



TYPE APPROVAL CERTIFICATE

Certificate No. : BSN35101-VV010 **Initial Approval** : 26th November, 2018
Product : Cryogenic Valve
Manufacturer : BMT Co., Ltd.
35, Sanmakgongdannam 11-gil, Yangsan-si, Gyeongsangnam-do, Korea

Product Description : Cryogenic Ball Valve
- Model : FCB Series
- Intended for : Liquid and Gas Service
" See Appendix 1 "

Approval Condition : " See Appendix 1 "

THIS IS TO CERTIFY that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows and entered in the "List of Approved Manufacturers and Type Approved Equipment".

Pt 7, Ch 5, Art 513 of the Rules for the Classification of Steel Ships and IGC Code, ASME B16.5, B16.10, B16.11, B16.25, B16.34 & BS6364.

This Certificate is valid until 25th November, 2023

Issued at Busan, Korea on 26th November, 2018

 **KOREAN REGISTER OF SHIPPING**

General Manager of
Marine & Ocean Equipment Team

- Note :*
1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.
 2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.
 3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.
 4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.

Appendix 1

Product Description and/or Approval Condition

Certificate No : BSN35101-VV010

Date of Issue :26 November, 2018

A. Product Description

1. Product Specification

- 1) Cryogenic Ball Valve
 - Design Temp. : -196°C to +120°C
 - Pressure Rating : ANSI Class 150
 - Size : 1/2", 1", 2"
 - End Connection : Butt weld connection (ASME B16.25)
 - Material
 - Shell : ASTM A182 F316L
 - Stem : ASTM A276 316
- 2) Cryogenic Ball Valve
 - Design Temp. : -196°C to +120°C
 - Pressure Rating : ANSI Class 150
 - Size : 1/2"
 - End Connection : Raised face flange (ASME B16.5)
 - Material
 - Shell : ASTM A182 F316L
 - Stem : ASTM A276 316

2. Approved Drawings and documents

- 1) 180705-01-115-03, 04, 06

3. Test Reports, etc.

- 1) Type test report No. BMT-CTR-1808H-01 dated 22 Oct 2018 witnessed by KR Surveyor.

B. Approval Condition

1. Application & Limitation

- 1) The materials used for valve body, etc as appropriately are to be supplied by the approved manufacturers, and certified by the Society or to be satisfactory to the Surveyor.
- 2) Gaskets and packings are to be suitable for the condition of use and to have a construction specified in Korean Industrial Standards or equivalent construction thereto.

2. Individual Product Cert. and Drawing Approval Requirement

- 1) Individual Product Certification is required.
- 2) The minimum average energy for Charpy V-notch impact test should be complied with the relevant requirements of the Rules, Pt.7, Ch.5.
- 3) The following tests are to be applicable for each size of the valves as individual product certification.
 - Hydrostatic test of the valve body at a pressure equal to 1.5 times the design pressure
 - Cryogenic testing consisting of valve operation and leakage verification for a minimum of 10% of each type and size of valve for valves
 - Proving testing at ambient temperature consisting of leakage test at a pressure equal to 1.1 times the design pressure

3. Marking

- 1) The product is to be permanently marked with manufacturer name and type designation on a suitable position.

4. Others

Not applicable.

< End of Certificate >