RANGER
VALVE AMERICA

SPE 77/200

CRYOGENIC VALVES

GATE, GLOBE, CHECK, BALL & TOV

Ranger Valve America Ltd. (Ranger™) is proud to produce Cryogenic Gate, Globe, Check, Ball and TOV valves that are third-party and field tested and are suitable for temperatures as low as -320°F/-196°C. Ranger™'s cryogenic valves are suitable for numerous applications including liquefied natural gas (LNG), liquefied petroleum gas (LPG), liquefied oxygen, liquefied hydrogen, ethylene plants, as well as in air separation industries.

DESIGN FEATURES AND BENEFITS

Ranger™ works to provide a rigorous research and development program aimed at product design, innovation and validation, often developing designs that meet the specific challenges of key process applications.

Extended bonnet

- The extended bonnet ensures the service inside the valve does not affect the sealing performance of the stem packing.
- Ranger™'s extended bonnet design meets the requirements of both MESC SPE 77/200 as well as MSS SP-134

Drip Plate

- Ranger™'s drip plate reduces the impact of external temperatures on the service and protect the bonnet bolting area from condensation.

Pressure Relief Port

- Ranger™'s automatic pressure relief port prevents cavity over-pressurization due to temperature change by releasing pressure to the up-stream side.

Live loaded bolting

- Ranger™'s disk-spring washers add live-loading spring force to ensure and maintain the seal of stem packing and bonnet.

QUALITY CONTROL

Ranger™ uses a full spectrum of inspection and test equipment to ensure that all products meet or exceed the quality standards, including:

Computer aided design phase:

- Finite element analysis (body, closure & stem)
- Extended bonnet temp. analysis

Raw material and material in production control:

- Mechanical: tensile, impact and hardness testing;
- NDE: PT, MT, UT
- Chemical: PMI

Individual component verification testing:

- Seats & seat inserts
- Lip-seals (Saint Gobain)
- Gaskets
- Sealing packings

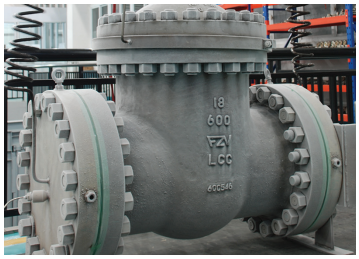
As well, Ranger™ simulates various tests in critical and crucial working conditions to verify product performance.

Finished valve testing:

- Fugitive emission
- Shell type acceptance test (TAT/TAMAP)

-20°F/-29°C

-320°F/-196°C



KEY STANDARDS

- API 598
- API 624
- BS 6364
- MESC SPE 77/200
- MESC SPE 77/300
- MESC SPE 77/312
- MSS SP-134
- ISO15848-1
- Internal test specifications

-320°F/-196°C

QUALITY, ECONOMY & PERFORMANCE

MESC SPE 77/200, SPE 77/300 & SPE 77/312

Ranger™ utilizes a laboratory designed and built to ensure the accurate testing of cryogenic, type acceptance testing, and fugitive emissions testing, as required by the Shell MESC specifications. This capability includes real-time monitoring of the testing and test results including test parameter curves in the test reports.

Controlled Environment

Ranger™ has a dust-free workshop for special valves that will be placed in extremely sensitive applications, which need to be assembled in a controlled environment, including cryogenic valves.

Cryogenic Manufacturing

Ranger™ follows a specific process for its cryogenic valves that includes a separate set of requirements and additional steps in the manufacturing process including:

Cryogenic treatment:

- All of cryogenic valves from Ranger™ undergo an extended cryogenic treatment of pressure containing parts and trim after rough machining is complete.
- This 2-6 hour treatment depends on the size and designed service temperature of the valve.

Precision machining:

- All components of cryogenic valves are CNC machined to ensure achievement of precise tolerances.

Ultrasonic cleaning & dust free assembly:

- Cryogenic valve components undergo a moisture removal process and ultrasonic cleaning prior to being transported to the dust-free workshop.

Industry Leading Traceability

Ranger™ offers its customers a complete system of traceability and document management. Using an advanced system of cloud-based file management, Ranger™ offers its customers the ability to track its valves from purchase, through expediting to delivery and throughout the valve life-cycle.

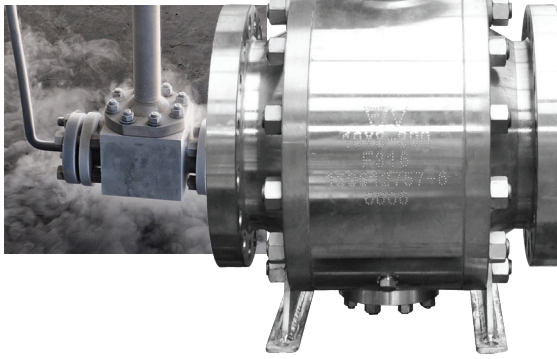
In addition, Ranger™'s Advanced Expediting Program adds a new level of visibility for expediting teams, detailing manufacturing milestones and using a critical control point check system built directly in to the manufacturing process.

Technical Response Team

In support of our distribution partners and their end-use customers, Ranger™ employs a technical response team lead by industry veterans with both engineering and field expertise. Providing a timely and experienced response, this technical team is available to support your requirement - anytime, anywhere. In turn, they are supported directly by factory engineering and manufacturing teams who are on call to ensure valve reliability and consistent operation.

Repair & Modification

Ranger™ acknowledges that not all repair or modifications to its valves can occur at the factory. As such, Ranger™ has audited/ approved repair and fabrication partners in local geographies to support our end users needs while maintaining warranty and ensuring factory OEM parts and processes are followed when operating on Ranger™ valves.



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