

Super Maramu 2000
Owner's manual



Le respect de la mer



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Super Maramu 2000

W A R N I N G S

For a constant improvement of the quality of their product, the AMEL Shipyard keep the right to make some modifications without notice.

All the texts, illustrations, diagrams and photographs are not contractual and can be modified by the AMEL Shipyard without notice.

The owner is the only responsible for the respect of the safety rules and the accordance of the rule concerning the boat with the concerned law.



Super Maramu 2000

Serial number

FR – AML SM

Name

Delivery date

Flag

Hailing port

Owners



Dear customer,

Here you are on your wonderful and brand new Super Maramu 2000, and I would like, in the name of all the AMEL team, to welcome you aboard your yacht, and to thank you to have chosen the AMEL Shipyard to build it.

I am sure that you will have with your sailing partner all the delights and the satisfactions that you are expecting during your cruises, and be assured that all the AMEL team is here to help you if needed.

You will find in all the next pages of this “Owner’s manual” the entire information you need to use the best way your Super Maramu 2000.

Best winds and sailings, to you and your crew.

Jean Jacques LEMONNIER

Sales manager



1 General

1.1 Information requested by the European Community Statement 94/25/EC from 16th June 1994

1.1.1 General information about the ship

- Boatbuilder : Chantiers AMEL / La Rochelle.
- This ship has been surveyed by Bureau Veritas, through the "CE type" process, according to the B schedule of the regulation. Certificate n°6632-0037 A19 CE RCD from 31st October.
- Design class A « Open Sea » - ship designed for long cruises, able to face winds over 8 Beaufort and waves over 4 metres height, and being, to a large extent, self-sufficient.
- The maximum builder's recommended load is 3000 kg, including crew, fuel, freshwater, supplies, safety equipment and miscellaneous.
- A maximum of 8 crew members are allowed on board in A category.
- The auxiliary engine is a YANMAR 4JH3-TE (44 kW at 2500 rpm – 55 kW at 3500 rpm). The most efficient motoring's range is situated between 1500 and 2500 rpm.

1.1.2 Fire fighting equipment

- A remote shut-off control is situated above the fuel tank, in the passageway near by the electric fuel gauge dial. In case of fire in the engine room, pull it out once the engine has been stopped.
- The engine room is protected by a inert gas fire automatic extinguisher. If used, block up the air intakes and outlets of the engine room. Follow the instructions given by the person in charge of safety on board.
- A hand fire extinguisher is located by the companionway, nearby the galley. Instructions can be read on its body.
According to the ship's flag's regulations, it is up to the owner to upgrade this fire fighting equipment to meet that country's requirements.

1.1.3 Partitioning / pumping out

The ship has got a collision watertight compartment (actually, the chain locker). The engine room is watertight. A watertight bulkhead fitted with a watertight door separates the front cabin from the saloon. A watertight bulkhead fitted with a watertight door separates the aft cabin from the saloon/passageway. A watertight bulkhead separates the aft cabin from the stern locker.

Next to both watertight doors, 2 valves shut the watertight compartments' outflow hoses.

In case of severe damage causing a seawater flooding, shut the watertight door of the flooded compartment and the valve as well.

Both manual and electric bilge pumps dry out the bilge in the engine room. This bilge collects the waters from both shower basins and the chain locker as well.



2 Guided tour of the Super Maramu 2000

2.1 Electric power from the AMEL point of view

Most of the electrical equipment in board of the Super Maramu 2000 works with in 24 V DC. This energy is stored in batteries that need to be charged regularly. **Ideally, charging should be done promptly produce when needed.**

When the boat is in a harbour, connected to the shore power, batteries are charged automatically with the 30 A charger (optional) which is less greedy than the 50 A.

When the boat sails, a lot of 24 V equipment (automatic pilot, electronics, rig and sail furling system, winches, refrigerators, lightning, ...) work with the batteries' energy. If we don't pay attention, they will be quickly discharged. Thus the generator should be switched on regularly to charge the 24 V batteries. If it is possible, schedule not a daily long time, but 3 shorter periods of 1 and a half to 2 hours. The next chart shows a solution, but your own experience can improve it.

1 time early in the morning	1 time near 13 or 14 PM	1 time near 19 or 20 PM
generator + 50 A charger (first) + 30 A charger (1 min after)		
<i>During the night, automatic pilot, lights, refrigerators, electronics, have discharged batteries. The generator delivers 220 V, useful at breakfast to warm water, wash up, warm the boat, ...</i>	<i>Good for batteries, generator, refrigerators, pumps, ... 220 V is useful for hot water, microwave oven, dishwasher, air conditioning, ...</i>	<i>At dinner time, for the same reasons as previously, and to have good batteries for the night.</i>

At the harbour : 30 A charger

In the open sea : 50 A charger + 30 A charger (1 min after)

5 to 6 hours seem to be reasonable, regarding to the needs of the crew.

When the boat is at anchorage, 24 V uses are less, and 3 to 4 hours of generator's work should be enough.

Batteries wear out, not due to their age, but according to their number of cycles of *Charge / Discharge*. That is why batteries of an occupied boat, but most of the time connected to shore power, will last longer (4 years max.) than batteries on a boat who sails or at the anchorage most of the time. In that case, lifetime of the batteries will probably not exceed 18 months.

Batteries usually fail because they are not charged enough.



2.1.1 Batteries



CAUTION ! The Super Maramu 2000 is equipped with high load lead-acid batteries.

These lead-acid batteries produce hydrogen gas which is easily flammable. If ignited from a spark or a flame, this gas can cause a violent explosion, involve acid spreads, damage the battery and might cause bodily damages.

Don't smoke around the batteries. Wear safety goggles and insulated gloves while working nearby the batteries. If battery acid comes into contact with unprotected skin, wash off immediately, using plenty of water and soap. If battery acid comes into contact with the eyes, flush immediately with plenty of water and get medical assistance without delay.

These batteries are located into a watertight and gastight locked down containment. Once it is unlocked, make sure children cannot get access inside.

The containment is fitted with a vent hose which drains the gas outside of the boat.

a) Operation

The batteries are located in a watertight and gastight compartment, under the berth in the passageway.

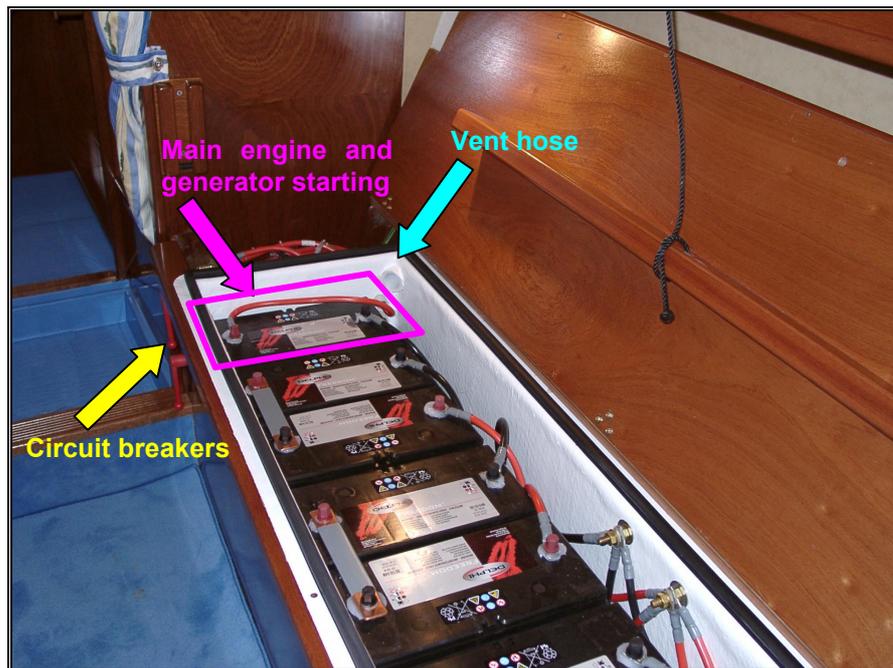
There are 9 batteries, 12 V and 105 Ah each. However, they are connected in two separate circuits as follows :

12 V circuit: One only battery feeds the starters of both main engine and power generator engine. It is situated towards the front of the boat. It is charged from two 12 V alternators one on each of these engines.

24 V circuit: Eight batteries connected in series two by two and then in parallel, make a 24 V battery group of 400 Ah which feeds all the 24 V equipment on the boat (lights, winches, sail furlers, fridges, electronics, pumps ...).

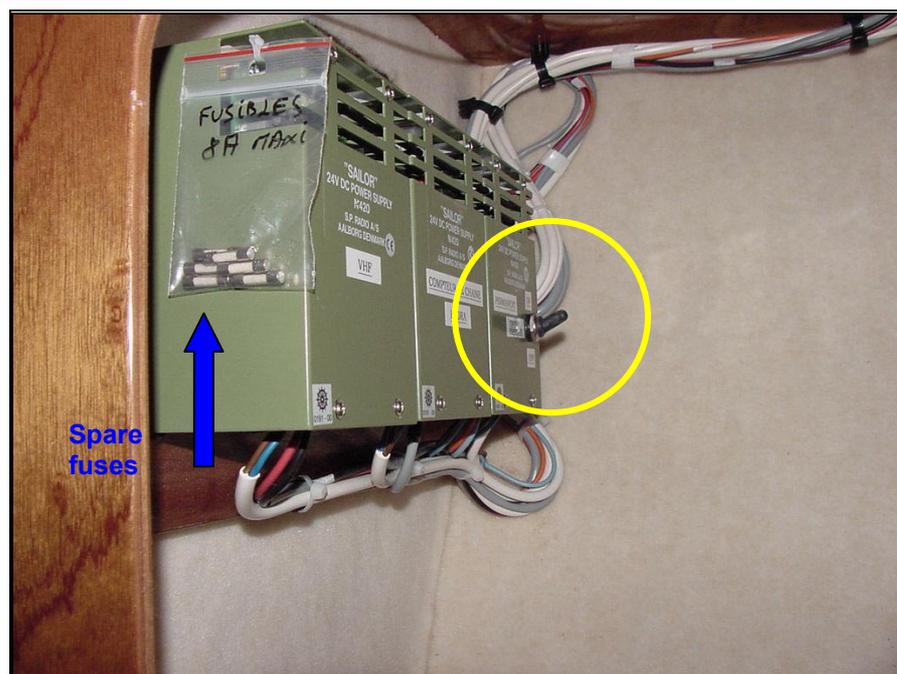
They are charged by battery chargers 220 / 24 V or the main engine alternator.

Two main circuit breakers (outside the battery container in the passageway) switch on or off both circuits. The top one switches the positives (both 12 and 24 V). The bottom one switches the negatives (both 12 and 24 V).



Pict. 1 – Batteries

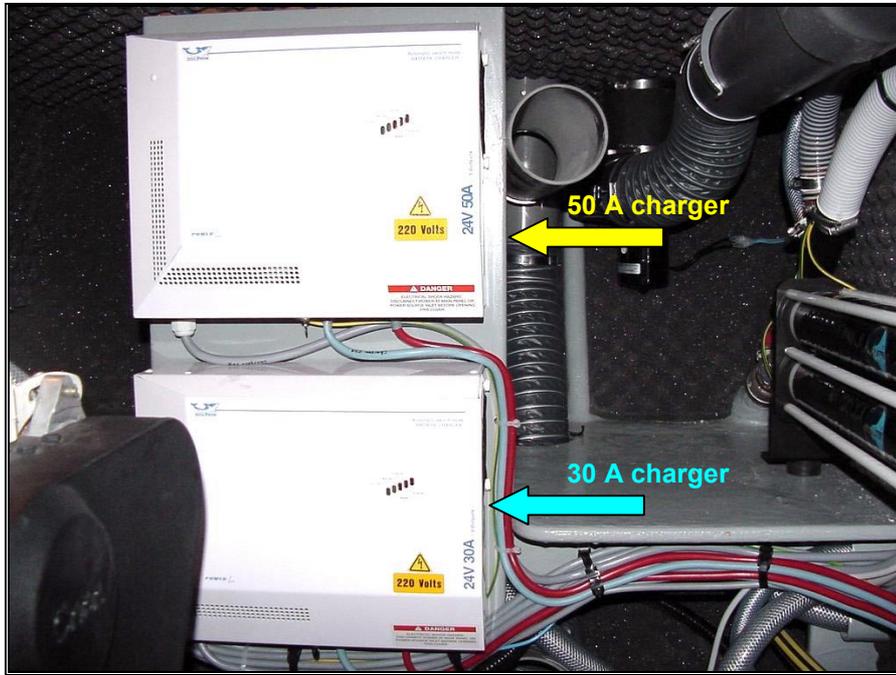
Two equipment are connected straight to the 24 V batteries : the battery controller (located in the galley, see *Pict. 5 – 24 V circuit breakers panel*) and the 24 / 12 V step-down transformer called "Permanent" (inside the locker under the chart table). This "Permanent" transformer feeds the pre-set memories on the music radio and can be switched off from a toggle switch.



Pict. 2 – Toggle switch for the « Permanent » transformer



When using both chargers together, don't switch them on at the same time. First switch on the 50 A battery charger, then after 1 minute, switch on the 30 A one. This is allowing each charger to analyse the state of the batteries and supply the optimal charge.



Pict. 3 – Batteries chargers

AMEL recommends to use the batteries only between 100 and 65 % capacity. As soon as the capacity is below 65%, you must charge them. Thus, they'll have a longer life. The batteries should never be fully discharged.

b) Maintenance

The batteries are sealed. Check the battery connections to be sure they are clean and tight.



2.1.2 Power generator



CAUTION ! Read carefully the generator's manual before use. It contains **warnings** concerning your own safety while operating and doing maintenance. Any maintenance work on mechanical or electrical parts of the generator should be done by skilled workers, using appropriate tools and protections.

The power generator can be started from two control knobs : one in the galley and one on the control panel on the generator itself.

The generator is located in the engine room portside. It uses diesel fuel.

The diesel fuel comes from the RACOR prefilter / water strainer, enters the electric priming pump and the engine's filter, and then feeds the injection pump. The overflow returns straight to the fuel tank. To bleed the fuel circuit on the generator, refer to generator owner's manual.

It is important to start the generator without load, meaning every 220V equipment is switched off. Check the seacock for seawater intake (see 2.4.2). Check also for water discharge from the hull exhaust outlet when the generator is running. outlet.

Once the generator has been running for more than 1 hour at heavy load, before stopping it, let it run 1 minute without load to let it cool down.

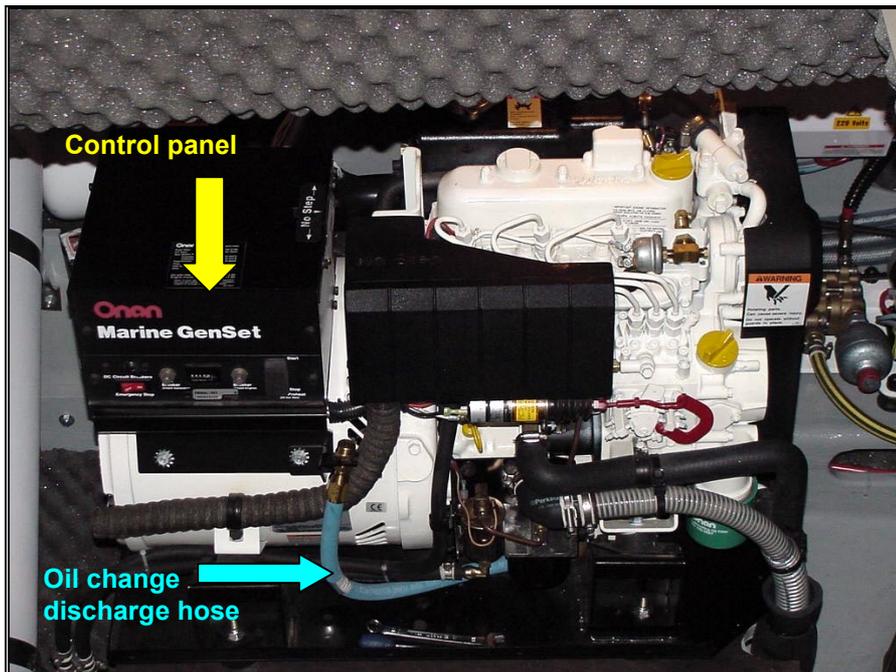
There are several circuit breakers and fault breakers on the generator control panel in the engine room. Refer to generator's manual.

The seawater cooling circuit is fitted with an anti-siphon system to prevent seawater from returning into the engine.

Here are the main specifications of the ONAN MDKAL 7kW generator.
For further information, refer to generator's manual.

<i>Electric generator</i>	
Type	4-pole revolving field
Frequency	50 Hz +/- 1 Hz
Power available	7 kW
Cooling	air

<i>Diesel engine</i>	
Type	3 cylinders verticle in line
Capacity	1 124 cm ³
Rating	1 500 rpm
Charging alternator	10 A
Consumption at half load	2 l/h
Cooling system	Heat exchanger



Pict. 4 – Generator

About the exhaust circuit of the generator :

It is fitted with a muffler were the exhaust gas is mixed with seawater and therefore cooled down. When the generator is running, make sure that seawater flows out of the exhaust discharge outlet on the hull.

2.1.3 Shore power

To get 220 V shore power on board, connect the cable located in the aft locker (portside) to the dock's terminal. Then, in the galley, inside the locker above the sink, make sure the main 220 V circuit breaker is on.

For safety reasons, the 220 V circuit has got a solenoid switch that gives the generator priority when running, while the boat is connected to shore power.

2.1.4 Electrical drawings



CAUTION ! Any work on the wiring system must be done by skilled and warned workers.
Read carefully the electrical drawings and safety instructions of the boat or concerned equipment before starting any work.

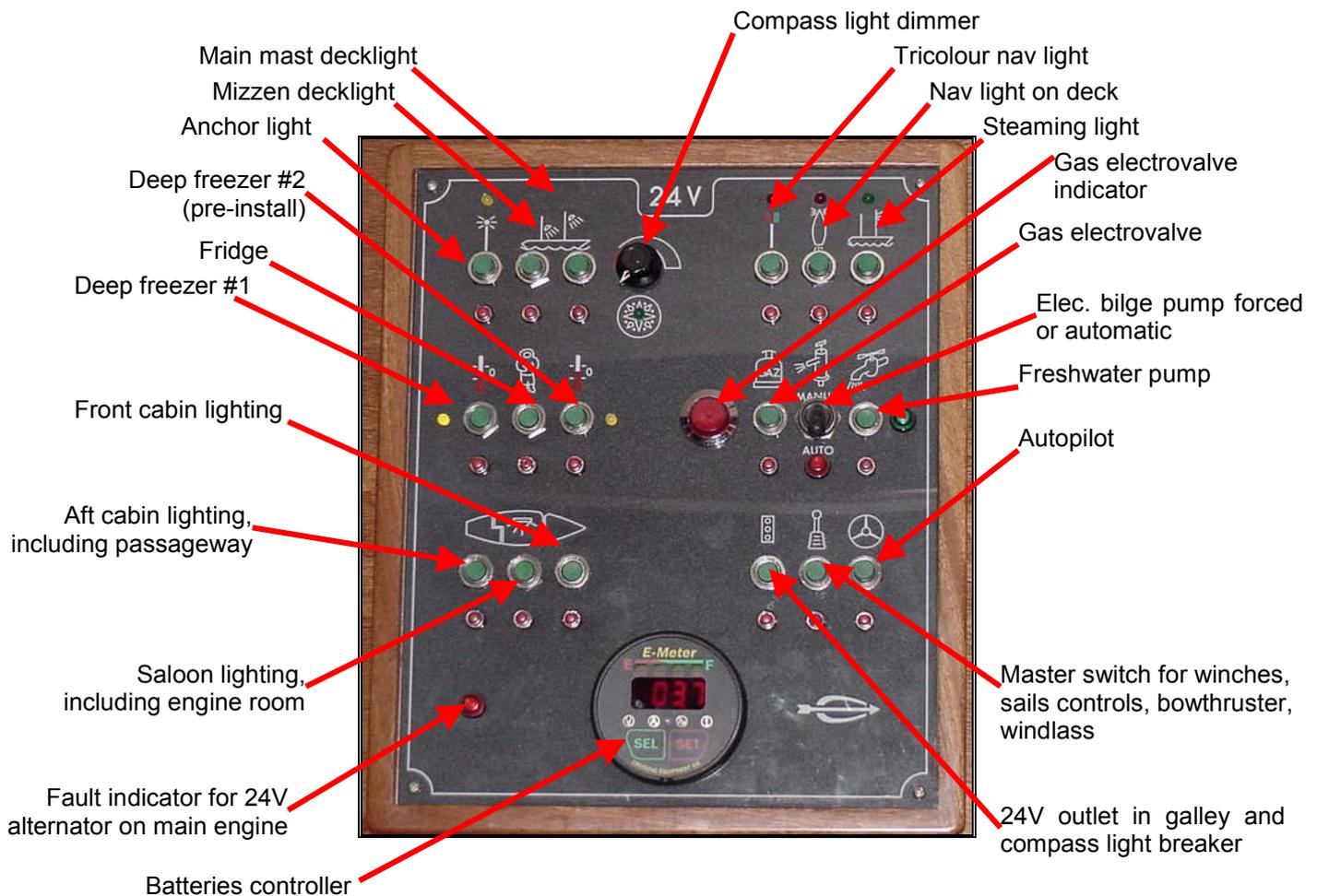
Electrical drawings show separately the general wiring of the 12, 24 and 220 V circuits.



2.1.5 Electrical panels

Both 24V and 220V panels work the same way :

- press the green knob to switch on,
- press the red knob to switch off.



Pict. 5 – 24 V circuit breakers panel

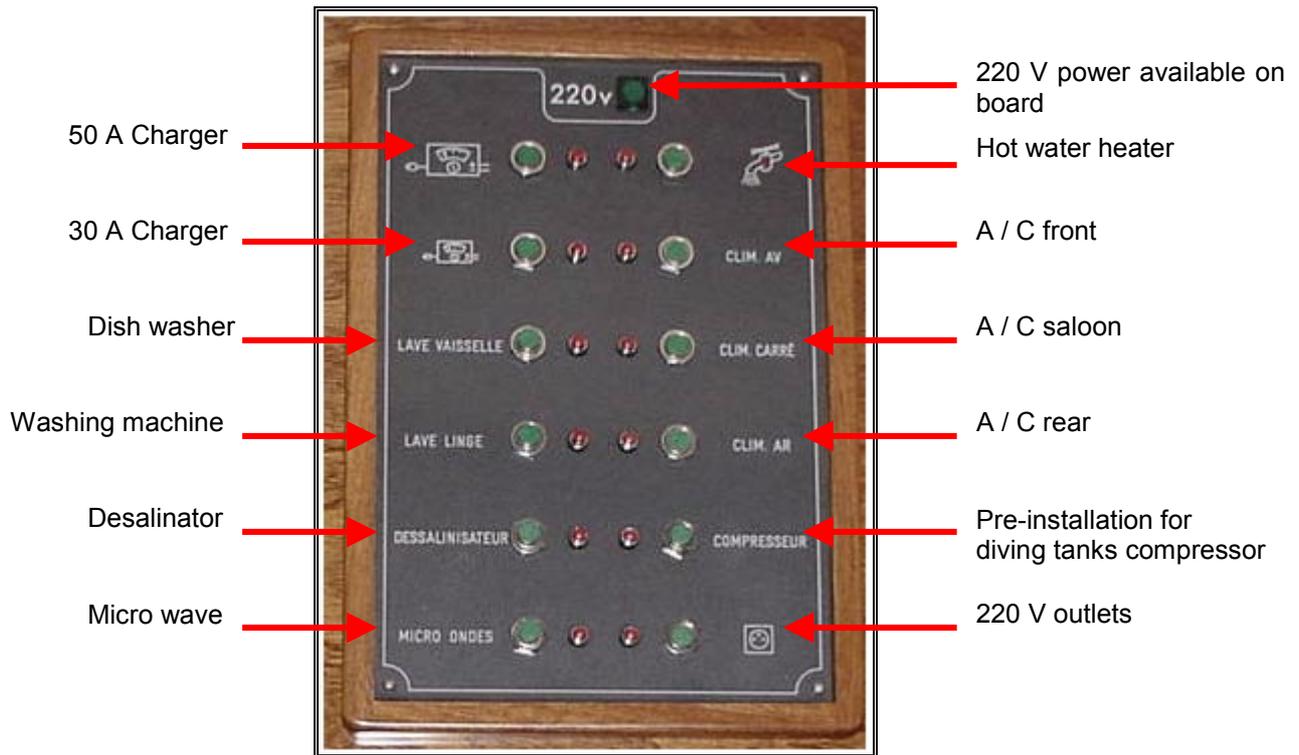
The red indicator (down left) being on, shows a fault (loose or broken belt, too low rating, faulty regulator) on the 24V alternator's charge (on main engine).

Remark : this indicator can be lighted if all the chargers and alternators are working simultaneously (alternator measures an high voltage, and so stops charging).

The battery controller shows the batteries' state with 4 green LEDs (refer to manual).

Pressing SEL gives you more information about the batteries. Only voltage (V) and amperage (A) are reliable. **Don't let the voltage drop below 23 V.**

The ampere-hours indicator (A.h) or percentage (t) is useful to know how many Ah have been spent since the last charge. Don't take this info as showing the general state of the batteries, except to know the consumption of A.h between 2 charges.



Pict. 6 – 220 V panel

On top of this panel, a green light shows that 220V is available on board (either shore power, or generator after 15 s).
 The main 220V circuit breaker is located in the locker behind this panel, and includes a ground fault interrupter.

Reminder : Before starting the generator, make sure every 220 V circuit breaker on this panel is off.



2.1.6 Estimate of the electrical equipment' consumption.

Following values should be taken for informative.

<i>Equipment</i>	<i>Power (W)</i>	<i>Amperage</i>	<i>Amperage on load</i>
24 V Equipment			
Freshwater pump	290	12	-
Toilets pump	150	6	-
Bilge pump	100	4	-
Bow thruster	7000	510	-
Windlass	1200	36	95
Jib furling system	1000	44	84
Mainsail mast furling motor	500	25	-
Mainsail clew motor	500	25	-
Desalinator	500	18	-
Fridge	100	3	-
Deep freezer	100	3	-
Masthead tricolour nav. light	25	1	-
Anchor light	10	0.5	-
Deck navigation. lights	60	2.5	-
Deck flood light	50	2	-
Automatic pilot	250	4	-
Radar	100	3.5	-
Wind indicator	-	0.5	-
VHF	120	1	5 (transmission)
GPS	-	0.5	-
SSB	500	2	25 (transmission)
Mini-M satellite phone	250	2	5 (transmission)
Ceiling lights	20	1	-
Bulkhead lights	20	1	-
Jib sheet winches	3000	43	200
Main sheet winch	1700	28	120

Warning : electronics use a lot of power when permanently on

220 V equipment			
Washing machine / dryer	1300	6.5	-
Dish washer	1570	9.4	-
Air conditioning (heating)	850	5.6	-
Air conditioning (cooling)	850	3,3	-
A/C cooling pump	500	2.2	-
Hot water heater	500	2.2	-
Micro-wave oven	1300	6	-
Micro-wave + grill	2800	13	-
30 A charger	1500	7	-
50 A charger	2400	11	-
Desalinator			-

Never leave any 220 V equipment on when the boat is unattended for several days.



2.1.7 Ground circuit and protection against electrolysis

All the equipment in contact with water (pumps, engines, pipes, transmission, propeller, toilets, ...) are connected together to make a circuit, isolated from the other wires but linked to the zinc anodes of the rudder.

This installation (green / yellow wire) represents a protection against the electrolysis : anodes break up, but not the item being protected.

Warning : *inspect anodes every 6 months.*

Change anodes every year, maybe more often. Electrolysis depends on the environment of the boat, and especially if there is a metal boat close-by.

The Super Maramu 2000 has got in standard 2 ground plates on the rudder, used by the SSB system.

If the boat hasn't got any SSB, these plates are connected to the zinc anodes.

When setting up a SSB, disconnect ground plates of the anodes (behind the chart table).

When a new metallic material in contact with water is installed :

- ***be sure the alimentation wires (positive and negative) are isolated,***
- ***link the metallic part to the ground circuit.***



2.2 Main engine

2.2.1 Engine

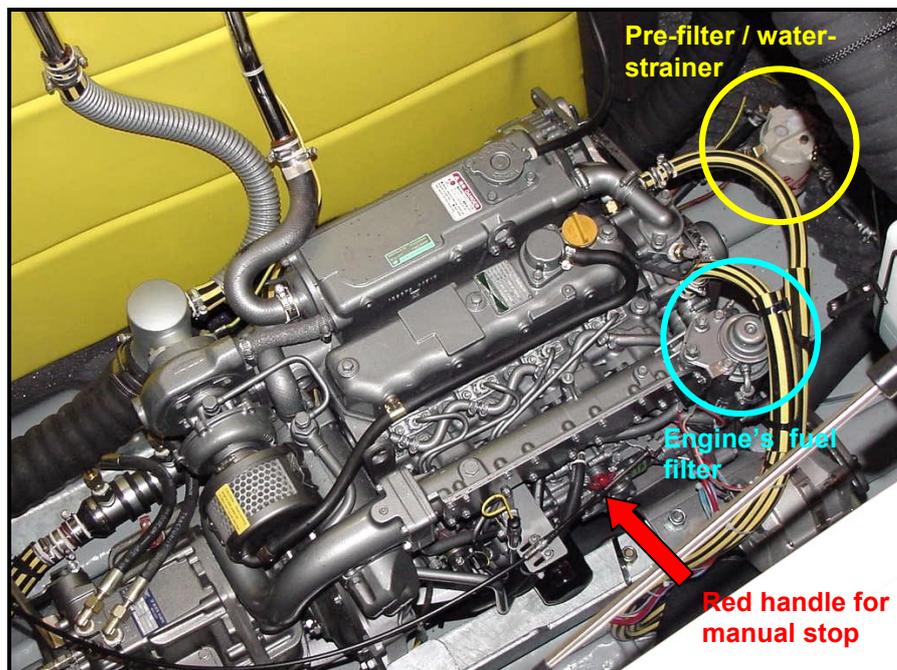


CAUTION ! User's manuals for the main engine and the hydraulic gearbox content safety **warnings** that must be respected. Refer to these manuals before use. Any mechanic or electrical work should be done by skilled staff, using appropriate tools and equipment.

Warning 1 : some drops of oil could be seen in the bilge below the engine. One must take this for granted. This is not a symptom of a faulty engine.

Warning 2 : you must run the main engine everyday of sailing for 15 or 20 minutes (in 1 or 2 times) to drain the exhaust circuit (the waves fill in it).

Diesel fuel runs from the racor pre-filter/water-strainer to the engine's fuel filter and then to the injection pump that feeds the injectors. Afterwards, the fuel overflow returns straight into the fuel tank (see 2.4.1). On the injection pump, a red handle makes it possible to stop the engine manually, in case the electrical stop doesn't work.



Pict. 7 – Main engine



Engine specifications (for further details, refer to engine's manual) :

<i>Diesel engine YANMAR 4JH3-TE</i>	
Type	Turbo powered diesel engine 4-stroke, 4 cylinders verticle in line direct injection
Engine capacity	1995 cm ³
Power	55 kW (75 hp.) at 3500 rpm
Minimum idling speed	700 ± 25 rpm
Cooling system	Fresh water with heat exchanger
Engine battery alternator	12 V, 55 A
Service batteries alternator	24 V, 55 A
Fuel consumption (clean hull)	Economical cruising (1800 rpm ; 6.5 knts) : 3.9 l/h Cruising (2000 rpm ; 7 knts) : 5.5 l/h

When the engine has been running for a long time at high load, let it idle several minutes before stopping to cool it down and to allow the turbocharger to slow down.

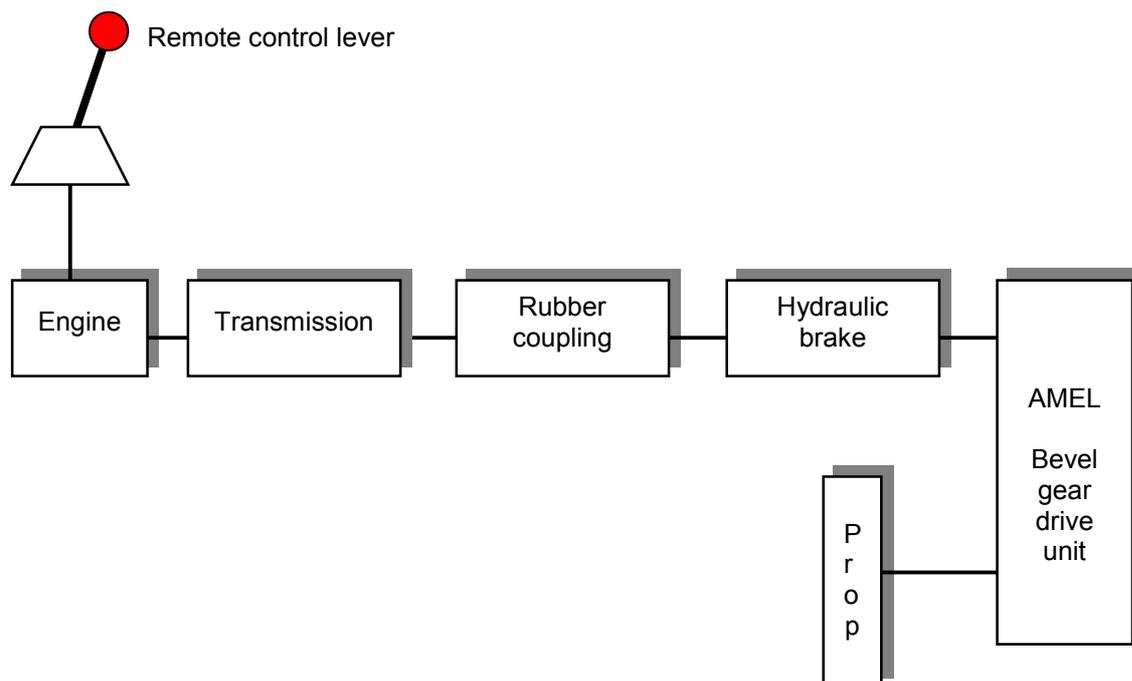
The seawater cooling circuit is fitted with an anti-siphon system to prevent seawater from returning into the engine.

The transmission (to shift from forward to reverse) is hydraulic-powered. Refer to manufacturer's manual for maintenance and further information.

While sailing, the hydraulic brake prevents the propeller shaft from turning and makes it possible for the propeller to feather.

A rubber coupling dampens the shock of shifting the transmission.

Schema of the whole motoring system :





The coolant overflow container is situated above the engine, on the aft end (see *Pict. 55 – Gas-oil tank*).

About the exhaust circuit on the main engine :

It is fitted with a muffler where the exhaust gas are mixed with seawater and therefore cooled down. When the engine is running, make sure that seawater flows out of the exhaust discharge outlet on the hull (portside).

2.2.2 AMEL transmission

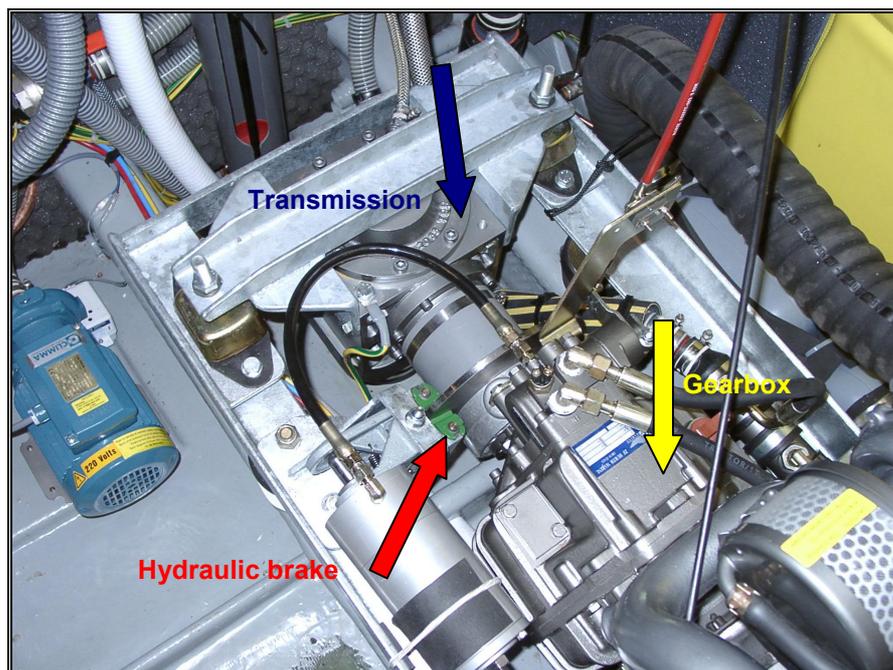


CAUTION ! Don't touch or let clothes or hair get in contact with the AMEL transmission while the engine is running. The moving parts (shafts, wheels, coupling...) could cause severe damage. Before starting the engine, check that neither tools nor towels remain around it. The transmission and the engine can get very hot while running and after use : avoid any contact with body or clothes.

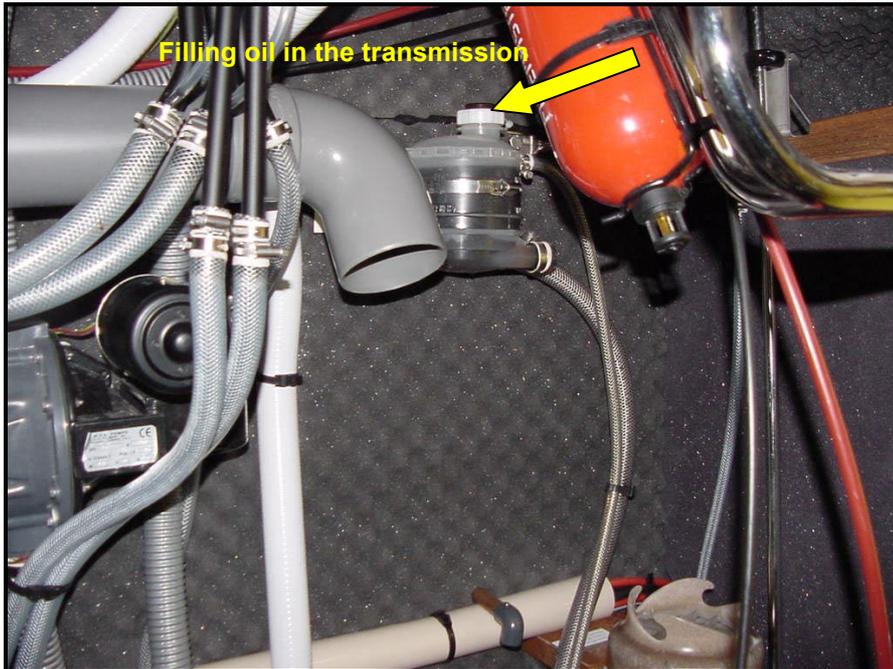
Any electrical or mechanic work should be done by skilled staff, with appropriate tools and protective equipment (gloves, glasses ...).

Before starting any work, make sure the engine is off and disconnected from battery, shut off the fuel tank outlet.

The AMEL transmission in front of the gearbox is made out of two pairs of bevel gears running in a housing full of oil, making the transmission of power to the propeller safe, quiet and reliable.



Pict. 8 – Transmission



Pict. 9 – Transmission oil tank

2.2.3 Propeller



CAUTION ! Before any inspection or work, make sure the engine is stopped and the fuel tank shut off. Any mechanic work must should be done by skilled workers with appropriate tools and safety equipment.

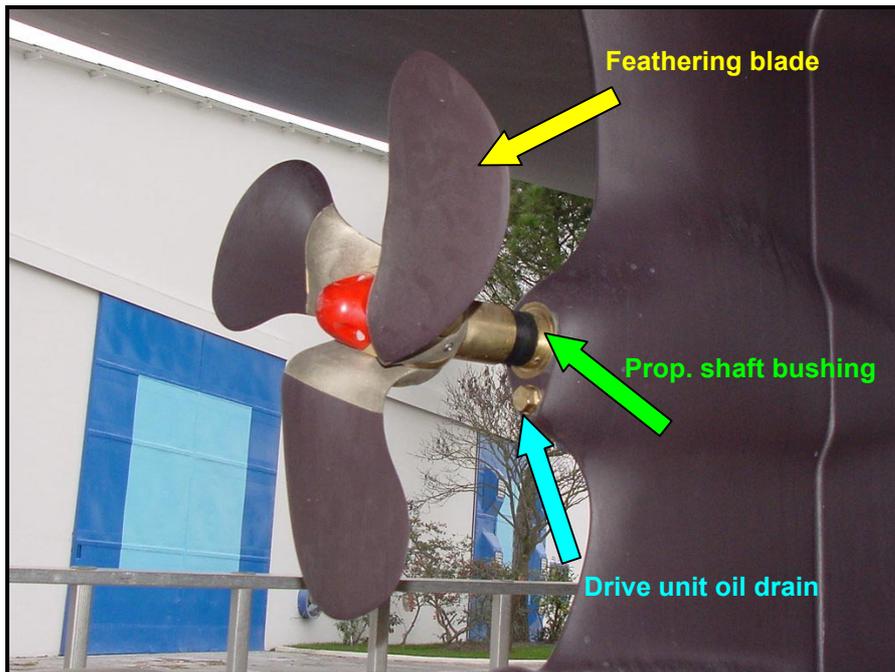
The H6 AUTOPROP, diameter 566 mm is a three-blade feathering bronze propeller. Each blade is 360° free which allows optimal pitch at any power setting and therefore maximum thrust, even reversing. Also, using the free blade rotation, the prop feathers automatically when the engine is stopped, reducing its braking surface and resultant drag.

Remark : in case of damage on the AUTOPROP, a spare 3 fixed-blade propeller can be fitted. It is originally located under the front cabin starboard berth. Refer to chapter 4.5.3 for replacing instructions.

AUTOPROP cleanness :

If the AUTOPROP is even a little fouled, the blades might not take the same pitch and therefore make vibrations and more fuel consumption.

Check the fouling on the AUTOPROP (and clean it if needed) especially after remaining stationary 1 or 2 months in hot and sunny waters.

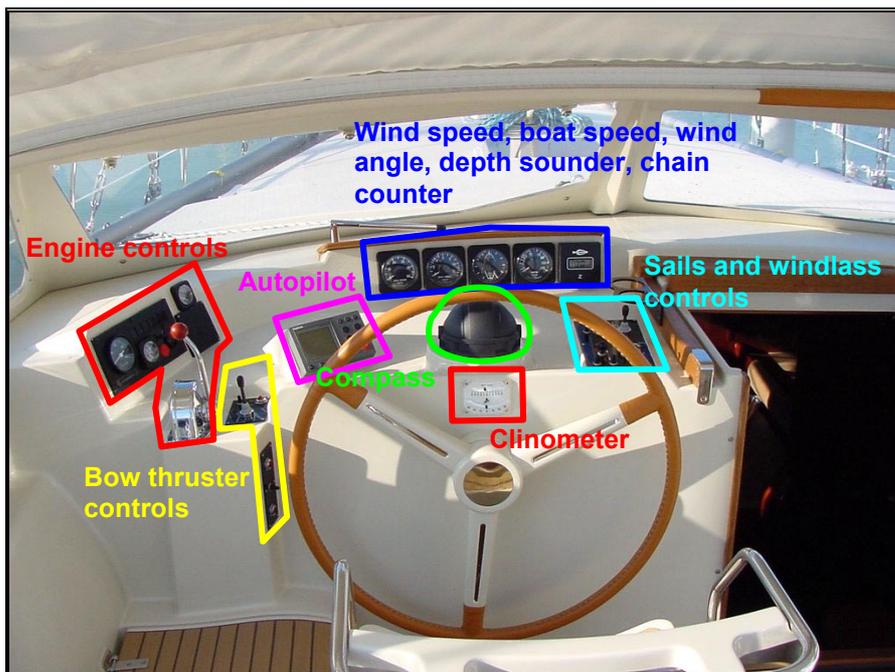


Pict. 10 – Propeller

2.3 AMEL makes it easier to sail

2.3.1 Cockpit

The Super Maramu 2000 has got a wide and well-sheltered cockpit where sails and engine controls can be used from. *Pict. 11 – Cockpit* shows the location of these controls.



Pict. 11 – Cockpit



2.3.2 AMEL bow thruster



CAUTION ! Any electrical work should be done by skilled staff, aware of safety rules and procedures, and equipped with appropriate tools and protective equipment.

Read carefully electric drawings before proceeding any repair.

Before operating the bow thruster, make sure that nobody swims or dives nearby, and that no litter floats around the propeller.

Any maintenance on the bow thruster should be done in a harbour.

Since 1985, every AMEL ship is fitted with our bow thruster. Its design is very reliable for every underwater part is made out of GRP and therefore not subject to electrolysis. An electrical jack moves it up and down using cables and pulleys. The propeller is driven by a 6 kW 24V electric motor.

The polyester propeller is mounted with 8 nylon screws (4 with a diameter of 8 mm, and 4 with a diameter of 6 mm) able to break if a floating rope gets caught into it. Thus, the propeller gets lost, but the bow thruster is not damaged.

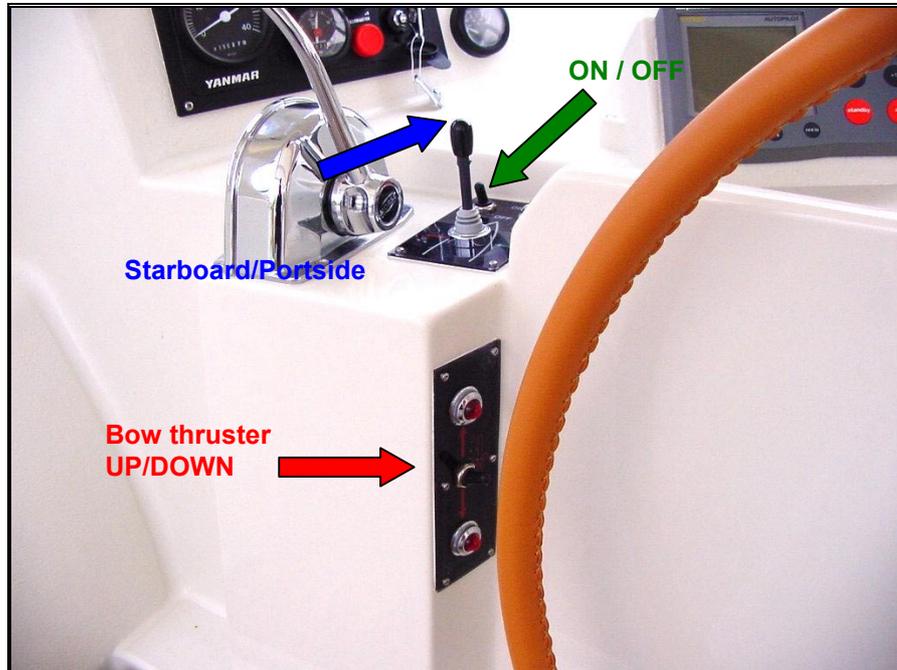


Pict. 12 – Bow thruster

Your bow thruster is retractable and is therefore lifted while sailing. Just lower it a few seconds before use : switch on the main control and use the up and down toggle switch to set it in the operating position (until the lower light shows and rings).

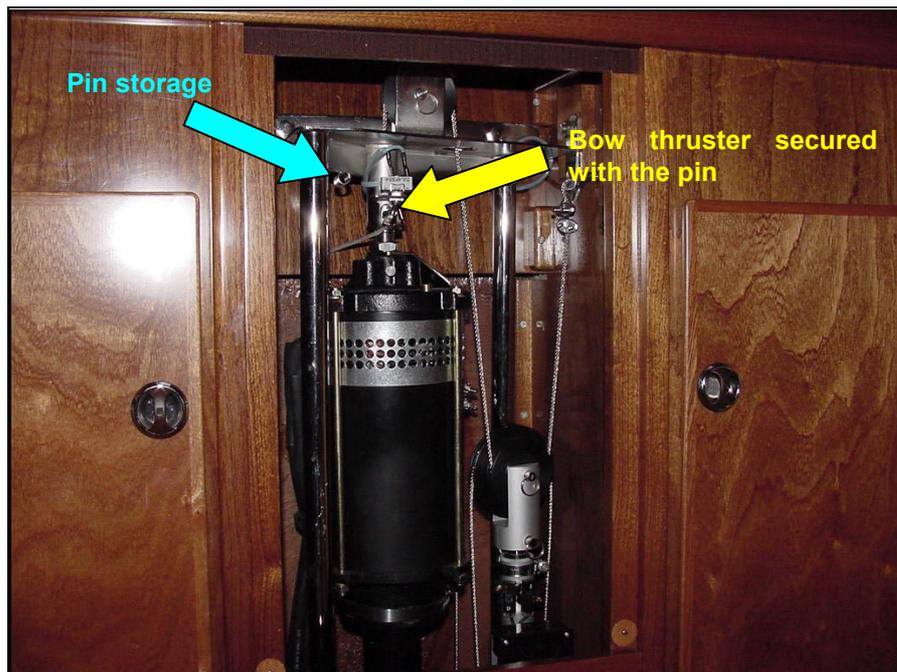


Then, you can use the bow thruster. Don't use it more than 30 seconds in one push. Don't reverse rotation before the propeller has stopped (about one second). When lifting the bow thruster, wait for the red light to show before switching off.



Pict. 13 – Bow thruster controls

In case of offshore navigation, secure the bow thruster unit with the stainless steel pin (nearby the electric motor). Therefore, you have to move the switch on the way to the hole for the pin, which shuts off the power supply, making any improper use or mistake impossible.



Pict. 14 – Bow thruster electric motor, jack and pin



After a long mooring, have the bow thruster moved up and down several times to make sure it is not stuck by marine growth.

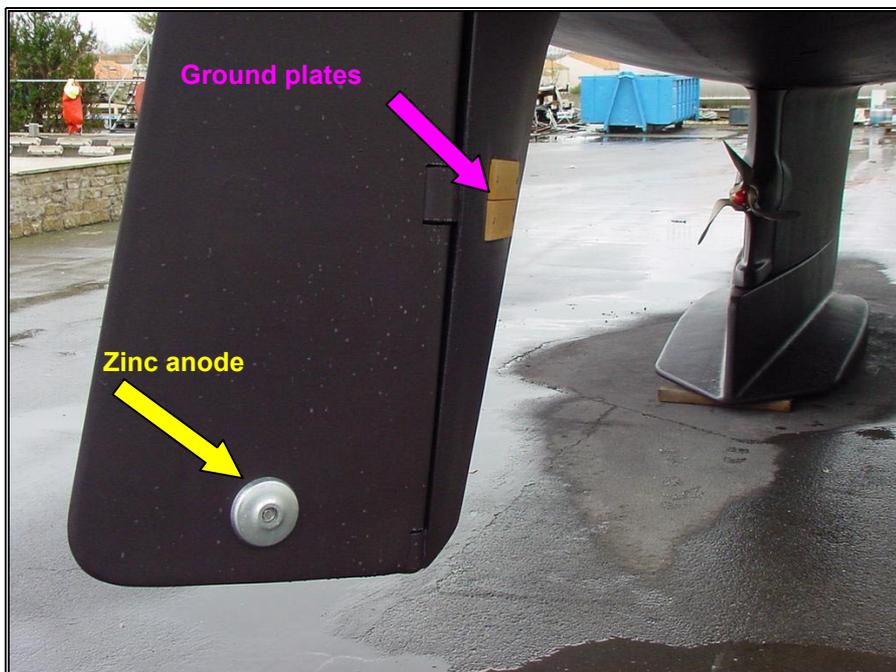
If a rope gets caught by the propeller, the nylon screws will break. The propeller gets lost but the bow thruster won't be further damaged. It is possible to replace the prop without diving or having the boat taken out of the water, using a special tool that one can buy at AMEL'.

When the boat is on the hard, switch off the main circuit breaker (on the 24V panel) to avoid any accident.

2.3.3 AMEL rudder

The rudder blade is made out of fiberglass, reinforced with stainless steel plates. It is hollow and a hole has been drilled at the bottom to let the water go when the boat is hauled on the hard. The rudder blade is supported by three brackets or bushings. A zinc anode is mounted on each side.

The skeg is fitted with two ground plates for radio uses (optional). The rudder stock through-hull is watertight using a stuffing-box which is serviceable from the aft cabin, under the berth.



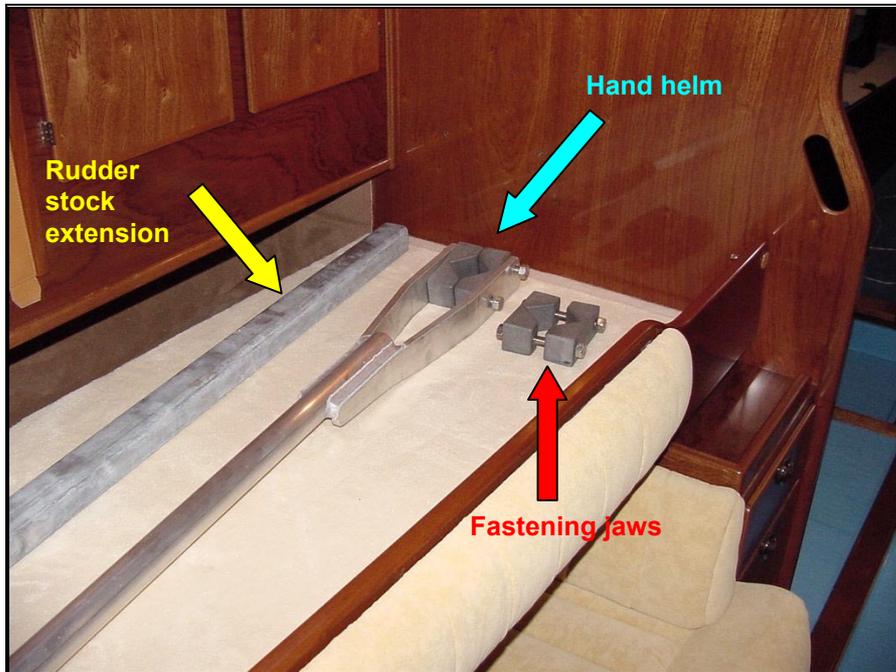
Pict. 15 – Rudder and skeg



The emergency tiller is located in the saloon, under the starboard berth and made of 3 parts :

- the rudder stock extension (steel square tube),
- the fastening jaws,
- the hand helm (aluminium).

Refer to chapter 4.14.1 for fitting instructions.



Pict. 16 – Emergency tiller

Opening the aft cabin berths' hatches gives access to the linear driving of the automatic pilot.



Pict. 17 – Rudder stock and automatic pilot linear driving unit



CAUTION ! Before any inspection or work, make sure nobody operates the rudder system.
For safety reasons, have this system checked by skilled staff.
Any work should be done by skilled staff, equipped with appropriate tools and protective gear.



2.3.4 AMEL rig and sail furling systems

The ballooner is located in the front starboard deck locker and the mizzen ballooner in the cockpit aft portside locker.

The Super Maramu 2000 is equipped with 5 tri-radial cut sails:

- 3 are made out of composite DACRON fabric : the jib, the mainsail and the mizzen,
- 2 are made out of nylon fabric : the ballooner and the mizzen ballooner.

a) Winches



CAUTION ! Don't let fingers, hair clothes or ties touch the winches during operation. The rotating parts may cause severe injuries. Before operation, make sure no tool or towel is lying on the winch.

Don't leave children unattended while operating the winches.

For safety reasons, have these equipment checked by skilled staff.

Any electrical or mechanic work should be done by skilled staff, using appropriate tools and protective gear.

The Super Maramu 2000 is equipped with 2 electric winches (type LEWMAR 58 CEST) for the jib sheet. Under the mizzen mast is the electric winch (LEWMAR 40 CEST) for the main sheet.

For further information, refer to their own manual.

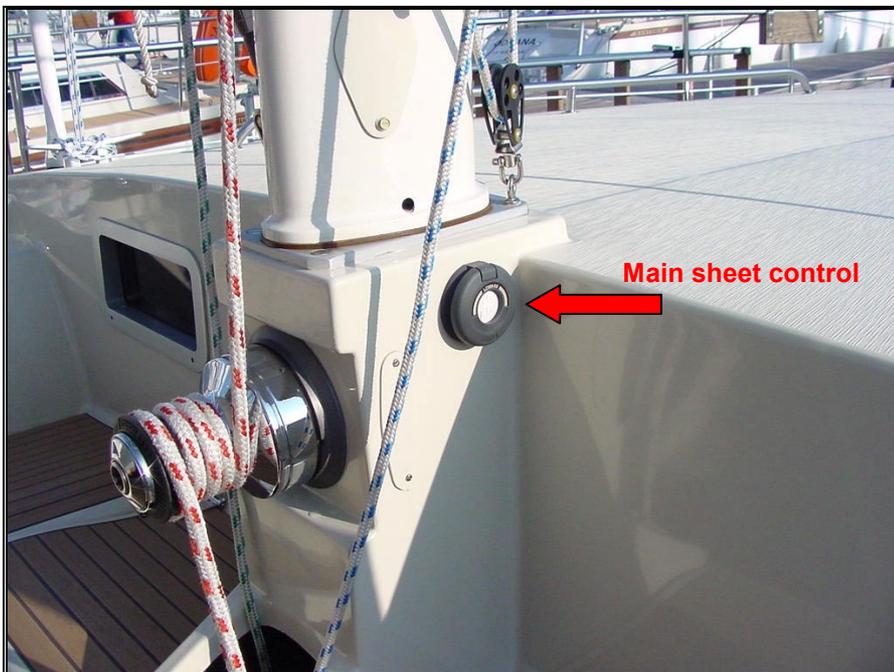
The electric jib sheet winches have a twin control system : switches are located on the back of the cockpit's benches and at the sails' control panel, nearby the steering wheel. Make sure nobody leans against a winch while operating.

The electric winches can be used manually with a regular winch handle. No need to disconnect or release anything. A circuit breaker for each one can be switched off, if there are some children on board for example. Always remove the handle when operating electrically.



Pict. 18 – Jib sheet electric winch

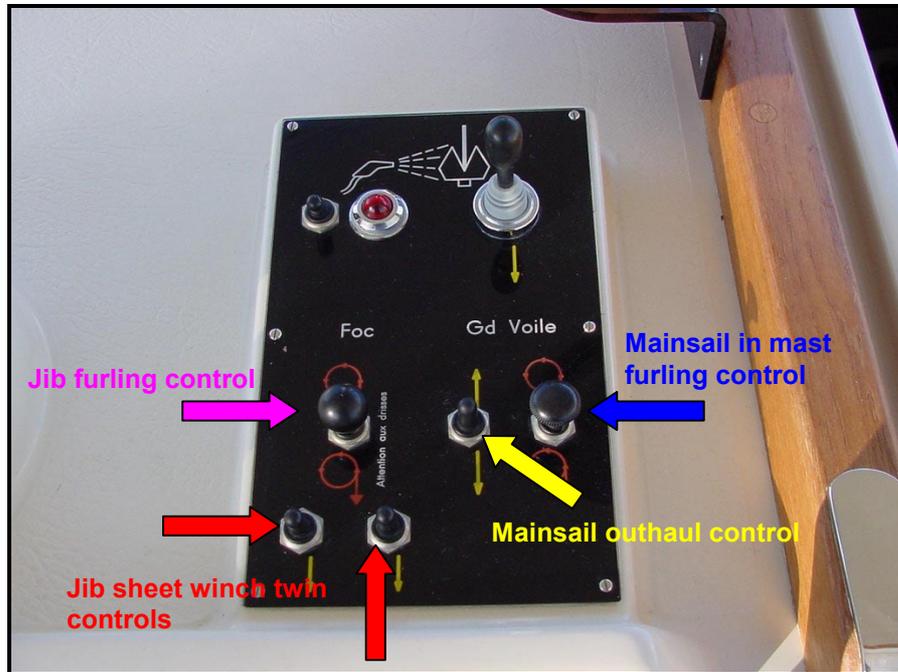
The control for the electric main sheet winch is on the portside of the mizzen mast.



Pict. 19 – Main sheet electric winch



The sails' control panel is located at the helm station.



Pict. 20 – Sails controls

Warning : beware of loose halyards that could get caught in the jib furling system, especially by the top of the mast.



On the passageway's ceiling, one hatch gives access to the circuit breakers for the main sheet winch, starboard jib sheet winch and 24V outlet for the dinghy inflator in the lazaret (for use with the batteries only).

Another gives access to show the starboard winch motor.

The circuit breaker for the portside electric winch is located in the engine room.



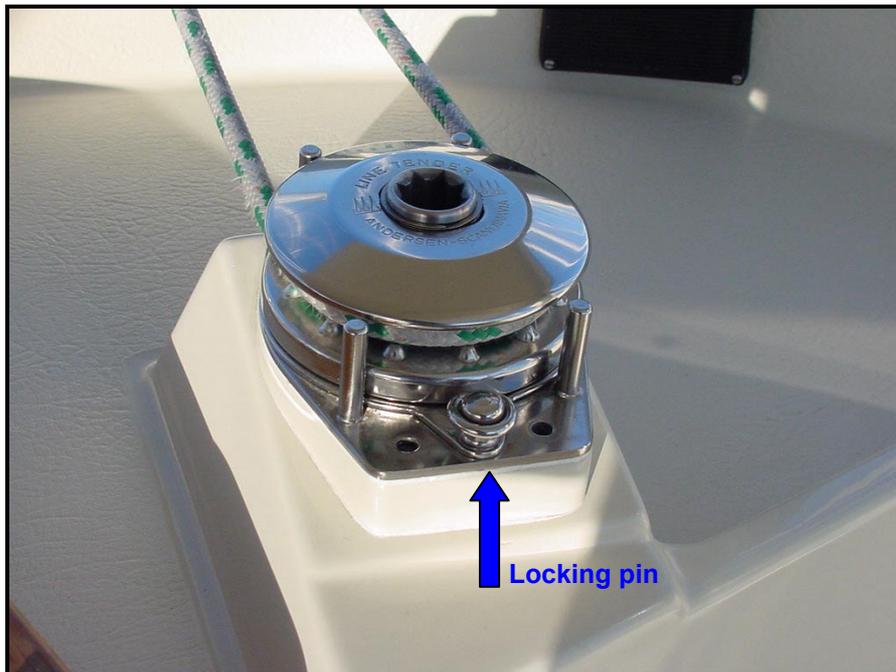
Pict. 21 – Passageway / Hatch to the starboard jib sheet and mainsheet electric winches



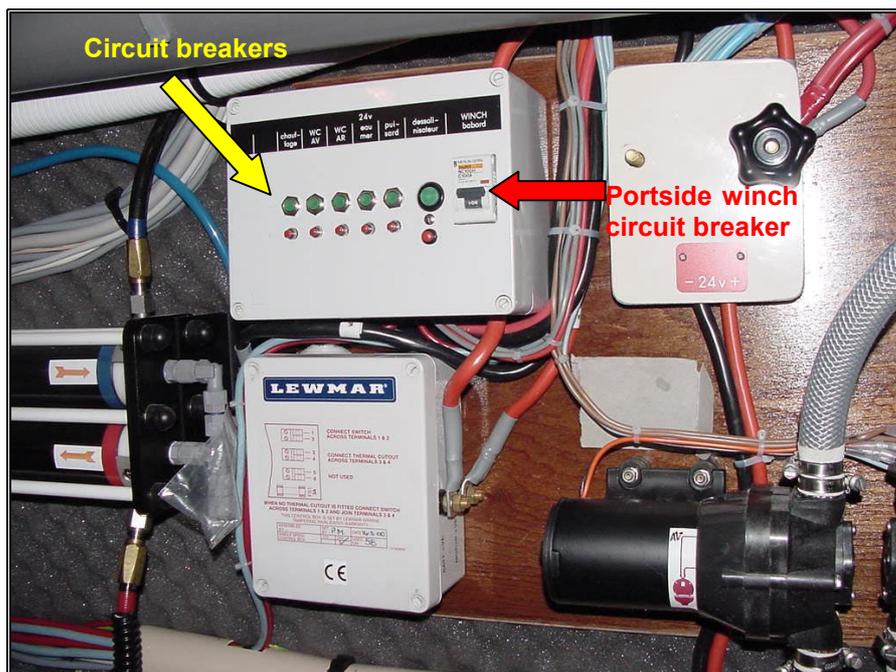
The winch to operate the main sheet traveller is located in the cockpit, on starboard side. A locking pin can be set to starboard in order to move the traveller to starboard, or to portside in order to move the traveller to port.

If no move is requested, this winch can be locked on both ways.

Once adjusted, remove the winch handle from the winch.



Pict. 22 – Main sheet traveller control (locked on both ways)



Pict. 23 – Portside electric winch circuit breaker



b) AMEL sails furling systems



CAUTION ! Don't let fingers, hair clothes or ties touch the winches during operation. The rotating parts may cause severe injuries. Before operation, make sure no tool or towel is lying on the winch.

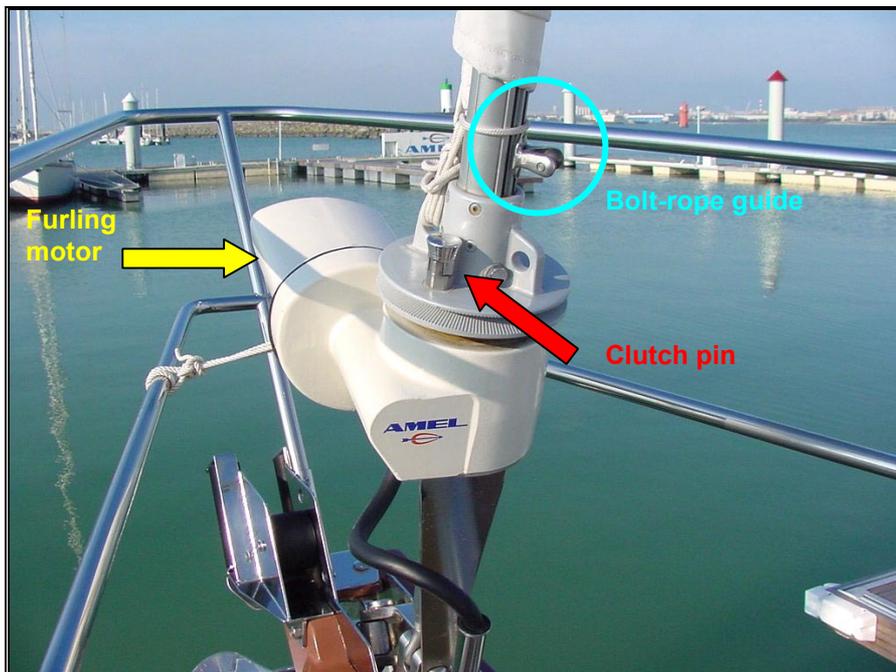
Don't leave children unattended while operating the winches.

For safety reasons, have these equipment checked by skilled staff.

Any electric or mechanic work should be done by skilled staff, using appropriate tools and protective gear.

Warning : Inside the jib furling tube, the forestay is coated with grease. In hot countries, this grease may get fluid and drip at the bottom of the forestay. However, don't fear a leak on the motor for its housing is sealed.

- The jib furling control switch is in the cockpit. (see *Pict. 20 – Sails controls*).

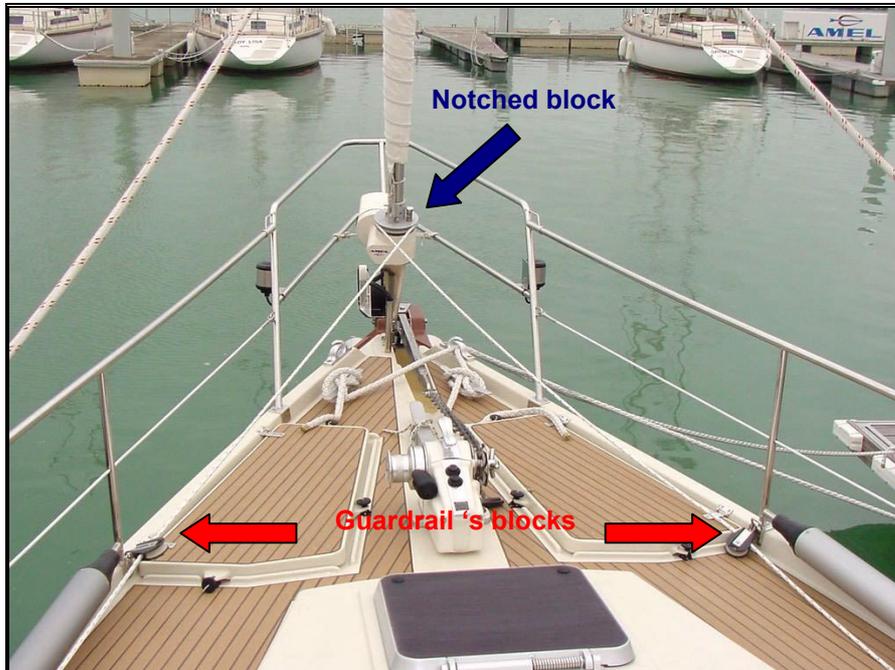


Pict. 24 – Jib furling motor

During the navigation, if lines appear on the jib, tighten the port halyard using the winch.



To use it manually, lift the clutch pin and turn it $\frac{1}{4}$ of a turn to lock it. Then set the rope on the notched block as shown on *Pict. 25 – Using the jib manually*, crossing it, to handle it from the cockpit.



Pict. 25 – Using the jib manually

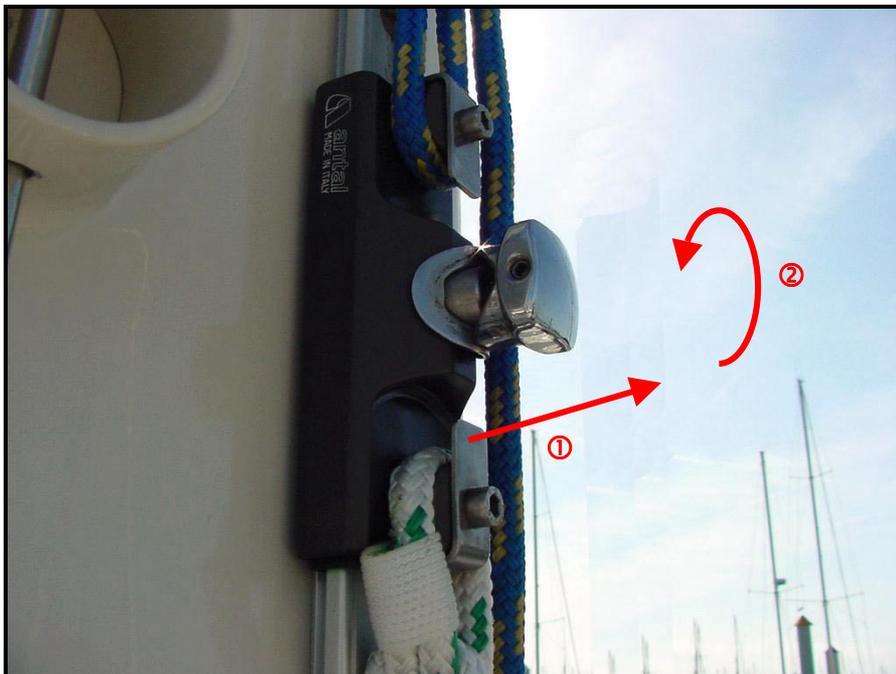
- The mainsail electric furler controls are in the cockpit (see *Pict. 20 – Sails controls*). When unfurling in the mast, bring the outhaul backwards as well.



When sailing, if lines appear on the mainsail, harden up the port halyard using the winch and to the traveller (see *Pict. 26 – Tightening the mainsail halyard*). Lift the clutch pin and turn it $\frac{1}{4}$ of a turn to unlock the traveller, move it and take up the halyard on the winch.



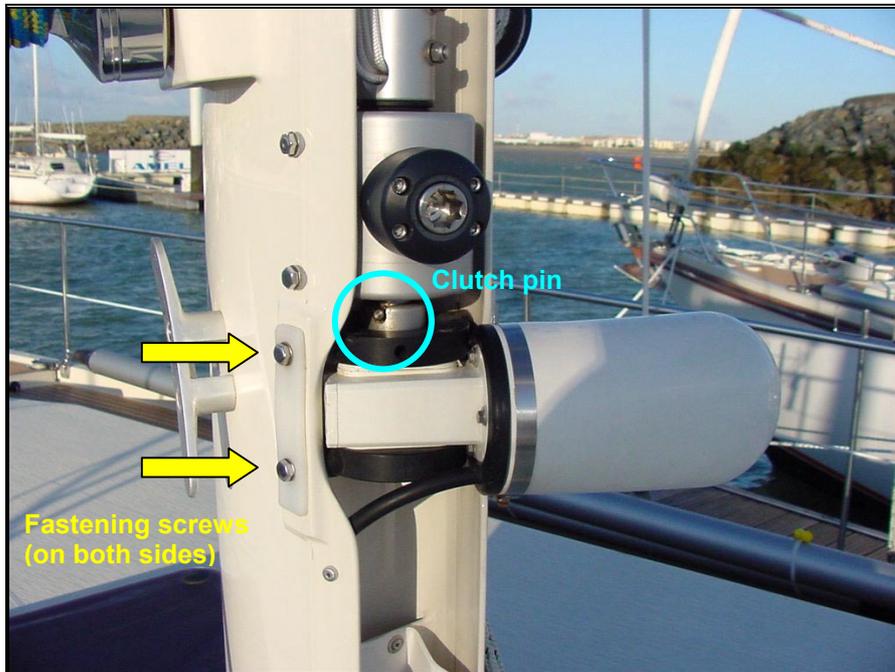
Pict. 26 – Tightening the mainsail halyard



Pict. 27 – Clutch pin

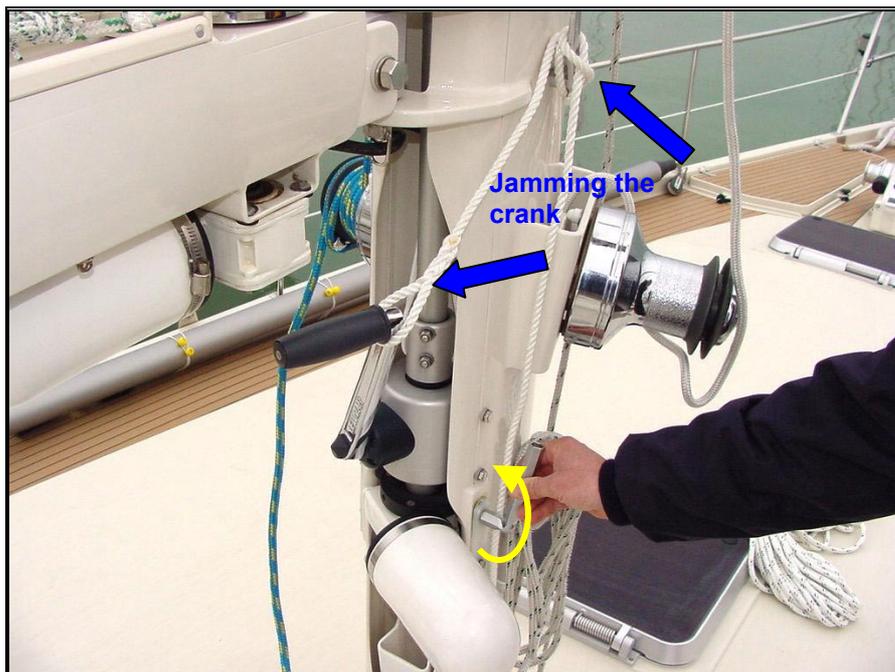


To use the mainsail mast furler manually, first put a winch handle in the furler and loosen the 4 fastening screws that hold the motor. Then move the motor downwards in order to free the clutch pin. The mast furler is now ready for hand use. (Caution : do not tighten too tight when reassembling parts).



Pict. 28 – Mainsail mast furling motor

When releasing the motor of the mainsail furling system, the crank must be secured as shown below.



Pict. 29 – Release of the mainsail furling system

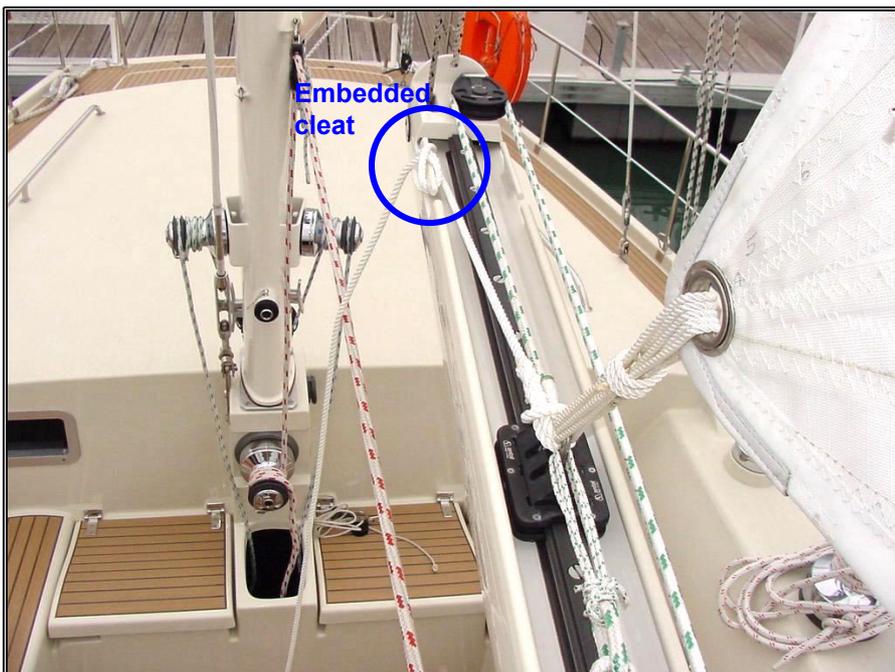


- The electric clew on the boom can be released too, unscrewing the screw on the top of the block.



Pict. 30 – Release of the electric clew's motor

Now, the clew can be moved by hand with a rope in the sheet traveller ; after the mainsail is trimmed, take a turn at the notched cleat of the boom, and sheet the mainsail using the furling system.



Pict. 31 – Clew of the boom moved by hand

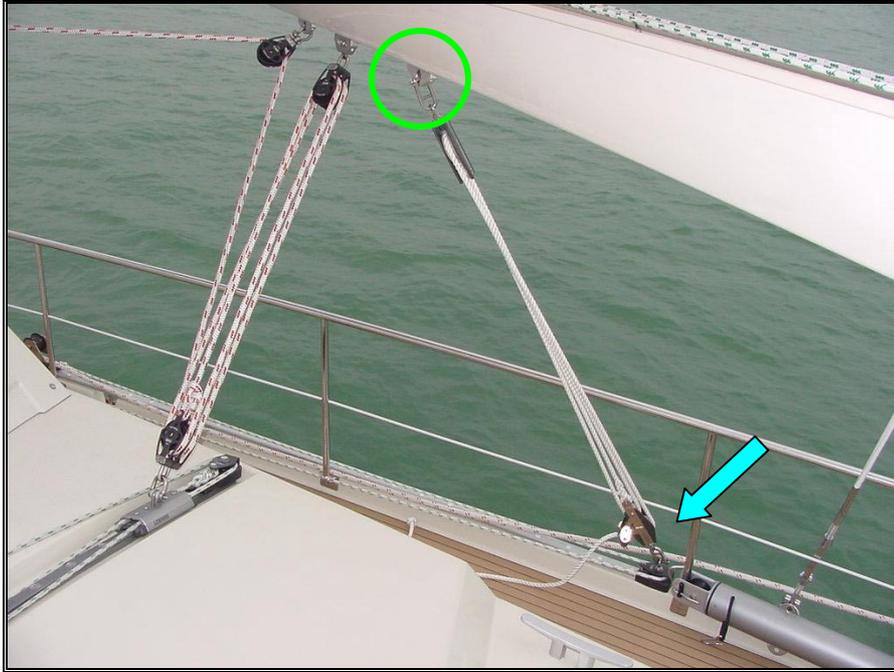


About the sails : *The AMEL Shipyard recommend to :*

- *don't hoist the jib to windward, to avoid the jib lifting above the deck and against the mast,*
- *hoist the mainsail and the mizzen between 0 and 40° of wind, to avoid their rubbing against the mast.*



- Both booms of the Super Maramu 2000 can be fitted out with a supplied preventer (equipped with a jamcleat), to limit the movement of the boom at wind free running. Don't forget to establish them when needed, especially to avoid gybing.



Pict. 32 – Preventer of the main mast



Pict. 33 – Preventer of the mizzen mast

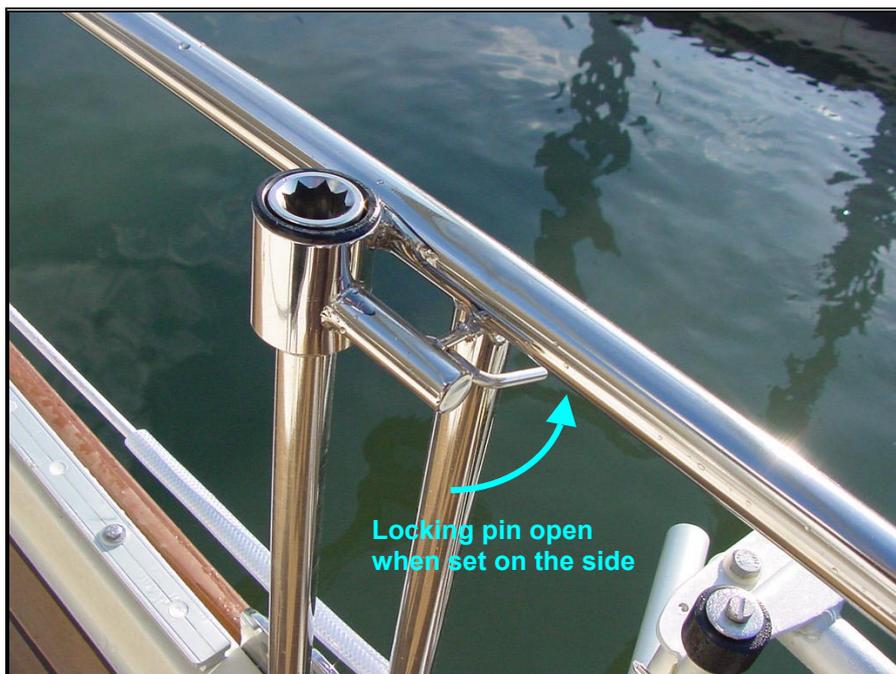


c) AMEL jib sheet traveller remote control

The AMEL jib sheet traveller remote control allows the crew members to move it from the cockpit. Use a regular winch handle to operate it. It is fitted with a locking pin that can be left open while handling (see *Pict. 34 –AMEL's jib sheet traveller remote control* and *Pict. 35 – Locking pin*).



Pict. 34 –AMEL's jib sheet traveller remote control

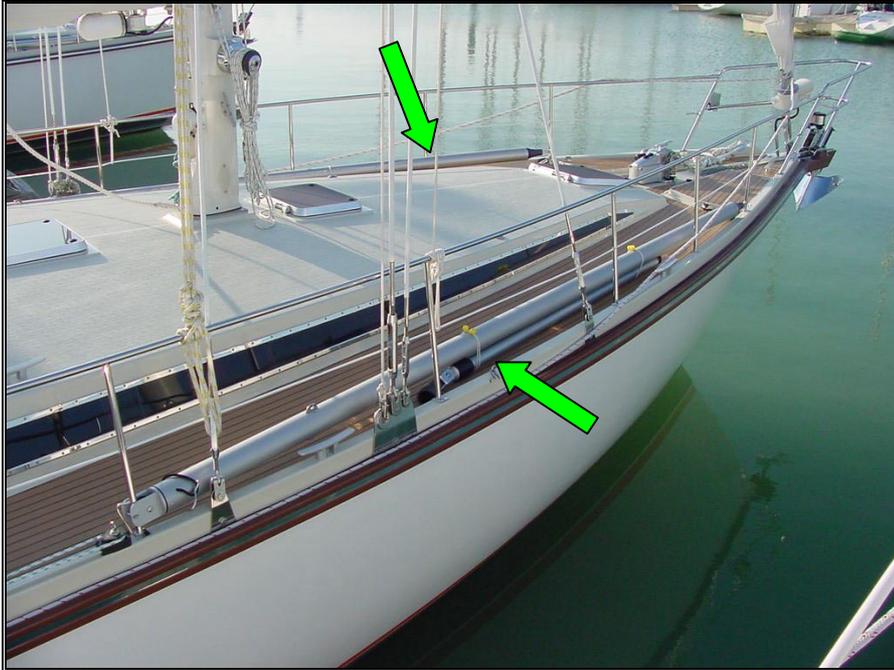


Pict. 35 – Locking pin



d) AMEL twin pole system

2 pairs of poles and jockey poles are stowed on both sides of the front deck when not used. The AMEL twin pole system allows to sail wind free up to 160° off. When the true wind is more than 20 knots, furl jib and balloonier together.



Pict. 36 – Pole and jockey pole

Forward, the pole is plugged onto a pin (part of the stanchion).



Pict. 37 – Stowage of the pole on the deck



Backwards, the pole's block is set on the base of the stanchion.



Pict. 38 – Aft stowage of the pole

To set the poles, you need 3 coloured (blue, yellow and red) ropes and a white topping lift.

Each pole is set as follows :

- hauled forward with the blue line
- hauled backward with the red line
- hauled down with the yellow line
- lifted up with the white topping lift

On each line, a mark shows what length is required.

Because of the location of the halyards, always set the jib on portside and the balloon on starboard side.



- setting the poles :
 - introduce the little pole in the ring of the shroud support ring,
 - put the little pole in his location on the mast,
 - stop it with the pin,
 - insert the long pole in the little one,
 - hook the pole to the guard-rail,



Pict. 39 – Pole hooked to the guard-rail



- set the 4 lines (they must pass outside the shroud and be connected to the right hook) :
 - blue one goes through the fore block, and is made to the front cleat,
 - red one is taken by the cleat behind the jib sheet traveller remote control,
 - yellow one is made on the cleat of the toe, behind the front lift u-bolt,
- thread the jib's sheet in the block at the extremity of the pole, and lock with the pin,
- (thread the ballooner's sheet directly in the starboard block, instead of the jib's sheet),
- get the jib's sheet on the electrical winch at portside,
- (get the ballooner's (green) sheet on the electrical winch at starboard),



Pict. 40 – Attachment of the lines on the pole and way of jib's sheet



- send the pole running up the blue rope, and take it on the cleat,



Pict. 41 – Blue and yellow ropes taken on their cleats

- hoist the pole with the topping lift,
- run up the lines until the pole follows the little pole,
- all the lines must be tightened,



Pict. 42 – Pole set for the jib



- unfurl the jib and stop when the clew is at 1 m of the pole,



Pict. 43 – Jib set

If case of rough sea, slacken blue, red and yellow lines, and hoist of 1 m more the pole, to avoid they touch the waves.



- Setting the ballooner :
 - as previously, the twin pole must be set starboard. The ballooner's sheet goes through the block at the extremity of the pole,
 - attach the extremity of the ballooner's sheet on his clew,
 - take the ballooner's halyard, shackle on his two extremities, and pass it in front of shrouds,
 - engage top eye of the halyard in the slot of the hook fixed on the head of the ballooner. Turn the jib boom so that free grooves will be facing the mast,



Pict. 44 – Hook with ballooner's halyard



- thread the hook in the starboard groove with the bolt-rope guide,
- set the bolt-rope in his guide, and then in the appropriate groove,
- somebody near the furler can help the sail to go in the groove and the guide,



Pict. 45 – Hook engaged in the jib foil

- hoist thoroughly the ballooner by hand so that the hook locks in the swivel,
- before pulling out the foot, harden up the ballooner's luff on the notched block,
- slacken the ballooner's halyard. If it is well fastened, the sail should not go down,
- in case of difficulties for locking, be sure the grooves are in front of the mast,
- harden sheet,
- pull down the ballooner's halyard, and secure it.



If the true wind exceeds 20 knots, jib and ballooner can be furled together on the jib boom.



Pict. 46 – Furling the jib and the ballooner together



- To haul in the ballooner :
 - take the ballooner's halyard and shackle on his extremities,
 - on the same shackle, fasten the dehooker (mouse) using its line,



Pict. 47 – Fastening of the dehooker (mouse)



- thread the dehooker (head at the top) in the middle groove,
- hoist the halyard until 20 cm (3 in) of the swivel, take a turn, slacken the tack's rope,
- luff up until reaching wind abeam. The ballooner will fold up above the deck,
- cast off 5 or 6 m (20 ft) of the sheet or more if the wind is stronger,
- hoist the dehooker thoroughly,
- there is a little snap in the hands,
- pull down the ballooner to haul in,
- put it back in place in the front starboard locker,



Pict. 48 – Putting the ballooner in the front starboard locker

- **bring the ballooner's halyard back with his dehooker,**
- **don't furl the jib BEFORE having the dehooker.**

To remove the twin pole system, do the same in the reverse order : first slacken the topping lift. Be careful when bringing back the pole pulling on the red rope, because it may come suddenly. You can check the lengths using the black strings on the rope.



CAUTION ! The twin pole system, during working, must never bump somebody or any equipment. It is absolutely necessary to takes precautions for using them safety for the safety of the people and the equipment.



e) Mizzen ballooner

Sailing is possible with the mizzen ballooner up to 15 knots of true wind, for an angle between 80 and 150°.

- To hoist the mizzen ballooner (portside or starboard) :
 - set the tack using the shackle at the eye in front of the roof,



Pict. 49 – Setting the tack on the mizzen ballooner



- set the two shackles on the same board, like shown on the *Pict. 50 – Way from the mizzen ballooner 's sheet '*
- thread the sheet in the block backwards,



Pict. 50 – Way from the mizzen ballooner 's sheet



- set the halyard on the side on which you want install it,
- set the halyard at the head of the mizzen ballooner,
- using the automatic pilot, place the boat at 70° of the wind (suitable for hauling in too),
- before hoisting, don't forget to take a turn on the halyard,
- hoist the mizzen ballooner using the portside winch of the mizzen mast,



Pict. 51 – Halyard secured before hoisting

- put it back in place in the portside locker, putting the 3 clews together to make easier the next use.



2.3.5 Watertight doors

The Super Maramu 2000 is equipped with many watertight bulkheads (see 1.1.3).

The forward cabin can be made watertight :

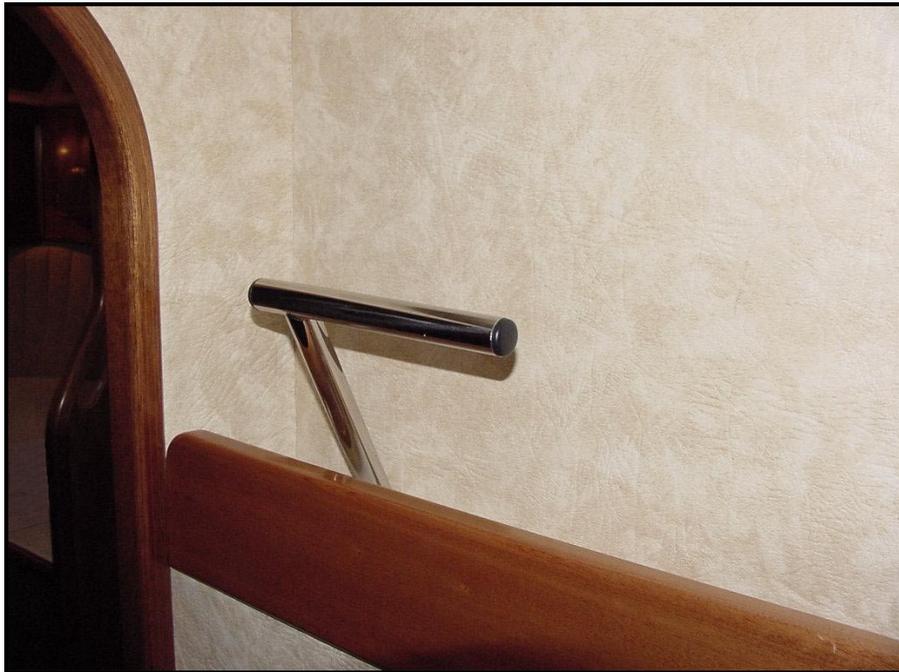
- close the watertight door,
- set the wood bar (located in the shelf forward of the saloon berth) who press this door on his gasket,
- lift the sole hatch and close the forward compartment seacock located under the door.



Pict. 52 – Wood bar settled and forward compartment seacock (photographed closed)

The aft cabin could be watertight :

- close the watertight door,
- set the wood bar (located in the wardrobe of the passageway) who press this door on his gasket,
- turn the aft compartment seacock near the door.



Pict. 53 – Aft compartment seacock (photographed open)



Pict. 54 – Storage of the aft wood bar



2.4 Other equipment

2.4.1 Fuel tank



CAUTION! Any handling of fuel must be done respecting the warnings of the sales company. Filling the tank must be done in absence of spark, flame, incandescent object (cigarette, ...), or any other device able to cause any events (like cellular phone).

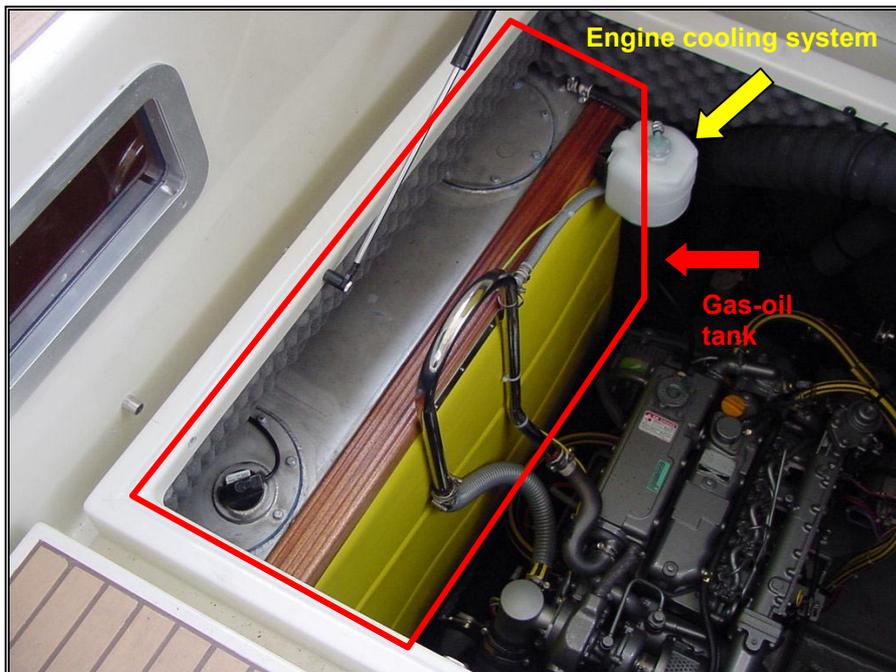
Engine's and generator's manuals give warnings and secure instructions for a safety use of this devices. Refer to them before going on.

Any maintenance work on mechanical or electrical parts should be done by skilled workers, using appropriate tools and protections.

Use only appropriate gas-oil **for marine diesel engines**. Never use other fuel like petrol, kerosene, ... because they may start a fire.

A non adapted fuel may cause faults of the diesel injection system.

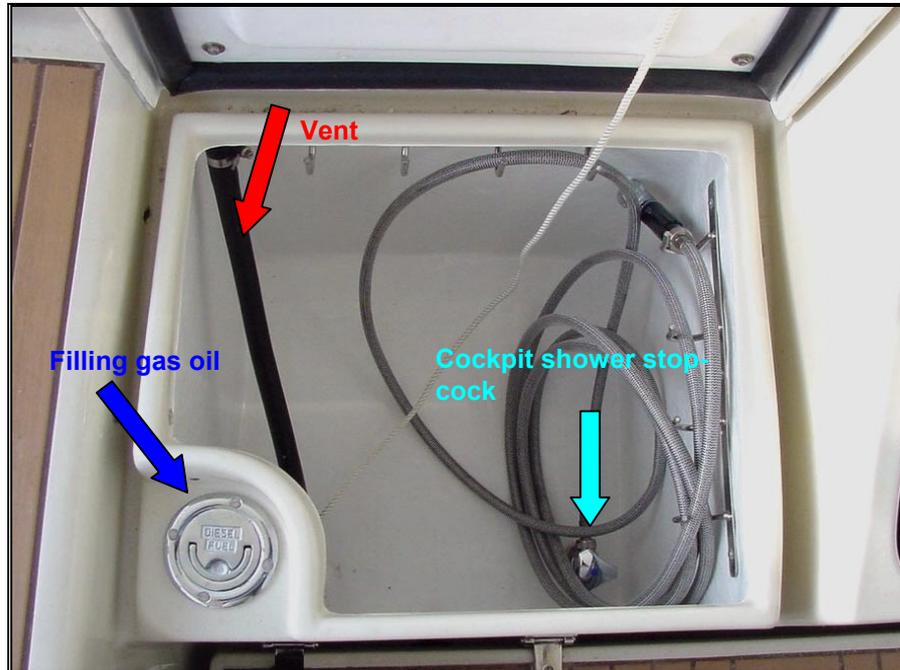
The gas-oil tank in stainless steel has got a capacity of 600 l (132 Imperial Gallons, 159 U.S. Gallons) and is located in the engine room (starboard).



Pict. 55 – Gas-oil tank



The tank's filling is made from the cockpit, lifting the starboard locker near the mizzen mast. There is a vent who goes to the starboard passageway (this vent pass above the wardrobe). Never fill to the overflowing.



Pict. 56 – Starboard cockpit locker

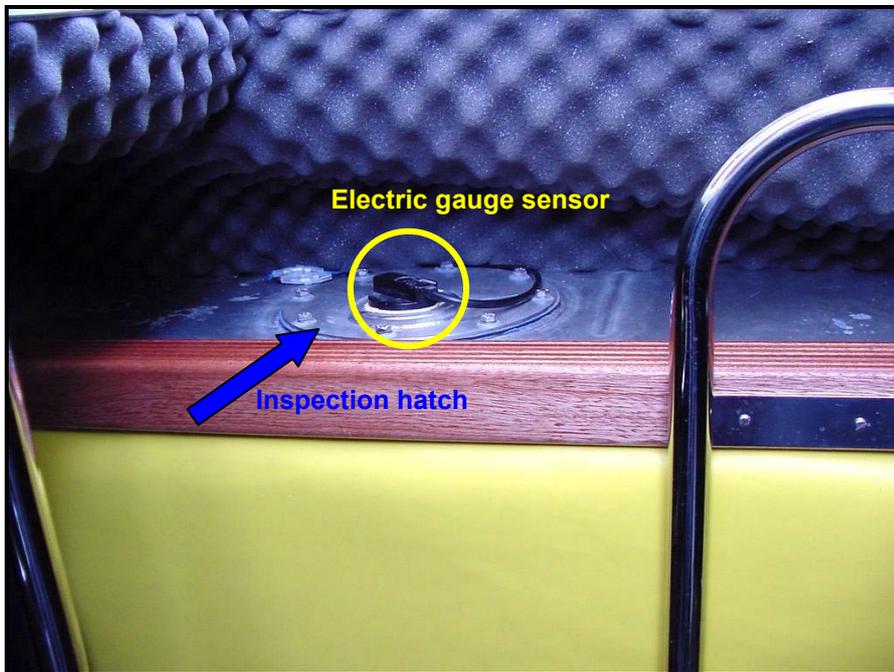
Inside of the tank, there is a graduated dipstick.



Pict. 57 – Graduated dipstick in plastic

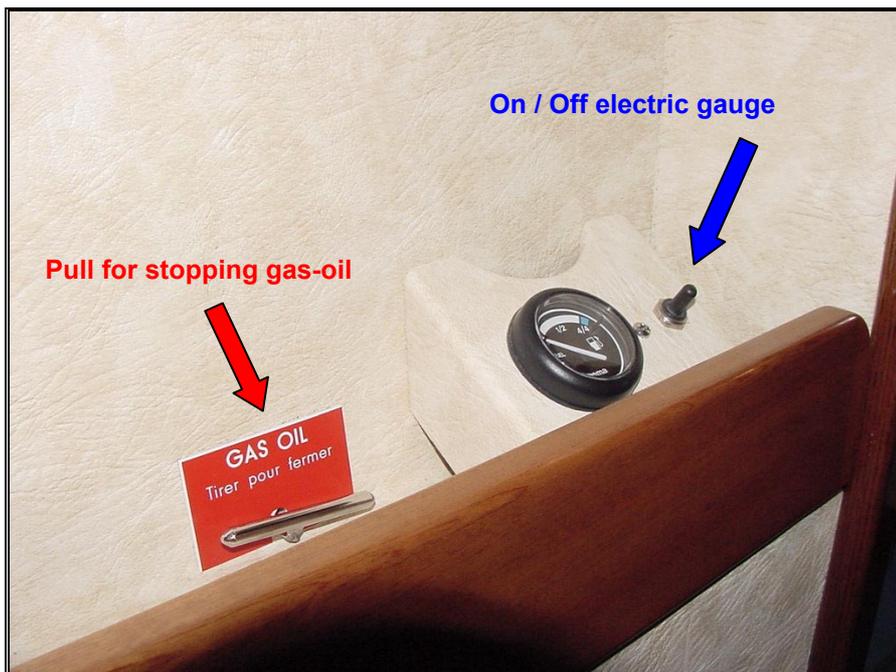


On the top, the tank has got 2 inspection hatches. The electric gauge sensor is on the forward hatch.

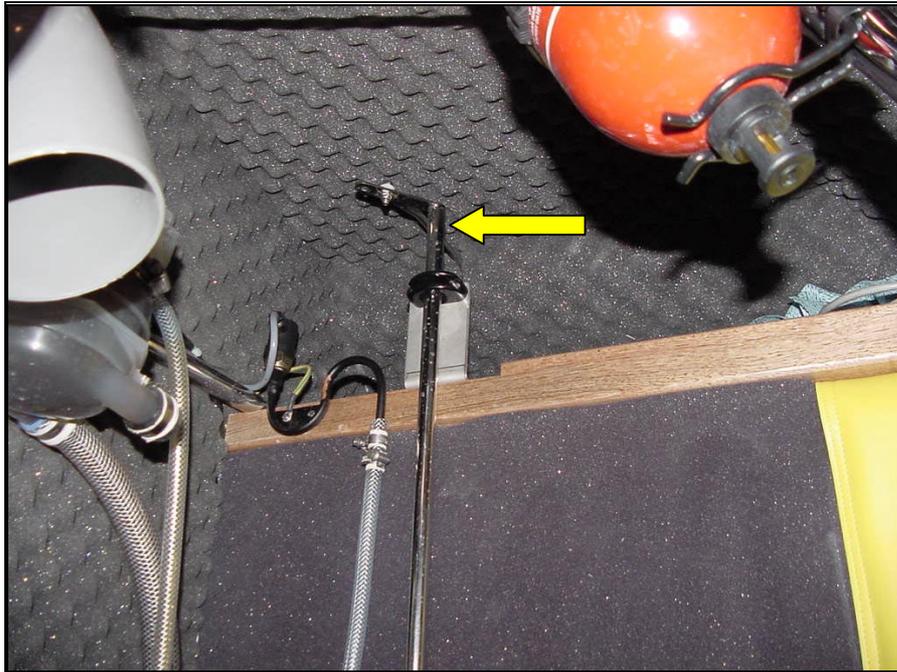


Pict. 58 – Top of the tank

There is a stop cock at the outlet of the tank, who can be operated equally from the engine room or the passageway. This stop cock delivers gas-oil to the racor-filter. Turning off this stop cock and the gas-oil isn't delivered to the engine and the generator.

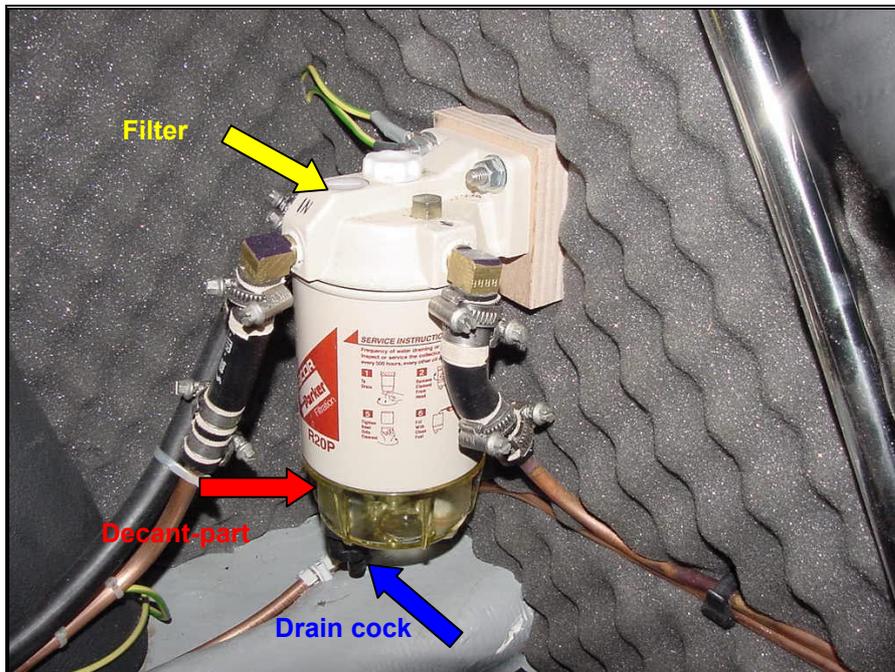


Pict. 59 – Gas-oil electric gauge and lever for stopping gas-oil delivery from the passageway



Pict. 60 – Stopping gas-oil delivery from the engine room

The racor-filter delivers gas-oil to the main engine and the generator.



Pict. 61 – Racor-filter



The opening of the engine room is locked from the passageway, introducing a stainless steel pin through the cover.



Pict. 62 – Locking the opening of the engine room's cover

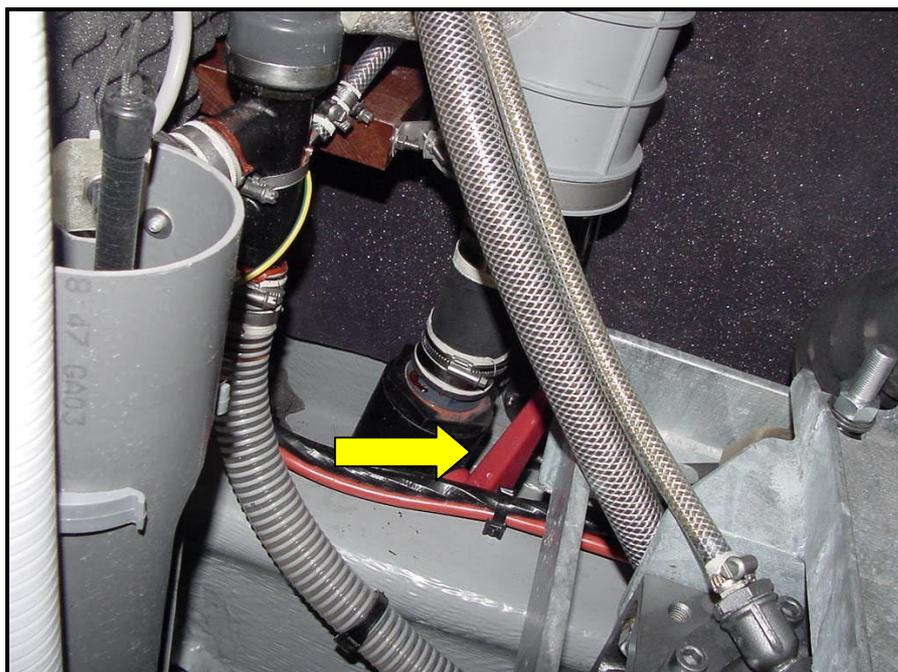


2.4.2 Seawater

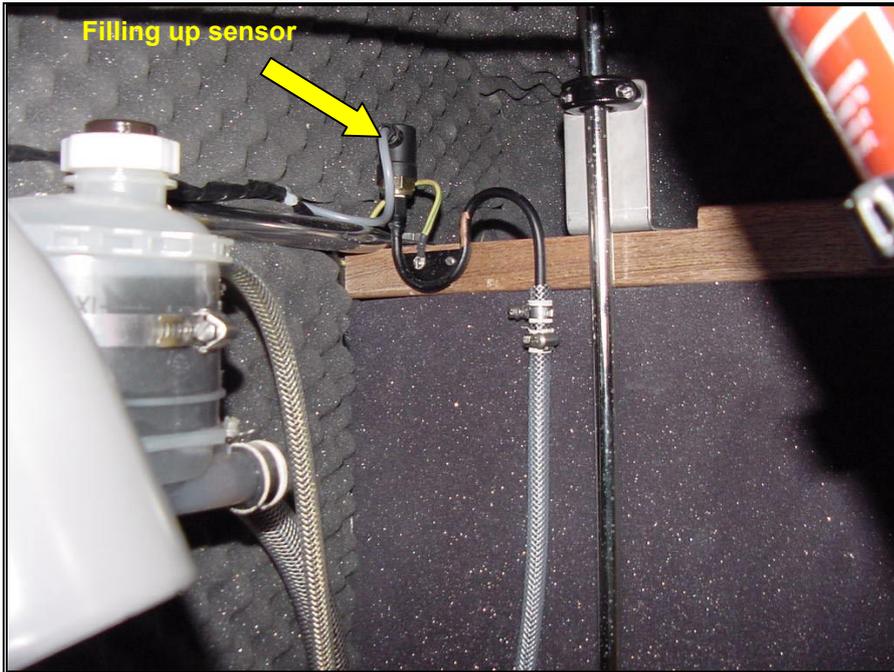
There is only one water inlet in the Super Maramu 2000, located in the engine room, at forward starboard. She is composed with a polyester seacock and a stop cock (to close, turn it perpendicular to the pipe). Then there is the filter, which can be checked by unscrewing his cover. It must be cleaned regularly, brushing the removable basket inside. If the filter has been getting blocked, you will hear and see an alarm in the companionway (see *Pict. 66 – Seawater and sump*).



Pict. 63 – Seawater filter

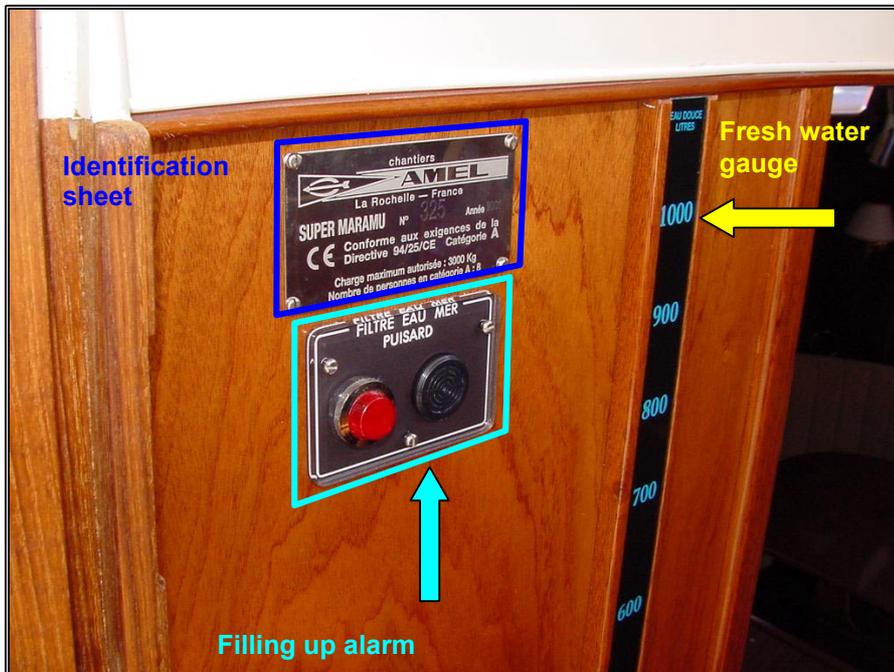


Pict. 64 – Seawater inlet stop cock (photographed open)



Pict. 65 – Blockage sensor of the seawater filter

Fresh water gauge can be locked in lower position, to prevent it scratching the companionway's bulkhead.

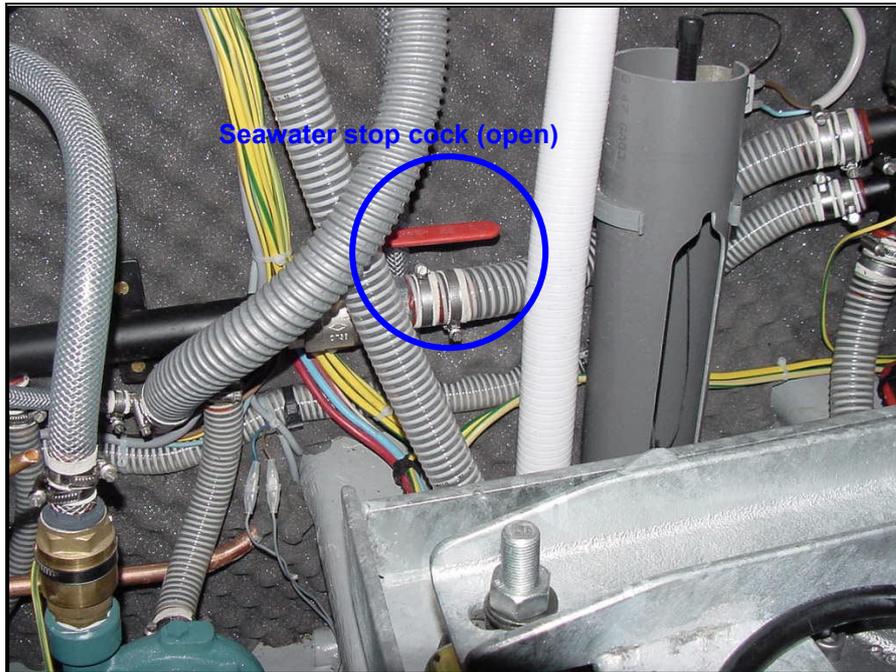


Pict. 66 – Seawater and sump alarm



Seawater is delivered on the one hand to the main engine and the generator, and on the other hand, through a stop cock, to the different pumps (toilets, air conditioning, desalinator and anchor wash).

Fluid drawings shows the entire system. In the Super Maramu 2000, the clamping rings are doubled on the seawater pipes.



Pict. 67 – Seawater stop cock (other devices as main engine and generator)

If the boat is not use for a long time, seawater circuits of :

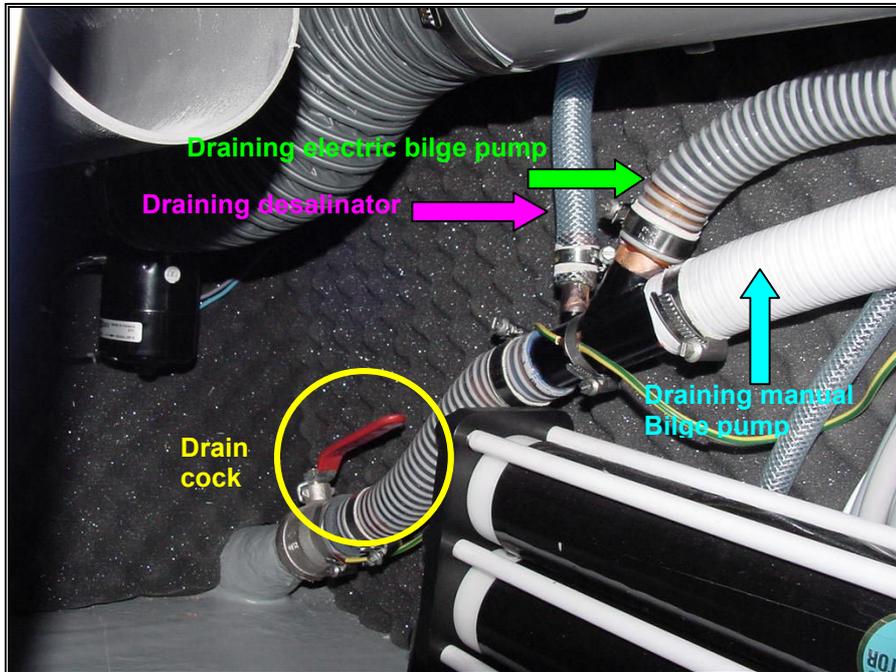
- main engine,
- generator,
- air conditioning,
- toilets,
- anchor wash,

have to be flushed with fresh water (or fresh water and antifreeze). It's good to avoid corrosion, obstructions and bad odours, especially in the toilets.

For the maintenance of the desalinator, refer to the manual.



The drain cock of the water thrown by the desalinator, bilges pumps manual and electric, is located in the engine room portside.



Pict. 68 – Wasted water drain cock (photographed open)

About the sump : the sump is located in the aft end of the keel. We can access to it from the engine room. Wasted water (grey water) of the aft shower, galley's sink, washing machines, forward shower and anchor box flow into it.

Water of the sump is drained using 2 pumps :

- electrical bilge pump,
- manual bilge pump.

If needed, access to the sump is easier by releasing the plastic and the intakes pipes. Clean with a brush (see 4.13.1)



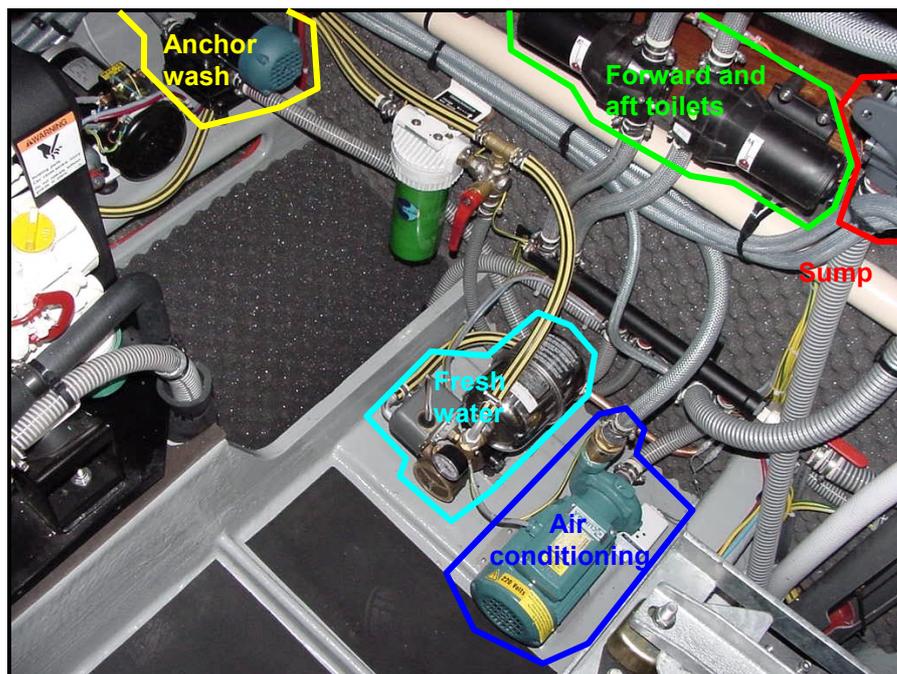
2.4.3 Electrical pumps



CAUTION ! Any maintenance work on mechanical or electrical parts should be done by skilled workers, using appropriate tools and protections. User's manuals of this equipment content safety **warnings** that must be respected. Refer to these manuals before use. Refer to electrical drawings (belonging to the boat or to another device) before doing any work.

To know on which voltage work the different pumps, refer to the electrical drawings delivered and to the manual's manufacturer.

Fluid drawings (fresh water and sea water) shows intakes and exhausts.



Pict. 69– General overview of few electrical pumps

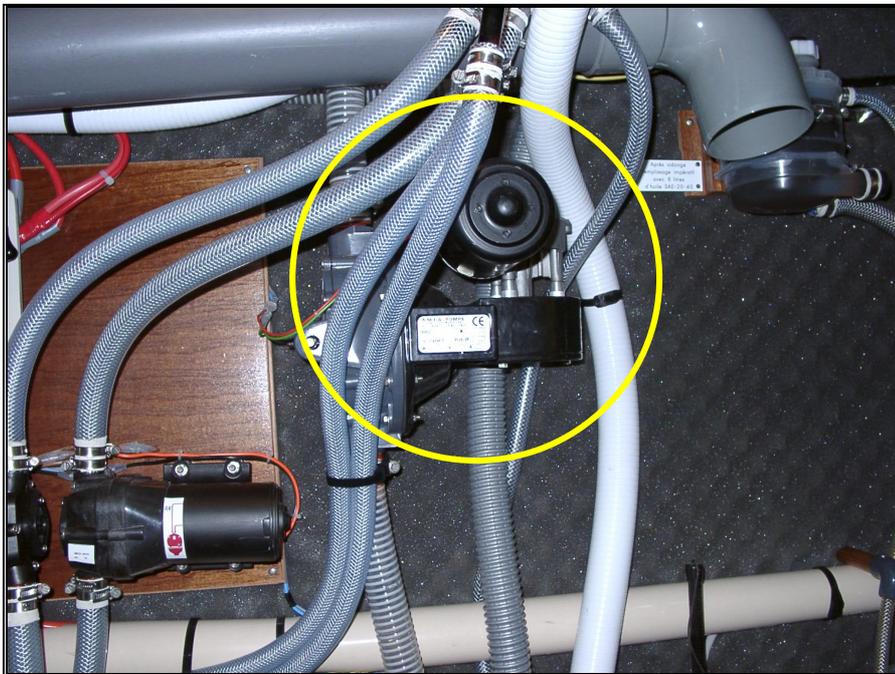


a) Bilge pump

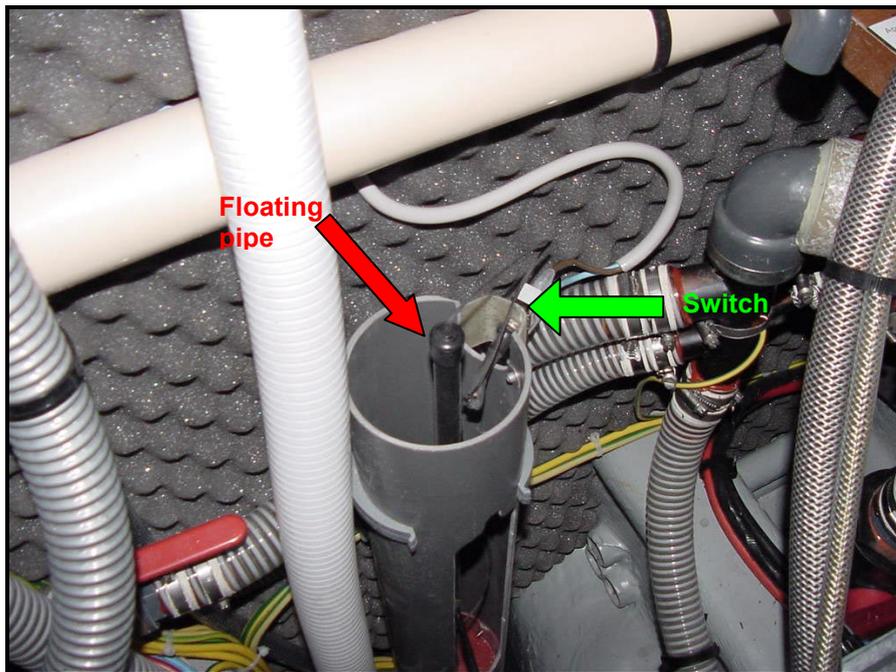
The bilge pump is located in the engine room, above the sump. Her function is to intake the wasted water in the sump, and to exhaust it outside of the boat. It works automatically using the floating switch on the top of the plastic pipe. It can be operated from the 24 V panel in the galley.

It intakes till 10 cm (4 in) from the bottom. To pump the rest (liquid and solid), use the manual bilge pump.

Furthermore, behind the air conditioning pump, there is a sensor. The alarm is repeated on the filling up sensor. It will start if the bilge pump is failed.



Pict. 70 – Bilge pump



Pict. 71 – Floating switch

b) Seawater pumps

Many devices pump some seawater. There are :

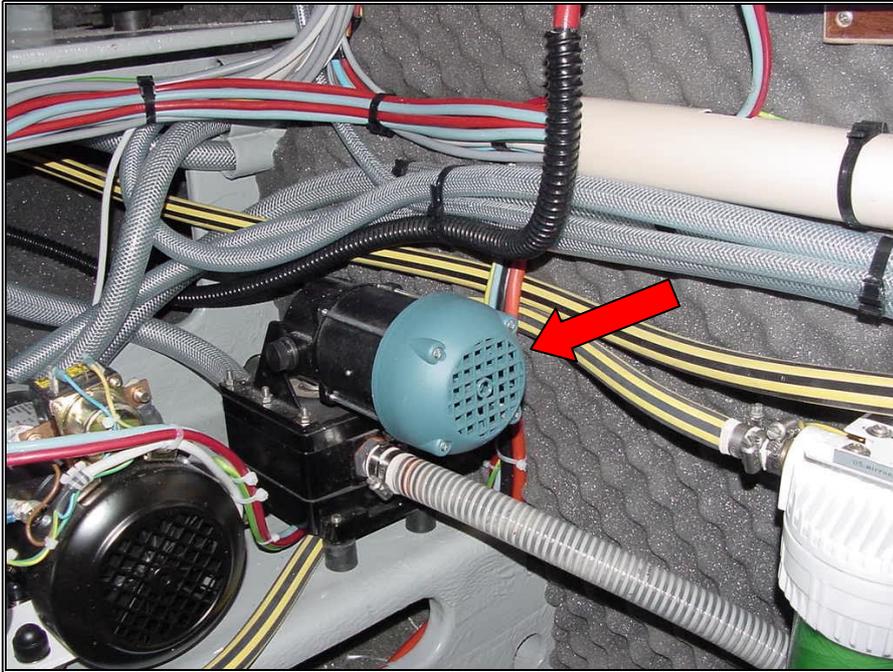
- desalinator,
- anchor wash pump,
- toilets pump,
- air conditioning pump.

Refer to appropriate paragraph and manufacturer's manual to know location and characteristics of each one.



c) Anchor wash pump

The anchor wash pump is in the engine room portside.



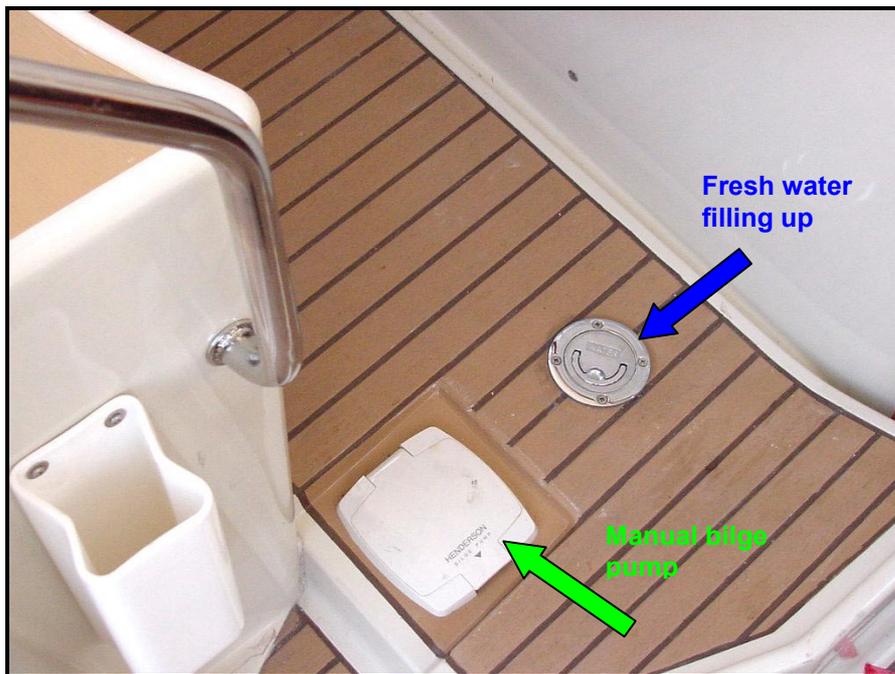
Pict. 72 – Anchor wash pump



d) Fresh water pump

About fresh water :

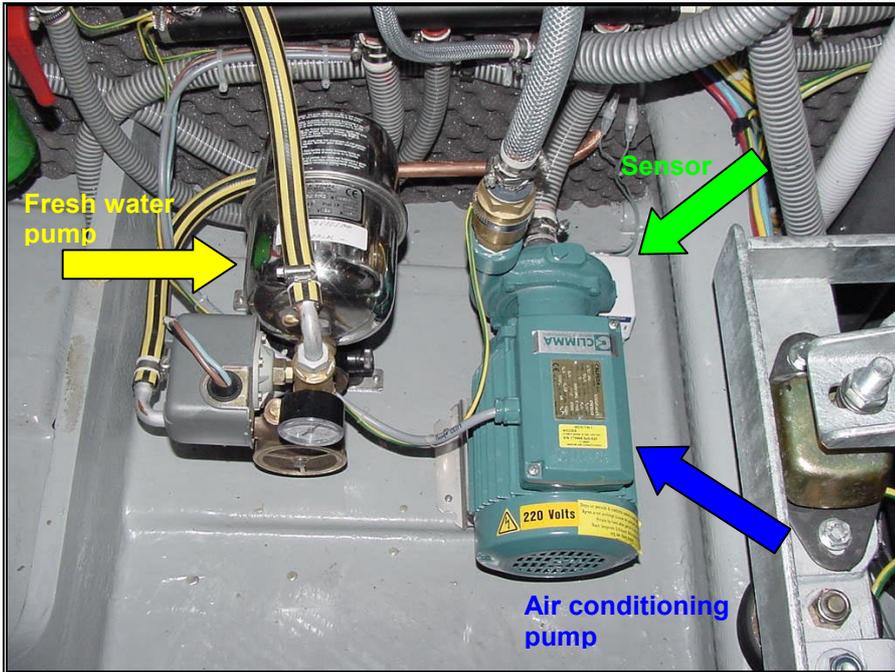
Fresh water tank, with a 1000 l (220 Imperial Gallons, 264 U.S. Gallons) capacity, is in the keel. The pump is in the engine room. Don't use it without water, because the bronze turbine may break down prematurely. The fresh water level is given using a floating pipe, placed portside of the companionway (see Pict. 66 – Seawater and sump alarm). Filling up the fresh water tank is made from the cockpit, unscrewing the cap under the steering wheel).



Pict. 73 – Fresh water filling up

It has a priming hole (see the drawing of the manufacturer).

When it's freezing, drain the pump, open all the taps (don't forget the cockpit shower, see *Pict. 56 – Starboard cockpit locker*) and drain the hot water heater.



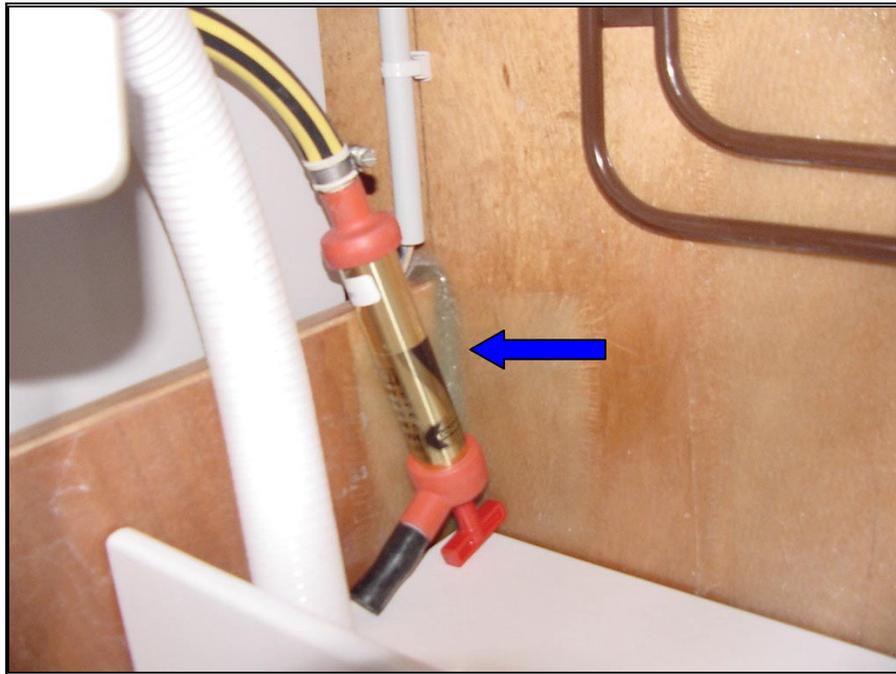
Pict. 74 – Fresh water pump



2.4.4 Manual pumps

a) Emergency fresh water pump

Under the galley's sink, in the cupboard near the refrigerator is installed an emergency fresh water pump. Instructions for use are on it. This device is connected to a hose for an easier use, in case of the electrical fresh water pump is down.



Pict. 75 – Emergency fresh water pump

b) Bilge pump

The bilge pump is in the cockpit, under the steering wheel. It's good to use it once per week, to evacuate the liquids and solids in the bottom's sump. The handle could be made by the stainless steel leg of the removable cockpit table. It's placed in the storage-locker. See the *Pict. 73 – Fresh water filling up*).



2.4.5 Toilets



CAUTION ! Read carefully the toilets' manual before use. It contains **warnings** concerning your own safety while operating and doing maintenance. Any maintenance work on mechanical or electrical parts on this device should be done by skilled workers, using appropriate tools and protections.

The Super Maramu 2000 has got 2 independent toilets. They can be rinsed with seawater, and the black water are mascerated and drained to the holding tank (60 litres each, 13 Imperial Gallons, 16 U.S. Gallons), located behind the bowl. The mascerator motor is behind the bowl too.

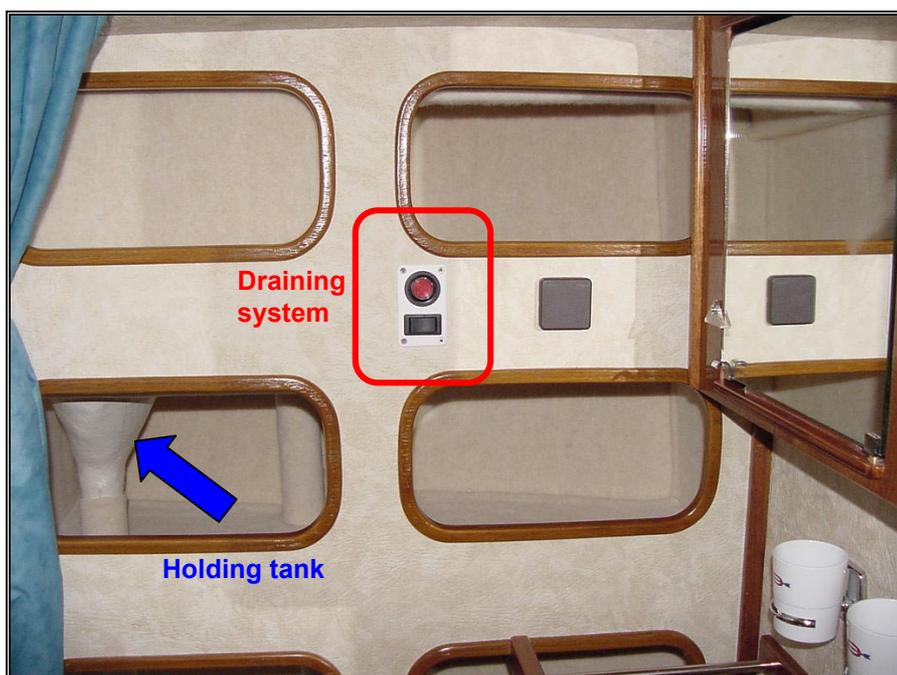
Each toilet has got his own watertight holding tank to contain all that is evacuated by the draining.

The draining system is composed of a black switch and of a red push button.

There are 2 positions on the switch :

- pushing on the left (Fill), the toilets are rinsed with seawater,
- pushing on the right (Drain), mascerating and draining to the holding tank.

The red button does these 2 operations simultaneously.



Pict. 76 – Holding tank



Instead of discharging in the harbour or at the anchorage, wait until being seaward to empty the holding tanks, opening the drain cock located on the left of the toilets. Nowadays, some harbours have wasted water pumps. If it's available, evacuate the wasted water by the deckholes.

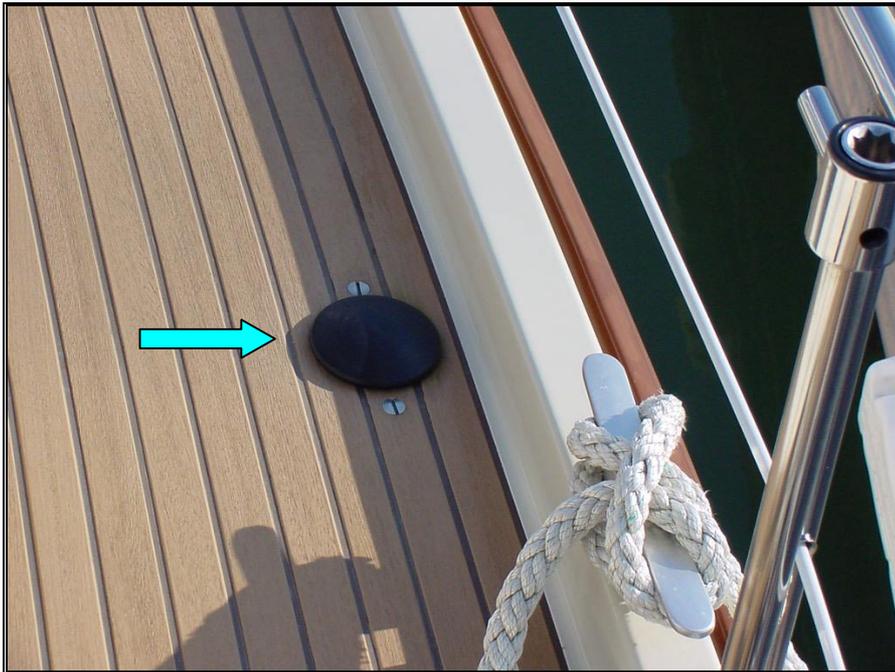


Pict. 77 – Drain cock of a holding tank (photographed closed)

On the deck are 2 holes, to access to the holding tanks for cleaning. There are along of toe rail (forward and backward), and are closed with 2 plastic caps.

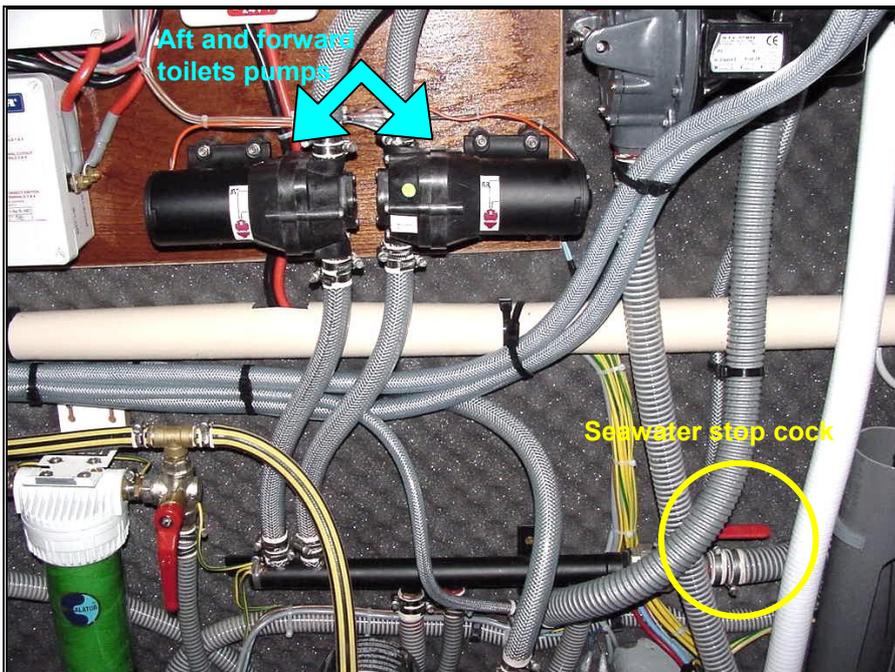


Pict. 78 – Access to the forward holding tank



Pict. 79 – Access to the aft holding tank

Each toilet has got his own seawater pump. There are in the engine room, forward, and are equipped with an anti-siphon system.



Pict. 80 – Toilets pumps



2.4.6 Hot water heater



CAUTION! Read carefully the hot water heater's manual before use. It contains **warnings** concerning your own safety while operating and doing maintenance. Any maintenance work on mechanical or electrical parts on this device should be done by skilled workers, using appropriate tools and protections.

The hot water heater has got a capacity of 45 l (approx. 10 Imperial Gallons, 12 U.S. Gallons) ; water is warmed by thermal exchange with the main engine (in 20 min) or by an 220 V electrical resistance unit (in 2 hours). Every 3 years, regarding the stored water quantity, clean the tank to remove the calcified deposit. Replace the magnesium anode inside.



Pict. 81 – Hot water heater



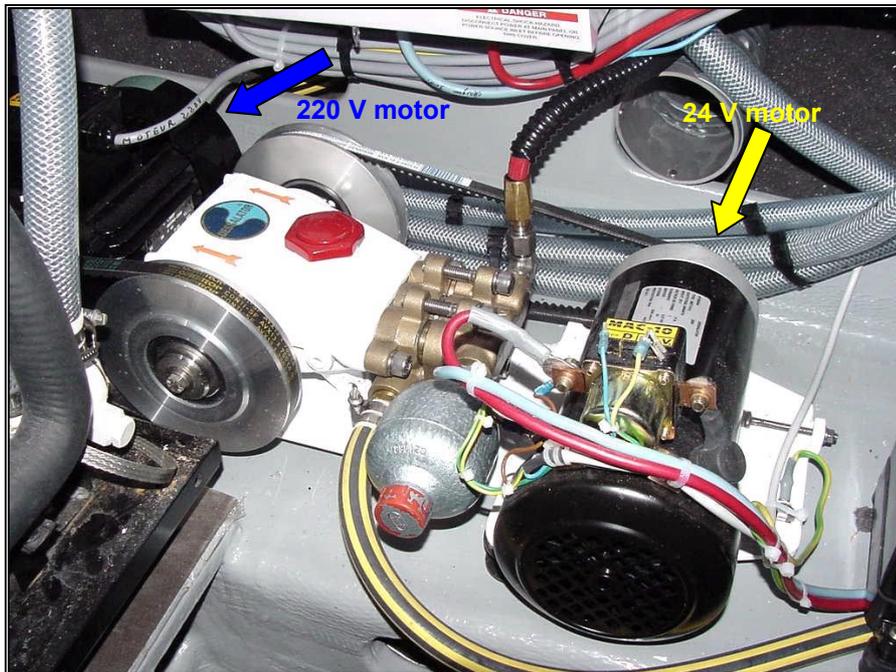
2.4.7 Desalinator 50 litres / hour



CAUTION! Read carefully the desalinator's manual before use. It contains **warnings** concerning your own safety while operating and doing maintenance. Any maintenance work on mechanical or electrical parts on this device should be done by skilled workers, using appropriate tools and protections.

The Super Maramu's desalinator is especially made for AMEL. It's able to produce 50 l/h (approx. 11 Imperial Gallons per hour, 14 U.S. Gallons) of fresh water. These values are only for information, because the rate of desalination depends extremely on the seawater characteristics. More the temperature is low, more weaker will be the volume of fresh water.

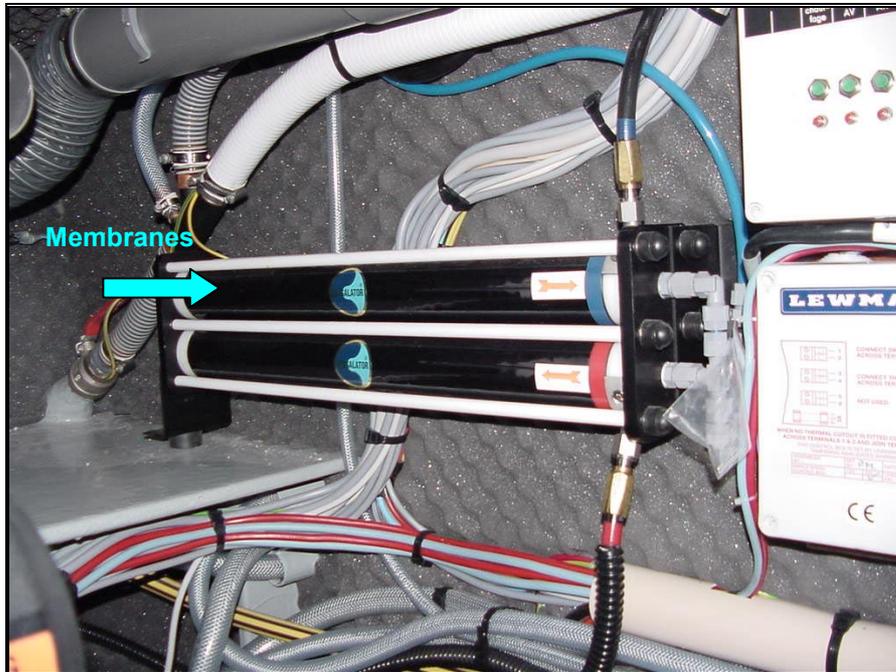
This device works on 220 V through the 24 V battery charger (generator's alternator) or on 24 V (on the main engine's alternator or on the batteries).



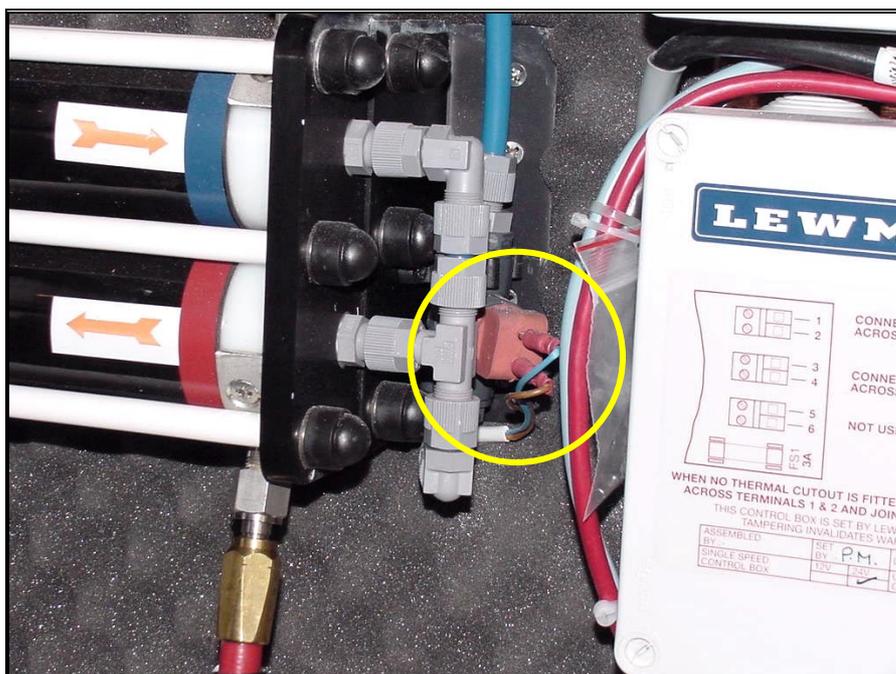
Pict. 82 – Desalinator



The desalinator has got 2 membranes to produce fresh water due to the reverse osmosis phenomena.



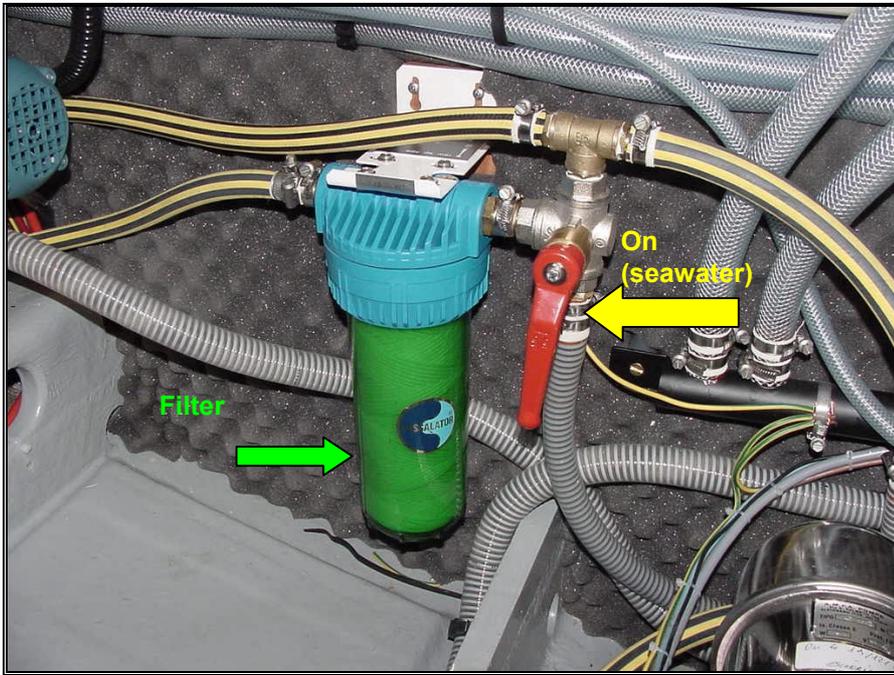
Pict. 83 – Desalinator's membranes



Pict. 84 – Quality sensor



The installation has got a 5 microns filter. Right to this filter is a stop cock. The vertical position is the normal one, to treat seawater using this filter. Horizontally, it allows to drain and to clean the desalinator with fresh water.



Pict. 85 – 5 microns filter (Marche)



Pict. 86 – Fresh water draining position



In the galley, above the portside sink, is the remote control panel of the desalinator. This panel is composed of many instruments :

- 3 lighted quality indicators,
- one On / Off switch,
- one hour metre,
- one flowmeter in glass, to measure the volume of fresh water delivered,
- one tap delivering fresh water for check,
- one high pressure manometer (in bars),
- one high pressure control system (regulating wheel)



Pict. 87 – Desalinator control panel

We give here a few simplified instructions for the desalinator, but refer to the manufacturer's one too :

- ① before using, check the opening of seacocks.
- ② if the desalinator hasn't work for a few days, rinse it with fresh water using the stop cock right to the 5 microns filter. Like for every rinsing, stop the desalinator and open the pressure regulator thoroughly (anticlockwise) for 2 minutes, and then replace this seacock in the *Marche* (seawater) position.
- ③ to start, regulator open, switch on the device, let it work 1 minute without pressure, and do a 1st setting with the needle in the green area. This is to eject air from the circuit and to obtain a better pressure stability. Check the pressure and readjust if needed.
- ④ producing fresh water depends on seawater temperature and on the cleanness of the filter.
- ⑤ checking the fresh water quality and sending it in the tank is made using a quality sensor and integrated circuit automatically. If fresh water produced contains salt, it will be rejected.
- ⑥ a too much higher pressure setting lights the red default of the desalinator and stops the device ; in this case, set the pressure lower and start again.



- ⑦ to stop, set the pressure lower opening the regulating wheel thoroughly, stop and rinse like described at ②.
- ⑧ concerning the winter service, rinse every month or fill up with sterilizing agent.
- ⑨ add some glycerine to the sterilizing agent if needed.
- ⑩ don't forget to drain the glass pipe of the flowmeter.

2.4.8 AMEL air conditioning and heating system

The Super Maramu 2000 is equipped with 3 air conditioning devices, able to deliver cold or warm air.

Setting one device is independent of the others. Temperature (of heating or cooling) is set using the thermostatic control. The *Cool / Heat* switch has got a medium position who stops it working.

Important remark :

- in the air conditioning (*Cool*) position, don't turn the thermostatic control after hearing a "clic",
- in the heating (*Heat*) position, don't set the ventilation on "*Min*". prefer "*Med*" or "*Max*".



Pict. 88 – Thermostatic control

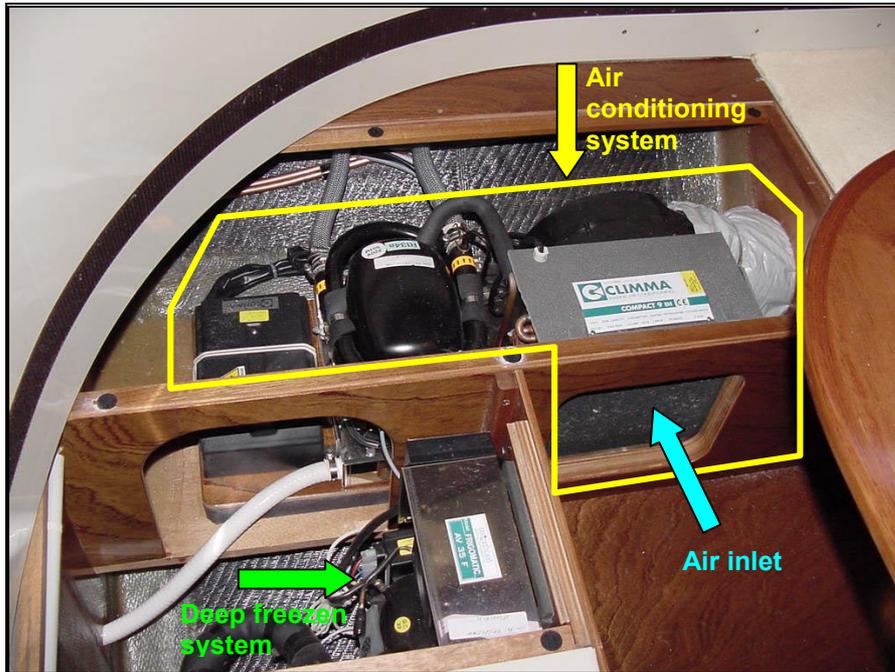
Air conditioning systems are :

- in the saloon, under the portside bench. Remove the cushions and the plywood seating,
- in the forward cabin. Remove the berths' cushions and unscrew the centre wheel. It allows to release the seating between portside and starboard, in front of the bow thruster (it allows access to the drain cock of the chain locker's flow to the sump),
- in the aft shower (to bring air conditioning to the aft cabin). Remove the furniture against the hull.



Never obstruct the hole who delivers the conditioned air to the room (see *Pict. 117 – Fluxgate compass*).

The air conditioning systems have got an air inlet inside of the boat. Be careful never to obstruct them or to hold up air flowing around them.



Pict. 89 – Saloon air conditioning



Pict. 90 – Forward cabin air conditioning



Pict. 91 – Aft cabin air conditioning

For working, air conditioning systems need a pump, located in the engine room. It works in 220 V, and delivers water to the 3 air conditioning systems.

Air conditioning are equipped with starters delayings, to avoid a current peak on the generator (if the switches were on at the generator start).

The air conditioners can operate on 50 or 60 cycles 220 V shore power.



After many weeks of inactivity, turn a little by hand the pump with a screwdriver, like shown on *Pict. 92 – Air conditioning pump*. **Before doing this, be sure the 220 V is switched off.**



Pict. 92 – Air conditioning pump



CAUTION ! Read carefully the air conditioning's manual before use. It contains **warnings** concerning your own safety while operating and doing maintenance.

Any maintenance work on mechanical or electrical parts on this device should be done by skilled workers, using appropriate tools and protections.



2.4.9 Convenience equipment

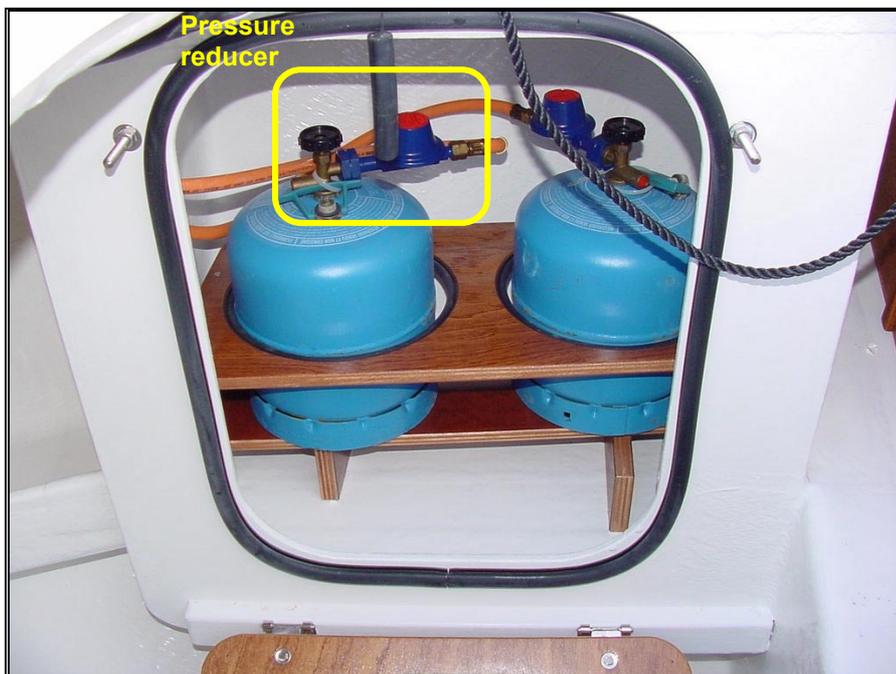
a) Household electrical appliances

The Super Maramu 2000 is equipped with all household electrical appliances, like microwave oven, gas stove and oven, refrigerator, deep freezer, dish washer, clothes washer / dryer.

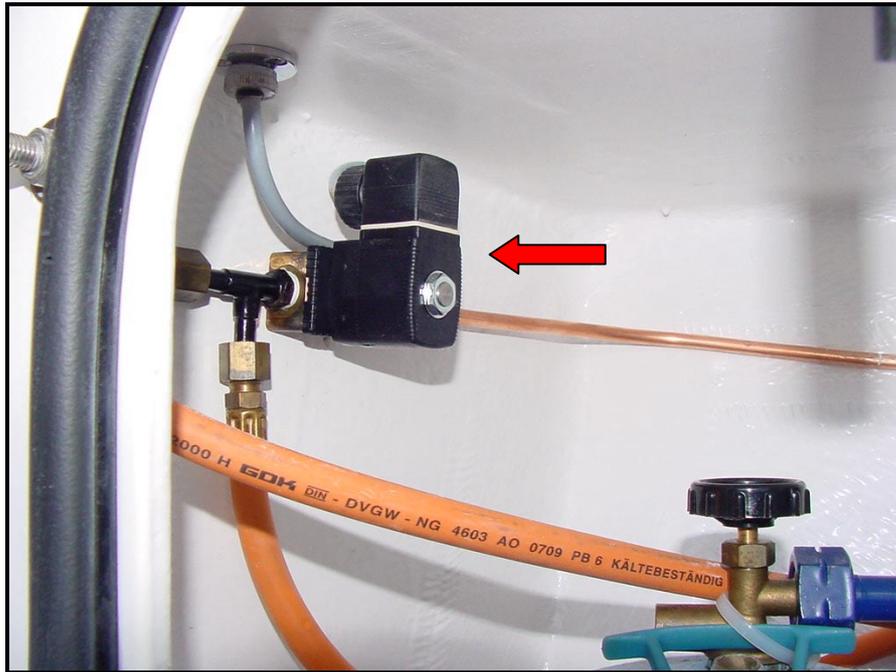
- The gas stove and oven has got its butane gas bottles in the aft locker. Unscrew the 2 wheels on the plywood panel. Refer to the manufacturer's manual for further details.

The electrical gas shut-off, controlled from the 24 V panel, is placed left to the bottles.

The gas arrival can be switched off by turning off the pressure reducer on each bottle.



Pict. 93 – Aft locker and gas bottles



Pict. 94 – Electrical gas shut-off

- Above the gas stove and oven is the ventilation. Press the green knob (on his left, above the portside sink) to switch on.



Pict. 95 – Ventilation circuit breaker



- The deep freezer can either be a refrigerator or a freezer, switching on the desired position inside of the device. The thermostatic control who works is of the selected one.



Pict. 96 – Deep freezer

- Dish washer and clothes washer / dryer both need a water intake. They are under the gas stove and oven and are both equipped of a stop cock.

Remark: *the clothes washer / dryer uses fresh water. Wasted water goes into the sump. These drains can be seen by lifting the cover under the companionway.*

The refrigerator, the clothes washer / dryer and the deep freezer are equipped with an air intake : never obstruct it.



Pict. 97 – Refrigerator's air intake

The clothes' washer / dryer has got its own air intake, but it allows to access to the turbine's filter for cleaning too.



Pict. 98 – Clothes' washer / dryer intake



Pict. 99 – Deep freezer 's intake



CAUTION ! Read carefully the convenience equipment's manuals before use and sail. They content **warnings** concerning your own safety while operating and doing maintenance.

Any maintenance work on mechanical or electrical parts on these devices should be done by skilled workers, using appropriate tools and protections.



b) Wooden lee boards

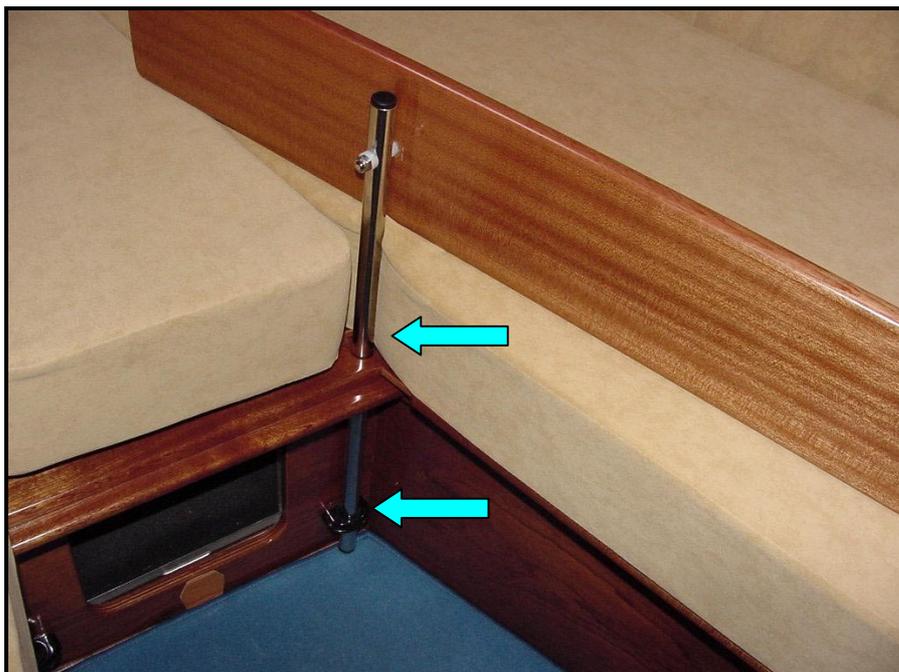
The berths are equipped with removable wooden lee boards. Each board has got its own storage and use location. Unscrew the wheels, fit the stainless steel leg in the right port (except in the passageway where there are 2 wooden guides).

Storage location of the wooden lee boards :

- in the forward cabin, they are under the portside and starboard shelves,
- in the passageway,
- in the aft cabin, it is behind the aft shower door.



Pict. 100 – Storage of the forward cabin's wooden lee board



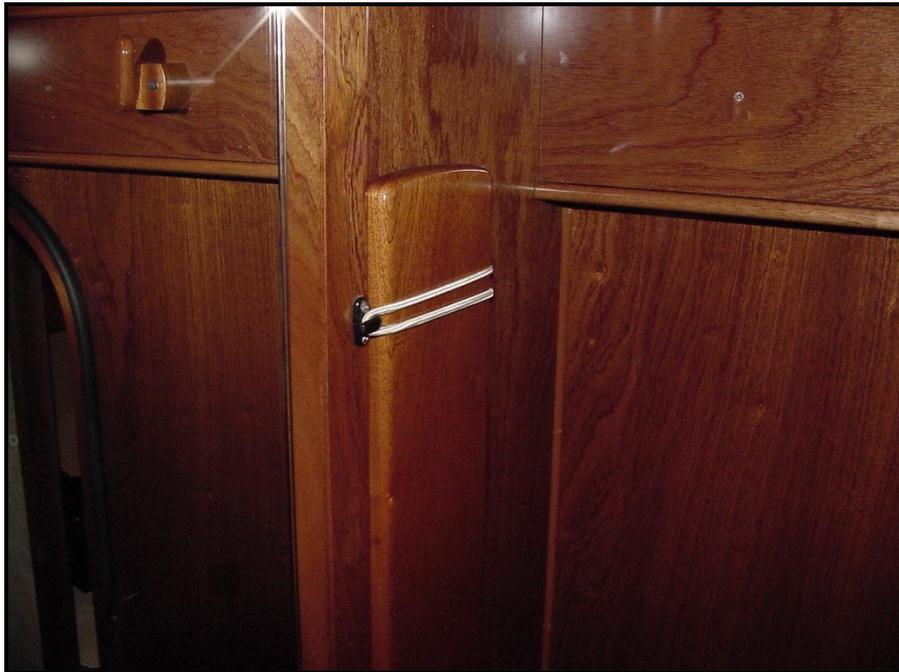
Pict. 101 – Forward cabin's wooden lee board set



Pict. 102 – Storage of the passageway's wooden lee board



Pict. 103 – Passageway's wooden lee board set



Pict. 104 – Storage of the aft cabin's wooden lee board



Pict. 105 – Aft cabin's wooden lee board set



c) Safe

A safe (with personal code) is installed in a aft cabin's shelf. To change the personal code and know the characteristics of this equipment, refer to its own manual. It works on little dry cell batteries.

If needed (code forgotten, no spare dry batteries,...), a key can open it.



Pict. 106 – Safe



2.4.10 Windlass and chain



CAUTION ! Read carefully the windlass's manual before use and sail. It contains **warnings** concerning your own safety while operating and doing maintenance.

Any maintenance work on mechanical or electrical parts on this device should be done by skilled workers, using appropriate tools and protections.

A switch, called "*Guindeau On / Off*" in the portside shelf of the forward cabin, disconnect the controls, to avoid that someone who is non-authorized uses it.

Never operate the chain on the windlass if the switch is On.

Never put an arm in the chain locker when it is operated by the windlass.

Never open the watertight door when using the windlass.

a) Windlass

The Super Maramu 2000 has got a 1200 W windlass, working on 24 V.

A switch, called "*Guindeau On / Off*" in the portside shelf of the forward cabin, disconnect the controls, to avoid that someone who is non-authorized uses it. We advise to switch off this device when its use is not required (during sailing for example). In this shelf are the windlass', boom's and mast's circuit breakers.

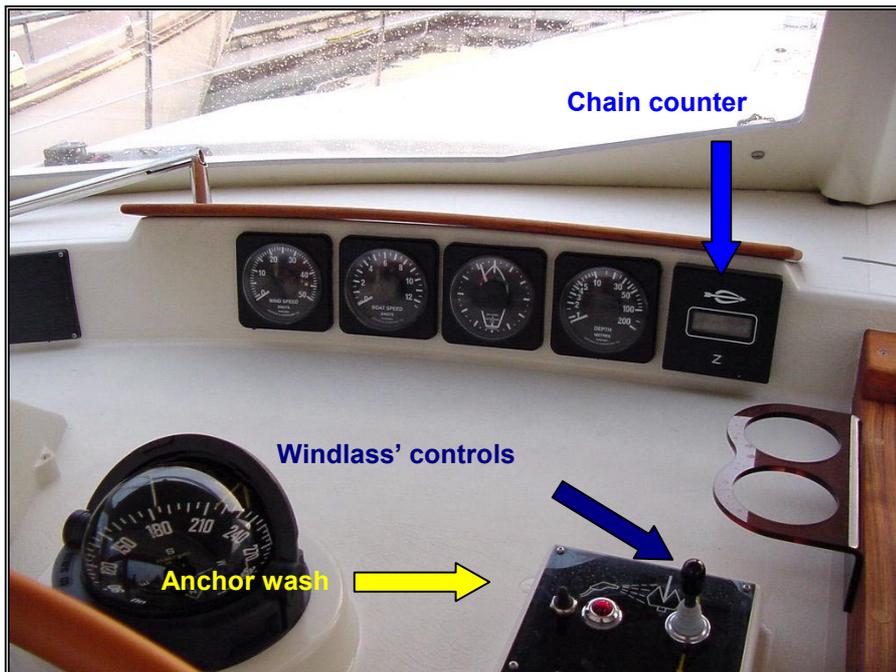


Pict. 107 – Windlass' security switch

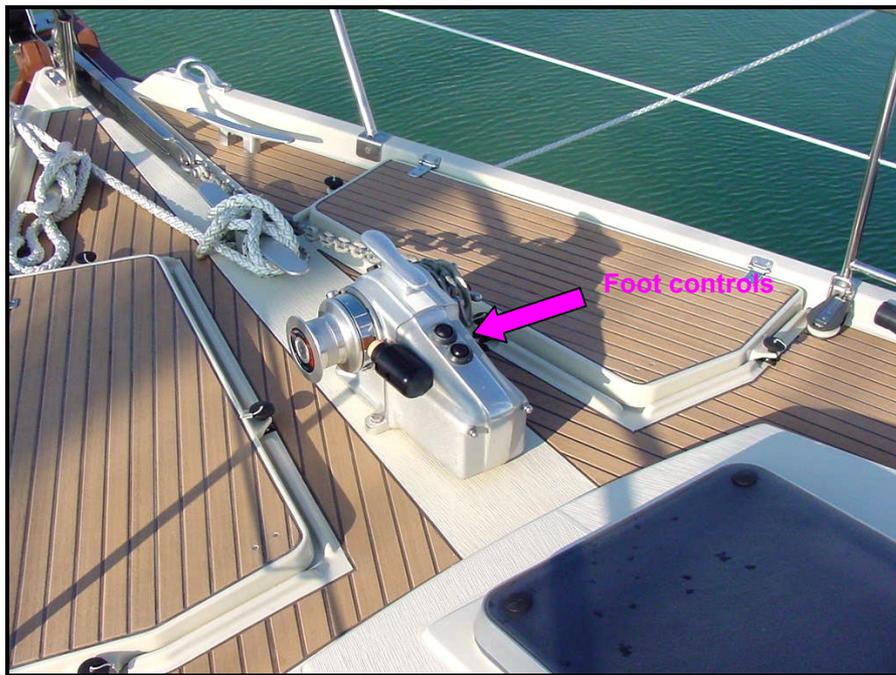


The windlass can be operated from the cockpit at the wheelhouse, or directly from the foot controls on his top. Don't let the anchor chain go all the way out (if it happens, lift 2 m). Near the cockpit control, is the lever for the anchor wash. Wash the anchor from the beginning to the end of each use. It keeps the chain locker clean. A screw locks this panel.

Warning : stop the washing pump as soon as the anchor is in place at the bow, because the anchor may obstruct the outlet.



Pict. 108 – Windlass' controls



Pict. 109 – Windlass

Here is a simplified manual of the windlass :

It can be released, unscrewing the wing nut at starboard ; the gipsy is now free. You can let go the anchor free (be careful not to let it go completely !).

Furthermore, if the windlass is broken, the chain can be pulled up by hand : fit the crank handle in the portside wheel.



b) Chain locker

In the shelf, starboard to the bow thruster, a tight door allows access to the chain locker. A clinch links the chain and the boat. This rope is fastened on an eye-bolt. If needed, let go wholly the anchor and cut the clinch (see *Pict. 112 – Clinch*).

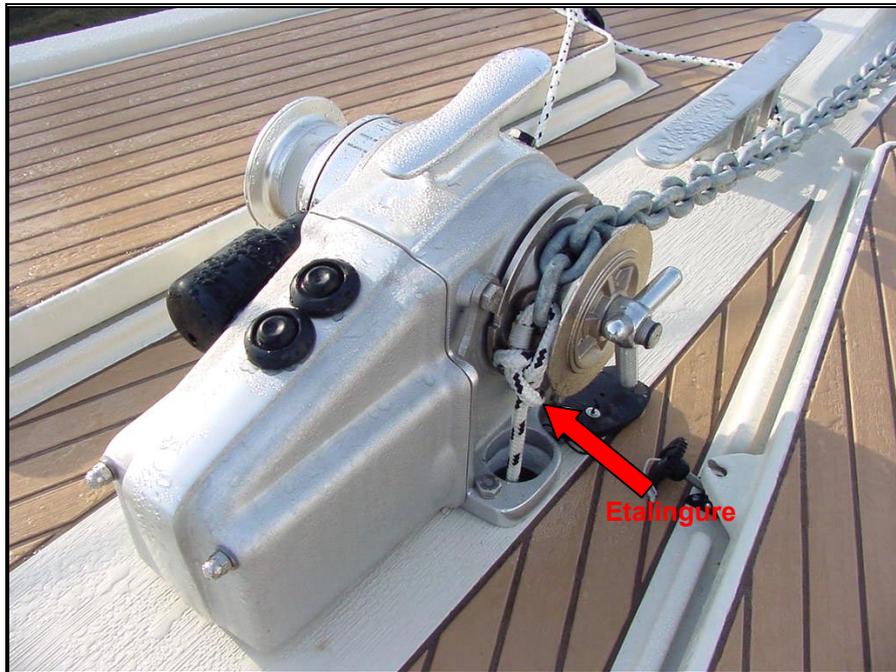


Pict. 110 – Tight door if the chain locker

The chain locker is watertight. The gravity drain goes to the sump. A stop cock under the bow thruster stops this flow.



Pict. 111 – Chain locker's drain stop cock (photographed open)



Pict. 112 – Clinch

c) Chain counter

A chain counter (with inductive sensor) is mounted on the windlass. His precision is approx. 10%.
The chain length (in meters) is given by a LCD display in the cockpit (see *Pict. 28 – Windlass' controls*). It can be zeroed by pushing on "Z".



2.4.11 Electronic equipment

The standard equipment of the Super Maramu 2000 includes many sailing instruments and security electronic equipment. They are at the chart table.

Refer to each own manual for further details and functions description.

The racks in which are installed the electronic equipment are removable, unscrewing the wheels underneath.



Pict. 113 – Chart table

A few electronics devices work on 12 V. It comes from the 24/12 V transformer located under the chart table, in an aired shelf (see *Pict. 2 - Toggle switch for the "Permanent" transformer*).

In the closet near the chart table are 2 circuit breakers :

- the one at portside cuts the power supply of all the electronic equipment, except the SSB,
- the other at starboard cuts the power supply of the SSB if installed.



Pict. 114 – Electronic equipment and SSB circuit breakers

Behind the devices is a way kept for the further installation of a SSB if the boat isn't equipped with. Refer to 2.1.7 for information about the ground circuit.

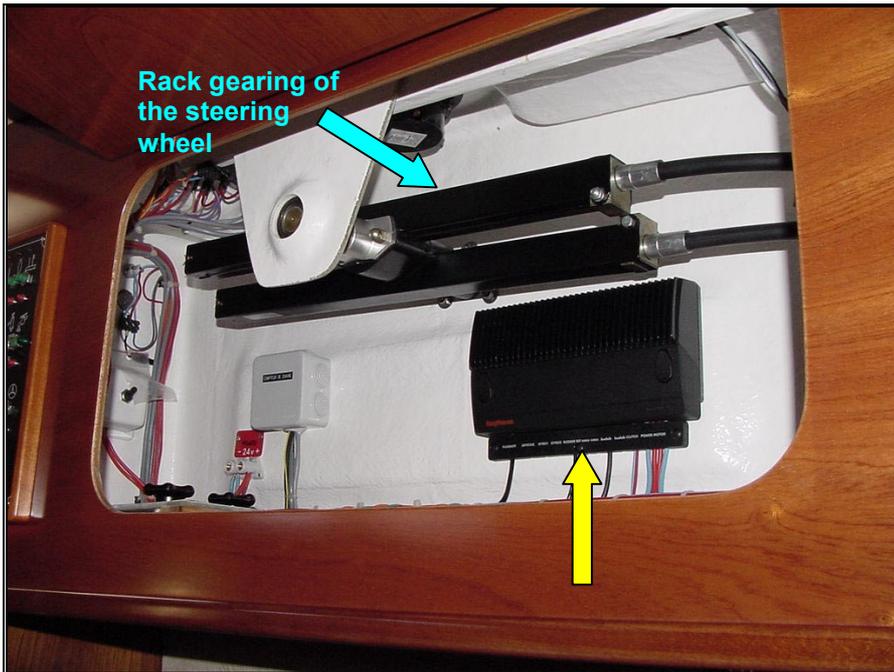


Pict. 115 – Lifting the chart table



a) Automatic pilot

In the aft cabin is the linear driving unit of the automatic pilot (see *Pict. 17 - Rudder stock and automatic pilot linear driving unit.*).
Accessing to the automatic pilot's calculator is possible from the galley, above the sink.

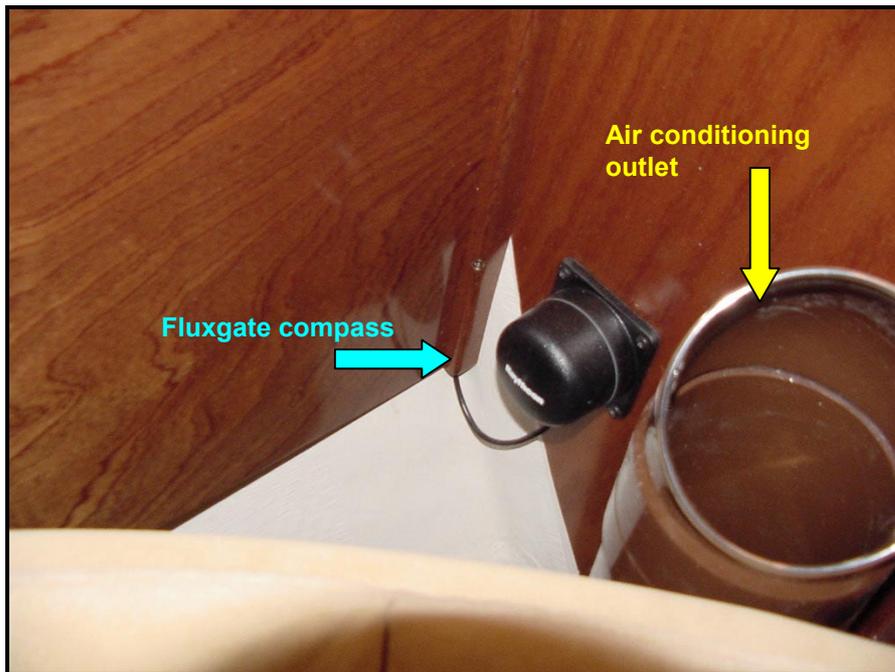


Pict. 116 – Automatic pilot's calculator of the steering wheel

Remark : accessing to rack gearing of the steering wheel the is possible from the galley, above the sink.

In the portside corner, behind the dinette seat back bench, is the Fluxgate compass of the automatic pilot.

Don't stock any metallic object (especially in the toilets) within a radius of 50 cm (approx. 20 in), because it may disturb the automatic pilot.



Pict. 117 – Fluxgate compass

b) Sonic Speed speedometer

Each sensor of the Sonic Speed speedometer are under the floating waterline on the hull. The speedometer's calculator is in the shelf at the front of the saloon's berth (under the wood bar in case of damage).



Pict. 118 – Sonic Speed calculator



c) Miscellaneous

The GPS' antenna is mounted on portside aft of the stainless steel guard-rail.



Pict. 119 – GPS' antenna

As standard, the triatic stay is electrically isolated, to become an antenna if an equipment is added.



CAUTION! Read carefully the electronic equipment's manuals before use and sail. They content **warnings** concerning your own safety while operating and doing maintenance.

Any maintenance work on mechanical or electrical parts on these devices should be done by skilled workers, using appropriate tools and protections.



2.4.12 Fire extinguishers



CAUTION ! Read carefully the extinguisher's manuals before use and sail. They content **warnings** concerning your own safety while operating and doing maintenance. Any maintenance work on mechanical or electrical parts on these devices should be done by skilled workers, using appropriate tools and protections. Extinguishers must be periodically serviced by skilled workers, and replaced if needed. As the law is different in each country, the owner must put the extinguishing system of the boat in order.

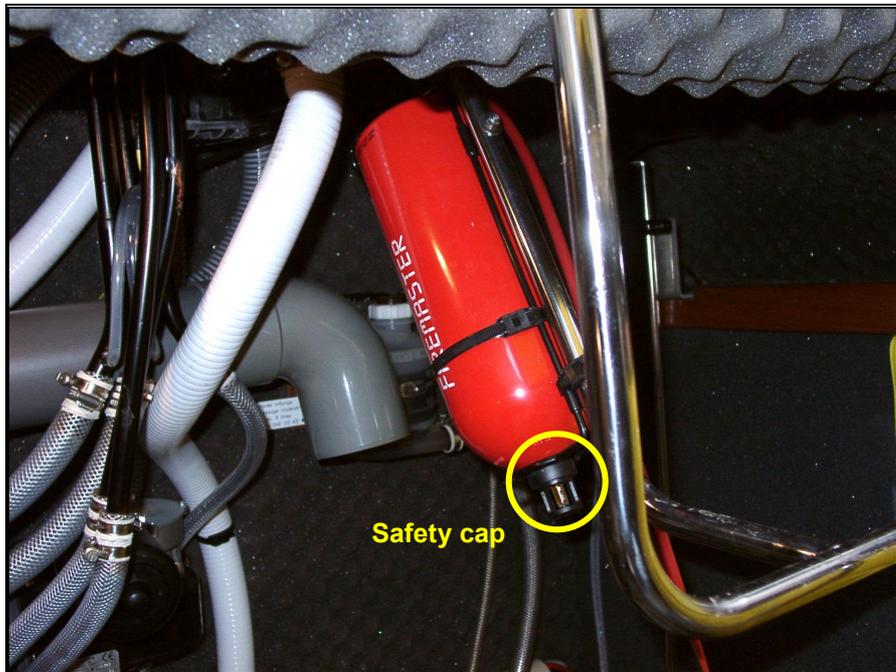
The Super Maramu 2000 has got 2 extinguishers. Refer to 1.1 for the safety instructions.

An automatic fire extinguisher is in the watertight engine room.

If somebody is in the engine room as a fire breaks out :

- break the safety cap with a screwdriver, a hammer,(to put out the fire faster),
- leave the engine room,
- close the cover of the engine room,
- wait until the fire is completely extinguished,

Ventilate and bring fresh air in the engine room before staying inside for a long time.



Pict. 120 – Automatic fire sprinkler in the engine room



The 2nd extinguisher is against the companionway, at starboard.



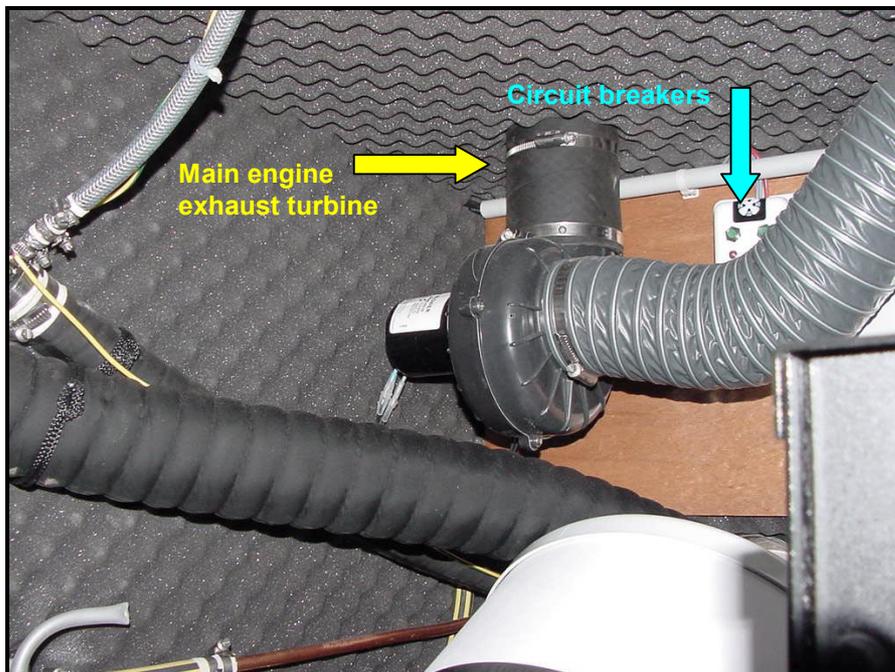
Pict. 121 – Companionway's extinguisher



2.4.13 Engine room's ventilation

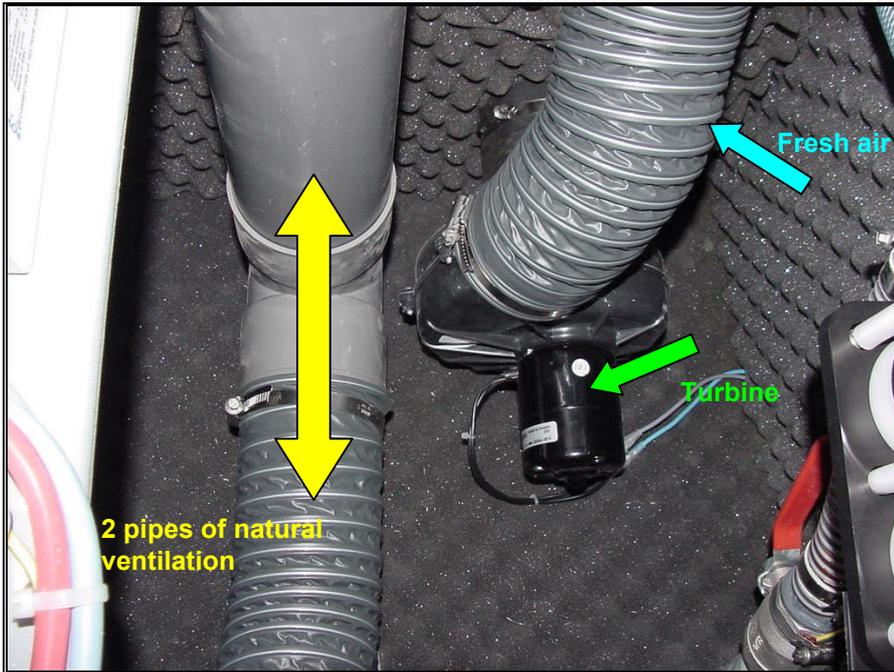
The engine room of the Super Maramu 2000 is equipped with a ventilation, to evacuate warm air produced (evacuation), and to replace it by fresh air (suction). There is also a natural ventilation.

Evacuation for the engine works as soon as the voltage is applied to the engine ; it operates at the same time the fresh air suction. These both 24 V devices work intentionally on 12 V delivered by the main engine alternator, and can be switched off using 2 circuit breakers right to the main engine exhaust turbine.



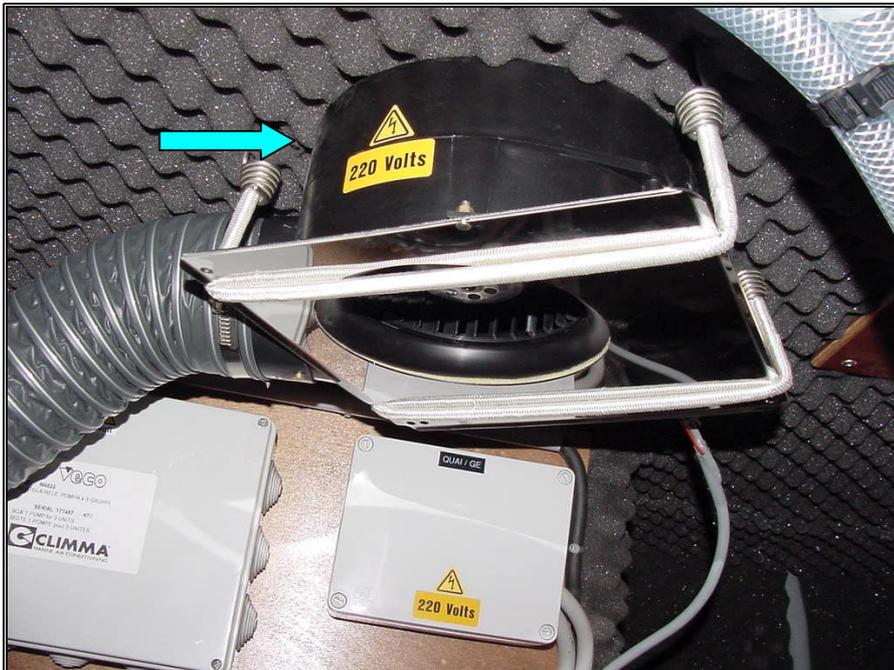
Pict. 122 – Main engine exhaust turbine (12 V)

Fresh air suction is thrown on the main engine and the transmission. The natural ventilation comes out on the one hand near the 50 A batteries charger, and on the other hand near the 24 V motor of the desalinator. The outlet is made on the deck, at the portside ear which have the AMEL logo.



Pict. 123 – Fresh air intake system

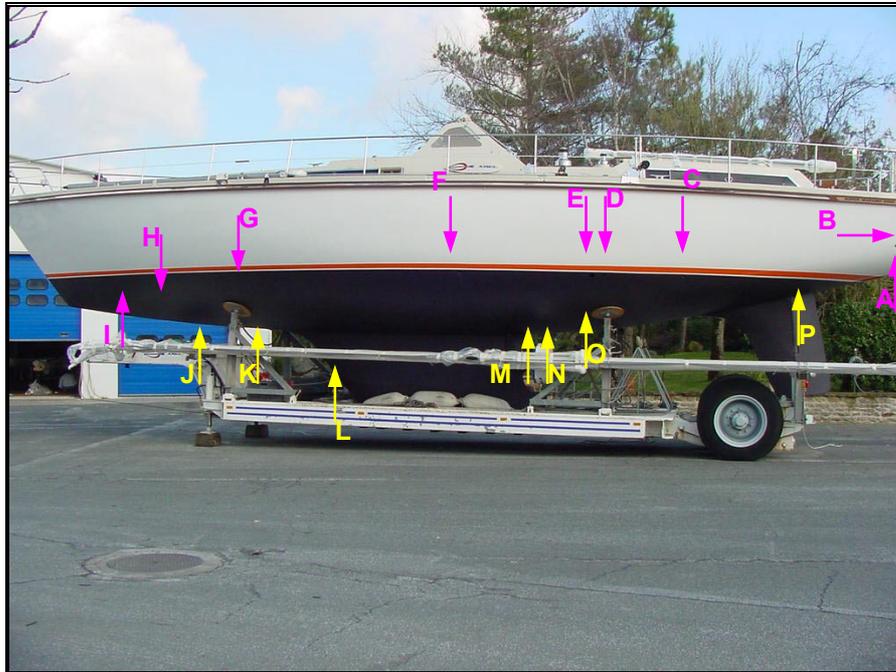
Exhaust of the warm air is linked in series to the main engine exhaust. It is above the generator, and works as soon as this appliance delivers 220 V. It works with 220 V.



Pict. 124 – Exhaust turbine for warm air



2.5 Through hull fittings



Pict. 125 – Through hull fittings

Above the floating waterline there are 9 through hulls :

Ref.	Description
A	Aft locker's drain hole
B	Aft locker's vent of gas bottles
C	Aft toilets output
D	Generator exhaust
E	Main engine exhaust
F	Wasted water output
G	Forward toilets output
H	Air conditioning output
I	Bow thruster's hole



Underneath the floating waterline, there are 7 through hulls (shown in yellow on the *Pict. 125* – *Through hull*) :

Ref.	Description
J	Depth-sounder
K	Sonic Speed speedometer
L	Sonic Speed speedometer
M	Transmission hole
N	Seawater inlet (starboard)
O	Scuppers (portside and starboard)
P	Rudder hole

The 2 scuppers are useful to evacuate the water in the self-draining cockpit. These scuppers are close to the hinges of the engine room's cover. They go through the engine room and come out under the hull. Never obstruct these drains, with rags or any other object.

Furthermore, underneath the rub rail and on both side of the boat, aft and forward, are 2 draining outlets for rainwater and spindrift.



3 Check-list

3.1 Arrival on the boat

At the harbour, when arriving on the boat, proceed to a general inspection of different elements and of all the bilges (the 1st person who goes in the saloon must be very careful, because some of the floor boards can be open).

Then, do the following operations :

- open the seawater inlet,
- switch on the batteries circuit breakers ("*Marche*"),
- check all the oil and cooling liquid levels,
- check the filling of the diesel fuel tank,
- check the batteries' charge level,
- connect the boat to shore power,
- check the batteries chargers are in function,
- disconnect the engine's anti-theft device,
- run the main engine and the generator if needed,
- connect all that was disconnected for the departure,
- check the electronic and sailing equipment are usable,
- check the convenience equipment are ready for use,
- rinse the toilets before use.

3.2 Taking to the open sea

For a safe sail, check a few points :

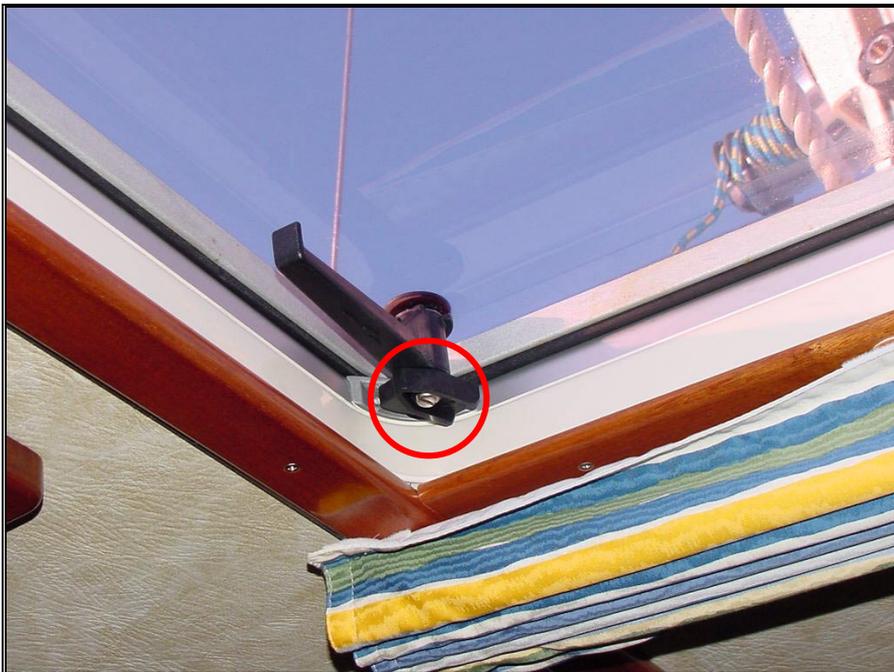
- check the filling of the tanks (fresh water, gas-oil, gas, ...),
- check the oil levels,
- check the times of the next oil changing,
- set the sails,
- check the release of the jib furling motor and of the mainsail furling system,
- check the furling systems,
- remove the bow thruster's pin (don't forget to resecure it in open sea),
- check the bow thruster is usable,
- check the windlass use, and by hand too,
- be sure the electrical winches are usable,
- be sure the mainsail electrical clew can run,
- check that all the safety equipment are on board and can be use (using the law),
- don't forget to disconnect the shore power.



3.3 Arrival at the harbour

If the boat will be uninhabited for a few weeks, do the following instructions :

- furl the sails,
- put the jib in his sailbag,
- set the pin of the mizzen,
- put the plastic protections on the wheel house's equipment,
- check the boat is well berthed,
- put out fenders,
- rinse with fresh water all the parts of the masts and equipment close to the bottom (furling systems, windlass, winches, ...),
- rinse the desalinator with fresh water,
- set the bow thruster pin,
- block up the deck hatches and the aft cabin hatch (setting the pin like on the next pictures),



Pict. 126 – Blocking up a deck hatch



Pict. 127 – Blocking up the aft cabin hatch

- clear out the sump, using the bilge pump and finish with the manual one,
- switch off the 220 V and bring the shore power cable on board,
- close and block up the lockers and covers,
- switch off all the electric equipment separately,
- fill in the fresh water tank,
- switch the batteries circuit breakers on “Arrêt”,
- the batteries’ compartment must remain closed,
- set the anti-theft device,
- lift the mattress which recently people had sleep on,
- open the doors of all the convenience equipment (refrigerator, deep freezer, dish washer, clothes washer / dryer),
- shut off the seawater intake,
- in dangerous areas (storm, hurricanes, ...), set the watertight doors and shut off the corresponding stop cocks,
- block up the engine room’s cover,
- open the bottom traps,
- close and block up the companionway’s door.



3.4 Winter service

3.4.1 Sails

- lower the jib and store it inside of the boat,
- furl the mainsail and the mizzen in the masts, unlock their clews,
- store the ballooner and the mizzen ballooner inside of the boat.

3.4.2 Deck

Clean and rinse the deck with fresh water, to remove all the salt, especially near the jib furling motor, windlass, mainsail, winches and GPS antenna. Be insistent on the lower parts of the masts.

3.4.3 Fresh water

- drain the fresh water pump,
- blow off the hot water heater,
- open all the taps and mixer taps (don't forget the cockpit shower),
- open the desalinator's tap in the galley,
- if the boat is left out of the water, pour out 0.2 l (approx. 0,05 Imperial Gallons) of bleach in the fresh water tank, and then drain,
- drain and clean the sump,
- drain the electric and manual bilge pump,
- pour out 2 litres (approx. 0.5 Imperial Gallons, 0.6 U.S. Gallons) of antifreeze in each toilets, pump until it disappears.

3.4.4 Bow thruster

Take down and drain every 2 years. Refill with 0,3 l (approx. 0,066 Imperial Gallons) of SAE 90 oil.

3.4.5 AMEL transmission

- drain and replace the propeller shaft bush and gaskets every 2 years or 800 hours,
- after a long stay in sea without sailing, operate the engine and reverse immediately in astern. Do this several times to clean the propeller's blades which can be full of seaweed and marine growth,
- grease the propeller's ball bearings each haulout.



3.4.6 Main engine and generator

Drain the seawater circuits, and fill them up with fresh water (or antifreeze if needed) :

- shut off the seawater intake,
- open the filter's cap,
- throw fresh water into the tank of the filter (using a pipe for example),
- run the engine and the generator during 1 minute.
- refer to the manufacturer's manual for further details.

3.5 Leaving for a long trip

Before leaving for a long trip, many operations must be done, concerning miscellaneous fields, for example :

- mechanics,
- electricity,
- polyester,
- ship's and crew's papers (certificate of registry, marine insurance, ...),
- health and hygiene,
- sails,
- safety equipment,
- clothes adapted to conditions,
- manufacturers' documentation,
- ...

Be sure that for each field, are on board :

- tools (hammer, wrench, spanner, screwdriver, knife, marlin spike, pliers, wire cutters, multimeter, ...),
- components and spare parts (filters, preheating plugs for the generator, pumps, driving belt, sail cloth, sewing kit, ...),
- furniture (screws, nuts, gaskets, washers, rings, deck fittings, electric wires, cable terminals, greases, oils, ...),
- first aid box, vaccines, hypodermic syringe,...
- electric torch, dry batteries,
- chart at a well detailed scale,
- extinguishers,
- gas bottles,
- catalyst, glass cloth, gelcoat, ...
- ...

Before leaving, check that all the cleanings, replacements, oil changing and services have been done, and that the next intervention will not be during the trip or the next month (in this case, do it before). Plan if necessary to do some maintenance during sailing. Check all the mechanic equipment (main engine, generator, bow thruster, AMEL transmission, ...) and electrical (pumps, desalinator, hot water heater, chargers, batteries, air conditioning system, convenience appliances, ...).

Check all the sailing help and security electronic equipment.

Do a complete haulout of the boat, and a close inspection of the hull and the deck.

***Of course, this list isn't an exhaustive one :
nothing can take over from your own experience !***



4 Maintenance

4.1 Hull

Warning : the Chantiers AMEL advise that any repairs on the fiberglass hull of the Super Maramu 2000 should be done by skilled workers, able to maintain and repair that kind of material.

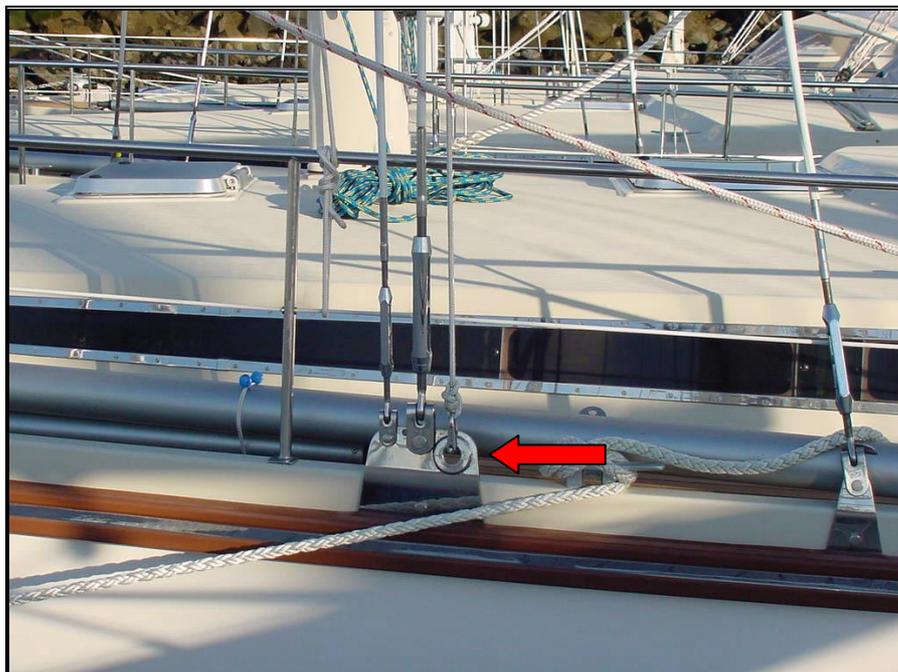
Using abrasive and / or corrosive products and equipment (harsh detergent, stiff brushes, ...) is forbidden.

Using a high pressure water machine is not advised, unless regarding the following instructions :

- the distance between the hull and the pipe must be at least 20 cm (approx. 8 in),
- the stream's pressure must not exceed 80 bars (approx. 1130 PSI),
- never add any abrasive (sand,..) to the stream,
- don't use the stream perpendicularly to the hull, but at 45° only.

To maintain the hull above the floating waterline :

- ① put the boat out of the water, lifting it by the U-bolts forward and aft. Use 4 slings of at least 6 m (approx. 20 feet) long each, taking care to make longer the outside strands of the crane of a shackle length (to avoid the spring stay will be damaged by the crane's hook). As the boat is out of the water, it can stand on his ballast, but we STRONGLY recommend that screwstands be employed.



Pict. 128 – Forward lift U-bolt



Pict. 129 – Aft lift U-bolt

Remark : *the boat can be lift with adapted straps under the hull.*

Take care not to damage the propelling system and the rudder, like the electronic sensors (depth-sounder and Sonic Speed, ...).

- ② switch off all the electric power supply (especially the bow thruster and the main engine start).
- ③ switch off the bilge pump,
- ④ clean with non-abrasive sponge and fresh water (if necessary with soapy water) all the parts, seacocks and appendixes of the boat's hull.
- ⑤ let dry.

To maintain the hull below the floating waterline :

- ① put the boat out of the water.
- ② switch off all the electric power supply (especially the bow thruster).
- ③ switch off the bilge pump.
- ④ clean with non-abrasive sponge and fresh water (if necessary with soapy water) all the parts, seacocks and appendixes of the boat's hull :
 - ballast,
 - skeg,
 - rudder,
 - propeller shaft,
 - ground plates,
 - sacrificial zinc anodes (if they have been changed this year),
 - Sonic Speed,
 - seacocks and scuppers.
- ⑤ if some shells are stay on the hull, don't use the high pressure machine but a spatula.
- ⑥ release the sacrificial zinc anodes, and replace by an equivalent model ; if they are not eaten away, check the electrical continuity.
- ⑦ apply an hard antifouling painting system (not a eroding one) on the hull and the bow thruster's foot. Don't paint :



- Sonic Speed sensors,
 - ground plates,
 - zinc anodes.
- ⑧ apply on the propeller's blades, after cleaning and greasing with silicon of the rotating parts, an adapted primer, and then the antifouling painting system.
- ⑨ let dry following the instructions of the manufacturer's of the antifouling, before launch.

Remark : before putting the boat in the sea and removing the lifting system, be sure no water is entering in the bilges.

4.2 Deck

Warning : the Chantiers AMEL advise that any repairs on the fiberglass hull of the Super Maramu 2000 should be done by skilled workers, able to maintain and repair that kind of material.

Using abrasive and / or corrosive products and equipment (harsh detergent, stiff brushes, ...) is forbidden.

Using a high pressure water machine is not advised, unless regarding the following instructions :

- the distance between the hull and the pipe must be at least 20 cm (approx. 8 in),
- the stream's pressure must not exceed 80 bars (approx. 1130 PSI),
- never add any abrasive (sand,..) to the stream,
- don't use the stream perpendicularly to the hull, but at 45°.

If possible, clean with fresh water (if necessary with soapy water) after each navigation. To avoid the salt deposits, be insistent on :

- lower parts of the masts,
- blocks,
- furling systems,
- windlass.

4.3 Wood

On the varnished wood, never use aggressive products (trichlorethylene, acetone, alcohol, ...). Prefer product for glass, with a little quantity in alcohol, or some vinegary water or soapy water.

About the teak, apply some Teac oil (rub down before if it had turned green).



4.4 Batteries

Batteries don't need any maintenance. Don't refill with water (or another liquid) in the battery.

If accidentally a battery is completely discharged, it will be very difficult (and maybe impossible) to charge it. Disconnect all the batteries from each other and from the boat. Then charge individually each one with a charger who delivers 14 to 16 V with a current of 10 to 20 A. Don't let the batteries alone ! It's a very long and approximate work, and sometimes you need to replace all the batteries.

The type of battery we choose is a simple one. He has got stainless steel terminals, easier to connect. Furthermore, they don't need any maintenance, are available everywhere, and can operate a consumer of 500 A (bow thruster) or mA (electronic equipment).

Environment protection : lead-acid batteries can be recycled. They must be collected separately. Give them to an agreed company.

4.5 Main engine and AMEL transmission



CAUTION ! User's manuals for the main engine and the hydraulic gearbox content safety **warnings** that must be respected. Refer to these manuals before use.
Before any work, check that the power supply is switched off, and stop the gas-oil delivery.
Any mechanic or electrical work should be done by skilled staff, using appropriate tools and equipment.

4.5.1 Main engine

Refer to the manufacturer's manual, section "Maintenance and inspection" for further details. To drain the air in the gas-oil circuit, refer to the manufacturer's manual, section "Operating".

On the top of the engine are the filling oil cap and the gauge. Don't fill above the max. level. On portside is a pump to drain oil : fit the outlet hose of this pump in a jerry-can, and pump. During the draining, replace the oil filter.

The gearbox is on the front of the engine and contains 2 l (approx. 0.5 Imperial Gallons, 0.6 U.S. Gallons) of ATF (Automatic Transmission Fluid). The gauge is underneath the filling cap. Don't fill above the max. level.

Every 200 hours, or every year :

- change main engine's oil,
- change oil filter,
- change gas-oil filter,
- change gearbox's oil,
- check the seawater pump's turbine.

Checking the seawater pump, if some rubber blades are missing, of course replace them, and search the pieces of the missing blades which can be blocked at the entrance of the temperature exchanger. All missing blades must be found and removed.



4.5.2 Transmission

Maintaining the transmission has to be done during the haulout, when the boat is out of the water.

Every 2 years, or 800 hours of engine, replace :

- oil,
- propeller shaft bushing.

This system contains 8 litres (approx. 1,76 Imperial Gallons, 2.1 U.S. Gallons) of diesel engine's oil 15 W 40.

To replace the propeller shaft bushing and his gaskets :

- drain oil,
- remove the propeller,
- remove the shaft,
- replace it (available at Chantiers AMEL for sale),
- replace the gaskets,
- put together again.

Deoxidize and degrease the hydraulic brake wheel.

4.5.3 Propeller



CAUTION ! Before any release, be sure the main engine is switched off, and stop the gas-oil delivery.

For safety reasons, check this appliance by skilled workers.

Any mechanic or electrical work should be done by skilled staff, using appropriate tools and equipment.

Inspect the propeller (cover, antifouling, blades, ...) each time the boat is put out of the water, but at least once a year. A damaged blade can be replaced separately from the others.

While the boat is out of the water, grease the free rotation system of each blade. Use waterproof and corrosion resistant grease :

- remove the pan heads screws from the grease channel on the blade,
- fit the grease nipple by screwing it into the grease channel on the blade and connect to the grease gun,
- remove the grease exit screw in the retaining cap,
- your hub can now be applied with the grease. Pump the gun until the new grease pushes through the grease exit hole. You may need to rotate the blade, working the new grease around the bearing,
- clean any excess grease from the retaining cap and replace the pan head screw with the O-ring,
- remove the grease nipple and clean the excess grease and replace the grease channel screw,
- ensure that all three blades are greased as per instructions.



If necessary, the removal of the AUTOPROP must be done as follow :

- remove the plastic nose cone by removing the screws,
- unscrew the shaft nut locking screw until it is clear of the shaft nut,
- unscrew the shaft nut remembering whether it has a right or left hand thread,
- you can now use your three legged puller to remove your AUTOPROP from the shaft. With the extractor, screw the extractor plate on to the end of the propeller boss using the socket head screws provided. Screw in the jacking screw and tighten until the AUTOPROP loosens on the taper, and remove from the shaft,
- tape the key onto the shaft, or remove and keep in a safe place.

Reminder : cleaning regularly the propeller's blades is important to obtain higher efficiency and avoid higher gas-oil consumption.

About the spare propeller : it must be fitted with all the accessories given (nut and lock nut).

4.6 Generator



CAUTION ! Read carefully the generator's manual before use. It contains **warnings** concerning your own safety while operating and doing maintenance. Any maintenance work on mechanical or electrical parts of the generator should be done by skilled workers, using appropriate tools and protections. The very hot oil of the cover may causes some severe burns on the skin. Wear adapted equipment, protecting the whole body.

4.6.1 Fluids

a) Oil

There are 2 different holes for the oil refill. Both can be used. To change the oil, remove the cap of the blue hose, and introduce it into a jerrycan. The gravity drain goes easier if the engine is heated (be careful : oil projections can cause severe damages. Wear special equipment.

During the oil changing, replace the oil filter too.

To know the maintenance occurrences, and the way to do it, refer to the manufacturer's manual, section "Maintenance".

Environment protection : wasted oil must be collected separately. Give it to an agreed company.



b) Cooling liquid

To know the maintenance occurrences, and the way to do it, refer to the manufacturer's manual, section "Maintenance".

c) Gas-oil

To know the characteristics of this element, refer to the manufacturer's manual, section "Maintenance".

4.6.2 Other components

The manufacturer's manual, section "Maintenance", gives some information about :

- components location,
- inspection,
- electric circuits,
- transmission belts,
- filters,
- exchangers,
- alternative current generator.

4.7 Fuel tank and fuel filter / water separator

The tank can be inspected using 2 hatches (see *Pict. 58 - Top of the tank*) to clean it.

The decanting part of the filter can be drained : if some water is at the bottom of the Plexiglas cap, unscrew the wheel and clean it.

Replace the filtering cartridge every 500 hours (main engine hours and generator hours), or every year, with an equivalent one (30 microns).



4.8 Bow thruster



CAUTION! Any electrical work should be done by skilled staff, aware of safety rules and procedures, and equipped with appropriate tools and protective equipment.

Read carefully electric drawings before proceeding any repair.

Before operating the bow thruster, make sure that nobody swims or dive nearby, and that no litter floats around the propeller.

Any maintenance on the bow thruster should be done in a harbour.

When the bow thruster is in the down position, watertightness is made with a rubber joint, compressed with the weight of the motor. If the pin is easier to fit, it means the system need to be tight a little bit, with the locknut under the covering.

Every 2 years, remove the bow thruster's foot to change oil and apply an antifouling painting system inside the well and on the foot.

0,3 l (approx. 0,066 Imperial Gallons) of S.A.E 90 oil are contained in the bow thruster. Remove the stainless steel ring at the basis of the motor in the forward cabin, and unscrew the four 8 x 40 screws.

Before removing the last screw, someone must stand under the hull to catch the bow thruster's foot.

Turn over this assembly, to empty it from its oil. Let it drain during an hour. If the oil contains a lot of water, replace the lip joint. Then, turn the foot to its normal position and refill from the top with 0,3 litres (approx. 0.066 Imperial Gallons, 0.080 U.S. Gallons) oil. Replace the rubber joint.

Fit the foot and block it with the 4 screws, the braking washers and the clamping ring.

A few grease at the base of the motor will make easier the next removal.

4.9 Sails and furling systems

4.9.1 Sails

If the sail is wet, let it dry before store it into his bag.

For the ballooner and the mizzen ballooner (which are made of nylon), it's better to put them in the bag, without furling them.

At the end of the nice season, rinse all the sails with fresh water to clean them from salt.

a) Iron stain

- use a 5 to 10 % hydrochloric acid solution,
- use a ammonium fluoride solution (like PANAMAX).

b) Blood



- if it is fresh, wash with cold fresh water,
- if it is dry, steep it in cold fresh water mixed a few bleach.

c) Hydrocarbon

Cut the cleaning as follow :

- let it soak with a fatty element,
- degrease with trichlorethylene,
- wash with soap,
- rinse with fresh water.

d) Paint

For the paint stains, use the solvent specified on the painting.

e) Fatty elements

Use some trichlorethylene.

f) Mould

For this type of stains :

- wash with soap and bleach,
- if the stains persists, use some sodium carbonate, but the greatest care must be taken with it !

4.9.2 Furling systems



CAUTION ! Don't let fingers, hair clothes or ties touch the winches during operation. The rotating parts may cause severe injuries. Before operation, make sure no tool or towel is lying on the winch.

Don't leave children unattended while operating the winches.

For safety reasons, have these equipment checked by skilled staff.

Any electrical or mechanic work should be done by skilled staff, using appropriate tools and protective gear.

Always rinse with fresh water the motor's covers as they have been exposed to seawater

The jib furling system don't need any maintenance. Check the clutch pin is sufficiently greased.

Check before each navigation that all the releases of the furling systems (jib, mainsail and clew) can work, and train to release them.

Check and clean if needed the brushes of the mast and boom every 2 years. Don' forget to make them watertight again.



4.10 Convenience equipment

4.10.1 Refrigerator

Regularly, check the air intake of this appliance isn't obstructed by any object.

The release of the refrigerator is possible unscrewing 2 wheels :

- lift the bottom trap in front of the companionway. The wheel is in front of the refrigerator, portside forward. Unscrew it and remove the front.
- the 2nd wheel is underneath the sink, in the top of the cupboard.

After unscrewed these 2 wheels, disconnect the power supply (green wire and white wire at the bottom), pull the refrigerator out of his seating, disconnect the condensation exhaust pipe (copper connection).

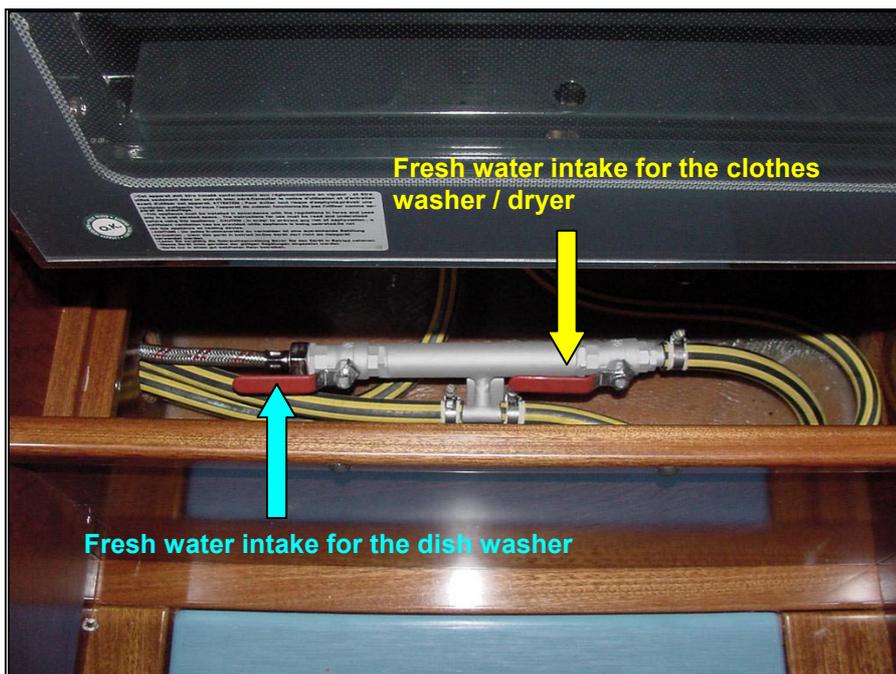
4.10.2 Deep freezer

Regularly, check the air intake of this appliance isn't obstructed by any object.

The AMEL deep freezer requires the same maintenance as a domestic one. Don't use abrasive products, neither steel tools. Prefer plastic or wooden tools. Don't cut the little channel of freezing gas.

4.10.3 Clothes washer / dryer

Before remove it, take care to turn off the fresh water stop cock under the gas stove and oven. Switch off its power supply on the 220 V panel too.



Pict. 130 – Fresh water intakes stop cocks for the clothes washer / dryer and dish washer (photographed open)



Don't forget to disconnect the 220 V power supply of the clothes washer / dryer : pass by the bar on the right.
Then unscrew the 2 bolts on the front of the appliance. So the corner can be removed from the assembly.



Pict. 131 – Removal of the clothes washer / dryer

Pull the handcraft and set the 4 wheels. Then, disconnect the fresh water intake and wasted water outlet pipes.

4.10.4 Dish washer

Before remove the dish washer, the gas stove and oven must be taken over and the fresh water intake must be shut off (see *Pict. 130 - Fresh water intakes stop cocks for the clothes washer / dryer*). After that, open the 2 cupboards under the sinks to unscrew 2 screws on the top. The wooden front can now be lift. Unscrew 6 screws to remove the dish washer's front. Unscrew a wheel (located under the portside cupboard under the sink). Slide the dish washer and disconnect its power supply, fresh water intake and draining pipe.

4.10.5 Microwave oven

The microwave oven is can't go higher using a steel belt. She's removable unscrewing 2 wheels, forward and aft. Lift lightly to remove.



4.10.6 Gas stove and oven

Before any removal, switch off the electrical gas shut-off on the 24 V panel. Switch off the pressure reducer on each gas bottle too. The gas stove and oven is removable unscrewing the 2 rocking screws forward and aft.

There is, above the gas stove and oven, the ventilation's filter. It must be inspected regularly, and replaced if needed. The filter can be removed unscrewing 2 wheels, forward and aft.



CAUTION ! Read carefully the convenience equipment's manuals before use and sail. They contain **warnings** concerning your own safety while operating and doing maintenance.

Any maintenance work on mechanical or electrical parts on these devices should be done by skilled workers, using appropriate tools and protections.

4.11 Toilets



CAUTION ! Read carefully the toilets' manual before use. It contains **warnings** concerning your own safety while operating and doing maintenance.

Any maintenance work on mechanical or electrical parts on this device should be done by skilled workers, using appropriate tools and protections.

Toilets don't need any particular maintenance, except a regular and classical one. Don't use abrasive or aggressive products (deodorant and household cleaning materials, like pine for example).

If the boat was unoccupied for a long time, rinse them with fresh water before use (use the shower head).

The pump's diaphragm must be replaced if there are some leaks or water lack, or if it doesn't work anymore. A suction box's cleaning can be done if the suction doesn't work.

The manufacturer's manual gives some detailed information about maintenance of this device.

Holding tanks can be rinsed with a mix of fresh water and bleach.



4.12 Desalinator

In case of freezing, refer to the manufacturer's manual.

The 5 microns filter must be checked regularly, because its lifetime depends on the boat's navigation area regarding how clean the sea is.

For the maintenance at long term of this appliance, refer to the manufacturer's manual, section "Maintenance".

4.13 Water circuits

If the boat will not be used for a long time, the followings seawater circuits have to be flushed with fresh water (or fresh water and antifreeze) :

- main engine,
- generator,
- toilets,
- anchor wash,
- air conditioning,

For the maintenance at long term of this appliance, refer to the manufacturer's manual, section "Maintenance".

4.13.1 Sump

The sump's cleaning must be done after a long time of inactivity of the boat, and at least yearly.

The PVC pipe can be removed :

- disconnect the switch's wires,
- release the PVC pipe from its seating and take it from the top,
- release the suction pipes.

Then, with a brush, clean the PVC and suction pipes, and sump too.
As doing this, clean strum box of the bilge pump.

4.13.2 Air conditioning and heating system



CAUTION ! Read carefully the air conditioning's manual before use. It contains **warnings** concerning your own safety while operating and doing maintenance.
Any maintenance work on mechanical or electrical parts on this device should be done by skilled workers, using appropriate tools and protections.

The manufacturer's manual gives information about normal and exceptional maintenance that must be done on the air conditioning systems. Nevertheless, remove the dust from the devices, and clean (or replace) the air filters. In case of freezing, drain (like written in the manufacturer's manual, section "Maintenance") the cooling water circuit, or add an antifreeze liquid.



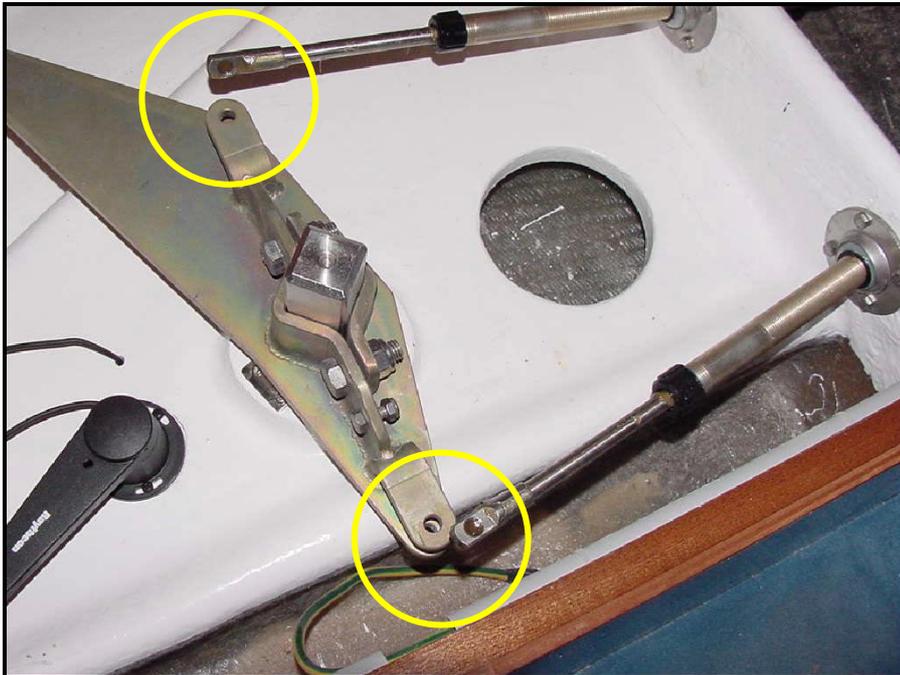
4.14 Miscellaneous

4.14.1 AMEL steering system

The only maintenance is to tighten the stuffing box nylon nut a sixth of a rev in case of dripping water. There is no need to grease the rudder cables.

Installing the emergency tiller :

When needed (damaged cables, worn out gears, broken steering wheel ...), first remove the cables on the rudder stock's end.



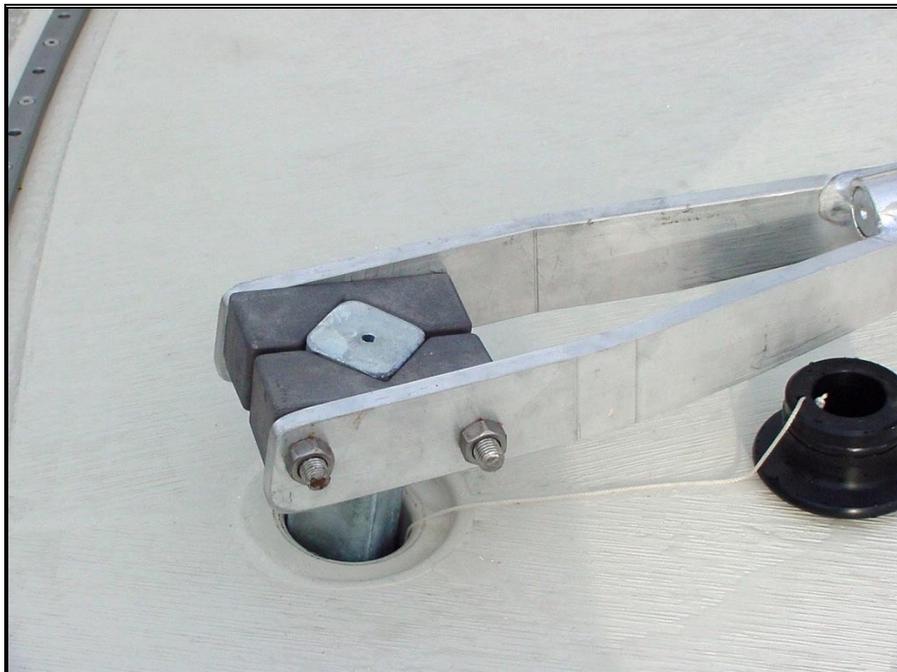
Pict. 132 – Taking down the rudder stock cables

- ① bring the rudder stock extension (square tube) and the jaws in the aft cabin.
- ② remove the berth's cushions and lift the berth's boards
- ③ on the ceiling, move the hiding piece of wood to get access to the plastic cork and push it out.
- ④ set the jaws and extension onto the rudder stock.
- ⑤ bolt strongly this assembly :



Pict. 133 – Setting in the aft cabin

- ⑥ bring the aluminium hand helm on the aft deck
- ⑦ set and bolt it on the extension's top end :



Pict. 134 – Emergency tiller on the deck

Remark : the automatic pilot's drive unit keeps working even with the emergency tiller installed.



4.14.2 Windlass and anchor chain

Once a year you must :

- take apart and grease the gipsy,
- flush the anchor chain with fresh water,
- check the entire chain, especially the very beginning and the very end.

Every 5 years, change the oil in the windlass.

4.14.3 Hot water heater

Every 3 years, depending on the fresh water' s quality, have the tank cleaned, especially to remove the scale. Replace the zinc anode inside.



5 AMEL all over the world

Remark : *an identification number is engraved in a stainless steel sheet in the companionway, and underneath the mulding portside aft. We thank you to give this number for a unequivocally identification of your boat.*

Should you face any technical problem or question about the use or maintenance of your Super Maramu 2000, AMEL remains at your disposal to help you wherever in the world:

Atlantic and rest of the world at AMEL La Rochelle :

Olivier BEAUTÉ and Christian DUFOURD during the guarantee

Jean Yves SELO after its expiry

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5.1 After sales La Rochelle

AMEL / La Rochelle takes care of the Atlantic area and the rest of the world.

Contact for the one year warranty period: Mr. Olivier BEAUTE.

Contact after warranty period : Mr. Jean-Yves SELO.

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B.P. 15
17 182 PERIGNY Cedex / FRANCE

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*Internet web site : <http://www.amel.fr>
Email : amel@amel.fr*

5.2 After sales Hyères

The AMEL base in Hyères takes care of the Mediterranean area.
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5.3 After sales Guadeloupe

Mr. Hervé BODIGER / Mr. Laurent COLONNA

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Marina Bas du Fort
97 110 POINTE-A-PITRE

Phone / Fax : (590) 90 85 83



6 Used units – Conversion

<i>Measure</i>	<i>Unit</i>	<i>Symbol</i>	<i>Equivalent to...</i>
Electric power intensity / amperage	Ampere	A	-
Battery capacity	Ampere – hour	Ah	-
Voltage	Volt	V	-
Length	Metre	m	1,094 yd
	Nautical mile	N mile	1852 m
	Inch	in	0.0254 m = 25.4 mm
	Feet	ft	12 in = 304,8 mm = 0.3048 m
	Yard	yd	36 in = 3 ft = 0,9144 m
Power	Watt	W	1.358 hp
	Horse-power	hp	736 W
Electric resistance	Ohm	Ω	-
Pressure	Pascal	Pa	-
	Bar	bar	100 000 Pa
	Pound per square Inch	PSI	0.0707 bar = 7070 Pa
Weight	Kilogram	kg	-
	Pound	lb.	0.4531 kg
	Ounce	oz	0.02832 kg
Volume	Litre	l	-
	Imperial Gallon	Imp. Gal.	4.546 dm ³
	US Gallon	US Gal	3.785 dm ³
Temperature	Fahrenheit degrees	$^{\circ}\text{F}$	$T(^{\circ}\text{C}) = 0.55 \times T(^{\circ}\text{F}) - 32$
	Centigrade degrees	$^{\circ}\text{C}$	$T(^{\circ}\text{F}) = 1.8 \times T(^{\circ}\text{C}) + 32$



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