Thank you for choosing DIEBALL SAILING sails for your Interlake. Much time has been spent in developing a durable sail program that is capable of making a wide range of gear changes easily. This will allow you to be fast in a wide variety of conditions. The following is a guide to use in boat set-up and preparation. Use these ideas and numbers in developing your program.

If you have any questions please call. We want to help you sail fast, smart and have fun!

BOAT SETUP

Mast step placement: 76" from stem (intersection of hull and deck at bow not including the rubrail) to front of mast. This is the maximum forward position allowed by the class and reduces weather helm.

Mast Rake: Rake measurement is made by hoisting a tape measure as high as possible on the main halyard and measuring the distance from the masthead to the middle and back edge of the transom. The class standard is 25' 4". We find that with the DIEBALL SAILING sail design some boats perform best raked backed slightly more – 25'3" to 25'2". To find your sweet spot, set up as recommended and then rake the mast forward for greater acceleration (i.e. to handle chop or tacking duels) or back to point higher. While dialing in, make small adjustments (1/2"-1") and remember to keep rig tension constant while adjusting the jib leads as necessary. [Older boats that have a dual sheave mast head crane will need to add approximately 3" to this measurement.] Adjusting the rake to the conditions will help fine-tune your boat even further. In winds below five knots rake back 1" from your all around sweet spot. This will help eliminate lee-helm. In 15+ knot winds, raking forward an inch or more from the all around measurement will help reduce weather helm.

Rig Tension: Rig tension is an important gear-shifting tool. The Interlake performs best when set up tight. The best all around shroud tension (not forestay) should be approximately 280lbs as measured on the trailer without the sails up. Less experienced sailors may want to make the groove wider by decreasing this tension to approximately 240lbs. Easing off the tension in light winds is also recommended, especially if there is chop, to 240lbs. This will permit more headstay sag. Sag powers up the rig. When the wind is strong increase tension to 340+ lbs. This will reduce headstay sag thus keeping the jib flatter, depowered and pointing higher. A tool such as the "Loose tension gauge" is required to measure shroud tension. They are available at most marine outfitters. Remember to measure tension on the shrouds and not the forestay without sails up. Note: If your method of rig tensioning is at the forestay, then tightening the rig will automatically rake the mast forward some and vice versa.

Another tool for adjusting forestay sag is wire (halyard) tension. The wire is the cable that runs through the luff of the jib. It is connected to the jib halyard and tack. Adjustment is by tensioning that halyard. As the wind builds, increase wire tension (we recommend a minimum wire purchase of 6:1. 8:1 is better). Set the standing rig tension in an appropriate range for the expected wind & wave conditions before the race. Fine tune to changing conditions during the race with wire tension. The greater the travel and power of your wire adjustment the greater your gear range. (See "main trim" for details on ring tension.) Be sure to use non-stretching and non-creeping line for this system such as "Technora."

Hull Preparation: Make sure that the hull and foils are smooth and fair. The Interlake's lines are classic and pure. This design really enjoys a fair hull. A happy boat is a fast boat. To fair, fill in low spots and sand down high spots. Use a long board, 9" minimum (12-16" is even better). Once the peaks and valleys are evened out

it's time to paint. Two-part epoxy primer is recommended for its durability and ability to finish smooth. There is no need to paint over this primer. It will permit the best finish. Racers don't bother with anti-fouling. It is too soft for a primo finish. Use of the 9" block while sanding will continue the fairing process. Work up to 400 or even 600 grit. Remember to sand in fore/aft strokes. Now that you have a fast bottom, KEEP IT CLEAN! (One good product line with a good set do-it yourself manuals is the WEST SYSTEM of epoxies and filler additives.)

Centerboard angle: The centerboard angle is critical due to its large size. The CB should never go farther forward that perpendicular (straight down). Mark this position on the CB line with a knot. Few top sailors sail with the board all the way down. When beating, angle the board back 10 degrees (approx. 10-12" of line trimmed). If it is blowing hard try bringing the board back to 20-25 degrees in order to reduce weather helm and heeling force. When reaching, raise the board enough to neutralize the helm. Raise the board half up or more on a run. Extra board down will give control in big wind and seas. It will also help prevent the dreaded death roll to windward. Remember: raising the board reduces weather helm and wetted surface thus reducing drag and increasing speed but if raised to far will hurt pointing and tracking. When beating error on the side of too much board down.

Helm: Interlakes perform best with minimal helm. Neutral helm when the boat is flat is best. If you really desire some helm use the minimal amount you can. The reason for this is two fold. First, the Interlake centerboard is a thin "foil" which stalls easily. This is not a shape that is capable of creating lift, only drag. The goal is to minimize drag thereby increasing speed. Stalling reduces flow and speed. Speed reduction further decreases flow. Secondly, lots of helm means that you are always using the rudder. Turning the rudder creates lots of drag. Minimizing helm also minimizes rudder drag. This is the second way reducing helm reduces drag and increases speed. Increased speed reduces leeway.

Lots of helm may help you "point high." But you may not be tracking or holding a high lane. If you check your actual course made good, and especially your velocity made good, you will find that a neutral helm results in the fastest time around the course.

Another advantage of a neutral helm is that it will permit the tiller to communicate an incredible amount of information to the skipper. Feedback from the helm is an important part of the feel of an Interlake. This feel indicates proper/improper sail trim, weight trim, heel and more. Proper set up and "Tiller Time" will develop this vital feel.

The four main determinates to helm are: 1) Mast rake. 2) Centerboard angle. 3) Sail Trim. 4) Heel. Mast rake aft increases (weather) helm/forward reduces. Centerboard angled aft reduces helm. Main trimmed harder increases helm. Leeward heel increases helm.

Boat Weight: Class minimum is 650 lbs. This includes rudder, tiller, spars, sheets & lines. While the Interlake design is not touchy with respect to weight and performance, extra weight is never good. Especially be sensitive to weight in the ends. Get those empty cans out of there.

Munchies/clothing: Yes munchies. It is not fun to be starving, thirsty, or cold. Performance also drops quickly. Keep warm and dry. Water or juice is best during competition. Try to have something fun for the sail in. It is good for the crew's Karma.

SAIL CONTROLS

Mark all controls/sheets/etc: These marks are points of reference. They permit repeatability and aide in training. Hey, if Olympic sailors, coaches and America's Cup teams do it…. When you are fast, make note of your settings, the conditions, crew weight, etc. Taking the time to mark your controls will make you faster. Sailing faster is devastating to the competition and just plan more fun!!

Attaching controls to jib: Your DIEBALL SAILING jib has been designed to accommodate the wide range of control line configurations found on Interlakes. This variety has developed due to many older boats being refurbished and modern control rigging added. The biggest variable is whether or not you have roller furling. The procedures are simple.

Roller Furling: The roller furling system has the cloth adjustment at the head. In this setup connect the cloth control line to the grommet at the head. Remove the lashing between the grommet and the wire/halyard loop so that they work independently. The cloth control line then follows the halyard up to a double block at the mast and then down through the deck. Depending on your exact system, you will either want to lash the forward most grommet at the tack to the wire loop or attach the loop to the center of the drum and hook the forward grommet to the rotating part of the drum.

Non-furling: Most non-furling systems have the cloth adjustment through the deck at the tack. This system requires lashing the head grommet to the halyard loop. Adjust the length of the lashing so that when fully hoisted the foot of the jib just touches the deck. If the jib is too high there will be air leakage under the jib. This will increase induced drag. Attach the cloth control line to which ever of the two grommets gives the smoothest foot. If the cloth control line is even with the tack then the forward grommet should give the smoothest results. Many Interlakes have their cloth control lines an inch or two aft of the tack. Such boats will want to use the aft grommet. Don't worry about the unused forward grommet. It will help shed the spinnaker guy. Remember: use whichever grommet gives you the smoothest foot.

Jib Lead Placement: With your mast rake set at 25'4"; adjust the leads so that the sheets intersect the deck at 104-5" from the stem and 19.5" off centerline. (If you run two tracks run the intersection point to 18.5" & 20.5") This is a great starting point.

We believe that the common advice of lead placement that permits "all of the jib luff telltales to break at the same time" is misleading. Most often this placement is too far forward. Once this even breaking position is found, move the leads back a couple of inches. Allowing the top windward to lift slightly earlier widens the groove is fast and high! This position requires hard sheeting to bring the top batten in. (See "jib trim" for details.) Adjustment hints: If the top telltales break too early then move the lead forward. If the leech is hooked excessively or the bottom telltales break first move the leads back. To depower, move the leads back one or two inches. This twisted shape also works well in extremely light air (less than 3 knots). To power up in choppy conditions, move them forward an inch from the standard position. (See "jib trim" for details)

Jib Cloth Tension: Tension the jib cloth so that medium wrinkles extend from the luff back 4"- 8" (to the telltales). In shifty winds or choppy seas, use more tension to round out the entry and pull the draft forward thus providing a wider steering groove and better acceleration. Also in heavy air pull the cloth tight to keep the draft in its proper place and the leach open. Minimal to no purchase is necessary. 2:1 is max.

Jib Wire/Halyard Tension: In light air or choppy water, use just enough wire tension to keep fully hoisted and fully powered. In flat water or heavy air, put on maximum tension in order to de-power the jib and increase pointing. (See "rig tension" for details on headstay sag.)

Traveler & Bridle: The traveler is used primarily to depower the main by easing the boom sideways. There are many traveler systems available. Be sure that your system eases directly to leeward and that the bridle does not

rise or lower when eased. Make sure your bridle height is set low enough that you can sheet in hard and not run out of travel between the bridle and mainsheet block. This is called being block to block or two blocked. If you become two blocked you will not point. This is because the Interlake gets much of its pointing ability from the leech of the main. In fact, control of the Interlake's leech is the primary determinate of pointing vs. power modes. (See "main trim" for details.)

Battens: Your DIEBALL SAILING Sails are supplied with a set of tapered battens to help adjust the sail to a wide variety of wind & wave conditions and crew weight. The softer battens help to power up for light winds, chop, or heavier crew. The softest batten goes in the top pocket. As the winds build into the 13+ knot range (white-caps) replace with stiffer battens. First replace the upper batten with a stiffer one and work your way down as the conditions warrant further de-powering. Stiffening the top batten first helps to keep the upper leach open. Important: Always insert tapered battens thin end first!

Outhaul: When beating in moderate conditions, pull the outhaul tight enough for a smooth shape. In flat water or strong winds, pull the outhaul on tight so that a hard crease forms on the bottom of the main. This will de-power the sail, make a better upwind shape, and open the slot between main and jib. When in light air, chop, or reaching, ease the outhaul to increase depth and power.

Cunningham: The cunningham adjusts the draft in the lower 1/3 of the main. Seldom is any cunningham tension needed until the wind is 13+ knots. Small wrinkles along the luff are OK. In fact, if there are no wrinkles along the length of the luff there is usually too much luff tension. Check the cunningham & main halyard tension if this happens.

Boom Vang: When beating in light to moderate air, adjust the vang so that when the main is eased the boom raise a couple inches allowing the upper batten falls off up to 8 degrees to leeward and then the boom eases laterally. This setting permits quick gear shifting between pointing and footing. Heavier winds require more vang tension to help bend the mast, flatten the main, and help with forestay tension. (See "main sail trim" for details.) Hint: In heavier winds Interlake vang settings usually rang between "super," "mega," & "ulta-max" settings.

CARE OF YOUR DIEBALL SAILING SAILS: Roll your sails whenever possible. Leave the battens in. (Except when putting away for winter. Then be kind to the elastic in the batten pockets by removing the battens.) Fold the jib/main in half loosely by pairing the head and the clew. Starting at the fold (do not crease the fabric) and roll, keeping parallel to the seams. Keep your sails dry. Beware of mice in the winter. Put the spinnaker away loosely. Pack with as few wrinkles as possible to keep it as big as possible.

SAIL TRIM

Jib Trim: (See "set up," "cloth" & "wire" sections for additional details.) Your Interlake jib is trimmed properly when the middle batten points straight back—parallel to the centerline of the boat. With the proper lead position the lower batten will angle in a few degrees while the upper batten will angle out slightly. Keep the mid leech telltale always streaming. Another key thing to watch is the slot. The leech of the jib should parallel the luff of the main. When steering upwind use the telltales on the luff of the jib. Always keep the leeward telltale streaming. The windward telltale should also be streaming when powering up, and it should be lifting just slightly every 5-6 seconds when in max point mode. Mark your jib sheets with a permanent marker or whipping for the upwind setting. When beating, the middle telltales are the best indicators because they indicate the average trim of the sail. Interlakes love to breathe. Hate pinching. Proper upwind jib lead position will require hard sheeting to bring the head of the sail in. This hard sheeting helps to flatten the sail and gains pointing. When eased, the jib becomes fuller thus increasing power and acceleration. When close reaching, keep windward, leeward and leech telltales streaming. When deep, keep the bottom half drawing (the top will twist off) with the bottom and middle outer telltales streaming. Mainsail Trim: Constant adjustment of the Interlake main is needed for top performance due to its large size, full roach, effect on forestay tension/sag and effect on helm. Top helmsman keep the mainsheet uncleated and in hand at all times. The mainsheet also provides lots of information and feel.

Beating: Boom on centerline, upper batten parallel to the boom. Upper telltale will stall 50-70% of the time. When footing, in a puff, or light air ease the main slightly allowing the upper batten to fall off as much as 10 degrees and keep the upper telltale streaming full time. When pinching, sheet hard and hook the upper batten by as much as 10 degrees for a short period (a couple of seconds...until speed drops). Hooking may completely stall the upper batten. Leech tension is key to pointing and is controlled by mainsheet and vang tension.

Reaching: Keep all telltales flowing. It is often fast to add extra twist and slightly over-trim the foot of the main when close reaching with the spinnaker. Setting up this way keeps the slot between the main and the spinnaker open.

Running: Boom all the way out. When running very deep, twist the top by easing the vang so as to keep the upper batten perpendicular to the wind thus increasing projected area.

Spinnaker trim: Start with the spinnaker pole perpendicular to the wind. On a reach, pull the pole back an additional 6-10" if you can maintain proper trim (or slightly forward if you want a wider groove). When running, keep the pole perpendicular to the wind. Adjust the pole height so that the clews are equal height. In all but extreme conditions, ease the halyard by 6-8" to help get the sail in clearer air and open the slot. Twing lines are highly recommended in air greater than 5 knots. If you have twings pull both full on when running, and fully ease the sheet twing when reaching. When sailing very deep, heel your Interlake to windward to reduce wetted area, lift the main up into greater wind, and let the spinnaker rotate out from behind the mast. This increases projected area and permits the skipper to use the chine to steer the boat downwind with neutral helm. Important: Use non-stretching spinnaker sheets.

STEERING: Use of sail and weight trim to steer is definitely fast. Trimming the main helps turn to windward. Easing the main helps turn to leeward. Easing and trimming the jib helps in steering to windward/leeward. Steering with sail trim is more critical as the wind increases. Leeward heel turns to weather. Windward heel turns to leeward. Try to steer without using the rudder. Excessive use of the rudder really kills boat speed. Just allow the tiller to follow the motion of the boat. When tacking, start and complete the turn smoothly. Steer 5 degrees wide. Build speed. Then sheet in the last couple of inches and point.

CREW WEIGHT: Fortunately the Interlake has a large "weight groove," and your DIEBALL SAILING sails are design to maximize the competitive weight range. A combined weight of 385-485lbs. works well (naked weight). Three persons, totaling 435lbs would be ideal (a junior sailor is often helpful to achieve this). Many

crews compete weighing as little as 325 but if the wind comes up they are seriously handicapped, especially on a reach or beating into chop. Crews over 500lbs are regularly found in the front of fleets. Keep weight forward, shoulder to shoulder, roll the boat strong, and hike hard….really hard. A flat Interlake is a fast Interlake (except in light air). Two crew and skipper is a good combination: Crew can hike harder than skippers, extra hands permit quick spinnaker maneuvers and extra eyes/brains are always a plus! Design fact: The Interlake's fore/aft center is just behind the shrouds. In order to keep weight centered in hull you need to be forward in cockpit.

BOAT TRIM: Light air: Weight forward and to leeward to induce heel and raise the flat stern out of the water thus reducing wetted area while allowing gravity to shape the sails. Moderate air: Keep boat flat and on its lines. Planning: Slide slightly aft to encourage bow to lift and boat to ride on flatter aft sections. WARNING: Never slide weight so far aft that the wash off of the stern is churning. Wash should always be smooth…regardless of speed. Keep your Interlake on its lines…even when planning.

MISC. TIPS & TRICKS:

-- Remove slop/play from tiller and rudder. This system is vital in developing feel and quick response. Old gudgeons become enlarged. The joining of the tiller and rudder at the head gets loose. Mechanical universals at the tiller extension are sloppy. Replace and tighten as necessary. Use a rubber universal on the tiller extension. (Replace rubber universal every couple years or at the first sign of wear.)
-- Use as long a tiller as possible. This will provide more feel. It also moves the skipper forward.
-- Thinner, lighter sheets provide more performance and feel at a lower cost! Drawback: hand fatigue.
-- Write your tuning numbers for various conditions on a "Hello my name is" sticker and stick it on your loose tension gauge. That way they will always be handy.
-- The deck core immediately under the mast step often gets crushed on older boats. Why? Because years of rig tension have driven the mast down smashing the balsa core. If this happens the rig will not hold tension. When quickly inspected these decks usually look fine since the fiberglass springs back when the tension is released. This condition can only be found with the rig under tension for a period of time. Once this problem is spotted the fix is easy. Replace the area under the mast step with a block of mahogany making a snug fit. Be sure to seal the new edge of the deck core with epoxy.
-- Crew/skipper communication is key at all times. Anticipate. Keep your eyes out of the boat. Talk about what you see. What you are looking for. What you are going to do. Good communication reduces stress and mistakes while improving teamwork, performance and fun. Plus it is safe.
-- The connecting bolt holes for the deck and hull become elongated over the years. Remove the rub-rail and tighten these screws (usually self tapping). Once the screws start slipping etc. its time to replace them with the next size larger and change to a through bolt with nut. This is most important in the forward half of the boat where the most flexing and wave impact occur. The benefit is a stiffer and more responsive boat.
-- Go Sailing. Even if it is not for practice, Sail. Practice is even better. Sail in all conditions. Take a friend. Sail. Sail some more. Just sail...a lot. SMILE. YOU'RE SAILING!
-- The mainsheet system can be quickly converted from 2:1 to 1:1 by untying the main sheet from the end of the boom and tying a stopper knot at its end. This knot will stop at the block on the bridle. This configuration is great in very light air.
-- Use a 2:1 jib sheet system. Ninety percent of the Interlake Champions from the nineties until now have used this system. A 2:1 system is easier and safer in a breeze. It is also more manageable for ladies and juniors, plus it permits finer adjustments. To build this system you need: two small blocks, a short piece of line, and another jib sheet. Attach the two blocks to the clew of the jib with the short piece of line. Attach one end of the jib sheet to the base of the block on the jib car. Lead from the base of the block on the car through a block on the jib and back through the block on car. Make sure your sheets are long enough to permit "wing on wing" on either jibe. 1/4" thick line works great. In light air change to 1:1 by simply untying the sheet from the base of the jib block, and place a stopper knot in the end.
-- WARNING: Hiking straps break when needed most. This is one of the most common reasons for capsizing. Check them regularly. Other popular ways to become a submarine commander: cleated sheets (especially main) and not looking out for the next puff.

POINTING VS. SPEED CHECKLIST
Remember: Speed = Height
You must first move fast before you can track and point high.
INTERLAKES HATE PINCHING!

Problem: Pointing low.

- Get the boat moving up to speed.
- Check jib leads. Often needs to be moved aft. Is top telltale breaking first? It should be, slightly.
- Ease Cloth tension so that there are 6-8" wrinkles extending off the luff of jib.
- Make sure centerboard is near full down. (Its often left up after leeward rounding.)
- Trim main in hard. Upper batten parallel to boom, or even slight hook. Boom on centerline.
- Make sure vang is on hard enough.
- Make sure there is enough rig or wire tension.
- Can you increase outhaul tension?
- Seaweed on centerboard or rudder?

Problem: Slow.

- Remember: When in doubt, let it out.
- Pinching? Interlakes HATE pinching. Let it breathe.
- POWER UP:
    - Ease the main a couple inches. Don't hook the leech.
    - Ease the Outhaul.
- Check vang tension. Too much in a lull is slow. Not enough in a blow is slow.
- Check jib lead position. To far back looses power. To far forward is also slow.
- Ease the jib. Don't hook the leech. Let it breathe.
- Ease the wire.
- Reduce weather helm.
- Check centerboard position. Can it come back without inducing side slipping?
- Crew placement. Weight should be centered or even forward.
- Seaweed on centerboard or rudder?

The Interlake Sailing Class Association has a fantastic training video. World Class roll tacks and crew work are displayed. Proper trim, heel, and more are demonstrated and talked through. This tuning guide is slightly different from what is discussed on the video but the principals are the same: highly recommended. Contact the ILCA – www.interlakesailing.org

Waves - Wind - Settings by Skip Dieball, Dieball Sailing				
FLAT WATER (No Waves)				
Control	*Wind 0-5*	*Wind 5-10*	*Wind 10-15*	*Wind 15+*
Main Sheet	Very loose (cat-like)	Two-blocked	In/Out in puff/lulls	Aggressively played
Outhaul	Tight	Tight	Tight	Extremely Tight
Cunningham	Off	Off	Slight tension	On to open leech
Boom Vang	Off	Off	Aggressively played	Extremely tight
Traveler	Centered	Centered	Centered	Ease for control/feel
Jib Sheet	Eased (open leech)	Mid-batten straight	Slight ease in puffs	Twisted
Halyard	Medium	Medium	Tight	Very Tight
Cloth	Eased	Small wrinkles @luff	Medium	Tight
Jib Lead	0-1 hole aft	Centered	Centered	0-2 holes aft
Centerboard	Vertical	Vertical	Up to balance helm	<1' up to balance helm
MEDIUM CHOP (Larger Inland)				
Control	*Wind 0-5*	*Wind 5-10*	*Wind 10-15*	*Wind 15+*
Main Sheet	In/Out for Power	In/Out: Power/Balance	Out: Power/Balance	Out for Balance
Outhaul	Tight	Slight ease for power	Tight	Extremely Tight
Cunningham	Off	Off	Off	On to open leech
Boom Vang	Off	Off	Aggressively played	Extremely tight
Traveler	Centered	Centered	Centered	Centered
Jib Sheet	Eased (open leech)	Slightly eased	Mid-batten centered	Twisted
Halyard	Loose	Medium	Tight	Very Tight
Cloth	Eased	Small wrinkles @luff	Small wrinkles @luff	Tight
Jib Lead	0-1 hole aft	Centered	0-1 hole forward	0-1 hole aft
Centerboard	Vertical	Up to balance helm	Up to balance helm	<1' up to balance helm
HEAVY CHOP (Lake Erie)				
Control	*Wind 0-5*	*Wind 5-10*	*Wind 10-15*	*Wind 15+*
Main Sheet	Very loose (cat-like)	Aggressively played	In/Out in puff/lulls	Aggressively played
Outhaul	Eased a little	Eased a little	Tight	Extremely Tight
Cunningham	Off	Off	Slight tension	On to open Main leech
Boom Vang	Off	Aggressively played	Aggressively played	Extremely tight
Traveler	Centered	Centered	Centered	Centered
Jib Sheet	Eased (open leech)	Aggressively played	Mid-batten straight	Twisted slightly
Halyard	Medium	Medium	Tight	Very Tight
Cloth	Eased	Small wrinkles @luff	Small wrinkles @luff	Tight
Jib Lead	Centered	Centered	Centered	0-2 holes aft
Centerboard	Vertical	Up to balance helm	Up to balance helm	<1' up to balance helm