Bell & Gossett
a xylem brand

INSTRUCTION MANUAL
V1000001B

PT Diaphragm Non-Code Expansion Tanks

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

WARNING: California proposition 65 warning! This product contains chemicals known to the state of California to cause cancer and birth defects or other reproductive harm.

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 THE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.

WARNING: Explosion or Rupture Hazard. A relief valve must be installed to prevent pressure in excess of local code requirement or maximum working pressure designated in the Product Manual, whichever is less. Do not expose Product to freezing temperatures or temperatures in excess of 140°F. Do not adjust the pre-charge or re-charge this Product except for any adjustments at the time of the initial installation, especially if Product is corroded, damaged or with diminished integrity. Adjustments to pre-charge must be done at ambient temperature only. Failure to properly size the Product or follow these instructions may result in excessive strain on the system and may lead to Product failure, serious or fatal personal injury, leakage, and/or property damage.

WARNING: Read carefully the product installation, operating and maintenance instructions. Failure to follow the instructions and warnings in the manual may result in serious or fatal injury and/or property damage, and will void the product warranty. This product must be installed by a qualified professional. Follow all applicable local and state codes and regulations, in the absence of such codes, follow the current editions of the National Plumbing Code and National Electric Code, as applicable.

DESCRIPTION

Many local codes require back flow preventers. Since this seals off the system, an expansion tank is required or the relief valve will discharge on every heating cycle. The thermal expansion tanks eliminate this wasteful, costly, and dangerous practice. The thermal expansion tank is designed to be used with water temperatures to 140° F (60° C). DO NOT USE A STANDARD TANK. The sizing chart will allow you to choose the correct size expansion tank for your application. When water is heated, it expands. Provision must be made for this expansion in a closed hot water heating system. The Bell & Gossett Series PT pre-charged diaphragm tank stores the expanded hot water and returns air-free water to the system when the temperature drops.

OPERATIONAL LIMITS

MODEL NUMBER	MAXIMUM LIMITATIONS		FACTORY
	PRESSURE	TEMPERATURE	PRE-CHARGE
PT-5, PT-12, PT-25V	140 STET (1035 kPa)	140°F (60°C)	38 PSIG (262 kPa)
PT-30V, PT-42V, PT-60V, PT-80V, PT-180V, PT-210V	100 PSIG (689 kPa)		

WARNING: This product, like most products under pressure, may over time corrode, weaken and burst or explode, causing serious or fatal personal injury, leaking or flooding and/or property damage. To minimize risk, a licensed professional must install and periodically inspect and service the Product. A drip pan connected to an adequate drain must be installed if leaking or flooding could cause property damage. Do not locate in an area where leaking could cause property damage.

INSTALLATION INSTRUCTIONS

A. PRE-INSTALLATION

1. Visually inspect expansion tank and check for damage prior to installation.

WARNING: If the expansion tank is damaged, it must be replaced. Failure to follow this instruction may result in serious personal injury or death and property damage.

2. Bell & Gossett Series PT diaphragm tanks are factory pre-charged to 38 PSI (262 kPa). Adjust pre-charge to equal system fill pressure.

WARNING: Excessive pressure can cause tank to explode. Exercise care when filling a tank with air so the pressure does not exceed that required of 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.

3. Replace and tighten cap on air fitting.
4. The location selected should be indoors in an area not subject to freezing.
5. The items which must be installed in sequence in the cold water line are:
a. The EXPANSION TANK must be installed at least 18 inches (46 cm) away from the cold water inlet fitting on the water heater
b. The PRESSURE GAUGE, and
c. The PRESSURE REDUCING VALVE, if required.
6. The expansion tank is designed to be supported by the piping system in the vertical position. If however, the expansion tank must be installed horizontally, it must be supported by adequate strapping (not supplied).
7. The expansion tank, pipes, and connections may in time leak. Put the expansion tank in a place where a water leak will not damage anything. The expansion tank should be located in an area where water leakage from the tank or connections will not result in damage to the area around the expansion tank or to the lower floors of the structure.

WARNING: System fluid under pressure and/or at high temperatures can be very hazardous. Before servicing, reduce system pressure to zero or isolate the vessel from the system. Allow system to cool below 100°F and above 35°F. Failure to follow this instruction may result in serious personal injury and/or property damage.

B. INSTALLATION

Install Bell & Gossett Series PT pre-charged diaphragm expansion tanks on the cold water supply (CWS) line at a point between the water heater and back flow preventer, check valve or pressure reducing valve.

WARNING: A residential tank must be installed vertically or horizontally. Do not install on a dead end pipe or in an overhead joist space. *See Figure 1 for installation.

1. The water supply and power (electricity or gas) must be shut off during the installation of the valves and expansion tank. Follow the instructions found on the water heater and in the owner's manual.
2. Install expansion tank, pressure gauge and pressure reducing valve, if required.
3. Once tank and other components are installed, fill system and check for any leakage. Make repairs if necessary.
4. Before 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).
5. 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.
6. 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.

Recommended inlet water pressure is 60 PSI (414 kPa) or less. Refer to the pressure gauge. Adjust the pressure reducing valve to increase or decrease the pressure as required. Open a nearby faucet allowing water to run briefly then close the faucet. Check the pressure gauge again and make additional adjustments as necessary. This process may need to be repeated several times before the pressure can be adjusted to 60 PSI (414 kPa) or less.

WARNING: RUPTURE OR EXPLOSION HAZARD Like most pressurized tanks, this tank can over time corrode, weaken, and burst or explode. Failure to follow this instruction may result in serious personal injury or death and property damage.

WARNING: CHLORINE & AGGRESSIVE WATER HAZARD The water quality can significantly influence the life of your product. You should test for corrosive elements, acidity, total solids, and other relevant contaminants, including chlorine and treat your water appropriately to insure satisfactory performance and prevent premature failure. Failure to follow this instruction may result in serious personal injury or death and property damage.

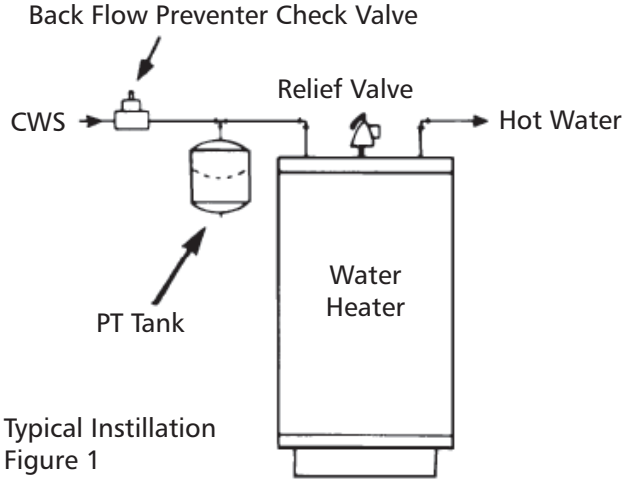
SYSTEM VENTING AND PURGING

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 Bell & Gossett 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 Bell & Gossett air separator installed on the main or mains, it is recommended that Bell & Gossett 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.



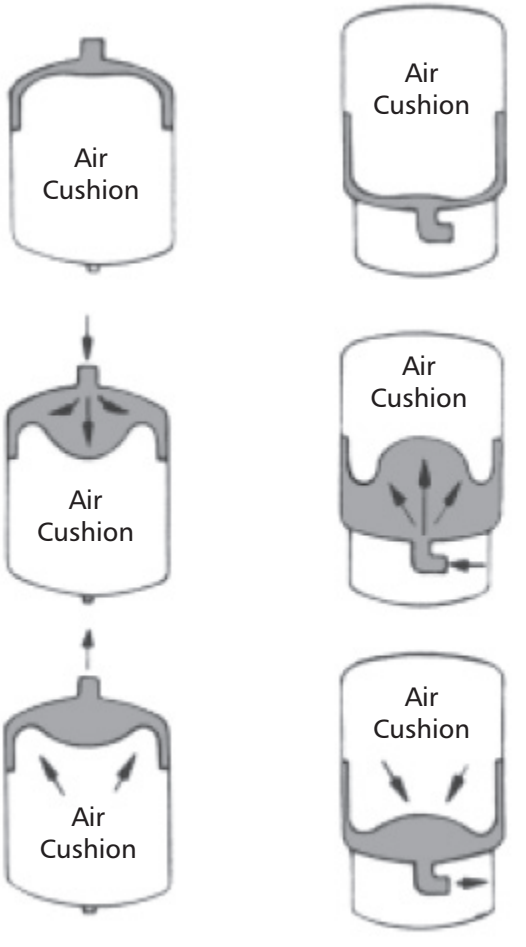
Typical Instillation
Figure 1

OPERATING INSTRUCTIONS

1. The expansion tank is typically installed in the bottom of an air separator. Its 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 tank's water reservoir. The pre-charge air chamber absorbs the pressure increase, keeping system pressures below the relief valve setting.

3. As water temperature decreases the pressure in the air chamber forces water back into the system until the expansion tank is empty.



Models PT-5 and PT-12

Models PT-25V and PT-475

The selection, application, installation and servicing of this product should be performed by a qualified professional within all applicable safety and code requirements.

SERVICE INSTRUCTIONS

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

WARNING: Signs of leakage or corrosion are indications the tank may have failed. Periodically check the expansion tank for signs of external leakage or corrosion. If found, the tank must be replaced. Failure to follow these instructions may 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.

Before filling and starting the operation of a HVAC system, a properly applied and sized pressure relief valve must be installed and in good operating order.

During filling and start-up after servicing, the system pressure should be closely monitored to ensure the pressure does not exceed the pressure relief valve rating.

Consult the applicable pressure relief valve manufacturer's instructions as necessary.

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 the expansion tank. (Expansion tank must be empty of expanded system water.)
3. Then check tank pressure with tire 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 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 shutoff 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 the manufacturer's 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 manufacturer's instruction.

WARNING: System fluid under pressure and/or at high temperatures can be very hazardous. Before servicing, reduce system pressure to zero or isolate the vessel from the system. Allow system to cool below 100° F and above 35° F. Failure to follow this instruction may result in serious personal injury and /or property damage.

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 manufacturer's instruction.
c. If multiple expansion tanks are installed in the system, check pressure of each for possible air leaks. Be sure 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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