

6. Control valve styles

6.1 General

Control valves exist in innumerable styles and options. To list and describe all of them would be beyond the scope of this book. For this reason only the most common constructions used in process industries today are discussed. To reach a certain systematic in the description of the various styles, a distinction is made regarding essential criteria and functionalities. A rough overview of the control valves most frequently used is given in Figure 6.1.-1:

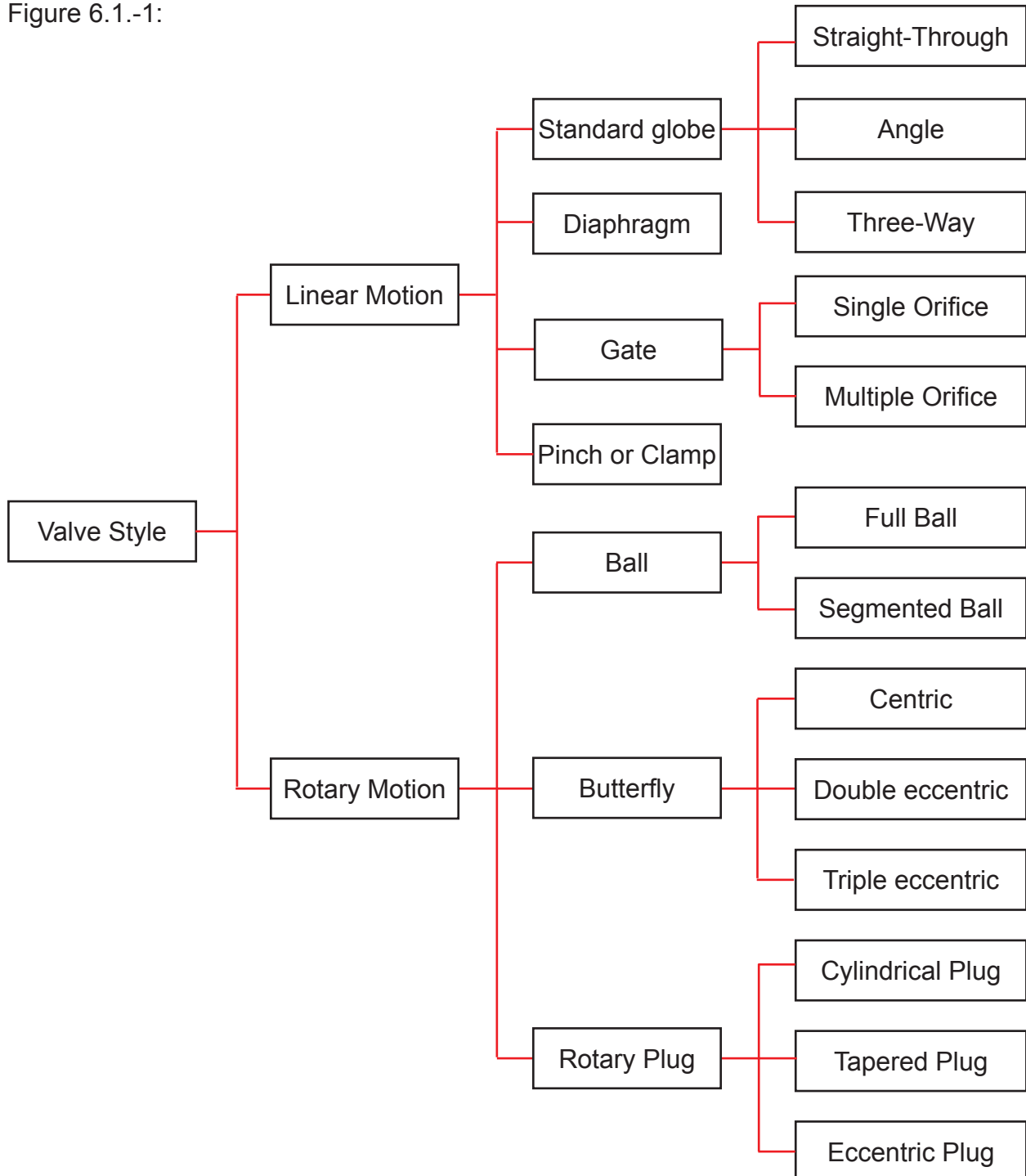


Figure 6.1.-1: Frequently used control valve styles in process industries

A first essential distinctive characteristic or feature is the movement of the throttling part, the so-called obturator or plug. It executes either a linear movement as for globe valves, or a rotary movement between 50° and 90° as for butterfly valves or ball valves.

To the group of control valves with a linear movement of the plug belong the so-called standard globe valves which are available in numerous valve options. The rated travel of these valves is usually between 10 and 100 mm. The rated travel are fixed for SAMSON on nominal size in steps of 7.5, 15, 30, 60, and 120 mm.

With control valves of the second group the plug makes a rotary motion, meaning that the actuator drives the valve shaft with a rotary motion usually within a maximum range of 90 degrees. Butterfly valves, rotary plug valves as well as ball and cock valves belong to this group.

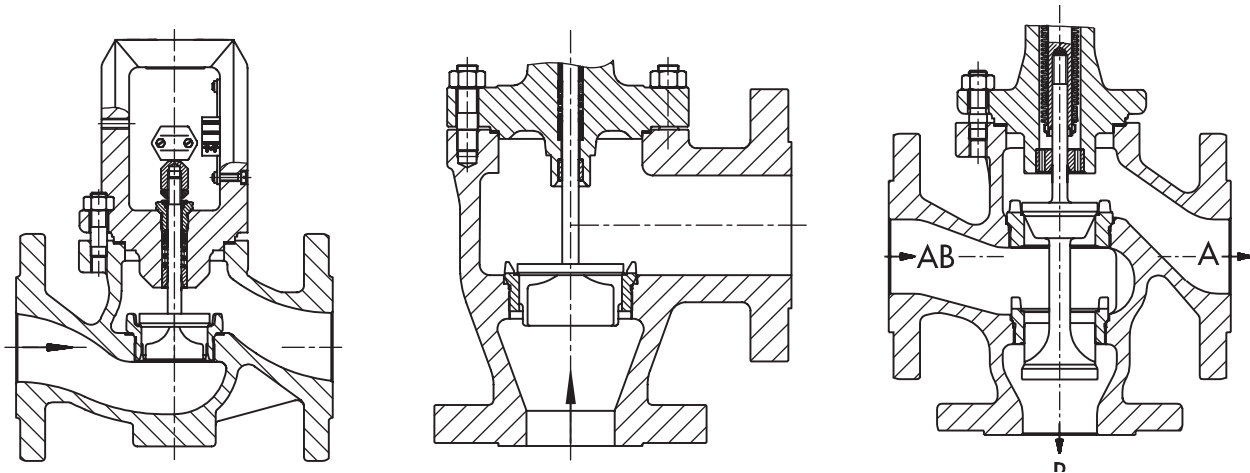


Figure 6.1.-2: Globe valve (left), Angle valve (middle), and Three-way valve (right)

Another important differentiating feature is the shape or style of the valve body and the manner in which the pipe is connected to the valve body. Most common valve styles are:

- Standard globe valve for installation into a straight pipe,
- Angle valve for installation into a pipe moved around 90 degrees,
- Three-way valve with three pipe connections for mixing or diverting fluids.

Another distinctive characteristic is, in addition, the manner in which the obturator or plug is guided:

- Plug guided on both sides
- Plug guided only at the top

Finally, the trim of the control valve is a critical and distinctive characteristic. One differentiates here between:

- Single-seated type
- Double-seated type
- Trim with pressure balance
- Low noise trim etc.

Furthermore a typical differentiator is the manner of connection within the rigid piping system, in order to enable an easy interchangeability of the control valve:

- Flanged connection with numerous variants
- Screwed connection (for small nominal sizes only)
- Welded connection (preferred in power stations)
- Other end connections (e.g. clamped)



Figure 6.1.-3: Flanged, Screwed, Welded, and other end connections

The essential control valve constructions are briefly explained below, normal availability with regard to nominal sizes and pressures is indicated and the typical advantages and disadvantages of the different designs are listed in table 6-1.

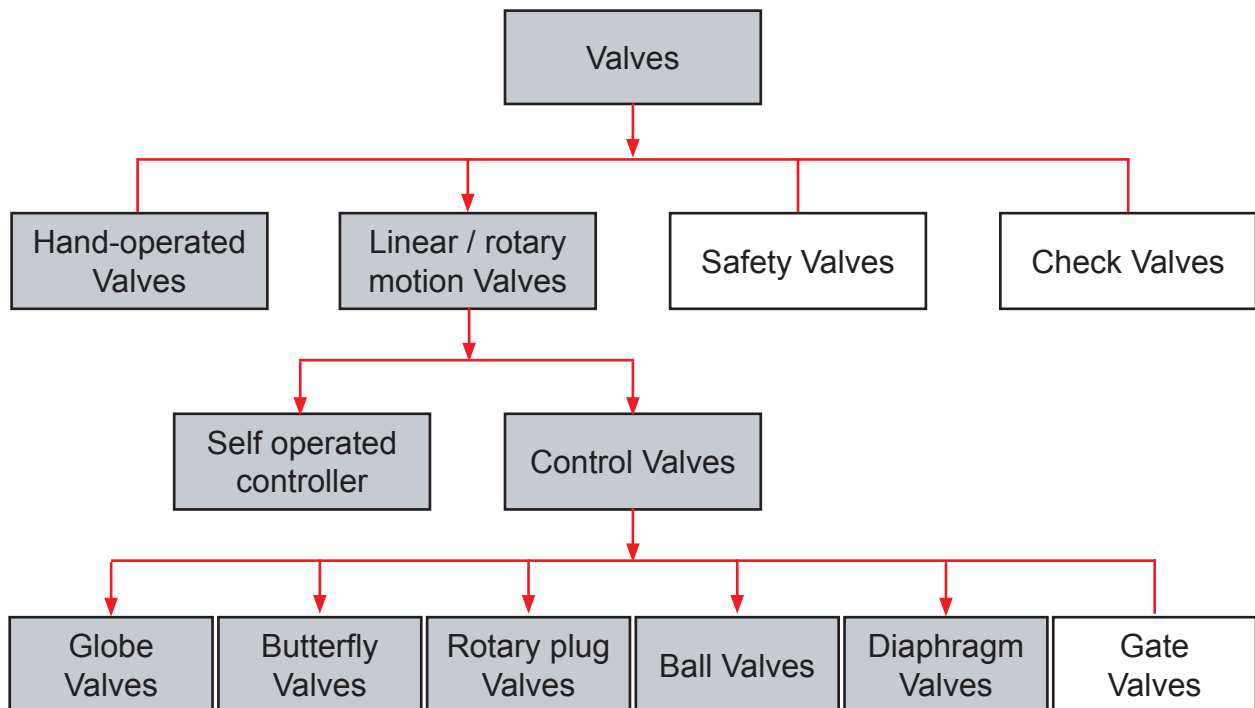


Figure 6.1.-4: Valve series of the SAMSON GROUP