



MONTMONTAŽA – GREBEN d.o.o
Vela Luka, Croatia



Ident.No. 1008784

TECHNICAL DESCRIPTION

FISHING BOAT, type: RB23-S

October, 2003.



1. GENERAL

1.1 Type and function

This specification contains the requirements for building the multi-purpose vessel for which the hull has been specifically designed to carry out the following fishing activities: - stern trawling
- purse-seining

1.2 Principal particulars

Length over all	23,19 m
Length on DWL.....	21,04 m
Breadth	6,86 m
Depth	3,70 m
Midship draft	2,97 m
Max. draft on the stern	3,28 m

Accommodation

2 x 3 berth cabin	6 men
1 x 2 berth cabin	2 men
<u>1 x 1 berth cabin</u>	<u>captain</u>
Total	9 men

Capacities

Fresh water tank	10 m ³
Fuel oil	37 m ³
Fish hold	80-85 m ³

Performance

Main engine	approx. 270 kW
Speed	10 +/- 5% knots
Autonomy	approx. 20 days
GRT.....	118,65
Ship in ballast condition with equipment	95,00 t
Ship with full catch and 50% stores	195,00 t
Freeboard amidships	0,80 m

1.3 Layout

The vessel has a continuous main deck with closed forecastle. The space under the forecastle deck is divided into the crew's cabin, the galley, the mess room, sanitary space and the pantry. The wheelhouse is located on the forecast deck. There is also the engine room skylight, anchor windless with anchor, spare anchor, self-inflatable life rafts, and emergency exit from accommodation, rope baskets, bitts and chocks. On the main deck the fishing gear, fish hold hatch, pantry hatch and steering gear room hatch, bitts, hydrants and the other deck equipment are installed.

Watertight bulkheads into the following spaces divide the hull:

- Stern peak with two fuel tanks
- Fish hold
- Engine room with two fuel tanks
- Fore peak with fresh water tanks



The main deck is protected by 1m height bulwark with the required number of water drain outlets. Forecastle deck is protected by 1 m high rail with bars. The vessel's appearance can be seen on the General Arrangement, Reg. No.1.111.758, which is the component part of this Specification.

1.4 Classification and testing

The vessel, including the hull, main and auxiliary machinery, electrical outfit etc. will be built under the survey by Croatian Register of Shipping or one of major world's register of shipping (BV, GL,DNV,...). Safety regulations will be applied as required by the international institutions and/or national authorities concerned. On complete, the vessels will be subjected to: - Trials

- Speed test on measured mile
- Hauling force test

A technical sea trial trip shall take place before delivery, long enough to enable all necessary test to be held. The speed test on measured mile will be carried out with fully equipped vessel, with full fuel and water tanks and with nine crew members on board. Condition: sea state up to 2 , wind up to 2 B, deep water. Builders shall demonstrate the complete workability of the vessel, its main engine and reduction gearboxes, auxiliaries, generators, etc. The tests to be conducted in presence of representatives of owner, classification society and other regulatory bodies, where this is normal practice.

1.5 Stability

Builders guarantee for good stability in all sea going conditions. Builders will prepare and submit to the Owner and the regulatory bodies a detailed stability study of the vessel.

1.6 Documentation and certificates

Each vessel will be delivered with the following documentation and certificates:

1.6.1 Documentation: outline specification, wiring diagram, piping scheme, docking plan

1.6.2 Certificates:

Certificate on ship's navigation stability
Cargo gear register
Stability verification certificate
Survey and control book
International load line certificate
Safety radio equipment certificate
Safety construction certificate
Hull and machinery certificates
Plus other essential certificates
Compulsory according to class requirements

All pertinent certification and/or documents covering the indicating compliance with requirements shall be obtained by the builder and distributed as directed. Costs for obtaining all certificates shall be included in the builder's price.



2. HULL STRUCTURE

2.1 Material of construction

Superstructure, deck, bulkheads and wheelhouse are made of height quality marine grade steel. All the materials used are of good quality, supplied by known manufacturers and certified.

2.2 Hull arrangement

All structural arrangements and details is to be approved by classification society. Ship to have transverse frames.

2.3 Painting

The decorative coat of the hull shall be white, the deck shell is light green and the superstructure and the wheelhouse will be painted white (or acc. to customer's request). The underwater hull surface will be protected with two coats of about 80 microns wet, of base paint and one coat of about 150 microns wet, of anti fouling paint. All metal parts of equipment on the vessel will be protected with two layers of base coating and two layers of yellow topcoat. Inside of the hull shall be painted white as well as the fore peak, aft peak and the fish hold. The engine room shall be painted in light gray and the engines light green. All wooden parts shall be done in standard transparent marine enamel.

2.4 Marking and fishing vessel

The name and port of registry of the vessel shall be marked on each side of the vessel stern. The markings shall be of adequate size printed in contrast colour.

2.5 Cathodic protection

An adequate number of zinc anodes are fitted on the vessel's hull in order to protect the underwater hull and equipment.

3. PROPULSION

3.1 General

All machinery to be of first class marine type and the installation to be laid out for easy maintenance. Variations in type and size of equipment will be limited to the best possible way. Spare parts as required by Classification Society.

3.2 Engine room equipment

Main engine	1
Auxiliary engine	2
General service pump	2
Fuel transfer pump	1
Cooling water pump, Sanitary pump	1 + 1
Fresh water pump	1
Main distribution board	1
Hydraulic oil tank, Lubricating oil tank	1 + 1
Fuel tanks	2
Work table	1



3.3 Main engine

In the engine room, approx. 270kW continuous rating, marine diesel main engine will be installed. The engine builders will deliver the following accessories along with the engine:

Exhaust silencer & expansion bellows for exhaust,
Electric starting motor, Alternator 24 V DC,
Duplex fuel oil filter, Lube oil cooler for M.E. and gearbox, and lube oil duplex filter, Built in pumps for lube. oil cooling water and fuel,
Alarm and safety contacts, all wired to a junction box, Instrument panel for bridge mounting,
Loose extra expansion tank (if necessary), Standard tools & Spare parts according to class rules.

3.4 Gearbox

The main engine will be coupled to reverse-reduction gearbox. The gearbox will be operated hydraulically and will have reduction ratio about 4,5:1. This reduction ratio ensures the optimum relation between propeller size and thrust.

3.5 Propeller and shaft

The propeller shaft will be of stainless steel. The total length of this shaft will be approx. 10m. The main engine will drive manganese bronze fixed propeller. The tail shaft will be made of steel of appropriate hardness according to the class requirements.

3.6 Remote control propulsion

The main engine and reverse reduction gearbox will be controlled by a mechanical remote control system from the wheelhouse.

4. **AUXILIARIES**

4.1 Auxiliary engine

The vessel is provided with two 45 kVA auxiliary engines, each of 3 x 380/220 V 50 Hz. Parallel operation is possible. The diesel engine is equipped with: Electrical starting equipment, Manual starting equipment, Keel cooling with freshwater, Lube oil and fuel oil filters, Alarms and instruments.

4.2 Exhaust gas system

The exhaust gas system from the main engines and the auxiliary engines will be laid through the casing up to the top of the funnel. The exhaust pipelines equipped with silencers will be sheathed with asbestos - free insulation materials.

4.3 Fuel oil system

The fuel oil lines to be made of steel pipes and fittings. Valves to be made of cast iron with bronze outlets. The fuel oil piping system will be consisted of pipelines from all fuel tanks to the sealing tank and return lines to the fuel tanks.

4.4 Fresh water system

A fresh water pump will be installed in the engine room. This pump will have a capacity of 1800 lit/hour at pressure height of 10 m. The fresh water lines will be made of steel or brass pipes. The system will have the following outlets: galley, shower and toilets.



4.5 Sanitary supply system

A sanitary water system (seawater) will be installed on the vessel, which will be exclusively used for flushing WC bowls. Sanitary water piping will be made of galvanized pipes. The system will have seawater hydro pack.

4.6 Cooling water system

The cooling water lines to be made of steel pipe with welded flanges. The valves to be made of cast iron.

4.7 General service piping system

The general service piping system will be used for fire fighting deck washing and toilet flushing. The piping will be made of ND 50 mm galvanized steel.

4.8 Bilge system

The bilge lines to be made of steel pipes with welded flanges galvanized after welding. The valves will be made of cast iron with bronze inserts. Two suction points to be made in the engine room as well as two suction points in the fish-hold and one suction point in the aft peak.

4.9 Seawater inlet chest

On the vessel side in the engine room to be installed suction boxes (kingston) through which all the installations to supply water for cooling, general service - fire extinguishing are connected.

4.10 Seawater hydro pack 8 lit.

Maker type, capacity 30-40 l/min, at 10-30 M.W.
Sea water hydro pack driven by an el. motor of 0,75 kW, 380 V.

4.11 General service pump

Maker type....., capacity 4 l/s at 50 M.W.C. and 2200 R.P.M.
A fuel oil transfer pump driven by an el. motor of 6 kW , 220V/ 380V.

4.12. Fuel oil transfer pump

Maker type....., capacity 2 l/s at 15 M.W.C and 289 R.P.M.
A fuel oil transfer pump driven by an el. motor of 3,6 kW, 220V/380 V.
Hand wing pump No. 3 for fuel transfer.

4.13 Bilge pump

Makertype, capacity 4 l/s at 50 M.W.C. and 2200 RPM
A bilge pump driven by an el. motor of 6 kW, 220 V/ 380V if it is required by class, otherwise it will be self-suction type driven by the propulsion engine.

4.14. Marking etc.

All valves, cooks covers, sounding etc. to be marked with brass plates with engraved letters for easy identification.



5. ELECTRICAL EQUIPMENT

5.1 General

Electrical installation on the vessel will be installed in accordance with the one of worlds respectable register (LR, BV, GL, DNV...) Rules.

Cables of marine type are used, suitable for marine as well as for tropical condition.

5.2 Generators and el. engines

In the engine room will be installed

- two diesel generators rating 45 kVA, 3 x 380/220V, 50 Hz
- emergency battery 24V, 240 Ah
- battery for main engine starting 24 V, 240 Ah
- battery for generator starting 24V, 180 Ah

5.3 Electrical devices

Sea water pressure unit	3 x 380 V,	50Hz,	1,1 kW	1 pc
Fresh water pressure unit	3 x 380 V,	50Hz,	1,1 kW	1 pc
Engine room fan	3 x 380 V,	50Hz,	1,0 kW	2 pcs
Hydraulic oil cooling pump	3 x 380 V,	50Hz,	0,75 kW	1 pc
Fuel transfer pump	3 x 380 V,	50Hz,	3,6 kW	1 pc
El. rudder	3 x 380 V,	50Hz	1,5 kW	1 pc

5.4 Lighting

Lighting installation on the vessel is powered by 220V 50 Hz source. Emergency lighting is powered by 24 V DC.

Particulars:

El. cooker	220 V,	50Hz	5 kW
Refrigerator 250 l, Siren, Radar deflection indicator	220 V,	50Hz	
Ship alarm	24 V	DC	

Navigational lights are powered by 24 V and are in accordance with Register Rules.

5.5 Accommodation lighting

Galley, toilet	2 x 60 W
Mess room	2 x 40 W
Alley way, Seeling lamp	1 x 60 W

Captain's cabin, officer's cabin, crew's cabin:

Sealing lamp	1 x 60 W
Table lamp	1 x 40 W
Bed lamp	1 x 25 W

5.6 Lighting of workspace and deck

In the vessel's workspace the following lights will be fitted: 2 double tube 40 W fluorescent lamps in the engine room; 2 double tube 40 W fluorescent lamps in the fish hold; 1 x 60 W light in the aft peak 4 searchlight of 500 W each illuminating the deck during night fishing; On the top of the wheelhouse a navigational searchlight of 1000 W is installed.



5.7 Main switchboard

A main switchboard to be provided with control gear and meters as required by class. Control gear and measuring instruments on front of the panel.

A main switchboard will be composed of three fields :

- Generator field
- AC alternating current field
- DC direct current field

5.8 Battery - charging

For the emergency battery: one charging-rectifier 220V/24-28V, 40 A

For the start battery and automatic quick: one alternator 24-28V, 60A (on the main engine)

5.9 Shore connection

380/220 V 50 Hz according to standard. Drip charging.

5.10. General alarm bells

One alarm switch in the wheelhouse. General alarm bells:

- One in the mess room
- One in the alleyway accommodation
- One in the engine room
- One on the fishing deck

5.11 Machine alarm

One alarm system will be provide in the engine room for main and auxiliary engines and bilge level.

5.12 Installation of cables

Cables are generally supported by a cable duct and secured by stainless steel cable clips. Where cables pass through watertight bulkheads or deck a watertight type sealing gland will be fitted.

5.13 Emergency supply

24 V DC emergency lights will be fitted at strategic points in the wheelhouse, engine room, galley and mess room.

5.14 Radio and Navigation System

Under normal operation transformer rectifier will feed the radio circuit. Emergency operation will be established through battery supply by automatic changeover. All 24V consumers will be supplied by a transformer rectifier with automatic changeover to battery supply in the event of 220 V 50 Hz failure. Installation will be as indicated on the electrical drawings. An emergency radio light will be fitted.

5.15 Miscellaneous

Switchboard and distribution panel is marked by plastic nameplates with white engraved inscription in English language, plus other language if required by the owner. Spare parts for the electrical installation will be delivered as prescribed and required by the Class.

6. MAIN ELECTRONICS



- 6.1 Radar
One radar, Maker: FURUNO
Type: M-1832
Range: 36 NM, Voltage : 220V, 4Kw, display 10" CRT
- 6.2 Echo sounder
Maker: FURUNO
Type: FCV 292
Dual frequency (50/200kHz), 24VDC
- 6.3 MF/HF SSB radio telephone
Maker: FURUNO
Type: FCV 292
Dual frequency (50/200kHz), 24VDC
- 6.4 MF/HF DSC terminal
Maker: FURUNO
Type: DSC 60
24 VDC/220 VAC
- 6.5 VHF portable telephone
Maker: NAVICO
Type: AXIS 150

7. ACCOMMODATION

7.1 General

Accommodation on the vessel provides good living condition for 9 persons.

The Crew will be accommodated in the following cabins: one single bed cabin, one double bed cabin, two cabins with three beds. The other necessary rooms satisfying the crew needs are: the messroom, the galley and the bathroom with Persian toilet

7.2 Insulation and internal sheathing

The superstructure is insulated with 40 mm stone wool which ensures good heat insulation in accommodations. Internal accommodation walls will be white.

7.3 Floor sheathing

Crew cabins are sheathed with brown "Podolit" and the mess room and the wheelhouse with PVC floor. Bathroom and toilet floors are protected with rubber mats.

7.4 Furniture

All furniture, except the galley equipment, is made of wood panel plate and plywood. Table and wardrobe outside surface are coated with "Melanit"

7.5 Doors

The doors in accommodation spaces and wheelhouse shall be made of wood.

7.6 Stairs



Inlaid-anti-slip strips shall be fitted on the steps, made of steel, of the accommodation leading towards the wheelhouse. Handrails made of wood to be placed in staircase.

7.7 Windows

Side lights and windows to be as indicated on general arrangement drawing. All sidelights to have armored glass of "Securit", make or equal. Wheelhouse to have large windows to ensure maximum visibility. The windows shall be made of safety glass of "Securit" make or equal.

7.8 Mess-room and galley

The mess-room is fitted with: table, settee, two chairs.

The galley is equipped with: electrical cooker with oven, 250 l refrigerator, double sink with working surface, wall cupboards, work table, small hot-water boiler.

7.9 Store

The necessary racks with shelves

7.10 Cabin equipment

Single cabins for the captain are provided with the bed, wardrobe, writing table with the drawer and a chair. Double cabins for the officers are provided with two beds, two wardrobes, writing table with the drawer and a chair. Crew's cabins have 3 beds and 3 wardrobes.

7.11 Bathrooms

Sanitary equipment to be supplied as shown on the arrangement plans. The bathrooms are equipped with: shower-tray, shower, wash basin, oriental Persian toilet, bathroom and the toilet to be provided with appropriate ventilation

7.12 Wheelhouse

The wheelhouse is designed and built in such a way as to enable good visibility from the command post. It is consisted of the following equipment :

- One steering wheel made of wood & Rudder indicator,
- Main engine controls & alarms,
- Voice-tube connecting the engine room and the wheelhouse,
- Magnetic compass with a mirror, Radar, Echo sounder,
- One VHF radiotelephone 25W & SSB radio transmitter,
- Work table with drawer, clock, barometer, binocular, small locker with one set of international code flags, state flag.



8. VENTILATION

8.1 General

Natural and mechanical ventilation ensures adequate air circulation on the vessel.

8.2 Natural ventilation

natural ventilation will be provided in the following spaces :

- aft and fore peak
- WC and shower
- deck store

8.3 Accommodation ventilation

Accommodations have natural and mechanical ventilation. In the accommodation and the wheelhouse mechanical ventilation by means of fans will be provided. Optionally, the accommodation spaces and the wheelhouse can be air-conditioned.

8.4 Engine room ventilation

The engine room has mechanical ventilation with two fans, one for air supply and the other for air discharge. The ventilation system is provided to operate at the ambient temperature of 45°C.

9 DECK EQUIPMENT

9.1 Anchor gear

For anchoring purpose the following equipment is installed:

- hydraulic windlass, type with drums for winding and warping
- two hall anchors, 180 kg
- anchor chain $f_i=16$ mm, 120 m

9.2 Mooring arrangement

For mooring purpose the following equipment is provided :

- 4 bitts, two on bow and two on stern
- 4 eye-plates on the stern
- 4 chocks on the bow
- 2 painters $f_i=30$ mm, $l=110$ m of nylon rope, minimum braking strength 178 kN

9.3 Steering gear

The rudder is of balanced type with three frames, made of mild steel. The rudder stock is made of stainless steel, with self lubricating bearings. The steering engine is electro-hydraulic for rudder moment of 10 KNm – two cylinder type. An emergency steering gear is provided. The rudder indicator is installed in the wheelhouse.

9.4 Life-saving equipment

For life-saving purpose the following equipment is provided on the vessel: two self-inflated life rafts, each for 10 persons, with hydrostatic valves; eleven lifejackets; four life-buoys; one set of pyrotechnical means



9.5 Fire-fighting equipment

For fire-fighting purposes the following equipment is provided on the vessel:

- Four hydrants connected to the general service system.

Two hydrants are placed on the stern superstructure wall and two others on the main deck in the area structure, starboard which are put into a plastic box with the following equipment: a water hose, a nozzle and hatchet.

- Five units for dry fire extinguishing: two of them are placed in engine-room and the other three units are in the galley, the wheelhouse and the engine room entrance. The galley and wheelhouse units are filled with foam and those in the engine room and at the entrance with powder.

10. **FISH HOLD**

10.1 General

The fish hold of 75-80 m³ capacity is arranged onboard. Cooling system installed on board is consisted of:

- compressor set,
- circulation sea water pump,
- evaporators coils placed in the fish hold,
- electric switchboard.

The cooling system in combination with properly insulated fish store (polyurethane) ensures permanent keeping of -2⁰C temperature, with ambient temperature of 35⁰C. On the fish hold there is a hatch, clear opening 1200x1200 mm.

11. **FISHING GEAR**

11.1 General

The vessel will be equipped as a stern trawler and purse-seiner.

11.2 Trawl winches

Two hydraulic trawl winches are installed on vessel of the following characteristics :

- pull empty drum 29 KN
- pull mid. drum 15 KN
- pull full drum 11 KN
- the main drum capacity will be 1000m of 12mm steel wire, or 900m of 14mm steel wire rope.
- the hauling speed will be 47 - 120 m/min

11.3 Net winch

Hydraulic net winch capacity 2.5m³ of net will be provided. The winch will be controlled from forward part of winch itself.

11.4 Stern roller

A metal roller 216 mm dim. 5000 mm long will be installed on the after part of vessel, which will be used for lowering and hoisting the nets. External edge of roller will for 100 mm stick out of the most extended part of stern.



11.5 Mast

Mast will be made of steel tube 200 mm dia, with rigid steel shrouds. Main derrick will be made of steel tube 150 mm. dia capacity 25 KN with two fixing points for cargo runners. Small derrick will be made of steel tube 100 mm. Dia. capacity 10 KN.

11.6 Bipod mast

Transverse beam will be fitted on the bipod mast at a height of 2800 mm from the deck for block suspension. Each side of bipod mast will equipped with arms for bottom trawler block suspension.

11.7 Trawl door racks

Door racks will be installed on both portside and starboard side of the vessel.

11.9 Purse seine davit

Purse seine davit will be fitted on the port side of the vessel. The lead roller will be installed on starboard side, intended for anchor lighting in the line of purse seine davit. The lead sheaves for purse-seining operation will be installed in the line of net winch barrel.

11.10 Fish well

Fish well with dismountable board will be provided on the stern part of the vessel.

11.11 Power block

Power block with diameter of 600 mm will be provided.