

**Conbraco ASME Section I and VIII Bronze Safety Valves**

- A Dependable Cast Bronze High Capacity Safety Valve Ideal for Use on All Types of Boilers, Piping Systems and Unfired Pressure Vessels
- Rugged Design Features Improved Alignment for Enhanced Performance and Reliability
- Set Pressures 5 to 300 PSIG
- Maximum Temperature is 406° F
- Steam Set Pressures to 300 PSI @ 422° F
- Choice of Teflon® or Metal to Metal Seating
- 316 stainless Steel Wetted Trim
- Anti - Vibration Dampened Lifting Lever
- Oxygen Cleaning

**Features**

- Wider Wrenching Hex for Easier, Faster Installations
- Stainless Steel Springs
- Teflon® PFA Seat Resists Corrosive Boiler Chemicals and Excessive Vibration
- High Capacity Full Nozzle Design
- Two Control Rings for Maximum Performance and Adjustability
- Short "Tuned" Blow Down Minimizes Product Loss
- 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



Side Venting

**Side Venting Valve**

Inlet	Outlet	Metal to Metal Seat Model No.	Soft Seat Model No.
1/2"	3/4"	19MDC	19KDC
3/4"	3/4"	19MDD	19KDD
3/4"	1"	19MED	19KED
1"	1"	19MEE	19KEE
1"	1-1/4"	19MFE	19KFE
1-1/4"	1-1/4"	19MFF	19KFF
1-1/4"	1-1/2"	19MGF	19KGF
1-1/2"	1-1/2"	19MGG	19KGG
1-1/2"	2"	19MHG	19KHG
2"	2"	19MHH	19KHH
2"	2-1/2"	19MJH	19KJH
2-1/2"	2-1/2"	19MJJ	19KJJ

- To determine valve size see chart on other side
1. Locate desired pressure and SCFM
  2. Intersect orifice size at the top of the chart
  3. For example 626 scfm @ 150 psig = An "E" Orifice
  4. Model = 19M, select desired inlet pipe size
  5. Add psig setting to part number suffix

19M      E      E  
Model    Orifice   Pipe Size

ASME rating is only applicable to valves set at 15 psig and higher

High Capacity Safety Valve

Orifice Size	D			E			F			G			H			J		
Area	.129 Sq. In.			.230 Sq. In.			.359 Sq. In.			.589 Sq. In.			.919 Sq. In.			1.509 Sq. In.		
Set PSIG	LBS/HR Steam V	LBS/HR Steam UV	SCFM Air UV	LBS/HR Steam V	LBS/HR Steam UV	SCFM Air UV	LBS/HR Steam V	LBS/HR Steam UV	SCFM Air UV	LBS/HR Steam V	LBS/HR Steam UV	SCFM Air UV	LBS/HR Steam V	LBS/HR Steam UV	SCFM Air UV	LBS/HR Steam V	LBS/HR Steam UV	SCFM Air UV
10		167	54		298	97		466	151		765	248		1193	387		1958	635
15	174	179	64	310	320	114	484	499	178	794	820	292	1240	1279	455	2035	2100	747
20	201	207	74	359	369	131	561	576	205	920	945	336	1435	1474	525	2356	2421	862
25	229	234	83	408	418	149	637	652	232	1045	1070	381	1631	1670	594	2677	2742	976
30	256	262	93	457	467	166	713	729	259	1170	1195	426	1826	1865	664	2998	3063	1090
35	284	292	104	506	521	185	790	813	289	1296	1333	475	2022	2080	740	3319	3416	1216
40	311	322	115	555	574	204	866	897	319	1421	1471	524	2217	2295	817	3641	3769	1342
45	339	352	125	604	628	224	942	981	349	1546	1609	573	2413	2510	894	3962	4122	1467
50	366	383	136	653	682	243	1019	1065	379	1672	1747	622	2608	2725	970	4283	4475	1593
55	394	413	147	702	736	262	1095	1149	409	1797	1885	671	2804	2941	1047	4604	4828	1719
60	421	443	158	751	790	281	1172	1233	439	1922	2022	720	2999	3156	1123	4925	5181	1844
65	448	473	168	800	844	300	1248	1317	469	2048	2160	769	3195	3371	1200	5246	5535	1970
70	476	503	179	849	897	319	1326	1401	499	2175	2298	818	3394	3586	1276	5573	5888	2096
75	505	534	190	900	951	339	1405	1485	528	2304	2436	867	3596	3801	1353	5904	6241	2221
80	533	564	201	950	1005	358	1483	1569	558	2433	2574	916	3797	4016	1429	6234	6594	2347
85	561	594	211	1001	1059	377	1562	1653	588	2563	2712	965	3998	4231	1506	6565	6947	2473
90	590	624	222	1051	1113	396	1641	1737	618	2692	2849	1014	4200	4446	1583	6896	7300	2598
95	618	654	233	1101	1167	415	1719	1821	648	2821	2987	1063	4401	4661	1659	7226	7653	2724
100	646	684	244	1152	1220	434	1798	1905	678	2950	3125	1112	4602	4876	1736	7557	8007	2850
105	674	715	254	1202	1274	454	1877	1989	708	3079	3263	1161	4804	5091	1812	7888	8360	2976
110	703	745	265	1253	1328	473	1955	2073	738	3208	3401	1211	5005	5306	1889	8218	8713	3101
115	731	775	276	1303	1382	492	2034	2157	768	3337	3539	1260	5207	5521	1965	8549	9066	3227
120	759	805	287	1353	1436	511	2113	2241	798	3466	3677	1309	5408	5736	2042	8880	9419	3353
125	787	835	297	1404	1489	530	2191	2325	828	3595	3814	1358	5609	5951	2118	9210	9772	3478
130	816	866	308	1454	1543	549	2270	2409	857	3724	3952	1407	5811	6167	2195	9541	10125	3604
135	844	896	319	1505	1597	568	2349	2493	887	3853	4090	1456	6012	6382	2271	9872	10479	3730
140	872	926	330	1555	1651	588	2427	2577	917	3982	4228	1505	6213	6597	2348	10202	10832	3855
145	900	956	340	1605	1705	607	2506	2661	947	4111	4366	1554	6415	6812	2425	10533	11185	3981
150	929	986	351	1656	1759	626	2585	2745	977	4240	4504	1603	6616	7027	2501	10864	11538	4107
160	985	1047	373	1757	1866	664	2742	2913	1037	4499	4779	1701	7019	7457	2654	11525	12244	4358
170	1042	1107	394	1857	1974	703	2899	3081	1097	4757	5055	1799	7422	7887	2807	12186	12951	4610
180	1098	1167	416	1958	2082	741	3057	3249	1156	5015	5331	1897	7824	8317	2960	12848	13657	4861
190	1155	1228	437	2059	2189	779	3214	3417	1216	5273	5606	1996	8227	8747	3114	13509	14363	5112
200	1211	1288	459	2160	2297	818	3371	3585	1276	5531	5882	2094	8630	9177	3267	14170	15069	5364
210	1268	1349	480	2261	2405	856	3529	3753	1336	5789	6158	2192	9033	9608	3420	14832	15776	5615
220	1324	1409	502	2361	2512	894	3686	3921	1396	6047	6433	2290	9436	10038	3573	15493	16482	5867
230	1381	1469	523	2462	2620	932	3843	4089	1456	6305	6709	2388	9838	10468	3726	16154	17188	6118
240	1438	1530	545	2563	2727	971	4001	4257	1515	6564	6985	2486	10241	10898	3879	16816	17894	6369
250	1494	1590	566	2664	2835	1009	4158	4425	1575	6822	7260	2584	10644	11328	4032	17477	18601	6621
260	1551	1651	587	2765	2943	1047	4315	4593	1635	7080	7536	2682	11047	11758	4185	18138	19307	6872
270	1607	1711	609	2865	3050	1086	4473	4761	1695	7338	7812	2781	11449	1218	4338	18800	20013	7124
280	1664	1771	630	2966	3158	1124	4630	4929	1755	7596	8087	2879	11852	12618	4491	19461	20720	7375
290	1720	1832	652	3067	3266	1162	4787	5097	1814	7854	8363	2977	12255	13049	4645	20122	21426	7626
300	1777	1892	673	3168	3373	1201	4945	5265	1874	8112	8639	3075	12658	13479	4798	20784	22132	7878



## 19-Series Bronze Safety Valves for Steam, Air & Gas Service



### Overview

National Board capacity certified, high capacity, ideal for use with all types of boilers, pressure vessels, compressors and pressure piping systems.

ASME Section I and VIII

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

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

Pressures: 15 through 300 psig steam, air, gas

### 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

- **New! Wider wrenching hex for easier, faster installations**
- **New! European Pressure Equipment Directive Compliant (optional)**
- Max. temp. 406°F, 422°F with stainless steel trim
- 12 sizes, 1/2" thru 2-1/2" NPT
- Stainless steel spring
- Optional 316 stainless steel wetted trim (Specify 19L or 19S Series)
- Available in metal and soft seat designs
- Metal to metal seat lapped to optical flatness
- Less costly repairing, soft seat easily replaced
- Double ring, full bore, high-capacity design
- Registered in all Canadian provinces and territories CRN #0G8547.5C

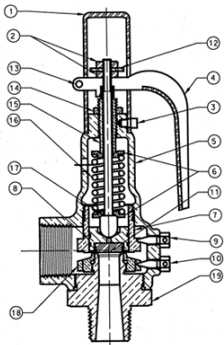
### Options

- 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

## Ordering Number System for 19-Series

19K	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 19M Brass Trim/Metal Seat 19L Stainless Trim/Teflon Seat 19S Stainless Trim/Metal Seat	D E F G H J	C-1/2 D-3/4 E-1 F-1-1/4 G-1-1/2 H-2 J-2-1/2	A-Sect. I Steam K- Sect. VIII Air L-Sect. VIII Steam N-Non-Code Air P-Non-Code Steam		A -Anti-vibration trim CE-PED Compliant X - Oxygen cleaning Other suffixes - factory issued

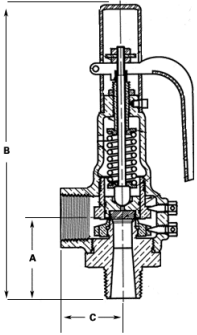
## Materials



item	Component	19K, 19M	19L, 19S
-	Nameplate	SS	SS
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	Steel / Brass	Steel / Brass

18	Nozzle Ring	Brass	Brass
19	Nozzle	Brass	SS

## Dimensions



Old Part Number	New Model Number	Size Inlet x Outlet in./mm	Orifice Letter in./mm	A in./mm	B in./mm	C in./mm	Wt Each lbs/kg
19-202	19*DC	1/2 X 3/4 15 x 20	D	2.210 56.134	6.520 165.608	1.370 34.798	1.600 0.726
19-301	19*DD	3/4 X 3/4 20 x 20	D	2.210 56.134	6.520 165.608	1.370 34.798	1.600 0.726
19-302	19*ED	3/4 X 1 20 x 25	E	2.500 63.500	7.160 181.864	1.750 44.450	2.000 0.907
19-401	19*EE	1 X 1 25 x 25	E	2.640 67.056	7.300 185.420	1.750 44.450	2.200 0.998
19-402	19*FE	1 X 1-1/4 25 x 32	F	2.950 74.930	9.340 237.236	2.000 50.800	4.100 1.860
19-501	19*FF	1-1/4 X 1-1/4 32 x 32	F	2.950 74.930	9.340 237.236	2.000 50.800	4.300 1.950
19-502	19*GF	1-1/4 X 1-1/2 32 x 40	G	3.380 85.852	11.010 279.654	2.370 60.198	7.400 3.357
19-601	19*GG	1-1/2 X 1-1/2 40 x 40	G	3.380 85.852	11.010 279.654	2.370 60.198	7.600 3.447
19-602	19*HG	1-1/2 X 2 40 x 50	H	3.630 92.202	11.960 303.784	2.750 69.850	11.500 5.216
19-701	19*HH	2 X 2 50 x 50	H	3.630 92.202	11.960 303.784	2.750 69.850	11.600 5.262
19-801	19*JG	1-1/2 F X 2-1/2 65 x 65	J	3.800 96.520	14.000 355.600	3.500 88.900	20.000 9.072
19-702	19*JH	2 X 2-1/2 50 x 65	J	4.060 103.124	14.250 361.950	3.500 88.900	19.900 9.026
19-801	19*JJ	2-1/2 X 2-1/2 65 x 65	J	4.500 114.300	14.680 372.872	3.500 88.900	20.800 9.435
NEW	19*JG	1-1/2 X 2-1/2 40x65	j	3.800 96.520	14.000 355.600	3.500 88.900	20.000 9.072





**19 Series Safety Valves**

***Installation, Operation and Maintenance***

***Part I***

**Document Number:** ES-1045-1

**Revision Level:** G

**Issued By:** D. Edmonds

**Approved By:** \_\_\_\_\_

**Date:** 9/19/05

**Date:** \_\_\_\_\_

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**IMPORTANT**

Conbraco pressure relief valves are safety devices designed for the protection of lives and property. These valves will provide years of service when properly installed and maintained. The information contained herein is intended for use by qualified personnel to properly maintain these devices.

Serious property damage and injury or death may occur should a pressure relieving device fail to operate correctly. Any installation, maintenance, adjustment, repair or testing should only be performed by experienced personnel properly trained and qualified in accordance with applicable codes and standards.

When maintaining or repairing Conbraco pressure relief valves, use only original Conbraco parts to ensure safe and reliable operation.

**Maximum Pressure/Temperature Chart**



**Warning – Application must not exceed the pressure/temperature limitations below.**

Series	19K	19M	19L	19S
TrimSeat	Brass PFA Teflon®	Brass Metal to Metal	Stainless Steel/PFA Teflon®	Stainless Steel Metal to Metal
Max. Set - Steam	250 psi (1723.7 kPa)	250 psi (1723.7 kPa)	250 psi (1723.7 kPa)	300 psi (2068.4 kPa)
Max. Set - Air/Gas	300 psi (2068.4 kPa)	300 psi (2068.4 kPa)	300 psi (2068.4 kPa)	300 psi (2068.4 kPa)
Max. Temperature	406°F (207.8°C)	406°F (207.8°C)	406°F (207.8°C)	422°F (216.7°C)



### Installation Instructions

This quality Conbraco safety valve, along with proper installation, use and maintenance will provide many years of reliable service and protection against excessive pressure build-up of steam, air or non-hazardous gas. Use of this valve for any other purpose or media places all responsibility upon the user. Before installing valve, or operating equipment to which it is installed, read all instructions carefully.



**Caution - Always wear proper safety equipment.**



**Caution - Valve may be very hot to the touch. Wear protective equipment if necessary.**

1. Installation must be performed by qualified service personnel only.
2. It is the piping system designer's responsibility to implement appropriate protective measures to minimize reaction forces and moments which result from supports, attachments, piping, etc.
3. Service is to be compatible with the materials of construction. Prior to selection it is the user's responsibility to determine that the valve is appropriate for the intended application. Application not to allow corrosion  $>.001"/\text{year}$  (.025mm/year).
4. The capacity rating of this valve must equal or exceed that of the equipment to which it is installed.
5. Do not use this valve on a coal or wood fired boiler having an uncontrolled heat input.
6. Do not use the test lever as a lifting device during installation.
7. Ensure that all connections, including the valve inlet, are clean and free of any foreign material.
8. Use pipe compound sparingly or tape on external threads only.
9. Do not use a pipe wrench! Use proper type and size wrench on wrench pads only.
10. This valve must be mounted in a vertical upright position directly to a clean tapped opening in the top of the pressure vessel. Under no circumstances should there be a flow restriction or valve of any type between the safety valve and pressure vessel.
11. Do not plug or obstruct valve body drain. A body drain line should be installed to dispose of condensate.
12. See ASME Boiler and Pressure Vessel Code and local jurisdiction for additional installation and operating instructions.



**Caution - During operation, this valve may discharge large amounts of high-pressure steam, hot water, air or gas. To reduce the potential for bodily injury and property damage, a discharge line must be installed that:**

- a) **is connected from the valve outlet to a safe point of discharge with no intervening valve;**
- b) **allows complete drainage of the valve and discharge line;**
- c) **is independently supported and securely anchored to avoid applied stress on the valve;**
- d) **is as short and straight as possible;**
- e) **terminates freely to atmosphere where any discharge will be clearly visible and is at no risk of freezing;**
- f) **is, over its entire length, of a pipe size equal to or greater than the valve outlet. Use only schedule 40 pipe for discharge. Do not use schedule 80, extra strong or double strong pipe or connections. Do not cap, plug or obstruct discharge pipe outlet! If discharge is piped upward, a condensate drain must be provided in the elbow below the vertical pipe to prevent condensate from returning into the valve. A Conbraco Drip Pan Elbow is ideal.**

### Operating Instructions

If adding water to a boiler, do not allow water to flow through safety valve as sediment or debris may be deposited on seating surfaces.

To achieve topmost performance and maximum service life, it is necessary to maintain a proper pressure margin between the set pressure of the safety valve and the operating pressure of the equipment. The minimum recommended operating pressure margin for this type of safety valve is 5 psi for pressures up to 70 psig and is 10% of set pressure for pressures above 70 psig. Failure to maintain this operating margin may result in leakage past the seat and an accumulation of deposits on the seating surface. Excessive deposits may prevent the safety valve from operating properly, and a dangerous pressure build-up and equipment rupture may result.

**Maintenance and Testing Instructions**



**CAUTION! Before testing, make certain discharge pipe is properly connected to valve outlet and arranged to contain and safely dispose of discharge (see Installation Instructions).**

Under normal operating conditions a "try lever test" should be performed biannually in steam service, with a visual inspection every 2 months and an annual pressure test. In air/gas service, perform a visual inspection every 6 months, a lever test annually and a pressure test every 3 years. Under severe service conditions or if corrosion, pitting, and/or deposits are noticed within the valve body, testing must be performed more often. A "try lever test" should be performed at the end of any non-service period.



**CAUTION! Hot, high-pressure fluid may be discharged from body drain during lever test.**



**CAUTION! High sound levels may be experienced during lever test. Wear proper safety equipment and exercise extreme care.**

Test at or near maximum operating pressure by holding the test lever fully open for at least five seconds to flush the valve seat free of sediment and debris. Then release lever and permit valve to snap shut. If lift lever does not actuate, or there is no evidence of discharge, turn off equipment immediately and contact a licensed contractor or qualified service personnel.

For resetting, adjustment or repairs contact Conbraco Industries for the appropriate service facility.

Neither Conbraco Industries, Inc. nor its agents assume any liability for valves improperly installed or maintained.

**19 Series Part Number Matrix**




**EX: 19KDCA50**

POSITION	OPTION
1-2: SERIES #	19 = 19 SERIES
3: TRIM	E = BRASS TRIM W/EPR O-RING SEAT (100 PSI MAX) K = BRASS TRIM W/PFA SOFT SEAT M = BRASS TRIM W/METAL SEAT L = STAINLESS STEEL TRIM W/PFA SOFT SEAT S = STAINLESS STEEL TRIM W/METAL SEAT
4: ORIFICE	SPECIFY D/E/F/G/H/J
5: INLET	C = 1/2 NPT D = 3/4 NPT E = 1 NPT F = 1-1/4 NPT G = 1-1/2 NPT (1-1/2 FNPT, J ORIFICE ONLY) H = 2 NPT J = 2-1/2 NPT
6: SERVICE	A = ASME SECTION I (V) STEAM K = ASME SECTION VIII (UV) AIR/GAS L = ASME SECTION VIII (UV) STEAM N = NON-CODE AIR/GAS P = NON-CODE STEAM
7: SET PRESSURE	5 THRU 300,PSIG

DIGITS AFTER SET PRESSURE INDICATE ADDITIONAL FEATURES;  
ISSUED LETTERS/NUMBERS FOR SPECIAL OPTIONS.

A = ANTI-VIBRATIONFACTORY  
X = OXYGEN CLEAN

## Nameplate Information

<b>'Apollo' Valves</b>		ISO 4126-1			
CONBRACO INDUSTRIES INC., USA CC2408		0035		  	
MODEL 19MFEL125					
<input type="radio"/>	CAP 2325	X LB/HR	SCFM	GPM	<input type="radio"/>
	SET 125 PSIG	kPa	8.6 BARG		
SIZE 1 IN DN 25		TS 208		DT 0412	
A=233mm <sup>2</sup>		S-.826		LIFT 4.3mm @ 10% CRN 0G8547.5C	

### ASME Code Symbol

When applicable, the ASME "V" or "UV" stamp will be added in the empty box in the upper right corner. The "V" symbol signifies the valve has been designed, manufactured, and tested in accordance with Section I of the ASME Boiler and Pressure Vessel Code and is approved for use on power boilers. The "UV" symbol signifies the valve has been designed, manufactured, and tested in accordance with Section VIII of the ASME Boiler and Pressure Vessel Code and is approved for use on unfired pressure vessels and pressure piping systems.

### NB Symbol

This symbol indicates the capacity value stamped on the nameplate has been certified by the National Board of Boiler and Pressure Vessel Inspectors.

### CRN

The design registration number in accordance with CSA B51, the Canadian Boiler, Pressure Vessel and Pressure Piping Code.

### MODEL

The valve model number as described in the Part Number Matrix.

### CAP

The approved capacity of the valve. One of the three adjacent boxes will be marked to indicate the units of the capacity rating.

### SET

The set pressure of the valve in pounds per square inch and bar gauge.

### SIZE

The inlet size of the valve in inches.

### A

The orifice area in square millimeters.

### TS

The maximum allowable temperature.

### S

The derated coefficient of discharge indicating reference fluid: 'G' for gas, 'S' for steam, and 'L' for liquid.

### DN

The metric size designation of the inlet.

### DATE

The date of manufacture. The first two numbers indicate the year (04=2004), and the last two numbers indicate the week of the year (12=12<sup>th</sup> week of the year).

### LIFT

The minimum lift at specified overpressure.

**Amendment Register**

DATE	REV	PAGES	DESCRIPTION
11/9/00	A	ALL	NEW RELEASE
2/20/01	B	ALL	CHANGED DOCUMENT No.
7/18/01	C	14-16	Updated Capacities
3/04/02	D	9-10	Removed Pack Lever/Screw Cap
8/22/02	E	ALL	Split into two sections
4/29/04	F	5	UPDATED NAMEPLATE GRAPHICS
9/19/05	G	4	ADDED MODEL 19E