

GLOBE VALVE DESIGN DISC STYLE TYPES

Operation

Profluid globe valves are for services requiring frequent operation for on-off isolation service as well as throttling. Never attempt throttling at under 20% of stem travel. Closer throttling, can result in higher pressure drops which may cause excessive velocities or cavitation and could cause vibration or high noise levels resulting in damage to the valve or adjacent components/structure.

Life

Heavy construction provides years of reliable service.

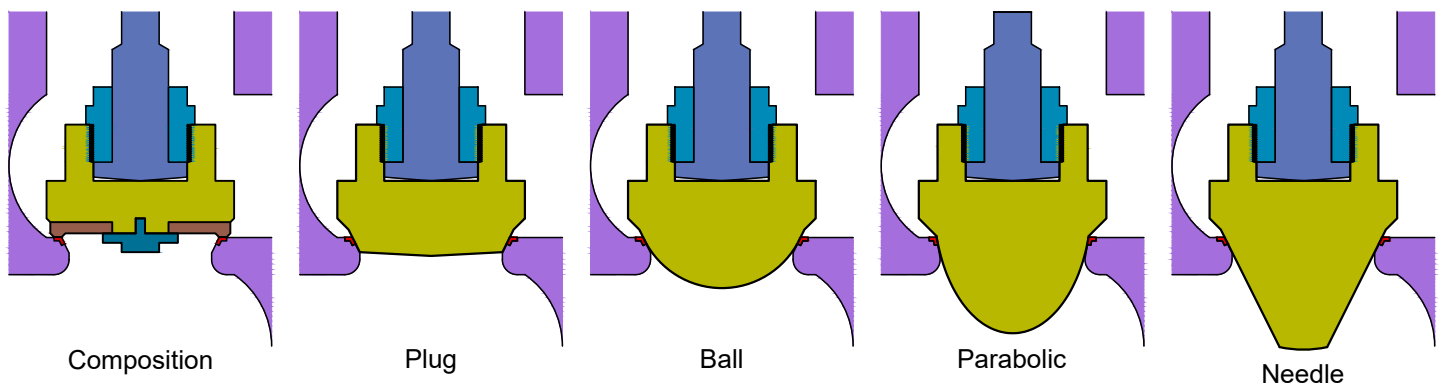
Design

Available in bolted and pressure seal bonnet, outside screw and yoke, rising stem with ball or plug type disc, and have flanged or butt weld ends. Screw down non-return (Stop check) also available. Stem with precision Acme threads and burnished finish. Valve suitable for horizontal installation. Conical seating surfaces 13Cr hard faced / stellite, ground and lapped to a Ra 0.4~0.8 μm finish. Tapered plug type disc as standard. Body guided disc on larger sizes, and higher classes on smaller sizes, accurately mates the hard faced surface of the disc with the surface of the seat. Body and bonnet joint accurately machined. fully enclosed gasket. Rotating stem nut. Austenitic ductile iron Grade D-2C, renewable in-line.

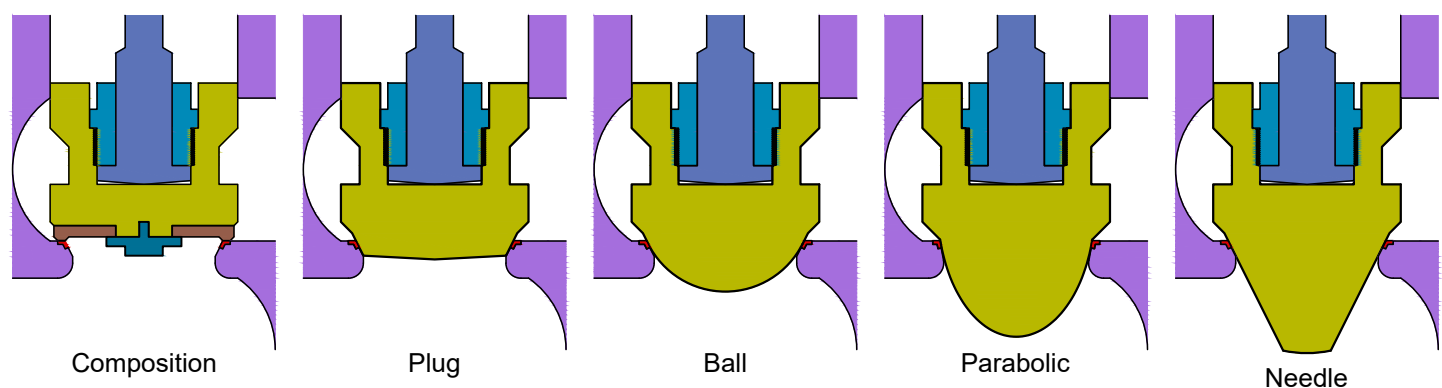
Standards

Design standard to ASME B16.34 / API 623. Dimensions to ASME B16.10 and ISO 5752. Wall thickness, stem smoothness and stuffing box finish complies with API 623. Profluid stuffing box smoothness $\leq \text{Ra } 3.2 \mu\text{m}$ superior to API 623 / API 600. Stem smoothness $\leq \text{Ra } 0.80 \mu\text{m}$ as per API 600/API 623.

Stem Guided Disc Types



Body Guided Disc Types



Disc Guides

Stem guided globe valves is the most basic design as the disc is just guided by the stem that actuates it. Body guided globe valve assures a perfect seat and disc alignment in spite of side thrust caused by high velocity flow. Cage guided globe valves throttle flow by uncovering more or less of the port area in the surrounding cage as the plug moves up and down. The cage also serves to guide the plug so the stem need not be subjected to lateral forces as in a stem-guided valve design. Port guided globe valves have flow path that is guided by the geometry of the valve port/bore. So the flow of the fluid is guided by the port and not the plug/disk.

Application of Different Disc Types

Globe valves can be supplied with various types of disc depending on the application. Each style provides various levels of control. The correct selection of disc and material of construction and hardfacing, will minimize wear caused by cavitation in more severe applications.

Composition Disc

The composition disk design uses a hard, nonmetallic insert ring on the disk. The insert ring creates a tighter closure. These are primarily used in steam and hot water applications. They resist erosion and are sufficiently resilient to close on solid particles without damaging the valve. Composition disks are replaceable.

Plug Disc

The disc has a flat finished bottom, being the most common standard globe disc type, as well as simple and economical. Designed to permit flow passage or flow stop without a high degree of regulation. In larger sizes and higher pressures a guided disc and a stem guide is required for throttling applications. It is primarily used for positive shut off service and is also used to control flow. Whilst it has a taper, it is also available in superior longer and more tapered design variants depending on size, class and valve style.

Ball Disc

Lower half of the disc has a ball shape, permitting flow passage and flow stop, having the possibility to control partially the flow mainly in low pressure service.

Parabolic Disc

It is similar to the ball type disc, but its parabolic design provides a higher flow regulation, having a better behavior against wear.

Needle Disc

With the needle disc design the flow rate is better controlled than other disc designs and a fine regulation is achieved.

Disc Functionality

The chart shows the stem opening related to the quantity of flow provided. It also indicates the grade of control over the fluid between the different type of discs.

