

6.23 Valve style • Advantages • Disadvantages

Valve style	Typical availability	Advantages	Disadvantages
Full bore, „floating“ ball valve	DN 15-200 PN 16-100 ANSI 125-600	<ul style="list-style-type: none"> ■ Extremely high C_v-values ■ Robust, compact construction with self-cleaning effect ■ Excellent tight shut-off capabilities 	<ul style="list-style-type: none"> ■ High pressure recovery and low F_L- and x_T-values ■ Low throttling capability ■ High friction and hysteresis ■ Expensive at large valve sizes
Trunnion type ball valve	DN 100-1000 PN 10-40 up to ANSI 300	<ul style="list-style-type: none"> ■ Extremely high C_v-values ■ Robust, compact construction with self-cleaning effect ■ Excellent tight shut-off capabilities 	<ul style="list-style-type: none"> ■ High pressure recovery and low F_L- and x_T-values ■ Low throttling capability ■ Limited differential pressure ■ Expensive at large valve sizes
Segmented ball valve	DN 50-400 PN 16-40 ANSI 125-300	<ul style="list-style-type: none"> ■ High C_v-values ■ Good rangeability and characteristic for V-slot-segment ■ Economical alternative for valve sizes > DN 150 	<ul style="list-style-type: none"> ■ High pressure recovery and low F_L- and x_T-values in comparison with standard valves ■ Low throttling capability ■ Limited differential pressure
Concentric butterfly valves (standard wafer type)	DN 50-1200 PN 6-25 up to ANSI 150	<ul style="list-style-type: none"> ■ Compact and low weight ■ Economy-priced alternative ■ High C_v-values, good rangeability, reasonable torque ■ Broad range of lining materials available ■ Matches any flange standard 	<ul style="list-style-type: none"> ■ High leakage for aligned disk versions ■ Allows only small differential pressures (noise, cavitation) ■ Limited applicability for lined butterfly valves ■ Only limited options available
Heavy duty type, triple eccentric butterfly valves (Wafer type or with flanges)	DN 100-2000 PN 25-250 ANSI 150-2500	<ul style="list-style-type: none"> ■ Compact, low weight for wafer type (sandwich) design ■ High C_v-values ■ Reduced C_{v100} values (seat and disk) available ■ Low leakage even at high differential pressures ■ Actuators available for high shut down pressure ■ Fire-safe certification 	<ul style="list-style-type: none"> ■ Restricted dynamic differential pressures and noise and cavitation reduction in comparison to globe valves. ■ Low noise options > -10 dB(A) expensive ■ Relatively high torque required in comparison with aligned standard butterfly valves
Cock valves (Tapered version)	DN 15-200 PN 10-40 up to ANSI 300	<ul style="list-style-type: none"> ■ Low-priced ON-OFF valve for high static differential pressure ■ High C_v-values ■ Tight shut-off ■ Adjustable 	<ul style="list-style-type: none"> ■ High friction and hysteresis ■ Not very suitable for fine control ■ Restricted applicability for valve with PTFE or PFA lining ■ Only limited options available

Valve style	Typical availability	Advantages	Disadvantages
Cock valves (cylindrical plug version)	DN 25-300 PN 10-40 up to ANSI 300	<ul style="list-style-type: none"> ■ Low-priced ON-OFF valve for low duty applications ■ High C_V-values ■ Low leakage rates 	<ul style="list-style-type: none"> ■ High friction and hysteresis ■ Not very suitable for fine control ■ Restricted applicability for valve with PTFE or PFA lining
Rotary valve with eccentric disk plug	DN 25-500 PN 25-250 ANSI 150-900	<ul style="list-style-type: none"> ■ Compact, low weight for flange less valve bodies ■ High C_V-values, excellent C_V turn down ratio. Reduced seats and C_{V100} values available ■ Low leakage rates Class IV at moderate actuator thrust ■ Integrated valve bonnet 	<ul style="list-style-type: none"> ■ Seat leak rate Class IV up to 250°C. Smaller variations than globe valves, bellows seal, small C_V-values, seat leak rate Class V etc. ■ Limited noise and cavitation reduction in comparison to low noise globe valves ■ Expensive at small sizes ■ Restricted applicability for flange less valves in refineries and places of fire risk. Flanged rotary plug valves are suitable alternatives, etc.

Table 6.23.-1: Valve style • Advantages • Disadvantages

