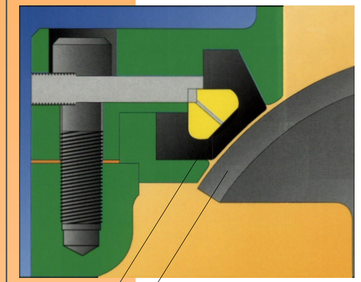
Dome Valve II®

inflatable seat valve

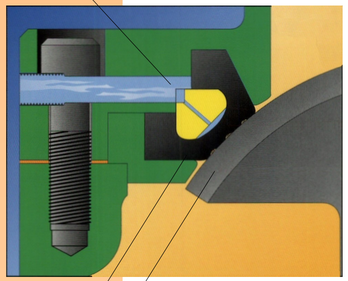
A pioneering and innovative departure from the traditional valve seat approach to achieving sealing efficiency and acceptable valve seat life.



relaxed seat
dome component

air supply

Particle entrapment prevents seal/seat erosion, solving the cause of valve wear.



inflated seat
dome component

principle of operation

The dome component closes beneath the seat (seal) when the seal is relaxed (not inflated), allowing a controlled gap between the seat (seal) and the closing member (dome). Material is allowed to pass through or enter the controlled gap if, due to its characteristics, it is pulled into the gap by the action of the dome component moving to its closed position. In the closed position, high pressure air or other gas enters the space between the back of the seal 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 seat 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 induced to move across valve seats under the influence of pressure differentials on either side of the closing member. Entrapping particles within a flexible face during the period of valve closure prevents particle movement and considerably reduces valve seat wear. Inflatable seats allow automatic wear compensation.

hard seats

The conventional hard material approach to valve seat life 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 small the particles are, each particle contributes to continuing erosion. Particle movement and initial erosion allows accelerated subsequent erosion since the hard seats cannot compensate for wear.

flexible seats

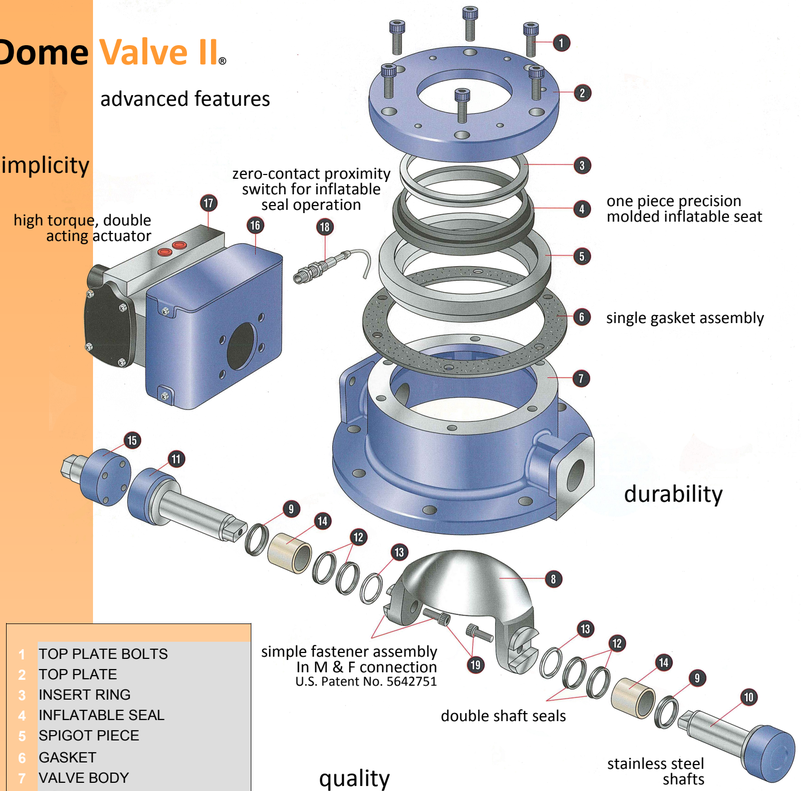
Flexible seats that do not inflate require the force of engagement on closing to entrap particles. However the flexible valve seat has limited life because the worn surface of the flexible seat cannot continue to reengage the closing member and entrap particles. Inflatable seats compensate for wear to the seat and provide longer sealing life.

U.S. Patent No. 4,137,935

Dome Valve II®

advanced features

simplicity



1	TOP PLATE BOLTS
2	TOP PLATE
3	INSERT RING
4	INFLATABLE SEAL
5	SPIGOT PIECE
6	GASKET
7	VALVE BODY
8	DOME
9	V-RING
10	PIVOT SHAFT
11	DRIVE SHAFT
12	SHAFT SEAL
13	SEAL RETAINER
14	BEARING
15	ACTUATOR DRIVE ASSEMBLY
16	ACTUATOR MOUNT
17	ACTUATOR
18	PROXIMITY SWITCH
19	DOME-TO-SHAFT BOLT

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:

abrasive materials

Slurries, bulk powders, granules, lumps or dust-laden gases cause seat erosion and ineffective closure. The inflatable seal provides continuous wear compensation.

pressure differential

Pressure differential also causes accelerated seat wear in conventional seat valves. The inflatable seal provides continuous wear compensation.

high temperature

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

close and seal

The action 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 remove particles adhering to the dome surface that affect seal performance.

abrasion / temperature / pressure

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

reliability

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

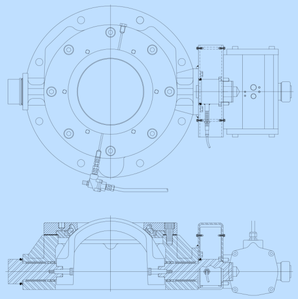
applications in every process worldwide

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

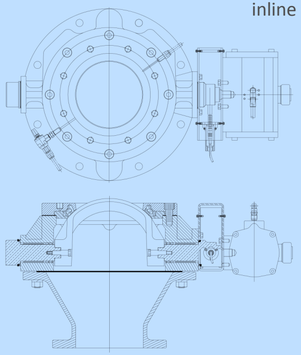
Dome Valve II®

standard configurations

bulkhead



inline



standard options

size (in): 2, 4, 6, 8, 10, 12, 16
design temp: 230°F/110°C, 536°F/280°C, 662°F/350°C
design pressure: 100 psig / 7 barg
flanges: ANSI 150 / PN 10 / PN 16
construction: Cast Iron A278 C40 / Stainless 304/316

non-standard options

size options (in): up to 30"
design temp: up to 1500°F/815°C *
design pressure: up to 630 psig / 43 barg

*Requires high temp batching valve

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controlled rate injection systems

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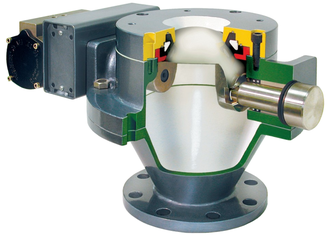

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inflatable seat valves

the process engineering valve solution

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