

Type Approval Certificate



[Cryogenic Valves]

Initial Approval 24th September, 2020
Manufacturer HY-LOK CORPORATION
 97, Noksansandan 27-ro, Gangseo-gu, Busan, Korea

Product Description Cryogenic Ball & Needle Valve

- Design Temperature : -196°C to +80°C
- Intended for : LNG, N2
- Body Material : ASTM A351 CF8M/CF3M (Ball Valve)
 ASTM A182 F316/316L (Needle Valve)

" 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 BS6364, ASME B16.34.

This Certificate is valid until 23rd September, 2025

Reissued at Busan, Korea on 7th January, 2021



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(ME21000628607) and certificate No.(GCH00551-VV004).



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 : 7th January, 2021

A. Product Description

1. Product Specification

1) Ball Valve

	Model	Size	Rating	Design Press.	End Connection
VCBOW	-12FA	3/4"	Class 150	19.0 bar	RF + RF
	-12BWFA	3/4"	Class 150	19.0 bar	BW + RF
	-12FBWA	3/4"	Class 150	19.0 bar	RF + BW
	-12BWA	3/4"	Class 150	19.0 bar	BW + BW
	-12NA	3/4"	Class 150	19.0 bar	NPT (F) + NPT (F)
VCBOW	-16FA-R	1"	Class 150	19.0 bar	RF + RF
	-16BWFA-R	1"	Class 150	19.0 bar	BW + RF
	-16FBWA-R	1"	Class 150	19.0 bar	RF + BW
	-16BWA-R	1"	Class 150	19.0 bar	BW + BW
VCBOW	-24FA	1-1/2"	Class 150	19.0 bar	RF + RF
	-24BW (V) FA	1-1/2"	Class 150	19.0 bar	BW + RF
	-24FBW (V) A	1-1/2"	Class 150	19.0 bar	RF + BW
	-24BW (V) A	1-1/2"	Class 150	19.0 bar	BW + BW
VCBOW	-32FA-R	2"	Class 150	19.0 bar	RF + RF
	-32BW (V) FA-R	2"	Class 150	19.0 bar	BW + RF
	-32FBW (V) A-R	2"	Class 150	19.0 bar	RF + BW
	-32BW (V) A-R	2"	Class 150	19.0 bar	BW + BW

2) Needle Valve

	Model	Size	Rating	Design Press.	End Connection
VCRYONC	-8FA	1/2"	Class 150	19.0 bar	RF + RF
	-8BW (V) FA	1/2"	Class 150	19.0 bar	BW + RF
	-8FBW (V) A	1/2"	Class 150	19.0 bar	RF + BW
	-8BW (V) A	1/2"	Class 150	19.0 bar	BW + BW
	-8FNA	1/2"	Class 150	19.0 bar	RF + NPT
	-8BW (V) NA	1/2"	Class 150	19.0 bar	BW + NPT
	-8NA	1/2"	Class 150	19.0 bar	NPT + NPT
VCRYONC	-16FA	1"	Class 150	19.0 bar	RF + RF
	-16BWFA	1"	Class 150	19.0 bar	BW + RF
	-16FBWA	1"	Class 150	19.0 bar	RF + BW
	-16BWA	1"	Class 150	19.0 bar	BW + BW

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-16FNA	1"	Class 150	19.0 bar	RF + NPT
-16BW (V) NA	1"	Class 150	19.0 bar	BW + NPT

2. Approved Drawings and Documents

- 1) Document No. CRYO-DR, Rev. 2
- 2) Drawings No. CRYO-DWG, Rev. 2

3. Test Reports, etc.

- Test Report No. : TR-TA-20101-S01~04 dated on 1st September, 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

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

4. Others

- N. A.

< End of Certificate >