

PROTECT YOUR PLUMBING FROM THERMAL EXPANSION

When the water is heated, it expands. For example, water heated from 90 degrees Fahrenheit (“F”) to a thermostat setting of 140 degrees F in a 40 gallon hot water heater will expand by almost one-half gallon. This is because when water is heated, its density decreases and its volume expands. Since water is not compressible, the extra volume created by expansion must go somewhere, or it will increase pressure in the home or plumbing system. This is called thermal expansion.

In a water heater, the additional volume can create more pressure than the system can handle. A backflow preventer could cause a “closed system”. The pressure can result in dripping fixtures and leaks, as well as damage to the water heater, pipes, or other fixtures.

What the homeowner should do to ensure protection from thermal expansion.

Protection can be provided in a plumbing system in two ways: (a) a thermal expansion tank, or (b) a thermal expansion pressure relief valve.

The thermal expansion tank controls the increased pressure generated within the normal operating temperature range of the water heater. The small tank with a sealed compressible air cushion provides a space to store and hold the additional expanded water volume.

A thermal expansion relief valve controls increased pressure by opening and discharging excess water whenever water pressure exceeds the pressure setting on the valve. Unlike the thermal expansion tank, relief valves do not prevent the loss of water, and the discharge needs to be piped to a drain. There are several types of thermal expansion relief valves including, but not necessarily limited to, a combination toilet tank ball cock fill valve and thermal expansion relief valve; a calibrated pressure relief valve; a combination ball valve and relief valve; and a hose connection pressure relief valve.

It is recommended that you contact a plumber if you want any of these devices installed. Please note that the temperature and pressure relief valve (T & P valve) on the hot water tank should not be used for thermal expansion purposes.