



by HOH FANG-CHIUN

EKKO III

an aerobatic "pattern" model for comps. and fun-flying!

SPAN: 63½" - POWER: .61 - RADIO: 4 or 5 functions

DEVELOPMENT of competition aerobatic designs has been moving toward fast-flying and large aircraft during the last few years. This design trend has been made possible mainly by the availability of extremely powerful engines, but an altered view on aerobatic flying in favour of large patterns also has contributed to this progress. There is no question that high speed and graceful manoeuvres are more effective in gaining maximum points than corresponding figures of more compact size performed with a slower flying machine.

Ekko III is a fast, smooth-flying aircraft, capable of contest performance. Although the model has been designed and developed primarily for competition purposes, it is an easy plane to fly, and can be handled without difficulty by anyone who has flown similar aircraft successfully. In the design approach, performance considerations were naturally put in the foremost place, but functionalism in combination with a realistic appearance were also set as basic goals. You will notice, from the

plans, that *Ekko III* is a sound design with the emphasis on uncomplicated construction methods and general simplicity.

The similarity feature so evident in current competition aerobatic models is entirely the result of the standardization reached by "pattern" flyers in their endeavours to attain design perfection. The fact is that, within the frame of given performance requirements, there simply is not much left in the way of an entirely new layout! In addition, it would be impossible to create a new competitive aircraft today without borrowing ideas and good points from other designs, and this model is no exception. Nevertheless, efforts were made to provide *Ekko III*, at least in some extent, a "personal" look which, mainly, is characterized by its huge scale-like canopy.

Since I am not an ardent competition flyer but rather prefer the flying primarily as a pleasant pastime I have so far not entered any contest with the model. Therefore I have no competition merits to refer to at this moment, as might be expected from

design presentation of this category. However, backed by a long standing experience in designing and flying of radio control aircraft, and after a great deal of testing and comparison with other outstanding pattern models, I have come to the conclusion that *Ekko III* itself possesses performance capabilities comparable to top competition aerobatic aircraft flying today. After all, the design concepts follow in general well known and tested conventions. In addition, a number of good ideas from other proven designs also have been incorporated in the final layout.

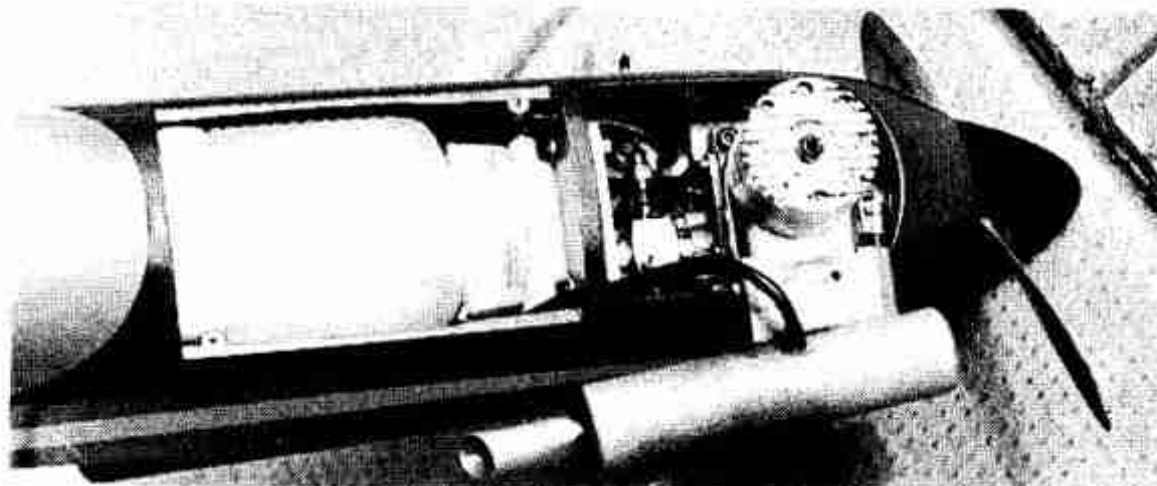
The original model employs KDH retractable landing gear, and this system is shown on the plans. There is no doubt that retract gear is a necessity for precision aerobatic flying today, despite the problems still connected with many units that are currently available. Fixed landing gear can of course be used, and actually is recommended, if the model is not intended to be flown in competitions. The comparatively limited loss in performance with a fixed gear can very well be accepted



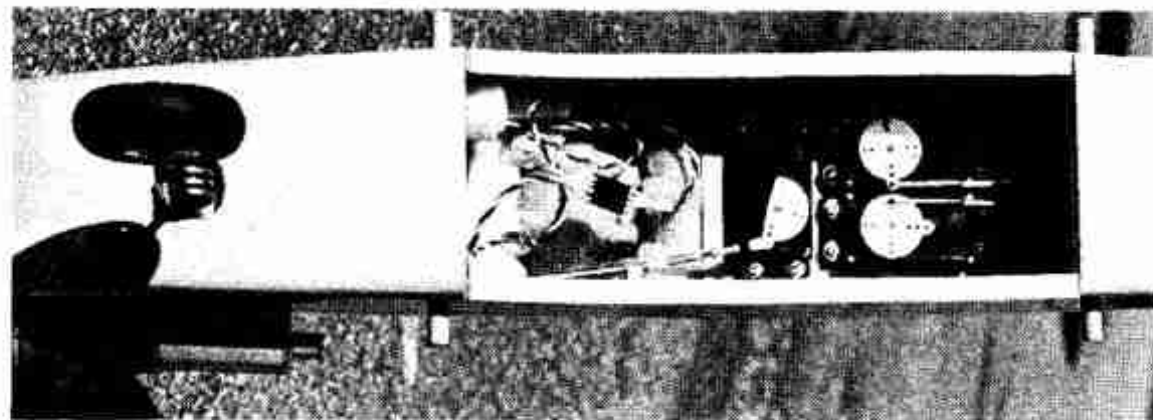
by a sport flyer as it does mean elimination of the tedious maintenance work involved with most retract units.

Ekko III measures 63½ in. (1620mm) in wingspan and 710 sq. in. (45.8 sq.dm.) in area. It is a pretty large and heavy multi job and therefore only the most powerful .60

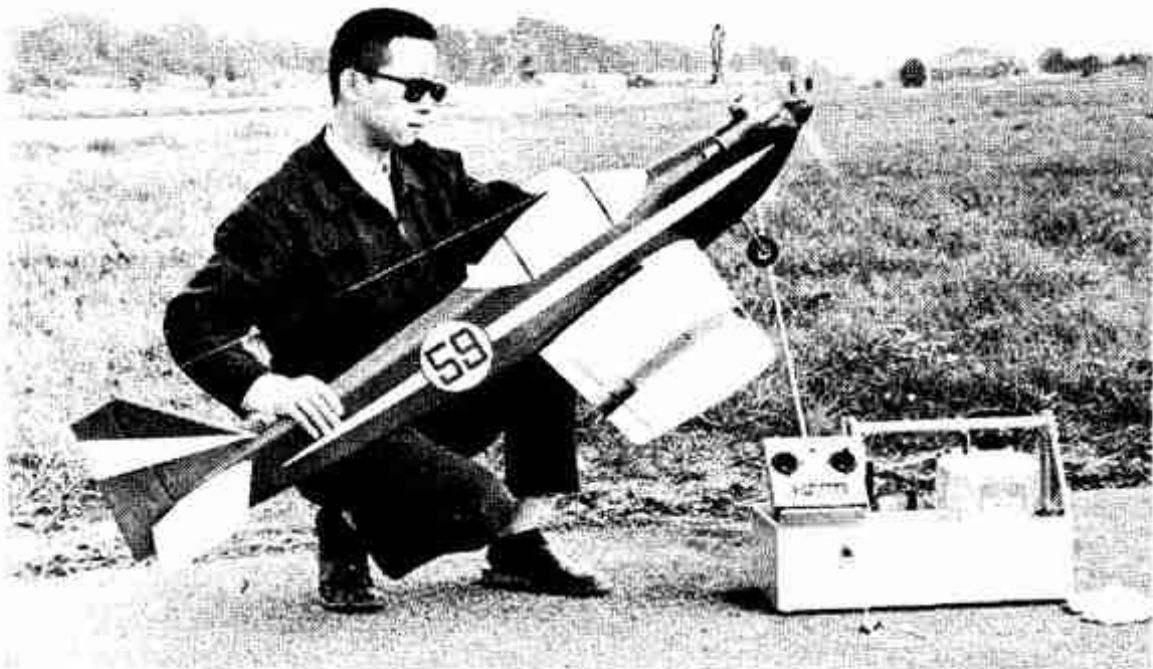
engine is recommended. The powerplant employed in my own model is a Rossi 60 ABC rear induction RC engine equipped with a Kavan carburettor. This combination indeed provides an impressive power package. Incidentally, equipment used in the original model truly is of multinational composition. The silencer



Above—hatches off, showing engine and fuel tank installation. Below—radio installation in the fixed u/c version.



Mr Hoh is quite a prolific designer who, as readers will guess, hails from China. He lives in Sweden, however, and is here seen preparing *Ekko-III* for flight.



is the Swiss KO venturi-type muffler and the propeller with the spinner are from the United States. As mentioned earlier, retractable landing gear is made by Germany's KDH, while the wheels and radio outfit are from Japan. Complete with a 5-channel Digiace r/c installation, the all-up weight of the model is slightly below 7.5lb. (3500g).

CONSTRUCTION

General

The construction is completely straightforward, but care should be taken to ensure that balsa wood used is of medium density if the design weight is not to be exceeded. This is important because you will notice that the sizes specified for most parts are on the generous side, as using relatively large section medium density wood gives a stronger structure, as well as being easier to work, than if harder wood of a smaller section is used.

The plan is intended to be self-explanatory. I think that anyone capable of making such a model does not need to be told how to glue things together. It is for this reason that I consider it superfluous for me to go into the construction of the model in any detail.

Wing

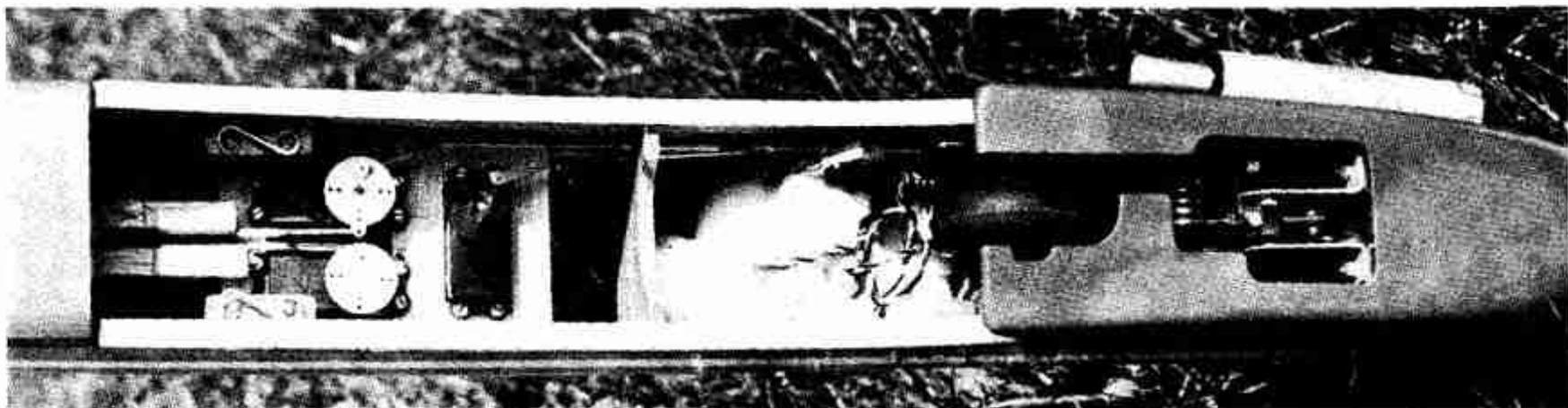
The wing can be built in one piece, or each half may be built separately; join at proper dihedral angle when ready for sheet covering. To assemble the wing, a jig should be used to ensure an absolutely true structure, because any warps occurred at this stage will be very difficult to fully eliminate later on. Also, be certain not to exceed the specified amount of dihedral when joining wing halves. The fuselage side panels are prepared with specified reinforcements prior to assembly, for wing seating.

Fuselage

To assemble the fuselage, formers F3 and F6 are first cemented to the sides. The sides are then pulled together at front and rear before the remaining formers, etc. are added. The rest of the building process is quite obvious.

Finish and installation

Finishing technique usually is a matter of personal choice. Remember though, that weight will be easily built up on such a large model if paint is used in too generous a manner. To obtain a durable and glossy finish, the final fuel-proofer should be of good quality. I applied



Here's an installation close-up of the retract-u/c version of the model while, at right, Fang-chiun eases *Ekko-III* into a slow roll.

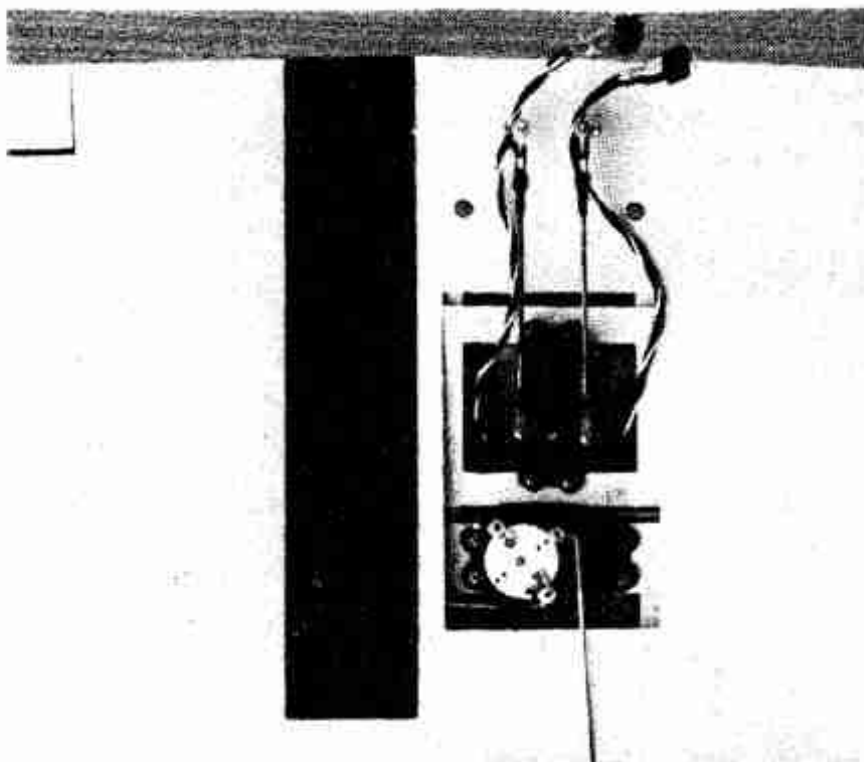
an epoxy-type proofer on my model and it gave a very satisfactory result.

There is enough room in the fuselage for any of the modern digital systems. My servos are mounted on a 1/8in. (3mm) plywood plate, the plate itself is then fastened on hardwood rails with sheet metal screws (*i.e.* self-tappers).

Normal checking procedures should be followed prior to test

flights; ensure that the model balances correctly and the indicated engine right-thrust is properly set. (Right-thrust is required to compensate screwing tendency which would occur during loop manoeuvres.)

Flying the model should not present any problem to those familiar with this type of aircraft. You will find that *Ekko III* is very smooth and responds exactly upon your commands.



Some views of the retract installation—units and servo.

