



# 500 SERIES - SAFETY VALVE

*INSTALLATION, OPERATION, & MAINTENANCE*

*Part I*

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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	510	520	530	540
Body	Bronze	Bronze	Carbon Steel	Stainless Steel
Trim	Brass	Stainless Steel	Stainless Steel	Stainless Steel
Max. Set Steam	250 psi (1724 kPa)	300 psi (2068 kPa)	900 psi (6205 kPa) D/E 600 psi (4137 kPa) F/G 500 psi (3447 kPa) H/J	900 psi (6205 kPa) D/E 600 psi (4137 kPa) F/G 500 psi (3447 kPa) H/J
Max. Set Air/Gas/Liquid	300 psi (2068 kPa)	900 psi (6205 kPa) D/E 600 psi (4137 kPa) F/G 500 psi (3447 kPa) H/J	900 psi (6205 kPa) D/E 600 psi (4137 kPa) F/G 500 psi (3447 kPa) H/J	900 psi (6205 kPa) D/E 600 psi (4137 kPa) F/G 500 psi (3447 kPa) H/J
Max. Temperature	406°F (208°C)	422°F (217°C)	800°F (427°C)	800°F (427°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 the test lever as a lifting device during installation.
6. Insure that all connections, including the valve inlet, are clean and free of any foreign material.
7. Use pipe compound sparingly or tape on external threads only.
8. Do not use a pipe wrench! Use proper type and size wrench on wrench pads only.
9. Valves for compressible fluid service shall be connected to the vessel in the vapor space above any contained liquid or to piping connected to the vapor space on the vessel which is to be protected. Mount in a vertical upright position. Vacuum Relief: Install female NPT to vacuum source, male NPT open to atmosphere. Do not plug or cap male NPT. Valves for use in liquid service shall be connected below the normal liquid level.
10. Do not plug or obstruct valve body drain. A body drain line should be installed to dispose of condensate.
11. 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 liquid, 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) 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

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 or 10% of the nameplate set pressure, whichever is greater. 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 (when so equipped) 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 location of the nearest authorized service facility.

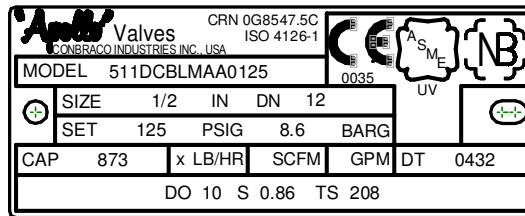
Neither Conbraco Industries, Inc. nor it's agents assume any liability for valves improperly installed or maintained.

## 500 Series Part Number Matrix

**EX: 523JHBKMAA0125**

POSITION	OPTION
1 – SERIES #	5 = 500 SERIES
2 – BODY/TRIM	1 = BRONZE/BRASS 2 = BRONZE/STAINLESS STEEL 3 = CARBON STEEL/STAINLESS STEEL 4 = STAINLESS STEEL/STAINLESS STEEL
3 - CAP	1 = SCREWED CAP 2 = SCREWED CAP W/GAG 3 = PACKED LEVER 4 = PACKED LEVER W/GAG
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 H = 2 NPT
6 – CONNECTION	B = MNPT INLET x FNPT OUTLET D = MNPT x 3/4FNPT OUTLET, D ORIFICE, BRONZE BODY ONLY
7 – SERVICE	J = UV LIQUID K = UV AIR L = UV STEAM M = NON-CODE LIQUID N = NON-CODE AIR P = NON-CODE STEAM Q = VACUUM SERVICE
8 – SEAT	M = METAL B = NITRILE/BUNA-N E = EPR K = PCTFE (CRYOGENIC SERVICE) S = SILICONE N = NEOPRENE V = VITON
9-10 - OPTIONS	AA = DEFAULT; FACTORY ISSUED LETTERS/NUMBERS FOR SPECIAL OPTIONS
11-14 – SET PRESSURE	4 DIGITS, 0005 THRU 0900, PSIG; VACUUM SERVICE, HG05 THRU HG30, Hg"

## Nameplate Information



### ASME Code Symbol

When applicable, the ASME “UV” stamp will be added in the empty box in the upper right corner. 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 National Board certified capacity rating of the valve, calculated in accordance with the requirements of ASME Section VIII, Division I. One of the three adjacent boxes will be marked to indicate the units of the capacity rating.

### 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.

### DN

This is the metric size designation of the inlet.

### DO

This is the orifice diameter in millimeters.

### TS

This is the maximum allowable temperature in Celsius.

### S

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

### DATE

This is the date of manufacture. The first two numbers indicate the year (04=2004), and the last two numbers indicate the week of the year (32=32<sup>ND</sup> week of the year).