Tuning notes.

To achieve good results in races or just for fast sailing it is important to set up the boat for the conditions of the day. These notes are published as a general guide and each reader should determine the relevance to there boat and style of racing. Most settings given here are relevant to a Nacra 5.8, but will adapt to other styles of cat.

General Catamaran Setups.

Platform. It is important to have the platform as stiff as possible. Ensure beam bolts have been tightened properly, taking care not to over tighten. Check beam straps are not stretched. Any straps that don't have an air gap between the strap and the hull need replacing.
Beam pads under the beam will help mould around the beam profile.
Most important is a very tight tramp. Retighten the tramp at least a couple of times each season. (If the tramp is tight to fit, lay in the sun for a couple of hours and then fit).

Rudder Alignment.
Rudder alignment is checked by measuring the distance between the leading edges of the rudders and then the trailing edge at the same height. The rudders must be in the fully down position to do this.
With the boat on the trailer or with the beach rollers pushed forward pull the rudders right down. Lay a batten under the hull and mark the rudder blade at the front and back as a guide to ensure that you measure from the same point each time you check and adjust. Ensure rudders are inline with the boat when measuring (not turned).
Check for rudder slop and tighten or replace any items that contribute to excessive movement in the blade when in the fully down position.
Adjustment is either by adjusting the adjusting nut on the cross bar or by redrilling a new hole, depending on the type of cross bar you have.
Rudders should be set up with 0-2mm toe in (front facing in), never toe out.

Rudder rake.
With the rudders in the fully down position place a batten against the transom and measure the amount of distance the rudder is forward of the batten at the deepest point on the blade. The blade will usually curve forward of the batten and then arc back.
Most boats like 20-30mm kicked under the boat.

If the boat feels heavy on the helm and has weather helm kick further under the boat. Test this while sailing to wind ward, loosen your grip on the Tiller extension and see if the boat rounds up or bears away. You want the boat to ever so slowly round up.
If the boat feels too light and has lee helm reduce the amount under the boat.

Rig Tension.
Rig tension is to avoid forestay sag.
For light winds 60-70 kgs. This is your light crew pulling the trap wire down without bouncing.
For heavy winds 80-100 kgs. The limit has been reached when the mast no longer rotates easily. This is your heavy skipper pulling the trap wire down and bouncing to get the next hole.
I don't obsess about getting the holes equal, but more the correct tension. Remember it is easier to pull on when you are positioned at the back beam, rather than opposite the side stay.
Try to avoid pulling rig tension on with the mainsheet, use a crew member to pull the trapeze down. This way you can gauge the amount of rig tension and easily reproduce for next time.

Mast Rake.
Mast rake affects the trim and balance of the boat.
Too much mast rake and the boat will feel heavy and not accelerate out of the gusts.
Not enough rake can induce lee helm and pushes the bows down when sailing downwind.

Boats that do the "wild thing" down wind will carry more rack than those that sail the conventional "mild thing". This is to stop the bows from digging in down wind. This also applies to spinnaker cats.

Measured from forestay bridle tang with a trapeze wire (add a metre of rope to the trap as it will not be long enough other wise) and holding this point swing to the rear of the boat and see where it touches on the centre line of the stern.

A Nacra 5.8 is at the rear of hatch cover and further back in a blow.

Lighter crews can carry more rake to help depower and heavy crews can carry less rake.

Try to find the best all round setting and only alter 1 hole either side of this. Ie on the 5.8 set up at rear of hatch cover as your medium setting (suitable for most conditions) and go forward 1 hole if less than 8 knots and go back 1 hole if its greater than 18 knots.

Spreader Rake.

Spreader rake is the method of tuning the fore-aft stiffness of a mast below the hounds.

Lighter crews can have more spreader rake to allow the mast to take some of the gust and depower.

Heavy crews can carry less mast rake and maintain more power in the rig.

Measure by putting a batten across the diamonds and measuring the gap between the batten and the mast track.

Stiffer masts require more spreader rake to allow the mast to bend.

Soft masts require less spreader rake.

If you have excellent height, but lack boat speed upwind and the boat does not want to accelerate in a gust, more spreader rake is needed.

This helps the mast to bend fore and aft allowing the sail to flatten and the leech to open in the gusts.

If you are lacking height and grunt in the light to medium winds, you need less spreader rake.

Try to find the best all round setting and only alter in extreme conditions.

Ie on the 5.8 set up approx 40-44 mm of spreader rake for a crew of 150kgs and upwards. And 50 – 55 mm of spreader rake for light weight crews (135-150).

Real big boys may reduce this slightly, but I found that no more than 42mm was adequate and then control your stiffness (power) with diamond tension.

Should you be racing in extreme conditions and need to place well (sheep stations) then drop the diamond rake back 10mm from your base setting, but don't forget to put it back when the conditions ease.

Diamond Tension.
The tension on the diamond wires primarily controls the side bends of your mast.
Loose diamonds allow the middle of the mast to bend to leeward and the top of the mast to hook to windward. This tends to allow the boat to heel very easily in Wind gusts.

Very tight diamonds do the opposite.
Downwind, tight diamonds keep the mast bent, reducing camber and power.

On the 5.8 set the base setting so that at approx 18 inches up from the adjuster you can not touch the mast with the diamond wires when pushed in. I know this doesn't sound very accurate, but some times your setting are best judged by feel. (similar to rig tension), This becomes your setting for 80% of the conditions. Sight up the mast track (with no sail up and mast centred) and look to see that it is straight from base to top. You may need to alter each side (one up a turn and one down turn) to get the mast straight. At this point mark your nut flap on both sides (cut a mark with a hacksaw) and from this point alter each side equally.
Wind tighter one full turn if less than 8 knots and wind looser 1 full turn if its greater than 18 knots.

Pre-Bend
Pre-bend is the result of diamond tension, spreader rake and mast stiffness.
Usually reserved for wing mast sections and not generally used on standard tear drop sections.

Batten Tension.
Battens should be tied firmly into the sail to remove creases along the batten pocket.
Stiff battens hold the sail flat and help to twist the sail more easily, Reducing power.
Soft battens allows the sail to develop more camber and reduces the leach twist, increasing power.

Battens need to be looked after and stored so that they do not become permanently bent of twisted, remove from the sail if storing for any long periods.

All shorter (top 3 battens) should be weighed and marked with a pen so you can easily identify when required.
To weigh a batten put it vertically on a bathroom scale and push down on the end. The scales will register and change with the increase in downwards pressure, until the batten bends to the point that any increase in down pressure is used in bending only. At this point the scales will register the batten weight. Any additional pushing down will not change the weight. So push the batten down hard and watch the scales.

The top 3 battens will determine the amount of sail twist or knuckle that you will have depending on the wind strength. In moderate conditions you want the batten to have an even curve matching the sail shape.
If a soft batten is used in strong conditions you will see a definite knuckle at the luff.
So with the objective being to allow the top of the sail to open up in the gusts, it stands to reason that the top battens are then quite heavy compared to the rest.

My rule of thumb is the battens decrease in weight by half as they come down the sail for the top 3.
That is if the top batten is 12kg, then the #2 is 6kg and the #3 is 3kg.
The remainder are stock standard battens and don't need to be changed.

The heavier conditions then the heavier the top battens become.

On the 5.8 I found a batten of approx 10kgs for the top was my all round batten suitable for most conditions. #2 was 5kg and #3 was the standard batten as supplied.

In extreme light conditions I put a 6.5kg top batten in and #2 was 3kgs.
I never used lighter than this and rarely used this.

For 18 knots and above I increased the top batten to one that was difficult to bend (a tree trunk) and used a #2 at 8kgs and #3 at 4kgs.

Mast Rotation.
Reducing mast rotation upwind allows the mast to fall away and open the leach. This will reduce power and drag.

For doing the "wild thing" just allow the mast to float, but when the wind soften's over rotate the mast and go back to conventional down wind sailing.
For sailing down wind in lighter conditions set you forward wind indicators to 90 degrees or sail of ribbons on the bridle. You target down wind is to always be at 90 degrees to the wind.

Luff Tension. (turbo charger)
This prebends the mast flattening the sail while at the same time the tip of the mast moves back, shortening the distance between the clew and the head, hence losing the leach and allowing the leach to fall away.
This is less power and less drag.
Luff tension should always be eased before any major easing of the mainsail, otherwise you will stretch the cloth.
Ease on every tack and pull back on asap after the tack to accelerate out of the tack.
Ease right off when going down wind.
With most cats you need a power downhaul system. Aim for 12:1 as a minimum, I ran with 18:1.
Most new cat sailors don't utilise the downhaul as much as they should. This control should be used as your principal adjustment on the boat and should be being constantly altered to keep power in the rig. The skipper should'nt have to ease main or feather while it is possible to have more downhaul pulled on. The crew needs to watch for wind gusts and pull on accordingly and ease as the gust passes.

The fastest way upwind is to have the windward hull always just of the water (it's the "Wildthing" in reverse). You principal control for achieving this is downhaul first, main tension second and rudder adjustment last. Remember every rudder adjustment is like putting the brakes on.

The 5.8 is primarily over powered in most conditions and if the boat is heeling in the gusts or the skipper is feathering up in the gusts then you don't have enough downhaul on.

Cannot stress downhaul enough it is your turbo charger, use it, if in doubt pull some more on.

Heavier top batten. See section on batten tension
This flattens the top section of the sail slightly, reducing the heeling moment in the most critical part of the sail.
Most will change the top 2 battens in the heavy conditions.

Sheet Tension.
The main effect of the sheet tension is to control the twist of the sail.
Trouble shooting, If the boat is over powered and flighty in strong winds.
Try more luff tension, point up and **sheet on**.

If the boat heels instead of accelerating in medium conditions.
Try more luff tension.

Upwind.

Keep the boat as flat as possible. Windward hull no more than 100mm off the water.
Depower early is a better option than overpowered.
This allows you to go for speed at all times.
Trapeze low and keep feet close together.
Keep crew weight together

Basic settings
0-8 knots
Luff tension – just take out the wrinkles.
Mainsheet – moderate to firm. Adjust off top leach ribbon. This should be just flicking out at all times. If not flowing, ease mainsheet, if always flowing tighten mainsheet.
Traveller – centred
Hiking forward to keep the bows down.
Bear off in the puffs and point in the lulls.

8-12 knots
Pull on luff tension in puffs rather than ease main.
Luff tension will now be on quite hard.

5.8 main blocks are nearly always hooked into the centre hole on the clew board.

Strong winds
Luff tension on maximum.
Sheet off approx 250mm in the heavy puffs and try to go for speed.
If uncontrollable ease traveller down 100mm, but you will loose height.
This is you best defence to controlling the boat if you loose confidence in the conditions.
Flatten mainsail, on the 5.8 go forward into the 2nd hole from the front on the clew board.
Lifting the centre boards approx 300mm in extreme conditions will allow the boat to slip side ways and make it easier to control.
Over rotation will also assist if the conditions become extreme.
Should the mast "pop" to the central postion in heavy weather, this is good thing as it will depower the rig. The boat will sail very flat and fast, while you retain maximum control. As the gust passes you will feel the boat bog down and at this point you need to "pop" the mast back to its natural position.

Downwind.

0-8 knots.
Weight forward.
Mast rotation over rotated (100 deg). Remember to unlock before gybing.
Barber hauls pulled right down.
Ease foot if you have adjustable foot.
Traveller down to the footstrap. But keep tension on the main to reduce flogging.
Plates up to max.

10-15 knots Wild thing mode.
Crew on the leeward hull behind the centre plate. Crew slides back in the heavier gust, or in strong conditions is sitting on the back beam.
Plates up to half way point.
Skipper sitting on the tramp next to the mainsheet block.
Traveller down approx 150mm.

Mainsheet on tight to induce sail twist. Skipper looking for speed and working the main and tiller to keep windward hull 100mm out of the water at all times.
Rotation reduced to 70 degrees.
Barber haul out approx 300mm.
Greater than 15 knots
Wild thing mode
Crew on leeward side at rear of the boat, skipper on windward side sitting out on the hull.
All other settings the same as above, you can leave the rotation right off and just let the mast rotate naturally. Boards 1/3 up.
Traveller can remain centred.

Keep a log of your settings and compare to the others.
No one person is right, but if he is faster than you then he is more right than you!

Remember that setting up a quick boat is not one setting, but an overall package. By just changing one setting will not help if all the others are wrong. You should now have enough knowledge to ask the right questions.

There are very few new ideas, only those you borrow from the guys that are going fast, so ask as many questions as you can and try their settings. Most people will openly share there data and are just waiting for you to ask.

Enjoy your sailing and keep the big long shiny thing pointed upwards.

Goose.

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