

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Filter**

with type designation(s)

FMND 40-140, FMND 160/250/400, FMND 160/250/400 RL

Issued to

HYDAC Filtertechnik GmbH
Sulzbach Saarland, Germany

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.7 Pressure equipment**Application :****Filter(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Type:	Max. working temp.:	Working media:	Design pressure:
FMND 40-140	-10°C +100°C	see application/limitation	250 bar
FMND 160/250/400	-10°C +100°C	see application/limitation	210 bar
FMND 160/250/400 RL	-10°C +100°C	see application/limitation	210 bar

Issued at **Hamburg** on **2017-07-20**This Certificate is valid until **2022-10-04**.for **DNV GL**DNV GL local station: **Essen**Approval Engineer: **Stefan Wiemer**

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Harald Pauli
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

- Three types of switchable change-over inline filters, in three or five sizes. Dimensions of types and sizes:

Type	Shell, external diameter (mm)	Sizes, length over all (mm)	Sizes, volume (Liter)
FMND 40-140	68,2	190/199,5/259,5/300,5/352,5	2x 0,2/0,22/0,33/0,44/0,5
FMND 160/250/400	106	303,5/390,5/540,5	2x 1,1/1,7/2,7
FMND 160/250/400 RL	106	303,5/390,5/540,5	2x 1,1/1,7/2,7

- Approved according to DNV GL rules ship Pt.4 Ch.7 (edition January 2017). The filter function has not been assessed,
- Materials of heads and shell: steel casting or nodular cast iron,
- For details of the filters (e. g. design data, materials or dimensions) see Approved Drawings (listed below in "Type Approval documentation").

Application/Limitation

- The filters are graded as pressure equipment class I according to DNVGL rules for classification - Ships Pt.4 Ch.7 Sec.1 Table 2,
- Operating media: hydraulic fluids, lubrication oils, or non flammable fluids,
- Screwed socket connections with parallel or tapered threads are not permitted on filters in case of flammable media,
- Materials used shall conform DNVGL Rules Pt.2 Ch.2 Sec.8 or Sec.9 and shall be delivered with material certificates according to DNVGL Rules Ship Pt.4 Ch.7 Sec.1 Table 6,
- The cast components of the filters subject to pressure shall be delivered by a foundry holding a valid certificate according to DNVGL CP-0346 'DNV GL approval of manufacturing scheme',
- The sealing rings (o-rings) shall be suitable for the design temperature and the intended media,
- Manufacturing, workmanship and testing shall be done according to DNV Rules Pt.4 Ch.7 Sec.7,
- Each filter is to be:
 - Hydraulic pressure tested to minimum 1.5 x design pressure,
 - Certified by DNV GL and delivered with a DNV GL product certificate.

Type Approval documentation

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 GL'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

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Certificate No: **TAP00000ZT**

- 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
- verification of the product marking

For retention of the TA certificate in its validity period the periodical assessments will be carried out bi-yearly.

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