



Certificate No:
TAP00002HC

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pumps

with type designation(s)
NDW150, NDW200, NDW250

Issued to
DESMI Pumping Technology A/S
Nørresundby, Nordjylland, Denmark

is found to comply with
DNV rules for classification – Ships Pt.5 Ch.7 Liquefied gas tankers
DNV class programme DNV-CP-0505 – Type approval – Pumping units

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:
NDW150	16 bar (nominal)	LPG, NH3, VCM, Chem gases and Chemicals	-104 deg C to +45 deg C
NDW200	16 bar (nominal)	LPG, NH3, VCM, Chem gases and Chemicals	-104 deg C to +45 deg C
NDW250	18 bar (nominal)	LPG, NH3, VCM, Chem gases and Chemicals	-104 deg C to +45 deg C

Issued at **Høvik** on **2022-05-31**

This Certificate is valid until **2027-05-30**.

for **DNV**

DNV local station: **Sweden CMC**

Approval Engineer: **Yury Ilchenko**

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Monika Johannessen
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

The NDW150, NDW200 and NDW250 are multi-stage centrifugal deepwell (DW) pumps which consists of three major parts: head unit, stack and cylinder. The pumps are driven by electric motor installed outside the storage tank. The pumps are equipped with 2 mechanical shaft seals, item 11, arranged in a back-to-back position. The pump is lubricated and cooled by pumping media. The surrounding chamber is filled with oil for lubrication and cooling of the sealing faces.

Application/Limitation

Type	NDW 150	NDW 200	NDW 250
Volume rate of flow [m3/hr]	350	510	750
Delivery head, [mLC]	120	120	120
Min. temperature, [degrees C]	-104	-104	-104
Differential pressure, [bar] (*)	-	-	-
Power cons. nominal, [kW]	150	220	350
Motor Size, [kW] (*)	-	-	-
Casing, shaft and impeller materials	Austenitic stainless steel (type 304 and type 316)		
Notes:	(*) – According to manufacturer specification		

Type Approval documentation

Drw No	Rev	Title
--	C.6	DESMI pumps presentation
--	--	Reference list
--	--	Test plan
--	--	Performance curves
--	07	Manual - Installation, operation, and maintenance manual.
---	08	Manual - Installation, operation, and maintenance manual.
--	--	Inspection and test plan
--	--	Outline - NDW 200-2
596060	A.1	Main parts Inducer NDW200 M
596040	A.1	Main parts - Bell NDW200 M
596020	A.1	Main parts - Bowl NDW200 M
596000	A.3	Main parts - Impeller NDW200 M
551760	--	Main parts - Motor bracket NDW200
551740	--	Main parts - Middle bracket NDW 200
551720	A2	Main parts - HEAD NDW
55139	--	Main parts - Sealing support
117475	A2	Main parts - Top Shaft NDW 200
117451	A2	Main parts - Intermediate pipe Ø273
--	A.1	Assembly - NDW200 COLUMN WITH HOLE
46 45 21a	--	Assembly - Pressure accumulator, Self regulating
460292	--	Assembly - ASSEMBLY DRAWING NDW 200
460291	--	Assembly - HEAD UNIT NDW 200
BEARING ASS NDW	--	Assembly - BEARING ASS NDW
46028	--	Assembly - SEALING UNIT NDW
423642	--	Assembly - NDW200-2 ASSEMBLY DRAWING
423641	--	Assembly - NDW200 COLUMN 3' ASS.L-2990

Tests carried out

Satisfactory in-service experience as an alternative to prototype testing was taken into consideration (ref. DNV-RU-SHIP Pt.5 Ch.7 Sec.5 §13.5.1)

Marking of product

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

Periodical assessment



Job Id: **262.1-036536-1**
Certificate No: **TAP00002HC**

The pump is subject to periodical surveys in service following HSSC (IMO Resolution A.1140(31)). A renewal assessment will be performed at renewal of this certificate.

In case when 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 production tests and certification at the manufacturer's works under DNV-RU-SHIP Pt.5 Ch.7 Sec.5 (§13.5.2).