



June 2006 Revision

MAINSAIL TRIM GUIDE

Your new mainsail has been designed to be easy to trim effectively. Here we outline fundamental principles of mainsail trim for most stayed sloop rigs, to help you get the most out of your new sail. Other types of boats will still benefit from the principles described.

For maximum performance, ensure your mast is straight (without side-to-side curve) and centered in the boat (not leaning slightly one way or the other). As always, keep the main covered when not in use to protect it from the sun, and prevent flogging of the leech as much as possible for a longer-lasting sail.

Mainsheet Tension

The mainsheet is the most important single sail trim control on the boat. First, it steers the boat: easing enables the boat to bear off, trimming forces the boat up into the wind. Second, the mainsheet controls the angle of attack (the sail's angle to the wind). Basic trim is achieved by simply easing the sail until it luffs, and trimming just enough to fill the sail. Be sure to ease far enough when off the wind -- many sailors overtrim. It's okay for the sail to go out perpendicular to the boat on a run (providing it's not luffing), especially if the boom vang is on to keep the sail from wrapping around any spreader, especially when the top of the sail has full battens, which can break with repeated impact.

Upwind, the mainsheet has another critical function: it controls leech tension. Trimming the sheet when the boom is over the boat pulls down on the leech, tightening it and removing twist. You should trim the sheet until the top batten is parallel to the boom. The sail's top telltale will be on the verge of stall, disappearing occasionally behind the leech, but flying most of the time. The stronger the breeze, the harder you'll have to trim to achieve this. If you trim too hard, the top batten will poke to windward and the telltale will stall and most of the time. In light air, ease the sheet until the top telltale flows, but be careful not to ease too much -- no more than 20% of the sail should be lightly backwinding. It may not be possible to get the top telltale flowing.

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There are exceptions to the golden rule of keeping the top batten parallel to the boom. In light air, or when acceleration is critical (out of tacks, in lumpy seas, etc.), ease the mainsheet for extra twist. Also when overpowered, or when in breezy, choppy conditions, use more twist than normal. In flat water, with good boat speed, pointing can be increased by overtensioning until the top batten pokes slightly to weather of the centerline.

Boom Vang

Once the boom is eased outboard, the vang takes over the job of tensioning the mainsail leech from the sheet. Tighten it until the top batten is parallel, or until the top telltale just begins to stall. When reaching in breezy conditions, though, always be ready to release the boom vang if a sudden gust heels the boat.

Mast Bend (when possible)

Mast bend, achieved with backstay and/or babystay tension (assuming you have them), can accomplish the following changes. It:

- 1) flattens (depowers) the upper two thirds of the mainsail,
- 2) opens the leech and allows a smoother exit
- 3) and moves the new shallower draft aft.

When adding bend, you will probably need to tension the mainsheet to tighten the leech, and halyard tension to pull the draft forward. When straightening the mast for more fullness (power), ease mainsheet and luff tension. As a rule of thumb, the harder it blows, the more mast bend is needed, but in super-light air, some bend is needed to open the leech and keep the main's entry from becoming too deep. A properly designed main should "blade out", or become practically board flat when the mast is fully bent. Use the following table as a guide to setting mast bend upwind:

0-4	5-10	11-14	15-18	18+
20-30%	10-30%	40-70%	70-90%	100%

Off the wind, use a straight mast for maximum power.

Outhaul

The outhaul flattens the lower third of the mainsail, and should be in a tighter setting when sailing upwind, even in light air. Ease fully when sailing off the wind only. As the wind increases, apply more outhaul to depower and reduce backwinding as the breeze increases. In lighter conditions, especially when choppy, ease the outhaul for more power.

Luff Tension (Cunningham and Halyard)

The cunningham, halyard, and gooseneck downhauls tension the luff, pulling cloth (and camber) forward in the sail. The golden rule in most boats is to tension luff just enough to smooth out horizontal wrinkles. As the breeze increases, or as you

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increase mast bend, luff tension should also increase. With all these controls, it is usually better to have too little tension than too much, particularly in light to moderate air.

Traveler

A main traveler controls the mainsail's angle to the wind when beating, and helm balance in moderate to heavy air. For maximum power and pointing ability, the boom should be on or very close to the centerline when sailing upwind. Set the leech tension with the mainsheet and/or boom vang first, then center the boom with the traveler. In puffy conditions, use the traveler to control helm and keep the boat flat.

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