



TYPE APPROVAL CERTIFICATE

Certificate No. : BSN35101-VV017 **Initial Approval** : 20th April, 2020
Product : Cryogenic Valve
Manufacturer : BMT Co., Ltd.
35, Sanmakgongdannam 11-gil, Yangsan-si, Gyeongsangnam-do, Korea

Product Description : Cryogenic Needle Valve

- Model : FCNVA, FCNV 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 Classification, Steel Ships and IGC Code, ASME B16.34, B16.10, B16.25 & BS6364

This Certificate is valid until 19th April, 2025

Issued at Busan, Korea on 20th April, 2020



This certificate is signed electronically in accordance with IMO FAL.5/Circ.39/Rev.2. Validation and authentication of the certificate can be confirmed from "<http://e-cert.krs.co.kr>" by using the tracking No (ME20013233917) and certificate No.(BSN35101-VV017).



KOREAN REGISTER

*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

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Date of Issue : 20th April, 2020

A. Product Description

1. Product Specification

- 1) FCWA Series
 - Design Temp. : -196°C to +120°C
 - Pressure Class : ANSI Class 150
 - Size : 1/2"
 - Design Pressure : 19 bar at 38°C
 - End Connection : RF, RFxSW
 - Material
 - Shell : ASTM A351 CF8M
 - Stem : ASTM A276-316
- 2) FCW Series
 - Design Temp. : -196°C to +120°C
 - Pressure Class : ANSI Class 300
 - Size : 1/2", 3/4"
 - Design Pressure : 41.4 bar at 38°C
 - End Connection : BWxRF, RFxSW, BW, RF
 - Material
 - Shell : ASTM A182 F316
 - Stem : ASTM A276-316

2. Approved Drawings and Documents

- 1) FCNVARF1-8-R1, FCNVARFSW1-8-R1, FCNVB4SRF1-8-36L, FCNVBRFSW1-8-36L, FCNVB4S1-8-36L, and FCNVBRF2-12-36L dated on 15 Jan., 2020

3. Test Reports, etc.

- 1) BMT-CTR-200306-TA-06~11 dated on 06 March, 2020

B. Approval Condition

1. Application & Limitation

- 1) The materials used for valve body & etc. as appropriately are to be certified by this 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

N/A

< End of Certificate >