



Marine & Offshore

Certificate number: 26820/B0 BV

File number: ACM 101/0096/04

Product code: 73011

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

DESMI Pumping Technology A/S

Nørresundby - DENMARK

for the type of product

DEEPWELL CARGO PUMPS

Cargo pump NDW200

Requirements:

- BUREAU VERITAS Rules for the Classification of Steel Ships
- IGC Code as amended by IMO Resolution MSC.370(93)

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate is a renewal of certificate N° 26820/A2 BV expiring on 16/01/2018

This certificate will expire on: 16 Jan 2023

For Bureau Veritas Marine & Offshore,

At BV FREDERICIA, on 12 Jan 2018,

Jesper Jensen



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

Cargo pump NDW200

1.1 Rating for Pump model NDW200-4stg

Speed (r/min)	Impeller Diameter Range (mm)	Capacity (m3/h)	Head (m)	Efficiency (%)	Shaft Power (kW) (Liquid density=1000 kg/m3)
1480	316	500	100	75	181.7
	279	420	78	73	122.3
1788	316	600	149.5	75	325.9
	279	580	104	73	225.2

- Temperature Range: -104°C up to +180°C

- Note: Customer parameters can be matched by trimming impeller or changing stages. The Largest impeller diameter is 316 mm. The smallest impeller diameter is 279 mm. The stages are from 1 to 6.

1.2 Materials and/or components:

Item Name	Material	Material Standard
Inducer	CF8M (1.4408)	DIN 17.440
Bell	CF8M (1.4408)	DIN 17.440
Impeller	CF8M (1.4408)	DIN 17.440
Bowl	CF8M (1.4408)	DIN 17.440
Pump shaft	1.4401	DIN 17.440
Middle pipe	CF8M (1.4408)	DIN 17.440
Head	CF8M (1.4408)	DIN 17.440
Sealing support	CF8M (1.4408)	DIN 17.440
Middle bracket	AISI 304	AISI
Motor bracket	AIS I304	AISI
Top shaft	1.4401	DIN 17.440

When other choices of materials are used per manufacturer's recommendations, the BV agreement is to be obtained.

2. DOCUMENTS AND DRAWINGS

- Manual for NDW Pump

- Drawings:

Item Name	Drawing N°
NDW200 Bowl Unit	460293
NDW200 Head Unit	460291
Drive Unit	460291
Manometer and Extra Parts	460292
Pressure Booster	464521
Inducer	551290
Bell	551240
Impeller	551330

Item Name	Drawing N°
Bowl	551260
Pump Shaft	151116
Middle Pipe	151123
Head	551720
Sealing Support	551390
Middle Bracket	551740
Motor Bracket	551760
Top Shaft	151088

- 414640 NDW200 Outline Drawing

- NDW200 Explore drawing

- NDW 3D Assembly drawing

No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.

3. TEST REPORTS

- NDW200 Test plan
- Casting materials certificate and mechanical property (at -196°C) N°03460CHN11-1 dated 21/06/2011
- Forging materials certificate and mechanical property (at -196°C) N°10875CHN11 dated 01/07/2011
- Pipe/Tube and fitting material certificate and mechanical property (at -196°C) N°09963CHN11 dated 24/06/2011
- Static pressure test for NDW200 N°12072401 dated 24/07/2012
- Performance test report of NDW200 N° 12060701dated 07/06/2012
- Cryogenics test report N° 12022401dated 24/02/2012
- Durability test for NDW200 N°12072402 dated 07/24/2012
- NPSHr test for NDW200 N°12043001 dated 30/04/2012
- Part Examination Report after all tests N°12081701 dated 17/08/2012

4. APPLICATION / LIMITATION

- 4.1 May be used on LPG/LEG piping system.
- 4.2 When required in Part D, Ch 9, Sec 6 of the Bureau Veritas Rules applicable to liquefied gas tankers, Charpy V-notch impact test shall be carried out for castings. Castings in steel grades 316 and 316L at any temperature will be impact tested at -196 °C. A reduction may be granted for design temperature above -60 °C after examination by the Society.
- 4.3 The pumps body and internal parts should be of a suitable type for use with cargoes intended to be carried.
- 4.4 The approval does not include the prime mover of the pump.
- 4.5 The pumps are to be installed according to the Manufacturer's instructions and Society's Rules requirements.

5. PRODUCTION SURVEY REQUIREMENTS

- 5.1 The products are to be supplied by **DESMI Pumping Technology A/S** in compliance with the type and the requirements described in this certificate.
- 5.2 This type of product is within the category IBV of Bureau Veritas Rule Note NR320.
- 5.3 BV product certificate is required.
- 5.4 Each pump is to be tested according to BV Rules NR 467 Pt D, Ch 9, Sec 5 item 13.2.2.

For information, **DESMI Pumping Technology A/S** has declared to Bureau Veritas the following production sites:

- **DESMI Pumping Technology A/S: P. O. Box 226, Tagholm 1, 9400 Nørresundby, DENMARK**
- **DESMI Pumping Technology (Suzhou) Co, Ltd, N°740 Fengting avenue, Weiting Sub District, 215122 SIP, SUZHOU CHINA**

6. MARKING OF PRODUCT

Each pump is to be at least permanently marked with:

- Manufacturer's name or logo
- Pump size
- Serial number
- Society's brand as relevant

7. OTHERS

It is **DESMI Pumping Technology A/S's** responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

This certificate supersedes the Type Approval Certificate N° 26820/A1 BV issued by the Society.

*** END OF CERTIFICATE ***