



## INTERNATIONAL DESIGN AND TECHNICAL OFFICE

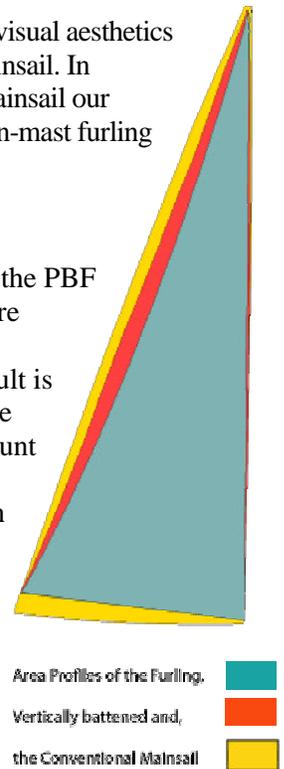
**Vertically Battened Mainsail Overview & Handling / Trim Guide for the Oceanis Series****Overview:**

The Neil Pryde Sails PBF or Power Batten Furling mainsail adds a more ‘classic’ look to the visual aesthetics of the mainsail while improving the aerodynamic efficiency and increasing the area of the mainsail. In working directly with US Spars and Beneteau in developing this vertically battened furling mainsail our goals were to provide improved performance without the loss of handling ease which makes in-mast furling systems so popular.

**Details:**

In-mast furling mains are generally about 18-20% smaller than the classic mainsails and the PBF mainsails gain back 50% of this lost area. The performance gains due to increased area are obvious, but the boat will also gain an improvement in upwind performance due to the increased leech area, which makes dramatic improvements to the foil efficiency. The result is better airflow and increased pointing ability over the conventional furling mainsail. These sails are designed fairly flat to ensure ease of mechanical furling and with a specific amount of clew “rise” also to help facilitate smooth furling. Each mainsail is equipped with 4 vertical battens that are inserted with an internal Velcro tensioning system. In addition an external U.V. clew cover to protect the exposed sail surface from sunlight when furled is standard.

All PBF mainsails are equipped with a safety clew ring to be used in the unlikely chance of clew block failure. Patch styles include reefing ‘buffer’ patches at head and tack that help to disperse sail loads when reefed and our new ‘spider’ clew patch that significantly lightens the corner reinforcement while improving the stability of the clew area.



The 423 PBF Mainsail

## Sail Handling:

1. The boom vang (kicker) should be off completely and the mainsheet eased before furling or unfurling the mainsail
2. The mainsail should always be furled with the boat head-to-wind or slightly from port. This is true for furling and unfurling the mainsail.
3. Furling or unfurling the sail with the wind on the starboard quarter will increase the friction of the sail on the mast, causing unnecessary wear.
4. Always take additional care when furling or unfurling at the bottom most batten, as the furled sail diameter is at its largest point and the internal friction is greatest at this point.

## Reefing:

Reefing the mainsail, headsail or both in combination allows the skipper to keep the trim of the boat in a more upright mode. This is a safer, more comfortable and faster way to sail in strong breezes. In addition, reefing the sails importantly affects the balance of the boat and can increase or decrease the amount of weather helm that develops at the wheel. The timing and sequence of reefing is up to the skipper of the boat to consider and will vary from skipper to skipper, as some conditions or preference in how the boat is sailed in reefing conditions are variable. With this in mind, the following points are general observations.

1. The 'balance' of helm is regulated through mast rake, fore and aft. This will be preset during the initial commissioning.
  - a. More mast rake aft will move the sailplan center of effort aft, in effect putting more loads on the sails aft of the keel. This will then in turn 'pivot' the boat around the keel, bringing the bow into the wind.
  - b. Mast rake forward and the opposite is true, the balance moves forward and the boat will gain neutral or lee helm.
2. Weather helm is desirable in all sailing yachts. It keeps the bow into the wind while sailing upwind and improves your VMG to weather.
  - a. In 10 to 12 knots of wind with the sails fully deployed we expect to have the helm just slightly above neutral or with a small amount of helm. This means in releasing the wheel, the boat will (depending on wind, sea conditions and boat trim) slowly come into the wind.
3. As you reef the sails, you are also going to affect the balance or center of effort on the sailplan.
  - a. Reefing the genoa will reduce the area of this sail and in turn moves the center of effort aft, increasing helm.
  - b. Reefing the mainsail first, will move the center of effort forward and decrease the weather helm.

With these points in mind, we generally recommend that both the mainsail and genoa be reefed in tandem at the first shortening of sail. This will ensure a balanced helm as the breeze initially builds. Though you may be somewhat underpowered initially, as sailors we find it safer to assume the wind will continue to build and it is always more prudent to reef earlier than later. Should the wind decrease, increasing the sail area is easily accomplished by deploying the genoa so it can be full sized again.

Assuming the breeze continues to build into the twenties, it is important to have a sense of how much

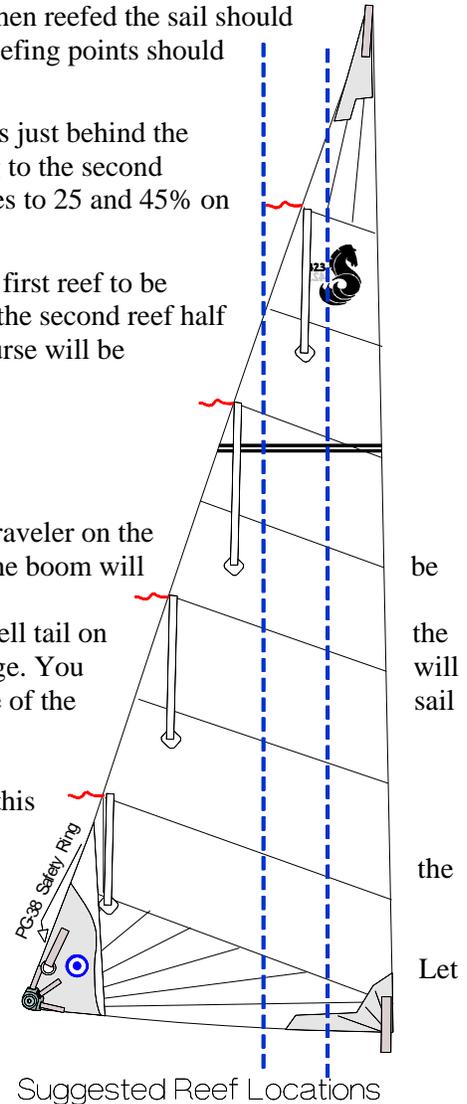
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weather helm you have. If you find yourself fighting to keep the bow down (the boat continually wanting to come up hard into the wind) then you need to reduce the mainsail area by furling the mainsail into the mast. This will establish the balance back to the helm and also decrease the total net area, making the boat more upright and comfortable. Note the following:

1. Furling mainsails offer the user infinite reefing positions as compared to fixed reefing points found on traditional mainsails. The only exception to this is that when reefed the sail should not be reefed with a batten partially in or out of the mast. Reefing points should be on either side of a batten for best results.
2. Typically reefing the mainsail so that the uppermost batten is just behind the mast will reduce the area of the mainsail by 30-35%, reefing to the second highest batten will reduce the area by 65-75%. (this compares to 25 and 45% on the Classic mainsails)
3. Given this reduction, we recommend a starting place for the first reef to be about three quarters of the way to the uppermost batten and the second reef half way between the uppermost and second batten. These of course will be variable as outlined in the paragraphs above.

## Upwind Trim:

1. We have found that upwind in up to about 8-knots true wind the traveler on the mainsail can be brought to weather of centerline. This ensures that the boom will centerline at the aft end.
2. Mainsheet tension should be tight enough to have the uppermost tell tail on leech streaming aft about 50% of the time in this 7-12 true wind range. You find that the upper tell tail will stall and fold over to the weather side of the about 50% of the time. If it is folding over to leeward, the mainsheet tension is too loose.
3. With the mainsheet tension set, the boom vang should be snug at this point.
4. In over 12 knots, the upper tell tail should be flowing almost all time.
5. As the wind builds above the 12-knot range you will need to de-power the boat to keep her on her lines and to reduce weather helm. the traveler down in 3" increments until the boat balances. If the action of lowering the traveler to balance the helm causes the mainsail to backwind, this means it is time to furl the mainsail.



## Downwind:

1. The vang set as above will get you pretty close to the right trim.
2. As soon as you crack off bit, even as little as 3°, ease the traveler down in 3" increments until the boat balances and drives well.



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3. 6° and deeper, the traveler will be all the way out and you will start to ease the mainsheet. The leech should be set correctly, assuming the vang was tightened as above and all your tell tails flowing aft. With a battened mainsail (Classic), you normally keep the top batten parallel to the boom...and you do this with the boom vang. Obviously, with vertical battens there you will need to eyeball it. If the top batten is falling off to leeward you need to tighten the vang to bring it back in line with the boom.
4. With the leech trimmed this way, both tell tails should fly aft 95% of the time.

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