



**CRANE ChemPharma Flow Solutions™**



**XOMOX®**  
**XLB Lined Ball Valves**  
**Sales Presentation**



- Introduction
  - Current LBV designs
  - Typical Challenges
- Customer Requirements
  - What's the ideal LBV?
- Product line overview
- XLB design features and benefits
  - Innovative Stem sealing system
  - Dynamic body joint design
  - Lower torque - smaller actuators
  - Other design features
  - Materials of construction
- XLB Applications
- Summary

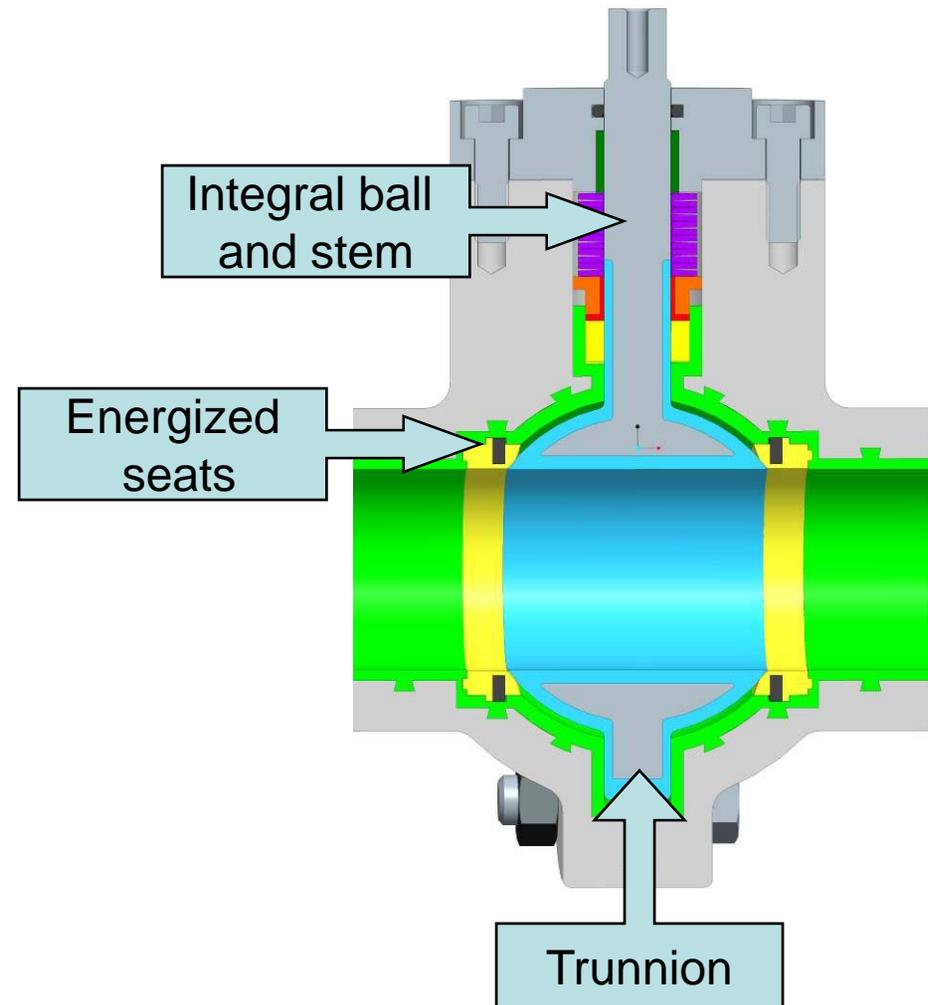
## Two-piece ball and stem designs

- Stem and ball are two separate lined components acting together
  - Wear can cause “play” between ball and stem leading to loss of positive rotational control
  - Prolonged use and other factors that increase torque can lead to liner failure at the ball stem connection, which in turn can lead to rapid corrosion of the ball and stem core material

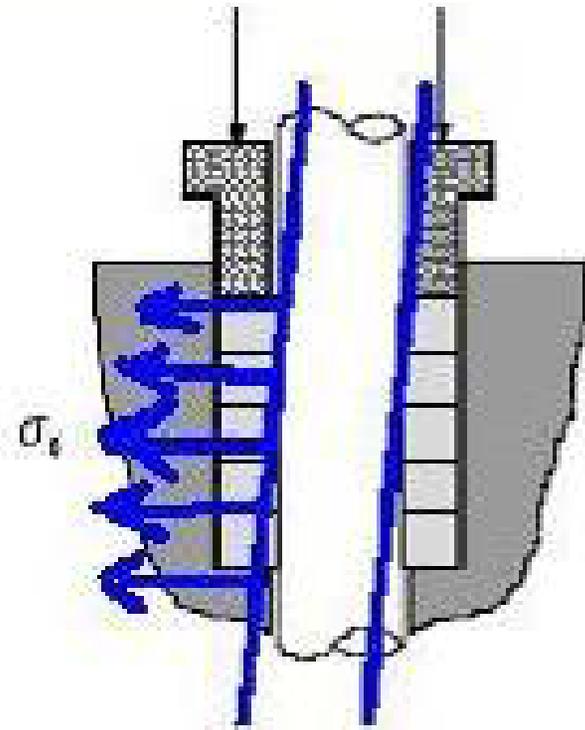


## One-piece ball and stem designs

- Some one-piece designs are held with a trunnion mounting. Utilized to prevent stem side load
  - Loses the advantage of the pressure assisted seal
  - Requires the use of spring energized seats
  - Leads to greatly increased torques and potential weak spot for potential failure
- Other designs reduce side load by tightly packed stem packing
  - Leads to higher torques
  - Still does not compensate for severe side loads



- Side loading is a design challenge that directly impacts the lining and sealing capabilities. When a spherical ball is in the closed position, the face of the ball is subjected to pressure generated by the media and can create side loading. In both the two-piece and one-piece traditional ball valve designs, side loading creates a weakness, which increases the risk of leaks in-line or to the environment.



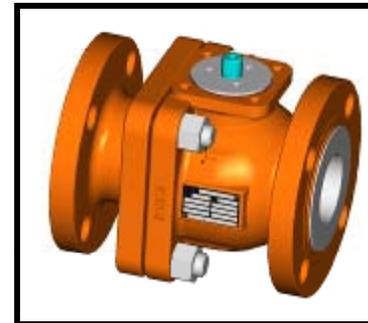
- High wear and exposure to excessive torque on the ball and stem joint area cause the lining to creep, which thins the lining, risking static deformation or destruction of the lining between the ball and the stem, potentially leading to corrosion of the ball and stem core and catastrophic valve failure
- Lost motion between ball and stem reduces positive rotational control
- Unpredictable ball movement (“tilting”) inside the valve body, leading to misalignment between ball and sealing area
- Misalignment of actuator or side loading of the lever tilts the stem, impacting the stem seal and leading to potential leakage to atmosphere

- In short, the “ideal lined ball valve” from a customer’s perspective should offer a quantum advance in safety and reliability. More specifically, a new design should address:
  - Consistent in-line sealing at varying temperature and pressure ranges
  - Maintaining the highest possible atmospheric seal
  - Corrosion resistance
  - Lowest torque for automation (break torque and operating torque)
  - “Zero” maintenance over the entire productive life-span
  - Adaptability to different applications/processes

## Product Line Overview

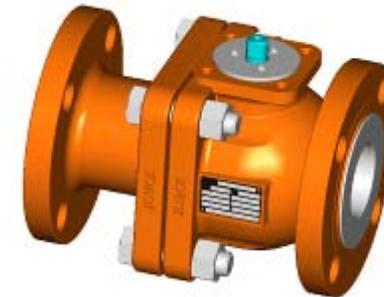
- XLB Lined Ball Valves
  - PFA Lined
    - 1/2" through 6"
  - ASME, DIN and JIS versions
  - Short pattern ASME, full and reduced bore
  - Long Pattern DIN and ASME full bore

ASME,  
DI, SP  
FP & RP

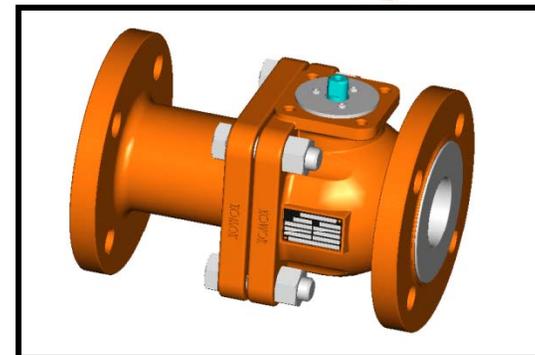


ASME full port  
short pattern  
type XLB 12A

ASME, JIS  
DI, LP



EN full port  
type XLB 24A



Phase 1 Product Launch 2009

# XLB Key Design Benefits



- The new XOMOX XLB offers an innovative stem sealing system, providing safety and long term fugitive emission control under extreme conditions
- Dynamic body joint design retains pressure boundary during thermal cycles
- Lower Torque - Smaller actuators, reduced costs, space and weight saving

# XLB Design Features



- One piece ball and stem to eliminate liner failure potential at ball/stem joint and resolve lost motion problems
- Dynamic atmospheric seal
- Metal-to-metal body joint
- Floating ball
- Pressure assisted in-line seal
- Stainless steel lever
- Latching lever
- Standard locking
- ISO 5211 actuator mounting
- Full port and reduced port options



# XLB Applications



- Industrial Inorganic Chemicals
- Industrial Organic Chemicals
- Alkali's & Chlorine
- Detergent production
- Bromine production
- Nitrogenous & Phosphorus Fertilizers
- Pharmaceutical preparation
- Petroleum Refining
- Metal & Mining industry
- Plant Protective Agent production
- Pulp, Paper & Wood
- Water treatment
- Sulfur recovery
- Food processing
- Sugar industry
- Corn industry

FUNCTION			MEDIA														APPLICATION REQUIREMENTS													
On / Off	Throttling	Diversion	Clean Liquids & Gases	Dirty Liquids & Gases	Corrosive Liquids & Gases	Mineral Acids	Organic Acids	Alkalis	Hazardous Liquids & Gases	Viscous Liquids	Scaling Liquids & Slurries	Abrasive Slurries	Fibrous Slurries	Bromine	Waste water	Dry Materials	Food / Pharmaceutical	Vacuum Service	High Flow Capacity	Low Torque	Fugitive Emissions Control	Reduced Maintenance	Extended Service Life	Sizes	Pressure Ratings	High Temperature (ASME/EN)	Low Temperature (EN)	Low Temperature (ASME)	Key Benefit	
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	1/2" - 6"	DN15 - DN150	Class 150 / PN16	400°F / 204°C	-10°C / 14°F	-20°F / -29°C	Safety / Economy
			<p>● Superior Performance</p> <p>● Limited Application (Consult: Factory)</p> <p>● Not Applicable</p>																											

# Summary



- The XLB takes advantage of the internal pressure to create a better seal, demonstrating that even long-term designs like fluoropolymer lined ball valves can be significantly improved using modern process and design methodologies.
- The benefit for customers is that the main disadvantages of the current designs are addressed without compromising other design strengths.
- The new design integral ball and stem retains the sealing advantage of the “floating ball” found in a traditional two-piece design
- Typical limitations of a body joint have been overcome.
- The XLB’s metallic core, PFA lining, and advanced sealing technology result in considerably reduced wear, limiting the danger of safety-related incidents.
- Innovative features lead to increased safety and better environmental safeguards
- Economic advantages, including longer life performance and lower torque, without the need for exotic alloys.