

AMBUSH 15

Aspiring CL stunt pilots can learn the basics quickly and inexpensively with this .15 powered all-sheet-balsa scale-up of a Bill Netzeband design.

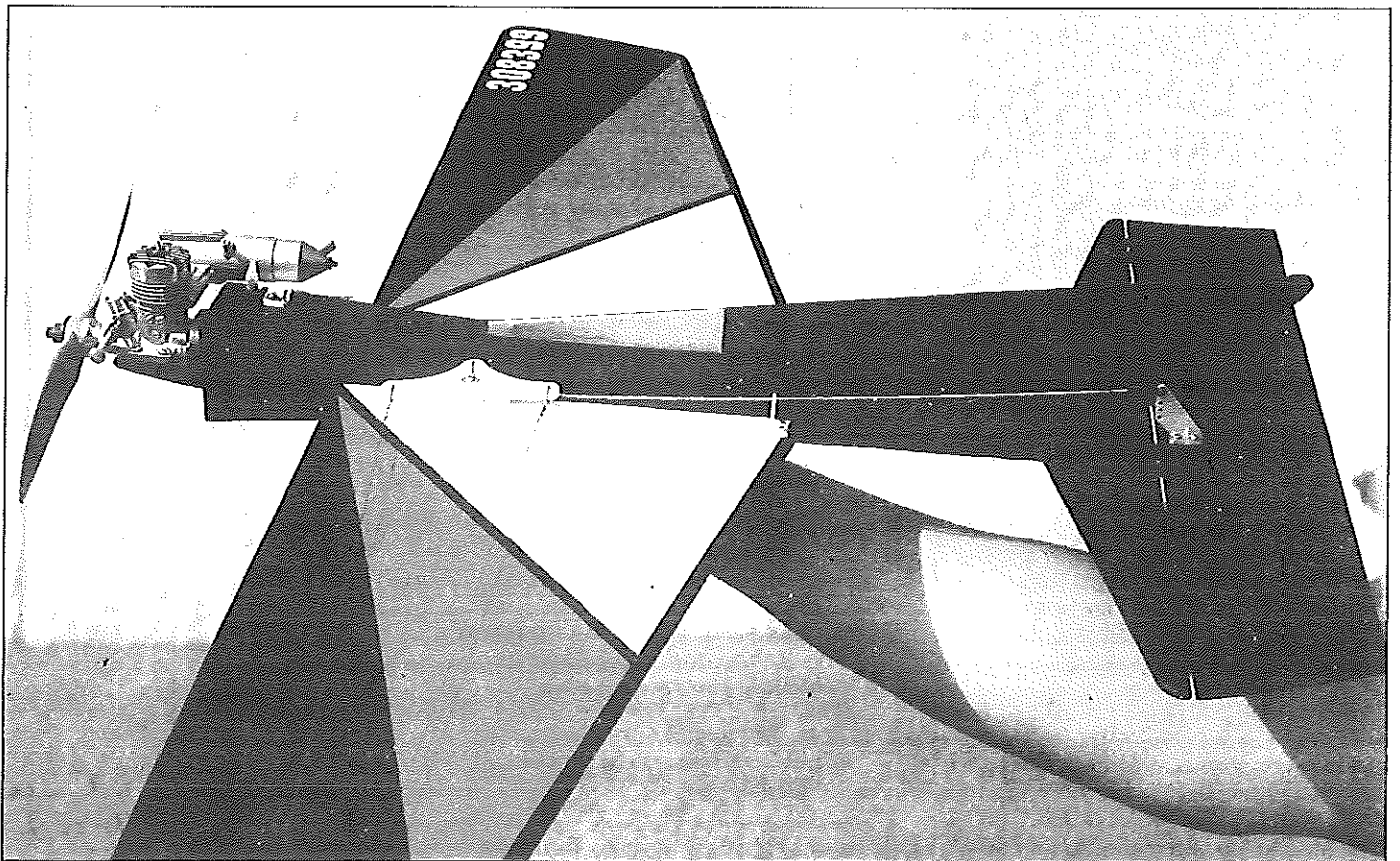
BY ALLEN W. BRICKHAUS

My interest in the Ambush 15 came in a talk with my friend Jim Pacourek. He, like many other beginners in CL stunt, was having a learning curve problem. Building a fully ribbed stunt trainer was time consuming, and a lack of good weather prompted few flying sessions. Crashes were more the norm than the exception. Pacourek's master guru, Jim Renkar, suggested putting together a small 1/2A design called the Ambush, a fully-sheeted stunter developed by Bill Netzeband for the Testor 8000 engine.

In Mr. Netzeband's words: "My first sketch and data sheet is dated 5/10/77. The concept was to create a 1/2A machine that was fully aerobatic, using the reed valve 1/2A engine power level. The structure was laid out to be bulletproof, and it was designed to bounce when accidentally landed in the grass. Since it was to be a rank beginner's project, I elected to hold material costs to a mini-

mum. Thus, the parts all came out of two sheets of 1/8x3x36 balsa. The assembly was designed to be pinned flat on a work surface to align the critical surfaces. The controls were all commercially available, at the time.

"The CG location has been verified by calculation and experiment. I had zeroed in on the ideal stability coefficients, and had the math to adjust the controls to handle the excessive pitching moment created by a flat plate wing at angles of attack. The weights were fairly easy to accomplish (no Concours finishes allowed). The layout also permitted a dedicated individual to mass produce parts for a group of kids. Bill Tucker did this for 10 kids in his club, and they produced 100 percent flyable planes! The finished planes met every design criteria, and were able to do respectable squares on 35-foot cloth or wire lines. On 42-foot, .008-inch diameter cables,



they flew up a storm.

"Once the plane and plans were firmed up, Testor offered the plans at cost, to promote the 8000 engine. I believe we sent out more than 300 plans."

The JP/JR consortium decided to scale up the Ambush for an O.S. Max .15FP-S. The final wingspan of 37 inches was determined. This gave them a multiplier of 154 percent for the rest of the model. Construction was still all sheet balsa. Two spars of 1/8-inch plywood were inserted to minimize dihedral flexing during maneuvers. With this span and the thin (1/4-inch) flat airfoil, some dihedral effect will be seen during attitude changes. This cannot be removed without severe weight penalties.

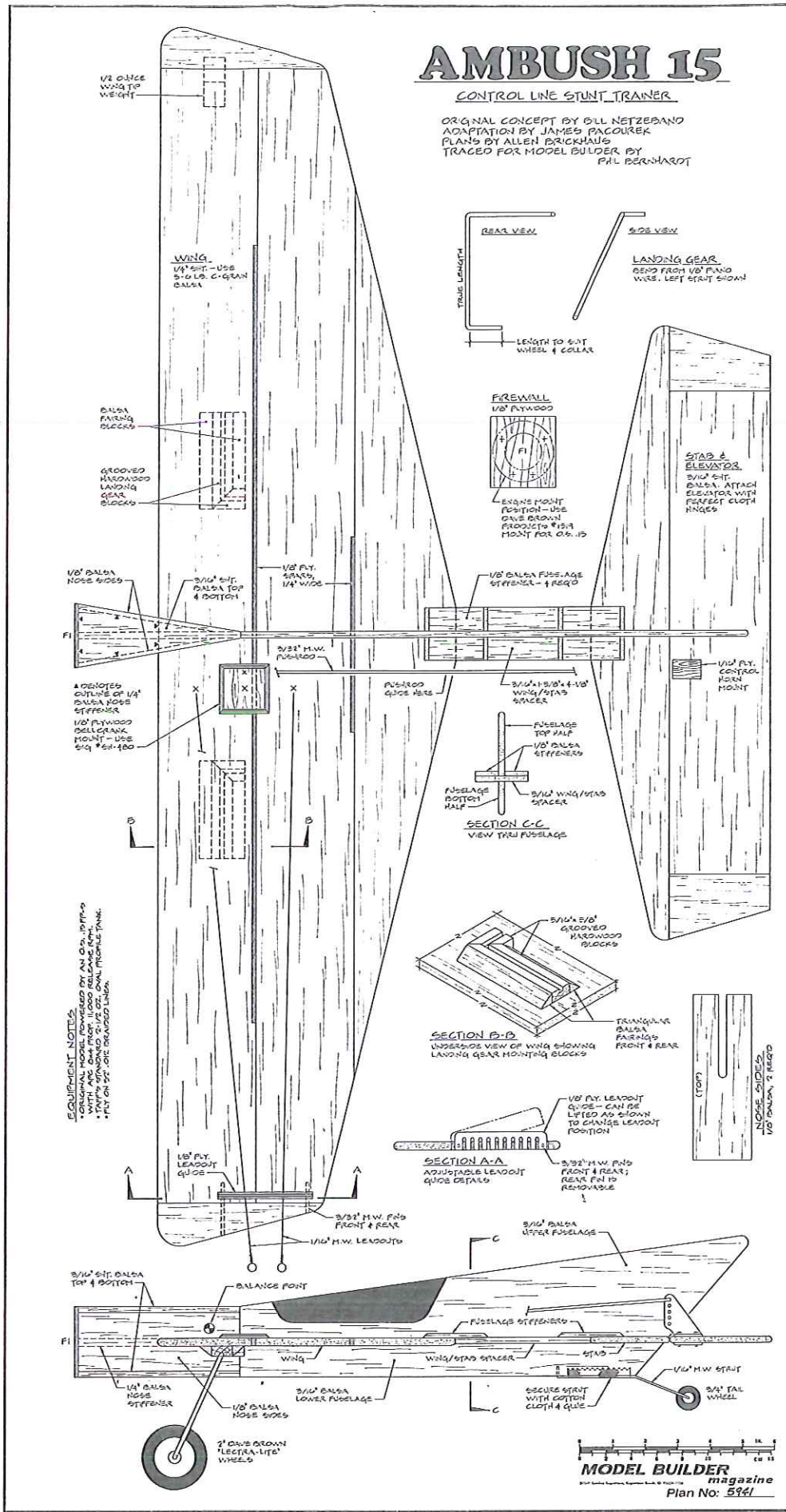
CONSTRUCTION

The Ambush's construction is of the utmost simplicity. Few words are needed to describe the actual procedure, although the upper and lower fuselage vertical pieces deem some attention. On a flat board, glue together the three wing sections and the two spars. Add the 1/4-inch balsa nose block stiffener to the leading edge. Once dry, turn the completed section upside down. Add the 3/16x1-5/8x4-1/8 balsa fuselage section and the stab part to the rear of the wing. Now glue the 3/16-inch balsa fuselage bottom to the lower side of the wing. When cured, the fuselage top can be glued to the upper portion of the wing. Add the 1/8x5/8x2 balsa fuselage stiffeners and you are ready to build the nose section.

Using an aliphatic resin type glue, glue the two 1/8-inch balsa nose pieces to the nose area. Add the nose top and bottom balsa pieces. Align and pin these parts together and allow to dry. Drill the firewall (F1) for your motor mount and install 4-40 blind mounting nuts to the backside. Glue F1 to the fuselage nose section with slow-drying epoxy. Wrap a piece of 1-inch wide fiberglass cloth and epoxy around the nose. Half of the cloth folds over the firewall and the rest covers the circumference of the balsa nose sides, top and bottom. The rest of the construction is simply looking at the plans and adding the bellcrank/horn mounts, wingtip weight, landing gear blocks and hinging the elevator to the stab.

The photo that shows Jim's motor/tank setup depicts a wedge-type metal tank inset in the outboard fuselage nose section. No tank location is shown on the plans. The tank you use might be a metal or plastic unit and a different size than Jim used. Cut a place in the outboard nose section to accommodate your particular fuel tank. Line the opening with 1/16 balsa and fuelproof it before final painting. If you decide to side-mount the engine, be sure to have some vertical adjustment space in the tank compartment.

The leadout guide is similar to that on the original 1/2A Ambush. I must compliment Mr. Netzeband for the cleverness of design of this simple item. The front piece of 3/32 wire is a pivot point for the leadout guide.





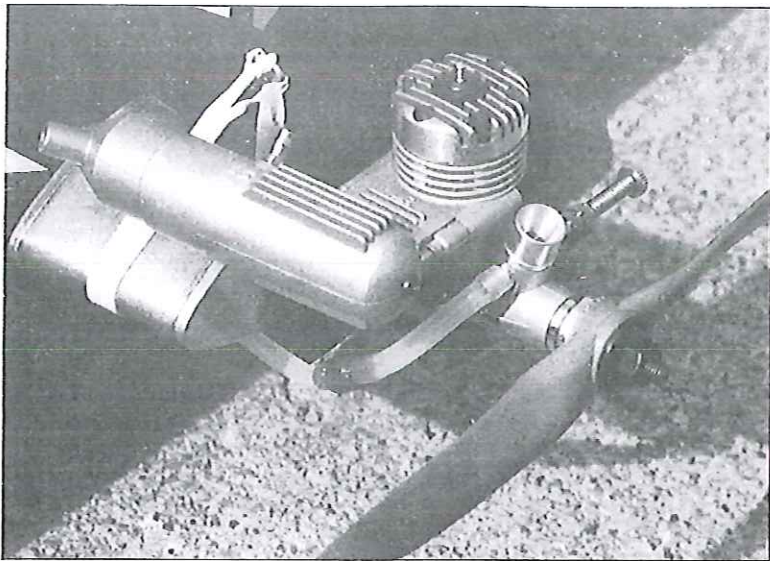
The author (left) and his buddy Jim Pacourek with two original 1/2A Ambushes and the bigger Ambush 15.

The rear 3/32 wire can be pulled out enough to allow the back of the guide to lift so that the leadout wires can be moved to the position needed, then the guide is lowered into place and locked in place with the rear wire. The leadouts are held in place by the top of the slots and the upper surface of the wing. Hook up all the controls, being sure that your controls are free moving and that neutral is centered on all pivot points.

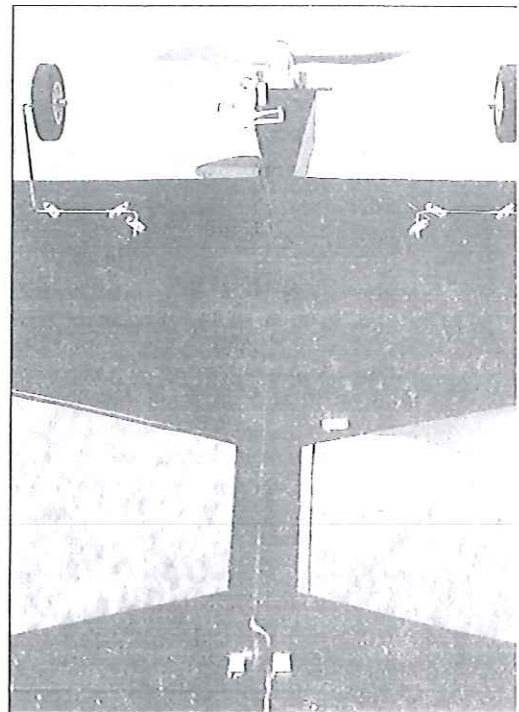
Remove the control system and apply as light a finish as you can. The original Ambush 15 was finished with Sig clear and colored dope. Very light tissue or silkspan can be put on during the early coats of dope to offer a smoother surface. Just remember Mr. Netzeband's admonition to keep the plane light and avoid a Concours-style finish. This is still a learning plane; the finish need only be fuelproof and somewhat colorful.

FLYING

The Ambush flies best at a 5-second lap time or slightly faster. It will do the entire pattern and offers ease of repair in case of pilot error. With CA glues, the plane can be back in the air within a few minutes of a crash—unless it's a straight-in, full-bore impact with concrete. It's best to learn to fly over grass and even higher weeds with the Ambush. It



Power for the Ambush 15 comes from an O.S. .15FP-S, turning an 8x4 APC prop and fed from a 2-1/2 ounce tank.

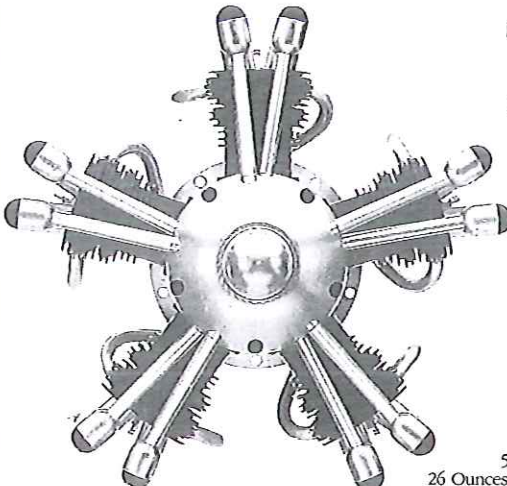


Underside view shows the hardwood landing gear mounting blocks glued to the underside of the wing. Each strut is secured with three nylon straps screwed to the blocks.

should last a long time for you and get you into more advanced trainers for better future flying.

Jim Pacourek has outlined his numbers for flying the Ambush; they are included on the plans. I do recommend writing Jim for further information on the Ambush 15. Jim's address is 173 E. Quincy, Riverside, IL 60546.

The cost outlay for this project is minimal. Wood needs are far less than most projects published (including my other articles) and flying costs are down due to the smaller motor, fuel and prop needs.



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Firing up for another flight is co-designer Jim Pacourek, with an able assist from Ron Woodman.

I sincerely hope you enjoy building the Ambush 15 and gain the confidence Jim has gotten from flying this version of Bill Netzeband's design. The Ambush 15 can lead to many future and more complicated designs or kits for you as you learn to fly the control line precision aerobatics pattern. *MB*