

# Finn Tuning Guide

## About the Finn Dinghy:

The Finn [dinghy](#) is the men's single-handed, [cat-rigged Olympic](#) class for [sailing](#) competition. It was designed by Swedish canoe designer, [Rickard Sarby](#), in 1949 for the [1952 Summer Olympics](#) in [Helsinki](#). Since the 1952 debut of the boat, the design has been in every summer Olympics, making it one of the most prolific Olympic sailboats as it is the longest serving dinghy in the Olympic Regatta. It currently fills the slot for the Heavyweight Dinghy at the Olympic games. It has been contended that the Finn is the most physical and tactical single-handed sailboat in the world.

Although the Finn has strict one design standards for the hull, rig, and blades, it can be customized to fit an individual sailor's size, technique and style. The hiking straps should be adjusted to allow the skipper to hike all day, without complaints (too much). The straps should be moved outboard enough to keep the straps from pulling on the toes. If the straps are too far outboard, they will have too much leverage and the skipper will get really sore knees from hiking on the joints instead of the muscles. The hiking pads, and risers can be adjusted to fit the skippers leg length and hiking style. The tiller extension needs to be long enough to allow full out hiking with 30 degrees of helm adjustment. For heavy air downwind, you can use a center strap (between the aft eye strap and mainsheet block) for taller sailors. Shorter sailors can use two rear straps (between the aft eye strap and the aft attachment points of the forward straps).

## Centerboard:

The centerboard fore and aft position is the most often overlooked Finn adjustment. The balance of the boat is determined by the distance between the centerboard (which lives in the most dense medium) and the sail plan's center of effort (mast rake and position). Keeping the board forward, allows more bite, and a tiny bit of weather helm when the boat is flat (perfectly flat). It makes the boat feel stiffer and more lively. Sliding the board aft in the boat, will decrease weather helm and make the ride softer. It is much easier to 'put the bow down' while keeping the boat flat in this mode. The aft end of the range should be set by the size and hiking ability of the sailor combined with the stiffness of the boat. The board should be lowered out of the trunk a little and the measurement taken from the aft edge of the board to the transom. The class minimum is 2050mm which is measured with an end for end jig. So, don't try to go aft of 2051 or it most likely will be illegal. Instructions for measuring this can be found in the class rule book. A lightweight sailor or someone with a really stiff boat should optimize the range of movement -- aft. A heavy sailor or someone with a soft boat should optimize the range of movement -- forward. Going too far forward may damage the trunk. The class rules allow 2cm of adjustment forward from it's most aft position. The hole for the pin should be filed accordingly.

Mode	Lightweight sailor and/or stiff boat	Medium and/or average	Heavyweight sailor and/or soft boat
Aft position	2051mm	2055mm	2059mm
Forward position	2071mm	2075mm	2079mm

## Mast Butt Position:

These measurements are taken with the board in it's most aft position, in heavy air mode. This adjustment will determine the amount of weather helm the driver feels while hiking the boat flat. If the skipper cannot hold the tiller extension easily with just the thumb and 2 fingers, there is too much helm and the rudder will act as a brake. There are many different ways to measure this. However, with 4+ different boat manufacturers, the easiest way is to measure the distance between the centerboard pin and the aft face of the mast at the butt. This way, you will be measuring the position of the center of effort of the sail plan versus the centerboard, and the brand of boat won't matter. If the boat is getting wound up or feels tight, or the boat feels too stiff, or the sailor can't maintain hiking the entire race, the distance should be increased.

In super light wind, or as long as the boat can be kept in perfectly flat mode, the mast butt can be adjusted all the way aft (while still allowing proper rake). Also, the board can be moved to the front of the adjustment range as long as there isn't any weather helm.

## Mast Rake:

There are many different views of what is best. This adjustment can be dialed in by using a leech tension gauge or a tape measure. Usually, if the luff curve of the sail matches the mast and is adjusted for the weight and hiking ability of the sailor. The tension numbers for a light sailor using a soft mast, should be much smaller. Higher tension numbers for heavier sailors.

	No Wind	Light Wind	Medium Wind	Heavy Wind
Distance	22'½"	22'2"	22'3"	22'2"
Tension	69lbs or 31kg	73lbs or 33kg	75lbs or 34kg	73lbs or 33kg
Traveler: aft boom@deck	Over or outside	Over corner	0-4 inches in	0-8 inches out

The Finn is fastest when the boom is on the deck. Regarding the traveler adjustment, the most accurate way to describe the distance from the center line is by using where the boom is hitting the aft deck.

Medium wind settings have the widest range. Basically it covers anytime while the sailor is hiking but isn't being overwhelmed by power with the boom on the deck. So, in smooth water, these settings can be carried to nearly 20 knots. The traveler can be adjusted so the boom is as much as 4 inches inside the gunwale at the aft end, in small waves, with a small period, maybe until 14 knots. This will be greatly determined by hiking ability for the entire race.

In Wind between 6 and 10, the goal is to get into medium wind mode as soon as possible. The boom will be on the deck at the corner of the gunwale or eased up as much as 8 inches. Anticipation while driving is key. Smooth water will allow the boom to be kept on the deck, well inside. Waves or slop should be anticipated with the boom eased up 8 - 10 inches. With a stiff mast, the mainsheet can never be cleated in these conditions.

When the wind drops below 5kts and the sailors are sitting on the traveler bar, the goal is to get the boom parallel to the water without an absurd amount of leech tension. There is no backstay to bend the mast and remove "the bag". The sailor may have to hold the traveler down with a knee. Some sailors pull the vang on. This only works in smooth water. In sloppy conditions with the vang on, the rig will bounce around, removing all flow from the sail. If the sail won't "fly" and hold its shape, extreme leeward heel will be required. Remember it could be worse, you could be in a Laser.

In heavy wind, the goal is to keep the boat flat and moving fast. If you can't get the boom to go well outside the gunwale at the deck, it is OK to ease the boom up a few inches. However, this will make the sailplan fuller so care should be taken. If you do keep the boom on the deck, as the end goes outside the gunwale, the boom will drop vertically lower. This means you should rake the top of the mast aft (butt forward) so you don't end up increasing leech tension an undesirable amount. In puffy conditions, easing the mainsheet a couple inches is actually bad. It just makes the sail more baggy. Aggressive steering is better, and if you have to blow off the mainsheet, release 16 inches of sheet so the boom goes out instead of just up. The centerboard can be pulled up a few inches to ease weather helm and allow you to really "put the bow down".

## Sail controls:

The Finn has a unique sail control, the inhaul. It is the most often misunderstood sail control. A common mistake is to pull the inhaul tight when it's windy. This actually increases the effective luff curve of the bottom of the sail and rounds the entry making it much too FULL. Easing the inhaul will allow the tack of the sail to line up with the intended luff curve. When it is in the ideal spot, there won't be any wobbles(bubbles or wrinkles) in the shape above the tack. In extremely light and sloppy conditions, the inhaul can be pulled a little tighter. This will allow a very round entry with a wide groove for steering.

Once, the inhaul is adjusted, the outhaul can be tightened. The shelf, along the boom changes shape and appearance with the age and cut of the sail. The clew position will change with the luff curve, mast bend and stiffness. The best place to look while playing the outhaul is the top 1/3 of the window and the lower batten. You want to flatten the bag. Remember, it is never fast to drag a bag upwind. Extra outhaul tension can be applied to open the lower battens to help with survival in breeze.

The cunningham should only be used to clean up the wrinkles and keep the draft in the middle of the sail until it gets windy. In breeze, the draft will want to move aft at the top two battens. The cunningham needs to be pulled harder to bring it forward.

Downwind, the vang should be played to keep the top batten slightly open and the 2nd batten opening and closing (in relation to the boom). Generally, the board should be up as much as you dare, the aft corner 4-8 inches above the centerboard cap. In marginal conditions, the vang should be tighter and the centerboard below halfway, a few inches inside the trunk. This gives you more power to pump and rock against. In big breeze, the board should be up more than halfway to keep the boat from tripping and tipping. In really big breeze, the vang should be loose (sail depowered) while rounding the top mark, with the main over trimmed. The board should be halfway up before trying to turn down. Then the vang can be applied once the boat is aimed comfortably by-the-lee.

An outhaul safety should be used between the end of the boom and the clew. If the outhaul breaks at the wrong time, the sail can bag instantly and snap the mast. The outhaul safety should be set so the outhaul will only ease 3 inches from the upwind position. This way, it will go to the proper spot when released before rounding the top mark. A common mistake is not easing ALL the sail controls before turning downwind. This is crucial as it helps with the bear away, stabilizes the boat, and allows the sailor to focus on maximum gains off-wind. The inhaul, outhaul and cunningham should be tensioned a little and cleated during the leeward mark rounding. They should be fine tuned after the boat is close hauled and the boom is back in the upwind position.