

38 SPECIAL



Sport biplane looks add an air of realism to this profile stunter. Side view shows Pitts Special/Christen Eagle influence. Leadout guide bolts to strut.

**Fully aerobatic
.40-powered
biplane stunt
model offers
scalelike
appearance.**

■ **Tom Dixon**

What control line stunt flier has not imagined a fully aerobatic biplane? How many biplanes have been built, only to be disappointing? When built properly, this model will *not* be a disappointment!

I wish I could take all the design credit, but I just can't. When I was in Australia in 1988, Sydney club member Grant Wylie offered me his Zephyr biplane to fly. He was enthusiastic about the model and its ability to fly very accurate eights and overheads; I was skeptical.

One flight convinced me that Grant was correct. The Zephyr, a design by Raymond Zarichak, was published in the July 1979 issue of *Model Airplane News*. I don't believe Ray would be insulted by my saying it is...uh...functional in design.



Beautiful it isn't, but there is no question that it flies very well.

For a couple of years after my trip to Australia, I kept thinking about that Zephyr. I didn't want to build one, but I did want to capture the flying ability in something more scalelike. Working from the magazine-size Zephyr plan, I began to design the 38 Special.

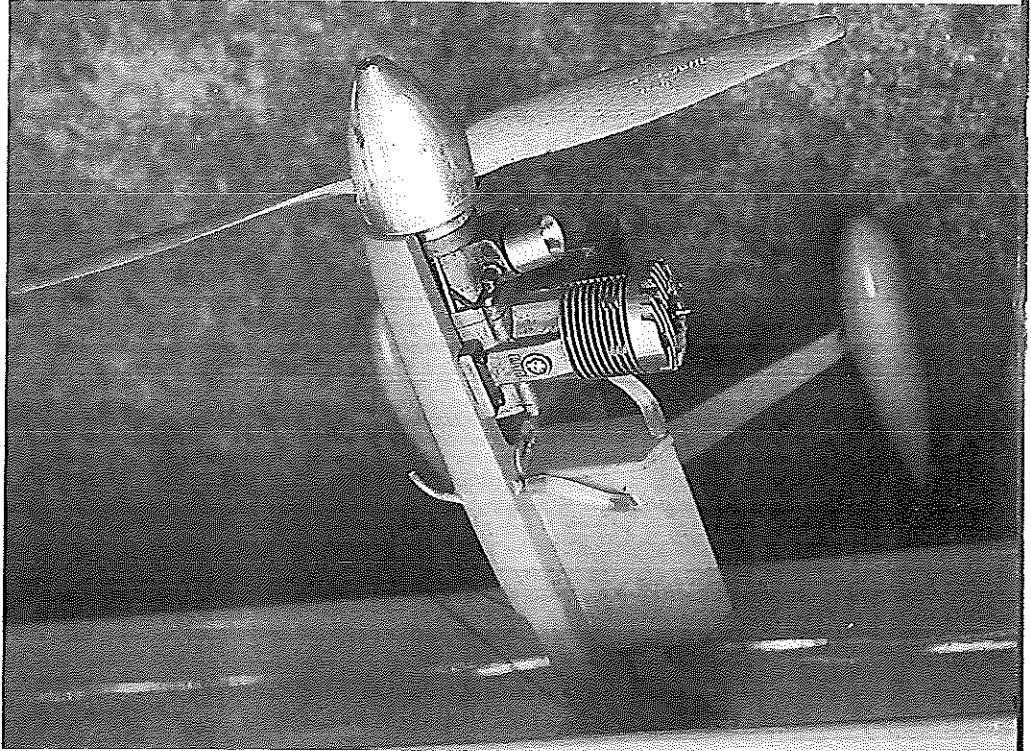
Most of the basic aerodynamics were retained while throwing in some looks of the Pitts Specials and Christen Eagle full-scale aerobatic bipes. For a more scale look and better pavement landings, the landing gear was changed in layout and material. The top and bottom wings were made equal in size for equal inside and outside turn rates, and a cheek cowl of $\frac{3}{8}$ -inch balsa was added to the nose for more stiffness and better engine runs.

Because Zarichak's article commented that the Fox .35 in his plane "needed to run in a two-cycle," I used a Fox .40 modified for stunt in the prototype. I wanted more power reserve.

The first model exceeded all my expectations. However, it was lost when the handle pulled out of my hand as the model regained line tension after going slack while I was attempting the pattern with the engine running too slowly. Only Randy Smith ever saw it perform.

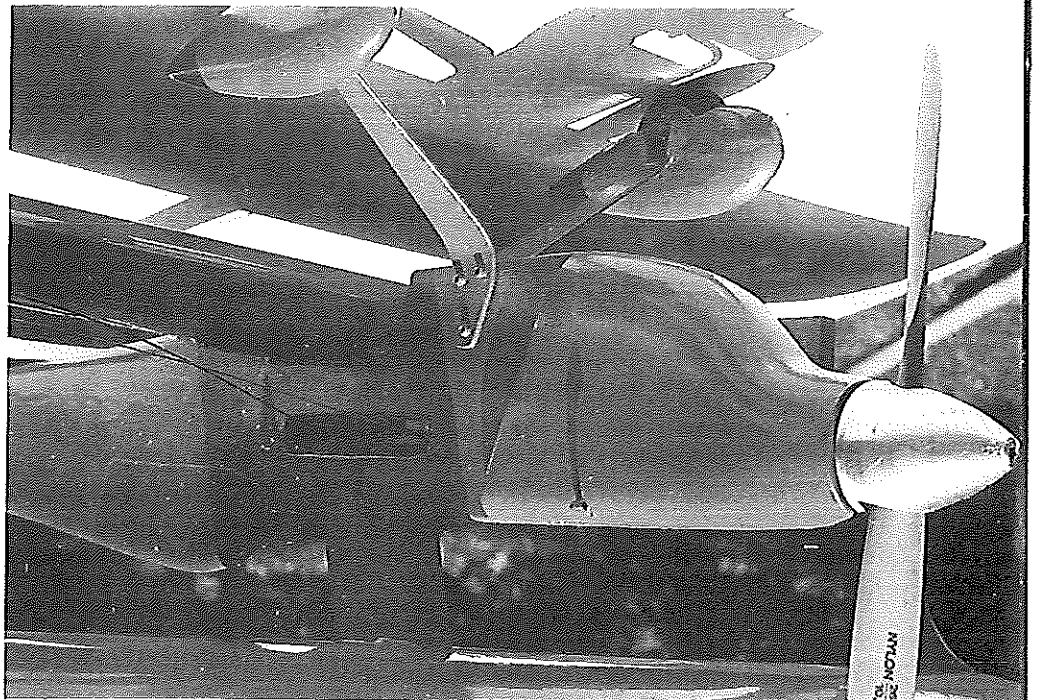
It took me two years to build another—the model shown in the photos. This plane is even better. The nose was lengthened $\frac{1}{4}$ inch for easier balancing, and a Royal .40 modified for stunt provides more power.

Engine is a Royal .40 reworked for competition-type run quality. Tank is a stock 3½-ounce unflow with Fancher-style adjustable mount. Once proper height is established, the tank may be epoxied in place.

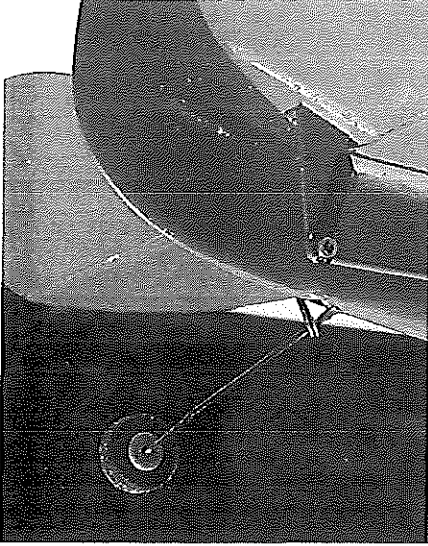


At a 40-ounce weight, this plane will fly a pattern with just about anything out there. Wing loading than by a lack of flaps. A 40-ounce airplane on around 500 square inches of wing is not going to turn extremely tightly no matter how it is configured. Take that as a hint. If you want absolute maximum performance, build the model as light as possible. With good wood and good

Front view shows cowl cheeks with protruding unflow vent. Carved balsa wheel pants are covered with ¼-ounce fiberglass cloth. Wheels are Dave Brown Lectra-Lites. Fuel is 5% nitro, and a Master Airscrew 11 x 6 prop is used.



Elevator horn is mounted on 1/8 ply and glued to the elevator. Line clip on tall wheel is for launching stogie hookup.

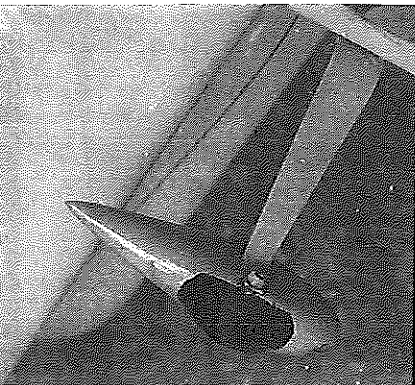


If you plan on using a plastic film covering, you might consider somewhat different tip construction. The ribs as

Wings: The ribs are cut via the stack method, and sanding the stack to shape. Since a bunch of ribs must be made, you will probably have to cut three or four stacks. The wings are identical, with the exception of the cutouts in the bottom of the top wing for cabane and interplane struts and in the top of the bottom wing for the fuselage and struts. Don't make two bottom wings or two top wings!

Build both wings before you build anything else. It can be psychologically intimidating to build two wings after everything else has been built. (That is why mine sat unfinished for nearly a year with only one wing built.)

Construction
Special is complicated, but proper sequencing is helpful. Nothing in the construction of the 38 attainable weight. construction techniques, 36 ounces is an attainable weight. Wheel pants are retained by a 6-32 axle bolt. When flying on rough fields, remove the pants and use larger wheels.



The most critical aspect of the model is the alignment of the wings, both to each other and to the stab and thrust line. If there is to be any error, it should be in the top wing incidence. You can probably get away with one degree negative incidence here. Everything else should be zero degrees relative to the thrust line.

Attach the bottom wing to the fuselage, and align very carefully before the glue cures. Dry-fit the struts and top wing, and check alignment. When aligned, epoxy the struts into the lower wing, then attach the top wing. Whether film or paper is used for covering, it is far easier to have the top wing completely finished before attaching it.

Bellcrank mounts are pre-mounted pieces of 1/8-inch plywood epoxied to outboard side of fuselage. Pushrod brace is a small control horn drilled for pushrod passage. Pushrod's bellcrank end has foolproof Z-bend.



Fuselage side so that the bellcrank is also in neutral. Wait until after painting to install the leadouts.

38 Special

Type: Control line stunt
Wingspan: 38 inches
Recommended motor size and type: .35-.46 glow
Expected flying weight: 40 ounces
Type of construction: Built-up
Type of covering finish recommended: Iron-on film

ply mount assembly to the outboard in neutral, then epoxy the bellcrank and pushed to the elevator. Tape the elevator permanently installed, attach the horn and plan. With stab/elevator assembly to bend the pushed to length over the Law in reverse!).

The easiest way to install the controls is Law in reverse!). The feature has never been needed—Murphy's engine centerline. I used a Fancher mount mounted 1/4 inch to 1/8 inch above the Most engines will need the tank

The engine mount section needs to be planned around your choice of engine. Several of these models have been built with Super Tigre .46s; others use O.S. .40 FPs. When selecting an engine, consider length of run on the fuel available—tank room is somewhat limited. I used a 3 1/2-ounce Smith's unflow with the Royal .40 on the model shown here.

drawn are a bit difficult to cover without wrinkles. Partial blocks at the leading and trailing edges may work better.

