HYDRONIC BUFFER TANKS

Heat-flo

Heat-flo's Hydronic Buffer Tanks are designed to be used in closed loop heating systems with low-mass boilers, geothermal systems, and chilled water applications. Utilizing our hydronic buffer tanks improves system efficiency and can extend equipment life by reducing the wear and tear on chillers or boilers due to short cycling.

HF-22-BT

The primary application for the HF-22-BT is to reduce low-mass modulating, condensing boiler short cycling. The high and low left side connections are used for boiler supply and return. The top connection is used to supply the distribution system and the low right connection is the return from the distribution system. If the top connection is piped to the line supplying the air purger and vent, the tank will be self-venting.

HF-30-BT

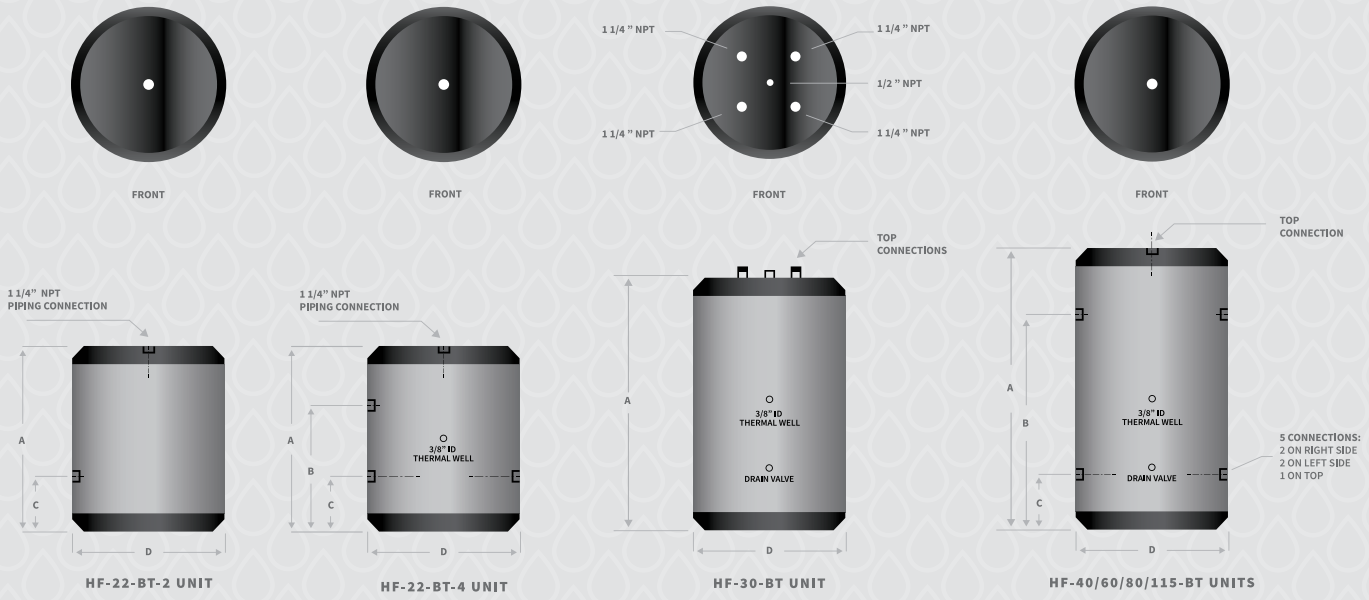
The HF-30-BT is designed with 4 – 1 ¼" NPT connections on top, and can be installed under a typical residential mod-con boiler to save space, piping, and labor. Two top connections are connected to the top of the tank, and two top connections direct water to the bottom of the tank via internal stainless steel dip tubes. A ½" connection is in the center of the tank for an air vent.

HF-40-BT THROUGH HF-115-BT

Our hydronic buffer tanks are built with 5 connections: 2 connections can be piped to the chiller or boiler, and 2 connections can be piped to the distribution system. A fifth connection is available for alternate piping configurations. When configured and piped correctly, Heat-flo hydronic buffer tanks can serve as both a thermal buffer and a hydraulic separator - allowing the heating or cooling source to be hydraulically decoupled from the distribution system.

HF-22-BT-2 / HF-22-BT-4 / HF-30-BT
HF-40-BT-2 / HF-60-BT-2
HF-80-BT-2 / HF-115-BT-2

SYSTEM CONNECTION CONFIGURATIONS & DIMENSIONS FOR EACH MODEL



FEATURES & BENEFITS INCLUDE:

QUALITY DESIGN & CONSTRUCTION

- All stainless steel.
- Over 2" of insulation, providing less than 1° / hr. heat loss.
- Flexible thermoplastic jacket that will not corrode and resists denting.

EASY INSTALLATION

- All pipe connections are on top for a neat, quick and clean installation.
- Brass drain and relief valves are factory installed.

RESIDENTIAL AND COMMERCIAL

- Models available in 22, 30, 40, 60, 80, and 115 gallon sizes.
- Bank together 80 and 115 gallon units for large commercial applications.

DIMENSIONS & CAPACITIES

MODEL	Storage Volume	Dimensions *(Inches)*				Piping Connections	Max. Tank Working Pressure	Approx. Shipping Wt.
	(Gal.)	*A (Ht.)*	*B*	*C*	*D (Dia.)*	*(NPT)*	*(psi)*	*(Lbs.)*
HF-22-BT-2	22	24.5	—	8.0	22.5	1 ¼"	60	35
HF-22-BT-4	22	24.5	15.0	8.0	22.5	1 ¼"	60	35
HF-30-BT	30	34.0	—	—	23.5	1 ¼"	60	77
HF-40-BT-2	40	42.0	31.0	11.0	23.5	2"	60	87
HF-60-BT-2	60	44.0	31.5	11.5	28.0	2"	60	115
HF-80-BT-2	80	54.0	40.5	11.5	28.0	2"	60	125
BT-115-BT-2	115	72.0	61.5	11.5	28.0	2"	60	160

Intertek

Conforms to UL STD 174 and NSF/ANSI 372 Certified to CAN/CSA STD C22.2 No. 110-94

BUFFER TANK SIZING: CALCULATING CAPACITY

The Heat-Flo buffer tanks are a simple, cost effective way to improve overall system efficiency by reducing unnecessary equipment short cycling. The recommended capacity or volume of a buffer tank is based on four variables:

1. **The duration of the heating or cooling source "on time." (Minutes)**
   The desired length of "on time" for each run cycle depends on the type of equipment used. Heat pump and chiller manufacturers typically recommend a minimum of 5 to 10 minutes "on time," and boiler manufacturers may recommend a minimum of 10 minutes "on time." Check with your equipment manufacturer. Generally, the longer the "on time," the higher the overall operating efficiency.

2. **The minimum rate of heat input. (BTU/ HR)**
   This is based on the heat pump or chiller output, or the boiler output at the minimum firing rate if the boiler has a variable input system that ramps input down as the demand decreases.

3. **The minimum system load (BTU/ HR)**
   This is the demand place on the system with the smallest zone calling for heat.

4. **The allowable tank temperature rise. (Deg. F)**
   This varies depending on the type of heating or cooling system used, and on the design of the distribution system. Chillers may require a tight (6 deg. F) differential to assure good dehumidification and prevent freezing; heat pumps may require a 10 deg. F differential to maintain a high COP; and boilers with hydronic heating distribution systems may require a differential anywhere between 10 to 40 deg. F depending on the application.

THE FOLLOWING FORMULA DETERMINES THE TANK VOLUME:

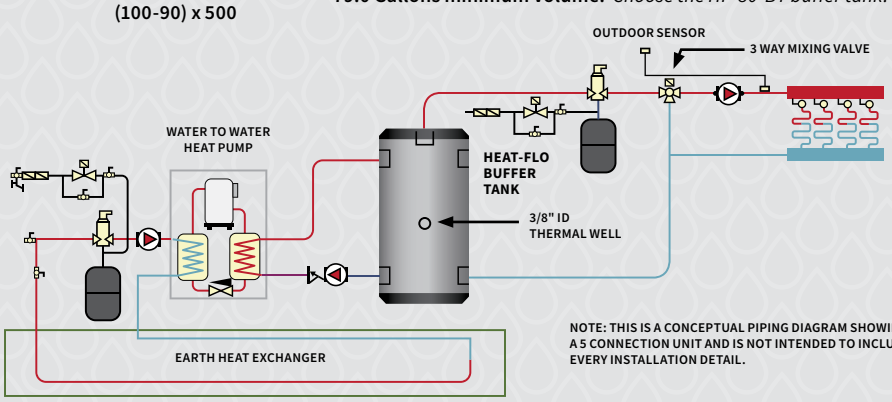
$$V = \frac{T \times (Q \text{ heat input} - Q \text{ min. heat load})}{\text{Tank temperature rise X } 500}$$

V = Buffer Tank Volume (Gallons)
T = Desired Heat Source "on cycle" (Min.)
Q Heat Source = Heat Source Output to Minimum Load
Q Min. Heat Load = Heat Output to Minimum Load
Tank Temp. Rise (deg. F)

WATER TO WATER HEAT PUMP EXAMPLE:

Town and Country Mechanical wants a minimum heat pump on time of 10 minutes. The heat pump output is 46,500 BTU/ HR. The smallest zone is a 7,000 BTU/ HR bathroom. The allowable temperature differential is 90 to 100 deg. F for the radiant heat zones.

$$V = \frac{10 \times (46{,}500 - 7{,}000)}{(100-90) \times 500}$$ **= 79.0 Gallons minimum volume.** *Choose the HF-80-BT buffer tank.*



NOTE: THIS IS A CONCEPTUAL PIPING DIAGRAM SHOWING A 5 CONNECTION UNIT AND IS NOT INTENDED TO INCLUDE EVERY INSTALLATION DETAIL.

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