

SAFETY & RELIEF VALVES



**PRESSURE RELIEF VALVES
AND ACCESSORIES FOR:**

**RESIDENTIAL
COMMERCIAL
INDUSTRIAL
OEM APPLICATIONS**



"Apollo" Valves

manufactured in the USA
by CONBRACO Industries

A history of Quality, Service and Innovation

Now in its ninth decade, Conbraco Industries, Inc. is a leading manufacturer of flow control products for U.S. and international markets. The company's headquarters is based in Matthews, North Carolina with manufacturing plants and foundries located in Pageland and Conway, South Carolina.

Conbraco has a history of new product development and innovation that dates back to the company's inception in 1928. Today, the Conbraco line of products is marketed under the "Apollo Valves" brand and includes: ball valves, butterfly valves, backflow prevention devices, water pressure reducing valves, mixing valves, safety relief valves, water gauges, strainers, actuation and ApolloXpress products.

Conbraco's vertically integrated manufacturing ensures a consistency of production, testing, quality and availability. You can be assured that Conbraco flow control products will deliver long term reliability. All Conbraco plants are registered to ISO 9001:2008 quality standards.

The Conbraco line continues to expand with new products, designs and advanced materials to better serve the needs of our customers. Markets served include: chemical processing, pulp and paper, petroleum, residential and commercial plumbing and heating, OEM, irrigation, water works, and fire protection.



PAGELAND, SC
Bronze Foundry and Manufacturing Plant



PAGELAND, SC
Final Assembly and Distribution Center



CONWAY, SC
Steel Foundry and Manufacturing Plant



MATTHEWS, NC
Corporate Headquarters

A LONG, SUCCESSFUL HISTORY IN SAFETY AND RELIEF VALVES

Conbraco has been designing and producing ASME safety and relief valves for eight decades. Its portfolio includes more than 30 models of valves carrying the ASME Section I, Section IV and Section VIII designations. These products are specified around the globe for use in boilers, sterilizers, air compressors and a broad spectrum of commercial, industrial and OEM applications.

The company offers safety and relief valves with brass, bronze, cast iron, carbon steel and stainless steel body construction. Available in inlet sizes from 1/4" through 6", Conbraco valves are certified for steam, air/gas and liquid service, with set pressures up to 1,200 psi.

As part of its total quality program, Conbraco provides 100 percent factory testing of safety and relief valves prior to shipment. It maintains a network of regional ASME certified setting stations that offer prompt deliveries as well as factory authorized sales, service and repair.

Every Conbraco safety and relief valve represents our proud tradition of providing customers with real value and satisfying their needs with unmatched efficiency, consistency and speed.

This catalog provides you with a full overview of the Conbraco safety and safety relief valve product line plus information on proper valve selection and application. If you have any questions, please don't hesitate to contact your nearest Conbraco factory representative, authorized setting station or Conbraco customer service.

SAFETY & RELIEF VALVES

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European CE/PED Compliance Now Available!

Several models of Apollo / Conbraco pressure relief valves listed in this catalog may now be furnished in compliance with the provisions of the European Pressure Equipment Directive 97/23/EC. These valves meet the essential safety requirements for Safety Hazard Category IV and Conformity Assessment Module H1.

CE conformance is signified by the inclusion of the **CE** symbol on the valve nameplate.

CE marking is an option and must be specified at the time of order placement. Please consult the factory for details.



SAFETY & RELIEF VALVES

Pressure Relief Valve Selection Chart

Model	Material Body / Trim	Inlet Sizes Min / Max, in.	Inlet Sizes Min / Max, mm.	Connections		CE/PED Available	Set Pressures Min / Max, PSIG	Set Pressures Min / Max, barg	Temperature Max, °F	Temperature Max, °C
				NPT	Flanged					
ASME Section I - Steam Power Boilers										
19M	Bronze / Brass	1/2 - 2 1/2	DN 15 - 65	X		X	15 - 250	1.0 - 17.2	406°F	207.7°C
19K	Bronze / Brass	1/2 - 2 1/2	DN 15 - 65	X		X	15 - 250	1.0 - 17.2	406°F	207.7°C
19L	Bronze / Stainless	1/2 - 2 1/2	DN 15 - 65	X		X	15 - 250	1.0 - 17.2	406°F	207.7°C
19S	Bronze / Stainless	1/2 - 2 1/2	DN 15 - 65	X		X	15 - 300	1.0 - 20.7	422°F	216.7°C
29	Bronze / Brass	3/8 - 1 1/4	DN 10 - 32	X		X	30 - 200	2.0 - 13.8	406°F	207.7°C
119	Cast Iron / Stainless	1-1/2 - 6	DN 40 - 150	X	X	X	15 - 250	1.0 - 17.2	450°F	232.2°C
ASME Section IV - Low Pressure Steam Heating Boilers										
12	Bronze / Brass	2 - 3	DN 50 - 80	X			5 - 15	0.34 - 1.0	250°F	121.1°C
13-101	Bronze / Brass	3/4	DN 20	X			5 - 15	0.34 - 1.0	250°F	121.1°C
13-202	Bronze / Brass	1	DN 25	X			5 - 15	0.34 - 1.0	250°F	121.1°C
13-211	Bronze / Brass	3/4	DN 20	X			5 - 15	0.34 - 1.0	250°F	121.1°C
13-213	Bronze / Brass	1-1/4	DN 32	X			5 - 15	0.34 - 1.0	250°F	121.1°C
13-214	Bronze / Brass	1-1/2	DN 40	X			5 - 15	0.34 - 1.0	250°F	121.1°C
13-510	Bronze / Brass	3/4	DN 20	X			5 - 15	0.34 - 1.0	250°F	121.1°C
14-200	Bronze / Brass	2 - 3	DN 50 - 80	X			5 - 15	0.34 - 1.0	250°F	121.1°C
ASME Section IV - Hot Water Heating & Supply Boilers										
10-100	Bronze / Brass	3/4	DN 20	X			20 - 65	1.4 - 4.5	250°F	121.1°C
10-300	Bronze / Brass	3/4	DN 20	X			20 - 65	1.4 - 4.5	250°F	121.1°C
10-400	Bronze / Brass	3/4	DN 20	X			30	2.0	250°F	121.1°C
10-410	Bronze / Brass	3/4	DN 20	X			20 - 80	1.4 - 5.5	250°F	121.1°C
10-600, 10-610	Bronze / Brass	3/4 - 2	DN 20 - 50	X		X	15 - 160	1.0 - 11.0	250°F	121.1°C
10-624, 10-634	Bronze / Brass	3/4	DN 20	X			30 - 150	2.0 - 10.3	250°F	121.1°C
17-401	Bronze / Brass	1/2	DN 15	X			75 - 160	5.2 - 11.0	250°F	121.1°C
17-402	Bronze / Brass	3/4	DN 20	X			75 - 150	5.2 - 10.3	250°F	121.1°C
18C-400	Bronze / Brass	1/2 - 3/4	DN 15 - 20	X			125 - 175	8.61 - 12.1	210°F	98.9°C
18C-500	Bronze / Stainless	3/4 - 2	DN 20 - 50	X			75 - 150	5.2 - 10.3	210°F	98.9°C
ASME Section VIII Air / Gases										
15	Brass	1/4 - 1	DN 8 - 25	X		X	15 - 250	1.0 - 17.2	325°F	162.8°C
19M	Bronze / Brass	1/2 - 2 1/2	DN 15 - 65	X		X	8 - 300	0.55 - 20.7	406°F	207.7°C
19K	Bronze / Brass	1/2 - 2 1/2	DN 15 - 65	X		X	15 - 300	1.0 - 20.7	406°F	207.7°C
19L	Bronze / Stainless	1/2 - 2 1/2	DN 15 - 65	X		X	15 - 300	1.0 - 20.7	406°F	207.7°C
19S	Bronze / Stainless	1/2 - 2 1/2	DN 15 - 65	X		X	8 - 300	0.55 - 20.7	422°F	216.7°C
29	Bronze / Brass	3/8 - 1 1/4	DN 10 - 32	X		X	30 - 200	2.0 - 13.8	406°F	207.7°C
119	Cast Iron / Stainless	1-1/2 - 6	DN 40 - 150	X	X	X	8 - 250	0.55 - 17.2	450°F	232.2°C
510	Bronze / Brass	1/2 - 2	DN 15 - 50	X		X	8 - 300	0.55 - 20.7	406°F	207.7°C
520	Bronze / Stainless	1/2 - 2	DN 15 - 50	X		X	8 - 1200	0.55 - 82.7	422°F	216.7°C
530	Steel / Stainless	1/2 - 2	DN 15 - 50	X	X	X	8 - 1200	0.55 - 82.7	800°F	426.7°C
540	Stainless / Stainless	1/2 - 2	DN 15 - 50	X	X	X	8 - 1200	0.55 - 82.7	800°F	426.7°C
ASME Section VIII Steam										
10-322	Brass	3/4	DN 20	X		X	15 - 60	1.0 - 4.1	325°F	162.8°C
10-512	Brass	1/2	DN 15	X		X	9 - 60	0.62 - 4.1	325°F	162.8°C
19M	Bronze / Brass	1/2 - 2 1/2	DN 15 - 65	X		X	8 - 250	0.55 - 17.2	406°F	207.7°C
19K	Bronze / Brass	1/2 - 2 1/2	DN 15 - 65	X		X	15 - 250	1.0 - 17.2	406°F	207.7°C
19L	Bronze / Stainless	1/2 - 2 1/2	DN 15 - 65	X		X	15 - 250	1.0 - 17.2	406°F	207.7°C
19S	Bronze / Stainless	1/2 - 2 1/2	DN 15 - 65	X		X	8 - 300	0.55 - 20.7	422°F	216.7°C
29	Bronze / Brass	3/8 - 1 1/4	DN 10 - 32	X		X	30 - 200	2.0 - 13.8	406°F	207.7°C
119	Cast Iron / Stainless	1-1/2 - 6	DN 40 - 150	X	X	X	8 - 250	0.55 - 17.2	450°F	232.2°C
510	Bronze / Brass	1/2 - 2	DN 15 - 50	X		X	8 - 250	0.55 - 17.2	406°F	207.7°C
520	Bronze / Stainless	1/2 - 2	DN 15 - 50	X		X	8 - 300	0.55 - 20.7	422°F	216.7°C
530	Steel / Stainless	1/2 - 2	DN 15 - 50	X	X	X	8 - 900	0.55 - 62.1	800°F	426.7°C
540	Stainless / Stainless	1/2 - 2	DN 15 - 50	X	X	X	8 - 900	0.55 - 62.1	800°F	426.7°C
ASME Section VIII Liquid										
510	Bronze / Brass	1/2 - 2	DN 15 - 50	X		X	8 - 300	0.55 - 20.7	406°F	207.7°C
520	Bronze / Stainless	1/2 - 2	DN 15 - 50	X		X	8 - 1200	0.55 - 82.7	422°F	216.7°C
530	CS / Stainless	1/2 - 2	DN 15 - 50	X	X	X	8 - 1200	0.55 - 82.7	800°F	426.7°C
540	Stainless / Stainless	1/2 - 2	DN 15 - 50	X	X	X	8 - 1200	0.55 - 82.7	800°F	426.7°C
Non-Code, Vacuum & Miscellaneous Products										
14-400, 14-500	Low Pressure Air	2 - 3	DN 50 - 80	X			4 - 22	0.3 - 1.52	400°F	204.4°C
14-600	Vacuum Relief	2 - 3	DN 50 - 80	X			8 - 30 HG	203 - 762 mm. HG	400°F	204.4°C
16-200	Liquids	1/2	DN 15	X			30 - 80	2.1 - 12.4	120°F	48.9°C
16-501	Adj. Liquid Bypass	1/2	DN 15	X			50 - 600	0 - 41.4	200°F	93.3°C
16-503, 16-504	Calibrated Liquid Relief	1/2 - 3/4	DN 15 - 20	X			50 - 175	3.4 - 12.1	200°F	93.3°C
Drip Pan Elbows	Steam Discharge	3/4 - 8	DN 20 - 200	X	X		N/A	N/A	450°F	232.2°C

SAFETY & RELIEF VALVES

Hot Water Boiler Safety Relief Valves

10 SERIES

Brass/bronze safety relief valves protect ASME Section IV hot water heating boilers and hydronic heating systems. High capacity design features corrosion resistant construction. Brass, satin or polished chrome finishes available.

ASME Section IV

Inlet Size 3/4" - Outlet - 3/4" & 1"

Factory set Pressure 20-150 psi

Maximum temperature service: 250°F



Section IV
Heating Boilers

APPLICATIONS:

Ideal for use with hot water boilers and hydronic heating systems.

FEATURES:

- Pressures from 20 to 150 psig
- Registered in all Canadian provinces and territories, CRN #0G8547.5C
- Stainless steel springs standard
- 10-624/634 are ideal for use in various plumbing systems, commercial boiler applications and swimming pool heaters
- 10-418/417 are ideal for use in swimming pool heater applications

OPTIONS:

- Model 10-104 and 10-301 are available with optional satin or polished chrome finish
- 10-321 available in polished chrome only

DIMENSIONS AND WEIGHTS

Model Number	Size(in./mm.)		Certified Pressure Range psig	Height (in./mm.)	Wt./100 (lbs./kg.)
	Inlet NPT	Outlet NPT			
10-102	3/4 F	1 F	20-60	3.94	105
	20 F	25 F		100	47.7
10-104	3/4 M	1 F	20-60	3.75	109
	20 M	25 F		95	49.5
10-301	3/4 M	3/4 F	20-60	3.75	114
	20 M	20 F		95	51.8
10-303	3/4 F	3/4 F	20-60	3.94	115
	20 F	20 F		100	52.3
10-321	3/4 M	3/4 F	20-60	3.75	123
	20 M	20 F		95	55.9
10-407	3/4 M	3/4 F	30	3	62
	20 M	20 F		76	28.2
10-408	3/4 F	3/4 F	30	2.75	65
	20 F	20 F		70	29.5
10-417	3/4 M	3/4 F	20-80	3	62
	20 M	20 F		76	28.1
10-418	3/4 F	3/4 F	20-80	2.75	65
	20 F	20 F		70	29.5
10-624	3/4 M	3/4 F	30-150	4.62	106
	20 M	20 F		117	48.2
10-634	3/4 F	3/4 F	30-150	4.62	106
	20 F	20 F		117	48.2



10-102
10-303



10-104
10-301



10-321



10-407
10-417



10-408
10-418



10-624
10-634 OEM

SAFETY & RELIEF VALVES



Hot Water Boiler Safety Relief Valves

10 SERIES

ASME SECTION IV HOT WATER

British thermal units per hour (Kilocalories per hour) at 10% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units Btu/Hr.

Metric Units Kcal/Hr.

Model No.	10-102 10-104	10-301 10-303	10-321	10-407 10-408	10-417 10-418	10-624 10-634	Model No.	10-102 10-104	10-301 10-303	10-321	10-407 10-408	10-417 10-418	10-624 10-634
Set Pressure psig							Set Pressure barg						
5*	-	225,000	175,000	-	-	-	0.34	-	57	44	-	-	-
10*	-	295,000	230,000	-	-	-	0.69	-	74	58	-	-	-
15	-	365,000	285,000	-	-	-	1.03	-	92	72	-	-	-
20	545,000	420,000	325,000	-	377,000	-	1.38	137	106	82	-	95	-
25	625,000	485,000	375,000	-	427,000	-	1.72	158	122	95	-	108	-
30	710,000	550,000	425,000	535,000	477,000	689,000	2.07	179	139	107	135	120	174
35	790,000	610,000	475,000	-	532,000	769,000	2.41	199	154	120	-	134	194
40	870,000	675,000	525,000	-	587,000	848,000	2.76	219	170	132	-	148	214
45	955,000	740,000	575,000	-	642,000	928,000	3.10	241	187	145	-	162	234
50	1,035,000	805,000	625,000	-	697,000	1,007,000	3.45	261	203	158	-	176	254
55	1,115,000	870,000	675,000	-	752,000	1,087,000	3.80	281	219	170	-	190	274
60	1,200,000	935,000	725,000	-	807,000	1,166,000	4.14	303	236	183	-	204	294
65	-	-	-	-	862,000	1,246,000	4.48	-	-	-	-	217	314
70	-	-	-	-	917,000	1,325,000	4.83	-	-	-	-	231	334
75	-	-	-	-	972,000	1,405,000	5.17	-	-	-	-	245	354
80	-	-	-	-	1,027,000	1,484,000	5.51	-	-	-	-	259	374
85	-	-	-	-	-	1,564,000	5.86	-	-	-	-	-	394
90	-	-	-	-	-	1,643,000	6.20	-	-	-	-	-	414
95	-	-	-	-	-	1,723,000	6.55	-	-	-	-	-	435
100	-	-	-	-	-	1,802,000	6.89	-	-	-	-	-	454
105	-	-	-	-	-	1,882,000	7.24	-	-	-	-	-	475
110	-	-	-	-	-	1,961,000	7.58	-	-	-	-	-	495
115	-	-	-	-	-	2,041,000	7.93	-	-	-	-	-	515
120	-	-	-	-	-	2,120,000	8.27	-	-	-	-	-	535
125	-	-	-	-	-	2,199,000	8.62	-	-	-	-	-	555
130	-	-	-	-	-	2,279,000	8.96	-	-	-	-	-	575
135	-	-	-	-	-	2,358,000	9.31	-	-	-	-	-	595
140	-	-	-	-	-	2,438,000	9.65	-	-	-	-	-	615
145	-	-	-	-	-	2,517,000	10.00	-	-	-	-	-	635
150	-	-	-	-	-	2,597,000	10.34	-	-	-	-	-	655

* Pressure settings below 15 psi are non-ASME Code.

P/N SUFFIX KEY

Set Pressure psig	Exterior Finish		
	Plain Brass	Satin Chrome	Polished Chrome
20	-02	-41	-67
22	-03	-42	-68
25	-04	-43	-69
30	-05	-44	-70
35	-06	-45	-71
40	-07	-46	-72
43	-08	-47	-73
45	-09	-48	-74
50	-10	-49	-75
55	-11	-50	-76
60	-12	-51	-77
65	-13		
70	-14		
75	-15		
80	-16		

ORDERING CODE:

Use two-digit suffix number to indicate set pressure and body finish.
Suffix for 10-624 / 10-634 models is actual set pressure in psig.

EXAMPLE:

10-301-44

3/4" 10-301 set @ 30 psig, satin chrome finish.

10-624-125

3/4" 10-624 set @ 125 psig (plain bronze finish only)

NOTE:

- Model 10-321 available in polished chrome finish only.
- All other models are furnished with plain bronze finish.
- Model 10-104 and 10-301 available with optional satin or polished chrome finish.

SAFETY & RELIEF VALVES

OEM Style Steam Safety Relief Valves

10-322 AND 10-512 SERIES



10-512



10-322

National Board capacity-certified safety valves; brass body with optional satin or polished chrome finish. Protects against excess pressure from thermal expansion and steam caused by failure of Btu input controls.

ASME Section VIII

Sizes 1/2" and 3/4"

Factory set pressures 15 to 60 psig@312°F max

National Board Certified Capacity



APPLICATIONS:

Ideally suited for OEM applications such as steam carpet and jewelry cleaners, autoclaves, sterilizers, commercial pressure cookers, steam jacketed kettles, dental equipment, coffee makers and similar equipment.

FEATURES:

- Stainless steel springs
- Small physical size
- Discharge capacities to 725 lbs./hr.
- Soft seating for exceptional seat tightness
- Pressure settings 15 to 60 psig
- 10-322 in polished chrome only (10-322-P)
- CRN OG8547.5C, registered in all Canadian provinces and territories
- More descriptive model numbering system

OPTIONS:

(Model 10-512 Only)

- Satin or polished chrome finish
- Stainless steel wetted trim
- BSP pipe connections
- CE/PED compliance

P/N SUFFIX KEY

Set Pressure psig	*Certified Capacities	
	10.322 lbs.hr.	15.512 lbs.hr.
15	-	151
20	325	178
25	375	205
30	425	232
35	475	258
40	525	285
45	575	312
50	625	339
55	675	366
60	725	392

* ASME (UV) Rating – 90% of actual capacity at 10% accumulation. Capacity in lbs. of saturated steam per hour.

DIMENSIONS AND WEIGHTS

Model Number	Size (in./mm.)		Set Pressure Range psig	Height (in./mm.)	Wt./100 (lbs./kg.)
	Inlet NPT	Outlet NPT			
10-322	3/4 M	3/4 F	20-60	3.75	128
	20	20		95	58.2
10-512	1/2 M	1/2 F	15-60	2.62	58
	15	15		67	26.4

MODEL NUMBERING SYSTEM

10 - X	-X	-XX	-X
MODEL AND SIZE (IN.)	FINISH	SET PRESSURE	OPTIONS
512 = 1/2 x 1/2 322 = 3/4 x 3/4	B = Plain Brass S = Satin Chrome P = Polished Chrome	Set Pressure in PSIG (2 Digits)	B = BSPP connections CE = PED/CE S = Stainless Steel trim V = Viton® Seat X = Blank Outlet not threaded

EXAMPLE:

10-322-P-20

3/4" 10-322 set @ 20 psig, polished chrome finish.

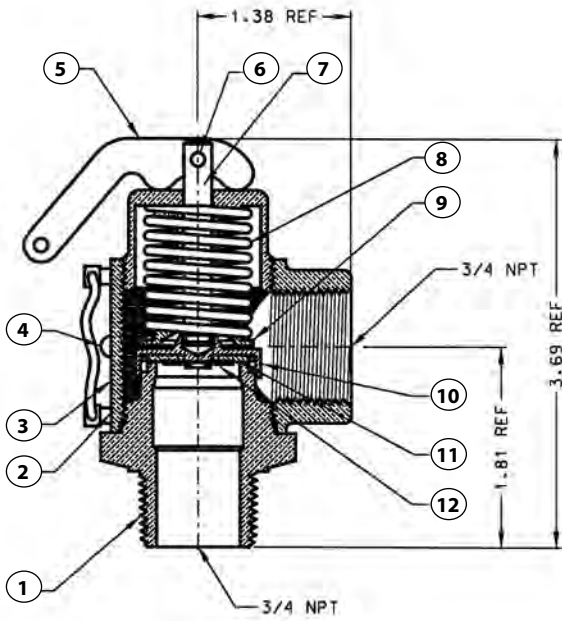
NOTE:

- Model 10-322 available in polished chrome finish only.
- Valves may be set for any pressure between 15 and 60 psig.

SAFETY & RELIEF VALVES

OEM Style Steam Safety Relief Valves

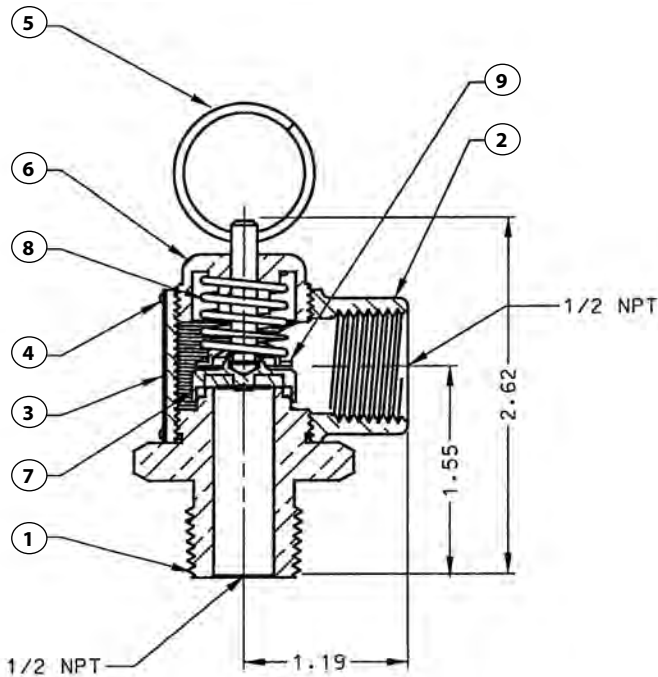
10-322 SERIES



10-322 MATERIALS

Item	Component	Material
1	Nozzle	Brass ASTM B-16
2	Body	Brass ASTM B-16
3	Nameplate	Aluminum
4	Drive Screw	Steel, Zinc Plated
5	Handle	Steel, Zinc Plated
6	Cotter Pin	Steel, Zinc Plated
7	Stem	Brass ASTM B-16
8	Spring	Stainless Steel
9	Spring Washer	Brass ASTM B-16
10	Disc	Brass ASTM B-16
11	Seat	Teflon Faced EPDM
12	Washer	Brass ASTM B-16

10-512 SERIES



10-512 MATERIALS

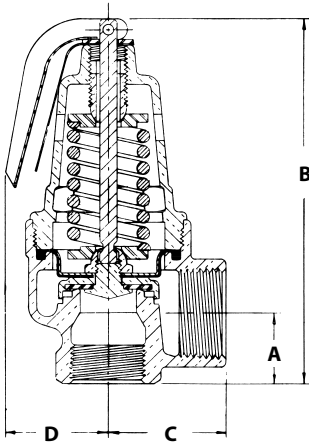
Item	Component	Material
1	Nozzle	Brass ASTM B-16
2	Body	Brass ASTM B-16
3	Nameplate	Aluminum
4	Drive Screw	Steel, Zinc Plated
5	Pull Ring	Steel, Zinc Plated
6	Cap	Brass ASTM B-16
7	Disc Assembly	Brass, Silicone
8	Spring	Stainless Steel
9	Spring Washer	Brass ASTM B-16

Model 10-512 available with optional stainless steel wetted trim. Nozzle, disc holder and disc washer are type 316 stainless steel.

SAFETY & RELIEF VALVES

High Capacity Safety Relief Valves for Hot Water Heating Boilers

10-600 SERIES



High-capacity heating system valves with female inlet and standard or expanded female outlet. Elevated seat for drainage of water away from seat area. Entire pressure range is National Board capacity certified.

ASME Section IV

Inlet Sizes 3/4" to 2"

Factory set pressures from 15-160 psig

Maximum temperature service 250°F



Section IV
Heating Boilers

APPLICATIONS:

Hot water heating boilers and hot water supply systems

FEATURES:

- High Btu capacity rating
- Silicone seat
- Fabric reinforced molded diaphragm isolates spring from water at all times
- Bronze body and spring cage
- Registered in Canadian provinces and territories CRN #0G8547.5C
- Protects against excessive water pressure due to failure of controls to regulate Btu input

DIMENSIONS AND WEIGHTS

Model Number	Size(in./mm.)		Certified Pressure Range psig	Wt./100 (lbs./kg.)	Dimensions (in./mm.)			
	Inlet NPT	Outlet NPT			A	B	C	D
10-604	3/4F	3/4F	15-160	232	1.03	5.25	1.62	1.56
	20	20		105.2	26	133	41	39
10-614	3/4F	1 F	15-160	226	1.03	5.25	1.72	1.56
	20	25		102.5	26	133	43	39
10-605	1F	1F	15-160	410	1.25	6.69	2.00	2.00
	25	25		185.9	31	169	50	50
10-615	1 F	1-1/4F	15-160	390	1.25	6.69	2.00	2.00
	25	32		176.9	31	169	50	50
10-606	1-1/4F	1-1/4F	15-160	795	1.25	8.37	2.47	2.62
	32	32		360.5	31	212	63	67
10-616	1-1/4F	1-1/2F	15-160	755	1.25	8.37	2.47	2.62
	32	40		342.4	31	212	63	67
10-607	1-1/2F	1-1/2F	15-160	1100	2.00	10.75	2.75	3.12
	40	40		498.9	50	273	69	79
10-617	1-1/2F	2F	15-160	1145	2.00	10.75	2.75	3.12
	40	50		519.3	50	273	69	79
10-608	2F	2F	15-160	2375	2.19	14.00	3.69	3.50
	50	50		1077.1	55	355	93	88
10-618	2F	2-1/2F	15-160	2315	2.19	14.00	3.66	3.50
	50	65		1049.9	55	355	92	88

P/N SUFFIX KEY

Set Pressure psig	Suffix	Set Pressure psig	Suffix
15	-01	85	-17
20	-02	90	-18
22	-03	95	-19
25	-04	100	-20
30	-05	105	-21
35	-06	110	-22
40	-07	115	-23
43	-08	120	-24
45	-09	125	-25
50	-10	130	-30
55	-11	135	-31
60	-12	140	-32
65	-13	145	-33
70	-14	150	-34
75	-15	155	-35
80	-16	160	-36

ORDERING CODE:

Use two-digit suffix number to indicate Inlet x Outlet size and set pressure.

EXAMPLES:

10-615-12

1" x 1-1/4" 10-610 set 60 psig

10-608-05

2" x 2" 10-600 set 30 psig



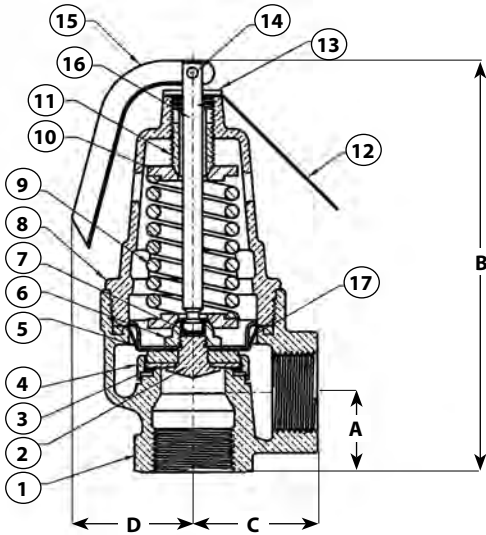
For additional information, submittal sheets and manuals, visit www.apollovalves.com

Customer Service (704) 841-6000

SAFETY & RELIEF VALVES

High Capacity Safety Relief Valves for Hot Water Heating Boilers

10-600 SERIES



10-600 MATERIALS

Item	Component	Material
1	Body	Bronze Alloy C84400
2	Seat Insert	Brass ASTM B-16
3	Seat	Silicone
4	Disc	Brass ASTM B-16
5	Diaphragm	Fabric Reinforce EPDM
6	Stem Nut	Steel Plated
7	Spacer	Silicone
8	Cap	Bronze Alloy C84400
9	Spring	PLATED ASTM A228
10	Spring Washer	AISI 12L14 Steel
11	Adj. Screw	Brass ASTM B-16
12	Nameplate	Aluminum
13	Lift Washer	Steel Plated
14	Handle Rivet	Steel Plated
15	Lift Handle	Steel Plated
16	Stem Nut	Steel Plated
17	Diaphragm Ret.	Steel Plated



ASME SECTION IV HOT WATER

British thermal units per hour (Kilocalories per hour) at 10% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units Btu/Hr.

Metric Units Kcal/Hr.

Model No.	10-604 3/4 x 3/4	10-605 1 x 1	10-606 1-1/4 x 1-1/4	10-607 1-1/2 x 1-1/2	10-608 2 x 2	Model No.	10-604 20 x 20	10-605 25 x 25	10-606 32 x 32	10-607 40 x 40	10-608 50 x 50
Set Pressure psig						Set Pressure barg					
15	541,000	876,000	1,515,000	2,061,000	3,397,000	1.03	136	221	382	520	857
20	636,000	1,030,000	1,782,000	2,424,000	3,996,000	1.38	160	260	449	611	1,008
25	732,000	1,185,000	2,049,000	2,788,000	4,595,000	1.72	185	299	517	703	1,159
30	827,000	1,339,000	2,316,000	3,151,000	5,193,000	2.07	209	351	584	795	1,310
35	923,000	1,493,000	2,583,000	3,514,000	5,792,000	2.41	233	377	651	886	1,461
40	1,018,000	1,648,000	2,850,000	3,878,000	6,391,000	2.76	257	416	719	978	1,612
45	1,113,000	1,802,000	3,117,000	4,241,000	6,990,000	3.10	281	454	786	1,070	1,763
50	1,209,000	1,956,000	3,384,000	4,604,000	7,589,000	3.45	305	493	853	1,161	1,914
55	1,304,000	2,111,000	3,651,000	4,968,000	8,188,000	3.79	329	532	921	1,253	2,065
60	1,399,000	2,265,000	3,918,000	5,331,000	8,786,000	4.14	353	571	988	1,344	2,219
65	1,495,000	2,420,000	4,185,000	5,694,000	9,385,000	4.48	377	610	1,055	1,436	2,367
70	1,590,000	2,574,000	4,453,000	6,058,000	9,984,000	4.83	401	649	1,123	1,528	2,518
75	1,686,000	2,728,000	4,720,000	6,421,000	10,583,000	5.17	425	688	1,190	1,619	2,669
80	1,781,000	2,883,000	4,987,000	6,784,000	11,182,000	5.51	449	727	1,258	1,711	2,820
85	1,876,000	3,037,000	5,254,000	7,148,000	11,780,000	5.86	473	766	1,325	1,803	2,971
90	1,972,000	3,192,000	5,521,000	7,511,000	12,379,000	6.20	497	805	1,393	1,894	3,122
95	2,067,000	3,346,000	5,788,000	7,874,000	12,978,000	6.55	521	844	1,560	1,986	3,273
100	2,162,000	3,500,000	6,055,000	8,238,000	13,577,000	6.89	545	883	1,527	2,076	3,424
105	2,258,000	3,655,000	6,322,000	8,601,000	14,176,000	7.24	569	922	1,594	2,169	3,575
110	2,353,000	3,809,000	6,589,000	8,964,000	14,775,000	7.58	593	961	1,662	2,261	3,726
115	2,449,000	3,963,000	6,856,000	9,327,000	15,373,000	7.93	618	999	1,729	2,352	3,877
120	2,544,000	4,118,000	7,123,000	9,691,000	15,972,000	8.27	642	1,039	1,796	2,444	4,028
125	2,639,000	4,272,000	7,390,000	10,054,000	16,571,000	8.62	666	1,077	1,864	2,536	4,179
130	2,735,000	4,427,000	7,657,000	10,417,000	17,170,000	8.96	690	1,116	1,931	2,627	4,330
135	2,830,000	4,581,000	7,924,000	10,781,000	17,769,000	9.31	714	1,155	1,998	2,719	4,481
140	2,925,000	4,735,000	8,191,000	11,144,000	18,368,000	9.65	738	1,194	2,066	2,811	4,632
145	3,021,000	4,890,000	8,458,000	11,507,000	18,967,000	10.00	762	1,233	2,133	2,902	4,783
150	3,116,000	5,044,000	8,725,000	11,871,000	19,565,000	10.34	786	1,272	2,200	2,994	4,934
155	3,212,000	5,199,000	8,992,000	12,234,000	20,164,000	10.69	810	1,311	2,268	3,085	5,085
160	3,307,000	5,353,000	9,260,000	12,597,000	20,763,000	11.03	834	1,350	2,335	3,177	5,236

SAFETY & RELIEF VALVES

High Capacity Safety Relief Valves for Hot Water Heating Boilers



10-610 SERIES

ASME SECTION IV HOT WATER

British thermal units per hour (kilocalories per hour) at 10% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units Btu/Hr.

Metric Units Kcal/Hr.

Model No.	10-614 3/4 x 1	10-615 1 x 1-1/4	10-616 1-1/4 x 1-1/2	10-617 1-1/2 x 2	10-618 2 x 2-1/2	Model No.	10-614 20 x 25	10-615 25 x 32	10-616 32 x 40	10-617 40 x 50	10-618 50 x 65
Set Pressure psig						Set Pressure barg					
15	635,000	1,027,000	1,777,000	2,417,000	3,984,000	1.03	160	259	448	610	1,005
20	746,000	1,208,000	2,090,000	2,843,000	4,686,000	1.38	188	305	527	717	1,182
25	858,000	1,389,000	2,403,000	3,270,000	5,389,000	1.72	216	350	606	825	1,359
30	970,000	1,570,000	2,716,000	3,696,000	6,091,000	2.07	245	396	645	932	1,536
35	1,082,000	1,751,000	3,030,000	4,122,000	6,793,000	2.41	273	442	765	1,040	1,713
40	1,194,000	1,933,000	3,343,000	4,548,000	7,496,000	2.76	301	488	843	1,147	1,890
45	1,306,000	2,114,000	3,656,000	4,974,000	8,198,000	3.10	329	533	922	1,254	2,067
50	1,418,000	2,295,000	3,969,000	5,400,000	8,900,000	3.45	358	579	932	1,362	2,244
55	1,529,000	2,476,000	4,283,000	5,826,000	9,603,000	3.79	386	624	1,080	1,469	2,422
60	1,641,000	2,657,000	4,596,000	6,252,000	10,305,000	4.14	414	670	1,159	1,577	2,599
65	1,753,000	2,838,000	4,909,000	6,679,000	11,007,000	4.48	442	716	1,238	1,684	2,776
70	1,865,000	3,019,000	5,222,000	7,105,000	11,710,000	4.83	470	761	1,317	1,792	2,953
75	1,977,000	3,200,000	5,535,000	7,531,000	12,412,000	5.17	498	807	1,396	1,899	3,130
80	2,089,000	3,381,000	5,849,000	7,957,000	13,114,000	5.51	527	827	1,475	2,007	3,307
85	2,201,000	3,562,000	6,162,000	8,383,000	13,817,000	5.86	555	898	1,554	2,114	3,485
90	2,313,000	3,743,000	6,475,000	8,809,000	14,519,000	6.20	583	944	1,633	2,222	3,662
95	2,424,000	3,924,000	6,788,000	9,235,000	15,221,000	6.55	611	990	1,712	2,329	3,839
100	2,536,000	4,105,000	7,101,000	9,661,000	15,924,000	6.89	640	1,035	1,791	2,437	4,016
105	2,648,000	4,286,000	7,415,000	10,088,000	16,626,000	7.24	668	1,081	1,870	2,544	4,193
110	2,760,000	4,468,000	7,728,000	10,514,000	17,328,000	7.58	696	1,127	1,949	2,652	4,370
115	2,872,000	4,649,000	8,041,000	10,940,000	18,031,000	7.93	724	1,172	2,028	2,759	4,547
120	2,984,000	4,830,000	8,354,000	11,366,000	18,733,000	8.27	752	1,218	2,107	2,866	4,724
125	3,096,000	5,011,000	8,668,000	11,792,000	19,435,000	8.62	781	1,264	2,186	2,974	4,901
130	3,207,000	5,192,000	8,981,000	12,218,000	20,138,000	8.96	809	1,309	2,265	3,081	5,079
135	3,319,000	5,373,000	9,294,000	12,644,000	20,840,000	9.31	837	1,355	2,344	3,189	5,256
140	3,431,000	5,554,000	9,607,000	13,070,000	21,543,000	9.65	865	1,401	2,423	3,296	5,433
145	3,543,000	5,735,000	9,920,000	13,497,000	22,245,000	10.00	893	1,446	2,502	3,404	5,610
150	3,655,000	5,916,000	10,234,000	13,923,000	22,947,000	10.34	922	1,492	2,581	3,511	5,787
155	3,767,000	6,097,000	10,547,000	14,349,000	23,650,000	10.69	950	1,538	2,660	3,619	5,964
160	3,879,000	6,278,000	10,860,000	14,775,000	24,352,000	11.03	978	1,583	2,739	3,726	6,141



For additional information, submittal sheets and manuals, visit www.apollovalves.com

Customer Service (704) 841-6000

SAFETY & RELIEF VALVES

Low Pressure Steam Heating Boiler Safety Valves

12-200 SERIES



Medium capacity safety valves protect ASME Section IV low pressure steam heating boilers. Cast bronze, full nozzle design features PTFE faced elastomer soft seating for dependable operation. Ideal for OEM applications.

ASME Section IV
 Sizes 2, 2-1/2" and 3"
 Factory set pressures 5-15 psi



Section IV
 Heating Boilers

APPLICATIONS:

Medium and large commercial and industrial steam heating and processing boilers.

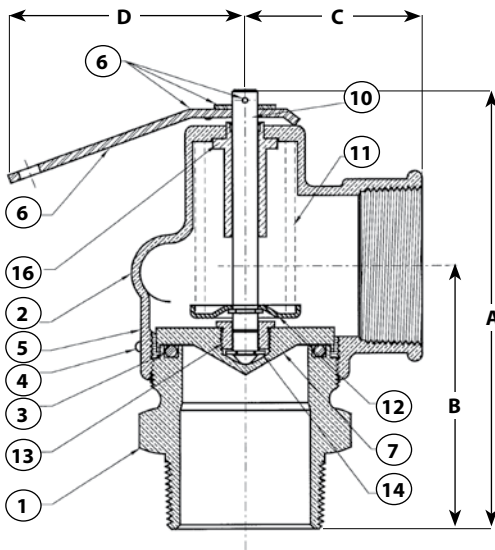
FEATURES:

- All bronze construction
- PTFE-coated O-ring seat seal
- 3/8" NPT side tapping for drain
- Rust-proofed steel spring
- Top guided, high capacity design
- Registered in all Canadian provinces and territories, CRN #0G8547.5C
- National Board certified at 15 psig

DIMENSIONS AND WEIGHTS

Model Number	Size (in./mm.)		Wt./Ea. (lbs./kg.)	Dimensions (in./mm.)			
	Inlet NPT	Outlet NPT		A	B	C	D
12-205	2M	2F	5.1	6.00	3.75	2.62	4.00
	50	50	2.3	152	95	67	102
12-206	2-1/2M	2-1/2F	8.4	8.50	5.25	3.06	4.00
	65	65	3.8	216	133	78	102
12-208	3M	3F	11.6	9.50	6.00	3.75	4.00
	80	80	5.3	241	152	95	102

NOTE: See Capacities page 15



10-512 MATERIALS

Item	Component	Material
1	Nozzle	Bronze ASTM B584
2	Body	Bronze ASTM B584
3	O-ring	Teflon Coated EPDM
4	Drive Screw	AISI 1010 Plated CR Steel
5	Nameplate	Aluminum
6	Handle Assembly	Steel, Plated
7	Disc	Brass ASTM B-16
10	Stem	Brass ASTM B-16
11	Spring	Stainless Steel
12	Spr. Washer	AISI 1010 Plated CR steel
13	Stem Nut	Brass ASTM B-16
14	Retainer Ring	Brass ASTM B-16
15	Guide	Brass ASTM B-16

ORDERING CODE:

Use two-digit suffix number to indicate set pressure and body finish.

P/N SUFFIX KEY

Set Pressure psig	Suffix
5	-03
6	-04
8	-05
10	-06
12	-07
15	-08

EXAMPLE:

12-205-08
 2" 12 Series set 15 psig

SAFETY & RELIEF VALVES

Low Pressure Steam Heating Boiler Safety Valves

13 SERIES

ASME Section IV bronze safety valves protect small to medium low pressure steam heating boilers. Three design configurations feature top guiding and raised seating area for extended service life. Available top and side discharge models.

ASME Section IV

Sizes 3/4"-1-1/2"

Factory set pressure 5 to 15 psig



Section IV
Heating Boilers

APPLICATIONS:

Low pressure steam heating and supply boilers.

FEATURES:

- Flat seat, PTFE faced disc for positive seal
- Standard set pressure of 15 psig
- Positive drainage of condensate from seat area
- No. 13-101 is top outlet discharge
- Registered in all Canadian provinces and territories, CRN #0G8547.5C
- ASME and National Board certified at 15 psig

OPTIONS:

- Satin or polished chrome finishes

DIMENSIONS AND WEIGHTS

Model Number	Size (in./mm.)		Wt./100 (lbs./kg.)	Dimensions (in./mm.)			
	Inlet NPT	Outlet NPT		A	B	C	D
13-101	3/4 M	Top	64	2.87	0.94	1.25	—
	20		29.0	73	23	31	—
13-211	3/4 M	3/4 F	107	1.81	3.69	1.44	1.41
	20	20	48.5	46	93	36	35
13-202	1 M	1 F	110	2.06	3.87	1.53	1.41
	25	25	49.9	52	98	39	35
13-213	1-1/4 M	1-1/2 F	218	2.53	4.50	1.87	1.50
	32	40	98.9	64	114	47	38
13-214	1-1/2 M	2 F	320	3	5.25	2.19	1.81
	40	50	145.1	76	133	55	46
13-511	3/4 M	3/4 F	62	1.69	3.25	1.19	1.25
	20	20	28.1	42	82	30	31
13-512	3/4 F	3/4 F	59	1.19	2.75	1.19	1.25
	20	20	26.8	30	69	30	31

NOTE: See Capacities page 15

MODEL NUMBERING SYSTEM

13 - XXX	-X	-XX	-X
MODEL	FINISH	SET PRESSURE	OPTIONS
101 = 3/4" M x Top	B = Plain Brass	Set Pressure in PSIG (2 Digits)	A = Air Service (Non-ASME)
211 = 3/4" M x 3/4" F	S = Satin Chrome*		
202 = 1" M x 1" F	P = Polished Chrome*		
213 = 1-1/4" M x 1-1/2" F			
214 = 1-1/2" M x 2" F			
511 = 3/4" M x 3/4" F			
512 = 3/4" F x 3/4" F			

EXAMPLE:

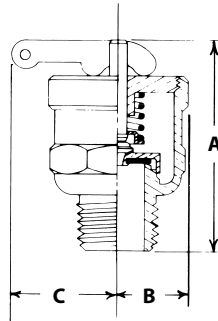
13-511-B15

3/4" 13-511 set at 15 psig

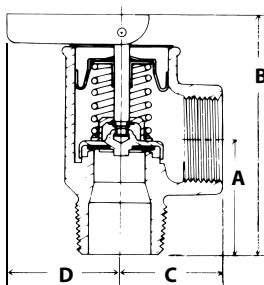
* Available on select models only



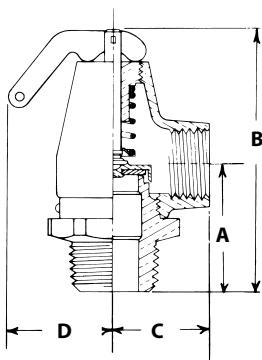
13-101



13-511



13-200



SAFETY & RELIEF VALVES

Low Pressure Steam Heating Boiler Safety Valves

14-200 SERIES

ASME Section IV

Factory set pressures from 5 to 15 psig.
 Sizes 2", 2-1/2" and 3".



Section IV
 Heating Boilers



APPLICATIONS:

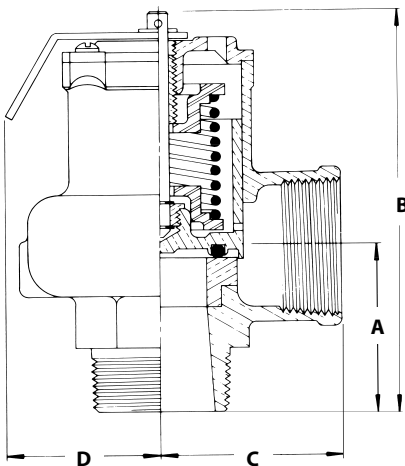
The 14 Series is an ASME Section IV high capacity steam safety valve for use with medium and large size commercial and industrial heating boilers.

FEATURES:

- One piece body, all bronze construction
- Rust proofed steel spring
- Chrome plated seat, PTFE coated disc
- PTFE coated EPDM O-ring for positive seal
- 3/8" NPT side tapping for drain connection
- Valves are capacity certified by the National Board at 15 psig only, in accordance with ASME Boiler and Pressure Vessel Code Section IV
- Registered in all Canadian provinces and territories, CRN #0G8547.5C

OPTIONS:

- Test gag available to prevent the valve from opening during hydrostatic testing of the boiler. To specify gag option, add "G" to suffix.



DIMENSIONS AND WEIGHTS

Model Number	Size (in./mm.)		Wt./Ea. (lbs./kg.)	Dimensions (in./mm.)			
	Inlet NPT	Outlet NPT		A	B	C	D
14-205	2M	2F	8.4	3.00	7.12	3.12	4.00
	50M	50F	3.8	76	181	79	101
14-206	2-1/2M	2-1/2F	13.0	3.50	8.25	3.50	4.00
	65M	65F	5.9	88	209	88	101
14-207	3M	3F	17.0	4.12	9.37	3.87	4.00
	80M	80F	7.7	104	238	98	101

NOTE: See Capacities page 15

ORDERING CODE:

Use model number and two digit suffix number to indicate size and set pressure.

P/N SUFFIX KEY

Set Pressure psig	Suffix
5	-03
6	-04
8	-05
10	-06
12	-07
15	-08

EXAMPLE:

14-206-08
 2-1/2" valve set at 15 psi

Note:

- ASME IV and NB certified capacities at 15 psi only
- Valves may be set for any pressure between 5 and 15 psi. Consult factory for set pressures not listed.
- To specify test gag option add "G" to suffix.

SAFETY & RELIEF VALVES

Low Pressure Steam Heating Boiler Safety Valves



12, 13 AND 14-200 SERIES

CAPACITIES – ASME SECTION IV STEAM

Pounds per hour (Kilograms per hour) saturated steam at 33-1/3% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units Lbs./Hr.

Model No. (in.)	12-205 2 x 2	12-206 2-1/2 x 2-1/2	12-208 3 x 3	13-101 3/4	13-202 1 x 1	13-211 3/4 x 3/4	13-213 1-1/4 x 1-1/2	13-214 1-1/2 x 2	13-511 13-512 3/4 x 3/4	14-205 2 x 2	14-206 2-1/2 x 2-1/2	14-207 3 x 3
Set Pressure psig												
5*	1,439	2,043	2,855	333	374	290	699	1,106	213	1,815	2,695	3,944
10*	1,969	2,786	3,478	372	509	383	950	1,503	310	2,483	3,686	5,394
15	2,500	3,529	4,100	410	643	475	1,200	1,900	407	3,150	4,676	6,843

Metric Units Kg./Hr.

Model No. (mm.)	12-205 50 x 50	12-206 65 x 65	12-208 80 x 80	13-101 20	13-202 25 x 25	13-211 20x20	13-213 32 x 40	13-214 40 x 50	13-511 13-512 20 x 20	14-205 50 x 50	14-206 65 x 65	14-207 80 x 80
Set Pressure barg												
0.34	653	927	1,295	151	170	131	317	502	97	823	1,222	1,789
0.69	893	1,264	1,577	169	231	174	431	682	141	1,126	1,672	2,447
1.03	1,134	1,601	1,860	186	292	215	544	862	185	1,429	2,121	3,103

*ASME Section IV and NB certified capacities at 15 psi only.

Valves may be set for any pressure between 5 and 15 psi. Consult factory for set pressures not listed.



For additional information, submittal sheets and manuals, visit www.apollovalves.com

Customer Service (704) 841-6000

SAFETY & RELIEF VALVES

Low Pressure Air Relief Valves

14-400 AND 14-500 SERIES

High volume air relief valves designed for low pressure/high volume air and gas service. Rugged bronze construction features elastomer soft seating and TFE coated discs for dependable operation.

Inlet sizes 2", 2 1/2" and 3"

Factory set pressures 4 to 22 psig @ 400°F max.

APPLICATIONS:

- Non-ASME code air and gas service
- Low pressure, high volume blowers and compressors
- Bulk hauling tanks, trailers and rail cars
- Powdered solids / bulk handling
- Pneumatic conveying equipment

FEATURES:

- Vibration resistant soft seat is standard
- Stainless steel spring
- One piece corrosion resistant bronze body design
- High flow "top-guided" design

OPTIONS:

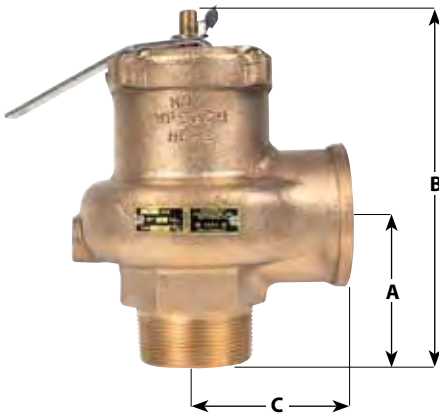
- Model 14-400 with test lever
- Model 14-500 with plain cap, weather resistant sealed body

AIR RELIEF CAPACITY:

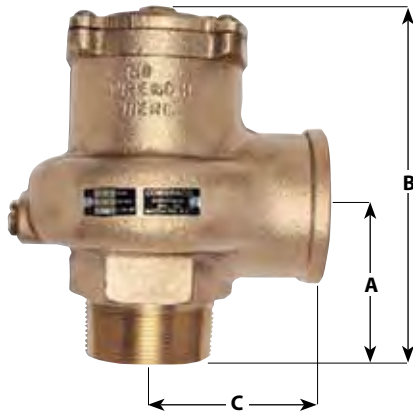
See page 19

DIMENSIONS AND WEIGHTS

Model Number	Size (in./mm.)	Dimensions (in./mm.)			Wt./Ea. (lbs./kg.)
		A	B	C	
14-X05	2 x 2	3	6-1/2	3-1/8	8.4
	50M x 50F	76	165	79	3.81
14-X06	2-1/2 x 2-1/2	3-1/2	7-5/8	3-1/2	12.5
	65M x 65F	89	194	89	5.7
14-X07	3 x 3	4-1/8	8-3/4	3-7/8	17.0
	80M x 80F	105	222	98	7.7



14-400
W/LIFT LEVER



14-500
PLAIN CAP

MODEL NUMBERING SYSTEM

14-400/500 Series Air Relief Valves

14	-X	-XX	-X
SERIES NUMBER	BODY/CAP STYLE AND SERVICE	INLET CONNECTION	RELIEF PRESSURE
14 = Base Model No.	4 = Air Relief, with Test Lever 5 = Air Relief, Plain Cap	05 = 2" NPT 06 = 2 1/2" NPT 07 = 3" NPT	Set Pressure in PSIG (2 Digits)

EXAMPLES:

14-406 12

2-1/2" 14 Series air relief valve set at 12 psig, with lift lever

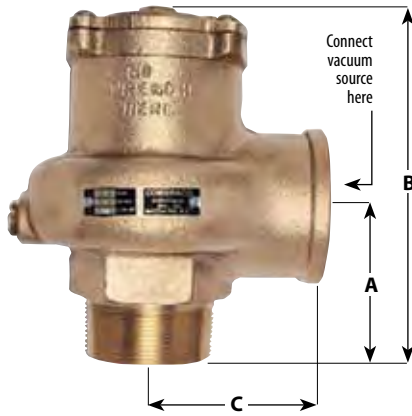
14-505-08

2" air relief valve set at 8 psig, with sealed cap

SAFETY & RELIEF VALVES

Vacuum Relief Valves

14-600 SERIES



14-600

High flow vacuum relief valves feature one piece cast bronze bodies. Teflon coated discs and elastomer soft seating provide accurate and dependable operation.

Connection sizes 2", 2 1/2" and 3"
Relief settings 8" to 30" Hg @ 400°F max.

APPLICATIONS:

- High volume vacuum systems
- Bulk hauling tanks and trailers
- Powdered solids / bulk handling
- Pneumatic conveying equipment

FEATURES:

- Weather resistant construction
- Elastomer soft seat is vibration resistant
- Stainless steel spring
- One piece corrosion resistant bronze body design
- High capacity "top-guided" design
- TFE / chrome plated internals

VACUUM AIR RELIEF CAPACITY:

See page 19

DIMENSIONS AND WEIGHTS

Model Number	Size (in./mm.)	Dimensions (in./mm.)			Wt./Ea. (lbs./kg.)
		A	B	C	
14-605	2 x 2	3	6-1/2	3-1/8	8.4
	50M x 50F	76	165	79	3.81
14-606	2-1/2 x 2-1/2	3-1/2	7-5/8	3-1/2	11.8
	65M x 65F	89	194	89	5.4
14-607	3 x 3	4-1/8	8-3/4	3-7/8	16.3
	80M x 80F	105	222	98	7.4

MODEL NUMBERING SYSTEM

14	-6	-0X	-VXX
SERIES NUMBER	BODY/CAP STYLE AND SERVICE	INLET CONNECTION	RELIEF PRESSURE
14 = Base Model No.	6 = Vacuum Relief	05 = 2" NPT 06 = 2 1/2" NPT 07 = 3" NPT	Vacuum Relief Setting, HG "V" Prefix + Inches Mercury ("V" + 2 Digits)

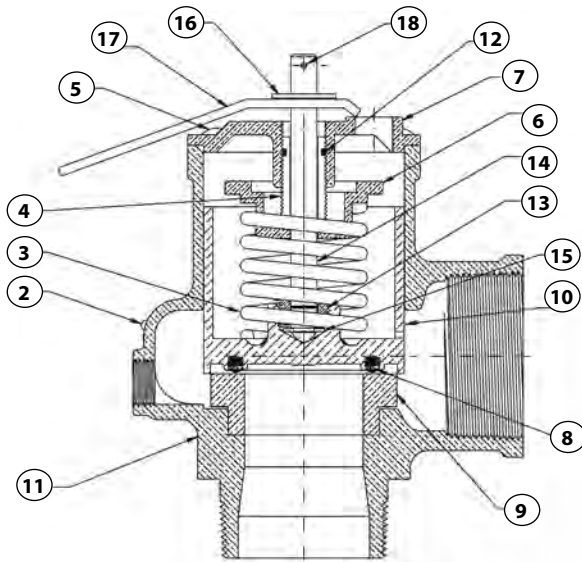
EXAMPLE:

14-607-V14
3" Vacuum relief valve set at 14 Hg"

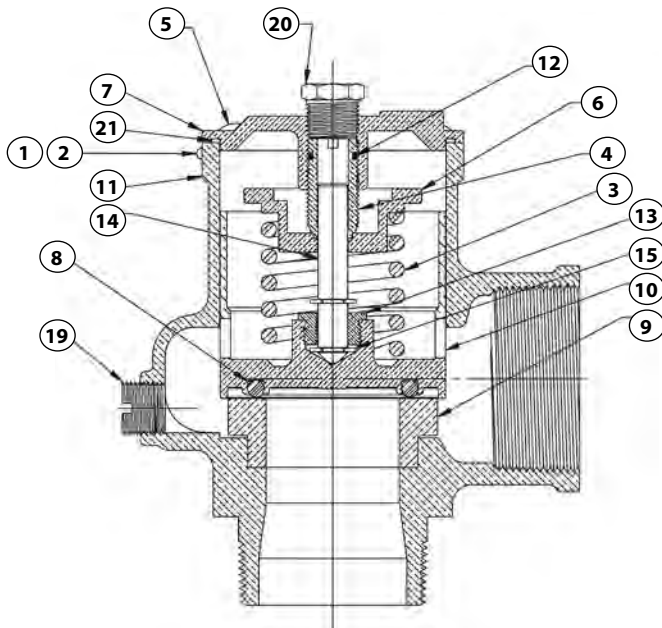
SAFETY & RELIEF VALVES

Low Pressure Air and Vacuum Relief Valves

14-400, 14-500 AND 14-600 SERIES



14-400



14-500 & 14-600

MATERIALS

Item	Component	Material
1	Nameplate	Aluminum
2	Drivescrews (2)	Steel (Plated)
3	Spring	Stainless Steel
4	Adjusting Screw	Brass ASTM B-16
5	Cap Screw (4)	Steel (Plated)
6	Spring Washer	Brass ASTM B-16
7	Cap	Bronze ASTM B-584
8	Seat-O-Ring	Silicone
9	Seat Insert	Brass ASTM B-16
10	Disc	Bronze ASTM B-584
11	Body	Bronze ASTM B-584
12	Friction Ring	EPDM
13	Stem Nut	Brass ASTM B-16
14	Stem	Brass ASTM B-16
15	Retaining Ring	Steel (Plated)
16	Lift Washer	Steel (Plated)
17	Lift Lever	Steel (Plated)
18	Roll Pin	Steel (Plated)
19	Plug	Brass ASTM B-16
20	Plug	Brass ASTM B-16
21	Cap Seal O-Ring	Silicone

SAFETY & RELIEF VALVES

Air Relief Valves

14-400 AND 14-500 SERIES

NON-CODE AIR RELIEF CAPACITIES

Standard cubic feet per minute (Normalized cubic meters per hour) of air at 10% overpressure.

US Customary Units SCFM Air

Metric Units Nm³/Hr. Air

Ordering Suffix	Model No.	14-405 14-505	14-406 14-506	14-407 14-507	Model No.	14-405 14-505	14-406 14-506	14-407 14-507
	Size (in.) Area (in. ²)	2 x 2 2.238	2-1/2 x 2-1/2 3.339	3 x 3 5.155	Size (mm.) Area (cm ²)	50 x 50 14.438	65 x 65 21.544	80 x 80 33.259
Set Pressure psig					Set Pressure barg			
-04	4	615	914	1338	.28	988	1469	2151
-05	5	651	967	1415	.34	1046	1554	2275
-06	6	687	1020	1492	.41	1104	1639	2398
-07	7	722	1072	1569	.48	1161	1724	2522
-08	8	758	1125	1646	.55	1218	1809	2646
-09	9	793	1178	1723	.62	1275	1893	2770
-10	10	829	1231	1801	.69	1332	1978	2894
-11	11	864	1283	1878	.76	1389	2063	3018
-12	12	900	1336	1955	.83	1446	2147	3142
-13	13	935	1389	2032	.90	1503	2232	3266
-14	14	971	1441	2109	.97	1560	2317	3390
-15	15	1006	1494	2186	1.03	1617	2402	3514
-16	16	1041	1547	2263	1.10	1673	2487	3638
-17	17	1076	1600	2340	1.17	1730	2572	3761
-18	18	1111	1653	2417	1.24	1786	2657	3885
-19	19	1146	1706	2494	1.31	1842	2742	4009
-20	20	1181	1756	2571	1.38	1899	2823	4133
-21	21	1216	1809	2648	1.45	1955	2907	4257
-22	22	1252	1861	2725	1.52	2012	2992	4381

14-600 SERIES

VACUUM AIR RELIEF CAPACITY.

Standard cubic feet per minute (normalized cubic meters per hour) of air at 10% overpressure.

US Customary Units SCFM Air

Metric Units Nm³/Hr. Air

Ordering Suffix	Model No.	14-605	14-606	14-607	Model No.	14-605	14-606	14-607
	Size (in.) Area (in. ²)	2 x 2 2.238	2-1/2 x 2-1/2 3.339	3 x 3 5.155	Size (mm.) Area (cm ²)	50 x 50 14.438	65 x 65 21.544	80 x 80 33.259
Relief Setting (in. Hg)					Relief Setting (mm. Hg)			
V08	8	395	600	865	203	635	964	1390
V09	9	405	618	890	229	651	993	1431
V10	10	415	635	915	254	667	1021	1471
V11	11	421	642	927	279	676	1021	1471
V12	12	426	649	939	305	685	1043	1509
V13	13	430	653	943	330	691	1050	1516
V14	14	430	653	943	356	691	1050	1516
V15	15	430	653	943	381	691	1050	1516
V20	20	430	653	943	508	691	1050	1516
V25	25	430	653	943	635	691	1050	1516
V30	30	430	653	943	762	691	1050	1516



For additional information, submittal sheets and manuals, visit www.apollovalves.com

Customer Service (704) 841-6000

SAFETY & RELIEF VALVES

Air Relief Valves

15 SERIES



Rugged design 15 Series air relief valves provide dependable overpressure protection at an economical price. Top guided design features brass construction and resilient seating for superior performance. Widely used by OEM's and for aftermarket replacement.

ASME Section VIII

Sizes 1/4" to 1"

Factory set pressures from 15 to 250 psi

Maximum Temp. 325°F



Section VIII
Pressure Vessels

APPLICATIONS:

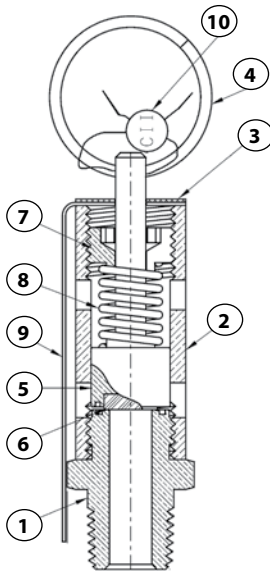
Ideal for a wide range of air and inert gas applications including compressors, intercoolers, dryers, receivers, control and instrument air lines, and pressurized systems and equipment.

FEATURES:

- National Board certified 15 psig through 250 psig
- Stainless steel springs
- Viton O-ring seat
- Registered in all Canadian provinces and territories: CRN #0G8547.5C
- ASTM B16 Brass Body
- RoHS Compliant Materials
- European pressure equipment directive compliant option (CE/PED)

DIMENSIONS AND WEIGHTS

Model Number	Inlet Size (in./mm.)	Dimensions (in./mm.)		Wt./100 (lbs./kg.)
		A	B	
15-112	1/4 NPT	2.62	0.78	18.5
	8	66	20	8.4
15-115	3/8 NPT	3.25	1.12	42.2
	10	82	28	19.2
15-117	1/2 NPT	3.37	1.12	45.3
	15	85	28	20.6
15-118	3/4 NPT	4.06	1.21	58
	20	105	30	26.4
15-119	1 NPT	5.12	1.87	153
	25	130	47	69.5



MATERIALS

Item	Component	Material
1	Nozzle	ASTM B-16 Brass
2	Body	ASTM B-16 Brass
3	Nameplate	Aluminum
4	Pull Ring	Ptld. AISI 1018 CRS
5	Disc/Stem	ASTM B-16 Brass
6	Seat	Viton
7	Cap	ASTM B-16 Brass
8	Spring	ASTM A-227 Steel
9	Inst. Tag	Paper
10	Lead Seal	Lead

MODEL NUMBERING SYSTEM

15-XXX	-X	-XXX	-XX
MODEL AND SIZE (IN.)	FINISH	SET PRESSURE	OPTIONS
112 = 1/4 NPT 115 = 3/8 NPT 117 = 1/2 NPT 118 = 3/4 NPT 119 = 1 NPT	B = Plain Brass	Set Pressure in PSIG	CE = PED/CE Q = Performance (Calibration) Test Reports

EXAMPLE:

15 117 B 165

15 Series set @ 165 psig.

www.apollovalves.com

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SAFETY & RELIEF VALVES

Air Relief Valves



15 SERIES

ASME SECTION VIII - AIR

Standard cubic feet per minute (Normalized cubic meters per hour) of air at 10% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units SCFM Air

Metric Units Nm³/Hr. Air

Model No. Size (in.)	15-112 1/4	15-115 & 117 3/8 & 1/2	15-118 3/4	15-119 1	Model No. Size (mm)	15-112 8	15-115 & 117 10 & 15	15-118 20	15-119 25
Set Pressure psig					Set Pressure barg				
15	24	60	107	222	1.03	39	96	172	357
20	28	70	124	256	1.38	45	112	199	411
25	32	79	140	290	1.72	51	127	225	466
30	35	88	156	323	2.07	57	141	251	519
35	39	98	174	361	2.41	63	157	280	580
40	43	109	193	398	2.76	69	175	310	640
45	47	119	211	435	3.10	75	191	339	699
50	51	128	229	473	3.45	82	206	368	760
55	55	139	247	510	3.79	88	223	397	820
60	60	149	265	547	4.14	96	239	426	879
65	64	159	283	584	4.48	103	255	455	939
70	68	170	301	622	4.83	109	273	484	1,000
75	72	179	319	659	5.17	116	288	513	1,059
80	76	190	337	696	5.51	122	305	542	1,119
85	80	200	355	734	5.86	129	321	571	1,180
90	84	210	373	771	6.20	135	337	600	1,239
95	88	220	391	808	6.55	141	354	628	1,299
100	92	230	409	845	6.89	148	370	657	1,358
105	96	241	427	883	7.24	154	387	686	1,419
110	100	251	445	920	7.58	161	403	715	1,479
115	104	261	463	957	7.93	167	419	744	1,538
120	108	271	481	995	8.27	174	436	773	1,599
125	112	281	499	1,032	8.62	180	452	802	1,659
130	116	292	517	1,069	8.96	186	469	831	1,718
135	120	302	535	1,106	9.31	193	485	860	1,778
140	124	312	553	1,144	9.65	199	501	889	1,839
145	129	322	571	1,181	10.00	207	518	918	1,898
150	133	332	589	1,218	10.34	214	534	947	1,958
155	137	342	607	1,256	10.69	220	550	976	2,019
160	141	353	625	1,293	11.03	227	567	1,005	2,078
165	145	363	644	1,330	11.38	233	583	1,035	2,138
170	149	373	662	1,368	11.72	239	600	1,064	2,199
175	153	383	680	1,405	12.06	246	616	1,093	2,258
180	157	393	698	1,442	12.41	252	632	1,122	2,318
185	161	403	716	1,479	12.75	259	648	1,151	2,377
190	165	414	734	1,517	13.10	265	665	1,180	2,439
195	169	424	752	1,554	13.44	272	681	1,209	2,498
200	173	432	770	1,591	13.79	278	694	1,238	2,557
205	177	444	788	1,629	14.13	285	714	1,267	2,619
210	181	454	806	1,666	14.48	291	730	1,296	2,678
215	185	464	824	1,703	14.82	298	746	1,325	2,738
220	189	475	842	1,740	15.17	305	763	1,353	2,797
225	194	484	860	1,778	15.51	311	778	1,382	2,858
230	198	495	878	1,815	15.86	318	796	1,411	2,918
235	202	505	896	1,852	16.20	324	812	1,440	2,977
240	206	515	914	1,890	16.55	331	828	1,469	3,038
245	210	525	932	1,927	16.89	337	844	1,498	3,098
250	214	535	950	1,964	17.24	344	860	1,527	3,157



For additional information, submittal sheets and manuals, visit www.apollovalves.com

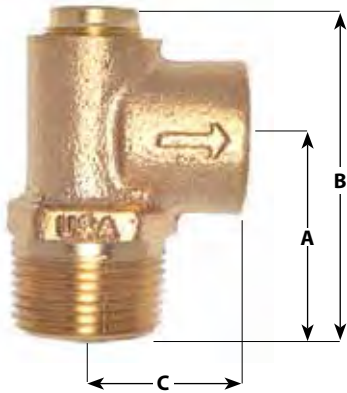
Customer Service (704) 841-6000

SAFETY & RELIEF VALVES

General Purpose Pressure Relief Valves

Economical relief valves for general purpose non-code overpressure protection and bypass relief applications. Applications include liquid bypass or thermal expansion relief of well pumps, tanks, fire protection systems and all types of water or liquid piping systems. Not intended for steam service.

16-200 SERIES



16-200

Pressure relief valves relieve excess pressure in cold water supply systems, storage tanks, well pumps. Also suitable for air, oil and other non-hazardous liquids.

FEATURES:

- Standard pressure settings from 50 to 175 psi
- Cast bronze body, stainless steel springs
- Silicone soft seat ensures seat tightness, extended service life
- All valves are 100% factory tested
- Maximum recommended service temperature 120°F
- Lead Free Option, Model 16LF

DIMENSIONS AND WEIGHTS

Model Number	Inlet Size (in./mm.)	Dimensions (in./mm.)			Wt./100 (lbs./kg.)
		A	B	C	
16-202 (16LF-202)	1/2 M X 1/2 F	1.41	2.12	1.00	33
	15 M x 15 F	36	54	25	15
16-203 (16LF-203)	3/4 M x 1/2 F	1.41	2.50	1.00	37.5
	20 M x 15 F	36	63	25	17

ORDERING CODE:

Use two-digit suffix number to indicate set pressure and body finish.

P/N SUFFIX KEY

Set Pressure psig	Suffix
50	-01
75	-02
100	-03
125	-04
150	-05
175	-06

EXAMPLE:

16-202-03
1/2" model set @ 100 psi.

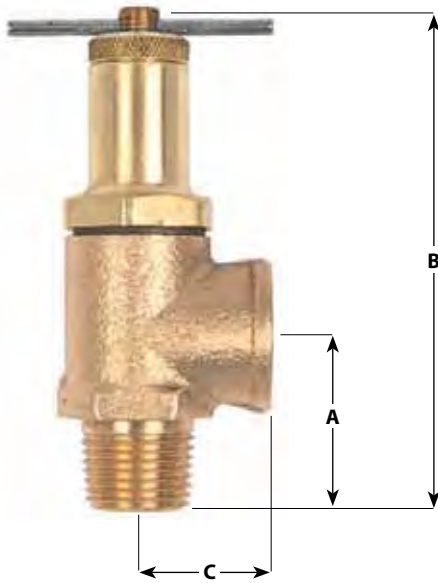
NOTE:

- Valves may be set for any pressure between 30 and 180 psi. Consult factory for pressure settings not shown.

SAFETY & RELIEF VALVES

General Purpose Liquid Relief Valves

16-501 SERIES



16-501

Adjustable relief valves protect equipment by providing low volume liquid relief or bypass control. Excess volume may be discharged back to the low pressure source. Ideal for agricultural sprayers and simple commercial or industrial pressurized systems.

FEATURES:

- Adjustable relief settings, in two ranges to 600 psi
- Cast bronze body, stainless steel springs
- Choice of Nitrile (Buna) or PTFE soft seats
- Knurled locknut locks pressure adjustment
- Viton stem seal, polypropylene body gasket
- Maximum recommended service temperature 200°F

DIMENSIONS AND WEIGHTS

Model Number	Inlet Size (in./mm.)	Relief Range	Seat Material	Dimensions (in./mm.)			Wt./100 (lbs./kg.)
				A	B	C	
16-501-01	1/2 M X 1/2 F	50 - 250	Nitrile	1.29	4.12	1.00	62
16-501-02		250 - 600					
16-501-25	15 M x 15 F	50 - 250	PTFE	33	105	25	28
16-501-60		250 - 600					

16-503 & 16-504 SERIES



16-503
16-504

Calibrated pressure relief valve allows for in-line pressure adjustments without the need for a pressure gauge. Provides static overpressure protection for liquid filled systems such as well pumps, tanks, fire protection systems.

FEATURES:

- Choice of 1/2" or 3/4" inlet connection
- Factory preset at 100 psi
- Pressure range 50 to 175 psi, calibrated in 25 psi increments
- Cast bronze body, stainless steel spring
- Silicone soft seat, EPDM cap seal
- Maximum recommended service temperature 200°F

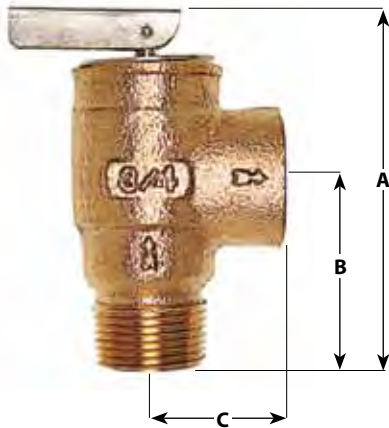
DIMENSIONS AND WEIGHTS

Model Number	Inlet Size (in./mm.)	Dimensions (in./mm.)			Wt./100 (lbs./kg.)
		A	B	C	
16-503-01	1/2 M X 1/2 F	1.31	3.44	1.00	37
	15 M x 15 F				
16-504-01	3/4 M X 1/2 F	33	87	25	17
	20 M x 15 F				

SAFETY & RELIEF VALVES

Pressure Only Hot Water Relief Valves

17-400 SERIES



17-400

17-400 series pressure only relief valves are engineered to protect against excessive pressure buildup due to thermal expansion in hot water supply systems. Both models are CSA certified to ANSI Z21.22 "Relief Valves for Hot Water Supply Systems". In addition the 17-402 is design certified to ASME Section IV for hot water relief.

Connection sizes 1/2" (model 17-401) and 3/4" (model 17-402)
 CSA certified to ANSI Z21.22
 Pressure settings 75 through 150 psi @ 250°F max.
 ASME Section IV Hot Water, model 17-402 only



APPLICATIONS:

Model 17-401: overpressure protection of domestic tankless water heaters. Also ideal for protecting plumbing and well systems, small liquid filled vessels and similar equipment from thermal expansion or pressure surges.

Model 17-402: as above plus suitable for ASME Section IV hot water heating and supply boilers and storage tanks.

FEATURES:

- Cast bronze body, stainless steel springs
- Soft seat for durability, extended service life
- Conforms to HUD / FHA requirements
- CSA certified to ANSI Z21.22
- ASME Section IV hot water, model 17-402
- CSA B-51, CRN 0G8547.5C

DIMENSIONS AND WEIGHTS

Model Number	Inlet Size (in./mm.)	CSA Capacity Rating	ASME Capacity Rating	Dimensions (in./mm.)			Wt./100 (lbs./kg.)
				A	B	C	
17-401	1/2 M X 1/2 F	15,000	-	3.26	1.73	1.16	57
	15 M X 15 F			83	44	29	26
17-402	3/4 M X 3/4 F	200,000	See table below	3.14	1.62	1.13	53
	20 M X 20 F			80	41	29	24

ORDERING CODE:

Use model number and two-digit suffix number to indicate size and set pressure.

P/N SUFFIX KEY

Set Pressure psig	Suffix	Btu/hr. ASME Sec. IV 17-402
75	-01	505,000
100	-02	648,000
125	-03	791,000
150	-04	934,000
160	-05	-

EXAMPLES:

17-401-03

1/2" model 17 set @ 125 psig.

17-402-04

3/4" model 17 set @ 150 psig.

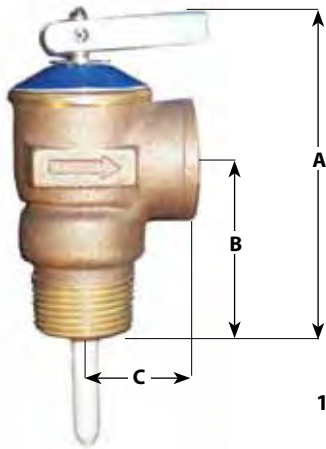
NOTE:

- Valves may be set for any pressure between 70 and 175 psi. Consult factory for pressure settings not shown.
- ASME Section IV certified model 17-402 only, pressure settings 75 to 150 psig.

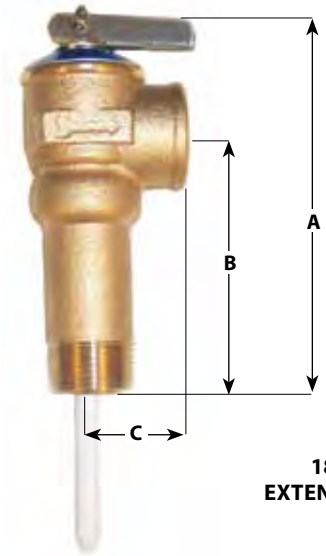
SAFETY & RELIEF VALVES

Water Heater T&P Relief Valves

18C-400 AND 18C-402X SERIES



18C-400



18C-402X
EXTENDED SHANK

Automatic temperature and pressure relief valves feature unique non-metallic coating which protects the element against galvanic and electromechanical corrosion by isolating it from the heated water. This coating is electrostatically applied for uniform coverage, then thermobonded, resulting in optimum adhesion for extended service life.

CSA design certified at all settings to ANSI Z21.22.
ASME Section IV rated at 125 and 150 psig settings for 3/4 NPT only.

APPLICATIONS:

Temperature and pressure protection for hot water heaters and storage tanks.

FEATURES:

- Meets HUD/FHA requirements
- Cast bronze body, stainless steel spring
- Rated 210°F maximum
- Registered in all Canadian provinces and territories
- ASME capacity certified to 500,000 Btu/hr.



OPTIONS:

- Model 18C-402X features a body inlet extended 2" for insulated vessels.

DIMENSIONS AND WEIGHTS

Model Number	Size (in./mm.)	Element Length (in./mm.)	CSA Capacity Rating Btu/HR	Dimensions (in./mm.)			Wt./100 (lbs./kg.)
				A	B	C	
18C-401	1/2 M x 1/2 F	1.44, 3 & 8"	15,000	3.25	1.75	1.13	64
	15 M x 15 F	37, 76 & 200		83	44	29	29
18C-402	3/4 M x 3/4 F	1.44	95,000	3.25	1.75	1.13	64
	20 M x 20 F	37		83	44	29	29
18C-402	3/4 M x 3/4 F	3 & 8"	105,000	3.25	1.75	1.13	64
	20 M x 20 F	76 & 200		83	44	29	29
18C-402X	3/4 M x 3/4 F	3"	105,000	4.51	2.97	1.13	75
	20 M x 20 F	76		115	75	29	34

ORDERING CODE:

Use model number and two-digit suffix number to indicate size and set pressure.

P/N SUFFIX KEY - MODEL 18C-401

Set Pressure psig	Coated Element Length (in.)	
	1.44	3
125	-27	-29
150	-28	-30

P/N SUFFIX KEY - MODEL 18C-402X

Set Pressure psig	Coated Element Length (in.)
125	-39
150	-38

P/N SUFFIX KEY - MODEL 18C-402

Set Pressure psig	Coated Element Length (in.)		
	1.44	3	8
125	-27	-29	-36
150	-28	-30	-37
175		-24	

EXAMPLE:

18C-402X-38
3/4" model 18C-402X set 150 psig with 3" element

EXAMPLE:

18C-402-30
3/4" model 18C-402 set 150 psig with 3" element

SAFETY & RELIEF VALVES

Bronze High Capacity Commercial T&P Valves

18C SERIES



The Apollo® 18C-500 Series bronze automatic temperature and pressure relief valves are used for high capacity protection of commercial hot water heaters and storage tanks.

FEATURES:

- ASME Section IV certified capacity
- 3/4" through 2" NPT connections
- CSA Listed and certified to ANSI Z21.22
- 125 and 150 psig set pressures at 210°F max
- Coated element protects against corrosion
- SS elements (1-1/2" and 2")
- ASME Section IV heating boilers
- Canadian registration number CSA- OG1438.6C



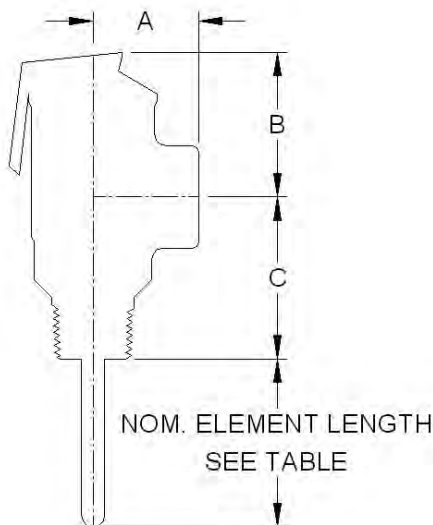
Section IV
Heating Boilers



DIMENSIONS AND WEIGHTS

Part Number	Size (in.)	Element Length (in.)	Inlet Type	CSA Capacity Rating Btu/HR	*ASME Cap. Rating BTU/HR
18C5113125	3/4"	2.69"	M	185,000	1,619,000
18C5113150	3/4"	2.69"	M	185,000	1,912,000
18C5115125	3/4"	4.38"	M	205,000	1,619,000
18C5115150	3/4"	4.38"	M	205,000	1,912,000
18C5118125	3/4"	7.56"	M	205,000	1,619,000
18C5118150	3/4"	7.56"	M	205,000	1,912,000
18C5123125	3/4"	2.88"	F	185,000	1,619,000
18C5123150	3/4"	2.88"	F	185,000	1,912,000
18C5125125	3/4"	4.56"	F	205,000	1,619,000
18C5125150	3/4"	4.56"	F	205,000	1,912,000
18C5128125	3/4"	7.75"	F	205,000	1,619,000
18C5128150	3/4"	7.75"	F	205,000	1,912,000
18C5213125	1"	3.06"	M	500,000	1,825,000
18C5213150	1"	3.06"	M	500,000	2,155,000
18C5215125	1"	4.75"	M	500,000	1,825,000
18C5215150	1"	4.75"	M	500,000	2,155,000
18C5225125	1"	4.75"	F	750,000	3,070,000
18C5225150	1"	4.75"	F	750,000	3,625,000
18C5228125	1"	8.13"	F	750,000	3,070,000
18C5228150	1"	8.13"	F	750,000	3,625,000
18C5314125	1-1/4" x 1"	3.97"	M	750,000	3,070,000
18C5314150	1-1/4" x 1"	3.97"	M	750,000	3,625,000
18C5424125	1-1/2"	4.13"	F	1,200,000	5,125,000
18C5424150	1-1/2"	4.13"	F	1,200,000	6,050,000
18C5513125	2" x 1-1/2"	3.25"	M	1,200,000	5,125,000
18C5513150	2" x 1-1/2"	3.25"	M	1,200,000	6,050,000

* National Board certified capacity per ASME Section IV-Heating Boilers



DIMENSIONS AND WEIGHTS

Model Number	Inlet Size (in./mm.)	Dimensions (in./mm.)		
		A	B	C
18C511	3/4" M x 3/4" FNPT	1.50	3.47	2.53
	(20)	(40)	(88)	(64)
18C512	3/4" F x 3/4" FNPT	1.50	3.47	2.35
	(20)	(40)	(88)	(60)
18C521	1" M x 1" FNPT	1.56	3.47	2.38
	(25)	(40)	(88)	(60)
18C522	1" F x 1" FNPT	1.56	3.47	2.13
	(25)	(40)	(88)	(54)
18C531	1-1/4" M x 1" FNPT	1.75	4.34	1.91
	(32)	(44)	(110)	(49)
18C542	1-1/2" M x 1-1/2" FNPT	2.47	5.84	1.71
	(40)	(63)	(148)	(43)
18C551	2" M x 1-1/2" FNPT	2.47	5.84	2.59
	(50)	(63)	(148)	(66)

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SAFETY & RELIEF VALVES

Bronze Safety Valves For Steam, Air and Gas Service

19 SERIES



A dependable cast bronze high capacity safety valve ideal for use on all types of boilers, piping systems and unfired pressure vessels. This rugged design features top guided alignment for enhanced performance and reliability. Other features include optional metal seating, optional stainless steel wetted trim in all sizes, and a new, more descriptive model numbering system. Flow ratings are National Board certified in accordance with ASME sections I and VIII.

ASME Section I and VIII

Sizes 1/2" through 2-1/2"

Factory set pressures 5 to 300 psig

Maximum temperature is 406°F, 422°F for model 19S



Section I
Power Boilers

APPLICATIONS:

Overpressure protection of steam boilers, sterilizers, distillers, cookers, and pressure reducing stations. Pneumatic conveying equipment, air compressors, receivers and dryers. Steam, air and gas accumulators, pressure vessels and pressure piping systems.



Section VIII
Pressure Vessels

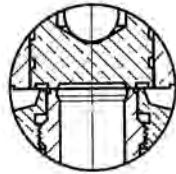
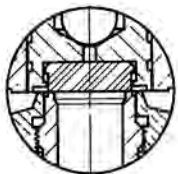
FEATURES:

- Wide wrenching hex for easier, faster installations
- Stainless steel springs are standard
- Choice of Teflon® or metal-to-metal seating
- Teflon® PFA seat resists corrosive boiler chemicals and excessive vibration
- High-capacity full nozzle design available in six orifice sizes
- Two control rings for maximum performance and adjustability
- Short "tuned" blow down minimizes product loss
- Tapped body drain allows piping of condensate safely away from equipment
- Reduced repair costs: soft seat easily replaced
- Registered in all Canadian provinces under CSA B51 CRN OG8547.5C

OPTIONS:

- Choice of Teflon® or metal to metal seating
- Steam set pressures to 300 psi @ 422°F (Model 19S, stainless steel trim)
- 316 stainless steel wetted trim available for all sizes
- Anti-vibration dampened lifting lever
- Oxygen cleaning
- European Pressure Equipment Directive compliant option (CE/PED)

SEAT DETAIL



Soft Seat Design
Model 19K - Brass
Model 19L - Stainless

Metal to Metal Seat Design
Model 19M - Brass
Model 19S - Stainless

4 TRIM STYLES TO CHOOSE FROM

Series	19K	19M	19L	19S
Trim	Brass	Brass	SS	SS
Seat	Teflon®	Metal to Metal	Teflon®	Metal to Metal
Max. Set - Steam	250	250	250	300
Max. Set - Air/Gas	300	300	300	300
Max. Temperature	406°F	406°F	406°F	422°F

* Teflon is a registered trademark of DuPont.

19 SERIES MODEL NUMBERING SYSTEM

19M	D	C	K	165	A
BASE MODEL NUMBER	ORIFICE LETTER	INLET SIZE (IN.) NPT	ASME CODE AND SERVICE	SET PRESSURE IN PSI	SPECIAL OPTIONS
19K = Brass Trim/Teflon Seat	D	C = 1/2	A = Sect. I Steam		A = Anti-vibration trim
19M = Brass Trim/Metal Seat	E	D = 3/4	K = Sect. VIII Air		CE = CE/PED Compliant
19L = Stainless Trim/Teflon Seat	F	E = 1	L = Sect. VIII Steam		Q = Performance (Calibration) test report
19S = Stainless Trim/Metal Seat	G	F = 1-1/4	N = Non-Code Air		X = Oxygen cleaning
	H	G = 1-1/2	P = Non-Code Steam		* Other suffixes - factory issued
	J	H = 2			
		J = 2-1/2			



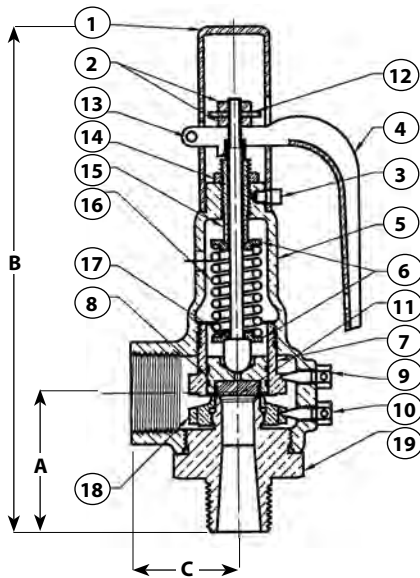
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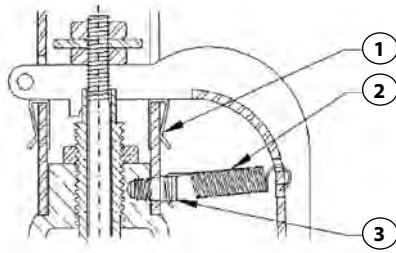
SAFETY & RELIEF VALVES

Bronze Safety Valves

19 SERIES



19 SERIES



MATERIALS 19 SERIES WITH OPTION "A" ANTI-VIBRATION TRIM

Item	Component	Material
1	Friction Clip (4)	Steel Plated
2	Extension Spring	Stainless Steel
3	Cap Lock Screw	Stainless Steel

Note: Preparation includes threadlocking of all internal threaded connections.

MATERIALS

Item	Component	Material 19K, 19M	Material 19L, 19S
1	Cap	Brass	Brass
2	Stem Nut (2)	Steel - Plated	Steel - Plated
3	Cap Lock Screw	Brass	Brass
4	Lift Lever	Steel - Plated	Steel - Plated
5	Body	Bronze	Bronze
6	Spring Washer (2)	Brass	Brass
7	Guide Ring	Brass	Brass
8	Disc	Brass	Stainless Steel
9	Guide Ring Screw	Brass	Brass
10	Nozzle Ring Screw	Brass	Brass
11	Seat Insert-19K & 19L	PFA Teflon®	PFA Teflon®
12	Lift Washer	Steel - Plated	Steel - Plated
13	Lever Pin	Steel - Plated	Steel - Plated
14	Adjusting Screw Lock Nut	Steel - Plated	Steel - Plated
15	Adjusting Screw	Brass	Brass
16	Spring	Stainless Steel	Stainless Steel
17	Stem	Stainless Steel	Stainless Steel
18	Nozzle Ring	Brass	Brass
19	Nozzle	Brass	Stainless Steel
-	Nameplate	Stainless Steel	Stainless Steel
-	Seal and Wire	Lead/SS*	Lead/SS*

* Alum/SS on CE models

DIMENSIONS AND WEIGHTS

Old Model Number	New Model Number	Orifice Letter	Size (in./mm) Inlet x Outlet	Dimensions (in./mm.)			Wt./Ea. (lbs./kg.)
				A	B	C	
19-202	19*DC	D	1/2 X 3/4	2.21	6.52	1.37	1.6
			15 x 20	56	166	35	.73
19-301	19*DD	D	3/4 X 3/4	2.21	6.52	1.37	1.6
			20 x 20	56	166	35	.73
19-302	19*ED	E	3/4 X 1	2.50	7.16	1.75	2.0
			20 x 25	64	182	44	.91
19-401	19*EE	E	1 X 1	2.64	7.30	1.75	2.2
			25 x 25	67	185	44	1.0
19-402	19*FE	F	1 X 1-1/4	2.95	9.34	2.00	4.1
			25 x 32	75	237	51	1.9
19-501	19*FF	F	1-1/4 X 1-1/4	2.95	9.34	2.00	4.3
			32 x 32	75	237	51	2.0
19-502	19*GF	G	1-1/4 X 1-1/2	3.38	11.01	2.37	7.4
			32 x 40	86	280	60	3.4
19-601	19*GG	G	1-1/2 X 1-1/2	3.38	11.01	2.37	7.6
			40 x 40	86	280	60	3.4
19-602	19*HG	H	1-1/2 X 2	3.63	11.96	2.75	11.5
			40 x 50	92	304	70	5.2
19-701	19*HH	H	2 X 2	3.63	11.96	2.75	11.6
			50 x 50	92	304	70	5.3
	19*JG ¹	J	1-1/2F X 2-1/2	3.80	14.00	3.50	20.0
			40 x 65	97	356	89	9.1
19-702	19*JH	J	2 X 2-1/2	4.06	14.25	3.50	19.9
			50 x 65	103	362	89	9.0
19-801	19*JJ	J	2-1/2 X 2-1/2	4.50	14.68	3.50	20.8
			65 x 65	114	373	89	9.4

* Specify trim letter (see previous page):

1: Available in bronze trim only, Model 19KJG & 19MJG.
Connections are 1-1/2" FNPT x 2-1/2" FNPT.

SAFETY & RELIEF VALVES

Bronze Safety Valves



19 SERIES

ASME SECTION I - STEAM

Pounds per hour (Kilograms per hour) saturated steam @ 3% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units Lbs./Hr.

Metric Units Kg./Hr.

Orifice Letter Area in. ²	D 0.129	E 0.230	F 0.359	G 0.589	H 0.919	J 1.509	Orifice Letter Area cm. ²	D 0.835	E 1.483	F 2.315	G 3.800	H 5.932	J 9.733
Set Pressure psig							Set Pressure barg						
15	174	310	484	794	1,240	2,035	0.34	-	-	-	-	-	-
20	201	359	561	920	1,435	2,356	0.69	-	-	-	-	-	-
25	229	408	637	1,045	1,631	2,677	1.1	81	145	226	371	579	951
30	256	457	713	1,170	1,826	2,998	1.5	96	171	266	437	682	1,120
35	284	506	790	1,296	2,022	3,319	2	114	203	317	519	811	1,331
40	311	555	866	1,421	2,217	3,641	2.5	132	235	367	602	940	1,542
45	339	604	942	1,546	2,413	3,962	3	150	267	417	684	1,068	1,753
50	366	653	1,019	1,672	2,608	4,283	3.5	168	299	467	767	1,197	1,964
55	394	702	1,095	1,797	2,804	4,604	4	186	331	517	849	1,326	2,175
60	421	751	1,172	1,922	2,999	4,925	4.5	204	364	568	932	1,454	2,386
65	448	800	1,248	2,048	3,195	5,246	5	222	397	619	1,016	1,586	2,602
70	476	849	1,326	2,175	3,394	5,573	5.5	241	430	671	1,101	1,719	2,820
75	505	900	1,405	2,304	3,596	5,904	6	259	463	723	1,186	1,851	3,037
80	533	950	1,483	2,433	3,797	6,234	6.5	278	496	774	1,271	1,984	3,255
85	561	1,001	1,562	2,563	3,998	6,565	7	296	529	826	1,356	2,116	3,472
90	590	1,051	1,641	2,692	4,200	6,896	7.5	315	562	878	1,440	2,249	3,690
95	618	1,101	1,719	2,821	4,401	7,226	8	334	595	929	1,525	2,381	3,907
100	646	1,152	1,798	2,950	4,602	7,557	8.5	352	628	981	1,610	2,514	4,125
105	674	1,202	1,877	3,079	4,804	7,888	9	371	662	1,033	1,695	2,646	4,342
110	703	1,253	1,955	3,208	5,005	8,218	9.5	389	695	1,085	1,780	2,779	4,559
115	731	1,303	2,034	3,337	5,207	8,549	10	408	728	1,136	1,865	2,911	4,777
120	759	1,353	2,113	3,466	5,408	8,880	10.5	426	761	1,188	1,950	3,044	4,994
125	787	1,404	2,191	3,595	5,609	9,210	11	445	794	1,240	2,035	3,176	5,212
130	816	1,454	2,270	3,724	5,811	9,541	11.5	464	827	1,292	2,120	3,309	5,429
135	844	1,505	2,349	3,853	6,012	9,872	12	482	860	1,343	2,204	3,441	5,647
140	872	1,555	2,427	3,982	6,213	10,202	12.5	501	893	1,395	2,289	3,574	5,864
145	900	1,605	2,506	4,111	6,415	10,533	13	519	927	1,447	2,374	3,706	6,082
150	929	1,656	2,585	4,240	6,616	10,864	13.5	538	960	1,498	2,459	3,839	6,299
160	985	1,757	2,742	4,499	7,019	11,525	14	556	993	1,550	2,544	3,971	6,517
170	1,042	1,857	2,899	4,757	7,422	12,186	15	594	1,059	1,654	2,714	4,236	6,951
180	1,098	1,958	3,057	5,015	7,824	12,848	16	631	1,125	1,757	2,884	4,501	7,386
190	1,155	2,059	3,214	5,273	8,227	13,509	17	668	1,192	1,861	3,053	4,767	7,821
200	1,211	2,160	3,371	5,531	8,630	14,170	18	705	1,258	1,964	3,223	5,032	8,256
210	1,268	2,261	3,529	5,789	9,033	14,832	19	742	1,324	2,067	3,393	5,297	8,691
220	1,324	2,361	3,686	6,047	9,436	15,493	20	779	1,390	2,171	3,563	5,562	9,126
230	1,381	2,462	3,843	6,305	9,838	16,154	20.7	805	1,437	2,243	3,682	5,747	9,430
240	1,438	2,563	4,001	6,564	10,241	16,816	Approx. 0.1 barg increments						
250	1,494	2,664	4,158	6,822	10,644	17,477		3.7	6.6	10.3	17.0	26.5	43.5
255	1,522	2,714	4,237	6,951	10,845	17,808							
260	1,551	2,765	4,315	7,080	11,047	18,138							
265	1,579	2,815	4,394	7,209	11,248	18,469							
270	1,607	2,865	4,473	7,338	11,449	18,800							
275	1,635	2,916	4,551	7,467	11,651	19,130							
280	1,664	2,966	4,630	7,596	11,852	19,461							
285	1,692	3,017	4,709	7,725	12,053	19,792							
290	1,720	3,067	4,787	7,854	12,255	20,122							
295	1,748	3,117	4,866	7,983	12,456	20,453							
300	1,777	3,168	4,945	8,112	12,658	20,784							
Approx. 1 psi increments	5.7	10.0	15.6	25.8	40.2	66.0							

Note: Specify model 19S with stainless steel wetted trim for steam settings beyond 250 psig / 17.2 barg.



For additional information, submittal sheets and manuals, visit www.apollovalves.com

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SAFETY & RELIEF VALVES

Bronze Safety Valves



19 SERIES

ASME SECTION VIII - STEAM

Pounds per hour (Kilograms per hour) saturated steam at 10% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units Lbs./Hr.

Metric Units Kg./Hr.

Orifice Letter Area in. ²	D 0.129	E 0.230	F 0.359	G 0.589	H 0.919	J 1.509	Orifice Letter Area cm. ²	D 0.835	E 1.483	F 2.315	G 3.800	H 5.932	J 9.733
Set Pressure psig							Set Pressure barg						
5*	122	218	340	558	871	1,429	0.34*	55	99	154	253	395	648
10*	167	298	466	765	1,193	1,958	0.69*	76	135	211	347	541	888
15	179	320	499	820	1,279	2,100	1.1	84	149	233	382	597	980
20	207	369	576	945	1,474	2,421	1.5	98	175	273	448	700	1,149
25	234	418	652	1,070	1,670	2,742	2	116	207	323	531	829	1,360
30	262	467	729	1,195	1,865	3,063	2.5	136	242	378	620	968	1,589
35	292	521	813	1,333	2,080	3,416	3	156	277	433	711	1,110	1,821
40	322	574	897	1,471	2,295	3,769	3.5	175	313	489	802	1,251	2,054
45	352	628	981	1,609	2,510	4,122	4	195	348	544	892	1,393	2,286
50	383	682	1,065	1,747	2,725	4,475	4.5	215	384	599	983	1,535	2,518
55	413	736	1,149	1,885	2,941	4,828	5	235	419	654	1,074	1,676	2,750
60	443	790	1,233	2,022	3,156	5,181	5.5	255	454	709	1,164	1,818	2,982
65	473	844	1,317	2,160	3,371	5,535	6	274	490	765	1,255	1,959	3,215
70	503	897	1,401	2,298	3,586	5,888	6.5	294	525	820	1,346	2,101	3,447
75	534	951	1,485	2,436	3,801	6,241	7	314	561	875	1,436	2,242	3,679
80	564	1,005	1,569	2,574	4,016	6,594	7.5	334	596	930	1,527	2,384	3,911
85	594	1,059	1,653	2,712	4,231	6,947	8	354	631	986	1,618	2,525	4,144
90	624	1,113	1,737	2,849	4,446	7,300	8.5	374	667	1,041	1,708	2,667	4,376
95	654	1,167	1,821	2,987	4,661	7,653	9	393	702	1,096	1,799	2,808	4,608
100	684	1,220	1,905	3,125	4,876	8,007	9.5	413	737	1,151	1,890	2,950	4,840
105	715	1,274	1,989	3,263	5,091	8,360	10	433	773	1,207	1,980	3,091	5,072
110	745	1,328	2,073	3,401	5,306	8,713	10.5	453	808	1,262	2,071	3,233	5,305
115	775	1,382	2,157	3,539	5,521	9,066	11	473	844	1,317	2,162	3,374	5,537
120	805	1,436	2,241	3,677	5,736	9,419	11.5	493	879	1,372	2,252	3,516	5,769
125	835	1,489	2,325	3,814	5,951	9,772	12	512	914	1,428	2,343	3,657	6,001
130	866	1,543	2,409	3,952	6,167	10,125	12.5	532	950	1,483	2,434	3,799	6,234
135	896	1,597	2,493	4,090	6,382	10,479	13	552	985	1,538	2,524	3,941	6,466
140	926	1,651	2,577	4,228	6,597	10,832	13.5	572	1,021	1,593	2,615	4,082	6,698
145	956	1,705	2,661	4,366	6,812	11,185	14	592	1,056	1,649	2,706	4,224	6,930
150	986	1,759	2,745	4,504	7,027	11,538	15	631	1,127	1,759	2,887	4,507	7,395
155	1,017	1,812	2,829	4,641	7,242	11,891	16	671	1,197	1,870	3,068	4,790	7,859
160	1,047	1,866	2,913	4,779	7,457	12,244	17	711	1,268	1,980	3,250	5,073	8,324
165	1,077	1,920	2,997	4,917	7,672	12,597	18	750	1,339	2,091	3,431	5,356	8,788
170	1,107	1,974	3,081	5,055	7,887	12,951	19	790	1,410	2,201	3,612	5,639	9,253
180	1,167	2,082	3,249	5,331	8,317	13,657	20	830	1,480	2,312	3,794	5,922	9,717
190	1,228	2,189	3,417	5,606	8,747	14,363	20.7	857	1,530	2,389	3,920	6,120	10,042
200	1,288	2,297	3,585	5,882	9,177	15,069	Approx. 0.1 barg increments						
210	1,349	2,405	3,753	6,158	9,608	15,776							
220	1,409	2,512	3,921	6,433	10,038	16,482							
230	1,469	2,620	4,089	6,709	10,468	17,188							
240	1,530	2,727	4,257	6,985	10,898	17,894							
250	1,590	2,835	4,425	7,260	11,328	18,601							
255	1,620	2,889	4,509	7,398	11,543	18,954							
260	1,651	2,943	4,593	7,536	11,758	19,307							
265	1,681	2,997	4,677	7,674	11,973	19,660							
270	1,711	3,050	4,761	7,812	12,188	20,013							
275	1,741	3,104	4,845	7,950	12,403	20,366							
280	1,771	3,158	4,929	8,087	12,618	20,720							
285	1,801	3,212	5,013	8,225	12,834	21,073							
290	1,832	3,266	5,097	8,363	13,049	21,426							
295	1,862	3,320	5,181	8,501	13,264	21,779							
300	1,892	3,373	5,265	8,639	13,479	22,132							
Approx. 1 psi increments	6.0	10.8	16.8	27.6	43.0	70.6							

Note: Specify model 19S with stainless steel wetted trim for steam settings beyond 250 psig / 17.2 barg.

* Settings below 15 psi (1.1 barg) are non-ASME code.

SAFETY & RELIEF VALVES

Bronze Safety Valves



19 SERIES

ASME SECTION VIII - AIR

Standard cubic feet per minute (Normalized cubic meters per hour) of air at 10% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units SCFM

Metric Units Nm³/Hr.

Orifice Letter Area in. ²	D 0.129	E 0.230	F 0.359	G 0.589	H 0.919	J 1.509	Orifice Letter Area cm. ²	D 0.835	E 1.483	F 2.315	G 3.800	H 5.932	J 9.733
Set Pressure psig							Set Pressure barg						
5*	39	69	108	178	277	455	0.34*	66	118	184	302	471	773
10*	54	97	151	248	387	635	0.69*	92	164	256	421	657	1,078
15	64	114	178	292	455	747	1.1	112	199	311	510	796	1,306
20	74	131	205	336	525	862	1.5	131	233	364	598	933	1,531
25	83	149	232	381	594	976	2	155	276	431	708	1,105	1,813
30	93	166	259	426	664	1,090	2.5	181	323	504	827	1,291	2,119
35	104	185	289	475	740	1,216	3	207	370	578	948	1,480	2,428
40	115	204	319	524	817	1,342	3.5	234	417	651	1,069	1,669	2,738
45	125	224	349	573	894	1,467	4	260	464	725	1,190	1,857	3,047
50	136	243	379	622	970	1,593	4.5	287	511	799	1,311	2,046	3,357
55	147	262	409	671	1,047	1,719	5	313	559	872	1,431	2,235	3,667
60	158	281	439	720	1,123	1,844	5.5	340	606	946	1,552	2,423	3,976
65	168	300	469	769	1,200	1,970	6	366	653	1,020	1,673	2,612	4,286
70	179	319	499	818	1,276	2,096	6.5	392	700	1,093	1,794	2,801	4,596
75	190	339	528	867	1,353	2,221	7	419	747	1,167	1,915	2,989	4,905
80	201	358	558	916	1,429	2,347	7.5	445	795	1,241	2,036	3,178	5,215
85	211	377	588	965	1,506	2,473	8	472	842	1,314	2,157	3,367	5,524
90	222	396	618	1,014	1,583	2,598	8.5	498	889	1,388	2,278	3,555	5,834
95	233	415	648	1,063	1,659	2,724	9	525	936	1,461	2,398	3,744	6,144
100	244	434	678	1,112	1,736	2,850	9.5	551	983	1,535	2,519	3,933	6,453
105	254	454	708	1,161	1,812	2,976	10	577	1,030	1,609	2,640	4,122	6,763
110	265	473	738	1,211	1,889	3,101	10.5	604	1,078	1,682	2,761	4,310	7,072
115	276	492	768	1,260	1,965	3,227	11	630	1,125	1,756	2,882	4,499	7,382
120	287	511	798	1,309	2,042	3,353	11.5	657	1,172	1,830	3,003	4,688	7,692
125	297	530	828	1,358	2,118	3,478	12	683	1,219	1,903	3,124	4,876	8,001
130	308	549	857	1,407	2,195	3,604	12.5	710	1,266	1,977	3,245	5,065	8,311
135	319	568	887	1,456	2,271	3,730	13	736	1,313	2,051	3,365	5,254	8,621
140	330	588	917	1,505	2,348	3,855	13.5	763	1,361	2,124	3,486	5,442	8,930
145	340	607	947	1,554	2,425	3,981	14	789	1,408	2,198	3,607	5,631	9,240
150	351	626	977	1,603	2,501	4,107	15	842	1,502	2,345	3,849	6,008	9,859
160	373	664	1,037	1,701	2,654	4,358	16	895	1,596	2,493	4,091	6,386	10,478
165	383	683	1,067	1,750	2,731	4,484	17	948	1,691	2,640	4,332	6,763	11,097
170	394	703	1,097	1,799	2,807	4,610	18	1,000	1,785	2,787	4,574	7,141	11,717
180	416	741	1,156	1,897	2,960	4,861	19	1,053	1,879	2,935	4,816	7,518	12,336
190	437	779	1,216	1,996	3,114	5,112	20	1,106	1,974	3,082	5,058	7,895	12,955
200	459	818	1,276	2,094	3,267	5,364	20.7	1,143	2,040	3,185	5,227	8,160	13,389
210	480	856	1,336	2,192	3,420	5,615	Approx. 0.1 barg increments						
220	502	894	1,396	2,290	3,573	5,867		5.3	9.4	14.7	24.2	37.7	61.9
230	523	932	1,456	2,388	3,726	6,118							
240	545	971	1,515	2,486	3,879	6,369							
250	566	1,009	1,575	2,584	4,032	6,621							
255	577	1,028	1,605	2,633	4,109	6,746							
260	587	1,047	1,635	2,682	4,185	6,872							
265	598	1,067	1,665	2,731	4,262	6,998							
270	609	1,086	1,695	2,781	4,338	7,124							
275	620	1,105	1,725	2,830	4,415	7,249							
280	630	1,124	1,755	2,879	4,491	7,375							
285	641	1,143	1,784	2,928	4,568	7,501							
290	652	1,162	1,814	2,977	4,645	7,626							
295	663	1,182	1,844	3,026	4,721	7,752							
300	673	1,201	1,874	3,075	4,798	7,878							
Approx. 1 psi increments	2.1	3.8	6.0	9.8	15.3	25.1							

Note: To correct for temperature or specific gravities other than air (=1.0), multiply the SCFM from the capacity tables by factor Ksg (See page 50)

* Settings below 15 psi (1.1 barg) are non-ASME code.



For additional information, submittal sheets and manuals, visit www.apollovalves.com

Customer Service (704) 841-6000

SAFETY & RELIEF VALVES

OEM Style Bronze Safety Valves for Steam, Air and Non-Hazardous Gas

29 SERIES



Conbraco 29 Series is ideally suited for OEM applications where compact size, dependable performance and maximum economy are required. These rugged safety valves feature a top guided design and patented Teflon® "soft-seat" for dramatically reduced seat leakage. Flow ratings are National Board certified.

ASME Sections I and VIII

Sizes 3/8" - 1-1/4" NPT

Factory set pressures 30 to 200 psig

Maximum temperature 406°F



Section I
Power Boilers

Section VIII
Pressure Vessels

APPLICATIONS:

Small to medium sized steam power boilers, sterilizers and distillers, air compressors and receivers, pressure vessels and pressure piping systems.

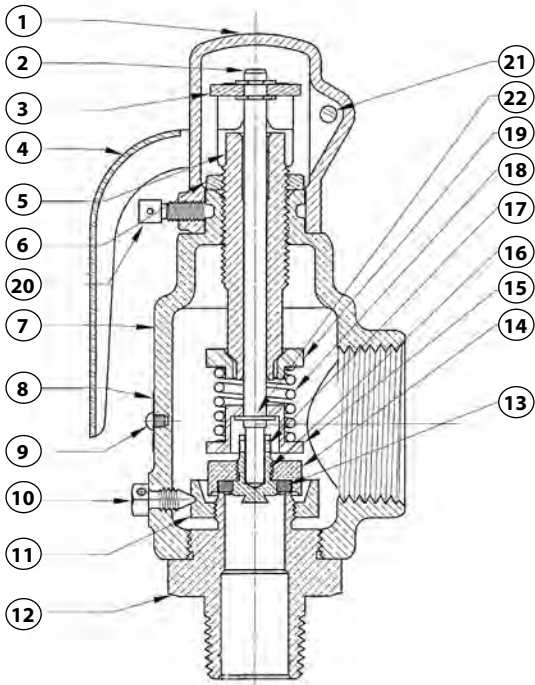
FEATURES:

- Stainless steel springs are standard
- PFA Teflon® seat resists corrosive boiler chemicals
- Rust-proofed steel stem and spring washers
- Lower control ring ensures short, consistent blowdown
- Tapped body drain allows piping of condensate away from equipment
- Reduced repair costs; soft seat easily replaced
- Registered in all Canadian Provinces under CSA B51 CRN OG8547.5C

OPTIONS:

- 316 Stainless steel wetted trim (29-202 & 29-303 sizes only)
- Oxygen cleaning
- European pressure equipment directive compliant option (CE/PED)

MATERIALS



Item	Component	Material
1	Cap	Bronze or Brass
2	Stem	Steel - Plated
3	Lift Washer	Steel - Plated
4	Lift Lever	Steel - Plated
5	Adjusting Screw	Brass
6	Lock Nut	Brass
7	Body	Bronze
8	Nameplate	Stainless Steel
9	Drive Screws	Stainless Steel
10	Set Screw	Brass
11	Blowdown Ring	Brass
12	Nozzle*	Brass/Stainless
13	Seat Insert	Teflon® PFA
14	Disc Holder	Brass
15	Lower Washer	Steel - Plated
16	Seat Retainer*	Brass/Stainless
17	Stem Pin	Stainless Steel
18	Spring	Stainless Steel
19	Upper Washer	Steel - Plated
20	Lock Screw	Steel - Plated
21	Lever Pin	Steel - Plated
22	Retaining Ring	Stainless Steel
-	Seal & Wire	Lead/Steel

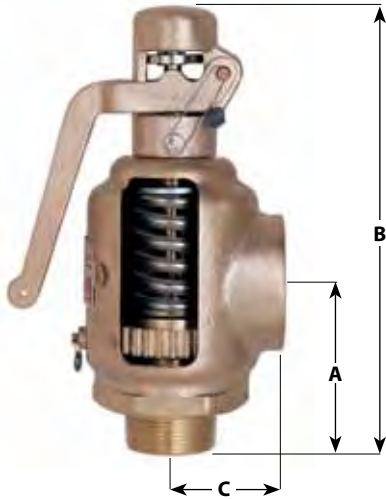
*Teflon is a registered trademark of DuPont.

* Optional stainless steel wetted trim for models 29-202XXL and 29-302XXL. Items 12 & 16 are type 316 stainless steel.

SAFETY & RELIEF VALVES

Bronze Safety Valves

29 SERIES



DIMENSIONS AND WEIGHTS

Model Number	Size (in./mm.)		Wt./Ea. (lbs./kg.)	Dimensions (in./mm.)		
	Inlet	Outlet		A	B	C
29-102	3/8	1	1.30	2.12	5.40	1.25
	10	25	.59	53	137	31
29-202	1/2	1	1.33	2.12	5.40	1.25
	15	25	.60	53	137	31
29-302	3/4	1	1.90	2.12	5.40	1.25
	20	25	.86	53	137	31
29-303	3/4	1-1/4	3.43	2.75	7.25	1.69
	20	32	1.55	69	184	42
29-402	1	1-1/4	3.43	2.75	7.25	1.69
	25	32	1.55	69	184	42
29-501	1-1/4	1-1/4	3.48	2.75	7.25	1.69
	32	32	1.58	69	184	42

29 SERIES MODEL NUMBERING SYSTEM

29	202	A	100	S
BASE MODEL NUMBER	INLET x OUTLET NPT	SERVICE	SET PRESSURE	OPTIONS
Bronze with Brass Trim and Teflon® Soft Seat	102 = 3/8 x 1 202 = 1/2 x 1 302 = 3/4 x 1 303 = 3/4 x 1-1/4 402 = 1 x 1-1/4 501 = 1-1/4 x 1-1/4	A = ASME Sec I Steam K = ASME Sec VIII Air L = ASME Sec VIII Steam	Set Pressure, PSIG (range 30-200 psig)	S = Stainless Steel Wetted Trim (models 29-202 & 29-303 only) CE = CE/PED Q = Performance (Calibration) test reports

EXAMPLES:

29 202 A100

1/2 X 1" 29 series set at 100 psig, ASME Section I "V" Steam

29 202 L40

1/2 X 1" 29 series set at 40 psig, ASME Section VIII "UV" Steam

29 303 K200 S

3/4 X 1" 29 series set at 200 psig, ASME Section VIII "UV" air, stainless steel wetted trim

SAFETY & RELIEF VALVES

Bronze Safety Valves



29 SERIES

ASME SECTION I - STEAM

Pounds per hour (Kilograms per hour) saturated steam at 3% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units Lbs./Hr.

Metric Units Kg./Hr.

Model No. Seat Dia. (in.)	29-102, 29-202, 29-302 0.500	29-303, 29-402, 29-501 0.737	Model No. Seat Dia. (mm.)	29-102, 29-202, 29-302 12.70	29-303, 29-402, 29-501 18.72
Set Pressure psig			Set Pressure barg		
30	164	330	2.1	77	155
35	182	367	2.5	86	174
40	201	405	3	98	197
45	220	442	3.5	110	221
50	238	479	4	122	245
55	257	517	4.5	134	269
60	275	554	5	146	293
65	294	591	5.5	158	318
70	312	628	6	170	342
75	331	664	6.5	182	367
80	349	702	7	195	391
85	368	739	7.5	207	416
90	386	777	8	219	440
95	405	814	8.5	231	465
100	423	851	9	243	489
105	442	888	9.5	255	514
110	460	925	10	268	538
115	479	963	10.5	280	563
120	497	1,000	11	292	587
125	516	1,036	11.5	304	612
130	534	1,074	12	316	636
135	553	1,112	12.5	329	661
140	571	1,149	13	341	685
145	590	1,186	13.5	353	710
150	608	1,223	13.8	360	724
155	627	1,261	Approx. 0.1 barg increments	2.44	4.9
160	645	1,298			
165	664	1,335			
170	683	1,372			
175	701	1,409			
180	720	1,447			
185	738	1,484			
190	757	1,521			
195	775	1,558			
200	794	1,596			
Approx. 1 psi increments	3.7	7.4			

SAFETY & RELIEF VALVES

Bronze Safety Valves



29 SERIES

ASME SECTION VIII STEAM

Pounds per hour (Kilograms per hour) saturated steam at 10% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units Lbs./Hr.

Metric Units Kg./Hr.

Model No. Seat Dia. (in.)	29-102, 29-202, 29-302 0.500	29-303, 29-402, 29-501 0.737	Model No. Seat Dia. (mm.)	29-102, 29-202, 29-302 12.70	29-303, 29-402, 29-501 18.72
Set Pressure psig			Set Pressure barg		
30	172	345	2.1	79	158
35	191	385	2.5	89	179
40	211	425	3	102	205
45	231	465	3.5	115	231
50	251	504	4	128	257
55	270	544	4.5	141	284
60	290	584	5	154	310
65	310	624	5.5	167	336
70	330	664	6	180	362
75	350	704	6.5	193	388
80	369	744	7	206	414
85	389	783	7.5	219	441
90	409	823	8	232	467
95	429	863	8.5	245	493
100	448	902	9	258	519
105	468	943	9.5	271	545
110	488	982	10	284	571
115	508	1,022	10.5	297	598
120	528	1,062	11	310	624
125	547	1,102	11.5	323	650
130	567	1,142	12	336	676
135	587	1,182	12.5	349	702
140	607	1,221	13	362	728
145	626	1,261	13.5	375	755
150	646	1,299	13.8	383	770
155	666	1,341	Approx. 0.1 barg increments		
160	686	1,381		2.6	5.22
165	706	1,420			
170	725	1,460			
175	745	1,500			
180	765	1,540			
185	785	1,580			
190	804	1,620			
195	824	1,659			
200	844	1,697			
Approx. 1 psi increments					
	3.95	8.0			



For additional information, submittal sheets and manuals, visit www.apollovalves.com

Customer Service (704) 841-6000

SAFETY & RELIEF VALVES

Bronze Safety Valves



29 SERIES

ASME SECTION VIII AIR

Standard cubic feet per minute (Normalized cubic meters per hour) of air at 10% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units SCFM

Metric Units Nm³./Hr.

Model No. Seat Dia. (in.)	29-102, 29-202, 29-302 0.500	29-303, 29-402, 29-501 0.737	Model No. Seat Dia. (mm.)	29-102, 29-202, 29-302 12.70	29-303, 29-402, 29-501 18.72
Set Pressure psig			Set Pressure barg		
30	61	123	2.1	105	210
35	68	137	2.5	118	238
40	75	151	3	136	273
45	82	165	3.5	153	308
50	89	180	4	170	342
55	96	193	4.5	188	377
60	103	208	5	205	412
65	110	222	5.5	222	447
70	117	236	6	240	482
75	124	250	6.5	257	516
80	131	264	7	274	551
85	138	278	7.5	291	586
90	145	292	8	309	621
95	152	307	8.5	326	655
100	159	321	9	343	690
105	166	335	9.5	361	725
110	173	349	10	378	760
115	180	363	10.5	395	795
120	187	378	11	413	829
125	194	392	11.5	430	864
130	201	406	12	447	899
135	208	420	12.5	464	934
140	215	434	13	482	969
145	222	448	13.5	499	1,003
150	229	463	13.8	509	1,024
155	236	477	Approx. 0.1 barg increments		
160	243	491		3.46	6.96
165	250	505			
170	257	519			
175	265	533			
180	272	547			
185	279	562			
190	286	576			
195	293	590			
200	300	604			
Approx. 1 psi increments	1.4	2.8			

SAFETY & RELIEF VALVES

Cast Iron Flanged Safety Valves

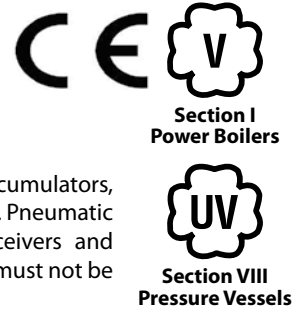
119 SERIES



These flanged, heavy duty and high capacity safety valves are ideal for use on all types of boilers, pressure vessels and pressure piping systems. These ruggedly built valves offer you a cost-saving alternative to conventional steel bodied valves — without compromising quality or performance. These valves feature a top guided design and two control rings to ensure seat tightness, repeatable performance and extended service life. Flow ratings are National Board certified.

ASME Sections I & VIII, for steam, air and gas service

Set pressures to 250 psig at 450°F max
 Flanged inlet sizes 1 1/2" through 6" ANSI 250 lb.
 Threaded inlet sizes 2" through 3" FNPT



APPLICATIONS:

Overpressure protection of steam boilers, deaerators, accumulators, pressure reducing stations and pressure piping systems. Pneumatic conveying equipment, air and gas compressors, receivers and dryers. Per the ASME Code, cast iron safety relief valves must not be used for lethal or flammable fluid service.

FEATURES:

- Metal to metal seating, lapped to optical flatness
- High-capacity semi-nozzle design available in 8 orifice sizes
- Stainless steel wetted trim is standard
- Two control rings assure maximum performance and dependability
- Designed for new installations and replacement of existing valves (high flow rates and face to face dimensions enable direct replacement of most competitive models)
- Designed for ease of service or repair
- Ductile iron caps, forks and levers for added durability
- Registered in all Canadian provinces under CSA B51, CRN OG8547.5C

OPTIONS:

- Drip pan elbows for discharge piping (See pg. 42)
- European pressure equipment directive compliant option (CE/PED)

119 SERIES MODEL NUMBERING SYSTEM

119	K	H	C	A	MAA	0150	Q
SERIES NUMBER	ORIFICE LETTER	INLET (IN.)	CONNECTION	SERVICE	SPECIAL OPTIONS	SET PRESSURE	SUFFIX
119 = Stainless Steel Wetted Trim	The orifice letter from the Capacity Chart (pg. 39-41)	G = 1-1/2 H = 2 J = 2-1/2 K = 3 M = 4 P = 6	A = FNPT x FNPT C = 250# x FNPT D = 250# x 125#	A = Sec I Steam K = Sec VIII Air L = Sec VIII Steam N = Non Code Air P = Non Code Steam	Factory issued letters/numbers (MAA default) MCE = CE/PED	Set Pressure, PSIG (4 digits)	Q = Performance (Calibration) test reports

HOW TO SELECT:

1. Determine the orifice letter that corresponds to your required flow rate from the capacity charts on pages 39-41.
2. Select the inlet x outlet connection options from the list of models available for that orifice from page 38.
3. Enter this base model number into the matrix above. Complete by specifying the Code, service and set pressure requirements.

EXAMPLES:

119 KHC A MAA 0150

2" "K" 3" ASME Section I steam service valve set at 150 psig, with flanged inlet.

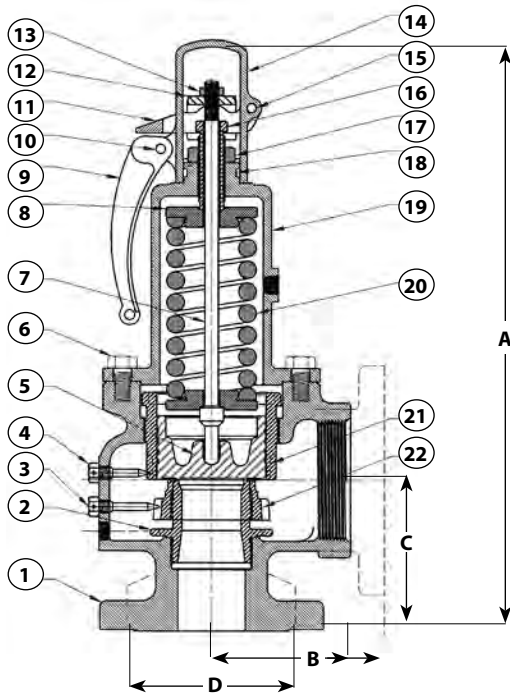
119 QPD L MAA 0025

6" "Q" 8" ASME Section VIII steam service valve set at 25 psi, with flanged inlet.

SAFETY & RELIEF VALVES

Cast Iron Flanged Safety Valves

119 SERIES



MATERIALS

Item	Component	Material
1	Body	Gray Iron
2	Nozzle	Stainless Steel
3	Nozzle Ring Screw	Brass
4	Guide Ring Screw	Brass
5	Disc	Stainless Steel
6	Bonnet Bolt	Steel (Plated)
7	Stem	Steel (Plated)
8	Spring Washer	Steel (Plated)
9	Test Lever	Ductile Iron or
10	Clevis Pin	Steel (Plated)
11	Lifting Fork	Ductile Iron
12	Stem Nut	Steel (Plated)
13	Stem Nut Lock Nut	Steel (Plated)
14	Lifting Cap	Ductile Iron
15	Clevis Pin	Steel (Plated)
16	Adjusting Screw	Brass
17	Lock Nut	Steel (Plated)
18	Lift Cap Lockscrew	Steel (Plated)
19	Bonnet	Gray Iron
20	Spring	Steel (Plated) or SS
21	Disc Guide	Brass or Bronze
22	Nozzle Ring	Brass or Bronze
-	Nameplate	Aluminum
-	Seal and Wire	Lead/Steel
-	Seal and Wire (CE)	Alum/SS

DIMENSIONS AND WEIGHTS

Model Number	Size (in./mm.) Inlet x Outlet	Orifice Size	Dimensions (in./mm.)			Hex Flat D (in./mm)	Weight (lbs./kg.)
			A	B	C		
119 JGC	1-1/2 250# X 2-1/2 FNPT DN40 x DN65	J	15	4	4.31		35
			381	101	109		15.8
119 KHC	2 250# X 3 FNPT DN50 x DN80	K	16	4	4.63		36
			406	101	109		16.3
119 KHA	2 FNPT X 3 FNPT DN50 x DN80	K	16	4	4.63	3.75	37
			406	101	109	95	16.7
119 KJC	2-1/2 250# X 3 FNPT DN65 x DN80	K	16	4	4.63		41
			406	101	109		18.6
119 KKC	3 250# X 3 FNPT DN80 x DN80	K	16	4	4.63		45
			406	101	109		20.5
119 LJC	2-1/2 250# X 4 FNPT DN65 x DN100	L	22	5.13	5.63		84
			558	130	143		38.1
119 LJA	2-1/2 FNPT X 4 FNPT DN65 x DN100	L	22	5.13	5.63	5.38	81
			558	130	143	136	36.7
119 LKC	3 250# X 4 FNPT DN80 x DN100	L	22	5.13	5.63		85
			558	130	143		38.5
119 LMC	4 250# X 4 FNPT DN100 x DN100	L	22	5.13	5.63		90
			558	130	143		40.9
119 MKA	3 FNPT X 4 FNPT DN80 x DN100	M	22	5.13	5.63	5.38	80
			558	130	143	136	36.2
119 MKC	3 250# X 4 FNPT DN80 x DN100	M	22	5.13	5.63		87
			558	130	143		39.4
119 MMC	4 250# X 4 FNPT DN100 x DN100	M	22	5.13	5.63		95
			558	130	143		43.2
119 NMD	4 250# X 6 125# DN100 x DN150	N	28	7.25	6.75		210
			711	184	171		95.2
119 PMD	4 250# X 6 125# DN100 x DN150	P	28	7.25	6.75		215
			711	184	171		97.5
119 QPD	6 250# X 8 125# DN150 x DN200	Q	42	10	9.25		530
			1066	254	234		240.4
119 RPD	6 250# X 8 125# DN150 x DN200	R	42	10	9.25		530
			1066	254	234		240.4

SAFETY & RELIEF VALVES



Cast Iron Flanged Safety Valves

119 SERIES

ASME SECTION I STEAM

Pounds per hour (Kilograms per hour) saturated steam at 3% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units Lbs./Hr.

Metric Units Kg./Hr.

Orifice Letter Area in. ²	J 1.358	K 1.926	L 2.99	M 3.774	N 4.55	P 6.692	Q 11.593	R 16.786	Orifice Letter Area cm. ²	J 8.762	K 12.426	L 19.287	M 24.347	N 29.357	P 43.174	Q 74.795	R 108.294
Set Pressure psig									Set Pressure barg								
15	1,947	2,761	4,286	5,410	6,522	9,592	16,617	24,061	1.1	910	1,290	2,002	2,527	3,048	4,482	7,764	11,242
20	2,254	3,196	4,962	6,263	7,551	11,105	19,238	27,856	1.5	1,071	1,519	2,358	2,976	3,589	5,278	9,144	13,239
25	2,561	3,632	5,638	7,116	8,579	12,618	21,859	31,651	2	1,273	1,806	2,803	3,538	4,266	6,274	10,868	15,736
30	2,868	4,067	6,314	7,969	9,608	14,131	24,480	35,446	2.5	1,475	2,092	3,247	4,099	4,943	7,269	12,593	18,233
35	3,175	4,502	6,990	8,823	10,637	15,644	27,101	39,241	3	1,677	2,379	3,692	4,660	5,619	8,264	14,317	20,729
40	3,482	4,938	7,666	9,676	11,665	17,157	29,722	43,036	3.5	1,879	2,665	4,137	5,222	6,296	9,260	16,041	23,226
45	3,789	5,373	8,342	10,529	12,694	18,670	32,343	46,831	4	2,081	2,952	4,581	5,783	6,973	10,255	17,766	25,723
50	4,096	5,809	9,018	11,382	13,723	20,183	34,964	50,626	4.5	2,283	3,238	5,026	6,344	7,650	11,250	19,490	28,219
55	4,403	6,244	9,694	12,236	14,751	21,696	37,585	54,421	5	2,490	3,531	5,481	6,919	8,343	12,270	21,256	30,776
60	4,710	6,680	10,370	13,089	15,780	23,209	40,206	58,216	5.5	2,698	3,827	5,939	7,497	9,040	13,295	23,032	33,348
65	5,017	7,115	11,046	13,942	16,809	24,722	42,827	62,011	6	2,906	4,122	6,397	8,075	9,737	14,320	24,808	35,919
70	5,330	7,559	11,735	14,812	17,858	26,265	45,501	65,882	6.5	3,114	4,417	6,855	8,653	10,434	15,345	26,584	38,491
75	5,646	8,008	12,432	15,691	18,918	27,823	48,200	69,791	7	3,322	4,712	7,313	9,232	11,131	16,371	28,360	41,062
80	5,962	8,456	13,128	16,570	19,977	29,382	50,900	73,700	7.5	3,530	5,007	7,771	9,810	11,828	17,396	30,136	43,634
85	6,279	8,905	13,824	17,449	21,037	30,940	53,600	77,609	8	3,738	5,302	8,229	10,388	12,526	18,421	31,912	46,205
90	6,595	9,353	14,520	18,328	22,096	32,498	56,299	81,518	8.5	3,947	5,597	8,687	10,966	13,223	19,446	33,689	48,777
95	6,911	9,802	15,217	19,207	23,156	34,057	58,999	85,427	9	4,155	5,892	9,145	11,544	13,920	20,471	35,465	51,349
100	7,227	10,250	15,913	20,085	24,215	35,615	61,698	89,336	9.5	4,363	6,187	9,603	12,122	14,617	21,497	37,241	53,920
105	7,544	10,699	16,609	20,964	25,275	37,173	64,398	93,245	10	4,571	6,482	10,061	12,700	15,314	22,522	39,017	56,492
110	7,860	11,147	17,305	21,843	26,334	38,732	67,098	97,154	10.5	4,779	6,777	10,519	13,279	16,011	23,547	40,793	59,063
115	8,176	11,596	18,002	22,722	27,394	40,290	69,797	101,063	11	4,987	7,072	10,977	13,857	16,708	24,572	42,569	61,635
120	8,492	12,044	18,698	23,601	28,453	41,848	72,497	104,971	11.5	5,195	7,367	11,435	14,435	17,405	25,598	44,345	64,206
125	8,809	12,493	19,394	24,480	29,513	43,407	75,197	108,880	12	5,403	7,662	11,893	15,013	18,102	26,623	46,121	66,778
130	9,125	12,941	20,091	25,358	30,573	44,965	77,896	112,789	12.5	5,611	7,958	12,351	15,591	18,800	27,648	47,897	69,349
135	9,441	13,390	20,787	26,237	31,632	46,524	80,596	116,698	13	5,819	8,253	12,809	16,169	19,497	28,673	49,673	71,921
140	9,757	13,838	21,483	27,116	32,692	48,082	83,295	120,607	13.5	6,027	8,548	13,267	16,747	20,194	29,698	51,449	74,492
145	10,073	14,287	22,179	27,995	33,751	49,640	85,995	124,516	14	6,235	8,843	13,725	17,325	20,891	30,724	53,225	77,064
150	10,390	14,735	22,876	28,874	34,811	51,199	88,695	128,425	15	6,451	9,433	14,641	18,482	22,285	32,774	56,777	82,207
155	10,706	15,184	23,572	29,753	35,870	52,757	91,394	132,334	16	7,068	10,023	15,557	19,638	23,679	34,824	60,330	87,350
160	11,022	15,632	24,268	30,631	36,930	54,315	94,094	136,243	17	7,484	10,613	16,473	20,794	25,073	36,875	63,882	92,493
165	11,338	16,081	24,964	31,510	37,989	55,874	96,794	140,152	Approx 0.1 barg Increments								
170	11,655	16,529	25,661	32,389	39,049	57,432	99,493	144,061	41.6	59.0	91.6	115.6	139.4	205.0	355.2	514.3	
175	11,971	16,978	26,357	33,268	40,108	58,990	102,193	147,969									
180	12,287	17,426	27,053	34,147	41,168	60,549	104,893	151,878									
185	12,603	17,875	27,750	35,026	42,228	62,107	107,592	155,787									
190	12,920	18,323	28,446	35,905	43,287	63,665	110,292	159,696									
195	13,236	18,772	29,142	36,783	44,347	65,224	112,991	163,605									
200	13,552	19,220	29,838	37,662	45,406	66,782	115,691	167,514									
205	13,868	19,669	30,535	38,541	46,466	68,340	118,391	171,423									
210	14,184	20,117	31,231	39,420	47,525	69,899	121,090	175,332									
215	14,501	20,566	31,927	40,299	48,585	71,457	123,790	179,241									
220	14,817	21,014	32,623	41,178	49,644	73,015	126,490	183,150									
225	15,133	21,463	33,320	42,056	50,704	74,574	129,189	187,059									
230	15,449	21,911	34,016	42,935	51,764	76,132	131,889	190,958									
235	15,766	22,360	34,712	43,814	52,823	77,691	134,589	194,876									
240	16,082	22,808	35,409	44,693	53,883	79,249	137,288	198,785									
245	16,398	23,257	36,105	45,572	54,942	80,807	139,988	202,694									
250	16,714	23,705	36,801	46,451	56,002	82,366	142,687	206,603									
Approx. 1 psi Increments		63	90	139	176	212	312	540	782								



For additional information, submittal sheets and manuals, visit www.apollovalves.com

Customer Service (704) 841-6000

SAFETY & RELIEF VALVES



Cast Iron Flanged Safety Valves

119 SERIES

ASME SECTION VIII STEAM

Pounds per hour (Kilograms per hour) saturated steam at 10% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units Lbs./Hr.

Metric Units Kg./Hr.

Orifice Letter Area in. ²	J 1.358	K 1.926	L 2.99	M 3.774	N 4.55	P 6.692	Q 11.593	R 16.786	Orifice Letter Area cm. ²	J 8.762	K 12.426	L 19.287	M 24.347	N 29.357	P 43.174	Q 74.795	R 108.294
Set Pressure psig									Set Pressure barg								
5*	1,312	1,860	2,888	3,645	4,395	6,464	11,198	16,213	.34*	590	836	1,298	1,639	1,976	2,906	5,034	7,289
10*	1,798	2,550	3,957	4,995	6,023	8,859	15,346	22,220	.69*	822	1,165	1,809	2,283	2,753	4,049	7,014	10,155
15	2,008	2,848	4,421	5,580	6,728	9,895	17,141	24,820	1.1	937	1,329	2,064	2,605	3,141	4,619	8,002	11,586
20	2,315	3,283	5,097	6,433	7,756	11,408	19,762	28,615	1.5	1,099	1,559	2,419	3,054	3,682	5,415	9,382	13,584
25	2,622	3,719	5,773	7,287	8,785	12,921	22,383	32,410	2	1,301	1,845	2,864	3,615	4,359	6,411	11,106	16,080
30	2,929	4,154	6,449	8,140	9,814	14,434	25,004	36,205	2.5	1,520	2,156	3,347	4,225	5,094	7,492	12,979	18,792
35	3,267	4,633	7,193	9,079	10,945	16,098	27,887	40,379	3	1,743	2,471	3,836	4,842	5,839	8,587	14,876	21,539
40	3,604	5,112	7,936	10,017	12,077	17,762	30,771	44,554	3.5	1,965	2,787	4,325	5,460	6,583	9,682	16,773	24,285
45	3,942	5,591	8,680	10,956	13,208	19,426	33,654	48,729	4	2,187	3,102	4,814	6,077	7,328	10,777	18,670	27,031
50	4,280	6,070	9,423	11,894	14,340	21,091	36,537	52,903	4.5	2,409	3,417	5,303	6,695	8,072	11,872	20,566	29,778
55	4,618	6,549	10,167	12,833	15,471	22,755	39,420	57,078	5	2,632	3,732	5,793	7,312	8,817	12,967	22,463	32,524
60	4,955	7,028	10,911	13,771	16,603	24,419	42,303	61,252	5.5	2,854	4,047	6,282	7,929	9,561	14,061	24,360	35,270
65	5,293	7,507	11,654	14,710	17,735	26,083	45,186	65,427	6	3,076	4,362	6,771	8,547	10,306	15,156	26,257	38,017
70	5,631	7,986	12,398	15,649	18,866	27,748	48,069	69,601	6.5	3,298	4,677	7,260	9,164	11,050	16,251	28,153	40,763
75	5,969	8,465	13,141	16,587	19,998	29,412	50,952	73,776	7	3,520	4,992	7,749	9,782	11,795	17,346	30,050	43,509
80	6,306	8,944	13,885	17,526	21,129	31,076	53,835	77,951	7.5	3,743	5,308	8,238	10,399	12,539	18,441	31,947	46,255
85	6,644	9,423	14,629	18,464	22,261	32,740	56,719	82,125	8	3,965	5,623	8,727	11,017	13,284	19,536	33,844	49,002
90	6,982	9,902	15,372	19,403	23,392	34,405	59,602	86,300	8.5	4,187	5,938	9,216	11,634	14,028	20,631	35,741	51,748
95	7,319	10,381	16,116	20,341	24,524	36,609	62,485	90,474	9	4,409	6,253	9,706	12,251	14,773	21,726	37,637	54,494
100	7,657	10,860	16,859	21,280	25,655	37,733	65,368	94,649	9.5	4,631	6,568	10,195	12,869	15,517	22,820	39,534	57,241
105	7,995	11,339	17,603	22,218	26,787	39,397	68,251	98,823	10	4,854	6,883	10,684	13,486	16,262	23,915	41,431	59,987
110	8,333	11,818	18,346	23,157	27,919	41,062	71,134	102,998	10.5	5,076	7,198	11,173	14,104	17,006	25,010	43,328	62,733
115	8,670	12,297	19,090	24,096	29,050	42,726	74,017	107,173	11	5,298	7,513	11,662	14,721	17,750	26,105	45,224	65,480
120	9,008	12,776	19,834	25,034	30,182	44,390	76,900	111,347	11.5	5,520	7,829	12,151	15,338	18,495	27,200	47,121	68,226
125	9,346	13,255	20,577	25,973	31,313	46,055	79,783	115,522	12	5,742	8,144	12,640	15,956	19,239	28,295	49,018	70,972
130	9,684	13,734	21,321	26,911	32,445	47,719	82,666	119,696	12.5	5,965	8,459	13,129	16,573	19,984	29,390	50,915	73,718
135	10,021	14,213	22,064	27,850	33,576	49,383	85,550	123,871	13	6,187	8,774	13,618	17,191	20,728	30,485	52,811	76,465
140	10,359	14,692	22,808	28,788	34,708	51,047	88,433	128,045	13.5	6,409	9,089	14,108	17,808	21,473	31,580	54,708	79,211
145	10,697	15,171	23,552	29,727	35,839	52,712	91,316	132,220	14	6,631	9,404	14,597	18,426	22,217	32,674	56,605	81,957
150	11,034	15,650	24,295	30,666	36,971	54,376	94,199	136,395	15	6,854	9,727	15,090	19,166	23,106	33,861	58,702	84,802
155	11,372	16,129	25,039	31,604	38,103	56,040	97,082	140,569	16	7,076	10,050	15,575	19,660	23,706	34,864	60,399	87,450
160	11,710	16,608	25,782	32,543	39,234	57,704	99,965	144,744	17	7,298	10,373	16,064	20,251	24,306	35,867	62,096	90,098
165	12,048	17,087	26,526	33,481	40,366	59,369	102,848	148,918	Approx. 0.1 barg								
170	12,385	17,566	27,270	34,420	41,497	61,033	105,731	153,093	Increment								
175	12,723	18,045	28,013	35,358	42,629	62,697	108,614	157,267	44.4	63.0	97.8	123.5	148.9	219.0	379.4	549.3	
180	13,061	18,524	28,757	36,297	43,760	64,361	111,497	161,442									
185	13,399	19,003	29,500	37,236	44,892	66,026	114,381	165,617									
190	13,736	19,482	30,244	38,174	46,023	67,690	117,264	169,791									
195	14,074	19,961	30,988	39,113	47,155	69,354	120,147	173,966									
200	14,412	20,440	31,731	40,051	48,287	71,018	123,030	178,140									
205	14,749	20,919	32,475	40,990	49,418	72,683	125,913	182,315									
210	15,087	21,398	33,218	41,928	50,550	74,347	128,796	186,489									
215	15,425	21,876	33,962	42,867	51,681	76,011	131,679	190,664									
220	15,763	22,355	34,706	43,806	52,813	77,675	134,562	194,839									
225	16,100	22,834	35,449	44,744	53,944	79,340	137,445	199,013									
230	16,438	23,313	36,193	45,683	55,076	81,004	140,329	203,188									
235	16,776	23,792	36,936	46,621	56,207	82,668	143,212	207,362									
240	17,113	24,271	37,680	47,560	57,339	84,332	146,095	211,537									
245	17,451	24,750	38,424	48,498	58,471	85,997	148,978	215,711									
250	17,789	25,229	39,167	49,437	59,602	87,661	151,861	219,886									
Approx. 1 psi Increment	68	96	149	188	226	333	577	835									

*Settings below 15 psi (1.1 barg) are non-ASME code.

SAFETY & RELIEF VALVES



Cast Iron Flanged Safety Valves

119 SERIES

ASME SECTION VIII AIR

Standard cubic feet per minute (Normalized cubic meters per hour) of air at 10% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units SCFM

Metric Units Nm³/Hr.

Orifice Letter Area in. ²	J 1.358	K 1.926	L 2.99	M 3.774	N 4.55	P 6.692	Q 11.593	R 16.786	Orifice Letter Area cm. ²	J 8.762	K 12.426	L 19.287	M 24.347	N 29.357	P 43.174	Q 74.795	R 108.294
Set Pressure psig									Set Pressure barg								
5*	418	592	919	1,160	1,399	2,058	3,565	5,161	0.4*	722	1,024	1,589	2,006	2,418	3,557	6,161	8,921
10*	583	826	1,282	1,619	1,952	2,870	4,973	7,200	0.8*	1,005	1,425	2,212	2,793	3,367	4,952	8,579	12,422
15	715	1,014	1,574	1,986	2,395	3,522	6,101	8,834	1.1	1,182	1,677	2,603	3,286	3,961	5,826	10,093	14,615
20	824	1,169	1,814	2,290	2,761	4,060	7,034	10,185	1.5	1,386	1,996	3,052	3,852	4,644	6,831	11,833	17,134
25	933	1,324	2,055	2,594	3,127	4,599	7,967	11,536	2	1,641	2,327	3,613	4,560	5,498	8,086	14,008	20,283
30	1,043	1,479	2,295	2,897	3,493	5,138	8,900	12,887	2.5	1,918	2,720	4,222	5,329	6,425	9,449	16,370	23,703
35	1,163	1,649	2,560	3,231	3,896	5,730	9,926	14,373	3	2,198	3,117	4,839	6,108	7,364	10,830	18,762	27,166
40	1,283	1,820	2,825	3,566	4,299	6,322	10,953	15,859	3.5	2,478	3,514	5,456	6,887	8,303	12,211	21,154	30,630
45	1,403	1,990	3,089	3,900	4,701	6,915	11,979	17,345	4	2,758	3,912	6,073	7,665	9,241	13,592	23,546	34,094
50	1,523	2,161	3,354	4,234	5,104	7,507	13,005	18,830	4.5	3,038	4,309	6,690	8,444	10,180	14,973	25,938	37,557
55	1,644	2,331	3,619	4,568	5,507	8,099	14,031	20,316	5	3,319	4,707	7,307	9,223	11,119	16,354	28,331	41,021
60	1,764	2,502	3,884	4,902	5,910	8,692	15,057	21,802	5.5	3,599	5,104	7,924	10,002	12,058	17,735	30,723	44,485
65	1,884	2,672	4,148	5,236	6,312	9,284	16,084	23,288	6	3,879	5,502	8,541	10,780	12,997	19,115	33,115	47,948
70	2,004	2,843	4,413	5,570	6,715	9,877	17,110	24,774	6.5	4,159	5,899	9,158	11,559	13,936	20,496	35,507	51,412
75	2,124	3,013	4,678	5,904	7,118	10,469	18,136	26,260	7	4,439	6,296	9,775	12,338	14,875	21,877	37,899	54,876
80	2,245	3,184	4,942	6,238	7,521	11,061	19,162	27,746	7.5	4,720	6,694	10,392	13,116	15,813	23,258	40,291	58,339
85	2,365	3,354	5,207	6,572	7,924	11,654	20,188	29,232	8	5,000	7,091	11,009	13,895	16,752	24,639	42,683	61,803
90	2,485	3,524	5,472	6,906	8,326	12,246	21,215	30,718	8.5	5,280	7,489	11,626	14,674	17,691	26,020	45,076	65,267
95	2,605	3,695	5,736	7,240	8,729	12,838	22,241	32,204	9	5,560	7,886	12,243	15,453	18,630	27,400	47,468	68,730
100	2,726	3,865	6,001	7,574	9,132	13,431	23,267	33,689	9.5	5,841	8,283	12,860	16,231	19,569	28,781	49,860	72,194
105	2,846	4,036	6,266	7,908	9,535	14,023	24,293	35,175	10	6,121	8,681	13,477	17,010	20,508	30,162	52,252	75,658
110	2,966	4,206	6,530	8,243	9,937	14,616	25,320	36,661	10.5	6,401	9,078	14,093	17,789	21,447	31,543	54,644	79,121
115	3,086	4,377	6,795	8,577	10,340	15,208	26,346	38,147	11	6,681	9,476	14,710	18,568	22,385	32,924	57,036	82,585
120	3,206	4,547	7,060	8,911	10,743	15,800	27,372	39,633	11.5	6,961	9,873	15,327	19,346	23,234	34,305	59,428	86,049
125	3,327	4,718	7,324	9,245	11,146	16,393	28,398	41,119	12	7,242	10,271	15,944	20,125	24,263	35,686	61,820	89,512
130	3,447	4,888	7,589	9,579	11,548	16,985	29,424	42,605	12.5	7,522	10,668	16,561	20,904	25,202	37,066	64,213	91,976
135	3,567	5,059	7,854	9,913	11,951	17,577	30,451	44,091	13	7,802	11,065	17,178	21,683	26,141	38,447	66,605	96,440
140	3,687	5,229	8,118	10,247	12,354	18,170	31,477	45,577	13.5	8,082	11,463	17,795	22,461	27,080	39,828	68,997	99,903
145	3,807	5,400	8,383	10,581	12,757	18,762	32,503	47,063	14	8,362	11,860	18,412	23,240	28,019	41,209	71,389	103,367
150	3,928	5,570	8,648	10,915	13,160	19,355	33,529	48,549	15	8,643	12,258	19,029	24,029	28,958	42,590	73,780	106,830
155	4,048	5,741	8,912	11,249	13,562	19,947	34,556	50,034	16	8,923	12,655	19,646	24,848	29,897	43,971	76,171	110,294
160	4,168	5,911	9,177	11,583	13,965	20,539	35,582	51,520	17	9,203	13,052	20,263	25,667	30,836	45,352	78,562	113,757
165	4,288	6,082	9,442	11,917	14,368	21,132	36,608	53,006	Approx. 0.1 barg								
170	4,408	6,252	9,706	12,251	14,771	21,724	37,634	54,492	Increment								
175	4,529	6,423	9,971	12,586	15,173	22,317	38,660	55,978	56.0	79.5	123.4	155.8	187.8	276.2	478.4	692.7	
180	4,649	6,593	10,236	12,920	15,576	22,909	39,687	57,464									
185	4,769	6,764	10,500	13,254	15,979	23,501	40,713	58,950									
190	4,889	6,934	10,765	13,588	16,382	24,094	41,739	60,436									
195	5,010	7,105	11,030	13,922	16,784	24,686	42,765	61,922									
200	5,130	7,275	11,294	14,256	17,187	25,278	43,791	63,408									
205	5,250	7,446	11,559	14,590	17,590	25,871	44,818	64,893									
210	5,370	7,616	11,824	14,924	17,993	26,463	45,844	66,379									
215	5,490	7,787	12,088	15,258	18,396	27,056	46,870	67,865									
220	5,611	7,957	12,353	15,592	18,798	27,648	47,896	69,351									
225	5,731	8,128	12,618	15,926	19,201	28,240	48,923	70,837									
230	5,851	8,298	12,883	16,260	19,604	28,833	49,949	72,323									
235	5,971	8,469	13,147	16,594	20,007	29,425	50,975	73,809									
240	6,091	8,639	13,412	16,929	20,409	30,017	52,001	75,295									
245	6,212	8,810	13,677	17,263	20,812	30,610	53,027	76,781									
250	6,332	8,980	13,941	17,597	21,215	31,202	54,054	78,267									
Approx. 1 psi																	
Increment																	
24	34	53	67	81	118	205	297										

*Settings below 15 psi (1.1 barg) are non-ASME code.

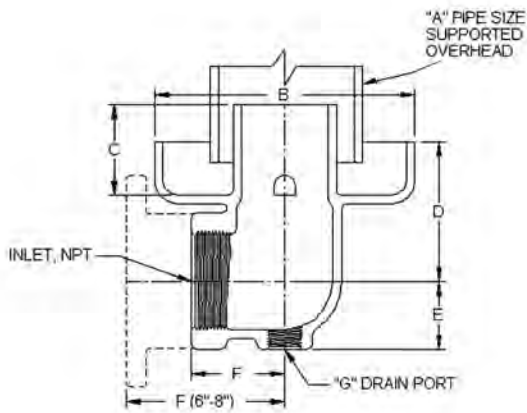


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SAFETY & RELIEF VALVES

Drip Pan Elbows



The use of an Apollo International™ drip pan elbow is highly recommended for steam safety valve installations. The drip pan elbow connects to the valve outlet to safely direct steam discharge away from the valve and into the discharge piping. Condensate is directed to drain. Drip pans offer ideal flow characteristics, and serve to isolate the valve from piping stresses that can adversely effect safety valve performance and longevity.

Sizes 3/4" through 8", flanged and threaded models
 Material: Gray iron ASTM A126 class B
 Finish: Black phosphate or black paint coating

FEATURES:

- Sizes 3/4" through 8" available from stock
- Ideal flow characteristics
- Directs condensate to drain
- Isolates safety valve from piping stresses caused by:
 - weight of discharge piping
 - thermal expansion
 - reaction forces during valve discharge

INSTALLATION:

Sizes 3/4" through 4" feature FNPT connections and connect directly to the valve outlet by means of a short pipe nipple, or with an appropriate companion flange and nipple for flanged outlet connections. Sizes 6" and 8" have integral cast ANSI 125# flanges that bolt directly to the valve outlet.

ORDERING INFORMATION:

Select the drip pan to match the nominal outlet size of the safety valve. Specify part number and quantity.

DIMENSIONS AND WEIGHTS

Part Number	Size (In.) NPS/DN	Dimensions (in./mm.)							Wt./Ea. (lbs./kg.)
		A NPS/DN	B	C	D	E	F	G NPS/DN	
DPE 07	3/4	1-1/2	3.75	1.63	2.25	1	1.5	1/4	2
	20	40	95	41	57	25	40	8	.9
DPE 10	1	1-1/2	3.75	1.63	2.25	1	1.5	1/4	2
	25	40	95	41	57	25	40	8	.9
DPE 12	1-1/4	2	5.5	2.13	3.38	1.5	2.13	3/8	5
	32	50	127	54	86	40	54	10	2.1
DPE 15	1-1/2	2	5.5	2.13	3.38	1.5	2.13	3/8	5
	40	50	127	54	86	40	54	10	2.1
DPE 20	2	3	6.25	2.25	3.63	1.63	2.25	1/2	7
	50	80	159	57	92	41	57	15	3.2
DPE 25	2-1/2	4	7.38	3	4.38	1.88	2.75	3/4	11
	65	100	187	80	111	48	70	20	5.0
DPE 30	3	4	8	3.5	4.88	2.13	3.13	3/4	17
	80	100	200	89	124	54	80	20	7.7
DPE 40	4	6	9.63	4.5	5.75	2.63	3.75	3/4	30
	100	150	245	114	146	67	95	20	13.6
DPE 60	6	8	12.75	6.63	7.63	3	8	3/4	84
	150	200	324	168	194	80	200	20	38.1
DPE 80	8	10	16.5	7.5	8.63	4.13	10.75	1	151
	200	250	419	191	219	105	273	25	68.5

SAFETY & RELIEF VALVES

Multi-Purpose Safety Relief Valves

500 SERIES



Versatile safety relief valve available in bronze, carbon steel or all stainless steel construction, suitable for a wide range of steam, air, gas and liquid applications. High capacity full nozzle design is available with metal to metal, PCTFE or elastomer O-ring seating. Short tuned blowdown and backpressure tight body minimizes fugitive emissions and product losses in the event of valve operation.

ASME Section VIII Air, Steam, and Liquid service

Sizes 1/2" through 2" NPT

Factory set pressure range 5-1200 psig @ 800°F max.

(See press. / temp. limit chart below for specific ratings for each model).

APPLICATIONS:

- Pressure Vessels and Pressure Piping Systems
- Pumps, Tanks and Hydraulic Systems
- Thermal Relief of Liquid Filled Vessels
- Chemical, Process and other Industrial Plants.
- Power Plant Auxiliary Systems
- Cryogenic and Industrial Gases
- Air and Gas Compressors and Dryers
- Vacuum Relief



FEATURES:

- Wide Range of Materials and Options
- One Trim Design is Suitable for Steam, Air / Gas and Liquid Service
- High Capacity Full Nozzle Design
- Stainless Steel Springs
- Integral Lift Stop
- Self - Aligning Pivoting Disc
- API 527 Seat Tightness, standard for all models
- Tuned Blowdown - Short and Adjustable, reduces product losses.
- Backpressure Tight Design Minimizes Fugitive Emissions
- CSA B51 CRN OG8547.5C

OPTIONS:

- Screwed Cap (standard), Packed Lift Lever
- Test gags
- Elastomer or PCTFE Soft Seat for Exceptional Seat Tightness
- High Temperature Alloy Springs for 550°F - 800°F Service
- Special Cleaning Available
- European Pressure Equipment Directive compliant option (CE/PED)

HOW TO SELECT:

1. Determine the orifice letter that corresponds to your required flow rate from the capacity charts on pages 46-48.
2. Select the inlet x outlet connection options from the list of models available for that orifice from page 45.
3. Enter this base model number into the matrix below. Complete by specifying the Code, service and set pressure requirements.

500 SERIES MODEL NUMBERING SYSTEM

52	3	J	H	B	K	M	AA	0425	Q
SERIES BODY/ TRIM MATERIAL	CAP	ORIFICE LETTER	INLET SIZE	CONNECTION	SERVICE	SEAT	SPECIAL OPTIONS	SET PRESSURE	SUFFIX
51 = Bronze/Brass	1 = Screwed Cap	D	C = 1/2	B = MNPT x NPT	J = Sec VIII Liquid	M = Metal	Factory Issued	Set Pressure, PSIG	Q = Performance
52 = Bronze/Stainless	2 = Screwed + Gag	E	D = 3/4	D = 3/4 Outlet	K = Sec VIII Air/Gas	B = BUNA-N	Letters/Numbers for	(4 digits)	(Calibration)
53 = Carbon/Stainless	3 = Packed Lever	F	E = 1	(Model 510 &	L = Sec VIII Steam	E = EPR	Special Options or	Vacuum "HG"	Test Reports
54 = All Stainless	4 = Packed + Gag	G	F = 1-1/4	520 D Orifice Only)	M = Non Code Liquid	K = PCTFE	Features	Prefix + 2 digits	
		H	G = 1-1/2		N = Non Code Air	N = Neoprene	"AA" = Default Setting		
		J	H = 2		P = Non Code Steam	Z = Kalrez®	"CE" = CE/PED		
					Q = Vacuum	S = Silicone	"HT" = High Temp Spring		
						V = Viton	"OX" = Cleaned for Oxygen		

Notes:

1. The ASME Code Section VIII requires a lift lever for the following services: air, steam, or hot water over 140°F
2. Maximum back pressure is 50 psig.
3. High temperature stainless steel alloy spring is required above 550°F / 288°C. Specify option "HT"
4. Contact factory for pricing and availability.



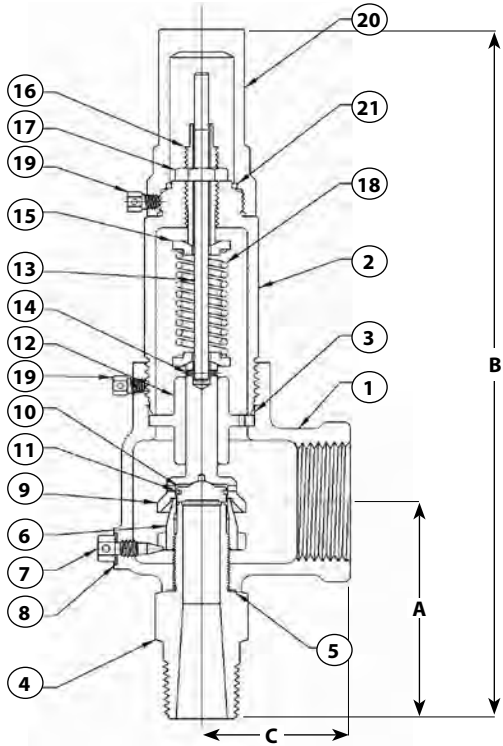
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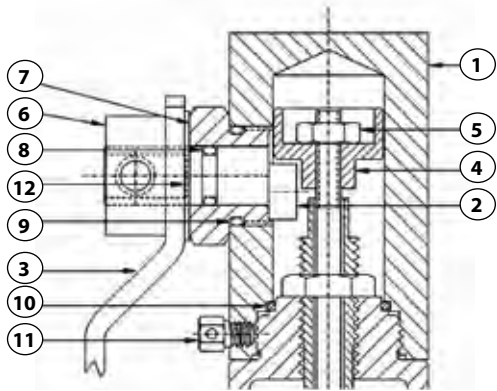
SAFETY & RELIEF VALVES

Multi-Purpose Safety Relief Valves

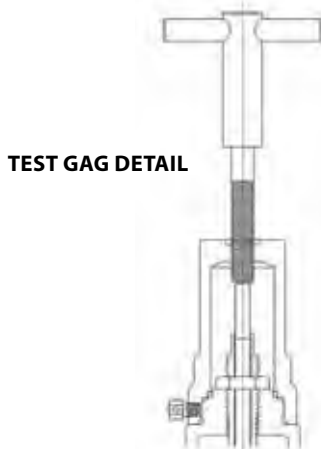
500 SERIES



500 ASSEMBLY W/SCREWED CAP



PACKED LEVER DETAIL



TEST GAG DETAIL

MATERIALS

Item	Component	Material 510 Series	Material 520 Series	Material 530 Series	Material 540 Series
1	Body	Bronze B-584-C844	Bronze B-584-C844	Steel SA-216 WCB	SS SA-351-CF8M
2	Bonnet	Brass*	Brass*	Steel**	SS Type 316***
3	Bonnet Seal	PTFE	PTFE	PTFE	PTFE
4	Nozzle	Brass B-16	SS Type 316	SS Type 316	SS Type 316
5	Nozzle Seal	PTFE	PTFE	PTFE	PTFE
6	Nozzle Ring	SS Type 316	SS Type 316	SS Type 316	SS Type 316
7	Set Screw	Brass	Brass	SS Type 316	SS Type 316
8	Set Screw Seal	PTFE	PTFE	PTFE	PTFE
9	Disc Holder	Brass	SS Type 316	SS Type 316	SS Type 316
10	Disc	SS Type 316	SS type 316	SS Type 316	SS Type 316
11	Retaining Ring	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
12	Disc Guide	Brass	Brass	SS Type 316	SS Type 316
13	Stem	Brass	Brass	SS Type 316	SS Type 316
14	Spring Pin	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
15	Spring Washer	Brass	Brass	SS Type 316	SS Type 316
16	Adjusting Bolt	Brass	Brass	SS Type 316	SS Type 316
17	Lock nut	Brass	Brass	SS Type 316	SS Type 316
18	Spring	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
	Spring, High Temp.	Inconel	Inconel	Inconel	Inconel
19	Lock Screw	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
20	Cap, Screwed	Brass	Brass	Steel	SS Type 316
21	Seal, Cap	Viton	Viton	Viton	Viton
-	Nameplate	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
-	Drive Screw	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
-	Seal & Wire	Lead/SS	Lead/SS	Lead/SS	Lead/SS
-	Seal & Wire (CE)			Alum/SS	Alum/SS

Notes:

* Sizes G, H and J are Cast Bronze

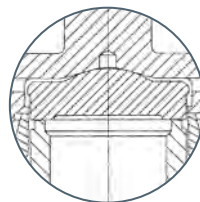
** Sizes H and J are Cast Steel

*** Sizes H and J are Cast Stainless Steel Type 316

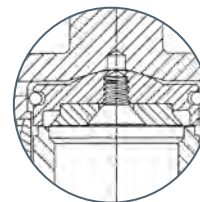
MATERIALS, LIFT LEVER OPTION

Item	Component	Material 513, 523 Series	Material 533 Series	Material 543 Series
1	Cap, Packed Lever	Brass	Steel	SS Type 316
2	Cam Bushing	Stainless Steel	Stainless Steel	Stainless Steel
3	Lever	Stainless Steel	Stainless Steel	Stainless Steel
4	Lift Washer	Stainless Steel	Stainless Steel	Stainless Steel
5	Locknut	Stainless Steel	Stainless Steel	Stainless Steel
6	Collar	Stainless Steel	Stainless Steel	Stainless Steel
7	Cam Bushing	Brass	Stainless Steel	Stainless Steel
8	Cam O-Ring	Viton	Viton	Viton
9	Bushing O-Ring	Viton	Viton	Viton
10	Seal, Cap	Viton	Viton	Viton
11	Set Screw	Stainless Steel	Stainless Steel	Stainless Steel
12	Washer	PTFE	PTFE	PTFE

500 SERIES SOFT SEAT DETAIL



PCTFE



O-RING

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SAFETY & RELIEF VALVES

Multi-Purpose Safety Relief Valves

500 SERIES

Soft Seat Pressure & Temperature Limits* - 500 Series

Seat Material	Set Pressure		Temperature		Service Recommendations**
	Min.	Max.	Min.	Max.	
Viton	15	900	-15°F	400°F	Air, Benzene, Butane, Carbon Dioxide, Carbon Disulphide, Carbon Tetrachloride, Dowtherm A, Ethyl Alcohol, Ethyl Chloride, Ethylene, Ethylene Glycol, Fuel Oil, Gasoline, Hydraulic Fluid, JP-4 and -5 Fuel, Kerosene, Lube Oil, Natural Gas, Naphtha, Nitrogen, Propane, Propyl Alcohol, Propylene, Propylene Glycol, Sulphur Dioxide, Toluene, Trichlorethylene, Turpentine, Vinyl Chloride, Water
EPDM	15	900	-70°F	250°F	Steam, Water, Hot Water, Acetone, Beer, Brake Fluid, Hydrogen Gas, Hydrogen Sulphide, Phosphate Ester Hydraulic Fluid, Sulphur Dioxide, Acids, Alkalis
Silicone	15	900	-60°F	450°F	Air, Helium, Nitrogen, Oxygen (gaseous)
Neoprene	15	900	-35°F	225°F	Air, Anhydrous Ammonia, Butane, Butyl Alcohol, Castor Oil, Denatured Alcohol, Ethanol, Ethyl Alcohol, Freon 12, 13, 14 & 22, Glycols, Natural Gas, Oxygen (gaseous), Silicate Esters
Nitrile / Buna-N	15	900	-30°F	250°F	Air, Anhydrous Ammonia, Butane, Carbon Dioxide, Diesel Oil, Freon 11 & 12, Fuel Oil, Gasoline, Helium, Hydraulic Fluid (petroleum based), Hydrogen Sulphide, Hydrogen Gas, Kerosene, Lube Oil, Natural Gas, Nitrogen, Oxygen (gaseous), Propane, Propylene, Sulphur Dioxide, Vinyl Chloride
PCTFE	15	500	-320°F	250°F	Cryogenic Service including Argon, Carbon Dioxide, Helium, Hydrogen, Nitrogen, Oxygen

Notes:

* Subject to valve body material pressure / temperature limitations. See chart below.

** Service recommendations are provided for guidance only. Material suitability and selection should be determined by the end user based on their prior experience with the service and materials involved.

PRESSURE AND TEMPERATURE RATINGS

Series Body Trim	510 Bronze Brass	520 Bronze Stainless	530 Carbon Steel Stainless	540 Stainless Steel Stainless
Max. Set-Steam	250 PSI	300 PSI	900 PSI (D/E) 600 PSI (F/G) 500 PSI (H/J)	900 PSI (D/E) 600 PSI (F/G) 500 PSI (H/J)
Max. Set-Air/Gas/Liquid	300 PSI	1200 PSI (D) ¹ 900 PSI (E) 600 PSI (F/G) 500 PSI (H/J)	1200 PSI (D) ¹ 900 PSI (E) 600 PSI (F/G) 500 PSI (H/J)	1200 PSI (D) ¹ 900 PSI (E) 600 PSI (F/G) 500 PSI (H/J)
Temp. Limits*	-320/406°F	-320/422°F	-20/800°F	-320/800°F

¹Max set pressure for liquids is 1000 psi.

Notes:

- Limits based upon materials of construction and use of metal to metal seating. Refer to 500 series soft seat chart for limitations based upon elastomer.
- Specify "HT" high temperature Inconel springs for service temperature beyond 422°F.
- Models 510, 520 and 540 are suitable for cryogenic service to -320°F, with choice of either "M" metal or "K" PCTFE seat options.

DIMENSIONS AND WEIGHTS

Model Number	Orifice Letter	Size Inlet x Outlet	Dimensions (in./mm.)			Weight (Lb./kg.)
			A	B	C	
5xxDC	D	1/2 X 1	2.38	7.5	1.63	2
			60	191	41	0.9
5xxDCD*	D	1/2 X 3/4	2.38	7.5	1.63	2
			60	191	41	0.9
5xxDD	D	3/4 X 1	2.38	7.5	1.63	2
			60	191	41	0.9
5xxDDD*	D	3/4 X 3/4	2.38	7.5	1.63	2
			60	191	41	0.9
5xxED	E	3/4 X 1-1/4	2.63	9	2	3
			67	229	51	1.4
5xxEE	E	1 X 1-1/4	2.63	9	2	3
			67	229	51	1.4
5xxFE	F	1 X 1-1/2	2.83	10.25	2.38	5
			73	260	60	2.3
5xxFF	F	1-1/4 X 1-1/2	2.83	10.25	2.38	5
			73	260	60	2.3
5xxGF	G	1-1/4 X 2	3.25	13.25	2.63	9
			83	337	67	4.1
5xxGG	G	1-1/2 X 2	3.25	13.25	2.68	9.5
			83	337	67	4.31
5xxHG	H	1-1/2 X 2-1/2	3.5	15	2.75	15.5
			89	381	70	7.0
5xxHH	H	2 X 2-1/2	3.5	15	2.75	16
			89	381	70	7.3
5xxJH	J	2 X 3	4	17	3.25	24
			102	432	83	10.9

* 3/4" Outlet option available with 510 and 520 bronze bodied models only.



For additional information, submittal sheets and manuals, visit www.apollovalves.com

Customer Service (704) 841-6000

SAFETY & RELIEF VALVES



Multi-Purpose Safety Relief Valves

500 SERIES

ASME SECTION VIII STEAM

Pounds per hour (Kilograms per hour) saturated steam at 10% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units Lbs./Hr.

Metric Units Kg./Hr.

Orifice Letter Area (in. ²)	D 0.1295	E 0.2282	F 0.3589	G 0.5890	H 0.9195	J 1.5044	Orifice Letter Area (cm. ²)	D 0.8352	E 1.4721	F 2.3155	G 3.8001	H 5.9321	J 9.7058						
Set Pressure psig							Set Pressure barg												
5*	122	216	339	557	869	1,422	0.4*	60	105	165	271	423	692						
10*	168	295	465	762	1,190	1,947	0.8*	82	145	228	374	583	955						
15	188	331	520	853	1,332	2,180	1.1	88	154	243	398	622	1,018						
20	216	381	600	984	1,536	2,513	2	122	214	337	553	863	1,412						
25	245	432	679	1,114	1,740	2,846	3	163	287	451	741	1,156	1,892						
30	274	482	759	1,245	1,943	3,180	4	204	360	566	930	1,451	2,374						
35	305	538	846	1,388	2,168	3,546	5	246	433	681	1,118	1,746	2,857						
40	337	593	934	1,532	2,392	3,913	6	287	506	797	1,307	2,041	3,339						
45	368	649	1,021	1,676	2,616	4,280	7	329	580	912	1,496	2,336	3,821						
50	400	705	1,108	1,819	2,840	4,646	8	370	653	1,027	1,685	2,630	4,304						
55	431	760	1,196	1,963	3,064	5,013	9	412	726	1,142	1,874	2,925	4,786						
60	463	816	1,283	2,106	3,288	5,380	10	453	799	1,257	2,063	3,220	5,269						
65	494	872	1,371	2,250	3,512	5,746	12	536	945	1,487	2,441	3,810	6,233						
70	526	927	1,458	2,393	3,736	6,113	14	619	1,092	1,717	2,818	4,400	7,198						
75	558	983	1,546	2,537	3,960	6,479	16	702	1,238	1,947	3,196	4,989	8,163						
80	589	1,038	1,633	2,680	4,184	6,846	18	786	1,384	2,178	3,574	5,579	9,128						
85	621	1,094	1,721	2,824	4,408	7,213	20	869	1,531	2,408	3,952	6,169	10,093						
90	652	1,150	1,808	2,968	4,632	7,579	22	952	1,677	2,638	4,329	6,758	11,058						
95	684	1,205	1,896	3,111	4,857	7,946	24	1,035	1,823	2,868	4,707	7,348	12,022						
100	715	1,261	1,983	3,255	5,081	8,313	26	1,118	1,970	3,098	5,085	7,938	12,987						
125	873	1,539	2,421	3,972	6,201	10,146	28	1,201	2,116	3,329	5,463	8,527	13,952						
150	1,031	1,817	2,858	4,690	7,322	11,979	30	1,284	2,262	3,559	5,840	9,117	14,917						
175	1,189	2,095	3,295	5,408	8,442	13,812	32	1,367	2,409	3,789	6,218	9,707	15,882						
200	1,346	2,373	3,733	6,126	9,562	15,645	34	1,450	2,555	4,019	6,596	10,297	16,846						
225	1,504	2,651	4,170	6,843	10,683	17,478	36	1,533	2,701	4,249	6,974	-	-						
250	1,662	2,929	4,607	7,561	11,803	19,312	38	1,616	2,848	4,479	7,351	-	-						
275	1,820	3,207	5,045	8,279	12,924	21,145	40	1,699	2,994	4,710	7,729	-	-						
300	1,977	3,485	5,482	8,997	14,044	22,978	42	1,782	3,140	-	-	-	-						
325	2,135	3,763	5,919	9,714	15,165	24,811	44	1,865	3,287	-	-	-	-						
350	2,293	4,041	6,357	10,432	16,285	26,644	46	1,948	3,433	-	-	-	-						
375	2,451	4,319	6,794	11,150	17,405	28,477	48	2,031	3,579	-	-	-	-						
400	2,608	4,597	7,231	11,867	18,526	30,311	50	2,114	3,726	-	-	-	-						
425	2,766	4,875	7,669	12,585	19,646	32,144	52	2,197	3,872	-	-	-	-						
450	2,924	5,153	8,106	13,303	20,767	33,977	54	2,280	4,019	-	-	-	-						
475	3,082	5,431	8,543	14,021	21,887	35,810	58	2,446	4,311	-	-	-	-						
500	3,239	5,709	8,981	14,738	23,008	37,643	62	2,612	4,604	-	-	-	-						
525	3,397	5,987	9,418	15,456	-	-	65	2,736	-	-	-	-	-						
550	3,555	6,266	9,855	16,174	-	-	69	2,902	-	-	-	-	-						
575	3,713	6,544	10,293	16,892	-	-	72	3,026	-	-	-	-	-						
600	3,870	6,822	10,730	17,609	-	-	76	3,192	-	-	-	-	-						
625	4,028	7,100	-	-	-	-	79	3,316	-	-	-	-	-						
650	4,186	7,378	-	-	-	-	82	3,441	-	-	-	-	-						
675	4,344	7,656	-	-	-	-	Approx. 0.1 bar Increment												
700	4,501	7,934	-	-	-	-													
725	4,659	8,212	-	-	-	-	4.15	7.32	11.51	18.89	29.48	48.24							
750	4,817	8,490	-	-	-	-	Maximum Set Pressure Limits for Steam Service 510 Series - 250 psig/17.3 barg 520 Series - 300 psig/20.7 barg 530 Series - 900 psig/62.1 barg 540 Series - 900 psig/62.1 barg Note: For steam service beyond 300 psig or 550°F specify option "HT" high temperature stainless steel alloy spring. *Pressure settings below 15 psig/1.03 barg are non-ASME code.												
775	4,975	8,768	-	-	-	-													
800	5,132	9,046	-	-	-	-													
825	5,290	9,324	-	-	-	-													
850	5,448	9,602	-	-	-	-													
875	5,606	9,880	-	-	-	-													
900	5,763	10,158	-	-	-	-													
Approx. 1 psi Increment														6.3	11.1	17.5	28.7	44.8	73.3

Maximum Set Pressure Limits for Steam Service

- 510 Series - 250 psig/17.3 barg
- 520 Series - 300 psig/20.7 barg
- 530 Series - 900 psig/62.1 barg
- 540 Series - 900 psig/62.1 barg

Note: For steam service beyond 300 psig or 550°F specify option "HT" high temperature stainless steel alloy spring.

*Pressure settings below 15 psig/1.03 barg are non-ASME code.

SAFETY & RELIEF VALVES



Multi-Purpose Safety Relief Valves

500 SERIES

ASME SECTION VIII AIR

Standard cubic feet per minute (Normalized cubic meters per hour) of air at 10% overpressure. National Board Certified. Ratings are 90% of actual.

US Customary Units SCFM

Metric Units Nm³/Hr.

Orifice Letter Area (in. ²)	D 0.1295	E 0.2282	F 0.3589	G 0.5890	H 0.9195	J 1.5044	Orifice Letter Area (cm ²)	D 0.8352	E 1.4721	F 2.3155	G 3.8001	H 5.9321	J 9.7058
Set Pressure psig							Set Pressure barg						
5*	39	69	108	178	277	454	0.4*	67	119	187	307	479	784
10*	54	96	151	248	387	633	0.8*	94	165	260	427	667	1,091
15	67	118	185	304	474	776	1.1	110	195	306	503	784	1,283
20	77	136	213	350	547	895	2	153	270	425	697	1,089	1,781
25	87	154	242	397	619	1,013	3	205	362	569	934	1,458	2,386
30	97	172	270	443	692	1,132	4	258	454	714	1,172	1,830	2,994
35	109	191	301	494	772	1,262	5	310	546	859	1,411	2,202	3,603
40	120	211	332	545	851	1,393	6	362	639	1,005	1,649	2,574	4,211
45	131	231	363	596	931	1,523	7	415	731	1,150	1,887	2,946	4,819
50	142	251	395	648	1,011	1,654	8	467	823	1,295	2,125	3,317	5,428
55	154	271	426	699	1,091	1,784	9	519	916	1,440	2,363	3,689	6,036
60	165	290	457	750	1,170	1,915	10	572	1,008	1,585	2,601	4,061	6,644
65	176	310	488	801	1,250	2,045	12	676	1,192	1,875	3,078	4,805	7,861
70	187	330	519	852	1,330	2,176	14	781	1,377	2,166	3,554	5,548	9,078
75	198	350	550	903	1,410	2,306	16	886	1,561	2,456	4,031	6,292	10,295
80	210	370	581	954	1,489	2,437	18	991	1,746	2,746	4,507	7,036	11,511
85	221	389	612	1,005	1,569	2,567	20	1,095	1,931	3,037	4,983	7,779	12,728
90	232	409	644	1,056	1,649	2,698	22	1,200	2,115	3,327	5,460	8,523	13,945
95	243	429	675	1,107	1,729	2,828	24	1,305	2,300	3,617	5,936	9,267	15,162
100	255	449	706	1,158	1,808	2,959	26	1,409	2,484	3,907	6,413	10,010	16,378
125	311	548	862	1,414	2,207	3,611	28	1,514	2,669	4,198	6,889	10,754	17,595
150	367	647	1,017	1,669	2,606	4,264	30	1,619	2,853	4,488	7,365	11,498	18,812
175	423	746	1,173	1,925	3,005	4,916	32	1,724	3,038	4,778	7,842	12,241	20,029
200	479	845	1,329	2,180	3,404	5,569	34	1,828	3,222	5,069	8,318	12,985	21,245
225	535	944	1,484	2,436	3,802	6,221	36	1,933	3,407	5,359	8,795	-	-
250	592	1,043	1,640	2,691	4,201	6,874	38	2,038	3,591	5,649	9,271	-	-
275	648	1,142	1,796	2,947	4,600	7,526	40	2,142	3,776	5,939	9,747	-	-
300	704	1,240	1,951	3,202	4,999	8,179	42	2,247	3,961	-	-	-	-
325	760	1,339	2,107	3,458	5,398	8,831	44	2,352	4,145	-	-	-	-
350	816	1,438	2,263	3,713	5,796	9,484	46	2,457	4,330	-	-	-	-
375	872	1,537	2,418	3,969	6,195	10,136	48	2,561	4,514	-	-	-	-
400	928	1,636	2,574	4,224	6,594	10,789	50	2,666	4,699	-	-	-	-
425	985	1,735	2,730	4,480	6,993	11,441	52	2,771	4,883	-	-	-	-
450	1,041	1,834	2,885	4,735	7,392	12,094	54	2,875	5,068	-	-	-	-
475	1,097	1,933	3,041	4,991	7,791	12,746	58	3,085	5,437	-	-	-	-
500	1,153	2,032	3,197	5,246	8,189	13,399	62	3,294	5,806	-	-	-	-
525	1,209	2,131	3,352	5,501	-	-	65	3,450	-	-	-	-	-
550	1,265	2,230	3,508	5,757	-	-	69	3,659	-	-	-	-	-
575	1,321	2,329	3,664	6,012	-	-	72	3,815	-	-	-	-	-
600	1,378	2,428	3,819	6,268	-	-	76	4,020	-	-	-	-	-
625	1,434	2,527	-	-	-	-	79	4,177	-	-	-	-	-
650	1,490	2,626	-	-	-	-	82	4,381	-	-	-	-	-
675	1,546	2,725	-	-	-	-	Approx. 0.1 bar Increment						
700	1,602	2,824	-	-	-	-	5.24	9.23	14.51	23.82	37.18	60.84	
725	1,658	2,923	-	-	-	-							
750	1,715	3,022	-	-	-	-							
775	1,771	3,121	-	-	-	-							
800	1,827	3,220	-	-	-	-							
825	1,883	3,319	-	-	-	-							
850	1,939	3,418	-	-	-	-							
875	1,995	3,517	-	-	-	-							
900	2,051	3,616											
950	2,163	-	-	-	-	-							
1000	2,276	-	-	-	-	-							
1050	2,388	-	-	-	-	-							
1100	2,501	-	-	-	-	-							
1150	2,613	-	-	-	-	-							
1200	2,725	-	-	-	-	-							
Approx. 1 psi Increment	2.2	4.0	6.2	10.2	16.0	26.1							

Maximum Set Pressure Limits for Air/Gas Service

- 510 Series - 300 psig/20.7 barg
- 520 Series - 1200 psig/82.7 barg
- 530 Series - 1200 psig/82.7 barg
- 540 Series - 1200 psig/82.7 barg

*Pressure settings below 15 psig/1.03 barg are non-ASME code.



For additional information, submittal sheets and manuals, visit www.apollovalves.com

Customer Service (704) 841-6000

SAFETY & RELIEF VALVES



Multi-Purpose Safety Relief Valves

500 SERIES

ASME SECTION VIII WATER

U.S. gallons per minute (Cubic meters per hour) of water at 10% over pressure. National Board Certified. Ratings are 90% of actual.

US Customary Units GPM

Metric Units M³/Hr.

Orifice Letter Area (in. ²)	D 0.1295	E 0.2282	F 0.3589	G 0.5890	H 0.9195	J 1.5044	Orifice Letter Area (cm ²)	D 0.8352	E 1.4721	F 2.3155	G 3.8001	H 5.9321	J 9.7058
Set Pressure psig							Set Pressure barg						
5*	13	24	37	61	95	156	0.4*	2.0	3.6	5.6	9.2	14.4	23.6
10*	14	24	38	63	98	161	0.8*	2.9	5.1	8.0	13.1	20.4	33.3
15	14	25	40	65	102	167	1.1	3.3	5.9	9.3	15.2	23.8	38.9
20	16	29	45	74	115	189	2	4.4	7.7	12.1	19.8	30.9	50.6
25	18	32	50	82	127	208	3	5.3	9.4	14.8	24.2	37.8	61.8
30	19	34	54	89	138	226	4	6.1	10.8	17.0	28.0	43.6	71.4
35	21	37	58	96	149	244	5	6.9	12.1	19.0	31.3	48.8	79.8
40	22	40	62	102	160	261	6	7.5	13.3	20.9	34.2	53.4	87.4
45	24	42	66	108	169	277	7	8.1	14.3	22.5	37.0	57.7	94.5
50	25	44	70	114	178	292	8	8.7	15.3	24.1	39.5	61.7	101.0
55	26	46	73	120	187	306	9	9.2	16.2	25.6	41.9	65.5	107.1
60	28	48	76	125	195	320	10	9.7	17.1	26.9	44.2	69.0	112.9
65	29	50	79	130	203	333	12	10.6	18.8	29.5	48.4	75.6	123.7
70	30	52	82	135	211	345	14	11.5	20.3	31.9	52.3	81.6	133.6
75	31	54	85	140	218	357	16	12.3	21.7	34.1	55.9	87.3	142.8
80	32	56	88	145	226	369	18	13.0	23.0	36.1	59.3	92.6	151.5
85	33	58	91	149	233	381	20	13.7	24.2	38.1	62.5	97.6	159.7
90	34	59	93	153	239	392	22	14.4	25.4	39.9	65.6	102.3	167.5
95	35	61	96	158	246	402	24	15.1	26.5	41.7	68.5	106.9	174.9
100	36	63	98	162	252	413	26	15.7	27.6	43.4	71.3	111.3	182.0
125	40	70	110	181	282	462	28	16.3	28.7	45.1	74.0	115.5	188.9
150	44	77	121	198	309	506	30	16.8	29.7	46.7	76.6	119.5	195.5
175	47	83	130	214	334	546	32	17.4	30.6	48.2	79.1	123.4	202.0
200	50	89	139	229	357	584	34	17.9	31.6	49.7	81.5	127.2	208.2
225	53	94	148	242	378	619	36	18.4	32.5	51.1	83.9	-	-
250	56	99	156	256	399	653	38	18.9	33.4	52.5	86.2	-	-
275	59	104	163	268	418	685	40	19.4	34.2	53.9	88.4	-	-
300	62	108	171	280	437	715	42	19.9	35.1	-	-	-	-
325	64	113	178	291	455	744	44	20.4	35.9	-	-	-	-
350	66	117	184	302	472	772	46	20.8	36.7	-	-	-	-
375	69	121	191	313	489	799	48	21.3	37.5	-	-	-	-
400	71	125	197	323	505	826	50	21.7	38.3	-	-	-	-
425	73	129	203	333	520	851	52	22.2	39.0	-	-	-	-
450	75	133	209	343	535	876	54	22.6	39.8	-	-	-	-
475	77	136	215	352	550	900	58	23.4	41.2	-	-	-	-
500	79	140	220	361	564	923	62	24.2	42.6	-	-	-	-
525	81	143	226	370	-	-	65	24.8	-	-	-	-	-
550	83	147	231	379	-	-	69	25.6	-	-	-	-	-
575	85	150	236	388	-	-							
600	87	153	241	396	-	-							
625	89	157	-	-	-	-							
650	91	160	-	-	-	-							
675	92	163	-	-	-	-							
700	94	166	-	-	-	-							
725	96	169	-	-	-	-							
750	97	171	-	-	-	-							
775	99	174	-	-	-	-							
800	100	177	-	-	-	-							
825	102	180	-	-	-	-							
850	104	183	-	-	-	-							
875	105	185	-	-	-	-							
900	107	188	-	-	-	-							
950	109	-	-	-	-	-							
1000	112	-	-	-	-	-							

Maximum Set Pressure Limits for Liquid Service

- 510 Series - 300 psig/20.7 barg
- 520 Series - 1000 psig/68.9 barg
- 530 Series - 1000 psig/68.9 barg
- 540 Series - 1000 psig/68.9 barg

Note: To determine water capacity at 25% overpressure, multiply the capacity at 10% by 1.066.

*Pressure settings below 15 psig/1.03 barg are non-ASME code.

SAFETY & RELIEF VALVES

Equivalents and Conversion Factors

This table may be used in two ways:

- (1) Multiply the unit under column A by the figure under column B, the result is the unit under column C.
- (2) Divide the unit under column C by the figure under column B, the result is then the unit under column A.

A MULTIPLY	B BY	C TO OBTAIN
Atmospheres	14.70	Pounds per square inch
Atmospheres	1.033	Kilograms per sq. cm.
Atmospheres	29.92	Inches of mercury
Atmospheres	760.0	Millimeters of mercury
Atmospheres	407.5	Inches of water
Atmospheres	33.96	Feet of water
Atmospheres	1.013	Bars
Atmospheres	101.3	KiloPascals
Barrels	42.00	Gallons (U.S.)
Bars	14.50	Pounds per square inch
Bars	1.020	Kilograms per sq. cm
Bars	100.0	KiloPascals
Centimeters	0.3937	Inches
Centimeters	0.03281	Feet
Centimeters	0.010	Meters
Centimeters	0.01094	Yards
Cubic centimeters	0.06102	Cubic yards
Cubic feet	7.481	Gallons
Cubic feet	0.1781	Barrels
Cubic feet per minute	0.02832	Cubic meters per minute
Cubic feet per second	448.8	Gallons per minute
Cubic inches	16.39	Cubic centimeters
Cubic inches	0.004329	Gallons
Cubic meters	264.2	Gallons
Cubic meters per hour	4.403	Gallons per minute
Cubic meters per minute	35.31	Cubic feet per minute
Standard cubic feet per min.	60.00	Standard cubic ft. per hr
Standard cubic feet per min.	1440.	Standard cubic ft. per day
Standard cubic feet per min.	0.02716	Nm ³ /min. (0° C, 1 Bara)
Standard cubic feet per min.	1.630	Nm ³ /hr. (0° C, 1 Bara)
Standard cubic feet per min.	39.11	Nm ³ /day. (0° C, 1 Bara)
Standard cubic feet per min.	0.02832	Sm ³ /min.
Standard cubic feet per min.	1.699	Sm ³ /hr.
Standard cubic feet per min.	40.78	Sm ³ /day.
Feet	0.3048	Meters
Feet	0.3333	Yards
Feet	30.48	Centimeters
Feet of water (68° F)	0.8812	Inches of mercury (0° C)
Feet of water (68° F)	0.4328	Pounds per square inch
Gallons (U.S.)	3785.	Cubic centimeters
Gallons (U.S.)	0.1337	Cubic feet
Gallons (U.S.)	231.0	Cubic inches
Gallons (Imperial)	277.4	Cubic inches
Gallons (U.S.)	0.8327	Gallons (Imperial)
Gallons (U.S.)	3.785	Liters
Gallons of water (60° F)	8.337	Pounds
Gallons of liquid per minute	500xSp. Gr.	Pounds per hour liquid
Gallons per minute	0.002228	Cubic feet per second
Gallons per minute (60° F)	227.0xSG	Kilograms per hour
Gallons per minute	.06309	Liters per second
Gallons per minute	3.785	Liters per minute
Gallons per minute	.2271	M ³ /hr.
Grams	.03527	Ounces
Inches	2.540	Centimeters
Inches	0.08333	Feet
Inches	0.0254	Meters
Inches	0.02778	Yards
Inches of mercury (0° C)	1.135	Feet of water (68° F)
Inches of mercury (0° C)	0.4912	Pounds per square inch
Inches of mercury (0° C)	0.03342	Atmospheres

A MULTIPLY	B BY	C TO OBTAIN
Inches of mercury (0° C)	0.03453	Kilograms per sq. cm
Inches of water (68° F)	0.03607	Pounds per sq. in.
Inches of water (68° F)	0.07343	Inches of mercury (0° C)
Kilograms	2.205	Pounds
Kilograms	0.001102	Short tons (2000 lbs.)
Kilograms	35.27	Ounces
Kilograms per minute	132.3	Pounds per hour
Kilograms per sq. cm.	14.22	Pounds per sq. in.
Kilograms per sq. cm.	0.9678	Atmospheres
Kilograms per sq. cm	28.96	Inches of mercury
Kilograms per cubic meter	0.0624	Pounds per cubic foot
KiloPascals	0.1450	Pounds per sq. in.
KiloPascals	0.0100	Bars
KiloPascals	0.01020	Kilograms per sq. cm
Liters	0.03531	Cubic feet
Liters	1000.	Cubic centimeters
Liters	0.2642	Gallons
Liters per hour	0.004403	Gallons per minute
MegaPascals	145.038	PSI
Meters	3.281	Feet
Meters	1.094	Yards
Meters	100.0	Centimeters
Meters	39.97	Inches
Pounds	0.1199	Gallons H2O @ 60° F (US)
Pounds	453.6	Grams
Pounds	0.0005	Short tons (2000 lbs.)
Pounds	0.4536	Kilograms
Pounds	0.0004536	Metric tons
Pounds	16.00	Ounces
Pounds per hour	6.324/M.W.	SCFM
Pounds per hour	.4536	Kilograms per hour
Pounds per hour liquid	0.002/Sp.Gr.	Gallons per minute liquid
Pounds per sq. inch	27.73	Inches of water (68° F)
Pounds per sq. inch	2.311	Feet of water (68° F)
Pounds per sq. inch	2.036	Inches of mercury (0° C)
Pounds per sq. inch	0.07031	Kilograms per sq. cm.
Pounds per sq. inch	0.0680	Atmospheres
Pounds per sq. inch	51.71	Millimeters of mercury (0° C)
Pounds per sq. inch	0.7043	Meters of water (68° F)
Pounds per sq. inch	0.06895	Bar
Pounds per sq. inch	6.895	KiloPascals
Specific gravity (of gas or vapors)	28.97	Molecular weight (of gas or vapors)
Square centimeter	0.1550	Square inch
Square inch	6.4516	Square centimeter
Square inch	645.16	Square millimeter
SSU	0.2205 x SG	Centipoise
SSU	0.2162	Centistoke
Water (cubic feet @ 60F)	62.37	Pounds
Temperature:		
Centigrade	=	5/9 (Fahrenheit – 32)
Kelvin	=	Centigrade + 273
Fahrenheit	=	9/5 (Centigrade) + 32
Fahrenheit	=	Rankine – 460
Fahrenheit	=	(9/5 Kelvin) – 460

A MULTIPLY	B BY	C TO OBTAIN
Horsepower of boiler	33,479	Btu/hr
Watts/hour	3.412	Btu/hr
Kilowatts/hour	3,412	Btu/hr
Pounds of steam/hour	1,000	Btu/hr
MBH	1,000	Btu/hr



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SAFETY & RELIEF VALVES

Correction Factors

CORRECTION FACTORS

AIR AND GAS TEMPERATURE

To correct for temperatures other than 60°F at the valve inlet, multiply the SCFM from the capacity tables by factor K_t .

Temp °F	K_t
0	1.063
10	1.052
20	1.041
30	1.030
40	1.020
50	1.010
60	1.000
70	0.991
80	0.981
90	0.972
100	0.964
120	0.947
140	0.931
160	0.916
180	0.901
200	0.888
220	0.874
240	0.862
260	0.850
280	0.838
300	0.827
320	0.816
340	0.806
360	0.796
380	0.787
400	0.778
420	0.769
440	0.760
460	0.752
480	0.744
500	0.737
550	0.718
600	0.701
650	0.685
700	0.669
750	0.656

CORRECTION FACTORS

GAS AND LIQUID RELATIVE DENSITY

To correct for a specific gravity other than air or water (=1.0) multiply the SCFM or GPM from the capacity tables by factor K_{sg} .

Specific Gravity	K_{sg}
0.10	3.160
0.20	2.240
0.30	1.825
0.40	1.580
0.50	1.414
0.55	1.350
0.60	1.290
0.65	1.240
0.70	1.195
0.75	1.155
0.80	1.117
0.90	1.085
0.95	1.025
1.00	1.00
1.05	0.975
1.10	0.955
1.15	0.933
1.20	0.913
1.25	0.913
1.30	0.877
1.40	0.845
1.50	0.817
1.60	0.791
1.70	0.768
1.80	0.745
1.90	0.725
2.00	0.707
2.50	0.633
3.00	0.577
3.50	0.535
4.00	0.500
4.50	0.471

SAFETY & RELIEF VALVES

WARRANTY AND LIMITATIONS OF LIABILITY

Conbraco Industries, Inc. warrants, to its initial purchaser only, that its products which are delivered to this initial purchaser will be of the kind described in the order or price list and will be free of defects in workmanship or material for a period of FIVE years from the date of delivery to you, our initial purchaser. This warranty applies to Apollo brand product with "Made in the USA" markings only.

Should any failure to conform to this warranty appear within FIVE years after the date of the initial delivery to our initial purchaser, Conbraco will, upon written notification thereof and substantiation that the goods have been stored, installed, maintained and operated in accordance with Conbraco's recommendations and standard industry practice, correct such defects by suitable repair or replacement at Conbraco's own expense.

APOLLO INTERNATIONAL PRODUCTS: Conbraco Industries, Inc. warrants its International products, to its initial purchaser only, that its international products which are delivered to this initial purchaser will be of the kind described in the order or price list and will be free of defects in workmanship or material for a period of TWO years from the date of delivery to you, our initial purchaser.

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHER WARRANTY OF QUALITY, WHETHER EXPRESSED OR IMPLIED, EXCEPT THE WARRANTY OF TITLE AND AGAINST PATENT INFRINGEMENT. Correction of non-conformities, in the manner and for the period of time provided above, shall constitute fulfillment of all liabilities of Conbraco to our initial purchaser, with respect to the goods, whether based on contract, negligence, strict tort or otherwise. It is the intention of Conbraco Industries, Inc. that no warranty of any kind, whether expressed or implied shall pass through our initial purchaser to any other person or corporation.

LIMITATION OF LIABILITY: Conbraco Industries, inc. SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE FOR SPECIAL OR CONSEQUENTIAL DAMAGES SUCH AS, BUT NOT LIMITED TO, DAMAGES OR TO LOSS OF OTHER PROPERTY OR EQUIPMENT, LOSS OF PROFITS OR REVENUE, COST OF CAPITAL, COST OF PURCHASED OR REPLACEMENT GOODS, OR CLAIMS OF CUSTOMERS OF OUR INITIAL PURCHASER. THE REMEDIES OF OUR INITIAL PURCHASER, AND ALL OTHERS, SET FORTH HEREIN, ARE EXCLUSIVE, AND THE LIABILITY OF CONBRACO WITH RESPECT TO SAME SHALL NOT, EXCEPT AS EXPRESSLY PROVIDED HEREIN, EXCEED THE PRICE OF THE GOODS UPON WHICH SUCH LIABILITY IS BASED.

* It is the end user's responsibility to confirm that items intended for use satisfy local codes and standards.



INTERNATIONAL SALES REPS & REGIONAL MANAGERS

	AREAS COVERED	EMAIL	PHONE	FAX	
INTERNATIONAL	Conbraco International Sales:				
	Jose Arias	Mexico	jose.arias@conbraco.com	956-631-4542	956-631-4681
	Luis Guzman	Caribbean	luis.guzman@conbraco.com	787-739-5620	
	JR Jefferson	Central & South America	jr.jefferson@conbraco.com	832-220-3783	
	Mike Link	United Kingdom	michael.link@pegler.yorkshire.co.uk	44-0-1302-560-560	44-0-1302-367-661
	Luke Liu	China	luke.liu@conbraco.com	411-869-02498	411-869-02498
	Jonathan Yap	Asia Pacific/India	jonathan.yap@conbraco.com	65-9626-9241	65-6753-0131
	Pegler Yorkshire Mid East	Europe/Africa/Australia/Israel	Contact Customer Service	704-841-6000	704-841-6021
	Middle East (except Israel)	pydubai@mailme.ae	971-4-454-2353	971-4-454-2352	
REGIONAL MANAGERS	APOLLO VALVES REGIONAL SALES DIRECTORS		P.O. BOX 247, Matthews, NC 28106		
	Brian Blalock	East	brian.blalock@conbraco.com	704-614-3744	704-841-6021
	Skip Wilson	West	skip.wilson@conbraco.com	760-330-3293	775-854-5722
	APOLLO VALVES REGIONAL MANAGERS				
	Kevin Ashworth	Mid Atlantic	kevin.ashworth@conbraco.com	757-272-6200	
	Steve Brown	Northwest	steve.brown@conbraco.com	425-985-5095	253-862-3548
	Andy Fretz	Canada - Commercial	andy.fretz@conbraco.com	647-281-3161	905-761-6666
	Ben Lauletta	Northeast	ben.lauletta@conbraco.com	518-795-4629	
	Sanford Pauly	North Central	sanford.pauly@conbraco.com	513-716-7772	513-321-7717
	Hector Rivera	Florida	hector.rivera@conbraco.com	786-210-7010	
	James Saldivar	South Central - Industrial	james.saldivar@conbraco.com	832-776-5547	
	Nick Shelley	South Central - Commercial	nick.shelley@conbraco.com	214-790-4157	
	Jim Todman	Canada - Industrial	jim.todman@conbraco.com	905-407-8385	905-761-6666
	LASCO FITTINGS IRRIGATION REGIONAL MANAGERS		P.O. BOX 116, Brownsville, TN 38012		
	David Beyer	Northeast	dbeyer@lascofittings.com	561-718-9379	
Ron Modugno	West	rmodugno@lascofittings.com	661-910-5058	661-775-0713	
Jimmy White	Central	jwhite@lascofittings.com	731-234-2372	731-779-3608	
Ben Freeman	Southeast	bfreeman@lascofittings.com	205-919-4944		
Rick Williamson	Eastern Specifications Manager	rwilliamson@lascofittings.com	386-451-2307		



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SALES & CUSTOMER SERVICE:

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	AGENCY	AREAS COVERED	EMAIL	PHONE	FAX
SOUTHEAST REGION	Mid South Marketing, Inc.	VA/MD/Washington, D.C./WV-East	michael.uecker@msmsales1.com	804-213-3801	804-213-3802
	Pro Marketing, Inc.	NC/SC/TN-East	sales@promarketinginc.net	864-578-4334	864-578-4889
	Spirit Group	FL (except Panhandle)	info@spiritgroupinc.com	407-291-6035	407-299-0378
	Tim Morales & Associates, Inc.	AL/FL Panhandle	sales@timmorales.com	251-602-8333	251-602-8339
	White Wolf Group	GA	info@whitewolfgroupinc.com	800-401-4870	888-908-9372
SOUTHERN REGION	BWC Inc.	LA (Commercial Products)	chuck@bwcassoc.com	504-734-0229	504-734-3711
	Marathon Flow Control	TX, OK, KS except Northeast, LA (Industrial)	sales@marathonflowcontrol.com	214-201-0100	214-201-0104
	Southern Marketing Group	MS/TN-West/AR/Bowie Cty.-TX	SMG49@bellsouth.net	901-547-0042	901-547-0035
MIDWESTERN REGION	FourMation Sales	MN/ND/SD/WI-West	ryan@fourmationsales.com	763-420-6900	763-420-6993
	Marshall-Rodeno Heartland	NE/IA (Except River Counties)	trodeno@marshallrodeno.com	303-575-6701	303-575-6706
	Midwest Spec	Northern OH, Western PA, WV	glsales@mwspec.com	330-538-0406	330-538-0410
	Midwest Spec	Southern OH, KY	rvsales@mwspec.com	513-353-9191	513-353-1589
	New Tech Marketing	Northern-IL/WI-East/IN/MI-UP/IA-River Counties	sales@new-techmarketing.com	630-378-4300	630-378-0343
	New Tech Marketing	MO/Southern IL/Northeast Kansas	ntm112@aol.com	618-394-0329	618-394-0427
	V.E. Sales Co., Inc.	MI (Except Upper Peninsula)	tomv@vesalesinc.com	586-774-7760	586-774-1490
WESTERN REGION	Elmco Duddy	CA - South	tduddy@elmcoduddy.com	626-333-9942	626-855-4811
	Gordon & Associates	WA, OR, AK, Northern counties ID	kenn@gordonandassoc.com	907-441-7184	425-228-7777
	HC Fletcher	CA - North (AB 1953 compliant product)	apollosales@hcfletcher.com	800-432-7047	949-660-9072
	Marshall-Rodeno Associated	CO/WY/MT/ID-SE/UT/NV-NE/NM/El Paso-TX	trodeno@marshallrodeno.com	303-575-6701	303-575-6706
	Romatec	CA - North PVF (non AB 1953)	apollo@romatec.com	877-530-3530	661-588-3534
	Southwest Valves	CA (Waterworks and Fire Protection)	d.burell@southwestvalve.com	559-261-2703	559-261-2711
	Southwestern Industrial Sales Co.	AZ/Nevada-SW	eduardop@sw-ind.com	480-458-5838	480-458-5843
	Spec Management Group	HI	msmarch4@cox.net	949-481-4225	949-487-0990
NORTHEAST REGION	Conroy & Griese Sales, Inc.	NY-East/NJ-North	iezzis2@aol.com	856-663-4440	856-663-6644
	Keith Engle & Associates	OEM accounts	keith.engele@verizon.net	610-827-9560	610-827-9561
	Layden Company	NY-Upstate/PA-East/DE/NJ-South	joejr@laydencompany.com	610-363-6657	877-529-3361
	Urell, Inc.	MA/New England States	conbraco@urell.com	617-923-9500	617-926-9414
IRRIGATION ONLY REPS	Active Sales Northwest, Inc.	OR, WA, Western ID	skactive@aol.com	541-726-0320	541-726-1148
	Biz Sales Company	OH, KY, MI, IN, parts of PA, WV, WI	dzavelson@bizpvf.com	216-595-2888	216-595-2899
	Fourmation Sales	MN/ND/SD/WI-West	dean@fourmationsales.com	763-262-4700	763-262-4740
	Hall Marketing	AL, LA	hallmarketing@bellsouth.net	228-547-4637	228-832-6666
	J&J Midwest Sales	NE, IA, MO, KS	john@jandjmidwestsales.com	314-422-8419	
	Jim Benton & Associates	AL, FL Panhandle	jim@bentonandassoc.com	205-664-1221	205-664-1277
	John Hart	FL	jhart@lascofittings.com	772-595-7773	772-489-4305
	Larry Perkins	TX - Southern	lperkins@lascofittings.com	936-443-1096	
	Marel Enterprises	New England, NY, DE, MD, VA, DC, parts of PA & WV	marelenterprise@gmail.com	631-271-1718	631-427-8558
	Marshall-Rodeno Associated	CO/WY/MT/ID-SE/UT/NV-NE	trodeno@marshallrodeno.com	303-575-6701	303-575-6706
	NSC Marketing Group Inc.	OK	nsc_tulsa@sbcglobal.net	918-627-5340	918-664-1408
	Pro Marketing, Inc.	NC/SC/TN-East	sales@promarketinginc.net	864-578-4334	864-578-4889
	Sherman Dobbs	TX - Northern	sdobbs@lascofittings.com	469-442-8510	972-417-9733
	Southern Marketing Group	MS/TN-West/AR/Bowie Cty.-TX	SMG49@bellsouth.net	901-547-0042	901-547-0035
	Spec Management Group	CA-South	msmarch4@cox.net	949-481-4225	949-487-0990
	VPC Sales	AZ	chudson@vpcsales.com	661-257-3923	661-257-3928
CANADA	Barclay Sales Ltd.	British Columbia	bbarclay@barclaysales.com	604-945-1010	604-945-3030
	Conbraco Industries, Canada	178 Pennsylvania Ave., Unit 1, Concord, Ontario L4K 4B1	conbraco.canada@conbraco.com	905-761-6161	905-761-6666
	D & M Mechanical Sales	Ontario/East	don@dandmsales.ca	613-384-7084	613-384-3407
	Dynamic Agencies, Ltd.	Saskatchewan	doug.dynamicage@sasktel.net	306-343-1901	306-343-1901
	J. Levandier Sales, Inc.	Nova Scotia, New Brunswick, Prince Edward Island & Newfoundland	service@jlevandiersales	506-858-1615	506-858-1084
	Kern Industries, Ltd.	Alberta-North	kernind@telusplanet.net	780-451-2056	780-454-6687
	Kern Industries Calgary, Ltd.	Alberta-South	marty.yucytus@kernindustries.ca	403-730-7791	403-239-8179
	Key to the North Sales Agency, Inc.	Ontario-North	hmehes@keytothenorth.ca	705-524-6714	705-566-0148
	Task Controls, Inc.	Ontario	infotoronto@taskcontrols.com	416-291-3004	416-754-3481
	Tom Beggs Agencies Ltd.	Manitoba/NW Ontario	tba@mts.net	204-953-1900	204-774-6915
	Ventes Techniques Nimatec	Quebec	nimatec@nimatec.com	450-691-9427	450-691-4949