

NS255-E
NS200JMR
NS256



NAKAKITA

NAKAKITA SAFETY-RELIEF VALVES

CAT.No.526-3E



Preface

- With concentrated efforts, by constantly developing new techniques, furthering quality assurance of improved products and making it our motto to produce safety valves which guarantee full satisfaction of every customer, Nakakita vigorously has been striving toward safety of various plant facilities .
- As a ministerial certification holder to produce valves for High Pressure Gas Security Law and a certified manufacturer of ASME Code stamping, together with its acquisition of international standard of ISO 9001, Nakakita's quality control system has highly been recognized worldwide and hence its remarkable production increase of approved valves.
- Safety-relief valves introduced herein have widely been installed in every industrial field for all types of gas, vapor, steam and liquid, and contributing to device safety. These valves are basically designed in compliance with such international standards as API, ASME, etc. In addition, they are all in full compliance with such related domestic laws and rules as those of Ministry of Economy, Trade and Industry (High Pressure Gas Security Law and its Related Rules , Electric Power Industry Law, 〈Technical Standards of Nuclear and Thermal Power Generation〉 and Gas Industry Law), Ministry of Health, Labor and Welfare (Structural Standards of Boiler and Pressure Vessel), and other marine related rules, etc.
- We sincerely do hope this new catalog covering full description of Nakakita's safety-relief valves will give you complete satisfaction for your plan of technical innovation and safety security for your entire plant .



CERTIFICATE OF AUTHORIZATION

This certificate accredits the named company as authorized to use the indicated symbol of the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the Code symbol and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with this symbol shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY: **Nakakita Seisakusho Co., Ltd.**
 1-1 Fukuonminami-machi
 Daito-City
 574-8691 Osaka
 Japan

SCOPE:
Manufacture of pressure vessel pressure relief valves at the above location only

AUTHORIZED: **April 6, 2006**
 EXPIRES: **April 2, 2009**
 CERTIFICATE NUMBER: **25,605**

Richard S. Gardner
 Chairman of The Boiler
 And Pressure Vessel Committee

Alan Ba
 Director, Accreditation and Certification

The American Society of Mechanical Engineers



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1	Wide Range of Type and Application	Designed to be applicable to various services such as gas, vapor, steam and liquid from high pressure and temperature to cryogenic condition.
2	Precise Operation	Well-balanced operational function of safety valve, its most vital performance (opening and closing) under any service condition, designed by most updated technical innovation.
3	Assured Capacity	Structured by less pressure loss body, and its relieving capacity is assured by the National Board of Boiler and Pressure Vessel Inspectors in accordance with ASME code Section VIII.
4	Positive Tightness	Assured tightness materialized by the special seating surface on disc and nozzle finished by Nakakita's unique lapping scheme. Due consideration given to shape and structure of disc for complete prevention of seat leak due to thermal distortion for high temperature service.
5	Easy Maintenance	Simple lapping with flat seat of disc and nozzle so as to always maintain initial conditions. Another easy maintenance with interchangeable components worked by NC machines.
6	Excellent Quality	High quality safety valves produced by well-established design technique under a rigorous quality control system (ISO9001, ASME V&UV and High Pressure Gas Security Law), hence resulting in great amount of increasing delivery.

2-1 Application Range

Each valve's applicability for various fluid in view of structure and materials are tabulated below. Please use it as your reference of type selection.

Type	Type Application Index										Material Application Index										ASME Code Section VIII	Page
	Saturated Steam	Superheated Steam	Air	Gas	Vapor	Liquid	Water	Oil	Dowtherm	Corr. Gas & Vapor of Hydrocarbons	Non-Corr Gas & Vapor of Hydrocarbons	Corr. Liquid	Non-Corr. Liquid	Caustic	Acids	Extreme Corr. Service	Cryogenic Service	Chlorine	Ammonia			
NS 255□-E			●	●	●	●	●	●		●	●	●	●	●			●			●	7~	
NS 255□b-E			●	●	●	●	●	●		●	●	●	●	●			●			●	7~	
NS 255□C-E			●	●	●															●	7~	
NS 255□X-E	●	●	●	●	●				●		●										●	7~
NS 255□S-E	●	●																			●	7~
NS 200JMR□						●	●	●				●	●	●							●	20~
NS 256			●	●	●					●	●										●	22
NS 255□L-E						●	●	●				●										23
NS 255□-E			●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	7~
NS 255□b-E			●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	7~
NS 200JMR□						●	●	●			●	●	●	●	●	●					●	20~
NS 256			●	●	●					●	●					●	●		●	●	●	22

Note : In the blank, □, sub-codes showing type of cap or lever on the table below are put .
* Please refer to page 10 for special materials .

2-2 Type Designation

Types of safety-relief and relief valves listed in this catalog are as follows :

BAS-CODE	SUB-CODE	Description
NS 255		Full nozzle safety-relief valve designed for general application. Pressure, temperature and fluid are in wide range and most common for process purpose. Standard is flanged connection. Socket and butt welding connections also available.
NS 200JMR		Without adjustment, small and simple structure, basically designed for thermal relief of pipe and pressure vessel. Standard is screwed connection. Flanged and socket welding connections also available.
NS 256 *		Full nozzle pilot type safety valve. Extremely small pressure differential between operation and set pressure. So applied for narrow adjustment of valve's basic function (opening and closing performance) within its small differential. Standard is flanged connection. Socket and butt welding connections also available.
NS 255□L		Applied for overpressure protection at pump's outlet. Relief valve for liquid to obtain proportional valve lift against delivery pressure. Standard is flanged connection.
	A	Screwed cap (standard)
	C **	With regular lifting lever (pull-up type)
	D	With packed lifting lever (pull-up type)
	M **	With air lifting motor
	L **	With packed lifting L lever (pull-down type)
	R **	With packed lifting R lever (pull-down type)
	C **	With adjusting valve furnished on bonnet against back pressure. Applied only for the occasion when minute adjustment is required for blowdown.
	b **	Balanced bellows : applied against built-up and variable back pressure, and corrosive fluid . (conventional type is without code.)
	X **	Flexible disc : applied for complete prevention of seat leak due to thermal distortion and it provides superior tightness against dowtherm and high temperature fluid.
	S **	Super disc : applied for further prevention of seat leak in such case as above flexible disc can not cope with harder situation.
	-E	General application type safety relief valve with its 10% enlarged orifice area against conventional 255 type.
		* : This type is without sub-code. * * : NS 200JMR and NS 255□ L type are without sub-code .

2-3 Flange and Flange Facing

- a) Standard is JIS pipe flange or ASME flange.
- b) Standard of ASME flange comes with RF and serration is not given unless any special request, and when it's done, spiral is standard.

2-4 Valve Trim

Trim area is nozzle and disc and its standard material is SUS304 (SUS316 is for orifice D&E).

2-5 Balanced Bellows Type Safety-Relief Valves

- a) Balanced bellows type is recommended against back pressure outbreak exceeding 10%, variable back pressure and corrosive fluid.
- b) Standard material is SUS316L. Other materials available on your request.
- c) Average back pressure limit is 0.4 MPa. Your instruction needed for higher pressure.

2-6 Low Set Pressure Limit

Orifice	Low Set Pressure Limit (MPa)		
	Conventional (NS 255□-E)	Balanced Bellows (NS 255□b-E)	Thermal Relief (NS 200JMR)
8	—	—	0.06
10	—	—	0.06
D	0.03	—	—
E	0.03	0.33	—
F	0.03	0.38	—
G	0.03	0.37	—
H	0.03	0.28	—
J	0.03	0.45	—
K	0.03	0.36	—
L	0.03	0.32	—
M	0.03	0.23	—
N	0.03	0.15	—
P	0.03	0.13	—
Q	0.03	0.18	—
R	0.03	0.19	—
T	0.03	0.21	—
V	0.03	0.21	—
W	0.03	0.21	—

2-7 Cold Differential Set Pressure

It is customary to make some adjustment in the set pressure under atmospheric conditions to compensate for the effect of the operating temperatures. The following table shows the adjustments made in NAKAKITA Safety-Relief Valves.

Operating Temperature (°C)	Increase in Set Pressure at Atmospheric Temperature (%)
—150 and bellow	—1
over —150 to 80	0
over 80 to 150	1
over 150 to 250	2
over 250 to 450	3
over 450 to 650	4

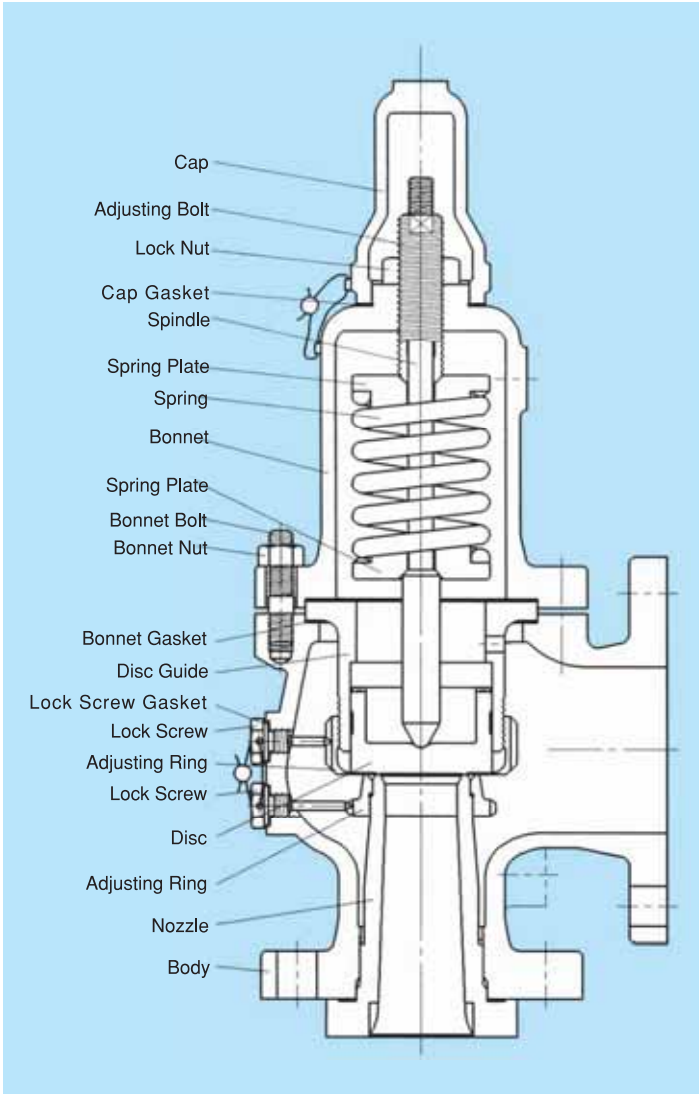
2-8 Differential between Operating and Set Pressures

Appropriate differential between operating and set pressures is required to prevent such troubles as seat leak, hunting, etc.

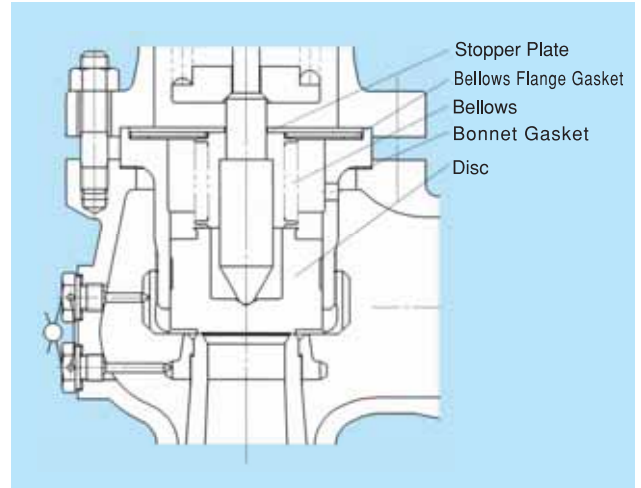
In general, for gas fluid approximately 10% or 0.035 MPa higher set pressure than the operating pressure- whichever is greater, is recommended.

3-1 Structure and Type

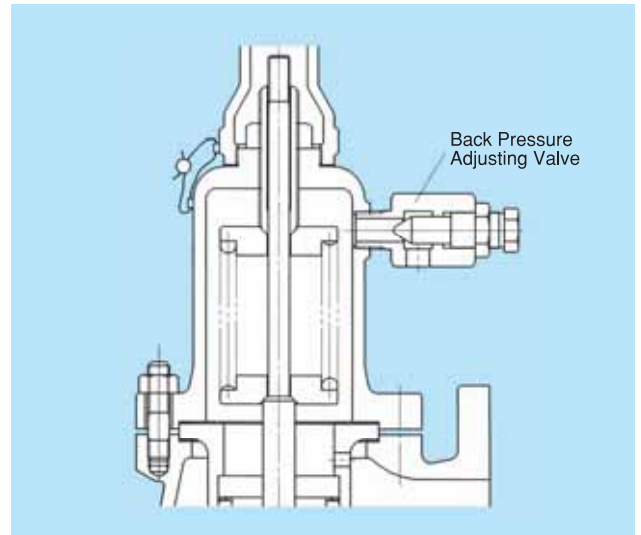
■ NS 255□-E (Conventional Type)



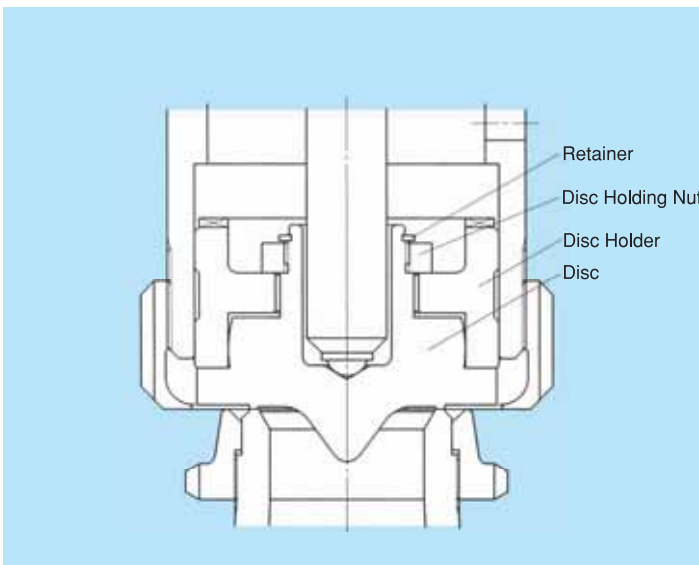
■ NS 255□b-E (Balanced Bellows Type)



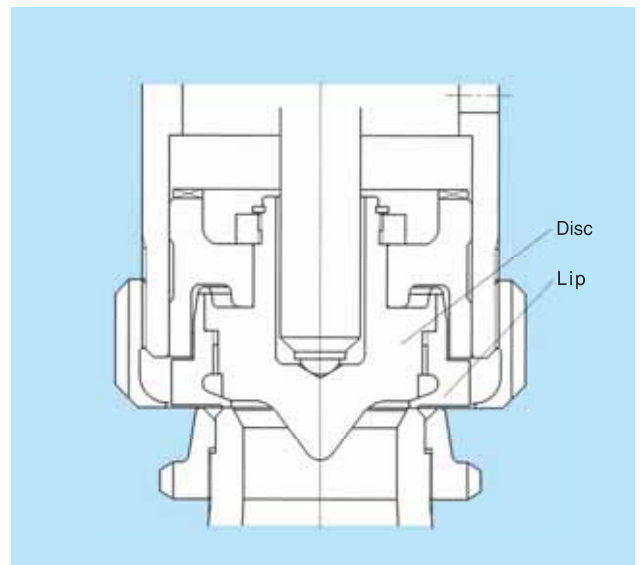
■ NS 255□C-E (Back Pressure Adjusting Device)



■ NS 255□X-E (Flexible Disc)

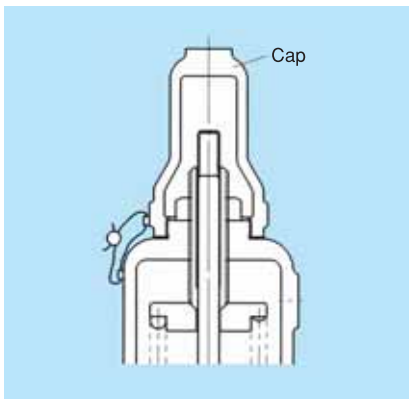


■ NS 255□S-E (Super Disc)

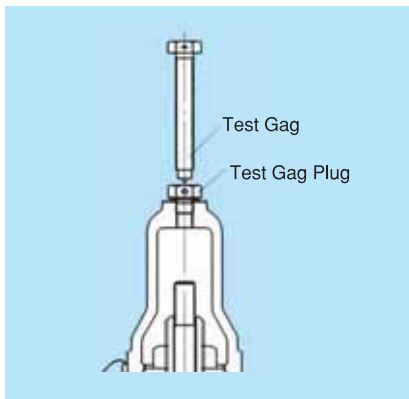


3-2 Cap and Lifting Gear

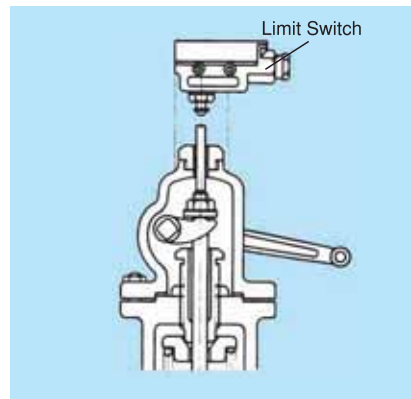
■ Type A (Screwed Cap)



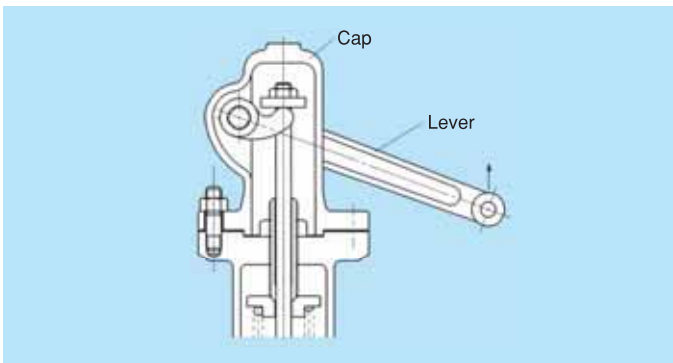
■ Test Gag



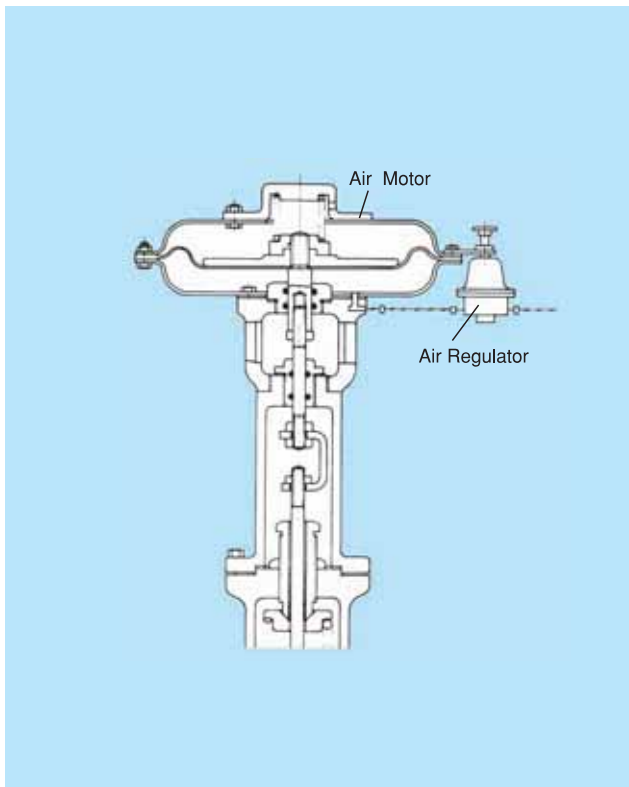
■ Limit Switch



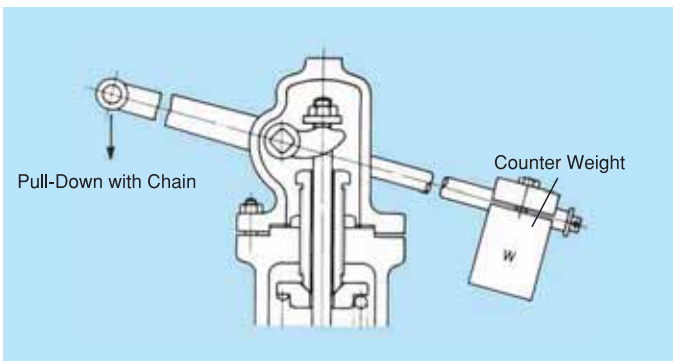
■ Type D (Packed Lifting Lever)



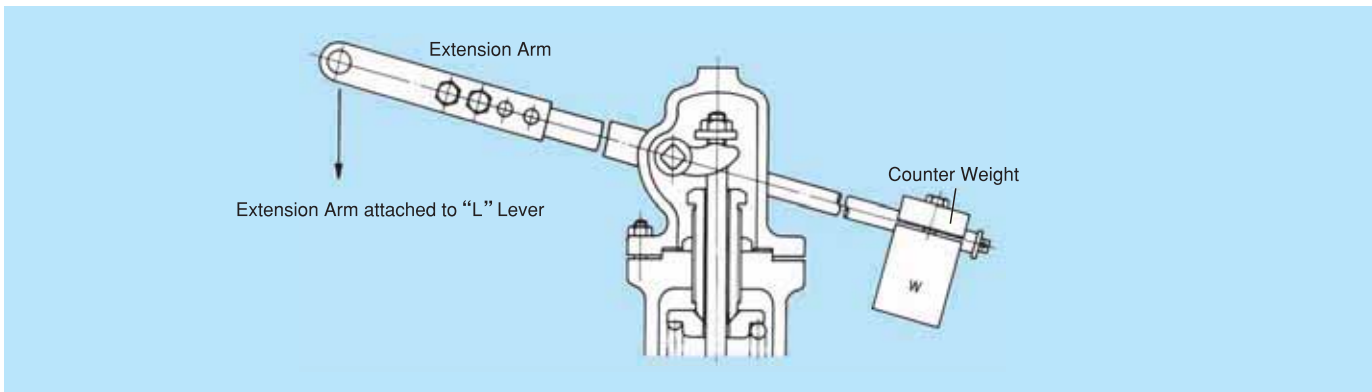
■ Type M (Air Lifting Motor)



■ Type L (Packed Lifting "L" Lever)



■ Type R (Packed Lifting "R" Lever)



3-3 Materials

■ Standard Material

Parts	Temp. Range (°C)				
	−268 to below −101	−101 to below −60	−60 to below −29	−29 to 427	over 427 to 538
Body	SCS 13	SCPL 31	SCPL 31	SCPH 2	SCPH 21
Bonnet	SCS 13	SCPL 31	SCPL 31	SCPH 2	SCPH 21
Disc Guide	SUS304 SCS 13 or	SUS304 SCS 13 or	SUS304 SCS 13 or	SUS304 SCS 13 or	SUS304 SCS 13 or
Disc	*2 SUS304 SUS316 or	*2 SUS304 SUS316 or	*2 SUS304 SUS316 or	*2 SUS304 SUS316 or	*2 SUS316
Nozzle	*2 SUS304 SUS316 or	*2 SUS304 SUS316 or	*2 SUS304 SUS316 or	*2 SUS304 SUS316 or	*2 SUS316
Adjusting Ring	SUS304 SCS 13 or	SUS304 SCS 13 or	SUS403 SCS 1 or	SUS403 SCS 1 or	SUS304 SCS 13 or
Splindle	SUS304	SUS304	SUS403	SUS403	SUS403
Spring Plate	SUS304	SUS304	*3SS400	*3SS400	*3S45C
Spring	SUS304 SUS316 or	SUS304	*3 SUP 10 SWOCV-V or	*3 & *4	*3 & *4
Adjusting Bolt	*1 SUS304	SUS304	SUS403	SUS403	SUS403
Adj. Bolt Logk Nut	SUS304	SUS304	SUS304	SUS304	SUS304
Cap	SUS304 SCS 13 or	SCPL 31	SCPL 31	SS400 SCPH 2 or	SCPH 21
Set Screw	SUS316	SUS316	SUS316	SUS316	SUS316
Bonnet Bolt	SUS304D	SUS304D	SUS304D	*5	*5
Bonnet Nut	SUS304	SUS304	SUS304	*5	*5
Gasket	Asbestos-free	Asbestos-free	Asbestos-free	Asbestos-free	Asbestos-free
Drain Plug *6	SUS316	SUS316	SS400	SS400	SUS316
Stopper Plate	SUS304	SUS304	SUS304	*3SS400	SUS304
Bellows	SUS316L	SUS316L	SUS316L	SUS316L	SUS316L
Bellows Fitting	SUS316L	SUS316L	SUS316L	SUS316L	SUS316L

- * 1 Hard-Cr Plated
- * 2 Stellite depending on service condition
- * 3 Rust proof painted

- * 4 Max 250°C : SWOCV-V, SUP 10 or equivalent
Max 500°C : SKD 4 or equivalent
Over 500°C : Inconel

- * 5 Bonnet Bolt Bonnet Nut
- −29°C to −5°C : SUS304D SUS304
- over −5°C to 350°C : S45C S45C
- over 350°C to 425°C : SNB 7 S45C
- over 425°C to 538°C : SNB 16 A194 Gr.4
- * 6 Drain hole finished for steam

Remarks : Tabulated basic materials (for body, bonnet and cap) and temperature range conform to API STD 526.
Variation of temperature range in particular depending on applicable rules must be taken into consideration.

■ Special Material

Parts	Type		Conventional Type & *5 Balanced Bellows Type			Balanced Bellows Type		
Body	SCS 13	SCS 14	SCS 16	MONEL	HASTELLOY	TITANIUM		
Bonnet	SCS 13	SCS 14	SCS 16	SCPH 2	SCPH 2	SCPH 2		
Disc Guide	SUS304 SCS 13 or	SUS316 SCS 14 or	SUS316L SCS 16 or	MONEL	HASTELLOY	TITANIUM		
Disc	*2 SUS304 SUS316 or	*2 SUS316	*2 SUS316L	MONEL	HASTELLOY	TITANIUM		
Nozzle	*2 SUS304 SUS316 or	*2 SUS316	*2 SUS316L	MONEL	HASTELLOY	TITANIUM		
Adjusting Ring	SUS304 SCS 13 or	SUS316 SCS 14 or	SUS316L SCS 16 or	MONEL	HASTELLOY	TITANIUM		
Spindle	SUS304	SUS316	SUS316	SUS403	SUS403	SUS403		
Spring Plate	SUS304	SUS316	SUS316	*3 SS400	*3 SS400	*3 SS400		
Spring	SUS304	SUS304 SUS316 or	SUS316	*3 & *4	*3 & *4	*3 & *4		
Adjusting Bolt	*1 SUS304	*1 SUS316	*1 SUS316L	SUS403	SUS403	SUS403		
Adj. Bolt Lock Nut	SUS304	SUS316	SUS316L	SUS304	SUS304	SUS304		
Cap	SUS304 SCS 13 or	SUS316 SCS 14 or	SUS316L SCS 16 or	SS400 SCPH 2 or	SS400 SCPH 2 or	SS400 SCPH 2 or		
Set Screw	SUS316	SUS316	SUS316L	MONEL	HASTELLOY	TITANIUM		
Bonnet Bolt	SUS304D	SUS304D	SUS304D	SUS304D	SUS304D	SUS304D		
Bonnet Nut	SUS304	SUS304	SUS304	SUS304	SUS304	SUS304		
Gasket	SPECIAL	SPECIAL	SPECIAL	SPECIAL	SPECIAL	SPECIAL		
Drain Plug *6	SUS316	SUS316	SUS316L	MONEL	HASTELLOY	TITANIUM		
Stopper Plate	SUS304	SUS316	SUS316L	SUS304	SUS304	SUS304		
Bellows	SUS316L	SUS316L	SUS316L	MONEL	HASTELLOY	TITANIUM		
Bellows Fitting	SUS316L	SUS316L	SUS316L	MONEL	HASTELLOY	TITANIUM		

*1 Hard-Cr Plated

*2 Stellite depending on service condition

*3 Rust proof painted

*4 Max 250°C : SWOCV-V, SUP 10 or equivalent

Max 500°C : SKD 4 or equivalent

Over 500°C : Inconel

*5 In case of Balanced Bellows Type with basic materials of SCS 13, 14 & 16.

Bonnet : SCPH 2

Spindle : SUS403

Spring Plate : *3 SS400

Adjusting Bolt : SUS403

Adj. Bolt Lock Nut : SUS304

Cap : SS400 or SCPH 2

Spring : *3 & *4

*6 Drain hole furnished for steam

3-4 Sizes, Pressure-Temperature Limits, Dimensions and Weights

- The table below shows the pressure-temperature limits (conforming to API STD.526) with ASME flange connection.
For JIS pipe flange connection the pressure limit is decreased depending on its rating.
- Please refer to pages 19 & 20 for pressure limit for low temperature below -29°C .

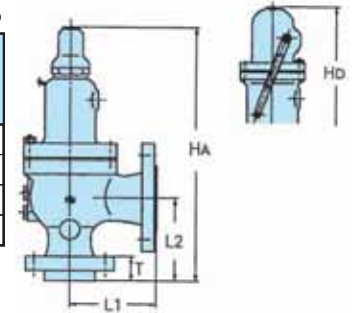


Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)					
			Inlet				Outlet	
			Inlet	Outlet	$-29\sim 38^{\circ}\text{C}$	232°C	427°C	538°C
25 · D · 50	150 -1	150 -2	1.96	1.28	0.552	—	1.59	1.31
25 · D · 50	300 -1	150 -2	1.96	1.96	1.96	—	1.59	1.31
25 · D · 50	300 -1	150 -2	5.10	4.24	2.83	1.55	1.59	1.31
25 · D · 50	600 -1	150 -2	10.2	8.52	5.69	3.07	1.59	1.31
40 · D · 50	900 $-1\frac{1}{2}$	300 -2	15.3	12.7	8.52	4.62	4.14	3.86
40 · D · 50	1500 $-1\frac{1}{2}$	300 -2	25.5	21.2	14.2	7.69	4.14	3.86
40 · D · 65	2500 $-1\frac{1}{2}$	300 $-2\frac{1}{2}$	41.4	35.4	23.6	12.8	4.14	3.86
			(1)	(2)	(3)			

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					Inlet	Outlet	L_1	L_2		
25 · D · 50	150 -1	150 -2	114	105	310	335	320	345	33	13
25 · D · 50	300 -1	150 -2	114	105	310	335	320	345	33	13
25 · D · 50	300 -1	150 -2	114	105	335	360	345	370	33	15
25 · D · 50	600 -1	150 -2	114	105	335	360	345	370	33	16

(mm)

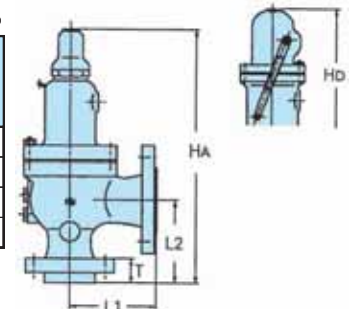


Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)					
			Inlet				Outlet	
			Inlet	Outlet	$-29\sim 38^{\circ}\text{C}$	232°C	427°C	538°C
25 · E · 50	150 -1	150 -2	1.96	1.28	0.552	—	1.59	1.31
25 · E · 50	300 -1	150 -2	1.96	1.96	1.96	—	1.59	1.31
25 · E · 50	300 -1	150 -2	5.10	4.24	2.83	1.55	1.59	1.31
25 · E · 50	600 -1	150 -2	10.2	8.52	5.69	3.07	1.59	1.31
40 · E · 50	900 $-1\frac{1}{2}$	300 -2	15.3	12.7	8.52	4.62	4.14	3.86
40 · E · 50	1500 $-1\frac{1}{2}$	300 -2	25.5	21.2	14.2	7.69	4.14	3.86
40 · E · 65	2500 $-1\frac{1}{2}$	300 $-2\frac{1}{2}$	41.4	35.4	23.6	12.8	4.14	3.86
			(1)	(2)	(3)			

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					Inlet	Outlet	L_1	L_2		
25 · E · 50	150 -1	150 -2	114	105	310	335	320	345	33	13
25 · E · 50	300 -1	150 -2	114	105	310	335	320	345	33	13
25 · E · 50	300 -1	150 -2	114	105	335	360	345	370	33	15
25 · E · 50	600 -1	150 -2	114	105	335	360	345	370	33	16

(mm)



Orifice
F

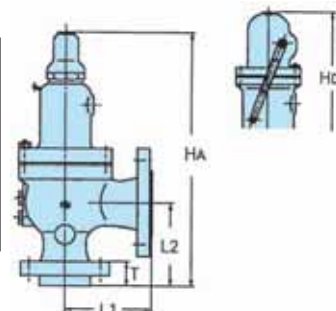
 Area
 0.351in²
 226.9mm²

Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)						
			Inlet				Outlet		
			Inlet	Outlet	-29~38°C	232°C	427°C	538°C	38°C
40 · F · 50	150 -1½	150 -2	1.96	1.28	0.552	—	1.59	1.31	
40 · F · 50	300 -1½	150 -2	1.96	1.96	1.96	—	1.59	1.31	
40 · F · 50	300 -1½	150 -2	5.10	4.24	2.83	1.55	1.59	1.31	
40 · F · 50	600 -1½	150 -2	10.2	8.52	5.69	3.07	1.59	1.31	
40 · F · 65	900 -1½	300 -2½	15.3	12.7	8.52	4.62	4.14	3.86	
40 · F · 65	1500 -1½	300 -2½	25.5	21.2	14.2	7.69	4.14	3.86	
40 · F · 65	2500 -1½	300 -2½	34.5	34.5	23.6	12.8	4.14	3.86	
			(1)		(2)	(3)			

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	質量 (kg) NS255A-E
					Conventional Type		Bellows Type			
					Inlet	Outlet	L ₁	L ₂		
40 · F · 50	150 -1½	150 -2	121	124	374	399	384	409	36	20
40 · F · 50	300 -1½	150 -2	121	124	374	399	384	409	36	20
40 · F · 50	300 -1½	150 -2	152	124	404	429	414	439	39	20
40 · F · 50	600 -1½	150 -2	152	124	404	429	414	439	39	21

(mm)


Orifice
G

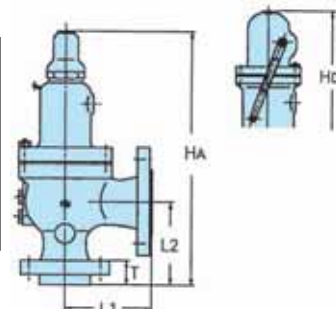
 Area
 0.589in²
 380.1mm²

Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)						
			Inlet				Outlet		
			Inlet	Outlet	-29~38°C	232°C	427°C	538°C	38°C
40 · G · 65	150 -1½	150 -2½	1.96	1.28	0.552	—	1.59	1.31	
40 · G · 65	300 -1½	150 -2½	1.96	1.96	1.96	—	1.59	1.31	
40 · G · 65	300 -1½	150 -2½	5.10	4.24	2.83	1.55	1.59	1.31	
40 · G · 65	600 -1½	150 -2½	10.2	8.52	5.69	3.07	1.59	1.31	
40 · G · 65	900 -1½	300 -2½	15.3	12.7	8.52	4.62	4.14	3.86	
50 · G · 80	1500 -2	300 -3	25.5	21.2	14.2	7.69	4.14	3.86	
50 · G · 80	2500 -2	300 -3	25.5	25.5	23.6	12.8	4.14	3.86	
			(1)		(2)	(3)			

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring

Valve Size	Std Connection ANSI-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					Inlet	Outlet	L ₁	L ₂		
40 · G · 65	150 -1½	150 -2½	121	124	374	399	384	409	36	21
40 · G · 65	300 -1½	150 -2½	121	124	374	399	384	409	36	21
40 · G · 65	300 -1½	150 -2½	152	124	404	429	414	439	39	21
40 · G · 65	600 -1½	150 -2½	152	124	404	429	414	439	39	23

(mm)



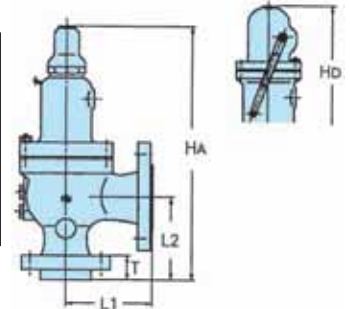


Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)					
			Inlet				Outlet	
			Inlet	Outlet	-29~38°C	232°C	427°C	538°C
40 · H · 80	150 -1½	150 -3	1.96	1.28	0.552	—	1.59	1.31
40 · H · 80	300 -1½	150 -3	1.96	1.96	1.96	—	1.59	1.31
50 · H · 80	300 -2	150 -3	5.10	4.24	2.83	1.55	1.59	1.31
50 · H · 80	600 -2	150 -3	10.2	8.52	5.69	3.07	1.59	1.31
50 · H · 80	900 -2	150 -3	15.3	12.7	8.52	4.62	1.59	1.31
50 · H · 80	1500 -2	300 -3	19.0	19.0	14.2	7.69	4.14	3.86
			(1)		(2)	(3)		

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					L ₁	L ₂	H _A	H _D		
40 · H · 80	150 -1½	150 -3	124	130	405	430	410	435	36	21
40 · H · 80	300 -1½	150 -3	124	130	405	430	410	435	36	21
50 · H · 80	300 -2	150 -3	124	130	465	540	475	550	41	34
50 · H · 80	600 -2	150 -3	162	154	489	564	499	574	44	36

(mm)

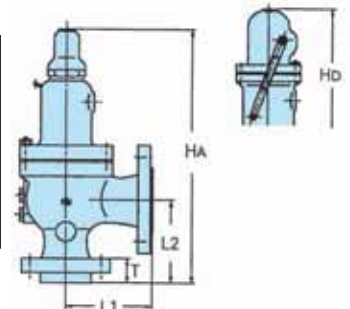


Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)					
			Inlet				Outlet	
			Inlet	Outlet	-29~38°C	232°C	427°C	538°C
50 · J · 80	150 -2	150 -3	1.96	1.28	0.552	—	1.59	1.31
50 · J · 80	300 -2	150 -3	1.96	1.96	1.96	—	1.59	1.31
65 · J · 100	300 -2½	150 -4	5.10	4.24	2.83	1.55	1.59	1.31
65 · J · 100	600 -2½	150 -4	10.2	8.52	5.69	3.07	1.59	1.31
* 80 · J · 100	900 -3	150 -4	15.3	12.7	8.52	4.62	1.59	1.31
* 80 · J · 100	1500 -3	300 -4	18.6	18.6	14.2	7.69	4.14	3.86
			(1)		(2)	(3)		

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring
 * Actual inside diameter=75

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					L ₁	L ₂	H _A	H _D		
50 · J · 80	150 -2	150 -3	124	137	472	547	482	557	41	26
50 · J · 80	300 -2	150 -3	124	137	472	547	482	557	41	26
65 · J · 100	300 -2½	150 -4	143	137	527	602	537	612	44	43
65 · J · 100	600 -2½	150 -4	171	156	546	621	556	631	48	45

(mm)



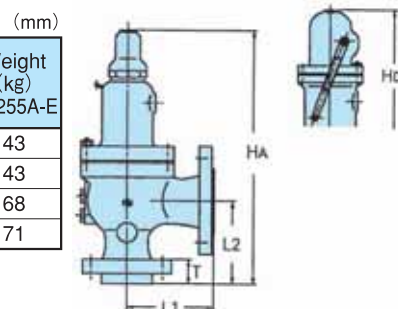


Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)					
			Inlet				Outlet	
			Inlet	Outlet	-29~38°C	232°C	427°C	538°C
* 80 · K · 100	150 -3	150 -4	1.96	1.28	0.552	—	1.59	1.31
* 80 · K · 100	300 -3	150 -4	1.96	1.96	1.96	—	1.59	1.31
* 80 · K · 100	300 -3	150 -4	5.10	4.24	2.83	1.55	1.59	1.31
* 80 · K · 100	600 -3	150 -4	10.2	8.52	5.69	3.07	1.59	1.31
* 80 · K · 150	900 -3	150 -6	15.3	12.7	8.52	4.62	1.59	1.31
* 80 · K · 150	1500 -3	300 -6	15.3	15.3	14.2	7.69	4.14	3.86
			(1)		(2)		(3)	

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring
 * Actual inside diameter=75

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					HA	HD	HAB	HDB		
* 80 · K · 100	150 -3	150 -4	162	156	521	581	526	586	44	43
* 80 · K · 100	300 -3	150 -4	162	156	521	581	526	586	49	43
* 80 · K · 100	300 -3	150 -4	162	156	561	621	566	626	49	68
* 80 · K · 100	600 -3	150 -4	181	184	589	649	594	654	52	71

* Actual inside diameter=75

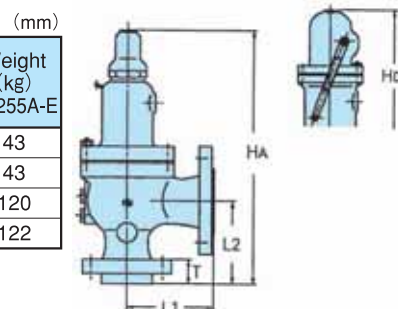


Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)					
			Inlet				Outlet	
			Inlet	Outlet	-29~38°C	232°C	427°C	538°C
* 80 · L · 100	150 -3	150 -4	1.96	1.28	0.552	—	1.59	1.31
* 80 · L · 100	300 -3	150 -4	1.96	1.96	1.96	—	1.59	1.31
100 · L · 150	300 -4	150 -6	5.10	4.24	2.83	1.55	1.59	1.31
100 · L · 150	600 -4	150 -6	6.89	6.89	5.69	3.07	1.59	1.31
100 · L · 150	900 -4	150 -6	10.3	10.3	8.52	4.62	1.59	1.31
100 · L · 150	1500 -4	150 -6	—	10.3	10.3	7.69	1.59	1.31
			(1)		(2)		(3)	

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring
 * Actual inside diameter=75

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					HA	HD	HAB	HDB		
* 80 · L · 100	150 -3	150 -4	165	156	561	616	581	636	44	43
* 80 · L · 100	300 -3	150 -4	165	156	561	616	581	636	49	43
100 · L · 150	300 -4	150 -6	181	179	794	884	799	889	54	120
100 · L · 150	600 -4	150 -6	203	179	794	884	799	889	57	122

* Actual inside diameter=75



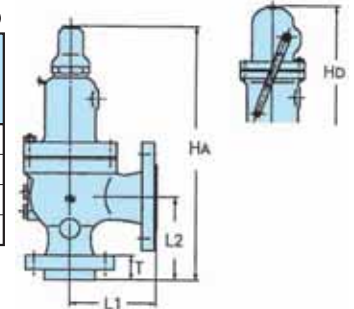
Orifice
M
Area
4.093in²
2642.0mm²

Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)					
			Inlet				Outlet	
			Inlet	Outlet	-29~38°C	232°C	427°C	538°C
100 · M · 150	150 -4	150 -6	1.96	1.28	0.552	—	1.59	1.31
100 · M · 150	300 -4	150 -6	1.96	1.96	1.96	—	1.59	1.31
100 · M · 150	300 -4	150 -6	5.10	4.24	2.83	1.55	1.59	1.31
100 · M · 150	600 -4	150 -6	7.58	7.58	5.69	3.07	1.59	1.31
100 · M · 150	900 -4	150 -6	—	7.58	7.58	4.62	1.59	1.31
			(1)	(2)	(3)			

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					Inlet	Outlet	L ₁	L ₂		
100 · M · 150	150 -4	150 -6	184	178	668	743	673	748	54	85
100 · M · 150	300 -4	150 -6	184	178	668	743	673	748	54	85
100 · M · 150	300 -4	150 -6	184	178	793	883	798	888	54	132
100 · M · 150	600 -4	150 -6	203	178	793	883	798	888	57	136

(mm)



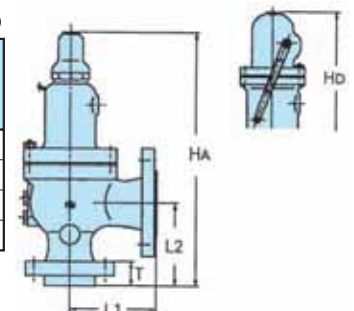
Orifice
N
Area
4.908in²
3166.9mm²

Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)					
			Inlet				Outlet	
			Inlet	Outlet	-29~38°C	232°C	427°C	538°C
100 · N · 150	150 -4	150 -6	1.96	1.28	0.552	—	1.59	1.31
100 · N · 150	300 -4	150 -6	1.96	1.96	1.96	—	1.59	1.31
100 · N · 150	300 -4	150 -6	5.10	4.24	2.83	1.55	1.59	1.31
100 · N · 150	600 -4	150 -6	6.89	6.89	5.69	3.07	1.59	1.31
100 · N · 150	900 -4	150 -6	—	6.89	6.89	4.62	1.59	1.31
			(1)	(2)	(3)			

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					Inlet	Outlet	L ₁	L ₂		
100 · N · 150	150 -4	150 -6	210	197	712	782	722	792	54	102
100 · N · 150	300 -4	150 -6	210	197	712	782	722	792	54	102
100 · N · 150	300 -4	150 -6	210	197	842	932	852	942	54	158
100 · N · 150	600 -4	150 -6	222	197	842	932	852	942	61	162

(mm)



Orifice
P

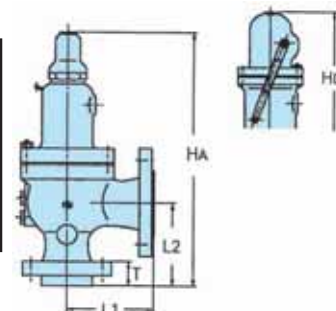
 Area
 7.215in²
 4656.6mm²

Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)					
			Inlet				Outlet	
			Inlet	Outlet	-29~38°C	232°C	427°C	538°C
100 · P · 150	150 -4	150 -6	1.96	1.28	0.552	—	1.59	1.31
100 · P · 150	300 -4	150 -6	1.96	1.96	1.96	—	1.59	1.31
100 · P · 150	300 -4	150 -6	5.10	4.24	2.83	1.55	1.59	1.31
100 · P · 150	600 -4	150 -6	6.89	6.89	5.69	3.07	1.59	1.31
100 · P · 150	900 -4	150 -6	—	6.89	6.89	4.62	1.59	1.31
			(1)		(2)	(3)		

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					L ₁	L ₂	H _A	H _D		
100 · P · 150	150 -4	150 -6	229	181	746	821	756	831	54	102
100 · P · 150	300 -4	150 -6	229	181	746	821	756	831	54	102
100 · P · 150	300 -4	150 -6	254	225	905	995	915	1005	54	162
100 · P · 150	600 -4	150 -6	254	225	905	995	915	1005	61	165

(mm)


Orifice
Q

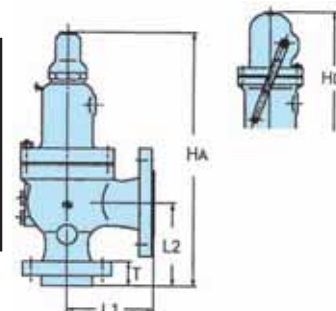
 Area
 12.541in²
 8091.3mm²

Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)					
			Inlet				Outlet	
			Inlet	Outlet	-29~38°C	232°C	427°C	538°C
150 · Q · 200	150 -6	150 -8	1.14	1.14	0.552	—	0.793	0.793
150 · Q · 200	300 -6	150 -8	1.14	1.14	1.14	—	0.793	0.793
150 · Q · 200	300 -6	150 -8	2.07	2.07	2.07	1.14	0.793	0.793
150 · Q · 200	600 -6	150 -8	4.14	4.14	4.14	3.07	0.793	0.793
			(1)		(2)	(3)		

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					L ₁	L ₂	H _A	H _D		
150 · Q · 200	150 -6	150 -8	241	240	825	915	1070	1160	59	140
150 · Q · 200	300 -6	150 -8	241	240	825	915	1070	1160	59	140
150 · Q · 200	300 -6	150 -8	241	240	1060	1155	1070	1165	59	185
150 · Q · 200	600 -6	150 -8	241	240	1060	1155	1070	1165	70	205

(mm)



Orifice

R

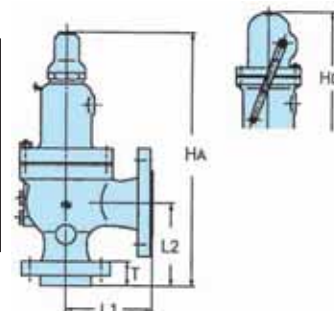
Area
18.118in²
11689.8mm²

Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)						
			Inlet				Outlet		
			Inlet	Outlet	-29~38°C	232°C	427°C	538°C	38°C
150 · R · 200	150 -6	150 - 8	0.689	0.689	0.552	—	0.414	0.414	
150 · R · 200	300 -6	150 - 8	0.689	0.689	0.689	—	0.414	0.414	
150 · R · 250	300 -6	150 -10	1.59	1.59	1.59	0.689	0.689	0.689	
150 · R · 250	600 -6	150 -10	2.07	2.07	2.07	2.07	0.689	0.689	
					(1)	(2)	(3)		

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					L ₁	L ₂	H _A	H _D		
150 · R · 200	150 -6	150 - 8	241	240	825	915	1070	1160	59	190
150 · R · 200	300 -6	150 - 8	241	240	825	915	1070	1160	59	190
150 · R · 250	300 -6	150 -10	267	240	1075	1170	1085	1180	59	250
150 · R · 250	600 -6	150 -10	267	240	1075	1170	1085	1180	70	280

(mm)



Orifice

T

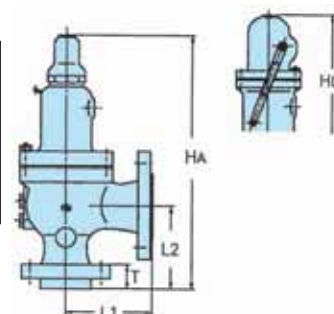
Area
29.435in²
18991.1mm²

Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)						
			Inlet				Outlet		
			Inlet	Outlet	-29~38°C	232°C	427°C	538°C	38°C
200 · T · 250	150 -8	150 -10	0.448	0.448	0.448	—	0.207	0.207	
200 · T · 250	300 -8	150 -10	0.448	0.448	0.448	—	0.207	0.207	
200 · T · 250	300 -8	150 -10	2.07	2.07	2.07	1.55	0.414	0.414	
					(1)	(2)	(3)		

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					L ₁	L ₂	H _A	H _D		
200 · T · 250	150 -8	150 -10	279	276	1011	1101	1156	1246	64	310
200 · T · 250	300 -8	150 -10	279	276	1011	1101	1156	1246	64	310
200 · T · 250	300 -8	150 -10	279	276	1011	1101	1156	1246	64	350

(mm)



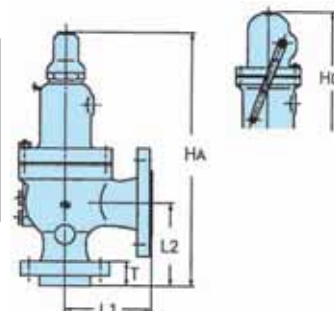
Orifice
V
Area
47.722in²
30790.7mm²

Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)						
			Inlet				Outlet		
			Inlet	Outlet	-29~38°C	232°C	427°C	538°C	38°C
250 · V · 300	150 -10	150 -12	0.448	0.448	0.448	—	0.207	0.207	
250 · V · 300	300 -10	150 -12	0.448	0.448	0.448	—	0.207	0.207	
250 · V · 300	300 -10	150 -12	0.827	0.827	0.827	0.827	0.414	0.414	
			(1)		(2)	(3)			

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					H _A	H _D	H _{AB}	H _{DB}		
250 · V · 300	150 -10	150 -12	340	312	1155	1275	1510	1530	50	650
250 · V · 300	300 -10	150 -12	340	326	1170	1290	1510	1530	64	670
250 · V · 300	300 -10	150 -12	340	326	1510	1530	1510	1530	64	850

(mm)



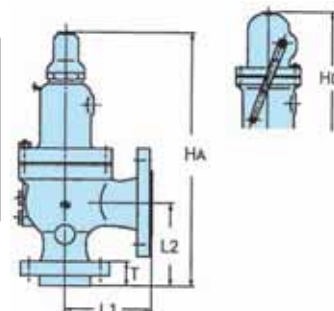
Orifice
W
Area
68.368in²
44115.0mm²

Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)						
			Inlet				Outlet		
			Inlet	Outlet	-29~38°C	232°C	427°C	538°C	38°C
300 · W · 400	150 -12	150 -16	0.448	0.448	0.448	—	0.207	0.207	
300 · W · 400	300 -12	150 -16	0.448	0.448	0.448	—	0.207	0.207	
300 · W · 400	300 -12	150 -16	0.827	0.827	0.827	0.827	0.414	0.414	
			(1)		(2)	(3)			

- (1) Max 232°C : Carbon Steel Body, Bonnet and Cap/Carbon Steel Spring
 (2) Max 427°C : Carbon Steel Body, Bonnet and Cap/Alloy Steel Spring
 (3) Max 538°C : Alloy Steel Body, Bonnet and Cap/Alloy Steel Spring

Valve Size	Std Connection ASME-RF Flange		Center-to-Face		Height (Max.)				T	Weight (kg) NS255A-E
					Conventional Type		Bellows Type			
					H _A	H _D	H _{AB}	H _{DB}		
300 · W · 400	150 -12	150 -16	406	356	1250	1370	1615	1735	50	800
300 · W · 400	300 -12	150 -16	406	370	1265	1385	1615	1735	64	820
300 · W · 400	300 -12	150 -16	406	370	1615	1735	1615	1735	64	1000

(mm)



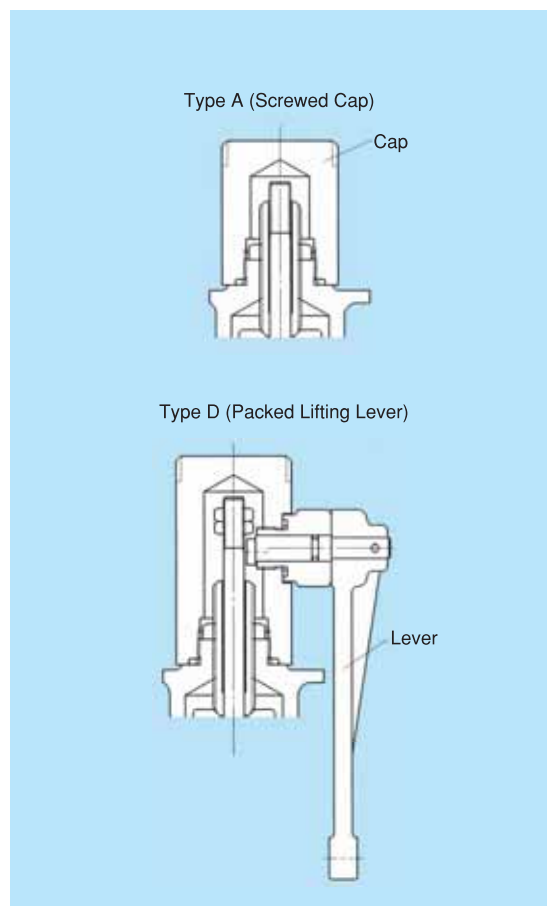
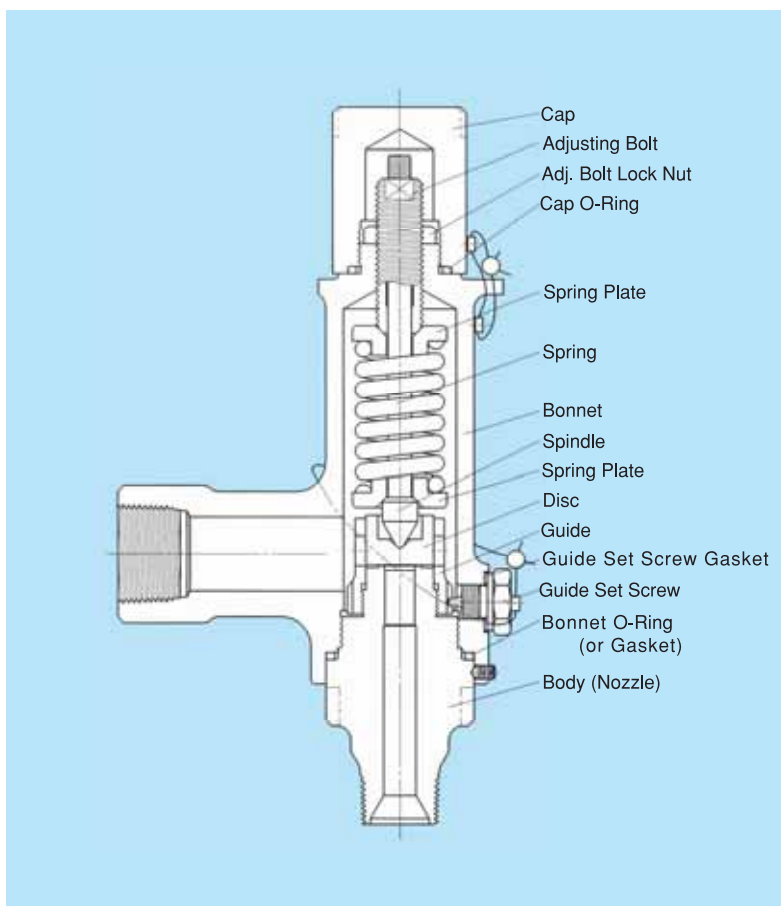
Pressure-Temperature Limits for Low Temperature

■ Conforming to API STD. 526

Orifice	Valve Size Inlet×Orifice×Outlet (mm)	Std Connection ASME-RF Flange		Pressure Limit (MPa)		
		Inlet	Outlet	-268 to below -101°C	-101 to below -60°C	-60 to below -29°C
D 0.133in ² 86.5mm ²	25 · D · 50	150 -1	150 -2	1.90	1.90	1.96
	25 · D · 50	300 -1	150 -2	1.90	1.90	1.96
	25 · D · 50	300 -1	150 -2	4.24	4.96	5.10
	25 · D · 50	600 -1	150 -2	8.52	9.93	10.2
	40 · D · 50	900 -1½	300 -2	12.8	14.9	15.3
	40 · D · 50	1500 -1½	300 -2	21.3	24.8	25.5
E 0.221in ² 143.1mm ²	40 · D · 65	2500 -1½	300 -2½	27.6	27.6	41.4
	25 · E · 50	150 -1	150 -2	1.90	1.90	1.96
	25 · E · 50	300 -1	150 -2	1.90	1.90	1.96
	25 · E · 50	300 -1	150 -2	4.24	4.96	5.10
	25 · E · 50	600 -1	150 -2	8.52	9.93	10.2
	40 · E · 50	900 -1½	300 -2	12.8	14.9	15.3
F 0.351in ² 226.9mm ²	40 · E · 50	1500 -1½	300 -2	17.9	17.9	25.5
	40 · E · 65	2500 -1½	300 -2½	26.2	26.2	41.4
	40 · F · 50	150 -1½	150 -2	1.90	1.90	1.96
	40 · F · 50	300 -1½	150 -2	1.90	1.90	1.96
	40 · F · 50	300 -1½	150 -2	4.24	4.96	5.10
	40 · F · 50	600 -1½	150 -2	8.52	9.93	10.2
G 0.589in ² 380.1mm ²	40 · F · 65	900 -1½	300 -2½	12.8	14.9	15.3
	40 · F · 65	1500 -1½	300 -2½	15.2	15.2	25.5
	40 · F · 65	2500 -1½	300 -2½	23.4	23.4	34.5
	40 · G · 65	150 -1½	150 -2½	1.90	1.90	1.96
	40 · G · 65	300 -1½	150 -2½	1.90	1.90	1.96
	40 · G · 65	300 -1½	150 -2½	4.24	4.96	5.10
H 0.919in ² 593.9mm ²	40 · G · 65	600 -1½	150 -2½	8.52	9.93	10.2
	40 · G · 65	900 -1½	300 -2½	11.0	11.0	15.3
	50 · G · 80	1500 -2	300 -3	16.9	16.9	25.5
	50 · G · 80	2500 -2	300 -3	17.9	17.9	25.5
	40 · H · 80	150 -1½	150 -3	1.90	1.90	1.96
	40 · H · 80	300 -1½	150 -3	1.90	1.90	1.96
J 1.448in ² 934.8mm ²	50 · H · 80	300 -2	150 -3	4.24	4.96	5.10
	50 · H · 80	600 -2	150 -3	8.52	9.93	10.2
	50 · H · 80	900 -2	150 -3	10.2	10.2	15.3
	50 · H · 80	1500 -2	300 -3	11.0	11.0	19.0
	50 · J · 80	150 -2	150 -3	1.90	1.90	1.96
	50 · J · 80	300 -2	150 -3	1.90	1.90	1.96
K 2.094in ² 1352.6mm ²	65 · J · 100	300 -2½	150 -4	3.45	3.45	5.10
	65 · J · 100	600 -2½	150 -4	4.31	4.31	10.2
	*80 · J · 100	900 -3	150 -4	5.52	5.52	15.3
	*80 · J · 100	1500 -3	300 -4	5.52	5.52	18.6
	*80 · K · 100	150 -3	150 -4	1.90	1.90	1.96
	*80 · K · 100	300 -3	150 -4	1.90	1.90	1.96
L 3.226in ² 2083.0mm ²	*80 · K · 100	300 -3	150 -4	3.62	3.62	5.10
	*80 · K · 100	600 -3	150 -4	4.14	4.14	10.2
	*80 · K · 150	900 -3	150 -6	4.14	4.14	15.3
	*80 · K · 150	1500 -3	300 -6	5.17	5.17	15.3
	*80 · L · 100	150 -3	150 -4	1.90	1.90	1.96
	*80 · L · 100	300 -3	150 -4	1.90	1.90	1.96
M 4.093in ² 2642.0mm ²	100 · L · 150	300 -4	150 -6	3.69	3.69	5.10
	100 · L · 150	600 -4	150 -6	3.69	3.69	6.89
	100 · L · 150	900 -4	150 -6	4.83	4.83	10.3
	100 · M · 150	150 -4	150 -6	1.90	1.90	1.96
	100 · M · 150	300 -4	150 -6	1.90	1.90	1.96
	100 · M · 150	300 -4	150 -6	3.62	3.62	5.10
N 4.908in ² 3166.9mm ²	100 · M · 150	600 -4	150 -6	4.14	4.14	7.58
	100 · N · 150	150 -4	150 -6	1.90	1.90	1.96
	100 · N · 150	300 -4	150 -6	1.90	1.90	1.96
	100 · N · 150	300 -4	150 -6	3.10	3.10	5.10
	100 · N · 150	600 -4	150 -6	3.45	3.45	6.89
	100 · P · 150	150 -4	150 -6	1.21	1.21	1.96
P 7.215in ² 4656.6mm ²	100 · P · 150	300 -4	150 -6	1.21	1.21	1.96
	100 · P · 150	300 -4	150 -6	2.07	2.07	3.62
	100 · P · 150	600 -4	150 -6	3.31	3.31	6.89
	150 · Q · 200	150 -6	150 -8	1.14	1.14	1.14
	150 · Q · 200	300 -6	150 -8	1.14	1.14	1.14
	150 · Q · 200	300 -6	150 -8	1.72	1.72	2.07
Q 12.541in ² 8091.3mm ²	150 · Q · 200	600 -6	150 -8	2.07	2.07	4.14
	150 · R · 200	150 -6	150 -8	0.379	0.379	0.689
	150 · R · 200	300 -6	150 -8	0.379	0.379	0.689
	150 · R · 250	300 -6	150 -10	1.03	1.03	1.59
	150 · R · 250	600 -6	150 -10	1.38	1.38	2.07
	200 · T · 250	150 -8	150 -10	0.345	0.345	0.448
R 18.118in ² 11689.8mm ²	200 · T · 250	300 -8	150 -10	0.345	0.345	0.448
	200 · T · 250	300 -8	150 -10	0.448	0.448	0.827
	250 · V · 300	150 -10	150 -12	0.345	0.345	0.448
	250 · V · 300	300 -10	150 -12	0.345	0.345	0.448
	250 · V · 300	300 -10	150 -12	0.448	0.448	0.827
	300 · W · 400	150 -12	150 -16	0.345	0.345	0.448
T 29.435in ² 18991.1mm ²	300 · W · 400	300 -12	150 -16	0.345	0.345	0.448
	300 · W · 400	300 -12	150 -16	0.448	0.448	0.827
	(1)			(1)	(2)	(3)

(1) Stainless Steel Body, Bonnet and Cap/Stainless Steel Spring
(2) Alloy Steel Body, Bonnet and Cap/Stainless Steel Spring
(3) Alloy Steel Body, Bonnet and Cap/Carbon Steel Spring
* Actual inside diameter=75

4-1 Structure and Type



4-2 Materials

Parts	Temperature °C	Temperature °C			
		below -101	-101 to below -60	-60 to below -29	-29 to 399
Body (Nozzle)		*1 SUS316	*1 SUS316	*1 SUS316	*1 SUS316
Bonnet		SUS316	ASTM A350 LF3	ASTM A350 LF1	S25C
Flange		SUS316	ASTM A350 LF3	ASTM A350 LF1	S25C
Guide		SUS316	SUS316	SUS316	SUS316
Disc		*1 SUS316	*1 SUS316	*1 SUS316	*1 SUS316
Spindle		SUS316	SUS316	SUS316	SUS316
Spring		SUS304-WPB	SUS304-WPB	SUS304-WPB	SUS304-WPB or *2
Spring Plate		SUS316	SUS316	SUS316	SUS316
Adjusting Bolt		SUS316	SUS316	SUS316	SUS316
Adj. Bolt Lock Nut		SUS316	SUS316	SUS316	SUS316
Cap		SUS316	SUS304	SUS403	SS400
Set Screw		SUS316	SUS316	SUS316	SUS316
O-ring and Gasket		Asbestos-free	Asbestos-free	Asbestos-free	Asbestos-free
Set Screw		SUS316	SUS316	SUS316	SUS316

*1 Stellite depending on service condition.

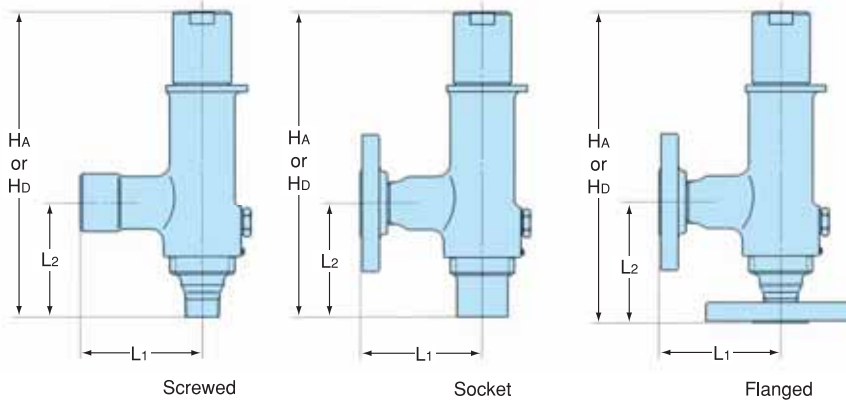
*2 Max 250°C : SWOCV-V or equivalent (rust proof painted)
Max 500°C : SKD 4 or equivalent (rust proof painted)

4-3 Pressure-Temperature Limits

Valve Size Inlet×Orifice×Outlet (mm)	Orifice Area mm ² (in ²)		Pressure Limit (MPa)			
	10	8	below -101 °C	-101 to below -29°C	-29 to 399°C	
15 · 10 (8) · 25	78.5 (0.1217)	50.2 (0.0779)	5.88	5.88	5.88	13.7 (19.6)
20 · 10 (8) · 25	78.5 (0.1217)	50.2 (0.0779)	5.88	5.88	5.88	13.7 (19.6)
25 · 10 (8) · 40	78.5 (0.1217)	50.2 (0.0779)	5.88	5.88	5.88	13.7 (19.6)
			(1)	(2)	(3)	(4) (5)

- (1) Stainless Steel Body (Nozzle)/Stainless Steel Bonnet/Stainless Steel Spring
- (2) Stainless Steel Body (Nozzle)/Alloy Steel Bonnet/Stainless Steel Spring
- (3) Stainless Steel Body (Nozzle)/Alloy Steel Bonnet/Stainless Steel Spring or Carbon Steel Spring
- (4) Stainless Steel Body (Nozzle)/Carbon Steel Bonnet/Stainless Steel Spring or Carbon Steel Spring
- (5) Stainless Steel Body (Nozzle)/Carbon Steel Bonnet/Stainless Steel Spring or Alloy Steel Spring

4-4 Dimensions and Weights

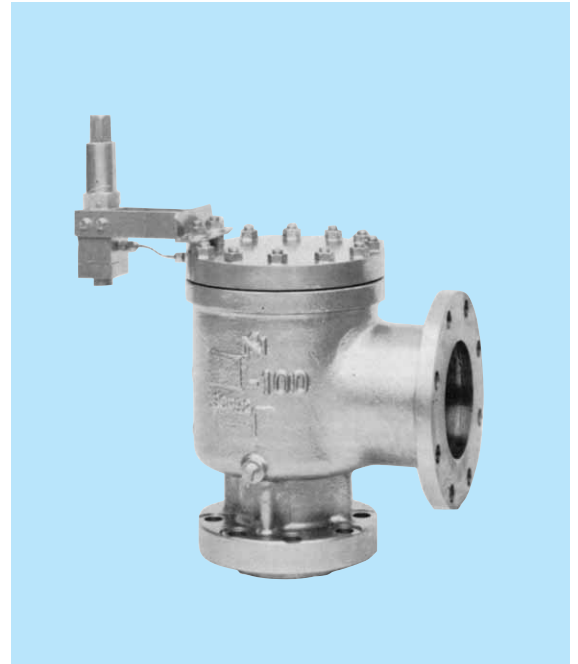
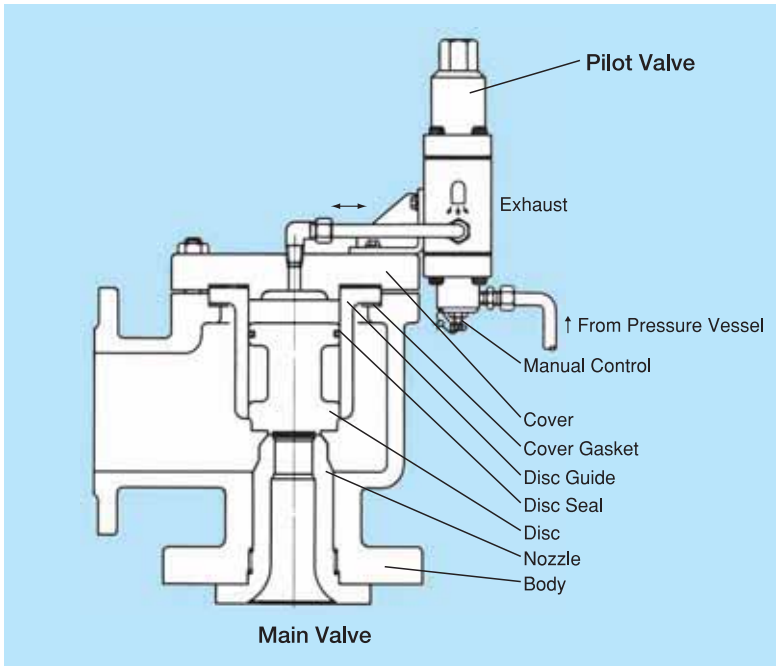


(mm)

Connection	Valve Size Inlet×Orifice×Outlet (mm)	Std Connection		Center-to-Face		Height		Weight (kg)
		Inlet	Outlet	L ₁	L ₂	1) HA	2) HD	
Screwed	15·10 (8) · [15, 20, 25]	NPT 1/2 (Male)	NPT (1/2, 3/4) (Female)	95	90	240	265	5.5
	20·10 (8) · [20, 25]	NPT 3/4 (Male)	NPT (3/4, 1) (Female)	95	90	240	265	
	25·10 (8) · [25, 40]	NPT 1 (Male)	NPT (1, 1 1/2) (Female)	95	90	240	265	
Socket	15·10 (8) · [15, 20, 25]	SW 1/2	150-(1/2, 3/4, 1)	95	90	240	265	5.5
	20·10 (8) · [20, 25]	SW 3/4	150-(3/4, 1)	95	90	240	265	
	25·10 (8) · [25, 40]	SW 1	150-(1, 1 1/2)	95	90	240	265	
Flanged	15·10 (8) · [15, 20, 25]	150-1/2	150-(1/2, 3/4, 1)	95	95	245	270	7.5
		300-1/2	150-(1/2, 3/4, 1)	95	95	245	270	
		600-1/2	150-(1/2, 3/4, 1)	95	95	245	270	
	20·10 (8) · [20, 25]	150-3/4	150-(3/4, 1)	95	95	245	270	
		300-3/4	150-(3/4, 1)	95	95	245	270	
		600-3/4	150-(3/4, 1)	95	95	245	270	
	25·10 (8) · [25, 40]	150-1	150-(1, 1 1/2)	95	95	245	270	
		300-1	150-(1, 1 1/2)	95	95	245	270	
		600-1	150-(1, 1 1/2)	95	95	245	270	

- 1) For Screwed Cap (TypeA)
- 2) For Packed Lifting Lever (TypeD)

5-1 Structure



5-2 Features

- 2 ~ 4 % blowdown
- No simmer
- No overpressure required
- Size, orifice and center-to-face comply with API STD. 526.
- Conforming to ASME Code Section VIII
- Relieving capacity is assured by the National Board of Boiler and Pressure Vessel Inspectors.

5-3 Sizes, Materials and Pressure-Temperature Limits

The Sizes, orifice and orifice area are tabulated below. For dimensions, materials and pressure-temperature limits, please refer to the information of NS 255-E series (page11-20) as they comply with API STD.526 in same manner as NS 255-E series. However, non-spring structure on main valve of NS 256 series can be set up to the limit of ANSI/ASME rating. In addition, please be careful to temperature limit of o-ring because o-ring is used for several places.

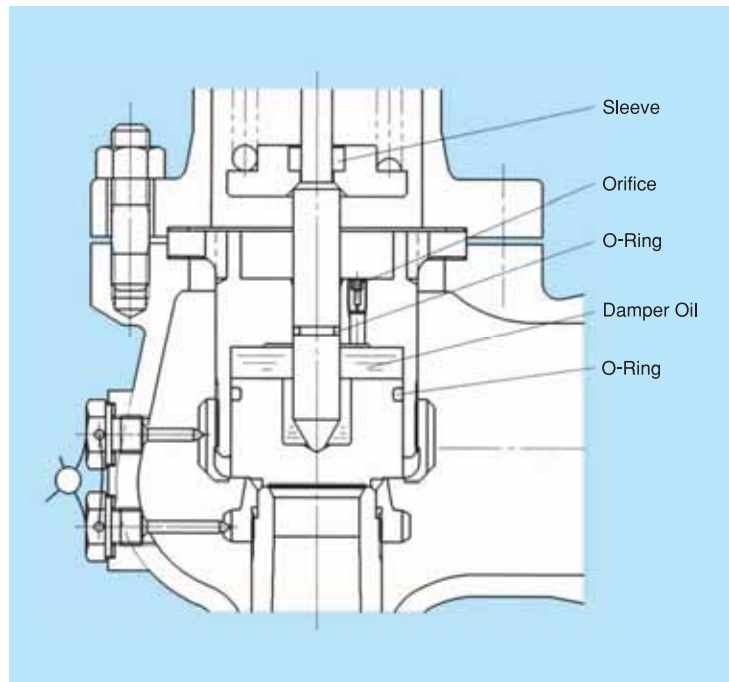
■ Sizes, Orifice and Orifice Area of NS 256 Series

Inlet	25	40	40	25	40	40	40	40	40	50	40	50	50	65	75	75	75	75	100	100	100	100	150	150	150	200
Outlet	50	50	65	50	50	65	50	65	65	80	80	80	80	100	100	100	150	100	150	150	150	150	200	200	250	250
Orifice	D		E		F		G		H		J		K		L		M	N	P	Q	R	T				
Area in ² (mm ²)	0.110 (72.3)		0.196 (126.6)		0.307 (198.5)		0.503 (326.8)		0.785 (506.7)		1.287 (834.6)		1.838 (1188.4)		2.853 (1847.4)		3.60 (2324.2)	4.34 (2808.6)	6.38 (4116.8)	11.05 (7133.0)	16.0 (10332.7)	26.0 (16787.4)				

■ Temperature Limit of O-ring

Material	Range(°C)
NBR	0 ~ 70
FPM	-15 ~ 160
MVQ	-50 ~ 180
EPDM	-45 ~ 100

6-1 Structure



6-2 Features

- Suitable for overpressure protection at pump's outlet.
- Speciality of basic performance capable of valve lift in proportion to increasing pressure.
- Orifice furnished within damper room makes soft opening/closing against sudden pressure change at inlet side, and prevents such troubles as chattering, etc. against flow change of fluid.
- Structure is same as NS 255-E Series except for inner parts, and its flow capacity is also same.

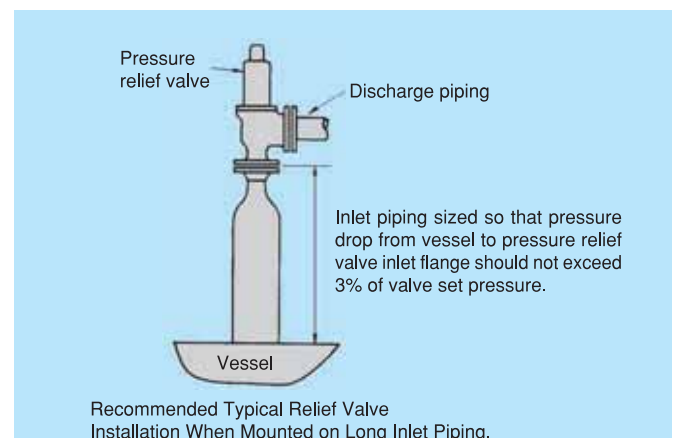
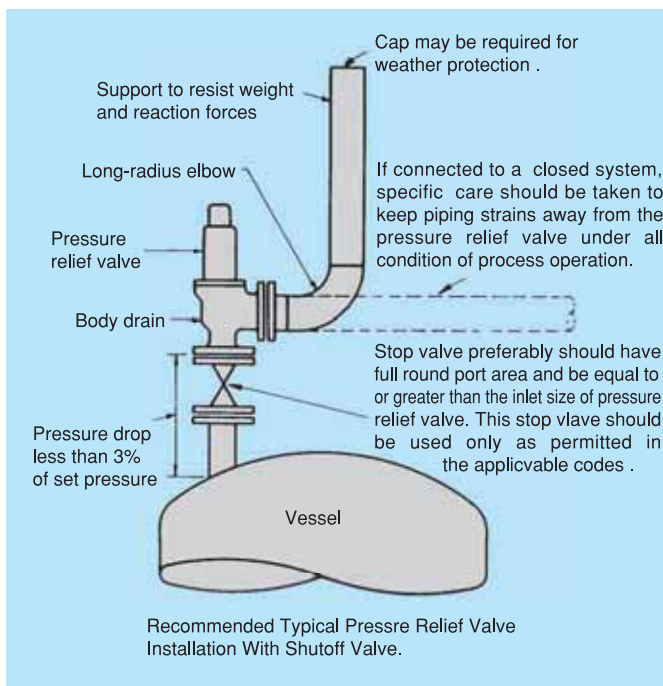
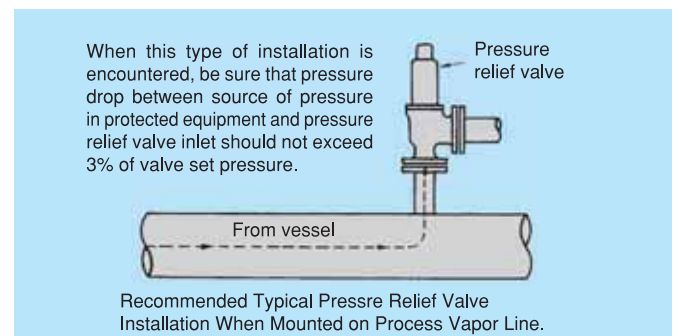
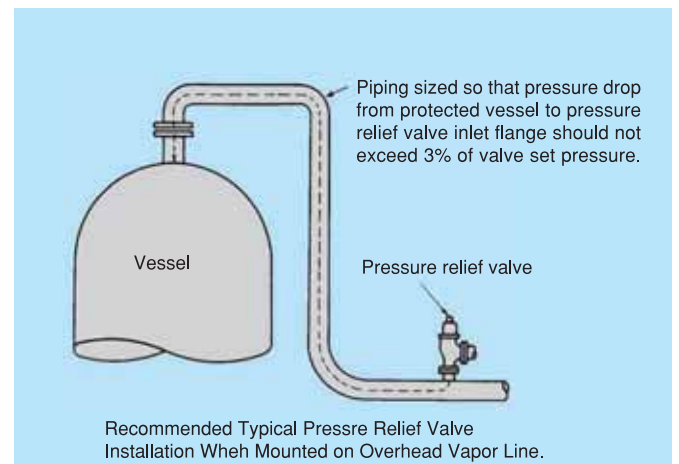
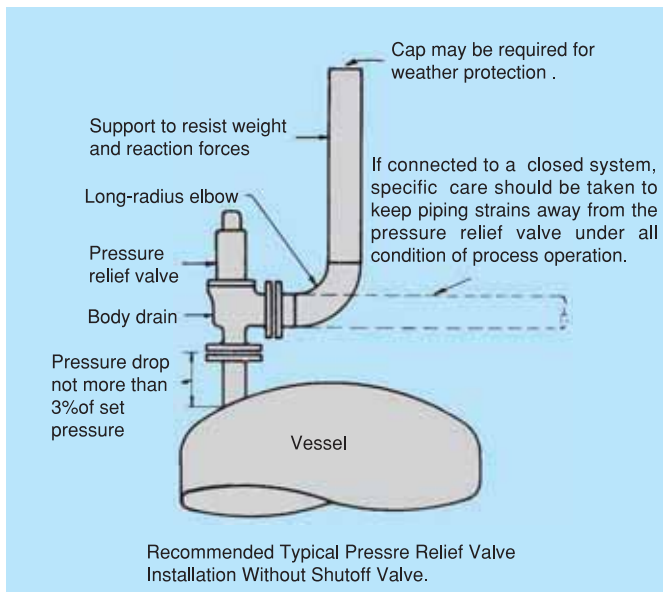
6-3 Sizes, Materials and Pressure-Temperature Limits

Derived from NS 255-E series and its size, material and pressure-temperature limits comply with API STD. 526 in same manner as NS 255-E series whose pressure-temperature limits are recommended for your reference. Equipped with O-ring which limits maximum applicable temperature and its material is tabulated on page 22.

7 Recommendation for Installation

For planning an installation of a safety valve (or relief valve), following instructions are recommended :

- In order to prevent chattering of the valve , keep the length of the mount to the minimum so that the pressure drop through the mount does not exceed 3% of the set pressure. The bore of the mount should not be less than the valve inlet bore.
- Pressure drop should not exceed 10% of the valve set pressure.
- Valves should be installed on the places for easy maintenance and adjustment.
- The valve should be set in a vertical position.
- Provide smooth “R” with the inlet approach of the mount.
- The mount should be designed to sufficiently absorb reaction forces and intallation weight.
- The exhaust pipe should be designed so as to keep piping strains away from the pressure relief valve under any condition of process operation.
- The valve inlet , the vessel and pipes all must be thoroughly cleaned before installation .
- Cautions illustrated below are extracted from API RP 520. Please comply with those recommendations for complete operation.



Seat Tightness

Standards on seat tightness are provided in JIS B8210 and API STD. 527. The following is extracted from JIS B8210.

Metal-to-metal Seat Tightness

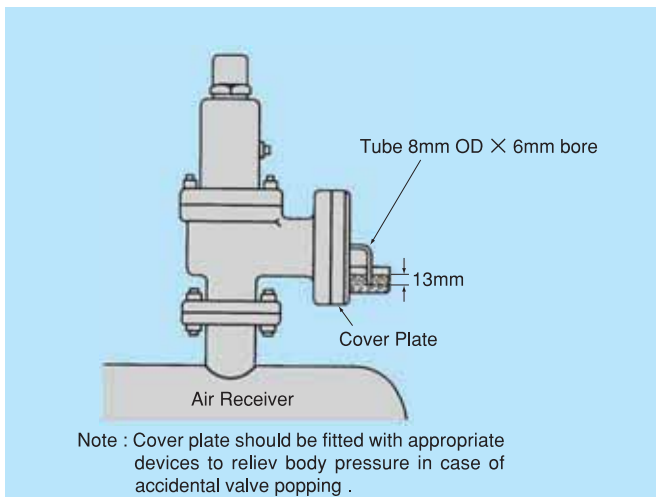
■ Test Apparatus

As illustrated in Fig.8-1, leakage measurement should be made with use of a 8mm-OD tubing with 6mm bore. The tube end shall be cut square and smooth. It should be paralalled to and 13mm below the water surface.

■ Test Procedure

As shown in Fig.8-1, with the valve mounted vertically the leakage rate in bubbles per minute shall be determined with the lower test pressure either of 90% of the set pressure or closing pressure immediately after popping. Atmospheric temperature air or N2 gas shall be used as test fluid and Table 8-1 shows how long the test pressure should be applied before bubble count.

■ Fig.8-1 Test Apparatus for Seat Tightness



■ Table 8-1 Pressure Duration before Bubble Count

Inlet Size (mm)	Duration
Max. 50	1 min.
65 to 100	2 min.
100 & 200	5 min.

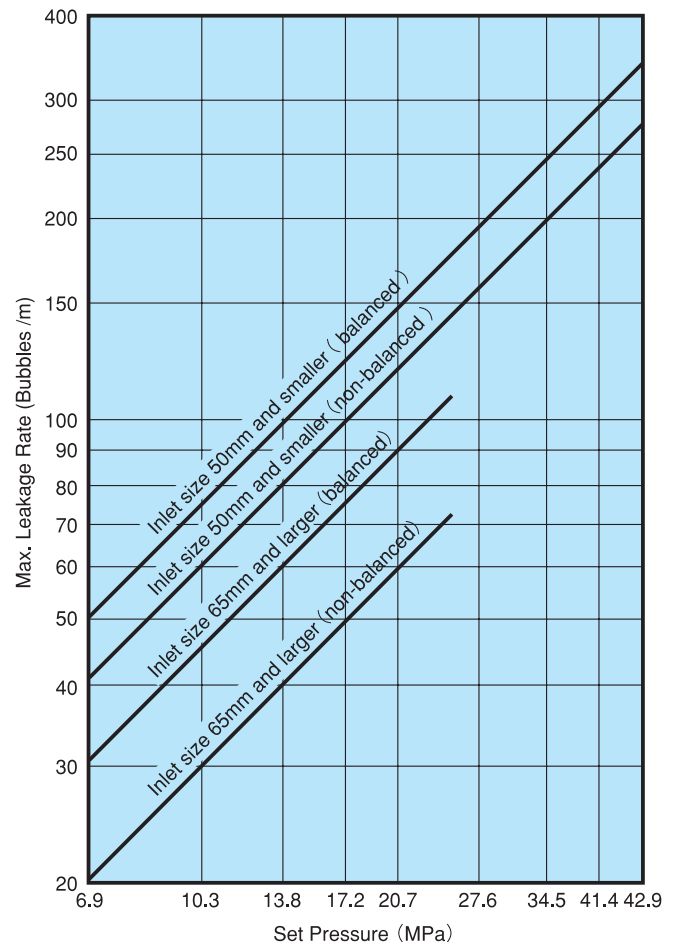
■ Leakage Rate

The leakage rate should not exceed the numbers listed in Table 8-2 when the set pressure is 7 MPa or below, and it should be below in Fig.8-2 when it is over 7 MPa.

■ Table 8-2 Max. Leakage Rate for Valves Set 7 MPa or below

Type	Inlet Size (mm)	Max. Leakage Rate (Bubbles/m)	Converted Leakage Rate (cm ³ /m)
Conventional (non-balanced)	50 and smaller	40	11.80
	65 and larger	20	5.90
Balanced Bellows (balanced)	50 and smaller	50	14.75
	65 and larger	30	8.85

■ Fig.8-2 Max. Leakage Rate for Valves Set at over 7MPa



Full Bore Safety Valve (NS 255F Series)

Safety valve basically for boiler, pressure vessel, various steam tubes, etc. Conformed with ASME Code Section I. Capacity certified by the National Board of Boiler and Pressure Vessel Inspectors.

- Inlet size : 25 to 200mm
- Connection : flange or welding
- Pressure limit : Max. 21.4 MPa



Please refer to Cat. No.524.

Special Specification Valve (NS255CX-E)

Dual discharge valve for high temperature.

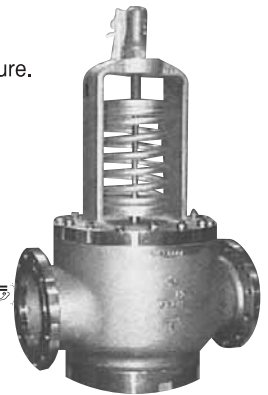
- Fluid : fuel gas
- Temperature : 720°C
- Material : CF8M/Incoloy
- Size : 300×300×300mm
(2 directions)

-  !?



- 

- Set pressure : 0.28 MPa
- Applicable code :



Feedwater Heating Chamber Low-lift Relief Valve (NS200BF)

- Fluid : water
- Material : Steel Casting
- Inlet size : 15 to 25mm
- Connection : flange or socket weldig
- Pressure limit : 1 to 40 MPa

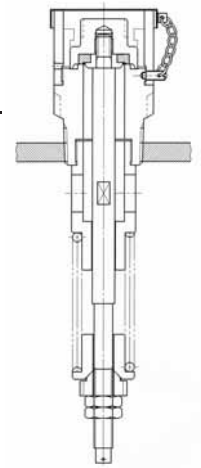


Specia Use Valve (NS200JS)

Relief valve for tank container.

Most vital valve with minimum leakage.

- Fluid : archilalumi
- Temperature : 20°C
- Material : SUS 316/Teflon
- Size : 32mm
- Connection : NPT1¼
- Set pressure : 1.38 MPa
- Applicable code : Fire fighting laws



Vacuum Breaker (NS54D)

Applicable for storage tanks of petroleum or chemical products to prevent tank destruction caused by operation when inside pressure turned to the vacuum by the thermal change, and to keep atmosperic pressure.

- Inlet size : 20 to 200mm
- Connection : flange



GENERAL OFFICE BUILDING

The general office building is the center of our plants for the production of [valves and control systems].

- The lower floor accommodates general offices of General Affairs Dept., Engineering Dept., Quality Assurance Dept., etc.
- The upper floor accommodates Technical Department (Design Section).



▲ Design Room

ASSEMBLY PLANT

NAKAKITA SEISAKUSHO CO., LTD. as the integrated valve manufacturer is manufacturing various types of valves. Each Assembly Department has its own plant for the respective type of products, and the assured quality is put to the products by skilled hands. And besides, Heat-treatment Shop and Washing Shop are fully furnished and they assure the specifications of customers.



▲ Assembly Plant

MACHINE WORKS

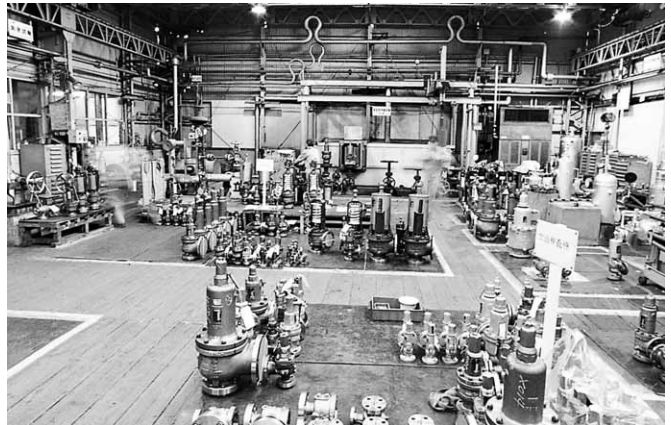
The machine works is functionally laid out to maximize performance of each machine type. Latest NC machines and automatic exclusive machines of our own make are continuously producing interchangeable components of stable quality.



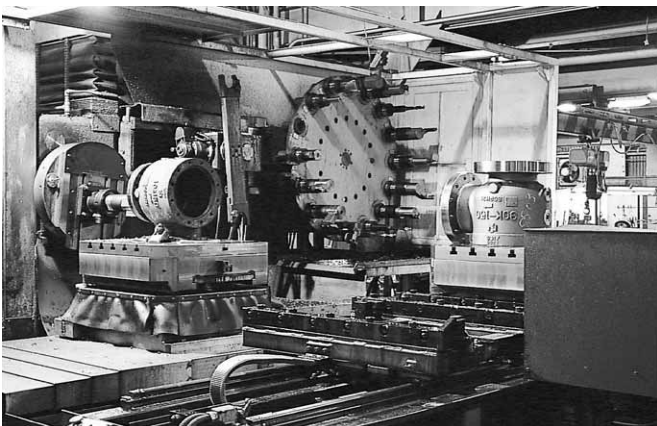
▲ Machine Works

INSPECTION SECTION

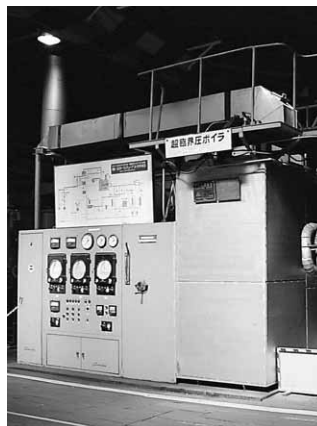
The inspection Sections for respective products are directly connected to the each Assembly Department, and every products are always carried out strict inspection by experts with excellent modern testing facilities. So the reliable NAKAKITA'S products are forwarded to the society. The followings are the inspection facilities for Safety-Relief Valves.



▲ Inspection Section



▲ Machining Center



▲ Super-critical Pressure Boiler



▲ Cryogenic Test Facility (LN₂·CE)

Tabulated below is the specification sheet for your inquiry and order. Please indicate any plant side condition also if any other than those items listed on the sheet .

Specification	Entry Sample
General	
Application (Equipment Name)	RP Plant
Valve No.	SV-242A
Quantity	1
Applicable Code	ASME Code Section VIII
Service Condition	
Fluid & State (Liquid, Gas or Vapor)	Ethylene (Gas)
Molecular Weight (M) or Specific Gravity (G)	M=28.05
Viscosity	—
Compressibility Factor (Z)	1
Temperature (Nor./Relieving) (°C)	—/83
Pressure (Nor./Design) (MPa)	3.5/4.5
Set Pressure (MPa)	4.5
Relieving Pressure (Overpressure%) (MPa)	4.95 (10%)
Closing Pressure (Blowdown) (MPa)	4.05 (0.45)
Back Pressure (Constant or Variable) (MPa)	0
Spring Set Pressure (MPa)	4.5
Required Capacity (kg/h)	11500
Material	
Body, Bonnet, Cap	SA216 WCB
Disc, Nozzle	SUS304
Others	
Spares and Tools	—
Selected Valve	
Conventional, Balanced Bellows or Pilot	Conventional
Bonnet Type (Packed or Open)	Packed
Type	NS255A-E
Size (Inlet×Orifice×Outlet)	40×G×80
Connection (Inlet Side×Outlet Side)	ASME 600-1½"RF×ASME 150-3"RF
Rated Capacity (kg/h)	12252
Remarks :	

■ Replacement Parts

For parts order, specific parts name with its number indicated on the approved drawing together with valve's type, size and Nakakita's serial number available on the valve name plate, are definitely needed.