

MAINSHEET

The newsletter of Pittwater Catamaran Club.
Mainsheet is published 5 times per year.

April - May - June



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February - March 1998

April - May - June

July - August - September

October - November

December - January

OFFICE	Name	Phone Number
Commodore	Upu Kila	02 9976 2742
Vice Commodore	Guy Machan	02 98948115
Secretary	Tony Hodson	02 9948 1208
Treasurer	Matthew Wyndham	02 94892603
Race Secretary		
Race Director		
Editor "MAINSHEET"	Russell Sheppard	02 9997 2128

MARCH MONTHLY MEETING

This months meeting is now on at our regular venue

PITTWATER RSL

Cnr. Mona Vale Rd & Foley St.

MONA VALE

8.00 P.M. 31st. March 1999

Acting Commodore Upu Kila has requested that as many members as possible make the effort to attend.

If you are not a member of a club please have Russell paged at main Foley Street entrance.

CLUB RACING

While the Club Championship has drawn to a close, the club races throughout the winter, every Saturday except 5 th June (Russell's birthday and the Polarbear Regatta).

Racing now starts at 1.30 p.m. (Rostered Boat Crew please take note).

CLUB T-SHIRTS

The club will have available after Easter 3 types of a new multi coloured T-shirt designed by Peter Manly in Canberra, he has produced those great Hobie ones.

See advertisement elsewhere in this issue.

TREASURERS REPORT

Carried Forward 20/1/99

\$14,110.09

INCOME

Membership \$580

T-shirts \$ 40

Esky \$265

EXPENDITURE

Postage \$121.50

Waterways \$ 54.50 (Boat Rego.)

RTA \$ 46 (Trailer Rego.)

YA of NSW \$504

Balance at 28/2/99

\$14,340.59

NEW !!!!!
CLUB SHIRTS

NEW MULTI COLOUR DESIGN

AVAILABLE AFTER EASTER

PHONE RUSSELL TO ORDER 9997 2128

T-SHIRT - WHITE - \$20

LARGE/EXTRA LARGE/EXTRA EXTRA LARGE

POLO COLLAR SHIRT - WHITE - \$25

**MEDIUM/LARGE/EXTRA LARGE/EXTRA EXTRA
LARGE**

SWEAT SHIRT - WHITE or GREY - \$30

**MEDIUM/LARGE/EXTRA LARGE/EXTRA EXTRA
LARGE**



RESCUE BOAT FACILITY

During the period of the 'Snapperman Beach' land grab, the club committee became concerned that public use of Sand Point may be threatened. The committee appointed Mike Warren to meet with Angus Gordon, General Manager of Pittwater Council regarding our 30 odd year continuous use of Sand Point, our responsible attitude to it and to reiterate (our club was amongst the first to respond to the land grab, Ross Wood preparing the submission) our support of Pittwater Council in their legal fight against the land grab.

Angus Gordon indicated at that meeting the council may well look favourably at a small clubhouse in Iluka Park. A proposal was prepared, as a result a meeting between David Lyall (Commercial), Bill Lynch (Parks & Reserves), Mike Warren and myself was held at Iluka Park to discuss the possibility. It was proposed to build a rescue boat facility attached to the existing toilet block. In time, all areas of Pittwater Council had given their in principle support, but unfortunately it was rejected by Sydney Water who have a pumping station attached.

David Lyall then indicated that while the compound on the corner of Iluka and Barrenjoey Rds, of which we are one of three trustees, while rated 2a Residential it was too small to allow a private residence to be built, a Rescue Boat/Clubhouse would be considered as Palm Beach Sailing Club had ongoing useage over a long period of time. I then met with the Trustees of the land and it was agreed in principle to allow for the construction of the facility on the land.

As the land is rated 2a Residential, we were advised by Pittwater Council that we would have to cease leasing the land for 'commercial activity', and that if such activity continued the council would have to take legal action against the Trustees, Warren Francis (Palm Beach Water Sports) who had been the main lessee for a number of years, therefore, would not be able to continue. As Land Administrator of the block I looked around for a private person who may be interested in leasing the land. Rental of the land is essential for the objectives of the Trustees to be met, that is, the encouragement of 'off the beach sailing' and in particular youth sailing, the Trustees gave a generous sum towards Dan Corlett's trip to the World Youth Championships in South Africa.

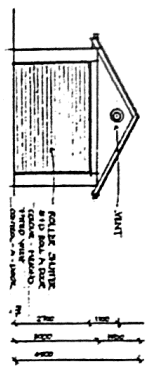
The Trustees have reached agreement with Mr. Denis Leech for a ten year lease, annual rental plus building the Rescue Boat Facility for the Pittwater Catamaran Club.

I would like to take this opportunity to thank Brian, Phil, Malcolm and David Lyall for their help and support in what has been a long, difficult and time consuming project.

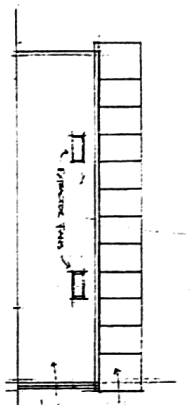
Any questions or ideas to the Building Committee.

Russell Sheppard

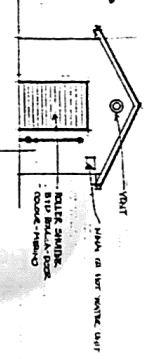
Architect:	Felicity Peters
Building Supervisor:	Michael Warren
Building Committee:	Russell Sheppard Mark Uren Geoff Watson Michael Warren
Trustees:	Phil Renouf (Pittwater Catamaran Club) Brian Chignell (Stormriders) Malcolm Galloway (Palm Beach Sailing Club)



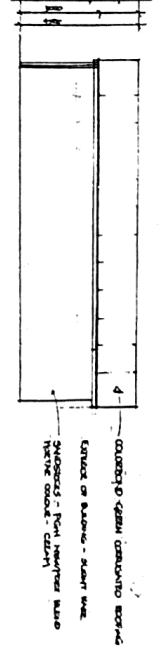
SOUTH WEST ELEVATION



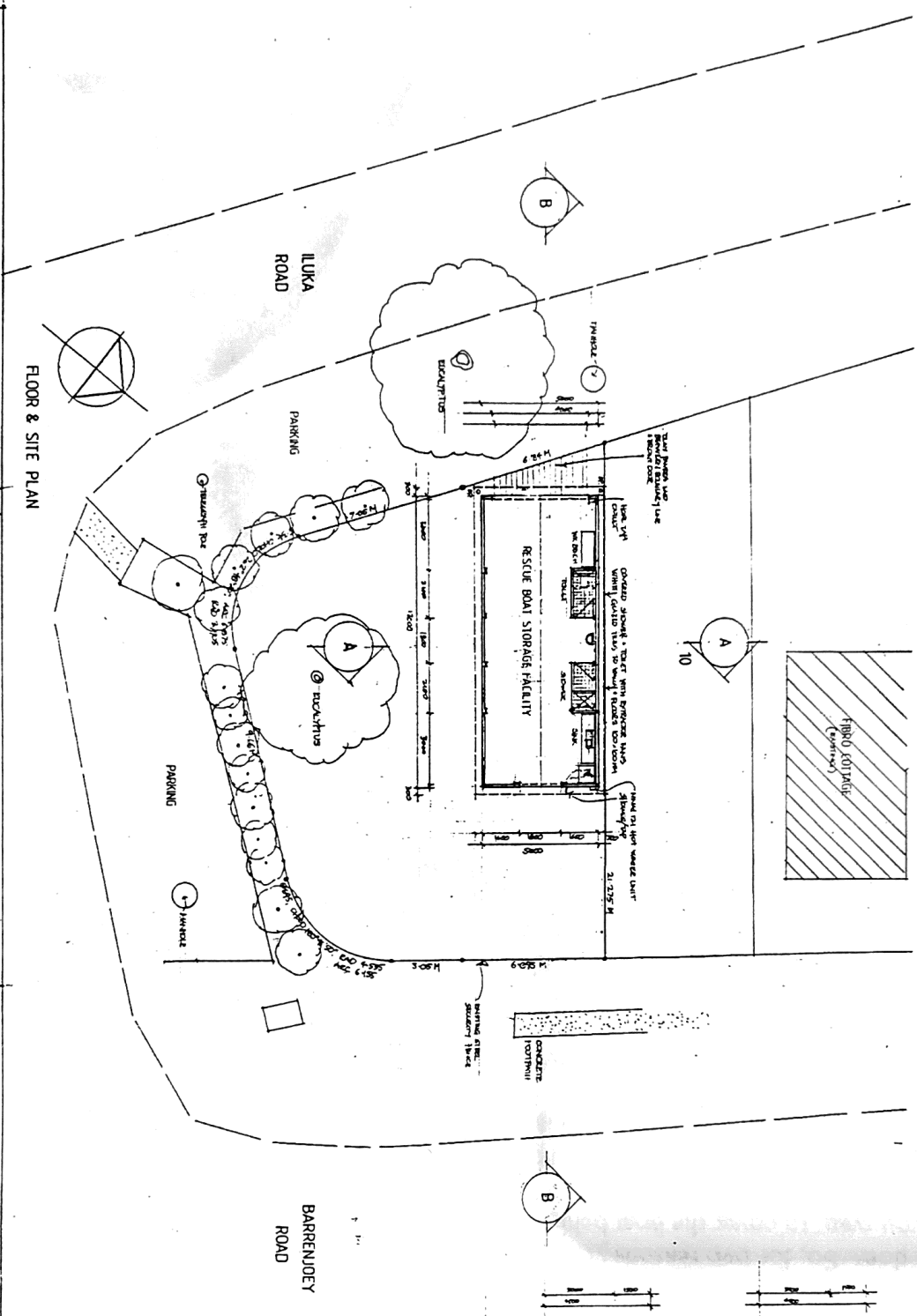
NORTH WEST ELEVATION



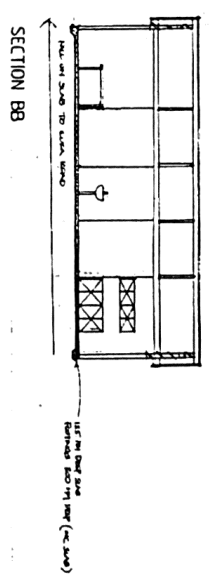
NORTH EAST ELEVATION



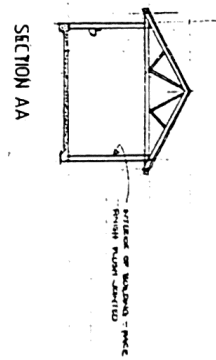
SOUTH EAST ELEVATION



FLOOR & SITE PLAN



SECTION BB



SECTION AA

FELITY PILOS - ARCHITECTURE 3 CARRAPETUA ROAD, MOSMAN NSW 2088 TEL/FAX : 02 9969 8716		GENERAL NOTES: 1. BUILDING TO BE CONSTRUCTED IN ACCORDANCE WITH THE BUILDING CODE OF PRACTICE FOR THE STATE OF NEW SOUTH WALES. 2. ALL WORK TO BE COMPLETED BY 31/03/2000. 3. ALL MATERIALS TO BE SUPPLIED BY THE CONTRACTOR. 4. ALL WORK TO BE COMPLETED BY 31/03/2000.	
PROJECT: RESCUE BOAT STORAGE FACILITY, 11 ILUKA ROAD, PALM BEACH		DRAWING TITLE: PLANS, ELEVATIONS, SECTIONS	
CLIENT: PITTSWATER CAYMANIAN CLUB		DATE: MARCH 1999	
SCALE: 1:100		DRAWN BY: FRP	
DATE: MARCH 1999		DWG NO.: PCC-01	

What if
by
Rick White

What if...
You are rounding the last leeward mark and heading for the finish.

You have one competitor ahead of you and another behind you. You are in second place (either overall for the race, or maybe for just this group of sailors). The leader makes a nice "Enter Wide, Exit Close" rounding of the mark and stays on port tack. You also do another nice rounding and stay on port tack as does the boat behind you. But, the third place boat is not satisfied with his position and tacks off. (Remember, you can't win by simply following someone – you must do something different)

What should you do?

Well, the rule of thumb is to stay between the next mark and the competitors behind you, so you should tack. Also, you know you won't do any good on the leader, if you continue to do the same thing that he does. So, for two reasons you should tack

1) Because you want to cover the boat behind you (stay between the next mark and the competitor)

2) Because you want to also do something different than the boat ahead of you.

This gives you the chance to stay in second place, and possibly even win the race between the three of you.

Why? Because you are staying in the same wind patterns as the boat behind you and chances of him passing you are poor, as long as you don't blow a tack. And you might win because you have a chance to be in different air than the leader.

By tacking off you may be in worse air, in which case you finish second – not bad!

It may be better air, in which case you could actually win – great!

It may all be the same air, in which case, no positions will change – still not bad!

No matter what the wind does, you shouldn't lose a position, and you have the possibility of picking up a spot.



BOAT ROSTER

REMEMBER WHEN YOU ARE ON BOAT DUTY:

1. Pick up keys from Mike Warren at 34 Binburra Rd, Avalon. (99187024) Sandstock double storey
2. Dont leave trailer hooked to your car in compound.
3. *Put in bungs!!!!*
4. Check oil level in motor.
5. Wash out motor and thoroughly wash down boat/remove bungs.
6. Replace cover and elevate front of trailer.

RACE

DATE

ON DUTY

WINTER SERIES

3 RD APRIL	MICHAEL JONES/GARTH FISHER
10 TH	JAN JENSEN/HEATH WALTERS
17 TH	TONY HODSON/HAL EVANS
24 TH	CHRIS DE VEYRAC/BRIAN COOPER
1 ST MAY	MARK JOHNSON/ANGELA GOODWIN
8 TH	PETER STUCKEN/PAUL BARNES
15 TH	MATT BUTTERWORTH/ROBERT FORBES
22 ND	PHIL BARNSLEY/LAURIE McDONALD
29 TH	GUY MACHAN/ UPU KILA
5 TH JUNE	NO OFFICIAL RACING (phone Russell)
12 TH	PETER SETRIGHT/BILL SYKES
19 TH	MARK OASTLER/KEVIN MOFFATT
26 TH	STEVE HOWE/JOHN FORBES
3 RD JULY	MALCOLM JACK/ROBERT CARPENTER
10 TH	GAIL PETRIE/JOHN GOLDSMITH
17 TH	DAMIEN MILLER/DAVID HAWORTH
24 TH	IAN DIXON/JOHN McCORMICK
31 ST	TRENT HILLER/GREG MULLENS
7 TH AUGUST	MITCH BOOTH/COREY GIBSON

PLEASE REMEMBER ITS YOUR RESPONSIBILITY TO ORGANISE A REPLACEMENT IF YOU ARE UNAVAILABLE
- DONT LEAVE IT UNTIL FRIDAY NIGHT - Hal 99801800 IF ALL ELSE FAILS

- REMEMBER HOW PISSED OFF YOU GET WHEN YOUR READY TO RACE AND THE START BOAT DOESN'T TURN UP. PLEASE WASH OUT MOTOR AND THE BOAT INSIDE AND OUT, CLEAN OUT THE RUBBISH AND PLACE ON COVER BEFORE YOU RUSH UP TO THE PARK TO HAVE YOUR FREE BEER.





The Celebrated Sixteen

Part One: Setup

BY MATT BOUNDS

DIAGRAM BY BILL BALDWIN

Good things come in three's, as this first in a trio of in-depth articles on the Hobie 16 clearly proves. Look for "Part Two; Tuning" and "Part Three; Sailing" in upcoming issues. Series author Matt Bounds, who is fast becoming a regular HOTLINE contributor, is secretary/treasurer of the North American Hobie Class Association. -Ed.

The Hobie 16 is undeniably the most popular catamaran class in the world. Since its introduction in 1970, over 100,000 sailors have learned to appreciate its simplicity and the challenge of making it go fast. It truly can be called the "Volkswagen of Catamarans."

Because the 16 has few strings to pull out on the water, it puts a greater emphasis on helmsmanship and sailing skill. Unfortunately, many sailors don't realize this and spend entirely too much time on tuning; they don't understand the most adjustable part of the boat is at the end of the tiller. The purpose of Hobie Class racing is to test sailing ability and skill, not measure the thickness of one's wallet.

When you're starting with a clean slate, either a new boat right out of the box, or a "beater" that's been sitting around for a while, you'll have to spend a little time on the boat to make it truly competitive. While all Cats are meant to be equal, some are more equal than others. The secret to making your 16 a standout? Setup.

HULL STRUCTURE - STIFFNESS IS ALL

When you lift one bow of your boat, how far does it move before the other bow starts to rise? When going through waves, does it appear to have independent hull suspension? All that motion soaking up the energy that should be directed toward making the boat go forward results instead in the boat going slower. The skewed structure also prevents effective tuning, because it does not provide a dimensionally stable platform on which to hold the settings.

There are two basic approaches to frame stiffness; gluing and shimming. Shimming is definitely less drastic, but it's also less

effective and must be redone periodically to maintain stiffness.

Shimming

Shimming involves taking the boat apart and inserting 4" x 1" strips of an aluminum soda can about 1/2" down between the foam plug and the pylon, then bending them over the top and outside of the pylon. Alternatively, you can purchase a Pylon Shim Kit from your Hobie dealer.

In either case, you effectively build up the aluminum worn off over the life of your boat. (For more details on shimming, see "Aging Gracefully: How to Remedy Hull Slop" in the November/December 1989 HOTLINE or "Ask the Expert: Keep it Stiff" in the July/August 1986 HOTLINE.)

Gluing

Gluing your boat together is the only way to assure it will hold alignment, but there is an air of finality about it. Once it's together, it doesn't come apart. Replacing a cracked corner casting or broken frame member can be a major operation, involving dangerous chemicals and open flames. You may end up replacing more than the original part that was broken. Also, you might block the hull vent tube in the front pylon, which means you'll have to remember to leave your drain plugs out whenever you're not on the water, or you could blow the hull/deck seam in extreme weather.

Ready to throw all caution to the wind and glue full speed ahead? One caveat before we start. Some things done to racing boats to make them go faster do not necessarily make them last longer. If you're not sure you want to glue, or think it may be beyond your handyman capabilities, DON'T DO IT. The loss in performance is minimal, and you probably won't notice the difference if you race at the fleet level.

If you do decide you want to glue the boat together, start with the boat completely apart. Remove the castings from the front and back crossbars by using a cold chisel to knock the heads off the rivets and driving the tails into the extrusion with a Phillips screwdriver. You can drill out the rivets, but you run the risk of enlarging the hole. On the front crossbar, you'll have to take the nuts off the dolphin striker. Clean the sockets on all four castings with soap, water and a small scrub brush. Let them dry thoroughly. Do the same for the ends of the crossbars and the tops of the hull pylons. Don't worry about the sidebars; they must be allowed to "float" in their sockets to accommodate thermal expansion.

Use masking tape to close off the ends of the crossbars; then lightly coat the ends of the crossbars and their sockets with

petroleum jelly (this will help you take the boat apart later if you have to). Mix up a good, thick batch of epoxy; I've used WEST System Epoxy with microballoons mixed in to make it the consistency of whipped cream. Slather the inside of the socket with epoxy and insert the crossbar. Make sure a lot of glue squeezes out, indicating you've filled all the voids. Clean off the excess with rags and solvent. Put new rivets in before the glue sets, but don't pull them or put the nuts on the dolphin striker until after it sets. That way, you don't have to drill new holes. Let the epoxy cure overnight.

The next day, repeat the same process with the crossbars and hull pylons. Perform the final assembly on a hard level surface such as a garage floor to facilitate alignment. Use slow curing hardener to provide sufficient time for alignment. An extra set of hands really helps.

Again, coat the pylons and casting sockets with petroleum jelly, slather on the epoxy, and assemble the trampoline frame on the hulls. **DON'T FORGET THE SIDEBARS!** Coat the pylon bolts with a little petroleum jelly and put them through their holes. Wait until the glue has cured to tighten them down, but you must align your boat before the glue sets.

HULL AND FRAME ALIGNMENT

If you glue your boat together, you must align it before the glue sets to enhance boat performance. There are three different modes of motion — camber, racking and twisting.

Camber

Camber is adjustable only through dolphin striker tension; no set alignment exists. Until now, the trend has been to keep the dolphin striker tight enough to make a melodic hum when struck lightly with the palm of your hand (see "Ask The Expert: How Tight is Tight Enough?" in the September/October 1985 HOTLINE). Lately, I've heard backing off on the tension to let the hulls splay out helps upwind performance.

I don't recommend this technique, since it strains the front crossbar (a very expensive part to replace) and also reduces the amount of mast rake that can be carried by lowering the whole rig (when the front crossbar flattens out). Chances are good the boat eventually will suffer metal fatigue failure on the front crossbar. Get the message? **DON'T DO IT!**

Racking

To set the racking alignment, measure diagonally from the centerline of the bow, just below the deck lip to the opposite

inside corner of the transom, and again just below the deck lip. Do the same for the opposite diagonal. The measurements should be equal.

To pull the boat into alignment, rig the mainsheet along the long diagonal and use it to pull the boat square. If you just glued the boat, leave the mainsheet on overnight while the glue cures.

If you shimmed the boat, sometimes it helps to pull it a little out of square in the opposite direction, because it will spring back when you take off the sheet. Put the trampoline back on the boat and lace it really tight. Check the alignment again, correcting if necessary. If you shim your boat, you will have to realign it periodically.

Twisting

Correcting for twist is easy. Measure the distance from the deck lip on each bow to the ground. Move either bow up or down until the measurements are equal. This measurement will not hold if you've shimmed the pylons, only if you've glued them together.

TIGHTENING THE TRAMP

To help maintain a stiff frame, the trampoline must be kept tight. There are many different ways of achieving this, from bare hands (with blisters) or two pair of Vise-Grips (tough on the line) to special tools made just for the task.

A tramp lacing kit with shock cord is available from your dealer, but I'm not convinced lacing the tramp with shock cord instead of dacron line makes it any tighter. (A good line to use is Yale Cordage Light™ because it doesn't absorb water.) Once you've tightened the tramp, you should notice a perceptible sweep inward on the sidebars.

Solid tramps can be pulled tighter than mesh because they don't stretch as much, but for racing purposes, the choice between the two is purely personal. I prefer mesh, as I don't like sitting in a puddle.

RUDDERS — THE SOFT UNDERBELLY

The 16's rudders are heavily loaded, mainly due to lots of mast rake and lack of centerboards, making proper setup of the steering system critical to performance. Without precise, balanced steering, the 16 can be a real beast to sail — good only for building upper body strength.

Before you can develop good helmsmanship, you must feel the rudder response. Otherwise, it's like driving a '76 Cadillac with power steering — you have only a vague notion of where you're going.

Steering Connections

Tiller Extension Connector. — Make sure the connector is tightly bolted onto the tiller crossbar. Not too tight, or it won't turn! Use a couple spare nylon pieces from an old connector kit to provide a flat surface for

the nut and swivel against which to bear.

Tiller/Tiller Crossbar Connection — Buy a KISME TLC Plus from your dealer. For slop removal and reliability, nothing else even comes close. When first installed, the connections are so tight they must be broken in before being used in a race, so go sailing a couple times (preferably in heavy air).

Rudder Pins/Gudgeons/Lower Castings — These pieces are the primary source of slop in the entire system. The aluminum pins that come with the boat lose in the battle with the stainless steel gudgeons. Stainless steel pins don't wear or break. (If you sail in the surf a lot, use plastic pins, but also use a keeper line to make sure the rudder will remain attached to the boat if the pin breaks.) Get the new H17-style gudgeons (they don't break, either).

Fill the rudder pin hole on the gudgeon with epoxy, let it cure, then redrill the hole with a 23/64" bit; it makes for a really tight rudder pin fit. Drill and tap the transom to accept the next larger size bolts (1/4 x 20 x 1-1/2) on the gudgeons. Use permanent LockTite when remounting them, so they won't back out. Use plastic rudder pin bushings in the castings — the ones that require you to drill out the hole in the casting to 1/2" diameter.

The re-inserted rudder pins should be so tight you'll need a hammer to get them all the way down (be careful not to break anything). Use silicone spray to help them slide in. The joint should be stiff enough to prevent the casting from pivoting on its own, able to be moved easily by hand.

Kick-Up Connections

Rudder Head/Castings — The objective here is to get a tight, yet smoothly operating connection with no wobble. File the inside of the castings to remove any burrs or bumps remaining from the casting process. EPO rudders as well as the new Racer Blades fit well in the castings, but others are looser and need shimming. Hobie Cat sells several kits to shim this connection. Pitch the nylon nuts that came with the boat and use stainless steel/nylon insert nuts on the rudder bolts to better control the connection's tightness.

When you install the rudder in the lower casting, tighten the bolt until the rudder just barely drops down under its own weight. The upper casting is installed in a like manner — stiff, but not binding.

Lockdown Mechanism — With your rudders locked down (boat on the trailer), try to move each rudder tip fore and aft. If it moves more than half an inch, tighten the rake adjusters.

With the rudders still locked down, loosen the adjusting screw on top of the casting. Insert a screwdriver through the slot in the casting, angling aft to catch the aft edge of the cam plate. Use the screwdriver as a lever to force the cam plate into the cam. Using your third hand, tighten the adjusting screw back down. You might

have to try this a few times before you get it right. (See "Small Flippers in Back" in the July/August 1987 HOTLINE for input on adjusting the lockdown mechanism.)

SHAPE, PREPARATION AND ALIGNMENT

To understand the whys and wherefores of the rudder blade itself, some airfoil theory is indispensable. Rudders are a design compromise. They must be small enough to minimize drag, yet large enough to generate sufficient lift to turn the boat. Catamarans complicate the problem by allowing a wide range of speeds. The Hobie Cat blade profile is one of the better compromises, but in my opinion, Class rules restrict racers to a thinner blade than I want.

All rudders are symmetrical foils; one side is a mirror image of the other. When pointing directly into the direction of water flow, they generate no lift, only drag. In this condition, drag is composed of two components, skin friction and form drag (dependent on foil thickness). Friction depends on the speed of the flow and surface roughness, which determines when the boundary layer transitions from laminar to turbulent. The boundary layer is the thin layer of water in direct contact with the blade. Laminar boundary layer flow is very low drag, but it's unstable and more likely to become separated from the foil. Turbulent boundary layer flow is much more stable and resistant to separation, but has higher drag.

When the rudder is turned, the flow around the foil is no longer symmetrical, complicating the matter. Lift is generated, along with induced drag resulting from the vortices shed by the foil. Without going into the dirty details about vortex sheets and circulation, the bottom line is that for small angles of attack, the pressure increases on one side of the blade and is reduced on the opposite side. This force acts on the blade at a point approximately 12-15% aft of the leading edge. The blade is balanced when this force is aligned with the pivot point (the rudder pin line). When you adjust your rudder rake, you really are trying to perform this alignment.

As the angle of attack increases, one of two things will happen. At low velocities, the blade will stall, meaning the flow can no longer negotiate the sharp turn at the leading and trailing edges of the foil. The result is a catastrophic loss of lift and corresponding increase in drag. Thickness actually helps you here; a thicker foil will allow a higher angle of attack before stalling.

At higher velocities, the blade will ventilate. The pressure on one side of the blade becomes so low it actually draws air from the surface of the water down that side. It happens all the time on Hobies: a horrible vacuuming sound and loss of steering control because the rudder is trying to work in air. Contrary to popular belief, this is not cavitation. Cavitation results when the pressure gets so low the water vapor-



izes. Hobie rudders will ventilate long before they cavitate.

The Hysteresis Effect also applies to this situation. Simply put, fluid flows are resistant to change, which explains why the air sheet stays stuck to a ventilating rudder for such a long time. This effect can be put to good use, too (more on that later).

What does all of this have to do with the Hobie 16? The objective is to manipulate the rudder shape and surface to reduce drag and increase the possible angle of attack, before the rudder stalls or ventilates. Doing so is especially challenging on the 16, due to the limitations imposed by Class rules and the heavily loaded condition of the rudders.

Rudder Shape

We're pretty much stuck with the rudder shape provided by the type of rudder blade used, but most new rudders hum. The hum, caused by oscillating flow produced by the bulbous trailing edge, is a double whammy — it causes drag and it makes the rudder ventilate sooner.

To kill the hum, thin down the trailing 2" of ABS, Lexan and PCG rudders and produce a 1/16" wide, square-edged trailing edge. This edge actually will have less drag (overall) than a knife edge, and it's a lot easier to maintain.

DON'T do this to EPO or any other rudders with foam cores! You'll ruin them! On foam core rudders, square off the trailing edge leaving a 1/8" wide, sharp-edged edge. Taper down the face of the blade on both sides to make a smooth transition. Be very careful not to go through the epoxy and into the foam core.

EPO rudders probably are still the best racing blades. I have yet to see one break. They're super-light and as thick as Class rules allow, making them tough to stall, but a slight penalty must be paid in additional drag.

Unfortunately, EPO rudders are not being manufactured anymore. The newest blades on the scene are Racer Rudders, which are supposed to be comparable to the EPO blades.

Surface Preparation

The object of surface prep is to minimize surface disruptions, which maximizes the laminar flow over the leading edge of the blade. Once you've fixed the trailing edge, WETSAND, WETSAND, WETSAND! Use progressively finer grits (up to 600). Sand across the blade, in the direction of water flow. Pay special attention to the front third, the area of laminar boundary layer flow. When you're done, water should sheet off the blade, not bead up, revealing a very thin layer of water adhering to the blade surface. Water/water friction is much less than water/blade friction.

Rudder Alignment

Unlike centerboard catamarans, the 16 relies on its hull shape to reduce sideslip

going to weather, an inefficient configuration, causing the boat to operate at a higher yaw angle than centerboard cats.

Yaw is the angle between the direction the boat is pointing and the direction it's actually travelling. It affects the rudders by increasing the effective angle of attack.

If the rudders are set perfectly parallel when the boat sails level, both will stall at the same time when they are turned. If they are toed in slightly, the windward rudder will stall later. Since the boat is almost always heeling, the leeward rudder can sustain more lift because it's deeper in the water. The net effect: both rudders will still stall about the same time, but with a net increase in lift for a given angle of attack.

There are two ways to align your rudders. In either case, set the boat up as if going to weather, with sails up. Then, either measure the alignment with the rudders up or locked down.

Rudders up — measure the distance between the center of the blade at the casting and at the blade tip. The tips should be about 1/2" farther apart. Rudders down — prop up the rear end so you can lock the rudders down. Measure the distance between the leading and trailing edges of the blades at the same height. Alignment should be slightly farther apart (1/8") at the trailing edge.

What's good for going to weather works against you off the wind. The yaw angle is nearly zero now, and toe in actually can precipitate ventilation by creating a higher angle of attack on one rudder. The solution is to raise one rudder; it doesn't matter which one in light air, but it better be the weather one in medium-to-heavy air!

Follow this procedure anyway, to reduce drag off the wind. The best discussion of rudder preparation and alignment is in "Welcome to A Fleet, Book 1: Boatspeed," by Jack Sammons.

THE RIG — NEATNESS COUNTS ALOFT

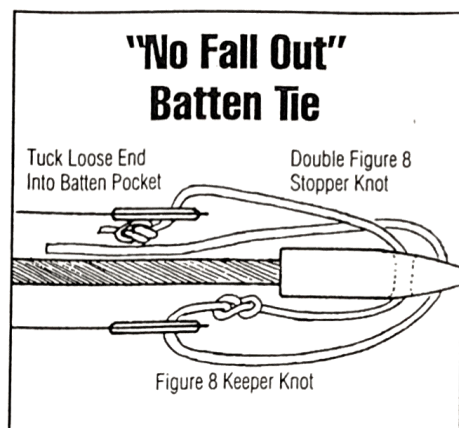
With the exception of sail shape, the 16 rig requires very little advance preparation; just some basic cleaning up.

Jib And Jib Battens

The only thing necessary to do to a stock jib to prepare for racing is change the luff tension adjustment from the head of the sail to the tack. Class rules prevent adjusting the tension while racing, but at least you'll be able to adjust it when the sail is up.

Neophytes have a hard time with the jib battens getting hung on the halyards when tacking. It's a shame, because it's easy to fix. Trim the jib battens so they barely protrude from the leech of the sail — only enough so they can be adjusted slightly. Get the halyards pulled back on the mast. I use a plastic holdback device mounted on the mast just above the top jib batten for the jib halyard, and lead the main halyard around the gooseneck to keep it out of the way.

Jib battens, especially the top one, also like to slip their adjustment lines and go for a swim. If you use the knot shown in the Diagram, you should never lose another one. Use this knot for the main battens, too.



Shaving down the battens to make them more flexible is never advantageous. The jib needs to be flat to help you point upwind. That's why top sailors replace their jib more often — because when the jib gets blown out, you can't point as high.

If you haven't a vision window in the jib, put one in. Don't let the sailmaker cut across any seams when inserting the window.

Main And Main Battens

The main requires much more attention to sail shape, which is determined by the cut of the sail and, to a lesser extent, by the battens. Sanding down the battens increases the draft somewhat and adjusts the position of maximum draft within a narrow range.

Sails tend to blow out over time, so you may want to begin with shaved battens and go to full battens as the sail ages and becomes fuller. Usually, the right sail shape can be obtained without batten shaving.

I advise trimming the excess batten length protruding from the leech of the sail. Usually 2-5" can be trimmed, still leaving plenty of room for adjustment. Trimming not only cleans up the sail aerodynamically, but is one of the few ways to reduce weight aloft.

Telltale Positions

I've seen both ends of the spectrum on telltales — from nearly none to 30. (How do they read all those?) If you've ever raced in the rain, you know what sailing without telltales is like. I've always believed you should never put more telltales on the sail than you can read in a glance, and that each should have a specific purpose.



Sailing a Wingmast rig

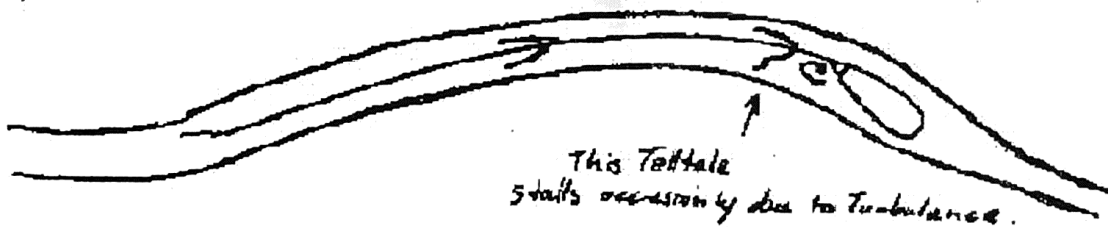
Welcome to the world of the wingmast rig. This type of rig offers many performance advantages compared to a Pear section mast, such as better boat speed, better pointing ability and more sophisticated sail control. The end result is a faster boat which is easier to sail.

Warning: The mast on a wingmasted boat is active sail area, both when the sail is up, or when it is lowered. For this reason The mast should never be left standing While the boat is unattended and unsecured eg. overnight, lest it blow over in a wind squall and injure someone, or damage itself or other boats.

This information sheet is primarily aimed at windward sailing, but these principles can also be applied to reaching and running. I might also add that there are no hard and fast rules in boat tuning, but this is the method that has worked well for me.

1. The basic concept:

The idea is to effectively make the mast part of the sail to do this the Leeward side of the mast is faired into the shape of the sail. Diag. - A



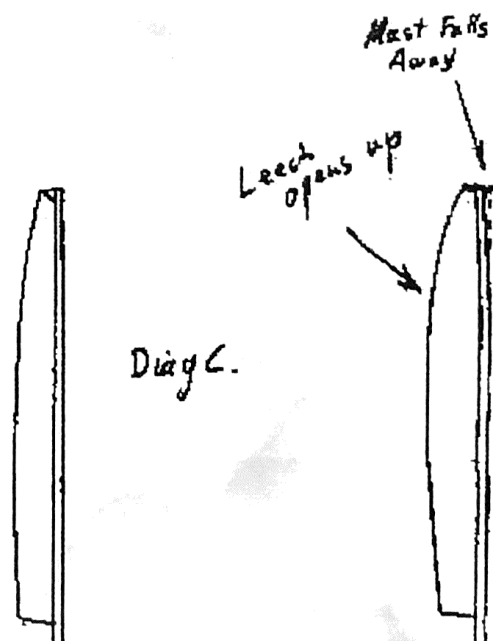
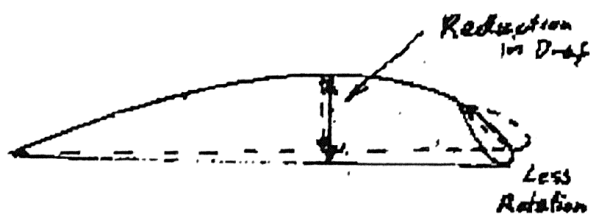
2. Use of telltales.

You will notice that your sail has an extra set of telltales down the luff. These are to indicate if you have the correct amount of mast rotation compared to the sail. A good starting point is with the leeward telltale streaming freely and the windward telltales stalling intermittently. All the other telltales on the sail should still flow freely. Diag A

3. Effect of Less Mast Rotation.

Reducing the mast rotation has the effect of allowing the top of the mast to fall away, causing the leech of the sail to open up, reducing the power and hence heeling moment. Diag C. The reduction of rotation also lessens the effective draft of the Pad, Diag.D, reducing both power and drag.

Note More rotation above the optimum described above increases both heeling moment and drag so you need to very mindful of increased drag in this situation.



4. Effect of Increased Luff Tension.

This prebends the mast flattening the sail while at the same time the tip of the mast moves back, shortening the distance between the clew and the he at, and hence loosening the leech and allowing the leech to fall away. The effect is less power and less drag.

5. Effect of Heavier Top Battens

This flattens the top section of the sail slightly, reducing the heeling moment in the most critical part of the sail. (Many skippers change these 3 battens for very windy conditions.) of Sheet Tension The main effect of sheet tension is to control the twist of the sail. As on other boats the mainsheet is used for most of the fine adjustments when sailing.

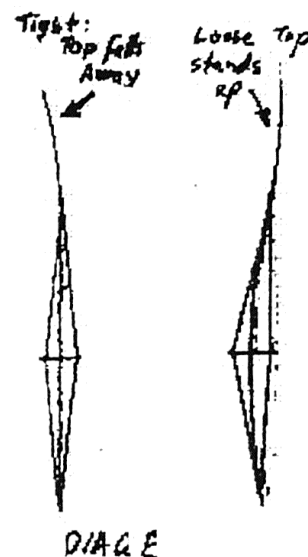
7. Effect of Diamond Tension

tight Diamonds=Less Power=Less Drag as:

- The extra prebend flattens the sail
- The middle of the mast stands up straight, which allows the top to fall away, taking the leech with it.

Loose Diamonds=More Power=More Drag as:

- The sail becomes fuller because of the luff curve.
- The middle of the mast bows away causing the top of the mast to stand up straight, bringing with it the leech. Diag.E



We recommend that you sail for your first half season before attempting to adjust the Diamond tension. This is because many apparent diamond tune problems are simply skipper inexperience problems. If you loose your factory settings learning to sail with the wing mist and learning to tune it at the same time is quite difficult. Before attempting any change to diamond tension mark and record your factory settings for future reference.

One way to check your diamond tension is to sail in conditions where you are comfortably on trapeze, if you sheet on harder the leech should stand up. If your diamonds are too tight then the sail will flatten before the leech stands up. A bit fiddling in these conditions should produce a diamond setting you are happy with. This setting should work in all conditions and no further adjustment should be necessary. If you are still unsure use the factory settings.

The diamond tension is very high on these rigs and, must be released before adjustment can be effected, this is done by pulling the wires out of the cross arms. Care must be taken not to put a point load point load on the mast during this process.

Trouble shooting

Boat is overpowered and flighty in strong winds;

Try: More Luff tension Less Rotation, Point up and Sheet on. (The Sail is too full due to lack of luff tension you are overpowered so you drop sheet. Because the leech is no longer controlled, and is tight as well it will not open at all in the gusts so you are blown over in the gusts and you fall in the water in the lulls Boat heels instead of accelerating in medium conditions Try more Luff tension. this will free the leech and reduce drag.



MEMBERS					
Name	Boat Type	Sail #	Home #	Mobile #	Email Address
Brian Cooper	A Class	KA 485	91443869		Life Member
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Mark Oastler	A Class	724	99186336	0414662549	
Corey Gibson	A Class	AUS714	94828358	99978455(w)	
Rick Wellens	A Class				
Rick Brown	A Class		96542880	0411261834	
Brad Sinnott	Hobie 14	45847	99731614		
Phil Bansley	Hobie 16		94278870		
Bill Sykes	Hobie 16	71 or TNT	99052016	99052016 w	
Brad Ashmore	Hobie 16	103214	96304677	0416358611	
Mike Warren	Hobie 16	201621	99187024	0414954550	fpeters@au1.ibm.com
Chris & Lynn De Veyrac	Hobie 16	99999		0418241745	
Lester Brand	Hobie 16		91443345	0418270882	
Ali & Dan Corlette	Hobie 16	103166	99992401		
Kevin Moffatt	Hobie 16	95887			
Gail Petrie	Hobie 16	81181	99043603		
Peter Stucken	Hobie 16	13	94495324	0418219440	
Heath Walters	Hobie 16	95465	99400005		
David Haworth	Hobie 16	97237	99826674	0419203613	
Frank Costanzo	Hobie 16	Fosters	99186339		Life Member
Simon Taylor	Hobie 16	99876	99698216	0411282338	
Ross Porter	Hobie 16			0419991004	
Sam Wood	Hobie 16	99373	99883850		
Rod Waterhouse	Hobie 16	104293	99798001		
Bruce Potts	Hobie 16	32	99531709		
Upu Kila	Hobie 16	104300	99762742	0412562742	Vice Commodore
Hal Evans	Hobie 16	103116	99801800	0412018158	
Graham Allen	Hobie 16	96262	98768573	015411509	
Ian Dixon	Hobie 16		99466238	0417405937	
Michael Jones	Hobie 16	104004	99883446	0414402166	
Damien Miller	Hobie 16	36	99133137	015494655	
Matthew Butterworth	Hobie 16		99188324		
Trent Hiller	Hobie 17		99978087	0411178866	
Garth Fisher	Hobie 17	2336		0412230733	
Guy Machan	Hobie 17	1885	98948115	0408020524	Secretary
Paul Barnes	Hobie 17	2511	94162996	0418440166	
Jan Jensen	Hobie 17	2735	99054869		Magazine Editor
Russell Sheppard	Hobie 17	2912	99972128	0417466956	
Mark Whitbourn	Hobie 17	5983	98161545	0419692672	Treasurer
Tony Hodson	Hobie 17	2504	99481208		
Jim Stevenson	Hobie 17	2132	99640271	014066091	Race Secretary
Mark Uren	Hobie 17	5960	98788602	0418474235	
Richard St John	Hobie 17			0411876187	
Robert Dodds	Hobie 18	16129	99183767	0412964352	
Chris Doig	Hobie 18	11457	96861278	0417486503	
Jim Tucker	Hobie 18	14540	96836693	0417880899	
Hunter Dodds	Hobie 18	16129	95607190		
Nigel Collins	Hobie 18	16460	98763897	0418298286	
Kyle Amadio	Hobie 18	7434	96743091	0411707081	
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Malcom Jack	Hobie 20	458	99993762	0419266615	
Bob Forbes	Nacra	18 ²	99992987	0418229900	
Steve Robinson	Nacra 4.8		94168946		
Simon Jeffrey	Taipan 4.9	AUS280	96741220	018668637	
Steve Howe	Taipan 4.9	AUS161	99991533	0412297117	
Mark Griffith	Taipan 4.9	AUS103	99187998	0418647512	
Geoff Watson	Taipan 4.9	AUS126	99294138	018214401	
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John Goldsmith	Tornado	AUS307	93898809 w		
Angela Goodwin	Tornado	AUS 293	99744759	0411212733	
Ross Lawrence	Windrush 14	3160			
Jean Brochut	Crew		99049486	041384 4722	
Karl Klessick	Crew		94524067		
Cameron Harrison	Crew		96600973		
Ainslie Campbell	Crew		99794969	0418962892	
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Carlow Escarpa	Crew		99061289		
Doug Macarthur	Crew		98765717		
Mark Oakden	Crew		94844501	0409317267	
Alex Doig	Crew		96861278		conquestlocks@iname.com