



TYPE APPROVAL CERTIFICATE

Certificate no.:
TAM000011J
Revision No:
2

This is to certify:

that the **Stern Tube Bearing Material**

with type designation(s)
EVR

issued to

EAGLE INDUSTRY CO., LTD. Marine Division
Takasago, Hyogo Pref., Japan

is found to comply with

DNV rules for classification – High speed and light craft
DNV rules for classification – Ships

Application:

Synthetic water lubricated propeller shaft bearing material. The Type Approval is valid only when the installation/application of the product is according to the DNV Rules and the Manufacturer's recommendations. Maximum nominal bearing pressure: 0.2 MPa.

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

Issued at **Hamburg** on **2024-05-22**

This Certificate is valid until **2029-03-11**.

DNV local unit: **Japan CMC**

Approval Engineer: **Gisle Hersvik**

for **DNV**



Digitally Signed By:
Martin Wenning
Location: **DNV Hamburg,**
Germany

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

EVR: An elastomer (rubber) stern tube and bracket bearing with shell.

Build-up of the EVR (Eagle Vessel Rubber) bearing:

- The sliding face is made of an elastomer (rubber) material.
- The outer shell is made of a glass-cloth or cotton-cloth reinforced plastic (GRP or CRP).
- The elastomer is bonded to the shell by vulcanizing process.

Manufactured by

EAGLE INDUSTRY CO., LTD. Marine Division, Kure Plant, 8-1, Showa-cho, Kure-chi, Hiroshima 737-0027, Japan

DNV local station: Japan CMC

Union Rubber Industrial Co., Ltd., 753-17 Aza Imaiike, Hiraoka-cho, Kakogawa, Hyogo 675-0104, Japan

DNV local station: Japan CMC

Responsibility

The Company (stated on the front page of this Certificate) takes the responsibility that both design and production are in compliance with Rules, Standards and/or Regulations listed on page 1 of this certificate.

Application/Limitation

| | |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fields of Application: | - Stern Tube/Propeller Shaft Bearings - Propeller Shaft Bracket Bearings |
| Lubricants: | - Water |
| Surface Pressure: | - 0.2 MPa, maximum, for minimum length to diameter (L/D) ratio of 2:1 for the bearing next to propeller. For all the other positions, L/D ratio as per Manufacturer's recommendations. |
| Installation: | - Clearance fit |
| Dimensions: | - As per DNV Rules and Manufacturer's recommendations. - Min – max diameters (OD): 40 – 550 mm - Min – max thicknesses (WT): as per Manufacturer's recommendations. |

The Type Approval is valid only when the installation/application of the product is according to the specified DNV Rules and the Manufacturer's recommendations, ref. EAGLE INDUSTRY CO., LTD. "Instruction Manual of Stern Tube Bearing – EVR", 06ME-024-9.

Any significant changes in design and / or quality of the material will render the approval invalid.

Type Approval documentation

1. Assessment Report from DNV Japan of 2024-05-21 (Union Rubber).
2. Assessment Report from DNV Japan of 2023-10-13 (Union Rubber).
3. Assessment Report from DNV Japan of 2023-03-01 (Eagle Industry, Takasago).
4. Inspection Procedure, No. ISEVR-F002/S002 Rev. 00.
5. EVR Manual, Doc. No. 06ME-024-9.
6. Letter from re. change of production site from EBJ/Niigata to EKK/Kure. 2022-04.
7. Application for Type Approval of 2023-02-07, and ISO 9001-certificate (issued by DNV GL).
8. Assessment Report from DNV GL Yokohama of 2018-12-06.
9. EAGLE INDUSTRY CO., LTD. "Instruction Manual of Stern Tube Bearing – EVR", 06ME-024E-7.
10. Application for Type Approval of 2018-11-07.
11. "Stern Tube Bearing Type EVR – Technical Manual", TEC-E-4.
12. Precautionary Instruction for Handling of EVR Rubber Bearing - Document 06ME-024-2 (2010-05-10).
13. Drawing: EVR-S002 – EVR Rubber Bearing – Straight type.
14. Drawing: EVR-F002 – EVR Rubber Bearing – Flange type.
15. Comments from Kemel received with email from DNV Yokohama dated 2010-05-14.



Job ID: **262.1-009820-7**
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Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**.

Tests described in "Stern Tube Bearing Type EVR – Technical Manual", TEC-E-4.

Marking of product

Product shall be marked with *manufacturer's name or trademark/logo*: **KEMEL**, *type designation*: **EVR**, *type*: **SS275** and *order number*.

The marking is to be carried out in such a way that it is visible, legible and indelible. The marking of product is to enable traceability to the DNV Type Approval Certificate.

Periodical assessment

The scope of the Periodical Assessment is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

Periodical assessments (for Certificate Retention / Certificate Renewal) shall be performed according to DNV-CP-0338.

Renewal testing is to be performed in accordance with DNV-CP-0081, Section 2, Table 1.

This certificate is only valid if required Periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>

END OF CERTIFICATE