

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Plate Heat Exchanger

with type designation(s)
PHE M10-FM

Issued to

Alfa Laval Lund AB
LUND, Sweden

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.7 Pressure equipment
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition July 2015

Application :

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

Temperature range: 200°C/-50°C
Design pressure: 12,5 bar/Full Vacuum
Operating media: See Certificate

Issued at **Høvik** on **2017-11-20**

This Certificate is valid until **2021-06-30**.

DNV GL local station: **Malmö**

for **DNV GL**

Approval Engineer: **Mehdi Rowshan**

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Marianne 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.



Product description

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

Design Data:

Pressure*: 12,5 bar/Full Vacuum
Temperature (Max/Min): 200 °C/ -50 °C

* design pressure is 10 bar at 200°C or 12,5 bar at 50°C.

Material:

Plates Material: EN 10028-2, P265GH
EN 10028-3, P355NL2

Tightening Bolt: EN 10269, 42CrMo4
EN ISO 898-1, Class 8.8

Stud bolt: EN ISO 3506, A2-70
EN ISO 898-1, Class 8.8

Corrosion allowance: 0 mm

Application/Limitation

Gasketed plate heat exchanger (PHE) with tie bolted frame plates of series type M10-FM approved for the medium according to limitations referred in DNV GL ship rules Pt.4 Ch.7 Sec.1 Table 2 to specify the class of heat exchanger.

Heat exchanger plates and gaskets shall withstand and meet the requirements of the operating media and temperature.

Materials used shall have certificates according to DNV GL Rules Pt.4 Ch.7 Sec.2 Table 1.

Each heat exchanger is to be:

- Hydraulic pressure tested to minimum 1.5 x design pressure. The hydraulic pressure test is to include a differential pressure test between the chambers; each chamber is to be pressure tested.
- Certified by DNV GL and delivered with a product certificate when required by the DNV GL rules or by the purchaser.

Type Approval documentation

Tests carried out

Marking of product

For traceability to this Type Approval the products should at least be marked with (on permanently attached stainless steel nameplate):

- 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 GL's identifying mark.

Periodical assessment



Job Id: **262.1-005529-5**
Certificate No: **TAP000010Z**

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.

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