



The full-size Powered Plank photographed here the Oshkosh Fly-in in 1977, followed Al's success with his Flying Plank sailplane.

THE WBP-1 FLYING PLANK

Al Backstrom offers a model of his unusual aeroplane

From my boyhood I have been fascinated by tailless aeroplanes and sailplanes including models of them. This led to the design and construction of flying plank type sailplanes in the '50s. Several duplicates have been built over the years and some are still flying. The full scale WBP-1 aeroplane was aerodynamically based on these earlier sailplanes. It is not a powered glider but has always been intended as a powered craft. It has a good glide ratio with the engine stopped; but I was never sure of this until it had an actual engine failure. The design objective was to create a machine with the performance of normal light planes, but one that used minimal power. Due to engine availability in the early 70's when it was designed and built it wound up with a larger than intended engine. The WBP-1 was flown extensively after early engine problems were solved but low engine reliability convinced me to put it in a museum rather than waiting for another engine failure in a very bad position. It is now housed in the Air Power Museum at Blakesburg, Iowa in the US.

The model

The model is so simple there is very little to say about construction. Do not glue the anti-warp strips on the wing until it is installed in the fuselage and glue the anti-warp strips to the tip fins before gluing them to the wing. Use your choice of thrust bearing but use a large headed pin to form the front hook. The large headed pin will assure that the model doesn't stick into people, etc. Do not cut the elevon area free at the inboard end and do not glue the tip anti-warp strip to the wing aft of the hinge line of the full scale aircraft. If you plan to fly the model outdoors you should apply a couple of very thin spray coats of lacquer.

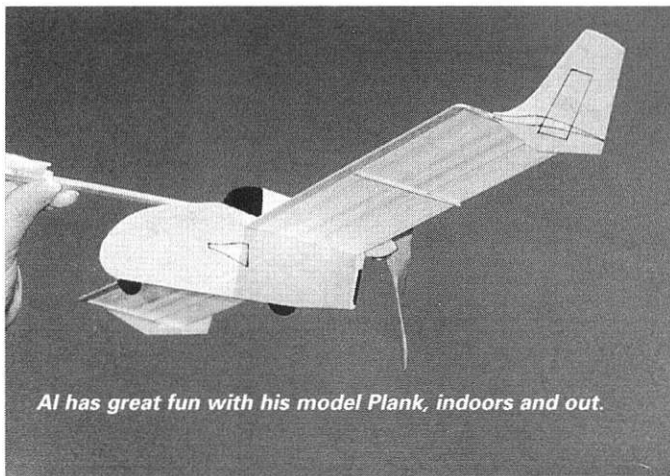
Use your choice of propellers. I initially used a 6-9 light balsa prop but the model was very sensitive to thrust line adjustments. The model did not require nose ballast with this prop. To reduce the sensitivity of thrust line adjustments I changed to a 5.1/2" North Pacific plastic prop. This prop reduces the thrust line sensitivity but does require nose ballast with the rubber used.

To trim the model make a motor approx. twice the length between the hooks of 3/32" to .110" rubber strip. Double this and install it on the model. Check the balance point: it should be as shown on the drawing. Set the outer ends of the elevons up 1/16-3/32" and tack glue to the wing tips. Test glide the model. Correct a dive with more up elevon.

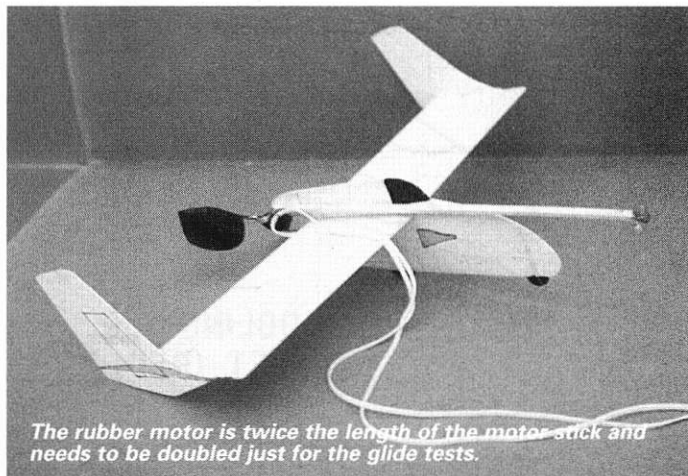
Correct a stall with more weight on the nose. When a satisfactory glide is obtained install the rubber as a single loop and wind about 200 turns. This should produce a prolonged glide. Correct a stall by slanting the thrust line up from the prop. Reverse the procedure for a dive. Add additional turns, about 100 - 150 increments and make further thrust line adjustments as required. Adjust the turn under power by shifting the thrust line laterally, adjust the glide turn by warping the fin section outboard aft of the wing trailing edge. As the thrust line is offset to the right it is easiest to adjust the model to fly left under power and in the glide.

I fly my model both indoors and out. It is not indestructible but will survive recovery from trees in addition to ceiling impacts and recovering to hit a wall. A spot or two of glue has it back going in a short while. Over time, warps will creep in but as long as they do not produce a cambered section the model will continue to fly but it may change turn characteristics. Any warps that produce positive or negative camber must be removed.

Flying outdoors the rubber will normally bunch at the nose and create a nose heavy condition that will discourage fly-aways. When this does not happen it is quite capable of going OOS. It is as easy to build another one as worry about a DT. Enjoy yours.



Al has great fun with his model Plank, indoors and out.



The rubber motor is twice the length of the motor stick and needs to be doubled just for the glide tests.

WBP-1 FLYING PLANK

By AL BACKSTROM

TIP FINS $\frac{1}{32}$ " SHT

DIHEDRAL
 $\frac{1}{4}$ " - $\frac{3}{8}$ "

DO NOT GLUE STRIP
TO WING AFT OF HERE

$\frac{1}{16}$ " SQ. ANTI WARP
STRIPS

20SWG PROP SHAFT

THRUST WASHER

5 $\frac{1}{2}$ " NORTH PACIFIC
PLASTIC PROP.

ALUMINIUM STRIP BEARING,
DRILL FOR SHAFT & BIND
TO SIDE OF STICK

N20WB

DRAG RUDDER,
OUTER SIDE
ONLY (BLACK
OUTLINE)

DO NOT CUT HERE

WING FROM $\frac{1}{32}$ " SHT.

BASIC AIRFRAME COLOUR WHITE

FIN STRIPE
(RED)

$\frac{1}{16}$ " STRIP L.E.

HOOK FROM BEAD-
HEAD PIN. BIND TO
SIDE OF STICK

MOTOR STICK
 $\frac{1}{8}$ " x $\frac{1}{4}$ " x 11"

APPROX.
BALANCE

SLOT

BLACK

$\frac{1}{16}$ " x $\frac{1}{32}$ "
HARD

COOLING AIR
INLET (RED)

COOLING AIR
OUTLET (BLACK)

EXHAUST
RHS (CHROME)

CARB AIR
INLET (BLACK)

DUMMY WHEELS (BLACK)

FUSELAGE FROM
 $\frac{1}{16}$ " SHT

ELEVON

TIP FIN
(REF)

