

HONKER



DESIGN BY DAVE THORNBURG

TEXT BY DON DEWEY

What is a Honker?

Specifically defined, a Honker is a 36" span, .049 powered aircraft with 250 square inches of wing area that can be built in a single evening. Weighing 15 to 22 ounces, the Honker is designed for rough field flying and can be as docile or as wild as you want it to be depending upon the configuration you choose to build.

Designed by Dave Thornburg of Albuquerque, New Mexico, so many prototypes of this aircraft have been built, including several here at RCM, that we have actually lost count. They've been flown on everything from the mildest .049 up through hot T.D. .051's and even one version with a .049 and floats! The purpose of the Honker was to come up with an extremely fast building, simple design that would be readily adaptable for rough field flying, that could serve as a docile and expendable trainer, and also as a wild machine that could perform some rather exotic and frantic maneuvers. We'll discuss just how these two extremes are accomplished in the flying section of this article.

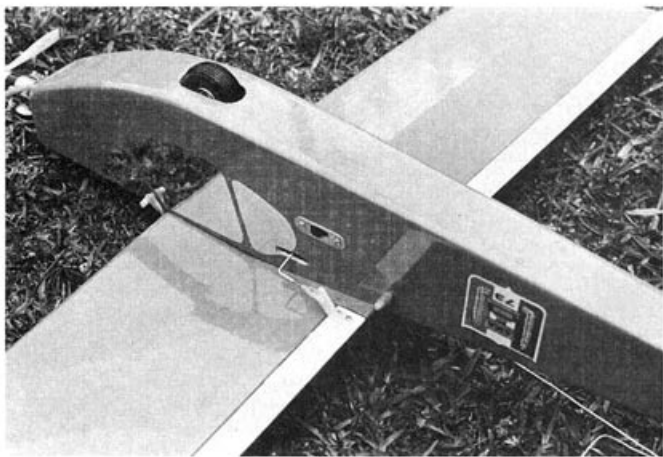
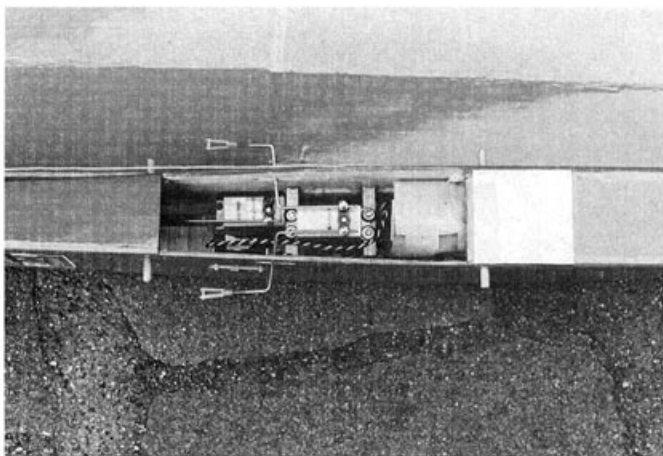
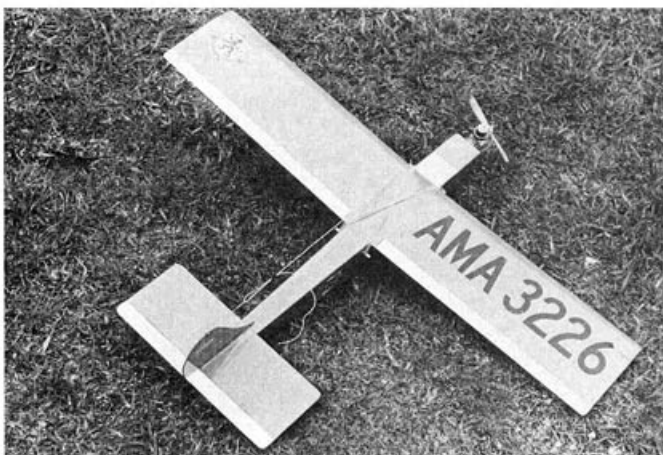
CONSTRUCTION

FUSELAGE:

Begin the fuselage construction by cutting two sides from 1/8" x 4" x 36" balsa. The right hand side is slightly shorter than the left in order to provide the necessary right thrust. Cut the two plywood doublers from 1/16" plywood and grab a handful of 3/16" square balsa (soft). Mark the position of the plywood doubler on each fuselage side and pin down to your work table over a piece of Saran Wrap. Glue the two doublers in place using 5 minute epoxy. Glue the 3/16" square top rear longerons in place and then wet the forward section of the bottom longerons and pin and glue them in place with 5 minute epoxy.

While the basic sides are drying, cut the forward nose deck from a piece of 1/4" x 2" x 5-1/8" balsa, cutting the angle into the forward part of it to automatically align the nose for the proper right thrust. When you have

The aileron and elevator version of the Honker. Heath radio used in RCM's prototype built by Dick Kidd. Note aileron linkage. Rolls faster than you can blink an eye.





The more docile rudder and elevator version of the Honker. Built by Don Dewey, this RCM prototype utilizes a Cannon radio and Golden Bee .049.

shaped the $\frac{1}{4}$ " sheet nose deck, glue a $\frac{3}{16}$ " square longeron to the bottom side of each. While these assemblies are drying, cut the firewall from $\frac{1}{8}$ " plywood, the top rear sheeting from a single piece of $\frac{3}{32}$ " sheet balsa (grain lengthwise) and the forward bottom sheeting from a 8" length of $\frac{1}{16}$ " plywood $2\frac{1}{2}$ " wide. Also prepare enough cross grain pieces of $\frac{3}{32}$ " balsa to cover the bottom of the fuselage using the top view of the plans as a guide. Stack these in a pile and set them aside, decide what engine you are going to use, and drill the firewall for the engine mount, installing blind nuts on the back side of the firewall to accommodate the motor mounting bolts.

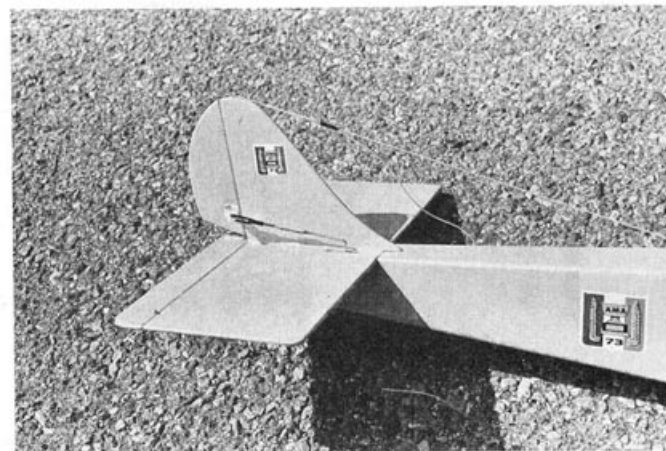
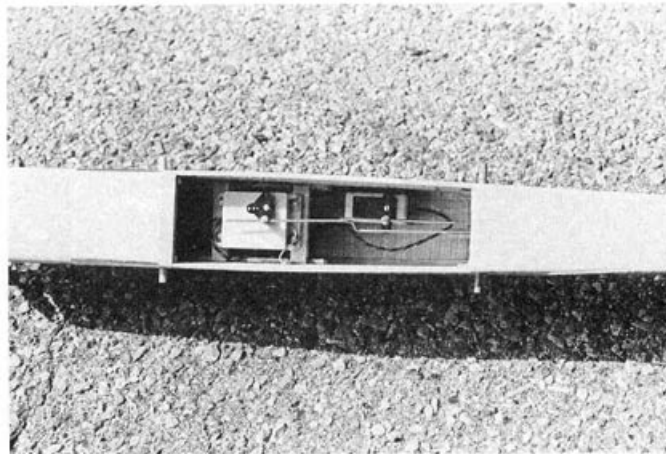
Join the fuselage sides with the pre-assembled nose deck, remembering that the right side is $\frac{1}{8}$ " shorter for the necessary right thrust. Epoxy the firewall in place using 5 minute epoxy. Next, add the $\frac{1}{16}$ " plywood bottom front sheeting and allow this assembly to dry.

Next, add the rear top turtledeck which should have been carefully cut to the shape shown on the top view of the plans in order to automatically align the fuselage. Finally, add the $\frac{3}{32}$ " balsa cross grain bottom sheeting which you previously cut to rough shape and the fuselage is completed ready for sanding. When all is dry, sand the fuselage and round the corners as desired.

WING:

The wing is constructed of a single 3' length of Sig four inch tapered stock (since carving your own is no fun at all) and a 3' length of $\frac{3}{8}$ " thick by 3" wide balsa leading edge. The first step is to sand the thick edge of the Sig tapered stock to a 6 degree angle with the sanding block by the trial-and-error method, or set your jointer to 6 degrees and shave it off. Sand the edges of both the $\frac{3}{8}$ " x 3" leading edge and the 4" wide piece of Sig trailing edge stock to a good fit since balsa is usually crooked. Pin the $\frac{3}{8}$ " thick leading edge to the bench top using a strip of Saran Wrap under-

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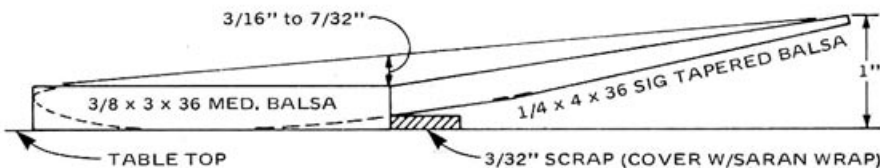




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neath to avoid sticking it to your workbench. Now, lay a scrap 36" piece of $3/32$ " balsa against it as shown in the sketch. Glue the tapered Sig stock in place with Titebond and block up the trailing edge exactly 1".



When completed you will have an undercambered straight wing 36" long by 7" wide. Finally, plane the airfoil to the shape shown on the plans, being sure to smooth down the hump on the top of the tapered stock 1" back from the joint.

When the wing has been sanded to your satisfaction, measure down 18" from one wingtip and draw a cut line across the wing at the center section. Cut the wing in half with your X-Acto

knife and pin the tip of each panel up to the amount of dihedral you intend to use. If you are planning to fly your Honker on rudder and elevator block each panel up 2". If you plan to use ailerons, block each panel up 1-1/8". Place the center section of each panel at the edge of your workbench and sand in the proper dihedral angle. After the roots have been beveled for the desired dihedral, join the wings with epoxy glue. It is not necessary to wrap the center section with anything --- out of the many prototypes built, and with all the rough flying they've seen, not one has ever come apart at the center section. When the joint is dry, your wing is completed.

EMPENNAGE:

The vertical and horizontal stabilizers, elevator, and rudder are all cut from $1/8$ " sheet balsa. If you plan to Solarfilm or MonoKote your Honker, we would suggest cutting $3/8$ " or $1/2$ " off of each stabilizer tip and gluing in a $3/8$ " or $1/2$ " x 4" strip of balsa as a stabilizer tip. This will act as a stiffener and prevent your stabilizer from warping when it is covered with one of the polyester covering materials.

Glue the vertical fin to the stabili-

zer checking with a triangle to make sure that it is at perfect right angle to the horizontal stab. When it is dry, glue the empennage to the fuselage.

FINISHING:

Finishing the Honker is as simple as it can be. We recommend sanding the entire airframe with 400 paper and covering everything with Solarfilm, Kwik Cote, or MonoKote. On the prototypes we built at RCM we made all hinges from Solarfilm and, after ironing them in place, put a coat of Aero Gloss Fuel Proofer around the edges to protect them from fuel.

If you have decided to use the optional wheel, now is the time to cut the hole in the plywood and mount it. The wheel is not necessary unless you are flying from asphalt since it only adds extra weight. Drill the holes for your wing dowels and install them with 5 minute epoxy. Mount the engine of your choice and install the control horns. You will note that the elevator control horn is cut down from a commercial unit and installed in the exact center of the elevator so that the entire linkage is inside the fuselage. Make sure your rudder clears the maximum throw of the elevator in all

positions. The pushrods are made from 1/4" x 3/16" balsa with 1/16" welding rod or music wire ends. The rudder pushrod exits the airframe through a slot in the stabilizer close to the vertical fin. Position your radio and check for proper balance according to the plans and then secure your radio in place either with servo mounting rails or servo mounting tape (not recommended for aircraft larger than .049). When your Honker is finished it should weight between 15 to 22 ounces. One of our prototypes, utilizing the Cannon miniature 2 channel proportional system, a Golden Bee engine with muffler and the optional wheel weighed 17 ounces ready to fly. Another RCM prototype utilizing ailerons and elevator, a T.D. .051 engine with muffler and a Heath radio with 500 mah battery pack weighed 23 ounces. The latter was definitely inferior in the glide compared to the lightweight machine and all efforts should be made to keep your Honker as light as possible.

AILERON INSTALLATION:

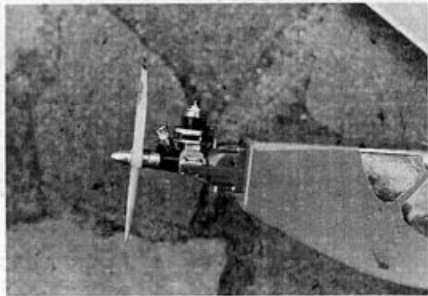
If you have decided to utilize ailerons on your Honker, they should be 7/8" wide by 16 1/2" long on each

panel. These should be hinged with thread or with the polyester covering material you are using. In order to provide the proper differential, your control horn on each aileron should be set back from the hinge line as shown on the plans. The throw of your ailerons should be adjusted for approximately 1/4" up and 1/16" down.

ENGINE:

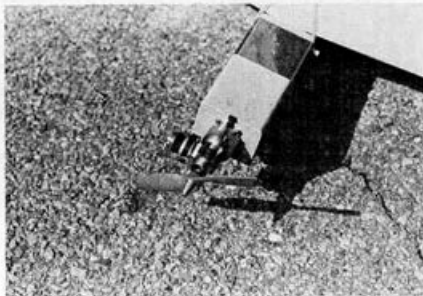
Your choice of engine for the Honker will depend upon what you intend to do with it. For the trainer version we strongly recommend the use of a Cox Golden Bee engine with muffler and a 5.5/4 Cox gray prop. If you cannot find one of these in your local hobby shop, purchase a nylon or a wooden 6/4 prop and carefully cut it to 5 1/2" in diameter. Be sure to balance the prop before running it since these Cox engines turn up an extremely high rpm.

If you want a "hot dog," use a Cox Tee Dee .049 or .051 on a Cox Tank Mount. Use a Cox gray 5/3 prop and hang on! If you are flying with ailerons you will find that the Honker rolls exceptionally well although the application of down elevator is required.



T.D. .049 with Cox muffler and tank mount.

Be sure that your plane is balanced in the range shown. With a hot .049 or .051 engine, a 5/3 prop, Cox Racing fuel, a rearward C.G., you'll have a ball! The aileron version rolls quite well for a plane of its size and is rapid to say the least! If you've built your aircraft lightly you are apt to snag a thermal or two and find yourself up for another 15 or 20 minutes after the engine quits. If you've built it on the heavy side, you will have a glide like



Golden Bee .049 with Cox muffler.

that of a falling arrow! The rudder and elevator version spins like a top and can do flat spins you won't believe. The aileron version, while it won't spin, does roll well and both models will loop from level flight until they run out of gas! The Trainer version with a mild .049 and a forward C.G. and the larger prop flies rather slowly and, if built lightly (in the 15 to 18 ounce category) has a glide equal to most sailplanes when the engine quits.

However you decide to build your Honker you are going to have a ball! We've built a number of these at RCM and everyone who has seen them here, or in the Albuquerque area, has had to build one. And, when they've tried to find out how many spins they could do, and stacked it into the deck, they've had to build another! For those of you who want to get into the air in a hurry, arrangements have been made with Southwestern Sailplanes, 917 Princeton SE, Albuquerque, New Mexico 87106, to produce a hand cut kit of the Honker with pre-assembled and sanded wing, all parts pre-cut to shape, pushrods, control horns, with complete instructions for \$13.95. We have also built several of the prototype kits and have found that they can be assembled, completely ready to cover in one hour.

The Honker is a different breed of cat — you'll have a ball and wonder why someone didn't think of it before! □