



TYPE APPROVAL CERTIFICATE

Certificate No:
TAP00000HF
Revision No:
2

This is to certify:

That the Valve for Liquefied Gas

with type designation(s)
Manually Operated Cryogenic Needle Valves

Issued to

Hy-Lok Corporation
Busan, Korea, Republic of

is found to comply with

DNV rules for classification – Ships Pt.5 Ch.7 Liquefied gas tankers
DNV GL class programme DNVGL-CP-0186 – Type approval – Valves

Application :

Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV.

Issued at **Høvik** on **2021-11-05**

for **DNV**

This Certificate is valid until **2026-08-21**.

DNV local station: **Busan**

Approval Engineer: **Maheshraja Venkatesan**

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Zeinab Sharifi
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2021-03

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Product description

Manually operated Cryogenic Needle Valves designed according to ASME B16.34.

Notations:

A	:	Class 150 (SCH 40)
N	:	NPT
F	:	Flanged ends
BW	:	Butt-welded ends
BWN	:	Butt-welded to NPT
BWF	:	Butt-welded to flanged ends

Sizes:

1/2" (DN 15)	:	CRYONC-8FA, CRYONC-8BWFA, CRYONC-8BWA, CRYONC-8BWNA, CRYONC-8NA
1" (DN 25)	:	CRYONC-16FA, CRYONC-16BWFA, CRYONC-16BWA, CRYONC-16BWNA, CRYONC-16NA

Materials:

Body	:	ASTM A351 CF8M, ASTM A351 CF3M or ASTM A182 F316
Extension bonnet	:	ASTM A479 TP316
Flange bonnet	:	ASTM A351CF8M
Extension stem	:	ASTM A479 TP316
Disc	:	ASTM A479 TP316
Bonnet packing	:	Graphite Filled/ S316L
Stem packing	:	Graphite
Position indicator	:	SS316
Handle	:	ASTM A351 CF8M
Bolt	:	ASTM A320 B8M

Manufacturing locations:

- (1) Hy-Lok Corporation, 97, Noksansandan 27-ro Gangseo-Gu, Busan, Korea
- (2) Hy-lok Corporation, 176 Dadae-ro, Saha-Gu, Busan (Shinpyung factory), Korea

Application/Limitation

Valves covered by this certificate may be used in LNG/LPG applications under the following design conditions:

Service	:	Liquefied Gas - Cryogenic Service
Temperature range	:	-196 °C to +38 °C
Max. working pressure	:	Class 150 according to ASME B16.34

Materials and material protection chosen for the specific system shall be suitable for the intended medium and environmental conditions.

The valves covered by this certificate are not to be considered fire safe and shall not be installed wherever fire safe application is required, e.g., as shut off or quick closing valves.

Types with slip-on threaded ends (N and BWN) shall not be used in piping systems conveying toxic or flammable media or services where fatigue, severe erosion or crevice corrosion is expected to occur.

Type Approval documentation

Drawings:

<u>Dwg. No.</u>	<u>Rev/Date</u>	<u>Dwg. No.</u>	<u>Rev/Date</u>
2006I01H001	0/ 2021.07.16	2006I02H001	0/ 2021.07.16
2006I01H002	2015.11.30	2005L27H002	2015.11.30
2006I01H102	2015.11.30	2005L27H502	2015.11.30
2006I01H202	2015.11.30	2005L27H102	2015.11.30
2005L26H102	2015.11.30	2016D26M02	2016.04.26
2005L26H203	2015.11.30	2016D26M01	2016.04.26
2006I11PVA02	2015.11.30	2007D17PVA03	2015.11.30
2006I01H004	2015.11.30	2006I02H004	2015.11.30
2006I11PVA03	2015.11.30	2007D17PVA04	2015.11.30

2005L26H006	2015.11.30	2005L27H006	2015.11.30
2005L26H007	2016.03.17	2005L26H007	2015.11.30
2005L26H008	2015.11.30	2005L27H009	2016.10.18
2001J08D07	2015.11.30	2001J25D03	2015.11.30
2007J24H001	2015.11.30	2006J24H002	2015.11.30

Other documentation:

- Catalog H-CRYO100, Hy-Lok Cryogenic Valves (dated Mar. 2014)
- Design calculation sheet (CRYO100-DS, Rev.1 dated 2016.12.28)
- Ambient test report witnessed by DNV: ATR-07J15-01 (dated 2007-10-16) and ATR-21H24-01 (dated 2021-08-24)
- Cryogenic test reports witnessed by DNV: CVTR-07J16-01 (dated 2007-10-16), CVTR-07J17-01 (dated 2007-10-17), CTR-12E22-02 (dated 2012-05-22), CTR-12E22-03 (dated 2012-05-22) and CTR-21H24-01 (dated 2021.08.24)

Tests carried out

Cryogenic seat leakage test

Production Testing and Certification

Production Testing and Certification for the actual intended application shall follow the latest applicable edition of the Rules (as mentioned on the front page of this certificate).

Marking of product

For traceability to this type approval each valve is at least to be marked with:

- manufacturer's name or trade- mark
- valve type designation
- size
- maximum design pressure and temperature
- arrow to indicate direction of flow on one-way flow valves.

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNV-CP-0338.