

Determining Proper Jib Trim on a 29er

The attached is a lay out of a 29er jib (White). So the first thing you do is find the CoA (centre of area), being basically a triangle, that's very easy, The red line runs from the Head to the middle of the Foot, The Yellow line runs from the Clew to the middle of the Luff (and if you want to you can run a line from the middle of the Leach to the tack and they should all bisect but as the leach has round, we tend not to bother.)

They just happen to land very close to the bottom batten, so what we are saying is there is about as much material/surface area above the bottom batten as there is below.

So if you now project a line that starts at the clew and run up through the CoA of the jib it will bisect the Luff (by definition). Yellow line.

Now the bottom batten happens to be approx 1300mm long, and the CoE (Centre of Effort) of the jib starts off approximately 33% aft of the LE (Leading Edge) of a foil, so if you take $1300/3 = 440$ (approx.) and you measure backwards along the lower batten 440mm, you will find the theoretical CoE of a 29er Jib.

Next take a line (purple) again starting at the clew and run that up through the CoE, it just happen to hit the luff 440 mm up from the bottom batten.

These 2 lines (yellow and purple) basically define the range of jib sheeting angle. (BTW, this works on every jib on every boat in the world.)

The un-known factor here is as a boat comes out of a tack, or you are accelerating off the line, CoE will be at the 33% point. As the boat gets closer and close to full speed, that CoE will wash back to a point 40-45% aft, far closer to the CoA.

As you are coming up to DW (Design Wind, the wind strength at which you are fully hiked, drive the boat with max swinging/trapezing and not easing anything), then you want to use the Yellow angle because that will maximize the power available from the jib when the boat is up to power. Once you achieve and go beyond DW you want to start moving towards the Purple line as that is when the jib is in "balance", and it will naturally de-power with gusts and re-power-up in lulls.

A 29er jib is particularly active, because it has roach (curvature in the leech) and battens.

The times you go beyond this is when you are in very lump wind (gusty) or water (waves) and you are below the DW, you may sheet steeper than the Yellow line as this will make the sail fuller/deeper with a tight leech.

And the opposite, is also true! In flat water and steady fresh wind you may go below the purple line because that will allow the leech to hang off and flatten the lower sail.

Obviously there are infinite ranges of possibilities, in most cases, you need to stay within the range, of Yellow to Purple and play with jib sheet tensions to achieve the appropriate settings.

The biggy, is coming out of tacks, or accelerating out of the blocks, ease it 3-4" = 75-100mm to allow the boat to accelerate.

