

Dart 15



DART 15
RIGGING MANUAL

DART 15 RIGGING MANUAL

The DART 15 rigging instructions are a comprehensive guide to rigging your DART 15. Due to production supplies certain parts may be slightly modified from those shown. This instruction manual is not a guide to sailing your craft and should not be considered as suitable for the purpose of learning to sail a catamaran.

CAT. CLINIC. (Dart Catamaran Sailing School)

The **Cat. Clinic** is the Laser Centres' only recommended catamaran sailing school. Here you will find the most up to date DART CATAMARANS ready for your instruction. There is nowhere more modern than the **Cat. Clinic**. Catamaran enthusiasts of all abilities attend courses regularly to improve their technique. Further details of the **Cat. Clinics'** Centres can be obtained from

The "CAT. CLINIC"
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RECOMMENDED BOOKS

Catamarans are one of the fastest craft on the water. So that you can enjoy your catamaran to its full potential we recommend 'The Catamaran Book' by Brian Phipps as a valuable addition to your library.

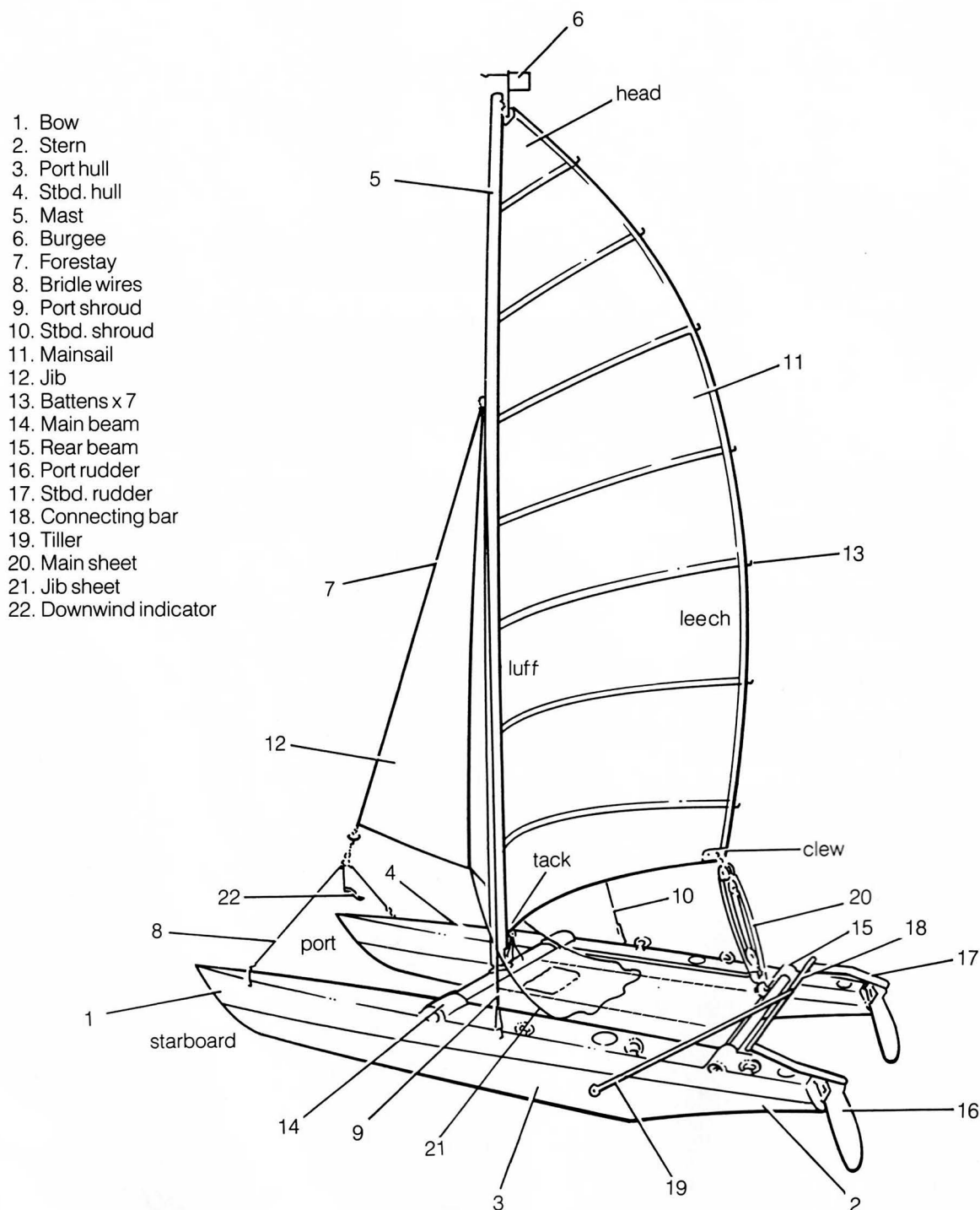
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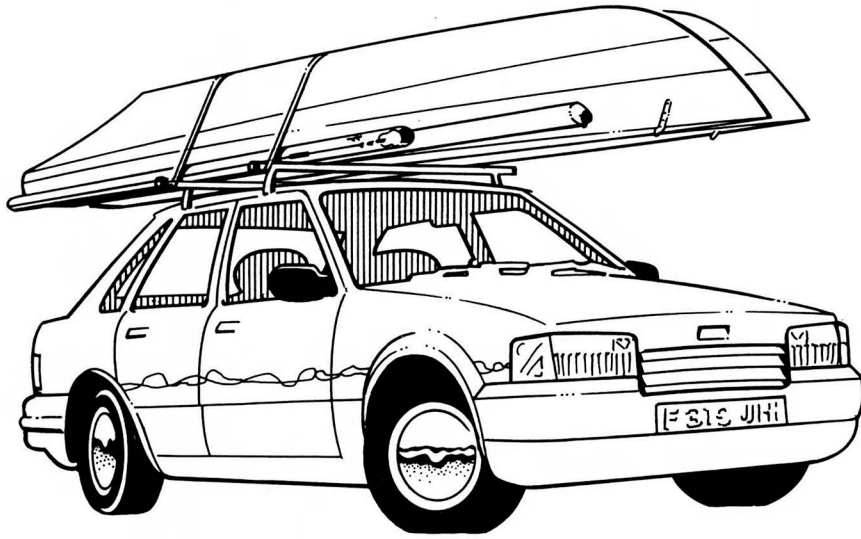
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GLOSSARY

Aft: towards the back of the boat.
Bow: the foremost end of the boat.
Burgee: a flag normally flown from the top of a mast.
Batten: a thin plastic strip which fits into a long narrow pocket in the sail.
Bridle wire: one of the two wires connected to the bow and forestay on a catamaran.
Centre board: a pivoting plate that reduces sideways drift.
Clew: the lower after-most corner of a sail.
Foot: the bottom edge of the sail.
Forward: towards the bows of a boat.
Forestay: the wire supporting the mast in a fore and aft direction.
Goose neck: a hinge fitting connecting the boom to the mast.
Gunwhale: the outermost edge of the craft.
Head: the top corner of a sail.
Hounds: the connecting point on the mast for rigging that gives it support.
Halyard: a rope or wire used to hoist or lower sails.
Jib sheet: the rope used to control the position of the jib when under sail.
Leech: the trailing edge of a sail.
Leeward: the side of the boat on which the mainsail is set when sailing.

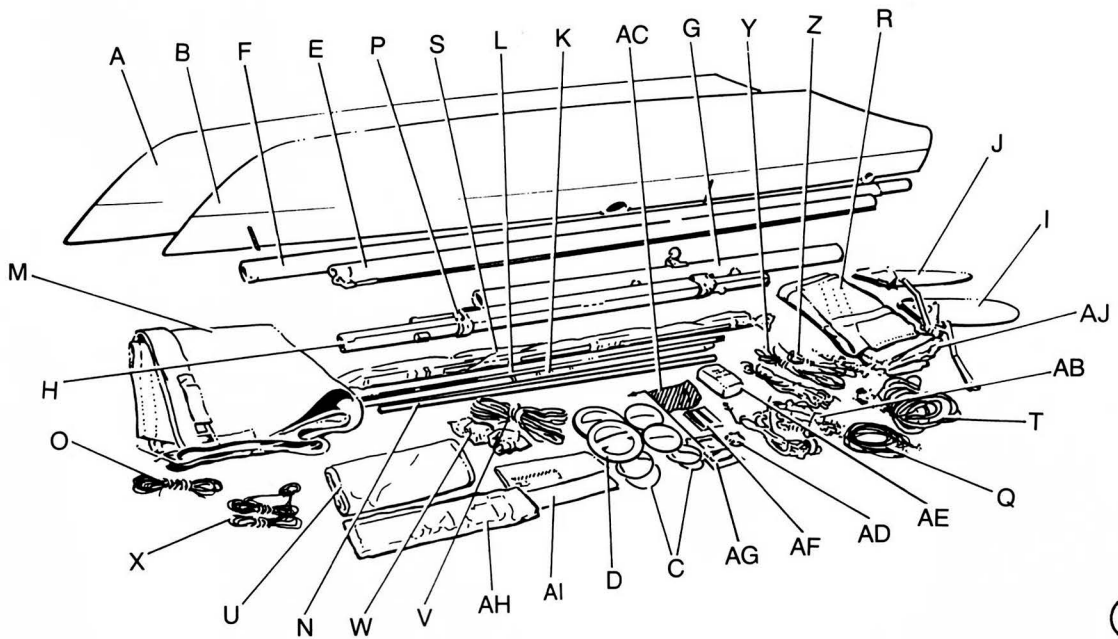
Luff: the front edge of a sail.
Main sheet: the rope controlling the position of a main sail.
Mast heel: the casting at the base of the mast.
Port: the left-hand side of a craft looking forward.
Shroud: a wire securing the mast in position and preventing it from falling sideways.
Shackle: a 'U' shaped piece of metal secured with a pin, used for securing halyards to sails etc.
Starboard: the right-hand side of a craft looking forward.
Stern: the aft-most area of a boat.
Tack: the lower forward corner of a sail.
Tiller: a length of aluminium which fits into the rudder head to allow steerage.
Tiller extension: a length of aluminium connected to the tiller by a universal joint which allows steerage whilst leaning out.
Trapeze wire: a wire used to extend the body beyond the gunwhale of the boat.
Transom: the flat area across the back of the boat to which the rudder is hung.
Thwart: a seat or seats set across the boat at 90g.
Windward: the side of the boat opposite to which the mainsail is set when sailing.





REMOVING CATAMARAN FROM CAR ROOF

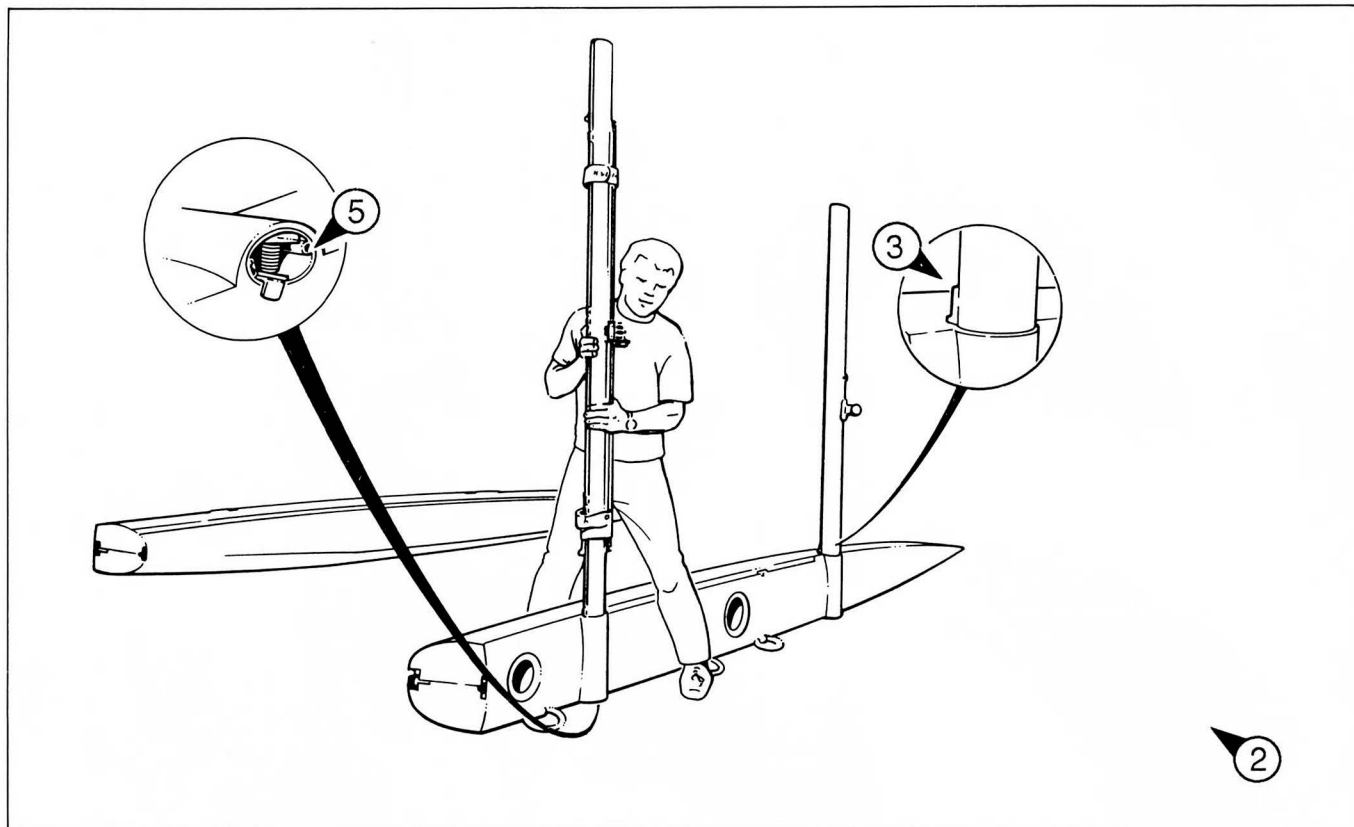
- * Remove all securing straps.
- * Lift each hull and place on the ground.
- * Remove spars, sails and other equipment.
- * Lay out all parts of the boat and identify with the contents list. (Fig 1) ◀



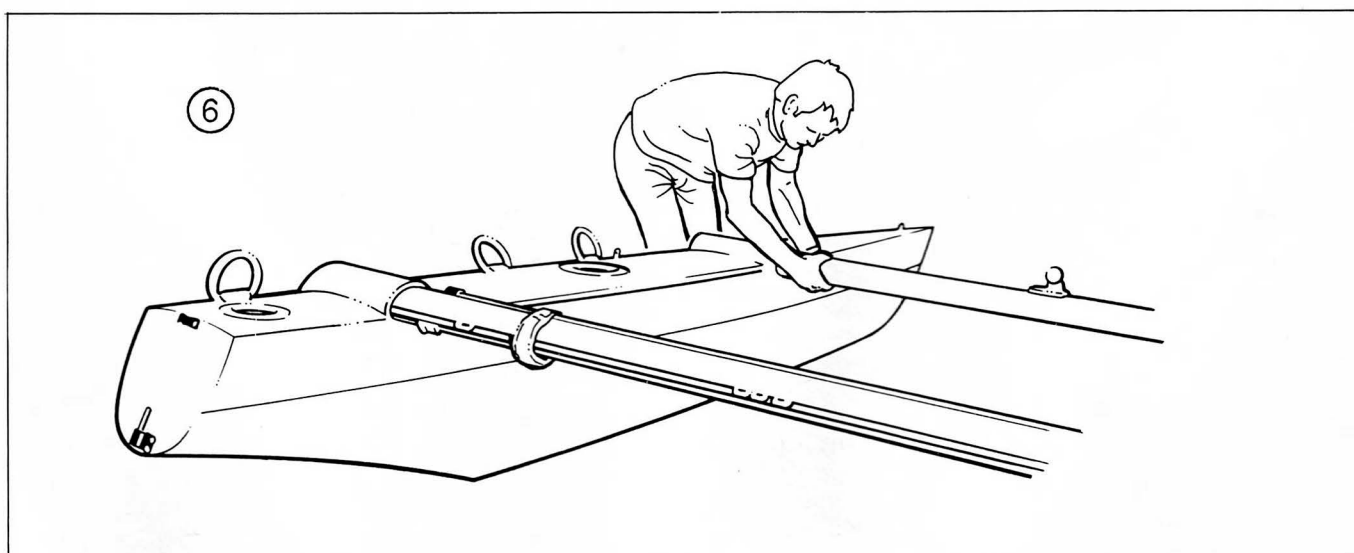
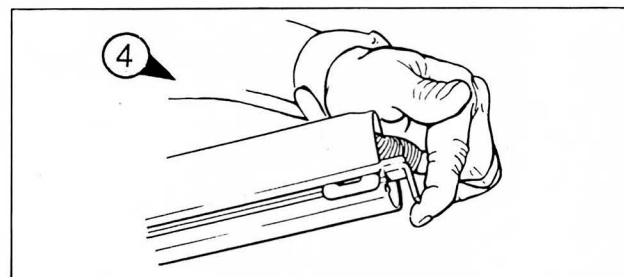
- | | | | | | |
|---|----------------------------------|---|---|----|--------------------------------------|
| A | Port hull | M | Trampoline | X | Jib stop and carbine hook (optional) |
| B | Starboard hull | N | Trampoline tube | Y | Main halyard |
| C | 'O' Rings (2 large / 2 small) | O | Trampoline lacing line | Z | Main sail down haul |
| D | Hatch covers (2 large / 2 small) | P | Toe straps | AB | Traveller line |
| E | Lower mast section | Q | Standing rigging : with trapeze wire (optional) | AC | Burgee |
| F | Upper mast section | | : jib halyard (optional) | AD | Adhesive tape |
| G | Main beam | R | Main sail | AE | Sponge |
| H | Rear beam | S | Main sail battens (x 7) | AF | Wind indicators |
| I | Port rudder | T | Main sheet | AG | Knife/shackle key |
| J | Starboard rudder | U | Jib (optional) | AH | Paddle |
| K | Connecting bar | V | Jib sheets (optional) | AI | Instructional folder/sail numbers |
| L | Tiller extension | W | Jib sheet blocks (optional) | AJ | Sail bag |

RIGGING YOUR DART 15

- * Place the hulls on a flat area of ground approximately 3m apart with the trampoline track facing upper-most. (Fig 2) ▲ .
(If a suitable area is unavailable use 4 tyres or similar to protect your craft).
- * Select the main beam, Part G, check before insertion that the mast ball is facing towards the deck.
- * Slide the beam into the housing of one hull until the thrust pad meets the hull side, (Fig 3) ▲ .
- * Select the rear beam, Part H. Check before insertion that the traveller track is facing towards the deck.



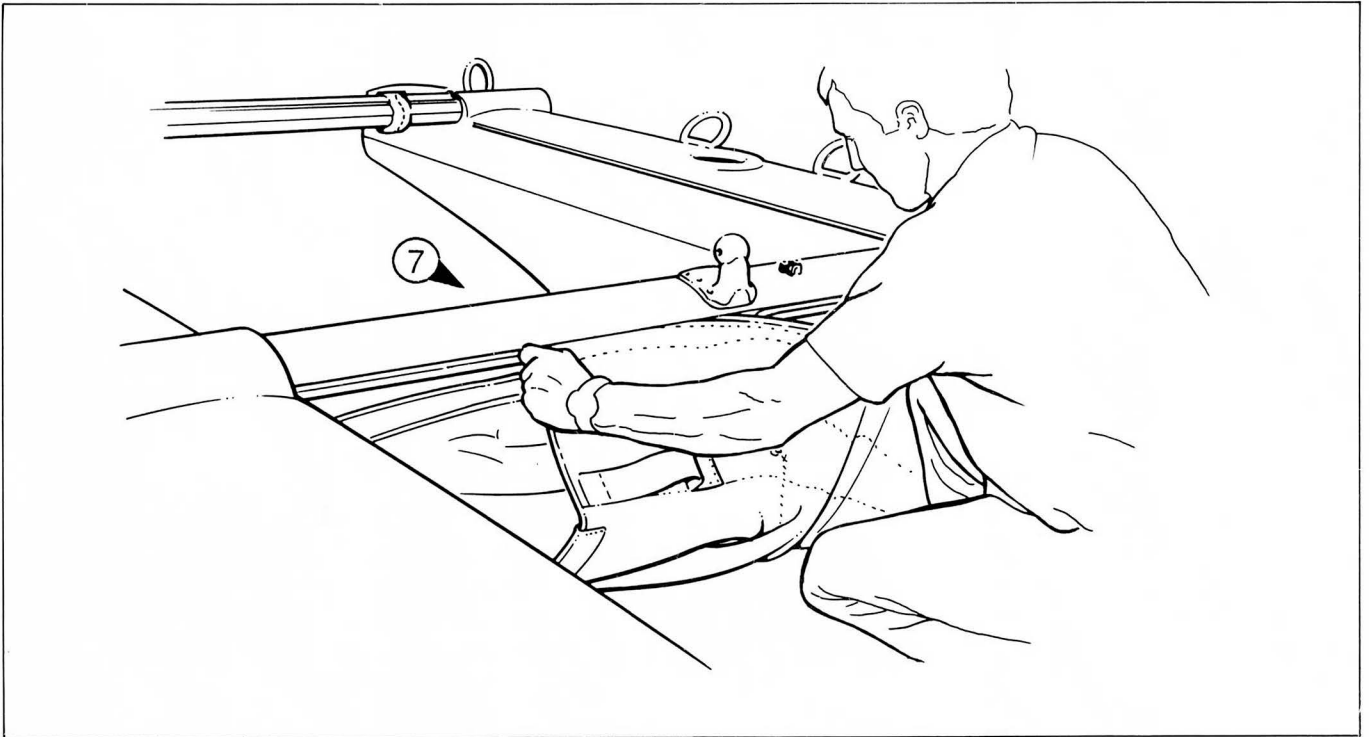
- * Raise the retaining clip at the beam end by pressing the spring to one side, (Fig 4) ► . Insert the rear beam into its housing and slide home until the thrust pad meets the hull. Check that the retaining clip has dropped over the outer edge of the hull side, (Fig 5) ▲ .
- * Carefully pull the beams down into the horizontal position. Raise the unattached hull and line up the beam housings.
- * Slide the hull onto the beams making sure that the hull is moved in a parallel action. The hull is fully home when the thrust pads are against the inner hull side and the rear beam clip has dropped over the outer edge, (Fig 6) ▲ .



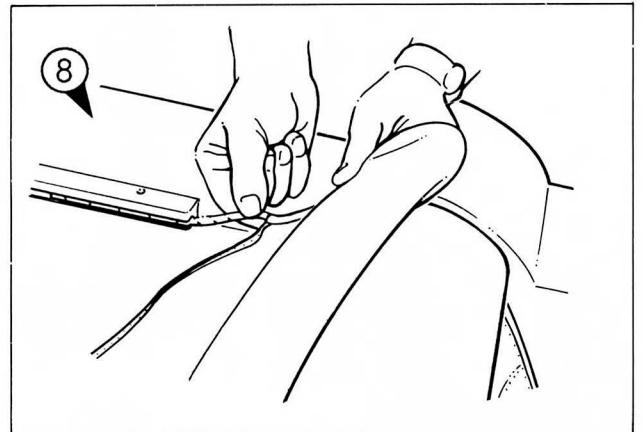
ADDING THE TRAMPOLINE

Identify the trampoline, (Part M), and lay it between the hulls with the webbing handles facing down.

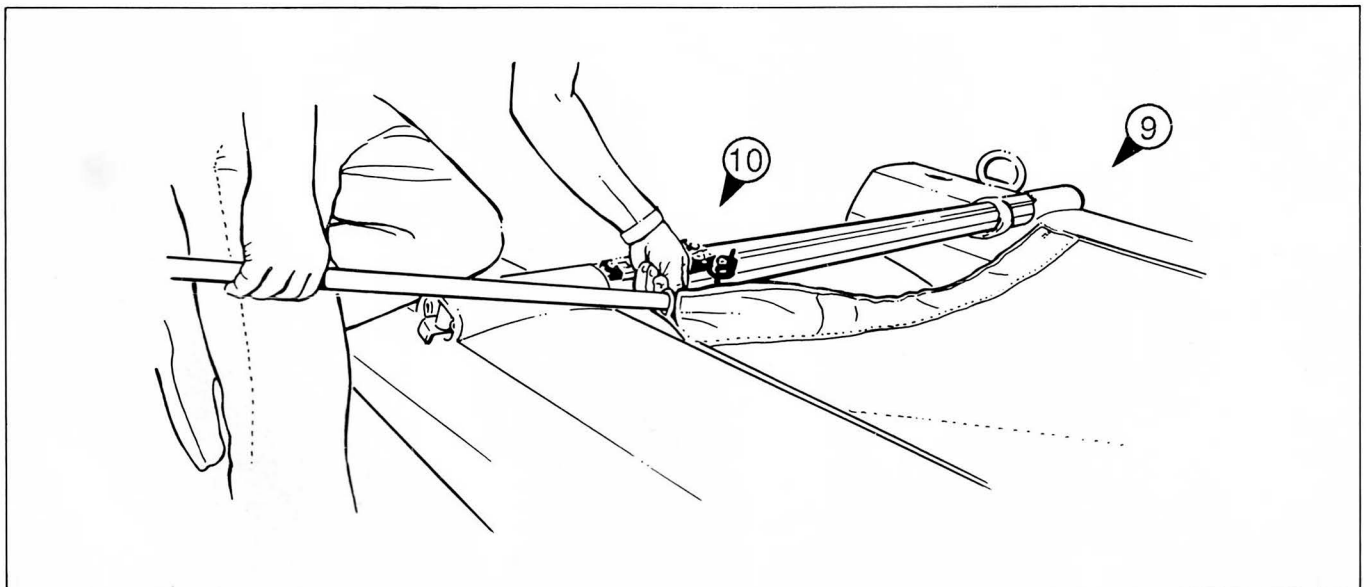
- * Identify the front edge and insert the bolt rope into the main beam as shown, (Fig 7 ◀). Check that the trampoline is in the centre of the beam).

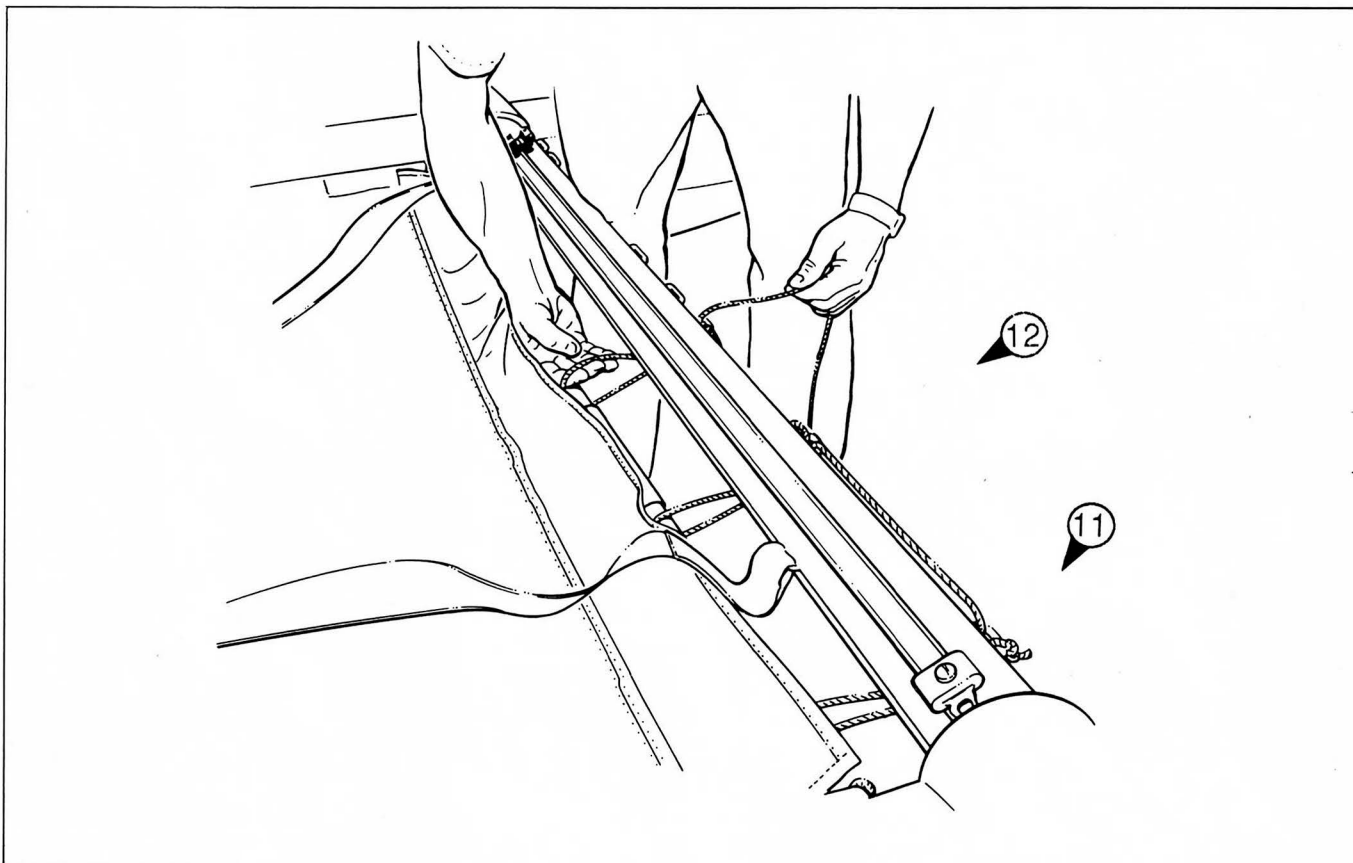


- * Take the side bolt ropes and slide them into the trampoline tracks on both hulls, (Fig 8 ▶).



- * Carefully slide the trampoline back along the tracks an equal amount until it is fully inserted in the track, (Fig 9 ▶).
- * Feed the trampoline tube into the sleeve at the back of the trampoline and push the loose ends of the trampoline bolt rope into either end, (Fig 10 ▶).



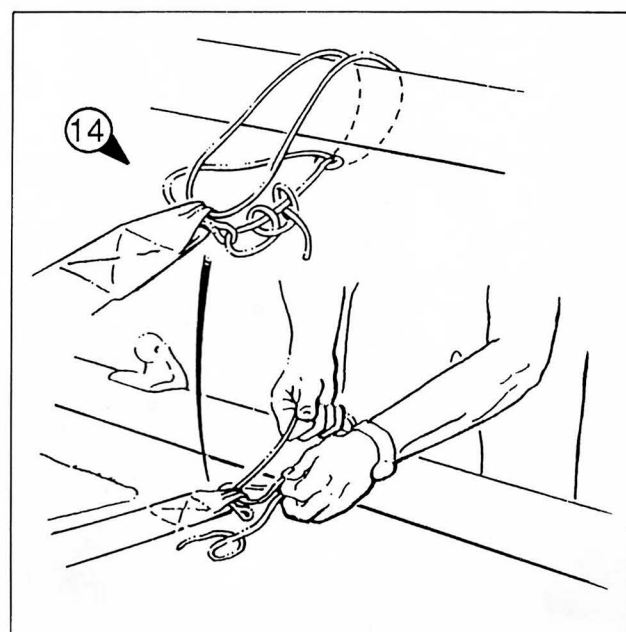
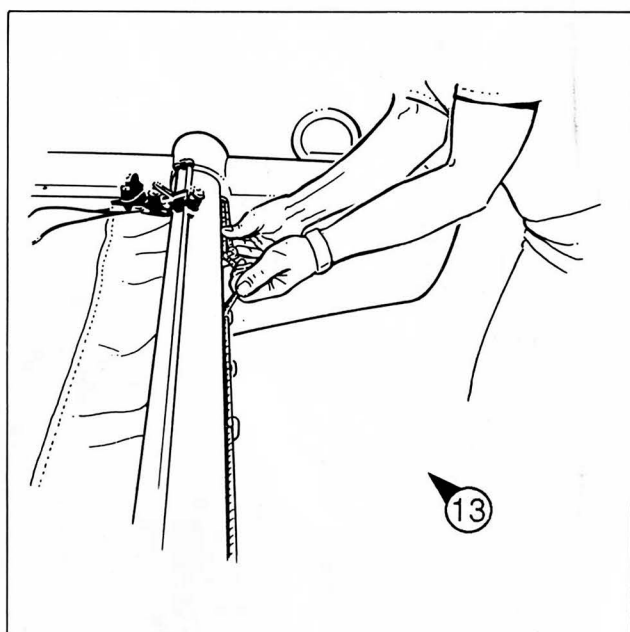


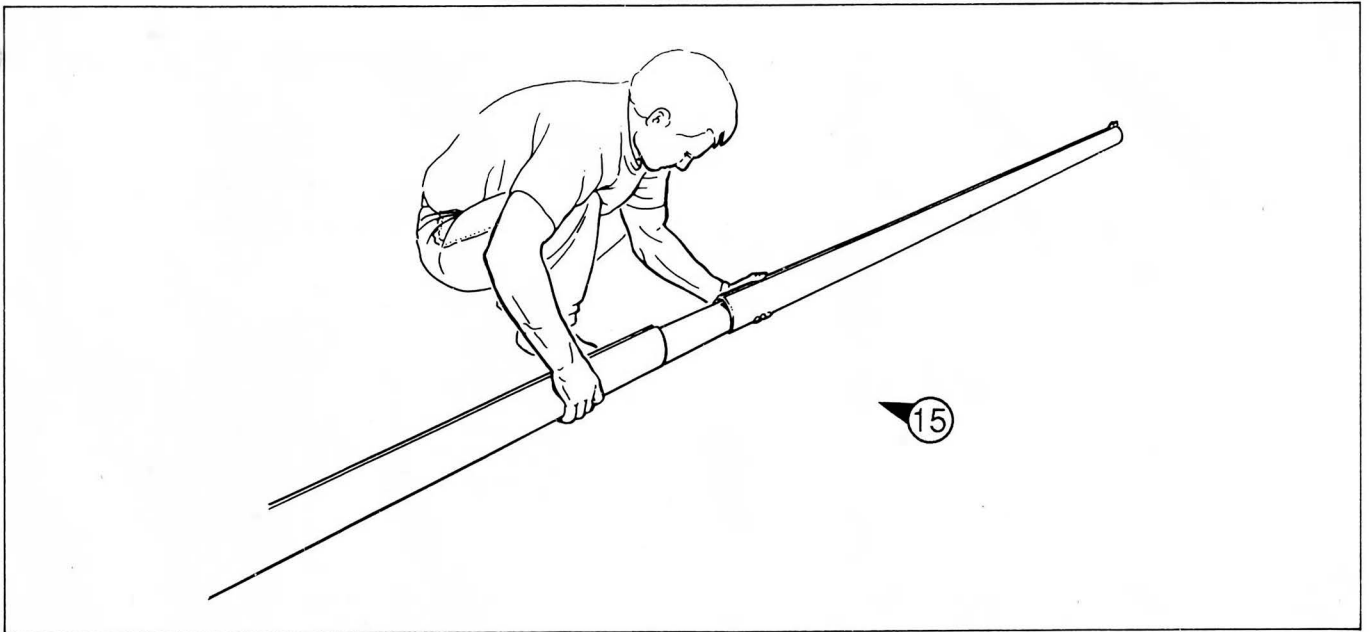
* Identify the trampoline lacing line, Part O, and tie it to the outermost beam slide, (Fig 11) ▼.

* Lace the trampoline, (Fig 12) ▼, making sure that the slides are opposite the trampoline cut-outs and that the centre slide is not used.

* Tension the trampoline and secure with a suitable knot. (You may find when the trampoline is new it will need several attempts to achieve maximum tension. This is best carried out immediately after sailing.) Fig 13 ▼.

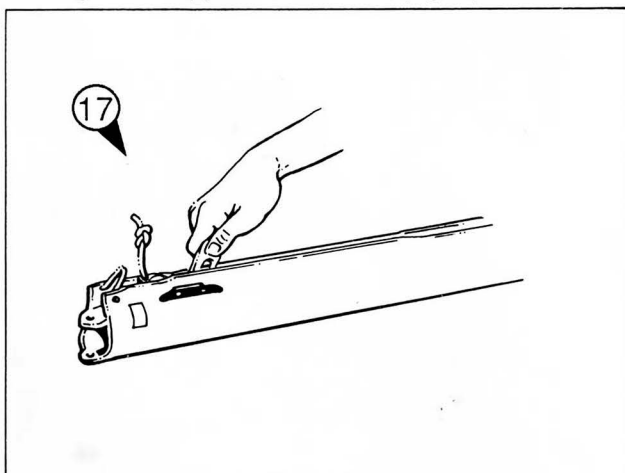
* Identify the toe straps, Part P, and lace them to the front beam as shown, Fig 14 ▲.



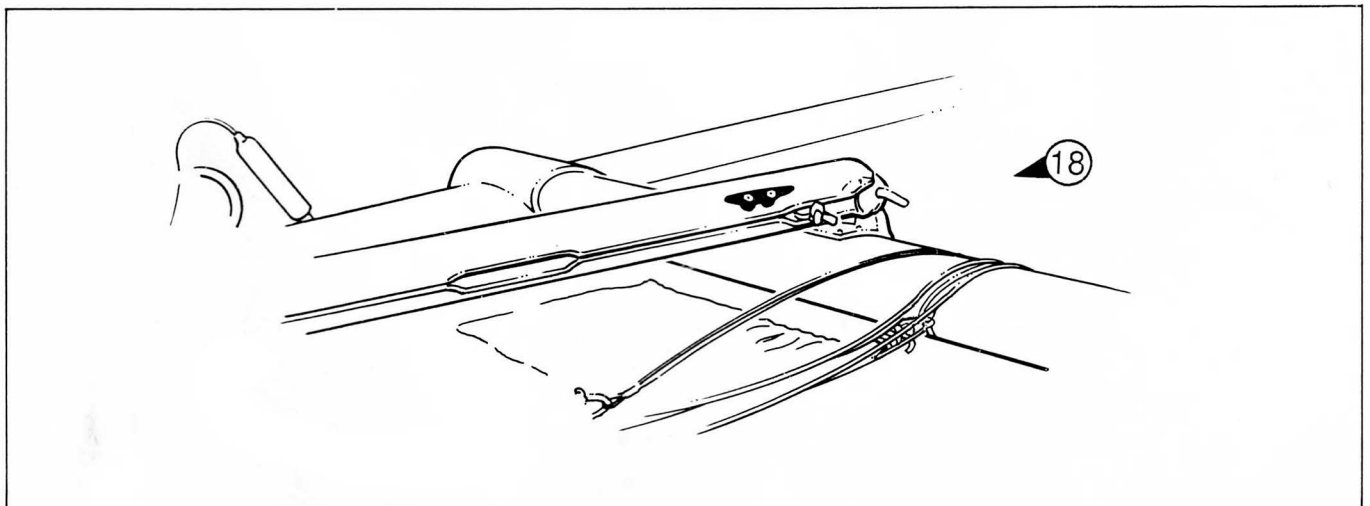


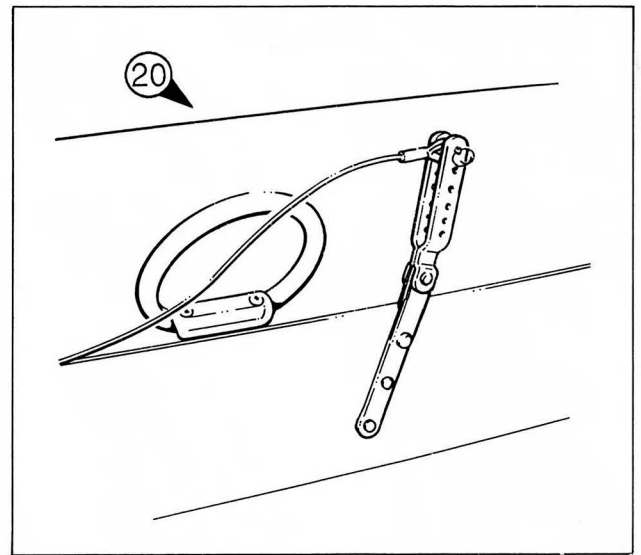
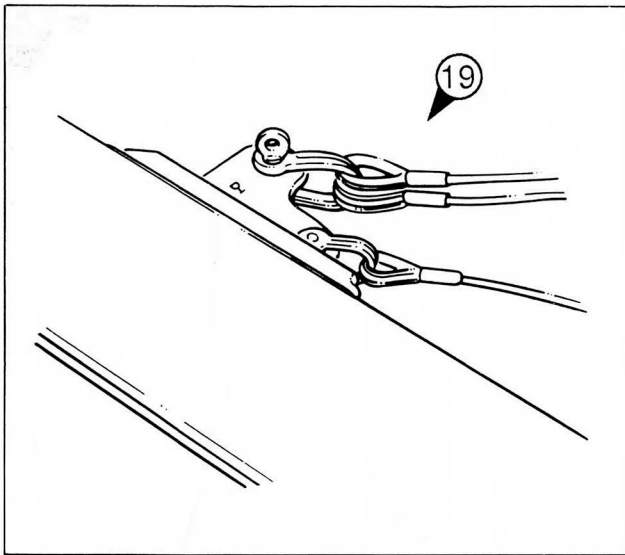
RAISING THE MAST

- * Slide the two halves of the mast together, (Fig 15) ◀. (Make sure there is no grit on the mating surfaces).
- * Identify the main halyard, Part Y, and feed it into the halyard slot as shown, (Fig 16) ▶.
- * Slide the halyard down the luff groove using a knife, or similar, and retrieve the lower end via the halyard roller finishing with a stopper knot as shown, (Fig 17) ▶.

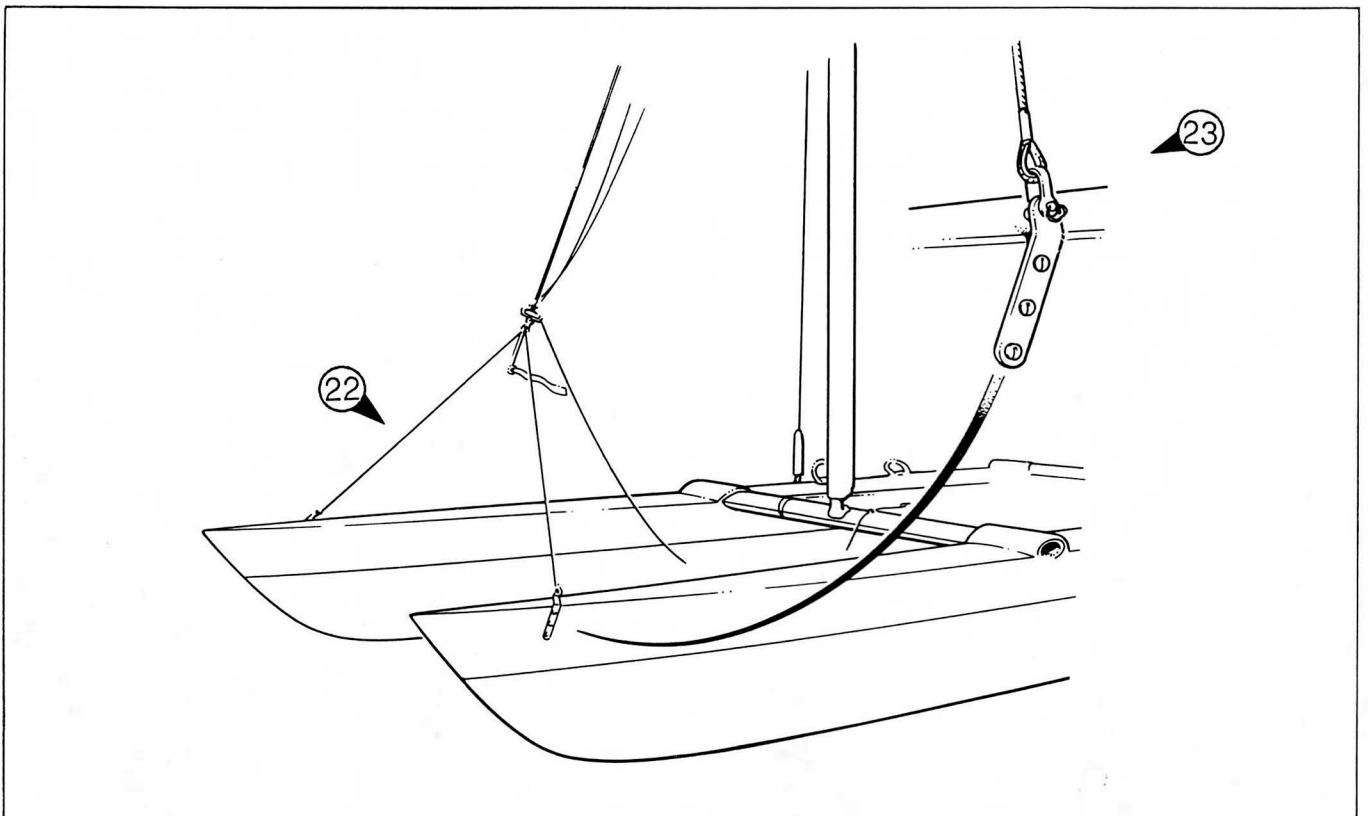
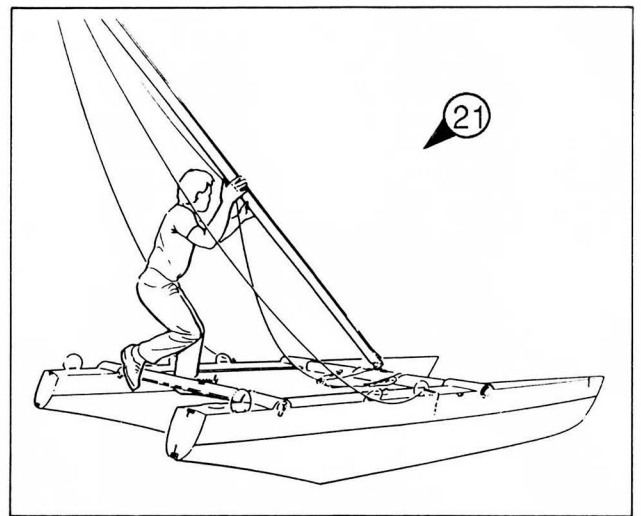


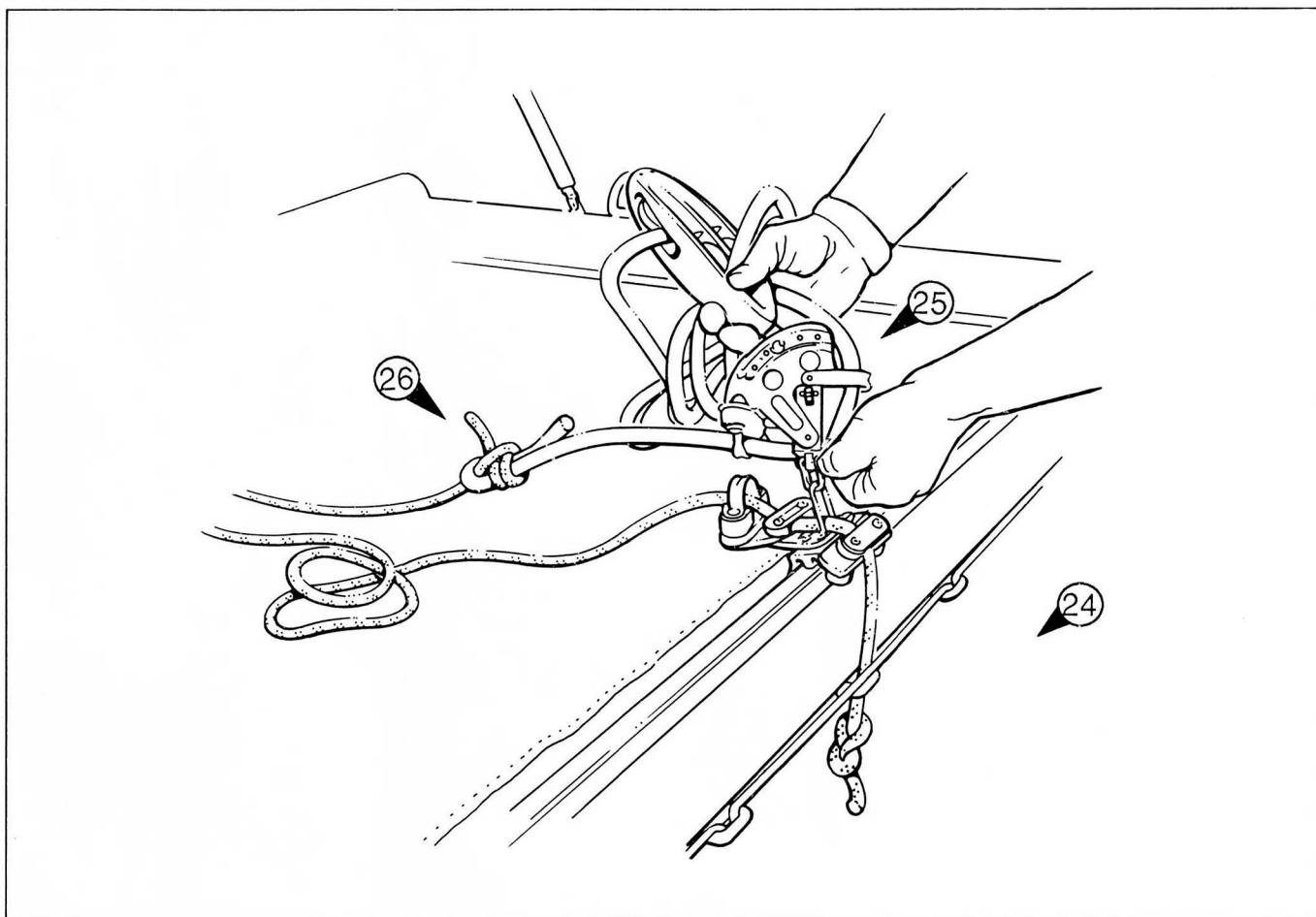
- * Place the mast on the mast ball facing aft and use the mast pin to secure it on the heel as shown, (Fig 18) ▶. Lay the mast carefully on the rear beam using some suitable padding i.e. transport packing or similar for protection.





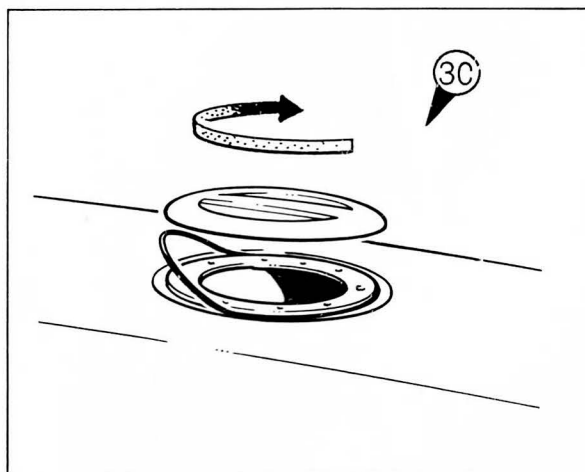
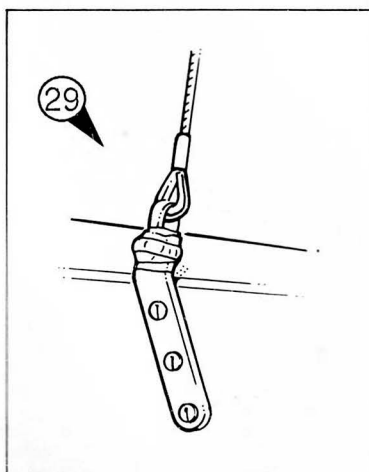
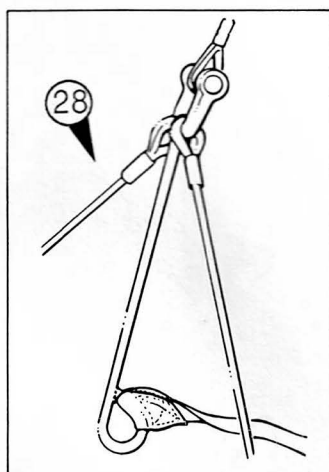
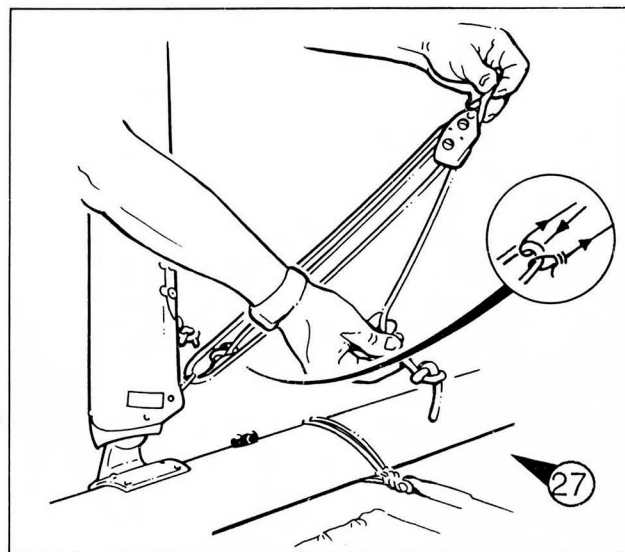
- * Identify the rigging wires, Part Q, and connect the hound fitting to the mast as shown, (Fig 19) ▲. (Make sure the fitting is correct with the wine glass stamp facing towards the top of the mast).
- * Carefully select the shroud wires and connect them to the shroud plates as shown, (Fig 20) ▼. The vernier shroud adjuster should be positioned on hole number 1 from the top; it is important to check there are no twists or kinks in the rigging.
- * Raise the mast by lifting it from the stern on to your shoulder and walk forward on to the trampoline, (Fig 21) ►. (This is easiest done when the boat is horizontal or facing slightly down hill).
NB: Raising the mast can be done easily single-handed but if two persons are present it is helpful to have someone holding the fore-stay as extra precaution.
- * Once the mast has been raised and restrained by the shroud wires the mast pin should be removed allowing the mast to rotate.
- * Identify the bridle wires, (Fig 22) ▼, and secure to the tang fittings on each hull, (Fig 23) ►. (Check that the loop of the wind wand and line for the jib roller is facing aft).

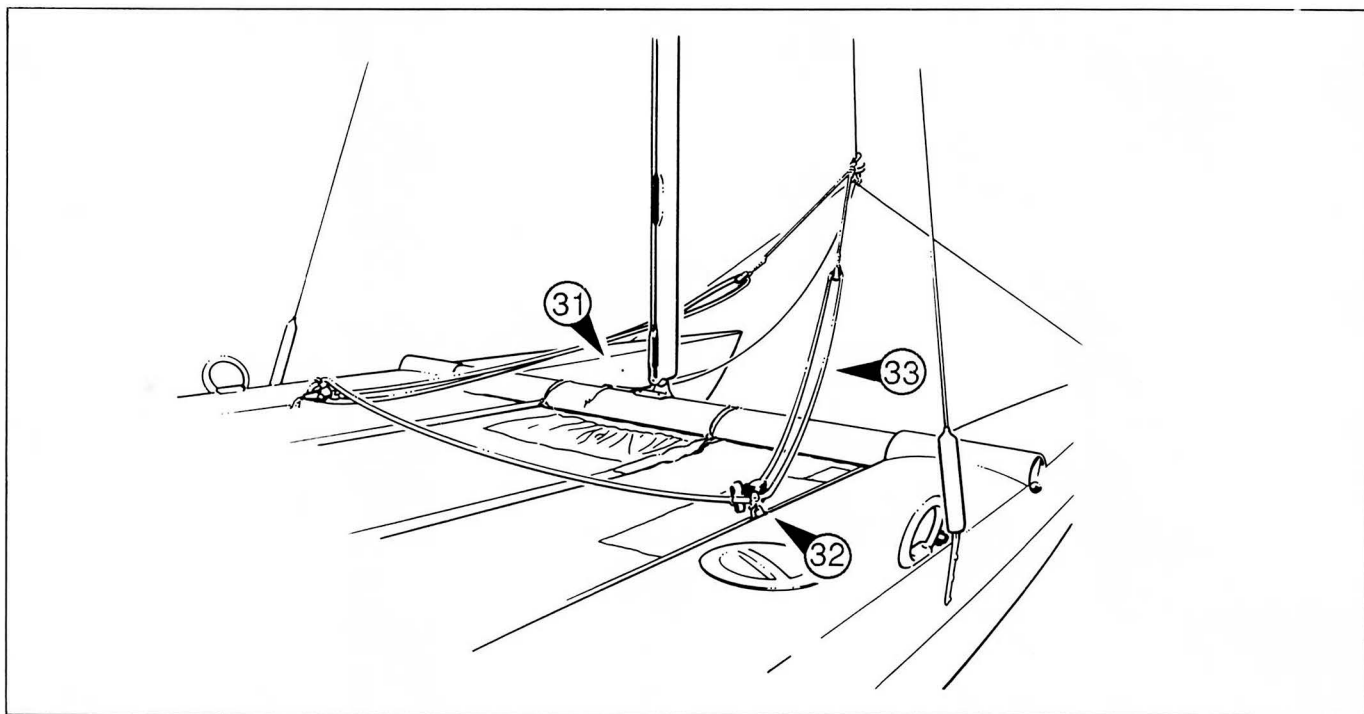




ATTACHING THE SHEETS

- * Select the traveller line, Part AB, and feed it through the traveller assembly and down through the centre slide on the rear beam as shown (Fig 24). ▼
- * Identify the main sheet assembly, Part T, and attach it to the traveller loop as shown, (Fig 25) ◀. (It is important that the shackle eye faces aft).
- * Tie the tail of the main sheet and the end of the traveller line together with a suitable knot, (Fig 26)
- * Identify the main sail downhaul, PART Z, and connect it to the mast as shown, (Fig 27)
- * Identify the down wind indicator, PART AF, and secure it to the wind wand as shown, (Fig 28)
- * Tape all split rings and pins for security using the supplied tape, (Fig 29) ◀.
- * Select the four 'O' rings, Part C, (2 large and 2 small) and place them around the hatch rings. Place the hatch covers, Part D, in their relevant positions and secure firmly with a screw action, (Fig 30) ▶. (Make sure the hatch covers are not cross threaded.)





JIB OPTION

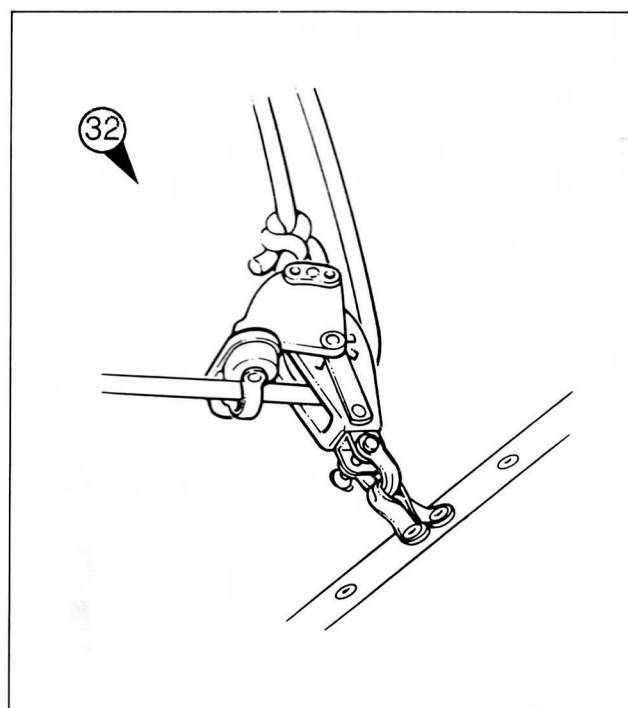
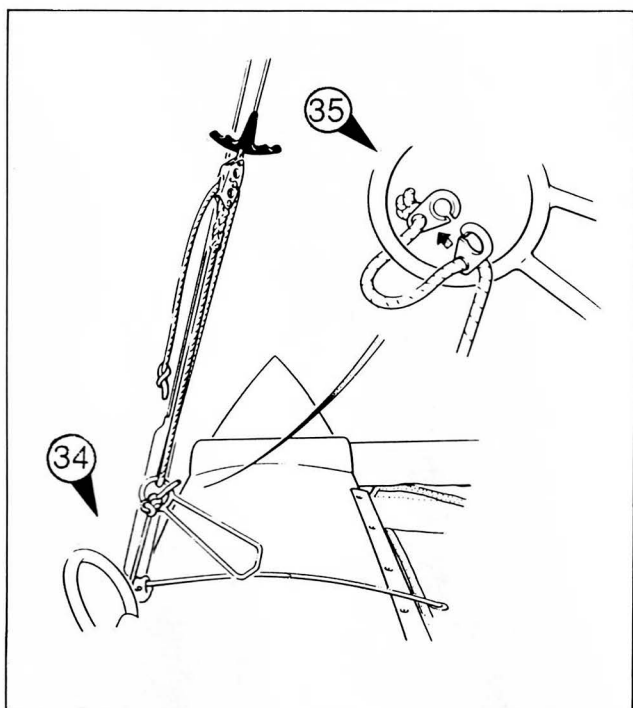
If your boat is fitted with jib and furler read the following.

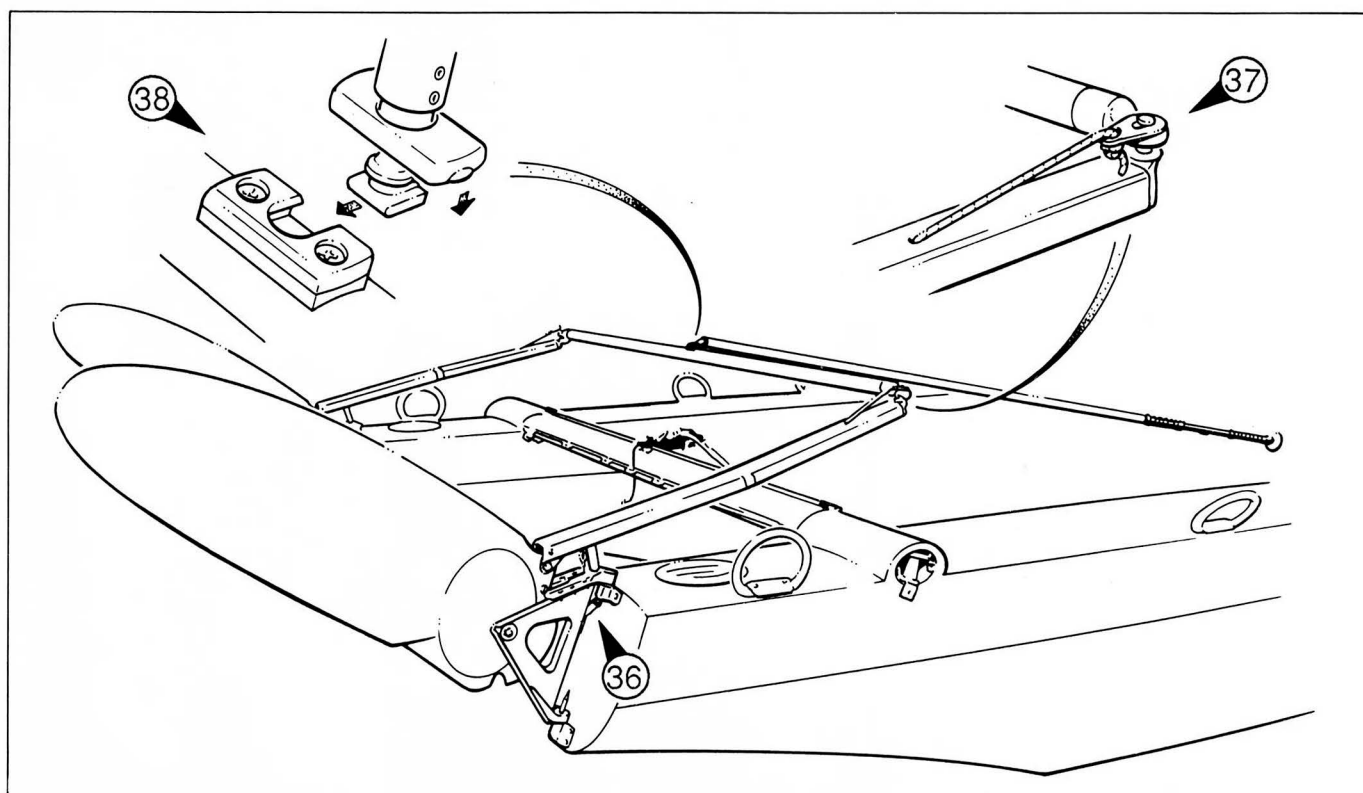
- * Take the line from the jib and furling drum and feed it through the jamming cleat on the main beam as shown, (Fig 31) ▲.
- * Check that the jib halyard (wire) and the slave up haul line (rope) are **not twisted around the fore-stay**.
- * Identify the jib blocks, PART W, and secure them to the fairlead clips as shown, (Fig 32) ◀◀.
- * Identify the jib sheets, Part V, and thread them through the jib sheet system and jib stop, Part X, as shown (Fig 33) ▲.

TRAPEZE WIRES OPTION

If your boat is fitted with trapeze wires read the following.

- * Feed the trapeze shock cord and clips through the bulls-eye on each hull as shown, (Fig 34) ▼.
- * Check the trapeze wires are not twisted and secure to the trapeze shock-cord via the clips as shown, (Fig 35) ▲.





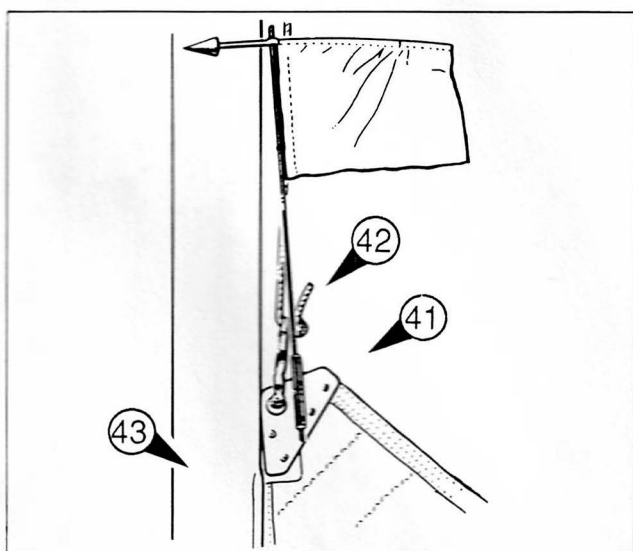
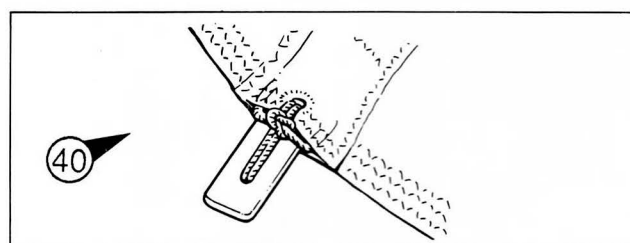
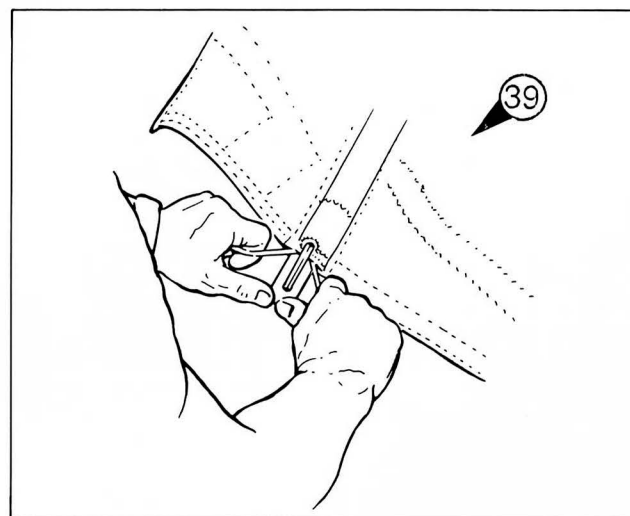
CONNECTING THE RUDDER ASSEMBLY

- * Identify the port and starboard rudders (left-right) and position on the hulls as shown. (Make sure the retaining clips lock correctly.) (Fig 36) ◀.
- * Select the connecting bar, Part K, and place on the tiller pins, secure with the clip as shown, (Fig 37) ◀. (The connecting bar should be positioned with the black clip facing up.)
- * Take the tiller extension, Part L, and clip it on to the connecting bar as shown, (Fig 38) ▲.

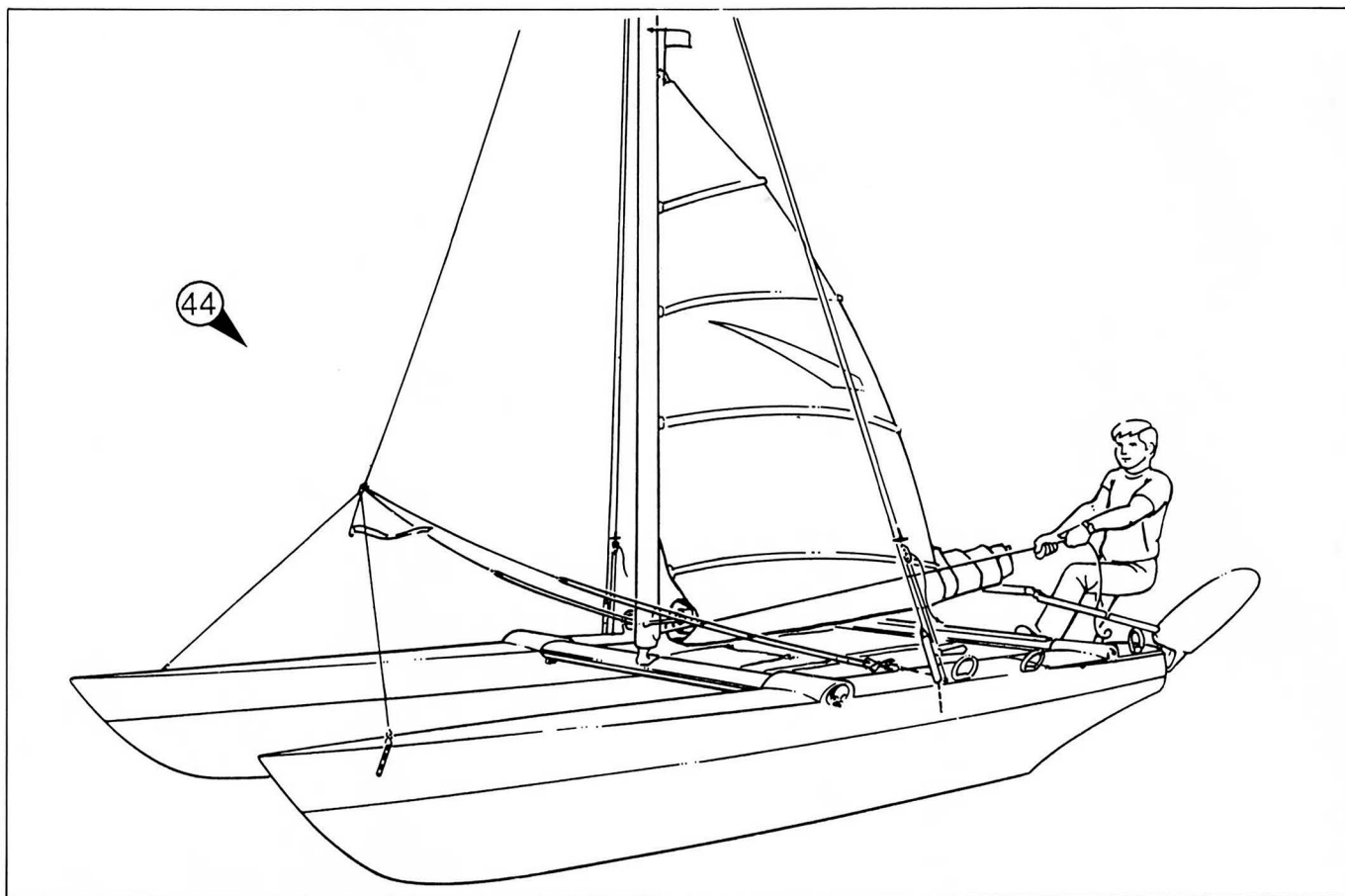
RAISING THE SAILS

MAINSAIL

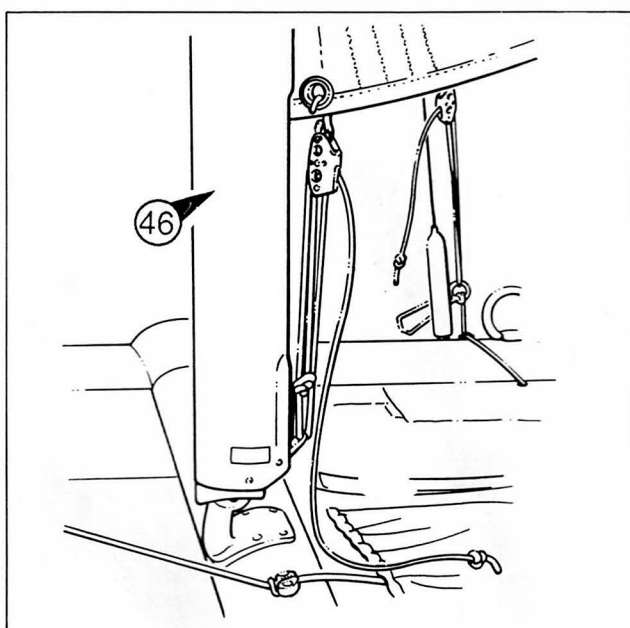
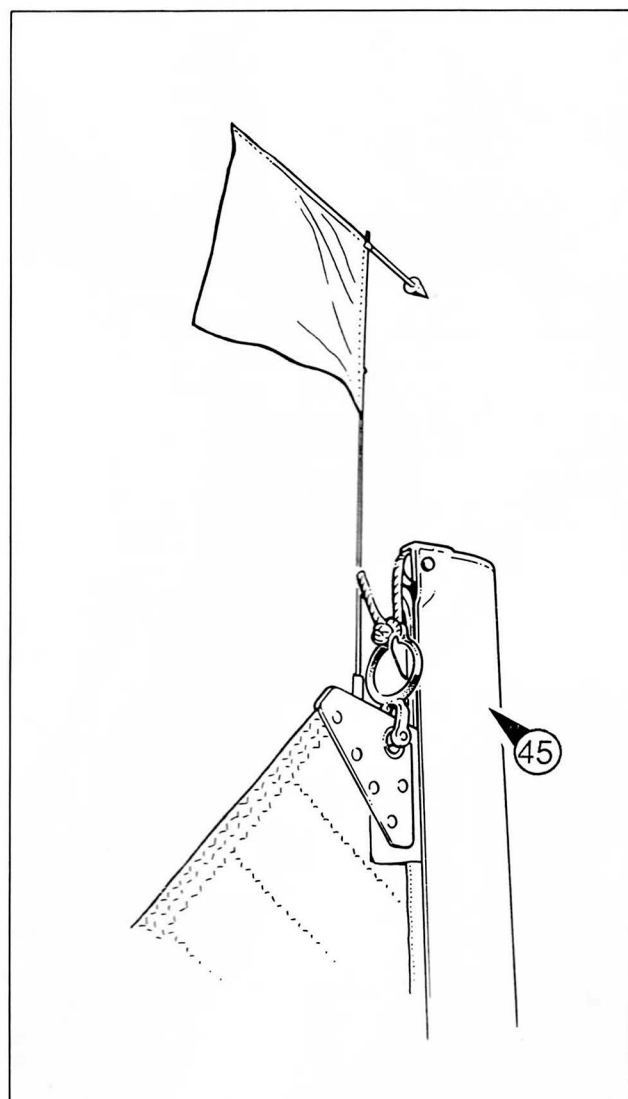
- * Lay out the mainsail on a clean surface and insert the battens (No. 1 : Bottom / No. 7 : Top)
- * Lace the batten ties through the batten and sail. Tension battens using the thumb and fore finger so that a **small** amount of tension is created down the batten pocket, (Fig 39) ▶. Secure the tie with a reef knot and feed the tail ends down the side of the batten as shown, (Fig 40) ▲. Roll the sail from the foot and place on the trampoline with the luff facing forward.



- * Position your boat with the bow facing into the wind.
- * Take the burgee (Flag) and clip it onto the head board as shown, (Fig 41) ◀.
- * Attach the halyard to the head of the sail with the halyard knot facing aft as shown (Fig 42) ◀. Insert the luff of the sail into the mast groove opening approximately 0.5m above the mast base (Fig 43) ◀.



- * Check that the halyard is running up the line of the mast groove (not around the mast hook) and raise the sail by pulling the halyard where it exists from the base of the mast, (Fig 44) ◀.
- * The mainsail is secured at the top of the mast by the halyard lock and the last 15cms of the mainsail hoist should be achieved with a firm pull to ensure the locking ring is positioned over the hook as shown, (Fig 45) ▶.
- * Feed the tack of the sail down into the lower part of the luff groove and connect the main sail down haul hook to the eye as shown, (Fig 46) ▼. (At this point no tension should be applied to the luff of the sail.)
- * Store spare halyard in trampoline pocket.
- * The mainsheet assemble should only be connected to the clew eye when the boat is in the water and you are about to go sailing.



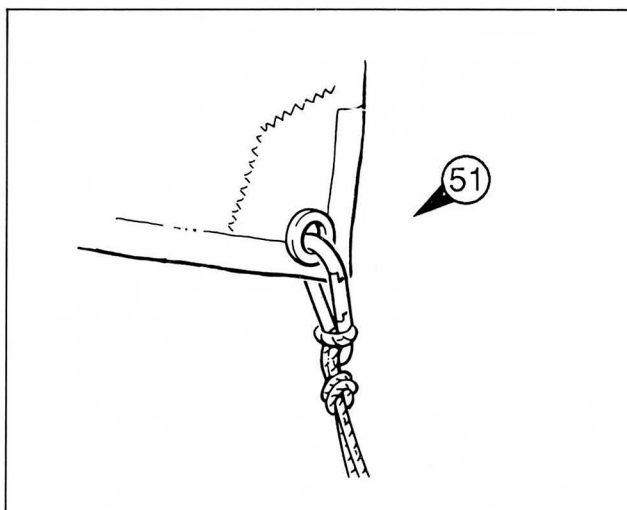
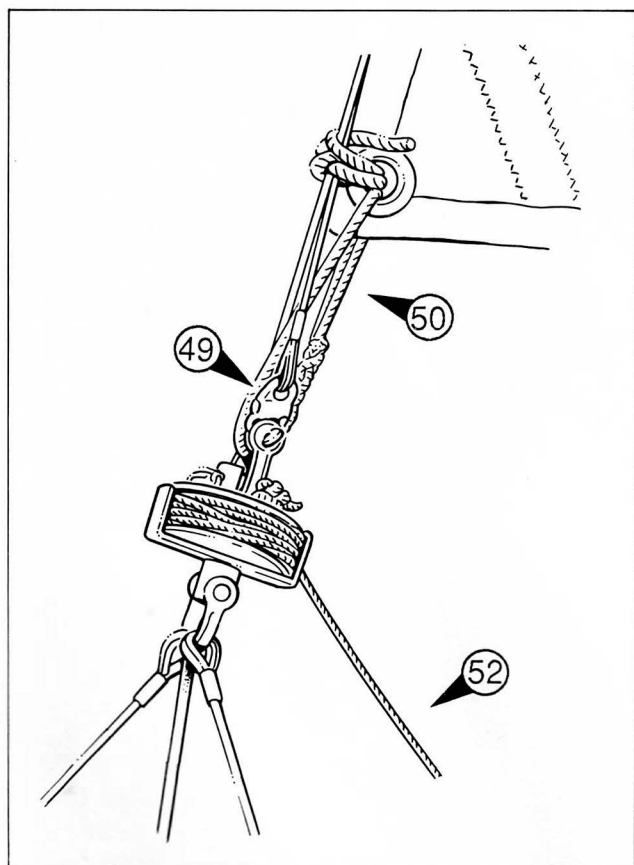
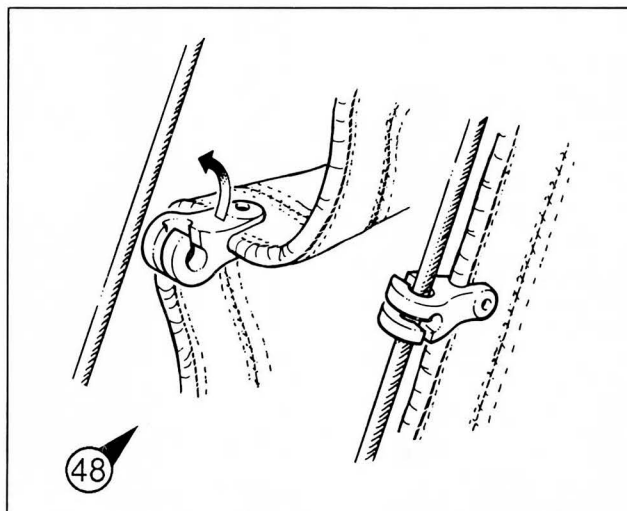
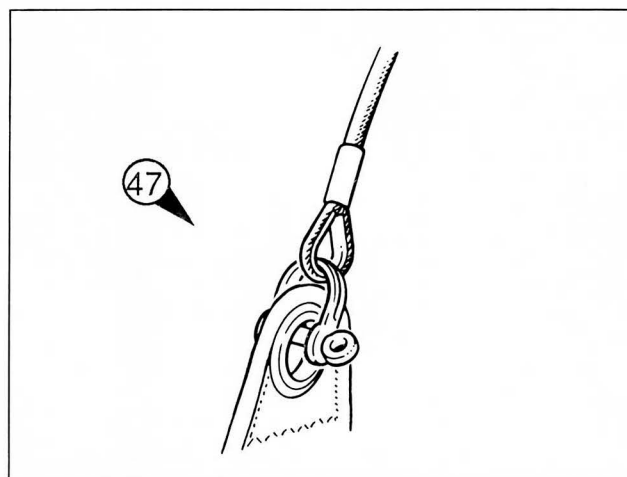
ROLLER JIB (if fitted)

- * Unfurl the sail and connect the head to the wire halyard, as shown, (Fig 47) ►. Hoist the sail via the slave halyard, clipping each sail hank to the fore-stay, using a push and turn action, (Fig 48) ▲.
- * When the sail is fully hoisted the slave halyard can be removed from the halyard clip and stored. The clip is then attached to the fore-stay eye as shown (Fig 49) ►.
- * Tension to the luff of the jib using the down haul line, as shown, (Fig 50) ▼.
- * Connect the jib sheet clip to the clew as shown (Fig 51) ▲.
- * Furl the jib by pulling the jib furling line, (Fig 52) ▼.

NB. If the jib furling drum is not loaded with the line it may be necessary to disconnect the jib stop and wind the jib around the fore-stay until fully stored. Re-connect the jib stop, the drum will now load with line when the jib is pulled out.

IMPORTANT: The jib can only be rolled or un-rolled when the mainsheet is not under tension.

- * Identify the paddle, Part AH, and place in trampoline pocket ready for use.



* ————— *

YOUR FIRST SAIL

Your boat is now ready to sail but before you launch it, it is best to familiarise yourself with the boat's equipment, personal safety, and the technique of lifting and lowering the rudders.

PERSONAL SAFETY

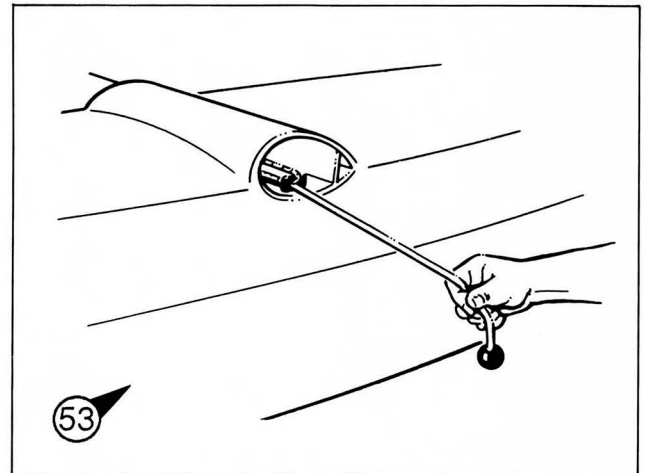
The Dart 15 is an excellent compromise between fun, speed and safety. We recommend you always wear suitable clothing and adequate buoyancy aid/life jacket when venturing afloat.

RIGHTING IN THE EVENT OF A CAPSIZE

The Dart 15 can be righted from a total inversion or a 90 degree knockdown. The righting line is situated in the main beam as shown (Fig 53) ▲ and should be fully extended to assist in the righting procedure.

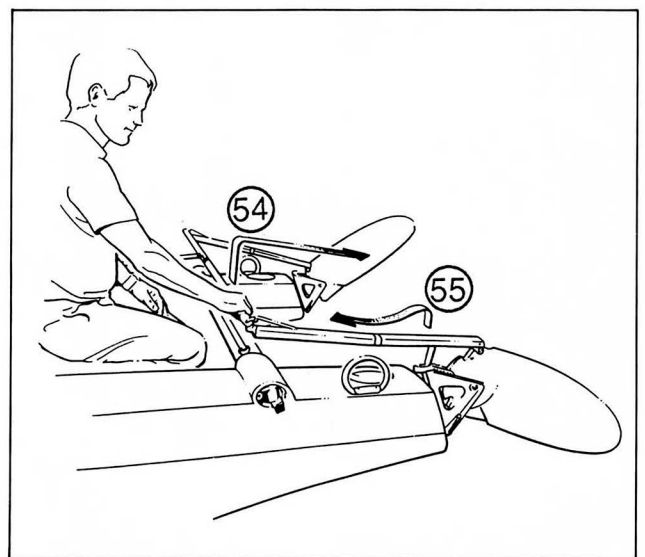
NB. All catamarans can only be righted when the mast is pointing towards the wind.

Further details on the correct righting procedure for catamarans is available in 'The Catamaran Book'.



LIFTING AND LOWERING RUDDERS

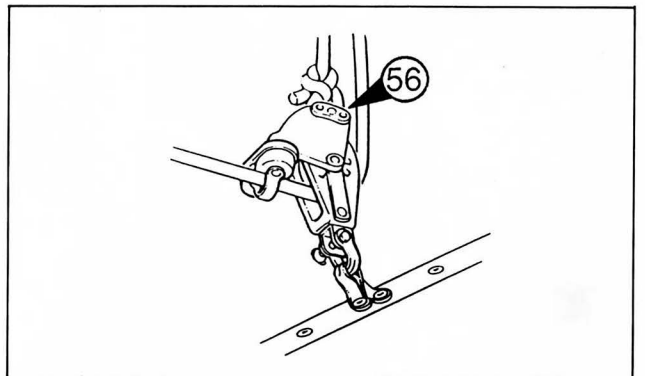
The rudders may be lowered independently. To lower a rudder, lift the tiller arm via the connecting bar and gently push backwards (Fig 54) ► until the lock roller drops into the lower slot on the rudder blade. To lift the rudders, hold the connecting bar close to the tiller end. Lift and pull in a scoop action (Fig 55) ► allowing the roller to follow the rudder cam into the upper rudder slot.



NB. It is a good idea to lift and lower rudders independently to ensure some steerage control whilst sailing on and off the beach.

JIB AND MAINSHEET BLOCKS

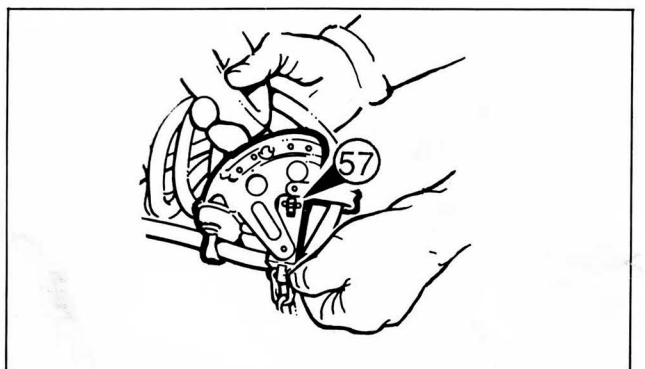
- * All blocks can be adjusted to allow quick release of sheets from the jamming cleats, (Fig 56) ►
- * The mainsheet block also has a ratchet facility for sailing in strong winds (Fig 57) ▲



LOWERING THE MAIN SAIL

To lower the main sail it is necessary to detach the halyard ring from the mast head lock. This sequence is simple but needs to be accurately followed.

- 1 Place the boat head to wind.
- 2 Disconnect the main sail down haul and remove the lower luff from the mast groove.
- 3 Pull the halyard firmly to lift the halyard ring off the hook, retain the tension on the halyard.
- 4 Turn the mast to port (left).
- 5 Release the halyard and pull the tack of the main sail downwards, (make sure the mast is still rotated to port).
- 6 Once the sail has been pulled down past the hook, the mast can be released and the sail lowered in a normal fashion.
- 7 It is a good idea to roll the sail as it is lowered to prevent it from being blown away in the wind.



ACCESSORIES

1. JIB ACCESSORY

If your boat was supplied without the jib accessory, you will need to replace and add to certain parts of the boat's equipment. Identify all parts of the Jib Accessory Option.

- | | |
|----------------------|----------------------------------|
| A Jib | H Jib strop |
| B Forestay strop | I Carbine hook |
| C Forestay | J Single block x 2 |
| D Furling drum | K Jib halyard plus Slave halyard |
| E Jib block x 2 | L Rivet plugs |
| F Fair lead hook x 2 | M Various fixings |
| G Jib sheet | |

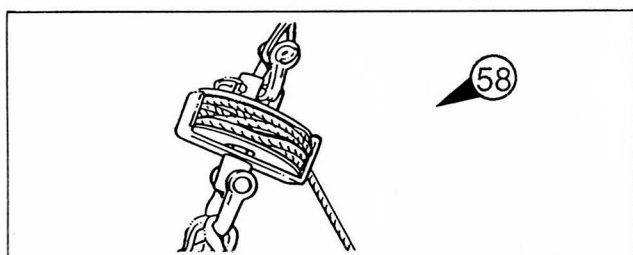
Tools required for fitting Jib Option.

Drill, drill bits, rivet gun, pliers/shackle key, extension rule.

FITTING INSTRUCTIONS

Attach all accessory jib fittings to hull and main beam as shown on drawing.

NB. All rivet holes should be sealed with supplied rivet plugs.



Replace the standard fore-stay with the assembled roller reefing system.

Attach the roller drum to the wind indicator as shown.

NB. Make sure the rope guide faces towards the main beam, as shown (Fig 58) ◀.

Instructions listed on page should now be followed.

2. TRAPEZE OPTION

If your craft was not fitted with the trapeze option when ordered, please follow the following instructions.

Identify all parts for Trapeze Option.

- A Trapeze wires x 2
- B Trapeze shockcord
- C Black bullseye Fairlead x 2
- D Englefield clips x 4
- E Various fittings
- F Rivet plugs

Tools required for fitting Trapeze Option

Drill, drill bits, rivet gun, pliers/shackle key, extension rule.

FITTING INSTRUCTIONS

Attach all accessory trapeze fittings to hull as shown on drawings.

NB. All rivets should be sealed using rivet plugs supplied.

RIGGING INSTRUCTIONS

Attach the trapeze wires to the large shackle at the hound fitting as shown, Fig 59) ◀.

Feed the trapeze shock cord across the boat as shown (Fig 60) ▶. Four Englefield clips should be attached to the shockcord as shown (Fig 61) ◀.

Please follow the rigging instructions as per page

3. LAUNCHING TROLLEY

The launching trolley can be transported assembled or broken down (two simple bolts secure the cup to the main shaft). To position the trolley under the hulls, place the trolley across the bows and lift the bows to allow the trolley room to slide under the keels. Its final position should be at the boat's balance point which is approximately in line with the shroud plates.

NB It is inadvisable to leave the boat in this position for any length of time as it can easily be blown off the trolley given sufficient wind.

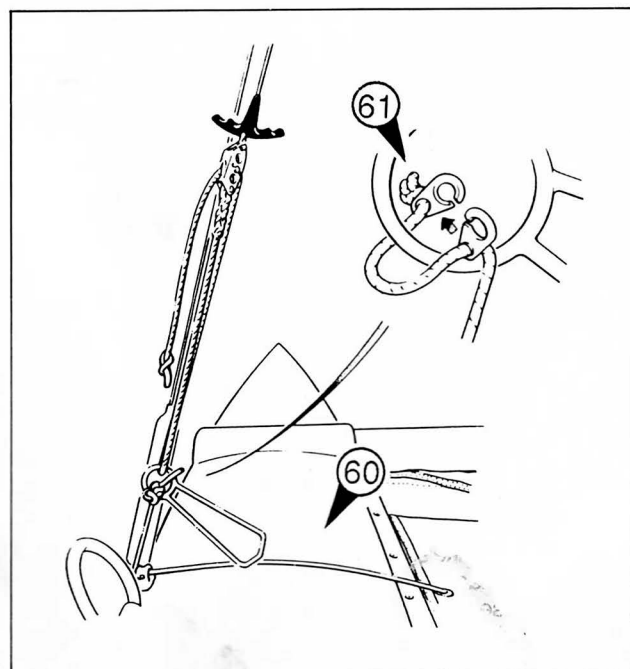
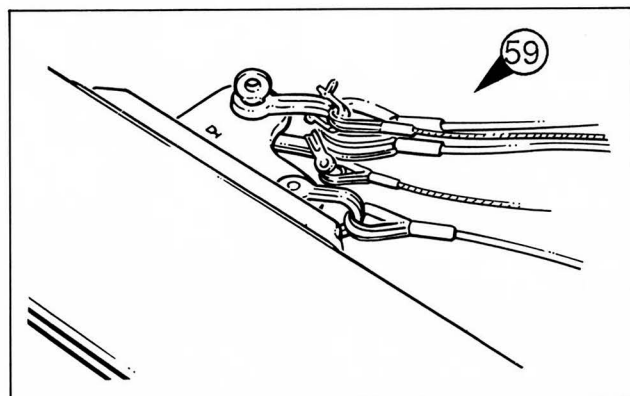
4. ROAD TRAILER

The standard road trailer available for the Dart 15 allows you to tow your catamaran fully made up. Once the mast has been lowered, the hulls can be slid onto the trailer (bow first) and the lighting board/mast support clipped onto the rudder fittings. The hulls and mast should then be secured with suitable line.

NB Before towing your trailer you should check that the weight on the tow hitch is acceptable and that the position of the hulls are such that they cannot catch the side of the towing vehicle when turning. The trailer has facility for adjustment if required.

5. BOAT AND HULL COVERS

These are available for all Dart catamarans. Their use will help protect your craft and prolong its quality finish.



GENERAL MAINTENANCE OF YOUR CRAFT

WEEKLY

1. Your boat should always be tied down securely to ground fittings when not in use. Sails should be stored dry when possible.
2. Any water that has accumulated in the hull during sailing should be removed using the applied sponge.

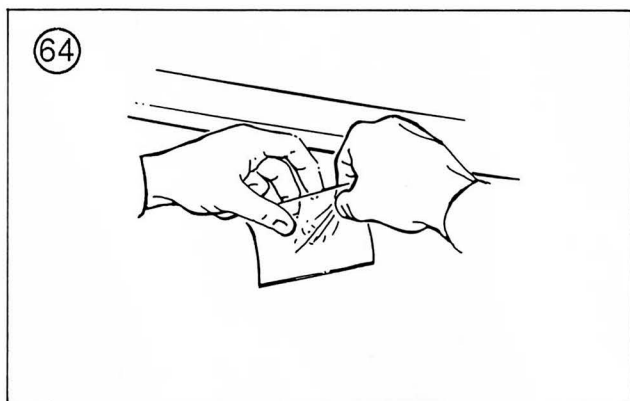
MONTHLY

1. Ropes and rigging should be checked periodically for wear or damage.
2. All moving parts such as jamming cleats and blocks should be lubricated lightly with WD40 or similar.
NB This includes the lifting mechanism for the rudder system but not the roller itself.
3. It is important that you regularly check that shackle fixings are secure at the hound fitting and that all clevis pins and rings are securely taped.

GEL COAT REPAIR

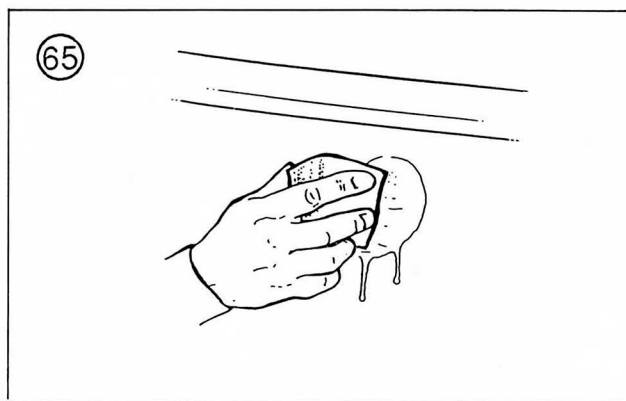
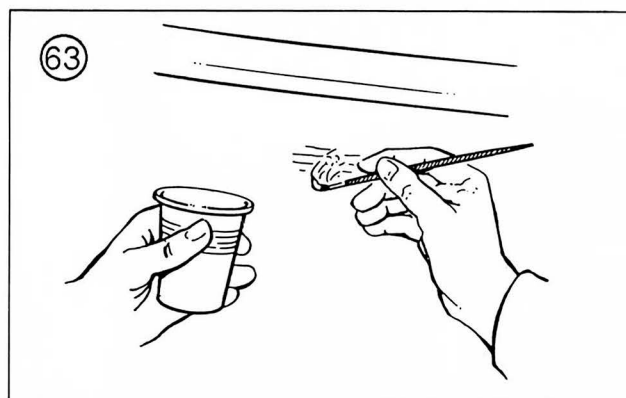
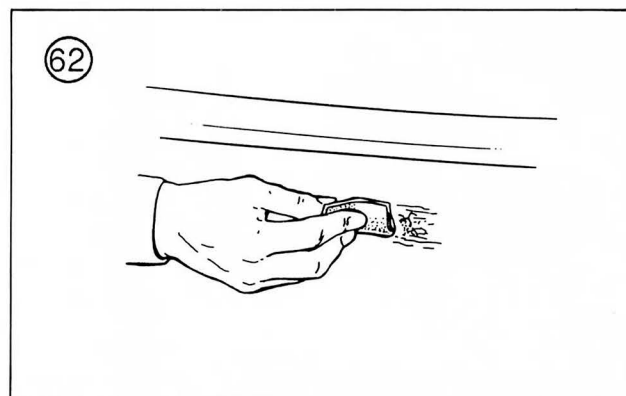
Should you damage the gel-coat surface of your boat, you should repair it as soon as possible. The correct gel-coat colour can be ordered through your Dart agent.

1. Sand back the damaged or flaking gel-coat until a solid area is produced. Make sure the area is clean and there are no sharp edges, (Fig 62) ▼
2. Mix the gel-coat with approximately 2% of hardener and apply using a fine artist brush or similar, (Fig 63) ▲. Cover the area with cellophane and allow to dry, (Fig 64) ▲
3. Brushes and equipment should be washed out in acetone if required.
4. When dry, carefully remove cellophane and sand surface with wet and dry sand paper until it blends in with the original area, (Fig 65) ▲.
5. Finally polish the area using a fibre glass rubbing compound or similar.
NB If substantial damage is sustained to your craft, you should take it to your nearest authorised Dart Repair Centre or contact your nearest Dart agent.



END OF SEASON

1. At the end of each season it is a good idea to check your boat thoroughly for signs of damage or wear.
2. Damage or worn parts should be replaced using the Dart parts identification system.
3. The hull should be washed down with fresh water and a protective cover placed over it.
4. Spars and rigging should be washed thoroughly, dried and placed in a protective area.
5. Sails should be thoroughly washed, dried, checked and stored in a dry place.
6. Road trailer and launching trolley should be washed, checked and greased where necessary.



BASIC SAFETY AFLOAT : By the CAT CLINIC

Before you go sailing:

1. Check you are wearing suitable clothing and safety equipment for the conditions and time of year.
NB Always wear a buoyancy aid or life jacket.
2. Make sure a third party knows where you are sailing and how many there are in your group.
3. Check the weather forecast: radio, television or coastguards.
4. Check the time of high and low tides, if applicable.
5. Seek advice on local conditions when sailing in a new area.
6. Check the condition of your craft.
7. Beware of overhead cables.

On the water:

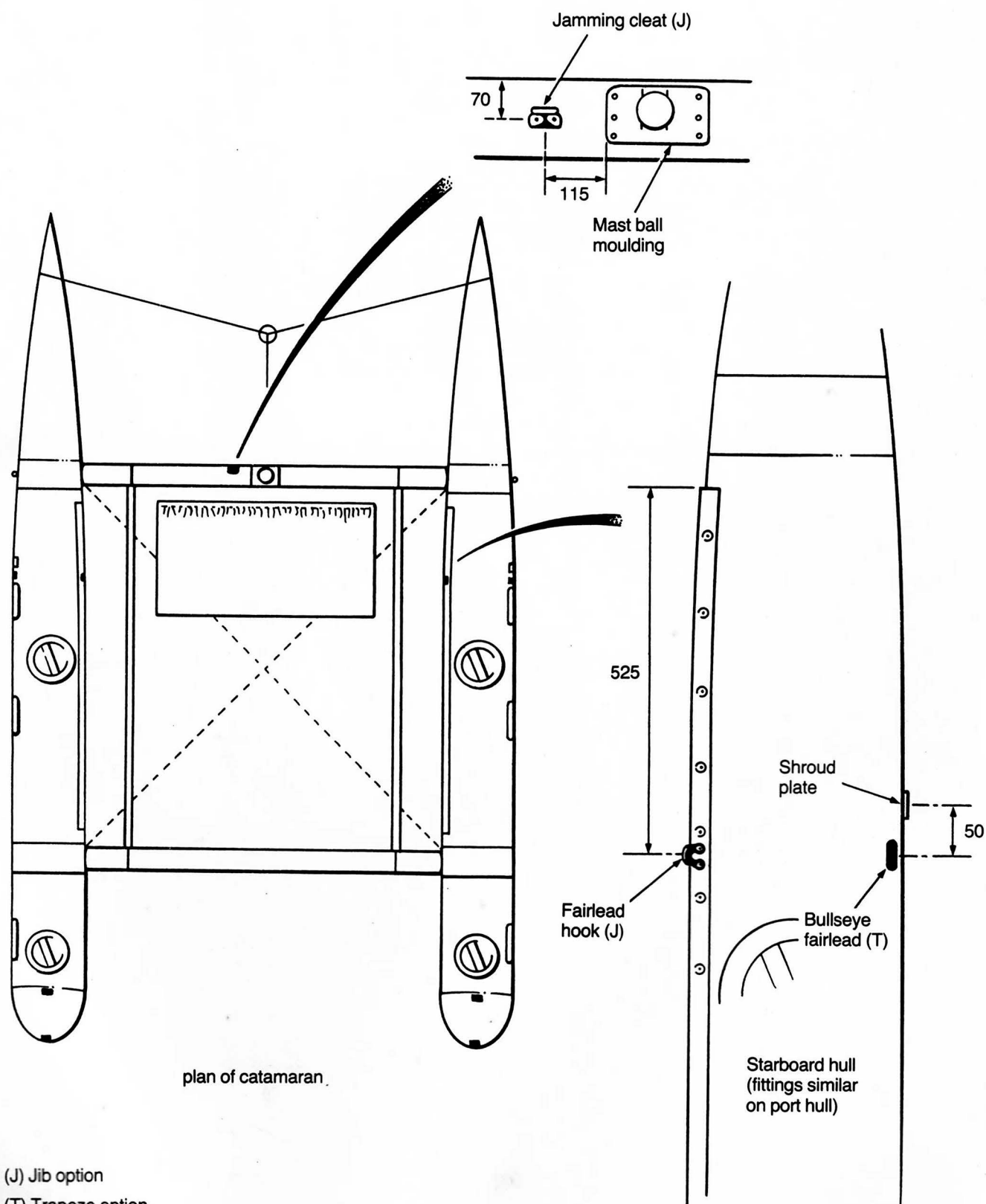
1. Conform to the sailing rules of the road.
2. Look out for changing weather conditions.
3. Never sail beyond your ability or that of your crew.
4. Understand and be competent in the sailing and righting techniques of your craft.

The end of the day:

1. Check the condition of your craft.
2. Secure your craft to its parking berth.
3. Advise any third party of your safe return.
4. Look forward to your next successful sailing trip.



OPTION ATTACHMENT DIMENSIONS



All measurements in mm
drawings not to scale