

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pumps

with type designation(s)
NMB100b, NMB150c, NMB150e, NMB200

Issued to
Svanehøj Danmark A/S
Svenstrup J, Nordjylland, Denmark

is found to comply with
DNV rules for classification – Ships

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Type:	Max. working press.:	Operating media:	Temperature range:
NMB100b	140 m	NH3 and VCM. LPG covering butadiene, propane, propylene, butane, butane/propane mix, butylene, LNG (methane)	-104 to 45 gr.C
NMB150c	170 m		-104 to 45 gr.C
NMB150e	170 m		-104 to 45 gr.C
NMB200	160 m		-104 to 45 gr.C

Issued at **Høvik** on **2021-09-23**

This Certificate is valid until **2025-08-30**.

for **DNV**

DNV local station: **Denmark CMC**

Approval Engineer: **Dag Harald Williksen**

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Oddvar Deinboll
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

Centrifugal booster pump.

Application/Limitation

The pump is approved for piping systems handling liquified gas on board ships with the following main data:

Type	NMB100b	NMB150c	NMB150e	NMB200
Volume rate of flow	270	450	750	1050
Delivery head, [m]	140	170	170	160
Min. temperature, [C]	-104	-104	-104	-104
M.A.W.P., [bar]	50	50	40	40
Revolution, min/max [rpm]	2950/3550	2950/3550	1480/1785	1480/1785
Casing material	AISI 304			
Impeller material	AISI 304			
Shaft, fluid wetted parts	AISI 304 / AISI 316			

Performance- and technical data see manufacturers data sheet & capacity curves

Type Approval documentation

Drawing no. ref to 14 316 – 15 HH:

36802-00/-10	23308-41	12230-01
36797-00/-10	24103-20	34924-00
36794-00/-10	24768-00	Operations Manual, Capacity Curve
36798-00/-10/-11	36810-00/-10	no: 34923-00
21446-25	36801-00/-10	

Marking of product

The product to be marked with manufacturer's name or trademark and type number identification

Periodical assessment

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.

In case where the type approved product is manufactured at other companies, the periodical assessment shall verify that the type approval applicant has a quality control system for consistent production at their licensees/subcontractors. Furthermore, periodical assessment shall be carried out randomly at these companies.

Other conditions

Pumps are subject to a performance test at the manufacturer's works under attendance of a DNV Surveyor and are to be presented for final inspection.