Expansion Vessel Operation and Commissioning

Expansion vessels are sometimes also referred to as “pressure packs” or “bladder packs”. The latter no doubt refers to the balloon type “bladder” which is fitted within expansion vessel and holds the water on filling. The vessel surrounding the bladder is typically of steel construction and is sealed, allowing the air around the bladder to be pressurised.

The use of an expansion vessel on the outlet of a pump is to prevent unnecessary cycling (ie. on/off operation). This can occur where the pump is operated on a pressure switch to a dead ended pipework distribution system which might suffer from small amounts of leakage. Frequent cycling can lead to unnecessary power consumption and shorten the life expectancy of the pump. The expansion vessel provides a reservoir which can be used to accommodate for small volume water usage without the need to start/stop the pump.

On commissioning the expansion vessel, inflate the air side of the vessel using a hand held air pump or compressor to the desired operating pressure. It is recommended that the operating pressure should be set to 0.2 bar (around 3 psi) below the cut-off point for the pump. This will allow maximum usage of the volume available within the vessel. If the pressure is too high then the pump will not be able to fill the bladder and this will prevent any beneficial use.

On choosing your expansion vessel it is worth noting that the vessel capacity is stated as the capacity at minimum operating pressure. At higher operating pressures the available operating capacity will decrease as operating pressure increases. To achieve the maximum possible capacity within the tank ideally operate over the largest possible differential range on the pressure switch operating the pump. Of course, this is not always possible where trying to maintain a fixed pressure within a distribution system with the minimum of fluctuation.