Certificate No:
TAP00002GJ

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pressure Vessel

with type designation(s)
Liquid receiver D500, Liquid receiver D368, Liquid receiver D298, Liquid receiver D216, Liquid receiver D159, Liquid receiver D108

Issued to
BITZER Kühlmaschinenbau GmbH
Sindelfingen, **Germany**

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 all vessels classed by DNV.

Type:	Max. working temp.:	Design pressure:	Operating Medium
Liquid receiver D500	-10 to 120 °C	-1 to 28 bar	HFC, EN378-1
Liquid receiver D368	-10 to 120 °C	-1 to 28 bar	HFC, EN378-1
Liquid receiver D298	-10 to 120 °C	-1 to 28 bar	HFC, EN378-1
Liquid receiver D216	-10 to 120 °C	-1 to 28 bar	HFC, EN378-1
Liquid receiver D159	-10 to 120 °C	-1 to 28 bar	HFC, EN378-1
Liquid receiver D108	-10 to 120 °C	-1 to 28 bar	HFC, EN378-1

Issued at **Hamburg** on **2022-02-08**
This Certificate is valid until **2027-02-07**.
DNV local station: **Augsburg**

Approval Engineer: **Le Loi Nguyen**

for **DNV**

Jonathan Struwe
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Product description

See approved drawing (“Type Approval documentation”) for details (e.g. design data, materials, dimensions and media HFC and EN378-1*)

Application/Limitation

The liquid receivers are approved according to DNV-RU-SHIP Pt.4 Ch.7 ‘Pressure Equipment’ (Edition July 2021), They are graded as pressure equipment class II (Pt.4 Ch.7 Sec.1 table 2). The joint efficiency is v=0.85, the corrosion allowance is 0 mm.

All material used for pressurized parts shall be delivered with material certificates according to DNV-RU-SHIP Pt.4 Ch.7 Sec.1 Tab.6. The material shall be delivered by a manufacturer holding a valid certificate according to DNV CP-0346 ‘DNV approval of manufacturing scheme’.

The materials used for pressurized parts shall conform DNV-RU-SHIP Pt.2 Ch.2 Sec.3. Manufacturing, workmanship and testing shall be done according to DNV-RU-SHIP Pt.4 Ch.7 Sec.7.

The welding work for pressure equipment graded as PEC II shall be carried out by a welding workshop holding a valid certificate acc. to following DNV class programmes:

- DNV-CP-0261 ‘Approval of manufacturers – Pressure equipment’ and
- DNV-CP-0352 ‘Approval of manufacturers – Manufacture of welded products – Welding workshop’.

Each pressure vessels manufactured to this type approval is to be:

- Constructionally checked and hydraulic pressure tested 1.5 x design pressure,
- Certified by DNV and delivered with a product certificate.

Type Approval documentation

Place of Production

BITZER Kühlmaschinenbau GmbH
Etzwiesenstraße 42-44, 72108 Rottenburg-Hailfingen, Germany

Marking of product

For traceability to this type approval the products are at least to 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 in °C,
- the hydraulic test pressure, and
- DNV 's identifying mark.

Periodical assessment

The objective of the periodical assessment is to verify that the conditions for the type approval (TA) have not been altered.

The main scope of the periodical assessment will normally include:

- verification of the TA applicant’s production and quality system w.r.t. ensuring continued consistent production of the TA products at the TA applicant’s own premises and at other companies that are given the responsibility for manufacturing of the products,
- review of TA documentation and that this is still used as basis for the production,
- review of possible changes in the design, the materials and the performance of the product, and
- verification of the product marking.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

Unscheduled assessments for retention of the certificate may be carried out when there is reason to believe that the type approval applicant has not adhered to the obligations stipulated in the type approval certificate.

End of Certificate