

# BENETTI CRYSTAL 140'

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## Technical Specification

Release 15

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Valid for Hull **07**

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## 00 GENERAL

## 00.10 GENERAL INFORMATION

### 00.10.01 GENERAL

Benetti Shipyard is pleased to present the general specifications for the Crystal 140 feet length full displacement Motoryacht, with bulbous bow, twin screw propellers and twin diesel engines. The yacht has been specifically designed, and is to be used solely, for recreational purposes.

The configuration of this Yacht is a triple deck arrangement plus sun deck.

The hull and the superstructure will be built in Fiber Reinforced Plastic.

The design and construction will be strictly in accordance with the following specifications, that describe the standard Yacht version.

The present Technical Specification, named Specification in the following, is referred to the General arrangement BY140'STD 0101 rev.18.

In the Specification, where some drawings are mentioned, it is intended that they are Benetti drawings.

Any Owner request of upgrading/modification to the Specification, to the General arrangement and to the drawings, will be evaluated and quoted accordingly if feasible.

### 00.10.02 PARTIES

The Builder:	Azimut Benetti S.p.A, Div. Benetti.
Exterior and Concept Designer:	Righini Design.
Interior Concept Designer for Owner's and guests areas:	Zuretti Interior's Designers.
Interior Concept Designer for wheelhouse, crew accommodation:	Azimut Benetti S.p.A Technical Department
Naval Architect:	Azimut Benetti S.p.A, R&D Department and Div. Benetti Technical Department
Engineering:	Azimut Benetti S.p.A Technical Department

## 00.20 DESIGN AND PERFORMANCES

### 00.20.01 MAIN CHARACTERISTICS

Length overall:	137' 7"	41.935		m	
Waterline length at full load:	116' 6"	35.52		m	
Beam (overall excluding rubbing strakes):	28' 7"	8.80		m	
Beam overall:	29' 8"	9.05		m	
Draft at half load (even keel):	7'	2.14		m	approx
Draft at full load (even keel):	7' 6"	2.28		m	approx
Displacement light ship:		303		t	approx
Displacement half load:		343		t	approx
Displacement full load:		378		t	approx
Gross tonnage (ITC '69):		<500		GT	
Total fuel oil capacity:	15,322	USG	58,000	litres	approx
Total fresh water capacity:	2,113	USG	8,000	litres	approx
Accommodations for Owner & guests:	12			persons in 6 cabins	
Accommodations for crew:	7			persons in 5 cabins	

### 00.20.02 HULL DESIGN, STABILITY

Hull is designed on the basis of experience on previous similar Yachts, to have the appropriate seakeeping, manoeuvrability and general handling characteristics.

Tank tests have been performed for the Series at the "Dipartimento di Ingegneria Navale di Napoli" Model Basin.

The Yacht is to float level and true to her waterline in the full load condition. A tolerance of  $\pm 0,30$  m on the design LBP for the trim will be acceptable.

A Stability information booklet containing the stability characteristics of the Yacht under standard load conditions (lightship, full load/departure and 10% load/arrival) will be prepared according to the RINA Rules for Pleasure Yachts.

The standard loading conditions for stability calculations are defined in the following way.

- Full load / departure condition for stability calculation:
  - fuel oil and fresh water tanks at 98% of maximum capacity, with max free surface correction,
  - sewage and greywater tanks at 10% of maximum capacity, with relevant free surface correction,
  - full number of passengers and provisions at 100%.
- 10% load/ arrival condition for stability calculation:
  - fuel oil and fresh water tanks at 10% of maximum capacity, with relevant free surface correction,
  - sewage and greywater tank at 90% of maximum capacity, with relevant free surface correction,
  - full number of passengers and provisions at 10%.

An Inclining Test and/or Lightweight Check will be carried out by Shipyard, according to RINA Rules for the Classification Yachts criteria, in order to establish the Yacht lightship weight and center of gravity position.

Owner's supplies up to 5 metric tonnes (see para 10.01.01) will be allowed and will be considered in the lightship condition for stability calculation (to be considered in performance calculation displacement).

Water inside the bathtub is included in all loading conditions for stability calculation (not to be considered in performance calculation displacement).

An extra weight of 5 metric tonnes will be taken into account in stability calculation as yacht growth margin (not to be considered in performance calculation displacement).

### **00.20.03      PERFORMANCES**

Max speed:	15 knots.
Speed at 85% of max power:	14 knots.
Range at 11 knots calculated using two engines and one generator working at 75% of max power, 95% of fuel oil capacity overflow excluded:	4,000 nautical miles.

The above performances will be tested during Sea trial under the following conditions:

- wind not exceeding Beaufort scale 1, with wave height < 0.2 m,
- in water with a depth of more than 75 m,
- yacht evenly trimmed fore and aft, and athwartships,

- clean hull,
- stabilizer fins operating,
- half load; the displacement at Sea trial will correspond to the half load condition as defined at 00.20.02, extra and options excluded; liquids inside the tanks may be adjusted to obtain that displacement and the even keel.

It should be noted that all power, speed and range figures specified are based on the ambient conditions as stated by the main engines and generators Manufacturers.

#### 00.20.04 NOISE AND VIBRATION

Benetti has performed a complete noise and vibration study finalized to control the relevant levels in the various loading conditions.

The type and characteristics of the sound insulation will be determined on the basis of accurate calculations made to reduce the noise levels (both airborne and structural borne) to the stated values.

##### Noise requirements

The noise levels shall not exceed the following value in dB(A) in the specified areas and conditions.

One generator running and air conditioning on (primary air and fan coils at minimum speed).

<u>Area</u>	<u>Deck level</u>	<u>Anchor</u>	<u>Navigation</u>
		E.R. fans at min. speed	Two engines @ 1500 RPM E.R. fans at half speed
Aft guests cabins:	LD	45	62
Fwd guests cabins:	LD	45	58
Crew mess:	LD	48	57
Crew cabins:	LD	48	56
Main saloon (average):	MD	48	62
Galley:	MD	48	60
Owner's cabin:	MD	44	51
Panoramic saloon:	UD	45	56
Captain cabin:	UD	48	55
Wheelhouse:	UD	55	55
Aft main deck (ext. area):	MD	58	79
Aft upper deck (ext. area):	UD	56	74
Aft sun deck (ext. area):	SD	55	70



A + 3 dB(A) measurement tolerance will be accepted on the all measured noise levels.

Noise levels are to be measured in the centre of the compartment or external area, between 1.2 m and 1.6 m above the floor or deck.

Noise levels measurements are to be carried out by means of a precision grade sound level meter. This sound level meter must comply with IEC60651 and IEC 60804 Type 1 standards (or recognized equivalent standard).

Noise levels have to be recorded in dB using the weighting filter - dB (A).

The measurements shall be carried out in accordance with the following conditions:

- all doors installed and closed;
- all interior spaces to be fully decorated and finished with carpet, draperies, loose furniture in place (where applicable), etc.;
- all Owner and guest accommodation and public spaces as well crew cabins, are assumed to have carpet floor covering; all other spaces are assumed to have wooden (or equal) floor covering;
- galley extraction fan operating at lowest speed;
- bow thruster not operating;
- stabilizers operating at anchor and during navigation;
- noises transmitted, by radios, HiFi equipment and kitchen appliances, shall be avoided;
- electronic noise in the wheelhouse to be such to do not dominate the target noise levels stated for the space.

Notes:

- The data indicated in this paragraph are referred to the main engines/reduction gears configuration CAT C32 ACERT / ZF 3356 and to the General arrangement rev. 18. For different configuration they have to be verified.
- In the event that a rope cutting device is installed as option upstream the propellers, the above target noise levels in navigation will be increased by 3 dB(A) in the all lower deck spaces, and by 2 dB(A) in the upper deck and sun deck area.

#### Vibration requirements

The maximum value of the vertical velocity vibration levels, over the frequency spectrum from 5 Hz to 100 Hz, shall not exceed following values, when measured in RMS [mm/s] in the specified areas and conditions.

One generator running, and air conditioning on (primary air and fan coils at minimum speed).

<u>Area</u>	<u>Navigation</u>
	Two engines @ 1500 RPM E.R. fans @ half speed
Owner and guests internal luxury areas	2
Open deck entertainment areas	2.5
Crew area	2.5

The vibration levels must be analyzed in FFT from 5 to 100 Hz with spectral line in constant band of 0.25 Hz and Hanning window type

Vibration levels have to be measured in the centre of the specified area.

#### General test conditions

The above noise and vibration requirements are based on the following conditions to be respected during noise and vibration measurements:

- wind not exceeding Beaufort scale 1, with wave height < 0.2 m,
- in water with a depth of more than 75 m,
- yacht evenly trimmed fore and aft, and athwartships,
- clean hull,
- stabilizer fins operating,
- half load; the displacement at Sea trial will correspond to the half load condition (fuel oil and fresh water at 50%, grey water and sewage tank empty), extra and options excluded; liquids inside the tanks may be adjusted to obtain that displacement and the even keel.

#### **00.20.05 STANDARD AND WORKMANSHIP**

Outfitting and engineering details will be chosen from Benetti Library/Standard/Selection.

All the materials used and works carried out shall conform with the Benetti shipbuilding standards for this Class of Yachts.

All materials and equipment used in the construction of the Yacht will be new and suitable for the use to which they will be put.

Benetti will choose materials and equipment from a list of suitable Manufactures. The list will be delivered to the Owner's Representative before the signature of the Contract.

The selection of the Manufacturers indicated in the list for each item is at Benetti discretion. The Manufacturers, materials and equipments may be changed with equivalents one at Benetti discretion.

All materials, accessories and equipment not specifically named will be chosen from the Benetti Library/Standard/Selection.

Benetti reserves the right to change their own Library/Standard/Selection at his sole discretion.

The layout and installation of all machinery, accessories and equipment will allow easy access for routine maintenance and servicing.

The workmanship and materials may be inspected by the Owner's Representatives.

### **00.20.06 CLASSIFICATION**

The Yacht including its machinery, equipment and systems will be in compliance with the following:

- RINA Rules for Classification of pleasure Yachts C ✕ HULL • MACH Y
- Convention on the International Regulations for Preventing Collisions at Sea, 1972;
- Flag Authority requirements, additional to Class Notation and to the Specification, will be evaluated case by case and quoted accordingly, if feasible;
- as option, the Code for Large Yachts (24 m and over in load line length) in commercial use for sport or pleasure, which do not carry cargo and do not carry more than 12 passengers, the Code of Practice for the Safety of Large Commercial Sailing and Motor Vessels (LY3);
- as option, the Class Notation E Circled Commercial Yachting Service (it is compulsory in case the Yacht will be registered for charter use).

## **00.30 PROJECT MANAGEMENT**

### **00.30.01 PROJECT MANAGEMENT**

A Project Manager will be appointed by Benetti as the interface with the Owner's Representative.

Benetti will advise the Project Manager name one week following signature of the Contract.

The Owner will appoint only one Representative acting on his behalf. His name will be given to Benetti within one week following signature of the Contract.

Owner's Consultants involved, have to refer to the Owner's Representative.

Selection of materials or items of equipment to be done by the Owner and/or his Representative must be carried out in accordance with the schedule presented by Benetti to the Owner's Representative at the sign of the Contract.

The communication language will be English.

### **00.30.02 CHANGE ORDERS**

Any modification of the design, construction, furnishing, equipment, etc. which implies a change in price, weight, stability, speed, range, noise and vibration levels, delivery time and/or whatever other feature as described in the Specification and/or shown on the drawings shall only be carried out after such modifications and any related change have been agreed in writing between the Owner and Benetti on a change order form.

It should be considered that any increase of weight will be reflected in a speed and range reduction.

When changes are requested by the Owner's Representative to Benetti, Benetti shall take into consideration the Owner's Representative requests, provided the requested change is not contrary to the Specification and the request is made prior to Benetti issuing the construction drawing to the production department, placing his order or carrying out the work relevant to the request.

Benetti will be entitled to refuse any requests in the last six months before the contractual delivery.

### **00.30.03 DISCREPANCIES**

If there is any conflict between the Specification on the one hand and any plan or drawing relating to the Yacht on the other, then the Specification will prevail.

Benetti reserves the right to deviate from the Specification as part of their continuous policy of updating and improving their Yachts.

### **00.30.04 ACCEPTANCE AND DELIVERY**

After Sea trial and Quay tTests the Yacht will be delivered to the Owner afloat at Benetti Yard in a clean condition with all systems in proper working order evidenced by signing an official delivery and acceptance protocol as specified in the Contract.

### **00.30.05 TEST MEMORANDA**

Before delivery, Benetti will carry out official Quay tests and one Sea trial to verify all the systems.

The tests will be carried out according to the Test memoranda list and schedule, that will be delivered to the Owner's Representative one month before beginning.

All official tests will be executed in presence of Owner's Representative and/or Classification Society Surveyor and/or Flag Authority Surveyor where necessary.

The Owner's Representative will be invited to attend these tests and accept the relevant system when found in compliance with the Specification.

The following tests and trial will be carried out.

## 1. Quay tests

- Fuel oil system.
- Oil system.
- Fire extinguishing system in engine room,
- Sea water cooling system.
- Cold and hot fresh water system.
- Sewage and sanitary system.
- Compressed air system.
- Scuppers system.
- Engine room ventilation.
- Air conditioning system.
- Mooring capstans.
- Tender launching and haulage.
- Jet skis launching and haulage.
- Stern gangway.
- Swimming ladder.
- Doors, windows, portholes hose test.
- Stability test.
- Alarms and monitoring.
- Navigation and communication equipment set-up.
- Entertainment equipment.
- Fire detection system.
- Intercom system.
- Diesel generators load and paralleling test.
- Lighting system, internal and external.
- Batteries and battery charger.
- Shore power.
- Navigation lights.
- Noise level measurement at harbour.
- Tanks inspection before filling.
- External ceilings.

- Service lift (dumbwaiter).
- Crew interior.
- Guest interior lower deck.
- Guest interior main deck.
- Guest interior upper deck.
- Guest interior sun deck.
- Whirlpool.
- Domestic appliances.

## 2. Sea trial

- Yacht speed (measured by the onboard instruments).
- Consumption at three speeds (to define a consumption curve).
- Main engines exhaust back pressure.
- Engine controls, alarm and monitoring.
- Endurance.
- Shaft lines seal temperature.
- Manoeuvring and steering gear.
- Noise and vibration levels measurements at navigation.
- Windlasses.
- Water maker.
- Magnetic compass adjustment.
- Bow thruster.
- Stabilizer fins, underway and at anchor.
- Navigation and communication equipment.
- Crash test (from full ahead to astern engaged).

All costs in connection with the Quay tests and Sea trial will be at Benetti account.

After delivery of the Yacht, remaining fuel oil and lubricating oil in tanks will be invoiced to the Owner, at current prices at time of delivery.

## 00.40 DOCUMENTS AND DOCUMENTATION

### 00.40.01 CERTIFICATES

At the time of the Yacht delivery, Benetti shall obtain and supply the following documents and certificates necessary for the proper operation of the Yacht such as:

- Builder's Certificate, issued by Benetti;
- Interim Classification Society Certificate, issued by RINA;
- International Tonnage Certificate (1969 Tonnage Convention), issued by RINA on behalf of the Flag Authority;
- International Oil Pollution Prevention Certificate (Marpol Convention Annex I), issued by RINA on behalf of the Flag Authority;
- the SOPEP Manual, approved by Flag Authority;
- International Sewage Pollution Prevention Certificate (Marpol Convention Annex IV), issued by RINA on behalf of the Flag Authority;
- International Air Pollution Prevention Certificate (Marpol Convention Annex VI), issued by RINA on behalf of the Flag Authority.

In case of application of the LY3 Code (option), the following certificates will be supplied:

- a Letter or Certificate of Compliance, issued by Flag Authority;
- International Safety Radio Certificate, issued by delegated Body on behalf of the Flag Authority.
- International Load Line Certificate, issued by RINA on behalf of the Flag Authority.

When RINA is not authorized by the Flag Authority, the above certificates will be issued by others delegated Bodies.

### 00.40.02 DRAWINGS

Benetti will prepare drawings and carry out calculations necessary for the construction of the Yacht taking into account also the requirements of the Classification Society.

All proprietary drawings rights reserved by Azimut|Benetti S.p.A.

The drawings shall not be reproduced also partially nor in any way used for the manufacture of the component or unit illustrated and must not be released to other parties without written consent. Any infringement will be legally pursued.

The following engineering and arrangement drawings will be made available to Owner's Representatives for operational purpose.

The Shipyard may deliver such drawings in electronic format through a dedicated online system (Benetti's iOS app or alternative systems).

- General arrangement.
- Stability information booklet.
- Operating manual (as option, in case of Class Notation E Circled Commercial Yachting Service).
- Tanks capacity plan,
- Tanks capacity tables.
- Manholes plan.
- Tanks sounding and levels plan.
- Main engine base plate.
- Bilge and fire extinguishing system.
- Engine room fire extinguishing system (schematic).
- Accommodation fire extinguishing system (schematic).
- Sea water cooling system.
- Scuppers system.
- Fuel oil system.
- Hot and cold fresh water system.
- Compressed air system.
- Lubricating oil system.
- Stabilizer fins base plate.
- Bow thruster room arrangement.
- Steering gear arrangement.
- Hydraulic systems diagrams for stabilizer fins, steering gear, stern doors (these are the ones included in the Manufacturers manuals).
- Sewage and sanitary system.
- Mooring arrangement.
- Garage arrangement.
- Engine room arrangement.
- Main engines exhaust systems (shown in engine room arrangement).
- Diesel generator exhaust systems (shown in engine room arrangement).
- Shaft lines arrangement.
- Electrical wiring diagrams and cable list.
- Electric switchboard and distribution panels arrangement.



- Wheelhouse console arrangement.
- Antennas plan.
- Fire detection system diagram.
- Safety plan.
- Docking plan.
- Engine room ventilation plan.
- Air conditioning system (schematic piping and ducts).
- Navigation lights plan.
- Draft marks plan.
- External paint plan.
- Interiors Book.

### **00.40.03 DOCUMENTATION AT DELIVERY**

The following documents will be supplied to the Owner's Representative at the delivery of the Yacht:

- One set of Manufacturer manuals for engine room main machinery, stabilizer fins, bow thruster, deck equipment, air conditioning system, galley and laundry equipment, entertainment equipment, nav/comm/signalling systems. All manuals will be in English language. The manuals will be in the electronic format (pdf).
- Reports of shop tests of main engines and generators, if available, in the printed format.
- Drawings as per above paragraph 00.40.02.
- Magnetic compass adjustment report, in the printed format.
- Certificates as for paragraph 00.40.01, in the printed format.
- Sea trial report, in the printed format.

## 01 STRUCTURE

## **01.10 HULL STRUCTURE**

### **01.11.00 HULL MATERIALS**

Hull and decks will be built in Fiberglass Reinforced Plastic.

The Yacht will be constructed of a combination of foam core sandwich and single skin fiberglass construction utilising mat, unidirectional, biaxial and woven E-glass as shown on the structural drawings approved by the Classification Society. Carbon/glass fiber will be used too.

The hull and the hull side will be made by single skin fiberglass reinforced plastic.

For the lamination of structural parts, hull, deck and reinforcements, a polyester isophthalic resin will be employed.

To prevent osmosis vinylester resin will be used for the lamination of the first three external layers of hull bottom and hull sides.

Main deck will be built in cored sandwich structure by means of closed cell foam.

The mechanical and chemical properties of the laminates will be verified by material tests in accordance to the Classification Society procedures.

### **01.11.01 HULL STERN STRUCTURE**

A FRP bathing platform will extend aft of the transom above waterline for the full width. On the sides it will be integrally built with the stern section of the hull and in the center will be created by the transom door. The transom door becomes a large bathing platform when it is opened.

A beach area will be provided aft, in the centre of the Yacht accessible from the bathing platform when the transom door is open.

An access to the beach area will be guaranteed also with the transom door closed passing through technical compartment.

A FRP recess integrated in the transom door will be provided to install the Yacht name.

A garage watertight compartment will be provided on port side, between the beach area and the engine room, for the positioning of one tender (Owner's supply) and one or two jet skis (Owner's supply).

Technical rooms will be provided aft.

### **01.11.02 HULL CONSTRUCTION**

The design and dimensioning of the structure will be according to the most recent experience in design and construction of FRP Yachts for heavy duty service.

It will ensure continuous strength of the main structural members, and will optimize vibration and noise.

Hull structure will be longitudinally and transversally framed with longitudinal main bottom girders and main deck girders and transverse web frames and bulkheads. Shell and deck thickness will be according to calculations, levels of stress to be carried, and Rules.

The main fuel oil tanks will extend symmetrically from centreline keel to outboard girders, port and starboard.

The service fuel oil tanks will be located aft the engine room, below the garage compartment.

Watertight bulkheads will be provided according to the General arrangement. Such bulkheads shall be made in monolithic/sandwich FRP, using the infusion process. N° 6 watertight bulkheads will divide the Yacht in n° 7 watertight compartments.

Watertight collision bulkhead will be positioned according to the Classification Society requirements.

Opening in structures for pipes, ducts and cables ways will be properly reinforced according to the Classification Society requirements.

Stabilizer fins will be provided below guests area. The shaft will be properly supported by a local reinforcement.

Rudder and stabilizers tubes will be flanged and directly laminated to the hull bottom.

### **01.11.03 HULL BOW STRUCTURE**

The bulbous bow will be in FRP and integrated in the hull.

Two chain lockers of such a volume suitable to contain port and starboard chains will be provided forward the watertight collision bulkhead and aft the forepeak.

A FRP bow thruster tunnel will be provided and will be fixed to the hull by means of an adequate number of FRP layers.

### **01.11.05 MAIN SEA CHESTS**

In the hull bottom in correspondence of the engine room, two integral FRP seachests will be provided.

### **01.11.08 STRUCTURAL REINFORCEMENTS**

Local reinforcement into hull, deck and bulwark will be provided in areas of heavy loading such as:

- fore and aft sections, in order to allow adequate strength to resist wave action and pitching;

- heavy machinery foundations (the scantlings of supports for engines and heavy equipment shall take into account the produced vibration and the equipment Manufacturers requirements);
- shaft brackets;
- stabilizers fins;
- rudders;
- bow thruster tunnel;
- sea chests;
- hull transducers;
- anchors windlasses;
- capstans;
- bollards;
- fairleads;
- anchors pockets.

#### **01.11.10 KEEL**

The Yacht bottom structure will be composed by longitudinal stiffeners with main transverse frames sized according to the Rules. Fuel oil tanks, water tank, black and grey waters tank and bilge tank will be integral part of the bottom structure.

The structural keel will not protrude below the baseline of the Yacht and will have a structure designed to resist to the stress caused by docking.

#### **01.11.11 BULWARK**

FRP bulwark will be provided, as indicated on the Profile. It will be integrated to the hull sides.

An integrated in bulwark sofa with storage under neath and raised towing manoeuvring area each side will be provided on aft main deck.

#### **01.11.12 HULL DOORS**

The Yacht will be equipped with a transom door and a hull port side door.

The transom door will open turning down and creating a large bathing platform adjacent to the beach area.

The lateral door will open toward up to allow the launching and haulage of the tender and the jet skis.

Hull doors will be watertight according to Classification Society requirements.

#### **01.11.99 HULL MANUFACTURE**

The lamination will be made by hand lay-up process. The quality control insures the resin to glass ratio and the mechanical properties within the established limits.

The hull and the superstructures will be laminated into female moulds according to Benetti Standard.

The mould surfaces will be fair and smooth.

The moulding will be free from uneven edges and its exterior surface will be polished.

#### **01.13.01 ANODES AND SENSORS HOUSING**

Suitable housings will be fitted into the hull bottom for depth-sounder, speed transducer and other sensors.

A watertight box or a valve for each transducer will be provided as per Classification Society requirements.

#### **01.13.02 PROTECTION FROM ANCHORS AND CHAINS**

Stainless steel profiles will be fitted on the bulbous bow to prevent the paint work damaging from the anchor chain.

#### **01.13.04 REMOVABLE PLATES**

The following removable plates will be provided to assure the embarkation at an appropriate time during construction and the possible later removing of main engines, generators and others engine room machinery:

- n° 2 on main deck,
- n° 1 on upper deck,
- n° 1 on sun deck.

These plates will be bolted assuring the integrity of the deck structure.

#### **01.13.05 WINDOWS AND PORTHOLES FRAMES**

FRP porthole flanged collar will be provided integrated into the hull side.

FRP window support will be provided for glued fitting windows.

**01.13.08 PROPELLER SHAFT BRACKETS**

V type brackets will support the shafts on the stern side.

The spread angle and bracket thickness will depend on the number of propeller blades and the propeller revolutions in order to reduce structural resonance.

Shaft brackets will be provided of twin profiled arm and constructed of bronze and connected to a properly designed foundation integrated in the hull.

**01.13.09 DOUBLE PLATES AND INSERTS**

Aluminium and steel inserts will be fitted to distribute concentrated stress due to the fastening of heavy machinery and parts to the hull structure.

**01.13.10 MAIN ENGINES OVERBOARD DISCHARGE**

Main engines gas exhaust outlets will be below the water line and will have a by-pass above the water line for low speed.

Outlets will be designed to create a depression to maintain exhaust back pressure below the limit allowed by the engines Manufacturer.

**01.13.11 GENERATORS OVERBOARD DISCHARGE**

Diesel generators gas exhaust outlet will be provided passing into the FRP structure rubbing strake at waterline level.

All overboard discharges will be placed below the waterline according to the system schematics.

The hull bottom will be holed to allow the fitting of a properly sealed pipe connection.

On the hull side a grill will be provided.

**01.13.12 RUBBING STRAKE**

Rubstrakes, integrally built in FRP with the hull will be provided at main deck and waterline level as indicated on the Profile.

**01.13.14 ANCHOR CHAIN HAWSE PIPES AND POCKETS**

Hawse pipes will be of stainless steel AISI 316 L with half-round ends in anchor pockets and at deck level.

Eyebolt for each chain and quick release will be provided.

The hull will be laminated with the pockets positioned in to the mould. This will reduce gaps and allow the alignment of the pockets with the hull surface. Fixing bolts will be laminated to prevent water infiltrations.

#### **01.13.17 STRUCTURAL METAL REINFORCEMENTS (BEAMS AND PILLARS)**

Steel pillars will be fitted in the hull, connected to the structure, to properly support the decks.

#### **01.14.01 HULL BASEMENTS AND SUPPORTS**

Proper base plates will be provided to support each machinery, equipment and switchboard in engine and technical rooms.

The engine foundation will be made by poliurethane and high density PVC cored longitudinal girders on which a steel Fe 430 support will be fitted.

The girders will be an integral part of the girder system.

Adequate drip trays provided with discharge valve will be fitted under fuel oil and oil machinery and equipments subject to leakage.

Drip trays and equipment base plates in engine room and outside engine room will be in aluminium white RAL 9003 painted.

Base plates for generators, main switch board, chiller, stabilizer fins power pack will be in Fe360 white RAL 9003 painted.

### **01.20 SUPERSTRUCTURE STRUCTURE**

#### **01.21.00 SUPERSTRUCTURE MATERIALS**

The superstructure will be built with a cored sandwich structure in the decks and on the sides utilising mat, unidirectional, biaxial and woven E-glass as shown on the structural drawings approved by the Classification Society. Carbon/glass fiber will be used too.

#### **01.21.01 SUPERSTRUCTURE CONSTRUCTION**

Decks and superstructure panels, if required are both longitudinally and transversally framed with girders and beams.

The connection between the different orders of the superstructure will be obtained by means of steel bolts and flanges and an adequate number of FRP layers.

Opening in superstructure for pipes, ducts and cables ways will be properly reinforced according to the Classification Society requirements.



FRP bulwark at upper and sun deck level will be provided as indicated on the Profile. The bulwark will be lined internally with FRP.

#### **01.21.07 SUPERSTRUCTURE REINFORCEMENTS**

Local reinforcements will be fitted, when necessary, to support concentrated loads due to heavy parts and objects.

#### **01.23.02 MAIN MAST**

A FRP mast will be provided as shown on the Profile. A FRP or aluminium alloy upper part will be provided.

The mast design will include platforms and others adequate supports to meet the Antennas plan for the navigation and communications equipment as listed at Ch. 06.

#### **01.23.05 SUPERSTRUCTURE PILLARS**

Steel pillars will be fitted inside the superstructure between the first and the second order and between the second and third order.

Four visible steel pillars will be fitted in the superstructure outside, between the second and the third order.

Two pillars will be also fitted to sustain sun deck awning.

### **01.40 ASSEMBLING**

#### **01.41.00 SUPERSTRUCTURE TO HULL FASTENING**

The connection between the superstructure and the main deck will be obtained by means of stainless steel bolts and flanges and an adequate number of FRP layers according to the Classification Society requirements.

## 02 OUTFITTING

## **02.10 EXTERNAL DECKS OUTFITTING**

### **02.11.00 DECK LINING**

External decks will be planked with teak as per General arrangement and according to Benetti standard 21100 deck covering. Thickness will be 15 mm.

External stairs will be planked as per Benetti Standard 21107 external stair covering. Thickness will be 15 mm.

### **02.14.00 EXTERNAL CEILINGS**

External ceilings will be made in honeycomb sandwich panels, painted to match the superstructure color, with satin finish.

Ceilings will integrate recesses for lights and speakers, and will have removable sections to access hidden equipment where necessary.

### **02.15.00 EXTERNAL FURNITURE OUTFITTING**

External lockers will have a scupper on the drip tray around the horizontal hatches. In the technical lockers there will be a plastic grating on the floor.

Lockers used for storage of deck equipment will be Formica lining with removable shelves.

Lockers will have stainless steel fittings. Design and details will be according to Benetti Standard and/or Benetti Selection.

#### **02.15.01 EXTERNAL LOOSE FURNITURE**

Loose chairs, armchairs, tables, stools, sofas, etc. will be supplied and installed by Benetti according to the Loose furniture plans.

External loose furniture will be provided, according to Benetti Selection Range.

## **02.20 FAIRING, PAINTING AND INSULATION**

### **02.21.00 UNACCESSIBLE SPACES TREATMENT**

Void spaces where maintenance will be impossible due to the accessibility will be filled with resin compound to prevent corrosion. Refer to Benetti paint procedure for details.

## **02.22.00 TECHNICAL SPACES FLOORING**

Plastic protective grating will be laid on the floor of all deck lockers.

## **02.25.00 PAINT, GENERAL**

All interior and exterior finishes will be painted and protected.

The preparation, application of filler and application of paint will be according to Benetti painting specification.

During the painting process all items not to be painted will be covered for protection.

### **02.25.01 HULL TOP SIDE PAINTING**

The topside will be finished in polished gelcoat white colour.

A black colour strip will be painted above the water line level.

### **02.25.02 UNDERWATER HULL PAINT**

The bottom will be finished in gelcoat and an additional anti osmosis epoxidic treatment will be applied. An antifouling paint, black colour, will be applied.

### **02.25.03 SUPERSTRUCTURE PAINT**

The superstructure will be finished in polished gelcoat, white colour.

### **02.25.04 INTERNAL PAINT**

The bilges will be finished in white colour gelcoat, self levelling gelcoat or enamel painting. The self levelling gelcoat and the enamel will be applied on all the visible surfaces. In particular the enamel paint will be used on surfaces with damping treatment.

Internal surfaces of bulkheads and sides will be finished in white colour water paint, gelcoat, self levelling gelcoat or enamel painting. The visible surfaces will be finished with self levelling gelcoat or enamel painting. In particular the enamel paint will be used on surfaces with damping treatment.

Tanks top will be finished in white colour selflevelling gelcoat or enamel painting. In particular the enamel paint will be used on surfaces with damping treatment.

**02.25.07 TANK TREATMENT**

Fuel oil, oil, sewage, sanitary, bilge and sludge tanks will be coated with an adequate resistant paint system as per Classification Society requirements.

Fresh water tank will be coated with a special alimentary treatment.

**02.25.08 PIPING PAINT**

Inox, carbon steel and CuNi pipes of the welded type will be white RAL 9003 enamel painted.

Inox and CuNi of the pressfitting type, copper, PVC and polypropylene multilayer pipes will not be painted.

**02.25.09 MACHINERY AND OUTFITTING EQUIPMENT PAINT**

Main machinery metal base plates (main engines, diesel generators), bilge and fire pumps will be white RAL 9003 enamel painted.

Main engines, generators, switchboards and auxiliary machinery will be white RAL 9003 painted.

Nuts and bolts, gaskets, inox parts, copper stripes, piping insulation, auxiliary machinery base plates and drip trays will not be painted.

**02.27.02 EXHAUST GAS PIPES INSULATION**

The hot sections of exhaust pipes of main engines will be insulated to avoid thermal transmission and stainless steel polished covered.

**02.27.03 PIPES INSULATION**

Hot water pipes will be insulated.

Chilled water pipes will be insulated inside and outside engine room. Maximum care will be taken to ensure the insulation continuity in order to avoid any condensation.

Fresh water filling lines will be insulated too.

**02.27.04 AIR CONDITIONING DUCTS INSULATION**

Air conditioning supply ducts, when in rectangular section, will be insulated with proper material in order to reduce heat/cold loss and avoid condensation when is necessary.

Round section supply ducts will be of the pre insulated type when is necessary.

### **02.27.05 RESILIENT MOUNTING OF BULKHEADS, CEILINGS AND PARTITIONS**

Partition panels of ceilings and bulkheads in general will be installed by using resilient mountings system to avoid vibrations transmission from the structure to the interior.

Floating floors - plywood panels will be fitted on a structural frame fixed onto the deck. Between panels and frame structure will be fitted elastic material, according to the location. Hatches, traps and removable sections will be made where required, hatches will be fitted with proper lifting devices.

### **02.27.07 VIBRATION DAMPING TREATMENT**

Vibration damping treatment will be applied in the most critical part at Benetti discretion to minimize the transmission of vibration and structural born noise.

### **02.27.08 SAND FILLED PILLARS**

To avoid vibration transmission and resonance, pillars in the engine room and aft part of the Yacht will be sand filled.

### **02.27.09 FIRE AND COMFORT INSULATION**

Yacht insulation will be carried out taking into account fire and comfort requirements and will be installed on board according to insulation plans and details developed by Benetti.

### **02.27.10 ENGINE ROOM**

The insulation of the engine room will be carried out in compliance with the Benetti Standard to guarantee the A-30 class structural fire protection according to RINA requirements and carefully applied.

Additional material will be added where necessary to improve comfort levels, thickness and weight will be chosen according to the noise and vibration study.

Fire and comfort material inside the engine room will be of non combustible type.

The insulation material will be covered by a vapour barrier foil.

The hot sections of the exhaust pipes will be insulated.

Engine room ventilation casings will be properly reinforced and insulated to achieve the minimum noise transmission to the adjacent accommodation.

## **02.30 NAUTICAL AND DECK EQUIPMENT**

### **02.31.01 RUDDER BLADES AND STOCKS**

Two spade rudders will be provided, made of AISI 316, sized to ensure good evolution capabilities at low speed. They will have filling and drain plugs and will be pressure tested.

Rudder stocks will be made in Marinox 17, sized according to Classification Society requirements.

The rudder skeg will be mounted with a minimal clearance to the rudder blade.

### **02.31.02 RUDDER HOLES**

Rudder tubes of suitable diameter will be connected to the hull bottom with flange and filling with chockfast orange for any tolerance.

### **02.31.03 RUDDERS BEARINGS**

Rudder bearings at lower end of rudder stocks to be made of bronze material.

### **02.31.04 RUDDER MACHINERY, PUMPS AND ACCESSORIES**

The steering gear will consist of two rams connected to the rudder stocks and connecting rod.

Rudder angle will be limited to 35 degrees each side, with mechanical stoppers on the rudders.

The hydraulic power pack of the rudder system will be fitted in the aft technical room. It will have two electric pumps and one oil tank divided in two separate compartment inside. It will be equipped with filters inside the tank, solenoid valves, relief valves, oil pressure, level gauges and a low level tank alarm as for Class requirements for commercial use.

The pipe connections to the various parts of the system will be of high pressure resistant material.

### **02.31.05 RUDDER CONTROL SYSTEM**

Rudder angle indicators will be installed at all steering positions.

Rudders will be controlled by a steering wheel and electric tiller located in the Wheelhouse and a hand pump with steering wheel at the emergency steering station.

### **02.32.01 ANCHORS WINDLASSES**

Two electric vertical type windlasses 380 VAC, 3 phases, 5,500 W will be provided with a wildcat gypsy and capstan.

The location is shown on the General arrangement. The windlasses will be raised from the deck level and locally controlled.

### **02.32.02 CAPSTANS**

Two electric foot operated capstans will be fitted on aft deck as shown on the General arrangement.

The capstans will be raised from deck level on a dedicated manoeuvring area and will be capable to rotate in both directions.

### **02.32.03 MOORING BOLLARDS**

Mooring bollards in polished stainless steel AISI 316 L will be provided. They will be connected to the main deck, four on the forward area, four on the aft and two in the midship integrated in the fairleads.

Bollards will be chosen from the Benetti Library.

### **02.32.04 TOWING LINES**

The following lines will be supplied:

n° 1 towing line of 100 m in length, 40 mm diameter, n° 8 strands, two ends splice, minimum breaking load 18 t white color.

Material: polypropylene.

### **02.32.06 FAIRLEADS**

Two horn type fairleads will be provided each side bulwark for side spring mooring. They will be made in polished stainless steel AISI 316 L. They will be integrated with bollards.

### **02.32.07 ROLLER FAIRLEADS**

Four polished AISI 316 L stainless steel roller type fairleads will be provided on the forward mooring area.

Four polished AISI 316 L stainless steel roller type fairleads will be provided on the aft mooring area.



**02.32.08 ANCHORS**

Two galvanized steel fully balanced SHHP (Super High Holding Power) anchors of 219 kg each will be provided complete of superbox swivel.

**02.32.09 MOORING LINES**

The following lines will be supplied:

- n° 4 mooring lines of 50 m in length each, 30 mm diameter, n° 8 strands, one end with eye splice with skin, one end splice, minimum breaking load 18 t black color. Material: polyammyde.
- n° 8 fenders lines of 6 m in length each, 14 mm diameter, n° 3 strands, one end with eye splice, one end splice. Material: polyammyde.

**02.32.10 CHAIN ROLLERS**

Polished stainless steel rollers will be fitted for each anchor in order to prevent friction at the upper end of the hawse pipes.

**02.32.11 CHAIN STOPPERS**

Stainless steel stoppers will be installed for each anchor to hold in position the anchors against the anchor pocket. Size and type will be chosen from Benetti Library.

**02.32.13 CHAIN QUICK RELEASE**

Anchor chains will be connected to the hull by a quick release system, to allow safe release when in emergency conditions.

**02.32.14 ANCHOR CHAINS**

Five lengths of galvanized studlink chain will be supplied for each anchor. Chain diameter 17.5 mm in special steel grade U2 with common links only.

**02.33.01 FLAG POLE**

A wood flagpole will be fitted on the stern, as per Benetti Standard.

**02.33.02 FORWARD MAST**

A painted aluminium or FRP forward mast will be provided on the external top of the wheelhouse as shown on the Profile. It will have the necessaries bases for the antennas,

navigation lights, searchlight, and fog horn. The mast will be bolted at the superstructure.

### **02.33.03 JACK STAFF**

A wood jack staff will be fitted on the bow, as per Benetti Standard.

### **02.34.01 BOAT HOOKS**

Two varnished wood boat hooks, 2.6 m length will be provided.

### **02.34.02 ROPE LADDER**

One rope ladder will be provided for pilot boarding.

### **02.34.05 YACHT BELL**

One chromed bronze bell will be provided, diameter 300 mm. The bell will be engraved with the Yacht name and year of delivery and fitted on the fore deck.

### **02.34.06 SIGNAL SHAPES**

Three balls and one diamond, black colour and of folding type will be provided.

### **02.34.08 NAUTICAL INSTRUMENTS**

A round clock, barometer and a thermometer will be installed in the wheelhouse.

### **02.35.00 PROTECTIVE FABRIC COVERS**

Protective covers for anchor windlasses, bell, horn and search light will be provided in white "sky".

Covers for whirlpool on sun deck, sun bathing cushions and external tables will be provided in white "sky".

Sun screen black colour for wheelhouse windows will be provided.

## **02.40 WINDOWS, DOORS AND HATCHES**

### **02.41.02 HULL AND SUPERSTRUCTURE WINDOWS**

Size and position of windows will be according to the General arrangement. They will be made from tempered or stratified toughened glass, thickness to conform to Classification Society and Flag Authority requirements to operate at sea without storm shutters.

Glass will be fixed and glued to FRP frames as per the Benetti Standard.

Glass color will be bronze. The wheelhouse front and side windows will be clear. The wheelhouse front windows will be heated with internal electric resistance.

No windows can be opened.

### **02.41.03 WINDOW WIPERS**

Heavy duty electric window wipers will be fitted on the forward wheelhouse windows, suitable for marine use, with a selector switch for intermittent running.

A fresh water spray, operated by a push button solenoid valve mounted on the wheelhouse console, will be provided for the front windows.

### **02.43.01 WATERTIGHT DOORS**

One sliding fire watertight door, will be provided to allow proper passage in the guests compartment below the main deck. It will be monitored and controlled from the Wheelhouse, connected to main and emergency power and will have an additional independent source of power.

Hinged watertight doors (open and closed position monitored in the wheelhouse) will be installed on compartments usually not frequently accessed during navigation. According to Class Society requirements, they will have to be permanently closed at sea. They will be properly insulated.

### **02.43.02 WEATHERTIGHT DOORS**

External doors of wheelhouse (sliding), main deck port side corridor (hinged) engine room (hinged) and external sun deck superstructure (pantograph type) will be weathertight as for the Classification Society requirements. The size and position will be according to the General arrangement.

All doors can be secured in the open position.

### **02.43.03 FIRE DOORS**

Fire doors will be installed where required by Classification Society.

### **02.43.04 EXTERNAL SLIDING DOORS**

One automatic electrically sliding (internally) door in stainless steel AISI 316 with tempered glass will be fitted at main deck starboard side corridor activated by means of radars (inside & outside) and pushbuttons.

One door in stainless steel AISI 316 with tempered glass will be fitted at the aft main deck saloon. The door will have one fixed part, one semi fixed part and one automatic electrically operated part activated by means of radars (inside & outside) and pushbuttons.

All the doors will be weathertight according to the Classification Society requirements and secured in open position.

The size and position will be according to the General arrangement.

### **02.43.05 GLASS VERANDA**

One sliding curved veranda in stainless steel AISI 316 with tempered glass will be fitted at the aft end of the upper deck.

This veranda will have the two first central doors (one of each side) electrically operated by means of radars (inside & outside) and pushbuttons. The remaining doors will be manually operated.

The veranda will be weathertight according to the Classification Society requirements and secured in open position.

The size and position will be according to the General arrangement.

### **02.44.01 EXTERNAL WEATHERTIGHT HATCHES**

Weathertight hatches will be provided to access to lockers, filling stations and storage areas from outside. Hatches will be built in aluminium or FRP, details according to Benetti Standard, with stainless steel concealed hinges and stainless steel knobs.

Weatertight access will be provided to access from outside to compartments below the main deck. They will be installed with the sill height required by the Class Society, and will have the appropriate closing dogs to ensure weatertightness when closed.

Small hull hatches will be provided in the stern near the gangway hatch to run through the hull shore power cables, fresh water connection and phone cables.

Hinged doors will be built in to the bulwarks, the size and position are indicated on the General arrangement. They will have stainless steel hardware and concealed hinges.

#### **02.44.02 INTERNAL HATCHES**

Hinged hatches will be used for access to small compartments or as secondary escape from lower decks. They will be watertight where required.

Access panels for painting and maintenance will be provided for each of the stabilizer fins compartments.

#### **02.45.01 MANHOLES**

At least one manhole for each tank will be provided. Manholes to be selected from Benetti Library.

Handles will be fitted to the manholes.

#### **02.46.02 HULL DOORS**

The stern hull door will be hydraulically operated and when open will create a bathing platform.

Folding cleats will be provided on the edge of the door for tender and water toys mooring.

### **02.50 STAIRS, LADDERS, GANGWAYS, TECHNICAL FLOORS**

#### **02.51.01 EXTERNAL STAIRS, NOT INTEGRATED IN STRUCTURE**

A removable access ladder (and/or foldable steps) as per Benetti Library will be provided on the mast for equipment inspection and maintenance.

#### **02.51.02 INTERNAL STAIRS**

Internal stairs in crew and guest areas will be made in plywood.

#### **02.52.01 GANGWAY**

A three stage telescopic retractable stern gangway will be provided, capable to move up and down 15°. It will be hydraulically operated and connected to the power pack unit, used also for other equipments.

The gangway will extend 5.0 m with a minimum walking of 520 mm and will be made in polished stainless steel AISI 316.

Removable handrails will be provided at both sides and made in polished stainless steel. Walking surface will be in grating teak and light with optical fiber.

A bell will be installed on the first stanchion at the entrance.

The control panel will be recessed into bulwark next to the gangway and radio operated remote control system for extension and retraction will be supplied.

#### **02.53.02 MANUAL SIDE BOARDING LADDER**

One removable anodized aluminium alloy n° 8 steps ladder 19" (480 mm) walkway will be supplied for side access.

The ladder will be stored in a dedicated pocket on the main or upper dek.

The steps will be made in teak.

#### **02.53.04 AUTOMATIC SWIMMING LADDER**

One electro hydraulic AISI 316 stainless steel swimming ladder stored inside on aft port side of the bathing platform will be provided.

Two automatic raised stainless steel stanchions will be provided on top of the swimming ladder.

The steps will be made in teak.

#### **02.54.00 FALSE FLOORS**

In accommodation spaces, where the floor is not laid on a structural deck, a false floor will be installed supported by painted AISI 304 steel or aluminium pillars and angle bar frames.

#### **02.54.01 ENGINE ROOM FLOORING**

Knocked plating with raised edge will be provided. They will be of the lean on type. Neoprene gasket will be mounted between the plating and the supporting angle bars.

Removable sections will be made in way of valves, filters, etc. where quick manoeuvring or access is required.

The supporting structure will be in white painted RAL 9003 aluminium. The plating will be in anodized aluminium of the titanium colour.

### **02.60 HANDRAILS, PILLARS, SUN AND WIND PROTECTIONS**

#### **02.61.00 EXTERNAL METALLIC HANDRAILS**

Polished stainless steel handrails will be fitted as shown on the General arrangement on

bulwarks and stairs.

The height and the spacing of the horizontal bars of the handrails will be according to the Classification Society requirements.

#### **02.62.00 ENGINE ROOM AND TECHNICAL SPACES HANDRAILS**

Removable polished stainless steel handrails will be fitted around the engines and floor plates. Details will be according to Benetti Standard.

#### **02.63.02 AWNING**

A motorized awning will be fitted on the sun deck, forward of the mast, to cover the dining table and area bar as showed in the General arrangement.

Awning will be supported by a FRP structure.

#### **02.64.01 WINDSCREENS**

A windscreen, as shown in the General arrangement, will be fitted in the front part of the sun deck, made by plexyglass panels supported by stainless steel frame.

### **02.70 LIFTING DEVICES**

#### **02.71.00 DUMBWAITER**

A dumb waiter connecting main deck, upper deck and sun deck will be installed.

It will be of the electric winch type, capacity 50 kg, trunk dimension 600 mm x 750 mm, service speed 0.20 m/s about, box in satin steel AISI 304, access doors at decks of the guillotine type opening.

#### **02.73.01 CRANES FOR TENDERS AND JET SKIS**

One electro hydraulic painted aluminium alloy crane will be provided in the garage for tender and jet skis handling.

The crane will be of the telescopic type, with a rotating arm to operate the jet skis.

Tender capacity will be 2,000 kg, jet ski capacity will be 400 kg.

The crane will be supported by the hull structure.

A remote control system for extension, retraction and lifting (up & down) will be supplied.

## **02.75.01 EXTERNAL RAILS**

Anodized aluminium track sections will be fitted on either side of the Yacht on the outside of the full beam accommodation. The rails will carry cars on each side, so that fenders can be secured to them or for use as straps attachment points for crew to clean the outside.

## **02.80 VARIOUS OUTFITTINGS**

### **02.81.00 CATHODIC PROTECTION**

Sea chests, piping and equipment in contact with sea water will be connected by copper wire or tape to zinc anods fitted into the transom and mid hull below the waterline level for cathodic protection.

A sintered bronze ground plate will be fitted externally.

A copper type ring of suitable section will be fitted all around the Yacht.

All the machinery, electrical motors, equipment, boards will be connected to the above named copper tape.

All the minor features will be earthed by means of the ground wire.

A lighting conductor will be fitted at mast top and directly connected to the ground plate by a dedicated wiring.

### **02.81.01 ZINC ANODES**

Zinc anodes will be installed according to Benetti Standard to protect piping and metallic equipment from galvanic erosion.

### **02.82.01 DRIP TRAYS**

Drip trays will be fitted under machinery and equipment that may leak or discharge fluids or condensate when in use or being serviced.

Drip trays will be made in anodized aluminium of the titanium colour.

### **02.82.03 GUARDS**

Guard plates will be fitted in way of revolving machinery parts in engine room as necessary.



**02.82.05 CHAIN LOCKER**

Two chain lockers of a such volume suitable to contain the chains will be provided forward the collision bulkhead. A grating shall be fitted on the bottom of the chain lockers, material AISI 316 L stainless steel.

The inner surface of the chain lockers will be protected with antidumping material.

**02.82.07 BATTERY BOXES**

Batteries will be installed in boxes, design as per Benetti Standard.

**02.82.08 NAVIGATION LIGHTS HOUSING**

Side navigation lights will be installed in proper housings integrated in the superstructure. Geometry of the housing will be compliant with COLREG requirements.

**02.82.09 ANTENNAS SUPPORTS**

Navigation and communication system antennas will be installed on suitable aluminium basements integrated in the masts or in the superstructure.

**02.82.10 ENGINE ROOM SINK**

A steel parts washing sink will be installed in the engine room. Discharging to a collecting box. Hot and cold water will be provided.

**02.82.11 SHELVING IN STORAGE SPACES**

Suitable spaces in the technical areas will be provided to store oil cans and equipment spare parts. The spaces will be fitted out with appropriate flooring and fiddles.

Formica shelves will be installed in the storage spaces.

**02.82.13 BOAT CHOCKS**

Boat chocks made in wood or combined with aluminium will be provided for the tender and the jet sky.

**02.82.15 SUPPORTS FOR LIFERAFTS**

Supports with cradles and hydrostatic release will be installed on sun deck.

**02.83.01 DRAFT MARKS**

Polished stainless steel draft marks will be fitted, two forward and two aft.

**02.83.03 YACHT NAME**

On both sides of the Yacht superstructure the Yacht name will be made by 5/10 mm thickness polished stainless steel letters without back lit.

The transom name will be made by 5/10 mm thickness polished stainless steel letters without back lit.

The port of registry will be made by adhesive labels.

The font type will be decided by the Owner and it will be supplied to Benetti during the design stage. Benetti, if requested, can prepare proposal to the Owner.

**02.83.07 PIPE AND VALVE LABELS**

Main valves, cocks, filters, pumps, electrical equipment controls, gauges, etc. will be clearly identified in the English language by suitable engraved plates of metal or thermoplastic.

Direction of the arrow will indicate flow direction and color of the arrow or valve will indicate the type of fluid.

Operating positions of valves and switches will be marked.

The Benetti Standard piping systems colour code will be used.

**02.84.01 SIDE FENDERS**

N° 8 sausage fenders type F10 of diameter 520 mm will be provided, the colour will be white and blue, with 6 m of polypropilene black colour tails.

**02.84.03 FENDER HOLDERS**

N° 8 aluminium alloy, leather and lamb wool covered fender holders with jam-cleats and line eyes, will be provided to be fitted on the capping rail. The size and type will be according to Benetti Library.

**02.84.04 FENDERS STORAGE**

The fenders will be stored in a suitable locker located at bow below the main deck.

**02.84.08 STEM PROTECTION**

A stainless steel stem protection will be provided.

**02.85.01 VENTILATION GRILLES**

Ventilation grilles will be made in aluminium painted alloy or FRP , bolted in recesses built in the superstructure.

They will be provided for engine room ventilation, conditioning system (inlet, outlet) and storage compartment.

All inlet grilles will be installed with a water trap and drain.

Design of grilles and water traps from Benetti Library.

**02.85.02 EXHAUST GAS GRILLES**

Stainless steel grilles will be fitted on the hull for generators and main engines low speed gas exhaust.

Grilles will be painted with the same color of the hull.

**02.85.03 SEA CHESTS GRILLES**

Stainless steel grilles will be bolted to the hull to protect sea water inlets from risk of obstruction.

**02.86.00 HULL AND SUPERSTRUCTURE RECESSES**

Frames and recesses will be built in the structure to install grilles, life buoys, fire hydrants, bunkering and shore discharge connections, deck and step footlights, deck washdown connections, capstans and windlasses controls, lights, telephone plugs, TV plugs, sockets, speakers, gangway, swimming ladders and transom/side doors with relevant controls.

**02.87.00 FIXED BALLAST**

Fixed ballast may be used to adjust list and trim and in order to comply with stability criteria if necessary. Ballast will be made with lead pellets fitted in enclosed spaces.

## **02.90 SAFETY EQUIPMENT**

### **02.91.02 FIRE HOSES HOUSING**

Steel boxes, red painted will be fitted in technical spaces and in accommodation spaces hidden in closet or lockers.

### **02.91.03 FIRE EXTINGUISHERS**

Foam, powder or CO<sub>2</sub> fire extinguishers will be provided.

Type and number will be according to Classification Society requirements.

### **02.91.05 FIRE HOSES**

Fire hoses and nozzles will be as per Classification Society requirements.

### **02.91.06 FIREMAN AXE**

One fireman axe will be provided according to Classification Society requirements.

### **02.91.07 FIREMAN SUIT**

One fire suit will be provided.

### **02.91.08 BREATHING APPARATUS**

One breathing apparatus will be provided.

### **02.91.09 FIREFIGHTING BLANKET**

One fire blanket will be provided in the galley.

### **02.91.10 MEDICAL KIT**

A medical kit will be provided.

### **02.93.02 LIFE RAFTS**

Two n° 20 persons life rafts with hydrostatic release and survival kit (SOLAS approved package A) and one n° 8 persons will be provided on the sun deck.

### **02.93.03 LIFE BUOYS**

Two life buoys with painted Yacht name and port of registry will be fitted recessed in the superstructure.

### **02.93.04 PARACHUTE FLARES**

Parachute flares and smoke signals will be provided.

### **02.93.06 LIFE JACKETS**

N° 20 life jackets will be stowed in the cabins.

N° 4 life jackets for children will be provided. All of them will be of the approved type.

## **03 AUXILIARY MACHINERY**

## **03.10 BILGE AND FIRE EQUIPMENT**

### **03.11.01 FIRE PUMPS**

One electric sea water pump for fire fighting system will be installed, with capacity in accordance with Classification Society requirements.

### **03.11.02 BILGE PUMPS**

One electric sea water pump for bilge system will be installed, with capacity in accordance with Classification Society requirements.

### **03.11.04 EMERGENCY BILGE/FIRE PUMPS**

An emergency bilge motor driven fire pump with an independent manifold and line to draw the engine room and the adjacent compartments will be provided.

### **03.12.02 GALLEY HOOD FIRE EXTINGUISHING SYSTEM**

A CO<sub>2</sub> system will be installed in the galley hood extraction duct. Release will be manually activated with pressure switch to close the duct and to stop the extraction according to Class requirements.

### **03.12.03 ENGINE ROOM FIRE EXTINGUISHING SYSTEM**

A system to be installed according to Class requirements.

## **03.20 FUEL OIL AND LUBE OIL EQUIPMENT**

### **03.21.01 FUEL OIL TRANSFER PUMPS**

Two electrical fuel oil transfer pumps (one at 380 V AC and one at 24 V DC) will be installed, connected to a combined suction delivery manifold.

### **03.21.02 FUEL OIL SEPARATOR**

A fuel oil purifying system will be provided.

#### **03.21.04 FUEL OIL FILTERS**

One set fuel pre filter will be installed for each main engine and generator, with water alarm, manometer.

#### **03.21.06 VARIOUS FUEL OIL PUMPS**

One hand operated fuel oil transfer pump will be fitted for emergency use.

One pump for tenders refuelling will be installed in the garage, complete with delivery hose, hose reel, fuel counter and gun.

#### **03.21.07 FUEL OIL FLOW METER**

A fuel oil flow meter will be installed on the filling manifold and used for transfer and bunker line.

#### **03.22.01 CLEAN OIL PUMP**

One electric clean oil pump will be installed to transfer lube oil from tank to user, complete with delivery hose, fuel counter and gun.

#### **03.22.02 DIRTY OIL PUMP**

One electric dirty oil pump will be installed to draw from the engine sump to the tank and from the tank (also sludge, bilge tank) to the shore line.

### **03.30 SANITARY EQUIPMENT**

#### **03.31.01 SANITARY SYSTEM**

Collecting tanks will be installed in the lower decks to collect gray water from the users (showers, sinks, bath tubes). They will be connected through common manifold to the sewage/sanitary tank.

Ceramic floor mounted WC will be provided.

#### **03.31.02 SEWAGE TREATMENT PLANT**

A chemical sewage treatment unit will be provided conforming to Marpol Annex IV.



### **03.31.05 SMELL SYSTEM**

An ozone generating system will be provided to eliminate bad smell from black/grey waters tank air vent.

## **03.40 AIR PRESSURE AND HYDRAULIC EQUIPMENT**

### **03.41.01 AIR COMPRESSOR**

One electric air compressor will be installed, 250-440 l/min at 6.9 bar.

One compressed air tank will be connected to the compressor.

### **03.41.04 CONDENSATE WATER DISCHARGE**

Air compressed bottle will have an automatic valve for condensate water discharge.

A drainage e/valve 24 V DC automatic discharge will be provided.

### **03.42.01 STERN HYDRAULIC POWER UNIT**

One hydraulic power pack will feed the stern doors, the passerelle and the bathing ladder. Manual operation in case of emergency will be possible.

### **03.42.06 HULL DOORS MECHANISM**

Hull doors will be hydraulically operated by means of rams.

Doors will be locked using stainless steel pins. Microswitches will allow monitoring of the doors closure.

## **03.50 FRESH WATER EQUIPMENT**

### **03.51.01 FRESH WATER PUMPS**

Two electrical pumps with variable speed controllers will be provided, connected to the two fresh water tanks.

The pumps are connected to the deck washing system by section valves.

**03.51.02 HOT WATER PUMPS**

Two hot water circulating pumps will be installed to keep constant temperature in hot water ring.

**03.51.04 WATER MAKERS**

One water softener will be installed, connected to the filling line of the tanks, treating water from embarkations.

Two reverse osmosis water makers with a total nominal capacity of 18,000 liters per day at 25°C sea water temperature will be provided. They will have all necessary gauges, filters, high and low pressure pumps and filter with reverse cycle cleaning and automatic fresh water flushing.

**03.51.05 WATER HEATERS**

Two electrical stainless steel heating tanks will be installed, each with 250 l capacity.

**03.51.07 FRESH WATER STERILISER**

UV system, carbon filters on fresh water pumps delivery line, dosing pump in line to bunker and water maker fill line will be provided.

**03.51.10 MINIPOOLS**

One minipool will be fitted on the sun deck as per General arrangement.

**03.60 SEA WATER COOLING EQUIPMENT****03.61.01 SEA WATER COOLING PUMPS**

Two sea waters cooling pumps (one working, one back-up) will be provided for each of the following systems: air conditioning, stabilizer fins.

The main engines and generators have their own sea water pump.

## **03.70 VENT AND SOUNDING EQUIPMENT**

### **03.71.01 LEVEL SWITCHES**

Level switches will be installed in the bilges of each compartment near bilge suction, connected to alarms in the monitoring system.

A level switch will be installed in the fuel overflow tank, and a flow switch will be installed on the overflow line.

### **03.71.02 LEVEL GAUGES**

Microwave level gauges will be installed on fuel oil tanks, lube oil tanks, black and grey waters tank, fresh water tanks, bilge and sludge tanks.

Level gauges fitted on the tanks, will have remote fluid quantity indication in the central monitoring system.

### **03.71.03 SIGHT GAUGES**

Magnetic sight gauge will be installed on the service fuel oil tanks.

## **03.80 EXHAUST GAS EQUIPMENT**

### **03.81.03 SMOKE WATER SEPARATOR**

Each generator exhaust system will have a muffler and a smoke/water separator.

### **03.81.04 EXHAUST GAS VALVES**

By-pass valves will be fitted on the main engine exhaust line, controlled to have gas discharged on the hull side at low rpm and under water at high rpm.

## **03.90 VARIOUS AUXILIARY EQUIPMENT**

### **03.91.01 RESILIENT MOUNTINGS**

Main engines exhaust silencers and rotating machinery, with the exception of windlasses and capstans, will be installed on resilient mountings. Mountings will be selected according to the weight and the characteristics of the machinery, to reduce vibrations transmission to the structure.

### **03.91.02 VACUUM AND PRESSURE GAUGES**

All vacuum and pressure gauge sets will be arranged in a support as close as possible to the relevant pump.

## 04 PIPING

## **04.10 BILGE AND FIRE PIPES**

### **04.11.01 BILGE AND FIRE PIPING**

Each watertight compartment will have a separate bilge suction connected through a bilge manifold to the electric pumps.

The bilge pump piping will be designed to normally discharge into the bilge tank and only be able to discharge directly overboard in emergency.

Fire pump will be connected to the fire manifold and can supply sea water to the fire system. Fire manifold will be connected to the anchor hawse pipes to supply water for chain washing.

Fire hydrant valves connected to sea water fire main will be fitted on all decks in accordance with Classification Society requirements.

Main engines cooling pumps can be used to draw water from the main bilge in case of emergency.

All sea water piping for fire and bilge system will be made in CuNi 90-10.

### **04.11.04 GALLEY HOOD FIRE EXTINGUISHING PIPING**

CO<sub>2</sub> pipes for the galley hood firefighting system will be made in copper.

## **04.20 FUEL OIL AND LUBRICATING OIL PIPES**

### **04.21.01 FUEL OIL PIPING**

Fuel oil pipes will be made of stainless steel AISI 304 (up to diam. ND15). The pipes will be white painted RAL 9003. Emergency quick closing valves with remote control outside the engine room will be provided on the service tank for the diesel engines supply lines.

Tanks will be filled from two filling intakes, one on each side of main deck. A sight glass will be fitted on the embarkation line.

The transfer pump will draw from any tank and deliver to any tank and to the service tanks.

Fuel oil purifier will draw from any tank and the service tanks and will deliver to any tank and to the service tanks.

Main engines and generators draw from the service tanks. Pump for tender refueling will draw from the service tank.

The waste from the fuel purifier will be discharged into the sludge tank. The sludge tank will discharge to shore using the waste oil pump.

#### **04.21.02 LUBRICATING OIL PIPING**

Waste oil pump will discharge oil from the main engines, generators and gearboxes into the waste oil tank, and will discharge waste oil to shore.

Lubricating oil pipes will be made of AISI 304 white painted RAL 9003.

Clean oil tank will be filled from the main deck.

Clean oil pump will allow to fill main engines, gearboxes and generators from the clean oil tank.

### **04.30 SANITARY AND SCUPPERS PIPES**

#### **04.31.01 SCUPPERS AND DRAINAGE PIPING**

Scuppers and drainage system will be designed to collect and discharge outboard the washdown and rain water from decks.

Pipes outside engine room will be made of PVC with rubber connections. They will be in FRP only up to 1.2 m above water level.

Collecting wells will be in FRP. In engine room and below main deck the pipes will be AISI 316, above main deck the pipes will be PVC.

#### **04.31.02 SANITARY PIPING**

System will be designed to have sinks, baths and showers draining through conventional collection tanks, connected to the black and grey waters tank.

Washing machines and dishwashers will discharge to the black and grey waters tank through collecting tanks.

Piping will be made in high density PVC.

Connections will ensure a smooth inner pipe surface without steps or hindrances to the flow. All piping will be installed as per the system Manufacturer recommendations.

## **04.40 AIR PRESSURE AND HYDRAULIC PIPES**

### **04.41.01 COMPRESSED AIR PIPING**

The system will supply compressed air through pressure reducing valves. Outlets will be fitted on the sun deck, forward mooring area, horn, tender garage.

Compressed air will also feed quick closing valves, main sea chest and sewage treatment system for cleaning.

### **04.42.01 HYDRAULIC SYSTEMS PIPING**

Carbon steel pipes will be used for high pressure hydraulic system. Flexible pipes will be used for connections. The related connection will be high pressure fittings, according to system Manufacturer recommendations.

Stainless steel pipes will be used only for the garage.

## **04.50 FRESH WATER AND AIR CONDITIONING WATER PIPES**

### **04.51.01 FRESH WATER PIPING**

Cold and hot water pipes will be made in stainless steel AISI 316 in the engine room and multilayer outside the engine room.

Fresh water tanks can be filled from two filling inlets on the main deck. A strainer type filter will be installed in the line.

The system will supply water to the windscreen washers in the wheelhouse.

A hand held shower with hot and cold water will be mounted close to the aft swim platform.

System will draw water from the two fresh water tanks.

### **04.52.01 AIR CONDITIONING PIPING**

Pipes for air conditioning chilled/heated water will be made in CuNi insulated with Armaflex.



## **04.60 SEA WATER COOLING PIPES**

### **04.61.01 SEA WATER PIPING**

The two main sea water intakes will be sized so that all sea water users can operate from a single intake.

The sea water outlet of each main engine is led partially through the water injection sleeve into the exhaust lines, and by a dedicated line is led to the oil cooler on the gearbox, fuel oil heat exchanger and shaft lines tubes.

All pipe lines carrying sea water to be made of CuNi 90-10. Large butterfly valves will have body in cast iron and disc AISI 316. Smaller ones will be made of marine bronze.

## **04.70 VENT AND SOUNDING PIPES**

### **04.71.02 VENT LINES**

The vent pipes section of all tanks will be 1.50 times larger than the inlets.

All the fuel oil tanks vent outlets will be connected to the overflow tank through a common line. The overflow tank vent will discharge to the mast. A grill will be fitted into the outlet. Material will be stainless steel AISI 304.

Fresh water vent line will be led above the main deck.

Black and grey waters tank will have vent line running to the top of the mast.

Bilge, sludge, clean oil and dirty oil vent will be inside engine room.

## **04.80 EXHAUST GAS PIPES**

### **04.81.01 MAIN ENGINES EXHAUST GAS PIPING**

The main engine exhaust is equipped with flexible connection at the engines. The hot gas of each engine will be led through a dry duct, a water injection sleeve and GRP duct to the hull side into the engine room area. The main outlet is located below the water level with a manually operated butterfly valve, the minimum outlet (by-pass) is located above the water level with an electrically operated butterfly valve according to engines RPM. The injection sleeve is provided to cool down the gases before they blow along the hull. The piping is flexibly supported on the floor and sides. The system will ensure compliance with Diesel Engines Manufacturer recommended backpressure.

#### **04.81.02 GENERATORS EXHAUST GAS PIPING**

Exhaust gases will be discharged through an outlet above the water line and the cooling water through an outlet below the waterline.

### **04.90 VARIOUS SYSTEM EQUIPMENT**

#### **04.91.02 SCUPPERS BOXES**

FRP scupper boxes will be provided in number and position to assure proper water drainage and discharge from the external decks.

Scuppers will be protected by a polished stainless steel grill.

#### **04.91.03 PIPES FLEXIBLE CONNECTIONS**

All piping connected to rotating and vibrating mechanical equipment will be connected with flexible couplings, oil resistant material will be used on fuel and oil systems.

#### **04.91.04 PIPE BRACKETS**

All pipe work will be installed without stress and with a hollow "double wall" type rubber lining between the pipe and every pipe clamps.

All pipe lines will be supported by metal brackets connected to the Yacht structure.

All hydraulic oil piping will be supported by plastic saddle type pipe clamps with rubber insulation inserts.

Chilled water pipes will be connected to the structure with rigid foam insulated brackets.

## **05 VENTILATION AND AIR CONDITIONING**

## 05.10 ACCOMMODATION VENTILATION AND AIR CONDITIONING

### 05.10.00 AIR CONDITIONING SYSTEM GENERAL

The air conditioning system is based on the following parameters:

<u>Summer</u>	external air	35 °C 95 F	R.H. 90%
	internal air	22 °C 72 F	R.H. 55%
	Sea water temperature	32 °C 90 F	
<u>Winter</u>	external air	0 °C 32 F	R.H. 90%
	internal air	22 °C 72 F	R.H. 50%
	Sea water temperature	8 °C 46 F	

In general all living quarters and interior spaces shall be provided with fan coil units that receive fresh air from fresh air treatment unit.

The central air-handling unit and fan coil shall be cooled/heated by means of chilled/hot water from the chilled water unit in the engine room.

### 05.11.02 FAN COILS

The fan coil units shall be fed by chilled/heated water. The units shall be complete with heat exchanger, electric heater, fan, drip-tray with double drain connected to a separate drain tank, electric actuated three way valve.

Each fan coil unit shall be provided with a three speed controller for up an down room temperature and fan speed settings and a display panel.

### 05.11.03 MAIN CHILLER UNIT

One chilled water unit shall be installed in the engine room, serving the fresh air units and fan coil units throughout the Yacht.

The unit is working with reverse cycle, provides chilled water during the Summer and hot water during the Winter.

The total installed chilled water cooling capacity will be 480,000 BTU/h.

The chilled water unit shall consists of:

- four hermetic compressors,
- four sea water cooled condensers with connection to the main manifold,
- four frequency inverters.

The four compressor/condenser systems shall be fully independent, so that one system can run while the other is being serviced/repaired.

#### **05.11.04 AIR CONDITIONING SEA WATER PUMPS**

Two sea water pumps will be provided for the chiller unit.

#### **05.11.05 AIR CONDITIONING FRESH WATER PUMPS**

Two fresh water pumps will allow chilled water circulation, one as back-up to the other.

#### **05.11.06 AIR TREATMENT UNITS**

The fresh air unit shall be of marine execution with a galvanized casing, electrical heater, filter, heat exchanger and fan.

The casing shall be insulated. Equipment inside the casing shall be accessible.

#### **05.11.07 VENTILATION AND EXTRACTION FANS**

Extraction fans will be provided for accommodation areas (for the cabins it will be through the bathrooms).

Extraction fans will be provided for the laundry, beach area and galley hood.

#### **05.12.02 AIR CONDITIONING DUCTS**

Air conditioning ducts will be made in anodized steel and will be insulated.

Each duct is to be independently supported by steel brackets connected to the Yacht structure. Brackets will be insulated from the duct by a rubber lining to reduce resonance.

### **05.30 ENGINE ROOM AND TECHNICAL SPACES VENTILATION SYSTEM**

#### **05.31.01 ENGINE ROOM FANS**

A supply and extraction fans system will be installed for engine room ventilation. The fans will be of the axial flow type, flexibly mounted in the ventilation trunks or in the engine room.

They will be controlled by inverter, with automatic adjustable speed controlled by pressure and temperature sensor.

**05.31.02 ENGINE ROOM FIRE DAMPERS**

Fire dampers will be fitted to close the engine room ventilation trunks, as per Classification Society requirements.

**05.31.03 ENGINE ROOM FANS SILENCERS**

Silencers will be installed in the engine room air extraction and delivery trunks to reduce the noise generated by the air flow.

**05.31.04 WATER MIST SEPARATORS FOR ENGINE ROOM**

Water mist separators will be provided on engine room air intake grilles.

**05.32.01 VENTILATION OUT OF ENGINE ROOM**

In general technical compartments, storages and bilges will be naturally ventilated to ensure adequate ventilation of each space to avoid overheating and condensation.

The following compartments will have forced extraction:

- forward storage aft the chain locker,
- bow thruster and forward machinery area,
- garage,
- aft port and aft stbd technical areas.

## **06 ELECTRIC AND ELECTRONIC SYSTEM**

## **06.10 EMERGENCY ELECTRICAL SYSTEM**

### **06.11.0 EMERGENCY LIGHTING SYSTEM**

Emergency lights will be installed as required by Classification Society. They will switch on automatically in case of failure of the AC system.

#### **06.11.01 EMERGENCY BATTERIES**

One battery group of the gel type will be provided for emergency purpose in the main deck. It will supply all those loads and devices considered essential for ship safety.

## **06.20 LOW VOLTAGE SYSTEM**

### **06.21.01 BATTERIES , GENERAL**

24 V DC batteries will be installed for the services.

All batteries to be installed in battery boxes as per Classification Society requirements.

All batteries will be gel type.

#### **06.21.02 RADIO BATTERIES**

Essential communication and navigation equipment will be connected to a dedicated battery bank, according to Classification Society requirements.

#### **06.21.03 SERVICE BATTERIES**

One battery group will be provided for service systems in the engine room.

#### **06.21.04 ENGINES STARTING BATTERIES**

One battery group will be provided for each generator according to the generators Manufacturer instructions.

One battery group will be provided for each engine, according to the engines Manufacturer instructions.

One battery group will be provided for supplying both engine electronics, according to the engines Manufacturer instructions.

A selector for the cross connection between the two main engine starting battery will be provided as per Rules.



### **06.21.05 BATTERY CHARGERS**

Battery chargers of adequate power, suitable for gel batteries, will be installed for the below mentioned batteries.

One dedicated charger will charge main engine battery banks.

One dedicated charger will charge generator battery banks.

One dedicated charger will charge service batteries.

One dedicated charger will charge emergency batteries.

One dedicated charger will charge radio batteries.

One dedicated charger will charge MM.EE electronics batteries.

One backup battery charger will be able to replace the emergency, service or the radio battery chargers in case of failure.

### **06.22.02 GROUNDING SYSTEM**

Flexibly mounted equipment and pipes will be grounded to the hull with bonding straps.

External fixtures will be grounded by the ground wire of the supply cable.

### **06.22.03 LAN NETWORK**

A Ship LAN network ,part of BEST Entertainment System, will be layed. Sockets will be provided in Saloons, Guest cabins, Owner Cabin, Wheelhouse, Crew mess, Captain Cabin. Access to the internal network in noble areas will be possible via wi-fi as well. External routing to internet available as extra option.

## **06.30 MAIN VOLTAGE SYSTEM**

### **06.32.00 ELECTRIC POWER SYSTEM, GENERAL**

#### Generators.

Main power system will be 400 VAC, 50 Hz, 3 ph with grounded neutral for main equipment, and 230 VAC, 50 Hz, 1 ph for small users. Electrical equipment will be selected and located to ensure adequate protection against damage from water, steam, oil, humidity, vibration and will be arranged in such a way as to facilitate access for maintenance. The two 125 kW main generators will be connected to the main switchboard bus bars. Each generator has its own control protection device. A system for automatic paralleling of the two generators will be provided.

#### Shore power.

The Yacht may receive shore power supply by means of two shore power inlet sockets (one 125 A on transom and one 125 A at bow) and one shore cable semiautomatic stowing system in the garage, 150 A, cable 25 m length. Two shore power cables, length 25 m each, of suitable section for the two others main connection at 125 A will be provided. Two of the three shore connections can be connected simultaneously. Two 50 kVA 400 V (inlet) / 400 V (outlet) 3 ph + N, 50 Hz shore insulation transformer will be provided. A shore power panel complete of: protection switches, socket selection, voltmeter, ammeter, sequence-meter will be provided.

Seamless Transfer System between Generator and Shore Power Supply will be provided.

### Cables

Cables with stranded wires suitable for marine use will be used. All supply cables for electronic equipment shall be of the shielded type. Cables will be of the multiple conductors type for all AC circuits and meeting Classification Society requirements. All cables connected to terminal blocks will have 'ferrule end connectors' or other approved means of connection as per the Classification Society requirements. All the wires and terminal strips will be marked with identification code in the switchboard, in junction boxes and at the termination of the wire. Shielded cables will be used for low power equipment liable to be affected by strong magnetic or electrostatic fields such as intercoms, hailers, etc. All connection boxes (also in the accommodations) to be accessible and as per Classification Society requirements. Penetration of watertight bulkheads and all electrical switchboards and boxes will be done as per Classification Society requirements and with approved penetrations systems.

## **06.32.01 ELECTRICAL PANELS**

Main switchboard will be positioned in the engine room, made of steel framing or aluminium alloy and plating. All panels will be hinged or removable with quick release locks. Color of panels will be white (RAL 9003). Main switchboard will incorporate a copper busbar system with protection and control gear for the power sources and main distribution. Main switchboard will incorporate circuit breakers, contactors and relays, and instruments for main generators and shore converters. Sub-switchboards will be installed for local distribution of electrical power. They will contain automatic circuit breakers for different lines or circuits. They will be built in a light alloy or aluminium box with painted panels; to be covered by a decorative door matching with the surrounding joinery. For technical spaces industrial type boxes will be used. Main panel and sub panels will be drip proof type as per Classification Society requirements. A sub-switchboard will be installed in the wheelhouse, with AC and DC circuit breakers for the navigation and electronic users and all external lights.

## **06.40 LIGHTING AND PLUGS**

### **06.41.00 LIGHTING SYSTEM**

All lights to be either 230 V AC, 50 Hz or 12/24 V DC. Where required by the Classification Society, 24 V D.C. lights will be installed for emergency lighting. All lighting circuits will be protected by circuit-breakers fitted on distribution panels as described in the above section.

#### **06.41.01 ENGINE ROOM AND TECHNICAL SPACES LIGHTS**

In the engine room neon lights of 2x18 W will be fitted. Technical spaces will be fitted with 24 V DC lights in IP54 housing. Some emergency lights will be incorporated in the existing fixtures.

#### **06.41.02 ACCOMMODATION LIGHTS**

Dimmers will be fitted in the perimetral ceiling of all guest areas, corridors excluded. Lights in guest areas will be controlled by the centralized B.E.S.T. system. All spotlights will be of low voltage type 12 or 24 V. Heat protector and cooling space will be provided around all spotlights, detail construction have to be in accordance with the Interiors Book. Low intensity red lights and two adjustable chart lights will be installed in wheelhouse deckhead. All instrument and pilot lights in wheelhouse console will be provided with dimmers. LED lights will be used.

#### **06.41.03 EXTERNAL LIGHTS**

The external lighting system will be provided as per the following themes:

Ceiling light: LED lights will be installed into the recessed ceiling part.

Step light: LED lights will be installed as per indirect lighting effect fitted on every step of the outside structural stairs.

Foot light: LED lights will be installed around main deck, upper deck and sun deck.

Decorative light: LED stripe light will be installed under the bar in the sun deck area.

#### **06.44.01 EXTERNAL FLOOD LIGHTS**

One search light will be fitted on the fore mast, remotely controlled from the wheelhouse.

**06.44.03 FIBER OPTICS**

Twin fiber optic floodlights will be fitted in the main deck ceiling edge to illuminate the mid port and stbd bulwark doors.

**06.44.04 ELECTRICAL FITTINGS IN ACCOMMODATION**

All accommodation light switches and equipment will be as per Interiors Book.

**06.44.05 ACCOMMODATION LAMPS**

Wall, floor, reading and table lamps in guest area will be provided according to the Decorative lamps plan and the Benetti Selection Range.

**06.44.07 ACCOMMODATION CEILING LIGHTS**

Spotlights will be installed in Accommodation ceilings as per Interiors Book.

Waterproof spotlights will be installed in bathrooms and showers.

**06.44.10 LINEAR LIGHTING**

LED linear light will be fitted for indirect lighting as per Interiors Book in guest and Owner's areas.

**06.44.11 WARDROBE LIGHTING**

Internal lighting will be provided inside all wardrobes as per Interiors Book with movement reader sensor.

**06.50 NAVIGATION, COMMUNICATION AND SIGNALLING EQUIPMENT****06.50.00 NAV/COMM/SIGN EQUIPMENT**

An integrated navigation / communication system will be provided. The dashboard will be composed of **three LCD monitors** and **three touch panels** for visualizing and controlling all the navigation instruments like radar, echosounder, chart plotter, LOG, GPS rather than the engine / conning data and even the steering system. Moreover **one multifunction station** with track ball and jog system will be provided. With the combination of these tools it will be possible to easily control all the navigation instruments in a very human friendly and intuitive way without the need of different

dedicated keyboards or panels that will be definitively removed from the dashboard or, if necessary, for back up reason, hidden inside special drawers/cupboards as provided for radars and echosounder control keyboard.

#### Touch panel functions

This is the list of the devices controlled by touch screens. Navigation monitors configuration management, WH device control scene management, language selector, integrated monitor brightness control, check list, wiper control, horn control, chart control, radar control, eco control, search light control, fog horn signalling, wind, depth, speed, engine panel, engine start / stop, wheelhouse lighth control, navigation light control, compass light control and dimmer, keyboard for charting and conning, scenes control.

#### Wing stations

Two control stations with 10" Displays will be positioned externally at both sides of the wheelhouse and will include all the necessary commands and instruments for manoeuvring the Yacht in mooring operations.

### **06.52.01 NAVIGATION LIGHT**

Navigation lights (single light execution) will be provided. They will comply both for position and type with the International Regulation for Preventing Collision at Sea (Colreg 72). The navigation lights panel will be fed by 24VDC from emergency and service battery banks. Control of navigation lights in the wheelhouse monitor, with audible and visual alarm in case of failure. Included in integrated navigation system.

### **06.52.02 INTERCOM SYSTEM**

One Emergency internal communication system as per Classification Society and Flag Authority requirements will be fitted in: wheelhouse, engine room, emergency steering station.

### **06.52.04 LOG**

One speed-log system will be provided. Included in integrated navigation system.

### **06.52.06 ECHOSOUNDER**

One echosounder will be provided with dual frequency transducer (depth, log, water temp) with PC interface for chart plotter software. Included in integrated navigation system.

A second echosounder NMEA will be provided.

**06.52.07 MAGNETIC COMPASS**

One ceiling mounted magnetic compass will be provided.

**06.52.08 WIND SYSTEM**

One wind system with no moving parts and with GPS, air temperature and pressure sensors will be supplied. Included in integrated navigation system.

One NMEA data Display will be provided for Captain's cabin

**06.52.09 VHF SYSTEM**

One VHF class D with distress capabilities will be provided.

One standard VHF will be provided.

N° 1 remote control unit for VHF will be provided (crew mess).

N° 4 handheld VHF for mooring operation will be supplied.

**06.52.11 X-BAND RADAR**

One IMO approved 12 kW X - band 4 ft antenna with ARPA and AIS interfaces will be provided. Included in integrated navigation system.

One radar interface will be provided.

**06.52.12 GYROCOMPASS**

One gyrocompass will be provided.

**06.52.14 AUTOPILOT**

One autopilot will be provided comprising of n° 1 NFU tiller interface, n° 1 rudder angle indicator, n° 1 feedback unit. Included in integrated navigation system.

N° 1 take over system for n° 3 control stations will be provided. Included in integrated navigation system.

**06.52.15 GSM SYSTEM**

N° 1 GSM interface will be provided to be connected to the VOIP system.

**06.52.16 GPS SYSTEM**

N° 1 GPS systems IMO Approved . Included in integrated navigation system.

**06.52.17 TELEPHONE SYSTEM**

Integrated in B.E.S.T system.

**06.52.18 CHART PLOTTER**

One system for charting will be provided. Included in integrated navigation system. Charts are not included

**06.52.21 HORN**

A chromium plated pneumatic three tones horn as per the Flag Authority requirements will be provided. Controlled by the integrated navigation system.

**06.52.23 TELEPHONE UNITS**

N° 19 VOIP telephones connected to the B.E.S.T network will be provided.

**06.60 MONITORING AND AUTOMATION SYSTEM****06.61.01 MONITORING SYSTEM**

A monitoring and alarm system will be installed on board to monitor tank levels, tank alarms, bilge alarms, main engines, navigation system, navigation lights, generators, and other equipment that has an alarm output. The monitoring system will consist of two central processing units connected each other by a redundant LAN network. The two CPU will be located in engine room and in wheelhouse respectively. A touch screen will be fitted in the main switchboard in engine room as human interface, while in the wheelhouse data will be processed and displayed by the integrated navigation system dedicated touch screen. The main system functions are: multi window graphic, alarms signalling and their acknowledgment. Interactive interface with operator via touch screen.

**Power management**

The monitoring system will manage the electrical sources of power of the boat. It will monitor and control the generators, their switching on and off, their synchronization and paralleling, their on-line inserction, the load sharing, the emergency stop. Moreover it will monitor the current drawing preventing accidental black-outs. The system is also

able to monitor the shore power and to manage the necessary automatic operation to perform the switch from ship generators to shore source of power (and vice versa).

#### Batteries management

The system will monitor all groups of batteries and their chargers by measuring voltages, sourced / sinked currents and eventual faults.

#### Main engine supervision

The system will interface with the main engines by monitoring their state and all working parameters. These values will be graphically visualized in the monitoring system displays in the engine room and in the wheelhouse.

#### Blowers, extractors and shutters control

The system will manage and control the operation of blowers, extractors and shutters of the engine room and the garage. They will be operated in automatic or manual mode. In case of fire extractors and blowers will be shutted down while the shutters will be closed to help estinguishing the fire.

#### Tanks level monitoring

The system will monitor the levels of the various tanks of the Yacht. Alarms will be set in case of levels under / above preset limits.

#### Door and hatches monitoring

The system will monitor the status of door and hatches of the boat and report it on a special page representing the Yacht General arrangement.

#### Alarm Repeaters

Suitable alarm repeater panels will be provided in the crew mess and in the crew cabin for the engineer.

### **06.61.04 EMERGENCY STOP SYSTEM**

Main engines emergency stop will be provided in wheelhouse.

### **06.61.05 MAIN ENGINES CONTROL SYSTEM**

Main engines throttles will be provided in wheelhouse.

### **06.62.01 FIRE ALARM SYSTEM**

An addressed fire alarm system will be installed.

The control unit will be fitted in wheelhouse.

A connection (common alarm) will be provided to monitoring system.



The fire alarm system will be connected with the manual fire alarm buttons throughout the Yacht.

One or more heat or smoke detector will be fitted in each cabin, room and technical space according to Classification Society. They will actuate an audible and visible alarm in wheelhouse.

#### **06.62.05 SERVICE CALL**

The service call system will be integrated in the B.E.S.T. system. Buttons will be integrated in touch panels and remote controls.

Receiving panels will be located in the galley and in the upper deck bar.

### **06.70 ENTERTAINMENT EQUIPMENT**

#### **06.70.00 ENTERTAINMENT SYSTEM**

The core of the entertainment / domotics is the B.E.S.T. system which is a complete and modular solution for the distribution of digital services over a single physical infrastructure (Ethernet Cat 5E cabling). The system replaces the infrastructures traditionally employed to provide similar services, enhancing their functionality and simplifying their integration.

The services supervised by B.E.S.T. system include:

##### Audio Video functionality

Distribution of audio / video streams coming from diverse sources like satellite TV receivers, as well as internal storage systems (video on demand). Function like audio / video and images archival and indexing are available.

##### Voice communication functionality

It involves handling of M/Y internal voice communication, as well as with the outside world through diverse channels (traditional PSTN, cellular radio, HF vectors etc.).

##### Automation and control functionality

Any authorized terminal (like touch screens, PDAs, AV clients) can manage lighting, temperature and curtains, videos and music, as viewing on board navigation devices, on board sensors, and so-forth.

The system is composed of some central racks where all the servers and the storage system devices are integrated; access to services goes through diverse terminals including AV entertainment clients, control panels, mobile and handheld devices, surveillance station, phone terminals. In the following the list of the provided devices for each room.

ALL DEVICES ARE INTENDED OF EUROPEAN MODEL

### **06.70.01 CREW MESS**

- n° 1 TV 26'' LCD HD ready - 16:9,
- n° 1 micro Hi-Fi - AM/FM tuner - DVD player,
- n° 1 pair of loudspeakers,

### **06.70.02 BEACH AREA**

- n° 1 Marine Audio client/ FM Tuner
- n° 2 marine speakers
- n°1 Apple Airport Express

### **06.70.03 TWIN GUEST CABINS**

Items to be considered for two cabins.

- N° 1 TV 26'' LCD HD ready - 16:9
- N° 1 Audio Video Receiver – AM FM Tuner – HDMI Input/Output
- N° 1 “BEST” Audio-Video Client
- N°1 Blue Ray player
- N° 1 Pair of loudspeakers
- N° 1 Integrated wi-fi remote control (Mini iPad)
- N° 1 Mini Ipad Charge docking station
- N° 1 Apple TV

### **06.70.04 VIP CABINS (2 in Lower + 1 in Upper Deck)**

Items to be considered for three cabins.

- N° 1 TV 26'' LCD HD ready - 16:9
- N° 1 Audio Video Receiver – AM FM Tuner – HDMI Input/Output
- N° 1 “BEST” Audio-Video Client
- N°1 Blue Ray player
- N° 1 Pair of loudspeakers
- N° 1 Integrated wi-fi remote control (Mini iPad)
- N° 1 Mini Ipad Charge docking station
- N° 1 Apple TV

**06.70.03 CREW CABINS**

Items to be considered for four cabins.

- n° 1 mini Hi Fi with CD Player
- n° 2 speakers,

**06.70.07 OWNER'S CABIN**

- n° 1 TV 40'' LED full HD 1080P - 16:9,
- n° 1 audio video receiver - AM FM tuner - HDMI input/output,
- n° 1 "BEST" audio video client,
- n°1 Blue Ray player
- n° 1 high quality speaker system surround 5.1 with powered subwoofer,
- n° 1 integrated Wi-Fi remote control (iPad)
- n° 1 iPad charge docking station,
- n° 1 Apple TV

**06.70.08 OWNER'S STUDY**

- n° 2 speakers ,
- n° 1 keyboard for volume control

**06.70.09 GALLEY**

- n° 1 mini Hi Fi with CD Player
- n° 4 speakers ,

**06.70.10 MAIN SALOON**

- n° 1 TV 55'' LED full HD 1080P - 16:9,
- n° 1 audio video receiver - AM FM Tuner - HDMI input/output,
- n° 1 "BEST" audio video client,
- n°1 Blue Ray player
- n° 1 high quality speaker system surround 5.1 with powered subwoofer,
- n° 1 integrated Wi-Fi remote control (iPad)
- n° 1 iPad charge docking station,

- n° 1 Apple TV

#### **06.70.11 MAIN SALOON DINING (slave of main saloon)**

- n° 1 keyboard for volume control,
- n° 1 pair of loudspeakers.

#### **06.70.12 EXTERNAL MAIN DECK (slave of main saloon)**

- n° 4 marine speakers .
- n°1 Amplifier
- n° 1 keyboard for volume control,

#### **06.70.13 WHEELHOUSE**

- n° 1 mini Hi Fi with CD Player
- n° 2 speakers ,

#### **06.70.14 CAPTAIN CABIN**

- n° 1 TV 26'' LCD HD ready - 16:9,
- n° 1 micro Hi-Fi - AM/FM tuner - BD player,
- n° 1 pair of loudspeakers,

#### **06.70.15 SKY LOUNGE**

- n° 1 TV 55'' LED full HD 1080P - 16:9l,
- n° 1 audio video receiver - AM FM tuner - HDMI input/output,
- n° 1 "BEST" audio video client,
- n°1 Blue Ray player
- n° 1 high quality speaker system surround 5.1 with powered subwoofer,
- n° 1 integrated Wi-Fi remote control (iPad)
- n° 1 iPad charge docking station,
- n° 1 Apple TV

**06.70.17 EXTERNAL UPPER DECK AFT (slave of sky lounge)**

- n° 4 marine speakers .
- n° 1 keyboard for volume control,

**06.70.18 EXTERNAL UPPER DECK FORWARD**

- n° 1 Marine Audio client/ FM Tuner
- n° 4 marine speakers
- n°1 Apple Airport Express.

**06.70.19 SUN DECK**

- n° 1 Marine Audio client/ FM Tuner
- n°1 Amplifier
- n° 8 marine speakers
- n°1 Apple Airport Express.

**06.70.21 TECHNICAL SPACE**

The technical space is located in the main deck crew corridor, where the necessary racks will be fitted.

**06.70.22 SERVER RACK**

- n° 1 switch managed 24 ports full gigabits,
- n° 1 KVM controller (keyboard, mouse, lcd),
- n° 1 AVoD storage system 6 Tbytes raw RAID System + AvoD + OAM + YAS server,
- n°1 Wi-Fi AP controller
- n° 1 Voip Server+Gateway
- n° 1 UPS rack mount,
- n° 1 rack for devices housing.

**06.70.24 DISTRIBUTED EQUIPMENT**

- n° 10 access point WiFi.
- n° 5 Network switches

## **07 MAIN MACHINERY**

## **07.10 PROPULSION MACHINERY**

### **07.11.01 MAIN ENGINES**

Two turbo charged after cooled four stroke diesel engines suitable for marine propulsion will be installed on the dedicated foundations in the engine room:

CAT C32 ACERT rating D, of 1193 kW (1600 HP) @ 2300 rpm each,

Exhaust emissions of these engines are in compliance with EPA TIER III and IMO TIER II regulations.

Main engines will have integrated fresh water cooling systems and fresh water pumps, heat exchangers, and sea water pumps.

The primary main engine controls will be mounted on or near the main engines.

The engines will be supplied with standard equipment, including instruments and alarms as per Classification Society requirements.

### **07.11.02 GEAR BOXES**

Reduction gear boxes will be fitted to assure over the top outward Yacht rotation of the propellers.

The reduction ratio will be:  $i = 4.000:1$  approx.

### **07.11.03 ELASTIC COUPLING**

An elastic mounting will connect gearboxes to the main engines to reduce noise and vibrations transmission.

### **07.11.05 RESILIENT MOUNTS**

Main engines and reduction gear boxes will be elastically mounted on resilient mounts.

### **07.13.01 SHAFT LINES**

Shaft lines will be made of Aquamet 22.

Shaft diameter will be as per Classification Society requirements.

### **07.13.03 SHAFT BEARINGS**

Shafting will be arranged with water lubricated bearings.

**07.13.04 SHAFT SEALS**

Mechanical seals will be provided inside hull.

**07.13.05 PROPELLERS**

Two propellers with five fixed blades will be provided, designed for high efficiency and low pressure transmission to the hull, made in nickel-aluminium-bronze.

They will be statically balanced and will have a surface finishing according to ISO S class.

**07.13.08 ELASTIC COUPLINGS**

The main engine/gearbox/shaft line configuration will be: reduction gear and engine in the flanged version, four mounting for engine and reduction gear, thrust bearing with elastic joint from reduction gear to shaft line.

**07.13.10 SHAFT BRAKETS**

A removable shaft brake will be provided for emergency use.

**07.30 ELECTRIC POWER GENERATORS****07.31.01 MAIN GENERATORS**

Two diesel electric generators, 125 kW, 400 V, 3 ph, 50 Hz will be provided.

Generators will have integrated fresh water cooling systems with integrated fresh water pump, heat exchanger and integrated sea water pump.

**07.31.02 GENERATORS SOUND SHIELDS**

Generators will be enclosed in a sound shield, supplied by the generator Manufacturer.

**07.31.03 GENERATORS MOUNTING**

The generators will be resiliently mounted on double mounts on a rigid structural foundation.



## **07.40 SIDE PROPULSION**

### **07.41.01 BOW THRUSTER TUNNEL**

The FRP bow thruster tunnel passing through the hull will be connected by means of an adequate number of FRP layers according to the Classification Society requirements. Adequate reinforcement will connect it to the bottom to resist the transverse propeller thrust.

Hull at bow thruster insertion will be properly faired to minimize drag.

### **07.41.02 BOW THRUSTER**

An electric motor driven bow thruster will be provided, 85 kW of power, controlled from wheelhouse and from wing stations.

## **07.50 STABILIZERS**

### **07.51.01 STABILIZER FINS**

One pair of non retractable stabilizer fins will be provided for underway operation and at anchor as well.

Fins will be actuated directly by electric motors.

Control panel 24 V DC to be installed in the wheelhouse.

## 08 INTERIORS

## 08.00 08.00 INTERIORS

The Interior's styles are based on the Interior's Concept Design, done by Zuretti Interior's Designers. The Interior's Concept Design are:

- Classic style
- Modern style

The Interior's style will be shown through a set of renders for the following areas:

- Master Cabin
- Master Bath
- Main Salon
- Vip Cabin
- Vip Bath
- Main Foyer
- Sky Lounge

The renderings will be prepared as per the following process:

- First Stage (one time) – Interior Concept - will be composed by Main Salon Rendering and Interior Design Mood Board, for the definition of interior style, main materials selection and finishing;
- Second Stage (one time) will be composed by Vip Cabin, Vip Bath Rendering based on the General Arrangement ,Interior Concept and the contractual definition;
- Third Stage (one time) will be composed Master Cabin, Master Bath and Main Salon Rendering based on the General Arrangement ,Interior Concept and the contractual definition;
- Fourth Stage (one time) will be composed by Sky Lounge and Main Foyer Rendering based on the General Arrangement ,Interior Concept and the contractual definition.

The rendering is purely indicative of style and may include options and/or change order. It do not necessarily correspond to the executive drawings. These images are indicative and show the style and volume environments and may be modified during construction according to technical reasons-executive proposals or modifications required by the customer. Any new rendering or updated rendering not included in the above list will be quoted accordingly.

The accommodation layout will be according to the general arrangement which will be part of the building specification.

All decorative material, loose furniture, fittings, accessories, hardware etc. will be chosen according to the proper interior style and according to the Functional Plan Book.

The Functional Plan Book represent the quantity and the position for each decorative element.

Deviation from decoration standard and the Functional Plan Book will be quoted accordingly, in terms of finishing, materials and quantity.

All the confirmed selections will be collected into the Décor Book

The Book of Interiors, with plan and elevation, will be delivered as per information and as reference for the general looking of the interiors.

## **08.00.01 ACCOMMODATION PARTITIONS**

### **GUEST & OWNER:**

- LOWER DECK : Port Vip Cabin, Port Vip Bath, Port Twin Cabin, Port Twin Bath, STBD Vip Cabin, STBD Vip Bath, STBD Twin Cabin, STBD Twin Bath, Lobby
- MAIN DECK : Main Saloon, Main Foyer, Pantry, Galley, Powder room, Owner's Study, Owner's Dressing, Owner's Cabin, Owner's Bathroom
- UPPER DECK : Sky Lounge, Vip Cabin, Vip Bath, Pantry, Lobby, Powder Room, Wheelhouse

### **CREW :**

- LOWER DECK : Crew Mess, STBD Crew Cabin 01, STBD Crew Bath 01, Port Crew Cabin 01, Port Crew Bath 01, STBD Crew Cabin 02, STBD Crew Bath 02, Port Crew Cabin 02, Port Crew Bath 02, Laundry ,Crew Corridor
- MAIN DECK : Crew Corridor
- UPPER DECK : Captin's Cabin, Captain's Bath,

## **08.10 CREW INTERIOR**

### **08.11.02 CREW INTERIOR LININGS AND FURNITURE**

The natural wood, solid and veneer, will be oak as per Modern style and tangonica as per Classic style. The finish will be satin. Lacquered wood will be as per reference RAL9010, satin finish.

Hull sides, superstructure sides and bulkheads will be lined with glued marine plywood panels, stiffened where required and with removable sections where necessary to access technical equipment or accessories (valves, electrical junction boxes etc.).

The Crew Quarters (Corridor and Cabins) will be lined in natural wood veneer. All the Crew Quarters furniture will be made of plywood finished in veneer with solid wood trim.

Crew Bathrooms, Crew Mess and Laundry will be lined by lacquered wood with solid wood boundary detail.

Crew Bathroom, Crew Mess and Laundry furniture will be finished with lacquered wood and solid wood trims.

Ceiling finishes will be with painted wood panels as per reference RAL 9010, Satin finishing.

Built in furniture will be made according to the General Arrangement.

Air conditioning grills will be flush with the furniture and removable for service.

### 08.11.03 CREW INTERIOR FLOOR LININGS

Floors in Crew Areas will be fitted according to the Functional Plan Book, as per Benetti selection:

- Crew Cabin => Synthetic Carpet
- Crew Bath => Wood
- Crew Mess, Corridor, Laundry => Vinyl Floor

#### CREW AREA:

ROOM	TYPE	BRAND
CABIN	CARPET SYNTHETIC	BENETTI SELECTION
BATH	WOOD FLOOR	BENETTI SELECTION
CORRIDOR	VINYL FLOOR	BENETTI SELECTION
STAIRS	VINYL FLOOR	BENETTI SELECTION
LAUNDRY	VINYL FLOOR	BENETTI SELECTION
CREW MESS	VINYL FLOOR	BENETTI SELECTION

### 08.11.04 CREW LOOSE FURNITURE

Loose furniture in crew areas will be fitted according with the Functional Plan Book as for Benetti selection.

## LOWER DECK

### CREW MESS:

TYPE	QUANTITY	BRAND
STOOL	4	BENETTI SELECTION

### 08.11.05 CREW INTERIOR HARDWARE

The following hardware will be provided for Crew Areas, as per Benetti selection:

- Furniture knobs,
- Door handles,
- Door stoppers.

Polished stainless steel pipe handrail will be fitted on Crew staircases.

Crew Area doors will be equipped with a twist lock from the inside and safety opening system from the outside.

## 08.20 GUESTS INTERIOR

### 08.20.00 GUESTS FURNISHING

#### Guests interior linings and furniture

Hull sides, superstructure sides and bulkheads will be lined with glued marine plywood panels, stiffened where required and with removable sections to access the technical equipment or accessories (valves, electrical junction boxes etc).

Wall linings and ceilings will be covered with fabric, leather, veneer or lacquered wood and according to the Interior's Concept Design.

Doors which are not fire doors will be made of double plywood sandwich panels. Doors will be painted, mirrored or veneered with solid mouldings according to the Interior's Concept Design.

Built-in furniture (cupboards, drawers, consoles, night tables, wash basin units, A/C units, desks, etc.) will be made according to the Interior's Concept Design and the General Arrangement. Furniture will be made of wood (timber or veneered marine plywood).

Interior stairways wall will be covered with veneered marine plywood.

Around portholes and windows curtain boxes will be fitted, made of lacquered or leather, as per Interior's style.

All selected wood samples (three copies, size 210 x 297 mm – A4 size) will be double signed both by the Owner and by Benetti.

Lining and furniture panels will have a balancing and sealing coat on the reverse side to avoid bending.

Air conditioning grills will be flush with the furniture and panels and removable for servicing according to the Interior's style.

Satin varnish or lacquer will be used according to the Interior's style Interior's Concept Design.

Special decorations selected together with the Benetti Interior's Decorator, will be quoted accordingly.

### **Guests loose furniture**

Guest loose furniture (seats and tables) will be supplied and installed according to the Interior's Concept Design and the Functional Plan Book.

## **LOWER DECK**

### **VIP CABIN:**

TYPE	QUANTITY	BRAND
DESK CHAIR	2	BENETTI SELECTION

## **MAIN DECK**

### **EXTERNAL AFT AREA:**

TYPE	QUANTITY	BRAND
COFFE TABLE	1	BENETTI SELECTION

### **MAIN SALOON:**

TYPE	QUANTITY	BRAND
SOFA 3 SEAT	2	BENETTI SELECTION
ARMCHAIR	2	BENETTI SELECTION
COFFE TABLE	1	BENETTI SELECTION
BAR STOOL	2	BENETTI SELECTION
DINING CHAIR	10	BENETTI SELECTION
DINNING TABLE	1	BENETTI SELECTION

### **OWNER'S STUDY:**

TYPE	QUANTITY	BRAND
DESK CHAIR	2	BENETTI SELECTION

DESK	1	BENETTI SELECTION
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**OWNER'S CABIN:**

TYPE	QUANTITY	BRAND
VANITY CHAIR	1	BENETTI SELECTION
CHAISE LOUNGE	1	BENETTI SELECTION

**UPPER DECK****EXTERNAL AFT AREA:**

TYPE	QUANTITY	BRAND
SOFA 2 SEAT	2	BENETTI SELECTION
SOFA 3 SEAT	1	BENETTI SELECTION
ARMCHAIR	2	BENETTI SELECTION
COFFE TABLE	1	BENETTI SELECTION

**SKY LOUNGE:**

TYPE	QUANTITY	BRAND
BAR STOOL	3	BENETTI SELECTION
ARMCHAIR	2	BENETTI SELECTION
COFFE TABLE	1	BENETTI SELECTION
SOFA 4 SEAT	2	BENETTI SELECTION

**EXTERNAL FWD:**

TYPE	QUANTITY	BRAND
COFFE TABLE	2	BENETTI SELECTION

**WHEELHOUSE:**

TYPE	QUANTITY	BRAND
BACKREST	1	BENETTI SELECTION
DESKCHAIR	1	BENETTI SELECTION



## SUNDECK

### EXTERNAL:

TYPE	QUANTITY	BRAND
DINING CHAIR	12	BENETTI SELECTION
DINING TABLE	1	BENETTI SELECTION
SUNBED	4	BENETTI SELECTION
BAR STOOL	3	BENETTI SELECTION
COFFE TABLE	2	BENETTI SELECTION
SOFA 3 SEAT	2	BENETTI SELECTION
SOFA 4 SEAT	2	BENETTI SELECTION

### Guests interior hardware

Guest Area doors will be equipped with a twist lock from the inside and safety opening system from the outside.

Doors stoppers will be provided to hold the doors in the open position.

All cupboard / storage / wardrobe / cabinet doors will be provided with closing devices. Full height cabinet doors will be provided with top, bottom and central hinges and locking pins. All cabinet doors will have fastening latches; touch latches where possible.

The following hardware will be detailed in according to the Interior's Concept Design:

- Furniture knobs,
- Anti-roll fiddles
- Hand rails,
- Door handles,
- Door stoppers.

Decorative polished stainless steel hand rails will be fitted on guest staircases.

### Guests cabinets outfitting

Dedicated storage will be provided, with plexiglass supports for the following Owner's supplies:

Glasses - Plexiglas supports - one table service for n° 12 people (n° 36 pieces in total),

Dishes - Plexiglas supports - one table services for n° 12 people (n° 48 pieces in total),

Cutlery - drawers with partitions lined with velvet - one table services for n° 12 people (max. two drawers),

Bar (glasses, various liquors bottles) for n° 12 people (bar glasses n° 24 pieces).

Four months before the Vessel's delivery the Owner shall supply a list of supplies with a sample of each item to be stored so that proper plexiglass fittings can be made.

## 08.26.00 UPHOLSTERY, MARBLES, CARPET

### Guest interior floor linings

Carpet, wood, marble, stone and vinyl floor will be chosen, supplied and installed according to the Interior's Concept Design and the Functional Plan Book.

#### **GUEST&OWNER:**

ROOM	TYPE	BRAND
CABINS	CARPET	BENETTI SELECTION
BATHROOMS	MARBLE	BENETTI SELECTION
LOBBY	CARPET	BENETTI SELECTION
STAIRS	CARPET	BENETTI SELECTION
CORRIDORS	CARPET	BENETTI SELECTION
GALLEY/PANTRY	VINYL FLOOR	BENETTI SELECTION
BACKSTAIR	VINYL FLOOR	BENETTI SELECTION
ROOM	TYPE	BRAND
MAIN SALOON	CARPET	BENETTI SELECTION
MAIN FOYER	MARBLE	BENETTI SELECTION
DRESSING	CARPET	BENETTI SELECTION
OWNER STUDY	CARPET	BENETTI SELECTION
ROOM	TYPE	BRAND
SKY LOUNGE	CARPET	BENETTI SELECTION
WHEELHOUSE	TEAK&HOLY	BENETTI SELECTION
BEACH AREA DRESSING	TEAK	BENETTI SELECTION
BATHROOM BEACH AREA	CORIAN	BENETTI SELECTION

### 08.26.01 INTERIOR UPHOLSTERY AND BLINDS

Fabric and leather will be chosen according with the Interior's Concept Design and the Functional Plan Book.

All windows and portlights, except Wheelhouse windows, will have curtains and/or blinds as per Functional Plan Book. The decorative curtains will be made of fabric and have horizontal or vertical folding. The blinds will be roller translucent shades. Wheelhouse windows will have a black mesh type shade, fixed on the outside.

Fabric for bed covers decorative cushions, headboard, curtains, sofa, chair, walls, ceiling etc.. will be chosen according to Interior's Concept Design.

One bedcover will be supplied for each bed.

One pillow and one decorative cushion will be supplied for each person.

One decorative pillow will be supplied for each sofa's seat.

### 08.26.02 EXTERNAL UPHOLSTERY

Sun bathing mattresses and external cushions will be covered with proper upholstery for external use.

### 08.26.03 MARBLES AND STONES

Marble floor, wall, and furniture tops will be fitted as shown as per Functional Plan Book.

Marbles will be chosen according to Interior's Concept Design.

Marbles and stones will be mounted on light support when installed on walls and floors, for a total thickness of 20 mm. For tops and other surfaces, where solid slabs will be used, maximum thickness of the slab will be 20 mm.

All selected marble samples (three copies, size 210 x 297 mm A4 size) will be double signed (one by the Owner, one by Benetti).

#### GUEST&OWNER:

ROOM	TYPE	BRAND
MAIN FOYER	FLOOR (CENTRAL - BORDER)	BENETTI SELECTION
GALLEY/PANTRY	WORK TOP + BACKSPLASH (H.MAX10cm)	BENETTI SELECTION
ROOM	TYPE	BRAND
INTERNAL BAR	WORK TOP	BENETTI SELECTION
BATHROOM	FLOOR (CENTRAL - BORDER)	BENETTI SELECTION
BATHROOM	VANITY TOP + BACKSPLASH (H.MAX20cm)	BENETTI SELECTION
BATHROOM WITH SHOWER	SHOWER FLOOR	BENETTI SELECTION
BATHROOM WITH SHOWER	SHOWER WALL	BENETTI SELECTION

#### BEACH AREA:

ROOM	TYPE	BRAND
GUEST BATHROOM	VANITY TOP + BACKSPLASH (H.MAX20cm)	BENETTI SELECTION
BAR	WORK TOP + BACKSPLASH (H.MAX10cm)	BENETTI SELECTION

#### CREW AREA:

ROOM	TYPE	BRAND
LAUNDRY	WORK TOP + BACKSPLASH (H.MAX10cm)	BENETTI SELECTION
CREW MESS	WORK TOP + BACKSPLASH (H.MAX10cm)	BENETTI SELECTION
BATHROOM	VANITY TOP + BACKSPLASH (H.MAX10cm)	BENETTI SELECTION

#### 08.26.04 CARPET

Carpet will be chosen according with the Interior's Concept Design and the Functional Plan Book.

All edges of carpet will be bound, where necessary, or fixed under the plinth in the dedicated recesses.

#### 08.28.01 SANITARY EQUIPMENT

Wash basins, sinks and baths will be fitted in Guest's Are as per the Interior's Concept Design and the Functional Plan Book.

Shower doors for Guest and Owner's Bath will be of commercial type with proper locking system.

Crew Areas sanitary equipment will be fitted as per Benetti Selection, in according with the Functional Plan Book.

#### 08.28.02 TAPS

Taps in the Guest's Areas will be fitted in Guest's Are as per the Interior's Concept Design and the Functional Plan Book.

Crew areas will will be fitted as per Benetti Selection, in according with the Functional Plan Book.

#### 08.28.03 BATHROOM ACCESSORIES

The bath accessories fitted in the Guest's Areas will be chosen according to the Interior's Concept Design and the Functional Plan Book.

#### GUEST&OWNER:

ROOM	TYPE	QUANTITY	BRAND
BATHROOMS	SINK	1	BENETTI SELECTION
BATHROOMS	WASHBUSIN FAUCET	1	BENETTI SELECTION

BATHROOM WITH SHOWER	SHOWER MIXER	1	BENETTI SELECTION
BATHROOM WITH SHOWER	SHOWER DIVERTER	1	BENETTI SELECTION
BATHROOM WITH SHOWER	SHOWER HEAD	1	BENETTI SELECTION
BATHROOM WITH SHOWER	SHOWER HANDSET	1	BENETTI SELECTION
BATHROOM	SOAP HOLDER	1	BENETTI SELECTION
BATHROOM	GLASS HOLDER	1	BENETTI SELECTION
BATHROOM	TOWEL RAIL 45cm	2	BENETTI SELECTION
BATHROOM	TOWEL RAIL 60cm	1	BENETTI SELECTION
BATHROOM	TOILET BRUSH HOLDER	1	BENETTI SELECTION
BATHROOM	TOILET PAPER HOLDER	1	BENETTI SELECTION
BATHROOM	CLOTHES HOOK	2	BENETTI SELECTION
BATHROOM	TOILET GARBAGE BIN	1	BENETTI SELECTION
BATHROOM	SHOWER/BATH BASKET	1	BENETTI SELECTION
BAR	SINK	1	BENETTI SELECTION
BAR	FAUCET	1	BENETTI SELECTION
GALLEY/PANTRY	SINK	1	BENETTI SELECTION
GALLEY/PANTRY	FAUCET	1	BENETTI SELECTION

**CREW AREA:**

ROOM	TYPE	QUANTITY	BRAND
CREW MESS	SINK	1	BENETTI SELECTION
CREW MESS	FAUCET	1	BENETTI SELECTION
LAUNDRY	SINK	1	BENETTI SELECTION
LAUNDRY	FAUCET	1	BENETTI SELECTION
CREW BATH	SINK	1	BENETTI SELECTION
CREW BATH	FAUCET	1	BENETTI SELECTION
CREW BATH	SHOWER COLUMN SET	1	BENETTI SELECTION
CREW BATH	SOAP HOLDER	1	BENETTI SELECTION
CREW BATH	GLASS HOLDER	1	BENETTI SELECTION
CREW BATH	TOWEL RAIL 45cm	1	BENETTI SELECTION

CREW BATH	TOWEL RAIL 60cm	1	BENETTI SELECTION
CREW BATH	TOILET BRUSH HOLDER	1	BENETTI SELECTION
CREW BATH	TOILET PAPER HOLDER	1	BENETTI SELECTION
CREW BATH	CLOTHES HOOK	2	BENETTI SELECTION

**EXTERNAL:**

ROOM	TYPE	QUANTITY	BRAND
BAR	SINK	1	BENETTI SELECTION
BAR	FAUCET	1	BENETTI SELECTION

**08.30 VARIOUS ACCESSORIES****08.32.0 MISCELLANEOUS****GUEST&OWNER:**

ROOM	TYPE	BRAND
ALL	DOOR HANDLE	BENETTI SELECTION
ALL	DOOR STOPPER	BENETTI SELECTION
ALL	FURNITURE KNOB	BENETTI SELECTION
ALL	ANTI-ROLL RODS	BENETTI SELECTION
ALL	HAND RAIL	BENETTI SELECTION

ROOM	TYPE	QUANTITY	SIZE	BRAND
MASTER CABIN	SAFE	1	210X297 MM	BENETTI SELECTION
CAPTAIN CABIN	SAFE	1	210X297 MM	BENETTI SELECTION

**Decorative lamps**

Decorative lamps fitted in the Guest's Areas will be chosen according to the Interior's Concept Design and the Functional Plan Book.

**GUEST&OWNER:**

ROOM	TYPE	QUANTITY	BRAND
VIP CABIN STBD	READING LAMP	2	BENETTI SELECTION
VIP CABIN STBD	WALL LAMP	2	BENETTI SELECTION
VIP CABIN PORT	READING LAMP	2	BENETTI SELECTION

VIP CABIN PORT	WALL LAMP	2	BENETTI SELECTION
TWIN CABIN STBD	READING LAMP	2	BENETTI SELECTION
TWIN CABIN STBD	WALL LAMP	2	BENETTI SELECTION
TWIN CABIN PORT	READING LAMP	2	BENETTI SELECTION
TWIN CABIN PORT	WALL LAMP	2	BENETTI SELECTION
MAIN SALOON	TABLE LAMP	4	BENETTI SELECTION
OWNER CABIN	READING LAMP	2	BENETTI SELECTION
OWNER CABIN	WALL LAMP	2	BENETTI SELECTION
SKY LOUNGE	TABLE LAMP	2	BENETTI SELECTION
VIP CABIN	READING LAMP	2	BENETTI SELECTION
VIP CABIN	WALL LAMP	2	BENETTI SELECTION
CAPTAIN CABIN	READING LAMP	1	BENETTI SELECTION
WHEELHOUSE	CHART LAMP	2	BENETTI SELECTION

**CREW AREA:**

ROOM	TYPE	QUANTITY	BRAND
CREW CABIN	READING LAMP	7	BENETTI SELECTION

Special request will be quoted accordingly.

**08.34.01 MATTRESSES**

Owner's, Guest and Captain mattresses will be of the spring type, custom made, with padding.

The Crew 's mattresses will be of rubber foam marine quality, custom made.

There will be some clearance between the mattress and the bedframes.

## 08.40 DOMESTIC APPLIANCES

### 08.41.00 APPLIANCES

Domestic equipment fitted on board will be chosen according to the Functional Plan Book.

#### CREW:

ROOM	TYPE	QUANTITY	BRAND
LAUNDRY	WASHER MACHINE	2	BENETTI SELECTION
LAUNDRY	DRYER MACHINE	2	BENETTI SELECTION
CREW MESS	DISHWASHER 45CM	1	BENETTI SELECTION
CREW MESS	FRIDGE FREEZER	1	BENETTI SELECTION
CREWMESS	MICROWAVE	1	BENETTI SELECTION
BEACH AREA	MINI FRIDGE	1	BENETTI SELECTION
BEACH AREA	ICE MAKER	1	BENETTI SELECTION

#### GUEST&OWNER:

ROOM	TYPE	QUANTITY	BRAND
MAIN SALOON BAR	ICE MAKER	1	BENETTI SELECTION
MAIN SALOON BAR	MINIFRIDGE	1	BENETTI SELECTION
GALLEY/PANTRY	COOKING TOP 90cm	1	BENETTI SELECTION
GALLEY/PANTRY	EXHAUST HOOD	1	BENETTI SELECTION
GALLEY/PANTRY	OVEN 90cm	1	BENETTI SELECTION
GALLEY/PANTRY	MICROWAVE	1	BENETTI SELECTION
GALLEY/PANTRY	DISHWASHER	1	BENETTI SELECTION
GALLEY/PANTRY	GARBAGE MACERATOR	1	BENETTI SELECTION
GALLEY/PANTRY	FREEZER	1	BENETTI SELECTION
GALLEY/PANTRY	FRIDGE	1	BENETTI SELECTION
GALLEY/PANTRY	TRASH COMPACTOR	1	BENETTI SELECTION
GALLEY/PANTRY	WINE CELLAR UNDER TOP TYPE	1	BENETTI SELECTION
GALLEY/PANTRY	COFFE MACHINE	1	BENETTI SELECTION
OWNER STUDY	MINIFRIDGE	1	BENETTI SELECTION



SKY LOUNGE BAR	ICE MAKER	1	BENETTI SELECTION
SKY LOUNGE BAR	MINIFRIDGE	1	BENETTI SELECTION
SKY LOUNGE BAR	MICROWAVE	1	BENETTI SELECTION

**EXTERNAL:**

ROOM	TYPE	QUANTITY	BRAND
BAR	ICE MAKER	1	BENETTI SELECTION
BAR	MINIFRIDGE	1	BENETTI SELECTION
BAR	BARBECUE 30cm	2	BENETTI SELECTION

## **08.50.00 SPECIAL DECORATION**

The builder will design and execute all the interior furniture and decor according the material selection and typical details indicated in the specification.

Any request of change and or modification to the interior furniture and decor of what proposed and not expressly mentioned in the specification and related interior documents such as high gloss interior varnishing, special wood lacquering, metallic lacquering, metal decorative inlays, wood marqueteries and inlays, special woods decorations, gold leaves, silver leaves, marbles inlays, mosaics, custom made decorative items, custom made hardware ecc... will be evaluated and quoted accordingly.

## 10 MISCELLANEOUS

## 10.00 MISCELLANEOUS

### 10.01.01 OWNER'S SUPPLY

Owner's supplies up to 5 t have been considered for weight calculation within this Specification. These are typically to include but not limited to:

- Tender, including the lifting points, with overall dimension in meters, engine included, of 6.2 x 2.61 x 1.13 (L x W x H).
- Jet skis, including the lifting points, with overall dimension in meters of 3.07 x 1.22 x 1.16 (L x W x H).
- The effective tender and jet skis maximum dimensions or bigger dimension than above, may be confirmed only when the models will be defined from the Owner.
- Watersports equipment.
- Diving bottles with scuba accessories and swimming equipments.
- Gym and fitness equipment.
- Artworks and paintings, antiques, decorative items, frames, ashtrays.
- Books and games.
- Cassettes, compact discs, video discs.
- Bone china, crokery, glasswork, trays, silverware.
- Table accessories, table linens.
- Cutlery, serving pieces, loose cooking equipment and utensils, bottles.
- Pots, pans and cooking tools.
- Bedlinens and blankets.
- Towels and robes.
- Rugs.
- Uniforms.
- Stationery.
- Charts, pilots, almanacs, chart table equipment, etc.
- Nautical books and publications.
- Personal computers and accessory equipment.
- Tools, workshop equipment.
- Torches and small items.

- Cleaning equipment and products.
- Spare parts, except for those requested by the Classification Society.