



Marine &amp; Offshore

Certificate number: 50913/A0 BV

File number: ACM 145/2581/05

Product code: 7333I

*This certificate is not valid when presented without the full attached schedule composed of 7 sections*

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## TYPE APPROVAL CERTIFICATE

*This certificate is issued to*

**BMT CO., LTD.**

YANGSAN (GYEONGNAM) - KOREA (REPUBLIC OF)

*for the type of product*

**BALL VALVES FOR LIQUEFIED GAS PIPING SYSTEMS**

Cryogenic Ball Valves FCB Series

### Requirements:

Bureau Veritas Rules for the Classification of Steel Ships

Bureau Veritas Rules for the Classification of Offshore Units

IGC Code as amended by IMO Res. MSC.370(93)

*This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.*

**This certificate will expire on: 22 Nov 2022**

**For Bureau Veritas Marine & Offshore,**

At BV PUSAN, on 22 Nov 2017,

Chang-uk HONG



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site [www.veristar.com](http://www.veristar.com). Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

## **THE SCHEDULE OF APPROVAL**

### **1. PRODUCT DESCRIPTION**

#### **Cryogenic Ball Valves FCB Series**

##### **1.1 Design Specifications**

Size range (inch)	1", 2"
Pressure class rating	ANSI Class 150
Design Pressure (bar)	15,9
Working temperature (°C)	- 196 / 80
End Connections	Butt Welded

##### **1.2 Materials**

Part	Material
Body	ASTM A182-F316L
Bonnet	ASTM A276-316
Ball	ASTM A276-316
Ball seat	PCTFE
Stem	ASTM A276-316

*When other choices of materials are used per manufacturer's instructions, the BV agreement is to be obtained.*

### **2. DOCUMENTS AND DRAWINGS**

- N° 161228-01-115-16 Rev. F. dated 27/06/2017 : 1", 2" Butt Weld Class 150
- Test procedure N°BMT-ITP-1301 Rev.3 dated 15/02/2017

*No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.*

### **3. TEST REPORTS**

Type tests witnessed by a BV Surveyor including hydrostatic test and seat leakage test at ambient temperature, valve operation and leakage test at the minimum design temperature:

- Test report N° BMT-CTR-1770-01 dated 25/07/2017 : 2" Butt Weld Class 150
- Test report N° BMT-CTR-1770-02 dated 25/07/2017 : 1" Butt Weld Class 150

### **4. APPLICATION / LIMITATION**

- 4.1 May be used on cargo handling systems of ships granted with the notation liquefied gas carrier.
- 4.2 The valve intended to be used for handling of Propylene Oxide or Ethylene Oxide/ Propylene Oxide mixtures shall be of a fire safe design.
- 4.3 The valves belong to class I pressure piping according to the relevant requirements stated in Part D, Ch 9, Sec 5 of the BUREAU VERITAS Rules.
- 4.4 The valve intended to be installed on BUREAU VERITAS classed ship have to comply with Pt D, Ch 9, Sec 5 & IGC Code and type tests reports witnessed by BUREAU VERITAS are to be available for each type and size of valve.
- 4.5 When required in Part D, Ch 9, Sec 6 of the BUREAU VERITAS Rules applicable to liquefied gas carriers, Charpy V-notch impact test shall be carried out for castings. Castings in steel grades 316 and 316L at any temperature will be impact tested at -196 °C. A reduction of the tests may be granted for design temperature above -60 °C after examination of each case by the Society.
- 4.6 The materials for valves housing, internal and sealing are to be of a suitable type at the temperature and pressure for use with cargoes intended to be carried.
- 4.7 The approval does not include any operating gear for remote control of the valves.
- 4.8 The valve is to be installed according to manufacturer's instructions and Society's Rule requirements.

### **5. PRODUCTION SURVEY REQUIREMENTS**

- 5.1 The products are to be supplied by **BMT CO., LTD.** in compliance with the type and the requirements described in this certificate.
- 5.2 This type of product is within the category IBV of BUREAU VERITAS Rule Note NR320.

5.3 BV product certificate is required.

5.4 BUREAU VERITAS Certificates are required for materials of valve housings of Class I (DN $\geq$ 50). Materials of valve housings of Class I (DN $<$ 50) and other pressure boundary parts of Class I are to be with work's certificates.

5.5 Materials are to comply with the approved drawings and the applicable requirements in Part D of the BUREAU VERITAS Rules. Charpy impact test to be as per Materials Rules requirements, and where relevant, in accordance with requirements of IGC Code.

5.6 Each valve is to be tested according BUREAU VERITAS Rules Pt D, Ch 9, Sec 5 item 13.3.3.

For information, **BMT CO., LTD.** has declared to Bureau Veritas the following production site:

**BMT CO., LTD.**  
**35, Sanmakgongdannam 11-gil**  
**YANGSAN (GYEONGNAM)**  
**KOREA (REPUBLIC OF)**

## **6. MARKING OF PRODUCT**

The valve shall be marked with at least:

- Manufacturer's name or trade mark
- Type designation
- Size
- Society's brand as relevant

## **7. OTHERS**

It is **BMT CO., LTD.**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

\*\*\* END OF CERTIFICATE \*\*\*



