

FIRST 235

OWNER'S MANUAL

WELCOME ABOARD!

Throughout the life of the various models of the **Bénéteau** boats, improvements suggested by our own experience and that of our customers are incorporated. Consequently the characteristics and descriptions given in this Owner's Handbook are not binding; they may be changed without prior notice, and involve no obligation to update existing boats.

Likewise this handbook, which is very general in scope, may sometimes list items of equipment or accessories, or discuss various matters, that are not relevant to your particular boat. If in any doubt, you should always consult the inventory in force at the time of acquisition, and if appropriate the sales agreement made with your **Bénéteau** concessionaire or sales agent.

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CHAPTER 1 - YOUR BOAT'S I.D. CARD

FIRST 235

DESIGNER : Groupe FINOT

MAIN SPECIFICATIONS

Length overall	7,14 m
Length at waterline	6,20 m
Max. beam	2,50 m
Draft fixed keel (1)	1,15 m
Draft lifting keel (1)	1,75/0,66 m
Approx. weight	1 200 kg
Ballast fixed keel	420 kg approx.
Ballast lifting keel	360 kg approx.
French Merch. Marine approval number	2 655
Authorized number of persons on board	4/6
Max. authorized engine power	9,9 C V
Gross tonnage (French tonneaux)	4,20 T

(1) This measurement applies for an empty boat out of factory.

CHAPTER 2 - PUTTING HER IN THE WATER

Commissioning your Bénéteau calls for a great deal of skill and care; the competence with which the many operations involved in commissioning a boat are carried out will govern how well she and all her equipment function later on.

This is why putting the boat in the water for the first time, the first stepping of mast and the first tests on the various items of equipment **must** be done by your Bénéteau concessionaire, so that you can claim under the guarantee should anything be faulty.

If, later on, you need to deal with putting the boat in the water or stepping and unstepping the mast yourself, be sure to take the precautions described below.

LIFTING

Check that all the seacocks and instrument ports are closed, and that the pickups of the various navigation instruments (log, speedo, and so on) are retracted.

The hook of crane will be fitted with a lifting frame or spreader system with two straps. The straps must **never** be attached directly to the hook – this would put abnormal compression stresses on hull.

Should the lifting be too short, make up four wooden chocks, cut to a wedge and wrapped in felt, to use for separating the lifting straps from the toerails.

Put out fenders along the side where the hull will come into contact with quay.

Fit two lines, on forward and one aft, to provide the control of the boat you will need during lifting. These should be long enough for quickly towing the boat away to a quieter spot once she is in the water – slipways and craning points are usually very cluttered places

Position the straps so that the boat is balanced. Check that they are not likely to bear on the propeller shaft, echo-sounder or speedo head or the rudder. Make sure they stay in position by rigging a rope along each side, linking them and fastened to the stem and stern.

Lift the boat slightly, and check for proper balance. Mark the position of the lifting straps and hook with small strips of adhesive tape stuck underneath the sheer-rail; these will prove useful when lifting-out, and when putting her in the water another time.

Craning must be done gently, and the movement of the hull controlled by two persons using the forward and aft lines. **Never have anyone on board or standing under the hull while a boat is being lifted.**

UNSTEPPING AND RESTEPPING THE MAST

If you have to unstep or restep the mast other than at your agent's yard, proceed as described below.

Unstepping

Disconnect the electric cables at the terminal boxes under the coachroof, undo the grommets and pull the cables out.

Remove the boom from the mast, and unreeve all its sheets and other items of running rigging from their pulley-blocks on the hull (labeling them for easy identification later).

Unship the lower forestay and lower shrouds, and frap these and all the running rigging to the bottom of the mast. Leave a rope long enough for guiding the foot of the mast.

Pass round the mast a rope strop about 1.5 metres in length, fitted with an eye and thimble at each end and wrapped in rag. Join the two eyes with a harp shackle, big enough to take the crane hook and positioned at the front of the mast. Wrap the hook in rags, and lift the whole until the strop is bearing slightly against the base of the crosstrees.

Unship the forestay, upper shrouds and backstay; keep hold of the latter so that it can be used for steering the mast, and frap the others to the foot. Lift the mast, guiding it carefully with the rope attached to the bottom.

Restepping

For restepping, follow the above instructions in reverse order.

After restepping the mast, make sure that the split-pins locking the bottlescrews are properly spread, and wrap them with adhesive tape; check, too, that there is the correct tension on the tie rod at the foot of the mast, and on the shroud chainplates if your boat is fitted with these.

CHAPTER 4 - THE BOAT'S SYSTEMS

THE FRESH WATER SYSTEM

The plan at the back of this handbook will help you to locate and identify the main parts of the fresh water system. The deck plug is opened using a winch handle or a special spanner (the latter is supplied as part of the boat's tool kit).

The water can be sterilized before use with chloramine tablets (obtainable from a chemist's).

Never top up with water and diesel oil at the same time if the filling points are close enough to each other for there to be a risk of contaminating one liquid with the other by mistake. Similarly, avoid risk of contamination by never handling a product that might cause pollution close to the deck plug while taking on water.

If they have been unused for a long time, the tanks and pipes need to be purified with a solution of acetic acid (white vinegar).

On certain models rigid water tanks can be fitted as an option; maintenance of these is the same as for the flexible tanks.

The fresh water system supplies the galley sink, and any washbasins. Depending on the model, the water is drawn via a hand or an electric pump (take care never to run an electric pump with the tank empty – this will ruin it beyond repair).

The sink and washbasins are drained through their own through-hull valves; these should be kept closed when the fresh water system is not in use.

SEA WATER SYSTEM

This is used for supplying and flushing out the galley sink and/or heads.

All these supply and flushing points have 1/4-turn plug-type taps, which must be opened only during use. The quarter-turn tap is open when the lever is in line with the pipe, and closed when it is at right angles. Plug-type taps open anticlockwise (i.e. to the left) and shut to the right.

Take special care to see that these taps are well maintained, give a good seal and work smoothly. Have a bung of the right size to hand, so that they can be plugged on the outside if, for instance, a seized tap has to be dismantled, or merely lubricated.

The same applies to through-hull ports for instruments such as the echo-sounder and speedometer; they need to be two on each external intake below the water-line. After hot water has been run through a pipe for the first time, check the tightness of all the

clips. Check, too, that the pipes have not been squashed flat at a bend or where they pass through a bulkhead.

NB: These recommendations also apply to the cooling system of the inboard engine, if your boat has one.

HEADS

Important: never use the pump with the valves closed!

Follow to the letter the instructions for use and precautions marked on the pump. Before use, make certain that the water supply valve and flushing valve are open (i.e. that the lever is in line).

Close the valves after use.

Only use absorbent toilet paper: anything else may damage the mechanism.

If the pump breaks down (generally this is due to not keeping to the simple instructions given above) it will have to be taken apart – which is not always the nicest of jobs! Take care not to lose any of the parts, and note carefully the order in which they fit together.

Maintenance consists of regularly rinsing the whole system out with fresh water, by operating the pump.

When laying up for the winter, rinse the system in the same way with fresh water to which paraffin oil has been added (about 1/4-litre to 5 liters of water).

ICEBOX

This drains directly into the bilges through a special pipe. Check from time to time that this is not blocked, and pump out the bilges.

Important: Some boats are fitted (as standard or as an option) with a refrigerator unit. Always watch to see that the generator of the refrigerator is well ventilated, otherwise irreparable damage may occur. Make sure you know where it is located, and never – even partially – obstruct the air intakes.

BILGE PUMP

The drawing at the back of the handbook will help you locate and identify the various parts of the bilge pumping system. The intake of the hand-pump is at the bottom of the bilge, and the vent is through the side of the hull. Check regularly that the strumbox and bilge are perfectly clean, and remove the breadcrumbs that inevitably find their way there. Inspect the pipes and jubilee clips.

If, on your particular boat, this pump is electric, it will be controlled from the main instrument panel, and you should observe the same precautions in use as for a manual pump. Be sure, too, to clean the filter between the pump and strumbox carefully, at regular intervals.

SELF-DRAINING COCKPIT

Make sure that the drainholes are not blocked. When using the cockpit as a workshop, close these holes off with large cork bungs so that any nuts or bolts you drop are not lost forever.

GAS

The flexible pipes linking the gas bottle to one end of the system and the stove to the other should be renewed every year; use only special flexibles made to special standards. At the same time, grease the shut-off tap at the stove end, and check with soapy water or special foaming agent (obtainable from your ironmonger) that there are no leaks in the fixed piping. Be careful not to damage the thread of the gas bottle where the pressure-reducing valve is fitted. Use a regulator reducing valve with a safety cutoff – if the pressure in the system should drop due to a leak, the supply of gas will then automatically be disconnected. This does not, of course, mean that you should ever leave the taps at the stove and bottle ends open when the system is not in use.

If you have a two-burner stove that fits direct to the gas bottle, the bottle must always be changed on deck, never below. Test it before taking it back down to the galley, and check that the brazing of the pipes is sound and that there are no leaks. Take care to lock the stove gimbals in place after reassembly.

If a gas flame should go out accidentally, create a draught to blow away any gas that may be hanging about in the galley.

ELECTRICAL SYSTEM

The power for the boat's electrical circuits and that of the inboard engine (if you have one) comes from one or more 12V batteries. These are of the traditional lead accumulator type, and require a certain amount of regular maintenance. They need to be very carefully stowed and secured.

Make sure that the level of the electrolyte is always at least 1cm above the top of the plates. This level can change suddenly, because of evaporation in an overheated bilge or because of the boat pitching about in a heavy sea.

If the level is low, top the battery up with distilled water **and nothing else** (always have a bottle of it on board). The level of acidity (i.e. the relative density of the electrolyte) should also be checked from time to time.

The amount of charge the battery is receiving can be checked on the voltmeter, which is graduated in either volts or percentage charge or with colored sectors. This should be done when the battery is cold and has not been recharged or used for several hours beforehand. A reading of less than 11.5V or under 50% charge means that recharging is necessary.

The battery should be kept scrupulously clean, and the terminal posts should be regularly smeared with Vaseline.

Battery isolating switches are provided to isolate the battery from its circuit. **NB - Never operate these isolating switches while the engine is running** – doing so could damage the alternator diodes and regulator beyond repair.

There is:

- (a) one POSITIVE (+) battery switch for each battery, colored red; and
- (b) a single NEGATIVE (-) switch no matter how many batteries there are.

On boats fitted with several batteries, the circuits can be selected separately or used together, depending on the power need at the time or on whether they need to be charged while the engine is running.

They are switched as follows

To use the circuit # 1 only:

Put on the COMMON NEGATIVE switch (-) to "ON", then set the POSITIVE (+) switch of BAT1 to "ON"; the switch for BAT2 stays at "OFF".

To use circuit # 2 only:

Put the COMMON NEGATIVE switch (-) to "ON", then set the POSITIVE (+) switch of BAT2 to "ON"; the switch for BAT1 stays at "OFF".

To use both circuits together:

Set all the switches (COMMON NEGATIVE and BAT1 and BAT2 POSITIVE) to "ON".

Generally one battery is kept for the engine (BAT2) and the other for the boat's circuits (BAT1). They can however be used the other way round, or be coupled together when there is a heavy demand for current – though this should not be done any length of time, as power needs to be always kept in hand for starting the engine.

Each wire leaving the electrical panel is provided with a fuse and switch. Further switches can be fitted to items supplied from one and the same wire (cabin lights, for instance).

A spare wire is provided for lighting a bulkhead compass fitted to port. A label stuck to the cabin ceiling shows where this comes out.

Always carry a complete set of fuses and spare lamp bulbs on board.

CHAPTER 6 - THE OUTBOARD MOTOR

The outboard motor is easy to maintain, since it is portable, and it forms a convenient single unit with its transmission; so whether you use it to drive your Bénéteau or the tender, it all too easily gets forgotten. But if you do neglect it, you may be quite sure that one day it will remind you of the fact. The few items of advice that follow are meant simply to save you a certain amount of hassle, and prevent a variety of breakdowns and incidents that can only be described as stupid and unnecessary. In any case, we do urge you to follow scrupulously the instructions given in the maker's handbook.

FITTING THE OUTBOARD

So far as possible, an outboard motor should be kept upright. Where this is not possible (during transport, when changing a prop, etc.) keep it so that the cylinders are above the horizontal plane of the propeller. The reason is simple – and the result of ignoring it rather nasty: the water left in the cooling system after use will otherwise find its way into the cylinders via the exhaust. The first thing to make sure of, if this is not made clear in the maker's instruction manual, is which way up the motor should not be carried or laid down. Generally speaking, the cylinders are at the back of the engine block.

Before mounting the outboard on its bracket, fit a rope strop about a meter long to attach it to the boat – an accident takes only a second or two to happen, and you will not always have a skindiver on call!

Once the clamps have been tightened, pass a padlock through the holes in the folding handles of the clamps; this will not only deter thieves if you have to leave the outboard fitted to the boat, but will also prevent the clamps from working loose and letting the motor disappear overboard at full speed.

On a sailing boat the angle of the outboard should be adjusted so that the shaft is near enough vertical.

If the fuel tank is separate, it will connect to the motor by a flexible tube ending in a small connector with a ball-bearing valve and retaining clip. Never let this connector lie about in the sand or water - it is a vulnerable, precision-made item, and the smallest foreign object will prevent it from connecting properly to the tank, and/or cause a leak.

Be sure to use only the grades and portions of oil recommended by the outboard manufacturer. Moped 2-stroke mixture sold from the pump in a filling station must **never** be used. If you do not have your oil in containers of the right amount, use a graduated plastic measure (available from all concessionaires). Rinse this out with petrol every time after use, and keep it wrapped in a rag. Always use a big funnel with a sieve to fill the fuel tank. After the oil has been put in, top up with the amount petrol needed and then shake the tank about a few times, pausing in between, so that the two are properly mixed.

STARTING UP AN OUTBOARD

Above all else, never forget to open up the breather valve in the filler cap of the tank – if you do, the motor will strangle itself and stop. Remember too, to close it again after use if you do not want to find the locker where you store the outboard or tank awash with fuel.

Open a fuel-cock of a built-in tank, or squeeze the priming bulb in the flexible tube a few times in case of a separate tank.

Put the gear lever to neutral and the throttle twistgrip to "Start", and engage the choke (if you have one). Before you tug on the starter cord, wait ... and make sure an over-curious child is not standing just behind you; an elbow in the face, like a swinging boom on the head, **hurts!**

If the outboard motor does not have a clip to lock it in the "down" position, you will have to hold it down with one hand. With the other, pull gently on the cord to engage the starter, and then smartly as soon as you feel resistance at the point of compression.

The motor should start at the third or fourth tug; release the choke at once. If it has not started by the fourth or fifth pull on the cord, release the choke, open the throttle wide and continue tugging on the cord. If you still have no success, it means the cylinders are flooded; close the fuel cock or unclip the fuel line, and carry on pulling the cord until the motor starts. Then, wind the throttle back to tickover - you will have plenty of time to reconnect the fuel supply before it stops.

Ensure that the cooling water is circulating properly by checking that it is running freely from its outlet.

UNDER WAY

The outboard motor sometimes provides both drive and steering (in which case make sure it is free to pivot), and sometimes just drive (if this is so, check that it is locked in the fore-and-aft axis by the bolt provided for this on the support bracket). If the outboard is attached to a bracket or on the transom close to the rudder, check the angle through which the rudder blade moves, to make sure it cannot be damaged by the prop.

Engage the clutch cleanly, and rev up gradually. Never change from ahead to astern without slowing down to tickover – at a very least, you will bread the shearpin on the prop, and perhaps worse. Modern outboards have a safety device that prevents mishandling.

Do not leave the motor at tickover for too long - it makes 2-stroke engines unhappy.

When running on the motor do not let your crew all gather aft, because a hull with the nose up makes deep waves that will gobble up your fuel.

MAINTENANCE

The only routine maintenance needed, apart from wiping the outboard over a rag and spraying on a water-repellant (such as WD-40) after a "wet" outing, is to check the state of the sparkplugs.

Fit only the plugs recommended by the outboard manufacturer. Always keep a spare set on board, in waterproof packing. If, however, you expect to run for a longish period at slow speed – when fishing, for example – a "hot" sparkplug will burn the gases

To remove a sparkplug, disconnect the HT lead and unscrew the plug with the hexagonal box spanner provided with the motor. Before removing the plug from its seating, blow on it to chase away any dust or dirt that might fall down into the combustion chamber.

Clean the plug with trichlorethylene or some other solvent, using an old toothbrush. **Never** use a wire brush, which is meant only for cleaning out the thread.

If the center electrode is badly pitted, you can restore a smooth surface with a special small file, or with a manicure emery board. The spark gap between the center and earth electrodes will then need to be set to that stipulated by the outboard manufacturer, and checked with a feeler gauge.

Remember to replace the washer when replacing the plug, and smear the thread with a little Vaseline. Take great care not to cross the thread when inserting the plug – the light-alloy cylinder heads used on outboard motors are easily damaged. The plug should screw home normally by hand without sticking, and the spanner is used only for final tightening.

The appearance of the sparkplug you have removed will allow you to analyze various things that may be wrong with the motor or how you are using it.

OUTBOARD OVERBOARD!

You may one day, despite all your precautions, have your outboard motor fall in the water.

If it was running at the time (and assuming you have been able to retrieve it thanks to the safety stop) matters are likely to be serious – because water is incompressible, and when it replaces the gases in the combustion chamber something has to give. If it was stopped, on the other hand, all is not lost... provided you can recover it, of course. If it has fallen into seawater, the first thing to do is immediately to immerse it (or at least the

engine block) in fresh water, so as to be sure that there is no salt left behind that might dry hard in some nook or cranny.

Remove the sparkplugs, and turn the motor over by hand to drive out any water that has got into the cylinders. **Note:** while doing this, the HT leads must be connected to earth, or the STOP button kept pressed, so as not to harm the ignition system.

Then dismantle the fuel filter and carburetor float chamber, in order to clean out the fuel supply system. If the fuel tank is integral with the motor, empty it out.

Put in fresh fuel containing twice the normal proportion of oil, and turn the motor over by hand in to bring the mixture up to the cylinders.

Fit a new set of plugs; spray a little Dampstart or a similar product into the carburetor intake, and a plentiful amount of water-repellant over the whole thing. Pray hard that it is going to start – and pull the starter cord.

Remember that an outboard that has fallen into the water is like a drowned man whose heart has stopped beating – you have only few minutes to bring it back to life. If the circumstances, or your own abilities, make you doubt you can manage it, it is better to leave the motor in the water (even seawater) until you can get it to your concessionaire or agent. It must not at any time be left in the open air – the less it is exposed to air, the more chance there is of rescuing it.

CHAPTER 7 - RIGGING AND SAILS

Note: also check Chapter 15 for racing adjustment tips.

ADJUSTING THE MAST

One of the greatest pleasures in sailing a yacht is tuning her rigging and sails so that everything is as well balanced as possible when under way. A well-tuned boat is sweet to steer, has just enough weather helm to come slowly up head to wind when you let go, and is easy to set "into the tramlines" when you are close-hauled.

With a fractional rig – unlike a masthead rig when each of them has only one function – both the standing rigging and the mainsail play a part in the lengthwise and lateral positioning of the mast.

Lengthwise, for instance, the tension on the forestay when closehauled is provided by the pull of the mainsail on the mast, by the runners (and perhaps lower runners) if there are any (First Class 10), and to a minor degree – at least up to F4-5 – by the backstay.

This bow will be accentuated by the tension of the backstay and the pressure exerted on the mast by the boom under the effect of the pull on the downhaul; at the same time the crosstrees, pressing against the upper shrouds, will limit it.

Since the force of the mainsail and downhaul are exerted at an angle to the fore-and-aft axis of the yacht, the bow in the mast will be produced in both the lengthwise and the crosswise planes (see figure35).

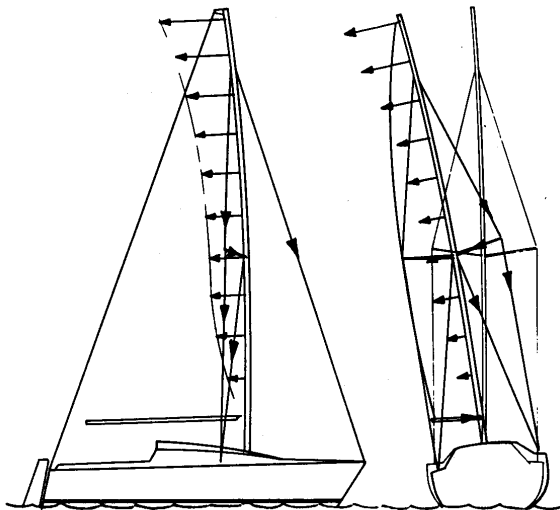


Figure 35

The constant interaction of these three components – mainsails, mast and rigging – explains why a fractional rig is far more adaptable to wind and sea conditions than a masthead rig, and also why tuning it can sometimes seem much more difficult if one has not mastered the principle of how it works.

Tuning the mast will be done in two stages – on a mooring, and under way.

Adjustments to the mast should be made after you have done a few miles of sailing, so that the shrouds have had time to get rid of their residual stretch and all the fittings have settled down. Choose a day with the wind about force 3-4 (which means a heel of roughly 20°), and a flat sea.

Static tuning

The length of the forestay is adjusted first of all, to obtain the desired rake on the mast. The bottlescrews on the two upper shrouds are then screwed up fingertight, until any further adjustment would need a tool. Check that both bottlescrews, to port and starboard, are the same length. Check for verticality by holding the jib halyard against both chainplates (figure 36).

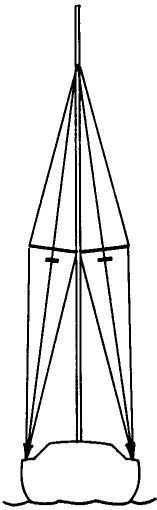


Figure 36

Tighten up the bottlescrews of the lower shrouds in the same way.

Check that the bottlescrews are the same length; this will be confirmed by the straightness of the luff groove when you took up the mast with your head alongside the gooseneck.

Now take up the backstay until the mast has a bow, at mid-height, equal to 1.5 - 2 times its diameter (figure 37). Doing this takes the strain off all the shrouds; they are therefore taken up, starting with the lower shrouds and ending with the uppers. The amount of bow in the mast will have increased, and it will be found that the lower shrouds are less taut

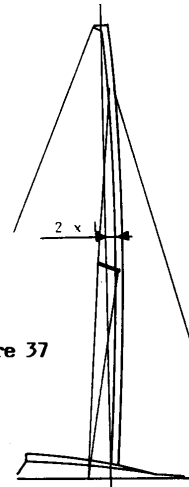


Figure 37

than the uppers. Recheck the straightness of the mast and the equal length of the bottlescrews on each side.

Tuning under sail, close-hauled

The second part of tuning the rigging involves checking that the strain on the upper and lower shrouds is balanced; this is done with the backstay without any slack, and yet not drum-taut.

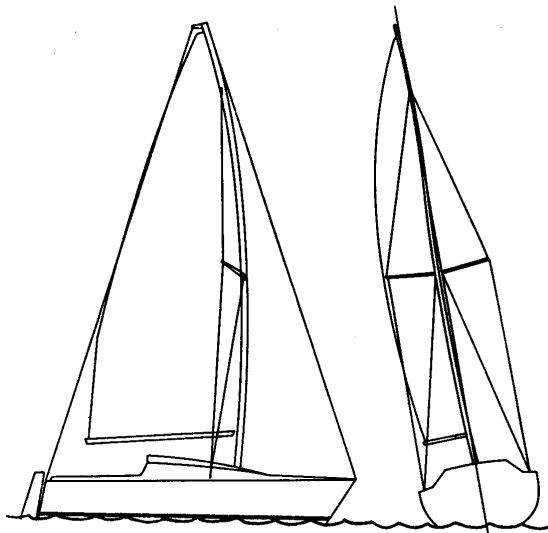


Figure 38

If the lower shroud is not taut enough compared to the upper, the mast will take on an inverse bow crosswise – i.e. the part of the mast below the forestay will have a bend to leeward (figure 38). If this is so, retighten the lower-shroud bottlescrew to leeward, and, after going about, the one on the other side. Never try to adjust a bottlescrew when it is under strain – you will only seize it.

If the lower shroud is too taut compared to the upper, the mast will have an excessive

crosswise bend to windward (figure 39), and this will mean slackening off the bottlescrews of the lower shrouds. The crosswise bow in the mast should not be more than half its diameter. Generally the amount of bow is right when, on a mooring, the tension on the upper shrouds is slightly more than that on the lower shrouds.

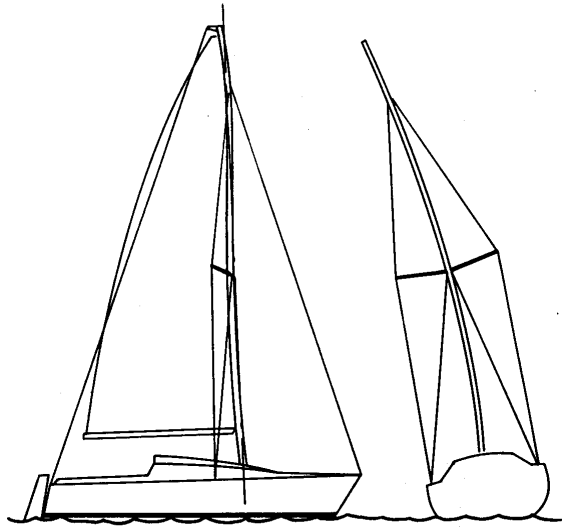


Figure 39

You still need to know whether the standing rigging as a whole is too taut or slack. You can get a rough idea by looking at the rigging to leeward – this should not become slack until the apparent wind reaches about 10-15 knots. A second indication is the balance on the helm: with the sails properly trimmed (as we shall explain below), the boat will be level on the helm if the rigging is too light, and sluggish if it is not taut enough.

Remember, when adjusting bottlescrews, to take the same number of turns on the barrels on each side, and to note how long they are when the adjustment is completed. You will then not need to use trial-and-error when

resteping the mast another time; but do not forget that the shrouds will need to be taken up after a certain amount of sailing, since they always stretch a bit at the beginning.

Take the opportunity to inspect the split-pins and the tightness of the locking nuts, and to renew the protective wrapping with adhesive tape.

As we have seen, this kind of rig demands a considerable level of stressing, so whenever possible it will be wise, if the boat is to be left unused for a time, to slacken off the runners and backstay so as to release the strain on the rigging as a whole.

CHOOSING AND TRIMING YOUR SAILS

BASIC RULES

If a yacht is to sail as balanced as possible and at maximum performance, the sails need to be constantly matched to the wind strength and sea state, not only by a correct choice of sail area but by adjusting the shape of the sails as well; because of this, our explanation is going to have to involve a bit of aerodynamics.

Rule 1

The choice of which sail to use is dictated not only by the sail area the boat's stability allows you to carry safely, but also by the strength of the material the sail is made from. If you go beyond the maximum wind-strength for which the canvas is suited, the sail will

distort; quite apart from the safety aspect, this is an important reason for always reducing sail in good time. If your boat does not have an anemometer, her angle of heel is a good indicator of when to reduce sail – 15% is a normal amount of heel, but if during gusts you find you have the lee rail under for a moment or two, then the time has come to carry less canvas.

Table A below gives a rough approximation of how sail area should be reduced progressively, on the different points of sailing and with a cruising crew and inventory; if you are racing, choose the next one above. Always take the helmsman's and crew's degree of experience into account, and keep in mind that from force 6 onwards sailing stops being a pleasure.

Always match the sail area to wind strength and sea state.

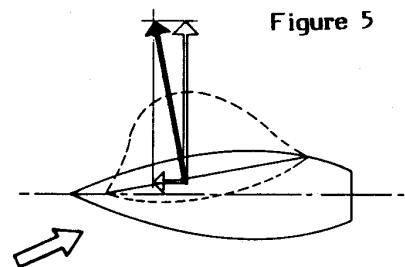
Table A

Progressive reduction of sail area

True wind	Close-hauled	Reaching	Running
F 1 - 2 0-6 knots	light genoa main	light genoa main	spinnaker main
F 3 - 4 11-16 knots	medium or intermediate genoa main	light genoa main	light genoa possibly spinnaker main
F 5 - 6 17-21 knots	inlern. genoa or #1 jib main, 1 reef	interm. genoa main	heavy genoa boomed-out main
F 6 - 7 22-35 knots	#1 or #2 jib main, 2 reefs	heavy genoa main, 2 reefs	heavy genoa boomed-out main, 1 or 2 reefs
F 7 - 8 30-40 knots	#2 or storm jib main, 2 or 3 reefs	#1 jib main, 2 reefs	#1 jib boomed-out main, 2 reefs
F 8	storm jib main, 3 reefs	#1 jib main, 3 reefs	#1 jib

Rule 2

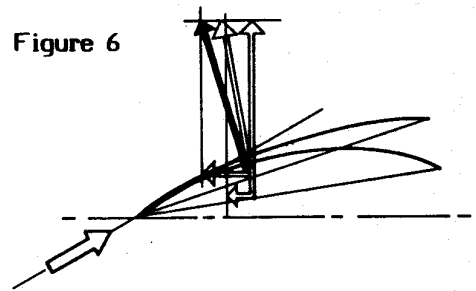
As it deflects the wind, the sail creates an imbalance in the air pressure around it, increasing this to windward and decreasing it to leeward. The resultant of these pressures is an aerodynamic force, roughly perpendicular to the sail, that when close-hauled will draw the yacht forward and push it downwind, depending on its two, longitudinal and transverse components (see fig. 5); the first of these drives the boat, the second causes leeway;



The angle of the sail governs that of the aerodynamic force, whose strength and position depend on the shape of the varying cross-sections of the sail; the more concave these are (the more "belly" the sail has), the more the wind will be deflected

and the stronger will be the aerodynamic force. The point at which it acts on the sail will be the point of maximum belly.

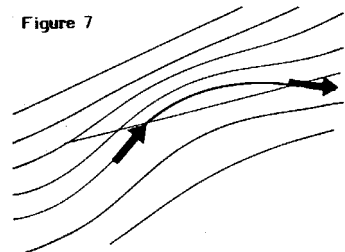
However, it is no good having a sail with a lot of belly if this can be obtained only with the wind at a high angle of incidence (fig. 6). The limit angle is to a great extent linked to the sail's angle of attack, and one can see from the figure that though a flatter sail may develop a lower aerodynamic force, its better angle to the wind makes it possible to obtain a greater driving force with less leeway and less heel. The same would apply if the maximum belly were further back. One always notices that by easing off slightly and flattening the sail a little you go faster and make less leeway; and the worse the sea, the more this is true.



Never sheet in too hard, and never give too much belly.

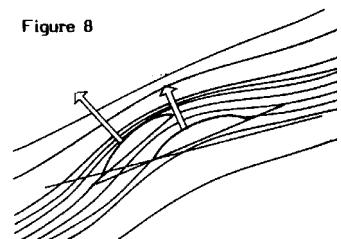
Rule 3

When you watch the flow of air over a sail in a wind tunnel, you notice that the streams of air start to be deflected well ahead of the luff, and that the effect continues well past the leech. To an observer placed ahead of the sail, the wind is seen to move further abeam – to "free", while if he is behind the sail the wind shifts forward – or "heads" (see figure 7).



Your yacht carries two sails – a foresail (jib or genoa) and a mainsail. Each will affect the other – the jib will be in area with a freeing wind, while the main will have a heading wind.

The two sails will thus not be set at the same angle to the axis of the hull; the jib will be more open than the main (figure 8). The aerodynamic force of the jib will consequently be directed more favorably than that of the main.



And since a flow of air over the jib is not disturbed by the mast, as it is for the mainsail, its efficiency is very much higher.

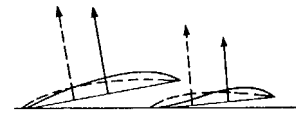
With a masthead rig, the foresail provides most of the drive, and it is its setting that is the more important... the mainsail can then be looked on as an "air rudder".

Rule 4

The point where the aerodynamic force acts on the sail is more or less that of maximum belly. Thus if the belly moves aft so will the aerodynamic force, and the boat will take on

weather helm. Moreover, as the belly of the jib shifts aft it will spill wind onto the forward part of the main, and the latter's force will be even further aft (fig. 9). A very careful watch therefore needs to be kept to hold the belly of the sails in the same place as the wind rises, if the yacht is to remain in balance.

Figure 9



For a well-balanced helm, adjust the position of the belly of the sails.

Rule 5

The wind-strength is low at water level, and increases more and more with height. The apparent wind (that indicated by the burgee) thus varies from the foot of the sail to the head; it is stronger, and freer, as one moves up – what is known as the "wind gradient". This means that the angle of incidence and the belly of the sails is bound to vary as well, and the result is a "twisting" of the surface. This twist needs to be accurately matched to the wind gradient, and the relative incidence of the two sails kept the same from head to foot (fig. 10).

Figure 10



Match the twist in the sails to the wind gradient by keeping them parallel.

Trimming the sails to the point of sailing and wind-strength

Very light wind (under Force 1)

A light breeze can be deflected only very little without its flow becoming turbulent. On the wind and with a calm sea the belly of the sail therefore needs to be reduced, and placed towards the center of the sail so as to give the boat a little more weather helm. The yacht is easy to control, and one can steer in a very narrow "tramline" for optimum performance – the sails will be flat with a taut leech, and their angle of incidence will be as open as possible without any attempt to "pinch".

The boat is made to heel, again so that she will carry weather helm but also in order to reduce the wetter surface of the hull and help the sails take their shape by means of their own weight.

If there is a chop, give the sails a little belly and twist, and bear away so as to gain as much drive as possible; the important thing is to obtain maximum speed – the higher the speed, the better she will point.

Light to moderate wind (Force 1 - 3)

The deflection of the wind can be progressively more marked. The belly in the sail is increased to the maximum, and moved forward. The angle of incidence is reduced, but

twist is increased so as to widen the "tramline" and negotiate the waves. The crew moves up to windward to limit the heel.

Moderate to fresh wind (Force 3 - 5)

The yacht's stability will demand a gradual reduction in the lateral force; to do this, reduce the amount of belly while keeping it as far forward as possible so as to hold the boat balanced, and slacken off the sheets. The main will become flatter. In a gust, pressure on the sails can be lessened by putting the helm down.

Strong wind (Force 5)

With the sea generally getting up more and more, you can give drive while keeping a reasonable amount of belly in the sails by slackening off the sheets to the maximum and bearing away. Luff as you go over the crest of the waves, and bear away as the boat runs down the other side.

Means of trimming the sail

Foresail

There are three ways of trimming the foresail

- (a) the tension on the halyard, Cunningham and backstay. These make it possible to alter the position of the belly. The backstay also decides the tautness of the leech and the amount of twist on the sail.
- (b) the tension on the sheet, which governs the size of the belly and the tautness of the leech.
- (c) the position of the jib sheeting point; lengthwise, this decides the twist, and crosswise the angle of incidence.

Mainsail

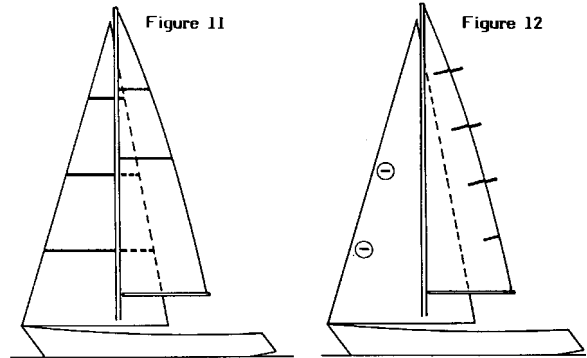
There are five means of trimming the main

- (a) the tension on the halyard and Cunningham adjustment, governing the placing of the belly fore-and-aft.
- (b) the tension on the outhaul tackle, which decides the vertical placing of the belly and reduces the amount of the belly when hauled tighter.
- (c) the bow of the mast, which reduces the belly and shifts it forward.
- (d) the tension of the downhaul and mainsheet. This governs the curve of the leech and the amount of twist in the sail.
- (e) the horse, which controls the sail's setting and angle of incidence.

Checking the sail trim

While it is important to know the various means of trimming the sails, it is just as useful to be able to check what effect these are having. There are two devices for doing so

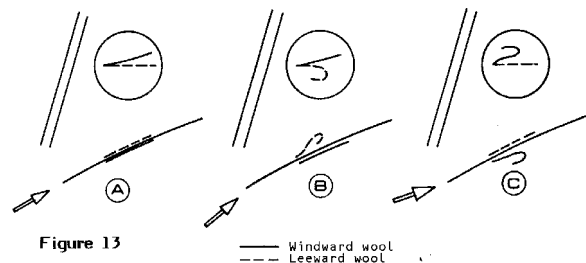
- (a) adhesive nylon stripes stuck on the sail, parallel with the waterline, half and three-quarters of the way up (see figure 11).
- (b) lengths of wool or ribbon attached close to the luff on each side of the foresail some 30 cm back from the luff wire – have at least two pairs, at one-quarter and halfway up the sail. Ribbons can also be fixed to the leech of the mainsail, close to the battens (see fig. 12).



The horizontal stripes are used to check the position and amount of the belly.

The lengths of wool on the foresail are used to watch the air-flow; when this is right, both of them are stretched out aft, with the one to windward tilted a little further up than the other (fig. 13A). If the angle of incidence of the wind is too great (sail sheeted in too hard or too flat along the luff, mainsheet traveler too far inboard for the heading, or boat sagging off to leeward), turbulence will form on the lee surface of the sail, and the bit of wool on that side will flap about and point forward (figure 13B).

If on the other hand there is too shallow an angle of incidence (sail with too much belly or not sheeted in enough, belly too far forward, or boat pointing too high), then the wool to windward will flap or point forwards, before the luff begins to quiver (fig. 13C).



The bits of wool on the leech of the main allow you to adjust its curve and twist.

When making adjustments to the sail trim, always keep the balance of the helm in mind.

As you shift away from the close-hauled position, the sheets are eased out, the center of effort of the jibs shifts forward, and the sail settings are slacked off to give the maximum amount of belly. The mainsail downhaul, on the other hand, is hardened to prevent too great a twist.

Table B summarizes these sail-trim settings for the various wind strengths and points of sailing.

Table B

Trimming the sails for various points of sailing and wind-strengths

	CLOSEHAULED			REACHING		RUNNING	
	F 0 to 1	F 1 to 3	over F 3	under F 3	over F 3		
Mainsail	Belly	medium	maximum	reduced	maximum	maximum	maximum
	Position of belly	centered	centered	forward	centered	centered	centered
	Bow in the mast	forced	none	natural or forced	none	none	none
	Halyard and/or Cunningham	av. hardened	eased	hardened	eased	eased	eased
	Clew outhaul	average	eased	hardened	eased	eased	eased
	Foot reef	reefed	free	reefed	free	free	free
	Leech line	slack	slack	slack	tight	tight	tight
	Mainsheet	eased	average	hardened	eased	eased	eased
	Mainsheet traveler	to windward	amidships	to leeward	to leeward	to leeward	to leeward
	Downhaul	eased	eased	hardened	hardened	hardened	hardened
Jib	Belly	medium	maximum	reduced	maximum	maximum	maximum
	Position of belly	centered	centered	forward	centered	centered	centered
	Luff	av. hardened	eased	hardened	eased	av. hardened	eased
	Sheet	eased	hardened	hardened	eased	eased	eased
	Spill	average	minimum	maximum	maximum	maximum	maximum
	Sheeting point	aft	mid	aft	forward	forward	forward

Note: when hard on the wind, the difference between "eased" and "hardened" for a halyard or the mainsail clew outhaul may be no more than a few centimeters, or even millimeters; the sail must show no vertical creases.

Leech line

This thin line buried in the leech rope of the sails is normally slackened off. It is hardened (slightly) only if the leech begins to flap or, when running, to give some belly to the main.

Reefing the foot

Some sails can be reefed along the foot. This is done to flatten the foot of the sail when it is no longer possible to do so by means of the tension of the foot-band alone.

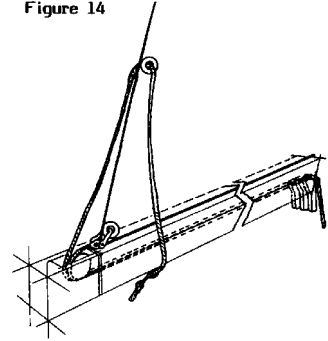
REEFING

In addition to the clew outhaul, the boom contains as many reefing pendants as there are stabs in the sail; the same number of eyes sliding along on a track are provided beneath the boom, and an equivalent number of jamming levers beneath the gooseneck.

Preparing to reef

As soon as the main has been hoisted, and each time after taking in a reef, make the next reefing pendant ready. Release the jamming lever, pull out the pendant, undo the figure-of-8 knot that was blocking it, pass it through the reef cringle in the sail and down on the other side, reeve it through the rearmost eye, and remake the figure-of-8 knot. Adjust the sliding eye so that it lines up with the reef cringle (see fig. 14).

Figure 14



Taking in a reef

- (1) Bring the boat head to wind.
- (2) Take up the topping lift.
- (3) Slacken off the main halyard until the reef cringle at the luff can be slipped over the reefing hook on the mast (figure 15). A mark on the halyard will make it easy to find how far to slacken it off. Then swig up the halyard.
- (4) Slacken off the mainsheet a little, and if necessary the downhaul as well. Haul on the reefing pendant using the winch on the aft face of the mast, below the gooseneck (figure 16A), and lock it with the jamming lever (figure 16B).
- (5) Tie up the reef points, making sure to place the bottom batten flat along the boom, and make the next reef pendant ready.
- (6) Slacken off the topping-lift, and harden the mainsheet and downhaul.

Figure 15

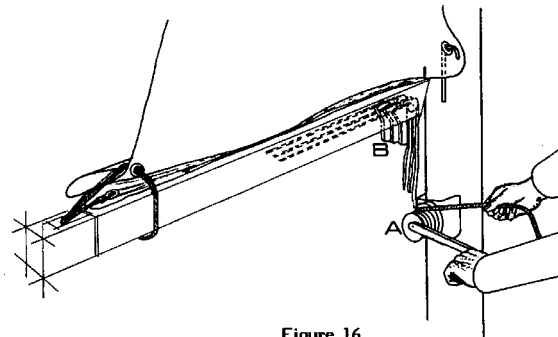
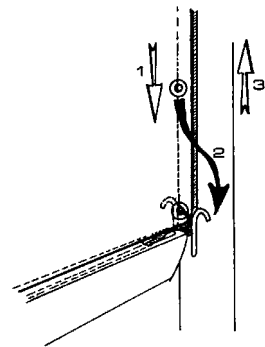


Figure 16

After the reef has been taken in, the sail should be perfectly flat.

CHAPTER 8 - BOATHANDLING IN HARBOR

For some of you the **Bénéteau** you have just bought may be your first boat, and you may not be all that used to handling a yacht. For others, moving to a bigger or different boat may provide the occasion to swot up on a few things that, just because they are so elementary, tend to get buried deep down in your memory.

A course at a sailing or cruising school, learning "on the job" by crewing on other people's yacht, and reading textbooks on the subject are the best ways of learning how to handle a yacht. Nonetheless, we felt it might be useful to run through a few simple examples of the maneuvers you find in the manuals of seamanship.

Obviously these are basic procedures, which need to be adapted to suit each individual case – to the characteristics of the boat and harbor, to the wind and sea conditions (currents, tides and so on), and to the level of experience of the skipper and crew. The current and wind, for instance, can call for speeds and paths of approach very different from what these would be without them.

Before carrying out any maneuver, the skipper must consider all the factors involved; on the basis of these he will work out a plan the various stages of the operation. He will have to give clear, precise commands, remembering always that he carries the entire responsibility for the action he is embarking on.

Planning, calmness and precision are the essentials for successful boat handling.

One or two general **precautions** taken well before entering port will help things go smoothly

- (a) have your mooring-lines clear to throw, and ready at each position
- (b) fenders should be placed ready, and made fast
- (c) only the crewmembers actually involved in the operation should be on deck, and they must take care not to obstruct the helmsman's view
- (d) remember that the boathook is used to hold your boat steady in a given position – **never** to haul it off another craft (and especially not by pushing against her lifelines or stanchions).
- (e) always be in control of your speed, and of the operation.

Most modern harbors and marinas oblige you to run on the engine. This makes it essential (however skilled you may be at maneuvering under sail) to know the special tricks of moving on an engine, and the precautions that need to be taken.

It would, anyway, prove very instructive, on a calm day and in open water and if possible close to a buoy, to try out maneuvers of all kinds so as to get to know how your boat reacts going ahead and astern, on one tack or the other, and when moving off or coming to stop.

As a boat moves off, the direction in which the propeller rotates has a "kick" effect, turning the craft to port if the prop is right-handed, and vice-versa. So the first thing to do is to make sure you know which way it rotates.

With a right-handed prop, you will go about to port on a much tighter radius than to starboard. It is important to know this, so as to know how much space you need to maneuver, and it may dictate which way you choose to go about.

You will experience the same kick effect when going astern.

Finally, a rudder blade located aft of the prop may, even when at a standstill, give sideways thrust; and remember that a hull pivots around a point roughly one-third back from the bow.

These characteristics will govern the maneuvers to be carried out. In what follows, we assume a right-handed prop – reverse the helm positions if your prop is left-handed.

LEAVING A BERTH

On a catwalk or between other boats:

Stern-to (fig. 17)

- (a) give a little port helm, engine slow ahead; fender out on the starboard quarter.
- (b) as soon as the stern is clear, helm hard right and a burst of throttle to line up the boat.

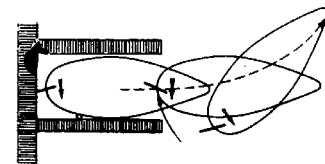


Figure 17

Bow-to (fig. 18)

- (a) helm slightly to port, engine slow astern, fenders out on the starboard quarter and port bow.
- (b) gradually bring the helm to starboard, keeping the bows rolling against the starboard fender.
- (c) as soon as the boat is lined up, put the helm back to port and accelerate ahead.

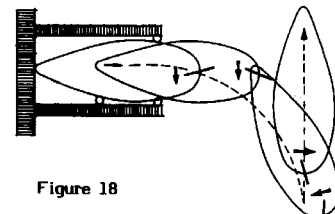
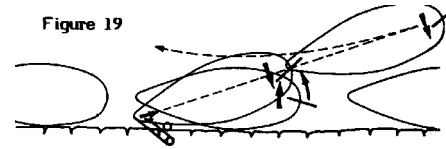


Figure 18

Alongside a quay (figure 19):

- (a) put out a fender at the bows, and a bow mooring line ready to slip. Helm to starboard, and a blip of throttle ahead.
- (b) once the stern has swung sufficiently clear, slip the mooring, reverse the helm and go astern.
- (c) when the boat is in the center of the channel, leave with engine ahead.



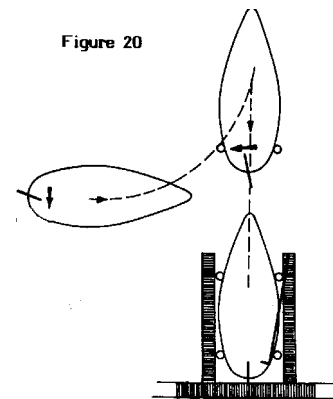
This maneuver is the same even if the wind is onto the quay, or if there is a current.

ENTERING A BERTH

On a catwalk or between other boats:

Stern-to (fig. 20)

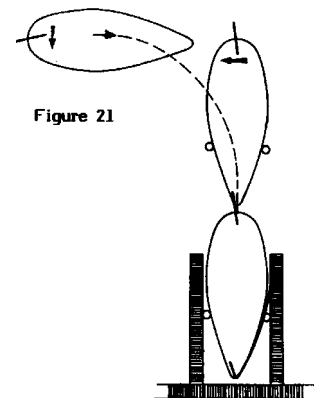
- (a) with engine ahead, turn level with the catwalk and come to a stop lined-up by giving a burst of throttle astern.
- (b) enter the berth dead slow astern, with a touch of starboard helm. Put out fenders at the stern on both sides.
- (c) immediately put out a spring, to prevent the boat from hitting up against the pontoon.
- (d) stop by giving a burst of throttle ahead.



Take care when there is a crosswind or -current, and allow for drift. Have a line ready at the bows to pass to the up-wind or up-current tip of the catway, so that the boat is not set askew.

Bow-to (fig. 21)

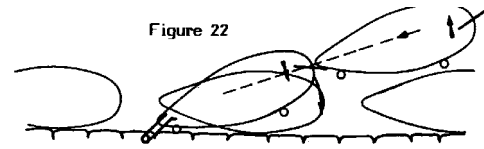
- (a) turn before reaching the berth, because your way will carry the boat further than you expect.
- (b) line the boat up, taking account of wind and current.
- (c) have fenders ready, and go in gently with a touch of port helm.
- (d) come to a stop with a burst of throttle astern.



Alongside the quay (figure 22):

Whenever possible, try to come alongside with the quay to port if the prop is right-handed, and vice versa.

- (a) approach with engine slow ahead, and a little port helm. Put out one or two fenders, and have one of the crew ready to jump ashore at the bows with a mooring line.



- (b) at a distance governed by the boat's way and weight, put the helm hard to starboard and give a burst of throttle astern; the combined effect of pressure on the rudder and the kick from the prop will bring the stern up to the quay.

The mooring line at the bow will prevent the boat from falling back too far. If the movement is not complete, finish with little blips of throttle – ahead with helm to port, astern with helm to starboard.

CHAPTER 9 - MAKING FAST

THE ROPE YOU WILL NEED

For mooring purposes a boat needs a number of lines and warps of varying lengths and diameters, and types of materials, to suit the job they have to do and where they have to do it (the bottom, currents, tidal range, prevailing winds and so on). It is always wise to take advice on this from your agent, who will know the particular needs of his area.

The table below shows, as an example what might be considered the minimum equipment for a cruising boat of 8 - 10m, in waters with an average tidal range and modern harbors. The length is given as a multiple of that of the hull (L), and the strength (and hence the rope's diameter) as a multiple of the craft's displacement (D).

Table C

Qty	Description	Material	Length	Ø
1	Light line	Plaited polyester or polypropylene	4 L	0.25 D
1	Towing warp	Laid polyamide	3-4 L	0.5 D
1	Heavy warp	Laid polyamide	1.5 L	0.5 D
1	Heavy warp	Plaited polyester or polypropylene	1.5 L	0.5 D
1	Medium warp	Plaited polyamide	1 L	0.4 D

To these might be added a heaving rope for passing a mooring line ashore, and various lengths of rope for general purposes.

You will also need six or eight cylindrical fenders of appropriate length and diameter, with attachment eye at one or both ends.

A cheap accessory that sometimes proves very useful is a piece of pine planking of suitable length and about 25cm wide, with a hole drilled in it at each end; this will protect the fenders against a quay wall that is dirty or rough or fitted with wooden piling.

MOORING METHODS

On a catwalk mooring is very simple - a mooring line is put out to each side at bow and stern, and after springs to prevent the stern from bumping against the pontoon (fig. 23).

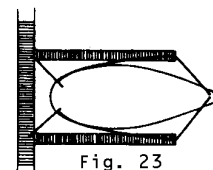
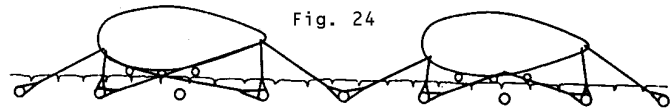


Fig. 23

Alongside a quay (fig. 24), put out head and stern ropes, and head and after springs. The length of these lines and distances between where they are made fast will depend on the height of the quay, and the rise-and-fall of the tide if you are not in a wet basin. If the boat will have to dry out at low tide, put a double line round the mast to avoid any risk of her falling over. If you do this, keep a watch throughout at

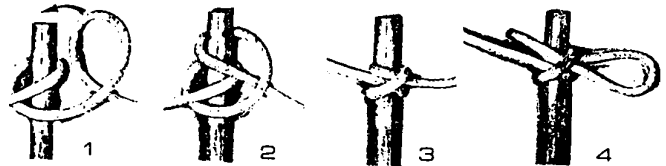
least the first tide, so as to tend the lines and check that the line round the mast is slipping up and down it safely. Be careful that the shrouds do not chafe against the quayside, causing the beginnings of a break.



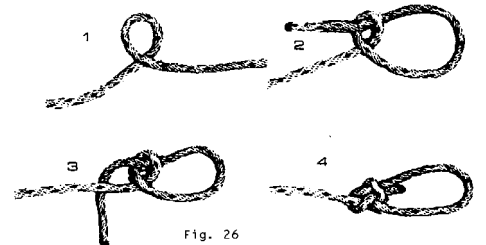
KNOTS

The two knots that are most commonly used, and that you must be able to make blindfold without hesitation, are:

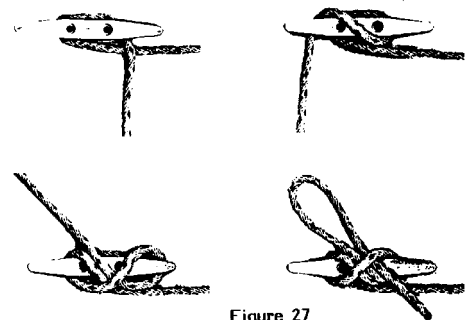
(a) the clove hitch, for fastening a rope to a bollard or post (fig. 25), and



(b) the bowline, for making a loop at the end of a rope (fig. 26).



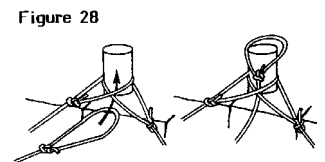
You also need to know the right way of making a line fast to a cleat (shown in fig. 27).



A FEW TIPS

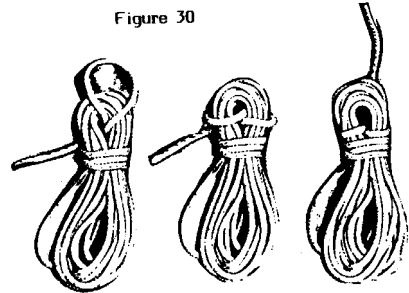
If there are several loops already round a bollard, pass yours through from underneath (see fig. 28); this way, you will be able to remove it later without having to unfasten the others.

When looping a line through a ring ready to slip, put it through from above and pull it free from beneath; there is then no risk of it jamming as you slip it.



If you are going to be tied up alongside a quay for any length of time, use a loop of chain at the bollard end, to prevent the rope from chafing against the quayside.

When mooring lines are not in use they must be coiled down carefully so as to be immediately ready. The method shown in fig. 30 is the simplest way of hanging a coil up or storing it in a locker.



Once mooring has been completed, check to see that all is in order, that the mooring ropes are clear and correctly turned round their cleats, and that they are protected wherever they might chafe (at fairleads, over the edge of the quayside, etc.). For this, always have on hand a few lengths of garden hose split lengthwise and fitted with a short length of cord at each end; these can be slipped round a rope and fastened at each points of wear.

Anchor the boom and helm with a length of shock-cord so that they do not swing from side to side and cause unnecessary wear on the joints; pull all the sheets up tight.

Remember that you will seldom be the only boat alongside the quay – you will have to moor outside craft or others will come up alongside you. Always have your fenders ready to receive them, and help them make fast.

If the berth is not a quiet one and the boats are rolling about, it may be wise to moor head-to-tail, so that there is no risk of the masts striking each other.

And finally, keep in mind that there is nothing more wearing on the nerves than the sound of halyards slapping against a mast in the wind – hold them away from it with a short length of shock-cord fixed halfway up the shrouds.

CHAPTER 10 - SHORING UP THE BOAT

Note: This section applies only to boats with centerboard, short ballast keel or deep keel.

Along the Channel and Atlantic coasts there are numerous anchorages and harbors – often among the prettiest – where there is no wet basin and where the boats take the ground at each low tide.

Though some centerboard fisher-sailors, and motorboats, can take the ground without any need for legs, they will – unless the bottom is soft mud – do so keeled over at an angle that does not make for comfort or a normal life on board.

It is besides very risky to let one particular part of the boat – the skin of the hull – settle on a bottom you nothing about, because unlike the keel it is not designed of the job.

So whenever you expect to take the ground, or when you do not know whether you might, the boat needs shoring up with legs. **This operation calls for a number of precautions if it is to be done safely**, and the following general advice will help you.

Let us suppose that the place you have chosen is known, from your charts and sailing instructions, to be likely to dry out, and that you have taken due heed of all the factors that need considering such as wind strength and direction, tidal range, the kind of bottom and so on. Even so, once the boat is anchored or moored at the chosen spot you still need to check what the bottom is like where she is going to settle. In clear water, a skin-diver's mask will let you inspect the bottom for rocks or the anchors of neighboring craft. But you still need to take sounding by hand to check the depth and, especially, the slope of the bottom; this is particularly necessary if murky water prevents you from making a visual inspection.

A boathook can be used for a last-minute exploration just before the boat takes the ground.

With a sloping bottom, and providing nothing else prevents it, point the bow towards the higher ground.

As soon as anchoring is over, make the legs ready by fixing to them the arms that will keep them vertical.

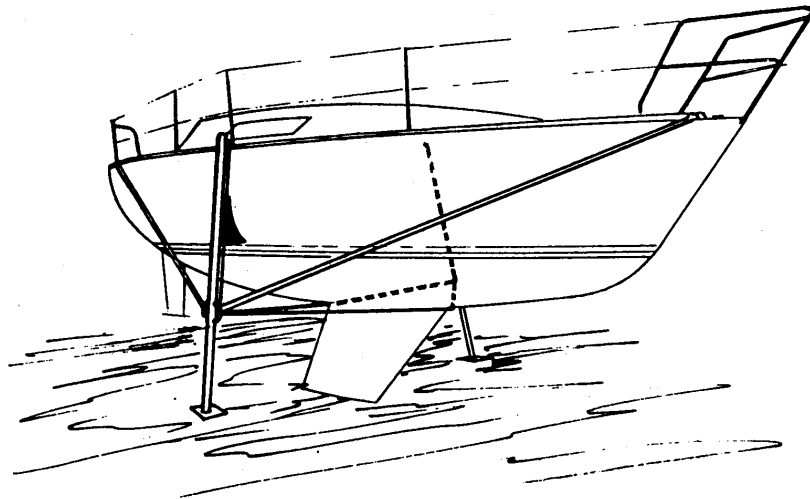
The leg is then attached at its head, and adjusted vertically by means of the arms, which are passed through the bow and stern fairleads and made fast to the appropriate cleats. These arms, preferably made of polyester, must be lashed tight to prevent them from shifting. The first time they are used, mark their position in the fairleads with an indelible felt pen or piece of sticky tape, so that the right position can be found at once on future occasions.

As the angle of inward pull of the arm is always fairly shallow, the sideways positioning of the legs will not yet be completely firm, especially if there is a cross current or on uneven ground. If this is the case, you can attach a length of rope to the fixing eyes of the arms, and pass it round the hull. There will have to be two such ropes on certain models of boat where the fixing plates for the top of the legs are in line with the ballast keel; one of the ropes will be passed round the hull ahead of the keel and the other behind it, taking good care to tension the two so that the leg remains verticals.

One of the crew should, of course, stay on board to keep an eye on things when the boat is taking the ground and lifting off again.

Remember, too, that for the safety of the boat and her crew a proper balance must be ensured throughout, by keeping the weight on board well centered, and by not letting any member of the crew move towards the bow or stern.

This last recommendation is especially important when the boat is small or light, or if she has a short keel.



CHAPTER 11 - MAINTENANCE

Your boat represents a sizeable capital investment that, because of the harsh environment it lives in, needs special and regular care. Apart from this, a fair number of the accidents that occur are due to negligence and poor maintenance. These two reasons - safeguarding your investment and looking after your own safety – should persuade you of the importance of careful and regular upkeep of your boat. The hints given below, and writing up the section for **Personal Notes** (at the back of this handbook), will help you.

THE HULL

The hull, in glass-reinforced plastic, is made from high-quality products; but it would be wrong to suggest that it will keep its original state if it does not get a certain amount of care and attention.

The gel-coat is vulnerable to any dents and scratches it may get during maneuvering in harbor and on a mooring. The best way to avoid them is to do your maneuvering calmly, after thinking out all the relevant factors (such as speed, current, wind, and the layout of the harbor). Always have one of the crew ready to put out a fender at the right place. When bringing in the anchor chain, back off or swing the boat round so as not to rub the chain against the hull. Hold the anchor well clear as you bring it aboard so that it does not scrape the stem; lay it on deck and lash it down at once, even if only temporarily.

Never use dirty fenders; some people put a piece of cloth between them and the hull.

Even so, you will need to hose off the hull and deck as often as possible, with fresh water and a liquid detergent (e.g. Teepol). Before hosing down, remember to check that the hatch covers are not in the ventilating position; and it is wise not to take on diesel oil or fresh water supplies while you are cleaning off the hull. After a few years, the gel-coat, may be repolished, either with a lambswool buffer and polish, or by hand using a polish or similar product. Your yard will also be able to supply you with special cleaning products for getting rid of stubborn stains.

To fill in a scratch or small dent, obtain some gel-coat, with its catalyzer and instructions for use, from your agent. Clean the affected area and rub it down with wet-and-dry emery paper, and then dry it off thoroughly (use a hair-dryer if necessary). Mix up the components of the gel-coat, and fill the dent using a spatula so as to avoid any excess; cover with a sheet of cellophane, rub down with very fine wet-and-dry emery paper (grade 600 or 800), and finish off by polishing the new surface.

Stains from fuel oil can be cleaned off using products you can buy at a filling station.

The boat's bottom is covered with a protective paint that offers very little grip to marine vegetation. Clean and degrease it well before applying a coat antifouling. Take care not

to paint the zinc anodes or the heads of electronic instruments, nor to block the water intake strainers (especially not those for the engine cooling system).

THE DECK AND DECK FITTINGS

Using a gentle liquid detergent, scrub all antislip areas frequently to keep them free of caked-on dirt. Light-alloy sections (tracks, etc) can be cleaned in the same manner.

The tiny spots of oxidation pitting that may appear on stainless steel parts are nothing to worry about – simple polishing will remove them.

From time to time, lubricate pulley-blocks and sheaves, bottlescrews, tracks and travelers with light grease or a water-repellant lubricant such as WD 40.

After a certain time at sea, your winches will get stiffer and stiffer to turn as they clog up with salt and dust, and will need cleaning inside. They must be cleaned out completely once a year.

When dismantling deck fittings, have a bowl close to hand for putting the parts in, and circle the area with a rolled dishcloth or the like so that any screws or springs you drop do not roll overboard. Use the lubricant recommended by the manufacturer before reassembling. **Be careful – wrong reassembly can cause accidents** (from crank handles that fly back, for instance), so it is wise to note down the order in which parts are dismantled; this will make it easier to put them together again later.

Acrylic plastic hatch-covers and portholes should be rinsed off with fresh water and rubbed over with a soft cloth soaked in liquid paraffin.

External woodwork is in teak and thus needs no protection; a rub down with fine sandpaper is all that is required, and day-to-day upkeep consists of scrubbing with seawater. Your concessionaire can always supply you with special cleaning product if necessary.

THE RUDDER

Once a year, check the whole of the steering gear. If necessary renew any parts (bushes, glands, etc.) that are worn or look at all doubtful.

Never lubricate nylon, ertalon or teflon bushes that may be stiff with either oil or grease – use only WD 40.

BELOW DECKS

Start by hunting breadcrumbs, the most disagreeable form of parasite you can have on a boat. Then get a rid of damp as much as possible, by bringing the mattresses, sleeping-bags and so on abovedecks to air whenever the weather permits.

Oil (like any other fatty or oily substance) must be stored very carefully, preferably away from the living quarters; any accidental leak is likely to turn the cabin into a dangerous skating-rink.

The internal woodwork used in most of our boats is varnished. This should be regularly rinsed off with fresh water with a little liquid detergent, and then polished with a chamois leather.

If you have an accident, rub the damaged woodwork down with very fine sandpaper and touch it in with several coats of the varnish your agent recommends. When this is quite dry, rub it down with a very fine wet-and-dry emery paper (grade 800 or 1000) and finish off with polish (or a silicone spray) or wax (Johnson Special Teak).

ELECTRICAL SYSTEMS

The first essential for an electrical system to function well is a battery in sound condition – i.e. clean, with well-greased terminal posts, with electrolyte that has its level regularly topped up and its density checked, and kept fully charged.

If you have to leave your boat unused for more than a month, it is best to leave your batteries with your yard so that they can be kept charged. Keep a charger suitable for your batteries on board, so you can recharge them when alongside a quay without having to turn the engine.

If you have an inboard engine, check the condition and tension of the alternator drive belt. From time to time, spray a little WD 40 or something similar on all the connections to the control panel, terminal boxes and lamp sockets. Make sure that cable grommets are watertight smear them with Vaseline so that they do not dry out and perish too quickly.

WATER SYSTEM

Check all joints regularly for leaks ¹. Keep the tank(s) topped up. If, however, you have to leave the boat untended for several months, disconnect the water lines, purge them, and rinse them through with vinegar water so that they do not form foul-smelling deposits.

Look at the through-hull ports regularly - check the cocks, fixings, water-tightness, connectors and jubilee clips, and make sure the cocks can turn freely.

¹ **Important:** If an electric pump carries on running when all the taps are closed, switch off the power supply at once and check the water system to find and overcome the leak that is causing this.

THE ENGINE

We have already stressed the points that are important of an engine is to keep working properly. It might be added that the engine compartment must be kept scrupulously clean; watch out for any unusual oil or fuel leaks. Inspect all the electrical connections frequently.

Empty the bowl of the oil filter at regular intervals, and to prevent as far as possible any water forming in the tanks due to condensation, keep these topped-up.

If you have teak decking, diesel oil stains are hardly a pretty sight; to avoid them, swill a bucket of water over the deck before opening the filler orifice -the diesel oil will float on this and not penetrate into the wood, and it can be sluiced away with another bucket of water after replacing the deck plug.

Always have a spare set of sacrificial anodes on board, and watch those that are already fitted for deterioration; they should be replaced when their size has been reduced by half. The time this takes will vary with the waters the boat lives in, and depends on the water temperature and salinity, the presence of neighboring boats, and the nature of the bottom and the materials in the quayside.

THE SAILS

The sails need constant attention, as the slightest wear in the stitching or at a reinforced part can very quickly have dramatic consequences. Keep a small sailmaker's kit to hand, and a book showing how to carry out minor work yourself until you can get the job done by a professional sailmaker.

Keep a special eye on points where the sails can chafe on the rigging or fittings – bottlescrews, safety lines, shrouds, crosstrees and so on.

Sails dislike salt water and sunshine, so as soon as you get into harbor unbend all the sails – after all, it does not take all that long to bend on a mainsail again, and a bare boom always looks much smarter than one with untidy bundle of canvas lashed along it.

If, however, you are planning to stay in only couple of hours, furl the main properly after slackening off the clew outhaul. Fold the sail down evenly onto the top of the boom (the folds generally correspond to the seams in the sail) with shock-cord or rope tiers. Unshackle the halyard, bend it to the gooseneck and haul it taut.

Before taking down a mainsail, always remember to take up the topping-lift so as to avoid any abnormal strains on the lower part of the sail from the weight of the boom, and to prevent the boom from falling down onto the deck. And mind your head!

So far as possible, always fold a sail after unbending it. If there is no space to do this, or if the sail is damp, leave it in a very loose bundle in the boat or on the ground until it can

be spread out to be rinsed off, dried and folded. Whenever you get a chance, rinse the sails in fresh water and leave them to dry stretched out – preferably on a lawn. Never dry a sail by hoisting it and letting it flog in the wind

MAST, BOOM AND RIGGING

These need constant care and attention, because the yacht's safety depends very largely on their being in sound condition.

Before every major cruise, or at regular intervals, make a thorough general inspection of the mast from top to bottom². This should include in particular

- (a) a test of navigation lights
- (b) adjustment of the anemometer spinner
- (c) lubrication of the masthead sheaves
- (d) a check on the halyards for wear
- (e) a check on the shroud attachments
- (f) a check on the condition of the electric cables and their connections (if any strands are broken, **renew cables**)
- (g) a check that the connectors at the top end of the shrouds are not jamming against the mast, and leave the shrouds enough clearance when the mast takes a bend
- (h) an inspection of each of the shrouds over its entire length; take the opportunity to wash them down with a sponge or cloth soaked in fresh water
- (i) a check on the attachment to the crosstrees to the mast; tighten up the bolts. Check that the shrouds are symmetrical at their top end; check the locking of their fasteners, and renew the protection for the sails.

At the foot of the mast, inspect all the fittings, lower sheave box, guide sheaves, winches and the gooseneck, and lubricate all joints. Check, inspect all the bottlescrews, seeing that the split-pins are in sound condition and properly spread; check the locknuts for tightness.

Check the swaging or whipping, and snap fasteners or shackles, on the halyards and sheets, and the amount of wear on ropes and pulleys. Some sheets can be shifted or

² **Most important:** when hoisting a member of the crew up to the masthead, **never use the snap fastener or shackle on the main halyard – make a bowline directly onto the bosun's chair, or join the halyard to the chair with a large shackle.**

end-to-ended to change the position of the wear ³. Where the halyard passes inside the mast, use whipping twine to sew a small eye onto the free end, so that you can attach a replacement halyard or a messenger (a light rope of 3mm diameter) to take its place when it will not be used for any length of time ropes do not take kindly to being left out in the sun.

To change a halyard running down the inside of a mast, or to use a messenger (which should be slightly longer than the mast, and have one end weighted with, for instance, a lead fisherman's weight) tilt the mast towards the halyard exit side, and gently feed the messenger in over the appropriate sheave at the top of the mast. If it jams inside the mast, lift it and drop it again until it falls freely.

At the foot of the mast, another member of the crew can watch for the messenger to pass the lower sheave box, and hook it out with a piece of bent wire. All have to do then is to whip the end of the messenger to the new halyard, and pull this through.

³ **Very important:** any rope forming part of a tackle (downhaul, mainsheet, etc.) **must not be used for any other purpose;** and take care to keep to the same number of parts as originally intended (e.g. never use rope meant for a 4-part tackle to make a 2-part tackle).

CHAPTER 12 - LAYING UP FOR THE WINTER

Only you will know the particular features of your boat and her gear. If you want fitting-out at the start of the next season to go smoothly, in good order and in a good temper, now is the time – when laying up – to do things methodically.

Your concessionaire's or agent's job is to answer your technical questions; don't give him all the jobs to do. As some of these will depend on your own knowledge and your own habits (and indeed even on your own sailing plans), it is up to you always to play an active part in the laying-up operations if you do not want the new season to start in chaos.

BOAT'S EQUIPEMENT

Take ashore everything you can, and protect everything you can that can't be removed.

Take ashore

- (a) the boat's papers and other documents
- (b) charts, books, sailing instructions and all navigating instruments
- (c) mattresses and all sleeping gear, which should be immediately cleaned and dried;
- (d) sails and all ropework not needed for mooring afloat
- (e) fresh and canned provisions (now is the time to make a list)
- (f) galley equipment, crockery and tableware
- (g) the gas bottle(s)
- (h) safety gear: lifejackets, harnesses, flares, etc. – check their expiry dates, clean, and renew the markings
- (i) the emergency dinghy, which should be sent away **now** for its annual overhaul – next Easter will be too late
- (j) all the batteries from equipment that cannot be removed, and the battery for the lighting system which should be given to your yard so that it can be kept charged
- (k) tools, which should be cleaned and greased.

Protect

- (a) the echo-sounder and speedometer heads, and take all removable electronic gear ashore
- (b) all the electrical switches, which should be cleaned and sprayed with a protective coat of oil;
- (c) all the fresh water lines and pumps, which should be rinsed through with vinegar water and left disconnected. **Never use chlorine-based cleaning products;**
- (e) seacocks and pumps – now is the time, when laying-up, to dismantle and grease these. If you don't, you will find them jammed or stuck when you come to fit out next spring
- (f) don't forget to empty out the pump for the heads. Never use antifreeze, chlorine, descaler or other toxic products in the fresh water system – this could have very serious consequences, both mechanically and for your health.
- (g) the rudder blade, which should be fixed so that it does not move.

RIGGING

If the boat is unrigged for the winter, this gives you the chance to

- (1) remove all the standing rigging
- (2) check all pins and their attachments and range of movement, to detect any signs of incipient wear
- (3) check all electrical cables for broken strands – if you find any, order new replacement cable;
- (4) rinse all cables off in fresh water, scrub and wash them, label them and store them in a dry place
- (5) unreeve all running rigging, mousing thin lines down the mast as a replacement
- (6) rinse all ropes in fresh water, scrub them and inspect for points of wear (worn splices, whipping and so on should be renewed), wash, label and store in the dry
- (7) check the electrical circuits in the mast, and inspect grommets for wear; open up the navigation lights, rinse them out with fresh water, dry well and spray with a special protective oil

- (8) unship anemometers, spinners, antennas and other electronic gear; clean the connector plug, and enclose these in a small plastic bag stuffed with Vaseline
- (9) remove old protective strips of adhesive tape
- (10) hose all the spars down with fresh water and scrub them to remove all traces of salt, remove all sheaves, and clean and grease these before refitting them.

SAILS

There are two ways of coping with these – either you hand all of them over to a sailmaker, through your agent or direct, and ask him to do the lot, or you give yourself a little trouble to save money. In the latter case, take all the sails out of their bags and wash them. The ideal arrangement is to have a lawn or a piece of flat, clean ground on which you can spread them out, hose and scrub them with a soft brush using soap or a gentle detergent, and rinse them off with plenty of fresh water.

Rust spots can be removed with Rubigine or 5 % oxalic acid; put this on as little of the surface as possible, and **rinse off thoroughly**.

Traces of mineral grease (engine grease, tar or oil) can be diluted with animal grease (butter) and then cleaned with white spirit; they can never be completely got rid of. Plastic paint marks cannot be removed.

Leave the sail to dry, preferably spread out flat, or if this is impossible stretched by its hoist (which should not be tautened).

Before folding the sail up carefully, inspect the attachment cringles, edges, seams and batten pockets for any sign of wear, chafing or broken stitching that needs to be made good.

There are specialist books that will teach you how to do minor repair jobs, but if you lack the skill or courage to cope with these, indicate clearly what is needed on a sheet of paper you attach to the sail before sending it off to the sailmaker.

It is a good idea, when doing all these laying-up jobs, to make a list showing what has to be done and where the items are being stored; then, over the winter, you can more easily keep an eye on how the jobs are progressing.

During all these preparations for the winter, you will have noted down the large or small jobs you cannot deal with yourself. Make a full, accurate and detailed list; hand it to your agent, keeping a copy, and ask him to do the work over the slack months.

All these jobs may seem a bore at the end of the sailing season; for this very reason, never leave them till the last minute. If they are done in good time, this will save you a

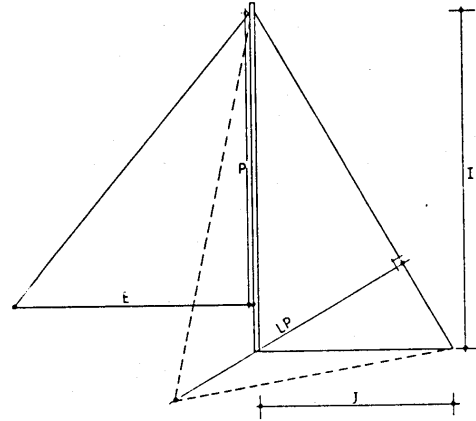
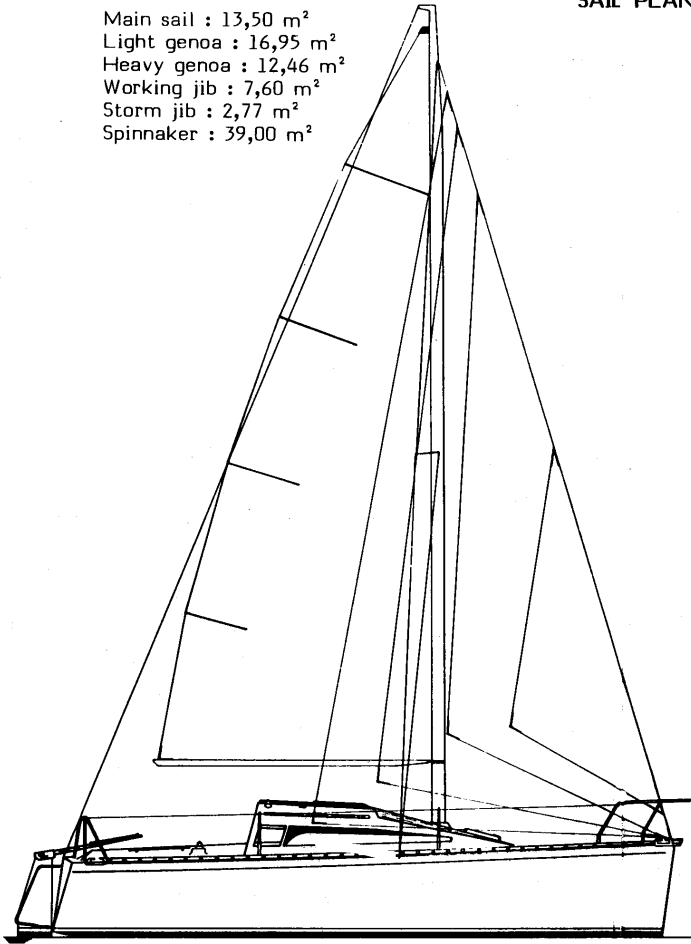
lot of seizing-up, corrosion and jamming when it comes to fitting out again that can cost you a great deal in harbor costs, replacement parts and lost time.

One hour's work when laying up saves two hours of work when fitting out, and three hours of frayed nerves!

CHAPTER 14 - DRAWINGS

Main sail : 13,50 m²
Light genoa : 16,95 m²
Heavy genoa : 12,46 m²
Working jib : 7,60 m²
Storm jib : 2,77 m²
Spinnaker : 39,00 m²

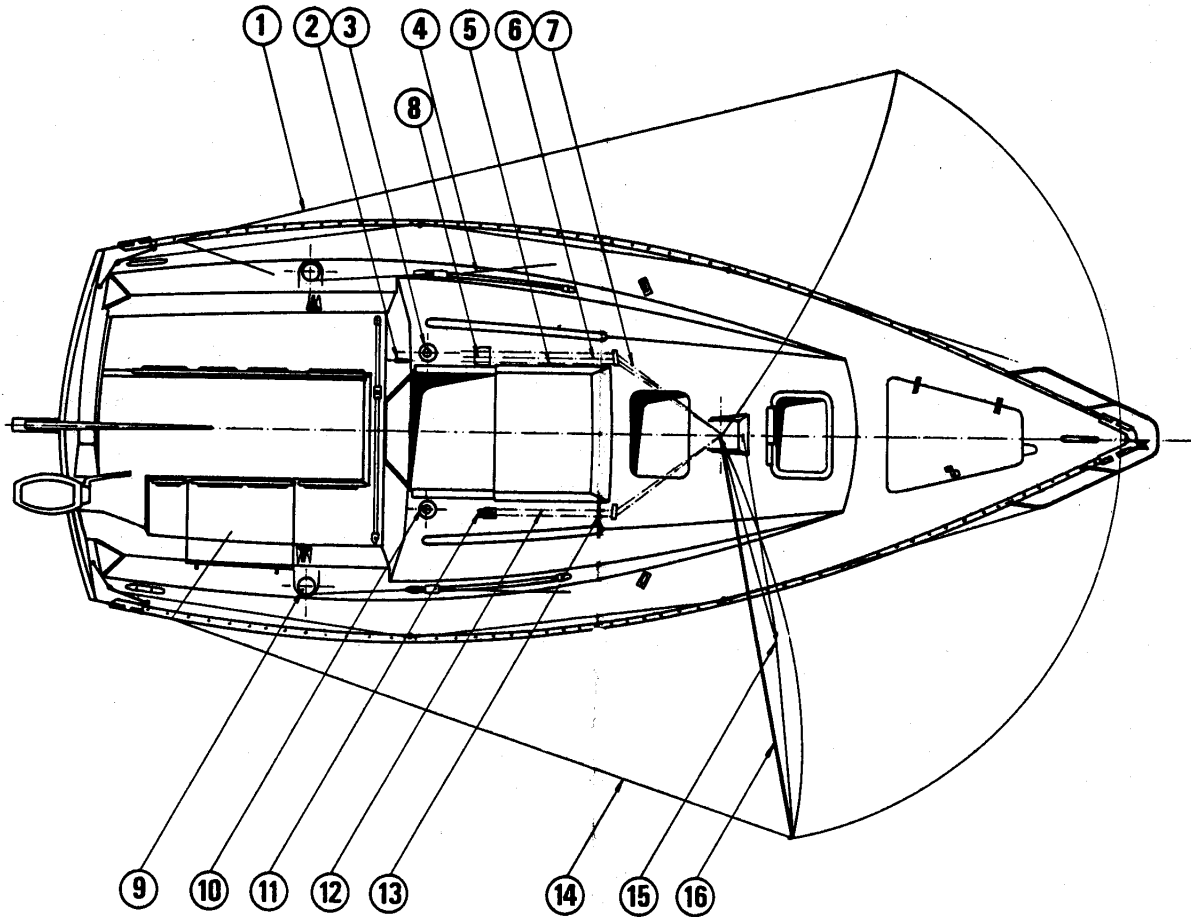
SAIL PLAN



E : 3 150 mm
P : 8 100 mm
I : 8 720 mm
J : 2 400 mm
LP : 3 800 mm
JC : 2 530 mm

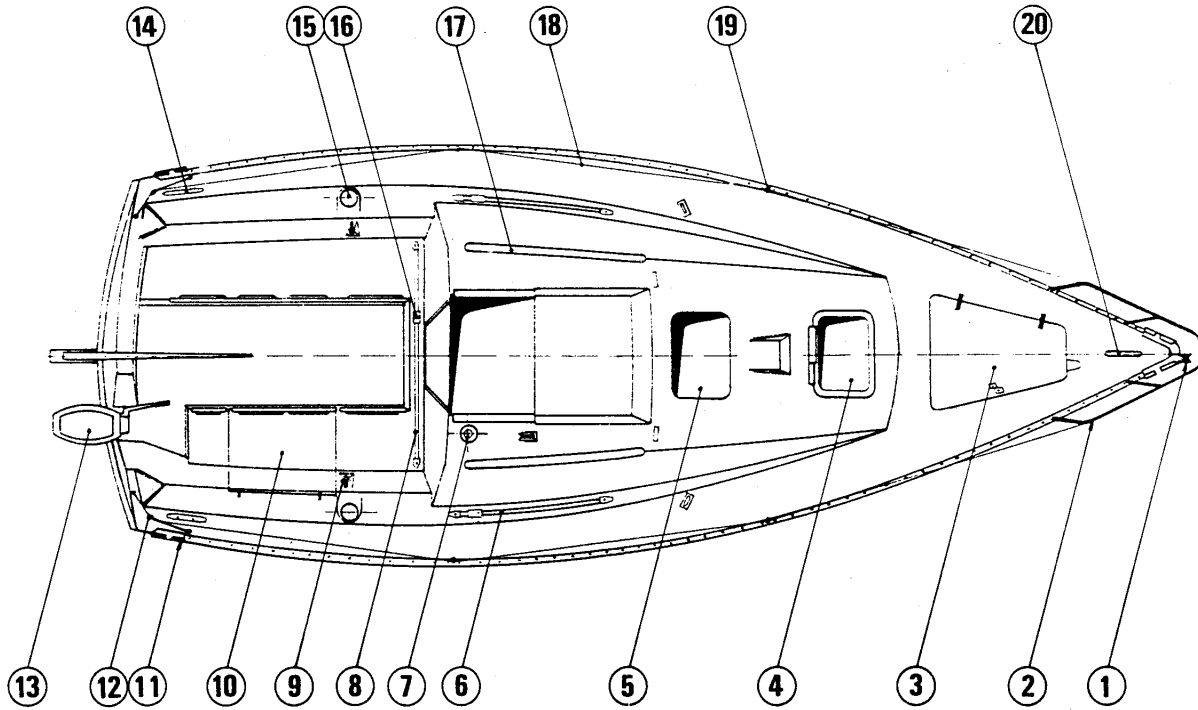
Forestay : Ø 4
Ageca

DECK FITTINGS LAYOUT



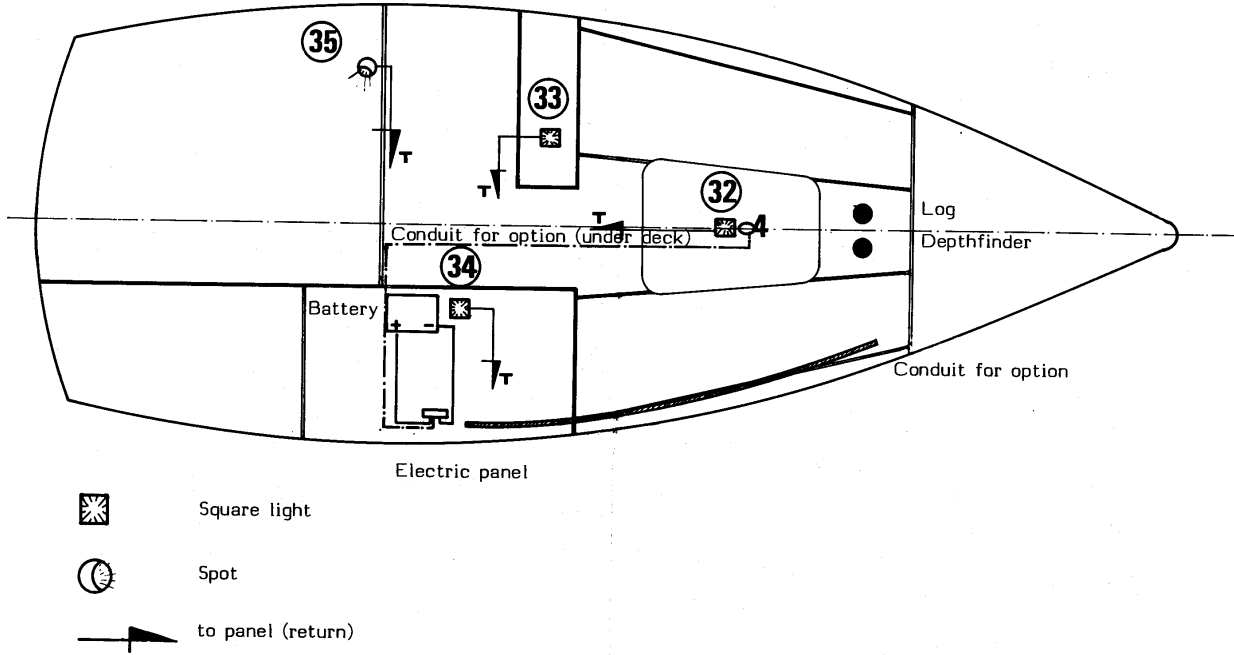
- | | |
|-----------------------------------|-------------------------------------|
| 1 - Spinnaker foreguy (opt.) | 9 - Genoa sheet winch |
| 2 - Deck stopper (opt.) | 10 - Main and genoa halyard winch |
| 3 - Maneuvering winch (opt.) | 11 - Triple vertical deck stopper |
| 4 - Genoa sheet | 12 - Genoa halyard |
| 5 - Spinnaker topping lift (opt.) | 13 - Mainsail halyard |
| 6 - Spinnaker halyard (opt.) | 14 - Spi sheet (opt.) |
| 7 - Spinnaker downhaul (opt.) | 15 - Spinnaker pole downhaul (opt.) |
| 8 - Horizontal double clamcleat | 16 - Spinnaker pole |

DECK LAYOUT

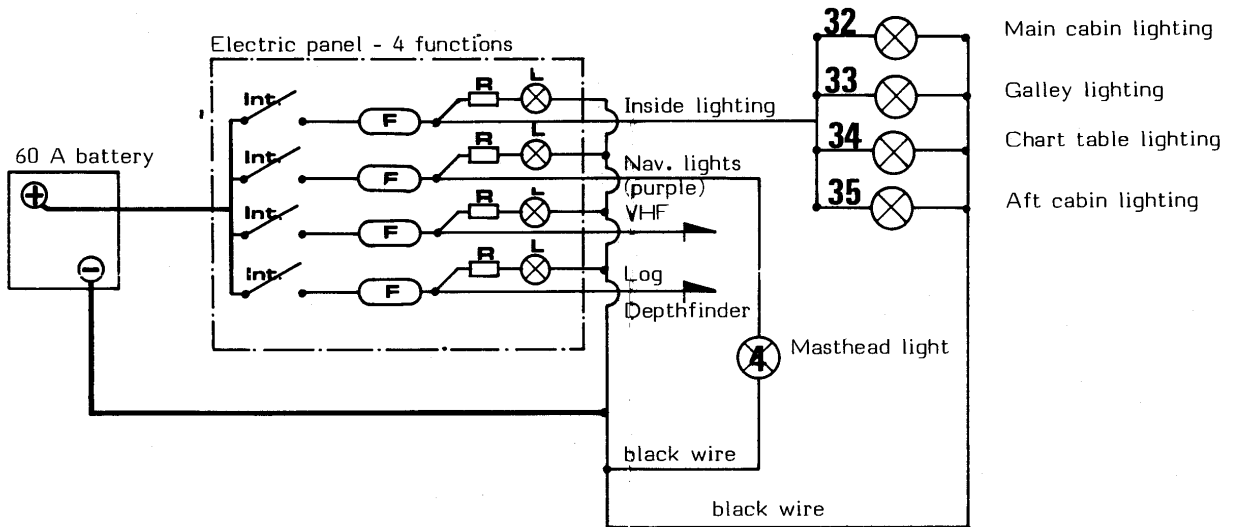


- | | |
|-------------------------|-------------------------------|
| 1 - Bow fitting | 11 - Fairlead with rollers |
| 2 - Bow pulpit | 12 - Stern pulpit |
| 3 - Chain locker | 13 - Outboard engine location |
| 4 - Deck opening hatch | 14 - Mooring cleat |
| 5 - Plexiglass | 15 - Genoa sheet winch |
| 6 - Genoa sheet track | 16 - Main traveler car |
| 7 - Genoa halyard winch | 17 - Handrail |
| 8 - Main traveller | 18 - Lifeline |
| 9 - Deck stopper | 19 - Stanchion |
| 10 - Sail locker | 20 - Mooring cleat |

INSIDE LIGHTING INSTALLATION



ELECTRIC INSTALLATION - PANEL - SHOREPOWER INSTALLATION



CHAPTER 15 - ADDITIONAL NOTES

TIPS FOR THE FIRST 235 OWNER

The First 235 has shown herself to be a successful club racer, and we have received many phone calls from owners inquiring about how to squeeze that extra bit of speed out of their boat.

We have listed a few tips that we have found to help the performance

MAST TUNING

- 1) Set the boat up at a dock.
- 2) Loosen all rigging and set boom on deck.
- 3) Lengthen forestay to achieve maximum rake. You can even lengthen it another 1.5" from maximum by way of a shackle or longer plate. You can disconnect baby stay during tuning.
- 4) Set up mast straight in boat (athwartships). To do this, use your main halyard and measure to each side of boat on toerails in area of chainplates. Preferably measure from the bow back to ensure identical position on each side.
- 5) Set up uppers so that they are extremely tight. By this, prebend should be forced into mast (approximately 4" looking up track) lowers should be completely slack during this period of tuning.
- 6) Take up the slack in lowers but do not make them bar tight. Pull up on the backstay hard and see that lowers start taking up load and limits the forward bend of the mast.
- 7) Release backstay and then decide whether you want to keep babystay rigged. If you remember to keep prebend in mast at all times, the babystay can be omitted. However, remember that failing this you could lose your mast, especially in heavy weather under spinnaker.

Why have we suggested this tuning?

In light airs, especially, we have found the boat lacks weather helm, and in the case of the fin keel, actually has slight lee helm. We have found owners to set the leech of the main to hard in order to create weather helm and this tends to stop the boat in her tracks.

GENOA LEAD POSITION

The long spreaders on the First 235 make sheeting positions extremely critical as a light genoa with a normal leech shape gets hooked up on the uppers very easily. We believe that a hollowed leech helps sail shape substantially. We also do not recommend going for a genoa larger than 150%.

In stronger winds do not hesitate to move your genoa lead further aft and sheet the genoa tight, as well as, tighter halyard tension so that the foot does not have too much fullness.

This has two effects:

- 1) it opens the crucial slot and reduces the backwinding on the main.
- 2) Flattens the genoa and moves the draft forward allowing for better pointing ability.

WEIGHT DISTRIBUTION

This is extremely important especially on the wing keel version. In light airs keep the boat floating on her lines and do not drag the transom. Therefore, you will normally have the helmsman in the cockpit, one crew member in the companionway, and the 3rd member to leeward on the sidedecks.

As the wind increases, slowly move your weight to weather and aft. In strong winds, keep everyone well aft and hiking to windward. You have to keep the rudder working.

BACKSTAY

The backstay is extremely Important and generally follow this:

Light airs No backstay tension
Medium airs Medium backstay tension
Heavy airs Hard backstay tension

Remember that in most conditions you should release the backstay when you go off wind, except in strong wind so that bend is kept in the mast. It is a good idea to mark your backstay so that you can revert back to similar settings easily.

The reasons for altering backstay tension has the following effects:

- 1) Light air: No backstay tension gives you fuller, more powerful sails.

- 2) Heavy air: Hard backstay tension tightens your forestay and moves the draft forward on the genoa. The mainsail is flattened out by the mast bending and opens the leech allowing the wind to spill out of the main easily.

PERSONAL NOTES

A series of 25 horizontal dotted lines for writing notes.