

TYPE APPROVAL CERTIFICATE

This is to certify:

That the **Hydraulic Accumulator**

with type designation(s)
Diaphragm Accumulator

Issued to
AVN Hydraulik A/S
Brøndby, Hovedstaden, Denmark

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 vessels classed by DNV.

Temperature range: **-25°C to +80°C**
Operating media: **Nitrogen/ Mineral Oil**
Design pressure: **315 bar**
Sizes: **2L**

Issued at **Høvik** on **2023-01-13**

This Certificate is valid until **2028-01-12**.

DNV local station: **Denmark CMC**

Approval Engineer: **Jane Lozanov**

for **DNV**

Bosman van der Merwe
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

Welded diaphragm accumulator designed according to EN 14359 with the following design data:

Outside diameter	:	172 mm
Inside diameter	:	150 mm
Shell thickness	:	as per approved drawing
Length	:	248 mm
Corrosion allowance	:	1mm
Joint efficiency	:	1
Number of load cycles ($\Delta P = 157.5$ bar)	:	57639

Part	Material
Lower head	P420 NL1 EN 10028-3
Upper head	P420 NL1 EN 10028-3
Nozzle	P420 NL1 EN 10028-3

Place of manufacture:
BUCCMA Accumulator Zhangjiakuo Co.Ltd, Zhangjiakuo, China

Application/Limitation

Hydraulic accumulators covered by this certificate are approved as Class I pressure equipment and they shall follow requirements stated in DNV-RU-SHIP Pt.4 Ch.7 table 4 and 5.

Each accumulator shell / seamless gas bottle shall be hydraulically pressure tested to minimum 1.43 times the design pressure in the presence of DNV surveyor. Final product shall be certified and delivered with DNV product certificate.

All manufacturing, workmanship and testing shall be done in accordance with EN 14359.

Each accumulator shall be protected on both gas and hydraulic fluid side by a safety device such as relief valve, fuse plug or rupture disc to prevent excess pressure if overheated. When the accumulator is an integral part of a system with such a safety device, the accumulator itself need not be supplied with a safety device.

Type Approval documentation

Production testing and Certification

Production Testing and Certification for the actual intended application shall follow EN 14359 and the latest applicable edition of the Rules (as mentioned on the front page of this certificate).

Marking of product

Minimum marking requirements shall be as outlined in the latest edition of the design standard and the Rules (as mentioned on the front page of this certificate).

Periodical assessment

For retention of the Type Approval, a DNV 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 DNV-CP-0338.