

**POTVRDA O TIPNOM ODOBRENJU**  
**TYPE APPROVAL CERTIFICATE****Br /No**      **02-002070/023859**

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:***Brodski reduktori za dizelski poriv – serija ZF 30xx***Marine Reduction Gearboxes for Diesel Propulsion – ZF 30xx family***PROIZVOĐAČ:**  
*MANUFACTURER:***ZF Friedrichshafen AG**

Marine Propulsion Systems

Ehlersstraße 50

88046 Friedrichshafen

Germany

**PROIZVOD UDOVOLJAVA SLIJEDEĆIM PRAVILIMA/PROPISIMA:***THE PRODUCT MEETS FOLLOWING RULES/REGULATIONS:***HRB: Pravila za klasifikaciju brodova, Dio 9. - Strojevi.***CRS: Rules for the classification of ships, Part 9. - Machines.***DETALJI O PROIZVODU I UVJETIMA CERTIFIKACIJE DANI SU NA POLEĐINI.***FURTHER DETAILS OF THE PRODUCT AND CONDITIONS FOR CERTIFICATION ARE GIVEN OVERLEAF.***ODOBRENJE VRIJEDI DO:**  
*APPROVAL IS VALID UNTIL:***2019-05-30****Mjesto i datum:**  
*Place and date:*

Split, 2016-02-04

**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.*

**PODROBNIJI OPIS PROIZVODA:**  
**DETAILED PRODUCT DESCRIPTION:**

**Brodski reduktori ZF 3000, ZF 3050, ZF 3055, ZF 3060 (NR, NR2) sa ugrađenom hidrauličkom spojkom sa ili bez prekreta.**

*Marine reduction gearboxes ZF 3000, ZF 3050, ZF 3055, ZF 3060 (NR, NR2) with built-in hydraulic clutches and with/without reversing stage.*

**PODRUČJE PRIMJENE / POSEBNI GRANIČNI UVJETI:**  
**APPLICATION / LIMITATIONS:**

**Odobreno za pogonski faktor  $K_A = 1,30$ .**

*The approval status is based on application factor 1,30.*

<b>Continuous Duty, commercial application, single screw</b>				
<b>Model</b>	<b>MCR</b>	<b>RPM</b>	<b>Torque</b>	<b>Ratios</b>
ZF 3000 (NR, NR2)	836kW	2100	3801Nm	1.093, 1.250, 1.343, 1.441, 1.500, 1.563, 1.645, 1.700, 1.733,
ZF 3050 (NR, NR2)	979kW		4454Nm	1.800, 1.828, 2.037, 2.154, 2.240, 2.375, 2.500, 2.609, 2.773, 2.952

<b>Medium Duty, commercial application, single screw</b>				
<b>Model</b>	<b>MCR</b>	<b>RPM</b>	<b>Torque</b>	<b>Ratios</b>
ZF 3000 (NR, NR2)	1090kW	2600	4005Nm	1.093, 1.250, 1.343, 1.441, 1.500, 1.563, 1.645, 1.700, 1.733,
ZF 3050 (NR, NR2)	1340kW		4921Nm	1.800, 1.828, 2.037, 2.154, 2.240, 2.375, 2.500, 2.609, 2.773, 2.952
ZF 3055 (NR, NR2)	1433kW		5261Nm	1.093, 1.250, 1.343, 1.441, 1.500, 1.563, 1.645, 1.700, 1.733, 1.800, 1.828, 2.037, 2.154, 2.240, 2.375, 2.500, 2.609, 2.773
	1350kW		4958Nm	2.952

<b>Light Duty, commercial application, multiple screw</b>				
<b>Model</b>	<b>MCR</b>	<b>RPM</b>	<b>Torque</b>	<b>Ratios</b>
ZF 3000 (NR, NR2)	1316kW	2600	4834Nm	1.093, 1.250, 1.343, 1.441, 1.500, 1.563,
ZF 3050 (NR, NR2)	1460kW		5361Nm	1.645, 1.700, 1.733, 1.800, 1.828, 2.037,
ZF 3055 (NR, NR2)	1464kW		5376Nm	2.154, 2.240, 2.375, 2.500, 2.609, 2.773,
ZF 3060 (NR, NR2)	1381kW	2450	5382Nm	2.952

<b>Pleasure Duty, yacht application, single screw</b>				
<b>Model</b>	<b>MCR</b>	<b>RPM</b>	<b>Torque</b>	<b>Ratios</b>
ZF 3050 (NR, NR2)	1603kW	2600	5887Nm	1.093, 1.250, 1.343, 1.441, 1.500, 1.563,
ZF 3055 (NR, NR2)	1687kW		6197Nm	1.645, 1.700, 1.733, 1.800, 1.828, 2.037,
ZF 3060 (NR, NR2)	1644kW	2450	6408Nm	2.154, 2.240, 2.375, 2.500, 2.609, 2.773, 2.952

**DOKUMENTACIJA ZA TIPNO ODOBRENJE:**  
*TYPE APPROVAL DOCUMENTATION:*

**Nacrti i proračuni odobreni od HRB dopisima:** 678/023093 (2011-04-11)  
*Drawings and calculations approved by CRS with letters:* 200/023859 (2016-02-04)

**OZNAČAVANJE PROIZVODA:**  
*MARKING OF PRODUCT:*

- |                                 |   |
|---------------------------------|---|
| - <b>oznaka proizvođača</b>     | - <i>manufacturer's mark</i>                |
| - <b>serijski broj</b>          | - <i>serial No.</i>                         |
| - <b>mjesto i godina izrade</b> | - <i>location and year of manufacturing</i> |
| - <b>oznaka HRB</b>             | - <i>CRS mark</i>                           |

**UVJETI ZA CERTIFIKACIJU:**  
*CONDITIONS FOR CERTIFICATION:*

**Proizvođač mora organizirati prisustvo inspektora Registra pregledu i ispitivanju u tvornici ili se mora obaviti odgovarajući pregled ako se odobri alternativni način prihvata. HRB Potvrda za svaki pojedini reduktor izdat će se nakon zadovoljavajućeg završetka postupka.**

*The manufacturer shall make arrangements for the CRS Surveyor to attend the relevant tests and examinations at manufacturer's works or to perform the relevant audits in case an alternative survey scheme has been approved. Relevant CRS certificate for each particular reduction gearbox will be issued after satisfactory completion of the procedure.*

Račlana

09.04.02

Zamjenjuje potvrdu

02-001495/023104