FREE BLUEPRINT: Build a hydrofoil boat in two weekends—for $116!

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Flying Platform Boat

It's a real quickie. Make it in two weekends... for $116... with a table saw... for unsinkable fun

By Herbert R. Pfister

T
HE first time I shoved the throttle forward on this little 4'-by-8' fun boat, it took my breath away. In an instant, I found myself flying more than a foot above the water on homemade hydrofoils, going faster and faster. My first thought was that I had no experience at this sort of thing. It didn't take long, though, to discover that flying a boat is one thrill you can enjoy without special training.
In calm water, with a 10-hp. long-shaft motor, I flew the crazy little craft at 35 m.p.h. (clocked by an escort boat with a 40-hp. kicker). I found that rough water slows the boat the way rough air slows a plane, and brisk crosswinds make it difficult to keep on course. It is like flying.

The largest single item of material is the Styrofoam used to make the unsinkable hull of the boat. To save time, place your order for the Styrofoam* and begin work on the foils while you're waiting.

You need two widths of oak to make the foils. Struts are 51/2" wide and the foils themselves are 7" wide. Widths of hardwoods vary, so try to get the nearest width that will allow enough for trimming.

The method of shaping the oak into a smooth airfoil section is outlined in the photos below. Take pains to make duplicate and plywood and have all items of your boat. Ad

You can fashion these wings of oak on your table saw

PERFECT CHORDS, foils are thin at the edges, curving to 5/8" thickness at the center. A jig shapes them; you supply only the muscle.

4. PARTLY SHAPED FOIL shows how curve of template is reproduced on surface of oak. Make repeated passes, feeding the edge into the blade until half the surface is shaped. Then turn foil around and shape opposite edge to complete it.

5. ONE TRICKY JOINT, where end of upper foil joins curve of lower foil, is made easy by using the saw as a jig. Unplug line cord and set blade at 30 degrees to support upper foil. Use half-section of pencil to lay out curved cut.

*You can order Styrofoam planks from Dow Chemical Co., Plastic Sales Dept., Midland, Mich. Dow will forward your order to the distributor nearest your town. Planks 10" by 20" by 9' cost about $19 each, plus shipping charges.
cate parts for all four foils (except struts) and assemble them over a plan drawn on plywood so they'll be identical in shape and provide uniform lift in the water. Have no qualms about the thin oak sections supporting you, the motor, and the boat. The epoxy glue combined with screws produces joints that are as strong as the wood itself. After the glue sets, file away any globs that have squeezed out, but leave a light fillet over each joint. Sand smooth and cover with two coats of epoxy paint for a smooth, drag-free finish.

Construction of the boat requires no boatbuilding skill. Just cut the plywood to the unsinkable size, place and begin waiting.

1. Set up the leeward end of the nearest trimming. Make a bevel on each slight crossgrain bottom of foils.

2. SCREW TEMPLATES TO FOIL BLANK, making sure bottom surface lies flat against stop strips. Align centerline of foil with centerline drawn on templates. Screw holes will be removed later when foils are cut to the specified size.

3. WITH JIG CLAMPED IN POSITION, press the waded templates on the rails and slowly slide them forward to pass the oak over the dado head. Make trial cuts, raising the blade until it shaves the foil edge to 1/32" thickness.

4. AFTER CUTTING, sand curve on drill press with table tilted 30 degrees. Lacking a drill press, you can shape the curve with a half-round file, using a 30-degree guide block pressed against the foil bottom to maintain filing angle.

5. ASSEMBLE FOILS over layout drawn on a smooth surface. Fit all parts and screw them together. Then unscrew parts and reassemble them with epoxy glue in each joint. No clamps are needed; screws draw parts up tight.
Foil settings on foil supports. To get best performance from the foils, vary adjustments one degree at a time during trial runs in calm water.

The boat has stubbornly refused to tip over during tests, but you might have a bumpy ride as the foils bite into rough water. Steer with your feet as you would steer a sled—push the right pedal to turn left and vice versa.

Flying the boat is largely a matter of getting the feel of it. From a standing start, push the throttle full ahead, then pull it back slightly as the boat rises and becomes foil-borne. In calm water, once the boat is full up, it will gradually pick up speed at \( \frac{3}{4} \) throttle. Slowly advance the throttle to gain more speed. Slight adjustments in the foil angle and motor trim can eliminate any tendency to porpoise at full throttle. With a sensitive throttle hand, it’s possible to fly for miles without porpoising.

Steering is tricky. Only slight changes in direction can be made under full headway. For a tight turn, you must throttle back for a moment, then gun the motor as you steer to kick the stern around and bank the boat.
Next Month...

YOU'LL get detailed instructions for mounting these same foils on any runabout up to 16 feet. An 18-hp. long-shaft motor was used to fly the plywood 14-footer shown below. With two passengers in the front seat, the foils were carrying a gross weight of nearly 1,000 pounds. And best news of all for you: The foils can be made for less than $25, including their supports.