Certificate No:
**TAP000020D**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Plate Heat Exchanger**

with type designation(s)
**GL-008SI**

Issued to
## Tranter International AB
**Vänersborg, Västra Götalands Län, Sweden**

is found to comply with
**DNV rules for classification – Ships Pt.4 Ch.7 Pressure equipment**

## Application :

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

| | |
|---|---|
| **Temperature range:** | **-50/200°C** |
| **Design pressure:** | **16 bar** |
| **Operating media:** | **Fresh water, sea water, steam, alcohol, brine, lubrication oil, Marine Gas Oil and Marine Diesel Oil** |

Issued at **Høvik** on **2021-12-01**
This Certificate is valid until **2026-11-30**.
DNV local station: **Sweden CMC**

Approval Engineer: **Thomas Wilhelm Juell**

for **DNV**

**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.

## Product description

Plate Heat Exchangers with tightening bolts designed according to DNV-RU-SHIP Pt.4 Ch.7 (Parts not covered by Pt.4 Ch.7 are designed in accordance with EN13445)

Materials:

| | |
|---|---|
| Plates Material: | P355GH (EN 10028-2) |
| Tightening Bolt: | 42CrMo4 (EN 10269) |
| Connections: | SA-312 TP 316/ SB-575 UNS N10276/ SA-240 UNS S31254/ SB-265 Grade 1 |
| Gasket: | NBR/ EPDM |

## Application/Limitation

| Model | GL-008SI |
|---|---|
| Design pressure (bar) | 16 |
| Test pressure (bar) | 24 |
| Design temperature (°C) | -50/200 |
| Joint efficiency | 0.85 |
| Corrosion allowance (mm) | 1 |

Gasketed plate heat exchanger (PHE) with tie bolted frame plates of series type GL-008SI approved for the medium according to limitations referred in DNV-RU-SHIP Pt.4 Ch.7 Sec.1 Table 2 to specify the class of the heat exchanger.

Maximum temperature limitation based on gasket:

| Gasket material | Maximum temperature |
|---|---|
| NBR | 130°C |
| EPDM | 160°C |

Materials and material protection chosen for the specific system shall be suitable for the intended medium and environmental conditions. Surface in contact with the medium shall be protected from corrosion by considering adequate corrosion allowance, and/or by applying suitable coatings. Surface preparation and coating shall be approved by the Society.

Threaded connections without O-ring seals are not allowed for class I piping systems.

## Type Approval documentation

## Production testing

Each heat exchanger shall be subjected to hydrostatic pressure test upon completion to at least 1.5 times the design pressure in the presence of a DNV Surveyor.

Test pressure shall be applied separately to the hot side and to the cold side with atmospheric pressure on the other side.

## Certification

Materials for pressure retaining parts are to be delivered with material certificates according to DNV-RU-SHIP Pt.4 Ch.7 Sec.1 Table 5/Table 6, as applicable. Also, relevant requirements in DNV-RU-SHIP Pt.2 Ch.2 shall be fulfilled.

Approval of manufacture is required for VL and W material certificates.

Manufacturer of pressure vessels of class I and II shall be approved manufacturer.

Each plate heat exchanger shall be certified by a DNV surveyor and to be delivered with a DNV product certificate.

## Marking of product

For traceability to this Type Approval the products should at least be marked with:

- the name and domicile of the manufacturer
- the manufacturer's type designation and serial number
- the year of manufacture
- the design pressure

- the design temperature (s) in °C
- the hydraulic test pressure
- DNV's identifying mark.

## 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.