

LTR43 FULLY WELDED BUTTERFLY VALVE

COLD BOXES AND CRYOGENIC APPLICATIONS



LIVE LOADED PACKING

- Live-loaded packing design with Bellville washers that extends the lifespan of the packings
- Eliminates the need for

POLISHED STEM

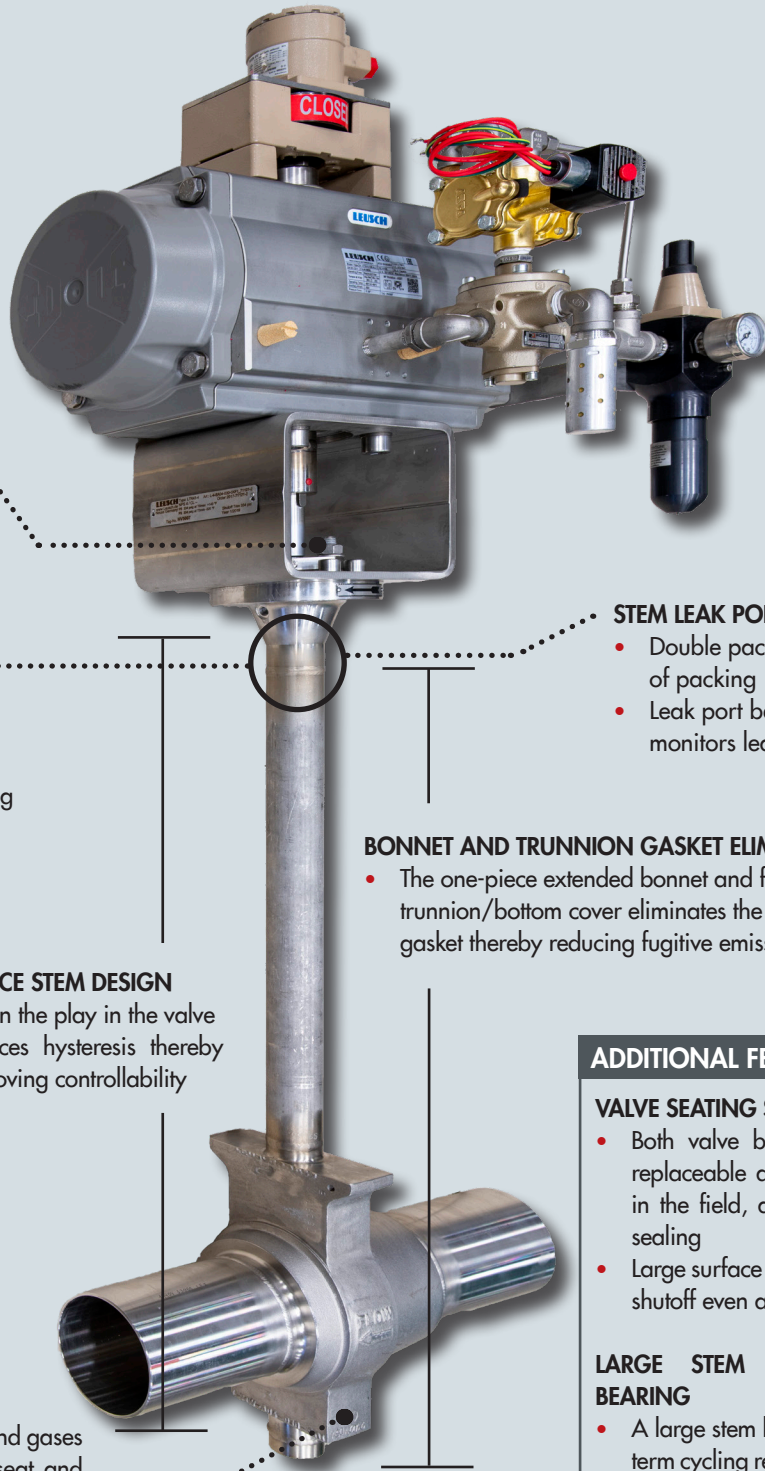
- Polished shaft minimizes friction between packing and stem
- Reduced required torque
- Reduce hysteresis thereby improving controllability

ONE-PIECE STEM DESIGN

- Lessen the play in the valve
- Reduces hysteresis thereby improving controllability

TRIPLE ECCENTRIC CONSTRUCTION

- Guarantee tight shutoff in liquids and gases
- Eliminated friction is valve body seat and disc during rotation
- Lowered hysteresis during control
- Lower breakaway torque requirement
- Reduced overall maintenance cost



STEM LEAK PORT WITH DOUBLE PACKING

- Double packing increases the reliability of packing
- Leak port between the two packings monitors leakage in the packing layers

BONNET AND TRUNNION GASKET ELIMINATION

- The one-piece extended bonnet and fully welded trunnion/bottom cover eliminates the use of gasket thereby reducing fugitive emission

ADDITIONAL FEATURES

VALVE SEATING SYSTEM

- Both valve body seat and disc seat are replaceable and can be exchanged easily in the field, allowing for dependable tight sealing
- Large surface sealing areas guarantees tight shutoff even at higher differential pressure

LARGE STEM THRUST WASHERS AND BEARING

- A large stem bearing provides long-term cycling reliability and reduces vibration
- Solid stellated thrust washer provide flexibility to different temperatures and further improves reliability

APPLICATION

In a low temperature gas separation unit, gases are liquefied by cooling them to cryogenic temperatures of -320°F (-196°C) before they are separated in a thermal separation process. The process is complex and uses a variety of cryogenic equipment (e.g. heat exchangers, expansion turbines, pumps, condensers, re-boilers, distillation columns, etc.) The equipment is installed in a large box called the cold box. The cold box is insulated from surrounding ambient environment to minimize heat loss. Cryogenic cold box valves are then used in the regulation and isolation of flow across the equipment.

Cold boxes are designed such that certain components of a valve are located outside of the insulated cold box. For example, valve packing, actuators, and other accessories can be placed outside of the cold box. This allows the use of standard materials and electronics, reducing the cost and increasing the reliability of the items. A major challenge posed by the design is leakage from the valve joints due to temperature differentials. This challenge is often made more difficult when different materials are involved. SAMSON, together with its partners in the cryogenic air separation unit business, have developed a "fully-welded cryogenic butterfly valve" that eliminates all leak sources in the valve. The design eliminates issues caused by thermal effects while retaining the advantages of standard cold box valves.



Application Areas:

- Air separation plants
- LNG and natural gas processing plants
- Petrochemical plants
- Hydrogen and synthesis gas plants
- Adsorption plants
- Carbon capture and utilization plants
- Cryogenic tanks

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