

SAFETY RELIEF VALVE

AL-300 SERIES

AL-300 series are the most popular compact type safety relief valves with high efficiency.

These safety relief valves are mainly used as a safety valve after a pressure reducing valve, a safety valve for small boilers, various types of pressure vessels and instruments, and a relief valve for pumps.

Features

- 1: Simple construction enables easy maintenance.
- 2: A reliable blowout operation is assured by the popping structure.
- 3: PTFE valve disc enables tight shutoff for gas and liquid service.
(AL-300T, 301T)



AL-300

Specification

Model		AL-300	AL-301	AL-300T	AL-301T
Application		Steam		Air, Oil, Water and Other non-corrosive fluids	
Setting Pressure		0.05~1.0MPa {0.5~10kgf/cm²G}	0.05~1.5MPa {0.5~15kgf/cm²G}	0.05~1.0MPa {0.5~10kgf/cm²G}	0.05~1.5MPa ※¹ {0.5~15kgf/cm²G}
Maximum Temp.		220℃		150℃ ※²	
Material	Spring Case	Ductile Cast Iron			
	Valve Case	Ductile Cast Iron			
	Valve/Seat	Bronze	Stainless Steel	PTFE/Bronze	PTFE/Stainless Steel
Connection		JIS 10K FF Flanged	JIS 10K, 16K FF Flanged	JIS 10K FF Flanged	JIS 10K, 16K FF Flanged

※1: Model AL-301 is used in case the setting pressure is over 1.3MPa.

※2: For liquid application, the maximum temperature is 120°C.

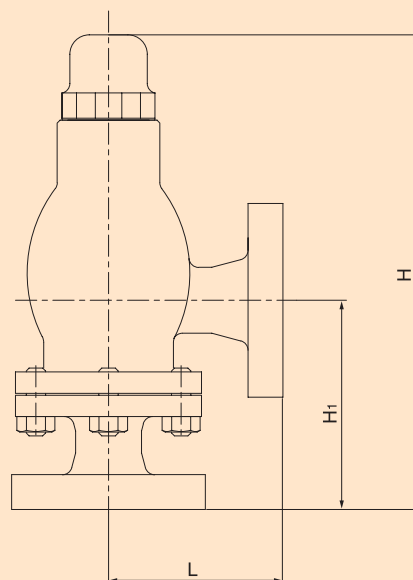
Dimensions & Weights

●AL-300, 301 (mm)

Nominal Size	L	H ₁	H	D	Blowout Area A=πD ℓ (mm ²)	Weight (kg)
15A	90	108	245	25	49.1	4.7
20A	90	108	245	25	49.1	5.0
25A	90	108	245	25	49.1	6.2
32A	91	115	285	37	107.6	8.6
40A	91	115	285	38	113.5	8.8
50A	105	132	311	50	196.4	12.6

●AL-300T, 301T (mm)

Nominal Size	L	H ₁	H	D	Blowout Area A=πD ℓ (mm ²)	Weight (kg)
15A	90	108	245	29	66.1	4.7
20A	90	108	245	29	66.1	5.0
25A	90	108	245	29	66.1	6.2
32A	91	115	285	37	107.6	8.6
40A	91	115	285	37	107.6	8.8
50A	105	132	311	50	196.4	12.6



AL-300, 301 nominal size selection table

For saturated steam

〈Pressure Vessel Structure Standard〉

(kg/h)

Pressure MPa (kgf/cm ² G)	0.05 {0.5}	0.1 {1}	0.2 {2}	0.3 {3}	0.4 {4}	0.5 {5}	0.6 {6}	0.7 {7}	0.8 {8}	0.9 {9}	1.0 {10}	1.1 {11}	1.2 {12}	1.3 {13}	1.4 {14}	1.5 {15}
Nominal Size																
15A	38	50	69	93	117	140	162	185	208	230	253	275	298	320	342	365
20A	38	50	69	93	117	140	162	185	208	230	253	275	298	320	342	365
25A	38	50	69	93	117	140	162	185	208	230	253	275	298	320	342	365
32A	84	109	152	204	256	306	357	406	455	505	554	604	653	702	750	800
40A	89	115	161	215	270	323	376	429	480	532	585	637	688	740	791	844
50A	154	200	278	372	468	560	651	742	832	922	1012	1102	1192	1281	1370	1460

AL-300T, 301T nominal size selection table

For air (20°C)

〈Pressure Vessel Structure Standard〉

(kg/h)

Pressure MPa (kgf/cm ² G)	0.05 {0.5}	0.1 {1}	0.2 {2}	0.3 {3}	0.4 {4}	0.5 {5}	0.6 {6}	0.7 {7}	0.8 {8}	0.9 {9}	1.0 {10}	1.1 {11}	1.2 {12}	1.3 {13}	1.4 {14}	1.5 {15}
Nominal Size																
15A	74	104	158	213	267	322	377	431	486	540	595	650	704	759	804	845
20A	74	104	158	213	267	322	377	431	486	540	595	650	704	759	804	845
25A	74	104	158	213	267	322	377	431	486	540	595	650	704	759	804	845
32A	121	169	258	347	436	525	613	702	791	880	969	1058	1147	1235	1324	1413
40A	121	169	258	347	436	525	613	702	791	880	969	1058	1147	1235	1397	1491
50A	221	309	471	634	796	958	1122	1282	1444	1607	1769	1931	2093	2255	2418	2580

For water (25% accumulation)

〈Yoshitake Standard〉

(m³/h)

Pressure MPa (kgf/cm ² G)	0.05 {0.5}	0.1 {1}	0.2 {2}	0.3 {3}	0.4 {4}	0.5 {5}	0.6 {6}	0.7 {7}	0.8 {8}	0.9 {9}	1.0 {10}	1.1 {11}	1.2 {12}	1.3 {13}	1.4 {14}	1.5 {15}
Nominal Size																
15A	0.8	1.1	1.6	2.0	2.3	2.6	2.8	3.1	3.3	3.5	3.7	3.9	4.0	4.2	3.2	3.3
20A	0.8	1.1	1.6	2.0	2.3	2.6	2.8	3.1	3.3	3.5	3.7	3.9	4.0	4.2	3.2	3.3
25A	0.8	1.1	1.6	2.0	2.3	2.6	2.8	3.1	3.3	3.5	3.7	3.9	4.0	4.2	3.2	3.3
32A	1.3	1.9	2.7	3.3	3.8	4.2	4.7	5.0	5.4	5.7	6.0	6.3	6.6	6.9	7.1	7.4
40A	1.3	1.9	2.7	3.3	3.8	4.2	4.7	5.0	5.4	5.7	6.0	6.3	6.6	6.9	7.5	7.8
50A	2.4	3.5	4.9	6.0	7.0	7.8	8.5	9.2	9.9	10.5	11.0	11.6	12.1	12.6	13.1	13.5

Formula for blowout capacity

Pressure Vessel Structure Standard

[Steam]

$$W=5.246 \times C \times K_d \times A (P+0.1) \times 0.9$$

[Gas]

$$W=C' \times K_d \times A \times P_1 \sqrt{\frac{M}{ZT}} \times 0.9$$

Yoshitake's Standard (for liquid)

..... (25% accumulation)

$$V = \frac{AK}{12.4 \sqrt{\frac{G}{P}}}$$

W : Blowout capacity (kg/h)
 C : Coefficient according to the properties of steam
 K_d : Coefficient of blowout
 [AL-300series: 0.982]
 A : Blowout area (mm²)
 $A = \pi D \ell$
 D : Bore of valve seat opening (mm)
 ℓ : Lift (mm)
 P : Pressure to determine the blowout capacity [MPa]
 C' : Coefficient depending on adiabatic index and pressure
 P₁ : Pressure to determine the blowout capacity [MPa · A]
 M : Molecular weight of gas
 Z : Compression factor
 T : Absolute temperature under P₁ (K)

V : Discharge capacity (m³/h)
 A : Discharge area (mm²)
 $A = \pi D \ell$
 D : Bore of valve seat opening (mm)
 ℓ : Lift (mm)
 K : 0.7 (Flow coefficient)
 G : Specific gravity relative to water
 P : Discharge pressure [MPa]



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