

Cryogenic Valves

ValvTechnologies' Specialty Products

Built to withstand the most severe applications



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ValvTechnologies' cryogenic valves are built to withstand the most severe applications. This solution represents an important step forward in cryogenic technology by providing absolute zero-leakage thanks to the RiTech® coated integral seat, live-loaded fugitive emissions and fire safe tested design.

According to most specifications, cryogenic valves for LNG service must be fire tested. Unfortunately, the soft goods in most cryogenic ball valves will not pass the industry standard fire tests. Additionally, some metal seated valves which claim to be "inherently fire safe" have not actually been fire tested.

Contrary to conventional ball valve designs that attempt to adapt hard seats to a soft seated design, ValvTechnologies' valves were designed from the beginning to be metal seated.

The ValvTechnologies' design is centered around a seat that is machined as one piece integral to the end connector. This provides a stable platform onto which the ball is loaded with the high force of a Belleville® spring. The proprietary RiTech® carbide coating on the ball and integral seat are mated, which, in combination with the spring, provide a tight metal seal at all differential pressures and temperatures. In addition, all ValvTechnologies' valves feature live-loaded fugitive emissions and fire safe stem packing.

ValvTechnologies' ball valves do not use any elastomers. As such, the valves are inherently fire safe by design. Pressure and temperature parameters are dictated by the grade of steel used in construction of the valve, not by o-rings.

ValvTechnologies' Cryogenic Valve Features

Integral metal seat	With our proprietary HVOF RiTech® coating technology, the integral seat in ValvTechnologies' valves is resistant to the attack of abrasive magnetite and ferrous oxides that may be seen in the steam flow.
Body seal ring	ValvTechnologies employs a field proven seal ring technology to ensure sealing under all operating conditions, up to 1400°F. The body seal ring is loaded at a pressure higher than 20,000 psi. In addition, valves sized three inch and above contain a secondary Grafoil seal to further guarantee reliability.
Patented coating process	The sealing surfaces are overlaid with tungsten or chromium carbide using our exclusive HVOF RiTech® process. These surfaces have a hardness of 68 – 72 Rc to allow long periods of operation in the most severe conditions.
Live-loaded gland area.	The V Series' sealing design features a four stud, live-loaded assembly designed for heavy industrial applications. The sealing material is high purity Grafoil® surrounded by stainless steel wire mesh anti-extrusion rings. The six Belleville® springs (per stud) provide constant load pressure through extreme thermal shocks and prevent wear leaks in high-cycle service.
Blow-out proof stem	The blow-out proof stem design utilizes a one piece, hard-faced, blow-out proof stem that is inserted through the inside of the body cavity eliminating the possibility of blow-out through the gland area.

Technical Data	
Features	Benefits
Sizes	1/4 - 36"
Pressure Classes	ANSI/ASME Class 150 – 4500
Materials of Construction	ValvTechnologies' metal seated cryogenic valves are available in a variety of materials suited for extremely low temperatures.
In Compliance	Design exceeds the test requirements of BS 6364 Meets the fire safe requirements of API 607
Shutoff	Absolute zero-leakage shutoff
Applications	Liquified natural gas (LNG) Air separation

ValvTechnologies' Cryogenic Valve Benefits

Features	Benefits
Through conduit design: No tortuous flow path. When open it has the highest possible Cv's. Minimized wear & tear.	Eliminated vibration, reduced maintenance
Fixed position – quarter turn: No seating torques required.	Minimized stem wear, lower cost of ownership
Hardened blowout proof stem: One piece, inserted through the body & shouldered. Eliminates the weak link of collared & pinned designs.	Improved safety
Metallic body seal ring: Increases body integrity by eliminating external leakage.	Improved reliability, zero-leakage shutoff
Live-loaded packing gland: Minimum four bolt configuration with shallow stuffing box. Ensures consistent torque at variable pressures & temperatures.	Increased reliability
Hardcoated & mate lapped seats: High Velocity Oxygen Fuel (HVOF) RiTech® chrome carbide hardcoating with a Rockwell C of up to 72. Mate-lapped seats.	Wear & corrosion resistant, increased reliability, zero-leakage shutoff
Seat designs: Hardcoated, both ball & integral downstream seat to the end-cap to eliminate a potential leak path.	Increased reliability
Simplicity of design: Designed for ease of installation & maintenance.	Easily actuated, increased system reliability, increased efficiencies, ease of use, reduced maintenance
Stringent testing: Every valve is tested, documented & serialized.	Increased reliability, increased safety, total traceability

Resources

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