

Tuning the CR 914

by Chuck Luscomb

The 914 offers some pretty unique features not found in every RC sailboat. The boat is very light in comparison to many other classes (minimum weight is 6 lb 4 oz), which means it accelerates quickly and also decelerates quickly. She planes easily, which is a sight to see. Class rules do not allow sail changes or alternate rigs, so we have to learn to sail these boats in all wind conditions with the same suit of sails.

So how do you optimize your 914's speed for each set of conditions? Over the years, several excellent articles have been written about tuning the CR 914 by experts like two-time National Champs Dave Ramos and Geoff Becker and published in the CRonicle, our class news letter. The class secretary has incorporated these wise teachings into the current, cookbook-like, two-page CR 914 Tuning Guide, which is included in the registration packet that is mailed to CR 914 owners when they register their boats with the class, and is available in the Members Area of the class website. This guide is a great way to get a CR 914 set up the first time, and it teaches the basics of tuning. What follows goes into a bit more detail about the theory and practice of tuning so lets get started.

Base Tune

Big boat sailors talk about "base tune," which means that when they arrive at the boat to go racing they set it up at "base" from which all other adjustments originate. It is also useful when you think you have adjusted something too much, so that you can start over by returning to base tune. The base tune that follows is a good setting for wind speeds in the 5-8 knot wind range. We will talk later about what to do when the wind is above or below this range.

With the boat on its cradle:

- Set backstay length to 53-7/8" measured from the bottom of the transom to the "V" of the mast crane.
- Mast should be straight with no pre-bend at all. Upper and intermediate shrouds are tight.
- Jumpers are set to maintain a straight mast.
- Jib boom/tack is about 1"-1¼" off the deck.
- Rudder is straight and in perfect alignment with the keel. (make sure you check this)
- Turning blocks and main boom gooseneck should move freely.

Now turn on the transmitter and receiver and heel the boat in the cradle.

- With the sails fully sheeted in, the jib boom should point at the aftermost shroud position.
- Main boom end should be about a boom-and-a-half width below center line.
- The knot in the common sheet is just outside the aft turning block.
- Vang is set to be just "on" but not tight. We will talk more about the vang and sheeting in a moment.
- Jib and main foots will be about 1" out at mid boom.

Standing behind the boat with the boat heeling in the cradle, make sure you have a small amount of travel left in your fine tune sheet adjustment. Now look at the main leech with sails sheeted in.

- The middle third of the leech should be parallel to the mast.
- If it is not, adjust the main sheet boom slide to get the right leech shape. The reason for the additional travel in your fine tune is that when you are sailing close hauled you can trim your sheet in further with your fine tune. The sail does not actually come in much more because it is just over the main sheet bridle. But what does happen when you make this adjustment is the leech closes up, and conversely it opens up when you move your fine tune out and ease the sheet. When you are sailing up wind, this adjustment can give you additional speed and pointing ability.

On The Water

Now that you have your boat set up at base, it is time to go sailing and check to see what needs to be adjusted further.

- Push the boat off the shore with the sails eased all the way out. See that the boat tracks straight with no influence from the sails. If it does not, adjust the rudder fine tune until it tracks correctly. This will help you know if your boat is reacting to sail trim and weather helm or simply an incorrect rudder setting.
- Sheet in the sails and sail the boat away from you so you can see the leech of the jib and main. The main should again have the middle third parallel to the mast. The configuration of the jib leech should be similar in shape to the main and not straight. If the jib leech is too straight, ease the lowers and the backstay slightly and check again. If it remains straight, ease the headstay slightly and the leech should now open up.

- Bring the boat to hard on the wind and let her track for a few feet. Then trim the fine tune in as I mentioned above and watch the leech of the main close up. Now adjust the fine tune out and watch the leech open back up.
- Does the boat track straight when hard on the wind? Most people like weather helm. I do not. The reason is that I like to be able to take my eyes off my boat going up wind so I can watch for wind shifts and see what other boats are doing.

Once you have gone through this routine a few times, you will get used to each setting and the routine will become automatic. In the mean time, I would suggest that you keep a notebook to record what you are doing. And watch your boat's speed against others. Check your speed against other boats you know to be fast. I intentionally do not offer specific measurements because you will need to develop an understanding of how much to adjust things to get the results you want without a tape measure. Sometimes you cannot pull out a tape if you need to make a quick change between races.

Adjusting for changing conditions

5 knots or less

Light air can be quite a challenge since nothing really happens fast and it always seems like the other guy right next to you gets the breeze before you do. It takes only a few simple adjustments to make your boat sail better in light air. If you don't have telltales on your jib and some kind of wind vane on your mast, get them. They will make a difference. I use cassette tape on my jib. It moves in the slightest of breeze and will flash like a mirror in the sunlight.

- Ease your lowers to "loose" and adjust backstay to just "on." This allows the jib leech to open up in lighter breeze thus improving its shape. If you find the jib leech is too open, tighten the back stay and lowers a bit to close the leech.
- Adjust jib halyard so that there is just enough tension to keep the luff tape from going slack.
- Mast should still be perfectly straight.
- Adjust jib and main outhauls to increase the foot to boom dimension to 1-½"-2".

All the other basic tuning factors still apply. You are still looking for the same shape in the sails as before. The main and jib leech should be full without excessive twist. If the jib leech is too flat, and your lowers and backstay are eased, try easing the headstay a bit more. Again, watch the boat sail and measure your speed against others and compare.

15 knots or more

These kinds of winds make the 914 quite exciting. The changes you need to make to your setup in order to stay up with the leaders are again fairly simple. Note that the following adjustments again are from base, not from the light air settings above. Overall, we are looking to shorten sail without changing rigs. This is done by depowering the main and powering up the jib. Doing so gives the boat the speed and power needed to punch through any chop that may be present.

- Ease your main sheet boom slide so that the main boom is just over the leeward steering wheel.
- Ease the vang to allow the top third of the main to twist off while fully sheeted in. Remember, you can still control the main leech with the main sheet when close hauled. Use the sheet to close the leech in the lulls and ease off to depower the main in the puffs.
- Adjust the jib boom inboard end to about half the distance between the aft shroud chainplate fitting and the mast. This will increase the power of the jib and help you power through the waves.
- Flatten the foot of each sail so that they are about ¾" from their booms at mid boom.

Sail the boat and check your settings. Sail hard on the wind and see that the boat tracks correctly and is able stay on her feet in the higher wind speeds. If she appears over powered, ease the main sheet a bit more and try it again.

Tacking is also a challenge in these higher wind speeds. In order to complete a tack, you need to do it quickly and not allow the sails to luff too too long, otherwise they will drive the boat backwards. Look for a lull in the waves and ease your sails slightly and then move the helm over smoothly. If you don't make it through head to wind and the boat starts getting driven backwards, push the helm over the opposite direction to complete the tack and ease the sails as the bow gets driven forward.

I hope you can benefit from what I have shared here. The key to sailing any boat well is to be able to adapt to conditions as they change. As you become more familiar with your boat and these settings, adjustments will become more automatic and fluid. You will know before your boat returns to the beach what you want to change and how much. Happy sailing....

