

## **Albacore Tuning Guide**

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### **TEAM SPOT**

### **USA 8011**

The Albacore is a great boat for racing. It's rounded hull sections, deep airfoil centerboard and rudder make the Albacore exceptionally maneuverable - a roll tacking machine. The powerful, rig and easily driven hull give excellent performance over a wide range of conditions. The Albacore will handily outperform other similar two person boats such as the Snipe or Jet, or any of the new generation of classes such as the Vanguard 15 or JY15. The tapered mast and modern, adjustable rig permit the boat to be raced competitively with a wide range of crew weights in all but the most extreme conditions. The Albacore's large reserve buoyancy and adjustability enable it to handle high wind and rough seas. Indeed, the Albacore was originally designed for the cold, rough conditions off the English coast which are characterized by high winds and steep chop produced by shallow water and high current. I would sail an Albacore in almost any conditions.

I have created this document based on my experiences with the Albacore class which began in 1983. It is based on the North Sails Albacore Tuning Guide in circulation in the late 1980's. I originally had difficulty with many of the schemes North used to set up the boat, and worked to resolve them with North around the time they sold KC 6660 "Beast of Burden" (or was it "Cunning Stunts" - I can not remember). I asked them to clarify their settings via numerous telephone conversations and faxed sketches, until I could understand and repeat them. I have refined this basic set up over the past 10 years to my particular weight, sailing technique, and biases. North has not done any Albacore sail development in the past 10 years. The down side of this is that the state of the art in Albacore sails has not advanced since 1988 or so. The good news is that every time one buys a new set of sails, they look exactly the same, so you can build on anything you have learned while using your last several sets. There are many ways to set up any boat to make it perform well, and the Albacore is no exception. One key to this is that the whole boat, rig, crew, sails, must work as a system. That is, one can not expect to use the boat set up and sailing style based around one sail makers design and expect it to work well for another. The following tuning guide is based on a post 1989 Ontario Yachts cored hull, Superspar M2 mast, and North championship main and low aspect jib.

## **Setting up the Albacore**

**Mast:** Most Albacores are equipped with either the Superspar M2 or the Proctor D tapered mast sections. Some older boats are equipped with a non-tapered or straight mast. Some very old boats [1950's vintage] have a two part mast, the bottom consisting of a straight aluminum tube, and the top of wood. It is critically important that the mast extrusion is straight. If it is not, gently bend it back into shape or get a replacement.

**Spreaders:** Spreader length and draft have a pronounced effect on mast bend. Spreader length is the minimum distance between the shroud and the mast. Draft is the minimum distance from the mast to a line connecting the shrouds where they pass through the spreaders. Shorter spreaders will permit more side to side bend; longer spreaders tend to constrain the masts side to side bend. More spreader draft permits the mast to bend more as vang and jib halyard tension are increased, flattening the main sail and depowering the rig. Conversely, less spreader draft will reduce the mast's bend and

maintain power in the rig. A good starting point for spreader length and draft is 17 inches and 6.5 inches respectively. These settings are good values to begin with, but one should fine tune them to the sailing conditions and crew weight: specifically, more draft in high wind and flat water with light crews and less draft in steep chop.

**Mast Step:** Set the mast step as far forward as permitted by the class rules - 3350 mm from the aft face of the transom to the forward side of the mast. Set this location by adjusting the pins on the mast step. Note that the pins may wear a notch in the mast foot casting. Either sleeve the pins with some small aluminum stand offs, or use 1/2 inch square aluminum to make a stop. This is only required on the forward side. It is important that the mast not be able to rotate about a vertical axis while sailing. Test this by grabbing the mast with both hands at twisting it - there should be no perceptible motion. Either pinch the sides of the mast step aluminum channel with a pair of pliers or use shims to make the mast's base casting fit tightly into the step. Be sure the mast base casting is securely riveted to the mast extrusion.

**Partners:** The partners are the area of the fore deck through which the mast passes. The partners constrain the masts side to side motion, but permit it to move fore-n-aft. Ensure the mast can move fore-n-aft the maximum permitted by the class rules. This dimension is the distance from the transom to the forward side of the mast and ranges from 3225 mm to 3330 mm. Maximum range of motion is important to allow the mast to bend in heavier winds, and to be rammed aft in moderate to light conditions when sailing off the wind. It is interesting that the newer boats being built in England are arranged with a flat foredeck, which ends up with a lower mast deck opening, permitting a greater range of motion. The mast partners should not constrain the mast's motion fore-n-aft, that is the mast should move freely in the partners by either affixing Teflon pads or spraying with McLube.

**Shrouds:** The mast must be set up perfectly straight. It is constrained by the step, partners, spreaders and hounds. It is unlikely that any boat will be perfectly symmetrical, so the shroud and possibly spreader may have to be individually adjusted to compensate. Check this with the mast in the boat. Hoist the jib halyard until the shrouds have around 100 lbs, or so, tension. Now sight up the aft side of the mast with the boat level on its trailer. You should not be able to perceive any side to side mast bend. Check this by pulling the main halyard tight and pressing it into the sail track with your thumb. It should lie in the track all the way from top to bottom. It is improbable that the shrouds will be on the same pin setting, as the boat, its mast step location, the partners, chain plate locations and shroud lengths are not perfectly symmetric and / or aligned. Do not be concerned if the boat is a little asymmetric - the key it to get the mast straight. Check the shroud thru deck locations that they are equidistant from the mast sail track and transom. If not, plug and re drill them.

**Rake:** Now, with the mast straight in the boat, we can set the rake. Rake is a measure of how straight the mast is in the boat for-n-aft. There are several methods to determine rake. One is to simply measure from the mast head to the inside corner of the transome. Another is to measure the difference between the mast height above the step and the distance from the head to the transom. These methods have the fundamental flaw that the distance from the step to the mast head is not the same for all Albacores. I prefer to guage rake using the forestay and shear line mark on the mast. The shear is an imaginary curved surface resulting from the intersection of the deck and hull. The shear is where everythng else on an Albacore is measured from. To find the shear's intersection with the mast, place a straight object on the deck just aft of the mast. Measure vertically from the ends to the shear, which will be near the edge of the

foredeck. Now, average the left and right measurement and measure down along the aft side of the mast. Mark this location - unless it has already been marked. To measure rake, place the boat on its trailer or dolly. Raise the jib and tighten the jib halyard until the tension in each shroud is 100 - 200 lbs. Disconnect the forestay and swing it to the forward side of the mast and mark the location of the shear line. Swing the forestay to the jib luff and measure from the shear mark to the tip of the foredeck at the bow. Adjust your shrouds symmetrically until you have a measurement of 152mm for newer design Ontario hulls, or 178mm for older Skene hulls.

View the boat with the rig tensioned; note the shrouds where they pass through the spreaders. Sight from the shroud at deck level to the mast track. Now, without changing your position, look up the mast and shroud: they should lie more or less in the same plane. If the shroud is being pulled forward at the spreader tip, increase spreader draft and vice versa. The mast should be perfectly straight both side to side and fore-n-aft - when sitting on the trailer. It's straightness should not change with jib halyard tension. This will constitute your nominal setting; mark these pin locations. Note that any variation from these settings will be to rake the mast further aft in the boat, and so you will need at least 2 lower pin locations on the chain plates. This may require that the chain plates be relocated, typically lowered. Accomplish this by bolting the top two holes on the bottom holes in the hull, and drill one new hole. Be sure to seal the holes with silicone or epoxy.

Some older Albacores are equipped with 3/32 inch wire shrouds. Most newer boat use 1/8 inch wire rope or 1/8 inch dyform wire. I switched my first boat (US 7109) from the 3/32 inch to the 1/8 inch wire. The difference was quite noticeable - the rig seemed less "spongy."

**Centerboard:** The centerboard should be arranged to be as far aft in the hull as the rules allow. Some tuning instructions specify the location of the centerboard pivot bolt, as it is easy to measure. I do not recommend this. Close examination of the Albacore Class rules shows the centerboard pivot bolt is not constrained on the centerboard. I prefer to measure the location of the centerboard directly by rolling the boat on it's side, extending the board, and measuring it's location with a tape. The board's location is constrained by the distance measured from the transom along the hull bottom to its leading edge when lowered normal to the hull. The centerboard must be shimmed to have as little side to side play as possible without jamming in the trunk. Do not attempt to increase the centerboard to trunk friction by tightening the pivot pin. The centerboard shape and surface must be as close to perfect as possible. Fill any small nicks with WEST system epoxy filler and sand with 600 grit wet or dry sandpaper. In particular, the trailing edge must be tapered and squared off no wider than 1/16 inch or so. Rule of thumb: if the board vibrates while sailing, then it is not perfect enough.

**Rudder:** A fixed rudder is generally lighter weight, stiffer, and gives better performance than the kick up types. Kick up rudders are convenient while sailing in variable depth like the Potomac River. Any rudder should have a little play as possible in the pintles, rudder hinge, and tiller. Any rudder should not have any sweep - that is it should be vertical when fully lowered. The rudder should be coplanar with the centerboard when centered. Check this with the boat on it's side or upside down, rudder installed and board lowered. Move the pintles until they are coplanar.

## Controls

In contrast to many newer one design classes, the Albacore class does not restrict the manner by which an owner can rig controls. Most newer one design "builders" classes subscribe to a strict one design nature - that no one can get an edge over anyone else because any alterations to the basic boat are prohibited. This holds great attraction for some, that the lack of freedom will keep the cost low. However, there is a down side: an owner can not alter the controls to suit his / her strength, weight, or other preference. Furthermore, the lack of adjustability constrains the conditions in which lighter weight crews can compete since the rig can not be de powered as effectively. These classes can only be competitively raced with a relatively narrow helm + crew total weight range. In the Laser class many sailors have devised work arounds to the absolute restriction to changing controls which involve using thin spectra line with cascaded purchases formed by loops tied into the line - resulting in a high friction control which wears out in a few days of racing.

The Albacore rig is "restricted" as opposed to "one design." The Albacore class rules have been carefully crafted to prevent enhancements which will result in any tangible advantage, but with enough freedom so each owner can set up his / her boat as they please with almost total freedom as to purchase, where cleated, and line size and type. No one will, by virtue of expending large amounts of money, obtain a meaningful advantage on the race course.

**Jib Halyard:** The Albacore is very sensitive to jib halyard tension or actually - jib luff sag. Greater luff sag will increase the jib's draft and therefore power at the expense of pointing. Tensioning the jib halyard will reduce luff sag and flatten the sail entry, permitting the boat to be steered closer to the wind, but with less power. I recommend a 12:1 jib halyard using a triple cascade system with control lines lead to the thwart, permitting its adjustment at all times.

Arrange the forestay to pass through a small pulley at the jib tack, to a length of shock cord, to the mast and down past the deck partners to the halyard exit on the side of the mast. Now changes in the jib halyard setting will be replicated in the forestay, which will be held at a near constant tension by the shock cord, and will provide a steady reference from which the helm can gage jib luff sag.

One can not get the most out of the Albacore by merely setting the jib halyard on a number read off a sheet - you must understand what it does to the rig, and adjust it optimally while sailing. A reasonably good starting point is to seek between one and two inches of sag - if the boat feels slow, ease the jib halyard a bit. If you can not point as well as other boats, tighten it a bit. In moderate to high winds the jib halyard can be adjusted to just bring the leeward shroud almost tight - more than this will depower the boat too much.

**Jib Leads:** The jib track should be installed fore-n-aft on the inboard edge of the seat. Install a small Harken hexaratchet on the adjustable slide. The jib sheet is lead from the jib clew, through the ratchet block, and to the crew's hands. I prefer that the crew NOT cleat the jib, particularly when sailing up wind. The jib lead must be set while sailing. You must have three sets of tell tales: two sets on the luff, spaced to approximately trisect the luff, and one on the trailing edge arranged to be visible through the window on the main. Begin setting the jib lead by locating it so the upper and lower jib luff tell tails break evenly while luffing up from a close hauled course. Now trim the jib in hard - the trailing edge tell tail should fly until just before the sheet comes tight. If the jib trailing edge tell tail does not stall, move the jib lead one pin forward from this point. If the trailing edge tell tail stalls too early, move the jib lead one pin aft. I have found that it

helps to move the lead a pin forward in winds over 18 knots. I have never found it advantageous to move the lead aft in high wind. I have experimented some with barber haulers with mixed results. I have not been able to improve the boat's performance by moving the jib leads outboard in high winds, but I have heard it works well in some conditions.

**Vang:** Correct vang adjustment is as critical as the jib halyard. As with the jib halyard, it is not possible to convey a perfect how to setting; its effect on the boat must be learned and its effects understood. Tightening the vang will pull the boom down and forward into the mast. This has the compound effect of tightening the mainsail leech and bending the mast. As described previously, mast bend is resisted by the shrouds and spreaders - you can see this with the boat on a trailer - apply some jib halyard tension and pull the vang and note how the shroud angles at the spreader tip, tending to constrain the mast's forward motion. The vang should be arranged to be adjusted while sailing, and should be at least 12:1 - I prefer a 16:1 arrangement using a triple cascade system. Set the boom attachment XX inches from the aft side of the mast and the lower connection as low as possible on the mast.

**Cunningham:** Adjusting the Cunningham changes tension in the sail cloth on the luff. More tension tends to move the sail's draft forward, open the leech, and flattens the main. The outhaul is of secondary importance on the Albacore. In light winds it should be adjusted to not quite remove the wrinkles along the luff. In moderate wind the Cunningham should be pulled until the wrinkles are completely removed. In extreme wind the Cunningham should be pulled as tight as possible. Doing so will depower the main by opening the leech and, in combination with added rake, further bend the mast. The Cunningham should be rigged as a 2 or 4 to 1 and lead aft into the boat.

**Outhaul:** Rig the outhaul with a 4:1 purchase lead to the mast or to the centerboard cap. Tightening the outhaul will flatten the lower 1/3 of the main and open the leech a bit. When sailing upwind, the outhaul should be pulled tight in light winds, eased off a bit in moderate wind, and pulled very tight in heavy winds. When sailing off wind the outhaul should be released such that the foot is completely slack and heavily wrinkled. A shock chord take up will help it release.

**Mast Prebend:** Prebending the mast flattens the main, opens the leech. It also pulls the mast forward against the shrouds. This makes the jib luff respond more directly to changes in the jib halyard, and tends to decouple the jib luff tension from main sheet tension. Mechanisms to pre-bend the mast could consist of a deck mounted magic box, mast ram, or other system. The simplest method is to place wooden blocks behind the mast at deck level. Use the boom vang to bend the mast, drop the blocks in place, and release the vang. Prebend the mast in light winds to open the leech and reduce the main's draft.

**Main Sheet:** The main sheet should be a split tail type, arranged with each tail dead ended on the deck about 6 to 8 inches forward of the transom. Lead the main sheet to two turning blocks on the boom and to the centerboard cap arranged such that the main sheet runs vertically between the boat and boom, that is so that tension in the main sheet does not pull the boom neither forward nor aft when center lined.

**Jib Sheets:** I arrange the jib sheets with a brummel or sister clip attachment to the jib clew. This makes it easy to attach / detach the jib sheets, making it easy to wrap the jib around the forestay after racing. I do not have cleats for the jib, so an easy to grab

jib sheet is appropriate for high winds.

**Main Halyard:** Most Albacores are equipped with a simple fiber line main halyard which is lead internal to the mast from the top either out the side just above the step, or through a turning block in the mast base. My last boat had a wire halyard which ran out the mast side to a "rake" riveted to the side. When sailing in high wind, the main halyard can stretch some. I have found it to be very slow to have the main only partially hoisted. If you find the main sail headboard below the upper black band by more than an inch, adjust (hoist) the halyard a bit to bring it back up. In high wind the combined vang and Cunningham tension will stretch the halyard; pretensioning the halyard while rigging is a good idea. Place a small wood dowel in the mast track at the head arranged such that the mainsail headboard can not be hoisted above the upper black band. Now pull the main halyard as tight as possible while rigging. This will reduce or eliminate the mainsail dropping due to halyard stretch.

## Sailing Upwind

The Albacore has a fairly wide groove. It can be sailed very close to the wind in flat water - even to the point where the jib is luffing almost all the time, or driven off slightly with additional speed for nearly constant VMG to weather. The key to good upwind speed is keeping the boat in balance and trimmed properly. The helm will know when the boat is out of balance, typically it will have excessive weather helm. Once the boat is set up as described above, the helm will be primarily a function of heeling angle. The best angle is when the helm goes dead in your hand - no force on the tiller either way. This seems unnatural at first, that there is a lack of "feel." Some sailors believe that a small amount of weather helm is good, that the rudder at a small angle of attack contributes to the total lift generated by the boat. I contend that the rudder is nothing more than a brake which is applied each and every time it is used. Ideally one wants the rudder to simply follow the boat and not develop any lift and minimal drag.

**Drifting Conditions:** Prebend the mast almost to the limit on the deck mast partners. The vang and Cunningham should be slack, & outhaul tight. Steer slightly below a close hauled course. Adjust the jib halyard to produce a jib luff sag of 3-4 inches when accelerating, and around 2 inches when up to speed. This means loosening the jib halyard before sailing through wakes or chop. If the boat stops for any reason, ease the jib halyard and bear away to build speed, easing the main sheet. Speed is very important - and more important than pointing. Do not hesitate to bear away 10, or even 20 degrees away from the wind to maintain or build speed. Pinching high of a close hauled course is suicidal. The boom should be outboard of the rail to accelerate and never center lined. Clear air and the ability to bear away are important - if you are being pinched up by someone to leeward, bear away and drive through their lee into clear air or make two clearing tacks. Weight should be forward - to the shrouds in no wind, and moving aft to keep the knuckle just submerged when the boat has perceptible headway.

**Light Winds:** Leave the mast prebent. The main will begin twist. Counter this by applying vang such that the main's shape is held constant. The mainsail top leech tell tail should be flying about 50% of the time. Tighten the jib halyard in flat water such that the sag is between 0.5 and 1 inch. In chop allow the jib to sag up to 3-4 inches to accelerate or drive off to leeward to change position or when sailing through waves. Place crew weight far forward until the boat is moving, at which time weight should be adjusted to keep the knuckle of the bow at or just below the water surface. Keep the boat perfectly flat in winds in which the sails will stay full.

**Moderate Wind:** Increase vang to maintain leech tension such that the tell tails are flying 100% of the time - if they are not the vang is too tight. Vang tension is a critical adjustment. If it is too tight the boat will lack drive; too loose and the boat will be overpowered and exhibit weather helm. Since there is such a small difference between a stalled leach and a correctly set vang, the crew must adjust it constantly in response to the changing wind velocity.

Jib halyard should be adjusted for 1 to 1/2 inches of sag when sailing normally, eased a bit when accelerating or sailing through chop, or when sailing low of close hauled course. As with the mainsail leach, the jib luff sag must be maintained within a very narrow range, necessitating constant adjustments in response to wind velocity. Another source of feedback to which one can correlate the jib halyard to is leeward shroud tension: the jib halyard should be set to where the leeward shroud is just not quite tensioned - in fact the leeward shroud should alternately tighten and slacken when sailing through waves. If the boat seems to point well but is going slow, ease the jib halyard a bit. Conversely, if the boat has adequate speed but does not point, tighten the jib halyard. Do not allow the boat to heel more than a few degrees. Hike out, ease the main, and steer a little high of close hauled. It may be necessary to ease the main out well past the leeward rail.

Focus on keeping the boat moving fast when sailing in steep chop. The objective is to avoid having the boat stopped when it's bow comes off one wave and smashes into the next. Watch the water 5 to 10 feet from the boat's bow for larger than normal or breaking waves. Steer up or down to avoid the worst waves - down mostly. It may be necessary to bear away 10 or 15 degrees. Keep the boat flat throughout this transition. The crew and helm must ease both main and jib such that they are correctly trimmed throughout the maneuver - and hike a bit harder. Maintaining the boat's balance and trim while bearing away minimizes ground lost to weather while ducking a steep wave. It is important to have "wobble room," that is, you do not want boats close to leeward in steep chop as they inhibit your freedom to maneuver to best encounter (avoid) waves. In large seas one should head up slightly to meet an oncoming waves, and bear away on the back side. This reduces the amount of pounding a bit and therefore the energy dissipated. If the crew torques forward and down at the crest it helps the bow follow the back side of the wave and lessens slamming. Adjust fore-aft weight such that the knuckle of the bow is just above the water's edge in smooth water, and a bit higher in steep chop.

There is an interesting wind range where the jib halyard can be eased a bit, to say 3-4 inches of sag, and the jib luff tension can be controlled with the main sheet. This is useful in the 12-15 knot range in flat water with occasional motor boat wake - like the Potomac River in summer, when sailing underweight, i.e. with a light crew. Ease the vang off a bit so the main twists and the mast is straighter than you would normally sail with. Now when the main is sheeted tightly, it's leech and jib's luff will be tensioned simultaneously. When sailing in smooth water keep the main sheet tight, hike hard, and feather a little to keep the boat flat. This will depower the rig a little by pulling the mast aft, allowing it to bend. The tight main leach and jib luff will provide pointing ability. When encountering motorboat wake, easing the main sheet a little will allow the jib luff to sag somewhat and the mast to pivot forward, powering up both sails. So the tune of the entire rig can be changed by adjusting the main sheet. This technique does not work when the wind strength increases to the point that the main must be eased to keep the boat flat.

**High Wind:** At some wind level the boat will become overpowered. The reader may

know the sensation - boat over on her ear, huge weather helm, having to ease the main, which is always luffing, well outside the leeward rail, and pinch up into the wind to keep from being blown over. The skipper and crew are hiking really hard, but the boat just does not move. The boat feels "bound up."

Albacore sailors in the UK use mast rake to reduce rig power in high winds. Mast rake is set with the jib halyard. Jib luff tension is then set by adjusting the shrouds on the fly. Albacores in the UK use a wide variety of systems to adjust shrouds ranging from simple levers, to cascaded block systems, to hydraulics. Raking the mast aft does several things. As the mast above the deck is moved aft, pivoting about the mast step, the geometry and juxtaposition of where each shroud touches the hull, spreaders, and mast changes. When in its upright position, the shrouds, spreader tips, and hounds all lie in one plane, more or less, and work to constrain middle of the mast's motion fore-n-aft thereby limiting bend. Raking the mast aft moves the hounds (where the shrouds connect to the mast) and spreaders aft, placing the spreader tips aft of a plane described by the hounds and chain plates. When the rig is tensioned the mast will bend in response to the shrouds trying to become straight. While sailing raked, the spreaders will constrain the mast less, and the mast bends still more. Greater mast bend pulls the middle from and flattens and depowers the main. A person on the boat will see the main as being flatter. The leech will have a twisted open shape - no matter how much vang is applied. The main will no longer be back winded just aft of the mast. Depowering in this manner reduces the heeling moment while maintaining drive at only a small penalty in pointing ability. The sensation is that the boat has been "released." It now eagerly punches through steep chop. The main can be sheeted in almost to centerline and kept full with helm and crew sitting on the weather rail - just going for a boat ride.

Raking the mast also moves the jib halyard to mast connection, rotating the jib aft about its tack. If the jib leads are not adjusted at the same time they will be effectively lead higher from the jib. This depowers the jib by twisting it off. I believe it better to maintain the jib lead, that is, move the lead forward a bit to maintain the top to bottom luffing characteristics described above.

In North America, it is illegal to adjust the shrouds while racing. Easing the jib halyard alone has the contradictory effect of increasing jib luff sag, powering up that sail, and permitting the mast to rake, with the accompanying increased mast bend and reduced main sail power. Conversely, tightening the jib halyard reduces power in the jib by straightening its luff, and increases main power by pulling the mast forward, which reduces bend. We North Americans must adjust our shrouds before the start of a race. In higher winds, one should adjust the shrouds down a pin hole or two to rake the mast aft and depower the rig. The amount of rake will be less than that used in the UK, since too much will reduce power on off wind legs. North American Albacore sailors must strike a balance between upwind manageability and off wind power. This compromise prevents North American Albacore sailors from sailing their Albacores to the boat's full potential, but reduces the boat's complexity and cost.

Raking the rig aft may seem like it would only exacerbate the already large weather helm, but in fact the opposite is true. Before raking the mast, the helm will have to ease the main out, causing the forward part of the sail to back, with a corresponding aft shift in the center of effort. Bending the mast and thereby flattening the main by raking allows the whole sail to be used, so the effect on weather helm is not as great as one might think. In extreme conditions one may have to raise the centerboard a small amount to move the center of lateral resistance aft and maintain balance. There should be NO net helm when sailing upwind.



Considerable vang must be used when racing upwind in high wind. I have a 16:1 vang and pull it as hard as I can to bend the mast and control the leech. When the mast is raked aft, it will seem like no amount of vang will bring the leech into line.

## Reaching

In general, adjust the rig for maximum power in all but the most extreme conditions. Ease the jib halyard to obtain 3-4 inches of luff sag. Ease the Cunningham, and outhaul, and ram or block the mast aft at deck level. Vang tension is critical, as always: tensioning the vang has the contradictory result of depowering the rig from greater mast bend, and increasing power by tightening the leech. Forcing the mast aft at deck level nets both, by preventing the mast from bending with increasing vang tension. The vang must be adjusted to almost remove twist from the main - but not hook the leech. I find that there is never one perfect setting - you can only get close. Then you must iterate up and down, a little more, note your relative speed, then a little less. When you begin to go a little faster than the boats around you - hold that setting, until your relative speed drops, and repeat. Adjust fore-n-aft trim, as always, to keep the bow knuckle at the water's edge.

The crew must manually fly the jib, holding it outboard of the rail. The crew must watch the jib tell tails and keep them all streaming by adjusting the lead up or down in response to the ever changing winds and heading. Helm and crew must communicate constantly to maintain top speed: the jib sheet tension is the primary indicator. The boat can be born away from the wind until the jib sheet tension begins to drop. If the helm maintains this course, the boat will lose speed, and permit others sailing at only a very small amount closer to the wind to pass. If a wing or leeward mark has been set such that the rhumb line course is below that which will keep the jib full, it is often better to sail a little high initially, and then switch to wing and wing for the later half of that leg.

Raise the centerboard to reduce drag. Look at the wake as it passes the stern. If the bubbles are equal side to side, raise the board a bit. Too little centerboard is indicated by the wake trailing to windward of the stern, caused by too much leeway from inadequate lift - put the board down a bit. As with the vang, periodically adjust the board about the nominal setting.

The Albacore planes readily in moderate and high winds. The crew must adjust their weight to prevent the bow burying in waves, but not to move too far aft, as the rounder after sections may lead to instability. The helm and crew must coordinate sail trim in planing conditions. When a puff hits, the apparent wind will move a bit aft, and the crew must ease the jib momentarily to maintain correct trim. The jib must be trimmed in gradually as the boat accelerates in the greater wind velocity. Steer the Albacore down the face of waves until planing, and head up or down to avoid running into the next wave in front, thereby maintaining speed.

## Running

Mike MacNamara (former Albacore World Champion and sailmaker) said it best when he explained that the Albacore goes best when it is "...sailing out from under itself," that is, heeled slightly to windward and going a little sideways. No where is does this apply more than running.

In the UK, Albacore sailors will ease both shrouds and rake the mast far forward in the boat. This removes all mast bend below the hounds, which has a dramatic effect on off wind performance as the main is greatly powered up.

In North America we do the opposite: the formula is to rake the rig by easing the jib halyard and ramming the mast aft with blocks in the partners or mast ram. This serves the dual purpose of powering up the rig by straightening the mast and permits the boom to be pushed out to right angles to the boat's centerline by allowing the leeward shroud to go slack. The vang adjustment is critical - as the optimal setting is just enough to just begin to hook the leech. At this tension, a slight increase in wind velocity will make the main twist off too far, and a slight reduction in wind strength will allow the leech to hook. For this reason, the vang must be constantly adjusted - as the optimal setting is not something which can be readily sensed or explained: keep adjusting it till you are going a little faster than those around you - then hold, until your speed advantage ends, and repeat.

As stated above, the jib halyard should be eased until the mast falls aft onto the gate, and eased more until it sags 6 to 8 inches from the forestay while set on the whisker pole wing on wing. Pull the jib sheet until all slack is out of the jib when sailing dead down wind.

Raise the centerboard until it is completely inside the boat in all but high winds. Adjust weight fore-n-aft until the transom is as low in the water as possible without dragging (look at the boat's wake though the plexiglass transom flaps). Heel slightly to weather and allow the boat to crab slightly to leeward. Do not steer the boat - instead try to settle into a steady state condition where the rudder is not being used except to correct for small transient imbalances. If there is a consistent weather or lee helm, heel the boat further to windward or leeward respectively until you can not detect force on the tiller. The skipper and crew should not move around in the boat. Note that with the centerboard all the way raised, you will not be able to change course. This requires that you think far ahead during off wind legs - to get set up in a lane of clear air, and avoid altercations with other boats. The Albacore does not make better VMG downwind by sailing above a dead downwind course. For this reason, focus on keeping the boat pointed directly at the leeward mark. Note the wind shifts and, with the boat pointed at the mark, gybe when you are by the lee. Focus on keeping the boat pointed at the mark during and directly after each gybe.

The Albacore can be sailed like this to about 10 or 15 degrees above dead downwind. When conditions require you to sail higher, you will have to lower the board about 1/3, ease the jib, which is still on the whisker pole, until it will just barely remain filled. Flatten the boat, unblock the mast and tighten the jib halyard a bit. Ram the mast aft to keep it straight. The boat can be sailed up to a beam reach in this manner without losing too much. If this course must be maintained for an extended period it is better to strike the pole and fly the jib to leeward.

Place the helm and crew's weight as far forward as possible in drifting conditions. Adjust weight laterally to create a slight heel to windward. The crew must hold the boom out and into the shrouds forcibly. The jib should be winged out on the whisker pole. Remain motionless in the boat. When the wind picks up and the boat begins to move adjust the weight aft a bit until the transom is nearly kissing the water.

In high winds one must be right on top of the boat to keep it upright. Raising the board

fully is still fastest - but risks a capsize. I prefer to raise the board all the way, since it is fastest, and will instruct my crew to maintain a "death grip" on the centerboard in these conditions - so even if they slip and fall, the board will be lowered a bit and provide steering control. Sailing the boat in these conditions is a real balancing act - one must keep all the driving and drag forces nearly lined up. Alternatively, just leave the board down about 1/4 or so. Keep the weight aft to prevent the bow from burying. The skipper should sit on the weather rail and the crew sits wherever necessary to balance the boat. The vang is critical in puffy high wind conditions sailing dead down wind. When a puff hits, the rig will deflect, bending the mast towards the leech and spilling air by twisting. This creates a reaction which tends to heel the boat to windward - a very unnatural feeling (particularly when the mast hits the water!) The helm can compensate for this by heading up a small amount and / or pulling in the main sheet to generate more leeward heeling moment. Of the two sheeting the main is preferable - heading up in heavier conditions will result in a rapid increase of heeling moment, and if the crew does not respond quickly a capsize to leeward can result. Also, if the centerboard is not down enough, the boat will simply slide sideways through the water when the helm attempts to head up, likely resulting in a capsize to windward. If the main appears to twist off too much and / or the boat suddenly feels "weird," tighten the vang a little. Watch for puffs and be ready. Typically the vang is adjusted for the average wind strength about every minute and main sheet and steering are used to react to changes on a second by second basis.

The Albacore will surf readily, which can greatly increase speed on downwind legs. The helm must strive to keep the boat's bow surfing down the face of a wave, but never stuffing into the next wave in front. Instead, when approaching the next wave, bear off or head up to avoid the next wave and maintain speed, coordinating weight placement to keep the boat upright.