



Chesapeake Tartan 30 Association

FORESTAY FITTING FAILURE

Lee Greenbaum, T-30 #90, *Cloudsong*, June 1978*

Thank heavens the wind was light when it gave way! On the previous evening I had eased off on the backstay to move the forestay fitting up one hole in the stainless steel plates at the base of the forestay to reduce some of my boat's weather helm. The backstay turnbuckle was then tightened to a tension which hopefully would allow for 3 inches of forestay sag in moderate airs. In other words, the tension was not excessive.

While sailing out of the Wye River with a following wind the next morning, I heard a *twanging* sound. I guessed it was movement of the mast in the partners, resulting from the retensioning of the mast the previous evening. Since nothing came down on my head I sailed on, blissfully thinking that everything was copesetic. Had I a bright and inquiring mind I would have searched through the boat and rigging, looking for the sound's source.

My surprise the following morning was one of horror! While hoisting up on the anchor rope I took a look at the stem plate under the bagged genoa. The stem plate was canted up 45°, having been pulled away from the forward stainless steel chainplate. The three short $\frac{3}{8}$ " bolts were missing! I jury-rigged the plate with two bolts with nuts and since then have replaced those bolts with two $\frac{3}{8}$ " bolts, but long enough to thread through the plate so that they could be capped with nuts.

The boat is five years old and apparently oxidation at the tapped holes was sufficient to weaken the threaded surfaces. When the forestay forces on the stem plate are substantial, the relatively shallow "bite" of each bolt in the stem plate may not be enough to hold the plate.

STRENGTHENING THE STEM FITTING

Brad Armendt, T-30 #282, *Emprise*, August 1980*

In the article above Lee Greenbaum reported a failure of the forestay fitting when the three $\frac{3}{8}$ " bolts connecting the stainless steel bow strap pulled out of their tapped holes in the aluminum stem plate, allowing the stem plate to pull up from the deck to about a 45° angle. Lee attributed this failure to corrosion of the aluminum, which weakened the tapped threads around the bolts. He later replaced the bolts with longer ones capped with nuts. Since hearing of his experience, I intended to make the same modification but did not get around to it until the boat (a 1975 model) was hauled in the Spring of 1980.

I'm glad I did, because I also found corrosion had eaten away about half of the thread depth in the aluminum plate (the bolts were as good as new, though). I only replaced the top two bolts, because the third bolt down is tapped into a blind hole in a place where it's not practical to drill it all the way through. It turned out to be a fairly tough job because the corrosion, while weakening the aluminum, also froze the bolts so they were difficult to get out. These are large flat-head bolts with a slotted head. The top bolt was finally loosened by soaking in penetrating oil, and considerable pounding with an impact wrench. The second bolt was immune to the impact wrench, and finally had to be drilled out. I started with a $\frac{1}{8}$ " drill bit and drilled all the way through the length of the bolt. Then the hole was gradually enlarged using progressively larger drill bits until the tap drill size was reached. The remainder of the bolt was removed with a $\frac{3}{8}$ " tap. This procedure is necessary because if you start with a large drill bit it will usually veer off of the stainless bolt into the softer aluminum alongside. Stainless steel should always be drilled slowly, e.g., with a variable-speed drill run at low speed. Removing this one screw took about two hours.

Once the screws were removed and the threaded holes in the stem plate were cleaned by re-tapping, slightly longer bolts were installed and set hard using the impact wrench. Stainless nuts were then installed on the bolts. The slot in the stem plate is barely wide enough for the nuts to turn, but not wide

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enough to get any tool I had on the nuts to tighten them, so I set them as tightly as I could using a large screw driver and sledge to pound on the edge of each nut to turn it as far as it would go.

I strongly recommend that this type of modification be made to avoid the failure Lee experienced, or worse, like losing your mast. The job would have been much more difficult with the boat in the water, because of the heavy pounding required (and the number of tools I dropped overside).

(Illustration added February 2001)

This is the cast aluminum stem plate removed from *Emprise* in 1997, when it was replaced with a new stainless steel stem plate with anchor rollers.

