DNV·GL

Certificate No:
**TAP0000177**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Plate Freezer**

with type designation(s)
**V3, V4, V5, V7, V8, V16**

Issued to
**A/S DYBVAD STÅLINDUSTRI**
**Dybvad Nordjylland, Denmark**

is found to comply with
**DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems**
**DNV GL rules for classification – Ships Pt.4 Ch.7 Pressure equipment**

## Application :

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

| | |
|---|---|
| **Temperature range:** | **-60°C to 40°C** |
| **Operating media:** | **R22, R507, R404A, R717 (Ammonia)** |
| **Design pressure:** | **22 bar/-1 bar** |

Issued at **Høvik** on **2018-01-18**
This Certificate is valid until **2022-12-31**.
DNV GL local station: **Aalborg**

Approval Engineer: **Mehdi Rowshan**

for **DNV GL**

**Marianne Spæren 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.


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Job Id: **262.1-000064-6**
Certificate No: **TAP0000177**

## Product description

Vertical Plate Freezers.
For freezer model V-4; consists of three cooler bricks that are friction welded together.
Materials: AlMg Si 0,5 F22 (EN AW 6060 T66/T6).

Design according to EN13445-3:2014

Pressure class: I for refrigerant group 2 (R717)
Pressure class: II for refrigerant group 1

## Application/Limitation

The plate freezers are to be used with flexible hoses to be delivered with a type approval certificate for a maximum working pressure.

Each plate freezers are to be hydrostatic pressure tested to 1.5 times the design pressure.

Material certificates shall be in accordance with DNV GL ship Rules Pt.4 Ch.7 Sec.1 Table 5,6,7.

Friction welding shall be performed according to EN ISO 25239-4 with documented minimum strength in welding seam 0.6 Rm of the base metal.
For 6060-T6: $0.6 \times 215 N/mm^2 = 130 N/mm^2$

## Type Approval documentation

930213 Rev.B 17.01.2012 Appendix for cooling plate 930700

## Tests carried out

Burst testing witnessed by DNV GL.

## Marking of product

The marking is to show the following particulars:

a. the name and domicile of the manufacturer
b. the manufacturer's type designation and serial number
c. the year of manufacture
d. the design pressure
e. the design temperatures in °C
f. the hydraulic test pressure

## Periodical assessment

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.