



Valbart Cryogenic Ball Valves



Experience In Motion



Flowserve Valbart Cryogenic Valves

Optimized design

Valbart cryogenic valves are designed to meet the most demanding end-users requirements in terms of leakage rates and fugitive emission performance. Body construction and flexible trim configurations deliver durable functionality and high performance in the most stringent of cryogenic applications

Services

Nitrogen (-320°F / -196°C)	Helium (-452°F/-269°C)
Oxygen (-297°F/-183°C)	Hydrogen (-423°F/-253°C)
Argon (-303°F / -186°C)	Krypton (-244°F/-153°C)
Carbon Dioxide (-109 °F / -78°C)	Methane (-259°F/-162°C)
Carbon Monoxide (-312°F/-191°C)	Neon (-410°F/-246°C)
Ethylene (-155°F / -104°C)	Nitric Oxide (-241°F/-151°C)
Fluorine (-307°F / -188°C)	Propane (-44°F/-42°C)

Applications

LNG Plants	Loading/Unloading
Chemical Plants	Storage
Gas Liquefaction	Re-gasification

Accurate Material Selection & Production Technology

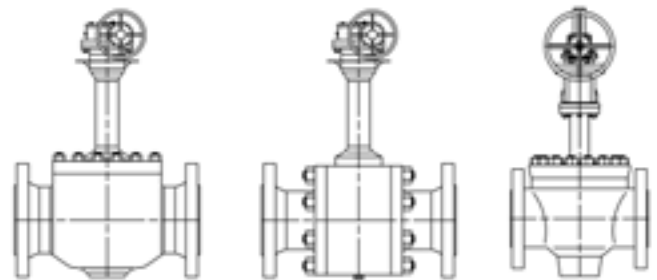
Austenitic stainless steel grades (316 – 304 - 321) are used for pressure containing and controlling parts ensuring optimum performance at cryogenic temperatures. Components are produced from high quality forgings and casting (traditional or centrifuged). High strength materials like 316LN-Mod or Nitronic-50® are available for HP applications (900# & above).

PCTFE (Kel-F®), RPTFE and PEEK are applied as seat inserts. Lip-seals (PTFE jacket & Elgiloy® springs) are used as primary static and dynamic seals.

Applicable Specifications

API 6A/ API 6D
ASME B 16.34
BS 6364

Available Configuration



BODY DESIGN PRESSURE CLASS	TOP ENTRY SIZE RANGE	SIDE ENTRY SIZE RANGE	RISING STEM SIZE RANGE
150# - 600#	2" - 56"	2" - 56"	1" - 24"
900#	2" - 36"	2" - 36"	1" - 20"
1500#	2" - 30"	2" - 30"	1" - 16"
2500#	2" - 24"	2" - 24"	1" - 8"
API 5000	2" 1/16 - 13" 5/8	2" 1/16 - 13" 5/8	-
API 10000	1" 3/16 - 13" 5/8	1" 3/16 - 13" 5/8	-
LOW TEMP LIMITS	Upto -320°F /-196°C	Upto -320°F /-196°C	Upto -452°F/-269°C
FLOW DIRECTION			
Uni-Directional	✓	✓	✓
Bi-Directional	✓	✓	-
END CONNECTION			
Butt Weld	✓	✓	✓
Flanged RF/ RTJ	✓	✓	✓
HUB	✓	✓	✓
SEATING			
Soft Seated	✓	✓	✓
Metal Seated	✓	✓	✓
SEAT DESIGN			
SPE	✓	✓	-
DPE	✓	✓	-
COMBINED SPE/ DPE	✓	✓	-



Cryogenic Ball Valve Features

- Extended Bonnet Design
- Soft and Metal Seat Selection
- Double Stem Seals
- Self Energized Body Seals
- Internal Relief

Advantages

Improves seal performance at extremely low temperatures by isolating the stem seals from the cold media

Ensures correct functionality at all possible combinations of temperatures, fluid types and leakage rates

A primary energized lip seal guarantees optimum leakage resistance in demanding cryogenic applications. In critical applications, the leak-proof integrity of the valve is further enhanced by a combination of the primary energized lip seal and an optional chevron packing (see Figure 1). The stem packing can be adjusted or live-loaded depending on customer requirement

Zero leakage is achieved at extremely low temperatures and high/ low pressure conditions through the primary spring energized lip seal

Automatic excessive body pressure discharge through internal self relieving system. Pressure can be discharged upstream or downstream depending on customer requirement. This feature is not applicable for Rising Stem Ball Valves since the valve is unidirectional by design

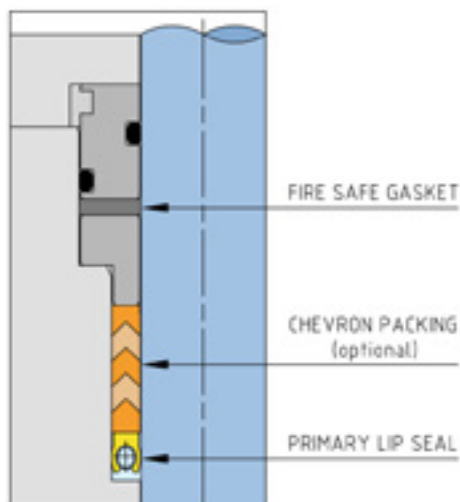


Figure 1. Typical Cryogenic Valve Stem Configuration

Flowserve Valbart In-House Cryogenic Testing Facilities

- 5 Cold boxes up to 56"
- Liquid nitrogen testing facility down to -196°C.
- HP direct nitrogen gasifying system for body and seat gas tests up to 420 barg (higher test pressure available with boosters)
- Helium HP gas test for -196°C testing
- Helium mass spectrometer for fugitive emission test
- Torque test tools c/w strain gauges torque cells
- Data acquisition electronic system.



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For more information about Flowserve Corporation,
visit www.flowserve.com or call USA 1 800 225 6989

Due to continuous development of our product range, we reserve the right to alter the dimensions and information contained in this leaflet as required. Information given in this leaflet is made in good faith and based upon specific testing but does not, however, constitute a guarantee.

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