



Certificate No:
TAP00002KY

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Butterfly Valves

with type designation(s)
EFVLN (K5615)

Issued to

**OKM (Okumura Engineering Corp.) Head Office & Research and
Development Center
Yasu City, Shiga, Japan**

is found to comply with

**DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV rules for classification – Ships Pt.5 Ch.7 Liquefied gas tankers
DNV class programme DNV-CP-0186 – Type approval – Valves**

Application :

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

Temperature range: -196°C to +80°C

Max. working press.: 1.0 MPa

Sizes: 100A, 150A, 200A, 250A, 300A, 350A, and 400A

Issued at **Høvik** on **2022-12-13**

This Certificate is valid until **2027-12-12**.

DNV local station: **Kobe**

for **DNV**

Approval Engineer: **Andreas Hansen**

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**Bosman van der Merwe
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.



Product description

Double flanged cryogenic butterfly valves of type EFVLN (K5615) designed according to EN 12516-2 with flanged end connections as per ASME B16.5 Class 150.

Materials:

Body	: Stainless steel SCS14 – JIS B 8265
Disc	: Stainless steel SCS14 – JIS B 8265
Stem	: Stainless steel SUS 316 – JIS B8265
Seat	: Stainless steel UHMW + SUS316

Manufacturing locations:

- OKM Hino Factory, Hino-cho, Gamo-Gun, Shiga Pref., Japan
- OKM Higashiomi Factory, Higashiomi City, Shiga Pref., Japan

Application/Limitation

The approval is valid for LNG cargo piping systems and gas fuelled ship installations onboard DNV classed ships and mobile offshore units.

Material and material protection chosen for the specific system shall be suitable for the intended medium and environmental conditions. Valves of austenitic stainless steel shall not be used in direct contact with seawater.

Materials for pressure equipment designed for material temperatures below 0°C shall fulfil requirements for low temperature service in DNV-RU-SHIP Pt.2 Ch.2 and DNV-RU-SHIP Pt.5 Ch.7, as applicable.

The approval does not include any operating gear for remote control of the valves.

This approval does not include protection by a secondary barrier, i.e. double walled, up to the first closing valve in case piping is connected below the liquid level of the fuel tank as required by DNV-RU-SHIP Pt.6 Ch.2.

Type Approval documentation

Tests carried out

Pneumatic and hydrostatic leakage test (seat and body), ambient and cryogenic leakage test (seat and body), fire testing and operational 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

Minimum marking requirements shall be as outlined in the valve design standard in addition to minimum design temperature.

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.