



Marine & Offshore

Certificate number: 20797/C0 BV

File number: ACM 145/2536/1

Product code: 73311

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

HY-LOK CORPORATION

BUSAN - KOREA (REPUBLIC OF)

for the type of product

GLOBE VALVES FOR LIQUEFIED GAS PIPING SYSTEMS

Cryogenic needle valves, type VCRYON

Requirements:

- BUREAU VERITAS Rules for the Classification of Steel Ships
- BUREAU VERITAS Rules for the Classification of Offshore Units
- IGC Code + Amendments IMO Resolution 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: 04 Mar 2024

For Bureau Veritas Marine & Offshore,

At BV PUSAN, on 04 Mar 2019,

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. 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 4 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

Cryogenic needle valves, type VCRYON

Valve Type	Product Name	Material	Standard
VCRYON-16FA	Cryogenic needle valve, F type DN25(1") #150	ASTM A351 CF8M	BS6364, ANSI B16.25 ANSI B16.5
VCRYON-16BWA16FA	Cryogenic needle valve, BF type DN25(1") #150	ASTM A351 CF3M	
VCRYON-16BWA	Cryogenic needle valve, B type DN25(1") #150	ASTM A351 CF3M	
VCRYON-8FA	Cryogenic needle valve, F type DN15(1/2") #150	ASTM A351 CF8M	
VCRYON-8BWA8FA	Cryogenic needle valve, BF type DN15(1/2") #150	ASTM A351 CF3M	
VCRYON-8BWA	Cryogenic needle valve, B type DN15(1/2") #150	ASTM A351 CF3M	
VCRYON-8GA	Cryogenic needle valve, F type DN15(1/2") #300	ASTM A351 CF8M	
VCRYON-8BWGA	Cryogenic needle valve, BF type DN15(1/2") #300	ASTM A351 CF3M	
VCRYON-16GA	Cryogenic needle valve, F type DN25(1") #300	ASTM A351 CF8M	
VCRYON-16BWGA	Cryogenic needle valve, BF type DN25(1") #300	ASTM A351 CF3M	

A : Class 150 (SCH 40) - FA : Flanged ends - BWA : Butt welded ends -BWFA: Butt welded ends to flanged ends

1.1 Description

Valve Type	Size (Min~Max)	Pressure rating	Temperature rating
VCRYON-16	270 ~ 282 mm	19 / 25 BAR	-196°C to 38 °C
VCRYON-8	232 ~ 242 mm		

1.2 Material specification

Parts	Material
Body	ASTM A351
Bonnet	ASTM A479 TP316
Flange bonnet	ASTM A351 CF8M
Stem	ASTM A479 TP 316

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

2. DOCUMENTS AND DRAWINGS

- Manufacturer's Drawings:

Valve Type	Drawings	Date
VCRYON-16FA	Hy - Lok Cryogenic needle valve, F type CF8M / DN25(1") #150	23/10/2006
VCRYON-16BWA16FA	Hy - Lok Cryogenic needle valve, BF type CF3M / DN25(1") #150	23/10/2006
VCRYON-16BWA	Hy - Lok Cryogenic needle valve, B type CF3M / DN25(1") #150	23/10/2006
VCRYON-8FA	Hy - Lok Cryogenic needle valve, F type CF8M / DN15(1/2") #150	23/10/2006
VCRYON-8BWA8FA	Hy - Lok Cryogenic needle valve, BF type CF3M / DN15(1/2") #150	23/10/2006
VCRYON-8BWA	Hy - Lok Cryogenic needle valve, B type CF3M / DN15(1/2") #150	23/10/2006
VCRYON-8GA	Hy - Lok Cryogenic needle valve, F type CF8M / DN15(1/2") #300	17/10/2018
VCRYON-8BWGA	Hy - Lok Cryogenic needle valve, BF type CF3M DN15(1/2") #300	17/10/2018
VCRYON-16GA	Hy - Lok Cryogenic needle valve, F type CF8M DN25(1") #300	17/10/2018
VCRYON-16BWGA	Hy - Lok Cryogenic needle valve, BF type CF3M DN25(1") #300	17/10/2018

- Design calculation for cryogenic needle valve N°DCN-07J12-1,2 dated 10/12/2007

- Maintenance manual long storage N° HL-TS077

- Design specification Data sheet N°CRYO100-DS, Rev N°1, dated 07/09/2018

- Design calculation sheet for Cryogenic valves N°CRYO100-DR, Rev N°1, dated 25/09/2018

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:

3.1 - Ambient test reports

- shell and seat test report N° ATR-16G22-01
- shell and seat report N° 15T-CRYO100-01 dated 16/10/2018
- shell and seat report N° 15T-CRYO100-03, dated 16/10/2018

3.2 - Cryogenic test reports

- N° CTR-16G22-01
- N° 15T-CRYO100-02, dated 16/10/2018
- N° 15T-CRYO100-02, dated 16/10/2018

3.3 - Test plan of cryogenic valves

- DOC N° TP-16G08-S01 Rev.00

4. APPLICATION / LIMITATION

4.1 - To be used on cargo handling systems of ships granted with the notation Liquefied gas carrier. Threaded ends are not acceptable on lines with external diameter above 25 mm.

4.2 - The valves 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 valves intended to be installed on BV classed ship have to comply with Pt D, Ch 9, Sec 5 & IGC Code and type tests reports witnessed by BV 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 may be granted for design temperature above -60 °C after examination by the Society.

4.6 - The materials for valves housing, disc and sealing should 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 **HY-LOK CORPORATION** 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 - Bureau Veritas Certificates are required for materials of valve housings of class I (DN≥50). Materials of valve housings of class I (DN<50) and for other parts of class I are to be with Work's certificates.

5.4 - BV product certificate is required.

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

5.6 - For information, **HY-LOK CORPORATION** has declared to Bureau Veritas the following production site:

HY-LOK CORPORATION
#1467-1, Songjeong-dong, Gangseo-gu
BUSAN
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 **HY-LOK CORPORATION**'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.

This certificate supersedes the Type Approval Certificate No. 20797/B1 BV issued by the Society.

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