MAKO MARINE AFRICA	Data Sheet No:	03032RIB017866
	Product Type:	Fast Rescue Boat
	Product Designation:	6.5m MAKO Inboard RIB®

This document is the Technical Specification

6.5m MAKO Inboard Rigid Foam Collar boat

The MAKO 650 Fast Rescue Craft is an effective platform for Search and Rescue operations, developed by highly experienced naval architects. The MAKO 650 FRC has excellent reliability, maneuverability, sea keeping abilities, including low maintenance during standby and operations.

Equipped to perform the following services and duties:

- Single Point Lift – Henriksen Hook Quick Release
- Fast Rescue Boat (FRC) SOLAS
- Man Overboard Boat (MOB),
- Search and Rescue (SAR) duties
- Patrol, boarding and inspection rolls
- Safe transfer of personnel and equipment.
- Survey and work boat duties
- Diving support

The MAKO 650 FRC meets all the dimensional and design criteria and is built to the guideline of SOLAS requirements. She has a maneuvering speed of at least 40 knots (dependent of sea conditions) with 3 crew and maintaining a constant speed for at least 4 hours.

MAKO MARINE AFRICA (PTY) LTD
2 Hildalan Road; Bishopscourt; Cape Town; Western Cape; South Africa
Phone: +27 (0)21 823 0177 **Email:** info@makoafrica.com **Web:** www.makoafrica.com

MAKO MARINE AFRICA	Data Sheet No:	03032RIB017866
	Product Type:	Rigid Inflatable Boat
	Product Designation:	6.5m MAKO Inboard RIB®

Vessel Specifications:

- Type of vessel — FRC/Daughter Vessel
- Hull — Glass Reinforced Plastic (GRP)
- Collar — Closed cell foam, Hypalon lined/covered
- Engine — Volvo Penta, Diesel, Model D3-220
- Drive — Volvo Penta, Sterndrive, Aquamatic DP-S, 7.78:1, Helical spline with Propeller Kit FH4, Helical Spline and counter rotating
- Crew — Minimum 2 crew for operational requirements (launch & recovery)
- Passengers — Maximum 5 passengers
- Seating — Single suspension pilot straddle seat
- Max Speed — Minimum 38 knots with full load on calm sea
- Cruising speed — 25 Knots (Full load)
- Fuel capacity — 150 Liters min
- Range — 5 Hours min @ cruising speed (out and inbound) based on fuel consumption of 30 liters per hour.
- Storage — Palfinger Davit (on rest arm support) Loaded and fueled for operation
- Launch/recovery — Single point suspended from Davit A-frame Henriksen Hook structure & Hook Type : HMKST 3.5T
- Davit — Palfinger Marine PRHE252
- A-Frame Davit — Electro-hydraulic

Standard Equipment

- Battery charge system — Whisper WBC 12V/40A x 3 output
- Navigation Lighting — Lalizas LED FOS
- Automatic Bilge Pump — Novaraude 600Gph
- A-Frame — Stainless Steel roll bar, motor guard, self-righting cradle and safety frames
- Self-Righting Bag Setup — Bag material: PVC 1000g Cylinder: 7.8kg/6.7L White CO2 and accessories
- Blue Lights — LED Law-enforcement Light Bar 600mm BLUE RESPONDER
- Siren — Compact 100 W speaker
- Nav & Comm systems — Garmin GPSMAP
  Garmin RADAR GMR18HD
  Garmin Blue Chart g2 Vision
  Garmin In-hull transducer
  Garmin VHF Radio
- Safety Equipment — SAMSA Category C

HENRIKSEN
REDUCING OPERATIONAL RISK

SAMSA
SOUTH AFRICAN MARITIME SAFETY AUTHORITY

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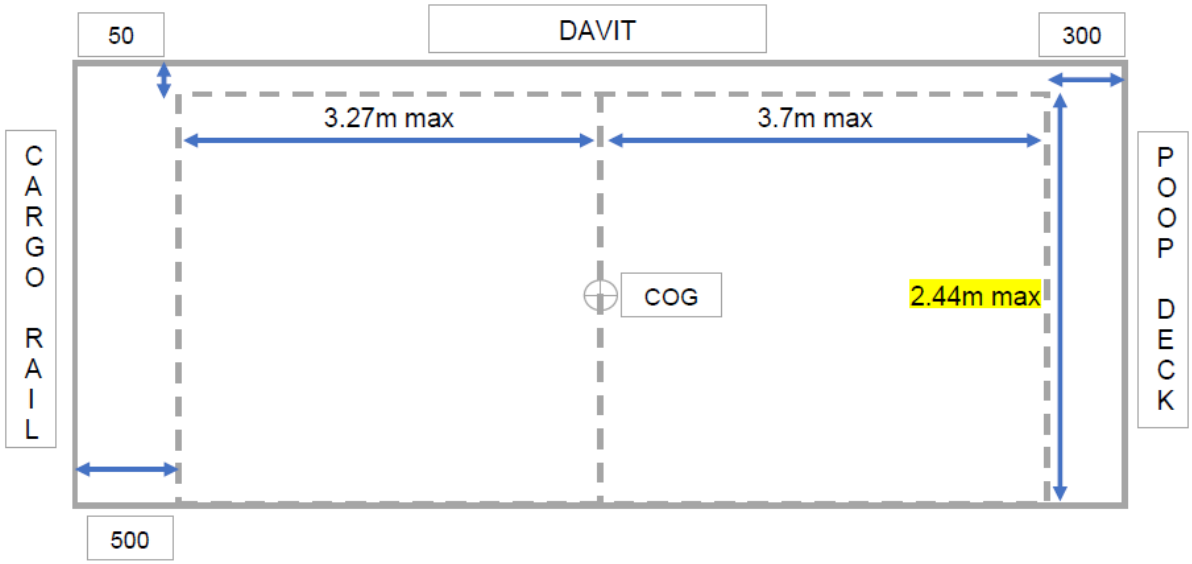
Dimensional Data

Design Envelope / Deck Space required:



Principal dimensions:

- Length 6.47m
- Width 2.44m
- Height 1.535m (Henriksen hook point)
- Refer attached GA of MAKO M001 - 19004-0070-001-G
- Weight Calculated total weight at 2000 kg (Full fuel tank and 5 pax included)

National authorities and standards:

- Marine standard (SAMSA) and Part 3: Category VIII.
- QP-08-026-B Supplier quality requirements
- All Stainless Steel material to be Grade 316
- Hull construction according to:
- ISO 12215 Part 1: Thermosetting resins, glass-fibre reinforcement, reference laminates
- ISO 12215 Part 4: Workshop and manufacturing

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Volvo Penta Spec – D3 220

Technical description:

Engine block and head
- Cylinder block and head made of aluminum
- Cylinder block with integrated bed plate
- 4-valve technology with hydraulic lash adjusters
- Double overhead camshafts
- Oil-cooled pistons with two compression rings and one oil scraper ring
- Cast-in grey iron cylinder liners
- Replaceable valve seats
- Six-bearing crankshaft
- Front-end transmission

Engine mounting
- Flexible engine mounting

Lubrication system
- Easily replaceable (insert) full-flow oil filter
- Plate oil cooler

Fuel system
- Common rail fuel injection system
- Piezo-electric injectors
- Constant power output regardless of fuel quality or temperature (5–55° C/41–131° F)
- Fine filter with water separator and water in fuel sensor with alarm

Air inlet and exhaust system
- Replaceable air filter
- Closed crankcase ventilation with oil separator and filter
- Stainless steel exhaust elbow

– Turbocharger with variable geometry

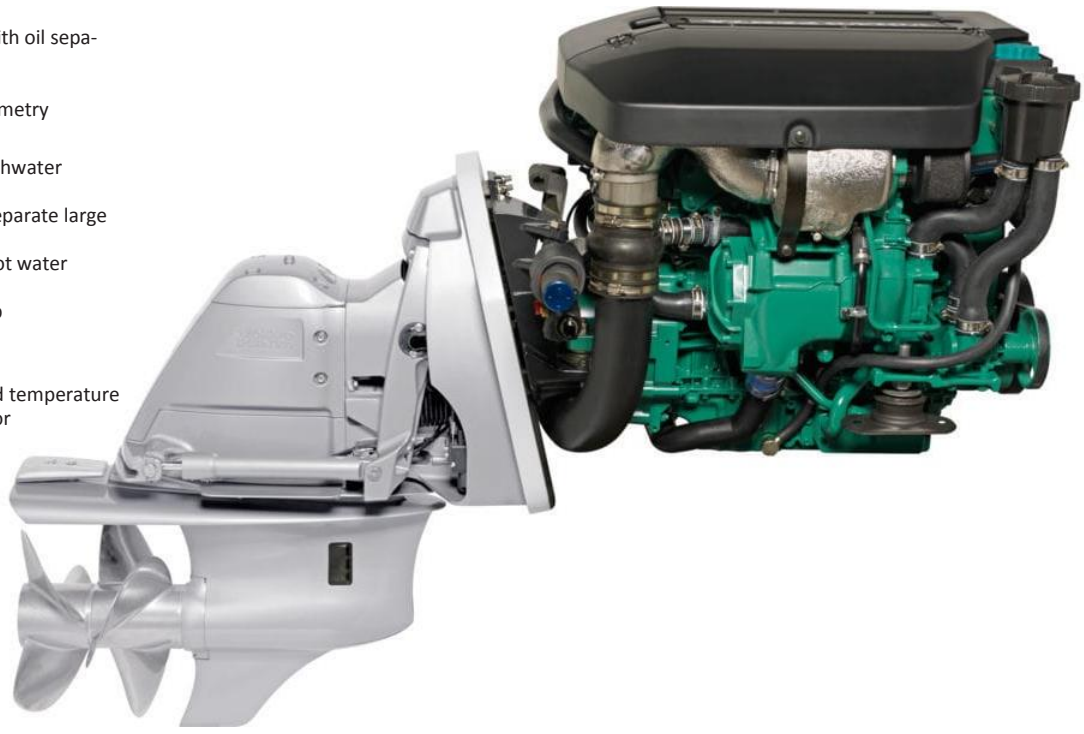
Cooling system
- Thermostatically regulated freshwater cooling
- Tubular heat exchanger with separate large volume expansion tank
- Coolant system prepared for hot water outlet
- Easily accessible impeller pump

Electrical system
- 12V one-pole electrical system
- 180A alternator, and integrated temperature compensated charging regulator
- Auxiliary stop button

Instruments/control
- Electronic shift and throttle

Technical Data

Engine designation	D3-220 I
Crankshaft power, kW (hp)	162 (220)
Propeller shaft power, kW (hp)	157 (213)
Engine speed, rpm	4000
Displacement, l (in_3)	2.4 (146)
Number of cylinders	5
Bore/stroke, mm (in.)	81/93.2 (3.19/3.67)
Compression ratio	16.5:1
Dry weight with HS45AE, kg (lb)	301 (664)
Dry weight with HS63IVE, kg (lb)	335 (739)
Rating	R5*
Emission compliance	IMO NOx (D3-220), EU RCD, US EPA Tier 3



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Solid Foam Tube Spec – SPX 33

DATA SHEET: SPX 33

Date: Jun '14
Rev. No.: 13
Page: 1 of 1

SPX is a closed cell, cross-linked expanded Polyethylene foam available in various densities, which is suitable for use in packaging, padding, buoyancy, gasketing and footwear components. The SPX product range is free from CFC's and HCFC's.

PROPERTY	UNIT	TEST METHOD	NOMINAL (1)	RANGE
DENSITY:	kg / m³	ISO 845	31	26 - 37 (2)
TENSILE STRENGTH:				
CD	kPa	ISO 1798	271	>220
MD	kPa	ISO 1798	275	>225
ELONGATION:				
CD	%	ISO 1798	189	>137
MD	%	ISO 1798	181	>136
COMPRESSION DEFLECTION:				
10 %	kPa	ISO 3386 / 1	38	26 - 49
25 %	kPa	ISO 3386 / 1	54	42 - 67
50 %	kPa	ISO 3386 / 1	106	88 - 124
COMPRESSION-SET:				
25 % 22 hr COMP / 30 min REC	%	ISO 1856	13	<17
25 % 22 hr COMP / 24 hr REC	%	ISO 1856	3	< 6
50 % 22 hr COMP / 30 min REC	%	ISO 1856	26	<31
50 % 22 hr COMP / 24 hr REC	%	ISO 1856	15	<20
MAXIMUM OPERATING TEMPERATURE: (3)	°C	INTERNAL	90	N/A
BURN RATE: (4)	mm / min	INTERNAL		<100
BURN RATE: (5)	mm / sec	ISO 3582	1.03	<1.3
SHORE HARDNESS:	00	INTERNAL	54	50 - 59
THERMAL CONDUCTIVITY:				
10 mm	W / m.K	ASTM C-518	0.037	
20 mm	W / m.K	ASTM C-518	0.037	
WATER ABSORPTION:	%	ASTM D 570-98	< 1	< 1

1. NOMINAL:
   Indicative average value.
2. DENSITY:
   Based on 90 % net bun yield.
3. MAXIMUM OPERATING TEMPERATURE:
   Defined as the temperature which will typically cause an average linear shrinkage of no more than 5 % after a 24 hour exposure period. The percentage shrinkage of a sample, having the dimensions 100mm by 100mm by 10mm, with respect to its length, width and thicknesses is used to calculate the average linear shrinkage. The degree of shrinkage depends on the material type, density, temperature, exposure time, part dimensions and cell size. Other temperatures may prove to be limiting depending on the particular conditions of each application. The above quoted value will be deemed not applicable, if any deviation from the above mentioned sample dimensions are to occur.
4. BURN RATE:
   A 10mm thick sample is used to determine the horizontal burn rate of the relevant material. The above quoted value will be deemed not applicable, if any deviation from the above mentioned sample dimensions are to occur. Test based on FMVSS302.
5. BURN RATE:
   A 13mm thick sample is used to determine the horizontal burn rate of the relevant material. The above quoted value will be deemed not applicable, if any deviation from the above mentioned sample dimensions are to occur.

PLEASE NOTE:
The above results are obtained based on the referenced test methods and are to be regarded as typical values which are not usually directly comparable with those of any product tested to other test methods, i.e.: DIN. Tests were conducted at ambient temperature and humidity unless otherwise stated.

sondor PERFORMANCE FOAMS

SABS ISO 9001 SABS ISO 14001 SABS OHSAS 18001

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Military Grade Hypalon Spec – ORCA 866

Division Produits techniques
Technical Products Division
Version n°16 du 19/01/05

ORCA® 866

Base fabric: Polyester High Tenacity **1670 dtex – 1500 deniers**

Coating : Ext Chlorosulfonated Polyethylene (CSM) / Polychloroprene (CR)
Int : Polychloroprene (CR)

Specifications	Standard-Test	Direction	Result *(Imperial)*	*Result (Metric)*
Surfacic Mass	*NF EN 2286-2* *FSTM 191/5041*		44,24 ± 4,42 oz/yd^2	1500 ± 150 g/m^2
Tensile Strength	*NF EN ISO 1421* *ASTM D 751 / B*	*CH (W)* *TR (F)*	≥ 561,8 lbs/in ≥ 516,9 lbs/in	≥ 500 daN/5cm ≥ 460 daN/5cm
Tear Resistance	*NFG 37 128/A* *ASTM D 751 / B*	*CH (W)* *TR (F)*	≥ 74,19 lbs ≥ 78,68 lbs	≥ 33 daN ≥ 35 daN
Permeability (Helium) Zeppelin Test	*NFG 37 114*			≤ 2,5 l/m^2/24h
Peeling Test Adhesion	*NFT 46008* *ASTM D 751*		≥ 16,85 lbs/in	≥ 15 daN/5cm
Low Temperature Resistance	*NF EN 1876-2* *ASTM D 751*		≤ -4 °F	≤ -20 °C
Heat Aging 7 days at 158 °F (70°C)	*NFG 37 105*		Mechanical prop. Unchanged	
Hydrocarbon Resistance	*NFJ 37 825*		Mechanical prop. Unchanged	

Pennel & Flipo
France

Standard width : 57 in – 145 cm (edge cut)
Standard colours : 16 colours, please refer to the ORCA® catalogue
Other colours on request.

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Bon Voyage

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