DNV·GL

Certificate No:
TAP0000178

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Plate Freezer

with type designation(s)
V3CO2, V4CO2, V5CO2, V7CO2, V8CO2, V16CO2 Vertical Plate Freezers

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/+40°C**
Operating media:	**CO2, R22, R507, R404A, R717 (Ammonia)**
Design pressure:	**55 bar/-1 bar**

Issued at **Høvik** on **2018-01-18**
This Certificate is valid until **2023-12-31**.
DNV GL local station: **Aalborg**

for **DNV GL**

Approval Engineer: **Mehdi Rowshan**

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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Product description
Vertical Plate Freezers
Materials: AlMgSiO, 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.

Type Approval documentation
925768 rev.C D.14/11-2011 Cooling system
930582 rev.D D.03/11-2017 Cooling plate complete
930581 rev.A D.10/11-2011 Cooling plate working up
930213 rev.B D.17/01-2012 Appendix for cooling plate 930852
301060 rev.E D.21/03-2015 Cooling profile extrusions
930768 rev.B D.21/03-2015 Cooling profile extrusions
925581 rev.C D.13/01-2012 Cooling profile extrusions
929238 rev.B D.31/01-2012 Cooling profile extrusions FSW
930580 rev.B D.27/02-2012 Back profile for cooling plate
402250 rev.C D.17/01-2012 Back profile extrusions
931986 rev.A D.25/04-2013 Back profile for cooling plate
931985 rev.A D.25/04-2013 Back profile extrusions
931694 rev.B D.29/06-2015 Front profile extrusions

930583 rev.C D. 20/06-2012 Headers complete
929891 rev. E D. 25/06-2012 Appendix for 930583
Bilag 1 for 930583 & 929891 D. 24/10-2013

932895 rev.A D.21/01-2014 El-bow inlet

Burst test report 930582 rev.B 301060 rev.D witnessed by DNV GL dated 2012-04-24

Tests carried out
Burst testing witnessed by DNVGL

Marking of product
For traceability to this type approval the products are to be marked with:
- Manufacturer’s name or trade mark
- Type designation
- Maximum operating pressure

Periodical assessment
For retention of the type approval, a DNV surveyor shall perform a survey before the expiry date of this certificate, to verify that the conditions for the type approval are complied with.