As Seen On Ask This Old House

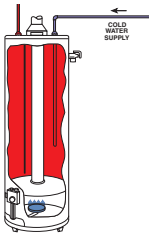
OUR THERMAL EXPANSION TANK PUTS YOU IN A SAFER PLACE.

What you should know about water heater safety.

AMTROL INC.

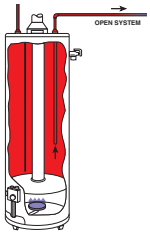
When water is heated...

It expands! Reacting to physical law, water expands in volume as its temperature rises.



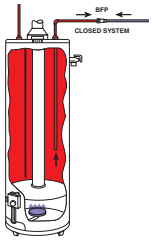
In a 40-gallon water heater, water being heated will end up expanding to about 40.53 gallons when the desired temperature is reached.

In the "Good Old" days

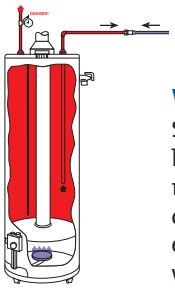


Before the advent of cross-connection control, expanded water that exceeded the capacity of the water heater flowed back to the city main, where it easily dissipated.

Cross connection control means "no return"



Today, with back flow preventers, water meters with check valves and/or pressure-reducing valves without a bypass being installed, expanded water from a water heater cannot return to the city supply. It is now a closed system, and expanded water has no place to go.



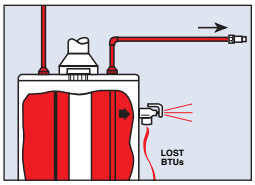
Water is not compressible

Since water completely fills the water heater and system piping before recovery starts, and since it can't be compressed, the expanded volume, even though small, has no space in which it can be accommodated.

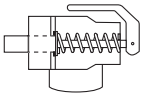
As a result, the expanding water creates a rapid and dangerous pressure increase in the water heater and system piping, much like the action of a hydraulic ram.

So "pop" goes the relief valve

The setting on a safety relief is quickly reached, and the relief valve opens, losing heater water down the drain or, more often than not, all over the floor.

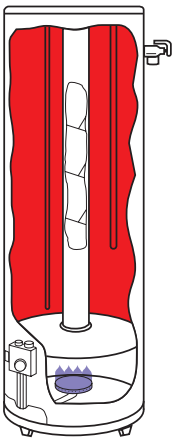


The illogical practice of operating your safety valve once or twice a day is not only wasteful (you paid money to heat that hot water that went down the drain), it's also dangerous.



First of all, the T & P relief valve you installed serves as an emergency control only. It was never designed as an operating control. Once a safety valve is used on a daily basis, it isn't that safe.

Deposits on the seat, deteriorating springs, wear-and-tear erosion, can wear out a relief valve in no time at all.

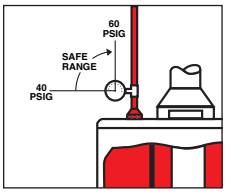


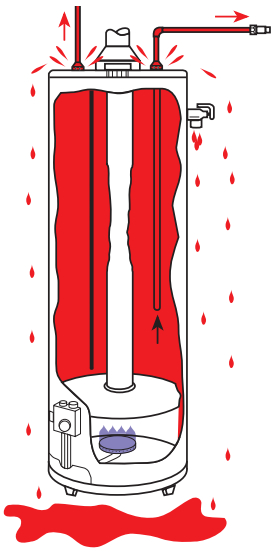
Dangerous pressures before relief

What most people don't realize is that dangerous conditions can exist during thermal expansion long before the relief valve operates.

Internal pressures repeatedly occurring during recovery periods can collapse the center flue of a gas-fired water heater, creating a hazardous presence of deadly carbon monoxide gas, or even a water-heater explosion.

Even though the relief valve operates during each recovery period, high internal pressures occurring over and over again can accelerate tank leakage and shorten water-heater life, no matter how it is fired.





Controlled pressure rise during thermal expansion

The best solution to thermal expansion is to control pressure within normal, safe operating range, well below the emergency setting of a relief valve. This will allow thermal expansion to occur, but without causing a dangerous increase in pressure.

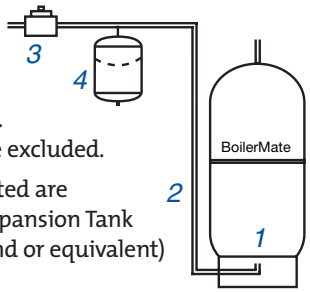
Without THERM-X-TROL®, your water heater's warranty may already be void.

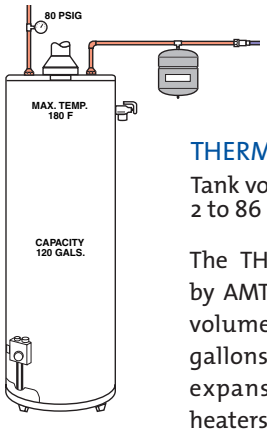
Many water heater manufacturers require a thermal expansion device to be installed if a backflow preventer, pressure reducing valve or any other one-way device is present on a city supply line. If a device is not installed to handle thermal expansion, then the water heater warranty could be void.

A thermal expansion tank is the perfect solution to thermal expansion in a water heating system. It guards against damaging pressure build-up in the plumbing system and leaky relief valves, and protects your water heater warranty.

To find out if you need a thermal expansion tank, follow this simple guide.

1. Locate cold water pipe.
2. Trace this line back toward the home's main water supply.
3. Look for a Pressure Reducing Valve (PRV), Backflow Preventer (BFP), or a check valve. Shut-off valves can be excluded.
4. If any of the valves listed are present, a Thermal Expansion Tank (THERM-X-TROL® brand or equivalent) should be installed.





THERM-X-TROL®

Tank volumes range from 2 to 86 gallons.

The THERM-X-TROL®, manufactured by AMTROL® Inc., for example, with volumes ranging between 2-86 gallons, will safely handle thermal expansion of residential water heaters up to 120 gallons in size, with a maximum of 80 PSI. supply pressure and a maximum temperature of 180° F. Most local codes require a thermal expansion device in place. Please check with your local utility company to find out if this is a requirement in your area.

For more information on Thermal Expansion, please contact your local utility company, AMTROL's Technical Service Dept. at 401-535-1216 or visit AMTROL's website at www.amtrol.com

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