



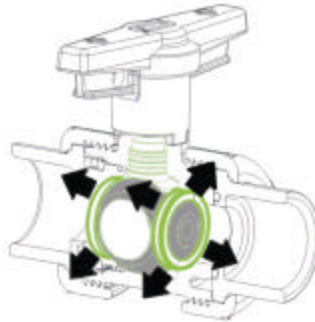
# SPEARS FLOATING SEAL DESIGN FOR BALL VALVES

TECH-2-No.102

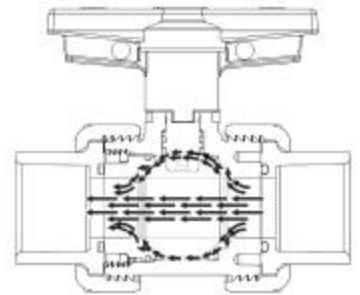
- Reduces Seat Wear
- Self Adjusting Design
- Self Cleaning Action

The true test of a ball valve is in its sealing capability. Sealing is accomplished by maintaining contact between the seat and ball when in the closed position. Conventional "O-ring backed" seat designs depend on the compensating affect of an O-ring to maintain such contact, but can be plagued by problems such as O-ring displacement, loss of resilience, and frozen seats due to debris accumulation. This is especially true in 2" and smaller size valves where higher fluid velocities are often encountered. In such cases, O-rings can be literally "washed-out" from behind the valve seat. Moreover, the use of O-ring elastomers with poor compression-set properties can render the seal ineffective.

With Spears unique "Floating Seal" design, the ball diameter is greatest in the closed position. The seat is free to expand on closing and contract on opening. This maintains ball-to-seat contact, assuring proper adjustment and continual sealing.



Since the seat is allowed to "float" in the open position, fluids and debris do not accumulate around and behind the seat. The result is a self-adjusting seat with reduced wear, smoother operation, and self cleaning action to keep the valve free of internal sediment and fluid stagnation.



## Floating Seal Advantage Summary . . .

### Superior Sealing

Ball-to-seat sealing is further improved by allowing both the ball and seat to move. The special Floating Seat fully conforms to the corresponding ball sealing surface when the valve is in a closed position, providing a leak-tight seal even at low pressures. The Floating Ball allows increased compression against the seat as system pressures increase.

### Smooth Operation & Reduced Seat Wear

A special radius at the ball port eliminates seat compression and maintains port alignment under flow when the valve is in the open position. Because the seat can flex, ball-to-seat contact increases gradually and uniformly as the ball is rotated into its closed position. Reduced friction on the seat during this transition provides smoother valve operation and reduces seat wear to extend valve life.

### Self Adjusting

Spears unique ball and seat interface allows the seat to expand and contract in order to maintain proper ball contact at all times. The result is a self-adjusting design without depending on backing O-rings.

### Self Cleaning Action

When placed in their full open position, most ball valves can entrap system fluids in the internal areas around, under and behind the seats in the valve cavity. Such entrapment can result in particle buildups which adversely affect valve operation, sealing ability, and seat wear. Spears Floating Seal design allows entrapped fluids to be continually drawn from the valve cavity during open system flow. This internal washing action keeps the seats free of sediment, suspended particle buildup, and fluid stagnation that can result in system contamination.

TECHNOLOGY UPDATE



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