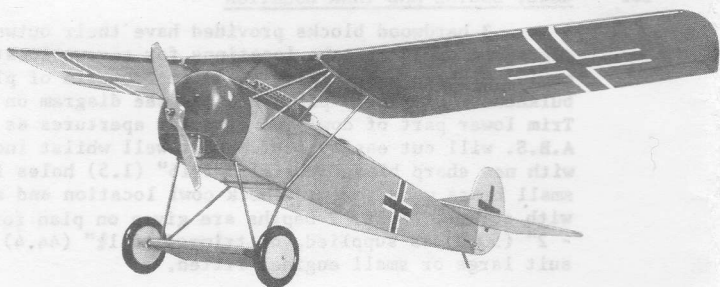


VERON FOKKER D8



BUILDING INSTRUCTIONS

As a fighting machine in the last year of the 1914-18 War, the Fokker DVIII earned a somewhat unenviable reputation for its tendency for wing failure, but as a subject for Vintage Scale or Near-to-Scale modelling, it is probably the finest choice one could make for inherent stability coupled with rudder-only radio control, or even for free-flight.

The prototype model was flown with a 1.5 c.c. (.099 cu.ins) diesel with annular silencer, and single proportional rudder control, all up weight being 31 oz. with a '500' 4.8 v Deac pack. The design would easily carry - and the plan allows for - 2 channel proportional control on rudder and elevator. The glide at 31 oz. is fantastic.

For pure free-flight, a 1 c.c. racing diesel, or Glow-plug motor would be ideal.

The design has been "stretched" a little to enhance the tail moment arm and both rudder and tailplane both slightly enlarged to take the inherent stability to the ultimate.

Simple modelling tools are needed. Bead-headed modelling pins; White P.V.A. adhesive such as "HUMBROL 55", also Epoxy glue such as "HUMBROL 88". Balsa Knife with spare blades; "HUMBROL" Banana Oil, "HUMBROL" Clear Shrinking Dope and Hot-fuel Proofer. Use only sprayed "HUMBROL" Colour Dopes, or brushed-on "HUMBROL" Enamels for Colour Schemes. Modelling pliers; 1/16", 3/32" and 3/16" Drills with wheel-brace; Grease-proof paper to protect plan; Tissue-paste and garnet paper (med. and fine). 5 and 15 amp. fuse-wire for binding with use of a soldering-iron. Also carpet thread for binding and K-link (one or two as required) and though certain modellers will prefer to use nylon tube and cable controls to rudder (and elevator) 3/16" square hard balsa actuating rods with 16 and 20 s.w.g. for servo attachments are provided. Recommended tank is the Veron 15 c.c. Rectangular Double Vented; a set of parts is supplied. Extra fuel leads (filler) of 3/32" (2.5 mm) P.V.C. will be required.

A good building board is essential. As most models require silencers, a "Spinaflo" Annular Ring type may be fitted to Annular Exhaust motors such as Webra 'Record' and 'Winner' and similar.

The general sequence of assembly is laid out in the following instructions, and these coupled with the numbered diagrams on the main plan will facilitate construction.

Study the plan and these instructions carefully before commencing, and so familiarize yourself with the complete sequence of assembly. Note that numbers in brackets after all 'inch' dimensions are decimal millimetres.

1. FUSELAGE SIDES

DIAG. 1. Select even grade balsa for upper and lower longerons. Upper longerons are $\frac{1}{2}$ " x $\frac{1}{2}$ " (6.4 x 6.4), lower longerons are laminated to curve from $\frac{1}{2}$ " x $\frac{1}{2}$ " (6.4 x 3.2) securing with pins whilst setting. Vertical grain sheet, 4" and 3" (101.6 and 76.2) is set between longerons at front. Remaining verticals are $\frac{1}{2}$ " x $\frac{1}{2}$ " (6.4 x 3.2) and diagonals $\frac{1}{2}$ " x 1/16" (6.4 x 1.5). Note that only difference between left and right hand side is tail-bay vertical of $\frac{1}{8}$ " x $\frac{1}{2}$ " (3.2 x 12.7), which is placed accordingly.

2. DIE-CUT PLY LAMINATES

DIAG. 2. With longeron structures firmly pinned to the board, add 1/16" (1.5) ply laminates ensuring left and right hand sides. When set, cut out longeron areas to accommodate slotted hardwood cross-beams ensuring they will be a TIGHT FIT.

3. JOINING TWO SIDES

DIAG. 3. Four $3\frac{3}{8}$ " (98.4) lengths of slotted hardwood are glued firmly in place to set the fuselage width of the two halves at the parallel front end. Check structure is square. Add $\frac{1}{2}$ " x $\frac{1}{2}$ " (6.4 x 6.4) and $\frac{1}{2}$ " x $\frac{1}{8}$ " (6.4 x 3.2) crosspieces fore and aft of cockpit area. Allow to dry firmly. When set, chamfer inner faces of tail-bay for approx. 1" (25.4) - see plan top view. Then draw rear ends together securing with clothes peg whilst glue is setting. Finally, cut and fit all remaining top and bottom crosspieces. Check for alignment. Recess front face of two front hardwood crosspieces where thread binding will take place.

4. JURY STRUTS

DIAG. 4. Make two jury-struts of $\frac{1}{8}$ " x $\frac{1}{2}$ " (3.2 x 12.7) over drawing on plan. Whilst setting, slightly angle ends of $4\frac{1}{2}$ " (123.8) hardwood crosspiece and slot through fuselage. Mark location of front jury-strut in pencil $\frac{1}{8}$ " (22.2) from front edge of fuselage. Erect two jury-struts in place and temporarily pin. Bend two lengths $6\frac{1}{2}$ " (158.8) of 14 s.w.g. wire to shape of undercamber of wing section - see plan side view. Set in slots in jury-struts and secure temporarily with thread.

5. WING CABANE STRUTS

DIAG. 5. Set two top tripod struts (pre-bent 14 s.w.g.) into slots in top hardwood crosspieces and bind with thread, then bind tops with 5 or 10 amp. fuse-wire to wing supports and touch with solder. Coat thread binding with Epoxy glue. Similarly add rear cabane strut to rear underside hardwood crosspiece and bind with fuse wire to wing support. Note that where necessary, adjustments may have to be made to angles of wires at top ends to permit alignment with wing supports prior to binding.

THE FORWARD CABANE STRUT (OR LONGEST AND LOWEST TRIPOD STRUT) is supplied bent in one piece to assure its symmetry. CUT IN HALF for location but bend ends slightly down - see plan section front view. Finally, add two parts of forward cabane strutting to complete front tripod. These are bound with thread both inside and outside fuselage sides - see diagram.

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6. UNDERCARRIAGE

DIAG. 7. Two main undercarriage support struts are identical size. Front one rests in forward lower crosspiece and is bound with thread. Rear one may be bound with fuse-wire to rear wing support and touch soldered, then both thread bound to rear lower hardwood crosspiece. Bind on 12 s.w.g. axle using 15 amp.

fuse-wire. Diagonal 18 s.w.g. bracing wires are optional. Wheels are retained by soldered washers, or clips made of 30 amp. fuse-wire. Track widths are given on plan.

7. BALSA BULKHEAD

DIAG. 6. Trim 3/16" (4.8) bulkhead to closely fit within fuselage front. Glue firmly in place.

8. PLY BULKHEAD AND MOTOR MOUNT

DIAG. 8. Slots are pre-cut into die-cut 1/16" (1.5) plywood former for tank location. If not fitting tank made from parts supplied, seal cuts with epoxy. If fitting, break out ready, also beam slots. Glue very firmly to fuselage front, lower edges parallel, pinning in place (generously) to secure whilst setting. Then with sharp pointed balsa knife, cut out beam slots through 3/16" (4.8) balsa bulkhead.

Tapered hardwood beams are then located protruding $1\frac{1}{8}$ " (41.2) for 1.5 c.c. (.09 cu.ins) motors or $1\frac{1}{4}$ " (47.6) for 2.5 c.c. (.15 cu.ins) motors. Ensure that they are level, square and in full contact with interior plywood laminates on fuselage sides - see fuselage top view.

If necessary, ease out slot in plywood engine mount to fit intended engine. Drill four mounting holes 3/32" (2.5) for 6 B.A. bolts (N.S.) and 3/16" (4.8) hole for filler tube - see drawings on main plan.

Very firmly locate and glue ply mount in location.

9. FUSELAGE FORMERS

DIAG. 9. Identify (and mark in pencil) all semi-circular formers on 3/32" (2.5) die-cut sheet. Layout is given on Diagram Sheet 2. Note that second former 'A' is set upon an extra $\frac{1}{2}$ " x $\frac{1}{2}$ " (6.4 x 6.4) crosspiece. Erect all formers, A, B, C on fuselage top and formers D, E, F and G along sheeted sides. All are just short of outer longeron corners to permit scarf-jointing of sheeting.

10. FUSELAGE SHEETING

DIAG. 10. Top forward sheeting is two 3" (76.2) wide joined edge-to-edge. If ability for balsa to roll is in doubt, moisten outer surface. Trim width and chamfer underside of edges to meet longerons. Side sheeting is 4" wide (101.6). Carefully cut out niches to accommodate wire strutting. Pin to secure whilst setting.

11. COMPLETION OF SHEETING

DIAG. 11. Add $\frac{1}{8}$ " x $\frac{3}{8}$ " (3.2 x 9.5) balsa crosspiece above tail-bay and chamfer and sand gently round. Add rear top sheeting. Lightly mark in pencil the cockpit area - compasses will help - then cut out with sharp new blade. Glue piece of $\frac{1}{2}$ " (12.7) trailing edge along lower edge of front bulkhead - see plan and diag. 18.

12. FIN, TAILPLANE AND RUDDER

DIAG. 12. Fin is built up from strip directly over plan. Tailplane structure is similarly built up - plan also shows version required for movable elevators with 2 channel radio. Make up units with very neat and accurate butt joints and allow P.V.A. glue to set overnight to avoid warps. Hinges on elevators may be commercial nylon tape, or sewn with nylon thread (criss-cross or herringbone). Similarly the rudder.

Both fin and tailplane are covered both sides with lightweight tissue and doped once before being joined. Tail will be permanently cemented above stern-bay and fin glued in slot along centre top of tail, after covering complete fuselage.

Rudder is assembled from medium-hard vertical of $\frac{1}{8}$ " x $\frac{1}{2}$ " (3.2 x 12.7) with pre-shaped $\frac{1}{8}$ " (3.2) sheet outline neatly glued together and allowed to set whilst flat. Sand all edges round, cover with tissue.

Note that where controls are fitted to tail surfaces on 1 or 2 channel units, control leads will pass through slots cut in sheeting in last bay of fuselage - see fuselage side view.

Wire tail-skid is shaped as shown and either trapped between two balsa laminations or sewn to a piece of scrap plywood and glued to underside of tail-bay.

13. WINGS - CENTRE SECTION

DIAG. 13 Make up directly over plan. Short trailing edges are not supplied notched. Rear spar and edges of cut-out are $\frac{1}{8}$ " x $\frac{1}{2}$ " (3.2 x 12.7). Front lower spar is $\frac{1}{8}$ " x $\frac{1}{4}$ " (3.2 x 6.4) resting on scrap 1/16" (1.5) packing pieces to meet undercamber of ribs.

14. CENTRE-SECTION

DIAG. 14. Die-cut rib sheet for centre section may be quite easily identified and ribs matched because of slot for rear $\frac{1}{8}$ " x $\frac{1}{2}$ " (3.2 x 12.7) spar. Erect as shown, omitting front of outer ribs. Add top spar of $\frac{1}{8}$ " x 3/16" (3.2 x 4.8). Diagram shows how three laminations of $\frac{1}{8}$ " x $\frac{1}{2}$ " (3.2 x 12.7) are cut to form edge of wing cut-out, also two pieces to close rear edge between centre two ribs.

15. CENTRE-SECTION

DIAG. 15. Leading-edge is added level with lower edge of ribs. Then dihedral gussets behind leading edge and on front face of two spars. Add front end of outer ribs. Add pieces of $\frac{1}{8}$ " (3.2) sheet between outer ribs and behind spar to create slot for wing retaining bands.

16. OUTER WING PANELS

DIAG. 16. Make up two pairs of spars laminated from selected $\frac{1}{8}$ " x $\frac{1}{8}$ " (3.2 x 3.2) strips - pinning together whilst drying. Pin slotted trailing edges in place. Erect lower spar on 1/16" (1.5) packing pieces. Add all ribs, these may be identified by progression of taper and temporarily pinned upright - except largest 2-part root rib. Add leading edge with all ribs set level in slots - there is no outer panel wing sheeting. Finally, add pre-cut tip pieces - trimming to accurately fit.

17. DIHEDRAL JOINTS

DIAG. 17. Cut scarf recess in first bay of rear face of leading edge to accept angle of ply gusset as drawn on wing plan top view. Join up two outer wing panels to centre section, ensuring good butt joints at trailing edges. With centre-section flat to board, DIHEDRAL UNDER EACH TIP IS 1" - support tips on blocks whilst setting. Add base rib (in two halves) laminating as required. Finally, add trailing edge gusset and $\frac{1}{8}$ " (3.2) sheeting between lower edges of outer two ribs on centre-section to create platform for wing to rest on cabane supports.

Lastly add 1/16" (1.5) leading edge sheeting to top of centre section only. Sandpaper smooth the complete wing structure including tips and taper along top of leading edge from root to tip.

18. ACCESS HATCH

DIAG. 18. Ply panel, 1/16" x 3 $\frac{1}{2}$ " x 4" (1.5 x 95.2 x 101.6) is trimmed to accurately make hatch to fuselage underside at nose. Diag. 20 will show small wire

hooks are made to permit securing of hatch with rubber bands over hooks located through slots cut in edges of ply.

19. RADIO INSTALLATION

DIAG. 19. Before covering model, radio installation may be anticipated and fitted, whether Single Channel with Rudder only (ply is supplied for mounting rubber driven actuator - not illustrated) or 1 or 2 Channel Proportional for rudder and/or elevator (2 hardwood beams are supplied set crosswise within fuselage). $\frac{1}{4}$ " (6.4) Balsa bulkhead is also trimmed and located where required to accommodate Batteries or Deac and radio receiver at front dependant upon their shape. Pack in foam rubber. ALL UNITS ARE SET AS FAR FORWARD AS POSSIBLE. Prototype model required no ballasting whatever.

20. DETAIL RADIO INSTALLATION

DIAG. 20. This shows a complete installation layout and is self explanatory. 2 hard balsa $3/16$ " x $3/16$ " (4.8 x 4.8) actuating rods are supplied for linkage from servo(s) to nylon control horn(s) at rear. End clips may be made of I6 s.w.g. wire with 20 s.w.g. wire keeper springs as shown, or commercial clevis or K links used. Radio switch is set through underside ply hatch where readily accessible. Aerial passes to rear on the underside of model and secured to skid - tensioned with a light rubber-band.

21. GUN DETAIL

DIAG. 21. These are made from Balsa dowel and Balsa block with hardwood dowel muzzle. Point light grey with black detail on barrel. Angle undersides slightly to permit upright mounting upon curved decking. Add after finishing model.

22. TAIL LINKAGE (RUDDER/ELEVATOR)

DIAG. 22. Two single-throw nylon horns are provided in the kit. Most servo's have multi-position discs so control surface movement may be adjusted at the servo end. Rudder horn is shown and attached either side, remembering that disc rotation will be with inverted servos. Rudder and elevator horns are bolted on (8 B.A.) and sealed with epoxy. Two halves of elevator are coupled with 18 s.w.g. torque link - see plan.

23. UNDERCARRIAGE FAIRING

DIAGRAMS ON PLAN. Pre-formed balsa fairing has slot to accommodate axle - trim out extra slots to fit over soldered joints between axle and struts. Epoxy into place, underside of fairing flat to centre-line of model then fill in top of slot with balsa and sand smooth. Cover with tissue.

24. COVERING

Lightweight Modelspan (1 sheet) and Heavy (3 sheets) are provided. Tail, Fin and Rudder are all covered in lightweight, use photo-mounting paste as adhesive, or Banana-oil (non-shrinking dope) onto rudder. Fuselage and wings are all heavy tissue covered, adhering with paste over open frames of wing and fuselage, banana oil over sheeted areas. Spray shrink with water and dope until slightly glossy. Nylon and Iron-on coverings are NOT recommended because of weight.

25. DETAIL

Wire strutting may be left as built, or all struts faired with rolled gummed paper tape (not supplied), and gently flattened to a streamline oval section, then proofed with dope.

Celluloid windshield may be cut out - template on plan - and epoxied to top decking. It has no outline rim - just a curved base support (paint on). Hatched lines on plan show 'step' and 'lift' handles - optional detail simulated with wire and added.

26. COWL, ENGINE AND TANK LOCATION

3 hardwood blocks provided have their outward edges contoured to make locations for screws locating cowl. Glue in place 1/16" (1.5) in from rim of ply bulkhead. Similarly parts H & J - see diagram on plan. Trim lower part of cowl and circular apertures as shown. A.B.S. will cut easily but support well whilst incising with new sharp blade. Drill 3 1/16" (1.5) holes for small brass wood screws, check cowl location and secure with screws. **NOTE.** 2 Depths are given on plan for cowl - 2" (50.8) as supplied, or trimmed to 1 1/2" (44.4) to suit large or small engines fitted.

Fuel tanks is made up and fitted tightly with epoxy into slot through bulkhead - note filler extension of 3/32" (2.5) P.V.C. passes through ply mount to convenient hole cut in cowl.

Give whole motor-bay several coats of dope and finally fuel proofer.

Engine may be located with blind nuts and bolts, or double nuts to secure against vibration. Use largest diameter propeller consistent with engine manufacturers instructions. Jet needle may require extension of brass tube (or spring curtain wire) for access outside cowl.

27. COLOUR SCHEME

"Profile" Publication No.67 gives full colour detail of 1914-18 War Schemes, but our prototype was Olive Matt green wings, cowl and top decking to cockpit with rear fuselage, fin and tail-plane, struts and undercart fairing in Red. Rudder (and part of the fin) is in White. Wheel centres should be green or White. Transfer decals are provided and applied **AFTER** fuel proofing complete model if a Glow engine is fitted.

28. BALANCING & FLYING

Our prototype required no ballast to bring C.G. to correct location. Endeavour should be made to achieve balance (model hang slightly nose down in gliding attitude) when supported on finger tips upon C.G. line by disposition of radio components, otherwise add ballast as required.

Engine side and downthrust as suggested on plan may vary with engine power and should be adjusted by trial and error after flight trim tests for straight flights under power and on glide.

Minimal glide testing in calm conditions is recommended. Very slight adjustment to wing incidence may be made by position of rear end of wing supports where secured through slot by rubber bands, pulling together will decrease incidence and vice versa. Normally ensure that wing supports are always accurately placed.

Never attempt first flights on reduced power - if in doubt, co-opt the services of an experienced flyer to check and trim.

Always check radio and servo operation before flights, especially the range and also with engine running for vibration faults. Always check that your frequency does not interfere with anyone flying on the same, etc..

HAPPY LANDINGS !