



Marine & Offshore

Certificate number: 19905/C0 BV

File number: ACM 119/0402/001

Product code: 0710I

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

DURAMAX MARINE LLC
Hiram - UNITED STATES OF AMERICA

for the type of product

BEARING

DMX Locking Stave Bearing

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships.

Bureau Veritas Rules for FREMM 3.2.

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° 19905/B0 BV expiring on 05/11/2017

This certificate will expire on: 05 Nov 2022

For Bureau Veritas Marine & Offshore,

At BV PORT EVERGLADES CENTRE, on 05 Oct 2017,

Flavio Rosas



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:

DMX® Locking Stave Bearing

Water lubricated stern tube and strut bearings.
Made of designed DMX® Bearing Materials.
Shaft Diameter from 75 mm to 1000 mm.

2. DOCUMENTS AND DRAWINGS:

Water lubricated bearings:

DWG DMXM625S1 Rev. 07 Aft Bracket Bearing DMX-LSS Assembly
DWG DMXM530S0 Rev. 06 Forward Stern Tube DMX-LSS Assembly
DWG DMXM530S1 Rev. 05 Aft Stern Tube DMX-LSS Assembly
DWG DMXM530S2 Rev. 06 Int. Bracket Bearing DMX-LSS Assembly
DWG 806150024 Rev. D DMX / Rubber locking stave assembly dia 625 mm
DWG 806150025 Rev. D DMX / Rubber locking stave assembly dia 530 mm
DWG KB30-20-1445-0 Rev. 2 Keeper Bar Set for Aft Main Bracket Bearing
DWG KB30-20-525-0 Rev. 2 Keeper Bar Set for Int. Bracket and Both Sterntube Bearings.

Document from DMX® company sent by fax dated Sept 10, 2007.
Installation Instructions DMX® Super Demountable Locking Stave Bearing dated July 2004.
Hunt Class Stern Tube Bearing Using Duramax DMX® With Misalignment/Report JK119/R3974 BMT Defense Services LTD.
Functional Application Data Sheet.
DMX® Material - Physical & Mechanical Properties dated October, 22th 2004.

3. TEST REPORTS:

Water lubricated bearings

Duramax Marine SPA on Gunmetal Shaft - 2000 Hr trial / Report JK106-R3437 from BMT Defense Services LTD.

4. APPLICATION / LIMITATION:

4.1 - Water lubricated bearings:

TYPE:	USE:	MAXIMUM SPECIFIC BEARING MEAN PRESSURE:
DMX® Bearing	Strut and Sterntube	0.55 MPa

- The length of the aft bearing must not be less than 2.0 times the shaft rule diameter.
- Complete justifications must be sent to the Society about the distribution of loads on the shaftline bearings.

4.2 - On board installation & Maintenance requirements:

As per DMX® instructions.

5. PRODUCTION SURVEY REQUIREMENTS:

- 5.1 - The **DMX® Locking Stave Bearings** are to be supplied by **DURAMAX MARINE LLC** 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 - For information, **DURAMAX MARINE LLC** has declared to Bureau Veritas the following production site(s):

DURAMAX MARINE LLC
17990 Great Lakes Parkway
Hiram OH 44234 - UNITED STATES OF AMERICA

6. MARKING OF PRODUCT:

- Date of manufacture.
- Bureau Veritas' Marks.
- Part number reference for Weight and Dimension & Nominal Shaft Diameter.
- Manufacturing Data and lot number.

7. OTHERS:

7.1 - It is **DURAMAX MARINE LLC** 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.

7.2 - This Certificate supersedes the Type Approval Certificate N° 19905/B0 BV issued on 05 Nov. 2012 by the Society.

***** END OF CERTIFICATE *****