

# TYPE APPROVAL CERTIFICATE

**This is to certify:****That the Plate Heat Exchanger**with type designation(s)  
**T8-FM**

Issued to

**Alfa Laval Lund AB**  
**Lund, Skåne Län, 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 January 2018****Application :****Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.****Temperature range: -10°C to 200°C****Design pressure: 16 bar @ 50°C****Operating media: See Certificate**Issued at **Høvik** on **2019-11-05**This Certificate is valid until **2021-06-30**.DNV GL local station: **Sweden CMC**for **DNV GL**Approval Engineer: **Mehdi Rowshan**

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**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 exchanger type T8-FM with tie bolted frame plates (Bolts: 6 x M20)  
Designed according to EN13445:2009  
Corrosion allowance 1 mm (for carbon steel parts) and 0 (for stainless steel parts)  
Certified in accordance with DNVGL ship rules Pt.4 Ch.7

### Material:

|                         |                                                                 |
|-------------------------|-----------------------------------------------------------------|
| Frame & pressure plate: | P265GH according to EN10028-2                                   |
| Tightening bolt:        | ISO 898-1 class 8.8(alternative:42CrMo4 according to EN10269)   |
| Stud bolt:              | ISO 898-1 class 8.8(alternative:A2-70 according to EN ISO 3506) |
| Channel plate           | Stainless steel or titanium                                     |

Thickness of frame and pressure plates: 29.7 mm

## Application/Limitation

Design pressure and life cycle for different maximum design temperatures are resulted as below:

| Maximum design temperature | Design pressure | Life cycle |
|----------------------------|-----------------|------------|
| 50°C                       | 16 bar          | 619        |
| 100°C                      | 14.5 bar        | 752        |
| 150°C                      | 13.5 bar        | 836        |
| 180°C                      | 13 bar          | 851        |
| 200°C                      | 13 bar          | 815        |

Gasketed plate heat exchanger (PHE) with tie bolted frame plates of series types T8-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 the 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.1 [3.2].

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:

- 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

### Periodical assessment



Job Id: **262.1-018727-3**  
Certificate No: **TAP00001YX**

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.