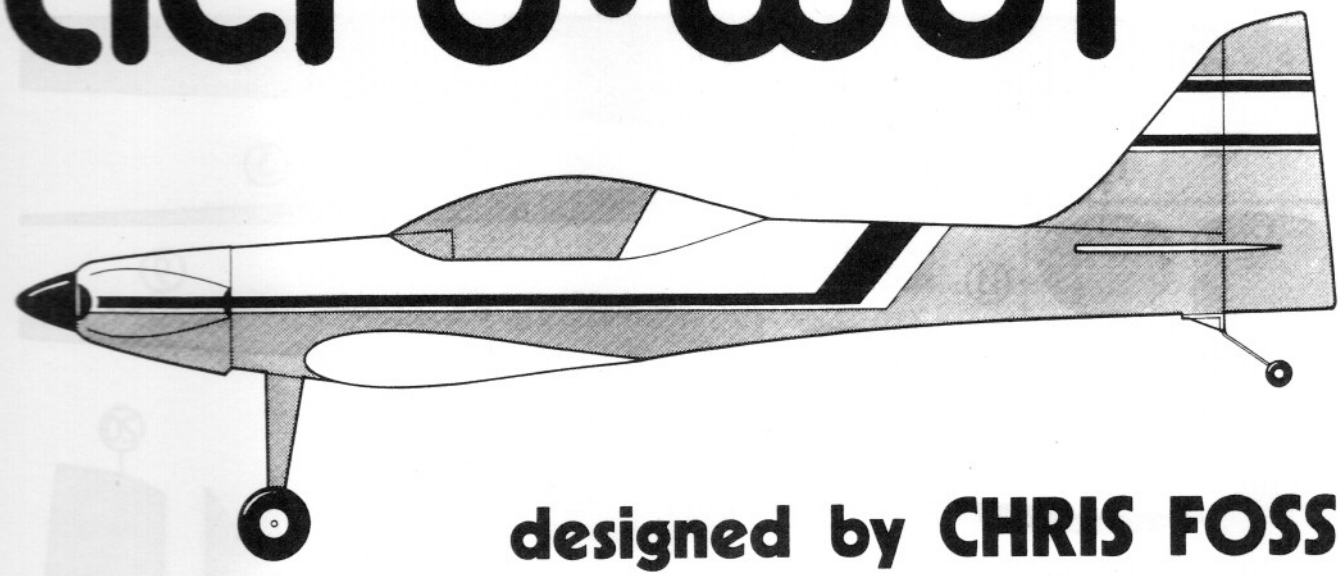
acro·wot



designed by CHRIS FOSS

instruction manual

INTRODUCTION

The overall concept of Acro-Wot owes much to its high wing brother, the now legendary WOT 4. The characteristically thick wing section, in this case fully-symmetrical, provides superb manoeuvrability and exceptional low speed handling whilst the low wing layout offers a fine balanced aerobatic capability. With an exceptionally wide range of suitable engine capacities, Acro-Wot covers a wide sector of the market. Using a minimum power unit its gentle and forgiving characteristics make it an ideal "first low wing" model, but fitted with a maximum size engine Acro-Wot offers a lively and spectacular performance that will delight the real aerobatic expert and display pilot.

In styling the Acro-Wot a high degree of realism has been created, with considerable influence coming from the current generation of full size aerobatic aircraft, in particular the Zlin Z50L, yet at the same time retaining a distinctive character of its own.

Acro-Wot therefore offers the rare combination of superb "WOT 4" type flying characteristics, smooth aerobatic performance and crisp realistic styling.

SPECIFICATION

Wing:	Span 58". Area 594 sq. ins.
	Loading 19-22 ozs/sq. ft.
	Aerofoil 17% symmetrical.
Fuselage:	Overall length, inc. spinner 46".
	Overall maximum width 3½".
Total weight:	80-90 ozs., depending on engine.
	(Prototypes flown with O.S. 40 2-stroke, Laser 61, Laser 75 and O.S. 90 4-stroke).

BUILDING NOTES

Although designed for the more advanced flyer than our WOT 4, construction is very straightforward. However, resist the temptation to totally ignore the written instructions as they have been carefully planned so assembly takes place in a natural sequence, and also contain a number of useful hints.

Identify all shaped parts first, using "Parts" drawing and list. Care and accuracy throughout all stages of assembly will be rewarded in the flying.

Choice of adhesives is to some extent left to the builder, although P.V.A. wood glue is recommended except where specified to the contrary.

HANDLING AND STORAGE OF FOAM WINGS

Although veneer covered foam core wings are a well proven and popular feature of many modern kits, problems can occur as a result of ignorance and the following points should be noted:

1. Leave wing panels in foam packing until required.
2. Keep away from direct heat and strong sunlight to prevent risk of warping.
3. Do not store in a damp atmosphere as the veneer will absorb moisture and expand, causing the surface to ripple.
4. Each panel is thoroughly checked, both after manufacture and again before dispatch, but check they are still true and warp-free before starting work.
5. Handle with care before leading edges, rear facings, and tips are fitted to prevent damage to the exposed edges.
6. Ensure no cellulose glue, dope or polyester resin comes in contact with the foam cores.
7. When covering the wing with heat shrink material using a heat gun or iron, avoid unnecessary or excessive build-up of heat.

NOTE: The manufacturer cannot accept responsibility for faults o problems that result from incorrect storage, handling or construction.

SPARES

Replacement parts such as wing panels, cowling and u/c can be obtained direct from the manufacturer where genuine cases of damage have occurred. However it is not the policy of the manufacturer to supply parts for use on "scratch-built" copies and the right is reserved to refuse to supply if such cases are suspected.

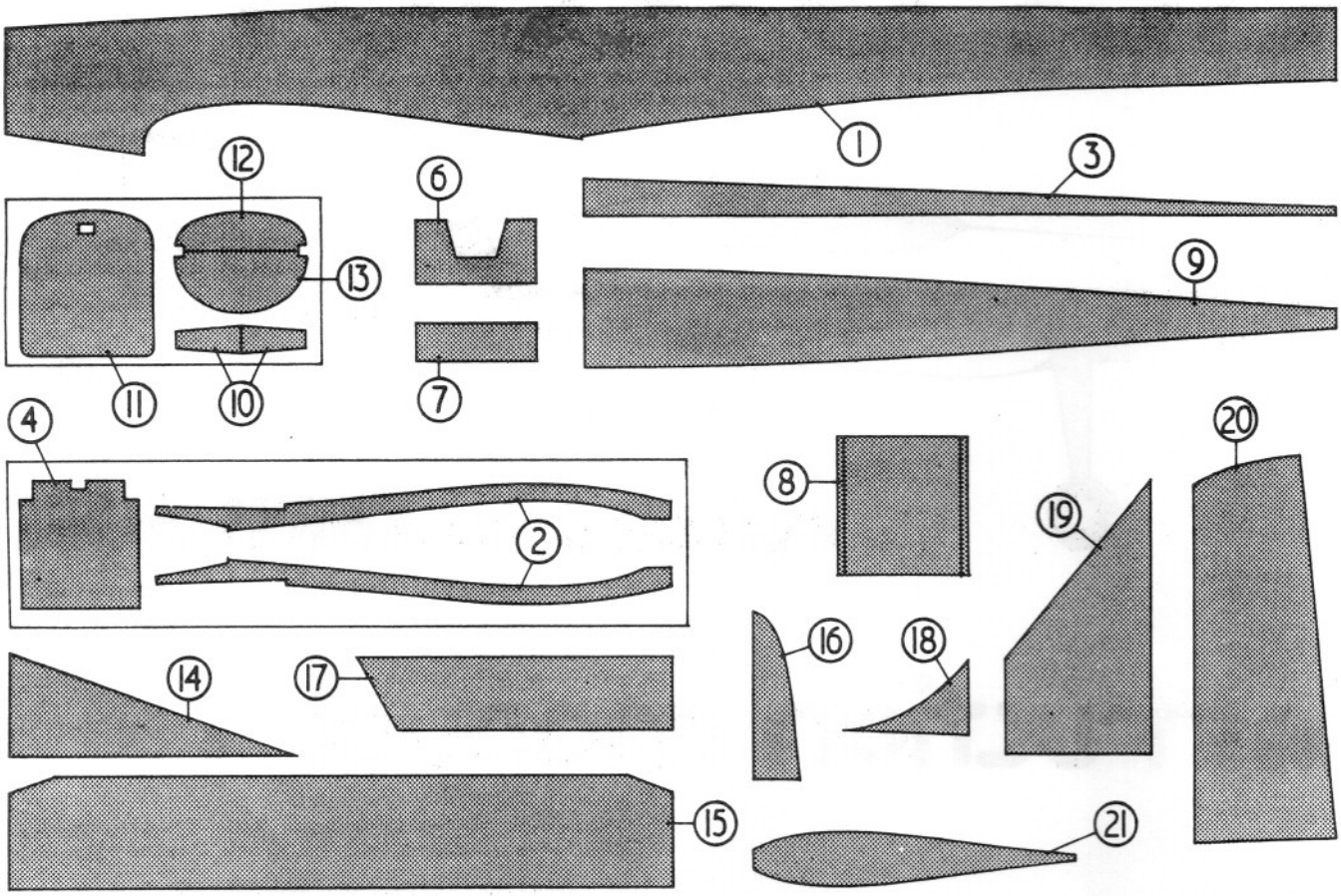
METRIC CONVERSION

All Imperial sizes and dimensions contained in this manual are listed below with their metric equivalent.

1/16" – 1.5mm	5/8" – 16mm	2¼" – 57mm	4¼" – 108mm
1/8" – 3.0	¾" – 19	3" – 76	5¾" – 146
3/16" – 4.5	1" – 25	3¼" – 82	6½" – 165
¼" – 6.0	1½" – 38	3½" – 89	9" – 229
3/8" – 9.5	1¾" – 44	4" – 102	11" – 279
½" – 12.5	2" – 51		

2

parts



PARTS LIST

SHAPED PARTS

Part No.	*Quantity*	*Description*
1	2	1/8" Balsa Sides
2	2	1/8" Ply Doublers
3	2	1/4" Balsa Tapered Cappings
4	1	1/8" Ply Engine Bulkhead
6	1	1/8" Ply Wing Fixing Plate
7	1	1/8" Ply Wing Fixing Bulkhead
8	1	1/4" Ply Undercarriage Plate
9	1	3/8" Balsa Top
10	2	1/16" Ply Tailwheel Mounting Plates
11, 12, 13	1	1/16" Ply Facings
14	2	1/4" Balsa Tailplane L.E.'s
15	1	1/4" Balsa Tailplane
16	2	1/4" Balsa Tips
17	2	1/4" Balsa Elevators
18	1	1/4" Balsa Fin Fairings
19	1	1/4" Balsa Fin
20	1	1/4" Balsa Rudder
21	2	1/8" Balsa Wing Tip Facings

ADDITIONAL MATERIALS

Quantity	*Description*	*Location*
2	1/8" x 5/8" x 36" Balsa	L.E. Facings & Cross Braces
2	1/4" x 1/2" x 36" Balsa	Rear Facings etc.
2	3/8" x 1 1/2" x 30" ◣ Balsa	Ailerons
1	1/16" x 2" x 7" Balsa	Aileron Servo Bay Lining
1	1/2" ◣ x 36" Balsa	Nose Fillets & Longerons
2	1/8" x 1/4" x 36" Spruce	Longerons
2	1/4" sq. x 36" Balsa	Longerons etc.
2	1/2" sq. x 8 7/8" Balsa	Cappings
1	3/8" x 3" x 8 7/8" Balsa	Nose Top
1	1/8" x 3 1/4" x 3" Balsa	Cockpit Floor
1	1/8" x 3 1/4" x 4" Balsa	
1	1/8" x 4" x 14" Balsa	Fuselage U/Side Sheeting
1	1/4" x 3/8" x 18" Balsa	Elevator Control Rod
1	1/4" x 1/4" x 12" Spruce	Servo Rails & Cowl Fixings
2	1/4" dia. Dowels	Wing Locators

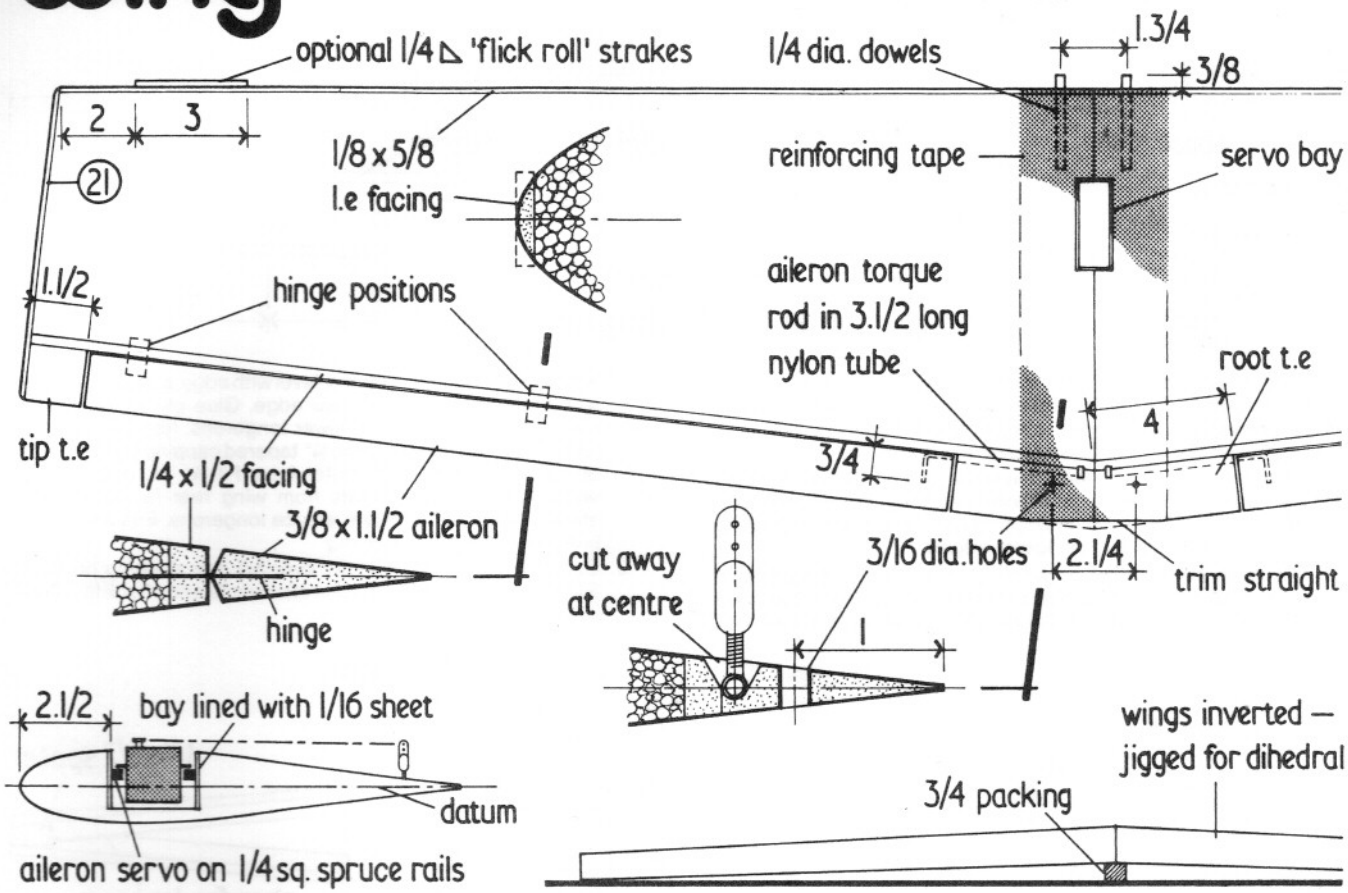
HARDWARE

Quantity	*Description*
6	Nylon Snap Links & Threaded Rods
3	Nylon Keepers
2	Aileron Torque Rods & 3 1/2" Nylon Bearing Tubes
1	Elevator Control Horn
1	Rudder Control Horn
1	Length Nylon Covered Rudder Cable
1	Length Throttle Cable & Nylon Tube
1	Nylon/Brass Screw Link
1	Wire Elevator Joiner
1	Wire Tailwheel Leg & Nylon Bracket
* 4	Nylon U/C & Wing Fixing Bolts & Captive Nuts
1	Pre-formed Aluminium U/C
2	High Tensile Bolts & Nuts – U/C Axles
1	Length 1" Wide Nylon Hinge Material
1	Length 1 1/2" & 4" Wide Wing Reinforcing Tape
8	Self Tapping Screws
1	Moulded Plastic Canopy
1	Moulded A.B.S. Canopy Fairing
1	Moulded A.B.S. Cowling (Left & Right Halves)
1	Moulded Pilot (2 Halves)
1	Self Adhesive Decal Sheet

* 2 x 5mm metal bolts are now supplied for U/C fixing.

3

wing



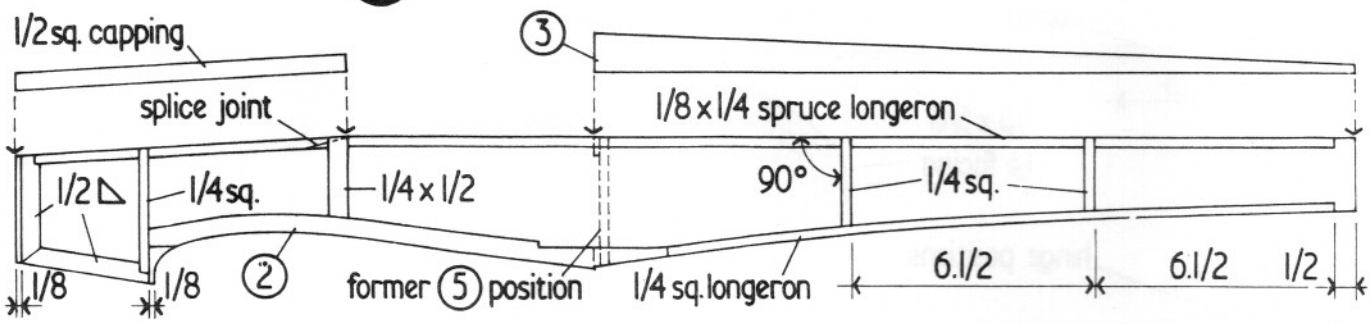
Servo recess in root of each panel is set in from **top** surface – be sure to identify this fact before proceeding beyond Note 3.

1. Cut ⅛″ x ⅝″ L.E. facings and ¼″ x ½″ rear facings to exact length of each wing panel (keep off-cuts for use in fuselage) then glue in place, securing with strips of masking tape until dry. Sand facings to appropriate sections, as shown.
2. Trim veneer away round servo recess in root of each panel. Enlarge recess, if necessary, to suit servo, allowing 1/16″ extra all-round for balsa lining.
3. Cut 1½″ length off each aileron strip for tip T.E.'s, and glue in position, in line with end of panels. Check they are correctly aligned with datum line of wing section so a fully symmetrical section is maintained. Epoxy tip facings (21) in place, and when set sand flush with wing and round off edges.
   NOTE: T.E./aileron creates a slight 'reflex' section – i.e. it doesn't continue as a straight line from top and bottom surfaces of wing panel.
4. Carefully chamfer root faces with sanding block until panels butt together accurately when laid inverted on flat surface jigged up as shown and with datum line parallel to surface. Check leading edge is straight from tip to tip, when viewed from above, and adjust if necessary. Join panels together with epoxy, in jigged position, removing surplus glue before it sets.
5. Slide 3½″ nylon tube onto each aileron torque rod – because tubing comes off a roll it may be slightly curled, so blow over with a heat gun to straighten. Form 90 deg. bend in each rod ¾″ from end at right angles to horn, checking that a left and right hand pair are produced. Roughen surfaces of tubing with sandpaper to improve adhesion and glue assemblies to rear of wing, positioned mid-depth with outer end of each tube 4″ from centre joint. Ensure they are correctly installed with horns projecting **above** wing! 'Instant' glue of 5 minute epoxy is recommended but use sparingly and check rods rotate freely afterwards.
   NOTE: If using linear output servo which gives limited travel it may be necessary to modify torque rod to obtain sufficient aileron movement, before fitting to the wing. Unscrew nylon horn, remove ¼″ or so from threaded end of rod, then trim base of horn to suit so it can be screwed down further.
6. Cut appropriate length off each aileron strip for root T.E.'s with angled cut so they join at centre. Groove front edges to fit over tubing, and cut away at centre to allow free movement of rods, with horns approximately ½″ apart. Epoxy in place, using glue with care to ensure it doesn't come in contact with rods. Check T.E.'s are correctly aligned with wing so a symmetrical section is maintained – use wing seating of fuselage side as a jig.
7. Trim ailerons to length, allowing 1/16″ clearance either end, slot and drill for torque rods and bevel L.E. as shown. Put to one side until ready for covering and hinging.
8. Line servo bay with 1/16″ balsa and when dry, sand flush with wing.
   Trim off T.E. straight across at root as shown in order to fit fuselage. Ideally have completed fuselage to hand to obtain exact fit.
9. Run a strip of masking tape round each wing parallel with, and 2½″ out from, root joint. Using low viscosity epoxy laminating resin (**not** 5 minute type), mixed with appropriate hardener, coat top surface between masking tape. Lay down **narrow** reinforcing tape centrally along wing joint (having first trimmed to clear aileron horns) starting at T.E. and working forward. Immediately overlay 4″ wide tape, brush smooth and add further resin as necessary until tape is **completely impregnated.** Apply resin to the lower surface, wrap each tape round L.E. in turn and repeat process, then carefully remove masking tape.
10. When resin has completely hardened trim off surplus tape level with T.E., trim round servo bay and sand smooth any high spots or imperfections. Blend in edges of tape with wing surface either by building up a fillet of lightweight filler or by feathering tape off with careful sanding. It is **vitally important** to avoid sanding or damaging the adjacent veneer otherwise the wing will be seriously weakened in a critical stress area, so protect with masking tape or thin card during this process.
    WARNING – Failure to follow the above procedures with proper care, or the use of unsuitable resins may result in a subsequent expensive and terminal failure!
11. In order to fit locating dowels in L.E. it is necessary to have completed fuselage available so correct alignment can be achieved. See section headed "Wing – Fuselage Fixing".
12. Drill two 3/16″ dia. holes through T.E. in positions shown for retaining bolts.

NOTE: Optional "snap-roll" strakes should only be added if considered necessary after model has been test flown – see "Flying" section.

4

fuselage

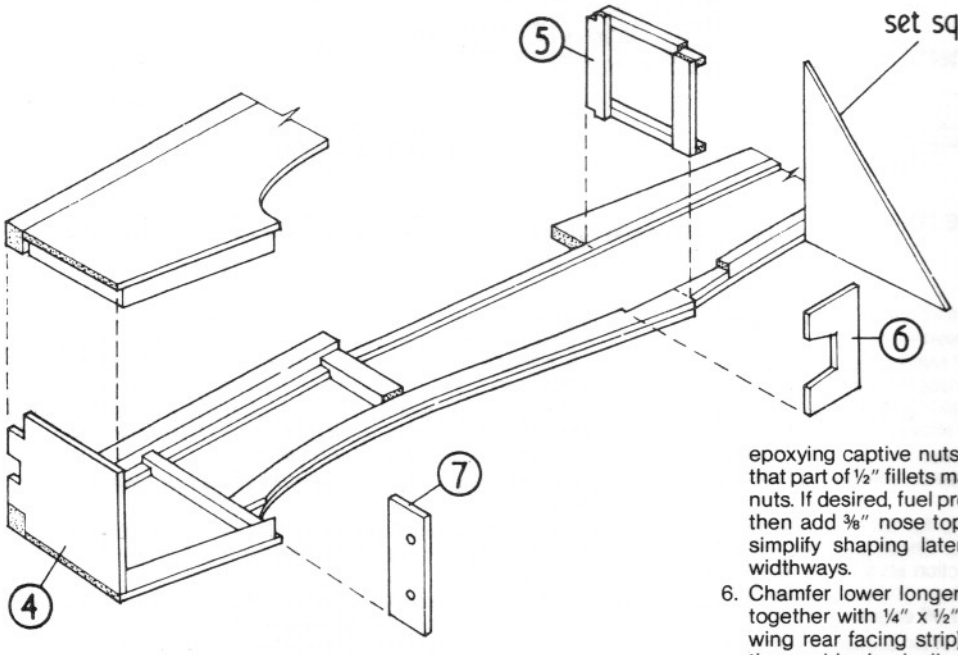


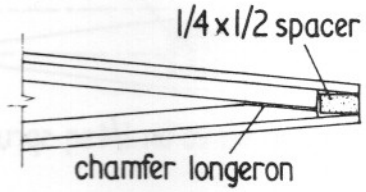
Cowl is designed to fit over nose with 1¼" overlap, giving an engine installation length of 4¼" (from back of spinner to bulkhead).

To accommodate extra length of many larger 4-strokes, bulkhead can be moved back 1", reducing cowl overlap to ¼".

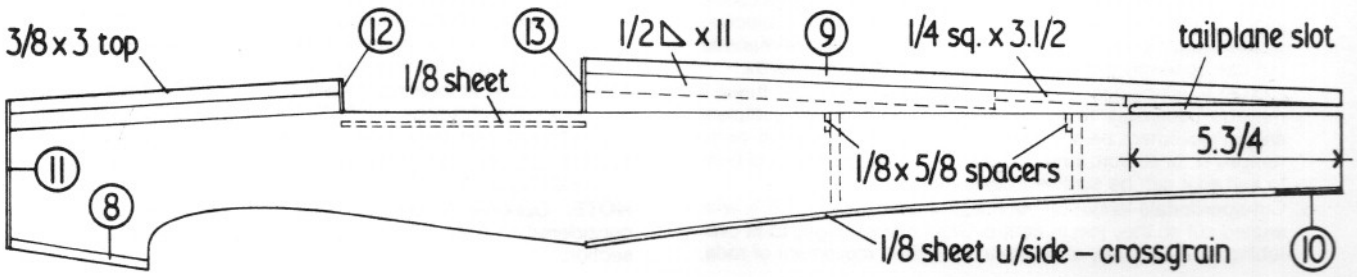
To shorten nose, trim back fuselage sides before starting construction and reduce length of top deck, longerons and ply plate accordingly. Ply bulkhead (4) and facings (11) will require making up slightly with scrap material on **lower** edges.

1. Pin down sides (1) flat on work surface in left and right hand form. Glue ½" triangular fillets inside nose, set back from front edge ⅛" and stopping short of wing cut out by ⅛", as shown. Add ⅛" x ¼" spruce top longerons, level with edge, splicing as shown and terminating ½" from rear edge. Glue ply doublers (2) in place, followed by ¼" sq. lower longerons, (cut 36" length in half). Add ½" sq. capping and ¼" tapered capping (3) to top edge of each side, flush with outer face. Fit ¼" sq. and ¼" x ½" verticals (the latter off-cuts from wing rear facing strip), as shown, notching to fit over spruce longerons. Ensure ¼" x ½" lines up with end of capping.
2. Construct former (5) directly over full size drawing on Detail Sheet. Cut away for longerons afterwards and check fit against sides.



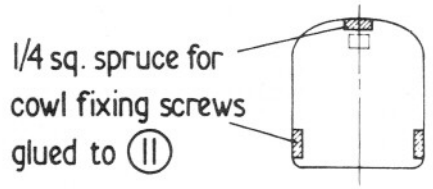


3. Leave one side pinned flat on work surface and install bulkhead (4) and former (5), checking they are vertical. Note front face of former lines up with step in fuselage side. Glue wing fixing plate (6) in position, locating on top of doubler (2) and against former cross member.
4. Lower other side into place. It is vital both sides are exactly super-imposed over each other – check with a set square, as shown, along edges. Install wing fixing bulkhead (7) between sides against ¼" sq. verticals, having already drilled holes indicated on Detail Sheet.
5. When glue has set, remove assembly from work surface and add ⅛" sheet, crossgrain, to cockpit opening, gluing to underside of longerons. Prepare ¼" ply u/c plate (8) by drilling two ¼" dia. holes in positions shown on Detail Sheet and epoxying captive nuts in place. Glue plate to fuselage, noting that part of ½" fillets may have to be relieved to allow for captive nuts. If desired, fuel proof fuselage inside around fuel tank area then add ⅜" nose top – note it is narrower than fuselage (to simplify shaping later) so ensure it is centrally positioned widthways.
6. Chamfer lower longerons at rear to allow sides to be drawn together with ¼" x ½" spacer inserted as shown (off-cut from wing rear facing strip). Apply glue, clamp together and then thoroughly check alignment of fuselage visually from front and rear to ensure it is straight and twist free.
7. Cut two spacers from offcuts of ⅛" x ⅝" wing L.E. facings and glue across fuselage locating against ¼" sq. verticals as shown. Cut remainder of ½" triangular into 11" lengths, induce a curve to match that of the fuselage by using finger pressure, notching at regular intervals or steaming, then glue in place level with top of cappings (3). Also add 3½" length of ¼" sq. immediately behind.
8. Fit ⅜" rear top (9) in place – note it is narrower than fuselage so position accurately widthways. Glue two 1/16" ply tailwheel mounting plates (10) together and then position as shown. Sheet u/side of fuselage from wing opening back to (10), crossgrain, cutting from ⅛" x 4" x 14" panel.



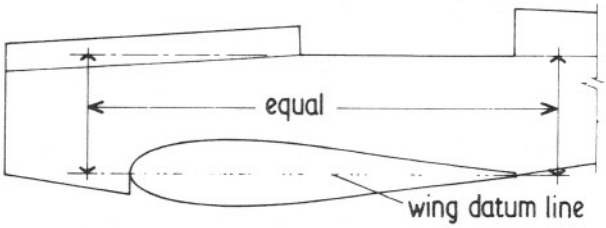
FUSELAGE continued

9. Epoxy ply facings (11), (12), and (13) in position, having first checked surfaces are flat and true. Note indent in centre of (11) indicates engine datum line. If nose has been shortened align top of (11) with fuselage and make up lower edge with scrap material.
10. Using a miniature plane initially, followed by a sanding block, shape top of fuselage to curve indicated by facings (11), 12) and (13). Accurate shaping is necessary for cowling, canopy, and rear fairing to fit satisfactorily later. See Detail Sheet for typical section.
    Also round off bevel of u/c plate (8) to form radius and round off lower corners from wing opening to tail, including ply plate (10).
11. Cut ¼" wide tailplane slot each side, as shown, along joint between fuselage sides and capping. Also form 4" long slot centrally in top of fuselage for fin. Epoxy ¼" sq. x ¾" lengths of spruce to bulkhead (11) for cowl fixings in positions shown.

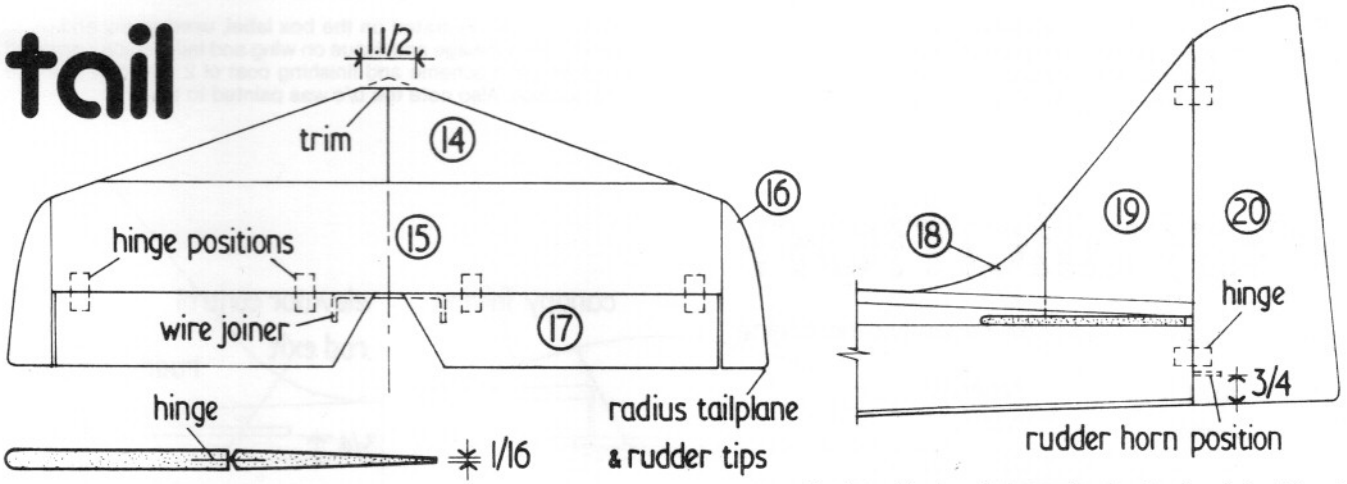


WING - FUSELAGE FIXING

1. Bring wing and fuselage together and check wing datum is parallel with top line of fuselage side. If necessary trim wing seat until front and rear measurements are equal, then check for accurate alignment laterally when viewed from in front and behind.
   NOTE: For a perfect fit, coat wing seating with Cataloy body filler and fit wing in position (protected with polythene sheet). When set, remove wing and trim away surplus filler.
2. Drill two ¼" dia. holes in wing L.E. to correspond with those in bulkhead (7), check for fit then expoxy locating dowels in place – carefully line wing up on fuselage whilst glue sets to ensure exact alignment of dowels.
3. Check wing is square with fuselage in plan form by taking diagonal measurements from rear fuselage to wing tips. Drill through holes in wing T.E. into fixing plate (6). Remove wing, open out holes in plate to ¼" dia. and epoxy captive nuts in place.



tail

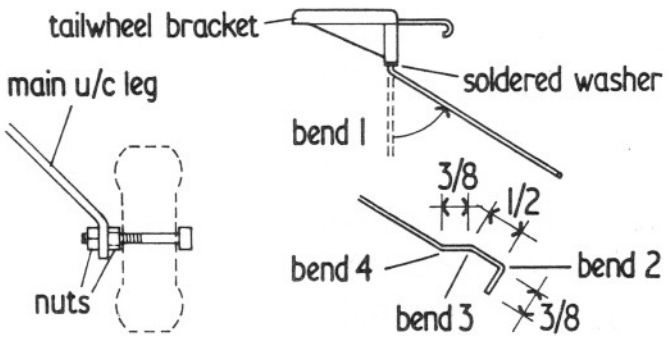


typical section thro' tail surfaces

1. Glue tailplane parts (14), (15) and (16) together and hold down on flat surface to dry. Glue fairing (18) to fin (19), having first checked with fuselage exact vertical location.
2. Radius L.E. and tip edges of tailplane, L.E. of fin and fairing, and top edge of rudder. Taper elevators and rudder, as shown, and also taper tips (16) to blend in with elevators.
3. Bevel front edges of elevators (17) and rudder (20) as shown in section. Slot and drill elevators for wire joiner, and check, when assembled, elevators fit between tailplane tips with small clearance. Clean wire with sandpaper to improve adhesion and epoxy in place. Pin down to keep elevators level and check front edges are straight.
4. After a 'dry run' to check fit, glue tailplane into slot ensuring it is central and accurately aligned with fuselage viewed from above and rear, with rear edge inset approx. 3/16" to allow for elevator joiner.
   NOTE: It may be simpler to fit tailplane and fin after fuselage has been covered particularly if intending to use epoxy and glass cloth – see "Surface Finishing".
5. Install fin in slot, applying glue to lower edge where it locates with tailplane. Check it is vertical. Apply additional fillet of glue around roots of fin and tailplane to strengthen bond with fuselage.

u/c

1. Drill 3/16" dia. holes in u/c to correspond with those in fuselage – see Detail Sheet. Check straight edge of u/c is to the rear. Use 2½" dia. wheels and fit to axle bolts as shown.
2. Feed part-formed tailwheel leg through bracket and bend as indicated. Wait until fuselage has been covered before fixing in place. Use 1" dia. tailwheel and retain with soldered washer.



6

PLASTIC MOULDINGS

To trim mouldings to size, use a really sharp modelling knife. Lightly score along moulded ridge lines then follow with a series of deeper cuts, rather than trying to cut through in one go. Clean up edges with a sanding block.

After keying surface with fine "wet and dry" paper A.B.S. material can be painted using cellulose or most types of enamel.

Cowl

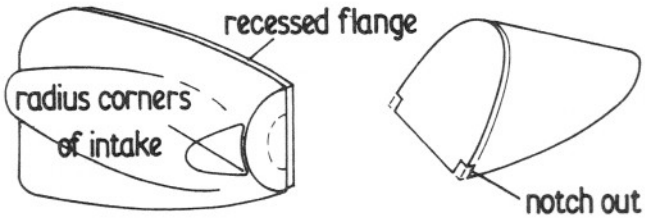
Cut both mouldings to size, noting recessed joining flange on right half must be retained to form an overlap joint. For a good flush joint between the two halves, some material may require scraping or sanding away from inside edge of left half until thickness matches depth of recess on joining flange.

Temporarily join halves with masking tape to check fit over fuselage, then glue together using A.B.S. solvent or Cyano with gap filler.

Any joint imperfections may be filled with Cataloy body filler and sanded smooth ready for painting.

Open out air inlets as shown, together with air outlets at rear of side cheeks. Keep A.B.S. off-cuts as they can be used to reinforce or repair cowl should damage occur.

NOTE: It may be advisable to join cowl together **after** installing engine in order to simplify the task of cutting apertures for cylinder head, silencer, etc.



Canopy Fairing

Trim to size, notching out front corners to fit over fuselage sides as shown. Fit after fuselage has been covered, by first roughening inside edges to improve adhesion and then epoxying in position, against facing (13) as shown in "Installation" drawing.

Canopy

Cut moulding to size and check it fits fuselage satisfactorily, overlapping sides by approx. ⅛" and fitting neatly into recess around fairing. Fit in place after final painting is completed by either gluing with contact adhesive or securing with ¼" wide strips of clear self adhesive tape.

NOTE: If clear canopy is supplied it may be tinted if desired using 'Tamiya' translucent acrylic paint, applied with an air-brush. Experiment first on an off-cut to establish correct technique.

Pilot

Join halves together using Polystyrene cement. Paint, if required, for added realism and install in cockpit after interior has been decorated.

SURFACE FINISHING

The choice of covering materials is often a matter of personal preference. However for the most satisfactory combination of durability and lightness we suggest you choose from the following:

Fuselage

Dope and nylon or epoxy finishing resin and lightweight glass cloth, or heat shrink fabric.

Note: Just dope/paint or epoxy resin on its own, or plastic film will result in an inferior strength air-frame.

Wing and Tail Surfaces

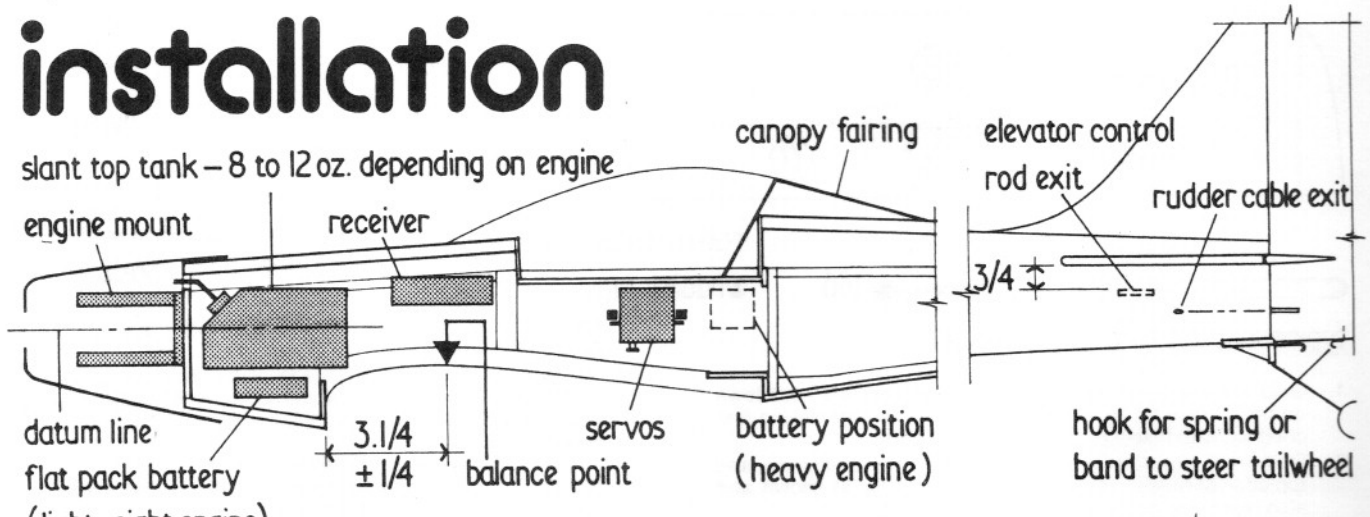
Dope and tissue or heat shrink film.

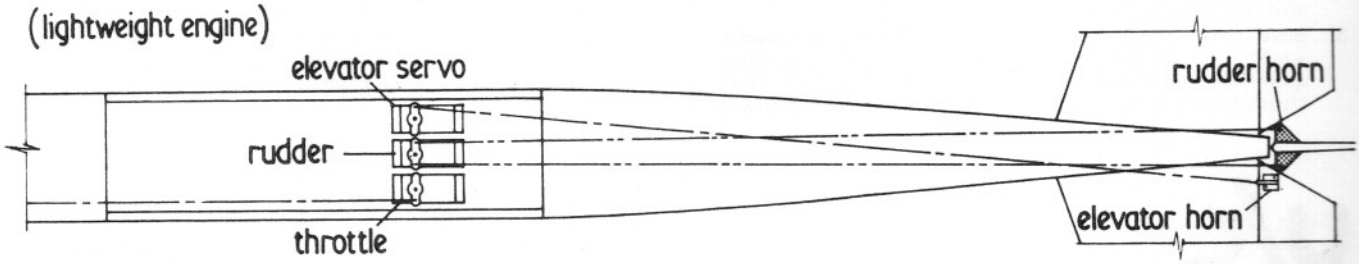
Caution: Before doping wing it is essential to fill any surface joints or gaps to prevent dope coming into contact with foam.

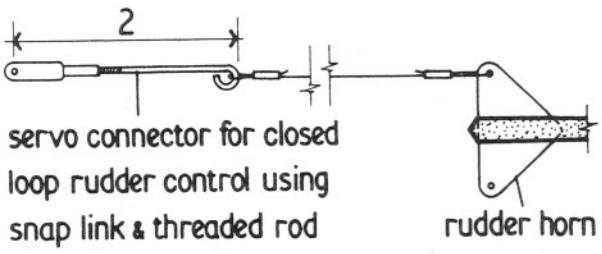
IMPORTANT: If using a lightweight engine (.40–.45 size) the tail end must be kept light with an absolute minimum of paint etc. on all tail surfaces to avoid adding nose weight for correct balance.

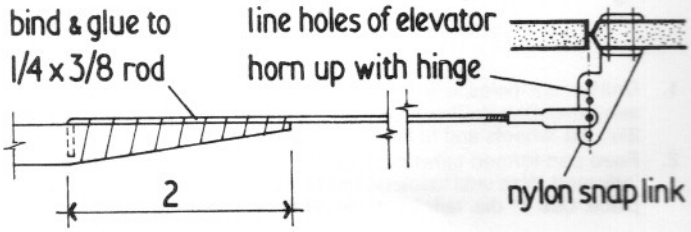
The prototype, illustrated on the box label, used epoxy and glass cloth on the fuselage and tissue on wing and tail surfaces, sprayed cellulose paint scheme and finishing coat of 2 part polyurethane clear varnish. Also note the u/c was painted to match.

installation









INSTALLATION continued

1. Slot tail surfaces for hinges in positions shown on "Tail" drawing. Cut ½" wide strips from nylon hinge material, roughen with sandpaper and epoxy into control surfaces. Fix control horn with self-tapping screws, just inboard of elevator joiner. Slot rudder in position shown on "Tail" drawing and epoxy control horn centrally in place. Epoxy control surfaces in position, elevator first, and check for full and free movement.
2. Hinge ailerons in similar manner. Ensure good bond to torque rod but take great care to prevent any surplus glue fouling torque rod bearings.
3. Fix tailwheel bracket to fuselage with 3 self-tapping screws. Bend a pin to form a hook, glue into underside of rudder and use small rubber band or spring to provide steering for tailwheel.
4. Mark vertical & horizontal datum lines on bulkhead, crossing indent. As **2° right thrust** (no downthrust) is required offset engine mount 3/16" to left of vertical datum so spinner will be central with front of cowl. Bolt engine to mount with back of spinner 4¼" from bulkhead (5¼" on shortened nose).

   NOTE: Cowl is designed for side mounted engine, but if using a 2-stroke it may be necessary to angle cylinder head slightly below the horizontal for silencer to clear u/c.
5. Having already trimmed cowl to suit engine and joined halves together (as previously described), secure in position with 3 self tappers screwed through into spruce fixings. Avoid excessive overtightening, otherwise splitting could occur around screw holes with engine vibration.
6. Assemble completed model with radio equipment loosely installed as shown. Weight of engine used will determine final position of equipment required to achieve correct balance point. In some cases additional nose or tail ballast may be required. Mount servos, three abreast, on ¼" sq. spruce rails glued firmly to fuselage sides.
7. Drill ⅛" hole in bulkhead in line with throttle arm, roughen end of nylon tube and epoxy in place. Trim tube off just short of servo and fix to fuselage side using suitable spacer if required. Secure nylon/brass screw link to throttle cable at servo end. Cut cable to length and bind (using fuse wire) and solder shortened rod and snap link to connect to throttle arm.
8. Make up elevator control rod as shown. Use off-cut from threaded rod, form 90° bend ¼" long and connect to servo, retaining with nylon keeper. Cut exit slot in fuselage side opposite to that of elevator servo so control run is straight as possible.
9. Make up servo connectors for rudder cables using two rods and links as shown. Drill cable exit holes in line with rudder horn beneath tailplane, feed cable down fuselage and secure either end by looping back through ¼" length of aluminium or brass tubing and crimping firmly with pliers.
10. Mount aileron servo in wing on ¼" sq. spruce rails. Connect threaded rods with snap links to aileron horns, form 90° bend ¼" long at servo end and retain with nylon keepers.
11. Install tank, centrally on datum line as shown, and support with foam rubber. To enable routine replacement of fuel tubing, without removal of tank, extend fuel feed and vent pipes to project through bulkhead.
12. Check lateral balance of assembled model, holding crankshaft and T.E. of rudder. Add weight to wing tip as necessary to achieve balance.
13. Set up control movements as specified below, using lower limits initially:

    Ailerons 3/16" – ¼" up and down at T.E.
    Elevator ⅜" – ½" up and down at T.E.
    Rudder 1¾" left and right, at widest point.

FLYING

It is assumed the builder has reasonable flying experience so a simple list of fairly obvious but important pre-flight checks should suffice.

CHECK: Completed model balances in correct position.
Control surface movements are within limits specified.
Controls operate in correct mode and direction.
Wing is securely bolted in place.
Wheels are free running and tracking straight.
Engine tick-over is reliable and with good pick-up.
Mixture is set correctly on full throttle in nose-up attitude.

However, there are a number of common problems that can arise:

Climbs or dives suddenly when throttle is opened or closed – incorrect thrust line caused by engine misaligned on mount or bulkhead installed inaccurately.

Skews out of looping manoeuvres – model not balanced laterally, i.e. one wing heavy.

Over sensitive elevator response – balance point too far back and/or excessive elevator movement.

Sluggish elevator response – balance point too far forward and/or insufficient elevator movement.

Optional Snap-Roll Strakes

Due to the almost stall-proof nature of the wing section, some difficulty may be experienced in performing spectacular snap-rolls, particularly if set up with "soft" control response and a forward C.G. To many this may not be a problem but there will be those who want to squeeze the most out of their Acro-Wot. Adding a small strake at each wing tip may be necessary to perform "snap-rolls" consistently yet without unduly promoting any unpleasant characteristics during normal flying.

Ideally the length of the strake should be just long enough to promote a snap-roll and will probably vary between individual models. Make up from ¼" triangular balsa (not supplied) and temporarily tape in position as shown in "Wing" drawing then "cut and try" until minimum effective length is determined. Treat with caution until all flight characteristics have been fully explored.

Acro-Wot is designed as a highly manoeuvrable aerobatic machine with excellent slow flying characteristics. Fitted with a powerful 4-stroke and flown with correct use of the throttle it is capable of performing "Aresti" full size style aerobatic sequences in a very realistic manner, so resist fitting a tuned pipe and flying it like a pylon racer!

Have Fun.

CHRIS FOSS has been involved in the design, development and flying of R/C models since 1967. Much of the time has been devoted to competition flying, both power and glider, resulting to date in a collection of several hundred trophies!

In 1976 Chris decided to channel his knowledge and experience into a full-time kit manufacturing business which has now become truly established with an enviable reputation both home and abroad. He is also involved in full-size flying, being a qualified glider pilot and holder of a Private Pilot's Licence, but still enjoys R/C flying as much as ever!

Competition highlights include becoming 1977 British National Thermal Soaring Champion, 1986 British National Scale Champion, placing 4th at 1986 World Scale Championships in Norway, placing 6th at 1992 World Scale Championships in U.S.A., and winning both 1992 and 1993 B.A.R.C.S. Radio Glide National Thermal Soaring Contests.

He hopes you have been impressed with your ACRO.WOT and may be interested in another of his products. For full details of our range visit our website - **www.chrisfoss.co.uk**

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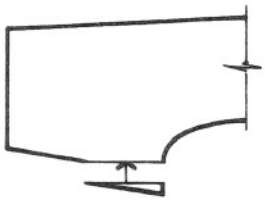
up-date bulletin no.1

May 1992

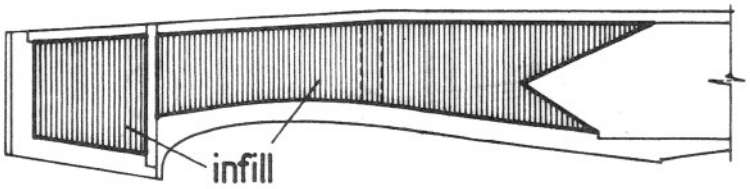
With thousands of Acro Wots now flying world wide we are continuously receiving letters and messages of overwhelming praise from delighted owners. However, not wishing to rest on our laurels we have endeavoured to further improve the product and are now able to issue this, the first update.

1. Jig cutting procedures for fuselage sides have now been revised for greater accuracy but a slight variation in width of the raw material may result in the lower edge being incomplete. If necessary build up with a fillet of 1/8" balsa, cut from 4" x 14" panel, as shown.

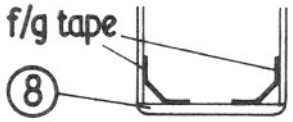


2. Whilst structurally adequate for "normal" use, the fuselage may, in certain circumstances, benefit from additional reinforcement. If the model is likely to suffer landing "abuses", or operate from rough terrain, one or more of the following modifications should be adopted. It is important to realise that any undue stresses are magnified by the increased mass of the model so such modifications become more relevant when using heavier 4-stroke engines of .60 size and above.

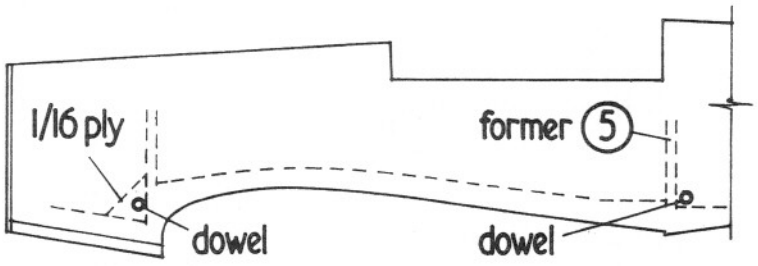
   A. Additional Internal Doublers - infill as shown between longerons, fillets and doublers with either 1/32" ply or 1/16" hard balsa (grain vertical).



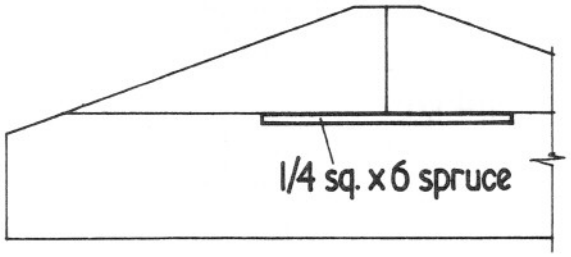
   B. U/C Plate Reinforcement - apply fibre-glass tape and resin internally around lower corners before gluing 3/8" nose top in place (Fuselage Note 5).



   C. Rubber Band Wing Fixing - particularly advisable for those with serious doubts about their landing abilities! Build fuselage complete with ply wing fixings (6) and (7). Fix two 5/16" dia. x 4¼" long hardwood dowels (not supplied) through fuselage as shown, reinforcing locally inside with 1/16" ply around front dowel if modifications A or B are not incorporated. Recess an 8" length of 1/16" dia. wire into root trailing edge **before** applying tape to protect against retaining bands. Secure wing **firmly** using sufficient rubber bands of adequate size and tension to prevent any movement in flight.

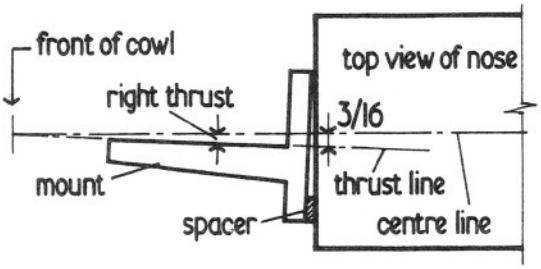


3. For those who like big engines, hot fuel and use full throttle for the entire flight (and will miss out on the superb low speed characteristics of the Acro Wot!) it is advisable to use a **metal** quick link for the elevator and insert a spruce sub-spar in the tailplane for a greater safety margin.



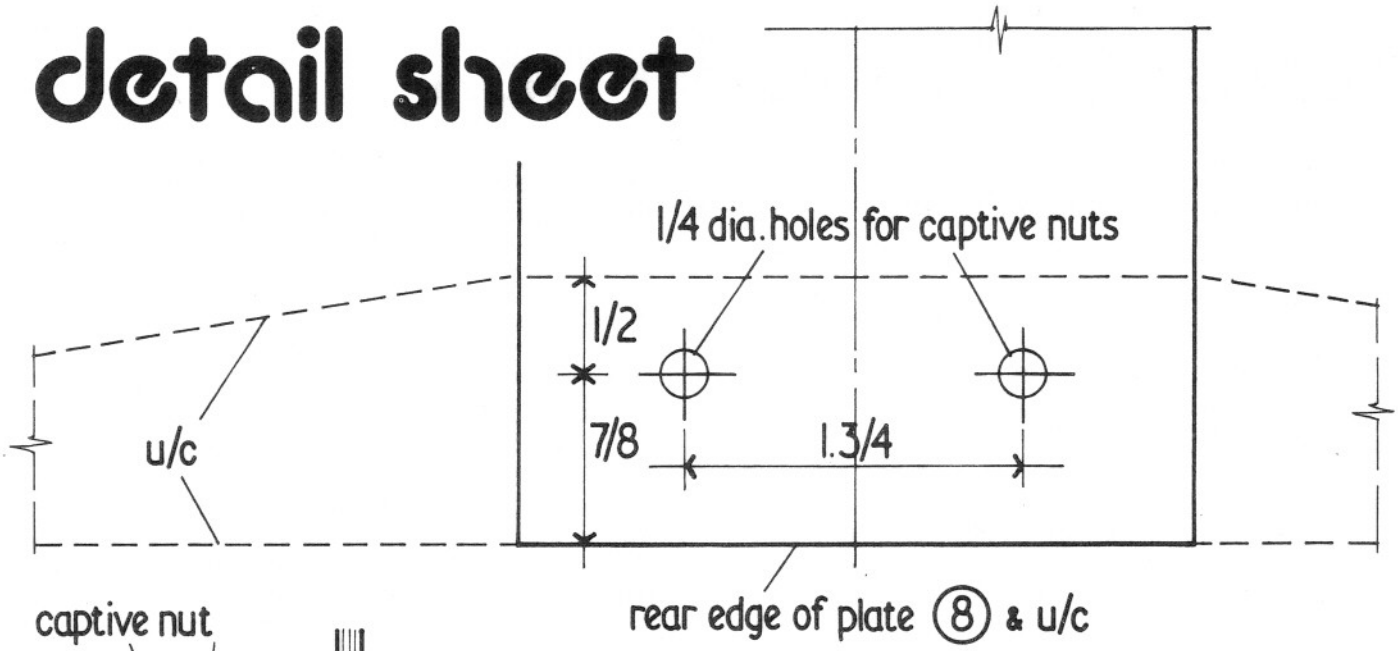
4. When gluing ply facing (11) in place ensure indent is on the outside otherwise vertical position of thrust line will be lost. For those who have dropped a clanger, the indent position is 1.7/8" (47 mm) down from centre of top edge.

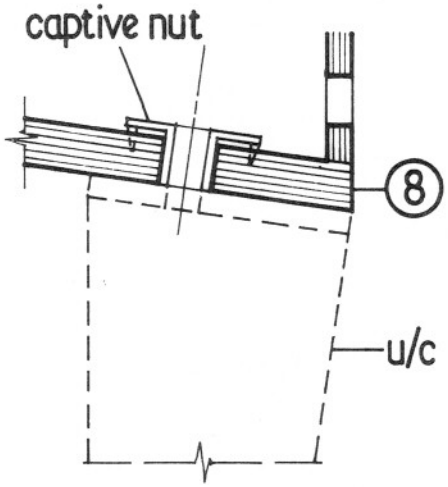
5. The description of offsetting engine mount and obtaining side thrust (Installation Note 4) has prompted a few phone calls so a diagram is included to avoid any further confusion.



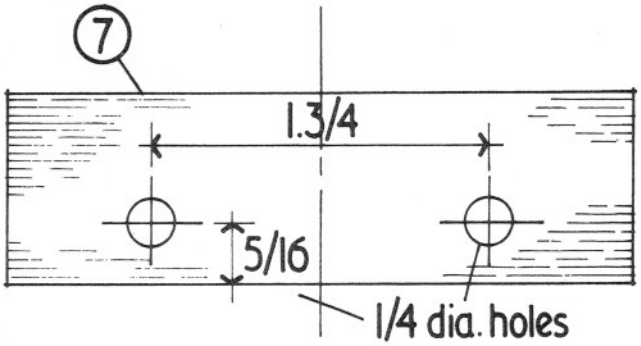
6. A one-piece fibre-glass cowl is now available by popular demand as an option either with the kit or separately as a spare part.

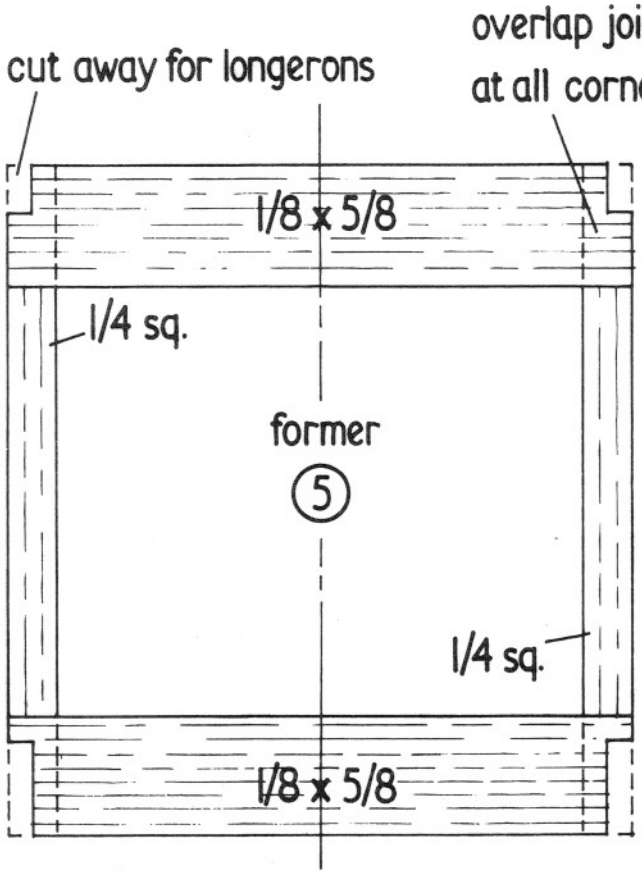
detail sheet

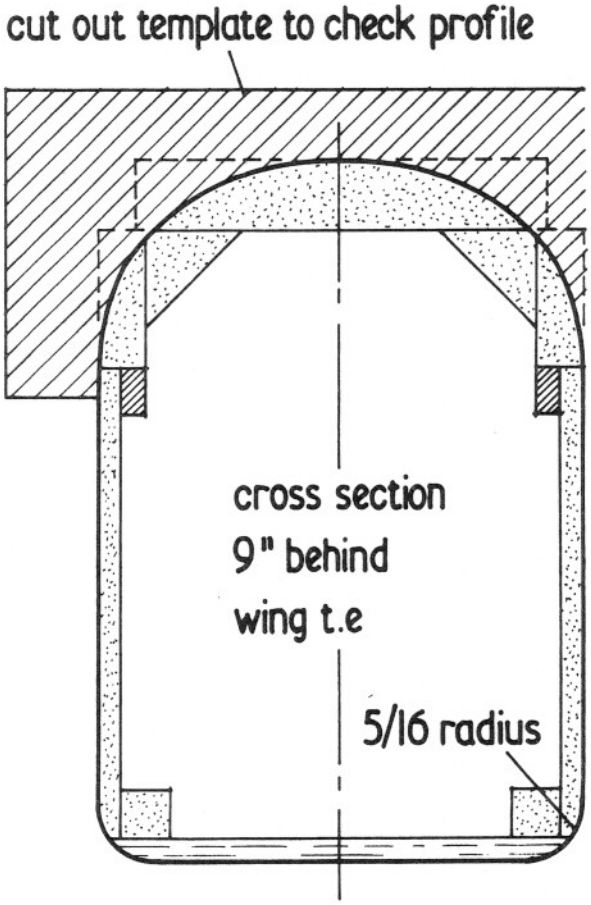




section thro' u/c fixing







update bulletin no. 2 - Fin fixing

It is essential the lower edge of the fin is securely glued to top surface of the tailplane. To emphasise this point, Note 1 of 'Tail' on page 5 has been revised to read:

1. Glue tailplane parts (14), (15) and (16) together and hold down on flat surface to dry. Then slide completed assembly temporarily in position in fuselage slot. Locate fin (19) **fully** into its slot so **lower edge is resting on tailplane,** trim fairing (18) as necessary to blend in with fin, whilst lower edge is resting on fuselage top, as shown, and then glue fairing to front edge of fin. Carefully remove and place on flat surface to dry.

Also, it is imperative the tailplane and fin are glued into the fuselage **before** any covering material is applied to them, in order to obtain a strong wood-to-wood bond.

update bulletin no. 3 – Fuselage fillets

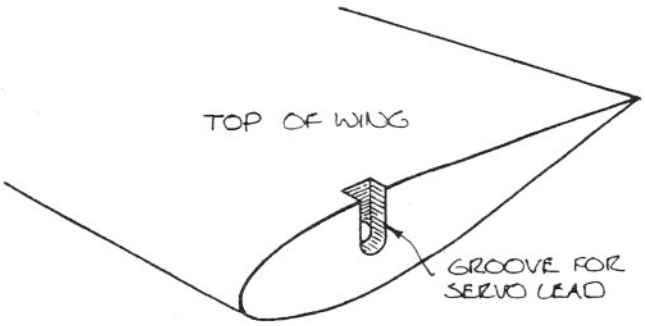
The 1/2" triangular balsa internal nose fillets (Fuselage Note 1) have been replaced by 3/8" triangular hardwood.

Revisions to the Parts List:
Omit: 1 no. 1/2" triangular x 36" balsa nose fillets and longerons
Add: 2 no. 3/8" triangular x 6.1/2" hardwood nose fillets
2 no. 1/2" triangular x 11" balsa longerons (or one 22" length)

ACRO WOT - 2 servo wing Nov 2007

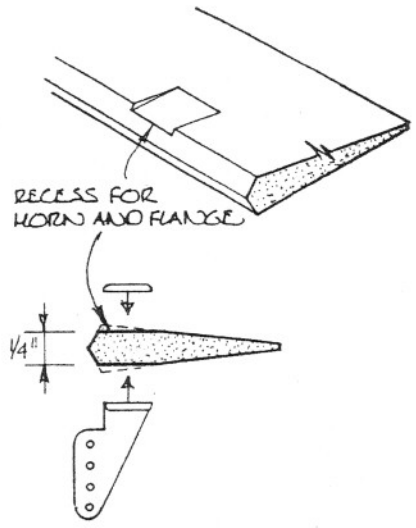
Wing panels now supplied with outboard servo recesses, replacing the original centre recess.
Using individual servos in each wing:

- Simplifies construction.
- Provides more positive control.
- Using a programmable transmitter, enables ailerons to be individually adjusted for optimum travel and, if required, coupled to elevator as 'flapperons' for increased manoeuvrability. We recommend maximum 1/8" down/ up aileron with full up/down elevator.



Revised PARTS content
Omitted: 2 aileron torque rods and nylon tubes.
Added: 2 control horns and flanges.
4 self tapping screws.
1/16 x 2" balsa servo bay lining now 12" long.

WING Instructions page 3
First line should now read 'Servo recesses are cut into **underside** of wing panels'.
Note 2 – delete 'root of'.
Note 5 – delete completely.
Note 6 – delete 'Groove front edges.....1/2" apart'.
Replace 'Epoxy in place.....contact with rods' with 'Glue in place'.
Note 7 – delete 'slot and drill for torque rods'.
Note 8 – this applies to **both** recesses.
Diagram on page 3 of servo mounted in wing should now be viewed as upside down! (Servos are now in underside of wing). Also ignore 2 ½" dimension.



INSTALLATION Instructions page 7
Note 2 – Delete 'Ensure good bond.....bearings'.

Additional instructions
Form vertical groove in root of each wing panel, before joining, from servo lead channel to top of wing.
Form recess in ailerons top and bottom for control horn and flange as shown.
Install additional hinge at root end of aileron.