



"PUP"

JUNIOR
SERIES

10" SPAN BIPLANE
RUBBER-POWERED

SIDE VIEW (Full size)

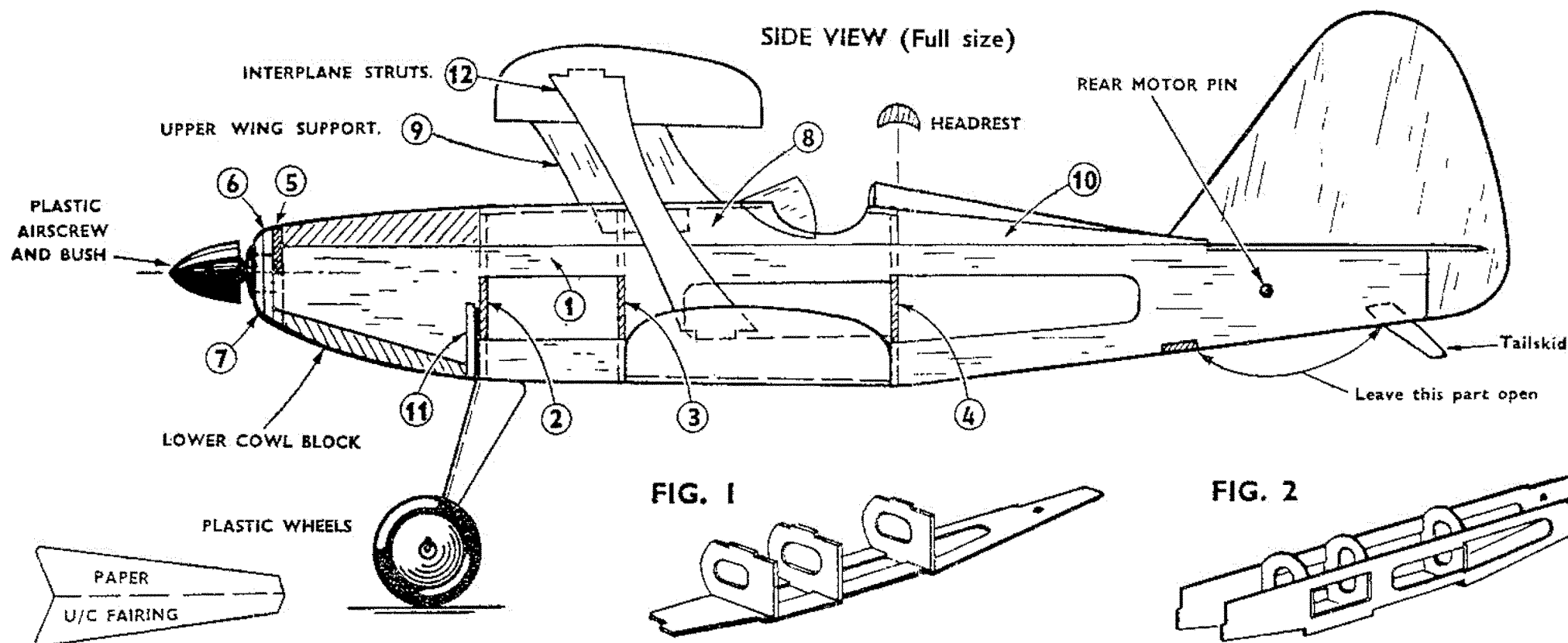


FIG. 1

FIG. 2

FIG. 3

Top view of fuselage

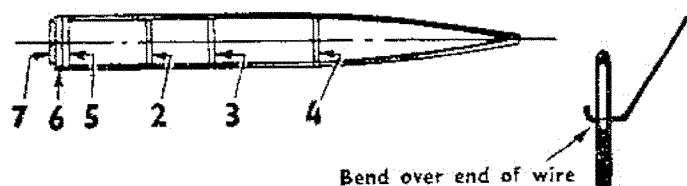


FIG. 4

U/C ASSEMBLY

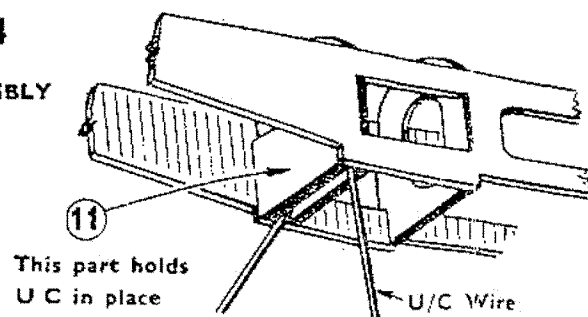
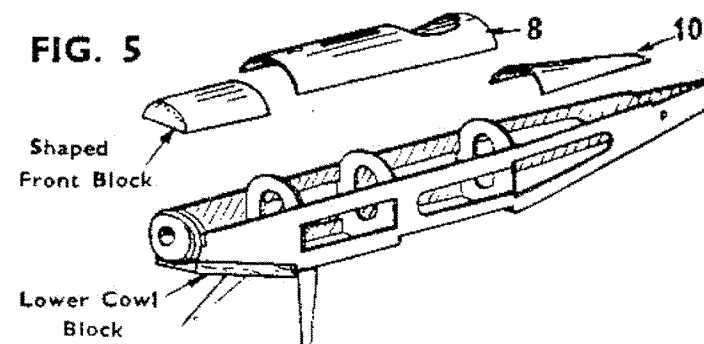


FIG. 5

Shaped Front Block

Lower Cowl Block



BUILDING INSTRUCTIONS

The Frog Junior Series comprises a range of models of near-scale design and appearance, and embodying very simple and quick construction methods. All the parts are ready-cut to shape, and interlock together, so that they automatically locate with each other, and only require cementing.

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

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

If you enjoy building this model, remember there are many others in this series equally attractive.

FUSELAGE ASSEMBLY.

Carefully remove all the parts from the balsa sheet using a balsa knife or a piece of razor-blade to separate them with a clean edge. Start by cementing bulkheads 2, 3 and 4 to one of the side panels, as shown in fig. 1. Make sure they are upright, and allow to dry. Then cement the other side in place as in fig. 2. When these are set, assemble the front bulkheads 5, 6 and 7 and cement the rear ends together; see fig. 3.

UNDERCARRIAGE.

Bend the top part of the shaped wire piece forward as shown in the side view drawing; then cement it into place in front of bulkhead 2, with the piece 11 against the wire to hold it in place; see fig. 4. Then fix the lower cowl block $\frac{1}{16}$ in. thick, between part 11 and the nose piece, and shape it after it has set.

Fit the wheels in place and bend over the ends of the wire, or glue small paper washers to the axles to hold them on. Cut the two fairings from paper to the shape given, fold them, and glue them to the wire legs.

COWLING.

Remove the cockpit piece 8, and rear cowling 10, from the balsa sheet, damp them on the outside with water to help bend them to shape, and cement them in place over the bulkheads 2, 3 and 4; as shown in fig. 5.

Cement the front cowl block in place, and sandpaper it to fit the nose of the fuselage.

Cut a small strip of balsa to fit between the side panels behind bulkhead 4, as shown in Side View. Another strip serves as a tailskid.

INSTRUCTIONS (cont'd).

Cement part 9 securely in the slot in the top cowl. This supports the upper wing. Fix the windscreen in place on the cowling, holding it in position until the cement has set.

Shape the headrest from a strip of $\frac{1}{4}$ in. square balsa, and cement it to the rear cowl block; see fig. 8, and Side View drawing.

Remove any sharp corners on the fuselage with sandpaper, and smooth down the whole fuselage to obtain a good finish.

WING.

Remove the cut-out wing pieces from the balsa sheets, and sandpaper the surface and edges smooth. Two score-lines are made at the centre to help bend the wings to the required angle.

Place each wing on a flat board or table, fix down the centre as indicated in fig. 6 and raise each end $\frac{1}{2}$ in.

Apply cement along the score-lines, and allow to dry. When they are quite set, remove the wings from the board and fix the lower one to the fuselage, between bulkheads 3 and 4 see fig. 8. Make sure that both sides of the wing are level and free from warps.

TAIL ASSEMBLY.

Remove the Tailplane and Fin parts from the balsa sheet, and sandpaper them to obtain a smooth finish. Cement them in place on the fuselage as shown in figs. 7 and 8 and make sure they are quite "square."

COVERING.

Only the fuselage needs covering on this model, and it will be easier to do this before the upper wing is in place. Cut three strips of the tissue to cover each side and bottom separately, allowing about $\frac{1}{2}$ in. overlap all round. Use paste for sticking it to the framework. Dope can be used, but remember that it dries very quickly. Start with the bottom and apply paste to the edges of the frame, from the undercarriage to the cross-strip behind bulkhead 4. Lay the strip of tissue over the frame and smooth out any wrinkles. Do not try and get it drum-tight, as water-shrinking and doping will ensure a taught surface. When dry, trim off the excess paper and paste down again. Repeat this with each side. When the paste is set, spray water carefully over the tissue and allow to dry. A coat of dope or lacquer can be applied to the fuselage to "proof" the surface and strengthen it.

Finally assemble the upper wing. Cement the top of part 9 into the centre slot in the wing, and cement the struts 12 in place in the outer slots.

DECORATING.

Painting should be restricted to the fuselage, and edging on the wing and tail, to save weight. Use Cellulose Lacquer, and apply it quickly and evenly with a soft brush. Do not put it on heavily, or the model will not fly well.

Transfers can be affixed to the wing or fin, and any other lettering or decoration required.

MOTOR.

This is an elastic band 6 in. long. Lubricate it with Castor Oil, and insert it 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. Hook the band 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 loop of elastic. Pull the band out through the front, and hook it 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.

This model can be flown indoors or out, but it should only be used outdoors on a calm day, owing to its size.

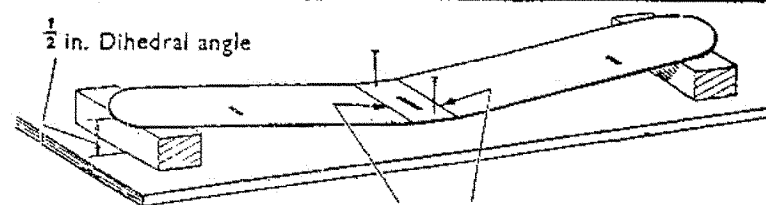


FIG. 6

Raise wing tips and cement along score lines

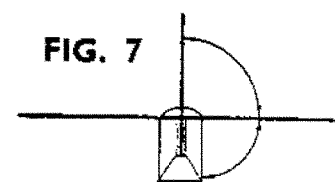


FIG. 7

Tailplane and fin must be "square" with Fuselage

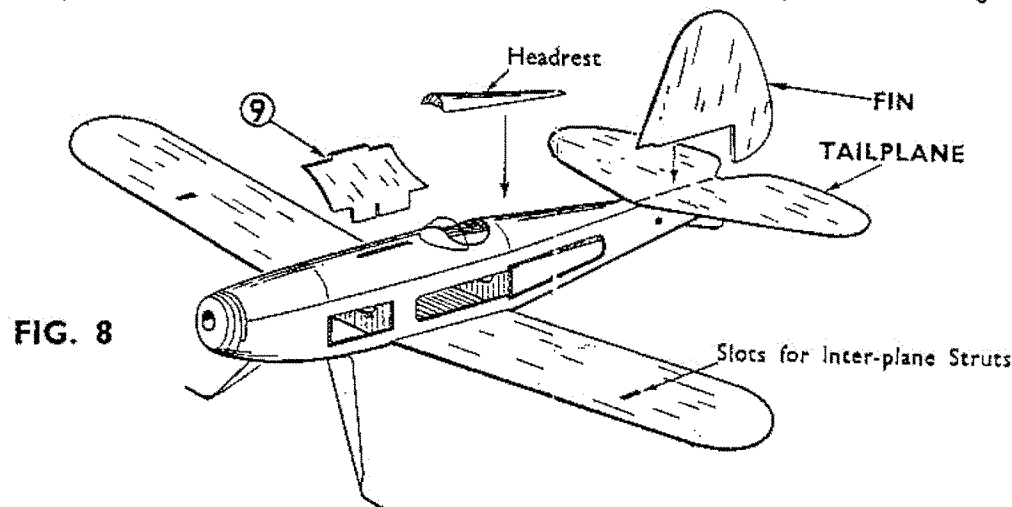
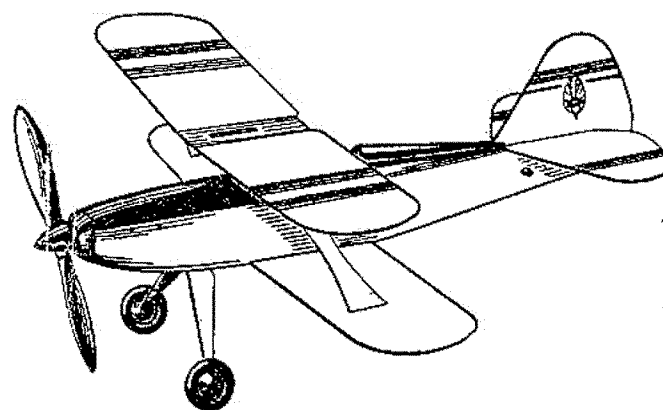
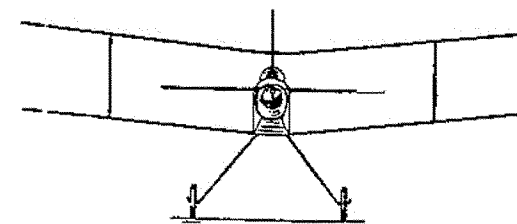


FIG. 8



FRONT VIEW
 $\frac{1}{4}$ SIZE



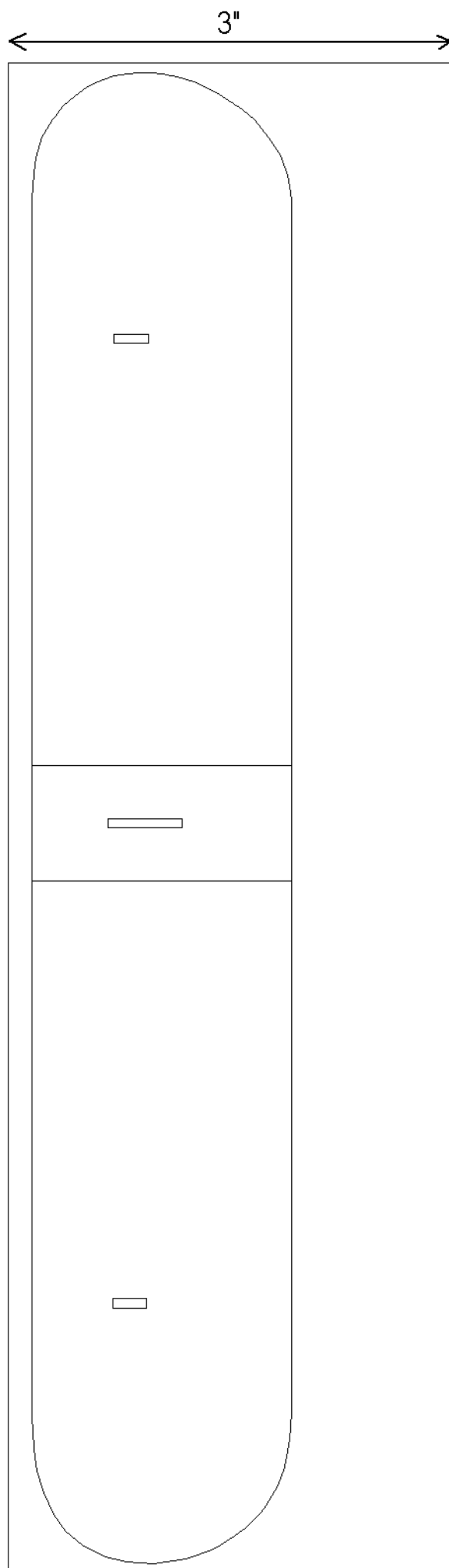
Test-glide the model first to check the balance. Hand-launch it in a slightly downward direction. If it dives to the ground, carefully bend up the rear edges of the tailplane, known as elevators, or glue a small weight in the rear end of the fuselage. If the model climbs steeply and stalls, bend the elevators down slightly, and/or add a small weight to the nose of the fuselage. A small nail can be pushed into the cowl block for this.

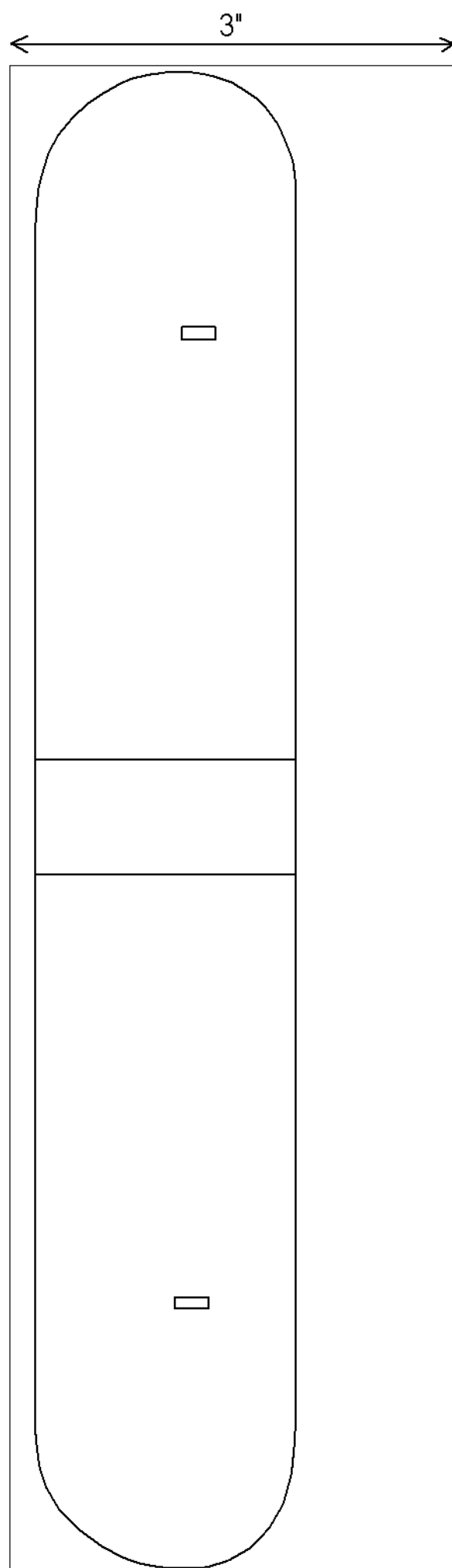
When the glide seems satisfactory, put a few turns on the motor and launch the model into wind (if any). The turn can be adjusted by bending the fin, or by twisting the wing slightly.

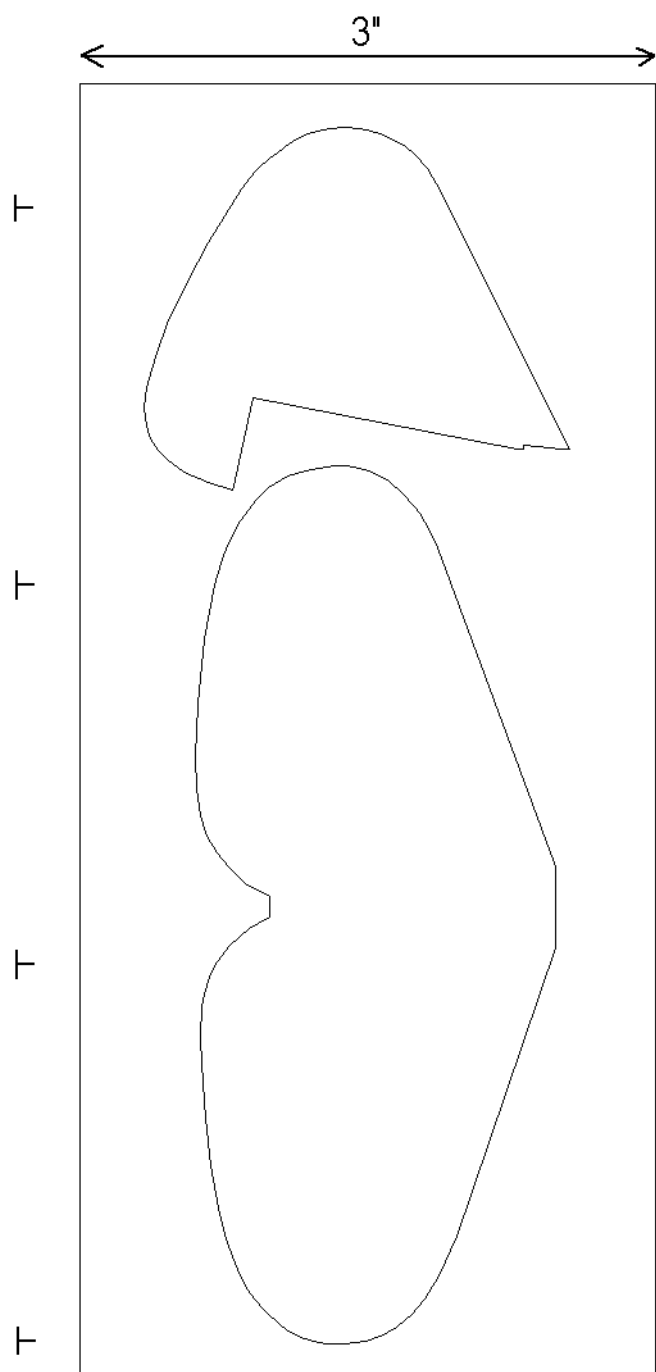
Increase the turns on the motor gradually, up to a maximum of approximately 300. If the motor is not lubricated, the turns must be limited to approximately 150.

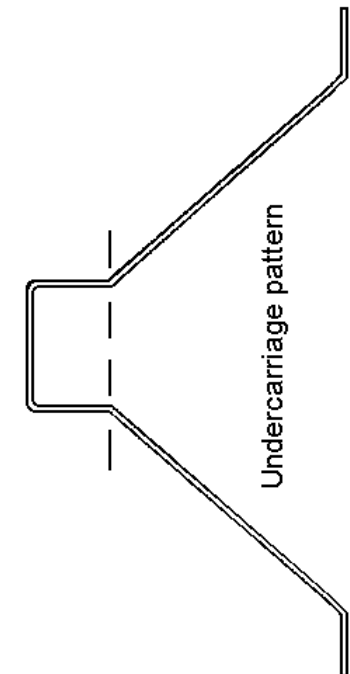
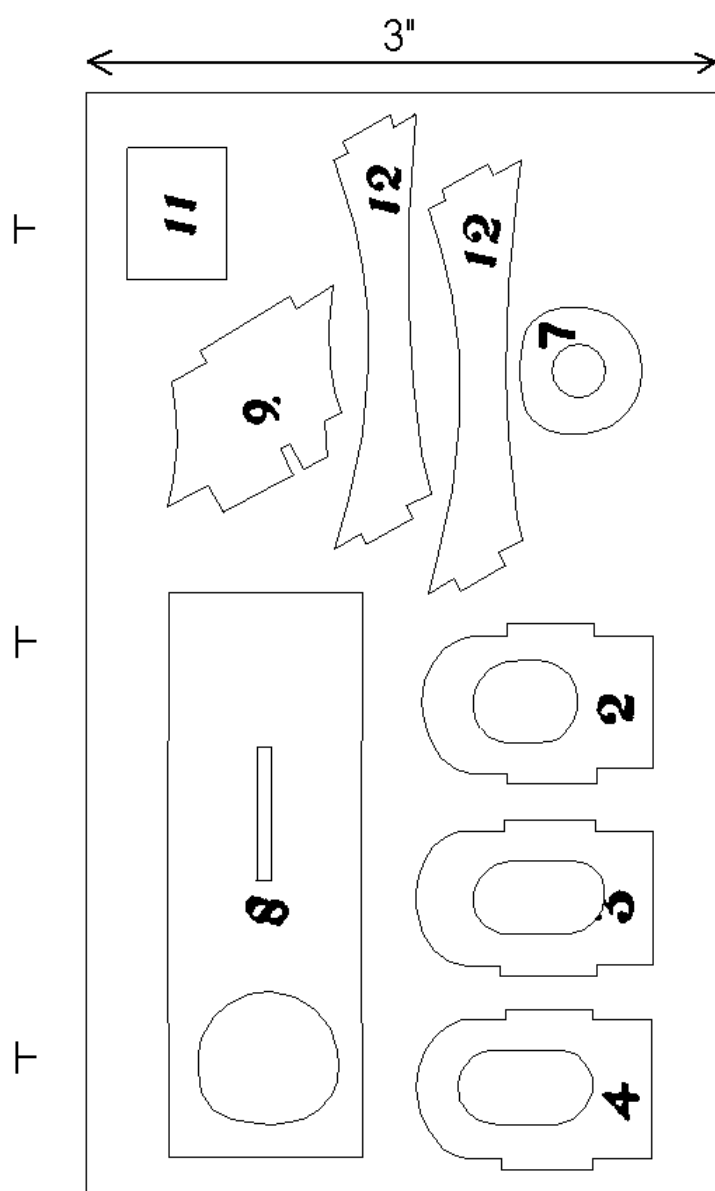
Designed and Made in England by
INTERNATIONAL MODEL AIRCRAFT LTD.

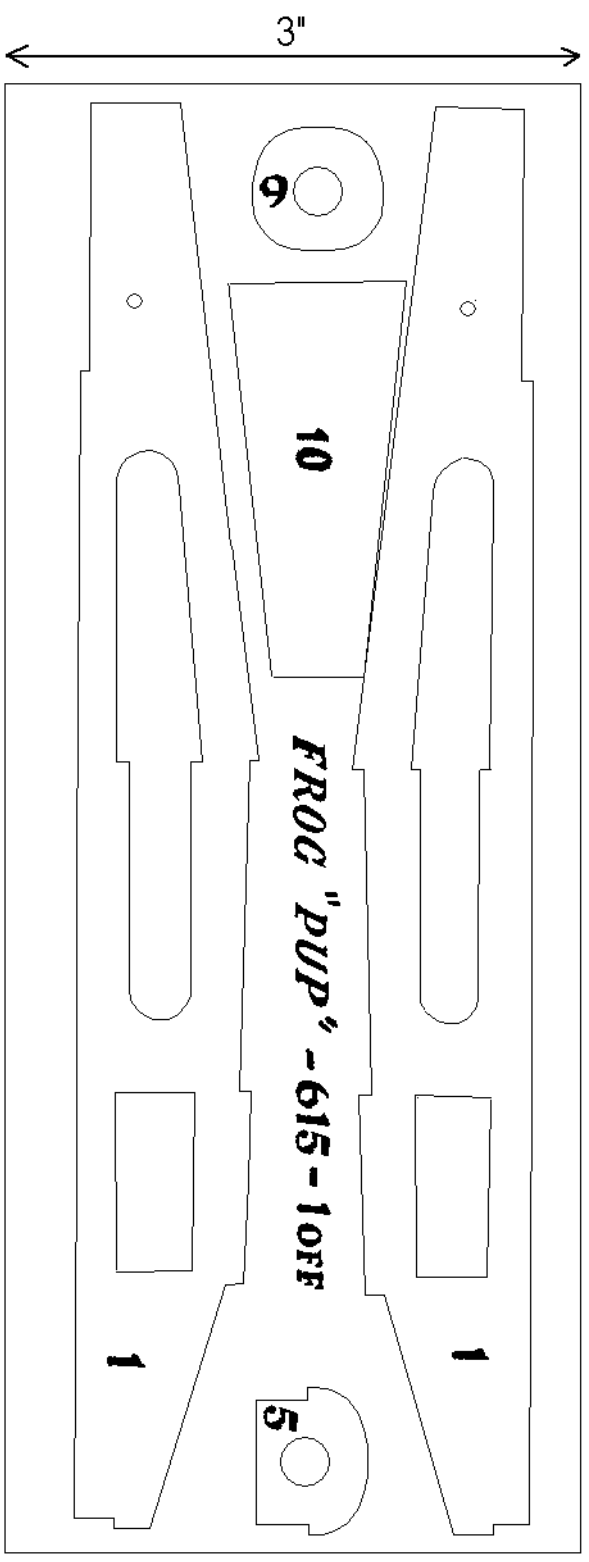
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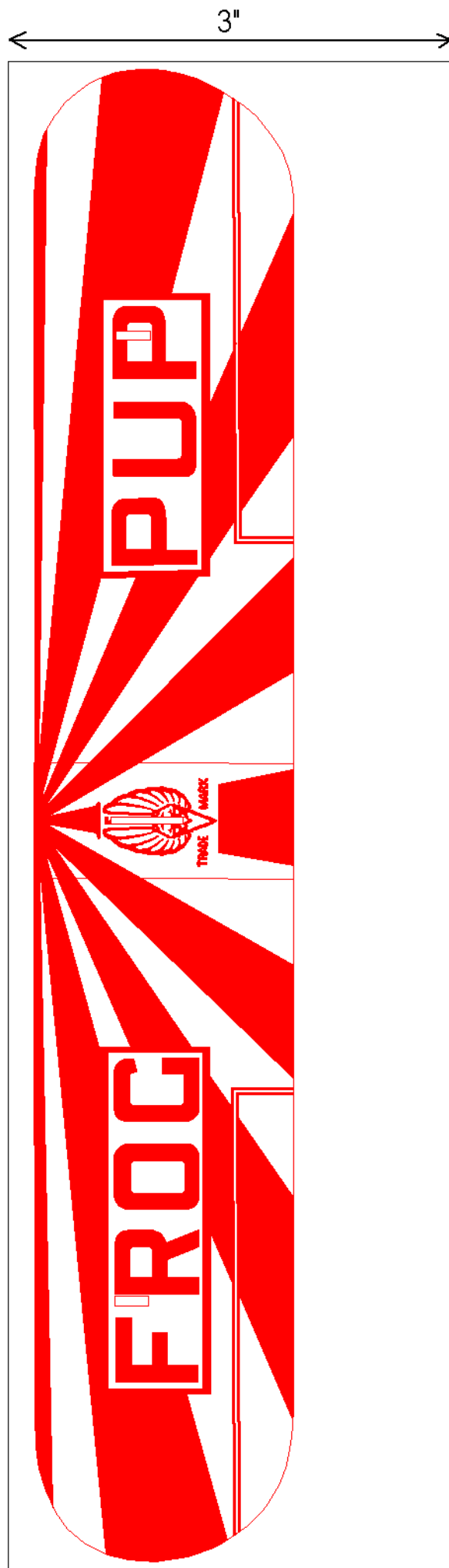


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