Pull-out plan for an exciting two function slope sports model

OBELIX

Designed by Chas Gardiner

'OBELIX' originated from discussions with BATS clubmates a couple of years back and is a development of the control line and Club 20 combat theme introduced by Phil Newman, whose 'Bomcat' machine was a simple 'wing' cut from a slab of polystyrene foam.

Much midnight oil was burnt on the vexing problem of reflex sections and pitch control, solved eventually by a semi-symmetrical centre section set at an effective negative incidence whilst the wing panels went from semi to fully symmetrical. Developments threw out models like shelling peas until the present design which will fly inverted with little or no change of trim and will perform any combinations of aerobatics involving rolls, inside and outside loops. Most manoeuvres in the book are easily performed but this machine is essentially a 'fun' model as I would expect it to be outpointed by a smoother flying, larger model in an aerobatic competition. Still, they cost more etc....

And so to the present developments. I am currently using blue foam panels, the completed model being covered in lightweight tissue using wallpaper paste before the iron on film. You can however cut your panels from expanded polystyrene foam building the model as per instructions but cladding with obeche veneer before final covering. In this instance, the veneer on the underside can be applied in one length tip to tip. The finished model will weigh around 4oz heavier than the blue foam version but will motor nicely in modest lift.

Use any two channel gear, 27MHz should be OK as you do not fly at any great distance so cut yourself some panels and get cracking. (If you are stuck, we can supply panels. See ad. in the back pages). A third alternative is to use the built-up construction also shown on the plan.

Right, here's how you do it

Cut panels from blue foam, check they are square and epoxy together to give 3/16in. under each tip. Try not to allow epoxy to ooze out onto the surface.

While this is going off — put the kettle on ... Next glue on leading and trailing edges using custard, glue or similar — secure with light rubber bands, add side ribs, then brew up. It is important that you satisfy yourself that there is enough room in the fuselage for your nicad pack and Rx. The original takes four AA cells and one of the cheap 27MHz receivers currently available.

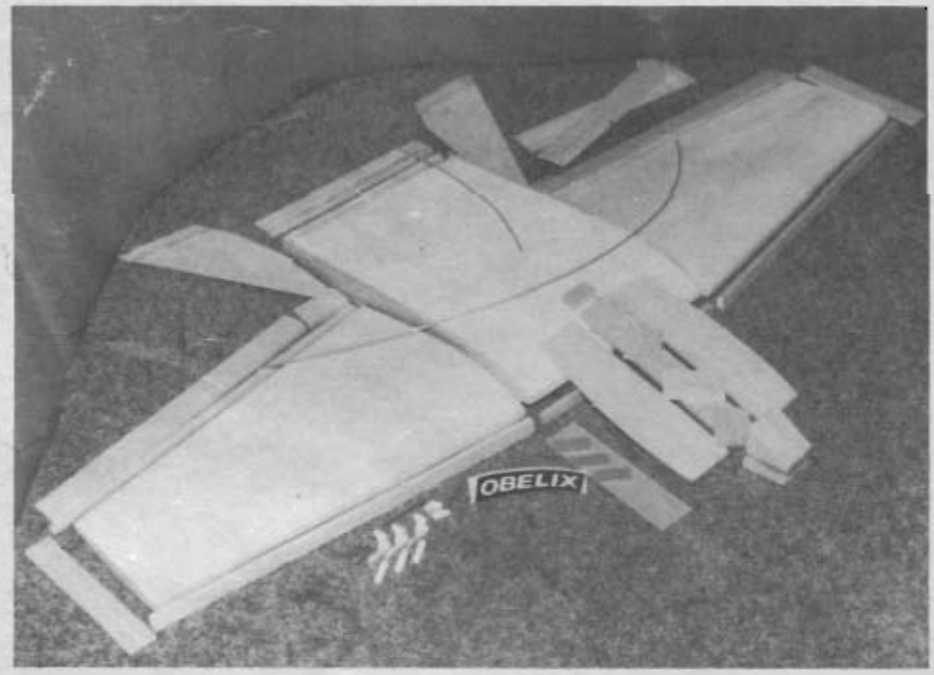
Cut 3/16in. sheet sides and formers to suit. Glue fuselage sides to bottom — add formers and sandwich of hard balsa and ply for nose block. Glue up fins from 3/32in. sheet — note direction of grain, then cut and sand elevator and ailerons from 1 1/4in. × 5/16in. TE section.

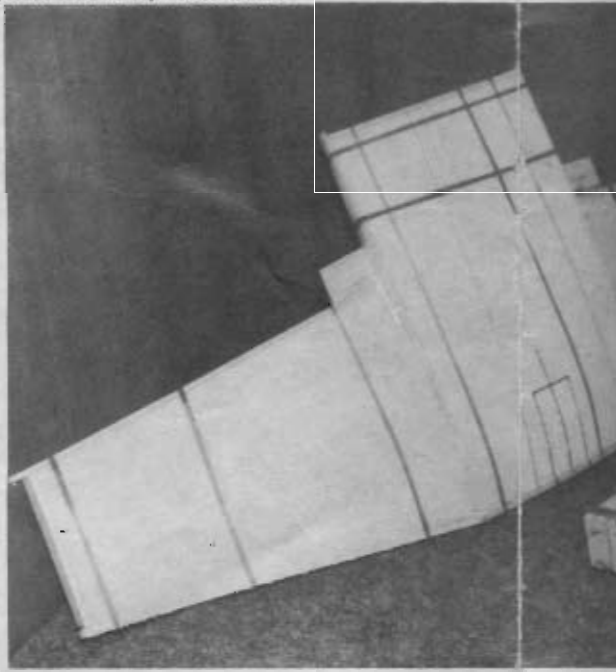
Sand leading and trailing edges to section — note top hinge for ailerons, bottom hinge for elevator. Lightly sand the tips square and glue the 3/16in. tip blocks in place — sand to section when dry. Add 2in. lengths of TE fairing cut from aileron strips. Now *carefully* mark out the fuselage width on the centre panel and cut out *square* using a backsaw, try to obtain a tight fit. Sand fuselage and epoxy in place with underside flush to wing. Apply generous fillet of epoxy all round.

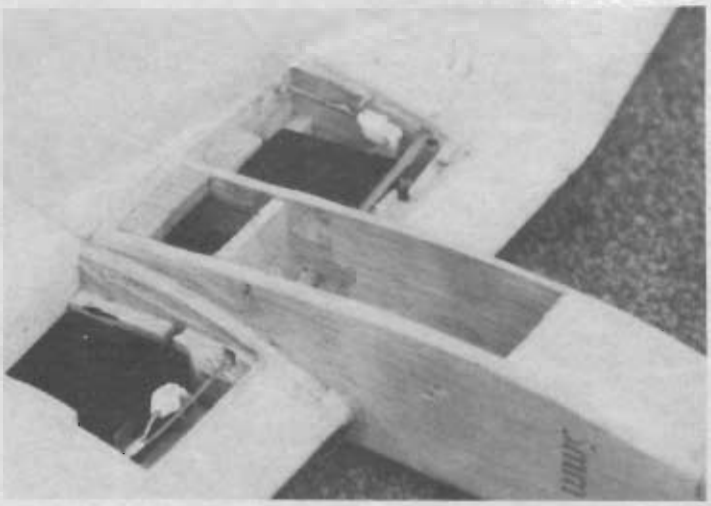
Cut out foam for servo housings and line with 1/16in. balsa sheet then check radio gear and servo direction. Reverse if necessary then locate servos with soft balsa packing using PVA or similar.

Mark route of snakes on foam and cut grooves (a 3/32in. wide file is ideal) — apply glue, press snake to depth and fill groove using 1/8in. soft balsa. Fit cables and links as shown, check movements and glue soft balsa hatches in place. Lightly sand flush when dry. Carve nose block and fuselage to suit, lightly sand whole model including ailerons, elevator and fins which are still separate. Note, blue foam sands well providing you use a fine grade with extremely light pressure. Cover the model with light weight tissue using wallpaper paste before iron-on film which you should tack *round the edges* and use a heat gun to shrink. Don't linger too long in any one place. Hinge elevator and ailerons

Below left: complete 'kit' of parts for blue-foam version, always a good idea to adopt this approach to building from plans. Below: foam panels assembled with leading and trailing edge pieces retained by rubber bands.







using 'magic tape' then add horns and check control movements. Fit and cover ply Rx hatch, then fix fins — I used double sided tape, but these can be glued in place after cutting away *Solarfilm*.

Check balance position which should be 2¾in. back from centre section leading edge. Whilst nicads are charging, consider a contrasting colour scheme particularly on the underside, then do it! Set the elevator about 3/16in. up on neutral setting, about ⅜in. up and down will be ample. The ailerons should be set up ⅛in. to form a reflex section with ⅜in. up and down maximum.

Flying

Firstly — don't hesitate to ask for help. If the CG position is right — you'll find the model rock steady, forward speed being altered by trim i.e., up elevator slows it down, but in good lift, back it off and watch it go. You may move the CG forward a little at first until you get used to it but do not move it any further back than shown. The model is almost impossible to stall, the 'flick' stall and instant recovery from a too slow loop being a favourite party piece. OBELIX will do almost everything but a stall turn and spins, but rolling manoeuvres and outside loops are something else ...

Add ballast in good lift conditions, the faster it flies the better but don't take your eyes off it, you may not see which way it went!

We fly a type of combat towing 30ft. lengths of cassette tape. Aim to touch your opponent's tape as often as possible in a given time. One point per touch, five off for both pilots if one or more models downed by a mid-air. Any inadvertent landings, five points off that pilot only but any number of re-launches permitted during the heat.

Finally, as a dedicated glider guider, I am reluctant to admit that I have had a lot of fun flying a powered version. Known as 'MOBELIX,' it has a sparkling performance using a 1.5cc diesel. It has enough power for all the usual aerobatics and has a flat smooth glide when the motor cuts. How they manage with a hot .19, I have yet to find out ...

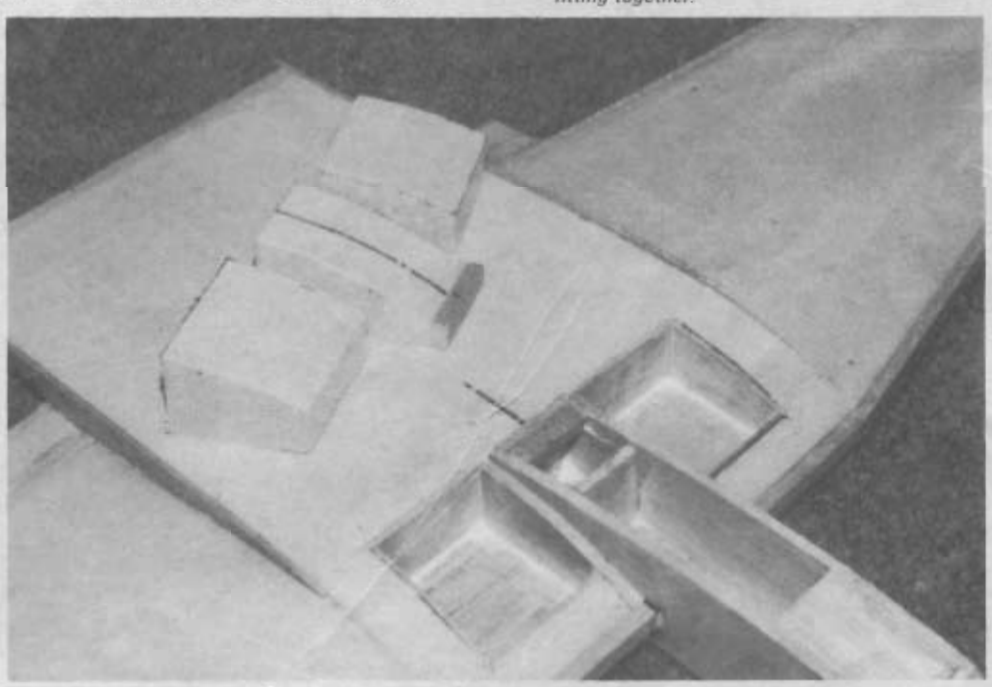
Built-up version

Cut out a complete set of ribs W1-W7 and prepare the false trailing edge pieces from ⅛ sheet. Pin down a strip of 3/16 sq. to prop up the ribs in the outer panels to produce a true wing. Pin down the spruce spar and assemble ribs, false leading and trailing edges plus second spruce spars. Make up four, 1/16 balsa skins for the outer panels and sheet each panel on one surface. Assemble the three panels sheeted side downwards on a flat building board propping up the tips ⅝in. Now instal the snake tubes for ailerons and elevators fit the vertical grain servo boxes, then add the top 1/16 balsa skinning to the complete wing.

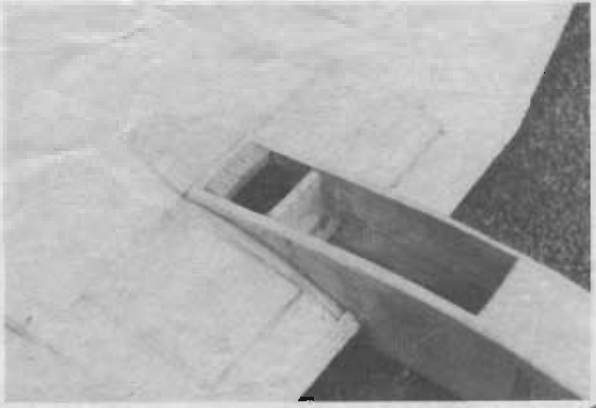
Cut out the fuselage space between the centre W1 ribs, add the leading and trailing edges, tips and 3/32 facing ribs and sand the whole wing to section. Remainder of the construction as per the foam version.

Above left: fuselage fitted and aileron and elevator servos installed into boxes. Balsa fill-in pieces can be seen on wing upper surfaces - used to seal in snakes. Above right: close-up of aileron servo hook-up. Below: designer Chas Gardiner, RCM&E Slope Special columnist, with two examples of 'Obelix.'

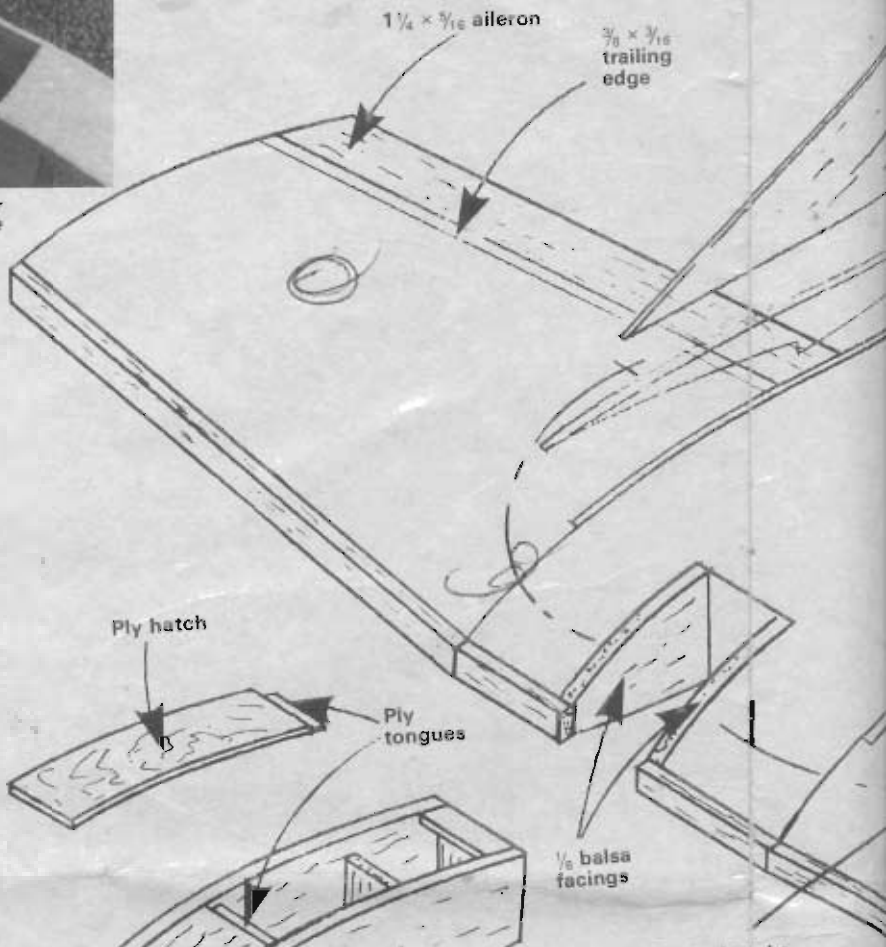
Below: foam cut away for fuselage and servo boxes. Cut-out for fuselage must be a really good fit, and holes for aileron snake are made after fitting together.

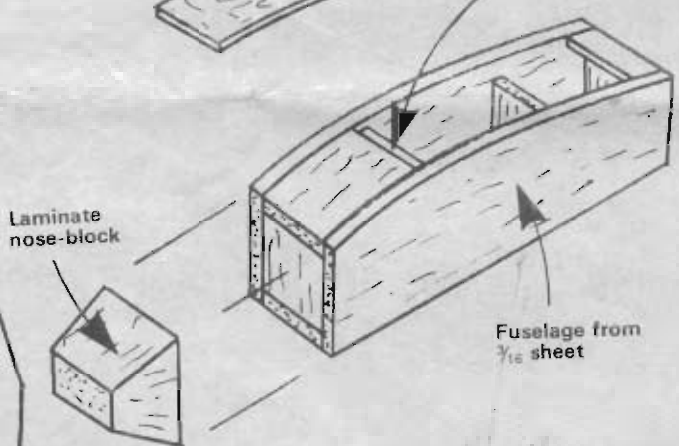


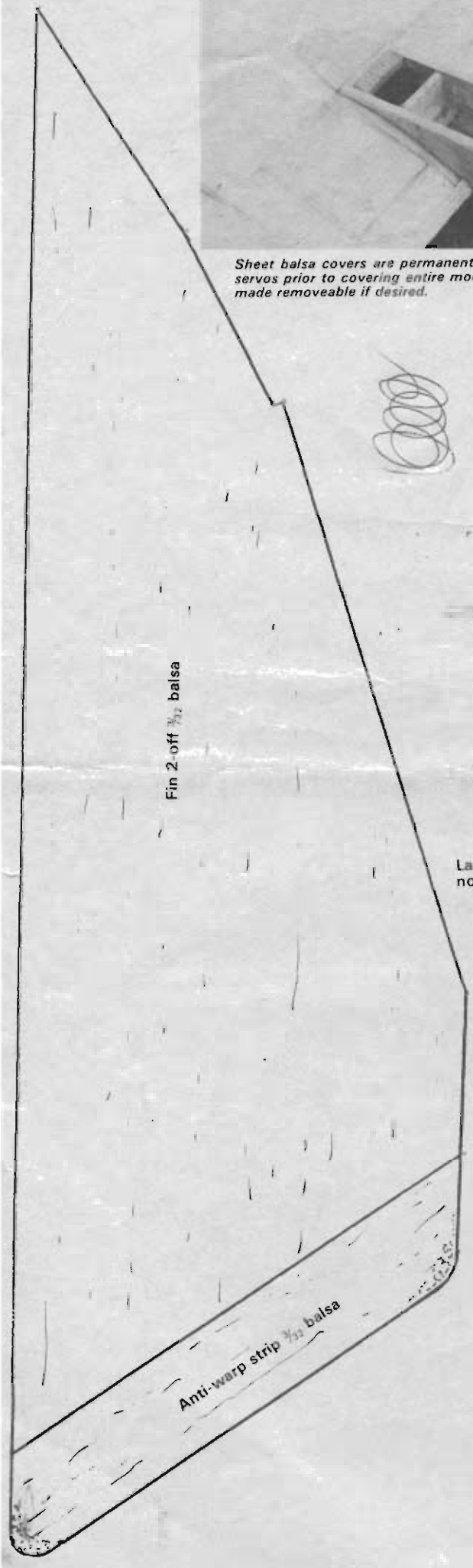
Foam version assembly

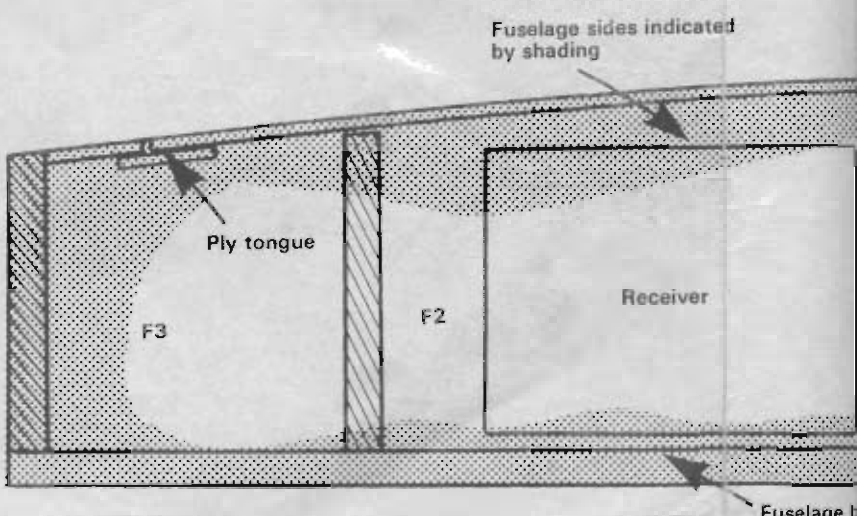


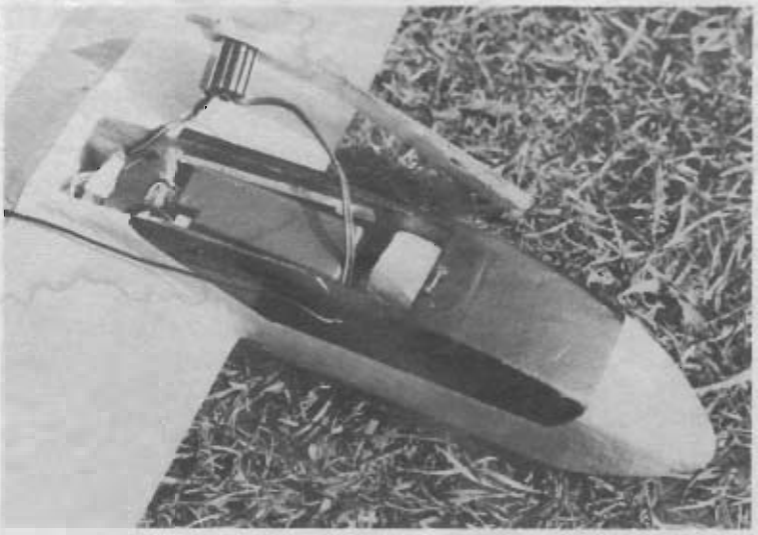
Sheet balsa covers are permanently fitted over servos prior to covering entire model. Could be made removeable if desired.



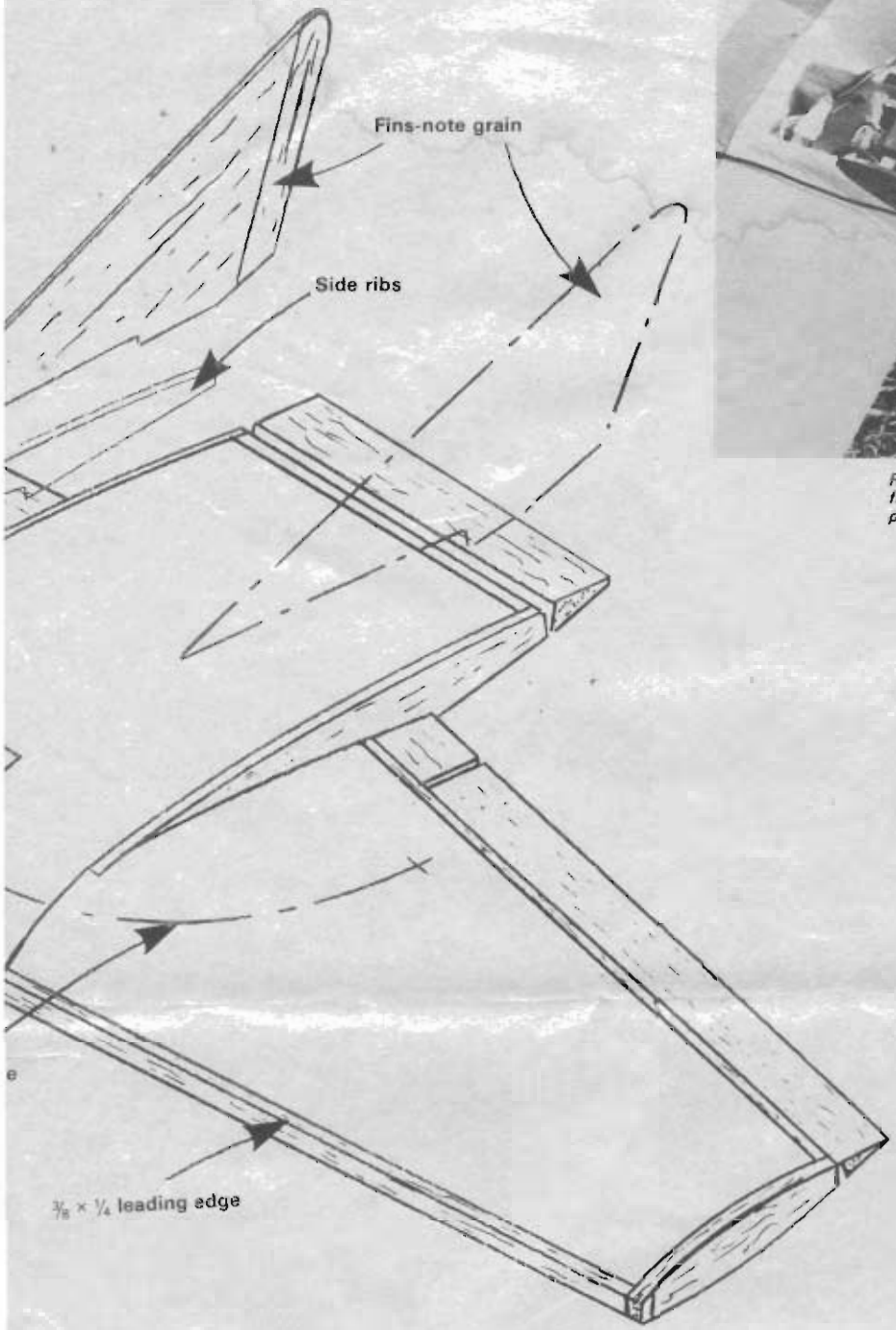






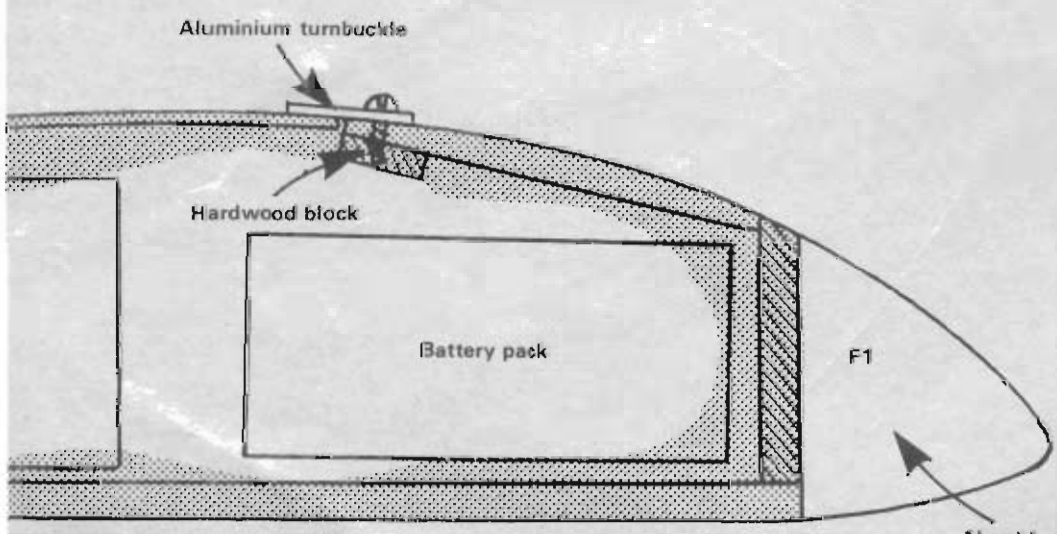


Receiver and Ni-Cad fit comfortably into the fuselage - holes must be made for servo leads to pass through from the wing.

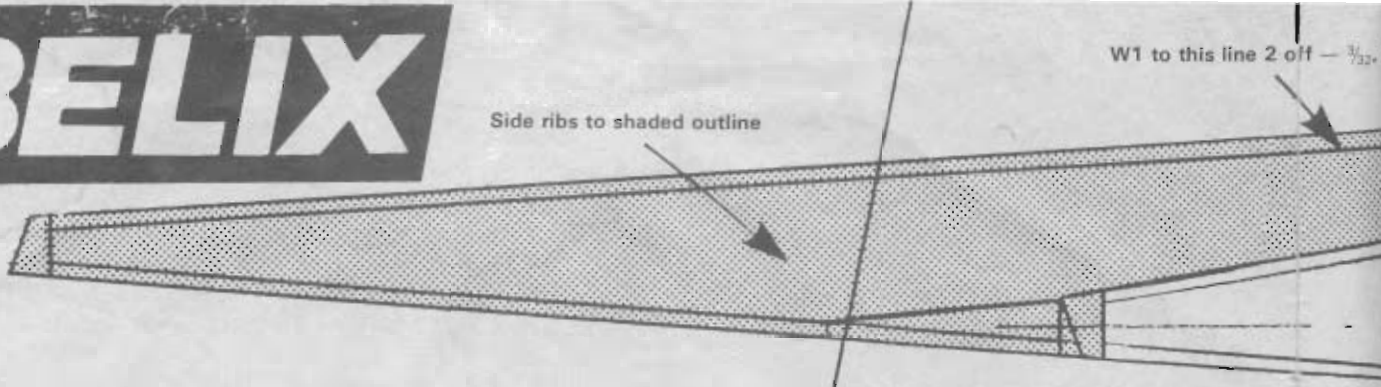


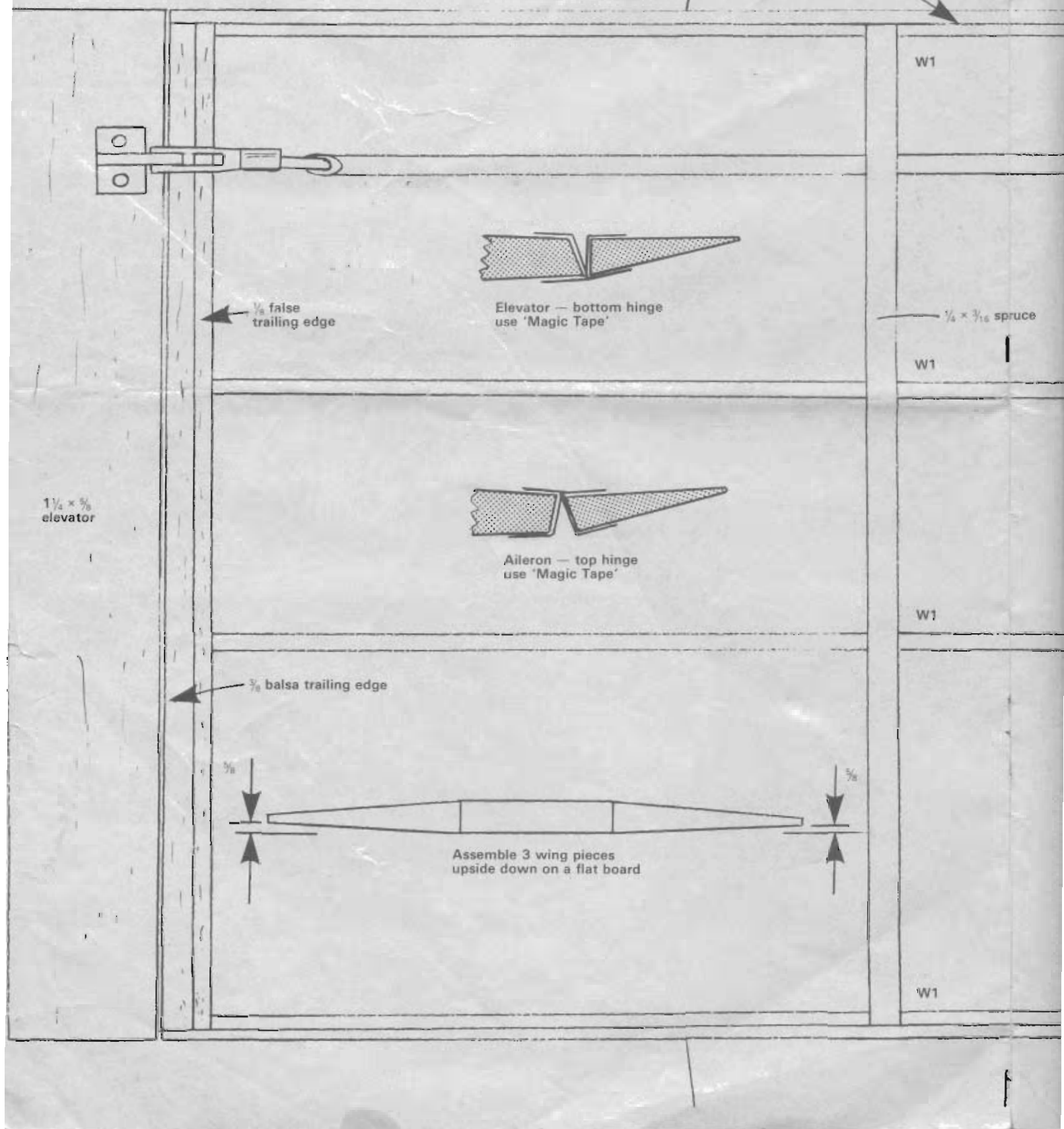
F1 3/16 balsa balsa
Note chamfer
on top edge

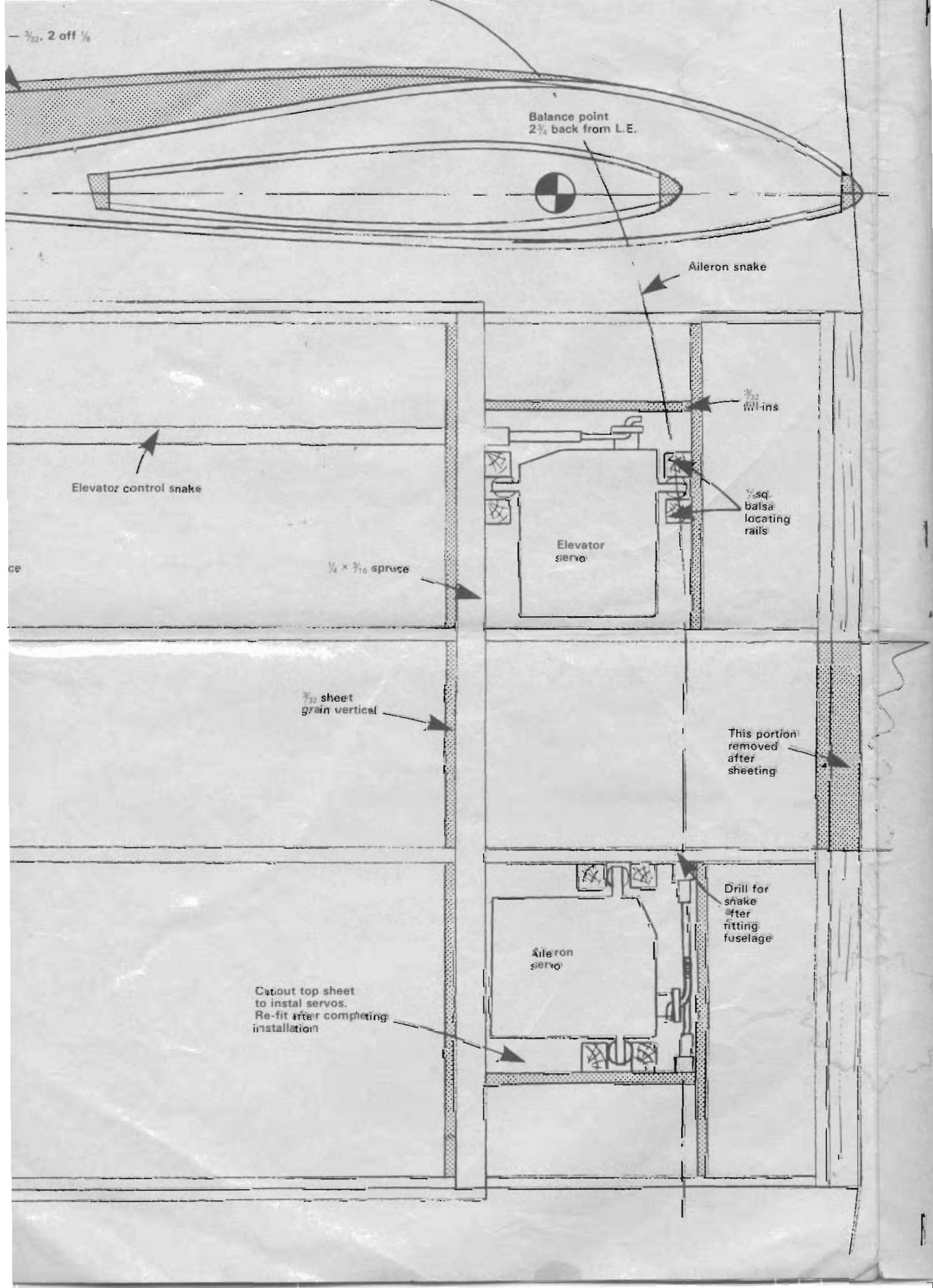
F2 & F3 3/16 balsa

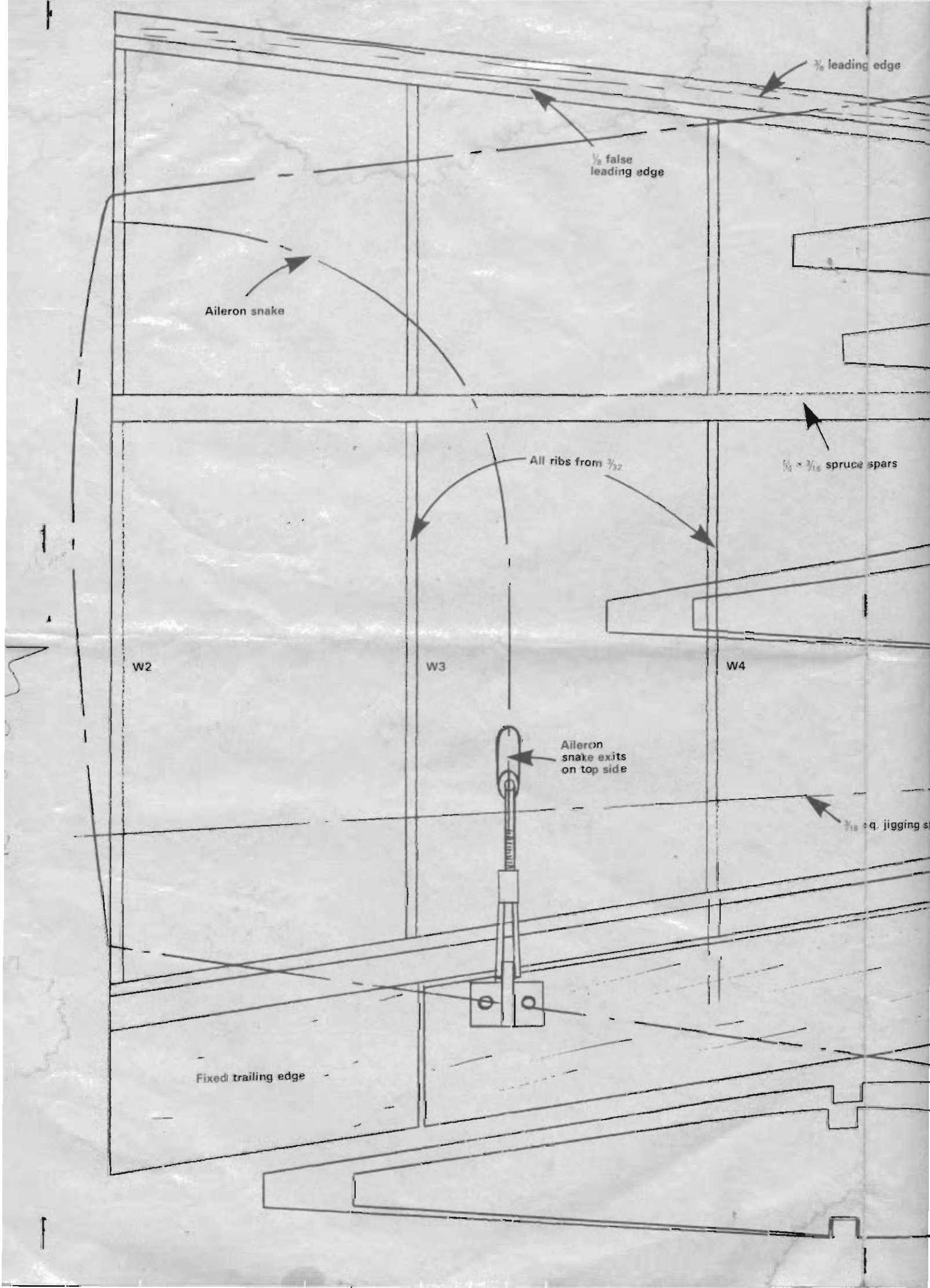


OBELIX


W1 to this line 2 off — 3/32"
Side ribs to shaded outline


Side ribs
W1
Elevator — bottom hinge
use 'Magic Tape'
1/8 false
trailing edge
1/4 × 3/16 spruce
W1
1 1/4 × 5/8
elevator
Aileron — top hinge
use 'Magic Tape'
W1
3/8 balsa trailing edge
3/8
3/8
Assemble 3 wing pieces
upside down on a flat board
W1


— 3/32, 2 off 1/8
Balance point
2 3/4 back from L.E.
Aileron snake
3/32 fill-ins
Elevator control snake
1/8 sq. balsa locating rails
Elevator servo
1/4 × 3/16 spruce
3/32 sheet grain vertical
This portion removed after sheeting
Drill for snake after fitting fuselage
Aileron servo
Cutout top sheet to instal servos. Re-fit after completing installation


3/8 leading edge
1/8 false leading edge
Aileron snake
All ribs from 3/32
1/2 × 3/16 spruce spars
W2
W3
W4
Aileron snake exits on top side
3/16 sq. jigging st
Fixed trailing edge