



FLAIR

A modern 29' auto-boat

by Laurie McGowan

Dear Laurie,

For *WoodenBoat* No. 251, I wrote an article on the so-called “auto-boat” craze of the early 20th century. These boats took their styling cues from the automobile industry, and were sophisticated semi-displacement hulls. I believe that they provide a unique and special boating experience, and would be pleased to see one designed for the modern boater.

The type’s essential aesthetic qualities include: (1) a long forward deck, (2) an automobile-style helm, and (3) forward-facing front seats. This modern auto boat should seat six people who will stay seated, for the most part, while the boat is underway; this is not a picnic boat, unless the picnic is on shore, so we don’t need a table or space for standing around. Auto-boats were small for their time, and were not the multi-tools that we expect modern designs to be. I would urge you to eschew the modern obsession with space efficiency and minimalism.

Auto-boats were extravagant in concept and design. The early Minetts were some of the best. On the boats of Fry & Denny of Clayton, New York, the windshield is attached to the sliding engine hatch, providing easy access to the engine and a little heat on a cold day.

The auto-boat style predates the widespread use and understanding of planing hulls, but the speedier auto-boats do “plane” slightly. I have been told it is not really planing as we know it, but the hull does lift and the bow

clears the surface. The boats provide a sliding and skimming sensation, like a racing canoe, as opposed to skipping across the surface. Auto-boats accelerate smoothly and are comfortable at any speed; there is no “up-and-over” motion, as there is in a planing hull. I would like this feeling up to a top speed of about 20 knots.

Some auto-boats have an unusual design feature described as an “inverted spoon shape” over the propeller. It is a shallow cup, perhaps 4–6’ long and about 2” deep. It seems to create an ideal riding attitude at just above the theoretical hull speed, as if it somehow captures the stern wave. Some auto-boats that have this feature leave almost no wake at all from the stern at speed. Other auto-boats have a shallow-V and round sides.

The original auto-boats carried about 20- to 75-hp engines, and these engines were heavy. I would be curious to see a design for electric propulsion. Diesel is too stinky. It is the long, narrow hull that makes the type efficient and easily driven, but this is the difficult design trade-off. In a chop, I have buried the nose of an auto-boat, because there is very little lift forward and not much freeboard. Auto-boats can also roll in a sea. Consolidated and Lawley employed raised decks in their auto-boat designs, and this strikes me as a good idea—and a good look.

—Emmett V. Smith

Thanks very much for your letter, Emmett, and for the good article on auto-boats. I read it with interest—especially because I had an awakening about old cars one day about 20 years ago, when some automobiles of the era of the auto-boats drove by a house I was working on, then parked nearby. I wandered over at lunchtime and remember eating a sandwich and stopping mid-chew as the level of detailing and craftsmanship hit home. Generally I don’t like cars (especially new ones) very much, but I remember wondering how I had never seen anything like that before, as it opened up a new world of design I was completely ignorant of. Now I often look at older cars for inspiration.

People of the auto-boat era often used their boats for jaunts and not for real cruising or expeditions, and I’ve kept that in mind while also remembering that people showed off their boats, which were fashionable and cutting-edge for their time.

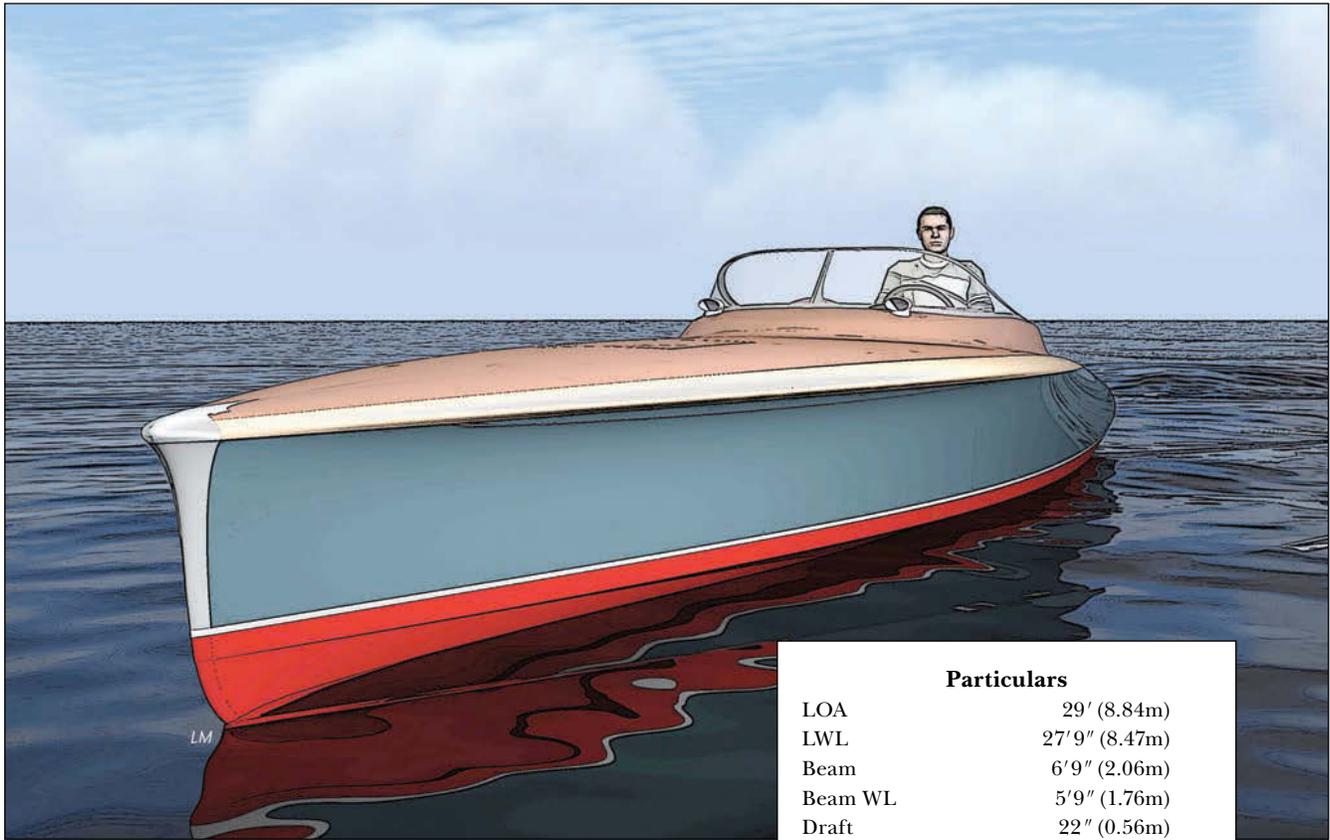
After playing around with the shape a bit, the name FLARE came to mind for the concept I’ve drawn here. But FLAIR is a much better name, as you’d be boating in style in something like this. She’s all curves, is low and lean, and has neat paint and brightwork and a few

custom castings. This boat could really stand out in a crowd. I hope the shape isn’t too modern for you.

The windshield and the flare in the topsides should help keep the cockpit dry for most of the waves and weather you’d get into, but green water over the bow is likely going to catch the passengers in the aft seat in the teeth! “Ha ha!” the pilot and co-pilot would be able to joke, as they duck waves. This scenario would mean that you’re going too fast in the wrong weather, though. In wet or cold weather, or blistering heat, the pop-top and self-draining cowl air vents forward of the windshield will help keep conditions comfy.

Layout

FLAIR’s cockpit is very simple, with two sideways box seats aft and comfy helm and co-pilot seats, with arm rests, forward. A hatch in the dash bulkhead gives access to the batteries and gear stored in the bow. There are lockers under the box seats, and one can access the motor(s) through the aft bulkhead in the cockpit as well. Self-draining and flush hatches over the lazarette and set into the foredeck offer more access to spaces below. The cockpit drains aft through the transom.



FLAIR is an update of the early 20th-century auto-boat type. Auto-boats took their styling cues from the fledgling car industry; they were the precursors to the later runabout.

Particulars	
LOA	29' (8.84m)
LWL	27'9" (8.47m)
Beam	6'9" (2.06m)
Beam WL	5'9" (1.76m)
Draft	22" (0.56m)
Displacement (half-load)	2,840 lbs (1.29t)
D/L ratio	59
Prismatic coefficient	0.64
Electric motor	LEMCO Swordfish twin 200-D135 @ 72V system, 26kW (35 hp) continuous and 53kW (71 hp) peak output

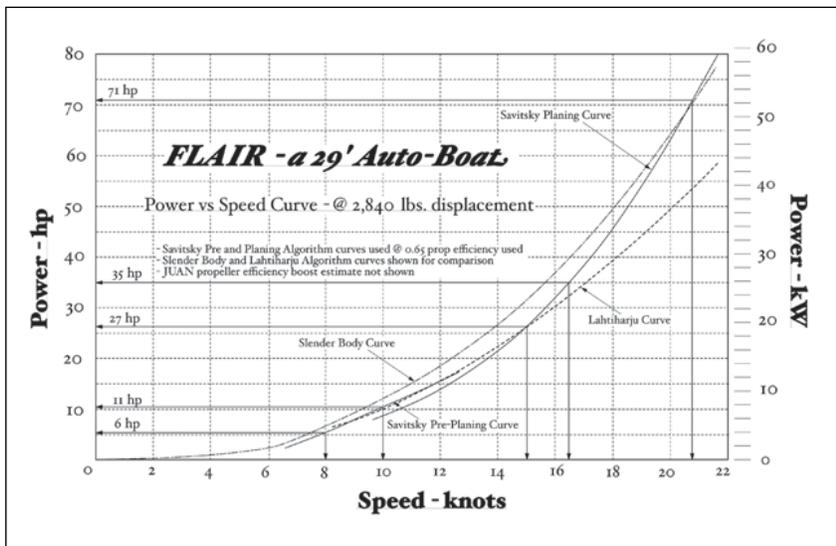
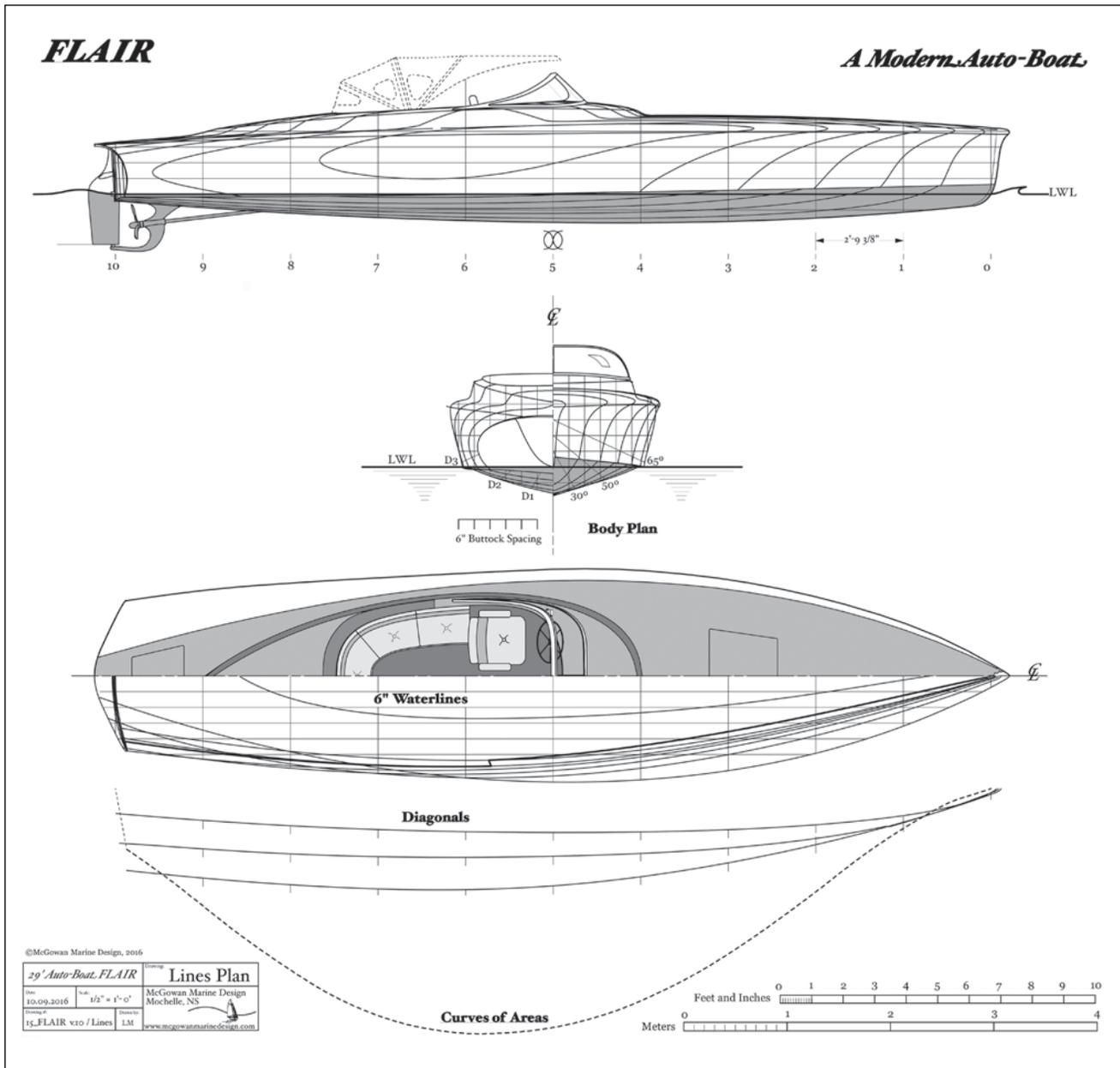
Shape

I started with a round-sectioned hull, then went to a very flared bow with a tumblehome stern, with a subtle chine and spray rail. I call it “subtle” only because the rest of the topsides is a riot of curves. “What’s the fun and cool-looking deck overhang aft for?,” you may ask. The answer is simple: It’s for fun, and it’s supposed to be cool-looking. It also adds some shape to what would have been a just chopped-off transom with a rudder hung on it.

The combination of narrow waterline, low quarter beam angle (the measure of the angle of the run of a boat, where too much rocker, or angle, aft limits speed), nice curve of areas, excellent diagonal lines, light weight, V forward, and almost flat sections aft (known as a “warped” hull), spray rails, and clean underbody promises excellent performance. Computer analysis of the boat supports this. I’ve continued the tumblehome down into the water at the transom, to act as a non-tripping surface—a feature that should make the boat bank correctly in turns.

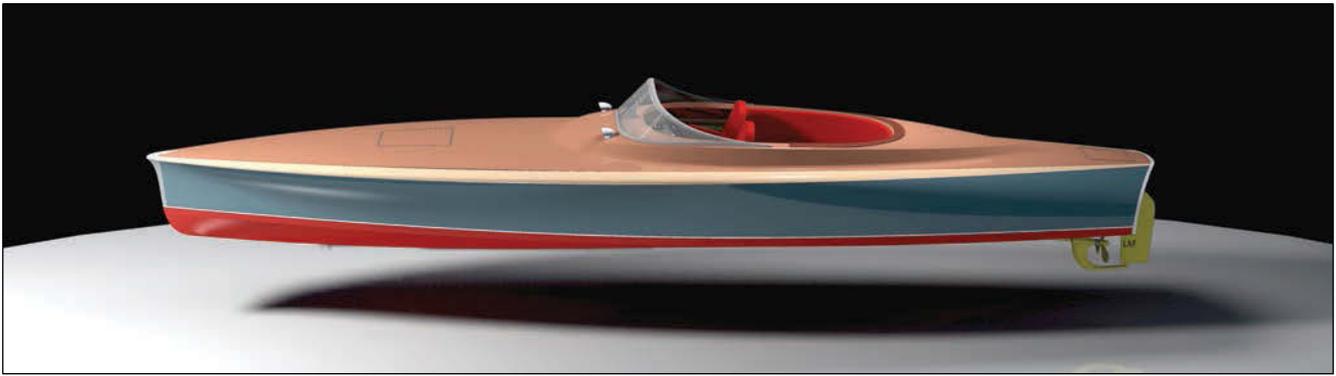
Motor

I like that you’re open to an electric drive system as the quietness of the motors will really enhance your outings. You won’t have to yell to be heard, you’ll be able to see more wildlife up close, and you can even have a great sound system to play your favorite music. Electric drives and especially battery systems are improving all the time, so I’ve picked a powerful and light twin system called a LEMCO Swordfish. It’s a 72V system with a 26kW (35-hp) continuous rating, and a 53kW (71-hp) peak rating for when you want to skip across the water. If you look at 35 hp on the power-vs-speed curve, that’s comfortably in the mid-teen speed range. I’d suggest lithium-ion batteries for their lightness and because they have more usable capacity than lead-acid ones. Depending on your requirements (distance and speed), the battery bank could last a few hours, or all day. Lithium-ion batteries are very expensive, however.



Above—FLAIR’s hull shape combines a narrow waterline, a nearly flat run (and flat sections) aft, and a sharp entry, all of which promise good semi-planing speed and economy. The tumblehome continues below the water’s surface, presenting a non-tripping shape in tight turns.

Left—At 35-hp, FLAIR will travel in the mid-teens. And she’ll do that in near-silence with an electric-propulsion unit.

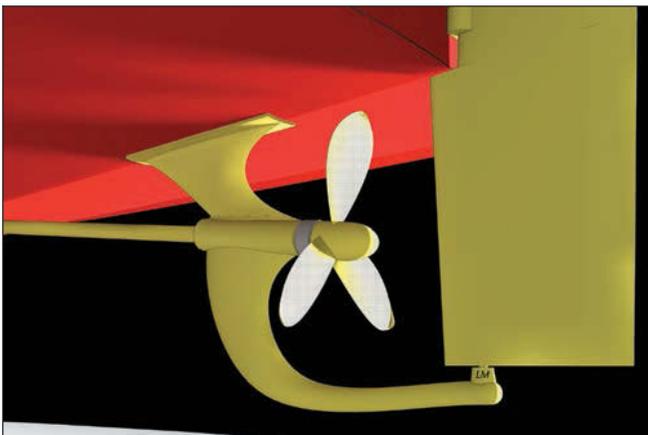


FLAIR's shapely hull is meant to be cold-molded or strip-planked and sheathed in fiberglass. The deck receives a decorative overlay of teak or mahogany.

For a propeller, I'd suggest a Juan (pronounced "zjou-ahn") three-blade model from Sanary-sur-Mer, France. It's essentially a conventional wheel with an interesting and very subtly hooked shape at its tips (in fact, conventional propellers may be "treated" with Juan tips). These props, the invention of a retired airplane mechanic, Jacques Juan, create a virtual nozzle effect underwater and limit the amount of water that's thrown sideways off the tips, resulting in a smoother and more efficient ride. One of its benefits is you can place the propeller closer to the hull bottom without having water bounce off the hull. I became a fan of these while standing barefoot on the inside bottom of a large and fast aluminum tour boat in the Mediterranean. The boat was powered by twin 750-hp engines, and before getting Juan-treated propellers, it had cracked welds all over the hull from being pounded by the prop-wash. After the boat received these modified propellers, the hull at speed felt like a balanced washing machine during the spin cycle.

I looked at making a tunnel in the boat, as you described, and it's still a possibility, but the boat is

The boat's three-bladed propeller appears conventional, but it's not: This is a Juan ("zjou-ann") treated prop, meaning its tips are shaped to direct water in a nozzle-like fashion. The result is a smoother and more efficient boat.



quite shallow for a 29-footer without it. Yes, that spoon-shaped depression in some of the auto-boats likely does hold the hull to the water a bit more—or that's what it feels like, at least. Tunnels not only result in less hull volume aft, but when they fill (if the top is above water when at rest) they add the weight of the water in the tunnel to the boat's displacement, and lower the hull in the water more. *Not* having a tunnel is always sleeker.

Construction

There is so much shape in the boat that it needs to be epoxy strip-planked or cold-molded. I'm going with red or white cedar strips, $\frac{5}{8}$ " (16mm) thick on the hull, with $\frac{1}{2}$ " (13mm) cedar, then a decorative overlay of $\frac{3}{8}$ " (10mm) mahogany or teak on the deck. The coaming is $\frac{1}{2}$ " fir or teak. Sheathing is 24-oz biaxial on the hull and 10-oz cloth on the decks. There are three $\frac{5}{8}$ " (16mm) bulkheads, with two $\frac{5}{8}$ " ring frames between them, and $\frac{1}{4}$ " (32mm) square fir frames between each of these. The transom is $\frac{5}{8}$ " mahogany. Fir backbone and framing includes a 2×4 " (100 \times 200mm) keelson, $2\frac{3}{4} \times 4$ " (70 \times 200mm) engine beds, a 2×3 " (100 \times 150mm) inner stem, $1\frac{1}{8} \times 4$ " (27 \times 200mm) floors, $\frac{3}{4} \times 4$ " (19 \times 200mm) bilge stringers, $1 \times 1\frac{1}{4}$ " (25 \times 44mm) chines, and $\frac{7}{8} \times 2\frac{1}{4}$ " (22 \times 57mm) clamps. CNC-cut bulkheads and patterns would save a lot of time in the boat's construction.

I think FLAIR could be a very fun boat to own and use. The modern construction and electric drive would make maintenance a snap and motoring a joy. And I think the very slippery yet stable hull would provide a nice motion on the water. 

Laurie McGowan is a Nova Scotia-based boat designer in with a diverse on- and below-water work history. He specializes in energy-efficient commercial and pleasure boats. More of his work may be found at mcgowanmarinedesign.com.

Do you have a boat concept you'd like to see Laurie McGowan develop on these pages? If so, send it to Sketchbook, WoodenBoat Publications, P.O. Box 78, Brooklin, ME 04616, or email it to sketchbook@woodenboat.com. Your letter should be no longer than 500 words.