

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Filter

with type designation(s)

ZB Filtergehäuse 350bar/420bar, ZB Öl-Wasserabscheidergehäuse 350bar/420bar

Issued to

Lenhardt & Wagner GmbH
Lampertheim, Hessen, 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.:	Working media:	Design pressure:
ZB Filtergehäuse 350bar/420bar	-10 to 70 °C	see application/limitation	350/420 bar
ZB Öl-Wasserabscheidergehäuse 350bar/420bar	-20°C to 70°C	see application/limitation	350/420 bar

Issued at **Hamburg** on **2022-04-06**

This Certificate is valid until **2027-04-05**.

DNV local station: **Essen**

for **DNV**

Approval Engineer: **Le Loi Nguyen**

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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

Two types of filter housings in two sizes.

Type	Shell, external diameter (mm)	Sizes, length over all (mm)	Sizes, volume (Liter)
Filtergehäuse	95	Length depending on filter cartridge	1.7/2.3
Öl-Wasserabscheidergehäuse	95	Length depending on filter cartridge	1.7/2.3

- Approved according to DNV-RU-SHIP Pt.4 Ch.7 (Edition July 2021). The filter function has not been assessed.
- Materials of end caps and shell are steel casting.
- For details of the filters (e. g. design data, materials or dimensions) see Approved Drawings (listed below in "Type Approval documentation").

Place of production

Lenhardt & Wagner GmbH
An d. Tuchbleiche 39
Lampertheim, Hessen, Germany

Application/Limitation

- The filters are classified in pressure equipment class I acc. To DNV-RU-SHIP Pt.4 Ch.7 Sec.1 Table 2.
- Operating media: air, hydraulic fluids, lubrication oils, fire resisting fluids and fuel oil.
- Screwed socket connections with parallel or tapered threads are not permitted on filters in case of flammable media.
- Each filter is to be hydraulic pressure tested to 1.5 x design pressure.
- Each filter for which the number of allowable load cycles (number of load cycles N) has been laid down shall undergo an internal inspection at the latest when half of the load cycles fixed has been reached.

Materials

- The materials used for the design and fabrication of the filters shall be suitable for the environmental, specific service conditions and the applicable fluids and shall be resistant to corrosion and wear during the intended service lifetime.
- The materials of filters for PEC I shall be delivered by a material manufacturer holding a valid certificate according to DNV-CP-0346 'DNV approval of manufacturer scheme'.
- All used materials of the filter assembly shall be delivered with product and material certificates acc. to DNV-RU-SHIP Pt.4 Ch.7 Sec.1 Tab.5.

Type Approval documentation

Marking of product

For traceability to this type approval the products are at least to be marked with

- Name and domicile of the manufacturer
- Manufacturer's type designation and serial number
- Year of manufacture
- Maximum allowable working pressure
- Design temperature in °C
- Hydrostatic test pressure
- DNV's identifying mark

Periodical assessment

The objective of periodical assessments 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 with relation to ensuring continue consistent production of the type approved products at the TA applicant's own premises and at other companies that are given the responsibility for manufacturing of the products,
- Review of the TA documentation and that this is still used as basis for the production,
- Review of possible changes to the design, the material and the performance of the product,
- Verification of the product marking.

Periodical assessments for type approvals with a validity period of five years will be required after two years (+/- 90 days) and after 3.5 years (+/- 90 days).

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

END OF CERTIFICATE