

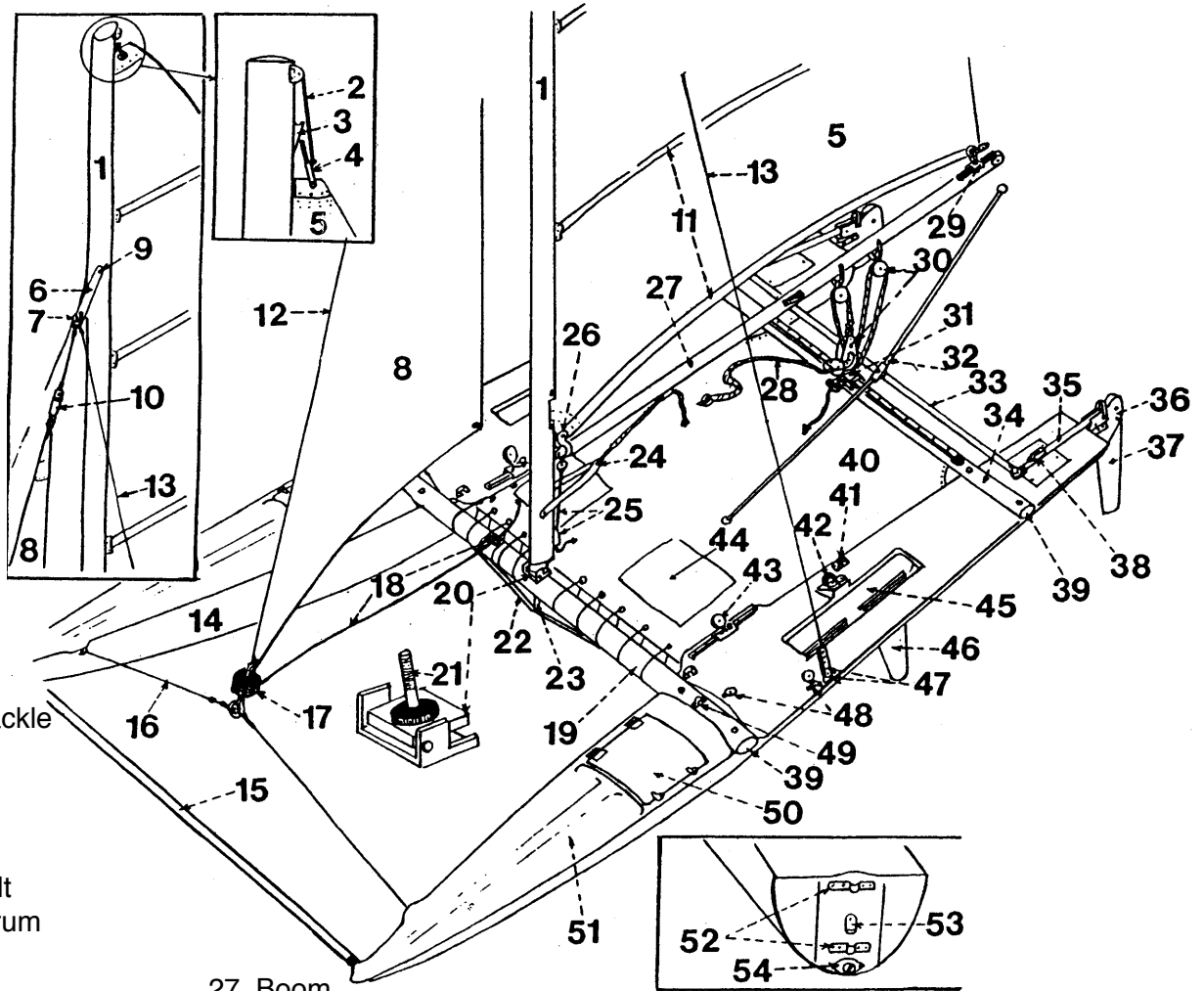
ISOTOPE CATAMARANS

Thank you for choosing the Isotope / Cheshire Catamaran. Following these instructions will help you get years of performance and sailing enjoyment out of your boat. These cats are high-performance sailboats, requiring skill in handling and care in rigging. Each boat is built, by hand, often to owner's specifications.

To sail properly you need to do a lot of things right. Time and care is important in rigging and sailing.

Please read through the instructions, before you begin setting up your boat. Familiarize yourself with all of the parts mentioned and their location. Your awareness will make the rigging procedure faster and easier.

Our best hope is that the following manual will help you realize the potential of your cat and of yourself as its skipper.



- 1. Mast
- 2. Main Halyard
- 3. Howard Hook
- 4. Main Halyard Shackle
- 5. Mainsail
- 6. Hound's Head
- 7. Shroud Shackle
- 8. Jib Sail
- 9. Hound's Head Bolt
- 10. Upper Furling Drum
- 11. Battens
- 12. Forestay
- 13. Side Stay
- 14. Hull
- 15. Compression Bar
- 16. Jib Saddle
- 17. Lower Furling Drum
- 18. Jib Furling Line
- 19. Front Crossarm
- 20. Mast Plate
- 21. Mast Step Bolt
- 22. Dolphin Striker
- 23. Dolphin Striker Post
- 24. Mast Rotation Control
- 25. Downhaul
- 26. Gooseneck

- 27. Boom
- 28. Mainsheet
- 29. Boom Outhaul
- 30. Mainsheet Blocks
- 31. Main Traveller Car
- 32. Tiller Extension
- 33. Tiller Connector Bar
- 34. Rear Crossarm
- 35. Tiller Arm
- 36. Rudder Head / Pintles
- 37. Rudder Blade
- 38. Rear Hatch
- 39. Crossarm End Cap
- 40. Trampoline
- 41. Barbour Outhaul Cleat

- 42. Jib Cleat
- 43. Jib Lead Block
- 44. Trampoline Pocket
- 45. Centerboard Well
- 46. Centerboard
- 47. Shroud Adjuster and Chainplate
- 48. Barbour Outhaul Blocks
- 49. Self-stepping Strap
- 50. Front Hatch
- 51. Deck
- 52. Rudder Gudgeons
- 53. Rudder Stop
- 54. Drain Plug

RIGGING TO SAIL

If possible, remove your cat from the trailer before rigging. Place the boat on land, enough out of the water, so that it has no tendency to float. The pressure of stepping the mast will move an unstable boat causing you to drop the mast.

Before removing the boat from the trailer, make sure the drain plugs are in place, and the rudder pins are removed and the rudder blades are in the full up position.

Lay the mast, sail grove up, across the compression bar with the base near the mast step. Before stepping the mast, check the following:

1. Are the halyards free and working smoothly?
2. Is the shroud shackle tight at the hound's head?
3. Is the mast base and self-stepper clear of grit?
4. Does the dolphin striker need adjusting? (Fig. J)
5. Are the shrouds separated?

Roll the jib up snugly and secure with a small line. Securing the jib prevents the wind from unfurling the jib while you are stepping the mast.

Plug the base of the mast into the mast stepper bolt.

Attach the side stays to the self-stepping straps on the front cross arm.

Make sure NO rope is rolled up on the lower furling drum. There is a knot securing the furling rope to the lower drum. This knot should be turned toward the stern of the boat, shown in Fig. B. Attach the jib to the lower drum and the upper drum. Make sure all keepers are properly in place and the jib is over the compression bar. You are now ready to step the mast.

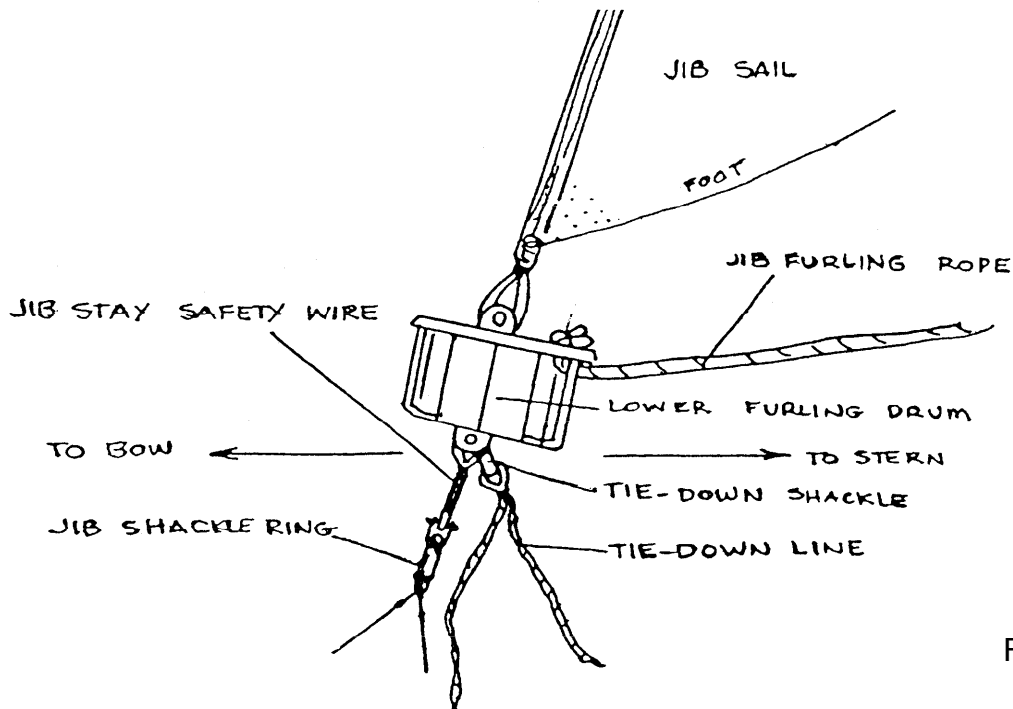


Figure B

STEPPING THE MAST

Steeping the mast can be accomplished most easily with two people. The first person inserts the mast stepper bolt into the hole in the mast base and then holds one side stay loosely. The second person then walks the mast up, hand over hand, until it is upright. As the mast approaches the upright position, it will be stopped by the jib acting as the forestay and need only be held against sideways movement. The person then securely fastens the side stays with the shroud adjusters to the chainplates taking care not to cross them or wrap them around the jib.

Steeping the mast with your cat on the trailer can be accomplished by using a platform secured to the tongue of the trailer. Follow the same procedure for stepping the mast on the ground just use the platform to stand on for the needed extra height. You can use an extender on the trailer mast stand to help you raise the mast; a step stool to stand on for the second person is handy for reaching the shrouds to attach them to chainplates.

When one sailor steps the mast, the jib forestay is attached, the mast stepper bolt inserted into the mast base hole and the side stays are attached to the self-stepping straps on the front crossarm. (Fast pins can be use for this step) The mast can then be walked up and held in position on three points. The sailor then transfers the pre-attached side stays from the strap to the chainplates.

Checking the furling of the jib: Untie the cord around the jib and uncleat the furling rope, if cleated. Grab the clew of the jib and pull the sail all the way out. If the jib remains wrapped around the forestay, in such a way that the jib is forced into an unnatural shape; simply take the clew of the jib around the front of the forestay, until the jib is completely unfurled.

Still holding the clew, pull the furling rope until tight. Cleat the furling rope. Wrap up any slack of the sail by manually wrapping the sail around the forestay. Re-tie the cord around the jib sail. The importance of checking the furl of the jib lines is to make sure the jib furls completely up and unfurls completely out. Having made this check, you can rope up your jib.

Tighten down on your rig by running the jib tie down rope through the jib saddle ring and the tie down shackle in opposite directions until there are 6 strands of rope through the ring and shackle. Pull the shackle down to the ring and secure. (Fig. C) The tension of the rig is normally up to the sailor. A suggested rule of thumb is that the mast should not be down so tight that it cannot be rotated with one hand.

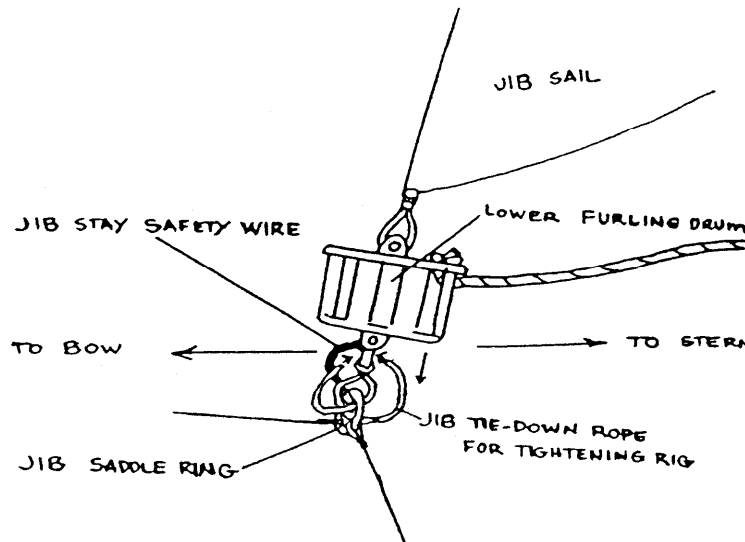


Figure C

Checking the mast rake: After the rig has been tightened down, the rake of the mast is checked visually. Stand in front of the boat approximately 5 feet from the compression bar. Line up the front stay with the mast. The jib can be unfurled to aid accuracy. The mast should not lean to the left (port) or the right (starboard). The proper position is as close to center as visually possible.

With the boat on a reasonably flat surface, the fore and aft rake can be checked. Move approximately 8-10 feet to one side of the boat. The rake should be between perpendicular and approximately 3 degrees aft.

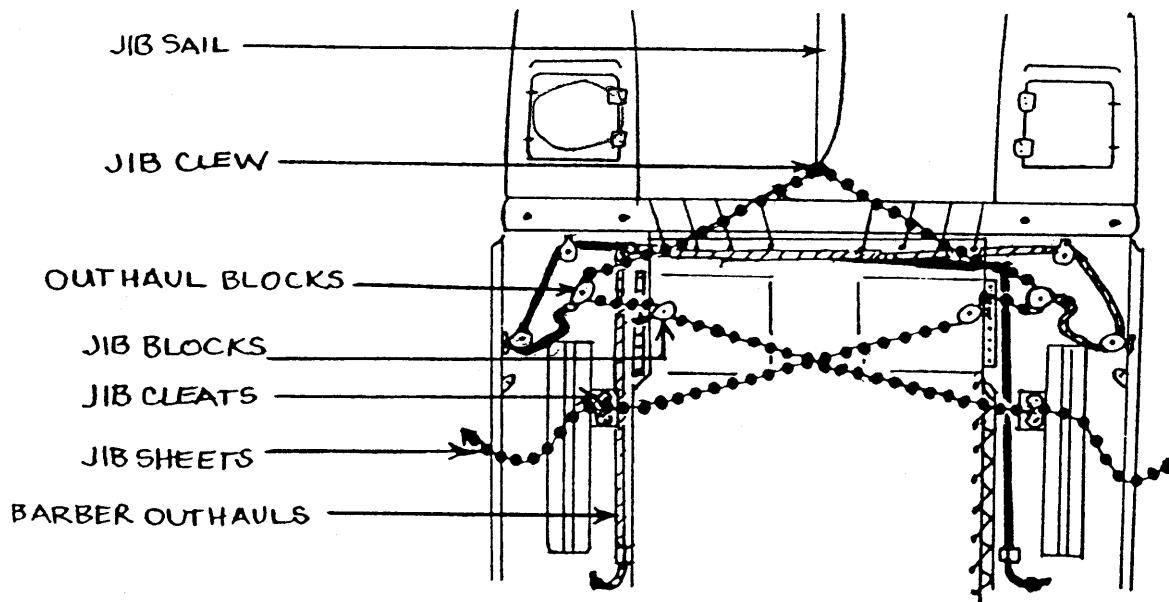
Note: If the boat is to be left rigged overnight with the mast up, the jib tie-down rope should be loosened and the next day re-tied before sailing.

Two people can most easily unstep the mast. One person standing between the hulls at the front crossarm holds the mast. The assistant unpins one stay and then the other. The mast is walked down hand over hand. The assistant catches the upper part of the mast as it comes down. Pull the mast from the mast step and rest it on the compression bar. Remove the stays and jib sail.

REEVING THE JIB

Windward cleating for the jib is standard on the Isotope and Cheshire. Figure D illustrates how to reeve the jib for windward cleating. Offered, as options for the cats are several methods of leeward cleating for the jib. Should this be the case for your cat, simply request the reeving system drawing.

Figure D



RIGGING THE MAINSAIL

Unroll the mainsail on the trampoline. Fasten the mainsail to the Howard Hook Ring, so it leans inward towards the mast. See Figure E. Feed the luff of the main into the mast groove through the cut away slot, as you hoist the sail. (Note: Sails should always be hoisted with the boat heading into the wind. You may need to turn the boat around in the water and pull it back on the shore stern first.)

If the sail is difficult to raise, stop and see if the rope is pinching in the slot. The Howard Hook Ring should slip into the Howard Hook as the sail reaches the raised position. Feed the Gooseneck and rest of the mainsail luff rope down in the mast groove. Tuck the remainder of the halyard line into one of the pockets on the trampoline.

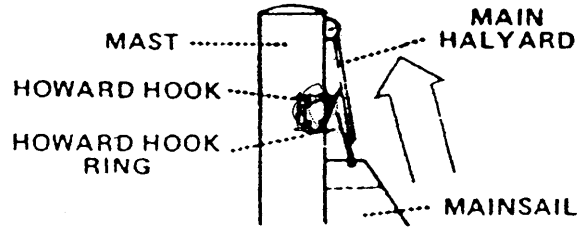


Figure E

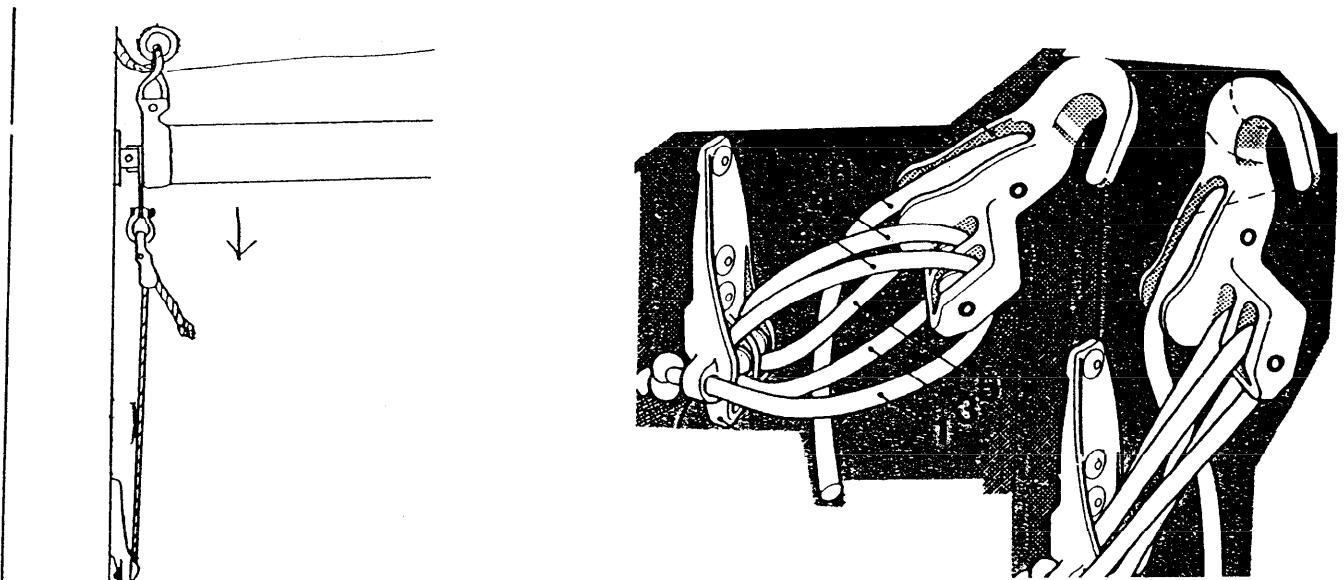
NOTE: When taking down the mainsail, hoist up the sail, turn the mast one direction and pull the boom in the opposite direction, allowing the ring to clear the Hook so the sail can come down.

DOWNHAUL TENSION

There are quite a few options available for downhaul tensioning and sailors usually have their own ideas. Radial cut sails require more downhaul for better sail control.

The downhaul system in Figure F is the standard system. Pull down on the line until all the wrinkles are out of the luff of the mainsail. There will be some wrinkles at the foot of the sail due to the pressure applied. These wrinkles are acceptable.

Figure F



PREPARING TO SAIL

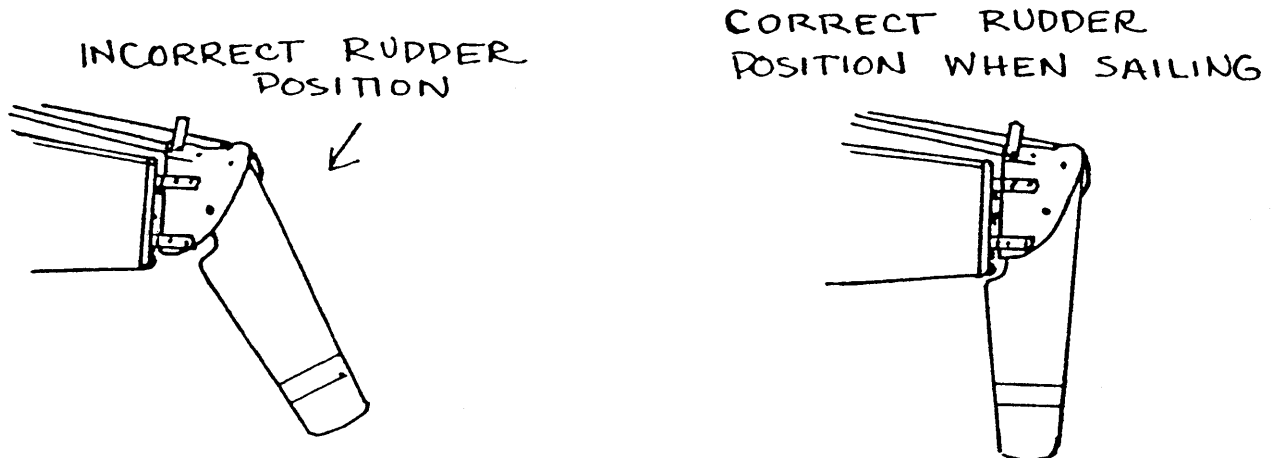
Make these checks before getting underway:

1. Check your mast rotation. The mast should rotate by hand without too much effort.
2. Attach mainsheet blocks to traveler car.
3. Check all lines: halyards, sheets, and control lines.
4. Make sure drain plugs are in.
5. Place centerboards in wells.
6. MAKE SURE ABOUT LIFE JACKETS, PADDLE, and TOWLINE.

Getting Underway.

As soon as possible after shoving off, cleat your rudders in the full down position. (Figure G) This action gives you control of your boat. Next get your centerboards down for directional stability and windward control.

Figure G



RETURNING TO SHORE

When returning to shore, check the following:

1. WIND DIRECTION SAILING INTO SHORE.
2. Make sure both rudders are uncleated.
3. Make sure both centerboards are in the up position.
4. Furl your Jib.
5. Uncleat your mainsail. Slow your boat down.
6. Watch out for people and obstacles in the water.
7. Make sure the shore is clear.

IN IRONS

You are sailing directly into the wind. Your boat has stopped moving forward. Moving the tiller has no effect. You are IN IRONS. Uncleat the jib and loosen the main. You will begin coasting backwards. Push the tiller away from you and hold it. The boat will swing off the wind. When the boat slows down or stops, cleat your jib and straighten the rudder. The boat will begin to move forward. Time to trim your main and be on your way.

EXCESSIVE HEALING

If you think you are about to go over, head into the wind, release the main and jib (if you have time). Hike out as far as possible. Balance is the important factor for you in keeping control of your boat.

COLLISION AHEAD

If you are on a collision course, steer away as best you can. Release your main and jib to slow down. If all fails, hit the object straight on. The bow is one of the strongest parts of the boat. If the compression bar is damaged, furl the jib and sail in on your main. Make proper repairs before sailing again.

TURTLED BOAT

Having won the one and only Turning Turtle Award made Steve Chobot the appropriate Isotope sailor to devise a method to right an Isotope from that position. The method became apparent to him during a regatta. "Rounding the windward mark, the wind shifts and strengthens from 10 to 15 knots changing a long angular run to the leeward mark into a straight screaming broad reach. The race leader is just ahead. With this speed the lead is mine. Into the tack for the mark rounding, high and tight, looks really good. Then a gust, a loud scream of &\$*# NO! &###\$ from somewhere, somewhere real close, the leader slides by as the boat rolls slowly onto its side and then all the way over. TURTLED. Now What?"

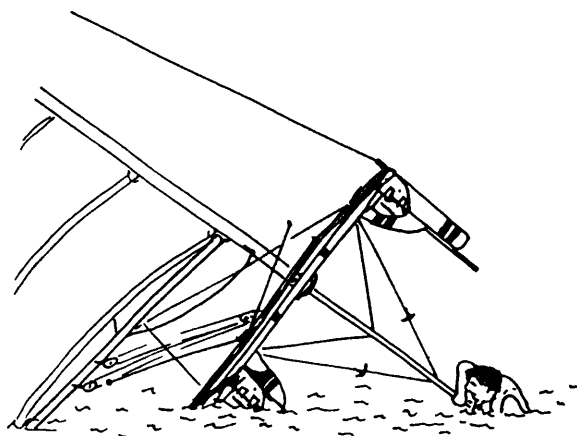
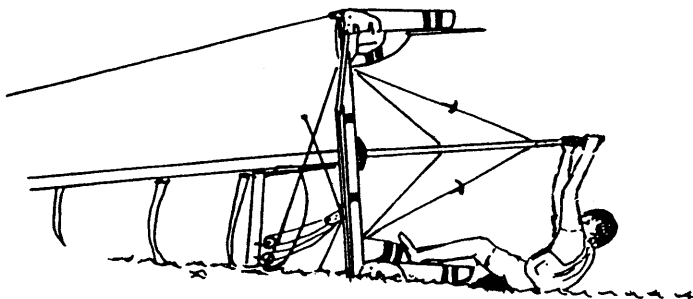
"Grab the stabilizing rope attached to the righting bar pull the righting bar vertical. Plant both feet high on the leeward hull and lean back over the water. As the windward hull rises off the water and the wind starts to push the boat over use the knots on the

stabilizing rope and climb up to the righting bar. Slide your weight out onto the righting bar using the rope to keep the bar aligned with the mast. As the mast rises out of the water the sail will catch the wind and right the boat. Climb aboard and back into the race.”

OVERTURNED BOAT

You are over and the boat is on its side. Uncleat the main and jib; swim the tip of the mast so that it points into the wind. Detach the righting bar at the back and swing out on the bar until it stops. Press hard at the end of the bar with your body weight and hold there until the boat rights itself. If you need to, grab the handle on the righting bar wire. stay with the bar until the boat is very nearly up right. Leave the bar and climb on. The force of the water will push the righting bar to the surface of the water. When you can, lift the bar and secure it.

If you have difficulty righting your boat from exhaustion, wind or wave action. Call for motor boat assistance. Have the motor boat go to the tip of the mast and lift as high as possible while you remain on the righting bar. Should this effort not be enough, have the motorboat crew walk the mast hand over hand, lifting the mast higher out of the water.



GENERAL MAINTENANCE

The Isotope and Cheshire are designed and built like the best airplane; strong where it needs to be, yet light weight overall. This combination assures the finest possible performance while inspiring and requiring special attention.

Cover your boat or store out of the weather. This kind of care will protect your gelcoat finish and keep the trampoline from aging.

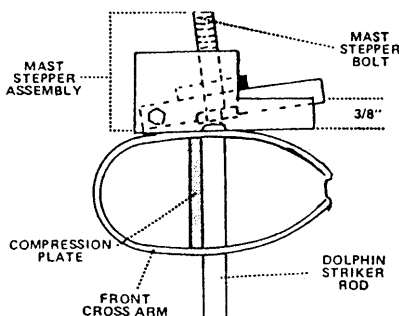
Always rinse your boat (including blocks) with fresh water, after sailing in brackish or salt water. Check your 8 crossarm bolts, shackles, and other fasteners periodically, and tighten when you need to. Remember, over tightening may cause bolt heads to snap off.

When folding or rolling your jib, take care not to wrinkle the window. Roll the main on itself from the head to the boom. It is a good idea to let sails dry if wet, before putting away. A jib and a main bag are provided. Lubricating the luff with silicon can lessen chafing and make the sail easier to hoist.

Keep the mast step and base lubricated.

If a rudder rope breaks, cut or saw the damaged rope where it exists the rudder blade. Take a 1/4", variable speed drill with a 1/4" bit and drill straight down into the remaining rope inside the rudder blade about 1 1/2" to 2" deep. Back out the drill bit. Make sure the hole is clean. Run the new rope in the hole and glue in place with 5-minute epoxy.

Inside the front crossarm is a 2" x 7" compression plate. Note the drawing below. This plate should always be in a vertical position, either in front of or behind the dolphin striker rod. Keeping the quarter inch bolts that hold the mast step to the crossarm tight at all times will hold this plate vertical. Check on this plate by loosening one of the front crossarm end caps and looking inside.



WARNING • WARNING • WARNING • WARNING • WARNING

Beware of electrical wires and power lines. These lines can be over land or water, so be watchful rigging or sailing. The aluminum mast and shrouds are good conductors of electricity. Sailors have been injured or electrocuted when their sailboat or mast touched electrical wires. If you are in a situation where you can not avoid hitting an electrical wire or power line, ABANDON SHIP. Move as far away from the boat as possible. Better wet than dead.

CAUTION: NO STEP AREAS

Care should be taken during rigging and sailing to avoid walking or placing full weight on the shaded areas of the deck, shown In Figure A.

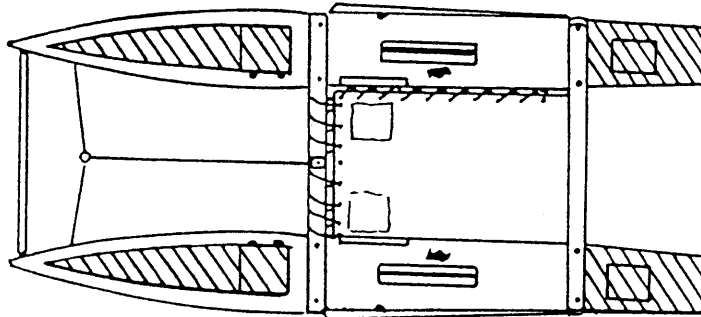


Figure A

TRAILERING

BOAT TIE DOWN: Attach two ropes at the base of the trailer mast stand. Then tie each rope to the eyelets on the compression bar at each hull. These ropes should be tight, but no so tight that the cat is forced out of balance on the trailer. Next, attach a single rope to the mid frame of the trailer and tie tightly to the front crossarm. As an extra measure the same can be done to the rear crossarm. Next, a single rope is attached to the top of the mast stand and tied snugly through the jib ring and back to the mast stand. A popular way to accomplish this is to use a pre-attached snap hook.

SECURING THE RUDDERS: Simply install the custom trailering pins in the holes in the rudderheads and lower the rudders until seated. Remove the slack in the down rudder ropes by cleating in place.

MAST TIE DOWN: Place the molded mast rest on one side of the traveller carriage on the back crossarm. Place the mast on the mast stand with the hounds head approximately one foot ahead of the mast stand and across the mast rest at the back crossarm. Secure at both points. Bungee cords with hooks are popular for securing the mast. The hooks can fit into the straps for the righting bar. BE SURE to pull both barbour outhauls all the way in, batten down the hatches and remove centerboards out of the hulls. Remove any debris in the trailer cradles before loading your cat.



SAILING TIPS FOR CATS

This is only an introduction, not a complete set of instructions. As with all skills, experience is the best teacher. When you start sailing your boat, do not take on more than you can handle. In time you will develop skills that will serve in every sailing situation.

The Isotope and Cheshire are well designed, well balanced, and equipped with some of the best hardware on the market. These factors provide easy trimming and outstanding sailing performance. The beginning sailor will make few adjustments while he learns on his cat. The advanced sailor will find the fine tuning devices are there and ready to use.

The secret of trimming is familiarity with your boat. Sailing in different winds will build familiarity.

The Isotope and Cheshire are responsive – sensitive on the tiller, sensitive to sailor adjustments, and sensitive to weight placement – therefore sailing becomes a very individual matter. You and your boat work together, becoming one with each other, as you learn the wind and water.

Developing your skills can lead you to competition. The race course is the best way to test your knowledge of the boat and to learn from other experienced sailors. If you have no intentions of becoming a full-fledged racer, you can still compare and refine your skills, eventually getting the best performance out of your boat.

The skills of trimming out involve a variety of things: mast tuning, reading wind direction, light and heavy air setting, weight placement, trapezing, tacking and sail trim. These topics are discussed briefly in the following sections. After sailing your boat, your comments will be welcome.

WIND INDICATORS

Wind indicators, or Telltales, are strips of material that flutter in the wind, showing wind direction and force. There are many types of telltales, some commercially designed to affix to various parts of the boat. You can make your own out of yarn or recording tape. These can be tied to the shrouds to show wind direction over the water and to the edges of the sails to reveal air motion around the sails.

Using yarn can be a hassle initially, but a valuable aid in the long run. If you choose yarn, thread it through the sail, tie a knot in each side to keep it from sliding through and leave a 4-6 inch tale hanging from either end. If the airflow on each side of the sail is even, the telltales will line up. If the windward side telltales luff while you are pointing, you are sailing too close to the wind. If the telltales luff while you are reaching, your sail is eased out too far. If the leeward telltales luff, you are sailing too far off the wind or your jib is trimmed too tightly. Reinhorn's Law states briefly if the leeward telltale flutters, push the tiller to leeward, and if the windward telltale flutters, pull the tiller to windward.

You can use yarn telltales to trim your jib. If the telltale flutters high at first, your jib lead position is too far aft. If the jib telltales flutter low at first, your jib lead is too far forward. Ideally the jib telltales should flutter along the entire length of the jib at the same time.

Remember that there are conditions where the telltales can line up and boat speed decreases. So use them as a guide – not as the last word.

TACKING

Just before tacking, point as high as you can (in light air – maintain good boat speed), push the rudder over slowly and hold until the boat is through the eye of the wind and the wind fills the jib on the opposite side. Uncleat the jib and move to the other side taking the jib sheet with you. Recleat on the opposite side and then trim and cleat the main. In light air the mainsheet can be left cleated during tacking, BUT in heavy air the mainsheet should be hand held. When tacking in heavy air the jib should be uncleated and hand held until the boat is about, then cleated on the opposite side. The reason is

heavy wind can make the jib difficult to uncleat once the wind has filled the sail in the tack. Once the boat is through the eye of the wind, cleating is faster and easier.

MAST TUNING

The mast should stand 90 degrees as you face the bow or stern of the boat, not leaning to port or starboard. Lean can be corrected using the side shroud adjusters. The mast may be raked fore or aft a bit. Sail the boat to windward and feel the pressure on the rudder through the tiller. This rudder pressure is called helm. You gauge helm by removing your hand from the tiller, while sailing into the wind. If the boat sails too quickly up wind, you have weather helm. This can be corrected by raking the mast forward. Rake the mast forward by moving the pins in the side stays up one hole. If the boat tends to sail away from the wind, you have lee helm. To correct this, rake the mast aft by dropping the side stays down one hole on the adjusters. It is good to have a small amount of weather helm. Adjustments of only inches can make a difference.

A rotating mast is standard on the Isotope and Cheshire. The mast will vane automatically up to 45 degrees to the wind, preventing wind resistance from building on the leading edge of the mast. A mast limiter is useful for adjusting and controlling mast rotation, but it is not a required piece of equipment for the Isotope and Cheshire. The limiter can be adjusted to allow mast rotations of 30-35 degrees when heading to windward and 90 degrees when running with the wind.

SAIL TRIM

SAILING IN HEAVY WEATHER

NEVER sail in heavy weather with the mainsail cleated. The mainsail should be flat, the downhaul tight, and the outhaul very tight, especially when heading windward. This moves the center of effort of the sail forward, pointing the boat higher and reducing weather helm. The roller traveler carriage and block system should be eased outward about 12 inches when beating. This helps maintain maximum speed, minimum wind spilling, and control without excessive heeling.

In heavy weather, the jib lead blocks should be moved back. This puts tension on the foot of the jib and produces a wider slot between the jib and mainsail. As a general rule, in heavy wind you should sit behind the center of the boat with a crew around the side stay. This keeps the leeward hull from dipping and stalling out. If the bow slams down into every wave, bringing spray aboard and causing excessive pitching, you should move your weight closer to the center and experiment for the best-controlled performance.

Although flying a hull is easy and exciting, it is not very efficient. When you fly a hull, you expose less sail area and spill too much wind. With a catamaran the best angle of tack has one hull barely touching the water on the windward side. This gives you the minimum wetted surface and least sideslip. When you catch a puff, head-up slowly into the wind and as the puff grows; ease the mainsheet as necessary.

When the wind is up you may need to sail your Isotope or Cheshire without the jib. The cat will have a tendency to develop weather helm. Only sailing experience will help you learn to compensate. When tacking without a jib, you will need to plan your tacks. Get up boat speed close hauled. Tack. As you come through the eye of the wind uncleat your mainsail. Make sure you are about. Slowly pull in the mainsail, gaining boat speed and at the same time pull the tiller towards you. As your boat speed increase, you will gain control.

TRIMMING FOR LIGHT AIR

Beating to windward in light air, your mainsail traveler car should be 0 - 3 inches off center. When reaching off the wind, go about 4 inches out with the traveler and pull the mainsheet in tight. When running, cleat the mainsheet so that it hangs loose without drooping, leaving the traveler car 4" on center.

In light air, tension should be eased on the jib sheet, allowing the wind to bulge the sail. Move the jib lead blocks forward to reduce the air slot between the main and the jib and to put tension on the leach of the jib. The air slot can be opened on a reach by setting the barber outhaul at its midpoint. Be sure to uncleat the barber outhaul when heading to windward.

When running, you might try to sail "wing to wing", holding the jib on the side of the boat opposite the mainsail.

To balance the boat in light air, skipper and crew should sit forward to reduce stern drag and wetted surface. The idea is to keep the boat level and reduce drag at the same time. Lifting the centerboards will decrease the drag when running with the wind.

In very light air, you may want to sit on the leeward side of the boat to improve your sail angle. In drifter conditions, move forward, keeping body movement at a minimum. Concentrate on keeping up boat speed, tacking only when necessary.

TRAPPING OUT

In moderate wind, hiking out is all that is necessary to keep the Isotope balanced. In higher wind, however, you have two choices - depower the sails or go out on the trapeze. The trapeze is basically just a wire attached to the mast near the top of the forestay with a ring or "dog bone" on the lower end. This ring, usually on a short piece of line for length adjustment, clips onto a hook that is part of a hiking harness. When not in use, the trapeze wire is held in place by a length of shock cord.

When the wind picks up, the skipper or crew clips the trapeze wire to his harness and "traps-out". After tacking, hike out behind the shroud and attach to the wire. Lean

back letting the trapeze hold your weight and work your way outboard by standing first in the centerboard well and then out onto the side of the hull. Keep your feet apart and knees bent. Balance the boat by moving slightly fore and aft, and by moving your weight in or out. Before tacking, come back inboard and unclip your harness from the wire. Do NOT leave the sheets behind. You will still need to spill wind from the sails (both main and jib) when a big gust hits.

Some sailors like a longer "rabbit ear" when trapping out. Others prefer a straight telescoping tiller. The Isotope can be fitted with either. Keeping control of both sheets and the tiller while on the trapeze can be quite a challenge for a single-handed sailor, but his speed will be unmatched. When sailing two-up, the crew can trap-out comfortably with the jib sheet (and possibly also the mainsheet or downhaul), freeing up the skipper to concentrate on steering and sail trim. This practice often wins races.

When trapping out, its usually advantageous to foot a little (sail a little lower than close-hauled) for two reasons. First, a sudden wind shift is less likely to dump you overboard. Second, you'll have more power and as you speed up, your apparent wind will move forward. On the racecourse, this means sailing a longer distance but the extra speed makes up for the difference.

Don't be afraid to try the trapeze. It's thrilling and not as scary as it looks.

TRAPPING OUT was written by Eric and Joleen Rasmussen

TECHNICAL SPECIFICATIONS

Cheshire Catamaran:

- LOA 14'
- Beam 6' 5"
- Draft 5" to 2' 1"
- Sail Area 135 square feet
- Main Sail 105 square feet
- Jib Sail 30 square feet
- Mast height 21'
- Boom 7' 6"
- Weight (all up) 170 lbs.

Isotope Catamaran:

- LOA 16'
- Beam 7' 4"
- Draft 6" to 2' 6"
- Sail Area 185 square feet
- Main Sail 140 square feet
- Jib Sail 45 square feet
- Mast height 26'
- Boom 8' 6"
- Weight (all up) 275 lbs.

CONTACT INFORMATION

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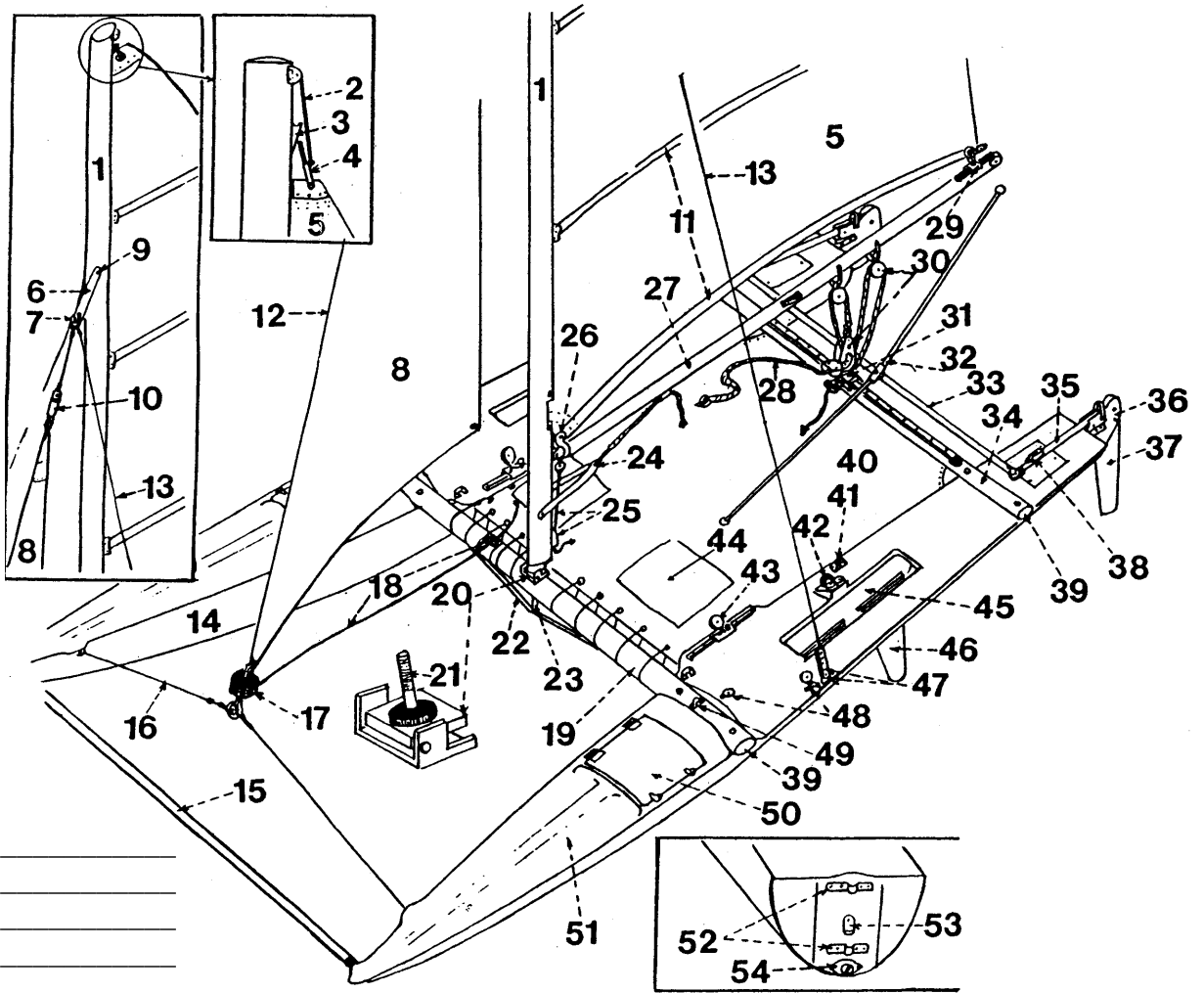
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POP QUIZ, HOT SHOT

Can you name all the parts of the cat?



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