

**KIT**

**REVIEW**

**No. 110 By  
Peter Hales**



**STERLING  
MODELS**



**SRE  
BIPLANE**

**T**HE *Waco SRE* biplane is among the latest additions to the *Sterling Models* kit range to be distributed by *RipMax* and a real beauty it is. At  $1\frac{1}{8}$  in.-1 ft., this scale replica of the *WACO cabin biplane* of the 'Golden Thirties' is really magnificent, appealing to the R/C Sport and Scale flier alike. Model spans  $56\frac{1}{2}$  ins. and is 45 ins. long. Recommended engine size is .40-.60. I found .40 to be ample.

In many ways, the design reflects a return to old-style as the model features fully built up construction with the exception of the spats and engine cowl which are ABS mouldings. Ninety per cent of the parts have been die-cut and numbered, some of the soft balsa sheets suffered with imperfect cutting and the  $1/8$ th inch ply sheets needed some knife work. Quality of the strips and sheet balsa on the whole was good, but a lighter grade would have helped for the wing leading edge sheeting. A bag of goodies contains aluminium engine mounts, aileron, elevator and rudder, horns, bellcranks, wing-fixing bolts and pre-formed U/C wires. This leaves the builder to supply main and tail wheels and a fuel tank. ABS mouldings for the spats and engine cowl are good, the cowl has dummy engine cylinders

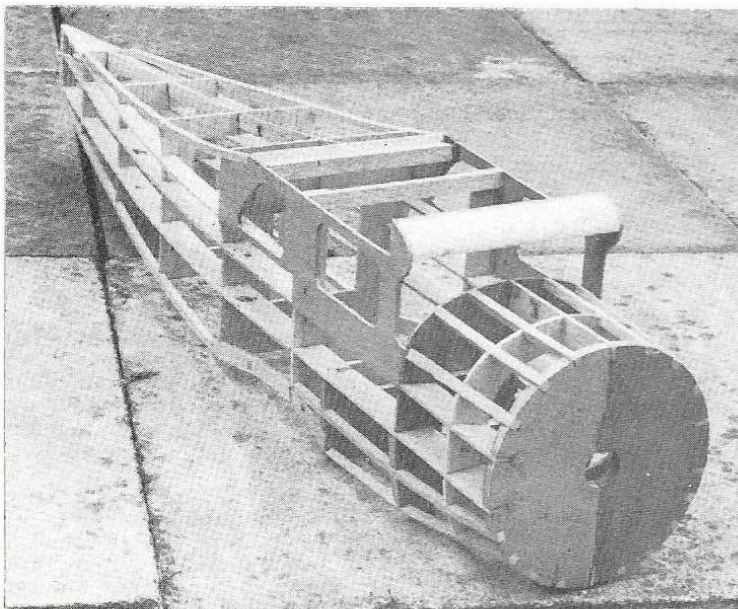
moulded in place, which adds to the scale appearance.

Typical *Sterling* thoroughness is evident in the plan which is printed on both sides with detailed step by step assembly drawings and instructions. Various photographs showing details of the full size prototype are dotted here and there to help add that extra scale fidelity if required.

#### Fuselage construction

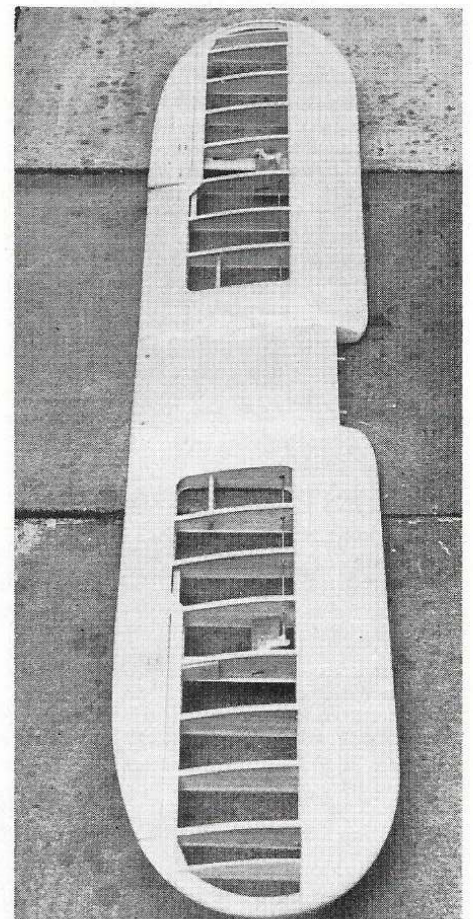
Construction follows scale rubber powered model practice and is made in two halves. One half is built flat over the plan on the building board, and then removed, and the second half is then built on to the first. To eliminate any twists, full length shaped longerons (three either side) slot onto the formers holding them in place and producing the curve of the fuselage and a very strong box section. The main undercarriage legs and rear supports are held to the formers using 'J' bolts which incidentally were too short in the kit. I dislike this form of fixing because the 'J' bolts tend to cant over at an angle. So I replaced these with nylon saddles. The only other modification to the fuselage was to provide adequate cooling for

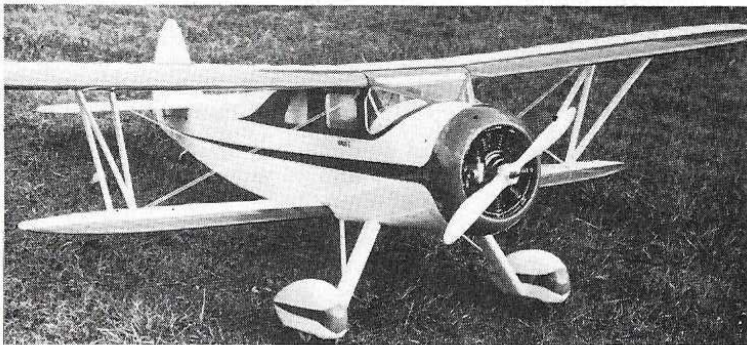
the engine and an exit for the exhaust gases. This was achieved by drilling two  $3/4$  in. dia. holes 1 in. apart at the bottom of the engine mounting bulkhead and two  $3/8$  inch dia. holes 1 in. apart in the second bulkhead. Between these two, tapered paper tubes were glued. Behind the second bulkhead a 2 in. square cut-out was made in the  $1/8$  in. fuselage sheeting. The piece cut out is then glued back in at an angle from the top of the tubes to the bottom of the fuselage. A cover is then made and glued over the cut out and angled down at about  $35^\circ$



**Top:** Karen Packer displays the reviewer's finished model. **Left:** naked fuselage, the die-cut crutch and longerons can be clearly seen. This construction method produces a fair representation of the full-size structure when film or nylon covered.

**Right:** top wing before covering - inset ailerons are fitted on top wing only with pushrod and bellcrank operation.





**Left: chunky fuselage with radial cowl neatly encloses the HP40 power plant. Note the vacuum formed dummy radial engine.**

which will simulate the full size aircraft's cooling access door. The silencer was made from 1 in. dia. copper tubing with two  $\frac{1}{4}$  in. dia. pipes spaced 1 in. apart. These were centrally positioned down the two paper tubes and exit level with the bottom of the fuselage.

### Wings

These are quite straightforward being built flat over the plan in three sections, i.e. - centre and two outer panels. These are then joined together at the correct dihedral determined by balsa doublers built into the centre section. The wings are then completed by adding the bottom sheeting.

### Tailplane

The tailplane and fin are built up with  $\frac{1}{4}$  in. balsa strips and then sheeted with  $\frac{1}{16}$  in. sheet. Fin and rudder are  $\frac{1}{16}$  in. balsa sanded to section.

### Finishing

The completed airframe was sanded to a smooth finish and then covered with white Humbrol 'Flight-Span' with red trim as depicted on the box lid. The engine cowl and

spats were painted with Humbrol Epoxycote in colours to match the film.

I fitted an HP 40 which I selected for its short overall length as the cowl depth is only  $2\frac{1}{2}$  in. With everything fitted and ready to fly, the model weighed in at 6 lbs.  $2\frac{1}{2}$  oz. A little heavy I thought, and I searched the plan for the recommended weight but all I could come up with was:- Weight empty, 2,734 lbs! Weight loaded 4,200 lbs! I was well within that figure, trouble was where to fit a 400 H.P. Pratt & Whitney Wasp Jr.? Never mind, I digress! The CG position came out at  $\frac{3}{4}$  in. in front of the correct position, which is unusual for a model with a short nose like this one. (Must have been in that copper silencer that I made.) About an ounce of lead weight was added to the tail which brought the CG to approx.  $\frac{3}{8}$  in. in front of the recommended position.

### Flying

The day before the test flying, I ran a couple of tanks of fuel through the new HP 40 to set up the throttle and check out the engine. Total weight was, less fuel:- 6 lbs.  $2\frac{1}{2}$  ozs.

Next day down to the flying field, a last check-over, engine idling nicely, we were

ready to go. I positioned the cameraman about 40 yards up the runway estimating that to be about at the rotation point, allowing for the forward CG and model weight. How wrong can you be! As soon as the throttle was opened, up came the tail and in what looked like 30 feet she was airborne, requiring only a touch of left rudder whilst running across the ground.

A couple of circuits dispelled all my doubts regarding a possibly over-weight model, and as for engine size, a good .40 is ample. Performance is snappy and crisp on full throttle to say the least. For scale flying a reduction in throttle to approx. half is required, when response to controls is still positive. Turns on rudder are good. Aileron response is positive and will roll the model, if somewhat barrelly without the aid of rudder and elevator. While doing slow low pass for the benefit of the camera, we noticed on opening up the throttle she would stick her nose down rather sharply which was a little disconcerting. This is less noticeable of course, if you open the throttle slowly. It's possible the forward CG position aggravates this condition. After a couple more flights it was obvious that not only was the 'WACO' a good looking scale biplane, but a beautiful flyer as well; capable of basic aerobatic manoeuvres which will satisfy the scale and aerobatic sports flyers alike.

### Summary

A good quality kit which goes together well. The finished 'WACO' is a very attractive looking aeroplane indeed. It is a pleasure to fly and is a real beauty in the air. I feel sure we will see this model at many of the scale meetings in the near future.

It is also a fitting tribute to Ed Manulkin, founder of Sterling Models, who died suddenly last year. This was one of his favourite air planes.

**Distributed by RIPMAX LTD. Price £54.50p.**