



BUFFER TANKS

ASME Commercial Buffer Tanks



3
Years

For Closed Loop Systems



BUFFER TANKS

Amtrol ASME Buffer Tanks add capacity to non-potable, closed systems to help reduce cycling, improve temperature control and provide more consistent system operation. Available for chilled water and hot water applications, these Buffer Tanks are all made at our ISO 9001:2015 registered facilities and have an industry leading 3-year warranty.



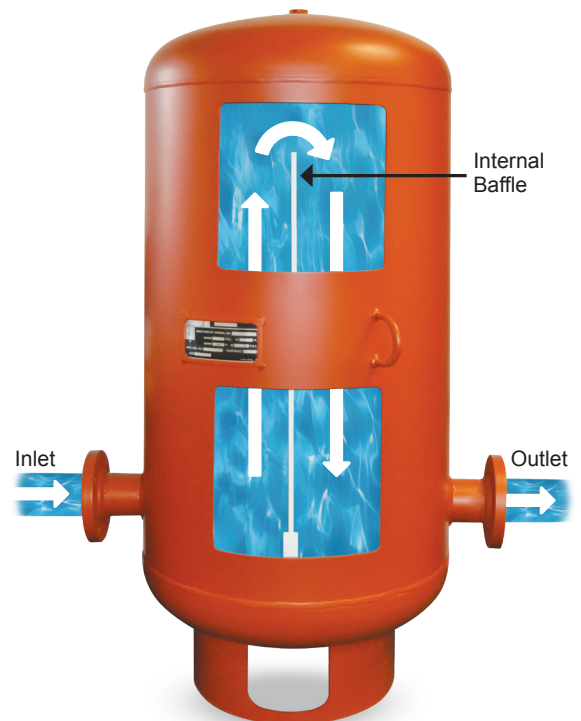
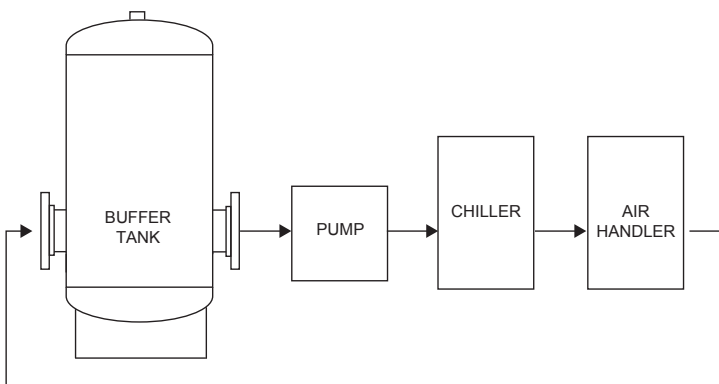
Chilled Water Buffer Tank CWBT Series

- Meets all ASME Section VIII, Division I standards.
- Available up to 1,040 gallons.
- Connections from 3" to 12".
- Internal baffle helps properly circulate water.
- Maximum Working Pressure: 125 or 150 psig.
- Maximum Operating Temperature: 450° F.

How It Works

Water enters the buffer tank and is diverted up and over the internal baffle to circulate the water and take full advantage of the tank volume.

Typical Installation



for Chilled and Hot Water Systems



Hot Water Buffer Tank HWBT Series

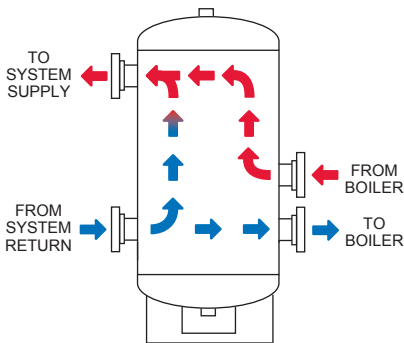
- Meets all ASME Section VIII, Division I standards.
- Available in 2 or 4 port options.
- Available up to 300 gallons.
- Available in 2", 3" & 4" connections.
- Maximum Working Pressure: 125 or 150 psig.
- Maximum Operating Temperature: 450° F.

How It Works

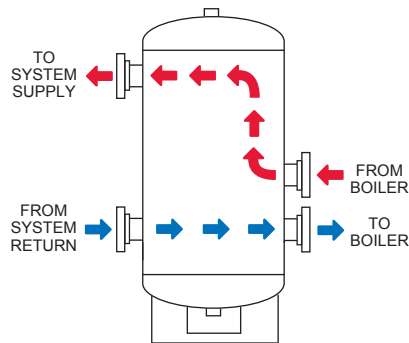
Tank provides added capacity in high efficiency systems that incorporate small, modular, low-mass condensing boilers.

- 4-port tanks allow for primary / secondary flow through the vessel. This is usually required for systems with multiple small or low volume zones to maximize boiler efficiency and overall system performance.
- 2-port tanks are typically used in standard applications where all zones are similarly sized.

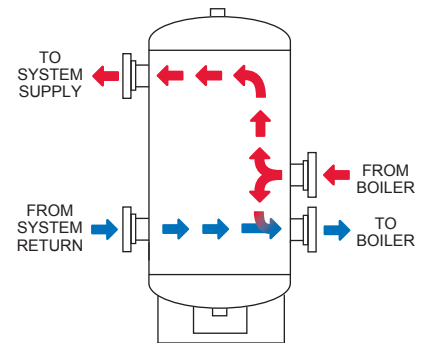
System Flow > Boiler Flow



System Flow = Boiler Flow

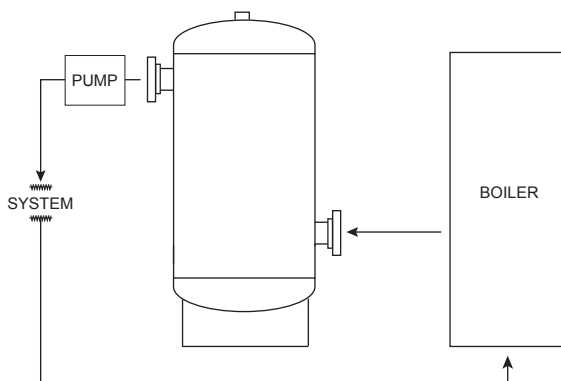


System Flow < Boiler Flow

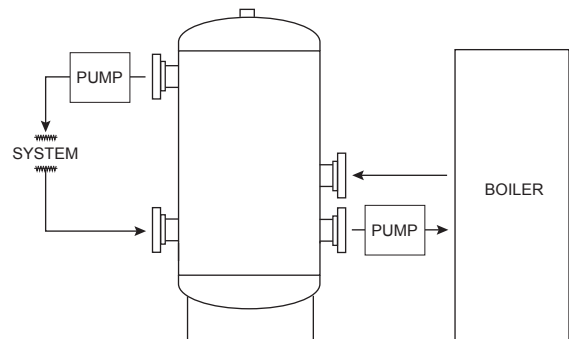


Typical Installations

2 Port Installation



4 Port Installation



Sizing Hot Water Buffer Tanks

For Adding Capacity to Closed, Non-Potable Hot Water Systems

Required Information

- Boiler Cycle Time (minutes)
- Minimum Boiler Output (BTU/hr)
- Minimum System Load (BTU/hr)
- Temperature Differential (°F)

Example:

Boiler Cycle Time: 5 minutes
 Minimum Boiler Output: 200,000 BTU's
 Minimum System Load: 25,000 BTU's
 Temperature Differential: 170° - 180° = 10° F
 Pipe Size: 2"
 Relief Valve: 50 PSI

$$\frac{5 (200,000 - 25,000)}{10 \times 500} = 175 \text{ Gallons}^*$$

Recommendation: HWBT200-2-125

*Select tank equal to or greater

Manufacturer's
recommended
minimum boiler
cycle time*

Minutes

Minimum
Boiler
Output

BTU/hr.

Minimum
System
Load**

BTU/hr.

Temperature
differential
within tank***

°F.

x 500

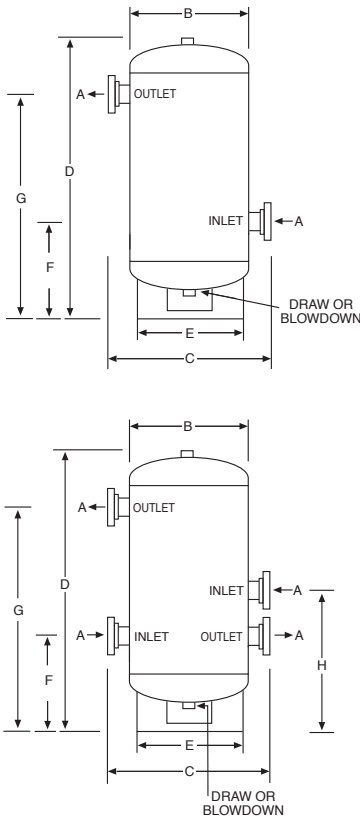
Buffer
Tank Size

Gallons

* Typical 1-10 min. (use 5 if unknown).

** Assume to be 0 if no system load or if rate is unknown.

*** Temperature differential can range from 5 to 25°F., 10°F is typical.



HWBT Series Specifications

| Model Number | Ports | Tank Volume (Gallons) | Dimensions (Inches) | | | | | | | | Shipping Weight (lbs.) | |
|--------------|-------|-----------------------|---------------------|----|------------------|------------------|----|------------------|------------------|------------------|------------------------|---------|
| | | | Connection Size A | B | C | D | E | F | G | H | 125 PSI | 150 PSI |
| HWBT120-2 | 2 | 120 | 2 | 24 | 33 $\frac{1}{8}$ | 55 $\frac{3}{4}$ | 16 | 15 | 45 | - | 254 | 279 |
| HWBT120-3 | 2 | 120 | 3 | 24 | 33 $\frac{1}{8}$ | 55 $\frac{3}{4}$ | 16 | 15 | 45 | - | 268 | 295 |
| HWBT200-2 | 2 | 200 | 2 | 30 | 39 | 62 $\frac{1}{2}$ | 24 | 21 $\frac{1}{2}$ | 45 $\frac{1}{2}$ | - | 475 | 523 |
| HWBT200-3 | 2 | 200 | 3 | 30 | 39 $\frac{1}{8}$ | 62 $\frac{1}{2}$ | 24 | 21 $\frac{1}{2}$ | 45 $\frac{1}{2}$ | - | 490 | 539 |
| HWBT300-2 | 2 | 300 | 2 | 36 | 45 $\frac{1}{8}$ | 80 $\frac{3}{8}$ | 30 | 32 $\frac{1}{4}$ | 61 $\frac{1}{4}$ | - | 668 | 735 |
| HWBT300-3 | 2 | 300 | 3 | 36 | 45 $\frac{1}{8}$ | 80 $\frac{3}{8}$ | 30 | 32 $\frac{1}{8}$ | 61 | - | 683 | 751 |
| HWBT120-2/2 | 4 | 120 | 2/2 | 24 | 33 $\frac{1}{8}$ | 55 $\frac{3}{4}$ | 16 | 15 | 45 | 27 | 267 | 294 |
| HWBT120-2/3 | 4 | 120 | 2/3 | 24 | 33 $\frac{1}{8}$ | 55 $\frac{3}{4}$ | 16 | 15 | 45 | 27 | 282 | 310 |
| HWBT120-3/3 | 4 | 120 | 3/3 | 24 | 33 $\frac{1}{8}$ | 55 $\frac{3}{4}$ | 16 | 15 | 45 | 27 | 297 | 327 |
| HWBT120-4/4 | 4 | 120 | 4/4 | 24 | 33 $\frac{1}{8}$ | 55 $\frac{3}{4}$ | 16 | 15 $\frac{1}{2}$ | 44 $\frac{1}{2}$ | 27 $\frac{1}{2}$ | 338 | 372 |
| HWBT200-2/2 | 4 | 200 | 2/2 | 30 | 39 | 62 $\frac{1}{2}$ | 24 | 21 $\frac{1}{2}$ | 45 $\frac{1}{2}$ | 35 $\frac{1}{2}$ | 489 | 538 |
| HWBT200-2/3 | 4 | 200 | 2/3 | 30 | 39 | 62 $\frac{1}{2}$ | 24 | 21 $\frac{1}{2}$ | 45 $\frac{1}{2}$ | 35 $\frac{1}{2}$ | 503 | 553 |
| HWBT200-3/3 | 4 | 200 | 3/3 | 30 | 39 $\frac{1}{8}$ | 62 $\frac{1}{2}$ | 24 | 21 $\frac{1}{2}$ | 45 $\frac{1}{2}$ | 35 $\frac{1}{2}$ | 518 | 570 |
| HWBT200-4/4 | 4 | 200 | 4/4 | 30 | 39 $\frac{1}{8}$ | 62 $\frac{1}{2}$ | 24 | 21 $\frac{1}{2}$ | 45 $\frac{1}{2}$ | 35 $\frac{1}{2}$ | 560 | 617 |
| HWBT300-2/2 | 4 | 300 | 2/2 | 36 | 45 $\frac{1}{8}$ | 80 $\frac{3}{8}$ | 30 | 32 $\frac{1}{4}$ | 61 $\frac{1}{4}$ | 48 $\frac{1}{4}$ | 682 | 750 |
| HWBT300-2/3 | 4 | 300 | 2/3 | 36 | 45 $\frac{1}{8}$ | 80 $\frac{3}{8}$ | 30 | 32 $\frac{1}{8}$ | 61 | 48 $\frac{3}{8}$ | 696 | 766 |
| HWBT300-3/3 | 4 | 300 | 3/3 | 36 | 45 $\frac{1}{8}$ | 80 $\frac{3}{8}$ | 30 | 32 $\frac{1}{8}$ | 61 | 48 $\frac{3}{8}$ | 711 | 782 |
| HWBT300-4/4 | 4 | 300 | 4/4 | 36 | 45 $\frac{1}{8}$ | 80 $\frac{3}{8}$ | 30 | 32 $\frac{1}{8}$ | 61 | 48 $\frac{3}{8}$ | 753 | 828 |

Sizing Chilled Water Buffer Tanks

For Adding Capacity to Closed, Non-Potable Chilled Water Systems

Required Information

Total Chilled Capacity in Tons = C

System Volume per Ton* = V_R

Actual System Volume in Gallons = V_A

*Check with Chiller Manufacturer for specific requirements. Typical HVAC chiller systems are between 3 and 6 gallons per ton. Applications where temperature accuracy is critical requires 6 to 10 gallons.

$$\left(\begin{array}{c} \text{Total} \\ \text{Chilled} \\ \text{Capacity} \\ \hline \text{Tons} \\ (C) \end{array} \right) \times \left(\begin{array}{c} \text{System} \\ \text{Volume} \\ \text{Per Ton} \\ \hline \text{Gallons/Ton} \\ (V_R) \end{array} \right) - \left(\begin{array}{c} \text{System} \\ \text{Volume} \\ \hline \text{Gallons} \\ (V_A) \end{array} \right) = \left(\begin{array}{c} \text{Buffer} \\ \text{Tank} \\ \text{Size} \\ \hline \text{Gallons} \end{array} \right)$$

Example:

Total Chilled Capacity (C): 100 Tons

System Volume (V_R): 10 Gallons Per Ton

Actual System Volume (V_A): 800 Gallons

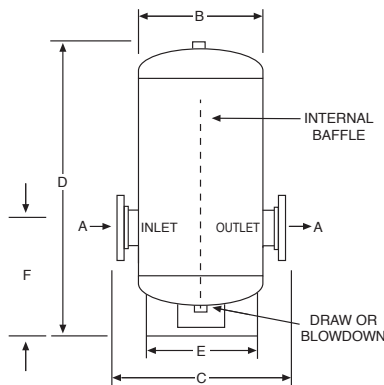
Pipe Size: 4"

Relief Valve: 50 PSI

$(100 \times 10) - 800 = 200$ Gallons*

Recommendation: CWBT200-4-125

*Select tank equal to or greater



CWBT Series Specifications

| Model Number | Tank Volume (Gallons) | Dimensions (Inches) | | | | | | Shipping Weight (lbs.) | |
|--------------|-----------------------|---------------------|----|------------------|--------------------|----|------------------|------------------------|---------|
| | | Connection Size A | B | C | D | E | F | 125 PSI | 150 PSI |
| CWBT120-3 | 120 | 3 | 24 | 33 $\frac{3}{8}$ | 55 $\frac{3}{4}$ | 16 | 15 | 294 | 323 |
| CWBT120-4 | 120 | 4 | 24 | 33 $\frac{3}{8}$ | 55 $\frac{3}{4}$ | 16 | 15 $\frac{1}{2}$ | 315 | 347 |
| CWBT120-6 | 120 | 6 | 24 | 33 $\frac{3}{8}$ | 55 $\frac{3}{4}$ | 16 | 16 $\frac{1}{2}$ | 333 | 366 |
| CWBT200-3 | 200 | 3 | 30 | 39 $\frac{3}{8}$ | 62 $\frac{3}{8}$ | 24 | 21 $\frac{1}{2}$ | 527 | 580 |
| CWBT200-4 | 200 | 4 | 30 | 39 $\frac{3}{8}$ | 62 $\frac{3}{8}$ | 24 | 22 | 547 | 602 |
| CWBT200-6 | 200 | 6 | 30 | 39 $\frac{3}{8}$ | 62 $\frac{3}{8}$ | 24 | 23 | 566 | 623 |
| CWBT300-4 | 300 | 4 | 36 | 45 | 80 $\frac{3}{8}$ | 30 | 32 $\frac{3}{8}$ | 753 | 828 |
| CWBT300-6 | 300 | 6 | 36 | 45 | 80 $\frac{3}{8}$ | 30 | 33 $\frac{3}{8}$ | 772 | 849 |
| CWBT300-8 | 300 | 8 | 36 | 45 | 80 $\frac{3}{8}$ | 30 | 34 $\frac{3}{8}$ | 801 | 881 |
| CWBT500-6 | 500 | 6 | 42 | 51 | 99 $\frac{1}{2}$ | 30 | 36 $\frac{1}{2}$ | 1,366 | 1,503 |
| CWBT500-8 | 500 | 8 | 42 | 51 | 99 $\frac{1}{2}$ | 30 | 37 $\frac{1}{2}$ | 1,395 | 1,535 |
| CWBT500-10 | 500 | 10 | 42 | 51 | 99 $\frac{1}{2}$ | 30 | 38 $\frac{1}{2}$ | 1,490 | 1,639 |
| CWBT850-6 | 850 | 6 | 54 | 64 $\frac{1}{8}$ | 114 $\frac{7}{16}$ | 42 | 39 $\frac{1}{2}$ | 2,707 | 2,978 |
| CWBT850-8 | 850 | 8 | 54 | 64 $\frac{1}{8}$ | 114 $\frac{7}{16}$ | 42 | 40 $\frac{1}{2}$ | 2,736 | 3,010 |
| CWBT850-10 | 850 | 10 | 54 | 64 $\frac{1}{8}$ | 114 $\frac{7}{16}$ | 42 | 41 $\frac{1}{2}$ | 2,771 | 3,048 |
| CWBT1040-8 | 1040 | 8 | 60 | 70 | 107 $\frac{7}{8}$ | 45 | 36 | 3,136 | 3,450 |
| CWBT1040-10 | 1040 | 10 | 60 | 70 | 107 $\frac{7}{8}$ | 45 | 37 | 3,171 | 3,488 |
| CWBT1040-12 | 1040 | 12 | 60 | 70 | 107 $\frac{7}{8}$ | 45 | 38 | 3,283 | 3,611 |



Tanks on Tour™

The Tanks on Tour™ mobile education center is traveling throughout the United States and Canada demonstrating the very real differences of Amtrol's Commercial tanks. Now with an industry leading 3-year warranty on our ASME tanks, Amtrol continues to provide you with the highest quality, most reliable, and best performing products on the market.



Tanks on Tour™ in front of the Amtrol Education Center.

Additional support materials available on amtrol.com.



1400 Division Road, West Warwick, RI 02893 USA
T: 800.426.8765 www.amtrol.com

