APEX VALVES
A WATTS Brand
367 Rosebank Road | Avondale | Auckland 1026 | T: 0800 500 484 | Int +64 9 828 3123

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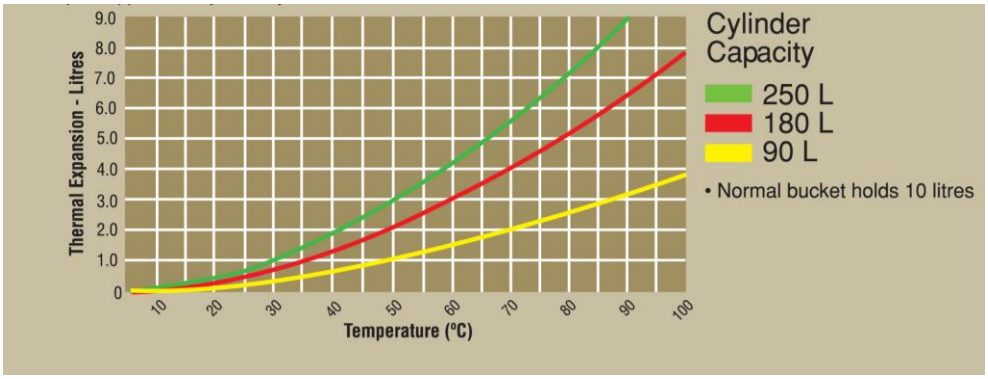
Thermal expansion

I hope you all enjoyed your festive season and are recharged ready for the new year ahead.

When almost anything is heated, it expands. Liquid water certainly behaves this way and it is important to control the expansion for both safety and efficiency. The chart below shows the volumetric expansion of water against temperature.



A 180l cylinder heated from ambient to 65°C will expand 3.2 litres.

- From a safety point of view, this expansion needs to be relieved in a controlled manner or the pressure increases to unsafe levels with catastrophic consequences. The image to the right is from a Myth Busters video and a ruptured mains pressure cylinder can be seen heading skywards through the roof of a building after it ruptured.

- From an efficiency point of view, it is both best practice and mandatory for valve vented systems to prevent the pressure being relieved by bleeding off hot water (which has had energy put into it to heat it). There are 2 options to do this:

    - Cold water expansion control valves
    - Expansion tanks, these are used in Europe but not common in New Zealand

Apex and Watts have a selection of low and mains pressure cold water expansion valves.

Apex

EVT 7.6
EVT 12.2
EVT 500
EVT 700

Watts

EV 25800W
EV 32800W

We take regular technical calls from both home owners and plumbers asking why they have water dripping from a vent pipe or from a cold water expansion valve drain. They usually want some re-assurance that this is normal. Based on water usage, from the chart on the first page, you can estimate how much water might be expected to be relieved, something around ¾ of a bucket a day would be quite normal.

If you actually want to know if the system is relieving correctly there is a simple procedure:

1. Turn off the power to the hot water cylinder
2. Open a tap for a few seconds and then close. This drops the system pressure to the pressure limiting valve (mains pressure system) or pressure reducing valve (low pressure system) setting.
3. Observe the cold water expansion valve or vent pipe for any drips – there should be none.

If you determined that there is an issue, the fault finding flow chart in the Apex brochure can be used to help diagnose what the cause is. If it is a home owner asking the question, the best response at this point is to advise them to call a plumber.