

VALVE PERFORMANCE FEATURES

Valves are for starting or stopping flow, regulating or throttling flow, preventing backflow or relieving and regulating pressure in fluid or gaseous handling applications. Common valve types include: Ball, Butterfly, Check, Diaphragm, Gate, Globe, Knife Gate, Parallel Slide, Pinch, Piston, Plug, Sluice, etc.

The following types of valves are used in a variety of applications, these descriptions may provide a basic guideline in the selection of valves.

BALL VALVES

Because of their excellent operating characteristics, ball valves are used for the broadest spectrum of applications and are available in a wide range of sizes and materials and are available in full flow and full through conduit. *Advantage* - quick acting, straight through flow in either direction, low pressure drop & operating torque, easily actuated, bubble tight shut off (ANSI CLVI). *Disadvantages* - temperature limitations on seating material, long 'relative' face to face dimension.

BUTTERFLY VALVES

The butterfly valve derives its name from the wing-like action of the disc which operates at right angles to the flow. Its main advantage is a seating surface which is not critical. It is designed for flow isolation. The disc impinges against a resilient liner to provide bubble tightness with low operating torque. Compact and with simple construction, butterfly valves facilitate easy pipe arrangement. Due to disc, they have slightly reduced low characteristics. *Advantage* - quick acting, good regulating characteristics, low cost, compact & light, low pressure drop, easily actuated. *Disadvantage* - temperature/pressure limitations.

GATE VALVES

Gate valves are efficient isolating valves (ANSI CLV shut off) allowing flow in either direction. Gate valves are used where a minimum pressure drop is important. Gate valves are not suitable for throttling as flow characteristics do not facilitate accurate and consistent flow control. Also Gate valves may be damaged by the high velocity across the seats when partially open. They function best fully open or fully closed. *Advantage* - low pressure drop straight through flow either direction. *Disadvantage* - slow acting, bulky.

KNIFE GATE VALVES

Knife gate valves are useful for many applications in larger sized pipework (50mm and up). Unlike traditional gate valves, they are able to throttle at lower pressures depending on line media and degree of opening (anywhere from fully open to fully closed). Metal seated knife gate valves are not leak tight shut off. Some knife gate valves have a resilient seat in order to ensure they close leak-tight. Ideally suited for the control of effluent, slurries, waste products, semi solids, pulp, bulk powders. Most knife gate valves are designed for single flow direction.

GLOBE VALVES

Globe valves are ideal for throttling service and can be used as a stop valve but do not have the same isolation tightness as gate valves. Their flow characteristics do allow accurate and repeatable flow control. However, caution must be exercised to avoid extremely close throttling when the repeatable pressure drop exceeds 20%. Close throttling creates excessive noise, vibration and possible damage to valves and piping. When these conditions are anticipated, consult Australian Pipeline Valve for recommendations. *Advantage* - regulating characteristics. *Disadvantage* - high pressure drop (head loss), unidirectional.

PLUG VALVES

Plug valves are valves with cylindrical or conically-tapered 'plugs' which can be rotated inside the valve body to control flow through the valve. The plugs in plug valves have one or more hollow passageways going sideways through the plug, so that fluid can flow through the plug when the valve is open. Plug valves are simple and often economical.

CHECK VALVES - ALL TYPES

Some piston/disc check valves are spring loaded for fast operation (minimum cracking pressure may be an issue at very low pressures). Swing & wafer checks cease reverse flow with a flap that swing onto a seat. Piston & spring checks cease reverse flow with a spring loaded plunger while ball checks have a ball that slides into a hole as forward flow slows. Use swing checks only for forward flow that is horizontal or vertical upward. Vertical downwards flow requires a spring loaded check valve. Consider a ball check for semi-solids such as pulp or effluent. Lower cost, lighter wafer pattern check valves are also available in single and dual flap styles. Dual flap wafer check valves have a smaller port size compared to swing check valves.

STOP CHECK VALVES (SDNR)

Stop check valves are essentially the same as Globe valves, except there is no mechanical connection between the stem and the disc. They provide a combination Stop valve and a Piston check valve in one valve. However, they are not designed for throttling. They are used in steam boiler outlet piping when two or more boilers are connected to a common header. Valves must be installed with pressure under the disc, and when the stem is raised, only boiler pressure can raise the disc whenever boiler pressure exceeds header pressure. They prevent backflow from the header to boiler.

SWING CHECK VALVES

Swing check valves prevent reversal of flow through pipe lines. Most Swing check valves can be installed in horizontal or vertical upwards flow, piping. They offer resistance to flow and are particularly suited to low velocity service.

TILTING DISC CHECK VALVES

Tilting Disc check valves are similar to Swing check valves but in most installations, slamming is minimised upon reversal of flow so noise and vibration are reduced.

We can manufacture exotic grades like Nickel, Super Duplex F55 and Monel (ASTM A494-M35-1), Cd4M-Cu, Hastelloy C (ASTM A-494 CW12MW), 317 (C8G8M) in short lead-times.

For other ANSI, ASME, ISO, API, BS, API valve related technical cross reference charts and tables relating to standards, codes, pressure, temperature, application, suitability, equivalents, body & trim materials, valve manufacturing & test standards, etc., go to the technical section of our website.

We manufacture valves in API600, API602, API6D, BS1868, API603, API6A and numerous other standards including Ball, Butterfly, Check, Gate, Globe, Needle and Plug valves

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