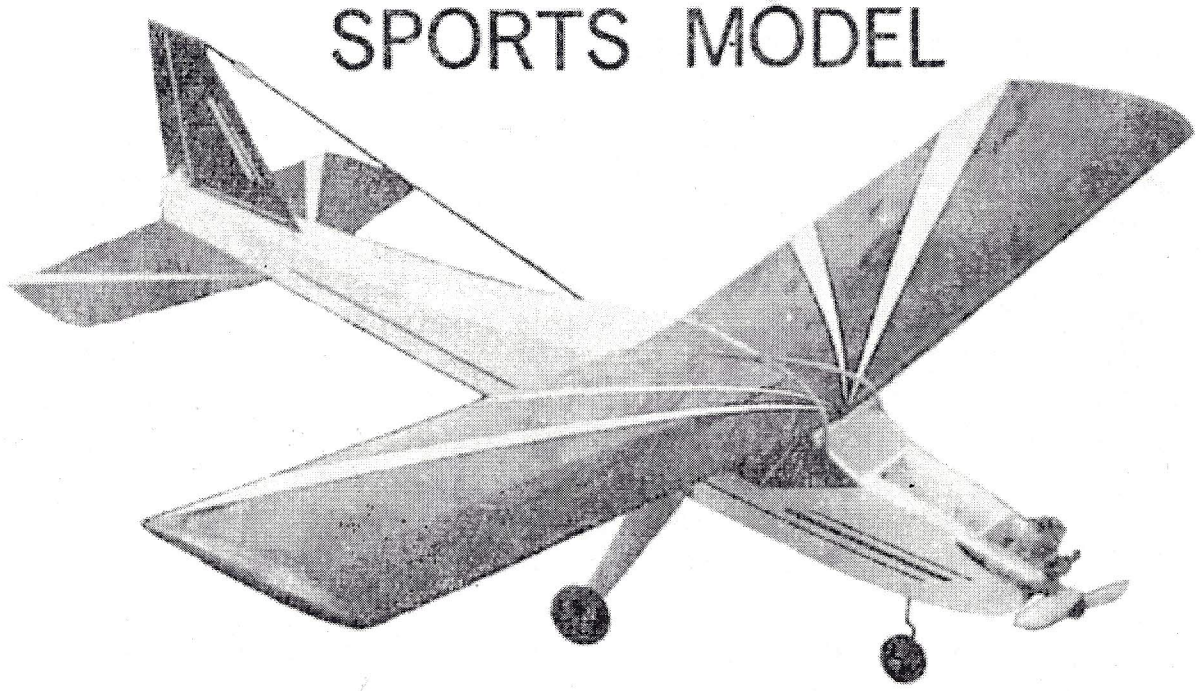
KEILKRAFT

OUTLAW

45 in. Wingspan

SINGLE CHANNEL

SPORTS MODEL



BUILDING and FLYING

INSTRUCTIONS

E. KEIL & Co. Ltd. WICKFORD, ESSEX.

THE OUTLAW

Introduction

The OUTLAW has been designed to meet the demand for a Single Channel Radio Control model with a first class flight performance, that is suitable to the newcomer to Radio Control. It is stable, easy to build and of rugged construction. One of its most pleasing attributes is its ability to fly itself out of the tricky situations that it is likely to encounter in the hands of a novice.

If this is your first Radio Control model or if you just want a model that is great fun to fly, you are assured of success with the OUTLAW.

Before you begin

Study the plans and read the instructions fully before commencing construction. If this is to be your first single channel model be sure that you are quite clear where each component should go by laying them on the plan in their respective positions.

Remember that to fly a radio controlled model in Great Britain it is necessary to hold a licence. This costs 30/- and is valid for 5 years. Obtainable from:—

Radio Branch,
Radio & Accommodation Dept.,
G.P.O. Headquarters,
London, E.C.1.

It is also advisable to carry suitable insurance against damage to persons and property. The cost of this is very small and details can be obtained from:—

Society of Model Aeronautical Engineers Ltd.,
10a Electric Avenue,
London, S.W.9.

BUILDING THE MODEL

FUSELAGE

1. Make sure you are building left and right sides. Lightly mark on the insides of both sides, positions of formers A, B, C, D and E and engine bearers.

2. Glue $\frac{3}{16}$" x $\frac{3}{16}$" longerons on top inside edge, starting at former E and finishing at rear of sides.
3. Glue $\frac{3}{16}$" x $\frac{3}{16}$" longerons on bottom inside edge from behind former A to leading edge of tailplane, add spacer at this position and then $\frac{3}{16}$" x $\frac{3}{16}$" to inside edge of tailplane seat.
4. Glue $\frac{1}{16}$" ply gussets in place for the dowel supports ahead of former D and to the rear of former E. Add $\frac{1}{16}$" ply braces in position shown for the undercarriage attachment dowels.
5. Assemble formers D and E over plan using $\frac{1}{2}$" x $\frac{3}{16}$" for the side members and $\frac{3}{8}$" x $\frac{3}{16}$" for top and bottom members, cut out notches as shown.
6. Lay right hand fuselage side in position on plan and glue formers D and E in place, checking with a square for accuracy.
7. Join fuselage sides together with formers D and E.
8. When thoroughly dry remove from plan and glue $\frac{3}{16}$" x $\frac{3}{8}$" in place on inside edges of wing seat.
9. Pull fuselage sides together at rear and glue rear ply former in place, making sure that taper is equal on each side when viewed from top.
10. Glue $\frac{3}{16}$" x $\frac{3}{16}$" spacers in positions shown between former E and leading edge of tailplane.
11. Glue $\frac{1}{16}$" ply strengthener in position across fuselage at main undercarriage as shown.
12. Place nose undercarriage leg in correct position on $\frac{1}{8}$" ply former B, drill a series of holes around wire and sew leg to former. Smear apoxy resin, i.e. Brifix 88 or Araldite around stitching and wire to form a permanent bond.
13. Draw nose gently together and position engine mounting plate on bearers, mark holes through plate, drill with a small drill and screw engine mounting plate temporarily in position.
14. Glue formers A, B and C in place.
15. Sheet top of fuselage from trailing edge of wing to rear, using $\frac{1}{16}$" sheet, running grain crosswise.
16. Cut to size and glue in place under engine bearers the $\frac{1}{16}$" sheet tank floor.
17. Fit and glue $\frac{3}{32}$" sheet tank compartment sides.
18. Sheet top of nose with $\frac{1}{16}$" sheet either side of tank compartment and also add sheet at front of cabin.
19. Using $\frac{1}{16}$" sheet crossgrained, complete underside of nose from $\frac{1}{16}$" ply main undercarriage stiffener to underside of engine bearers at nose.
20. Sand fin and rudder to shape.
21. Hinge rudder to fin using two of the K.K. hinges provided and glue fin in place on top of fuselage ensuring that it is vertical and parallel with centre line.

22. Fit escapement in position in fuselage being careful to clear $\frac{3}{16}$" dowels. Bend winding hook from 20 s.w.g. wire.
23. Make actuator rod from $\frac{3}{16}$" x $\frac{3}{16}$" and fit to fuselage, making sure that it is absolutely free and does not touch top of fuselage.
24. When satisfied that escapement and linkage are correct, the bottom rear fuselage can be completed with $\frac{1}{16}$" crossgrained sheet.
25. Remove motor mounting plate and drill holes to suit motor to be used. Place on one side ready for final fitting upon completion of covering.
26. Glue crossgrained tips to tailplane, sand and fit tailplane to fuselage, once again accuracy is essential.

The fuselage is now complete, ready for covering.

WING

1. Pin $\frac{1}{16}$" lower trailing edge sheet in place on plan.
2. Pin $\frac{3}{16}$" x $\frac{3}{16}$" front and rear lower spars in place on plan. Pack up at intervals with pieces of scrap $\frac{1}{16}$" sheet.
3. Glue all wing ribs in place. Angle root rib to suit dihedral.
4. Glue $\frac{1}{16}$" sheet top of trailing edge in place and $\frac{3}{16}$" x $\frac{3}{16}$" top spar.
5. Glue $\frac{1}{4}$" x $\frac{1}{2}$" leading edge to front edge of ribs.
6. When leading edge is dry, shape top surface to contour of ribs and sheet from spar to leading edge with $\frac{1}{16}$" sheet. Allow to dry thoroughly.
7. Remove from plan. Shape lower leading edge to section and complete bottom sheeting.
8. Web between all ribs except centre bay with $\frac{1}{16}$" sheet running grain vertically.
9. Following above procedure, complete other wing panel.
10. Join wing panels together to the dihedral angle shown on plan and leave to dry thoroughly.
11. Remove $\frac{1}{8}$" from centre ribs behind front spar and glue dihedral brace in place.
12. Complete $\frac{1}{16}$" sheeting at centre section.
13. Sand leading edge to shape.
14. Fit tip blocks, carve and sand to shape.

COVERING AND FINISHING

The method recommended for covering and finishing the Outlaw is as follows:—

1. Give the entire model two coats of clear dope, lightly sanding between each.
2. Cut a panel of heavyweight Modelspan to the size of part to be covered. Crumple the tissue into a loose ball, hold under water tap and squeeze out excess water until just damp.
3. Lay tissue over panel to be covered and smooth out gently, avoiding creases. Dope through tissue around outer edge of framework and allow to dry.
4. When tissue and dope have dried, the result will be a taut covering strongly adhered to framework.
5. Any blushing of dope that occurs due to dampness of tissue will disappear when next coat of dope is applied.
6. Proceed in the same manner for the rest of the model.
7. When entire model is covered, give two full coats of clear dope.
8. It is recommended with this model that coloured tissue is used in preference to coloured dope as the weight penalty of coloured dope liberally applied is excessive.
9. Fuel proofer must be applied over cellulose dope, paying particular attention to areas around engine and tank. Allow ample drying time.

RADIO INSTALLATION AND FINAL CHECK

As there are many and varied forms of radio equipment available at the present time, it is not practical to go into too much detail regarding installation. We would recommend consultation with the manufacturer's instructions. The following pointers, however, will be found useful in a general sense.

Try to keep batteries well forward, preferably under fuel tank and wrap well with sponge rubber.

Final receiver position will be determined by recommended balance point. Motor control escapement, if fitted, can be placed above rudder escapement. Run receiver aerial out through fuselage side away from exhaust and carry up to fin terminating with a rubber band.

Fit wire yoke to rudder with nut and bolt and check rudder movement. By bending yoke down, rudder movement can be kept small for first flights (about $\frac{1}{8}$" either side of neutral).

Attach the main wheels to the undercarriage with the $\frac{1}{8}$" high tensile bolts provided and adjust so that they can

revolve without being too loose. The nose wheel is retained by the wheel collets, one either side positioned so that the tyre does not rub on leg.

Before attempting to fly your model, the radio must be checked for range in accordance with the manufacturer's instructions. Do not fly until you are absolutely sure that the controls are functioning perfectly. Check again with the engine running and if throttle control is fitted, check that it runs at all settings.

FLYING THE MODEL

Test glide the model into wind, watching carefully for any indication of a stall, bearing in mind that this can be caused by too hard a launch.

When satisfied that nothing further can be achieved with test glides, the time has come to try some powered flights.

Start the engine and check fuel consumption, first flights should be made with not more than 1–1½ mins. fuel.

Prior to launch, always check that radio functions correctly by operating rudder left and right and, if using a sequential escapement, make a habit of always leaving it so that you know which command (left or right) comes next.

Launch gently into wind, trying to judge correct flying speed. If your preflight checks of the model were done correctly, the model should now climb away without any need for corrections from yourself. Allow the model to gain height and then gently apply rudder first one way and then the opposite. Don't hold any one signal for long and get the feel of the way it starts to turn. Notice how, if held too long, the nose starts to drop. If during this time the model gets into an attitude where you are not sure what to do, release control and the model will soon regain an even attitude. Aim to keep the model upwind and always try to maintain sufficient height to allow you to return to a landing close by.

You will find that the Outlaw is extremely forgiving and easy to fly, but only practice will teach you to place the model just where you want it and to bring it back to a smooth landing.

Always fly carefully with consideration for others and here we would once again draw your attention to the necessity for a licence and the importance of insurance cover.

GOOD LUCK and GOOD FLYING with your OUTLAW.