



J/70 Tuning Guide



Photo Paul Todd/OUTSIDE IMAGES

For any question you may have on tuning your J/70 for speed, contact our experts:

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After countless hours sailing, testing and competing in the J/70 One Design, North Sails has updated our tuning notes and tips in an effort to get sailors and teams up to race winning speed quickly with our World Championship Sails! As we learn more about the J/70, or any other One-Design Class, new information regarding setup, tuning and trimming techniques will be updated online @ OneDesign.com. Also, anyone can sign up online for our North Sails One Design email blasts and receive all J/70 news and updates directly by email.

The J/70 is a design that incorporates many decades worth of great ideas and puts them into a 22' package of fun and speed. Incorporating the speed and handling of a top tier sport boat with the stability and reliability of a performance keelboat, the J/70 creates a sailing experience that accommodates all ages, abilities and sailing appetites. We expect to see the J/70 class crown a diverse group of champions in the coming years. Let North Sails help you reach your competitive goals!

SAIL CARE

Properly caring for your North Sails will prolong the life of the sails. When storing your sails, keep them clean, dry, out of direct sunlight and away from areas of extreme heat. Rolling the mainsail and jib when they are not being used and folding your spinnaker (instead of stuffing it in a bag) will help all of your sails remain wrinkle free and last much longer. In addition, releasing the tension

on the full-length battens in the mainsail, for storage, will increase the life of the sail.

Tuning Quick Guide

Attached is our quick tuning guide that we have developed for the J/70. North Sails worked in concert with Southern Spars in designing our sails to match the characteristics of the class approved J/70 mast. Using the North Design Suite, our design team was able to design the perfect sail and mast combination using the same tools and process we use for projects like TP52, Farr 40 and other high performance racing programs that choose North Sails and Southern Spars.

Tuning Tools

Some basic tools are required to accurately setup and tune your J/70 mast. These include: 50' or longer Measuring Tape, PT-2 Loos Tension Gauge, Calipers, Permanent Marker and Electrical Tape. Each of these tools will be mentioned in this tuning guide and will aid in the proper tuning of your mast.



Tuning tools needed to accurately setup and tune your J/70. Another important setup tool is the use

Another important setup tool is the use of reference marks. **MARK EVERYTHING!** While this sounds basic, marking settings can make it much easier to repeat your setup and tuning on the water. Mark your sheets, bowsprit out line, tack line, halyards and other controls to make settings repeatable and more accurate.

MAST SETUP AND TUNING

Spreaders Trim Marks

Before stepping the mast, mark the spreaders with tape stripes to use as a reference when trimming the jib. These marks will indicate the location of the leech of the jib when it is trimmed for upwind sailing. Measuring from the mast, along the aft edge of the spreader, put tape stripes at 18", 20" and 22" with the measured edge of the stripe closest to the mast.

Initial Rig Setup

1. Measure headstay length. With the mast up, attach the spinnaker halyard to the bowsprit to support the mast, allowing the headstay to be disconnected from the furler drum. Then pull the headstay taut down the front face of the mast and make a mark on the headstay (Use either a marking pen or piece of tape) corresponding to the top of the white band around the mast near the gooseneck. After marking the headstay, reconnect it to the furler drum and measure from the mark you made down to the center of the pin at the bottom of the headstay (including and toggles). That initial measurement should be 54 1/2" (see pics).



2. After the initial headstay length has been set, the length can be adjusted later to aid in fine tuning the balance of the boat to wind conditions or trimming tendencies. Any changes to the headstay length, after the initial setup, should be done at $\frac{1}{4}$ " increments to better track the effect of the change.

3. Center the mast side to side. To aid in centering the mast laterally in the boat, place a pencil mark 8' (96") back from the stem fitting at the shear (hull-deck intersection) on each side. Next, hoist a tape measure on the jib halyard, secure the halyard and measure to the pencil marks you made on the shear. Adjust the Upper Shroud lengths until the mast is centered and the halyard to shear lengths are the same from side-to-side.

NOTE: The tape measure only needs to be hoisted a short distance since the measurements are relative to each other and the actual lengths are not important.

4. Set the base shroud tension. The base tension for the Upper Shrouds is 22 and the Lower Shrouds is 12 on the PT-2 gauge. While adding tension to get to the base setting, occasionally sight up the sail track on the aft side of the mast to ensure the length of the spar is straight. If the mast track has any side bend or curve, adjust the shrouds to bring the mast into column.

5. Checking for proper Pre-Bend. After setting the shroud tensions at 22-12, check that the mast has the proper pre-bend (aft bend) by pulling the main halyard down taught to the bottom of the mast track near the gooseneck (see pic). The pre-bend distance between the back of the mast track and the front of the main halyard (at the spreaders) should be between 1 1/2 and 2 1/2 inches. The SD-1 main may fit your mast better if you are closer to 1 1/2 inches of prebend and the M-2 main may be better if you are closer to 2 1/2 inches of prebend.

6. Use calipers to check base settings. After setting the base rig tensions and checking the side-to-side center position of the mast, it is a good idea to use Calipers to measure the distance between the studs on the shrouds and headstay. This measurement can help you get the rig back to base setting more easily, especially if unsure of the turns or tensions while on the water.



Hold main halyard to bottom of mast track to measure pre-bend

M2/J2 Designs Tension Charts

SOUTHERN SPARS MAST												
WIND SPEED Knots	UPPERS (PT2)	LOW- ERS (PT2)	UPPERS Turns from BASE *	YOUR TURNS	LOWERS Turns from BASE *	YOUR TURNS	JIB LEAD Holes in Front **	VANG	OUTHAWL	MAIN TRAVELER	IN-HAUL From Cabin ***	
<6 knots	19	Loose	- 3		- 2		4-5 holes	0%	Loose	14" - Max (Above Center)	1" - 3"	
6-8 knots	20	7	- 2		- 1		5-6 holes	Snug	Firm	12" - 14" (Above Center)	1" - 2"	
8-10 knots	22	12	BASE		BASE		5-6 holes	Snug-75%	75%	10" - 12" (Above Center)	1" - 2"	
10-12	24	16	+ 2		+ 1		5-6 holes	95%	95%	6" - 8" (Above Center)	1.5" - 3"	
12-16	26	20	+ 4		+ 2		5-6 holes	100%	100%	Center	2" - 3"	
16 - 20	28	24	+ 6		+ 3		4-5 holes	100%	100%	4" - 6" (Below Center)	2" - 4"	
20+	28	28	+ 6		+ 5		4-5 holes	100%	100%	4" - 6" (Below Center)	No In-Haul	

SELDEN MAST										
WIND SPEED Knots	OUTERS Turns from BASE *	YOUR TURNS	INNERS Turns from BASE *	YOUR TURNS	FORESTAY	VANG	OUTHAWL	MAIN TRAVELER	IN-HAUL From Cabin ***	
0-5 knots	-1			-3		0	0%	Loose	14" - Max (Above Center)	1" - 3"
6-8 knots	0			-2		0	Snug	Firm	12" - 14" (Above Center)	1" - 2"
8-10 knots	22			11		1385 mm	Snug-75%	75%	10" - 12" (Above Center)	1" - 2"
10-12	+2			+1		0	95%	95%	6" - 8" (Above Center)	1.5" - 3"
12-15	+4			+2		0	100%	100%	Center	2" - 3"
16 - 20	+6			+3		0	100%	100%	4" - 6" (Below Center)	2" - 4"
20+	+8			+4		0	100%	100%	4" - 6" (Below Center)	No In-Haul

Forestay measurement is a swing from the top of the gooseneck white band.

* The number of turns is an estimate and could be different from boat to boat. It is important to check your settings, and the number of turns between the settings, before going out on the water.

** Counting the number of open holes in front of the jib lead car identifies jib lead position. Setting the jib lead position at 6 holes in front of the lead car, is recommended for flat water only.

*** The distance (in inches) from the clew of the jib to the side of the cabin identifies In-Haul measurement. Use less In-Haul when lead is forward and more In-Haul when lead is aft.

SD-1 Designs Tension Chart for all Masts

WIND SPEED Knots	UPPERS (PT2)	LOWERS (PT2)	UPPERS Turns from BASE *	YOUR TURNS	LOWERS Turns from BASE *	YOUR TURNS	JIB LEAD Holes in Front **	VANG	OUTHAWL	MAIN TRAVELER	IN-HAUL From Cabin ***
<6 knots	14	Loose	- 2		- 1.5		4-5 holes	0%	Loose	14" - Max (Above Center)	1" - 3"
6-8 knots	16	Loose	- 1		- 1		5-6 holes	Snug	Firm	12" - 14" (Above Center)	1" - 2"
8-10 knots	18	8	BASE		BASE		5-6 holes	Snug- 75%	75%	10" - 12" (Above Center)	1" - 2"
10-12	20	12	+2		+1		5-7 holes	95%	95%	6" - 8" (Above Center)	1.5" - 3"
12-16	22	16	+4		+2		5-7 holes	100%	100%	Center	2" - 3"
16 - 20	24	20	+6		+3		5-7 holes	100%	100%	4" - 6" (Below Center)	2" - 4"
20+	26	25	+8		+4.5		5-7 holes	100%	100%	4" - 6" (Below Center)	No In-Haul

Less vang is needed for the SD-1 main, especially in 15+knots. Pull vang snug then 1-2" more control line.

Inhailer for the SD-1 Jib should be on the outside of the range from the cabin.

* The number of turns is an estimate and could be different from boat to boat. It is important to check your settings, and the number of turns between the settings, before going out on the water.

** Counting the number of open holes in front of the jib lead car identifies jib lead position. Setting the jib lead position at 7 holes in front of the lead car, is recommended for flat water only.

*** The distance (in inches) from the clew of the jib to the side of the cabin identifies In-Haul measurement. Use less In-Haul when lead is forward and more In-Haul when lead is aft.

Sail Trim

MAINSAIL

Mainsail trim on the J/70 is an important factor in getting the boat up to speed. Check each of these for proper mainsail setup:

1. Make sure the mainsail is at full hoist at all times. The head of the sail should be hoisted until even with the white band at the top of the mast. This setting should be checked regularly as the halyard could stretch out during the day.

2. The tack of the mainsail is equipped with a strap that leads around the front of the mast. This tack strap should be tensioned so that the tack of the sail is held forward while under load from the outhaul. The tension is also important to keep the luff rope in the mainsail from chafing in the feeder or pulling out of the track completely. **REMEMBER** to unclip the buckle when dropping the main. If the outhaul is on tight and the main is dropped, the buckle may break from excessive load created as the boom drops to the deck.

3. Correct batten tension for the three (3) full length battens is important to achieve proper mainsail shape. Each batten should be tensioned so that all the wrinkles are removed from the batten pocket and the batten can pop from side-to-side easily. If a batten is too loose, wrinkles will appear along the batten pocket and if a batten is too tight,

it will be difficult to pop the batten from side-to-side.

4. Adding a backstay flicker to the mast crane can help the leech of the mainsail pass through the backstay when tacking and jibing in lighter winds.

Trimming the mainsail on the J/70 is a balance between power and stalling. If the sail is trimmed properly, you will get the maximum amount of power out of the sail and if not trimmed properly, the sail could stall and your boat speed will suffer. The controls that most directly affect the trim of the mainsail are the mainsheet, the main traveller, the boomvang, the outhaul and the backstay. Here is what to check for each control when trimming the mainsail:

1. Mainsheet tension, like any sail, is the place to start for proper trim. In most conditions, the J/70 mainsheet should be trimmed so that at max trim the leech telltales at the top of the main are stalling 25-30% of the time. In light wind or when building speed these leech telltales should be flowing 80-100% of the time.

2. Boom height, relative to the boat's centerline, is another important factor in mainsail trim and the mainsheet traveler is the way to set the boom height properly. Until the boat becomes overpowered, the traveler should be set so that the boom is near the centerline of the boat while sailing upwind. It can be set slightly above center to help

in pointing, but there is risk of stalling the sail. If the boat loses speed when the boom is raised above centerline, the traveler or the mainsheet should be eased to help return the boom to centerline and build speed.

3. When the wind gets stronger the **boomvang** is used to help depower the lower part of the mainsail. Adding tension to the boomvang flattens the lower main sail and allows the trimmer to ease the mainsheet in the puffs and still maintain some leech tension on the sail. It is important to remember to ease the boomvang when the wind speed drops to add shape and power back into the mainsail.

4. The shape of the foot, and lower section of the mainsail can also be changed using the **outhaul**. The outhaul should be set looser when the boat needs more power and tighter as the power increases. A good indicator of proper outhaul tension is the lowest batten. When the mainsheet is trimmed properly, the lowest batten will hook slightly to windward of the boom. If the lowest batten hooks too much, the outhaul might be too loose and if it is parallel with the boom, the outhaul could be too tight.

5. Like the **boomvang** and outhaul, the backstay is used to change the power in the mainsail. When the wind gets stronger, more backstay tension will help depower the upper part of the mainsail and take sag out of the

headstay. Increasing backstay tension bends the top of the mast and flattens the upper part of the main and tensions the headstay flattening the jib. Also, like the boom vang and outhaul, the backstay should be eased off if the wind drops so the mainsail and jib will gain depth and power.

JIB

Trimming the jib on the J/70 involves both technique and accuracy. Proper jib trim will help balance the boat and help in boat speed and pointing ability. While achieving the proper trim is the goal, being able to repeat the trim consistently will also make a big impact on your boat's performance. The important factors in proper jib trim are the lead car position, jib sheet tension, in-hauler tension, jib halyard tension and reference marks to repeat all the settings. The final trim position for the J/70 jib is a balance between the sheet tension and in-hauler tension. When more in-hauler is used, less sheet tension is required and vice-versa. When the jib is trimmed in the leech of the jib should be lined up with the spreader stripes (between 18"-22" from the side of the mast).

1. The first step in jib trim on the J/70 is jib lead car position. Setting this position is important as it affects all of the other settings. Combining the jib lead car position with the amount of sheet tension, in-hauler and halyard tension allows the trimmer to manipulate the sail to fit the conditions and style of the skipper. When discussing the position of the jib lead

car, we reference the number of holes visible in front of the car itself once it is in place.

2. On the J/70, we use the windward, or lazy jib sheet as an 'in-hauler' to pull the clew of the jib to windward and more inboard. When setting the in-hauler tension, our reference point is the distance the clew of the jib is away from the side of the cabin house. Our go to setting is 1.5" from the cabin house. Flat water we may go to 1" away and in moderate chop conditions 2-3". In big waves and chop we may go with no in-hauler. Remember that the less inhaul is used, the farther forward the jib car needs to be. With no in hauler, the car should be around 3-4 holes

showing and with a lot of in-hauler on and the jib clew is at 1" from the cabin house, there should be 5-6 holes showing in front.

3. The jib halyard on the J/70 is rigged with a fine tune purchase that can be adjusted while sailing. In lighter winds, the jib halyard should be set so that there are slight wrinkles appearing in the first panel along the luff of the sail (approx. 4-8" back from luff of sail). If wrinkles extend further back in the sail, or no wrinkles appear at all, the halyard should be adjusted to compensate. As the wind gets stronger, and the sails need to be depowered, the jib halyard should be tightened just to the point where the wrinkles



Jib clew shown In-hauled to about 1" from touching cabin house.

along the luff disappear. As the halyard is tightened and loosened, it is important to keep in mind that the halyard tension also affects the leech tension of the jib and the sheet and/or in-hauler may need to be adjusted to compensate.

4. Make reference marks on jib sheets for both the sheet tension and in-hauler tension. Having reference marks will make it much easier to duplicate your trim settings quickly.



Jib sheet and deck reference marks help accurately repeat trim settings

It is a good idea to experiment with different settings for each control to get used to how each control affects the sail and how they interact with each other. The basic effect of the three jib controls, lead car position, in-hauler and jib halyard is:

1. Jib Lead Car Position

Forward = tighter leech, round foot
Aft = open leech, flat foot

2. In-hauler

More = tighter leech, round foot
Less = open leech, flat foot

3. Jib Halyard

More = flatter sail
Less = Deeper sail

After setting the sheeting position of the jib, the trimmer needs to constantly check to ensure the trim remains correct as the conditions change. Since the jib on the J/70 is high aspect (tall and thin) changes in the conditions have a significant impact on the trim of the sail. For this reason, there are telltales attached to the upper leech of the jib to help the trimmer know when the sail is going to stall. When the sail is trimmed properly for upwind, the leech telltales will be flowing and if the telltales begin to stall, the sail will need to be adjusted to regain the flow. Most often, only a small adjustment is needed to help return the proper trim and flow to the sail. The reference marks on your spreads will also help with jib trim. You will find that in 10+ knots in flat water you may be able to sheet so the jib leech is at the inside, 18" spreader mark and the leech telltale is still flowing. When it is light and lumpy you will find that the leech will need to be closer to the outside 22" spreader mark.

Easing the jib sheet slightly is the first step in returning flow to the jib. Normally, this will only require an inch (or less) of sheet to be eased out. If the leech telltales continue to stall when the leech is sheeted in to the spreader stripes, other adjustments need to be made to properly trim the sail. Since the telltales indicate the stalling of the upper leech of the sail, adding twist is likely the

solution. The two ways to best achieve more twist in the jib, is to move the lead car aft and use less in-hauler tension. As described earlier, both adjustment will add twist to the sail and help regain the twist and flow at the top of the sail.

SPINNAKER

Spinnaker trim on the J/70 is much easier than that of a conventional poled boat. Here are a few tricks that can make you faster downwind and make your sail handling easier:

1. Setting – The most efficient position to set the spinnaker is out the main hatch and between the shrouds and mast. With this method, the sail will need to be retrieved between the shrouds and mast, which will work with each of the different types of takedowns. When setting the spinnaker, the biggest concern is keeping the sail out of the water until it is hoisted. As the bowsprit is extended and the tack line pulls the sail out to the end of the bowsprit, a crew member should be assigned to guiding the sail out of the companionway while keeping the foot of the sail tight and up out of the water.

2. Tack Height – Most often the tack of the spinnaker should be pulled down tight to the end of the fully extended bowsprit. In conditions, before planning and when the breeze allows the boat to sail deeper downwind, easing the tack line 4-6" up can help the spinnaker rotate to windward. This is similar to pulling the afterguy back when sailing downwind. When the tack is eased up off

of the bowsprit, the tack line should be aimed straight up or slightly to windward to help stabilize the sail, because with the tack raised the sail can easily become unstable and rock from side-to-side. If this happens, the tack needs to be pulled down tight to help stabilize the sail. Increasing windward heel with the tack line eased can help to stabilize the sail and allow the boat to sail a lower course downwind.

3. Gybing – An asymmetrical spinnaker can be gybed two ways, 'outside' or 'inside'. An outside gybe is where the clew of the spinnaker is eased around the front of the boat and then sheeted in on the opposite side. This method is rarely used on a J/70 and is more common on larger boats with larger sails. The outside gybe also, requires significantly longer sheets to allow the sail to rotate completely around the front of the boat.

The inside gybe is the most common technique for smaller boats like the J/70. During an inside gybe the spinnaker is passed between its own luff and the headstay. When rigging up the sail, make sure the tack line passes over the spinnaker sheet coming from the bow. This will allow the tack to go out to the end of the bowsprit while the sheet remains lead around the headstay.

To complete the inside gybe, the boat is turned down slowly while the trimmer eases the spinnaker sheet until the clew is just forward of the headstay. At this point the trimmer overhauls

the new sheet and completely releases the old sheet pulling the clew of the spinnaker around the headstay before the mainsail is gybed. Once the clew of the spinnaker is around the headstay, the boat is turned through the gybe and the mainsail is pulled across the boat to the new side. When timed correctly, the mainsail and the spinnaker will fill simultaneously on the new side.

4. Spinnaker Douses – There are three basic types of spinnaker douses used on the J/70. The windward douse, the leeward douse and the gybe douse, sometimes called the 'Mexican'. Each douse is different because of the approach to the mark and type of turn at the mark. Since the spinnaker is almost always set from the port side of the boat, each method will return the sail to the port side.

Approaching a port rounding on port tack will require a windward douse. Since the boat stays on port tack the entire time, the sail is released and retrieved on the windward side of the boat. To perform the windward douse, the boat is sailed lower to release pressure in the spinnaker and the clew of the sail is pulled around the headstay. At this point the tack line is released, collapsing the spinnaker allowing the forward crew to gather the foot of the sail. Once the sail is under control, the halyard and bowsprit are released and the sail falls to the deck and is stored down the main hatch. This is also the proper douse when approaching a starboard rounding on port tack. In that case, the douse should

be completed before reaching the mark so the gybe around the mark can be made after the spinnaker is retrieved.

Approaching a starboard mark rounding on starboard tack will require a leeward douse since the sail will be stored on the leeward side and the boat will not change tacks before the rounding. Before beginning the douse, the boat must be turned downwind to release pressure on the sail. After the turn down, the spinnaker over trimmed so the forward crew can reach out to leeward to retrieve the sail. If the boat isn't sailed lower during a leeward douse, it will get exciting as the boat will likely want to tip over as the sail is over sheeted. When the foot of the spinnaker is over trimmed the forward crew should grab the foot of the sail forward of the shrouds (between the mast and lower shroud) at the same time the tack line is released. Once the crew has the foot of the sail under control, the halyard and bowsprit are released and the sail is gathered and stored down the main hatch. Because the sail is taken in on the leeward side, the crew needs to take care in pulling the sail aboard while at the same time keeping it from hitting the water. If the sail falls in the water, it is likely to 'shrimp' or fill with water and pull the rest of the sail over the side.

Approaching a port mark rounding on starboard tack, without room to completely gybe the spinnaker before the rounding, requires a gybe douse or 'Mexican'. The gybe douse begins as a leeward douse and ends as a windward douse. The boat is sailed low and into a

gybe on starboard tack, while the spinnaker is over trimmed on the port side of the boat. As the boat turns toward the mark and gybes, the crew grabs the foot of the spinnaker between the shrouds and mast at the same time the halyard is released, dropping the sail onto the foredeck. Once the sail is mostly down, the tack line and bowsprit are released and the sail is gathered and stored down the main hatch.

Contact Us

To discuss tuning, setup, or any other aspect of sailing your J/70, please contact one of the class experts at North Sails One Design.

NORTH SAILS ONE DESIGN QUALITY CONTROL CHECK

MAINSAIL		JIB		SPINNAKER	
Corners		Corners		Corners	
Cunningham		Battens		Numbers (both sides)	
Tack Slug		Luff Tape		Country Code (both sides)	
Leech Cord		Cunningham		Royalty (stitched on)	
Luff Slugs		Telltale		North Logo	
Royalty (stitched on)		Leech telltale		Bag	
Numbers		Leech Line			
Country Code		Royalty (stitched on)			
Battens		North Logo			
Leech Telltales		Bag			
Insignia					
North Logo					
Bag					

Checked by: _____

Date: ____ / ____ / ____