

**POTVRDA O TIPNOM ODOBRENJU**  
**TYPE APPROVAL CERTIFICATE****Br /No** 02-002531/024535

Potvrđuje se da je ovaj proizvod, u skladu s Pravilima za klasifikaciju brodova, Dio 1. - Opći propisi, Odjeljak 3. - Tipno odobrenje proizvoda, odobren za ugradnju na brodove i postrojenja pod nadzorom Hrvatskog registra brodova.

*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, is approved for use on board ships and installations under supervision of the Croatian Register of Shipping.*

**TIP I OPIS PROIZVODA:***TYPE AND DESCRIPTION OF PRODUCT:***DIZEL MOTOR, četverotaktni, tip** **L/V 32/40**  
**DIESEL ENGINE, four-stroke, type****PROIZVOĐAČ:**  
*MANUFACTURER:***MAN Energy Solutions SE**  
Stadtbachstraße 1  
D-86224 AUGSBURG  
Germany**PROIZVOD UDOVOLJAVA SLIJEDEĆIM PRAVILIMA/PROPISIMA:**  
*THE PRODUCT MEETS FOLLOWING RULES/REGULATIONS:***HRVATSKI REGISTAR BRODOVA:** **Pravila za klasifikaciju brodova, Dio 9.-Strojevi,  
Dio 13.-Automatizacija****CROATIAN REGISTER OF SHIPPING:** *Rules for the Classification of Ships, Part 9-Machines,  
Part 13-Automation***DETALJI O PROIZVODU I UVJETIMA CERTIFIKACIJE DANI SU NA POLEDINI.**  
*FURTHER DETAILS OF THE PRODUCT AND CONDITIONS FOR CERTIFICATION ARE GIVEN OVERLEAF.***ODOBRENJE VRIJEDI DO:** **2023-02-21**  
*APPROVAL IS VALID UNTIL:***Mjesto i datum:** Split, 2019-01-04  
*Place and date:***M.P.**  
*(Seal)*

Marinko Popović, dipl.ing.

**NAPOMENA: Ova potvrda nije valjana ako se proizvod ili način njegove proizvodnje promijenio u odnosu na tipno ispitani proizvod. Proizvođač treba obavijestiti Hrvatski registar brodova o bilo kojoj izmjeni na proizvodu kako bi ishodio valjanu potvrdu.***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.*

**PODROBNJI OPIS PROIZVODA:**

DETAILED PRODUCT DESCRIPTION:

Dizel motor, dvotaktni / Diesel engine, two-stroke

Tip / Type

**L32/40****V32/40**

Promjer cilindra / Cylinder bore

320 mm

320 mm

Stapaj / Piston stroke

400 mm

400 mm

Broj cilindara / Number of cylinders

5, 6, 7, 8, 9, 10L

12, 14, 16, 18, 20V

**PODRUČJE PRIMJENE / POSEBNI GRANIČNI UVJETI:**

APPLICATION / LIMITATIONS:

**Poriv (P) / Pomoćni uređaji (A)**

Propulsion (P) / Auxiliaries (A)

**Tip motora / Engine type****L32/40****L32/40****V32/40****V32/40****Materijal koljenastog vratila (vidi dolje)**

Ck 45N,

Ck 45N,

34CrNiMo6,

34CrNiMo6,

Crankshaft material (see below)

Ck 45V

Ck 45V

50CrMo4

50CrMo4

**Maksimalna trajna snaga po cilindru**

Maximum continuous output per cylinder [kW/cyl]

500

500

500

500

**Pri brzini vrtnje**At engine speed [min<sup>-1</sup>]

720

750

720

750

**Srednji efektivni tlak**

Mean effective pressure [bar]

25,9

24,9

25,9

24,9

**Najveći tlak u cilindru**

Maximal cylinder pressure [bar]

215

215

215

215

**Najveće naizmjenično torzijsko naprezanje**Maximal alternating torsional stress [N/mm<sup>2</sup>]

30,0

30,0

46,0

46,0

**DOKUMENTACIJA ZA TIPNO ODOBRENJE:**

TYPE APPROVAL DOCUMENTATION:

**Odobrena od Hrvatskog registra brodova pismom br. (od):**

Approved by the Croatian Register of Shipping with letter No.(dated):

237/TSv/NV-434/021777 (2005-02-08)

1490/TSv/NV-541/021895 (2005-07-28)

1784/TSv/NV-578/021907 (2005-09-30)

328/TSv/NV-578/021907 (2007-02-21)

221/TSv/NV-2159/022724 (2009-02-04)

657/TSv/NV-2869/023586 (2014-04-10)

2035/TS/VB/023825 (2015-10-23)

903/TS/VB/024132 (2017-06-01)

**OZNAČAVANJE PROIZVODA:**

MARKING OF PRODUCT:

- **oznaka proizvođača** - manufacturer's mark
- **mjesto i godina proizvodnje** - location and year of manufacture
- **oznaka HRB** - CRS mark

**UVJETI ZA CERTIFIKACIJU:**

CONDITIONS FOR CERTIFICATION:

**Najmanja vlačna čvrstoća materijala koljenastog vratila:**

Minimal tensile strength of crankshaft material:

640 N/mm<sup>2</sup> (L32/40), 1000 N/mm<sup>2</sup> (V32/40)**Proračun torzijskih vibracija mora se dostaviti na odobrenje za svaki pojedini projekt.**

Torsional vibration calculation shall be submitted for approval for each particular project.