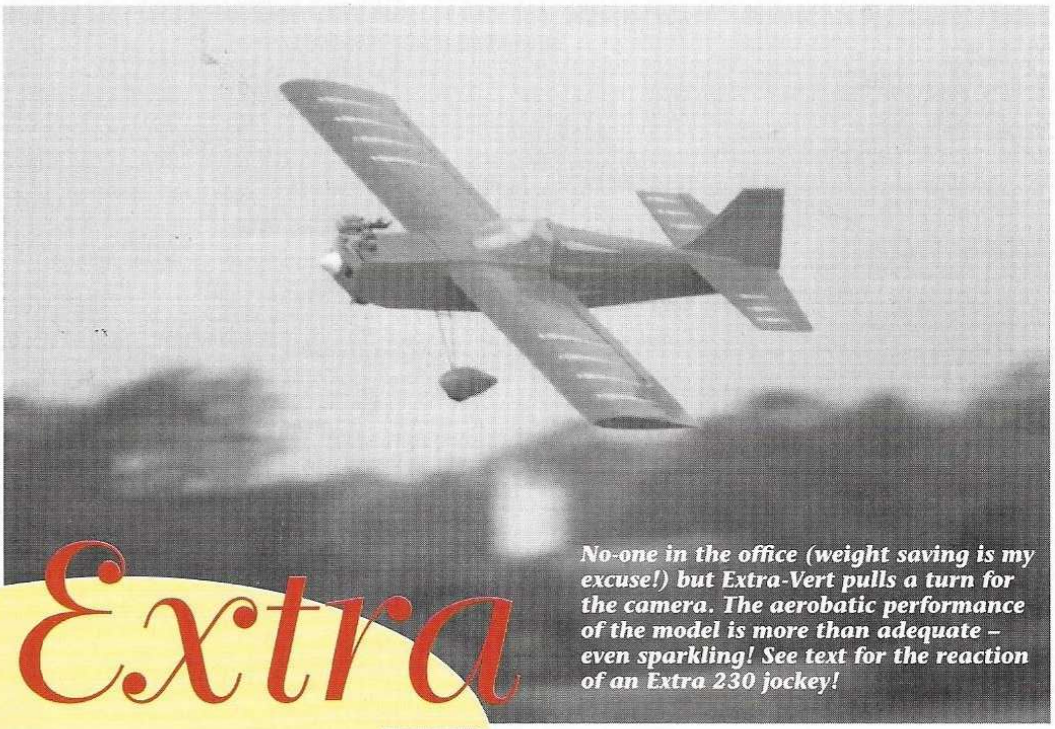
Extra Vert

Smitten by the 'Extra 230' look, Gavin Selwood designed this 48" span lookalike with spectacular results.



No-one in the office (weight saving is my excuse!) but Extra-Vert pulls a turn for the camera. The aerobatic performance of the model is more than adequate – even sparkling! See text for the reaction of an Extra 230 jockey!

A couple of years ago, like most modellers, I had a thing about the Extra 230. I also had a desire to design and build an aerobatic model of my own. The basic requirements were that it had to vaguely resemble an Extra 230, be relatively quick and easy to build (no compound curves etc), reasonably light wing loading and, because I'm a reasonably lazy modeller, had to fit into the car without removing the wing.

With these concepts in mind, I set about what was my very first own design project and was quite pleased with the end result. It looked good on paper but as always with own designs, there is always that nagging doubt "Would it fly?" So with plenty of encouragement from fellow club members, construction commenced.

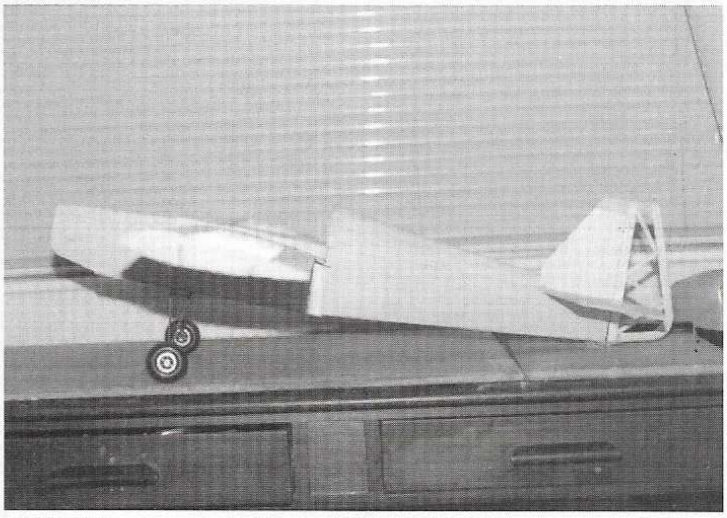
About three months later, the model was completed and test flown at RAF Benson. It was a complete anti-climax, complete with all the old modelling cliché's – "flew straight off the board', 'very groovy' etc, and she would go exactly where I wanted it to go and do exactly what I wanted it to do. After getting used to the model, I managed to perfect what I call the 'Richard Goode' take off. Line her up, full throttle keeping her straight, unstick and keep straight and level for a few seconds, then lift the nose up and roll full inverted. Complete the circuit in the inverted. No vices. Perfect!

I did build a foam wing version for an OS.48 Surpass four stroke and deliberately 'beefed it up' to make it heavier just to see what I could get away with. She flew OK with power on but landings were a fast, wheels on affair. However, don't let this put you off. I'm sure that a foam wing version could be built reasonably light.

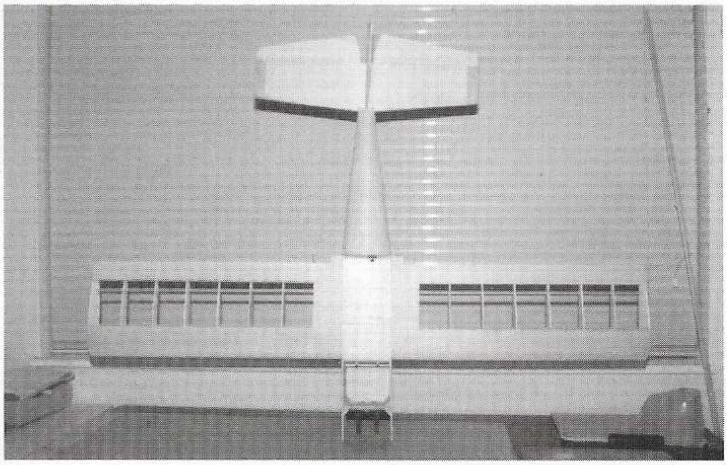
The whole exercise was worthwhile and the flight characteristics surpassed my expectations – so much so that I flew it consistently for a whole year and literally 'flew it to death'. The cause was fuel creep under the Solarfilm, just behind the wing mount. Whilst showing off to a new crowd one morning, a low inverted roll resulted in a cartwheel and the model snapped in half completely. The post mortem revealed fuel soaked balsa and ply doublers – my own fault on both counts!

Various scale projects have kept me from building another Extra-Vert, but I do intend to scale it up for the Quadra 40 or a 1.20 four stroke.

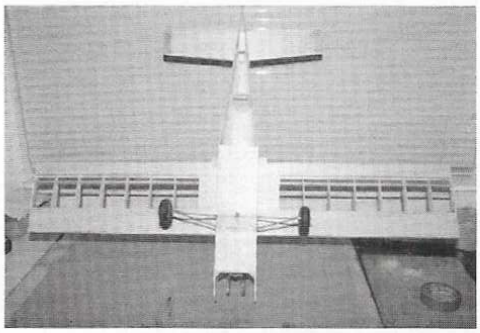
As a postscript, a few years ago, I was flying next to an unknown modeller who happened to be flying a scale Extra. He started making enquiries about the model and so we decided to swop transmitters during the 'slot'. He made some very flattering remarks about the flying characteristics. Shortly after that, the model went 'deadstick' and he quite happily landed it with no problem.



Not looking too much like an Extra 230 at the moment, the Extra-Vert nonetheless has clean, sharp lines that bode well for its aerobatic performance.



Built as per the plan, the model is very light and strong. The fin and stabiliser are constructed from sheet balsa whilst the rudder is built up. Every effort has been made to keep the weight down, improving the flight envelope and producing a versatile and lively model.



The undercarriage can either be made up from piano wire as shown here or, if you detest wire-bending, a commercial dural undercarriage can be used.

Stage One

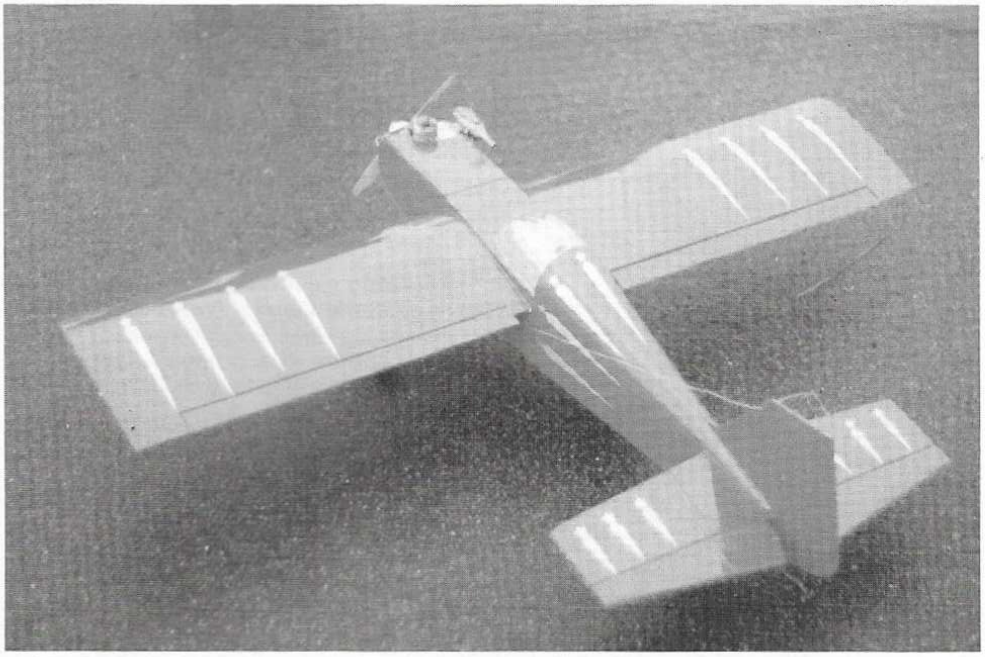
Trace all formers and wing ribs, then cut out as many parts as possible to make a 'kit' of parts.

Stage Two – Fuselage Construction

Cut out the basic sheet sides from 1/8" medium to soft balsa, the 0.8mm ply doublers and soft balsa wing seat.

Fix the 0.8mm doublers to the fuselage side with Copydex – the 1/8" balsa wing seat can be glued in the same way. Remember to make a left and right-hand side.

Pre-flight photo session! The Extra-Vert has proved itself to be a popular and well liked model at the club. Although I didn't expect to produce such a well-mannered model, I have flown it almost exclusively for a year or so now.



With the ST X25 up front, she's ready to go. The colour scheme was kept simple with just the fore/aft bars added for orientation.

General Construction Guide

Before commencing construction, study the plan carefully. As much information as possible has been included in the plan. Also observe grain direction and careful grading of wood will enable the model to be built well within the target weight.

Mark all former positions in the inside of the fuselage and glue formers 1, 2 and 3 into position. Leave to set. When dry, add formers 4 and 5 and the 3/8" stern post. Draw the tail ends together at the stern post, ensuring that everything is true. You may need to facilitate bending by lightly cutting the fuselage sides just behind F3. Leave to dry.

When set, glue the 1/2" triangular reinforcements to the cockpit floor and both sides of F1 with epoxy. Add the cockpit floor (3mm ply) and sheet in. Complete the underside, observing the grain direction.

Next, sheet in or plank in the upper rear fuselage sides using soft 3/32" sheet.

Mark out and drill F1 ready to install the motor mount and fuel tank. At this time, a removable access hatch can be constructed in the front top deck between F1 and F2.

Epoxy the ply wing bolt mount in position and leave to dry.

Stage Three – Tailplane

The fin and tailplane are cut from 3/16" medium grade balsa observing the grain direction shown on the plan.

The rudder is an open structure built over the plan using the wood sizes shown. The rudder can be glued with cyano to save both time and weight.

The tailplane is glued in position, followed by the fin. This is positioned using the soft block fairings. Complete the tail section by sanding to shape.

Stage Four – Undercarriage

Form the undercarriage as shown on the plan with 10g wire. A dural strip undercarriage could be used as an alternative if preferred.

Stage Five – Wing Construction

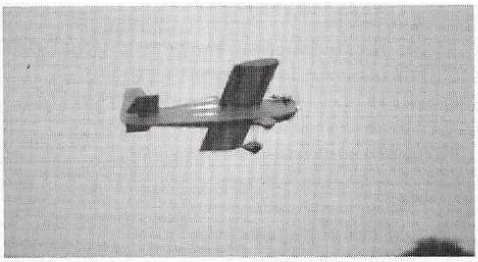
The wing panels are constructed over the plan by pinning down the lower 1 1/16" × 1 1/2" strip and gluing the 1/4" × 3/8" T.E. spar to it. Prop up the lower T.E. spar using 1/16" strip, and the mainspar by using 1/4" strip.

Slot the ribs in position on the mainspar, remembering to glue them to the T.E. spar and sheet as well as the two lower spars. Note that the root rib is angled for dihedral.

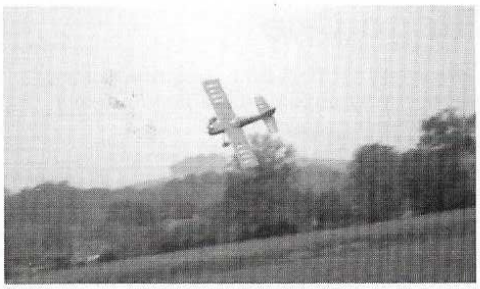
Add the 3/8" × 5/8" L.E. which needs to be supported by 3/4" packing pieces. Glue the 1/16" × 1 1/2" top T.E. sheet in position.

When set, remove the assembly from the plan. The other wing half can be built by turning the plan over and smearing the wing portion of the plan with oil so that it shows through (reversed).

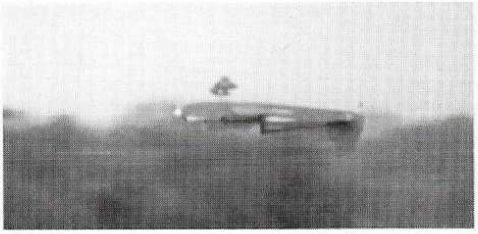
Next, cut slots in the root ribs on both wing halves to accept the dihedral braces, then join the wing halves together at the centre. When dry, glue the dihedral braces in position. Install the servo bearers for the aileron noting that the servo needs to be on



Take off is relaxed and she is surprisingly stable and controllable in the circuit. Flying small, slow patterns for the camera proved to be no problem – she will ease down to a slow airspeed and still maintain height.



Tight turns at low level have never presented any problems at all. Even with the throws set as per the plan, there has always been enough authority to maintain accurate control.



This is what Extra-Vert is all about. If you really do enjoy showing off with a model that is forgiving, exciting and a good-looker to boot, then Extra-Vert is a must. Inverted, with a little practice, you will soon be dragging the fin through the tall grass with no worries!

the underside and off to one side of the wing centre section.

Trial fit the aileron torque rods using pre-grooved triangular T.E. section. When satisfied with the fit, glue in position.

The final stage of wing construction involves gluing 0.8mm ply scrap strip to the T.E. centre section to take the load of the wing mounting bolt. Locate and glue the wing dowel to the L.E. centre section of the wing.

Position the wing on the fuselage wing seating and, whilst in situ, locate and glue the front wing fixing plate to F3 and drill for the wing mounting bolt fixing at the T.E centre section. This ensures a nice, tight fit and maintains the correct wing incidence angle.

The cockpit sides and floor are built up from ⅛" scrap sheet while the wing is in position on the fuselage. F3a is spot glued in position first. Before gluing the canopy in position, carve a hole in the rear cockpit floor and canopy just in front of F3a for wing bolt access.

Stage Six – Final Installation

The engine can be mounted in any desired position. The fuel tank is mounted in the top half of the space between F2 and F3, and the battery and Receiver in the bottom half. Servo positions are shown on the plan. A canopy can be either cut from a soft drinks bottle or moulded from acetate sheet.

Flying notes

The prototype has been flown on a Super Tigre X25 motor turning a 9X7 propeller with the built up wing. All up flying weight was less than 3.5lbs.

The take off run is a copybook procedure i.e. open up the throttle and correct the take off swing with a touch of right rudder. After a nice, gentle climb-out, trim the model if necessary and then check out the stall which should be virtually non-existent.

Full blown aerobatics are easy with this model. It will do the lot – flick rolls, knife edge, lomcevak etc, etc.

Landings are easy for a mid winged model and are very much akin to that of a high wing trainer – long, floaty approach followed by a three pointer!

The low weight contributes to the excellent flying qualities. However, an alternative foam wing version is shown on the plan for those who do not like building wings and this has been tried already as previously explained. The weight penalty incurred by using a foam wing should only be marginal so it should not affect the performance of the model too much.

Suggested Control Throws

AILERONS	½" up and down
ELEVATOR	1" up and down
RUDDER	1" each way

Happy Landings!