

Setting Reactance Tension in Bobstay - Ty37

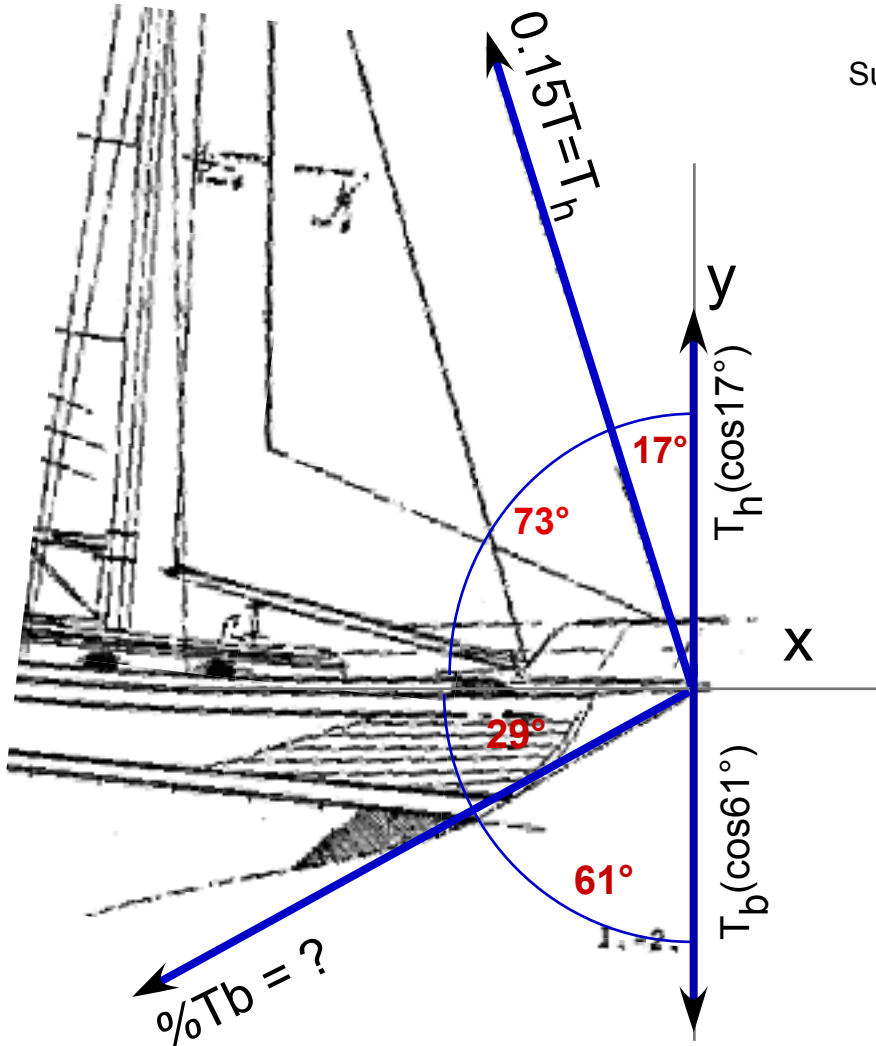
Headstay (1/4") intersects with Bowsprit @ 73 degrees

Bobstay (5/16") intersects with Bowsprit @ 29 degrees

Normal Headstay tension @ 15% load.

Question: what is proper Bobstay tension % to **equilibrate** reaction to Headstay @ 15%

Note: *this method should prevent/attenuate the tendency of the bowsprit to separate at its laminate structure ... and lessen water intrusion into the laminate joints / and subsequential internal rot of the bowsprit.*



Sum of Forces(x) = 0; Sum of Forces(y) = 0

Calculation (wires are SAME size):

Sum of Forces (y) = 0

$$0 = (T_h)\cos17^\circ - (T_b)\cos61^\circ$$

$$= \{(T_h).95\} - \{(T_b).485\}$$

$$\{(T_h).95\} / .485 = T_b$$

$$1.95T_h = T_b$$

therefore if $T_h = 15\%$ uts,

then $T_b = 1.95 (.15) = 30\%$

Correction for wire size.

1/4" wire ~8,200 psi UTS

5/16" wire ~12,200 psi UTS

$$8.2/12.2 = 0.67$$

Tension %

Headstay

Bobstay

1/4"

5/16"

8%

10.4%

10%

13.1%

12%

15.7%

14%

18.4%

16%

20.1%

20%

25.1%

24%

30%

Therefore if T_h (forestay tension %) is 15%, then T_b (bobstay tension %) must be set to **TWICE** the *load in pounds_f*; otherwise the bowsprit will be forced to either bend or deflect due to the unbalanced load applied to the bowsprit. Setting the bobstay at twice the *pounds load* of tension of the headstay may seem a bit scary but this will **BALANCE** the loads (in vertical direction) at the cranse; compressional loading induced into the bowsprit is ignored. If so balanced, then if greater loads are born by the headstay (due to heeling, genoa sheet winches, etc.) the bowsprit will begin to also bear a reactance load vs. the headstay, etc. If this "Twice Load" recommendation intimidates you, then consider to add a 'dolphin striker' to change (increase) the intercept angle of the bobstay to the cranse, or increase the wire dia. of the bobstay. One must be aware that wire (and all solids) are elastic and they must work in correct proportion when reacting to one another to keep the system 'in balance'.