

PRODUCTS IN USE

■ By David Manley/Photos By Roy Inman

ACE R/C'S 1/2A

"GRASSHOPPER"

The Grasshopper, a pod-and-boom, foam-winged aerialist from Ace R/C, joins the other 1/2As in the Ace line-up as the company's slingshot to the butt of modeling boredom.

Until I acquired the Grasshopper, all of my flight experience came by way of pure and self-launched sailplanes. The first flight of the Grasshopper took place with me on the sticks for the first time as a pilot of an engine-powered plane. I made three successful flights in a row with nary a mishap. More about that later.

Designed by Art Bigelow, the Grasshopper originally appeared as the Cricket in a June 1990 RCM magazine construction article. The Ace design department made minor changes, added a landing gear (included in the kit) and bestowed upon it a name that most likely reflected the fields from which modelers would fly the craft.

If you handle transmitter sticks with the touch of an ironworker, you'll appreciate the rubber bands that hold the Grasshopper's major components (wings,



Low price, pop-apart design and near indestructibility make this foam-wing pod-and-boomer an excellent choice for an RC trainer or sport model.

landing gear, engine and tail feathers) in place. The fiberglass arrowshaft, cut to the required length, seems capable of withstanding all manner of brain-lock.

Ace recommends an .049 of the reed-valve gender. I chose the Cox Texaco engine for duration, power and quietude. The Texaco—a little jewel of typical Cox quality—drives a 7x3.5 prop with ample authority for the Grasshopper without the "scream" of its more powerful 1/2A brethren. I also latched onto a Tee Dee .049 in case I yearned for that scream.

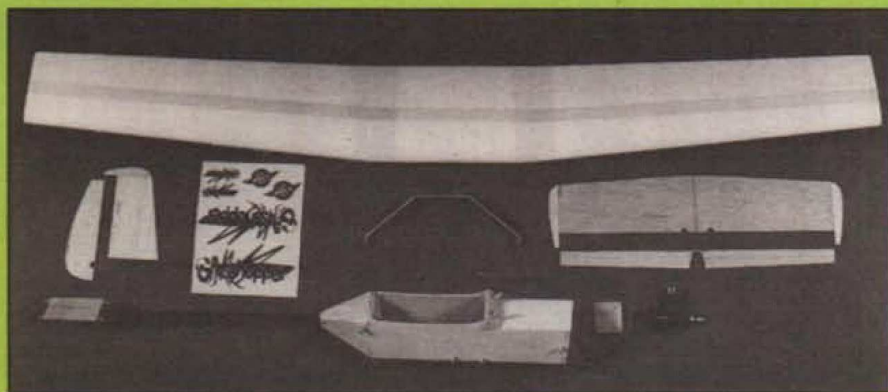
My Ace MicroPro and Pro 810 AM receiver provided glitch-free guidance. I store all my electricity in SR Batteries. Thanks to Larry Sribnick (Mr. SR), I've never had a battery failure since switching to his excellent products.

CONSTRUCTION

Assembling the Grasshopper begins with the fuselage. It takes only seconds to push out the 11 die-cut "tab-in-slot" pieces from the 1/8 lite-ply sheet. The pod can then be framed and taped together in

minutes. The right side of the fuselage (looking from the top and behind) is 1/8-inch shorter than the left, the bottom shorter than the top. Thus, following the directions renders the correct amount of right and down thrust.

Medium CA and accelerator can be used to seal the fuselage in seconds. Otherwise, it must be untaped and glue (white or carpenter's) applied before reassembling. Be certain the short side is on the Grasshopper's right, lest your first flight be too brief, too exciting and signal



As you can see, there isn't much to putting one of these little hummers together. Basic construction can be finished in a couple of evenings. Note the lite-ply fuselage pod bristling with dowels; the Grasshopper features "pop-apart" construction, meaning that the wing, tail, landing gear and engine are all held on with rubber bands so that they can pop off in a hard landing or crash, preventing damage or at least keeping it to a minimum.

your entry into model railroading.

The arrowshaft boom slips into its pre-cut and pre-drilled block with nary a hassle. Thin CA wicked into the block seals the boom. The rudder and elevator pushrods, which appear to be 18 inches of Ace's nylon Flex Throttle tubing, fit perfectly inside the arrowshaft. Depending on variances in the arrowshaft manufacturing, the outer pushrod tubes may need a bit of soapy water to ease them into the shaft. Ace also suggests a few drops of thin CA (but not in the nylon tubes!) to lock the rods in place. I need the soapy water applied on a daily basis, the pushrods did not. As the tubes seemed quite secure, I skipped the CA treatment.

The instructions say to make the tubes flush with the tail end of the shaft and leave about a half-inch of tubing where they enter the fuselage. That worked fine, no visible flex at either end. However, on my second 'Hopper (yes, I had to try another version), I ran the tubes out to give more support, but not so long as to interfere with tailplane movement.

Not a whole lot of work goes into assembling the tail feathers. The 1/8 sheet

balsa needed a tad of sanding before covering and hinging. The plans suggest "X" hinging with film covering or the nearly forgotten method of "sewing" them together with carpet thread in a Figure 8 pattern.

The engine mounts to the firewall with four self-tapping screws. Four more screws go into the firewall to serve as hooks for the rubber bands.

The tail surfaces receive the same rubber band treatment. A 1/8 lite-ply stab plate goes on the boom, and two 1/8-inch dowels, glued to the stab plate, hold the surfaces in place. Ace even supplies the No. 10 rubber bands!

I covered the fuselage and tail surfaces with red and white MonoKote and added a bit of 1/8-inch wide white striping for accent.

The Grasshopper, no doubt, would have been better served with a lighter, low-temperature film covering. But I had a cash shortage and a MonoKote surplus. While it's a bit heavier, MonoKote does add a measure of strength. In addition, the craft's



This ground-level close-up clearly shows the Grasshopper's rubber-band-together assembly. Dave used MonoKote on the fuselage pod and tail surfaces. Pod could also be painted with K&B Super Pox for a durable, totally fuelproof finish.

THE 1/2A "GRASSHOPPER" FROM ACE R/C

WINGSPAN	43-1/2 in.
WING AREA	214 sq. in.
FLYING WEIGHT	20 oz.
	(25 oz. as tested).
WING LOADING	16.8 oz./sq. ft.
	as tested.
ENGINE	Reed-valve .049.
RADIO	Two channels
	(rudder/elevator).
CONSTRUCTION ..	Molded foam wings,
	lite-ply fuselage pod,
	fiberglass tailboom,
	sheet balsa tail surfaces.
SUGGESTED RETAIL	\$29.95.

Produced by Ace R/C, Inc.,
116 W. 19th St., Higginsville, MO 64037-0472;
(816) 584-7121.

box-like shape means no compound curves to worry about.

Those wonderful Grasshopper foam wings made my day. They can be painted, covered with low-temperature film, coated with polyurethane varnish, or left in the nude. Builders can also trim off some of the trailing edge and glue on 1/4x3/4-inch balsa stock. With a bit of work, those trailing edges can be sharpened to render better performance—a truism for nearly all flying surfaces.

The Grasshopper's wing is a combination of panels from Ace's constant-chord and tapered foam wings. A short section of constant chord panel goes between the two tapered tips. I used five-minute epoxy to join the panels at the specified angles. When everything dried, I applied a continuous strip of 1/2-inch wide fiberglass-reinforced strapping tape that runs from tip to tip, top and bottom. *Don't* omit the tape—it's about all that separates you from a foam snowstorm, a lite-ply box of radio parts and a fiberglass boom with which to beat yourself on the head.

After sticking on the decals, I painted the wing with a thin coat of clear polyurethane. The varnish, which protects the wing quite well, causes a slight discoloration of the foam . . . as well as fingers that get in the way. But a caramel-winged Grasshopper won't destroy one's life and it does save lots of time.

For the airborne system I used two old Ace Bantam servos and an Ace Pro 810 receiver. It took a 500-mAH pack and 2 ounces of lead to get the plane's nose slightly down and my concern substantially up . . . prepositionally speaking. At 25 ounces, the Grasshopper tipped the scales

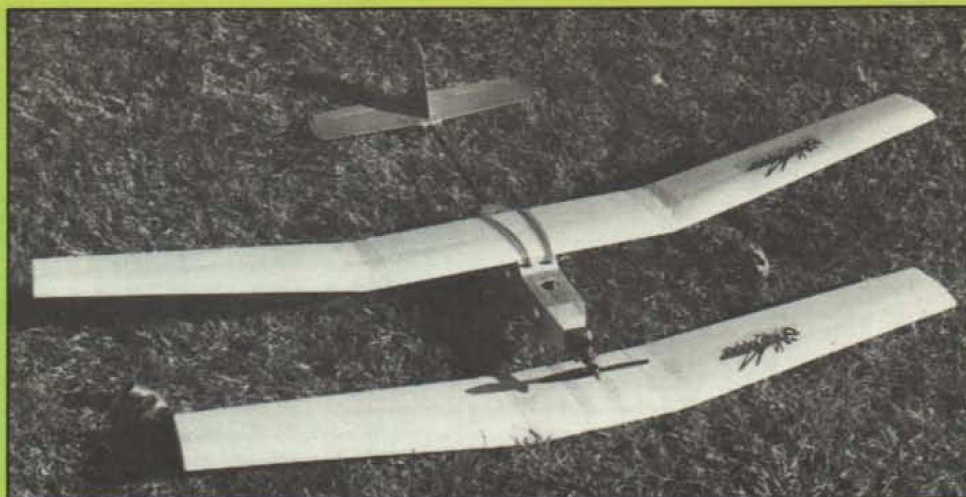
5 ounces overweight. The extra fat would do nothing to help this Little Caesar's flight performance.

FLYING

As we came to praise Caesar, not to bury him, photographer Roy Inman generated three hand-launches of cannonshot quality before obtaining a weed-splitting, dust-swirling, gear-dragging, 30-foot-in-ground-effect sojourn to a reasonable altitude. (Cox thoughtfully provides well-written, easy-to-read, enlightening instructions that clearly indicate the need for a break-in period. Fortunately for me, Cox does not require proof of average intelligence to purchase its high-quality products.) At altitude, the Grasshopper became a docile, predictable flying machine. Despite the extra weight, the plane climbed out nicely.

The first steep turns, carefully instigated, revealed absolutely no tendency to tip stall. The plane goes where you want it without protest. Sharp turns at low speed resulted in some loss of altitude (as is the case with nearly all aircraft), but nothing dramatic.

I didn't try any fancy moves—loops, spins, rolls, etc. Roy needed close-in passes to take the photos for this review. Also, I couldn't squeeze more than about 3 minutes of running time out of the little Texaco. The wonderful person at Cox's toll-free courtesy line offered several suggestions which I will try later.



Dave built a second Grasshopper and modified it for a direct drive Astro 035 electric system. Modifications included drilling 3/4-inch lightening holes in the fuselage pod, installing a tubular plywood motor mount, and stretching the span (to better carry the extra weight) by inserting a full panel from an Ace constant chord foam wing. The project was abandoned for the time being because, although Dave managed to shoehorn everything into that small pod, some of the equipment was just too vulnerable to damage. However, not wanting to waste a perfectly good long-winged Grasshopper, Dave installed a Cox Tee Dee .049 on a tank mount and ended up with a fast-climbing motorglider. Strapping on the stock wing delivers tight loops, rapid rolls and scary spins, says Dave.

Three attempts at R.O.G. generated 160 over 95 blood pressure, 95 beats per minute and zero air time. With only a fixed tailskid, the 'Hopper just wants to groundloop. (In fairness, Ace only recommends hand launches.) The wings must be level and the nose of the plane aimed at a spot about 100 in front of the launching point.

With many Grasshopper flights now in

my logbook, my only conclusion is that Ace has succeeded in its goal to produce a fun, friendly 1/2A craft with trainer-like qualities. At about \$30 retail (several dollars less at some discount houses and retail shops), the Grasshopper's excellent value equals Ace's goal to provide an inexpensive training tool and incredibly fun sport flying. **MB**