

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	Hy-Lok Corporation
Address	#97, Noksansandan 27-ro, Gangseo-gu, Busan, Republic of Korea.
Place of Production	Hy-Lok Corporation #97, Noksansandan 27-ro, Gangseo-gu, Busan, Republic of Korea.
Type	Cryogenic Ball Valve
Description	Top Entry Ball Valve / Trunnion Ball
Trade Name	VCRYOTA VCRYOTB VCRYOTC VCRYOTD
Application	Marine use for cargo piping systems in ships for carriage of liquefied gases in bulk
Specified Standard	Lloyd's Register Rules and Regulations for Classification of Ships (July 2019), Part 5, Chapter 12 Chapter 5 of Lloyd's Register's Rules and Regulations for the Construction and Classification of Ships for the Carriage of Liquefied Gases in Bulk (July 2019)



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Ratings	Refer to Appendix
Additional Tests	The following tests are carried out on representative samples in accordance with BS 6364:1984, ANSI/ISA-75.02.01:2008, and KS B 2101:2003 with satisfactory results:- <ol style="list-style-type: none">1) Shell test2) Cryogenic service test3) Seat leakage test4) Flow capacity test
Other Conditions	<ol style="list-style-type: none">1) Where the valves are intended to be installed on a ship classed with LR, the valves are to be made, installed and tested in accordance with the Class I & II piping systems requirements of Part 5, Chapter 12 of the Rules and Regulations for the Classification of ships.2) Seat tightness testing for bi-directional flow is to be additionally performed where it is required by 5.13.1.1.1 of the IGC code.3) The requirements for design temperatures below -165°C shall be specially agreed with the Flag Administration in accordance with Chapter 6, Table 6.4 of the IGC Code.

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register Asia of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document No. LR2016009TA and its supplementary Type Approval Terms and Conditions form part of this Certificate.

LLOYD'S REGISTER TYPE APPROVAL

Issue by: BUSAN Technical Support Office

Issued to: Hy-Lok Corporation

For: Cryogenic Ball Valve

The undernoted documents have been reviewed for compliance with the requirements of the Lloyd's Register Type Approval System Procedure TA14 Version 03 (July 2017) and this Design Appraisal Document forms part of the Certificate.

APPROVAL DOCUMENTATION

Request for Marine Services, Form 2502TA dated 14 March 2018

Application Checklist – Appendix to Form 2502TA

Production Quality Assessment Form (Form – PQA) dated 21 March 2018

Documents for LR Type approval including the following design drawings:

<u>Drawing No.</u>	<u>Rev. No.</u>	<u>Title</u>	<u>Date</u>
2017K15M02	0	Cryogenic Ball Valve	15-11-2017
2017K15M03	0	Cryogenic Ball Valve	15-11-2017
2017K15M04	0	Cryogenic Ball Valve	15-11-2017
2017K15M05	0	Cryogenic Ball Valve	15-11-2017

TEST REPORTS

Test Report (Doc. No. TR-TA-19G15-S01) dated 15 July 2019, witnessed/endorsed by LR Busan port surveyor

Test Report (Doc. No. TR-TA-19G09-S02) dated 09 July 2019, witnessed/endorsed by LR Busan port surveyor

Test Report (Doc. No. TR-TA-19G09-S03) dated 09 July 2019, witnessed/endorsed by LR Busan port surveyor

Test Report (Doc. No. TR-TA-19C27-S01) dated 27 March 2019, witnessed/endorsed by LR Busan port surveyor

Test Report (Doc. No. TR-TA-19C27-S02) dated 27 March 2019, witnessed/endorsed by LR Busan port surveyor

Test Report (Doc. No. TCHPV-20-049) dated 10 April 2020, witnessed/endorsed by LR Busan port surveyor

Test Report (Doc. No. TCHPV-20-048) dated 10 April 2020, witnessed/endorsed by LR Busan port surveyor

Test Report (Doc. No. TCHPV-18-09-104) dated 10 September 2018, witnessed/endorsed by LR Busan port surveyor

Test Report (Flow Test) dated 06 April 2020, witnessed/endorsed by LR Busan port surveyor



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Supplementary Type Approval Terms and Conditions

Type Approval certifies that a representative sample of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein. It does not mean or imply approval for any other use, nor approval of any product(s) designed or manufactured otherwise than in strict conformity with the said representative sample.

Type Approval is based on the understanding that the manufacturer's recommendations and instructions and any relevant requirements of the Rules and Regulations are complied with.

Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations. Lloyd's Register Asia reserves the right to cancel or withdraw this Type Approval Certificate in accordance with the Lloyd's Register Type Approval System Procedure.

Appendix

RATING

Nominal Size (inch)	Nominal Pressure Ratings
1/2	ANSI Class 300
1	ANSI Class 600
2	ANSI Class 900
3, 12	ANSI Class 150

Minimum Service Temperature (°C) : -196

LIMITATION

- 1) Type Approval does not eliminate the need for normal inspection survey procedures required by the Rules and Regulation.
- 2) If the specified standards are amended during the validity of this certificate, the product is to be re-approved prior to it being supplied to vessels to which the amended standards apply.
- 3) (in case of applications other than Marine) The application of this Type Approval Certificate will be limited to the relevant scope of the Specified standards and acceptance thereof by the local authorities.

YDKong



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 Lloyd's Register Asia

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