

BOGUS BAKA &

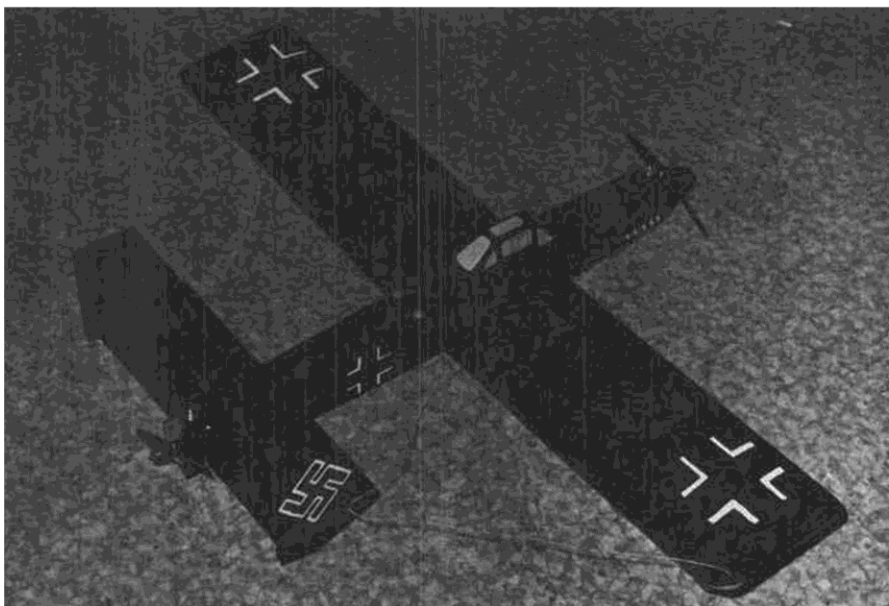
By KEN CASHION . . . A couple of World War II pseudo-scale 1/2A push-pull twins for 2-channel radio control. Ace foam wings make the construction quick and easy. That twin sound is something else!!

• Our flying group, the Picayune Aircraft Competition Team, is primarily interested in sailplanes. During the Mississippi winters, however, we do a lot of power flying, so this year I decided to build something really unusual . . . to maintain my reputation. After drawing all over two desk pads, I ended up with a design using two .049's and an Ace foam wing. I didn't want to have any power trim problems, so I put the

engines in line. I wanted the wing shoulder-mounted or higher because I hate chucking low wing aircraft almost as much as chucking bipes. Our field does not always allow for small-wheel takeoffs and, in this case, I did not want all the drag of wheels. Wheels are just an earth-bound convenience anyway.

Since I would not be using rudder control, I would be able to easily use twin-fins and gain more access

HEINEKIN HEINKEL



to the aft engine. The twin-fins also provided a lot of fin area for good yaw stability. After the outline drawings were completed, it looked . . . well . . . it looked German, and since my good flying friend from Britain is always telling me that any aircraft with crosses and swastikas could not possibly fly, I knew that I had found the alleged underground design of Professor Doktor Ernst Heinkel: the infamous HEINEKIN HEINKEL! The top-secret HEINEKIN HEINKEL was a combined high-altitude fighter and low-altitude anti-tank bomber, a real wall-buster. The fact that it appears only now, after 33 years, shows how secret it was!

As for the origin of the BOGUS BAKA, the BAKA has always been one of my favorite aircraft. It was small, specialized, both austere and technically advanced, and flown by the ultimate in courageous, dedicated patriots. Also, the post-flight procedures were not too complicated.

These are not beginner's models, but anyone who has built and flown fast 1/2A's will have no problems with them. These are sport planes designed to look and sound differently from other models, provide approximately two minutes of very fast flying, and then finish the rest of the flight with reasonably fast, stable performance. Whichever is built (if you only build one), it should be built with the intent of providing some fun on the flying field or spicing up fun-flies. Fly it a few weekends and then pull the RC gear and put the plane up for a while. There is no big investment. In a few weeks, you'll be surprised at what a pitiful excuse you will use to get it back out on the field. It is a plane that everyone will always enjoy seeing arrive at the field.

The engine selection is really a question of how easy you want to make your pre-flight activities. Using an internal tank and a TD .049 is an obvious choice for the front. Anything else and you'd have the trouble of adding fuel immediately before launch. A Black Widow .049 works well in the rear. This is what mine had, and with two black Cox 6-3's and Cox "Blue Label" fuel, it did just fine. There are some small pressure pumps on the market, and perhaps it might be practical to have a TD on the internal tank in the front with a pump feeding a rear TD from the same forward fuel tank. With this configuration, a spruce spar would *have* to be added to the *top* of the wing. The Black Widow has about 85% of the static thrust of a TD .049, but with the Black Widow operating as a pusher, the difference between the TD and Black Widow decreases.

On just Black Widow power, the aircraft will still be very maneuverable, but do not stay inverted very long or you will flame out.

There were no bad surprises during initial flight checkout. On one occasion, the clunk line came off the internal tank and, not knowing it, I launched the plane. In about one minute I heard an engine quit and just assumed that the Black Widow had quite prematurely. I did a couple of rolls, flipped up on one wing and started a I'm-agonna-straft-the-field dive, and as I came by, saw that it was the front, not the back prop that was stopped. That demonstrated good single-engine performance. On another day, I lost radio link for 15 to 20 seconds and the plane proceeded to climb and circle "free-flight" until the Radio Gods returned my control. That demonstrated good stability . . . among other things.

If you don't care for the looks of the HEINEKIN HEINKEL or the BOGUS BAKA, then use the BAKA fuselage, no canopy, the HEINKEL fins, and either wing. Paint it day-glow orange, put USAF markings on it, and now you have a drone. But don't make it into a cruise missile . . . I have that one on the drawing board now and I can't afford the competition.

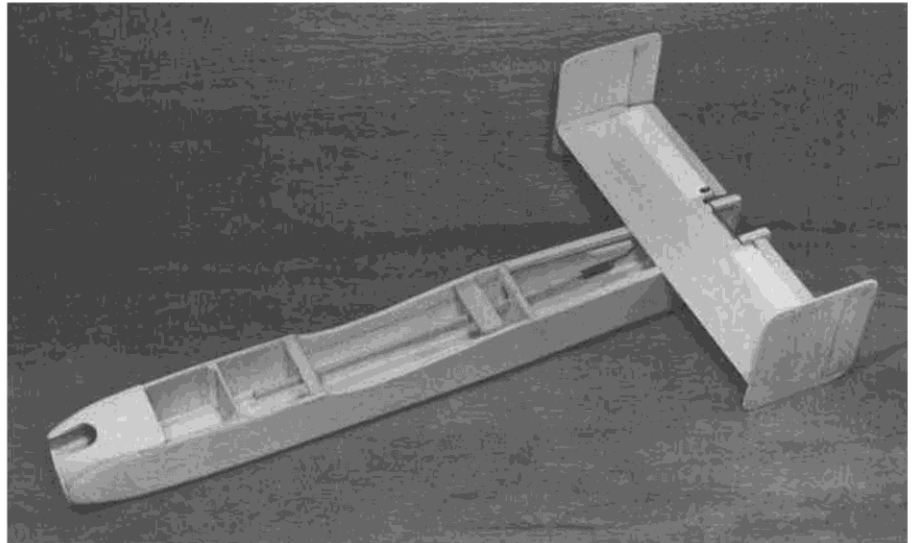
CONSTRUCTION

1. Cut out the fuselage bottom, firewalls and formers. Mark firewalls for engine location (If blind nuts are used in the firewall to secure the engine mounts, then 5/16 or 1/8 inch ply can be used for firewalls). Add 1/8 inch to the length of each end of the fuselage and cut out sides. The extra 1/8 inch permits the sides to follow the curvature of the fuselage bottom. Add the square or triangular stock to fuselage bottom and mount firewalls and formers. No offset is needed in the firewalls.

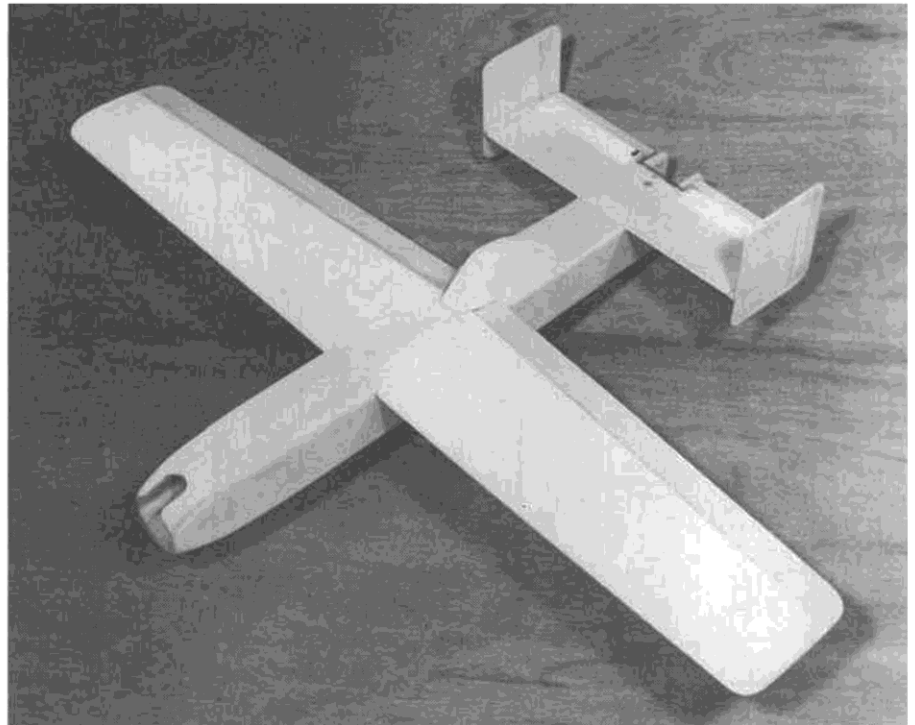
2. Add sides to fuselage bottom and add square stock on top, inside of fuselage sides. Add doublers and any other bracing shown on plans. Add hardwood mounting plates and start building up nose area to allow for the required shaping. Be sure to put a "goop" drain hole in the bottom of the front engine compartment (Sailplanes are not this messy!).

Temporarily install top nose block. Shape nose, fuselage bottom, and sand. Make bevel cut in top nose block to create fuel tank access hatch.

3. Cut out stab, fins and elevators from firm 1/8 inch balsa. Bevel leading edge of elevator for Monokote hinges. Monokote provides for a much more rigid horizontal tail. I do not recommend the use of a pinned hinge in this area because the wood is thin and the horizontal tail on this



The above "step photos" illustrate the simple construction of both aircraft. In bottom photo, the elevator pushrod and linkage wire are in place.



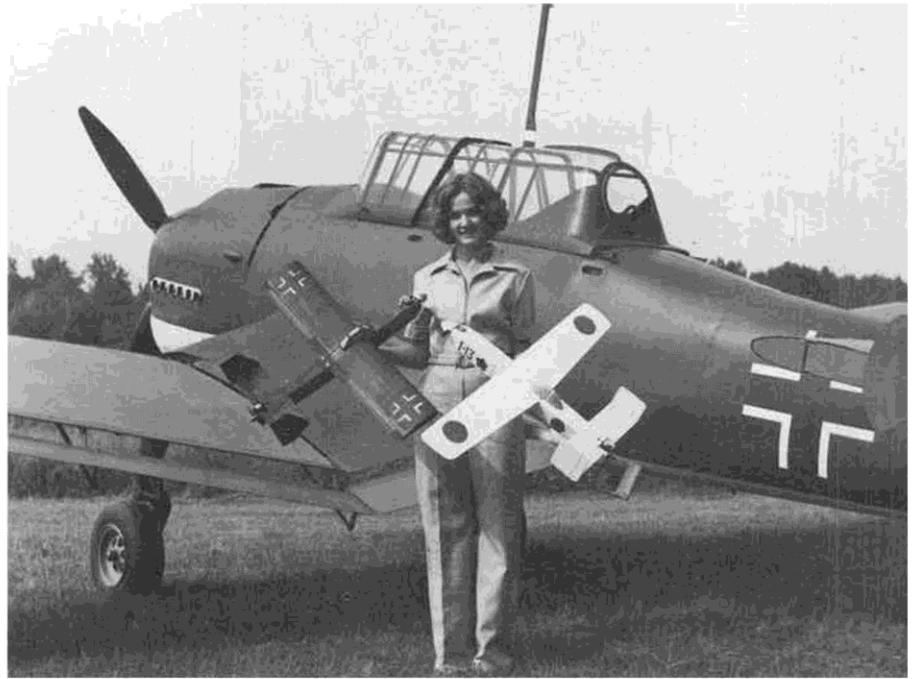
With wing in place for "trial fit" on the "Bogus Baka", the moments look a bit out of place. Don't worry, they work fine. Ship will fly on either engine, as well as both.

aircraft configuration can be exposed to some strange vibration and air loads. Shape other edges as customary.

4. Add the elevator control horns. I used Rocket City mini-control horns and clevises (clevis ?). Add the dual wire pushrods and epoxy wire to a single 1/4 inch square pushrod. If you think that a dual pushrod arrangement is too much trouble and prefer a single one, a wire parallel to the stab can couple the elevators. However, do keep track of where you want your servos and their direction of rotation, etc. Install elevator pushrod(s) and mount stab to fuselage. With epoxy, fuel-proof the engine compartments, as well as the fuel tank compartment, if you have sloppy habits on the field (as I do).

5. Now is the time to build the wing. Cut the trailing edge from the Ace foam wings so that there is a good surface interface between wing and rather firm trailing edge stock. Epoxy trailing edge to wings and shape wing tips. Cut and shape wing roots for proper dihedral, as per instructions on these plans and those with the ACE wings. Lay wings on fuselage wing saddle and mark fuselage/wing interface on wing to determine aileron servo location. Cut aileron servo recess (a little under-size) in wing. Two-sided sticky tape will help secure servo in wing. Don't leave the servo mounted sloppily.

This plane will pull a few G's. The servo is on the outside of the turns and the flexing wings will be "opening" the servo recess. Cut ailerons from the wings, bevel aileron leading edges as you did the elevator, and attach ailerons to wings with Monokote. There are many ways of putting aileron mechanics in a wing, but the one shown on the plans is my preference for sport planes.



Frances Pigott, with both the HEINEKIN HEINKEL and the BOGUS BAKA, posed in front of Louis Langhurst's 7/10 scale JU-87B.

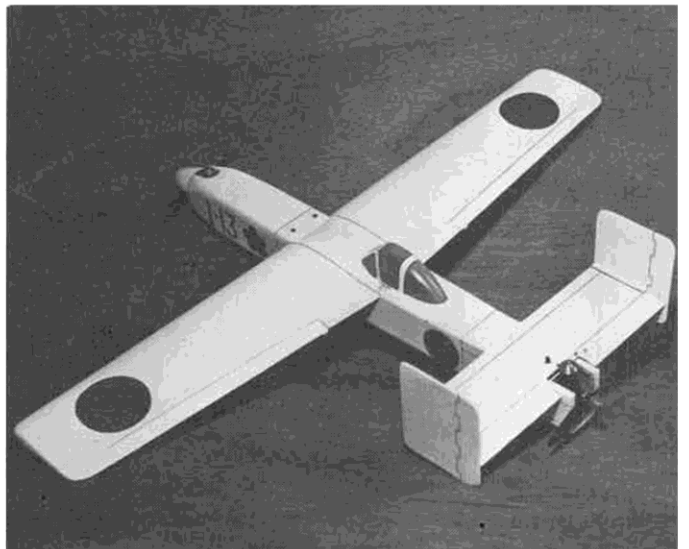
6. After the aileron mechanics are installed, lay wing on fuselage saddle again and trim saddle for proper wing/fuselage/stab alignment. Drill through the balsa trailing edge and tap the rear wing mounting plate and tap the mounting plate for the 1/4 x 20 nylon screws. Give the holes in the trailing edge and mounting plate a good shot of "Hot Stuff", or equivalent, to convert the area around the holes to concrete. Don't get "Hot Stuff" on the foam or the foam will convert to air. Re-tap the 1/4 x 20 hole very carefully after the "Hot Stuff" has cured. Make sure that the wing and mounting plate do not touch until all the "Hot Stuff" is cured or you will have no use for the nylon screws. Mount wing to fuselage with the nylon screws and

add, shape, and sand the rear, top fuselage sheeting. Shape the front hatch/wing interface so the hatch applies firm pressure to the wing. The front hatch is secured to the front mounting plate with 8 x 3/4 inch sheet metal screws. Rather large washers of 1/32 or 1/16 inch plywood may be used under these screws. Again, "Hot Stuff" can add tremendous strength to these areas where threads are used. Be sure that the hatch is in intimate contact with the forward bevel cut when fitting the hatch to wing. Shape, sand, and attach canopy. This would be the time to consider protecting the fuselage from skidding on your flying field. Some of the choices are celastic, glass, resins, strips of

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The author-designer peaks up the TD .049. Then he'll turn it around and crank up the Black Widow. Roy Welch stands by with xmitter.



Plenty of access to the Black Widow rear engine. Note needle valve protruding through stab. Remember that prop when launching!!

plywood, a partially enclosed wheel, wire, etc. In my case, and knowing our field, I used nothing. I just dab on some new paint every once in a while.

7. Do final sanding and temporarily attach engines and tank. Lay the radio gear in the fuselage, and by the push-and-shove method, determine the gear location which will permit proper balance without adding ballast. Remember that the finish is all that's left to add, but there is a lot more area behind the CG than in front of it, so leave it a little nose heavy for the moment. No pun intended. (Beat ya, WCN!) Permanently install servos, and if the mini-control horn and clevises are used, you will need to put a clevis at your servo and not just a "Z" bend (or "L"). The safe adjustment range on the mini-clevis is just that, mini, so a little more adjustment range is desired. You will have to do something with that long wire that dangles out of the receiver. You can't let it trail behind the fuselage unless you want it shortened. I put mine to the outside of the fin.

8. Foam wings without spars must have some longitudinal rigidity added or your dihedral will increase very suddenly in the air and not come out. Fiberglass-reinforced strapping tape is required. (*Did you happen to mention that it goes on the bottom surface? wcn*) But you don't just plop it on. Make sure that all the foam dust has been wiped off and bend some of the dihedral out of the wing when applying the tape. The proper dihedral will return and place the tape under tension. If the tape is put on with the wing "relaxed," the wing will still flex until the top wing surface compresses excessively. The "play" comes from slippage at the adhesive interface and flexing within the surface beads, to which the tape is attached. Put a strip (the wider the better) from three inches from the tip, right past the front edge of the aileron servo, to three inches from the other tip. A similar strip can be applied behind the servo. I use 1 inch wide tape, but 3/4 inch would be OK. If you only have 1/2 inch wide tape, put two strips edge-to-edge where I have one. Some No. 200 sandpaper will take the wax and sheen off the tape so paint will adhere to these surfaces.

9. Finish. On sport planes, particularly those with foam wings, I always use artists' acrylic paint from the local discount store. It comes in a tube, in many colors, mixes and covers well, thins with water, dries quickly, is oil proof, and has a flat finish. You can be as "cute" as you want with acrylics. It takes India Ink so well that I can't resist adding

hinge lines, inspection doors, rivets, slogans, etc. The ink is put on with the usual drafting equipment. If you want a gloss or lustre finish on the model, you can mist Sears Polyurethane on it. Other sprays may work just as well, but test on scrap if you are not sure. My HEINKEL is flat black on top and side surfaces, grungey grey on bottom surfaces, with octane and exhaust stains added by what is known as dry brush technique. The canopy is green. The BAKA is white, with red meatballs and cherry blossoms. Canopy is pale blue. India Ink division lines on both models.

10. Flying. I like to have plenty of control on final approaches, so the controls have turned out a little sensitive when both engines are running. With just one engine running, there shouldn't be any concern about over controlling. I fire up the front engine first and still have plenty of fuel in the tank when the rear engine starts. To launch, just give it a hard chuck, wings level, and make sure that your wrist does not snap any yaw moment into it at the release. Also, give it a slightly upward throw to let it know what you have in mind and to give you a little time to get your hand on the stick. Improper hand launches have damaged a lot of aircraft over the years, and since the hand is quicker than the eye, I prefer to chuck my own. I *know* what kind of launch I'm getting.

With both engines making their special sound . . . after you have rapidly climbed to 300 feet altitude, and started that first wing-over to come screaming down to buzz the field, don't forget to yell, "ACHTUNG!!" . . . or "BANZAI!!" whichever the case may be (But, if it is "Banzai", remember, *you* are supposed to pull out.)

My address is Ken Cashion, 235 Tennyson Cove, Picayune, MS 39466 if you have any questions or comments . . . And one last suggestion, make your new model a sailplane . . . you'll enjoy the change of pace. ●