



Marine & Offshore

Certificate number: 53726/A0 BV

File number: ACC111/10

Product code: 0720H

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

Norden Marine Bearings AS

OS - NORWAY

for the type of product

BEARING MATERIALS

Norden 788 Marine

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships

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 will expire on: 28 Sep 2023

For Bureau Veritas Marine & Offshore,

At BV OSLO, on 28 Sep 2018,

Rune MARSTEIN

Rune Marstein



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.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 2 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

Rudder, stern tube & stabilizer fin bearing, model **Norden 788 Marine**

Water, oil, grease lubricated or dry lubricated bearing bush material, made of high load synthetic fabric reinforced thermosetting resin, with very low coefficient of friction.

2. DOCUMENTS AND DRAWINGS :

Rudder bearing raw drawing n°00000107 rev. A dated 2017/12/07

Rudder bearing neck drawing n°00000108 rev. A dated 2017/12/06

Qualification Test Program of Norden 788 Maritime n°C4238-2 rev. A dated 2016/10/04

3. TEST REPORTS :

Norden 788 Marine Type Approval Application rev. B dated 2016/10/07

4. APPLICATION / LIMITATION :

4.1 - This Certificate applies to the bare bearing material. If required by the Rules, attached equipment is to be either type approved or design appraised on a case-by-case basis.

4.2 - On board installation and maintenance requirements have to be in accordance with Society's Rules requirements and Manufacturer's recommendations.

4.3 - Due consideration is to be paid to the Manufacturer's recommendations concerning the installation, inspection, operation and maintenance of the bearing. Bearing's drawing is to be submitted for each application.

4.4 - Stern tube applications:

- Maximum nominal bearing surface pressure: 0.6 MPa for bearing maximum length equal to 2 times the shaft rule diameter, for higher length/diameter ratios, as per manufacturer's recommendations

- bearing minimum length equal to 1.5 times the shaft rule diameter

Nota: The complete justifications about the distribution of loads on the shaftline bearings is the responsibility of the owner/shipyard and is to be sent to the Society as per Rules requirements.

4.5 - Rudder applications:

- Maximum nominal bearing surface pressure: 10 MPa

- bearing maximum length equal to 1.2 times the shaft rule diameter

4.6 - Stabilizer fin applications:

- Maximum nominal bearing pressure: 10 MPa

5. PRODUCTION SURVEY REQUIREMENTS :

5.1 - The **Norden 788 Marine bearings** are to be supplied by **Norden Marine Bearings AS** in compliance with the type described in this certificate.

5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3 - **Norden Marine Bearings AS** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

5.4 - For information, **Norden Marine Bearings AS** has declared to Bureau Veritas the following production site(s):

Norden Marine Bearings AS
Industriveien 13
5210 OS
NORWAY

6. MARKING OF PRODUCT :

- Manufacturing Data and lot number.

- Bureau Veritas' Marks (ink mark only).

- Weight and dimension as per attached drawing.

- Nominal Shaft Diameter as per attached drawing

7. OTHERS :

It is **Norden Marine Bearings AS'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.

*** END OF CERTIFICATE ***