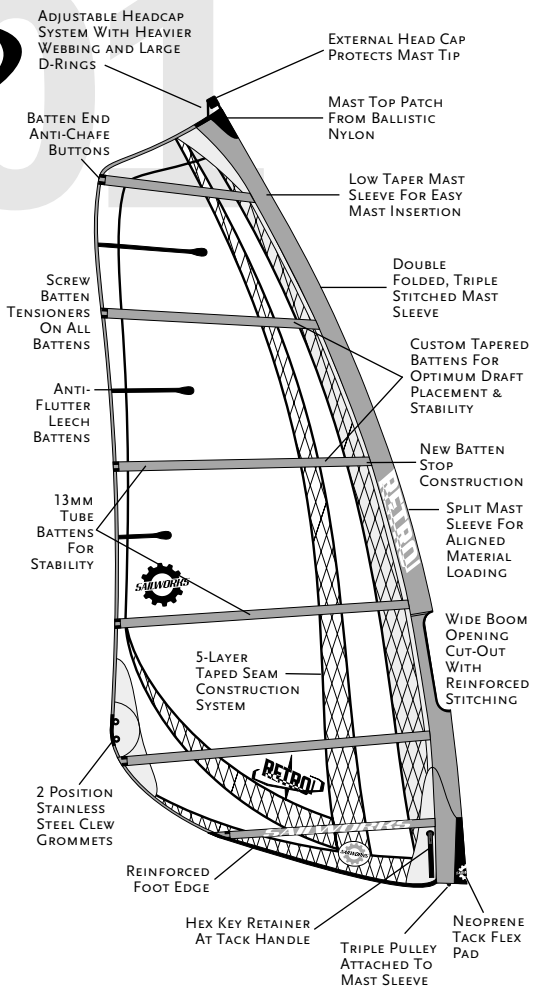
RETRO 2001

SAIL MAINTENANCE

- Let your sail dry before de-rigging.
- Shake the sand off before rolling up your sail at the beach, as this will help keep the monofilm clear. Most scratches to the monofilm are caused by sand and grit abrading the sail while it's rolled up.a
- Rinse the sail with fresh water occasionally, including inside the mast sleeve, to avoid salt and sand buildup.
- Avoid rigging on hard or abrasive surfaces.
- If left rigged all day or overnight, release the outhaul and downhaul.
- Store your rigged sail out of direct sunlight. UV degrades monofilm.
- To prevent creases in the monofilm, roll your sail on the tube it came on, or roll it tightly and store it where it won't get flattened.



- Repair tears promptly through a qualified sail repairperson. Make temporary repairs to the monofilm with Mylar packing tape or a sticker on both sides.
- Do not use solvents for cleaning near seams, as this will dissolve the seam tape adhesives. Use water and mild soap. To remove tar spots or sticker adhesive residue use a citrus based cleaner
- When on the beach, secure your sail from blowing away.
- Avoid getting sand or dirt inside the mast sleeve and batten pockets. This reduces sail performance by increasing friction and wear on the mast and battens.
- Loosen the batten tension if you are not going to use the sail for an extended period.

SAILWORKS

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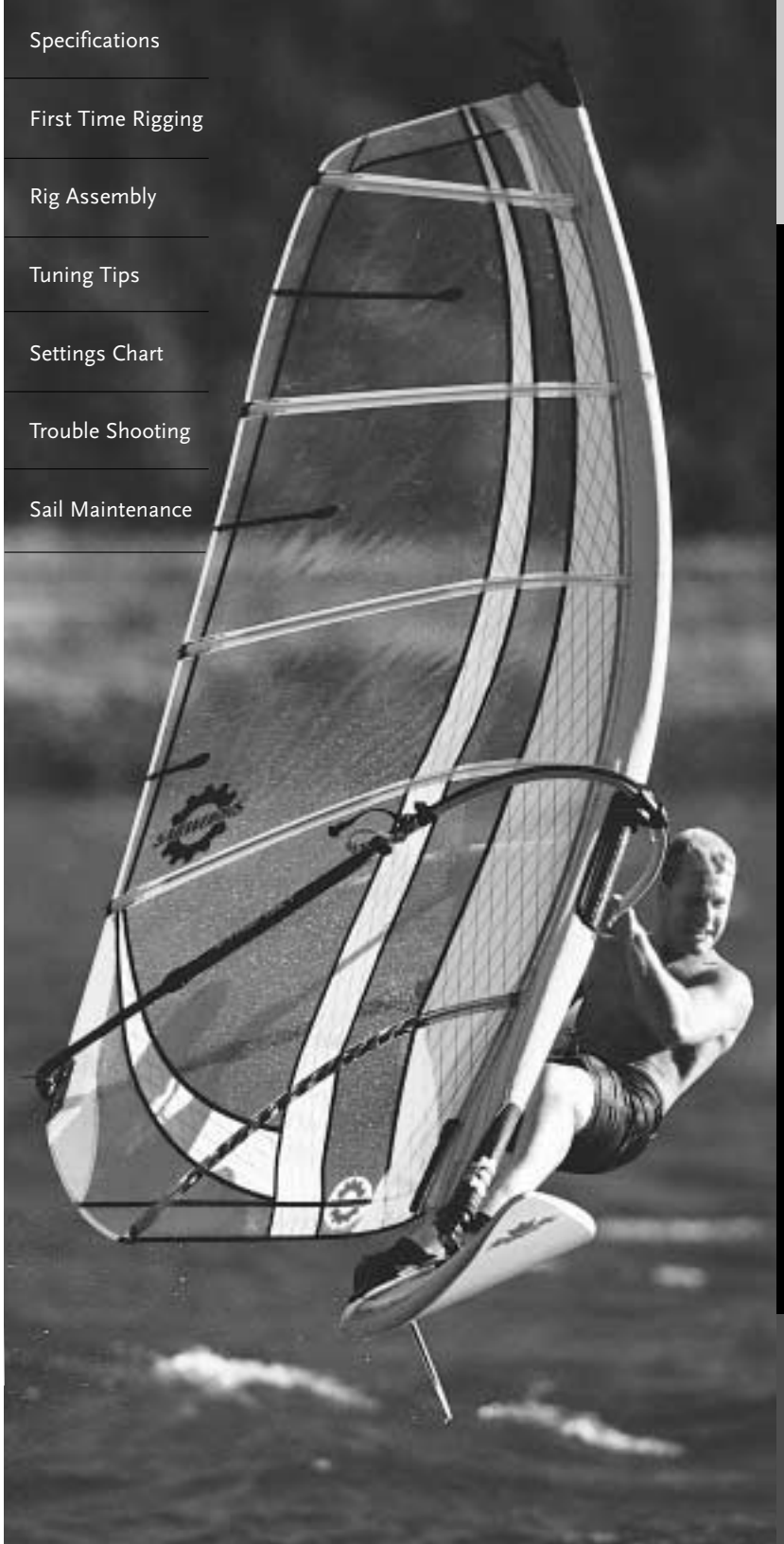
 Design: Bridgeworks Photography: Laura Graetzel Derwin • Bruce Peterson Printed in Canada



SAILWORKS

Retro 2001

Rigging and Tuning Guide

RETRO

2001

RETRO

Rigging & Tuning Guide

Back to the Future!

We're confident you'll be thrilled with your new RETROs, no matter what level your sailing. The RETRO is the hottest, most talked about sail in the windsurfing market and winner of numerous sail tests worldwide. As a leader of the camless free-ride sail renaissance, the RETRO is quite raceable yet remains very user friendly – smooth yet powerful. It's light and easy to pump in light wind, yet adaptable to a wide range of downhaul and outhaul adjustments for stronger wind conditions. The RETRO is a highly adjustable sail that can be tuned for a variety of conditions. Please read this guide and follow the rigging advice to get the best performance!

Time saving features that get you on the water faster are a huge bonus:

- Power Block triple pulley at tack for easy 6:1 downhaul purchase
- Streamlined Batten Tensioners (SBT's)
- Wide boom opening
- Low mast sleeve taper for easy mast insertion and downhauling

RETRO DIMENSIONS

SIZE m²	LUFF MEDIAN (cm/ft)	BOOM MEDIAN (cm/ft)	BOOM MAX (cm/ft)	WEIGHT (kg/lbs)	# BTNS	MAST SLEEVE	REQUIRED MAST: IDEAL MAST	REQUIRED MAST: MCS CURVE %	REQUIRED MAST: IMCS STIFFNESS	SAILWORKS MAST: EPX 370	EPX 400	EPX 430	EPX 460	FR 400	FR 430	FR 460	FR 490	XR 430	XR 460	XR 490
4.0	389/12'9"	143/4'8"	148/5'0"	2.90/6.4	5	OPEN	EPX 400	12	17 - 19	●	●			●						
4.5	411/13'6"	155/5'1"	160/5'3"	3.00/6.6	5	OPEN	EPX 400	12	17 - 21		●	●		●	●			●		
5.0	428/14'0"	165/5'5"	170/5'7"	3.15/6.9	5	OPEN	XR 430	12	17 - 21		●	●		●	●			●		
5.5	447/14'8"	174/5'8"	179/5'10"	3.35/7.4	5	OPEN	XR 430	12	21 - 25			●	●		●	●		●	●	
6.0	462/15'2"	184/6'0"	189/6'2"	3.75/8.3	6	OPEN	XR 430	12	21 - 25			●	●		●	●		●	●	
6.5	477/15'8"	193/6'4"	198/6'6"	4.00/8.8	6	OPEN	XR 460	12	21 - 25			●	●		●	●		●	●	
7.0	489/16'0"	201/6'7"	206/6'9"	4.20/9.2	6	OPEN	XR 460	12	25 - 30				●			●	●		●	●
7.5	498/16'4"	211/6'11"	216/7'1"	4.40/9.7	6	FIXED	XR 460	12	25 - 30				●			●	●		●	●
8.0	508/16'8"	220/7'2"	225/7'4"	4.65/10.2	6	FIXED	XR 490	12	28 - 30								●			●
8.5	517/17'0"	228/7'6"	233/7'8"	4.90/10.8	6	FIXED	XR 490	12	28 - 30								●			●
9.0	526/17'3"	236/7'9"	241/7'11"	5.10/11.2	6	FIXED	XR 490	12	28 - 30								●			●
9.5	533/17'6"	245/8'0"	250/8'2"	5.30/11.7	6	FIXED	XR 490	12	28 - 30								●			●

● Ideal Mast ● Alternate Mast

Note that the luff and boom lengths listed are intended as a guide to rig assembly and sail trim. Depending on the rig components you choose, these dimensions may not always correspond exactly to the settings that are best for you. We measure median boom length from the front of the mast at the middle of the boom opening, to the back of the clew. Maximum boom length is achieved at high levels of downhaul and outhaul with the boom placed at the top of the boom opening. We measure luff length from the top of the mast cap, around the front of the mast curve to a point opposite the pulleys of the Power Block (using the minimum amount of headcap or mast base extension).

FIRST TIME RIGGING

USE THE RIGHT MAST

One of the most important parts of your rig is the mast, specifically its curve and stiffness and how closely these parameters match the sail. The mast acts quite literally as the backbone of the rig and it governs the sail's performance.

The mast requirements for the RETRO are printed on the sailbag and at the tack of your sail. Listed on on the left is a broader range of mast specifications (length and IMCS stiffness) necessary for compatibility with the shaping and tension profile of your sail. Your mast should be within this required range, regardless of the brand or model to achieve optimum performance. Note that NOT all sail sizes will work on the same mast. As a rule, larger sails need longer and stiffer masts while smaller sails require shorter and softer masts. Two common mast compatibility problems are:

i) Using too long, or too stiff a mast. This restricts wind range by over-tensioning the sail.
ii) Using too short or too soft a mast. This also restricts wind range by insufficiently stabilizing the sail.

NOTE: Each Retro size is designed and balanced on a specific Sailworks mast to suit conditions typical for the "average" size sailor (140 - 190 lb./ 63 - 86 kg). If you are lighter than this average, or prefer a softer handling feel, consider using the next mast softer or shorter listed in the table. Heavier sailors can use a slightly stiffer mast to increase rig tension and stability. The luff and boom lengths listed are intended as a guide to rig assembly and sail trim. Depending on the rig components you choose, these dimensions may not always correspond exactly to the settings that are best for you. We measure median boom length from the front of the mast at the middle of the boom opening, to the back of the clew. Maximum boom length is achieved at high levels of downhaul and outhaul with the boom placed at the top of the boom opening. We measure luff length from the top of the mast cap, around the front of the mast curve to a point opposite the pulleys of the Power Block (using the minimum amount of headcap or mast base extension).

SET THE HEADCAP LENGTH

Sizes 7.5 and larger have closed heads, so no adjustment is necessary. Sizes 7.0 and smaller have an adjustable headcap system. This allows for masts longer that the sail's luff length. Check the luff length of your sail (printed at the tack and on the sailbag), and compare it to your mast length. If your mast is shorter than the luff length, adjust the headcap extension strap so the headcap is as close to the top of the mast sleeve as you can set it. If your mast is longer than the luff length, estimate the amount of mast that will extend out the top of the sleeve (mast length minus luff length). Adjust the strap so that the top of the headcap is 1-2 cm shorter than this distance away from the top of the mast sleeve to allow for the headcap strap to cinch tight.

RIG ASSEMBLY

1. INSERT THE MAST

Pull the sail down the mast in sections using the tack handle and working the mast tip to the top of the sleeve before pulling the tack all the way down to the base of the mast. Try to keep the battens all rotated to the under-side of the mast. Check that the headcap is seated completely onto or into the mast and that the two-piece coupling of the mast is joined completely before applying downhaul tension.

2. INSERT THE MAST BASE

Estimate the amount of mast base extension needed by subtracting your mast length from the sail's luff length. Your downhaul pulley system should have 6:1 purchase and enough line to make lacing easy. The Power Block works best with 4.0 or 5.0 mm line. Lace the downhaul line through the Power Block tack pulley. Keep the path of line looping in the same direction each time you feed it through the Power Block and through your base pulley (we recommend a counter-clockwise direction working from the underside upwards). Try not to cross the lines, as this increases friction and makes the downhaul line harder to pull. Do not fully downhaul the sail yet – leave the downhaul just "hand-tight."

3. ATTACH THE BOOM

If you plan to use the on-the-fly adjustable outhaul system enclosed, set that up now. Follow the instructions enclosed with the adjustable outhaul for setup and use. Adjust your boom to the length specified for the sail. Attach the boom to the mast at the middle of the boom opening and re-adjust it after the sail is fully rigged. Be careful not to attach it too high in the boom opening - you must account for the sail to be downhauled further. Also be careful not to pinch the mast sleeve under the boom clamp. Lace the outhaul through the clew grommet, and pull the outhaul completely so the sail is flat, using the recommended boom length.

4. TUNE THE DOWNHAUL

The downhaul controls the sail's shape and performance. Discover its effect by pulling and slowly releasing the line. Use an easy-rig or downhauling tool so the line is easier to pull hard. Watch the change in depth and tension of the leading edge (front 1/3 of the sail), and the flattening and loosening of the head area (upper leech) as more downhaul is pulled. Specifically notice the change in the angles, or twist, of the battens; the top batten should open to leeward the furthest - called "progressive twist". Twist is cut into the sail, but is ultimately controlled by the downhaul tension. More downhaul induces more twist; less downhaul allows less twist. Twist improves sail efficiency by lowering the center of effort and making the sail easier to control.

The optimum downhaul setting gives a tight luff and a lean (not full) entry, and the leech area between the top two battens should become loose. (see RETRO Settings chart on the next page)

Once you're familiar with the correct downhaul setting, re-check the headcap length vs. mast base height. If necessary, re-adjust these so that the tack pulley sits very close to the mast base cleat, and the amount of mast extending out the top of the mast sleeve is minimized by lowering the mast base.

5. TENSION THE SBT'S

(Streamlined Batten Tensioners)

The battens are tensioned using the hex-key tool found under the strap above the tack handle. Insert the hex-key into the cap screw inside the SBT at the leech end of each batten. Turn the hex-key to the right (clockwise) to tighten. Tension the battens JUST until the wrinkles across the batten pockets disappear. Look for continuous smooth shape to the sailcloth next to the batten pocket (see photos). You should see a smooth reflection, with no wrinkles alongside the battens.

CAUTION: DO NOT OVER-TENSION THE BATTENS - POOR ROTATION, EXCESSIVE FOIL DEPTH AND DAMAGE TO THE SAIL CAN RESULT.

Replace the hex-key tool back in its pocket above the tack handle. The batten tension will need to be re-tightened after one or two uses as the sail sets into its final shape, but once the batten tension is set, it's not necessary to release batten tension after each session.

Needs more batten tension

Correct batten tension

6. BALANCE THE OUTHAUL SETTING

Release any outhaul tension and allow the sail to relax naturally. Now pull the outhaul a minimum of 3.0 cm (1 1/4 inch) from this neutral position. Cleat off the outhaul line. Check the foil depth by pushing on the sail area under your harness lines or standing it up in the wind. Under pressure, the sail will increase in depth as the battens pull back from the mast. When luffing or without pressure, the sail will flatten. Less outhaul makes the sail fuller and more powerful for reaching, but it will also be harder to control when over-powered or sailing upwind. For upwind sailing or over-powered conditions, more outhaul tension will improve performance by making the sail flatter and tighter. Whenever you increase or release downhaul, realize that the outhaul tension is also changed and may need to be adjusted too.

TUNING FOR WIND RANGE

Please refer to the RETRO Settings Chart on the next page.

Light wind (under-powered conditions)

- Less downhaul, to increase foil depth for more power; to tighten the leech for better pumping; and to reduce twist and increase power in the upper part of the sail.
- Less outhaul, for more depth. A looser outhaul moves the center of effort (power) further back, which facilitates early planing.

High wind (over-powering conditions)

- More downhaul, to tighten and flatten the leading edge of the sail. This lowers the center of effort and gives the sail more twist.
- More outhaul, to flatten the overall foil depth and reduce power. This will tighten the sail and improve top end handling and control.

You can expand the Retro's wind range significantly by adjusting the downhaul and outhaul. IMPORTANT: Downhaul and outhaul tension are closely interrelated. Whenever you pull or ease the downhaul, you inversely affect the outhaul tension, so readjustment of the outhaul may be required.

2001

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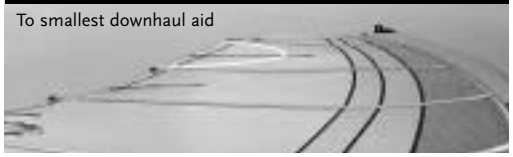
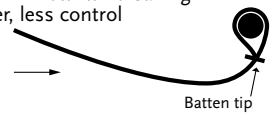
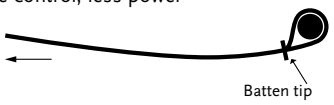
GETTING THE MOST FROM YOUR GEAR

- If it doesn't feel right, it probably isn't. A well-tuned rig should be effortless to sail. Don't be afraid to make changes and explore different settings.
- When you have found settings (boom length, mast base length, boom height, mast step position, downhaul and outhaul position, harness line position) that feel balanced, record the position of each adjustment so that they are easy to repeat next session. Mark the settings with a waterproof marker right on your equipment.

SETTINGS CHART 2001

LEECH TWIST PROFILE	CROSS SECTION PROFILE	DOWNHAUL SETTINGS	OUTHAUL SETTINGS
MINIMUM To smallest downhaul aid 	**Minimum Settings** — **Full Entry** • Light wind/underpowered • Flat water • Downwind sailing • More power, less control 	**Minimum Downhaul** • Leech is loose to smallest downhaul aid • Deeper foil • Less twist • **Full entry** - batten tip above boom sits beside mast, but doesn't extend past it	**Minimum Outhaul** • Boom length becomes shorter • Pull the outhaul about 1.5 cm from neutral • Deeper foil
OPTIMUM To black teardrop on top leech batten 	**Optimum Settings** — **Lean Entry** • Steady/moderate wind • Choppy water • All-round sailing • Power and control 	**Optimum Downhaul** • Leech is loose to black teardrop on top leech batten • Lean foil • Moderate twist • **Lean entry** - batten tip above boom sits at center of mast	**Optimum Outhaul** • Boom at referenced length on tack • Pull the outhaul about 3 cm from neutral • Lean foil
MAXIMUM To larger downhaul aid 	**Maximum Settings** — **Flat Entry** • High wind/overpowered • Upwind sailing • More control, less power 	**Maximum Downhaul** • Leech is loose to larger downhaul aid • Flatter foil • More twist • **Flat entry** - batten tip above boom sits behind mast	**Maximum Outhaul** • Boom length becomes longer • Pull the outhaul about 5 cm from neutral • Flatter foil

TROUBLESHOOTING

Q: "Why do I keep getting pitched forward? The sail seems to pitch me to the front of my board."

A:
- *Move the mast step forward to give more leverage over the rig.*
- *Pull the downhaul more, or pull a bit on the outhaul to stabilize the sail shape better.*
- *Check your harness line balance point: When you are hooked in and planing, try lifting your hands off the boom. If the sail moves to the front or the back of the board, move your lines the other direction. Or try increasing your downhaul tension (moving the draft back) and do not touch the outhaul (it automatically gets looser by pulling the downhaul. Increasing only the outhaul would move your draft forward). Note that your harness lines will not balance in the same position on the boom for every size sail – larger sails set up further back, smaller sails set up further forward.*

Q: "Why can't I pull the downhaul far enough?"

A:
- *Check the mast requirements printed on the sailbag; your mast may be too stiff or too long for the sail.*
- *Make sure the downhaul lines are not crossed through the pulley.*
- *Make sure your line diameter isn't too thick or worn out.*
- *Try using a tool (easy-rig) to get a better hold on the line.*
- *Extend the mastbase further.*

Q: "Why don't my battens rotate very easily?"

A:
- *Check batten tension; excessive batten tension may restrict proper rotation.*
- *Check your downhaul; you may not have enough.*

Q: "Why can't I get planing when I know I should be?"

A:
- *Ease the downhaul. Too much downhaul flattens the foil and excessively loosens the leech, which gives you more control in heavy wind, but less power in light wind. Releasing some downhaul will move the draft forward and up. This gives more depth and power in lighter wind.*
- *Ease the outhaul. Too much outhaul will flatten the sail and take power away, which is good for high wind control but not for light wind power.*

Q. "How does the downhaul affect the outhaul; why do I need to adjust both?"

A: *When you downhaul a sail, you are essentially bending the mast into the curve of the sail's mast sleeve. As you pull more downhaul, the clew moves away from the mast, increasing the boom length. As you ease off the downhaul, the clew moves toward the mast, decreasing boom length.*

Q. "Why does my back arm get tired? I'm having a hard time sheeting in."

A:
- *You may need to move your harness lines back.*
- *Pull some more outhaul to move the draft forward.*
- *Check your settings. An extreme downhaul setting and very little outhaul moves the draft back causing you to use your back arm more to compensate.*
- *You're over powered. Try a smaller sail.*