

baby biplane

By DON PRENTICE

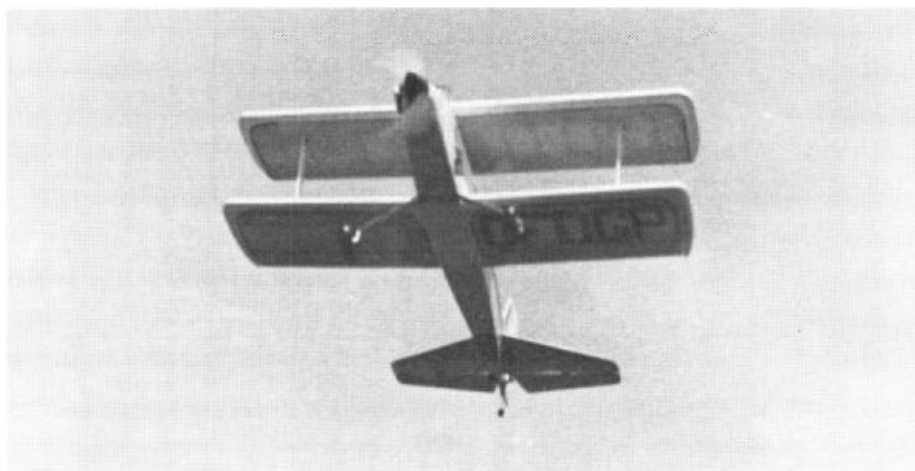


Even though ship features simple construction, its attractive lines are still very evident.

Biplanes are an exciting part of R/Cing and this "bundle of dynamite," fitting small ship trend will get you in on the fun!



Baby Bipe in its element; with .23 power this one can be a handful, slowed down it's docile.



Fine overhead shot displays the tiny bipe's squared-off wing planform and triangular stab.

• My concept of a small biplane evolved as a result of our purchasing a small car . . . a very small car. Where previously I had been able to take the model to the field in the larger car already assembled, I would now have to assemble it after arrival, a major fault of biplanes in general. Sound logic dictated a baby-sized model which would fit in the mini-car in an assembled condition . . . hence the design of the Baby Bipe. The prototype scaled out at a flying weight of 3 lb 3 oz, so Keep It Light!

Additionally, I expected this model to perform like the larger biplanes, and do all the maneuvers that are normally associated with the .60 size machines, and it does in fact meet performance as well as size criteria. Biplane maneuvers can all be accomplished directly over the field.

Problems might occur due to the necessity of keeping it on the ground during high wind conditions, and there is the possibility of its tripping on grass at a field which has not been scaled down to the model's size; grass must be shoooot! With a hot .23 engine, Baby Bipe is a handful, but given less throttle, it is docile and even comfortable to fly.

Construction-wise the design is easy to build, and anyone with a minimum of tools (jigsaw) can readily accomplish it. The original plane had solar film covered wings, and the tail and fuselage were painted with surfacing resin.

Fuselage: The fuselage sides were 3/32" medium balsa, and the doubler 1/32 ply. The formers key into the doubler and sides, making for easy construction. Be careful while installing the cabane strut, as its position determines the incidence of the upper wing. This doubler is installed before the upper fuselage planking.

The plan shows two methods of attaching the upper wing, doing it with either nylon bolts or rubber bands. Which you choose has to be decided before you cut out the pylon. The motor is located on a metal mount, and the cowling is shaped by gluing balsa blocks around the motor mounting and engine, and then carving to shape. The spinner is to be placed on the engine before the cowling is carved. Complete the upper part of the fuselage and install the tail assembly, then cover the bottom of the fuselage. This will make it easier to fit the push rods.

TAIL AND TAIL WHEEL ASSEMBLY. Note the type of tail wheel assembly. This method of manufacture makes for a springy assembly and keeps the tail on the ground when the plane is taxiing. In performance it is far superior to the regular type we are used to, especially when taxiing in a wind. The main gear is torsion bar suspended and should present no problem. To improve the appearance of the model, fair in the 1/8" undercart wires. The hardwood blocks in the fuselage into which the gear plugs must be well glued in place.

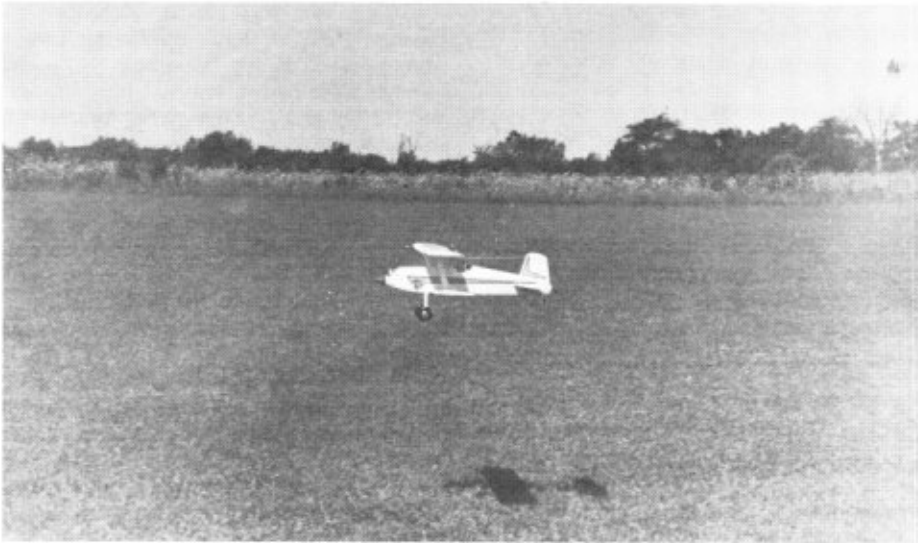
The entire tail assembly is made of 3/16" lightweight balsa. The elevators are connected by means of a 3/32" wire fitting. If

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We've heard of carrier landings but this is ridiculous! Simple cabane and strut setup.

BABY BIPE . . . CONTINUED



Teenie two-winger likes short grass best but good stick work can handle most landing needs.



Strut setup described is functional and well-proven. Baby Biipe can handle all maneuvers.

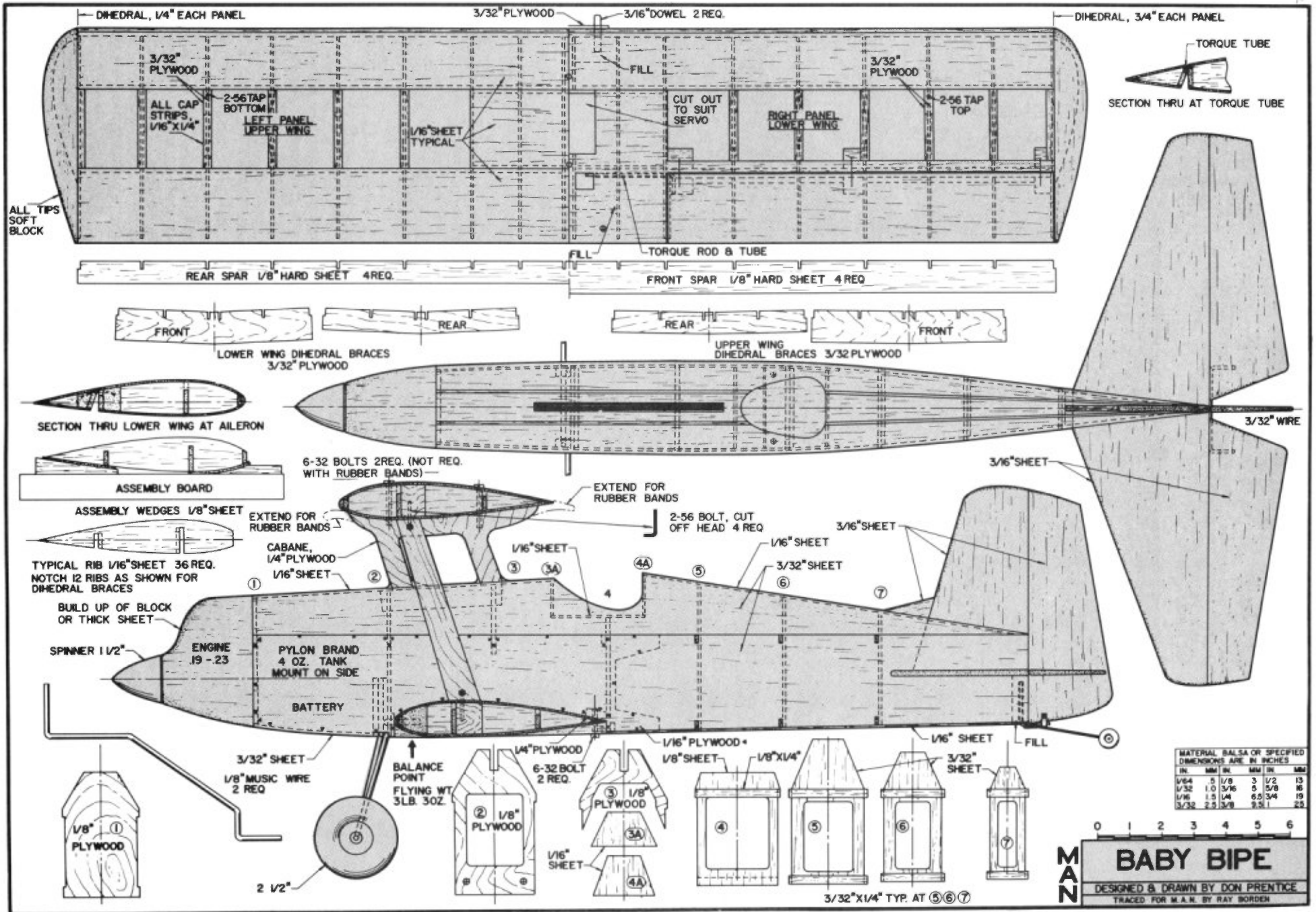
you intend to use surfacing resin, it is a good idea to apply the resin and then sand to finish before installing the stab and fin on the fuselage, since it is hard to apply pressure to these parts once they have been installed. The control horns are not shown on the plan, but experience has shown that on a small model, a finish of resin is adequate where the controls are located, if the surface is sandwiched by a plate on the opposite side of the horn.

WINGS. This plan shows only half the upper wing and half the lower wing, adequate since the wing is not assembled over the plan. Cut the spars as shown, all four front ones together and all rear ones at the same time. Cut the ply joiners and then assemble the spars at the correct dihedral. Doing it this way makes it possible to clamp the joiners tightly to the spars while the glue is drying. Now prepare two building boards slightly larger than the wing panels. Block these boards up to the correct dihedral and lay the joined spars on the board to check the dihedral. Manufacture the front and rear assembly wedges, a pair for each rib. Lay the lower sheeting on the boards (over wax paper) and pin the spars in place; the exact location of the spars will be determined by the spar slots in the ribs. Now install the ribs and pin them down. Using the wedges, curve the lower sheeting up to meet the ribs and glue in place. The upper sheeting may now be added. If you have given this method some thought, you will have realized that the complete wing can be built and sheeted on the board; only the lower cap strips will need to be added after the wing is removed from the board.

After taking the assembly off the board, cut the ailerons out of the wing. In order to know where to cut the sheeting for the aileron, it is a good idea to pierce the lower skin in several spots with a knife before adding the upper skin. When removed, the leading edge of the aileron is angled to shape and a $\frac{1}{8}$ " sheet added. Don't forget to add the hinge strengtheners and the torque tube strengthener before adding the upper skin to the rear of the lower wing. Similarly, the torque rods are added before the center skin of the lower wing is. Then roughly cut the wing tips to shape, hollow them out, glue in place, and finish to size.

STRUTS. The struts, made of $\frac{1}{8}$ " lightweight plywood, are functional and must be used. The ribs under the struts are strengthened by sandwiching $\frac{3}{32}$ " ply pieces on each side of the rib under the struts. The strut is then attached by a 2-56 bolt with the head removed and bent in the form of an "L". The strengthened part of the rib is tapped to accommodate the bolt and the bolt is then threaded down into the rib. The "L" part of the bolt fits into a hole in the strut, and the strut is held in place by means of a nut. A very neat arrangement! This system is strong and has not failed to date.

FLYING. The KPS-size servos fit this
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M A N

BABY BIPE

DESIGNED & DRAWN BY DON PRENTICE
TRACED FOR M.A.N. BY RAY BORDEN

Baby Bipe

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model easily and a square .500 battery pack fits under the four-ounce tank. By keeping the tail light, it should balance as shown, but if for some reason it doesn't, add weight to the tank area. The original model was flown with a borrowed Supertigre .23. It was thought to be broken in, however—it *was* new, and there were a few hairy flights in which the engine was very erratic. Soon it started to smoothe out and the model's behavior became predictable: now, the engine is reliable, and flies as I originally hoped that it would. The whole biplane pattern can be accomplished right in front of the pilot, and a long approach starts at the end of the field. As previously noted, the model has a tendency to trip on landing if the grass is not short, but this also can be overcome by the judicious use of throttle and elevator at the last moment.

ADDENDUM. With the use of this model, the high cost of fuel becomes a secondary consideration—fuel consumed in getting the model to the field in one piece, and also fuel expended in flying it. Who says we cannot exercise restraint in the use of petroleum resources for our hobby? "Not I," according to *this* author. ■