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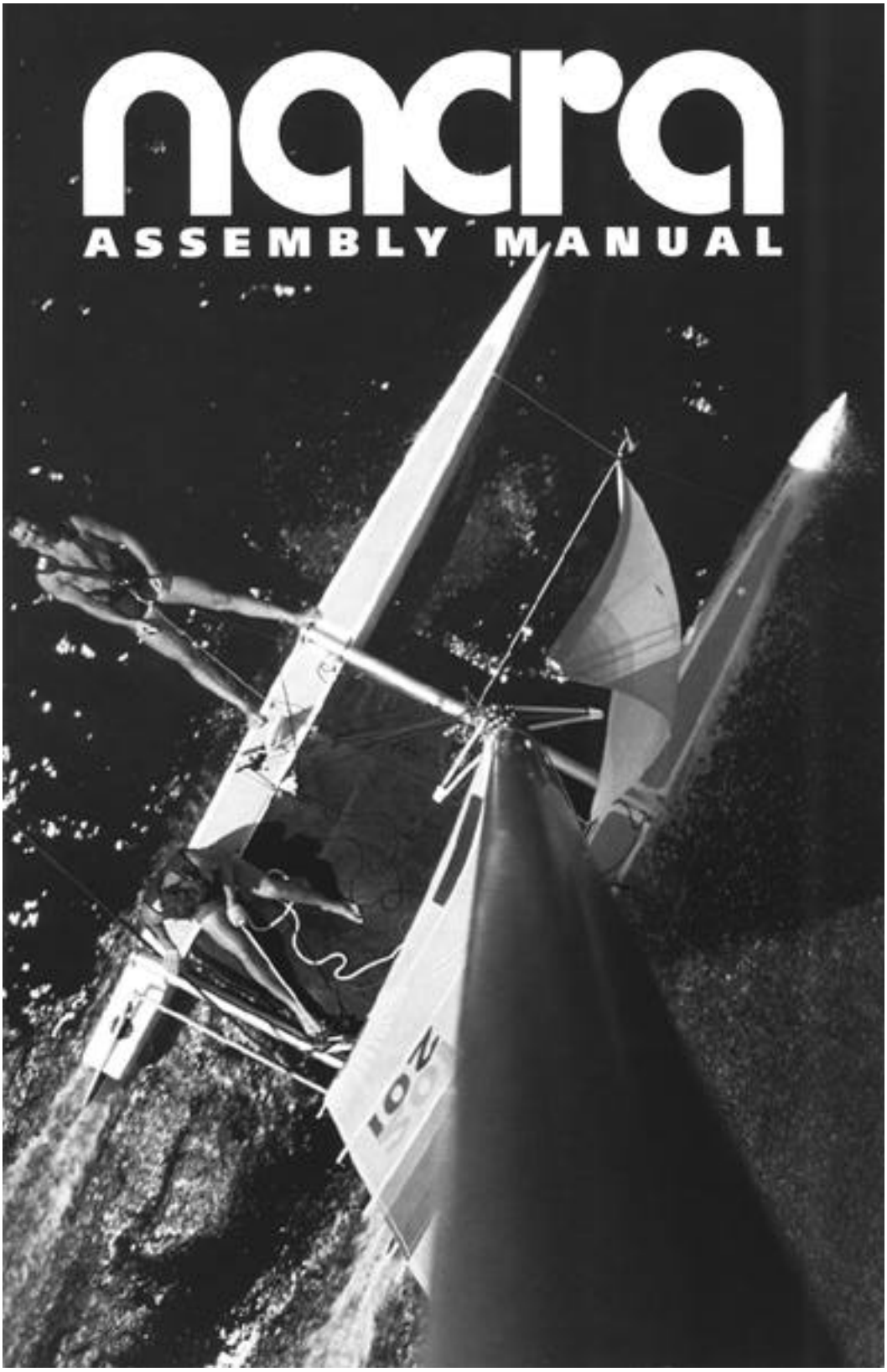
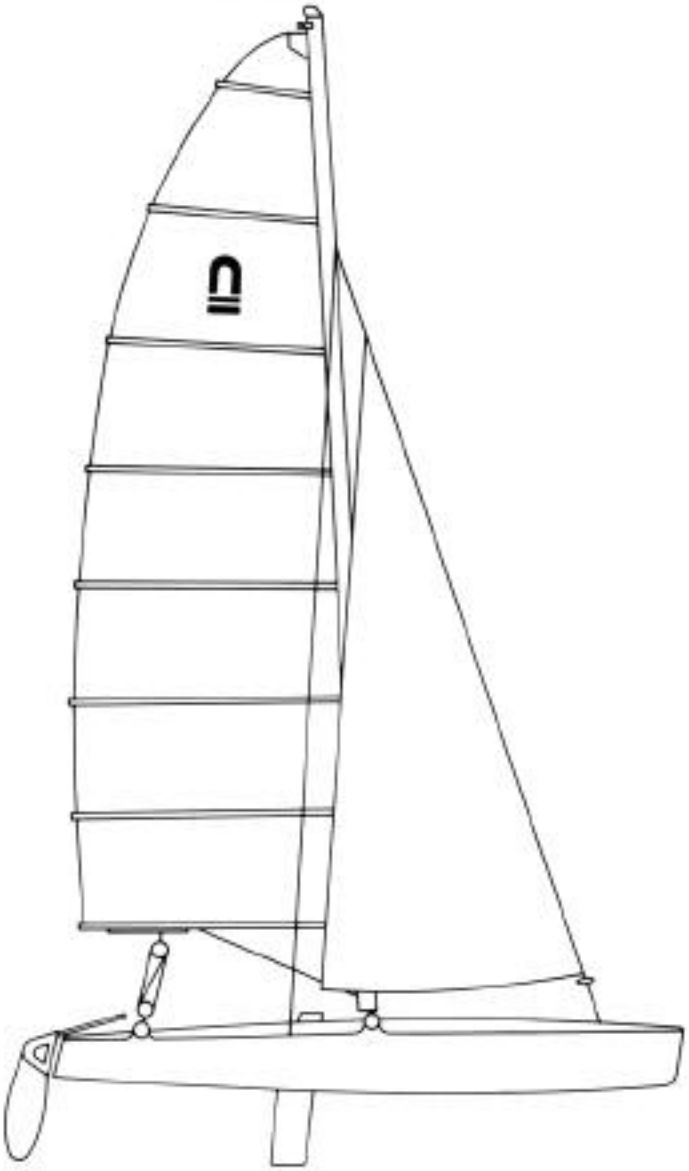
ASSEMBLY MANUAL





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by
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WARRANTY

FIVE YEAR LIMITED WARRANTY

Performance Catamarans, Inc. warrants that all catamarans manufactured by Performance Catamarans, Inc. after May 1, 1988 are free from defects in materials and workmanship to retail customers in the United States. Performance Catamarans, Inc. will repair or, at its option, replace defective parts under the following terms.

YEAR	COVERED ITEMS	AMOUNT COVERED	
		Owner #1	Owner #2
First Year	Hulls, Parts & Accessories	100%	100%
Second Year	Hulls	*80%	*40%
Third Year	Hulls	*60%	*30%
Fourth Year	Hulls	*40%	*20%
Fifth Year	Hulls	*20%	*10%

Freight and labor expenses not included

THIS WARRANTY DOES NOT COVER:

- Battens.
- Normal Wear.
- Damage caused by abuse or failure to perform normal maintenance.
- Damage caused by alterations or modifications.
- Discoloration, blistering or crazing of gel coat caused by mooring or storing the boat in water. Barrier paint and anti-fouling paint must be applied to bottom if boat is stored in water.
- Transportation of boat or parts to Performance Catamarans, Inc. or its dealers.
- Any other consequential damages, incidental expenses, including damage to property.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you.

TO OBTAIN WARRANTY SERVICE

Within 10 days of discovering the defect, take your boat, along with proof of purchase (sales receipt or registration card) to the authorized dealer from whom you purchased it, or if you have moved or are traveling, see your nearest authorized dealer.

IMPLIED WARRANTIES

Any implied warranties, including the implied warranties of merchantability and fitness for a particular purpose, shall be no longer than the duration of this express warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Performance Catamarans, Inc. makes no express warranties in addition to this Limited Warranty. Authorized dealers have no authority to make any warranties on behalf of Performance Catamarans, Inc. in addition to or consistent with those stated herein.

To the extent any provision of this warranty is prohibited by Federal, State or Municipal law and cannot be pre-empted, it shall not be applicable. This warranty gives you specific legal rights, and you may have other rights which vary from state to state. *SPECIFICATIONS, HARDWARE AND EQUIPMENT SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION.*

CAUTION

The aluminum mast and other metal parts conduct electricity, coming in contact with or near an electrical power line or lightening can cause severe injury or death. For your safety, do not sail, motor, launch or beach near power lines.

INTRODUCTION

Congratulations! You are now the proud owner of one of the most high performance and fun catamarans made today.

This owner's manual is provided to ease assembly, maintenance and use of your Nacra Catamaran. Please read through completely before starting and utilize the glossary of terms if needed. We believe these instructions portray the simplest methods. Do it our way the first time and learn from us. Then, if you discover a better method, feel free to tell us about it. You may see your idea appearing in the next edition. We hope you will enjoy your Nacra Catamaran.

Make sure to join the International Nacra Class Association. You will receive the *Performance Sailor*, our quarterly Class publication. This magazine contains feature articles, news, regatta results, photographs, tuning tips, special announcements and contests. As a member of the International Nacra Class Association you will also be entitled to enter and participate in all of our Class sanctioned regattas.

One design racing begins at the local fleet level leading to regional regattas that culminate toward the Annual National Championship Regatta held in a different region each year. Even if you are not a racer, join the Nacra Fleet in your area. Our fleets have held such fun events as hull flying contests, group cruises, picnics and clinics. It's much more fun to share the joy of sailing a Nacra Catamaran. If a fleet does not exist in your area start one! All you need is five enthusiastic Nacra sailors!

If you buy a new catamaran make sure your dealer submits your completed warranty card as this not only validates your warranty, but it will also automatically register you as a member of the International Nacra Class Association. If you have purchased a used Nacra Catamaran please send us your complete address. Make sure to notify us when you move, the newsletter does not get forwarded.

Keep in touch. We love to hear from our fellow Nacra sailors!

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H U L L S

Tools you'll need:

7/16" & 1/2" socket wrench
Phillips head and regular screw driver
Adjustable crescent wrench
Pliers
Tape measure

HULL ASSEMBLY

1

Place hulls approx. 8' apart on a level surface using the box ends to hold upright.

2

2. Open the hardware box and familiarize yourself with the major parts of your boat. The contents of the hardware box should include:

- ❑ boom (5.2 only)
- ❑ main beam
- ❑ rear beam
- ❑ sails (w/battens)
- ❑ trampoline
- ❑ rudder box
- ❑ tiller tiebar
- ❑ tiller extension
- ❑ rigging box
- ❑ bow foil (5.5SL)
- ❑ daggerboards

The contents will be listed on the sheet enclosed.

3. Lay both the front and rear crossbar on the hulls with the outside edges even with the outside edges of the hulls. The curf (groove) on the front crossbar should face aft.

3

4. Remove beam caps on front crossbar, then slide the front of trampoline into slot in beam.

4

5. Gradually and equally slide both sides of the trampoline into the rails on each hull. Pull both sides of the trampoline aft so that the trampoline is fully engaged in the rails and the main beam rests loosely in the chocks. Insert PVC tube in slot at rear of tramp.

5

6

6. Arrange the 16 bolts, black chips, washers and main and aft beam straps so that the 4 main beam and the 4 rear beam straps are separated.

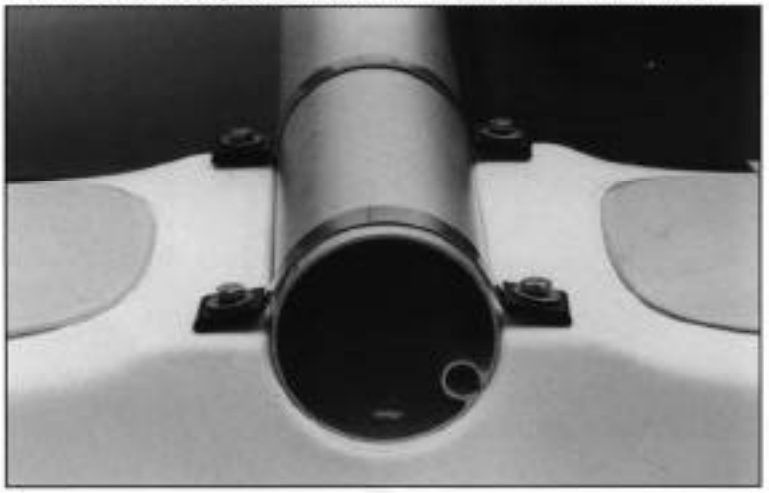
Note: Boardless Boats straps - 8 3/4" (all straps)
Daggerboard boats main beam straps - 8", Rear beam straps - 8 1/2".

7

7. Place one end of the main beam flush in the chock in the hull so that the dolphin striker support strap (bolted to the underside of the main beam) butts up against the bearing tang (riveted to the inside of the hull just under the forward chock). Rotate the main beam so that the beam hole will align with the 5/16" hole tapped in the main beam chock. Note: Do not install internal beam casting yet.

8

8. Dip the ends of the beam strap bolts into the grease cup making sure all threads are coated. Thread the greased bolts into the tapped holes in the hull so that the beam is strapped snug to the hull. Do not completely tighten the bolts at this stage. Be sure the curved side of the black chip is down so that the strap conforms to the same curve as the black chip.

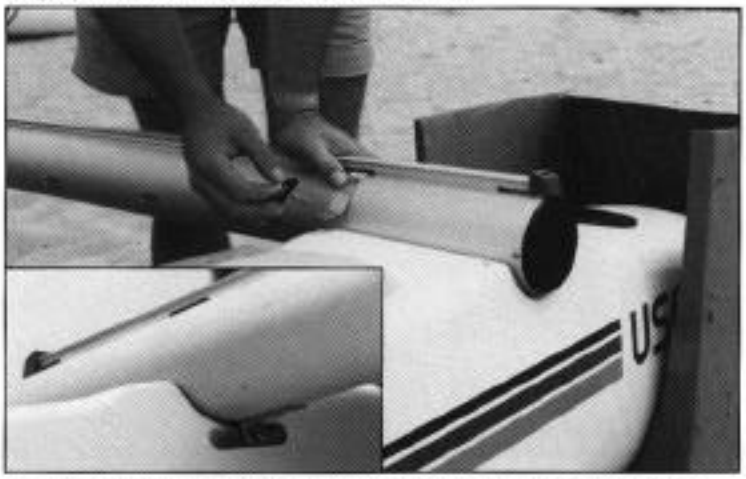


9. Insert a 2" x 5/16" bolt with washer through an internal beam casting so that the threads are exiting out the curved side. Dip the bolt into the grease cup. Place the unit into the main beam and carefully thread it into the tapped hole.

9

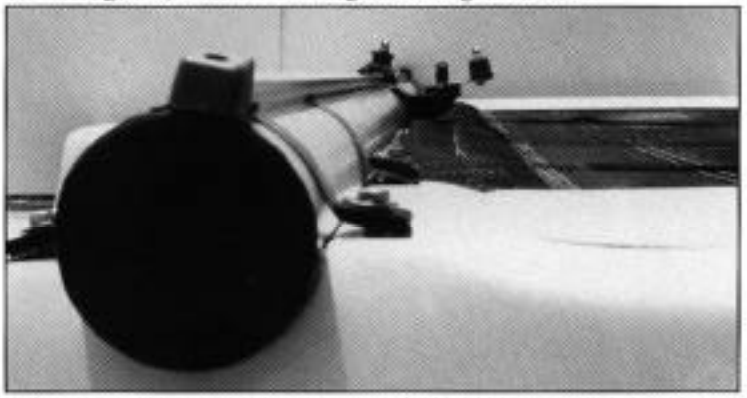
10. On the same hull, strap the aft beam in place, being sure that the stop (riveted on the underside of the aft beam) butts up against the bearing tang (riveted to the hull under the aft chock).

10



11. Strap the aft beam in place on the other hull in the same manner.
Note: Rear beam rotation angle varies according to model. Traveler pedestal casting should be parallel with the decks. With boom rigs the track should angle aft, with boomless rigs it will angle forward.

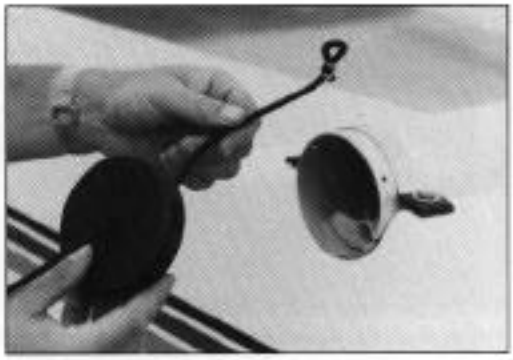
11



Finalize beam mounting procedure by completing the other main beam assembly as described in the steps above.

12

12. Before the beam straps are tightened fully, feed the trapeze shock cord through the beam end caps and through the beam.



The use of a long object (PVC tramp tube) will help passing it through the beam.

Now, re-install the beam end caps.

13

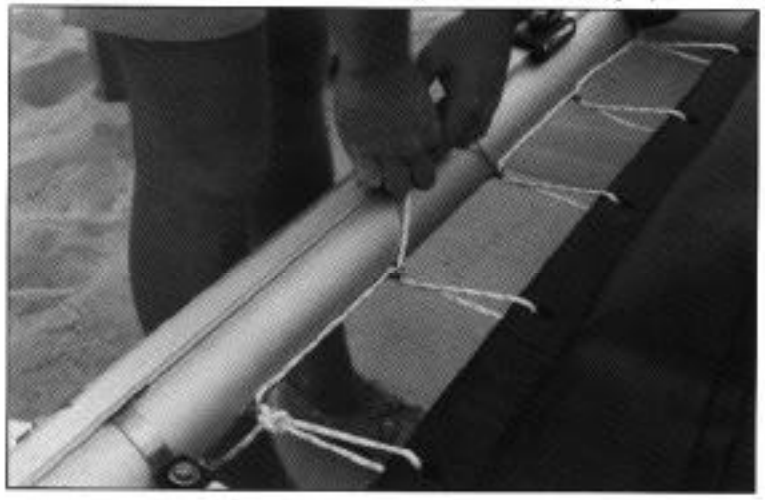
13. You can now completely tighten all beam mounting bolts. Do not over tighten (16-18ft/lbs). Beam straps may not lay flush on a new boat. Beam straps should be periodically retightened.

Use a large crescent wrench or pliers to orient the black chips so they are square against the beam strap. This will insure that an even load is being applied along the beam strap. Lift one bow and shake the boat gently to 'set' beams and then retighten. Check often.

14. Tie one end of the tramp lace line to an aft beam strap eye. Run the line around the exposed PVC tube and then return the line through the same strap eye. Lead the line to the next eye in line and back around the PVC.

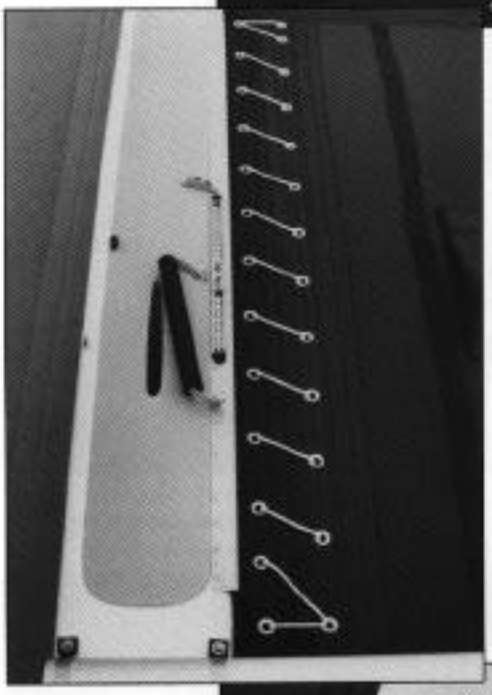
14

Repeat this procedure until the trampoline is laced. Go back to the beginning and pull the line tight as possible so the trampoline pulls taut at each eye in succession. Tie off the lacing line at the last strap eye.



15

15. Take second lace line and begin lacing side tramp grommets from the main beam aft.



Tie off side tramp lacing and retighten. (Some models lace on the underneath side of the tramp in the center).

16

16. Lead skipper trapeze shock cord from the deck strap eye through the trampoline grommets to the strap eye on other hull. Tie a temporary knot to hold in place.

STEERING

Parts:

- ❑ 2 rudders rigged
- ❑ 2 tiller cheek assemblies
- ❑ 2 pintles w/cotter rings
- ❑ 1 tie bar w/adjustable end cap
- ❑ 2 tie bar end fitting assemblies
- ❑ 1 hiking stick
- ❑ 2 pivmatic assemblies

Tools you'll need:

7/16" & 1/2" socket wrench
Adjustable crescent wrench
Pliers

17. Attach the tiller cheek assemblies to the gudgeons on the transoms with the pintles, securing cotter rings at both ends.

17

18

18. Bolt the rudders into the tiller cheek assemblies using the 5/16" x 2" bolts supplied. Use spacers if necessary to eliminate excess play. Feed one end of the 5/16" halyard tail line through the tiller from the forward and out the aft end. Note: A rudder kick-up stopper (1" rubber hose) has now been supplied. Before installing the rudder shock cord the stopper should be slid over the shock cord and up to the rudder. This hose prevents the rudder damage or chipping from the end of the tiller when in the kicked-up position.

19

19. Tie the line to the shock cord attached to the rudder using a bowline knot and pull the shock cord through the tiller. Hold it stretched out. Put the bushing inside the loop of the shock cord and feed them back inside the tiller until the bushing aligns with the holes in the tiller. Push the 1/4" bolt on the end of the tie bar end fitting through the hole and bushing then attach with the washer and nut. Nut will be on outside of tiller. Do not tighten yet. This will hold the shock cord stretched and the rudder in the up position. Repeat on other side.

20

20. Attach the tie bar to the end fitting with the clevis pins provided. Place nylon washers above and below the tie bar, between the bracket and the bar to reduce play. Now turn tillers completely to one side or other, then tighten 1/4" nylock nuts. NOTE: This nut must be tightened often so that the fitting does not spin.

21

21. To install pivmatic systems, remove split ring and clevis pin from the unit. Snap the plastic unit onto the tiller arm with the riveted shackle on the forward of the plastic unit facing forward. Then align the holes in the pivmatic bracket and the tiller arm. Fasten the system with the clevis pin by re-inserting the pin and recapturing it with the split ring.

22

22. Feed the rudder pull down line from the head of the rudder over the clevis pin, then out of the assembly, over the top of the tiller to the pivmatic. Tie a loop using a bowline knot on the end of the rudder pull down line for easier pull down into sailing position.

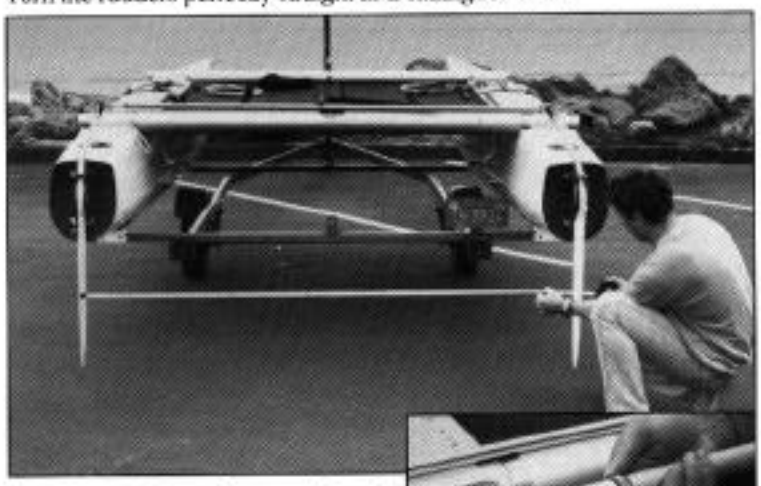
23

23. Bolt the hiking stick to the hole in the center of the tie bar.

RUDDER ALIGNMENT

24. Lower and lock down both rudders (make sure tips do not hit ground). Turn the rudders perfectly straight as if sailing forward.

24



25. Measure from the centerline of the front edge of one rudder blade to the centerline of the front edge of the other blade. Do the same with the trailing edges. If the distance between the trailing edges is greater than that of the front edges, lengthen the tiller adjuster by unscrewing it. If the distance between the front edges is greater than that of the trailing edges, shorten the tiller adjuster by screwing it in. One complete turn is $^1/_{16}$" of an inch. Attach adjuster end of tiller crossbar to tiller. Example: If the distance between the front edges is 86" and the distance between the trailing edges is 86 $^1/_2$", unscrew the tiller adjuster 4 or 5 complete turns and measure again. Keep adjusting until the measurements are the same. You can achieve accuracy up to $^1/_{32}$" of an inch but $^1/_8$" is good.

25

STANDARD JIB SYSTEM

26. Attach jib block to pad eye on side jib tracks, or wire on 4-way system.
NOTE: Completion of system is done under final assembly (#56).

26

DELUXE 4-WAY JIB SYSTEM

27

27. The parts are included in a separate bag. The jib cars have installed pad eyes. Remove the pad eye as it is not necessary with this system. Remove and mount jib adjuster plate to both hulls.

28

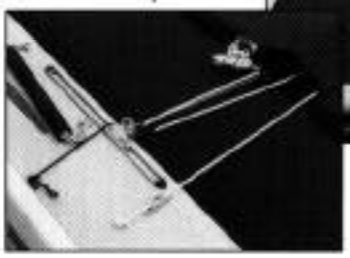
28. Attach jib crosswire to adjuster plate, leading wire through the tramp sock, choosing one of the four middle holes on each side so the wire is snug. Note: you may find it necessary to remove the plate to put the split ring on the clevis pin.

29

29. Attach the small bullet block using a 5/16" shackle. Shackle the jib blocks to each of the 2 bullet blocks on the crosswire. Adjust the cleat angle as high as possible using the side set screws. The jib blocks have a ratchet which can be turned off and on by using the button on the side of the block.

30

30. Tie each 1/4" x 8' 1/2" line completely around the jib block shackle, not through. Lead the line around the bullet block on the adjuster plate and through the tramp sock to the cleat on plate opposite hull. Repeat on other side. Lead the shockcord through both loops in the lines around the jib shackles and tie shock cord together. Slide the knot into tramp sock.



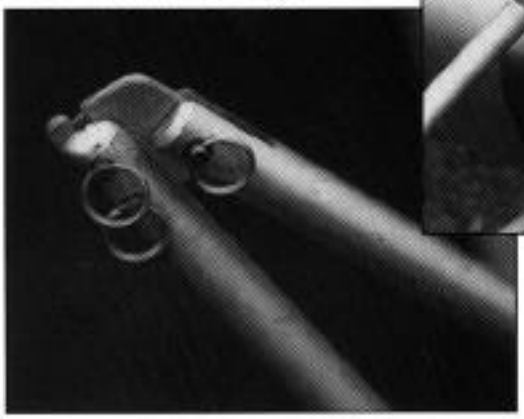
MAST AND RIGGING

Parts:

- ❑ mast
- ❑ main and jib halyards
- ❑ 2 halyard tails (5/16" line)
- ❑ 2 diamond wires
- ❑ 1 spreader assembly
- ❑ 2 spreader boots
- ❑ 1 mast rotator (5.2 only)

Tools you'll need:

1/2" socket wrench
needle nose pliers
regular pliers

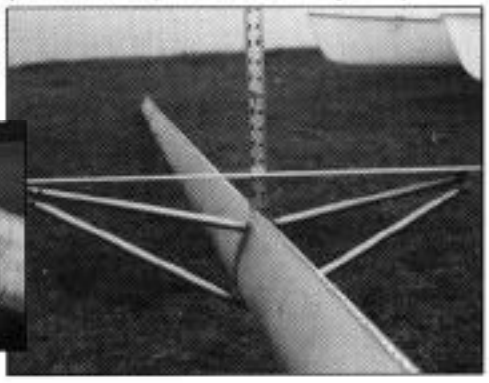


31

31. The spreader bars are installed onto the mast spreader base with four 5/16" x 5/8" clevis pins and split rings. The adjustable length spreader bars are attached to the front of the spreader base plate and the shorter bars to the ears near the aft edge of the mast. Split rings should be on the bottom. Connect spreader tips with six clevis pins and split rings. Remove pin on forward threaded bar for rake adjustment.

32

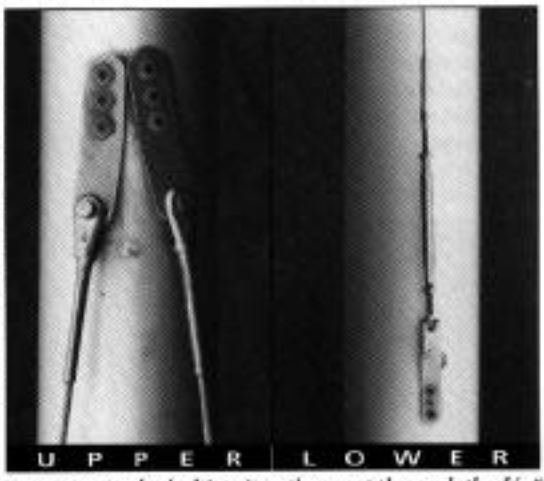
32. The adjustable forward bar can be lengthened or shortened to adjust the amount of aft rake the spreaders have. The more the spreaders are swept back, the more smooth the mast bend will be, even with tight diamond wires. However, the more "swept back" the spreaders are the more they will get in the way of the jib while sailing. There is no right or wrong amount of aft swept adjustment, only personal preference. Be sure both sides are adjusted to the same length. To measure the amount of aft sweep in the spreaders, lay a batten or yard stick from tip to tip. Then measure the distance from the cuff of the mast to the batten. About 1 1/2" sweep is considered average.



DIAMOND WIRES

33

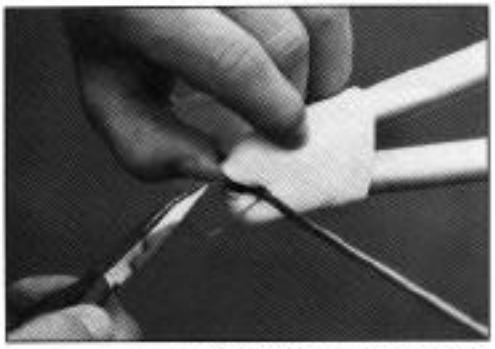
33. The fork fitting on the diamond wire is attached to the upper fitting on the mast. The turnbuckle on the diamond wire is attached to the lower fitting on the mast. The two separate turnbuckle studs should be started into the turnbuckle at the same time.



*(*5.2 only- install the mast rotator by bolting it to the mast through the 5/16" hole in the lower tangs. Use supplied washers to shim bolt to length.)*

34

34. Place plastic protector over spreader bar ends and place the diamond wire in the slot in the spreader tip with the nylon roller above the spreaders. Feed seizing wire from the back side of the tip with one end on each side of the diamond wire. Lead wire out of the tip.



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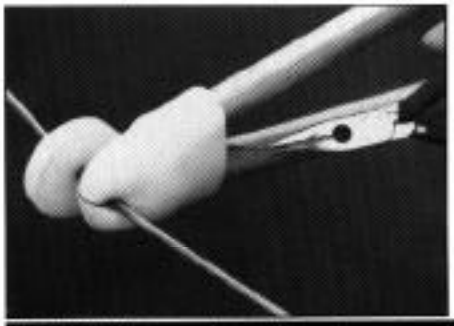


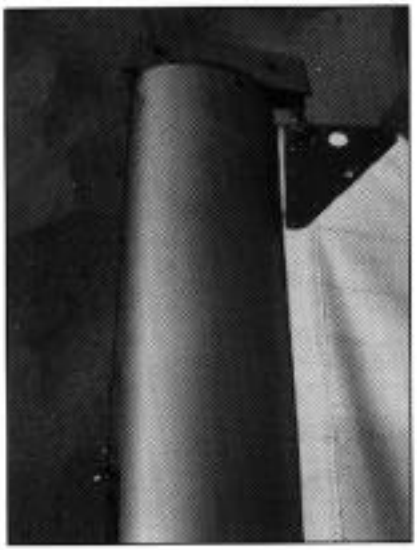
35. Cross the seizing wire over the diamond wire and feed to the back of the tip. Pull and twist tight with needle-nose pliers. Check the diamond wire to be sure it is snug in tip slot.

To prevent the jib from chafing use duct tape, sail tape or electrical tape at the spreader tips.

WARNING: Be sure the total spreader system is securely attached. If any part disconnects the whole system may fail. Mast breakage may occur. Running diamond wires to tight or extremely loose (at end of adjustment) can also cause excessive strains or failures. The mast is not covered under warranty for breakage due to improper installation, tuning or maintenance.

HALYARDS

36. **Ring Lock System**
The main halyard lock ring (ring with loop welded on) is attached to the main halyard by tieing the halyard through the welded loop with a small, compact bowline. Attach the twisted shackle onto the ring. Run line over sheave and down mast make sure it is in the luff groove. Attach the main halyard ring and other end of main halyard near the base of the mast to help keep it out of the way while raising the mast. Note: Be sure to tie a small, compact bowline on lock ring as a large knot will prevent the mainsail from hoisting fully.



37. **Wire Lock System**
Remove split rings, clevis pins and sheaves from mast head. Run main halyard through mast head (under 2 retaining bridges) with the shackle towards curfed side of mast. Replace sheave making sure halyard wire runs freely. Tie the respective halyard tails to each halyard. The main halyard line is approximately 27' and is tied to the eye end of the halyard.

38. Mount jib halyard to mast using the wire block supplied with halyard. Be sure that halyard is oriented properly, with shackle away from mast, to travel down forestay. The jib halyard tail is 21" and ties to the free end of the jib halyard. Position both halyards on the mast with the shackles near base and tie off temporarily.

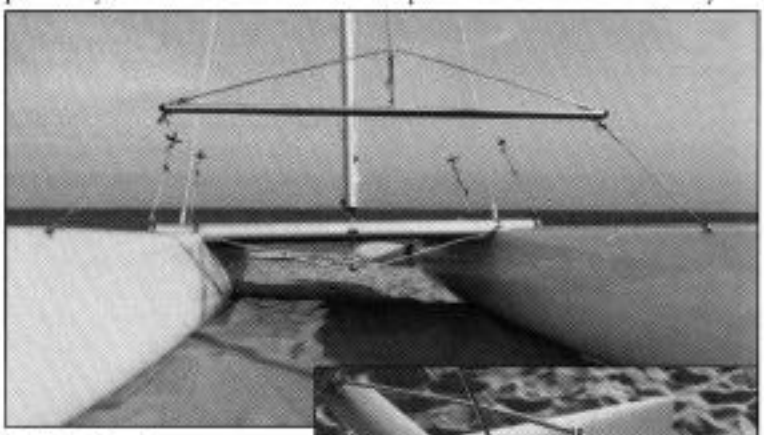
STANDING RIGGING

39 39. Attach bridle wires to the bow chainplate using the clevis pins and split rings provided in the small parts kit. Locate the stay adjuster with enclosed jib tack hanger. Bring the loose ends of the bridle wires together in the middle and align the holes in the forks and stay adjuster. Position the jib tack hanger aft of this assembly.

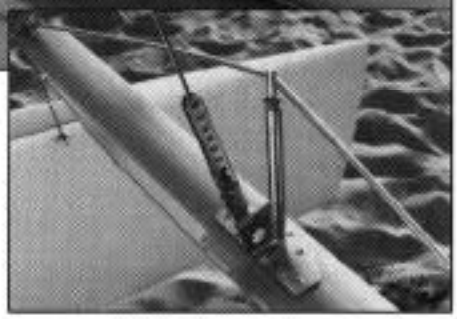
Assemble by pushing clevis pin forward through tack hanger, stay adjuster and forks. Secure with split ring.

Some models use a large 1/4" twist shackle at bridle intersection.

NOTE: For 5.5 Sloop bridle assembly, attach short bridle wires to bow chainplates and end of bow foil assembly. Pin stay adjuster to center post assembly. **WARNING:** Bow foils must have a pre-bend prior to rig tensioning. Approx. 1/2" to 1" maximum. Periodic inspection is required as parts may wear or stretch over time. Replace worn wires immediately.



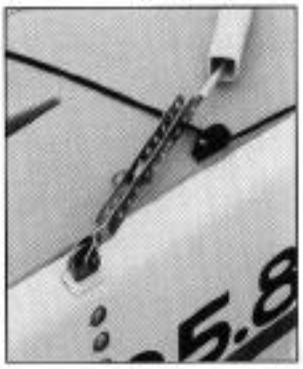
40 40. Two (2) adjuster nuts are mounted on top of center post assembly to enable adjustment. Adjust bottom nut and tighten top nut down when proper pre-bend is established. Approx. 1/2" to 1" pre-bend.



41. Lay the mast lengthwise on the boat so that the mast rests on the beams with the base forward and the sail slot pointing down. Shackle the standing rig (two shrouds and one forestay with 5/16" bow shackle) to the hound fitting on the mast in the lower hole and shackle 1/4" bow shackle to the trapeze wires into the top hole.

41

42. Attach the two remaining stay adjusters to the chainplate on the hulls. Free the wires and lead to respective stay adjusters on hull. Slide stay adjuster cover onto shroud and pin into the second hole form the top. This is a preliminary setting and may vary with sailing conditions. Free trapeze wires and lead to the same side, outside of shroud. Tie trapeze shock cords, (mounted in beam and tramp), one to each trapeze.



42

RAISING THE MAST

CAUTION: Check for overhead wires before raising mast. A mast which comes in contact with electrical powerlines can cause serious injury or death.

43. Before raising the mast the boat should be steady on level ground. If the surface is not level, point the bows downhill. If the boat is on a trailer be sure it is tied down and trailer tongue is secured to the hitch. Straighten out shrouds, forestay and trapeze wires allowing them to hang over the tiller crossbar to the ground. Walk the mast back until the base is just behind the mast step, located on main beam. While moving the mast aft, rotate to 90° while raising or lowering to prevent any undue strains or damage to base assembly. Secure hinge to mast base using pin provided.

43

44

44. Attach cotter rings to both ends of hinge pin to prevent it from falling out while raising mast. Before lifting the mast, make sure wires will not catch on rudders or other obstructions and that forestay is clear and not fouled in the shrouds.

CAUTION: Check for overhead wires before raising mast.

45

45. One person stands on tramp with one foot on rear beam to steady themselves. A second person raises mast up to the person on tramp. Raise the mast to shoulder and walk forward on trampoline while extending arms over head until the mast raises vertically and is held by the side shrouds. NOTE: Never step on 4-way jib cable system.

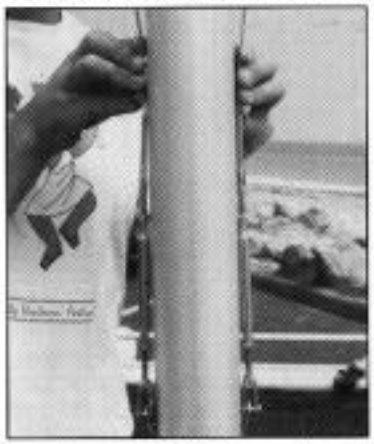
46

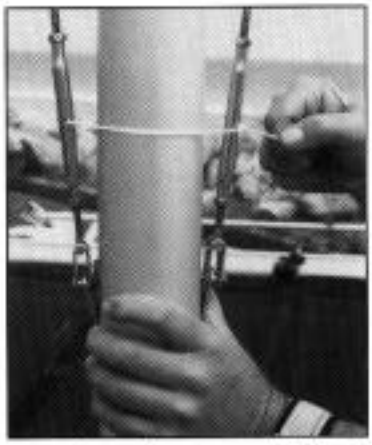
46. Attach the forestay to the stay adjuster that is already attached to the bridle wires. Tighten rig by putting weight on trapeze wires and adjusting pins in appropriate chain plate holes. Adjust so mast is raked slightly aft or straight up. Rake adjustment may vary according to boat handling or wind conditions.

DIAMOND WIRE TUNING

47

47. Adjusting the tension of the diamond wires should be done with care. Adjust both diamond wires to the same tightness after the mast has been stepped and before the sails are hoisted. If one side is looser your mast will bend more on one tack than the other. Push both wires towards the mast with equal tension at the same time. The wires should touch the mast at least 12" above the lower attachment point but not more than 20" above. If the diamond wires are too tight, your mast will not bend and undo strain will be put on these wires and fittings.





WARNING: If the diamond wires are too loose the mast could break under high pressure loads. Be sure to tape the locking nuts on turnbuckles after you have adjusted the wires so that they will not loosen.

Sailing Note: *The looser the diamond wires are the more the mast will bend and the flatter the sail will become (and vice versa).*

A way to insure that the turnbuckles on mast do not loosen is to thread a small line (batten tie) through the center hole in each barrel, tieing a knot on the back side of the barrel. Be sure to check diamond wire tension periodically as the wires will stretch with use.

T R A P E Z E

48

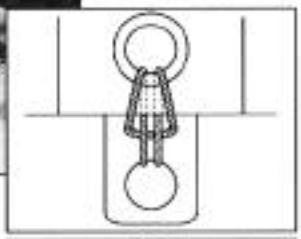
48. Tie a trapeze ring to each of the 3' lines supplied. Thread the line through the thimble at the end of the trapeze wire. Thread one of the plastic height adjusters onto the line, wrapping the line around it at least twice. The adjuster allows you to adjust your trapeze height. Tie the tail of the line to the shock cord with a bowline.

SAILS

49

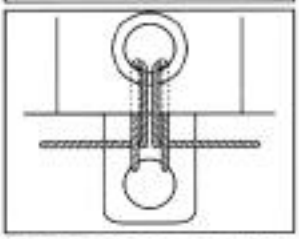
49. First unroll the suit of sails on a clean surface. A lawn or the top of boat is usual. Separate the main from the jib sail. Sort battens, #1, the shortest batten, is the top batten. In general they become longer moving down on the sail, but on some models the bottom batten is not the longest batten.

Slide the battens into the pockets making sure the batten tips fit snugly into the plastic caps riveted to the sail luff.



50

50. Fold a batten tie in half and loop it through the grommet on one side of the batten pocket. Lead both ends of the tie through the batten and then through the tie grommet on the opposite side. Tie an overhand knot while pushing the batten into the sail with your thumb. Tension the battens enough to eliminate all wrinkles from the sail. Finish tying with a square knot and tuck the loose ends into the batten pocket.

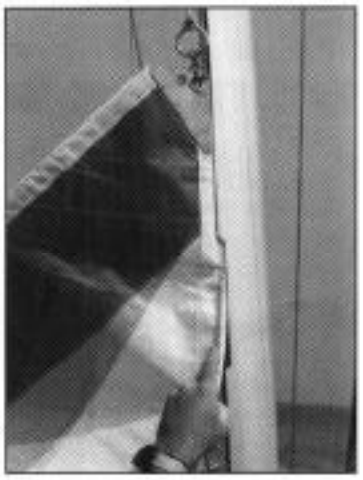


HOISTING THE MAINSAIL

51

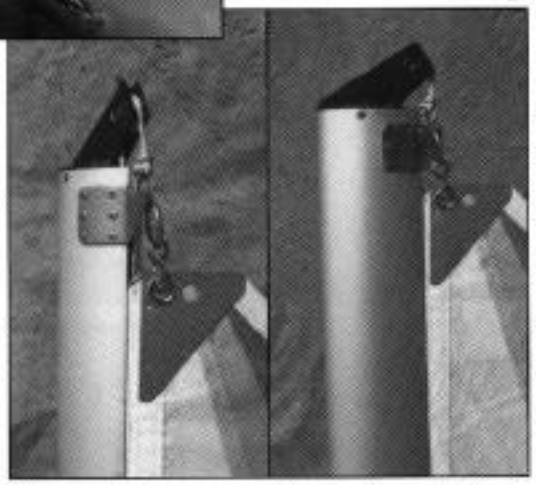
51. Face your boat into the wind when raising or lowering your sails. Lay the mainsail so the batten ends will not get caught under the tiller crossbar. Feed the head of main sail into the slot in the mast.

Make sure sail slot is smooth, rough edges can cut the sail while inserting and raising.



52. **Ring Lock System** - Make sure halyard is inside the slot in the mast. Feed rope tail of halyard out the bottom of mast then through block on main beam. Hoist the sail to the top of the mast and lock the ring on the halyard line to the hook at the head of the mast. To do this, pull halyard until the ring is above the hook. Rotate mast so hook is inside the ring and pull down on the tack of the sail gently until the ring locks onto the hook. Coil extra halyard line and store in tramp pocket.

52



Wire Lock System - Attach shackle and begin to raise the sail. After sail has reached the top, hook the ball (on wire) in halyard lock on front edge of mast. Hook halyard to halyard snap provided at front of mast. This keeps the halyard from flying loose and is not intended to hold up the sail. Untie halyard tail, coil and stow in tramp pocket with the other halyard.

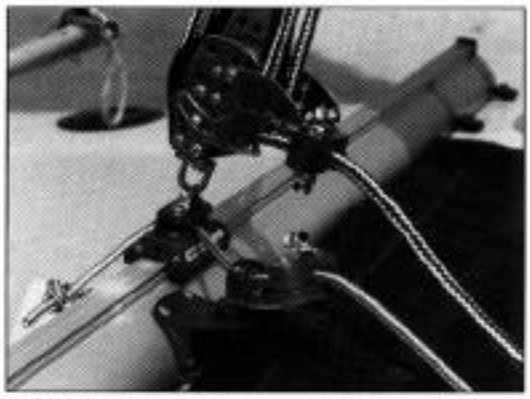
MAINSHEET AND TRAVELER SYSTEMS

53

53. To thread mainsheet blocks (7:1 purchase) lay blocks on their sides on a flat surface, or directly to sail as if in use. Feed line away from you through cleat and ratchet roller of lower block and lead through blocks and tie to becket of upper block with bowline. Install upper block to traveler car with 1/4" shackle or "S" hook. Install lower block to traveler with 1/4" shackle. Adjusting fore and aft will affect sail shape.

54

54. Tie or splice 5/16" traveler line to loose end of mainsheet. Thread traveler line through traveler cleat, fairlead, traveler car, and pad eye. Tie off with figure eight knot. Tie a stop knot through the traveler sheet to prevent the traveler car from reaching the end of the traveler track on a jibe or tack. This can shear the end stop on the track resulting in the loss of traveler bearings.

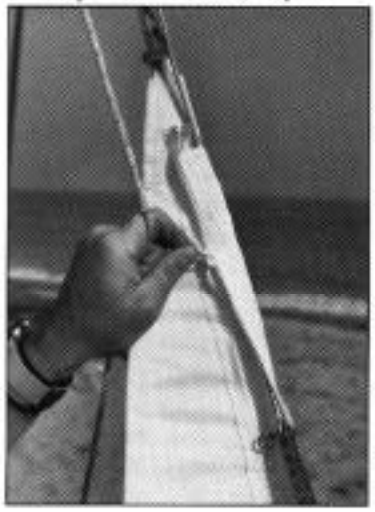


THE JIBSAIL

55

55. Unroll Jib on a clean surface and unzip the zipper. Tie the 2 jib clew blocks to jib pigtail line. Put center of line through clew grommet and then pass the two ends through loop and pull tight. This could be attached by shackles for easy removal.

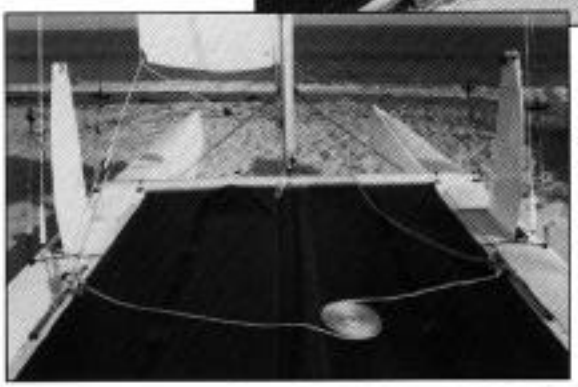
Begin by zipping about a foot of the Jib around the forestay, then attach Jib halyard. As you slowly raise the sail continue to zip up the luff until completely raised. Attach tack to jib tack hanger on bridle assemble. 5.5. Sloop tack attaches with shackle to center post on foil assembly.



JIB SHEET SYSTEM

56

56. Face the jib ratchet blocks (already fastened) with cleats toward the center of the boat. Locate the jib sheet. Beginning from the center of the boat feed end through the cleat and around the jib ratchet block. Proceed forward through one pigtail block on jib clew and back. Tie off the line to the becket on the jibsheet ratchet block.

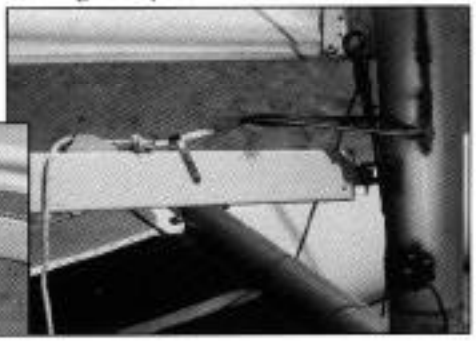


Repeat the procedure on other side. Make sure that the line runs freely around the front of the mast. The jib sheet forms a continuous loop on the trampoline for ease of control.

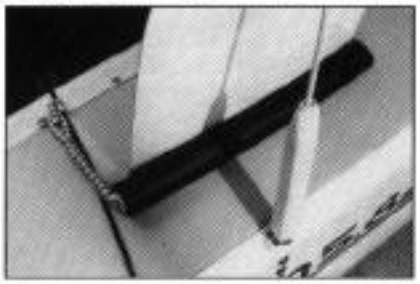
5.2 BOOM SYSTEM

57

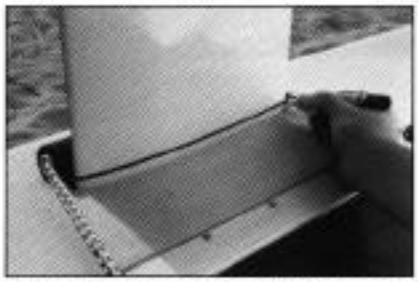
57. Remove the clevis pin from the gooseneck assembly attached to the forward end of the boom. Connect boom to the bracket on the mast using this clevis pin and cotter ring. Pass $^{5}/_{16}$" rotator line with a stop knot tied in the end through the strap eye mounted on the boom, then through the end of the rotator and back through the jam cleat also mounted on the boom. Use $^{1}/_{4}$" shackle to connect the clew ring of the sail to the outhaul car on the boom.



58 DAGGERBOARD SIDE LOADER SYSTEM



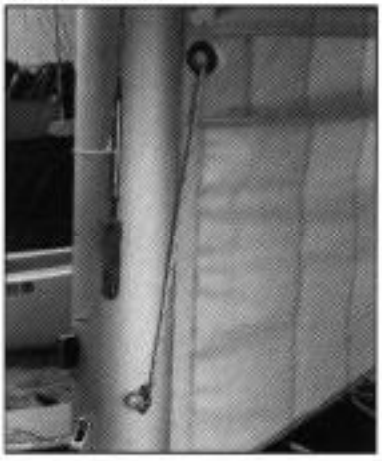
58. Place the daggerboards in the wells. Stretch the attached shock cord with roller around daggerboard and hook into fitting on the hull. Different positions are available on shock cord to adjust for proper tension. This system keeps side pressure on the boards in all vertical positions.



With a waterproof marker draw an indicator line on the side of the board that is even with the deck when the board is flush with the hull bottom. This will insure that the boards are fully up when beaching. For top racing performance, the bottom of the board should not be raised higher than the bottom of the daggerboard well. If it is then extra drag is created along the bottom of the hull. NOTE: Make sure stop knots on rope handle are tied so as to not allow the top of board to go into the hull.

59 MAIN DOWNHAUL SYSTEMS

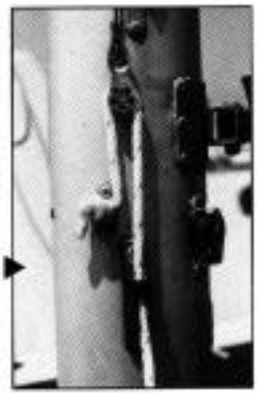
59. Attach the (3/4" x 3') line to the top of the V-jam block. Pass the line through the sail grommet and tie off to the strap eye mounted on the opposite side of the mast. This system doubles the down haul purchase power.



Attach the 1/4" x 6' Downhaul lines to strap eye on mast. Feed through lower sheave on V-jam block, back down around block on mast up through V-Jam top sheave and tie knot in end to prevent it from undoing itself accidentally.

JIB DOWNHAUL SYSTEMS

60. There are two systems used. Jib halyards with bullet block and becket: Tie 1/4" line to becket, feed down around block on mast up around bullet block and back down through cleat. Jib halyard with bullet block: Tie 1/4" line to eye on mast go up and around block on halyard and down through cleat.



60

JIB SHEET JAM PREVENTOR

61. Using the extra 7' piece of shock cord supplied, attach the center to the mast and tie each end to dolphin striker bar on opposite sides of mast. Be sure the jib sheet is lead outside shock cord. This will keep the jib sheet from catching under mast base.

61

BOATING SAFETY

- **Beware of overhead wires when raising and lowering the mast, launching and retrieving the boat or sailing on unfamiliar waters.**
- Always carry and/or wear Coast Guard approved life jackets whenever sailing. Wearing life jackets is better than carrying them on board.
- Check with local weather reports for updated conditions when sailing on unfamiliar waters. Don't get caught by surprise.
- When sailing alone or in unfamiliar waters notify someone before you leave and when you return.
- It is recommended that you always carry a righting line on your boat. Use a line at least 15' long by 3/16" or 7/16" diameter. Tie around the mast post and stow in the tramp pouch.

SAILING AND BEACHING

- ❑ When launching through the surf, always head directly into the waves.
- ❑ Always know which direction the wind is blowing before launching.
- ❑ Secure the drain plugs before sailing. After beaching equalize air pressure in the hulls by removing drain plugs.
- ❑ When your NACRA is docked or beached with the sails up, head boat to wind. Release downhauls and mainsheet. Tie jib off, or wrap around forestay so it does not flap (battens may cause damage if wrapped to tight).
- ❑ Do not use Pivmatic rudder release on every beaching. Repeated unnecessary use will wear out the rudder tip, line and cleat. Re-cleat the rudder in a horizontal position for easy beaching.
- ❑ Carry your NACRA or use beach wheels with cradles whenever possible to minimize keel wear.

MAINTENANCE

- ❑ Rinse ENTIRE boat with fresh water after each use. Be sure to flush all blocks and fittings thoroughly.
- ❑ Check the sails and the trampoline for rips, tears or loose stitching. Repair immediately to avoid further damage.
- ❑ Always keep trampoline lacing tight!
- ❑ Check mast ball for excessive wear. REPLACE IF NECESSARY.
- ❑ Tape all split ring and cotter pins to prevent loss or damage.
- ❑ Check for broken or delaminated battens (abrupt curvature 1"-5" at batten end nearest mast) Never sail with damaged battens.
- ❑ Rinse sails with plenty of fresh water, make sure sail is dry and batten tension is released when storing for more than a day. To roll main sail, start with second batten from the top and keep battens parallel. Roll jib starting at second seam from top or roll them up together at the same time for ease of storage.
- ❑ Check the beam strap bolt tension and tighten evenly as necessary. Don't overtighten crushing the slot in the beam (16-18 ft/lbs).

- ❑ Check hulls for excessive wear on bottoms from beaching and dragging the boat. A bottom job should be done to replace any lost fiberglass. Check for leaks at all hull fitting by covering these areas with detergent and blowing air (from your lungs) into drain drain plug hole. DO NOT USE A VACUUM CLEANER AS THE EXCESSIVE PRESSURE CAN DAMAGE THE HULLS. If detergent bubbles, there is a leak. Remove fitting and/or cover area with clear silicone sealant and replace. If the leak is from a fiberglassed area (no fittings) this should be reglassed to insure proper permanent bonding and sealing.
- ❑ Masts should be regularly inspected for seal and diamond wire wear. Make sure fittings are sealed with silicone. Replace wires that show any signs of wear.
- ❑ Periodically check for and replace frayed or kinked wires, shock cord, frayed or broken lines.
- ❑ Check diamond wire attachment points, turnbuckle and seizing wires. This could prevent major damage to sails and mast.
- ❑ Avoid storing your NACRA overnight or longer with shrouds at racing tension (very tight). Check all shackles and fasteners for loosening or wear. Adjust or replace as needed.
- ❑ Periodically check the bearings in the traveler car and replace them if necessary! If traveler car seems to be sluggish, rinse with freshwater and move back and forth quickly to free any stuck bearings.
- ❑ Periodically check the dolphin striker strap tension. It should not move more than a 1". To tighten the strap loosen the upper nut, tighten the lower nut and then retighten the upper nut.

TRAILERING AND STORAGE

- ❑ Always use trailers and beach dollies with cradles rather than rollers. The use of Beach Wheels and or trailers without proper support can cause damage to your hulls. In order to better assure against point loaded damage caused by Beach Rollers or straight tubing, you should always make sure hulls are supported by the use of cradles of flat padded surfaces. Rollers may be used on rear of trailer for ease of loading and unloading but must locate under rear beam for trailering.
- ❑ Always remove daggerboards, blocks and rigging while trailering. Removal of rudder and/or steering system is recommended for long distance trailering. For short trips, make sure tie bar is tied off to keep the tiller systems from turning. Tighten rudder pivot bolt in casting so the rudder cannot drop down into sailing position.
- ❑ Tie boat snugly but be aware you can damage hulls by over tightening the tie downs. Don't use the dolphin striker as a tie down attachment point or for pulling the boat. Run a line around the main beam instead. Secure BOTH ends of the mast. Be sure to have a red flag flying off the end of the mast.
- ❑ Boat covers are recommended to avoid rocks, gravel or road debris thrown from tow vehicles and to provide good protection against sun and weather.

- ❑ Mooring is not recommended. However, if the boat is moored in the water the warranty must be complied with. Barrier paint and anti-fouling paint must be applied to the bottom.
- ❑ Always leave drain plugs and/or inspection port lids open to avoid possible air pressure damage when not sailing.
- ❑ Coil wires into a loop and slide into the trampoline pocket and tie off securely while trailering.

OPTIONAL CONVENIENCE ITEMS

- ❑ ***Non-Skid Tape***. Various colors, textures and brands exist that can be applied to the rail area for sure footed trapezing.
- ❑ ***Roller Furling (Jib System)***. Allows the jib to be rolled around the forestay for quick and easy jib storage.
- ❑ ***Reaching Line***. A simple system for stabilizing the crew on a fast rough water reach The line attaches to the transom (tied around the pintle) and is lead forward along the rail to the main beam where it is joined to a length of shock cord. The shock cord is lead through the main beam to the same line on the other side. Knots or loops may be tied in the reaching line for easier grip.
- ❑ ***Mast Rotator***. Standard on the 5.2 and 18 sq. and optional on all boomless models.
- ❑ ***Barber Hauler System***. This is basically a racing option but can be used for everyday speed sailing. It changes the jib sheeting angle to an outboard position which is used for heavy air reaching and down wind.
- ❑ ***Main Downhaul System***. This system will add purchase (blocks) to the existing downhaul and makes it possible for adjustment from both sides of the mast.

GLOSSARY OF TERMS

AFT:
Toward or near the rear of the boat.

BACKWIND:
A sail sheeted to the weather side, used to get out of "IRONS".

BARBER HAULER:
An option for racing which sheets the jib outboard for downwind.

BATTEN:
Thin narrow strip of material used to stiffen the shape of a sail.

BEAT:
To sail to windward or, windward leg of a race.

BLOCK:
Pulley used to give a mechanical advantage for sail control.

BOOM:
A spar that controls a sail and is attached to the mast.

BOOM RAIL:
A fitting on the boom on which the mainsheet blocks are attached.

BOW:
The forward part of a hull.

BRIDLE:
Two wires, one from each bow that intersects at the forestay or bow foil.

CHOCK:
Pockets the beams rest in.

CLASS RULES:
A set of rules governing the fairness of competition among boats in a class.

CLEAT:
A device which secures a line or rope by jamming or tying off.

CLEW:
Lower aft corner of a sail from which it is sheeted.

CURF:
The slot in the mast or beam designed to hold the bolt rope of the sail or trampoline.

DAGGERBOARD:
Vertical sliding keel which provides lift and lateral resistance.

DOLPHIN STRIKER:
A stainless steel rod which distributes the downward mast pressure to the ends of the main beam.

DOWNHAUL:
Tackle used to tension the luff of a sail.

DOWNWIND:
Sailing with the wind (same direction).

FOOT:
Side of the sail between the clew and the tack (bottom).

FORE AND AFT:
Orientation in relation to a line drawn between the bow and stern.

FORESTAY:
Forward wire supporting the mast and the luff of the jib sail.

GOOSENECK:
Universal joint connecting the boom to the mast.

GROMMET:
A ring set into a sail or trampoline.

GUDGEON:
Fittings bolted on the transom of each hull for attaching the rudder system.

HALYARD:
Line or wire for hoisting & lowering sails.

HARNESS:
A sling worn which supports your body when trapezing.

HEAD:
Top of the sail and the corner which the halyard is connected.

HEAD OFF:
To steer away from the wind.

HEAD TO WIND:
Also referred to as "IN IRONS" pointing with bows directly into the wind.

HEAD UP:
To steer the boat into the wind.

HELM:
Tiller which controls the rudders.

HIKE:
To position body weight as far as possible to windward to stabilize the boat.

HOIST:
To pull up as in hoisting the sails.

I.N.C.A.:
International Nacra Class Association.

IN IRONS:
Head to wind, unable to tack or go forward without backwinding.

JIB:
The small sail on the front of the boat.

JIBE:
Maneuver in which the sails switch sides by passing the stern through the eye of the wind.

LEE:
Side falling away from the wind.

LEECH:
Side of sail between clew and head. (back edge)

LEE HELM:
Improper boat balance causing it to head off.

LUFF:
Side of sail between head and tack (front edge). Flogging of sail due to improper sail trim or boat heading (luffing).

LIFE JACKET:
JUST WHAT IT IS, A JACKET TO SAVE YOUR LIFE! WEAR THEM!!!

MAIN BEAM:
The forward large beam which joins the two hulls and supports the mast.

MAST RAKE:
The distance the mast head is from perpendicular in a fore and aft direction. Rake is important in performance and boat balance.

MAST ROTATOR:
A device used to control the amount of mast rotation.

OUTHAUL:
Tackle mounted on the boom to move the clew away from the tack, flattening the lower part of the mainsail.

PIGTAIL:
A line from the jib clew to the jib clew block which allows the use of a shorter jib sheet.

PINTLE:
Pin holding rudder casting to gudgeon.

PIVMATIC:
NACRA's exclusive rudder release and kick-up system.

PORT:
The left side.

PORTSMOUTH HANDICAP:
A handicap number based on the past racing performance of an entire class against all other classes.

PURCHASE:
The amount of mechanical advantage derived from a block system.

REACHING:
To sail across the direction of the wind, usually the fastest point of sail.

REAR BEAM:
The beam where the traveler is mounted.

SHACKLE:
"U" shaped fitting with removable pin used to fasten lines/parts together.

SHEAVE:
Roller part of block or pulley.

SHEET:
Lines used to control sails.

SHROUD:
Wire on each side of boat supporting the mast vertically.

SLOT:
The opening distance between the jib and the main which the wind passes through. Also- groove in a mast or beam.

SPREADER:
Strut projecting from each side of the mast which with the diamond wires stiffen the mast.

STARBOARD:
The right side.

STERN:
The back of the boat.

TACK:
Maneuver in which the sails switch sides by passing the bow through the eye of the wind, or the lower forward corner of the sail.

TACK (sail):
Bottom forward corner of the sail.

TELLTALE:
Short piece of ribbon on the sail or rigging used for indicating sail trim or wind direction.

TILLER EXTENSION:
Device which controls rudder steering.

TRAMPOLINE:
Polypropylene material stretched between hulls and beams to serve as a lightweight deck.

TRANSOM:
Afi-most end of boat.

TRAVELER:
A track and car on the rear beam used to change the angle of the mainsail to the wind.

TRIM:
To adjust sheet tension resulting in proper air-flow over the sails.

TURNBUCKLE:
Threaded fitting for adjusting wire length found on diamond wires.

UPWIND:
To sail into the wind.

WEATHER HELM:
When rudder adjustment is wrong it can cause the boat to steer abnormally to weather (into the direction of the wind). Also, when the rudders are not fully down.

WINDWARD:
Side toward the wind.