



Chesapeake Tartan 30 Association

THE STUFFING BOX

Brad Armendt, T-30 #282, Emprise, January 1992*

The other day I had to repack the propeller shaft stuffing box again. This is the third time it's been necessary since I bought Emprise in 1975, so I can't complain that it's been a constant problem. And in fact I suspect that when our replacement driveshaft was installed, the stuffing box might not have been repacked properly. In any case, after a day of motoring all the way back from Oxford, I happened to check the bilge and found it about half full of water, with a constant dribble from the stuffing box adding to it. I could have just tightened the adjustment, but since I wasn't sure how carefully it had been repacked, I decided to repack it myself. It only takes about ten minutes to repack, provided you have what's necessary aboard. You'll need a foot or so of lubricated stuffing box packing cord ... mine uses $\frac{3}{16}$ " square cord. Plus you'll need two tools capable of grabbing onto the stuffing box cap and its locknut. I use 10 inch ViseGrip pliers for the cap, and 13 inch Channel Lock pliers for the locknut. Both of these tools have plenty of uses aboard; you don't have to buy special tools to work on the stuffing box.

In case you're not familiar with the design of a stuffing box, Figure 1 illustrates a typical configuration. First, hold the stuffing box cap and back off the lock nut a turn or two (screw it toward the stern). Then, screw the cap toward the engine until it comes completely off the main body, and slide it forward up the shaft far enough for the next step. Usually, a small stream of water (but not a gusher) will run out of the stuffing box while you have the cap off. If it runs too fast, jam a rag around the shaft while you continue. Using a small screwdriver, poke into the internal groove of the cap and pry out the old packing. Keep poking until you get it all out and can feel your tool sliding on bare metal at the bottom of the groove. Typically, there will be three rings of packing.

Figure 2 shows how to prepare and install the new packing rings (Tip: prepare the rings before removing the stuffing box cap). Once you have the new rings pressed into the cap, screw the cap back onto the main body hard enough to compress the packing rings and stop the incoming water.

Now comes the critical part: Adjusting the tightness of the cap. You must tighten the cap enough to seal out the water, but not so tight that there is excessive friction when the engine is driving the boat. Obviously, if the cap is not tightened enough, water will leak in and eventually sink the boat. But if the cap is tightened *too* much, when the shaft is turning the friction at the packing will heat up the stuffing box and shaft. The excessive heat will first melt the lubricant out of the packing, but it *can* get bad enough to cause the shaft to break, which could ruin your whole day.

The ideal condition: When the cap is adjusted properly, (1) there should be no drip of water from the stuffing box when the shaft is not turning, and (2) when the engine is running (i.e., turning the shaft) the stuffing box runs only warm to the touch (NOT HOT!), and it drips water slowly.

After repacking the stuffing box, tighten the cap until the water stops dripping, set the locknut to hold it in place, and then start the engine. Run the boat on the engine for awhile, checking the temperature of the stuffing box with your hand. If it leaks too much, tighten it a bit. If it gets too hot to hold with your fingers, back off the cap a bit. Every time you adjust the cap, be sure to reset the locknut. Trial and error adjustment will eventually get you to the ideal condition described above.

It's not a good idea to repack the stuffing box and then leave the boat unattended for a week or more. Instead, plan to check the bilge fairly often for a day or so, until you can be confident that you won't come back to find the boat sitting way below its normal waterline. If you *have* to repack the stuffing box but can't stick around to check whether it leaks, go ahead and do so, but overtighten the cap so the box definitely cannot leak while you're away. Then hang your engine ignition key on the stuffing box, so you'll remember to loosen the cap adjustment before leaving the slip next time.

Remember, messing around with the stuffing box is serious business. Doing it improperly could result in major property loss, or worse. If you're not comfortable with it, hire a professional to do it.

Also, if you have a 2-blade prop, remember what Tartan Marine Company stated in the Owner's Manual for the T-30: "Mark the propeller shaft with fixed prop vertical and folding prop with blades opening

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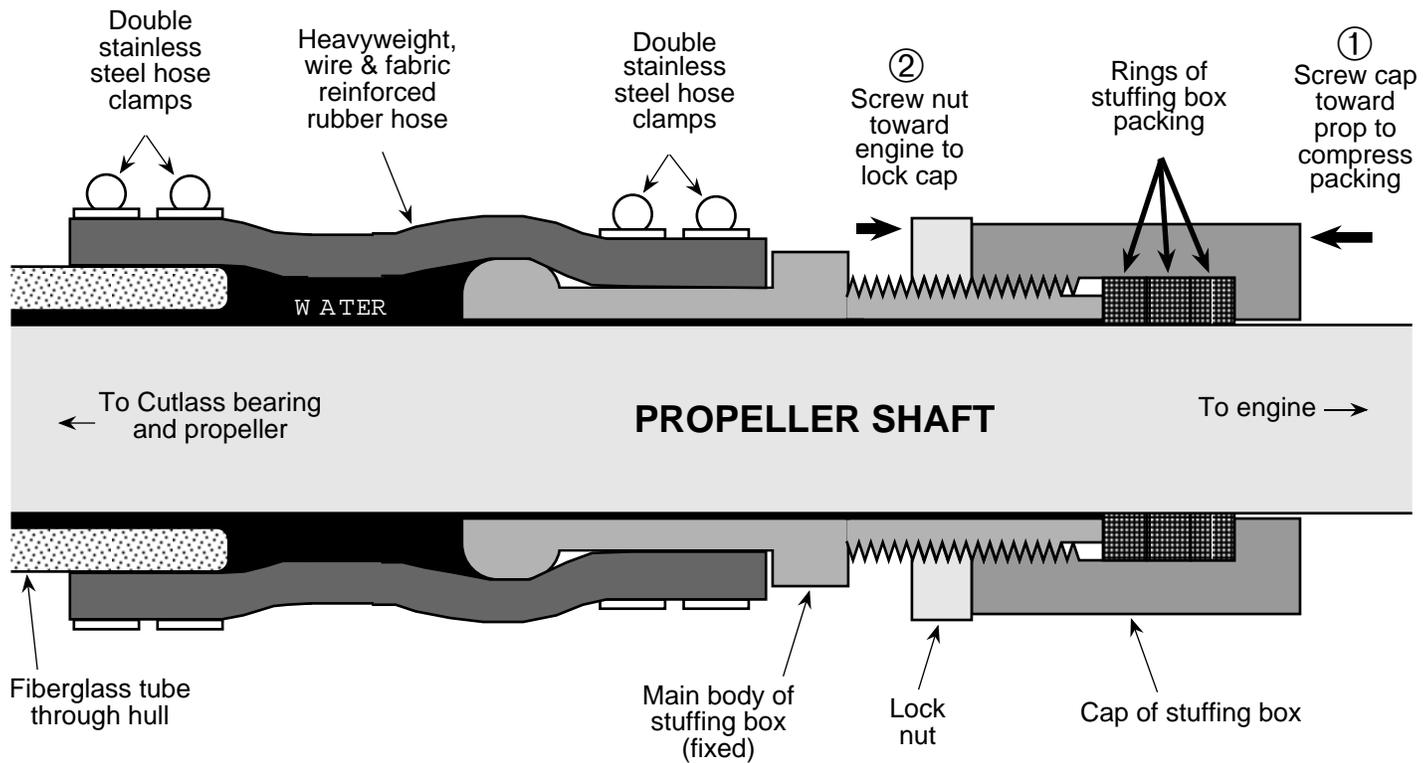


FIGURE 1. CROSS SECTION OF A GENERIC STUFFING BOX (NOT TO SCALE)

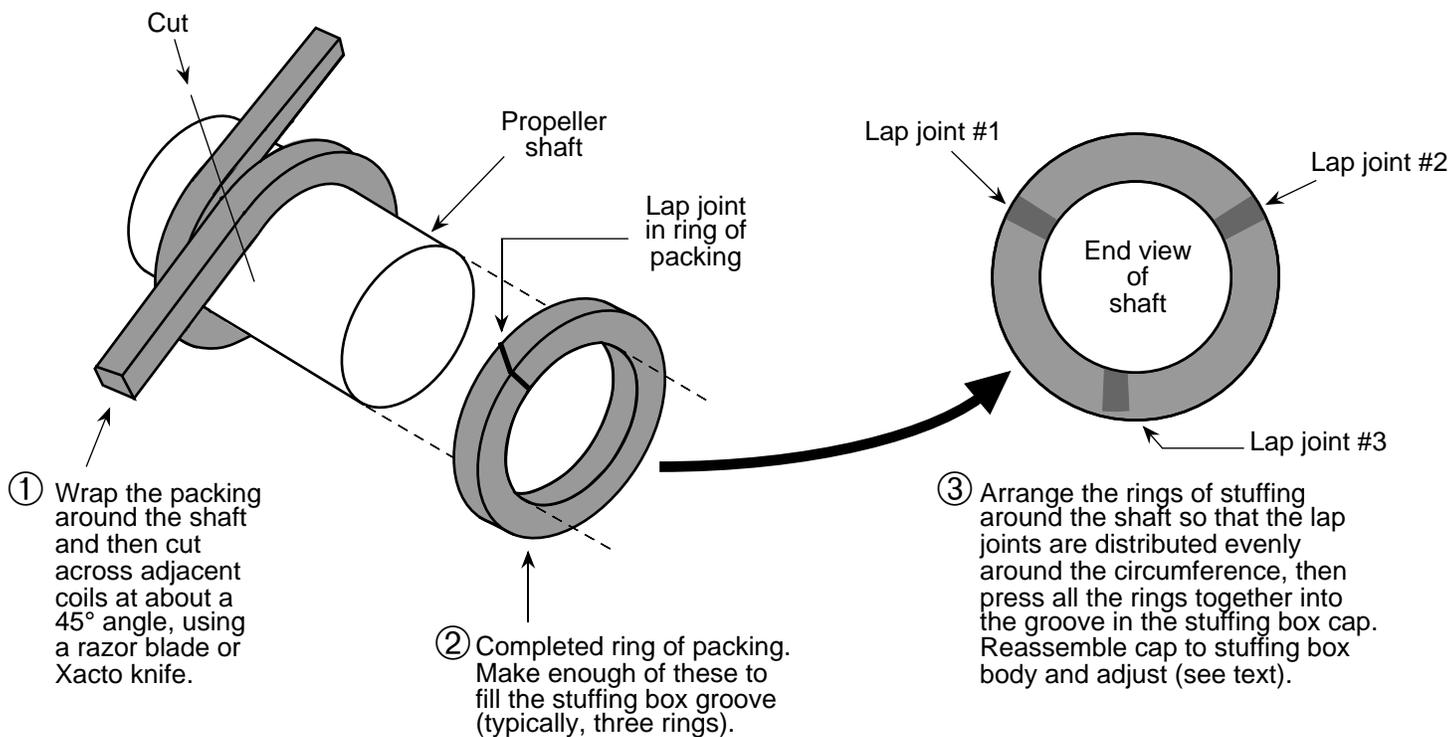


FIGURE 2. PREPARATION OF REPLACEMENT PACKING RINGS

horizontally. For best sailing speed, set shaft to this position while sailing. Never leave the engine out of gear and allow the shaft to rotate while sailing.” And bless Olin Stevens for designing the T-30 so that setting the prop like this is easy to do. Just pick up the floorboard and yell at the helmsman “OUT (of gear)! ... IN! ... OUT! ... IN! ... etc. until the shaft stops in the right position.

MARCH 2001 NOTE: During the past five years or so I have switched from conventional flax driveshaft packing to PTFE Flax Packing, used with Syn-Tel Stuffing Box Lubricant (both available from West Marine). These new packing materials seem to give better results — good sealing, with less friction on the shaft and less heat.