

# 17YBCVNL SERIES - NL BRASS THREADED CHECK VALVES

Check Valves, sometimes referred to as non-return or one way valves, allow the flow of fluid in one direction only. The flow direction is typically indicated by an arrow on the valve body. They are commonly used in the installation of a submersible pump. Their purpose is to prevent the flow of fluid in the opposite direction and to maintain system pressure when the pump stops. Check valves work automatically and are opened by the pump's pressure against a low tension spring, normally ½ PSI or less cracking pressure (cracking pressure is the pressure it takes to open the valve). When the pump stops the valve starts closing automatically with assistance of the spring as the flow slows, and is completely sealed before it comes to a full stop. This eliminates flow reversal which would cause the poppet to slam against the seat causing hydraulic shock or water hammer. Without a check valve gravity would cause the water or fluid to flow in the reverse direction, draining system pressure and potentially causing damage to the pump and or piping system.

## APPLICATIONS:

- Check valves are mainly used in wastewater, irrigation, and some potable water applications



## SPECIFICATIONS:

- Threads conform to ANSI/ASME B1.20.1
- Cast NL brass body and poppet
- Nitrile Butadiene Rubber (NBR) O-ring seal
- Cracking pressure equal to or less than 0.5 PSI for 1/2" through 4" valves
- Best practice is to install check valves vertically with the arrow pointed up in the direction of liquid flow. (1/2" through 1-1/4" sizes can be installed horizontally)

## CERTIFICATION:

- Lead Free Certified to the standard Section 1417(d) of the Safe Drinking Water Act, and The lead content requirements of Section 116875 of the California Health & Safety Code

## RATINGS:

- Maximum pressure rating: 200 PSI WOG Non-Shock
- Maximum temperature rating: 180 °F (82 °C)
- Headloss - see page 3 for detailed information
- Velocity - see page 3 for detailed information
- CV Rating - see page 3 for detailed information

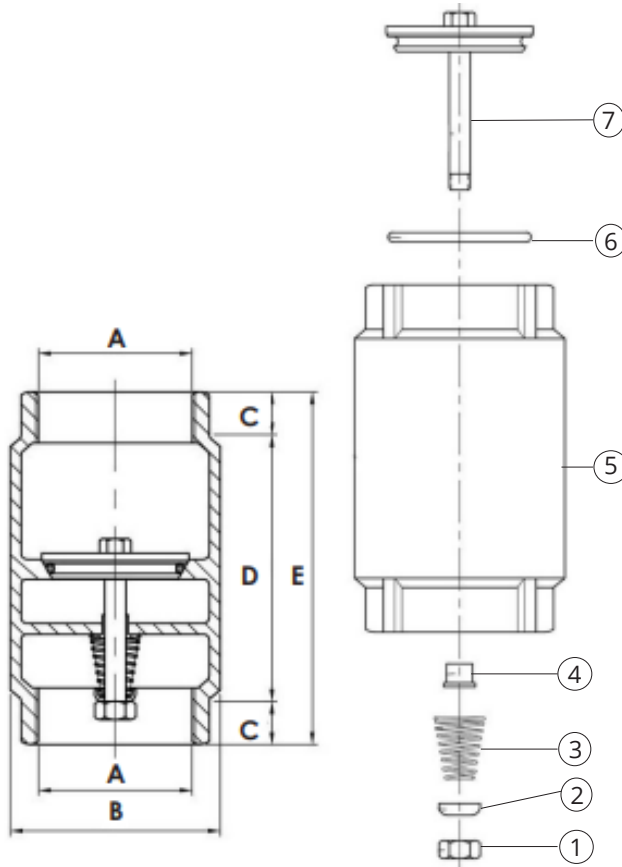
**BOSHART**  
**INDUSTRIES**

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17YBCV400NL



| MATERIAL LIST |            |                                |
|---------------|------------|--------------------------------|
| No.           | Part Name  | Material                       |
| 1             | Hex Nut    | 304SS                          |
| 2             | Cup Washer | 304SS                          |
| 3             | Spring     | 304SS                          |
| 4             | Bushing    | Polyethylene                   |
| 5             | Body       | NL Brass (C89540)              |
| 6             | O-ring     | Nitrile Butadiene Rubber (NBR) |
| 7             | Poppet     | NL Brass (C89540)              |

| DIMENSIONS  |            |      |        |      |       |      |        |       |        |        |       |
|-------------|------------|------|--------|------|-------|------|--------|-------|--------|--------|-------|
| Part No.    | A          | B    |        | C    |       | D    |        | E     |        | Weight |       |
|             |            | in   | mm     | in   | mm    | in   | mm     | in    | mm     | lbs    | grams |
| 17YBCV050NL | 1/2" FPT   | 1.22 | 30.99  | 0.37 | 9.50  | 1.61 | 41.00  | 2.36  | 59.99  | 0.40   | 180   |
| 17YBCV075NL | 3/4" FPT   | 1.46 | 37.01  | 0.39 | 10.01 | 1.85 | 46.99  | 2.64  | 67.01  | 0.55   | 250   |
| 17YBCV100NL | 1" FPT     | 1.73 | 43.99  | 0.45 | 11.51 | 2.24 | 57.00  | 3.15  | 80.01  | 0.82   | 370   |
| 17YBCV125NL | 1-1/4" FPT | 2.09 | 53.01  | 0.53 | 13.49 | 2.48 | 62.99  | 3.54  | 89.99  | 1.32   | 600   |
| 17YBCV150NL | 1-1/2" FPT | 2.36 | 59.99  | 0.61 | 15.49 | 2.82 | 71.70  | 3.94  | 100.00 | 1.57   | 710   |
| 17YBCV200NL | 2" FPT     | 2.95 | 75.01  | 0.65 | 16.51 | 3.43 | 87.00  | 4.72  | 119.99 | 2.89   | 1310  |
| 17YBCV300NL | 3" FPT     | 4.13 | 105.00 | 1.18 | 30.00 | 5.00 | 127.00 | 7.36  | 186.99 | 9.48   | 4300  |
| 17YBCV400NL | 4" FPT     | 5.51 | 140.00 | 1.97 | 50.01 | 6.46 | 164.01 | 10.39 | 264.01 | 18.52  | 8400  |



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**FLOW COEFFICIENT:** Flow Coefficient (Cv) is the number of U.S. gallons that can pass through a valve when it is in the fully opened position at a pressure drop of 1 PSI. Testing is typically done by running water (specific gravity of 1.0 centistoke viscosity) at 60°F (°C) unless stated otherwise.

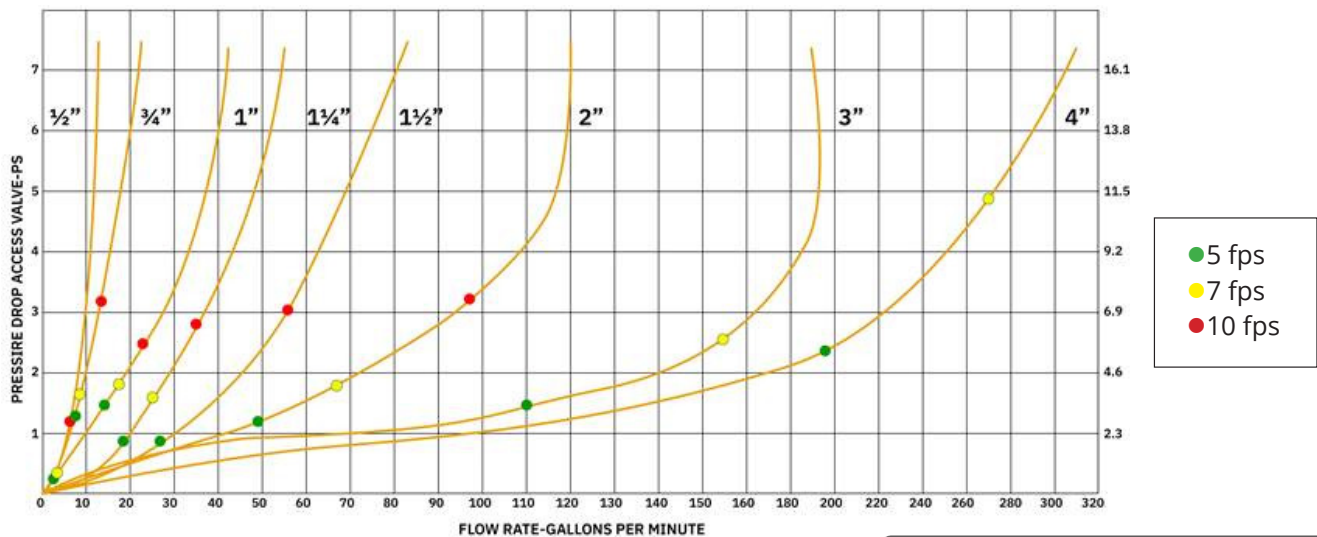
| Valve Size            | 1/2" | 3/4" | 1"  | 1-1/4" | 1-1/2" | 2"   | 3"   | 4"   |
|-----------------------|------|------|-----|--------|--------|------|------|------|
| Flow Coefficient (CV) | 5.0  | 6.2  | 9.6 | 20.1   | 30.1   | 41.2 | 65.0 | 95.0 |

The Cv is used to properly size valves, so they have minimal effect on the hydraulic efficiency of your system. Flow Coefficient or Cv is one of the most important things to know for selecting the right size of valve. For example, a 1-1/4" valve with a Cv of 20.1 has an effective port area in the fully open position such that it is capable of passing 20.1 GPM of water with a pressure drop of 1 PSI.

**VELOCITY:** It is also important to take Flow Velocity into consideration when selecting a valve, larger pipe is more expensive, however keeping the water velocity low is important to limit pressure losses due to friction, water hammer, and pipe movement due to water momentum changes inside the pipe. It is recommended to size piping to maintain a water velocity of 5 ft/second (1.524 LPM). Five feet per second is a threshold that is widely accepted by engineers and designers because beyond this velocity, the friction losses, danger of water hammer, and pipe movement due to water momentum changes are deemed to be too high.

| Maximum Flow Rates to Maintain Fluid Velocity of 5 fps (1.523m/s) |       |       |       |        |        |        |        |        |
|---|-------|-------|-------|--------|--------|--------|--------|--------|
| Nominal Valve / Pipe Size   | 1/2"  | 3/4"  | 1"    | 1-1/4" | 1-1/2" | 2"     | 3"     | 4"     |
| GPM at 5 fps (feet / second)                                      | 3.06  | 6.89  | 12.25 | 19.15  | 27.57  | 49.02  | 110.29 | 196.08 |
| LPM at 1.524 m/s (meters / second)                                | 11.57 | 26.04 | 46.30 | 72.34  | 104.17 | 185.19 | 416.67 | 704.75 |

**HEAD LOSS:** Head loss is a measure of the reduction in the total head (sum of elevation head, velocity head and pressure head) of the fluid as it moves through a fluid system. The chart below provides the head loss data for these series of valves. You will notice that when the flow velocity is maintained the head loss across the valves is typically 1.5 PSI or less (except for the 4" valves at approx. 2.3 PSI)



For more information on installation, adjustment, repair & operation, visit Boshart Knowledge Base at [SUPPORT.BOSHART.COM](http://SUPPORT.BOSHART.COM)



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