

Expansion - Knowing the facts

We talk every day about expansion vessels in one form or another, this could be giving part codes to customers to sizing vessels for installers – but what is the purpose of an expansion vessel and what are the differences between all the different types, let's take a look.

What are they for?

It is fairly simple and self-explanatory really, they are there to take expansion within a system to prevent over pressurising thus causing damage, and this could be internal damage to components or pipes blowing off.

Operating Principle

Water is at its least dense at a temperature of 4°C not 0°C as commonly thought, anything above or below this temperature then the volume of water increases, this can be turning to ice as it cools or expands with heat, this is down to the way the molecules behave under differing conditions.

When the volume of water increases it needs somewhere to go, this is where the expansion vessel comes in. The vessel under normal working conditions is an empty chamber of air with a pre-determined pre-charge of air sitting behind it, as the volume increases the expansion vessel fills with the increased volume of water, when the water volume decreases the pre-charge of air allows the vessel to empty. The size of vessel is determined by several factors to ensure the correct size is installed, these are as follows:

- System Temp
- System Volume
- SRV Setting
- Pre-charge setting
- Heating or Potable

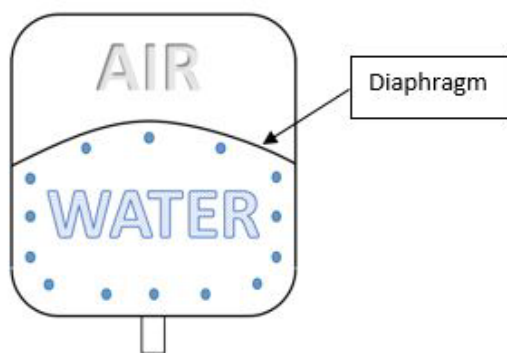
This then will allow sizing to take place.

Different Types of Vessel



Differences Between the Vessels

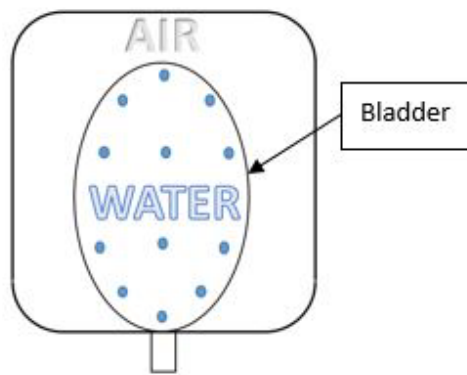
Heating vessels are designed to allow the water to sit within the metallic body and there is then a diaphragm which holds the pre-charge.



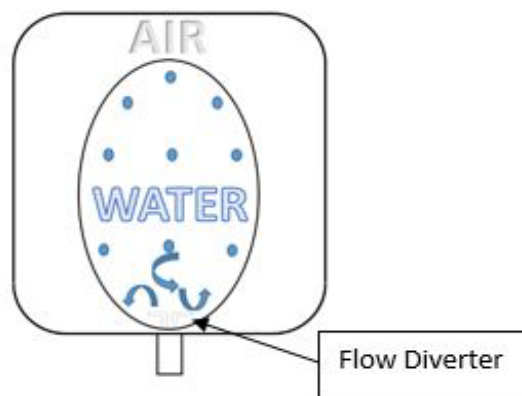
Technical Bulletin

Expansion Vessels

Potable vessel work using the same method however the water sits within a rubber bladder, this is due to the fact that the potable water (wholesome water) cannot sit against the metal due to it being oxygenated water.



Flow through vessels are designed in a similar way to potable vessels however there is a special "mushroom" shaped insert which encourages flow through the vessel and not allowing any stagnation.



There are also flow through vessels where there is a top and bottom connection and the water flows directly through the vessel.