



Chesapeake Tartan 30 Association

ENGINE LAG BOLTS

Via Email, August 1997*

Q: I did an annual check of the engine mounting bolts and found several of the lag bolts were loose — in fact, so loose I could entirely unscrew and remove several. Does anyone have any thoughts on rebedding? I am thinking of removing all four (after removing starter and water pump so I do not have to remove or lift the engine), drilling some small holes in the fiberglass-coated wood frame that the engine rests on, drilling bigger holes where the lag bolts are and cleaning out the damp material (as described in the Boat Fiberglass West System Epoxy Manual), drying it all out with a hair dryer (being careful to drain all gas from engine), replacing the lag bolts in old positions and then filling all holes with epoxy paste, and checking engine alignment. If this works, lag bolts will be embedded and probably unremovable in epoxy — but that is the idea. Is this crazy? Paul Kirshen, *Misty*, #332

A: I would not recommend a repair that resulted in the lag bolts being permanently epoxied into the engine mount timbers. Sooner or later the engine will have to be removed, for any number of reasons. Before that, the engine alignment will have to be adjusted. It won't stay in alignment just because the engine is fixed to the mounts; the whole boat is flexible and may, in time, change shape. When necessary to re-align the engine, or remove it for replacement, you would have to do major surgery on the mounts to move the engine.

But you should not have to go to that length to fix the loose lag bolts. You didn't say what engine you had, but I think it's most likely an Atomic 4. I have never owned an Atomic 4 engine. My original T-30 engine was a Farymann 1-cylinder diesel. Although of somewhat different shape than an Atomic 4 mount, the engine mount was made of two heavy timbers completely encased in fiberglass, to which the engine was screwed with four large lag screws.

That engine shook a lot, and the vibration took its toll. When the boat was several years old, I found the lag screws loose in their holes, and eventually a couple couldn't be tightened because threads in the engine mount timbers were stripped. What I did was to remove the lag screws and clean out the holes as best I could. Then I poured epoxy into each hole and worked it thoroughly into the crevices of the hole wall, using a hardwood dowel smaller in diameter than the lag screw. After allowing the epoxy to cure thoroughly, I re-drilled the holes for the lag screws, then re-installed them. But I used *new* lag screws of the same size as originals. Instead of being rusty and rough, the new lag screws were clean and smooth, which I think helped make a good, tight fit. This worked. As long as I had that shaky old Farymann, the screws never got loose again. But when I needed to re-align the engine, I could loosen the lag screws as necessary.

Years later, I replaced the Farymann with a Yanmar 2GM20F diesel. This required modification of the engine bed, because the spacing of the engine mounting bolts (both fore-and-aft and athwartships) was significantly different. A mechanic did the work, but I found the approach interesting. On each side, he used a piece of very heavy aluminum angle iron. One side of the angle extended downward alongside the original engine bed timber and was through-bolted to it with large machine screws. The other side of the angle extended across the top of the old engine bed timber. Flexible mounts were bolted to this top surface to hold the engine. (Normally, diesels are mounted on flexible mounts, unlike Atomic 4s which are bolted solidly to the boat.) No lag screws into wood were used in this installation. I mention this only because it illustrates a way that the original lag-screws-into-timbers mounts can be changed into a really strong engine bed, if you wanted to go to that much work. And yet, everything can still be taken apart with wrenches, when (not if) it becomes necessary. Brad Armendt, *Emprise*, #282

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