CROATIAN REGISTER OF SHIPPING

Certificate No.	02-002704/024672

TYPE APPROVAL CERTIFICATE

This is to certify that this product, on the basis of the Rules for the classification of ships, Part 1 - General requirements, Chapter 3 - Type approval of products.

TYPE AND DESCRIPTION OF PRODUCT:

DIESEL ENGINES MTU SERIES 2000 PLD

MANUFACTURER:

MTU Friedrichshafen GmbH

Maybachplatz 1
88045 FRIEDRICHSHAFEN
GERMANY

THE PRODUCT MEETS FOLLOWING RULES/REGULATIONS:

CRS: Rules for the classification of ships, Part 9. - Machines.

FURTHER DETAILS OF THE PRODUCT AND CONDITIONS FOR CERTIFICATION ARE GIVEN OVERLEAF.

APPROVAL IS VALID UNTIL: **2023-07-02**

Place and date: Split, 2019-05-15 **Seal**

Marinko Popović, dipl.ing.

NOTE: This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Croatian Register of Shipping of any modification or changes to the product in order to obtain a valid certificate.

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DETAILED PRODUCT DESCRIPTION:

DIESEL ENGINE
4-stroke single-acting, water cooled

Cylinder bore: **130 mm**
Piston stroke: **150 mm**
Cylinder number: **12, 16 – V**
Max. firing pressure: **160 bar**
Mean effective pressure: **20 bar**

APPLICATION / LIMITATIONS:

Engine type	Rated cont. output, kW/cyl	Speed, rpm
M60	50	1800
M61	50	1800
M70	65,6	2100
M90	83,9	2300

Application: for propulsion

Model	Rated cont. output, kW	Speed, rpm
M50A	41,5	1500
M51A	41,5	1500
M50B	50	1800
M51B	50	1800
M40	48	1500
M41A	48	1500
M40B	58	1800
M41B	58	1800

Application: for auxiliary duties

TYPE APPROVAL DOCUMENTATION:

Drawings and calculations approved by CRS with letters: **33/TS/020477/BŠ (1998-01-12)**
2210/TS/IA/023505 (2013-10-11)
1314/TS/IA/023782 (2015-07-02)

MARKING OF PRODUCT:

- **manufacturer's mark**
- **location and year of final fitting**
- **CRS mark**

CONDITIONS FOR CERTIFICATION:

Minimal tensile strength of crankshaft material is 930 MPa.
Signalization and protection related to the engine shall be subject to CRS approval in each particular case and will depend on service applied and the degree of automation of the engine plant.
Must not be used when duplication of cooling water pump is requested.
Test report TCW 51499 dated January 20th 2015.