

Diaphragm Expansion Tanks

ASME And Non-Code

INSTALLER: PLEASE LEAVE THIS MANUAL FOR THE OWNER'S USE.



SAFETY INSTRUCTION

This safety alert symbol will be used in this manual to draw attention to safety related instructions. When used, the safety alert symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.**

DESCRIPTION

Series "PT" and "PTA" expansion tanks are precharged diaphragm-type vessels. The PTA Series meet the requirements of the ASME boiler and pressure vessels code. The Series "PT" and "PTA" tanks are designed to absorb the force of expanding water and protect the potable water system from pressure build up. Refer to table 1 on page 2 for pressure and temperature information.

Series "WTX", "WT" and "WTA" tanks are precharged diaphragm-type vessels. The WTA Series meet the requirements of the ASME boiler and pressure vessels code. The Series "WTX", "WT" and "WTA" tanks help protect the pump and pressure switches against short cycling in potable well

water systems. The well tank delivers adequate water under pressure between pump cycles to meet the required demand. It will provide economical system operation by minimizing pump starts and saving energy. Refer to table 1 on page 2 for pressure and temperature information.

The Series "HFT" tank is designed to absorb the expansion force in heating water and maintain proper pressurization in a closed hydronic system. The Series "HFT" tank is not for use in potable water systems. Refer to table 1 on page 2 for pressure and temperature information.



SERIES HFT TANKS ARE NOT FOR USE IN POTABLE WATER SYSTEMS

WARNING: Potable or fresh water can cause serious corrosion in Series HFT tanks. This can result in leakage and a potential explosion. Do not use HFT tanks for potable or fresh water applications. Failure to follow this instruction will result in serious personal injury or death and property damage.

TABLE 1

MODEL NUMBER	MAXIMUM LIMITATIONS		FACTORY PRE-CHARGE
	PRESSURE	TEMPERATURE	
All HFT	100 PSIG (689 kPa)	240°F (115°C)	40 PSIG (276 kPa)
PT-5, PT-12, PT-25V, PT-30V, PT-42V, PT-60V, PT-80V, PT-180V, PT-210V	150 PSIG (1035 kPa)	200°F (93°C)	40 PSIG (276 kPa)
PT-451 through PT-457	150 PSIG (1035 kPa)	240°F (115°C)	40 PSIG (276 kPa)
PTA-5, PTA-12, PTA-20V, PTA-30V, PTA-42V, PTA-60V, PTA-80V, PTA-180V, PTA-210V	150 PSIG (1035 kPa)	240°F (115°C)	40 PSIG (276 kPa)
PTA-451 through PTA-457	150 PSIG (862 kPa)	240°F (115°C)	40 PSIG (276 kPa)
WTX-2, WTX-5	100 PSIG (689 kPa)	200°F (93°C)	18 PSIG (124 kPa)
WTX-8	100 PSIG (689 kPa)	200°F (93°C)	28 PSIG (193 kPa)
WTX-10, WTX-14, WTX-10S, WTX-14S, WTX-20S, WTX-26S, WTX-32S, WTX-34S, WTX-44S, WTX-62S, WTX-81S, WTX-86S, WTX-119S	100 PSIG (689 kPa)	200°F (93°C)	38 PSIG (262 kPa)
WT-401 through WT-405	150 PSIG (1035 kPa)	200°F (93°C)	30 PSIG (207 kPa)
WT-421 through WT-427	100 PSIG (689 kPa)	240°F (115°C)	25 PSIG (172 kPa)
WT-447 through WT-457	150 PSIG (1035 kPa)	240°F (115°C)	25 PSIG (172 kPa)
WTA-401 through WTA-405	125 PSIG (862 kPa)	200°F (93°C)	30 PSIG (207 kPa)
WTA-447 through WTA-457	125 PSIG (862 kPa)	240°F (115°C)	25 PSIG (172 kPa)

INSTALLATION INSTRUCTIONS

A. Pre-Installation

1. Inspect the expansion tank for damage.

WARNING: If the expansion tank is damaged, it must be exchanged for a new tank. The tank could rupture. Failure to follow these instructions could result in serious personal injury or death and property damage.

2. For a residential potable water installation where:

a. cold water supply (CWS) pressure is less than 80 psig and the water heater size is up to 120 gallons with an ending temperature setting of up to 160°F, the air charge of the PT-12 Model does not need to be changed.

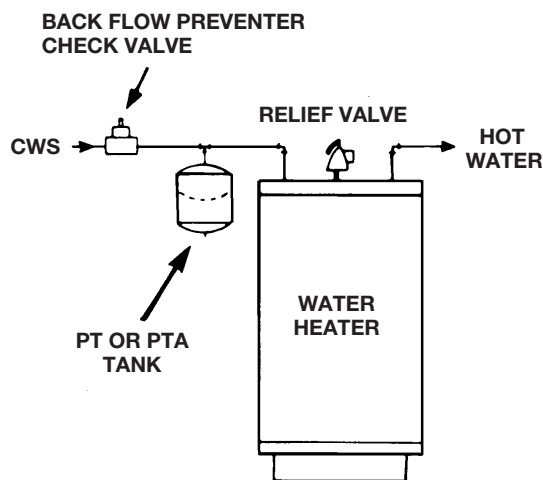
b. cold water supply pressure (CWS) is greater than 80 psig, the air charge of the PT-12 Model must change to equal the incoming pressure by charging the expansion tank with oil free compressed air. Check the pressure frequently during this process when filling with air to avoid over pressurizing the tank.

WARNING: Excessive pressure can cause tank to explode. Exercise care when filling a tank with air so the pressure does not exceed that required or does not exceed the working pressure of the tank as stamped on the nameplate. Failure to follow these instructions will result in serious personal injury or death and property damage.

B. Installation ("PT" & "PTA" Series)

1. Install the expansion tanks on the cold water supply (CWS) line at a point between the water heater and backflow preventer, check valve or pressure reducing valve (see Figure 1).
2. Once tank is installed, fill system and check for any leakage. Make repairs if necessary.

3. Before the initial firing of the water heater, open a hot water fixture and draw water until all air is removed from the system. Turn the water heater temperature control to desired ending temperature level (see water heater instructions).
4. To relieve initial thermal expansion, slightly open a hot water faucet. Continue until water heater aquastat temperature is satisfied. Once heater is at its operating range, no further bleeding of expanded water is required.
5. The system water heater and expansion tank will now be operational. The expansion tank will absorb pressure increases caused by thermal expansion to a level well below the water heater relief valve setting.



**TYPICAL INSTALLATION
FIGURE 1**

C. Installation ("HFT" Series)

The series "HFT" may be installed into a tee or any other suitable tapping on a water heating system, preferably on the suction side of the circulator. (see Figure 2).

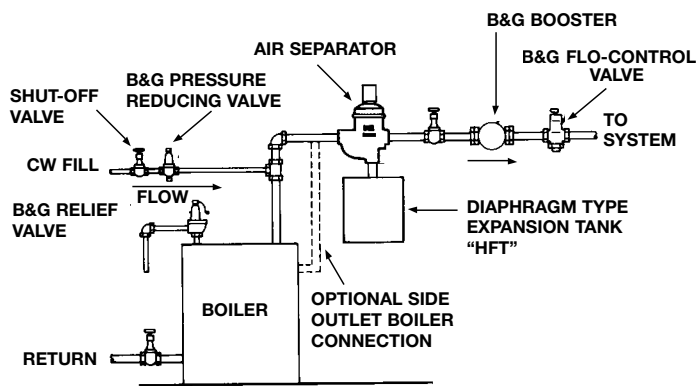
SYSTEM VENTING AND PURGING (For hydronic heating systems not potable water systems)

After initial venting and purging of air from the system, more air will be released from the water as it is heated. Therefore, it is recommended that a B&G air separator be installed on the main.

If the system has multiple loops or zones, the supply water for all loops and zones must pass through the air separator for complete and continuous air removal. In case the piping arrangement does not permit the installation of a single air separator on the main, air separators should be installed on each loop or zone. In this event, only one expansion tank is required for the system.

Even with a B&G air separator installed on the main or mains, it is recommended that B&G air vents be installed on high points in the system.

It is also recommended that manual (key or coin type) air vents be installed at higher points on the radiation.



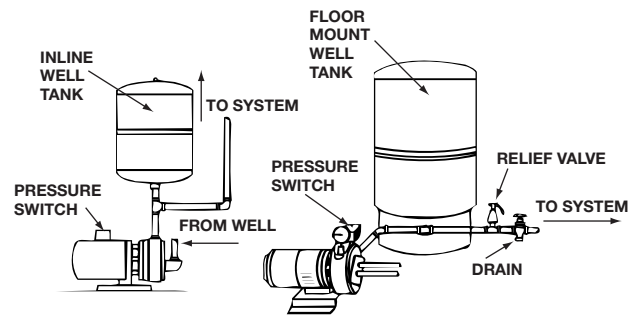
TYPICAL INSTALLATION
FIGURE 2

D. Installation ("WTX", "WT" & "WTA" Series)

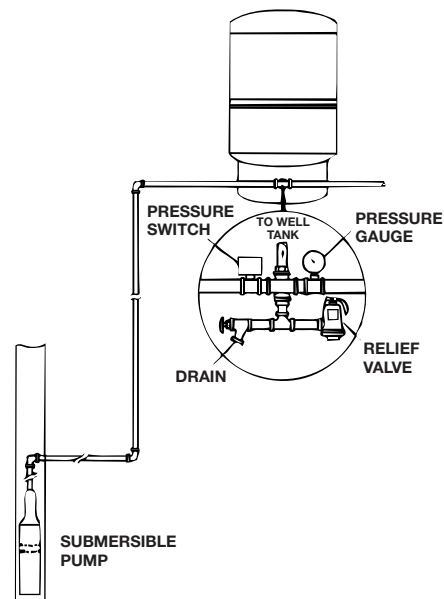
The well tank should be installed as close as possible to the pressure switch. Inline models are generally installed directly into the main water supply with a $\frac{3}{4}$ " connection. The floor models are generally installed using a tee off main. (See figures 3 & 4.) The air pressure should be adjusted to 1-2 PSIG below the pressure switch pump "cut-in" setting. (Tank should be at room temperature and empty of water when adjusting the air pressure.) Refer to Table 1 for the factory pre-charge pressure.

System Connection

1. Locate desired tank location.
2. Level the tank as necessary.
3. Connect to pump supply line with the same size pipe as from pump.
4. All piping should be in accordance with local code requirements



INSTALLATION WITH JET PUMP
FIGURE 3



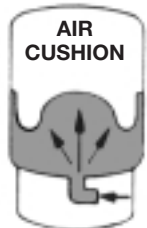
INSTALLATION WITH SUBMERSIBLE PUMP
FIGURE 4

OPERATING INSTRUCTIONS

1. The expansion tank's sealed-in-air pre-charge prevents water from entering the tank until the system pressure exceeds the pre-charge pressure.
2. As the water temperature rises, expanded water enters the expansion tanks water reservoir. The pre-charged air chamber absorbs the pressure increase, keeping system pressures below the relief valve setting.
3. As water is used in a potable well system, the pressure in the air chamber forces water back into the system until the pressure switch pump "cut-in" setting is reached. The pump will then turn on forcing water into the tank until the pump "cut-out" pressure is reached. The water stored in the tank is supplied to the potable water system under pressure without the pump turning on.



MODELS
PT-5 & PT-12
PTA-5 & PTA-12
HFT-15 THRU HFT-90
WTX-2 THRU WTX-14



MODELS
PT-25V & PT-457
PTA-20V & PTA-457
HFT-30V THRU HFT-160V
ALL WT & WTA MODELS
WTX-10S THRU WTX-119S

SERVICE INSTRUCTIONS

1. Check the expansion tank periodically for signs of external leakage or corrosion. If found, the tank must be replaced.

WARNING: Signs of leakage or corrosion are indications the tank may fail. Periodically check the expansion tank for signs of external leakage or corrosion. If found, the tank must be replaced. Failure to follow these instructions will result in serious personal injury or death and property damage.

2. If a HVAC system is shut down for long periods or emptied for any reason, it is necessary to follow the following procedure:
 - a) Fill system.
 - b) Vent air from system (see system venting and purging).
 - c) Bring system up to maximum operating temperature.

3. If the system pressure is too high:

- a. Check gauge calibration.
- b. Check to see if expansion tank has lost its air charge.
Note: To check the expansion tank air pressure with a tire gauge either:
 1. Disconnect the expansion tank from the system or,
 2. Draw off system water until boiler pressure reads zero or isolate the expansion tank from the system in domestic water systems, and bleed pressure from the system. All drains must be kept open during servicing of expansion tank. (Expansion tank must be empty of expanded system water.)
3. Then check tank pressure with tire air gauge.

WARNING: Improper use of air charging valve during venting of air pressure from tank will create a hazardous condition due to the escape of high velocity gas and/or liquid. Depress the center valve core stem, as with a tire valve to slowly vent off gas pressure. Do not remove the valve core until pressure in the expansion tank has reached zero. Failure to follow these instructions could result in serious personal injury or death and property damage.

- c. Check for faulty fill valve operation. First, close manual shut-off located before the fill-valve; then, draw system pressure down to pre-set pressure (see TABLE 1) open shut-off valve and observe system for pressure build-up several hours later. If pressure build up beyond set pressure is found, replace fill valve following manufacturers instruction.
- d. Check for service water entering system from any other source such as a defective tankless heater or indirect fired water storage tank. Use same procedure as above after shutting off possible water source. Replace defective device if found following manufacturers instruction.
4. If pressure relief valve drips water:
 - a. First, check system pressure. If too high, follow steps 3. a., b., c. and d. above.
 - b. If pressure relief valve continues to drip water, even at reduced pressure, flush relief valve by quickly raising lever several times. If drip continues, replace relief valve following manufacturers instruction.
 - c. If multiple expansion tanks are installed in the system, check pressure of each for possible air leaks. Be sure plastic air valve caps are on tight. Multiple tanks should be in the same location.

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Let's Solve Water

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