

## Heated Water Expansion Chart

Expansion tanks provide an air cushion into which the boiler water can expand when boiler water is heated.

Based upon an initial water temperature of 40°F

Water Temperature	Expansion of Water	Net Expansion-For Tank Sizing Purposes*
100°	0.75%	0.50%
112°	1.00%	0.67%
125°	1.25%	1.00%
137°	1.75%	1.38%
150°	2.00%	1.75%
162°	2.50%	2.25%
180°	3.00%	2.75%
187°	3.38%	3.12%
200°	3.75%	3.50%
212°	4.25%	4.00%
225°	4.75%	4.50%
237°	5.38%	5.00%
250°	5.67%	5.50%

\*"Net Expansion" takes into consideration the expansion of water and components in the system.

For example, if your system holds 50 gallons of water at the initial temperature of 40°F, at normal operating temperature of 180°F the volume of water would have increased 3.0% to 51.5 gallons. Taking into account the expansion of the boiler water and system components, an expansion tank capable of handling that 1.5 gallon volume increase would be needed as a minimum.

### Types of Expansion Tanks:

**Plain steel** with no rubber bladder, which must be drained from time-to-time if system pressures exceed 24 psig. This is due to the air in the tank dissolving into the boiler water and being vented from the system.

**Bladder-type tanks** (which cannot be drained and in most cases should maintain an operating pressure of 12 psig) If this type of tank is hooked to the a filltrol-type fill valve, the air pressure in the tank determines the fill pressure (minimum system pressure) Adjusting air pressure on a tank hooked to a filltrol fill valve is the way minimum system pressure is adjusted: 0 psi air pressure = 0 psi minimum system pressure.