

PALM BEACH SAILING CLUB inc.

racing as

PITTWATER CATAMARAN CLUB



Photo courtesy of Walter Cooper

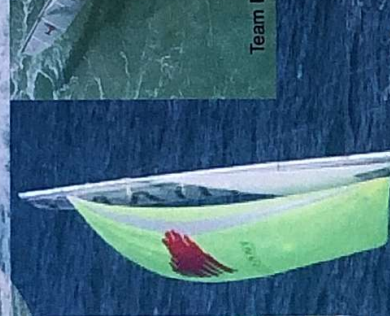
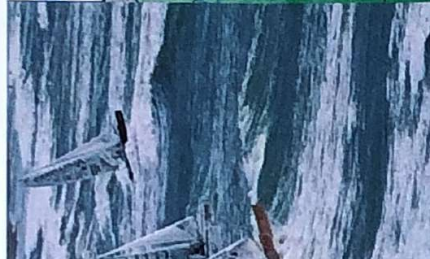
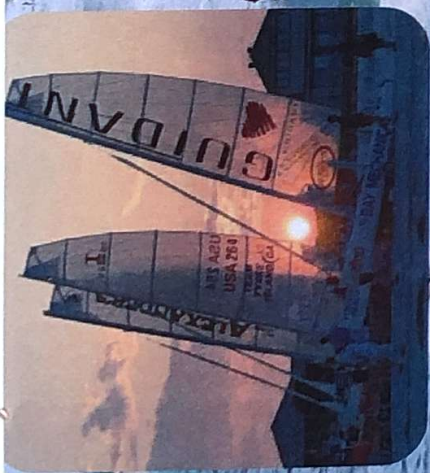
Rod Waterhouse and Katie Pettibone - Worrell 1000

MAINSHEET

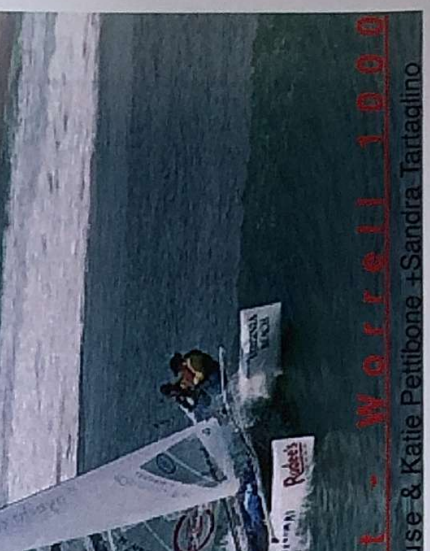
JUNE/JULY/AUGUST 2001



How Katie ended up sailing with Rod



Team Dallas without a Skipper!



Team Guidant - Worrell 1000

Rod Waterhouse & Katie Pettibone + Sandra Tartaglino

MAINSHEET

Mainsheet is the newsletter of the Palm Beach Sailing Club and is published 5 times a year.

FEBRUARY - MARCH

APRIL - MAY - JUNE

JULY - AUGUST - SEPTEMBER

OCTOBER - NOVEMBER

DECEMBER - JANUARY

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COMMODORE'S REPORT June 2001

An overseas shortened holiday and family commitments prevented my involvement in the last newsletter and Sand Point Regatta.

On the subject of Regattas, they are our major source of fund raising and PR exposure, and a club of our size should be able to effectively hold at least 2 regattas a year. Whilst specific procedures have been established to ensure that the planning and operations run as smoothly as possible (notwithstanding Murphy's Law), I understand the last Sand Point Regatta encountered a few problems. Even so the Club raised approximately \$1800.

The current procedure is that each Committee member and two other members are responsible for ensuring that club members are organised to carry out specific tasks. However, after discussing the problems of the last regatta, it is the Committee's view that these responsibilities should be taken over by a Regatta Subcommittee and we are seeking volunteers for these exciting activities. Another idea to be considered is for such a subcommittee to be involved in the planning and organising of an Open Day when the general public and people interested in sailing cats could be taken for a sail, thus exposing the Club to the potential of attracting new members. Please contact any Committee member if you wish to be involved.

At our last AGM it was suggested we should consider starting the winter sailing about 1000 hrs to take advantage of potentially better conditions in the mornings. Working bees have prevented us from exercising this idea but at an appropriate time we will progress the concept.

The RBF construction is progressing somewhat slower than had been expected, working bees having been poorly attended and the weather has been unfriendly at times. However thanks are extended to the few familiar faces that make the effort on Saturday mornings to give a hand. Thanks are also extended to those members who cannot physically attend the working bees but have donated products and other skills to the construction.

It is hoped that the roof will be completed within the next 2 weeks and hopefully progress will then speed up with the internal fit-out. Check your emails or contact Mike and provided we get your support we could plan an opening ceremony sometime in September possibly at the Heart Starter.

Pittwater Council (for whatever reason) seem to be trying to make life very difficult for the Palm Beach Sailing Club whereby they have decided to landscape and put in parking bays in the area adjacent to the toilet block. There is a possibility that they could do the same for the Northern section of the parking area resulting in rather restricted movements for cars and trailers and presenting bigger problems during Regatta days. It may mean members will have to improve their manoeuvring skills or park cars and trailers separately!

On the subject of a new boat, the Committee will be evaluating 2 or 3 alternatives and it is hoped to have a report and recommendation as a result of this research in time for discussion and decisions at the AGM. The major issue is one of finance, we will need to raise about \$20,000 for a new boat, engine and trailer. To this end we request members to be more proactive in seeking out potential sponsors.

The AGM is planned for about the end of August. Subscriptions are due by the 1st of July and unless you are a fully paid up member you will not be eligible to nominate or vote in new Committee members. Ideas for an appropriate venue should be passed to Russell, alternatively we can revert to last year's Indian Restaurant.

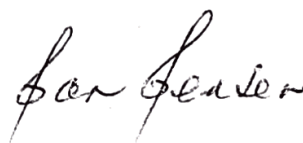
There is still a lot to do for the Club and we need support and action from more members.

June's Nautical Quiz

1. What is *Free Surface*?
2. What is a *Cuddy*?
3. What is an *Irish Pendant*?

Answers to December's Nautical Quiz.

1. Transverse thrust – the effect of a single propeller on a boat's stern when going astern or ahead from a stationary position with no rudder movement
2. Bumpkin – two small davits or a boom at the stern of a vessel to hang off / lash a small dingy.
3. Bunt – the belly of a sail



Jan Jensen.

WORKING BEES

EVERY SATURDAY AT 0900, WE NEED YOUR HELP!!

PHONE MIKE WARREN 9918 7024

OK - TONY, LAURIE, PAUL, MARK AND OTHERS ITS TIME TO GET THAT CAT
OUT OF MOTHBALLS AND COME SAILING AND DRINKING!!!!!!!!!!!!!!

HEARTSTARTER

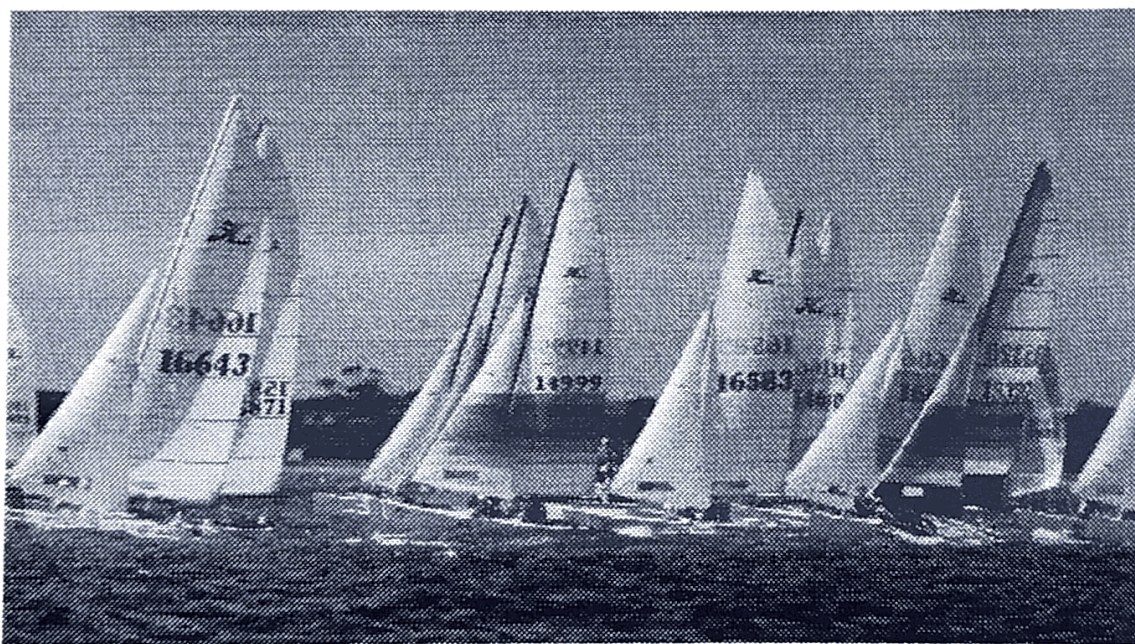
8 th SEPTEMBER 2001
SATURDAY

Rigging from 10.00 a.m.

Briefing 10.30 a.m.

Barbecue about 5.00 p.m at the clubhouse.

Official Opening 7.00 p.m.



Please bring family and friends

Drinks and food will be on sale from 10.30 a.m.

Lets get the season off to a great start !!

NEW !!!!!
CLUB SHIRTS

NEW MULTI COLOUR DESIGN

SEE UPU

AT SAND POINT
or phone 9401 7292

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***



*ANNUAL GENERAL MEETING
&
CLUB DINNER*

**SATURDAY 18 TH
AUGUST**

*AGM 1830
DINNER 1930*

VENUE TO BE ADVISED

NOTE: No racing on this Saturday



RESCUE BOAT FACILITY - UPDATE

At long last the roof is on, we are about to paint the walls, have power and lights fitted to interior, completion of the shower and toilets by the end of June. Mike Warren is in charge of construction, Mike will be designating from time to time 'working bee' days, they may be on Saturdays and if so racing will be suspended in that event, please, where possible attend, many hands make light work.

When the Facility is to lock up stage, we will be looking for various items to fit it out, not to be seen looking a gift horse in the mouth - *BUT !!!!! please only new or items in excellent condition.*

GARDENING EQUIPMENT

MOTOR MOWER
WHIPPER SNIPPER
CLIPPERS/LONG HANDLED POLE CUTTERS
SPADES - SQUARE/ROUND NOSE/LONG HANDLED
RAKE/BARROW

MAINTENANCE EQUIPMENT

HEAVY DUTY RIVET GUN
ELECTRIC DRILL/CORDLESS DRILL/DRILL SET
HAMMERS/PLIERS/VICE GRIPS/SHIFTERS
METAL VICE
BATTERY CHARGER
SET OF RING SPANNERS/OPEN JAW SPANNERS
Any tools that would be useful in the maintenance of boat/motor/catamarans.

KITCHEN EQUIPMENT

ELECTRIC JUG/COFFEE MUGS/KNIVES/FORKS/SPOONS ETC.
TELEVISION SET/ VCR
REFRIGERATOR (must be in A1 condition)
LOUNGE SUITE

MEMORABILIA

In particular PHOTOS (Sand Point and Governor Phillip Park), pennants, flags, trophies, medals, old catamaran magazines etc.



Caribbean Report

**From the SV Magic IV – John & Robyn McCormick
(Hobie 16, Babe – now in storage)**

Cruising in the Caribbean is quite different to Hobie racing on Pittwater!

We left Sydney with our two children, Kara (12) and Michael (11) last September to enjoy 15 months off work to sail from Virginia to Sydney. We bought our 11 year old Jeanneau Sun Magic 44 in Lewisetta, VA on the USA east coast. After an extensive re-fit taking 9 weeks, we travelled down the Intra-Coastal Waterway to Fort Lauderdale and early in the New Year headed offshore for an 8 day run to St Thomas in the USVI. We are presently in the southern Leeward Islands, Bequia to be precise, and plan to transit the Panama Canal in mid to late April.

Here are just a few thoughts from our “Cruzan” (rum brand from the USVI) through the Caribbean – I won’t waste time telling you how lousy it is!

As I said, we are presently holed up in Bequia and are feeling great having returned from the local beach bar called ‘The Reef’ after watching the cricket (South Africa V West Indies) surrounded by locals and with a steel band ‘jamin’ in the background. The blue Caribbean water sparkles in the late afternoon sun and it’s hard to imagine a better place to be today. We are at anchor in a good protected harbour in 12 feet of crystal clear water and our 44 feet is quite dwarfed by the 60 – 70ft Swans etc which are common. One of the biggest sailing boats we have yet seen was a cutter ketch 150ft called Union – a private yacht. There is always the other side, with a 21ft sloop carrying a family with 2 small children who have come all the way from Norway and intend carrying to cross the Pacific!

Earlier we spent a long weekend in St Croix (USVI) and just happened to be there on a regatta weekend. They could show some of our clubs a thing or two, being so welcoming to multihulls as well as monohulls. They had several divisions including Beach Cats which had a couple of Hobie 16s, 4 Inter 20’s and a couple of Inter 17s and some Pringles. We stayed with friends of friends who had a brand new Hobie 16 (been out twice) which they were having a hard time coming to grips with in the 25+ knot winds on the regatta’s first day. We remembered many of the great tips we had had from Upu and the Waterhouses and were able to help them tune the boat. Ben (14) went from last in the first races to taking out a good win in the final race and feeling very pleased to get the novice award. The overall first prize, apart from a trophy, for the big boats, was Cruzan Rum to the weight of the winning boat’s skipper. They had a huge set of scales (like the scales of justice) set up the prize giving area. The winning skipper sat on one side of the balance and they proceeded to load up the other side with cases of rum, until the scales were tipped. The winning skipper was local legend John Holsberger who was part of the Virgin Islands Americas Cup Challenge (don’t think they made it!). Unfortunately for the sponsors

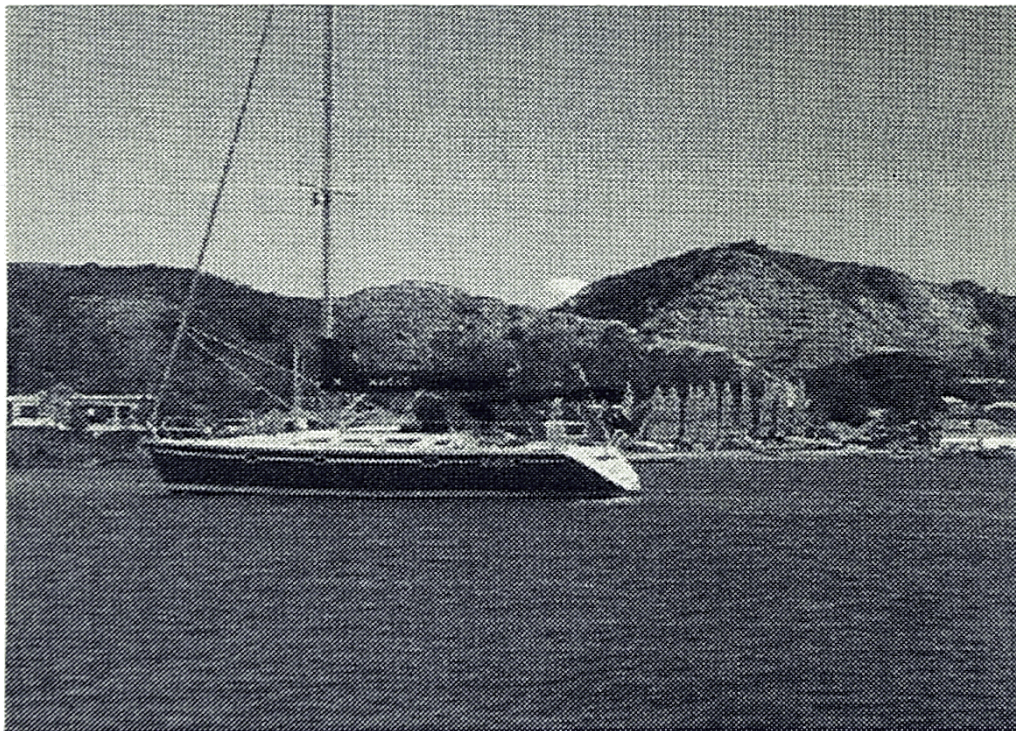
he weighs in at about 115kg and it took all 12 cases of rum to even move the scales!
Pittwater Regatta Committee – take note!

At Isle de Saintes (just south of Guadeloupe) we found a whole fleet of Hobie 16s at the French Sports Foundation. We got talking to the instructor and managed to get a ride in 20 knots. They are all training boats and have cut down mains and jibs with no battens, so of course we had to change the rig a little to suit us – much to the surprise of the instructor.

Since then we have watched some of the local traditional sailing boats, some sporting Kevlar and Spectra sails – believe it! The locals in Martinique had vessels very similar to a surf board with a series of 75mm poles, 2m long which they used as outriggers to load up the boat just like you would a skiff.

We hear 14 Hobies turned up to the States in Byron Bay, well done, almost makes me wish we were there, but here is pretty good. Hope the Pittwater Regatta is a great success.

John McCormick and the crew of MAGIC IV



SV Magic IV anchored at Isle de Saintes, in the background are Hobie 16's with cut down mains and batten less jibs.



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

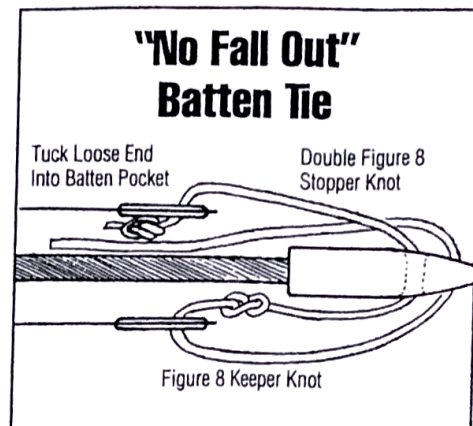
With the exception of sail shape, the 16 rig requires very little advance preparation; just some basic cleaning up.

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

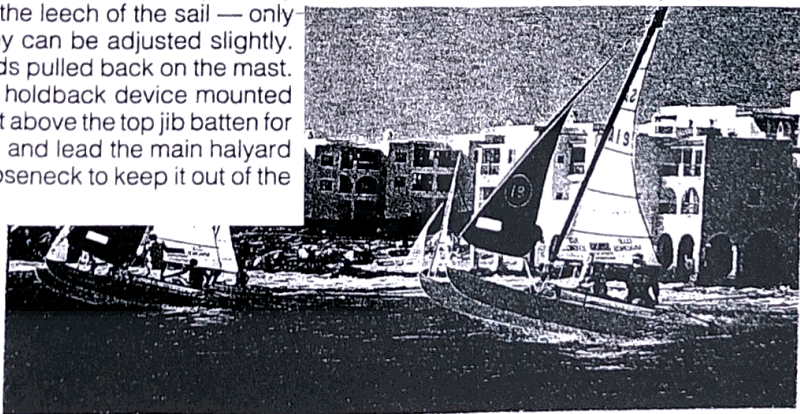
The main requires much more attention to sail shape, which is determined by the cut of the sail and, to a lesser extent, by the battens. Sanding down the battens increases the draft somewhat and adjusts the position of maximum draft within a narrow range.

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.



EUROPEAN NEWS

HYERES OLYMPIC WEEK

THE OLYMPIC SAILING WEEK FINISHED TODAY WITH ALL CLASSES CANCELLING THE DAYS RACING DUE TO LIGHT WINDS. THIS WAS IN CONTRAST TO THE PREVIOUS DAYS THAT WERE SAILED IN WINDS UP TO 30 KNOTS.

THE EDS SAILING TEAM OF MITCH BOOTH AND HERBERT DERCKSEN REPRESENTING HOLLAND WON THE OVERALL TITLE AHEAD OF OLYMPIC GOLD MEDALISTS ROMAN HAGARA AND HANS PETER STEINACHER OF AUSTRIA WITH ECHAVARRI/PAZ FROM SPAIN THIRD.

THIS WAS THE THIRD EVENT FOR THE NEW TORNADO THAT NOW CARRIES A SPINNAKER AND DOUBLE TRAPEZE. THE EDS SAILING TEAM REMAINS UNDEFEATED WINNING ALL 3 EVENTS .

THE WEEK PROVIDED PLENTY OF ACTION WITH MANY CAPSIZES , RIPPED SAILS AND BROKEN MASTS ,HOWEVER THE SAILORS ALL ENJOY THE CHALLENGE OF SAILING THE NEW EQUIPMENT.

TORNADO CLASS RACING WILL TAKE A SHORT BREAK BEFORE THE NEXT EVENT IN HOLLAND FOR THE FAMOUS SPA REGATTA.

RESULTS:

BOOTH/DERCKSEN

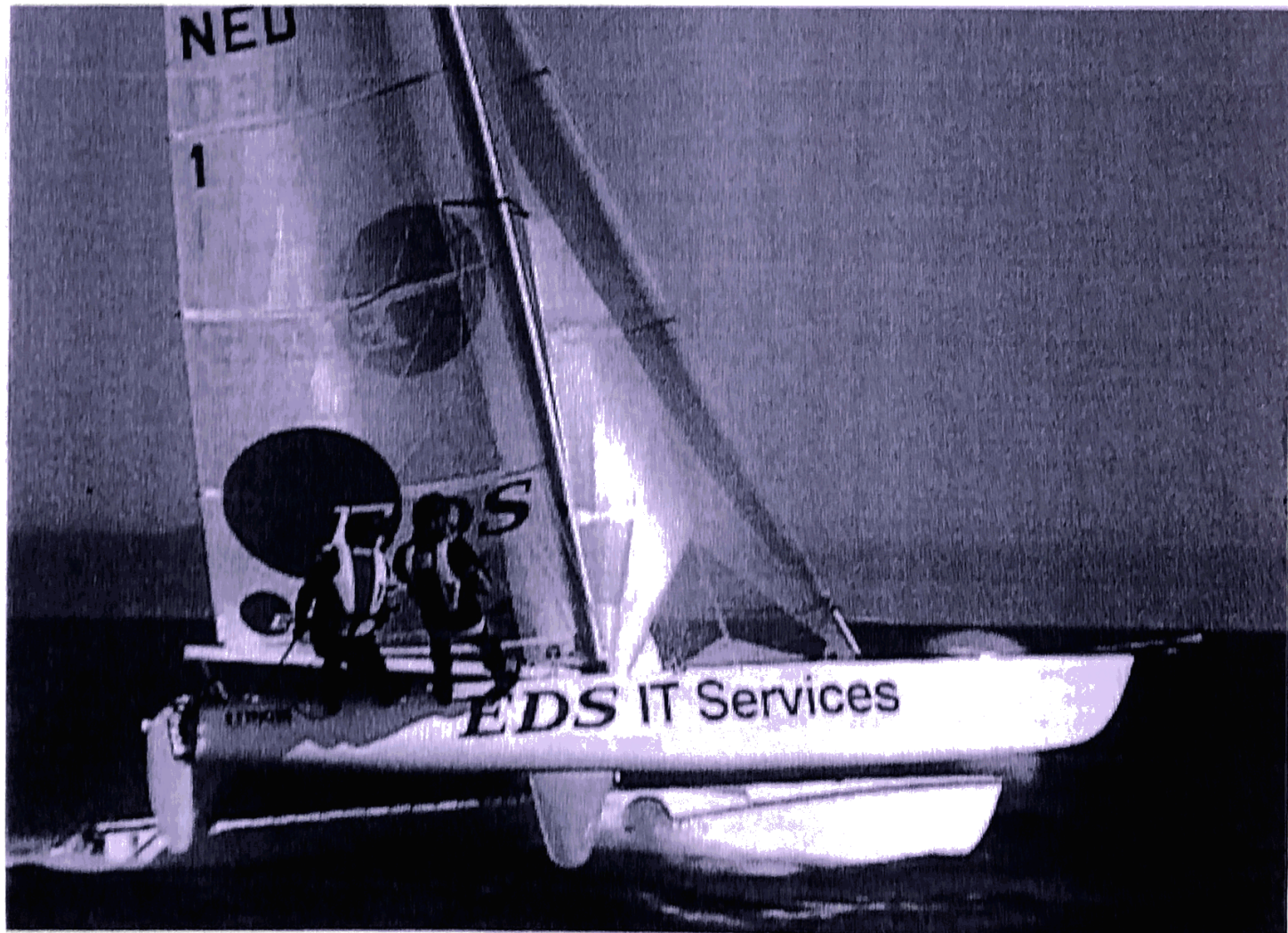
HAGARA/STEINACHER

ECHAVARRI/PAZ

NED 11 POINTS

AUT 23

ESP 36



Members Contact Details

Skipper	Class	Sail No	Phone\AH	Mobile\BH	Email Address	Office
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David Elwers	A Class		9365 0859	0429904626		
David Fisher	Hobie 16	103542	94848800	0411 403 326		
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Frank Costanzo	Hobie 16	Fosters	99186339			
Garry Eastman	Taipan 4.9		96605774			
Garth Fisher	Hobie 17	2336		0412230733		
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Mitch Booth	Tornado		99744620	0417691542		
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Rohan Walter	Hobie 17		99972600			
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Sam Wood	Hobie 16	99373	99883850	0417664077		
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Steve Howe	Taipan 4.9	AUS161	99991533	0410497400	steve@howeconsulting.com.au	
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Stuart Innes	Nacra 5.8	1550	98946987	0403215551	phase2@one.net.au	
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Palm Beach Sailing Club Inc. (Income and Expenditure Accounts) - July 2000 to June 2001

99/00 Account Description	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00	Jan-01	Feb-01	Mar-01	Apr-01	May-01	Jun-01	Total	Var Last yr
8,655.48 Carried Forward	14,185.78	21,008.03	30,497.02	31,647.58	32,820.67	20,195.22	18,885.01	16,692.95	15,557.82	14,484.25	15,834.90	15,834.90	14,185.78	
Income														
5,630.00 Membership Subscriptions		839.70	1,325.00	2,703.00			380.00		445.00	320.00			6,012.70	(382.70)
2,425.05 Regatta							1,519.16		2,011.78				3,530.94	(1,105.89)
632.35 Interest Earned	0.28	0.21		2.37	128.20		3.02	0.67		822.16			956.63	(324.28)
0.00 Raffles													-	0.00
1,391.50 Drink Sales		564.85	12.74	150.00			425.19						1,152.78	238.72
330.00 T Shirt Sales									170.00	105.00			275.00	55.00
0.00 Sponsorships													-	0.00
40.00 Social Functions													-	40.00
1,494.00 Miscellaneous	8,050.07	8,642.60	0.00				67.00			134.85			8,844.45	(7,350.45)
788.00 Presentation Dinner													-	788.00
12,730.90 Total Income	8,050.35	10,047.36	1,337.74	2,855.37	128.20	0.00	2,394.37	0.67	2,628.78	1,382.01	0.00	0.00	20,772.50	(8,041.60)
0.00 Expenditure														0.00
553.00 PO Box Rental & Postage		147.35		105.40			108.30		11.00				372.05	180.95
1,008.00 YA of NSW Subscription							420.42						1,109.68	(101.68)
361.40 Trophies				300.00									300.00	61.40
70.05 Government & Bank Fees	28.10	33.82	8.04	3.81	11.81	3.50	1.50	6.35	13.87				82.70	(12.65)
2,510.00 Purchase T-Shirts													-	2,510.00
0.00 Race Book													-	0.00
158.00 Petrol & Oil		17.50					36.89						54.39	103.61
0.00 Donations													-	0.00
858.00 Presentation Dinner & AGM													-	858.00
1,100.00 Insurance - Public Risk							1,749.00						1,749.00	(649.00)
0.00 Insurance - Public Boat													-	0.00
54.50 Registration - Boat													-	54.50
0.00 Registration - Trailer													-	0.00
239.00 Registration - Course							239.00	7.00					246.00	(7.00)
997.89 Service & Repair Boat			42.74	18.00									60.74	937.15
30.00 New Constitution / Legals	1,200.00							27.50					27.50	(27.50)
86.97 Fridge Purchase							15.00			250.70			15.00	71.97
1,228.91 Regatta							799.02						1,049.72	179.19
1,200.02 Miscellaneous							15.00	180.00					195.00	1,005.02
0.00 Equipment Purch / Boat Rep		59.70					677.60	562.60	258.28				1,558.18	(1,558.18)
1,424.20 Boat Trailer													1,424.20	1,424.20
50.00 Rescue Boat Storage Costs													-	50.00
0.00 Rates & Utilities			136.40	94.40		237.49	231.40			31.36			731.05	(731.05)
250.00 Construction Costs		300.00		1,160.67	12,741.84	648.80	945.12	120.95	3,166.50				19,083.88	(18,833.88)
12,178.94 Total Expenditure	1,228.10	556.37	187.18	1,682.28	12,753.65	1,310.21	4,588.43	1,135.80	3,700.35	31.36	0.00	689.26	26,634.89	(14,454.95)
550.96 Net Movement	6,822.25	9,488.99	1,150.56	1,173.09	(12,826.45)	(1,310.21)	(2,192.06)	(1,135.13)	-1,073.57	1,350.65	-	-689.26	-5,862.39	6,413.35
14,185.78 Balance	21,008.03	30,497.02	31,647.58	32,820.67	20,195.22	18,885.01	16,692.95	15,557.82	14,484.25	15,834.90	15,834.90	15,145.64	8,323.39	5,862.39
ACCOUNT BALANCES														
1,089.48 Trading Account	-218.62	958.60	2,115.73	3,286.45	3,287.00	2,728.44	3,228.98	2,446.20	1,486.16	1,454.82	1,454.82	1,454.82	1,454.82	
12,052.75 Term Deposit	20,102.82	20,102.82	20,102.82	20,102.82	8,050.07	8,050.07	8,050.07	8,050.07	8,050.07	8,872.23	8,872.23	8,872.23	8,872.23	
1,123.55 Building Fund	1,123.83	9,435.60	9,429.03	9431.4	8858.15	8,106.50	5,413.90	5,061.70	4,948.00	4,948.85	4,948.85	4,948.85	4,948.85	
80.00 UnPresented Cheques													-	
14,185.78 Account Balances	21,008.03	30,497.02	31,647.58	32,820.67	20,195.22	18,885.01	16,692.95	15,557.82	14,484.23	15,275.90	15,275.90	15,275.90	15,275.90	

MONTHLY MEETINGS
LAST WEDNESDAY OF THE MONTH
PITTWATER RSL at 8.00 p.m.
Cnr. Mona Vale Road & Foley Street.
MONA VALE (use back entrance)
ALL MEMBERS WELCOME

DOWNWIND LEG

It looks like it should be easy, but in actuality this is the most difficult point of sail for catamaran sailors to get the hang of. Most people can figure out how to go to weather respectably, if only by having the right sail shape, sheeting their sails in tight and going at about the same angle as everybody else. And usually boats stay fairly grouped going to weather, so you can see what other boats are doing and how their sails are set.

But once you go around that weather mark and head downwind, everyone spreads out all over the pond and you may not even be near another boat until you all begin converging again on the leeward mark.

Going downwind the tiller no longer has that nice solid feel it had going to weather — the rudder doesn't seem to be telling you anything about which way to steer the boat — you have no feeling of helm — the boat does not respond quickly when you turn the tiller. As a result, you may have a tendency to oversteer in an effort to get the boat to turn faster.

There is a much larger variation as to where you can set your sails on the downwind leg. Upwind you know within a narrow range how tight they should be — but downwind how loose should they be?

To make things easier to discuss, let's divide this into three parts:

- 1) Setting the boat up for downwind sailing
- 2) Helmsmanship
- 3) Rounding the leeward mark

SETTING UP FOR DOWNWIND SAILING

Going to weather, you were sailing with a relatively flat sail compared to what you need for the downhill ride. So now think "full." Your goal downwind is to make the sails as full as possible and eliminate as much wetted surface as possible to reduce underwater friction.

As you turn at the weather mark to head downwind, as discussed in "Weather Mark Rounding" in the "Weather Leg" chapter, you have released both traveler and mainsheet. Let the traveler go out to the inside edge of the hull and let the mainsheet go out until the main is as full as it can be without being indented against the sidestays. In other words, do not let the sail go out so far that there is a big crease where the sail touches the sidestay.

Stop turning at the point where the bridle fly or telltale is pointing at a 90-degree angle to the boat or slightly aft (in other words, pointing FROM slightly forward of 90 degrees).

The jib should be let out smoothly during the turn, keeping the telltales flowing and should then be set in a nice, full curve, without allowing the sail to belly out ahead of the forestay. The clew must be either held or barberhailed out as far as possible, so that the shape of the jib conforms to the shape of the main. (Note: If barber haulers are used, these must be pulled to their outer position DURING the weather mark rounding so the sail can immediately take its proper shape.)

Once the jib is preliminarily set, the skipper can sail by the bottom telltales and orient himself to his direction. The rounding and initial set of the sails and getting on course should only take a few seconds.

Then, and only then — when the boat is stabilized, the sails are set and the skipper is on course — begin making the other adjustments on the boat to improve downwind performance.

Sailing the boat is primary. All the adjustments in the world won't make any difference if the boat is going in the wrong direction or the sails aren't drawing.

For example, when is the last time you raised a daggerboard and went 10 percent faster? Never, I presume! However, if you used your speed around the weather mark and bled it off to a fast downwind direction, you could burst ahead of other boats by 5 or 10 boat lengths.

SECONDARY ADJUSTMENTS TO MAKE

1. Rotate the mast to 110 degrees, if possible, to improve air flow over the back of the main. Just like going to weather, the mast is actually the leading edge of the sail and must be rotated enough to both meet the wind at the proper angle and make a smooth transition between mast and sail.

2. Release the outhaul, to make the bottom of the sail fuller.

3. Release the downhaul, if possible, to make the whole sail fuller.

4. Pull up the boards.

A WORD ABOUT DAGGERBOARDS AND CENTERBOARDS

In most cases downwind you will want to raise your boards to reduce wetted surface. However, this does not necessarily mean you can pull them all the way up.

Most beachcats do not have board gaskets underwater to stop the water from coming up into the board trunk while the boards are up.

For those that do not have gaskets, pull your boards only high enough to reduce wetted surface drag, but not so high as to make a gap of any kind in the board trunk. For example, the Hobie 18 board is shaped so that if you pull the board clear of the water, you create a huge cavity in the board trunk — that produces more drag than you created by reducing wetted surface. In essence, you have created another stern drag — instead of having two sterns dragging and causing a fuss, you now have four.

For boats with gaskets, pull your boards totally clear. Gaskets are wonderful for keeping the bottom of the boat clean for smooth, undisturbed water flow. However, they are a pain in the neck to maintain.

Sometimes in a choppy, troubled sea, you may want a board down to make the steering easier — it provides an axis upon which to turn the boat quickly; and if the sea is slapping you back and forth, to and fro, you can control the yawing of the craft easier with a board down.

In heavy air you sometimes get so busy there just isn't time to get to the boards. Again, with the boards left in the down position, you will find that steering the boat is much easier and rudder helm is better (you have a pivot point on which to steer the boat). But two problems may pop up.

First, at extremely high speeds, the boards may cause air bubbles (cavitation) to hit the rudders. If nothing attaches to the rudder except the air, you will find the steering will go haywire — you may totally lose your steering altogether.

Second, the board offers an underwater resistance that allows the boat to raise a hull more quickly than with the boards up.

The best of both worlds would be nice, so raise the boards halfway, and you have a boat that steers fairly easily but has less tendency toward cavitation or hull flying.

Perfection would be to sail with the leeward board up, the windward board down; but in a really hairy blow, who has time for perfection?

HELMSMANSHIP

The boat is now set up for speed downwind, and it is up to the helmsman to get the most out of the boat. There are four more things the helmsman must do:

1. Decide the angle you are going to sail — high or deep.
2. Fine-tune the main and telltales for the angle you are sailing.
3. Steer the fine line between luff and stall.
4. Steer the wind and waves.

THE COURSE TO SAIL — HIGH OR DEEP

As in going to weather, the variety of winds and waves will make some difference to you in the manner and direction in which you steer the boat.

Also the boat itself will make a difference. You will find that the faster boats, such as the Tornado, Prindle 19, etc., are able to sail a little higher downwind, because they can develop enough speed to compensate for the greater distance sailed. The boats on the slower end of the catamaran scale will need to sail comparatively deeper. (As speed capability is reduced, shorter distance becomes more important.)

In light air and flat seas you have nothing stopping you from getting to the leeward pin, but there is also nothing helping you. You are best advised to head a bit higher than normal in these conditions. You must maintain boat speed.

If the seas were still flat and the wind came up a bit, you would find it is easy to go pretty deep — there is nothing trying to stop you and the wind is trying to help you.

Quite often you will get boat chop on a light air day that is quite disturbing — it stops the boat and shakes the sails. Again you want to sail a little higher than normal.

Still another scenario, when you have seas and heavy air, you should head somewhat deeper. Here you have the sea trying to push you down to the “C” mark anyway, so let it help you.

When the wind really starts blowing past the survival state, your boat cannot handle the speeds the winds are trying to create, anyway; and your best bet is to head extremely deep, nearly dead downwind (but watch out for the accidental jibe), and get way aft on the boat. The deep heading will allow the higher volume of buoyancy of both hulls to be used and will make the boat more stable.

Keep in mind that “relatively high” and “relatively deep” mean relative to sailing with your sterns at 45-degree angles to the true wind (just as upwind the bows sail at 45-degree angles to the true wind).

TUNING YOUR SAILS BY THE TELLTALES

In the chapter “Telltales” we discussed where to place telltales on the sail and how to use them to set the sails for downwind.

Just to quickly review: With your bridle telltale pointing at 90 degrees to the boat (or slightly aft or slightly forward, depending on the course chosen based upon the factors explained above), pull in the traveler until the bottom, backside telltale begins to stall. Then let the traveler out until that telltale begins to flow aft and cleat the traveler. Secondly, sheet the main until the upper backside telltale begins to stall, then ease the mainsheet until the back telltale is flowing aft and cleat the mainsheet.

Note: When jibing, do NOT uncleat either the traveler or the mainsheet. You have gone to the trouble of setting them perfectly on one tack — if you leave them alone, they will also be perfect on the other tack. (Review the jibing technique in Chapter 1, “Boat Handling.”)

STEERING A FINE LINE

But these days, there is no time to rest. All high-performance cats tack downwind, sailing at approximately 45-degree angles to the wind (or actually 135 degrees off the wind direction), just as they do in going to weather. (See Diagram 29.)

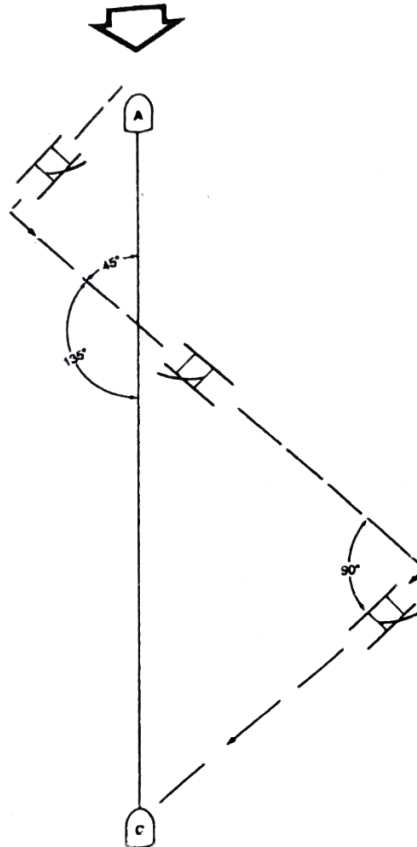


DIAGRAM 29
An example of tacking downwind to get from Mark A to Mark C.

The additional speed is more than enough to compensate for the additional distance covered. A straight line may be the shortest distance between two points, but it is not always the fastest. (Note: The Hobie 14

Because we are tacking downwind, there is a "sweet spot" or groove that the helmsman must find, just as in tacking upwind. If you head too high, you will certainly be going fast, but you will be covering too much additional distance by not sailing deep enough toward the mark. If you head too low, your sails will stall and you will lose a tremendous amount of speed. You will be taking a shorter line to the mark, but much too slowly.

that in the cat-sail method, it is still imperative to

STEERING A FINE LINE

In the old days when catamarans were going wing-and-wing on the downhill leg like monohulls, this was the time to relax a little and watch the water go by.

But these days, there is no time to rest. All high-performance cats tack downwind, sailing at approximately 45-degree angles to the wind (or actually 135 degrees off the wind direction), just as they do in going to weather. (See Diagram 29.)

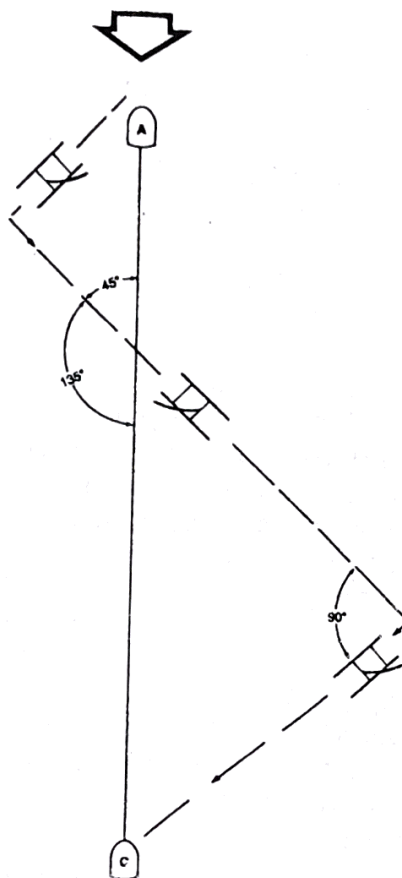


DIAGRAM 29

An example of tacking downwind to get from Mark A to Mark C.

By tacking downwind, you are using the cat's tremendous speed to create a forward-moving apparent wind. While the true wind is coming from a 135-degree angle aft of the bow, the apparent wind moves forward to 90 degrees aft of the bow.

The additional speed is more than enough to compensate for the additional distance covered. A straight line may be the shortest distance between two points, but it is not always the fastest. (Note: The Hobie 14

does very well by sailing straight downwind. And some Hobie 16 sailors will also do the same occasionally in extremely light air.)

Because we are tacking downwind, there is a "sweet spot" or groove that the helmsman must find, just as in tacking upwind. If you head too high, you will certainly be going fast, but you will be covering too much additional distance by not sailing deep enough toward the mark. If you head too low, your sails will stall and you will lose a tremendous amount of speed. You will be taking a shorter line to the mark, but much too slowly.

We must point out that in the set-sail method, it is still imperative to have a telltale on the bridle or sidestay to make sure you are at approximately the right angle to the wind and for setting your sails to your course heading initially. It provides a general point of reference. But for following the lifts and headers, use the jib.

STEERING THE WIND AND WAVES

If you have waves helping you get down to the leeward mark, use them to your greatest advantage.

Here is where using the telltales on the jib will really pay off.

When you catch the front side of a wave, the boat will accelerate in its descent, and the jib telltales will show a luff, as the apparent wind moves forward. That is a great time to get a whole bunch deeper, by falling off until the jib is no longer luffing. But when you run out of wave and start trying to climb up the next wave, the boat will slow down considerably, and your telltales will show a drastic stall.

Before reaching that point on the next wave, anticipate what is going to happen and begin heading up at the slightest trace of a stall. As you see the bow approaching the next wave, head the boat up to a slight luff and be prepared to go even higher to maintain your speed and keep out of a stall. A stall will kill you! You will have lost all you gained running down the backside of the last wave, and you will sit wallowing in the trough.

ABOUT THE RUDDERS

If you like to sail with only one rudder, there are times you will find that one blade just doesn't cut it — you may try to turn to catch a wave and the rudder will stall. You quite often may require both rudders to gain better steering — and accurate steering is the secret for sailing downwind.

ROUNDING THE LEEWARD MARK

PREPARE FOR THE MARK ROUNDING.

All the things that you did to get your boat to go fast downwind will hinder you while going to weather, so they must be undone. And you certainly don't want to wait until you are rounding the mark to do these things. And you most certainly don't want to do them while you are going to weather.

Depending upon the wind conditions and how fast you are traveling, when you are 10 to 20 boat lengths from the mark, you should put down your daggerboards, tighten your downhaul, tighten your outhaul, move your jib leads back (if they were moved forward), release your barber haulers, set your mast rotation limiter for going to weather, and hook up your trapeze. The last thing to do is center the traveler.

By the time you enter the two-boat-length circle, the crew should be on the windward side, both skipper and crew should be hooked to their trapeze wires. There should be nothing left to do but steer and sheet in.

Taking care of all the adjustments well before the mark is not going to slow you down enough to matter for that short a distance, and it pays big dividends in assuring a good mark rounding. Can you picture making a good mark rounding amongst 10 shouting competitors — and here you are still putting down boards, pulling the downhaul, and the outhaul — all while trying to steer and sheet? There is no way!

There is a small, finite line between heading too high and heading too low that makes your boat go fast and, at the same time, deep and toward the mark.

Just as on the weather leg, when tacking downwind you must have some way to tell you how to steer the boat through the fluctuations in the wind and stay in the groove.

The technique we recommend is basically the same as for going upwind: Set the sails for the course you want to steer, tune the telltales to each other, and then just use the jib as your primary guide. If the main is set and everything is properly flowing, and the jib is set to do the same, then all the telltales everywhere on the boat should luff at the same time, or stall at the same time.

Therefore, the driver needs only to look at the lower telltales on the jib and he is reading the entire sail plan at once.

If the back telltale acts up, head up; if the front telltale acts up, head down.

But the challenge is to never let that back one act up.

Here is the big "never" again: NEVER, NEVER let the sails stall! If anything, you would prefer a slight luff to a stall. Even the briefest stall really slows the boat down. I have heard aerodynamic experts say that a stalled sail operates at 100% efficiency — or basically the power you could expect from a barn door. As soon as the flow attaches on the backside of the sail, and the backside telltales begin to stream, the sail creates 180% efficiency. So, never let the sails stall. You want that extra 80 percent of power.

You can closely monitor the backside telltale of the jib and watch for it to barely begin to act up a bit. As soon as it does, head up — do not let it stall. A slight luff is far better than a slight stall.

If it is too hard to walk that thin line I just mentioned, stay toward the side of a small bit of luff. The luff is not nearly as damaging to your speed on the downwind leg as is a stall.

If the air is too heavy for the crew to hand-hold the jib on the leeward side, bring the crew to windward and aft, but still try to get the jib complementing the main as best you can, and endeavor to steer by the jib telltales. To get the jib in the best position will require the traveler to be set to the forequarter and out as far as possible, or barberhaunched.

Because you lack other indicators that you have going to weather, like the pressure on the helm and the wind striking your cheek at just a certain angle, downwind sailing demands the skipper to really concentrate on reading the telltales in order to get the boat to perform well, sailing both deep and fast.

Another bonus to this technique of sailing downwind is the ability to pick out wind shifts easily. Since you are walking a thin line, you will immediately notice overall changes in your direction. Despite the oscillation of waves and the fact that you should be heading up for a bit of speed and falling off to drive it as deeply as possible, the overall direction will be much more noticeable than in another popular technique, which we will address next.

Some sailors, instead of setting their sails and sailing by the jib, use a telltale, which can be located either on the bridle or on the sidestay. The most popular device is the bridle fly, a feather or plastic wind vane mounted between the bridle stays and beneath the forestay.

In this technique, they keep the bridle fly or sidestay telltale pointing at 90-degrees to the boat and constantly sheet in and ease off in headers and lifts, puffs and lulls.

Some world-class sailors use this method very successfully; however, most are using the set-sail method described earlier.

ENTER WIDE; EXIT CLOSE

This caution is explained more in depth in the downwind leg tactics section of the "Tactics" chapter. However, we repeat it here, because although it is a tactical rounding, it is what you should strive to do every time you round the leeward mark.

Instead of heading directly at the mark, try heading for a point 20 feet to the right of the mark and start your turn there, so that when you pass the mark, you are already hard on the wind. This tactical rounding gets you closer upwind and puts you in a better position tactically on the boats ahead of you and behind you.

Hint for a Faster Rounding:

Just as the key to making a fast turn onto a downwind course is to release the main quickly, the key to making a fast turn up to weather is getting the mainsail in fast — the faster it comes in, the faster the boat can round up and go to windward. You must sheet hand over hand, which means you do not have a hand for the tiller. Most people deal with this by tucking it under their butt while they are pulling in the sheet.

☛ **CAUTION: DO NOT** sheet in tight **BEFORE** you get to the mark. What happens if the sail is brought in tight? You stall the mainsail — you lose 80% of your power. You must sheet in as you are heading up to the close-hauled course.

Notes for the crew:

✓ Once the mainsail is set, the crew should hold the jib in a set position, complementing the mainsail, and should keep that shape in a constant position, whether hand-held or barberhailed. The crew can keep the upper and lower telltales breaking evenly by slightly raising or lowering the clew to maintain an even sail shape from top to bottom, but do not move the clew forward or back without being told to do so by the skipper or without notifying the skipper you are doing it.

✓ If your skipper sails by the bridle fly or telltale rather than by the jib, he may want you to play the jib downwind, adjusting it in and out in reaction to changes in the telltales. Be aware of which downwind sailing technique your skipper uses.

✓ As in sailing to weather, the crew can help by watching for boats on other tacks, watching for puffs and wind shifts, keeping an eye on the leeward mark, noting changes in relative positions with other boats and calling the lay line. (Note: If the crew is hand-holding the jib, it may be difficult to watch for puffs, as you are facing forward, and the puffs will come from astern when you are going downwind.)

✓ If you normally hand-hold the jib, you will not be able to do so in very heavy air. Instead, move your jib leads all the way forward and/or out, cleat the jib, and move your weight to windward and aft. Just remember to move your jib leads back again before getting to the leeward mark, so they will be ready for going to weather.

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