



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. P-14200

This is to certify that the
Valve for Liquefied Gas

with type designation(s)

**CRYON-16FA, CRYON-16BWA16FA, CRYON-16BWA, CRYON-16BWNA, CRYON-16NA,
CRYON-8FA, CRYON-8BWA8FA, CRYON-8BWA, CRYON-8BWNA & CRYON-8NA**

Manufactured by

Hy-Lok Corporation (Kangseo Factory)
Pusan, Republic of Korea

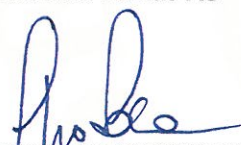
is found to comply with

Det Norske Veritas' Rules for Classification of Ships
Det Norske Veritas' Standards for Certification 2.9 No. 5-794.40

Application

The valves may be used in liquefied gas systems. See conditions in certificate.

Høvik, 2012-08-28
for Det Norske Veritas AS


Giorgio Saia
Acting Head of Section



DNV local office:
Pusan

This Certificate is valid until
2016-06-30


Mohsen Mohebbi
Surveyor

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.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



Certificate No.: P-14200
File No.: 783.44
Job Id.: 262.1-002723-2

Product description

Manually operated Cryogenic needle valves.

Notations:

A: Class 150 (SCH 40)

N: NPT

FA: Flanged ends

BWA: Butt welded ends

BWN: Butt welded to NPT

BWFA: Butt welded to flanged ends

Minimum wall thickness of valve bodies calculated according to ASME/ANSI B13.3-304.1

Sizes: DN15 and DN25

Materials:

Body: ASTM A351 CF 8M (N, FA, BWN), ASTM A351 CF3M and ASTM A182 F316 (BWA, BWFA)

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

Application/Limitation

Service: Liquefied Gas-Cryogenic service

Temperature range: -196°C to +38°C

Maximum working pressure: 10 bar

Type Approval documentation

- Catalog H-CRYO100, Hy-Lok Cryogenic Valves
- Design calculation sheet (CRYO100-DS, Rev.0)
- Ambient test report ATR-07J15-01, DNV Witnessed
- Cryogenic test reports CVTR-07J16-01, CVTR-07J17-01, CTR-12E22-02 and CTR-12E22-03 DNV Witnessed
- Retention survey checklist dated 2012-05-22

Drawings:

Dwg. No.	Rev/Date	Dwg. No.	Rev/Date
CRYON-8FA	2006.10.23	CRYON-16FA	2006.10.23
CRYON-8BWA8FA	2006.10.23	CRYON-16BWA16FA	2006.10.23
CRYON-8BWA	2006.07.15	CRYON-16BWA	2006.10.23
2006I01H002	2006.09.01	2005L27H002	2005.12.27
2006I01H102	2006.09.01	2005L27H502	2005.12.27
2006I01H202	2006.09.01	2005L27H102	2005.12.27
2006I11PVA02	2006.09.11	2006I12PVA02	2006.09.12
2006I01H004	2006.09.01	2006I02H004	2006.09.02
2006I11PVA03	2006.09.11	2006I12PVA03	2006.09.12
2005L26H006	2005.12.26	2005L27H006	2005.12.27
2005L26H007	2005.12.26	2005L26H007	2005.12.26
2005L26H008	2005.12.26	2005L27H009	2005.12.27
2001J08D07	2001.11.10	2001J25D03	2001.11.20
2006I01H018	2006.09.01	2006I02H016	2006.09.02
2006I01H001	2012.06.29	2006I02H001	2012.06.29



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Tests carried out

Cryogenic test, shell test, seat test

Marking of product

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

- Manufacturer's name
- Size & Material

Certificate Retention Survey

For retention of the Type Approval, a DNV Surveyor shall perform a survey - every second year and before the expiry date of this certificate - to verify that the conditions for the type approval are complied with.

END OF CERTIFICATE