

TAMING YOUR **HOBIE TIGER**



TUNING, TIPS & TACTICS

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First Edition - March 2007



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INTRODUCTION

Most sailors on first sailing a Hobie Tiger will be baffled by the myriad of settings to tune and trim the boat properly. Not only will you need to get to grips with different setting combinations, but you will also need to master totally new sailing techniques, which could take much trial and error.

In the quest to learn to sail faster in the quickest time, I researched whatever I could find on the Hobie Tiger from chat room debates, internet user forums, and DVD interviews to chats after races with experienced sailors and champions and then compiled these for my own use. In doing so I was struck by how useful this could be to others, resulting in what you are now reading.

The information outlined in the pages to follow must be credited with thanks to the following sailors:

- From the US - Mitch Booth; Greg Thomas; Dan Delhave; Sandra Tartaglino;
- From SA – Blaine Dodds; Sean Ferry; Hylton Hale; Allan Lawrence;
- From AUS - Marc Laruffa.

The initial focus of this project was on demystifying the tuning aspects of the Tiger. It is well and good knowing what to do, but far better to understand the logic behind the things you do.

The focus broadened to meet the needs of those new to Tiger sailing, developing into what you have now. Since many of those new to Tiger sailing are crew, I have added a section specifically dealing with the role of crew during race legs.

In addition to wisdom from those above, substantial reference has been made to the Hobie University booklet, along with knowledge gleaned from materials listed in section 4, which come highly recommended.

Finally, as this is all a lot to remember, I compiled a Tuning and Trim Matrix, which I laminated and put into my sailing bag for reference during rigging. It has already helped me significantly and may be useful to you. Cut it out and add your own notes to the reverse for use as your personal checklist.

This project has helped me come to grips with numerous concepts that were previously “black magic”. Nothing forces one to understand more than having to be able to explain it to someone else in your own words. I hope the explanations given are readily understandable and that this booklet is useful to you.

Some of the observations and assertions in this booklet could be the subject of vigorous debate, which I welcome. All I’ve done is “tell it as I’ve heard it”!

Please contact me at william@calulo.co.za with any suggestions for improvement and for any additional insights that could contribute to better Tiger sailing.



SECTION 1 – TUNING THE TIGER

1.1) Battens

The most important aspect to understand is the way batten shape affects the main sail. Battens with hard back sections promote twist (open the leech) and those with soft back sections close the leech. Successful sailors achieve twisting off the top of the sail with the lower part of the sail standing up in the leech. The standard sets of battens issued with the Tiger are pretty good at achieving a suitable ratio of twist to standing-up. Should you want more twist in the top section on hauling in the cunningham, opt for the harder top battens.

Batten weight is important as it indicates the depth that they will promote within the sail and how they respond to cunningham tension. The "tip weights" most commonly used are: (from the top) 6.5kg; 5kg; 3kg; 2kg; and 1.4 to 1.6kg for the rest of the way down. "Tip weight" is the amount of weight - as measured on a scale from the tip of a batten that needs to be applied to the batten before it bends.

1.2) Mast and Mast Rotation

Mast rotation, Spreader rake, and Pre-bend all work hand in hand. The most important aspect of any rig is to ensure that the luff curve of the sail matches the bend of the mast. The angle of rotation on the mast changes the bend of the mast significantly, giving you a very powerful control to match your mast to your sail.

The mast section is much stiffer fore-aft than sideways because of the oval shaped section. Think about the mast in two separate sections lengthways: above the stay fittings where the cunningham dictates and; below the stay fittings, where the spreaders play their role.

The top section can bend freely, so the more the rotation is pulled back, the less the mast can bend off at the top and the fuller the sail will be on top.

Below the stay fittings, the mast is supported by the spreaders. When the diamonds are tight, (the windward diamond wire never goes loose while sailing) the mast can not bend sideways. Therefore the only way the mast can bend is forward through its section. When the mast rotation is pulled backwards the mast can bend more forward through its section below the stays. So the point to remember is that when you pull the rotation back you make the mast stiffer in the top and softer in the bottom.

When the sail is too flat and twisted in the top and the cunningham is not over tensioned, pull the mast rotation back until the upper leech starts to stand up. When the top of the sail is how you want it, check the bottom and if necessary adjust the spreaders and diamond tension to change it to a suitable shape. Aim to have even sail depth from top to bottom.

The rule of thumb is to start with the wishbone pointing towards the shrouds (assuming spreader rake and pre-bend are set well) and then to move the wishbone fore or aft depending on conditions. The heavier the wind, the more you move the cunningham forward from the shrouds.

1.3) Pre-Bend

Mast Pre-bend is set by spreader angle and diamond wire tension. Pre-bend induces two major effects:

Firstly, in very light wind with no cunningham tension, the pre-bend sets the base depth of the sail. It is important to have some pre-bend because if the sail is too full and the draft is forward in the bottom of the sail, it will tend to stall and close the slot from the jib, compromising speed and height.

Secondly, pre-bend affects the way the mast reacts to cunningham pressure. The less pre-bend you have, the more the top bends under cunningham. The more pre-bend you have the more the mast bends down low and the straighter the top of the mast remains. Like the rotation being pulled back "Pre-bend" helps stiffen the top and soften the bottom, pushing the point of maximum mast bend down the mast.

If unsure where to start, a good number for pre-bend is 35mm. Note that mast pre-bend is not spreader rake. Pre-bend is measured by laying the mast on its leading section and pulling a string line between the boom fitting and the top of the mast. The measurement is always taken from the position of the spreaders. You may increase it up to 45mm and sometimes go as low as 30 mm. It depends on the mast/sail combination, conditions, and crew weight. It is a good idea to learn how many turns you need on the diamond wires to achieve necessary changes, while you have the mast on the ground. Then you can make changes on the water and understand how the pre-bend is changing.

1.4) Spreader Rake

There is a correlation between spreader rake and crew weight. The heavier total crew weight, the more power needed to match the speeds of lighter crews. In order to gain more power, reduce mast pre-bend. This creates a fuller, more powerful sail shape.

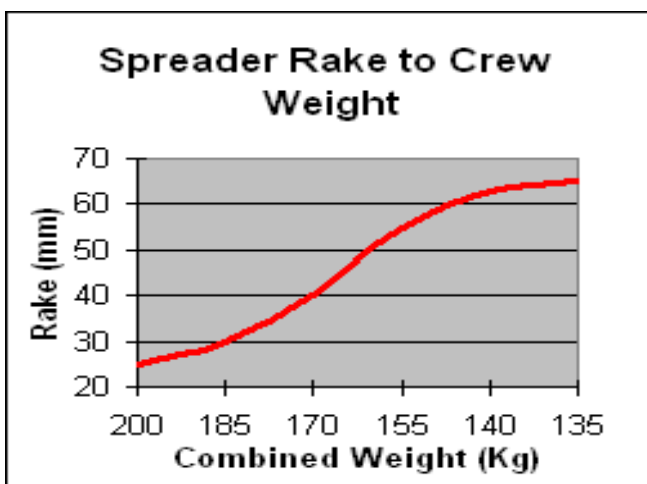
To accurately determine spreader rake, tension a line between the tips of the spreaders (or lay a batten across) and measure the perpendicular distance between the line/batten and the luff slot of the mast. As can be seen from Graph 1 below, a heavy crew weighing 180kg would necessitate a spreader rake of about 35mm, whereas a lighter crew of 150kg would need a rake of about 55mm.

1.5) Diamond Wire Tension

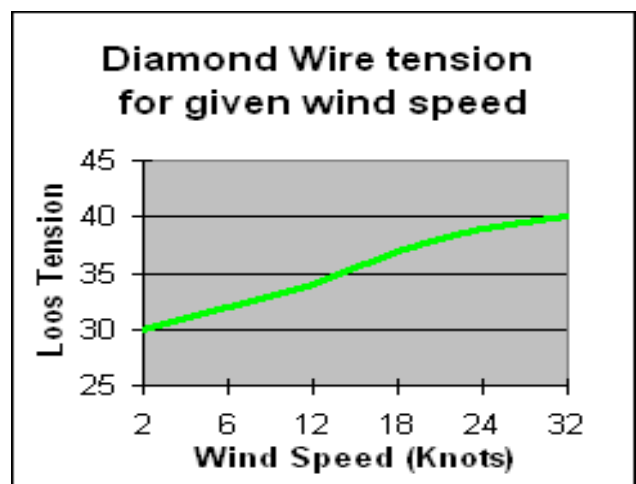
As winds strengthen one needs to flatten the main to allow for accelerated airflow and effective de-powering. Flattening the main is achieved by increasing mast pre-bend and this in turn is achieved by increasing diamond wire tension.

Tensions for particular wind speeds are shown on Graph 2 below. In light winds of 6 knots and under, tension can be in the low 30's. For moderate winds of 12-18 knots, tensions should be set between 33 and 38 and for high winds of over 20 knots, tension should be set between 38 and 41. Do not exceed 45 because of high stresses imposed on the stay connectors. Similarly one should not go below a tension of 30 as this will compromise the supportive role played by the wires.

If still overpowered at maximum tension you will be forced to increase your spreader rake. Finding the optimal setting between spreader rake and wire tension is a matter of trial and error. Once comfortable with your settings, it is advisable to calibrate different diamond wire settings onto the mast, as the diamond wire tension can easily be altered between races as mentioned under the section dealing with pre-bend.



Graph 1



Graph 2

Note that tension numbers differ, depending on the type of Loos gauge being used. The old style Aluminium Loos gauge should be between 42 and 47, whereas the new black Loos gauge tensions are between 30 and 40 as per Graph 2.

If you don't own a gauge, just remember two rules: firstly, the windward diamond wire should never go loose while sailing upwind, not even under maximum cunningham; secondly, if you lay the mast on the ground and put your feet against the mast on either side of the spreader, it should just be possible to pull the diamond wire out of the spreader. (Not easily, but it should be possible.)

1.6) Mast Rake

Mast rake is measured comparatively by reference to the "rake point". This is a point along the rear of the hull where a suitably extended trapeze wire touches.

To check rake, take one trapeze wire and tie a piece of line to it so that when you swing it around to the front of the boat you are able to touch the point where the bridle wires connect to the hull. Keep this point fixed on the line between your fingers and then swing it back again to the back of the boat. The point on the boat which this point between your fingers touches is the "rake point".

The most widely used rake point is the middle of the rear inspection hatch. Lighter crews may go as far back as the transom, but seldom go beyond that. It is important that the boat feels good to steer upwind. With too much rake the boat will have too much helm and tends upwind.

1.7) Rig Tension

Rig tension should be set as tight as possible without preventing the mast from over-rotating. In light wind it can be looser to enable the mast to rotate more easily. As soon as the wind strengthens rig tension should be tightened.

1.8) Outhaul

When sailing upwind the outhaul should be as tight as possible. Only let it off slightly to provide more powerful drive in heavy chop.

Downwind, the outhaul needs to be let out, but not further than will allow the foot of the sail to extend beyond 25cm from the boom. Settings beyond 25cm tend to create a camber that is aerodynamically inefficient.

The outhaul is the line most crew forget about, especially on rounding the leeward mark, forcing the helm to wonder why they are being out-pointed by everybody else, or on the windward mark, where failure to do so will result in a higher apparent wind shift, rendering you unable to sail as deep as your competitors.

1.9) Rudders

Raking the rudder blades forward under the boat can change the feeling of the steering and may be necessary if steering constantly feels heavy. However, the most important aspect to address is alignment.

Some helmsmen prefer to have the rudders set exactly parallel to each other, giving a totally neutral feel. Top helmsmen prefer the blades to be toed in a little to generate a little weather helm. However, too much weather helm will necessitate having to pull on the tiller often to keep the boat going straight which tires arms and slows progress. A completely neutral helm makes it difficult to keep track of where one is on the wind and could result in sailing too low. With slight weather helm one is able to put the boat on auto-steer, knowing that the boat will always be heading up slightly. This frees the helm to concentrate on other things such as boat speed, tactics and surrounding conditions (waves, chop, other boats, marks, etc.)

It is also argued that toeing-in the rudders slightly reduces drag created on the windward rudder because it is usually almost always turned out slightly when steering the boat straight. When toed in the windward rudder is travelling straighter with the direction of the boat as opposed to turning out, which significantly reduces the drag on the windward rudder, particularly on re-entry into the water after heeling.

Weather helm on the upwind leg translates to leeward helm on the downwind leg, which reminds the helm of the direction in which to steer to dive down when overpowered.

As a rough guide, set one rudder straight down the centre line of the hull and point the other to the bridle fitting on the inside edge of the other hull.

1.10) Dagger-boards

Dagger-boards are set halfway up on the downwind leg. It is a good idea to draw a line on the board on deck level at the position where the dagger-board is at its maximum up position with the dagger-board still filling the case perfectly. This is to ensure that the dagger-board is not extracted too far on the downwind leg, which causes the case slots to make turbulence below the hull. This turbulence reduces speed and can cause rudder cavitation, which is the last thing you need downwind with the spinnaker flying. In stronger wind the rudders should be lifted higher.

On the upwind leg one should always use the full boards. On boats with Teflon bushes, the leeward rudder sometimes pops up a few centimetres. This negatively impacts pointing and should be addressed by re-positioning the bushes to provide a more snug fit. Do not tighten the bushes beyond the ability of the crew to lift and drop the dagger-boards.

In extreme conditions, once all other options to get the rig de-powered have been exhausted, lift the boards up to 30cm to prevent the boat from tripping over itself.

1.11) Spinnaker Pole

It is important to put enough pre-bend in the spinnaker pole to prevent it from bending under spinnaker load, but also to strengthen the system against assault from unruly crew swinging around the nose! The rule of thumb is to bring the pole up towards the furler until the distance between furler and pole is between 25 and 30 cm.

1.12) Spinnaker Luff and Offset

A spinnaker's best and only tell-tale is its luff. As a result, it is important to ensure that the luff is tensioned properly. Ideally the luff twine should not be too tight so as to make the luff too rounded and create wrinkles in the fabric. Ensure that sufficient slack remains to be able to twist a handful of luff through 90 degrees.

Offset is the distance between the halyard block at the top of the mast and the head of the spinnaker. Offsets can vary from 40cm in length in light airs to 20cm in heavier winds and is usually set at about 30cm on average.

1.13) Jib Shape

As the shape is built into the design of the sail, not much can be done to change it, besides pulling slightly tighter on the luff to flatten it somewhat. Flattening the jib provides more speed on flat water and it gives you more height. This needs to be balanced with the shape of the main sail. Too full a main with a flat jib will cause back-winding and too flat a main with a full jib will cause stalling at the back of the main.

A slightly fuller jib shape is better in waves and can be achieved by loosening luff tension and letting out the sheet.

Jib trim in light winds is relatively minor because it is so small and does not overlap the main. However sail efficiency can be enhanced by closing the slot in light airs. This is achieved by running the jib traveller to the 1st post inside (approx 4 fingers from the outside) of the self-tacker track.

The jib clew-board regulates the size of the jib slot. On average, the middle hole is used. For light conditions, move up the clew-board to open the slot. In heavy wind, move the sheet connection down the clew-board. I have not seen any movements in excess of 2 holes each way.

1.14) Common Rigging Mistakes

We all tend to make mistakes. In order to learn from the mistakes of others without having to incur the time and cost of learning from experience (as is usually the case), here are some of the more common mistakes made during rigging – especially a new boat. Some will make you laugh as you realise you once did the same thing:

- Shackles not tightened;
- Rig not tensioned;
- Jib sheet blocks twisted;
- Spinnaker pole pre-bend insufficient;
- Mainsheet block cleating angle not adjusted for easy cleating and more importantly un-cleating;
- Spinnaker pole bracing wires put over, not under, spinnaker pole;
- Mast rake set too neutral, rather set to provide light weather helm;
- Crossbar bolts not tightened after sailing a new boat;
- Diamond wires off centre (even by small amounts) can make a difference in the boat's performance on different tacks;
- Failure to understand that the main is the rear stay leading to mast inversion and damage;
- Trapeze wires too short;
- Spinnaker halyard on wrong side of spinnaker;
- Spinnaker rings too close to spinnaker. Bottom should be 5cm long and middle 2cm long;
- Spinnaker rigged the wrong way round (tack to clew);
- Spinnaker sheets fed the wrong way through ratchet blocks;
- Dangerous rings and shackles not taped up to prevent damage to spinnaker;
- No protector bungee between shrouds and diamond wires to prevent spinnaker inversion;
- Main sheet fed into traveller clam cleat the wrong way round (believe it!);
- Not knowing how to tie proper knots;
- And finally, my personal favourite - no bungs (even the very best sailors have done this!).

1.15) Common Modifications

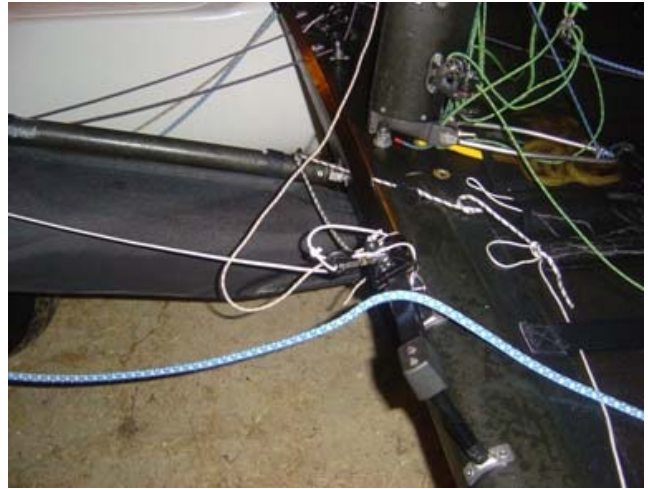
Over time one sees numerous modifications as sailors individualise their boats. During the worlds I had a fantastic opportunity to study and photograph some of the best ideas. Below are some of the tried and tested and seemingly successful minor modifications done by the best in the business. These are:

- Rear foot straps and /or chicken wire (Pic 1);
- Saddle on top of spinnaker halyard cam-cleat removed and bungee tied to the cleat to facilitate offset position for cleat during dropping of spinnaker (Pic 2);
- Fairlead added to crossbar at rear of self-tacker to set preventer line (Pic 3);
- Lengthened jib sheets and cunningham – some tied to trapeze and shrouds, others channelled into crossbars (Pic 4);
- Variable spinnaker sheet block positioning - back at the original position for big blow, forward at the tramp holes for light air (Pic 4);
- Reversed spinnaker sheets into a continuous line, (instead of free ends tying onto the sail) and run through pulley/ring tied to rear of tramp, with thin rope connecting to spinnaker (Pic 5);
- Pig-tails on outside of hulls to hold forward trapeze outside of hull top (Pic 6);
- Side-adjustable mast rotation, with wishbone dropped to the bottom of the mast (Pic 3 & 6);
- Spinnaker halyard running through a bungeed small block on tramp rear to take up slack;
- Spinnaker sheets running through 2 rings on a bungee at tramp rear to take up slack;
- Double stacked jib sheet pulleys, with twist shackle, using a smaller diameter jib sheet line;
- For older boats a jib luff tensioner with purchase system on front crossbar;

- Smaller diameter mainsheet and made approximately 1.5m shorter than stock standard;
- Main sheet separated into 2 different sections - one for traveller and a thinner line for the sheet section – sections with different colours;
- Main block purchase increased to 10 times by adding 2 small blocks.



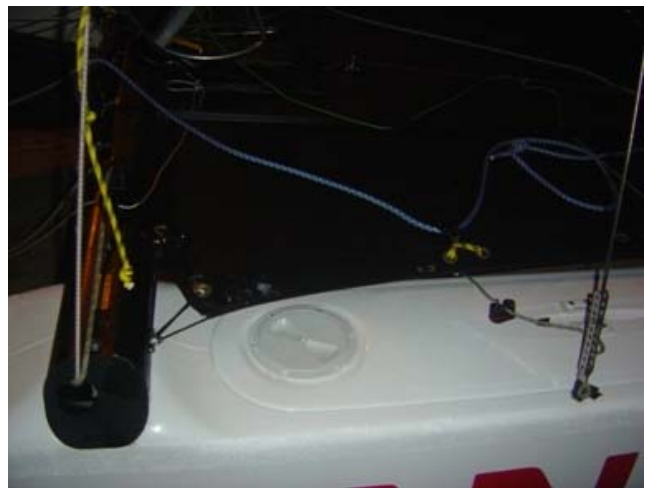
Pic 1



Pic 2



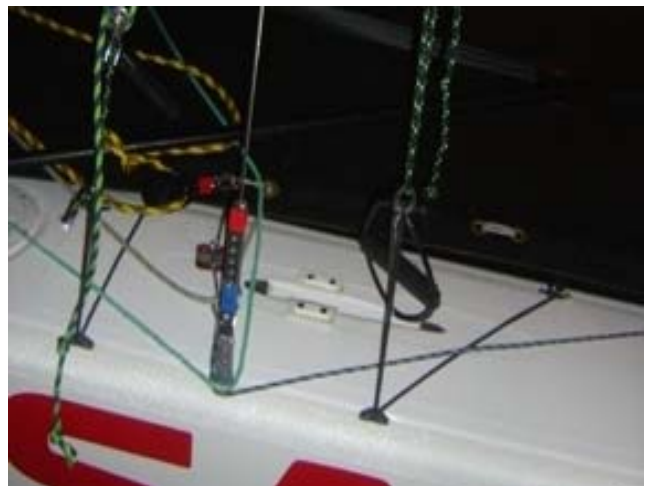
Pic 3



Pic 4



Pic 5



Pic 6

SECTION 2 – RACING TIPS

Numerous excellent books exist on the subject of sailing, racing, tactics, weather etc. What follows cannot replace that knowledge, but is aimed more specifically at the Tiger racing experience. For comprehensive detail around tactics at various points of sail, consider getting the reference material outlined in Section 4.

2.1) Start

If time allows, especially on the first race of the day, it is very helpful (particularly on the nerves) to go for a short sail towards the weather mark, checking on the lay-line, identifying the favoured side of the course and doing a spinnaker hoist on the way back to the start.

The most important components of a good start are: accelerating well; choosing a clear lane; being on the favoured side of the line; and driving to the favoured side of the course. Accelerating well from a stand-still depends on boat angle and positioning prior to the start. Speeding down a line without traffic is a rarity. Good teams are adept at parking still at the line with more than a minute to go. In Worlds and larger fleets one must be able to control “dead still” for over a minute and then be able to manoeuvre slightly upwind and point the bows down. If not, your starts will be confined to second or even third rows making it impossible to get a good position. (Pic 7 and Pic 8)



Pic 7



Pic 8

When parked, try to create some space to leeward and force any windward boats to get room to manoeuvre after the start gun. It is important to get some space directly to leeward. If unable to, ensure that you are pointed bow out of the team to leeward, so that you can roll him directly after the start. However, if he pokes out on you it will be impossible to hold your lane and likely that you will be forced to tack straight away to get clear – which is bad if the left of the course is favoured.

To help achieve a clean start, don't be shy to communicate your position to windward boats – for example “windward boat keep clear” or “no barging”.

Having a team close to windward will cause them to slow too. Here be sure to poke out ahead of them or they will roll over the top of you. If leeward space is tight try and sail high after the gun to cause the team close to windward to pinch up and slow down – allowing you to poke out ahead. If leeward space is available, run away from them so that you can sail free in clean air.

A good start is often dependent on which teams you start on either side of. Aim to find a nice cushy spot next to a slower team - a great way to maximize your chances of getting off the line cleanly and holding your lane longer. If you start directly next to a faster team you'll likely be toast sooner - so look at where you are on the line with relation to the other racers.

Crew responsibilities:

- Get course number and co-ordinates off the committee board or notice board and communicate to skipper;

- Prior to start sequences, make transit on the start line, especially when you have objects on land to act as reference points;
- Watch flags and set timing accordingly, then provide the skipper with frequent updates on time;
- Understand the skippers start plan along with any contingency plans;
- Provide feedback as to relative positions of key rivals;
- Check that all control settings are as per agreement with skipper – outhaul, cunningham, jib, dagger boards etc.
- Assist with boat handling and control settings during stopping, turning, starting and changing gears.
- Look out for potential contact situations and prevent boat contact where possible.

2.2) Upwind Leg

Head up with reference to the bottom set of jib tell-tails, keeping them both flowing straight back. In mild winds, (no trapping) look to the main leach tell tales for guidance. They should disappear half the time and flow back the other. Having the telltales straight back too much means the main sail is set too open and if they are always hiding behind the sail, then the sail is set too tight.

As the wind intensifies to the point where you are both trapping, visual aids become less important than heel angle. Normal trim will be indicated by tell tails pointing slightly upwards on the windward side. As the hull starts flying, steer by feel, just keeping the windward hull skimming the water, always steering straight and doing as little turning of the rudder as possible. (Pic 9) Rudder turn = brakes.

A lot more steering and sheeting is required in heavier wind and big waves. You need to be aggressive (yet smooth) with your movements so as to get the boat to accelerate - otherwise it is easy to slow down behind waves and in troughs. When you get it really wrong your upwind speed could be 5 knots, whereas when you get it really right upwind speed could be 15 knots. In flat water, you can sail much closer to the edge of stall, whereas wave sailing requires more variation in your steering and sheeting. This is why it is best for the crew to play the main. (Pic 10) The mainsheet needs to be released constantly to twist and gain speed. Once speed has been achieved, burn some off with height. Height cannot be achieved until speed is built up. As soon as speed drops, trim out again and bear off just slightly to keep the efficiency going.



Pic 9



Pic 10

When sailing upwind in light airs, crank the cunningham hard to make it easier for the battens to pop over on tacks and to open up the top leech of the sail, preventing it from hooking to weather (which is dog slow). With cunningham on you can put on a little more main sheet which keeps the main flat, prevents flapping and allowing the air flow re-attach quickly when going through chop. As soon as the pressure builds back up to single trap conditions, let the cunningham off to power up as there will then be enough pressure on the top of the main to stop it hooking.

Sail all lifts on the beats upwind, especially on lakes where winds tend to be more shifty. When a decent header arises (over 5 to 10 degrees), consider a tack because the Tiger can tack relatively quickly without losing too much time (unlike a H16).

Main sheet tension is a direct equation of "tighter for height" and "looser for speed". Look at other boats around you and choose whether you want height or speed. Be cognisant of the ability of the foils to create lift under speed – see footing in section 3.3.

As a general rule of thumb, the mast rotation arm should be pointing at the leeward shroud. Mast rotation is a very subtle control. Rotate the mast too much and the mast tip will bend in the minor axis and the top of the sail will twist off too much. However, induce too little rotation and the top of the sail will be too full compared with the rest of it. Look at the shape of the sail and gauge the depth and twist to determine the amount of rotation required.

The traveller should stay on the centreline at all times. It should be bolted there really. It is only used for starting and possibly as a bail-out in case of a potential capsize. If you have overcooked the lay line and prefer not to ease mainsheet, then it can be useful to let the traveller out sometimes. Rule of thumb – Neva Eva Use Ya Trevla! (Notwithstanding this advice, some teams prefer to sheet main in tightly and have crew dump power with the traveller in heavy air – so it boils down to a matter of personal choice...)

In light airs bring the jib track closer in board, not sheeting on quite as hard as usual. As the breeze builds, move the jib track further outboard, and pull the sheet harder to flatten out the foot of the sail.

In gusty conditions, set the boat up for the lighter patches rather than the biggest gust. When you see a gust, prepare, but wait for it to hit before you react. Always sail into the gust before adjusting cunningham or anything else. See section 3.2 on changing gears. In the initial part of the gust you want to twist the main for acceleration and then haul it back in once you are up to speed and looking for height again. Rule of thumb - It is easier to get rid of excess power than look for power in an excessively de-powered rig.

In summary: Head up in strong puffs, sheet out in small puffs and tack as fast as the crew can get things done.

Crew responsibilities:

- Monitor cross traffic and boats inside and slightly behind, keeping the skipper informed;
- Hail other boats if necessary, to ensure safe passage;
- Monitor wind shifts and try to ensure that sailing occurs on the preferred side of the course;
- Monitor rivals to ensure to pick up any lifts, headers, gusts or holes in the wind;
- Locate A mark, monitor lay-lines and provide regular updates on distance and time to tack;
- When tacking:
 - Acknowledge skippers warning to tack;
 - Hand mainsheet back to skipper;
 - In light airs crack jib slightly;
 - On sail transition, dive across and get out on trapeze, such that you are going out on trapeze as the sails fill in the new tack;
 - Set cunningham if necessary and take mainsheet from skipper, just prior to skipper coming out on trapeze.
 - As the skipper comes out, continue sheeting in main, such that boat is fully powered up by the time both are out on trapeze.

2.3) Rounding the Weather Mark

Rounding in light air is pedestrian. In light airs, the best teams will get the spinnaker up before mark rounding and will use it to drive around the mark (Pic 11).

It is heavy airs that give teams new to the Tiger sleepless nights! In heavier winds, it is important that the move from beat to run takes place at speed. Slowing down will result in the hulls being driven down as wind forces on the top of the high aspect main are too much to resist without the help of momentum. Crew and helm weight needs to be as far back as possible during execution.

This is a very tricky point of sail for the helm, who needs to remain out on trapeze, whilst the crew is busy inboard (Pic 12). On rounding the A mark it is important to travel out the main to de-power and trim for the reach towards the offset mark.



Pic 11



Pic 12

As soon as the offset mark is rounded and the spinnaker is up, helm will travel in and steer towards the optimum downwind angle, getting the windward hull to skim.

When racing, in all conditions the spinnaker must come up ASAP. The quicker this is done, the better. Tops crews will stand on the tramp to execute hoisting (Pic 13). Do not hoist spinnaker before rounding the offset mark unless you have lots of water to the mark, lest you find yourself mounting the offset mark as the boat slews downwind. (Been there!)

During hoisting in light to medium conditions, sail at a higher angle, but when it's windy (over 15) it's easiest on the crew if you head below a normal downwind angle so that the main helps blanket the spinnaker which allows it to go up easier. Once the spinnaker is all the way up, revert to usual downwind angle.



Pic 13



Pic 14

Crew responsibilities:

- On approach to the mark, increase the rate of feedback on rival positions and likely tactics;
- Go in off trapeze, with the helm staying out and shifting backwards.
- On the way in, lift the windward dagger-board to the correct height.
- Once in, adjust the mast rotation and release the outhaul. The helm stays out (Pic 14).
- On rounding A mark, release the jib sheet and (if on a separate line), bring out the spinnaker tack.
- Whilst running towards the offset mark, raise the leeward dagger-board and prepare to hoist the spinnaker.
- As the offset mark is rounded, hoist the spinnaker, grab spinnaker sheet, set spinnaker and get out on the wire – all in quick time.
- As the crew comes out on trapeze, the helm comes in and the crew moves to behind the helm and secures their foot in the rear foot strap.

2.2) Downwind Leg

The best boat speed is achieved when the downwind angle is reduced to harness the awesome apparent wind induced by the Tiger's speed.

In light conditions, teams aim to get the windward hull skimming the water, by positioning the crew on the leeward hull to do the "wild thing" (see Pic 15 a & b).



Pic 15 a



Pic 15 b

In puffy or windy conditions, when the hull starts to fly or the boat feels overpowered, the helm heads down (the direct opposite of upwind). The mainsail must be kept sheeted medium tight, with the helm holding only the main traveller line. In puffs or windy conditions the traveller can be let out when overpowered. Never touch the mainsheet (which could cause accidental uncleeing) or sheet out, because the main sheet acts as a rear stay which supports the mast.

A great way to think of sailing downwind is to think of it like sailing upwind. Most people can sail well upwind, keeping the hull just skimming the water by steering little and playing the sheet little. Imagine sailing downwind the same way except to keep the hull skimming you steer down instead of up and play the spinnaker a little instead of the main. Steer the boat in a straight line keeping the jib telltales flowing.

During conditions of radical chop it is better for the crew to come in off trapeze and sit far back, bracing against the dagger-board to be able to ride out nose-dives – rather than staying out back and being submerged most of the time (Pic 16).



Pic 16



Pic 17

The crew should adjust spinnaker to where the skipper is steering and not the other way round. The crew does this by letting the spinnaker out until the luff begins to curl slightly (called the "curling point") and then sheeting it in until the curling stops, then letting it out again slowly until the luff begins to curl again etc. (Pic 17). Some teams steer to the spinnaker, which is slightly different and I would contend, less efficient, because helm adjustments and spinnaker adjustments become too amplified.

In all wind conditions, light and heavy, sailing downwind, very little steering should take place. Turning rudders is like putting on the brakes. Steering should be very gentle to come up and gain speed, pushing apparent wind forward, which is then used to steer lower, but not too low to lose too much speed and lose apparent wind. The trick is learning how much to come up and then bleed off while keeping speed up.

Crew responsibilities:

- Ensure that the spinnaker is always optimally set to the helm's steering by sheeting in and out around the curling point;
- At the gybe or earlier if possible, go out on trapeze and secure position in foot-strap;
- Provide skipper with constant feedback on gusts and wind-shifts;
- Locate C mark, monitor lay-lines and provide regular updates as to distance and time to gybe;
- On gybing:
 - Acknowledge skippers warning to gybe;
 - Come in to next to skipper at rear and pick up opposite side sheet;
 - As helm executes turn, assist spinnaker through its transition, such that power is brought to bear ASAP;
 - As spinnaker sets, get out on trapeze;

2.3) Rounding the Leeward Mark

On approaching the leeward mark (C mark), wait as long as possible before dropping the spinnaker. Think of the fact that with a spinnaker, sail area and speed is doubled, so dropping it should be left to the last minute (Pic 18). In light winds, spinnakers are dropped within 2 boat lengths of the mark and at times, just on reaching the mark. In heavier winds, dropping takes place early enough to provide sufficient time for the helm to go out on trapeze and for the crew to attend to all the settings.

On coming in from trapeze, the crew (usually standing) drops the spinnaker (Pic 19 a) and then the windward dagger-board (Pic 19 b). The crew then drops the leeward dagger-board and attends to the outhaul and mast rotation settings.



Pic 18



Pic 19 a

Whilst all this is going on the helm goes out on trapeze to prepare for hardening up for rounding. It is imperative to make a good mark rounding. Enter wide, round tight and exit high in order to get as high a line as possible. It is therefore essential to exercise good judgement on the timing of spinnaker drops (comprehending aspects like crew abilities and traffic) because it is imperative that you set yourself up for a clean mark rounding. Remember round tight, exit high (Pic 20).



Pic 19 b



Pic 20

If the leeward mark has been overlaid and you sail with a separate spinnaker tack line, you can let out the tack by up to 1m, in order to point higher and make the mark.

Crew responsibilities:

- If on starboard, prepare to gybe on rounding;
- On approach to mark come in off trapeze, drop windward dagger-board, uncleat spinnaker halyard, haul in spinnaker and tighten outhaul;
- Then get out on the trapeze, and reset the jib for the upwind leg.
- Set mast rotation and take over mainsheet from helm.

2.4) Finish

Tactics here could be either offensive, or defensive, depending on your position relative to other competitors. A good finish depends on 2 key aspects: sailing up to the favoured end; and sailing on the favoured tack.

The favoured end is that closest to downwind when finishing upwind and vice-versa when finishing downwind (which is seldom the case). When starting, the favoured end is the same as the favoured tack. When finishing the favoured tack is the opposite to the favoured end in terms of port/starboard. The favoured tack is that tack which crosses the finish line at the most perpendicular angle.

On determining your lay line to the finish, remember never to finish in the middle of the line – always aim to finish on the favoured side on the favoured tack. Also remember that the distance between the leeward mark and the finish line is usually short and extra tacks should be avoided at all costs.

Crew responsibilities:

- Monitor the positions of close competitors;
- Monitor lay-lines, favoured end of the finish line and favoured tack;
- Spur skipper on to make the boat go faster...!



Pic 21

SECTION 3 – GENERAL TACTICAL TIPS

In the quest to understand what differentiates the great teams from the good teams, certain characteristics became apparent. These are touched on here more for special emphasis than anything else.

3.1) Crew on Mainsheet

Working the mainsheet is the most important trim task, particularly in changeable conditions. Most of the top teams have the crew playing the main sheet. The crew has two hands to do the job and can get their whole body into hauling the mainsheet (see Pic 22), whereas the helm has only one. The helm does not touch anything except the tiller on the upwind leg and the tiller and traveller on the downwind leg and focuses on the water and boat speed through steering.

Getting the crew onto the mainsheet is the single biggest thing that teams can do to improve performance on the water. Many sailors are just too scared to ease the sheet and then pull it back in again. This is particularly the case when the helm is controlling the sheet, because they only have one spare hand, so the temptation is all too strong to cleat the main off. Ideally, never use the main block cleat - the only reason it is there is for safety reasons downwind when sailing with the spinnaker!

Other strong teams believe that the crew should spend more time crunching the cunningham in puffs to keep the hulls flat, leaving the main sheeting to the helm. The effectiveness of this strategy can be disputed when conditions become too variable, with predominantly strong winds which could justify setting the cunningham hard and leaving it and wave action, necessitating more radical steering (see Pic 23).



Pic 22



Pic 23

3.2) Changing Gears

The most important aspect of changing gears is getting the cunningham on early. If a puff hits and the main cunningham is hauled in too late all the positive effect will be lost. There will be no squirt forward as energy will be dissipated in flying the hull, forcing you to steer up and then crash down and bear away. Getting the luff on early before the puff hits and identifying whether a puff is going to be a header or a lift, will determine your steering.

If a header puff hits, one does not have to steer up and sheet out too drastically as would be necessary if hit by a lifting puff, which will usually hit with more force because of boat trim, requiring you to make more drastic direction changes and sheet out more.

3.3) Footing

Avoid the temptation to outpoint everyone in the fleet. Maintaining boat speed takes precedence, so consider footing, but no more than 2 degrees. When footing, speed builds, resulting in being able to find lift from the sails. A common mistake made by novice sailors is to just point the boat higher upwind by setting a flatter main and so on. Unfortunately that just bleeds off speed, whereas footing off slightly will generate more speed, resulting in a better VMG. This is almost like steering up slightly when sailing downwind to increase apparent wind, allowing you to go faster and deeper. (VMG = velocity made good = the straight line speed directly to the mark.)

Footing only really starts to work when the wind and seas are up (18 knots plus on the wind and 5ft plus on the swells). Other than that one should just point to where the boat feels it likes to be - presuming that there is not too much weather helm. Footing is only 1 to 2 degrees by the way, not like a Hobie 16 which foots at about 5 degrees.

3.4) Team Weight

Extra weight should be avoided. The most competitive teams tip the scales at between 145 and 160kg. Extra weight can be beneficial upwind, but hurts more on the downwind leg where you'll suffer speed and angle to lighter teams. No change in pre-bend will account for team weight over 180kg, because at that point you would need to go so full that you will compromise angle of attack and pointing ability and because draft issues and back-winding problems will arise between the main and jib. So if your team weight exceeds 180 kg consider large limb amputation, getting a smaller crew or liposuction – or like me, resign yourself to never winning.

The bottom line is if your team weight exceeds 180kg you will not win any races – regardless of wind strength. This is because stability gained through extra weight is more than lost from reduced buoyancy and extra drag. Ironically 180kg is the Hobie Tiger class boat weight, meaning that boat effectiveness is compromised when having to carry more than its weight.

3.5) Weight Distribution

In lighter winds weight needs to be further forward on the boat with the crew sitting on, or in front of the main beam and the skipper just at, or in front of the shroud. In heavier wind while sailing trapped upwind, the crew should be at the shroud and skipper close alongside. Crew sometimes trap at the front beam which is way too far forward.

The relative weights of the skipper and crew are important in that the aim should be for the average weight distribution should occur at the centre of the dagger board.

3.6) Two Boat Tuning

Two boat tuning is an excellent way to improve settings, provided both teams are equal in speed and weigh about the same. One boat stays rigged the same while the other does a change and then tests it against the other. Always train harder upwind to find speed as this is where most of the race is won (or lost). It is important to be fast uphill so as to be towards the top of the fleet at the first rounding. Then downwind you can cover from the front which is much easier than trying to come through the fleet from behind.

3.7) De-Powering

The best teams are always able to get back to the beach when the proverbial hits the fan. This is because they are super effective at de-powering the boat on the water (see Pic 24) and do so quite simply by:

- Cranking cunningham and outhaul to the max;
- Hauling in jib at tight as ever and cranking jib cunningham to its max;
- Undoing mast rotation completely;
- Travelling out the main to just before serious back-winding occurs with the jib;

- Getting weight far back and holding on for dear life...(Pic 25)



Pic 24



Pic 25

3.9) The Most Important Things

Last, but definitely not least are the most important things to remember:

- STOP – Spend Time On Practising! Nothing improves performance more than spending time on the water, honing skills. Work on time-and-motion, counting down tacks etc. until you can execute fluid and fast movements. Work on communication. Work on balance.
- PYB – Pick Your Battles! Choose teams of similar weight and skill levels to race against. Forget about the Top Guns and other jet pilots. They have been sailing for years and can only be beaten with extreme luck. There are races within races. If you pick a couple of similar teams to race against and concentrate on racing them you will improve. As you improve you will beat these teams regularly. Then step up a notch and aim at better groups. This helps to avoid the disappointment of never winning - especially for those “heavier teams”.
- TNT – Totally Nice Tiger! If you get the above right, you will have “Tamed your Tiger”. Aim to enjoy every moment on the water and remember how fortunate you are to be participating in one of the best forms of sailing around!

In parting, here’s proof that the pros also have ugly ones



SECTION 4 – REFERENCE MATERIAL

I have really enjoyed reading about sailing over the years and recommend the following reading material, which is suited to different groups.

For those wanting to learn about rigging, improve their sailing and understand why it is that other sailors keep beating them in races:

- Catamaran Racing for 90's by Rick White and Mary Wells ISBN 1-880871-00-9
- Catamaran Racing by Kim Furniss and Sarah Powell ISBN 0-906754-90-9

For beginners, new to sailing and cats (unlikely to have just acquired a Tiger) there is:

- Catamaran Sailing from Start to Finish by Phil Berman ISBN 0-393-31880-X

For experienced sailors interested in aeronautical engineering who really like technical aspects:

- High Performance Sailing by Frank Bethwaite ISBN 1-85310-757-3

In addition to the excellent material above, by far my most brilliant learning arose from watching a DVD called "The Catamaran DVD" and can be bought on <http://tilliard.georges1.free.fr> . It is expensive, but worth every cent.

THE END



TIGER TUNING and TRIM MATRIX

Wind Strength	Light (0 to 8 knots)	Moderate (8 to 15 knots)	Heavy (15 knots plus)	Comment
BOAT SETUP				
Rig Tension	Loose to enable full rotation and facilitate sail transition. Loos 16-18	Firm. Loos 18-22	Tight. Loos 22-24	Loose means straight shrouds, but not floppy.
Mast Rake	Less rake than average.	Average rake.	Raked back more to de-power.	Rake should also comprehend weight.
Batten Tension	Just enough to remove wrinkles. Use hard top batten.	Reasonably tensioned. Not too tight. Use soft top batten.	Reasonably tensioned, but not too tight. Use soft top batten.	Battens do not significantly impact boat tuning, given nature of sail fabric.
Jib Clew	Up max 2 holes.	In centre hole.	Down Max 2 holes.	Down opens the slot, up closes it.
UPWIND TRIM				
Main Sheet	Eased to prevent hooking	Tight. Slackened on major gusts.	As tight as possible. Slackened on major gusts.	Minimise extent to which main is cleated. Tight for height and slightly looser for speed.
Main Traveller	3 to 5 cm off centre to prevent hooking	Centered.	Centered	Never use traveller to trim main in gusts. For emergencies only....
Main c/ham	Just pull wrinkles out. Helps with batten transition.	Down in puffs to flatten boat, eased in during lulls.	Down early in puffs to flatten boat, eased in during lulls.	More cunningham = flat fast sail, less = more power and height
Outhaul	Eased, not tight.	Pulled in 80%.	Pulled in 100% - tight as possible.	Set knot at full eased position, with a mark on 100% tight.
Mast Rotation	Pointing to side stay (45/90)	Pointing to middle of dagger-board (60/90)	Pointing to outside of rear crossbar (75/90)	0 = full rotation, 90 = no rotation
Jib Sheet	Taut but not tight.	Tight.	Tight as possible.	Ensure tension does not compromise self tacking.
Jib Traveller	In 8cm from end of self tacker.	Fully out.	Fully out.	Very small contributor.
Jib c/ham	Soft tension. Small wrinkles.	Moderate tension. No wrinkles.	Tight as possible.	Same logic applies to jib as main.
Dagger Boards	Full down	Full down	Raised up to 30cm in very strong winds.	Raising prevents the boat from tripping over itself.
Balance	On bows, crew to leeward. Raise stern to prevent suction.	On windward hull and forward, driving nose down. Close together.	On trapeze keeping hulls trimmed level and hull skimming.	Strive for skimming the windward hull. Being close together reduces windage and stops hobby horsing.
DOWNWIND TRIM				
Main Sheet	Eased for good twist	Medium tight.	Medium tight.	
Main Traveller	30cm off centre, reduced as apparent shifts.	Centred.	Centred.	Let traveller out if overpowered.
Main c/ham	Slackened off fully, wrinkles in sail	Just pull wrinkles out.	Down in puffs to flatten boat, eased in during lulls.	
Outhaul	Full smooth bottom	Pulled in 50%.	Pulled in 100% - tight as possible.	
Mast Rotation	Forward of beam (0/90)	Even with front beam (0/90)	Less to de-power (70-80/90)	0 = full rotation, 90 = no rotation
Jib Sheet	Set out 15cm from upwind setting	Set out 15cm from upwind setting	Set out 15cm from upwind setting	
Jib Traveller	Fully out.	Fully out.	Fully out.	
Jib c/ham	Soft tension. Small wrinkles.	Moderate tension. No wrinkles.	As tight as possible, to make luff flat and firm.	
Spinnaker	Sheet block forward. Luff slack = 90deg hand-turn. Trimmed round.	Sheet block at trap connector. Luff slack = 90deg hand-turn. Trimmed to luff curling.	Sheet block amidships. Luff slack = 45deg hand-turn.	Sheet in flat on gusts and flog when rudders cavitate.
Balance	Nose down, aft out of water, crew on lee-hull.	Keep hull skimming. Shift backwards as wind intensifies.	Weight fully aft. Crew on trapeze.	

