



Type Approval Certificate

[Cryogenic Valves]

Initial Approval 18 May 2021

Manufacturer BMT Co., Ltd.

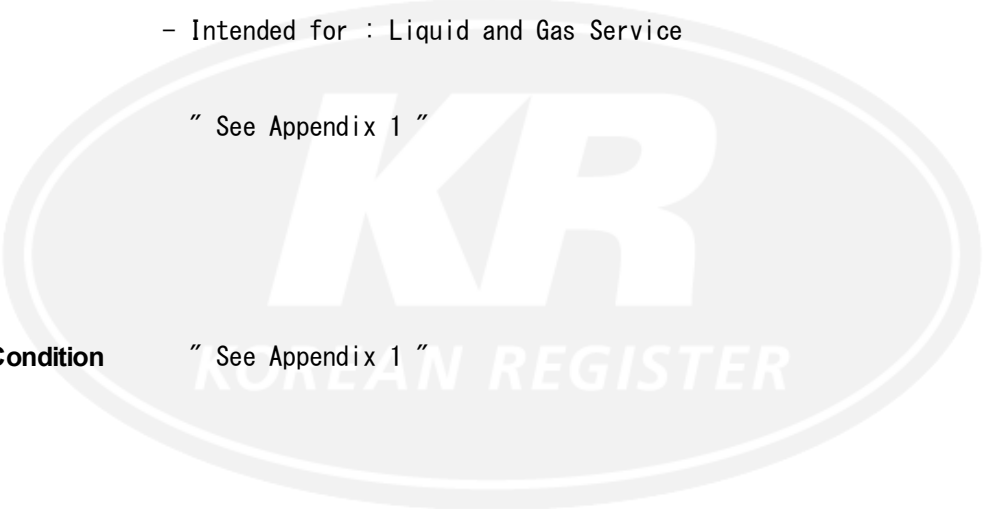
17 Sinsojaesandan 2-ro, Jangan-eup, Gijang-gun, Busan, 46031, Republic of Korea

Product Description Cryogenic Top-Entry 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.

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

This Certificate is valid until 17 May 2026

Reissued at Busan, Korea on 21 February 2024



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(ME24008157738) and certificate No.(CSP35101-VV019).



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.

Product Description and/or Approval Condition

Date of Issue : 21 February 2024

A. Product Description

1. Product Specification

1) FCB Series

Size (inch)	Pressure Rating	Design Press. (bar)	Design Temp. (°C)	End Connection	Material (Shell/Stem)
1/2"	Class 150	19.0	-196 ~ +100	RF, BW	ASTM A351 CF8M/SS316
3/4"	Class 150	19.0	-196 ~ +100	RF, BW	ASTM A351 CF8M/SS316
1"	Class 150	19.0	-196 ~ +100	RF, BW	ASTM A351 CF8M/SS316
1-1/2"	Class 150	19.0	-196 ~ +100	RF, BW	ASTM A351 CF8M/SS316
2"	Class 150	19.0	-196 ~ +100	RF, BW	ASTM A351 CF8M/SS316

2) FCB Series (Remote)

Size (inch)	Pressure Rating	Design Press. (bar)	Design Temp. (°C)	End Connection	Material (Shell/Stem)
2"	Class 150	19.0	-196 ~ +100	BW	ASTM A351 CF3M/SS316
1/2"	Class 150	19.0	-196 ~ +100	BW	ASTM A351 CF3M/SS316
3/4"	Class 150	19.0	-196 ~ +100	BW	ASTM A351 CF3M/SS316
2-1/2"	Class 150	19.0	-196 ~ +100	BW	ASTM A351 CF3M/SS316
3"	Class 150	19.0	-196 ~ +120	RF	ASTM A351 CF8M/A182 316

2. Approved Drawings and Documents

- 1) 210217-01-123 dated 17 Feb. 2021, BMT-201012-115-01 ~ 05 dated 12 Oct. 2020
- 2) 210329-02-119-05 dated 15 Sep. 2021
- 3) 202110-1241-001, 002, 024 dated 23 Feb. 2022
- 4) 220107-01-123-04 Rev. 0 dated 07 Sep. 2022

3. Test Reports, etc.

- 1) Report No. : BMT-CTR-210513-TA-01 ~ 05 dated 14 May 2021
- 2) Report No. : BMT-CTR-220118-TA-08 dated 18 Jan. 2022
- 3) Report No. : BMT-CTR-220530-TAC-01, 02, 03 dated 30 May 2022
- 4) Report No. : BMT-CTR-230117-TA-02 dated 18 Jan. 2023

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

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