



# Tuning the *Fairwind* for Racing



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July 2005

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How do you know if your Fairwind Class R/C model yacht is tuned correctly for racing? First you must confirm that you have built your boat for speed, or at least have followed the basic information contained in “The Bakersfield Fairwind for Racing”, a Construction Guide, available for free on the Fairwind website at:

<http://fairwind900.home.comcast.net>

If you want the fun and excitement of being up with the leaders, or even win a few races, then this manual will provide some basic tips to improve your speed. After you have developed your speed, then the only thing left for you to do is improve your...SKILL. This only comes with three things...practice, practice and practice. Only time on the water, sailing against other Fairwinds and learning the feel and techniques of sailing your boat will transform you into a consistent contender!

We don't intend for this manual to be a 'cookie cutter' solution to work for all Fairwinds and sailors, but following are some basic criteria for tuning your boat for maximum speed.

## I. SAILS AND SAIL SHAPE

Do not use the Kyosho 'kit' sails, since they are flat and have no shape. Only use a good sail manufacturer, such as 'Black Sails', who makes a great set of sails for the Fairwind at reasonable prices. Whatever sails you are using, use a 'loose footed' main and jib. Do NOT confine the sails to a groove on the boom.

How fast your Fairwind moves close hauled to windward is one of the keys to winning races. Your sail is your engine and your sail's shape is your throttle. Ideally you want your Fairwind balanced so well, it will sail to windward almost by itself without undue rudder control, except perhaps a slight kick occasionally to keep it in the "groove". Your rudder is the biggest drag on your boat, so use it sparingly. Some experienced Fairwind sailors use more 'weather helm' than others, combined with a looser jib sheet setting so they have a very fast windward boat speed, with a lesser 'pointing' ability to achieve the fastest speed to windward.

Going fast downwind is simply presenting the most sail area to the wind as possible, which means winging out your jib as much as possible. Adjustments for fast down-wind speed usually take care of themselves if you have good up-wind speed. Most positions in a race are won or lost going up-wind, especially to the first windward mark after the start.

Achieving the "groove" and the balance is simply a matter of adjustments, and it's all related to getting your best sail shape. The following rigging adjustments will help you achieve that ideal "sail shape".

## II. MAST RAKE AND POSITION

The location of the mast fore or aft helps to balance the boat under sail and will help to determine whether you have a 'weather helm' or a 'lee helm'. Most Fairwind sailors position the mast on the center hole of the deck-mounting base in an almost vertical position. (**Figure 1**) Some like more 'weather helm' by placing their mast at the rear position, and compensate by using a looser jib sheet setting to provide more 'slot' between the jib and the main. This should increase your speed to windward, except in heavier winds, the 'weather helm' requires more rudder control, so the added rudder drag may or may not be a deterrent, it depends on your sailing skill and experience. (**Figure 9**)



Figure 1. Near Vertical Mast



Figure 2. Centering Mast

### III. SIDE SHROUDS

Side shrouds should be stranded or solid stainless steel wire with screw-type, lockable turnbuckles (no bowsies) for adjustment to minimize stretching. The Fairwind only needs one shroud on each side of the mast. Spreaders are not necessary and add unnecessary weight aloft. The shrouds should be attached to the mast about 80% of the way up to the top and on the deck at directly opposite sides of the base of the mast. Tension should be almost 'strum' tight. If you 'launch' your Fairwind by the mast, these two shrouds are the only solid connections to your hull, so they must not be loose, or you will dismast your boat every time you launch it.

Adjust the side-to-side center position of your mast by laying your fully rigged boat on one side on a flat surface. (**Figure 2**) Use a tape measure from the floor to the tip of the mast. Turn your boat over and repeat the process. Adjust the side shrouds until both sides are equal. Lock these positions into your turnbuckles, so they are automatically reproduced each time you remove your rig for traveling and re-rig your boat at the pond.

### IV. JIB STAY ADJUSTMENT

If you have a jib boom adjustment fore and aft, the jib boom should be positioned as far forward as possible so that the boom's front tip will not extend beyond an imaginary line extending along the bow stem of the boat. (**According to the Fairwind Class Rules, 5.2 Jib Pivot**) In addition, the jib pivot should be between 1" and 1-1/2" from the bow (**Figure 3**).

The mast should be approximately vertical and perpendicular to the plane of the boat (**Figure 1**). Adjust the jib stay bowsie so the mast is approximately vertical. Tighten the jib halyard bowsie (jib luff) so there is no sag in the sail. With a tape, measure the distance from the tip of the mast to the bow of the boat, and record this information for future use. (**Figure 4**)



Figure 3. Jib Boom & Jib Pivot Position



Figure 4. Measure Rake of Mast

## V. BACK STAY TENSION

Tighten the backstay so there is a very slight tension using the bowsie for quick and easy adjustment. In very light airs, the backstay is set quite loose. In heavier winds, the backstay should be tighter.

## VI. DOWNHAUL TENSION

Adjust the mainsail's downhaul to JUST barely remove any horizontal wrinkles in the luff of the sail along the mast. Do not tighten so as to create a vertical wrinkle. In very heavy winds, slightly more downhaul tension would be O.K. to help flatten the sails.

## VII. OUTHAUL TENSION

Adjust the outhaul on both the main and the jib so there is a nice curvature to the sail and a 'camber' or space between the boom and the foot of the sail. The main should have about 1-1/2 " (about two fingers) clearance between the boom and the foot of the sail for most light to medium wind conditions.

**(Figure 5)** The jib should have about 1" camber, slightly less than the main. **(Figure 6)**

Along with each 'outhaul' at the end of both booms, you should have a loop of line to hold down the clew of the sail. The correct tightness of this loop will produce a fast sail shape when close-hauled.

**Too loose**, and the top of the sail's leach will 'twist' off too much; **too tight**, the leach of the sail will be too tight and bend inwards too much. Avoiding the "too much" is by trial and error and works in conjunction with the "Boom Vang" adjustment.



Figure 5 Camber in the Main Sail



Figure 6. Camber in the Jib Sail

## VIII. MAIN SHEET POSITION

Sailing to windward, close hauled, in light to moderate winds, the main boom of the Fairwind should be set so that the tip of the boom is pointed to the inside rear of the cockpit. **(Figure 7)** Set your Fairwind on it's stand, close haul the sails, and set your main sheet as above. In heavy winds, the main sheet should be loosened slightly, compared to the jib sheet, to keep the boat from heeling too much, thus keeping the boat more upright...and faster.



Figure 7. Main Boom Close Hauled



Figure 8. Jib Boom Close Hauled

### IX. JIB SHEET POSITION – KEEPING THE ‘SLOT’ OPEN

Adjust the Jib Sheet while your boat is in the above position with sails close hauled. The tip of the jib boom should point between the side shroud turnbuckle and 1” inside. **(Figure 8)** This setting should produce a nice ‘slot’ between the jib leach and the luff of the main. The ‘slot’ is crucial for keeping a good airflow over the surface of the sails, making your boat go fast in winds over 4 mph. **(Figure 9)** For very slight wind pressure (1-4 mph), the slot should be even more open to keep the boat moving to windward, so loosen both jib and main sheets slightly.



Figure 9. The open ‘Slot’

### X. BOOM VANG – ADJUSTING SAIL TWIST

With your Fairwind on it’s stand and the sails closed hauled let the wind (if it’s not too heavy) fill the sails. Walk to the rear of your boat, about 10 feet back, and look squarely at the rear of your boat. The lower batten should point slightly to windward, the middle batten should be about parallel to your line of sight and the upper batten should point to leeward. **(Figure 10)** The amount the upper batten, or upper leach of the main that points to leeward, or away from the wind, is called “twist”. You need twist in your sails, even in light air. The more wind, the more twist you need. Adjust the twist in your main sail by extending or contracting the boom vang.



Figure 10. Looking at the “twist” from the rear.

## **XI. PUTTING IT ALL TOGETHER**

Your goal in tuning a Fairwind is to get the right balance to the boat when sailing close hauled to windward. It should just about sail itself in an obvious “groove” or have a slight ‘weather helm’.

If you experience a strong “weather helm”, where the boat heads up into the wind by itself, and you need to use a lot of rudder control to keep it on a line, then your mast is leaning too far backward. If you have a strong “leeward helm”, where the boat moves away from the wind, your mast is leaning too far forward. With your boat out of the water, be doubly sure that your rudder is aligned straight with the keel when no rudder correction is applied.

You have previously recorded the distance from the tip of the mast to the bow of the boat. For excessive “weather helm”, loosen the backstay and then tighten the jib stay and jib halyard with your bowsies to tilt your mast forward slightly. Tighten the backstay to take up any slack. Again measure the distance from the tip of the mast to the bow. If you find you have excessive “leeward helm”, do just the opposite adjustments. Try out the boat again on the water on a close hauled windward tack. Keep adjusting your rigging until you find the “groove” and the boat practically sails itself to windward with little or no rudder correction. Remember, that some sailors prefer a very slight weather helm so the boat keeps seeking the best windward direction, with only a slight bit of rudder control. So try it yourself and find your own ‘groove’.

Once you find the “groove”, record the distance from the mast tip to the bow, so you can duplicate the “groove” in the future. Each time you make a change to any sails or rigging setting, you probably will have to make other adjustments to compensate. So keep working at it until you find the best setting for the wind conditions. Different wind conditions may require different settings, so keep records so you can reproduce them. When in doubt about tuning, copy whatever settings the leader’s use.

## **XII. JIB BOOM TOPPING LIFT – NOT RECOMMENDED**

A jib topping-lift is used to produce “twist” in the jib to match the shape of the mainsail. This is O.K. for some sailors, but it has several definite drawbacks. A topping-lift fixes the amount of twist in the jib, when it should automatically “twist-off” as the wind increases. In addition, it is an extra “drag” right in the middle of the slot between the jib and the main, and it frequently can get tangled with spreaders.

## **XIII. JIB BOOM COUNTER WEIGHTS – NOT RECOMMENDED**

The ostensible purpose of a jib boom counter-weight is to help balance the jib boom and allow it to wing out freely going down wind in very, very light winds. Fairwinds really don’t have much of a problem like this, and in moderate to heavy winds, it’s simply a drag and extra weight not needed

above the water.

#### **XIV. HULL CONDITION**

Whether your Fairwind is painted or un-painted, it should have a smooth polished surface, free of scratches, nicks or dirt. Never wax your hull. Wax only repels water and disturbs the laminar flow of water across your hull and causes turbulence, which slows you down. For a good surface, use #1500 or #2000 wet sandpaper with a small amount of soapy water and finish with an extra-fine, wax-free rubbing compound commercially available for automobiles.

#### **XV. TWO-BOAT TESTING**

It's fun to sail a Fairwind, even when by your self. But it's even more fun to sail with somebody else who also has a Fairwind. It's even 'essential' to sail with another Fairwind if you want to race, so you get some idea of how your boat is performing against another Fairwind under varying conditions. Two-boat testing is sailing side by side with another Fairwind within a couple of boat lengths of each other to primarily test speed. When one boat seems to be going a little faster, then trade radio controls with your friend and do the same thing again, so you know for sure if it's the boat and not your skill that's causing the difference. If you find out that your boat is slower, then go back through all of the above points and change some of the adjustments to make it faster.

#### **XVI. PRACTICE, PRACTICE & PRACTICE (ESPECIALLY STARTS)**

Skill does not necessarily come easy or quick. There are those that have sailed and raced big boats for years, but still have problems sailing and winning with a small Fairwind model yacht. The Fairwind responds much quicker than a bigger boat, thus it is more "touchy" and can get caught "in-stays" (heading into the wind with no movement forward) easier because it lacks momentum. We have all seen, or have first-hand experience, of going "backwards" in a Fairwind, when we should be going forward. It can be frustrating, but that's where "practice" comes in. It's most important to "keep the boat moving" and it just takes practice and time on the water.

We hope this 'Tuning the Fairwind for Racing' manual is of some help in moving you up to be contenders, leaders and winners in the future.

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