PG201901220E

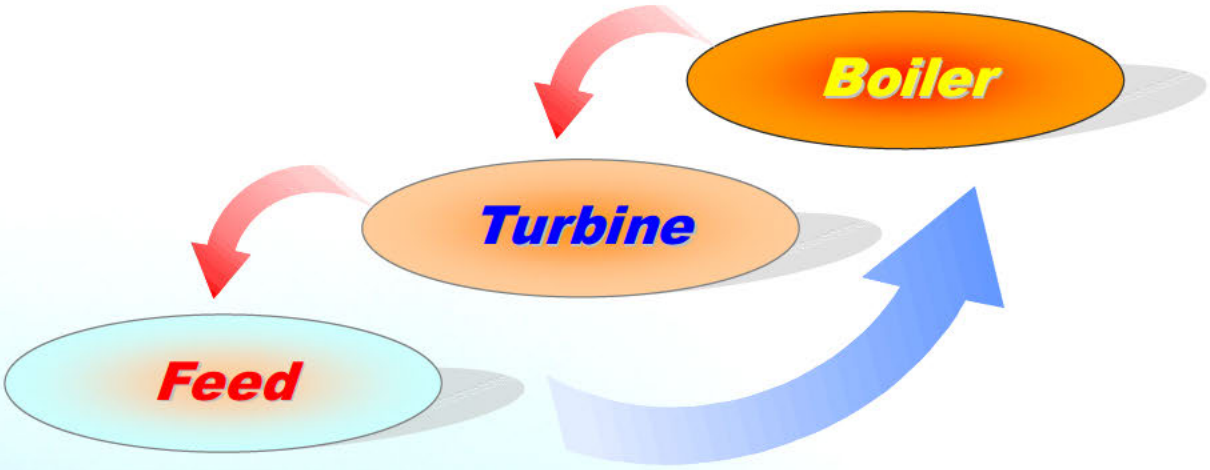
Product line for Power Generation

FUKUI

Fukui Seisakusho Co., Ltd. has been developing and supplying high-end technology on safety relief valve as manufacturer specializing in safety valve, under our philosophy of "continually pushing back the frontier of safety valves and making them our life work" since 1936year when founded.

We have successfully developed all kinds of safety valves intended for power boiler services up to super-critical pressure.

It is Fukui Seisakusho Co., Ltd. that is your best partner capable of supplying high quality, efficient performance and good after-sales service in the power boiler field.



Division		Style							
		SL & SJ	PCV	RPE	RECL -STM	RECL-E -PE	REC-STM	LT3000	RVK & RHK
Pressure range		~34.8MPa	~30.0MPa	~25.0MPa	~10.0MPa	~41.4MPa	~2.1MPa	~ 21.0MPa	1.96~ 5.88kPa
Temperature range		~621℃	~621℃	~350℃	Saturation temperature	~374℃	~538℃	Saturation temperature	
Effective area range (mm^2)		78.5~ 18385.4	1294.2~ 1885.1	651.1~ 25434.0	88.2~18867			38.5~ 70.9	17592~ 241776
ASME Stamp		V & UV	V	V	UV	UV	UV	———	———
Boiler	Drum	○	———	———	———	———	———	———	———
	Superheater	○	○	———	———	———	———	———	———
	Reheater	○	———	———	———	———	———	———	———
	Soot Blowers	○	———	———	———	———	———	———	———
	Economizer	———	———	○	○	○	———	———	———
Turbine	Auxiliary Steam	○	———	———	———	———	———	———	———
	Grand Steam	○	———	———	———	———	———	———	———
	Bleed Steam	○	———	———	———	———	———	———	———
	Others	———	———	———	———	○	○	○	———
Feed pump	Condenser	○	———	———	———	———	○	———	○
	Deaerator	○	———	———	———	———	———	———	———
	Pipe	———	———	———	○	○	———	○	———
	Body	———	———	———	———	———	○	———	———

❋❋❋ Series Line-up ❋❋❋

SJ/SL/PCV Series

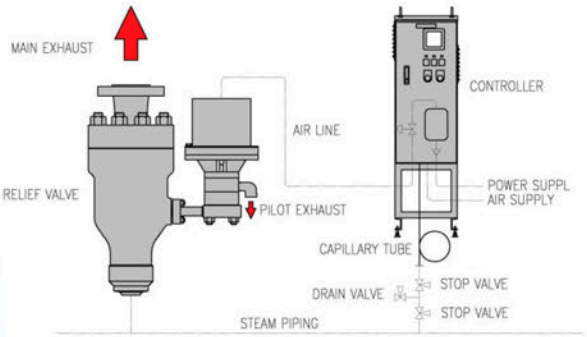
★ SJ/SLSeries

SJ & SL series has been developed for steam service and meets all of demanding requirements from ASME Boiler and Pressure Vessel Code Section Ⅰ Power Boiler. They have been approved by The National Board of Boiler and Pressure Vessel Inspectors in their capacity. Also, they meet with all of regulations such as CE mark and various kinds of class associations. So, this model can respond to requirements of steam service under severe conditions of high temperature and high pressure.

★ RPE Series

RPE Series have been developed with ASME Section I Certified Capacity to serve Economizer application for both steam and water.

★ PCV Series



The power actuated pressure relieving valve, PCV series is characterized by activating the valve through the power of air(0.5MPa~0.7MPa) or electromagnet.
PCV-AR is composed of Main Valve, Pilot Valve, Air-cylinder Assembly and Controller.
In comparison with conventional spring loaded safety valve, ① perfect seat tightness is maintained till the line pressure reaches the setting point. ② accurate and reliable setting point can be done through pressure sensor. ③ accurate blow-down(3% of blow-down) can be secured, which contributes to effective boiler operation and saving of cost.

REC-STM Series

★ REC-STM & RECL-STM Series

REC series meets client's request for low-priced and high performed product, which contradicts to each other.
Its performance is certified through getting approved by ASME Boiler and Pressure Vessel Code Section Ⅷ and this model can be used for all kinds of fluids, such as Air, Steam, various kinds of Gas or Vapor and Liquid.

★ RECL-E-PE Series

RECL-E-PE series has been developed for the service of liquid with high temperature and high pressure on heat exchanger of water.
Its construction and material is designed to resist the severe environment with high temperature and high pressure.
This model is characterized by most suitable trim construction to realize smooth function for liquid service, by forging body to absorb excessive reaction force of pipe and by adoption of hard surface treatment on internal sliding parts to resist continual popping.

LT3000 Series

LT3000 series is a relief valve with compact body and high performance that can be applicable to various kinds of fluids (Air, Gas, Vapor and Liquid) and broad range of pressure from low pressure up to high pressure.
Its construction is high quality oriented unlike small-sized valve as characterized by application of metal to metal seat, adjustment of blow-down pressure.
Also, the applicable connections covers all kinds of connections, such as Thread(Rc, NPT), Flange(ASME, JIS) and welding.

RVK & RHK Series

RVK & RHK series is a relief valve of water sealed type and low pressure designed for safety device of Condenser.
The type can be chosen from two types in terms of construction, which are vertical type(RVK) and horizontal type(RHK).
Both of them has equipped with Handle to pull upward by hand.
Their construction is characterized by weight lift and metal to metal seat and the seat is sealed with water kept around the seat so that the air isn't put into the equipment.

Precautions to Be Observed When Installing Steam Safety Valves Mounting

Despite the roughhewn outward appearance of safety valves, they are very delicate products comprising precision-machined internal components. For that reason, users are encouraged to gain full understanding of safety precautions and the manual. Especially with regard to safety valve installation, refer to the following cautions, to standards, product manuals, and other materials because failure to do this could result in leaks, malfunctions, or other problems by imposing an excessive load on a valve, or by piping designs or other configurations that cause pressure loss. Safety valves also require regular maintenance (every year or every other year). Safety valve care and maintenance should be left to specialized engineers sufficient training. Our service department provides round-the-clock service by full-time staff engineers. Please give us a call when you need safety valve maintenance and regular servicing.

■ Safety precautions

The following categories are used to explain the extent of danger damage that is anticipated if cautionary information is ignored products are incorrectly used.

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Receiving and Storage		**Stay out from under safety valves suspended in the air.** To prevent accidents caused by dropping valves, keep them as near a vertical position as possible when suspending with a crane or other device. Never go under a suspended valve. Use appropriate equipment after checking the valve's weight.
		**Do not use the lever or cap to lift a safety valve.** Avoid using parts such as the lever or cap to suspend a valve because this could affect valve performance. We recommend winding a wire or nylon sling around the valve outlet neck and the bonnet or yoke.
		**Do not let valves tip over.** Many safety valves have curved shapes and are therefore highly unstable. Do not try to stack them in storage because they could tip and be damaged.
		**Store safety valves indoors.** Safety valves should be kept indoors when in storage before mounting. If indoor storage is impossible, shroud completely wi h a waterproof tarp or other covering to prevent exposure to the elements.
Precautions to Be Observed When Installing Steam Safety Valves Mounting		**Mount the safety valve directly on the mounting connection in an upright position.** Mount the valve in an upright position on the boiler or the mounting connection. Mounting an incline could cause poor tightness and unstable operation. The permissible deviation from the vertical is within ±1°.
		**Use care in tightening the flange bolts.** When mounting a safety valve, first remove the inlet and outlet protective covers and make sure there is no foreign matter. When mounting a flanged valve, be sure that the flange gasket dose not protrude, and tighten the flange bolts alternately to ensure they are all tightened equally. Improper bolt tightening could cause steam leaks and pose the danger of burns by leaked steam.
		**The safety valve inlet connection must be at least as large as the valve inlet diameter.** The inside of the safety valve's mounting connec ion should save rounded corners and its inside diameter should be at least the same as the valve's nominal to ensure the smooth flow of steam from the boiler to the valve. We recommend that the R dimension of the inlet pipe's inside diameter corner is at least one-fourth the inside diameter.
		**Pressure loss at the safety valve inlet should be under 2%.** See that the pressure loss from the connection to the valve is under 2% of the valve's set pressure. A large pressure loss presents the danger of chattering when the valve operates. When a valve is installed on an elbow, provide for a generous radius as well as appropriate supports for curved attachments.
		**Mount safety valves a sufficient distance away from joints and other valves.** When installing a safety valve on a pipe line, make sure it is sufficiently distant from joints or other valves that disrupt the fluid flow. A safety valve must be at least the approximate distance of 10 X D (where D is pipe diameter) from these other fixtures, both upstream and downstream. Do not install a branch-pipe in a position that is symmetrically opposite the safety valve. When installing two or more safety valves on the same header or line, be careful of the distance between valves. A malfunction could result from unevenness in the pressure distribution if all safety valves actuate at same time.
		**Be careful of safety valve blowoff recoil.** A exhaust pipe's diameter must be at least as large as the safety valve's outlet diameter, and the distance from the valve axis to the center of the exhaust pipe must be less than four time the ou let diameter. The pipe must be as short as possible and lead outdoors without bends; its structure must be as simple and sound as possible. Back pressure arising in the exhaust pipe when the valve operates must not exceed 10% of the set pressure because it could cause unstable operation. Adopt piping arrangements that will not allow excessive impacts on the safety valve from thermal expansion of the boiler, other equipment and the exhaust pipe, or other causes. If you attach a drain pipe to the exhaust pipe, make sure the end is open.
		**Do not restrict safety valve actuation with drain pipe.** Be sure to provide a safety valve with a drain pipe to drain away rainwater, and the condensed water that forms during a safety valve blowoff. Take care to provide a drain pipe that is independent of other piping, and does not restrict the valve. Leave the lower end open; do not attach a cock or valve.
Operation and Use		**Be careful of test pressure when performing hydrostatic pressure tests.** When pressure testing a safety valve, carefully watch the test pressure and be sure never to exceed it. Some valves have a water pressure plug un the nozzle seat for pressure testing. Be sure to remove the plug after testing but before starting operation. See the manual for details.
		**Use a safety valve's lever only when necessary.** Do not touch or lift a safety valve's lever except when there is a need to use it. Unnecessary use could cause improper functioning.
		**Do not use safety valve as a foothold.** Never use an installed safety valve as a foothold when performing a task. This could damage the valve, and is also dangerous should the valve operate.
		**Carefully choose where safety valves are installed.** If a safety valve is installed near a heat source, or where it is exposed to a cold air current, such external thermal influence could cause uneven expansion or contraction, bringing about a malfunction or poor tightness. In such a case, change the installation location, provide for heat retention, and take other measures. If lagging is used, cover the valve midsection down to the bottom, taking care not to cover the adjustment lock bolts.
		**Be careful of pressure when removing or dismantling a safety valve.** When removing a safety valve for regular servicing or other purposes, or dismantling a valve in a condition of being installed on equipment, begin work only after making sure there is no internal pressure in order to eliminate the danger of a serious accident.
		**Provide access space around a safety valve.** Leave open space around a safety valve to facilitate dismantling, inspection, and adjustment. Dismantling requires open space above a valve as well, so make sure it is possible to attach a chain block for lifting a valve.

Contents

Note … Material and specifications in this catalog are subject to change.

Mechanisms That Enhance Product Reliability

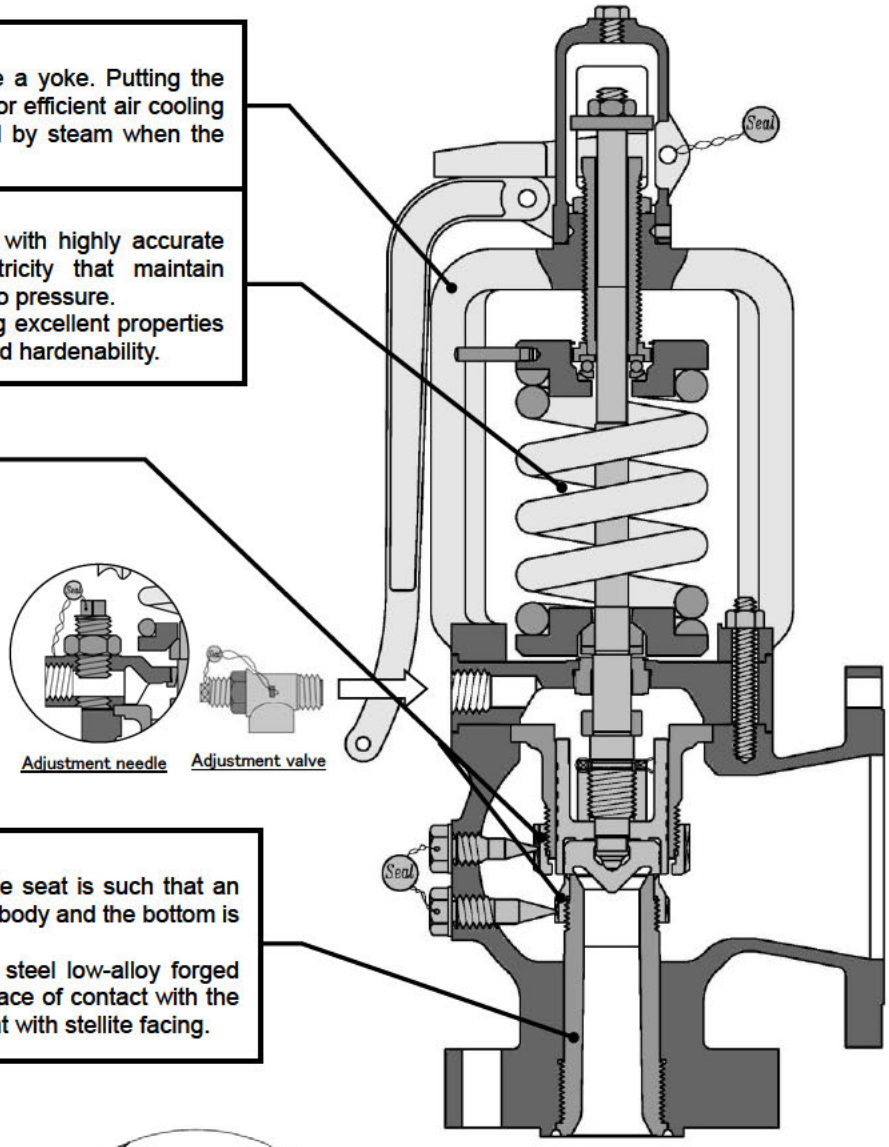
Safety valves must protect pressure equipment from the danger of explosion in an emergency by quickly releasing excess pressure under severe conditions of use. At the same time, under normal operating conditions they need to be completely sealed to allow no fluid leaks from pressure equipment.
Safety valves are expected to provide both of these conflicting functions, and yet they must perform both these difficult tasks by using only the power of the springs built into them.
To accomplish these tasks, Fukui uses disc structures called “feather disc” and “thermo lip disc”, which involve precision engineering the edge of each nozzle seat into the form of a lip to give it flexibility and endow it with the exact operating characteristics and sealing by taking advantage of fluid temperature and pressure.
Springs, spindles, and other parts likewise benefit from FUKUI technologies developed through long years of experience to yield products you can depend on.

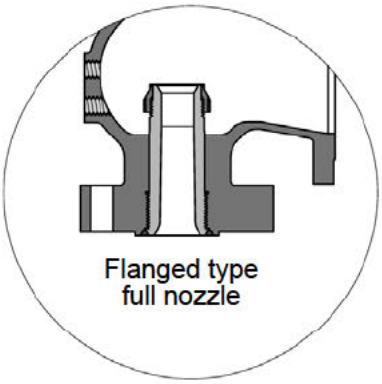
■Yoke
SL/SJ 100~600 series safety valves have a yoke. Putting the spring inside the yoke structure provides for efficient air cooling and keeps the spring from being affected by steam when the valve actuates.

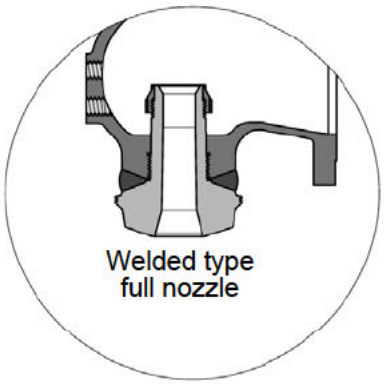
■Spring
These valves use cylindrical coil springs with highly accurate dimensions and corrected load eccentricity that maintain constant flexibility indexes without regard to pressure.
The springs are made of alloy steel having excellent properties including fatigue resistance, workability, and hardenability.

■Operating Adjustment Mechanism
The lower adjusting ring set into the upper end of the nozzle seat is a controlling mechanism that finely adjusts pop-up actuation at beginning of a blowoff, while the upper adjusting ring that is attached to the bottom of the valve guide adjusts blowdown.
Further, operating stability is enhanced blowdown adjusted by using the adjustment needle or adjustment valve on the yoke to control the back pressure that arises behind the disc during valve blowoffs. This is Fukui’s “back pressure adjustment mechanism.

■Nozzle Seat
The structure of each safety valve’s nozzle seat is such that an integrated full nozzle screws into the valve body and the bottom is seal-welded to keep it in place.
Nozzle seats are made of forged carbon steel low-alloy forged steel, and the edge seat, which is the surface of contact with the disc, is given a surface hardening treatment with stellite facing.

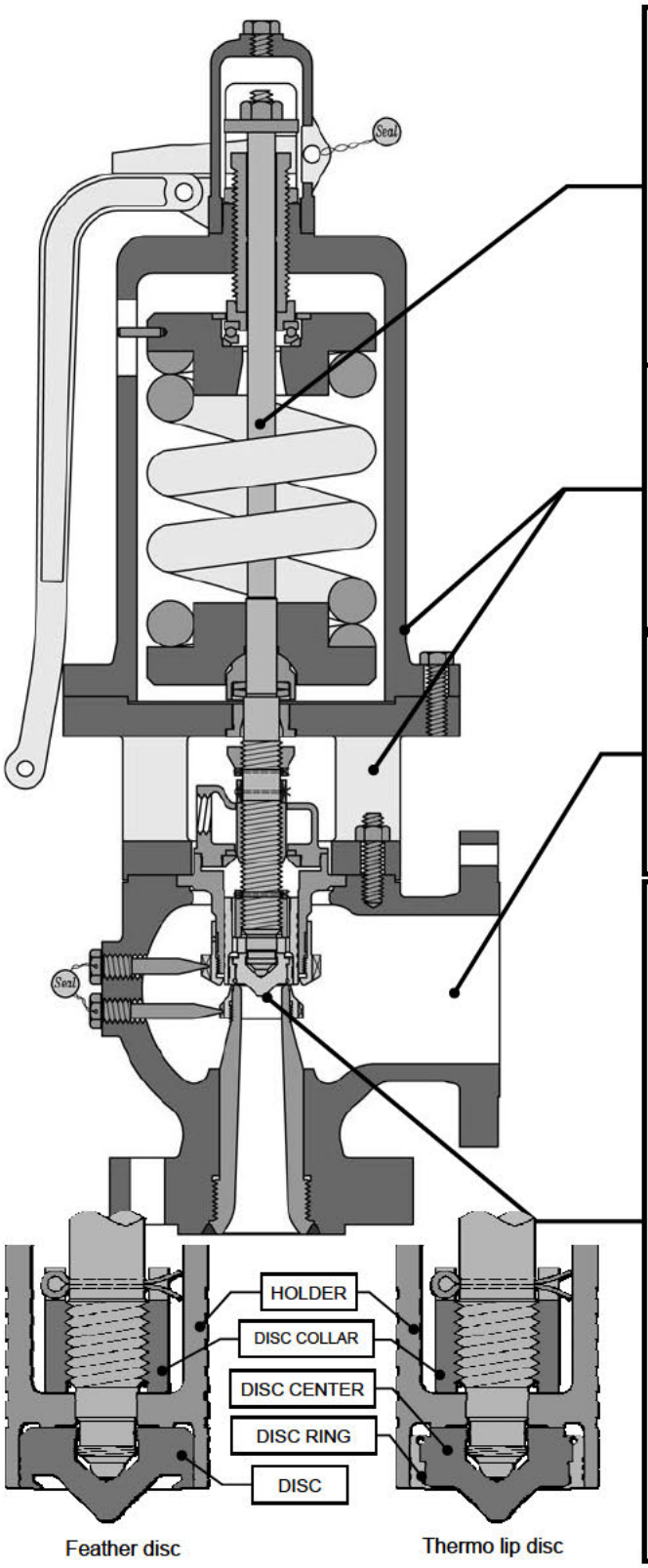



Flanged type
full nozzle


Welded type
full nozzle

Mechanisms That Enhance Product Reliability

In addition to blowoff characteristics and leak prevention, safety valves need mechanisms that provide good reliability.
A good example is the back pressure adjustment mechanism of our safety valves.
In addition to clear - popping and valve lifting force adjustment mechanisms, our valves have a unique back pressure adjustment mechanism adjustment mechanism allowing them control blowdown.
This is the “yoke side needle” mechanism, which features coil spring protection and easy post - installation adjustment. We have also brought into practical application a “cooling center throttle” mechanism that automatically opens and closes the throttle in response to disc actuation.



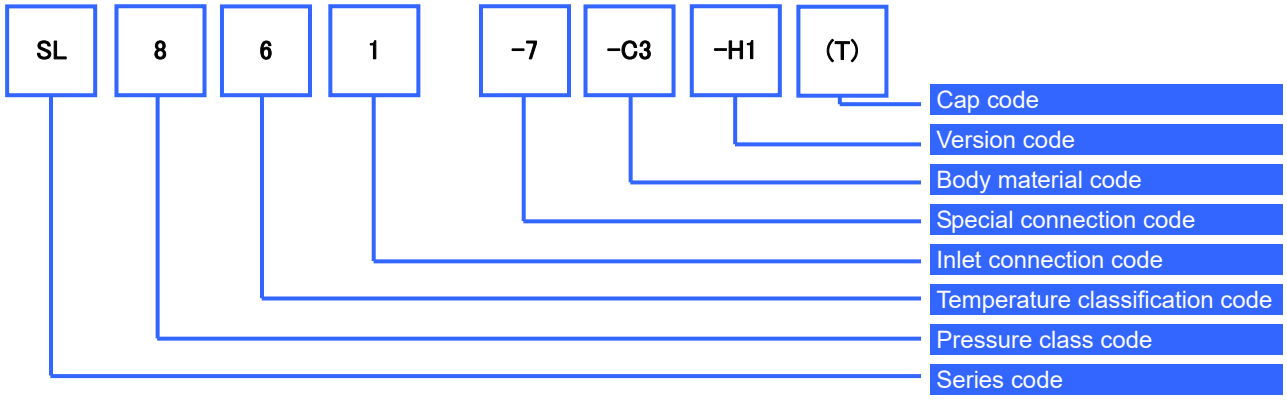
■Spindle
The tip of the spindle must vertically transmit spring thrust ranging between several hundred and several tons accurately to the disc center.
For this reason the spindle must have the load-bearing capacity and resistance to wear withstand spring thrust .Fukui structures the disc back, which receives spindle thrust, and the spindle tip into perfectly matching spherical surface, which not only ensures that spindle thrust is centered, but also unerringly transits the load thanks to the suitable contact area.
Spindles use 13 chrome stainless steel, while for high-temperature, high-pressure specifications we use special

■Cooling spool and Bonnet
We chose cylindrical spring for the bonnets on SL500 valves and above in order to protect the coil springs and increase vibration resistance.
Between the valve body and bonnet there is a cooling spool that keeps the spring from being directly exposed to high - temperature steam just after the valve actuates. This cooling spool also serves to facilitate the center throttle’s adjustment back pressure discharge and other functions.

■Valve Body
The valve body is a sturdy spherical structure, which lowers its susceptibility to distortion blowoff steam counteraction, the vibration of inlet and discharge pipes, and other causes.
This spherical shape also eliminates wasteful dead spaces from inside the valve casing and creates a uniform internal pressure distribution, thereby providing for a smooth flow toward the valve outlet.

■Discs
Discs come in two types called the “feather lip disc” and “thermo lip disc”, in which the contact surface with the nozzle seat has a lip face.
Disc type is chosen on the basis of temperature and pressure.
The principle involves shaping the disc seat into a lip, so that until a safety valve blowoff, internal pressure deforms the lip edge. When disc seat pressure decreases because of a pressure rise, the raised part of the lip decreases contact area of the disc and nozzle seat. As a result, a tight seal is maintained by keeping seat surface pressure high.
The thermo lip disc has built-up structure that is a combination of a disc center and disc ring, which further enhances the feather lip’s function. It is used in higher-pressure applications.
A characteristic of this type is that the lip is protected from deformation caused by the shock arising when safety valves closes. This is a accomplished by providing the surface contacting the lip back of the disc center, with hard facing to prevent lip deformation. This makes the disc more durable because even in high-temperature, high-pressure ranges, the feather lips excellent sealing function is unimpaired.
Additionally, flexibility is provided by a gap between the disc and holder that disc will be unaffected even if the spindle should tilt out of line due to piping counteraction or other external force.

SJ / SL / PCV Series　Code System



Symbol	Regulation code or standard		Inlet connection standard			
	ASME	Shipping class	JIS B8210	ASME , JPI	JIS B2220	Welded type
SJ	—	◎	◎	○	◎	◎
SL	◎	◎	−	◎	○	◎
PCV	◎	◎	−	◎	−	◎
RPE	◎	−	−	◎	−	−

Special connection code	Inlet connection code		
	JIS B8210	ASME , JPI	JIS B2220
-3	30K	300#	30K
-4	40K	600#	40K
-5		900#	63K
-6	-	1500#	-
-7	-	2500#	-

No number is shown when nominal pressure for the inlet connection is the same as pressure class code.

Number	Inlet connection code		
	JIS B8210	ASME , JPI	JIS B2220
1	10K	150#	10K
2	20K	300#	20K
3	30K	300#	30K
4	40K	600#	40K
5		900#	63K
6	-	1500#	-
7	-	2500#	-
8	-	2500#	-
9	-	3000# *1	-
10	-	4500# *1	-

*1. Welded type only

Body material code	Material	
	JIS notation	ASME notation
Non code	SCPH2	SA216M-WCB
-C2	SCPH21	SA217M-WC6
-C3	SCPH32	SA217M-WC9
-C4	SCPH61	SA217M-C5
-CA	火 SCPH91	CASE 2192

Version code	Pressure class code	*2Seat tightness
Non code	SL100～300	90%
-H2		
-M	SL400～500	94%
-M2	SL400～600	
-H1	SL700～1000	95%
-H2	SL700～800	93%
PA	Each SL series Air drive	98%
-AR	PCV100～1000 Air drive	100%
-ER	PCV100～900 Sorenoid drive	100%
Non code	RPE300～700　Main Valve	90%

*2. set pressure×( )%

Inlet connection code	Inlet connection standard
1	ASME
2	JPI
3	Welded type
4	JIS B2220
5	special connection
9	JIS B8210

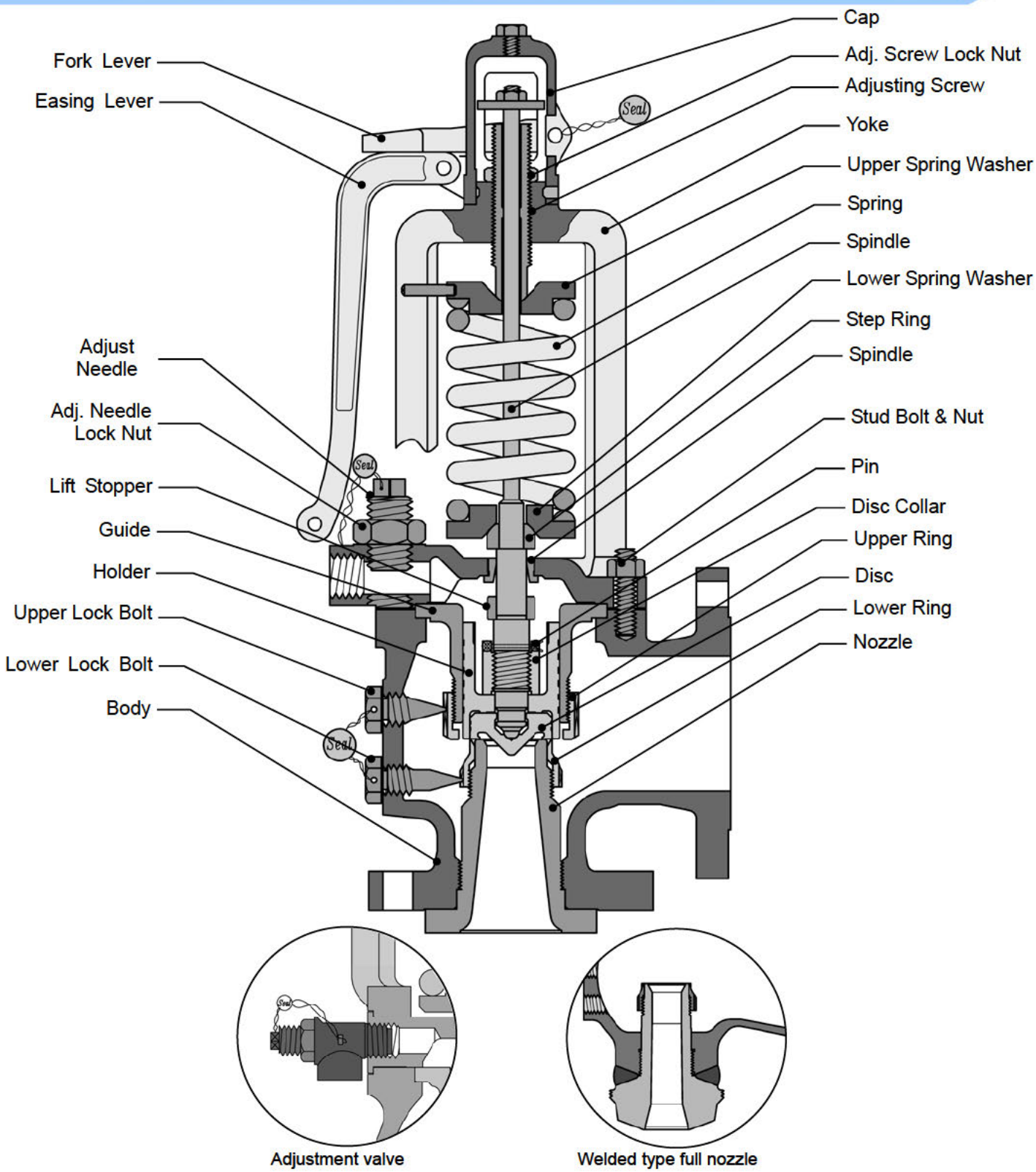
Cap code	Construction
(C)	Open lever
(T)	Open lever with test gag

Temperature classification code	Maximum service temperature
3	400℃　(750˚F)
5	510℃　(950˚F)
6	571℃　(1060˚F)
7	621℃　(1150˚F)

Applicable law, regulation code, or standard	Formula	Nomenclature
JIS B 8210	$W = 5.25C'K_DAP$	W = Steam discharge capacity kg/h A = Orifice area mm^2 P = Relieving pressure MPaA C' = Coefficient based on nature of steam K_d = Coefficient of discharge K_N = Correction factor for Napier K_b = Back pressure correction factor Ksh = Superheated steam correction factor Ksc = Supercritical Correction Factor K_c = Combination factor with Rupture Disc k = Specific heat ratio
ASME Sec.1 (POWER BOILER)	$P_1 \leq 22.1\ (MPaA)$ $W = 5.25 \times P_1 K_d K_N K_{SH} A$ $P_1 \leq 10.3\ (MPaA)$ $K_N = 1$ $10.3\ (MPaA) < P_1 \leq 22.1\ (MPaA)$ $K_N = \frac{27.6P_1 - 1000}{33.2P_1 - 1061}$ $P_1 > 22.1\ (MPaA)$ $W = 5.25 \times P_1 K_d K_{SC} A$	
ASME Sec.8 (PRESSURE VESSELS) API STANDAR 520	$W = \frac{AP_1 K_d K_b K_c K_N K_{SH}}{0.1905}$ $K_b = \frac{1}{17.9C}\sqrt{\frac{k}{k-1}\left\{\left(\frac{P_2}{P_1}\right)^{\frac{2}{k}} - \left(\frac{P_2}{P_1}\right)^{\frac{k+1}{k}}\right\}}$ $P_1 \leq 10.339\ (MPaA)$ $K_N = 1$ $10.339\ (MPaA) < P_1 \leq 22.057\ (MPaA)$ $K_N = \frac{27.64P_1 - 1000}{33.24P_1 - 1061}$	

These above Nomenclature differ somewhat from those established by laws and or standards.

SJ / SL1( )( )~3( )( ) Series Parts Names



Adjustment valve

Welded type full nozzle

SJ100~300 (unit:mm²)

Orifice Letter	F2	G2	H2	J2	L1	M	N3	P2	Q2	Q3	R	T
Throat area	283.5	452.4	706.8	1134.1	1885.7	2533.9	3739.3	4560.4	6082.1	7208.1	10386.9	18385.4

SL100~300 (unit:mm²)

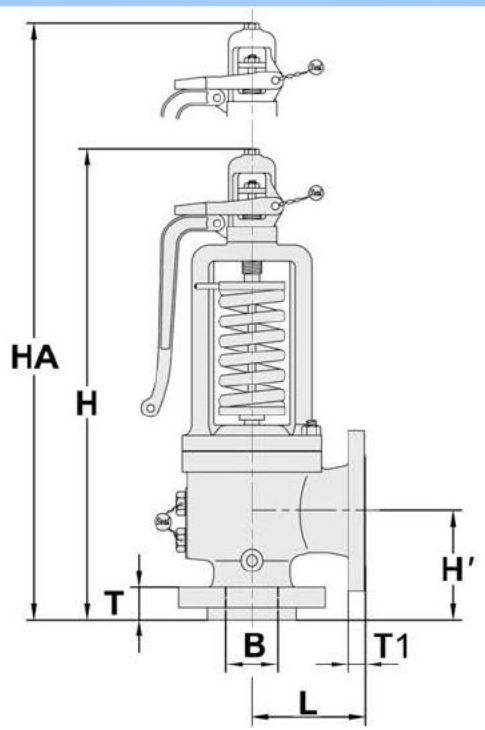
Orifice Letter	D	E	F	G	H	J	K	L	M	N	P	Q	R	RR	T
Throat area	78.5	138.9	216.4	353.0	555.7	907.9	1294.6	2010.9	2533.9	3058.1	4500.7	7791.3	11272.0	12687.6	18385.4

	Type		SJ( )3( )	SJ( )5( )	SJ( )6( )
	Maximum Temperature		400°C 750°F	510°C 950°F	538°C 1000°F
Parts Name	Nozzle *1		SA105M	SA182M-F12	SA182M-F22
	Disc		SUS630 (≦320℃) or B637-N07750 (＞320℃)		
	Disc Collar		SUS630		
	Holder		SUS420J2		
	Body		SA216M-WCB	SA217M-WC6	SA217M-WC9
	Yoke	Yoke	SA216M-WCB	SA217M-WC6	
		Spindle Guide	SUS630		
	Spindle		SUS403	SUS431	
	Guide		SUS420J2 or SCS1		
	Upper or Lower Ring		SUS304 or SCS13A		
	Upper Lock Bolt		SUS403	SUS431	
	Lower Lock Bolt		SUS403	SUS431	
	Upper or Lower Spring Washer		SUS403		
	Spring		Carbon Steel or Alloy Steel		
	Adjusting Screw		SUS420J2		
	Adj. Screw Lock Nut		SUS304		
	Lift Stopper		SUS420J2		
	Step Ring		SUS420J2		
	Stud Bolt & Nut		SNB7 / S45C		SNB7 / S45C
	Cap		FCD450-10		
	Fork Lever		FCMB310-8		
	Easing Lever		FCMB310-8		
	Pin		SUS304		
	Adjust Needle／Adj. Lock Nut *2		SUS304 / SS400		
	Adjustment Valve *2		SCS13		

*1 : Bishilite deposited on the seat surface.

*2 : Either the back pressure adjustment needle or the back pressure adjustment valve is the manufacturer standard for the back pressure adjustment mechanism.

SJ1( )9～3( )9 Series Application Range and Dimensions



(Unit:mm)

Type	Connection		Size	Pressure and Temperature Limits MPaG		Inlet Dia	Throat area mm²	Outlet Dia.	Center to Face		Height	Disman ling Height	Thickness of Flange		Approx. Weight
	Inlet	Outlet		400℃	450℃	B			H'	L	H	HA	Inlet T	Outlet T1	kg
SJ109	JIS B 8210 (1994) 10K RF	JIS 10K RF	25×F2×40	1.07	1.07	25	283.5	40	120	110	400	540	40	16	17
			32×G2×50			32	452.4	50	125	120	435	610	44	16	23
			40×H2×65			40	706.8	65	135	130	520	730	46	18	31
			50×J2×80			50	1134.1	80	155	150	625	865	44	18	47
			65×L1×100			65	1885.7	100	170	160	690	975	48	18	63
			80×M×125			80	2533.9	125	180	160	710	1000	50	20	71
			90×N3×150			90	3739.3	150	190	180	800	1150	52	22	94
			100×P2×150			100	4560.4	150	200	200	885	1235	54	22	120
			125×Q2×200			115	6082.1	200	220	220	1010	1460	56	22	178
			125×Q3×200			125	7208.1	200	240	230	1060	1510	56	22	198
			150×R×200			150	10386.9	200	250	240	1190	1705	60	22	290
			200×T×250			200	18385.4	250	290	290	1395	2065	66	31	465
SJ209	JIS B 8210 (1994) 20K RF	JIS 10K RF	25×F2×40	2.15	2.15	25	283.5	40	120	110	400	540	40	16	17
			32×G2×50			32	452.4	50	125	120	435	610	44	16	23
			40×H2×65			40	706.8	65	135	130	520	730	46	18	31
			50×J2×80			50	1134.1	80	155	150	625	865	44	18	47
			65×L1×100			65	1885.7	100	170	160	690	975	48	18	63
			80×M×125			80	2533.9	125	180	160	710	1000	50	20	71
			90×N3×150			90	3739.3	150	190	180	800	1150	52	22	94
			100×P2×150			100	4560.4	150	200	200	885	1235	54	22	120
			125×Q2×200			115	6082.1	200	220	220	1010	1465	56	22	178
			125×Q3×200			125	7208.1	200	240	230	1060	1510	56	22	198
			150×R×200			150	10386.9	200	250	240	1190	1705	60	22	290
			200×T×250	1.56	1.56	200	18385.4	250	292	290	1395	2065	66	31	465
SJ309	JIS B 8210 (1994) 30K RF	JIS 10K RF	25×F2×40	3.23	3.23	25	283.5	40	120	120	425	595	42	16	20
			32×G2×50			32	452.4	50	125	120	505	710	44	16	27
			40×H2×65			40	706.8	65	135	130	595	840	46	18	40
			50×J2×80			50	1134.1	80	165	155	670	960	48	18	54
			65×L1×100			65	1885.7	100	180	165	745	1095	52	18	75
			80×M×125			80	2533.9	125	200	180	840	1195	54	20	100
			90×N3×150			90	3739.3	150	210	200	865	1220	56	22	112
			100×P2×150			100	4560.4	150	210	220	985	1435	58	22	167
			125×Q2×200			115	6082.1	200	222	220	1120	1635	62	22	240
			125×Q3×200			125	7208.1	200	240	250	1160	1685	62	22	265
			150×R×250	2.15	2.15	150	10386.9	250	262	260	1190	1705	68	24	310

Connection size means the inlet or outlet nominal flange size.
Note carefully that inlet diameter means the inside diameter of the safety valve inlet, which is not the same as inlet flange size.

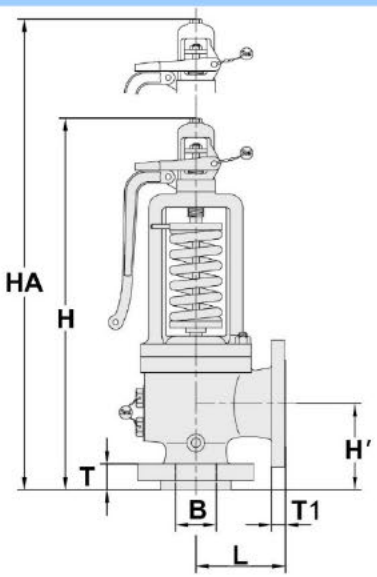
SL1( )1～3( )1Series (ASME flange type only) Parts Materials

	Type		SL( )31	SL( )51	SL( )61	SL( )71
	Maximum Temperature		400°C 750°F	510°C 950°F	571°C 1000°F	621℃ 1150°F
Parts Name	Nozzle *1		SA105M	SA182M-F12	SA182M-F22	SA182M-F91
	Disc		SUS630 (≦320℃) or B637-N07750 (＞320℃)			B637-N07718
	Disc Collar		SUS630			B637-N07750
	Holder		SUS420J2			
	Body		SA216M-WCB	SA217M-WC6	SA217M-WC9	CASE 2192
	Yoke	Yoke	SA216M-WCB	SA217M-WC6		SA217M-WC9
		Spindle Guide	SUS630			
	Spindle		SUS403	SUS431		
	Guide		SUS420J2 or SCS1			
	Upper or Lower Ring		SUS304 or SCS13A			
	Upper Lock Bolt		SUS403	SUS431		
	Lower Lock Bolt		SUS403	SUS431		
	Upper or Lower Spring Washer		SUS403			
	Spring		Carbon Steel or Alloy Steel			
	Adjusting Screw		SUS420J2			
	Adj. Screw Lock Nut		SUS304			
	Lift Stopper		SUS420J2			
	Step Ring		SUS420J2			
	Stud Bolt & Nut		SNB7 / S45C		SNB16 / A194-4	
	Cap		FCD450-10			
	Fork Lever		FCMB310-8			
	Easing Lever		FCMB310-8			
	Pin		SUS304			
	Adjust Needle／Adj. Lock Nut *2		SUS304 / SS400			
	Adjustment Valve *2		SCS13			

*1: Bishilite deposited on the seat surface.

*2: Either the back pressure adjustment needle or the back pressure adjustment valve is the manufacturer standard for the back pressure adjustment mechanism.

SL1( )1～3( )1 Series Application Range and Dimensions



(Unit:mm)

Type	Inlet	Outlet	Size	Pressure and Temperature Limits	Inlet Dia.	Orifice area mm²	Outlet Dia.	Center to Face		Height	Dismantling Hheight	Flange Thickness		Thread size		Approx Weight
												Inlet	Outlet	Drain	Needle	
					B			H'	L	H	HA	T	T1	Rc	Rp	kg
SL101	ASME 150Lb RF	ASME 150Lb RF	3/4×D×1	Refer to P.11 and P.12	20	78.5	25	92	96	345	470	30	14.5	3/8	1/2	11
			1×D×2		25	78.5	50	105	114	360	485	32	16	3/8	1/2	13
			1×E×2		25	138.9	50	105	114	360	485	32	16	3/8	1/2	13
			1-1/2×F×2		40	216.4	50	124	121	380	505	39	16	1/2	1/2	16
			1-1/2×G×2-1/2		40	353.0	65	124	121	410	550	39	18	1/2	1/2	19
			1-1/2×H×3		40	555.7	80	130	124	440	610	39	20	1/2	3/4	23
			2×J×3		50	907.9	80	137	124	515	720	41	20	1/2	3/4	30
			3×K×4		80	1294.6	100	156	162	620	860	47	24	1/2	1	51
			3×L×4		80	2010.9	100	156	165	680	965	47	24	1/2	1	59
			4×M×6		100	2533.9	150	178	184	700	990	50	26	1/2	1	71
			4×N×6		100	3058.1	150	197	210	790	1140	50	26	1/2	1-1/4	90
			4×P×6		100	4500.7	150	181	229	875	1230	50	26	1/2	1-1/4	110
			6×Q×8		150	7791.3	200	240	241	1050	1500	44	29	1/2	1-1/4	200
			6×R×8		150	11272.0	200	240	241	1155	1675	44	29	3/4	1-1/4	260
			8×T×10		200	18385.4	250	276	279	1380	2055	48	31	3/4	1-1/2	400
SL201	ASME 300Lb RF	ASME 150Lb RF	3/4×D×1		20	78.5	25	92	96	345	470	30	14.5	3/8	1/2	11
			1×D×2		25	78.5	50	105	114	360	485	32	16	3/8	1/2	13
			1×E×2		25	138.9	50	105	114	360	485	32	16	3/8	1/2	13
			1-1/2×F×2		40	216.4	50	124	121	380	505	39	16	1/2	1/2	16
			1-1/2×G×2-1/2		40	353.0	65	124	121	410	550	39	18	1/2	1/2	20
			1-1/2×H×3		40	555.7	80	130	124	440	610	39	20	1/2	3/4	24
			2×J×3		50	907.9	80	137	124	515	720	41	20	1/2	3/4	31
			3×K×4		80	1294.6	100	156	162	620	860	47	24	1/2	1	53
			3×L×4		80	2010.9	100	156	165	680	965	47	24	1/2	1	61
			4×M×6		100	2533.9	150	178	184	700	990	50	26	1/2	1	73
			4×N×6		100	3058.1	150	197	210	790	1140	50	26	1/2	1-1/4	92
			4×P×6		100	4500.7	150	181	229	875	1230	50	26	1/2	1-1/4	112
			6×Q×8		150	7791.3	200	240	241	1050	1500	55	29	1/2	1-1/4	205
			6×R×8		150	11272.0	200	240	241	1155	1675	56	29	3/4	1-1/4	265
			8×T×10		200	18385.4	250	276	279	1380	2055	60	31	3/4	1-1/2	410
SL301	ASME 300Lb RF	ASME 150Lb RF	1×D×2		25	78.5	50	105	114	360	485	32	16	3/8	1/2	14
			1×E×2		25	138.9	50	105	114	360	485	32	16	3/8	1/2	14
			1-1/2×F×2		40	216.4	50	124	152	380	505	40	16	1/2	1/2	19
			1-1/2×G×2-1/2		40	353.0	65	124	152	420	590	40	18	1/2	3/4	22
			2×H×3		50	555.7	80	130	124	500	705	41	20	1/2	3/4	31
			2-1/2×J×4		65	907.9	100	137	143	595	835	44	24	1/2	1	46
			3×K×4		80	1294.6	100	156	162	665	955	47	24	1/2	1	60
			4×L×6		80	2010.9	150	179	181	765	1115	50	26	1/2	1-1/4	90
			4×M×6		100	2533.9	150	178	184	840	1195	50	26	1/2	1-1/4	105
			4×N×6		100	3058.1	150	197	210	865	1215	50	26	1/2	1-1/4	113
			4×P×6		100	4500.7	150	225	254	1005	1455	50	26	1/2	1-1/4	160
			6×Q×8		150	7791.3	200	240	241	1050	1500	55	29	1/2	1-1/4	220
			6×R×10		150	11272.0	250	240	267	1155	1675	56	31	3/4	1-1/4	285
			6×RR×10		150	12687.6	250	240	267	1155	1675	56	31	3/4	1-1/4	285
			8×T×10		200	18385.4	250	276	279	1380	2055	60	31	3/4	1-1/2	420

SL1( )1～3( )1 Series Pressure and Temperature Limits

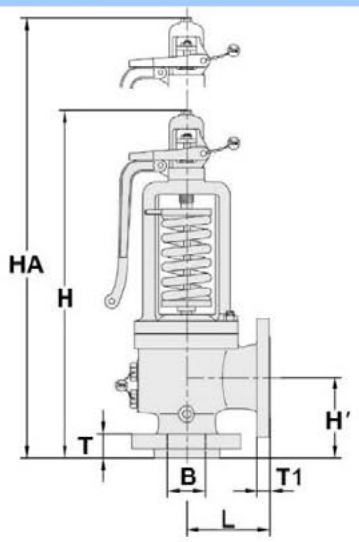
型式	Orifice	Body Material Code	Pressure and Temperature Limits (TEMP. / MPa)									
			100℉	200℉	300℉	400℉	450℉	500℉	600℉	650℉	700℉	750℉
			37.8℃	93.3℃	149℃	204℃	232℃	260℃	316℃	343℃	371℃	400℃
SL101	D～P	Blank	1.96	1.79	1.58	1.37	1.27	1.17	0.96	0.86	0.75	0.65
		-C2	1.99	1.79	1.58	1.37	1.27	1.17	0.96	0 86	0.75	0.65
		-C3	1.99	1.79	1.58	1.37	1.27	1.17	0.96	0.86	0.75	0.65
	Q	Blank	1.13	1.13	1.13	1.13	1.13	1.13	0.96	0 86	0.75	0.65
		-C2	1.13	1.13	1.13	1.13	1.13	1.13	0.96	0.86	0.75	0.65
		-C3	1.13	1.13	1.13	1.13	1.13	1.13	0.96	0 86	0.75	0.65
	R	Blank	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.65
		-C2	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.65
		-C3	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.65
	T	Blank	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
		-C2	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
		-C3	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
SL201	D～P	Blank	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96
		-C2	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1 99	1.99	1.99
		-C3	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99
		-CA	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1 99	1.99	1.99
	Q	Blank	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
		-C2	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
		-C3	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
		-CA	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
	R	Blank	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
		-C2	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
		-C3	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
		-CA	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
	T	Blank	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
		-C2	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
		-C3	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
		-CA	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
SL301	D～N	Blank	4	4	4	4	4	4	3.93	3.79	3.65	3.48
		-C2	4	4	4	4	4	4	4	4	3.93	3.65
		-C3	4	4	4	4	4	4	4	4	3.93	3.65
		-CA	4	4	4	4	4	4	4	4	3.93	3.65
	P	Blank	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.48
		-C2	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
		-C3	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
		-CA	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
	Q	Blank	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06
		-C2	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2 06	2.06	2.06
		-C3	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06
		-CA	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2 06	2.06	2.06
	R, T	Blank	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
		-C2	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1 58	1.58	1.58
		-C3	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
		-CA	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1 58	1.58	1.58

SL1( )1～3( )1 Series Pressure and Temperature Limits (Cont'd)

Type	オリフィス	材料コード	圧力温度基準 (TEMP. / MPa)									
			800℉	850℉	900℉	950℉	1000℉	1050℉	1060℉	1100℉	1120℉	1150℉
			427℃	454℃	482℃	510℃	538℃	566℃	571℃	593℃	604℃	621℃
SL101	D～P	Blank	-	-	-	-	-	-	-	-	-	-
		-C2	0.55	0.44	0.34	0.24	-	-	-	-	-	-
		-C3	0.55	0.44	0.34	0.24	0.13	-	-	-	-	-
	Q	Blank	-	-	-	-	-	-	-	-	-	-
		-C2	0.55	0.44	0.34	0.24	-	-	-	-	-	-
		-C3	0.55	0.44	0.34	0.24	0.13	-	-	-	-	-
	R	Blank	-	-	-	-	-	-	-	-	-	-
		-C2	0.55	0.44	0.34	0.24	-	-	-	-	-	-
		-C3	0.55	0.44	0.34	0.24	0.13	-	-	-	-	-
	T	Blank	-	-	-	-	-	-	-	-	-	-
		-C2	0.44	0.44	0.34	0.24	-	-	-	-	-	-
		-C3	0.44	0.44	0.34	0.24	0.13	-	-	-	-	-
SL201	D～P	Blank	-	-	-	-	-	-	-	-	-	-
		-C2	1.99	1.99	1.99	1.99	-	-	-	-	-	-
		-C3	1.99	1.99	1.99	1.99	1.82	1.2	1.11			
		-CA	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1 82	1.55
	Q	Blank	-	-	-	-	-	-	-	-	-	-
		-C2	1.13	1.13	1.13	1.13	-	-	-	-	-	-
		-C3	1.13	1.13	1.13	1.13	1.13	1.13	1.06			
		-CA	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
	R	Blank	-	-	-	-	-	-	-	-	-	-
		-C2	0.68	0.68	0.68	0.68	-	-	-	-	-	-
		-C3	0.68	0.68	0.68	0.68	0.68	0.68	0.68			
		-CA	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
	T	Blank	-	-	-	-	-	-	-	-	-	-
		-C2	0.44	0.44	0.44	0.44	-	-	-	-	-	-
		-C3	0.44	0.44	0.44	0.44	0.44	0.44	0.44			
		-CA	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
SL301	D～N	Blank	-	-	-	-	-	-	-	-	-	-
		-C2	3.51	3.34	3.1	2.2	-	-	-	-	-	-
		-C3	3.51	3.34	3.1	2.65	1.82	1.2	1.11			
		-CA	3.51	3.34	3.1	2.65	2.51	2.48	2.39	2.06	1 86	1.55
	P	Blank	-	-	-	-	-	-	-	-	-	-
		-C2	3.51	3.34	3.1	2.2	-	-	-	-	-	-
		-C3	3.51	3.34	3.1	2.65	1.82	1.2	1.11			
		-CA	3.51	3.34	3.1	2.65	2.51	2.48	2.39	2.06	1 86	1.55
	Q	Blank	-	-	-	-	-	-	-	-	-	-
		-C2	2.06	2.06	2.06	2.06	-	-	-	-	-	-
		-C3	2.06	2.06	2.06	2.06	1.82	1.2	1.11			
		-CA	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	1 86	1.55
	R, T	Blank	-	-	-	-	-	-	-	-	-	-
		-C2	1.58	1.58	1.58	1.58	-	-	-	-	-	-
		-C3	1.58	1.58	1.58	1.58	1.58	1.2	1.11			
		-CA	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1 57	1.55

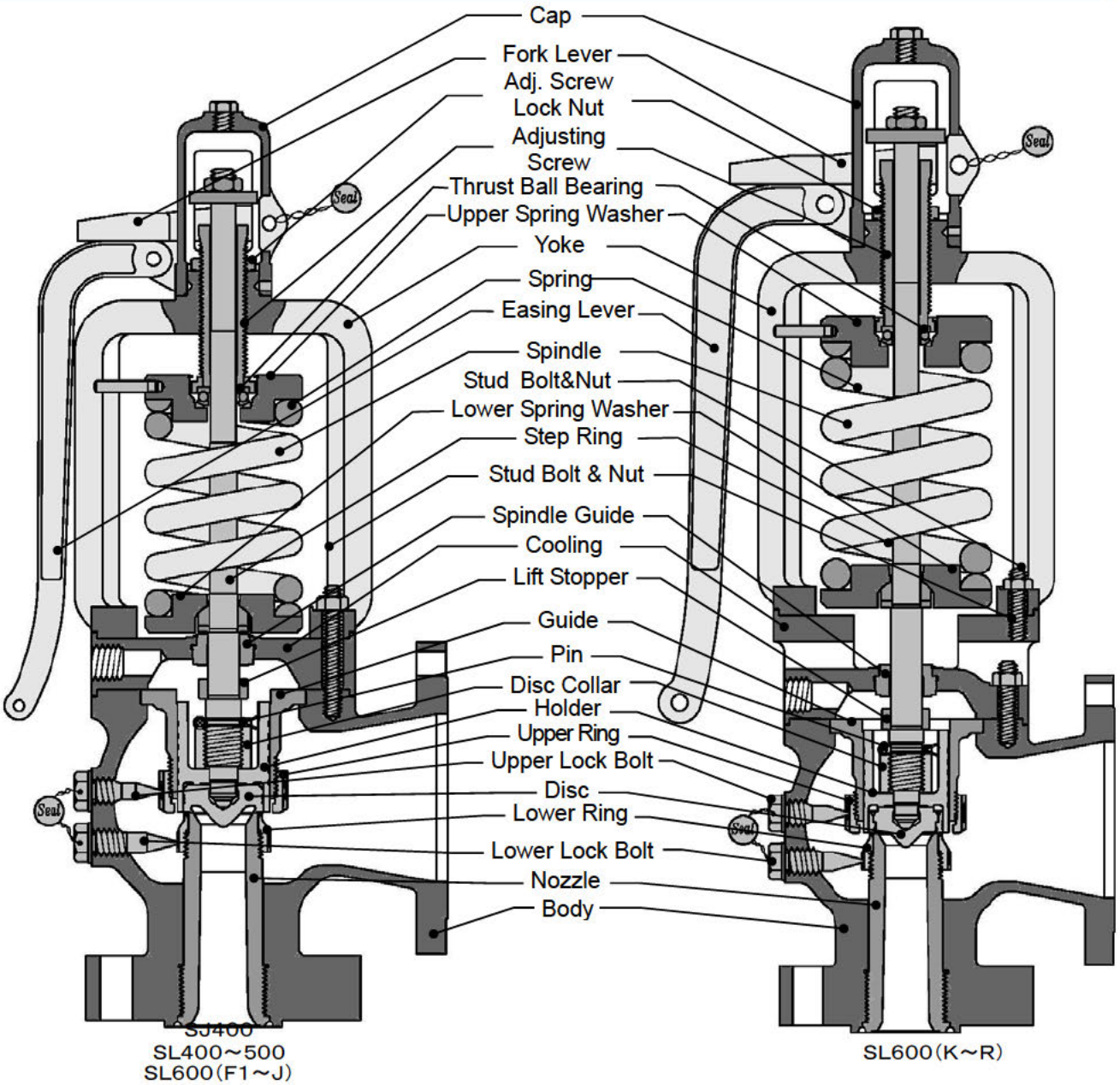
The maximum working pressure at a temperature intermediate between the temperatures shown in the table is obtained by proportional interpolation

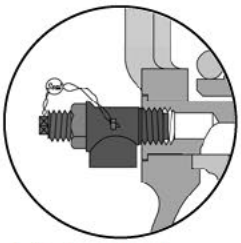
SL1( )1～3( )1 Series Application Range and Dimensions



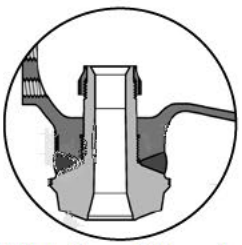
(Unit:mm)

Type	Inlet	Outlet	Size	Pressure and temperature Limits MPaG			Inlet Dia.	Throat area mm²	Outlet Dia.	Center to Face		Height	Dismantling Height	Flange thickness		Thread size		Approx. Weight
				220℃	300℃	400℃	B			H'	L	H	HA	Inlet T	Outlet T1	Drain Rc	Needle Rp	kg
SL104	JIS 10K RF	JIS 10K RF	20×D×25	1.18	0.98	-	20	78.5	25	92	96	345	470	30	14	3/8	1/2	11
			25×D×50				25	78.5	50	105	114	360	485	32	16	3/8	1/2	13
			25×E×50				25	138.9	50	105	114	360	485	32	16	3/8	1/2	13
			40×F×50				40	216.4	50	124	121	380	505	39	16	1/2	1/2	16
			40×G×65				40	353.0	65	124	121	410	550	39	18	1/2	1/2	19
			40×H×80	1.13			40	555.7	80	130	124	440	610	39	20	1/2	3/4	23
			50×J×80				50	907.9	80	137	124	515	720	41	20	1/2	3/4	30
			80×K×100	0.98	0.93		80	1294.6	100	156	162	620	860	47	24	1/2	1	51
			80×L×100	0.88	0.83		80	2010.9	100	156	165	680	965	47	24	1/2	1	59
			100×M×150				100	2533.9	150	178	184	700	990	50	26	1/2	1	71
			100×N×150	0.78	0.73		100	3058.1	150	197	210	790	1140	50	26	1/2	1-1/4	90
			100×P×150	0.73	0.68		100	4500.7	150	181	229	875	1230	50	22	1/2	1-1/4	110
			150×Q×200	0.98	0.83		150	7791.3	200	240	241	1050	1500	44	29	1/2	1-1/4	200
			150×R×200	0.68	0.68		150	11272.0	200	240	241	1155	1675	44	29	3/4	1-1/4	260
			200×T×250	0.45	0.45		200	18385.4	250	276	279	1380	2055	48	31	3/4	1-1/2	400
SL204	JIS 20K RF	JIS 10K RF	20×D×25	1.96	1.96	1.96	20	78.5	25	92	96	345	470	30	14	3/8	1/2	11
			25×D×50				25	78.5	50	105	114	360	485	32	16	3/8	1/2	13
			25×E×50				25	138.9	50	105	114	360	485	32	16	3/8	1/2	13
			40×F×50				40	216.4	50	124	121	380	505	39	16	1/2	1/2	16
			40×G×65				40	353.0	65	124	121	410	550	39	18	1/2	1/2	19
			40×H×80				40	555.7	80	130	124	440	610	39	20	1/2	3/4	24
			50×J×80				50	907.9	80	137	124	515	720	41	20	1/2	3/4	31
			80×K×100				80	1294.6	100	156	162	620	860	47	24	1/2	1	53
			80×L×100				80	2010.9	100	156	165	680	965	47	24	1/2	1	61
			100×M×150				100	2533.9	150	178	184	700	990	50	26	1/2	1	73
			100×N×150	1.86	1.86	1.86	100	3058.1	150	197	210	790	1140	50	26	1/2	1-1/4	92
			100×P×150	1.76	1.76	1.76	100	4500.7	150	181	229	875	1230	50	26	1/2	1-1/4	112
			150×Q×200	1.18	1.18	1.18	150	7791.3	200	240	241	1050	1500	55	29	1/2	1-1/4	205
			150×R×200	0.68	0.68	0.68	150	11272.0	200	240	241	1155	1675	56	29	3/4	1-1/4	265
			200×T×250	0.44	0.44	0.44	200	18385.4	250	276	279	1380	2055	48	31	3/4	1-1/2	410
SL304	JIS 30K RF	JIS 10K RF	25×D×50	3.72	2.94	2.84	25	78.5	50	105	114	360	485	32	16	3/8	1/2	14
			25×E×50				25	138.9	50	105	114	360	485	32	16	3/8	1/2	14
			40×F×50				40	216.4	50	124	152	380	505	40	16	1/2	1/2	19
			40×G×65				40	353.0	65	124	152	420	590	40	18	1/2	3/4	22
			50×H×80	3.53			50	555.7	80	130	124	500	705	41	20	1/2	3/4	31
			65×J×100				65	907.9	100	137	143	595	835	44	24	1/2	1	46
			80×K×100	3.13	2.64	2.45	80	1294.6	100	156	162	665	955	47	24	1/2	1	60
			100×L×150				100	2010.9	150	179	181	765	1115	50	26	1/2	1-1/4	90
			100×M×150	3.04	2.55	2.25	100	2533.9	150	178	184	840	1195	50	26	1/2	1-1/4	105
			100×N×150	2.74	2.25	2.15	100	3058.1	150	197	210	865	1215	50	26	1/2	1-1/4	113
			100×P×150	2.55	2.15	1.96	100	4500.7	150	225	254	1005	1455	50	26	1/2	1-1/4	160
			150×Q×200	2.06	2.06	1.08	150	7791.3	200	240	241	1050	1500	55	29	1/2	1-1/4	220
			150×R×250	1.37	1.18	0.68	150	11272.0	250	240	267	1155	1675	56	31	3/4	1-1/4	285
			150×RR×250	1.37	1.18	0.68	150	12687.6	250	240	267	1155	1675	56	31	3/4	1-1/4	285
			200×T×250	0.78	0.78	0.78	200	18385.4	250	276	279	1380	2055	60	31	3/4	1-1/2	420





Adjustment valve



Welded type full nozzle

SJ400 (Unit:mm²)

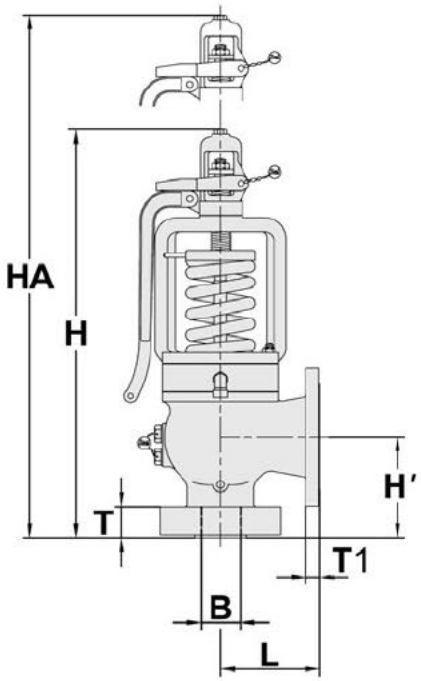
Orifice Letter	19	24	30	38	49	56	65	73	82	88	105
Throat area	283.5	452.4	706.8	1134.1	1885.7	2463.0	3318.3	4185.3	5281.0	6082.1	8659.0

SL400～700 (Unit:mm²)

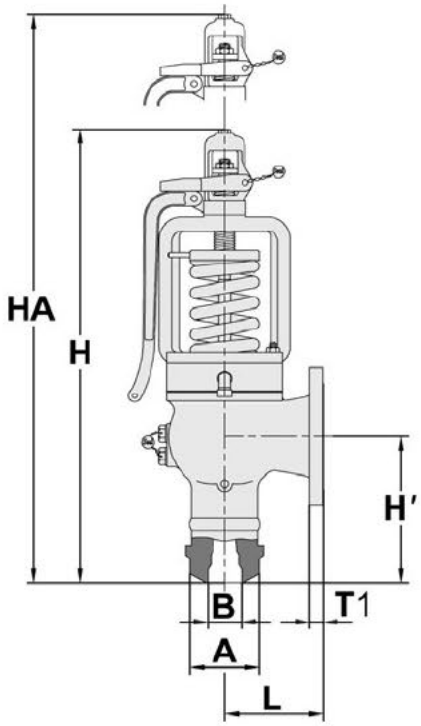
Orifice Letter	F1	G1	H	J	K	K2	L	M	M2	N2	P	Q0	Q1	Q	R	RR	T
Throat area	216.4	353.0	555.7	907.9	1294.6	1727.6	2010.9	2533.9	2587.7	3421.2	4500.7	5462.9	6418.4	7791.3	11272.0	12687.6	18337.3

	Type		SJ／SL( )3( )	SJ／SL( )5( )	SJ／SL( )6( )	SJ／SL( )7( )
	Maximum Temperature		400°C 750°F	510°C 950°F	571°C 1060°F	621°C 1150°F
Parts Name	Nozzle *1		SA105M	SA182M-F12	SA182M-F22	SA182M-F91
	Disc	SJ/SL4( )( )～5( )( )	SUS630(≦320℃) or B637-N07750 (＞320℃)			B637-N07718
		SL6( )( )-M2	B637-N07750			B637-N07718
	Disc Collar		SUS630			B637-N07750
	Holder		SUS420J2			
	Body		SA216M-WCB	SA217M-WC6	SA217M-WC9	CASE 2192
	Yoke	Yoke	SA216M-WCB			
		Spindle Guide	SUS630			
	Cooling		A105 or SA216M-WCB		A182-F12 or SA217M-WC6	
	Spindle		SUS403	SUS431		
	Guide		SUS420J2 or SCS1			
	Upper or Lower Ring		SUS304 or SCS13A			
	Upper Lock Bolt		SUS403	SUS431		
	Lower Lock Bolt		SUS403	SUS431		
	Lower Spring Washer		SUS403			
	Upper Spring Washer	Upper Spring Washer	SUS403			
		Thrust Ball Bearing	Thrust Metal			
	Spring		Carbon Steel or Alloy Steel			
	Adjusting Screw		SUS420J2			
	Adj. Screw Lock Nut		SUS304			
	Lift Stopper		SUS420J2			
	Step Ring		SUP10			
	Stud Bolt & Nut		SNB7 / S45C		SNB7 / S45C	
	Stud Bolt （SL600）		SNB7 / S45C			
	Cap		FCD450-10			
	Fork Lever		FCMB310-8			
	Easing Lever		FCMB310-8			
	Pin		SUS304			
	Adjustment Valve		SCS13			

*1 : Bishilite deposited on the seat surface.



Flange Type



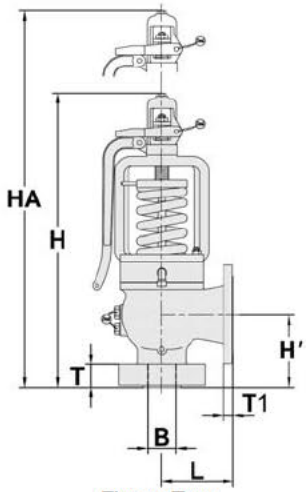
Welded Type

(Unit:mm)

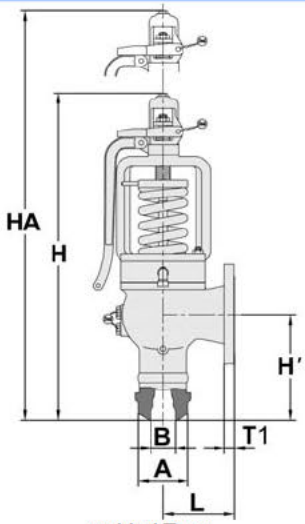
Style	Connec ion		Size	Pressure and Temperature Limits MPaG		Inlet Dia.	Throat area mm²	Outlet Dia.	Center to Face		Height	Dismantling Height	Thickness of Flange		Approx. Weight
	Inlet	Outlet		400℃	510℃	B			H'	L	H	HA	Inlet T	Outlet T1	kg
SJ409	JIS B 8210 (1994) 40K RF	JIS 10K RF	25×19×50	4.51	3.53	25	283.5	50	110	125	475	715	30	16	45
			32×24×65			32	452.4	65	130	140	500	750	34	18	60
			40×30×80			40	706.8	80	140	150	590	890	38	19.1	90
			50×38×100			50	1134.1	100	155	180	700	1085	40	24	120
			65×49×150			65	1885.7	150	195	200	825	1250	53	26	150
			80×56×150			80	2463.0	150	215	220	935	1435	53	26	185
			90×65×150			90	3318.3	150	230	240	1020	1580	60	26	270
			100×73×200			100	4185.3	200	260	265	1220	1870	60	29	450
			125×82×200			115	5281.0	200	260	265	1240	1880	60	29	550
			125×88×200			125	6082.1	200	270	280	1340	2020	60	29	600
			150×105×250			150	8659.0	250	330	320	1535	2315	69	31	650

Style	Connection		Size	Pressure Limits MPaG	Inlet Dia.	Max. temperature material specification for Inlet Neck A Inlet Neck O.D.		Throat area mm²	Outlet Dia.	Center to Face		Height	Dismantling Height	Thickness of Flange	Approx Weight
	Inlet	Outlet			B	510℃	540℃			H'	L	H	HA	T1	kg
SJ403	Welded	JIS 10K RF	25×19×50	4.51	27	50	56	283.5	50	140	125	505	745	16	40
			32×24×65		34	60	66	452.4	65	155	140	525	775	18	50
			40×30×80		42	72	78	706.8	80	170	150	620	920	19.1	80
			50×38×100		52	84	93	1134.1	100	195	180	740	1125	24	110
			65×49×150		67	100	112	1885.7	150	250	200	880	1300	26	135
			80×56×150		82	116	124	2463.0	150	260	220	980	1480	26	170
			90×65×150		92	128	138	3318.3	150	265	240	1055	1615	26	250
			100×73×200		102	140	150	4185.3	200	310	265	1270	1920	29	400
			125×82×200		127	156	166	5281.0	200	330	265	1310	1950	29	500
			125×88×200		127	168	178	6082.1	200	340	280	1410	2090	29	550
			150×105×250		152	195	205	8659.0	250	400	320	1605	2385	31	600

Connection size means the inlet or outlet nominal flange size.
Note carefully that inlet diameter means the inside diameter of the safety valve inlet, which is not the same as inlet flange size



Flange Type



welded Type

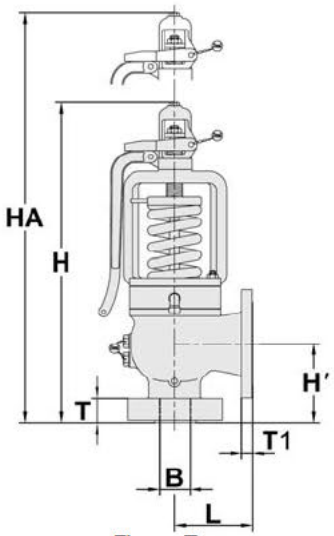
(Unit:mm)

Style	Connection		Size	Pressure and Temperature Limits MPaG				Inlet Dia.	Throat area mm^2	Ou let Dia.	Center to Face		Height	Dismantling Height	Thickness of Flange		Approx. Weight
	inlet	Outlet		400℃	510℃	571℃	621℃	B			H'	L	H	HA	Inlet T	Outlet T1	kg
SL401	ASME 600Lb RF	ASME 150Lb RF	2×F1×3	5.5	4.4	2.2	1.34	40	216.4	80	140	150	590	890	38	19.1	90
			2×G1×3					40	353.0	80	140	150	590	890	38	19.1	90
			2×H×3					40	555.7	80	140	150	590	890	38	19.1	90
			2-1/2×J×4					50	907.9	100	155	180	700	1085	40	24	120
			2-1/2×K×6					65	1294.6	150	185	190	745	1135	43	26	135
			3×K2×6					65	1727.6	150	185	200	815	1240	43	26	150
			3×L×6					80	2010.9	150	185	200	815	1240	43	26	150
			4×M×6					80	2533.9	150	215	220	935	1435	53	26	185
			4×M2×6					80	2587.7	150	215	220	935	1435	53	26	185
			4×N2×6					100	3421.2	150	230	240	1020	1580	60	26	265
			6×P×6					100	4500.7	150	260	265	1220	1870	60	26	360
			6×P×8					100	4500.7	200	260	265	1220	1870	60	29	450
			6×Q0×8	4.8				150	5462.9	200	260	265	1240	1880	60	29	550
			6×Q1×8					150	6418.4	200	270	280	1340	2020	60	29	580
			6×Q×8					150	7791.3	200	280	290	1370	2070	60	29	600
			6×Q×10					150	7791.3	250	280	290	1370	2070	60	31	650
			8×R×10					150	11272.0	250	330	320	1535	2315	69	31	850
			8×RR×10					150	12687.6	250	330	320	1535	2315	69	31	850
			8×T×12	3.4	3.4			200	18337.3	300	350	350	1670	2500	68	32	1000

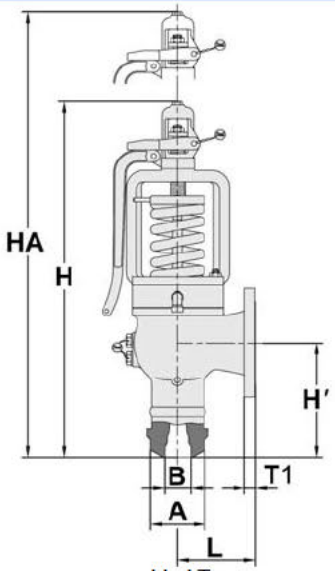
Style	Connection		Size	Pressure Limits MPaG	Inlet Dia.	Max. temperature material specification for Inlet Neck A Inlet Neck O.D.				Throat area mm^2	Outlet Dia.	Center to Face		Height	Dismantling Height	Thickness of Flange	Approx. Weight
	Inlet	Outlet			B	400℃	510℃	571℃	621℃			H'	L	H	HA	T1	kg
SL403	Welded	ASME 150Lb RF	1-1/2×F1×3	5.5	42	67	67	70	70	216.4	80	170	150	620	920	19.1	80
			1-1/2×G1×3		42	67	67	70	70	353.0	80	170	150	620	920	19.1	80
			1-1/2×H×3		42	67	67	70	70	555.7	80	170	150	620	920	19.1	80
			2×J×4		52	80	80	81	81	907.9	100	195	180	740	1125	24	110
			2-1/2×K×6		67	92	92	101	101	1294.6	150	235	190	795	1185	26	120
			2-1/2×K2×6		67	93	98	110	110	1727.6	150	250	200	880	1305	26	135
			3×L×6		82	105	109	122	122	2010.9	150	250	200	880	1305	26	135
			3×M×6		82	111	116	130	130	2533.9	150	260	220	980	1480	26	175
			3×M2×6		82	111	116	130	130	2587.7	150	260	220	980	1480	26	175
			4×N2×6		102	140	140	149	149	3421.2	150	265	240	1055	1615	26	250
			4×P×6		102	146	146	160	160	4500.7	150	310	265	1270	1920	26	400
			4×P×8		102	146	146	160	160	4500.7	200	310	265	1270	1920	29	400
			6×Q0×8	4.8	152	203	203	210	210	5462.9	200	330	265	1310	1950	29	500
			6×Q1×8		152	203	203	210	210	6418.4	200	340	280	1410	2090	29	530
			6×Q×8		152	203	203	210	210	7791.3	200	360	290	1450	2150	29	550
			6×Q×10		152	203	203	210	210	7791.3	250	360	290	1450	2150	31	600
			6×R×10		152	210	210	232	232	11272.0	250	400	320	1605	2385	31	800
			6×RR×10		152	210	210	232	232	12687.6	250	400	320	1605	2385	31	800
			8×T×12	3.4	202	230	230	256	256	18337.3	300	370	350	1690	2520	32	950

Connection size means the inlet or outlet nominal flange size.
Note carefully that inlet diameter means the inside diameter of the safety valve inlet, which is not the same as inlet flange size

SL5( )( )-M／M2 Series Application Range and Dimensions



Flange Type



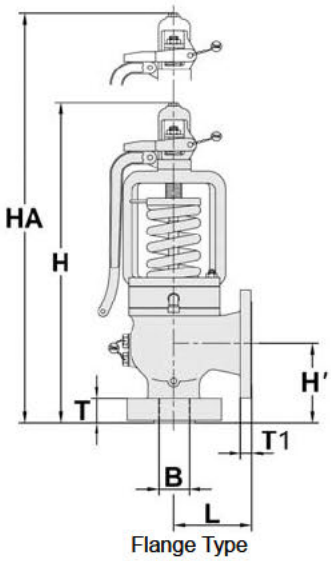
welded Type

(Unit:mm)

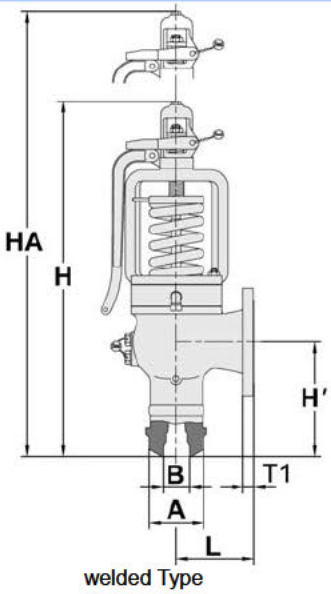
Style	Connection		Size	Pressure and Temperature Limits MPaG				Inlet Dia.	Throat area mm²	Outlet Dia.	Center to Face		Height	Dismantling Height	Thickness of Flange		Approx. Weight
	Inlet	Outlet		400℃	510℃	571℃	621℃	B			H'	L	H	HA	Inlet T	Outlet T1	kg
SL501	ASME 900Lb RF	ASME 150Lb RF	2×F1×3	6.18	6.18	3.55	2.03	40	216.4	80	150	150	600	900	48	19.1	90
			2×G1×3					40	353.0	80	150	150	600	900	48	19.1	90
			2×H×3					40	555.7	80	150	150	600	900	48	19.1	90
			2-1/2×J×4					50	907.9	100	170	180	715	1100	55	24	120
			2-1/2×K×6					65	1294.6	150	200	190	760	1150	58	26	135
			3×K2×6					65	1727.6	150	195	200	825	1250	53	26	150
			3×L×6					80	2010.9	150	195	200	825	1250	53	26	150
			4×M×6					80	2533.9	150	230	220	950	1450	68	26	190
			4×M2×6					80	2587.7	150	230	220	950	1450	68	26	190
			4×N2×6					100	3421.2	150	250	240	1040	1600	80	26	270
			6×P×6					100	4500.7	150	290	265	1250	1900	90	26	360
			6×P×8					100	4500.7	200	290	265	1250	1900	90	29	450
			6×Q0×8					150	5462.9	200	290	265	1270	1910	90	29	550
			6×Q1×8					150	6418.4	200	300	280	1370	2050	90	29	580
			6×Q×8					150	7791.3	200	310	290	1400	2100	90	29	600
			6×Q×10					150	7791.3	250	310	290	1400	2100	90	31	650
			8×R×10	5.49	5.49			150	11272.0	250	345	320	1550	2330	84	31	850
			8×RR×10					150	12687.6	250	345	320	1550	2330	84	31	850

Style	Connection		Size	Pressure Limits MPaG	Inlet Dia.	Max. temperature material specification for Inlet Neck A Inlet Neck O.D				Throat area mm²	Outlet Dia.	Center to Face		Height	Dismantling Height	Thickness of Flange	Approx. Weight
	Inlet	Outlet			B	400℃	510℃	571℃	621℃			H'	L	H	HA	T1	kg
SL503	Welded	ASME 150Lb RF	1-1/2×F1×3	6.18	42	70	70	80	80	216.4	80	170	150	620	920	19.1	80
			1-1/2×G1×3		42	70	70	80	80	353.0	80	170	150	620	920	19.1	80
			1-1/2×H×3		42	70	70	80	80	555.7	80	170	150	620	920	19.1	80
			2×J×4		52	83	83	90	90	907.9	100	195	180	740	1125	24	100
			2-1/2×K×6		67	102	102	110	110	1294.6	150	235	190	795	1185	26	120
			2-1/2×K2×6		67	102	102	115	115	1727.6	150	250	200	880	1305	26	130
			3×L×6		82	108	113	126	126	2010.9	150	250	200	880	1305	26	130
			3×M×6		82	117	120	135	135	2533.9	150	260	220	980	1480	26	180
			3×M2×6		82	117	120	135	135	2587.7	150	260	220	980	1480	26	180
			4×N2×6		102	146	146	154	154	3421.2	150	265	240	1055	1615	26	250
			4×P×6		102	156	156	168	168	4500.7	150	310	265	1270	1920	26	400
			4×P×8		102	156	156	168	168	4500.7	200	310	265	1270	1920	29	400
			6×Q0×8		152	200	200	210	210	5462.9	200	330	265	1310	1950	29	500
			6×Q1×8		152	210	210	222	222	6418.4	200	340	280	1410	2090	29	530
			6×Q×8		152	210	210	222	222	7791.3	200	360	290	1450	2150	29	550
			6×Q×10		152	210	210	222	222	7791.3	250	360	290	1450	2150	31	600
			6×R×10	5.49	152	216	216	240	240	11272.0	250	400	320	1605	2385	31	800
			6×RR×10		152	216	216	240	240	12687.6	250	400	320	1605	2385	31	800

Connection size means the inlet or outlet nominal flange size.
Note carefully that inlet diameter means the inside diameter of the safety valve inlet, which is not the same as inlet flange size



Flange Type



welded Type

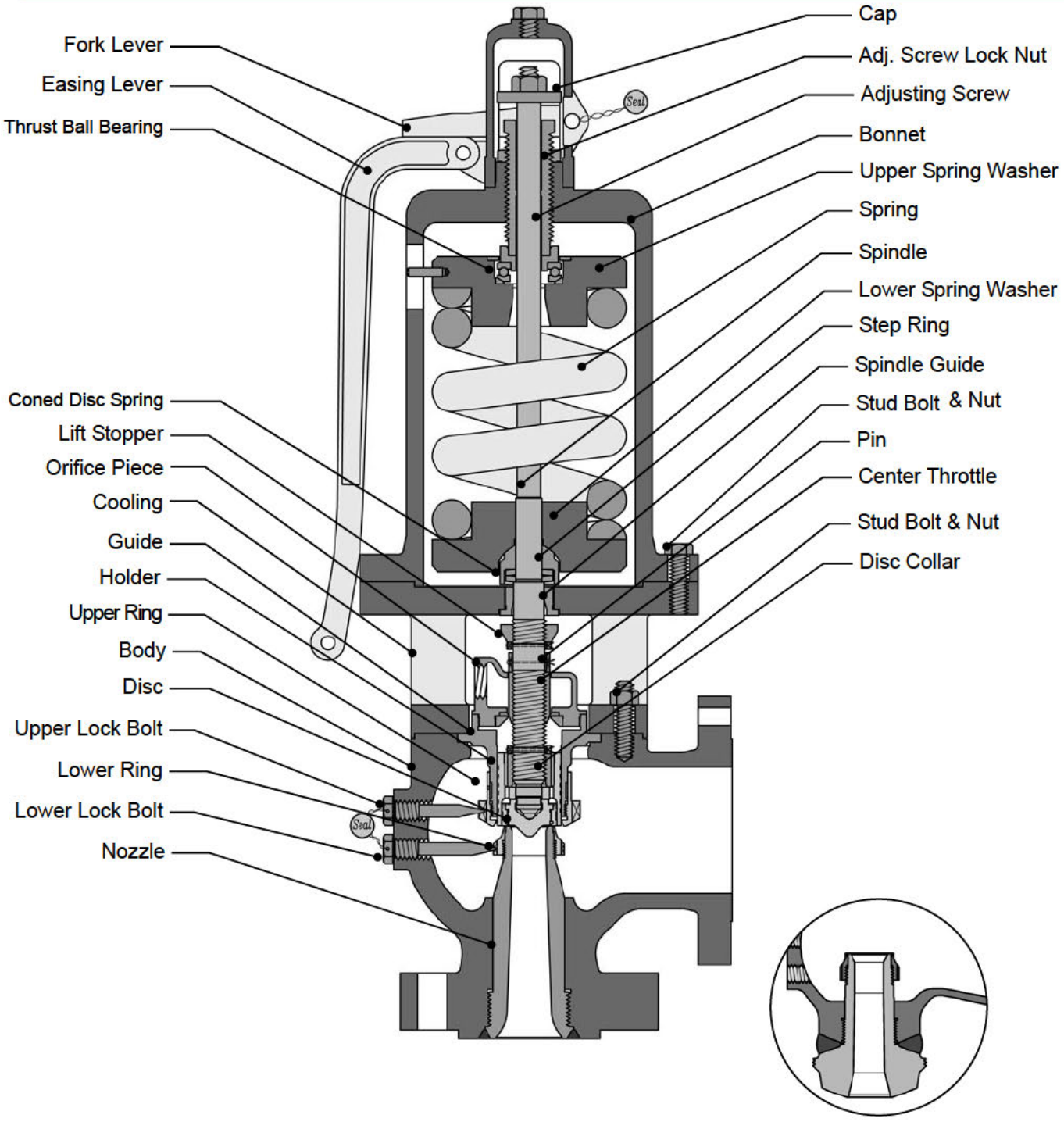
(Unit:mm)

Style	Connection		Size	Pressure and Temperature Limits MPaG				Inlet Dia.	Throat area mm²	Outlet Dia.	Center to Face		Height	Dismantling Height	Thickness of Flange		Approx. Weight
	Inlet	Outlet		400℃	510℃	571℃	621℃	B			H'	L	H	HA	Inlet T	Outlet T1	kg
SL601	ASME 1500Lb RF	ASME 150Lb RF	2×F1×3	10.3	10.3	5.58	3.39	40	216.4	80	150	150	600	900	48	19.1	90
			2×G1×3					40	353.0	80	150	150	600	900	48	19.1	90
			2×H×3					40	555.7	80	150	150	600	900	48	19.1	90
			2-1/2×J×4					50	907.9	100	170	180	715	1100	55	24	120
			2-1/2×K×6					65	1294.6	150	200	190	865	1300	58	26	140
			3×K2×6					65	1727.6	150	210	200	970	1500	68	26	170
			3×L×6					80	2010.9	150	210	200	970	1500	68	26	170
			4×M×6					80	2533.9	150	230	220	1055	1600	68	26	210
			4×M2×6					80	2587.7	150	230	220	1055	1600	68	26	210
			4×N2×6					100	3421.2	150	250	240	1250	1900	80	26	350
			6×P×6					100	4500.7	150	290	265	1420	2150	90	26	550
			6×P×8					100	4500.7	200	290	265	1420	2150	90	29	570
			6×Q0×8					150	5462.9	200	290	265	1430	2150	90	29	650
			6×Q1×8					150	6418.4	200	300	280	1580	2370	90	29	700
			6×Q×8					150	7791.3	200	310	290	1590	2390	90	29	850
			6×Q×10					150	7791.3	250	310	290	1590	2390	90	31	900
			8×R×10	8.23	8.23			150	11272.0	250	360	320	1780	2670	99	31	1100
			8×RR×10					150	12687.6	250	360	320	1780	2670	99	31	1100

Style	Connection		Size	Pressure Limits MPaG	Inlet Dia.	Max. temperature material specification for Inlet Neck A Inlet Neck O.D				Throat area mm²	Outlet Dia.	Center to Face		Height	Dismantling Height	Thickness of Flange	Approx. Weight
	Inlet	Outlet			B	400℃	510℃	571℃	621℃			H'	L	H	HA	T1	kg
SL603	Welded	ASME 150Lb RF	1-1/2×F1×3	10.3	42	80	80	86	86	216.4	80	170	150	620	920	19.1	80
			1-1/2×G1×3		42	80	80	86	86	353.0	80	170	150	620	920	19.1	80
			1-1/2×H×3		42	80	80	86	86	555.7	80	170	150	620	920	19.1	80
			2×J×4		52	90	96	102	102	907.9	100	195	180	740	1130	24	110
			2-1/2×K×6		67	108	115	128	128	1294.6	150	235	190	900	1340	26	120
			2-1/2×K2×6		67	120	120	140	140	1727.6	150	250	200	1010	1540	26	150
			3×L×6		82	124	131	152	152	2010.9	150	250	200	1010	1540	26	150
			3×M×6		82	137	140	163	163	2533.9	150	260	220	1090	1630	26	200
			3×M2×6		82	137	140	163	163	2587.7	150	260	220	1090	1630	26	200
			4×N2×6		102	160	160	184	184	3421.2	150	265	240	1270	1920	26	320
			4×P×6		102	170	172	199	199	4500.7	150	310	265	1440	2170	26	500
			4×P×8		102	170	172	199	199	4500.7	200	310	265	1440	2170	29	520
			6×Q0×8		152	200	206	233	233	5462.9	200	330	265	1470	2190	29	600
			6×Q1×8		152	205	216	242	242	6418.4	200	340	280	1620	2410	29	650
			6×Q×8		152	210	220	251	251	7791.3	200	360	290	1640	2440	29	800
			6×Q×10		152	210	220	251	251	7791.3	250	360	290	1640	2440	31	850
			6×R×10	8.23	152	215	224	254	254	11272.0	250	400	320	1820	2710	31	1050
			6×RR×10		152	215	224	254	254	12687.6	250	400	320	1820	2710	31	1050

Connection size means the inlet or outlet nominal flange size.
Note carefully that inlet diameter means the inside diameter of the safety valve inlet, which is not the same as inlet flange size

SL7( )( )～9( )( )－H1 Series Parts Names



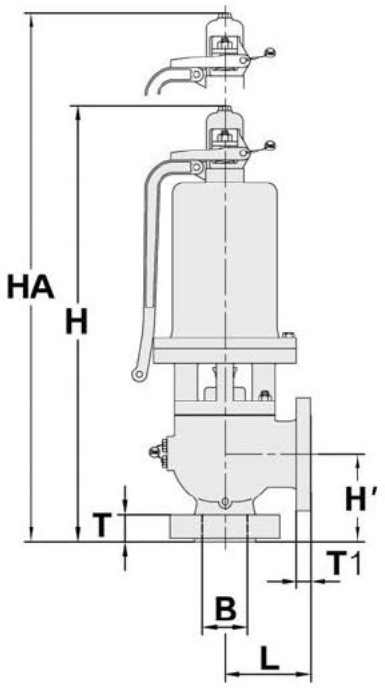
Welded type full nozzle

(Unit:mm²)

Orifice Letter	F1	G1	H	J	K	K2	L	M	M2	P
Throat area	216.4	353.0	555.7	907.9	1294.6	1727.6	2010.9	2533.9	2587.7	4500.7

	Type		SL( )3( )	SL( )5( )	SL( )6( )	SL( )7( )
	Maximum Temperature		400˚C 750˚F	510˚C 950˚F	571˚C 1060˚F	621˚C 1150˚F
Parts Name	Nozzle *1		SA105M	SA182M-F12	SA182M-F22 or SA182M-F91	SA182M-F91
	Disc		B637-N07750			B637-N07718
	Disc collar		SUS630			B637-N07750
	Holder		SUS420J2			
	Body		SA216N-WCB	SA217M-WC6	SA217M-WC9	CASE 2192
	Cooling	Cooling	SA216M-WCB	SA217M-WC6		
		SUS630	SUS630			
	Bonnet		SA216M-WCB			
	Spindle		SILICOLLOY A2			
	Guide		SUS420J2 or SCS1			
	Upper or Lower Ring		SUS304			
	Upper Lock Bolt		SUS431			
	Lower Lock Bolt		SUS431		B637-N07750	
	Lower Spring Washer		SUS403			
	Coned Disc Spring		SUS630			
	Upper Spring Washer	SUS403	SUS403			
		Thrust Ball Bearing	Thrust Metal			
	Spring		Carbon Steel or Alloy Steel			
	Adjusting Screw		SUS420J2			
	Adj. Screw Lock Nut		SUS304			
	Orifice Piece		SCS13A			
	Lift Stopper		SUS420J2			
	Center Throttle		SUS630			
	Step Ring		SUS420J2			
	Stud Bolt & Nut(Body)		SNB7 / S45C		SNB16 / A194-4	
	Stud Bolt & Nut(Bonnet)		SNB7 / S45C			
	Cap		FCD450-10			
	Fork Lever		FCMB310-8			
	Easing Lever		FCMB310-8			
	Pin		SUS304			

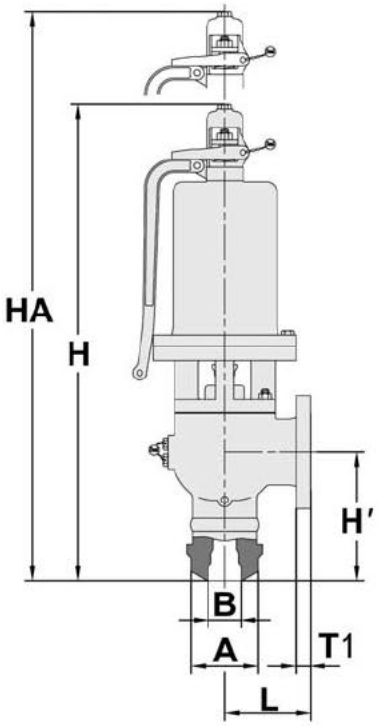
*1 : Bishilite deposited on the seat surface.



(Unit:mm)

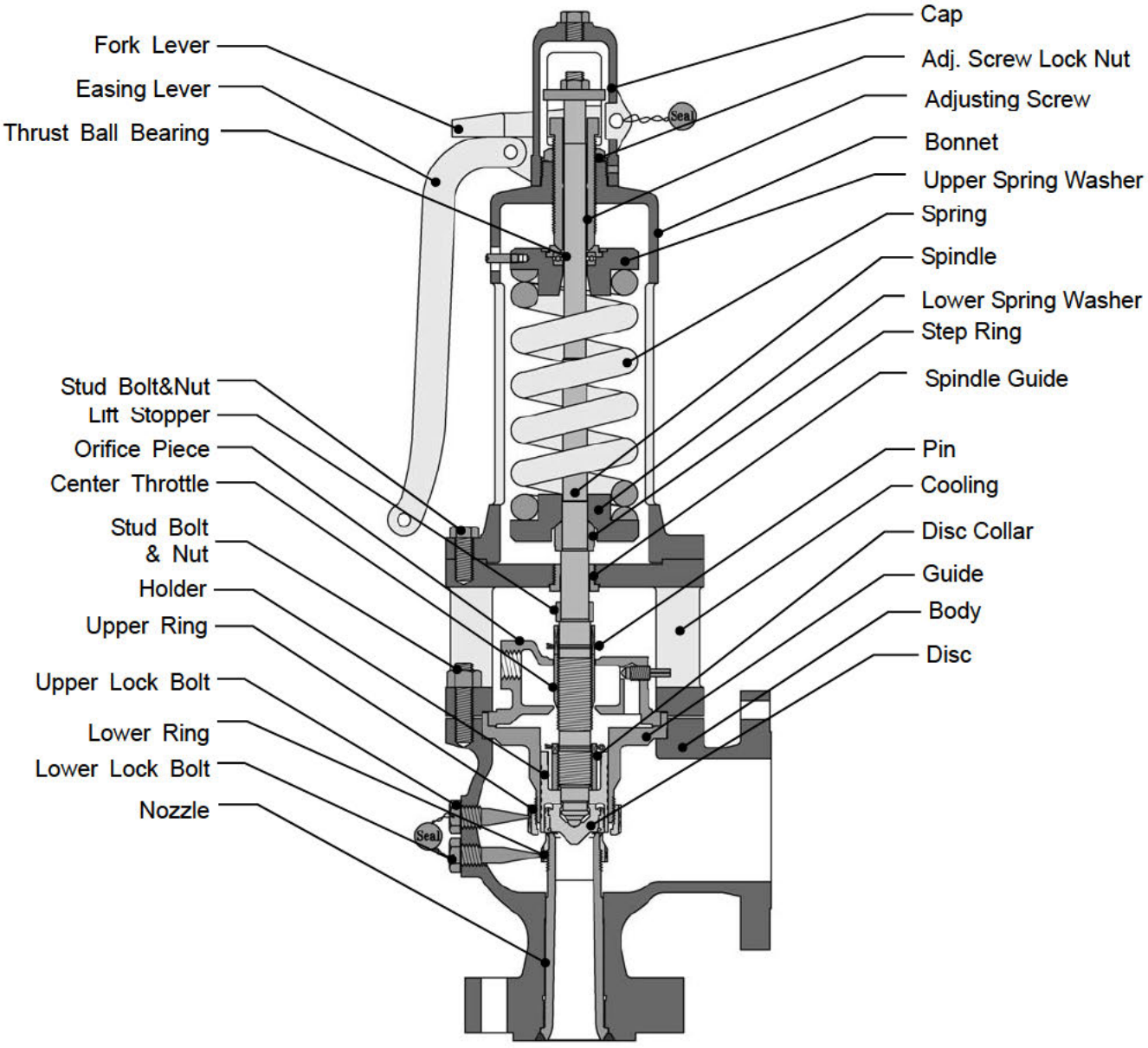
Style	Connection		Size	Pressure and Temperature Limits MPaG				Inlet Dia.	Throat area mm^2	Outlet Dia.	Center to Face		Height	Dismantling Height	Thickness of Flange		Approx. Weight
	Inlet	Outlet		400℃	510℃	571℃	621℃	B			H'	L	H	HA	Inlet T	Outlet T1	kg
SL701	ASME 2500Lb RF	ASME 300Lb RF	2×F1×4	13.7	13.7	9.28	5.66	40	216.4	100	230	169	930	1230	65	32	150
			2×G1×4					40	353.0	100	230	169	930	1230	65	32	150
			2×H×4					40	555.7	100	230	169	930	1230	65	32	150
			2-1/2×J×4					50	907.9	100	230	220	1080	1380	74	32	200
			3×K×6					65	1294.6	150	270	240	1165	1515	84	37	300
			3×K2×6					65	1727.6	150	280	240	1325	1775	84	37	350
			4×L×6					80	2010.9	150	280	240	1350	1800	96	37	350
			4×M×6					80	2533.9	150	300	260	1570	2120	96	37	500
			4×M2×6					80	2587.7	150	300	260	1570	2120	96	37	500
SL801	ASME 2500Lb RF	ASME 300Lb RF	2×F1×4	17.1	17.1	9.28	5.66	40	216.4	100	230	169	930	1230	65	32	150
			2×G1×4					40	353.0	100	230	169	930	1230	65	32	150
			2×H×4					40	555.7	100	230	169	930	1230	65	32	150
			2-1/2×J×4					50	907.9	100	230	220	1080	1380	74	32	250
			3×K×6					65	1294.6	150	270	240	1265	1715	84	37	350
			3×K2×6					65	1727.6	150	280	240	1475	1975	84	37	400
			4×L×6					80	2010.9	150	280	240	1500	2000	96	37	400
			4×M×6					80	2533.9	150	300	260	1620	2270	96	37	650
			4×M2×6					80	2588.7	150	300	260	1620	2270	96	37	650

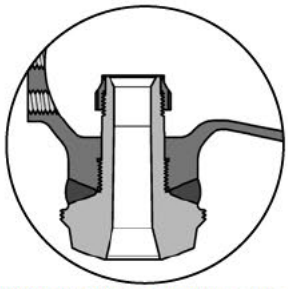
Connection size means the inlet or outlet nominal flange size.
Note carefully that inlet diameter means the inside diameter of the safety valve inlet, which is not the same as inlet flange size.



(Unit:mm)

Style	Connection		Size	Pressure Limits MPaG	Inlet Dia	Max. temperature material specification for Inlet Neck A Inlet Neck O.D.				Throat area mm^2	Outlet Dia.	Center to Face		Height	Dismantling Height	Thickness of Flange	Approx. Weight
	Inlet	Outlet			B	400℃	510℃	571℃	621℃			H'	L	H	HA	T1	kg
SL703	Welded	ASME 300Lb RF	1-1/2×F1×4	13.7	42	90	90	96	96	216.4	100	250	169	960	1260	32	150
			1-1/2×G1×4		42	90	90	96	96	353.0	100	250	169	960	1260	32	150
			1-1/2×H×4		42	90	90	96	96	555.7	100	250	169	960	1260	32	150
			2×J×4		52	110	110	120	120	907.9	100	250	220	1120	1420	32	200
			2-1/2×K×6		67	120	125	145	145	1294.6	150	305	240	1200	1550	37	300
			2-1/2×K2×6		67	135	145	152	152	1727.6	150	305	240	1370	1820	37	350
			3×L×6		82	140	140	155	155	2010.9	150	305	240	1370	1820	37	350
			3×M×6		82	150	150	170	170	2533.9	150	305	260	1570	2120	37	500
			3×M2×6		82	150	150	170	170	2587.7	150	305	260	1570	2120	37	500
SL803	Welded	ASME 300Lb RF	1-1/2×F1×4	17.1	42	95	95	105	105	216.4	100	250	169	960	1260	32	150
			1-1/2×G1×4		42	95	95	105	105	353.0	100	250	169	960	1260	32	150
			1-1/2×H×4		42	95	95	105	105	555.7	100	250	169	960	1260	32	150
			2×J×4		52	110	110	130	130	907.9	100	250	220	1120	1420	32	250
			2-1/2×K×6		67	130	130	145	145	1294.6	150	305	240	1300	1750	37	350
			2-1/2×K2×6		67	145	145	160	160	1727.6	150	305	240	1520	2020	37	400
			3×L×6		82	150	155	170	170	2010.9	150	305	240	1520	2020	37	400
			3×M×6		82	160	165	185	185	2533.9	150	305	260	1620	2270	37	650
			3×M2×6		82	160	165	185	185	2587.7	150	305	260	1620	2270	37	650
			4×P×8		102	210	220	240	240	4500.7	200	396	315	1900	2800	42	950
SL903	Welded	ASME 300Lb RF	1-1/2×F1×4	21.0	42	105	105	120	120	216.4	100	250	169	960	1260	32	150
			1-1/2×G1×4		42	105	105	120	120	353.0	100	250	169	960	1260	32	150
			1-1/2×H×4		42	105	105	120	120	555.7	100	250	169	960	1260	32	150
			2×J×4		42	125	125	145	145	907.9	100	250	220	1120	1420	32	250
			2-1/2×K×6		67	145	145	165	165	1294.6	150	305	240	1300	1750	37	350
			2-1/2×K2×6		67	155	155	180	180	1727.6	150	305	240	1520	2020	37	400
			3×L×6		82	160	170	195	195	2010.9	150	305	240	1520	2020	37	400
			3×M×6		82	165	180	210	210	2533.9	150	305	260	1620	2270	37	650
			3×M2×6		82	165	180	210	210	2587.7	150	305	260	1620	2270	37	650
			4×P×8		102	220	240	265	265	4500.7	200	396	315	1900	2800	42	950





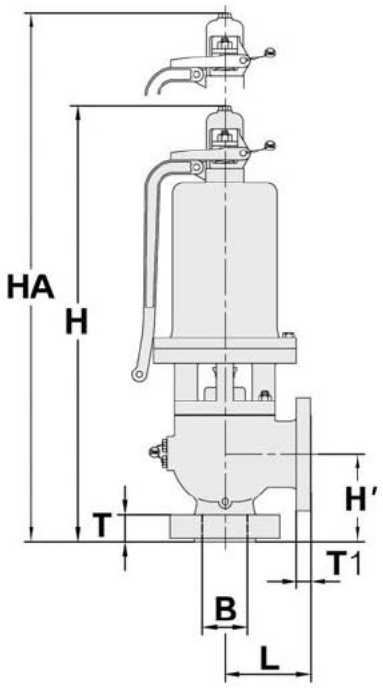
Welded type full nozzle

(Unit: mm²)

Orifice Letter	F1	G1	H	J	K	K2	L	M	M2
Throat area	216.4	353.0	555.7	907.9	1294.6	1727.6	2010.9	2533.9	2587.7

	Type		SL( )3( )	SL( )5( )	SL( )6( )	SL( )7( )
	Maximum Temperature		400˚C 750˚F	510˚C 950˚F	571˚C 1060˚F	621˚C 1150˚F
Parts Name	Nozzle *1		SA105M	SA182M-F12	SA182M-F22	SA182M-F91
	Disc		B637-N07750			B637-N07718
	Disc Collar		SUS630			B637-N07750
	Holder		SUS420J2			
	Body		SA216M-WCB	SA217M-WC6	SA217M-WC9	CASE 2192
	Cooling	Cooling	SA216M-WCB	SA217M-WC6		
		Spindle Guide	SUS630			
	Bonnet		SA216M-WCB			
	Spindle		SUS403	SUS431		
	Guide		SUS420J2 or SCS1			
	Upper or Lower Ring		SUS304			
	Upper Lock Bolt		SUS431			
	Lower Lock Bolt		SUS431		B637 N07750	
	Lower Spring Washer		SUS403			
	Upper Spring Washer	Upper Spring Washer	SUS403			
		Thrust Ball Bearing	Thrust Metal			
	Spring		Carbon Steel or Alloy Steel			
	Adjusting Screw		SUS420J2			
	Adj. Screw Lock Nut		SUS304			
	Orifice Piece		SCS13A			
	Lift Stopper		SUS420J2			
	Center Throttle		SUS304			
	Step Ring		SUS420J2			
	Stud Bolt & Nut(Body)		SNB7 / S45C		SNB16 / A194-4	
	Stud Bolt & Nut(Bonnet)		SNB7 / S45C			
	Cap		FCD450-10			
	Fork Lever		FCMB310-8			
	Easing Lever		FCMB310-8			
	Pin		SUS304			

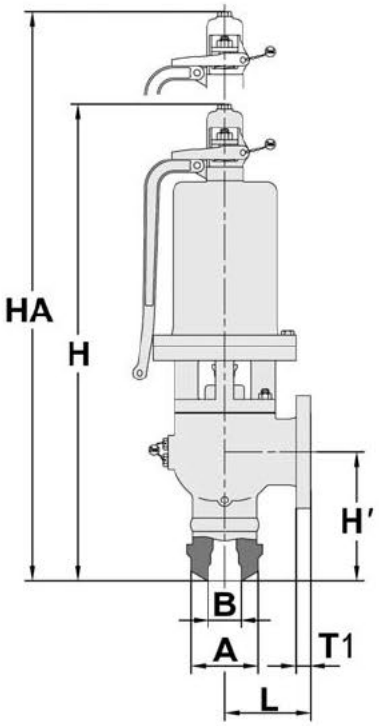
*1 : Bishilite deposited on the seat surface.



(Unit:mm)

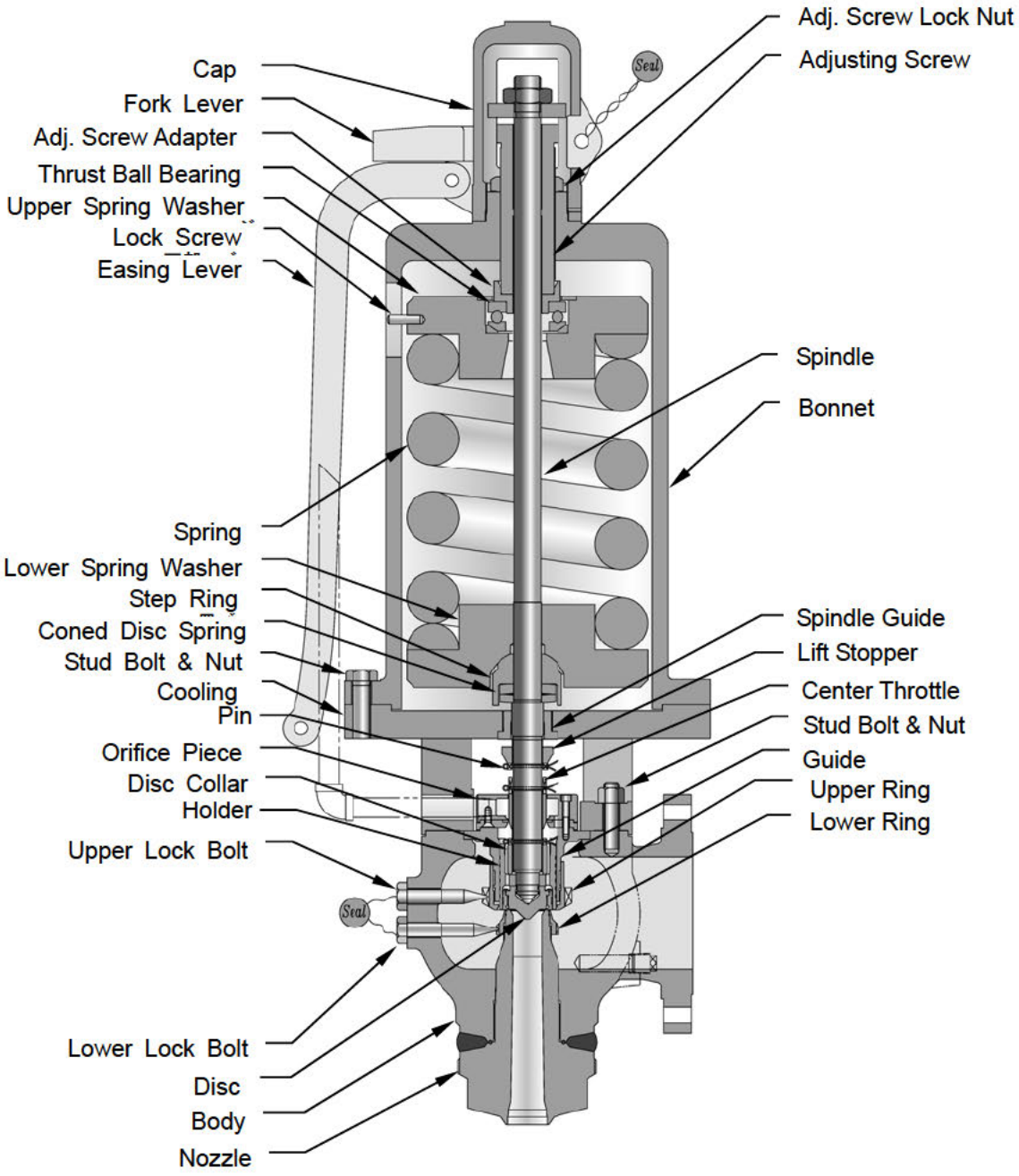
Style	Connection		Size	Pressure and Temperature Limits MPaG				Inlet Dia.	Throat area mm^2	Outlet Dia.	Center to Face		Height	Dismantling Height	Thickness of Flange		Approx Weight
	Inlet	Outlet		400℃	510℃	571℃	621℃	B			H'	L	H	HA	Inlet T	Outlet T1	kg
SL701	ASME 2500Lb RF	ASME 300Lb RF	1-1/2×F1×4	13.7	13.7	9.28	5.66	40	216.4	100	220	200	920	1200	58	32	102
			1-1/2×G1×4					40	353.0	100	220	200	920	1200	58	32	102
			1-1/2×H×4					40	555.7	100	220	200	920	1200	58	32	102
			2×J×4					50	907.9	100	220	220	980	1295	65	32	148
			2-1/2×K×6					65	1294.6	150	270	240	1160	1530	74	37	217
			2-1/2×K2×6					65	1727.6	150	270	240	1250	1690	77	37	250
			3×L×6					80	2010.9	150	280	260	1260	1700	84	37	258
			3×M×6					80	2533.9	150	280	260	1525	2090	84	37	447
			3×M2×6					80	2587.7	150	280	260	1525	2090	84	37	447
SL801	ASME 2500Lb RF	ASME 300Lb RF	1-1/2×F1×4	17.1	17.1	9.28	5.66	40	216.4	100	220	200	920	1200	58	32	102
			1-1/2×G1×4					40	353.0	100	220	200	920	1200	58	32	102
			1-1/2×H×4					40	555.7	100	220	200	920	1200	58	32	102
			2×J×4					50	907.9	100	220	220	980	1295	65	32	148
			2-1/2×K×6					65	1294.6	150	270	240	1160	1530	74	37	217
			2-1/2×K2×6					65	1727.6	150	270	240	1250	1690	77	37	250
			3×L×6					80	2010.9	150	280	260	1260	1700	84	37	258
			3×M×6					80	2533.9	150	280	260	1525	2090	84	37	447
			3×M2×6					80	2588.7	150	280	260	1525	2090	84	37	447

Connection size means the inlet or outlet nominal flange size.
Note carefully that inlet diameter means the inside diameter of the safety valve inlet, which is not the same as inlet flange size.



(Unit:mm)

Style	Connection		Size	Pressure Limits MPaG	Inlet Dia.	Max. temperature material specification for Inlet Neck A Inlet Neck O.D.				Throat area mm^2	Outlet Dia.	Center to Face		Height	Dismantling Height	Thickness of Flange	Approx. Weight
	Inlet	Outlet			B	400℃	510℃	571℃	621℃			H'	L	H	HA	T1	kg
SL703	Welded	ASME 300Lb RF	1-1/2×F1×4	13.7	42	90	90	96	96	216.4	100	250	200	950	1230	32	102
			1-1/2×G1×4		42	90	90	96	96	353.0	100	250	200	950	1230	32	102
			1-1/2×H×4		42	90	90	96	96	555.7	100	250	200	950	1230	32	102
			2×J×4		52	108	108	116	116	907.9	100	250	220	1010	1325	32	148
			2-1/2×K×6		67	120	120	135	135	1294.6	150	305	240	1200	1550	37	217
			2-1/2×K2×6		67	130	130	145	145	1727.6	150	305	240	1285	1725	37	250
			3×L×6		82	140	140	155	155	2010.9	150	305	260	1285	1725	37	258
			3×M×6		82	150	150	162	162	2533.9	150	305	260	1570	2115	37	447
			3×M2×6		82	150	150	162	162	2587.7	150	305	260	1570	2115	37	447
SL803	Welded	ASME 300Lb RF	1-1/2×F1×4	17.1	42	92	92	104	104	216.4	100	250	200	950	1230	32	102
			1-1/2×G1×4		42	92	92	104	104	353.0	100	250	200	950	1230	32	102
			1-1/2×H×4		42	92	92	104	104	555.7	100	250	200	950	1230	32	102
			2×J×4		52	108	108	127	127	907.9	100	250	220	1010	1325	32	148
			2-1/2×K×6		67	128	128	143	143	1294.6	150	305	240	1200	1550	37	217
			2-1/2×K2×6		67	143	143	155	155	1727.6	150	305	240	1285	1725	37	250
			3×L×6		82	146	152	165	165	2010.9	150	305	260	1285	1725	37	258
			3×M×6		82	158	162	174	174	2533.9	150	305	260	1570	2115	37	447
			3×M2×6		82	158	162	174	174	2587.7	150	305	260	1570	2115	37	447

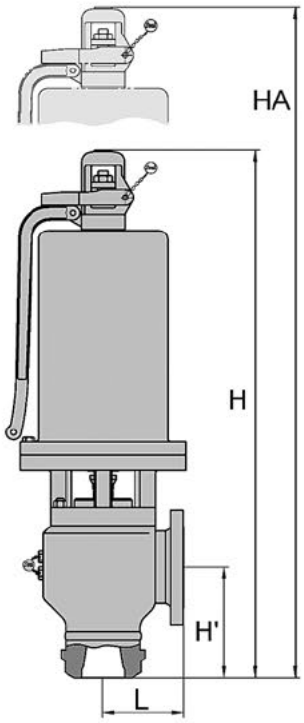


(Unt:mm²)

Orifice Letter	J3	K3	L	M2
Throat area	1164.1	1847.4	2010.9	2587.7

	Type	SL1033	SL1053	SL1063	SL1073
	Maximum Temperature	400°C 750°F	510°C 950°F	571°C 1000°F	621°C 1150°F
Parts Name	Nozzle *1	SA105M	SA182M-F12	SA182M-F22	SA182M-F91
	Body	SA216M-WCB	SA217M-WC6	SA217M-WC9	CASE 2192
	Disc	B637-N07750			B637-N07718
	Disc collar	SUS630			
	Holder	SUS420J2			
	Cooling	SA216M-WCB	SA217M-WC6	SA217M-WC9	CASE 2192
	Spindle Guide	B865 N05500			
	Bonnet	SA216M-WCB			
	Spindle	SILICOLLOY A2			
	Guide	SUS420J2			
	Upper Ring	SUS420J2			
	Lower Ring	SUS420J2			
	Upper Lock Bolt	SUS431			
	Lower Lock Bolt	SUS431		B637-N07750	
	Upper Spring Washer	SUS403			
	Coned Disc Spring	SUS630			
	Upper Spring Washer	SUS403			
	Thrust Ball Bearing	Thrust Metal			
	Adj. Screw Adapter	SUS430			
	Spring	Alloy Steel			
	Adjusting Screw	SUS420J2			
	Adj Screw Lock Nut	SUS304			
	Orifice Piece	SUS304			
	Lock Screw	SUS304			
	Lift Stopper	SUS420J2			
	Center Throttle	SUS630			
	Step Ring	SUS420J2			
	Stud Bolt & Nut(Body)	SNB7 / S45C		SNB16/A194-4	
	Stud Bolt & Nut(Bonnet)	SNB7 / S45C			
	Cap	FCD450-10			
	Fork Lever	FCMB310-8			
	Easing Lever	FCMB310-8			
	Pin	SUS304			

*1 : Bishilite deposited on the seat surface.



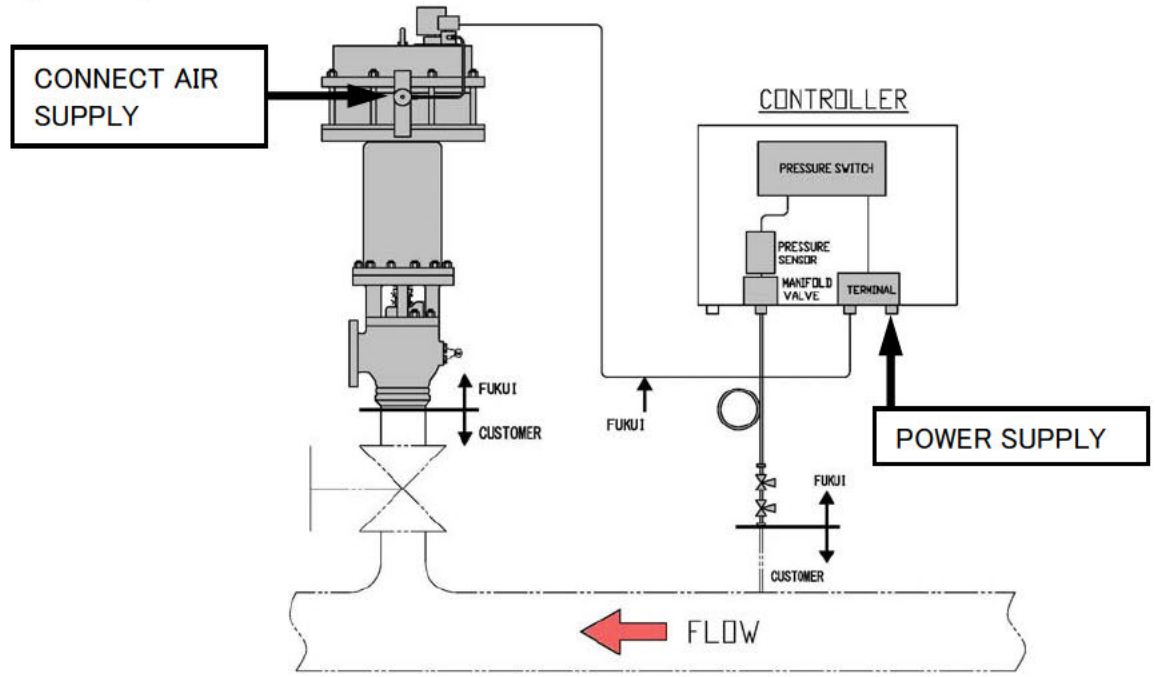
(Unit:mm)

Connection		Size	Pressure and Temperature Limits MPaG					Inlet Dia	Throat area mm^2	Outlet Dia.	Center to Face		Height	Disman ling Height	Approx Weight
Inlet	Outlet		400℃	450℃	549℃	571℃	621℃	B			H'	L	H	HA	kg
Welded	ASME 300Lb RF	2×J3×6	36.8	34.8	33.8	31.3	27.0	52	1164.1	150	280	220	1500	2050	580
		2-1/2×K3×8						67	1847.4	200	325	250	1700	2400	830
		3×L×8						82	2010.9	200	325	270	1720	2450	900
		3×M2×8						82	2587.7	200	325	270	1850	2600	980

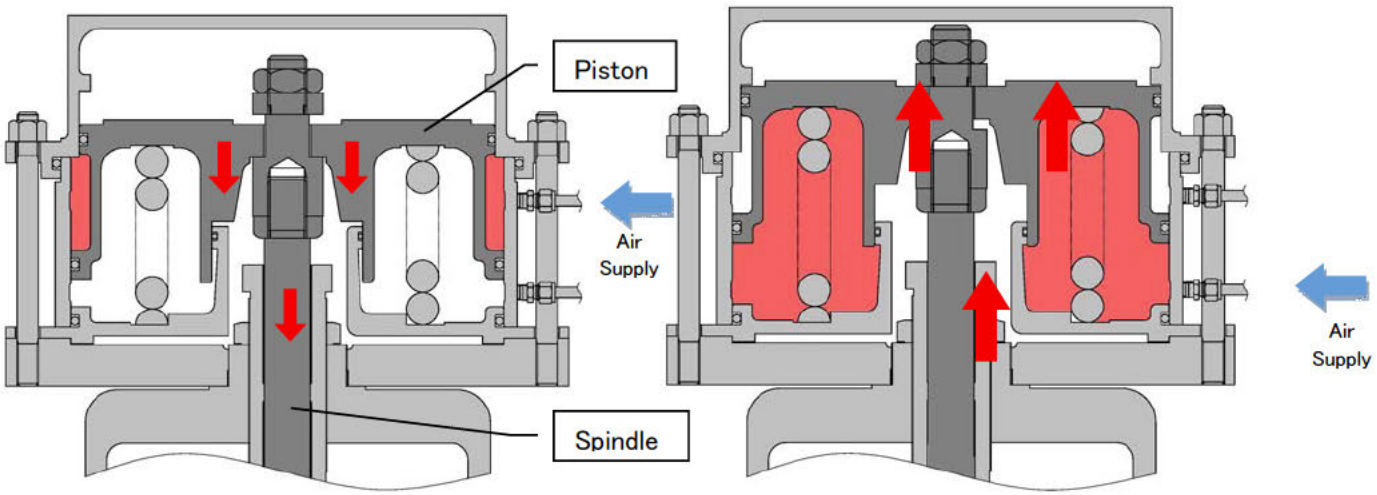
SL-PA series is product of SL series equipped with a dual cylinder. During normal operation, the spindle is pushed down by the Piston, so the seat leak performance is high. Also even in case of power failure, the function as a single safety valve can be secured.
Specification (Relieving capacity, Size, etc.) is based on SL series.

Item	Specification
Maximum adjusting pressure	36.8 MPa　(Same as SL400～SL1000 series)
Power supply	AC100 V ～ AC240 V
Power consumption	60 W
Supply air	0.5 MPa ～ 0.8 MPa(Clean and dry air)
Minimum required pressure for popping test	1 MPa

- Figure of System



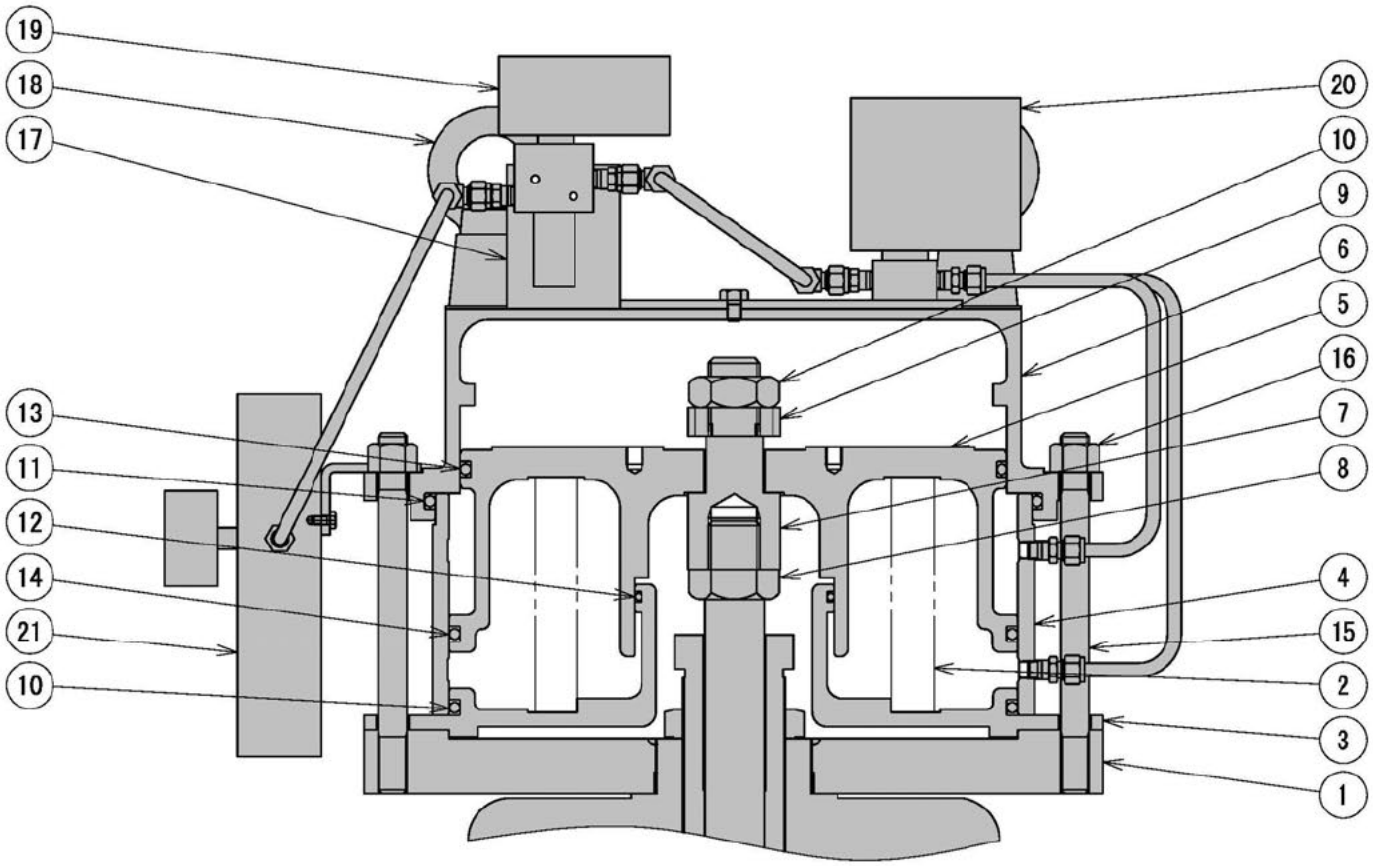
- Figure of Operation



Valve Close
The piston receives down force and pushes the spindle.

Valve Open
The piston receives up force and pulls the spindle.

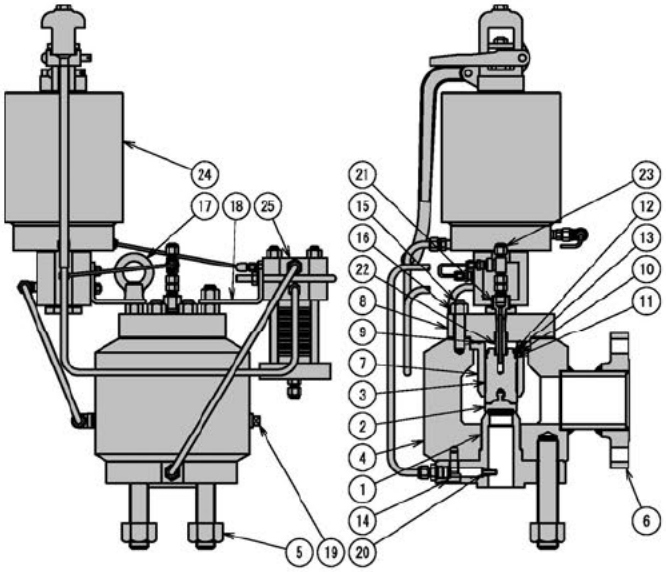
SL-PA Series　Parts name of power operated relief valve



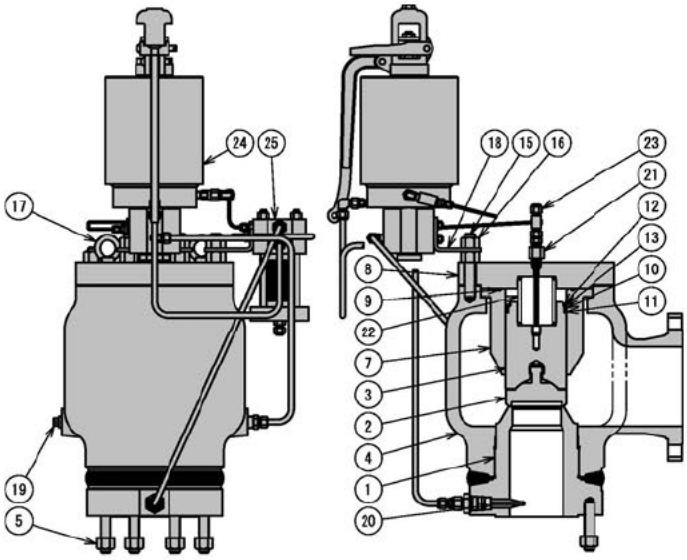
Parts NO.	Parts name	Material
1	Bonnet flange	SUS304
2	Spring	SUS304
3	Bottom flange	SCS13
4	Cylinder	SCS13
5	Piston	SCS13
6	Top flange	SCS13
7	Stem	SUS630
8	Stem nut	SUS304
9	Lifting washer	SUS304
10	Lifting nut	SUS304
11	O Ring	NBR
12	O Ring	NBR
13	O Ring	NBR
14	O Ring	NBR
15	Through bolt	SUS304
16	Nut	SUS304
17	Solenoid base	SUS304
18	Eye bolt	SUS304
19	3-Port solenoid valve	Commercial product
20	5-Port solenoid valve	Commercial product
21	Regulator filter	Commercial product

Note:

RPE Series Pilot Safety Valve of Economaizer Parts Names



Inlet Size＝1.1/2 , 2

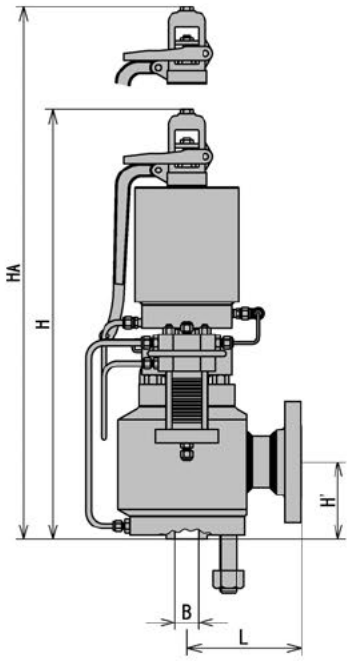


Inlet Size＝3 to 8

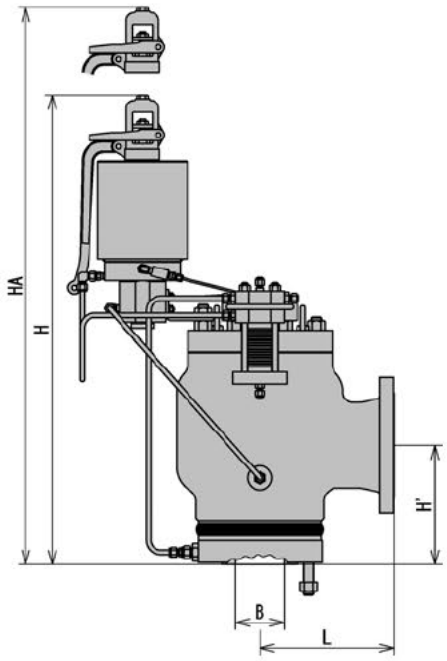
Parts Materials

No.	Parts Name	Inlet Size	
		1.1/2 , 2	3 to 8
1	Nozzle	SA105M	
2	Disc	SUS630 (≦320℃) or B637-N07750 (>320℃)	
3	Piston	SUS630	
4	Body	SA105M	SA216M-WCB
5	Inlet Stud Bolt & Nut	SA193-B7, SA194-2H	
6	Outlet Flange	SA105M	—
7	Guide	SUS304	
8	Cover	SA479M-304	
9	O-Ring	KALREZ®	
10	Piston Seal	SUS304.GRAPHITE	
11	Back Up Ring	PTFE	
12	Spiral Ring	SUS304	
13	Seal Cover	SUS304	
14	Hex. Sockt Screw	SUS304	—
15	Cover Stud Bolt	SA193-B7	
16	Cover Nut	SA194-2H	
17	Eye Bolt or Eye Nut	SUS304	
18	Support	SS400	
19	Drain Plug	SUS304	
20	Sense Tube	SUS304	
21	Bush	SUS304	
22	Spring	SUS304-WPB	
23	Plug	SUS304	
24	Pilot ASSY.	SUS304/SUS316/SUS630 etc.	
25	Heat Exchanger	SUS316	

Note: Manufacturing specifications and materials are subject to change without notice.



Inlet Size＝1.1/2 , 2



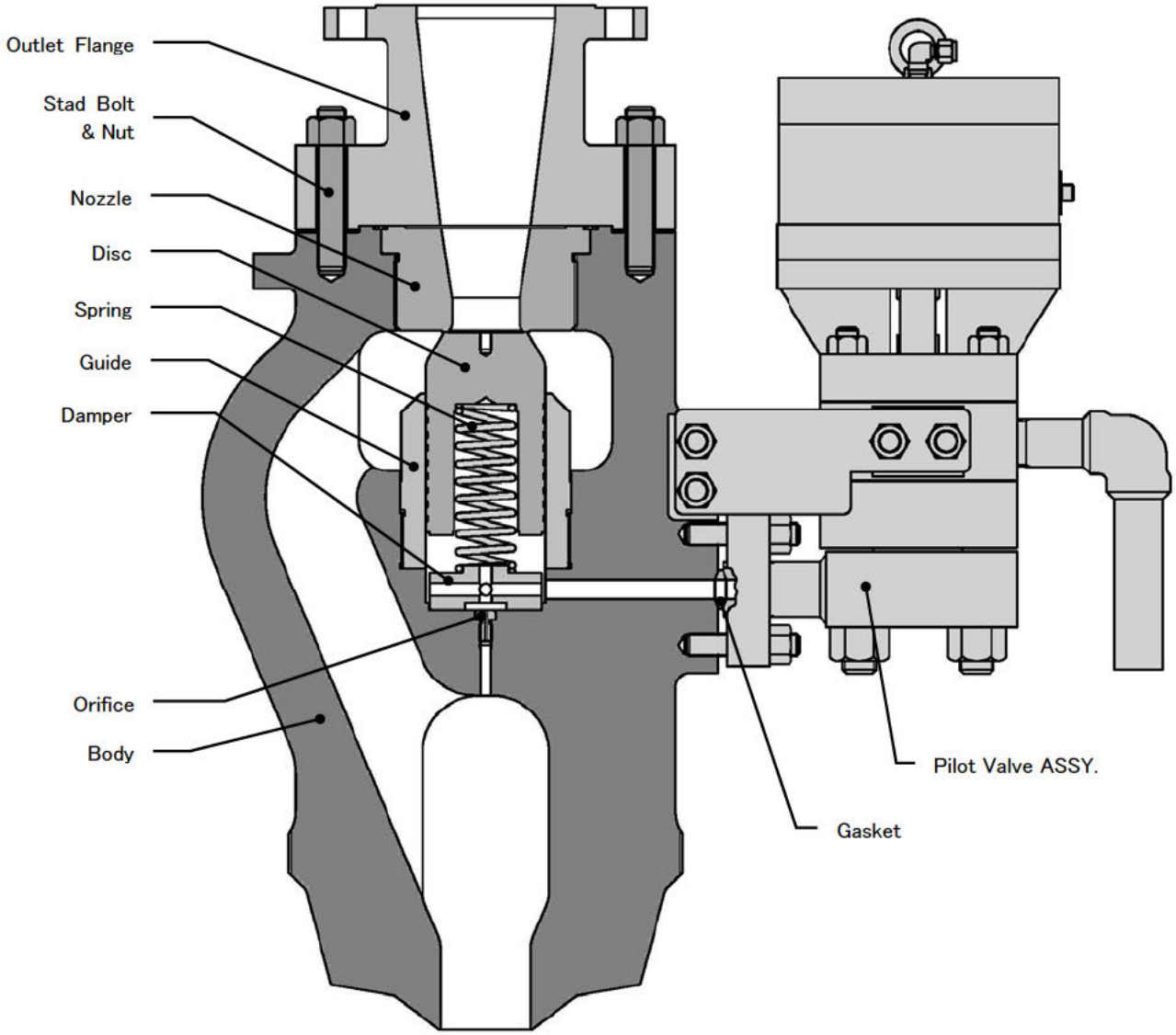
Inlet Size＝3 to 8

Style	Inlet ASME	Outlet ASME	Installation size Inlet×Outlet	Press. and Tenp. Limits (MPa) 38℃	200℃	350℃	Inlet Dia. B (mm)	Throat area (mm^2)	Outlet Dia (mm)	Center to Face H' (mm)	L (mm)	Height H (mm)	Dismantling Height HA (mm)	Drain Hole Rc	Approx Weight (kg)
RPE331	300Lb	150Lb	1-1/2×3	5.1 ※1	4.3 ※1	3.7 ※1	40	651.1	80	125	165	720	920	1/2	90
			1-1/2×3				40	1017.3	80	125	165	720	920	1/2	100
			2×3				50	1589.6	80	125	190	780	980	1/2	120
			3×6				80	4069.4	150	230	239	950	1150	1/2	180
			4×6				100	6358.5	150	245	274	1000	1200	1/2	220
			6×8				150	14306.6	200	340	350	1200	1400	1/2	350
			8×10				200	25434.0	250	430	450	1400	1600	1/2	600
RPE431	600Lb	150Lb	1-1/2×3	10.2	8.7	7.5	40	651.1	80	125	165	720	920	1/2	90
			1-1/2×3				40	1017.3	80	125	165	720	920	1/2	100
			2×3				50	1589.6	80	125	190	780	980	1/2	120
			3×6				80	4069.4	150	230	239	950	1150	1/2	180
			4×6				100	6358.5	150	255	274	1010	1210	1/2	230
			6×8				150	14306.6	200	355	350	1220	1420	1/2	370
			8×10				200	25434.0	250	445	450	1420	1620	1/2	620
RPE531	900Lb	150Lb	1-1/2×3	15.3	13.1	11.2	40	651.1	80	135	175	760	960	1/2	100
			1-1/2×3				40	1017.3	80	135	175	760	960	1/2	110
			2×3				50	1589.6	80	135	200	820	1020	1/2	130
			3×6				80	4069.4	150	240	239	960	1160	1/2	190
			4×6				100	6358.5	150	275	274	1030	1230	1/2	240
RPE631	1500Lb	300Lb	1-1/2×3	25.0	21.9	18.7	40	651.1	80	135	185	760	960	1/2	100
			1-1/2×3				40	1017.3	80	135	185	760	960	1/2	110
			2×3				50	1589.6	80	135	210	820	1020	1/2	130
			3×6				80	4069.4	150	270	250	1000	1200	1/2	200
			4×6				100	6358.5	150	285	285	1050	1250	1/2	250
RPE731	2500Lb	300Lb	1-1/2×3	25.0	25.0	25.0	40	651.1	80	135	200	770	970	1/2	110
			1-1/2×3				40	1017.3	80	135	200	770	970	1/2	120
			2×3				50	1589.6	80	135	230	830	1030	1/2	140

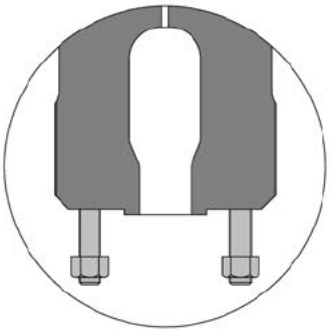
※1: Minimum Pressure:2MPa

Connection size means the inlet or outlet nominal flange size.

PCV Series Power actuated pressure relieving valve Parts Names



PCV100～1000



Welded type

PCV100～1000 (unit:mm^2)

Orifice Letter	30	37. 5	49	60	75	112. 5	150
Throat area	706. 9	1104. 5	1885. 7	2827. 4	4417. 9	9940. 2	17671. 5

PCV Series Power actuated pressure relieving valve Parts Materials

PCV100～900

	Type	PCV( )3( )	PCV( )5( )	PCV( )6( )	PCV( )7( )
	Maximum Temperature	400°C 750°F	510°C 950°F	571°C 1060°F	621°C 1150°F
Parts Name	Nozzle ※1	SA105M	SA182M-F12	SA182M-F22	SA182M-F91
	Disc	B637-N07750			B637-N07718
	Body	SA216M-WCB	SA217M-WC6	SA217M-WC9	CASE 2192
	Guide	SA105M	SA182M-F12	SA182M-F22	SA182M-F91
	Damper	B637-N07750			B637-N07718
	Outlet Flange	SA105M	SA182M-F12	SA182M-F22	SA182M-F91
	Spring	Inconel-X750 Eq.			Inconel-718 Eq.
	Stud Bolt & Nut	SNB7 / S45C		SNB16 / A194-4	
	Gasket	SUS321			
	Orifice	SUS316			
	Pilot Valve ASSY.	SUS304/SUS316 etc.			

※ 1：Bishilite deposited on the seat surface.

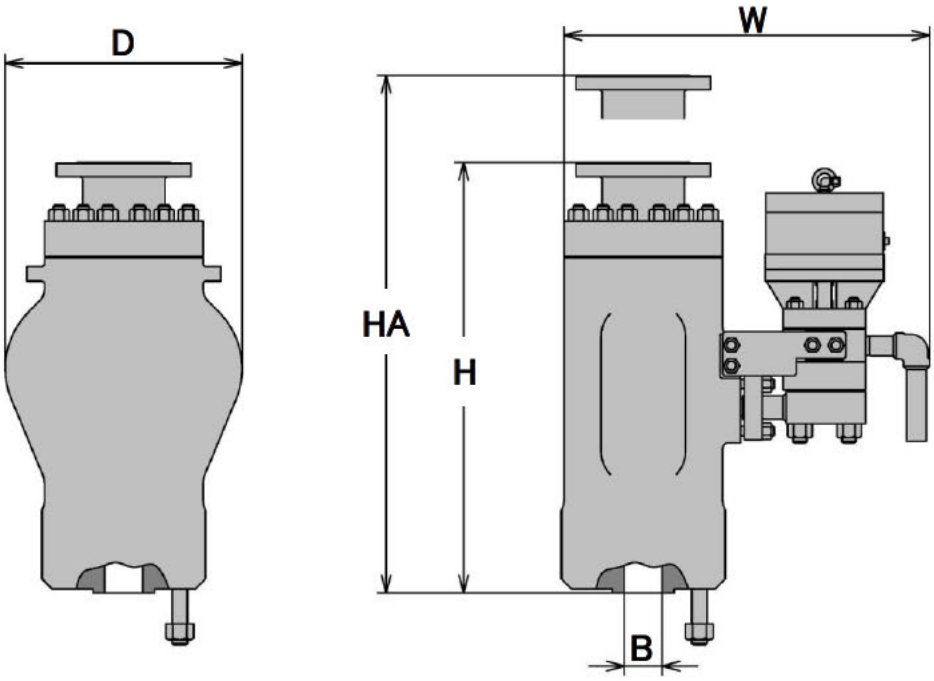
PCV1000

	Type	PCV1033	PCV1053	PCV1063	PCV1073
	Maximum Temperature	400°C 750°F	510°C 950°F	571°C 1060°F	621°C 1150°F
Parts Name	Nozzle ※1	SA105M	SA182M-F12	SA182M-F22	SA182M-F91
	Disc	B637-N07750			B637-N07718
	Body	SA216M-WCB	SA217M-WC6	SA217M-WC9	CASE 2192
	Guide	SA105M	SA182M-F12	SA182M-F22	SA182M-F91
	Damper	B637-N07750			B637-N07718
	Outlet Flange	SA105M	SA182M-F12	SA182M-F22	SA182M-F91
	Spring	Inconel-X750 Eq.			Inconel-718 Eq.
	Stud Bolt & Nut	SNB7 / S45C		SNB16 / A194-4	
	Gasket	SUS321			
	Orifice	SUS316			
	Pilot Valve ASSY.	SUS304/SUS316 etc.			

※ 1：Bishilite deposited on the seat surface.

Note：Manufacturing specifications and materials are subject to change without notice.

PCV1( )1～3( )1 Series Application Range and Dimensions



Style	Connection		Size	Pressure and Temperature Limits (MPaG)		Inlet Dia. (mm)	Throat area (mm^2)	Outlet Dia (mm)	Height	Wide		Dismantling Height	Approx Weight (kg)
	Inlet	Outlet		230℃	400℃	B			H (mm)	W (mm)	D (mm)	HA (mm)	
PCV101	ASME 150Lb RF	ASME 150Lb RF	1-1/2×30×3	1.96	1.27	40	706.9	80	490	525	235	700	140
			2×37.5×4			50	1104.5	100	600	560	300	830	210
			2-1/2×49×4			65	1885.7	100	735	625	400	970	350
			3×60×6			80	2827.4	150	880	685	480	1160	590
			4×75×6			100	4417.9	150	1000	740	590	1320	900
			6×112.5×8			150	9940.2	200	1220	860	805	1550	1500
			8×150×10			200	17671.5	250	1530	1000	1040	1900	2200

Style	Connection		Size	Pressure and Temperature Limits (MPaG)			Inlet Dia. (mm)	Throat area (mm^2)	Outlet Dia (mm)	Height	Wide		Dismantling Height	Approx Weight (kg)
	Inlet	Outlet		230℃	400℃	510℃	B			H (mm)	W (mm)	D (mm)	HA (mm)	
PCV201	ASME 300Lb RF	ASME 150Lb RF	1-1/2×30×3	1 96	1.96	1.96	40	706.9	80	490	525	235	700	140
			2×37.5×4				50	1104.5	100	600	560	300	830	210
			2-1/2×49×4				65	1885.7	100	735	625	400	970	350
			3×60×6				80	2827.4	150	880	685	480	1160	590
			4×75×6				100	4417.9	150	1000	740	590	1320	900
			6×112.5×8				150	9940.2	200	1220	860	805	1550	1500
			8×150×10				200	17671.5	250	1530	1000	1040	1900	2200

Style	Connection		Size	Pressure and Temperature Limits (MPaG)			Inlet Dia. (mm)	Throat area (mm^2)	Outlet Dia (mm)	Height	Wide		Dismantling Height	Approx Weight (kg)
	Inlet	Outlet		230℃	400℃	510℃	B			H (mm)	W (mm)	D (mm)	HA (mm)	
PCV301	ASME 300Lb RF	ASME 150Lb RF	1-1/2×30×3	3.72	3.45	2.62	40	706.9	80	490	525	235	700	140
			2×37.5×4				50	1104.5	100	600	560	300	830	210
			2-1/2×49×4				65	1885.7	100	735	625	400	970	350
			3×60×6				80	2827.4	150	880	685	480	1160	590
			4×75×6				100	4417.9	150	1000	740	590	1320	900
			6×112.5×8				150	9940.2	200	1220	860	805	1550	1500
			8×150×10				200	17671.5	250	1530	1000	1040	1900	2200

※1: Minimum Pressure: 1MPa

Connection size means the inlet or outlet nominal flange size.

Style	Connection		Size	Pressure and Temperature Limits (MPaG)				Inlet Dia. (mm)	Throat area (mm^2)	Outlet Dia (mm)	Height	Wide		Dismantling Height	Approx Weight (kg)
	Inlet	Outlet		400℃	510℃	571℃	621℃	B			H (mm)	W (mm)	D (mm)	HA (mm)	
PCV401	ASME 600Lb RF	ASME 150Lb RF	1-1/2×30×3	5.5	4.4	2.2	1.34	40	706.9	80	490	525	235	700	140
			2×37.5×4					50	1104.5	100	600	560	300	830	210
			2-1/2×49×4					65	1885.7	100	735	625	400	970	350
			3×60×6					80	2827.4	150	880	685	480	1160	590
			4×75×6					100	4417.9	150	1000	740	590	1320	900
			6×112.5×8					150	9940.2	200	1220	860	805	1550	1500
			8×150×10					200	17671.5	250	1530	1000	1040	1900	2200

Style	Connection		Size	Pressure and Temperature Limits (MPaG)				Inlet Dia. (mm)	Throat area (mm^2)	Outlet Dia (mm)	Height	Wide		Dismantling Height	Approx Weight (kg)
	Inlet	Outlet		400℃	510℃	571℃	621℃	B			H (mm)	W (mm)	D (mm)	HA (mm)	
PCV501	ASME 900Lb RF	ASME 150Lb RF	1-1/2×30×3	6.18	6.18	3.55	2.03	40	706.9	80	490	525	235	700	140
			2×37.5×4					50	1104.5	100	600	560	300	830	210
			2-1/2×49×4					65	1885.7	100	735	625	400	970	350
			3×60×6					80	2827.4	150	880	685	480	1160	590
			4×75×6					100	4417.9	150	1000	740	590	1320	900
			6×112.5×8					150	9940.2	200	1220	860	805	1550	1500

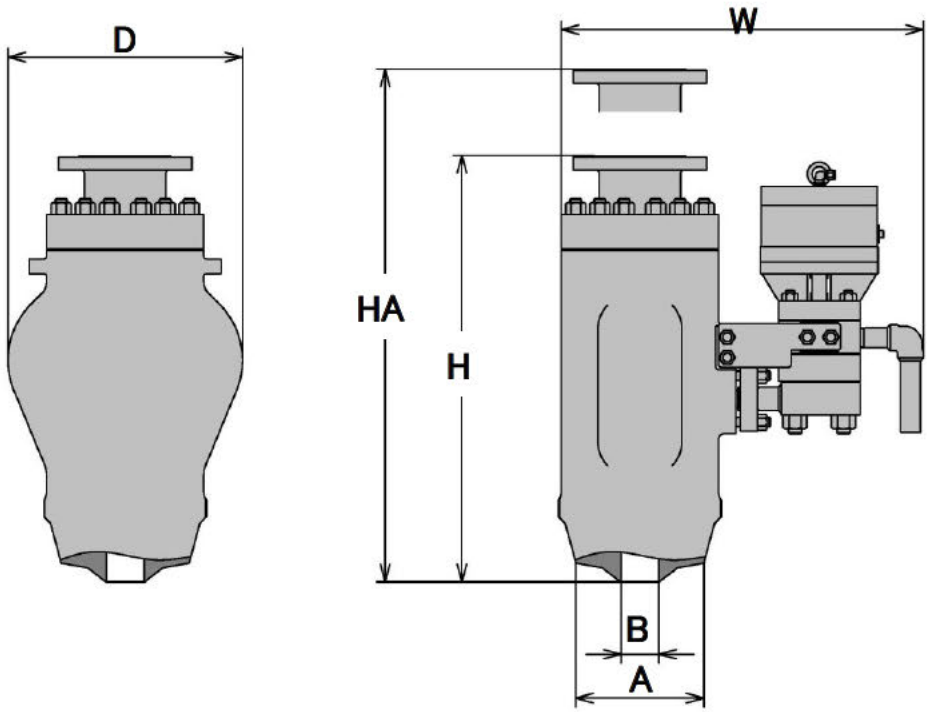
Style	Connection		Size	Pressure and Temperature Limits (MPaG)				Inlet Dia. (mm)	Throat area (mm^2)	Outlet Dia (mm)	Height	Wide		Dismantling Height	Approx Weight (kg)
	Inlet	Outlet		400℃	510℃	571℃	621℃	B			H (mm)	W (mm)	D (mm)	HA (mm)	
PCV601	ASME 1500Lb RF	ASME 150Lb RF	1-1/2×30×3	10.3	10.3	5.58	3.39	40	706.9	80	490	525	235	700	140
			2×37.5×4					50	1104.5	100	600	560	300	830	210
			2-1/2×49×4					65	1885.7	100	735	625	400	970	350
			3×60×6					80	2827.4	150	880	685	480	1160	590
			4×75×6					100	4417.9	150	1000	740	590	1320	900
			6×112.5×8					150	9940.2	200	1220	860	805	1550	1500

Style	Connection		Size	Pressure and Temperature Limits (MPaG)				Inlet Dia. (mm)	Throat area (mm^2)	Outlet Dia (mm)	Height	Wide		Dismantling Height	Approx Weight (kg)
	Inlet	Outlet		400℃	510℃	571℃	621℃	B			H (mm)	W (mm)	D (mm)	HA (mm)	
PCV701	ASME 2500Lb RF	ASME 300Lb RF	1-1/2×30×3	13.7	13.7	9.28	5.66	40	706.9	80	505	525	235	730	150
			2×37.5×4					50	1104.5	100	615	560	300	870	220
			2-1/2×49×4					65	1885.7	100	750	625	400	1010	360
			3×60×6					80	2827.4	150	900	685	480	1200	600
			4×75×6					100	4417.9	150	1015	740	590	1360	920

Style	Connection		Size	Pressure and Temperature Limits (MPaG)				Inlet Dia. (mm)	Throat area (mm^2)	Outlet Dia (mm)	Height	Wide		Dismantling Height	Approx Weight (kg)
	Inlet	Outlet		400℃	510℃	571℃	621℃	B			H (mm)	W (mm)	D (mm)	HA (mm)	
PCV801	ASME 2500Lb RF	ASME 300Lb RF	1-1/2×30×3	17.1	17.1	9.28	5.66	40	706.9	80	505	525	235	730	150
			2×37.5×4					50	1104.5	100	615	560	300	870	220
			2-1/2×49×4					65	1885.7	100	750	625	400	1010	360
			3×60×6					80	2827.4	150	900	685	480	1200	600
			4×75×6					100	4417.9	150	1015	740	590	1360	920

※1: Minimum Pressure: 1MPa

Connection size means the inlet or outlet nominal flange size.



Style	Connection		Size	Pressure Limits (MPaG)	Inlet Dia. (mm)	Max. temperature material specification for Inlet Neck A Inlet Neck O.D.				Throat area (mm^2)	Outlet Dia. (mm)	Height	Wide		Dismantling Height	Approx Weight (kg)
	Inlet	Outlet			B	400℃	510℃	571℃	621℃			H (mm)	W (mm)	D (mm)	HA (mm)	
PCV403～PCV603	Welded	ASME 150Lb RF	1-1/2×30×3	10.3	42	65	70	85	85	706.9	80	490	525	235	700	140
			2×37.5×4		52	80	90	105	105	1104.5	100	600	560	300	830	210
			2-1/2×49×4		67	105	110	135	135	1885.7	100	735	625	400	970	350
			3×60×6		82	130	135	165	165	2827.4	150	880	685	480	1160	590
			4×75×6		102	160	175	210	210	4417.9	150	1000	740	590	1320	900
			6×112.5×8		152	230	250	300	300	9940.2	200	1220	860	805	1550	1500
			8×150×10	4.1	202	275	285	310	310	17671.5	250	1530	1000	1040	1900	2200

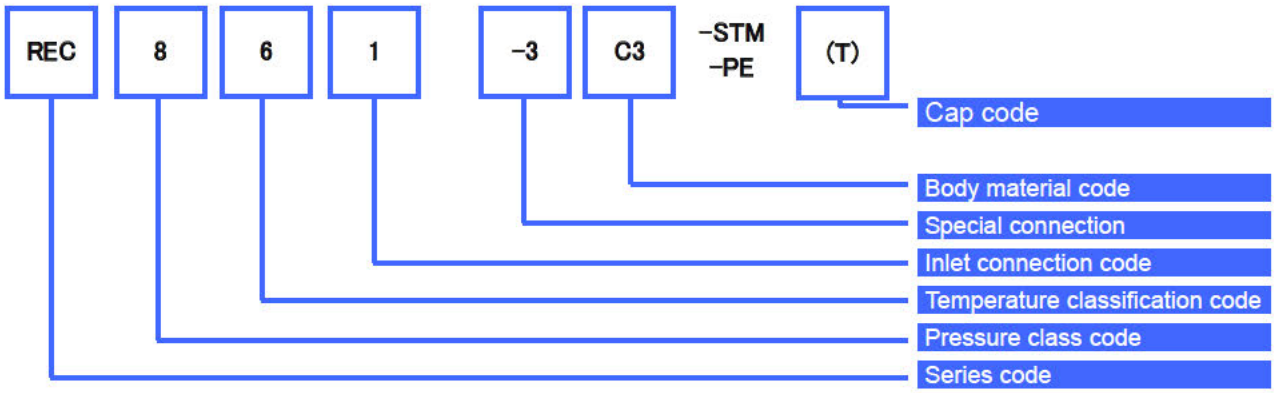
Style	Connection		Size	Pressure Limits (MPaG)	Inlet Dia. (mm)	Max. temperature material specification for Inlet Neck A Inlet Neck O.D.				Throat area (mm^2)	Outlet Dia. (mm)	Height	Wide		Dismantling Height	Approx Weight (kg)
	Inlet	Outlet			B	400℃	510 ℃	571℃	621℃			H (mm)	W (mm)	D (mm)	HA (mm)	
PCV703～PCV903	Welded	ASME 300Lb RF	1-1/2×30×3	20.6	42	75	85	130	130	706.9	80	505	525	235	730	150
			2×37.5×4		52	95	105	160	160	1104.5	100	615	560	300	870	220
			2-1/2×49×4		67	120	135	205	205	1885.7	100	750	625	400	1010	360
			3×60×6		82	145	165	250	250	2827.4	150	900	685	480	1200	600
			4×75×6		102	185	210	315	315	4417.9	150	1015	740	590	1360	920

Style	Connection		Size	Pressure Limits (MPaG)	Inlet Dia. (mm)	Max. temperature material specification for Inlet Neck A Inlet Neck O.D.			Throat area (mm^2)	Outlet Dia. (mm)	Height	Wide		Dismantling Height	Approx Weight (kg)
	Inlet	Outlet			B	400℃	510℃	621℃			H (mm)	W (mm)	D (mm)	HA (mm)	
PCV1003	Welded	ASME 300Lb RF	1-1/2×30×3	30	42	85	105	135	706.9	80	505	525	235	730	150
			2×37.5×4		52	105	130	170	1104.5	100	615	560	300	870	220
			2-1/2×49×4		67	135	165	220	1885.7	100	750	625	400	1010	360
			3×60×6		82	165	205	270	2827.4	150	900	685	480	1200	600

※1: Minimum Pressure: 1MPa

Connection size means the inlet or outlet nominal flange size.

REC-STM / RECL-STM Series Code System



Series Code	Regulation code or standard			Application fluid quality	
	ASME Sec. Ⅷ	API	Shipping classes	Steam	Liquid , Vapor
REC-STM	◎	◎	○	◎	—
RECL-STM	◎	◎	○	—	◎

Special connection code	Inlet connection code	
	JIS	ASME , JPI
-3	30K	300#
-4	40K	600#
-5	-	900#

No number is shown when nominal pressure for the inlet connection is the same as pressure class code.

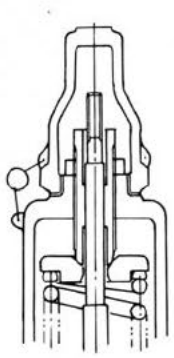
Body material code	Material	
	JIS notation	ASTM notation
Non code	SCPH2	A216-WCB
-C2	SCPH21	A217-WC6
-C3	SCPH32	A217-WC9
-C4	SCPH61	A217-C5
-E	-	A105

Pressure class code	Inlet connection code	
	JIS	ASME , JPI
1	10K	150#
2	20K	300#
3	30K	300#
4	-	600#
5	-	900#
6	-	1500#
7	-	2500#

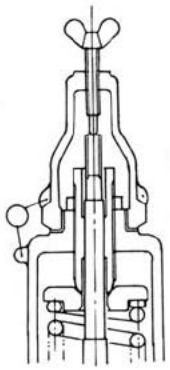
Inlet connection code	Inlet connection
1	ASME flange standard
2	JPI flange standard
3	Welded Type
4	JIS pipe flange
5	Special connection

Cap code	Construction
(A)	Screwed cap
(B)	Screwed cap with test gag
(C)	Open lever
(D)	Packed lever
(E)	Caped lever with test gag
(G)	Bolted cap
(H)	Bolted cap with test gag
(M)	Packed lever(O-Ring type)
(N)	Packed lever with test gag(O-Ring type)
(T)	Open lever with test gag

*Please refer to the following page for details.



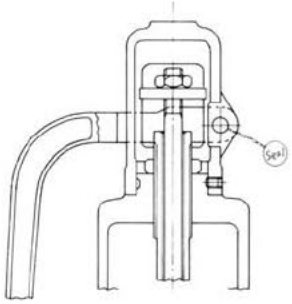
- Type A (screwed cap)
  Standard type
- Type G (bolted cap)



- Type B (screwed cap with test gag)

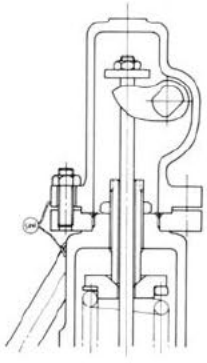
A test gag is useful and convenient at the time of hydrostatic pressure or blow-off testing. Be sure to fasten the gag finger tight. After a test is over, be sure to put back the plug in the original position to replace the gag.
Otherwise, the safety valve will not operate, creating a dangerous situation.

- Type H (with bolted cap and test gag)



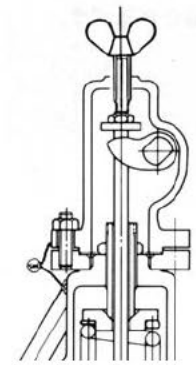
- Type C (open lever)

Is used when it is necessary to check the safety valve for performance on a regular basis, and if blowoff of fluid into the atmosphere does not matter as in the case of steam or air

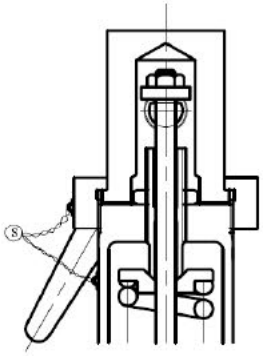


- Type D (packed lever)

Is used when a test lever is necessary and gastightness is required on the exhaust side.



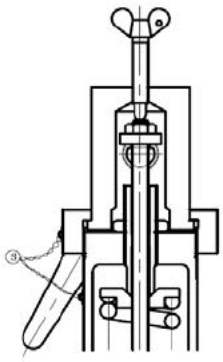
- Type E (packed lever with test gag)



- Type M (packed lever)

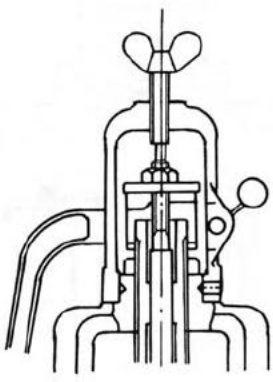
Is used when a test lever is necessary and gas tightness is required on the exhaust side.

Type D is of a gland packing type whereas Type M is of an O-ring seal type.



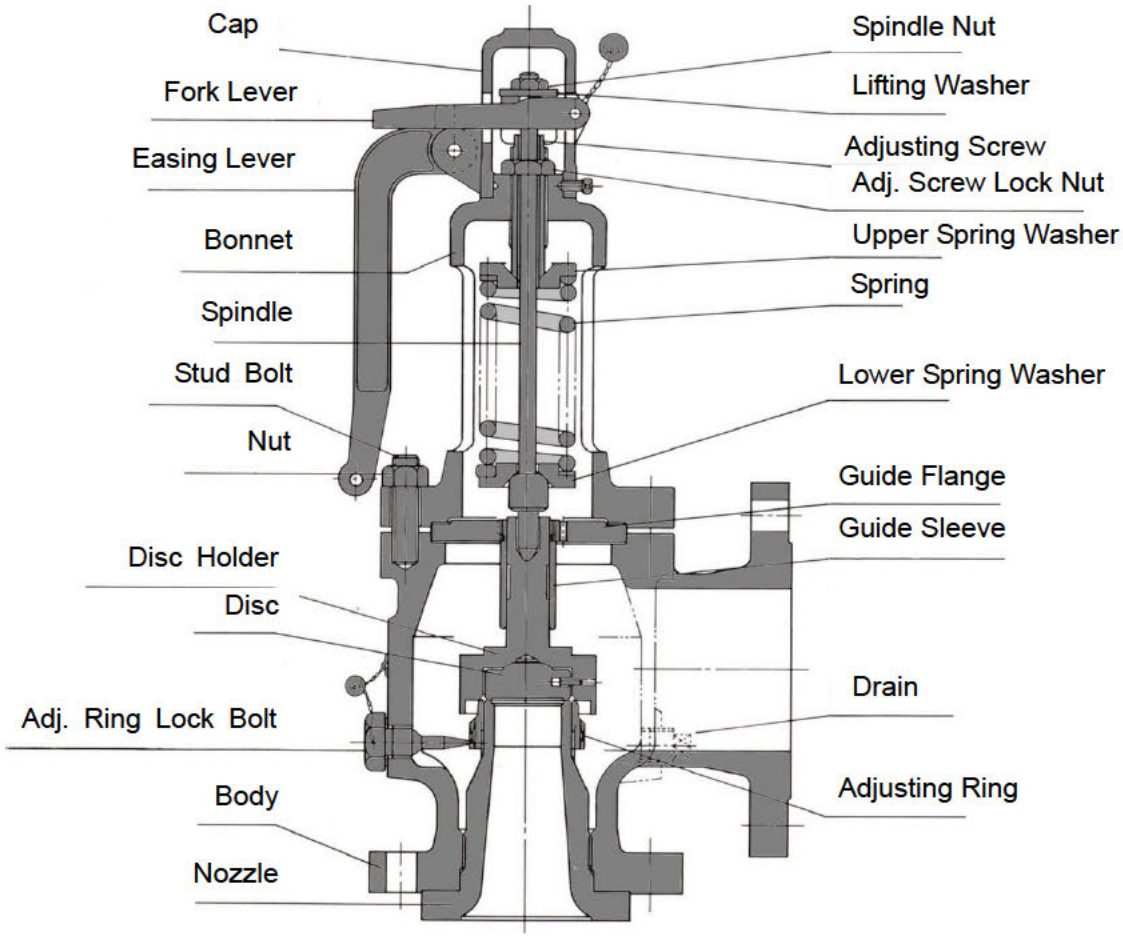
- Type N (packed lever)

A version of Type M with test gag



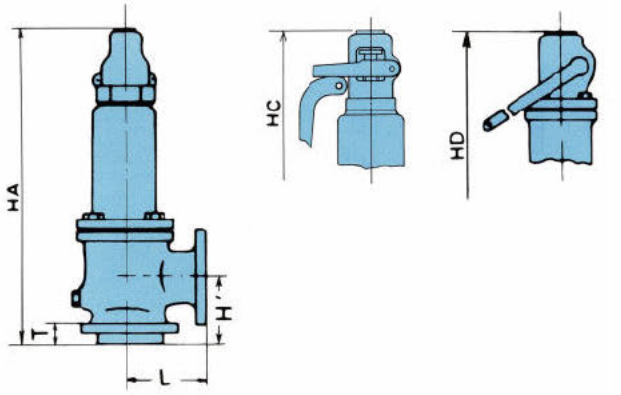
- Type N (packed lever)

A version of Type M with test gag



Parts Name		Up to 800°F(427℃) REC( )61-STM or RECL( )61-STM REC( )71-STM or RECL( )71-STM	1000°F(538℃) REC( )81-STM or RECL( )81-STM
Body		A216-WCB	A217-WC6
Bonnet		A216-WCB	
Cap		FCD450-10	
Nozzle		SUS304 or SCS13A	
Disc		SUS630 (≦320℃) or B637-N07750 (>320℃)	
Disc holder		SUS403	
Adjusting ring		SUS304 or SCS13A	
Adjusting ring rock bolt		S20C	
Guide	SUS304	SUS304	
	SA105M	A105	
Spindle		SUS403	
Adjusting screw		SUS403	
Adjusting screw lock nut		SS400	
Spring washer		S25C	
Spring		Carbon steel or alloy steel	
Stud bolt		SNB7	
Nut		S45C	
Spindle nut		SS400	
Lifting washer		SS400	
Open lever		FCMB310-8	
Fork lever		FCMB310-8	

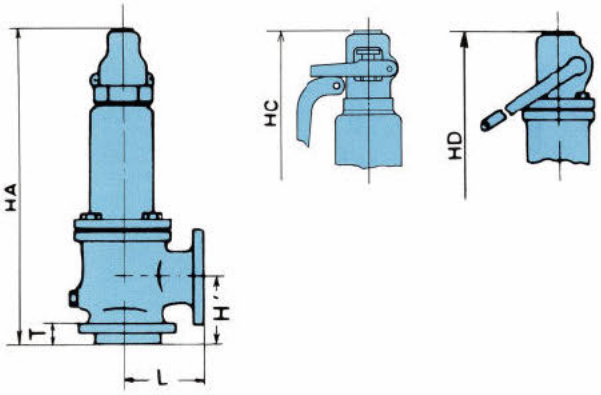
Note: Production specifications and material are subject to change without notice



Unit:mm

Nominal diameter	Type	ASME Flange		Center to Face		Thickness of Flange (T)	Height			Weight (TYPE A) (Kg)
		Inlet	Outlet	Inlet (H')	Outlet (L)		(HA)	(HC)	(HD)	
3/4 D1	REC & RECL 161,171	150#	150#	92	96	30	320	315	365	9
3/4 D1	REC & RECL 261,271	300#	150#	92	96	30	320	315	365	9
3/4 D1	REC & RECL 361,371,381	300#	150#	92	96	30	320	315	365	9
1D2	REC & RECL 161,171	150#	150#	105	114	32	335	330	375	11
1D2	REC & RECL 261,271	300#	150#	105	114	32	335	330	375	11
1D2	REC & RECL 361,371,381	300#	150#	105	114	32	335	330	375	11
1D2	RECL 461,471,481	600#	150#	105	114	32	345	345	390	13
1E2	REC & RECL 161,171	150#	150#	105	114	32	335	330	375	11
1E2	REC & RECL 261,271	300#	150#	105	114	32	335	330	375	12
1E2	REC & RECL 361,371,381	300#	150#	105	114	32	335	330	375	12
1E2	RECL 461,471,481	600#	150#	105	114	32	345	345	390	14
1 1/2 F2	REC & RECL 161,171	150#	150#	124	121	39	350	350	395	15
1 1/2 F2	REC & RECL 261,271	300#	150#	124	121	39	350	350	395	15
1 1/2 F2	REC & RECL 361,371,381	300#	150#	124	152	40	350	350	395	15
1 1/2 F2	RECL 461,471,481	600#	150#	124	152	41	365	360	410	17
1 1/2 G3	REC & RECL 161,171	150#	150#	124	121	39	375	375	420	17
1 1/2 G3	REC & RECL 261,271	300#	150#	124	121	39	375	375	420	17
1 1/2 G3	REC & RECL 361,371,381	300#	150#	124	152	40	405	400	450	19
1 1/2 G3	RECL 461,471,481	600#	150#	124	152	41	405	400	450	21
1 1/2 H3	REC & RECL 161,171	150#	150#	130	124	39	425	420	465	17
1 1/2 H3	REC & RECL 261,271	300#	150#	130	124	39	425	420	465	20
2H3	REC & RECL 361,371	300#	150#	130	124	41	460	460	505	22
2H3	RECL 461,471	600#	150#	154	162	44	485	485	530	25
2H3	REC & RECL 381	300#	150#	130	124	44	460	460	505	22
2H3	RECL 481	600#	150#	130	124	44	460	460	505	22
2J3	REC & RECL 161,171	150#	150#	137	124	41	475	475	520	23
2J3	REC & RECL 261,271	300#	150#	137	124	41	475	475	520	24
3J4	REC & RECL 361,371	300#	150#	184	181	47	590	585	635	44
3J4	RECL 461,471	600#	150#	184	181	50	590	585	635	50
3J4	REC & RECL 381	300#	150#	184	181	50	590	585	635	45
3J4	RECL 481	600#	150#	184	181	50	590	585	635	45
3K4	REC & RECL 161,171	150#	150#	156	162	47	570	565	615	41
3K4	REC & RECL 261,271	300#	150#	156	162	47	507	565	615	43
3K4	REC & RECL 361,371	300#	150#	156	162	47	605	600	650	47
3K4	RECL 461,471	600#	150#	184	181	50	635	630	680	57
3K4	REC & RECL 381	300#	150#	156	162	50	605	600	650	47
3K4	RECL 481	600#	150#	156	162	50	605	600	650	47

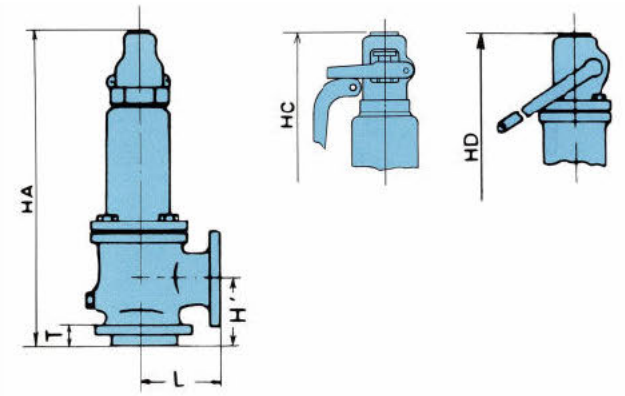
REC-STM / RECL-STM Series Application Range and Dimensions (ASME Flange)



Unit:mm

Nominal diameter	Type	ASME Flange		Center to Face		Thickness of Flange (T)	Height			Weight (TYPE A) (Kg)
		Inlet	Outlet	Inlet (H')	Inlet (L)		(HA)	(HC)	(HD)	
3L4	REC & RECL 161,171	150#	150#	156	165	47	620	615	665	52
3L4	REC & RECL 261,271	300#	150#	156	165	47	620	615	665	57
4L6	REC & RECL 361,371,381	300#	150#	179	181	50	685	680	730	72
4L6	RECL 461,471	600#	150#	179	203	56.5	685	680	730	77
4L6	RECL 481	600#	150#	181	203	57	685	680	730	77
4M6	REC & RECL 161,171	150#	150#	178	184	50	645	640	685	58
4M6	REC & RECL 261,271	300#	150#	178	184	50	645	640	685	72
4M6	REC & RECL 361,371,381	300#	150#	178	184	50	760	755	820	90
4M6	RECL 461,471,481	600#	150#	178	203	56.5	820	815	880	111
4N6	REC & RECL 161,171	150#	150#	197	210	50	710	705	755	76
4N6	REC & RECL 261,271	300#	150#	197	210	50	710	705	755	81
4N6	REC & RECL 361,371,381	300#	150#	197	210	50	840	835	905	105
4N6	RECL 461,471,481	600#	150#	197	222	56.5	840	835	905	113
4P6	REC & RECL 161,171	150#	150#	181	229	50	850	845	915	83
4P6	REC & RECL 261,271	300#	150#	181	229	50	850	845	915	105
4P6	REC & RECL 361,371,381	300#	150#	225	254	50	945	940	1010	140
4P6	RECL 461,471,481	600#	150#	225	254	56.5	945	940	1010	142
4P6	RECL 571,581	900#	150#	225	254	63	945	940	1010	162
6Q8	REC & RECL 161,171	150#	150#	240	241	44	990	985	1050	160
6Q8	REC & RECL 261,271	300#	150#	240	241	55	990	985	1050	170
6Q8	REC & RECL 361,371,381	300#	150#	240	241	56	1075	1070	1155	196
6Q8	RECL 461,471,481	600#	150#	240	241	66	1075	1070	1155	253
6R8	REC & RECL 161,171	150#	150#	240	241	44	990	985	1055	220
6R8	REC & RECL 261,271,281	300#	150#	240	241	56	990	985	1055	230
6R10	REC & RECL 361,371	300#	150#	240	267	56	1080	1075	1155	250
6R10	RECL 461,471,481	600#	150#	240	267	66	1095	1090	1175	260
8T10	REC & RECL 161,171	150#	150#	276	279	48	1085	1080	1165	245
8T10	REC & RECL 261,271	300#	150#	276	279	60	1085	1080	1165	300
8T10	REC & RECL 361,371,381	300#	150#	276	279	60	1140	1135	1220	300
8T10	RECL 461-3, 471-3, 481-3	300#	150#	276	279	60	1270	1265	1350	320

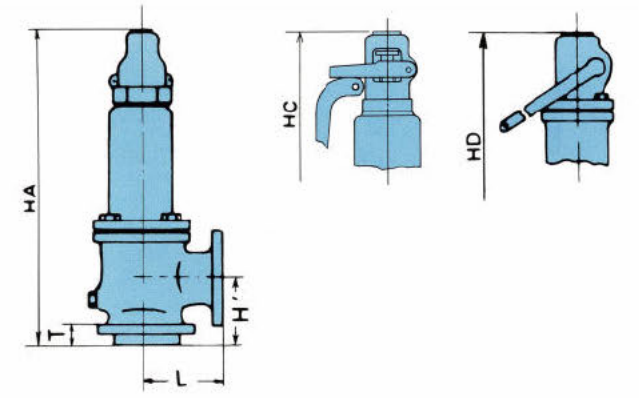
REC-STM / RECL-STM Series Application Range and Dimensions (JIS Flange)



Unit:mm

Nominal diameter	Type	JIS Flange		Center to Face		Thickness of Flange (T)	Height			Weight (TYPE A) (Kg)
		Inlet	Outlet	Inlet (H')	Outlet (L)		(HA)	(HC)	(HD)	
20D25	REC & RECL 164,174	10 K	10 K	92	96	30	320	315	365	9
20D25	REC & RECL 264,274	20 K	10 K	92	96	30	320	315	365	9
20D25	REC & RECL 364,374,384,394	30 K	10 K	92	96	30	320	315	365	9
25D50	REC & RECL 164,174	10 K	10 K	105	114	32	335	330	375	11
25D50	REC & RECL 264,274	20 K	10 K	105	114	32	335	330	375	11
25D50	REC & RECL 364,374,384,394	30 K	10 K	105	114	32	335	330	375	11
25E50	REC & RECL 164,174	10 K	10 K	105	114	32	335	330	375	11
25E50	REC & RECL 264,274	20 K	10 K	105	114	32	335	330	375	12
25E50	REC & RECL 364,374,384,394	30 K	10 K	105	114	32	335	330	375	12
40F50	REC & RECL 164,174	10 K	10 K	124	121	39	350	345	395	15
40F50	REC & RECL 264,274	20 K	10 K	124	121	39	350	345	395	15
40F50	REC & RECL 364,374,384,394	30 K	10 K	124	152	40	350	345	395	15
40G80	REC & RECL 164,174	10 K	10 K	124	212	39	375	375	420	17
40G80	REC & RECL 264,274	20 K	10 K	124	121	39	375	375	420	17
40G80	REC & RECL 364,374,384,394	30 K	10 K	124	152	40	405	400	450	19
40H80	REC & RECL 164,174	10 K	10 K	130	124	39	425	420	465	17
40H80	REC & RECL 264,274	20 K	10 K	130	124	39	425	420	465	20
50H80	REC & RECL 364,374(384,394)	30 K	10 K	130	124	41	460	460	505	22
50H80	REC & RECL 384,394	30 K	10 K	130	124	44	460	460	505	22
50J80	REC & RECL 164,174	10 K	10 K	137	124	41	475	475	520	23
50J80	REC & RECL 264,274	20 K	10 K	137	124	41	475	475	520	24
80J100	REC & RECL 364,374(384,394)	30 K	10 K	184	181	47	590	585	635	44
80J100	REC & RECL 384,394	30 K	10 K	184	181	50	590	585	635	45
80K100	REC & RECL 164,174	10 K	10 K	156	162	47	570	565	615	41
80K100	REC & RECL 264,274	20 K	10 K	156	162	47	570	565	615	43
80K100	REC & RECL 364,374(384,394)	30 K	10 K	156	162	47	605	600	650	47
80K100	REC & RECL 384,394	30 K	10 K	156	162	50	605	6000	650	47
80L100	REC & RECL 164,174	10 K	10 K	156	165	47	620	615	665	52
80L100	REC & RECL 264,274	20 K	10 K	156	165	47	620	615	665	54
100L150	REC & RECL 364,374,384,394	30 K	10 K	179	181	50	685	680	730	72
100M150	REC & RECL 164,174	10 K	10 K	178	184	50	645	640	685	58
100M150	REC & RECL 264,274	20 K	10 K	178	184	50	645	640	685	72
100M150	REC & RECL 364,374,384,394	30 K	10 K	178	184	50	760	755	820	90
100N150	REC & RECL 164,174	10 K	10 K	197	210	50	710	705	755	76
100N150	REC & RECL 264,274	20 K	10 K	197	210	50	710	705	755	81
100N150	REC & RECL 364,374,384,394	30 K	10 K	197	210	50	840	835	905	105

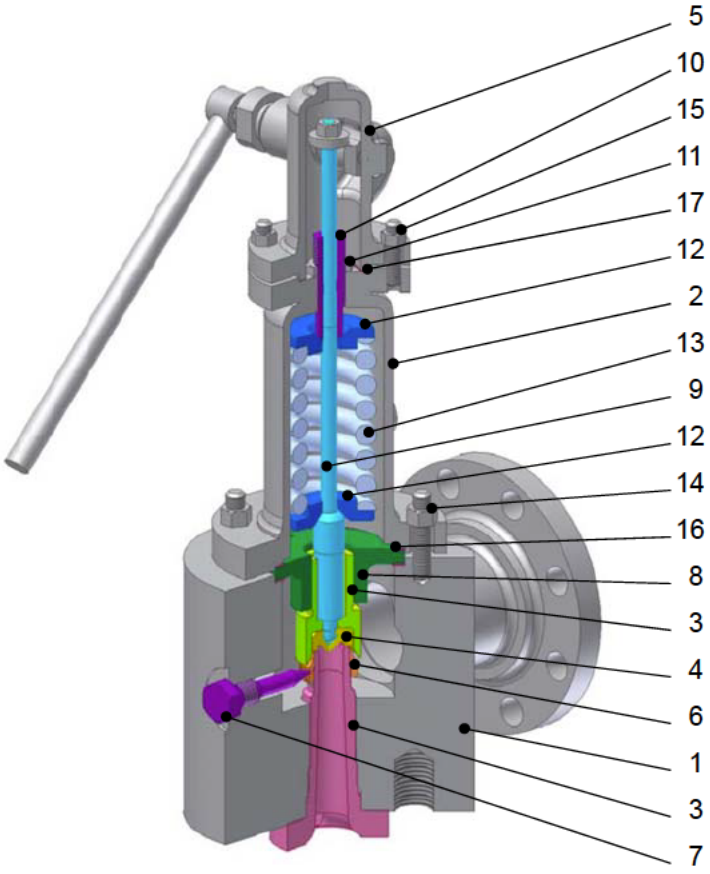
REC-STM / RECL-STM Series Application Range and Dimensions (JIS Flange)



Unit:mm

Nominal diameter	Type	JIS Flange		Center to Face		Thickness of Flange (T)	Height			Weight (TYPE A) (Kg)
		Inlet	Outlet	Inlet (H')	Outlet (L)		(HA)	(HC)	(HD)	
100P150	REC & RECL 164,174	10	10	181	229	50	850	845	915	83
100P150	REC & RECL 264,274	20	10	181	229	50	850	845	915	105
100P150	REC & RECL 364,374,384,394	30	10	225	254	50	945	940	1010	140
150Q200	REC & RECL 164,174	10	10	240	241	44	990	985	1050	160
150Q200	REC & RECL 264,274	20	10	240	241	55	990	985	1050	170
150Q200	REC & RECL 364,374,384,394	30	10	240	241	56	1075	1070	1155	196
150R200	REC & RECL 164,174	10	10	240	241	44	990	985	1055	220
150R200	REC & RECL 264,274	20	10	240	241	55	990	985	1055	230
150R250	REC & REB 364,374,384,394	30	10	240	267	56	1080	1075	1155	250
200T250	REC & RECL 164,174	10	10	276	279	48	1085	1080	1165	245
200T250	REC & RECL 264,274	20	10	276	279	48	1085	1080	1165	300
200T250	REC & RECL 364,374,384,394	30	10	276	279	60	1140	1135	1220	300
200T250	REC & RECL 464-3,474-3,484-3,494-3	30	10	276	279	60	1270	1265	1350	320

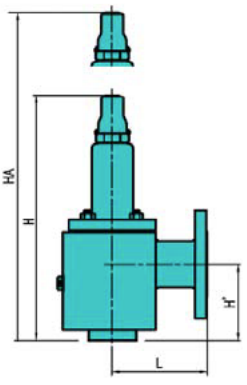
RECL-E-PE Series Parts name and materials

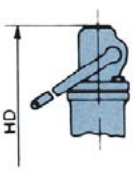


No.	Parts Name	Material
1	Body	SA105M
2	Bonnet	A216-WCB
3	Nozzle	A105
4	Disc	SUS630 (≦320℃) or B637-N07750 (>320℃)
5	Cap	SCPH2
6	Adjusting ring	SUS304
7	Adj. ring lock bolt	S20C
8	Guide	SUS304
9	Spindle	SUS403 or SUS431
10	Adjusting screw	SUS403
11	Adj. screw lock nut	SS400
12	Spring Washer	S25C
13	Spring	ALLOY STEEL
14	Stud bolt & nut	SNB7.S45C
15	Stud bolt & nut	SNB7.S45C
16	Gasket	Non-asbestos or dead soft steel
17	Gasket	Non-asbestos or dead soft steel

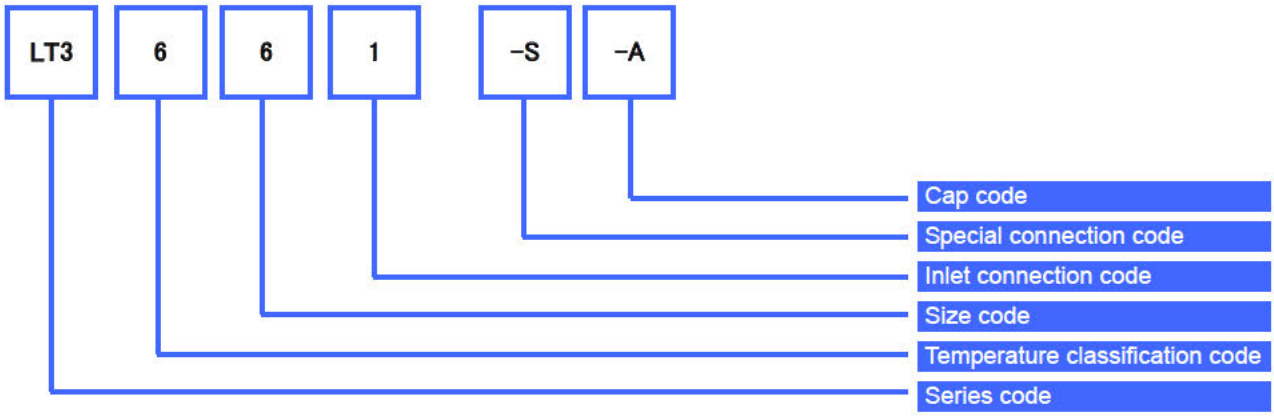
RECL-E-PE Series Dimensions and Weight (ASME Flange)

Nominal diameter	Type	Effective area cm^2	ASME Flange Rating		Center to Face		Height		Dismantling Height	Weight
					Inlet	Outlet				
			Inlet	Outlet	H'	L	H	HD	HA	kg
1 1/2×D×2	RECL 561,571	0.882	900	300	100	150	430	480	650	36
1 1/2×D×2	RECL 661,671	0.882	1500	300	100	150	430	480	650	36
1 1/2×D×3	RECL 761,771	0.882	2500	300	122	180	520	565	780	61
1 1/2×E×2	RECL 561,571	1.815	900	300	100	150	430	480	650	36
1 1/2×E×2	RECL 661,671	1.815	1500	300	100	150	430	480	650	36
1 1/2×E×3	RECL 761,771	1.815	2500	300	122	180	520	565	780	61
1 1/2×F×3	RECL 561,571	2.433	900	300	122	165	450	500	680	42
1 1/2×F×3	RECL 661,671	2.433	1500	300	122	165	450	500	680	42
1 1/2×F×3	RECL 761,771	2.433	2500	300	122	180	520	565	780	61
1 1/2×G×3	RECL 561,571	3.836	900	300	122	165	470	505	710	43
2×G×3	RECL 661,671	3.836	1500	300	122	200	525	570	790	73
2×G×3	RECL 761,771	3.836	2500	300	122	200	525	570	790	73
2×H×3	RECL 561,571	5.940	900	150	122	175	535	585	800	70
2×H×3	RECL 661,671	5.940	1500	300	122	190	535	585	800	73





LT3000 Series Code System



Temperature classification code	Maximum service temperature
6	-5～400℃(750˚F)

Size code	Size			
	Inlet	Outlet	Throat diameter (mm)	Throat area (mm^2)
1	1/2	3/4	7.0	38.5
2	3/4	3/4	7.0	38.5
3	3/4	1	7.0	38.5
4	1	1	7.0	38.5
5	3/4	1	10.0	78.5
6	1	1	10.0	78.5

Inlet connection code	Inlet connection standard
1	ASME
3	Welded type
4	JIS pipe flange
5	Special connection
6	Screwed end for pipe

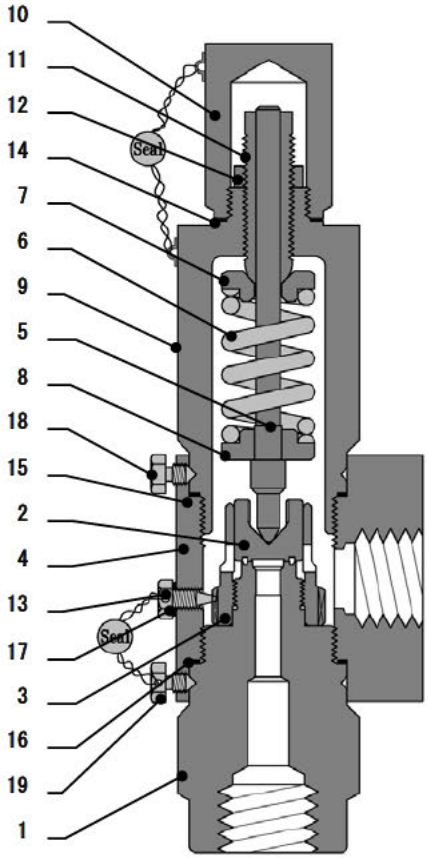
Special material code	Size		
	Body	Nozzle.Seat	Guide
Non code	A105	SUS304	→
*1 S	SUS304	→	→
*2 S1	SUS316	→	→
S2	SUS304L	→	→
*3 S3	SUS316L	→	→
S4	A105	SUS316	SUS304
C4	A350-LF2	SUS304	→
M	Monel	→	→

*1 Spring is SUS304.
*2 Spring is SUS316.
*3 Spring is Inconel.

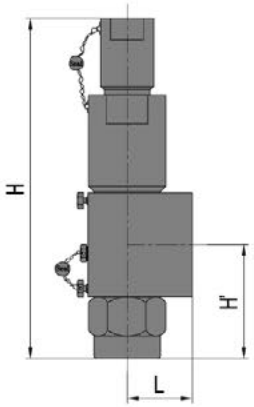
Cap code	Construction
(A)	Screwed Cap
(B)	Screwed cap with test gag
(C)	Open lever
(H)	Packed lever
(N)	Packed lever with test gag

LT3000 Series Parts names and materials

No.	Parts name	Material
1	Nozzle	SUS304
2	Seat	SUS304
3	Guide	SUS304
4	Body	SA105M
5	Spindle	SUS403
6	Spring	Carbon Steel or Alloy steel
7	Upper spring washer	S25C
8	Lower spring washer	S25C
9	Bonnet	SA105M
10	Cap	SA105M
11	Adjusting screw	SUS403
12	Adj. screw lock nut	SUS304
13	Lock bolt	SUS304
14	Gasket	Metal or Soft Gasket
15	Gasket	Metal or Soft Gasket
16	Gasket	Metal or Soft Gasket
17	Gasket	Metal or Soft Gasket
18	Lock screw	SUS304
19	Lock screw	SUS304

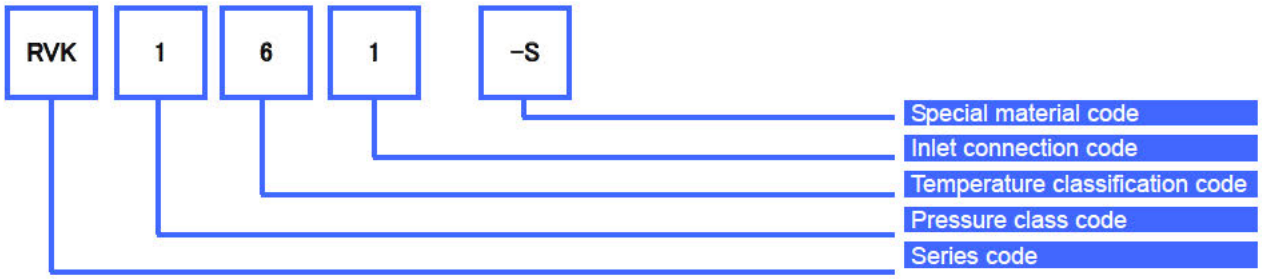


LT3000 Series Dimensions and Weight



No.	Size				Center to Face		Height	Weight	Inlet Maximum pressure and temperature	Maximum back pressure
	Inlet Screw Rc	Outlet Screw Rc	Throat diameter (mm)	Throat area (cm^2)	L (mm)	H' (mm)	H (mm)	kg		
1	1/2	3/4	7.0	0.385	45	60	210	2.7	21MPa 400℃	2.8MPa
2	3/4	3/4	7.0	0.385	45	60	210	2.7		
3	3/4	1	7.0	0.385	45	60	210	2.7		
4	1	1	7.0	0.385	45	60	210	2.7		
5	3/4	1	10.0	0.785	50	70	240	5.4		
6	1	1	10.0	0.785	50	70	240	5.4		

RVK & RHK Series code system



Symbol	Globe Type
RVK	Vertical
RHK	Horizontal

Pressure classification code	Maximum service temperature
1	125# (150#) or JIS 10K

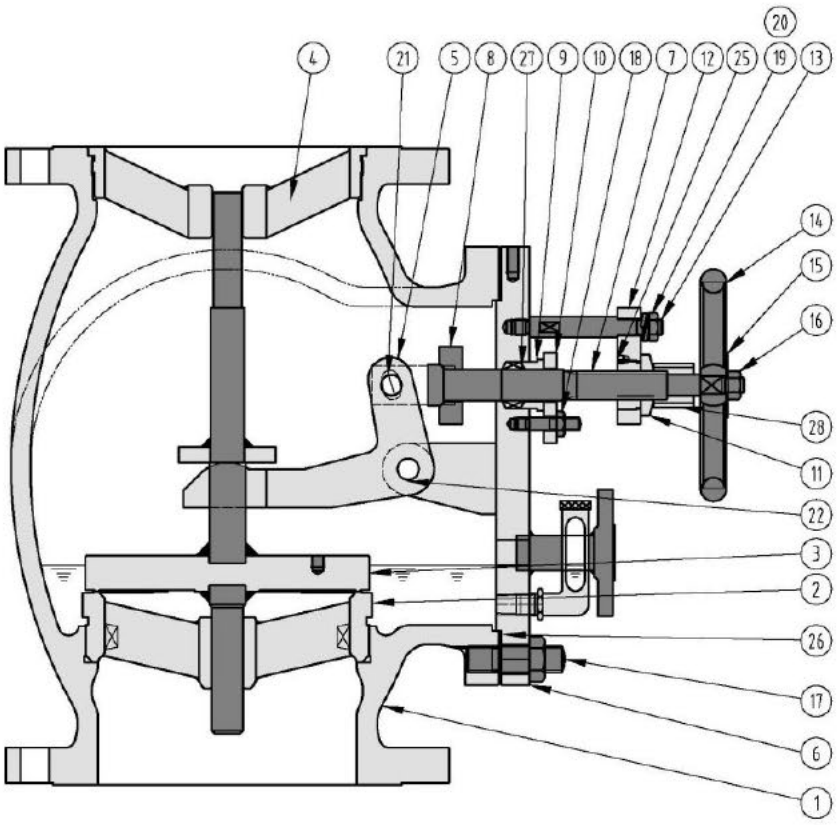
Temperature classification code	Maximum service temperature
6	~120℃

Inlet connection code	Inlet connection
1	ASME Flange standard
4	JIS pipe flange
5	special connection

Body material code	Material
-S	Cast steel

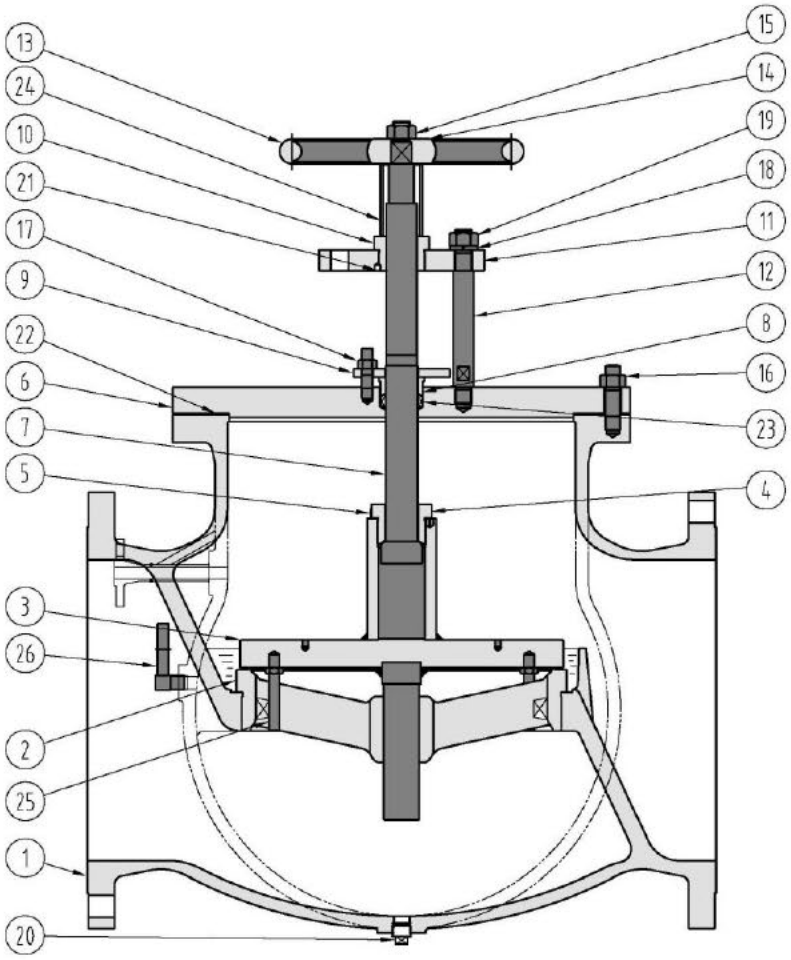
RVK Series Parts name and materials

No.	Parts name	Material
1	Body	A216-WCB
2	Seat	SCS13A
3	Disc	SUS304
4	Guide	SCS13A
5	Lift lever	SS400
6	Cover Flange	SM400B/SS400
7	Stem	SUS403
8	Lift Fork	SUS403/SS400
9	Grand	SUS403
10	Grand arm	SS400
11	Sleeve	SUS304
12	Stem arm	SS400
13	Pillar	SS400
14	Hand wheel	FC200
15	Plate	SUS304
16	Nut	SS400
17	Stud bolt & Nut	SS400
18	Stud bolt & Nut	SS400
19	Washer	SWRH57
20	Nut	SS400
21	Pin	SUS304
22	Pin	SUS304
23	Set screw	SCM435
24	Gasket	V#6502
25	Gland packing	V#6232
26	Stopper	SGP



RHK Series Parts name and material

No.	Item	Material
1	Body	A216-WCB
2	Seat	SCS13A
3	Disc	SUS304
4	Bush	SUS304
5	Washer	SUS304
6	Cover flange	SM400B
7	Stem	SUS403
8	Gland	SUS403
9	Gland arm	SS400
10	Sleeve	SUS304
11	Stem arm	SS400
12	Pillar	SS400
13	Hand wheel	FC200
14	Plate	SUS304
15	Nut	SS400
16	Stud bolt & Nut	S20C
17	Stud bolt & Nut	S20C
18	Washer	SWRH57
19	Nut	SS400
20	Plug	SUS304
21	Set screw	SCM435
22	Gasket	V#6502
23	Gland packing	V#6232
24	Stopper	SGP
25	Stopper	SUS304
26	Water guide	SUS304



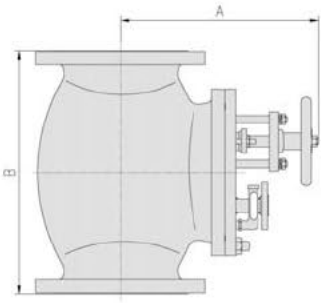
RVK & RHK Series discharge capacity

Style	Size	Seat diameter (mm)	Lift (mm)	Effective area (mm^2)	Coefficient discharge	Flux determination pressure (MPaA)	Relieving temperature (℃)	Certified capacity (kg/h)
RVK & RHK	8×8	200	28	17592	0.68	0.17024 *1	115.2 *2	10690
	10×10	250	35	27488	0.68			16710
	12×12	300	42	39584	0.68			24060
	14×14	335	47	49464	0.68			30070
	16×16	390	55	67387	0.68			40970
	18×18	440	66	91231	0.676			55140
	20×20	490	84	129307	0.669			77340
	24×24	590	105	194621	0.667			116000
	30×30	740	126	292922	0.669			175200

*1 Flux determination pressure is calculated from P =0.17024 MPaA (= 10+14.7 PSIA) by HEI (Heat Exchange Institute).

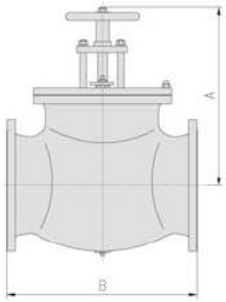
*2 Saturated-steam temperature at the time of 0.17024 MPaA.

RVK Series Dimensions and weight



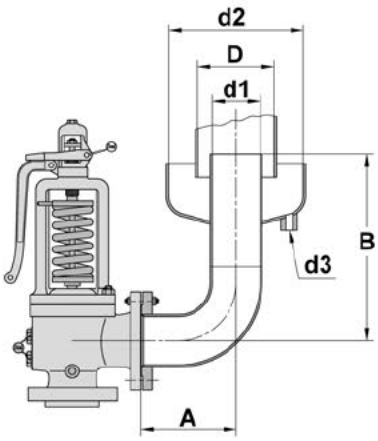
Style	Nominal diameter	Size		Dimension		Blow-off pressure (kPa)	Maximum service temperature (℃)	Weight (kg)
		Inlet (ASME 150LB)	Outlet (ASME 150LB)	A (mm)	B (mm)			
RVK161	8×8	200 A	200 A	400	495	4.0 ±50%	120	110
	10×10	250 A	250 A	490	622			225
	12×12	300 A	300 A	545	699			305
	14×14	350 A	350 A	605	787			465
	16×16	400 A	400 A	755	914			705
	18×18	450 A	450 A	840	914			730
	20×20	500 A	500 A	890	1100			980
	24×24	600 A	600 A	980	1330			1470
	30×30	750 A	750 A	1050	1400			2700

RHK Series Dimensions and weight

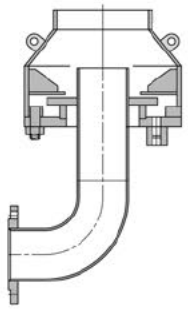


Style	Nominal diameter	Size		Dimension		Blow-off pressure (kPa)	Maximum service temperature (℃)	Weight (kg)
		Inlet (ASME 150LB)	Outlet (ASME 150LB)	A (mm)	B (mm)			
RHK161	8×8	200 A	200 A	400	495	4.0 ±50%	120	110
	10×10	250 A	250 A	490	622			225
	12×12	300 A	300 A	545	699			305
	14×14	350 A	350 A	605	787			465
	16×16	400 A	400 A	755	914			705
	18×18	450 A	450 A	857	914			750
	20×20	500 A	500 A	890	1100			980
	24×24	600 A	600 A	973	1330			1600
	30×30	750 A	750 A	1211	1400			3000

Steam Safety Valve Discharge Pipes (Drip Pans)



Standard type drip pan



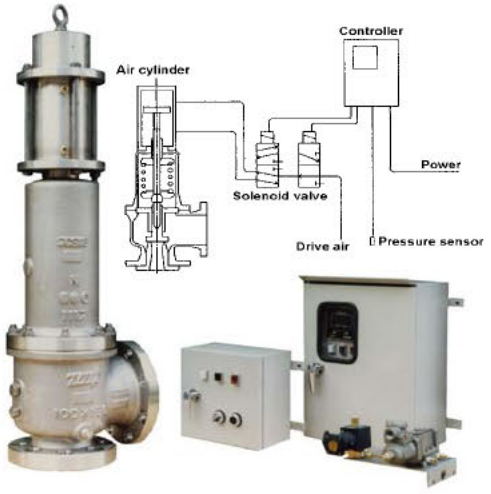
Close type drip pan

At least 90 % of the safety valve problems reported are nozzle seat leakage, most of which caused by constraining discharge pipes.
Fukui works to prevent occurrences of such problems by making the discharge pipes (drip pans) that are best suited to safety valves.

Standard Drip Pan Dimensions

Outlet size	d1 mm	d2 mm	d3	A mm	B mm	D mm
25	25	90	Rc1/4	40	200	50
40	40	125	Rc3/8	60	250	65
50	50	150	Rc1/2	80	270	80
65	65	200	Rc1/2	100	365	90
80	80	200	Rc1/2	120	380	125
100	100	250	Rc3/4	160	395	150
125	125	300	Rc3/4	195	430	175
150	150	300	Rc1	235	460	200
200	200	350	Rc1	310	600	250

Servo Assisted System



No pre-leak !
Dependable blowoff !
Reliable blowdown !
Cuts your maintenance costs dramatically !!

Nozzle seat leakage is a serious problem with safety valves when their operating pressures are near their blowoff pressures. Our servo - assisted system physically prevents leakage by using the power of electricity and air to make an air cylinder hold the spindle down.
Installing a reciprocating cylinder on top of a safety valve makes possible to control blowoff pressure and closing (or reseating) pressure, and to ensure leak - free, sound operation even when operating pressure is close to blowoff pressure. Thanks to the fail - safe mechanism, your equipment is assured of safety because the safety valves will actuate by itself when electricity and air pressure are cut off.

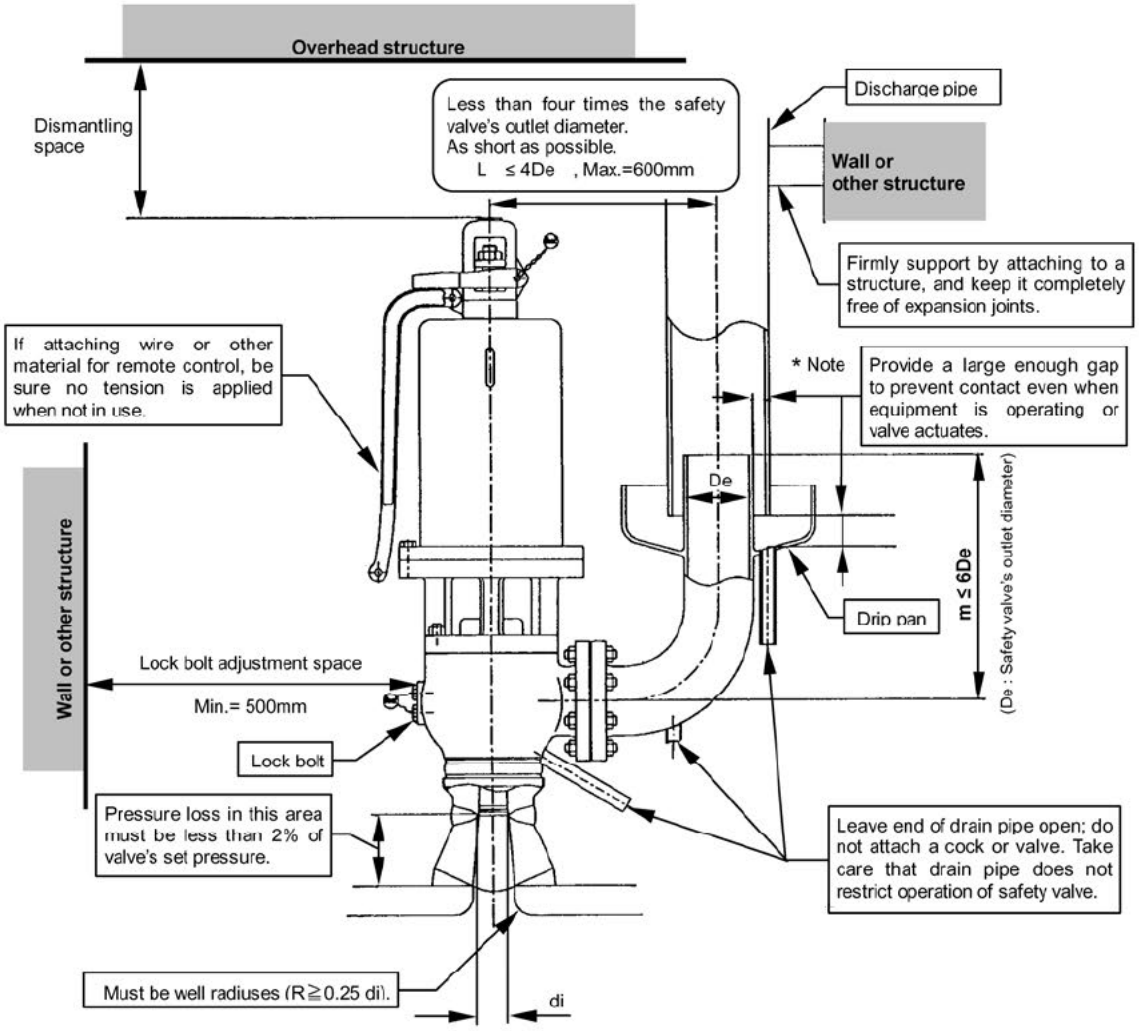
Jack-up Test Measuring Apparatus "JK-3"

Without realizing it, you are probably wasting time and money on popping tests of safety valves themselves and those performed in a mounted condition on a boiler that are both essential for every regular boiler inspection.
The JK - 3

- ✧ can perform tests at normal working pressure.
- ✧ make low - fuel - consumption, low - cost, low - noise testing possible.
- ✧ is highly reliability due to it directly reads the load.
- ✧ is microcomputer - controlled for simplicity, precision, and speed.
- ✧ prints out the measurement results.

A jack - up test is capable of confirming safety valve's actuation pressure at equipment operating pressure.
It is a convenient testing method that not only reduces testing costs, but also effectively controls pollution in the surrounding area.

Precautions to Be Observed When Installing Steam Safety Valves



*Notes

1. I n consideration of effects l ke those of movement caused by contraction upon cooling down, and thermal expansion such as during full boiler operation and when the safety valve actuates, or the effects of valve operation recoil, design and installation must provide this gap so that the discharge pipe never comes into contact with the valve outlet pipe and drip pan.
2. Use or metal bellows and flexible houses is not recommended.

Warranty Conditions

Thank you for using FUKUI products.
Our products are made in standardized manufacturing processes ɔing rigorous quality control. Nevertheless, in the event of a failure attributable to a manufacturing defect, we will either repair or replace the valve free of charge in accordance with the following warranty provisions. Contact us if this warranty seems applicable.

1. Warranty Term
The warranty extends 12 months from the time the valve comes into use, but the term may exceed 18 months after shipping.

2. Warranty Scope
If a valve failure within the warranty term is fault of FUKUI, we will, at our cost, repair it or provide a replacement. However, failures shall not be covered by the warranty if any one of the following applies.

2-1 A valve leaks or exhibits unstable operation due foreign matter or other substances in boilers or piping.

2-2 Improper treatment or use.

2-3 Failure results from a cause not attributable to FUKUI.

2-4 Improper repair or modification.

2-5 Treatment, storage, or use under severe conditions that exceed design specifications.

2. Warranty Term
The warranty extends 12 months from the time the valve comes into use, but the term may exceed 18 months after shipping.

3. Warranty Scope
If a valve failure within the warranty term is fault of FUKUI, we will, at our cost, repair it or provide a replacement. However, failures shall not be covered by the warranty if any one of the following applies.

2-6 A valve leaks or exhibits unstable operation due foreign matter or other substances in boilers or piping.

2-7 Improper treatment or use.

2-8 Failure results from a cause not attributable to FUKUI.

2-9 Improper repair or modification.

2-10 Treatment, storage, or use under severe conditions that exceed design specifications.

Note:

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