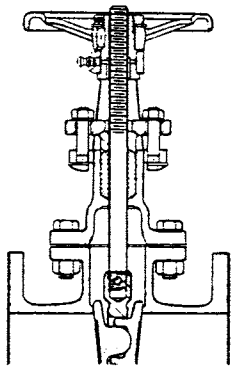
VALVE DESIGN

BODY-BONNET CONNECTIONS

Threaded bonnets are generally applicable only for non-critical services such as plumbing and heating shutoff in low pressure lines. This design is the simplest and least expensive, but tends to distort over time making reconditioning difficult.

Critical services, involving applications which could endanger persons or property, require union bonnets, bolted bonnets, or pressure seal bonnets. The union bonnet design offers easy coupling and uncoupling, and is therefore favored where the use of soft metal or composition discs requires periodic replacement. Bolted and pressure seal designs are utilized with larger sizes and higher pressure applications.



Outside Screw and Yoke
Rising Stem

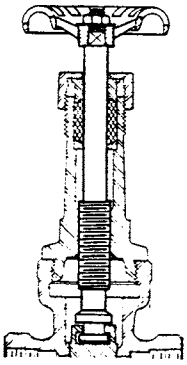
STEM CONSTRUCTION

RISING STEM - OUTSIDE SCREW AND YOKE

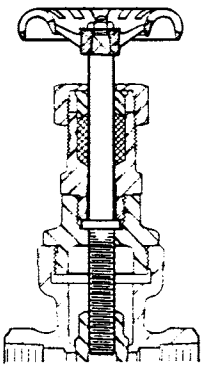
This design keeps stem threads outside the body in order to avoid the damaging effects of high temperature, corrosives, and inline solids inside the valve. When the handwheel is turned, the stem rises as the yoke bushing engages the stem threads. External threads afford easy lubrication, but care must be taken to protect threads from damage.

RISING STEM - INSIDE SCREW

This stem design is most commonly used in bronze gate valves. Since the handwheel and stem both rise, adequate clearance for operation must be provided. The stem and handwheel position indicates the position of the disc inside the valve. Care must be taken to protect the stem externally.



Inside Screw, Rising
Stem and Handwheel



Inside Screw
Non-Rising Stem

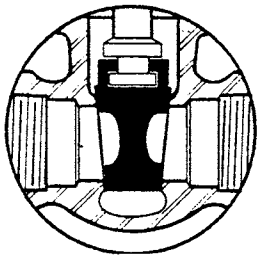
NON-RISING STEM - INSIDE SCREW

This design requires minimum headroom for operation. Since the stem does not travel vertically, packing wear is reduced. Heat, corrosives, and inline solids may damage stem threads, however, and cause excessive wear. It is also impossible to visually determine the position of the disc, unless valve is fitted with an indicator device.

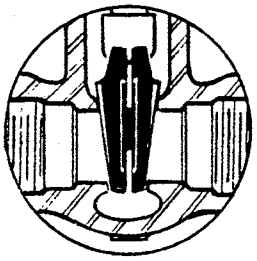
DISC CONSTRUCTION

GATE VALVES

The solid wedge disc is the most widely used design in gate valve construction due to its simplicity and versatility. Gate valves with this disc may be installed in any position. The solid wedge disc is particularly suitable for steam service where a split or double disc would chatter.



Solid Wedge



Flexible Wedge

Flexible discs are wedge-seated with disc faces joined at the center by a hub. This design enables the disc faces to independently compensate for variable temperatures and pressures, and allows valve operation at lower torques.

Split disc , double disc or parallel slide is especially suitable for use with non-condensing gases and liquids at normal temperatures. Disc halves are forced outward against the body seats by a disc spreader when closing the valve, but only after the disc assembly has been lowered into seating position. In opening the valve, pressure on the disc is relieved before being raised to avoid wear on body seats. Valves with this disc design are recommended for vertical installation only.

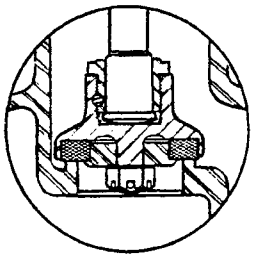
Double Disc

VALVE DESIGN

GLOBE VALVES

Discs and seats in most globe valves can be repaired or replaced without removing the valve body from the line.

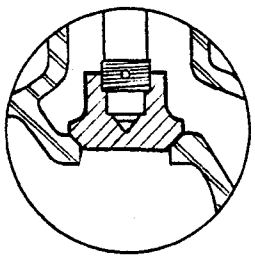
Teflon or composition discs are especially suitable for tight shutoff of gases. They are also suitable for most general services such as steam, water, and gasoline. Solid particles may be embedded in service without effecting tight shutoff. Teflon or composition discs are not recommended for severe throttling applications.



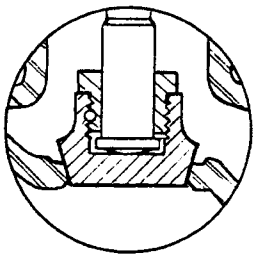
Teflon / Composition Disc

Conical discs can be reground and so are desirable for services that result in deposit build up on seating services. This design is usually found in bronze valves with bronze or other corrosion resistant seats.

Tapered plug discs have wider seating contact than the conical design, and are suitable for severe throttling applications.



Conical Disc



Plug Disc

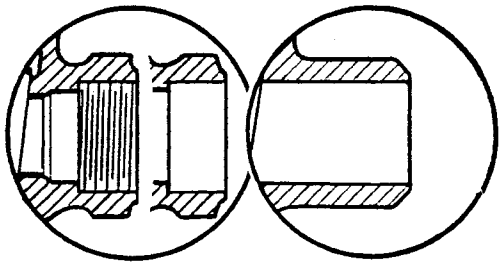
The **needle-type disc** is used for exacting flow regulation, usually in instrumentation.

The **screw down check-type disc**, commonly referred to as "stop check," permits globe and angle valves to serve as check valves. In the open position, the disc slides freely on the stem, and will seat to stop or check reversal of flow.

END CONNECTIONS

THREADED

Tapped with female taper pipe threads, threaded end connections are the least expensive and lightest in weight.



Threaded & Socketweld

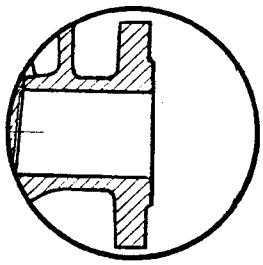
Buttweld

SOCKETWELD

Socketweld ends are pipe size and are recommended with high temperature and pressure applications where absolutely tight, leakproof connections must be maintained over a long period.

BUTTWELD

Like socketweld the buttweld end is a leakproof connection suitable for severe and high pressure applications.



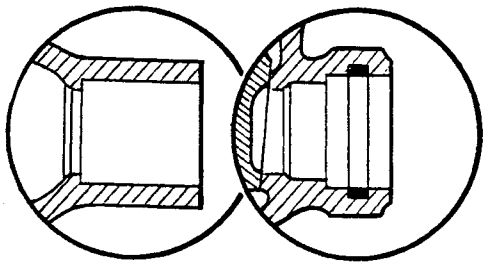
Flanged

FLANGED

Flanged ends provide a strong, tight joint and are generally used for line sizes above 3" that must be assembled and disassembled frequently.

SOLDER

Solder ends are socket ends for tube size applications and mostly used with Types K, L, and M copper tubing for low pressure services. Maximum temperature applications may not exceed 250° F due to the low melting point of solder.



Solder Joint

Silbraze

SILBRAZE

Silbraze ends are used with IPS sized copper or coppernickel pipe. The brazed silver solder joint is superior to a standard soldered joint, having higher pressure and temperature holding properties.