FROG TRADE MARK

"SHORT SEAMEW"

22" SPAN SCALE
RUBBER MODEL
CAT. No. 732 FK

0 50 mm 100 150

Trim off excess material and cement canopy in place.

PAINT THESE PARTS MED. BLUE.

Two pieces of 3/32" x 1/16" strip cemented together to support part 14.

Fin base fairing: Cut two from stiff paper: bend and cement them to the fuselage between part 15 and the rear end.

FIN. Pin the leading and trailing edges made from 1/8" x 1/16" strip to the drawing. Cut the various size strips to length and gusset piece to shape and cement them in place. Cement part 15 after assembly to fuselage.

3/16in. x 3/32in. STRIP

FIN.

1/8in. x 3/32in. STRIP

3/16in. x 3/32in. STRIP

TAILPLANE

3/32in. x 1/16in. STRIP

CUT THIS FROM SCRAP.

Shape end of fuselage and fin after assembly.

Bevel the edges of parts 16 to fit. Damp the outside faces and bend slightly before cementing them into place.

PAINT LEADING EDGE OF FIN BLACK.

TOP COWL BLOCK.

PLASTIC AIRSCREW AND BUSH

CUT THESE FROM SCRAP.

CUT THESE FROM SCRAP.

3/32in. x 1/16in. STRIP

CROSS-STRUTS

LEAVE THIS PART OPEN FOR ACCESS TO MOTOR.

Tail undercarriage leg made from two pins. Main leg bent thus.

TAILWHEEL MADE FROM SCRAP.

Landing hook held between two pieces of scrap balsa.

LOWER COWL BLOCK.

CROSS STRUT

Shape of undercarriage fairings. Cut two from stiff paper, bend them to this section and well-cement to wing.

Bend these from spare undercarriage wire; bind and cement or solder them in place.

Strips of scrap sheet balsa cemented to bulkheads 4, 5, 7 and 9, where indicated on the side-view drawing.

Cut two undercarriage wires 4½" long, from the piece supplied, and bend them to shape over plan.

WING. Start by pinning the leading and trailing edges to the drawing, and cement the tip pieces in place. Then cement the ribs in position, and cut the spars to length and cement these in the slots in the ribs, and to the tip pieces. Sandpaper the trailing edge to the section shown, and smooth down the whole structure

LEADING EDGE
3/16in. x 3/32in. STRIP

SPAR 1/8in. x 3/32in. STRIP

PORT WING

3/32in. x 1/16in. STRIP CEMENTED AGAINST RIB.

Cement the gussets (made from scrap) in place after rib W1 has set.

Bracing strip of 1/8" x 3/32" strip and spar-jointing piece are cemented in place when the wings are assembled to the fuselage

3/16in. x 3/32in.

TRAILING EDGE
1/4in. x 3/32in. STRIP

CUT STIFF PAPER TEMPLATE TO THIS SHAPE.

RIBS W1 AND W3 ARE CEMENTED AT THIS ANGLE.

TAILPLANE. Cut the leading and trailing edges to length and pin them to the drawing. Cement the tip pieces, centre strip and ribs in place followed by the gussets cut from scrap.

TAILPLANE.

3/32in. x 1/16in. STRIP

1/8in. x 3/32in. STRIP

CUT THESE FROM SCRAP.

LEADING EDGE

TRAILING EDGE

3/16in. x 3/32in. STRIP

CUT THESE FROM SCRAP.

W1 W2 W3 W4 W5 W6 W7

Well-cement undercarriage leg to rib W3 and secure it with a piece of scrap balsa between the ribs. Bind the top of the leg to the spar with cotton, and cement it. Fit the wheels in place and bend over the ends of the wires to hold them on.

STARBOARD WING

1/4in. x 3/32in. STRIP

SHAPE TRAILING EDGE TO THIS SECTION.

LEADING EDGE

W1 W2 W3 W4 W5

TRAILING EDGE

Underside view of the port wing showing the undercarriage leg fixing.

INTRODUCTION.

This model is one of the FROG SENIOR SCALE SERIES, which consists of a range of models representing popular full-size aircraft, all approx. 22in. span.

They embody very simple constructional methods, all main parts being ready-cut to shape. To ensure a satisfactory job, study the plan and check the parts with it before commencing.

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 sharp knife or razor blade, and a few pins.

ORDER OF ASSEMBLY.

Build the fuselage as far as Fig. 2, then build the wings and assemble them to the fuselage as shown in Fig. 3. Finish the fuselage with the exception of the top stringers. Next build the fin and assemble it to the fuselage followed by the top stringers. The tailplane is cemented to the fin after it is covered.

COVERING.

Cover the model with the paper supplied, in the following order — fuselage top and bottom, then sides. Wing and tailplane under-surfaces, then top. Use office paste or dope for fixing it. Cut the paper to the approximate shapes first, leaving a 1/4" margin all round. Apply paste to the edges of the frame, then lay the tissue over it and pull gently all round. Do not attempt to get it 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 each part with water and leave to dry. Spray the tailplane and pin it down to a flat board to prevent warping whilst it is drying. When they are completely dry, give each part a coat of dope, and pin down the tailplane again, when the dope begins to dry.

The tailplane can now be cemented in place, followed by part 16.

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 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 glue a small weight in the rear end of the fuselage. If the model climbs steeply and stalls, 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.

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FIG. 1. Build the two side frames from 3/32" x 1/16" strip balsa supplied, together with parts 1, 2 and 3. Duplicate the strips and build the second side over the first, to ensure they are identical. A piece of tracing paper between them will prevent them adhering to each other

3/32in. x 1/16in. STRIP

FIG. 2. Bulkheads 4, 5 and 6 are cemented between the side frames. The wings are assembled at this stage.

SLOT FOR BRACING STRIP.

SPAR-JOINTING PIECE IS MADE FROM 3/16in. x 3/32in. STRIP.

SIDE FRAMES.

Cover centre section of wing (top and bottom) with stiff paper.

CROSS-STRUT

LEADING EDGE.

BRACING STRIP MADE FROM 1/8in. x 3/32in. BALSA.

FIG. 3. Cut the bracing strip to the length shown on the plan above, and cement it into place in the fuselage. Assemble the wing halves using plenty of cement. Hold them in position with pins pushed into rib W1 and the side of the fuselage. Cut the spar-jointing piece to shape and cement it into place behind the spars.

FIG. 4. Cement the rear of the fuselage together, with bulkhead 7 and part 8. Cement bulkheads 9 and 10 in position. Bevel the ends of the cowl blocks and cement them in place with nose rings 11, 12 and 13. The packing piece and part 14 are cemented in place next, followed by the fin —

FIN LEADING EDGE.

TOP STRINGER 1/8in. x 3/32in.

USE 3/32in. x 1/16in. STRIP FOR OTHER TWO STRINGERS.

CROSS-STRUTS.

TOP COWL BLOCK.

LOWER COWL BLOCK.

—The top stringers are now cemented in place starting with the centre one. Cut it to length, and cement it in the slot in part 14, and against the fin. The other two stringers butt against part 14 and finish at bulkhead 7. Shape the cowl blocks with a sharp knife and sandpaper them smooth.

Views of finished model showing colour scheme. One or two thin coats of paint are required, preferably sprayed on. If too much paint is applied, the model will be too heavy and will not fly.

FIG. 5. The fin base fairings are stiff paper, and cemented in place. Bend the landing hook (aluminium wire) to shape and well cement it at the end of the fuselage, between parts 3. The tailplane and part 16 are cemented in place after the whole model is covered. Make sure the tailplane is square with the fin when assembling it.

FIN BASE FAIRING.

LANDING HOOK.

TOP SIDE MED. BLUE.

BLACK.

1" LETTERS ON UNDER SIDE.

1" ROUNDELS.

ROYAL NAVY XA 213

SHORT SEAMEW

UNDER SIDE DUCK EGG BLUE.

1" ROUNDELS.