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THE WESTERLY MANUAL

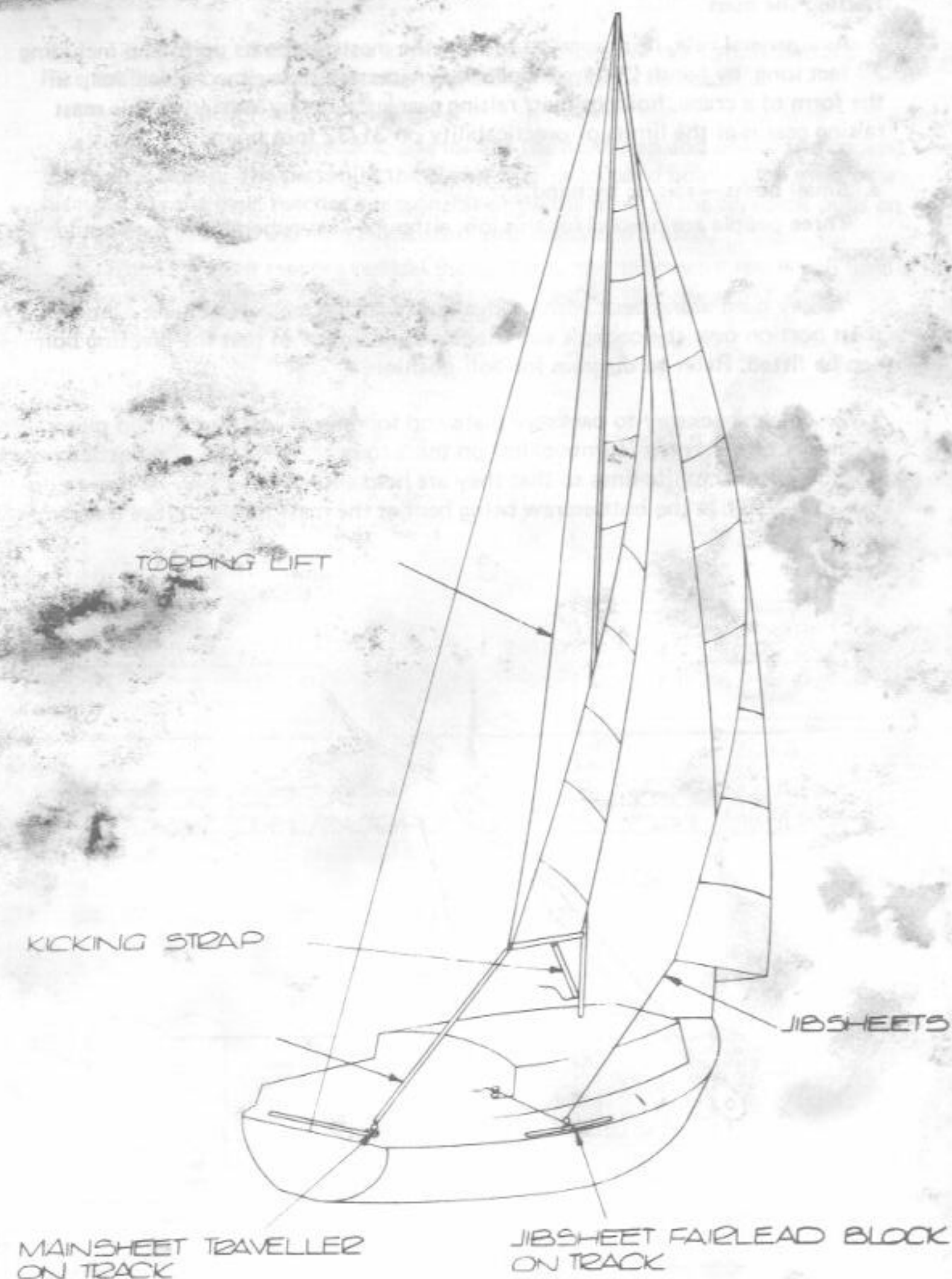
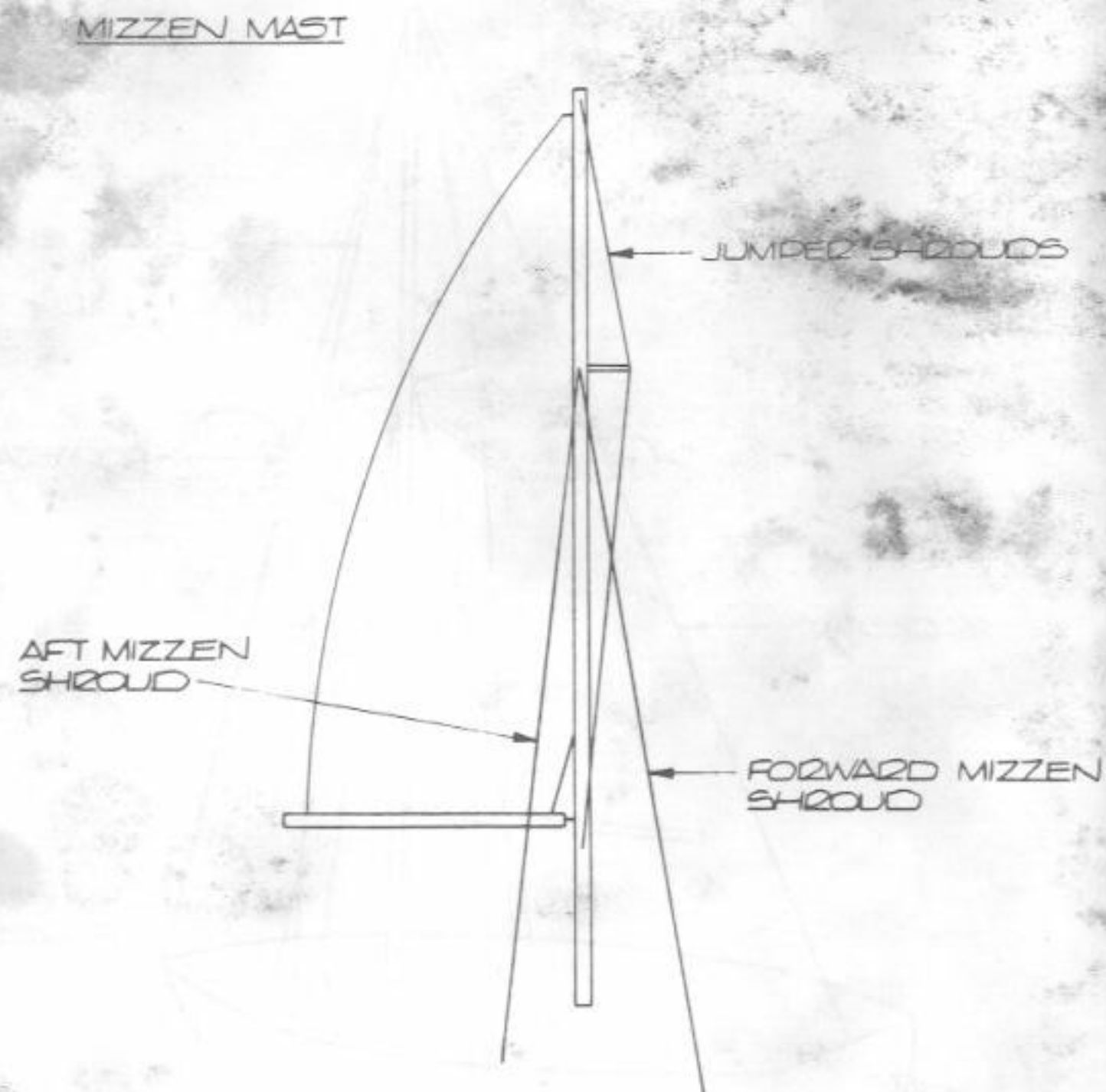
This manual has been compiled to help owners become quickly familiar with their boats. It is not intended to cover all aspects of boat handling, but merely to present the boat itself in terms which can be easily understood. It is not supplied to save ourselves work, it is to help you get the most pleasure from your boat.

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A ketch rigged boat has a mizzen mast which has a slightly different method of rigging. This consists of jumper shrouds which keep the mast straight and mizzen stays which support it.

b. Running rigging comprises the halyards which hoist the sails and sheets which control their position when sailing. There is also a topping lift which supports the end of the boom.



Raising the mast

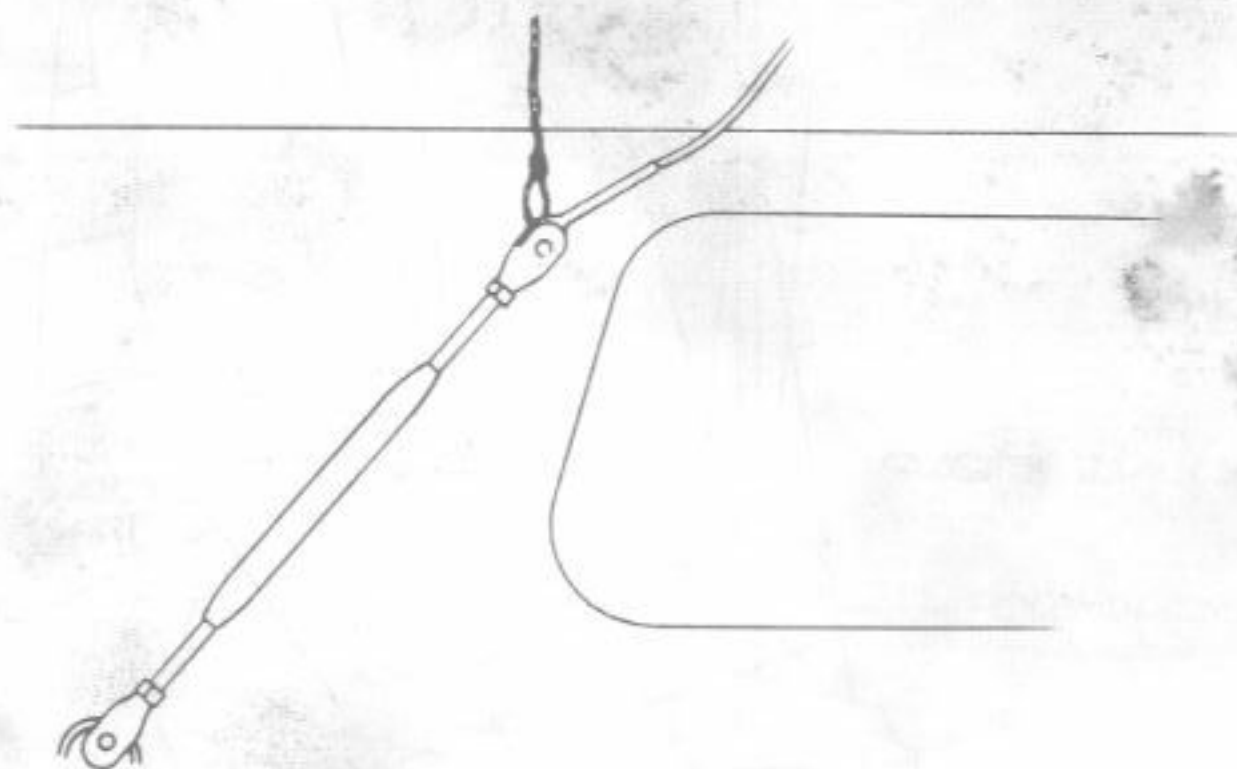
As a general rule, it is practical to raise the masts on boats up to and including 23 feet long, by hand. On larger boats it is necessary to use mechanical help in the form of a crane, hoist or mast raising gear supplied by Westerly. This mast raising gear is at the limits of practicability on 31/32 foot boats.

a. Small boats — raising by hand:

Three people are needed for this job, although two experienced men could cope.

1. Lay mast along deck with groove downwards. One person must support mast portion over the cockpit and the mast positioned so that the pivoting bolt can be fitted. Refer to diagram for bolt position.

2. Attach backstay to backstay plate and topmast shrouds to shroud plates. Open the bottlescrews (turnbuckles) on these to near maximum. Tie bottlescrews on side shrouds to life-lines so that they are held almost vertically. Failure to do this may result in the bottlescrew being bent as the mast is raised. (See diagram)

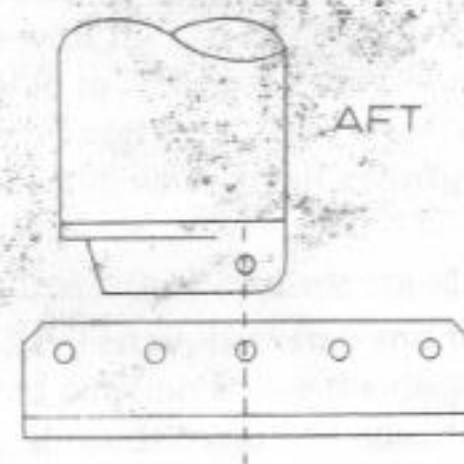


3. Tie a length of strong line to the forestay just above the bottlescrew. Pass this line through the bow roller and bring back onto foredeck.

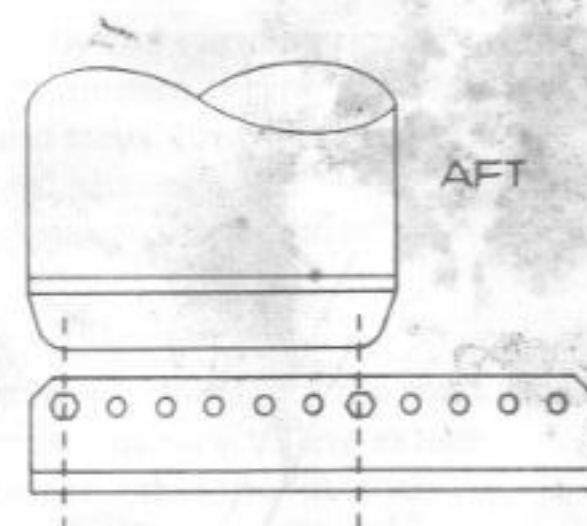
The mast is now ready for raising.

4. With one man on foredeck, one man at the mast step and one in the cockpit, the mast is raised. The person in the cockpit walks forward holding the mast over his head. As the mast reaches a reasonable angle the man on the foredeck pulls on the forestay line and the man at the mast step steadies the mast.

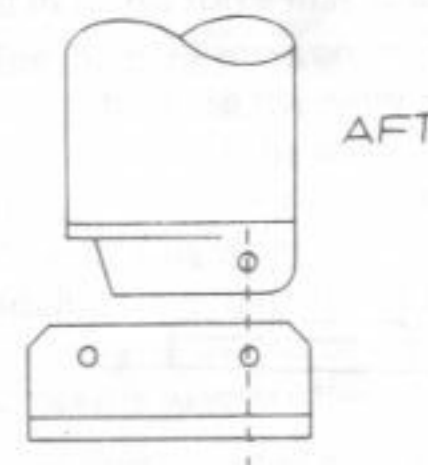
5. When the mast reaches vertical the backstay and topmast shrouds will hold the mast steady and the forestay should be connected. (See diagram for mast bolt positions)



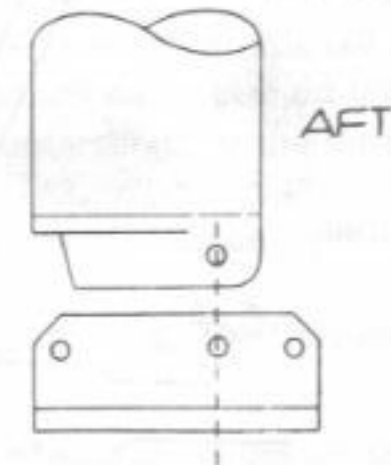
PROCTOR MAST ON
T/CR/CH/KETCH L/BK/R/PO



PROCTOR MAST
SLOOP L/BK/R/PO



PROCTOR MAST
P/WK/J



IYE MAST WK/J

6. The lower shrouds should then be attached and the rigging set up.

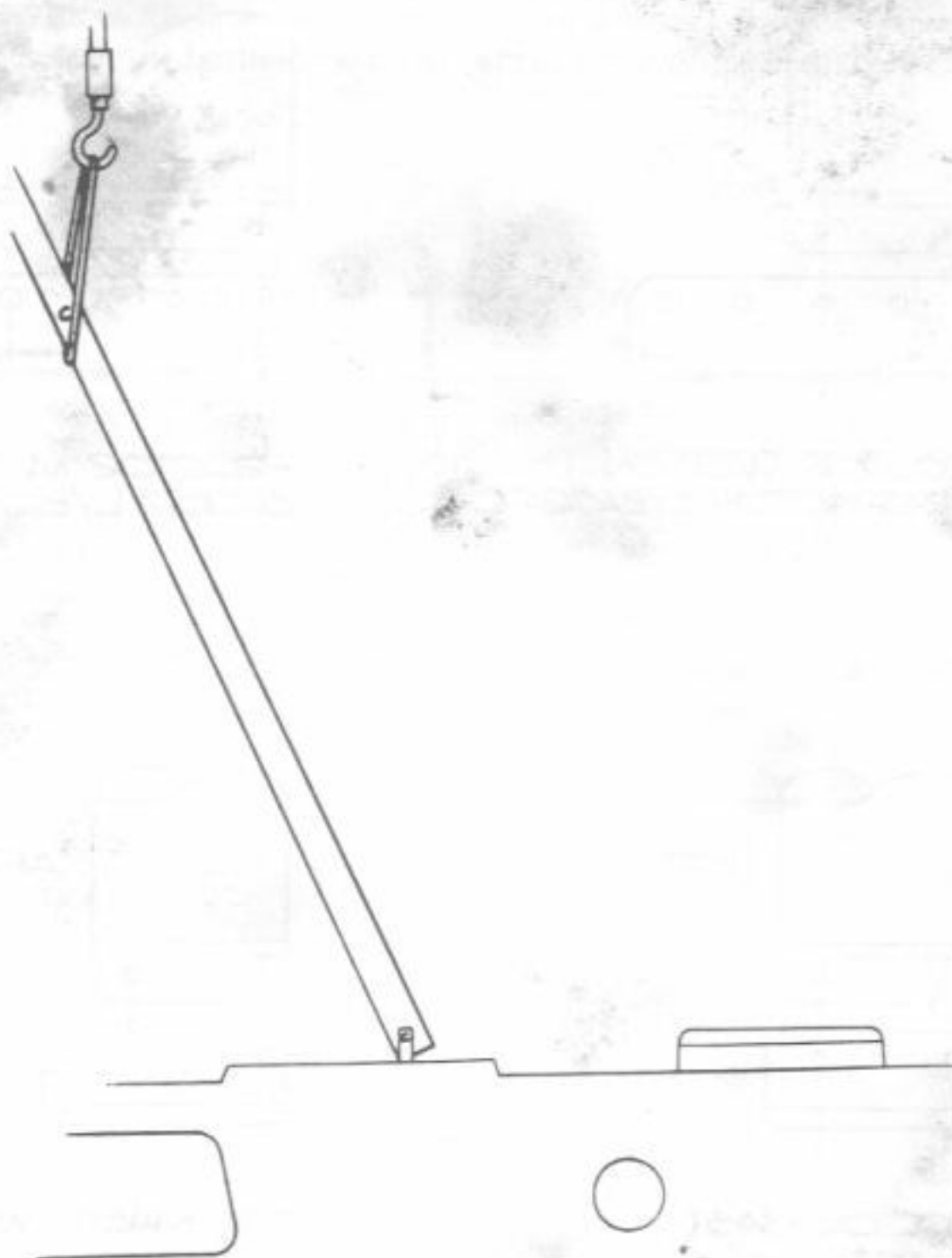
b. Larger boats — raising by crane:

As well as the crane driver, two other men are needed.

Steps 1. and 2. — as for small boats.

3. The mast is raised by a rope sling taken under the spreaders to the crane hook. A suitable long sling should be used to avoid greasy crane cables dirtying the mast.

4. The crane can hold the mast vertically while the remaining standing rigging is attached.



c. Mizzen masts — raising by hand:

Two people are needed for this.

1. Set the jumper stays so that the mast is straight and the stays reasonably tight. Lift the mast onto the boat and stand it vertically on cockpit floor. The mast can be supported by one man holding the base and one holding the mast as high as he can reach conveniently.

2. For masts set on the cockpit sole the mast can simply be lifted onto the step, positioning bolt fitted and rigging attached.

3. For mast set on top of pedestals one man should stand as high as he can on the boat while the mast is lifted vertically onto the step. The step bolt is fitted by the man standing in the cockpit well, who then attaches rigging.

Setting up the rigging

Modern aluminium masts need to be well supported by the standing rigging to cope with the stresses imposed on them by the sails. As modern rigging has been reduced to a designed minimum number of shrouds and stays, it is necessary to set these up correctly. This is sometimes termed as 'tuning', although this term is better used when small adjustments are made to the rigging to obtain maximum performance.

It is worthwhile understanding the function of the various stays.

1. Forestay, backstay and topmast shrouds simply locate the top of the mast at a fixed position above the deck. As this positioning must not vary to any extent, these shrouds should be adjusted tightly. The forestay also takes the jib, and tightening the forestay will lead to a straighter leading edge (luff) to the jib. This leads to a more efficient sail setting. When tightening the forestay the backstay should be tightened correspondingly.

2. The lower shrouds position the centre of the mast. Although this simple fact is obvious, it is important that the centre of the mast be kept at a constant position relative to the top and bottom of the mast. If the centre is allowed to move this will produce a mast bend. The forces exerted on the masthead by the rigging results in a downward compressive force on the mast. If the mast has a bend in it this force may cause the mast to increase its bend and eventually break.

The mainsail plays an important part in bracing the mast. With this sail set and filled by the wind the belly of the sail will produce a backwards pull on the central section of the mast. This backward pull is counteracted by the inner forestay, so the mast is still kept straight.

When sailing without the mainsail the aft lower shrouds produce a similar pull, maintaining the stability of the centre of the mast.

The rigging should be set up with the above points in mind. The following procedure is suggested:—

1. Adjust forestay and backstay so that mast is vertical. Some people prefer to rake the masthead aft by a few inches, and the rigging should accommodate this. These two stays should be tightened down hard.

2. Tighten down topmast shrouds so that mast is vertical in athwartships plane. This can be checked by reference to other boats in the vicinity, although if the bottlescrews are tightened to the same positions, the mast should be vertical. These shrouds should be tightened down hard.

3. The inner forestay should be tightened in conjunction with the aft lowers. The mast should be checked for straightness when the shrouds are set and any degree of bend removed by readjusting. The inner forestay should be set tighter than the aft lowers.

4. Finally, recheck that the mast is vertical and straight.

Notes

i. How tight is tight? An old question, difficult to answer on paper. Forestay and topmast shrouds should be so tight that the wire will ring when tapped by the back of the hand. By grasping the forestay at head height and pulling backwards there should only be a movement of about 2 inches. The other shrouds and stays can be slightly less tight and the aft lower shrouds should be the least tight.

ii. *It is essential* that rigging on a new boat is tightened after two or three weeks. All new rigging stretches and settles and must be tightened.

iii. *It is also strongly recommended* that owners themselves check their standing rigging — even if it has been set up professionally. They should ensure that there is sufficient thread in all bottlescrews, the rigging is tight and mast is straight. It is also advisable to wire lock the bottlescrews and tape over the ends with p.v.c. tape to avoid sail damage on split pins.

iv. When mast is set up, check that the plastic protectors on the end of the spreaders are securely in position. These protect sails from damage and it is up to the owner to ensure they are secured.

Sails

A basic suit of sails consists of mainsail and No. 1 jib, and a mizzen sail for ketch rigged boats.

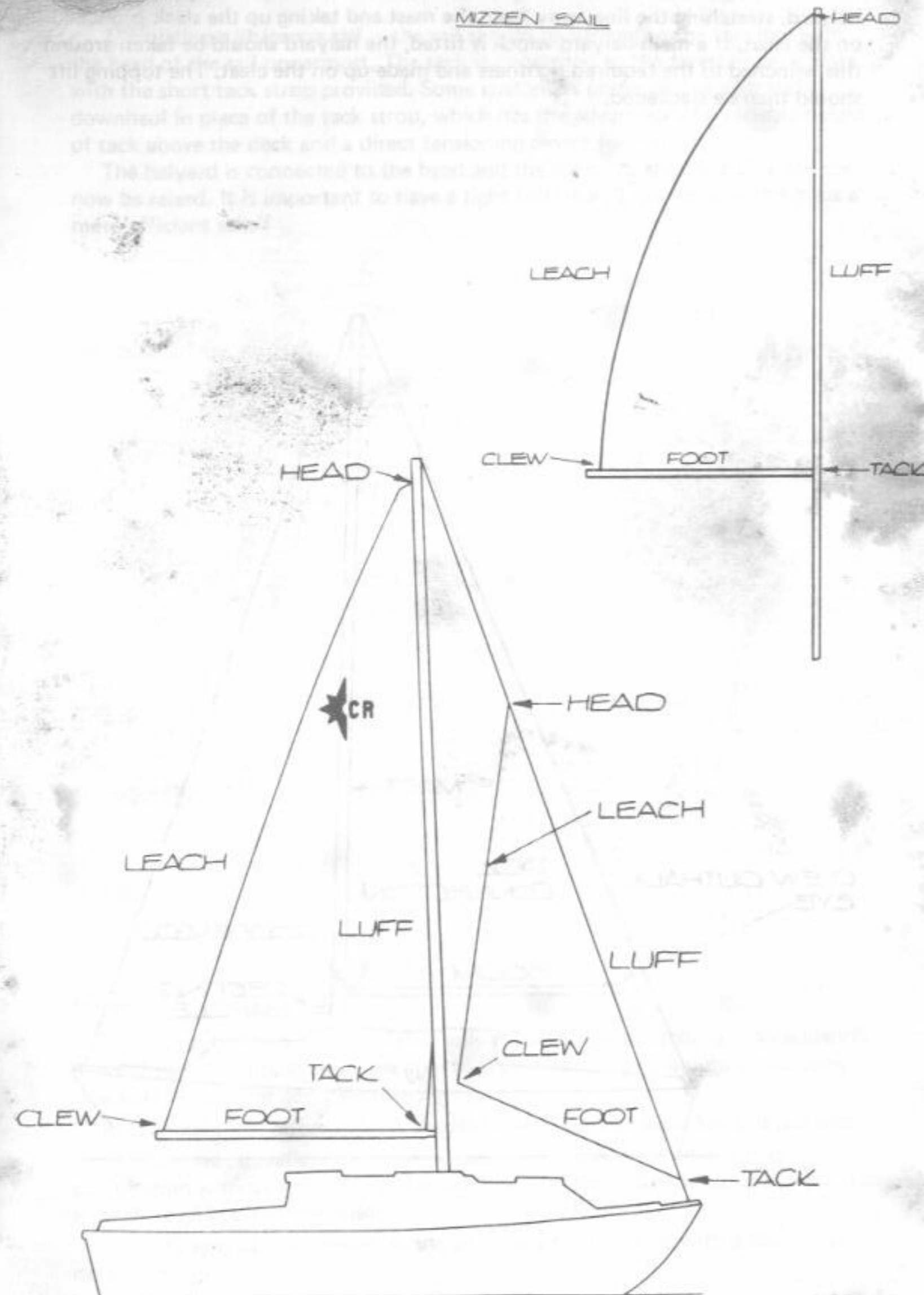
1. **Hoisting the mainsail** — the mainsail should be bent onto the boom. To do this the clew of the sail is fed into the groove on the boom from the gooseneck end. The foot is worked along the boom until the tack can be shackled to its anchoring point on the boom. The clew is then stretched along the boom and lashed to the outboard end of the boom.

The sail slides on the luff can then be fed into the mast groove by removing the split pin at the base of the groove. Some masts have a gate mechanism to allow the slides to be fed in.

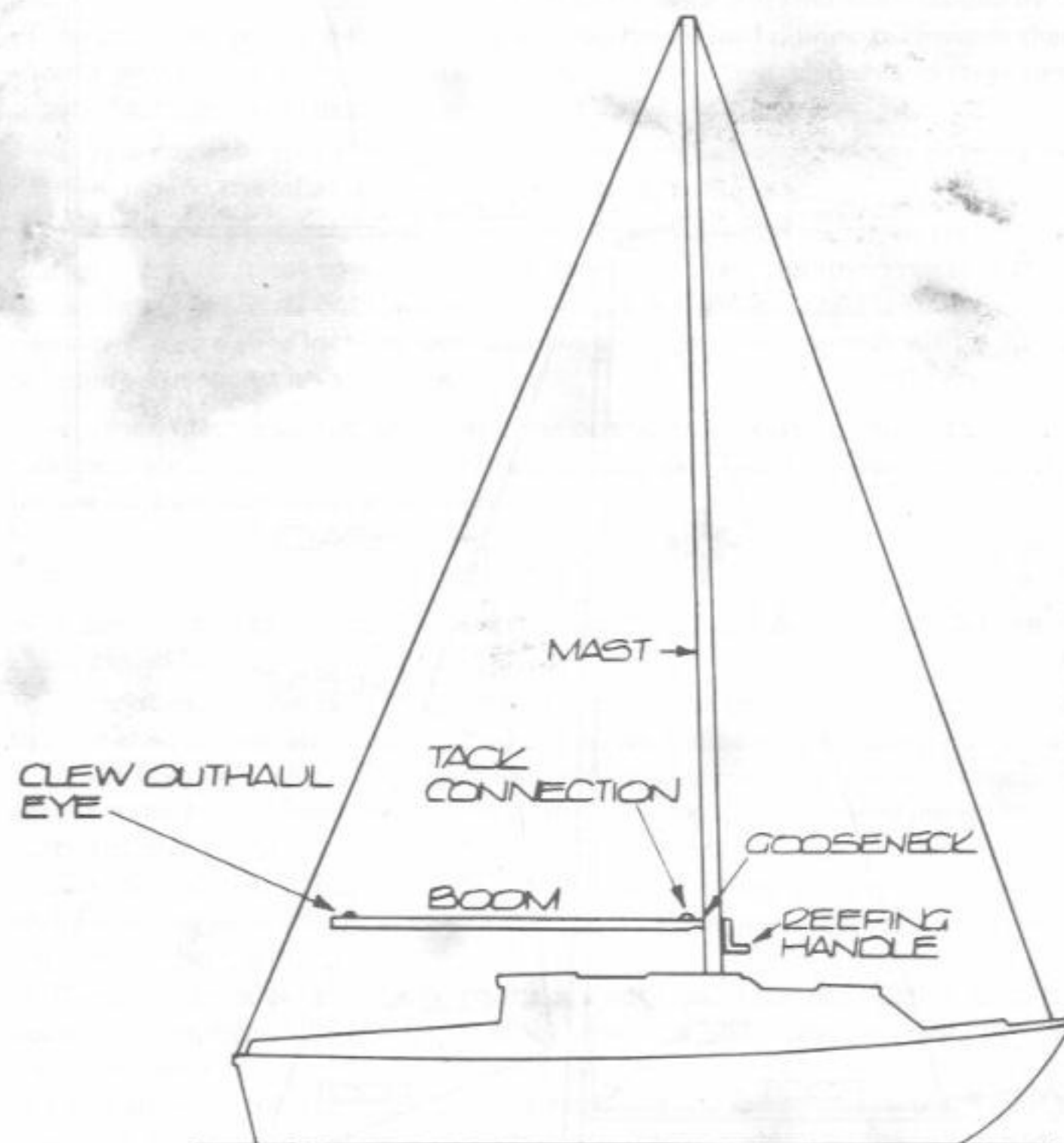
The sail battens are then put into the sail pockets. When each batten is in its pocket it is then pushed down so that the after end is held by the seam at the after end of the pocket.

The halyard is then connected to the head and the sail can be raised. The main-sheet should be uncleated so that the boom is free to swing and the boom hanger should be disconnected.

When the sail is raised the tension on the luff should be applied by cleating the



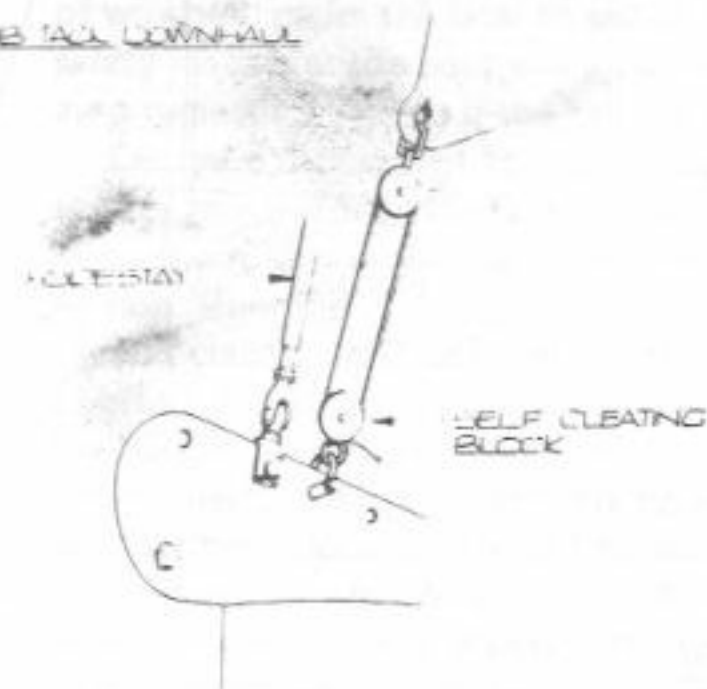
halyard, stretching the line away from the mast and taking up the slack produced on the cleat. If a main halyard winch is fitted, the halyard should be taken around this, winched to the required tightness and made up on the cleat. The topping lift should then be slackened.



2. **Hoisting a jib/genoa sail** — the sail should be hanked to the forestay with the head of the sail uppermost. The tack is connected to the forestay deck plate with the short tack stop provided. Some customers prefer to use a jib tack downhaul in place of the tack stop, which has the advantage of a variable height of tack above the deck and a direct tensioning device for the luff.

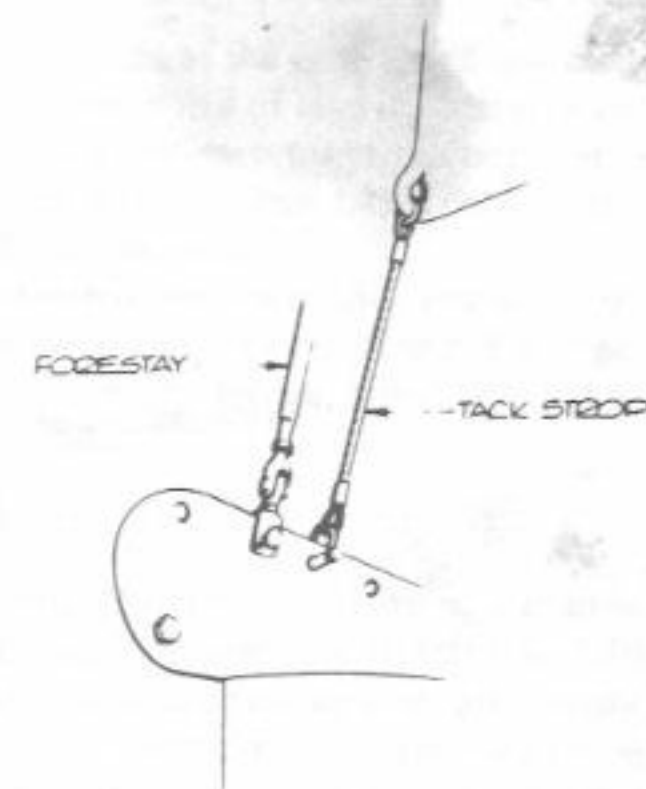
The halyard is connected to the head and the sheets to the clew. The sail can now be raised. It is important to have a tight luff on a jib or genoa — this gives a more efficient sail.

JIB TACK DOWNHAUL



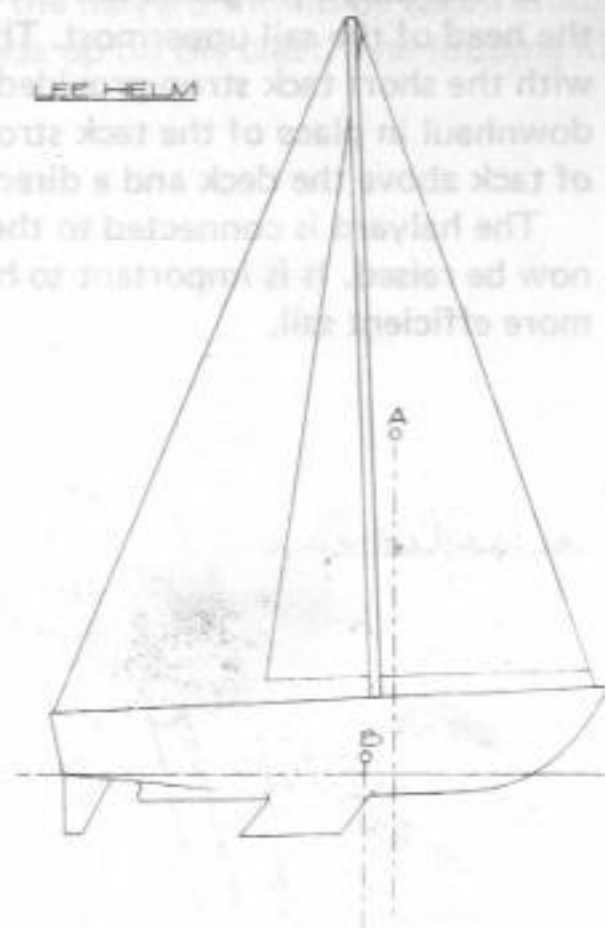
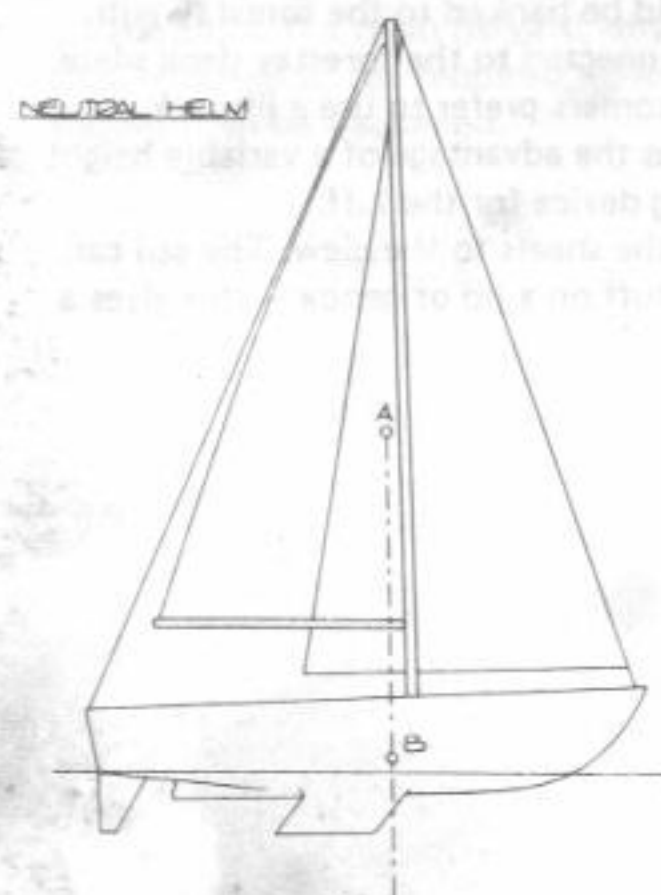
FORESTAY

TACK STOP



Notes

- i. It is advisable to 'break in' new sails to avoid over-stretching. Consequently, halyard tensions should be moderated to start with and one should avoid using new sails in heavy or gusty weather.
- ii. Jib, main and mizzen sheets should have a figure of eight knot in the end.
- iii. Mainsheet travellers have one or two lines attached which are used in conjunction with a cleat to limit the movement of the traveller. Generally speaking, a short travel is used otherwise.
- iv. Dirty sails can be valeted by the sail makers, or cleaned with a biological detergent.



GENERAL POINTS ON SAILING

Modern Westerly designs follow the current pattern of high efficiency rigs and sail plans fitted to a boat with low under-water drag. The underwater design features a short keel and either a spade type or half-skeg rudders.

The short keels and efficient rudders on Westerly boats result in a very manoeuvrable boat, sensitive to helm and with a good turn of speed. However, Westerly boats cannot be sailed in the same way as a long keeled boat. It is important on a Westerly boat to balance the sails to the relative wind and sea conditions, and while this can best be judged by experience, the following guide lines may be of assistance.

'Balance' — refers to the degree of weather or lee helm. Under most conditions a Westerly will have some weather helm, i.e. when sailing a steady course a gust of wind will cause the boat to sail up to windward. This is a normally acceptable safety feature as the boat will look after itself in gusty conditions and will automatically heave-to if the helmsman has to let go.

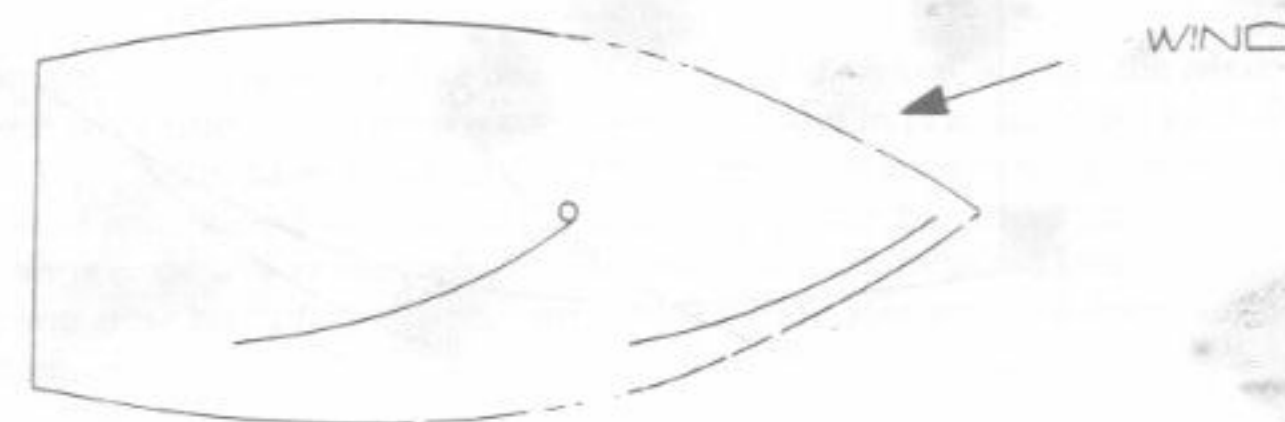
Lee helm occurs when the boat bears away from the wind in a gust. This is not so easy to control and would not be recommended for normal cruising. Under some conditions in very light airs this does occur and is discussed under the section 'Running'.

This clear difference in lee/weather helm occurs as the position of the centre of effort of the sails (A) varies in relation to the centre of lateral resistance of the hull (B). When the positions are vertically above each other the boat has neutral helm and is in a perfectly balanced condition. When (A) is behind (B), weather helm occurs. With (A) forward of (B), lee helm.

The positions of (A) vary with different combinations of sails and when the wind angle to the boat alters. If the vertical distance between A and B is large gusting winds will make the boat difficult to control. Hence, one should set sails to give only a moderate amount of weather helm.

Closed hauled

This is the most controlled point of sailing. With the wind making a shallow angle to the sails, gusting winds tend to produce less dramatic effects than with other points of sailing. The sea conditions are also predictable and fast, steady sailing can be experienced. Careful attention should be made to the way the sails are setting. This becomes more important as one points more directly into the wind.



The mainsheet traveller should be positioned towards the centre of the track, and the main and jib sheet hauled in until the boat is driving well. By tightening and slackening the sheets with reference to the sail settings the speed of the boat will alter. When pointing really close to the wind the main and jib sheets should be hard in, pulling the sails near the centreline of the boat and also flattening the sails. In these circumstances it is a good thing to have a really tight forestay with the jib halyard set hard. This will give a straight leading edge to the sail.

A good helmsman is often judged by his ability to sail a boat to windward. Skill, and above all practice are needed to keep a boat driving well when pointing close to the wind, and a good sail shape is needed. By tightening and letting out the sheets, adjusting the mainsheet traveller position and the kicking strap tension, the optimum performance can be attained.

When easing off the wind the sheets should be slackened to allow the sails to belly out slightly and take a more efficient shape.

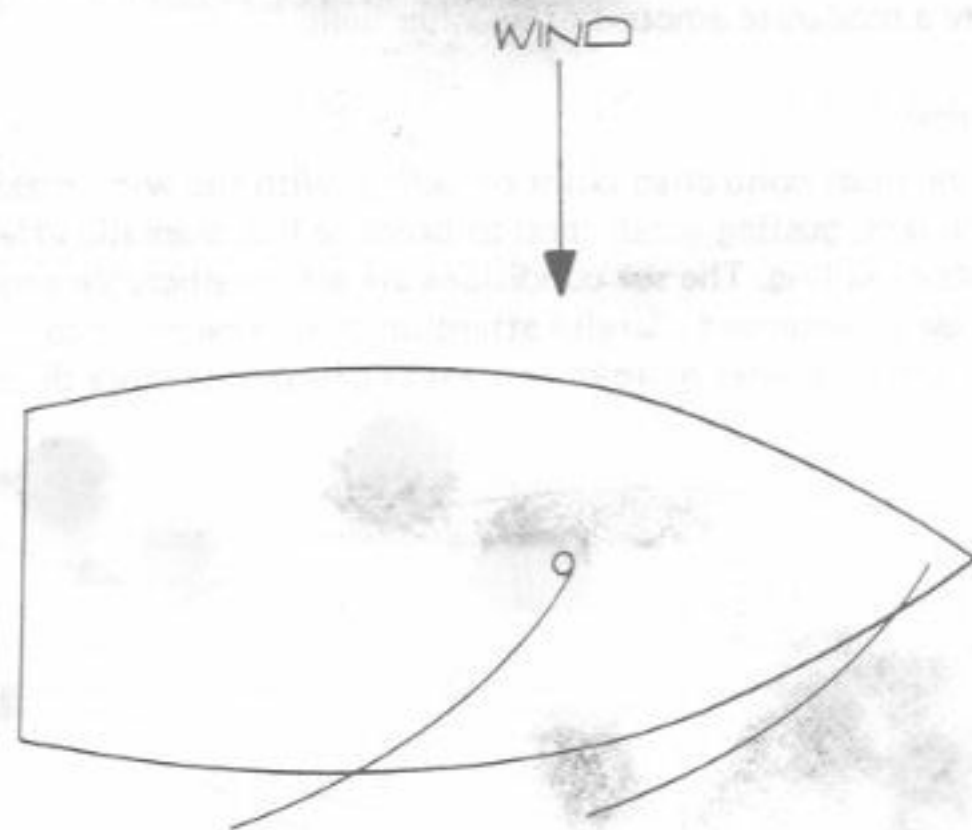
If weather helm is a problem on this point of sailing, then a reef in the mainsail or a larger jib will improve the situation.

Reaching

The angle of the wind to the boat and sails is increased, causing a greater degree of sensitivity to gusting.

The mainsail has more effect when reaching and the boat can be easily balanced. Weather helm can be reduced by freeing off the mainsail or by hardening in on the jib.

The boat will tend to move up and down causing the mainsail boom to move about and spoil the set of the sail. Consequently, it is a good thing to use a kicking strap to control the boom which also removes twist from the mainsail making it a more efficient shape.



Running

Control of the boom with a kicking strap is also important when running as the mainsail is fully bellied out and will tend to lift the boom and twist the sail. It is also advisable to use a bearing out spar or whisker pole to reduce the tendency of the headsail to collapse.

The sea conditions when running will tend to just about keep pace with the boat, causing the boat to sail down the waves in all directions. This yawing is not predictable and some practice is needed to sail a boat comfortably in these conditions. The high manoeuvrability of the boat will also allow it to change course easily, producing an ever varying situation.

In these conditions one may experience lee helm, although this will usually be short lived.

Spinnakers are ideal light weather sails for running.



Gybing

Gybing is the operation when the boat is running and the wind angle to the transom changes so that the boom must be positioned on the other side.



In (a) the wind is on the stern. The boom is then pulled central, so that the wind can carry it to position (b). This is a controlled gybe and in practice it can happen quite quickly. This gybe will take the boat to a goosewing situation. By slackening the jib sheet and hauling in on the other sheet, the jib can be moved across the boat onto the same side as the mainsail. The boat can then be sailed into a reaching and close hauled condition. This is how a boat goes about with the wind on the stern.

An uncontrolled gybe happens when the helmsman is unaware that the boat's course is changing, or that the wind direction is changing, and the first thing he knows is that the boom has crashed across to the other side. This can also happen when running in a lumpy sea which throws the boat temporarily off course.

The Spinnaker

The standard Westerly spinnaker is cut as a running sail only. It is used in conjunction with spinnaker sheets, halyard and boom. The boom is controlled with a topping lift and a downhaul.

The line attached to the leeward clew is called the sheet and the line to the windward tack is the guy. The sheet and guy are identical as the sail is symmetrical. The pole is clipped to the sliding eye on the front of the mast clipped to the tack.

The following procedure should be used when hoisting and lowering:

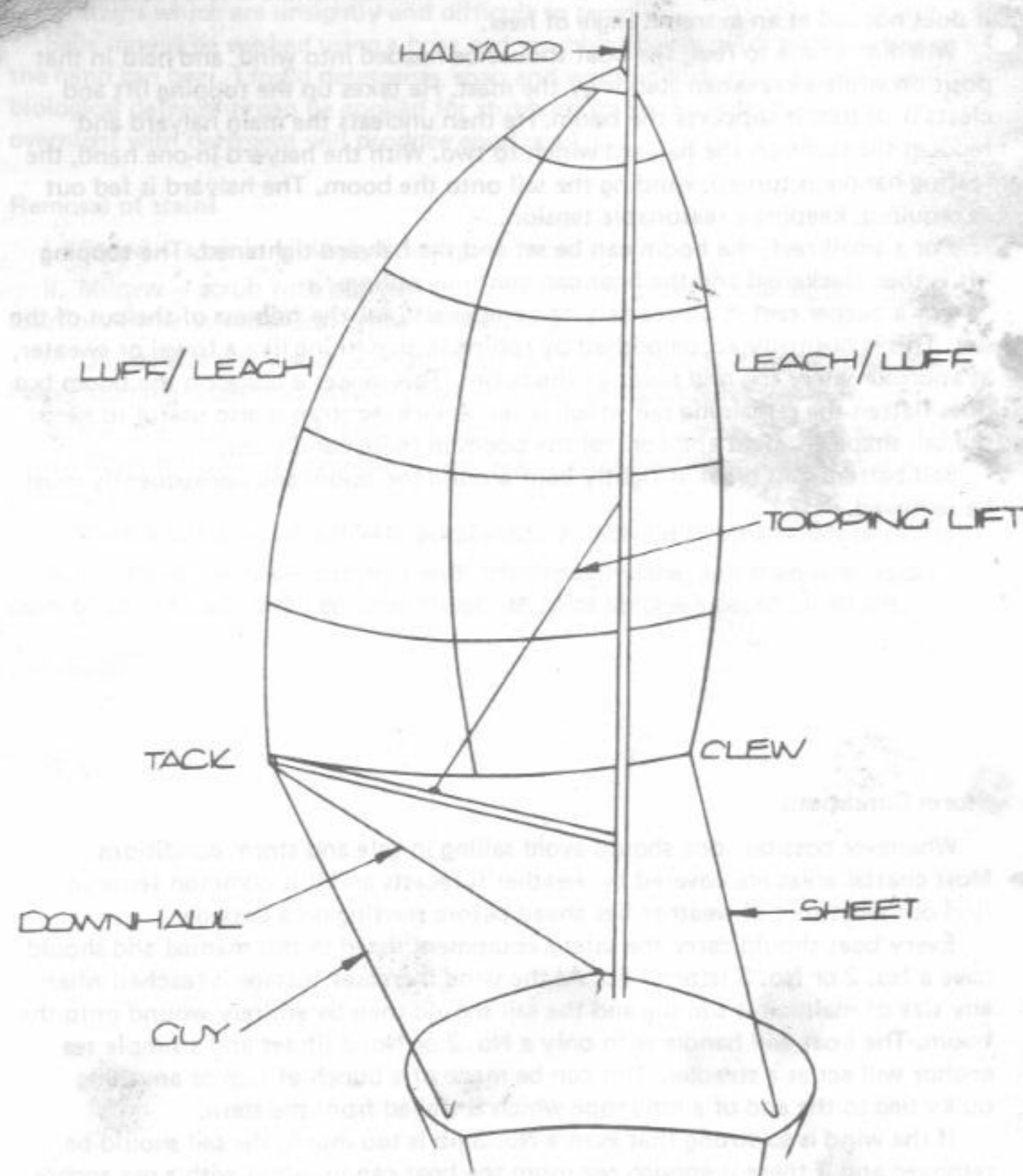
1. Arrange the sail in the bag so that head, tack and clew are by the mouth of the bag. Pack by starting with the centre of the sail. Tack and clew are marked red and green, for port and starboard. Bear in mind that when the sail is raised there should be no twists in it.
2. Tie the bag to the pulpit and attach halyard, sheet and guy. Clip the boom to mast eye and to the tack of sail. Clip topping lift to central eye on boom, and downhaul to the outboard end clip on the boom. The downhaul is taken via a block shackled to the stemhead, thence to the foredeck mooring cleat.
3. Set topping lift and downhaul to allow plenty of movement on pole.
4. With crew alerted on sheet and guy, raise spinnaker.
5. Set topping lift and downhaul so that boom is approximately horizontal and adjust guy so that boom is about at right angles to the wind.

When the sail is set it will move around with the wind and will fill and empty as the boat moves. This is compensated for by constant adjustment of sheet and guy to keep the sail filled.

To lower the sail, unclip tack, then free off the halyard and gather the sail by the clew under the boom as it comes down. The sheet should be released in a controlled fashion and the sail unclipped from the boom. Stow the sail in the bag, unclip sheets and halyards, and unclip the boom from the mast.

Notes

- i. The spinnaker, sheet and guy should be rigged outboard of everything.
- ii. In steady wind and sea conditions the guy can be set and the sail trimmed by the sheet only.
- iii. Some say that the optimum set on the sail is obtained when the leeward leach is just beginning to curl.
- iv. Practice is the key word to good spinnaker handling. Several variations are possible on the described procedure and a great deal of enjoyment and exhilaration can be gained with this sail.



Reefing

As the wind strength increases, a stage is reached when it is necessary to reef. This should be done before the boat becomes too difficult to handle and an experienced yachtsman will reef as he sees the weather worsening. In bad conditions, a boat will perform better and be easier to handle if it is reefed so that it does not sail at an extreme angle of heel.

When it is time to reef, the boat should be headed into wind, and held in that position while a crewman stands by the mast. He takes up the topping lift and cleats it so that it supports the boom. He then uncleats the main halyard and reduces the turns on the halyard winch to two. With the halyard in one hand, the reefing handle is turned, winding the sail onto the boom. The halyard is fed out as required, keeping a reasonable tension.

For a small reef, the boom can be set and the halyard tightened. The topping lift is then slackened and the boat can continue sailing.

For a deeper reef it is necessary to compensate for the fullness of the cut of the sail. This is normally accomplished by rolling in something like a towel or sweater, at approximately the mid point of the boom. This makes a bulge on the boom but does flatten the remaining sail which is set. A kicking strap is also useful to keep the sail shape efficient and control the boom in these conditions.

Sail battens will break if tightly bent around the boom and consequently must be removed.

Storm Conditions

Whenever possible, one should avoid sailing in gale and storm conditions. Most coastal areas are covered by weather forecasts and it is common sense to find out what sort of weather lies ahead before starting on a passage.

Every boat should carry the safety equipment listed in this manual and should have a No. 2 or No. 3 (storm) jib. As the wind increases, a stage is reached when any size of mainsail is too big and the sail should then be entirely wound onto the boom. The boat will handle with only a No. 2 or No. 3 jib set and a simple sea anchor will act as a steadier. This can be made of a bunch of rags or anything bulky tied to the end of a long rope which is trailed from the stern.

If the wind is so strong that even a No. 3 jib is too much, the sail should be removed and if there is enough sea room the boat can lie a-hull with a sea anchor. In many circumstances, it is advisable to remove all sails and motor into quieter waters in the lee of some land. Remember that your boat will last out any weather — in a storm take some time to consider the alternatives and choose the one which appears the safest for boat and crew.

CARE OF SAILS

Stow sails carefully to avoid sharp creases. The sails are made from polyester fibre, known as terylene or dacron and should be stored in well ventilated, damp-free conditions. Mildew growths do not affect the strength of the sail but can cause stains which are unsightly and difficult to remove.

Sails should be washed using a hose and scrubbing brush, with water as hot as the hand can bear. Liquid detergents, soap and washing soda can be used and biological detergents can be applied for stubborn stains. Soaking stained areas overnight with detergent will produce good results.

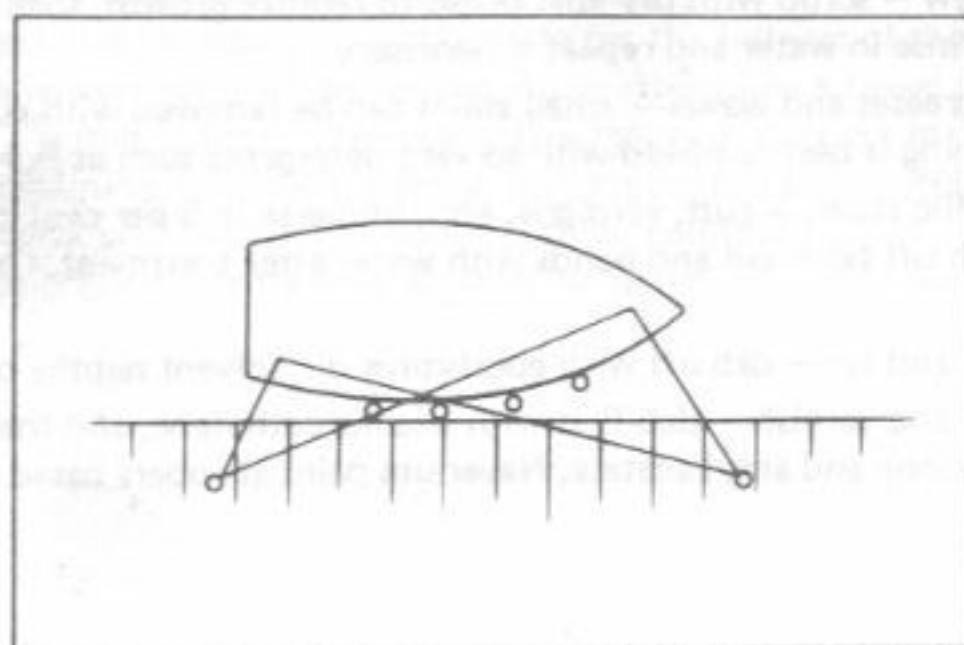
Removal of stains

- i. Blood — soak in biological detergent.
- ii. Mildew — scrub with dry stiff brush to remove growth, soak in bleach solution. Rinse in water and repeat if necessary.
- iii. Oil, greases and waxes — small stains can be removed with eucalyptus oil. Heavy staining is best removed with solvent detergents such as Polyclens.
- iv. Metallic stains — rust, verdigris, etc. Immerse in 5 per cent oxalic acid in hot water. Wash off both sail and hands with water after treatment. Oxalic acid is poisonous.
- v. Pitch and tar — dab off with eucalyptus oil, solvent naphtha or white spirit.
- vi. Paint and varnish — dab first with trichloroethylene, and then with equal parts of acetone and amyl acetate. Never use paint strippers based on alkalis.

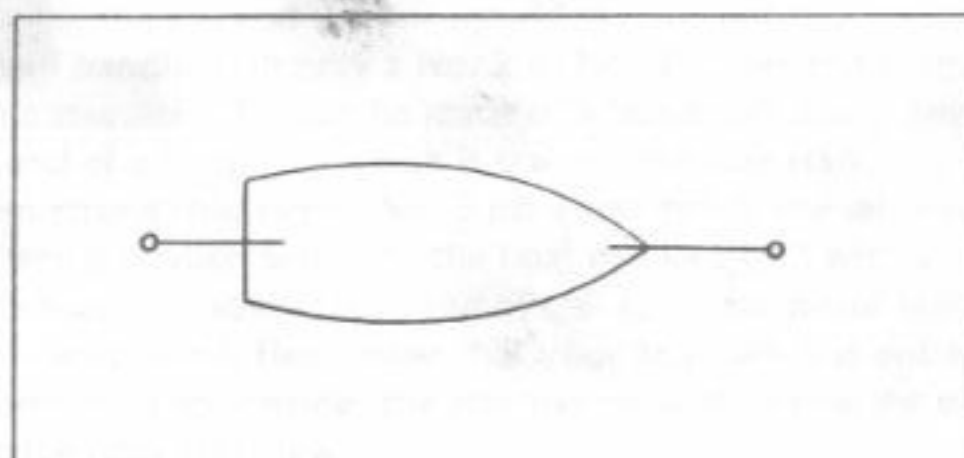
HINTS ON MOORING

No two mooring situations are the same, and each should be treated on its merit. The more usual types are discussed below.

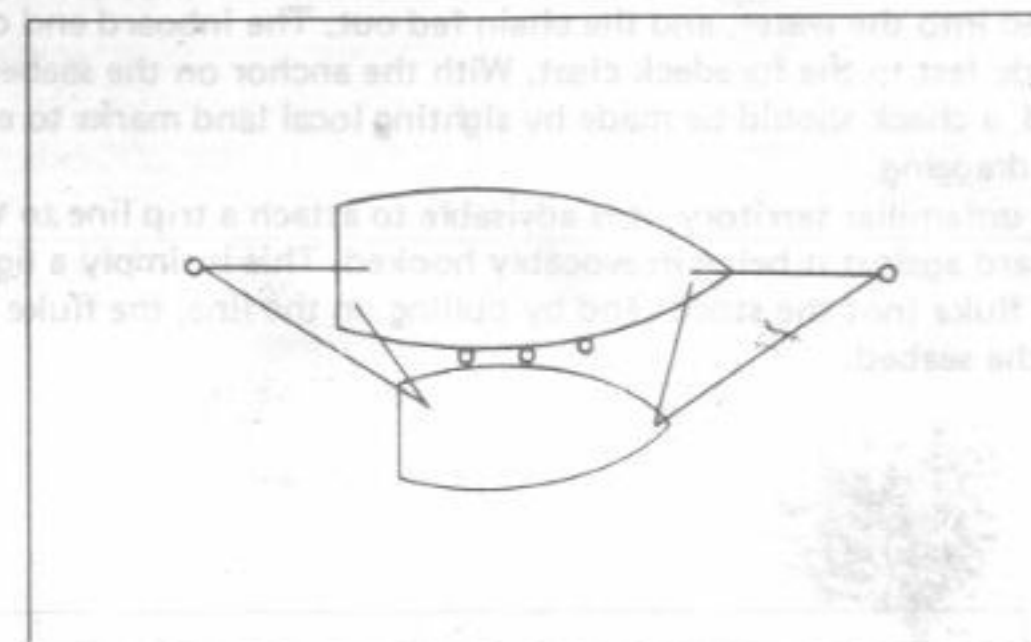
i. **Mooring sideways onto a pontoon.** This is used on many marinas, and as the mooring lines tend to pull the boat against the pontoon, fenders must be used to protect the boat. These should be positioned at the correct height, and the fender lines secured to the boat's guardrails. The bow and stern lines should be made fast to the relevant deck cleats, so that the boat is held against the pontoon. 'Spring' lines are then attached, to stop any fore and aft movement of the vessel. The movement of the boat should be restricted to the minimum amount required to allow for its motion on the water.



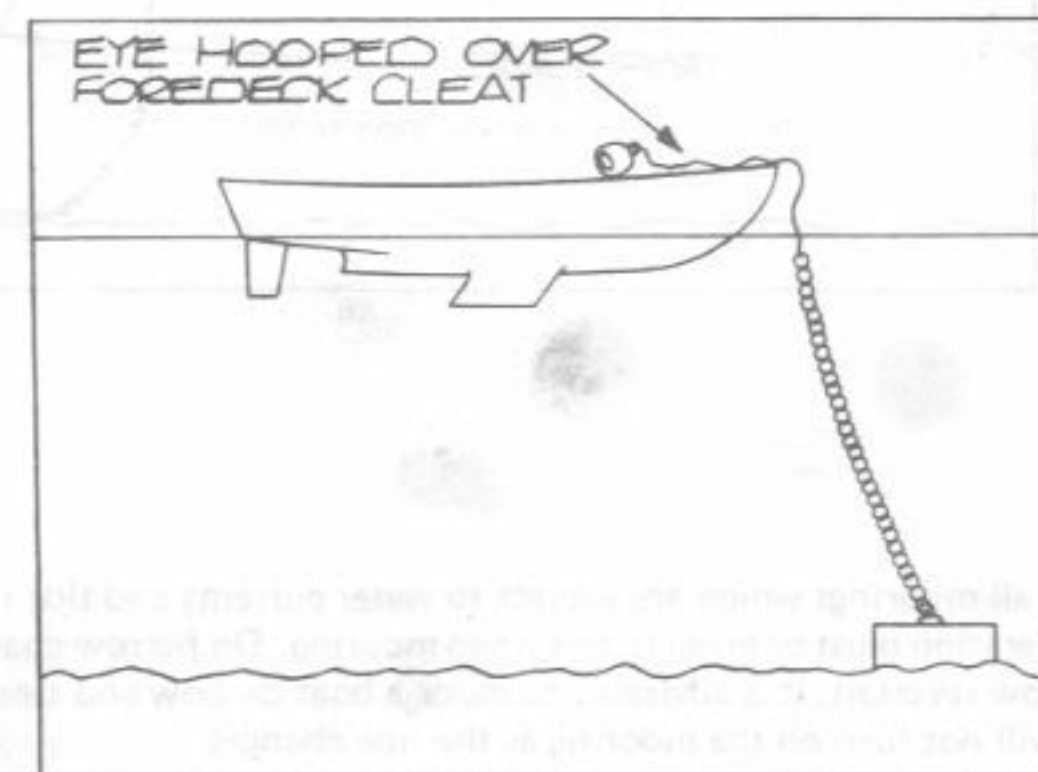
ii. **Mooring on trots.** Trotts are vertical posts set in the water. The first boat on the scene moors directly between two of these, with a single bow and stern line.



The second boat moors against the first, with carefully placed fenders separating them. In particular one should look for projecting pieces from either boat, which may snag when the boats roll under the influence of a wash from a passing vessel. The second boat is attached to the first with bow and stern lines, and if necessary with springs. An additional bow and stern line should be taken to the trots. It is not good policy for a boat which is considerably larger than the others on the trot to moor on the outside.



iii. **Mooring buoys.** Once you have established from the harbour-master that the mooring is sufficiently strong for your boat, the buoy should be lifted on board with a boathook, and the line attached to the buoy pulled in. On most moorings there is a wire stop attached to this line, with an eye in the wire. This can be looped over the foredeck cleat. If there is any uncertainty on the

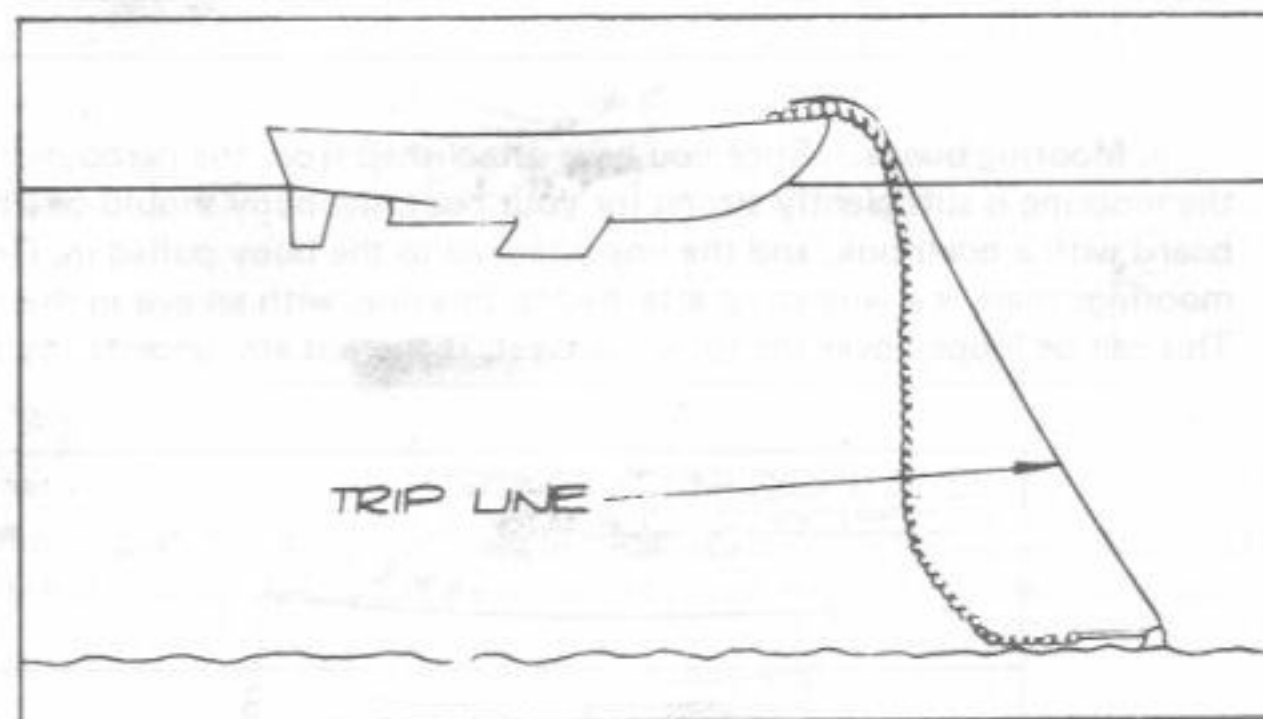


way the mooring line is used, it is advisable to look at how the neighbouring boats are attached to their moorings.

iv. **Anchoring.** Before anchoring, one should establish the approximate depth of water. A good yardstick for the amount of chain to use is to multiply this depth by three times. Some owners mark their chain every fathom to make it a simple matter to calculate the amount of chain paid out.

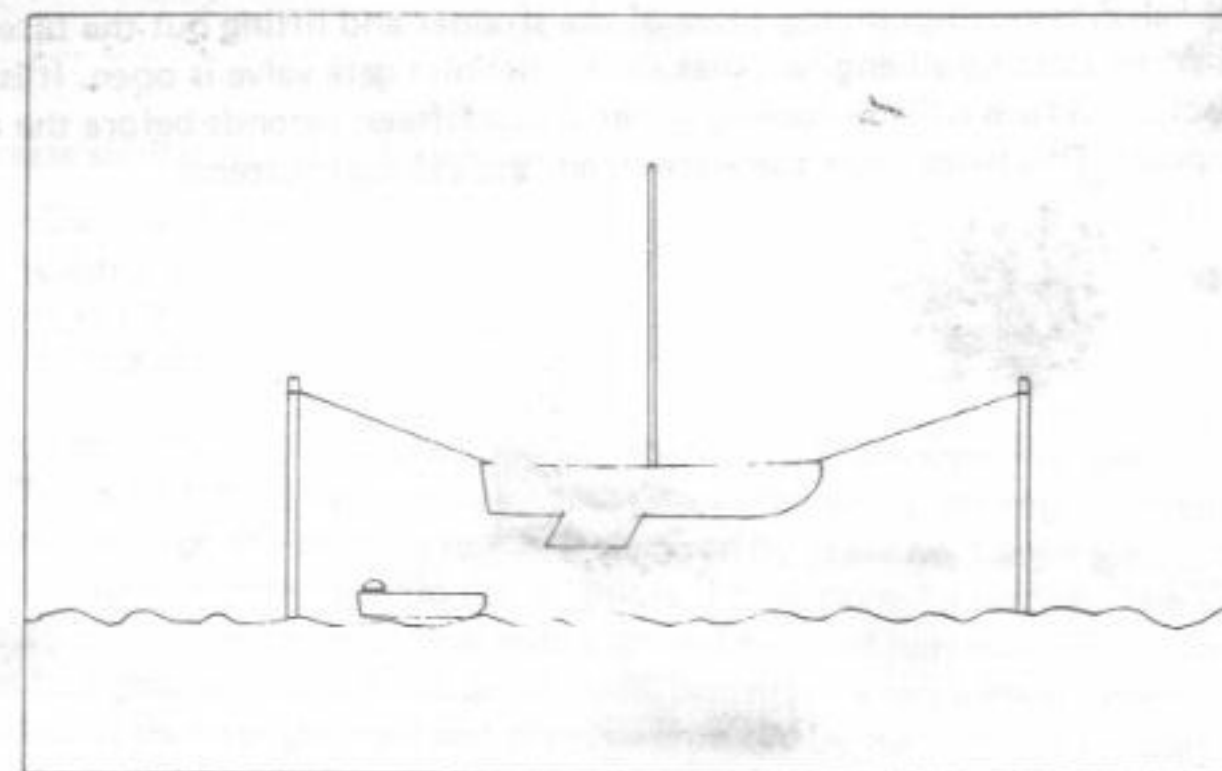
Once the amount of chain has been established, the chain should be laid out on deck, and the end securely shackled to the anchor. The anchor should be lowered into the water, and the chain fed out. The inboard end of the chain should be made fast to the foredeck cleat. With the anchor on the seabed and the boat settled, a check should be made by sighting local land marks to ensure the anchor is not dragging.

On unfamiliar territory, it is advisable to attach a trip line to the anchor as a safeguard against it being irrevocably hooked. This is simply a light line attached to the fluke (not the stock) and by pulling on the line, the fluke will disengage from the seabed.



Notes

On all moorings which are subject to water currents and tide rise and fall, consideration must be given to this when mooring. On narrow channels that have tide flow reversals, it is advisable to moor a boat by bow and stern, so that the boat will not turn on the mooring as the tide changes.



What goes up must come down!

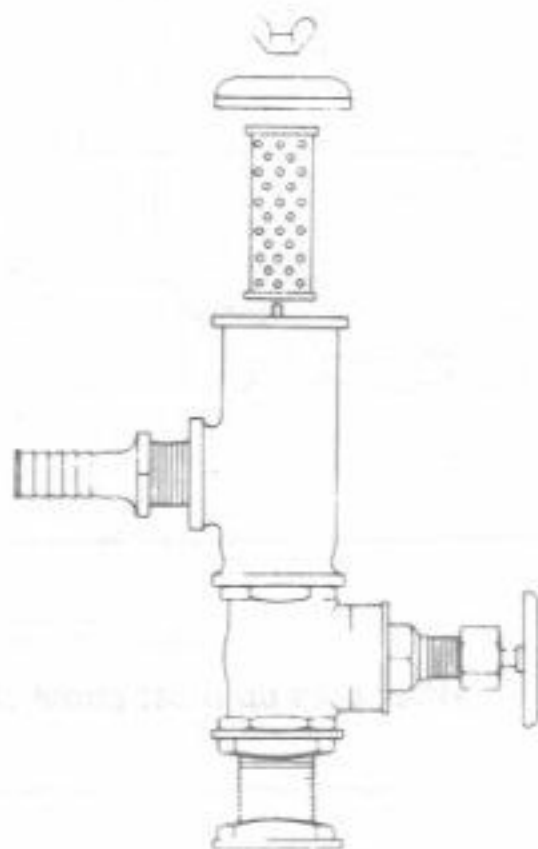
THE ENGINE

Diesel engines are installed in most Westerlys and should give trouble free service and a long life. The advantages of diesel engines over petrol ones for marine use are that they do not rely on electrical circuits for operation. Diesel fuel is also more difficult to ignite than petrol, which reduces the fire and explosion risk in the boat.

All the units fitted have their own manuals, which should be read before the engine is used for the first time. These manuals are fairly complete and a few further points are explained below.

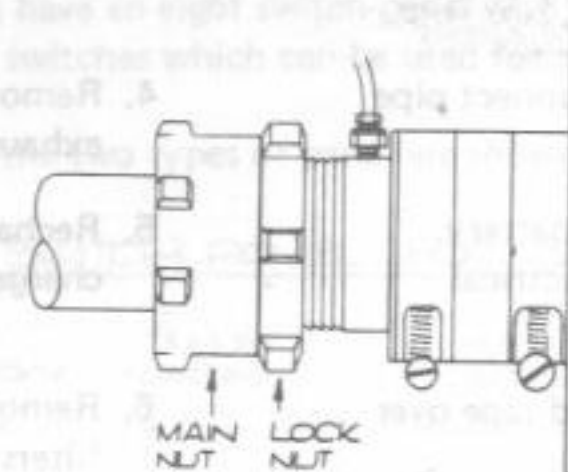
i. **Engine cooling water.** The cooling of the engine is done by sucking in salt water through a strainer and circulating it around the engine. It is then exhausted with the exhaust gases. This strainer is situated above the inlet gate valve and should be removed and cleaned occasionally. This involves turning off the valve, removing the top plate of the strainer and lifting out the filter element.

When starting all engines, make sure the inlet gate valve is open. It is good practice to turn off the cooling water about fifteen seconds before the engine is stopped. This helps clear the water from the exhaust system.



ii. **Stern gear.** The propeller shaft connects directly to the gearbox output shaft, and transmits the torque to the propeller which in turn drives the boat through the water. The shaft passes through two bearings, one at the inboard end of the tube, and one outside the hull. The inboard bearing is made of white metal and is connected to the tube with a short length of rubber hosing. This allows the bearing to move with the shaft. Attached to this bearing is the stuffing box. This is simply a chamber filled with packing material. The chamber can be tightened against the bearing, compressing the packing against the shaft, thus providing a

waterproof seal. This inboard bearing and stuffing box are fed with grease via the remote grease line. Greasing is done from the main cabin by lifting off the engine front and connecting the grease gun to the grease nipple.



A grease similar to the following should be used:—

Duckhams Keenol
Castrolase
B.P. L2
Energrease

It is recommended that the bearing and stuffing box are kept well packed with grease. This is best done by pumping a few times after using the engine. Small water leaks through the stuffing box can be cured by greasing. Larger leaks can be stopped by tightening the stuffing box. This is simply done by undoing the locknut by tapping one of the castellations with a screwdriver and hammer. The main nut can then be tightened onto the tube by hand, and given a tap with a screwdriver. The locknut is then retightened and the shaft rotated by hand to ensure that it is not binding.

iii. **Winterising** It is necessary to protect engines against winter conditions and this is particularly important if the boat is not going to be used. In this case a winterising procedure should be carried out, as briefly described below. In some cases, it is acceptable to visit the boat every two weeks and run the engine up to operating temperature. This can be adopted as an alternative to winterising, although care should be taken to avoid water freezing inside the engine.

a. **For Volvo engines**

WINTERISE

1. **Cooling system:** flush through with fresh water with inhibiting oil and antifreeze added. Drain water and leave leave taps open.
2. **Lubricating oil:** remove oil and replace with inhibiting oil. Top up gearbox with normal oil.

DEWINTERISE

1. Close drain taps.
2. Remove inhibiting oil and replace with lubricating oil.

3. *Fuel system:* mix inhibiting oil with diesel in fuel filter. Run engine. Top up fuel tank to the brim with diesel.
4. *Exhaust system:* disconnect pipe and tape over hole.
5. *Electrics:* disconnect battery. Spray leads and all electrical fittings with WD40.
6. *Air filters:* remove and tape over holes.
7. *General:* clean engine and spray with WD40.
3. (No action required.)
4. Remove tape and reconnect exhaust pipe.
5. Recharge battery with trickle charger. Reconnect.
6. Remove tape and reconnect filters.
7. (No action required.)
8. Run engine, bleeding fuel system as required.

b. For Watermota engines

WINTERISE

1. *Cooling system:* flush through salt water system with fresh water with antifreeze and inhibiting oil added. Add antifreeze to fresh water tank.
2. *Lubricating oil:* run engine in neutral at fast idling speed for approximately 10 minutes. This will 'oil up' the engine.
3. *Fuel system:* feed inhibiting oil into fuel system in conjunction with 2. above. Fill fuel tank to brim.
4. *Exhaust system:* disconnect pipe and tape over hole.
5. *Electrics:* disconnect batteries. Spray leads and all electrical fittings with WD40.
6. *Air filters:* remove and tape over holes.
7. *General:* clean engine and spray with WD40.

DEWINTERISE

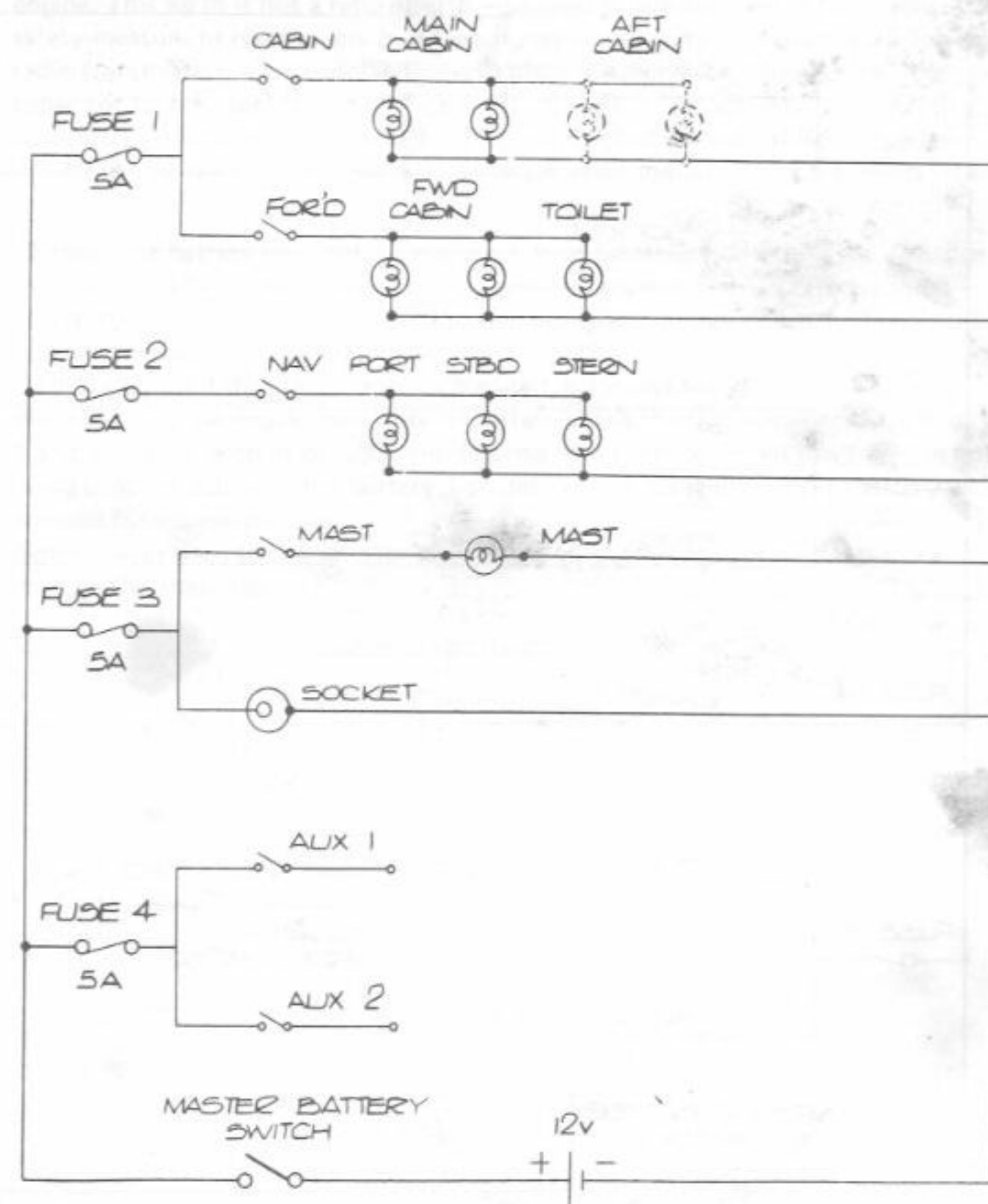
1. (No action required.)
2. (No action required.)
3. (No action required.)
4. Remove tape and reconnect exhaust pipe.
5. Recharge batteries with trickle charger and reconnect.
6. Remove tape and reconnect air filters.
7. (No action required.)
8. Run engine, bleeding fuel system as required.

ELECTRICAL SYSTEM

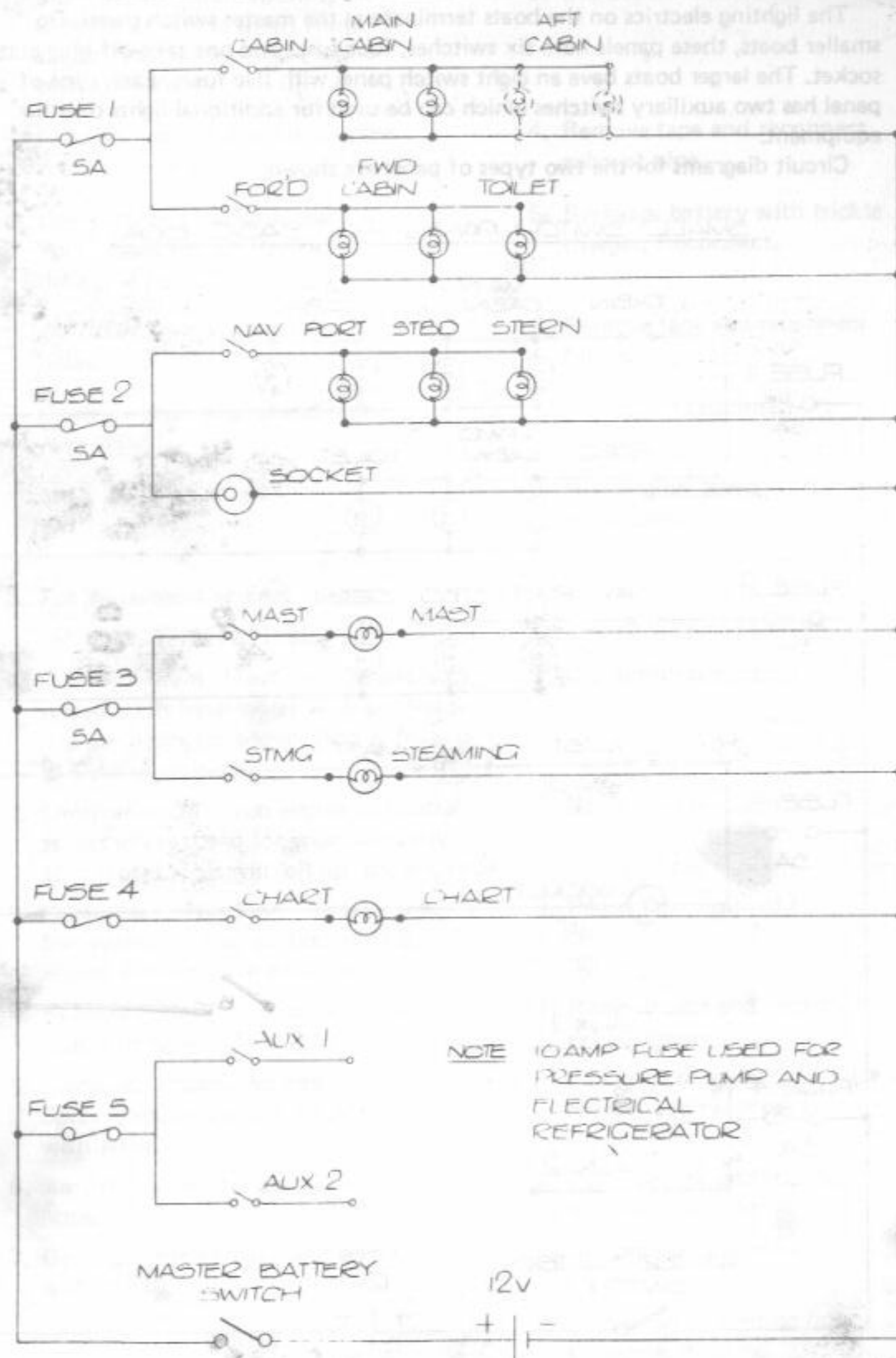
The lighting electrics on the boats terminate at the master switch panel. On smaller boats, these panels have six switches, four fuses and one take-off plug and socket. The larger boats have an eight switch panel with five fuses. Each type of panel has two auxiliary switches which can be used for additional lights or other equipment.

Circuit diagrams for the two types of panel are shown.

SMALL SWITCH PANEL FOR BASIC BOAT



LARGE SWITCH PANEL FOR BASIC BOAT



The wiring used for lighting is a normal domestic twin flex, with a current rating far in excess of the use to which it is put. The circuits are protected by 5 amp fuses. Sometimes a 10 amp fuse is used, in circumstances which need this higher rating. Both types of fuse are a glass cartridge type, 22 mm long by 5 mm diameter. Replacements are available from Westerly Chandlers.

In all cases, boats are fitted with battery isolating switches, so that the boat can be left with no suspicion that the batteries are being drained.

Circuit diagrams for the engines are shown in the engine manual. The connection of the engine circuit is made to a point on the opposite side of the master switch to the battery. Thus, the engine cannot be started until the master switch is turned on.

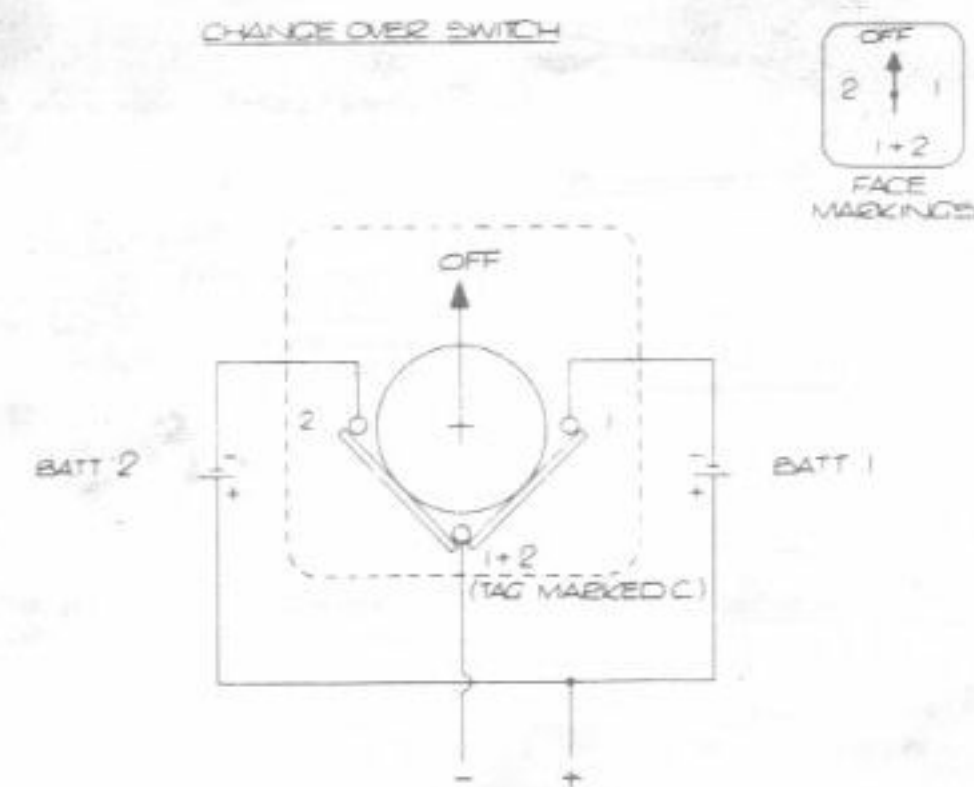
The boats system is earthed (grounded) at the inlet water skin fitting to the engine. This earth is not a return earth — as used in automobiles — but is simply a safety measure to remove any build up of static electricity. If owners wish to fit radio transmitters, a separate aerial earth plate is needed. This should incorporate a capacitor (condensor) to not allow any direct current leakage. Additionally, if customers wish to earth the mast to give some protection against lightning, this should not be taken to this point. In this case, they should obtain the advice of an expert in this field.

Change over battery switches — boats with twin batteries normally have a change over switch. The circuit diagram of this switch is shown. Either battery can be connected into the circuit and both batteries in parallel may be used. This gives 12 volts with twice the capacity.

It is suggested that twin batteries are used as follows:

When starting the engine, switch both batteries into the circuit (switch position 1 and 2). Leave both in circuit while the engine is running. When the engine is not being used, switch to either battery 1 or battery 2. This will keep one battery well charged for engine starting.

Note: Never use the change over switch while the engine is running. This can damage the alternator.



Batteries — used are normal 12 volt lead acid accumulators. These should be topped up with distilled water like a normal automobile battery. Battery capacities are generally as follows:

Peter and Volvo MD1B engines	..	..	..	..	..	45 amp hour
Volvo MD2B and 3B	..	..	..	..	..	52 amp hour

Note: Watermota Sea Panther presently has a 24 volt system. This is achieved by fitting two 52 amp hour 12 volt batteries in series. The 12 volt boat services are taken from one of these batteries.

LIGHT BULBS



CABIN LIGHT

12v 10w
FESTOON BULB



CABIN LIGHT
DE LUXE

12v 2w.
S.B.C. BULB



TRANSFIRM
FLUORESCENT

12v 8w TUBE

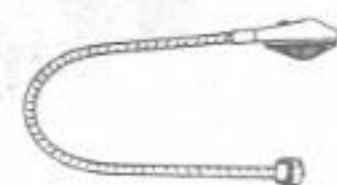


CHART LIGHT

12v 2-2w S.C.C



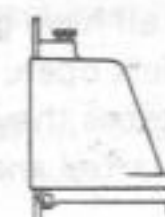
LUCAS
NAVIGATION
LIGHT

12v 6w OR 5w
S.B.C



MASTHEAD
LIGHT

12v 6w OR 5w
S.B.C BULB



MAST LAMP
(DECK ILLUMINATION)

12v 21w OR 15w S.B.C.



SPREADER LIGHT
(COPPER BOWL)

12v 21w S.B.C



STEAMING LIGHT
(SPARLIGHT MAST)

12v 6w FESTOON



STEAMING/
DECK LIGHT
(PROCTOR MAST)

12v 6w S.B.C
(2 BULBS USED)

SEACOCKS AND HULL FITTINGS

Each skin fitting has either a seacock or gate valve. A gate valve is a screw type mechanism operated by a circular wheel. As the wheel is rotated, the screw thread on the spindle slides an internal plug across the opening, effectively opening or closing the valve.

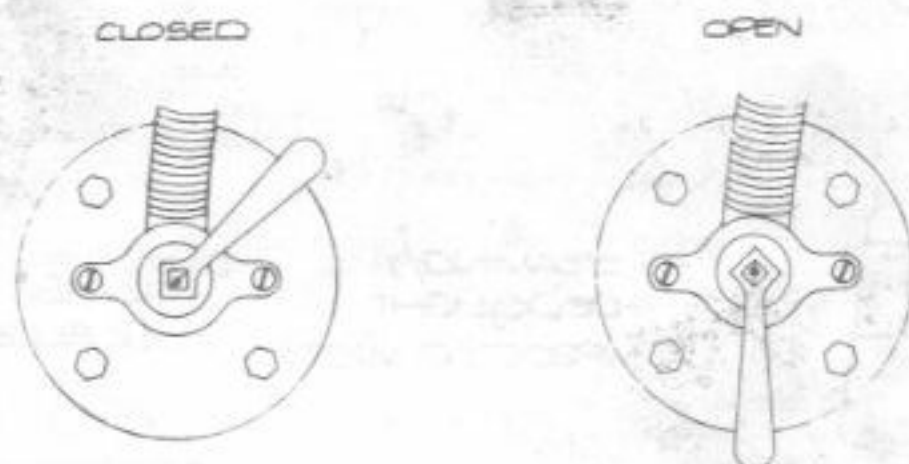
A seacock is a bronze casting with a tapered hole in its body. A carefully machined hollow plug fits into this, and a hole is positioned in the plug to match up with one in the body. By rotating the plug in the core, the holes will eventually be on opposite sides of the body, and the valve will be closed.

Cockpit drains, sink outlets and engine cooling water inlets all have gate valves. Those on the cockpit drains and sink outlets can normally be left open. They are simply there as a precaution against accidental damage to the pipes they serve. The engine water inlet should be opened before the engine is started and closed when the engine is not being used.

There is no servicing required for gate valves.

Toilet inlets and outlets have bronze seacocks and *must be opened* when the toilet pump is used. Failure to do this may result in damage to the toilet mechanism. The valves should be closed between use. As these valves rely on a close fit of the tapered core in the body of the unit, any wear on the system may allow leakage. This can easily be cured by evenly tightening the two bolts holding down the top plate. This will push the plug further into the taper and stop the leakage. If the action then becomes too stiff, the plate should be removed, the plug withdrawn and its surface cleaned. The core should also be cleaned and some grease wiped over the plug. This should then be replaced, the top plate refitted and tightened down. Make sure the plate rests level on top of the unit.

Open and closed positions of seacocks are shown below:



Hints on the lavatory

- i. Only proper toilet paper should be used. Anything else will build up on the valve and eventually cause it to become inoperative.
- ii. Sea water itself is antiseptic and it is not advisable to use strong cleaning compounds.
- iii. The lavatory bowl may be cleaned with bleach if necessary.
- iv. It is recommended that the bowl be pumped out dry when not in use.

GENERAL NOTES ON ANCILLARY EQUIPMENT

i. Trailers

Trailers supplied by us are based on standard production units. These are made as waterproof as possible but will require regular servicing each time they have been in the water. The wheel bearings are packed with grease and need to be kept so, as must the over-run brake actuating cylinder (behind the ball cup). The brakes themselves are most vulnerable. After each immersion the brakes should be removed and the brake mechanism greased and checked to be in working order.

Salt water is a terrible enemy of trailers and should be kept at bay by frequent greasing. Check also that the paintwork is intact and touch up where necessary. Tyre pressures should be checked before a road trip is made. These should be as follows:

Boats up to ½ ton	30 p.s.i.
From ½ ton to 1 ton	40 p.s.i.
From 1 ton to 3 tons	50 p.s.i.

This is only a general guide to pressure, and on some trailers the recommended tyre pressure is marked on a small plate.

ii. Cookers

There are a variety of cookers on the Westerly craft. The quality of design and finish is improving all the time, and these advantages are passed on to Westerly owners. There are a few simple "do's" and "don't's" which apply to all makes.

Cookers should always be kept clean. A boat is frequently left for several days, even weeks, before it is opened up again and small pieces of food can produce the most obnoxious smell in that time.

Calor Gas bottles should always be turned off at the bottle when the stove is not being used. Burn off any gas remaining in the pipe. Gas piping should be checked once a year and flexible pig tails replaced if they look at all suspicious.

Camping Gas bottles can simply be turned off at the cooker controls.

iii. Deck fittings

Stainless Steel. We only use the standard EN58J stainless steel and Argon Arc welding but while this is proof against corrosion from sea water, slight staining may occur after some months. This staining will be reduced by rubbing in a light machine oil, such as 3 in 1, or cycle oil. On cast fittings such as chainpipes, fairleads and cleats, there may be some "rust" appearing shortly after the boat is commissioned. This is caused by free iron being precipitated to the surface during casting which, of course, rusts. Once this rust is removed, by a chrome cleaner, there will be no further recurrence.

High Strength Alloys. We are using an increased amount of magnesium based alloy for deck fittings. This has a high specific strength and an excellent resistance to corrosion. The only maintenance recommended is an occasional rub with a soft cloth soaked in paraffin wax.

Winches. All the winches used on a Westerly are chosen to be maintenance free. They will function for long periods without attention. However, the drum and the shaft are assembled to a very close tolerance and the slightest corrosion of the shaft, or sweating of the bearings, will cause the winch to bind. If this happens, the big screw on top of the winch should be removed and the winch drum withdrawn. The shaft should be oiled with a light machine oil and the barrel replaced.

Hatches. The main hatches are mounted on sliding runners of a dovetail section. These runners should need no attention except possibly a small amount of grease to keep the action sweet. This will reduce the effect of oxidation of the metal, which would tend to make them stiffer to open and close. The aluminium catches on the forward hatches should not be abused or forced.

FIBREGLASS

The hull, deck and a large percentage of the interior is moulded in fibreglass. The polished surface is gelcoat, consisting of a layer of specially thickened resin. This is pigmented white, or alternative colours for hulls. The gelcoat is extremely resistant to deterioration and is tough and flexible. It is approximately ten times as thick as a coat of polyurethane paint. In most areas of the boat the gelcoat is used as the finished surface. Where alternative finishes are required, (non-slip decks, antifouling, etc.) these can be applied in paint form.

Gelcoat in itself has no strength, but it performs the useful function of waterproofing and providing a finish.

The strength of a fibreglass moulding comes from the short random fibres of glass embedded in resin. The glass strands themselves are extremely strong and flexible and the resin simply binds the fibres together. Successive layers of fibreglass are applied to the back of the gelcoat with hand rollers. Areas which need extra strength can have extra layers of glass applied, giving the designer a liberal degree of freedom with hull and deck layouts.

Caring for fibreglass — gelcoat will not deteriorate to any measureable extent during the life of the boat. Waxing should not be necessary and washing with normal liquid detergents will keep the surface clean. "Washing up" liquid applied with a sponge or soft scrubbing brush and rinsed off with fresh water will keep the surface in good condition.

Polishing — any dull areas can be brought up to the original gloss with a polishing compound. An old trick is to use metal polish, although the job will be less arduous if a proper compound is used. There are types available from garages used for polishing car paintwork which are suitable for boats. Some of these are only suitable for polishing with a machine, such as an electric drill with a lambswool pad. If such a tool is available it will save a lot of hard work.

To use a compound, spread it onto the surface with a cloth. Rub off by hand with a dry cloth, or by machine. After the surface is thoroughly polished any excess polish can be washed off with water.

Removing small scratches and scuff marks — if these marks cannot be removed with compound as described above, the surface should be carefully sanded with wet-and-dry sand paper. A very fine grade paper (400 or preferably 600 grade) should be used with plenty of water. Care should be taken not to concentrate on one small area as this will produce a discernable indentation.

When the scratches or scuff marks have been removed with sandpaper one is left with a matt area of gelcoat. This can be brought back to gloss using compound as described above. Bear in mind that gelcoat is relatively thick and a reasonable amount of sanding down is possible.

Filling deep scratches — if a scratch or gouge penetrates the gelcoat to the fibres it is necessary to fill with new gelcoat and polish back. Matching gelcoat is available from Westerly Chandlers in the form of a gel repair kit. This includes instructions.

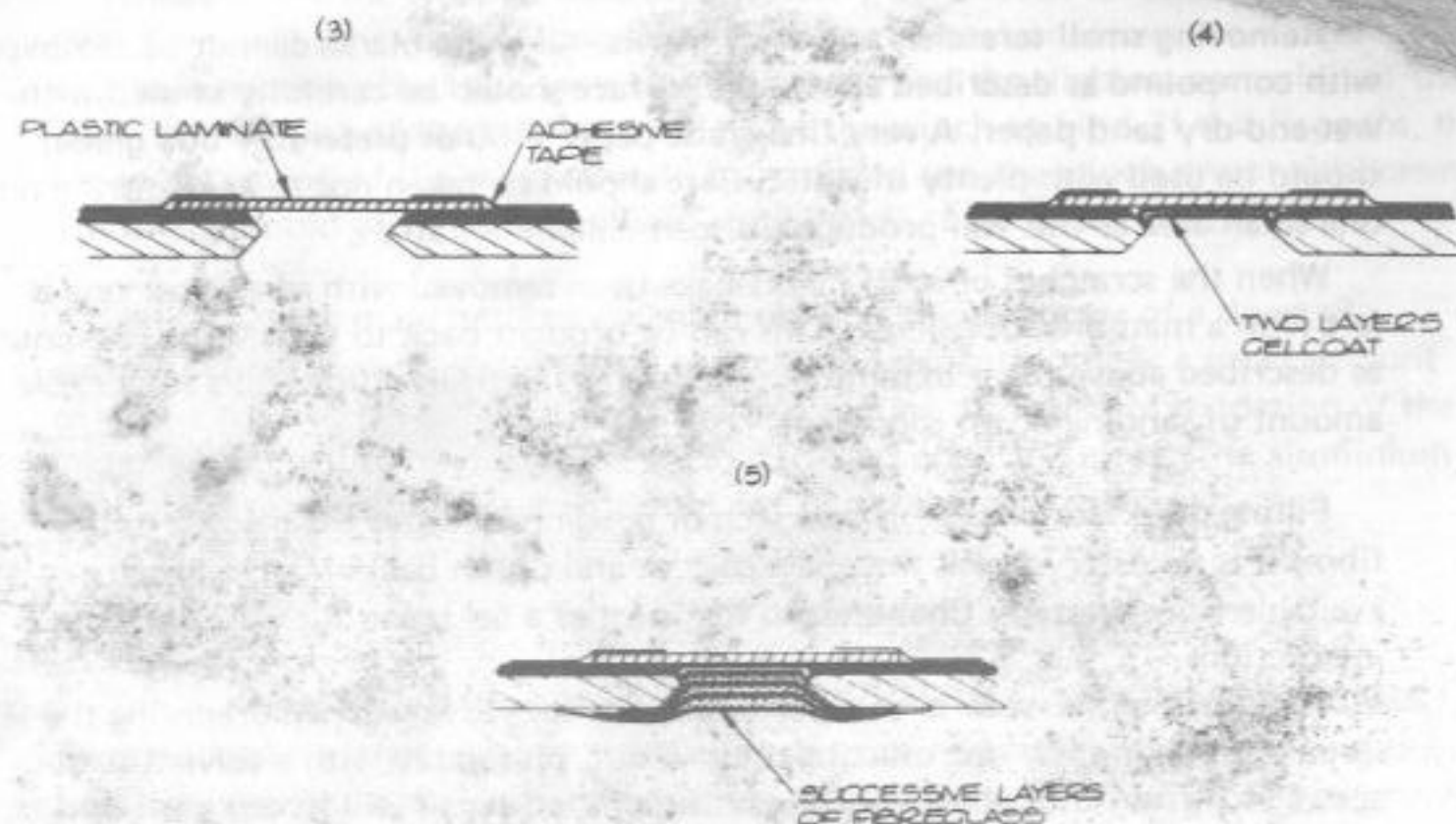
When doing this work it is important to be really clean. When preparing the scratch for filling any dirt must be cleaned out, preferably with a solvent such as acetone. If this is not absolutely clean the finished repair will have a dark outline around its edge.

Severe damage — penetration of glass fibre is most unusual but can be successfully repaired. Really severe storm damage is sometimes uneconomical to repair and it is less expensive to build a new boat. In such instances insurance companies will decide with reference to their surveyor.

A hole in the hull is repaired as follows:

- i. Cut back damaged area to firm material with a hacksaw and coarse file. Chamfer inside and outside to form a vee. (2) Clean off any paintwork with sandpaper.





ii. Fit a former over the hole. This can be made of plastic laminate sheeting smeared with wax and held to surface with adhesive tape or, for larger jobs, with bolts. Apply 2 layers of gelcoat to former. (4)

iii. When the gelcoat is cured apply layers of fibreglass, overlapping edges. (5)

iv. When resin has cured remove former, sand down gel until surface is fair and smooth, polish back to gloss with compound.

If the surface has a more complicated shape it may be necessary to obtain a piece of mould to be used as a former. In this instance Westerly Marine may be able to help.

The after sales department at Westerly will be pleased to answer any queries on glass fibre repairs and supply repair kits if required.

PAINTING AND GENERAL FINISH

Teak. All wooden parts on deck are made of teak. This is a very hard wood which has a natural oil in the grain. The wood is hard wearing, difficult to splinter and requires little maintenance once it has been "run in". This "running in" consists of oiling the wood with the teak oil provided, until the grain is saturated. The oil is applied with a soft fluff-free rag or a paintbrush, and any oil which goes on the fibreglass can be removed with methylated spirits or alcohol. Care should be taken not to allow any oil on the fibreglass to dry hard. The wood should be oiled weekly for about six weeks. After that, oil should be applied as the wood looks dry — we suggest twice a year is sufficient.

Do not leave rags soaked in teak oil in confined lockers. There is risk of fire. Open rags out to dry.

External Teak Trim. Our policy regarding the treatment of the external teak woodwork of Westerly yachts is now to leave it untreated and to recommend that the wood is scrubbed with a hard scrubbing brush and clean seawater. This minimises the maintenance required and gives it a pleasing appearance. However, if you wish to treat your teak with an oil, we would recommend Cuprinol Teak Oil, which can be obtained from our Chandlery Department or any stockist of Cuprinol products. The procedure outlined in the manual should then be followed.

Deck Paint. This should be repainted as necessary; we suggest once a season, but this depends on how much you use your boat. The old surface should be scrubbed to remove any dirt and dust, and allow to dry. The paint to use is a non-slip paint.

Antifouling. This should be renewed once a year. The boat must be hauled out of the water and any weed or growth scrubbed off the bottom. The surface should then be thoroughly scuffed with sandpaper. It is suggested that masking tape is carefully stuck along the waterline, with its lower edge following the top of the antifouling. Apply the new paint. Any good quality antifouling may be used with the exception of bronze base paints.

Painted Rubbing Strake. Before doing any painting, it is a good idea to apply masking tape along the hull to give a good sharp edge to your painting. Scuff down the existing paint with a reasonably fine sandpaper (about 250 grade). Repaint the lines with a yacht enamel paint, available from chandlers. Remove the masking tape when the paint is dry. All these paints are available from Westerly Marine.

NEVER use paint removers on fibreglass boats.

Cleaning Marks off Cabin Lining

Non-greasy marks can be removed by scrubbing with a soapy solution. Greasy marks and some stains may be removed using a degreasing solvent made by Blakes of Gosport. This is available from Westerly Marine. Another good cleaner is wood alcohol, available from most chemists.

SAFETY EQUIPMENT

The following items are suggested as a minimum list of safety equipment:

i. Personal equipment

- Safety harness to BSI standard. One for each crew member.
- Lifejackets, to BSI or DTI specification. One for each crew member.

ii. Rescue equipment for man overboard

- a. Lifebuoys — two at least, one with light for night sailing.
- b. Buoyant line — 30 metres (100 feet) long.

iii. For boats going more than three miles out

- a. Inflatable liferaft to take all crew members
or
Rigid dinghy with buoyancy and oars attached
or
Inflatable dinghy, always kept partly inflated.
- b. Anchors — two, each with warp or chain.
- c. Efficient compass, and spare.
- d. Charts covering area of operation.
- e. Distress flares — six, with two parachute type, and including daylight smoke signals.
- f. Tow rope of adequate length.
- g. First Aid box with seasickness tablets.
- h. Radio for receiving weather forecasts.
- i. Torch — waterproof.
- j. Radar reflector, mounted 3 metres (10 feet) above sea level.
- k. Lifelines.
- l. Engine tools.
- m. Name or sail number prominently displayed. Dodgers are a good way to make a boat's name easily visible.

iv. Fire fighting equipment

- a. Two fire extinguishers, at least 1.4 kg (3 lb) dry powder.
- b. Two buckets, with lanyards.
- c. Bag of sand, for spillage of burning fuel.

Note

i. These lists are extensive and are extracted from the Department of Trade and Industry Pamphlet prepared by Central Office of Information. Without doubt the recommendations are sound and should be followed.

ii. Yachtsmen sailing around the U.K. coast are advised to contact the local HM Coastguard Station and complete a "66" passage report form. This ensures that the service has all details of the boat, occupants and its intended voyage should search and rescue become necessary. At his destination, the yachtman reports his arrival to the nearest coastguard station. There is no charge for this service.

CHECK LIST

Every time you use the boat:

1. Check that stern gland is adequately packed with grease.
2. Make sure all lights are in working order.
3. Check locknuts on bottlescrews and that all shackles are secure.
4. Check water in battery.
5. Check safety equipment on board.

When leaving boat for long periods:

1. Pump lavatory dry.
2. Run engine for 30 seconds with cooling water turned off. This drains the water in the exhaust system.
3. Turn off all seacocks, except for cockpit drains which should be left open.
4. Pump water out of fresh water tank. If left for a long period, this will become tainted.
5. Remove any perishable food.
6. Leave locker lids open.

Every Season:

1. Check engine bearing bolts. Tighten down if necessary.
2. Check action of seacocks.
3. Check all flexible pipes for wear.
4. Check to see if engine needs servicing.
5. Check battery for corrosion. Clean off and grease terminals with Vaseline petroleum jelly.
6. Check fuel line nuts for tightness.
7. Check rubber washers and collars on deck fittings have not perished.
8. Check, and tighten if necessary, all hose clips.
9. Flush out and check fresh water system.
10. Check rubber sealing rings on forward hatches, portlights and cockpit floor hatches.
11. Check action of winches.
12. Check pop rivets on mast for deterioration or loosening. Replace if necessary.

AFTER SALES SERVICE

For Boats on the Home Market — There is a competent technical department which will give advice on anything to do with Westerly boats. Again, a telephone call is all that is required for this service to be available.

There are a number of Westerly Service Agents all over Britain. These people will give more local advice to owners, and also undertake repairs and fitting out.

Westerly Marine has a large store which stocks supplies of spare rigging, ancillary sails, repair kits, yacht paints and general chandlery, and there is a despatch department dealing with the supply of items to existing owners. A telephone call is usually all that is necessary for a price to be quoted and the materials to be despatched.

For Export Boats

Supply of items — These can be supplied from the Westerly store via your local agent.

Advice — This can be supplied by your nearest agent. He has a large amount of specialist knowledge on Westerlys, and if in doubt can easily approach Westerly Marine for their opinion.



THE
WESTERLY
MANUAL
