

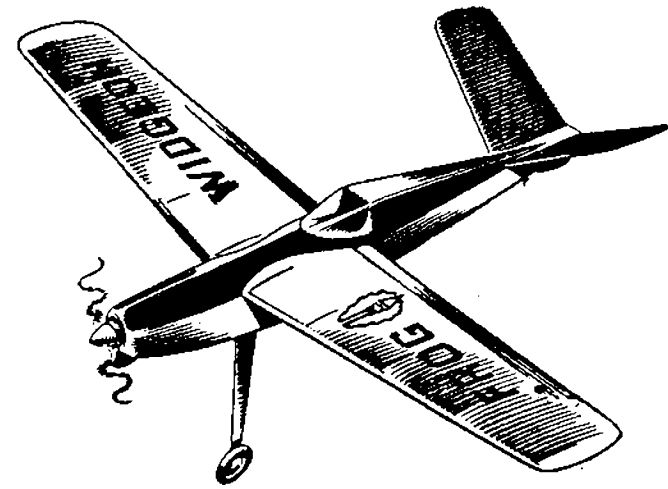
Senior Series



"WIDGEON"

18" SPAN
RUBBER-POWERED

Cat. No.
631 FK



VIEW OF FINISHED MODEL

INTRODUCTION.

This model is one of the Frog Senior-Series, which consists of a range of models of near-scale design and appearance, representing popular full-size light aircraft, all approximately 18in. span.

They embody very simple and quick constructional methods, as in the Frog Junior Series models, all the main parts being ready-cut to shape, and only require cementing together.

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

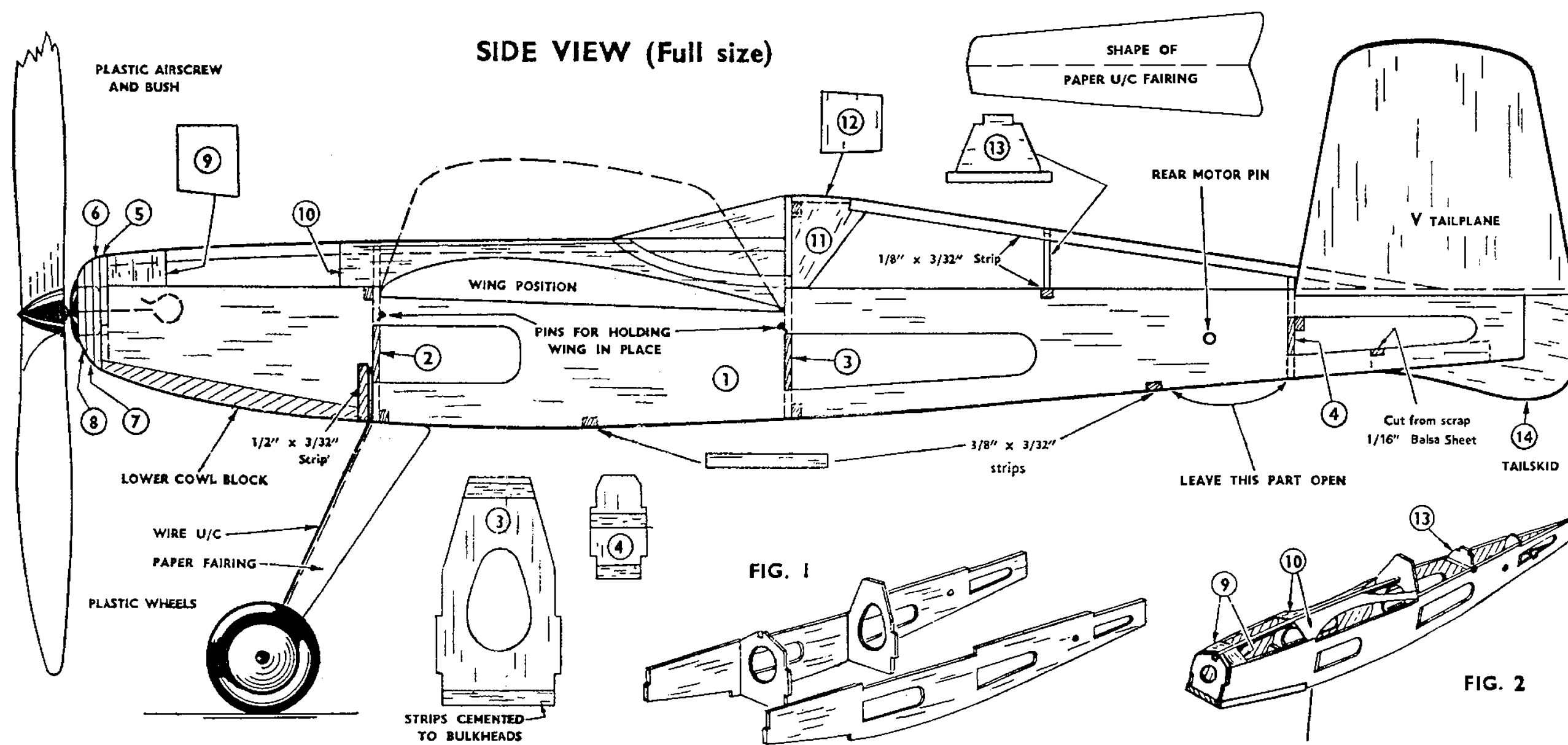
Cement and dope are not included in this kit, but they can be bought at any model shop. Use quick-drying balsa cement such as Frog Universal. You will also need a balsa-cutting knife or a razor blade, and a few pins.

When you have built this model, remember there are many others in this series equally attractive.

THIS KIT CONTAINS:

- 1 Plan and Instructions.
- 1 Balsa Sheet of cut-out fuselage sides.
- 1 Balsa Sheet of cut-out tailplane and fin.
- 1 Balsa Sheet of cut-out bulkheads, ribs, etc.
- 1 Balsa Sheet of cut strips.
- 1 Balsa Block for front lower cowl.
- 1 Shaped wire undercarriage.
- 1 Propeller with shaft and bush.
- 1 Piece cellatoid for windscreen.
- 1 Piece cane for motor pin.
- 2 Wheels.
- 2 2in. elastic bands for wing.
- 2 9in. elastic bands for motor.
- 2 Transfers.
- 1 Piece tissue for covering.
- 1 Piece sandpaper.

in envelope.



BUILDING INSTRUCTIONS.

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 pieces of balsa strip $1/8$ in. x $3/32$ in. to bulkheads 2, 3 and 4. Then cement bulkheads 2 and 3 to one of the side panels 1, as shown in fig. 1. Make sure they are upright, and allow to dry. Then cement the other side in place. When these are set, assemble the other bulkhead 4, and the front piece 5, and cement the rear ends of the fuselage together.

Fit the top front stringer in place, followed by pieces 9 and 10. See fig. 2. The rear stringers are fitted after the tailplane is assembled.

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 of $1/2$ in. x $3/32$ in. strip against the wire to hold it in place. Then fix the lower cowl block, $3/16$ in. thick, between this and the nose piece 5, and level it off flush at the front. Then cement the other front pieces 6, 7 and 8 in place, and round off the corners of these and the cowl block to obtain a smooth shape.

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 note paper to the shape shown on the drawing; fold them, and glue them to the wire legs.

TAILPLANE AND FIN.

Remove the shaped tailplane from the balsa panel, round off the edges and sandpaper the surface smooth. To form the dihedral 'V', bend the tailplane at the two 'score' lines, then place it on a flat surface with the tips raised $2\frac{1}{2}$ in., and cement along the score lines. Then cement it to the fuselage as shown in the side view. Cement parts 11 and 12 in place against bulkhead 3, and the half-bulkhead 13 together with the strip which fits into the notches in the side panels. Then the rear stringers can be cemented into place.

Cut away part 10 to the shape of the cockpit, and cement the shaped cellatoid cabin in place, holding it in position until it has set.

Cement the lower cross-struts in place, together with the tailskid 14. Remove any sharp corners with sandpaper, and smooth down the whole model to obtain a good finish. Apply a coat of dope or clear lacquer before covering.

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WING.

This is built over the plan in two halves as shown in fig. 3. It is advisable to pin a sheet of greaseproof or tracing paper over the plan to prevent the cement sticking to it.

Pin down the leading and trailing edges over the drawing, then remove the ribs W1—W4 from the printed sheet and cement these into place, together with the tip pieces. Then take two $1/8$ in. x $3/32$ in. strips for the spars, trim the ends as shown in fig. 3A, and cement them in place as shown in fig. 3. When both sides are set, lift them from the plan, and assemble them, with the tips raised as in fig. 4. Build up the centre section with short pieces of the same materials as the wing, and well-cement round the spar joint. See fig. 5.

When it is quite set, remove the wing from the plan, and shape the trailing edge as shown in fig. 3. Round off the leading edge and tips, smooth down the whole wing and apply a coat of dope before covering.

COVERING.

The fuselage and wing require covering with the tissue paper

supplied. Start with the fuselage and cover each side separately. Cut strips of tissue wide enough to allow a small overlap. Use dope or paste for sticking it to the framework. Apply some to one side of the fuselage, stretch a strip of the tissue over it and smooth out any wrinkles. Trim off any excess, and smooth down the edges. Repeat this for the other sides, leaving a gap on the bottom surface below the rear motor pin.

When the paste is dry, lightly spray the tissue with water to shrink it, and when it is thoroughly dry again, apply a coat of dope. This will also help to tighten the paper. Apply a thin coat of clear lacquer to the tailplane and fin.

Cover the wing with 4 separate pieces. Start with the bottom surface and apply the paste to the outer edges only. There is no need to stick the paper to each rib. When covering the top surface start at the centre-section, and keep the paper taut from end to end, to help preserve the airfoil shape.

When the covering is complete, lightly spray the paper with water to shrink it, and pin it down to a flat board when it is half-dry, to prevent it warping.

When it is dry, dope each half-wing separately, and pin down again as before.

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. It can be painted by hand, applying it quickly and evenly with a soft brush. Do not put it on heavily or the model will not fly well.

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

MOTOR.

This is composed of two 9in. 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 wing is held in place with two elastic bands stretched over the centre-section, and hooked onto the pins pushed into bulkheads 2 and 3 in the fuselage.

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 is intended to be flown out of doors, but choose a calm day for your first test.

Test-glide the model first to check the balance. Hand-launch it in a slight 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 or drawing pin 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 350; 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.

This model will take-off from the ground without assistance. Having wound the motor, place the model on a smooth surface, and release it directly into wind.

Designed and Made in England by

INTERNATIONAL MODEL AIRCRAFT LTD.
MORDEN ROAD, MERTON, LONDON, S.W.19.

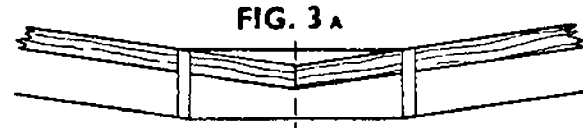
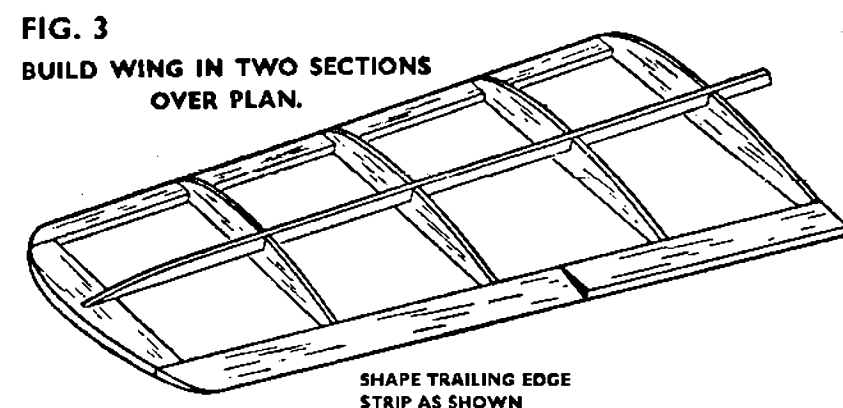


FIG. 4 RAISE WING-TIPS AS SHOWN, TO OBTAIN DIHEDRAL WHEN ASSEMBLING THE TWO HALVES.

