



### WATER FLOW & MEASUREMENT

Water flow measurement is generally achieved by the measuring the pressure differential (DP) and calculating the flow based on the orifice size (Kv) of the valve or measuring plate. Water flow or volume flow rate is typically expressed as litres per second (l/s) in Australia.

The following formula can be used to calculate water flow:

$$l/s = \frac{Kv \times \sqrt{DP}}{36}$$

The total system water flow can be calculated by measuring the DP across major equipment such as chillers and heat exchangers and referencing the equipment data or by measuring pump operating pressures and referencing a pump curve.

#### Typical Water Flow Instruments

- Water Manometer
- Pressure Gauges

#### Tips for Accurate Readings

*Water flow is most accurately measured when the water is less turbulent in the surrounding pipe work or vessel.*

*For pipe work, valves should be installed in a section with at least 5 diameters of straight upstream and 3 diameters of straight down stream.*

*Proprietary water manometers automatically convert the measured DP to a flow when the characteristics of the valve are known.*

<https://www.taca.org.au/technical>



### PUMPS & SYSTEM RESISTANCE

Pumps move water flow (l/s) against system resistance. The resistance of a system is measured in kilo Pascals (kPa). The total system resistance or pressure which the pump has to overcome is the sum of the pressure on the outlet and the inlet. This is made up of pipe (straight and bends), strainers, coils and valves.

Poor mechanical design, installation or maintenance practices result in excess system resistance that affect total pump performance.

#### Some common issues are:

- Undersized pipe work
- Fouled coils, pipe work or strainers
- Incorrectly selected control valves

