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Rigging Manual

Vector

Stepping the Mast

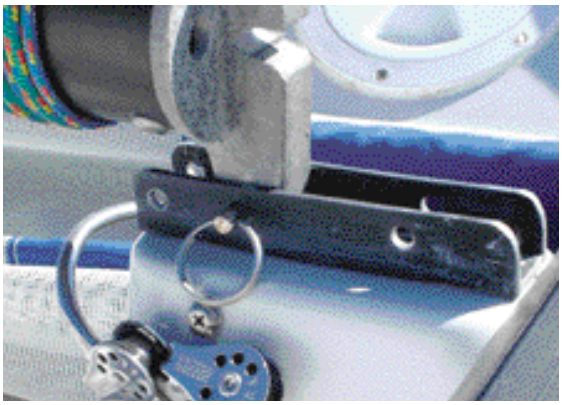
Rigging and Sailing The Vanguard Vector

The Vector is an exciting new boat that combines the high performance speed and handling of the latest skiff designs with extraordinary user friendliness. It sails well with a broad range of crew weights (270 – 340 pounds) with the aid of proper mast tuning and works well in all wind conditions.

Stepping the Mast and Leading Control Lines

The vector comes with most lines rigged. To rig the boat, you must first step the mast, then rig the trapeze wires, main and spinnaker sheets.

To step the mast, clear any twists from the halyards and shrouds. With the tip of the mast directly aft of the boat, place the mast butt in the mast step, with the front of the mast facing up. Place the mast step pin through the butt and step so that the mast butt becomes connected to the mast step.



Mast step and pin

The main and jib halyards come attached to the mast and led through their respective lead blocks on the mast. You must lead the spinnaker halyard before stepping the mast. Pass one end front to back through the spinnaker halyard lead block and down the mast, going through the lead ring at the hounds and through the hole in the starboard spreader. Secure both ends to the mast so that you don't lose the halyard up rig in the stepping process.

Next, pin the upper and lower shrouds to their corresponding shroud adjusters. Start off with the pins in about the center of each adjuster. The mast is raised with the shrouds connected.

One crew goes in front of the boat, holding the forestay in his hand. The other crew stands next to the mast behind the boat, at about the spreaders. That crew picks up the mast over his head and begins to walk forward.

Holding the mast behind the boat

The forward crew takes up slack in the forestay as the mast is being raised. When the aft crew is at the transom, he throws the mast up into the air and the forward crew pulls the forestay, raising the mast the rest of the way. The mast step/butt connection will stabilize the mast through this step. Tie the forestay tail to the forward hole in the jib tack fitting so the shrouds are just slack. Once the mast is raised, remove the pin from the holes at the aft end of the mast base and place it through the next set of holes forward on the mast base. Failure to move the pin may result in a cracked mast step.

To install the trapeze wires, simply tie the appropriate take-up shockcord to each trap wire's hook. A bowline through the horizontal bar in the hook works great.

The main and jib halyards will be ready to go at this point, but you must lead the spinnaker halyard. To do this, first tie the hoist end of the halyard (the part of the line not going through the leads on the mast and spreaders) to the jib tack fitting. Then take the retrieve end of the line and lead it down the mast so that it is aft of the starboard lower shroud. From there it is led from back to front through the cheek block immediately below the starboard side of the mast step. Next it goes forward through the open end of the interlinked blocks and aft through the cam cleat on the starboard side of the cockpit floor and through the hoist lead block immediately aft of the cam cleat.

Finally, the halyard goes from back to front through the douse lead block immediately aft of the spinnaker sock, and forward all the way out the front of the spinnaker sock.

Next, attach the boom. Simply pin the boom-mounted gooseneck eye to the mast mounted gooseneck bracket.

The only lines left to install are the main and spinnaker sheets. The mainsheet is dead-ended on the aft boom block, led through the bridle block, through the sheave of the aft boom block, and forward through the auto-ratchet on the boom. The tail is passed through the plastic eye one the floor. Hardware has been installed for a shockcord takeup on the mainsheet tail. To create this take-up, pass the mainsheet tail through the eye on the cockpit floor and tie it to a 20' long piece of 6mm shockcord. From there, lead the shockcord through the eye at the underneath the spinnaker throat, and aft to the spinnaker halyard hoist lead block. Tie the tail to the spinnaker halyard hoist lead block underneath the stand-up spring. One nice thing to do is to splice the mainsheet shockcord takeup to the sheet itself. To do this, pull about 6" of the core out of the mainsheet and cut it. Tape the remaining core to the shockcord takeup, then pull the cover back over this join. Using a sailmaker's needle and whipping thread, sew the cover to

Spinnaker halyard set-up

Assembly

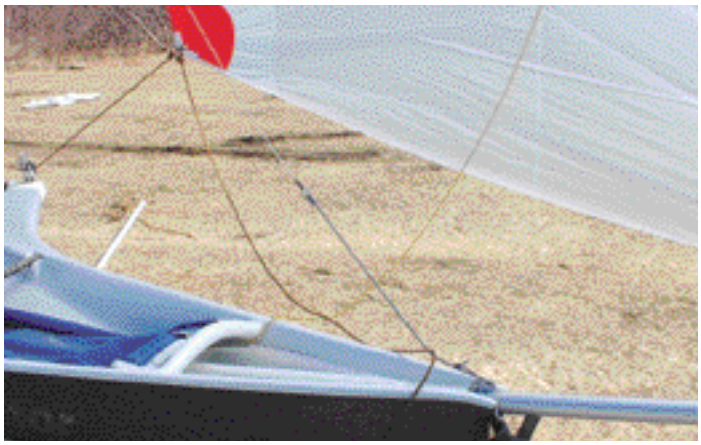
the shockcord. For extra credit, heat-shrink the join of the cover and shockcord.
To install the spinnaker sheet, take one end of the sheet, run it through the spinnaker sheet auto-ratchet, behind both crew trap wires, forward of the skipper trap wires and underneath the boom, through the other auto-ratchet and forward to the bow. Make sure that the line is passed through the auto-ratchets in the proper way – the ratchet should click when you trim the spinnaker sheet – not when you ease it!

To install the spinnaker, have the hoist end of the halyard, the retrieve end of the spinnaker halyard, the two tails of the spinnaker sheet, the tack line and the spinnaker all at the bow of the boat. First, using a bowline, tie the halyard to the head of the sail. Next, tie the tack line (line that comes out the front of the pole) to the tack of the sail. The clew of the sail should be to port of the boat, as though you are on starboard tack. Take the starboard spinnaker sheet, pass it over the pole behind the tack line and in front of the forestay, and tie it onto the clew using a bowline. Then take the port spinnaker sheet and tie it to the clew using another bowline. Finally, take the retrieve end of the halyard, pass it underneath the starboard spinnaker sheet and then under the foot of the kite, then thread it through the retrieval grommets from bottom to top, tying a stopper knot after passing through the top grommet.

Hoist the kite to make sure everything is led correctly, then release the halyard and pull the retrieval line to store the spinnaker it its sock.

Spinnaker sheet set-up

Spinnaker installation



Correctly set up and hoisted spinnaker

Hoisting the Sails

Since the boat has so much sail area, it is recommended that the sails not be hoisted until both crew are fully dressed and ready to hit the water. If the boat is tied down to the dolly, it is unlikely that the boat would flip over; however, this is a risk that is unnecessary. The last thing you want is to watch your boat get knocked over by a puff while you are pulling on your wetsuit.

To hoist the jib, first point the bow into the wind. Shackle the jib sheet to the clew of the jib.

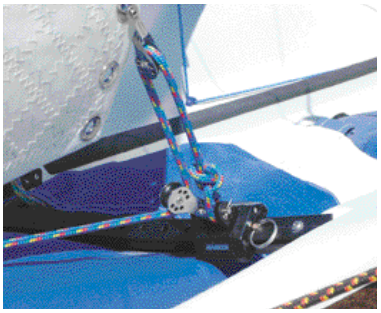
Then fasten the tack of the jib to the aft hole on the jib tack fitting using the shackle. Tie the forward jib sheet tail to the clew of the jib, and attach the halyard to the head of the sail. Make sure that the 2:1 halyard has no twists in it. Pull the halyard up to the desired height, cleat the halyard and thread the tail through the halyard keeper cleat. Coil the tail and stuff it into the halyard pouch on the spinnaker sock.

Hoisting the main is straightforward. Tie the clew of the sail tightly to the boom using the clew tie-down, pass the outhaul through the grommet and tie a stopper knot through the hole in the boom.

Attach the halyard shackle to the head grommet and hoist the sail. Be certain that the halyard has no twists in it and is straight down the aft side of the mast, between the port and starboard trap wires. It is extremely important to keep the mainsail bolt rope in the luff track when hoisting the sail. Failure to feed the bolt rope into the luff track may result in the bolt rope jumping up in the mast track, necessitating the dropping of the sail and possibly damaging the mast track. Spraying McLube on both the mainsail bolt rope and the mast luff track will aid this process tremendously. When the sail is fully hoisted, cleat the halyard up top, lead the tail through the tail keeper cleat and coil it and store it next to the jib halyard.

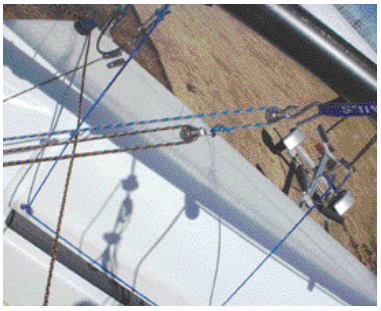
After the main is hoisted, hook the vang onto the boom bail.

Pass the cunningham s-hooks through the cunningham tabs above the tack. Lastly, wrap the tack strap around the mast, making sure



Jib clew

Outhaul



Boom vang set-up

Cunningham

Tuning and Adjustments

The Vector's rig is tuned somewhat differently from other dinghies you may have sailed. This is because the rig tune changes fairly drastically from when you are in the parking lot to when you are out sailing the boat. The weight of both sailors on the wire will cause the headstay to tighten considerably, and will also pull the tip of the mast to weather so much that the windward primary shroud usually goes slack. The lower shrouds also have a considerable influence on how the rig sets up. The goal of tuning is to have the rig set up in such a way that the rig works with both sailors on the wire, but also works when you are off the wire, such as during a tack.

To start with, the rake setting should be about 23'6" from the top of the mast to intersection of the transom and deck on the centerline. At this rake, the shrouds should be quite firm (about 24 on the Loos Model PT-1 tension gauge). The lower shrouds should be not quite as firm (about 7 on the Loos gauge). The rake is measured with the jib up and the mainsail down.

Rake is controlled by jib halyard tension and shroud pin position. Pulling the jib halyard harder will increase the distance from the tip of the mast to the transom. This is referred to as "decreasing rake." Decreasing rake is a good idea for heavier teams or for lighter air, as this will power up the rig. The maximum distance from the tip of the mast to the transom is about 23'8."

The goal of the lower shrouds is two-fold: to control lower mast bend and to keep the lower part of the rig in column from side to side. The more power you want, the tighter the lower shrouds should be. If the lower part of the main exhibits considerable overbend wrinkles, your lowers are probably too loose (photo). Conversely, if the boat feels like it is alternately over- and then underpowered, it is likely that you have the lowers too tight. Another symptom of too much lower shroud tension is that the telltale off the middle and lower middle mainsail battens will stall regularly. The goal is to have a fairly full sail down low, with the upper half of the sail fairly flat.

When there is more wind, you should rake the mast back. It can go back until the rake measures about 23'2." This is the rake setting we use when we are wondering if it is sane to go out. As you rake, you must move the upper shrouds down on the adjusters so that the rig becomes tensioned earlier. You should be pulling quite hard on the jib halyard to pull the mast up to this 23'2 rake measurement. Tension on the upper shrouds on the Loos PT-1should be about 30. Generally, the more you rake, the tighter the upper shrouds should be.

You will also move the lower shrouds down on their adjusters as you increase rake, but the amount you will move the lowers down is less than the amount you will move the uppers. This is for two reasons: first, the lower shrouds are much shorter than the upper shrouds and if you move the lowers as much as you move the uppers, it will have a more radical effect. Second, when you are raking back for breeze, you generally want the lower part of the main to be flatter. This is accomplished with relatively less lower shroud tension.

The other adjustment that you will want to make on land as you tune the mast is the bridle. As the rake increases, the bridle height should decrease. The bridle should be set so that the boom is just "two-blocked" on the bridle just at the point of absolute maximum mainsheet trim. The sheet pressure required to get to "two-blocked" should be formidable (it should take all of your strength and should be tough to hold onto), and the average mainsheet trim should give about 2" to 4" between the blocks. Generally, 1" of rake should have a corresponding 1" decrease in bridle height.

Now with your rig tuned, you are ready to hit the water and try sailing.

Launching a Vector is slightly more demanding than launching some other boats. The boat has a large amount of sail area compared to its weight. Once you are out on the water, this results in incredible sailing. Getting to the water, it has to be respected. It is first of all imperative that the vang, main and jib sheets are completely slack.

Whether you are launching down a ramp or beach, make sure the boat enters the water pointing as much into the wind as possible. If the wind is blowing onshore, this means that you will put the boat in the water bow first.

NOW YOU ARE READY TO SAIL

FOR YOUR OWN SAFETY, MAKE SURE YOU ARE WEARING APPROPRIATE CLOTHING FOR THE CONDITIONS, AND PLEASE OBTAIN PROPER TRAINING BEFORE SAILING. HAVE FUN AND **DON'T FORGET YOUR LIFEJACK-**

Whichever way the boat is pointing when it goes into the water, one person should be at the shrouds on the weather side while the other sailor wheels the boat from the front. In case of any strong gusts, the person at the shrouds can put slight downward pressure on the rail and keep the boat standing upright.

Once in the water, the person who has been at the shrouds should stay where he is, and point the bow roughly into the wind, favoring a direction that keeps him slightly to windward. The crew who was wheeling the dolly should put the dolly away and then return to the boat, climb onto the boat from the transom, and put the daggerboard into the case. When the boat is in enough water, the rudder goes in. Once the rudder is in, the person in the boat balances the boat while the other sailor climbs into the boat from the transom, grabs the tiller, and steers away from the beach.

The Vector sails very easily while going up- or downwind. If your sailing area is up or downwind of your launch, life is easy. If it is a reach to open water, a few tricks will help you out. First of all, don't try to sail the boat full speed on a reach your first time out. Keep the vang looser than you would have it for top speed, and keep the main and jib rather eased. If it is windy, have the crew go out on the trapeze, but keep the skipper in the boat. The first couple of times you sail it, the Vector feels a little unstable on a reach and you are best just getting to open water without incident.

Sailing Upwind

Sailing the Vector upwind is pure pleasure. Trim the main in so that the boom is nearly two-blocked against the bridle block, and trim the jib until there is just a little roundness left in the foot. The jib shouldn't be trimmed so hard that the leech becomes totally straight – it should have just a hint of twist in the leech.

First the crew goes out on the wire, shortly followed by the skipper. When you are both out on the wire, pull the vang until the mainsheet feels light in your hand except when approaching maximum trim. If the boat feels "soggy" and underpowered, ease the vang slightly. If your pointing is poor, try easing the vang a bit and pulling more mainsheet. If you feel overpowered and the boat is jumpy and stuck in pinching mode, pull more vang.

As you accelerate, the jib can be trimmed so that the leech becomes fairly firm. Easing the jib 1 to 2 inches in large puffs will help keep the boat on its feet and flying.

When the breeze is too light to have both sailors on the wire, it doesn't really matter whether the skipper or crew goes out first. Generally, if the driver can go out and stay out without constantly adjusting, the driver should go out first. In marginal conditions, it is a fine move to have one sailor fully extended and the other sailor hooked up, trapezing off the cockpit floor stringers.

The Vector's mainsail seems to be quite sensitive to proper outhaul tune. In very light air, you will want the outhaul somewhat firm for a flatter sail. As the breeze picks up, don't hesitate to ease the outhaul enough to put the draft of the sail as much as 3" away from the boom to power up the sail. As both sailors go out on the wire, the outhaul is brought back on until it is quite tight as both sailors are constantly full trapezing.

Tacking

Tacking is best done as a smooth, committed maneuver. The skipper should announce the tack so that the crew has enough time to prepare. When both sailors are ready to tack, the mainsheet is eased 5 or 6 inches as the skipper smoothly turns the bow into the wind. At the point when the windward rail unweights, both crew quickly cross the boat. If the tack is done smoothly, both sailors will be able to hook into their trapezes and extend on the wire right away. If there are any disruptions in the tack, letting the boat establish itself on the new tack for a brief moment will pay off. It is generally easier to tack with the crew holding the mainsheet, although it requires effective communication between skipper and crew in powering up the main when the tack is complete.

The turn of the tack should start gently and become more aggressive as the boat approaches head to wind and then bears off on the new tack.

A clip on the tail of the jib sheet allows the crew to attach the jib sheet to himself so that he doesn't lose the tail on tacks. Be aware that there are safety considerations with this technique, and it should not be attempted until you are comfortable in the boat. If you capsize with the jib sheet connected to the crew, the crew must unhook the jib sheet before the boat is righted.

Setting the Kite

Here's where the fun begins. Turning from a beat to a run is generally one of the more demanding moves in any type of skiff. The turn must be smooth, quick and committed. In preparation for the turn, the vang is eased slightly and the cunningham is slackened completely. As you become more comfortable with the turn, you can stop easing the vang. This will keep the boat powered up through the turn, and will save a step in bringing the vang back on after the kite is hoisted. Both sailors move aft until the skipper is at the turn in the rail. Both crew remain on the trapeze until about halfway through the turn, when the rig will depower tremendously. At this point, the crew jumps into the boat, grabs the hoist line and pulls the kite up. The crew can perform the hoist either standing in the middle of the boat or leaning against the windward rail. If both sailors had been trapezing upwind, the skipper should remain on the wire through this maneuver, although he will want to raise himself up several inches on the trapeze height adjuster. A kind and generous skipper will watch the hoist and will call out to the crew when the kite is at the spreaders and then when it is one pull away from fully hoisted. Be certain that the spinnaker tack is all the way at the end of the pole, as sometimes the pole will not fully extend until after the kite is at full hoist. When the kite is all the way up, the crew grabs the sheet and fills the kite. The skipper begins to turn the boat into the wind to accelerate while the crew connects to the trapeze and extends.

Kite trim on a Vector is similar to kite trim on other boats. It is critical not to overtrim, as this will slow the boat dramatically. If you are slow, try easing the kite. It is natural to steer the boat through about a 10 degree arc downwind through small puffs and lulls. During bigger puffs, it is not unusual to head down as much as 20 degrees to keep the boat balanced and rolling. When there is enough wind, it is much faster to double trap, but if you have to constantly head higher and higher to balance the boat, the skipper shouldn't hesitate to unhook and sit on the gunwale. Generally, in double trapping conditions, it is much easier for the skipper if he gets out on the wire first. Once there is a sailor on the wire with the kite up, the boat is generally going too fast for the skipper to hook up easily. Trying to hook up while you are moving at warp speed, steering the boat and bouncing over waves can be pretty difficult. Let the driver get out first, then the crew.

Sailing flat is very fast. At first, you will feel that a complete crash is imminent when you are sailing flat enough. In time, you will become more comfortable with sailing flat.

When it is really windy, slightly overtrimming the sheet will help keep you in control, especially in large waves. In very windy conditions, you will be going through waves so fast that you may not be able to stay ahead of what's happening to you. Overtrimming the kite allows you to throttle back, stay in control and avoid any nasty wipeouts.

Gybing

There really isn't much to say about gybing. You just go for it! The initial set-up consists of both sailors moving slightly forward on the rail, so that the skipper can make a clean cross. The skipper should steer a nice clean arc into the turn while the crew holds the sheet, neither easing nor trimming into the turn. It's important to consider boat speed when gybing. In light air, you won't be moving very fast and consequently you turn the boat fairly firmly. When it's windy, the same firm turn will eject both sailors backward from the reail and into a certain deathroll. If the magnitude of the rudder turn is expressed in hours of the clock in lighter airs (i.e. moving the tiller from 12 o'clock to 1 o'clock), then it is expressed in terms of minutes, and perhaps seconds, in heavier air. When the boat gets near dead downwind, both sailors unhook and cross the boat. The crew gives one big, quick ease on the sheet and then trims the new sheet. The new sheet should be overtrimmed and then eased right away to get breeze flowing over the kite as quickly as possible. As the boom crosses, the skipper should make a VERY aggressive "s" turn, heading the boat back towards dead downwind and preventing the rig from generating too much power too quickly. As the sailors hook onto their trapezes and extend, the skipper heads the boat up to power up and accelerate.

Dousing

Dousing on starboard tack is easier as the kite will be behind the jib and the boat doesn't need to be heading as low as it does when you douse on port.

When you decide to douse the kite, the skipper heads down as the crew swings in off the wire. The crew takes one long pull of the retrieval line, then uncleats the halyard and begins pulling in the retrieval line. The initial pull on the retrieval line organizes the kite for the takedown and prevents it from falling into the water. It is an especially important move when dousing on port, as it helps the kite get around the forestay right away. Be careful not to step on any part of the halyard line during the douse. Pull the kite all the way into the sock and cleat the halyard to prevent it from swinging all around the rig.

If you notice that the halyard is re-cleating on the takedowns, try to take quicker, shorter pulls on the retrieve line. If you take big, aggressive pulls, you will remove all the slack from the system and re-cleat the hoist side of the halyard. Quick, short pulls help to keep slack in the halyard system.

Capsizing

Don't be put off by capsizing during your first couple of sails. It's a natural part of the learning process. Recovering from a capsize is easy if you do it right.

Because the mast is sealed, there is little risk of turning turtle, but one of the first moves should be that one sailor goes to the daggerboard and gets on it. The boat floats fairly low in the water when it is capsized, so this shouldn't be a problem for even very small sailors. The sailor on the daggerboard should ease the vang. The sailor who is in the water should ease the jib sheet all the way and, if the capsize happened downwind, retrieve the spinnaker. DO NOT ATTEMPT TO RIGHT THE BOAT WITH THE SPINNAKER UP!

After the jib and vang are eased and the kite is doused, the second sailor should go to the daggerboard and help the other sailor right the boat. When the boat is upright, one sailor should tread water while holding the weather rail near the shrouds while the other sailor climbs into the boat. The easiest way to get into the boat is over the transom, but climbing in over the weather rail is also easy if you are quick about it. Climbing into the boat forward of the shrouds is also possible. Once the first sailor is in the boat, he should balance the boat while the second sailor gets in. From there, retrim the vang and get going again.

Landing

Landing is really the opposite of launching. Ease the vang and both sheets as you approach the shore or dock. If you are landing at a dock, it is easiest to land with the windward wing parallel to the dock and have the crew jump onto the dock (being careful not to let the wing crash into the dock), grab the shroud and hold the boat. From there, the skipper pulls the blades out.

On a beach landing, one sailor should jump over the side as you get into shallow water. Make sure you can stand in the water you are jumping into. Once the sailor who jumped is standing, he should grab the weather shroud while

Quick Tips

- Some sailors new to the Vector are confounded by the twin hiking sticks. It is perhaps easier to think of the hiking sticks not as two separate sticks but as one bar that runs across the boat. If you try to tack the hiking stick as you would in a conventional boat, it will end in misery.

- When you are on the water but not sailing around, ease the jib. A trimmed jib makes what should be an easy job for the skipper to keep the boat out of irons and upright into a real pain. In general, if you aren't trying to sail fast, ease the jib.

- Tape over every pin, split ring and shackle on board.

- Avoid running aground at all costs. Running aground at speed will damage your boat. If you are sailing in shallow water, keep the daggerboard lower than the rudder. Allowing the rudder to hit bottom with any kind of speed may result in more extensive damage.

- If you are constantly overpowered, raise the board. This will increase control and speed, but decrease pointing slightly. In big breeze, it often pays to raise the board and sail fast and low.

- If your pointing is suffering, try lowering the bridle, easing the vang and trimming the sheet harder.

- Upwind, trim the mainsheet very hard as soon as the boat is powered up. The most mainsheet tension is required just before both sailors are on the wire. From there, the vang gets tighter and the main is sheeted relatively softer when both sailors are trapezing.

- The jib traveler should be further in for medium and light air, and further out for breezier conditions. If you have raised the board, the jib traveler should be on one of the outer settings.

- Keep your tack line's length tuned by adjusting the knot which ties it to the mast base. You can easily adjust tack line length on the water by means of this knot. Do this when the kite is doused – not when it's up!

- Make sure the pole extender line is led through the forward block correctly. The tail of this line comes out of the top of the block and then to the pole. Having the extender line go to the pole from the bottom of the block will reduce the amount you can extend the pole and strain the block.

- Tape over the hiking stick universal joint bases. Having one of these pop off stinks.

- McLube is a skiff sailor's best friend. Excellent places to use McLube are on the sprit pole, the spinnaker throat, jib track, mast, mainsail boltrope and rudder pintles. Don't allow any overspray to get on the rails or you will be sorry. Don't spray McLube on the hull bottom until you stop flipping regularly!

- Tune the jib sheet cleat base to your preferred angle by bending it up or down slightly. Bending it up lets it cleat more easily, bending it down lets it uncleat more easily.

- Passing a light sandpaper over your trapeze adjuster lines and sheets will make them easier to use until they are broken in. Don't overdo it or you'll be replacing them sooner than you should be.

- Be kind to your spinnaker and take it out of the sock and fold it between uses. The spinnaker's life is hard and thankless. Be kind to it and it will pay you back.

- Wash absolutely everything on your boat with freshwater after every sail.

If you discover any new techniques or tricks, let us know.
Enjoy your new Vector!