



# 119 SERIES - SAFETY VALVE

*INSTALLATION, OPERATION, & MAINTENANCE*

*Part I*

**Conbraco Industries, Inc.**  
**P.O. Box 247**  
**Matthews, NC 28106**  
**(704) 841-6000**  
**Fax (704) 841-6020**  
<http://www.conbraco.com>

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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](http://www.conbraco.com).

## Maximum Pressure/Temperature Chart



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

Series	119
Trim Seat	Stainless Steel Metal to Metal
Max. Set – Steam	250 psi (1723.7 kPa)
Max. Set – Air/Gas	250 psi (1723.7 kPa)
Max. Temperature	450°F (232.2°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. Gasketing and bolting must meet the service requirements for the pressure and temperature involved. Gaskets must be sized to fully clear the valve inlet and outlet openings.
9. Cast iron bodied Safety Relief valves shall not be installed on vessels in lethal or flammable service
10. Use pipe compound sparingly or tape on external threads only.
11. Do not use a pipe wrench! Use proper type and size wrench on wrench pads only.
12. 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.
13. Do not plug or obstruct valve body drain. A body drain line should be installed to dispose of condensate.
14. 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, 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.

## 119 Series Part Number Matrix

**EX: 119JGCKMAA0125**

POSITION	OPTION
1-3: SERIES #	119 SERIES
4: ORIFICE	SPECIFY J/K/L/M/N/P/Q/R
5: INLET	G = 1-1/2" H = 2" J = 2-1/2" K = 3" M = 4" P = 6"
6 – CONNECTION	A = FNPT x FNPT (INLET x OUTLET) C = 250# x FNPT D = 250# x 125#
7 – SERVICE	A = ASME SECTION I STEAM K = ASME SECTION VIII AIR L = ASME SECTION VIII STEAM N = NON-CODE AIR P = NON-CODE STEAM
8 – SEAT	M = METAL (S.S. TRIM STD)
9-10 - OPTIONS	AA = DEFAULT; FACTORY ISSUED LETTERS/NUMBERS FOR SPECIAL OPTIONS
11-14 – SET PRESSURE	4 DIGITS, 0005 THRU 0250, PSIG

## Nameplate Information

 <b>Apollo Valves</b> CONBRACO INDUSTRIES INC., USA ISO 4126-1      CRN 0G8547.5C	MODEL 119KHCAMAA0175				  	
	SET	175	PSIG	12.1		BARG
	CAP	16978	LB/HR	SET	SCFM	
	SIZE	2	IN	DN	50	
	DO	40	S	.878	TS	
					DT 1304	

### 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

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

### MODEL

This is the valve model number as described in the Part Number Matrix.

### CAP

This is the approved capacity of the valve, lb/hr for steam, scfm for air/gas.

### SET

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

### SIZE

This is the inlet size of the valve in inches.

### DO

This is the orifice diameter in millimeters.

### TS

This is the maximum allowable temperature.

### S

This is the derated coefficient of discharge indicating reference fluid: ‘G’ for gas, ‘S’ for steam, and ‘L’ for liquid.

### DN

This is the metric size designation of the inlet.

### DATE

This is the date of manufacture. The last two numbers indicate the year (04=2004), and the first two numbers indicate the week of the year (13=13<sup>th</sup> week of the year).

# 119 Series

ASME Sections I & VIII Safety Valve



Job Name:	
Job Location:	
Engineer:	
Contractor:	
Tag:	
PO#:	
Rep:	
Wholesale Dist.:	

## DESCRIPTION

ASME Sections I & VIII air and steam capacity certified safety valve for overpressure protection of steam power boilers, deaerators, accumulators, pressure reducing stations and pressure piping systems.

## FEATURES

- ASME Section I & VIII Certified Capacities
- 5 - 250 psig Set Pressures @ 450° F max\*
- 1-1/2" - 6" Class 250 Flanged Inlet Connections
- 2" - 3" FNPT Inlet Connections Available
- Stainless Steel Wetted Trim Standard
- Optically Flat Lapped Metal Seats
- **Made in the USA**

## APPROVALS

- ASME Section I Power Boilers
- ASME Section VIII Div 1 Pressure Vessels for Steam, Air/Gas
- Canadian Registration Number 0G8547.5C
- Pressure Equipment Directive 2014/68/EU (PED)

*\*Set pressures and temperatures vary by model.  
Refer to catalog for sizing and selection information*

## STANDARD MATERIALS LIST

<b>BODY</b>	ASTM A126-B Cast Iron
<b>NOZZLE/DISC</b>	ASTM A479 Stainless
<b>SPRING</b>	Stainless Steel or Plated Steel

## CAPACITY, LB/HR (KG/HR)

NATIONAL BOARD CAPACITY CERTIFIED, SECTION 1 STEAM

SET PRESSURE PSIG (BAR)	15 (1.03)	100 (6.90)	250 (17.24)
J Orifice	1947 (885)	7227 (3285)	16714 (7597)
K Orifice	2761 (1255)	10250 (4659)	23705 (10775)
L Orifice	4286 (1948)	15913 (7233)	36801 (16727)
M Orifice	5410 (2459)	20085 (9129)	46451 (21114)
N Orifice	6522 (2964)	24215 (11006)	56002 (25455)
P Orifice	9592 (4360)	35615 (16188)	82366 (37439)
Q Orifice	16617 (7553)	61698 (28044)	142687 (64857)
R Orifice	24061 (10936)	89336 (40607)	206603 (93910)

## AVAILABLE CONFIGURATIONS

MODEL NUMBER	SIZE	INSTALLED HEIGHT IN. (MM)
119JGC	1-1/2" 250# x 2-1/2" FNPT	15 (381)
119KHC	2" 250# x 3" FNPT	16 (406)
119KHA	2" FNPT x 3" FNPT	16 (406)
119KJC	2-1/2" 250# x 3" FNPT	16 (406)
119KKC	3" 250# x 3" FNPT	16 (406)
119LJC	2-1/2" 250# x 4" FNPT	22 (558)
119LJA	2-1/2" FNPT x 4" FNPT	22 (558)
119LKC	3" 250# x 4" FNPT	22 (558)
119LMC	4" 250# x 4" FNPT	22 (558)
119MKA	3" FNPT x 4" FNPT	22 (558)
119MKC	3" 250# x 4" FNPT	22 (558)
119MMC	4" 250# x 4" FNPT	22 (558)
119NMD	4" 250# x 6" 125#	28 (711)
119PMD	4" 250# x 6" 125#	28 (711)
119QPD	6" 250# x 8" 125#	42 (1066)
119RPD	6" 250# x 8" 125#	42 (1066)

## PART NUMBER MATRIX

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 (CPCA9000)	G - 1-1/2	A - FNPT X FNPT	A - SEC I STEAM	FACTORY ISSUED LETTERS/NUMBERS (MAA DEFAULT) MCE - CE/PED	SET PRESSURE, PSIG (4 DIGITS)	Q - PERFORMANCE (CALIBRATION) TEST REPORTS
		H - 2	C - 250# X FNPT	K - SEC VIII AIR			
		J - 2-1/2	D - 250# X 125#	L - SEC VIII STEAM			
		K - 3		N - NON CODE AIR			
		M - 4		P - NON CODE STEAM			
		P - 6					

## 119 SERIES

### CAST IRON FLANGED SAFETY

#### ASME SECTION VIII - STEAM

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

#### US CUSTOMARY UNITS LB./HR.

ORIFICE LETTER AREA IN. <sup>2</sup>	J 1.358	K 1.926	L 2.99	M 3.774	N 4.55	P 6.692	Q 11.593	R 16.786
SET PRESSURE PSIG								
5*	1,312	1,860	2,888	3,645	4,395	6,464	11,198	16,213
10*	1,798	2,550	3,957	4,995	6,023	8,859	15,346	22,220
15	2,008	2,848	4,421	5,580	6,728	9,895	17,141	24,820
20	2,315	3,283	5,097	6,433	7,756	11,408	19,762	28,615
25	2,622	3,719	5,773	7,287	8,785	12,921	22,383	32,410
30	2,929	4,154	6,449	8,140	9,814	14,434	25,004	36,205
35	3,267	4,633	7,193	9,079	10,945	16,098	27,887	40,379
40	3,604	5,112	7,936	10,017	12,077	17,762	30,771	44,554
45	3,942	5,591	8,680	10,956	13,208	19,426	33,654	48,729
50	4,280	6,070	9,423	11,894	14,340	21,091	36,537	52,903
55	4,618	6,549	10,167	12,833	15,471	22,755	39,420	57,078
60	4,955	7,028	10,911	13,771	16,603	24,419	42,303	61,252
65	5,293	7,507	11,654	14,710	17,735	26,083	45,186	65,427
70	5,631	7,986	12,398	15,649	18,866	27,748	48,069	69,601
75	5,969	8,465	13,141	16,587	19,998	29,412	50,952	73,776
80	6,306	8,944	13,885	17,526	21,129	31,076	53,835	77,951
85	6,644	9,423	14,629	18,464	22,261	32,740	56,719	82,125
90	6,982	9,902	15,372	19,403	23,392	34,405	59,602	86,300
95	7,319	10,381	16,116	20,341	24,524	36,069	62,485	90,474
100	7,657	10,860	16,859	21,280	25,655	37,733	65,368	94,649
105	7,995	11,339	17,603	22,218	26,787	39,397	68,251	98,823
110	8,333	11,818	18,346	23,157	27,919	41,062	71,134	102,998
115	8,670	12,297	19,090	24,096	29,050	42,726	74,017	107,173
120	9,008	12,776	19,834	25,034	30,182	44,390	76,900	111,347
125	9,346	13,255	20,577	25,973	31,313	46,055	79,783	115,522
130	9,684	13,734	21,321	26,911	32,445	47,719	82,666	119,696
135	10,021	14,213	22,064	27,850	33,576	49,383	85,550	123,871
140	10,359	14,692	22,808	28,788	34,708	51,047	88,433	128,045
145	10,697	15,171	23,552	29,727	35,839	52,712	91,316	132,220
150	11,034	15,650	24,295	30,666	36,971	54,376	94,199	136,395
155	11,372	16,129	25,039	31,604	38,103	56,040	97,082	140,569
160	11,710	16,608	25,782	32,543	39,234	57,704	99,965	144,744
165	12,048	17,087	26,526	33,481	40,366	59,369	102,848	148,918
170	12,385	17,566	27,270	34,420	41,497	61,033	105,731	153,093
175	12,723	18,045	28,013	35,358	42,629	62,697	108,614	157,267
180	13,061	18,524	28,757	36,297	43,760	64,361	111,497	161,442
185	13,399	19,003	29,500	37,236	44,892	66,026	114,381	165,617
190	13,736	19,482	30,244	38,174	46,023	67,690	117,264	169,791
195	14,074	19,961	30,988	39,113	47,155	69,354	120,147	173,966
200	14,412	20,440	31,731	40,051	48,287	71,018	123,030	178,140
205	14,749	20,919	32,475	40,990	49,418	72,683	125,913	182,315
210	15,087	21,398	33,218	41,928	50,550	74,347	128,796	186,489
215	15,425	21,876	33,962	42,867	51,681	76,011	131,679	190,664
220	15,763	22,355	34,706	43,806	52,813	77,675	134,562	194,839
225	16,100	22,834	35,449	44,744	53,944	79,340	137,445	199,013
230	16,438	23,313	36,193	45,683	55,076	81,004	140,329	203,188
235	16,776	23,792	36,936	46,621	56,207	82,668	143,212	207,362
240	17,113	24,271	37,680	47,560	57,339	84,332	146,095	211,537
245	17,451	24,750	38,424	48,498	58,471	85,997	148,978	215,711
250	17,789	25,229	39,167	49,437	59,602	87,661	151,861	219,886
Approx. 1 psi Increment	68	96	149	188	226	333	577	835

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

#### METRIC UNITS KG/HR.

ORIFICE LETTER AREA CM. <sup>2</sup>	J 8.762	K 12.426	L 19.287	M 24.347	N 29.357	P 43.174	Q 74.795	R 108.294
SET PRESSURE BARG								
.34*	590	836	1,298	1,639	1,976	2,906	5,034	7,289
.69*	822	1,165	1,809	2,283	2,753	4,049	7,014	10,155
1.1	937	1,329	2,064	2,605	3,141	4,619	8,002	11,586
1.5	1,099	1,559	2,419	3,054	3,682	5,415	9,382	13,584
2	1,301	1,845	2,864	3,615	4,359	6,411	11,106	16,080
2.5	1,520	2,156	3,347	4,225	5,094	7,492	12,979	18,792
3	1,743	2,471	3,836	4,842	5,839	8,587	14,876	21,539
3.5	1,965	2,787	4,325	5,460	6,583	9,682	16,773	24,285
4	2,187	3,102	4,814	6,077	7,328	10,777	18,670	27,031
4.5	2,409	3,417	5,303	6,695	8,072	11,872	20,566	29,778
5	2,632	3,732	5,793	7,312	8,817	12,967	22,463	32,524
5.5	2,854	4,047	6,282	7,929	9,561	14,061	24,360	35,270
6	3,076	4,362	6,771	8,547	10,306	15,156	26,257	38,017
6.5	3,298	4,677	7,260	9,164	11,050	16,251	28,153	40,763
7	3,520	4,992	7,749	9,782	11,795	17,346	30,050	43,509
7.5	3,743	5,308	8,238	10,399	12,539	18,441	31,947	46,255
8	3,965	5,623	8,727	11,017	13,284	19,536	33,844	49,002
8.5	4,187	5,938	9,216	11,634	14,028	20,631	35,741	51,748
9	4,409	6,253	9,706	12,251	14,773	21,726	37,637	54,494
9.5	4,631	6,568	10,195	12,869	15,517	22,820	39,534	57,241
10	4,854	6,883	10,684	13,486	16,262	23,915	41,431	59,987
10.5	5,076	7,198	11,173	14,104	17,006	25,010	43,328	62,733
11	5,298	7,513	11,662	14,721	17,750	26,105	45,224	65,480
11.5	5,520	7,829	12,151	15,338	18,495	27,200	47,121	68,226
12	5,742	8,144	12,640	15,956	19,239	28,295	49,018	70,972
12.5	5,965	8,459	13,129	16,573	19,984	29,390	50,915	73,718
13	6,187	8,774	13,618	17,191	20,728	30,485	52,811	76,465
13.5	6,409	9,089	14,108	17,808	21,473	31,580	54,708	79,211
14	6,631	9,404	14,597	18,426	22,217	32,674	56,605	81,957
15	7,076	10,034	15,575	19,660	23,706	34,864	60,399	87,450
16	7,520	10,665	16,553	20,895	25,195	37,054	64,192	92,943
17	7,964	11,295	17,531	22,130	26,684	39,244	67,986	98,435
Approx. 0.1 barg Increment	44.4	63.0	97.8	123.5	148.9	219.0	379.4	549.3