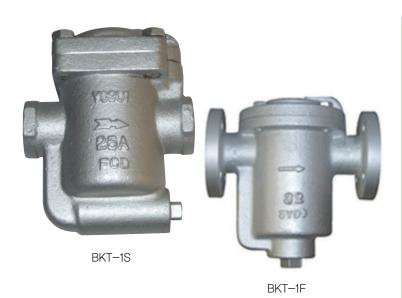
Working Property (test/m²)	Max. 16			
Working Pressure (kgf/air)	Min. 0.35			
Working Temperature (°c)	220			
Connection	PT Screwed			
Mataviala	Body: Ductile Iron			
Materials	Trim: Stainless Steel			

Size	d	L	H1	Н	Connection
15A	PT 1/2"	100	58	203	
20A	PT 3/4"	100	58	203	PT Screwed
25A	PT 1"	110	62	207	



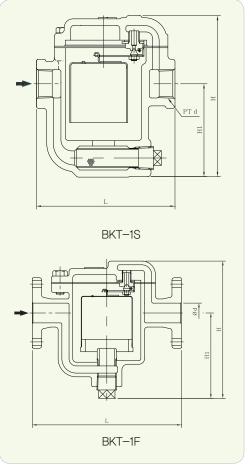
# BKT-1S/1F | 버켓식 트랩(Bucket Type Steam Trap)

- It is an inverted type steam trap suitable for the heat exchangers, dryers and steam press, constructionally solving the air trouble by itself.
- · All of the working parts are installed at the inside of the bonnet for easy disassembly andmaintenance.

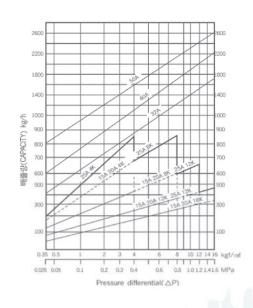




Working Program (Isotian)	Max. 8			
Working Pressure (kgf/cm²)	Min. 0.35			
Working Temperature (°)	220			
Occupation	BKT-1S: PT Screwed			
Connection	BKT-1F: JIS 10K Flanged			
Materials	Body: Ductile Iron			
waterials	Trim: Stainless Steel			



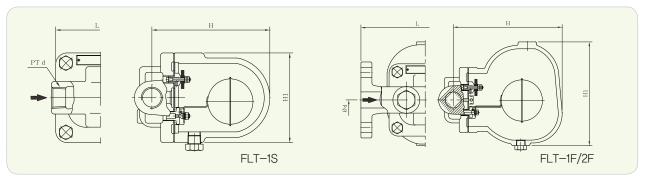
Model	Size	d	L	H1	Н	Connection
	15A	PT 1/2"	127	70	158	
	20A	PT 3/4"	127	70	158	
DI/T 10	25A	PT 1"	137	77	171	PT Screwed
BKT-1S	32A	PT 1 1/4"	190	190	280	PT Screwed
	40A	PT 1 1/2"	190	190	280	
	50A	PT 2"	240	200	300	
	32A	32	250	190	280	
BKT-1F	40A	40	250	190	280	JIS 10K Flanged
	50A	50	290	200	300	



# FLT-1S/1F/2F | Float Type Steam Trap

- For Aplication to larger capacity than thermodynamic trap such as heat exchanger, dryer, chemical plant, and various steam systems. Excellent durability of stainless steel disc, seat, and ball fl oat. Inbult air vent assembly to eliminate air—binding.
- All parts are installed at the bonnet, and the integral bonnet would be helpful for easy maintenance.

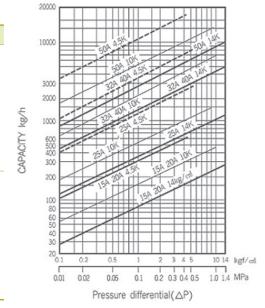




#### Specifications

Marking Property (katlan)	Max. 4.5, 10, 14	Max.20				
Working Pressure (kgf/cm²)	Min. 0.35	Min. 0.35				
Working Temperature (°C)	220	250				
Connection	FLT-1S: PT Screwed	FLT-2F: JIS Flanged				
Connection	FLT-1F: JIS Flanged	FLI-ZF : JIS Flatiged				
Materials	Body: Ductile Iron	Body: Cast Steel, Stainless Steel				
Materials	Trim: Stainless Steel	Trim: Stainless Steel				

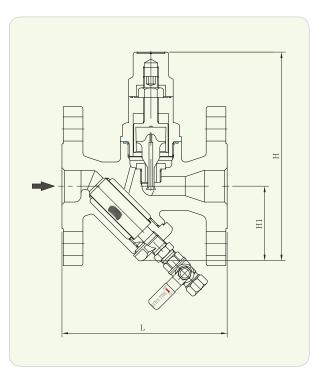
Model	Size	d	L	H1	Н	Connection
	15A	PT 1/2"	120	20 110 155		
	20A	PT 3/4"	120	110	155	
ELT. 40	25A	PT 1"	120	185	190	DT Carrant
FLT-1S	32A	PT 1 1/4"	270	240	295	PT Screwed
	40A	PT 1 1/2"	270	240	295	
	50A	PT 2"	300	260	310	
	15A	15	200	110	155	
	20A	20	200	110	155	JIS 5K Flanged
FLT-1F FLT-2F	25A	25	215	185	190	JIS 10K Flanged JIS 16K Flanged
	32A	32	320	240	295	(FLT-1F)
	40A	40	320	240	295	JIS 20K Flanged (FLT-2F)
	50A	50	360	260	310	, , , , , , , , , , , , , , , , , , ,



\* FLT-2F - ANSI and DIN Flange are available upon request

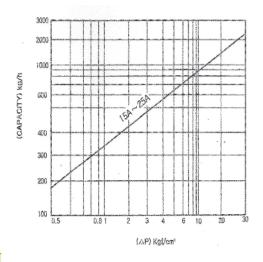
# PST-2F | 피스톤식 스팀트랩(Piston Type Steam Trap)





# Specifications

Working Pressure (kgf/air)	Max. 20				
Working Flessure (kgi/cii)	Min. 0.35				
Working Temperature (°C)	220				
Connection	JIS 16K, 20K Flanged				
Materials	Body: Cast Steel, Stainless Steel				
Materials	Trim: Stainless Steel				



Model	Size	d	L	H1	Н	Connection
	15A	15	126	60	165	
PST-2F	20A	20	130	60	165	JIS 16K, 20K Flanged
	25A	25	130	60	165	

# Reference Data | Accumulated Drain at steam pipe line

▶ When steam passes through at the beginning or accumulated A: when steam passes through at the Drain at unheated pipe line

beginning

B: Unheated pipe line

diama	ter(mm)														
pressure(kgf/cm²ç		15	20	25	32	40	50	65	80	100	125	150	200	250	300
0.5	Α	0.04	0.05	0.07	0.09	0.10	0.03	0.22	0.28	0.39	0.52	0,67	1.01	1.42	1,88
(110.7°C)	В	0.08	0.10	0.13	0.16	0.18	0.23	0.29	0.33	0.42	0.52	0.61	0.80	0.99	1,17
1	Α	0.04	0.05	0.07	0.10	0.11	0.15	0.25	0.30	0.43	0.58	0.74	1,11	1.57	2.07
(119.6°C)	В	0.09	0,12	0.15	0.18	0,21	0,26	0,32	0,38	0.48	0,59	0.70	0,91	1,12	1,34
2	Α	0.04	0.06	0.18	0.11	0.13	0.17	0.28	0.34	0.48	0.65	0.83	1.26	1,77	2.33
(132.9°C)	В	0.11	0.14	0.18	0.22	0.25	0.31	0.39	0.46	0.58	0.71	0,84	1,10	1.35	1.61
3	Α	0.05	0.06	0.09	0.12	0.14	0,18	0,30	0.37	0,52	0.71	0,90	1.37	1,93	1,61
(142.9°C)	В	0.13	0.16	0.20	0.25	0.29	0.38	0.45	0.52	0.67	0,81	0.96	1.25	1,55	2.55
4	Α	0.05	0.07	0.09	0.13	0.15	0.19	0.32	0.40	0.56	0.76	0.97	1.47	2.06	2,73
(151.1°C)	В	0.14	0.18	0.22	0.28	0.32	0.39	0.50	0.58	0.74	0,90	1,07	1.40	1,72	2.05
5	Α	0.05	0.07	0.10	0.13	0.16	0.20	0.34	0.42	0.59	0.80	1.02	1.55	2,18	2,88
(158.1°C)	В	0.15	0.20	0.25	0.32	0.36	0.45	0.56	0.66	0.84	1,03	1,21	1.59	1,88	2,34
6	Α	0.06	0.07	0.10	0.14	0.16	0.21	0.36	0.44	0.62	0.84	1.07	1,63	2,29	3.02
(164.2°C)	В	0.16	0,21	0.26	0.33	0.37	0.46	0.58	0.68	0.87	1.06	1,26	1,65	2,03	2.43
7	Α	0.06	0.07	0.11	0.14	0.17	0.22	0.37	0.46	0.65	0.87	1,11	1,69	2,38	3.14
(169.6°C)	В	0.18	0.23	0.28	0.35	0.40	0.50	0,62	0.73	0.93	1.14	1.34	1.76	2,17	2.59
8	А	0.06	0.08	0.11	0.15	0.18	0.23	0.38	0.48	0.67	0.91	1.16	1.76	2.47	3,26
(174.5°C)	В	0.19	0.24	0.30	0.37	0.42	0.53	0.66	0.77	0.99	1,21	1,28	1.87	2,31	2,76
9	Α	0.06	0.08	0.12	0.15	0.18	0.24	0.40	0.49	0.70	0.94	1.20	1,82	2,56	3.39
(179.0°C)	В	0.20	0.25	0.31	0.39	0.45	0.56	0.70	0.82	1.04	1,27	1.50	1.97	2.44	2,91
10	Α	0.06	0.08	0.12	0.16	0.19	0.25	0.41	0.51	0.72	0.98	1.24	1.87	2,65	3.51
(183.2°C)	В	0,21	0,27	0.33	0,41	0.47	0.58	0.73	0.86	1.09	1.34	1.58	2.07	2,56	3.05
15	Α	0.07	0.09	0.13	0.18	0,21	0.28	0.46	0.57	0.18	1.09	1,39	2,12	2,98	3.94
(200.4°C)	В	0.25	0.32	0.40	0.50	0.57	0.71	0.90	1,05	1.34	1.64	1.93	2,53	3,13	3,73
20	Α	0.08	0.10	0.14	0.19	0.23	0.30	0.50	0.62	0.87	1.18	1.50	2,28	3,21	4.24
(213.9°C)	В	0,29	0,26	0.46	0.57	0,65	0.81	1,02	1,19	1.53	4.87	2,21	2,89	3,57	4.26
30	Α	0.00	0.12	0.174	0.23	0.27	0.35	0.59	0.73	1.03	1.39	1.77	2,69	3.78	5.00
(234.6°C)	В	0.37	0.47	0.59	0.74	0.85	1.05	1.32	1.54	1,97	2.41	2,69	3.74	4.61	5.50

## ▶ Accumulated Drain when it is heated at pipe line

Temperature	Pipe size (mm)	15	20	25	32	40	50	65	80	100	125	150	200	250	300
100	Warm athickness mm	15	15	15	15	15	15	15	20	20	20	20	20	20	20
100	Accumulated Drain kg/min	0.05	0.06	0.07	0.08	0.08	0.10	0.11	0.12	0.14	0.17	0.19	0.23	0.27	0.31
450	Warm athickness mm	15	15	20	20	20	20	25	25	25	25	25	25	30	30
150	Accumulated Drain kg/min	0.09	0.10	0.11	0.12	0.13	0.14	0,17	0.18	0,20	0,23	0.26	0.32	0.37	0.42
000	Warm athickness mm	20	20	20	25	25	25	25	25	30	30	30	35	35	35
200	Accumulated Drain kg/min	0.12	0.14	0.15	0.15	0.17	0.19	0.22	0.24	0.28	0.32	0.36	0.43	0.50	0.58
050	Warm athickness mm	20	25	25	25	25	30	30	30	35	35	35	40	40	40
250	Accumulated Drain kg/min	0.17	0.19	0,20	0,22	0,23	0.26	0.30	0.33	0,38	0.43	0.49	0.58	0,68	0.78
300	Warm athickness mm	25	25	25	30	30	30	35	35	40	40	40	45	45	45
	Accumulated Drain kg/min	0.22	0.25	0.28	0,30	0,33	0.37	0.42	0.46	0,53	0,60	0.68	0.80	0.94	1,08

# Reference Data | Table of saturated vapour

Absolute		Temper	rature of	Volume of water	Volume	Weight of	Specific	Specific enthalpy of steam 1kg		Absolute for si		Temper	rature of	Volume of water	Volume	Weight of	Specific enthalpy of steam 1kg		
for si		ste	am	1kg before evaporation	of steam 1kg	steam 1m2	Heat	Latent heat	Total heat	(a b		ste	am	1kg before evaporation	of steam 1kg	steam 1m2	Heat	Latent heat	Total heat
kgf/ar	lb/ln²	°C	۴	Q	m²	kg	h	L	H=h+L	kgf/ar	lb/ln²	°C	۴	Q	m²	kg	h	L	H=h+L
0.02	028	17.2	629	1,0012	68,26	0.147	17.2	587.8	605.0	13.5	1920	1924	378.3	1,1451	0.1485	6.734	195.5	469.9	665.4
0.04	0.57	28.6	83.5	1,0039	35.45	0.0288	28.7	581.3	610.0	14.0	199.1	194.1	381.4	1,1476	0.1436	6.974	197.3	468.4	665,7
0.06	0,85	35,8	96.4	1,0063	24,18	0.0414	35,8	577,3	613,1	14,5	206,2	195,8	384,4	1,1500	0,1386	7,214	199,0	466,9	665,9
0.08	1,14	41.2	106.2	1,0083	18.44	0.0542	41.2	574.2	615.4	15.0	213,3	197.4	387.3	1,1524	0.1342	7.454	200.7	465.5	666.2
0.10	1,42	45.5	113.9	1,0101	14.95	0.0669	45.4	571.8	617.2	16.0	227,4	200.4	3927	1,1572	0.1260	7.934	204.1	4626	666.7
0.15	214	53.6	128,5	1,0136	10,21	0.0980	53.5	567.1	620.6	17.0	241.7	203,4	398.1	1,1618	0.1189	8.414	207.2	459.9	667.1
020	284	59.7	139.5	1,0170	7.791	0.1284	59.6	563.5	623.1	18.0	256.0	206.2	403.2	1,1663	0.1124	8,894	210,2	457.2	667.4
0.25	3,56	64.6	148,3	1,0197	6.319	0.1583	64.5	560.8	625.2	19.0	270.2	208.8	407.8	1,1706	0.1067	9.375	213,1	454.1	667.7
0.30	4.27	68.7	155,7	1,0221	5.326	0,1878	68.7	558.2	626,9	20.0	284,4	211.4	4125	1,1749	0,1 015	9.857	215.9	4521	668.0
0.35	4,98	723	1621	1,0242	4,409	0.2170	722	556.1	628.3	21.0	298,6	213.9	417.0	1,1791	0.0967	10.34	218,6	459.6	668.2
0.40	5,69	75.5	167.7	1,0362	4.067	0.2459	75.4	554.2	629.6	22.0	312,8	216.2	421.2	1,1833	0.0924	10,85	221,2	447.2	668.4
0.45	6.40	78.3	1729	1.0280	3.642	0.2746	78.3	5525	630.8	23.0	327.1	218.5	425.3	1,1873	0.0885	11.31	223.8	448.8	668.6
0.50	7.11	809	177.6	1,0296	3,300	0.3 030	8Q3	55 0.9	631.8	24.0	341.3	220.8	429.4	1,1913	0.0848	11.79	226.2	4426	668.8
0.60	8.53	85.5	185.9	1,0329	2.782	0.3594	85.5	548.1	633.6	25.0	355.5	222,9	433.2	1,1953	0.0815	12.28	228.6	440,3	668.9
0.70	9,95	89.5	193.1	1,0357	2 408	0.4152	89.5	545.7	635.2	26.0	369.7	225.0	437.0	1,1991	0.0784	12.76	230,9	438.1	669.0
0.80	11.4	93.0	199.4	1.0383	2125	0.4705	93.0	543.5	636.5	27.0	383.9	227.0	440.6	1,203	0.0755	13.25	233.2	435.9	669.1
0.90	12.8	96.2	205.2	1.0407	1.3904	0.5253	96.2	541.5	637.5	28.0	398.2	229.0	4422	1,207	00728	13.74	235.4	433.8	669.2
1,00	14.2	99.1	210.4	1,0430	1,755	0.5797	99.2	539.6	638.8	29.0	412.4	230,9	447.5	1,210	0.0703	14.23	237.5	431.7	669.2
1,20	17,1	104,3	219.7	1,0471	1,454	0.6875	104.4	536.3	640.7	30.0	426.6	232,8	451.0	1,214	0.0679	14,72	239.6	429.7	669.3
1.40	19.9	108,7	227,7	1,0580	1,259	0.7942	108.9	535.5	642.4	32.0	455.0	236.4	457.5	1,221	0.0637	15.70	243.7	425.6	669.3
1.60	22.8	1127	234,9	1,0542	1,111	0,8999	1129	530.8	643,7	34.0	483,5	239,8	463,6	1,229	0.0599	16.69	247,6	421,7	669.3
1,80	25,6	116.3	241,3	1,0573	0.9952	1,005	116.6	528.4	645.0	36.0	511,9	243.0	469,4	1,236	0.0565	17,69	251,3	417.9	669.2
200	28.4	119.6	247.3	1,0603	0.9018	1,109	119.9	526.3	646.2	38.0	540.4	246,2	475.2	1,243	0.0535	18.69	254,9	414,2	669.1
250	35.6	126.8	260,2	1,0669	0.7317	1,367	127.2	521.4	648.6	40.0	566.8	249.2	480.6	1,249	0.0508	19.70	258.4	41 0.5	669.9
3.00	42.7	132,9	271,2	1,0726	0.6168	1,621	133,4	517.2	650.6	42.0	597.2	252,1	485,8	12,56	0.0483	20.72	261,7	407.0	669.7
3,50	49,8	138.2	280,8	1,0782	0.5337	1,874	138.8	513.4	652.2	44.0	625,7	254,9	490,8	1,263	0.0460	21.74	265,0	403.5	668.5
4.00	56.9	1429	289,2	1,0831	0.4708	2124	143,7	51 0.0	653.7	46.0	654.1	257,6	495.7	1.269	0.0439	22,77	268.2	400.0	668.2
4,50	64,0	147.2	297.0	1,0877	0,4214	2 373	148.1	506,8	654.9	48.0	628,6	260,2	500,4	1,276	0.0420	23,80	271,3	396,6	667.9
5,00	71.1	151,1	304,0	1,0920	0,3816	2620	1521	503,9	656,0	50,0	711.0	262,7	504,9	1,283	0.0402	24,85	274,3	393,3	667.6
5,50	78.2	154,7	310.5	1.0961	0.3489	2.877	155.8	501.2	657.0	55.0	7821	268,7	515.7	1,299	0.0364	27,49	278.5	385.1	666.6
6.00	85.3	158,1	316,6	1,1000	0.3213	3,112	159.3	498.6	657.9	600	853.2	274,3	525.7	1,315	0,3331	30,18	288.3	3772	665.5
6.50	924	161.2	322,2	1.1037	02980	3.356	1626	496.1	658.7	65.0	924.3	279,5	535,1	1.331	0.0304	32.93	294.8	369.4	664.2
7.00	99.5	164.2	327.6	1,1072	0.2778	3,660	165,7	493,8	659.5	70.0	995,4	284,5	544,1	1,347	0.0280	35.75	301,0	361,8	6628
7.50	106.7	167.0	332,6	1,1111	0.2602	3.843	168.6	491,6	660,2	75.0	1066,5	289,2	5526	1,363	0,0259	38,62	307.0	3543	661,3
8.00	113,8	169.6	337.3	1.1140	0.2448	4,086	171.3	488.5	660.8	800	1137,6	293,6	560,5	1,379	0.0241	41,56	3128	346,9	659.7
8.15	120.9	1721	341.8	1,1172	0.2311	4.328	174,0	487.4	661.4	85.0	1208.7	297.9	588.2	1,395	0.0224	44.58	318.4	339.6	658.0
9.00	128.0	174.5	346.1	1,1203	100000000000000000000000000000000000000		176.5	485,4	661.9	900	1279.5	301,9	575.4	1,421	0.0210	47.67	323.8	3324	655.2
9.50	135,1	176.8	350,2	1,2333	02079	4,811	178.9	483.5	662.4	95.0	1350.9	305,8	5824	1,429	0.0197	50.85	329,1	3522	654.3
10,00	142,2	179.0	354,2	1,1262	0,1979	5,052	181.3	481.6	6629	100	1422,0	309,5	589.1	1,446	0.0185	54.12	334,3	318.0	6423
10,50	149,3	181,2	358,2	1,1291	0,1890	5,283	183,5	479,8	663,3	120	1706.4	323,1	613,6	1,518	0,0147	68,22	354.0	289.4	643.4
11.00	156,4	183,2	357.8	1,1319	0,1807	5,533	185,6	478,1	663,7	140	199Q8	335,1	653,2	1,599	0,0118	11110000	3728	260,0	6328
11,50	163,5	185,2	365.4	1,1346	0,1732	5,774	187,7	476.4	664.1	160	2275,2	345,8	654.4	1,693	0.0096	104.0	391,3	228.4	619,7
12.00	17Q6	187.1	368.8	1,1372	0,1663	6.014	189.8	474,7	664.5	180	25 59.6	355,4	671,7	1,814	0.0078	128,3	41 0.8	129.9	603.7
12,50	177,8	188,9	3720	1,1400	on combin	5053000	191.7	473.1	664.8	200	2844.0	346,1	687.4	1,990	0,0062	2000-000	431,6	151,2	5828
13,00	184,9	190,7	375,3		0,1540	4,494	193.6	471,5	665,1			374,15		3,170	0.0032		503,3	0	503,3
.0.00	1070		0.0.0	1, 1100	0,, 0, 0		.0.0.0		55011			J. T. 10	, 50, 31	~,,,	U.UUE	5.40	0.00		555,5

# Strainer

Y-Type Strainer

STR-1F/2F/3F ..... 49



# **Strainer**

# **STR-1F** | Y-Type Strainer

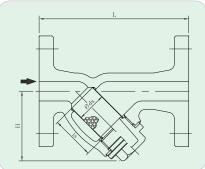
### Specifications

Working Pressure (kgf/cm²g)	10					
Working Temperature (°)	220					
Connection	JIS 10K Flanged					
Materials	Body: Cast Iron					
Materials	Trim: Stainless Steel					



#### Dimensions

Size Part	15A	20A	25A	32A	40A	50A	65A	80A	100A
L	125	140	165	178	195	220	285	305	360
Н	65	75	85	95	105	115	206	236	274
ls	34.3	49	63	66	75.5	87.5	160	190	230
ds	23	28	38	46	51	59	70	85	106



# **STR-2F/3F** | Y-Type Strainer

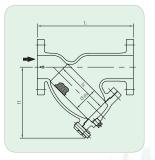
# Specifications

Model	STR-2F	STR-3F
Working Pressure (kgf/cm²g)	20	30
Working Temperature (°c)	250	250
Connection	JIS 20K Flanged	JIS 30K Flanged
Materials	Body: Cast Steel Stainless Steel	Body: Cast Steel Stainless Steel
	Trim: Stainless Steel	Trim: Stainless Steel



STR-2F	15A	20A	25A	32A	40A	50A	65A	80A	100A	125A	150A	200A	250A	300A
L	125	140	165	175	195	220	289	313	364	414	484	578	714	833
Н	65	75	85	95	105	115	206	236	275	325	380	450	524	587
ls	34.3	49	63	66	75.5	87.5	160	190	230	270	320	380	430	460
ds	23	28	38	46	51	59	70	85	106	134	160	206	270	330

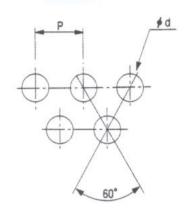
STR-3F	15A	20A	25A	32A	40A	50A
L	135	140	170	182	202	220
Н	65	75	85	95	105	115
ls	34.3	49	63	66	75.5	87.5
ds	23	28	38	46	51	59



<sup>\*</sup> STR-2F/3F: ANSI and DIN Flange are available upon request

# Engineering Data | Strainer

### Screen



Туре		Perforated Screen						S	creen	
Part		Screen only				Double screen			Quantity of	
Size	t	Ød	р	Operture ratio(%)	t	Ød	р	Operture ratio(%)	Diameter screen	
15A~25A	0.25	0.8	1.5	25.88	0.5	3.0	4.0	51.19		
32A~50A	0.3	1.0	1.7	31.48	0.5	3.0	4.0	31,19		
65A~100A	0.5	1.2	2.0	32.76	0.7	5.0	6.5	53,85	width: 0.55 height: 0.8	width: About 45 height: About 10
125A~150A	0.6	1.5	2.2	42.30	1.0	9.0	8.0 10.0	10.0 58.24		
200A	0.8	1.8	2.5	47.17	1.0	1.0 8.0				

# ▶ Operture ratio

 $F=91.0 \times d2/P2$ 

F: Operture ratio(%)

d: HOLE diameter(mm)

P: HOLE pitch(mm)

#### Mesh

	,			
Mesh	Pitch	S. W. G	Wire DIA(mm)	Operture ratio(%)
20	1,2700	30	0.3150	56.5
40	0.6350	35	0.2134	44.1
60	0.4233	38	0.1524	41.2
80	0.3175	41	0.1118	42.0
100	0.2540	42	0.0813	37.5
120	0.2116	44	0.0813	37.5
160	0.1588	46	0.0613	37.0
200	0.1270	48	0.0406	36.2

# Other Valves



# Globe Valve

GSO-1F ..... 52

## Air Vent

Sight Glass
DUG-1S/1F/5F ..... 56







# Angle Valve

ASO-1F ..... 52

# Air Trap

FAT-1S/1F/2F/3F ..... 55

# Temperature Regulating Valve

PTR-1F(Pilot Acting) ······					
DTR-1F(Direct Acting) ·····	57				

- \* The spins are operated up and down by the handle operation and seat protects the gate by blocking exposure
- \* The spins are operated up and down by the handle operation and seat protects the gate by blocking exposure and the fluid direction is 90°
- \* It is installed to remove air from a radiator or pipe to prevent an air painning for boiler plant
- \* It is an automatic valve to discharge condensed water and condensate of air compressor on a plumbing system after separating from compressed air
- \* Checking visually the fluid flow and leakage
- \* The temperature of object is being maintained constant when it is more than constant temperature after inserting hot water tank, heat exchanger, evaporator and etc into the control part of fluid supply tube for heating

# **Other Valves**

# GSO-1F | Globe Valve

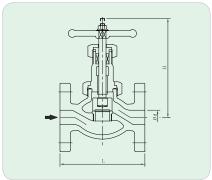
# Specifications

Working Pressure (kgf/cm²g)	16
Working Temperature (°c)	220
Connection	JIS Flanged
Materials	Body: Ductile Iron
Materials	Trim: Stainless Steel



### Dimensions

Model	Cina	al	JIS 5	K FF	JIS 16K FF	
Model	Size	d	L	Н	L	Н
GSO-1F	15A	15	100	135	110	135
	20A	20	110	145	120	145
	25A	25	120	167	130	167
	32A	32	140	180	160	180
	40A	40	160	195	180	195



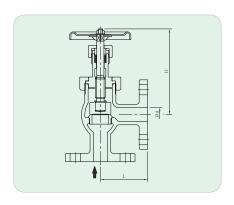
# ASO-1F | Angle Valve

### Specifications

Working Pressure (kgf/cm²g)	16
Working Temperature (℃)	220
Connection	JIS Flanged
Materials	Body: Ductile Iron
Materials	Trim: Stainless Steel



Model	Size	d	JIS 5	K FF	JIS 16K FF	
Model			L	Н	L	Н
ASO-1F	15A	15	50	135	70	135
	20A	20	60	145	75	145
	25A	25	65	167	85	167
	32A	32	80	180	95	180
	40A	40	85	195	100	195



# AVW-15 | Air Vent for Water

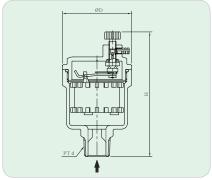
## Specifications

Working Pressure (kgf/carg)	10
Working Temperature (೮)	80
Working Fluid	Water
Connection	PT Screwed
Matariala	Body: Forged Brass
Materials	Trim: NBR



#### Dimensions

Size	d	L	Н	Connection
15A	PT 1/2"	58	105	PT Screwed



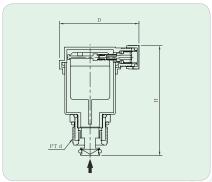
# AVW-1SB | Air Vent for Water

# Specifications

Working Pressure (kgf/cm²g)	10	
Working Temperature (°c)	80	
Working Fluid	Water	
Connection	PT Screwed	
Materials	Body: Forged Brass	
waterials	Trim: NBR	



Size	d	L	Н	Connection
15A	PT 1/2"	58	65	PT Screwed



# AVS-15 | Air Vent for Steam

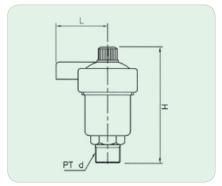
# Specifications

Working Pressure (kgf/om²g)	10
Working Temperature (°c)	220
Working Fluid	Steam
Connection	PT Screwed
Materials	Body: Forged Brass
Materials	Trim: Wax



## Dimensions

Size	d	L	Н	Connection
15A	PT 1/2"	30	75	PT Screwed



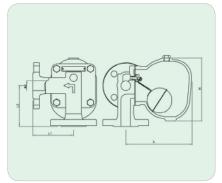
# AVO-1F/2F | Air Vent for Oil

# Specifications

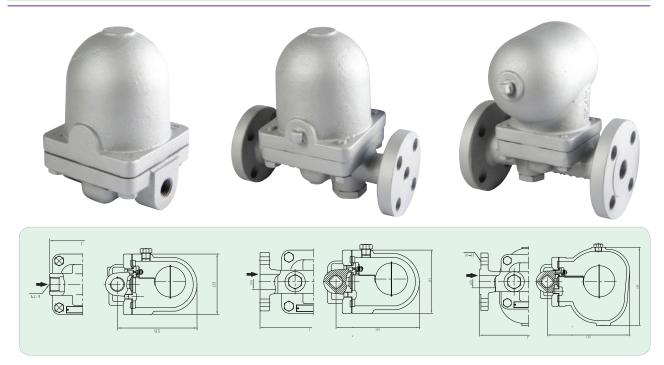
Model	AVO-1F	AVO-2F
Working Pressure (kgf/om²g)	10	20
Working Temperature (°c)	220	220
Working Fluid	Oil, Water	Oil, Water
Connection	JIS Flanged	JIS Flanged
Materials	Body: Ductile Iron	Body: Cast Steel
Materials	Trim: Stainless Steel	Trim: Stainless Steel



Size	L	L1	L2	Н	Connection
15A	220	105	105	185	
20A	220	105	105	185	JIS 16K, 20K Flanged
25A	220	105	105	185	1 101110 0 0



# FAT-1S/1F/2F/3F | Auto Air Trap



# Specifications

Model	FAT-1S	FAT-1F	FAT-2F	FAT-3F
Working Pressure (kgf/om²g)	10	10	20	30
Working Temperature (℃)	100	100	100	100
Connection	PT Screwed	JIS Flanged	JIS Flanged	JIS Flanged
Materials	Body: Ductile Iron	Body: Ductile Iron	Body: Cast Steel Stainless Steel	Body: Cast Steel Stainless Steel
	Trim: Stainless Steel	Trim: Stainless Steel	Trim: Stainless Steel	Trim: Stainless Steel

Model	Size	d	L	H1	H2	Connection
	15A	PT 1/2"	120	110	170	
FAT-1S	20A	PT 3/4"	120	110	170	PT Screwed
	25A	PT 1"	120	195	220	
	15A	15	205	110	155	
FAT-1F	20A	20	205	110	155	JIS 10K Flanged
	25A	25	215	185	190	
	15A	15	205	185	190	JIS 20K Flanged
FAT-2F	20A	20	205	185	190	
	25A	25	215	185	190	
FAT-3F	15A	15	205	185	190	
	20A	20	205	185	190	JIS 30K Flanged
	25A	25	215	185	190	

 $<sup>\</sup>ensuremath{\mathrm{\#}}$  FAT-2F/3F : ANSI and DIN Flange are available upon request

# **DUG-15** | Sight Glass

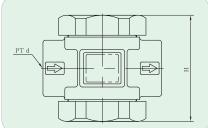
# Specifications

Working Pressure (kgf/om²g)	10			
Working Temperature (℃)	150			
Type	Flapper			
Connection	PT Screwed			
Materials	Body: Ductile Iron			
waterials	Trim: Stainless Steel			

## Dimensions

Size	d	L	Н
15A	PT 1/2"	90	85
20A	PT 3/4"	90	85
25A	PT 1"	90	85





# DUG-1F | Sight Glass

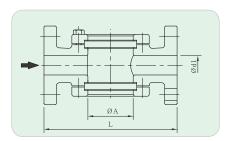
### Specifications

Working Pressure (kgf/cm²g)	10		
Working Temperature (℃)	150		
Type	Flapper		
Connection	JIS 10K Flanged		
Motoriolo	Body: Ductile Iron		
Materials	Trim: Stainless Steel		



#### Dimensions

Size	d	L	Α	Size	d	L	Α	Connection
15A	15	150	40	32A	32	175	65	110 4014
20A	20	150	40	40A	40	200	65	JIS 10K Flanged
25A	25	170	50	50A	50	220	80	i langed



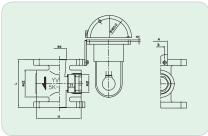
# **DUG-5F** | Sight Glass

# Specifications

Working Pressure (kgf/cm²g)	5		
Working Temperature (℃)	150		
Working Fluid	Water, Oil		
Connection	JIS 5K Flanged		
Matariala	Body: Cast Iron		
Materials	Trim: Heat Treatment Glass		



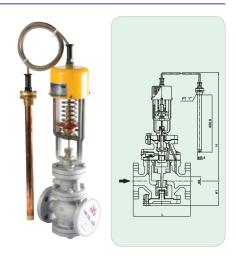
Size	d	Н	L	Size	d	Н	L	Connection
25A	25	86	90	100A	100	178	210	
40A	40	102	100	125A	125	208	245	110 517
50A	50	115	115	150A	150	232	310	JIS 5K Flanged
65A	65	140	160	200A	200	294	380	rianged
80A	80	158	180	250A	250	344	400	



# PTR-1F | Temperature Regulating Valve

## Specifications

Working Pressure (kgf/cm²g)	8			
Temperature Range (°c)	40~120			
Working Temperature (೮)	220			
Working Fluid	Steam			
Туре	Pilot Acting			
Connection	JIS 10K Flanged			
Capillary Tube Length	2M, 5M (5M-upon request)			
	Body: Ductile Iron			
Materials	Trim: Stainless Steel			
	Sensor: Copper Tube			



### Dimensions

P	art / Size	15A	20A	25A	32A	40A	50A	65A	80A	100A
	L	165	165	170	200	200	220	250	290	320
	H1	75	75	75	85	85	92	110	130	150
	Н	490	490	490	500	500	510	530	555	570

# ▶ Adjusting Range

Adjusting	Max.
40∼60℃	70℃
50∼70℃	80℃
60∼80℃	90℃
70∼90℃	100℃
80~100℃	110℃
90~110℃	120°C

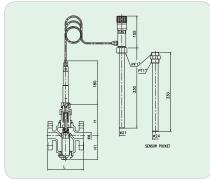
# DTR-1F | Temperature Regulating Valve

### Specifications

Working Pressure (kgf/om²g)	10		
Temperature Range (℃)	50~110		
Working Temperature (℃)	220		
Working Fluid	Steam		
Туре	Direct Acting Type		
Connection	JIS 10K(16K) Flanged		
Capillary Tube Length	3M, 5M (5M-upon request)		
	Body: Ductile Iron, Cast Steel		
Materials	Trim: Stainless Steel		
	Sensor: Copper Tube		



Size	15A	20A	25A
L	135	140	140
H1	65	65	70
Н	122	122	127



# **CERTIFICATES**

#### Certifications



Safety certificate of KOSHA



DNVGL Type Approval (LSV-1S)



DNVGL Type Approval (FSV-1F, FSV-3F)



DNVGL Type Approval (HSV-3S)



Certificate of factory registration



R&D Center certificate



Confirmation of Venture Business



INNO-BIZ



Manufacturer's registration



Small business confirmation



Certificate of specific equipment



Acquired the letter of patent for hydrant reducing valve



Acquired the letter of patent for safety relief valve of attachment type



Certificate of product—specific approved exporter



ISO certificate(Korean)



ISO certificate(English)





Certificate of DNVGL



Certificate of CCS



Designated as INNO-BIZ



Designated as venture business

# Safety certificate of KOSHA





































FSV-2F(40A)(S)

HSV-3S(25A)(S)

HSV-3S(L)(40A)(G)

HSV-3S(G)

FSV-1F(S)

HSV-3S(G)













HSV-3S(G)

LSV-1S(G)

LSV-1S(G)

LSV-1S(S)

LSV-1S(S)

BFSV-2F(G)



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