FUKUI

SL700–1000H Series

Contents

Features

The SL series is a long-selling spring-loaded pressure relief valve for steam, which has been manufactured and improved by FUKUI SEISAKUSHO for nearly half a century. It has a structure and durability designed to meet the severe operating conditions of power generation boilers etc.

Certification

Certification	Range			
	Service	Size	Pressure range MPa	Discharge coefficient
ASME BPVC SECTION I & SECTION VIII Division 1	Steam	D–M N–P Q–R T	0.1–37.9 0.1–24.1 0.1–10.3 0.1– 5.5	0.869

* In addition to the above-mentioned pressure and size, the ASME STAMP V and ASME UV STAMP also specify minimum requirements for temperature, structure, materials, etc. If all of these requirements are satisfied, the product can be certified as ASME STAMP V or ASME UV STAMP.
* We have also obtained certifications from classification societies such as NK, LR, BV, DNV, ABS, KR, RS, CCS, and RINA. For more information, contact us.
* For the actual manufacturing range, refer to the pressure-temperature rating. There are cases where products exceeding this pressure-temperature rating can also be manufactured.

Type code

SL	4	6	1-	3	C3	-H1	(T)

Cap code

(C)	Open lever	(T)	(C) + Test gag

Structure code

Code	Pressure class	Disc structure	Nozzle airtightness performance
Blank	1–3	Feather disc	90% or less of set pressure
-H2		Thermal disc	
M	4–6	Feather disc	94% or less of set pressure
-M2		Thermal disc	
-H1	7–10	Reinforced thermal disc	95% or less of set pressure
-H2	7, 8	Thermal disc	93% or less of set pressure
-PA	1–10	Air-assist type	98% or less of set pressure

Material code

Blank	SCPH2 or A216M-WCB	C4	SCPH61 or A217M-C5
C2	SCPH21 or A217M-WC6	CA	火 SPCH91 or A217M-C12A
C3	SCPH32 or A217M-WC9	—	—

Inlet flange class (only different from pressure class) Same code as pressure class

Connection code

1-	ASME Flange	5-	Special
2-	JPI Flange	6-	Screwing
3-	Welding	9-	JIS B 8210(1994) Flange
4-	JIS Flange	0-	JIS B 8210(1986) Flange

Temperature class code (determined by discharge temperature) Unit: °C (F)

3	T ≤ 400(752)	6	510(950) < T ≤ 571(1060)
5	400() < T ≤ 510(950)	7	571(1060) < T ≤ 621(1150)

Pressure class code

1	Class 150 or JIS 10K or JIS B 8210 10K	6	Class 1500	
2	Class 300 or JIS 20K or JIS B 8210 20K	7	Class 2500	
3	Class 300 or JIS 30K or JIS B 8210 30K	8	Class 2500	Welding connection only
4	Class 600 OR JIS B 8210 40K	9	Class 3000	Welding connection only
5	Class 900	10	Class 4500	Welding connection only

Type code

SL	Type for other than JIS B8210 flange	SJ	Type for JIS B8210 flange

Cap Code

The following two types of structures, each of which is with or without a test gag, are available as the cap structure. The test gag is an option for performing an airtight test with the pressure relief valve installed on piping etc.

Cap		Figure	Airtightness	Lever	Test gag
(C)	Open lever	1	X	○	X
(T)		2	X	○	○
(D)	Sealed lever	3	○	○	X
(E)		4	○	○	○

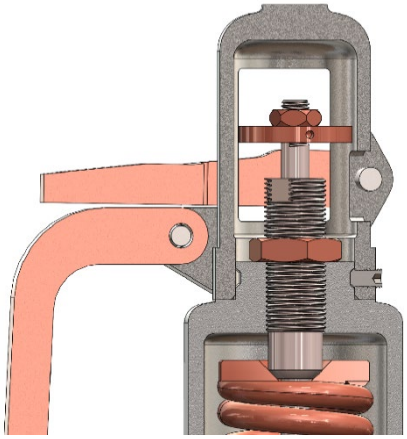


Figure 1　Open lever

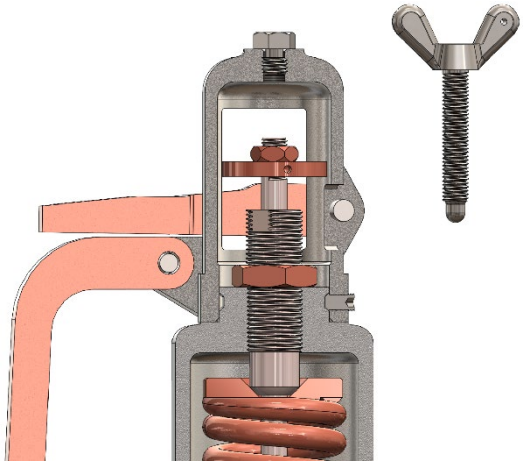


Figure 2　Open lever + Test gag

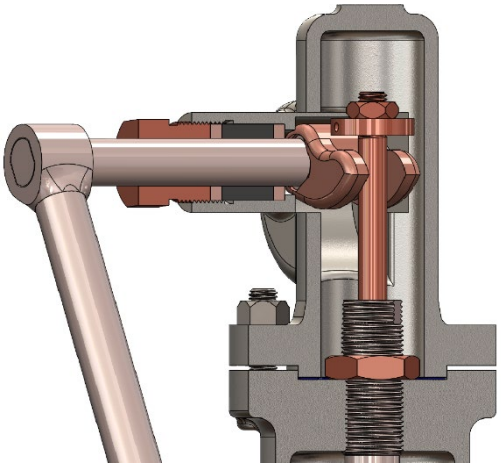


Figure 3　Sealed lever

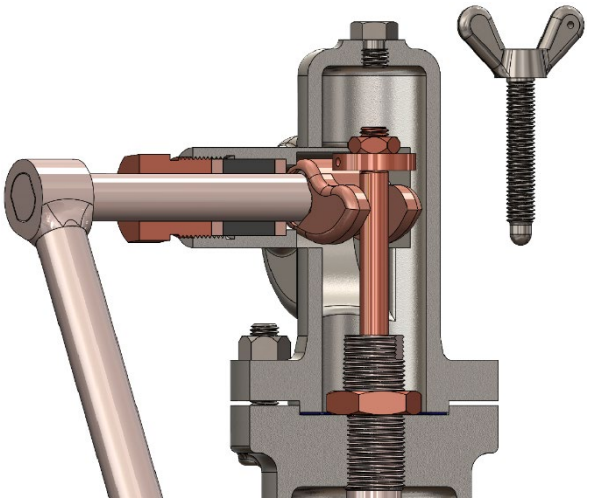


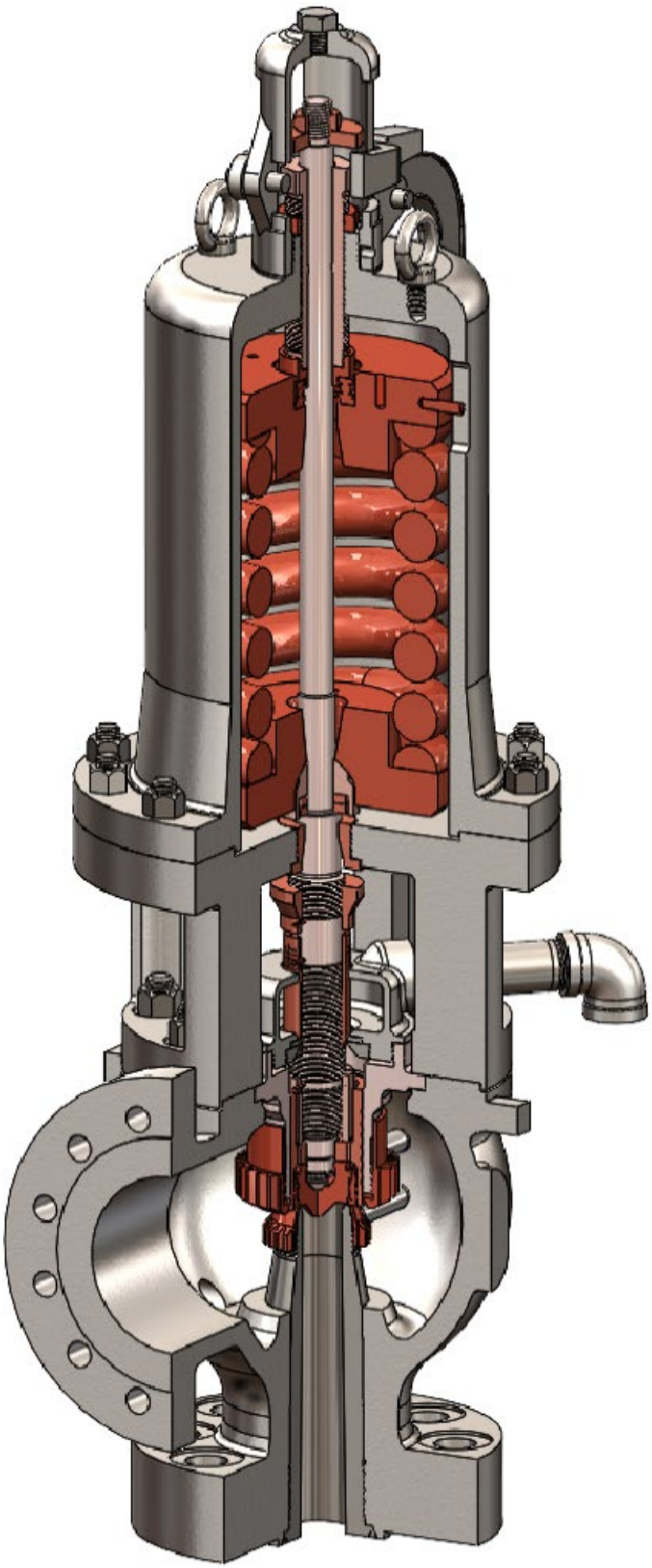
Figure 4　Sealed lever + Test gag

The lever is lifted to activate the pressure relief valve when the pressure on the inlet side of the pressure relief valve is 75% of the set pressure.

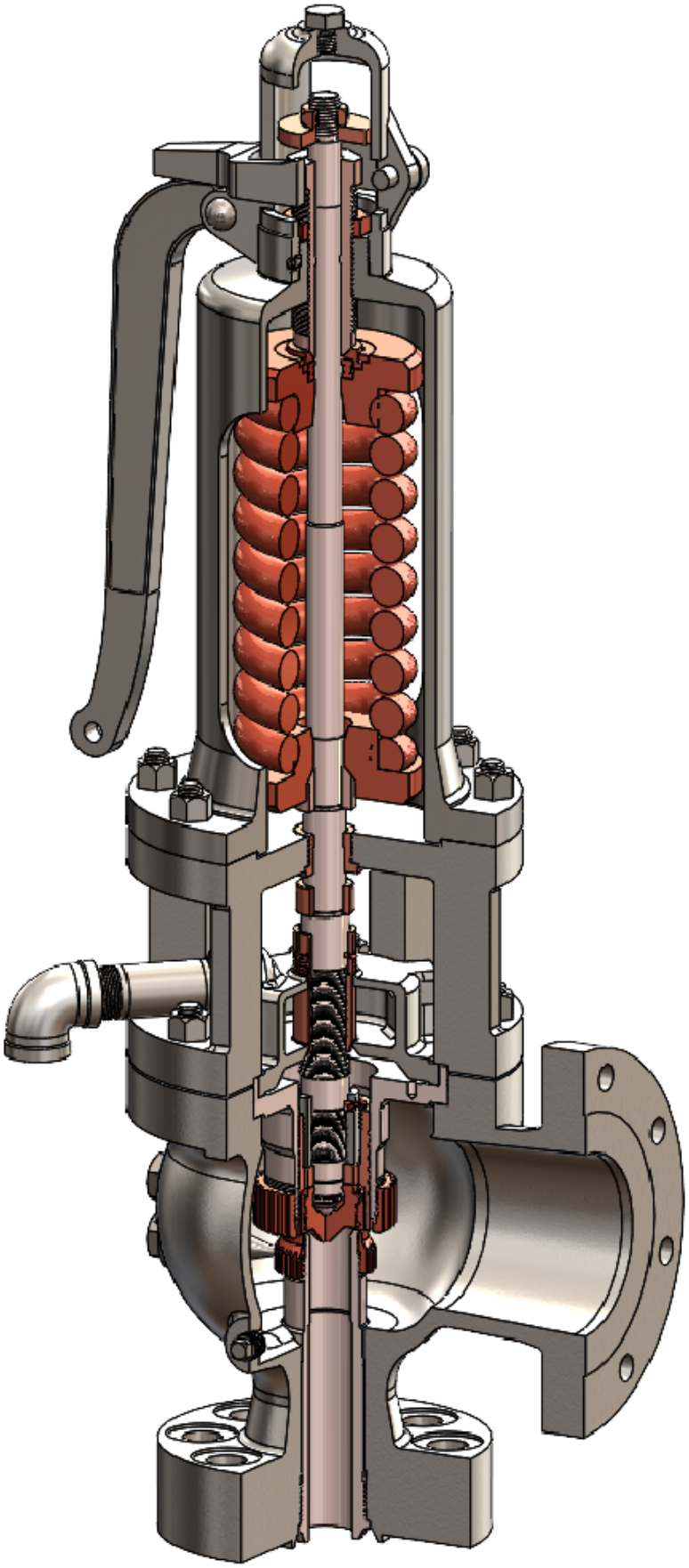
Structure

The optimal structure is adopted for each required performance and pressure classification.

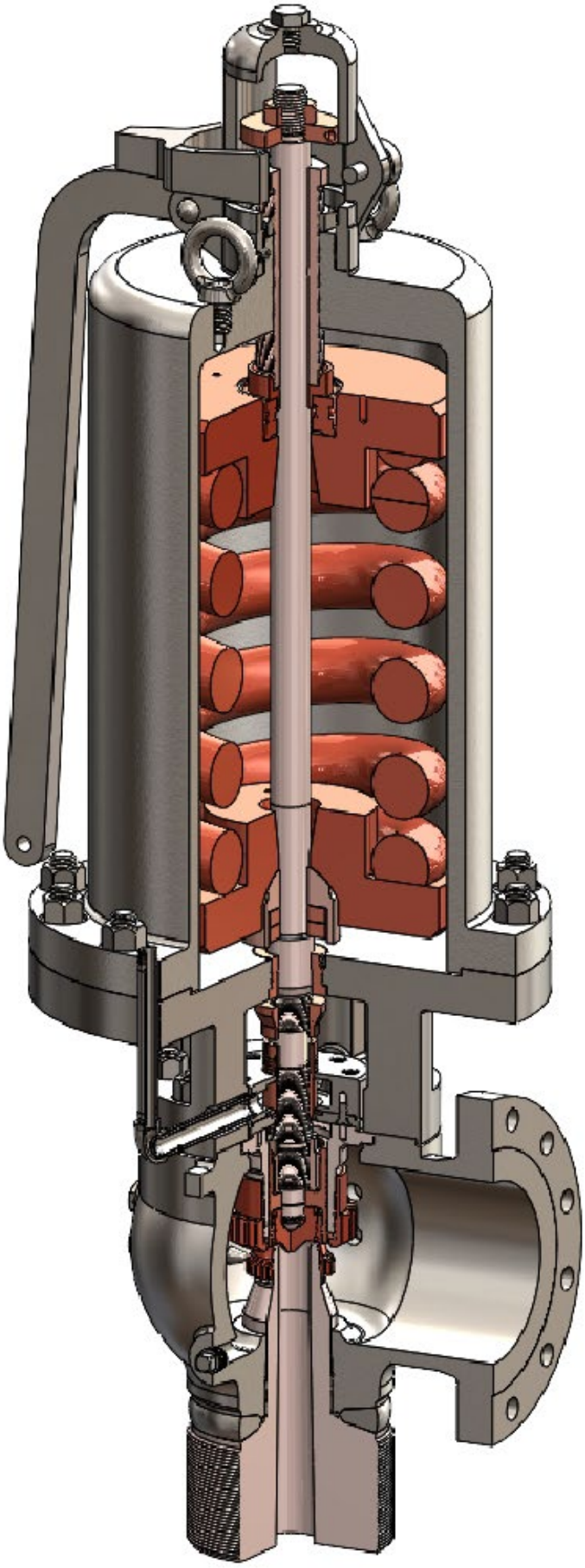
- Full nozzle
- Bonnet type
- Cast integral body
- Upper and lower adjusting
- Backpressure adjusting ne
- Cooling spool



SL700–900 H1



SL700–800 H2

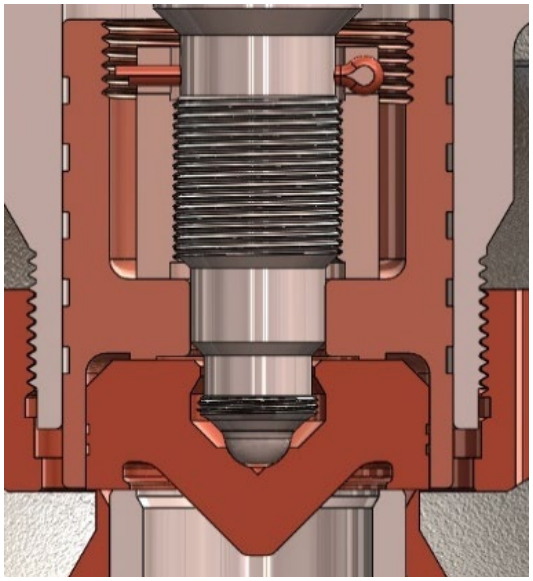


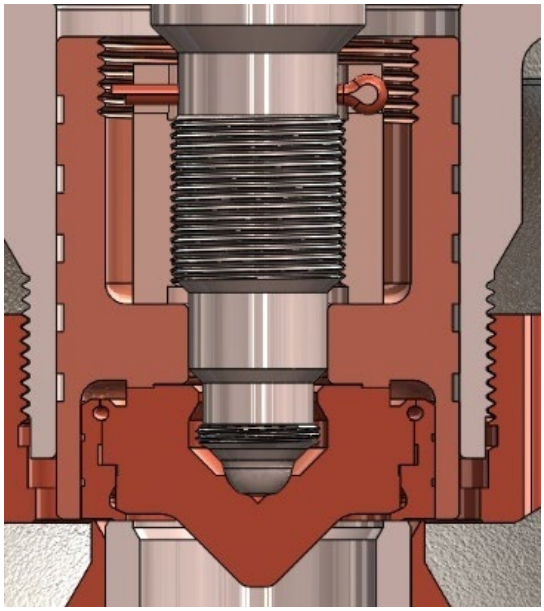
SL1000-1H

Main Section Structure

The trim of the SL-H series adopts a feather disc seat structure optimized for steam. SUS630 used at temperatures of 320°C or less and B637-N07750 or B637-N07718 used for higher temperatures are adopted as materials. The holder structure adopts a flexible holder.

- Feather disc & Flexible holder
  By shaping the seat section into a lip form, the surface pressure at the lip tip is kept high through internal pressure.
  In addition, a flexible holder structure is adopted to minimize the effect of holder inclination on the seat section.

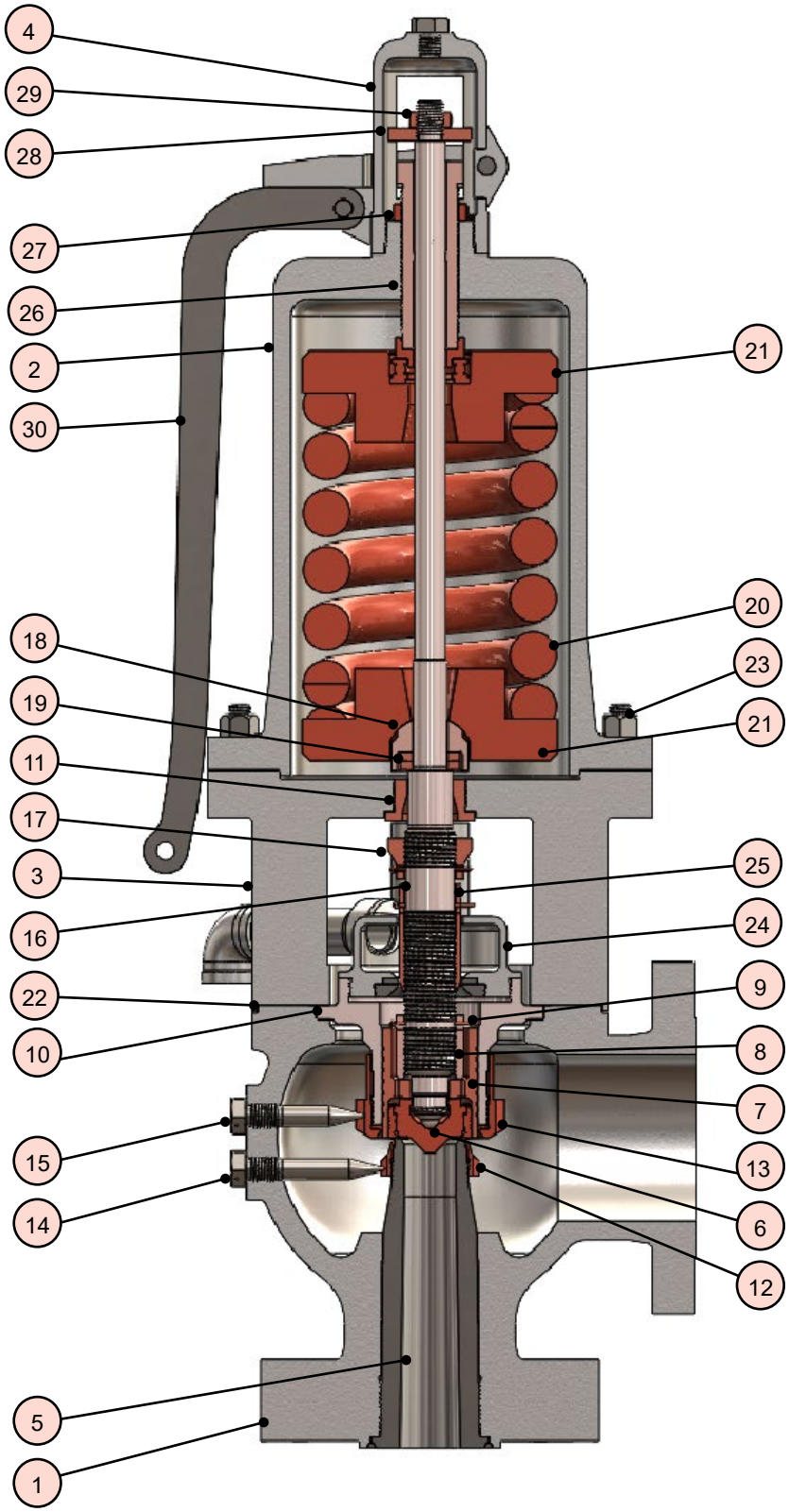




- Thermal disc & Flexible holder
  The lip depth is designed to be larger than that of the feather disc and the internal pressure is utilized more actively to maintain the surface pressure at the lip tip. In addition, to prevent damage from the impact caused when the valve closes after operation, a receiver for preventing deformation is provided at the lip section. The holder has the same structure as that of the feather disc.

Cross-Sectional View

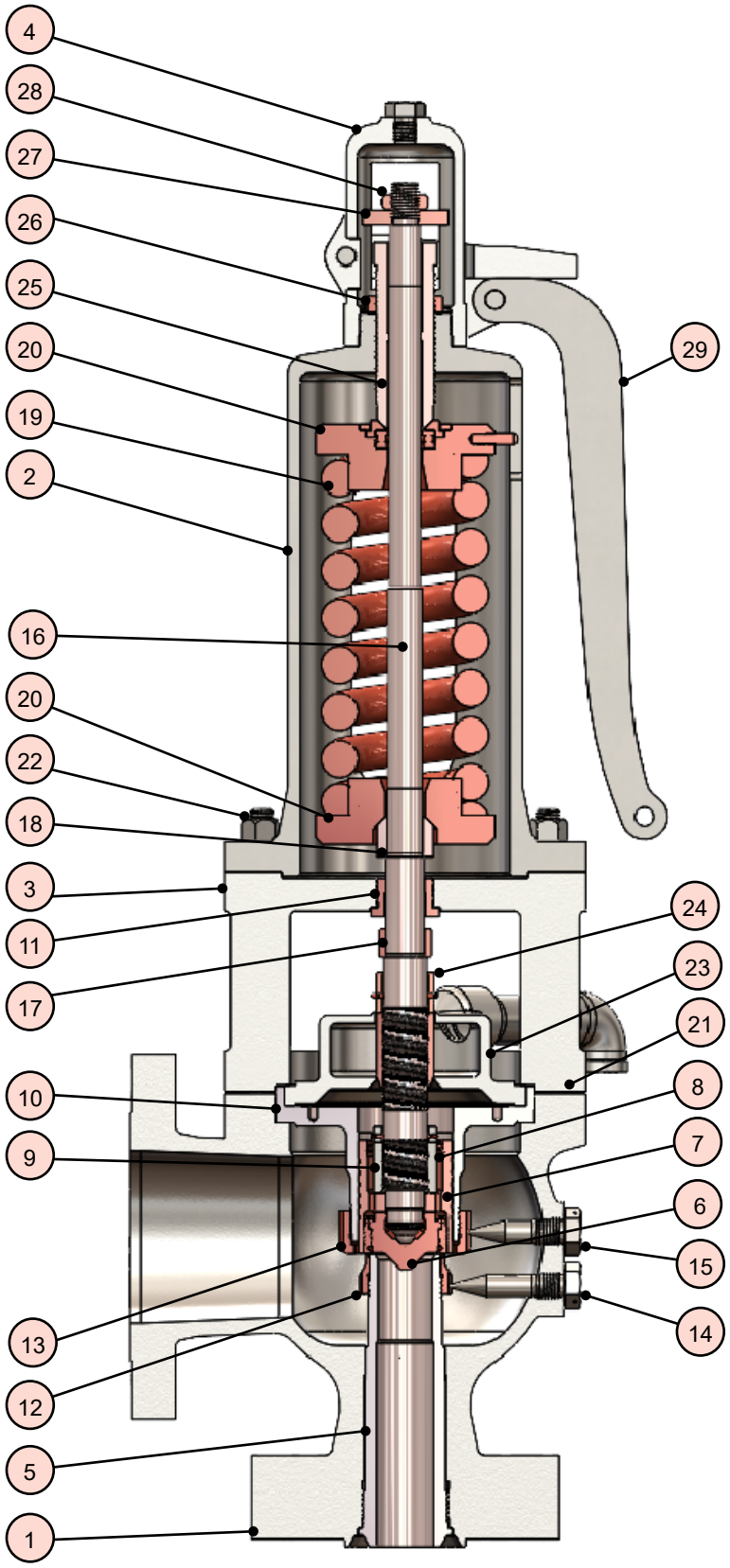
SL700–900 H1



No.	Part name
1	Body
2	Bonnet
3	Cooling piece
4	Cap
5	Nozzle
6	Disc
7	Disc holder
8	Disc collar
9	Pin
10	Guide
11	Spindle guide
12	Lower adjusting ring
13	Upper adjusting ring
14	Lower adjusting ring lock bolt
15	Upper adjusting ring lock bolt
16	Spindle
17	Lift stopper
18	Step ring
19	Disc spring
20	Spring
21	Spring retainer
22	Stud bolt, nut
23	Stud bolt, nut
24	Orifice piece
25	Center slot
26	Adjusting screw
27	Adjusting screw lock nut
28	Lifting washer
29	Lifting washer lock nut
30	Lever

* This shows a general structure. The structure may vary depending on the size.

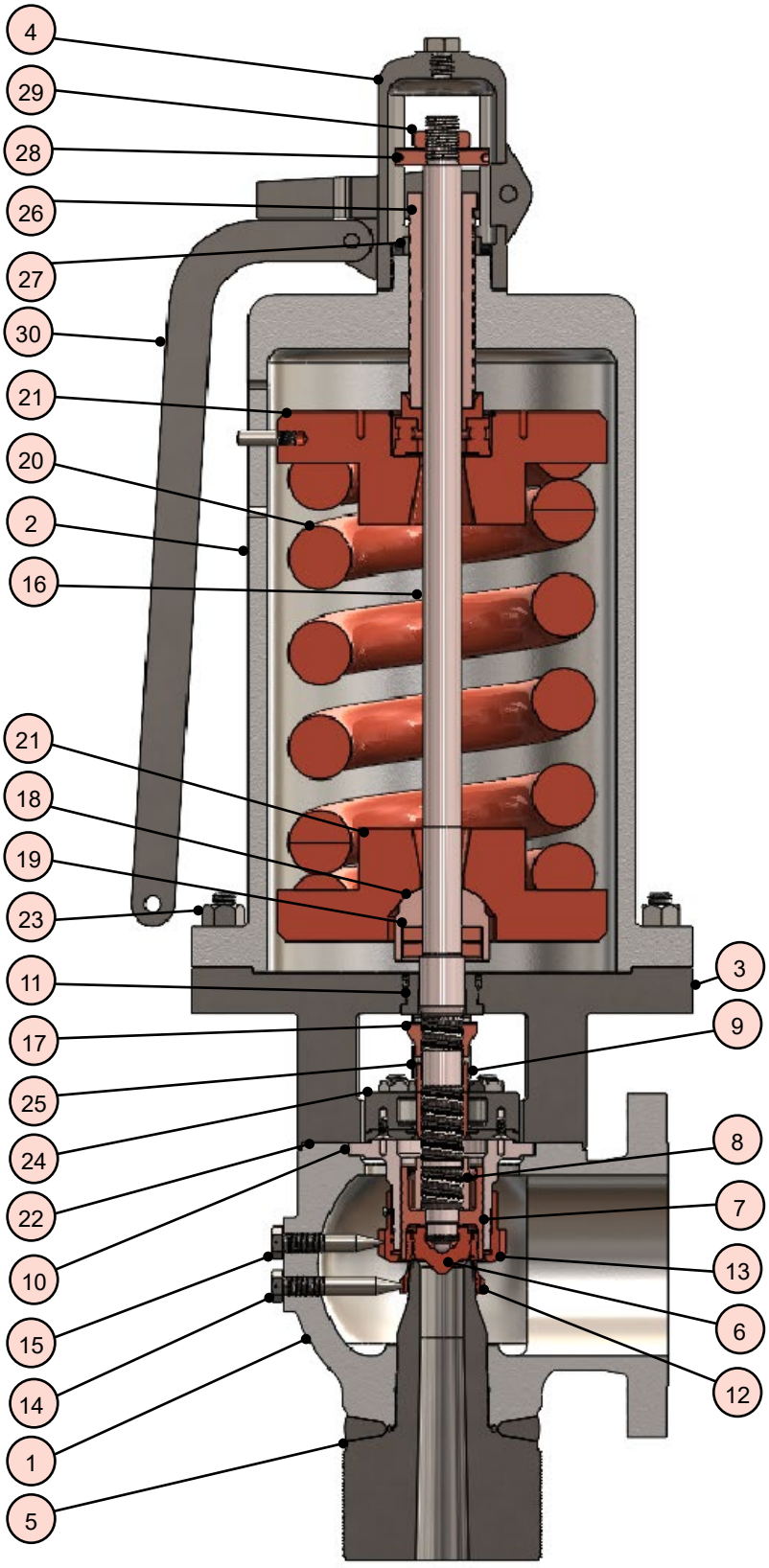
SL700–800 H2



No.	Part name
1	Body
2	Bonnet
3	Cooling piece
4	Cap
5	Nozzle
6	Disc
7	Disc holder
8	Disc collar
9	Pin
10	Guide
11	Spindle guide
12	Lower adjusting ring
13	Upper adjusting ring
14	Lower adjusting ring lock bolt
15	Upper adjusting ring lock bolt
16	Spindle
17	Lift stopper
18	Step ring
19	Spring
20	Spring retainer
21	Stud bolt, nut
22	Stud bolt, nut
23	Orifice piece
24	Center slot
25	Adjusting screw
26	Adjusting screw lock nut
27	Lifting washer
28	Lifting washer lock nut
29	Lever

* This shows a general structure. The structure may vary depending on the size.

SL1000 H1



No.	Part name
1	Body
2	Bonnet
3	Cooling piece
4	Cap
5	Nozzle
6	Disc
7	Disc holder
8	Disc collar
9	Pin
10	Guide
11	Spindle guide
12	Lower adjusting ring
13	Upper adjusting ring
14	Lower adjusting ring lock bolt
15	Upper adjusting ring lock bolt
16	Spindle
17	Lift stopper
18	Step ring
19	Disc spring
20	Spring
21	Spring retainer
22	Stud bolt, nut
23	Stud bolt, nut
24	Orifice piece
25	Center slot
26	Adjusting screw
27	Adjusting screw lock nut
28	Lifting washer
29	Lifting washer lock nut
30	Lever

* This shows a general structure. The structure may vary depending on the size.

Standard Material

Standard material by temperature
SL700–900 H1

No.	Application temperature range °C	≤400°C	≤510°C	≤571°C	≤621°C
	Temperature class code	3	5	6	7
1	Body	SCPH2 or SA216M-WCB	SCPH21 or SA217M-WC6	SCPH32 or SA217M-WC9	火 SCPH91 or SA217M-C12A
2	Bonnet	SCPH2 or SA216M-WCB			
3	Cooling piece	SCPH2 or SA216M-WCB	SCPH21 or SA217M-WC6		
4	Cap	FCD450-10			
5	Nozzle	SA105M	SA182M-F12	SA182M-F22	SA182M-F91
6	Disc	B637-N07750			B637-N07718
7	Disc holder	SUS420J2			
8	Disc collar	SUS630			B637-N07750
9	Pin	SUS304			
10	Guide	SUS420J2 or SCS1			
11	Spindle guide	SUS630			
12	Lower adjusting ring	SUS304			
13	Upper adjusting ring	SUS304			
14	Lower adjusting ring lock bolt	SUS431		B637-N07750	
15	Upper adjusting ring lock bolt	SUS431			
16	Spindle	SILICOLLOY A2			
17	Lift stopper	SUS420J2			
18	Step ring	SUS420J2			
19	Disc spring	SUS630			
20	Spring	Spring Steel			
21	Spring retainer	SUS403			
22	Stud bolt, nut	SNB7, S45C		SNB16, A194-4	
23	Stud bolt, nut	SNB7, S45C			
24	Orifice piece	SCS13A			
25	Center slot	SUS630			
26	Adjusting screw	SUS420J2			
27	Adjusting screw lock nut	SUS304			
28	Lifting washer	SS400			
29	Lifting washer lock nut	SS400			
30	Lever	FCMB310-8			

SL700–800 H2

No.	Application temperature range °C	≤400°C	≤510°C	≤571°C	≤621°C
	Temperature class code	3	5	6	7
1	Body	SCPH2 or SA216M-WCB	SCPH21 or SA217M-WC6	SCPH32 or SA217M-WC9	火 SCPH91 or SA217M-C12A
2	Bonnet	SCPH2 or SA216M-WCB			
3	Cooling piece	SCPH2 or SA216M-WCB	SCPH21 or SA217M-WC6		
4	Cap	FCD450-10			
5	Nozzle	SA105M	SA182M-F12	SA182M-F22	SA182M-F91
6	Disc	B637-N07750			B637-N07718
7	Disc holder	SUS420J2			
8	Disc collar	SUS630			B637-N07750
9	Pin	SUS304			
10	Guide	SUS420J2 or SCS1			
11	Spindle guide	SUS630			
12	Lower adjusting ring	SUS304			
13	Upper adjusting ring	SUS304			
14	Lower adjusting ring lock bolt	SUS431		B637-N07750	
15	Upper adjusting ring lock bolt	SUS431			
16	Spindle	SUS403	SUS431		
17	Lift stopper	SUS420J2			
18	Step ring	SUS420J2			
19	Spring	Spring Steel			
20	Spring retainer	SUS403			
21	Stud bolt, nut	SNB7, S45C		SNB16, A194-4	
22	Stud bolt, nut	SNB7, S45C			
23	Orifice piece	SCS13A			
24	Center slot	SUS304			
25	Adjusting screw	SUS420J2			
26	Adjusting screw lock nut	SUS304			
27	Lifting washer	SS400			
28	Lifting washer lock nut	SS400			
29	Lever	FCMB310-8			

SL1000 H1

No.	Application temperature range °C	≤400°C	≤510°C	≤571°C	≤621°C
	Temperature class code	3	5	6	7
1	Body	SCPH2 or SA216M-WCB	SCPH21 or SA217M-WC6	SCPH32 or SA217M-WC9	火 SCPH91 or SA217M-C12A
2	Bonnet	SCPH2 or SA216M-WCB			
3	Cooling piece	SCPH2 or SA216M-WCB	SCPH21 or SA217M-WC6	SCPH32 or SA217M-WC9	火 SCPH91 or SA217M-C12A
4	Cap	FCD450-10			
5	Nozzle	SA105M	SA182M-F12	SA182M-F22	SA182M-F91
6	Disc	B637-N07750			B637-N07718
7	Disc holder	SUS420J2			
8	Disc collar	SUS630			
9	Pin	SUS304			
10	Guide	SUS420J2			
11	Spindle guide	B865 N05500			
12	Lower adjusting ring	SUS420J2			
13	Upper adjusting ring	SUS420J2			
14	Lower adjusting ring lock bolt	SUS431		B637-N07750	
15	Upper adjusting ring lock bolt	SUS431			
16	Spindle	SILICOLLOY A2			
17	Lift stopper	SUS420J2			
18	Step ring	SUS420J2			
19	Disc spring	SUS630			
20	Spring	Spring Steel			
21	Spring retainer	SUS403			
22	Stud bolt, nut	SNB7, S45C		SNB16, A194-4	
23	Stud bolt, nut	SNB7, S45C			
24	Orifice piece	SUS304			
25	Center slot	SUS630			
26	Adjusting screw	SUS420J2			
27	Adjusting screw lock nut	SUS304			
28	Lifting washer	SS400			
29	Lifting washer lock nut	SS400			
30	Lever	FCMB310-8			

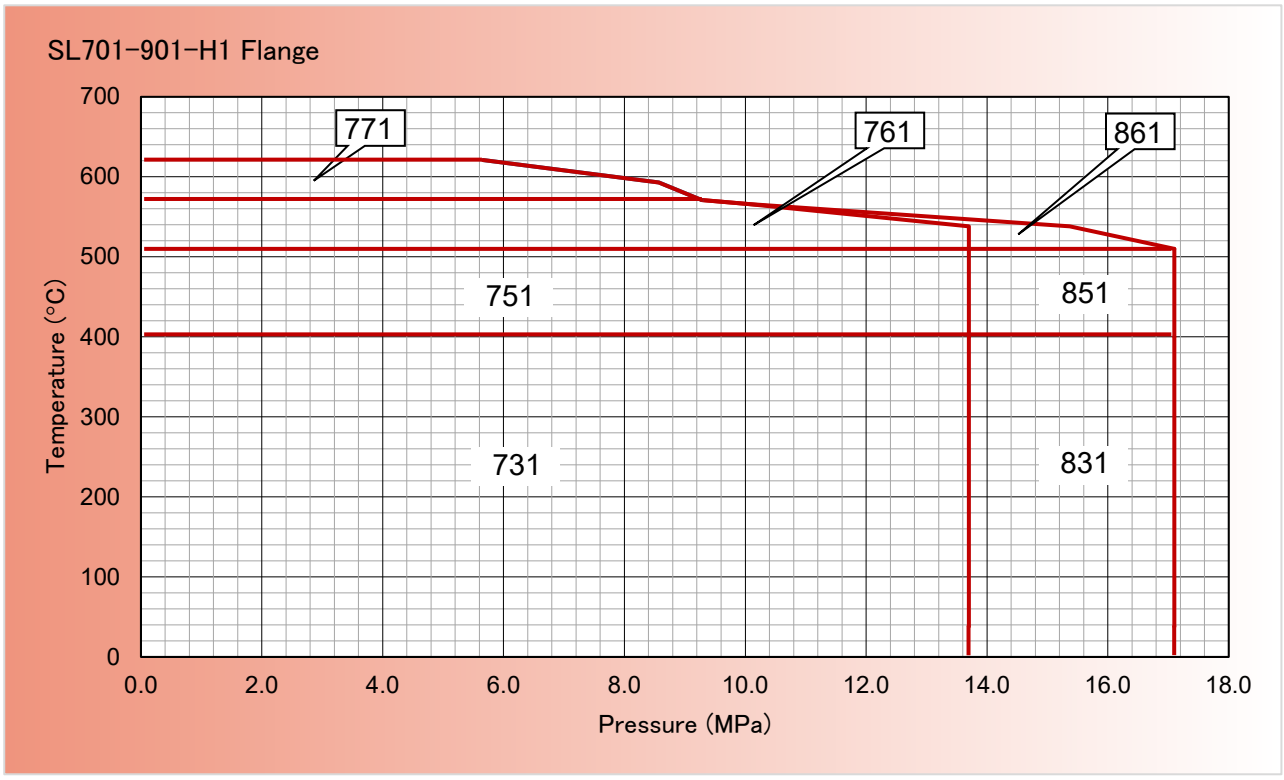
Actual Area

Type			Orifice	Throat diameter mm	Seat diameter mm	Nominal lift mm	Area mm^2
SL700–900		SL1000					
H1	H2	H1					
○	○	—	F1	—	32	2.3	216.4
○	○	—	G1	—	32	3.7	353.0
○	○	—	H	26.6	—	6.7	555.7
○	○	—	J	34.0	—	8.5	907.9
—	—	○	J3	38.5	—	9.7	1164.1
○	○	—	K	40.6	—	10.2	1294.6
○	○	—	K2	46.9	—	11.8	1727.6
—	—	○	K3	48.5	—	12.2	1847.4
○	○	○	L	50.6	—	12.7	2010.9
○	○	—	M	56.8	—	14.2	2533.9
○	○	○	M2	57.4	—	14.4	2587.7
○	—	—	P	75.7	—	19.0	4500.7

Pressure-temperature Rating

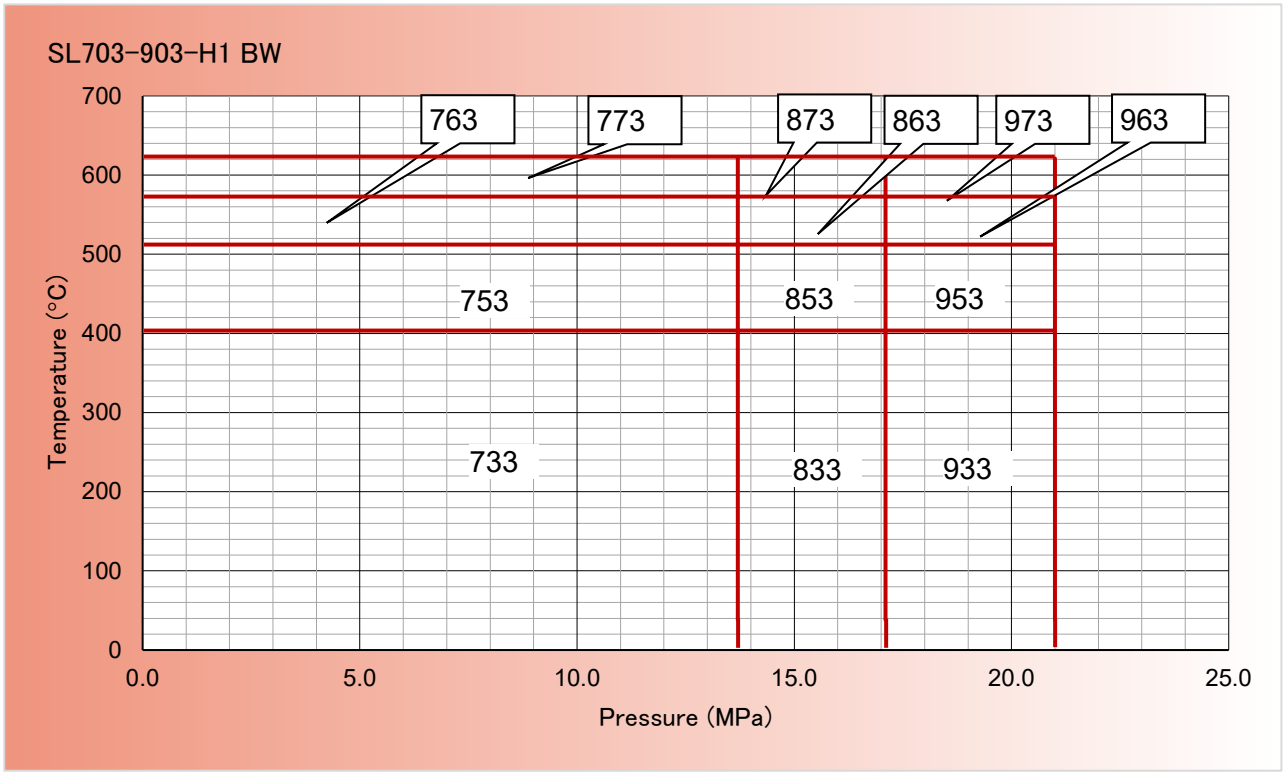
Pressure-temperature Rating SL701–901 H1 Flange Orifice F1, G1, H, J K, K2, L, M, M2													
Body material	Size	Flange class		Maximum Pressure Limit MPa									
				Temperature T °C	38	400	510	538	566	571	593	621	
		Inlet	Outlet	*1 \ *2	3		5	6			7		
WCB	F1, G1 H, J K, K2 L, M M2	2500	300	7	13.7	13.7							
				8	17.1	17.1							
WC6				7		13.7	13.7						
				8		17.1	17.1						
WC9				7			13.7	13.7	10.0	9.28			
				8			17.1	15.4	10.0	9.28			
C12A				7						9.28	8.57	5.66	

*1 Indicates the pressure class code. *2 Indicates the temperature code.



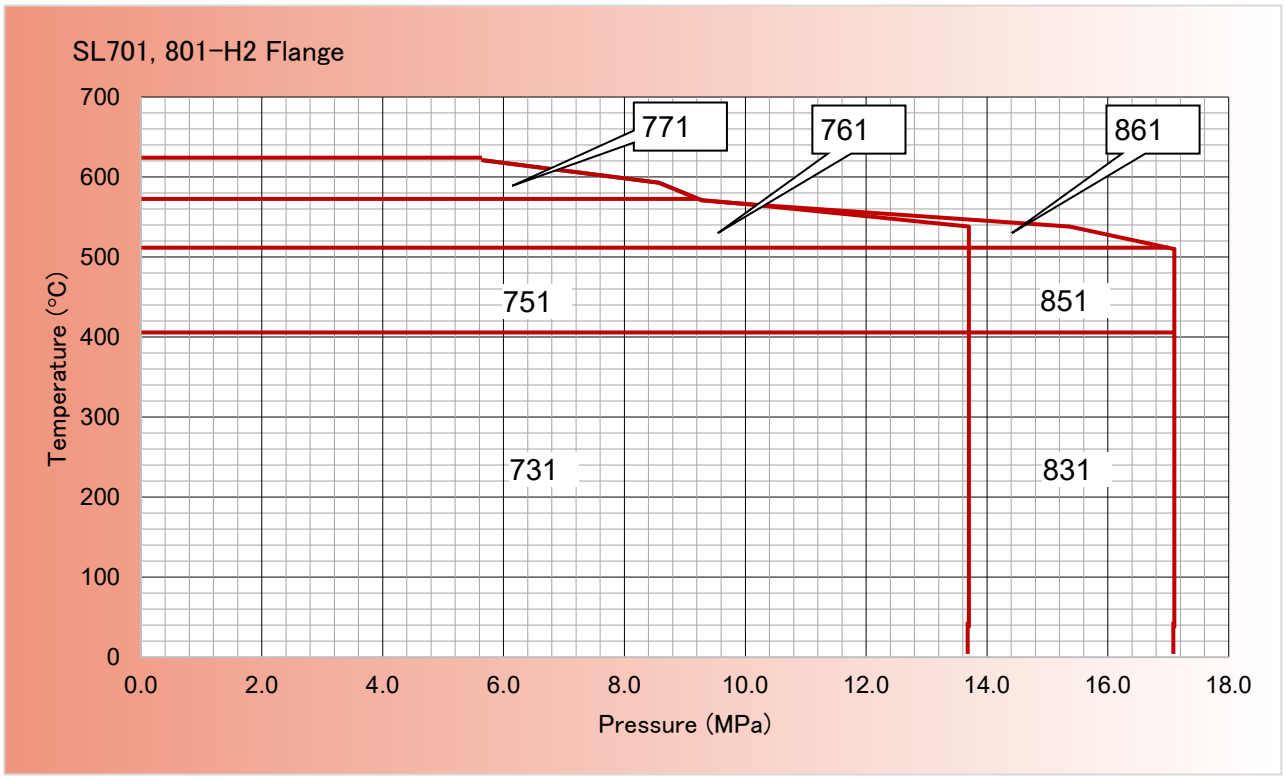
Pressure-temperature Rating SL703–903 H1 BW Orifice F1, G1, H, J K, K2, L, M, M2, P													
Body material	Size	Flange class		Maximum Pressure Limit MPa									
				Temperature T °C	38	400	510	538	566	571	593	621	
		Inlet	Outlet	*1 \ *2	3		5	6			7		
WCB	F1, G1 H, J K, K2 L, M M2, P	BW	300	7	13.7	13.7							
				8	17.1	17.1							
				9	21.0	21.0							
WC6				7		13.7	13.7						
				8		17.1	17.1						
				9		21.0	21.0						
WC9				7			13.7	13.7	13.7	13.7			
				8			17.1	17.1	17.1	17.1			
				9			21.0	21.0	21.0	21.0			
C12A				7						13.7	13.7	13.7	
				8						17.1	17.1	17.1	
				9						21.0	21.0	21.0	

*1 Indicates the pressure class code. *2 Indicates the temperature code.



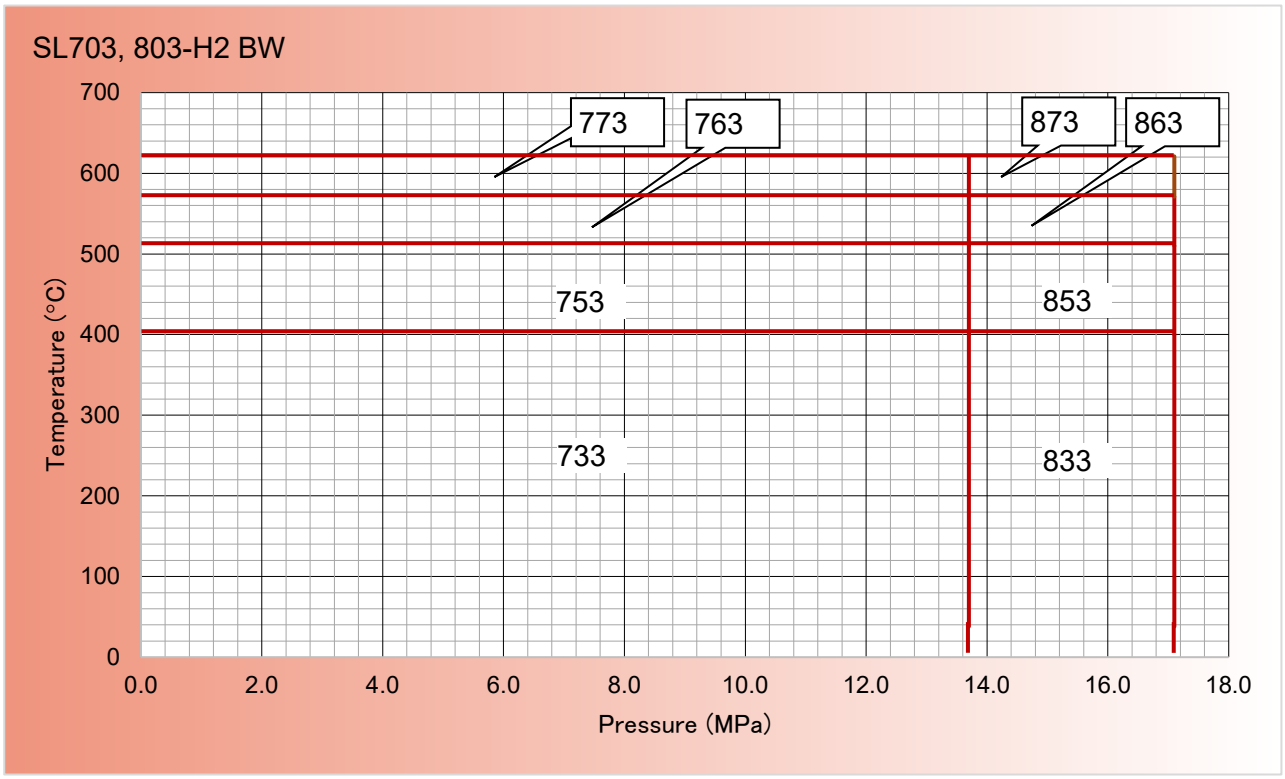
Pressure-temperature Rating SL701,801 H2 Flange Orifice F1, G1, H, J K, K2, L, M, M2													
Body material	Size	Flange class		Maximum Pressure Limit MPa									
				Temperature T °C	38	400	510	538	566	571	593	621	
		Inlet	Outlet	*1 \ *2	3		5	6			7		
WCB	F1, G1 H, J K, K2 L, M M2	2500	300	7	13.7	13.7							
				8	17.1	17.1							
WC6				7		13.7	13.7						
				8		17.1	17.1						
WC9				7			13.7	13.7	10.0	9.28			
				8			17.1	15.4	10.0	9.28			
C12A				7						9.28	8.57	5.66	
				8						9.28	8.57	5.66	

*1 Indicates the pressure class code. *2 Indicates the temperature code.



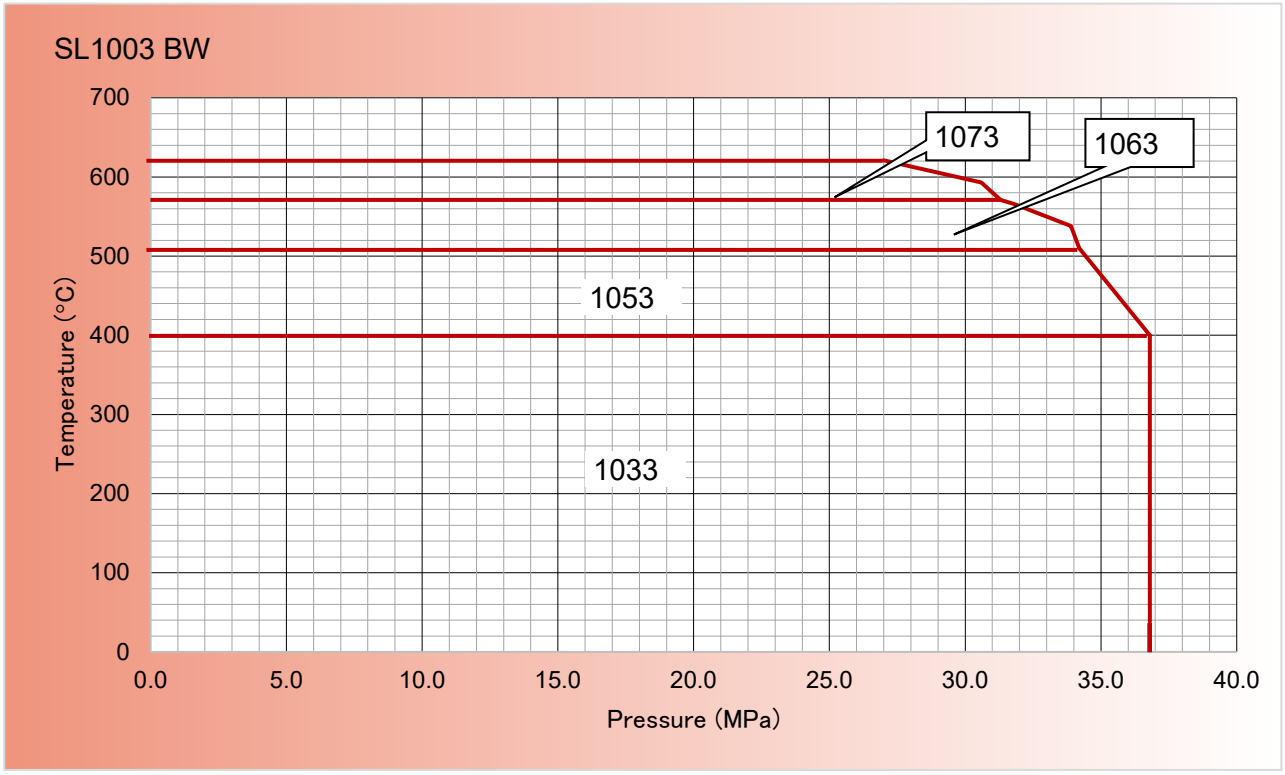
Pressure-temperature Rating SL703, 803 H2 BW Orifice F1, G1, H, J K, K2, L, M, M2													
Body material	Size	Flange class		Maximum Pressure Limit MPa									
				Temperature T °C	38	400	510	538	566	571	593	621
		Inlet	Outlet	*1 \ *2	3		5	6			7	
WCB	F1, G1 H, J K, K2 L, M M2	BW	300	7	13.7	13.7						
				8	17.1	17.1						
WC6				7		13.7	13.7					
				8		17.1	17.1					
WC9				7			13.7	13.7	13.7	13.70		
				8			17.1	17.1	17.1	17.1		
C12A				7						13.7	13.7	13.7
				8						17.1	17.1	17.1

*1 Indicates the pressure class code. *2 Indicates the temperature code.

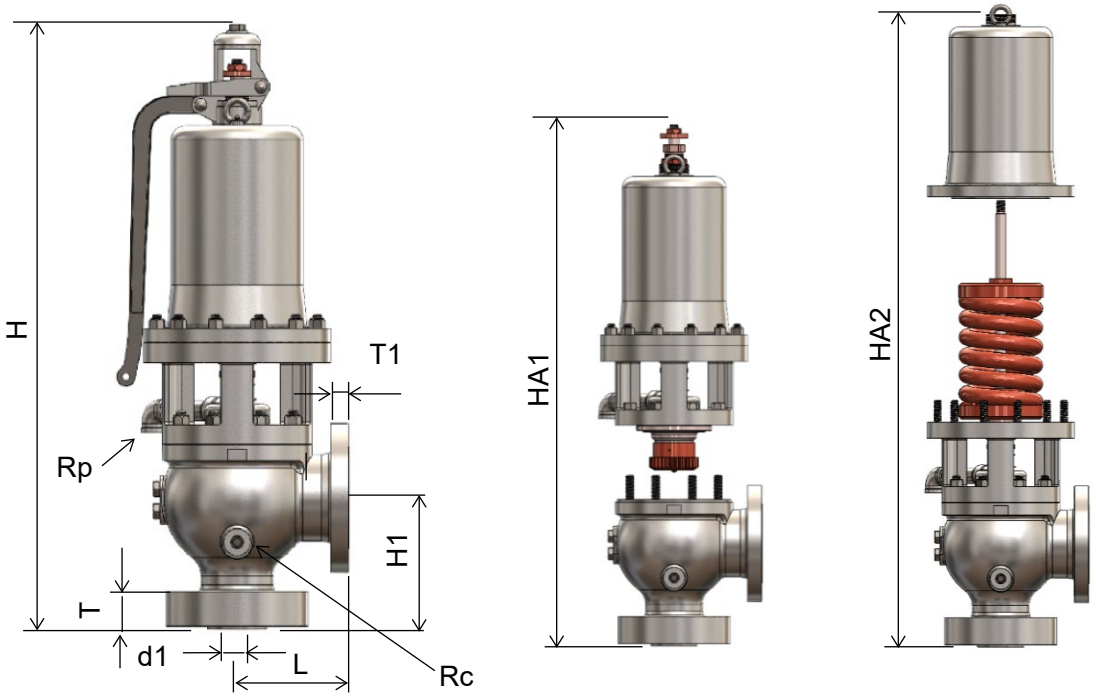


Pressure-temperature Rating SL1003 BW Orifice J3, K3, L, M2													
Body material	Size	Flange class		Maximum Pressure Limit MPa									
				Temperature T °C	38	400	510	538	566	571	593	621	
		Inlet	Outlet	*1 \ *2	3		5	6			7		
WCB	J3, K3 L, M2	BW	300	10	36.8	36.8							
WC6				10		36.8	34.2						
WC9				10			34.2	33.9	31.8	31.3			
C12A				10						31.3	30.6	27.0	

*1 Indicates the pressure class code. *2 Indicates the temperature code.



Dimensions and Weight

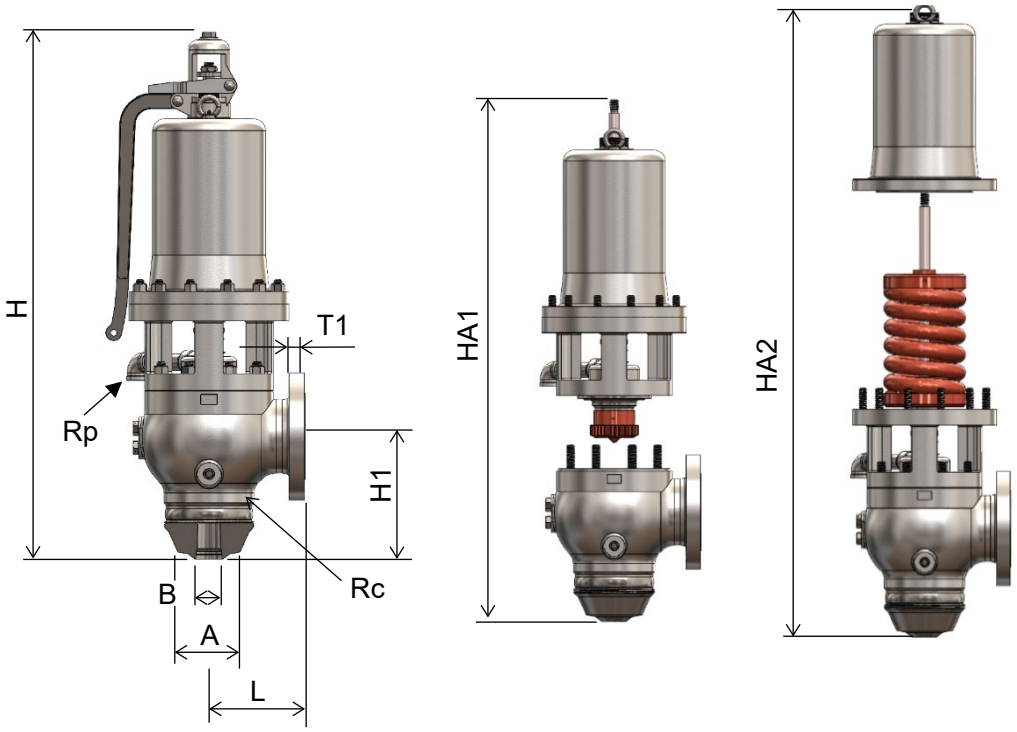


SL700–800 H1 Flange

ASME, JPI flange Dimensions and weight Units: mm, kg														
Size	Pressure class code	Flange class		Inlet diameter	Center-to-face		Flange thickness		Overall length	Disassembly height		Thread		Approximate weight
							Inlet	Outlet		Dual partitioning	Full disassembly	Drain	Needle	
		Inlet	Outlet	d1	H1	L	T	T1	H	HA1	HA2	Rc	Rp	
2*F1*4	7	2500	300	40	220	169	65	32	920	1040	1220	1/2	3/4	150
	8													
2*G1*4	7	2500	300	40	220	169	65	32	920	1040	1220	1/2	3/4	150
	8													
2*H*4	7	2500	300	40	220	169	65	32	920	1040	1220	1/2	3/4	150
	8													
2 1/2*J*4	7	2500	300	50	220	220	74	32	1030	1170	1370	1/2	1	200
	8													
3*K*6	7	2500	300	65	270	240	84	37	1140	1280	1480	1/2	1 1/4	300
	8													350
3*K2*6	7	2500	300	65	280	240	84	37	1280	1430	1730	3/4	1 1/4	350
	8													400
4*L*6	7	2500	300	80	280	240	96	37	1435	1630	1970	3/4	1 1/4	350
	8													400
4*M*6	7	2500	300	80	300	260	96	37	1585	1790	2210	3/4	1 1/2	500
	8													650
4*M2*6	7	2500	300	80	300	260	96	37	1585	1790	2210	3/4	1 1/2	500
	8													650

SL700–800 H2 Flange

ASME, JPI flange Dimensions and weight Units: mm, kg														
Size	Pressure class code	Flange class		Inlet diameter	Center-to-face		Flange thickness		Overall length	Disassembly height		Thread		Approximate weight
							Inlet	Outlet		Dual partitioning	Full disassembly	Drain	Needle	
		Inlet	Outlet	d1	H1	L	T	T1	H	HA1	HA2	Rc	Rp	
2*F1*4	7	2500	300	40	220	200	58	32	920	1050	1200	1/2	1	102
	8													
2*G1*4	7	2500	300	40	220	200	58	32	920	1050	1200	1/2	1	102
	8													
2*H*4	7	2500	300	40	220	200	58	32	910	1050	1200	1/2	1	102
	8													
2*J*4	7	2500	300	50	220	220	65	32	975	1110	1290	1/2	1	148
	8													
2 1/2*K*6	7	2500	300	65	270	240	74	37	1155	1310	1530	1/2	1 1/4	217
	8													
2 1/2*K2*6	7	2500	300	65	270	240	77	37	1240	1420	1690	1/2	1 1/4	250
	8													
3*L*6	7	2500	300	80	280	260	84	37	1250	1430	1700	3/4	1 1/4	258
	8													
3*M*6	7	2500	300	80	280	260	84	37	1515	1710	2090	3/4	1 1/2	447
	8													
3*M2*6	7	2500	300	80	280	260	84	37	1515	1710	2090	3/4	1 1/2	447
	8													



SL700–900 H1 BW

BW Dimensions and weight Units: mm, kg																	
Size	Pressure class code	Connection		*1	Temperature °C				Center-to-face dimension		*2	Overall length	Disassembly height		Thread		Approximate weight
		Inlet	Outlet		400	510	571	621					Dual partitioning	Full disassembly	Drain	Needle	
				B	A				H1	L	T1	H	HA1	HA2	Rc	Rp	
1 1/2*F1*4	7	BW	300	42	90		96		250	169	32	950	1070	1250	1/2	3/4	150
	8				95		105										
	9				105		120										
1 1/2*G1*4	7	BW	300	42	90		96		250	169	32	950	1070	1250	1/2	3/4	150
	8				95		105										
	9				105		120										
1 1/2*H*4	7	BW	300	42	90		96		250	169	32	950	1070	1250	1/2	3/4	150
	8				95		105										
	9				105		120										
2*J*4	7	BW	300	52	110		120		250	220	32	1060	1200	1400	1/2	1	200
	8				110		130										250
	9				125		145										
2 1/2*K*6	7	BW	300	67	120	125	145		305	240	37	1170	1310	1520	1/2	1 1/4	300
	8				130		145										350
	9				145		165										
2 1/2*K2*6	7	BW	300	67	135	145	152		305	240	37	1300	1450	1750	3/4	1 1/4	350
	8				145		160										400
	9				155		180										
3*L*6	7	BW	300	82	140		155		305	240	37	1455	1650	1990	3/4	1 1/4	350
	8				150	155	170										400
	9				160	170	195										

*1 Thinning diameter *2 Outlet flange thickness

SL700–900 H1 BW

BW Dimensions and weight																Units: mm, kg
Size	Pressure class code	Connection		*1	Temperature °C				Center-to-face		*2	Overall length	Disassembly height		Thread		Approximate weight
		Inlet	Outlet		400	510	571	621					Dual partitioning	Full disassembly	Drain	Needle	
				B	A				H1	L	T1	H	HA1	HA2	Rc	Rp	
3*M*6	7	BW	300	82	150			170	305	260	37	1585	1790	2210	3/4	1 1/2	500
	8				160	165		185									650
	9				165	180		210									
3*M2*6	7	BW	300	82	150			170	305	260	37	1585	1790	2210	3/4	1 1/2	500
	8				160	165		185									650
	9				165	180		210									
4*P*8	8	BW	300	102	210	220		240	396	315	42	1900	2100	2640	3/4	2	950
	9				220	240		265									

*1 Thinning diameter *2 Outlet flange thickness

SL700–800 H2 BW

BW Dimensions and weight																Units: mm, kg
Size	Pressure class code	Connection		*1	Temperature °C				Center-to-face		*2	Overall length	Disassembly height		Thread		Approximate weight
		Inlet	Outlet		400	510	571	621					Dual partitioning	Full disassembly	Drain	Needle	
				B	A				H1	L	T1	H	HA1	HA2	Rc	Rp	
1 1/2*F1*4	7	BW	300	42	90			96	250	200	32	950	1080	1230	1/2	1	102
	8				92			104									
1 1/2*G1*4	7	BW	300	42	90			96	250	200	32	950	1080	1230	1/2	1	102
	8				92			104									
1 1/2*H*4	7	BW	300	42	90			96	250	200	32	940	1080	1230	1/2	1	102
	8				92			104									
2*J*4	7	BW	300	52	108			116	250	220	32	1005	1140	1320	1/2	1	148
	8				108			127									
2 1/2*K*6	7	BW	300	67	120			135	305	240	37	1190	1340	1570	1/2	1 1/4	217
	8				128			143									
2 1/2*K2*6	7	BW	300	67	130			145	305	240	37	1275	1450	1720	1/2	1 1/4	250
	8				143			155									
3*L*6	7	BW	300	82	140			155	305	260	37	1275	1450	1720	3/4	1 1/4	258
	8				146	152		165									
3*M*6	7	BW	300	82	150			162	305	260	37	1540	1730	2120	3/4	1 1/2	447
	8				158	162		174									
3*M2*6	7	BW	300	82	150			162	305	260	37	1540	1730	2120	3/4	1 1/2	447
	8				158	162		174									

*1 Thinning diameter *2 Outlet flange thickness

SL1003-H1

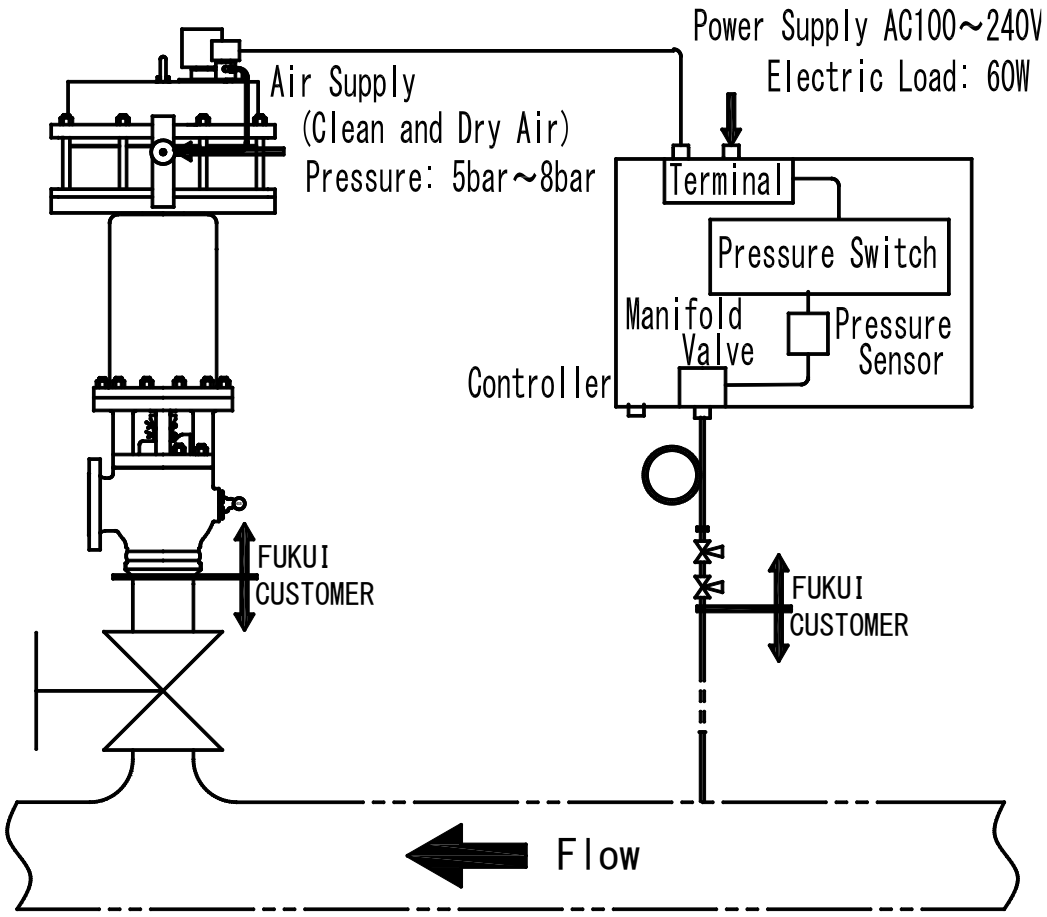
BW				Dimensions and weight								Units: mm, kg
Size	Pressure class code	Connection		*1	Center-to-face dimension		*2	Overall length	Disassembly height		Thread		Approximate weight
									Dual partitioning	Full disassembly	Drain	Needle	
		Inlet	Outlet	B	H1	L	T1	H	HA1	HA2	Rc	Rp	
2*J3*6	10	BW	300	52	280	220	37	1470	1660	2090	3/4	3/4	580
2 1/2*K3*8	10			67	325	250	42	1670	1870	2400	3/4	3/4	830
3*L*8	10			82	325	270	42	1650	1850	2380	3/4	1	900
3*M2*8	10			82	325	270	42	1720	1920	2450	3/4	1	980

*1 Thinning diameter *2 Outlet flange thickness

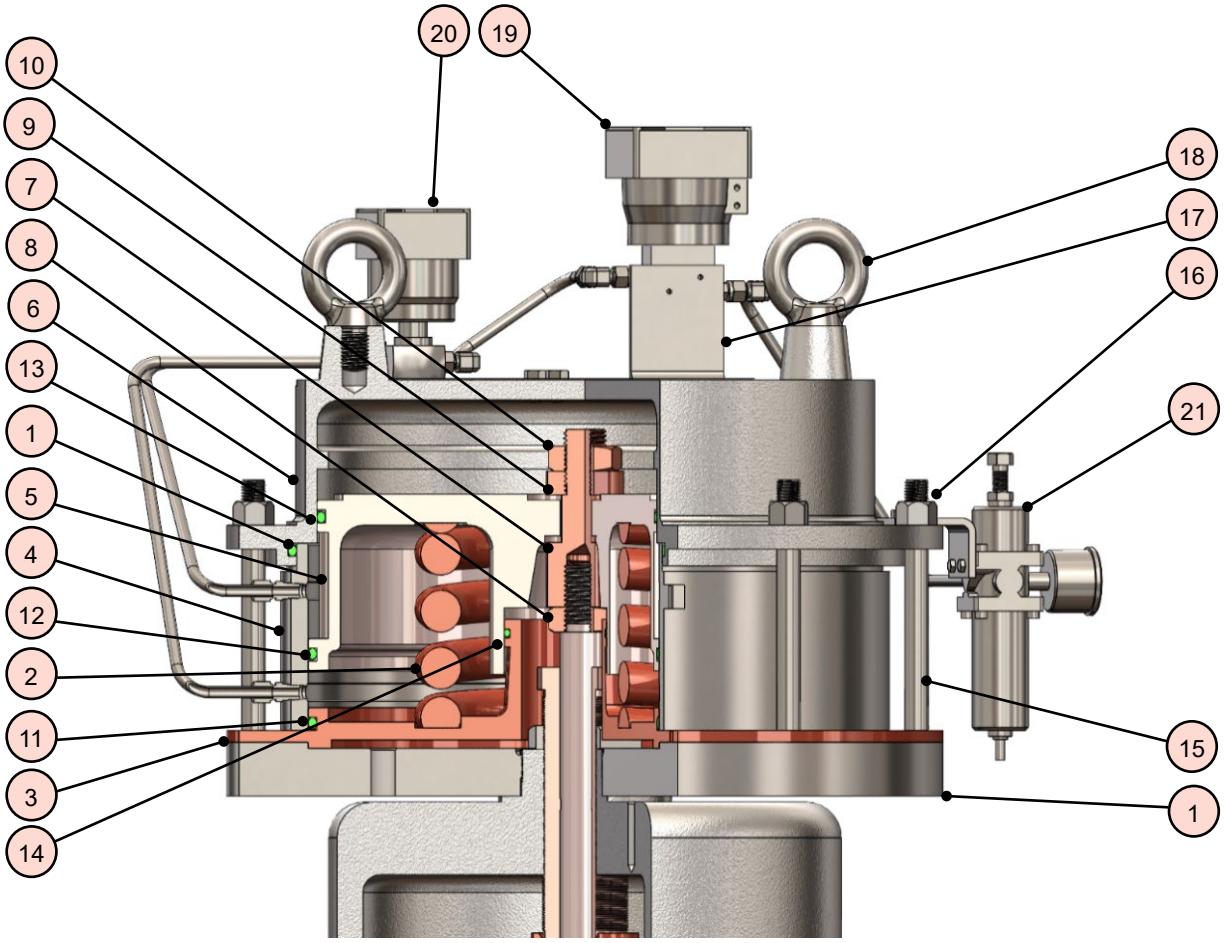
SL-PA Series

The SL-PA Series is a spring-loaded pressure relief valve made by adding a power-driven function to the upper section of the SL series spring-loaded pressure relief valve. That is, it is a valve that has both an externally actuated power-driven valve mode and a self-actuated spring-loaded pressure relief valve mode.
When the power-driven mode is active, the seat surface pressure is maintained by holding down the spindle of the pressure relief valve until the set pressure is reached, preventing leakage from the seat. When the set pressure is reached, the spindle of the pressure relief valve is lifted for operation.
In addition, the valve has a fail-safe function that allows it to operate as an independent spring-loaded pressure relief valve when the PA system enters the pressure relief valve mode due to a loss of power, loss of drive air pressure, etc.

- PA system overview
  The PA system consists of the air cylinder section on top of the pressure relief valve and the controller that detects pressure and controls the cylinder.



◆ Cross-sectional view of the cylinder section

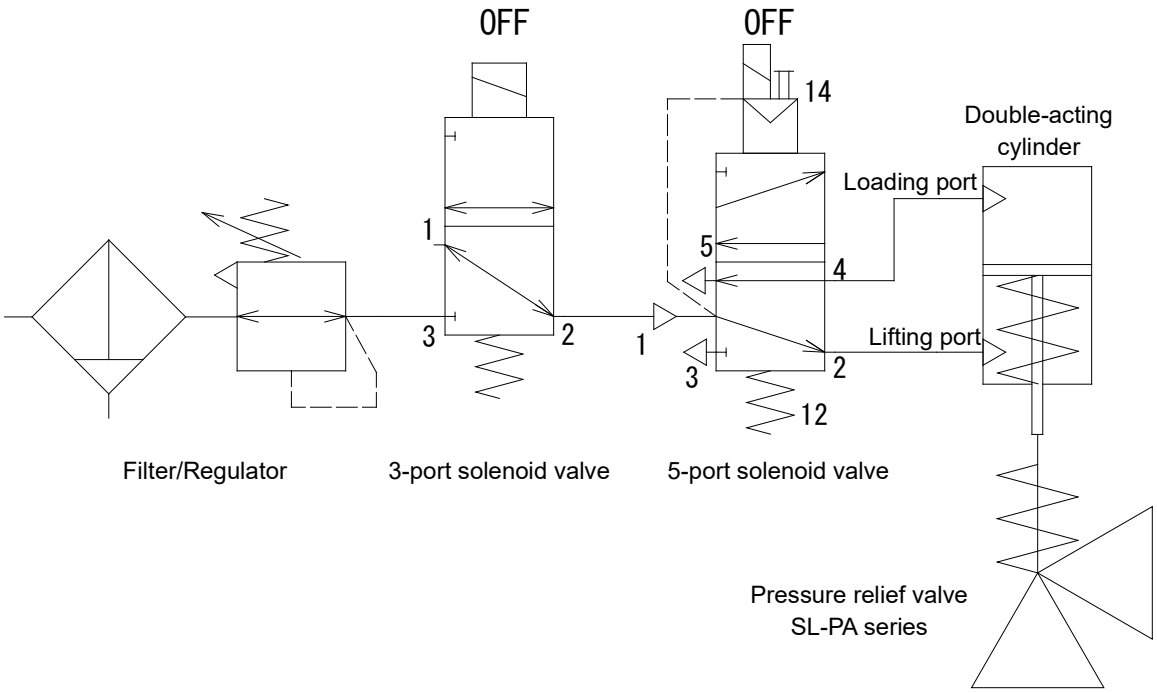


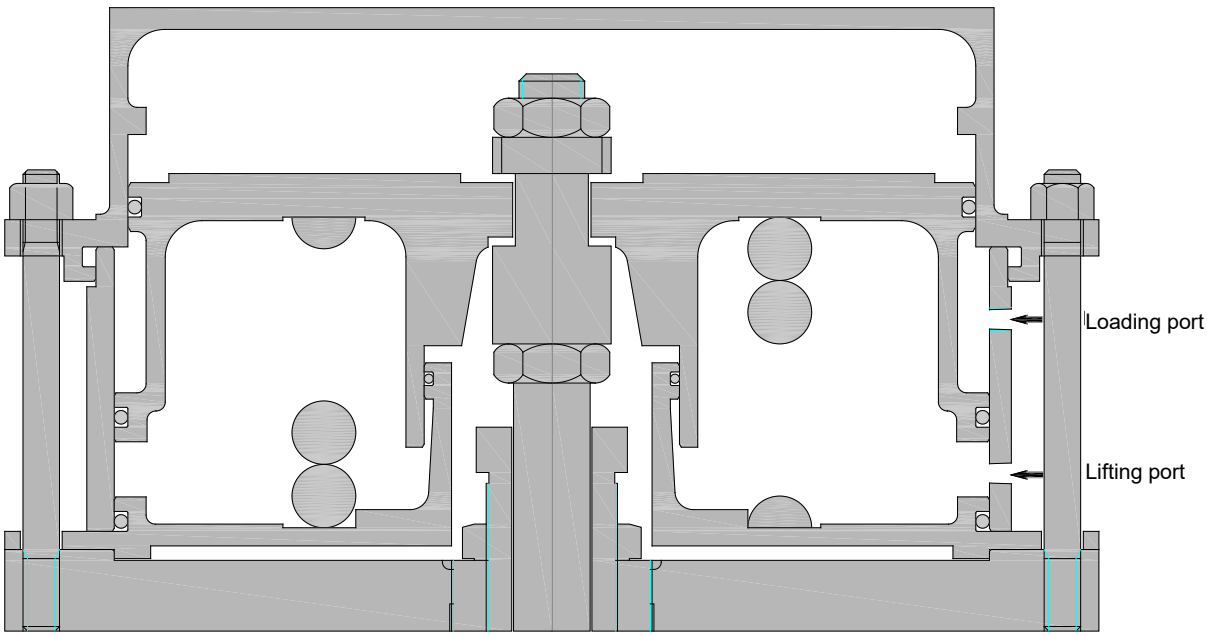
No.	Part name	Material	No.	Part name	Material
1	Bonnet flange	SUS304	12	O-ring	NBR
2	Spring	SUS304	13	O-ring	NBR
3	Bottom flange	SCS13	14	O-ring	NBR
4	Cylinder	SCS13	15	Through bolt	SUS304
5	Piston	SCS13	16	Nut	SUS304
6	Top flange	SUS630	17	Solenoid base	SUS304
7	Stem	SUS304	18	Eyebolt	SUS304
8	Stem nut	SUS304	19	3-port solenoid valve	Commercially available product
9	Lifting washer	SUS304	20	5-port solenoid valve	Commercially available product
10	Lifting nut	SUS304	21	Regulator filter	Commercially available product
11	O-ring	NBR			

◆ Operating principle

Neutral position

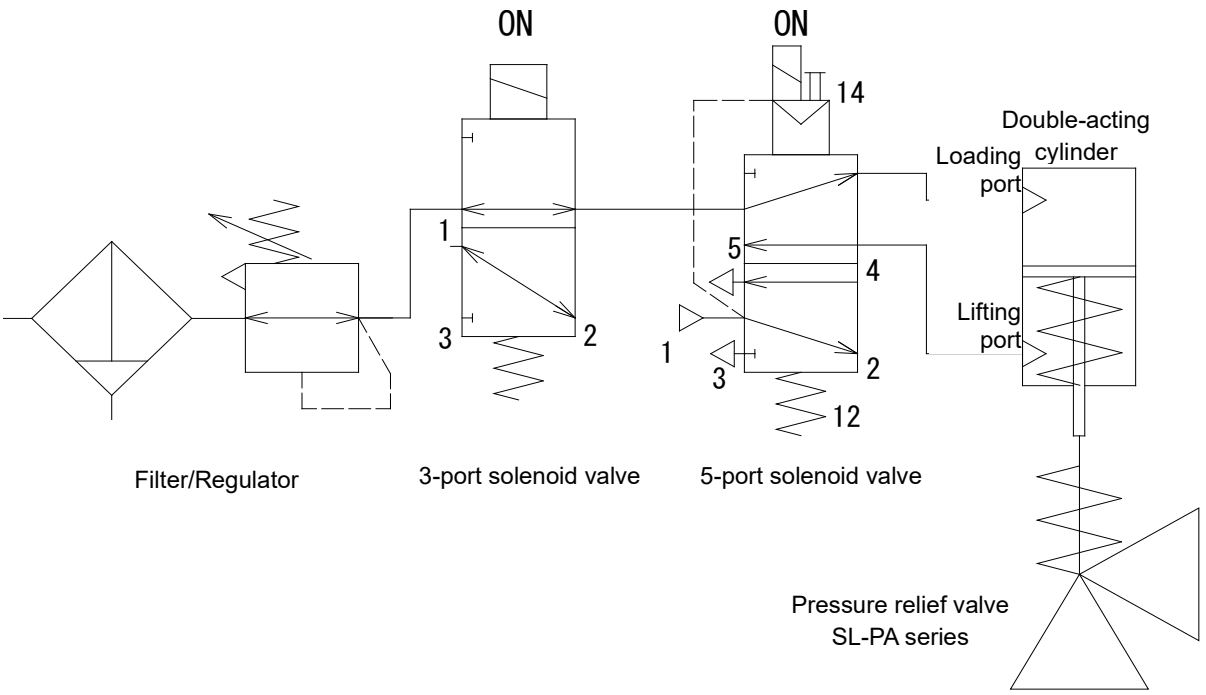
The PA system has entered the pressure relief valve mode due to a loss of power, loss of drive air pressure, etc. In this case, the loading port and lifting port of the double-acting cylinder are at atmospheric pressure, and the valve functions as a self-actuated pressure relief valve.

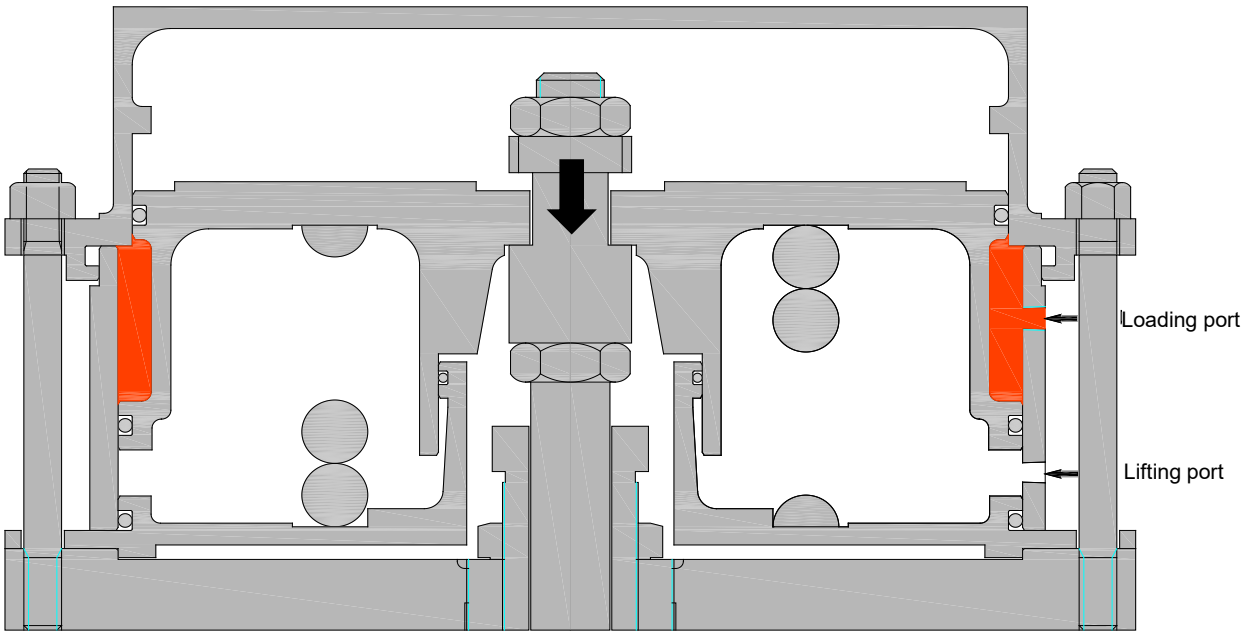




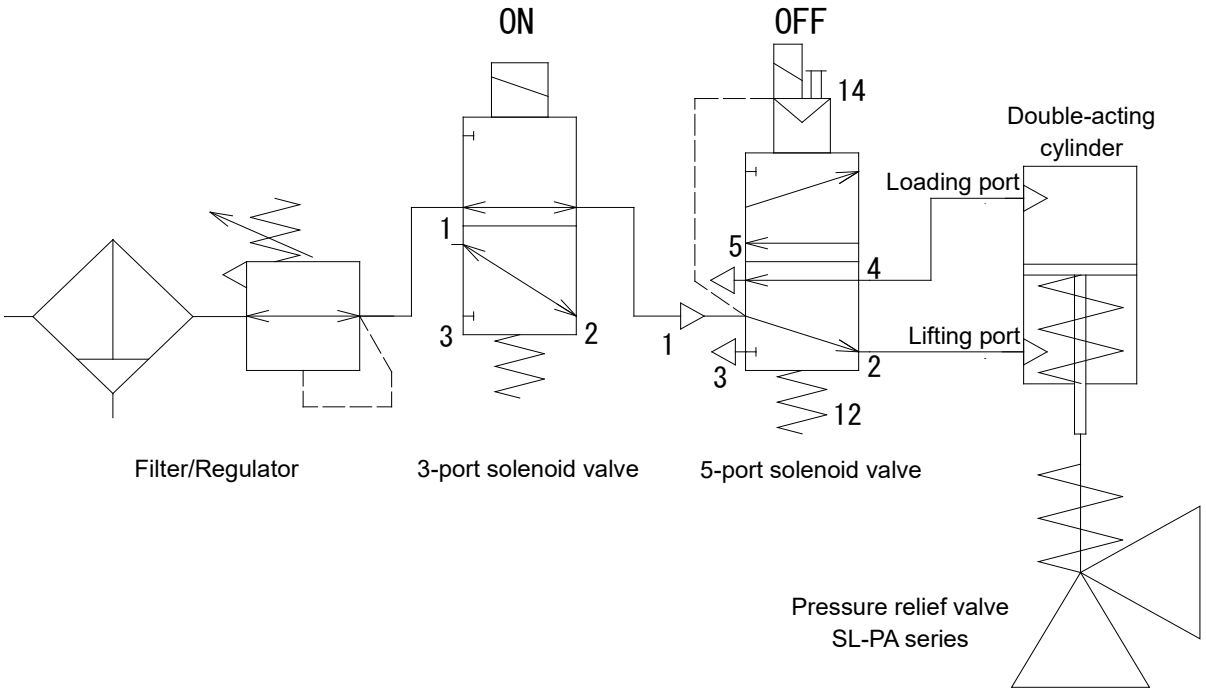
Loading position

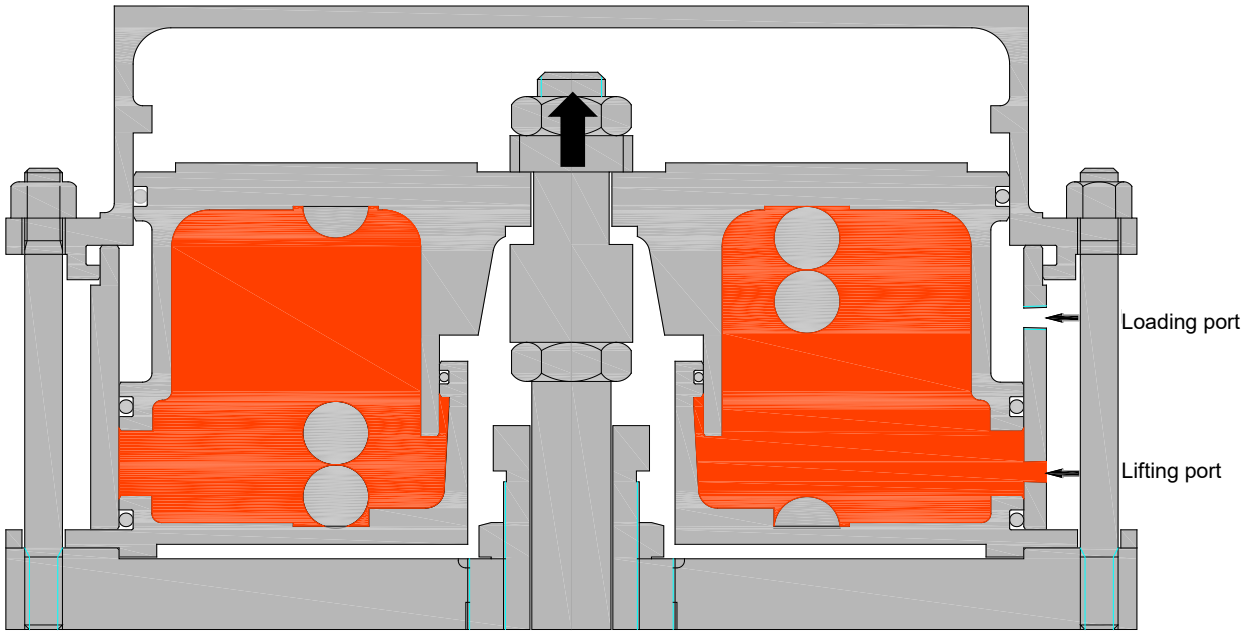
When the power-driven mode is active and the set pressure is not reached, the lifting port is at atmospheric pressure, and pressure is supplied to the loading port to hold down the spindle.





Lifting position
When the power-driven mode is active and the set pressure is exceeded, the loading port is at atmospheric pressure, and pressure is supplied to the lifting port to lift the spindle.





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