

Editor's Note: *Most scale-like profiles are designed for maximum aerobic ability, the designers adding wing area by altering the planform, and changing the airfoil to a stunt type—usually with a significant increase in thickness. Intended to look more like the real aircraft, this design takes fewer liberties and, therefore, is not comparable to so-called scale profile stunt jobs in maneuverability. Nor is the wing unsightly because of exaggerated thickness. If the bulky looking profile suggests bigger engines, say up to 29's, be aware of the relatively low drag and modest wing area. It flies well with a 15 and probably would be quite fast with a 19.*

THE TYPHOON was originally conceived as a replacement for the Hurricane fighter. Its initial planning was started in peace time but the start of World War II forced the building and testing program into an accelerated pace, causing many development problems. The first test pilots were very critical of the plane due to un-



What will it look like if you build it? How big does it look to the eye? Displayed by the author's son Steven, the model proves that a three-dimensional gem can result from just that two-dimensional plan—if you take care.

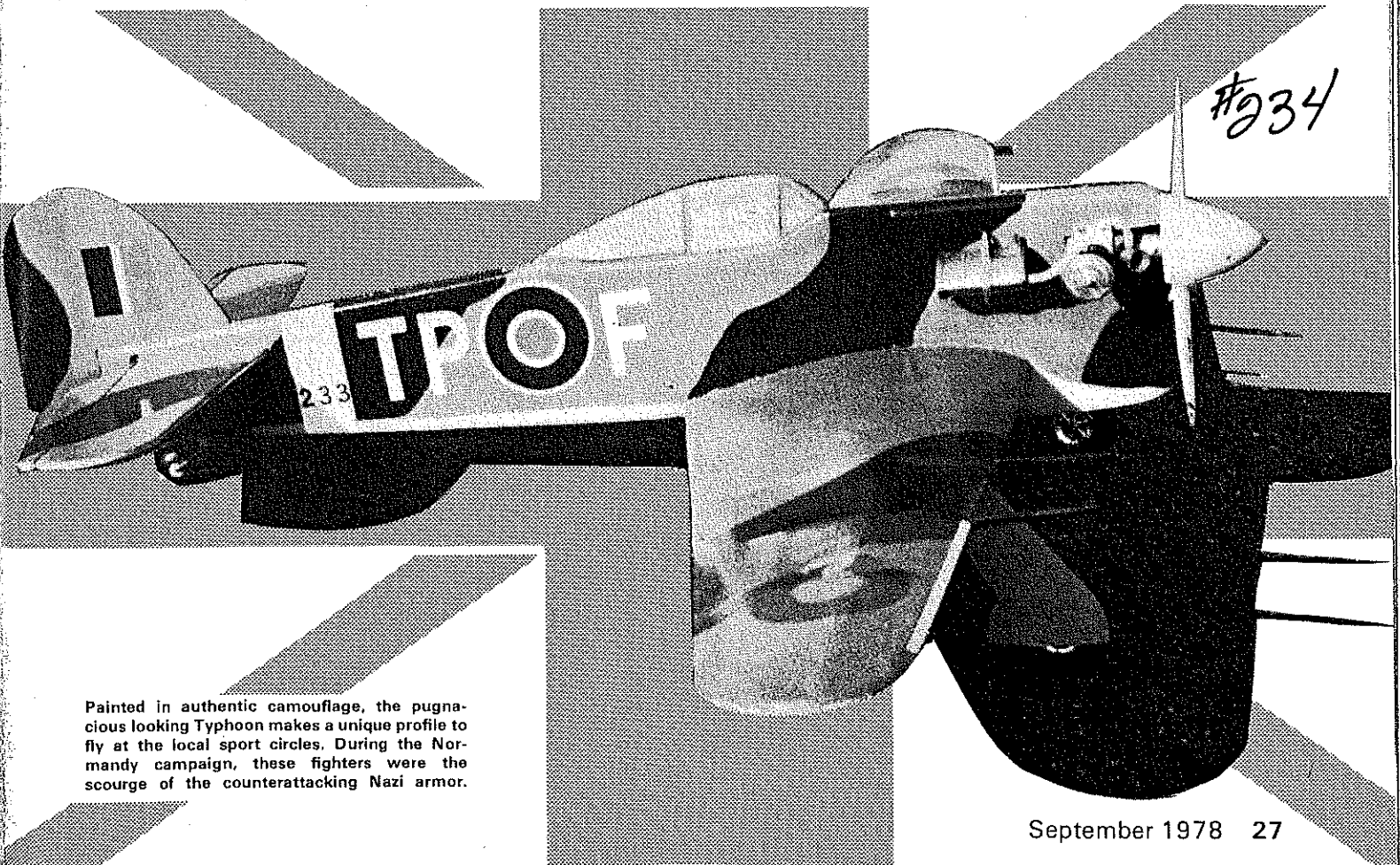
derpowered engines, structural failures and ground engine fires.

The Typhoon was designed first to combat heavily armored, well-armed, long-range fighters that Germany was reported to be building. Very early in its use, however, it was found to have no match under 10,000 ft. but at 20,000 ft. it was very vulnerable to enemy fighters. The thick wing and heavy wing loading that restricted its use at higher altitudes were necessary qualities for low altitude work. Its brute strength and heavy load carrying abilities made for a very stable aiming platform for all the armaments it carried.

The Typhoon became a tremendous ground attack weapon at the start of the Normandy invasion, being used in pinpoint attacks against German strong points of resistance and also against headquarters and command posts. In all, approximately 3,300 Typhoons were built and many experts give this plane nearly equal credit with the Spitfire in helping the Allied cause to victory. This model would

A 15-powered CL profile version of Great Britain's renowned Hawker ground-attack fighter of World War II. ■ Paul H. Schaaf, Jr.

TYPHOON



Painted in authentic camouflage, the pugnacious looking Typhoon makes a unique profile to fly at the local sport circles. During the Normandy campaign, these fighters were the scourge of the counterattacking Nazi armor.

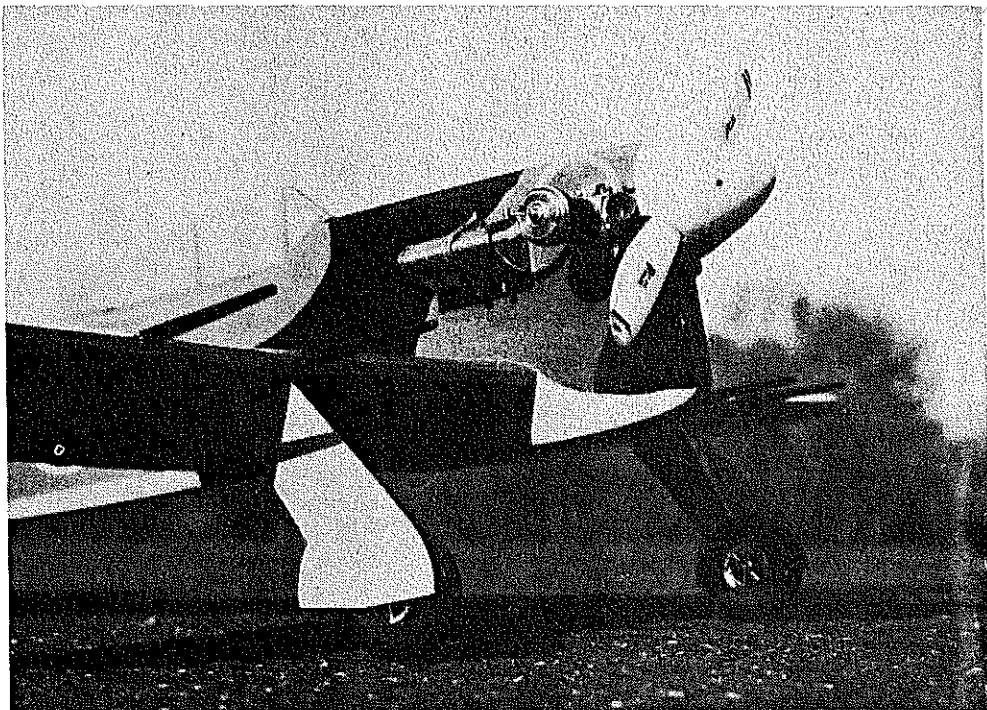
be a splendid addition to your collection of models. It is as tough as it looks.

Fuselage: The fuselage is cut from $\frac{1}{2}$ " sheet balsa. The outline of the body is transferred onto the wood by pushing a pin through the plans, following the outline of the fuselage while the balsa is positioned under the plans. With a pencil or ballpoint pen connect all the pin holes smoothly to outline the shape you wish to cut. Use a coping saw or a jigsaw to cut around the outline. After the shape is sanded smooth add the $\frac{1}{8}$ " plywood doublers to both sides of the fuselage, noting that only the right side has the cutout to receive the motor. Make the length and width of the cutout to fit the particular engine you plan to use. Radius the exposed corners of the body as illustrated. Drill the hole for the tailwheel assembly. Use a $\frac{7}{32}$ " dia. drill so that the thread-wrapped wire and dowel assembly can fit easily into the hole where it is securely cemented into place.

Rudder and Stabilizer: Cut these parts from $\frac{1}{8}$ " balsa sheet. The elevators are connected by $\frac{3}{16}$ " dia. dowel that is sanded flat on opposite sides to $\frac{1}{8}$ " thickness. The hinges are nylon tape cut 1" long. The control horn is a nylon RC one. Note that rudder is offset $\frac{1}{4}$ in. to help plane to maintain tension on the lines. Radius all edges as illustrated. Note also the stabilizer has to be cemented to the fuselage before the rudder can be assembled to the body.

Wing: The wing is made in three sections; the center panel plus the left and right outer ones. Construct the center section first. Pin the $\frac{1}{4}$ " sq. balsa spar and $1 \times \frac{1}{16}$ " lower trailing edge section into position. Cement ribs 1, 2, 3 and 4A to above. Rib 1 is cut from $\frac{1}{8}$ " balsa sheet while all the other ribs are cut from $\frac{1}{16}$ " sheet balsa. Cement the top spar, top of the trailing edge, and leading edge to the above. Leave off the $\frac{1}{16}$ " sheet covering until the bellcrank and landing gear are assembled to the above. Remove the center section from the plans and cement securely into place the $\frac{1}{8}$ " plywood bellcrank and landing gear platforms.

The outer panels are constructed identical to the center one. Pin the lower $\frac{1}{4}$ " sq.



The mounting of the Cox 15 and the wedge tank behind it is standard practice for profile installations. Realistic details—painted canopy, cannon, beefy nose, and gear—are exciting.

balsa spar and $1 \times \frac{1}{16}$ " lower trailing edge to the plans. Cement ribs 4B, 5, 6 and 7 into position. Rib 4B must be angled so that proper dihedral is achieved. Add the top spar, top of trailing edge and leading edge. Add the wing tips and angled spar on the top surface of the tip.

Before cementing ribs in position note the inboard ones must have the cutout for the leadout wires. To eliminate confusion on the plans cutouts for ribs 5 and 6 are not shown but their positions can be easily projected. I use the top of a pencil with the eraser removed as a tool to make the cutouts.

Cement the three sections together maintaining dihedral indicated. Add weight to the outboard wingtip (three- 3" nails should suffice). Add the 2-in. bellcrank, plus a section of the pushrod long enough to meet the Dubro Kwik-Link coming from the stab. Add the landing gear and leadout wires.

Cover top center section of the wing with the $\frac{1}{16}$ " balsa sheeting. Where the sheeting meets in the center of the wing sand a $\frac{1}{2}$ " wide flat so you have a smooth snug fit with the fuselage wing saddle. Cover wing with silk or Silkspan, and then

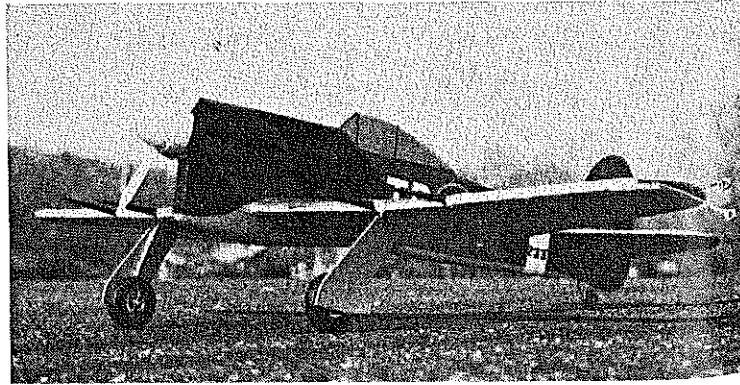
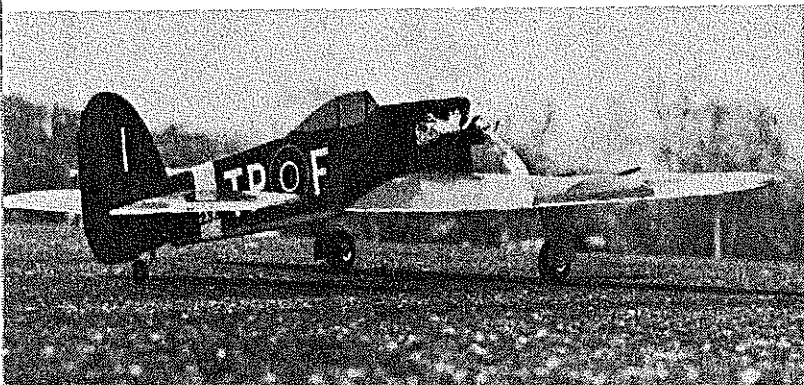
give it two coats of clear fuel-proof dope, sanding lightly between coats. A good paintable iron-on covering you can also use is Super Coverite.

Landing Gear and Tailwheel: The landing gear is bent from $\frac{3}{32}$ " dia. music wire. The two legs are wire wrapped and cemented to the landing gear platforms in the wing. The landing gear wing panels are cut from $\frac{1}{16}$ " plywood and are also wire wrapped and cemented into position. Wheels are $\frac{2}{4}$ " dia., retained by soldered washers.

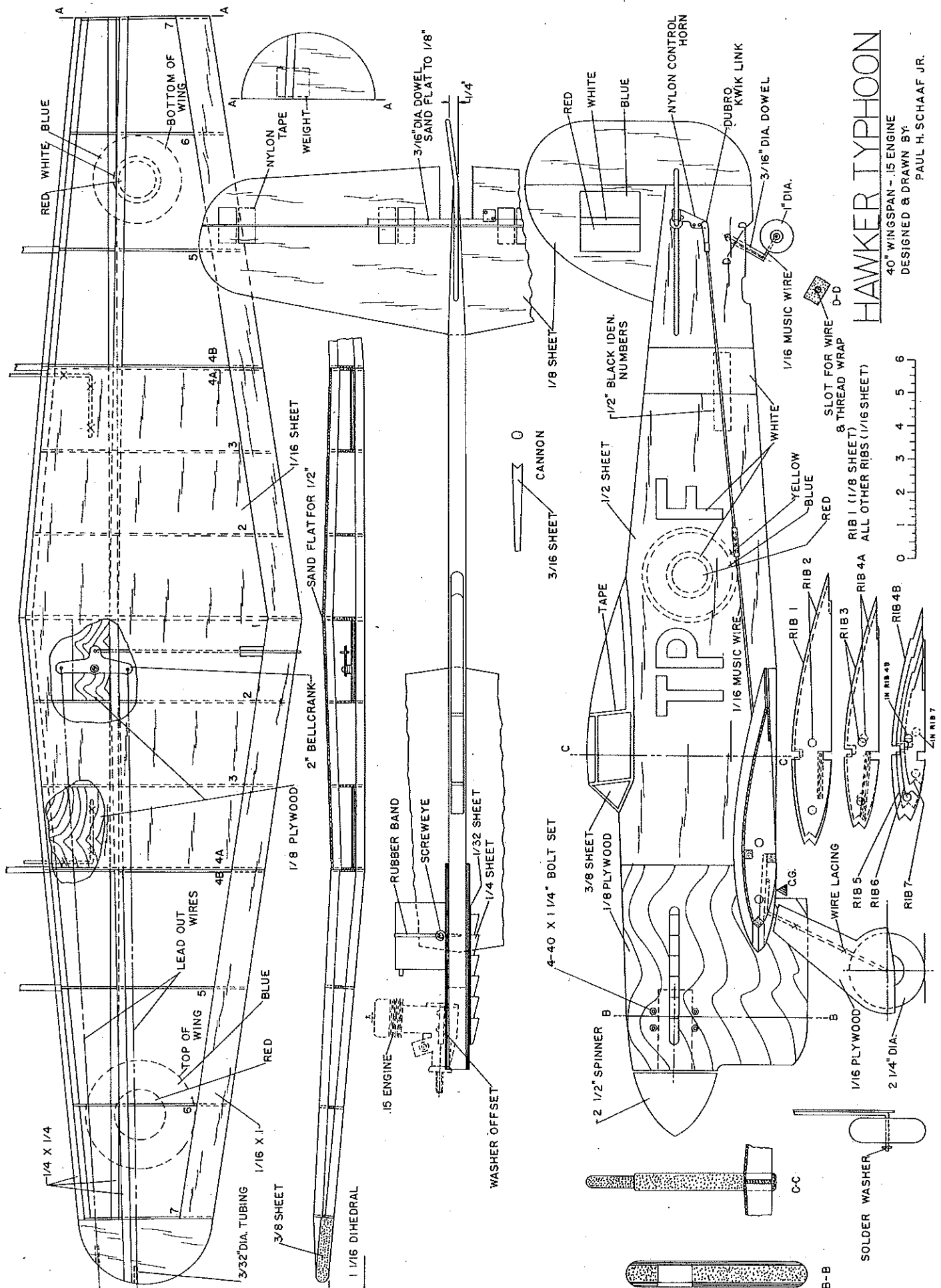
The tailwheel strut is bent from $\frac{1}{16}$ " dia. music wire that is thread wrapped and cemented into slots cut into a section of $\frac{3}{16}$ " dia. wood dowel. Slot the end of the dowel so the wire cannot rotate. Tailwheel is 1" dia., held on by a soldered washer. This entire assembly is glued into the hole drilled into the rear of the fuselage.

Finishing: After all parts are sanded smooth, start the assembly. Cement the stab and rudder onto the fuselage. Look carefully to see that the stab is level and the rudder perpendicular to it. Add a filler piece in the rear section of the stab slot

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No matter how you view it, the Typhoon model has eye appeal. Oddly enough, it hardly looks like just a profile. Perhaps it is because Paul Schaaf has designed scale, and scale-like, control-line ships for many years in various magazines. Or the color scheme, perhaps?



HAWKERTYPHOON

40" WINGSPAN - .15 ENGINE
DESIGNED & DRAWN BY:
PAUL H. SCHAAF JR.

SLOT FOR WIRE D-D
& THREAD WRAP

RIB 1 (1/8 SHEET)
RIB 4A ALL OTHER RIBS (1/16 SHEET)

RIB 1
RIB 2
RIB 3
RIB 4B
RIB 5
RIB 6
RIB 7
RIB 4A
RIB 4B

WIRE LACING

1/16 PLYWOOD
2 1/4" DIA.

4" RIB 7

0 1 2 3 4 5 6

FULL-SIZE PLANS AVAILABLE SEE PAGE 104

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cially like his "Rookie Race" comments. There were a couple of these held in Southern California a few years ago and were very successful. I think we need a couple of Rookie Races every season.

That's all for this month, go fast and turn left!

Dave Lane 4477 W. 136th St., Hawthorne, CA 90250.

RC Helicopters/Chesney

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vacant lot may be used—but insure that the site is safe and that permission to use it is verified. If an AMA Contest Director is available, enlist his help. I would suggest your first meet be an informal one.

After the preliminaries, get the word out. Mail a letter to every AMA chartered club in the state. The letter should include: the date and time of the meet, the location of your site with a map, a list of local motels and phone numbers, and your name, address and phone number. Also include a brief statement about the meet, your intentions, and a final request that everyone pass the word. While you are waiting for the date to come around, prepare a quantity of questionnaires to be handed out at the meet. Each person attending can be requested to fill in his name, address, phone number, AMA number and types of helicopters flown.

When the date comes, whether your first meet yields a club or not, I assure you that it will be rewarding. Don't forget to collect some ideas to pass on to Horace. His address is Horace Hagen, 15 Parkway Place, Red Bank, NJ 07701.

It is not necessary that you be an expert helicopter flier in order to stimulate local interest. In fact, a big benefit of a state helicopter group will be your ability to communicate the problems and successes of helicopter flying with others sharing your interest. That alone can speed your progress.

I was about to retire my three-year-old Heli-baby but decided to experiment instead; the photos are the result of the experiment. Since this helicopter was difficult to wear out, I got a little tired of seeing the same old scarred bubble and elected to make a fiberglass canopy.

Most helicopters will last a long time despite the hard knocks of learning to fly; so you may elect to try this type of cosmetic modification before retiring your bird. In most cases, a canopy similar to the one shown in the photos may be produced in just a few hours. I'll explain next month so sketch a few ideas for your "new" helicopter.

Dave Chesney, Rt. 9, Box 621A, Greensboro, NC 27407.

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Typhoon/Schaaf

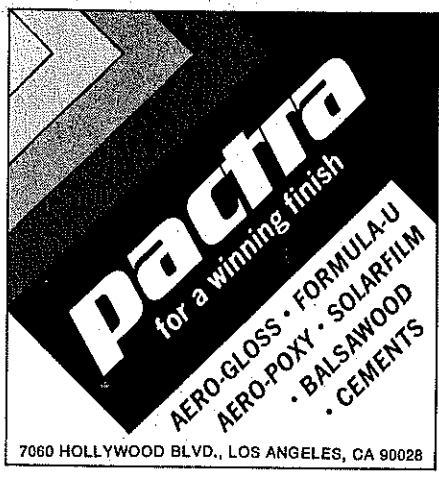
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where the open groove occurs. Move the elevators to check for any binding of the connector dowel in passing through the fuselage. Cement the wing into position insuring it is perpendicular to the fuselage.

The exhaust stacks on the inboard side of the body are cut from 1/4" balsa sheet cemented to a strip of 1/32" plywood or thin cardboard. Make the cannon from 3/16" balsa sheet. Both of the above are painted black and assembled to the model after it has been painted. Give the plane two coats of clear fuel-proof dope, sanding with #300 paper between the coats. Using a soldered coupling, join the pushrod from the wing to the Kwik-Link. With the bell-crank parallel with the fuselage the elevators should be level.

My plane was painted as follows. Fuselage top and sides, top of wing and stab, rudder, a splintered pattern of brown and green. The under side of the fuselage, wing, stab, and panels on the landing gear a light blue. The canopy is silver with the canopy frame brown painted tape. The spinner is yellow. The roundels, lettering, numbers and other markings are cut from Monokote Trim Sheets. Outboard of the cannon, I added a 1/2" wide strip of yellow equally above and below the point of the leading edge.

The plane is powered by a .15 motor



(mine uses a Cox .15). Prop is a 9 X 3 or a 8 X 4 nylon one. The gas tank is mounted very easily by using two screweyes (opened up) and rubberbands, centered behind the engine. Check the C.G., adding weight as required. My plane is flown on 52' lines, .015" dia.

Flying: For your first flights use the outer hole in the control horn, since the plane's reactions will be milder than if the inner ones are used. Since the frontal area on a profile plane is small, the model really moves out under power.

After you start the engine and it is running to your satisfaction, move out to the center of the circle and double check the controls. When all is ready, give your partner the signal to release the plane. As it speeds along the ground slowly feed in a small amount of up, and as it takes off and reaches about 10 feet of altitude, level off. Move the handle gently and get the feel of the plane before you start more violent maneuvers. As you know, every model has different characteristics and rates of response. Know your model first before experimenting. When the motor stops, gradually feed in up as you get close to the ground for a perfect three-point landing.

I'm sure you will be thrilled to have and fly this historic and powerful looking model. Fully decorated it looks great.

CL Scale/Gretz

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had to be rephotographed into black and white, thus loosing some sharpness in the process. I hope that what you see here in the magazine adequately conveys the excellence of Steve's workmanship and scale details. Here is part of what Steve wrote in his letter.

"At first it was tough to fly, but with 4 oz. extra nose weight and correct deflection of the ailerons it flies great. I use a Tatone expansion chamber exhausting down into a chamber under the motor mounts. The exhaust leaves the plane from eight openings in the bottom pan. It has a full cockpit and the guns are Williams Brothers. I plan to enter a few contests with this plane—it's fun competing

whether you win or lose."

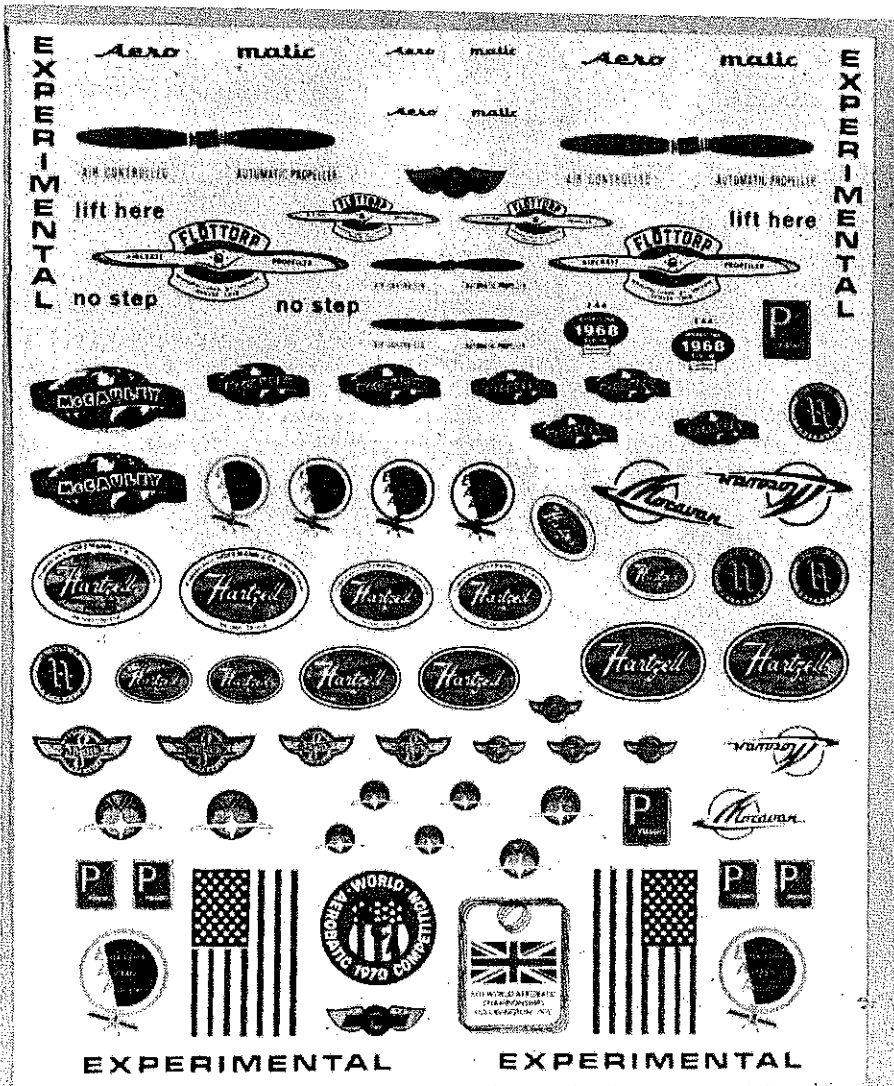
A Test Flying Problem: Ah, the thrill of test flying your new scale masterpiece for the first time—but what if something goes wrong? As in this recent case. "Last Sunday was the day. And guess what? I couldn't get off the ground! The Ryan weighs 8¼ pounds, Fox 60 with Perry carb and 14-6 prop—lots of power! The plane almost wants to stand on its tail when held vertically with engine running. Wheels roll freely. Balance for UC per the plans. But when the plane is released for take-off with the controls (elevator/flaps) at neutral, the plane noses over immediately and breaks the prop.

"Incidentally, the flying field is close-cut grass, smooth enough for 15-size planes on up. I don't want to add weight to the tail to keep it down because of the 8¼ plus pounds, and the balance is basically OK. I'd never experienced this before. I talked to an experienced friend last night at the RC field. His solution was to give full up elevator (and with mine, this would also mean flaps down) to keep the tail down on taxi-takeoff until flying speed was almost

obtained; then neutralize somewhat and come off and up to fly. Do you have any thoughts or suggestions?"

If you've flown a taildragger type scale model before, you probably recognize the problem. Nine times out of ten, there is nothing at all wrong with the model itself. There is a tendency for all taildraggers to nose over at the start of the takeoff run and also at landing. I've done both with my Zlin Akrobat. What is needed is for the pilot to be retrained to more full-scale-like flying techniques.

A scale model has too much weight on its wheels and too high a thrust line and CG to take off as most non-scale control-line models do. If you attempt a "normal" control line style takeoff with full power (high throttle) and a quick release, a scale model will almost invariably end up nosing over. The engine is trying to pull the model forward from a point high above the wheels (as on a long lever), and the model thus starts to rotate around the wheels because of lack of airflow over the tail surfaces. On a paved hard surface runway, where the wheels can move more freely, the problem is lessened but not



KDH propeller decal sheet #1147 provides authentic insignia to put the crowning touch on your scale propeller. The decal sheet is accurately reproduced in full color. Available from Hobby Lobby International, Rt. 3, Franklin Pike Circle, Brentwood, TN 37027. \$3.45, plus \$1 for postage.