J/24 Tuning Guide

Haarstick Sailmakers have used our years of experience building and racing J/24's to develop a FAST set of sails, geared for performance in a variety of conditions. Together with the industry's most rigorous quality standards of Cloth Selection, Cutting Accuracy, and Craftsmanship, we have created a unique combination of **speed, quality, and long-lasting performance**.

We hope this guide will help you to take your J 24 campaign all the way up to the Grand Prix level. We believe that a successful sailboat racing campaign is the combination of many elements. While one of the most dramatic improvements to any J/24 is a new set of sails, we can not over emphasize the importance of raising the level of all the other components of your campaign to that of your new Haarstick sails.

Before The Boat Hits The Water

The key to consistency is to optimize all the elements of the boat. Take the time before the boat is in the water to make sure everything is as perfect as you can get it. Most of the modifications are a one-time event; so put the time in once for the long-term pay off.

Underbody:

Water is many times more viscous than air. A rough, unfaired, or damaged underbody can be a major cause of the "slows". Dry sail your boat if you can. The polyester resin used in the hull can soak up water, adding weight to the boat.

Keel:

Factory Keels are Slow and should be reshaped by professionals. Look in your J-24 magazine for the company nearest you. If you love misery, you can attempt this yourself: Add to the front of the keel, if necessary, to position the leading edge at the maximum forward allowable position (less lee helm in light air). Make sure the keel is straight along centerline fore and aft, and side to side. Fair the keel to the minimum thickness. Make the trailing edge minimum thickness, with squared off corners, no radius. Keep the bottom edges of the tip sharp. Use the Class Templates!!!

Rudder:

New style: Faired to minimum thickness and minimum depth. The new style rudders have gudgeon fittings with a staggered bolt pattern. Old style: Fair to a good foil section but do not bring down to minimum thickness as these rudders will break if they are sanded down too much.

Hull Fairing:

Fair the hull by filling hollows. Sanding high spots is illegal, so filling in the hollows to the high points is the only legal way to make a smooth hull.

Bottom Finishing:

Finish the underbody with wet/dry sandpaper working toward 600 or 800 grit. We recommend finishing up with a polish containing Teflon or Mclube Hullkote, but only if you plan on multiple days in the water.

Deck Layout:

Keep the deck layout simple and clean. There have been many articles written on this subject and everyone has an opinion. Do research, and then drill the holes. Using quality deck hardware will make the operation of the boat easier. Invest in quality. (Refer to the Layline line usage chart, and the Hall Spars' Guide for the deck layout)

Mast Weight:

Eliminate weight aloft. Remove the extra jib halyard and mid-mast running lights. Replace the halyards with the minimum diameter spectra or Kevlar equivalents. We use a very lightweight masthead fly.

Mast Height:

Cut the mast down to within 3 mm of the minimum height. (Leave this slight extra length to cover variations in measurement). We suggest you do this with the aid of a class measurer, as this measurement is not straightforward. Making the mast the minimum height, in combination with a maximum length forestay, will move the center of effort aft, which helps create a better feel on the helm.

Forestay Length:

Make the forestay the Maximum length, 8670 mm. Very Important!

Spreader Setup:

Our main is designed with about 155-165 mm of spreader sweep. The combination of spreader sweep and rig tension determine the curve of the mast. Proper adjustment is important to match the resulting mastbend with the designed luff curve of the main. Make the spreaders symmetrical, and minimum length. Fix them permanently in that position.

Stepping the Mast:

Put the mast in the boat. Hook up the forestay and uppers, but do not tighten or chock the mast at the deck. Measure 2730 mm from the fiberglass hull next to the bottom forestay tang bolt, mark a line on the mast step I-beam. Then measure back 110 mm to the forward surface of the mast. The mast butt is now in Standard Position for Straight-Rig Tuning (Make sure the mast is straight side to side).

Deck Partner:

Modify the mast partner on the deck, if necessary, to get the mast to the maximum aft position: Max "J"= 2925 mm from the forestay. Acquire/make a set of chocks that will allow you to hold the mast at this maximum aft position at all times. Preferably you can use a permanent plate or spartite to duplicate this each time you step the rig. Also it is extremely important to insure that the mast (at the partners) is centered in the boat. Often the opening in the deck is not centered in the boat. Take careful measurements using the etched center seem on the mast to make certain it is an equal length to each toerail and the chainplates.

Centering the Rig/Base Tuning:

Measure from the bow fitting to six inches aft of the shroud tang. Mark this position and mark the opposite side, using the same measurement from the bow. Starting with the uppers, put tension on the rig while keeping it straight and centered in the boat. Tension the uppers by hand, and then add a few full turns when tools are needed. Set the rig at 20 on the uppers using a “old” style Model B Loos gauge.

As the upper shrouds are tightened to 20, use the main halyard (cleated) to check that the mast is straight sideways, by measuring alternately to both marks on the rails. You should also use the jib halyard as well just to double check everything. Try to use a bucket or set weight on the halyards so you can duplicate the same tension during measurement. Once both uppers are tightened to 20, and the rig top is perfectly centered, you should then tighten the lowers to set the mast perfectly in column/straight and tighten until it reads 15 on the gauge. You are now at the base setting. **If you do not have 2-3 fingers on the forestay at 20/15 base, then move your mast butt until you get it.**

Upwind Sailing

Mainsail

Raising the Main:

Always raise the main all the way up to the black band. The tack is "free floating" and the attached Slider must be place in the Mast groove. DO NOT cut off this slider and attempt to put the tack grommet in the boom tack fitting! A free-floating tack gives Maximum Area for light air, and ease of adjustment by the Cunningham.

Cunningham:

The free floating tack keeps the head of the main at the upper band in all conditions, and allows easier, quicker adjustment of the main Never over-tighten the luff tension. Only use the minimum necessary to JUST remove any horizontal wrinkles. The more you bend the mast, and the higher the wind velocity, the more Cunningham you will need to apply. When in doubt, use less!

Outhaul Adjustment:

The range of the outhaul upwind is only two inches on the boom. The outhaul affects the amount of draft in the lower third of the main. In light to medium air, the outhaul is eased 1-1.5" from the black band to power up the sail. At the high end of medium air, when the boat becomes overpowered, the outhaul is pulled on until it reaches the black band.

Traveler:

The traveler is used to control the power of the sail, and the helm. In lighter air conditions, we recommend having the traveler all the way up to windward, and use just enough sheet to bring the boom to center whilst having all the telltales flying. In light to medium air, keep the traveler up enough to align the boom with the centerline of the boat, along with increasing sheet tension. As the wind increases and the boat becomes over- powered, let the traveler down to dump air and keep the boat on its feet. (Easing the traveler before a puff hits is an excellent way to keep the boat on its feet).

Main Sheet:

The main sheet controls both the "throttle" and the boat's "pointing". To decide if the sheet tension is correct, look at the top batten. Main Sheet tension and top batten position are directly connected. Tightening the Main Sheet reduces twist at the top batten, relative to the boom: When the leech end of the batten is pointing to leeward of the boom, the main leech is "Open". Drifter conditions require a loose main sheet and an open batten. In light to medium air, tighten the mainsheet until the top batten is parallel to the boom. In medium air, tighten the sheet a little

more, but only after full speed has been reached. This will allow you to point higher. At the high end of medium, and into heavy air a combination of mastbend and vang will open the top batten and keep the main tensioned, even when the mainsheet is eased past the traveler in a gust. In conditions over 6-8knots the general rule is flying the top telltale 60% of the time, and 40% stalled. If you need more speed then fly it more, more point then fly it less.

Vang:

The vang is an independent means of keeping tension on the leech of the main. In light and low-medium air, the vang is left slack. As the wind increases, the tension on the vang increases. (Tension the vang a little more after trimming the main). In heavy air, the technique of "vang sheeting" is used when there is enough vang tension to flatten the mainsail without hard sheet tension. You can then use the mainsheet merely to control the placement of the boom. This becomes necessary when the main has to be "dumped" in a puff.

Backstay:

The backstay bends the mast, depowering the main by flattening the sail and opening the leech. As the boat starts to become overpowered in medium air, the backstay is pulled on harder with the increase in wind speed. At the high end of medium air, the backstay is on halfway, and quickly becomes maxed out in heavy air. (Pulling on backstay before a puff hits is another effective way to keep the Boat on its feet).

Main Controls Mini Chart:

Wind Range	*0-6*	*4-8*	*9-17*	*18-25*	*25+*
Outhaul	1.5" from Boom End	1"	.5"	0"	0"
Cunningham	zero	zero	Light	Tight	Tight
Traveler	6" from Centerline	0"	3-12"	12-18"	18"
Top Batten	Open 0-10 °	0-5 ° Closed	0-10 ° Closed	0-10 ° Open	Open
Backstay	Loose	Loose	6-16" from Bridal	17-25"	25+"
Vang	Loose	Loose	Tensioned	Tight	Tight

Genoa

The Haarstick FLEX Black and Triradial Technora genoa's are versatile all purpose sails. Our genoa is optimized for pointing ability, yet has a forgiving luff entry, and accelerates well out of a tack.

Halyard:

The amount of tension on the genoa halyard is a critical adjustment affecting the boat's pointing ability. Drifter conditions are the only time that the luff of the sail should be tighter than "just snug". In all other conditions, put ONLY enough tension on the halyard to remove the scallops between the hanks. Do not over tension the halyard! When in doubt, ease it!

Genoa Sheet:

The sheet is the throttle. The object is to get maximum power without back winding the mainsail. If the genoa sheet is too tight for the conditions, it will interfere with the flow around the main, and the boat will feel slow, and "choked". When the genoa is under- sheeted, the boat will not point high, but will feel

"livelier" as you bear off and get the windward telltales to lay back. The later of the two options is preferable. If in doubt about your speed, ease the genoa out.

Genoa Lead Block:

The neutral position on the genoa track is roughly 4" from the front of the factory track. The range of adjustment for the genoa car is four inches in either direction.

Genoa Cunningham:

Use the Genoa Cunningham to adjust the fore and aft position of the draft. The Cunningham adds versatility to the range of the sail. Pulling on the cunningham before a puff hits will move the draft forward, and flatten the leech area, which will help to control the boat

Jib

When the wind is up, it's time for the jib. The ***Haarstick*** "Blade" Jib is cut from the same, very stiff "Yarn-Tempered" Dacron used in the Main. This cloth has extremely low stretch and excellent durability, demanded by the conditions it is used in. This sail has a smooth flat leech, and a forgiving entry. You can use more halyard tension with the jib than with the genoa. Normally, adjust the sheet tension until the back edge of the leech lines up about 3" inside the spreader. However, the technique to optimum speed in a big breeze is: NEVER CLEAT THE SHEET!. The need to keep the boat FLAT requires constant adjustment. Keep the jib sheet off the cleats and in your hand! This will allow immediate response. Keeping the boat flat is the key to making ground upwind. If the boat is hard to keep on its feet, move the lead aft and over tension the foot, allowing the top of the jib to twist off to leeward and spill power.

Jib Lead:

The normal fore and aft lead position for the jib is in line with the shroud tang. In extreme conditions, move the jib lead aft, up to two inches behind the shroud.

Downwind Sailing

Spinnaker

The Haarstick Triradial Spinnaker is designed for Running performance as the current class courses have changed to mostly Windward - Leeward, instead of the older "Olympic" courses. Our sail is absolutely "Maxed-Out" everywhere: at the girths, maximum miter, and maximum area below the mid-girth, all the way down to the maximum foot length. If we could have squeezed another square inch of area into this sail, we would have. We sail the spinnaker with one person controlling both the sheet and the guy to keep the responses to the sail immediate. On tight reaches or heavy air, we have two people handle the sheets.

Spinnaker Technique:

The spinnaker guy is constantly being worked aft to get more area out from behind the main. Dead down in drifters and heavy air, keep the pole end lower, in all other conditions, lift the pole until the clews are level. Reaches also require a lowered pole end. It is important to keep the huge shoulders on this chute active. The bigger shoulders allow you to keep up to 6" of the shoulder curling without the sail being "on-the-edge" of collapsing. An over trimmed spinnaker is just as slow as an undersized one, so make your spinnaker trimmer someone with good focus and active hands.

HAARSTICK SAILMAKERS

SUMMARY CHARTS:

J 24

Rig Tension Chart:

	Loos B-Gauge (old)					
Wind Range	**Uppers**	**Lowers**			**Forestay**	**Pre-Bend**
0 - 2 no wind	**10**	**0**			***3 fingers+**	**2.5** inches
2 - 5 drifter	**17**	**10**			***3 fingers**	**2.5** inches
6 - 9 light	**20**	**15**			***2.5-3 fingers**	**2** inches
10 - 13 medium	**24**	**21**				**1.5** inch
14 - 20 med heavy	**27**	**24**				**1** inch
20 + heavy	**31**	**32**				**0**

*Fingers refers to distance between end "zero" of tension gauge and forestay. Make sure all backstay tension is non existent during these measurements.

Main Control Chart:

Wind Range	0-3 kts	4-8 kts	9-12 kts	13-17 kts	18-22 kts	22+ kts
Outhaul	1" eased	2"	1"	0"	0"	0"
Cunningham	off	off	off	snug	tight	tight
Boom	below center	center	center	down	down	down
Top Batten	open 10 °	open 5 – 0 °	closed 5 °	open 0 – 5 °	open 5 °	open 5 - 10
Backstay	loose	loose	loose	0 - 10	0 - 20	10-30
Vang	loose	loose	loose	sheet tension	tight	tight

Headsail & Control Chart:

Wind	*0 – 3 knots*	*4-8*	*9 – 12*	*13-17*	*18 - 22*	*22 +*
Sail	Genoa	Genoa	Genoa	Genoa	Genoa/Jib	Jib
Genoa Foot	on Lifelines	4" off Chainplate	2"	3"	5"	
***Genoa Lead Car**	3"aft	3" Aft	5" Aft	5" Aft	6" Aft	
Genoa Leech	9" off Spdr	6"	2"	4"	10"	
Jib Middle Batten					Parallel - Open	Open
Jib Lead Car					At Shrouds	Aft 2"
Halyard Tension	Slight	Slight	Slight	Taught	Tight	Tight

* lead car is measured from front of track, measurement may vary w/different boats

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