DUFOUR

CATAMARANS

USER'S GUIDE

DESIGN CATEGORY: A

According to European directive 2013/53/UE

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Index

INTRODUCTION

DUFOUR CATAMARANS is pleased to present this manual that will allow you to learn more about your boat. This manual has been developed to help you use your boat safely and with pleasure. It contains details about the boat, the equipment supplied or installed and its systems, as well as the information about their use. Read it carefully and familiarize yourself with the boat before using it. This owner's manual is not a course on the safety of navigation or the marine sense. If this boat is your first boat or if you have changed it to a type of boat with which you are not familiar, for your comfort and safety, be sure to gain experience on its manoeuvre and use before taking the Commands. Your dealer, your national sailing Federation or powerboating or your yacht club will be happy to inform you about the relevant sailing schools or instructors in the region.

Make sure that the wind and sea conditions are in line with the design category of your boat, and that you and your crew are able to manoeuvre the boat under these conditions. Even when your boat is adapted to it, the sea and wind conditions corresponding to the design categories A, B and C vary from heavy storm for category A to severe conditions for the top of category C, subject to the dangers of waves or gusts and anomalies, and are therefore dangerous conditions, in which only an experienced crew, in good shape, and trained, maneuvering a well-maintained boat can navigate satisfactorily. This owner's manual is not a detailed maintenance or repair guide. In case of difficulty use the builder of the boat or his representative. If a service manual is provided, use it.

Always use the services of an experienced professional for maintenance, installation of accessories or modifications. Modifications that may affect the safety characteristics of the vessel shall be assessed, carried out, and documented by competent persons. The builder of the boat cannot be held responsible for any changes that he would not have approved. In some countries a driver's licence or authorisation is required or specific regulations are in force. Always properly maintain your boat and consider the deterioration that results from time or, if applicable, significant or improper use. Any boat, however solid it may be, can be severely damaged if it is not used properly. This is not compatible with safe navigation. Always adjust the speed and direction of the boat to the sea conditions.

If your boat is equipped with a life raft, read the user manual carefully. The crew should have on board all the safety equipment (lifejackets, harness, etc....) corresponding to the type of boat, the weather conditions, distance from the coast, etc…. This material is mandatory in some countries. The crew should be familiar with the use of all safety equipment and with emergency safety manoeuvres (recovery of a man at sea, towing, etc.); sailing schools and clubs regularly organize training sessions. It is recommended that all persons carry appropriate flotation aids (lifejackets, personal flotation aid equipment) when they are on deck. It should be noted that in some countries it is compulsory to wear flotation aid in accordance with national regulations all the time.

WARNING

Before taking the sea, the owner/user of the boat must read this manual and know its contents, in particular all warnings regarding safe use and emergency procedures. It is the owner's responsibility to ensure that the boat is equipped with all the safety equipment required by law during navigation. The owner/user must also inform all other crew members about the proper use of the boat and the equipment and emergency procedures.

I. GENERAL SPECIFICATIONS

Design Category

The ship is designed for long journeys during which the wind may exceed force 8 (on the Beaufort scale) and the waves of significant height of 4 metres, for which these ships are broadly self-sufficient.

This ability to navigate also depends on the crew's skills, physical abilities, boat maintenance and armament.

So be very careful before going to sea.

DUFOUR CATAMARANS can not guarantee the perfect working of the ship in exceptional sea conditions (violent storm, hurricane, cyclone, whirlwind, ...)

REMINDER OF DESIGN CATEGORY

Design Category	Wind Force (Beaufort)	Vitesse du vent	Hauteur significative de vague à considérer
A	Beyond 8	Up to 28 m/s	Beyond 4 m
B	Up to 8 included	Up to 21m/s	Up to 4 included
C	Up to 6 included	Up to 17 m/s	Up to 2 included
D	Up to 4 included	Up to 13 m/s	Up to 0.5 included

Check the weather before going to sea: take the sea, not the risks!

At the Harbor: The Harbor Master's Office displays daily weather reports and forecasts for the following days.

Certification

DUFOUR CATAMARANS has chosen the Institute for the Certification and Standardization in the Nautisme as notified body to check the conformity of your boat with the ENAVE – Ente Navale Europeo S.r.l., according to the module B.

Hull Identification

The hull identification number is located near the shore power connection. It consists of a series of letters and numbers starting with IT-JJL

Building Plate

Some of the information is given on the builder's plate attached to the boat. A full explanation of this information is given below.

Design Category = **A**

Max number of people :

Category A = 12

Category B = 14

Category C = 20

Category D = 26

: recommended by the manufacturer when the boat is sailing in sea conditions corresponding to its design category.

WARNING

Do not exceed the maximum number of people recommended. Regardless of the number of people on board, the total mass of people and equipment must never exceed the maximum recommended load.

Max Load Reccomended :

recommended by the manufacturer including the mass of all persons on board, provisions and personal effects, all equipment not included in the light weight of the boat excluding the contents of the tanks.

WARNING

When loading the boat, never exceed the maximum recommended load. Always load the boat carefully and distribute the loads appropriately to maintain the theoretical attitude (approximately horizontal). Avoid placing heavy loads in the tops.

Degree of Danger

DANGER	**Indicates the existence of an extreme intrinsic risk that could give a high probability of death or irreparable injury if appropriate precautions are not taken**
WARNING	**Indicates the existence of a risk of injury or death if proper precautions are not taken.**
ATTENTION	**Indicates a reminder of safety practices or draws attention to dangerous practices that can cause injury to persons, damage to the boat or its components, or to the environment.**

Notes for the user:

All the explanation for standard equipment of the boat is written in black. When is blue, means the part is an option that could be present or not on the boat.

II. TECHNICAL SPECIFICATIONS

Technical data

	Model:	**DUFOUR CATAMARAN 48'**
	Builder	JJL CATAMARANS, via monda 128 Forlì (FC), Italy
	Architecture:	Umberto Felci
	Interior Design	DUFOUR Design
	Design Category	A
	Register Number	CE/2406
	CIN Number	IT-JJL_____
	Primary means of propulsion	Sails
L_{max}	Length overall* with bowsprit	14.70 m
L_H	Hull Length *	14.20 m
B_{max}	Maximum beam *	8.00 m
B_H	Hull beam *	7.60 m
T_{max}	Draft *	1.30 m
	Standard mainsail Surface (approx)	72 m²
	Surface Jib (approx)	48 m²
	Code Zero Surface (approx)	90 m²
	Gennaker Surface (approx)	110 m²
	Maximum permissible engine power on board	60 HP
	Water heater capacity	60 lt
	Total fresh water capacity	690 lt (3 x 230 lt)
	Total Fuel capacity	900 lt (2 x 450 lt)
	Total Holding tank capacity	250 lt (5 x 50 lt)
	Engine batteries	2 x 105 Ah
	Service batteries	3 x 140 Ah AGM (or 2 x 210 Ah as option)
M_{LC}	Light Displacement	17287 kg
M_{LDC}	Full load displacement	22035 kg

Lmax: maximum length of the boat including normally fixed parts such as davits, balconies, etc…
L_H: maximum length of the vessel including the structural parts and integral part of the boat and excluding the removable parts.

Bmax: width of the boat measured between the outermost parts and which may include removable parts such as strakes, railings, etc ...

B_H: width of the boat measured between the outermost fixed parts and excluding any removable parts

H_A: vertical distance between the light water plane and the highest point of the mast structure. (This measure does not take into account equipment such as lights and antennas that can be attached to the masthead)

Tmax: the maximum draft is measured at the lowest point of the ballast on the boat

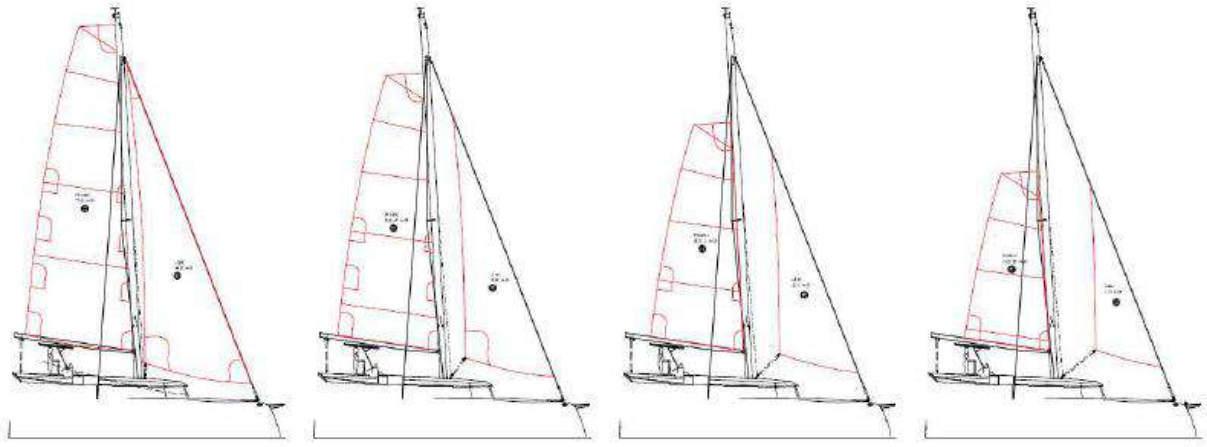
M_L: The Maximum Load is the sum of the recommended maximum load (see nameplate) and the total mass of liquids (consumables or not)

NB: the capacity of the various tanks of fresh water and diesel is generally not entirely usable according to the attitude or the loading of the ship. For diesel, it is recommended to keep a reserve of 20%.

Stability

Stability calculation are performed following **ISO/FDIS 12217-2:2015** by Felci Yacht Design Studio. To keep safety condition for boat and crew, a sail reduction table according to apparent wind is here reported.

	Transverse True Wind	Longitudinal True Wind
Full Mainsail + Full Jib	0 – 15 knots	0 – 18 knots
Reef1 Main + 2/3 Jib	15 - 20 knots	18 - 25 knots
Reef2 Main + ½ Jib	20 - 25 knots	25 - 30 knots
Reef3 Main + 1/3 Jib	25 - 30 knots	30 – 35 knots



III. ELECTRICAL SYSTEM

Safety and use instructions for the electrical system

WARNING

- Risk of fire or explosion can result from improper use of DC and / or AC systems.

Always:

- Check the condition of the batteries (charge and electrolyte level) and the charging system before going to sea.
- Disconnect and remove the batteries for overwintering.
- Maintain battery voltage above 10.5 V during winter storage.
- Take spare bulbs for all navigation lights and interior lights. Respect the powers especially for navigation lights.
- Check the operation of the navigation devices.
- Check the operation of the navigation lights before sailing at night.

Never:

- Work on a live electrical installation.
- Modify an installation and the relevant drawings, unless this is done by a qualified electrician.
- Change or modify the breaking capacity of the overcurrent protection devices.
- Replace electrical devices or equipment with components exceeding the specified capacity without recalibrating the conductors and their protection.
- Leave the vessel unattended when the electrical installation is live, possibly with the exception of an automatic bilge pump and fire or theft protection circuits.

If a fuse or breaker continues to blow, a specialist should be consulted to determine the cause of the short circuit.

12 V Systems

The main circuit is supplied in 12 V. 12 V service batteries are located in the port side engine room. The batteries can be charged either by the engine alternator or by the 110 V - 220 V / 12 V - 80 A battery charger.

Batteries

The battery bank consists of a 420 Ah service battery as standard (there are 3 batteries of 140 Ah each in portside engine room) and a 105 Ah battery for starting the engine (one in each after cabin, under the bed). The bank of batteries is located on the left after opening the engine room hatch.

As a option, instead of AGM batteries is possible to have two GEL batteries for services of the boat.

Their capacity has been studied to meet the energy needs of the accessories of the edge. To avoid any problem, it is necessary to ensure the proper charging and maintenance of the batteries

ATTENTION !

- When installing new electrical appliances, make sure that the overall consumption of these appliances is in keeping with the capacity of your batteries.
- Always disconnect the - terminal of the battery before the + terminal.
- Never put the two terminals of a battery into contact with conductive objects (tools, etc ...)
- When handling batteries, avoid leaking electrolytic liquid by holding them horizontally. Wear gloves and clothing to avoid any risk of contact with the electrolyte liquid in case of leakage.
- In the event of electrolyte splash, thoroughly rinse the contact area and consult a doctor.

The 12 V consuming appliances circuit breakers are located behind the electrical panel. They can be wound by pressing a black lug

Fans

As an option, on the boat can be installed 12 V fans for cabins and dinette.

WARNING

Do not stop the fans manually by hands or other objects when they are moving.

220 Volt Plant

DANGER !

The 220 V installation onboard is protected by a circuit breaker and equipped with a differential block. Additional onboard accessory wiring in 220 V must be carried out by professionals with the necessary recalibration of the general circuit breaker.

- Do not modify the electrical installation of the vessel or the relevant diagrams. Installation, modifications and maintenance should be performed by a qualified electrician. Check the system at least every 2 years

- Disconnect the ship power connectors when the system is not in use.

- Use electrical appliances with double insulation or grounding.
- A differential circuit breaker (DDR) test should be performed monthly if possible.

DANGER !

Your boat is delivered without a boat/dock power cable and without a plug on the dock terminal. The cable should be provided for outdoor use. Its section must be adapted according to its length and the power of the main circuit breaker (see electrical diagram). The socket must be adapted to the socket of the dock (ask a professional if necessary).

Warning: To reduce the risk of electric shock and fire.

● Turn off the docking power at the on-board disconnect device before plugging in or unplugging the boat/dock power cable.

● Connect the boat/dock power cable to the boat before plugging it into the dock terminal

● Unplug the boat/dock power cable from the dock terminal before disconnecting it to the boat

● Close the protection of the power inlet to the dock

Never:

● Modify the connections of the ship/dock power cable; Use only compatible connections.

● Swimming near a boat connected to a docking station: risk of electric shock!

ATTENTION !

When the vessel is docked, put the circuit breaker in the open position.

Location of the 220 V main circuit breaker: Starboard engine room. Check the system at least every two years. When servicing out of water, put in the closed position to have earth protection via shore power.

WARNING

Do not allow the end of the ship/dock power cable to hang in the water. This can result in an electric field that could injure or kill the swimmers located nearby.

Generator

As an option, on the boat can be installed a Generator of 12 kW of power. The generator is located in the starboard engine room. Its function is to re-supply the batteries via the chargers and supply 220 V electricity on board.

STARTING OPERATION

After having turned ON the cut-outs located in the starboard engine room, the generator can be turned on either on the generator itself or using its control located in dinette near the charter table.

1. Oil level control (ideal level: 2/3 MAX). The level should be about 2/3 of the maximum level of a cold engine. Further, if installed, the oil level of the oil-cooled bearing must be controlled before each start - see sediment bowl at generator front cover.

2. State of cooling water. The external expansion tank should be filled up to 1/3 of the maximum in a cold state. It is very important that a large expansion area remains above the cooling water level.

3. Check if sea cock for cooling water intake is open.For safety reasons, the sea cock must be closed after the generator has been switched off. It should be reopened before starting the generator.

4. Check raw water filter. The raw water filter must be regularly checked and cleaned. The impeller fatigue increases, if residual affects the raw water intake.

5. Visual inspection. Control fixing bolts, check hose connectors for leakages, control electrical connections.

6. Switch off the load.The generator should only be started without load.

7. Open fuel valve, if installed.

8. Close battery main switch (on).

For the use and maintenance of the generator, please refer to its instruction guide.

Sea water in valve (left) & Sea water out valve (right)

Cooling tank filled 1/3

IV. GAS SYSTEM

The hatch on deck leftside of sliding door has been designed to store two gas tanks (see gas plan). The circuits opening / closing valves are located in the forniture under the stove unit. Gas tank isn't supplied with the boat

Generalities

- Operating pressure: 30 mbar (see indication on gas box label and regulator valve)

- A gas-powered appliance uses the oxygen and releases combustion products. Ventilate your boat when you use this appliance through openings of hatches in dinette

- Do not obstruct the quick access to the elements of the gas installation (bottle chest, shut-off valve)

- Regularly inspect the hoses, at least annually, and change them if there are any signs of deterioration, if the expiry date has passed or if it is five years after the date of manufacture written on the hose

- Valves attached to empty bottles must be closed and disconnected. Protective caps, covers or caps must be kept in place. The reserve gas tanks shall be in lodgings or boxes for LPG cylinders with an outward ventilation circuit or stored outside the vessel, protected from inclement weather and mechanical damage and from escaping gases to evacuate only towards the outside of the boat

- LPG bottle chests must not be used for the storage of any other material

- Make sure that the gas cylinder and regulator comply with the recommendations of the stove (flow, pressure, type of gas) and the regulations in force in the country of use

Operation of gas system

- Valves on supply lines and gas tank valves must be closed when appliances are not in use, before filling and immediately in case of emergency

- Appliance faucets must be closed before opening the cylinder valve

- Limit the stove using when large angles of roll or heeling are likely

WARNING

Flame-burning appliances burning fuel consume oxygen from the cabin and release combustion products into the vessel. Good ventilation is required: open the fly hatch when appliances are running.

System Check

The LPG system should be leak tested before each use as follows:

- Close the valve of the device, open the valve of the LPG cylinder, let the gauge pressure stabilize, close the valve of the LPG cylinder, observe the pressure indicated by the manometer located near the bottle for three minutes. The pressure indicated by the manometer should be constant if there are no leaks in the system

- Information: the pressure gauge does not give an indication of the quantity of liquid LPG remaining in the bottle, but only its vapor pressure, which is a constant at a given temperature

If a leak of LPG is detected or suspected, immediately take the following measures:

- Turn off the power at the main supply tap (s).

- To extinguish open flames and other sources of ignition (heaters, cooking appliances, night lights, etc.)

- Do not operate an electrical switch.

- Evacuate the area, if possible

WARNING

Do not use a leaked installation until it has been inspected and repaired by a competent person.

DANGER !

Never use an open flame to check for leaks.

- Note: The above tests do not replace the verification that is recommended to be done by a professional periodically

Security Warnings

WARNING

- Never leave the vessel unattended when open-flame appliances are operating
- Do not smoke or use a naked flame while replacing LPG cylinders. Close the empty bottle valve before disconnecting to replace it. Ventilate the compartment housing the bottle when replacing it.
- Do not use the stove / oven as a heater.
- If a leak is detected, close the LPG main supply valve and do not use LPG appliances.
- Never smoke while going down inside the boat when it was closed, make sure there is no smell of gas.
- Do not modify the LPG system of the boat. Installation, modifications and maintenance must be performed by a competent person. Have the system checked at regular intervals or set by national requirements.

ATTENTION !

- Precautions must be taken to avoid contact with open flames and other hot areas.
- Do not use solutions containing ammonia during manual leak testing

Barbeque

The boat can be equipped with a BBQ as a option. As for the galley, the gas tank isn't supplied with the boat. Storage of gas tank for BBQ is under the BBQ.

V. LIQUID SYSTEMS

Bilge System

Two electric pumps are under the floorboard of each hull, in the portside hull under the stairs and in the starboard hull under the floor of pulman cabin. Other two electric pumps are provided in the two engine rooms near the bulkhead (see bilge plan). Each automatic pump is connected to a floating that turns it on when the water level increases too much.

In case of failing of an electric automatic pump, a manual pump is provided on deck. Take the hose DN 25 (not provided), connect the sump in the hatch near the pump to the pipe and connect the free end of pipe to the free attach on manual pump.

WARNING

The bilge pump system is not intended for the control of water from breaches in the hull. It is intended to drain water from spray, valve leakage or other moderate leakage.

ATTENTION !

- Keep the bilge water level to a minimum
- Make sure bilge pumps are in working order before going to sea.
- Regularly clean the sump and pump suction points or strainers of debris that could clog them. If watertight bulkheads isolating the front and rear peaks are fitted with valves, they shall be kept closed normally and open only to drain water into the main bilge.
- Locate each hand pump and its lever.
- Locate the electric bilge pump switch on the electrical panel.
- When operates bilge pumps in engine rooms, you are aware of discharging oily liquids into the sea.
- In case of failure of electric pump, a manual pump on deck can be used for drainage of water. Connect the hose DN 25 (storage in the hatch near the pump) to the free manual pump connection and bring the other end with sump in the proper area

Fresh Water System

The boat standard features include three 230 l tanks. To prevent any handling mistake, never fill the water and fuel tanks at the same time. One front filling cap allows the tanks to be filled up (see deck plan). During filling, avoid handling contaminants near the fillers. Open and close the filler caps with the right key. Check the filler cap seals for condition during filling. Never insert the water filling hose deep down into the system in order to prevent any over-pressure in the systems.

The sinks, showers and washdown system are fed with fresh water by an electric pump. A filter is installed in the pump circuit, it must be cleaned regularly.

The water pump is located under the small hatch in dinette under the fly central glass. (see fresh water plan). Its starting is done by using a switch on the electrical panel.
Never run the pump if the tank is empty. Fill up the tank before reusing the circuit.

It is possible to sterilize tanks with clonazone lozenge (available in pharmacies). Every year, dismantle the trap doors to clean them by filling with water containing a bactericidal detergent, let the product act a few hours and then do 2 to 3 rinses. In winter, fill the tanks thoroughly to avoid the proliferation of algae or bacteria, or empty the tanks if there is a risk of freezing, never use antifreeze. The production of hot water is provided by a water heater connected to the engine cooling circuit and the shore power socket. After draining the water heater, make sure the resistor is immersed before turning on the power again.

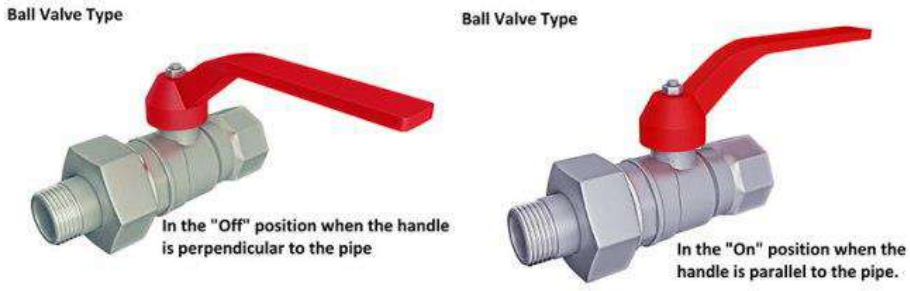
How manage the valves:

ATTENTION !

Before using fresh water terminal sas sinks, shower mixers, shower deck or washdown system make sure all the valve of the line till terminal are open

All the valves are ball valve type

- OPEN position: lever in the direction of the valve body,
- CLOSED position: lever perpendicular to the valve body.



ATTENTION !

- Never touch the tightening of the valves on the hull. In case of leak, consult a professional.
- In bad weather or when leaving your boat, close all the valves of the sanitary circuits.
- Keep valves closed when not in use and remember to handle them regularly to maintain flexibility. A valve that has not been used for too long can finally seize.
- During overwintering, clean and rinse hulls and valves. Inspect the brass accessories; slight surface corrosion is normal.
- In case of more serious corrosion, consult your dealer.

The shore fresh water inlet valve is located in the starboard aft transom. To use the marina fresh water:

- Connect the shore supply

- Set the pressure water pump switch to ‘OFF’

Operating WC

The electric toilets are rinsed with sea water. The sea water electric pump, its filter and the supply valve are located as shown in black water plan.

To operate the toilet:

One of the switches next to the toilets makes possible a water intake cycle and a water outlet cycle. The second switch makes possible to carry out a rinse cycle. Close the valves after each use. For the use and maintenance of the electric toilets, please refer to their instruction guide.

- Switch on the 12 V domestic circuit.
- Open the sea water inlet valve
- Open the waste valve of the 50 lt tank **only outside harbours**
- Charge a few amount of water in the WC using Charge Button (if already water in the WC this operation is useless)
- To empty the bowl and avoid any water movement, push the Discharge button (right one on the panel).
- Repeat these flushing / drying operations of the bowl as many times as necessary to ensure complete evacuation of the pipes
- Close the valves after use
- _°ò

ATTENTION !

In case of holding tank assembly, be sure to lock the drain valve to prevent inadvertent discharge during overwintering.

- The black water tank (50 L) is filled with the electrical WC pump.
- The contents of the bowl pours directly into the holding tank;
- Periodically check the proper functioning of the vent of each tank.
- 5 caps on deck are provided for the emptying of the tanks

- The discharge valve can be sealed in the closed position by means of a padlock.
- Provide a tank cleaning with a disinfectant and biodegradable product once a season.

Leave the system empty if the ship is parked in negative temperatures

WARNING

Use the suction systems in marinas to empty your holding tank. In order to respect environment, do not discharge your holding tank near the shore.

All the valves to operate the toilets are located under the washbasin plate of: left after head, skipper cabin, forward starboard head and after starboard head, except for the waste valve that has to be operated from the small panel under the lower bed of pullman cabin (sea black water plan)

Sea Water System

The smaller sink in galley works only with sea water. To use it, open the ball valve operated manually (see thru-hull fitting plan) and activate the Sea Water Pump on control panel.

VI. PREVENT FLOODING

To avoid the risk of flooding of the boat:

- Check the closing of the portholes and deck hatches or any other openings allowing flooding before each departure in navigation
- When navigating, close all valves when not in use, with the exception of engine water intakes.
  - Do not exceed the maximum recommended load.
  - the hold water should be kept to a minimum
  - Avoid adding masses in the tops so as not to affect the stability
- Check periodically:
  - The sealing of shells, valves and hoses
  - The good flow of the cockpit/fly evacuation.
  - The tightness of cable glands or sail-drive joints.

WARNING

The hatch cockpit must be closed before sailing. This is particularly important for chests with a high risk of flooding.

VII. FIRE FIGHTING SYSTEM

Fire extinguishers are subject to national regulations and are not supplied with the boat (except in the engine rooms). However, when in service, this boat shall be equipped with portable extinguishers with the following extinguishing capabilities and installed at the following locations (see fire fighting plan):

- N ° 1 – Starboard Engine Room, can be operated both automatically (when Temperature in Engine room reaches 93°C) and manually (with a handle on deck) - extinguishing capacity 6 kg (supply with the boat)

- N ° 2 – Portside Engine Room, can be operated both automatically (when Temperature in Engine room reaches 93°C) and manually (with a handle on deck) - extinguishing capacity 6 kg (supply with the boat)

- Other Fire Estinguisher to place as in the escape plan - extinguishing capacity 1 kg

  If you choose to install a carbon dioxide extinguisher, be aware that it can only be placed in living quarters containing electrically powered electrical equipment (e.g. electric motors, battery compartment, electric panels) or Flammable liquids (e.g. galley).

- Only compatible replacement parts must be used for the fire protection system. They must have the same indications and be technically equivalent.

- Similarly, for the protection of the bridge, a fire bucket equipped with its side wall must be stored in an immediately accessible safe.

If non-combustible materials are stored in the engine compartment, they must be insured so as not to risk falling onto the machinery and must not obstruct access to the engine compartment or its exit.

WARNING

If a CO_2 extinguisher is installed, the following information must be displayed near its location:

This fire extinguisher contains CO_2 – use it only to combat electric fires or kitchen lights. To avoid asphyxiation after discharge, leave the area immediately. Ventilate before entering.

After a fire has been extinguished, do not immediately open the engine compartment to prevent the release of toxic fumes and the projection of incandescent products (oil, water).

Safety Advices

ATTENTION !

It is the responsibility of the owner/chief of the Board:

- Check the fire fighting equipment according to the manufacturer's requirements and the regulations of your country.
- Replace the fire fighting equipment if it is outdated or unloaded, by extinguishing devices of equal or greater capacity.
- Indicate to crew members:

  - The location and operation of fire fighting equipment
  - The location of the discharge port of the engine compartment
- Ensure that fire fighting equipment is readily accessible when the vessel is occupied.
- Always keep the shims clean and check that there is no fuel or gas vapor or fuel leakage.
- Indicate the escape routes

Never:

- Obstruct the passages to the emergency exits (deck panels).
- Obstruct the safety controls (gas valve (s), fuel valve (s), electric switches.)
- Obstruct the storages containing fire extinguishers.
- Leave the vessel unoccupied with a stove or heating on.
- Use a gas lamp in the vessel.
- Fill a fuel tank or change a gas cylinder when the engine, stove or heater is operating.
- Smoking by handling fuels or gas.
- Hang curtains freely in the vicinity of the stove or other open-flame appliance.
- Store combustible products in the engine compartment.
- Modify any of the vessel's facilities (especially the electrical, fuel or gas installation) or leave unqualified personnel to proceed with the modification.

VIII. ENGINE PROPULSION

You have access to the engines through the after cockpit hatches.

ATTENTION !

Stop the engines before opening the hatches. In case you have to intervene when the engines are running:

- Stay away from belts and mobile parts.
- Be careful with full clothes, long hair, rings, etc. (they may be caught).
- Wear appropriate clothes (gloves, caps, etc.).

It is necessary to carry out a regular maintenance following the recommendations of the engine manufacturer. Carefully read the operating instructions for the motor that accompanies the boat. Do not hesitate to consult your dealer or a qualified professional. Follow the wintering instructions in particular.

ATTENTION !

Do not sail under sail and motor if the heel angle is greater than 10 °.

Any change in motorisation must respect the boat's capabilities and be carried out by a motorist specialized in marine mechanics.

After the first start-up and tensioning of the rig, check the flange of the sail drive.

- Make sure that the ventilation openings (vent, engine aeration grate) are clear.
- Make sure that the water inlet valve of the cooling system is open, and that there is a lot of water coming out of the engine exhaust.
- Check the fuel valves (situated under the the aft cabins berths, on the port and starboard tanks) are open
- Be careful to prevent deterioration of the fuel circuits.
- Do not store equipment containing petrol (outboard motor, tank, petrol generator, etc.) in compartments not provided for this purpose.
- Remember to activate the Fan in Engine Room from control panel every time the boat sails under engine

Starting the engine

Put the handle in neutral before starting the engine to prevent movement of the vessel and/or the rotation of the propeller.

A brief inspection of the propeller attachment during subsequent watering can be carried out. A malfunction of the propeller generates vibrations.

If using the anodes, they must be made of zinc. Those in magnesium must be avoided. The systems of cathodic protection by forced current are to be avoided.

If the anodes are not altered, you must check:

-that they are not painted,

-that they are properly fixed and in contact with the hull,

-that they are well zinc

DANGER !

Combustion engines produce carbon monoxide. Prolonged exposure to exhaust gases can result in serious sequelae or death.

DANGER !

The engine must not be turned on when bathers are operating near the boat in order to avoid any risk of serious damage by the propeller.

If possible, the engine must be stationary for any maintenance or control operation. Otherwise, special vigilance must be carried out to the moving parts (propeller shafts, belts, etc.) in order to avoid any risk of injury.

General information about starting

The handle must always be in the neutral position before start. The engine control system ensures that the engine receives the correct amount of fuel, even when the engine is cold. The colder the engine is, the more revolutions the engine is cranked. This increases the temperature in the combustion chambers, which guarantees a safe start and reduces starting smoke. Idle speed is also controlled by engine temperature and is somewhat higher after a cold start.

The following actions must be taken before the system is started:

1 Complete calibration

2 Start the MDI display(s)

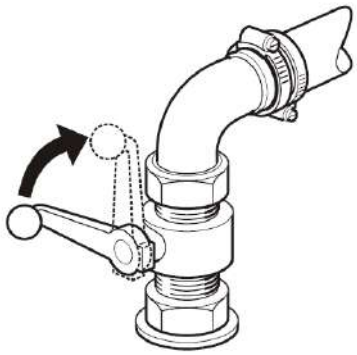
3 Fault code checks

Carry out the following before start:

1 Open the fuel tap

2 Open the seawater valve

3 Turn the main switches on



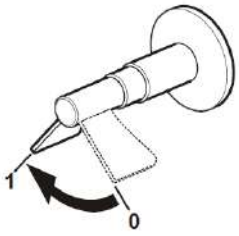
IMPORTANT!

Never switch off the current at the main switch when the engine is running. It may damage the alternator.

4 Start the engine compartment fan, where fitted, and allow it to run *for at least four minutes*.

5 Check that there is sufficient fuel for the planned trip.

6 Check that the fuel system is vented.

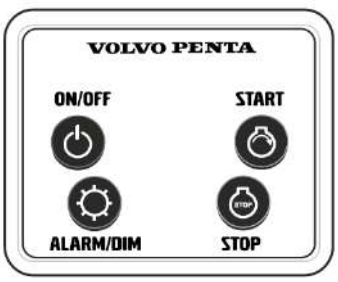


Start the engine

Turn the ignition on.
Switch on the ignition by pressing the control panel On/ Off button.

Control instruments and alarms
If a fault is registered it will be indicated on the tachometer display by a flashing light.

Start using the start button
Depress the start button. Release the start button as soon as the engine starts. Abort the start attempt if the engine does not start within 20 - 30 seconds.



Overheating protection
If the starter motor is allowed to run for its maximum activation time, the circuit will be disconnected to protect the starter motor from overheating. Allow the starter motor to cool for at least five minutes (if possible) before making a new start attempt.

Wintering

Carefully read the operating instructions for the engine that accompanies the boat and the wintering instruction.

In the absence of details, proceed as follows:

-Close the motor water inlet valve,

-Unplug the hose from the engine inlet valve,

-Drain the sea water circuit,

-Immerse the hose in a permanent liquid -25 °,

-Turn the engine until the liquid is released by the exhaust,

-Reconnect the hose to the valve at the end of the operation,

-Put a display on the electrical panel and the battery cutters indicating that the motor water inlet valve is closed.

IX. FUEL SYSTEM

The boat is fitted with two tanks. Each of them is filled separately. Check the fuel gauge of each tank on the electrical board. To switch from one tank to the other, press the "Port Fuel" button or “Stbd Fuel” one. The number are in % of capacity of the tank.

Flexible hoses for fuel must be replaced by pipes with the same marking in case of deterioration. Do the same for all fuel lines.

ATTENTION !

- The nominal fuel capacity is not fully usable depending on the plate and the loading of your boat. For safety, keep a reserve of 20%.
- Avoid contact between flammable materials and hot parts of the motor.
- Remedy any spillage of fuel in the vessel while filling the tanks.

Never:

- Store flammable material in unventilated spaces.
- Smoke while filling the tanks.
- Obstruct the ventilation openings (vent, Engine aeration Grille): Make sure they are clear.
- Modify the installation unless it is performed by a qualified technician in this area.
- Keep the fuel tanks as full as possible (to avoid condensation)

X. STEERING SYSTEM

The steering system is an essential element for the safety and comfort of your ship.

Manouver Bar

The DY CAT 48 is equipped with a wheel with wires system and chains as well as a spare bar. The main component of the systems is located in the starboard engine room.

Periodic checks to be carried out:

Check the set of the various elements (rudder wick/bearings, tension and wear of the mechanical parts) and lubricate if necessary sprocket and chain.

In case of doubt or problem, consult your dealer.

Emergency Tiller

ATTENTION !

- The DY CAT 48 is equipped with a free emergency bar which must be easily accessible, we recommend storing it in a cockpit safe.
- It is designed only for low speed navigation in case of damage to the bar.

To use it:

- Unscrew the cap using the handle

- Place the bar on the rudder's wick head

XI. NAVIGATION

Before leaving the dock

Close all the hull portholes (safety hatches included), covers, deck hatches and windscreen panels.
Unlock all the doors and chests, then check that the bilges are empty of water.
Check that the hatch of the raft is unlocked. Open the diesel valves and the seawater plugs

Fill:

• The fresh water tanks from the front starboard cap on deck

• The diesel tank from the two caps on the transom.

Then check the diesel and water level on the indicator

Check that the windlass circuit breaker and the service circuit breaker are activated.
Check the water and diesel levels on the dashboard ("Navigation instruments" switch on the electrical panel).

Place the safety equipment outside (life belts, life rafts, etc.) according to the regulations of the country in force.

WARNING

In all situations, adjust the speed of your boat to the surrounding conditions and keep a safe margin. Pay special attention:

- To the state of the sea, to the currents, to the force of the wind.
- To traffic
- To port maneuvers
- To the passages in the Anchorage zones.
- Observe the priority rules as defined by the rules of the road and imposed by the COLREG.
- Ensure you always have enough distance to stop or maneuver if necessary to avoid a collision
- Observe the speed limit zones.
- By courtesy and safety for other vessels, be careful not to produce an important wake near other boats
- Carefully fix the moving elements when the boat is ongoing

WARNING

- You must equip your boat with lifelines. Anchorage points are provided on the bridge. Refer to your boat's fittings plan.
- The stability of your boat has been studied taking into account the weight of the boat in light condition, the standard equipment on board and the site catalogue options. Any change in the layout of the masses on board (for example: the addition of a radar, the change of an engine, etc...) can affect the stability, the attitude and the performance of your boat. Surf waves are important dangers to stability. Towing a boat results in a significant overload, adversely affecting the stability of your boat.
- Never:

  Lift large weights using the boom.

Two stairs, one on the starboard and the other on the port side, lead you from the cockpit to the steering wheel on the flying bridge. While sailing, pay attention to the possible movements of the boat when using the stairs.

WARNING

Some area of deck and fly are inaccessible during navigation. This refers to all conditions where the boat isn't stationary (so also during manouvring, anchoring, mooring, etc…)

Check the fly/deck plan to better understand the inaccessible area

XII. PREVENTION OF FALLS AND MEANS OF REBOARDING

When navigating, it is recommended to move only to areas of the bridge provided for this purpose. These areas (sidedecks, cockpit, roof, side seats...) are equipped with anti-skid or teak flooring as per option, allowing safe travel. There are some areas of the deck and of the fly where access is forbidden during navigation

It is also recommended to use the harnesses by attaching to the various points (bollards) of attachment mentioned on the deck plan, depending on the conditions of sea, wind

When navigating, use the various hand grips that are handrails, cockpit table, deckhouse side handrails, shrouds, etc., if possible.

The DY CAT 48 is equipped with an onboard ladder that fits on the leftside transom. To use it, insert the ladder into the sockets provided for this purpose.

XIII. ENVIRONMENTAL PROTECTION AND SECURITY

We invite you to keep abreast of local environmental regulations, and to comply with international regulations against pollution in the marine Environment (MARPOL) and codes of good practice.

Do not unload the toilets or the contents of the retention tanks near the coasts or in prohibited areas and use the port or marina pumping systems to empty the retention vessels before leaving the port.

ATTENTION !

- Most maintenance products, motor oils and hydrocarbons are not environmentally neutral, so they must be discharged in regulated areas (check with the Harbour Master's office).
- Do not start the bilge pump when there is oil or hydrocarbon in the engine compartment as it is necessary to unload these products in regulated areas.
- Some products may also pose a risk to your safety and that of others, so it is important to read and follow the instructions for use.
- The substances used must be labelled and stored in a suitable location on the vessel.

XIV. SECURITY WEAPONS

Compulsory security armament is not harmonised within the European Community. You should be informed about the national regulations in force for the vessels marked CE.

Pleasure craft bearing the CE marking must have on board the equipment for the navigation category under the responsibility of the boatman.

Your boat is equipped with a location to store a life raft. The crew must be familiar with the use of all safety equipment (harness, rocket, life raft, etc...); sailing schools and clubs regularly organize training sessions.

XV. HANDLING, TRANSPORTATION, DRY SETTING

When haulage the boat, make sure that the belts are correctly positioned and that they are not worn on the propeller, the sail-drive or a fragile probe.

The gantry cranes will be wide enough or equipped with spacers so as not to exert on the strake of excessive transverse efforts.

Avoid the slings being worn on the dies. When transporting or drying, it is appropriate that the keel is in support of its sole and bears the bulk of the weight of the boat.

The pads must be positioned at the level of structural elements and exert only the pressure necessary to the proper balance of the boat.

Take advantage of the water outlets to inspect the propeller, rudder, hulls and probes.

XVI. MOORING, ANCHORING AND TOWING

Be sure to regularly inspect the different anchor points of the boat. If any of them have visible signs of deterioration, they must be replaced.

ATTENTION ! (ISO 15084:2003)

- Anchorage points for Anchorage and/or towing are the 2 front cleats
- Always tow or be towed at low speed. Never exceed the speed limit of a travel hull when towing.
- A towing cable must always be moored so that it can be dumped under load.

Anchoring

ATTENTION !

- Before you anchor, check the type of the sea bed, the depth of water and the strength of the stream, the space you have from other boats already anchored
- During anchoring, when the chain is lowered, it is advisable to move back slowly to help the chain lay out on the sea bed with the bow head towards the wind direction
- Be aware that when the wind direction changes the boat turns with it (like a flag) around the anchor, so the space from other boats or from the shore can reduce significantly

The electric windlass works with the 12 V service batteries. Activate the windlass using its control located in the hatch. If the electrical windlass does not function properly, check its fuse. For the maintenance of the windlass, please refer to the manufacturer's guide.

Unhook the safety hoist and drop the anchor and chain to a few metres from the final length desired. Hook the chain to the bridle snap hook available in the anchor locker

Drop the end of the length of chain desired until the anchoring tension is picked up by the bridle

Lifting the anchor

Raise the anchoring slowly, checking that the anchor is placed correctly in its davit. When the anchor is close to the davit, check that the tip moves into the davit entry roller in the right direction.

Lock the chain with the hoist provided. The circuit breaker is triggered if there is too much effort applied to the windlass; reset it to restart the windlass.

It is the responsibility of the owner/operator to ensure that mooring ropes, tow ropes, chains and mooring lines and anchors are adequate for the intended use of the vessel, that is, the lines or chains do not exceed 80% of the fracture resistance of the corresponding anchorage point.

In addition, the owner should take into consideration the necessary actions when attaching a tow rope on board.

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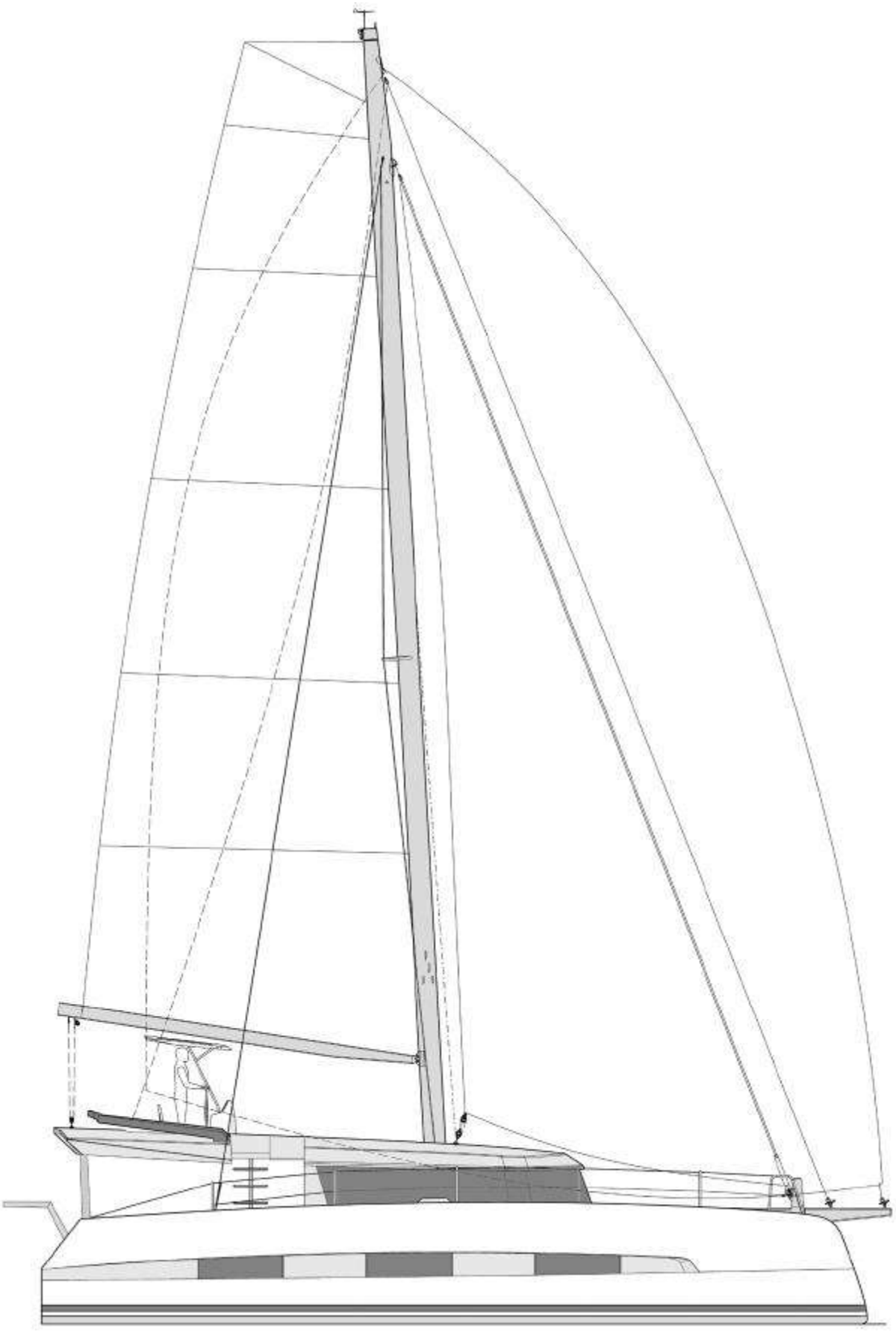
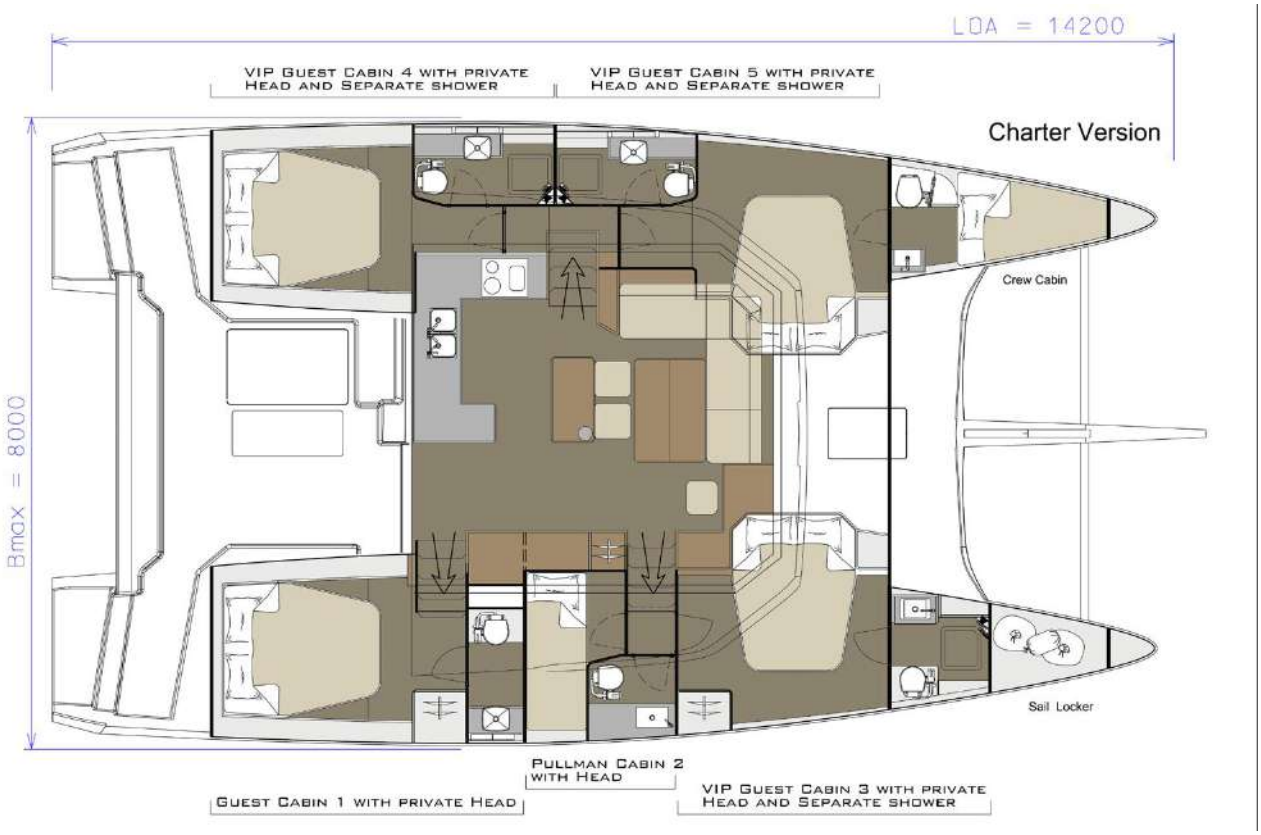
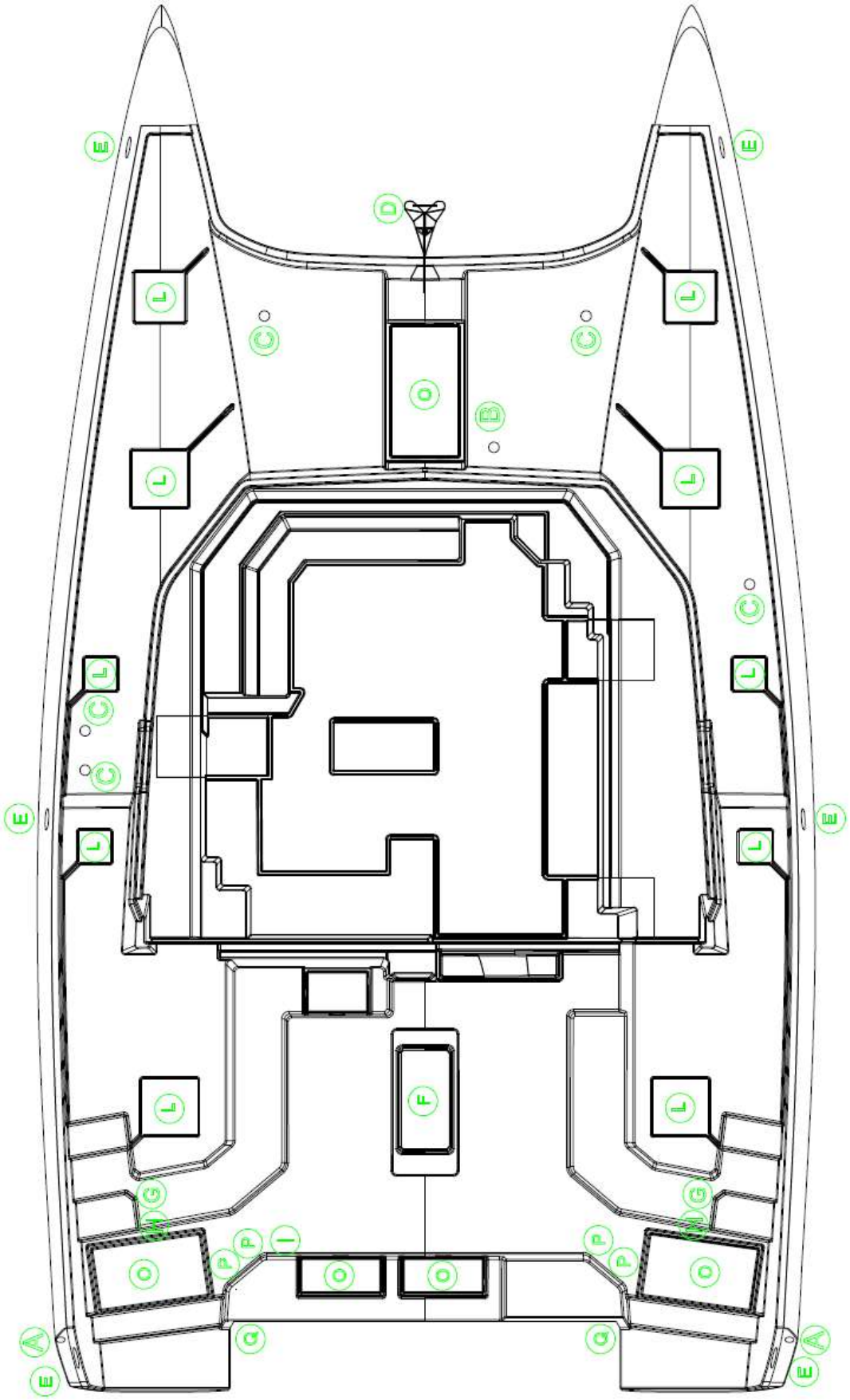
1. General plan




LOA = 14200
VIP Guest Cabin 4 with private Head and Separate shower
VIP Guest Cabin 5 with private Head and Separate shower
Charter Version
Crew Cabin
Bmax = 8000
Sail Locker
Pullman Cabin 2 with Head
Guest Cabin 1 with private Head
VIP Guest Cabin 3 with private Head and Separate shower

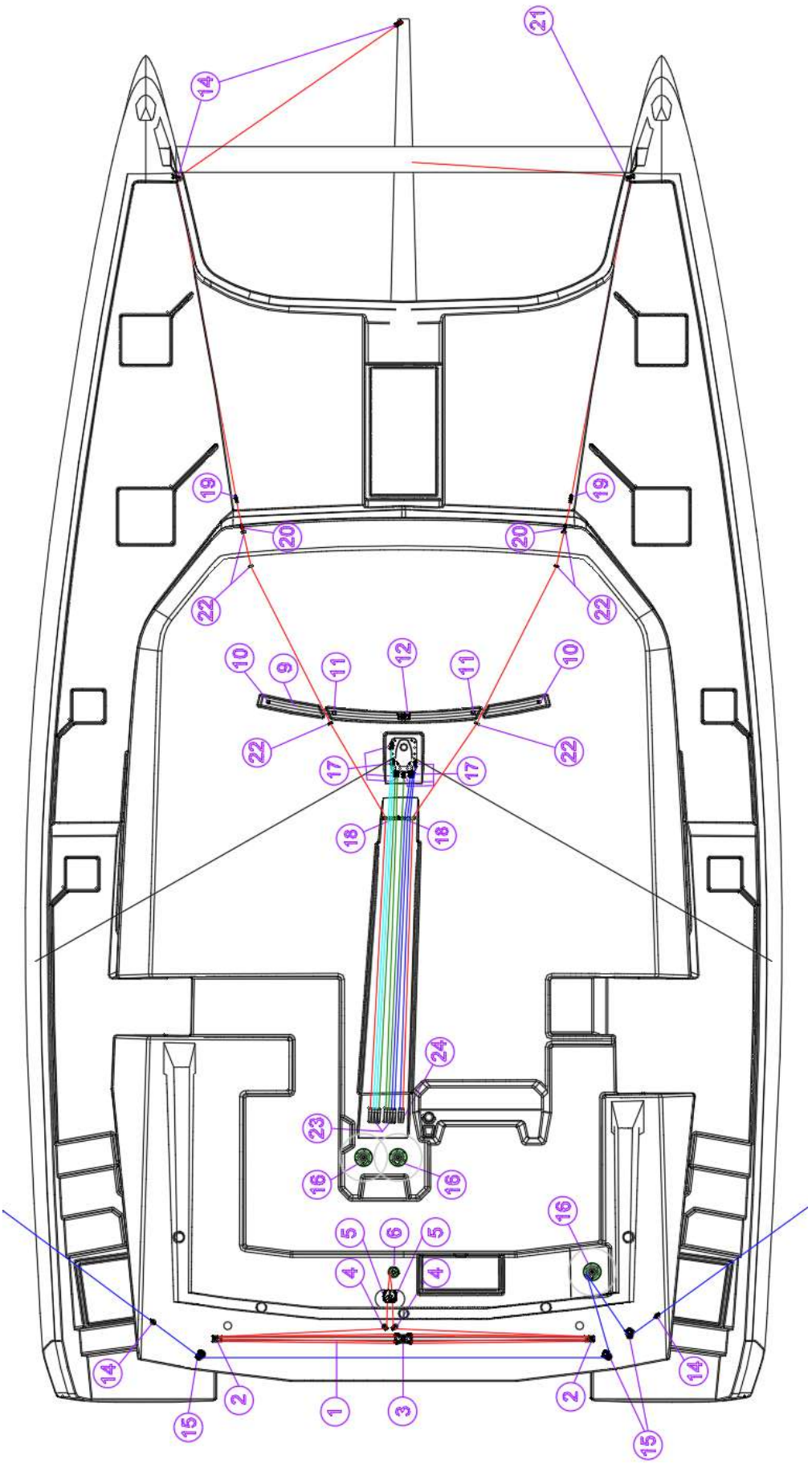
2. Deck Plan

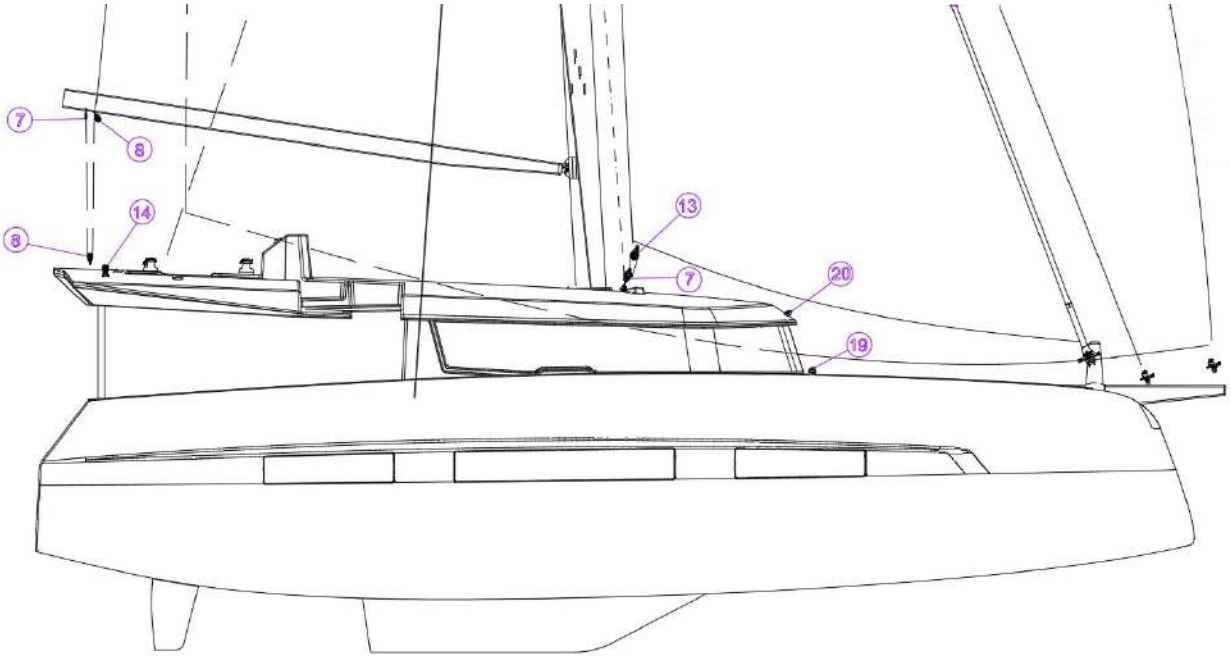
Ref.	***Description***
A	Fuel Cap DN 50
B	Fresh Water Cap DN 38
C	Black Water Dock DN 50 (1 each Black Water Tank)
D	Anchor **
E	Bollard
F	Life Raft **
G	Fuel Manual Stop Handle
H	Fire Manual Handle for activating fire-estinguisher
I	Manual Pump
L	Windows imperatively Closed in NAVIGATION
M	Emergency ladder **
N	Harness Attachment Point for Lifeline (Bollard)
O	Hatches imperatively Closed in NAVIGATION
P	Air Inlet Grill 125 mm x 125 mm
Q	Air Outlet Grill 85 mm x 85 mm
**	Not supply with the boat

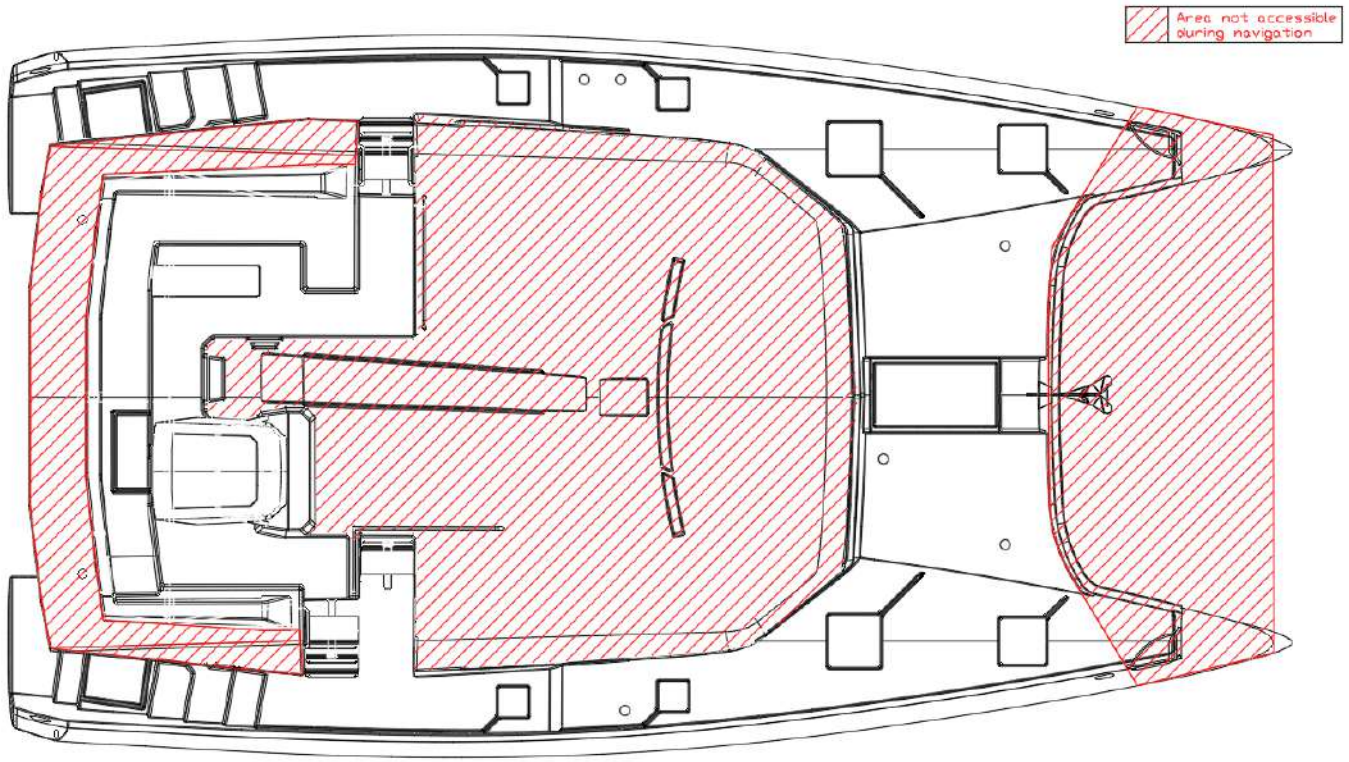

E
E
D
L
L
C
C
O
B
L
L
C
L
C
C
L
E
L
L
E
F
L
L
G
G
O
P
P
I
O
O
P
P
O
G
G
A
A
E
E

3. Fly Plan

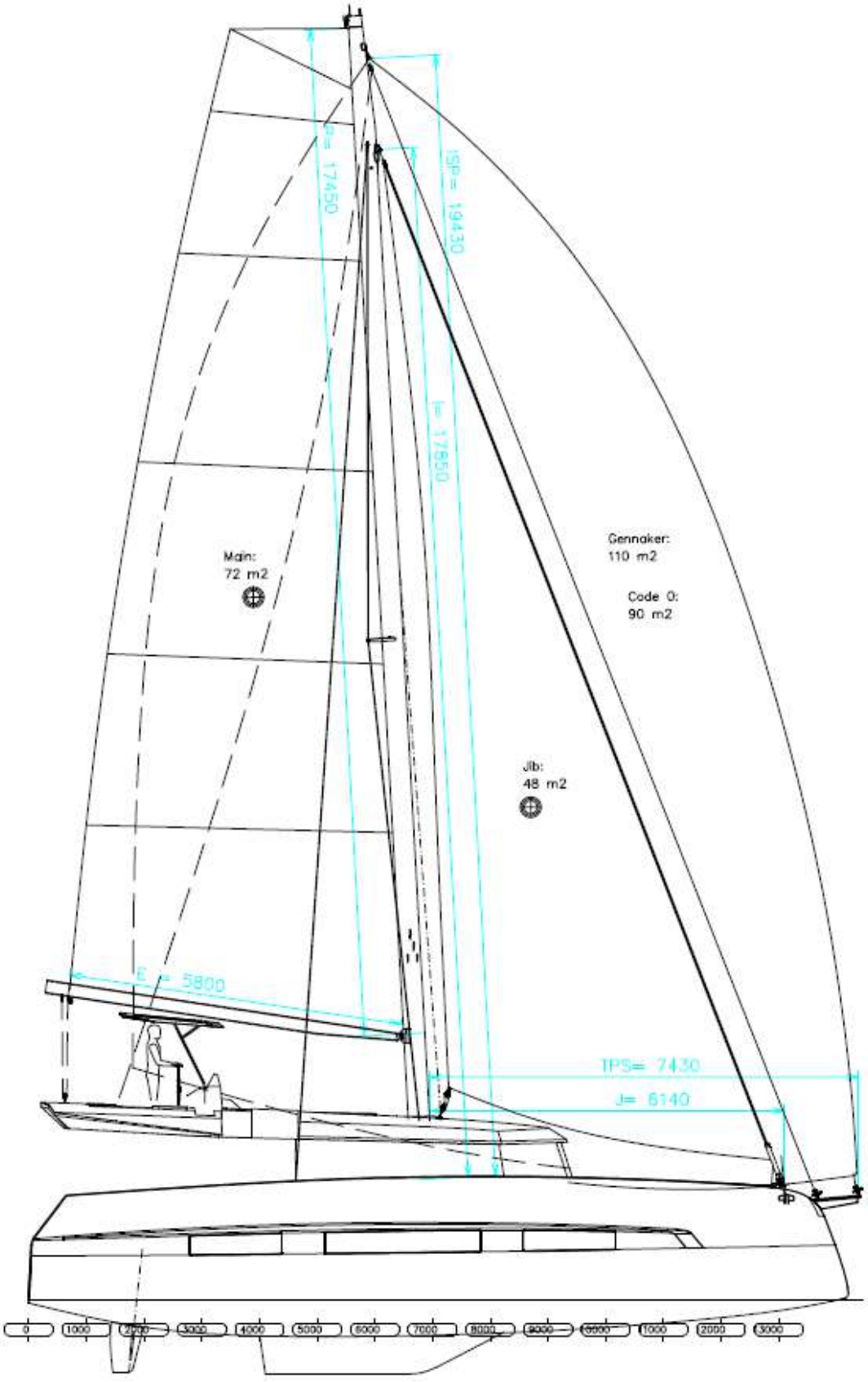
Ref.	Description	Quantity
	MAIN TRACK	
1	Standard Track 31 x 21 4 m	1
2	End fitting with double sheave and becket	2
3	Car L 190, stand up joint for 90 mm block, 2 double sheave	1
4	OPF foot block 50	2
5	Clutch CAM611	2
	MAIN CAR CONTROL WINCH	
6	Winch ST – alu – 16:2	1
	MAIN SHEET	
7	OPF block 80 with becket	1
8	OPF block 70 (shackle included)	2
	SELF TACKING TRACK	
9	STandards track with stop pin holes – 31 x 21 3 mt	1
10	Simple end fitting	2
11	Adjustable stop pin	2
12	Car L150, stand up joint for 75 mm block	1
	SELF TACKING SHEET	
13	Single Looper block 80 with loop	1
7	OPF block 80 with becket (shackle included)	1
	GENNAKER SHEET	
14	OPF block 80 on padeye with spring	2
15	OPF foot block 80	3
	GENNAKER WINCH	
16	Winch ST -alu- 2 speed	1
	MAST BASE	
17	OPF block 80 on padeye with spring	8
18	MRO -6 holes 14 mm	2
	JIB FURLING LINE	
19	Tulip vertical	1
20	Tulip over the top	2
21	OPF block 60 on padeye	1
22	Anello ponte 14 mm	3
	TACK LINE	
19	Tulip Vertical	1
20	Tulip over the top	2
21	OPF block 80 on padeye	2
22	Anello ponte 14 mm	3
	STOPPER	
23	Stopper V-Cam 814 10/12 - quadruple	2
24	Stopper V-Cam 814 10/12 - double	1
	CONSOLLE WINCH	
16	Winch ST -alu- 2 speed	2
*	Optional	

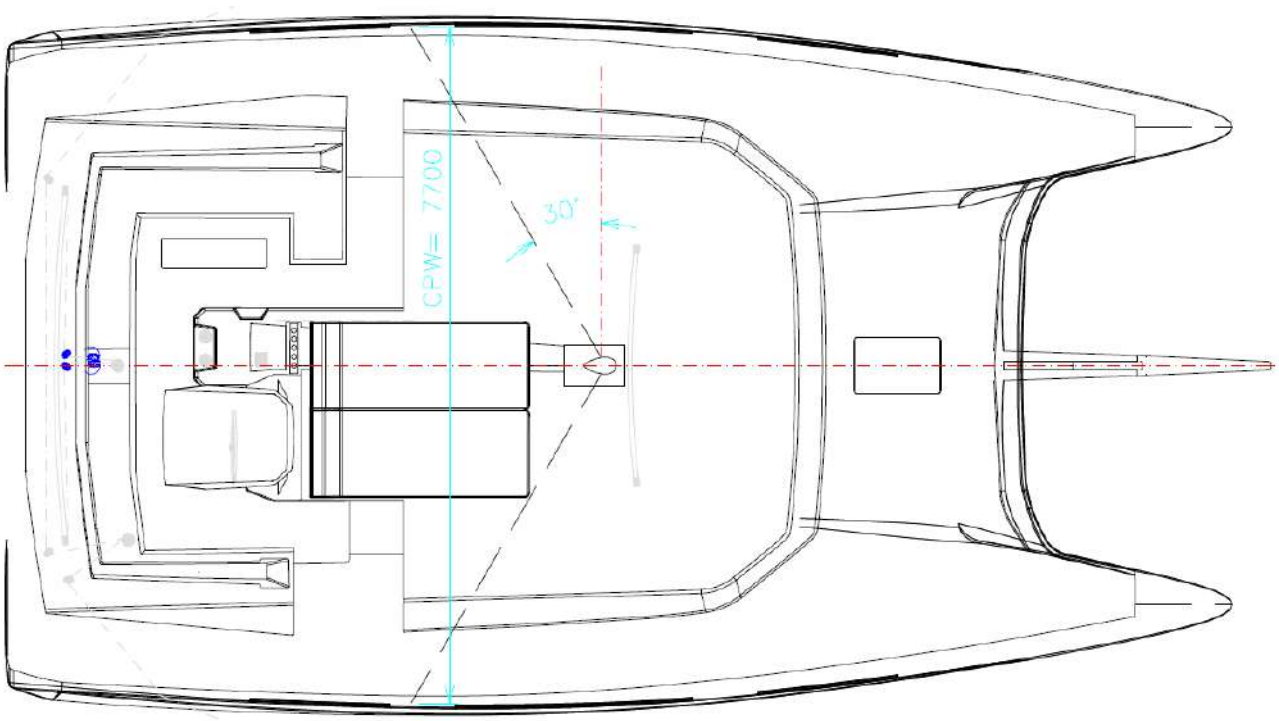

21
14
19
19
20
20
22
22
10
9
11
12
11
10
22
22
17
17
18
18
24
23
16
16
5
6
5
4
4
16
14
14
15
2
1
3
2
15


7
8
14
8
13
7
20
19


Area not accessible during navigation

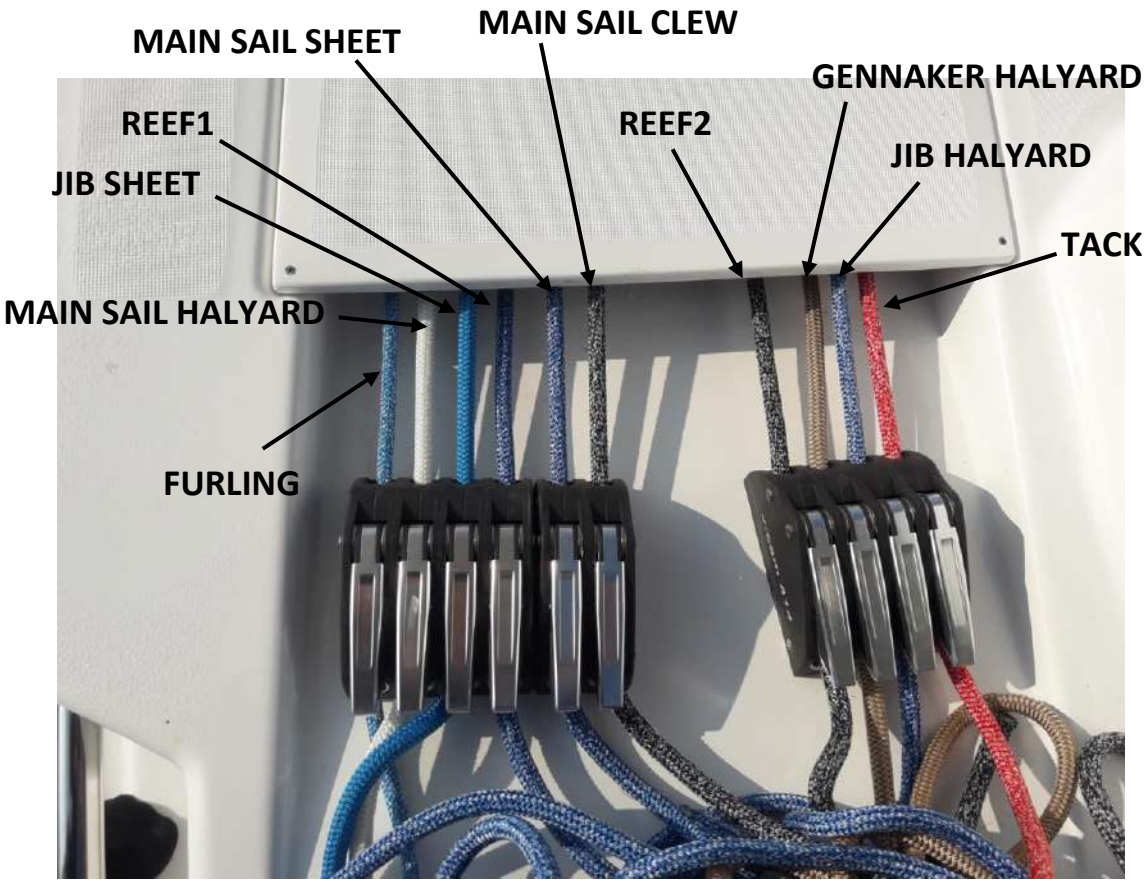
4. Sail Plan

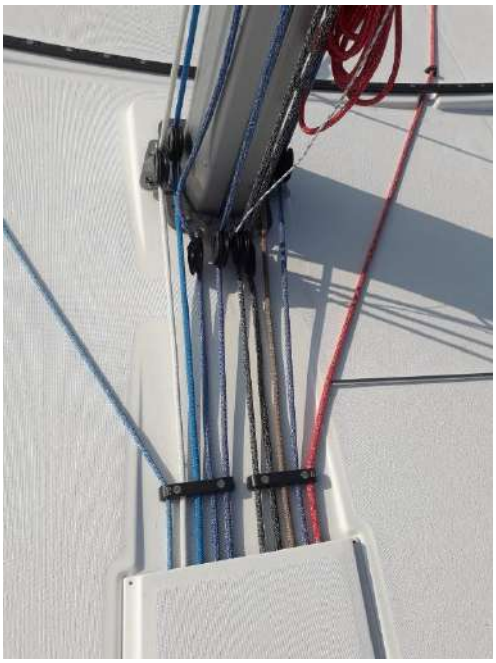

P= 17450
ISP= 19430
I= 17850
Main:
72 m2
Gennaker:
110 m2
Code 0:
90 m2
Jib:
48 m2
E = 5800
TPS= 7430
J= 6140
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
1000
2000
3000



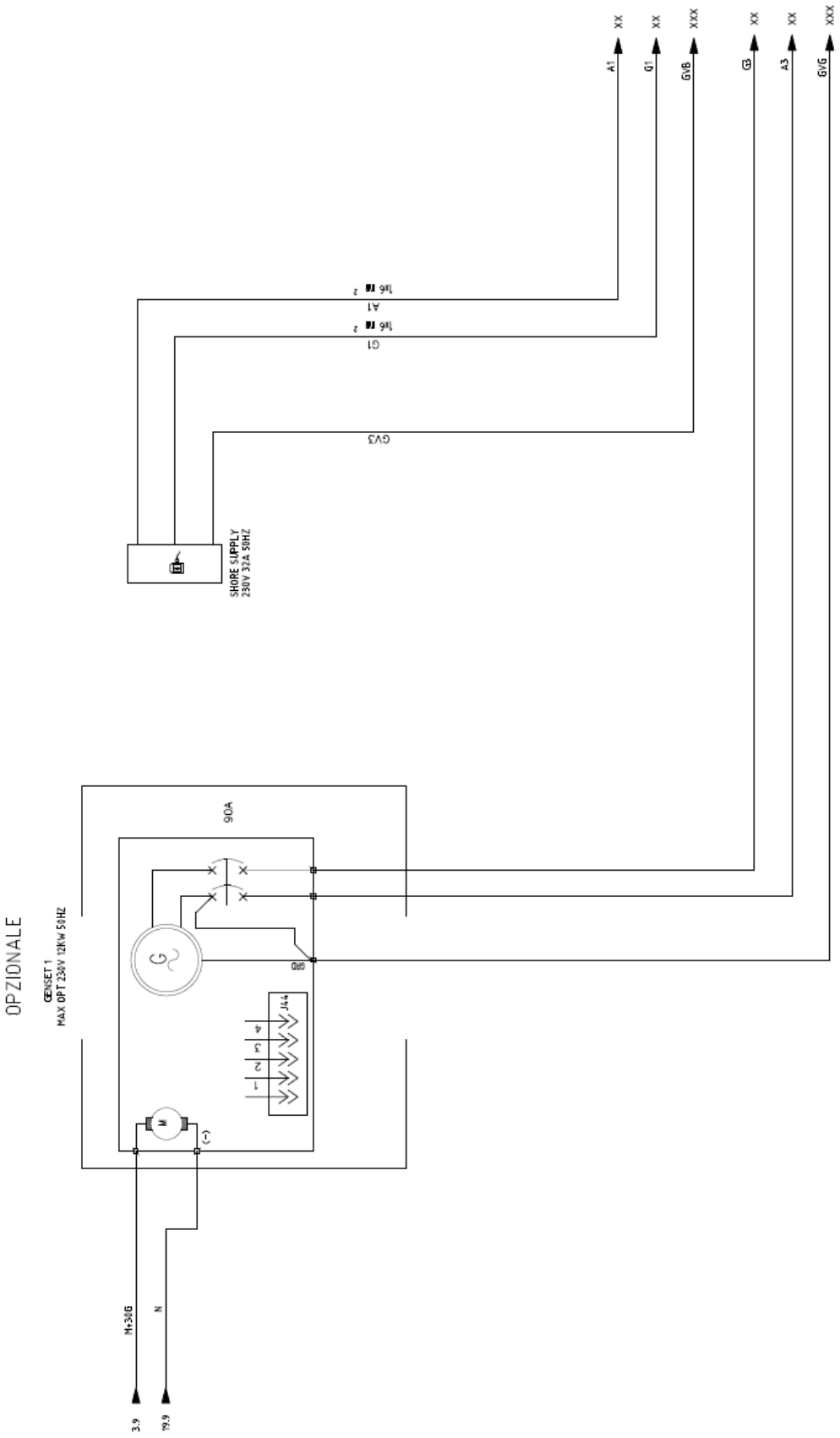
Sail Area Upwind	120 m²
Main Sail Area	72 m²
Furling Jib	48 m²
Code 0 *	90 m²
Gennaker *	110 m²
*	Optional

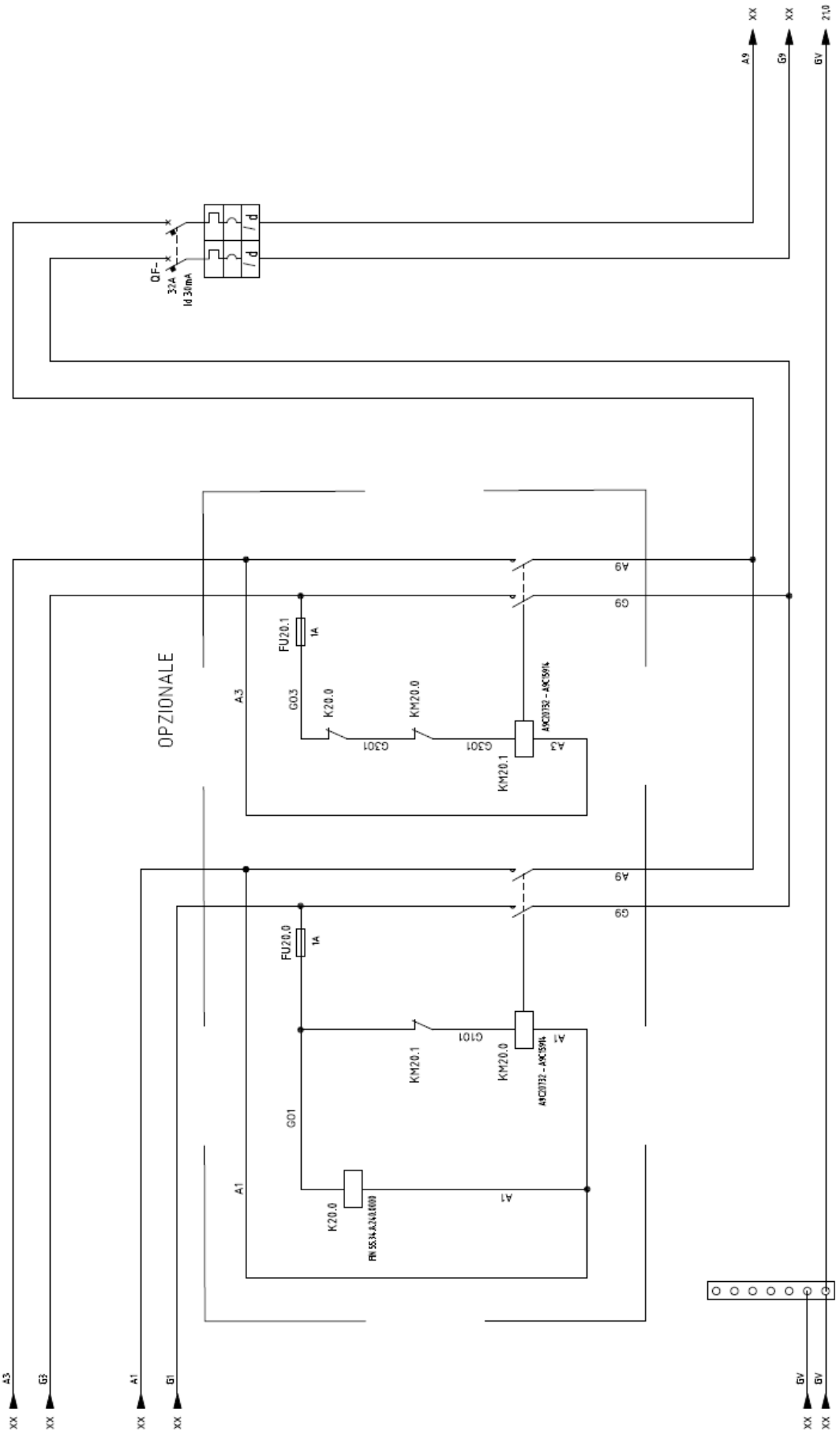
5. Plan of halyards and tapping

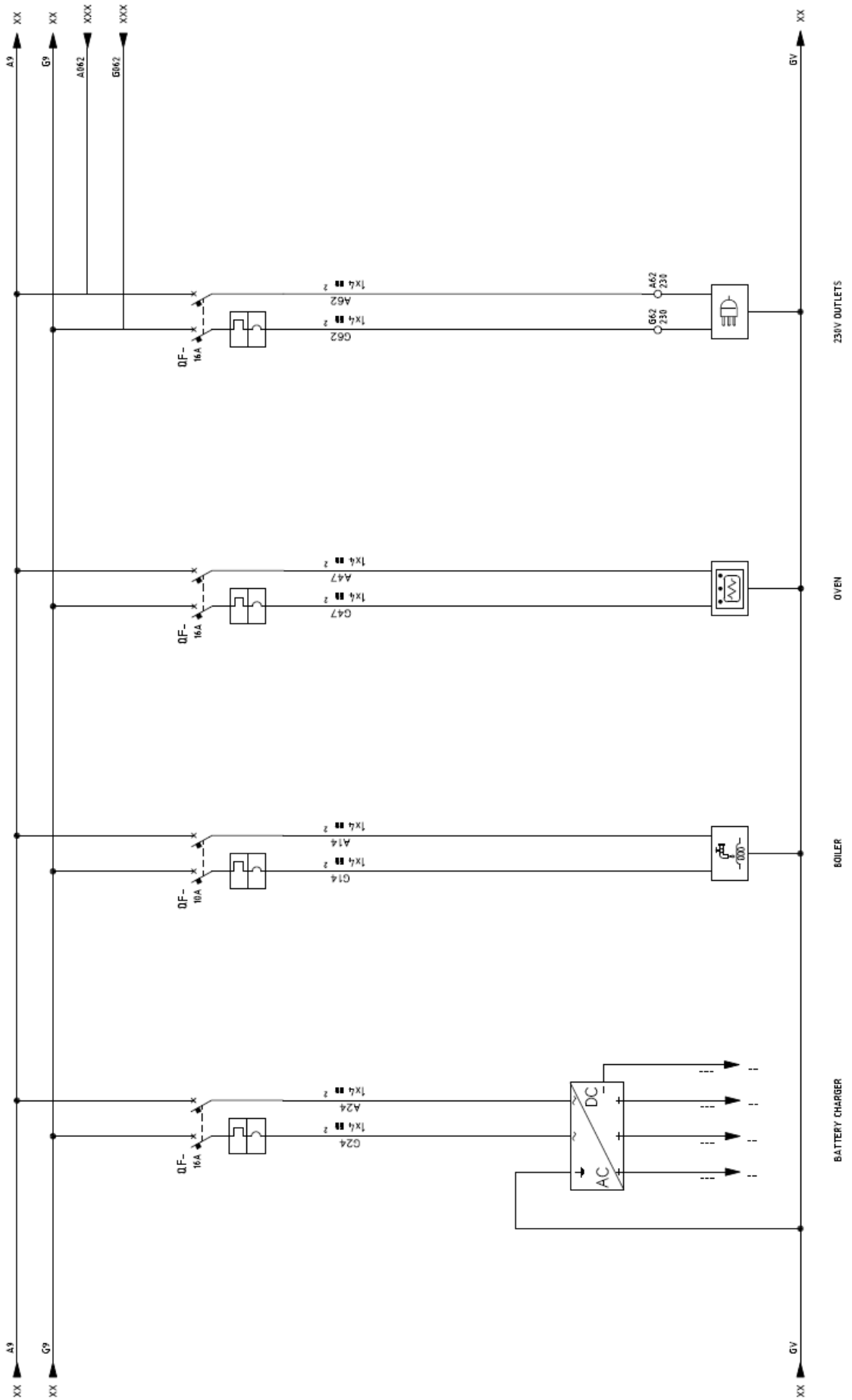


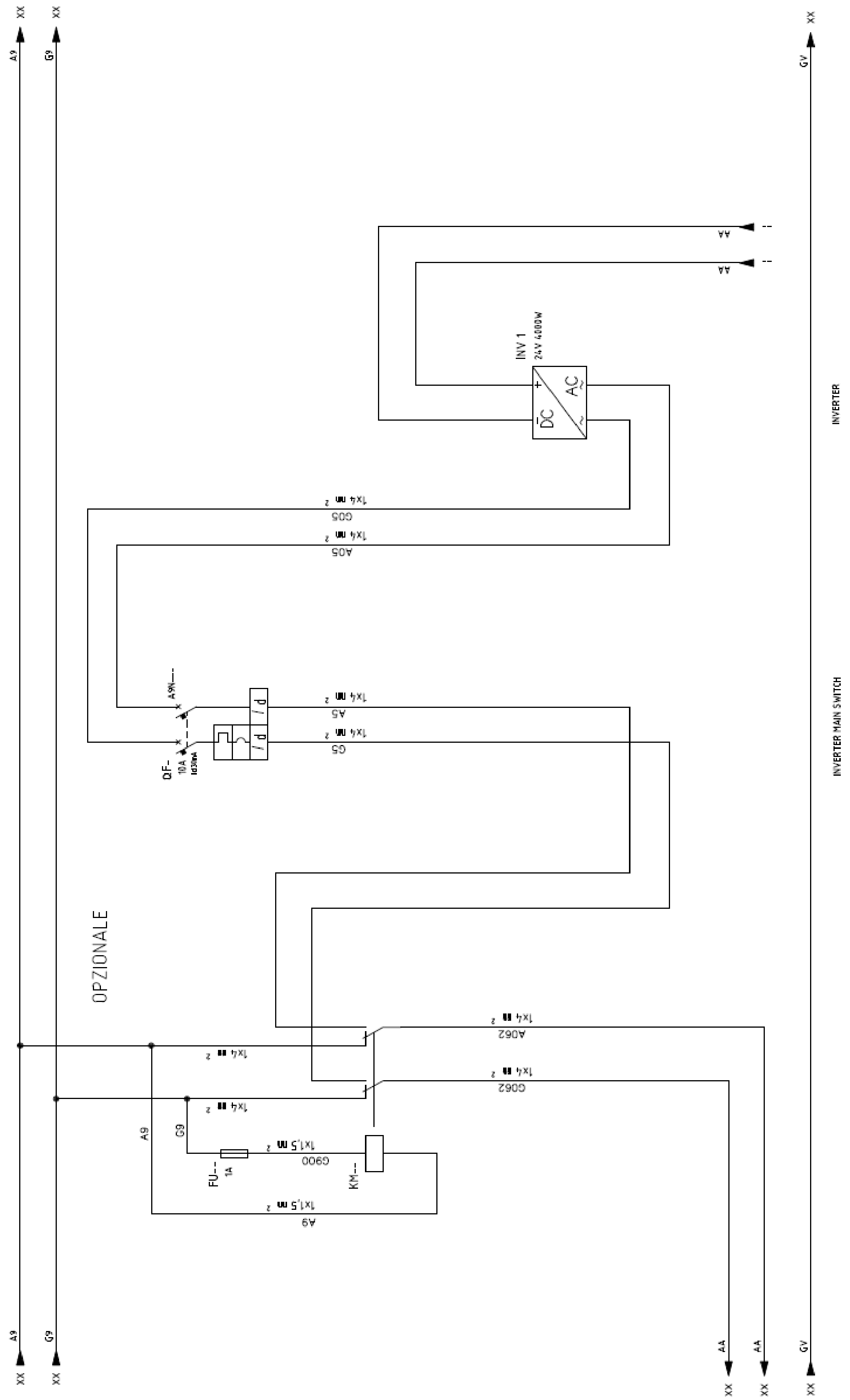


6. Plan 220 V

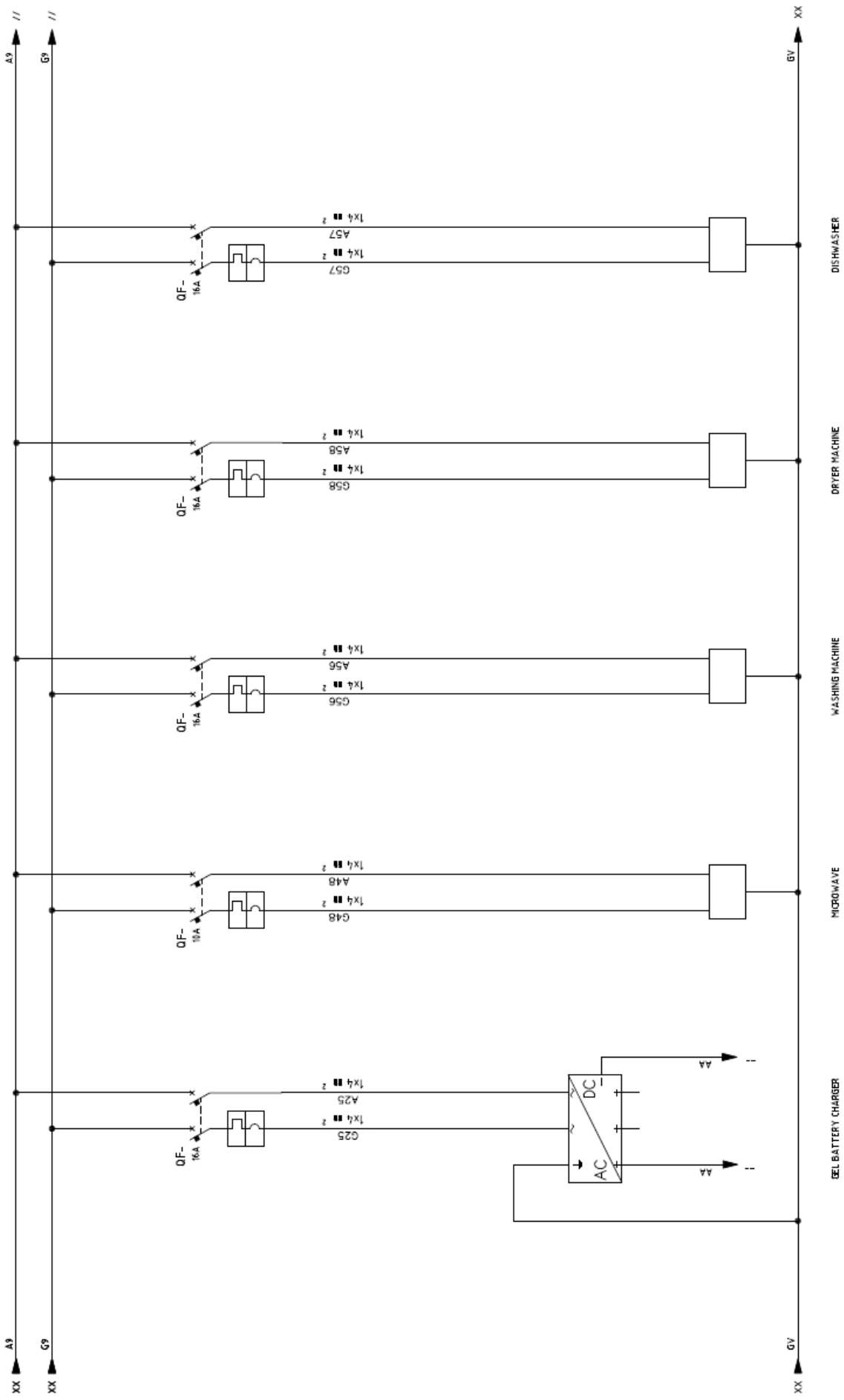

XX
XX
XXX
XX
XX
XXX
A1
G1
GVB
G3
A3
GVG
SHORE SUPPLY
230V 32A 50HZ
GV3
A1
G1
90A
OPZIONALE
GENSET 1
MAX OPT 230V 12KW 50HZ
J44
M+30G
N
3.9
19.9


OPZIONALE
QF-
32A
Id 30mA
FU20.1
1A
FU20.0
1A
K20.0
KM20.0
KM20.1
A9
G9
GV
A3
G3
A1
G1
XX

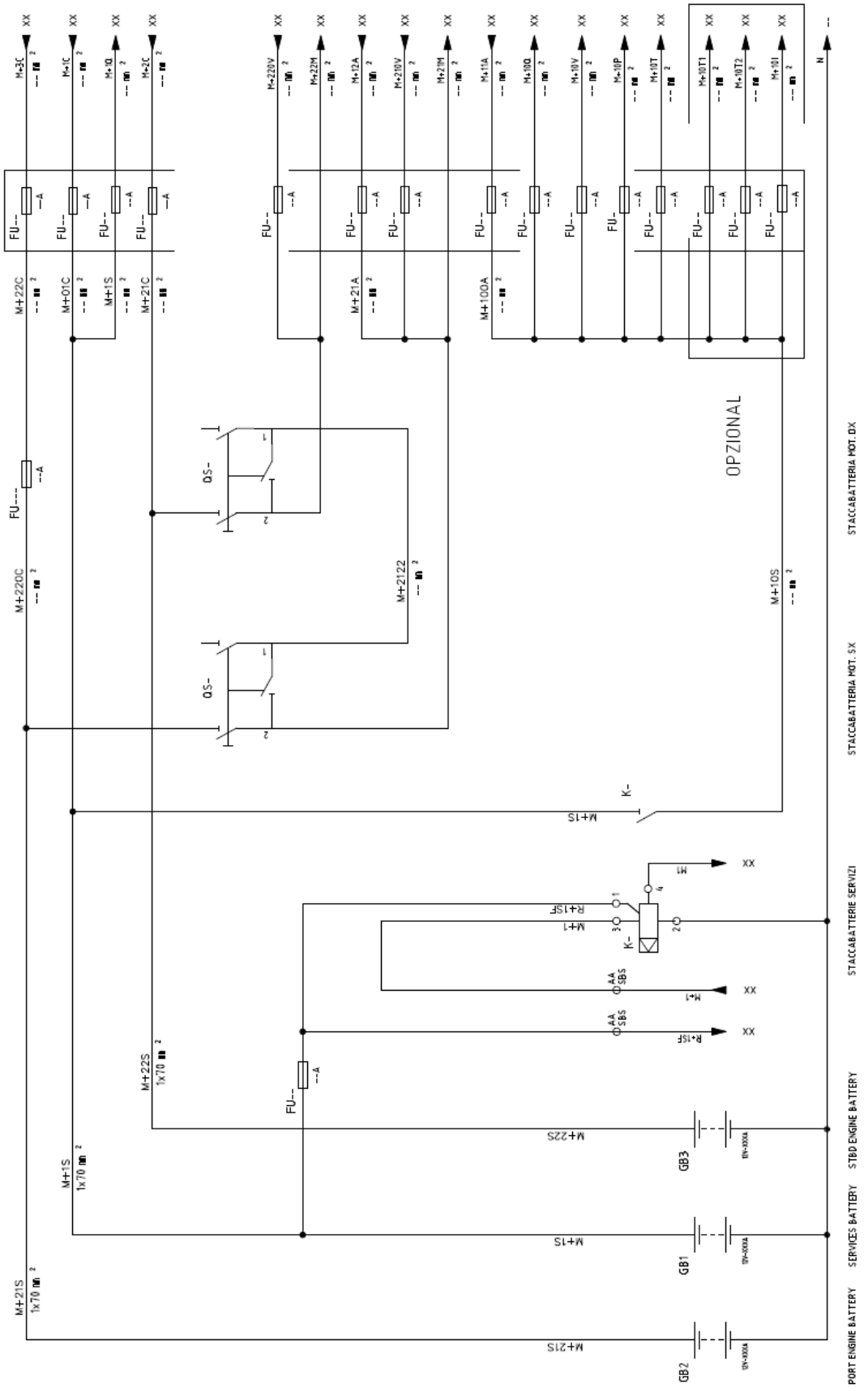

A9
G9
A062
G062
XX
XXX
GV
230V OUTLETS
OVEN
BOILER
BATTERY CHARGER
QF-
16A
10A
A62
G62
A47
G47
A14
G14
A24
G24
DC
AC



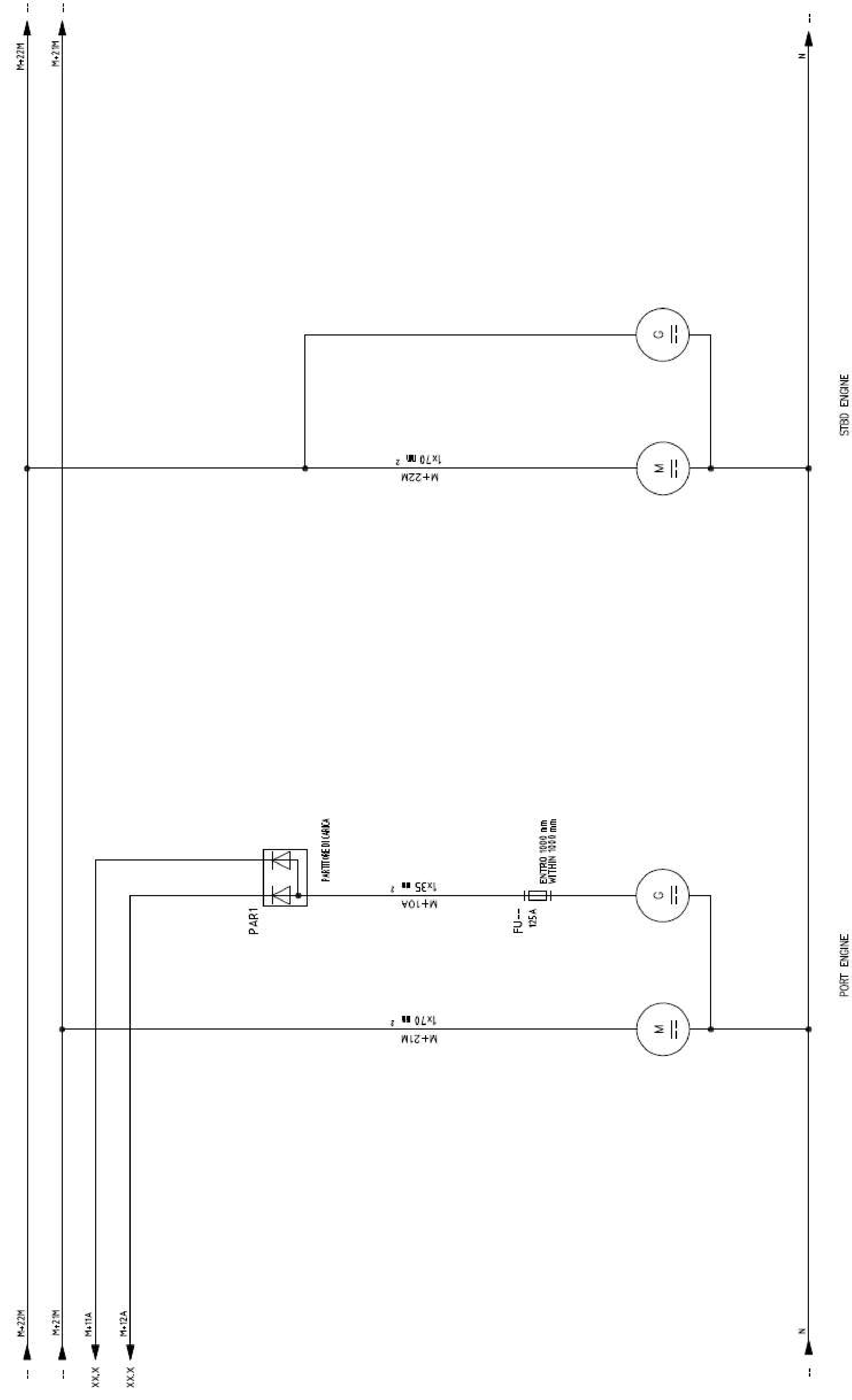
XX
A9
G9
GV
AA
INV 1
24 V 4000W
DC
AC
1x4 mm 2
G05
A05
A9N---
QF-
10A
Id30mA
A5
G5
OPZIONALE
A062
G062
1x1,5 mm 2
G900
FU--
1A
KM--
INVERTER
INVERTER MAIN SWITCH


A9
G9
GV
XX
QF-
16A
A57
G57
A58
G58
A56
G56
A48
G48
A25
G25
DC
AC
AA
DISHWASHER
DRYER MACHINE
WASHING MACHINE
MICROWAVE
GEL BATTERY CHARGER

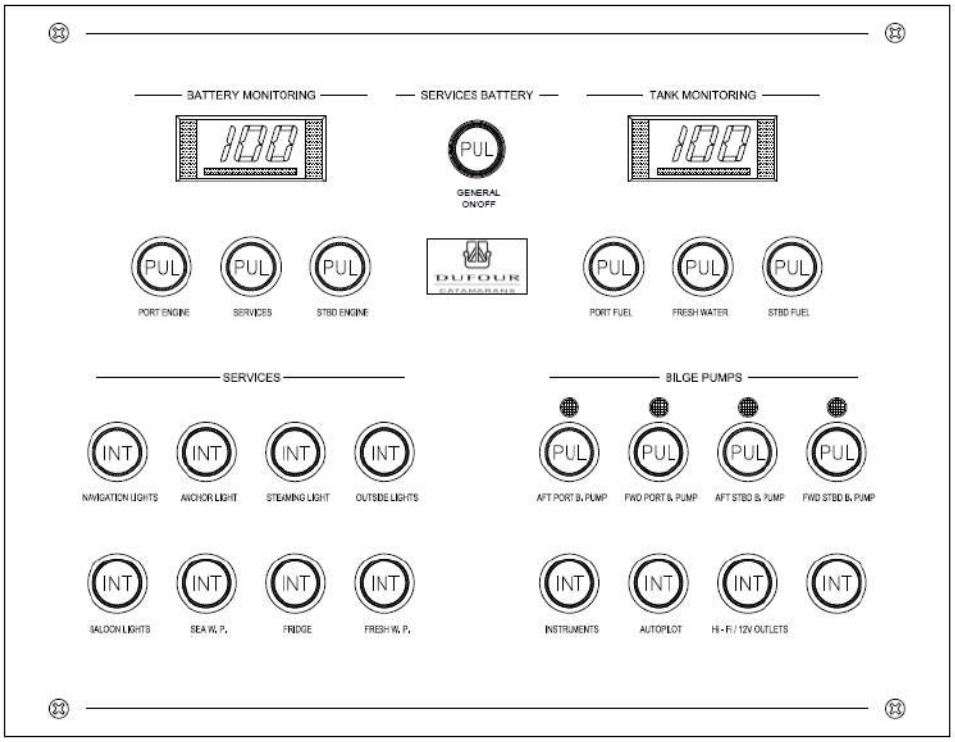
7. Plan of electrical loads and power



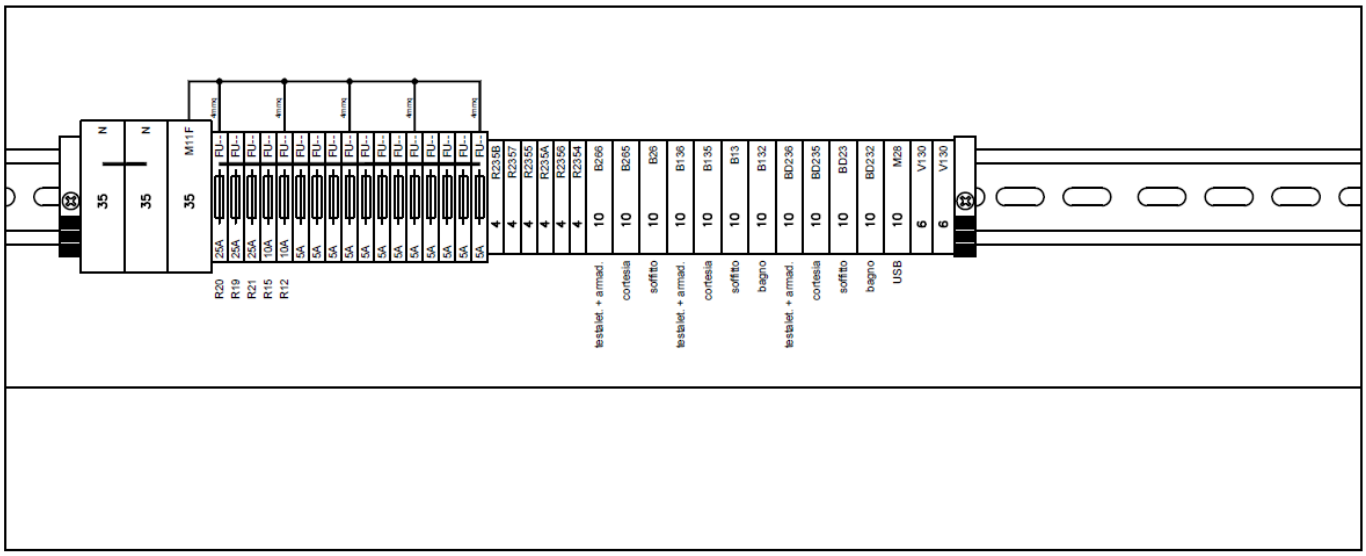
OPZIONAL
OPZIONAL
CONTROL BOX
CONTROL BOX
CONTROL BOX
CONTROL BOX
WINCH 2
WINCH 1
WINCH
WINDLASS
TENDER LIFT
M40
M400
M401
M+10I
M+10T
M+10T
M+10V
M+10P
N
N

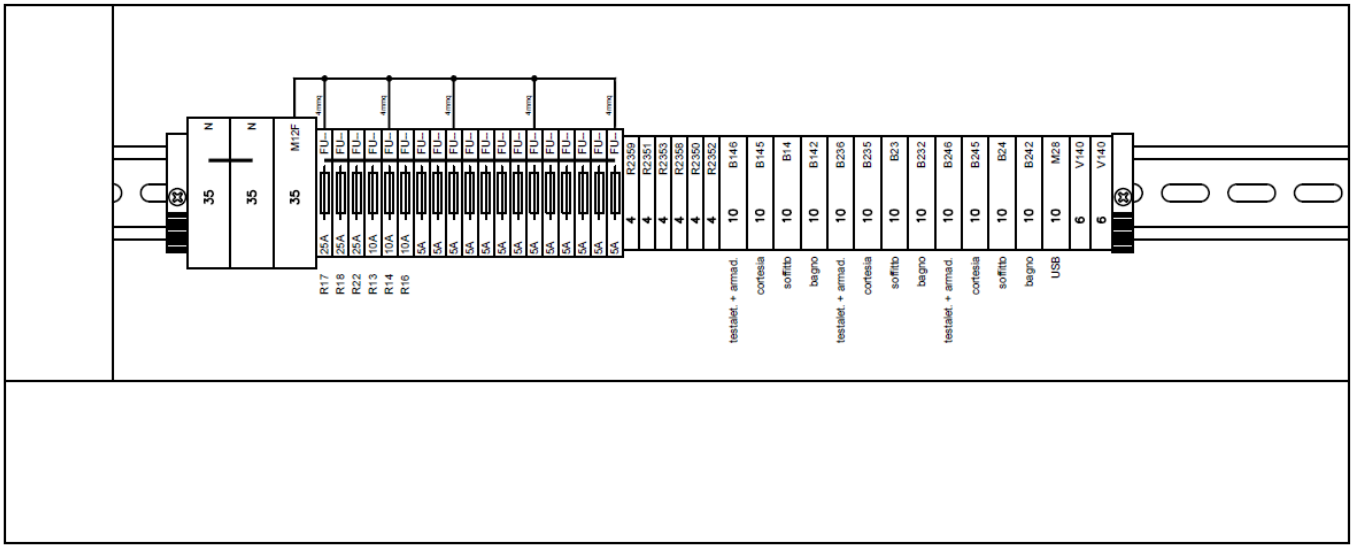

M+22M
M+21M
M+11A
M+12A
XX.X
XX.X
N
N
STBD ENGINE
PORT ENGINE
M+22M
1x70 mm2
M+21M
1x70 mm2
M+10A
1x35 mm2
PAR1
PARTITORE DI CARICA
FU--
125A
ENTRO 1000 mm
WITHIN 1000 mm
G
M
G
M

8. Electric panel 12 V



9. Plan of plugs 12 V



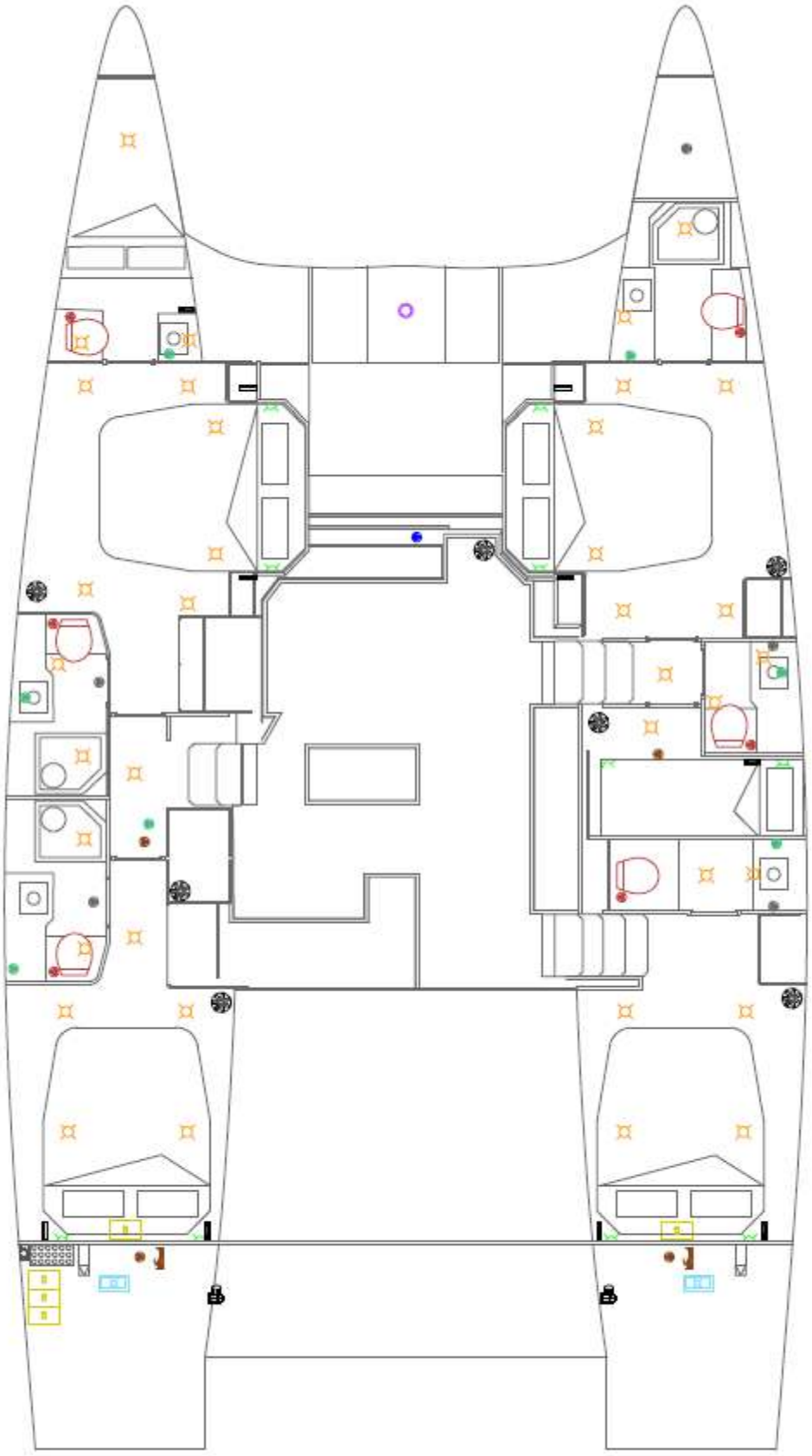


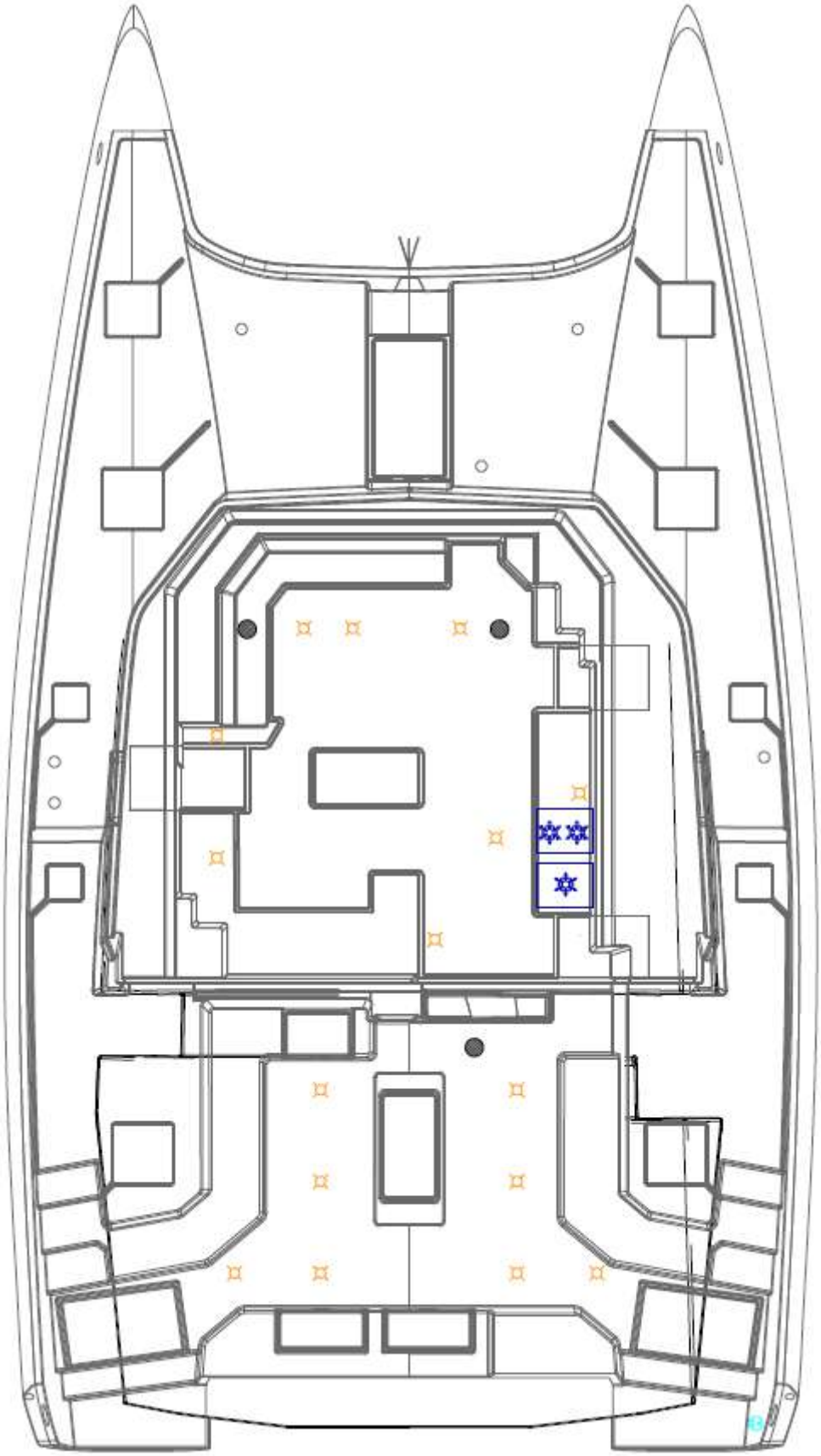
The components marked with * are options

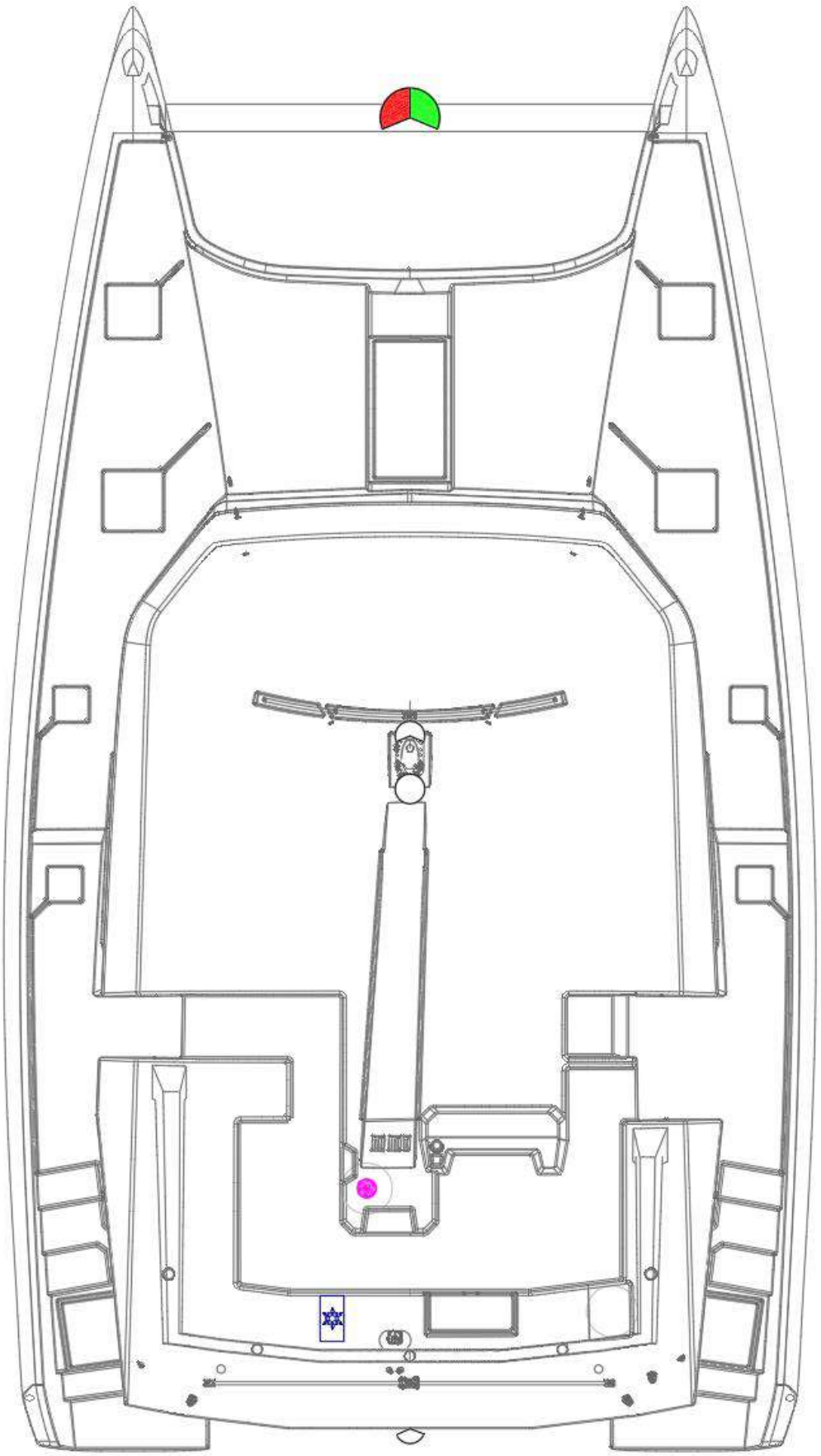
System Symbols

Symbol	Number	Description	Symbol	Number	Description	Symbol	Number	Description	Symbol	Number	Description	Symbol	Number	Description
	1	Plug 220 V		8	Fresh water pump		15	Microwave *	EB	22	Engine Battery		29	Generator *
	2	USB Plug		9	Sea water pump		16	Fly fridge *	SB	23	Service Battery		30	Water Maker *
	3	Ceiling light		10	Bilge Pump		17	Fridge		24	Batteries Charger		31	Anchor windlass
	4	Bed light		11	Floating		18	Washing machine *		25	Battery switch off		32	Electric WC *
	5	Engine room light		12	Grey water pump		19	Extra Fridge/Freezer *		26	Oven		33	Boiler
	6	Charge separator		13	Macerator pump		20	Fuse		27	220 V Control Panel		34	Shore Connection
	7	Electric Winch *		14	Navigation Lights		21	Dishwasher *		28	Vent *		35	Engine Room Fan

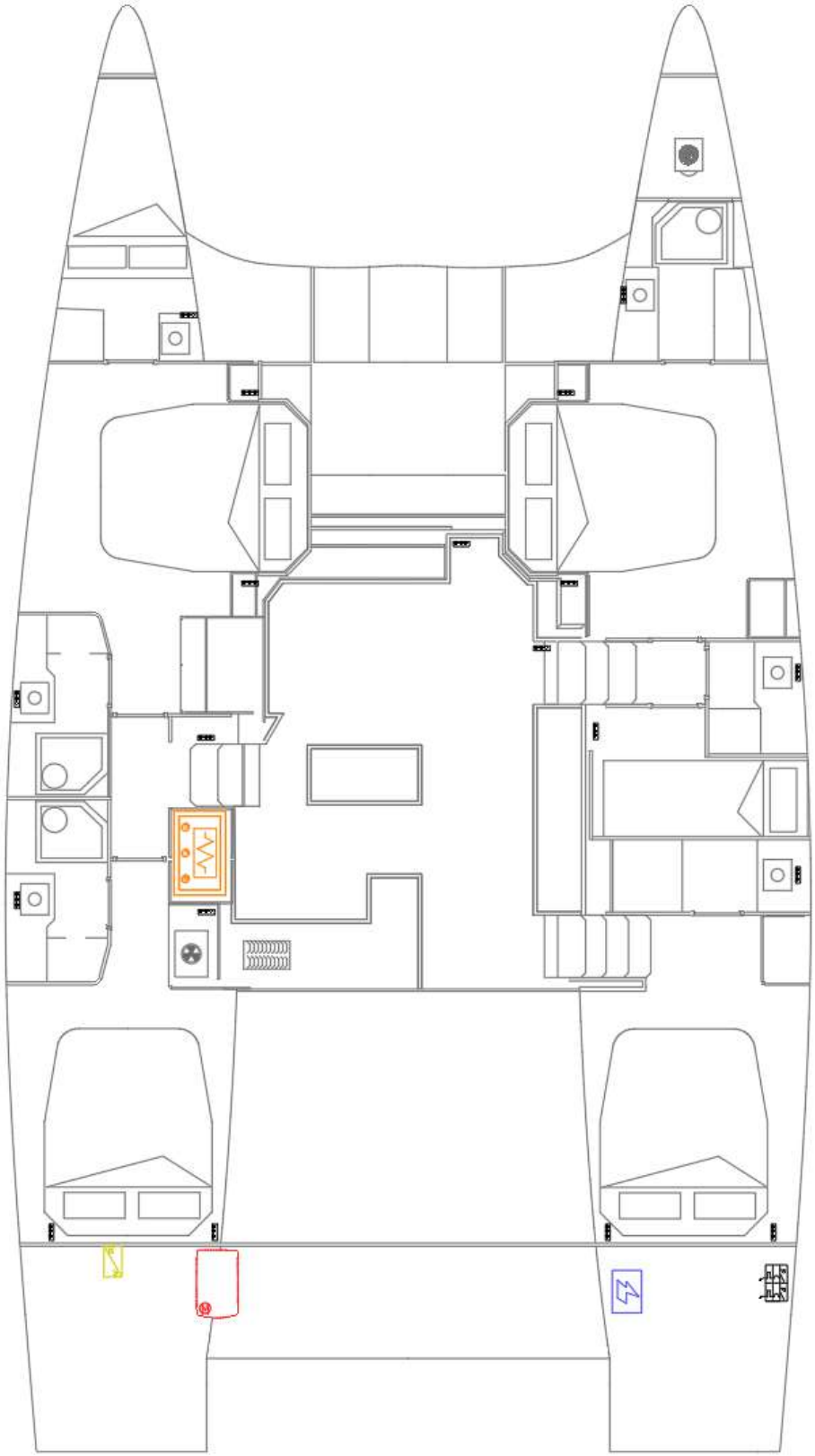
10. Electric plan 12 V



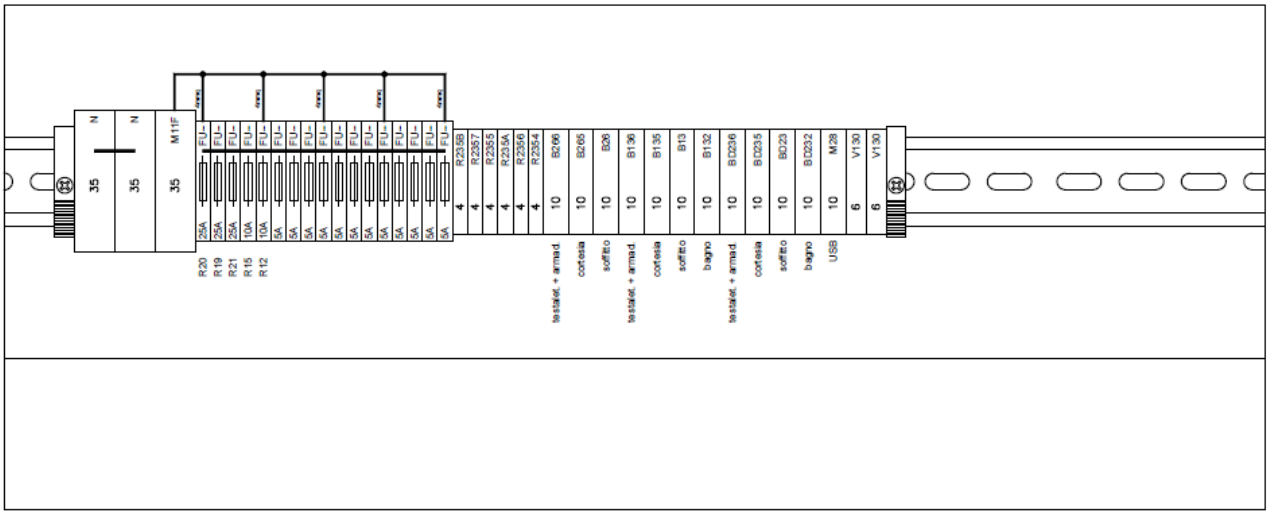


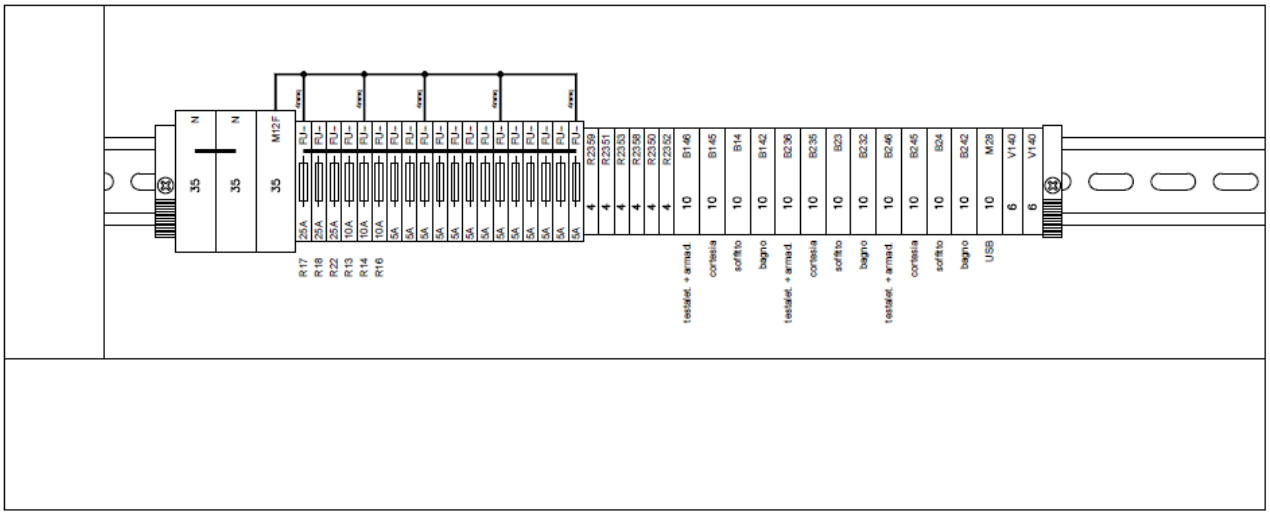


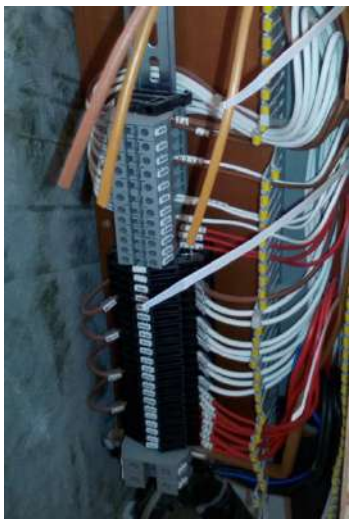
11. Electric plan 220 V



12. Fuse location plan

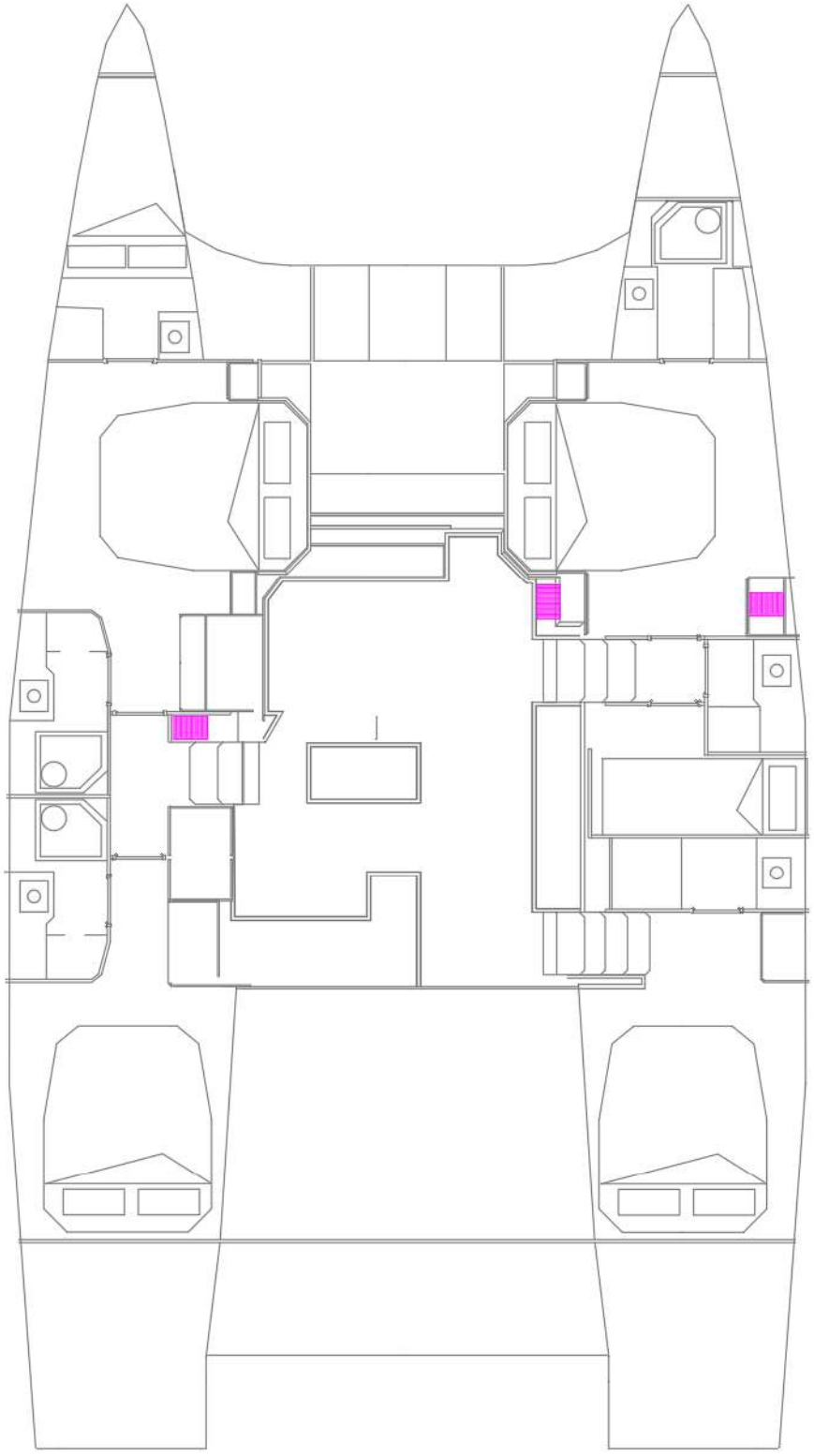




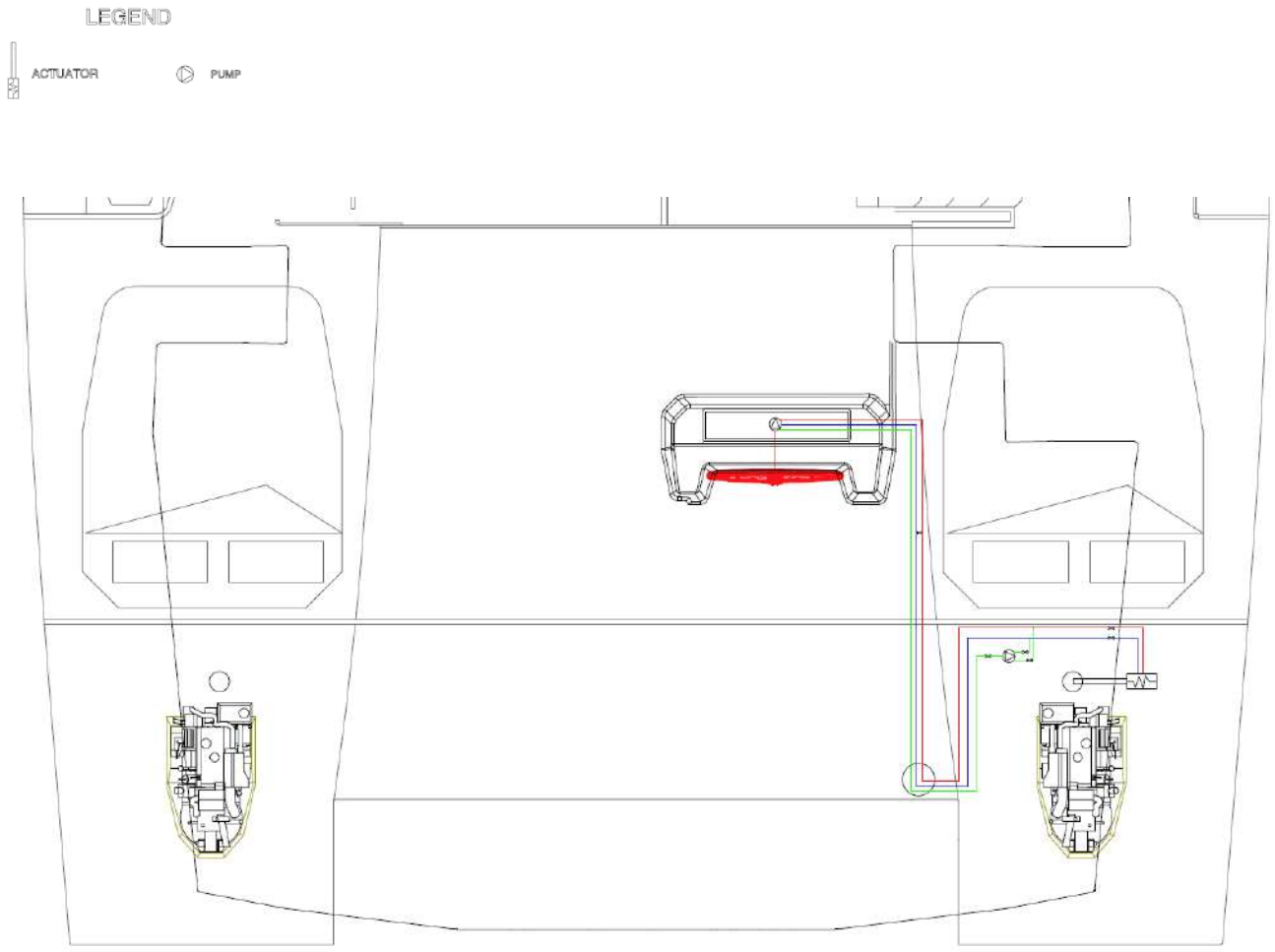


There are three blocs of fuses in the boat that control three different areas: one just right side to stairs near the flames for utilities in portside hull, one near the chart table for dinette/fly utilities, and one in the forniture of starboard forward cabin for utilities of starboard hull. A simple plan is attach (for more details see electric plan)

Ref.	Description
	Fuse



13. Steering system plan



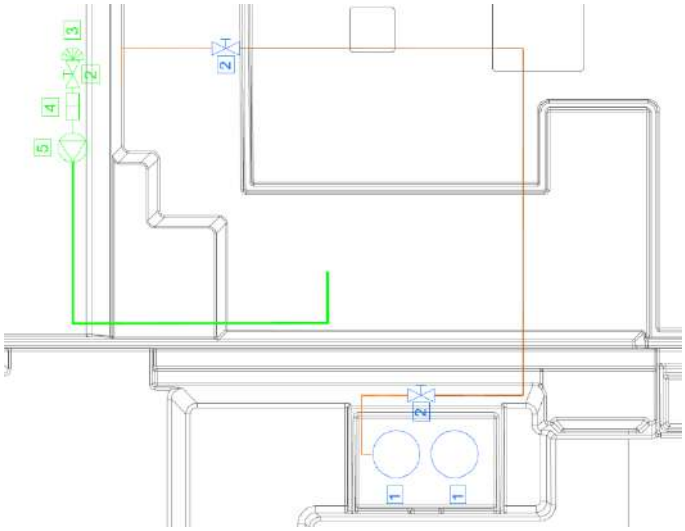
Steering pump on wheel

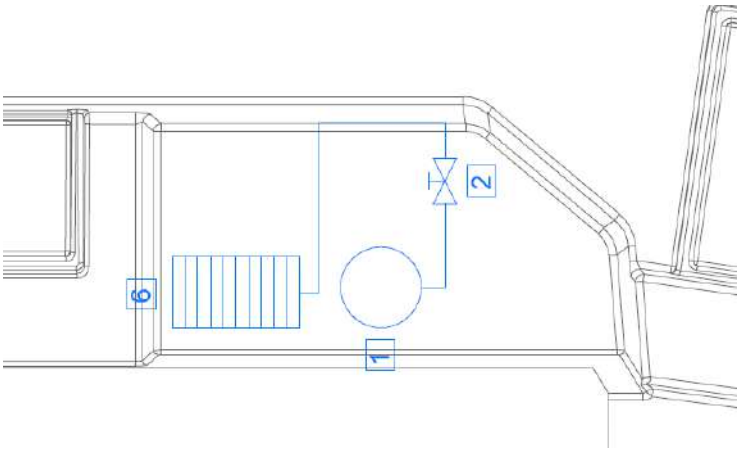
Actuator and autopilot pump with by-pass

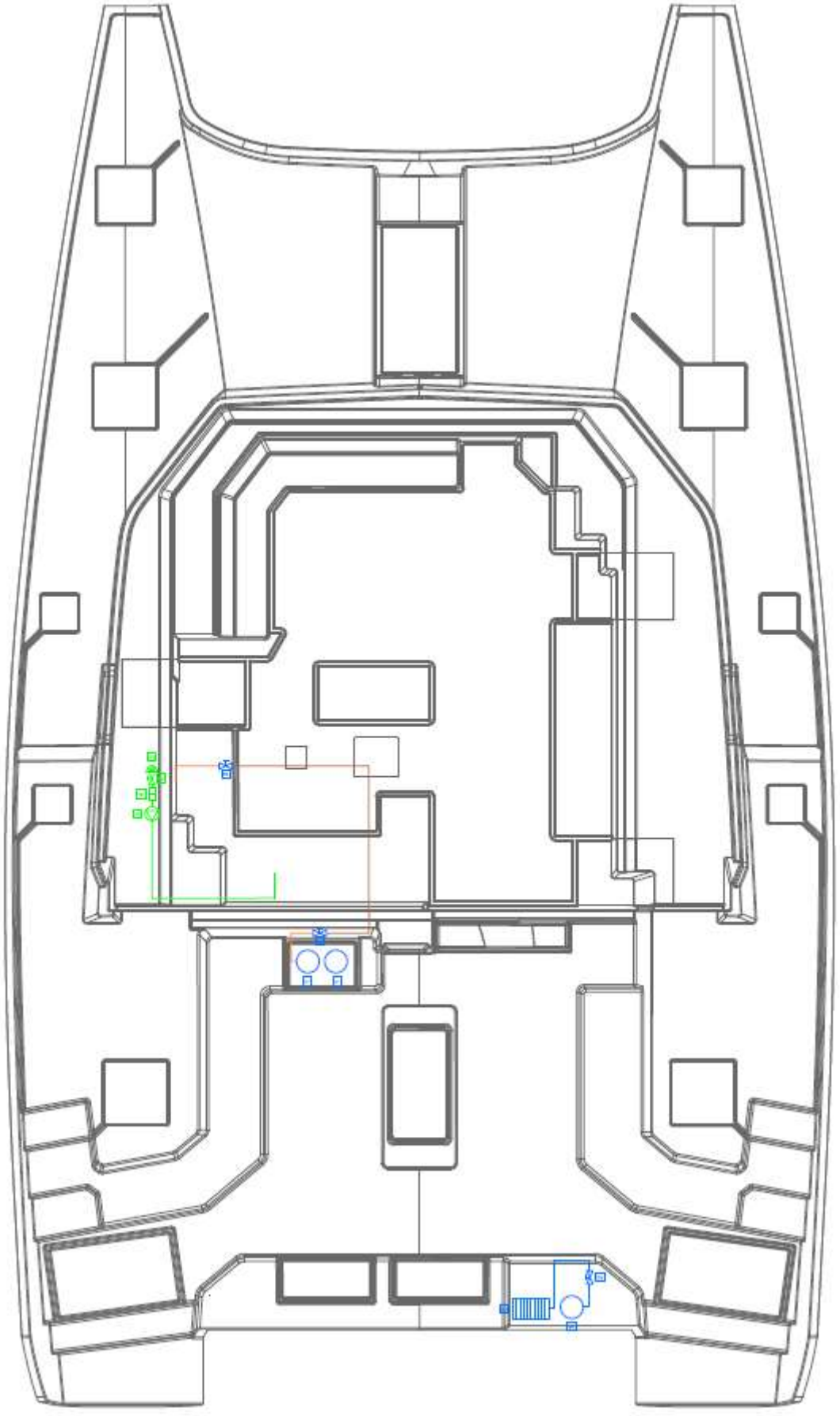
Steering by-pass for automatic pilot

14. Gas plan & Sea water system

Ref.	*Description*
1	Gas Tank 3 kg (NOT SUPPLY WITH THE BOAT)
2	Hand operated valve (NOT SUPPLY WITH THE BOAT)
3	Seacock
4	Filter
5	Sea Water pump
6	Barbeque
Green	Sea water line
Brown	Copper line
Orange	Flexible Gas line

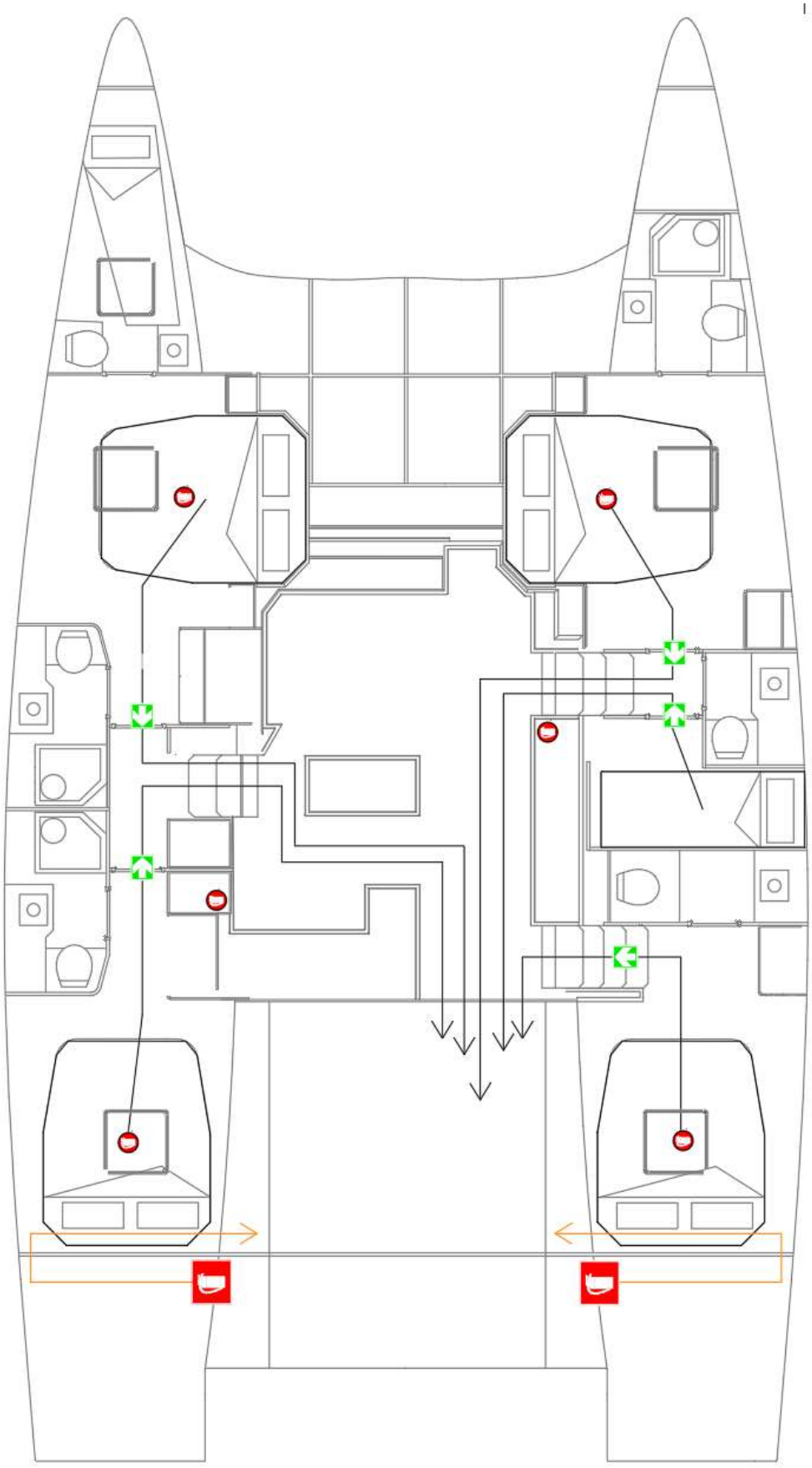






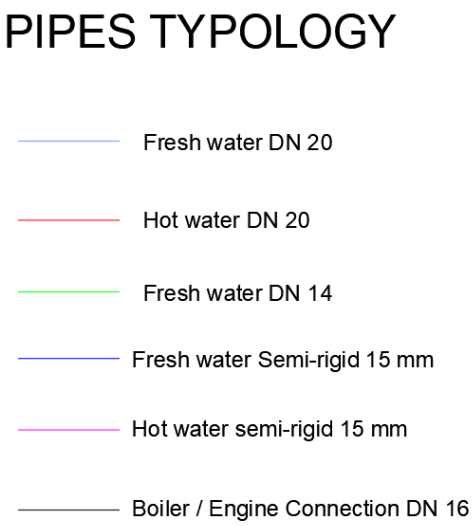
15. Evacuation plan

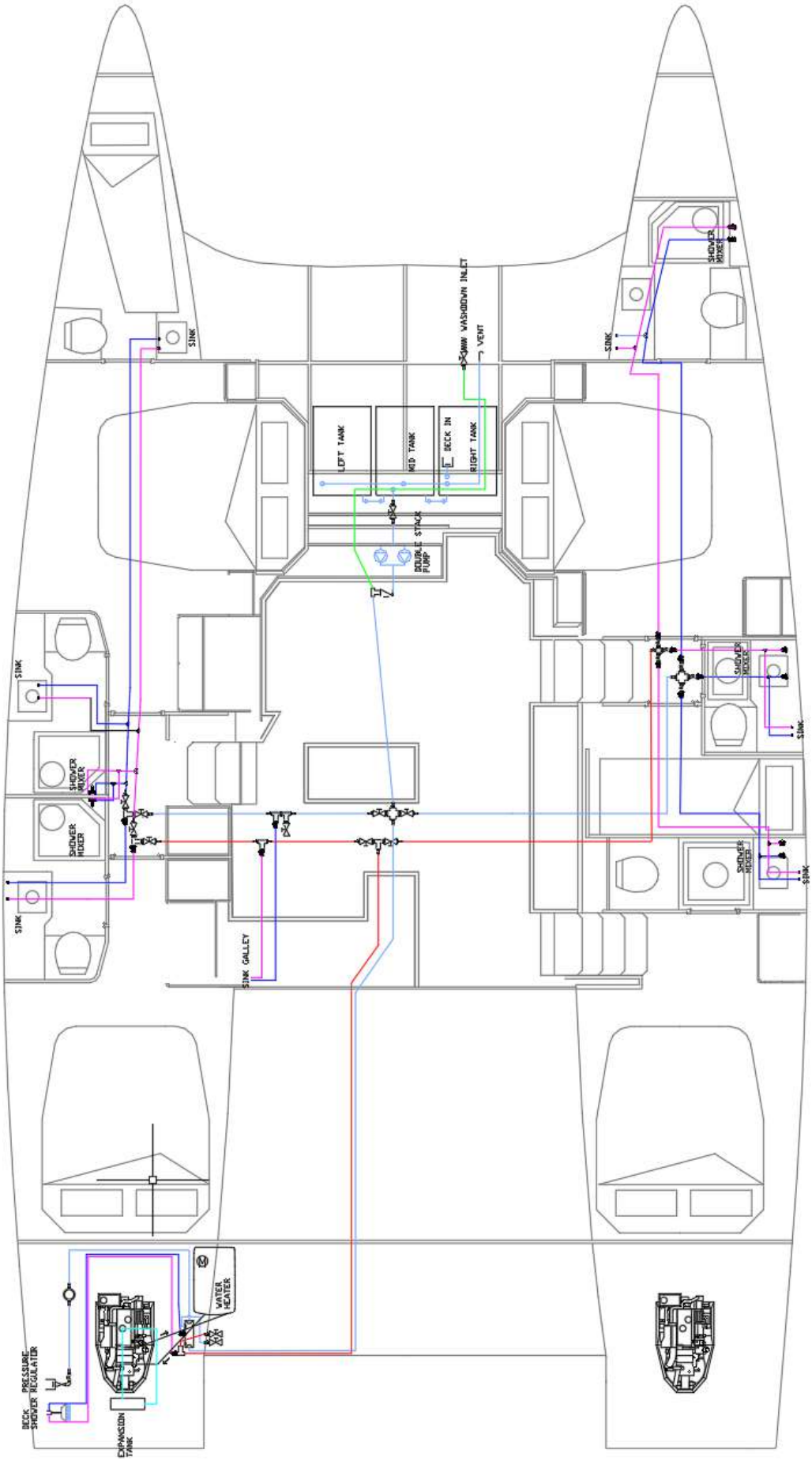
Symbol	*Description*
	Fire estinguisher for engine room 6 kg
	Fire estinguisher movable for cabins 1 kg **
	Manual cable to deck for activation
	Escape exit
**	Not supply with boat



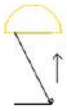
16. Fresh water system plan

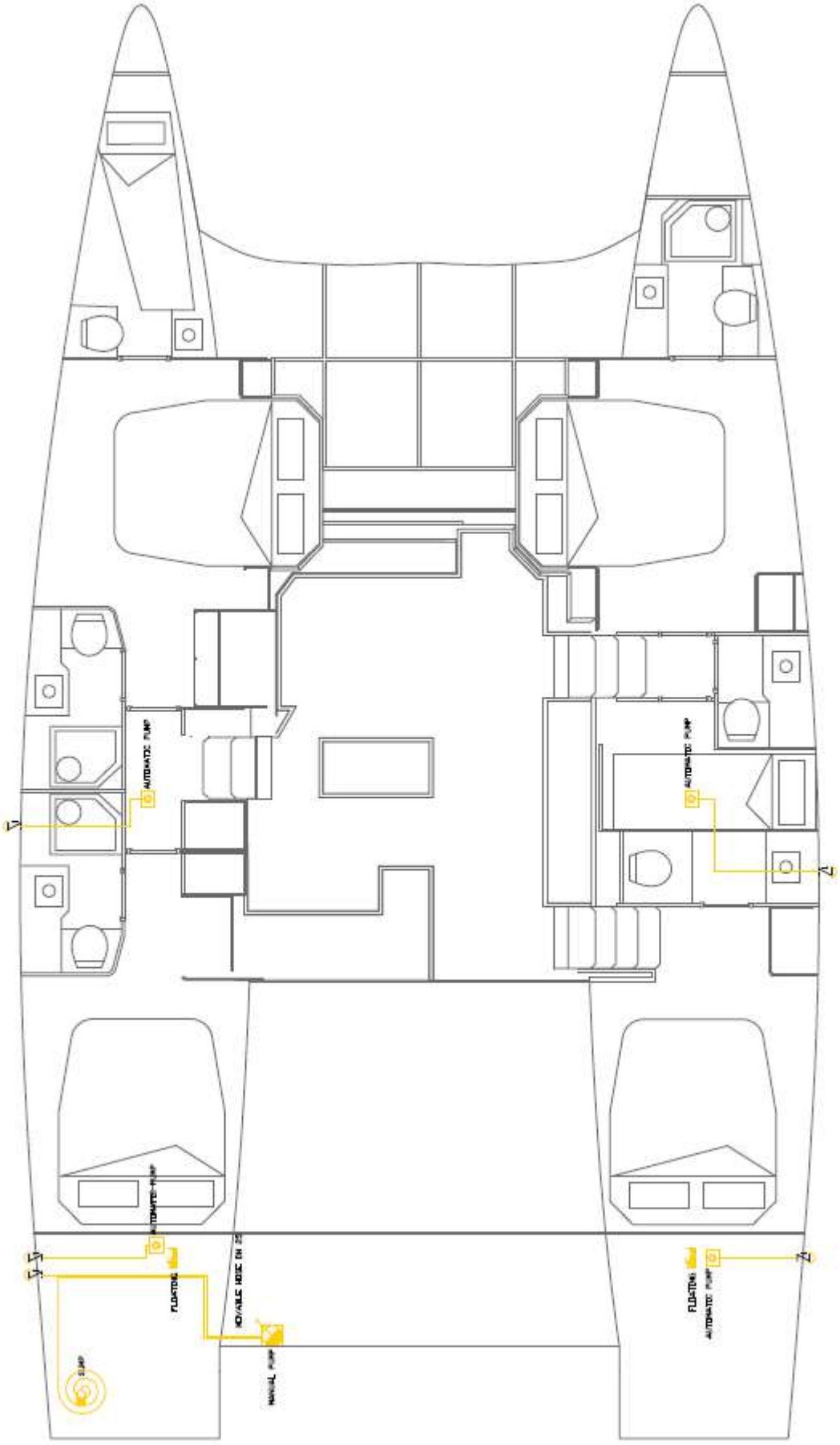
Symbol	*Description*
	Washdown system
	Ball valve hand operated
	Open Vent
	Double stack Pump
	Tee Raccord
	Non return Valve
	Cross Raccord
	Filter
	Collector




SINK
SHOWER MIXER
WWW VASHDOWN INLET
VENT
LOFT TANK
MID TANK
BECK IN
RIGHT TANK
BILGE STACK
BILGE PUMP
SINK GALLEY
WATER HEATER
DECK SHOWER
PRESSURE REGULATOR
EXPANSION TANK

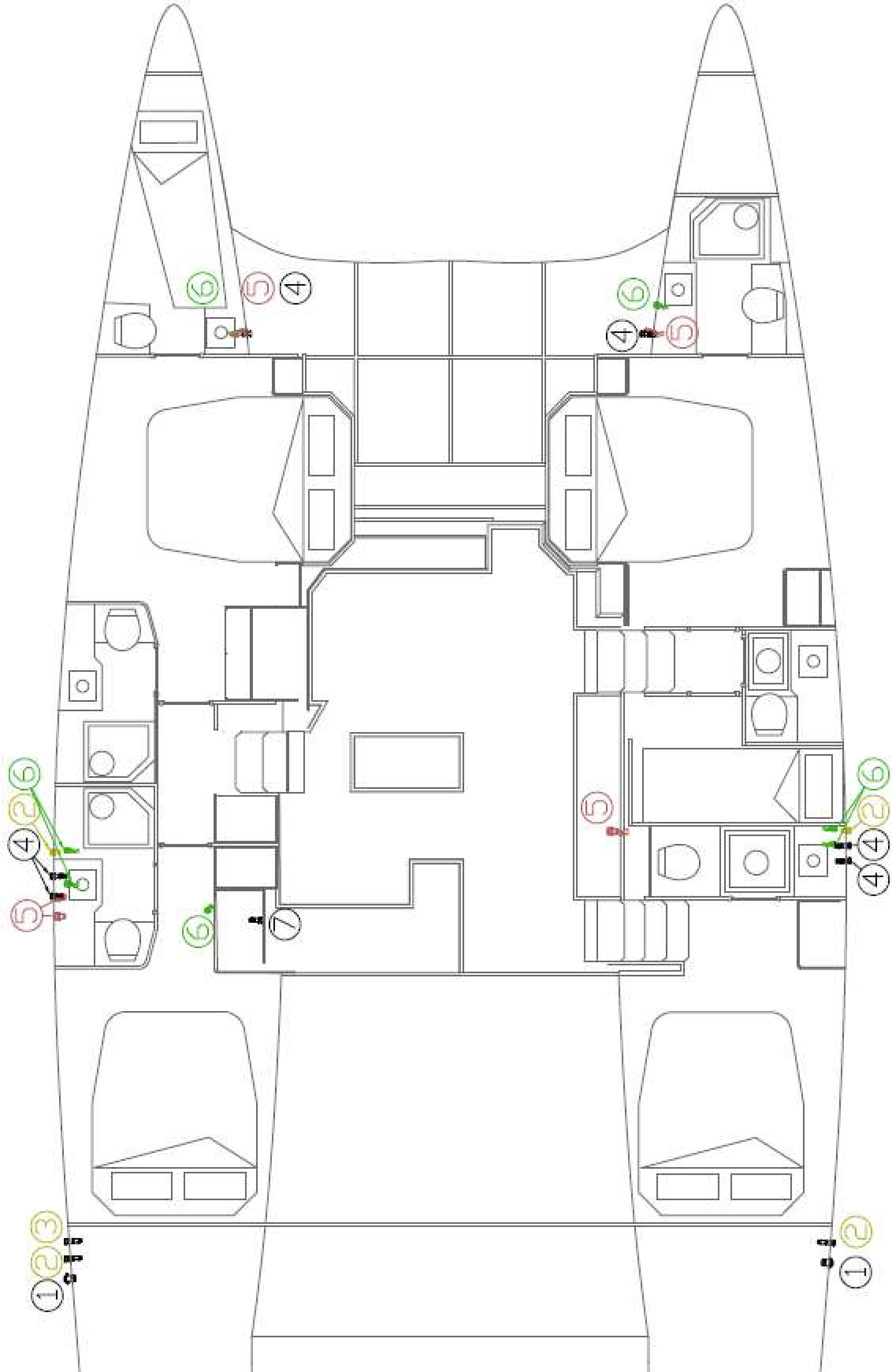
17. Bilge system plan

Symbol	*Description*
	Non return valve 1” on thru-hull fittings
	Sump for Manual Pump
	Electric bilge pump
	Manual Pump
	Movable hose for connection between manual pump and sumps
	Floating


AUTOMATIC PUMP
AUTOMATIC PUMP
AUTOMATIC PUMP
FLOATING
FLOATING
AUTOMATIC PUMP
MANUAL PUMP
SUMP

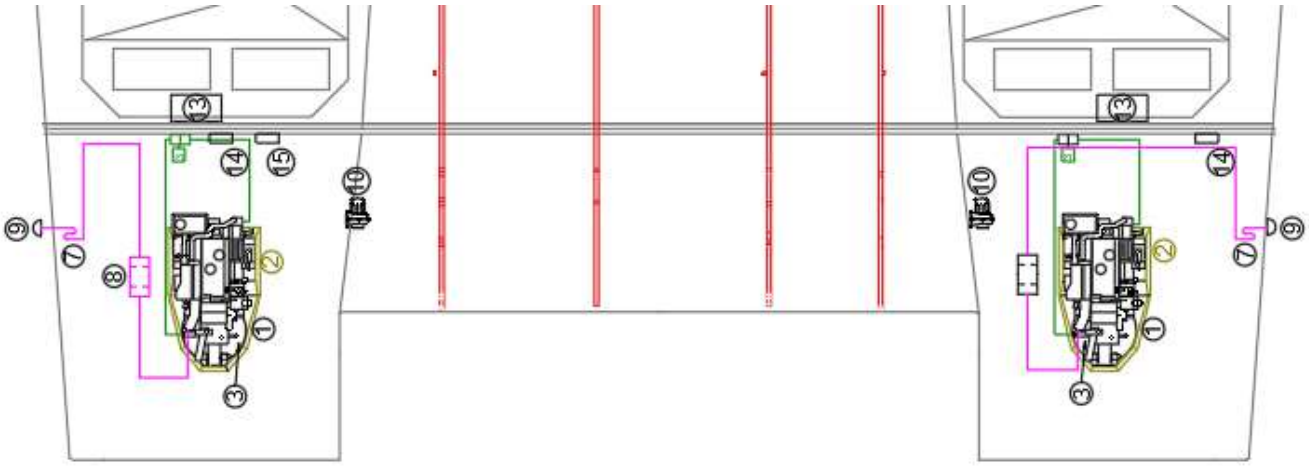
18. Thru-hull fittings plan

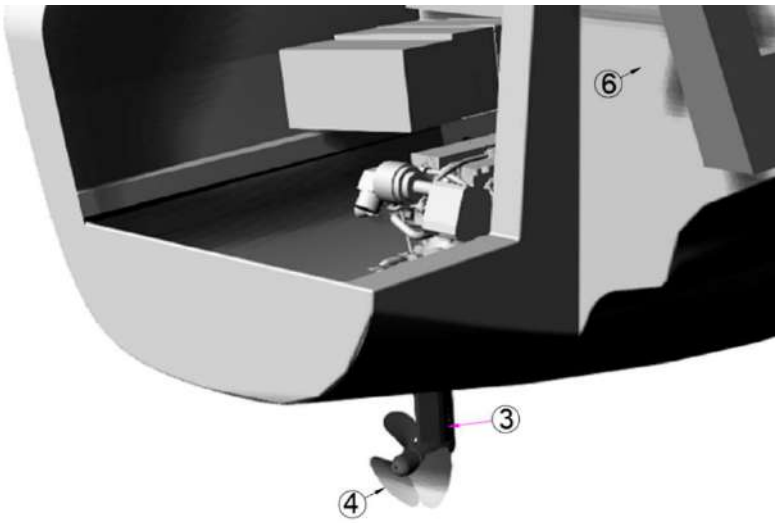
Ref.	***Description***
1	Engine Exhaust exit DN 60
2	Automatic Bilge exit 1”
3	Manual Bilge exit 1”
4	Grey Water Exit 1”
5	Black Water Exit 1”1/2
6	Sea Water In ¾”
7	Grey Water Exit 1”1/4

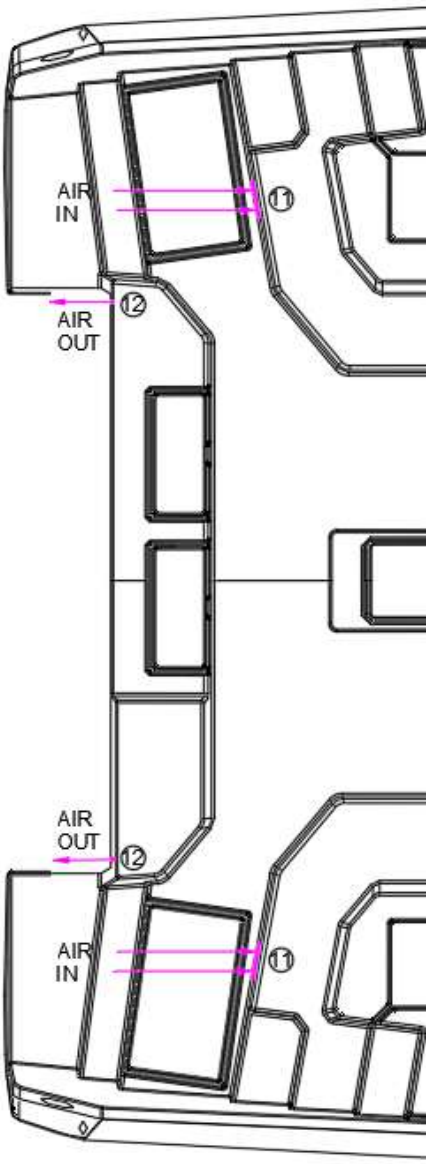

6
5
4
6
4
5
6
2
4
5
6
7
5
6
2
4
4
3
2
1
2
1

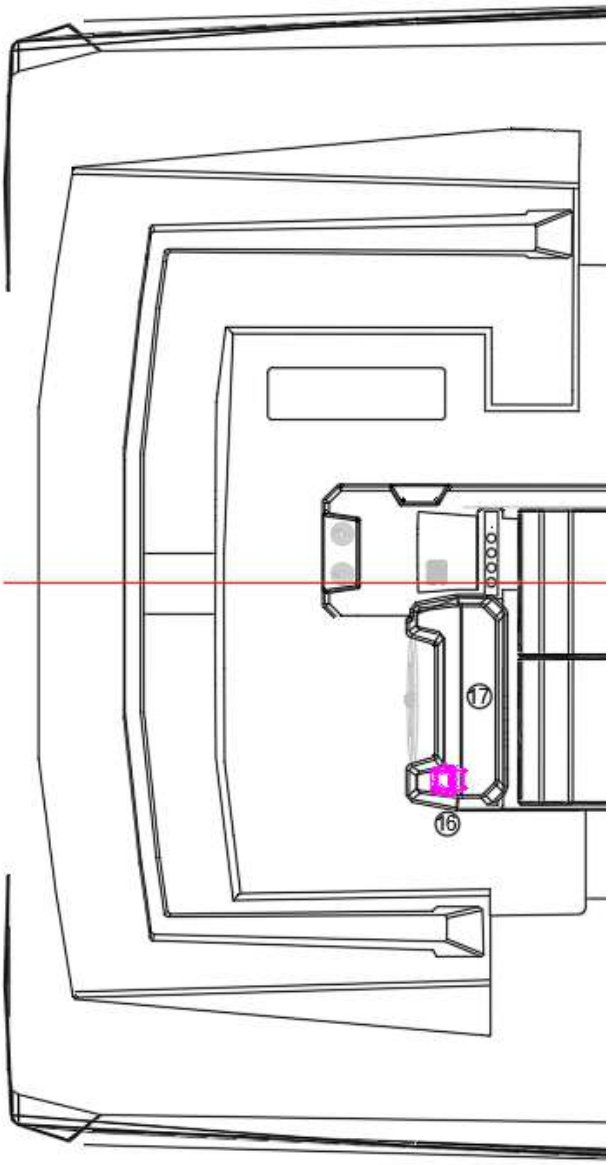
19. Mechanical plan

Ref.	*Description*
1	Main Engine Volvo D2-60
2	Engine Bed
3	Sail Drive
4	Anode
5	Propeller
6	Isolation Foam
7	Anti-siphon elbow
8	Waterlock
9	Exhaust Exit
10	Fan
11	Ventilation grids IN
12	Ventilation grids OUT
13	Starter Battery
14	Circuit breaker
15	Load Distributor
16	Engine Handle
17	Engine instruments



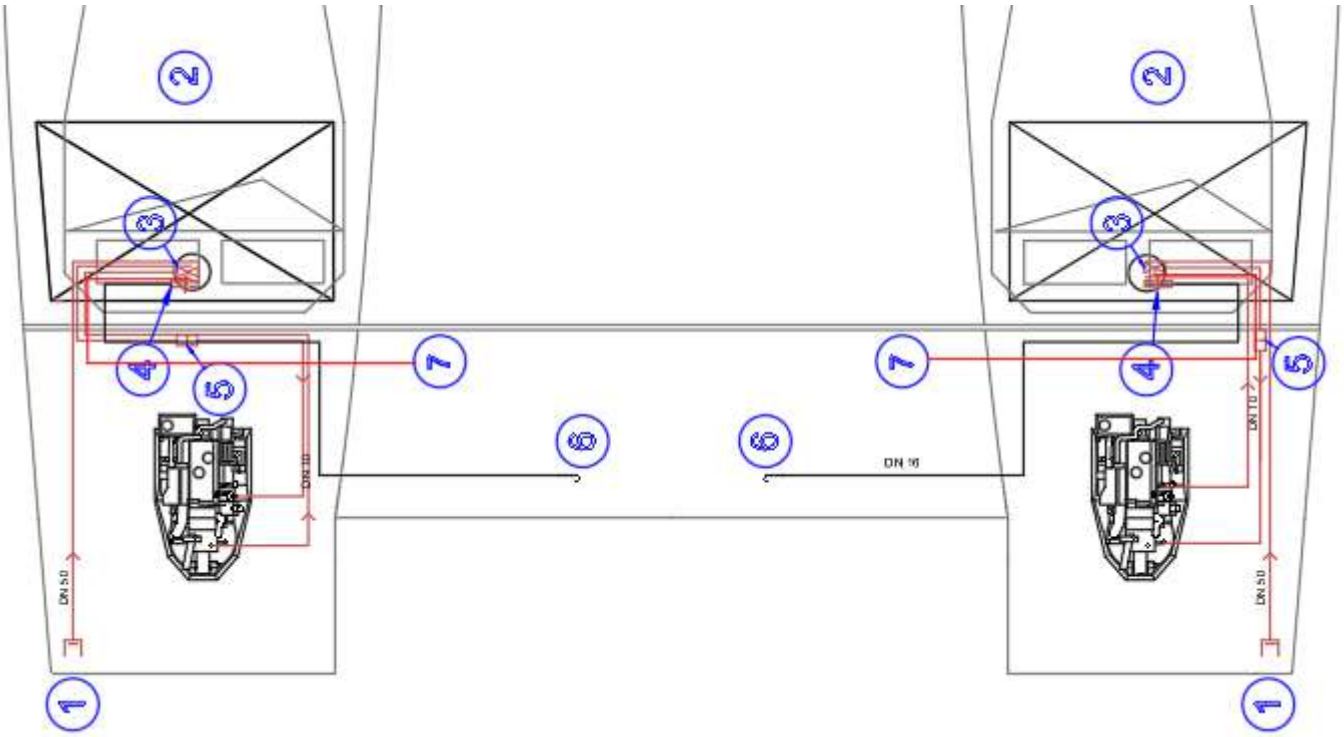

6
3
4


AIR
IN
11
AIR
OUT
12
AIR
OUT
12
AIR
IN
11

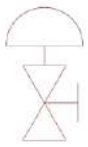

17
16

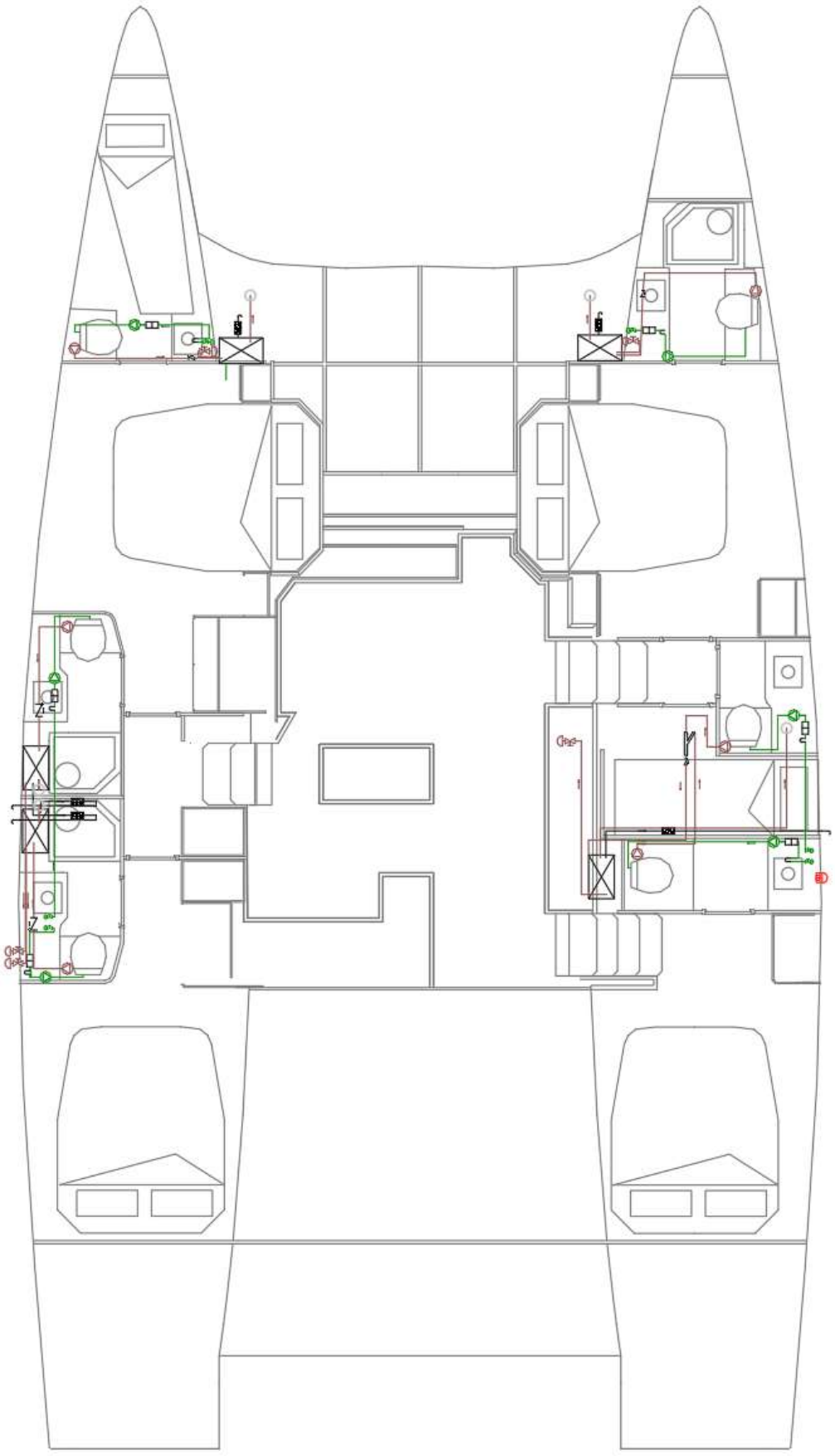
20. Fuel plan

Ref.	*Description*
1	Fuel Cap DN 50
2	Fuel Tank 450 lt
3	Hand Operated Valve to Stop Fuel Supply
4	Fuel Stop on vent line
5	Fuel Filter
6	Vent
7	Fuel Box Stop Handle to Stop Fuel Supply (For Emergency)



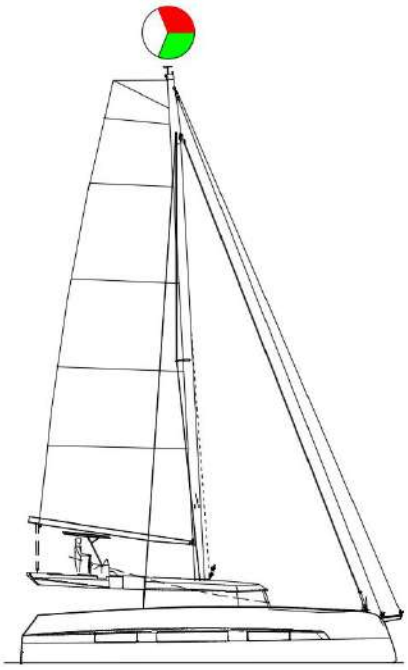
21. Black water plan

Symbol	Description
	Black water exit 1”1/2 with hand operated valve
	Sea water inlet ¾” with hand operated valve
	Sea water filter
	Siphon break
	Sea water pump
	Black water pump
	Non return valve
	Black water tank 50 lt
	Active carbon filter
	Vent
	Black water dock cap on deck
	Y Connector



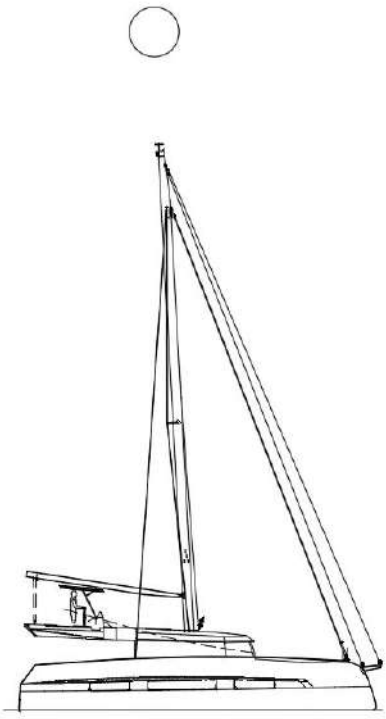
22. Navigation lights

Option A



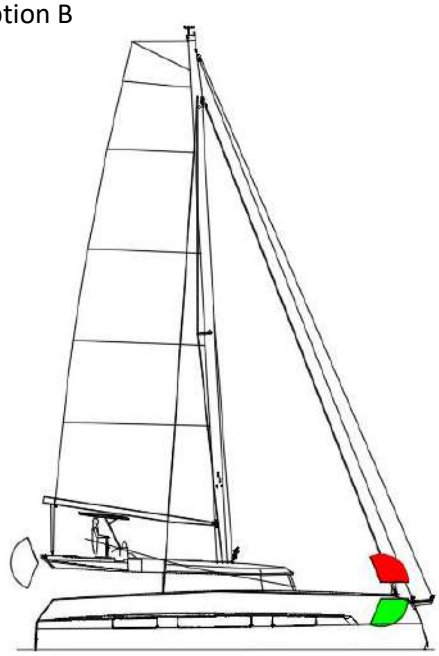
When Sailing under sails

When sailing with engine

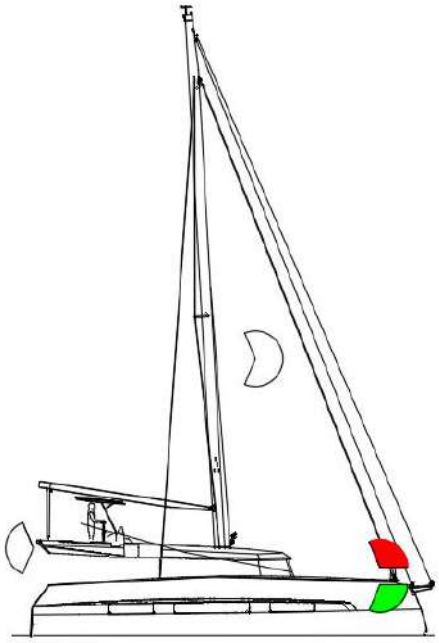


When boat is anchored

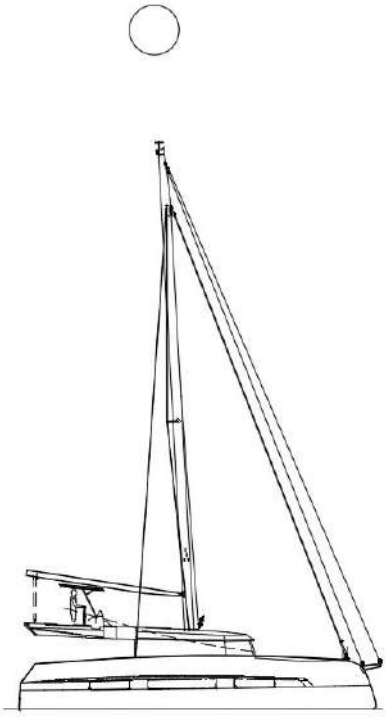
Option B



When Sailing under sails



When sailing with engine



When boat is anchored

NOTES