Certificate no.:
**TAM00001E7**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**that the Stern Tube Bearing Material**

with type designation(s)
**DMX® Locking Stave System**

issued to
## Duramax Marine, LLC
**Hiram, OH, USA**

is found to comply with
**DNV class programme DNV-CP-0081 – Type approval – Synthetic bearing bushing materials**

## Application:

**Synthetic propeller shaft bearing material.**

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

Issued at **Hamburg** on **2025-03-18**
This Certificate is valid until **2030-03-17**.
DNV local unit: **Houston**

for **DNV**

Approval Engineer: **Gisle Hersvik**

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 USD 300 000.

## Product description

**DMX® Locking Stave System**, based on a proprietary elastic polymer alloy.

DMX® Locking Stave System Bearings with Locking Stave Bearings are made up of keystone-sided staves of DMX® material and molded rubber locking staves that, when fitted together in a housing, form a cylindrical bearing.

## Place of manufacture

**Duramax Marine, LLC**, 17990 Great Lakes Parkway, 44234 Hiram, OH (Ohio), USA

## Application/Limitation

| | |
|---|---|
| Fields of Application: | - Stern tube bearings<br>- Strut bearings |
| Lubricants: | - Water, Sea water, River water |
| Operational Limits: | Permissible surface pressure:<br>- 0,55 MPa for minimum length to diameter ratio of 2:1<br>- The length of the aft bearing must not be less than 2.0 times the shaft rule diameter. |
| Max. service temperature: | 150°F / 65°C |
| Installation: | According to manufacturer Installation Guide |
| Dimensions: | According to manufacturer's recommendations<br>- Shaft diameters: 75 mm to 1000 mm<br>- Min. – max. thickness: 7/8" to 2-1/4" / 22 to 57 mm |

Installation shall be carried out only in accordance with DNV Rules and manufacturer's recommendations.

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

## Type Approval documentation

## Tests carried out

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

## Marking of product

Product shall be marked with *manufacturer's name:* ***Duramax Marine, LLC***, *type designation:* ***DMX-LSS***, *Made in USA*, *Item Part Number*, *MFG Date "XXX YR"* and *DMX Slab No. / Product Job No.*

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.

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