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# CONTROL VALVE SIZING

## Reactive Control Valve Sizing

Pressure Reducing and Sustaining

Choosing the correct valve size is critical when designing a pressure reducing or sustaining reactive control valve system. Valves must be sized corrrectly for the reactive control function to work properly. Control valve system designers need to avoid the most common problems while designing and sizing a control valve system.

**Problem #1 – "Over-Sizing The Valve".** An over-sized reactive pressure regulating control valve may lead to severe problems such as pressure cycling, cavitation and water hammering. Valves at the same diameter as the pipe may allow for simplified installaton, however they often lead to severe throttling problems.

**Problem #2 – Size Selection.** When selecting the size of the reactive control valve from valve flow graph minimum and maximum rates, keep in mind that such graphs do not take into account pressure drop across the valve. Since both rate of flow and pressure drop determine the diaphragm/sleeve position, both must be taken into account for proper reactive valve sizing. In order to make the control valve react correctly, the diaphragm/sleeve position should be in the middle of the fully-open and fully-closed positions.

## Installation Suggestions for Reactive Valve Control

To Improve Reactive Control Accuracy

1 - Avoid installing a pressure trap in a turbulent flow area

2 - Avoid air in system

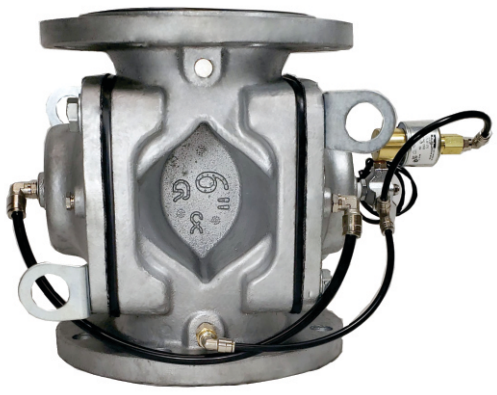
3 - For pressure reducing control, installing the downstream pressure trap at the end of a 24" to 30" long straight pipe will help the accuracy of the reactive control

4 - To be the most effective, the upstream and downstream pipe length should be a minimum of five pipe diameters long

### Minimum optimal flow for reactive/piloted control valve sizing

(Pressure reducing/sustaining)

| Seal-Matic | | | | XMAX | |
|---|---|---|---|---|---|
| 3/4" | 25 gpm | 2" 90° | 125 gpm | 4" | 450 gpm |
| 1" | 28 gpm | 3" | 400 gpm | 6" | 800 gpm |
| 1 1/4" | 43 gpm | 4" | 500 gpm | 8" | 2250 gpm |
| 1 1/2" | 45 gpm | 6" | 800 gpm | | |
| 2" | 125 gpm | 8" | 1500 gpm | | |



SMV6MPR
Super Flow