MANN FLOW CONTROLS , INC

Product Brochures
Cryogenic Valves

www.mannflowcontrols.com

ABOUT US

- Mann Flow Controls, Inc. (MFC) is a manufacturer of high quality valves and flow control products based in Houston, Texas, USA.
- We manufacture ball valves, check valves, gate valves, globe valves, plug valves, cryogenic valves and specialty valves.
- Our valves meet American Petroleum Institute (API), American National Standards Institute (ANSI), American Society of Mechanical Engineers (ASME), American Society for Non-Destructive Testing (ASNT), Manufacturers Standardization Society (MSS), British Standard Institute (BS), Conformité Européenne (CE), NACE International and other standards and specifications.
- MFC is dedicated to provide our customers with high quality valves that are designed, manufactured and tested to the exacting standards of various qualifying certification bodies.

CRYOGENIC VALVES

The definition of cryogenic is 'as of or relating to low temperature'.

MFC has the flexibility and ability to produce a wide range of extended bonnet and cryogenic valves on short lead times with the possibility of performance testing at service temperatures in our associate on-site test facilities. We manufacture forged and cast cryogenic ball, check, gate, globe and butterfly valves with extended bonnets (except check valve) for service temperatures down to -196°C, meeting the requirements of BS6364 and other similar national, international and user specifications.

USE

Typically Cryogenic Valves are used on processes involving liquefied gases such as Liquid Nitrogen, Oxygen and Liquefied Natural Gas (LNG).

Cryogenic valve is used to cut-off or connect media in various pipeline of Class 150 ~ Class 1500. The valves are made of different materials suitable for various media and different temperatures. The lowest working temperature for is -196°C. Cryogenic ball valves can be operated manually, gear operation or by pneumatic/electric actuators.

STRUCTURAL FEATURES

Cryogenic valves are normally similar to common valves in the design except for the materials used. Also, an extended bonnet is designed when the cryogenic valve is used within temperature lower than -50°C . Extended bonnet is not required for temperature above -50°C. This is to improve the temperature at the packing and to ensure reliable sealing of stem packing. The bonnet length is designed according to standard requirements or according to user requirements.

When cryogenic valve is at closed position, the low temperature liquid staying in the middle cavity will be gasified with the rise in temperature. This causes the volume to expand rapidly and leads to abnormal pressure rise in the middle cavity or even valve breakage in highly serious circumstances. Cryogenic valve is provided with function of middle cavity automatic pressure relief. In the event of abnormal rise in pressure in the middle cavity, the medium in middle cavity will overcome the spring pretightening effect through its own force and push the seat of the ball/gate to realize automatic pressure relief, to ensure valve safety.

- ◊ MFC maintain a self-auditing Quality Assurance program which provides us with identifiable goals for continuous quality improvements.
- ◊ Our QA department have emphasized on material traceability, (working with our affiliated production facilities) we conduct PMI laboratory with Optical Emission Spectrometer technology + RT-MT-.
- ◊ We believe that the integrity of materials provide for MFC valves are not just in a certificate but every valves produced must pass our rigid tests throughout the manufacturing process, including a final hydrostatic test prior to shipping.

OBJECTIVE, FOCUS AND EDGE

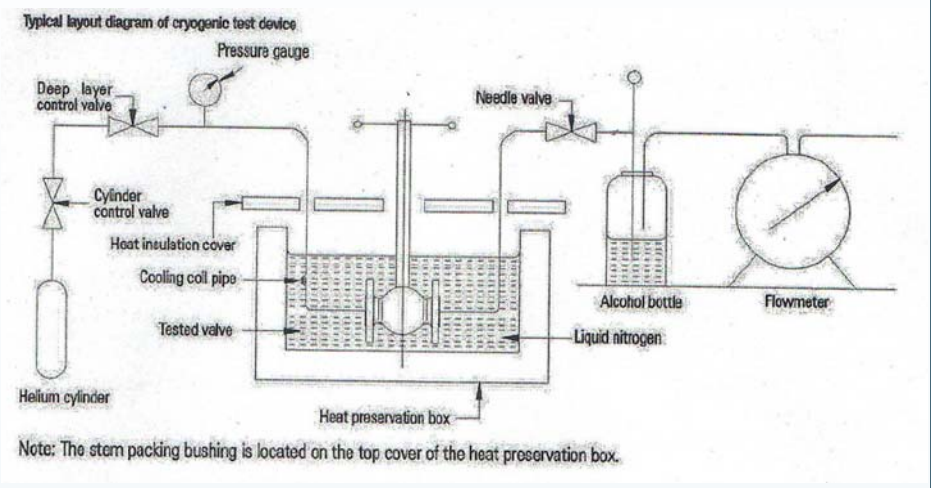
When it comes to valves, we that your most important purchase consideration is quality, reliability, total cost of ownership and delivery. The longer a valve performs as designed and without problems, the lower the total cost of ownership. We believe our valves can compete in those terms with our competitors' in the market today.

CRYOGENIC VALVE TESTING

Cryogenic valve is used for low temperature service condition such as natural gas. In association with our affiliate, we have substantial experience in designing, manufacturing, testing and inspecting cryogenic valves.

Cryogenic tests are normally carry out to test operating torque, sealing performance and other indices under low temperature environment.

Shown below is typical layout diagram of cryogenic test device.



MATERIALS SELECTION

Common steel will show low temperature brittleness under low temperature. As such, it is important for the users to select suitable body materials according to the lowest working temperature in operation. The low temperature materials will be subjected to low temperature impact test according to standard requirements. Additionally, for cryogenic ball valves with working temperature lower that -100°C; body, bonnet and stem will undergo cryogenic treatment after machining. Meanwhile, ball and seat sealing face will undergo cryogenic treatment hard alloy spray welding/overlay welding. Afterward, grinding and subsequent assembly will be carried out to ensure adaptability of materials under low temperature. None the least, pacing, gaskets, bolts and nuts will be made of materials suitable for low temperature service condition.

Refer to the table on the next page for the lowest working temperature of body materials.

LOWEST WORKING TEMPERATURE OF SHELL MATERIALS

Materials	Lowest Temperature	Materials	Lowest Temperature
ASTM A352 LCB	-46°C	ASTM A350 LF2	-46°C
ASTM A352 LCC	-46°C	ASTM A350 LF2	-46°C
ASTM A352 LC1	-59°C	ASTM A350 LF5	-59°C
ASTM A352 LC2	-73°C	ASTM A350 LF9	-73°C
ASTM A352 LC3	-101°C	ASTM A350 LF3	-101°C
ASTM A351 CF8	-254°C	ASTM A182 F304	-254°C
ASTM A351 CF8M	-254°C	ASTM A182 F316	-254°C
ASTM A351 CF3	-254°C	ASTM A182 F304L	-254°C
ASTM A351 CF3M	-254°C	ASTM A182 F316L	-254°C

MAIN PARAMETERS

(For Cryogenic Ball Valve and Gate Valve)

Main Parameters	Ball Valve	Gate Valve
Product Scope:	NPS 1/2"~NPS 36",CL150~CL1500	
Design and Manufacturing:	API6D, API608, ASME B16.34, BS6364	API600, API602, BS1873, BS6364
Face to Face Dimension:	API6D, ASME B16.10/Factory standard	ASME B16.10/Factory standard
End Connection:	ASME B16.5/ASME B16.25	ASME B16.5/ASME B16.25/ ASME B16.47
Wall Thickness:	ASME B16.34	
Pressure Test:	API598	
Pressure and Temperature Rating:	ASME B16.34	
Method of Operation:	Manual, gear operated, pneumatic actuator, electric actuator	

Cryogenic Ball Valve

Cryogenic Ball Valve

Cryogenic Ball Valve

Cryogenic Gate Valve

Cryogenic Gate Valve

Cryogenic Globe Valve

Cryogenic Globe Valve

Cryogenic Butterfly Valve

Cryogenic Butterfly Valve

CONTACT US

We are committed to providing you with the highest level of customer support, including responding to your questions in a timely manner. How well we do this depends on a clear, current understanding of your needs and preferences.

We encourage you to send your questions and requests, share your valuable opinions and experiences by contacting us at

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