



Section IV  
Heating Boilers

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



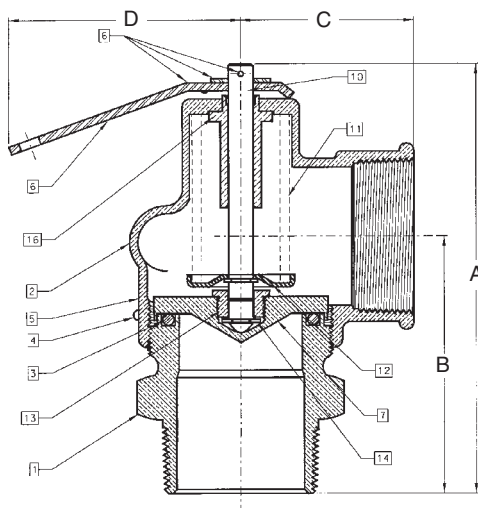
Medium capacity safety valves protect ASME Section IV low pressure steam heating boilers. Cast bronze, full nozzle design features PTFE faced elastomer soft seating for dependable operation.

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

**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 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.**



<b>U.S. Customary Units lbs./hr.</b>						
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

<b>Metric Units kg./hr.</b>						
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.

# 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
18-500	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	8 - 1200	0.55 - 82.7	800°F	426.7°C
540	Stainless / Stainless	1/2 - 2	DN 15 - 50	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	8 - 900	0.55 - 62.1	800°F	426.7°C
540	Stainless / Stainless	1/2 - 2	DN 15 - 50	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	8 - 1200	0.55 - 82.7	800°F	426.7°C
540	Stainless / Stainless	1/2 - 2	DN 15 - 50	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

# 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		

# 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	Bar
Pounds per sq. inch	6.895	KiloPascals
Specific gravity (of gas or vapors)	28.97	Molecular weight (of gas or vapors)
Square centimeter	0.1550	Square inch
Square inch	6.4516	Square centimeter
Square inch	645.16	Square millimeter
SSU	0.2205 x SG	Centipoise
SSU	0.2162	Centistoke
Water (cubic feet @ 60F)	62.37	Pounds
Temperature:		
Centigrade	=	5/9 (Fahrenheit - 32)
Kelvin	=	Centigrade + 273
Fahrenheit	=	9/5 (Centigrade) +32
Fahrenheit	=	Rankine - 460
Fahrenheit	=	(9/5 Kelvin) - 460

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