Ciunas

Noel Barrett introduces a four stroke special for F3A aerobatics

After the success over recent years of our two stroke design Scorpio, last year we decided to design a larger four stroke model. Having seen the powerful YS 120 four stroke at the World Championships in both France in 1987 and Virginia U.S.A. in 1989, it was clear that this engine would feature prominently in the future of F3A aerobatics. Enlarging the Scorpio design to 1,200 sq. in. and adopting it to run a YS 120, a new model, Ciunas was developed. Pronounced Q-Ness meaning 'QUIET' in Gaelic, this name seemed appropriate for the new silent and smooth flying design. At the recent triple crown event in Scotland, Ciunas was the quietest model present, the engine reading 88 db at one metre.

The Ciunas prototype, like Scorpio, proved to be another great model, however we felt it was too large. Therefore, altering the original design, a 960 sq. in. Ciunas was developed. This model placed first in all Irish events entered last season and with the introduction of new props for the YS 120, the model now appears to have unlimited vertical power. Presently, the engine is turning a 14.4 x 12 APC prop at 8,800 r.p.m. and runs on Omega fuel with 15% nitro. Ciunas will run, not only on a YS 120, but any available 120 four stroke engine.

Wing construction

The wings and tails are foam veneered, the prototype used items supplied by Geoff Mosley and these are excellent for precision F3A aerobatics. The wings were cored and veneered with 1/16 soft balsa saving up to 8oz. in weight. Although this is a plug in wing, the panels are joined as normal on a flat surface with 19mm dihedral under each wing tip.

The wing tube is fitted as follows:

1. Mark its position on the top of the wing and cut through the veneer to expose the foam.
2. Using a hot wire or sharp knife, cut slots for both the wing socket and supports.
3. Glue the socket and supports in position with slow curing epoxy resin.
4. Fill in the socket cut with balsa and sand smooth to wing contour.

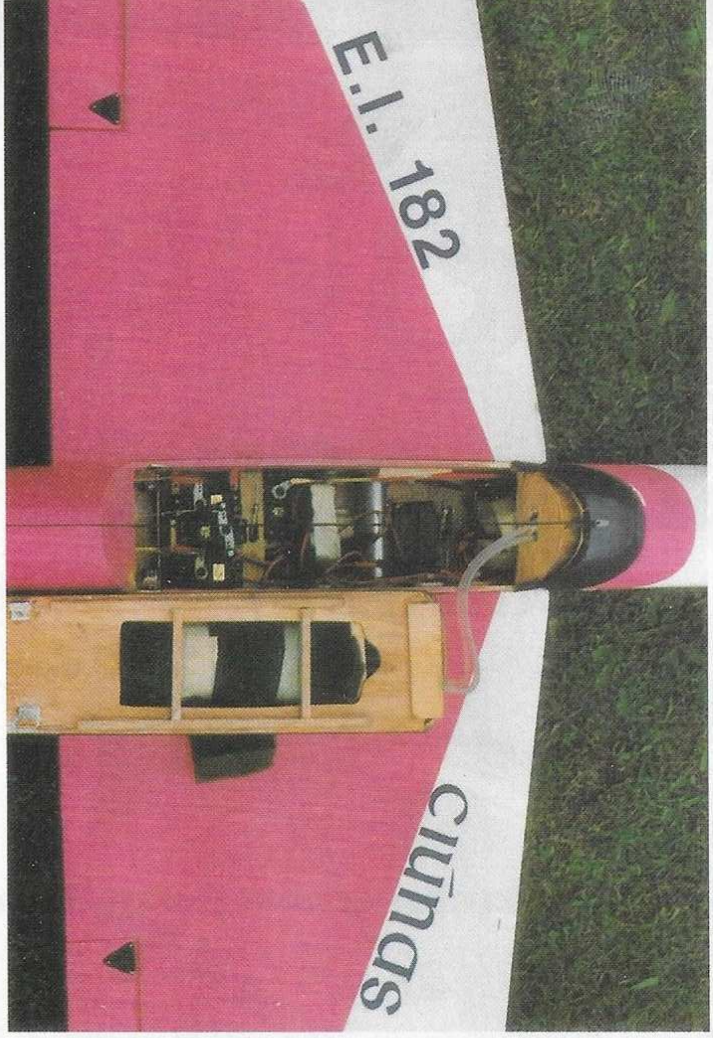
The joined wing, with embedded wing socket, is now cut as indicated on the plan and the centre section discarded. Two 1/16 plywood ribs are used to support the wing socket at the root of the wing. Before gluing the root ribs to the panels, glue in the 3/16 inch x 1 inch screws. These screws, as shown on the plan, secure the wings to the fuselage. The ailerons are cut from the wings and faced with 3/8 soft balsa. Holes are cut to take aileron servos, retract mounts and wheel wells. The wheel wells are lined with 1/16 balsa and the retract mounts are epoxied in place.

Tailplane construction

Construction of the tail is similar to the wing. The elevators are cut from the tail and faced with 3/8 soft balsa. The fin and rudder are constructed as shown on the plan. An optional feature, also indicated, is a removable, adjustable tail. A plug-in adjustable stabiliser kit is available for this construction.

Fuselage construction

A fuselage jig is desirable for assembly but not essential. An alternative method is to draw the centre line on a bench and mark the position of the formers F1, F2 and F3 along that line. The fuselage sides are joined at the rear and at F3. The 1/4 sq. balsa cross bracing is fitted along the top and bottom of the fuselage. Both fuselage sides are then pulled in and F2 is fitted in position. The fire wall, F1, is drilled for the motor mounts and throttle cable.



Left: Equipment bay, showing servo layout and tank installation in the canopy. Below: Sturdy 7/8" wing tube soaks up the flying stresses. Wings feature variable incidence for fine trimming.

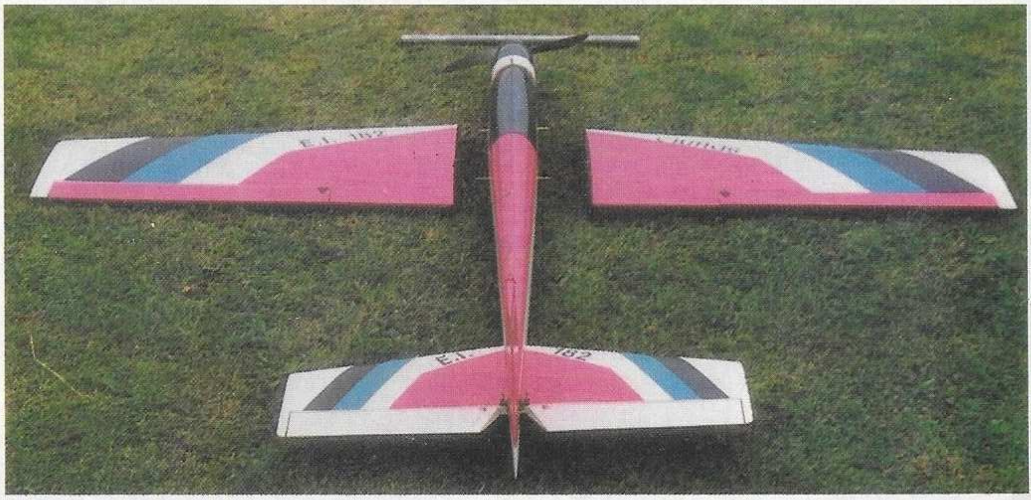
Note the motor mount is fitted 1/8 of an inch right of the centre line, with a 1/16 inch plywood wedge at the right of the mount. This allows for the correct side thrust and keeps the spinner on centre.

The front and rear top decks and lower rear deck may be constructed in two ways. These can be built up using the conventional method of hollowed soft block balsa. An alternative method is to use templates, T1 to T5, to cut foam decks which are then veneered with soft balsa or obechi. The canopy frame is made from 1/8 light plywood and an acetate canopy is cut to suit and glued in place. An alternative method for canopy construction is to build it up using soft balsa. The motor cowl, like the canopy, may be built up or the fibre glass unit may be used.

The fuselage floor is now fitted between F1 and F3. The lower soft balsa blocks are fitted, as indicated on the plan, and sanded to the contour of the fuselage. This will then form the pipe tunnel.

A particular feature on the Ciunas model is a variable wing incidence system. The adjusted kit, for such a system, is available which contains full fitting instructions. The advantage of variable wing incidence is that fine trim may be obtained, making for excellent aerobatic performance.

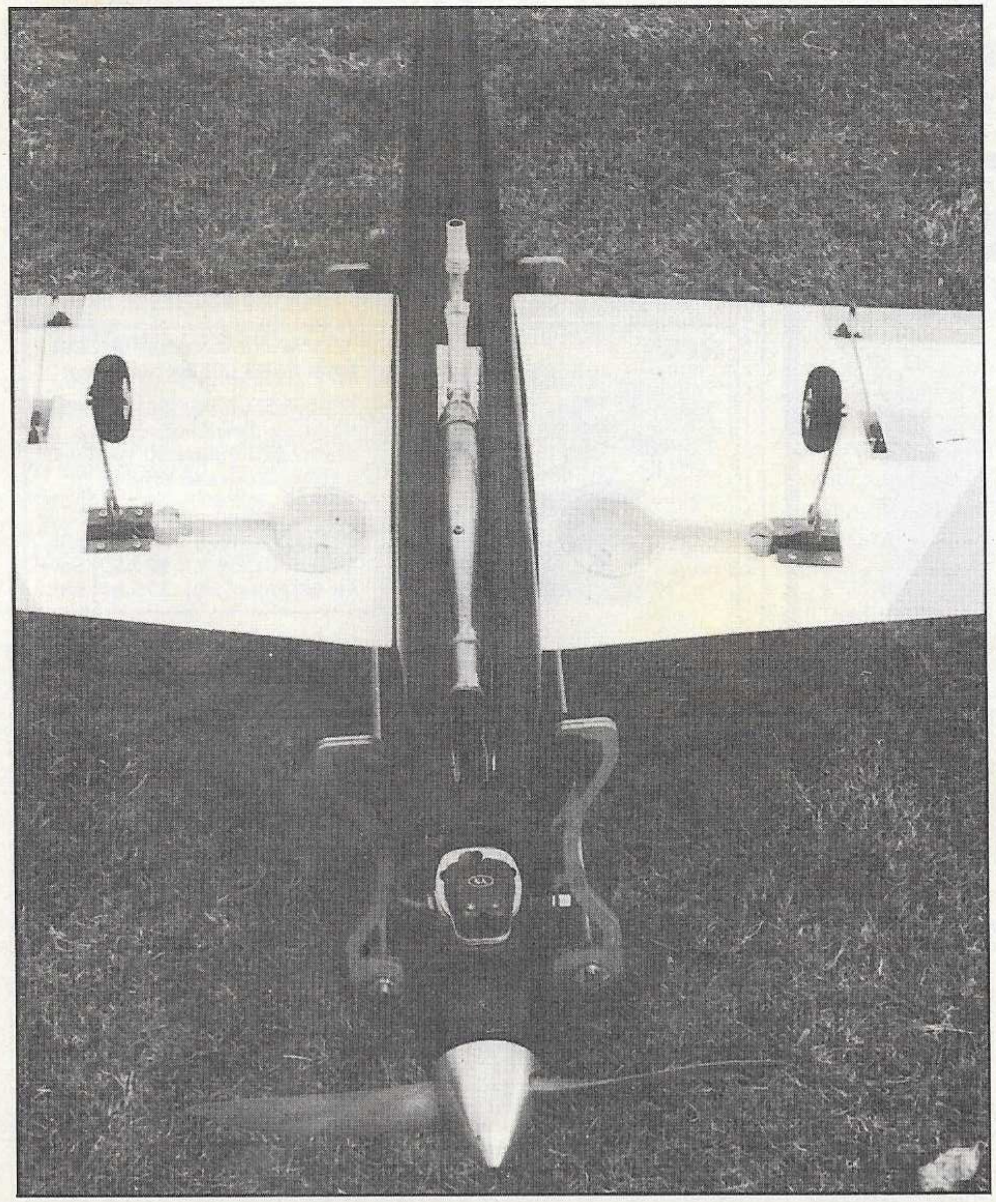
Below: Ciunas follows all of the latest design trends in F3A. Large model breaks down for ease of transport.



Finishing

As with any model, finishing is a matter of choice. On the present model the wings and tail were covered in Monokote. The fuselage was covered in epoxy and 3/4 oz. glass cloth, and finished in two pack acrylic enamel. The

Below: Belly up, showing retracts, engine and pipe installations.



weight of the present model is 9.25 lbs. although up to 10 lbs. is acceptable. For optimum aerobatic performance, the lighter the model the greater the performance.

We use a JR PCM 10, operating seven servos; ailerons(2), elevator(2), rudder, throttle and retracts. A 1,000 mAh battery pack is recommended when powering seven servos.

The YS 120 motor, with its pressurised system, enables the tank to be placed on the C.G. (in the canopy). As fuel burns off, through the flight, no alteration in pitch trim is required.

Flying

Pick a calm day for the first test flight as such conditions give you the best assessment of flying trim. After adjusting for level flight, with elevator and aileron trims, the model should be landed. Using both the wing adjuster and tail adjuster (if used), adjust the incidence until the model will fly level with the trims centred on the transmitter.

The throws on the control surfaces are as follows:
Elevator Throw: 1/2 in. up, 3/4 in. down.
Rudder Throw: 1 1/2 in. each way,
Ailerons Throw: 1/2 in. each way.

The items used in the construction of the model are:
Fibre Glass cowl
Motor Mount (Soft mounted)
Acetate canopy
Wing tube and socket
Wing and tail adjuster kits

All of the above are available from Noel Barrett Models.

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