Dome Valve II

inflatable seat valve

principle of operation

The dome component closes beneath the seat (seal) when the seal is inflated (inflated). Allowing a controlled gap between the seal (seat) and the closing member (dome). Material is allowed to pass through an area that is determined by the dome characteristics. It is pulled into the gap by the action of the dome component moving to its closed position. The closing member, high pressure air or other gas enters the space between the back of the seat face and the insert ring to cause the seal face to expand onto and around the periphery of the dome component. Material particles are entrapped by the seal against the dome surface, irrespective of particle size or shape. Before opening the valve, the seal is relaxed, and the controlled gap is reestablished before the dome component moves to its open position. The seal is a loose component clamped into place by a spigot piece and external fasteners holding the top plate assembly to the body. The seal is easily removed for inspection.

inflatable seats

Inflatable flexible seats entrap particles that are normally the cause of seat erosion. Particles are entrapped to move across valve seats under the influence of pressure differentials on either side of the closing members. Entrapment particles within a flexible face during the period of valve closure prevents particles movement and considerably reduces valve seat wear. Inflatable seal allows sustained wear compensation.

hard seats

The conventional hard material approach to valve seat wear relies on crushing particles between the faces. This approach does not attempt to entrap particles, but causes the particles remaining to become very small to reduce their erosion effect on the valve seat. However, the particles on the seat are each particle contributes to continuous erosion. Particle movement and initial erosion allow accelerated subsequent erosion once the hard seats cannot compensate for wear.

flexible seats

Flexible seats that do not inflates require the force of engagement or closing to entrap particles. However the inflatable valve seat does not require the force of engagement or closing to entrap particles. Inflatable seats compensate for wear to the seal and provide longer seal life.

Dome Valve II

advanced features

simplicity

high torque, double acting actuator

durability

single gasket assembly

double shaft seals

quality

simple fastener assembly

reliability

Dome Valve II

the problem solver

special performance advantages

The Dome® valve is used in a wide variety of applications in almost every process. The unique closing and sealing action of the Dome® valve enables continuous reliable operation where conventional valves fail to perform. Here is why:

abrasion / temperature / pressure

Dome® Valve can achieve operating reliability in severe applications combining abrasive materials, high temperature and high pressure differentials.

reliability

A heavy duty valve designed to perform where other valves cannot. Rebuilt for hundreds of thousands of cycles between inspections in approved applications.

applications in every process worldwide

More than 100,000 Dome® valves are in operation in almost every country of the world, providing long life and operating reliably where conventional valves have failed.

Dome® Valve can be operated at the highest speeds, pressures, and temperatures since it is not dependant on material compensation and wear.

In M & F connection

The Dome Valve body is a one piece precision molded inflatable seat. Made using state-of-the-art mold designs, the inflatable seat provides continuous wear compensation.

durability

Thermal expansion prevents consistent valve seat action. The inflatable seat provides continuous wear compensation throughout the temperature range of 0° to 350°C. Temperatures above this range may be accepted using special valve configuration.

close and seal

The valve of the rotating dome within the valve housing allows displacement of material so that a choke-filled Dome® Valve will close and seal through most packed materials.

seal and protection

Seal protection and dome scraper ring prevent particles adhering to the dome surface that affect seal performance.

no zero switching

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**Dome Valve II.**

**standard configurations**

- **bulkhead**
- **inline**

**standard options**
- size (in): 2, 4, 6, 8, 10, 12, 16
- design temp: 200°F/100°C, 350°F/175°C, 600°F/325°C
- design pressure: 400 psi / 28 barg
- flanges: ANSI 150 / PN 25, ANSI 300 / PN 40
- construction: Carbon steel A286 CD / Stainless 304/316

**non-standard options**
- size options (in): up to 36
- design temp: up to 300°F/150°C*
- design pressure: up to 4000 psi / 275 barg

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![Macawber Engineering Inc.](image)

Macawber Engineering Inc.

inflatable seat valves
advanced pneumatic conveying systems
controlled rate injection systems

1824 Cedarleaf Street, Maryville, TN 37802, USA

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