

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MEDB00003ET
Revision No:
6

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV AS under the authority of the Government of Norway.

This is to certify:

That the Fast rescue boats: (b) rigid

with type designation(s)
Mako-655 Waterjet MKI

Issued to

VIKING NORSAFE LIFE-SAVING EQUIPMENT NORWAY AS
FÆRVIK, Norway

is found to comply with the requirements in the following Regulations/Standards:

Regulation (EU) 2021/1158,

item No. MED/1.20b. SOLAS 74 as amended, Regulation III/4, III/26, III/34, LSA Code and IMO MSC/Circ.1006, 1016 & 1094

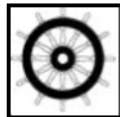
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2024-06-11**.

Issued at **Høvik** on **2021-09-02**

DNV local station:
Norway CMC, West

Approval Engineer:
Tessa Bieber



Notified Body
No.: **0575**



for **DNV AS**

Digitally Signed By: Øyvind Hoff
Location: DNV Høvik, Norway
on behalf of

Sverre Olav Bergli
Head of Notified Body



The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU. This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled. Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

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 300,000 USD.



Product description

“MAKO-655 MKI Waterjet” is a rigid fast rescue boat equipped with inboard engine and with single point lifting hook.

Material specification:

ASIA			
Material	Generic name	Type	Manufacturer
Polyester resin:	Polyester resin	FL-918 OR ETERSET 2929PT	Jiangsu Fullmark Chemical Co., Ltd. OR Eternal Materials Co.Ltd.
Gelcoat:		Enguard series: Enguard GE XXXXXS/HZ, Enguard TM XXXXXS/HZ	Ashland (Changzhou) Specialty Chemical Co., Ltd.
Gelcoat/topcoat		FL-NCxxxxG	Jiangsu Fullmark Chemicals Co., Ltd
Glass Fiber:	CSM	P-100g/m ² -- P-900g/m ² , chopped strand mat - powder bound	Jiangsu Changhai Composite Materials Holding Co., Ltd
		EMC (powder type), EMCL (emulsion type)	Taishan Fiberglass Inc.
Buoyant material:	Rigid polyurethane foam	Rigid polyurethane foam,	Jiangyin Tongqi Allied Chemical Factory OR
		Rigid polyurethane foam, LM- 206A/LM-206B	Qingdao Lianmei Chemical Co. Ltd..

EUROPE			
Material	Generic name	Type	Manufacture
Polyester resin	Polyester resin	Aropol F 207 or Aropol F 207 INF	INEOS Composites Finland Oy
Gelcoat		Maxguard NP WHI S, Maxguard NP WHI H	INEOS Composites Finland Oy
		LS-30PA white, LS-31PA & LS-30PA variants	Scott Bader Co., Ltd.
Glass fiber	CSM	Emulsion Bound E-100 – 900 g/m ²	Jiangsu Changhai Composite Materials
	Multi-axial	Uni-axial; UNIE-L (250-1200 g/m ²) with or without CSM (100-600 g/m ²), Uni-axial; UNIE-T (150-1000 g/m ²) with or without CSM (100-600 g/m ²)	Selcom S.r.l. a Socio Unico
		Bi-axial; EBX (200-2000 g/m ²) with or without CSM (100-600 g/m ²), Bi-axial; EBXS (300-2000 g/m ²) with or without CSM (100-600 g/m ²)	Selcom S.r.l. a Socio Unico
		Tri-axial; ETXL (350-2200 g/m ²) with or without CSM (100-600 g/m ²), Tri-axial; ETXT (200-2000 g/m ²) with or without CSM (100-600 g/m ²)	Selcom S.r.l. a Socio Unico
		Quadri-axial; EQX (400-3500 g/m ²) with or without CSM (100-600 g/m ²)	Selcom S.r.l. a Socio Unico
	Spray Gun Roving	Spray Up Rovings; ER13-2400-180, ER13-3000-180	Jushi Group Co., Ltd.
Buoyant material	Rigid polyurethane foam	Elastopor H 1700/10, Elastopor H 1700/11 and Elastopor H 1702/4	BASF Polyurethanes Nordic AB

Length: 6.55 m
 Breadth: 2.70 m
 Depth: 2.26 m
 Weight of boat, fully equipped: 2062 kg
 Weight of boat, fully manned (82.5 kg/person): 3300 kg

Hook manufacturer and type: Norsafe K4-D/ K4-D-FM ⁽¹⁾



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Henriksen HMK 3.5 ⁽²⁾
Henriksen HMK 5 ⁽³⁾

Lifting arrangement SWL (tie rods, Dwg. No. A-501839): 3200 kg
Lifting arrangement SWL (beams, Dwg. No. A-503024): 3300 kg

Hull material: FRP
Propulsion system: Inboard engine w/ waterjet

Engine manufacturer and type: STEYR SE236E40 ⁽¹⁾
STEYR SE266E40 ⁽²⁾
STEYR MO164M40 ⁽³⁾
BUKH R210J ⁽⁴⁾
Mercury MD 3.0 V6 ⁽⁵⁾
Yanmar 4LHA-STP ⁽⁶⁾
BUKH S270J ⁽⁷⁾

Waterjet types: Alamarin 230 ^(a)
Alamarin 245 ^(b)

Bollard pull: 5.3 kN / 7.0 kN (1a/1b)
4.0 kN / 7.5 kN (2a/2b)
4.8 kN (3a)
5.4 kN (4a)
4.3 kN (5a)
5.4 kN / 6.4 kN (6a/6b)
5.4 kN (7b)

Application/Limitation

Approved engine power, max: 170 kW ⁽¹⁾
195 kW ⁽²⁾
116 kW ⁽³⁾
154 kW ⁽⁴⁾
169 kW ⁽⁵⁾
177 kW ⁽⁶⁾
199 kW ⁽⁷⁾

Number of persons, max: 15
Maximum load of persons (82.5 kg/person): 1238 kg

Approved colour: Orange

The fast rescue boat equipment and marking/instructions to be inspected after installation on board the ship. Equipment shall comply with LSA Code and IMO Res. MSC.81(70).

The fast rescue boat is fitted with a release hook without on-load release capabilities, in accordance with LSA Code 4.4.7.6.9. Hence, if it is to be combined with launching appliances with permanent high-speed tensioning device (LSA Code 6.1.7.3), compatibility must be assured.

The normal equipment of the fast rescue boat to include a hands-free and watertight VHF radio communication set, in addition to the ones required on the bridge.

The design assessment is based on IMO Res. MSC.48(66) as amended by IMO Res. MSC.207(81), IMO Res. MSC.218(82), IMO Res. MSC.272(85) and IMO Res. MSC.320(89).

Production and installation testing shall be carried out according to IMO Res. MSC.81(70), Part 2 as amended.

Type Examination documentation

Document Index No.12480 Rev.3 dated 2021-03-22 (Design documentation)

Document Index No. 23387 Rev. A dated 2021-03-01 (Alternative Polyester Resin ETERTSET 2929PT).



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Tests carried out

Tests are documented in accordance with recommendation on testing of Lifesaving Appliances, IMO Res. MSC.81(70) Part 1, as amended by IMO Res. MSC.226(82), IMO Res. MSC.274(85), IMO Res. MSC.321(89) and IMO Res. MSC.323(89) and IMO MSC/Circ.1006.

Marking of product

The product is to be indelibly marked with name and address of manufacturer, boat model and serial number, month and year of manufacturer, number of persons approved for and operational restrictions, if any, according to LSA code item 4.4.1.2 and the MED Mark of Conformity (see page 1).

List of fast rescue boat equipment to be posted in the boat.