

SOLARIS 80 RS



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1 General

The following specification describes materials and the main production stages necessary to build a the Solaris 80 sailing yacht.

1.1 General administrative

1.1.1 General administrative requirements

The purpose of the Technical Specification is to define the technical characteristics of the Vessel in its entirety.

The Technical Specification must be read in conjunction with the general arrangement drawings.

1.1.2 Conflict between technical documents

The Technical Specification to be accompanied by the General Plan Drawings: given the highly customized nature of the Vessel, there may be from time to time a technical conflict or ambiguity between the Technical Specification and the Drawings; Builder shall exercise its reasonable discretion to resolve such conflict or ambiguity.

In the case of conflict or ambiguity between the Technical Specification and the Drawings the Specification has precedence over the Drawings and the Contract has precedence over the Specification.

As of the date of this issue of Technical Specification, Builder is not aware of any of such conflict or ambiguity.

1.1.3 List of drawings

Solaris will deliver a set of drawings intended for the correct use of the yacht and a "User Manual" written in accordance to the relevant ISO standard:

- Exterior general Arrangement
- Interior general Arrangement
- Anchoring and mooring plan
- Deck plan
- Sail plan
- Diagram and piping bilge system
- Diagram and piping fresh water system
- Diagram and piping grey water system
- Diagram and piping black water system
- Diagram and piping fire extinguishing system
- Diagram and piping Engine cooling system
- Diagram and piping Generator cooling system
- Diagram and piping Ventilation System
- Diagram and piping fuel system
- Diagram and piping fridge and freezer system
- Diagram of through Hull Fittings
- Deck drainage plan
- Electric wiring schematics AC-DC
- Navigation and Entertainment Block Diagram

1.1.4 Copyright

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1.2 General characteristics

LOA	23.98 m
LWL	22.48 m (light)
Beam	6.39 m
Draft	4.00 m
Displacement	46,0 t (light - for 4.00 m draft cast iron fin)
Ballast	12.3 t (for 4.00 m draft)

1.3 Sail area

Sail area (100% fore triangle)	325 m ²
Jib 90%	135 m ²
Mainsail	182 m ²

1.4 Engine

Main Engine	Volvo Penta D4-180 - 180 hp @2800 rpm
Transmission	Shaft line, bronze p-bracket

1.5 Generator

Electric genset	ONAN 11 kW @230 V - 50 Hz
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1.6 Tanks

Water	1500 l
Fuel	2000 l

1.7 Certification

CE assessed by RINA	Category A - Ocean
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1.8 Drawings

- Javier Soto Acebal (naval designer): water lines, hull lines and sail plan.
- Solaris Design Team (Boatyard): Hull and deck construction, interiors, stability and weight calculation, water, hydraulic, electric and electronic system.

1.9 Materials and workmanship

All materials and manufactured articles furnished by the Builder shall be suitable for marine installation and are of the best quality for their respective purpose. It shall be the responsibility of the Builder to check its purchase orders and also check all materials delivered, to insure confirmation with the details of the specification and with all normal working requirements.

1.10 Inspection

tbd

1.11 Insurance

The builder will insure the yacht during the construction and all accessories supplied by the owner. The owner must insure the yacht at her delivery, ex works boatyard.

1.12 Accessibility for maintenance and cleaning

All installations and compartments are built to be easily accessed, cleaned and maintained.

The builder will keep the yacht reasonably clean at all times. Particular care will be taken to ensure that all dust, shavings etc. are removed and the surfaces are accurately cleaned before painting. Upon delivery, the bilges and all sections of the yacht will be clean.

1.13 Weight and stability calculation

The Builder will make and check the weight calculation. Stability will be assessed according to ISO 12217-2 standard in the recommended conditions (MOC - Minimum Operation Condition and LA - Loading Arrival Condition).

Stability Index will grant the design category A for unrestricted navigation.

1.14 Trim

The Builder reserves the right to add weights (up to 1% of the displacement) to balance the yacht in the event of differences.

The heel tolerance is $\pm 0.6^\circ$, the longitudinal trim tolerance is $\pm 0.20^\circ$.

1.15 Noise limits

The noise levels in all Vessel compartments shall not exceed the following values:

- Crew cabin 63 dB(A)
- Galley 63 dB(A)
- Saloon 65 dB(A)
- Fwd guest Cabin 60 dB(A)
- Aft guest Cabin 60 dB(A)
- Owner Cabin 60 dB(A)

The test condition are with Electric genset ON and fan coils at 50% of the max speed. The noise level will be measured in the harbour.

During the measurements in the cabins the door must be kept closed.

All levels to be expressed in dB(A) and averaged over 30 s recording. Levels to be measured at 110 cm above the local sole level.

1.16 Mast and rigging

The Builder will check, with the Architect and mast manufacturer, the proper dimensions for the mast and rigging. Plans will be shown to the owner during construction.

1.17 Documentation

The yard will issue drawings and plans regarding plumbing, electrical and ventilation systems, engine and whatever necessary to control and maintain all the on-board systems. The instructions of all the equipment will be delivered on board. A detailed owner's manual with will be provided as standard in English language.

1.18 Systems descriptions

All systems are clearly labelled in English and Italian language. All cables are coded.

1.19 Warranty

The Builder shall accept responsibility for any defective workmanship and/or materials up to two years after delivery, given that this is not the result of gross negligence or incorrect use of the yacht. Should the Builder carry out warranty works on board, the Owner shall accept to pay travel and accommodation costs in case the Yacht is moored out of the European Community.

The Builder shall not be held responsible for equipment supplied by the Owner. For additional equipment, the manufacturers warranty is held liable.

The warranty terms applied are those indicated in the sales contract signed at the time of the purchase.

The Warranty covering osmosis is extended to five (5) years from the date of delivery.

1.20 Claims and Controversy

The production standard of the Solaris 80 will be the same as the Solaris 68, The Solaris 68 is taken as the term of comparison in case of controversy for the finishing, systems installations and production Standard.

2 Construction

The materials used and construction methods are designed to construct a light, yet strong and stable hull, without affecting the strength and stiffness. Hull and deck, as well as all other parts of the yacht, are designed to take high loads, providing maximum product durability.

Hull and deck are constructed in a negative mould.

All visible hull and deck surfaces are in high quality white gelcoat.

Boat structures are designed by an expert with the support of FEM analysis to ensure a safe and light construction. A European notified body will check and approve the structural design in accordance with CE rules ISO 12215 (RINa by default)

2.1 Hull Lamination

- The standard white RAL 9010 NPG gelcoat from DSM/Euroresins is applied by roll and brush on the female mold with an approximate thickness of 800 to 1000 micron (1100 micron wet).
- 2 plies of CSM 300 are hand laminated with vinylester resin to provide a chemical resistance against osmosis.
- The external structural laminate of the hull is hand laid up, the basic laminate is composed by 1 RE600/CSM 225 + 1 EBX450/CSM 150.
- The hull centerline is reinforced with plies overlap and a strip of unidirectional tapes to increase the longitudinal stiffness and resistance to slamming.
- The foam core used to create the sandwich construction is a closed cell PVC 80 kg/m³. Core density is increased in the bow sections of the hull bottom (130 kg/m³) to increase wave impact resistance (slamming). Sandwich is supplied as "Scrimp" type panels
- Core thickness is 40 mm.
- The bonding of the core is done under vacuum in different steps with a light polyester density bonder (0,70 kg/dm³).
- La pelle interna dello scafo è in resina infusa.
- One ply of EQX 1600 glass quadriaxial is applied with a total coverage
- Keel, rudder, shroud, backstay, forestay and portholes patches are applied.
- The infusion consumable are laid down with the most careful attention to avoid wrinkles and bridges
- The resin will be a modified epoxy-vinylester.
- The inner skin of the hull will be peel ply finished.

2.2 Hull Stiffeners

- The transverse and longitudinal stiffeners are infused on 80 kg/m³ PVC foam.
- Keel transverse frames are reinforced with carbon fiber unidirectional capping.
- Stiffeners web are made of EBX 600 with an orientation of +/- 45°;
- Limberholes will consist of GRP half pipes bonded in the foam before the infusion process;
- Overlaps of fiber on hull are 100 mm for the first ply then 25 mm/ply every 600 g/m² of fiber weight.
- Where the layup is very thick, an interlaminar mesh will be included among the unidirectional to enhance the resin flow and prevent dry spots.
- The resin will be a modified epoxy-vinylester .

2.3 Bulkheads

- The boat will have 7 bulkheads built in a glass fiber sandwich and infused under vacuum.

- The anchor peak bottom is enclosing, with the bow, a section of the hull which is filled with expanding foam to provide a crash box which increase the safety of the boat in case of collision
- All other bulkheads are made with 20 mm okumè marine plywood and are covered with the veneer except where the lamination is applied.
- Bulkheads are first glued to the hull with a polyester bonder containing glass fibers. Radius of 15 mm will ensure a smooth transition of stresses.
- All the structural composite and plywood bulkheads will be laminated to the hull and deck by a hand lay up of 3 EBX450/CSM150 @ 45° with vinylester resin on each face of the bulkhead.
- If one side of the bulkhead is not accessible for lamination, the lamination will be applied only on the accessible side with the double amount of material.

2.4 Deck lamination

- Deck lamination is equivalent to hull lamination in the first 2 steps
- Outer skin is laid dry onto the mold after the 2XC3M300
- 30 and 35 mm thick PVC plates are applied in sandwich areas in all the horizontal surfaces of the deck, core density will be 80 kg/m³
- Verticals inside cockpit with relevant height will be stiffened with 10 mm PVC plates
- In the high loaded points the PVC is replaced with plywood or glass plates.
- The deck area around the mast collar will be a reinforced solid laminate.
- Inner skin is laid dry after the sandwich application
- Deck beams and girders are infused in one shot with the deck
- Deck beams will be reinforced with carbon unidirectionals in high loaded areas;
- The resin will be modified epoxy-vinylester.

2.5 Ballast

- The bulb keel is designed and built for high speeds and guarantees performance and stability.
- Hydrodynamic foil sections are chosen to keep the laminar flow and reduce viscous resistance. They are optimized to maximize lift according to the sail plan.
- Bulb geometry is modeled with the support of "CFD" analysis
- The keel ballast is made of lead /antimony.
- The keel fin is built in cast iron and is connected to the hull with steel bolts.
- The fin top flange will be 50 mm thick. The holes for the keel spuds are female threaded. Spuds are M42 - A4-70 stainless steel with a non threaded portion which is in contact with the hull solid laminate. Keel bolts scantlings will be done according to ISO 12215 CE regulation.
- Keel backing plates will be 10 mm thick, U-shaped, AISI 304 steel.
- Double nuts will be tightened with a torque wrench to meet the designer's request.
- Externally, an additional lamination is provided to seal the junction between the top flange of the keel and the hull
- The keel is treated with epoxy primer.

2.6 Chain plates

- The shroud chain plates are made in composite and glued onto the hull topsides with SPABOND 340 LV. Additional lamination is provided to connect the chainplate panel to surrounding structural elements.
- The backstay chain plates are made in composite and laminated together with the transom. Additional structures are provided to spread the load to hull and deck.
- The forestay chain plate is a composite construction which is specially engineered around the genoa furler and will spread the vertical loads to the bow of the hull.
- The mast supplier is responsible for the design of the rig and for the calculation of the loads deriving from the sails. The aim is to provide a light and efficient rig, optimized for the sail plan.

2.7 Mast base

- The mast step is bolted to a brass plate embedded in the GRP stiffeners (transverse and longitudinal).

2.8 Bilge

- The tidy bilge is easily accessible.
- The bilge under the engine will be painted with white "Ceramite" by Veneziani

2.9 Engine bed

- The engine supports are bolted to composite brackets laminated to the hull longitudinal. The foam density of the stringers is locally increased under the engine supports to 100 kg/m³.

2.10 Drain holes

- The bilge drainage system is designed to get all water to the lowest point of the bilge in order to discharge outboards.

2.11 Rudders

- The yacht is steered by two balanced rudders. Two independent steering systems ensure redundancy and safety. The rudder shafts are then connected with a rod enabling each wheel to act on both rudders.
- Blades are laminated on female moulds
- The rudders shafts are machined out of a AISI 630 (17-4PH) rod and provided with welded plates for a correct load transfer to the GRP blades.
- Rudders and shaft scantling is based on CE ISO 12215-8 rule.
- A "wire and pulley" system is transferring the rotation of the wheels to the rudders through two quadrants built in Aluminium alloy.

2.12 Hull windows

- The hull topsides will have a total of 7 fixed windows placed in the VIP cabin (1), in the saloon (2), in the guest cabins (2), in the owner's cabin (1) and in owner's toilet (1).
- Windows will be built in a Grey, double layer tempered glass by Isoclima. Scantling of the glass according to ISO 12216.

2.13 Lazarette

- The transom of the hull will open to the sea and give access to the lazarette.
- The lazarette is also accessible from the 2 cockpit hatches

3 Interior

3.1 Interior design

Interior design is developed in house according to Solaris high quality standards

- The boatyard is monitoring the optimum weight distribution.
- Stowage is maximized by using all spare space.
- Okumè plywood is used for internal non-visible surfaces.
- All woodwork is carried out with the best nautical tradition.
- Rounded edges for all hatches, bulkheads, seating, lockers, etc.
- The yard counts on comfort and quality. Special care is given to soundproofing insulation.
- The high production quality, the clear, simple lines of the interior corresponding to the Solaris design, making a Solaris a unique yacht.

3.1.1 Veneer and Upholstery

- All the furniture are finished in high quality OAK WOOD, since now on defined as "veneer"
- Upholstery to be chosen from the Solaris Standard selection for cabins and saloon.

3.1.2 Finish

- The standard oak veneer is treated with an acrylic two-component varnish; applied in two or three layers, depending on the porosity of the wood;
- Lacquered surfaces are white RAL 9016;
- Internal upholstery on hull sides is in white leatherette;

3.1.3 Flooring

- The floorboards are made in 20 mm thick plywood with varnished oak veneer with longitudinal grain.
- Built to be completely removable for bilge inspections.

3.1.4 Ceiling

- 8mm thick plywood ceiling panels, covered with white vinyl upholstery treated against mold.
- To be fixed with "3M Dual Lock". All removable for inspection.

3.1.5 Cabin doors, drawers and locks

- All doors are fitted with a door lock.
- The front panels of the drawers are plywood covered with veneer and provided with locks to avoid their opening while sailing.
- Locking device will be mounted recessed or hidden on drawers and locker doors;

3.1.6 Berths and sofas

- Berths and sofas to have drawers or lockers wherever possible.
- Lee clothes will be installed on all berths

3.1.7 Companionway

- Companionway ladder finishing in veneer.

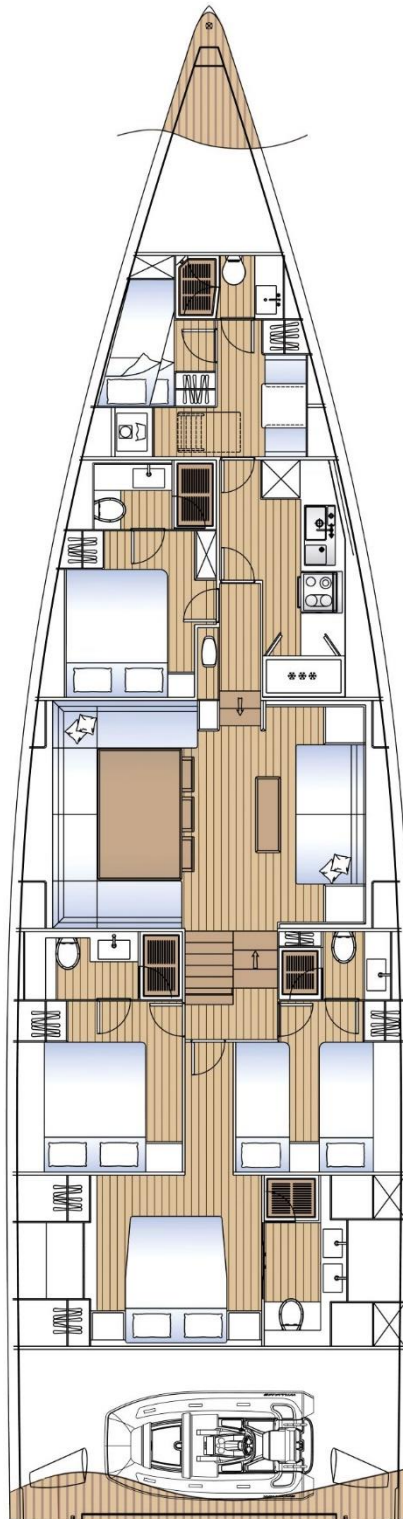
3.1.8 Handrails

- Polished stainless steel handrails in various parts of the yacht.

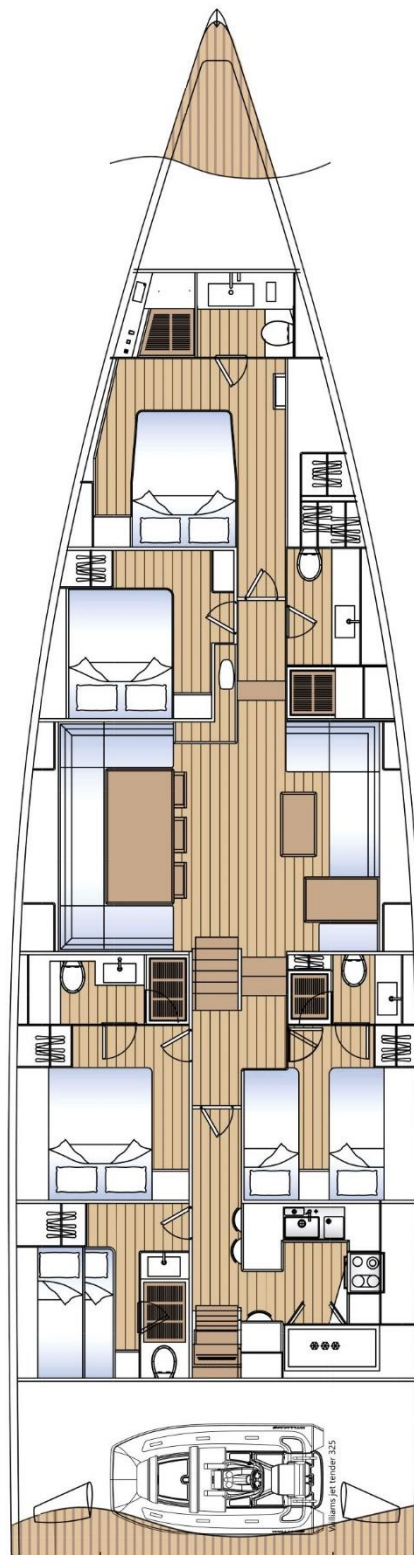
3.1.9 Black out screens

- All Hatches are provided with roller blinds and mosquito screen; Hull windows are provided with manual roller blinds
- Deckhouse windows are provided with manual blinds Layout

3.2 Layout



Interior General Arrangement LAYOUT A - may include non standard features



Interior General Arrangement LAYOUT B - may include non standard features

- The Solaris 80 has an interior layout with 5 cabins and 5 ensuite bathrooms with separate shower, a wide saloon, a large settee, an extra settee in front of the chart area, a large fixed dining table.
- The folding chart table is conveniently positioned near the companionway.

- Every area to have space exploited at the best and wherever possible, there will be stowage areas as in best Solaris tradition.

3.2.1 Sail locker

- Stainless Steel bars to hold fenders
- Stainless steel steps to climb up to the deck

3.2.2 Crew Mess

- One table with 2 settees on stbd side
- One toilet with shower, wc and sink
- Bunk bed for 2 crew

3.2.3 VIP Cabin

- One double bed with bedside table and drawers
- One full height wardrobe
- One cabinet on the side

3.2.4 Galley

- Induction stove on gimbals
- Dishwasher
- Combined electric oven with microwave
- All top surfaces in wood. On request in Corian.
- One stainless double basin sink.
- One fridge
- One freezer
- Galley with lockers and drawers to store dishes, glasses, pots and galley accessories.

3.2.5 Saloon

- A wide sofa with table on the portside with a seat depth of 500 mm.
- Table top is built with a veneer top and timber frame.
- Sofa in front of the dinette with a seat depth of 700 mm.
- Folding chart table oriented backwards.
- Locker for instruments.
- Electric switchboard with hinged door for inspection at chart table.

3.2.6 Aft port guest cabin

- Double beds with bedside table and drawers
- One cabinet on the side

3.2.7 Aft stbd guest cabin

- 2 separate beds with 1 bedside table and drawers
- One cabinet on the side

3.2.8 Owner's cabin

- Wide double bed on centerline with big drawers underneath and 2 bedside tables;
- Spacious wardrobe with integrated drawers.
- 2 cabinets at full height.

3.2.9 Toilettes

- Bathroom lockers are easily accessible for maintenance.
- All top surfaces in wood. On request in Corian;
- Composite sinks, head locker with mirror front.
- Flooring in veneer, shower cabin in polyethylene grating.
- Flooring in veneer, shower cabin in polyethylene grating.

- Shower door made of plexy glass
- 5 Toilets will be electric by Planus with fresh water flushing;
- Each toilet includes: 1 towel holder bar of 300 mm, 1 toilet roll holder and on brush with its holder and 1 towel hook;

3.2.10 Engine compartment

- The engine room is located under the saloon and provided with a main access hatch and other secondary access points.
- Engine will be provided with a cover to allow full inspection
- The Sound insulation is made of three different materials which are packed together to create a 45 mm sound barrier against different sound frequencies. (Soundfil, mapflex and white perforated aluminum plate).
- All accesses to engine room are provided with neoprene seals.

3.3 Household appliances and accessories

- Dishwasher in galley by Miele
- Combined oven with microwave – fixed
- Induction stove on gimbals.
- TV and entertainment not included and not defined

4 Engine

4.1 Engine

- The yacht will be equipped with a Volvo Penta D4-180 - 180 hp @2800 rpm with a ZF63 gerabox with R.R: 2-78:1;
- The propeller shaft will be machined in AISI 630 steel Ø50 mm.
- The P-Bracket will be casted in AB2 and have a top flange for its connection to the hull, supplied by UFIN
- A stern tube in OT.MAN will be laminated to the hull bottom
- A PSS Graphite Shaft seal will be installed on the internal side of the stern tube.
- Half shaft bearing will be installed on the external side of the stern tube
- On the engine side the shaft is supported by a thrust bearing and CV joint by GKN Aquadrive
- Instruments control panel to be mounted at the helm station.
- Engine hours counter, rpm-meter, throttle, are mounted in cockpit at helm station.

4.2 Engine exhaust and cooling system

- The engine exhaust will be water cooled.
- A dedicated seacock provided with valve will be installed in the engine room for the engine cooling sea water intake..
- A dedicated strainer will filter the cooling water.
- A steel reinforced PVC hose will deliver the sea water to the engine.
- The wet exhaust will be collected into a waterlift silencer and delivered to the water/fume separator.
- The water will be discharged outboard via a dedicated seacock

- The separated exhaust will run to the lazarette in flexible heat resistance pipes and discharged to the sea through a custom steel flanged outlet.

4.3 Propeller

- Fixed blades Propeller

5 Generator

- The yacht will be equipped with a Onan 11 kW @230 V - 50 Hz
- The genset will be installed on a dedicated steel frame.
- The genset will be water cooled and provided with a silencer.
- A dedicated seacock with valve will be installed in the engine room.
- A dedicated strainer will filter the cooling water.
- A steel reinforced PVC hose will deliver the sea water to the generator water inlet
- The wet exhaust will be collected into a waterlift silencer and delivered to the water/fume separator.
- The water will be discharged outboard via a dedicated seacock
- Dry exhaust gases will be discharged to the sea in the lazarette area (opposite side of the engine)

6 Auxiliary systems

6.1 Sea cocks

- Sea cocks are custom built by Maestrini in brass, according to a design which is among the strongest points of the Solaris tradition.
- They are bolted through the hull solid laminate, flush with the hull outer surface and life lasting.
- All seacocks under the design waterline are provided with ball valves and readily accessible for inspection and maintenance.
- Where possible the sea water outlets will be collected to a manifold in order to reduce the number of valves to be operated/inspected.

6.2 Scuppers and deck drains

- All gutters of deck hatches are collected under deck and drained naturally.
- All deck recesses as mast collar, halyard boxes, fuel and water inlet boxes are to be self draining

6.3 Bilge System

- The bilge system is designed in compliance with the ISO 15083 regulation.
- The main electric self priming bilge pump will be a Gianneschi CP30 24 V with a delivery of - 100 l/min.
- The bilge pump will be mounted above inside the engine room
- A "Genova" type water strainer by Maestrini will filter the bilge water to prevent the ingress of debris.
- All bilge hoses are steel reinforced PVC
- Suction branches are connected to a PVC grill provided with non return valve.
- The main bilge manifold is connected to a end free hose which is meant to dry the engine bilge area. This hose will have a VETUS oil/water separator BISEP19 installed on the suction side in order to separate grease from water before its discharge to the sea.
- 1 manual double action bilge pump is installed in cockpit with suction in the main bilge and lazarette (Whale Henderson MK5 75 L/min)
- 1 manual double action bilge pump is installed in the sail locker (Whale Henderson MK5 75 L/min)
- 1 auxiliary electric bilge pump will be installed in the sail locker (Gianneschi CP26- 24 V)
- 1 auxiliary electric bilge pump will be installed in the lazarette (Gianneschi CP26- 24 V)

6.4 Fresh water system

6.4.1 Fresh water system

- 2 Fresh water tanks will be installed onboard with a total water capacity of approx. 1500 L
- Tank material will be 20/10 mm AISI 304 stainless steel.
- Tanks inspection are to be sized approx. 350x350 mm.
- All internal compartments of the tanks are to be accessible for cleaning.
- Internal baffles are to be installed in order to avoid sloshing and reinforce the tanks
- Tanks are provided with electric level sensor.

6.4.2 Pumps and machinery

- The main fresh water system will be served by one fresh water pump Gianneschi Ecoinox 2 C.E. 55 l/min. with electronic pressure sensor and variable speed.
- Hot water will be granted by a 120 l water heater Gianneschi OR2-120 l with AISI 316 steel body and 2 heating elements with a total of 3 kW electric power.
- Water heater is connected to the engine cooling circuit for tele heating, hoses provided with valves.
- A thermostatic mixing valve will preserve hot water

6.4.3 Fresh water piping and distribution

- Pipes for drinking water (hot and cold) are in polybutylene, rigid and non-toxic with quick fit connections by Acorn / HEP20.
- External pipe diameter will be 22 mm for main distribution and 15 mm for branches.
- 1 Hose connection will be installed in the anchor locker for deck wash
- A separate circuit will run from bow to stern to serve the deck wash system.
- One shore connection with pressure reducer will be installed in the aft cockpit area
- Tanks will be connected with a Ø25 mm pipe to balance the level of water and to enable the filling up of both tanks with one single inlet.
- Every tap in the toilets or in the galley will be served with hot and cold water
- A shower with mixer will be installed in the aft cockpit
- Expansion vessel to compensate thermal expansion in the hot water distribution line

6.5 Black water system

- 1 holding tank built in HDPE 8 mm with a capacity of approx. 200 L will be installed in the lazarette.
- The tank will have an inspection hatch for maintenance and a deck connection for discharge
- The tank will have a High level alarm with visual and sound indicator to alert when full.
- Black water hoses are hardwall smooth cover rubber hose designed for marine toilets (Hosetechnology Sanimpomp/extra)
- Discharge pipe will have internal diameter of 38 mm.
- Tank will discharge via a macerator pump Gianneschi MV44G with bronze body.
- Discharge valves will have provision for locking when sailing in protected seas
- All 4 electric toilets will be flushed with fresh water

6.6 Grey water system

- 1 grey water tank built in HDPE 8 mm with a capacity of approx. 200 L will be installed in the lazarette.
- Tank will discharge via a macerator pump Gianneschi MV44G with bronze body.
- 4 Planus Pro Lift Mono sump boxes will collect the grey water from toilet showers and sinks
- 1 Planus Pro Lift Twin sump box will collect the grey water from the galley sink.
- Sump boxes will be provided with electronic switch and pump to transfer the content to the main tank.
- The grey water may be diverted directly outboard through a 3-way valve or to the tank.
- The drains of sinks, and showers are heat resistant flexible, white PVC pipes reinforced with a steel spiral (Hosetechnology Alimpomp/san)

6.7 Fuel system

6.7.1 Fuel tank

- 2 Fuel tanks will be installed under the saloon floor with a total capacity of approx. 2000 l.
- Tank Material will be AISI 304 stainless steel with a thickness of 20/10 mm.
- Tanks inspection are to be sized approx. 350x350 mm.
- All internal compartments of the tanks are to be accessible for cleaning.
- Internal baffles are to be installed in order to avoid sloshing and reinforce the tanks
- Tanks are provided with electric level sensor and min/max level switch.

6.7.2 Fuel piping and distribution

- Engine and generator fuel suctions are filtered by 2 VETUS fuel/water separator, easily accessible for maintenance.
- Tanks will be connected with a Ø38 mm hose ISO 7840 to balance the level of water and to enable the filling up of both tanks with one single inlet.
- Flexible hoses ISO 7840 will be used for fuel suction and return.
- Fuel vent are lead to the aft topsides of the hull.

6.8 Fire Extinguishing system

- Engine room is protected by a fixed fire extinguisher with automatic fire detection and control panel placed in the saloon.
- The extinguishing agent is FM200 non toxic gas (HFC227) supplied by Seafire or equivalent.
- 2 Fire dumpers will close automatically the air ducting to avoid fresh air getting into the Engine room if the fire has been detected.
- Capacity of the bottle to be sized according to engine room net volume.
- Portable fire extinguishers will be installed in cabins, galley and cockpit locker
- Fire blanket will be placed near the stove

7 Refrigeration , Heating and Air Conditioning

7.1 Cooling systems

- 1 freezer with a capacity of 150 liters.
- 1 double module fridge with approx. capacity of 300 liters
- Internal fridge compressors will have a keel cooler.

7.2 Ventilation system

- The engine room will be kept in optimal temperature conditions with a dedicated ventilation system
- Air will be extracted from the engine room by one centrifugal blower C503 by Gianneschi with an approximate delivery of 950 m³/h, outlet pipe Ø120 mm
- Air inlet will be natural through grid and water trap on internal side of cockpit on aft side
- Blower will be mounted on silent blocks
- Recirculating hood with active carbon filters in the galley above the oven
- 4 Toilets will have a centralized air extraction system with temporized switch



8 Deck equipment

- The standard deck equipment is designed for a sloop rig.
- All chosen dimensions are inspected by naval architects, functionality and safety is guaranteed.
- High quality brands deck equipment, in stainless steel or anodized aluminum .
- All sails will be supplied by the Owner.



Exterior General Arrangement - may include non standard features

8.1 Sail Plan

The sail plan is designed with the proportions of a 9/10 sloop

8.1.1 Self Tacking Jib

- The sail plan includes a self tacking Jib with a 90% of J
- The Jib sheet will run to a recessed transverse track blocks then is lead upwards to the mast then reverted downwards to the deck and directed to the cockpit winches and a dedicated jammer
- The jib sheet is lead to portside only.

8.1.2 Gennaker and code 0 gear

- The sailplan allows Gennaker and code 0 downwind sails – the sails are not included;
- The gennaker/code 0 tack is lead to a fixed padeye with block on top of the hull bow;
- Tack line will be secured to the mooring cleats;
- 4 fixed padeyes on the toerail with block are mounted for gennaker sheets and code 0 barber;
- 2 sheets are included.

8.1.3 Mainsail

- The mainsail will have an approximate area of 182 m²
- The mainsheet is a 2:1 system directed to a Harken 990 electric winch mounted on the mainsheet pedestal in the cockpit.
- The fixed point of the sheet is on the mainsheet pedestal.
- On the lower face of the boom there is a padeye and a turning block.

8.1.4 Sailing hardware

- Halyards run under deck from mast collar to the cockpit inside a GRP watertight box
- Organizers are mounted inside the boxes and provision is made for their accessibility
- Jammers are sized according to the corresponding loads, different models from Spinlock are used.

8.2 Deck hardware

8.2.1 Mooring

- 2 X 400 mm steel retractable cleats mounted on the toerail in the foredeck;
- 4 X 400 mm steel retractable cleats mounted on the toerail at midship for spring;
- 2 X 400 mm steel retractable cleats mounted on the toerail in the aftdeck;

8.2.2 Anchoring

- Lofrans X4 2700 W Low Profile vertical electric windlass mounted under deck in mooring locker (Max pull 2500 kg) with additional pushbutton on the steering console.
- The windlass will be equipped with gipsy only.
- Chain is automatically fed into the chain locker.
- 63 kg Delta anchor with 80 m of Ø12mm galvanized chain.
- Anchor bow roller will be provided with a tilting system to help anchor free fall
- The bow roller is welded in one piece stainless steel.
- Chain rollers will be machined in PET
- One chain stopper will be mounted in proximity of the windlass to enable the release of tension.

8.2.3 Winches

- 2 electric winches B990.3 STAA by Harken for halyards;

- 1 manual winch B990.3 STAA by Harken for mainsheet;
- 2 aluminium handles with locking system;
- All winches are made in anodized light alloy, in black

8.2.4 Peaks and lockers

- 1 chain locker to stow anchor chain, with discharge above the water line;
- 2 lockers under the cockpit seat;
- Lazarette for storage of various items with 2 accesses from cockpit

8.2.5 Hatches and portlights

1 hatch for anchor locker – teak covered	Flush, custom by Solimar
1 hatch for sail locker – teak covered	Flush, custom by Solimar
3 hatches for forward cabin – plexy	Flush mount Solimar - Size 330
1 hatch for VIP cabin- plexy	Flush mount Solimar - Size 460
1 hatch for VIP toilet-plexy	Flush mount Solimar- Size 330
1 hatches for the Galley-plexy	Flush mount Solimar- Size 460
1 hatches for the Galley-plexy	Flush mount Solimar- Size 330
2 hatches for the midship toilets-plexy	Flush mount Solimar- Size 170
1 sliding hatch for the companion way	Custom built by Solaris with 18 mm Perspex
2 hatches for the midship cabins plexy	Flush mount Solimar- Size 330
2 hatches for the owner's cabin and shower	Flush mount Solimar- Size 330
1 hatch for owner's cabin – teak covered	Flush mount Solimar- Size 460
1 hatch for owner's toilet – teak covered	Flush mount Solimar- Size 460
2 hatches for the tender Garage – teak cover	Flush, custom built by Solaris
1 transom door	custom built by Solaris

- NOTE: the flush hatches are made in GRP, firmly resin bonded to the deck and provided with integrated drainage system (Solimar or equivalent)

8.3 Pulpits and rails

- The toerail is reinforced with brass plates in way of stanchions, pulpits and pushpits
- All stanchions will be in AISI 316 with a base diameter of 30 mm, thickness 2 mm and height of 610 mm
- 2 Rails will be Ø5mm steel wire
- 2 Gates on the lifeline, one on each side amidship
- Pulpits and pushpits are designed and built by Solaris.

8.4 Teak deck

High quality teak is applied to Cockpit floor and seats

Teak caulking will be grey

Teak planks are bonded with SPABOND 370 epoxy glue under vacuum.

8.5 Canvas

- 1 folding sprayhood with storage box

8.6 General hardware

- Removable bathing ladder at the stern in stainless steel;
- Steps to descend to the transom platform;
- 2 teak cockpit table with folding wings

8.7 Steering position

- The Solaris 80 is equipped with two steering pedestals.
- Steering wheels will be in Carbon Ø1200 mm
- 2 steering consoles will allow the installation of navigation instruments

- 2 magnetic compasses will be mounted in the steering position
- 2 buttons will open/close the transom door
- Windlass commands UP/DOWN
- 1 panel on the stbd side will switch boom and courtesy lights
- Detailed design of the console will be done according to the layout of the navigation instruments requested by the owner, this can cause an extra cost.



9 Rig/Sails

9.1 Mast

- The Mast is a light aluminium alloy produced by Sparcraft in France
- The mast design and calculations will be carried on by the mast manufacturer according to the sail plan provided by the naval architect.
- The mast will have 3 sets of spreaders and be stepped through deck, tapered on the top.
- Equipped for lazy jacks.
- Anchor light on masthead;
- Deck Search light combined with steaming light visible at 5 nm;

9.2 Boom

- The boom is a light aluminium alloy produced by Sparcraft in France
- The hydraulic vang will be controlled by the manual hydraulic pump in the cockpit
- The boom will be equipped with hydraulic outhaul;
- The boom will be ready for 3 reeflines, 2 in single line and 1 traditional;
- Equipped for lazy jacks.
- 2 boom lights.

9.3 Rigging

- Shrouds in Rod - Nitronic 50
- Forestay in Rod- Nitronic 50 - foils in anodized aluminium
- Backstay in Rod - Nitronic 50

9.4 Furling system

- Bamar EJF 3 - 3C electric above deck for the Genoa

9.5 Running rigging

Main halyard	1
Jib halyard	2
Spinnaker halyard	1
Code Ø halyard - 2:1	1
Mainsheet	1
Self tacking Jib sheet	1
Topping lift	1
Reef lines	3

- All the halyards are in spectra, spliced and if necessary fitted with snap shackles and shackles. The pre-pressed ropes are spliced with snap shackles where necessary.

9.6 Hydraulic set

One manual hydraulic pump will operate:

- Vang
- Backstay tensioner
- Outhaul

10 Electrical system

Electrical system is designed and installed in compliance with relevant CE-ISO standards

10.1 24 V system

- The main electric system will be 24 V DC
- The recharging of the batteries is provided either by battery chargers or by a secondary alternator driven by the main engine.
- 2 Mastervolt battery charger for the service batteries group, capacity 100 A/24V.
- 1 Alternator 150 Ah/24V on the main engine for the service batteries.

10.2 Service batteries group

- The service group is powered by 24 Sonnenschein 70PzV 490-2V gel batteries with a total capacity of 980 Ah C10 @24 V - equipment may vary according to availability.
- The following equipment is connected to this system: Cabin lights, navigation lights, all pumps, fridge system, navigation instruments, communication and entertainment, winches, furlers, windlass.

10.3 12 V system

- 2 starting batteries for the engine with a total capacity of 150 Ah
- 1 starting battery for the generator with a total capacity of 75 Ah
- The recharging of the 12V battery pack is provided by the standard alternator of the engine.
- Mastervolt charger for the generator and for the main engine starting batteries, type 12/35-3

10.4 230 V / 50 Hz system

- The 230V 50 Hz system is connected to the shore power through a proper connector positioned in the aft area (63A) and will power all the 230 V consumers onboard;
- 230 V socket in every bathroom, galley and saloon.

10.5 Inverter

- 1X 2500 Watt Mastervolt Mass Sine 24/2500 (230V/50 Hz) will supply 230 V only to the sockets;

10.6 Electric panelboard

- The electric switchboard is split into 2 parts.
- The Right hand side of the switchboard is dedicated to the circuit breakers of the 230V alternating current (AC).
- The Left hand side of the switchboard is dedicated to the circuit breakers of the 24V direct current (DC). Users can be grouped together if necessary provided that the secondary branches are protected with fuses.
- Digital control instruments as voltmeters and ammeters for alternating (AC) and direct current (DC) and for the constant control of batteries and battery chargers.
- Bilge levels and alarms, as long as tank high level alarm will generate a visual and audio alert.
- One separate electric switchboard will be installed under the dinette settee and will power all the big electrical consumers (winches, windlass etc)

10.7 Lighting

- Interior LED lighting with recessed ceiling lights and 2 reading lights for cabins.
- One night-light installed at companionway with light switch close to the hatch. A Led red light under the 3 steps of the saloon.
- Cockpit light below the boom.
- LED courtesy lights in the cockpit
- Forward deck light on mast.

10.8 Navigation lights

- Navigation light switches on the interior panelboard.
- Led green navigation light.
- Led red navigation light.
- Led stern light.
- Led anchor light on masthead.
- Led steaming light.

10.9 Miscellaneous

- Cables sections and degree of insulation are determined according to the relevant ISO Standard
- All electric installations are properly fused.
- As far as possible leads do not pass through the bilges or in areas which may be dangerous because of dampness, heat or vibrations.
- All alternate current services and consumers are grounded with proper connections.
- All electric installations are tidy and easily accessed for maintenance.

11 Navigation and Entertainment

- Navigation instruments are not included.
- Entertainment is not included

12 Miscellaneous

- Mattresses lined in light colour fabric with zips.
- 8 fenders.

- 1 flag pole in GRP.

13 Extras

13.1 Air conditioning system

The Solaris 80 may be optionally equipped with a centralized air conditioning system based on Inverter technology and powered at 230 V; The capacity of the compressor is 65.000 Btu/h. The chiller is cooled through one heat exchanger by the sea water and may be used as a heating system until the sea water temperature is above +5 °C.

The AC system is composed as follows:

- One fancoil in Crew mess
- One fancoil in Galley
- One fancoil in VIP cabin
- Two fancoils in dinette
- One fancoil in each aft guest cabin
- Two fancoils in Owner's area

13.2 Hydraulic System and sails handling

The Solaris 80 may be optionally equipped with a centralized hydraulic system for the sail handling; the system is based on 2 electro-hydraulic pumps powered at 24 V by the service battery pack and one Hydraulic pump installed on the generator. The system is designed, supplied and commissioned by Cariboni in Italy. The system acts on the following users for sail handling and manoeuvring:

- Backstay Cylinders
- Outhaul Cylinder
- Vang
- Headstay furler
- 4 Hydraulic winches
- Mainsheet through Cariboni Magic Trim
- Self tacking jib sheet through Cariboni Magic Trim
- Bow thruster, if present
- Windlass

On request the system may include other optional features.



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