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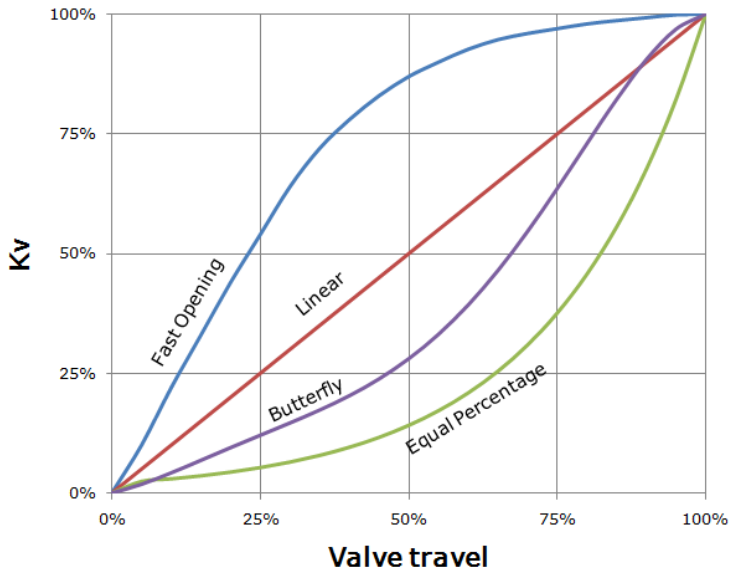
VALVE CHARACTERISTICS



Kv, Kvs and characteristic of a valve

The flow coefficient Kv of a valve or fitting in a certain position represents the water flow rate that goes through it under a differential pressure of 1 bar.

The Kvs of a valve is the particular Kv value, when the valve is fully open.

The relationship between the valve travel and the Kv at every position is the valve characteristic.

Fast opening characteristic

The fast opening characteristic is not normalized. It is the characteristic generated by a globe valve, with a flat plug. It is usually only used on On/Off valves. A slight alteration of it might be used in the self acting valves (pressure reducing valve or thermostatic valves).

Linear characteristic

The Kv of the valve at a certain position (hence the flow rate going through it) is directly proportional to the valve travel. This characteristic is popular in flow control applications.

Equal percentage characteristic (=%, or Exponential)

Any change in the opening from its current position changes the Kv by the same percentage of its current value at current opening. This characteristic is defined with a rangeability R, which is the ratio between the Kvs of the valve and its minimum controllable Kv. R is typically between 30 and 50.

The relation between Kv and Kvs is as follows:

$$Kv = Kvs.R^{\frac{\%travel}{100}-1}$$

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