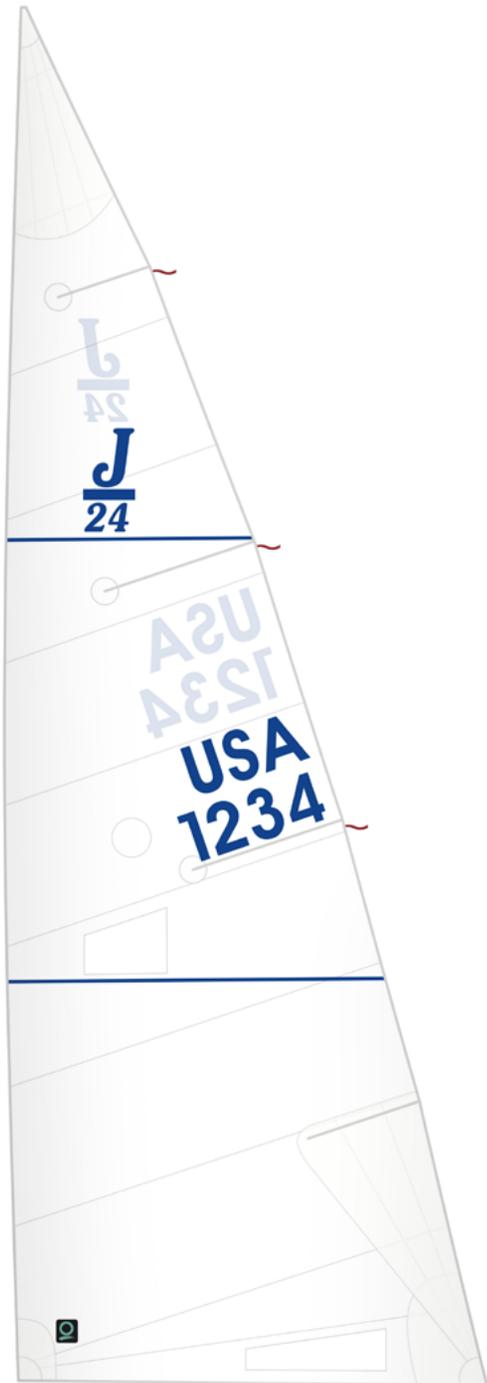


J/24

TUNING

GUIDE



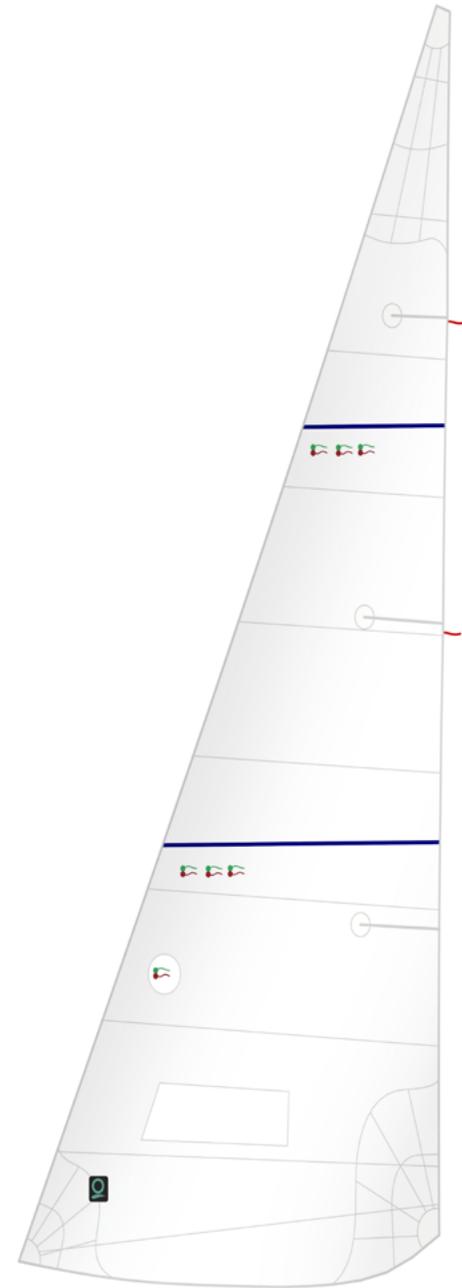


J/24

J/24 sailing has undergone a dramatic evolution over the past 25 years, and Quantum has aided that evolution by delivering the best J/24 sails on the market. This eBook provides you with information on boat preparation, tuning tips, and other helpful guidelines to make sure you're ready to meet your challenge in today's competitive J/24 fleets. It represents two decades of accumulated knowledge as passed down and refined by this generation's best J/24 sailors.

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BOAT PREPARATION

The primary goal of preparation is to create weather helm in light-to-moderate conditions to improve the boat's upwind performance. The secondary goal is to reduce drag, which helps on every leg of the course. Preparing the boat can be broken down into four sections: bottom, keel, rudder, and mast. If you race your J/24 without optimizing each of these four parts of the boat, you may run into difficulties when it comes to boat speed. Here are some tips to help you get the most out of your J/24.



BOTTOM

The operative words here are smooth and fair. Class rules specifically say you can remove factory imperfections but you cannot modify hull shapes. In other words, you can fill to fix voids and hollows but you can't grind gel coat. Use battens to check fairness, and sand with long boards. The goal is to get the boat to be as smooth as possible to reduce friction and increase speed. Pay special attention to the center seam, particularly from behind the keel to the transom. This seam is typically uneven and not very smooth, so we recommend evening out that surface so it is smooth. A great bottom, including keel and rudder, can make a huge difference in boat performance.

KEEL

There are differences of opinion on what the best keel shape is. Instead of guessing, we had the keel shape reviewed by industry experts. Their recommendations affirm what has become widely accepted. For specific numbers, check the [J/24 Class rules](#).

Our recommendations are:

- Maximum forward at the top and at station #4
- Maximum permissible chord length and maximum depth
- Minimum thickness

Templates are required to get the keel right. While newer keels are better, the process usually involves cutting area from the trailing edge and building up the forward sections to move the keel forward and insure maximum fore and aft length. Reshape primarily by grinding to slim down and match the keel shape to the templates. An online search or talking with boat owners will help you find templates.

RUDDER

There are five things to check to make the rudder as fast as possible:

1. Minimum length (see class rules)
2. Minimum thickness*
3. Minimum weight (Total minimum weight including hiking stick, tiller and rudder is 13.5 kilograms or 29.76 pounds)
4. Trailing edge should be as thin as allowable
5. Rudder should be parallel with the transom of the boat

*Be careful: If you fair too thin (particularly on boats manufactured prior to 1986), rudders can break. New rudders take less fairing but tend to be heavy. Once again, templates are required. The final product should be sanded to a 600-grit finish.

MAST

There are three goals in the mast department: minimum length spar and mast butt forward to induce and create rake; spreader angle to control mast bend and match mainsail luff curve; and light and clean. To meet these goals:

- Shorten mast to within 3mm of class maximum*
- Set headstay length at class maximum*
- Set spreader deflection at 155mm or 166mm**
- Remove extra jib halyard and foil system (older masts)
- Remove windex entirely, or replace with dinghy version
- Remove steaming light and all electrical wiring

*Refer to class rules for lengths and methodology. Confirm with a class measurer if possible.

**Our AP main is designed with less luff curve and requires a spreader deflection of 155-160mm. Reducing deflection allows for a tighter headstay in breeze because the center section of the mast is straighter, creating a mainsail that projects more sail area in the leech. There are two methods for controlling spreader deflection. The most common method is to use a thru-bar kit, which guarantees an accurate 155mm setting since the bar is pre-cut at the 155° angle. Another method is to add spreader brackets. These can be mounted to the spreaders and adjusted. Regardless of bracket type, make sure that the spreaders cannot move while sailing.



STEPPING & TUNING

Fortunately, tuning your J/24 sails is not like tuning a Stradivarius. The important items to check include:

- Mast butt (step) positioned so that the pre-bend measures 2.5" when the shroud tension measures 20 on the uppers and 15 on the lowers*
- Headstay must be measured and set at maximum length. At the 20-15 shroud setting, the headstay should measure negative 2.5-3 fingers on the Loos Tension gauge
- Set the mast at the partners so the forward face of the mast at the bottom of the black band is at maximum J dimension (2,925mm)**
- Center the mast in the boat***
- Set rig tension for conditions



*Measure from the side of the third bolt down the stem fitting 2,740mm aft to the l-beam. Make a permanent mark. From this point, measure 115mm to the front of the mast (not the front of the mast step). This is a good starting point. The goal is to get the proper pre-bend. The distance from the back of the mast at the spreaders to the front edge of the main halyard is the pre-bend. Pre-bend is measured by pulling the main halyard down from the top of the mast to the black band at the goose neck. At 20-15 on your shroud settings, you're looking for 2.5" of pre-bend. If you need slightly more pre-bend to get to 2.5", move the mast back in 0.125" increments until you get there. If you need less, move the butt forward.

**The J measurement is taken from the sheerline/stem intersection at the bow to the front of the mast. You will probably have to modify your partner blocks to allow the mast to sit this far aft.

***To center the mast, attach a tape measure to the tack shackle at the bow and measure back an equal distance on each side to a point perpendicular to the forward face of the mast. Place a mark on both the starboard and port sides at the toe rail. Measure from these points to the center seam of the mast at the deck to ensure that the mast is in the middle of the boat at the partners (It may not be centered in the partners themselves.). Tighten the upper shrouds to 20 on the Loos Tension gauge. Attach a tape measure to the genoa halyard. Pull the halyard up to the two-foot mark on the tape (or any even number). Check side-to-side to the two fixed points on the toe rail to confirm that the distance is the same. With the upper sections centered, use the lowers to bring the bottom in line (Sight up the luff groove to check straightness.).



SHROUD TENSION

Shroud tension controls headstay tension and mast bend. Here's a simple rule: Add rig tension with increases in breeze velocity, loosen tension with decreases. Another way to think about it is that the uppers control headstay tension and the lowers control mast bend. The balance shifts between the two with velocity. In light air, the lowers are looser than the uppers. As the breeze increases and more overall rig tension is used, the lowers gradually get tighter. Other ranges offer subtle changes when you get stuck in-between. All turns on rigging are measured in half-turn increments.

Our tuning chart is on the next page to get your rig set to the right spot.



QUICK TUNE CHART



**CLICK TO DOWNLOAD
QUICK TUNE CHART**

SAIL TRIM

TRUE WIND	0-5	4-8	8-13	12-15	15-19	19+
UPPER TENSION*	18	20	24	27	29	31
LOWER TENSION*	12	15	21	24	29	31
GENOA SCALLOPS	3/4"	1/2"	1/4"	1/4"	Smooth	Smooth
LEECH OFF SPREADER	4"	3"	2"	3.5"	4-8"	8-16"
FOOT OF SHROUDS	5"	4"	2"	2-4"	2-5"	4-6"
MAIN TOP BATTEN	Parallel to 5°	Parallel to 5°	Parallel to 3°	Parallel to 5°	Open to depower as needed	Open to depower as needed
TRAVELLER	11" up	7" up	2" up	0-2" up	0-2" down	0-6" down
BACKSTAY BELOW	8"	10"	12-16"	14-22"	22-32"	22-32"
OUTHHAUL	Eased 2"	Eased 2"	Eased 1"	Max	Max	Max
JIB FROM SPREADER TIP					3" inside	Tip to

SHROUD TENSION

TRUE WIND	PRE-BEND	UPPERS	LOWERS	BACKSTAY
0-5*	2.5"	18	12	0
4-8	2.5"	20	15	0
8-13*	2.25"	24	21	+6
12-16	2"	27	24	+6
16-19	1.75"	29	29	+6
19+	1.5"	30	31	+2

*Indicates four basic settings. Other ranges offer subtle changes when you get stuck in between. All turns on rigging are measured in half-turn increments.



MAINSAIL TRIM

LIGHT AIR (0-7 KNOTS)

In light air, the main is set with the traveler to weather to keep the boom on or just above center line. For the best combination of speed and pointing, make the top batten parallel with the boom. The outhaul should be eased 2" from the black band to power up the bottom sections and produce a fuller lower leech. The top telltale on the leech should be streaming 80 percent of the time. This setup is for straight line speed.

In a point mode, the boom will be pulled to weather of centerline, and the mainsheet will be sheeted harder until the top batten is closed by as much as 6° (Sight up the middle of the sail using the boom as a guide for the top batten.). The top telltale will be stalled about 50% of the time, and the boat will point higher but go slower. To build speed out of tacks, through waves, or when the boat is slow, ease the mainsheet so the top batten is parallel to the boom and drop the traveler until the boom is on the centerline.

Be sure to reference other boats to gauge the best mode to sail in any condition. Keeping an eye on your competition is the best way to gauge speed and angle. When in doubt, err on the side of speed and keep the leech of the mainsail open.

MEDIUM AIR (8-14 KNOTS)

Medium air is serious power-up pointing mode, especially at the bottom end of the range. At the bottom end, the outhaul is set 1" from the black band. The crew is fully hiked. Look for maximum load on the keel to create lift. Sheet tension is the secret. In 8-11 knots, sail with the top batten hooked 5° for straight line and 7° for point mode. The difference in tension is about two clicks on the ratchet block.

At 10-14 knots, you'll begin to de-power. The outhaul is maxed to the black band, and a combination of backstay, traveler, and mainsheet is used to flatten the sail and keep the boat on its feet. The first adjustment to make is to ease the traveler down. The boom position will vary from centerline to leeward of center. If this is not enough, next adjust the backstay. As backstay comes on, the mainsail is flattened and the leech is twisted open. This will de-power the boat but also twist the leech. An open leech will create pointing problems. Add mainsheet whenever backstay is added. One click on the mainsheet will keep the boat pointing.

HEAVY AIR (15+ KNOTS)

Hike hard! The outhaul is maxed and the backstay is on hard. The traveler is close to being all the way down, and chances are the main is flogging. In this range, switch from traveler sheeting to vang sheeting, particularly if it is puffy. The 8:1 purchase on the vang makes it easy to get all the vang tension that is necessary. Position the traveler three-quarters of the way down, and play the sheet for balance.



GENOA TRIM

This sail covers a wide range, from 0-18 knots. When in doubt about sail selection, the genoa is normally the correct option. Here are some tips for getting the most out of your Quantum genoa.

LIGHT AIR (0-7 KNOTS)

Keep the halyard loose, with large three-quarter inch scallops between hanks. The lead is set one or two holes forward of the eight-knot median settings, keeping the sheet played constantly. In this range, the helmsperson will have to steer to keep up with changes in velocity and direction if no change is made to the sheet. To limit speed loss by using a lot of rudder, the helmsman should steer straight and gradually make changes. The headsail trimmer should keep the telltales flying by adjusting the sheet. Try to work back to the median (4-6" off the spreader setting) for this condition. A constant dialogue between trimmer and driver is helpful. The trimmer tells the driver how far the leech is off, and the driver describes if he is working up or down, whether or not the sail can be sheeted harder, or if it needs to stay eased to build speed.

MEDIUM AIR (8-14 KNOTS)

Gradually tighten the luff (halyard or cunningham) so only a hint of scallops show. Move the lead position aft to median, or as much as two holes aft of median. Sheet tension changes little in this range. The trimmer hikes and changes trim only for big sets of waves (easing sheet) or in a tactical situation (trimming harder to point or easing to foot).

HEAVY AIR (15+ KNOTS)

Increase luff tension to smooth all wrinkles. Move the lead back 3-7 holes. The sheet and lead positions are set largely to balance the boat. Trim the genoa relative to how the mainsail is set up to keep the boat upright.

If the mainsail is flogging constantly, move the lead back. If the sail is still flogging, ease the sheet slightly so that both sails luff evenly. In light spots, the sail can be trimmed harder and/or the lead moved forward. In flat water, you can usually sheet harder and de-power with the lead aft. In choppy water, it is important to ease the sheet.

A note on lead position: drill out genoa tracks so there are two holes between every factory hole. Median lead position is determined in 8 knots of breeze. In this condition, trim the genoa so that it touches the tip of the spreader and the chain plate at the same time. From there, maximum forward will be two holes and maximum aft will be seven holes. Moving the lead aft increases the distance of the leech off the spreaders and brings the foot in on the chain plates (See sail trim chart for distances off of spreader and chain plate.).





JIB TRIM

Quantum designed the blade to overlap the genoa. This enables lighter teams to compete with heavier teams at the upper end of the genoa's range. The blade's range is 17+ knots. Halyard/Cunningham tension is always set to keep the luff smooth (To get maximum tension, sail the boat downwind with the backstay completely off. With two people, pull as hard as you can.). The median lead position is set by placing the plunger of the jib lead directly perpendicular to the lower shroud; this is the position that you will use about 80% of the time. With the lead at median, mark the jib sheet at a point just in front of the block. When the sail is trimmed to this mark, the middle batten will be parallel with the centerline of the boat and the upper leech will be about 3" inside the spreader tip.

The leech of the sail should be trimmed from a point 3" inside the spreader tip to as much as 3" outside the spreader tip as the breeze builds. In excess of 24 knots, slide the lead back 1" to de-power. If you get caught in a situation where the boat is overpowered and you cannot adjust the lead (or it is already back), ease the sheet 1-2" or whatever it takes to balance the boat. This will quickly de-power the head of the sail, and the boat will drive off the bottom of the sail.

SPINNAKER TRIM

Standard rules of spinnaker trim apply, though because of the rule's effect on sail geometry and because the sail design is geared more towards windward/leeward courses, reaching trim requires some exaggeration of normal technique.

KEEP IN MIND:

In 0-14 knots, sail with the pole on the lower ring. In 14+ knots, use the upper ring. If you are tight reaching in windier conditions, the outboard end of the pole should be a foot lower than perpendicular to the mast. This will slide the draft forward in the sail and open up the leech to de-power the boat. Keep the pole 3- 6" off the headstay. When broad reaching and running in all conditions, the tack should be slightly lower than the clew. This, coupled with the pole being squared, will help project maximum sail area. When broad reaching and running, always work to square the pole as far back as possible. Ease the sheet to maintain a curl, but make sure the bottom of the sail is underneath the top. The luff should run straight from tack to the point of curl. If the head can be eased to weather of the straight line, the pole is under-squared.





CREW TASKS

There is only one good approach to deck layout: keep it as simple as possible and minimize the clutter on deck. By doing these things, you will make the boat easier to handle, leaving you more time to race. While each crew members has their own preferences, the standard positions and tasks are described below.

DRIVER

- Steer
- Mainsheet
- Backstay
- Fine-tune genoa sheet
- Traveler

TACTICIAN

- Strategy planning
- Coordinate with driver to handle the boat in traffic
- Track wind direction
- Call puffs downwind
- Monitor relative boat speed
- Feed spinnaker on sets/gathers on douses
- Keep spinnaker packed and sheets organized
- Assist with guy in heavy air
- Communicate (The best place to stand downwind is in the companionway facing aft. The tactician funnels communication between the front and back of the boat.)



CREW TASKS



GENOA TRIMMER

- Trim genoa
- Trim spinnaker (Some crews have the tactician trim downwind. This is a matter of preference and should be based on the strength and skill of the genoa trimmer.)

BALANCE

- Clear weather genoa sheet in tacks
- Twing*
- Operate mast controls, including vang, outhaul, and cunninghams (With the sheets and twings led outside, the balance person can get double the amount of roll on the boat. The twings are positioned just behind the shrouds with a direct lead to the cleat. As the boat is turning into the jibe, uncleat the old twing, stand up, and pull as hard as possible on the new twing. This helps roll the boat through the jibe.)

BOWMAN

- Call starting line
- Call waves
- Watch for starboard tackers upwind (A note on crew weight: Every crewperson is responsible for boat balance. Always be conscious of your positions. As much as possible, do every job with weight in the right place and minimize unnecessary movement.)



QUANTUM CLASS EXPERTS

Like all tuning guides, these numbers and settings are just that: guides, not gospel. They have been developed to help you find the sweet spots and get you in the right range. Superior athletes in every sport often have slightly different styles or techniques that work for them.

Always keep in mind that trim is dynamic. You can't just set it and go. Learn what tuning and trim controls do. With that knowledge, you can react and make changes in response to your actual performance at any given moment. To paraphrase that famous West Coast credo: Fun is fast! Don't be afraid to experiment, and let us know what works.

If you have any questions, be sure to call. Quantum's class experts are your support team, providing real-time tuning data, sail trim, sailing technique, mast setup, and tips. We're here to help you enjoy your J/24.