J/105 Tuning Guide

Turnbuckle Update!

The number of turnbuckle turns referenced in this guide is for the old-style turnbuckles. To achieve the same tuning with new style turnbuckles, double the number of turns of what is listed below.

- Standard Turnbuckles = use # of turns in this guide
- New Turnbuckles = use twice the # of turns in this guide

(Shroud tensions – measured by Loos Gauge – are the same for standard and new turnbuckles)

Mast Rake

Mast rake dictates the amount of weather helm when sailing upwind. The J-105 is underpowered up to 10 knots, therefore you should set up for as much rake as the class allows. The increased mast rake will induce weather helm, make the boat much more responsive and easier to drive in light to medium conditions.

The three settings that determine mast rake are:

"J" Measurement

Your "J" measurement should be the maximum that the class rules allow, which is 13' 6". You may have to customize your mast chocks to get maximum "J". We have found that most J-105s need to almost let the spars lay against the aft partners at the deck to get to maximum "J".

*NOTE: In light air, you can use shims behind the mast at the partners to achieve more pre-bend. This ensures that your mainsail isn't too full when the backstay is all the way off. The opposite setting is needed in heavy winds. You can shim the mast partner aft to straighten the mast (to Max "J") so that when you adjust the backstay tight, the headstay is tightened proportionally, giving you better overall mainsail control!

Mast Butt Location

**NOTE: The class no longer has a maximum forestay length!

Depending on how close you can get your mast to reach the maximum "J" measurement at the deck determines exactly where the mast butt should be located. The mast butt should be set between 10 ¼" and 10 ½" from the bulkhead behind the mast. The bulkhead position may vary from boat to boat. The easiest way to check mast butt position is to check your mast pre-bend with the forestay set at max class allowance. With normal shroud tension, your spar should have zero pre-bend. If your spar has reverse bend, then you have placed your butt position too far forward. If your spar has any pre-bend at all, then you would want to move the butt forward until pre-bend disappears. Mast butt position is very critical. If you are not sure, please contact your local Ullman Sails Loft.

**NOTE: Some newer boats may have their mast steps 2” farther aft than previous boats.

Headstay Length

Set your headstay for 42.65' +/- 1” depending on wind conditions. Once your forestay is set, you do not need to adjust it again.

Shroud Tensions

(Use PS 10 Loos Red Gauge)

Before setting the shroud tension, it is very important that you make sure the mast is centered at the hounds. To center the spar, first measure from the forestay pin back to a point on each side of the toe rail adjacent to the mast. Mark with a permanent marker. Then attach a steel tape measure to the center jib halyard. Raise the jib halyard a few feet and cleat. Then measure to each rail, adjusting each upper shroud until the measurement is the same on each side.

Once the spar is centered, tighten the uppers to (30) on your Loos Gauge. Tighten the intermediate shrouds to (12). The lowers should be slack (approx. (0) on the gauge). Your rig is now dock-tuned for 0 to 8 knots. With the correct mast butt position, headstay length, "J" measurement, and shroud tension, your J-105 will have the correct mast bend and forestay sag to accommodate your new set of Ullman Sails through a wide range of conditions.

Shroud Adjustment for Different Conditions

Through years of testing and sail development, we have simplified J-105 rig tuning into an easy-to-understand guide that will help you get excellent performance out of your boat. However, by studying the rationale behind our tuning, you will understand why we do it. This should help increase your performance even further.

Upper shrouds:	Controls forestay sag and mast tip leeward sag.
Lower shrouds:	Controls leeward mast sag and, to some extent, lower mast bend.
Intermediate shrouds:	Controls mid-mast to upper-mast leeward sag.
Backstay:	Controls mid-mast to upper-mast bend and forestay sag.

Leeward Mast Sag

The J-105 is inherently underpowered below the 10-12 knot range and must be powered up every way possible in lighter conditions. We have found that if tuned correctly, "Leeward Mast Sag" is a formidable weapon under 12 knots. Leeward mast sag has two important affects on the sail shape and the slot between your jib and mainsail.

1. Leeward mast sag will add luff curve to the mainsail, making a more powerful shape for the lighter conditions.
2. Most importantly, leeward mast sag narrows the slot between the leech of the jib and the luff of the main. This in turn increases the pressure between the main and jib, which increases lift on the leech of the main. More lift. More power and speed.

Leeward mast sag is very much like barber hauling the jib. To achieve the correct leeward sag, you should sight up the mast slot while sailing upwind. Although the tuning guide chart will get you very close to the correct sag, the smoothness of the sag should be checked by eye.

A quarter turn off on the lower shroud can make a difference in the smoothness of your mast sag. The leeward mast sag should be a smooth curve starting from the gooseneck and continuing to the hounds where the upper shrouds and forestay attach to the spar.

Ullman Sails perform best with approximately 1 1/4” of leeward mast sag from 0-8 knots, and 1/2" of sag from 8 to 15 knots. Once the boat starts to become overpowered, the spar should be tuned as straight athwart ship as possible, eliminating any leeward mast sag.

Mast Tip Sag/Forestay Sag

Upper shroud tension will control head stay sag and mast tip sag through a wide range of wind conditions. A (30) on the Loos gauge for your upper shrouds will give you enough headstay sag to keep your Ullman jib powerful in 0-8 knot conditions. At the same time, (30) is just enough tension to keep the tip of the mast from falling to leeward. When your mast tip leans to leeward, you are essentially dumping wind from the top of the mainsail, which decreases the power in the mainsail. Mast tip sag under 12 knots is slow. Your lowers and intermediates should be set for 1 1/4" of leeward mast sag – approximately (12) on the intermediate shrouds, and (0) on the lowers.

As the breeze builds to the 8-16 knot range, your jib will begin to become too round and full for optimum performance. You will also notice that your mast tip will begin to sag to leeward, which is detrimental for the mainsail both in power and pointing. To compensate in windier conditions, simply tighten your upper shrouds to (41) on the Loos gauge. This tighter upper setting will once again give you the correct headstay sag and mast tip sag for optimum sail shape. Your lowers and intermediates should be set for 1/2" of leeward mast sag – approximately (17) on the intermediates, and (0) on the lowers.

Once the breeze has built to 17+, you should tighten the uppers to (51) to get the correct head stay sag and mast tip sag for optimum sail shape. At this point, the lowers and intermediates should be set for zero mast sag – approximately (22) on the intermediates, and (5) on the lowers.

Rig Tuning Synopsis

Simplicity is the key to maintaining top boat speed in all wind strengths. U/S sail shapes have been developed to perform through the entire sailing wind range, while requiring very little changes in your rig. Three simple settings on your uppers, lowers, and intermediates with a total variance of two turns or less per shroud is all that is needed.