



## IN-BOOM MAINSAIL REEFING-FURLING SYSTEM MK 3R MAINSAIL DESIGN SPECIFICATIONS

### 1. GEOMETRY

The design of the mainsail is very critical to the proper operation of the ProFurl In-Boom Reefing Furling system. General design requires a slightly flatter sail than normal with a minimum luff curve built into the sail to ensure proper rolling of the sail onto the furling mandrel and into the boom cavity.

#### a) Luff curve design:

Please refer to drawing #19. To compensate for various rig designs and mast prebend, a maximum of 2 inches of luff curve may be designed into the mainsail. Further draft must be built into the sail through the broadseams.

Caution : if the 2 inches luff curve is exceeded it is possible the sail will not roll properly into the boom cavity.

#### b) Draft:

As with any furling sail, the draft of the mainsail must be flatter than with a conventional mainsail. Leach broad seaming should remain normal with primary changes to the luff broad seams. A maximum draft of 8% may be used on a standard furling mainsail. This design will offer the most optimal sail shape for reefing and furling the mainsail.

If a deeper draft is desired for better light air performance, a sail shaping item such as foam pad must be added to the foot of the sail. The foam pad is designed into the foot of the sail under the same theory as a foam pad is added to the luff of a reefing-furling headsail. Shape and position of the foam pad will be determined by the depth and position of the mainsail draft.

Caution : Increasing the draft above 8% may create a less desirable sail shape when reefing the mainsail.

#### c) Tack angle and foot curve:

The tack angle based on a straight luff and foot **must be cut at 88°**. Please refer to drawing #20. Minimum foot curve should not exceed 0.5% of the foot length at mid-length of the foot. The finished foot of the sail should be a bolt rope with a finished diameter of 10 mm (3/8").

## d) Roach:

Maximum positive leach curve should not exceed 6% of the leach length. If a fuller roach is desired additional reinforcement will be necessary at the forward end of the batten pockets and may not allow the luff of the sail to set properly in light air. Also, the added load on the battens may accelerate luff tape and broad seams wear.

Battens

## a) Number and type of battens:

4 semi-full length battens are recommended. Additional battens may be added, but keep in mind that additional battens create more bulk to the sail and will limit the ability to furl max luff length into the boom cavity. Semi-flat tapered battens may be used if desired, but may also add additional bulk to the sail.

## b) Batten pocket positions:

Please refer to drawing #20 for batten pockets angles.

**Note:** batten pocket angles are based on a straight luff curve.

Batten pockets should be sewn on the **port side** of the sail and be of standard design based on the type of battens being used. Reinforcement of the batten pocket at the luff must **not** be closer than 33 mm (1 5/16") to the leading edge of the luff tape (see drawing #21). Leach end of the batten pockets may be finished in the sailmakers preferred style.

c) Leach line clam cleats (if any) should be fit on the port side of the sail.

2. HEAD, TACK AND CLEW ASSEMBLY

Only webbing straps of 50 mm (2") and a two ply maximum thickness of 4 mm (5/32") should be used at the tack and clew of the sail. Metal grommets should not be utilized as they will not allow the sail to furl properly and may damage the reefing-furling system. Please refer to drawings # 22 to 25 for specific details.

3. LUFF TAPE ASSEMBLY

Teflon luff tape with a finished diameter of 5.7 mm is recommended for the luff of the sail. Attachment of the luff tape should be performed with the sails final luff curve. Luff tape should have only one seam immediately aft of the bolt rope and fit to the sail with the bolt rope immediately aft of the bolt rope and fit to the sail with the bolt rope against the cut luff curve of the sail.

Caution : Luff tape applied to a sail based on a luff curve drawn onto the sail may shorten the life expectancy of the luff tape. Also luff tape with a secondary seam aft of the primary bolt rope seam may require replacement sooner than the recommended type.

LUFF AND FOOT TAPE DIAMETER

## a) Luff tape:

Maximum finished diameter of 5.7 mm Teflon luff tape is recommended to minimize friction when hoisting and striking the sail OR Baimbridge BSS High Aspect or equal..

## b) Foot tape:

Maximum finished diameter of 10 mm (13/32").

4. TACK AND CLEW REINFORCEMENT

## a) Tack reinforcement:

Reinforcement patches at the tack are necessary but should add a minimum amount of bulk to this area of the sail.

## b) Clew reinforcement:

A large primary clew reef patch is recommended. Take a measurement equal to 25% of the foot length, measure from the clew towards the tack & mark the sail at this point. At the 25% mark draw a line parallel to the luff of the sail up to the point where the line intersects the leach. A single layer over this entire area will help reinforce the clew and leach when the sail is reefed. Additional reinforcement in this area is at the discretion of the sailmaker.

5. LEACH REINFORCEMENT AND UV PROTECTION.

## a) Leach reinforcement

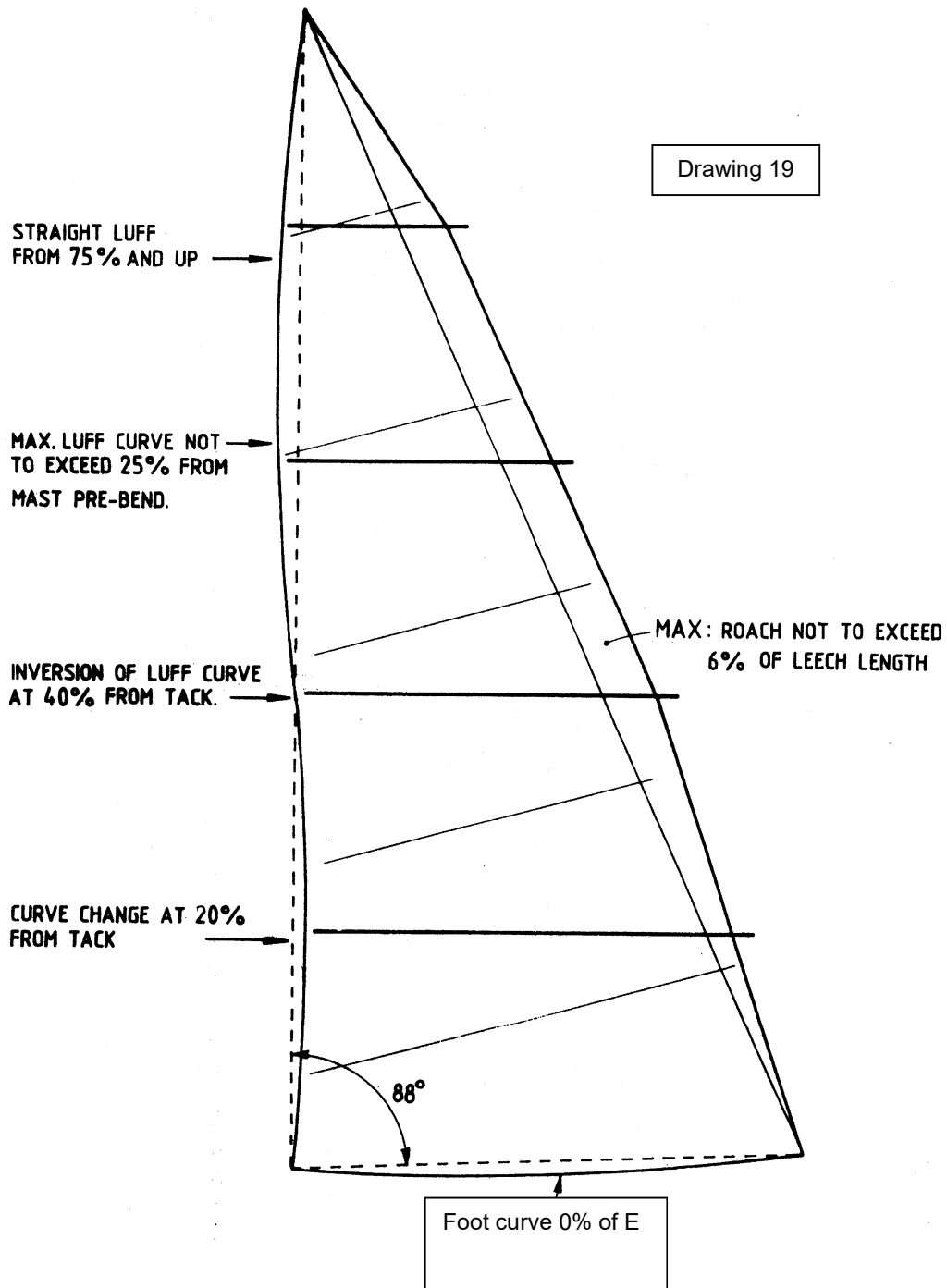
The leach of the mainsail should have a secondary strip approximately 2 feet wide sewn onto the starboard side of the sail. This secondary strip will help to strengthen the leach of the sail as well as add additional bulk to the leach. By bulking up the leach of the sail the leach will roll tighter and improve the shape of the reefed sail.

## b) UV protection:

A sacrificial strip, applied to the starboard side of the sail, may serve as dual purpose. First to strengthen the leach and also to protect the rolled mainsail from the elements, if a UV stable material is utilized. By having a sacrificial strip on the starboard side of the leach the need for a formal sail cover is eliminated.

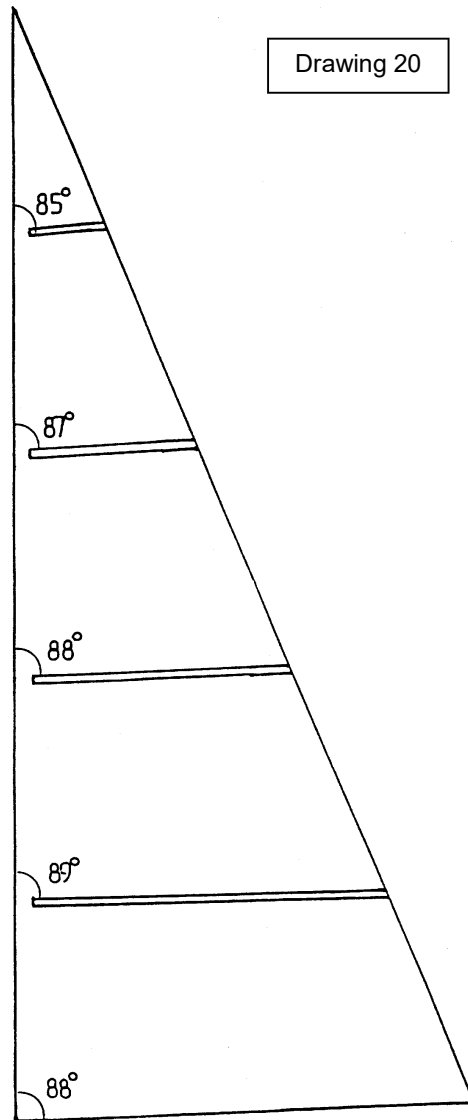
Note: The sacrificial UV strip must be wide enough to completely cover the sail when rolled onto a 95 mm ( 3 ¾") diameter mandrel (tube).

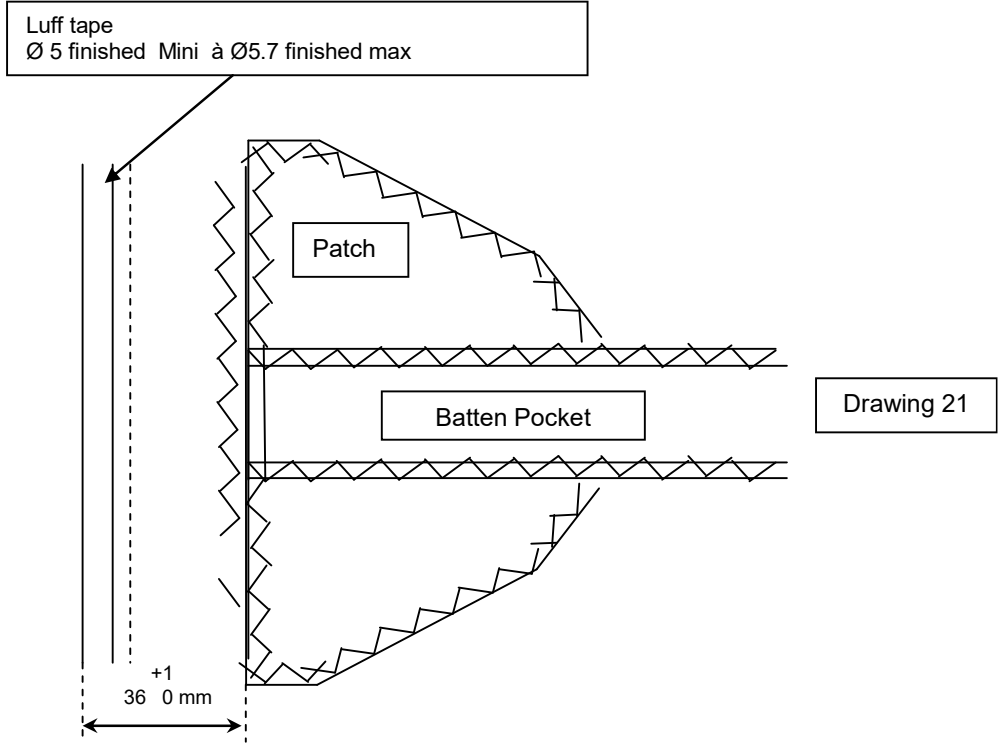
**4 BATTEN MAINSAIL**  
**LUFF CURVE DESIGN**



**BATTEN MAINSAIL**  
**BATTEN ANGLE TO THE LUFF**  
**CONSIDERED AS A STRAIGHT**

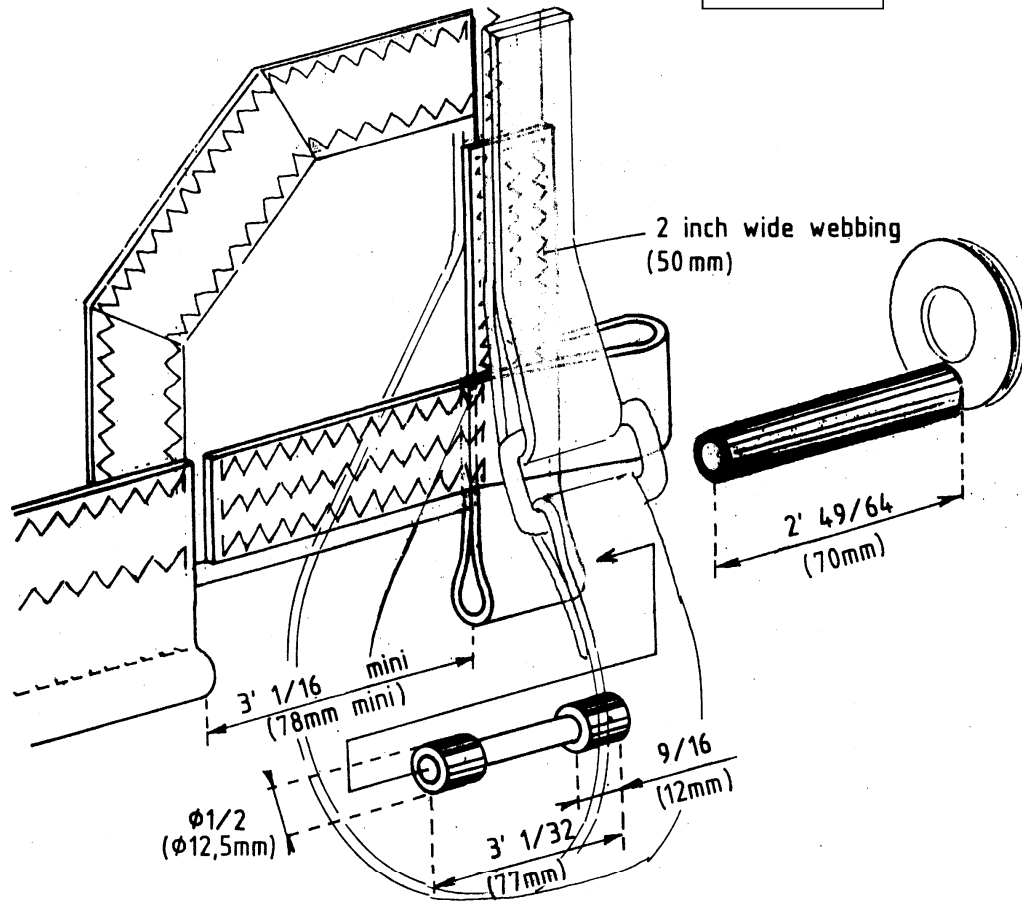
Drawing 20





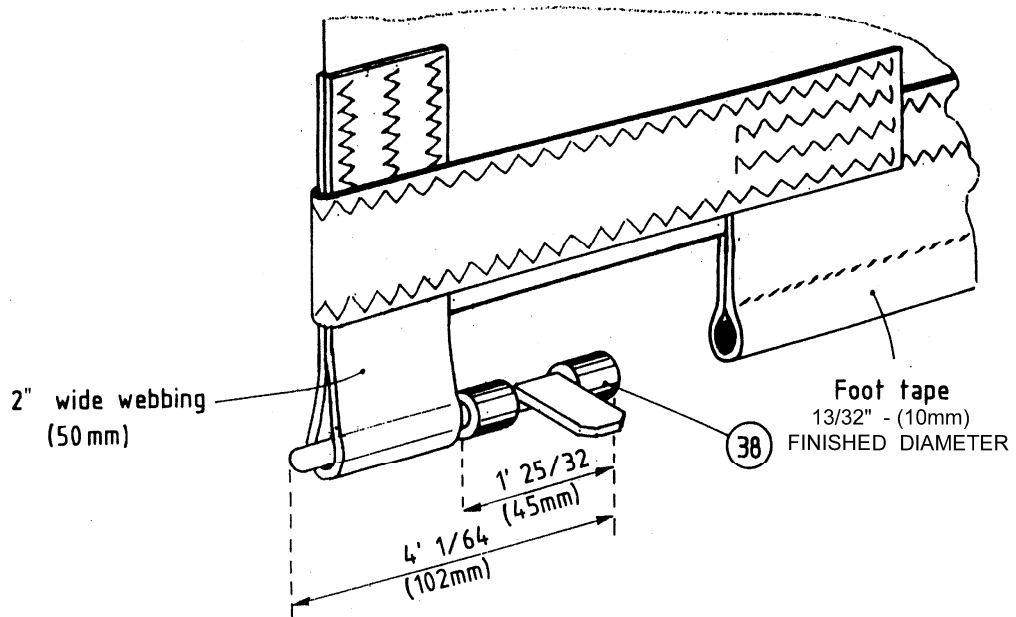
CLEW

Drawing 22



**TACK**

Drawing 23





Drawing 24

**HEAD CONSTRUCTION**

