

WELCOME ABOARD !

CONTENTS

NOTE

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** concessionnaire or sales agent.

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YOUR BOAT'S I.D. CARD

OCEANIS 350

DESIGNER : Philippe BRIAND

MAIN SPECIFICATIONS :

Length overall	: 10,30 m	33' 9 1/2"
Length at waterline	: 9,13 m	30'
Max. beam	: 3,45 m	11' 4"
Standard draught (1)	: 1,56 m	
Standard air draught (1)	: 13,84 m	
Approx. weight	: 4 500 kg	
ballast	: 1 600 kg	
French Merch. Marine approval number	:	
Authorized number of persons on board	:	
Max. authorized engine power	:	
Gross tonnage (French tonneaux)	:	

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

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 concessionnaire, 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, an 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 propellor 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 (labelling 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 $1\frac{1}{2}$ 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 resteping 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.

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 or 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 never 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 litres 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

standard ou en option suivant les modèles) d'une unité réfrigérante. Il convient de toujours veiller à ce que le local du groupe réfrigérant soit parfaitement ventilé pour éviter toute détérioration irréversible. Repérez la zone d'implantation du groupe et assurez-vous que rien n'obstrue même partiellement les arrivées d'air de ventilation.

POMPE D'ASSECHEMENT

Une planche, en fin de manuel, vous permettra de situer et d'identifier les éléments du circuit d'assèchement. L'aspiration de la pompe manuelle se fait dans la cale et l'évacuation sur le flanc de la coque. Vérifiez régulièrement la parfaite propreté de la crépine et de la cale, n'y laissez pas stationner les miettes de pain que trouvent là leur abri privilégié. Vérifiez aussi l'état des tuyaux et colliers.

Sur les unités homologuées en troisième catégorie de navigation et au-delà, une seconde pompe électrique ou manuelle suivant le type de bateau, est installée.

Son implantation et son circuit vous sont présentés sur la plaque "circuit d'assèchement" en fin de manuel.

Si, sur votre bateau, cette seconde pompe est électrique, vous la commanderez depuis le tableau de bord et vous respecterez les mêmes précautions d'usage que celles indiquées pour la pompe manuelle. Veuillez en outre à nettoyer soigneusement et régulièrement le filtre situé entre la pompe et la crépine.

COCKPIT AUTO-VIDEUR

Vérifiez que rien n'obstrue les évacuations. En revanche, lorsque vous bricolez dans le cockpit, munissez-les de larges bouchons de liège pour éviter d'y voir partir vis et écrous.

GAZ

Les sections souples reliant la bouteille à une extrémité du circuit et le réchaud à l'autre doivent être changées chaque année ; n'utilisez que du tuyau spécial normalisé NF Gaz. Profitez-en pour graisser le robinet d'arrêt côté réchaud, et vérifiez avec de l'eau savonneuse ou un produit moussant spécial (quincailler) qu'il n'y a pas de fuite sur la canalisation fixe. Faites attention à ne pas abîmer le filetage de la bouteille sur laquelle se monte le détendeur. Utilisez un détendeur régulateur à déclencheur de sécurité ; si la pression chute en aval par suite d'une fuite, le système ferme automatiquement le départ du gaz. Ceci ne vous autorise cependant pas à maintenir ouverts le robinet d'arrêt côté réchaud et celui de la bouteille en dehors des périodes d'utilisation.

Pour les réchauds deux feux à bouteille incorporée, le changement de celle-ci doit toujours se faire sur le pont. Faites un essai avant de le redescendre dans la cuisine et vérifiez l'état des brasures des conduits et leur étanchéité. Faites bien attention à verrouiller les articulations des réchauds après leur remise en place.

En cas d'extinction accidentelle, créez un courant d'air pour évacuer les gaz résiduels.

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 12 V 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 1 cm 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.

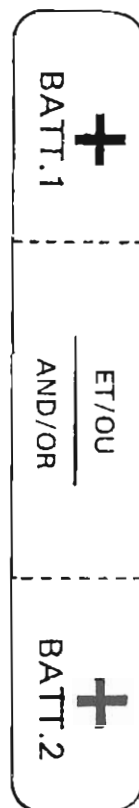
If the level is low, top the battery up with distilled water **and nothing else** (always have a bottle of it on board). The level of acidity (i.e. the relative density of the electrolyte) should also be checked from time to time.

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 coloured 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 11.5 V 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.

IMPORTANT : - ATTENDRE L'ARRET COMPLET DU MOTEUR AVANT DE COUPER LES BATTERIES.
- WAIT FOR ENGINE TO COME TO A FULL STOP BEFORE TURNING OFF.



Clef inexistante s'il n'y a qu'une seule batterie sur votre bateau.

No key is supplied if boat only equipped with 1 battery.

Il y a :

- (a) un robinet POSITIF (+) par batterie qui est en principe rouge,
- (b) un robinet NEGATIF (-) quel que soit le nombre de batteries installées.

Sur les bateaux équipés de plusieurs batteries, les circuits peuvent être sélectionnés séparément ou mis en fonction simultanément suivant les besoins en énergie du bord, ou leur besoin respectif de charge lorsque le moteur fonctionne.

On procédera comme suit (voir reproduction de l'étiquette présentant les robinets ci-contre) :

Utilisation du seul circuit n° 1 :

mettre le robinet du NEGATIF GENERAL (-) sur la position ON puis le robinet du POSITIF (+) : BAT 1 sur ON, le robinet BAT 2 restant sur la position OFF.

Utilisation du seul circuit n° 2 :

mettre le robinet du NEGATIF GENERAL (-) sur la position ON puis le robinet du POSITIF (+) : BAT 2 sur ON, le robinet BAT 1 reste sur la position OFF.

Utilisation simultanée des deux circuits :

mettre tous les robinets (NEGATIF GENERAL, BAT 1 et BAT 2) sur la position ON.

On réserve en général l'une des batteries pour le moteur uniquement (BAT 2) et l'autre pour les circuits du bord (BAT 1). On peut néanmoins inverser ce choix ou coupler les deux batteries en cas de forte demande

de courant qui ne doit toutefois pas être prolongée dans le souci de sauvegarder l'énergie suffisante au redémarrage du moteur.

Au départ du tableau électrique, chaque ligne est munie d'un fusible et d'un interrupteur. D'autres interrupteurs peuvent être placés sur les appareils alimentés par une même ligne (veilleuses de cabine par exemple).

Une ligne est montée en attente pour l'éclairage d'un compas de cloison bâbord. Un papillon collé sur le vaigrage indique sa sortie.

Ayez toujours à bord un jeu complet de fusibles et d'ampoule de rechange.

A boat engine is not like a car engine -- using it only once in a while, and the atmospheric conditions in which it spends its life, are forms of ill-treatment that make it essential to give special care and attention to how it is used and maintained.

COMMISSIONING THE ENGINE

This will be dealt with by your Bénéteau concessionaire or agent, but you need to know what is done when putting the boat in the water another time.

Filling the tank

The tank is filled for the first time with the cock closed, in order to calibrate the fuel gauge. During filling, put a funnel with a filter in the deck filler hole, and watch the fuel overflow outlet. **Useful tip :** to save staining a teak deck with diesel oil, swill it well with water beforehand - this will stop the oil from penetrating the wood. While filling, note how much fuel corresponds to the markings on the gauge (remembering that a small amount of fuel not consumed during the factory engine tests may remain in the tanks), like this :

Gauge markings : 1 2 3 4 5

Note : x x x x x

(corresponding number of litres)

Always sail with your tanks as full as possible -- both to avoid any contamination of the diesel oil with water (due to condensation on the tank), and to prevent the injector pump running dry and needing repriming.

Preparing the engine

The fuel now has to be brought up to the engine's injector pump. Following the manufacturer's

instructions, open all the purge points starting from the injector pump. Also open the oil-cleaning filter in the engine compartment. Finally, open the fuel cock and follow the fuel through all the purge points until the pump has been fully primed.

Before starting up the engine :

- (1) Open the coolant water valve(s).
- (2) Open the injector return cock if this is fitted.
- (3) Check the coolant level if the engine is fitted with a closed heat-exchanger cooling system.
- (4) Check the oil level in the sump and gearbox (this check should be repeated after a couple of hours running).
- (5) Check the tension of the alternator drive belt.
- (6) Move the lever to declutch the engine, and open the throttle a little (the mechanism will differ depending on the control box fitted).
- (7) Check that the "STOP" knob is fully home.
- (8) Operate the battery isolating switches to connect up the electrical power (see the reproduction of the label giving recommendations and illustrating the battery switch positions).
- (9) If necessary, ventilate the engine compartment for 5 minutes.

Starting the engine

Insert the ignition key and turn it to "ON" (and

then to the intermediate preheat position if your boat's engine has this system). A warning bell will sound as you start up - the engine marker's instructions explain the meaning of this bell and the check procedure to carry out.

- (a) Press the starter button or turn the key, as appropriate, and release the button or key as soon as the engine is running. Let the engine run for a moment, and then bring the throttle lever back to the tickover setting. After you engage the clutch, increase the engine speed only very gradually (it should take at least five minutes to reach cruising speed), because a diesel engine will warm up only when it is under load. The same procedure should be followed when charging up the batteries ; this must be done only with the propeller engaged -- i.e. under way, or tied up very securely somewhere where the wash from the propeller (and the engine noise) will not disturb other people.
- (b) Do not operate the starter for more than 10 seconds at a time. If the engine does not start, wait at least 30 seconds before trying again.
- (c) Check that the warning lamps for oil and coolant pressure have gone out, and that the batteries are charging properly (either by means of a warning lamp or on the ammeter).
- (d) Check that the coolant water is circulating correctly, either venting through the exhausts or passing through the heat-exchanger return circuit, depending on the cooling system fitted.

Important

- (1) Never operate the battery circuit switch or the ignition key when the engine is running. The

resulting cut-off current will ruin the alternator regulator.

- (2) Engage the clutch firmly but not harshly. Do not rev the engine hard. Never change suddenly from ahead to astern, or vice-versa.
- (3) Keep a regular watch to make sure that the coolant water is circulating properly.

Stopping the engine

- (a) **Leave the ignition key alone** to start with !
- (b) Once you have declutched, and if your engine is not fitted with a turbo-compressor, give a burst of throttle to drive the water out of the cooling system, if this vents through the exhaust.
- (c) Never stop a diesel suddenly. Reduce the revs gradually (over at least 15 minutes) depending on the model, before pulling out the STOP knob or pressing the equivalent button or turning the ignition key to the OFF position.
- (d) Do not remove the ignition key until the engine has come to a complete stop.
- (e) Turn the battery isolating switches to "OFF".
- (f) Close the fuel tank cock.
- (g) Close the cooling system valves.

Routine starting

Once you have opened the fuel cock, repeat all the steps described above under "Before starting up the engine".

Periodical checks

To ensure that your engine stays in top condition, you must carry out at intervals the inspections and checks set out in the engine manufacturer's servicing handbook, to which you should refer on any particular point. More generally, you should also :

Every five years :

clean out the fuel tank, to remove any sludge that may have collected.

Every two years :

check all the fuel feed and return lines, and the exhaust system. Tighten the jubilee clips, and replace any that are rusted or badly fitted. Watch for any signs of a leak.

Each year, when fitting out for the season :

- (1) check the stern tube bearing and/or propshaft pillow-block bearing for wear ; never hesitate to change any item that is doubtful.
- (2) check (on certain boats only - those with a rigid shaft line) the water circuit for cooling the stern tube bearing.
- (3) renew the packing in the stuffing-box or lubricate it, depending on the model.
- (4) renew the anode fixed to the prop or , close by, on the propshaft.
- (5) renew the anode on the engine cooling system (see the engine manufacturer's instructions).

(6) check the levels and state of the oil in the sump and gearbox (follow the manufacturer's recommendations).

(7) clean the cooling system pump, and check the impeller (replacing it if necessary).

(8) check the clutch, throttle and STOP cables (lubricating the cable nipples, clevis ends and joints).

(9) change the fuel filter and, if necessary, the air filter.

Each time you take the boat out :

- (a) cast an eye round the engine compartment to make sure there are no unusual leaks or traces of soot or burning.
- (b) check the oil levels (engine and gearbox) and the coolant level (if you have a closed, heat-exchanger cooling system).
- (c) make sure there is no water in the first-stage filter, emptying this out if necessary.
- (d) check the alternator and pump belts for tension and wear.
- (e) check the rate of weep from the stuffing-box. Running at cruising speed, a packing-type stuffing-box should lose one drop of water every 5 to 10 seconds in order to ensure proper cooling. It may be tightened up during long periods of non-use, but be quite sure to slacken it off again before starting up.

List of spares that MUST be carried on board

A set of tools for dismantling the engine.

A calibrated injector and injector tube fitted to its nozzle holder.

A filter cartridge for diesel fuel.

A few bolts of sizes appropriate to the engine.

A few flexible pipes, with jubilee clips.

Fuses for the electrical system.

Spare belts.

This is no more than an absolute minimum, which it would be wise to add to to suit your type of boat -- following your Bénéteau agent's advice -- so as to be able to cope with the most common problems that occur.

Main reasons why a diesel engine breaks down, and how to put it right

SYMPTOMS	REASON	REMEDY
The starter motor does not move, or cannot turn the engine.	Battery flat, poor connexion, or terminals oxidized.	Recharge battery, and check the connexions.
	Bad contact at starter relay.	Clean contacts, or shunt with a thick cable. Watch out for sparks !
	Pinion seized.	Unstick, and lubricate.
Engine will not start.	Fuel tank empty, or cock closed.	Check gauge and open cock.
	STOP knob pulled out.	Push STOP knob home.
	Injector pump not primed.	Reprime pump (see service manual or agent).
	No feed pressure.	Check by working hand feed pump lever (see instructions).
	Injector pump defective, injector defective or badly calibrated.	Consult agent.
	Preheater system not operating.	Consult agent.
Lack of compression.	Filters blocked.	Clean filters (see instructions).
	Water in system.	Purge filter(s) ; if this has no result, consult agent.
	Decompressor open.	Close decompressor.
	Head gasket defective.	Consult agent.

Abundant and persistent white smoke.	Head gasket leaking.	Consult agent.
Noisy engagement of clutch.	Reversing gearbox badly adjuted.	Consult agent.
Engine revs, but the boat does not make any way.	Propellar lost or broken. Propshaft broken. Transmission slipping. Prop clogged with rope or dirt.	Replace prop. Replace shaft. Tighten shaftline coupling. Slacken off or unseize stuffing-box gland. Check oil level in gearbox. Slip boat for cleaning.
Reverse drive normal, but forward drive inoperative.	Control cables detached or badly adjusted. Forward gear limit-stop badly adjusted. Forward gears broken.	Consult agent. Consult agent. Consult agent.
Forward drive normal, but reverse drive inoperative.	As above, but reverse gears and limit-stop affected.	Consult agent.
Gear lever hard to move.	Cables seized Oil level low. Neutral setting out of adjustment.	Unseize. Top up oil. Consult agent.

Engine refuses to rev.	STOP knob not fully home. Filters or exhaust blocked. Throttle lever badly adjusted. Injector system defective.	Push knob fully home. Clean filters and exhaust system. Have lever adjusted by agent. Consult agent.
Engine overheats.	Cooling system obstructed.	Clean out strum-box and pump ; check water level in heat-exchanger, and see that valves are open. If this has no effect, consult your agent.
Low oil pressure.	Insufficient oil level. Filter clogged. Oil pump or system damaged. Warning lamp defective.	Top up with oil. Change filter. Consult agent. Consult agent.
Black smoke.	Air filter blocked. Engine still too cold. Cold-starting system defective. Piston ring broken. Injector or valve defective.	Change filter. Wait, and watch thermostat. Consult agent. Consult agent. Consult agent.
Blue smoke.	Injector pump badly set. Valves badly set. Piston ring broken. Wrong oil.	Consult agent. Consult agent. Consult agent. Consult agent.

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 stop about a metre 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 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 properly to the tank, and/or cause a leak.

Be sure to use only the grades and proportions 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 concessionnaires). 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 of 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 the 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 such 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 maintance 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 better.

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 centre 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 analyse 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 carburettor 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 again to bring the mixture up to the cylinders.

Fit a new set of plugs ; spray a little Dampstart or a similar product into the carburettor 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 concessionnaire 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.

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.

Adjustment 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.

Lateral adjustment

While beating to windward, put your eye close to the gooseneck and have a look up the mainsail along the luff groove. This should be quite straight, but it hardly ever is to start with.

Begin by adjusting the lower shrouds so that the top of the mast, the crosstrees and the foot are all in line. If the mast has a bow to windward at about the height of the crosstrees, slacken off the windward shroud, and vice-versa (see figure 1). Never try to adjust the bottlescrew on a shroud when it is to windward, because it is under strain -- adjust it once it is to leeward, after going about.

After making an adjustment on one tack, change sides and check that both bottlescrews are the same length.

Use the same procedure for adjusting the upper shrouds if the boat has two sets of crosstrees. By this stage, your mast should be perfectly straight ; but you will still not know if it is really vertical -- that can be

checked only on a mooring, by taking the main halyard and holding it against the chainplates to port and starboard (see figure 2). If the rigging is not symmetrical, adjust the bottlescrews by tightening them up by as many turns on the side that is too long as you slacken off on the side that is too short.

When you have finished, the tension on the shrouds should decrease downwards from the upper to the lower shrouds.

Fore-and-aft adjustment

Your Bénéteau with a masthead has its crosswise rigging in the same plane as the mast, so this has no effect on the fore-and-aft adjustment.

Adjusting the mast is based on a common principle, that of the balance of stresses. When the foot of the mast is placed in its step free of any shroud tension, there is a gap of several millimetres at the rear of the heel (figure 3). Under its own weight and the strain of the shrouds, the mast will take on a natural bow aft (figure 4) ; this curvature is controlled and balanced by the tension of the forestay.

adjustment of the rake of the mast is done with the forestay so that, at rest, there is the desired degree of lean towards the stern.

Contrary to popular belief, altering the rake has very little effect on balancing the boat's helm, as the shift into the centre-of-effort of the sails that is produced is **very much less** than brought about by altering their shape.

While sailing to windward so as to balance the curve towards the stern (which tends to increase with windstrength, together with the strain on the shrouds and the draw of the mainsail), gradually tighten the backstay. You will slacken it off when running with

the wind free, but you should **never** slacken off the forestay -- as the boat pitches the mast could then take on too pronounced a bend toward the stern, and snap.

Very tall masts sometimes have runners (and even lower runners) so as to control this bend more effectively.

NB : a slight fore-and-aft bend in the middle of the mast, toward the bow, is always desirable when under sail.

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.

Rule 2

As it deflects the wind, the sail creates an

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 inter- mediate genoa main	light genoa main	light genoa possibly spinnaker main
F 5 - 6 17-21 knots	interm. genoa or n° 1 jib main, 1 reef	interm. genoa main	heavy genoa boomed-out main
F 6 - 7 22-30 knots	n° 1 or n° 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	n° 2 or storm jib main, 2 or 3 reefs	n° 1 jib main, 2 reefs	n° 1 jib boomed-out main, 2 reefs
F 8	storm jib main, 3 reefs	n° 1 jib main, 3 reefs	n° 1 jib

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 favourably 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.

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).

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 centre 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. 13 A). If the angle of incidence of the wind is too great (sail sheeted in too hard or too flat along the luff, mainsheet traveller 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 windwards will flap or point forwards, before the luff begins to quiver (fig. 13 C).

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 centre of effort of the jibs shifts forward, and the sail settings are slackened 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 on the next page summarizes these sail-trim settings for the various wind-strengths and points of sailing.

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.

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

		CLOSE-HAULED			REACHING		RUNNING
		F 0 to 1	F 1 to 3	over F 3	under F 3	over F 3	
M A I N S A I L	Belly Position of belly Bow in the mast Halyard and/or cunningham Clew outhaul Foot reef Leech line Mainsheet Mainsheet traveller Downhaul	medium centred forced av. hardened average reefed slack eased to windward eased	maximum centred none eased free slack average midships eased	reduced forward natural or forced hardened reefed slack hardened to leeward hardened	maximum centred inverse eased free tight eased to leeward hardened	maximum centred none eased free tight eased to leeward hardened	maximum centred none eased free tight eased to leeward hardened
J I B	Belly Position of belly Luff Sheet Spill Sheeting point	medium centred av. hardened eased average aft	maximum centred eased hardened minimum mid	reduced forward hardened hardened maximum aft	maximum centred eased eased maximum forward	maximum centred av. hardened eased maximum forward	maximum centred eased eased maximum forward

* If there is a means of adjusting this.

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 centimetres, or even millimetres ; the sail must show no vertical creases.

REEFING

In addition to the clew outhaul, the boom contains as many reefing pendants as there are slabs 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

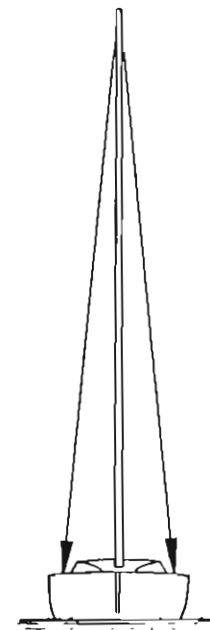
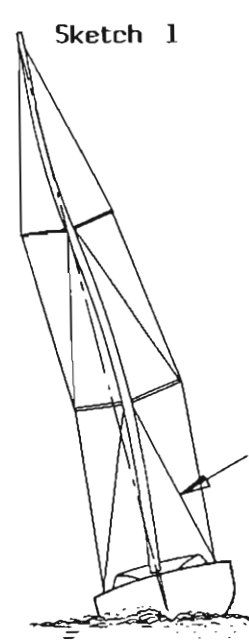
As soon as the main has been hoisted, and each time after taking in a reef, make the next reefing pendant ready. Release the jamming lever, pull out the pendant, undo the figure-of-8 knot that was blocking it, pass it through the reef cringle in the sail and down on the other side, reeve it through the 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).

Taking in a reef

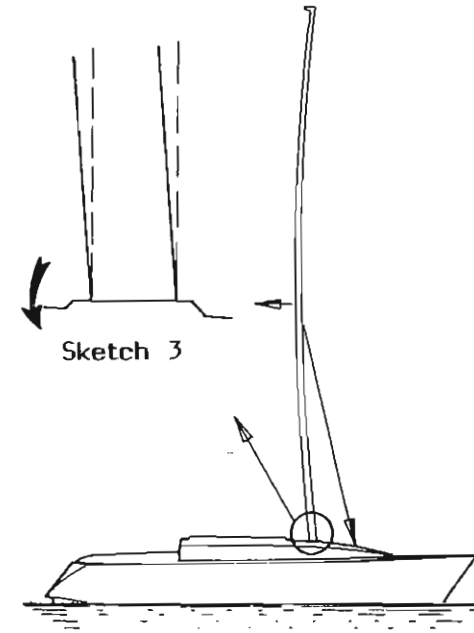
- (1) Bring the boat head to wind.
- (2) Take up the topping-lift.
- (3) Slacken off the main halyard until the reef cringle at the luff can be slipped over the reefing hook on the mast (figure 15). A mark on the halyard will make it easy to find how far to slacken it off. Then swig up the halyard.
- (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.

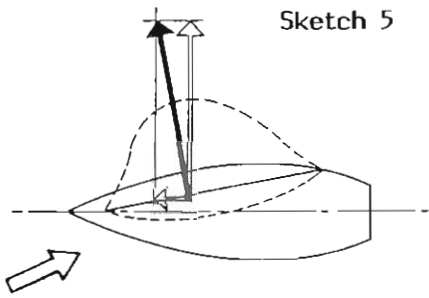
After the reef has been taken in, the sail should be perfectly flat.



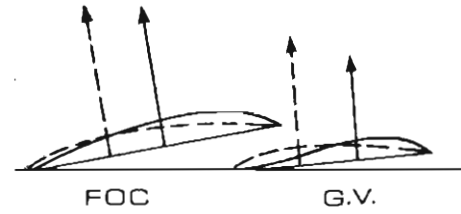
Sketch 2



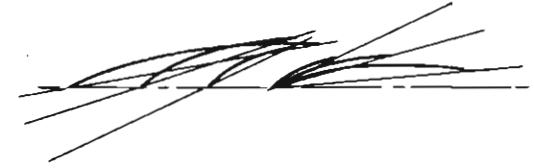
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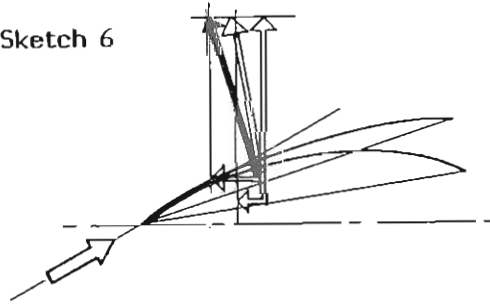
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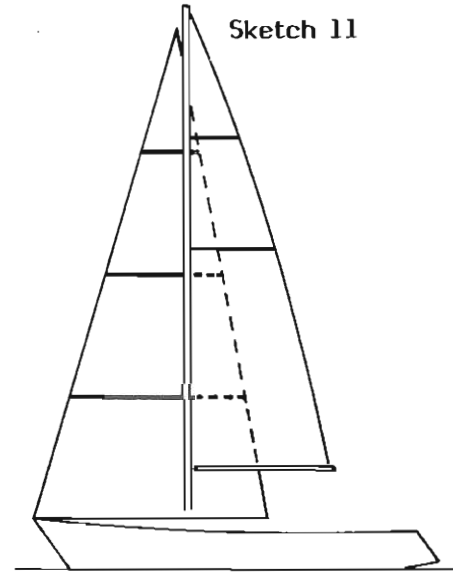
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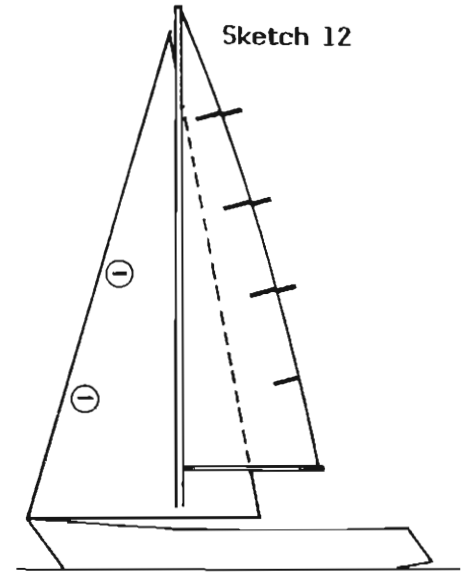
Sketch 6



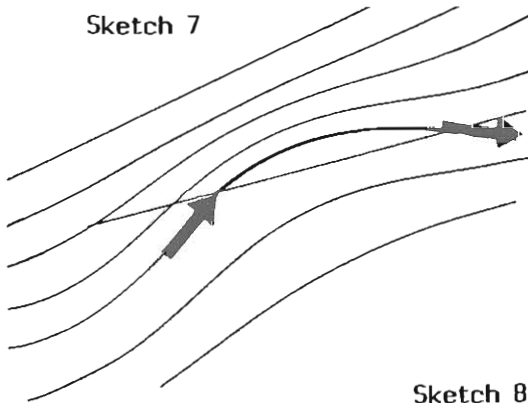
Sketch 11



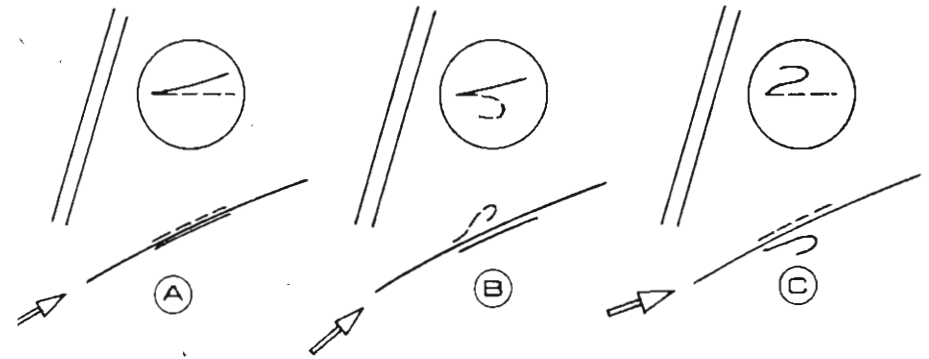
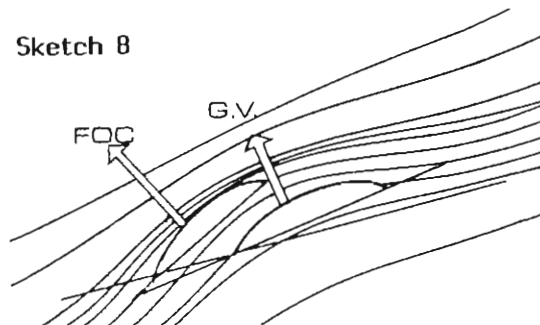
Sketch 12



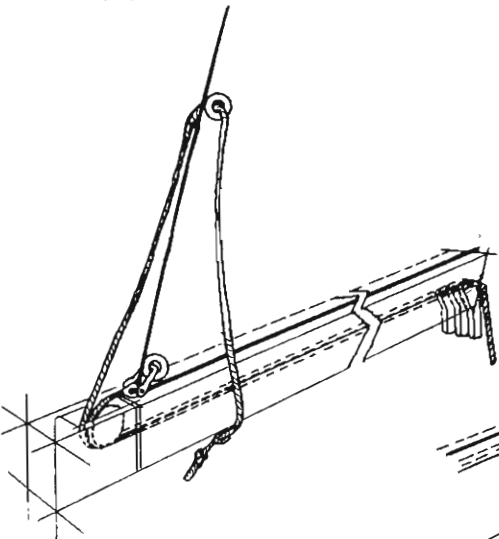
Sketch 7



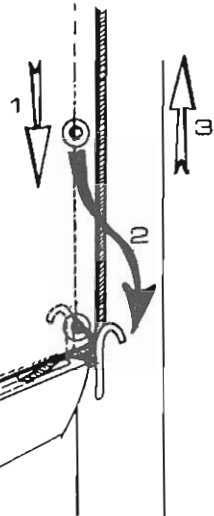
Sketch 8



Sketch 14



Sketch 15



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.

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 (which means a heel of roughly 20°), and a flat sea.

Lateral adjustment

Idylle 11,50 - 13,50 - 15,50

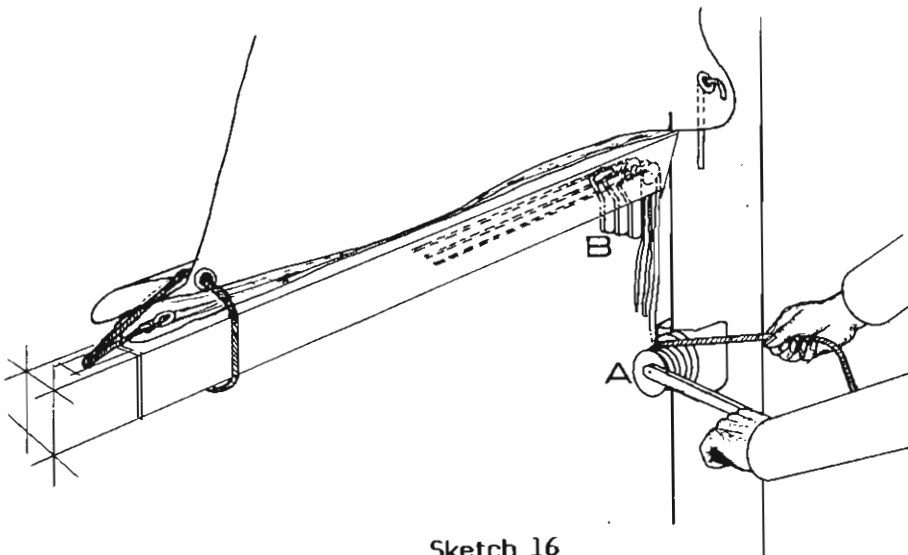
While beating to windward, put your eye close to the gooseneck and have a look up the mainsail along the luff groove. This should be quite straight, but hardly ever is to start with.

Begin by adjusting the lower shrouds so that the top of the mast, the first set of crosstrees and the foot are all in line. If the mast has a bow to windward at about the height of the first crosstrees, slacken off both lower shrouds by the same amount, and vice-versa (figure 1). Never try to adjust the bottlescrew on a shroud that is to windward, because it is under strain -- adjust the bottlescrew to leeward, after going about if necessary.

After making an adjustment on one tack, change sides and then check that both bottlescrews are near enough the same length.

Use the same procedure for adjusting the

Sketch 16



ADJUSTING THE MAST

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Lateral adjustment

Idylle 11,50 - 13,50 - 15,50

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After making an adjustment on one tack, change sides and then check that both bottlescrews are near enough the same length.

Use the same procedure for adjusting the

intermediate shrouds. By this time, your mast should be perfectly straight ; but you still do not know if it is really vertical -- that can be checked only when you are back on a mooring, by taking the main halyard and holding it against the chainplates on both sides (figure 2). If the rigging is not symetrical, adjust the bottle-screws by taking up as many turns on the side that is too long as you let out on the side that is too long as you let out on the side that is too short -- if, say, the mast is leaning to port, let off two turns on all the bottlescrews on that side, and take up two turns on all those to starboard.

When you have finished, the tension on the shrouds should decrease downwards from the upper to the lower shrouds.

Idylle 8,80

The lateral adjustment for the Idylle 8,80 is similar, except that there is only one set of crosstrees and hence no intermediate shrouds and only one lower shroud on each side.

Fore-and-aft adjustment

Adjustment of the rake of the mast is done with the forestay so that, at rest, there is the desired degree of lean towards the stern.

Contrary to popular belief, altering the rake has very little effect on balancing the boat's helm, as the shift in the centre-of-effort of the sails that it produces is very much less than that brought about by altering their shape.

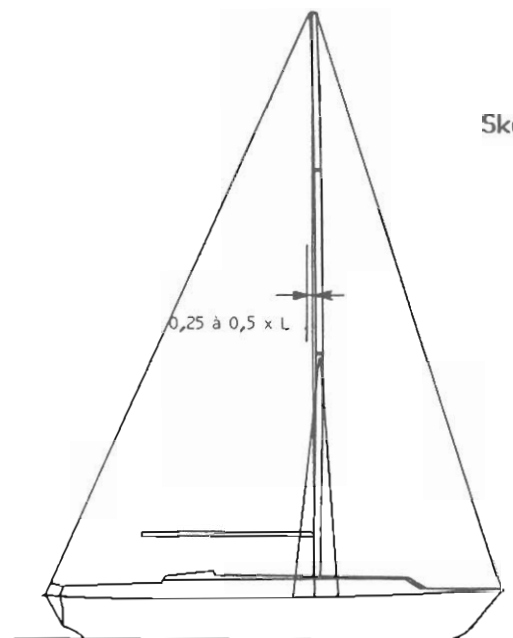
The bow in the mast, which is designed to be offset by the draw of the mainsail, is determined by the tension of the forward and aft lower shrouds (on Idylle 11,50, 13,50 and 15,50) or of the lower forestay and lower shrouds (on Idylle 8,80).

MAST

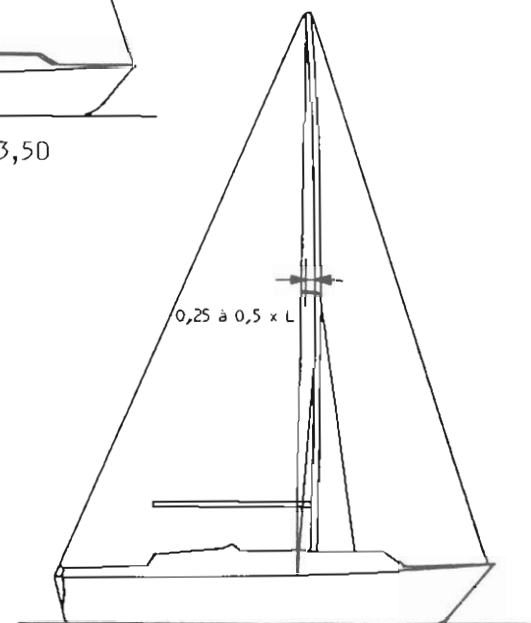
Under way, the mast must **never** have its middle bowing towards the stern.

Each change in the setting of one component of the rigging will affect the others, so make adjustments a little bit at a time in a methodical way, noting each alteration and what effect it has.

Sketch 43



Idylle 11,50 - 13,50
and 15,50



Idylle 8,80

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 fractionnal 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 figure 35).

The constant interaction 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.

be done in two stages -- on a

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).

Tighten up the bottlescrews of the lower shrouds and mid-shrouds (First Class 10) 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 look 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 $1\frac{1}{2}$ - 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 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.

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.

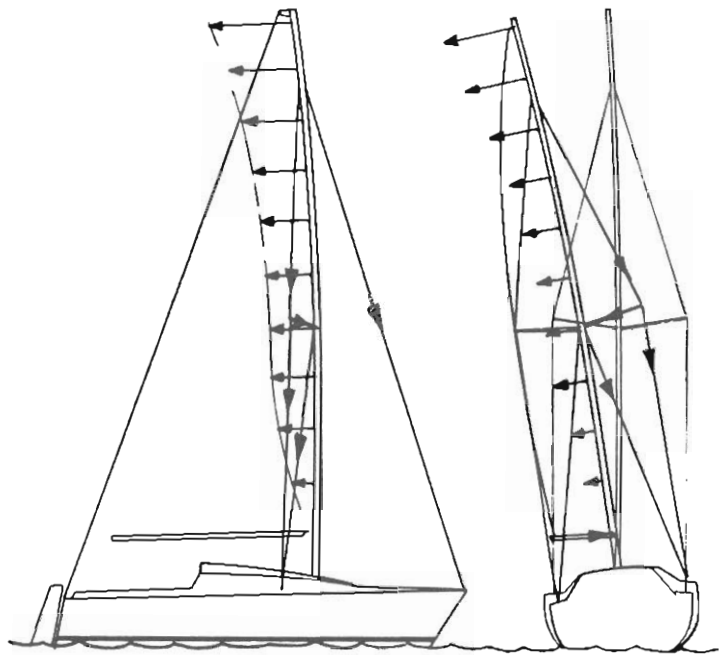
Generally the amount of bow is right when, on a mooring, the tension on the upper shrouds is slightly more than that on the lower shrouds.

You still need to know whether the standing rigging as a whole is too taut 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, an 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 resteepping 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.

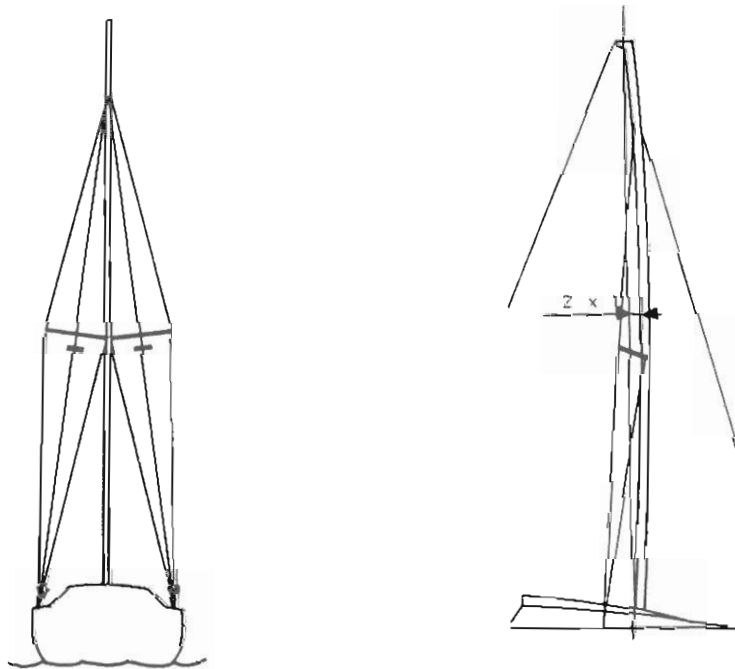
As we have seen, this kind of rig demands a considerable level of stressing, so whenever possible it will be wise, if the boat is to be left unused for a time, to slacken off the runners and backstay so as to release the strain on the rigging as a whole.



Sketch 35



Sketch 38



TUNING OF THE FRACTIONAL RIG

Before stepping the mast, start with tightening the intermediate shroud turnbuckles (at the lower spreaders) without too much tension so as to not damage the spreader bases.

Tune the turnbuckles in a systematic fashion from port to starboard but do not lock them.

After the mast is stepped, tune the lower shrouds (D1 see sketch 1) and upper shrouds (V1 see sketch 1) with the same tension as the port and starboard turnbuckles. Check that the mast alignment is straight.

In the case of a bend in the mast at the 2nd or 3rd set of spreaders climb the mast and take up on the intermediate turnbuckles. This can only be done while one person checks the mast alignment and gives directions for the tuning (See sketch 2 - 3 - 4 - 5).

Check also the angles of the spreaders to see that they are the same but not hard against the fore-and-aft faces of the spreader bases ensure to leave some clearance for the mast to work.

Further tuning of the mast is necessary after some hours of sailing, once the rigging has stretched and settled.

To facilitate the tuning of the fractional rig, we will proceed step by step and chronologically :

- 1 - 1st step : from deck to 1st set of spreaders.
- 2 - 2nd step : from 2nd set of spreaders to 2nd set of spreaders.
- 3 - 3rd step : from 2nd to 3rd set of spreaders.

Important : never grease the turnbuckles with silicon

use either tallow or graphite grease (or other). Regularly check the fastening of the turnbuckles (nuts or cotter pin).

Tuning example :

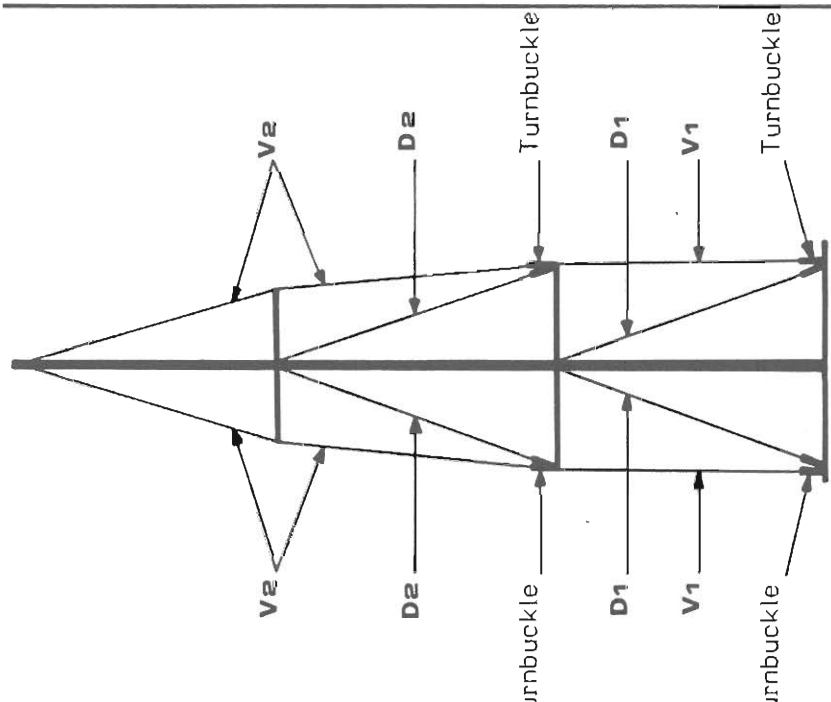
Sketch 2 : loosen D1 starboard, take up on D1 port - D2 starboard and V2 port.

Sketch 3 : take up on D2 port and V2 starboard.

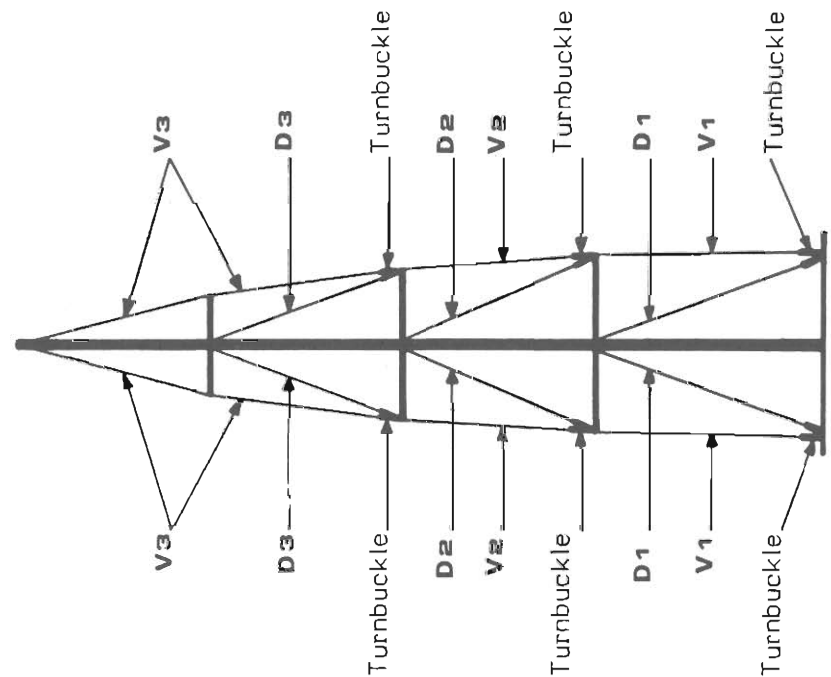
Sketch 4 : take up on D1 port - D2 starboard D3 starboard - V3 port.

Sketch 5 : take up on D3 starboard and V3 port.

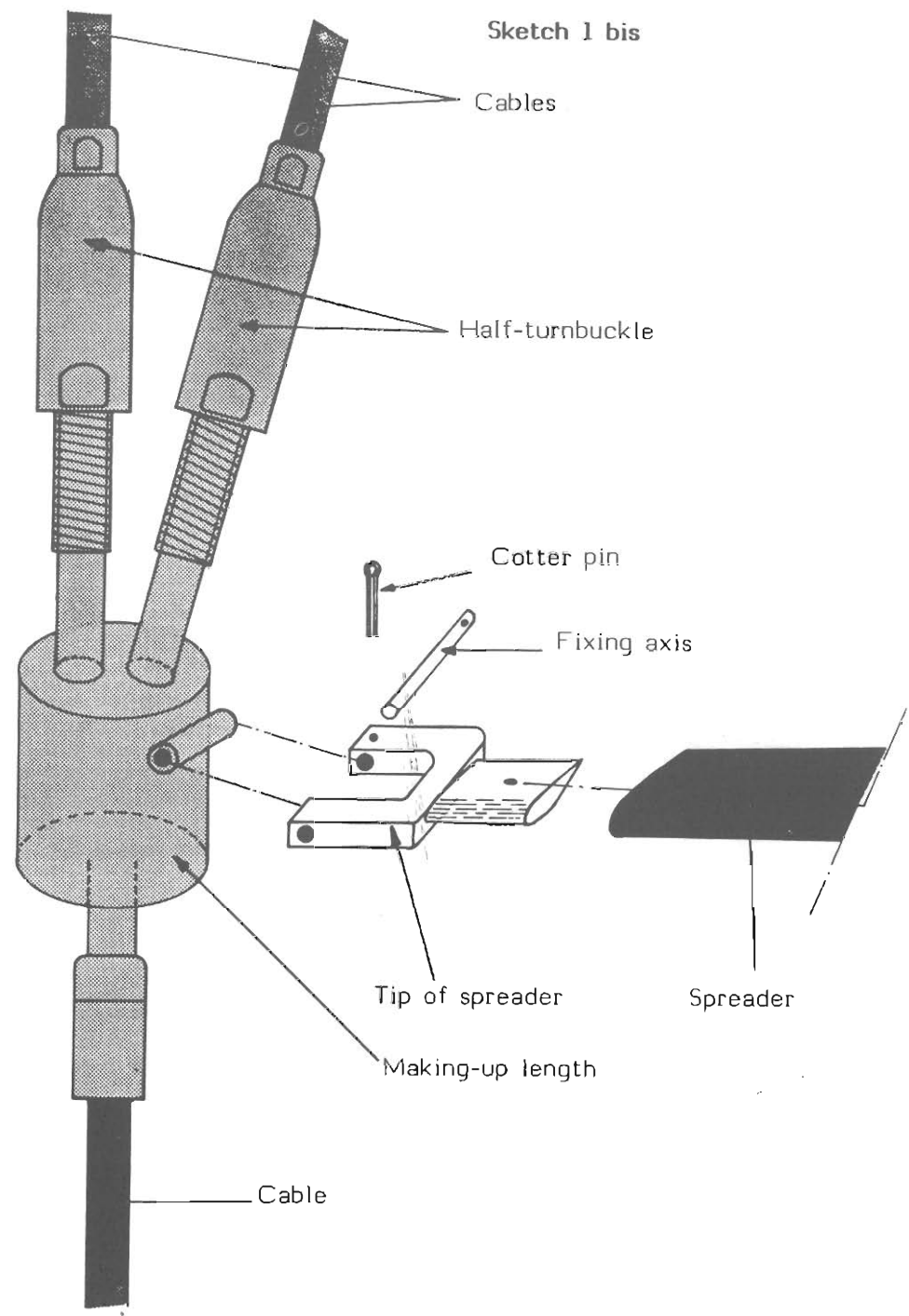
Sketch 1



2 sets of spreaders



3 sets of spreaders



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 few things that, just because they are so elementary, tend to get buried deep down in your memory.

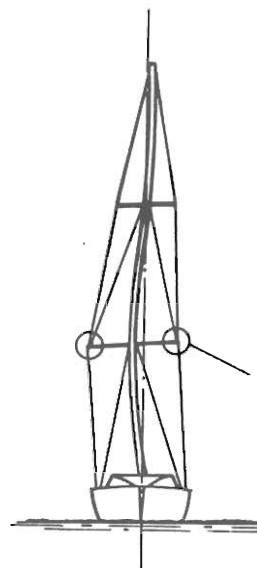
A course at a sailing or cruising school, learning "on the job" by crewing on other people's yacht, and reading textbooks on the subject are the best ways of learning how to handle a yacht ; nonetheless, we felt it might be useful to run through a few simple examples of the manoeuvres you find in the 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 harbour, 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 manoeuvre, the skipper must consider all the factors involved ; on the basis of these he will work out an 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.

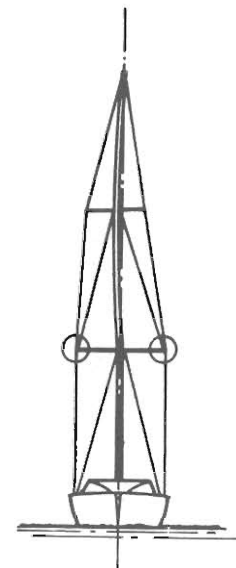
Planning, calmness and precision are the essentials for successful boat-handling.

Sketch 2



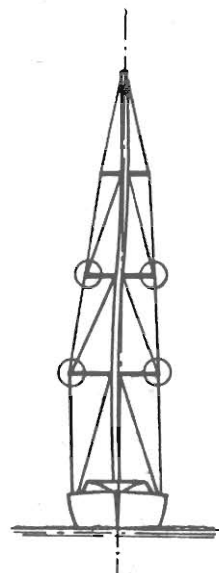
2 sets of spreaders

Sketch 3

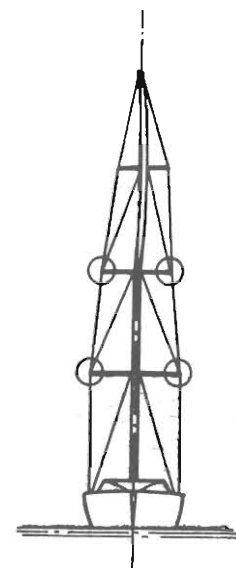


2 sets of spreaders

Sketch 4



Sketch 5



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 crew-members 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 harbours and marinas oblige you to run on the engine. This makes it essential (however skilled you may be at manoeuvring 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 manoeuvres 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 manoeuvre, 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 manoeuvres to be carried out. In what follows, we ~~assure~~ **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.

* 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.

Alongside a quay :

- (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 manoeuvre 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 cross-wind 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.

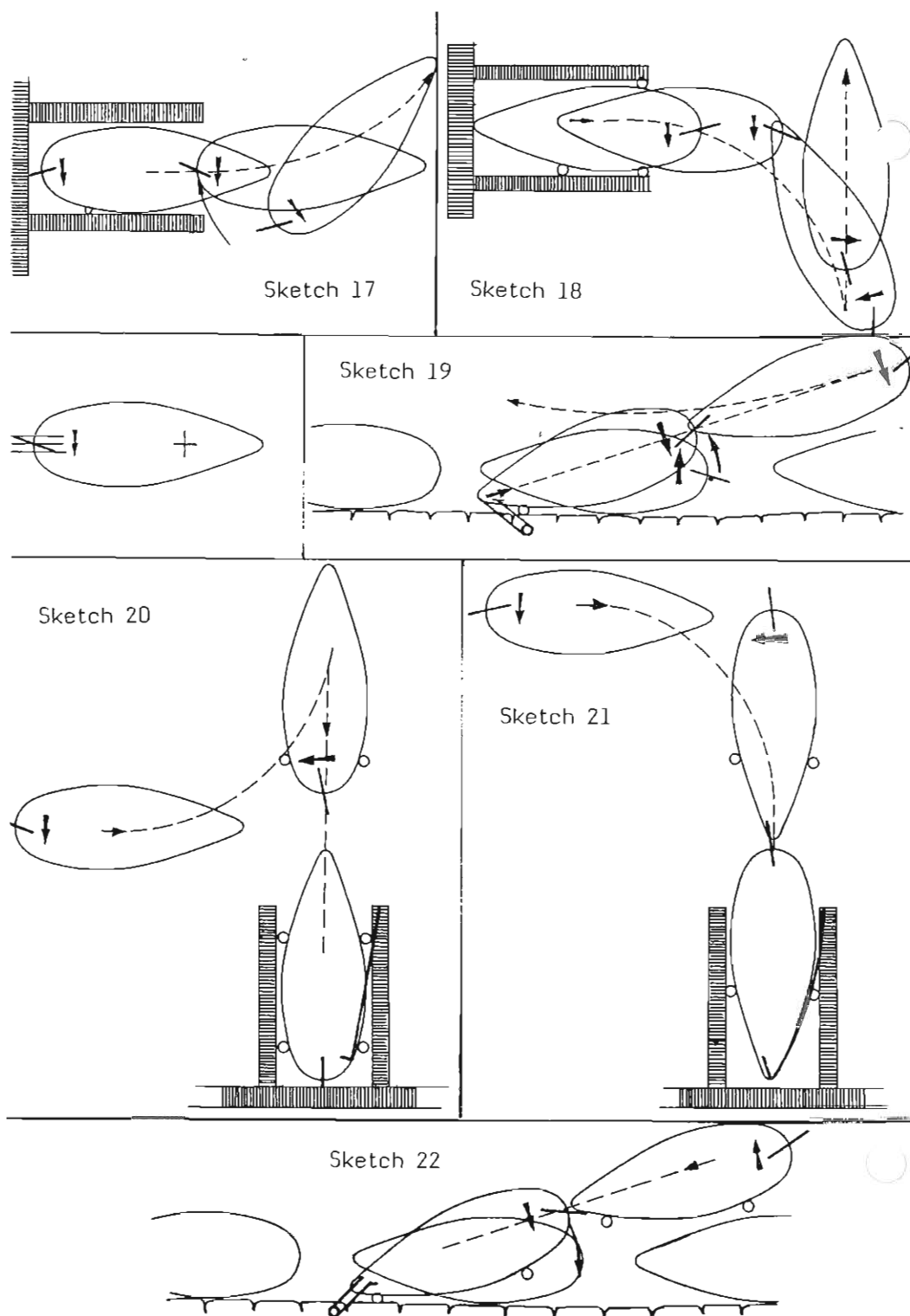
Alongside the quay

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.



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 - 10 m, in waters with an average tidal range and modern harbours. 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 25 cm 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).

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

hésitation, 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 are 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 quay side.

When mooring lines are not in use they must be coiled down carefully so as to be immediatly 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.

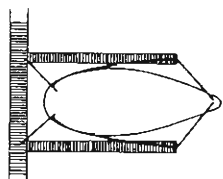
Anchor the boom and helm with a length of shock-cord so that they do not swing from side to side and cause unnecessary wear on the joints ; pull all the sheets up tight.

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.

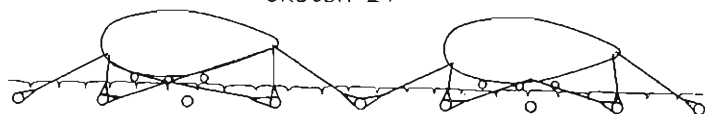
If the berth is not a quiet one and the boats are rolling about, it may be wise to moor head-to-tail, so that there is no risk of the masts striking each other.

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.

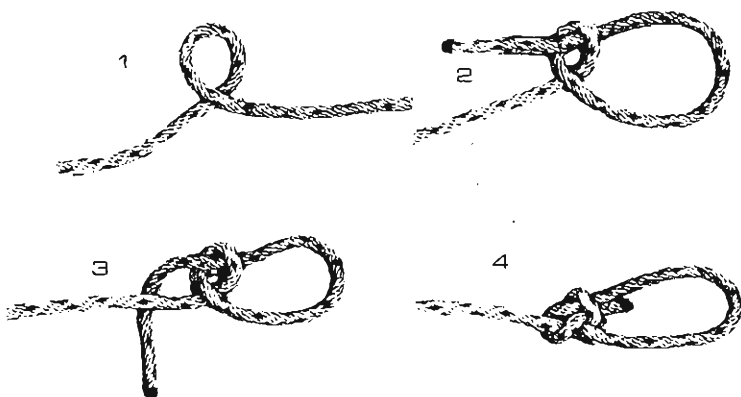
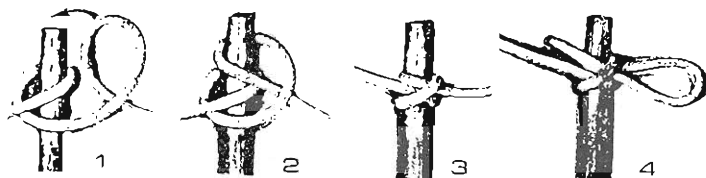
Sketch 23



Sketch 24



Sketch 25



Sketch 26

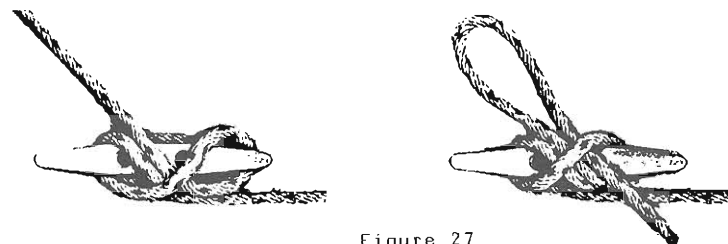


Figure 27

Figure 28

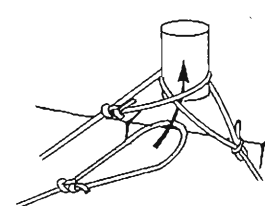


Figure 29

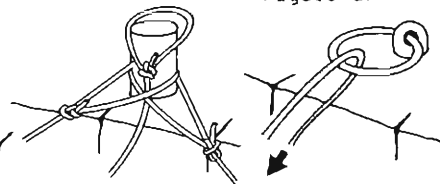
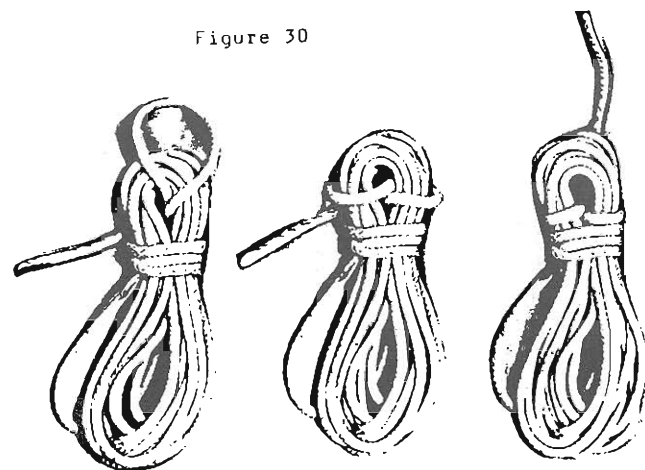


Figure 30



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 **Personnal 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 manoeuvring in harbour and on a mooring. The best way to avoid them is to do your manoeuvring calmly, after thinking out all the relevant factors (such as speed, current, wind, and the layout of the harbour). 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 travellers 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 sprins you drop do not roll averboard. 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 sea-water. Your concessionnaire 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 part (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.

If you have wheel steering, make regular check on all the clamps, the condition of the quadrant, the cables, guides sheaves and the chain in the column to the wheel, and lubricate them.

If your steering is hydraulic, check the condition of the connecting hoses, and make sure there are no leaks in the connections to the pump, actuating cylinder and bypass (if there is one). Check the hydraulic fluid level regularly ; top up if there is the least drop in this, purging by means of screws provided so as to drive any air out of the system (consult the supplier's instructions, or ask your concessionnaire or agent to deal with it for you).

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 connexions 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 *. 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.

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 connexions 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.

*** 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.

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 neighbouring boats, and the nature of the bottom and the materials in the quayside.

STUFFING-BOX, ROTATING SEAL OR LIPPED SEAL

Your yacht is fitted with one or other of these systems.

Setting them up in the first place, and maintaining them, are skilled jobs that should be left to an expert ; you are therefore recommended always to turn to your concessionnaire or agent when the system needs attention.

You should, however, check that things are working properly each time you go out, and you need to know how to cope with an emergency repair if necessary. For this reason, the various models that may be fitted to your boat are described below.

Stuffing-box (see diagram 32)

* On commissioning (once afloat) :

- (a) release the stuffing-box completely so that the water can fill the stern-tube and packing (the water should flow through into the inside of the boat) ;
- (b) gradually tighten the two clamping bolts (alternately, and never more than one turn with the spanner at a time), checking that the two flanges (2 and 3) are quite parallel.
- (c) the correct tension is reached when the declutched shaft can be turned by hand, and when with the boat running the stuffing-box lets in one drop of water every 5-10 seconds.

* During the season :

- (a) check the number of drops per second, and whether

the stuffing-box is heating up, each time you go out, and keep a regular eye on the stuffing-box water-cooling system if your boat has one.

(b) have the packing ^{changed} after 30-40 hours running on the engine, and in any case once a season.

(c) if the boat is to be left unused for long periods while afloat, the stuffing-box may be screwed down ; but when starting again, carry out the same operations as when first putting the boat afloat.

(d) for boats that are frequently out of the water (through drying out on moorings, or being trailed by road, for instance) a special watch must be kept on the stuffing-box, and if necessary the operations described for commissioning the boat should be repeated.

* Going afloat at the start of the season :

(a) renew the packing before putting the boat in the water.

(b) carry out the commissioning operations described earlier.

* Changing the stuffing-box packing :

This will be done ashore, by your concessionnaire or agent.

Rotating joint (see diagram 33)

* Each time you go afloat, or after drying out :

Carefully withdraw the bellows (3) a little way, and check that water is penetrating inside them to lubricate the friction surfaces (1 and 2).

* During the season :

Check that the rotation joint is watertight each time you go out. If the seal is deteriorating or there is an unusual leak, get your concessionnaire to deal with it.

* Periodical inspection and maintenance :

The whole of the system must be checked by an qualified mechanic at least once a year and after any long period out of use or laid up for the winter. Any replacement of parts must be done ashore, and they must be fitted only by the mechanic.

Lipped seal (see diagram 34)

* Each time you go afloat, or after drying out :

Remove air from the joint by squeezing the sleeve (D) and pressing it against the prop shaft (F). When it is squeezed, the seal comes away from the shaft (E) and all the air is expelled when the water enters through the gap created by the pressure on the sleeve.

* During the season :

Take the same precautions as recommended above for a rotation seal.

* Periodical inspection and maintenance :

A qualified mechanic must lubricate the seal after every 200 hours of running, after laying up for the winter or once a year, using a special waterresistant grease recommended by the manufacturer.

* **Important**

As the seal is made watertight by the inner lips, it is

dangerous to introduce into the sleeve any tool or foreign body not recommended by the manufacturer. When working on the seal, your concessionnaire or agent will use only recommended type of grease.

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 dislikes salt water and sunshine, so as soon as you get into harbour 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 tyers. 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 ; this will very quickly wear out the canvas.

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 bottom *. 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 connexions (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

*** 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.**

- (i) a check on the attachment of 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 end-to-ended to change the position of the wear *. Where 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 3 mm 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.

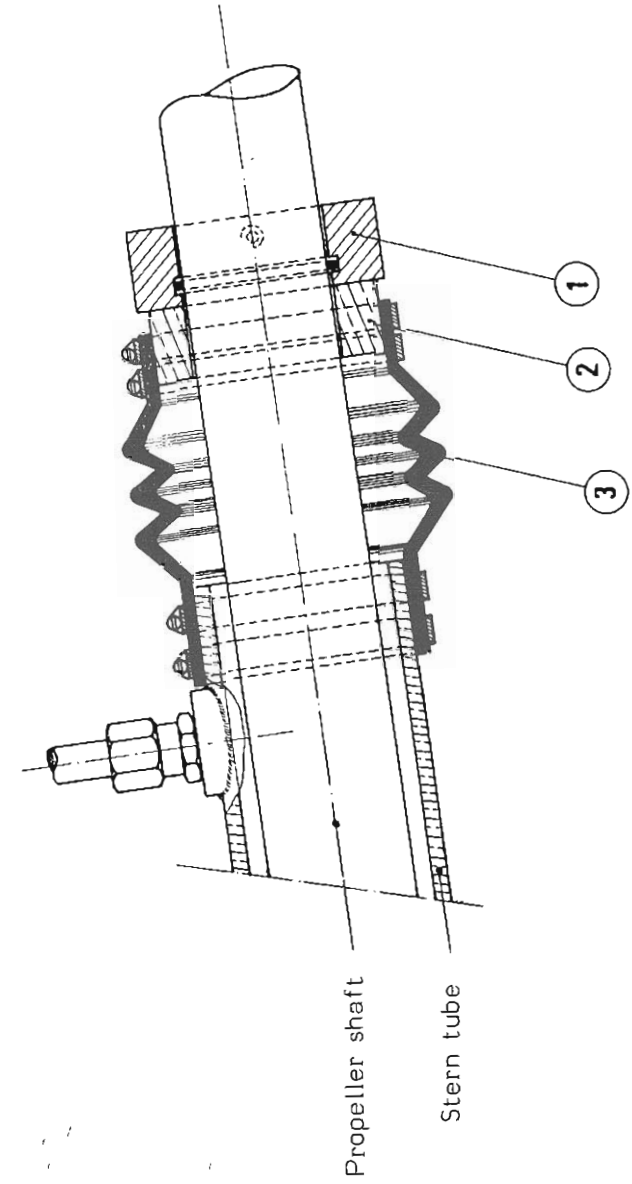
To change a halyard running down the inside of a mast, or to use a messenger (which should be slightly longer than the mast, and have one end weighted with, for instance, a lead fisherman's weight) tilt the mast towards the halyard exit side, and gently feed the messenger in over the appropriate sheave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

*** 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).

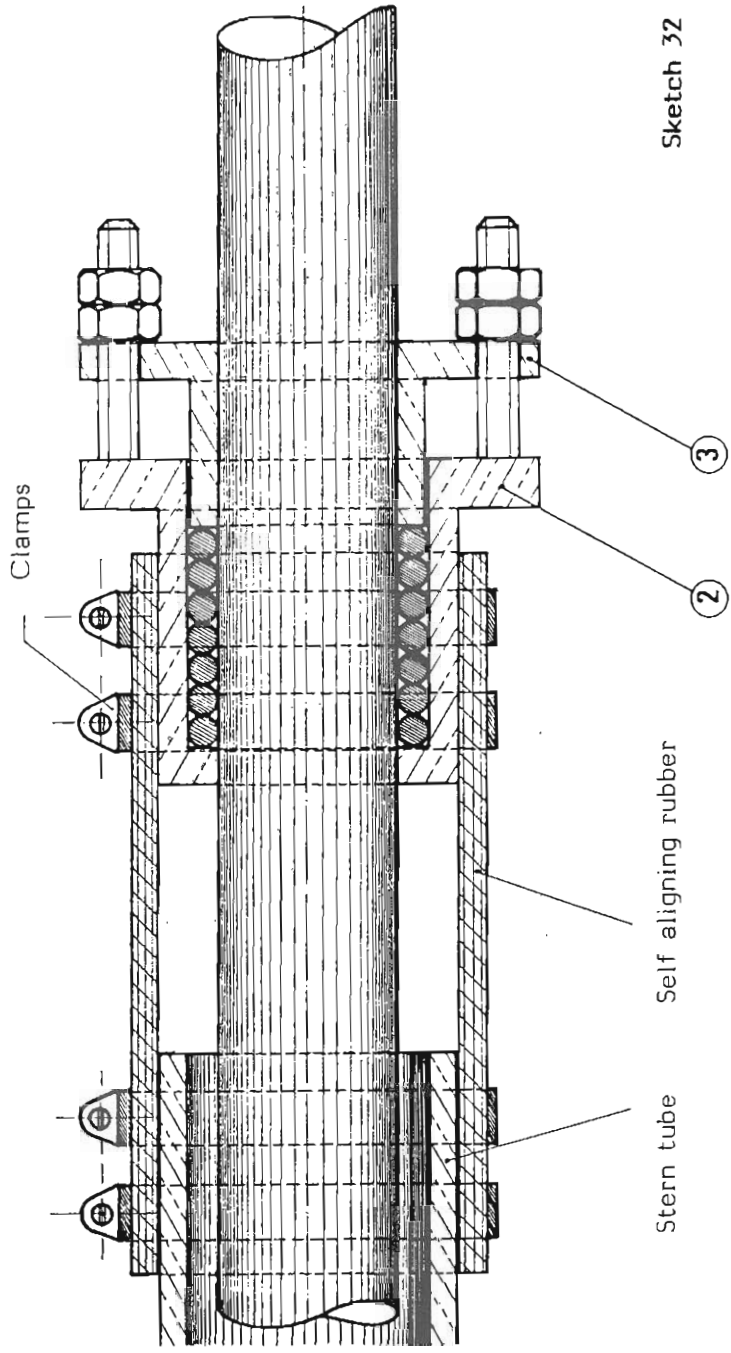
At the foot of the mast, another member of the crew can watch for the messenger to pass the lower sheave box, and hook it out with a piece of bent wire.

All have to do then is to whip the end of the messenger to the new halyard, and pull this through.

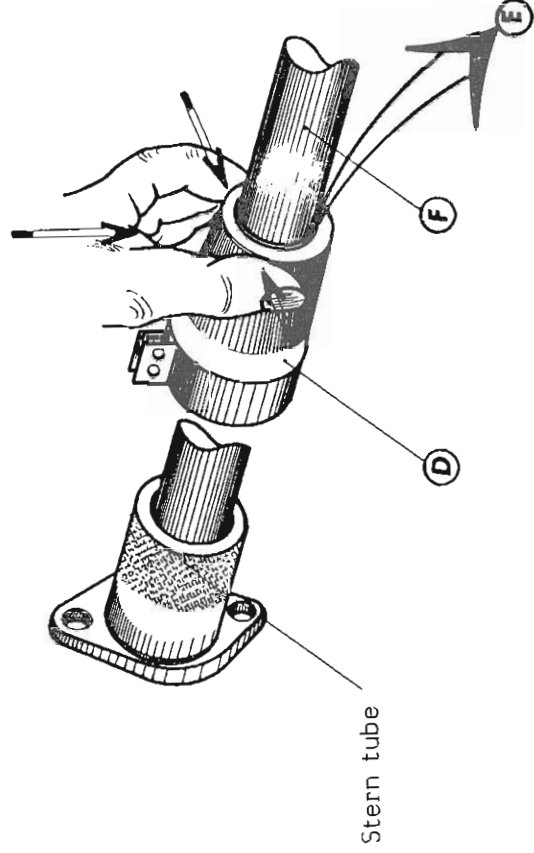
"ERCEM" TURNING RING



STUFFING-BOX



"V" RING



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 concessionnaire'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.

THE INBOARD ENGINE

Laying-up an engine for the winter is a job for a qualified mechanic. It will differ depending on whether the boat is to spend the winter afloat, and checked regularly by your agent, whether it will be brought ashore. In any case, consult the engine maintenance handbook and ask the advice of your agent, who will do what is needed if you ask. The following list covers the minimum that need to be done.

Wintering afloat :

- (a) charge up the batteries fully, and check the electrolyte ;
- (b) turn the battery isolating switches to "off" ;
- (c) top the fuel tank right up, to prevent condensation as much as possible ; you can also plug the overflow with a piece of adhesive tape, so long as you stick a clear warning notice next to the starter ;
- (d) tighten down the stuffing-box -- but again, leave a note beside the starter to remind you ;
- (e) change the anode on the propeller and engine ;
- (f) empty out all the cooling, exhaust and oil systems, and carry out the laying-up operations prescribed by the engine manufacturer, including antifreeze precautions.

Wintering ashore :

- (a) remove the battery and give it to your agent or a trustworthy garage so that it can be kept on charge ;

- (b) empty out all the cooling, exhaust, oil and fuel systems, and carry out the laying-up operations prescribed by the manufacturer, including antifreeze precautions -- remember that freezing-up can be much worse when the boat is ashore ;
- (c) dismantle and grease the seacocks of the cooling system ; leave them open and check the flexible lines ;
- (d) dismantle or slacken off the alternator and pump drive belts.

RIGGING

If the boat is unrigged for the winter, this gives you the change 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 vaselines ;
- (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 an 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.

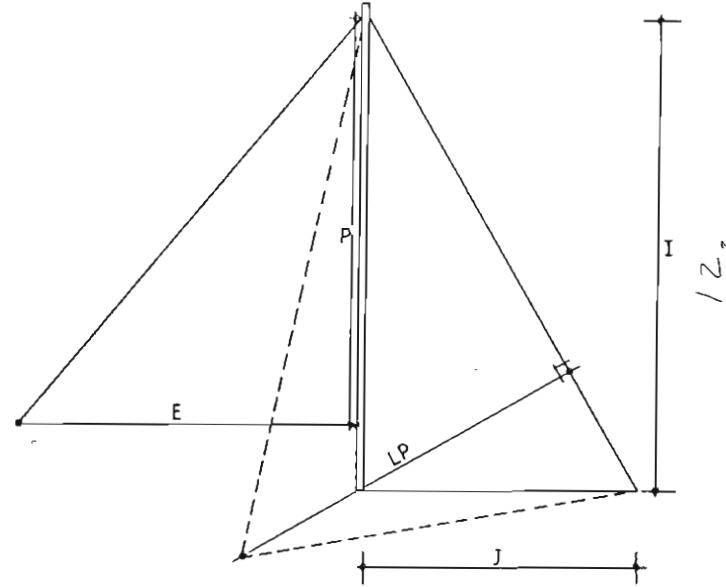
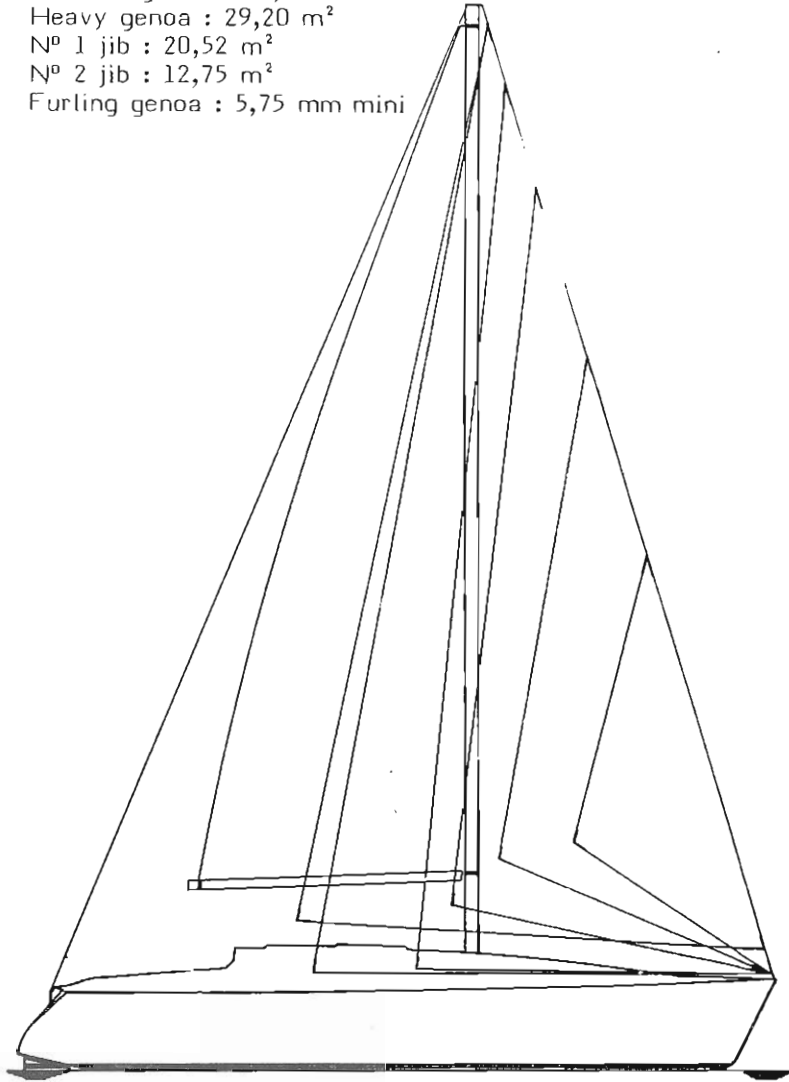
All these jobs may seem a bore at the end of the sailing season ; for this very reason, never leave them till the last minute. If they are done in good time, this will save you a lot of seizing-up, corrosion and jamming when it comes to fitting out again that can cost you a great deal in harbour costs, 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 !

OCEANIS 350

SAIL PLAN

Main sail : 21,50 m²
 Light genoa : 37,58 m²
 Medium genoa : 37,58 m²
 Heavy genoa : 29,20 m²
 N° 1 jib : 20,52 m²
 N° 2 jib : 12,75 m²
 Furling genoa : 5,75 mm mini



E 3 500
 P 10 900
 I 12 642
 J 3 100
 LP 5 800

Mast : Z SPARS

Forestay : 7 mm dia.

Length between pins : 17 800

23m

$$10.9^2 + 3.5^2 = C^2$$

$$118.81 + 12.25 = 131.06$$

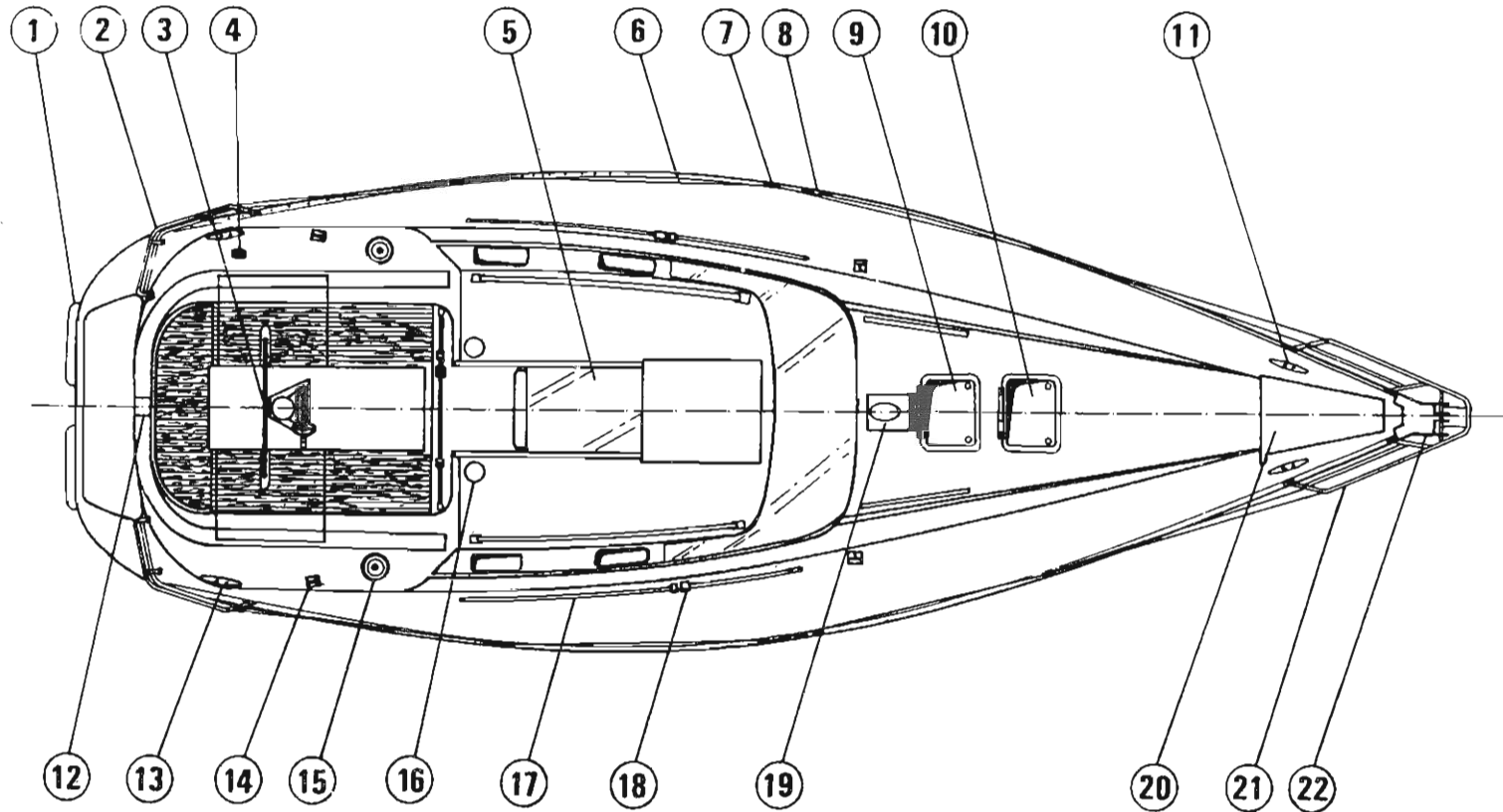
OCEANIS 350

STANDARD DECK FITTINGS LAYOUT

- 1 - Protection pad
- 2 - Stern pulpit
- 3 - Steering wheel
- 4 - Manual bilge pump
- 5 - Sliding hatch
- 6 - Lifeline
- 7 - Stanchion
- 8 - Side fairlead
- 9 - Deck opening hatch
- 10 - Deck opening hatch
- 11 - Alu. mooring cleat
- 12 - Spreader location
- 13 - Alu mooring cleat
- 14 - Genoa sheet deck turning block
- 15 - Genoa sheet winch
- 16 - Ventilator
- 17 - Genoa sheet track
- 18 - Genoa sheet car
- 19 - Mast step
- 20 - Mooring locker hatch
- 21 - Bow pulpit
- 22 - Stemhead fitting

OCEANIS 350

DECK FITTINGS LAYOUT



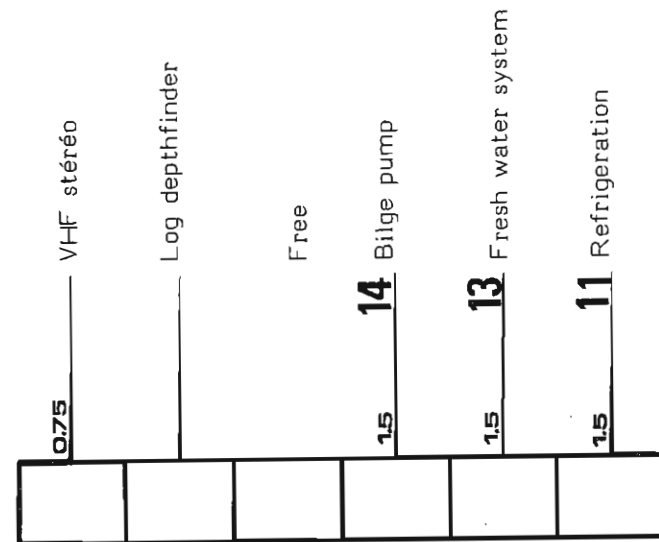
OCEANIS 350

ELECTRIC INSTALLATION

- 1 - 2 x 0.75² blue/black - Port and starboard light
- 5 - 0.75² red - Mooring light
- 6 - 0.75² purple - Range light
- 7 - 1.5² purple - Deck light
- 8 - 2.5² black - Common negative wire for mast
- 9 - 2 x 0.75² blue/black - Compass
- 10 - 2 x 0.75² blue/black - Stern light
- 31 - 2 x 0.75² blue/black - Port forward cabin spot
- 32 - 2 x 0.75² blue/black - Starboard forward cabin spot
- 33 - 2 x 0.75² blue/black - Forward cabin main light
- 34 - 2 x 0.75² blue/black - Port saloon spot
- 35 - 2 x 0.75² blue/black - Starboard saloon spot
- 36 - 2 x 0.75² blue/black - Saloon table light
- 37 - 2 x 0.75² blue/black - Galley light
- 38 - 2 x 0.75² blue/black - Chart table light
- 39 - 2 x 0.75² blue/black - Port aft main cabin light
- 40 - 2 x 0.75² blue/black - Chart table spot
- 41 - 2 x 0.75² blue/black - Fluorescent light above icebox
- 42 - 2 x 0.75² blue/black - Toilet fluorescent light
- 43 - 2 x 0.75² blue/black - Starboard aft cabin light
- 44 - 2 x 0.75² blue/black - Port aft cabin spot on hull side
- 45 - 2 x 0.75² blue/black - Port aft cabin spot on
dividing wall
- 46 - 2 x 0.75² blue/black - Port aft cabin light
- 47 - 2 x 0.75² blue/black - Starboard aft cabin spot on
hull side
- 48 - 2 x 0.75² blue/black - Starboard aft cabin spot on
bulkhead
- 49 - 2 x 0.75² blue/black - Cockpit table light

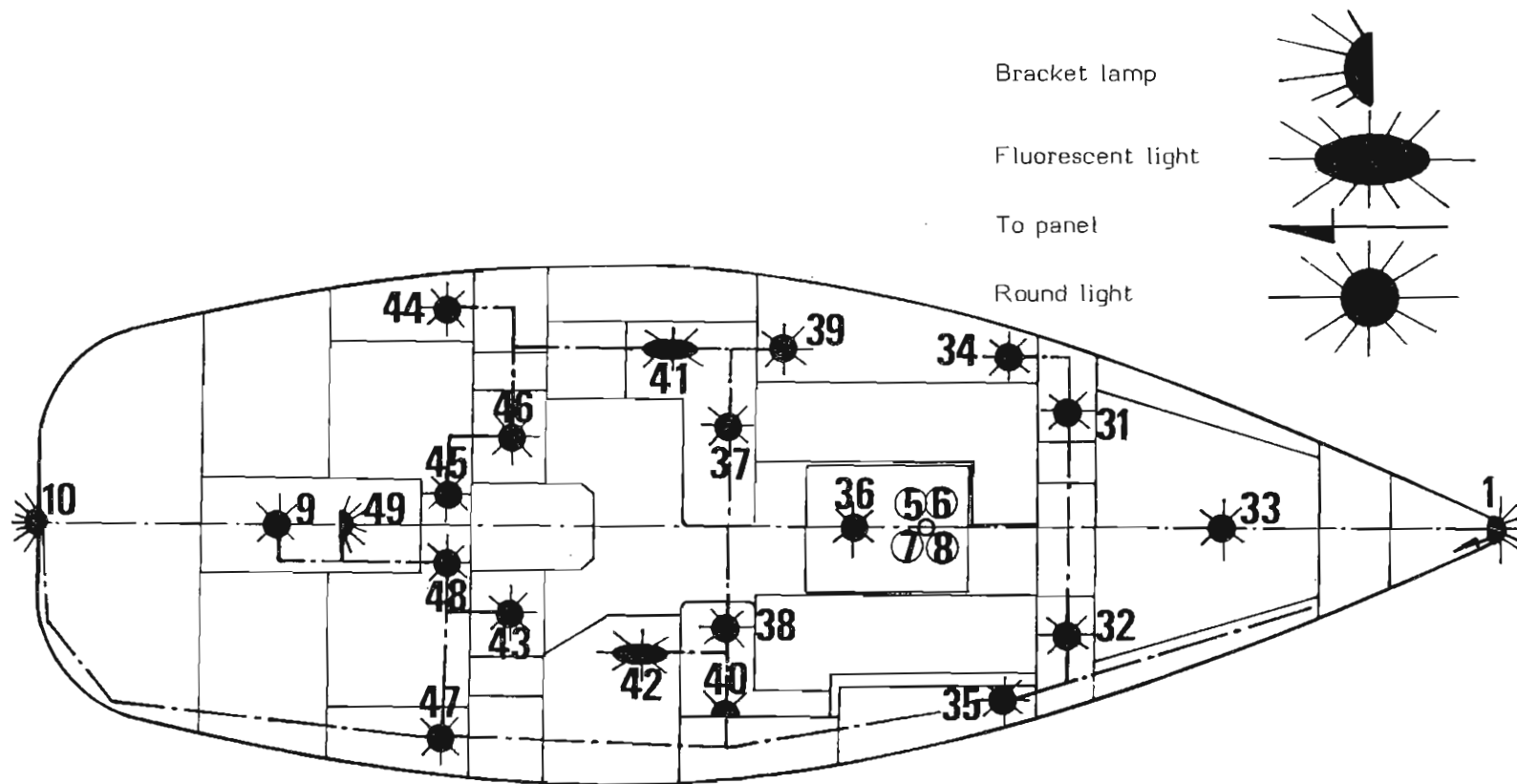
OCEANIS 350

ELECTRIC PANEL



OCEANIS 350

INSIDE LIGHTING

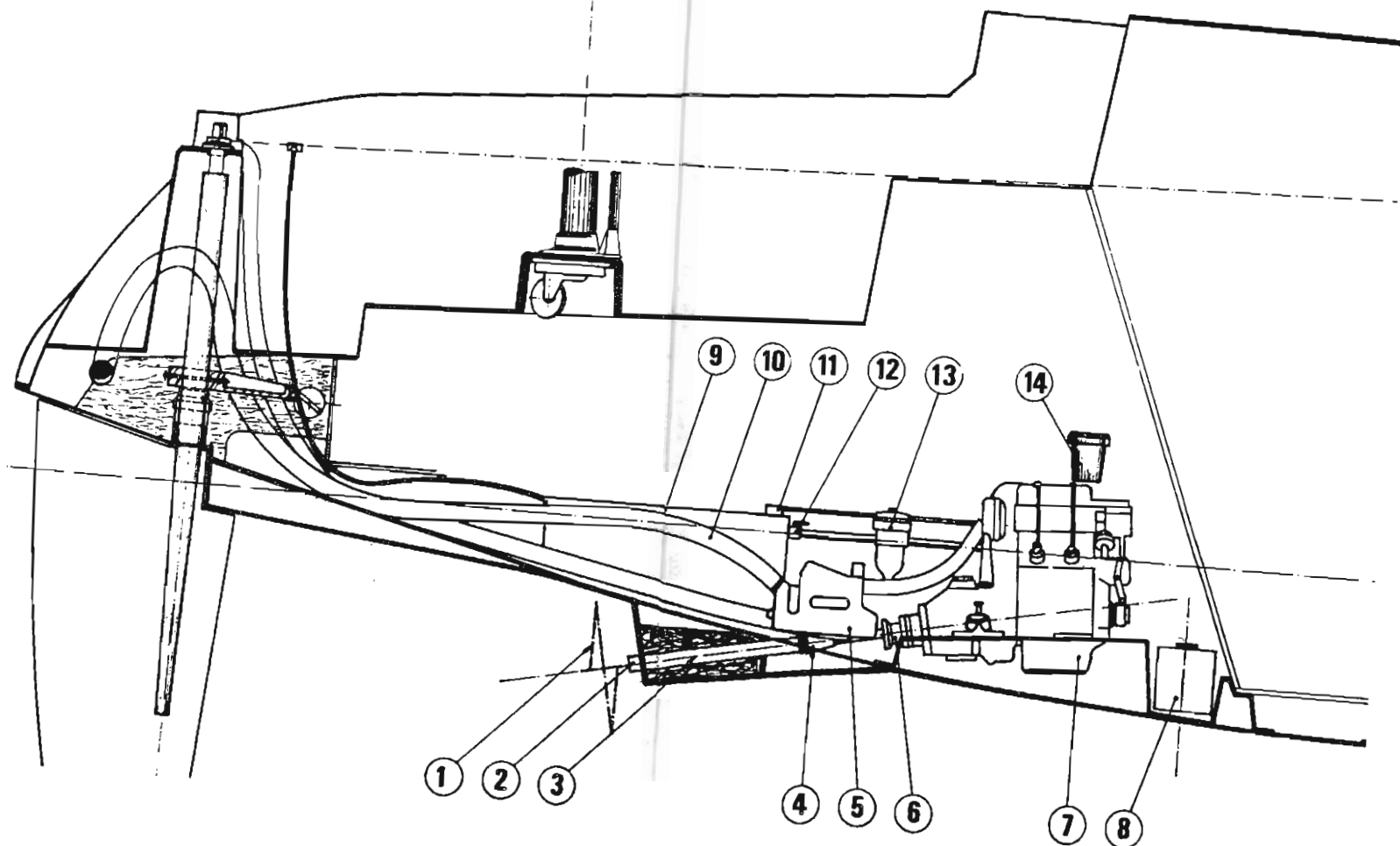


OCEANIS 350

ENGINE INSTALLATION

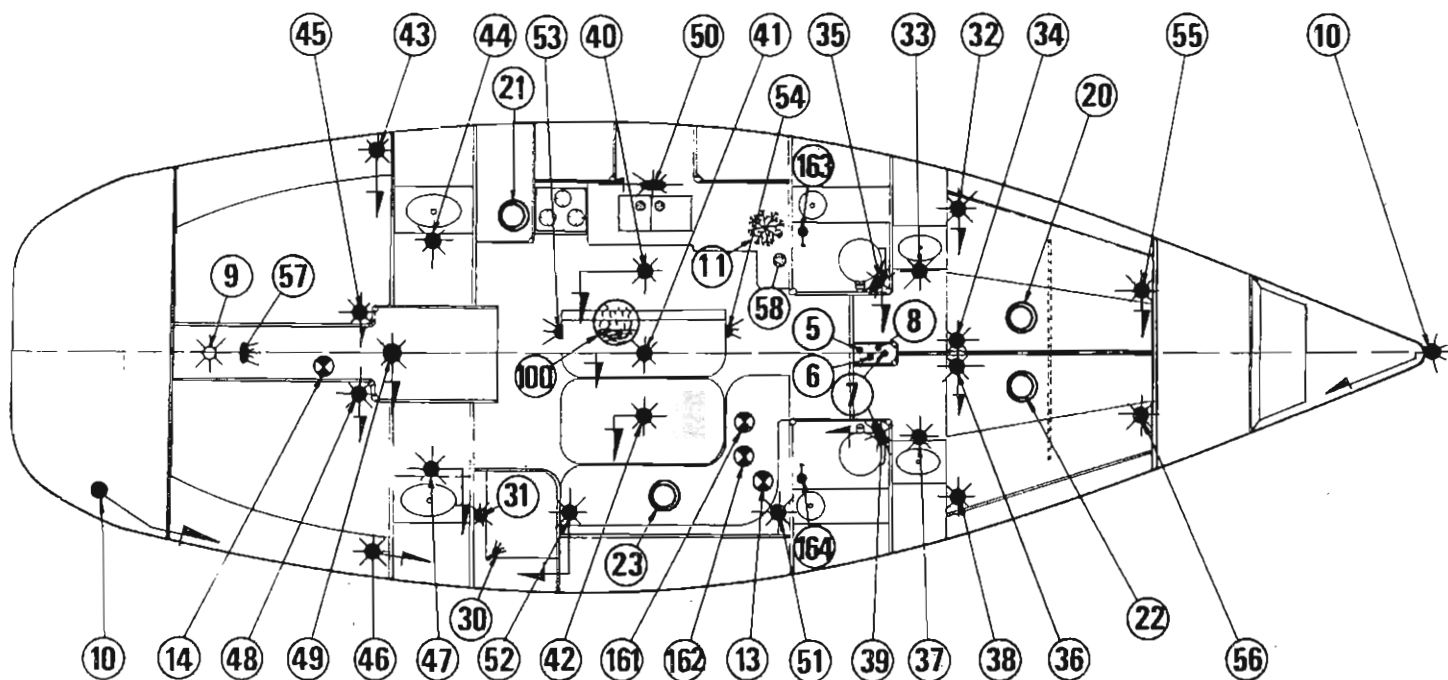
- 1 - Propeller
- 2 - Propeller shaft
- 3 - Shaft tube
- 4 - Stuffing-box
- 5 - Exhaust manifold
- 6 - Shaft flange
- 7 - Engine
- 8 - Battery
- 9 - Diesel oil tank
- 10 - Exhaust pipe
- 11 - Diesel gauge
- 12 - Diesel tank shut off
- 13 - Diesel filter
- 14 - Water filter
- 15 - Fresh air intake
- 16 - Diesel tank filling hose
- 17 - Diesel tank vent hose
- 18 - Engine diesel pipe
- 19 - Cooling system valve
- 20 - Cooling system hose
- 21 - Flexible pipe - diesel intake
- 22 - 2nd battery (option)
- 23 - Diesel tank vent
- 24 - Diesel tank filler
- 25 - Ventilation grid

OCEANIS 350
ENGINE INSTALLATION



OCEANIS 350

ELECTRIC INSTALLATION



Fluorescent light



Round light (ceiling or bulkhead)



To panel



Water heater

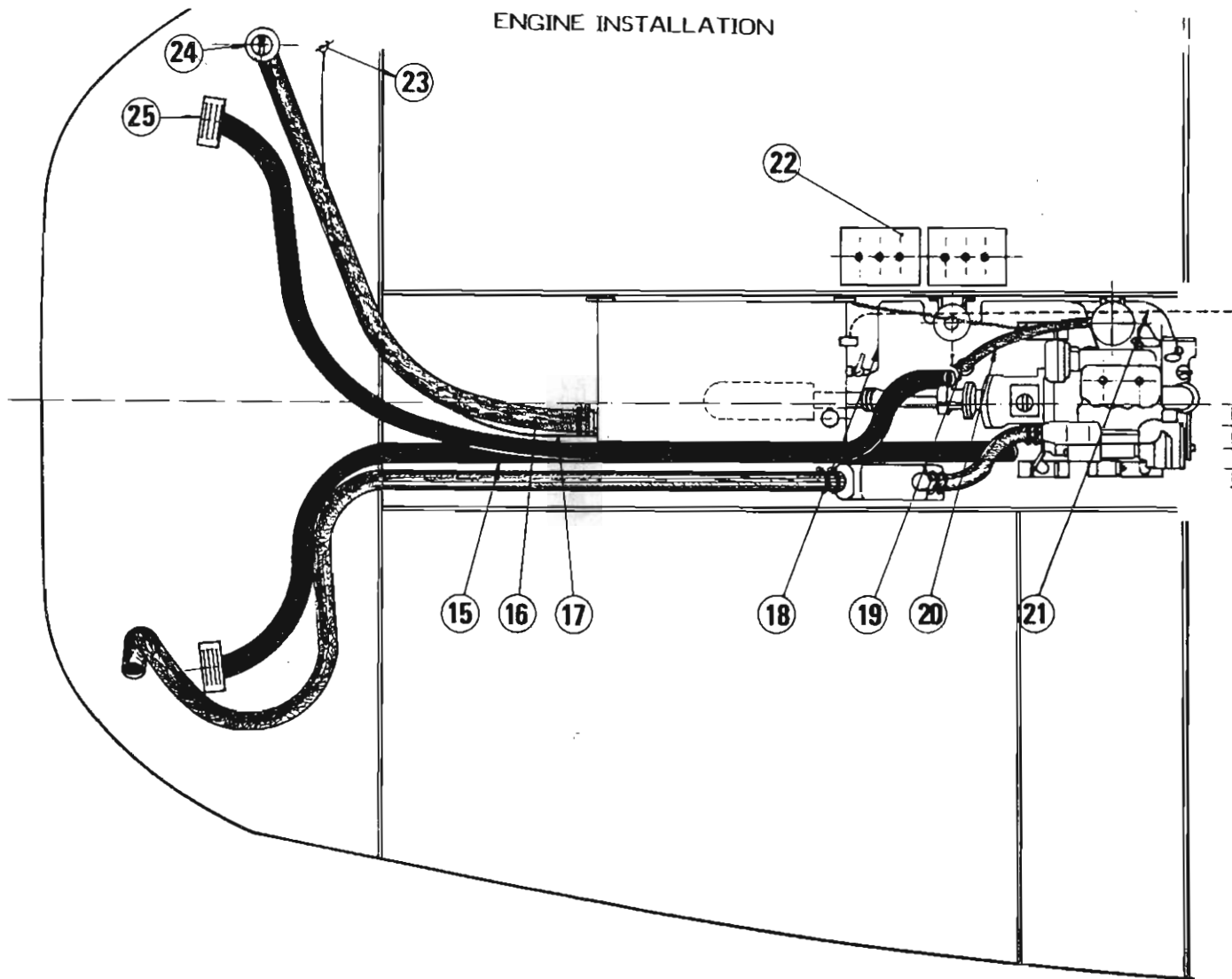


Refrigeration



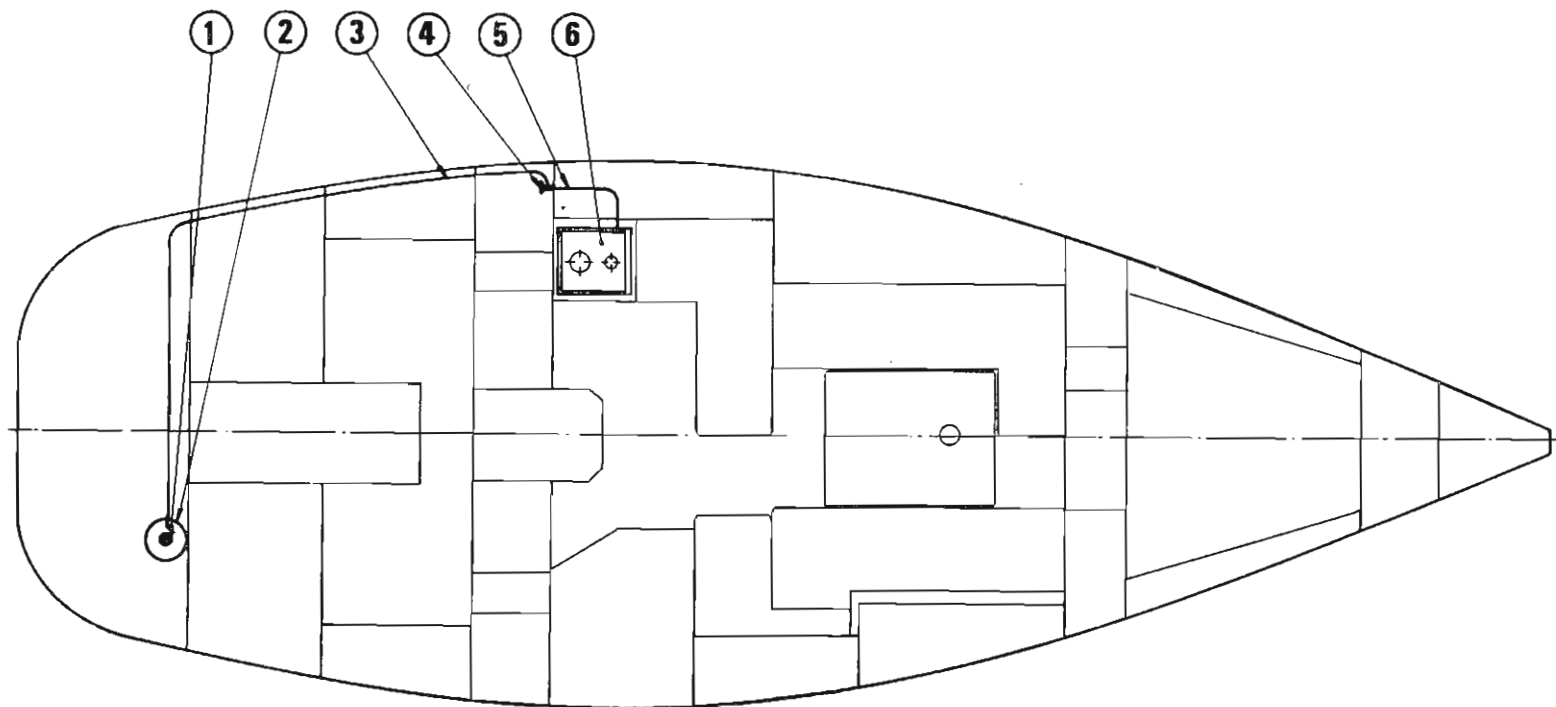
Fresh water gauge

OCEANIS 350
ENGINE INSTALLATION



OCEANIS 350

PROPANE/BUTANE SYSTEM



- 1 - Regulator - flexible hose
- 2 - Gas bottle
- 3 - Copper pipe
- 4 - Shut off
- 5 - Flexible pipe
- 6 - Gimbal stove with oven

OCEANIS 350

MESSENGER CONDUITS FOR OPTIONS

