Gain Six Seconds and Win

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Each fall, I hear the same concern from numerous customers: “If I just improve my rating by six seconds a mile, I could win races.” My response is always the same — “Then get faster by six seconds a mile.” To maximize your rating potential, ensure your boat is fast in all conditions. Gaining those six seconds starts now.

This is the perfect time of the year to consider the various aspects that affect a sailboat’s speed. I am currently working with a local boat, and naturally, the goal is to win races. Here’s my checklist of areas to focus on:

- **Weight below**
- **Rig symmetry, rake, and tune**
- **Deck layout and markings — recording**
- **Sails — shape and condition**
- **Instruments**
- **Below the water line**
- **Spring sailing (Your system for winning)**




The photos above are a typical of a boat that accumulates unnecessary items, which slows it down. Prior to removing unnecessary equipment, I measured the freeboard at the bow and stern and wrote down the numbers. Once we removed items that are not required to have onboard, we remeasured the bow and stern freeboards. I then put in the original freeboards and ran a certificate in ORC (Offshore Racing Rule). Next, we ran another with the new higher freeboard numbers and made a comparison. (The measurement of freeboards represents the boat's weight. By removing items that were not required to race safely or efficiently, the boats weight was reduced and the overall speed went up.)



I helped my customer remove anything extra that was not required to be onboard for racing. All sails and safety equipment remained below yet were stowed differently. All required safety required gear was left in clearly marked dry bags. A tip for all boaters: the bags should be stowed as low as possible, usually under a mid-bunk on each side of the boat. The sails also should be stowed low in the middle of the boat.


Rated boat velocities in knots							
Wind Velocity	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt
Beat Angles	43,0°	40,8°	39,0°	37,5°	36,4°	36,0°	35,7°
Beat VMG	3.87	4.70	5.29	5.58	5.74	5.84	5.95
52°	5.89	6,94	7.50	7.76	7.89	7,98	8.09
60°	6,20	7,17	7,66	7.93	8.08	8.18	8,31
75°	6.38	7.29	7.77	8.08	8.32	8.48	8.70
90°	6,49	7,50	7,98	8,28	8.50	8,68	9,09
110°	6.32	7.41	8.02	8.44	8.84	9.19	9.80
120°	6.07	7.32	8.00	8.49	8.94	9.35	10.13
135°	5.41	6.82	7.70	8.25	8.78	9.32	10,69
150°	4.58	5.80	6,89	7,68	8.09	8,44	9,20
Run VMG	3.97	5.03	5.97	6.66	7.01	7.37	8.18
Gybe Angles	143,9°	147,5°	147,8°	150,7°	150,3°	172,1°	174,8°

Rated boat velocities in knots							
Wind Velocity	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt
Beat Angles	43,0°	40,8°	38,7°	37,0°	36,4°	35,8°	35,4°
Beat VMG	3.96	4.81	5.40	5.68	5.83	5.93	6.03
52°	6.02	7.08	7.61	7.86	7.99	8.08	8.19
60°	6.34	7.30	7.77	8.03	8.19	8.30	8.43
75°	6.53	7.42	7.88	8.20	8.45	8.63	8.86
90°	6.62	7.60	8.08	8.39	8.63	8.84	9.31
110°	6.44	7.52	8.12	8.57	9.01	9.43	10.19
120°	6.17	7.42	8.09	8.62	9.11	9.60	10.65
135°	5.50	6.93	7.79	8.37	8.95	9.55	11.32
150°	4.66	5.89	6.99	7.77	8.21	8.62	9.74
Run VMG	4.03	5.10	6.05	6.74	7.11	7.47	8.44
Gybe Angles	143,5°	146,9°	147,8°	151,0°	150,1°	147,7°	142,8°

The certificate on the left is prior to the diet, and the certificate on the right is after.

The weight difference was 700 pounds less displacement. Note the speed difference from the original certificate. All the speed values went up.

Next is getting the rig set up properly. The process for starting a new tuning guide is:

- Making the rig square to the deck (Sit in chair on jib halyard and mark shroud - measure to deck)



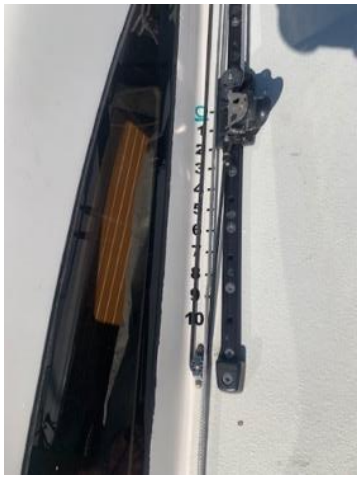
- Set up the rake by measuring the ARC - (Mark at mast to headstay down to deck)



Go sailing now and adjust diagonal shrouds in an 8-12 (base setting) wind speed to have the rig straight side to side. The uppers should be very firm and close to tight. The leeward upper

should not be loose at base. The headstay length should be adjusted to achieve helm between three and five degrees. Mark your wheel with tape at five degrees so the main trimmer can adjust the trim and backstay based on your helm.

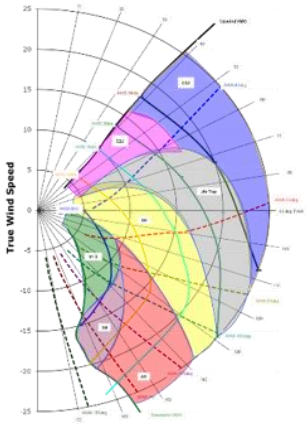
Mark everything now during a warm day:



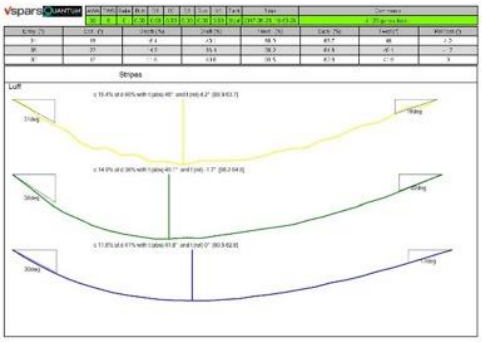
- Genoa — jib car
- Inhaul for jib
- All halyards
- Backstay
- Outhaul
- Cunningham

Start your system by recording settings after each race and jotting down comments. Slowly develop your tuning guide for three major wind conditions.

- Need power
- Power perfect
- Too much power

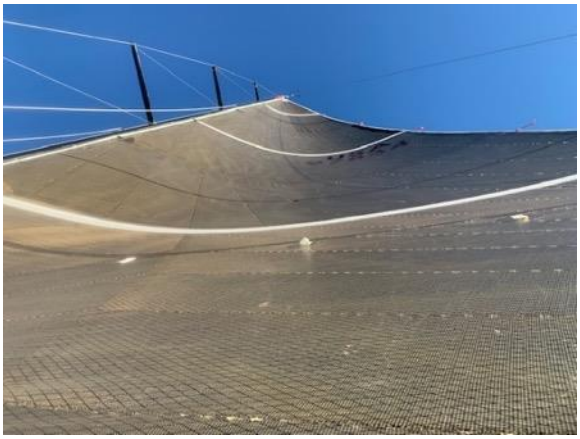


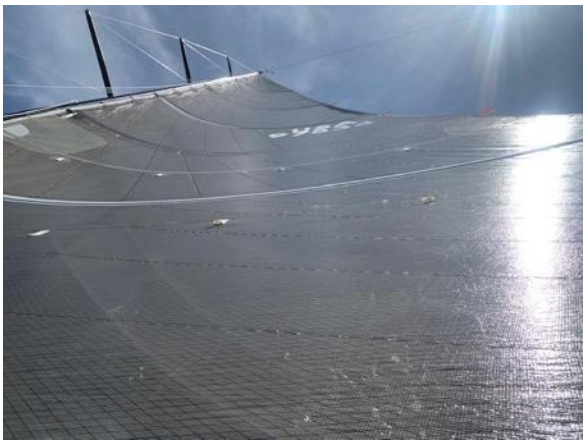
Look at your sails this fall. Go sailing with your crew and take pictures of your upwind sails. Hold your phone at mid foot and try to angle the viewfinder to capture the three draft stripes in the frame.



With this photo, we can turn this shape into numbers to describe the shape. Based on the numbers, depth, draft position, entry angle, and exit angle, we can advise on the level of performance the sail will provide. Often, we can adjust the luff or leech to help the sail perform longer.

The photo/digitize process also helps with setting up the mast to the main. On this boat, the mast step was too far aft in the picture on the right. Moving the step forward on the picture on the left allowed all the draft stripes to exit the mast at the same angle.





Photos help when re-shaping an older sail. The main above was recut to provide four more years of performance. The sail on the left was prior to the reshape, and the photo on the right was the result.

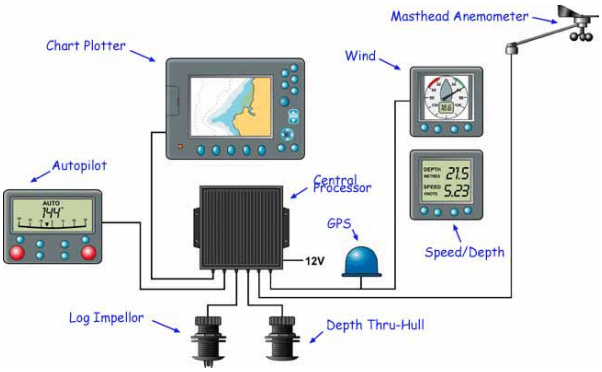
Downwind sails need to be viewed off the boat to see how they fly. The goal with asymmetrical spinnakers is to have a sail that flies like a symmetrical spinnaker downwind and sails like a genoa when reaching. A variety of shapes allow boats to sail off the wind from a 50-165 true wind angle.

While the boat is still in the water, evaluate the instruments. At a minimum, all boats need to know the proper boat speed and heading. Other important values are:

- True wind direction (the wind direction calculated)
- True wind speed
- True wind angle
- Target speed and angle
- Starting line
- Apparent wind angle

For boats from 15 to 35 feet, the newer GPS instruments like Velocitek and Varcos work well.

For boats over 35 feet, instrumentation with a processor that provides true values is preferred.



Fall is the best time of the year to prepare for the next sailing season. All the sailing experiences from summer are fresh, and usually the weather is ideal to make physical changes to your boat. The most important improvement to consider is under the water line.

Once the boat is out of the water, start your check list for the perfect bottom.

- Keel in center — measured from each rail
- Rudder in line with keel — string at bow and stern to line up rudder with keel
- Keel to hull joint — consistent radius
- Rudder close to hull
- Scuppers fair — sharp radius
- Hull/keel/rudder — fair, smooth (paint with hard epoxy)
- Bottom to transom — sharp as possible
- Fair bottom, keel, and rudder
- Symmetrical shapes on keel and rudder
- Epoxy primer, finished with epoxy paint (VC Offshore brand)
- Smooth with 800 grit sandpaper

Try to accomplish all of this while the boat and weather are warm. In the spring, it takes a typical boat a long time to warm up after being outside during the winter. Knowing the bottom is as perfect as possible will eliminate the one variable that is so important in winning races.

Now that all the hard work has been completed, start the process of starting your own system for racing. Meetings are an essential part of a working system, and a few winter meetings will go a long way in encouraging team members to race as equals.

Begin your checklist on how to prepare to win for 2024:

- Winter meetings – 2 to 3 (job descriptions, practice dates, race dates, job lists, etc.)
- Spring practice (set up rig, picture sails, calibrate instruments, start data collection system)
- Pre-regatta buoy practice (boat handling, speed training, starting system, tactics/strategy)
- Offshore training practice (VMC practice, sail changing, sailing in the dark, weather research)

All the work you did to make your boat faster will pay off once your team sails as one unit with equal goals. Make the training sessions as important as racing. Even if you must miss racing to practice, it will be worth it in the long run.

Fall is typically a time to put the boat and equipment away for the next year, but I argue that it is the best time to take steps to become faster for next summer. All your sailing experiences are still fresh, and there should be motivation to make your boat faster.

- **Weight Below** – All the data proves your boat will be faster with less weight in the boat. Take everything out of your boat and put safety equipment and necessary items in labeled dry bags. The placement should be low and then charted on a sheet of paper.

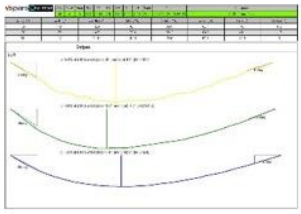
Use a **dehumidifier** during the sailing season to keep the interior dry/light.

- **The Rig** — Start your own tuning guide by setting up the rig symmetrical. The goal should be 3-5 degrees of helm in 9-11 knots of wind. Understand how the shrouds change the balance and the shape of the mainsail.

RECORD YOUR SETTINGS

- **The Deck** — Make the deck layout simple yet effective. Any moving part should have a marking system. Put down vinyl numbers and write down settings in different wind speeds.

- **Sails are the Engine** — Take pictures now and measure the shape to see if they are as designed or need adjustment or replacement. Fall is the perfect time to get this work completed. Most sailmakers will offer the best pricing this time of the year.



- **Instruments** — Clear, symmetrical information to help make decisions on the racecourse. It is better to have less instruments providing accurate information vs. many with numbers you cannot trust. Speed, heading, and starting information is the minimum while adding true values with wind help decision making while sailing.

- **The Bottom** — Make it perfect. Spend the time now to get the keel and rudder inline. Fair the bottom, keel and rudder, then finish the boat with an epoxy paint that can be sanded smoothly.

- **Practice** — Put in the time to meet on land and practice on the water. For every race, you should practice twice. Sail around two soft marks to perfect the wide and tight mark roundings. Tack and gybe using numbers, allowing everyone to move together.

Making a boat fast is like assembling a large puzzle. Each piece is equally important, and they all must fit to make your boat fast. Take the time now and start the process to improve your boat's speed. Have the winter meetings and then practice in the spring. Have meetings with your crew before and after each practice and race and listen to every crew member to develop the most powerful feeling — team chemistry.

If you lighten the boat, tune the rig, mark the deck, picture your sails, calibrate your instruments, and practice, you will be much faster than six seconds a mile.

Wally

Thanks to John Harvey and Rick Titsworth for allowing me to use their boat for this article.
Also to Mike Welch who gave me the idea.