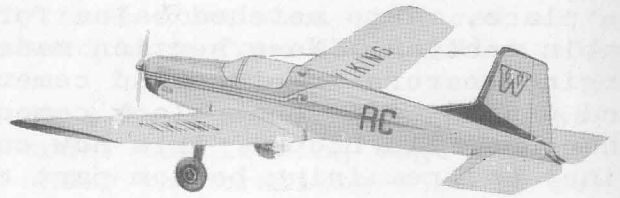


# BUILDING AND FLYING the "VIKING" RADIO CONTROL MODEL

Designed by Erik Berglund.



The VIKING has been specially designed for advanced R/C flying and has already dominated contests in Sweden with three National and one European Championship to its credit to date. It is definitely NOT a learners or beginners model, though construction has been kept very simple and most of the kit is prefabricated for quick yet rugged assembly. Flying is easy, but remember that the VIKING is a fully aerobatic model and is therefore sensitive and quick to respond to your commands.

As in all low wing models the secret of stability lies in the 'wash out' of the wings, in this case from  $0^\circ$  at the root to  $7\frac{1}{2}^\circ$  at the tip ribs. Before building study the plans and instructions carefully, and get to know every part, where it goes, and how it fits in relation to the other parts.

## MAIN PLANE:

Cover plan with tracing paper or waxed paper, and secure to building board. Notch out trailing edge to accept ribs and pin in place together with 4 x 8mm bottom main spars. Enlarge rib slots near centre section to allow for 1.5mm ply diheadral braces, and cement ribs in place. Next cement on leading edge. When dry remove from board, turn plan over and build left wing half to same stage.

Replace right half wing on plan and pin down leading edge also root rib. Set wash out by placing a 20mm ( $\frac{3}{4}$ " ) block under tip of trailing edge. Now cement in top main spar (4 x 8mm) and all triangular gussets and fillits. Top side of leading edge can now be sheeted also tip outer panel leaving it over length to be trimmed to shape after shaping and fixing underside diagonal outboard rib cut from 5mm sheet balsa. Repeat procedure for left wing half. Next construct centre section using pre-cut 'block' ribs and setting in ply diheadral braces. Ply should be pre-cemented over entire length before use.

With centre section secured to board fit wing halves ensuring correct diheadral angle (4" under leading edge), and chocking trailing edge to maintain correct washout. When thoroughly dry sheet underside of leading edges with balsa and cover centre section both sides with pre-cut ply panels again ensuring washout maintained by chocks whilst covering and drying. Do not omit U/C locating stops made from 3mm ply which are pre-cemented and cemented in front of lower main spar and against 'block' ribs. These should be reinforced with a balsa spreader also well cemented to bottom front main spar. Finally shape up tips, and sandpaper all over prior to covering.

## STABILISOR:

Leading edge, trailing edge, and tips made from 6mm thick strip as indicated with 4 x 6mm diagonal struts. Top and bottom centre spar of 4 x 8mm fitted after and tapered to tips, whilst centre section is covered with 1.5mm balsa sheet and pre-cut ply square is used to reinforce hole for fixing bands. Trailing edge extension finally well cemented in place and whole sanded before covering.

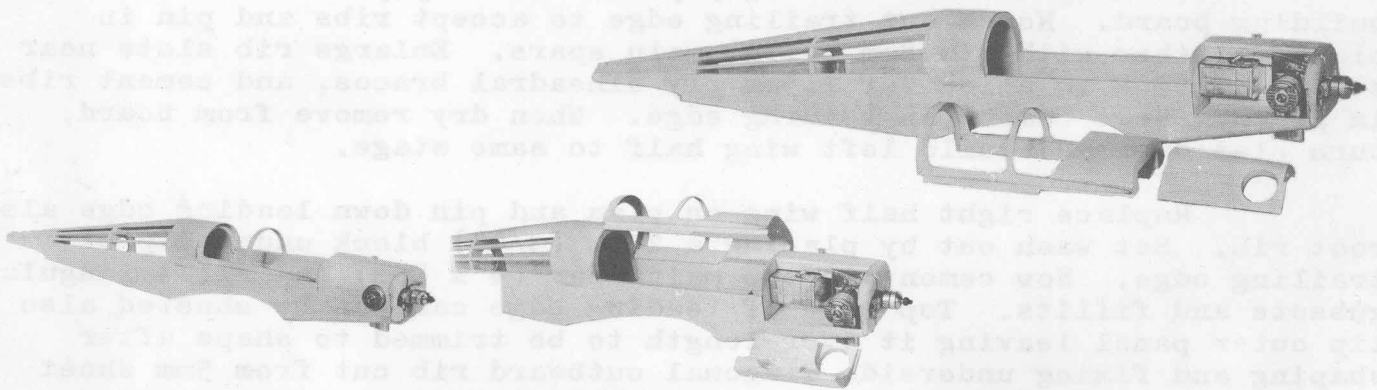
## RUDDER:

Follow constructional details as for stabilisor. Pre-cut control surface hinged with tape, and fairing added afterwards on assembly to fuselage.

### FUSELAGE:

Cement both pre-cut fuselage sides to machined tail block. Cut notches for stringers in formers and tail block and cement all formers in place. Note notched balsa former cemented to ply arch at rear of cabin section. Nose section made from three pre-cut balsa blocks. Fix engine bearers in place and cement this block home. Other main block and wedged additional block cemented together to form same external shape as main block. This now cut to provide convenient access to engine, and remaining bottom part cemented in place leaving room for fitting engine mounting plate, exhaust, ventilation and drainage for fuel. Remaining top half hollowed to take engine, fuel tank, etc., repositioned and shaped to formers. Underside covered with 5mm sheet. Lift off cabin section made from pre-cut block, with die cut ply hoops, and ply former reinforcing at rear end. Inside bottom edges lined with 3 x 10mm balsa inside which is a locating lip formed of 1mm ply, the whole held in position by locking devices made from 18 swg piano wire tensioned by a rubber band, and situated at any convenient point across cabin near the centre.

Cabin floor and wing locating blocks can now be cemented in place, whilst stringers from cabin section to tail block can be put in as and when convenient. (Any linkages to tail end surfaces having been installed). Section at rear of cabin can be covered with sheet balsa, and pre-cut wing fairing strips cemented to each side of fuselage, and sanded to make a smooth joint with wing. Wing and tail fixing dowels can now be fitted, also tail skid.



### UNDERCARRIAGE:

Use full length threaded machine screws provided as axles on pre formed and shaped dural frame, and use brass tubing as long bearings. Drill wheel hubs to snug fit on brass tube and solder in. Finally use 'Durofast' to secure tyres to hubs, and cut small locating notches in dural to engage with ply stops on underside of wing to stop side movement.

### ENGINE:

Mount engine on 'Tufnol' sheet provided, which should be cut out to suit engine, and secured to bearers by wood screws. Drill bearers first to avoid splitting. When bolting engine to 'tufnol' insert washers to give approximately 3 degrees of right side thrust, engine bearers already set to give required down thrust.

Suitable fuel tank should be mounted behind engine, and provision made for inverted flying if required.

### COVER:

Cover the whole model with Modelspan Tissue, Jap Silk or similar material, gluing at all contact points including wing ribs top and bottom, balsa sheet covered sections, longerons, and fairings. Remember that 50% of the strength of the airframe depends on the covering. Finally give 3-5 coats of clear shrinking dope, whilst any colour doping should be done after using the dope sparingly. When doping jig wing to maintain correct washout and dihedral until completely dry. Also jig stabiliser to keep it true.

**FLYING:**

Assemble the model using strong rubber bands to retain wing, stabiliser, and undercarriage. Check the line up of the flying surfaces carefully. The model should hang slightly nose down when balanced on the finger tips at a point 1/3rd of the chord back from the leading edge.

Move radio batteries and equipment until this has been attained. Test glide the model over long grass, packing under the leading edge of the stabiliser to cure tendency to dive, and under the trailing edge to remove stall if any. Rudder movement under radio should be limited to about 4mm either side of centre, which on test gliding should produce no more than a very gentle turn. Check radio close to, at range and with engine running, then with fuel for 20-30 seconds of motor run and engine at 2/3rds throttle launch into wind. Allow model to gain 100-200 ft before starting to control for the first time. Lack of climb can be cured by reducing down thrust, whilst stalling under power removed by more down thrust. Too sharp a turn under power in one direction can be adjusted by varying side thrust accordingly.

When confidence has been gained full power can be used, and rudder movement increased to give greater response and tighter turns, loops etc. In conclusion always check radio with engine running before every flight, and don't expect your batteries to last for ever..... they won't!!! NEVER FLY if in doubt, and finally do not forget to switch the radio ON!.....

Happy landings,

Erik Berglund.

Manufactured in Sweden by:



Adapted for, and distributed in England by RIPMAX MARINE ACCESSORIES  
LONDON.

As a guide to Non Metric Modellers approximate equivalent inch sizes are listed herewith to assist in cases of repairs or replacements:-

<u>SHEET</u>		<u>STRIP</u>				<u>GENERAL</u>	
1.5mm	= 1/16"	4 x 6mm	use	5/32	x 1/4"	1"	= 25.4mm
2.0mm	= 3/32"	4 x 8mm	use	5/32	x 5/16"	2"	= 50.8mm
3.0mm	= 1/8"	5 x 5mm	use	1/4	x 1/4"	3"	= 76.2mm
4.0mm	= 3/16"	5 x 10mm	use	1/4	x 1/2"	4"	= 101.6mm
5.0mm	= 7/32"	6 x 10mm	use	1/4	x 1/2"	5"	= 127.0mm
6.0mm	= 1/4"	3 x 10mm	use	1/8	x 1/2"	6"	= 152.4mm

SUGGESTED RADIO INSTALLATIONS and LAYOUTS

RUDDER ONLY:(Sequence)

- A. RMA Pathfinder Receiver and RMA Mactuator. Receiver mounted on foam rubber or plastic over U/C and strapped down with rubber bands. Box for batteries fitted against ply bulkhead, and batteries packed in with more foam. 3mm ply wall fitted across cabin at centre of wing and Mactuator mounted as in scheme C of instructions. Dowel torque rod free running through hole bored in tail block can be used to transmit movement from Mactuator to rudder.

RUDDER & ELEVATOR:(Sequence)

- B. RMA Pathfinder Receiver, RMA Compound Mactuator, & RMA Mactuator. Mount receiver and batteries as in A, and mount Mactuators side by side in same position also. Use Compound for rudder operation and Standard for elevator.

RUDDER & ELEVATOR:(Proportional)

- C. E.D. Black Arrow Four, & two E.D. Multi Servos. Mount receiver and batteries as in A, and mount servos on thin foam to cabin floor in tandem. Thin dowel push rods terminated in 18 s.w.g. piano wire hook -in connections should be used to link to surfaces.

There are many other combinations and installations which can be used with equal success in your Viking, but in all cases aim at getting the weight of the radio equipment evenly distributed so that it does not affect the trim of the model. Keep total radio weight to a minimum, but ensure adequate battery capacity and install equipment securely.

