

Deflating



Before the ball section begins its opening rotation, the expandable air-tight seal withdraws to its safeguarded location behind the scraping ring. This design approach ensures that the seal experiences minimal shear stress, contributing to an unusually long lifespan.

Opening



As the ball segment opens, the reactor's pressure or vacuum is alleviated, relieving the inflatable seal of pressure and causing it to retract. A roughly five-second time cycle enables the flexible sealing material to return to its initial form. Following this, the ball segment valve head rotates 90 degrees within the housing. Simultaneously, any accumulated deposits on the segment's scraping ring are cleared away. The product then flows out without obstruction, allowing the ball segment valve to close against the direction of the product flow.

Closing



When the ball segment is closed, it shifts to the vertical CLOSED position, during which the seal is pressurized. It inflates rapidly, establishing a seal against the rounded ball segment. Once the BSV is sealed, a vessel can be swapped out as needed

Inflating



The inflatable seal is the core component of the Ball-Segment-Valve. When the seal is inflated, it closes the slight space between the segment and the scraper ring attached to the housing. The scraper ring dislodges and removes any hardened deposits on the segment before it moves past the seal. Additionally, the scraper ring stops larger particles from entering the vicinity of the inflatable seal.