

# SAFETY & RELIEF VALVES



**PRESSURE RELIEF VALVES  
AND ACCESSORIES FOR:**

**RESIDENTIAL  
COMMERCIAL  
INDUSTRIAL  
OEM APPLICATIONS**

**"Apollo" Valves**

manufactured in the USA  
by CONBRICO Industries



# Table of Contents

## PRODUCTS

Valve Selection Guide .....	4
10 Series. ....	5-6
10-322 / 10-512 Series .....	7-8
10-600 Series .....	9-11
12-200 Series. ....	12, 15
13 Series .....	13, 15
14-200 Series. ....	14, 15
14-400, 14-500, 14-600 .....	16-19
15 Series. ....	20-21
16 Series. ....	22-23
17-400 Series. ....	24
18C-400 & 18C-402X Series .....	25
18C-500 Series .....	26
19 Series. ....	27-31
29 Series. ....	32-36
119 Series. ....	37-41
Drip Pan Elbows .....	42
500 Series. ....	43-48
Equivalents and Conversion Factors .....	49
Correction Factors .....	50

To find out more about Conbraco products and services, or to contact the nearest factory representative or ASME safety valve setting station:

**Conbraco Customer Service Department**

PO Box 247  
Matthews, N.C. 28106

Phone: 704.841.6000  
Fax: 704.841.6020

By e-mail : [conbraco@conbraco.com](mailto:conbraco@conbraco.com)  
Website: [www.apollovalves.com](http://www.apollovalves.com)

# About Conbraco



## American-made, over 80 years strong

American Lubricator and Brass Co. and Sterling & Skinner Manufacturing Co., two established Detroit-based manufacturers of brass valves and fittings, merged in 1928. They adopted a new name, Consolidated Brass Company, and Conbraco Industries was born. Now more than 80 years later, from its headquarters near Charlotte, N.C., Conbraco operates more than one million square feet of ISO 9001:2000 certified manufacturing and warehousing space at four Carolinas facilities.

Reflecting its commitment to vertically integrated manufacturing, design innovation and customer support, Conbraco has invested more than \$100 million in technology-based processes during the past decade. Innovations include an advanced bronze foundry and one of the industry's most sophisticated investment casting facilities for steel and exotic alloys.

## 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 and industrial 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 900 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, 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.

## 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.



## Pressure Relief Valve Selection Chart

Model	Material Body / Trim	Inlet Sizes		Connections		CE/PED Available	Set Pressures		Temperature	
		Min / Max, in.	Min / Max, mm.	NPT	Flanged		Min / Max, PSIG	Min / Max, barg	Max, °F	Max, °C
<b>ASME Section I - Steam Power Boilers</b>										
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
<b>ASME Section IV - Low Pressure Steam Heating Boilers</b>										
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
<b>ASME Section IV - Hot Water Heating &amp; Supply Boilers</b>										
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
<b>ASME Section VIII Air / Gases</b>										
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
<b>ASME Section VIII Steam</b>										
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
<b>ASME Section VIII Liquid</b>										
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
<b>Non-Code, Vacuum &amp; Miscellaneous Products</b>										
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			0 - 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



Section IV  
Heating Boilers

## 10 Series Hot Water Boiler Safety Relief Valves

### 10 Series



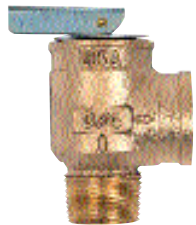
10-102  
10-303



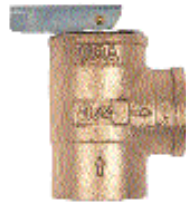
10-104  
10-301



10-321



10-407 & 10-417



10-408  
10-418



10-624  
10-634 OEM

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"  
Set Pressure 20-150 psi  
Maximum temperature service: 250°F

**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	3/4F 20 F	1F 25 F	20-60	3.94 100	105 47.7
10-104	3/4 M 20 M	1 F 25 F	20-60	3.75 95	109 49.5
10-301	3/4 M 20 M	3/4 F 20 F	20-60	3.75 95	114 51.8
10-303	3/4 F 20 F	3/4 F 20 F	20-60	3.94 100	115 52.3
10-321	3/4 M 20 M	3/4 F 20 F	20-60	3.75 95	123 55.9
10-407	3/4 M 20 M	3/4 F 20 F	30	3 76	62 28.2
10-408	3/4 F 20 F	3/4 F 20 F	30	2.75 70	65 29.5
10-417	3/4 M 20 M	3/4 F 20 F	20-80	3 76	62 28.1
10-418	3/4 F 20 F	3/4 F 20 F	20-80	2.75 70	65 29.5
10-624	3/4 M 20 M	3/4 F 20 F	30-150	4.62 117	106 48.2
10-634	3/4 F 20 F	3/4 F 20 F	30-150	4.62 117	106 48.2

10 Series

Hot Water Boiler Safety Relief Valves



ASME Section IV Hot Water  
BRITISH THERMAL UNITS PER HOUR (KILOCALORIES PER HOUR) AT 10%  
OVERPRESSURE. NATIONAL BOARD CERTIFIED. RATINGS ARE 90% OF ACTUAL.



U.S. 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							Set Pressure						
psig							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.



Section VIII  
Pressure Vessels

## 10-322 and 10-512 Series OEM Style Steam Safety Relief Valves

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"  
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



10-512



10-322

### 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			
10-512	1/2 M	1/2 F	15-60	2.62	58
	15	15			

10-X	-	X	-	XX	-	X
Model and Size (in.)	Finish	Set Pressure	Options			
512 - 1/2 x 1/2	B - Plain Brass	Set Pressure in PSIG	B - BSPP onnections			
322 - 3/4 x 3/4	S - Satin Chrome	(2 Digits)	CE - PED/CE			
	P - Polished Chrome		S - Stainless Steel trim			
			V - Viton® Seat			
			X - Blank Outlet not threaded			

### P/N Suffix Key

Set Pressure	*Certified Capacities	
	10.322 lbs./hr.	10.512 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

### EXAMPLE:

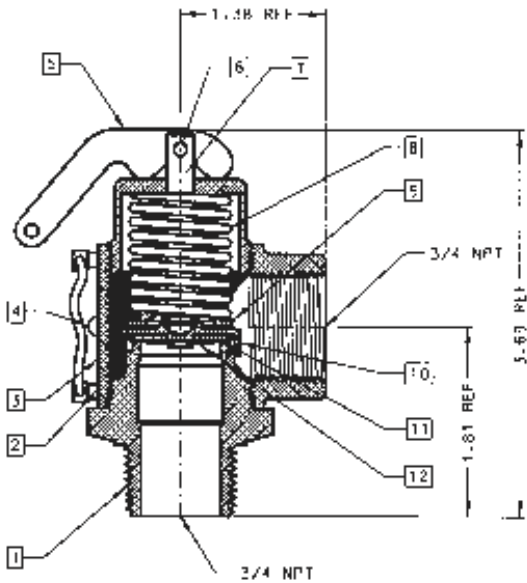
10-322-P-20 = 3/4" 10-322 set @ 20 psig, polished chrome finish.

### NOTE:

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

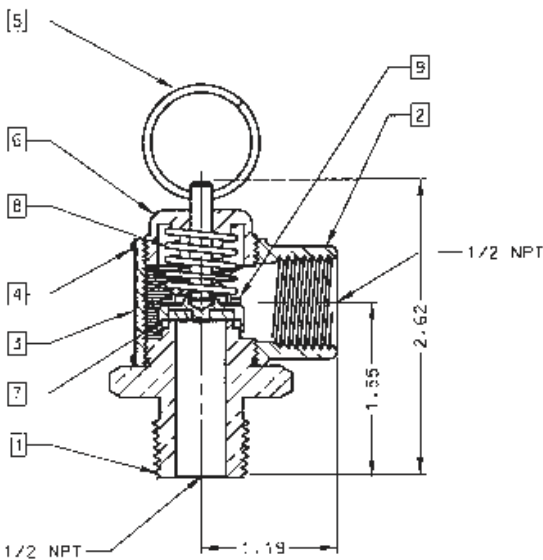
\* ASME (UV) Rating – 90% of actual capacity at 10% accumulation. Capacity in lbs. of saturated steam per hour.

## 10-322 and 10-512 Series OEM Style Steam Safety Relief Valves



### 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	SPR. WASHER	BRASS ASTM B-16
10	DISC	BRASS ASTM B-16
11	SEAT	TEFLON FACED EPDM
12	WASHER	BRASS ASTM B-16



### 10-512 Materials

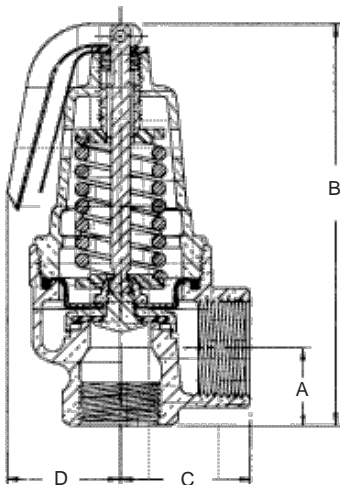
Item	Component	Material
1	NOZZLE	BRASS ASTM B-16
2	BODY	BRASS ASTM B-16
3	NAMEPLATE	ALUMINUM
4	DRIVE SCREW	STEEL, ZINC PLATED
5	PULL RING	STEEL, ZINC PLATED
6	CAP	BRASS ASTM B-16
7	DISC ASSEMBLY	BRASS, SILICONE
8	SPRING	STAINLESS STEEL
9	SPR. WASHER	BRASS ASTM B-16

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





Section IV  
Heating Boilers



**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

## 10-600 Series High Capacity Safety Relief Valves for Hot Water Heating Boilers

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"  
Pressures from 15-160 psig  
Maximum temperature service 250°F

**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

**ORDERING CODE:**

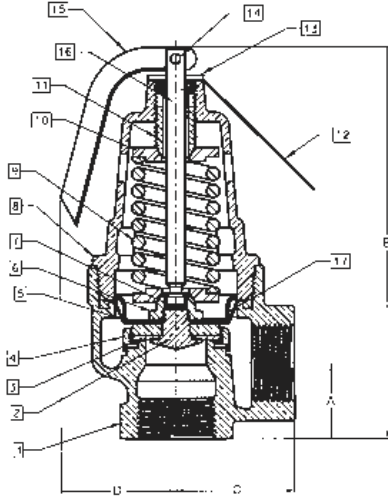
Use two-digit suffix number to indicate Inlet x Outlet size and set pressure.

**EXAMPLE:**

10-615-12 = 1"x 1-1/4" 10-610 set 60 psig  
10-608-05 = 2"x 2" 10-600 set 30 psig

# 10-600 Series

## ASME Section IV High Capacity Safety Relief Valves for Hot Water Heating Boilers



### 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

## 10-600 Series

### ASME Section IV Hot Water



**BRITISH THERMAL UNITS PER HOUR (KILOCALORIES PER HOUR) AT 10% OVER-PRESSURE. NATIONAL BOARD CERTIFIED. RATINGS ARE 90% OF ACTUAL.**



U.S. Customary Units Btu/hr.						Metric Units Kcal/hr.					
Model	10-604	10-605	10-606	10-607	10-608	Model	10-604	10-605	10-606	10-607	10-608
Number	3/4x3/4	1x1	1-1/4x1-1/4	1-1/2x1-1/2	2x2	Number	3/4x3/4	1x1	1-1/4x1-1/4	1-1/2x1-1/2	2x2
Set Pressure						Set Pressure					
psig						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	18,966,000	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

# 10-610 Series

## ASME Section IV High Capacity Safety Relief Valves for Hot Water Heating Boilers



**ASME Section IV Hot Water**  
BRITISH THERMAL UNITS PER HOUR (KILOCALORIES PER HOUR) AT 10% OVER-PRESSURE. NATIONAL BOARD CERTIFIED. RATINGS ARE 90% OF ACTUAL.

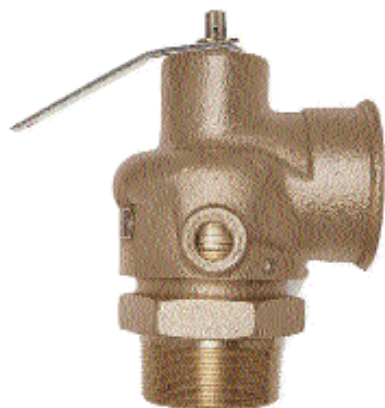


U.S. Customary Units Btu/hr.						Metric Units Kcal/hr.					
Model Number	10-614 3/4x1	10-615 1x1-1/4	10-616 1-1/4x1-1/2	10-617 1-1/2x2	10-618 2x2-1/2	Model Number	10-614 3/4x1	10-615 1x1-1/4	10-616 1-1/4x1-1/2	10-617 1-1/2x2	10-618 2x2-1/2
Set Pressure						Set Pressure					
psig						barg					
15	635,000	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



Section IV  
Heating Boilers

## 12-200 Series Low Pressure Steam Heating Boiler Safety Valves



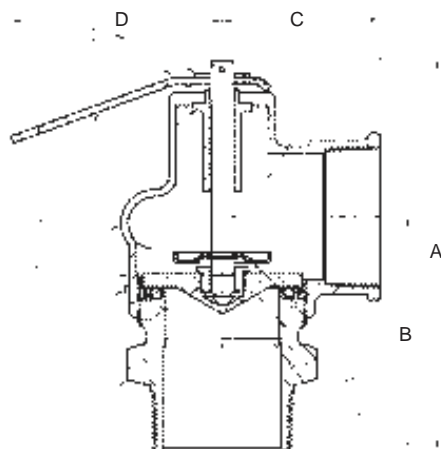
Medium capacity safety valves protect ASME Section IV low pressure steam heating boilers. Cast bronze, full nozzle design features PTFE faced elastomer soft seating for dependable operation.

ASME Section IV  
Sizes 2, 2-1/2" and 3"  
Set pressures 5-15 psig

**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./100 (lbs./kg.)	Dimensions (in./mm.)			
	Inlet NPT	Outlet NPT		A	B	C	D
12-205	2M	2F	514	6.00	3.75	2.62	4.00
	50	50	233.6	152	95	67	102
12-206	2-1/2M	2-1/2F	835	8.50	5.25	3.06	4.00
	65	65	379.5	216	133	78	102
12-208	3M	3F	1162	9.50	6.00	3.75	4.00
	80	80	528.2	241	152	95	102

NOTE: See Capacities page 15

### 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

### P/N Suffix Key

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

### ORDERING CODE:

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

### EXAMPLE:

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



Section IV  
Heating Boilers

## 13 Series ASME Section IV Low Pressure Steam Heating Boiler Safety Valves

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"  
Set pressure 5 to 15 psi

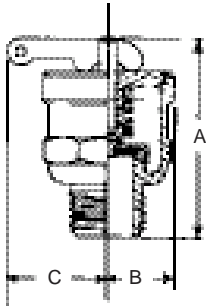
**Applications:** Low pressure steam heating and supply boilers.

### Features

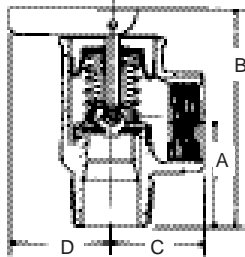
- Flat seat, PTFE faced disc for positive seal
- Standard set pressure of 15 psig
- Positive drainage of condensate from seat area
- No. 13-101 is top outlet discharge
- Registered in all Canadian provinces and territories, CRN #0G8547.5C
- ASME and National Board certified at 15 psig

### Options

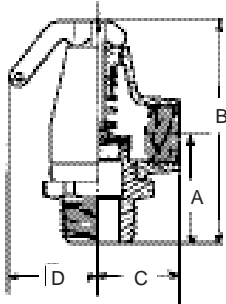
- Satin or polished chrome finishes



13-101



13-511



13-200

### 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

### P/N Suffix Key

13- **XXX** - **X** - **XX** - **X**

101=3/4"M x Top  
211 = 3/4"M x 3/4"F  
202 = 1"M x 1"F  
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

B - Plain Brass  
S - Satin Chrome\*  
P - Polished Chrome\*

Set Pressure in PSIG  
(2 digits)

A - Air Service  
(Non-ASME)

### Example:

13-511-B15 = 3/4" 13-511 set at 15 psig

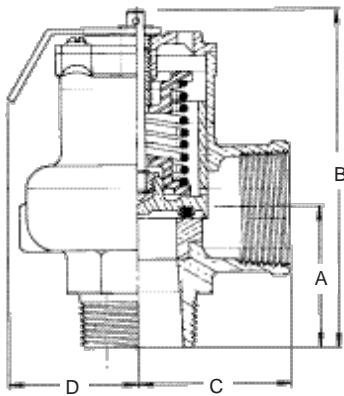
\* Available on select models only



Section IV  
Heating Boilers

## 14-200 Series Low Pressure Steam Boiler Safety Valves

ASME Section IV  
Set pressures from 5 to 15 psig.  
Sizes 2", 2-1/2" and 3".



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

NOTE: See Capacities page 15

### P/N Suffix Key

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

### 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.

### ORDERING CODE:

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

### EXAMPLE:

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

## 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.



U.S. Customary Units lbs./hr.						
Model No.	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
Set Pressure						
psig						
5*	1,439	2,043	2,855	333	374	290
10*	1,969	2,786	3,478	372	509	383
15	2,500	3,529	4,100	410	643	475
Model No.	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*	699	1,106	213	1,815	2,695	3,944
10*	950	1,503	310	2,483	3,686	5,394
15	1,200	1,900	407	3,150	4,676	6,843

Metric Units kg./hr.						
Model No.	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
Set Pressure						
barg						
0.34	653	927	1,295	151	170	131
0.69	893	1,264	1,577	169	231	174
1.03	1,134	1,601	1,860	186	292	215
Model No.	13-213 1-1/4 x 1-1/2	13-214 1-1/2 x 2	13-511 13-512 3/4 - 3/4	14-205 2 x 2	14-206 2-1/2 x 2-1/2	14-207 3 x 3
Set Pressure						
barg						
0.34	317	502	97	823	1,222	1,789
0.69	431	682	141	1,126	1,672	2,447
1.03	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.

## 14-400 and 14-500 Series Low Pressure Air Relief Valves

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"  
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:

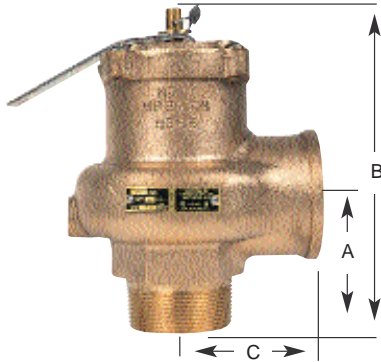
- Model 14-400 with test lever
- Model 14-500 with plain cap, weather resistant sealed body

### Air Relief Capacity

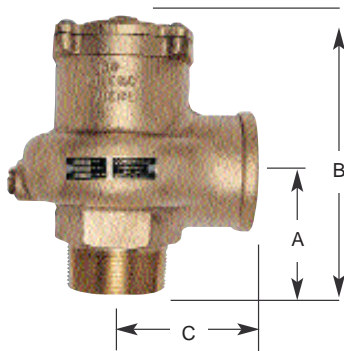
See page 19

### 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	4	05	12
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

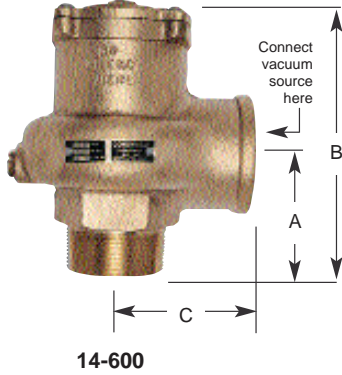
14-505-08  
2" air relief valve set at 8 psig, with sealed cap



## 14-600 Series Vacuum Relief Valves

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

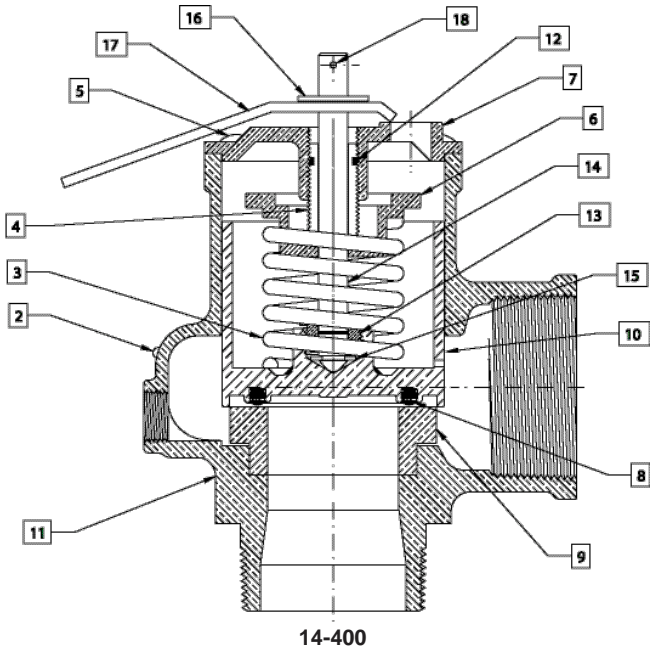
### Model Numbering System 14-600 Series Vacuum Relief Valves

14	6	05	V12
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)

### EXAMPLES:

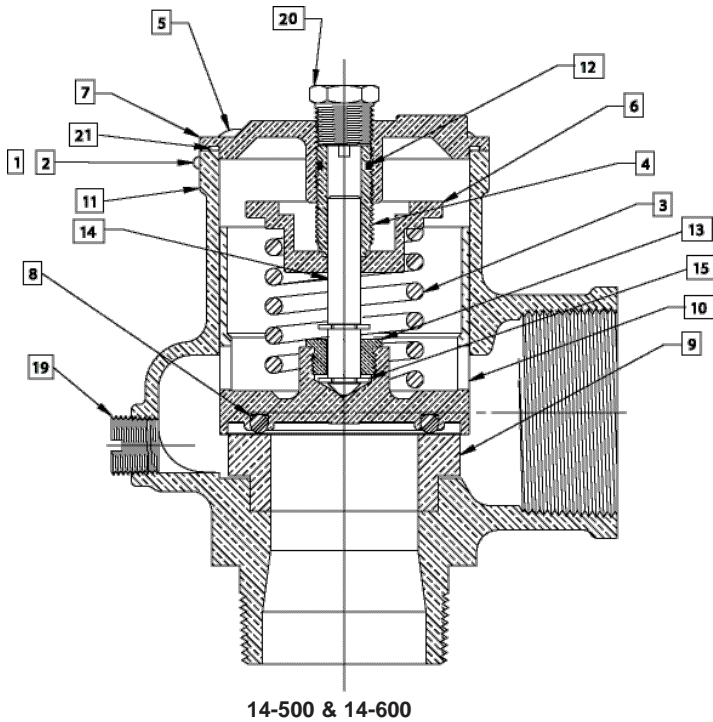
14-607-V14  
3" Vacuum relief valve set at 14 Hg"

## 14-400,14-500 and 14-600 Series Low Pressure Air and Vacuum Relief Valves



### 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



**MODEL 14-400 and 14-500 Air Relief Valves**  
**NON-CODE AIR RELIEF CAPACITIES**  
**STANDARD CUBIC FEET PER MINUTE (NORMALIZED CUBIC METERS PER HOUR)**  
**OF AIR AT 10% OVERPRESSURE**

Ordering Suffix	U.S. Customary Units SCFM Air				Metric Units Nm <sup>3</sup> /hr. Air			
	Model No.	14-405	14-406	14-407	Model No.	14-405	14-406	14-407
	Size, (in.)	14-505	14-506	14-507	Size, (mm.)	14-505	14-506	14-507
	Area (in. <sup>2</sup> )	2 x 2	2 1/2 x 2 1/2	3 x 3	Area (cm. <sup>2</sup> )	50 x 50	65 x 65	80 x 80
		2.238	3.339	5.155		14.438	21.544	33.259
	<b>PSIG</b>				<b>barg</b>			
-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

**Model 14-600 Vacuum Air Relief Capacity**  
**STANDARD CUBIC FEET PER MINUTE (NORMALIZED CUBIC METERS PER HOUR)**  
**OF AIR AT 10% OVERPRESSURE**

Ordering Suffix	U.S. Customary Units SCFM Air				Metric Units Nm <sup>3</sup> /hr. Air			
	Model No.	14-605	14-606	14-607	Model No.	14-605	14-606	14-607
	Size, (in.)	2 x 2	2 1/2 x 2 1/2	3 x 3	Size, (in.)	50 x 50	65 x 65	80 x 80
	Area (in. <sup>2</sup> )	2.238	3.339	5.155	Area (cm. <sup>2</sup> )	14.438	21.544	33.259
	<b>Relief Setting (in. Hg)</b>				<b>Relief Setting (mm. Hg)</b>			
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	1479	2132
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



## 15 Series Air Relief Valves

Section VIII  
Pressure Vessels

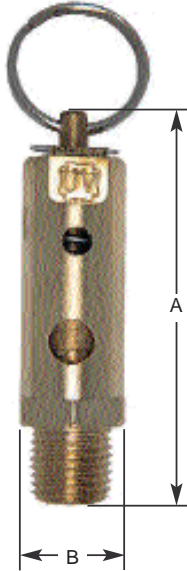
Rugged design 15 Series air relief valves provide dependable overpressure protection at an economical price. Top guided design features brass construction and resilient seating for superior performance. Widely used by OEM's and for aftermarket replacement.

ASME Section VIII  
Sizes 1/4" to 1"  
Set pressures from 15 to 250 psi  
Maximum Temp. 325°F

**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.

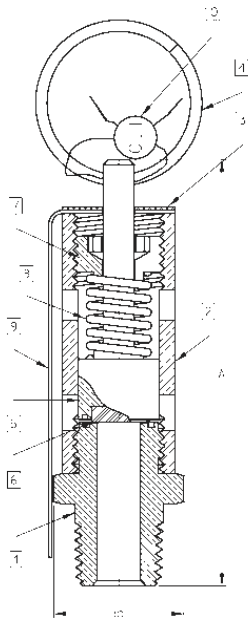
### Features

- 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



15-XXX	-	X	-	XXX	-	XX
Model and Size (in.)		Finish		Set Pressure		Options
112 = 1/4 NPT		B - Plain Brass		Set Pressure in PSIG		CE - PED/CE
115 = 3/8 NPT						Q - Performance (Calibration) Test Reports
117 = 1/2 NPT						
118 = 3/4 NPT						
119 = 1 NPT						

### EXAMPLE:

15 117 B 165 = 15 Series set @ 165 psig.

### Materials

Item	Component	Material
1	NOZZLE	ASTM B-16 BRASS
2	BODY	ASTM B-16 BRASS
3	NAMEPLATE	ALUMINUM
4	PULL RING	PLTD. 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

## 15 Series Air Relief Valves



**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.**

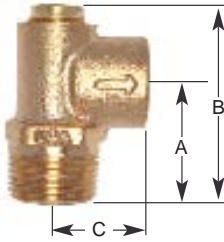


U.S. Customary Units SCFM Air					Metric Units Nm <sup>3</sup> /hr.				
Model No.	15-112	15-115 & 117	15-118	15-119	Model No.	15-112	15-115 & 117	15-118	15-119
Size (in.)	1/4	3/8 & 1/2	3/4	1	Size (in.)	1/4	3/8 & 1/2	3/4	1
Set Pressure					Set Pressure				
psig					barg				
15	24	60	107	222	1.03	39	96	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

# 16 Series

## 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

### Model 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

**NEW!** • Model 16LF **LEAD FREE\*** Option

### Dimensions and Weights

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

### P/N Suffix Key, Models 16-200

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

**\*LEAD FREE:** The wetted surfaces of this product shall contain no more than 0.25% lead by weighted average. Complies with CA AB 1953 and VT S.152 Contact factory for details.

#### ORDERING CODE:

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

#### 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.

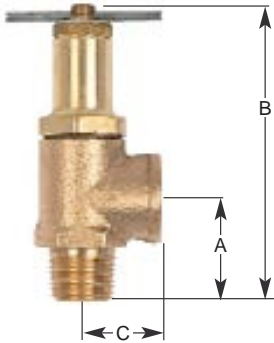
## 16-501, 16-503, 16-504 General Purpose Pressure Relief Valves

### Model 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



16-501

### Dimensions and Weights

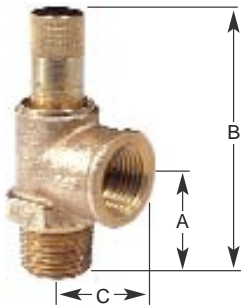
Model Number	Inlet Size (in./mm.)	Relief Range	Seat Material	Dimensions (in./mm.)			Wt./100 (lbs./kg.)
				A	B	C	
16-501-01		50 - 250	Nitrile	1.29	4.12	1.00	62
16-501-02	1/2 M X 1/2 F	250 - 600					
16-501-25	15 M x 15 F	50 - 250	PTFE	33	105	25	28
16-501-60		250 - 600					

### Models 16-503 and 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



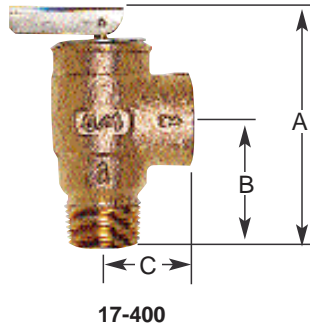
16-503  
16-504

### 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				



## 17-400 Series Pressure Only Hot Water Relief Valves



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 (lbs./kg.)	Inlet Size (in./mm.)	CSA Capacity Rating	ASME Capacity Rating	Dimensions(in./mm.)			Wt./100
				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

### P/N Suffix Key, Models 17-400

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	-

### ORDERING CODE:

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

### EXAMPLE:

17-401-03 = 1/2" model 17 set @ 125 psig.  
 17-402-04 = 3/4" model 17 set @ 150 psig.

### NOTE:

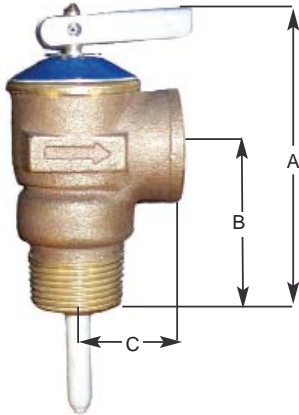
- Valves may be set for any pressure between 70 and 175 psi. Consult factory for pressure settings not shown.
- ASME Section IV certified model 17-402 only, pressure settings 75 to 150 psig.





Section IV  
Heating Boilers

## 18C-400 Series & 18C-402X Water Heater T&P Relief Valves



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.

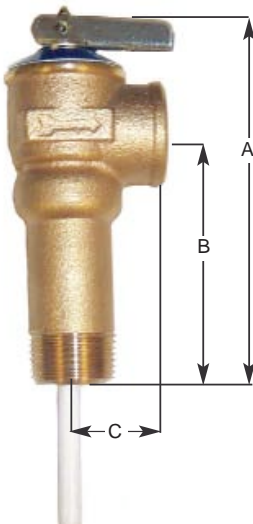
### Options:

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

18C-400

### Dimensions and Weights

Model Number	Size (in./mm.)	Element Length (in./mm.)	CSA Capacity rating Btu/HR	A	B	C	Wt. / 100 (lbs. / kg.)
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"					
18C-402	3/4 M x 3/4 F	1.44, 3 & 8"	95,000	3.25	1.75	1.13	64
	20 M x 20 F	37, 76 & 200"					
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					



18C-402X  
Extended Shank

### P/N Suffix Key, Models 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.)	
	3	
125		-39
150		-38

### P/N Suffix Key, Models 18C-402

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

### EXAMPLE:

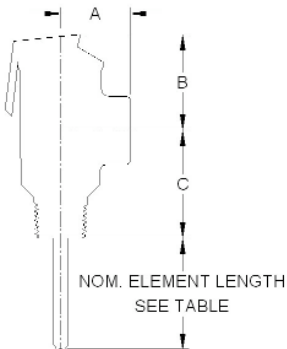
18C-402X-38 = 3/4" model 18C-402X  
set 150 psig with 3" element

### EXAMPLE:

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



Section IV  
Heating Boilers



## 18C Series Bronze High Capacity Commercial T&P Valves

### HIGH CAPACITY COMMERCIAL T&P VALVES

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-0G1438.6C

Part No.	Size	Element Length	Inlet Type	CSA Cap. 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

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

All dimensions in inches (mm)

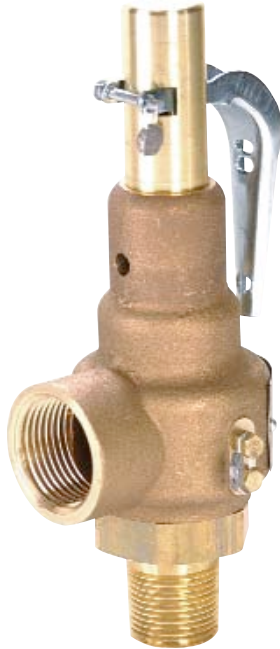


Section I  
Power Boilers



Section VIII  
Pressure Vessels

## 19 Series Bronze Safety Valves For Steam, Air and Gas Service



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"  
Set pressures 5 to 300 psig  
Maximum temperature is 406°F, 422°F for model 19S

### 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.

### 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

### 19 Series Model Numbering System

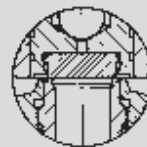
19M	D	C	K	165	A
Base Model Number	Orifice Letter	Inlet Size (in.) NPT	ASME Code and Service	Set Pressure In psi	Special Options
19K Brass Trim/Teflon Seat	D	C-1/2	A- Sect. I Steam		A – Anti-vibration trim
19M Brass Trim/Metal Seat	E	D-3/4	K- Sect. VIII Air		CE – CE/PED Compliant
19L Stainless Trim/Teflon 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			

### 4 Trim Styles to Choose From

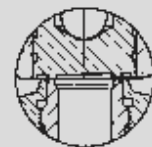
Series	19K	19M	19L	19S
Trim	Brass	Brass	SS	SS
Seat	Teflon®	Metal to Metal	Teflon®	Metal to Metal
Max. Set - Steam	250	250	250	300
Max. Set - Air/Gas	300	300	300	300
Max. Temperature	406°F	406°F	406°F	422°F

©Teflon is a registered trademark of DuPont.

### Seat Detail

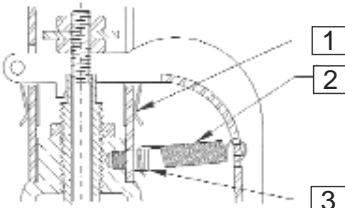
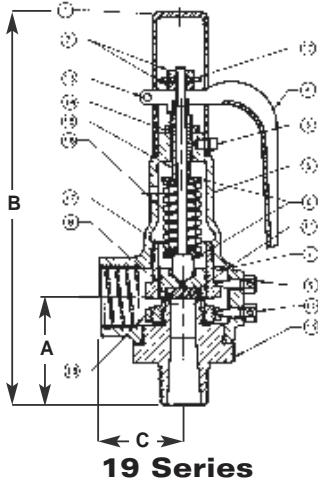


Soft Seat Design  
Model 19K - Brass  
Model 19L - Stainless



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

# 19 Series Bronze Safety Valves



## 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	SS
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	SS	SS
17	STEM	SS	SS
18	NOZZLE RING	BRASS	BRASS
19	NOZZLE	BRASS	SS
-	NAMEPLATE	SS	SS
-	SEAL AND WIRE	LEAD/SS*	LEAD/SS*

\* Alum/SS on CE models

## 19 Series with option "A" Anti-vibration trim

Number	Component	Material
1	FRICITION CLIP (4)	STEEL PLATED
2	EXTENSION SPRING	STAINLESS STEEL
3	CAP LOCK SCREW	STAINLESS STEEL

Note: Preparation includes threadlocking of all internal threaded connections.

## Selection/Dimensions and Weights

Old Part Number	New Model Number	Orifice Letter	Size (in./mm.)		Dimensions (in./mm.)			Weight Each (lbs./kg.)
			Inlet x Outlet		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'	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.

# 19 Series Bronze Safety Valves

## ASME Section I - Steam

**POUNDS PER HOUR (KILOGRAMS PER HOUR) SATURATED STEAM @ 3%  
OVERPRESSURE. NATIONAL BOARD CERTIFIED. RATINGS ARE 90% OF ACTUAL.**



U.S. Customary Units lbs./hr.							Metric Units kg./hr.						
Orifice Letter	D	E	F	G	H	J	Orifice Letter	D	E	F	G	H	J
Area in. <sup>2</sup>	0.129	0.230	0.359	0.589	0.919	1.509	Area Cm. <sup>2</sup>	0.835	1.483	2.315	3.800	5.932	9.733
Set Pressure							Set Pressure						
psig							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.						
250	1,494	2,664	4,158	6,822	10,644	17,477	0.1 barg						
255	1,522	2,714	4,237	6,951	10,845	17,808	increments	3.7	6.6	10.3	17.0	26.5	43.5
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.

# 19 Series Bronze Safety Valves

## ASME Section VIII - Steam

**POUNDS PER HOUR (KILOGRAMS PER HOUR) SATURATED STEAM AT 10% OVER-PRESSURE. NATIONAL BOARD CERTIFIED. RATINGS ARE 90% OF ACTUAL.**



U.S. Customary Units lbs./hr.							Metric Units kg./hr.						
Orifice Letter	D	E	F	G	H	J	Orifice Letter	D	E	F	G	H	J
Area in. <sup>2</sup>	0.129	0.230	0.359	0.589	0.919	1.509	Area Cm. <sup>2</sup>	0.835	1.483	2.315	3.800	5.932	9.733
Set Pressure							Set Pressure						
psig							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.						
210	1,349	2,405	3,753	6,158	9,608	15,776	0.1 barg						
220	1,409	2,512	3,921	6,433	10,038	16,482	increments	4.0	7.1	11.5	18.1	28.3	46.4
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.

# 19 Series Bronze Safety Valves

## 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.**



U.S. Customary Units SCFM							Metric Units Nm <sup>3</sup> /hr.						
Orifice Letter	D	E	F	G	H	J	Orifice Letter	D	E	F	G	H	J
Area in. <sup>2</sup>	0.129	0.230	0.359	0.589	0.919	1.509	Area Cm. <sup>2</sup>	0.835	1.483	2.315	3.800	5.932	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.



Section I  
Power Boilers

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



Section VIII  
Pressure Vessels



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  
Set pressures 30 to 200 psig  
Maximum temperature 406° F

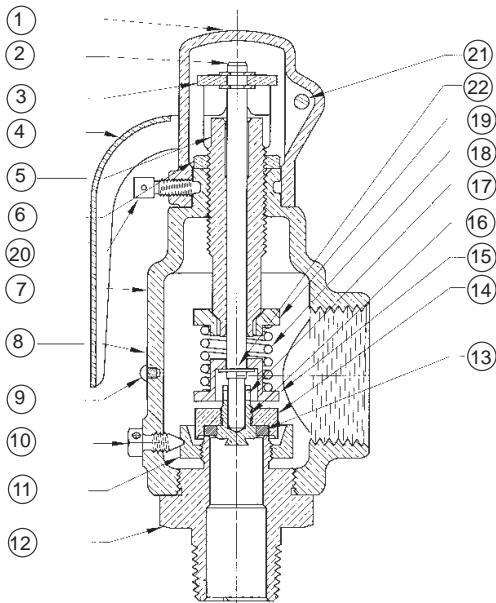
**Applications:** Small to medium sized steam power boilers, sterilizers and distillers, air compressors and receivers, pressure vessels and pressure piping systems.

### Features

- Stainless steel springs are standard
- PFA Teflon® seat resists corrosive boiler chemicals
- Pressure settings from 30 to 200 psig
- 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



### Materials

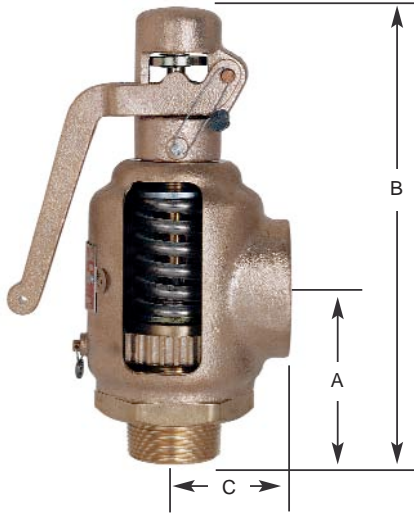
Item	Component	Material
1	CAP	BRONZE OR BRASS
2	STEM	STEEL - PLATED
3	LIFT WASHER	STEEL - PLATED
4	LIFT LEVER	STEEL - PLATED
5	ADJUSTING SCREW	BRASS
6	LOCK NUT	BRASS
7	BODY	BRONZE
8	NAMEPLATE	STAINLESS STEEL
9	DRIVE SCREWS	STAINLESS STEEL
10	SET SCREW	BRASS
11	BLOWDOWN RING	BRASS
12	NOZZLE*	BRASS/STAINLESS
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.



## 29 Series Bronze Safety Valves



### 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

<b>29</b>	<b>202</b>	<b>A</b>	<b>100</b>	<b>S</b>
<b>Base Model Number</b>	<b>Inlet x Outlet NPT</b>	<b>Service</b>	<b>Set Pressure</b>	<b>Options</b>
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

#### EXAMPLE:

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

## 29 Series Bronze Safety Valves



**ASME Section I - Steam**  
**POUNDS PER HOUR (KILOGRAMS PER HOUR) SATURATED STEAM AT 3%  
OVERPRESSURE. NATIONAL BOARD CERTIFIED. RATINGS ARE 90% OF ACTUAL.**



U.S. Customary Units lbs./hr.			Metric Units kg./hr.		
Model No.	29-102, 29-202, 29-302	29-303, 29-402, 29-501	Model No.	29-102, 29-202, 29-302	29-303, 29-402, 29-501
Seat Dia. (in.)	0.500	0.737	Seat Dia. (mm.)	12.70	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.		
160	645	1,298	0.1 barg		
165	664	1,335	increments	2.44	4.9
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			

## 29 Series Bronze Safety Valves



**ASME Section VIII Steam**  
**POUNDS PER HOUR (KILOGRAMS PER HOUR) SATURATED STEAM AT 10%  
OVERPRESSURE. NATIONAL BOARD CERTIFIED. RATINGS ARE 90% OF ACTUAL.**



<b>U.S. Customary Units lbs./hr.</b>			<b>Metric Units kg./hr.</b>		
Model No.	29-102, 29-202, 29-302	29-303, 29-402, 29-501	Model No.	29-102, 29-202, 29-302	29-303, 29-402, 29-501
Seat Dia. (in.)	0.500	0.737	Seat Dia. (mm.)	12.70	18.72
Set Pressure			Set Pressure		
psig			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.		
160	686	1,381	0.1 barg		
165	706	1,420	increments	2.6	5.22
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			

## 29 Series Bronze Safety Valves



**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.



U.S. Customary Units SCFM			Metric Units Nm <sup>3</sup> ./hr.		
Model No.	29-102, 29-202, 29-302	29-303, 29-402, 29-501	Model No.	29-102, 29-202, 29-302	29-303, 29-402, 29-501
Seat Dia. (in.)	0.500	0.737	Seat Dia. (mm.)	12.70	18.72
Set Pressure			Set Pressure		
psig			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.		
160	243	491	0.1 barg		
165	250	505	increments	3.46	6.96
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			



Section I  
Power Boilers



Section VIII  
Pressure Vessels

## 119 Series Cast Iron Flanged Safety Valves



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

## 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 - Section I Steam K - Section VIII Air L - Section 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

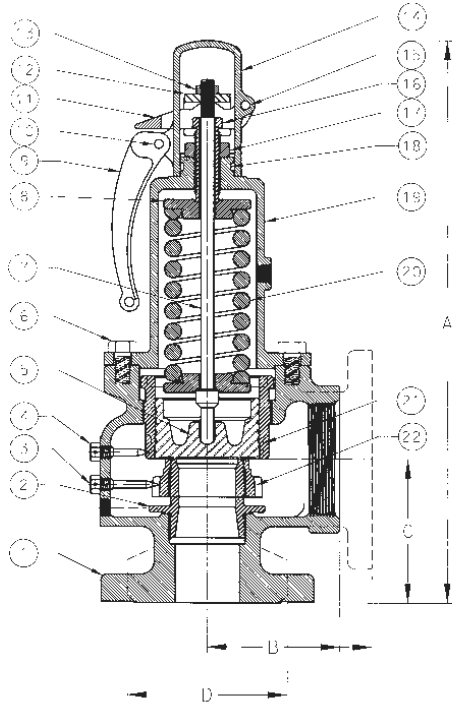
- 1 Determine the orifice letter that corresponds to your required flow rate from the capacity charts on pages 39-41.
- 2 Select the inlet x outlet connection options from the list of models available for that orifice from page 38.
- 3 Enter this base model number into the matrix above. Complete by specifying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

# 119 Series Cast Iron Flanged Safety Valves



## 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 BRONZE
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

## Selection/Dimensions and Weights

Model Number*	Valve 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	3.75	35
			381	101	109		15.8
119 KHC	2 250# X 3 FNPT DN50 x DN80	K	16	4	4.63	95	36
			406	101	109		16.3
119 KHA	2 FNPT X 3 FNPT DN50 x DN80	K	16	4	4.63	95	37
			406	101	109		16.7
119 KJC	2-1/2 250# X 3 FNPT DN65 x DN80	K	16	4	4.63	136	41
			406	101	109		18.6
119 KKC	3 250# X 3 FNPT DN80 x DN80	K	16	4	4.63	136	45
			406	101	109		20.5
119 LJC	2-1/2 250# X 4 FNPT DN65 x DN100	L	22	5.13	5.63	136	84
			558	130	143		38.1
119 LJA	2-1/2 FNPT X 4 FNPT DN65 x DN100	L	22	5.13	5.63	136	81
			558	130	143		36.7
119 LKC	3 250# X 4 FNPT DN80 x DN100	L	22	5.13	5.63	136	85
			558	130	143		38.5
119 LMC	4 250# X 4 FNPT DN100 x DN100	L	22	5.13	5.63	136	90
			558	130	143		40.9
119 MKA	3 FNPT X 4 FNPT DN80 x DN100	M	22	5.13	5.63	136	80
			558	130	143		36.2
119 MKC	3 250# X 4 FNPT DN80 x DN100	M	22	5.13	5.63	136	87
			558	130	143		39.4
119 MMC	4 250# X 4 FNPT DN100 x DN100	M	22	5.13	5.63	136	95
			558	130	143		43.2
119 NMD	4 250# X 6 125# DN100 x DN150	N	28	7.25	6.75	136	210
			711	184	171		95.2
119 PMD	4 250# X 6 125# DN100 x DN150	P	28	7.25	6.75	136	215
			711	184	171		97.5
119 QPD	6 250# X 8 125# DN150 x DN200	Q	42	10	9.25	136	530
			1066	254	234		240.4
119 RPD	6 250# X 8 125# DN150 x DN200	R	42	10	9.25	136	530
			1066	254	234		240.4







**119 Series  
Cast Iron Flanged Safety Valves**

**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.



U.S. Customary Units SCFM										Metric Units Nm <sup>3</sup> /hr.										
Orifice Letter	J	K	L	M	N	P	Q	R		Orifice Letter	J	K	L	M	N	P	Q	R		
Area (In <sup>2</sup> )	1.358	1.926	2.99	3.774	4.55	6.692	11.593	16.786		Area (Cm <sup>2</sup> )	8.762	12.426	19.287	24.347	29.357	43.174	74.795	108.294		
Set Pressure psig											Set Pressure barg									
5*	418	592	919	1,160	1,399	2,058	3,565	5,161												
10*	583	826	1,282	1,619	1,952	2,870	4,973	7,200												
15	715	1,014	1,574	1,986	2,395	3,522	6,101	8,834												
20	824	1,169	1,814	2,290	2,761	4,060	7,034	10,185												
25	933	1,324	2,055	2,594	3,127	4,599	7,967	11,536												
30	1,043	1,479	2,295	2,897	3,493	5,138	8,900	12,887												
35	1,163	1,649	2,560	3,231	3,896	5,730	9,926	14,373												
40	1,283	1,820	2,825	3,566	4,299	6,322	10,953	15,859												
45	1,403	1,990	3,089	3,900	4,701	6,915	11,979	17,345												
50	1,523	2,161	3,354	4,234	5,104	7,507	13,005	18,830												
55	1,644	2,331	3,619	4,568	5,507	8,099	14,031	20,316												
60	1,764	2,502	3,884	4,902	5,910	8,692	15,057	21,802												
65	1,884	2,672	4,148	5,236	6,312	9,284	16,084	23,288												
70	2,004	2,843	4,413	5,570	6,715	9,877	17,110	24,774												
75	2,124	3,013	4,678	5,904	7,118	10,469	18,136	26,260												
80	2,245	3,184	4,942	6,238	7,521	11,061	19,162	27,746												
85	2,365	3,354	5,207	6,572	7,924	11,654	20,188	29,232												
90	2,485	3,524	5,472	6,906	8,326	12,246	21,215	30,718												
95	2,605	3,695	5,736	7,240	8,729	12,838	22,241	32,204												
100	2,726	3,865	6,001	7,574	9,132	13,431	23,267	33,689												
105	2,846	4,036	6,266	7,908	9,535	14,023	24,293	35,175												
110	2,966	4,206	6,530	8,243	9,937	14,616	25,320	36,661												
115	3,086	4,377	6,795	8,577	10,340	15,208	26,346	38,147												
120	3,206	4,547	7,060	8,911	10,743	15,800	27,372	39,633												
125	3,327	4,718	7,324	9,245	11,146	16,393	28,398	41,119												
130	3,447	4,888	7,589	9,579	11,548	16,985	29,424	42,605												
135	3,567	5,059	7,854	9,913	11,951	17,577	30,451	44,091												
140	3,687	5,229	8,118	10,247	12,354	18,170	31,477	45,577												
145	3,807	5,400	8,383	10,581	12,757	18,762	32,503	47,063												
150	3,928	5,570	8,648	10,915	13,160	19,355	33,529	48,549												
155	4,048	5,741	8,912	11,249	13,562	19,947	34,556	50,034												
160	4,168	5,911	9,177	11,583	13,965	20,539	35,582	51,520												
165	4,288	6,082	9,442	11,917	14,368	21,132	36,608	53,006												
170	4,408	6,252	9,706	12,251	14,771	21,724	37,634	54,492												
175	4,529	6,423	9,971	12,586	15,173	22,317	38,660	55,978												
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												
											Approx. 0.1 barg Increment	56.0	79.5	123.4	155.8	187.8	276.2	478.4	692.7	

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

## 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

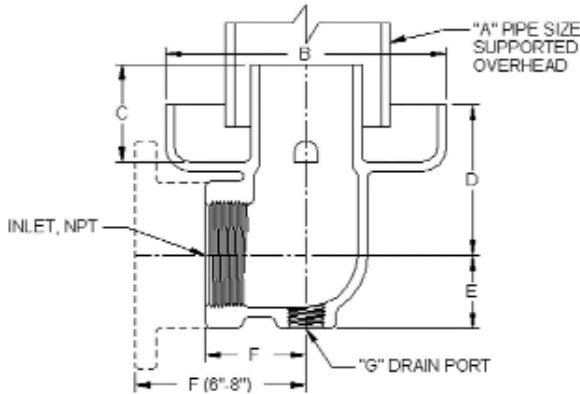
- Sizes 3/4" through 8" available from stock
- Ideal flow characteristics
- Directs condensate to drain
- Isolates safety valve from piping stresses caused by:
  - weight of discharge piping
  - thermal expansion
  - reaction forces during valve discharge

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



Section VIII  
Pressure Vessels

## 500 Series Multi-Purpose Safety Relief Valves

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  
 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 422°F - 800°F Service
- Special Cleaning Available
- European Pressure Equipment Directive compliant option

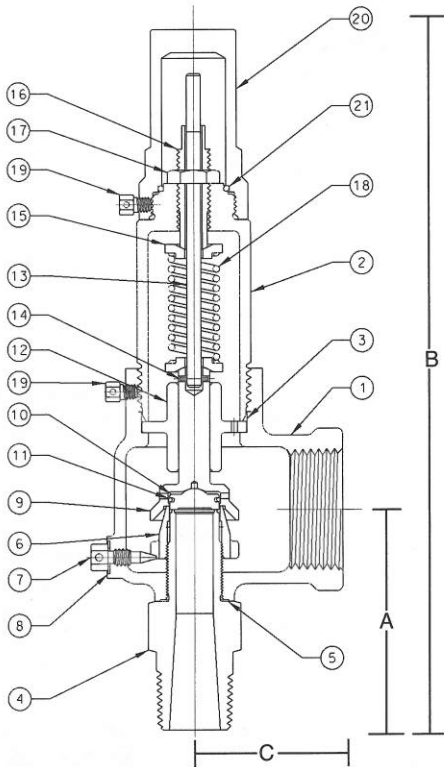
## 500 Series Model Numbering System

52	3	J	H	B	K	M	AA	0425	Q
Series Body/Trim Mat'l	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	Q-Performance
52-Bronze/ Stainless	2-Screwed + Gag	E	D-3/4	D-3/4 Outlet (Model	K-Section VIII Air/Gas	B-BUNA-N	Letters/Numbers	psig (4 digits)	(Calibration)
53-Carbon/ Stainless	3-Packed Lever	F	E-1	510 & 520 D	L-Section VIII Steam	E-EPR	for Special Options	Vacuum "HG"	Test Reports
54-All Stainless	4-Packed + Gag	G	F-1-1/4	Orifice Only)	M-Non Code Liquid	K-PCTFE	or Features	Prefix + 2 digits	
		H	G-1-1/2		N-Non Code Air	N-Neoprene	"AA"-Default		
		J	H-2		P-Non Code Steam	S-Silicone	Setting		
					Q-Vacuum	V-Viton	"CE"-CE/PED		
						Z-Kalrez	"HT"-High Temp		
							Spring		
							"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"

# 500 Series Multi-Purpose Safety Relief Valves



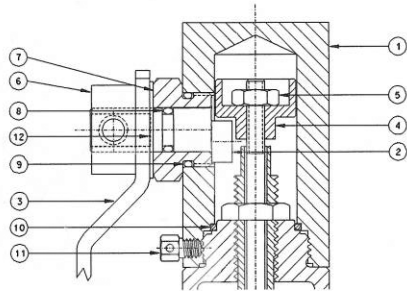
**500 Assembly w/Screwed Cap**

## 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:**

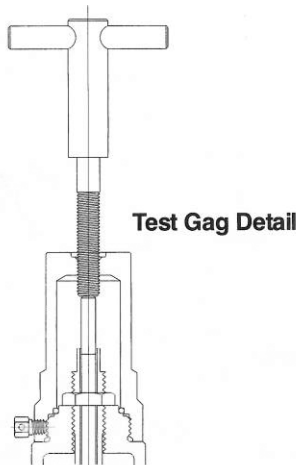
- \* Sizes G, H and J are Cast Bronze
- \*\* Sizes H and J are Cast Steel
- \*\*\* Sizes H and J are Cast Stainless Steel Type 316



**Packed Lever Detail**

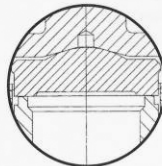
## Materials of Construction, Lift Lever Option

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

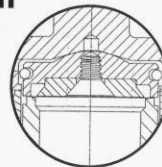


**Test Gag Detail**

## 500 Series Soft Seat Detail



**PCTFE**



**O-Ring**

# 500 Series

## Multi-Purpose Safety Relief Valves

### 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, TRICHLOROETHYLENE, 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	510	520	530	540
Body	Bronze	Bronze	Carbon Steel	Stainless Steel
Trim	Brass	Stainless	Stainless	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) <sup>1</sup> 900 PSI (E) 600 PSI (F/G) 500 PSI (H/J)	1200 PSI (D) <sup>1</sup> 900 PSI (E) 600 PSI (F/G) 500 PSI (H/J)	1200 PSI (D) <sup>1</sup> 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

<sup>1</sup> Max 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.

### Selection/Dimensions and Weights

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

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

# 500 Series Multi-Purpose Safety Relief Valves



**ASME Section VIII Steam**  
**POUNDS PER HOUR (KILOGRAMS PER HOUR) SATURATED STEAM AT 10% OVERPRESSURE.**  
**NATIONAL BOARD CERTIFIED. RATINGS ARE 90% OF ACTUAL.**

<b>U.S. Customary Units lbs./hr.</b>							<b>Metric Units kg./hr.</b>						
Orifice Letter	D	E	F	G	H	J	Orifice Letter	D	E	F	G	H	J
Area (in. <sup>2</sup> )	0.1295	0.2282	0.3589	0.5890	0.9195	1.5044	Area (Cm. <sup>2</sup> )	0.8352	1.4721	2.3155	3.8001	5.9321	9.7058
Set Pressure							Set Pressure						
psig							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	-	-	-	-							
700	4,501	7,934	-	-	-	-							
725	4,659	8,212	-	-	-	-	Approx. 0.1 bar						
750	4,817	8,490	-	-	-	-	Increment	4.15	7.32	11.51	18.89	29.48	48.24
775	4,975	8,768	-	-	-	-	Maximum Set Pressure Limits for Steam Service						
800	5,132	9,046	-	-	-	-	510 Series - 250 psig/17.3 barg						
825	5,290	9,324	-	-	-	-	520 Series - 300 psig/20.7 barg						
850	5,448	9,602	-	-	-	-	530 Series - 900 psig/62.1 barg						
875	5,606	9,880	-	-	-	-	540 Series - 900 psig/62.1 barg						
900	5,763	10,158	-	-	-	-							
Approx. 1 psi							<i>Note: For steam service beyond 300 psig or 422°F specify option "HT" high temperature stainless steel alloy spring.</i>						
Increment	6.3	11.1	17.5	28.7	44.8	73.3	<i>*Pressure settings below 15 psig/1.03 barg are non-ASME code.</i>						

# 500 Series

## Multi-Purpose Safety Relief Valves

### 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.



U.S. Customary Units SCFM							Metric Units Nm <sup>3</sup> ./hr.						
Orifice Letter	D	E	F	G	H	J	Orifice Letter	D	E	F	G	H	J
Area (In. <sup>2</sup> )	0.1295	0.2282	0.3589	0.5890	0.9195	1.5044	Area (Cm. <sup>2</sup> )	0.8352	1.4721	2.3155	3.8001	5.9321	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	-	-	-	-							
700	1,602	2,824	-	-	-	-	Approx. 0.1 bar						
725	1,658	2,923	-	-	-	-	Increment	5.24	9.23	14.51	23.82	37.18	60.84
750	1,715	3,022	-	-	-	-	Maximum Set Pressure Limits for Air/Gas Service						
775	1,771	3,121	-	-	-	-	510 Series - 300 psig/20.7 barg						
800	1,827	3,220	-	-	-	-	520 Series - 1200 psig/82.7 barg						
825	1,883	3,319	-	-	-	-	530 Series - 1200 psig/82.7 barg						
850	1,939	3,418	-	-	-	-	540 Series - 1200 psig/82.7 barg						
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							

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

# 500 Series Multi-Purpose Safety Relief Valves

## 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.



U.S. Customary Units GPM							Metric Units m <sup>3</sup> /hr.						
Orifice Letter	D	E	F	G	H	J	Orifice Letter	D	E	F	G	H	J
Area (In. <sup>2</sup> )	0.1295	0.2282	0.3589	0.5890	0.9195	1.5044	Area (Cm. <sup>2</sup> )	0.8352	1.4721	2.3155	3.8001	5.9321	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.*



# 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 <sup>3</sup> /min. (0°C, 1 Bara)
Standard cubic feet per min.	1.630	Nm <sup>3</sup> /hr. (0°C, 1 Bara)
Standard cubic feet per min.	39.11	Nm <sup>3</sup> /day. (0°C, 1 Bara)
Standard cubic feet per min.	0.02832	Sm <sup>3</sup> /min.
Standard cubic feet per min.	1.699	Sm <sup>3</sup> /hr.
Standard cubic feet per min.	40.78	Sm <sup>3</sup> /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 <sup>3</sup> /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
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.)

A MULTIPLY	B BY	C TO OBTAIN
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 (at 60°F)
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	Bars
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

## Correction Factors

### AIR AND GAS TEMPERATURE CORRECTION FACTORS

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

### GAS AND LIQUID RELATIVE DENSITY CORRECTION FACTORS

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

## Terms and Condition of Sale

Payment: 2% 10th prox. Net 30 days. All prices F.O.B. Matthews, N.C., or Pageland, S.C., with freight allowed on shipments of 750 pounds or \$5,000 net and over to all shipping points within the United States excluding Alaska and Hawaii. No freight allowed on Air Freight or Parcel Post shipments. Claims for shortages must be made within 10 days of receipt of material. Our responsibility ends when a receipt is furnished us by the carrier.

No Invoice Rendered For Less Than \$50.00. No freight will be allowed on Air Freight, Air Express, Parcel Post or U.P.S. shipments. Other Conbraco Products may be combined to make sufficient weight for full freight allowance. Phone order quoted prices are subject to correction. Prices and designs are subject to change without notice. Orders for material or special design or specification are made to customer's order and are not subject to cancellation or return. Goods returned to us will not be accepted unless a full explanation has been made and our written authorized permission obtained. All goods returned – if accepted – will be credited at invoice price, less 30% for service and rehandling charges, plus shipping expenses. We reserve the right to adjust orders to box quantities.

## 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 two years from the date of delivery to you, our initial purchaser.

Should any failure to conform to this warranty appear within two 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.

**New For April 2009: Extension of Warranty for Apollo products manufactured in the USA.** Conbraco warrants those products that are manufactured in our USA facilities for an additional 3 years; making the total warranty FIVE years. This extended warranty applies to Apollo brand product with "Made in the USA" markings only. (Note: All Apollo Safety and Relief Valves are "Made in the USA")

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHER WARRANTY, WHETHER EXPRESS 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 express 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, DAMAGE 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 CONBRACO GOODS UPON WHICH SUCH LIABILITY IS BASED.



## Sales and Customer Service

Phone: (704) 841-6000

Fax: (704) 841-6020

P.O. BOX 247  
Matthews, NC 28106

Conway, SC • Matthews, NC • Pageland, SC

www.apollovalves.com

			E-Mail Address	Phone	Fax	
Southeast Region	Spirit Group	Florida (except Pan Handle)	info@spiritgroupinc.com	407-291-6035	407-299-0378	
	Spotswood Associates	Georgia/Alabama	dlewis@spotswoodassociates.com	770-447-1227	770-263-6899	
	Pro Marketing, Inc.	North Carolina/South Carolina/Tennessee-East	sales@promarketinginc.net	864-578-4334	864-578-4889	
	Mid South Marketing, Inc.	Virginia/Maryland/Washington, D.C./WV-East	midsouth7@aol.com	804-213-3801	804-213-3802	
Southern Region	Southern Marketing Group	MS/TN-West/AR/Bowie Cty.-TX	SMG49@bellsouth.net	901-547-0042	901-547-0035	
	AVC Mechanical Sales, Inc.	Oklahoma (Plmb & Ind'l)/Texas-North (All)	valvesales@avalve.com	214-201-0100	214-201-0104	
	Armstrong/Weatherly Associates	Texas-South/Louisiana	sales@armstrong-weatherly.com	713-692-5566	713-692-6021	
	Lightsey Marketing	Oklahoma (Irrigation, Fire Protection, Water Works)	karenandmarilyn@yahoo.com	918-251-2828	918-251-7742	
Midwestern Region	New Tech Marketing	IL/WI-East/IN/MI-Upper Peninsula/IA-/River Counties	sales@new-techmarketing.com	630-378-4300	630-378-0343	
	New Tech Marketing	Eastern Missouri/Southern Illinois/Kansas City	ntrn112@aol.com	618-394-0329	618-394-0427	
	V.E. Sales Co., Inc.	Michigan (Except Upper Peninsula)	tomv@vesalesinc.com	586-774-7760	586-774-1490	
	Formation Sales	Minnesota/North & South Dakota/Wisconsin-West	dean@formationsales.com	763-262-4700	763-262-4740	
	Marshall-Rodeno Heartland	Nebraska/Iowa (Except River Counties)	trodeno@marshallrodeno.com	303-575-6701	303-575-6706	
	Midwest Spec	KY/OH/PA-West/West Virginia-West	glsales@mwspec.com	330-538-0406	330-538-0410	
Midwest Region	Warren Thoma Associates	MI/WI/IL/IN/KY/OH (Irrigation Only)	penny@thomaassociates.com	815-477-1814	815-477-2009	
	Midwest Region	Spec Management Group	California-South (Irrigation), Hawaii (All Products)	msmarch4@cox.net	949-481-4225	949-487-0990
		Specified Process Equipment Co.	California - North	jd@specifiedprocess.com	707-747-3466	707-747-4957
		Marshall-Rodeno Associated	CO/WY/MT/ID-SE/UT/NV-NE/NM/EI Paso-TX	trodeno@marshallrodeno.com	303-575-6701	303-575-6706
		Suntoya Corporation	WA, OR, AK, Northern counties ID	kim@suntoya.com	509-534-1516	509-535-6546
		Southwestern Industrial Sales Co.	Arizona/Nevada-SW	eduardop@sw-ind.com	480-458-5838	480-458-5843
		Southwest Valves	California (Waterworks and Fire Protection)	d.burell@southwestvalve.com	559-261-2703	559-261-2711
		Jack Prust Sales	California-North (Irrigation)	jack@jpsales.com	530-878-2922	530-878-2341
		Active Sales Northwest, Inc	Oregon, WA, Western Idaho (Irrigation)	skactive@aol.com	541-726-0320	541-726-1148
		Northeast Region	Urell, Inc.	Massachusetts/New England States	conbraco@urell.com	617-923-9500
McMahon Marketing, Inc.			New York-Upstate/New York-West	sales@mcmahonmarketing.com	518-792-3350	518-792-3351
Conroy & Griese Sales, Inc.	New York-East/New Jersey-North		iezzi52@aol.com	856-663-4440	856-663-6644	
Layden Company	Pennsylvania-East/Delaware/New Jersey-South		joejr@laydencompany.com	610-363-6657	877-529-3361	
Canada	Keith Engle & Associates	OEM accounts	keith.engle@verizon.net	610-827-9560	610-827-9561	
	Waterlines, Inc.	New England/Upstate, Metro NY/PA/VA (Irrigation Only)	waterlines@nac.net	973-209-7777	973-209-7421	
	Canada	Conbraco Industries, Canada	178 Pennsylvania Ave., Unit 1, Concord, Ontario L4K 4B1	conbraco.canada@conbraco.com	905-761-6161	905-761-6666
		Barclay Sales Ltd.	British Columbia	bbarclay@barclaysales.com	604-945-1010	604-945-3030
		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
		Tom Beggs Agencies Ltd.	Manitoba/NW Ontario	tba@mts.net	204-953-1900	204-774-6915
		Task Controls, Inc.	Ontario	infotoronto@taskcontrols.com	416-291-3004	416-754-3481
		Agences J. Pierre Sylvain, Inc.	Quebec	agencespsylvain@golden.net	450-655-9588	450-641-2737
		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	
J. Levandier Sales, Inc.		Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland	service@jlevandiersales	506-858-1615	506-858-1084	
Key to the North Sales Agency, Inc.	Ontario-North	hmehes@keytothenorth.ca	705-524-6714	705-566-0148		
an Acilburts Industries company Int'l.	Sadek Trading	Middle East (except Israel)	ysadek@aol.com	704-618-6613	980-233-8437	
	an Acilburts Industries company Int'l.	Conbraco International Sales:	Mexico	jose.arias@conbraco.com	956-631-4542	956-631-4681
		Caribbean	luis.guzman@conbraco.com	787-739-5620		
		Central & South America	jr.jefferson@conbraco.com	832-220-3783		
		Asia Pacific	jonathan.yap@conbraco.com	65-9626-9241	65-6753-0131	
		Europe	allen.bellamy@conbraco.com	44-161-212-3745	44-161-212-3747	
		Africa/Australia/Israel/India	donna.bult@conbraco.com	954-252-9781	954-252-8698	
		Regional Sales Managers:	Brian Blalock (East)	brian.blalock@conbraco.com	704-624-3744	704-841-6021
			Steve Brown (Northwest)	steve.brown@conbraco.com	425-985-5095	253-862-3548
			Skip Wilson (West)	skip.wilson@conbraco.com	760-330-3293	775-854-5722
Sanford Pauly (North Central)			sanford.pauly@conbracom	513-716-7772	513-321-7717	
Ron Fortner (South Central)	ron.fortner@conbraco.com		713-203-9207	713-203-9207		