



J/24 Tuning Guide

Rig Setup for Boat Balance

The J-24 has an inherent problem of leeward helm. Leeward helm is evident when the center of effort above the waterline is too far forward in the boat, meaning the boat is not well balanced. The problem of leeward helm can be detrimental to boat speed and pointing ability, especially in light air. Leeward helm will make it difficult to steer the boat to windward where a balanced helm or a slight amount of weather helm will help the helmsman keep the boat in the groove while sailing very flat. The flatter you can sail a J-24 to windward while staying in the groove, the faster the boat will go! By shortening the mast to the class minimum; and lengthening the headstay and "J" measurement to maximum, you have moved the sail plan as far back as the class rules allow. Raking the mast aft will move the center of effort aft in the boat, which will induce more weather helm in the boat.

If possible, we recommend having a certified J-24 class measurer mark your minimum mast length, maximum headstay length and maximum J measurement. To cut your spar as close to class minimum as possible, you will need a class jig. There seems to be some discrepancy from one boat to another to exactly where the stem/sheer line point is at the bow. This point can make a big difference in your headstay length and J dimension. It is crucial to your upwind, light air performance to have the mast length as close to minimum and the "J" measurement and headstay length as close to maximum as possible.

Mast Length

The mast should be cut to within 3mm of the minimum class allowance (see class rules 3.52, 3.53). It is important to note that most J-24 spars come long from the factory; therefore they must be checked to class rule measurements and shortened.

After cutting the spar, the shrouds and backstay may be too long to tension the rig correctly. This must be checked. You may have to shorten the shrouds and backstay as well.

Headstay Length

The headstay must be cut or lengthened to the maximum class allowance (8670, see class rules 3.52, 3.53). This measurement is taken from the fixing point on the mast bracket to the intersection of the stem-line and the sheer-line.

J Dimension

The mast should be blocked at the deck so the J Dimension is the maximum class allowed (2925mm). The J measurement is taken from the forward part of the mast at the lower edge of the band to the stem/sheer line intersection at the bow (see class rule 3.5, 2.b)

Factory mast chocks generally need to be altered to acquire the maximum "J" measurement.

Tuning the Rig

Spreader Length

Spreaders must be cut to the minimum length of 760 mm (see class rule 3.5, 3.F).

Spreader Rake

Spreader rake should be set between 155 mm and 160 mm (see class rule 3.5,3.F).

Note: There are spreader through-bar kits sold today which determine the spreader rake. They are generally close to the 155mm-160mm mark, but many still need to be altered to acquire the proper rake.

Spreader rake is directly related to the fore and aft stiffness of the mast and indirectly to your headstay tension. The more spreader rake you have, the easier the spar will bend for a given amount of backstay and the harder it will be to tension your headstay with that same given amount of backstay. The opposite holds true with a smaller spreader rake. A smaller spreader rake will give you a stiffer spar, which will make it harder to bend the spar with a given amount of backstay and easier to tension the headstay with that same given amount of backstay.

Mast Butt Position

Mast butt placement should be positioned for 1 ¾" pre-bend at the base shroud setting.

Procedure A:

To find your mast butt starting point position, first locate the stem fitting inside the boat at the bow. Measure from beside the third bolt down (where the bolt meets fiberglass) to the I beam at 2730mm and scribe a line. From this point, the front side of the mast should be 130 mm aft of the scribed line.

Procedure B:

Tighten shrouds to base setting at (23) on the upper shrouds and (18) on the lower shrouds. Have one person climb a ladder facing the front of the spar with a tape measure and a second person hold the ladder in place while holding the main halyard firm against the mast and as close to the gooseneck as possible. Have the person on the ladder measure the maximum pre-bend, which will be approximately one foot below the spreaders. The measurement is taken from the back edge of the spar to the nearest part of the main halyard. If your pre-bend is not 1 ¾", you should move your mast butt accordingly. Move the butt forward to reduce pre-bend and aft to increase. An adjustable mast step can make this process quick and easy.

Note: Be sure the backstay is loose and there is no tension on the spinnaker and genoa halyard or you may get a false reading.

The upwind sails are designed to interact with each other throughout the wind range by changing the mast bend and headstay sag offsets to accommodate different conditions. With correct spreader rake, pre-bend, and following the upper and lower tensions from the tuning chart, you can be sure that your mast bend and headstay sag will match the luff curves that are designed into your Ullman upwind sails. The result will give you maximum performance throughout the entire wind range.

Centering the Spar Athwart Ship at the Hounds and Deck

First, measure back from the bow approximately 10'6" on each side of the boat, and mark the toe rail with a permanent marker. Then attach a tape measure to jib halyard and raise just a few feet. Measure to the mark on the toe rail on each side and adjust the uppers so that measurement is the same side to side.

Once the spar is centered at the hounds, tighten each upper shroud to (20) on a Model B Loose Gauge with no tension on the lowers. Next, sight the spar making sure that the mast is relatively straight side-to-side. If the spar hooks to one side you will have to customize your mast chocks, allowing the spar to move closer to the partners on the side that the mast is hooking to. Adjust the mast at the partners left-to-right until the spar is straight, sighting up the mast groove. Chock permanently in that position.

It is important to note that the side-to-side spar placement at the partners is critical to ensure that you can sail with even lower tension, keeping the spar in column side-to-side. Having to tension one lower more than the other to keep the spar in column will cause you to sail with different fore and aft mast bend and headstay sag from tack to tack. This makes it impossible to acquire consistent speed and trim setting from tack to tack.

Rig Tension

Tension on the upper shrouds is mainly critical to get the correct upwind shape of the genoa and jib. There is also some affect on the mainsail. For maximum speed, it is important to aggressively adjust the tension on the upper and lower shrouds depending on wind and sea conditions. Remember, you can only adjust shrouds before the preparatory signal.

The lower shrouds control the side-to-side sag or bend of the mast, and to a smaller degree, how much the mast can bend forward in the middle. Because of this, the lowers have a lot of control over the shape of the mainsail and it is very important to be sure they are adjusted correctly.

Using a Loos B Gauge:

Wind Strength in Knots:	0-5	5-10	8-12	10-14	14-18	18-22 (Blade)	22+
Shroud Tensions							
Uppers:	20	23	24	27	29	29	29
Lowers:	15	18	20	24	30	32	34

You will have to determine how many turns it will take to get from one setting to another. This depends on the types of turnbuckles you have. We recommend making your own chart counting turns from the lowest setting to the highest. This will allow you to change setting between races easily.

Tips for Tuning the Rig

When the wind velocity is 10 knots and above, your leeward uppers and lowers should be just taught. If they are really dangling or seem very snug, your shroud tension will be incorrect.

Above 15 knots, keep the sheave block and tackle just bottomed out against the connector plate when the backstay adjuster line is slack.

Below 15 knots, keep the sheave block and bridle 6 to 8 inches below the connector plate when the backstay adjuster line is slack.

Backstay: As your shroud tensions are increased or decreased, your backstay turnbuckles should be adjusted accordingly.

Tuning Guide Synopsis

Understanding how boat balance and rig tune affect the weather helm and sail shape throughout the wind range is an important aspect of getting the most performance out of your boat and sails. Proper tuning can make your racing much more rewarding and enjoyable. If you have any questions about this tuning guide or your Ullman Sails, please contact your local Ullman Sails loft.