

Repairing Loose Bulkheads

Fixing loose bulkheads doesn't have to be a nightmare

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Most fiberglass boats are built with plywood bulkheads laminated to the hull for strength. Typical construction (called "tabbing") involves bonding bulkheads to the hull with strips of fiberglass cloth wetted with polyester resin. Done correctly, these tabs give an initially strong connection that seems permanent. Appearances are deceiving. Polyester resins used in fiberglass boat construction actually do not bond well to wood. It is quite common on 5 or 6-year-old boats to find that tabbed bulkheads have broken away. This bulkhead delamination results in loss of transverse strength in the hull.

Repairing loose bulkheads may or may not be something that can be done without professional help. If in doubt, seek the advice of a reputable repairman. A badly done bulkhead repair may make it difficult or impossible to correctly fix the situation without serious (and expensive) surgery to the interior. As a rule-of-thumb, bulkheads that have moved out of their original position require an expert touch. If the bulkhead is still in place and only the tab is delaminated, then the job can be undertaken by an amateur.

The future value of the boat hangs on repairing delaminated bulkheads correctly. Getting the advice of a recognized marine surveyor on the nature and extent of the damage is always a good idea. The surveyor should also be willing to discuss any proposed repairs. If a survey of the damage is done, then a follow-up survey of the repairs should also be conducted. This provides evidence that the delamination problem was recognized and corrected in an acceptable manner. The surveyor's final report on the repairs may be important for obtaining future insurance or when it comes time to sell the boat.

Bulkheads break loose for a variety of reasons. The relatively weak polyester bond to the wood is constantly under attack from moisture, vibration and the flexing of the hull as it is driven through the waves. A good repair should withstand these stresses better than the original tabbing. The following repair technique is a belt-and-suspenders approach using epoxy resins noted for their ability to bond both to wood and fiberglass laminates. It also uses mechanical fasteners to resist shearing forces caused by the natural flexing of the hull.

The gap between the delaminated fiberglass tabbing and the bulkhead should be opened slightly and cleaned as much as possible. A vacuum with a crevice tool is the best way to get dust and dirt out of the gap. Clean away any loose fiberglass "angel hair" or any broken splinters of wood.

Pilot holes for #8 self-tapping screws should be drilled every 4 to 6 inches around the perimeter of the tabbing. These holes should go into the plywood of the bulkhead, but not through it. Insert a screw with fender washer in each hole, but do not tighten them yet. Screw length depends on bulkhead thickness. It should be long enough to penetrate well into the wood, yet the screw tips should not show on the other side.

Mix the epoxy and hardener in a shallow plastic bowl. Once it is thoroughly mixed, add high density filler until the resin takes on the consistency of Vermont grade AA maple syrup. Using a disposable brush and putty knife, force the mixed resin into the gap between the bulkhead and fiberglass tabbing. Protect your hands with throwaway gloves as this is a messy job. A chemical respirator is recommended in the confined spaces of a boat bilge.

Work quickly as the resin in the mixing pot will be "cooking." The pot may begin to harden before all of the resin can be used. Discard any resin once it begins to turn "rubbery" and mix fresh, being sure not to contaminate the fresh mix with old materials.

Tighten the pre-set screws enough to draw the bulkhead and fiberglass tab together and squeeze out some epoxy resin from the gap. The original fiberglass tab should be trapped between the wide fender washers and the bulkhead. Clean off the excess resin with a putty knife and put it back in the container to "kick." Any remaining epoxy can be removed with a rag dampened in acetone. (Protect your skin and lungs; and don't smoke around acetone.) On a wide boat the process of filling and tightening should be done on 2-foot long sections at a time. Start at the keel and work outward and upward to each gunwale. This spreads any strain or stress evenly through the bulkhead and avoids concentrating it in one spot on the boat.

Bulkhead tabs repair are only as strong as the penetration of epoxy resin into the gap between the tab and the bulkhead. Small wooden wedges may be used to open this gap temporarily while resin is brushed into it. Cut shallow angle wedges from scrap wood. Two are needed. "Hop scotch" one wedge ahead of the other as you work around the bulkhead. While

not absolutely necessary for strength, a good job is topped off with a fresh coat of one-part epoxy paint over the repair.

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