



2004 TUNING GUIDE

Introduction

Due to the popularity of the J/22 class, there has been a steady increase in the level of competition within the class. This has sparked many different sailmakers to get involved in the class, each trying to make the fastest set of sails. At **Haarstick**, our goal is to provide the best blend of **Speed, Quality, and Durability**.

Our current sail designs reflect over 15 years of research and development. We have developed what we believe is the best balance of helm, rig tuning, and sail shapes for the very best speed, point, and durability. It all starts with the design. Steve Haarstick has a Masters in Aeronautical Engineering and over 35 years of sail design experience. Combine that with our proprietary cloth testing program, computer cutting, and famous **Haarstick** craftsmanship, and the net result is fast, high quality sails that will outlast most other sails.

This guide will provide customers of J22 sails with the How-To's to get most speed from your sails from proper rig tensioning and mast set up.

Before stepping the mast

Here are a few important details:

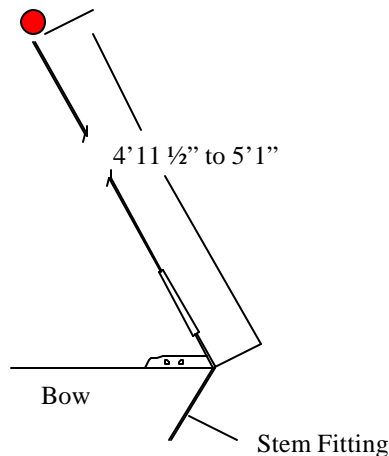
1. All rig settings are tuned with the **ANGLED or FLAT MAST PLATE**.
2. Lubricate all turnbuckles and mast sheaves.
3. Check distance from top of mast to spreader tips. They should be the same distance.
4. Make sure all halyards have been run down to the ring on the front of the mast and that there are figure eight knots at the bitter ends of your halyards.

If there is anything that may be accidentally missing in this guide or you have other suggestions from past experience, please do not hesitate to contact Haarstick Sailmakers @ 1(800) 342-5033



Headstay Length

After the mast has been stepped and the pins have been secured, stretch the headstay along the front of the mast down to the black band near the Gooseneck. Mark your headstay at this band and then secure the headstay to the stem of the boat. Next, measure the length from the intersection of the headstay tang and deck up to the mark you just made on the headstay. This distance should be between **4'11 1/2" to 5'1"**. See the illustration below.



Headstay length may be a little different from boat to boat. Sailing in breeze under 5 knots you should feel a slight tugging on the helm. This is known as weather helm. If you don't experience weather helm but instead find yourself having to push the helm down to keep the boat on a straight course, lee helm, lengthen your headstay in 1" increments or until you start feeling weather helm. Inducing weather helm will help you point going upwind.

Other things to consider when adjusting for proper headstay length:

Wind velocity in your sailing area – Generally, the lighter the breeze the longer the headstay length or more rake you will need.

Flat water – You can err on the lighter side of rig tension. This will allow for more headstay sag, which will give you better pointing ability upwind.

Choppy Water – You may need to err on the tighter side of rig tension to prevent the rig and headstay from pumping.

Crew Weight – Always try to sail as close to maximum weight as possible. If you find that you can't sail at maximum weight, then set a slightly tighter rig tune to allow you to depower earlier before having to apply backstay to help maintain a flatter boat.



FLAT PLATE Rig Tension Settings

		Rig Tension Settings					
		Wind Velocity	Uppers	Turns	Loweres	Turns	Headstay
Base —	0-5		23	-1	20	- ½	4
	6-10		29	-1	23	- ½	7
	11-14		34	0	30	0	10
	15-18		39	+1	35	+ ½	15
	19-21		41	+1	39	+ ½	20
	22+		44	+1	42	+1	23

ANGLED PLATE Rig Tension Settings

		Rig Tension Settings					
		Wind Velocity	Uppers	Turns	Loweres	Turns	Headstay
Base —	0-5		25	-½	22	- ½	4
	6-10		27	-½	24	- ½	6
	11-14		32	0	27	0	9
	15-18		37	+1	34	+1	13
	19-21		42	+1	37	+1	17
	22+		44	+1	43	+1	23

All of the rig tensions calibrated were done using the small LOOS Tension Gauge Model A. After the mast has been centered in the boat, tighten the rig to the base setting. Once the proper base tension has been set, check the headstay tension. With the headstay length between 4'11 ½" and 5'1", you'll find you may have to adjust your headstay slightly to achieve the proper tension. The shorter the length in the headstay, the tighter the rig tension. Likewise, the longer headstay length will result in a looser rig tension. Most of the modern sails are set up with long headstays and loose rig settings than previous years.

We recommend that you take the time to tune your rig while the boat is sitting on the trailer and figure how many turns you will need to acquire the above mentioned rig tensions. Since wire shrouds vary in age from boat to boat, the rig properties might be a bit different. You might find that it takes a full turn on the lowers to go from 30 to 35. Mark the number of turns it takes to go from each setting. This will result more accurate readings when the boat is sitting on the trailer and will speed up your rig tune process out on the water.

Keep a small notebook and record what you thought was fast so you will remember it for the next time you race. Try to duplicate your settings from race to race. Lastly, at the end of the day, tune your rig to the base setting. This will take unnecessary strain off the rig.



Mainsail and Jib Trim

Light Air [0 to 5 kts.]

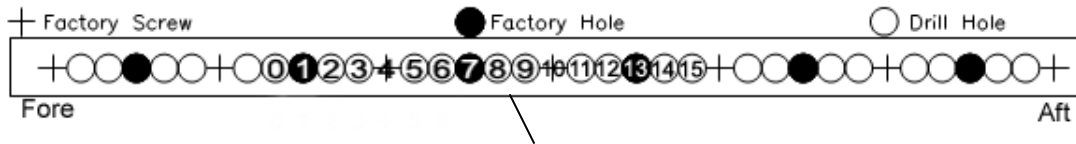
- **Mainsail:** Pull traveler up to windward seat and ease the mainsheet until the boom is centerline. Make sure the outhaul is well eased and the top batten is twisted off about 5 degrees. Keep the vang loose and the backstay up to the upper portion of the backstay bridal. The top telltale should be stalled and will show 45% of the time, while the rest of the telltales will be showing all of the time.
- **Jib:** The initial jib lead setting is **6**. Keep the jib eased until the foot is almost on the toe rail and keep a lookout on the top leach telltale. The jib halyard should be eased enough to leave slight scallops in the luff of the jib. This will help you point by allowing the draft to shift slightly aft. Having the backstay completely off should give you a nice wide groove to steer to. When the breeze starts to increase, add more halyard tension until the wrinkles just start to disappear. Remember, as you take up on the halyard, the leech will also become tighter so you may need to ease the sheet or move the jib lead back.





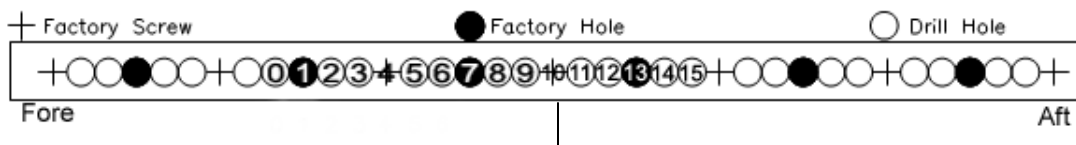
Medium Air [6 to 12 kts.]

- Mainsail:** In these conditions it will soon become apparent to start depowering by flattening the main until the top batten is parallel with the boom. The traveler should be centered if not 6" above center. The top telltale will stall slightly and occasionally you'll see all of them flying then stop then come back again. This is good. The outhaul tension should be slightly increased and the vang should be snug.
- Jib:** The initial jib lead setting is **8**. Sheet tension will become very important when sailing upwind. Before each race, either the skipper or the person controlling the jib should check and mark the jib sheet when the leech just becomes tight. Also, in this breeze range, you'll find that you will have to move the jib lead aft about 1/2" to 3/4". This will help depower and keep the boat under control.



Heavy Air [13 to 20 kts.]

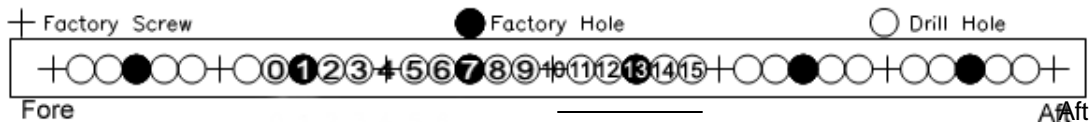
- Mainsail:** At this moment, the traveler should be centered, if not less than 6" above centerline. Keep the top batten parallel by applying more mainsheet tension. Minor backstay will be used when the major puffs hit the boat. You will need to apply more vang tension and may have to start vang sheeting the mainsail. You start to feel more helm and have control over the point and speed. More outhaul may need to be applied in these conditions.
- Jib:** The initial jib lead setting is **10**. This will be the condition where it will be time to start depowering the jib. The jib leads will need to be moved aft and you may need to err on the side where the top of the leech will be open and allow free passage of air between luff of the main and the leech of the jib. As the puffs hit, it is very important for the jib trimmer and the helmsman to work together.



BIG Air [21 to 26 kts.]



- **Mainsail:** Traveler should be centered or slightly to leeward about 3-6". Vang should be max as well as the outhaul. Backstay will most likely be aggressively tweaked and careful attention made to keeping the boat as flat as possible. Hang on!
- **Jib:** The initial jib lead setting is between **10 & 15**. The leads will be max aft to allow for open passage between the two sails and depowering the sail plan effectively. You may find yourself having to feather more in the heavier air simply to keep the boat.



Please keep in mind that the jib lead settings are primarily starting points. You may find that you will have to adjust accordingly to how the boat feels upwind. Use this jib lead guide as a starting point and make your own adjustments, as necessary.

Spinnaker

- Standard principles of spinnaker flying apply. In the light air, you'll need to carry the pole, outboard end, lower than parallel with the water. As the breeze increases, pole height will eventually increase. In the medium to heavy breeze, the pole should be carried slightly higher than perpendicular to the mast and the sheets eased somewhat. This will allow the spinnaker to breath and become more efficient.
- The Haarstick spinnaker design as been proven to be extremely fast and versatile in a wide range of wind strengths and angles downwind. It's exceptional design and construction will far outlast the competition.

Weight Placement

Light Air [0 to 5 kts.]

Crew should be to leeward and forward. Try to keep the weight concentrated together on the leeward side and never allow the bow person to sit in front of the shrouds. Try to maintain approximately 5-10 degrees of heel and keep the skipper to weather in view of the jib telltales and in front of the traveler. Roll tacking is crucial in this type of breeze. It's important to roll the boat and slowly make the boat flat out of the tacks.



This will allow you to come out of the tacks faster than when you went into them.

Medium Air [6 to 12 kts.]

One crew may be to leeward and one to weather. Again, directly across from one another and at max beam. Try to maintain approximately 5-10 degrees of heel having the middle crew shift their weight from side to side. The skipper sits to weather in view of the jib telltales and in front of the traveler.

Heavy Air [13 to 26 kts.]

These are typically survival conditions. If you find yourself racing in these conditions try to remember to give your crew enough time to prepare for each mark rounding. Be conservative and don't get greedy with attempting something ridiculous. If you feel comfortable handling a situation in Big Air, maintaining a confident tone, thinking through and discussing a procedure with your crew will most likely get you out of any difficult situation. Everyone will be on the weather rail and hiking. Middle person should be positioned at the aft end of the cabin top and the bow person just in front. The skipper should be forward and sitting next to the middle person. You'll find these boats are rocket ships downwind. Move everyone back in the cockpit and hang on!

Special Considerations

Even though the J/22 is very maneuverable, it stalls easily during acceleration. Your main priority is to get the boat moving and establish flow over the foils. After that, you can shift into point mode.

Lastly, the most important thing, **PRACTICE**. The more you practice and establish "tiller time", getting back in the boat after a long time will get to feel like riding a bike. Keep a notebook and record your observations and what you thought was fast or slow. This will also help when it comes time to experience the same conditions from before.