

Tuning your DNA

see post: <http://dnacat.blogspot.com/search/label/tweaking%20the%20DNA>

A set up guide can be found at http://www.racingcats.com/tuning_support/setting-up.php

Some figures for the set-up:

- Toe-in rudders 2-3 mm (measure rudders fore and aft at transom level)(always check after reception of the boat).
- Rudder raked under the boat: no more than 15 mm (factory settings can be slightly more)
- Toe-in daggerboards 3-5 mm (difference fore aft daggerboards) (= standard factory settings)
- Daggerboard J or C board slider: 1 cm space to the back end (standard setting) for more lift move daggerboard more aft, for less lift move daggerboard forward. Just untighten the screws lightly and use the board as a lever to change the position of the slider
- Mastrake: just behind the hatch in light winds, on the transom in medium winds, halfway the transom in stronger winds. (Procedure; keep trapezeline on the deck at the fore stay and see where it touches the hull aft). If you adjust mastrake you might have to adjust sheetlength too.
- Polish daggerboards and rudders with grid 600 and then 1000 or 1200. Especially the finish of the daggerboard has a huge impact on the performance. New boards are not polished yet.

Tuning:

- Upwind: traveller always in the middle, reduce mastrotation when the wind picks up.
- Downwind: Traveller on hiking strap when doing the wild thing, mast rotation 80-90 degrees
- Do not oversheet while doing the wildthing
- Keep daggerboards down will doing the wildthing, pull the weather daggerboard up in marginal wildthing conditions. In the mild thing or while going flat pull both daggerboards halfway up.
- In strong winds put the boards up 10 cm.
- Position yourself between the side stay and the daggerboard case when you are

going upwind. Only step back when the boat is on full speed. Hike before the sidestay in light conditions (see pics Stevie at the Worlds in Cesenatico). Many sailors stand too far back when going upwind especially just after a tack. (Keep fat bottom out of the water)

- Use surf wax on the trampoline to enhance grip in tacks and gybes.
- Use toestraps if you want to trapeze downwind. You do not need these in the lighter circumstances but if the wind picks up you will suffer from less fatigue.
- If you can trapeze downwind some cunningham may result in higher endspeeds and more control.
- If you cannot keep the bow up downwind come out of the trapeze, release the traveller a bit and steer for depth. Less mast rotation may improve control but hurts speed as well if wind is not stable.
- Ask your sailmaker for the right amount of spreaderrake and the right amount of diamond tension. Use a loose gauge to measure the tension.
- If you go from the windward mark to the offset mark do not step back and keep yourself positioned at the daggerboard case to prevent aggressive bow ups.
- If you sail a long distance race reduce the amount of lift by moving the slider .6 cms forward.
- Put your daggerboards in the trampoline bag before going ashore, else a board may wash off the boat and may sink.
- Do not make jumps on purpose with the boat while reaching This might damage the boards.

Maintenance:

- Keep your hulls clean. Wash the boat with water after sailing on saltwater. Transport it either in a box or use lycra covers.
- Teflon wax sealer can be applied on both the hulls and daggerboards for less friction.
- Put water on your daggerboards before you put these in daggerboard cases. Do not hang a daggerboard in the water if you are already sailing as it can be swept out of your hands.
- Keep the screws on the pushrods of the rudders tight else the pushrod pin might rotate.

- Check the knot in the daggerboard rope regularly as the daggerboards might sink if it comes loose.
- Drill a 2 mm in the hatch covers to let air out in case of heating by the sun.
- Do not drill holes in the beams as the beams are watertight and part of the positive safety buoyancy.
- Do not use acetone on the paint to remove glue or stickers but use spiritus/alcohol instead.
- Clean traveller car with clean water.
- Check trapeze ropes regularly

Tweaking and tuning your DNA

The DNA is very sensitive on the position of the daggerboards, on mast rake and body position.

The daggerboards can be adjusted in the horizontal axis by the glider in the hull and in the vertical axis by adding or removing filler or tape.

Horizontal adjustment can be done on the water. If the screws are not too tight you can move the slider by pulling a board up and then by using the board as a lever to move the slider forward for less lift or backwards for more lift.

If the wind is above 18 knots the boat is faster and more controllable if you use less lift (= less rake in the daggerboards). In medium conditions you use maximum lift (standard configuration). In light winds we are not sure yet, though you have to pull up the boards while going flat downwind.

In stronger winds you are faster downwind (about half a knot) if you pull up the luff board.

The amount of toe-in (vertical axis) differs between 3 mm and 5 mm (both boards combined). 3mm for minimum drag and 5 mm for some extra lift and height. The rule of the thumb here is that lighter guys use more toe-in. In really strong winds extra toe-in gives better control downwind, but there is a penalty upwind. More than 5 mm toe-in feels draggy.

If the wind picks up more mast rake seems better. You keep the bows out and the boat is both upwind and downwind significantly faster. The optimal amount of mast rake depends on the type of sail and/or the battens you use.

The flatter the top of the sail the more mast rake you can use. Chris Field has used this principle to his advantage and has designed his sail so he can use maximum mast rake if the wind picks up. He uses a twisty sail with a relative flat top and a full bottom. Many other sails get very full if you ease the sheet a bit. The fuller head moves the center of forces too

much backwards which leads to too much pressure on the rudders.

The amount of mastrake can be measured by holding a trapezewire on the deck at the forestay and then you look where it touches the deck at the back.

In light winds the best position is just behind the hatch, in medium conditions on the transom and in strong winds 10 cm down the transom if the top of the sail is not too full and the battens are not too soft.

If you use a lot of mastrake steering may improve if you put the rudders somewhat less under the boat. (standard 15 mm)

This weekend PJ sailed in Hellevoetsluis in force 5-6 in such a set-up (increased mastrake, striff battens) and he could easily beat a Nacra 20 carbon and the F18's upwind by sailing both higher and faster (downwind the Nacra was a rocket). Downwind he struggled a bit due to very nasty waves. In such waves you easily lose the rhythm, where the spinnaker boats just glide on.

A few weeks ago Chris Field could match the speed of a M20 in medium to strong winds on flat water after increasing the mastrake on his DNA.

Body position on the boat is critical as well. If you stand too far behind the transom sinks and you will be slow. The boat will sail at 9-10 knots upwind. The fastest way is to play with your weight a little bit; you step forward if the boat is picking up speed and once it is up to speed you step a bit backwards and get the boards working for you. (speed 12-13 knots) If you step back too early the boat is too draggy and you cannot get the boat over the threshold of 10 knots.

Downwind the same principles apply. It is easy to get the nose out of the water, but the fastest way is to get the nose just touching the water. Troubles (steep waves) are circumvented by increasing the heel of the boat, though generally the boat is sailed flatter downwind than the previous A-cat designs.

The boat asks for a more active (physical) style. You really have to work the mainsheet to get the best out of the boat and you have to move your body as well. You can see that style used by Chris in the pics taken at the Dutch Nationals. Sailing the boat in medium conditions is quite easy, but in strong winds you really need to master the boat to get the best out of it. The reward is huge though because Chris reached amazing endspeeds and downwind he sailed away from the others both in Garda and in Hellevoetsluis.