THE AEROCOUPE by Ray Malmström

RUBBER POWERED SEMI-SCALE MODEL

This is a slightly more advanced model called a "semi-scale" type which besides being an absorbing building project, will introduce you to the techniques of tissue covering. The flying surface (and part of the fuselage) are built up structures covered with lightweight tissue paper. This covering needs to be tightened by water shrinking and finally doping.

There is always a great appeal about a "semi-scale" model that looks very much like the real thing, but is so designed as to avoid complexities associated with the "true-to-scale" type of model. Aerocoupe includes a pilot that adds to its realistic appearance in the air.

The plan provides all the information needed to get your Aerocoupe airborne, but a few additional hints may be helpful. If you do not have balsa block of the required dimensions for the noseblock, wheels, and wing dihedral jig you can laminate together several thicknesses of 1/16" sheet. You will need to take a tracing of the starboard (right-hand) wing panel shown on the plan, and reverse it in order to build the port (left-hand) wing panel. Be sure to avoid building TWO STARBOARD wing panels. Yes! we have done it - and it really is frustrating! Use tissue paste (available from your model shop) to fasten the tissue paper to the framework, cutting the tissue about 1/8" oversize all round and folding over the edges for a neat job. Allow to dry thoroughly. When water shrinking and finally doping always pin the flying surfaces down on the building board, on small balsa blocks, while drying, to avoid those arch-enemies - WARPS!. NEVER use full strength dope straight from the bottle. Dilute the dope with thinners, (small bottle from your model shop), in the proportion of half dope, half thinners. The brass bearing bush for the propeller shaft, as purchased, is too long. Cut to length, using a hacksaw. We have designed Aerocoupe to take a British Keilkraft 5" dia. plastic propeller. You will need to remove the spinner portion with a fine hacksaw. Some hobby shops supply American 5" dia. plastic propellers. Fit one if you can. They are lighter and more efficient than the British equivalent.

FLYING

Make up the test motor (12" long loop of 3/16" flat rubber strip) lubricate with rubber lubricant and instal. Then support Aerocoupe by the finger tips under the balance point shown on the wing tips. Aerocoupe should hang level. A small amount of weight (folded empty cement tube, plasticene etc) may be needed front or rear to achieve correct balance, but this is unlikely. Correct balancing is IMPORTANT.

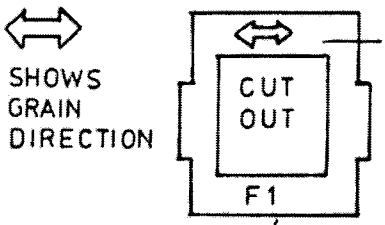
Choose a calm day and soft/long grass for glide tests. Launch smoothly into wind - avoid THROWING the model. If the model dives raise the tailplane trim tab about 3/32". If it stalls (climbs toosteeply and then dives) lower the trim tab about 1/16".

Having obtained a straight, flat glide, you can try a "power-on" flight, wind the test motor about 100-120 turns. If under power the model dives, cement a small strip (1/16" x 1/16" sq.) along the BOTTOM of the nose-block. If it stalls, add a similar strip to the TOP. Steep turns in either direction, are corrected by bending the fin tab. Bend left for a right turn, right for a left turn (model viewed from rear). With short satisfactory flights, remove the test-motor, and instal the longer flight motor. (16" loop of 3/16 flat rubber strip, well lubricated). Maximum turns, (after about 10 flights) are 450 approx. These are more quickly wound-on using a hand drill (geared approx. $3\frac{1}{2}$: 1) with a wire hook held firmly in the drill chuck. This hook engages with the winding hook on the front of the propeller. Stretch the motor to about TWICE its length, and come in slowly towards the model as you wind on the turns. You will need a helper to hold the model. Heres wishing you happy building and flying your Aerocoupe.

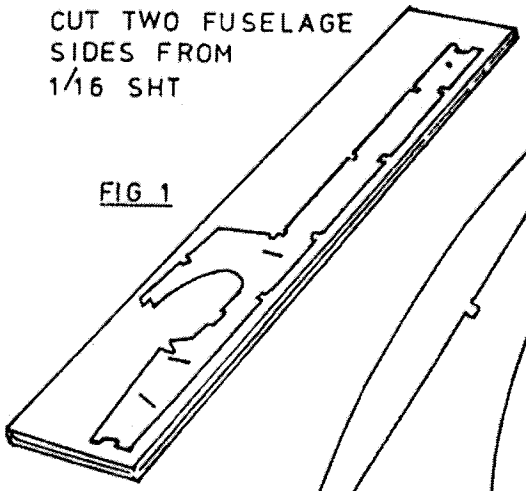
AERODOUPÉ

RUBBER POWERED SEMI-SCALE MODEL

SPAN: 17" LENGTH: 15¼"

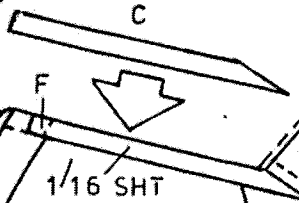


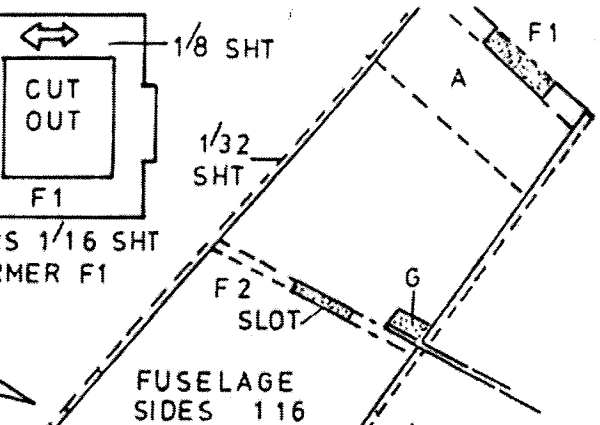
ALL FORMERS 1/16 SHT EXCEPT FORMER F1



CUT TWO FUSELAGE SIDES FROM 1/16 SHT

FIG 1





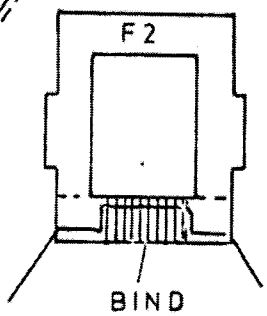
COVER CABIN WITH THIN ACETATE SHEET

INSTALL PILOT FIRST

H

F3

SLOT

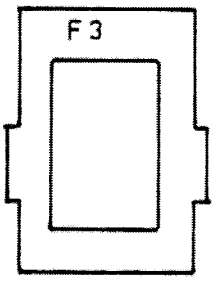


BIND WITH THIN THREAD AND CEMENT

WING POSITION

D

ALL PARTS SHOWN FULL SIZE



1/16 x 1/16 STRIP

F4

SLOT

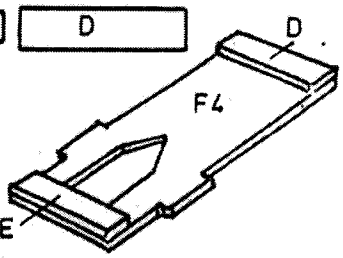
E

SKID 20 S.W.G WIRE

TISSUE COVER

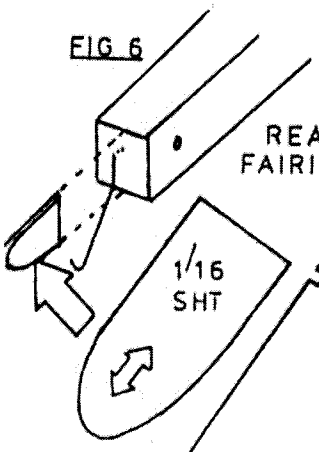
1/16 SHT

D

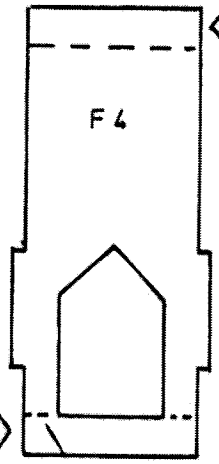


CONSTRUCTION OF MASTER FORMER

FIG 6



TISSUE COVER



1/16 SHT

E

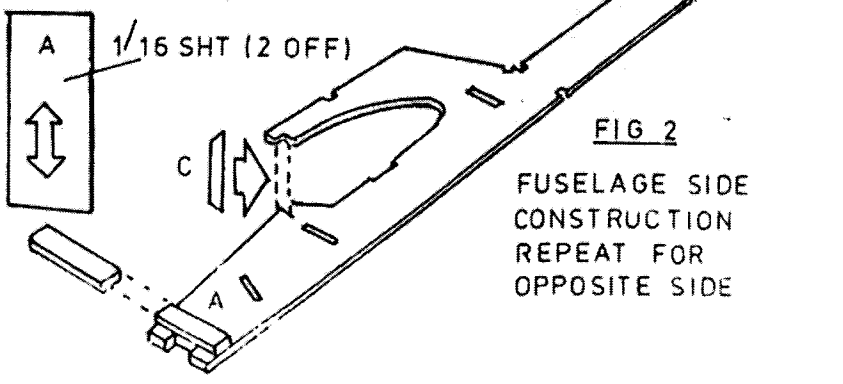
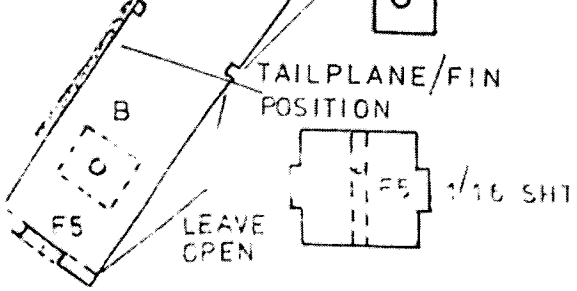


FIG 2

FUSELAGE SIDE CONSTRUCTION REPEAT FOR OPPOSITE SIDE

B/1 16 SHT

TAILPLANE/FIN POSITION



FUSELAGE ASSEMBLY

FIG 4

ASSEMBLE F4 FIRST CHECK WITH SET SQUARE

F1

F4

F3

F2

F

1/8 SHT

FIN TAILPLANE ASSEMBLY

FIG 7

1/32 SHT

NOTE GRAIN

'V' CUTS FOR UNDER-CARRIAGE LEGS

FIG 5

PULL IN SIDES AND CEMENT F5 IN PLACE

ADD 1/16 × 1/16 CROSSPIECES

3/32 DIA. F5 DOWEL ROD

G 1/8 SHT

UNDERCARRIAGE BOUND AND CEMENTED TO PIECE G AND F2

UNDERCARRIAGE 20 S.W.G WIRE

3/4" BALSA WHEELS SHAPED FROM BLOCK. (OR LIGHTWEIGHT PLASTIC WHEELS)

G

F2

FIG 3

ELEC. TUBING (WIRE REMOVED)

TRIM TAB

FIN SLOT

1/16 SHT

TRIM TAB

TAILPLANE AND FIN FROM 1/16 SHT. CUT STRIP TO DIMENSIONS

COVER BOTH SIDES WITH TISSUE

SECTION

SECTION

H

H 1/16 SHT

CUT PILOT HEADS FROM PLAN. COLOUR WITH FELT PENS. STICK ONE HEAD ONTO 1/16 SHT. CUT OUT AND ADD OTHER HEAD PROFILE

TRIM TABS FROM THIN CARD OR STIFF NOTEPAPER

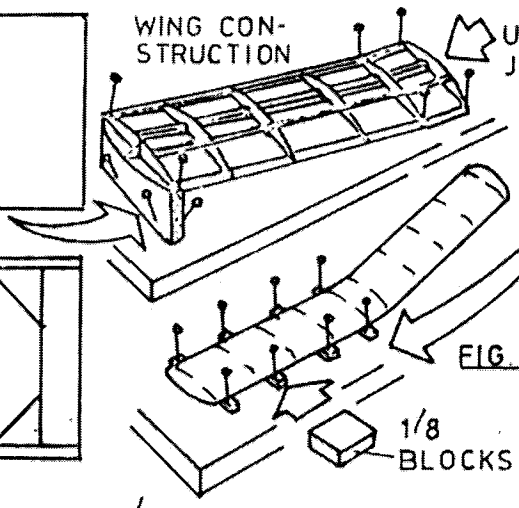
RAY MALMSTRÖM. 77

WING DIHEDRAL JIG

1/8 SHT

WING CONSTRUCTION

USE OF WING DIHEDRAL JIG

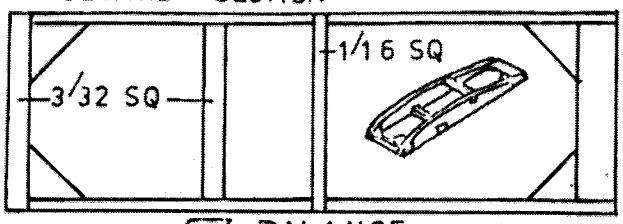


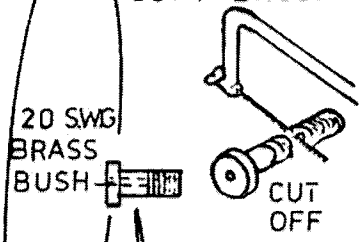
PIN DOWN WHEN WATER SHRINKING AND DOPING. APPLY WATER AND DOPE WITH A SOFT BRUSH

FIG 8

1/8 BLOCKS

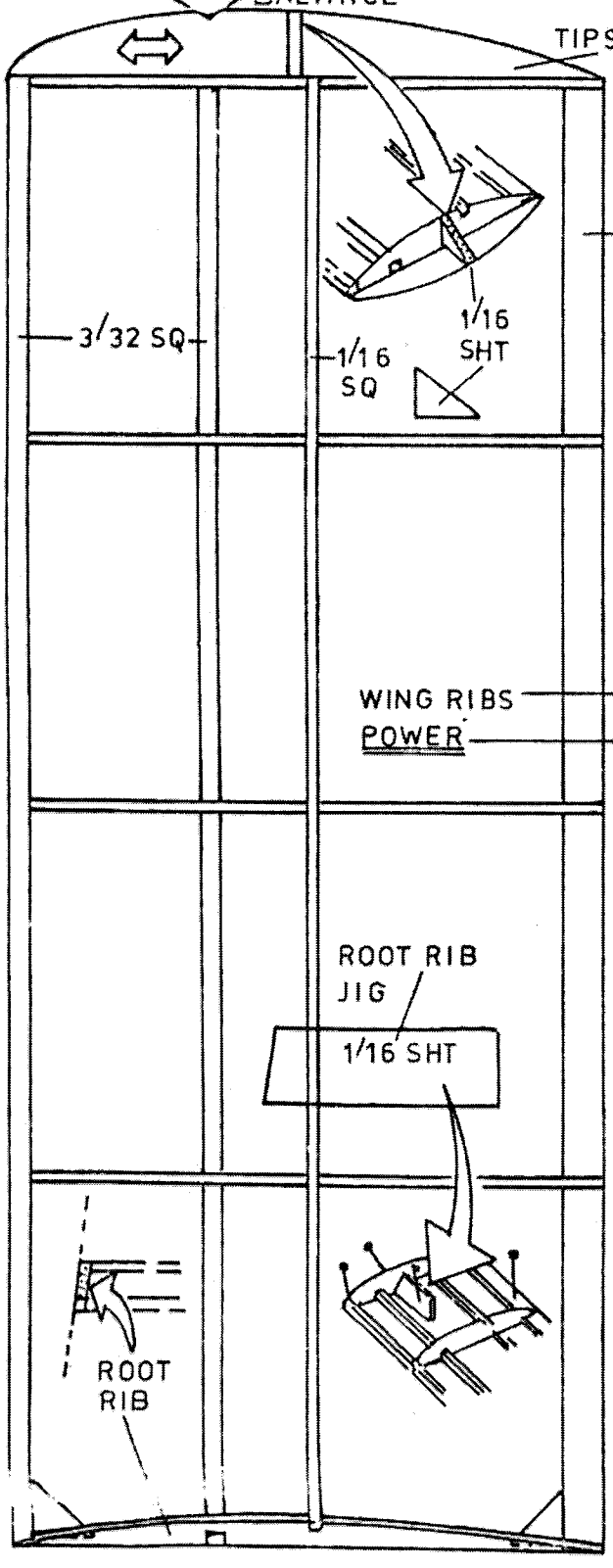
CENTRE SECTION

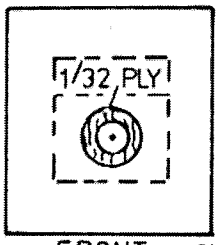




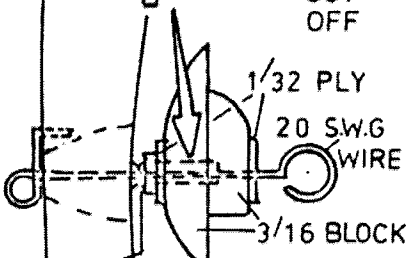
BALANCE

TIPS 1/16 SHT





FRONT



CUP WASHERS

KIELKRAFT 5" DIA. PLASTIC PROP

TOP NOSEBLOCK / PROPELLER ASSEMBLY

CUT OFF SPINNER

AFTER WATER SHRINKING GIVE WINGS TAILPLANE AND FIN ONE COAT OF DOPE THINNED TO 50/50 DOPE AND THINNER. PURE DOPE WILL TWIST THE FRAMEWORK. GIVE FUSELAGE ONE COAT. GIVE NOSEBLOCK FOUR COATS. SANDING BETWEEN COATS.

WING RIBS — 1/16 SHT (12)

POWER — 12" LOOP OF 3/16 FLAT STRIP RUBBER (TEST MOTOR)

16" LOOP OF 3/16 FLAT STRIP RUBBER (FLIGHT MOTOR)

COMPLETED MODEL