

## Yngling Tuning Guide for Ullman Mainsail by Dayne Sharp

### Mast setup

Setting up the Yngling mast can take some time, but done correctly with some detail, you will be able to use your Ullman sails in the manner for which they were designed for. The following procedure comes from seven years coaching of various Women's Olympic Yngling Campaigns. Measurements are general and as with all setups, there is tweaking to be done to suit different sailing styles; mast bend characteristics; crew weights; and regular sailing conditions, including wind speed and sea conditions. Have fun as you go through the process and make your adjustments small. Before and after each sail, check and recheck the rig until you are comfortable with your numbers, as well as your improved performance and speed through the water. Knowledge of your rig setup is one of the biggest factors of boat speed and pointing.

### Spreaders

The spreader length is measured from the side wall of the mast; along the spreader (middle) out to where the cap shroud runs through the spreader tip. This measures between 600 to 620mm.

### Spreader rake

With the mast track facing up, clip a piece of shock cord to the cap shrouds at each spreader tip and measure from this shock cord, at right angles, back to the mast track. This distance should be set at 190mm and can be adjusted to 225mm for moderate winds. Make sure you know how many turns on the spreader adjusters this will take. Adjust these settings as best as you can so the spreaders are raked even to the mast. Place a batten on the aft edge of the mast heel and sight from beyond the batten up to the spreader tips, eying the distance from each tip to the batten. Once the mast is stepped, further checking will be made.

### Mast rake

#### Mark the Forestay

Lay the forestay tight (from its attachment point at the hounds) along the front edge of the mast. Place a mark on the forestay where it meets the top edge of the gooseneck black band.

#### Mast step position on the deck

The class rules have a large tolerance as to where the mast can sit on the deck. However, there are two positions that are generally used. The mast can be stepped in the most forward setting, which is the longitudinal distance from the forward face of the mast at the cabin top to the forward breakwater measurement point of 360mm. Or, it can be moved aft to 280mm.

#### Mast heel tuning

Most Ynglings now come with an adjustable mast heel position, allowing for a neutral heel for differing rig tensions or to induce mast bend if need be by having a 1 - 3mm gap at the front edge of the heel. This is a nice feature to have however to keep it simple – start with a 1 -2 mm gap.

#### Stepping and setting up the mast (using a PT 1 Loos gauge for rig tension checks)

Once the mast is stepped, there are a number of checks and settings to be made.

### Mast rake

With the forestay, cap and lower shrouds attached but with no tension on the caps or lowers, take a measurement from the deck beside the forestay attachment up to the mark that was placed on the forestay earlier. This should read 112mm.

Now tension the cap shrouds – a little on each side at a time – to get a reading of 17 on the Loos gauge (double check that there is no lower or backstay tension). Sight up the mast track to ensure that it is straight.

Using moderate tension, hold the main halyard against the mast track at the goose neck. There should be 20 -25 mm prebend.

Firm the lowers so they are just tight with even tension each side.

With a tape measure, climb up to the spreaders on a step ladder, making sure you are clear of the mast so as not to induce bend. Check that the spreaders are even in the boat by measuring from each spreader tip to the centre line at the transom. Make sure adjustments made on both spreaders are even to maintain the original rake setting. (You can also mark on the forestay at the height of the spreaders and measure from this mark to each spreader tip, ensuring there is equal distance to the mark). Now measure from each tip down to the deck, checking that both tips are the same height on each side.

The last check is to pull the main halyard to the top of the mast with a tape measure attached. This will allow you to measure to the deck at the shroud base on each side to make sure the top of the mast is in the centre of the boat (alternatively, use a bucket of water attached to the halyard and swing from side to side measuring at the gunwhale edge next to the shroud base). Again if adjustments need to be made, do them on each side in small steps, maintaining the rig tension at 17.

It is very important during this setup process to look up the mast track constantly to make sure the mast is always straight.

### Rig tensions

Rig tension is important for control of mast bend and forestay sag, hence the power and depth in the main and jib.

The following tensions are a guide only. They vary with crew weight and sea conditions. They can be used as a visual aid to ensure that you have enough cap shroud tension to just stop the leeward shroud from moving throughout the wind range.

The lower shroud tension is set while sailing by sighting up the forward edge of the mast and observing the leeward bend at the spreaders. Check on each tack and double check if necessary. Correct lower tension is critical and small adjustments are very effective. Incorrect tension can lead to pointing problems.

| Wind speed | Gauge tension on cap shroud | Lower shroud tension         |
|------------|-----------------------------|------------------------------|
| 4 - 6k     | 9 3mm leeward bend          |                              |
| 6 - 8k     | 11 5mm leeward bend         |                              |
| 8 - 10k    | 14 0mm leeward bend         |                              |
| 10 - 14k   | 17 0mm leeward bend         | 14 - 18k 21 0mm leeward bend |

18k + 25 0mm leeward bend

As the cap shroud tension is increase so is the lower shroud tension, just enough to keep the mast straight up to the spreaders otherwise the mast will bent too much too soon when the boom vang is increased, producing over bend creases.

Always ease the vang when sighting the mast for leeward or zero bend.