



Etchells Fleet 27

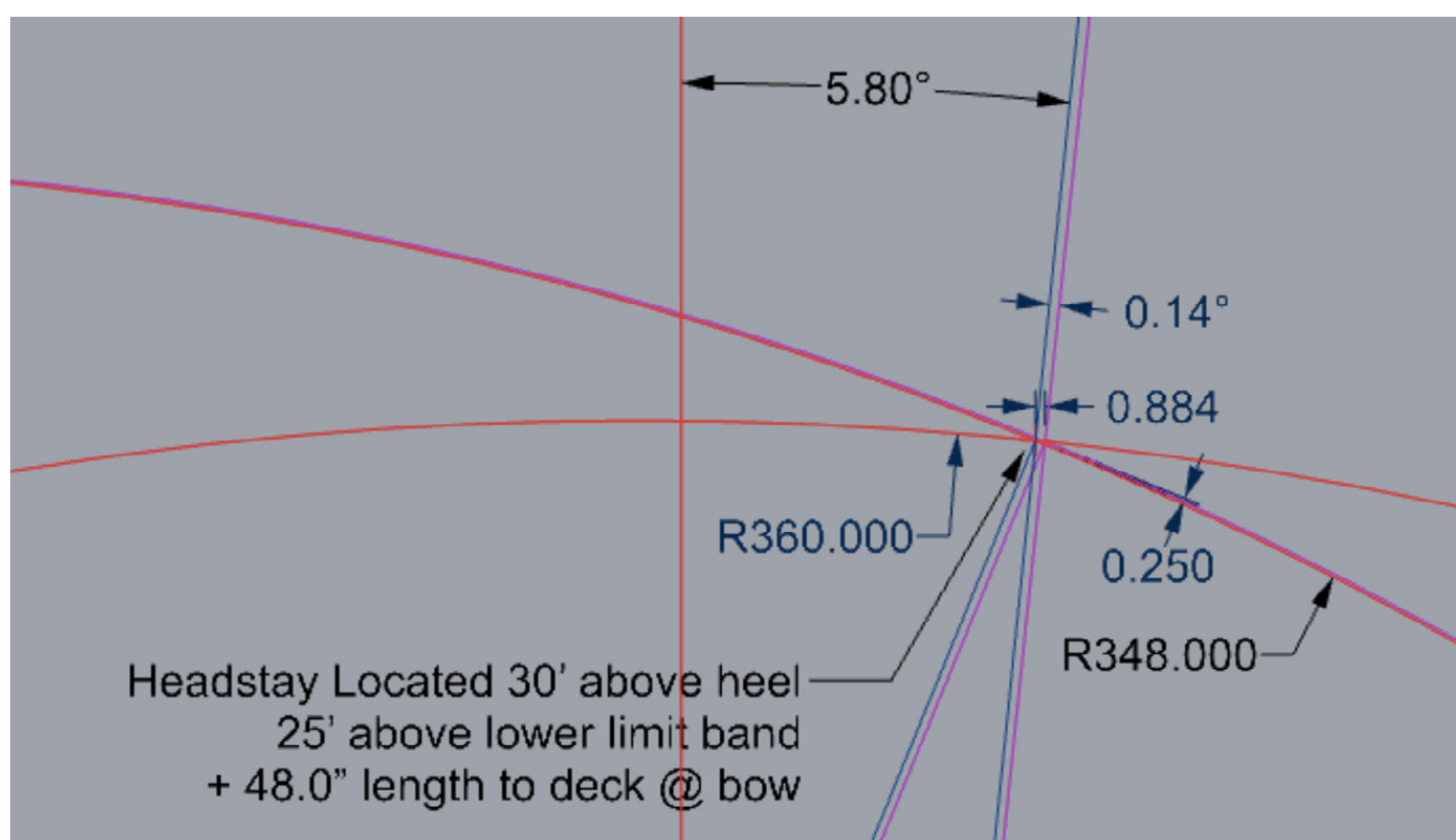
Spirited Sailboat Racing on Beautiful Casco Bay... for Over 20 Years.

EFFECT OF HEADSTAY LENGTH ON MAST RAKE

I think getting the mast rake correct in your boat is extremely important to your upwind speed. Too much helm (i.e., too much rake), and you are just dragging your rudder as a brake on speed; too little, and you don't point. It has taken me several years to figure it out for the Etchells, and I still am learning. If you have more than a little weather helm (if your tiller angle is more than 3 to 4 degrees or it takes two hands on the extension to steer upwind in 12-14 knots), take some rake out. It is a very fine adjustment, 1/4 inch of headstay length change does make a noticeable difference.

Headstay length is nominally 48 inches, $\pm 1/2$ inch (measured to the reference mark applied to the headstay IAW the sailmaker's tuning guides), with shorter lengths in heavy wind (i.e., less mast rake), and longer lengths for light winds (i.e., more mast rake). 5/16" diameter turnbuckle barrels are 24 threads per inch (i.e., 5/16 UNF thread), so 6 turns of the headstay pennant is 1/4 inch change in headstay length.

I was curious how much the mast rake changes with a 1/4" change in headstay length (6 full turns of the headstay pennant). This layout sketch closely approximates the headstay and mast geometry at the top of the headstay. The headstay attachment point moves fore or aft 0.88 inches (a 0.14° mast rake angle change) with a 1/4" change to the headstay length.



6 Full Turns of Headstay Pennant Changes Headstay Length 1/4" and Moves Headstay Attachment Point 0.88 inches.

So, about a 3.5 : 1 ratio for the unit change in headstay position per unit change in headstay length.

Another way to look at this, over the full ±1/2 inch range of headstay adjustment (47.5" — 48.5"), the headstay attachment point moves approximately ±1.8", or 3.5" total movement.