

BUILDING INSTRUCTIONS

Use Frog Universal Cement for building this model

Commence construction by cementing the engine bearers, packing strips and 3/32in sq stringers to the fuselage sides as shown in FIG 1. (Making sure you build one left and one right-hand side) The fuel tank should now be made. Mark out and cut the template supplied to the dimensions shown on the plan and shape and solder parts together. The vent and filler tubes should be soldered in position with not more than 1/16in length inside the tank. The feed pipe is fitted as shown in the top view of the fuselage.

Next bend the undercarriage wire to shape, sew with strong thread and cement it to plywood bulkhead B2 as shown on the plan.

The fuselage sides can now be assembled to the bulkheads B1, B3 and B4 as shown in FIG 2 and left to dry. Then add bulkheads B2, B5 and B6 and cement the fuselage sides together at the rear, sandwiching tailskid S1 between them. See FIG 3 (the undercarriage leans forward as shown in side view).

Cut the fuel tank platform from spare 1/16in sheet and cement in place. Drill hole in fuselage side for fuel feed pipe and fit fuel tank cement pieces of spare balsa around it to keep it in place.

Build up the tailplane as shown on the drawing, joining elevator halves together with plywood strip T4 and making hinges from the tape supplied. Drill a small hole in the plywood elevator horn H1 for the push-rod, then assemble the tailplane in position on the fuselage.

Next cement the three fin pieces T1, T2, and T3 together and when set, join to the fuselage.

The rear fuselage sides F1 and F2 can now be fitted as shown in FIG 4.

The wing is built over the plan in the following manner. Splice and cement the two halves of the wing spars at the centre section as shown in the plan view and pin the lower spar over the plan. Assemble the wing ribs 1 to 5 and A1 to A5 to the wing spar, using packing at the trailing edge as shown on the plan. Next fit the upper trailing edge and the shaped leading edge strips (use packing to raise it as shown in FIG 5) and add the bracing strips W3 and W4. (Making a good butt-joint at the centre), when dry remove the wing from the plan and cement the lower trailing edge in place.

The lower centre section can now be covered with 1/16in sheet balsa as shown on the plan, cutting out the hole to clear the push rod.

Next fit the lead-out wires to the bell-crank and assemble to the plywood mount B7 as shown in FIG 6. Slide the lead-out wires through the holes in the wing ribs and well cement B7 to the lower sheeting, making a small hole to clear the bolt head.

The top wing spar and 1/16in. centre section sheeting should now be fitted. Cement together the wing tip parts W1 and W2 and when dry, cement them to the wing after drilling holes for lead-outs and fitting eyelets to tip W1. The two lead weights should now be cemented in starboard wing tip and retained by parts W5 as shown in FIG 7.

The wing can now be fitted into the fuselage opening, and well cemented in place.

Next cut the slot in the starboard fuselage side to clear push-rod, and bend it to shape. It can now be fitted by inserting it through the hole in the fuselage and bulkhead B5, and the front end dropped down under the bell-crank in the slot provided. The bell-crank should now be rotated until the end of the push-rod can be pulled up through the hole, solder a cup-washer to the projecting end. (A small electric soldering iron is ideal for this job.) Push the rear end of the push-rod through the hole in the elevator-horn and solder a cup-washer onto the end of the wire.

The fuselage top and bottom can now be covered with 1/16in. sheet balsa and the entire model sanded smooth, then cement the cabin in place. It is now ready for covering with tissue.

Cover the wings with the tissue supplied, using office paste or clear-dope as an adhesive. Then cover the fuselage and tail assembly using clear dope for fixing tissue to sheet balsa surfaces. Cut the tissue to the shape required then lay it over the area to be covered and fix it down with dope. Generously apply with a brush on top of the tissue. After covering, water-shrink the wing tissue and when dry, give the whole model two coats of clear dope. The final colour-scheme is left to the individual and it is advisable to give the model a coat of fuel-proof lacquer finally.

ASSEMBLY.

Drill the holes for the engine mounting bolts as shown on the plan and fix the engine to the model with the four BBA bolts and nuts supplied.

Connect a piece of fuel-tubing from the tank outlet to the carburettor and fit the propeller. The recommended propellers are a Frog Nylon 6in dia. x 4in pitch for the "80" engine and a 7in x 4in for the "100 Mk. II".

You will need a set of steel control lines 30—40ft. long x .008in. dia. single strand, the length depending on the power of the engine. The loops at the end are made by securely wrapping the wire round itself without soldering, as this may cause the line to break beyond the joint. If however, the binding is not tight enough a little solder may be used to prevent unravelling. Small split key rings can be used to connect the lines to the model and control-handle.

FLYING.

Place the model at the boundary of the circle that it is intended to fly; connect the UP line to the Top of the control-handle and the DOWN line to the bottom. Place a mark on the top of the control handle to ensure you always get the lines the right way round. With an assistant to hold the model, start the engine and set the throttle for the best running position. Contrary to normal free-flight practice, all test and training flights must be made at full throttle—lack of power makes flying considerably more difficult. Hold the control handle with the lines taut and test the controls before starting to fly to make sure everything works. The handle should be vertical when the elevators are level. A take-off should be made with slight UP elevator to prevent nose-over during the rapid acceleration after release of the model. Do not let it climb more than shoulder height until you have become acquainted with the "feel" of control. Turn with the model and keep your eyes on it all the time. If there is any wind blowing and there is any tendency for the lines to slacken when flying across and down wind, keep the model low and step back quickly if necessary to keep the lines in tension.

When the motor begins to die out, bring the model down as low as possible, and when it finally cuts out, glide the model in, gradually raising the elevators to make a good landing. This should be practiced a few times before attempting to do anything more ambitious.

IMPORTANT. Always check your lines for "kinks" and test the controls before starting a flying session. THESE CHECKS ARE VITAL.

Always perform aerobatics on the down-wind side of the circle to keep the lines taut. It is possible to perform many stunts with this model, though a lot of practice is required to execute them consistently. The first is the vertical wing-over. This is performed by applying up elevator from a level flying position, until the model flies overhead, then "pull-out" at the other side of the circle by applying up elevator again.

The loop is the basis of many more advanced stunts and is very easy to execute. Fly straight and level, approaching the down-wind side, nose down slightly to increase speed, then apply up elevator by easing back the control gently to fly the model right round the loop. Too much elevator will cause the model to lose speed and "mush"; remember that it is essential to keep a steady speed by operating the control smoothly and not over-controlling. Avoid making the loops too tight. Having mastered this simple manoeuvre, you can now try inverted flight. From a level flying position, do 'half a loop', then apply opposite elevator at the top to keep the model inverted. Remember that the controls are reversed now, and to recover from this position, if the model is high enough, apply up elevator to complete the other half of the loop.

You can also recover from an inverted position by talking down elevator to bring the model up and over to make half an outside loop.

It will be seen that the combination of a normal and an outside loop will form a horizontal "figure of eight".

When you have had sufficient practice at this you can tackle the overhead 'g', the essential thing to remember here is to keep the circles large to maintain speed. Only continual practice will enable you to perform these stunts smoothly and without having to think before each manoeuvre.

This is only a brief outline of this fascinating form of control-flying, but will give some idea of the right way to start stunt flying before tackling something more ambitious, such as the Frog Aerobat or Condor.

Insurance —
Note — All power models should be insured against third party risks, and it is the owner's responsibility to get this arranged before flying, either through your local club, or write to — The Secretary, S.M.A.E., Londonderry House, 19, Park Lane, London, W.1.

Designed and Manufactured in England by

INTERNATIONAL MODEL AIRCRAFT LTD.

Morden Road, Merton, London, S.W.19.

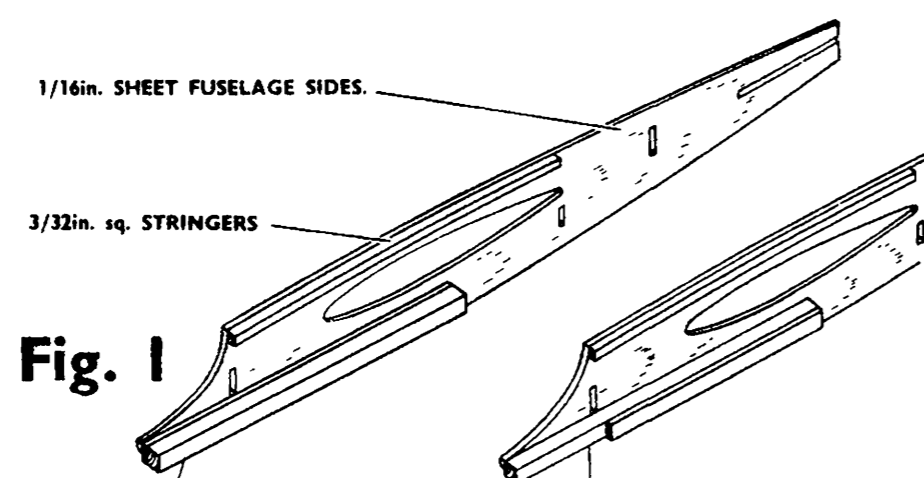


Fig. 1

BEARER POSITION FOR FROG 80 ENGINE.

BEARER POSITION FOR FROG 100 MK. II ENGINE.

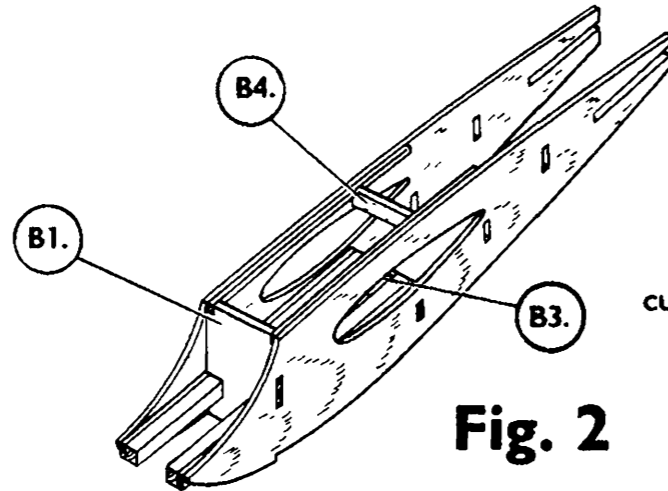


Fig. 2

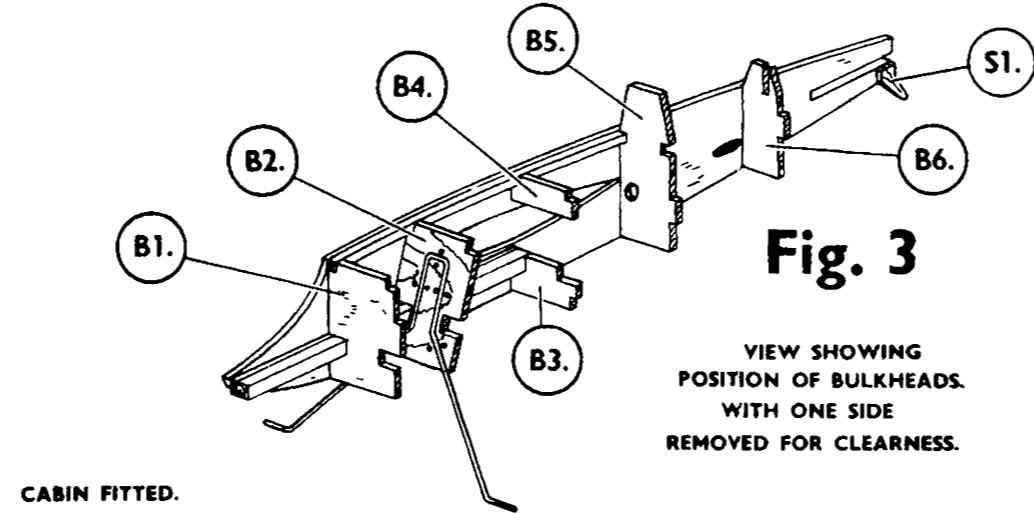


Fig. 3

VIEW SHOWING POSITION OF BULKHEADS WITH ONE SIDE REMOVED FOR CLEARNESS.

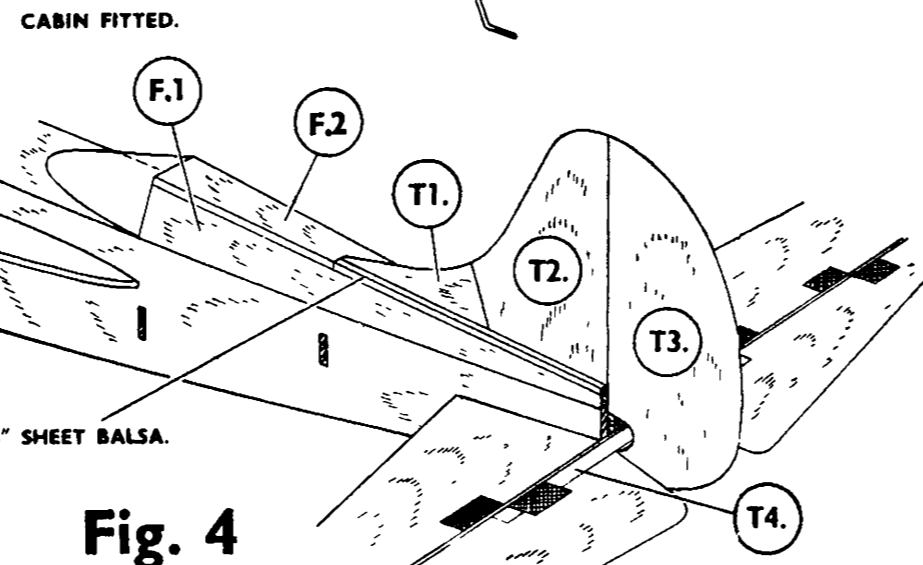


Fig. 4

DRILL 1/16in. DIA. HOLES AT POSITIONS SHOWN. THEN SEW U/C WIRE TO BULKHEAD (CEMENT KNOTS).

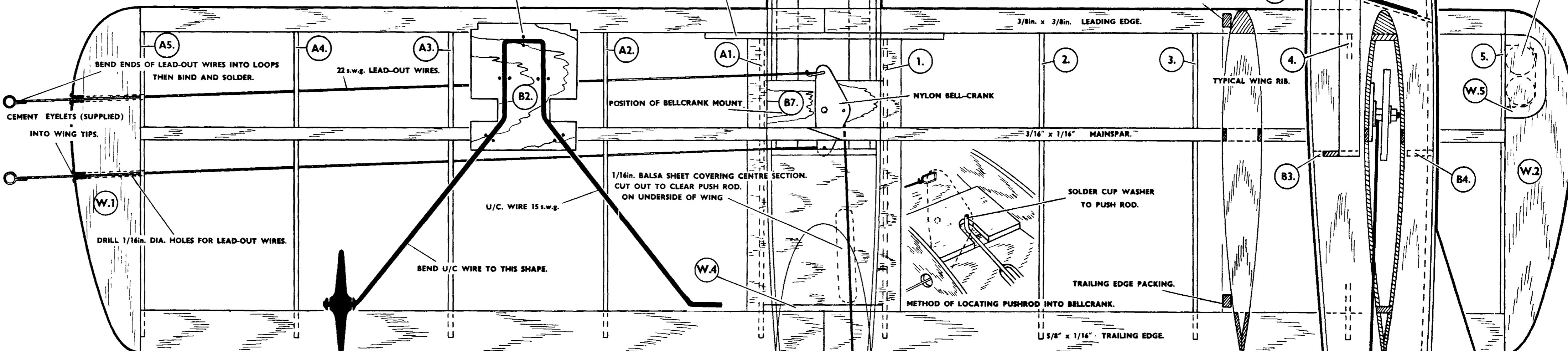


Fig. 5

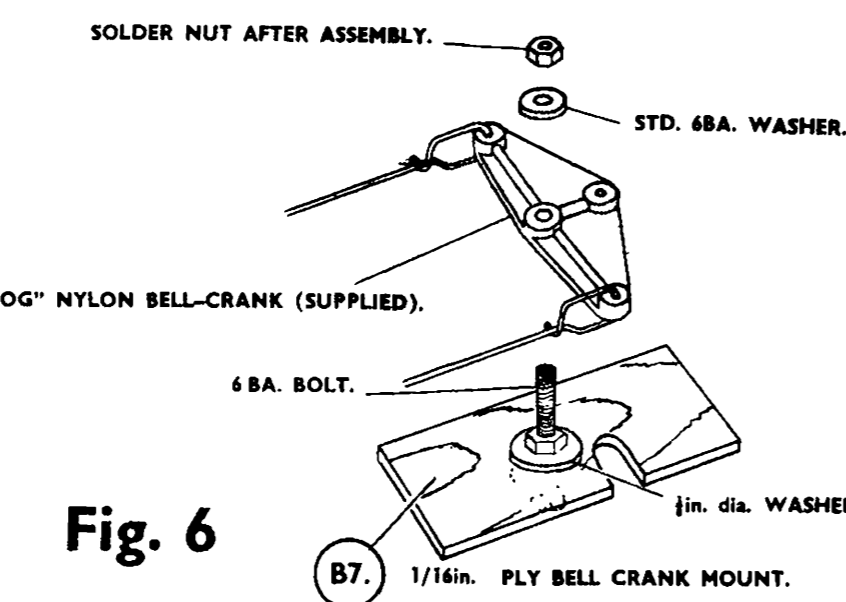
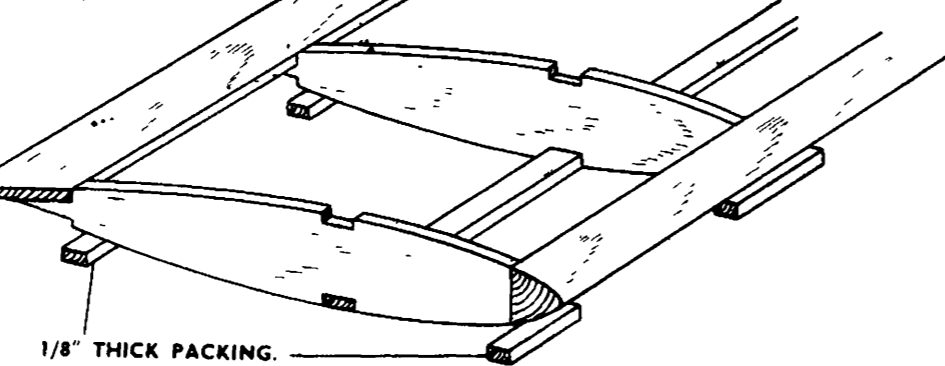


Fig. 6

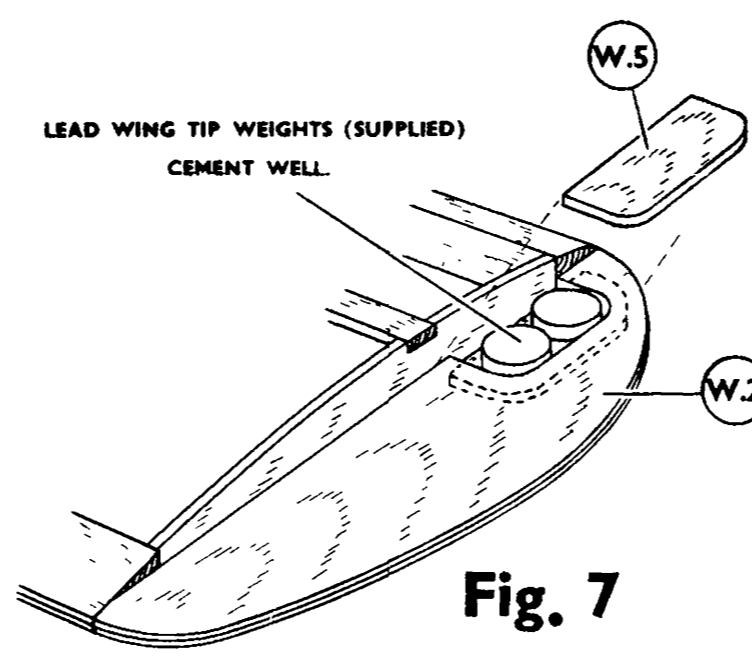


Fig. 7

FROG TRADE MARK

"CHIMP"

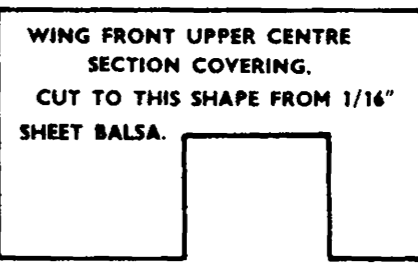
22" SPAN CONTROL LINE SPORT MODEL FOR .8-1 c.c. ENGINES

CAT. No. 694 KP.

ALL PARTS SHOWN THUS ARE CUT AND PRINTED ON SHEET BALS.

ENGINE MOUNTING FROG 80 ENGINE ENGINE OMITTED FOR CLEARNESS.

ENGINE MOUNTING FOR THE FROG 100 MK. II ENGINE ENGINE OMITTED FOR CLEARNESS.



FROG 6" dia. x 4" PITCH AIRSCREW FITTED.

FROG 80 ENGINE SHOWN MOUNTED.