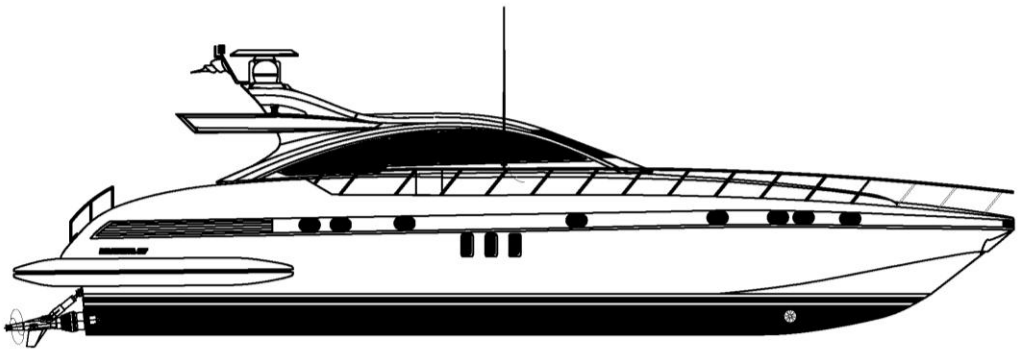
Specifications for the

MANGUSTA

80 Open

Twin Surface Drive motor-yacht



Built by:

OVERMARINE GROUP | MANGUSTA

DISCLAIMER

IMPORTANT NOTE
Any modification to the present specification will have to be discussed and approved with the Builder.

IMPORTANT NOTE
Listed Models of Equipment are up to date. The Builder reserve the possibility of replacing Models/Manufacturer indicated if at the date of the Vessel Construction improvements can be considered.

IMPORTANT NOTE
Systems described are up to date. The Builder reserve the possibility to modify systems if at the date of the Vessel Construction improvements can be considered.

1. General Conditions

1.1 Intent

It is the intent of this document to establish an as accurate as possible description of a Twin Surface Drive Luxury Motoryacht. Besides being specific, this document will also set forth the spirit, which is to guide all parties involved with the realisation of the design, by the making of decisions and value judgements.

1.2 Dimensions

Lenght Overall	25,07	[m]	82,25	[feet]
Lenght on Waterline	20,47	[m]	67,16	[feet]
Beam	5,9	[m]	19,36	[feet]
Max Draft (Arneson trimmed up)	~ 1,7	[m]	~ 5,58	[feet]
Displacement at Full Load Cond.	~ 62	[ton]	~ 136.685	[lbs]

1.3 Tank capacities

Fuel Oil - Main tank	~ 6.000	[litres]	~ 1.585	[gal]
Fresh Water	~ 1.000	[litres]	~ 264	[gal]
Grey	~ 600	[litres]	~ 159	[gal]
Black Water	~ 700	[litres]	~ 185	[gal]

These capacities are to be considered as desirable targets depending on the final systems installed. It shall be noted that significant differences must be brought to the attention of the owner's representative already during the preliminary design stage.

1.4 Performance

Top speed at half load	Approx 45 knots
Top speed at full load	Approx 42 knots
Cruising speed at half load	Approx 40 knots
Range at economical cruising speed (one generator running at all times)	Approx 250 nm

1.5 Classification

The yacht is to be built under the survey of and in full accordance with the Rina Rules for the Classification of Yachts including all Amendments and Notices issued up until the date of signing of the Vessel Construction Agreement.

The class notation shall be: **100 – A – 1.1 "Y"**

1.6 Type and Brief Description

1.6.1 Type of Yacht

Twin-screw diesel Mediterranean Sport motoryacht of contemporary design, in the style of the other Mangusta motoryachts, with a modified deep V planning hull, flared bow and transom type stern with integrated bathing platform.

1.6.2 Construction

Composite hull, with appropriately spaced transverse frames and girders, which run longitudinally as extensions of the engine foundations. There shall be two watertight bulkheads (Engine Room Fwd blkd and Fwd Collision Blkd). Between the tender garage and the engine room a third watertight wall shall be fitted.

1.6.3 Propulsion

Two MTU four stroke marine diesel propulsion engines. Each engine is fitted with a ZF flange mounted marine transmission a Arneson Surface Drive system.

1.6.4 Lay Out

Interior arrangements and style as per approved General Arrangement Drawings nrs._____ (dated _____) and sketches prepared by Overmarine

1.7 Supervision and Inspection

The builder shall, during normal working hours, keep the yacht available for inspection by the Owner, the Classification Society surveyor, the naval architect, the designer and the Owner's Representative.

It shall be allowed that photographs are taken from the work in progress.

1.7.1 Inspections by Architect

The naval architect shall, notwithstanding the fact that he is an employee or a subcontractor of the Builder, monitor the work in progress in order to insure that his drawings are adhered to.

1.7.2 Inspections by Owner's Representative(s)

The scope and authority and responsibility of the Owner's Representative will be in accordance with the terms of the Contract.

As a minimum the Owner's Representative shall:

- on a regular basis inspect the work in progress;
- be authorised, on behalf of the owner, to make decisions relating to the execution of the work;
- direct all his comments and remarks with respect to the yacht under construction, in writing to the Builder's project co-ordinator within 48h from the moment of the finding;

The Builder shall:

- at regular intervals meet with the Owner's Representative for the purpose of evaluating the status of the project. Any anticipated delay should then be brought to the attention of the owner's representative.

1.8 Design and Specifications

1.8.1 Specification

The document at hand, which should be seen as a complement to the design drawings, describing in detail the construction of the yacht and listing the material and equipment items to be used or installed.

In the case that the specification describes a specific item not or only in a limited way shown on the design drawings, or vice versa, the Builder shall be required to supply the most complete version.

1.8.2 Copyright

All design drawings and the specification are protected by Copyright, they are made available for the sole purpose of enabling the recipient to perform a specific task during the realisation of the design and must not be reproduced wholly or in part or be passed on to third parties without the specific written permission from its author.

1.8.3 Construction Drawings

The Builder's in-house naval architect or an expert firm assigned by the Builder shall be responsible for the hull shape design, for all the drawings required by the Classification Society and for the weight calculations.

1.8.4 Systems Drawings

All drawings and accompanying detailed parts lists to be produced by the Builder's in-house Engineer or an expert firm assigned by the Builder, required for the design of all shipboard systems including all the drawings required by the Classification Society. The Systems Drawings shall include at least the following:

- Schematics of the individual systems.
- Numbered parts lists accompanying each schematic.

1.9 Main Contractor

The building yard awarded the contract for the construction of the yacht, in this specification referred to as the Builder.

1.9.1 Workmanship

All work to the yacht or parts thereof shall be carried out by skilled and experienced tradesmen in accordance with the established good boat building practices and to the satisfaction of the nominated Owner's Representative.

1.9.2 Shop Practice

The Builder's standard workshop practice, which shall be acceptable, provided that the required quality level as set forth in these specifications shall be maintained.

1.9.3 Construction Buildings

Construction is to be carried out under permanent cover, keeping the yacht under construction and its components and materials at all times protected from weather conditions. The internal conditions and the available facilities must suit the requirements of the various aspects of the construction of a composite luxury yacht as per Overmarine standard.

1.9.4 Housekeeping

The yacht and its immediate surroundings are at all times to be kept clean and free from any accumulation of debris and of vermin or insect infestation. Special care is to be taken that drain pipes and other locations, which are similarly difficult to reach at the later stages, are kept open and unclogged at all times. Precautionary measures must be taken to protect the all or partially completed portions of the yacht and the installed components against any form of damage.

1.9.5 Working Hours

The normal Opening Hours by the Shipyard shall be:
Monday through Friday from 7:30-12:00 hours 13:30-17:00 hours.

1.10 Schedule

The estimated construction schedule is to be confirmed.

1.11 Trim

When fully commissioned, with all equipment on board and at 60% bunkers, the yacht shall float evenly on her lines (slight trim Aft is foreseen being this Vessel a planning Hull).
The Builder shall be allowed to fit on board permanent ballast up to a maximum of 2% of the declared Fully Load Displacement in order to meet the applicable stability criteria and or for trim correction.

1.12 Documentation

All documentation, text on drawings, equipment panels, handbooks etc. shall be in the English language.

At the handover of the completed yacht the Builder shall deliver to the Owner:

- A full duplicate set of "as built" drawings in print.
- First The Temporary Class Certificate and then the Class Certificate.
- Complete original manufacturer's manuals, handbooks, drawings and spare parts lists in the English language.

1.12.1 Nameplates

The Builder shall fit nameplates of a suitable material at the main valves etc.

1.12.2 Handbooks

During the course of constructing the yacht the builder shall fully co-operate with and make available all information and documentation to the person, who shall be assigned by the owner to produce the yacht's manuals and maintenance programs.

1.13 Change Orders

The shipyard has the faculty to make the necessary modifications for the good working of the systems. The shipyard must inform the Classification Society and the Owner's Surveyor about these modifications.

1.14 Testing, Commissioning and Seatrials

1.14.1 Testing

All tests and trials will be conducted in accordance with the requirements of the Classification Society and Builder's practices.
The Builder will conduct tests and trials necessary to ensure that all structure, systems, equipment and fittings are in accordance with the specification and working satisfactorily. The yacht's machinery, equipment and fittings to undergo shop testing according to the Builder and/or manufacturer's usual practices followed by such onboard test as considered necessary.
Further, in testing equipment, particular attention will be paid to vibration, seating, leaks and practical operating convenience.
Dock trials and preliminary underway trials will be carried out in accordance with the Builder's practice and at his discretion.
All mechanical, propulsion, piping, refrigeration and electrical systems will undergo satisfactory dock trials and will operate at various loads for a sufficient length of time to demonstrate to be in proper working order.
The Owner's Representative may be in attendance if requested.
When the yacht is substantially completed, except for such items of work as the Builder and Owner agree to be accomplished at a later date, the yacht will be subject to the acceptance sea trials described below.

1.14.2 Progressive Speed Trial

The official sea trials will be conducted under good weather conditions and with sea conditions of not more than Sea State 2 of Beaufort scale. In case of unfavourable conditions, the date of sea trials could be postponed.
The vessel shall be set in sea trial trim under Builder responsibility.
The yacht's speed will be measured by use of a Differential GPS and two runs will be conducted at each speed point
Sea trials will be carried out at rpm steps as per Engine Builder requirements. A representative of the engines manufacturer shall note engine exhaust gas temperatures together with the exhaust back pressure. At each run, the engine power and engine rpm shall be noted and reported.
Measurements shall be also taken of fuel intake air pressure, air temperature, etc.

1.14.3 Manoeuvring Trials

The yacht will be subjected to manoeuvring trials which will include ahead and astern steering at maximum and minimum speeds, turning circles to port and starboard, maximum speed "Z" manoeuvre, Crash Stop. Ahead and astern steering and turning circle manoeuvres will be carried out with the automatic pilot.
The bow thruster will be tested at full power to determine the rate of turn.

1.14.4 Equipment Trials

All mechanical, electric and electronic equipment and systems will be tested and shown to be in a satisfactory working order while operated under yacht generated current. All pumps will be operated sufficiently to demonstrate a satisfactory installation together with their associated systems components.
Effective performance of anchoring equipment to be demonstrated by setting and recovery of the gear in the open deep sea.

1.15 Hand Over

After the satisfactory conclusion of the dock-trials and sea-trials and the final completion of all rest items, the builder shall have the yacht thoroughly cleaned, upon which the Owner will take delivery, whereby the yacht will go over in the care and responsibility of the Owner's captain and crew.

2 Hull and Superstructure

2.1 General

- The structure shall be built to Classification Society rules.
- The hull shall be built as a single unitised structure in a "female" mould
- The deck and superstructure shall be constructed in a "female" mould.

2.2 Design plans

All the construction drawings for the GRP structure are to be approved by the Classification Society.

2.3 Construction Principles of Hull

2.3.1 Watertight Bulkheads

There shall be two watertight bulkheads, located as follows:

- At the forward side of the engine room.
- At the forward side of the Guest accomodation.(namely Collision Bulkhead)

Between the tender vane and the engine room a third watertight bulkhead shall be fitted. As per Classification Society requirements

2.3.1.1 Watertight Doors, Hatches, Portholes and Windows

In way of all openings, the core material shall be omitted or replaced with a structural core.

2.3.1.2 Doors

All watertight doors are to be approved by the Classification Society. The hinges, handles and locks of all exposed hatches and doors shall be in the style and quality of the exterior hardware and as per Overmarine standards.

2.3.1.3 Portholes

The portholes will be installed in a moulded-in recesses . The inside face of each individual recess is to be angled for the best optical effect in the interior. For the positions and number see General Plan approved from the Owner.

2.3.1.4 Windows

Fixed windows installed in recesses above the freeboard deck has to be located and dimensioned in accordance with the approved General Arrangement Drawings. Special attention shall be paid to the proper alignment of these windows both in relation to the hull sides and the interior of the owner's area.

2.3.2 Engine Foundations

Classification Society scantlings shall be the minimum requirement for the engine foundations.
Engine girders will have high density core inserts in way of foundations bolting through. Engine Foundations will be in marine grade aluminium (or equivalent).

2.3.3 CO_2 Locker

Directly adjacent to but separate from the engine room, a specific storage facility for the fire system's CO_2 cylinders.

2.3.4 Integral Items

2.3.4.1 Fill boxes

Fuel filling caps one on port and one on starboard. System will be approved from the Classification Society.
Similar but separate from the fuelling stations, the similarly constructed water filling station.
Grey and black water shore discharge connections are to be provided.

2.3.4.2 Controls

The control panels for the gangway and similar equipment, shall each be installed in a specific recess or integrated in deck furniture, behind its own flush cover.

2.3.5 Bathing Platform

The bathing platform shall be integrated in the stern section of the hull. On port and starboard integral tapered stairs lead to and from the main aft deck. A hydraulically operated door gives access to the Tender Garage. Additionally, there shall be provisions for the following items:

- Recess for the connection of an hand shower with hot and cold water.
- Shore power cables Inside Tender Garage space.
- A fresh water shore connection.
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2.3.6 Bowthruster

A heavy wall FRP tubular section, to be supplied by the bowthruster manufacturer, shall be installed in the extreme forward portion of the hull. The installation of the bowthruster will be done in accordance with the manufacturer specifications and approved by the Classification Society.

2.4 Construction Principles of Deck and Superstructure

The construction of the Deck and Superstructure will be done in accordance with the construction drawings approved by the Classification Society.

2.4.1 Main Deck

All deck penetrations for cables, piping and ducting in exposed location will be watertight. Engine room Air ducts to be fitted with fire flaps. All deck openings to have rounded corners and to be reinforced if necessary (see construction drawing approved by Classification Society).

2.4.2 Winch pads

On the foredeck, as an integral part of the main deck structure, a properly reinforced area on top of which the anchor winches, chain stoppers, chain rollers shall be installed. This winch mounting platform, if recessed, shall be fitted with permanent drains. A heavy wall Stainless Steel tube shall connect the anchor winch base plate and the anchor plates.
On the aft deck two heavily reinforced bases for the mooring winches, tilted to provide a proper lead.

2.4.3 Scuppers and Drains

The scuppers shall be located to guarantee a sufficient drainage of water from the main deck.

The scupper pipes will be provided with a SDNR (or equivalent) valve fitted at the through hull fitting.

2.4.4 Doubler Plates

High density core will be fixed by lamination in way of the bollards and all other areas of heavy loading.

2.4.5 Construction openings

In the main deck above the engine room, between pillars, openings shall be planned-in to allow the bringing in of equipment items at an appropriate time during construction. These openings will be closed by means of screws and bedding compound and then covered by a layer of teak with black rubber seams.

2.4.6 Casings

Casings are planned for:

- Engine room air intakes.
- Engine room air exhaust outlets.

The air intake ducts shall be fitted with mist eliminators, and remote controlled fire shutters.

2.4.7 Grilles

Removable decorative grilles are to be installed outside the engine room air intakes. The mist eliminators to be installed behind these decorative grilles.

2.4.8 Windows

Windows to be located and dimensioned in accordance with the designer's General Arrangement Drawings. Each window shall be glued into a recess, which is moulded in the hull or superstructure sides.

2.4.8.1 Hatches

All watertight hatches shall be fitted with drain fittings.
For the position of the hatches see General Plan approved by the Owner.

2.4.9 Emergency Controls Station

In the direct vicinity of the engine room entrance, a moulded-in recess shall be fitted into which, the panel with emergency controls for the CO_2 system.

2.4.10 Radar Arch and Antenna Support Structure

A gantry type structure as a continuation of the superstructure lines, with provisions for:

- wire and cable ducts;
- down lights and speakers;
- inspection hatches;
- attachment points for antenna support structure, which shall be attached to the gantry by means of bolted flanges and/or lamination.

3 Propulsion Details

The Builder shall install the components of the propulsion system with the utmost care. The following are minimum standards:

- The installation of the propulsion system will be done in accordance with the manufacturer's instructions, both of the engines and of the Surface Drive System.

3.1 Main Engines

Two MTU marine diesel propulsion engines, model 16V 2000 M93 each rated at 1791* kW (~2400* HP) at 2450 rpm.
(* Power losses due to Air T, $\triangle$p, etc. to be considered)

- PTO for Surface Drive System and Bow Thruster

3.2 Reduction gears

Two flange-mounted reduction gears ZF model 3060 with a reduction ratio selected in accordance to Propeller supplier.

3.3 Flexible Coupling Shaft

Between each ARNESON SURFACE DRIVE Sys. and the output flange of the gearbox, a flexible coupling shaft d by Rubber Design (or equivalent).

3.4 Drive System

Two ARNESON SURFACE DRIVE ASD 15 A1 L connected to the output flange of the coupling system supplied by Rubber Design.

3.5 Propeller

At the end of each ARNESON SURFACE DRIVE a Surface Propeller supplied by ROLLA RSP (or equivalent).

3.5.1 Exhaust Connections

The exhaust pipes shall be connected by means of flanged stainless steel expansion joints supplied by MTU.

3.5.2 Cooling Water Connections

The system will be installed in accordance with the manufacturer instructions and approved by the Classification Society.

3.5.3 Fuel Connections

The system will be installed in accordance with the manufacturer instructions and approved by the Classification Society.

3.5.4 Combustion Air Ducting

Combustion air will be drawn from the engine room. The air intakes dimensions will be sized to satisfy the air quantity by the specifications of the engine builder.

4 Generators

Two Kohler, model 20 EFOZD marine generator sets 20 kW, 230 VAC, 50 Hz.
The generator manufacturer's delivery shall include:

- As per standard supply from KOHLER:
- Sound Shield

4.1 Installation

All pipe connections are to be in accordance with the manufacturer instructions.

4.1.1 Flexible Mounts

The Generator shall be installed on elastic flexible mount in accordance with generator supplier.

4.1.2 Exhaust System

Water injected exhaust system shall be installed in accordance with the manufacturer instructions.

4.1.3 Cooling Water Connections

All cooling water connections through reinforced rubber hoses of sufficient length, shall be installed in accordance with the manufacturer instructions and shielded against heat or damage from abrasion.

4.1.4 Combustion Air Ducting

Combustion air will be drawn from the engine room. The total air intake balance should take consideration of the quantity necessary for both the generators and the engines.

5 Engine Room Ventilation System

The engine room ventilation system shall comprise balanced supply and exhaust systems.

5.1 Supply Air and Exhaust Air

Four 230V axial flow fan/blowers of sufficient capacity to provide combustion air for the main engines and generators and for adequate engine room ventilation, shall be installed in the engine room air intake ducts.

5.2 Ducts

The ducts shall be:

- constructed as an integral part of the vessels structure;
- fitted with fire shutters;
- fitted with water separator filters;
- be fitted with decorative grilles at the exterior.

6 General Requirements for Plumbing Systems

Installation of pipes, connections and material in accordance with the requirements of the Classification Society and approved drawings.

The general requirements for all pipe-works and plumbing systems shall be:

- Stress free installation on properly spaced support brackets and/or hangers.
- Metal pipes to be fitted into the brackets using rubber linings.
- Air condition and fridge pipes shall be insulated.
- Insulation shall be continuous in way of brackets, hangers, elbows, T-connections, etc.
- Installation with constant drops and straight runs avoiding sharp bends.
- All pipe bends to have smooth radiuses. No mitred joints shall be acceptable.
- Watertight bulkhead or exposed deck penetrations to be flanged or through the use of approved fittings.
- Straub® (or equivalent) couplings will be acceptable in tight places.
- Sight glasses to be fitted in appropriate locations.
- All exterior portions of fill and vent pipes to be stainless steel.
- English language name plates to be fitted at main valves and pipes.

The general requirements for all pumps shall be:

- All pump capacities in this specification are to be considered minimum capacities. The final capacities are to be determined by the Engineers.

Except when specifically specified otherwise, all overboard valves to be of the approved marine material screw-down-non-return type (SDNR) or equivalent (check valve + gate valve).

7 Fuel System

Design drawings approved by Classification Society.

7.1 Main Fuel tank

Main Fuel tank structural in GRP fitted inside with proper baffles. Tank treated inside with "fuel-tight" cycle. Mainly located ahead Engine Room bulkhead. Total capacity according to "Tank capacities".
Each section of the tank fitted with steel inspection cover (dimensions 500x500 mm) bolted through the Tank Top by means of stainless steel back–frame sealed with rubber gasket.
Fuel tank vented through vent pipes on port and stbd at the forward side of the tank. Vent pipes fitted with a flash proof safety screen.

7.2 Fuel suction system

Main engines and generators drawing fuel from Main tank. Before being distributed to Engine and Generator fuel is passing through Fuel Prefilter to separate particles and water.
Fuel pipes made out of AISI 304 stainless steel with bronze valves and fittings. Short runs of approved armoured flexible hose according to drawing approved by Classification Society.

7.3 Fuel filling operation

Filling operation, by gravity, directly to Main GRP Tank through two different fill-caps one on port and one on stbd side
Fuel level indication on main GRP Tank by means of two different system: one electric and one mechanical.
Full tank alarm on Ship Monitoring System on deck control panel.

8 Exhaust Equipment

In accordance with the requirements of Engine/Generator supplier and Classification Society.

8.1 Main Engine Exhaust

Installation of exhaust gas system in accordance with Engine supplier instructions.
Exhaust lines manufactured by the Builder shall be connected to engine's exhaust manifold, using appropriate flanged stainless steel expansion joints.
A water injection ring shall be fitted in the downward portion of the exhaust line "directly above" the through-hull fitting. In this downward portion of pipe, after the water injection point, the exhaust bypass shall be branched-off.
The entire dry portion of the exhaust line is to be insulated by an appropriate insulating material and cladded with SSteel sheets.
The exhaust lines shall be fixed in place by means of suitable "flexible" exhaust pipe hangers.

8.2 Generator exhaust

Installation of exhaust gas system in accordance with Generator supplier instructions.
Wet exhaust system incorporating an injection elbow and fibreglass muffler.

9 Fresh water System

In accordance with the requirements of the Classification Society.

9.1 Components

- Tank(s) with total capacity according to “Tank capacities”;
- Water pressure system: 2x el/pump (Gianneschi® P&B / Ecojet CE 24;
- Reverse Orsmosis Water maker 1x Idromar® / MC 2J, 130, lt/h (or equivalent);
- Boiler 2x 80LT;

9.2 Fresh water tank(s) and filling operation

Fresh water tank(s) filled up by gravity through an appropriate filling-cap on port side (deck) or by pressure through a connection on aft swim platform.
If filled by pressure (aft swim platform connection) then fresh water is “decalcified” before reaching the Fresh water tank.
Water maker is also contributing to Fresh Water Tank filling when vessel is cruising
Tank(s) is provided with one positive closing valve on the suction line, one on the fill line and one on the vent line.

9.3 R.O. Watermaker

One reverse osmosis desalination system. System shall draw seawater from a manifold connected to a sea water intake which shall be located deep enough below the waterline to exclude the possibility of drawing air or running dry under all conditions.
A permanent flushing line from the fresh water pressure system shall be fitted. Brine and reject product shall be discharged overboard.
After passing through a “softener” filter the product water shall be plumbed into the fresh water tank.

9.4 Freshwater Treatment System

Pressure for the system is supplied by the two fresh water pumps installed in Engine Room space. On the outlet side of Pressure pumps fresh water is filtered as follows:

- ACTIVE CARBON FILTER (Idromar® or equivalent) to remove suspended solids up to 10 micron, to de-colorize and to de-chlorinate. Filter body in Stainless Steel AISI 316L. Filtering cartridges in polypropylene and active carbon.
- UV sterilizer (Idromar® or equivalent) to eliminate microorganism and bacteria

Pressure to the final users is distributed through a main pipe fitted with distribution manifolds. Each user can be isolated though a valve on distribution manifold.
Boilers, fitted in bilge space, can work independently one from the others.

10 Black/grey water equipment

In accordance with the requirements of the Classification Society.

10.1 Components

- Grey and Black Water collecting tank(s) with total capacity according to “Tank capacities”;
  - Grey water Pumps Gianneschi® P&B / 2x CP 25/1 24V (or equivalent)
  - Black Water Pumps Gianneschi® P&B /2x ECO MV 44 24V (or equivalent)

Grey waters are wasted directly in to Grey Water Collecting Tank(s). Tank(s) are wasted overboard or to Shore though a specific Grey water Pump
Black waters are wasted directly in to Black Water Collecting Tank(s). Tank(s) are wasted overboard or to Shore though a specific Black water Pump. A pressure/macerating pump fitted in each Toilet

11 Bilge/Fire-fighting pump system

In accordance with the requirements of the Classification Society.

11.1 Components

- #2 pump Gianneschi® P&B / ACM 331/2 24V (or equivalent)

11.2 System description

Two electric pump in Machinery space providing necessary lift/pressure to the proper working of the system. The two pumps can run each of them for a specific service (Bilge or Fire-fighting) or in parallel for the same service (both in parallel for Bilge or Fire-fighting).
All bilge suction pipes run to a main collecting manifold installed near the Engine room Bulkhead.
Each bilge line fitted with a section valve directly connected to the main collecting manifold.
Each bilge line suction end fitted with a fott check valve and suction strainer
One Bilge Alarm fitted close to each bilge line suction.
Number and position of Fire-fighting connection according to drawing approved by Classification Society

NOTE: Each Main Engine sea water suction fitted with “Emergency Engine Room Bilge suction”. To be used only in Emergency situation

12 Tender garage drenching system.

Tender garage is protected by a drenching system. Sea water supply directly from Fire-fighting system

13 Fixed Fire-fighting system

In accordance with the requirements of the Classification Society.

13.1 Extinguishers

Number, type and position of each extinguisher is in accordance with the Classification Society requirements.

13.2 CO_2 System (or equivalent)

Activation of the CO2 system through a “Break Glass Box” fitted on main deck.
Interconnected with the Activation of the CO2 system:

- Audible Alarm
- Engine Room Fire Dumpers
- Engine Room Fan/Blowers
- Valves fitted on Fuel supply lines under static head of fuel

14 Winches, Anchors and Capstans

14.1 Anchor winches

One Lofrans® (or equivalent) Project 2000 – 2,5kW / 24V vertical anchor windlasses, with warping drum, installed in the foredeck, each complete with chain rollers and chain stopper.
Winch operation through hand-held remote controls, with cable permanently wired to a hidden watertight junction box. Proper out-of-view storage for the remote controls shall be provided.

14.2 Anchors and chains

One Sanguineti-Chiavari® SC 92 “Bruce Type” anchor of 75 kg. One length of 100 meter galvanised 14 mm chain.
Chain washing system installed with control switch on Bridge panel and in close proximity of Anchor Winches area. Sea Water pressure through bilge/fire-fighting pumps.

14.3 Capstans

Two Lofrans® (or equivalent) T1200 - 1.2 kW/24V or equivalent on the aft deck.
Capstan operation through footswitches.

15 Electrical System

In accordance with the requirements of the Classification Society.

15.1 Components

- Generators 2x Kohler® / 20EFOZD (or equivalent) - 230 VAC/50Hz 20 KVA;
- Shore power insulator transformer 230VAC/230VAC - 50 Hz of 16kW
- 24 V DC battery banks,
- 24 to 12 VDC converters for 12 volt consumers.

15.2 General description

Yacht main power supply 230 Volt, 50 Hertz. Power supplied by two generators, capable of running in automatic managed split bus-bar system, or by Shore Power connector.
Secondary supply 24 Volt DC, two wire with negative pole grounded at batteries.
Both AC and DC system's monitoring and controlling equipment shall be housed in a specific portion of the main switch board. 12 Volt consumers shall be equipped with 24-12 Volt converters.

15.3 Additional requirements and standards:

- The main electrical panel will be tested from the Surveyor of the Classification Society (if required).
- All electrical equipment, wiring, cables, fixtures and the complete installation to be in accordance with good practice and workmanship as is applicable on board of top quality vessels.
- All electrical equipment to be located so that it is accessible for maintenance or repair.
- During dock and sea trials, the installation and the generators will be tested under full load conditions.
- Adequate charging capacity will be installed.
- An electrical load list shall be compiled at the earliest possible moment
- All the drawings of the wiring system and of the control panels will be in approved by the Classification Society.
- All cables shall be laid inside a PVC guide, securely fastened with nylon.
- Passage of cables through watertight bulkheads and tanks will be in accordance with the Classification Society.
- Special shielded cables to be used in all possible areas of interference and where required by the equipment manufacturer.

15.4 Engine starting systems

Starting systems of the Main Engines 24 VDC through one Battery pack of approximately 1700 Cold Cranking Amps.

Battery pack (sealed maintenance free type) charged by:

- Alternators on the main engines;
- Specific battery charger

NOTE
One separate set of Battery for each Engine. Only in "Emergency" condition the separate Battery packs can be "paralleled"

15.5 Generator starting systems

Starting systems of Generators 12 VDC through one Battery pack of approximately 850 Cold Cranking Amps.

Battery pack (sealed maintenance free type) charged by:
- Alternators on the Generator;
- Battery charger

15.6 24 VDC service systems

15.6.1 Services Battery pack

One bank of approximately 640Ah as auxiliary power supply and for emergency lighting.

Battery pack (sealed maintenance free type) charged by:
- Alternators on Main Engines;
- Battery charger

24 VDC consumers shall include but not be limited to:
- Navigation lights
- Emergency lights
- Emergency fresh water pump
- Emergency galley refrigeration system
- Spot light on the arch
- Part of navigation electronics
- Part of Audio-Video system

15.6.2 Main Emergency Battery pack

One bank of approximately 210Ah with battery charger.
Bank to be capable of supplying following services for a period of 3 hours:
- Navigation lights
- Emergency lights
- Spot light on the arch
- VHF
- SSB
- Fire detection system
- Compass light

15.6.3 Secondary Emergency Battery pack

One bank of 60Ah with battery charger.
Bank to be capable of supplying following services for a period of 1 hours:
- VHF
- SSB

15.7 12 VDC Service systems

12 Volt consumers to be equipped with a 24-12 Volt transformers.

15.8 Main Switch Board

Main switchboard fitted in Engine Room space. To be a full metal enclosure, dimensioned to permit the bringing in of cables from the sides as well as the bottom.
Size and total weight of the main board may dictate, that it will be split up in two or three separate sections.
The switchboard cabinet tol be fitted with ventilation openings.
Installed equipment to be arranged in a logical easy to understand manner, be properly labelled and to include but not be limited to the following items:

- Generator start/stop.
- Shore power circuit breakers.
- Main bus-bar.
- Circuit breakers for main consumers, outgoing groups, local distribution panels and spares.
- Bilge pump switching.
- Overload alarm systems.
- Electric motor starters.

15.9 Lighting

24 V AC or 24 V DC throughout the yacht for main illumination including but not necessarily limited to:

- machinery space lighting (engine room, pump room)
  - 220 V AC fluorescent fixtures
  - 24 VDC emergency lights
- exterior lights,
  - Courtesy lights.
  - Strip lighting at seat fronts. (to be confirmed)
  - Overhead spots.
  - Working lights at foredeck.
  - Emergency lights
- interior lighting (incl. forepeak)
  - Halogen ceiling spotlights.
  - Berth reading lights (if 220VAC with dimmer).
  - Emergency lights
  - Free standing lamps (if present).
- emergency lighting.
  - Unobtrusive emergency light fixtures in with fixtures in each compartment at the ceiling near entrance doors of all accommodation spaces
- navigation lighting (type in accordance to COLREG 72)
- Light fixtures, both interior and exterior shall be from BCM® or equivalent
- All switches, sockets, dimmers, etc. to be Vimar® or equivalent

A selection of light fixtures, both interior and exterior, shall be presented to the Owner for approval.

15.10 Shore power supply

One 25 metre shore power cable.

15.11 Monitoring system

Monitoring system is a PLC based platform used to supervisor and control all primary equipment of vessel. Every information regarding fault, malfunction and alarm will be displayed on the dedicated monitors.

15.11.1 Power supply and architecture

System is supplied by service batteries bank. In case of emergency situation or batteries trouble, a 230V/24V electronic feeder is used as backup supply.
PLC is installed in the main cabinet as some I/O modules. Other I/O module is installed under pilot bridge, in the crew area and in the guest area. All the modules communicated to PLC using a 2-wire BUS.

15.11.1.1 Monitors

Touch screen monitor used as *Human-machine interface*.

15.11.1.2 Alarms management

In case an alarm occur, monitoring system notify to the operator by a audible signal and by display a visual red text string on the monitors. Every alarm shall be acknowledge to tacit the audible signal by proper push button on alarms page. If alarm condition persists after acknowledgement, text displayed became green. If alarm is acknowledged and is not active, text disappear. Alarm list is including, but not limited to, the followings:

- Bilges Level
- Fuel Tank High and Low Level
- Fresh Water Tank High and Low Level
- Electrical Systems
    - Shore Voltage, Amperage, Frequency
    - Voltage Starting Batteries
    - Voltage and Amperage Service Batteries
- CO2 System
- Navigation Lights
- Hatches, Portlights, Watertight Door
- Fire Detection System
- Etc.

16 Steering

Installation of steering system to be in accordance with instruction for Surface Drive System supplier.

16.1 Steering console

Final inventory and lay out of the equipment in the console shall be worked out in co-operation with the Owner's representative.

17 Bow thruster system

The Builder shall install a BCS® hydraulic bow-thruster, *power ~27kW (~36 hp) and ~2,45 kN* nominal thrust, with joystick controls at the helmsman console. Pressure for the bow-thruster system supplied by two pumps, one on each Main Engine or Gearbox PTO. Installation to be in accordance with the system supplier.
The manufacturer's delivery shall include:
Filament wound composite tunnel with thruster pod assembly, shipped early allowing bonding into the hull at an appropriate time. (Installation of GRP Tunnel in accordance to Classification Society)

- Lubrication oil tank.
- Alarm sensors for low oil level and high oil temperature.

- Main control panel for desk mounting in the wheelhouse with joystick, control buttons and alarm.
- Detailed English language handbooks.

18 Air Conditioning System

18.1 Design Criteria

Cooling

The air conditioning system shall be designed to provide mean internal conditions of +75F/+24^{0}C and a relative humidity of 50% (±5%) under the following ambient conditions:

- Outside air temperature max. +95^{0}F/+35^{0}C
- Outside air relative humidity max. 80%
- Seawater temperature max. +90^{0}F/+32^{0}C

Heating

The heating system shall be designed to provide internal conditions of +73.5^{0}F/+23^{0}C and a relative humidity of 50% (±5%) under the following ambient conditions:

- Outside air temperature min. +23^{0}F/-5^{0}C
- Seawater temperature min. +28^{0}F/-2^{0}C

Setting the main switch on Hot or Cold will automatically reset each thermostat.

18.2 Tempered Water Unit

Two FRIGIT® seawater cooled tempered water unit shall be installed in the engine room. The system will provide cool air in the summer and hot air in the winter time.

- Mod. CHILLER 2x ED 5.;
- total refrigeration output 2x 73.160 BTU/h;
- Sea water condenser composed by two elements in cupro nichel with wide surface in counter-current; outer surface in Copper welded with Silver alloy (30%);
- Water/Freon heat exchanger with two circuits, composed by two interchangeable elements, completely made out of copper and insulated with expanded Polyuretane; no-frost protection on each circuit;
- Safety low and high pressure control with independent signal;
- Anodic protection on the evaporator and on the sea water condenser;
- Display with visualization of inlet/outlet treated water temperature;
- System totally covered by a Stainless Steel cover with variable thickness.

18.3 Fan Coils

The Fan Coils shall be provided with a three velocity selector. They shall be controlled by an electronic thermostat with the visualization of the temperature. Each Fan Coil will be installed with two interception valves to permit an easy dismantling. The Fan Coils will be located in accordance with the general arrangement approved by the Owner.
Air Handlers Unit built as follow:

- Painted Aluminium structure with high thickness;
- Thermo-acoustic insulation in self-extinguishing material: thk. 11mm;
- Water collecting plate with drainage;
- Thermal exchange through wings battery in Aluminium/Copper, pitch 2.1mm for an high dehumidification;
- Fan gauge installation on an supporting skid;

- Fan provided with a silent block system;
- Fan rpm = 900
- Velocity setting through special system, to prevent engine's noise.

18.4 Plumbing system

Piping coneing Direc Expansion System gas from the main system in the engine room with the Fan Coils, to be realised through the use of copper pipes thermically insulated by suitable covering material.

18.5 Sea water pump

System to be provided with one pump supplied by Air Conditioning system supplier

19 Tenders

19.1 Tender

One 3,85m Williams waterjet propulsion/inboard gasoline engine (or equivalent)

19.1.1 Launching, retrieving and stowage arrangements

The gangway itself will provide, through an appropriate hook, the launching and retrieving of the tender. Tender stowed inside garage space Aft.

20 Deck Equipment and fitting out

20.1 Standards

All aspects of the exterior finishing and fitting out shall be to the highest of standards. By the installation of any equipment item, special attention is to be paid that no corrosion potential or dirt collection points are created.
General guidelines are:

- All places shall be adequately drained.
- Equipment shall be, if possible, installed recessed and flush.
- All stainless steel items to be installed shall be high gloss polished.
- All storage compartments shall be adequately ventilated, self-draining (if necessary).
- All doors and hatches shall be as per Overmarine standards.
- All hardware used will be of the highest quality as per Overmarine standards.
- Concealed hinges and flush, recessed or removable handles and locks shall be used whenever possible.
- Teak decks to be traditionally laid as per Overmarine standards.

20.2 Gangway

Telescopic Gangway or Crane permitting the launching and retrieving of the tender.
Max load up to 450Kg
Length of the gangway will be ~ 4,50 m.
Teak grating walking surface
Manually assembled stanchions
Tilting capability
Infrared remote control with three handsets

20.3 Windscreen and windows

Number and position depending on General Arrangement Plan. Windscreen and windows shall be made according to shipyard's standard with a safety glass, glued into the fibreglass superstructure. Windows dimension, type, thickness and installation in accordance with Classification Society,

20.4 Portholes

Number and position depending on General Arrangement Plan. Portholes shall be constructed with stainless steel frame. Portholes dimension, type, thickness and installation in accordance with Classification Society. Removable deadlights supplied where in accordance with Classification Society

20.5 Hatches

Number and position depending on General Arrangement Plan. Installation in accordance with the requirements of the Classification Society, with central locking mechanism.

20.6 Safety equipment

In accordance with Classification Society requirements.

20.7 P.V.C. covers

PVC cover will be supplied for the followings:

- Forward sun-bed
- Windscreen
- Aft sun bed

20.8 Cushions of exterior supply

Exterior cushions with closed cell interior foam padding, covers and one sets of removable terrycloth covers.

20.9 Miscellanea

Two Boathooks.
One Spare anchor type Admiralty Kg. 35.
Two courtesy Flags.
One Country of Registry flag.
Ten pneumatic fenders.
A full set of cleaning equipment.

20.10 Deck supply

Sofas and deck supply in fibreglass or wood as per Builder standard; incorporating a refrigerator, an icemaker and provisions for the secure storage of owner supplied items. Special attention is to be paid to the ventilation of the equipment installed.
Final arrangement of Deck supply in accordance with General Arrangement Plan

20.11 Exterior woodwork

Teak decks
Laid teak, 15 mm thick, bonded onto the deck surfaces. The deck is to be traditionally laid with king planks, margin and covering planks and proper detailing around the equipment installed on the deck surfaces.
Tables
Securely fixed but simply removable (if possible) varnished wood tables as per the General Arrangement Drawing.
Final arrangement of Exterior woodwork supply in accordance with General Arrangement Plan.

21 Noise, Vibration and Insulation Measures

General
Target is to build the quietest possible yacht with an internal climate as prescribed in previous sections of these specifications. From the earliest stage of the design work all the way to the final completion of the yacht all measures shall be taken to reach these objectives.

The following items are to be taken into consideration:
- Flexible installation of engines, gears and gen-sets.
- Structure under the main deck in the engine room.
- Construction of watertight bulkheads
- Construction of casings.
- Application of absorbing compounds in specific areas.
- Flexible installations of all noise and vibration producing equipment items.
- Expansion joints in pipelines.
- Mufflers and sound dampers on Generator exhaust

22 Household Appliances

The appliances shall generally be of the best professional quality. They are to be installed in such a manner as to readily permit service and maintenance. Care shall be taken that sufficient ventilation and air discharge facilities are provided for those equipment items that do so require.

22.1 Laundry room

- Clothes washing machine.
- Condense dryer machine.

22.2 Galley

- Oven;
- Hot plates;
- Exhaust hood;
- Dishwasher;
- One Fridge.

22.3 Exterior deck

- One Icerette® (or equivalent) ice cube maker
- One Frigit® Refrigerator.

23 Audio and Video Systems

23.1 Antennas

The antennas for reception of radio and television signals shall be located on top of the radar arch. The location of the antennas in relation to each other shall be determined as a result of mutual discussion between both the audio/video and the navigation/communication equipment suppliers. The final approval of the structure design shall be by the designer.

Final List to be discussed and agreed with Shipyard on separate document

23.2 Audio and video equipment

See separate List

23.3 Navigation and Communication equipment

See separate List

24 Interior Accommodations and Fitting Out

24.1 General Requirements

- The quality of the interior of the entire yacht shall be of top luxury yacht quality, on a level equal to the Mangusta Yachts. These criteria shall apply to comparative spaces and include the choice of timbers, fabrics, fittings, fixtures, hardware, finishing levels etc.
- The overall layout of the yacht shall be fully in accordance with the General Arrangement Plan and as further detailed in Accommodation, Visuals and Detail Plans.
- Where reasonably possible the builder must consider the possibility to make all “dead” space suitable to be used for bookshelves, storage lockers, etc.

24.1.1 Ironmongery

- In the crew areas all ironmongery to be confirmed by the Owner;
- In the Owner’s and guest areas all ironmongery items to be confirmed by the Owner;
- All doors shall be provided with seagoing catches devices to prevent rattling or spontaneous opening in a seaway.
- Toilet door locks to be keyless with emergency opening facility from the cabins or corridors.
- Grab-rails shall be fitted in order to permit the safe movement of persons during severe weather conditions.
- As shall be requested/indicated by the Owner or the Designer, invisible secure hanging/fixing of pictures, sculptures and similar items shall be provided.

24.1.2 Ceilings

- Unless specifically mentioned otherwise, all ceiling panels are to be flush and removable.
- Ceilings shall conceal all ducting, cables and other services (not necessarily in the ceiling of main deck hard-top).
- Ceiling details, features and skylights to be presented by the Designer as part of his tender submission package.
- No fittings or fixtures shall be installed on ceiling panel joints.

24.1.3 Supply

- All supply items are to be as similar as possible as shown on the General Arrangement Plan, Detail Drawings and concept Visuals.
- Where required the joinery work is modified to allow for air conditioning grills.
- The insides of cupboards and wardrobes are to be finished as per Overmarine standard.
- Supply is to be securely fixed to bulkheads and/or cabin soles.
- Any loose or free-standing supply is to have securing arrangements for use at sea.

24.1.4 Mirrors and glass

- Unless specifically stated otherwise, all mirrors shall be of silver plated glass, properly glued and sealed to prevent moisture entrapment.
- All edges of mirrors to be polished. No sharp edges shall be allowed. This includes those installations where the edges may be fitted in a frame or be otherwise not in direct view.
- All interior glass shall be “safety glass”, which does not produce sharp pieces when broken.

24.1.5 Mock-ups

Prior to the taking into production of any item of joinery work, the Builder shall:

- Produce samples of all timbers (minimal dimensions to be agreed) complete with all different finishes and colours under consideration for selection and approval by the Owner.

24.2 Shipyard Supplies

24.2.1 China

12 dinner plates
12 soup plates
12 dessert plates
12 coffee cups and saucers
12 tea cups and saucers
2 big salad service bowls
2 small salad service bowls
2 round platters
2 deep platters
1 cake plate
1 sugar bowl
1 creamer

Thermos
Champagne bucket
Ice bucket
Salt & pepper
Oil & vinegar

24.2.2 Cutlery

12 dinner knives
12 dinner forks
12 dinner spoons
12 fish forks
12 fish knives
12 dessert forks
12 dessert spoons
12 coffee spoons
2 service set (service fork and service spoon)
1 cake server

24.2.3 Glasses

12 water glasses
12 red wine glasses
12 white wine glasses
12 champagne flutes
12 whisky glasses
12 longdrink glasses

24.2.4 Miscellaneous

50 coat hangers
Chrome or gold bins (1 per bathroom)

24.2.5 Outside linen

12 beach towels

24.2.6 Table linen

2 tablecloth
2 set of place mat

24.2.7 Linen for cabins

Set of bed linen (2 per bed) :
1 set = fitted sheet
flat sheet
pillowcase
bedspread

OR

fitted sheet
1 duvet
duvet cover

1 bed protection
1 pillow per person

Set of towels (2 per person)
1 set = bath towel
Face towel
Bidet towel
Hand towel

1 bathrobe per person

Bath rugs

24.2.8 Crew linen

Set of bed linen (2 per bed) :
- 1 set = fitted sheet
  - 1 duvet
  - Duvet cover
  - Pillowcase
  - Bed protection

Set of towels (2 per person) :
- 1 set = bath towel
  - Face towel
  - Bidet towel

1 pillow per person

Bath rug

25 Electronic Equipment

25.1 Navigation

Model	Description	Q.ty
FR M1944C CMAP	RADAR FURUNO NAVNET M1944C CMA	1,00
FR GD-1920C CMA	CHART/VIDEO PLOTTER FURUNO GD-1920C	1,00
FR NAV-500	PILOTE FURUNO 4.7" LCD 220X110 MM SANS COMPAS	1,00
FR PG-500	COMPASS SENSOR INTEGRATED FURUNO	1,00
FR ETR-6/10N	NETWORK SOUNDER FURUNO ETR-6/10N	1,00
FR 000-015-212	TRANSDUCER 520-5MSD	1,00
FF CTE-VIP-10B	TRANSDUCER CTEVIP10B SPEED/TEMPERATURE	1,00
FR GP-32	GPS FURUNO GP-32 WAAS 12-24VDC	1,00
FR NX700	NAVTEX FURUNO NX-700B	1,00
WINDGPS	STATION VENT + GPS SECOURS + CABLE	1,00
IS15 COMBI	REPETITEUR CADRAN AFFICHAGE COMBINE 2 OU 3 DATAS	2,00
IS15WIND	CADRAN GIROUETTE ANEMOMETRE ANALOGIQUE	1,00
ROUTEUR	ROUTEUR NMEA 4 ENTREES / 4 SORTIES PROGRAM.	1,00
IS15 POWER	BOITIER D'ALIMENTATION IS15 POWER SUPPLY	1,00

25.2 Displays

FR MU120C	ECRAN PLAT TGT COULEUR 12"	1,00

25.3 Comunication

FR FM-2721	VHF FURUNO FM-2721 DSC CLASSE	1,00
	KIT DSC FOR VHF FURUNO FM 2721	1,00
MA 1000R	LOUDSPEAKER DUAL CONE MARINE SPEAKERS X 2	1,00
ACLINE AS+	PASSERELLE MONOCANAL ANALOGIQUE GSM	1,00
TDA30	AUTOCOM PANASONIC +4PN+4PS+17630+2LCOT4+1TDA141	1,00
TCA 155	TELEPHONE COMBINE DECT PORTABLE KX-TCA155CE	7,00
SF360	FAX SAMSUNG SF-360	1,00

25.4 CCTV

TELECAMERAPTZ12/24	CAMERA DOME COULEUR	2,00
MP2E	MP2E CRESTRON	1,00
CNX B12	CLAVIER CRESTRON CNX B12	1,00

25.5 Antennes

M7	TV SAT 60CM ANTENNE TV M7	1,00
M7	DOME VIDE	1,00
VP270/011	ANTENNE VHF VEDETTE PRO - 6DB - 2.70M SANS ROTULE	2,00
RLC/016	ANTENNE ROTULE METAL BANTEN	2,00

V9130	ANTENNA DIRETTIVA TV 5D TNT MARINE	1,00
FLEET 33	SAT COM	
SMS51202NF	MULTISWITCH SATELLITE SMS51202NF SPAUN	1,00

25.6 Deck Equipments

SONKDL32S3000	TV LCD 32"HD READY	1,00
WAMBA302	DECODEUR NUMERIQUE ASTON	1,00
BOSELIFESTYLE 28	DVD HOME SYSTEM CHAINE BOSE	1,00
HP IMAGE6	EARTHQUAKE ENCEINTE ACOUSTIQUE IMAGE-6	6,00

25.7 Aft Deck Equipment

IW106	IW106 HP RECTANGULAIRE	4,00
RC48S2-40	TELECOMMANDE PERSONAL MUSIC CENTER II RC48S2-40	1,00
BOSESA-3	AMPLIFIER	1,00

25.8 Fore Deck Equipment

CDXGT50UI	RADIO LASER /I POD SONY	1,00
MA 5104	LOUDSPEAKER 4" COAXIAL MARINE	2,00
GMD616	CACHE ETANCHE WATERPROOF CAR STEREO COVER	1,00

25.9 Owner Cab. Equipment

SONKDL26S3000	TV LCD SONY 26"	1,00
WAMBA302	DECODEUR NUMERIQUE ASTON	1,00
BOSELIFESTYLE 28	DVD HOME SYSTEM CHAINE BOSE	1,00
HP IMAGE5	EARTHQUAKE ENCEINTE ACOUSTIQUE IMAGE-5	4,00

25.10 Vip Cab. Equipment

SONKDL20S4000	TV TNT LCD KDL20S4000E	1,00
WAMBA302	DECODEUR NUMERIQUE ASTON	1,00
S101	HI-FI DVD CD AMPLIFIER DENON S-101	1,00
HP IMAGE6	EARTHQUAKE ENCEINTE ACOUSTIQUE IMAGE-6	2,00
TX48077	ENSEMBLE IR XANTECH COMPLET	1,00

25.11 Guest Cab. Equipment

SONKDL20S4000	TV TNT LCD KDL20S4000E	1,00
S101	HI-FI DVD CD AMPLIFIER DENON S-101	1,00

WAMBA302	DECODEUR NUMERIQE ASTON	1,00
HP IMAGE6	EARTHQUAKE ENCEINTE ACOUSTIQUE IMAGE-6	2,00
TX48077	ENSEMBLE IR XANTECH COMPLET	1,00

25.12 Captain Cab. Equipment

SONKDL20S4000	TV TNT LCD KDL20S4000E	1,00
DVD SONY	DVD CAR RADIO SONY MEX-1000	1,00
WAMBA302	DECODEUR NUMERIQE ASTON	1,00
HP IMAGE6	EARTHQUAKE ENCEINTE ACOUSTIQUE IMAGE-6	2,00
TX48077	ENSEMBLE IR XANTECH COMPLET	1,00

25.13 Crew Cab. Equipment

CDXGT50UI	RADIO LASER /I POD SONY	1,00
HP IMAGE5	EARTHQUAKE ENCEINTE ACOUSTIQUE IMAGE-5	2,00