

# 'HOT BOX' P-30

By JOHN OLDENKAMP . . . Are you ready for the 1977 Nats free flight competition? Not until you put together a couple of P-30 Class models and come out to join the unofficial fun!

• P-30's are coming out of the wood-work faster than lovesick termites: my proposal of two years ago for a threshold competition rubber event has suddenly taken on momentum . . . particularly in the areas where sites are diminishing in size. P-30 will be flown as an unofficial event at the USFF Championships this year, as well as at the Riverside AMA Nats. In addition, there will be an International Proxy Postal meet, to be flown off at Lake Elsinore by the San Diego Orbiters on September 10th and 11th. Latter is sponsored by M.A.N. and Dave Whatshistrum.

The rules are very simple; no dimension of the airplane may exceed 30 inches, including propeller and D/T hardware. It must have an unaltered 9-1/2 inch freewheeling commercial plastic propeller, and is allowed ten grams rubber total. Very interesting mix of ingredients. Until you see one zooming up, or, better still, build one and witness their extraordinary performance, you simply won't know. Those plastic props are very efficient, and if matched to the correct rubber stranding, really do go places.

HOT BOX is about the thirtieth P-30 I have designed, and although I haven't built this one yet, the prototype (in bright lilac and pink) flew more or less off Cynthia Sabransky's workbench,

needing only very slight decalage increase. We haven't found the perfect pattern yet, but she expects to put up a strong challenge with it for the Ladies Cup at Taft and the Nats. HOT BOX is straight-forward, robust, and easy to build, owing to generous stock dimensions. A Hot-Stuffed version should require no more than a day-and-a-half or so to complete.

The Airfoil: Besides wanting to help create an event for all to enjoy, I tried several different ways to make the whole project, in building terms, a snap. Hence, the cracked ribs. My first few P-30 models were rather small, underpowered, super-light, but each had the cracked rib thing all the way. As I gradually increased areas and went to six and eight-strand motors, I found that the diamond-sectioned mode provided a fantastic climb, but no glide to speak of. I had reasoned that the Driftwoud: OHLG (Geraghty) was getting by very nicely on the diamond shape, so why wouldn't a rubber ship of roughly three times the area and no more than twice the weight, etc? Several very pretty airplanes now sit in my "museum" . . . terrific climbers, but gliders they ain't. Curt Stevens, old line HLG theorist, suggested laying a turbulating spar somewhere on top of the diamond, run the tissue over it and see. It works. I've since built a couple of Coupe d'hivers (also plastic propped),

a Payload, and an A/1 . . . all with same general layout, some undercambered. Success!

The airfoil break is at the spar, located 40 percent of the chord, while the turbulator spar is half that, giving an approximate 30% high point for good climb, plus moderate damping in the glide. It is quite evident at this point, that the glide of a rubber ship with freewheeling prop must be a whole lot slower than one equipped with a folder. The section then, must be at least 10% thick. Take it from me, the Cracked Rib works. Or go back a bit and use the RAF 32, if you dislike the idea of gluing all those little sticks together. George Perryman pointed out once, though, that you do it a piece at a time, and I agree.

To make this gorgeous little bird come alive, you will need to observe only a few hints from me. First off, order up a set of plans from your favorite publishing house, then knee it down to El Hobby for a miser's share of wood. The only hard stuff necessary will be four 3/32nd square pieces for the fuselage longerons (1.1 grams each). Everything else should be medium-weight, stringy sticks and very light quarter-grained sheet. Your target weight for the finished plane should be about 35 grams . . . eight of which are accounted for by the propeller and

MODEL BUILDER

# 7773

noseblock/shaft assembly.

**IN GENERAL:** Double glue everything with Titebond thinned about 30% with plain water. Use a straightedge to establish pin lines around all major shapes. Cut and fit everything finger-tight. Work on a flat surface. Breathe deeply while the critter takes shape.

**SPECIFICALLY:** The wing tips should have at least 3/32 inch washout built in. A shim is indicated on the plan. It is also not such a bad idea to add about 1/16th inch washout to the stabilizer as well. On the wing and stabilizer, I pin down all the major outlines, then add the gusseting, perpendicular rib sticks, the diagonals, next the main spar, then the cracked ribs on top. Note that the wing spar tapers from the middle to 3/16 inch at the tips. Finally, install the riblets and the turbulator spar. Fill the center and tip ribs with soft scrap to provide a solid base for your tissue. The dihedral joint is bevel-sanded and butt glued before the little plywood brace is put in.

**HOW TO CRACK A RIB:** You might want to practice on the stabilizer first. Put a rib stick at the leading edge. Now make a Pentel mark where it crosses the spar. Brace the stick with a forefinger, then begin to dent/crack it with your thumbnail at the mark. The stick should crack/crush at the same time, assuming an angled profile. Put it back over the plan, trim the rear part to the trailing edge, and set aside. Do all for the panel that you are working on, then go back and trim a little off the bottom at the trailing edge side as shown in the photograph. Now brush on a spot of glue on the cracked side and let dry. If you did it right, the ribs will now fall into place without pinning, just double-gluing. If you panic, call me at (714) 235-6545, anytime. The answering service will think that you are cracked too, but I will try to get back to you.

**The Fuselage:** It is very helpful to cut out the big front sheet pieces and the motor peg support first, then pin the longerons and uprights around them. The extra large gussets are for launch-gripping, so do not leave them out. You will need to stack-build two identical sides, separate them, then join with the biggest cross pieces, then fill in with the others. The tail post is set in about a quarter of an inch to accept the D/T snuffer tube. Noseblock is a simple cross-grained sandwich from quarter-inch scrap balsa. The Peck/Polymers nylon thrust bearing works very well up front, as does their pre-formed wire prop shafts. Don't forget to line the nose and motor peg areas with some 1/16th scrap sheet. When your fuselage box is complete and as true as you can make it, fabricate the stabilizer platforms, wing rails, wing dowels, etc. Glue these on after covering, however.

What else? By now, with very little

help from me, you should be looking at an uncovered, but recognizable HOT BOX. Use whatever tissueing technique suits . . . I prefer the old dope and stick it routine . . . but be sure to alcohol shrink before applying dope finish. I would suggest no more than two coats of thinned, plasticized nitrate, sanded out with well-worn No. 600 paper. Apply ID numbers, cockpit trim, name and address, etc., after the first coat. Now Hot-Stuff all the platforms, D/T hardware, and such in place. It should be the night after the day before yesterday. Just as a favor to yourself, carefully weigh all the main hunks and mark each with drafting ink, or in a notebook. You may wish to build another P-30 or so one of these days, and since wing loading as a function of total weight is the name of the game, you will at least have a base line to opt from.

**HOT BOX** is very slightly on the chunky side . . . you could easily use 1/16th inch stock for the ribs, main spars, and reduce the trailing edge dimensions, saving about ten grams in all. The prototype weighed in at 40 grams minus rubber . . . not bad for common lumber, great haste, and first time around. Its flying characteristics look excellent, but would doubtless be better at 30 grams. On the other hand, the bigger bits are easier to handle in building.

Does it fly? Indeed. Take careful note of the side and down-thrust angles indicated. I have been using 1977 FAI rubber, 4 strands by 3/16ths inch, which will take about 1000 turns with a Sterling winder, but the initial torque is a bit much, which explains the relatively massive offsets. A four-strand motor allows the prop to do its work without unloading too fast, albeit scary. Proceed.

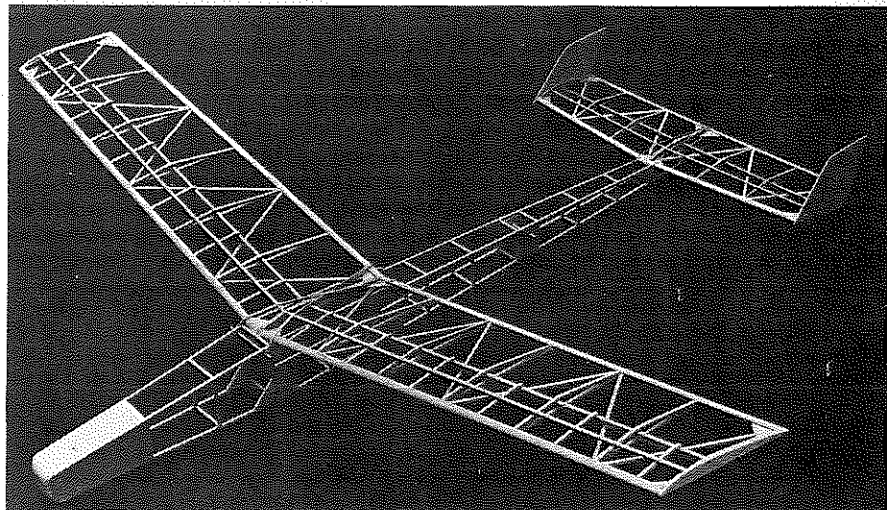
Check for warps and remove any that look suspicious by steaming/twisting them out. The stabilizer/fin unit must be keyed in place, too. Put a pin in the middle of the bottom nose

sheeting, then measure the fins out exactly the same distance. Mark and fit in some spruce or dowel chips on either side of the platforms. Load the model with rubber. Check the balance point. If it is where it should be, go fly. If not, correct with clay ballast. Also, squeeze on about half a pea of clay to the lighter side of the propeller blades to balance the unit. Most are hopelessly out of kilter as received. Last, if you are worried about all that rubber band hanging out the nose, in Peanut Scale fashion, get someone to lightly braid the strands. Some slack is needed to allow freewheeling, however.

**DO NOT HAND GLIDE.** Bent prop shaft will result. Wind about 200 turns and release. Airplane should move smartly up and to the right. If it looks a little hairy rightwise, tape a beer can tab on the right wing about halfway out and about a half inch by an inch, curl down. Use drafting tape to secure. Try again. Increase turns by fifty each flight to maximum. It probably will not power stall, owing to all that downthrust, but it might not go up steeply enough, or the glide may be a trifle fast, so put a layer of drafting tape under the stabilizer trailing edge. That should do it. Next, you may want your HOT BOX to have a glide turn . . . it makes sense to do a right/right pattern, so gradually either shift/tilt the stabilizer towards the turn, or, tweak the *left* fin over to the right, maybe a 64th at a time. The model should glide circle about seventy-five feet, then tighten up in lift. If you installed enough tip washout, stalls will not be a problem.

Now that you are there, enjoy! My address is 654 India Street, San Diego, Ca. 92101. Prototype built and flown by Cynthia Sabransky, AMA 11118. •

**MODEL  
BUILDER**



"I've been framed!" HOTBOX's nose area is large enough to accept winding tube. An Estes rocket unit works fine. Build a couple for the Nats. It won't take you long!

# 7773