Sailmaker instructions for the production of a mainsail for Made furling booms Type C and Type S

Disclaimer

Content

If any of the following is unclear contact Made Engineered BV before continuing. Please advise any variation to the specifications, as the system may require modification prior to installation. These instructions are intended as a guide for the building of the Leisure furl mainsail. The sailmaker is responsible for the structural integrity of the sail.

Important considerations

1. This document attempts to describe the basics for making woven cloth in-boom furling mainsails. The principles are also valid for different materials like polyester or laminated sails, but they may require a different approach. Sailmakers are expected to apply their knowledge about materials and production methods to match with the principles described in this document.

2. The sail can only furl well, when the luff and leech build-up equally. Therefore **the two and three plying of the leech is critical.** It is worth considering a strip of UV, running the full length of the leech, as this will have some benefits from the furling point of view. For laminated sails, a different approach may have to be used to create equal build-up, but this remains a critical item.

3. **Do not build twist into the leech.** A tight leech is essential for efficient furling. When necessary the leech can be opened by unloading the boom.

4. **The luff tape should be fitted directly to the sail without reinforcing tapes underneath as they will seriously affect the furling of the sail.** If required to do so to reinforce the luff because of the type of cloth or the construction of the sail, one layer of 4oz spectra 200mm wide will be sewn to one side on the sail. This would only apply to sails for boats that are over 45 feet.

5. **The luff curve proportions specified are critical.** Use seam shape to obtain the desired draft. If preferred the sail can be marginally flatter than average, but must not be "too" flat.

6. **Ensure all batten angles are correct.**

7. Do not use cringles or metal fittings anywhere on the sail. Cringles especially, are likely to catch the top lip of the boom and tear from the sail.

8. An indication of the batten stiffness from the Blue Streak range are as follows:
    a. 30-38 ft. boats use ocean/racer 3 for the battens 1, 2 and 3; ocean/racer 2 for battens 4 and 5, and ocean/racer 1 for batten 6.
    b. 38-45 ft. boats use ocean/racer 4 for battens 1, 2 and 3; ocean/racer 3 for battens 4 and 5, and ocean/racer 2 for batten 6.
    c. 45-55 ft. boats use ocean/racer 5 for battens 1, 2 and 3; ocean/racer 4 for battens 4 and 5, and ocean/racer 3 for batten 6.

    The size of the main and/or roach need to be considered in regards to batten stiffness.

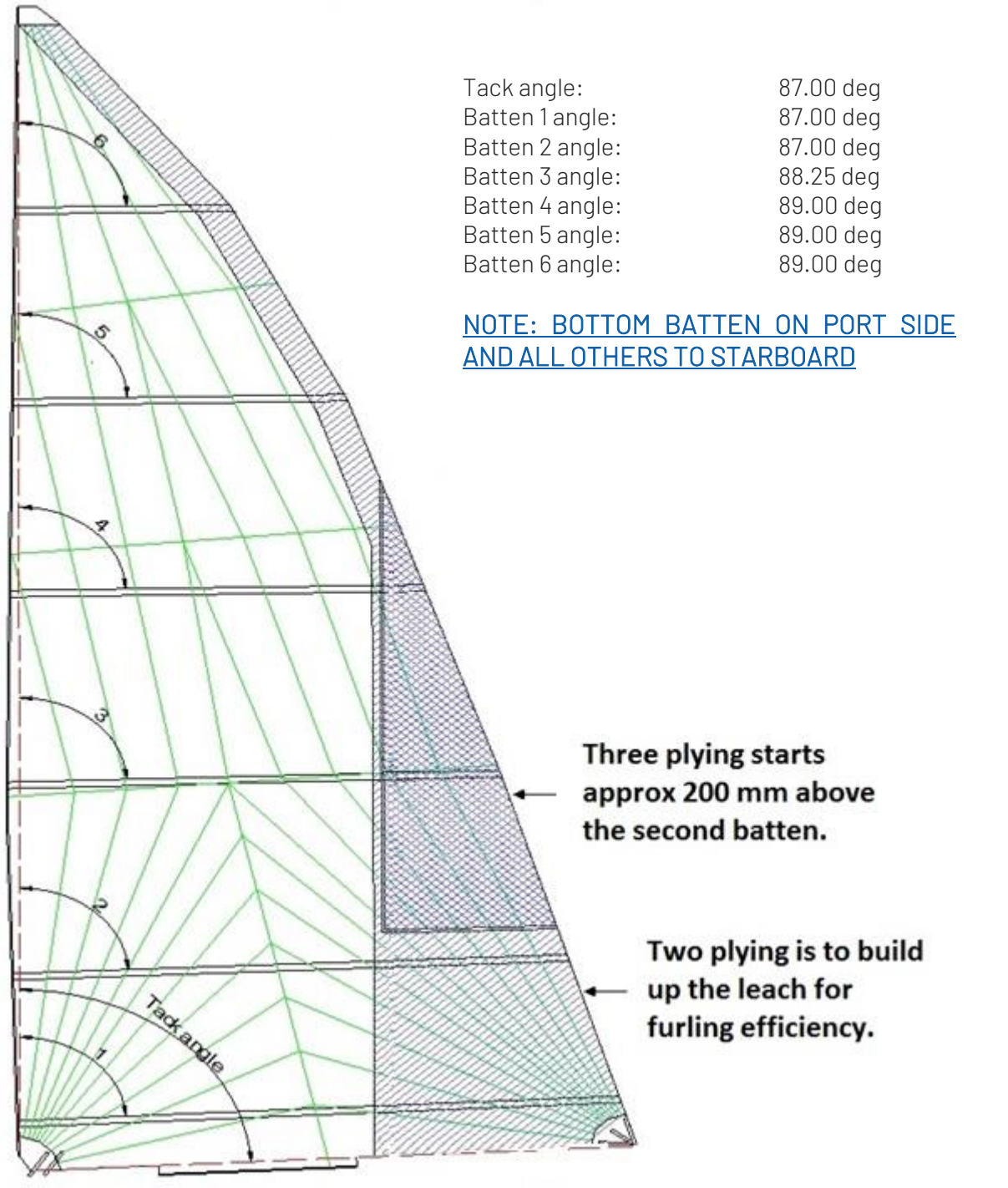
9. Leave 75mm of bolt rope exposed at the bottom in order to allow for shrinkage.

10. Sail headboard may vary in design dependant on the system and vessel size. Images 8 and 9 illustrate systems that have been used in the past, and are recommended for use with the system.

Batten angle and plying detail

Image 1 shows the angle of the battens and the plying detail for a Made furling mainsail.

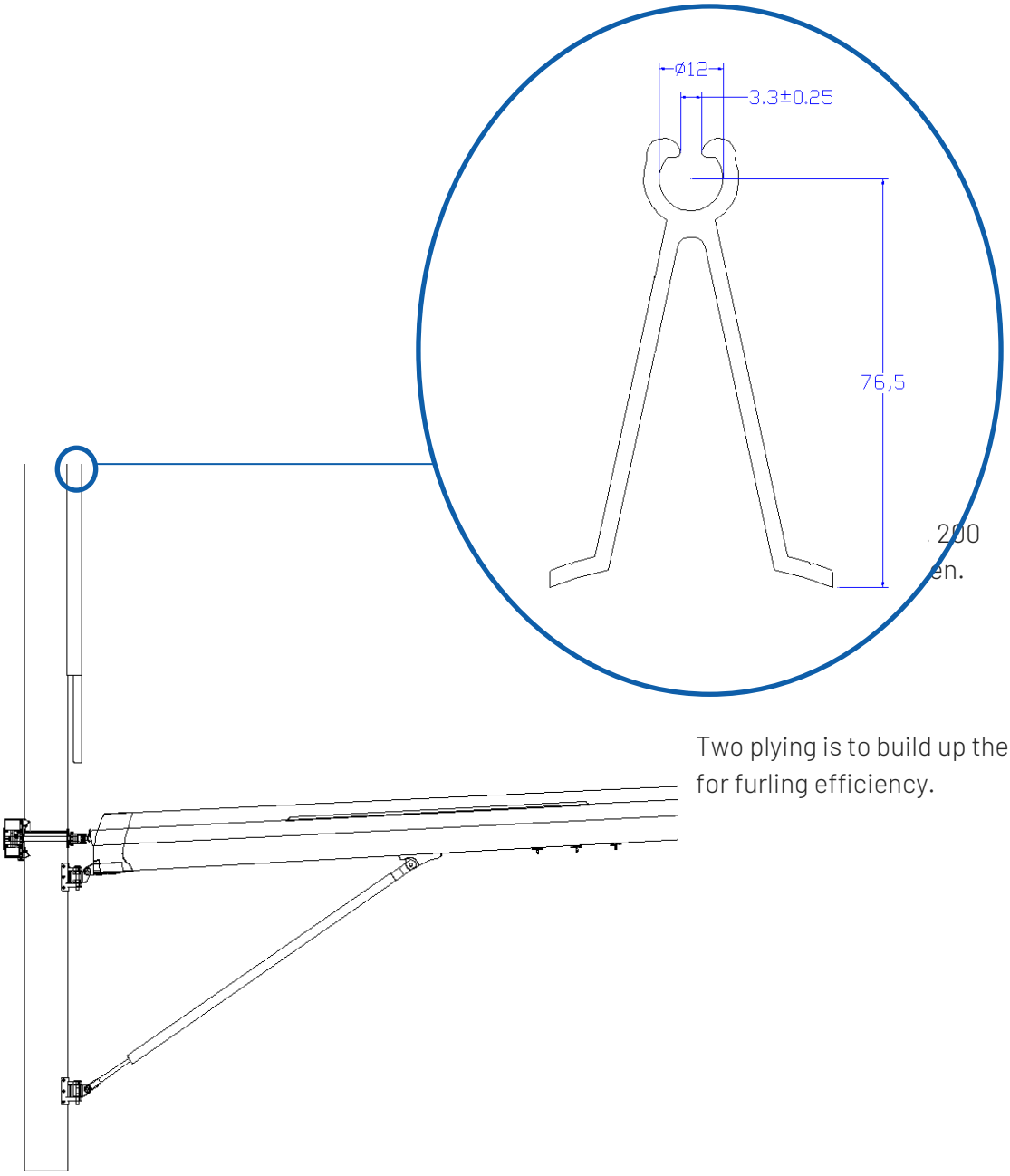
Image 1: batten angle and plying detail



Mast ramp and boom angle design

Image 2 illustrates the mast track geometry and boom angle. This must be taken into consideration, when designing the mainsail.

Image 2: mast track and boom angle design



Two plying is to build up the leech for furling efficiency.

Measurements

See images 4- 7. This information will be shared customer and vessel specific after order and downpayment.

REF	DESRIPTION	MEASUREMENT
A	Tack angle taking a line between the tack and head, tack and clew	87°
B	Height above the foot to the centre of the bottom batten	Vessel specific
C	Height above the foot, the cut back begins	Vessel specific
D	Cut back	Vessel specific
E	Foot bolt rope size	Vessel specific
F	Length from aft mast to the start of the foot bolt rope	Vessel specific
G	Length from aft mast to the end of the foot bolt rope	Vessel specific
H	Length of the foot aft mast (E-measurement)	Vessel specific
I	n.a.	Vessel specific
J	Sail cut	Vessel specific
K	Foot round - inside of the bolt rope to a line between the tack & clew	Vessel specific
L	Areas of the leech (shown as shading) to be two and three plied using the same weight of cloth as that of the sail.	
M	Tack detail (see image 5).	
N	In-board end batten placement (see image 7). Fit the bottom batten to the port side of sail and all others to starboard. Batten stiffness guide (see page 3, point 4) Batten angles (see page 4).	
O	Luff Length (P-measurement) = 17.650 mm (please verify max hoist)	
P	The outer end of the batten should be flush with the leech and attached in a manner so as not to bulk up the area.	
Q	Tack patches, these should be kept to a minimum.	
R	Leech cord cleats are to be small (no greater in length than 25mm) and fitted to the port side of the sail. Consider a webbing loop, and tying the leech cord off.	
S	Bolt rope tape: use only the specified Leisure Furl tape.	
T	Luff round - to be no greater than 25% more than the mast pre-bend, example, with mast pre-bend of 100mm, maximum luff round is 125mm. Maximum luff round is at mid luff length. At 25% luff length, luff round will be 90% of maximum, and at 75% of luff length, luff round will be 50% of maximum. Use seam shape to compensate, where necessary. If the mast is set up very straight, use a minimum luff round of 0,5% of luff length, example with a 25 metre luff, actual luff round disregarding seam shape is 125mm	
U	Clew detail (see image 6)	

Image 4: sail foot detail

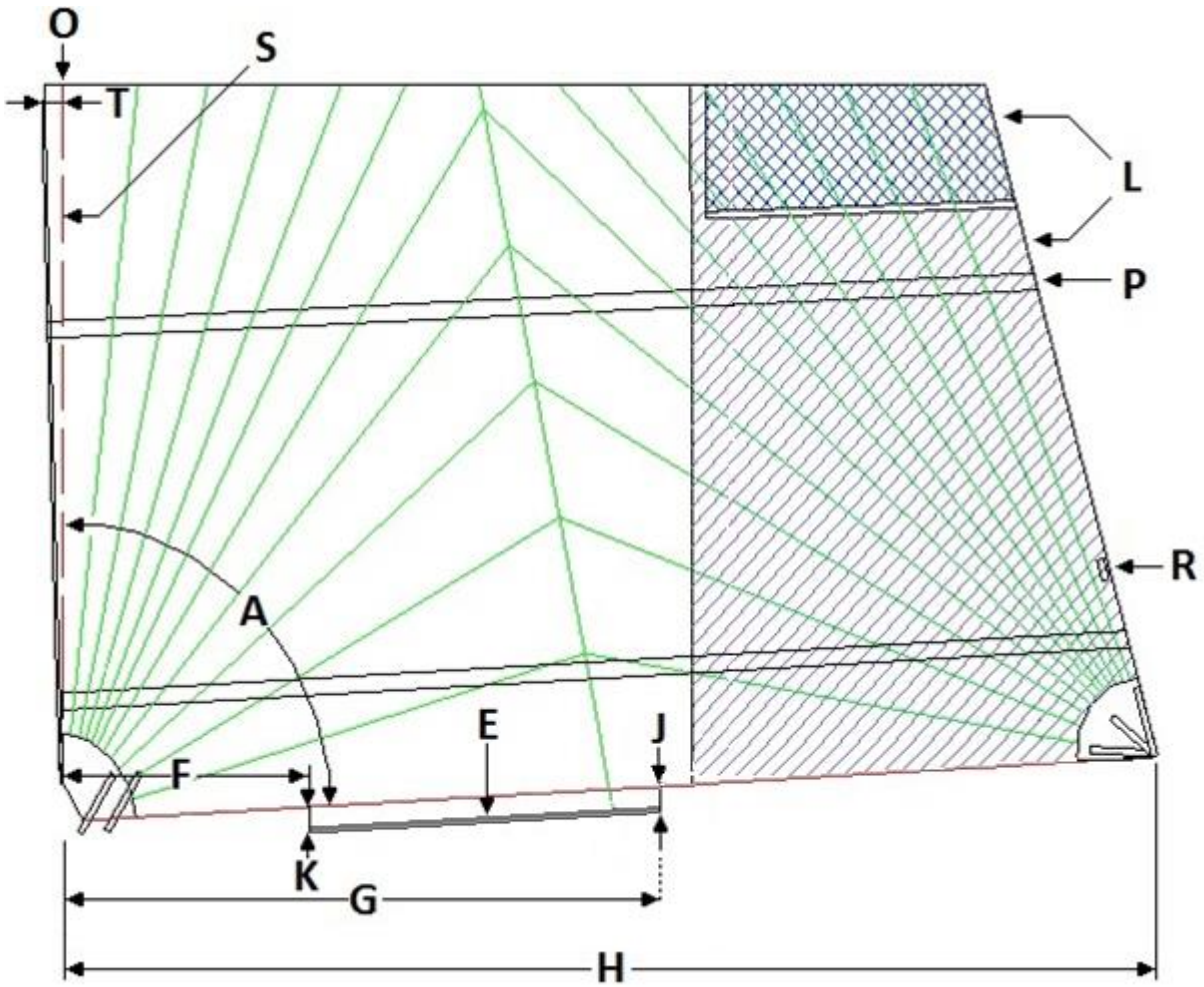


Image 5: tack detail

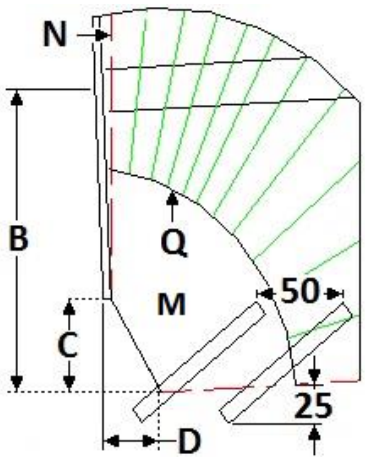
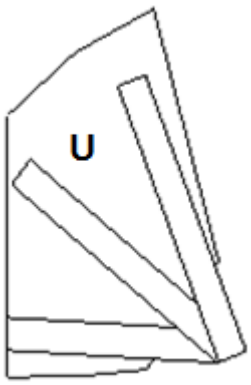


Image 6: clew detail



Batten ends

All battens should be fitted to the starboard side of the mainsail, except for the bottom batten which is fitted to the port side. Use conventional soft webbing end for all battens, terminating approximately 50 mm from the bolt rope. Detail of this webbing end is shown in image 5.

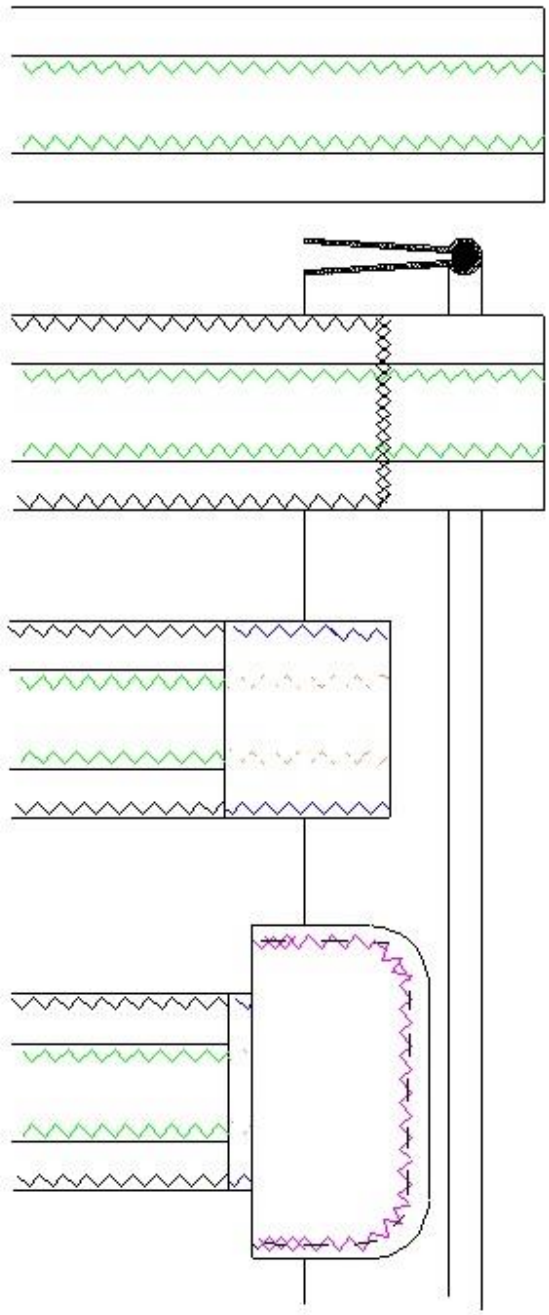
Image 7: in-board-end batten detail

1. Sew a strip of light webbing along a batten pocket tape for each side of the sail.

2. Attach this to the sail, leaving approximately 90 mm. overhanging the luff tape centre line. Sew the batten pocket tape to the sail and to the luff as shown.

3. Fold the overhanging batten pocket tape back over itself, and sew securely along the top and bottom edge as shown.

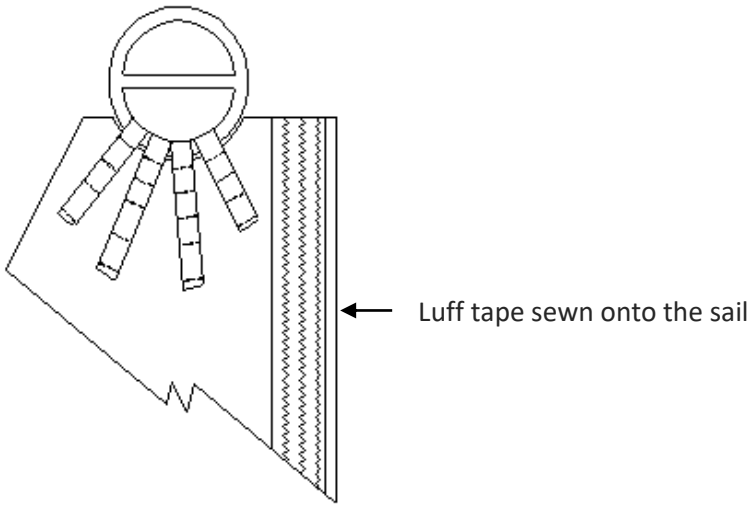
4. Sew a guide pad made from tight non-stretch webbing around 1.5 mm. thick to the sail as shown. Leave approximately 6 mm. between the webbing edge and the bolt rope. Handwork this also to support any machine stitching.



Head detail

For vessels 30-50 feet the luff tape must be sewn onto the sail, as illustrated in image 6.

Image 8: head detail for vessels 30-50 feet



For vessels 50-65 feet the luff tape must also be sewn onto the sail and be reinforced, as illustrate in image 7.

Image 9: head detail for vessels 50-65 feet