Certificate no.:
TAP000032W

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Check Valve

with type designation(s)
Cast stainless steel Cryogenic swing check valves

issued to
THT Corporation
Busan, **Korea, Republic of**

is found to comply with
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.

Issued at **Høvik** on **2026-03-09**
This Certificate is valid until **2031-03-08**.
DNV local unit: **Busan, CMC Korea**

for **DNV**

Approval Engineer: **Jo Skjeggestad Rangnes**

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 USD 300 000.

Product description
Cast stainless steel Cryogenic swing check valves with #150 RF flanged ends designed according to ASME B16.34 covering sizes 2", 4" and 8".

Materials:

	Swing Check
Body	ASTM A351 CF8M/CF3M
Cover	ASTM A351 CF8M/CF3M
Seat	ASTM A351 CF8M/CF3M
Disc	ASTM A351 CF8M/CF3M

Application/Limitation
Valves covered by this certificate are approved for use in cryogenic applications including LNG/LPG and LN2 systems.

Maximum working pressure: 19.0 bar
Design temperature: -196°C / +120°C

Materials 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, reference is made to DNV Rules for Ships Pt.4 Ch.6 Sec.2

The approval does not include actuator and/or other equipment for remote control of the valves.

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

Evaluation of flow or capacity are not covered under the scope of approval. The manufacturer shall certify the flow properties according to a recognized standard for each size and type of valve.

Type Approval documentation

Tests carried out
Hydrostatic leakage test (seat and body), Cryogenic leakage test (seat and body).

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).

Cryogenic seat testing at rated design pressure (applicable for valves with minimum design temperature < -55°C) consisting of valve operation and leakage verification for a minimum of 10% of each type and size of valve (for valves intended to be used at a working temperature below -55°C) shall follow the procedure stated in ISO 28921-1 or equivalent.

Marking of product
Minimum marking requirements shall be as outlined in the valve design standard in addition to minimum design temperature towards cryogenic applications.

Periodical assessment
This certificate is only valid if required periodical assessments are carried out with satisfactory results.

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.

To check the validity of this certificate, please look it up in https://approvalfinder.dnv.com.

Manufactured by:
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