MISS MISTY

A 2-Channel .15 To .23 Powered Hydro For Closed Course Racing

BY ROBERT STATT

PHOTOS BY DICK BEVIS

● R/C modelers are starting to discover the fun and excitement of high speed, high powered racing boats. The biggest attraction of the sport is the combination of powerful, screaming engines throwing "rooster tails" of water spray and the competitive spirit generated by closed course racing. Other, more tangible reasons for theincreasing popularity of power boating are the introduction of inexpensive, compact R/C systems, quality marine accessories, and the relative abundance of running sites. The airplane builders have also noted that an occasional "pilot error" results only in a wet engine and not a MonoKote bag of balsa!

Maybe you've thought of building a boat lately, but you're not sure how to set one up and start it. Hopefully "Miss Misty" will offer enough hints and how-to-do-it references to get you over your hesitancy and into the water. She is a stable, three point hydroplane designed so that the experienced boater can rig a hull capable of class competition, but at the same time, a first time skipper can have a successful try at this facet of the hobby. The hull design is similar to the larger three and four point White Heat hydroplanes by Octura while power is supplied by any .15 to .23 airplane or marine R/C engine. By the way, converting an airplaneengine to marine use is as easy as changing glow plugs.

Construction is similar to building an airplane fuselage, although a couple of airplanebuilding habits must be changed for "Miss Misty." Most airplanes are built over the plans; but since our hydro has no readily defined surface for this type of construction, the hull is built around an alignment block. Secondly, sharp edges work to your advantage in the water so try to avoid rounding off the edges of the running surfaces.

Begin construction by cutting out the motor mounts, sponson sides, tunnel bottom, and formers from 1/16" plywood. Mark the location of the maple engine plate bearers on the motor mounts and drill so that the bearers can be bolted to the ply motor mounts later. Next, define a reference line on the motor mounts for aligning the hull building jig. The exact location is not critical, just slightly above the former cutouts will do fine, but both the right and left sides have to be marked exactly the same. Using no glue, assemble the plywood structure and trim until you are satisfied with the fit, then disassemble.

The hull alignment jig is pine, measures 15" x 3-3/32" x 1" or 1½" and has to be square. If you don't have the tools to cut it accurately, seek a cooperative lumber yard or cabinet maker. Cover the jig with Saran Wrap. Position it between formers 3 and 10 on the motor mount reference line and tack in place. Double check that the former slots are opposite each other and that the formers are square with the mounts. Epoxy the hull

formers to the motor mounts. Since the hull will be water proofed inside and out, glues such as Titebond and Wilhold are acceptable, however, they don't let you make the minor alignment corrections needed as you "eyeball" the framework for smooth, warp-free contours.

When the epoxy has set, add the chines (stringers) to the main part of the hull. Do not add the sponson sides, sheer plates or sponson chines at this time. Sand the chines to match the hull contours with a long, rigid sanding block which helps to avoid cutting scallops into the chines.

Planking the hull is easy, but the 1/32" plywood panels have to be added in sequence since they overlap each other. Using the boat for the patterns, start with the rear quarter panel. Glue the panels in place and hold them with rubber bands, clothes pins, tape or whatever else might be handy. When the glue has set, sand the edges flush with the chines. Proceed to the rear non-trip panel then to the rear planing panel. The shape of the rear planing panel is given on the plans.

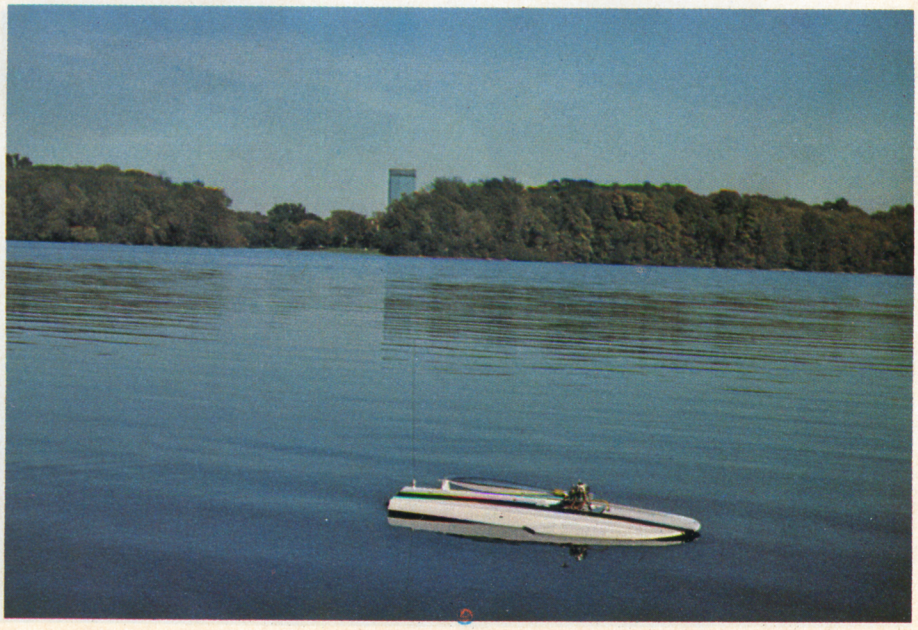
Returning to the sponsons, attach the sponson sheer pieces to the formers and rear quarter panel. Glue the sponson sides in place. Position the tunnel bottom and epoxy in place with 1/8" overhang to prevent water from creeping up the stern while running.

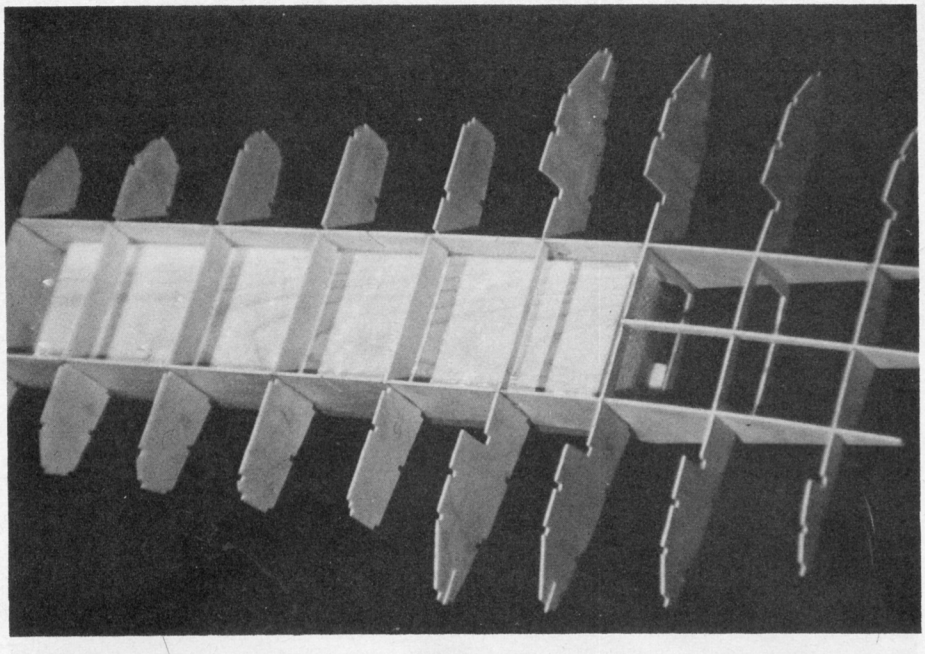
The bow chines are built up from two 1/16" x 3/16" spruce strips. I started the curves by steaming the bow chines. Attach the inner portion of the upper chine first, followed by the lower chine. When these have set, glue on the outer laminations using clothes pins to hold them together. Sand these to the contours formed by the hull members. (Yes, the front end does get pretty thin!)

The sponson chines are added next. These are cut so that they butt against the bow. A couple of the lower ones require quite a bit of bending to form the curves of the sponson planing panels. Plank the bottom of the sponsons with 1/32" ply starting with the non-trip panel and working inward. The planing surface panels are 1" wide strips with a 1/8" overhang at the rear of the inner panel. Finish the bottom woodwork by filling in the rear of the sponson sheer with scrap balsa.

The hull is beginning to take shape and is virtually immune from warps so remove the building jig. Install former No. 6 and build the R/C compartment hatch. The sides of the hatch should fit loosely into the compartment. Next make the water proofing channel from 3/16" sq. and 1/16" x 1/4" spruce strips. Position the channel near the top edge of the compartment so that 1/4" sq. foam strips can be placed in them to form a seal with the hatch sides. The hatch is held in place with 4-40 bolts screwed into blind nuts set in 1/8" x 3/8" spruce cross members.

On the first versions of "Miss Misty" I planked the top before starting with the details but I'm finding an open top model is





Hull alignment jig with motor mount and formers.

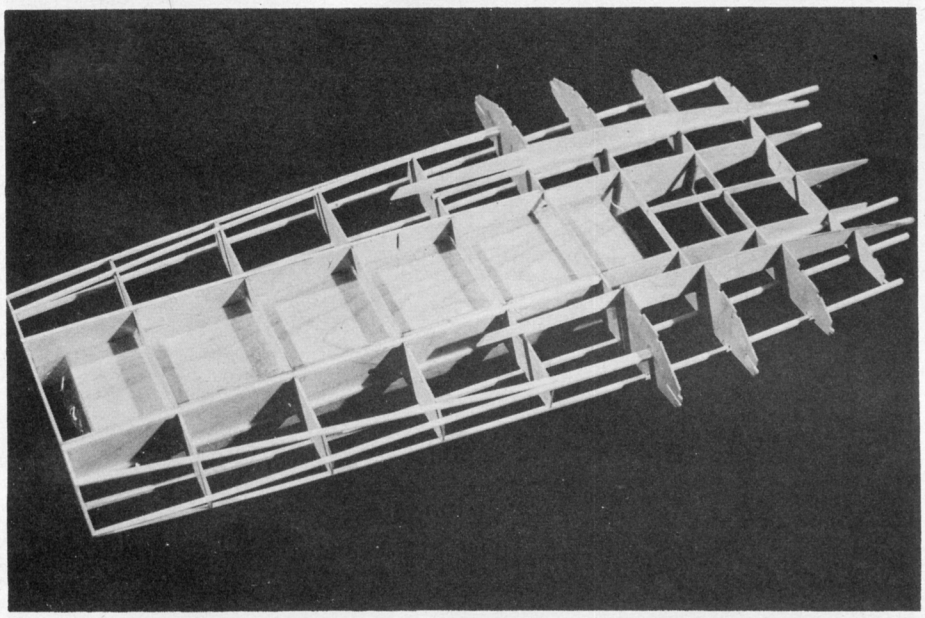
easier to "fuss" with so let's start work on the hardware. A "third hand" is useful while working on details and, since you'll need a cradle at the pond, let's build it now. Sketch the lower half of formers No. 3 and No. 9 on 1" x 4" pine. Draw them about 1/4" oversize so they can be lined with old carpet strips. After cutting them out, nail the end pieces to 1" x 4" side rails then finish it with a 1" x 4" x 24" foot-rest nailed across the bottom of the cradle.

Running Gear

Most of the hardware and fittings used on "Miss Misty" were beaten out of sheet stock or turned on a Sherline or Unimat lathe. There is no special reason for the home-made pieces other than that I enjoy doing it. (Isn't that what it's all about?!). Commercial hardware may be used for any of the fittings and will work as well, if not better, than my set-up.

Engine

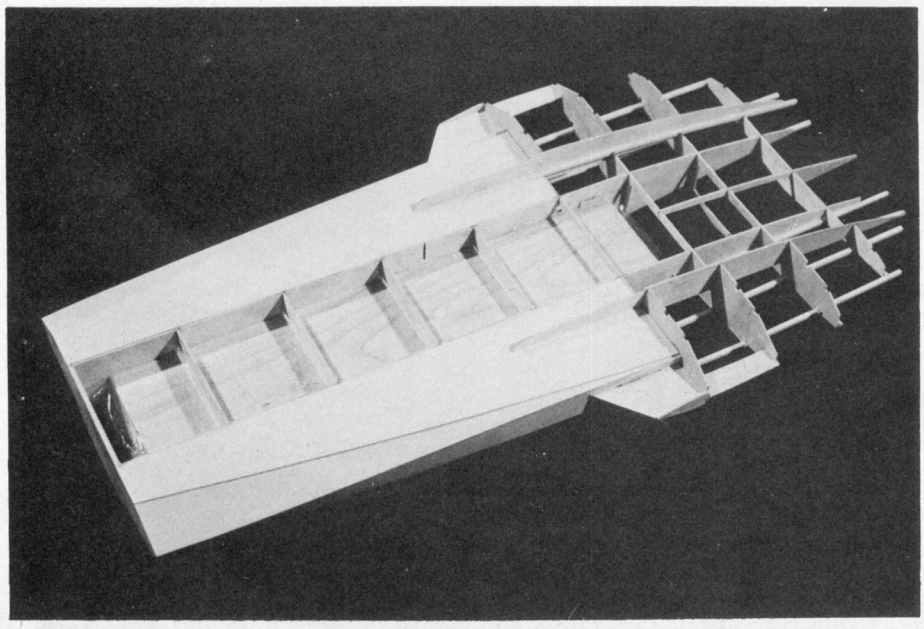
It's been my experience that a boat's design contributes about 20% to the overall speed, with the remaining 80% determined by the engine and props. Thus, the hotter the



Installation of chines and sponson sides to the hull.

engine the faster the boat. My S.T. .19 is stock except that I removed the burrs and polished the interior surfaces. It turns an Octura 1435 prop. The E.D. No. 1 pipe does more then "just" boost the power. The needle valve is less sensitive, however, the throttle is not too effective in the middle rpm ranges, the noise level is reduced, and it is effective in keeping the oil off the boat. I doubt that many of you will use a "pipe", but do use a muffler on your boats . . . if for no other reason than keeping the neighborhood running site!

Airplane engines are converted to water cooling with Octura's Kool Klamp, one bolt and it's ready to go. The flywheel is either Octura's or turned from bar stock. Mine is aluminum, measures 1-¼" dia. x 7/8" long and weighs slightly less than 2 oz. If you make your own, run out should be less than 0.005". Mount the engine on a 1/8" aluminum plate measuring 3" x 2-¼" with a cutout to fit your engine. Next, bolt the 3/8" x 1/2" maple engine plate bearers to the plywood motor mounts, then drill holes to bolt the plate to the bearers. Set blind nuts into the bottom of the bearers for the engine plate and permanently attach the bearers to



Plank the rear quarter panel and work inward to the planing panel; install the sponson sheer pieces.

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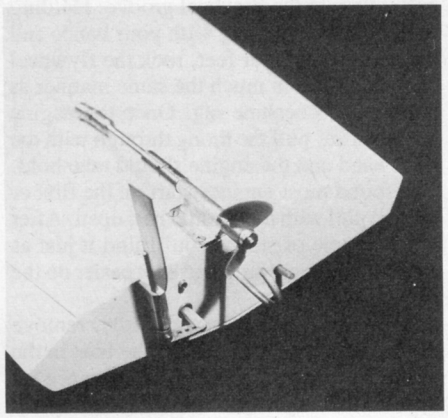


Stern detail including the water pick-up and rudder mounting.

MISS MISTY

from page 28

Radio Compartment

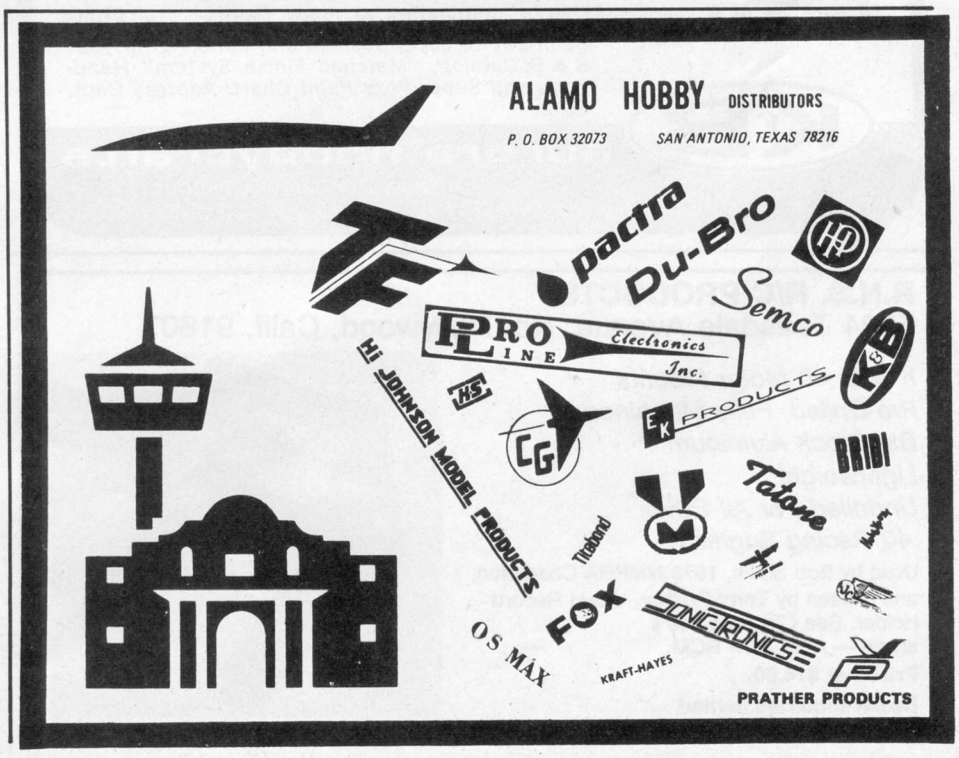
Since there are so many variations of R/C gear available that are suitable for "Miss Misty" I'll leave the installation of servo rails, etc. to you. A lot of the boaters use Nyrods, but I prefer 1/16" wire pushrods since you can have the play needed for the cranks in a small space. The pushrod exits are water proofed by epoxying a piece of 1/4" brass tubing, 1/2" long into the exit then tying a 1-½" long piece of thin latex tubing (I used the fingers off of a disposable surgeon's glove available at the drugstore) to the exit tubing and pushrod. Mount the switch inside with a wire push-pull to the outside.

At this point, you should have all of the hardware in place and everything should be in working order.

Finishing

Before you plank the top of the hull, remove all of the hardware and R/C gear and paint the **entire inside** of the boat with one coat of Hobbypoxy clear mixed 1/3 resin, 1/3 hardener and 1/3 thinner. (Try to keep it out of the blind nuts.) Also coat one side of the 1/32" plywood you plan to use for the top. When dry, plank the bow, sponsons, and deck with the epoxied side face down.

Waterproof finishes are a must in this business. I've used acrylic's in the past with some success but I'm convinced that epoxy is the only way to go when hot fuels are around. Start the finishing process by dry sanding the structure with 280 paper then spray on a coat of clear epoxy (Badger's little sprayer does the job). When this is dry, sand the rough spots and apply two coats of filler, thinned according to Hobbypoxy directions. Rough sand the filler with 280 used wet and finish it off with wet 600. I don't know about you but, at this stage, I have trouble seeing the little imperfections that always show up here and there after the last coat of colored paint. To solve this, I spray on a thin coat of silver (Now you know why there aren't many silver



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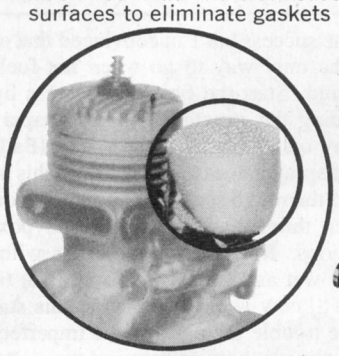

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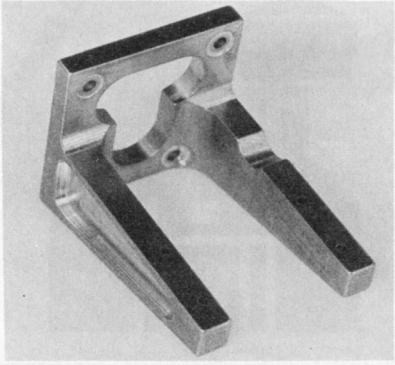

models . . . it shows up everything!). The silver is wet sanded with 600 paper and two coats of color are applied with light sanding between coats. People around here have been asking about my pastel purple from Hobbypoxy. Really, it's no secret . . . just add high quality artist's dry ground pigment to white resin. After the final coat of paint, wet sand with a well worn piece of 600 paper then rub to a gloss with compound.

With the finishing complete, install the hardware and water proofing details. This includes epoxying the fin to the tunnel floor.

Say . . . looks like it's going to run doesn't it?

Starting and Trim Adjustments

Before heading to the local pond make the following checks to assure yourself that the boat is ready. Are all the tubing lines hooked up and bolts snug? Is the fin, rudder, and strut in alignment? Is the drive shaft lubricated and sealed with tape? And last, but not least, is the antenna hooked up? For the first run, pick a day when the pond is glass smooth. At the pond, strap the boat into the cradle with good sized rubber bands, fill the tank with mild fuel, prime the engine, and hook up the battery. A 3' leather thong or shoelace is used to start the engine. Pass the thong under the shaft and pull it up into the flywheel groove. Holding both ends of the thong with your hands and the cradle with your feet, rock the flywheel back and forth in much the same manner as popping a shoeshine rag. Once the engine starts to fire, pull the thong through with the right hand and the engine should take hold. I've found most engines start on the first or second pull with the throttle half open. After just a couple of starts, you'll find it just as easy as flipping a prop and a lot easier on the fingers.

With the motor running at idle, remove the hold-down bands and set the boat in the water . . . but don't let go yet. Advance the throttle and adjust the needle valve. Make sure water is circulating through the cooling system. Throttle the engine down and let her go . . . the first launch of any model is kind of nerve-racking isn't it! As she moves out to open water, slowly advance the throttle. If everything is okay, "Miss Misty" will go up on the step at about half throttle and really start to move out.

Trim "Miss Misty" for smooth running by watching the action of the sponsons. If the sponsons begin to bounce or porpoise, the boat is riding too far back. This is corrected by shifting the C.G. forward or by shimming the rear of the drive strut. This causes the prop to push the rear of the boat higher in the water and, in effect, transfers the weight forward. The opposite problem is when the sponsons ride fairly deep in the water and the prop tends to cavitate or break out of the water. This is easily detected since the engine sounds great, fantastic amounts of spray are thrown up, and the boat just sits there. I prefer to trim this out by decreasing the prop thrust relative to the water line.

to page 102

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MISS MISTY

from page 96

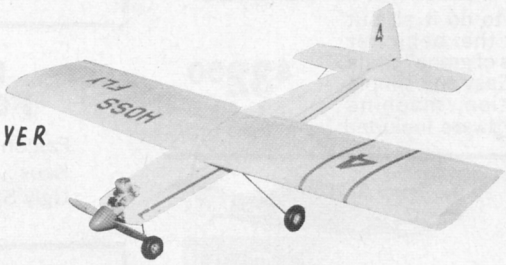
When properly trimmed, "Miss Misty's" sponsons will bounce once or twice crossing another boat's wake and the prop will cavitate only when the throttle is popped open from a full idle.

When disaster strikes (as it inevitably will) and you are separated from your dead boat by 100' of water there are at least three acceptable means of retrieval: 1) use a small row boat or vinyl raft; 2) tie a tennis ball to the fishing line of a spinning reel, throw it past the boat and hopefully snag the boat as you reel the line in; 3) let the breeze blow it toward shore. One method is deadly though, and that is swimming out for your boat. Fellas, let's face it, a high class toy boat isn't worth it. Here in Minneapolis we have one less R/C boater this year because he thought he could make it . . . enough said!

Now that "Miss Misty" is trimmed you are ready for some real fun and excitement. Pour in some hot fuel and challenge the boys with their .40's and .60's to a few laps. You may not win them all, but they'll all know they've been in a race! □

HOSS FLY

NEW!



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