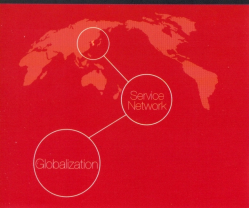

















Think Safety!

JOKWANG

CAT. NO. GC-100



-  'UV' Stamp of ASME Sec.VIII
-  Certificate of NBBI Safety Valve Capacity
-  ISO 9001 Certificate
-  ISO 14001 Certificate
-  DHSAS 18001 Certificate
-  Manufacturer approved by Korea Occupational Safety & Health Agency
-  Certificate of Korea Gas Safety Corp.
-  Certificate of Korea Electric Power Corporation
-  Maintenance Company approved by Korea Hydro. & Nuclear Power Co., Ltd.
-  Type Approval from GL
-  Type Approval from LR
-  Type Approval from DNV
-  Type Approval from BV
-  Type Approval from KR
-  Type Approval from CCS



JOKWANG I.L.I. CO., LTD.



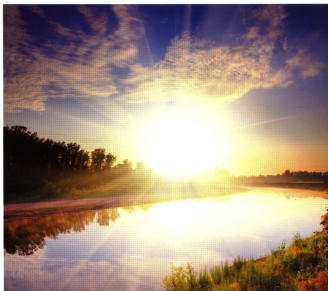
INTRODUCTION OF COMPANY

Since its establishment in 1968, JOKWANG ILLI CO., LTD. with its JK trademark has put every effort in pioneering and specializing as one of the leading valve manufacturing companies. Its devotion has concentrated especially in the area of safety relief valve, pressure reducing valve, stop valve and steam trap.

With almost half a century of experience, we have earned over a good reputation for quality, reliability, reasonable price and excellent performance.

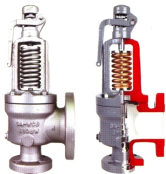
We determined to contribute to serve your need for your heat control and energy saving effort through our precision design, strict testing, and precision processing. Your kind inquiries would be much appreciated, and we will do our best to give you our business suggestions on them, which can be competitive in your market. In closing, we promise for our continuous endeavor, for more research, and for development work to pay back your positive supports and encouragement.





COMPANY HISTORY

- Nov. 1968 Founded Jokwang Industries Company in Busan, Korea
- May. 1987 Acquired K.S(Korean Industrial Standard) Mark
- Apr. 1989 Acquired Type approval from KR(Korea)
- Dec. 1992 Technical Collaboration with VENN in Japan
- Dec. 1998 Acquired ISO 9001 Certificate
- Dec. 1999 Changed Company name to Jokwang ILLI Co., Ltd.
- Oct. 2000 Moved to Noksan Industrial Complex in Busan, Korea
- Nov. 2003 Acquired Type approval from DNV(Norway)
- Mar. 2004 Acquired Type approval from BV(France)
- Apr. 2004 Acquired KEPIC Certificate
- Jun. 2004 Acquired Type approval from LR(UK)
- May. 2006 Acquired Safety Relief Valve ASME "UV" Stamp
- Nov. 2006 Patent registered for Pilot-Operated Safety Valve
- May. 2010 Acquired Type approval from GL(Germany)
- Apr. 2011 Acquired Safety Relief Valve ASME "UV" Stamp(Up to 6,000psig)
- Dec. 2011 Awarded Export Tower of 3 Mil. U.S Dollar
- Dec. 2011 Acquired Type approval from CCS(China)
- Dec. 2011 Acquired ISO14001 Certificate
- Mar. 2012 Acquired OHSAS18001 Certificate



Certificate

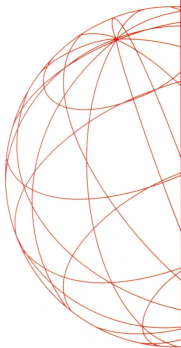


Quality System Certificate

- 'UV' Stamp of ASME Sec.VIII
- Certificate of NBBI Safety Valve Capacity
- ISO 9001 Certificate
- ISO 14001 Certificate
- OHSAS 18001 Certificate

TYPE APPROVAL

- GL - Germany
- LR - United Kingdom
- DNV - Norway
- BV - France
- KR - Korea
- CCS - China



PRODUCT

Contents

Safety Relief Valve - **UV Stamp**

Safety Relief Valve

Primary Pressure Regulating Valve

Cryogenic Safety Relief Valve & Control Valve

Pressure Reducing Valve

Steam Trap

Air Vent

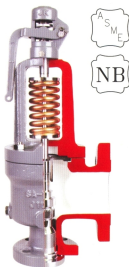
Temp. Control Valve

Globe Valve

Strainer



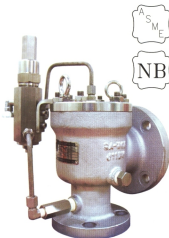
Safety Relief Valve - UV Stamp



JSV-FF100

Code	ASME Sec.VIII "UV" Stamp
Type	Conventional, Bellows
Applicable Fluid	Steam, Air, Gas, Liquid
Applicable Pressure	15~6,000(psig)
Applicable Temperature	-196~537(°C)
Size	3/4"X1" ~ 14"X18"
Orifice	D(0.11 in ²) ~ Y(76.078 in ²)
Connection	ANSI(ASME) 150LB ~ 2500LB
Material^{*)}	Body : Cast Steel(Standard) Trim : Stainless Steel(Standard)

*1) Material could be changeable upon request.



JSV-PF100

Code	ASME Sec.VIII "UV" Stamp
Type	Pilot(Modulating & Snap Acting)
Applicable Fluid	Steam, Air, Gas, Liquid
Applicable Pressure	15~6,170(psig)
Applicable Temperature	-45~260(°C), Option(- 253---46°C)
Size	1"X2" ~ 20"X24"
Orifice	D(0.15 in ²) ~ B2(227 in ²)
Connection	ANSI(ASME) 150LB ~ 2500LB
Material^{*)}	Body : Cast Steel(Standard) Trim : Stainless Steel(Standard)

*1) Material could be changeable upon request.

Safety Relief Valve

JSV-LT12



Type
Low Lift Type

Applicable Fluid
Steam, Air, Gas, Liquid

Applicable Pressure
0.35~1(kg/cm²)

Applicable Temperature
Max 220(°C)

Size
15A~50A

Connection
KS PT

Material
Body : Brass
Trim : Brass

JSV-HT41/HT51



Type
High Lift Type

Applicable Fluid
Steam, Air, Gas, Liquid

Applicable Pressure
0.5~5, 5~15, 15~33, 33~50(Kgf/cm²)

Applicable Temperature
Max 220(°C)

Size
15A~50A

Connection
KS PT

Material
Bonnet : Bronze
Body : Stainless Steel
Trim : Stainless Steel

JSV-FF11/21/41/51



Type
Full Bore Conventional Type

Applicable Fluid
Steam, Air, Gas, Liquid

Applicable Pressure
0.35~50(Kgf/cm²)

Applicable Temperature
Max 400(°C)

Size
15A~350A

Connection
Inlet : JIS 10K, 20K, 30K Outlet : 10K

Material
Body : Cast Iron/Steel, Bronze,
Stainless Steel
Trim : Stainless Steel

JSV-BF31



Type
Full Bore Bellows Type

Applicable Fluid
Steam, Air, Gas, Liquid

Applicable Pressure
0.35~22(Kgf/cm²)

Applicable Temperature
Max 400(°C)

Size
20A~200A

Connection
Inlet : JIS 10K, 20K Outlet : 10K

Material
Body : S480, Stainless Steel
Trim : Stainless Steel

Safety Relief Valve

JSV-FT11



Type
Full Bore Type

Applicable Fluid
Steam

Applicable Pressure
1.0~10(Kgf/cm²)

Applicable Temperature
Max 220(°C)

Size
20A~200A

Connection
Inlet : KS PT, Outlet : KS PF (PT is available)

Material
Body : Ductile Iron
Trim : Stainless Steel

JRV-FF12/FF21P



Applicable Fluid
Air, Gas, Liquid

Working Pressure
Max 16(Kgf/cm²)

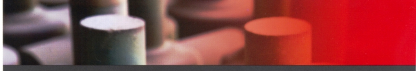
Adjustable Pressure
0.5~12(Kgf/cm²)

Applicable Temperature
Max 150(°C)

Size
15A~150A

Connection
JIS 10K, 20K

Material
Cast Iron/Steel, Bronze, Stainless Steel



Cryogenic Safety Relief Valve & Control Valve

JSV-PF11



Applicable Fluid
LNG/LPG

Applicable Pressure
0.25~2.5(barG)

Applicable Temperature
-196~125(°C)

Size
25A~250A

Connection
ANSI flanged Type

Material
Stainless Steel

JSV-CF21



Applicable Fluid
LNG/LPG

Applicable Pressure
1~3(barG)

Applicable Temperature
-196~125(°C)

Size
25A~80A

Connection
ANSI flanged Type

Material
Stainless Steel

JSV-CT41



Applicable Fluid
LNG/LPG

Applicable Pressure
Max 33(barG)

Applicable Temperature
-50~125(°C)

Size
15A~25A

Connection
Thread Type

Material
Stainless Steel

JCV-CF11



Applicable Fluid
LNG/LPG

Applicable Pressure
1~5(barG)

Applicable Temperature
-196~80(°C)

Size
25A~200A

Connection
ANSI flanged Type

Material
Stainless Steel

Pressure Reducing Valve

JRV-ST11



Applicable Fluid
Steam

Applicable Pressure
Inlet: Max 10(Kgf/cm²)
Outlet: 0.2~4(Kgf/cm²)

Max. Reducing ratio
20:1

Applicable Temperature
Max 184(°C)

Size
15A~40A

Connection
KS PT

Material
Cast Iron

JRV-ST17



Applicable Fluid
Air, Gas, Liquid

Applicable Pressure
Inlet: Max 10(Kgf/cm²)
Outlet: 0.35~4(Kgf/cm²)

Max. Reducing ratio
10:1

Applicable Temperature
Max 80(°C)

Size
15A~40A

Connection
KS PT

Material
Cast Iron

JRV-SF14/SF24D



Applicable Fluid
Air, Gas, Liquid

Applicable Pressure
Inlet: Max 20(Kgf/cm²)
Outlet: 0.5~12(Kgf/cm²)

Max. Reducing ratio
10:1

Applicable Temperature
Max 80(°C)

Size
15A~150A

Connection
JIS 10K, 20K

Material
Cast Iron/Steel, Bronze

JRV-SF12/SF24P



Applicable Fluid
Air, Gas, Liquid

Applicable Pressure
Inlet: Max 20(Kgf/cm²)
Outlet: 0.5~12(Kgf/cm²)

Max. Reducing ratio
10:1

Applicable Temperature
Max 150(°C)

Size
15A~150A

Connection
JIS 10K, 20K

Material
Cast Iron/Steel, Bronze

JRV-SF11/SF21



Applicable Fluid
Steam

Applicable Pressure
Inlet: Max 20(Kgf/cm²)
Outlet: 0.35~16(Kgf/cm²)

Max. Reducing ratio
20:1

Applicable Temperature
Max 300(°C)

Size
15A~200A

Connection
JIS 10K, 20K

Material
Cast Iron/Steel

JRV-SF31



Applicable Fluid
Air, Gas, Liquid

Applicable Pressure
Inlet: Max 30(Kgf/cm²)
Outlet: 0.5~15(Kgf/cm²)

Max. Reducing ratio
10:1

Applicable Temperature
Max 80(°C)

Size
15A~40A

Connection
JIS 10K, 20K, 30K

Material
Cast Steel



Steam Trap

JTR-FT12/FF12



Type
Ball Float

Applicable Fluid
Steam

Applicable Pressure
4.5, 10, 14(Kgf/cm²)

Applicable Temperature
Max 220(°C)

Size
15A~50A

Connection
KS PT, JIS 10K, 16K

Material
Cast Iron/Steel

JTR-DT22/DF21



Type
Thermodynamic Disc

Applicable Fluid
Steam

Applicable Pressure
0.35~16(Kgf/cm²)

Applicable Temperature
Max 220(°C)

Size
15A~50A

Connection
KS PT, JIS 10K, 16K

Material
Cast Iron, Ductile Iron

JTR-DT31



Type
Thermodynamic Disc

Applicable Fluid
Steam

Applicable Pressure
0.35~30(Kgf/cm²)

Applicable Temperature
Max 400(°C)

Size
8A, 10A

Connection
KS PT

Material
Stainless Steel

JTR-DT41/DF41



Type
Thermodynamic Disc

Applicable Fluid
Steam

Applicable Pressure
Max 42(Kgf/cm²)

Applicable Temperature
Max 400(°C)

Size
15A~50A

Connection
KS PT, JIS 10K, 16K, 20K

Material
Stainless Steel

Steam Trap

JTR-DS70/DF70



Type
Thermodynamic Disc

Applicable Fluid
Steam

Applicable Pressure
Max 65(Kgf/cm²)

Applicable Temperature
Max 525(°C)

Size
15A~25A

Connection
S.W, ANSI 600, 900lb

Material
A 182 F22

Air Vent

JAV-FF11



Type
Ball Float

Applicable Fluid
Water, Oil

Applicable Pressure
Max 16(Kgf/cm²)

Applicable Temperature
Max 220(°C)

Size
15A~25A

Connection
JIS 10K, 16K, 20K

Material
Cast Steel

Temp. Control Valve

JTC-DF12



- Type**
Direct Acting
- Applicable Fluid**
Steam, Hot Water, Oil
- Applicable Pressure**
0.5~10(Kgf/cm²)
- Applicable Temperature**
Max 220(°C)
- Adjustable Temperature**
40~110(°C)
- Size**
15A~40A
- Connection**
JIS 5K, 10K, 16K
- Material**
Cast Iron/Steel, Bronze

JTC-PF11



- Type**
Pilot Acting
- Applicable Fluid**
Steam, Hot Water, Oil
- Applicable Pressure**
0.5~10(Kgf/cm²)
- Applicable Temperature**
Max 220(°C)
- Adjustable Temperature**
40~200(°C)
- Size**
15A~200A
- Connection**
JIS 10K, 16K
- Material**
Cast Iron/Steel, Bronze

Temp. Control Valve

JTC-DF13



- Type**
Bellows
- Applicable Fluid**
Steam, Hot Water, Oil
- Applicable Pressure**
0.5~16(Kgf/cm²)
- Applicable Temperature**
Max 220(°C)
- Adjustable Temperature**
40~110(°C)
- Size**
15A~40A
- Connection**
JIS 5K, 10K, 16K
- Material**
Cast Iron/Steel, Bronze

Globe Valve

JGL-F11/FF11/FF21



- Applicable Fluid**
Steam, Hot Water, Oil
- Applicable Pressure**
Max 20(Kgf/cm²)
- Applicable Temperature**
Max 250(°C)
- Size**
15A~50A
- Connection**
KS PT, JIS B2210 10K, 20K
- Material**
Cast Iron

Strainer

JST-YT11/YT12/YT42



- Applicable Fluid**
Gas, Air, Liquid
- Applicable Pressure**
Max 20(Kgf/cm²)
- Applicable Temperature**
Max 220(°C)
- Size**
15A~50A
- Connection**
KS PT
- Material**
Cast Iron, Bronze, Stainless Steel

JST-YF11/YF21



- Applicable Fluid**
Gas, Air, Liquid
- Applicable Pressure**
Max 20(Kgf/cm²)
- Applicable Temperature**
Max 300(°C)
- Size**
15A~350A
- Connection**
JIS B2210 10K, 20K, 30K
- Material**
Cast Iron/Steel, Bronze, Stainless Steel

[] Old Model

Model
JSV-LT12[BSR-S2]

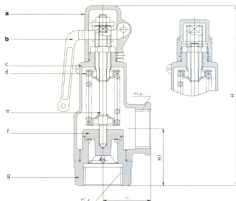
SAFETY VALVE

Lift Type Safety Valve

Screwed
Spring loaded



JSV-LT11[BSR-S2]



As angle type spring loaded lift safety valve for steam, air and water, JSV-LT12[BSR-S2] is suitable for small and medium capacity applications such as small boiler or pressure vessel, and tracing equipment.

- Quickly popping reaction and correct re-seating
- Easy adjustment of set pressure and blow-down pressure

SPECIFICATIONS

Working pressure ranges : 0.35~1, 1.1~2, 2.1~4, 4.1~7, 7.1~11kgf/cm²
0.05~0.1, 0.11~0.2, 0.21~0.4, 0.41~0.7, 0.71~1.1MPa

Working temperature : Max. 220°C

Connection Inlet : female screwed
Outlet : female screwed

Hydraulic pressure test : 1.5kgf/cm²(1.5MPa)

Cap types available

With lever : for periodical check in mainly steam and/or air service

Without lever : when air-tight is required for liquid

MATERIALS

No	Part	Material
a	Cap	Forged Brass
b	Lever	Bronze
c	Bonnet	Bronze
d	Spring	Oil Tempered Alloy Steel
e	Stem	Stainless Steel
f	Disc	Forged Brass
g	Body	Forged Brass

DIMENSIONS

(mm)

Size	Inlet dia.	Seat opening dia.	Effective area (mm ²)	Lift	End to end		Height	End connection		Wt
					L ₁	H ₁		PTd	PTD	
15(1/2")	20	21	62.83	1.0	35	45	142	1/2"	3/4"	0.8
20(3/4")	20	21	62.83	1.0	35	45	144	3/4"	3/4"	1.0
25(1")	25	26	133.52	1.7	41	49	155	1"	1"	1.3
32(1 1/4")	32	33	221.17	2.2	45	58	173	1 1/4"	1 1/4"	2.0
40(1 1/2")	40	41	289.03	2.3	55	64	198	1 1/2"	1 1/2"	3.0
50(2")	50	51	393.70	2.5	70	74	220	2"	2"	5.7

Dimensions in millimetre approximately. The lift type safety valve is designed to have the control mechanism of flow capacity.

The lifts (L) of lift type safety valve are 1/40 to 1/15 of the seat opening diameter.

Calculation of flow according to KS B 6216 for steam and air
to J.K standard for water

Symbols for fluid

- I. Air (kg/h at 20°C with 10% accumulation)
- II. Saturated steam (kg/h with 3% accumulation)
- III. Water (m³/h at G=1 with 15% accumulation)

Set pressure (kgf/cm ²) (MPa)	Size(㎜)			25 A			32 A			40A			50A		
	Effective area(㎜ ²)			133.52			221.17			289.03			382.70		
	Fluid			I	II	III	I	II	III	I	II	III	I	II	III
0.1(0.01)	51.7	36.3	0.45	109.8	77.1	0.96	181.9	127.8	1.60	237.8	167.0	2.09	323.1	226.9	2.83
0.2(0.02)	56.6	39.1	0.64	120.4	83.0	1.36	199.4	137.6	2.26	260.6	179.8	2.95	354.1	244.3	4.01
0.3(0.03)	61.6	41.9	0.79	131.0	89.0	1.67	216.9	147.4	2.76	283.5	192.7	3.61	385.2	261.8	4.91
0.4(0.04)	66.6	44.6	0.91	141.5	94.9	1.93	234.5	157.3	3.19	306.4	205.5	4.17	416.3	279.3	5.67
0.5(0.05)	71.6	47.4	1.01	152.1	100.9	2.15	252.0	167.1	3.57	329.3	218.4	4.66	447.4	296.7	6.34
0.6(0.06)	76.5	50.2	1.11	162.7	106.8	2.36	269.5	176.9	3.91	352.2	231.2	5.11	478.5	314.2	6.94
0.7(0.07)	81.5	53.0	1.20	173.2	112.7	2.55	287.0	186.8	4.22	375.1	244.1	5.52	509.6	331.6	7.50
0.8(0.08)	86.5	55.8	1.28	183.8	118.7	2.72	304.5	196.6	4.51	398.0	256.9	5.90	540.7	349.1	8.01
0.9(0.09)	91.5	58.6	1.36	194.4	124.6	2.89	322.0	206.4	4.79	420.8	269.8	6.26	571.8	366.5	8.50
1.0(0.1)	96.4	61.4	1.43	205.0	130.5	3.05	339.5	216.2	5.05	443.7	282.6	6.59	602.9	384.0	8.96
2 (0.2)	146.2	85.4	2.03	310.7	181.6	4.31	514.7	300.8	7.14	672.6	393.1	9.33	913.8	534.1	12.67
3 (0.3)	195.9	114.2	2.48	416.4	242.7	5.28	689.8	402.1	8.74	901.4	525.4	11.42	1224.8	713.9	15.52
4 (0.4)	245.7	143.0	2.87	522.1	303.8	6.09	864.9	503.3	10.09	1130.3	657.8	13.19	1535.7	893.7	17.92
5 (0.5)	295.4	171.7	3.21	627.8	365.0	6.81	1040.0	604.6	11.28	1359.1	790.1	14.74	1846.7	1073.5	20.03
6 (0.6)	345.2	200.5	3.51	733.6	426.1	7.46	1215.1	705.9	12.36	1588.0	922.4	16.15	2157.6	1253.3	21.95
7 (0.7)	394.9	229.3	3.79	839.3	487.2	8.06	1390.3	807.1	13.35	1816.8	1054.8	17.45	2468.5	1433.1	23.70
8 (0.8)	444.7	258.0	4.05	945.0	548.4	8.62	1565.4	908.4	14.27	2045.7	1187.1	18.65	2779.5	1612.9	25.34
9 (0.9)	494.4	286.8	4.30	1050.7	609.5	9.14	1740.5	1009.7	15.14	2274.5	1319.4	19.78	3090.4	1792.7	26.88
10 (1.0)	544.2	315.6	4.53	1156.4	670.6	9.63	1915.6	1110.9	15.96	2503.4	1451.8	20.85	3401.4	1972.5	28.33

CAUTION AT SIZING

As the relieving capacity of lift type valve is lower than full bore type valve, ensure to select valve size with maximum relieving capacity.

In the application at the secondary side of pressure reducing valve for its failure protection, select a valve to blow out 10% of maximum flow through pressure reducing valve unless otherwise specified.

See the table for the valve set pressure, in the case that the set pressure values while using for the failure protection of pressure reducing valve are recommendable but not absolute.

Set pressure of reducing valve (kgf/cm ²)(MPa)	Set pressure of safety valve (kgf/cm ²)(MPa)
1(0.1) and under	+ 0.5[+ 0.05] and over
1(0.1) to 4(0.4)	+ 0.8[+ 0.08] and over
4(0.4) to 6(0.6)	+ 1.0[+ 0.1] and over
6(0.6) to 8(0.8)	+ 1.2[+ 0.12] and over

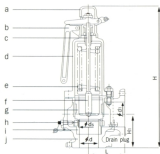
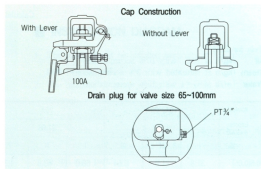
SAFETY VALVE

Lift Type Safety Valve

Spring loaded



JSV-HF11(FSR-HI)



MATERIALS

No	Part	Standard materials
a	Cap	Ductile iron
b	Lever	Ductile iron
c	Adjusting screw	Brass
d	Bonnet	Cast iron
e	Spring	Oil Tempered Alloy Steel or Spring Steel
f	Stem	Stainless steel
g	Disc	Stainless steel
h	Blow down ring	Bronze
i	Seat	Stainless steel
j	Body	Cast iron

These type safety valves are mainly used for medium capacity boiler, various pressure vessels and tracing machinery, and also pump.

SPECIFICATIONS

Applicable set pressure ranges : 0.35~1, 1~10kgf/cm²(0.035~0.1, 0.1~1.0MPa)

Maximum operating temperature : 220°C

Hydrostatic test pressure : 1.5 times the setting pressure

Stainless steel disc and seat available upon request.

Other flanges are available upon request. (ANSI, DIN)

DIMENSIONS

(mm)

Size (ND) Inlet × Outlet (d) (do)	Seat opening dia. ds(D)	Effective area (sq) πDℓ	Lift ℓ	End to end		Height H	Weight (kg) FSR-HI	End connection*	
				L ₁	L ₂			Inlet	Outlet
20 × 25 (¾" × 1")	21	98.96	1.5	80	75	280	6.3	KS 10K RF Flanged (KS B 6216) ~1988	KS 10K FF Flanged (KS B 1511)
25 × 40 (1" × 1½")	26	163.36	2	90	85	320	9.5		
32 × 40 (1½" × 1½")	33	228.08	2.2	102	90	330	11.5		
40 × 50 (1½" × 2")	41	386.42	3	115	100	385	14		
50 × 65 (2" × 2½")	51	640.88	4	122	112	440	18		
65 × 80 (2½" × 3")	66	1,036.72	5	140	125	520	34.5		
80 × 100 (3" × 4")	81	1,526.81	6	165	145	595	45.5		
100 × 125 (4" × 5")	105	2,221.10	7	175	167	690	64		

* Weights and length "L₁" and "L₂" are based on our standard flanged products and they may be slightly different according to details requested.

* Size means nominal inside diameter of inlet and outlet.

* Asterisk marked (★) flange details (JK standard): Inlet flange conforms to KS B 6216 and outlet flange to KS B 1511. See next page for table of dimensions.

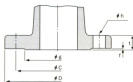
* All kinds of flanges are available upon request.

Calculation of flow according to KS B 6216 for steam, air
to J.K standard for water

- I. Saturated steam (kg/h with 3% accumulation)
- II. Air (kg/h at 20°C with 10% accumulation)
- III. Water (m³/h at G=1 with 15% accumulation)

Size (mm)	Effective area Df (m ²)	Fluid	Set Pressure (kgf/cm ²) (MPa)											
			0.5 (0.05)	0.7 (0.07)	1.0 (0.1)	2.0 (0.2)	3.0 (0.3)	4.0 (0.4)	5.0 (0.5)	6.0 (0.6)	7.0 (0.7)	8.0 (0.8)	9.0 (0.9)	10.0 (1.0)
20	98.96	I	63	71	82	114	153	192	231	269	308	347	385	424
		II	95	109	129	196	263	330	397	464	531	598	665	732
		III	195	231	276	390	478	552	617	676	730	781	828	873
25	163.36	I	105	117	136	189	253	317	381	445	509	573	637	700
		II	159	181	214	324	435	545	656	766	877	987	1,098	1,208
		III	322	381	456	644	789	911	1019	1116	1205	1288	1367	1441
32	228.08	I	147	164	190	265	354	443	532	621	711	800	889	978
		II	221	252	299	453	607	761	916	1,070	1,224	1,378	1,533	1,687
		III	450	532	636	899	1,102	1,272	1422	1558	1683	1799	1908	2011
40	386.42	I	249	278	322	448	600	751	902	1,053	1,204	1,355	1,506	1,657
		II	376	428	506	768	1,029	1,290	1,552	1,813	2,074	2,336	2,597	2,858
		III	762	902	1078	1524	1866	2155	2409	2639	2851	3048	3233	3407
50	640.88	I	401	462	535	744	995	1,245	1,496	1,747	1,997	2,248	2,499	2,749
		II	602	710	840	1,273	1,707	2,140	2,574	3,007	3,441	3,874	4,308	4,741
		III	1199	1495	1787	2527	3095	3574	3996	4377	4728	5055	5361	5651
65	1,036.72	I	669	747	866	1,204	1,610	2,015	2,420	2,826	3,231	3,637	4,042	4,448
		II	1,009	1,149	1,359	2,060	2,761	3,463	4,164	4,865	5,566	6,267	6,969	7,670
		III	2044	2419	2891	4088	5077	5782	6464	7081	7649	8177	8673	9142
80	1,526.81	I	985	1,101	1,275	1,773	2,371	2,968	3,565	4,162	4,759	5,356	5,953	6,550
		II	1,486	1,692	2,002	3,035	4,067	5,100	6,132	7,165	8,198	9,230	10,263	11,296
		III	3011	3562	4258	6021	7374	8515	9520	10429	11264	12042	12773	13463
100	2,221.10	I	1,433	1,602	1,855	2,580	3,449	4,317	5,186	6,055	6,923	7,792	8,661	9,529
		II	2,161	2,462	2,912	4,415	5,917	7,419	8,921	10,423	11,926	13,428	14,930	16,432
		III	4380	5182	6194	8759	10728	12387	13849	15171	16387	17518	18581	19586

REFERENCE DATA



Flange dimensions (standard by J,K)
of lift type safety valve by KS B 6216(inlet) × KS B 1511(outlet)
equal to JIS B 8210(inlet) × JIS B 2210 (outlet)

Inlet flange (KS B 6216) (LIFT TYPE)-1988 (mm)

Press (kgf/cm ²) (MPa)	Size	Flange				Bolt hole			Bolt Size
		D	t	f	g	c	No	h	
10 (1.0)	20	100	18	1	56	75	4	15	M12
	25	125	18	1	67	90	4	19	M16
	32	135	20	2	76	100	4	19	M16
	40	140	20	2	81	105	4	19	M16
	50	155	20	2	96	120	4	19	M16
	65	175	22	2	116	140	4	19	M16
	80	195	22	2	136	160	4	19	M16
	100	230	24	2	171	195	4	19	M16

D - outside dia, flange, t - thickness, f - depth, g - O.D. of raised face, C - pitch circle dia, h - hole dia.

Outlet flange (KS B 1511) (mm)

Press (kgf/cm ²) (MPa)	Size	Flange				Bolt hole			Bolt Size	
		D	t		f	g	C	No		h
10 (1.0)	15	95	12	16	1	51	70	4	15	M12
		100	14	18	1	56	75	4	15	M12
	25	125	14	18	1	67	90	4	19	M16
		32	135	16	20	2	76	100	4	19
	40	140	16	20	2	81	105	4	19	M16
		50	155	16	20	2	96	120	4	19
	65	175	18	22	2	116	140	4	19	M16
		80	185	18	22	2	126	150	4	19
	100	210	18	24	2	151	175	4	19	M16
		125	250	20	24	2	182	210	4	23

Specifications mentioned above may be changed without the notice for the improvement.

[] Old Model

Model **JSV-FF11, FF21**
[FSRF/SSRF]

SAFETY VALVE

Full Bore Safety Valve

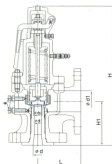
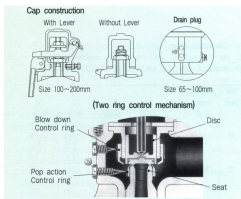
Two ring control mechanism
Spring loaded



Cast iron body
JSV-FF11[FSRF]



Cast steel body
JSV-FF21[SSRF]



MATERIALS (Standard)

No	Part	JSV-FF11[FSRF]	JSV-FF21[SSRF]	JSV-FF23[SSRF 201]
a	Cap		Ductile iron	
b	Lever		Ductile iron	
c	Adjusting screw	Brass	Stainless steel	
d	Bonnet	Cast iron	Cast steel	
e	Spring	Oil Tempered Alloy Steel or Spring Steel		
f	Stem	Stainless steel		
g	Disc	Stainless steel	Stainless steel	
h	Seat	Stainless steel	Stainless steel	
i	Body	Cast iron	Cast steel	
j	Blow down ring	Bronze	Stainless steel	
k	Popping ring	Bronze	Stainless steel	

* Stainless steel body is available upon request

Two ring control, for positive adjustment of both blowdown & pop action to insure consistently dependable performance for widest ranges of pressure, temperature and service condition.

Blowdown control ring : Guide ring accurately adjusts to the required blowdown by changing the reactive force of the various flowing media. Blowdown adjustment is independent of pop action, valve lift or capacity.

Pop action control ring : Adjustable nozzle ring assures sharp, controlled pop action-prevents long, worn-out commence to blow off or simmer before popping.

MATERIALS (Standard)

Models		JSV-FF11[FSRF]		JSV-FF21[SSRF]		JSV-FF22[SSRF 201]
Type		Without lever	With lever	Without lever	With lever	Without lever
Applicable fluid		Liquids	Steam, Air	Liquids	Steam, Air	Gas
Set pressure range		0.35~1.0, 1.0~3.0, 3.0~6.0, 6.0~11.0kgf/cm ² [0.035~0.1, 0.1~0.3, 0.3~0.6, 0.6~1.1MPa]		0.35~1.0, 1.0~3.0, 3.0~6.0, 6.0~12.0, 12.0~22.0kgf/cm ² [0.035~0.1, 0.1~0.3, 0.3~0.6, 0.6~1.2, 1.2~2.2MPa]		
Applicable temperature		Max. 220°C		Max. 250°C		-5~250°C
Connection*		Inlet:KS 10K RF Flanged Outlet:KS 10K FF Flanged		Inlet:KS 20K RF Flanged Outlet:KS 10K FF Flanged		
Materials	Body	Cast iron		Cast steel		
	Disc & Seat	Stainless steel		Stainless steel(stellited)		
Nozzle type		Semi nozzle		Full nozzle		
Hydrostatic test pressure		1.5 times the setting pressure				

* Other flanges are available upon request. (ANSI, DIN)

For safety valves in service of 30kgf/cm²(3.0MPa) and over pressure, please inquiry our factory for details.

Asterisk marked (★) flange details (J.K standard): Inlet flange conforms to KS B2616, outlet flange to KS B1511. See next page for table of dimensions.

JSV-FF11[SSRF-HP] for steam, air and liquids in service of 30kgf/cm²(3.0MPa) (size 20~100mm)

JSV-FF31[SSRF 300] series for gas in service of 30kgf/cm²(3.0MPa) (size 20~100mm), JSV-FF22/FF31[SSRF 200/300] series are approved by High Pressure Gas Safety Corporation.

DISCHARGE CAPACITIES

for Model JSV-FF11/JSV-FF21[FSRF/SSRF] and JSV-FF22[SSRF 201]

Calculation of flow according to KS B 6216 for steam & air
to JK standard for water

* Figures other than in the colored
shells are not subject to JSV-FF11[FSRF]

I. Saturated steam (kg/h with 3% accumulation)

S	15	20	25	32	40	50	65	80	100	125	150	200
10.1	103.86	176.71	263.52	452.39	706.86	1,134.11	1,885.74	2,922.47	4,536.47	7,088.23	9,503.34	17,671.50
10.1	93	158	253	398	631	1,013	1,685	2,611	4,053	6,332	8,490	15,787
20.2	129	219	351	553	875	1,403	2,333	3,614	5,614	8,771	11,760	21,867
30.3	171	291	468	740	1,166	2,871	3,111	4,821	7,483	11,692	15,676	29,149
40.4	214	364	585	926	1,457	2,338	3,888	6,025	9,352	14,613	19,592	36,431
50.5	257	437	701	1,113	1,749	2,805	4,665	7,229	11,222	17,534	23,508	43,713
60.6	300	510	818	1,299	2,040	3,273	5,442	8,433	13,091	20,455	27,424	50,995
70.7	343	583	935	1,485	2,331	3,740	6,219	9,638	14,960	23,376	31,340	58,277
80.8	385	656	1,052	1,672	2,622	4,207	6,996	10,842	16,830	26,297	35,256	65,559
90.9	428	728	1,169	1,858	2,914	4,675	7,773	12,046	18,699	29,218	39,173	72,841
101.0	471	801	1,285	2,045	3,205	5,142	8,550	13,251	20,569	32,138	43,089	80,124
111.1	514	874	1,402	2,231	3,496	5,609	9,327	14,455	22,438	35,059	47,005	87,406
121.2	557	947	1,519	2,418	3,788	6,077	10,104	15,659	24,307	37,980	50,921	94,688
131.3	599	1,020	1,636	2,604	4,079	6,544	10,881	16,863	26,177	40,901	54,837	101,970
141.4	642	1,092	1,753	2,790	4,370	7,011	11,658	18,068	28,046	43,822	58,753	109,252
151.5	685	1,165	1,870	2,977	4,661	7,479	12,435	19,272	29,915	46,743	62,669	116,534
161.6	728	1,238	1,986	3,163	4,953	7,946	13,212	20,476	31,785	49,664	66,585	123,816
171.7	770	1,311	2,103	3,350	5,244	8,414	13,990	21,881	33,654	52,585	70,501	131,098
181.8	813	1,384	2,220	3,536	5,535	8,881	14,767	22,885	35,524	55,506	74,418	138,330
191.9	856	1,457	2,337	3,722	5,826	9,348	15,544	24,089	37,393	58,427	78,334	145,662
202.0	899	1,529	2,454	3,909	6,118	9,816	16,321	25,293	39,262	61,347	82,250	152,944

Symbols : S = Size(mm), P = Set pressure (kgf/cm²), A = Effective area(m²)

II. Air (kg/h at 20°C with 10% accumulation)

S	15	20	25	32	40	50	65	80	100	125	150	200
10.1	103.86	176.71	263.52	452.39	706.86	1,134.11	1,885.74	2,922.47	4,536.47	7,088.23	9,503.34	17,671.50
10.1	144	244	392	625	977	1,567	2,606	4,038	6,269	9,795	13,132	24,419
20.2	218	370	594	947	1,480	2,375	3,950	6,121	9,501	14,846	19,904	37,012
30.3	292	496	796	1,269	1,984	3,184	5,293	8,204	12,734	19,897	26,677	49,605
40.4	366	622	998	1,592	2,488	3,992	6,637	10,296	15,967	24,949	33,449	62,199
50.5	440	748	1,200	1,914	2,992	4,800	7,981	12,369	19,200	30,000	40,221	74,792
60.6	514	874	1,402	2,237	3,495	5,608	9,325	14,451	22,433	35,051	46,994	87,385
70.7	588	1,000	1,604	2,559	3,999	6,416	10,669	16,534	25,665	40,102	53,766	99,978
80.8	662	1,126	1,806	2,881	4,503	7,225	12,013	18,617	28,898	45,154	60,538	112,571
90.9	736	1,252	2,008	3,204	5,007	8,033	13,356	20,699	32,131	50,205	67,311	125,164
101.0	810	1,378	2,210	3,526	5,510	8,841	14,700	22,782	35,364	55,256	74,083	137,375
111.1	884	1,503	2,412	3,848	6,014	9,649	16,044	24,865	38,597	60,307	80,855	150,361
121.2	958	1,629	2,614	4,171	6,518	10,457	17,388	26,947	41,829	65,358	87,627	162,944
131.3	1,032	1,755	2,816	4,493	7,021	11,265	18,732	29,030	45,062	70,410	94,400	175,537
141.4	1,106	1,881	3,018	4,816	7,525	12,074	20,075	31,112	48,295	75,461	101,172	188,130
151.5	1,180	2,007	3,220	5,138	8,029	12,882	21,419	33,196	51,528	80,512	107,944	200,723
161.6	1,254	2,133	3,422	5,460	8,533	13,690	22,763	35,278	54,761	85,563	114,717	213,316
171.7	1,328	2,259	3,624	5,783	9,036	14,498	24,107	37,360	57,993	90,615	121,489	225,909
181.8	1,402	2,385	3,827	6,105	9,540	15,306	25,451	39,443	61,226	95,666	128,261	238,502
191.9	1,476	2,511	4,029	6,428	10,044	16,115	26,795	41,526	64,959	100,717	135,034	251,096
202.0	1,550	2,637	4,231	6,750	10,548	16,923	28,138	43,608	67,692	105,768	141,806	263,689

Symbols : S = Size(mm), P = Set pressure (kgf/cm²), A = Effective area(m²)

III. Water (m/h at G=1 with 15% accumulation)

S	15	20	25	32	40	50	65	80	100	125	150	200
10.1	103.86	176.71	263.52	452.39	706.86	1,134.11	1,885.74	2,922.47	4,536.47	7,088.23	9,503.34	17,671.50
10.1	3.13	5.35	8.61	13.7	21.48	34.50	57.34	89.27	137.99	215.62	289.08	537.55
20.2	4.43	7.57	12.17	19.4	30.37	48.79	81.09	125.71	195.14	304.93	408.82	760.21
30.3	5.43	9.27	14.91	23.8	37.20	58.75	99.32	156.96	239.00	373.46	500.70	931.07
40.4	6.27	10.71	17.22	27.5	42.95	68.99	114.68	177.77	275.97	431.23	578.16	1,075.10
50.5	7.01	11.97	19.25	30.7	48.02	77.14	128.22	198.76	308.54	483.23	646.41	1,202.00
60.6	7.67	13.11	21.09	33.7	52.61	84.50	140.46	217.73	337.99	528.15	708.10	1,316.73
70.7	8.29	14.17	22.78	36.4	56.82	91.27	151.71	235.17	365.07	570.47	764.84	1,422.23
80.8	8.86	15.14	24.35	38.9	60.74	97.57	162.19	251.42	390.28	609.86	817.65	1,520.43
90.9	9.40	16.06	25.83	41.2	64.43	103.49	172.03	266.66	413.96	646.85	867.24	1,612.66
101.0	9.91	16.93	27.22	43.5	67.91	109.09	181.33	281.09	436.35	681.84	914.16	1,699.89
111.1	10.39	17.76	28.55	45.6	71.23	114.41	190.18	294.81	457.64	715.12	958.77	1,782.86
121.2	10.85	18.55	29.82	47.6	74.40	119.50	198.64	307.91	477.99	746.92	1,001.41	1,862.13
131.3	11.30	19.30	31.04	49.6	77.43	124.38	206.75	320.49	497.51	777.42	1,042.30	1,938.17
141.4	11.72	20.03	32.21	51.4	80.36	129.07	214.55	332.59	516.29	806.76	1,081.64	2,011.33
151.5	12.14	20.74	33.34	53.3	83.18	133.60	222.08	344.26	534.41	835.08	1,119.61	2,081.93
161.6	12.53	21.42	34.44	55.0	85.91	137.99	229.37	355.55	551.94	862.47	1,156.33	2,150.21
171.7	12.92	22.07	35.50	56.7	88.55	142.23	236.43	366.49	568.93	889.01	1,191.91	2,216.38
181.8	13.29	22.71	36.52	58.3	91.12	146.36	243.28	377.12	585.42	914.79	1,226.47	2,280.64
191.9	13.66	23.34	37.53	59.9	93.61	150.37	249.95	387.45	603.46	939.85	1,260.08	2,343.13
202.0	14.01	23.94	38.50	61.5	96.05	154.27	256.44	397.52	617.09	964.27	1,292.81	2,404.00

Symbols : S = Size(mm), P = Set pressure (kgf/cm²), A = Effective area(m²)

PRESSURE REDUCING VALVE

[] Old Model

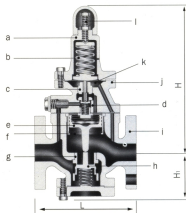
Model **JRV-SF11,SF21**
[RV-A, B]

Pilot Piston Type

for steam



JRV-SF11[RV-A] : Cast iron body
JRV-SF21[RV-B] : Cast steel body



MATERIALS (Standard)

No	Part	Model	JRV-SF11[RV-A]	JRV-SF21[RV-B]
a	Spring case		Cast iron	Cast steel
b	Spring		Carbon steel	
c	Pilot valve	Seat	Stainless steel	
d		Disc	Stainless steel	
e	Piston		Bronze	Cast iron
f	Cylinder		Bronze	Stainless steel
g	Main valve	Seat	Stainless steel	
h		Disc	Stainless steel	
i	Body		Cast iron	Cast steel
j	Top cover		Cast iron	Cast steel
k	Diaphragm		Stainless steel	
l	Adjusting screw		Brass	

Secondary pressure sensing

JRV-SF11[RV-A] : internal type
JRV-SF21[RV-B] : internal type
To install completely JRV-SF21[RV-B],
connect a supplied copper pipe in 1m long between on the
JRV-SF21[RV-B] and toward down-stream pipe.

SPECIFICATIONS

No	Kind	JRV-SF11[RV-A]	JRV-SF21[RV-B]
1	Inlet pressure	Max. 10kgf/cm ² (0.9MPa)	Max. 20kgf/cm ² (2.0MPa)
2	Outlet pressure	0.5~1, 1-3kgf/cm ² (0.05~1.0)~0.0MPa	0.35~16kgf/cm ² (0.035~1.6MPa)
3	Max. reducing ratio	10 : 1	10 : 1
4	Working temp.	Max. 220°C	Max. 250°C
5	Working fluid	Steam	Steam
6	Connection*	20K FF Flanged	20K RF Flanged

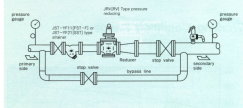
- * Secondary pressure must be less than 80% of primary pressure
- * Minimum pressure differential across the disc : 0.7kgf/cm²(0.07MPa)
- * Leakage allowance : Less than 0.05% of rated flow
- * Hydrostatic test pressure : JRV-SF11[RV-A]/15kgf/cm²(1.5MPa),
JRV-SF21[RV-B]/30kgf/cm²(3.0MPa)
- * ANSI, DIN flanges are available upon request.

DIMENSIONS

Model	JRV-SF11[RV-A]						JRV-SF21[RV-B]					
	Size mm(inch)	L	H	H	Cv	W(kg)	L	H	H	Cv	W(kg)	
15(1/2")	165	75	270	1	11.4	200	83	292	1	14		
20(3/4")	165	75	270	2.5	12	200	83	292	2.5	15		
25(1")	170	75	270	4	13.5	200	83	292	4	15.5		
32(1 1/4")	185	85	275	6.5	15.2	225	108	307	6.5	20.4		
40(1 1/2")	200	85	275	9	17.5	230	108	301	9	30.5		
50(2")	220	92	283	16	21	250	113	325	16	31		
65(2 1/2")	250	110	310	25	30	280	123	366	25	41		
80(3")	290	130	350	36	45	310	137	445	36	59		
100(4")	340	150	370	64	64.5	320	140	445	64	61		
125(5")	390	180	500	100	104	350	148	459	100	70		
150(6")	420	195	535	144	126	395	181	456	144	101		
200(8")	550	250	615	256	155	560	250	620	256	155		

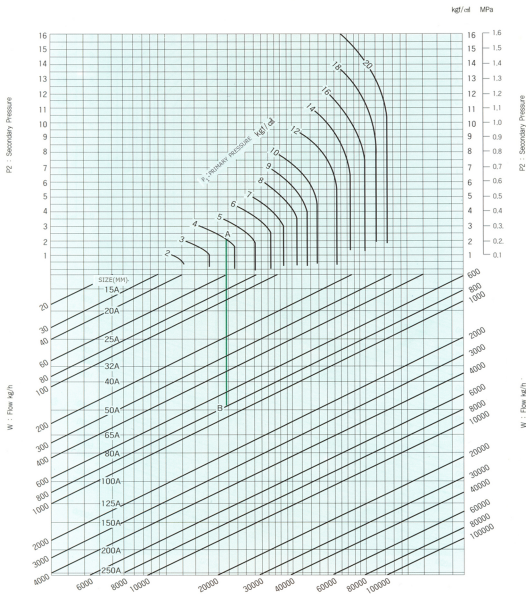
- * Weights and length "L" are based on our standard flanged products and they may be slightly different according to details requested.

Installation example



(mm)

Valve size selecting chart for JRV[RV] pressure reducing valve (for steam service)



Oblique line : Flow
Horizontal line : Size

How to use the chart

Where,

Primary pressure : 4kgf/cm²(0.4MPa)Secondary pressure : 2kgf/cm²(0.2MPa)

Flow (Saturated steam) : 800kg/h

Obtain a cross point "A" on the vertical line of primary pressure 4kgf/cm²(0.4MPa) with horizontal line of secondary pressure 2kgf/cm²(0.2MPa).

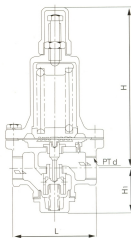
Obtain a cross point "B" on the vertical line down from the point "A" with the oblique line of flow 800kg/h. As the point "B" is between size 40 and 50mm, select safer size 50mm.

PRESSURE REDUCING VALVE

Model
JRV-ST11(RV-C)

Direct Acting Type

For Steam



■ FEATURES

1. The operation is very stable for the applications from the big flow rate to the small flow rate because the big opening ratio owing to the diaphragm of the special fiber rubber.
2. The Max. pressure reducing ratio is big.
3. The Min. differential pressure between the inlet and outlet is small.
4. This valve is available at the Min. secondary pressure.
5. The mal-operation from the foreign materials can be reduced owing to the little moving parts at operating with the simple structure and the maintenance is very easy.
6. The installation is very easy owing to the threaded connection.

■ SPECIFICATIONS

Nominal Size	15mm, 20mm, 25mm, 32mm, 40mm
Applicable Fluid	Steam, Water(Noncorrosive)Liquid
Applicable Temp.	Max. 184°C
Applicable Primary Pressure	Max. 10kgf/cm ² {1.0MPa}
Adjustable Secondary Pressure Ranges	0.2~2, 1.5~4kgf/cm ² {0.02~0.2, 0.15~0.4MPa}
Max. Reducing Pressure Ratio	20 : 1
Min. Pressure Differential across the disc	0.2kgf/cm ² {0.02MPa}
Lock Up Pressure	Max. 0.2kgf/cm ² {0.02MPa}
Offset Pressure	Within 0.45kgf/cm ² with spring ranges:0.2~2kgf/cm ² (within set pressure x 0.5 if the set pressure is below 0.8kgf/cm ² .)
Min. Adjustable Flow	2~5kg/h
Leak Allowance	Less than 0.05% of Rated Flow
Connection Type	PT Screw
Materials	Body-Cast Iron, Trim-SUS Diaphragm:Synthetic Rubber
Hydrostatic Test	20kgf/cm ² {2.0MPa}

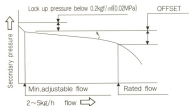
■ DIMENSIONS

Unit:mm

SIZE	PTd	L	H ₁	H	A	(kg)
15	1/2"	110	57	207	124	5.0
20	3/4"	110	57	207	124	5.0
25	1"	120	63	223	140	6.5
32	1 1/4"	150	78	278	166	12.0
40	1 1/2"	150	78	278	166	12.0

■ CHARACTERISTICS

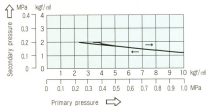
• Flow Characteristics



Within 0.45kgf/cm² {0.045MPa} with spring ranges from 0.2~2kgf/cm² {0.02~0.2MPa} (Within 0.5 times the setting pressure if the setting pressure is below 0.8kgf/cm²)

Within 0.6kgf/cm² {0.06MPa} with spring ranges from 1.5~4kgf/cm² {0.15~0.4MPa}.

• Pressure Characteristics

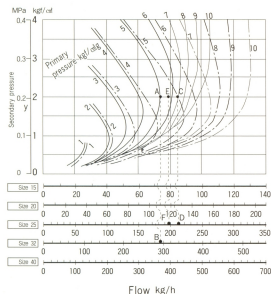


The pressure characteristic chart is showing the primary pressure changes depending on the secondary pressure changes.

The secondary pressure changes are within 0.1kgf/cm² {0.01MPa} as per the primary pressure change of 1kgf/cm² {0.1MPa}.

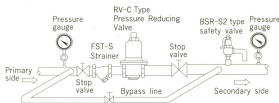
Valve size selecting chart for JRV-ST11[RV-C] Pressure reducing valve (for steam)

■ VALVE SIZE SELECTING CHART FOR SATURATED STEAM



■ INSTALLATION METHOD

• INSTALLATION SAMPLE



• CORRECT INSTALLATION

1. The pressure reducing valve should be installed vertically on the horizontal piping line.
2. The stop valve, safety relief valve, pressure gage, and bypass piping shall be installed before and behind of the pressure reducing valve.
3. The globe valve as the stop valve shall be installed for the easy maintenance of the pressure reducing valve.
4. Where the secondary piping size is to be larger than the primary piping size, please install the reducer at the place close to the pressure reducing valve and enlarge the secondary piping size.
5. Where the solenoid valve for on-off control of the pressure reducing valve is installed at either primary or secondary side of the valve, the solenoid valve shall be installed with the enough distance from the pressure reducing valve.
6. The condensate might have an impact on the unstable operation of the pressure reducing valve. So, the steam trap shall be installed in front of the pressure reducing valve in order to prevent the condensate from flowing into the valve.

■ HOW TO USE THE CHART

The valve size shall be selected with the saturated steam under the following conditions: the primary pressure of 5kgf/cm² (0.5MPa), the secondary pressure of 2kgf/cm² (0.2MPa), and the flow of 205kg/h.

1. The secondary piping size shall be considered.

The description of types of pressure lines on the primary side are as following:

Solid line(—): Where the size of the secondary piping size is the same as the nominal size of valve.

Chain line with a dot(- · -): Where the secondary piping size is larger than the nominal size of valve by two sizes, (the intermediate values shall be selected where the secondary piping size is larger than the valve nominal size by one size)

2. Where the secondary piping size is the same as the valve nominal size,

Obtain the intersection point "A" where the primary pressure of 5kgf/cm² (0.5MPa) on the solid line intersects with the secondary pressure of 2kgf/cm² (0.2MPa). Obtain the intersection point "B" on the vertical line down from the intersection point "A". The intersection point "B" covers the flow of 205kg/h and the valve nominal size of 32mm is selected on the point "B".

3. Where the secondary piping size is larger than the valve nominal size by two sizes,

Obtain the intersection point "C" where the primary pressure of 5kgf/cm² (0.2MPa), Obtain the intersection point "D" on the vertical line down from the intersection point "C". The intersection point "D" covers the flow of 205kg/h and the valve nominal size of 25mm is selected on the point "D" (the secondary piping size is 40mm).

4. The flow at the intersection point "D" is 213kg/h. This flow is bigger than the required flow of 205kg/h. It is necessary to check if the smaller size than the selected one by one size can cover the required flow.

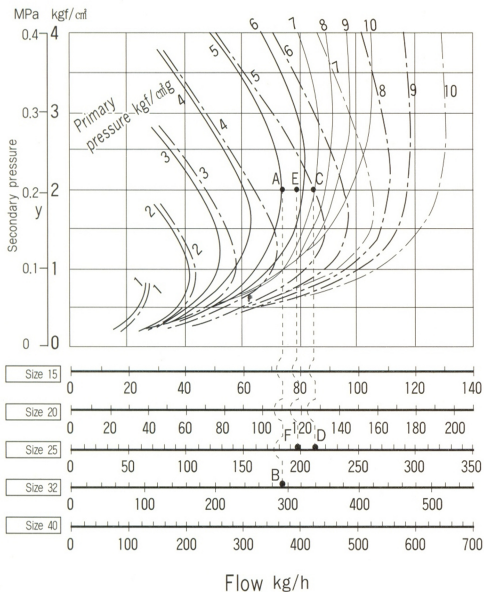
Where the secondary piping size is larger than the valve nominal size by one size,

The intermediate point "E" between "A" and "C" is selected. Obtain the intersection point "F" on the vertical line down with the same valve size(25mm) from the point "E" and the flow of 196kg/h with the same valve size (25mm) can be obtained on the point "F". This flow of 196kg/h is not sufficient compared with the required flow of 205kg/h.

• CAUTIONS PRIOR TO INSTALLATION

The foreign matters should be removed in the piping system through the enough flushing by using the bypass piping at new piping installation or in the case that the pressure reducing valve has not been used for a long time.

■ VALVE SIZE SELECTING CHART FOR SATURATED STEAM



[Old Model

Model JTR-FT12, FF12, FF13
[JKD-FT1, 2, 3]

STEAM TRAP

Ball Float Type

With Air vent



JTR-FT12[JKD-FT1]



JTR-FF12[JKD-FT2]



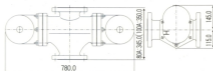
Spheroidal body



Square bonnet



Dome body



JTR-FF13[JKD-FT3]

For application 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 float. Inbuilt 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

Working pressure ranges : 4.5kgf/cm²(0.45MPa)

At working temperature : 10kgf/cm²(1.0MPa)

Within max. 220°C : 14kgf/cm²(1.4MPa)

Hydrostatic test pressure : 1.5times the pressure rating

* At ordering please specify pressure rating as a suffix with model.

Example: FT12[FT 1]/4.5(Model JTR-FT12[JKD-FT1],

4.5kgf/cm²(0.45MPa)

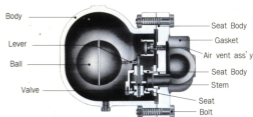
MATERIALS (Standard)

No	Part	JTR-FT12/FF12[JKD-FT1/FT2]	JTR-FF13[JKD-FT3]
a	Body	Cast iron	Cast steel
b	Lever	C.Stainless Steel	C.Stainless Steel
c	Ball float	Stainless Steel	Stainless Steel
d	Valve	Stainless Steel	Stainless Steel
e	Seat body	C.Stainless Steel	C.Stainless Steel
f	Gasket	Non Asbestos	Non Asbestos
g	Bonnet	Cast iron	Cast steel
h	Air vent ass'y	Stainless Steel	Stainless Steel
i	Stem	Stainless Steel	Stainless Steel
j	Seat	C.Stainless Steel	C.Stainless Steel
k	Bolt	Carbon steel	Carbon steel

Cast steel body steam traps are also available on request.

Differences on construction and appearance

Size	Part	Size (mm)			
		15	20	25	32 40 50
FT12/FF12 [FT 1/FT 2]	Body	Spheroidal		Dome	
	Bonnet	Square		Hexagonal	
	Seat	Single		Double	
	Drain plug	PT 3/8"		PT 3/8"	



DIMENSIONS

(mm)

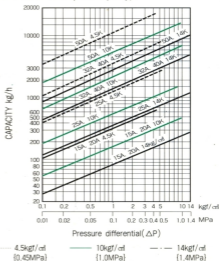
Model	Size mm(inch)	Dia d	End to end		Height		Weight (kg)	Conn- ection
			L	H ₁	H ₂			
JTR-FT12 [JKD-FT1]	15(1/2)	PT 1/2"	120	110	170	4.4	PT	
	20(3/4)	3/4"	120	110	170	4.4		
	25(1")	1"	120	195	220	7.4		
	32(1 1/4")	1 1/4"	270	240	295	18.0		
	40(1 1/2")	1 1/2"	270	240	295	18.5		
JTR-FF12 [JKD-FT2]	50(2")	2"	300	260	310	26.5	HS 10K FF Flanged	
	15(1/2)	15	200	110	170	6.2		
	20(3/4)	20	200	110	170	6.4		
	25(1")	25	215	195	220	10.6		
	32(1 1/4")	32	320	240	295	21.5		
40(1 1/2")	40	320	240	295	22.0			
50(2")	50	360	260	310	34.5			

* Weights and the length "L" are based on our standard products and they may be subject to changes by details requested.

• ANSI, DIN flanges are also available on request.

• NPT thread types available.

CAPACITY CHART on the continuous discharge
(Select the steam trap with the capacity at
least 3 times the required capacity)

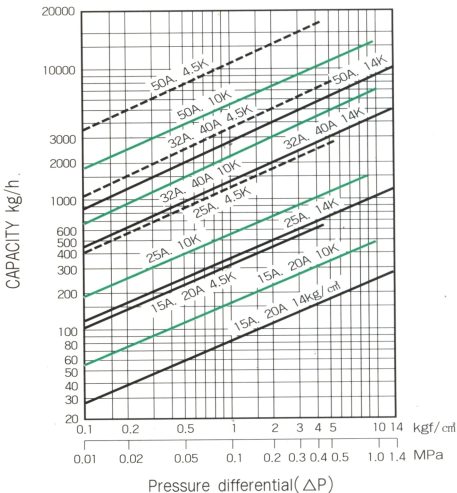


STEAM TRAP

Ball Float Type

With Air vent

CAPACITY CHART on the continuous discharge
(Select the steam trap with the capacity at
least 3 times the required capacity)



..... 4.5kgf/cm²
{0.45MPa}

———— 10kgf/cm²
{1.0MPa}

----- 14kgf/cm²
{1.4MPa}

TEMPERATURE REGULATING VALVE

[] Old Model

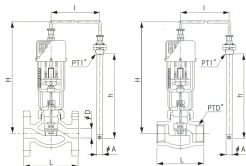
Model JTC-DT11, DF11
[JKTR-1S,1F]

Direct Acting Type

JTC-DT11[JKTR-1S]



JTC-DF11[JKTR-1F]

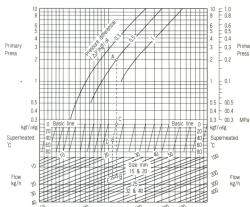


This type is a small capacity temperature regulating valve with flange connection. This valve with single seat has the minimum leakage allowance, and is suitable for using a hot water tank, heat exchanger, etc.

ADJUSTABLE TEMPERATURE RANGE

Adjustable temperature ranges	Withstanding temperature
40~60°C	70°C
60~80°C	90°C
80~100°C	110°C

SIZE SELECTION CHART (For STEAM)



HOW TO USE THE CHART

Where,

- Inlet Pressure : 2kgf/cm²(0.2MPa)
- Fluid : Saturated Steam
- Flow : 50kg/h
- Outlet Pressure : 1.5kgf/cm²(0.15MPa)

Obtain a cross point "A" on the horizontal line of Inlet pressure 2kgf/cm²(0.2MPa) and the oblique line of Pressure differential 0.5kgf/cm²(0.05MPa). Obtain a cross point "B" By tracing down from "A" on the line of Flow 50kg/h. As "B" is between Size 15, 20 and 25mm, select safer size 25mm.

Specifications mentioned above may be changed without the notice for the improvement.

SPECIFICATIONS

MODEL	JTC-DT11[JKTR-1S]	JTC-DF11[JKTR-1F]		
Type	Direct Acting Type	Direct Acting Type		
Size(mm)	15A 20A 25A 32A 40A	15A 20A 25A 32A 40A		
Applicable Fluid	Steam	Steam		
Connections	Screwed (PT)	Flanged (10K FF)		
Materials	Body	Bronze		
	Trim	Brass & Ptfte		
	Thermo Bulb	Copper Tube		
Applicable Pressure for Thermo Bulb	10kgf/cm ² (1.0MPa)			
Length of Capillary Tube	2m (Up to 5m is Available Upon Request)			
Pressure Limit at Inlet	15A~20A 5K	25A 4K	32A 3K	40A 2K

JTC-DF11[JKTR-1F]

(mm)

SIZE	D	L	H	I	h	A	C
15A	15	108	405	2000	400	25.4	1.0
20A	20	117	410	2000	400	25.4	1.5
25A	25	127	415	2000	400	25.4	3
32A	32	140	423	2000	400	25.4	4
40A	40	165	435	2000	400	25.4	6

JTC-DT11[JKTR-1S]

(mm)

SIZE	D	L	H	I	h	A	C
15A	½	60	400	2000	400	25.4	1.0
20A	¾	70	405	2000	400	25.4	1.5
25A	1	80	410	2000	400	25.4	3
32A	1¼	90	420	2000	400	25.4	4
40A	1½	100	430	2000	400	25.4	6

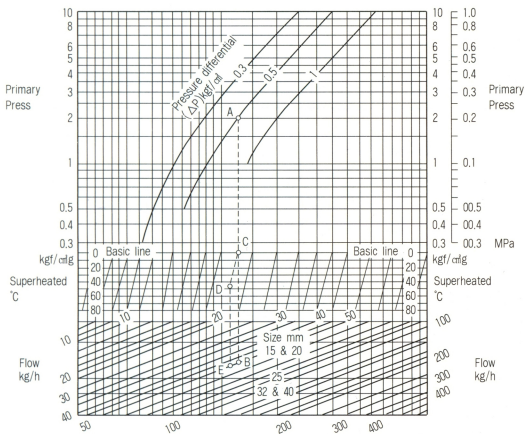
[] Old Model

TEMPERATURE REGULATING VALVE

Model JTC-DT11, DF11
[JKTR-1S,1F]

Direct Acting Type

SIZE SELECTION CHART (For STEAM)



[] Old Model

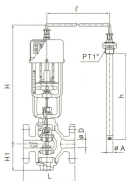
TEMPERATURE REGULATING VALVE

Model

JTC-DF12[JKTR-2F]

Direct Acting Type

JTC-DF12[JKTR-2F]



JTC-DF12[JKTR-2F] is for general use direct-operated and self operated temperature regulating valve.

JTC-DF12[JKTR-2F] is for heating purpose applications such as hot water tank, heat exchanger, heavy oil, heating vessel, etc.

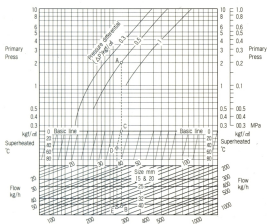
*FEATURES

1. Being direct-operated type, the construction of this valve is simple to ensure easy handling and steady operating.
2. Temperature adjusting ranges are divided by 20°C degree, so temperature deviation is very small.
3. Installation is very easy because this valve doesn't need assistant power such as electric power.

■ ADJUSTABLE TEMPERATURE RANGE

Adjustable temperature range	Withstanding temperature
40 ~ 60°C	70°C
60 ~ 80°C	90°C
80 ~ 100°C	110°C

■ SIZE SELECTION CHART (For STEAM)



HOW TO USE THE CHART

Where,

Inlet Pressure : 2kgf/cm² (0.2MPa)

Fluid : Saturated Steam

Flow : 200kg/h

Outlet Pressure : 1.5kgf/cm² (0.15MPa)

In case of steam temperature at 180°C, and the rest being same as above, obtain superheated degree as follows.

$$\left(\begin{array}{c} \text{Superheated} \\ \text{steam temp.} \end{array} \right) - \left(\begin{array}{c} \text{Saturated} \\ \text{steam temp.} \end{array} \right) = \left(\begin{array}{c} \text{Superheated} \\ \text{degree.} \end{array} \right)$$

$$180^{\circ}\text{C} - 132.9^{\circ}\text{C} = 47.1^{\circ}\text{C}$$

■ SPECIFICATIONS

MODEL		JTC-DF12[JKTR-2F]
Type	Direct-Operated	
Size(mm)	15A~40A	
Applicable Fluid	Steam	
Connections	Flanged (10K FF)	
Materials	Body	Ductile Iron
	Trim	Stainless Steel
	Thermo Bulb	Copper Tube
Applicable Pressure for the Thermo Bulb	10kgf/cm ² (1.0MPa)	
Length of Capillary Tube	2m (Upto 5m is available upon request)	
Pressure Limit at Inlet	Under Max 10K	

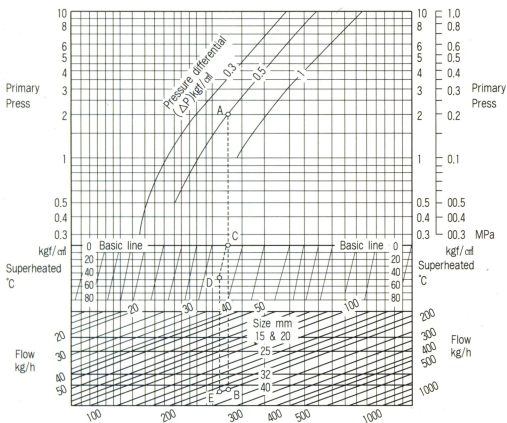
■ DIMENSIONS

(mm)

SIZE	φ	L	H _i	H	ℓ	h	φ A	Flang
15A	15	126	68	405	2000	400	25.4	KS B 1511 10K FF (JS B 2210 10K FF)
20A	20	130	68	405	2000	400	25.4	
25A	25	140	68	405	2000	400	25.4	
32A	32	150	87	405	2000	400	25.4	
40A	40	150	87	405	2000	400	25.4	

Obtain a cross point "A" on the horizontal line of Inlet pressure 2kgf/cm² (0.2MPa) and the oblique line of Pressure differential 0.5kgf/cm² (0.05MPa). Obtain a cross point "B" by tracing down from "A" on the line of Flow 200kg/h. As "B" is between Size 40 and 50mm, select safer size 50mm. Obtain a cross point "C" on the Basic line by tracing down from "A" then move to the point "D" by correcting the position with Superheated degree 47.1°C line. Obtain a cross point "E" by tracing down from "D" on the Flow 200kg/h. As "E" is between Size 40 and 50mm, select safer size 50mm.

SIZE SELECTION CHART (For STEAM)



[Old Model

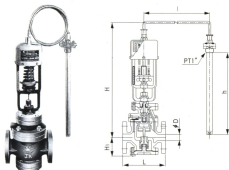
TEMPERATURE REGULATING VALVE

Model

JTC-PF11[JKTR-3F]

Pilot Acting Type

JTC-PF11[JKTR-3F]



This type is a large capacity temperature regulating valve with flange connection. Its pilot acting allows a large capacity. This type is suitable for using a hot water tank, heat exchanger, and it is also suitable for controlling temperature at the large vessel.

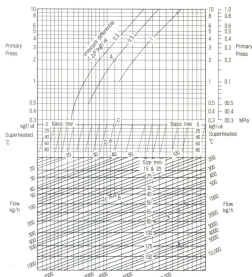
ADJUSTABLE TEMPERATURE RANGE

Adjustable temperature range	Withstanding temperature
40 ~ 60°C	70°C
60 ~ 80°C	90°C
80 ~ 100°C	110°C

SPECIFICATIONS

MODEL	JTC-PF11[JKTR-3F]	
Type	Pilot Acting Type	
Size(mm)	15A~200A	
Applicable Fluid	Steam	
Connections	Flanged (10K FF)	
Materials	Body	Cast Iron
	Trim	Stainless Steel
	Thermo Bulb	Copper Tube
Applicable Pressure for Thermo Bulb	10kgf/cm ² (1.0MPa)	
Length of Capillary Tube	2m (Up to 5m is available upon request)	

SIZE SELECTION CHART (For STEAM)



HOW TO USE THE CHART

Where,

- Inlet Pressure : 2kgf/cm² (0.2MPa)
 Fluid : Saturated Steam
 Flow : 200kg/h
 Outlet Pressure : 1.3kgf/cm² (0.15MPa)

In case of steam temperature at 180°C, and the rest being same as above, obtain superheated degree as follows.

$$\left(\begin{array}{l} \text{Superheated} \\ \text{steam temp.} \end{array} \right) - \left(\begin{array}{l} \text{Saturated} \\ \text{steam temp.} \end{array} \right) = \left(\begin{array}{l} \text{Superheated} \\ \text{degree.} \end{array} \right)$$

$$180^{\circ}\text{C} - 132.9^{\circ}\text{C} = 47.1^{\circ}\text{C}$$

Specifications mentioned above may be changed without the notice for the improvement.

DIMENSIONS

(mm)

SIZE	15A	20A	25A	32A	40A	50A	65A	80A	100A	125A	150A	200A
D	15	20	25	32	40	50	65	80	100	125	150	200
L	165	165	170	185	200	220	250	290	340	390	420	550
H	486	486	486	492	495	500	515	545	550	640	665	745
HT	75	75	79	85	85	92	110	130	150	180	195	250
I	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
h	400	400	400	400	400	400	400	400	400	400	400	400
Cv	1	2.5	4	6.5	9	16	25	36	64	100	144	256
Flang	KS B 1511 10K FF (JS B 2210 10K FF)											

Obtain a cross point "A" on the horizontal line of Inlet pressure 2kgf/cm² (0.2MPa) and the oblique line of Pressure differential 0.5kgf/cm² (0.05MPa). Obtain a cross point "B" by tracing down from "A" on the line of Flow 200kg/h. As "B" is between Size 40 and 50mm, select safer size 50mm. Obtain a cross point "C" on the Basic line by tracing down from "A" then move to the point "D" by correcting the position with Superheated degree 47.1°C line. Obtain a cross point "E" by tracing down from "D" on the Flow 200kg/h. As "E" is between Size 40 and 50mm, select safer size 50mm.

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[] Old Model

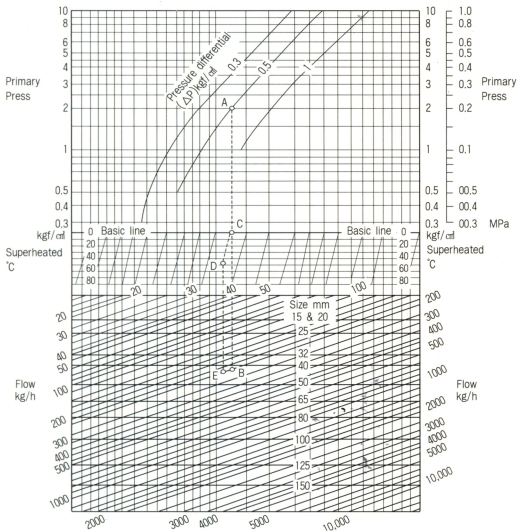
TEMPERATURE REGULATING VALVE

Model

JTC-PF11[JKTR-3F]

Pilot Acting Type

SIZE SELECTION CHART (For STEAM)

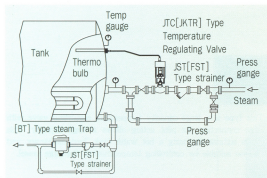


TEMPERATURE REGULATING VALVE

[] Old Model

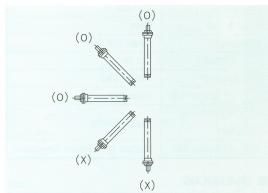
Model **JTC TYPE**
[JKTR TYPE]

Reference Data



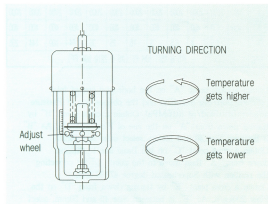
■ INSTALLATION DIAGRAM

1. The valve should be installed vertically at the horizontal pipe arrangement.
2. The direction of arrow should be accorded with the direction of fluid.
3. Before installing the temperature regulating valve, the scale should be eliminated at the pipe arrangement.
4. The strainer should be installed for preventing the scale at the inlet part.
5. The bypass pipe arrangement should be installed for eliminating the scale, checking and repairing the valve.



■ INSTALLATION ON THERMO BULB

1. More than 3/4 of the bulb should be put into the heated fluid.
2. Temperature gauge should be installed near and same height of the thermo bulb.
3. The sensor should be installed at the heated tank where is an average temperature.
4. Capillary tube should not be bent at the sharp angle.
5. There is no problem to install the sensor vertically and inclination. But the end of sensor should be towarded the bottom.



■ THE WAY OF ADJUSTING

The temperature regulating valve isn't adjusted to the set temperature at the factory. After installation the valve, the set temperature can be changed as required at the job site. The set temperature can be changed within the adjustable temperature range. After starting operation, watching the valve operating normally and the set temperature be settled as required temperature. When the temperature be settled, turning the handle to the clockwise, the valve is operating at the high temperature degree. And turning the handle to the anti-clockwise, the valve is operating at the low temperature degree.

[] Old Model

Model **JTR-DT22, DF21**
[JKD-AV3, AV4]

STEAM TRAP

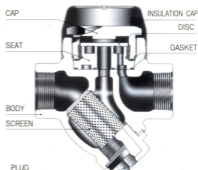
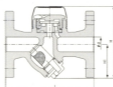
Thermodynamic Type

With
air insulation chamber

JTR-DT22[JKD-AV3]



JTR-DF21[JKD-AV4]



Constructions are slightly different according to sizes

Insulation chamber(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-heat-treated stainless steel and its replaceable seat.

SPECIFICATIONS

Working pressure : Max. 16kgf/cm²(1.6MPa)
Min. 0.35kgf/cm²(0.035MPa)

Working temperature : Max. 220°C

Hydrostatic test pressure : 24kgf/cm²(2.4MPa)

Insulation system : Air warm

Connection : JTR-DT22[JKD-AV3]:PT screwed/
JTR-DF21[JKD-AV4]: Flanged

One-touch cap(Round, head) for size 15~25mm

Bolted cap (square head) for size 32~50mm

ANSI, DIN flange are available upon request.

NPT thread type is available

DIMENSIONS

(mm)

Model	Size mm(inch)	Dia d	End to end L	Height H ₁	H ₂	Weight (kg)	Connec- tion
JTR-DT22 [JKD-AV3]	15(1/2")	PT 1/2"	90	56	112	1.3	PT Screwed
	20(3/4")	PT 3/4"	95	58	117	1.4	
	25(1")	PT 1"	100	58	121	1.6	
	32(1 1/4")	PT 1 1/4"	175	103	185	5.8	
	40(1 1/2")	PT 1 1/2"	180	112	206	7.2	
50(2")	PT 2"	195	130	233	10		
JTR-DF21 [JKD-AV4]	15(1/2")	15	136	53	113	2.5	KS 10K FF Flanged
	20(3/4")	20	140	56	118	3.0	
	25(1")	25	150	58	124	4.0	
	32(1 1/4")	32	245	103	195	9.2	
	40(1 1/2")	40	260	112	206	11	
50(2")	50	265	130	233	14		

Weights herein are based on our standard products and they may be slightly different according to specifications requested.

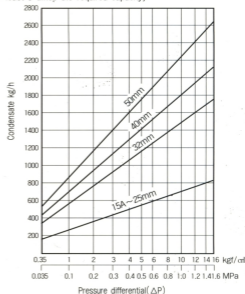
Specifications mentioned above may be changed without the notice for the improvement.

MATERIALS (Standard)

No	Part	JKD-AV
a	Cap	Stainless steel or Forged brass
b	Body	Ductile iron or Cast iron
c	Screen	Stainless steel
d	Insulation cap	Rolled steel or Cast iron
e	Disc	Stainless steel
f	Seat	Stainless steel
g	Gasket	Teflon
h	Strainer cap	Forged brass or Cast iron

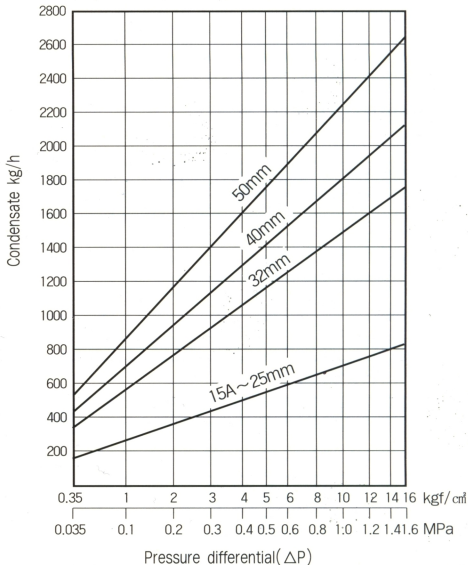
- Ductile iron body for 15~25mm/AV3
- Ductile iron body for 15~25mm/AV4
- Cast iron body for 32~50mm/AV3 & 32~50mm/AV4

CAPACITY CHART on the continuous discharge
(Select the steam trap with the capacity at
least 3 times the required capacity)



STEAM TRAP**Thermodynamic Type**With
air insulation chamber

CAPACITY CHART on the continuous discharge
(Select the steam trap with the capacity at
least 3 times the required capacity)



Old Model

Model

JTR-BT21[JKD-BT4]

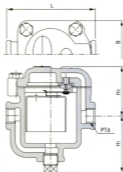
STEAM TRAP

Inverted Bucket Type

Shockless self return valve



JTR-BT21[JKD-BT4]



JTR-BT21[JKD-BT4] steam trap is designed for high steam pressure, combined with SSR system.

SSR (shockless self return) mechanism is maintainable to keep away shock while valve closing and centering, and to allow steady draining, valve self-closing independently from the bucket coming up.

- Small and compact design
- Easy maintenance and replacement

Working pressure ranges : 0.35~4, 4~8kgf/cm²
 (0.035~0.4, 0.4~0.8MPa)
 8~12, 12~16kgf/cm²
 (0.8~1.2, 1.2~1.6MPa)

Working temperature : Max. 230°C

Connection : KS PT Screwed
 NPT available on order

Hydrostatic test pressure : 1.5 times the pressure rating

- At ordering, specify pressure range as a suffix with model to allow maximum discharge rate,
 (ex. JTR-BT21[JKD-BT 4]/4.5 : pressure range
 0.35~4.5kgf/cm²(0.035~0.45MPa)

DIMENSIONS

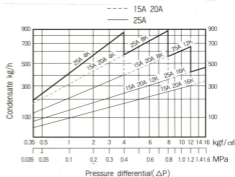
(mm)

Size	L	H ₁	H ₂	B	PTd	WL
15(½")	127.0	80.0	71.0	94.0	PT ½"	3.1kg
20(¾")	132.0	82.0	71.0	94.0	PT ¾"	3.2kg
25(1")	137.0	101.0	74.0	94.0	PT 1"	3.5kg

MATERIALS

No	Part	Material
a	Body	Ductile iron
b	Bonnet	Ductile iron
c	Bucket	Stainless Steel
d	Seat	Stainless Steel
e	Disc(valve)	Stainless Steel
f	Plug	Malleable iron
h	Bolt	Carbon steel

CAPACITY CHART on the continuous discharge
 (Select the steam trap with the capacity at
 least 3 times the required capacity)



CAUTIONS AT SIZING

At sizing, ensure to select the steam trap size to drain condensate loads 3 times the expected safety factor.

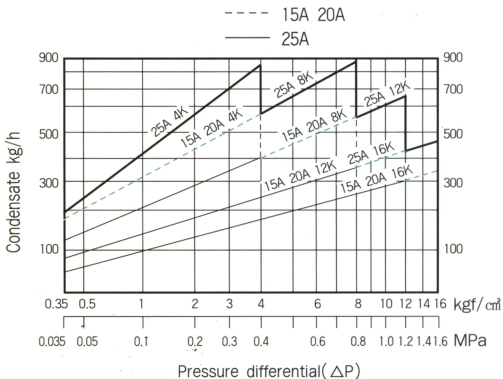
In case of any back pressure at the steam trap outlet side, choose the trap size by the pressure differential between inlet and outlet pressure.

STEAM TRAP

Inverted Bucket Type

Shockless self return valve

CAPACITY CHART on the continuous discharge
(Select the steam trap with the capacity at least 3 times the required capacity)



[] Old Model

Model

JTR-BF11[JKD-BT 2]

STEAM TRAP

Inverted Bucket Type



JTR-BF11[JKD-BT2]

JTR-BF11[JKD-BT2] 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 and maintenance. Disc and seat made of stainless steel keeps excellent durability.

SPECIFICATIONS

Working pressure : Max. 7kgf/cm²(0.7MPa)
Min. 0.35kgf/cm²(0.035MPa)

Working temperature : Max. 220°C

Connection : JTR-BF11[JKD-BT2] KS 10K FF flange
(ANSI, DIN flange are available)

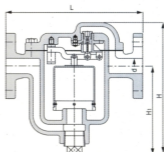
Hydrostatic test pressure : 10kgf/cm²(1.0MPa)

* The steam traps for the working pressure higher than 7kgf/cm² (0.7MPa) are available upon request.

DIMENSIONS

(mm)

Model	Size mm(inch)	Dia d	End to end L	Height H ₁ H ₂	Weight (kg)	Con- nection
JTR-BF11 [JKD-BT2]	32(1 1/4")	32	280	190 275	19	KS 10K
	40(1 1/2")	40	290	210 320	23.5	
	50(2")	50	350	250 385	35	FF
	65(2 1/2")	65	400	290 450	45	Flanged
	80(3")	80	400	290 450	46	
100(4")	100	492	360 520	85		

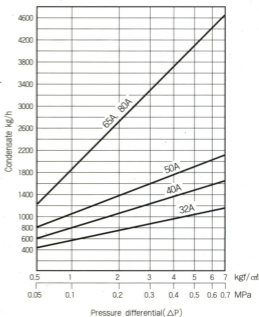


MATERIALS

No	Part name	Material
a	Bolt	Carbon steel
b	Gasket	Non-Asbestos
c	Body	Cast iron
d	Bucket	Stainless Steel
e	Bonnet	Cast iron
f	Seat	Stainless Steel
g	Disc	Stainless Steel
h	Plug	Malleable iron
i	Lever	Bronze
j	Lever bracket	Bronze

CAPACITY CHART

on the continuous discharge
(Select the steam trap with the capacity at
least 3 times the required capacity)



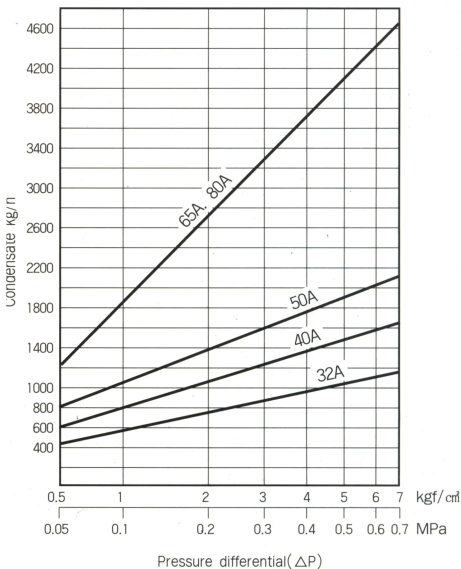
Specifications mentioned above may be changed without the notice for the improvement.

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STEAM TRAP

Inverted Bucket Type

CAPACITY CHART on the continuous discharge
(Select the steam trap with the capacity at least 3 times the required capacity)



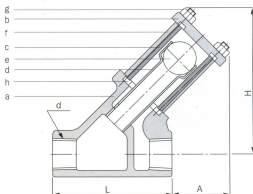
FLOW SIGHT

Sight Check

for condensate



JSC-BT11[JKS-CK]



Model JSC-BT11[JKS-CK] sight check is a device to be used for visually checking the conditions and leakage of steam trap whether in normal blow or not, being installed after the steam trap individually. When the fresh steam flows into a condensate receiving tank, it is sure that a steam trap allows steam leak. It is, however, difficult to find out and countermeasure the troubled unless any checking device is installed. In the case, JSC-BT11[JKS-CK] gives an opportunity to affirm the working attitude of the steam trap and the overall situation of steam system.

In case of being oxygen or dioxide carbon components contained in steam, care should be taken of a precautionary measure for no deposit accumulated at the inside of glass, reviewing the feed water system to the boiler.

Constructionally JSC-BT11[JKS-CK] is used even as a check valve, especially outlet flow being lifted upward higher than inlet flow.

Caution

At installing the sight check, be sure to keep the distance at least 1m long after the steam trap to protect the glass of sight check from the impact when steam trap blows off abruptly.

SPECIFICATIONS

Working Pressure	: Max. 10kgf/cm ² (1.0MPa)
Working Temperature	: Max. 220°C
Applicable fluid	: Condensate
Connection	: PT Screwed (NPT, BSP Screwed types are available)

DIMENSIONS

(mm)

Part	Size mm(inch)	15 (1/2")	20 (3/4")	25 (1")
d		PT 1/2"	PT 3/4"	PT 1"
L		80	80	80
A		39	36	36
H		95	95	100
Wt(kg)		0.7	0.9	1.3

MATERIALS

No	Part name	Standard
a	Body	Bronze
b	Cover	Bronze
c	Sight tube	Glass, heat treated
d	Discharge tube	Copper
e	Ball	Stainless steel
f	Stud bolt	Carbon steel
g	Nut	Carbon steel
h	Gasket	Synthetic rubber

[] Old Model

FLOW SIGHT

Model
JDG-NT11[JKD-GI]

Double Sight Glass(Flapper Type) for steam, water and liquid



JDG-NT11[JKD-GI]

Model JDG-NT11[JKD-GI] is device to be used visually to check the flow condition at the both sides through the transparent inside. The oscillating amount of the flapper responding to flux is to depend upon the flow condition enough to check easily.

Specially hardened glass and stainless steel flapper ensures to endure over load, reverse flow and enen at water hammer.

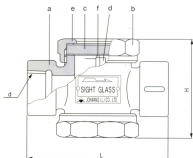
SPECIFICATIONS

Working Pressure	: Max. 10kgf/cm ² (1.0MPa)
Working Temperature	: Max. 220°C
Applicable fluid	: Condensate, water and liquid
Connection	: PT Screwed (NPT, BSP Screwed types are available)

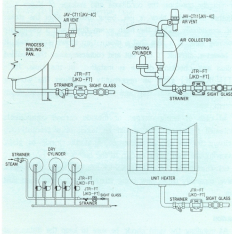
MATERIALS

No	Part name	Standard
a	Body	Cast iron
b	Cap	Cast iron
c	Sight glass	Glass, heat treated
d	Flapper *	Stainless steel
e	Gasket	Non Asbestos
f	Pin	Stainless steel

★ Synthetic resin balls available at order



Installation example with related periphery



DIMENSIONS

(mm)

Part	Size mm(inch)	15 (1/2")	20 (3/4")	25 (1")	32 (1 1/4")	40 (1 1/2")	50 (2")
d		PT 1/2"	PT 3/4"	PT 1"	PT 1 1/4"	PT 1 1/2"	PT 2"
L		126	126	126	155	155	161
H		96	96	96	106	106	123
Wt.(kg)		1.6	1.7	1.8	2.8	2.8	3.6
Connection		PT Screwed					

[Old Model

FLOW SIGHT

Model
JDG-NF11[JKD-GF]

Double Sight Glass (Flapper Type) for steam
water and liquid



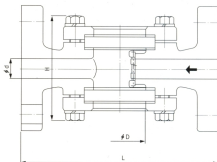
JDG-NF11[JKD-GF]



JDG-FF11[JKD-GFF]



JDG-BF11[JKD-GFB]



JDG-NF11[JKD-GF] is the device to be used to check the flow condition visually at the both sides through the transparent inside. The oscillating amount of the flapper responding to flux is to depend upon the flow condition enough to check easily.

JDG-FF11[JKD-GFF] type is manufactured, and its flapper can prevent a back flow.

JDG-BF11[JKD-GFB] type is manufactured, it can check the flow condition by the flowing of ball.

MATERIALS

BODY : CAST IRON
 FLAPPER : STAINLESS STEEL
 BALL : SYNTHETIC RESINS
 GLASS : HEAT TREATMENT

SPECIFICATIONS

1. WORKING PRESSURE : 10(kgf/cm²/1.0MPa)
2. DESIGN TEMP : 150°C
3. CONNECTION : FLANGED

DIMENSIONS

(mm)

Part \ Size mm(inch)	15(½")	20(¾")	25(1")	32(1¼")	40(1½")	50(2")	65(2½")	80(3")	100(4")
d	15	20	25	32	40	50	65	80	100
L	150	150	170	200	200	220	270	270	320
H	85	85	90	110	110	130	175	175	210
D	40	40	50	65	65	80	120	120	155
Connection	KS B 1511 10K FF FLANGED								

Specifications mentioned above may be changed without the notice for the improvement.

JOKWANG I.L.I. CO., LTD

GLOBE VALVE

Malleable Iron Valve

for steam,
water, oil and gas

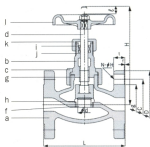
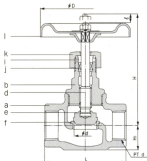
[] Old Model

JGL-FT11[JKV-GS10]
FF11, FF21[GF10, GF20]

JGL-FT11
[JKV-GS10]



JGL-FF11
[JKV-GF10]
JGL-FF21
[JKV-GF20]



J.K Malleable Iron valve, composing the body, the bonnet, the bonnet nut and the gland nut, have superior properties than those of bronze and cast iron. The tensile strength is extremely stable for temperature changes. Those advantages are:

- Stable tensile strength against temperature changes (-30~250°C)
- Better corrosion resistance than iron and steel
- Strength and toughness equivalent to cast steel or forged steel
- Economy equivalent to iron

Excellent properties ensure J.K Malleable Iron Valve for wide applications not only for common fluids such as air, water, oil, steam but gases and similar hazardous fluids where cast iron is prohibited.

MATERIALS (Standard)

No	Part	JGL-FT11 [JKV-GS10]	JGL-FF11 [JKV-GF10]	JGL-FF21 [JKV-GF20]
a	Body		Malleable iron	
b	Bonnet		Malleable iron	
c	Bonnet nut	-		Malleable iron
d	Stem		Stainless steel	
e	Disc		Stainless steel	
f	Seat		Stainless steel	
g	Gasket	PTFE		Asbestos or PTFE
h	Disc holder	-		Stainless steel
i	Packing gland	Steel		Brass or malleable iron
j	Packing		PTFE	
k	Gland nut		Malleable iron	
l	Hand wheel			Rolled steel, Cast iron

SPECIFICATIONS

Kind	Model	JGL-FF11 [JKV-GF10]	JGL-FF11 [JKV-GF10]	JGL-FF21 [JKV-GF20]
Design pressure		10kgf/cm ² (1.0MPa)		20kgf/cm ² (2.0MPa)
Design temperature		220°C		250°C
Working fluid		Steam, water, oil, air and gas		
Connection		PT screwed	KS 10K FF	KS 20K RF
Hydrostatic test pressure		15kgf/cm ² (1.5MPa)		30kgf/cm ² (3.0MPa)
Leak test		6kgf/cm ² (0.6MPa)		12kgf/cm ² (1.2MPa)
Construction	Disc	Conical type	Plate type : 15~50mm Conical type : 65~100mm	Plate type
		Bonnet	Screwed type	Union bonnet : 15~50mm Yoke bonnet : 65~100mm

* Renewable PTFE disc for JGL-FF11/FF21[JKV-GF10/GF20] are available upon request.

DIMENSIONS

(mm)

Model	part	JGL-FT11[JKV-GS10]							JGL-FF11[JKV-GF10], JGL-FF21[JKV-GF20]								
		φ d	L	H	ℓ	H _h	φ D	Wt. (kg)	φ d	L		H	ℓ	φ D		Wt. (kg)	
size mm(inch)									GF10	GF20				GF10	GF20	GF10	GF20
10(3/8")		10	55	85	4	17	62	0.4									
15(1/2")		15	65	85	6	18	62	0.5	15	108	110	135	9		78		2.8
20(3/4")		20	80	105	8	22	78	0.7	20	117	120	145	13		88		3.2
25(1")		25	90	125	10	27	88	1.2	25	127	130	167	15		100		4.8
32(1 1/4")		32	105	140	13	33	100	1.8	32	140	160	180	20		110	5.8	6.6
40(1 1/2")		40	120	155	16	37	110	2.3	40	165	180	195	22		130	8.2	8.5
50(2")		50	140	180	20	46	130	3.5	50	203	230	225	25		130	11	11.5
65(2 1/2")									65	216	292	320	22	225	250	23	29
80(3")									80	241	318	350	25	250	300	35	41
100(4")									100	292	356	390	31	300	315	50	61

* The weight and length "L" are based on our standard flanged products, and they may be subject to change to flange details upon request.

* NPT, BSP screwed types are available for JGL-FT11[JKV-GS10] and flanged ANSI or DIN are available upon request for JGL-FF11, FF21[JKV-GF10, GF20]

AIR VENT

Old Model

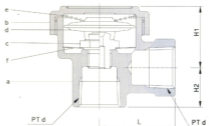
Model
JAV-CT11[JKV-4C]

Capsule Type

for steam



JAV-CT11[JKV-4C]



Model JAV-CT11[JKV-4C] is a self operating air vent to be used for eliminating air or non-condensable gas contained in steam, solving the air binding to ensure constant heat transferability and to prevent corrosion at the inside surface of pipe. As a bimetal operated air vent, the operating feature depends upon the temperature differential between steam and air. The valve closes at the steam temperature and opens when air or gas flows into the air vent.

DIMENSIONS

(mm)

Part	Size mm(inch)	15 (½")	20 (¾")
d		PT ½"	PT ¾"
L		40	42.5
H1		40.5	44.5
H2		22	20.5

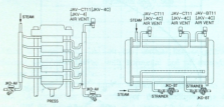
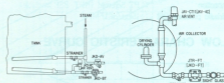
SPECIFICATIONS

Applicable fluid : Steam
 Working pressure : Max, 14kgf/cm²(1.4MPa)
 Working temperature : Max, 220°C
 Connection : PT Screwed
 (NPT, BSP thread type available)
 Hydrostatic test pressure: 1.5 times working pressure

MATERIALS

No	Part name	Standard
a	Body	Bronze
b	Cap	Bronze
c	Seat	Stainless Steel
d	Capsule Ass'y	Stainless Steel
e	Spring	Stainless Steel
f	Screen	Stainless Steel

Installation example with related periphery



[] Old Model

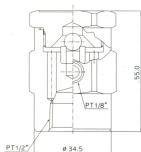
Model
JSV-LT13[VBS]

Vacuum Breaker

for steam, water



VACUUM BREAKER



MATERIALS

No	Part	Standard Materials
a	Cap	Brass
b	Disc Ball	Stainless steel
c	Seat	Stainless steel
d	Body	Brass
e	Gasket	PTFE
f	Name Plate	Brass
g	Rivet	Stainless steel

SPECIFICATIONS

Working pressure : Max 14kgf/cm²(1.4MPa)

Working temperature : Max 200°C

Vacuum : -0.0062kgf/cm²(-0.00062MPa)

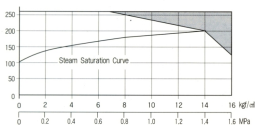
Hydrostatic test pressure : 21kgf/cm²(2.1MPa)

Seat : There should be no leakage up to 14kgf/cm²

The leakage allowance should be in accordance with that of safety relief valve.

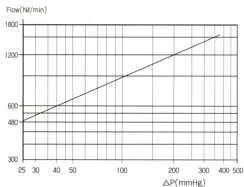
Applicable Fluid : Water, Steam

Working Condition Range



It is impossible to be used at the area of dotted line.

The chart of air discharge capacity



$K_v = 0.52$

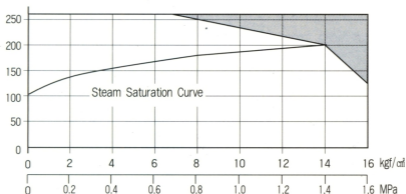
VBS OP = 4.6mmHg, 0.18inch Hg

Installation

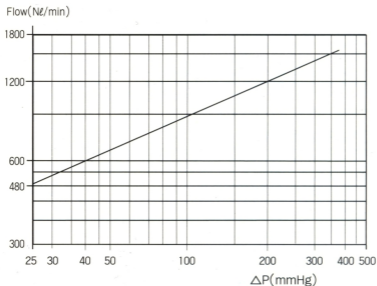
The vacuum Breaker must be installed in a vertical position with the system connection at the bottom.

Specifications mentioned above may be changed without the notice for the improvement.

JOKWANG I.L.I. CO., LTD

Working Condition Range

It is impossible to be used at the area of dotted line.

The chart of air discharge capacity

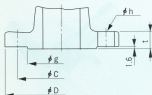
$$K_v = 0.52$$

$$VBS\ OP = 4.6\text{mmHg}, 0.18\text{inch Hg}$$

BASIC DIMENSIONS OF PIPE FLANGES

reference data

J.K Standard flanged products comply with KS B1511 pipe flange equal to JIS B2210 basic dimensions of pipe flanges and the sizes shown in the first column "Nominal diameter" are extracted from our products size.

Basic dimensions of 10kgf/cm² pipe flanges

(mm)

Nominal dia.	Outside dia. of steel pipe applicable to	Outside dia. of flange (D)	Detailed Dimensions of Flange				Bolt holes			Nominal size of bolt
			t	r	Dia-meter (f)	Pitch circle dia. (g)	No.	Dia-meter (h)		
									Steel or malleable cast iron	
15	21.7	95	12	16	1	51	70	4	15	M12
20	27.2	100	14	18	1	56	75	4	15	M12
25	34.0	125	14	18	1	67	90	4	19	M16
32	42.7	135	16	20	2	70	100	4	19	M16
40	48.6	140	16	20	2	81	105	4	19	M16
50	60.5	155	16	20	2	96	120	4	19	M16
65	76.3	175	18	22	2	116	140	4	19	M16
80	89.1	185	18	22	2	126	150	8	19	M16
100	114.3	210	18	24	2	151	175	8	19	M16
125	139.8	250	20	24	2	182	210	8	23	M20
150	165.2	290	22	26	2	212	240	8	23	M20
200	216.3	330	22	26	2	262	290	12	23	M20

Basic dimensions of 30kgf/cm² pipe flanges

(mm)

Nominal dia.	Outside dia. of steel pipe applicable to	Outside dia. of flange (D)	Detailed Dimensions of Flange				Bolt holes			Nominal size of bolt
			t	r	Dia-meter (f)	Pitch circle dia. (g)	No.	Dia-meter (h)		
									Steel or malleable cast iron	
15	21.7	115	18	1	55	80	4	19	M16	
20	27.2	120	18	1	60	85	4	19	M16	
25	34.0	130	20	1	70	95	4	19	M16	
32	42.7	140	22	2	80	105	4	19	M16	
40	48.6	160	22	2	90	120	4	23	M20	
50	60.5	165	22	2	105	130	8	19	M16	
65	76.3	200	26	2	130	160	8	23	M20	
80	89.1	210	28	2	140	170	8	23	M20	
100	114.3	240	32	2	160	195	8	25	M22	
125	139.8	275	36	2	195	230	8	25	M22	
150	165.2	325	38	2	235	275	12	27	M24	
200	216.3	370	42	2	280	320	12	27	M24	

Basic dimensions of 20kgf/cm² pipe flanges

(mm)

Nominal dia.	Outside dia. of steel pipe applicable to	Outside dia. of flange (D)	Detailed Dimensions of Flange				Bolt holes			Nominal size of bolt
			t	r	Dia-meter (f)	Pitch circle dia. (g)	No.	Dia-meter (h)		
									Steel or malleable cast iron	
15	21.7	95	14	1	51	70	4	15	M12	
20	27.2	100	16	1	56	75	4	15	M12	
25	34.0	125	16	1	67	90	4	19	M16	
32	42.7	135	18	2	76	100	4	19	M16	
40	48.6	140	18	2	81	105	4	19	M16	
50	60.5	155	18	2	96	120	8	19	M16	
65	76.3	175	20	2	116	140	8	19	M16	
80	89.1	200	22	2	132	160	8	23	M20	
100	114.3	225	24	2	160	185	8	23	M20	
125	139.8	270	26	2	195	225	8	25	M22	
150	165.2	305	28	2	230	260	12	25	M22	
200	216.3	350	30	2	275	305	12	25	M22	
250	267.4	430	34	2	345	365	12	27	M24	

Basic dimensions of 40kgf/cm² pipe flanges

(mm)

Nominal dia.	Outside dia. of steel pipe applicable to	Outside dia. of flange (D)	Detailed Dimensions of Flange				Bolt holes			Nominal size of bolt
			t	r	Dia-meter (f)	Pitch circle dia. (g)	No.	Dia-meter (h)		
									Steel or malleable cast iron	
15	21.7	115	20	1	55	80	4	19	M16	
20	27.2	120	20	1	60	85	4	19	M16	
25	34.0	130	22	1	70	95	4	19	M16	
32	42.7	140	24	2	80	105	4	19	M16	
40	48.6	160	24	2	90	120	4	23	M20	
50	60.5	165	25	2	105	130	8	19	M16	

STEEL PIPE FLANGES ANSI 16.5(1977)

reference data

ANSI CLASS 150

inch/(mm)

Nominal dia.	Detailed Dimensions of Flange				Bolt holes			Bolt size
	in	mm	t	g	Circle dia. c	No.	Diameter h	
1/2	15	3.50(89)	0.44(11.2)	1.38(35)	2.38(60.5)	4	0.62(16)	M14
3/4	20	3.88(98)	0.50(14.3)	1.69(43)	2.75(70.0)	4	0.62(16)	M14
1	25	4.25(108)	0.56(14.3)	2.00(51)	3.12(79.5)	4	0.62(16)	M14
1 1/4	32	4.62(117)	0.62(15.9)	2.50(64)	3.50(89.0)	4	0.62(16)	M14
1 1/2	40	5.00(127)	0.69(17.5)	2.88(73)	3.88(98.5)	4	0.62(16)	M14
2	50	6.00(152)	0.75(19.1)	3.62(92)	4.45(113.0)	4	0.75(19)	M16
2 1/2	65	7.00(178)	0.88(22.3)	4.12(105)	5.50(139.5)	4	0.75(19)	M16
3	80	7.50(191)	0.94(23.9)	5.00(127)	6.00(152.5)	4	0.75(19)	M16
4	100	9.00(229)	0.94(23.9)	6.19(157)	7.50(190.5)	8	0.75(19)	M16
5	125	10.00(254)	0.94(23.9)	7.31(186)	8.50(216.0)	8	0.88(22)	M20
6	150	11.00(279)	1.00(25.4)	8.50(216)	9.50(241.5)	8	0.88(22)	M20
8	200	13.50(343)	1.12(28.6)	10.62(270)	11.75(298.5)	8	0.88(22)	M20
10	250	16.00(406)	1.19(30.2)	12.75(324)	14.25(362.0)	12	1.00(25)	M22
12	300	19.00(483)	1.25(31.8)	15.00(381)	17.00(432.0)	12	1.00(25)	M22
14	350	21.00(533)	1.38(35.0)	16.25(413)	18.75(476.0)	12	1.12(29)	M27
16	400	23.50(597)	1.44(36.6)	18.50(470)	21.25(539.5)	16	1.12(29)	M27

ANSI CLASS 300

inch/(mm)

Nominal dia.	Detailed Dimensions of Flange				Bolt holes			Bolt size
	in	mm	t	g	Circle dia. c	No.	Diameter h	
1/2	15	3.75(95)	0.56(14.3)	1.38(35)	2.62(66.5)	4	0.62(16)	M14
3/4	20	4.62(117)	0.62(15.9)	1.69(43)	3.25(82.5)	4	0.75(19)	M16
1	25	4.88(124)	0.69(17.5)	2.00(51)	3.50(89.0)	4	0.75(19)	M16
1 1/4	32	5.25(133)	0.75(19.1)	2.50(64)	3.88(98.5)	4	0.75(19)	M16
1 1/2	40	6.12(156)	0.81(20.7)	2.88(73)	4.50(114.5)	4	0.88(22)	M20
2	50	6.50(165)	0.88(22.3)	3.62(92)	5.00(127.0)	8	0.75(19)	M16
2 1/2	65	7.50(191)	1.00(25.4)	4.12(105)	5.88(149.0)	8	0.88(22)	M20
3	80	8.25(210)	1.12(28.6)	5.00(127)	6.02(158.5)	8	0.88(22)	M20
4	100	10.00(254)	1.25(31.8)	6.19(157)	7.88(200.0)	8	0.88(22)	M20
5	125	11.00(279)	1.38(35.0)	7.31(186)	9.25(236.0)	8	0.88(22)	M20
6	150	12.50(318)	1.44(36.6)	8.50(216)	10.62(270.0)	12	0.88(22)	M20
8	200	15.00(381)	1.62(41.3)	10.62(270)	13.00(330.0)	12	1.00(25)	M22
10	250	17.50(445)	1.88(47.7)	12.75(324)	15.25(387.5)	16	1.12(29)	M27
12	300	20.50(518)	2.00(50.8)	15.00(381)	17.75(451.0)	16	1.25(32)	M30
14	350	23.00(584)	2.12(54.0)	16.25(413)	20.25(514.5)	20	1.25(32)	M30
16	400	25.50(648)	2.25(57.2)	18.50(470)	22.50(571.5)	20	1.38(35)	M33

CONVERSION TABLE

reference data

LENGTH

cm	m	km	in	ft
1	0.01	0.01	0.3937	0.0328
100	1	0.001	39.371	3.2809
100,000	1,000		39,371	3,280.9
2.54	0.02540	0.0254	1	0.08333
30.48	0.3048	0.3048	12	1
30.30	0.30303	0.3030	11.9303	0.9942

VOLUME

dm ³ or l	m ³ or kl	ft ³	(U.K.) gal	(U.S.A.) gal
1	0.001	0.03522	0.220	0.2642
1,000	1	35.317	219.95	264.19
28.315	0.2832	1	6.2279	7.4806
4.5456	0.04547	0.1606	1	1.2011
3.7852	0.03785	0.1337	0.8325	1
180.39	0.18039	6.3707	39.676	47.656
27.826	0.02783	0.9827	6.1203	7.3514

VISCOSITY

Poise = g/cm · s (CGS)	centipoise cP	kg/m · s	kg/m · h	lb/ft · s
1	100	0.1	360	0.0672
0.01	1	0.001	3.6	0.000672
10	1,000	1	3,600	0.672
0.00278	0.278	0.0278	1	0.000187
14.85	1.488	1.488	5,356.8	1

FLOW

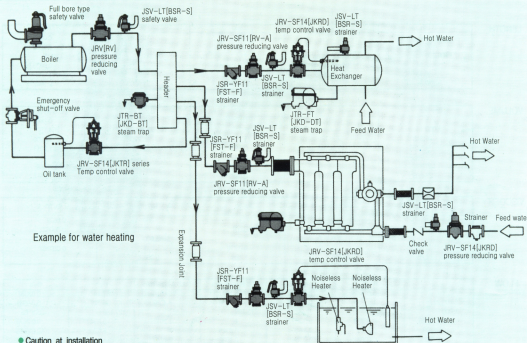
l/s	m ³ /h	m ³ /s	(U.K.) gal/min	(U.S.A.) gal/min	ft ³ /h	ft ³ /s
1	3.6	0.001	13.197	15.8514	127.14	0.03532
0.2778	1	0.02778	3.6658	4.4032	35.317	0.09801
1,000	6,600	1	13,197	15,851	127,150	35.3165
0.075775	0.27279	0.075775	1	1.2011	9.6342	0.2676
0.06309	0.2271	0.06304	0.8325	1	8.0208	0.2228
0.07865	0.02832	0.07865	0.1038	0.1247	1	0.02778
28.3153	101.935	0.02832	373.672	448.833	3,600	1

PRESSURE

kPa	bar or mgdyne/cm ²	kgf/cm ²	lb/in ²	atm	mmHg	inHg	mH ₂ O (mAq)	inH ₂ O (mAq)
1	0.01	0.010197	0.14504	0.009869	0.007501	0.29530	0.10197	4.01463
100	1	1.0197	14.50	0.9869	0.7500	29.55	10.21	401.8
98.0665	0.9807	1	14.223	0.9678	0.7355	28.96	10.01	394.0
6.8948	0.06895	0.07031	1	20.08904	0.05161	2.0355	0.7037	27.70
101.325	1.0133	1.0333	14.70	1	0.760	29.52	10.34	407.2
133.322	1.3333	1.3696	19.34	1.316	1	39.37	13.61	535.67
3.3864	0.03386	0.03453	0.4912	0.3342	0.02540	1	0.3456	13.61
9.8067	0.97996	0.09991	1.421	0.0967	0.07349	2.893	1	39.37
0.24909	0.002489	0.002538	0.03629	0.002496	0.001967	0.07349	0.0254	1

STEAM TABLE

Pressure (a b s)		Temperature		Pressure (a b s)		Temperature		Pressure (a b s)		Temperature	
(kgf/cm ²)	(lb/in ²)	(°C)	(°F)	(kgf/cm ²)	(lb/in ²)	(°C)	(°F)	(kgf/cm ²)	(lb/in ²)	(°C)	(°F)
0.02	0.28	17.2	62.9	1.60	22.8	112.7	234.9	11.00	156.4	183.2	367.8
0.04	0.57	28.6	83.5	1.80	25.6	116.3	241.3	11.50	163.5	185.2	365.4
0.06	0.85	35.8	96.4	2.00	28.4	119.6	247.3	12.00	170.6	187.1	368.8
0.08	1.14	41.2	106.2	2.50	35.6	126.8	260.2	12.5	177.8	188.9	372.0
0.10	1.42	45.5	113.9	3.00	42.7	132.9	271.2	13.00	184.9	190.7	375.3
0.15	2.13	53.6	128.5	3.50	49.8	136.2	280.8	13.50	192.0	192.4	378.3
0.20	2.84	59.7	139.5	4.00	56.9	142.9	289.2	14.00	199.1	194.1	381.4
0.25	3.56	64.6	148.3	4.50	64.0	147.2	297.0	14.50	206.2	195.8	384.4
0.30	4.27	68.7	155.7	5.00	71.1	151.2	304.5	15.0	213.3	197.4	387.3
0.35	4.98	72.3	162.1	5.50	78.2	154.7	310.5	16	227.4	200.4	392.7
0.40	5.69	75.4	167.7	6.00	85.3	158.1	316.7	17	241.7	203.4	398.1
0.45	6.40	78.3	172.9	6.50	92.4	161.2	322.2	18	256.0	206.2	403.2
0.50	7.11	80.9	177.6	7.00	99.5	164.2	327.6	19	270.2	208.8	407.8
0.60	8.53	85.5	185.9	7.50	106.7	167.0	332.6	20	284.4	211.4	412.5
0.70	9.95	89.5	193.1	8.00	113.8	169.6	337.3	21	298.6	213.9	417.0
0.80	11.4	93.0	199.4	8.50	120.9	172.1	341.8	22	312.8	216.2	421.6
0.90	12.8	96.2	205.2	9.00	128.0	174.5	346.1	23	327.1	218.5	425.3
1.00	14.2	99.1	210.4	9.50	135.1	176.8	350.2	24	341.3	220.8	429.0
1.20	17.1	104.3	219.7	10.00	142.2	179.0	354.2	25	355.5	222.9	432.7
1.40	19.9	108.7	227.7	10.50	149.3	181.2	358.2	26	369.7	225.0	437.0
1.60	22.8	113.9	234.9	11.00	156.4	183.2	362.2	27	383.9	227.0	441.2
1.80	25.6	119.6	241.3	11.50	163.5	185.2	365.4	28	398.2	229.0	445.2
2.00	28.4	125.9	247.3	12.00	170.6	187.1	368.8	29	412.4	230.9	449.2
2.50	35.6	142.9	289.2	13.00	184.9	190.7	375.3	30	426.6	232.8	453.0
3.00	42.7	154.7	310.5	14.00	199.1	194.1	381.4	31	440.8	234.6	456.8
3.50	49.8	167.7	327.6	15.00	213.3	197.4	387.3	32	455.0	236.4	460.6
4.00	56.9	177.6	337.3	16.00	227.4	200.4	392.7	33	469.2	238.1	464.4
4.50	64.0	187.2	349.2	17.00	241.7	203.4	398.1	34	483.4	239.8	468.2
5.00	71.1	196.7	362.2	18.00	256.0	206.2	403.2	35	497.6	241.5	472.0
5.50	78.2	205.2	375.3	19.00	270.2	208.8	407.8	36	511.8	243.0	475.8
6.00	85.3	213.9	387.3	20.00	284.4	211.4	412.5	37	526.0	244.5	479.6
6.50	92.4	222.2	399.2	21.00	298.6	213.9	417.0	38	540.2	246.0	483.4
7.00	99.5	230.2	410.9	22.00	312.8	216.2	421.6	39	554.4	247.5	487.2
7.50	106.7	237.6	422.2	23.00	327.1	218.5	425.3	40	568.6	249.0	491.0
8.00	113.8	244.9	433.2	24.00	341.3	220.8	429.0	41	582.8	250.5	494.8
8.50	120.9	252.2	444.2	25.00	355.5	222.9	432.7	42	597.0	252.0	498.6
9.00	128.0	259.2	455.2	26.00	369.7	225.0	437.0	43	611.2	253.5	502.4
9.50	135.1	266.2	466.2	27.00	383.9	227.0	441.2	44	625.4	255.0	506.2
10.00	142.2	273.2	477.2	28.00	398.2	229.0	445.2	45	639.6	256.5	510.0
10.50	149.3	280.2	488.2	29.00	412.4	230.9	449.2	46	653.8	258.0	513.8
11.00	156.4	287.2	499.2	30.00	426.6	232.8	453.0	47	668.0	259.5	517.6
11.50	163.5	294.2	510.2	31.00	440.8	234.6	456.8	48	682.2	261.0	521.4
12.00	170.6	301.2	521.2	32.00	455.0	236.4	460.6	49	696.4	262.5	525.2
12.50	177.6	308.2	532.2	33.00	469.2	238.1	464.4	50	710.6	264.0	529.0
13.00	184.9	315.2	543.2	34.00	483.4	239.8	468.2	51	724.8	265.5	532.8
13.50	192.0	322.2	554.2	35.00	497.6	241.5	472.0	52	739.0	267.0	536.6
14.00	199.1	329.2	565.2	36.00	511.8	243.0	475.8	53	753.2	268.5	540.4
14.50	206.2	336.2	576.2	37.00	526.0	244.5	479.6	54	767.4	270.0	544.2
15.00	213.3	343.2	587.2	38.00	540.2	246.0	483.4	55	781.6	271.5	548.0
15.50	220.4	350.2	598.2	39.00	554.4	247.5	487.2	56	795.8	273.0	551.8
16.00	227.4	357.2	609.2	40.00	568.6	249.0	491.0	57	810.0	274.5	555.6
16.50	234.5	364.2	620.2	41.00	582.8	250.5	494.8	58	824.2	276.0	559.4
17.00	241.5	371.2	631.2	42.00	597.0	252.0	498.6	59	838.4	277.5	563.2
17.50	248.6	378.2	642.2	43.00	611.2	253.5	502.4	60	852.6	279.0	567.0
18.00	255.6	385.2	653.2	44.00	625.4	255.0	506.2	61	866.8	280.5	570.8
18.50	262.7	392.2	664.2	45.00	639.6	256.5	510.0	62	881.0	282.0	574.6
19.00	269.7	399.2	675.2	46.00	653.8	258.0	513.8	63	895.2	283.5	578.4
19.50	276.8	406.2	686.2	47.00	668.0	259.5	517.6	64	909.4	285.0	582.2
20.00	283.8	413.2	697.2	48.00	682.2	261.0	521.4	65	923.6	286.5	586.0
20.50	290.9	420.2	708.2	49.00	696.4	262.5	525.2	66	937.8	288.0	589.8
21.00	297.9	427.2	719.2	50.00	710.6	264.0	529.0	67	952.0	289.5	593.6
21.50	305.0	434.2	730.2	51.00	724.8	265.5	532.8	68	966.2	291.0	597.4
22.00	312.0	441.2	741.2	52.00	739.0	267.0	536.6	69	980.4	292.5	601.2
22.50	319.1	448.2	752.2	53.00	753.2	268.5	540.4	70	994.6	294.0	605.0
23.00	326.1	455.2	763.2	54.00	767.4	270.0	544.2	71	1008.8	295.5	608.8
23.50	333.2	462.2	774.2	55.00	781.6	271.5	548.0	72	1023.0	297.0	612.6
24.00	340.2	469.2	785.2	56.00	795.8	273.0	551.8	73	1037.2	298.5	616.4
24.50	347.3	476.2	796.2	57.00	810.0	274.5	555.6	74	1051.4	299.5	620.2
25.00	354.3	483.2	807.2	58.00	824.2	276.0	559.4	75	1065.6	301.0	624.0
25.50	361.4	490.2	818.2	59.00	838.4	277.5	563.2	76	1079.8	302.5	



Example for water heating

● Caution at installation

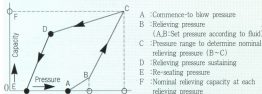
- Surely flush away foreign matters such as welding slags, dirt and etc. inside piping.
- Additionally install a by-pass line between pressure reducing valve, temp. con. valve, steam trap, at worst a strainer and pressure gate.
- Insure to install a valve to follow to down stream.
- For more information about each model refer to the installations of general notes on page 52

OPERATING TYPE

name	model	type	remarks	
safety & relief valve	JSV-LT12[BSR-S2]	lift type	KGSP approved	
	JSV-HT41, JSV-HT43, HT42[BSR-HP, GHSV-WF, CF]			
	JSV-HF11[FSR-HI]	full bore		
	JSV-FF11[FSRF]			
pressure reducing valve	JSV-FF21[SSRF]	pilot piston	bellows type available	
	JRV-SF11[RV-A]			
	JRV-SF21[RV-B]	direct piston		
	JRV-SF14[JKRD]			
steam trap	JRV-SF31[JKD-30F]	thermodynamic	flange end with suffix 2 & F	
	[JKD-AV1, AV2]			
	JTR-DT23[JKD-BP1]			
	JTR-DT21, DF22[JKD-1S, 2F]			
	JTR-DT31[JKD-30S]			
	JTR-DT41, DF41[JKD-41S, 41F]			
	JTR-FT12, FF12[JKD-FT1, FT2]			ball float
	JTR-BF11[JKD-BT2]			inverted bucket
	JTR-BT21[JKD-BT4]			
	JTR-CT21[JKD-BD]			thermostatic
JTR-WT11[BRT-4]				
hammerless check valve	JHC-WI11[JKHC-10]	wafar	excluding flange ends	
air vent	JAV-CT11[JKV-4C]	capsule		
	JAV-FT11[JKV-6]	PE float		
flow sight	JSC-BT11[JKS-CK]	s. steel ball	ball type available	
	JCG[JKD-G]	flapper		
globe valve	JGL-FT11, FF11, FF21[JKV-GS10, CF10, CF20]	conical, plate	flange end with suffix GF	
	strainer	ST-Y112, ST-Y111, ST-HF11, ST-HF21[JK3, FST-F, SST]	y-pattern	u-pattern available

SAFETY VALVE**Performance required**

The character of performance required by KS B 6216 is as follows
symbols : Class S is safety valve requiring the blowout pressure and its principle usage is for steam, Class G is safety valve requiring the commence-to-blow pressure and applicable fluid is for gas.

**Blow down pressure**

The blow down pressure of valve shall be as follows :
A) Valve class S shall be as below. However only when specified so as to use for the piping once-through boiler, reheater, etc. by the user side and appended with the mark of special specification, the blow-down pressure of class S with the blowout pressure exceeding 4kgf/cm² may be not more than 10% of the blowout pressure. B) The valve class G shall be as below:

Blow down pressure		unit: kgf/cm ²
Class S	Blowout pressure	Blow-down pressure
	4 max.	0.3 max.
Class G	over 4	7%(4% max. of blowout pressure)
	Set pressure	Blow-down pressure
	2 max.	0.3 max.
	over 2	Not more than 15% of set pressure

• The figures in () can be used in accordance with the agreement between the parties concerned.
• The figures specified in class G is for the valve in which the soft seat is not used on the valve.

Adjustment

A) Set pressure
The valve are adjusted to relieve at the desired relieving pressure before leaving our works, the set pressure being stamped on the name plate. Should any alteration in set pressure be necessary, the adjusting screw on the top of the valve should be turned to the right direction (clockwise) to increase the pressure, or the left direction (anti-clockwise) to decrease the pressure.

B) Blow down pressure
If it is necessary for the valve to re-seat at a different pressure from the pressure set at our works, the blow-down pressure being stamped on the name plate, the procedure should be followed:

B.1) One ring valve
After loosening the set screw, turn the ring to the right (clockwise) to re-seat at higher pressure that set (during this procedure increasing gap between the valve skirt and the blow-down ring, blow-down amount less); for the valve to re-seat at lower pressure, the reverse procedure should be necessary.

B.2) Two ring valve
After loosening the upper set screw (lower one : set screw for pop action adjusting ring/never try to adjust unless otherwise required), turn the ring to the right (clockwise) to re-seat at lower pressure than set (during this procedure blow-down amount more); for the valve to re-seat at higher pressure, the reverse procedure is necessary.

Maintenance

Before shipment the valves have been carefully set and or water tested to ensure that seating surfaces are perfect. Care should be taken of requirements below to maintain them at the best condition.

A) Save the valves from external impacts and keep seating surfaces clean and never expose them to be affected from foreign matters even before or after installation. B) Regular performance will be necessary to lift the lever manually at about 75% or more pressure of the set pressure for preventing the spring from failure of the restoring force. C) It is recommended to lift the lever manually because when the pressure of equipment is near to the set pressure, the clamping force between the seating surfaces is very weak, so it may be cause of sticking foreign matters between seating surfaces resulting in damaged. D) When any leak is occurred by foreign matters, flush away them by lever, but when by the seating surfaces damaged, re-lapping should be necessary. E) When hydraulic pressure test on the system is required, try to remove the valve from the system. If removal, however, is impossible, be sure to secure using the test gag on the top of the valve.

PRESSURE REDUCING VALVE**Adjustment of secondary pressure**

As the secondary pressure of the pressure reducing valves is not adjusted at our works, fluid does not flow as it is. The adjustment, therefore, should be made at the job site. 1) To flush away foreign matters in piping, open stop valve on the bypass line after ensuring to close stop valves on the both side of pressure reducing valve, primary and secondary (enough time need to leave nothing in the piping). 2) Remove the cap and check that the adjusting screw is free after fully closing the stop valves on the bypass line. 3) Gradually open the stop valve on the primary side, the stop valve on the secondary side leaving slightly open to let a little flow. 4) Turn the adjusting screw to the right to let the fluid pass through the valve and open gradually the stop valve at the secondary side more. 5) Turn the adjusting screw slowly to the right until the desired pressure is obtained while watching the pressure gauge on the secondary side (right turn (clockwise) - secondary pressure increase, left turn (anti-clockwise) - secondary pressure decrease). 6) After pressure adjustment secure the adjusting screw with lock nut and cap.

Recommendation of safety valve on the secondary side

A safety valve may be installed as emergency device on the secondary side of a pressure reducing valve. The discharge capacity is about 10% of the max. capacity of the pressure reducing valve unless otherwise specified.

The recommendation of set pressure on safety valve as follows:

Set pressure of pressure reducing valve	Set pressure of safety valve
1 or less	+0.5 or more
More than 1 and less than 4	+0.8 or more
4 or more and less than 6	+1.0 or more
6 or more and 8 or less	+1.2 or more
8 or more	+1.5 or more

Installation

Install pressure reducing valve vertically on the horizontal piping providing orderly stop valve, strainer, PRV, stop valve, a relief valve and pressure gauge at the both side of pressure reducing valve. Use a globe valve for the stop valve. Gate valve for this purpose causes leakage to make disassembling pressure reducing valve for maintenance difficult. The strainers recommended is J.K products with adequate mesh upon fluids (80 mesh for steam or air, 40 mesh for liquids). Generally model BSR-S is used as a relief valve, another valve, however especially for steam, air and gas service requiring full capacity, is required in consideration of security. In case of steam or gas service, the volume of fluid expands after passing through the pressure reducing valve. Therefore, use a larger size piping at the secondary side by using a reducer to connect the valve. Firmly secure and support the piping not to have pipe weight and thermal stress directly to the valve. Since most of claims on the valve at initial installation are caused by foreign matters such as welding slags, etc. in the pipe, be sure to flush away them through the by-pass line.

STEAM TRAP**Suitable conditions of steam trap as reliable**

To satisfy various working conditions, steam trap have to meet some requirements as follows : A) separation of steam and water and no leakage of steam, B) no air binding and steam locking, C) endurance against vibration and water hammer, D) easy maintenance and inspection on construction and E) durability of working parts.

Sizing

At the sizing, take into consideration of safety factor to select the size to have 2 or 3 times as much as or more capacity than required. The ratio between the max. discharge capacity of steam trap and condensate load expected to flow out is safety factor. The factors may be affected by A) operating characteristic of the steam trap, B) accuracy of estimated condensate load and C) pressure condition at the inlet and outlet side of steam trap.

In case of any back pressure at the outlet side of the steam trap, select the size with the pressure differential between inlet and outlet pressure referring each capacity chart.

Installation & Maintenance

Horizontal installation with parallel bypass line is recommended and it may save some advantages of A) blow off larger condensate and air together at the initial work, B) flushing away foreign matters at new pipe system, trap in order to work free from external hindrance and C) easy maintenance without stop of system. Install the steam trap at the side side so that condensate may flow into the trap easily, with considering any back pressure lessened. When vertical installation is inevitable or any back pressure is expected, install a check valve at the outlet side of the trap. To optical check of the trap increases the effect. When the trap is not in use for a long time or has possibility to get frozen in the winter time, drain the remainings through the drain plug. Foreign matters will be caused in defect of the trap because of not of claims by them. A strainer before the steam trap is recommended in case of the steam trap not built-in strainer.

Total Safety Solution Provider!

JOKWANG