

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Valve for Liquefied Gas

with type designation(s)
Cryogenic Needle Valves

Issued to

DK-Lok Corporation
Gimhae-si Gyeongsangnam-do, Korea

is found to comply with
DNV GL 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 GL.

Issued at **Høvik** on **2018-03-02**

for **DNV GL**

This Certificate is valid until **2023-02-12**.

DNV GL local station: **Gimhae Station**

Approval Engineer: **Zeinab Sharifi**

Marianne Spæren Marveng
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.



Job Id: **262.1-026882-2**
Certificate No: **TAP000015V**
Revision No: **1**

Product description

Cryogenic needle valves

Design standard: ASME B16.34

Sizes: 1/2 "(DN 15), 3/4 "(DN 20), 1" (DN25)

Type of end connections: Thread, Flange, Butt weld, Butt weld+Flange, Butt weld+Thread

Flanges rating and type: RF Class 150# according to ASME B16.5

Material:

Shell material	ASTM A351 CF3M
Stem	ASTM A479 TYPE316
Bonnet	ASTM A276 TYPE316
Bolted bonnet	ASTM A351 CF8M
GUIDE PACKING	PCTFE
BONNET PACKING	GRAFOIL
BALL	STAINLESS STEEL

Application/Limitation

Valves covered by this certificate may be used under the following design conditions:

Service Fluids: Cryogenic fluid (LNG/LPG applications)

Design temperature: -196 °C to 371 °C

Design pressure: 20 bar

Valves shall not be considered for fire safe applications.

Production Testing

Each valve body shall be subjected to a hydrostatic pressure test at 1.5 times the allowable pressure at room temperature.

In addition each valve shall be subject to seat leakage testing at 1.1 times the design pressure in the valve flow direction.

Testing shall follow procedures and acceptance criteria in EN12266-1.

Tests consisting of valve operation and leakage verification for a minimum of 10% of each type and size of valve intended to be used at a working temperature below -55°C shall be undertaken in the presence of the Society's representative. (DNV GL Ship Rules P.5 Ch.7 Sec.5 [13.1.1])

Certification

All valves covered by this type approval certificate shall be delivered with a product certificate.

The material used in bodies of valves shall be delivered with VL certificate when the minimum design temperature is less than -55°C; otherwise work certificates are accepted. In any case, material of bodies shall be made at foundries approved by the Society.

Type Approval documentation

DWG no: VYON-FN-D-CF3M

DWG no: VYON-RF-D-CF3M

DWG no: VYON-BW-D-CF3M

DWG no: VYON-BWRF-D-CF3M

DWG no: VYON-BWFN-D-CF3M

Test Report no:

DCTJ-1709-001 dated 2017-09-14/15

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DCTJ-1709-002 dated 2017-09-19/20
DCTJ-1709-003 dated 2017-09-21/22
DCTJ-1709-004 dated 2017-09-25/26
DCTJ-1709-005 dated 2017-09-27/28
DCTJ-1710-001 dated 2017-10-19/20
DCTJ-1710-002 dated 2017-10-31

Tests carried out

Cryogenic Leakage test, Burst Test

Marking of product

Minimum marking requirements shall be as outlined in the valve design standard. For non-standard valves the following shall be considered a minimum:

- 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 GL 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 DNVGL-CP-0338