

CONTROL VALVE DATABASE

Irrespective of what type of control valve component is chosen (or how the valve element is defined on the model flowsheet (eg *self acting flow controller*, *flow controller* or *self acting diff pressure controller*, etc) the valve performance characteristics are the same, ie they are drawn from the data entered in the **control valves** database. Hence a Keystone 1" Butterfly Valve may be used to perform the duty of any of the available control valve types, flow or pressure – assuming it is appropriate for the set conditions.

Auto pressure reducers and sustainers do not use control valve database data and are described separately below.

FLOW CONTROL VALVES

There are two types of flow control valve components, viz Self Acting Flow Controller and Flow Control Valve.

Self Acting Flow Controllers contain measurement and control mechanisms in one device, whereas the Flow Control Valve may have a remote measuring device. In FluidFlow3 a Control Valve incorporates a 'Measurement Location' in the Input Inspector. This value can be 'Upstream' or 'Downstream'.

Actual volumetric flow for gases and two phase mixtures is a function of position. Upstream means that you are attempting to control volume flow at the valve inlet temperature and pressure conditions. Downstream means that you are trying to control flow at the valve outlet temperature and pressure conditions. If you use mass flow in this entry then the measurement location is not used.

Note: Since the set flow for a Self Acting Flow Controller, when volumetric units are used, is automatically in either Normal or Standard units (based on Calculation Options | Gas), then this option seems redundant, the same conditions apply irrespective of the set measurement location.

PRESSURE CONTROL VALVES

There are four types of pressure control valve components, viz Self Acting Pressure Reducer, Self Acting Pressure Sustainer, Self Acting Differential Pressure Controller and Pressure Control Valve.

Self acting pressure sustainers and reducers control the pressure at any point in a flow system. The measurement and control mechanisms are encapsulated within a single device. For these types of pressure regulators the static pressure is measured and controlled. If you need to control stagnation pressure or are using say a Pitot tube to measure pressure remotely then you should use a pressure control valve instead of the self regulating type.

Self acting differential pressure controllers are used to control differential pressure at any point in a flow system.

A Pressure Control Valve incorporates a 'Measurement Location' in the Input Inspector.

AUTO PRESSURE CONTROLLERS

The Auto/Simple Pressure Reducer and Sustainer do not rely on manufacturer's control valve data from the database, but will fail fully open or closed if set values are unachievable.

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