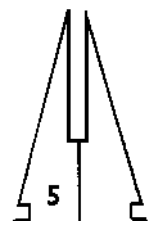
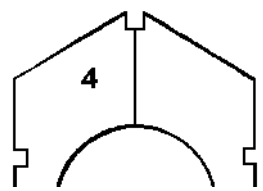
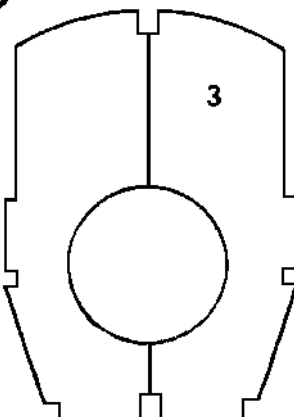
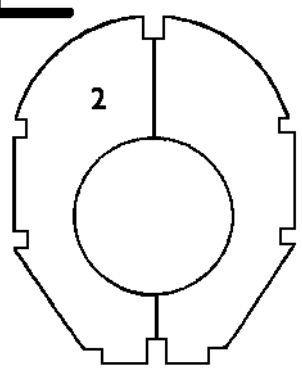
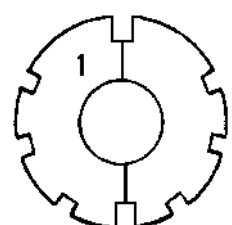
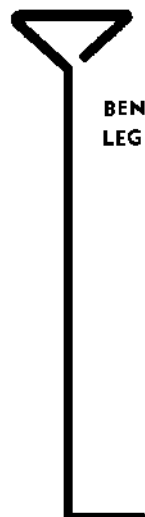
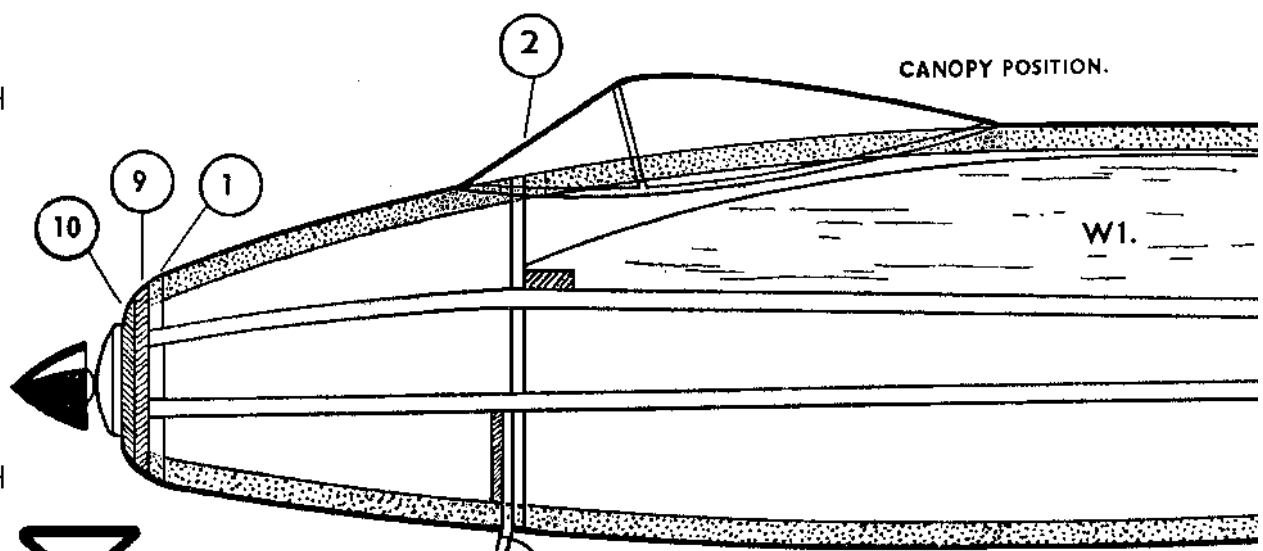
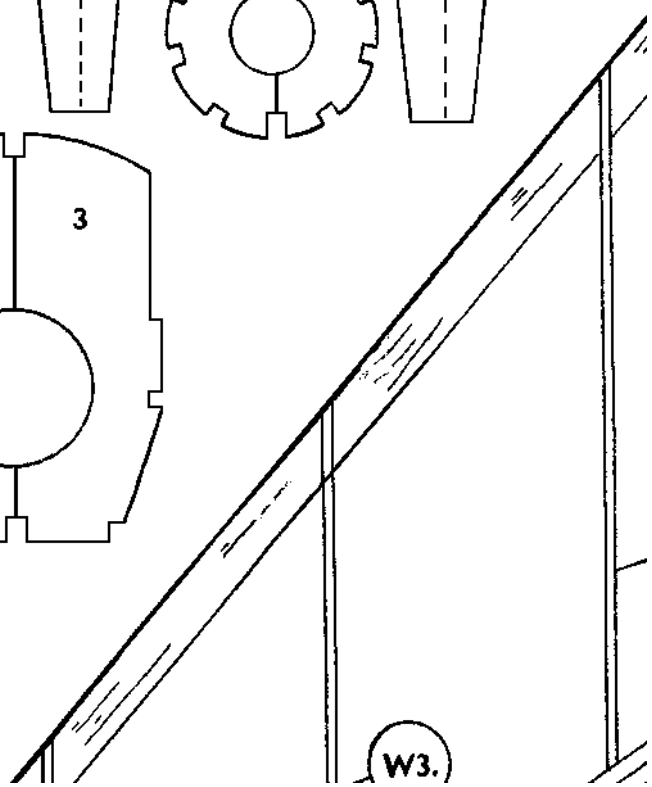


**FROG**  TRADE MARK

**"DELT"**



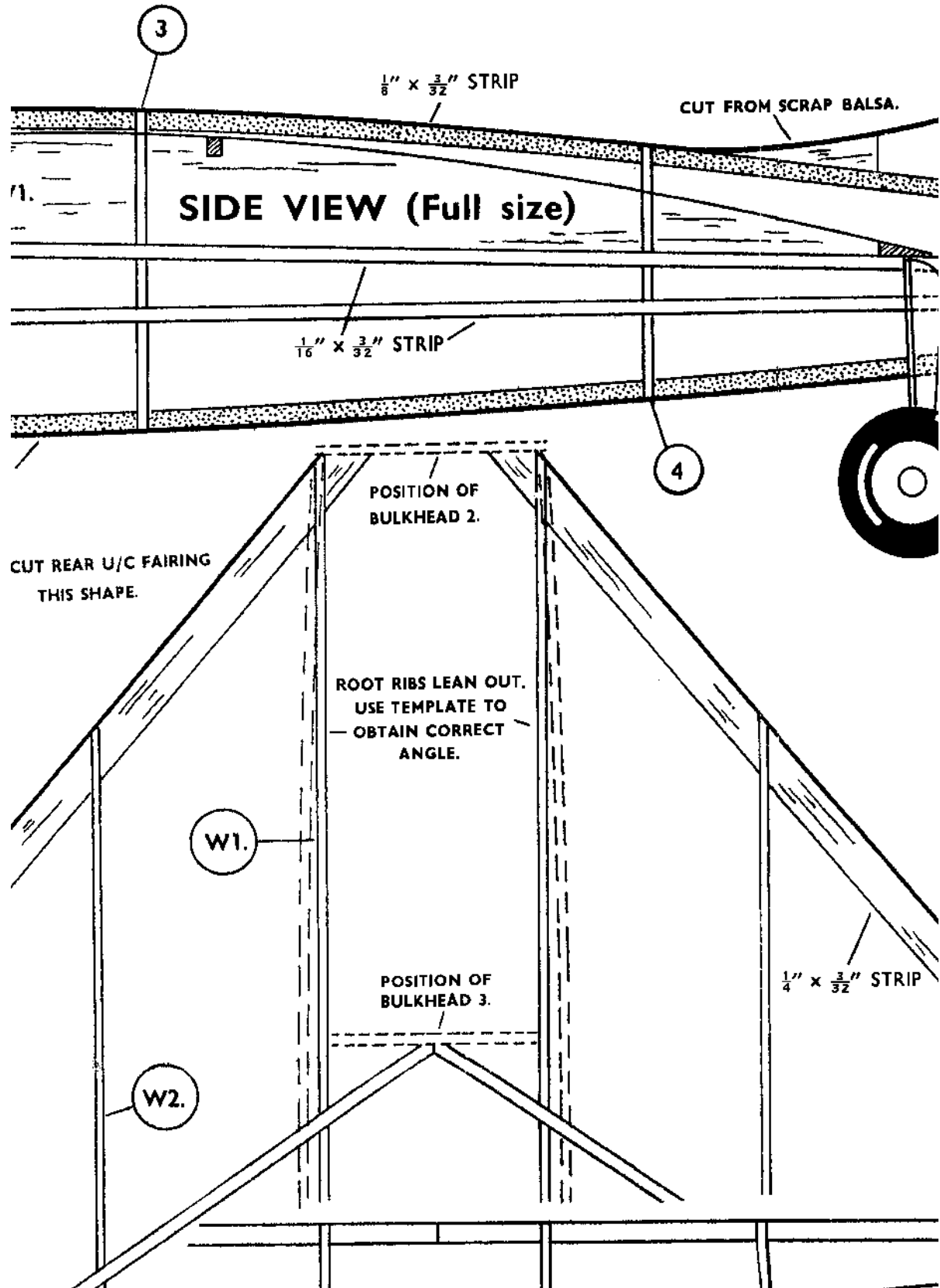
$\frac{1}{8}'' \times \frac{3}{32}''$  STRIP



# .TA 16"

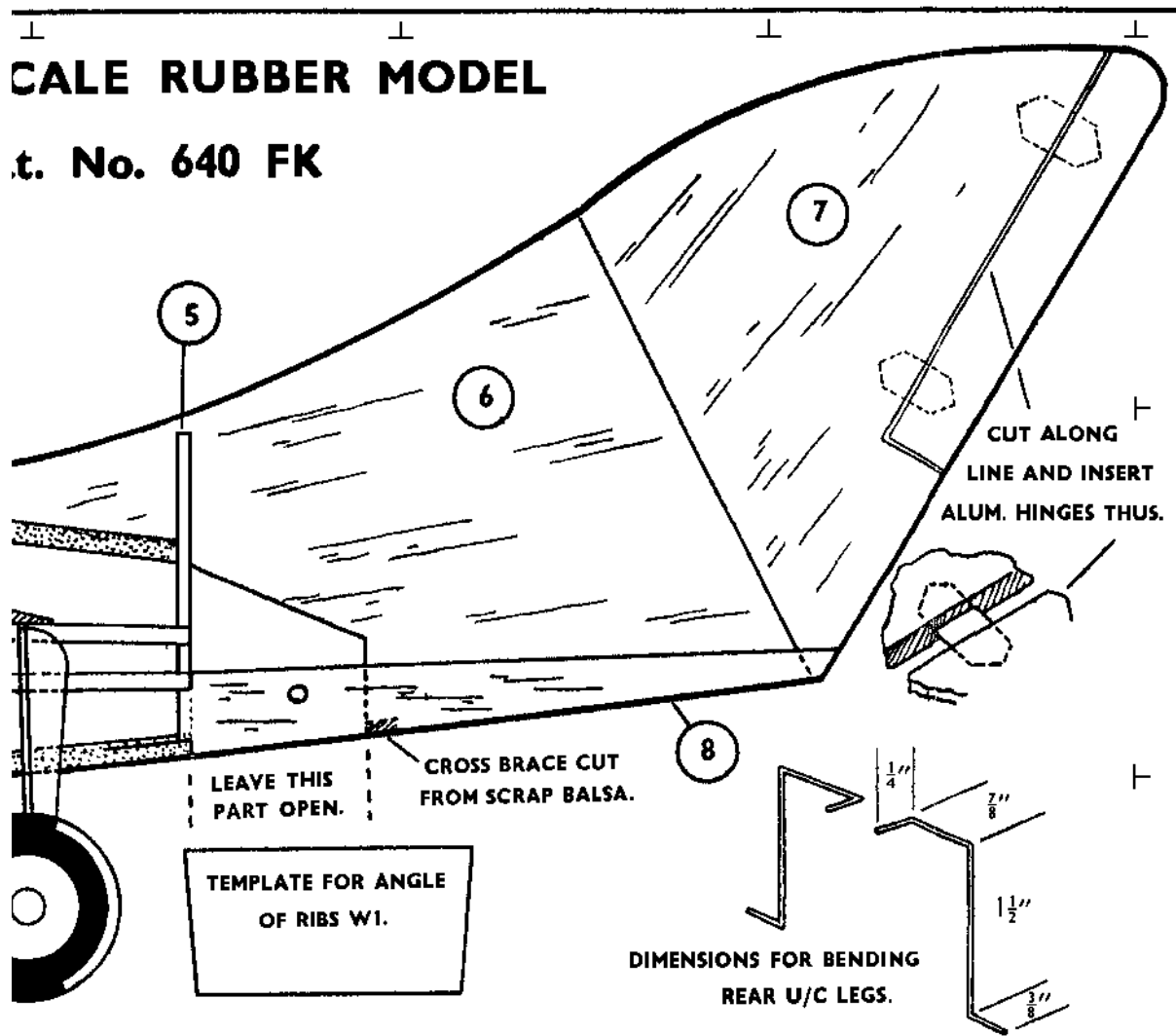
17" SPAN SEMI-SCA

Cat.

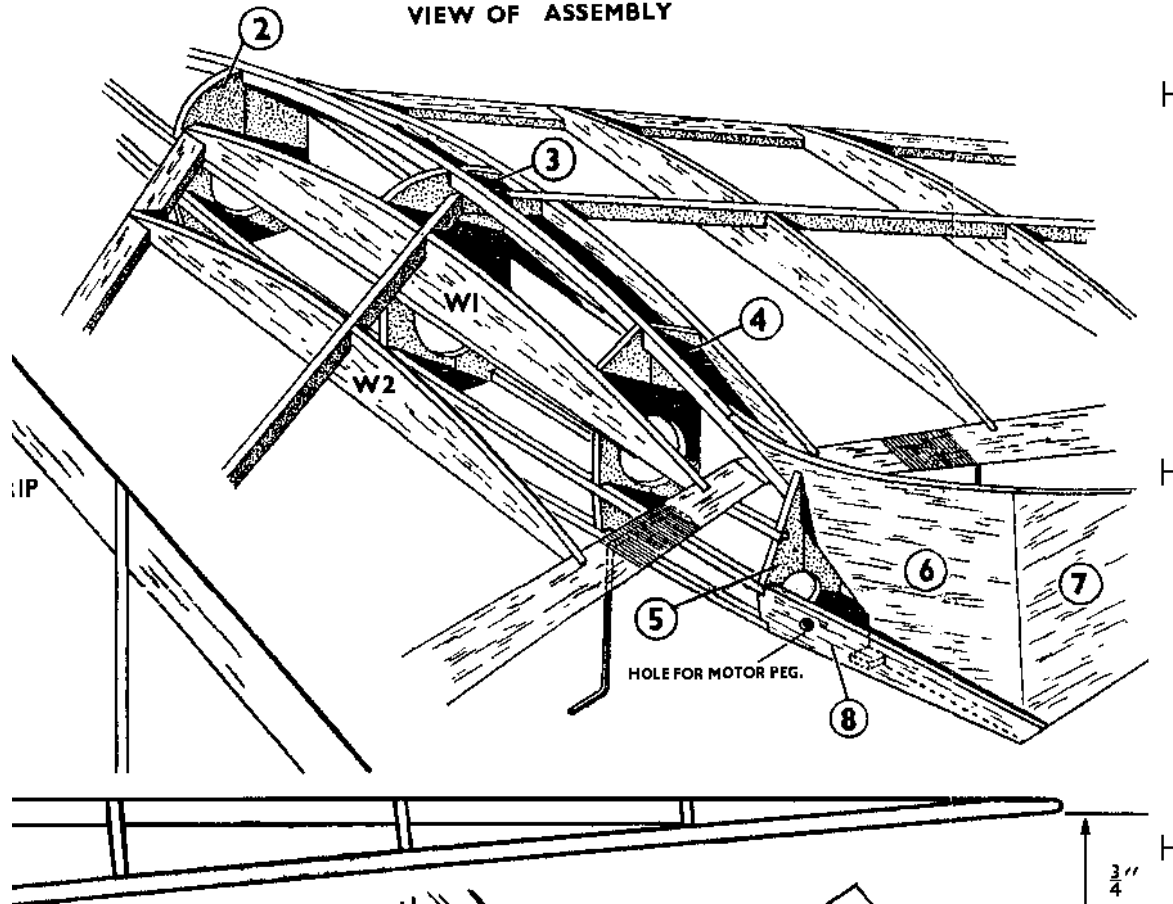


# SCALE RUBBER MODEL

t. No. 640 FK



VIEW OF ASSEMBLY



## INTRODUCTION.

This is a model of a modern fighter aircraft, based on the latest military jet aircraft to go into service with the R.A.F., and is airscrew-driven (by elastic bands) to simulate a prop-jet drive.

The model is quite simple to build incorporating novel constructional features, which also make it very robust when completed. All the main parts are ready-cut to shape and numbered to correspond with the drawings, as in all Frog Kits. -

To ensure a satisfactory job, study the plan and check the parts with it before commencing. Assemble the model step by step as described.

Cement and dope are not included in this kit, but they can be bought at any model shop. Use quick-drying balsa cement such as Frog Universal. You will also need a balsa-cutting knife or a razor blade and a few pins.

When you have built this model, remember there are many other Frog models equally attractive, which you will enjoy building.

## BUILDING INSTRUCTIONS.

### FUSELAGE.

Commence by pinning  $1/8$ in. x  $3/32$ in. balsa strip over plan (shown shaded) also cement together Fin parts 6 and 7, and pin over plan (see Fig. 1). While the Fin parts are setting remove all bulkheads and parts 8 from panel, then cement half bulkheads 1, 2, 3, 4 and 5 to keel. When dry add part 8 and three  $3/32$ in. x  $1/16$ in. stringers as shown in Fig. 2.

When this half of the fuselage has set, remove from plan and add the remaining half bulkheads, part 8 and stringers. Nose rings parts 9 and 10 may now be fixed, cement these to bulkhead 1 with the grains of the wood at right angles to each other.

Cut an  $8\frac{1}{2}$ in. length from the  $1\frac{1}{2}$ in. x  $3/32$ in. (wide) strip and set aside for trailing edges of wings, use the remainder of this strip to fill in between bulkheads 1 and 2 (see Fig. 3). The sides and bottom between bulkheads 1 and 2 can be covered with stiff paper after fixing front undercarriage leg. Sand nose of fuselage to shape when dry.

Next bend the front undercarriage leg to the shape given on drawing and cement it in place on bulkhead 2 using a piece of scrap balsa wood to hold it in place (see Fig. 3), use plenty of cement.

### WING.

Mark out and cut to shape the  $8\frac{1}{2}$ in. length of  $1\frac{1}{2}$ in. wide strip as shown in Fig. 4. This makes the trailing edge for both wing halves. Having done this, pin trailing edges and leading edges over plan and cement ribs W1, W2, W3, W4 and W5 in place making sure that ribs W1 are set at the correct angle (use template given on drawing) do not cement the trailing edges or main spars together at centre at this stage. The main spars  $1/8$ in. x  $3/32$ in. strip are now cut to length and cemented in the slots in the ribs. Cut the wing tip fillets from scrap balsa and cement in place.

Sandpaper the trailing edges to shape and section, and smooth down the rest of the wing. Now cut out the elevons (or trim tabs) from trailing edges of wings and fin, and refix with aluminium hinges, (cut from aluminium strip supplied). Next bend the rear undercarriage legs to shape given on plan, and bind and cement them in place on trailing edges of wing.

Now cover wings with the tissue supplied. Cover bottom surfaces first use office paste or clear dope for fixing, cut tissue to approximate shape leaving  $1/4$ in. margin all round. Do not water tighten the wing covering until wings are attached to fuselage.

### ASSEMBLY.

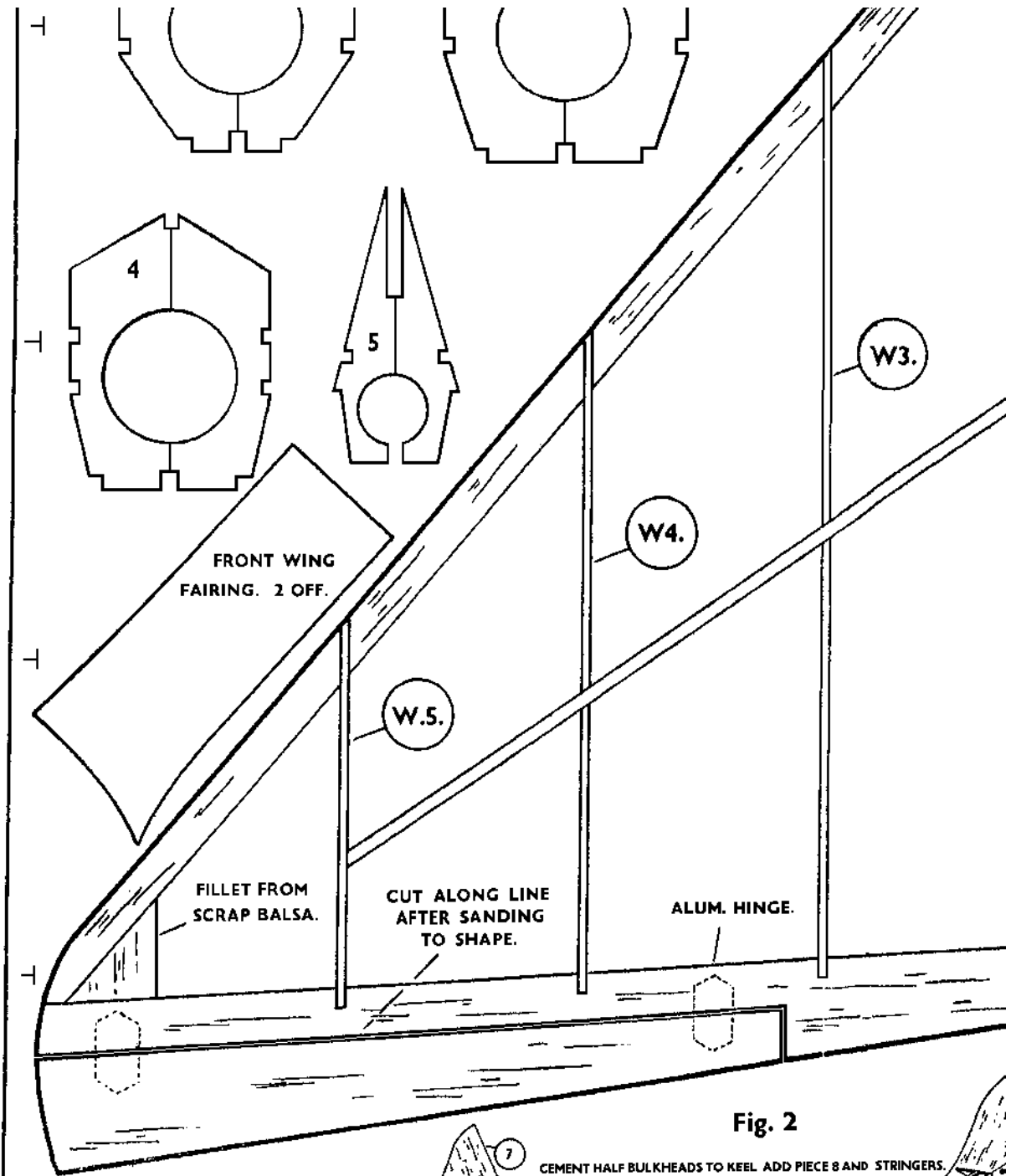
To fix wings, slide them in from each side of the fuselage making sure that ribs W1 rest against bulkhead 3, then check that the main spars are the correct length (trim if needed), now remove wings and cement along bottom of ribs W1, ends of trailing edges, also where they touch the stringers, the ends of the mainspars and leading edges, then slide wings into position and hold them together for a few minutes until set.

The paper fuselage fairings and undercarriage fairings can now be added, cut them from stiff paper to shapes given on plan. Two of each of the fuselage fairings are required. Try them against the fuselage to see that they fit. Trim them if necessary then cement them in place.

### COVERING.

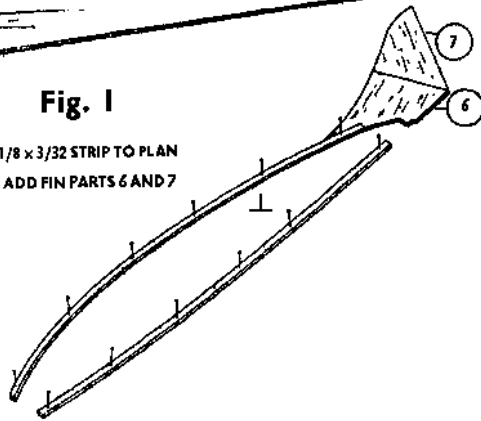
Cover fuselage with narrow strips of tissue, starting with the sides first then the bottom and finally the top and sides of fin. Do not attempt to get the tissue drum tight, but aim at getting an even surface with no deep wrinkles. The water spraying and doping will tighten it.

Before doping, lightly brush or spray the wings and fuselage with water and leave to dry. Then give one coat of clear dope all over.



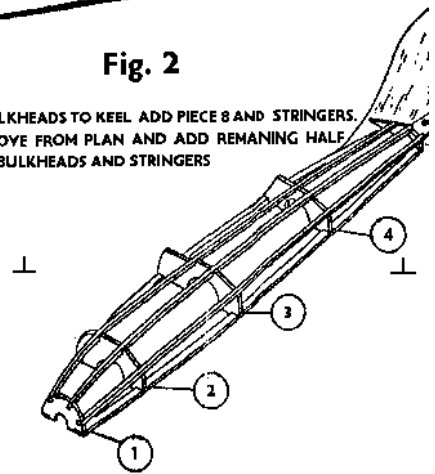
**Fig. 1**

PIN 1/8 x 3/32 STRIP TO PLAN  
AND ADD FIN PARTS 6 AND 7



**Fig. 2**

CEMENT HALF BULKHEADS TO KEEL. ADD PIECE 8 AND STRINGERS.  
WHEN DRY REMOVE FROM PLAN AND ADD REMAINING HALF  
BULKHEADS AND STRINGERS



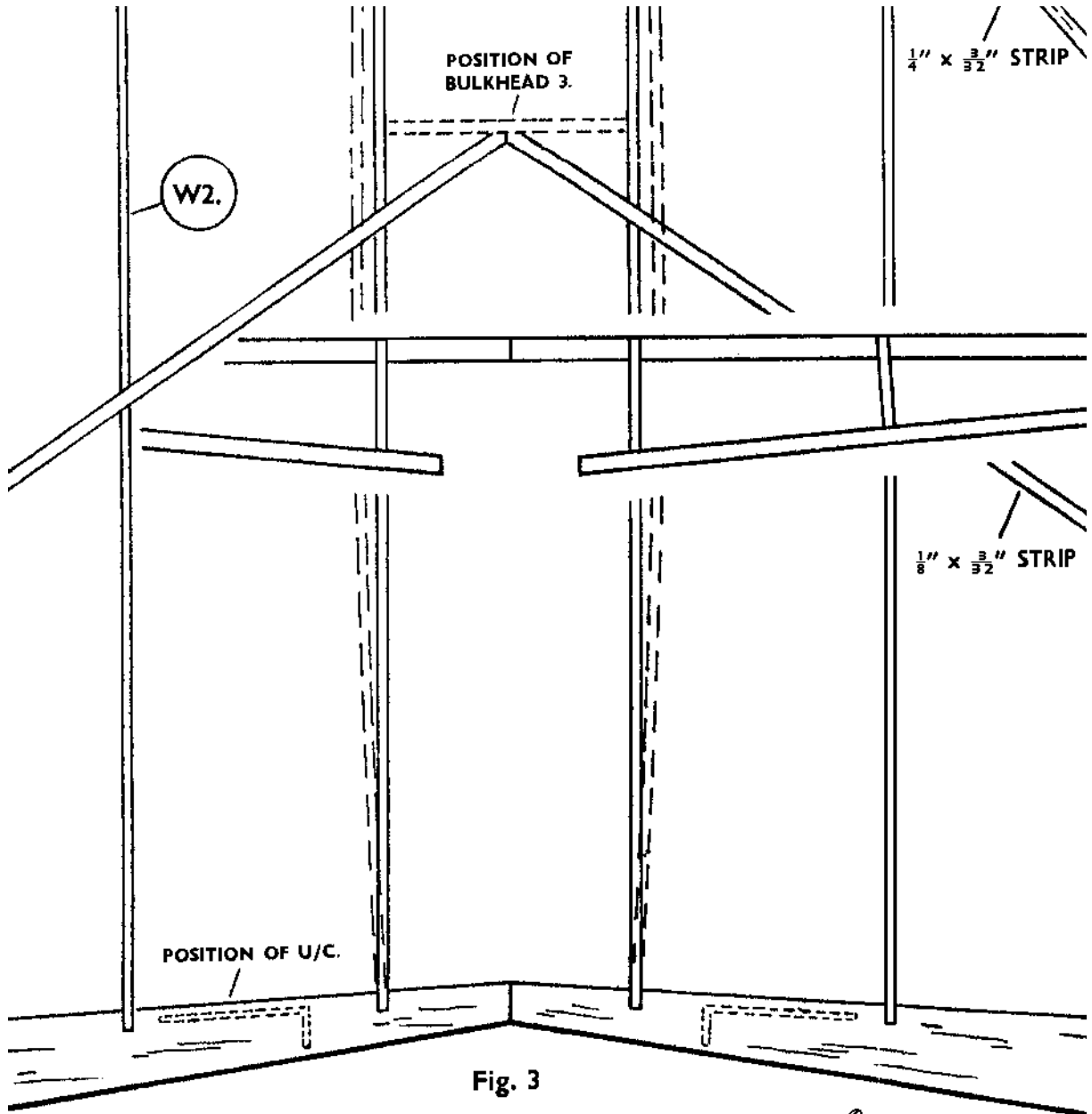
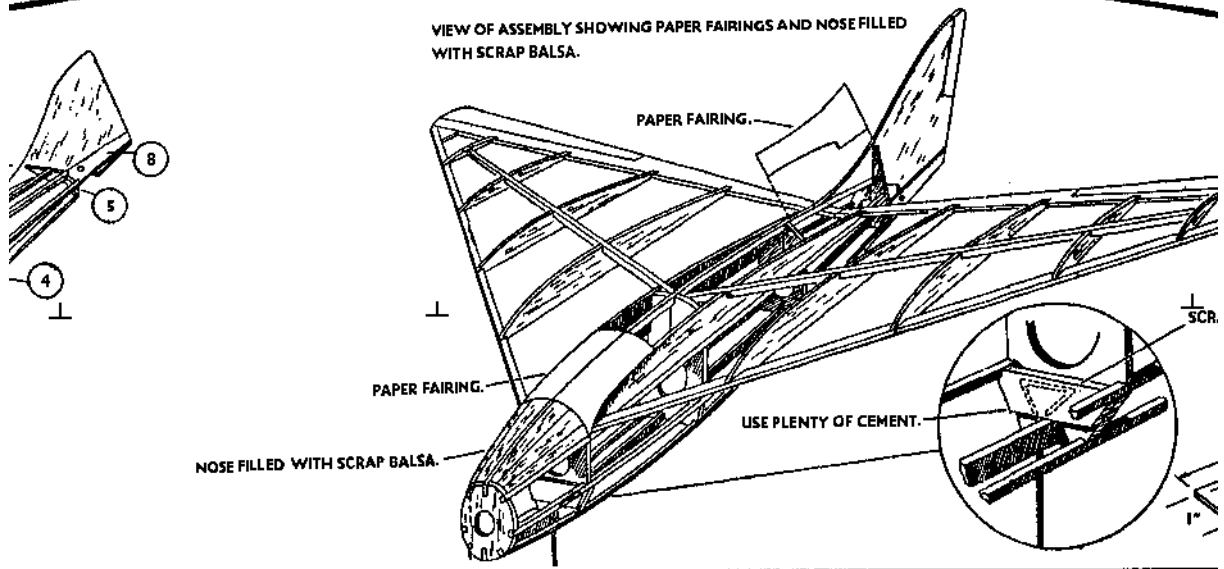


Fig. 3

VIEW OF ASSEMBLY SHOWING PAPER FAIRINGS AND NOSE FILLED WITH SCRAP BALSA.



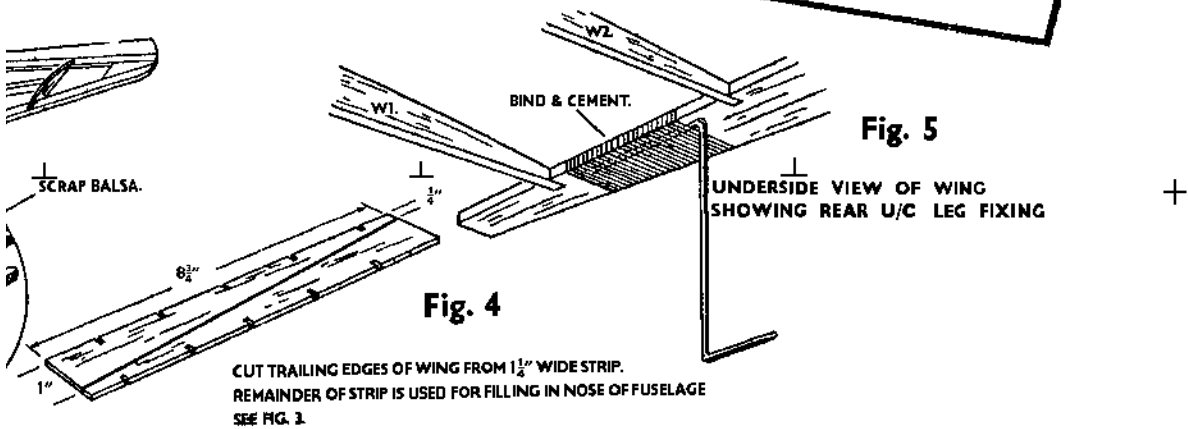
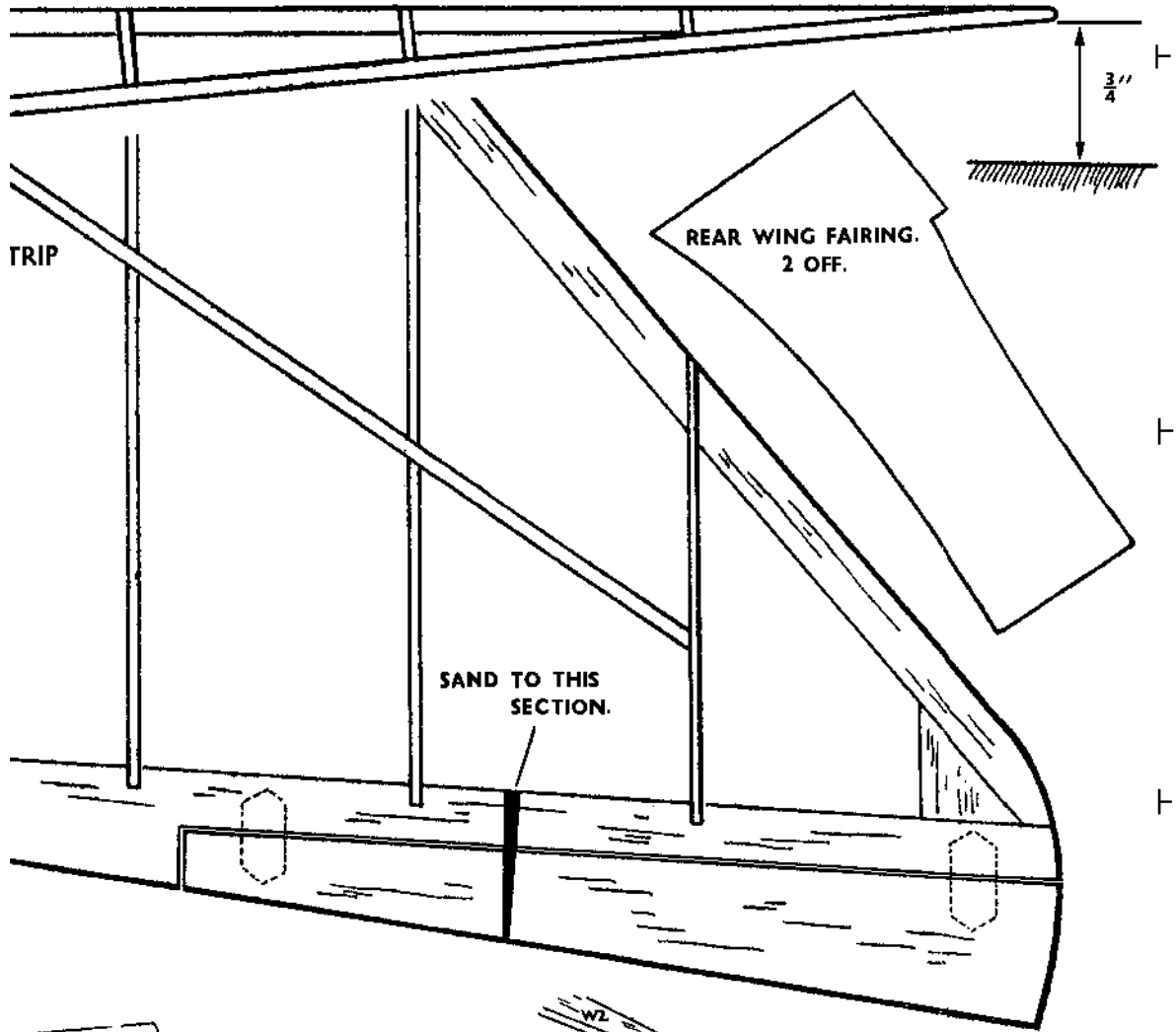
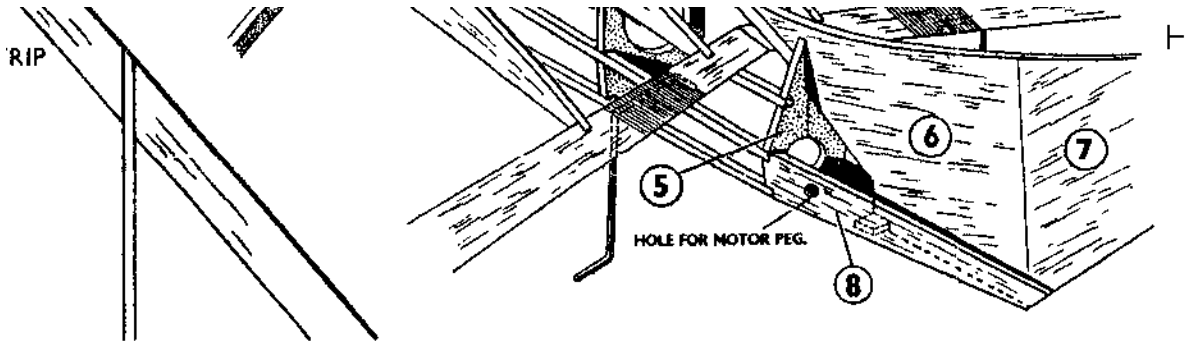


Fig. 4  
 CUT TRAILING EDGES OF WING FROM 1 1/2" WIDE STRIP.  
 REMAINDER OF STRIP IS USED FOR FILLING IN NOSE OF FUSELAGE  
 SEE FIG. 3.

Fig. 5

UNDERSIDE VIEW OF WING  
 SHOWING REAR U/C LEG FIXING

#### ASSEMBLY.

To fix wings, slide them in from each side of the fuselage making sure that ribs W1 rest against bulkhead 3, then check that the main spars are the correct length (trim if needed), now remove wings and cement along bottom of ribs W1, ends of trailing edges, also where they touch the stringers, the ends of the mainspars and leading edges, then slide wings into position and hold them together for a few minutes until set.

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#### COVERING.

Cover fuselage with narrow strips of tissue, starting with the sides first then the bottom and finally the top and sides of fin. Do not attempt to get the tissue drum tight, but aim at getting an even surface with no deep wrinkles. The water spraying and doping will tighten it.

Before doping, lightly brush or spray the wings and fuselage with water and leave to dry. Then give one coat of clear dope all over.

#### CANOPY AND WHEELS

The canopy is already moulded to shape and only requires the surplus material cut away. Check the shape with the plan before cutting. When a good fit is obtained cement it in place. The area covered by the canopy can be painted black before fixing if desired.

Slide wheels onto undercarriage legs and bend the ends of the legs up to retain wheels.

#### DECORATING.

The appearance of the finished model can be improved considerably by the addition of a little cellulose paint. This should be restricted to the fuselage, to save weight, unless it is sprayed on lightly. If it is painted by hand, apply it quickly and evenly with a soft brush. Do not put it on heavily or the model will not fly well.

The suggested colour scheme for this model is all silver, with black markings and coloured transfers, but any other colour could be used if desired.

#### MOTOR.

This is composed of two 12in. elastic bands which are supplied. Lubricate them with Frog Rubber Lubricant or Castor Oil, and insert them into the fuselage with the help of a length of wire or thread. Bend a hook at one end of the wire and insert it into the front end of the fuselage. (If a thread is being used, tie a weight to one end and drop it through).

Hook the bands on to it through the opening at the rear and insert the rear motor pin (cane) through the holes in the fuselage and through the loops of elastic. Pull the bands out through the front, and hook them on to the airscrew shaft (complete with Airscrew).

The model is now complete and ready for flying. A drop of thin oil on the airscrew shaft will improve the running.

#### FLYING.

Choose a calm day if possible for first tests. Bend the trim tabs on the wings up at an angle of about 30°, and hand launch the model into wind (if any). This model needs to be launched fairly fast. If it shows a tendency to nose up and stall, bend the trim tabs down a little and test again. When a satisfactory glide is obtained give the motor a few turns and launch into wind with a slightly nose up attitude.

The model can be made to circle right or left by bending the trim tab on the fin. When good power tests are obtained increase the turns on the motor gradually, up to a maximum of approximately 450, if the motor is not lubricated, the turns must be limited to 200. An unlubricated motor will wear and break very quickly. Stretching the elastic while winding will enable more turns to be obtained.

Designed and Made in England by

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R.L.A.