



19 SERIES - SAFETY VALVE

INSTALLATION, OPERATION, & MAINTENANCE

Part I

Document Number: ES-1045-1

Revision Level: G

Issued By: D. Edmonds

Date: 9/19/05

Approved By: _____

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.

Contact your local Conbraco factory representative for the name of a factory authorized repair center near you. Or visit us on the web at www.conbraco.com.

Maximum Pressure/Temperature Chart



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

Series	19K	19M	19L	19S
Trim Seat	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 $>.001''/\text{year}$ (.025 mm/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. Insure 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 it's 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 = ½ NPT D = ¾ 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 = 2-1/2NPT
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; FACTORY ISSUED LETTERS/NUMBERS FOR SPECIAL OPTIONS.	
	A = ANTI-VIBRATION X = OXYGEN CLEAN

Nameplate Information

'Apollo' Valves		ISO 4126-1			
CONBRACO INDUSTRIES INC., USA CC2408		CE		UV NB	
MODEL 19MFEL125		0035			
<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 ² S=0.826 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=12th 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



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

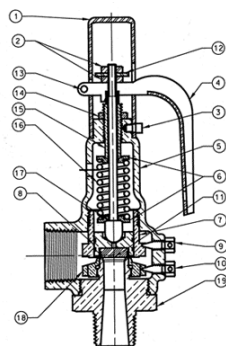
Options

- 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

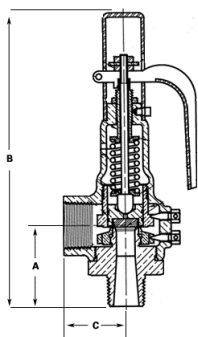
Materials



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 ASME SAFETY VALVE

Job Name:

Contractor:

Job Location:

P.O. Number:

Engineer:

Representative:

Tag:

Wholesale Distributor:

DESCRIPTION

ASME Section I/Section VIII capacity certified safety valve for overpressure protection of steam power boilers, systems, pressure vessels, piping and similar equipment. Suitable for steam, air and non-hazardous gases.

FEATURES

- ☐ ASME Section I & VIII Certified Capacities
- ☐ 5 - 300 psig Set Pressures @ 406F max
- ☐ 1/2+ - 2-1/2+ Inlet Connections Available
- ☐ Stainless Steel Wetted Component Option
- ☐ PFA, Metal and O-ring seat styles available
- ☐ Directive 97/23/EC (PED) Compliant Option
- ☐ Made in the USA

MATERIALS

Body: ASTM B584 Bronze

Nozzle: ASTM B16 Brass/ 316 SS

Spring: Stainless Steel

Seat: PFA Teflon/ B16 Brass/ 316 SS/ EPDM

CAPACITY, LB/HR (Kg/Hr)

National Board Capacity Certified, Section I Steam

Set Pressure PSIG (bar)	D ORIFICE	E ORIFICE	F ORIFICE
15 (1.03)	174 (79)	310 (140)	484 (220)
100 (6.90)	646 (293)	1152 (523)	1798 (817)
250 (17.24)	1494 (679)	2664 (1210)	4158 (1890)
	G ORIFICE	H ORIFICE	J ORIFICE
15 (1.03)	794 (360)	1240 (563)	2035 (925)
100 (6.90)	2950 (1340)	4602 (2091)	7557 (3435)
250 (17.24)	6822 (3100)	10644 (4838)	17477 (7944)

DIMENSIONS

MODEL #	SIZE	INSTALL HEIGHT	HEIGHT
19*DC	1/2M x 3/4F	6.00 (152)	6.5 (165)
19*DD	3/4M x 3/4F	6.00 (152)	6.5 (165)
19*ED	3/4M x 1F	6.75 (171)	7.1 (180)
19*EE	1M x 1F	6.75 (171)	7.1 (180)
19*FE	1M x 1-1/4F	8.68 (221)	9.3 (236)
19*FF	1-1/4M x 1-1/4F	8.68 (221)	9.3 (236)
19*GF	1-1/4M x 1-1/2F	10.32 (262)	11.0 (279)
19*GG	1-1/2M x 1-1/2F	10.32 (262)	11.0 (279)
19*HG	1-1/2M x 2F	11.28 (287)	12.0 (305)
19*HH	2M x 2F	11.28 (287)	12.0 (305)
19*JH	2M x 2-1/2F	13.75 (350)	14.2 (360)
19*JJ	2-1/2M x 2-1/2F	13.75 (350)	14.7 (373)
19*JG	1-1/2F x 2-1/2F	13.00 (331)	14.0 (355)

All dims in inches (mm);



ORDER NUMBER

19 . Seat-Orifice - Inlet - Service - Pressure - Options

Example: 19KEDA125CE

SEAT

- ☐ K = PFA Seat/Brass Trim
- ☐ M = Metal Seat/Brass Trim
- ☐ L = PFA Seat/Stainless Trim
- ☐ S = Stainless Seat/Stainless Trim
- ☐ E = EPDM O-ring/Brass Trim

ORIFICE

- ☐ D ☐ E ☐ F ☐ G ☐ H ☐ J

INLET

- ☐ 1/2+ (C) ☐ 3/4+(D) ☐ 1+(E)
- ☐ 1-1/4+(F) ☐ 1-1/2+(G) ☐ 2+(H)
- ☐ 2-1/2+(J)

SERVICE

- ☐ A = ASME SECTION I STEAM
- ☐ K = ASME SECTION VIII AIR/GAS
- ☐ L = ASME SECTION VIII STEAM
- ☐ N = NON-CODE AIR/GAS
- ☐ P = NON-CODE STEAM

SET PRESSURE

(5 - 300, psig)

SPECIAL OPTIONS

- ☐ A = ANTI-VIBRATION PREP
- ☐ CE = PED compliant

APPROVALS



ASME Section I Power Boilers

ASME Section VIII Div 1 Pressure Vessels

Canadian Registration Number 0G8547.5C

Pressure Equipment Directive 97/23/EC (PED)

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