

Based on a simple one-design model and an inexpensive engine, this 1/2A

Combat event makes a perfect club contest.

It's also a great way for modelers who don't normally don't fly Control Line to get a taste of the action.

NVCL Dragonfly

■ Design by Ron McNally and Bob Dorn

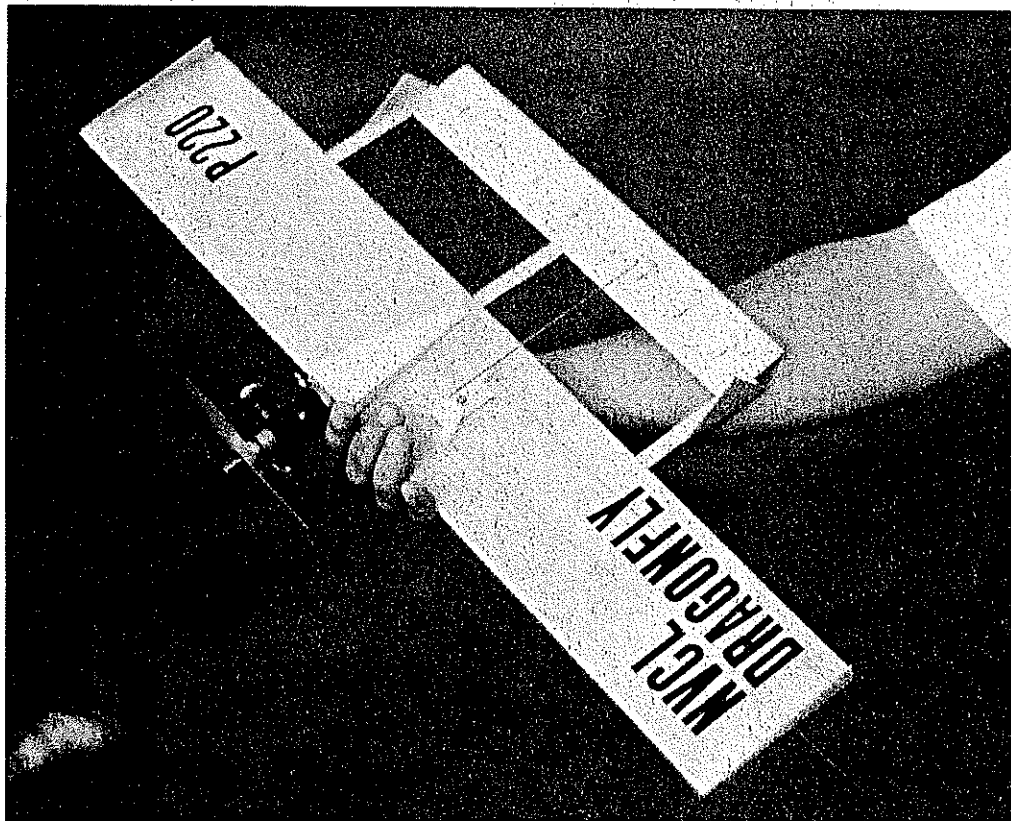
Text by John Hunton

IT ALL BEGAN with Bob Dorn's proposal for a reed-valve .049 "slab-wing thing" Combat contest. That was at a Northern Virginia Control Line Club meeting in December 1986. To bring Bob's idea home, we needed a standard design that would be inexpensive, easy to build, and durable—a model that would perform well and that could be built in batches.

Ron McNally took on the challenge and succeeded admirably. The Dragonfly design has been tested and perfected by Ron and Bob over the intervening years through many trials and club meets.

After having competed in several club contests with the Dragonfly, I can only say that this type of Combat flying is more fun than kids of any age should rightfully have. With the Cox Black Widow engine, the Dragonfly is a very docile model. It will fly anywhere on the sphere of Control Line action in any attitude that you ask of it. Not only that, it'll just hang out there without drifting into the center of the circle. That the design is ugly is actually, by that familiar paradox of modeling logic, a side benefit.

The one-design format in this type of 1/2A Combat competition shifts the emphasis away from the models, so that pilot skills and luck become the pivotal factors. The suspense is heightened, and anyone can win



The Dragonfly was designed to be easy to build and very sturdy. The tall booms and wing tip plates span across the full chord of the wing and serve to reinforce it. The Black Widow engine with spring starter is simple to operate. By having one design for club competition, close matches are typical, and anyone can be a winner. Best performance is on 35-ft. lines.

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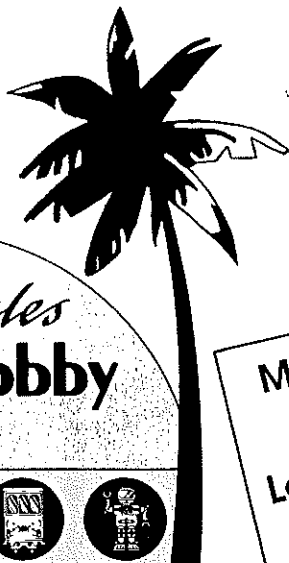


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over, using less backwards turns separately in each loop.

Flying. Wind in about 200 turns. Lock the prop with a pin in the rear of the nose block, and balance the model at the point shown on the plans, adding clay to the nose or tail as needed.

Select a calm day for test flying. If there is a wind, it should not be more than two or three miles per hour in order to properly trim the glide portion of the flight. Wind 200 turns in the motor and launch the model into the wind. Observe the glide. Trim the glide path by adjusting the tail surfaces.

Biplanes are not known for graceful, long, flat glides, but the descent should at least be flat. My CaBINair has the nicest glide of any biplane I have ever seen fly. When you are satisfied with the glide, launch with 300 turns to begin evaluating the powered portion of the flight. There is downthrust built into the model, but in case of a power stall, the amount of downthrust will need to be increased.

Trimming out a new model should be painless if you establish the glide first by moving the tail surfaces and then establish powered flight with thrust adjustments. If the powered flight requires changes in the stabilizer or rudder, you will need to go back and re-establish the glide.

Increase power in slow steps as you work on powered flights. These increases should not be more than 100 additional turns as compared to the last flight. If more than

this, the plane may not be ready for the higher power and could spiral into the ground with enough speed to severely damage your plane. Patience is the key word here. Never try more than one adjustment at a time. You took a lot of time to build the model, so take a little more to make it fly well. After proper flight trimming, planes like this are seldom damaged while flying.

My CaBINair is a great flier. It is very stable, and the glide is a very satisfying flat, gentle descent that adds nicely to the length of a flight.

The prototype's original flight pattern was left under power and right in the glide. I changed to a right power pattern to match the glide for two reasons: A right power pattern will gain more altitude, and with the power and glide patterns in the same direction, I don't have to walk as far on most flights to retrieve the model!

Once your model is flying well with the $\frac{1}{8}$ x 25-in. four-strand motor, you can work with a different rubber size and motor length depending on the final weight of your model and the size of your flying field. Experience the thrill of watching your CaBINair climb high with the sun shining through the tissue as it cruises over your head. It's a joy!

Dragonfly/Hunton

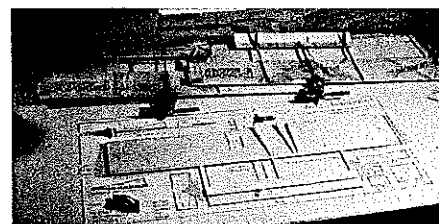
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parts and subassemblies smooth, breaking and rounding sharp edges. Parts can be pre-primed at this time with sealer or clear dope.

Attach the $\frac{1}{8}$ -in.-sq. hardwood front and back wing reinforcement strips to the main wing panel over wax paper on a flat building board. Use a pencil to draw accurate lines to locate the tail booms. Glue the booms into place on the wing, noting that the inboard wing is longer than the outboard panel. Attach the horizontal stabilizer to the three booms. Add the bellcrank mount, rudders, and wing tips (the tip with the holes goes on the left side, the holes positioned on top).

Glue the firewall fairings in place, using the solid member for the top. The two remaining pieces mount either side of the center tail boom on the bottom.

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A new Dragonfly just off the board and two well used but serviceable prototypes in the background. With cyanoacrylate and accelerator, repairs of most any kind can be made at a contest or even during a match. The author was involved in a match where both models got clobbered and had their engines knocked off. Both contestants had the engines back on and their models back in the air doing battle again all before the clock ran out on the match's five-minute time limit.

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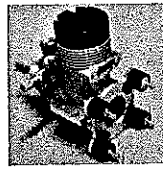
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Dragonfly/Hunton

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Engine preparation and mounting. The Cox Black Widow and Golden Bee engines both have stunt-type tanks which will run when inverted. Bolt your engine to the firewall with nuts to the rear. Dig out the balsa fairings to clear the nuts (sheet metal screws can be used also), then epoxy the engine mount in place.

After the epoxy has cured completely, remove the engine and prepare it as follows: Clean the engine thoroughly by immersing it in alcohol or other water-free solvent. Remove the fuel tank and backplate. The engine will be reassembled with the cylinder head to the outside of the circle, the tank vents in the up/down position (but toward the inside of the circle), and the backplate with the needle valve positioned in the same direction as the cylinder (toward the outside of the circle).

The only complication that this configuration presents is that the standard fuel line pickup will not be suitable. Use a piece of small silicon tubing to form a tight 'U' shape with the stock spring inside. A piece of fine copper wire holds the loop's shape. Cut the tubing so that one end will fit on the fuel feed nipple and the other end will lay on the inside surface of the tank as close as possible to the outside of the circle. Cut an angle on the pickup end of the tube. Check

that the small rubber gasket on the venturi is in place and healthy (the engine will not run without this gasket), then reassemble the engine.

Finishing and final assembly. Finish all parts of the model with fuel-proof dope (light) or polyurethane. The latter may be clear, in which case it is fairly light, or color (heavy).

Sew the elevator to the stabilizer with dental floss, and glue the knots.

Install a 1/2A bellcrank and control horn, then install the pushrod and lead-outs. Put two pennies in the outboard tip, and tape them into place. More pennies can be added later to improve line tension, if necessary.

When the finish is dry, reinstall the engine. Place a couple of washers under the in-board engine mount screws to create out-thrust. Be sure the cylinder is toward the outboard (right) side.

Balance the model to the point shown on the plan.

Flying. Northern Virginia Control Line Club rules require that the Dragonfly utilize .012-in.-thick braided lines at 35-ft. length. Use a control handle with a 2- to 2 1/2-in. spread (increasing the spread beyond that point will create oversensitivity).

For your initial flights be sure to hold neutral control upon launch (not full up). If you want your model to be less vulnerable to destruction, it's recommended that you fly it

over grass at all times. The higher the grass, the more likely you are to avert demolition.

See the AMA rule book for guidelines on how to set up a Combat match. Practice Combat maneuvers in solo flight and be prepared to tear the tail off your opponent.

CL Navy Carrier/Perry

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It has no moving surfaces except the elevator. It is equipped with an external line slider, and the bellcrank is mounted in the fuselage for easy access. The engine is an OS .46VF ABC. It is completely stock, just as it came from the box. I have done nothing to it but run it to break it in. The fuel system is a conventional suction system. The propeller was a Rev-Up 8 1/2 x 7 1/2, which was balanced but otherwise unmodified. Fuel was Sig 35%.

Carrier is like many other things in life—the last 10% in performance requires 90% of the effort and expense. If your desire is to compete effectively with minimum cost and frustration, simplicity is the key! By keeping equipment simple and reliable, practice time can be devoted to flying skills rather than trying to learn the characteristics of the equipment.

Sportsman Carrier: Lots of discussions have dealt with the issue of an entry-level Carrier event. Most have centered around .15 Carrier, Profile Carrier with various restrictions, or performance categories with existing rules. A consensus developed at the '88 Nats among all of the competitors that such an event should encourage

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