

# 2024 J70 Tuning & Trim Guide



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# BEFORE STEPPING MAST

**Install trim marks on the spreaders** at the mid-point of the aft edge of the spreaders. We like adding a second mark two inches inside the mid-point mark. Ideally these marks are parallel to the centerline of the boat as opposed to perpendicular to the spreader. We prefer to spraypaint the marks on the underside of the spreader as opposed to tape, which would rot on the top of the spreader.

Install a windex to the side or top of the backstay crane.

Most teams have eliminated using a backstay whip at all because of the extra windage and drag.

Mark the headstay at the top of the lower band with a reference mark before attaching to the furler to be able to measure mast rake.

On older Southern masts, it is imperative to remove the mast step casting and coat it with Tuff gel paste to prevent galvanic corrosion.

To achieve a long enough headstay, we recommend using a longer T-swage headstay attachment above the top swivel. You can also add a longer threaded stud to the turnbuckle or alternatively, add a 5/16" toggle fitting below the turnbuckle.

## ONCE MAST IS RAISED

- Coat turnbuckle threads with lanolin wax to prevent galling of the turnbuckle barrel. Add two plastic 3/8" nylon washers inside the chainplate pins to keep them flush on the outside edge. Once you've attached the headstay, start with the turnbuckle max open with just enough thread showing to install O-rings or cotter pins. Check the headstay length from the reference mark. With the Seldon mast on US built boats, the target headstay length 58.25" (148 cm) from top of the reference mark to lower pin on furler.
- Start with the lower and upper shroud turnbuckles open so thread is just not showing inside the barrel of the turnbuckle. The uppers should then be adjusted by counting an even number of turns on each side.
- Count about 20 full turns on each upper turnbuckle to get close to base setting (LOOS Gauge PT-2 should read 18 or 19 on the uppers). Use plastic calipers (available at Harbor Freight) to check the gap inside the turnbuckle barrel. To center the mast in the boat, use a bucket of water hanging off the main halyard below the sheer line and keep checking port to starboard until the uppers are centered in the boat (the lowers should be just slack while adjusting the uppers to center the mast.)
- You are permitted to cut as much as 1 cm off each threaded turnbuckle stud to prevent running out of adjustment at the higher end of the rig settings (this is a fairly common practice when sailing with a rake of 58.25".)



- Now you can tighten the lowers with equal turns to remove the slack. Sighting the aft edge of the mast. Check for straightness side to side until the load reads around 9 on the Loos gauge. This will be your base setting (10-11 knots). **The backstay should be slack when measuring the rig tension so it does not affect the reading on the LOOS Gauge PT-2.** Use a *Doyle-supplied pre-bend gauge* hoisted to the spreaders to adjust the uppers in order to achieve 3-4 cm of prebend at base setting of 18/19 uppers | 9 lowers. The goal is to adjust the uppers up or down evenly to achieve the correct pre-bend at base.



# WHEN SAILING

**Jib Leads.** For 5-6 knots, we use hole 7 (6 showing behind), For 7-8 knots, we use hole 6 ( 5 showing behind.), while for 10-16 knots, we use hole 6 or hole 5 and hole 5 for 16+. For very light air below 5 knots, the jib lead can be moved forward to hole 8 or 9 when not using the inhauler. Class rules do not allow you to adjust the standing rigging (including course backstay bridle adjuster) while racing (from the prep signal at (4 minutes to the gun until the finish of that race.) Headstay cannot be changed once off the dock.

It is important to assign only one person to adjust the rig tension to ensure it is even on both sides and at the end of the day, one person is responsible for the rig tension.

**Determining Proper Rig Tension for Very Light Air.** Rig tension needs to be set for the lowest wind speed expected for each race since the shroud tension cannot be adjusted while racing. Getting caught with the rig too tight in a dying breeze causes the headstay to get too firm which in turn flattens the jib in just the condition where it needs to be the fullest. A good way to judge the correct shroud tension for the conditions is to look and feel at the leeward shroud tension while sailing close-hauled.

**Determining Proper Rig Tension for Fresher Wind Speeds.** If the leeward shrouds are quite slack, most of the time the rig tension should be increased a setting or two. Add 2 turns on uppers and 1 turn on lowers for the first setting above base. If the mainsheet trimmer is fighting with the backstay and mainsheet to depower the boat, then the rig tension is probably too loose. Conversely if the backstay is generally *just* slack much of the time (like pushing on a string) and you're searching for more power, then the rig tension is probably a setting or two too tight.

- **Determining Shroud Tension.** The best way to determine the correct shroud tension is while sailing with the main and jib sheeted in on a close hauled course. **The leeward lower shroud** should just be just firm in each wind speed above base. If the leeward shrouds feel too tight, then ease the rig one setting at a time, check the firmness of the leeward lower shroud again. Conversely, if the leeward shrouds are too floppy, tension the rig one setting and repeat that ratio on both sides until leeward lower is no longer slack in the settings above 12 knots. If the rig tension is too loose as the wind speed freshens to 15+ knots, then the headstay will be too saggy and the main will wash out because of too much mast bend.





**Light air/Tight Rig.** If the rig is too tight in a dying breeze, it is *essential* to anticipate before racing and ease off the rig to a lower setting. It is also important to have a slack vang and ensure the backstay and cunningham are slack as well. The headstay will also be too bound up in this scenario and the boat will be underpowered. This is why it is essential in under 10 knots to drop the rig tension to a lower setting, which will increase power in the headsail to keep the crew on the rail. Do not sail with the rig at any looser setting than needed to keep the leeward shrouds from being too floppy.

**Freshening Wind/Loose Rig.** If caught with the rig too loose, you'll have too much mast bend as you're tensioning the backstay and the main will get too inverted and washed out. The backstay, cunningham, and vang can be used to help depower the sail plan and vang sheeting can be used to maintain correct heel angle. In over 12 knots, it is better to be at a tight enough rig setting so the leeward lower is not going slack when backstay is on hard. Having the rig too loose is slow in heavy air because the mast will over bend when depowering with the backstay and the headstay will still be too saggy.

**Backstay Bridle Setup.** After shrouds are tensioned for the conditions, make sure the backstay bridle is just slack when it's not cleated. As the wind speed increases, the backstay bridle should be shortened to take most of the excess slack out of the backstay before tensioning so you will not bottom out the backstay too quickly as the wind speed increases. Conversely when the wind is lightening, make sure to ease the backstay bridle so headstay does not get too bound up in the light spots. The backstay bridle generally should be adjusted when the rig setting changes. We like to add a thin shock cord to hold the backstay bridle blocks near the top to help keep the backstay bridle blocks high enough in light air.

- **Backstay Tension.** The backstay can only be tensioned as much as the mainsail can tolerate for the given shroud tension. Once the main starts to show an inversion crease starting from the middle stripe at the mast toward the clew, then the backstay is at max (or should be eased a touch) for that given shroud tension. This implies it is critical to quickly increase the shroud tension as the wind speed builds which will allow for more backstay tension and better headstay support. The backstay should not be over tensioned to cause an inversion crease to form toward the clew (washing out the main). If the main is overbending in the middle, it probably means you need to reduce prebend from 4 to 3 cm at base.



- **Gear Changing Controls.** Once the shroud tension is selected, the backstay, traveler, mainsheet and vang controls are the best ways to change gears. After tensioning the backstay the vang is also a good way to depower the main. Changing gears as the velocity changes often requires the crew to adjust the vang upwind, just firm in wind speeds over 10 knots. In less than 10 knots, the vang should be *just* slack upwind. Be careful to not have too much vang in the variable 11-13 knot range. Vang tension has to be adjusted as wind speed changes. The vang helps flatten the main in puffs. Too much vang will over flatten the main when wind lightens below 12 knots. The traveler can be adjusted between 3"-6" (7.5 - 15 cm) above centerline to allow for more mainsheet tension as wind speed increases over 12 knots.

**Tack Strop.** The tack strop should be adjusted looser in light air and gradually tighter as the wind increases. In light air especially, the tack strop should essentially be slack when sailing close-hauled. Starting at 10 knots, the tack strop needs to gradually be tensioned to allow for the additional mast bend generated when vang-sheeting,

**Outhaul.** The outhaul should be pulled to within 1.5" (4 cm) of the boom white band for upwind sailing. Tighten as wind speed increases to within .75" (2 cm.) The mark on the outhaul tail was good for repeating proper settings. Ease the outhaul when the wind speed drops below 8 knots for power (-2" / 5 cm from band).

**Traveler.** The traveler is a good helm control when closehauled. For light air up to 8 knots, the traveler should be positioned all the way to weather so the boom is on or just above centerline. The traveler should be lowered quickly to 6" - 12" (15-30 cm) above centerline as wind speed builds to 10 to 13 knots. In 14+ knots, the traveler should be no more than 6" (15 cm) above centerline.

- **Trimming.** Sheet the main enough so the top batten telltale is stalling but all other leech telltales are flowing. The main can be sheeted quite hard in 8-12 knots. Adjust the mainsheet and traveler for wind speed and puffs.

## MAINSAIL TRIM







# JIB TRIM

- **Jib Leads.** For 5-8 knots, we use hole 7 (6 showing behind), while for 9-10 knots, we use hole 6 (5 holes showing behind.) For very light air below 5 knots, the jib lead can be moved forward to hole 9 or 10 (8 or 9 holes showing behind) when not using the in-hauler.

**Very Light Air.** In a dying breeze, the in-hauler (weather jib sheet) needs to be eased almost completely since the tacking angles get wider and the apparent wind goes aft as the wind speed drops below 4 knots. Then the jib cars need to be *moved forward* several holes (to hole 9 or 10) since the in-hauler is not pulling the clew forward.

- Jib trim is the most critical and hardest to maintain from the rail. The jib halyard mark on the fine tune halyard purchase is critical to monitor small changes. The jib sheet and in-hauler marks are critical for repeating fast settings from the rail, so if the clew blocks change, it can change the marks quickly.

- **Luff Tension.** Start with the luff tension softer with some wrinkles in the luff in lighter air. You'll still have some wrinkles in the luff in 8-10 knots. In 12+ knots, the wrinkles can be removed with halyard tension.

- **Jib Furling.** Ideally, sail on a downwind course on starboard tack to furl the jib. If you attempt to furl while going upwind (hot furl,) you will regret it as it will only create bad wrinkles. Whenever roller furling the jib, make sure the jib sheets are eased and the jib is unloaded so that it rolls smoothly. . Another trick is to tension (or "banjo") the jib halyard, fine tune to furl and then ease it back off to the reference mark after the furl is complete.







# SPINNAKER TRIM

The tack should be two-blocked at the end of the sprit. The factory sprit line is too small for the cleat and can slip in heavy air. It should be replaced with a thicker tapered tack line that is luggage-tagged onto the tack ring.

**The Spinnaker luff cord** can be adjusted on a daily basis after the first practice run of the day. Nylon spinnaker cloth is hygroscopic and will change as it absorbs moisture and also shrink in hot temperatures. *As a general rule, the luff cord needs to be tightened in light air because it can become unstable and end up overtrimmed.* In heavy air, the spinnaker stretches, so you need to ease the luff cord to match - which is somewhat counter intuitive. It helps to mark the luff cord to keep track of adjustments you make on the water. The leech & foot also have internal cords, which require less attention. The foot should have only the same tightness as the sail and the leech should never be too tight.

- The asymmetrical sail should be flown with some curl in the luff. You can ease until it curls just to make sure that you aren't over trimmed, but constant easing and trimming to maintain a curl is not needed unless soaking at lower angles.
- **In light air displacement mode**, the jib should be furled after the spinnaker is flying. In planing conditions, the jib should be flown with telltales streaming, but not ever over-trimming the jib since that would blanket the spinnaker.

**In planing conditions**, the spinnaker sheet can be pumped to induce planing and surfing. However, "repeated" pumping of the spinnaker is prohibited by World Sailing and could be flagged by an umpire, and the spinnaker sheet is not being dragged around the headstay, then the jib can be deployed. The jib also needs to be furled for light air gybing and takedowns so that the clew and the sheet do not crumple the jib against the headstay as the clew and sheet are being pulled around the headstay. This is particularly an issue in very light air since the spinnaker does not fly out away from the headstay in the light air gybes.





**Jib Furling.** Don't rush to roll up the jib after the set or you will risk creasing the luff badly. First make sure the windward jib sheet is very slack. Start by easing the jib so that the luff telltales are streaming. Then the jib can be gently rolled if it's not planing conditions.

- **Dousing.** For windward spinnaker drops (port tack approach to either gate where the spinnaker is taken down on the port side) the jib must remain furled to prevent the jib cloth from getting crumpled by the clew being dragged around the headstay. Once the spinnaker is fully on the port side while dousing



## CREW WEIGHT

The crew weight upwind generally revolves around having the heavier crew members with their legs out, and the lightest crew member available to help tack the traveler and play the backstay. It is good to keep weight as far forward as possible and as weight is moved off the rail, all crewmembers should then move as close as possible to the bulkhead. The helmsman should move forward of the traveler up against the winch and only move back for tacking or gybing.



# DOWNWIND MODES

There are essentially four downwind “modes” for crew placement that we’ll refer to as displacement, wing on wing, lazy planing, and planing.

**Displacement Mode.** In lighter breeze you’ll be sailing in “displacement mode” in which case the boat will not be planing even when in the best pressure. If that is the case, you’ll want the weight as far forward as possible and the boat relatively flat. You may allow for slight heel to leeward in the light spots to keep the sail full and a slight heel to weather when sailing deep in pressure.

**Wing on wing.** Ideal conditions for wing on wing are 10 to 14 knots. Above that you would likely decide to plane and below that, transition to displacement mode. A good rule of thumb is to have the windex pointed back kite side at outermost point of transom and have some windward heel.



**Lazy Planing Mode.** In marginal planing conditions, 12 to 15 knots, with the jib deployed and outhaul eased, it's important to maintain a speed of around 10 knots to justify lazy plane mode instead of wing mode. Sometimes lazy planing is only possible on one gybe over another depending on the wave angle. It's important to key off other boats nearby sailing in the best pressure to justify the lazy plane mode. Crew weight is generally forward in lazy plane mode. Often when you find yourself in the best lane of pressure, that's a good time to consider going back to the wing mode. Targeting heel angles of 5 to 10 degrees is the optimum range for planing mode.

**Planing Mode.** Lastly, while in planing mode, with 16+ knots, it is important to move the crew weight way back and keep the jib deployed. You can put the mainsheet trimmer behind the helmsman to weather and have the spin trimmer slide aft of the winch in freshest breeze. The jib trimmer can cleat the jib so the bottom half is flying even if the top is soft and then flies the kite. The aft crew trims the main from the last part of the boom with light vang tension to twist the head open, traveler dropped to leeward for planing, and play the mainsheet over the cockpit (generally inside the rail.) The load on the mainsheet increases a lot when trimmed in over the cockpit while planing and eased when overpowered. This technique allows the helmsman to sail the boat closer to the edge of max power while planing without heeling the boat too much in the puffs. We have found most of the top teams sailing this way effectively in the planing conditions. When the aft main trimmer trims main off the last part of the boom they should take a lot of slack out of the uncleated mainsheet swivel. The mainsheet can then be looped over the helmsman's head (around back) so the helmsman can gybe without tripping over the mainsheet.

