

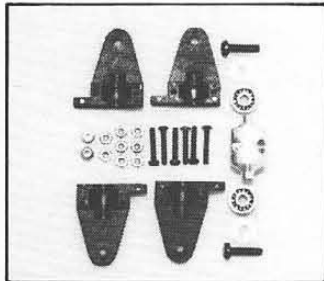
# MFA SPORT 500 REVIEW

In depth review of MFA's  
basic trainer  
by Clive Thompson.

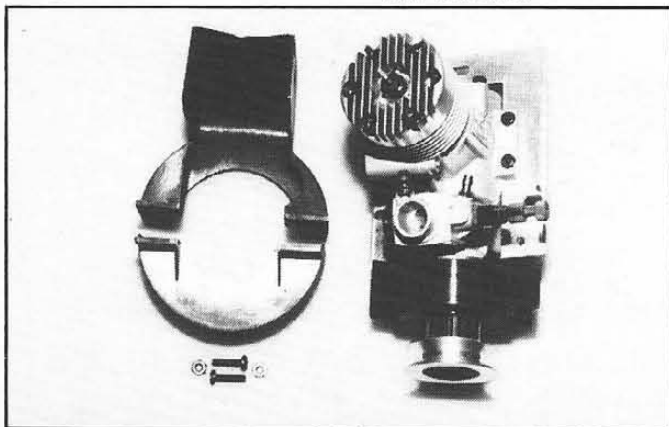
When first asked to build and review the MFA Sport 500 Helicopter, I must admit to questioning the sanity of the editors of this magazine. Had they taken leave of their senses?

How could someone without any experience or knowledge of Helicopters, possibly build and review one for a specialist magazine such as this? I didn't know a swash plate from a swatch watch! But it was this amazing lack of knowledge that actually made me the ideal candidate for the task. Someone bereft of the 'Right Stuff' was

*The component parts of the tail-rotor head. Note the safety washers — these came in handy later!*



*The motor and flywheel, etc., is mounted on a sub-plate before fitting to the chassis.*



needed and I fitted the editors bill!! Why? Well, Chris Baker at MFA has, with the Sport 500, designed and produced a Helicopter kit that is aimed primarily at the average week-end club flier. Who like the majority of us at some-time or other have watched these amazing whirling machines, but have perhaps been put off trying one, because of either their cost (they can be very expensive) or the mechanical complexity involved. On a personal note, I also feel that in the not too distant past of model Helicopter flying, there evolved an almost 'black art' to setting one up. Helicopter fliers would take a frequency peg and then proceed to tinker and mess for the next hour or so without the machine ever leaving terra firma!

That was then.

Today's generation of Helicopters speak for themselves. They fly and what's more, they fly very well indeed. True, they still require a fair degree of care and attention. But the guesswork and journey into the unknown have now been ironed out to a very great degree.

### The Question

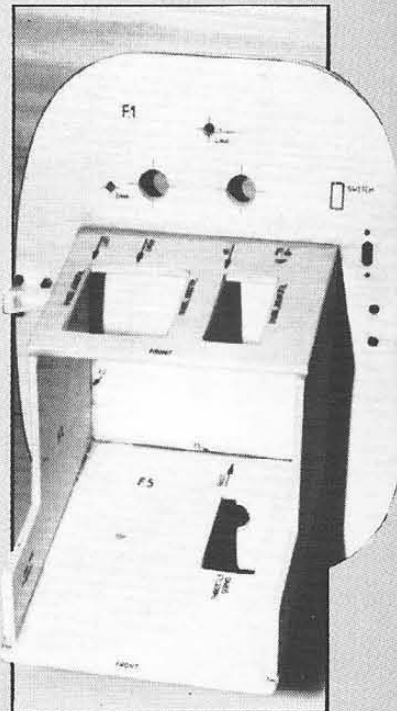
The MFA Sport 500 has been designed with all the aforementioned firmly in mind. The more observant (and knowledgeable) amongst you will have no doubt already noticed that the Sport 500 is a fixed pitch machine. So it is. Quite a deliberate move too. For it's here according to Chris Baker that both cost and mechanical complexity can both be minimised. As well as this the set up procedure is simplicity in itself. A boon for anyone devoid of expert advice, or worse, anyone suffering from an overload of non expert advice! So has Chris Baker found and produced the answer to a would be Helicopter fliers prayer? Has he really produced a Helicopter that is simple, cheap and one that flies well with the minimum of fuss to set up. A Helicopter that will make use of ordinary everyday four channel radio gear, with an or-

*The tank is simple retained by large clips and is easily seen in flight — no excuses for running out here!*

dinary everyday engine for power?

Well, let's see.....

*Woodwork is handily marked, not only with servo position, but also with the required direction of operation — nice one chaps!*



## The Answer

Upon opening the box, you will not be disappointed! For contained within are enough bits and pieces to make you grateful that this is only a fixed pitch machine and not something more complex!

Let us take a run technical wander over the kit and hopefully create a picture of what this kit is all about.

Plain and simple.

The Sport 500 follows the ubiquitous pod and boom layout. The main frame of the model is a pressed metal plate. This plate supports or carries the following:-

1. *The undercarriage legs and skids.*

Two sizes of legs are available, the standard pair or a slightly longer version that give increased ground clearance for training purposes or rough field flying.

2. *The engine and engine mounting plate.*

Attached to the engine are a fly wheel, fan, small toothed pulley for the main belt drive and a V belt pulley for starting. The cooling fan housing attaches to the engine mounting plate.

3. *Gear shaft and clutch assembly.*

*This shot gives you a good idea how it all goes together. Note drive train is initially by toothed belt and then via bevelled metal gears to the main rotor.*

This is a horizontal shaft with a small captive bevel gear and is supported by two ballraces. On this shaft reside the toothed pulley wheel for the main belt drive and the clutch assembly. The clutch is a simple swinging shoe unit.

4. *Mainshaft.*

Held vertically in place with one plain bearing and one ballrace, the large main gear at its base meshing with the bevel gear on the horizontal clutch assembly shaft. The swashplate and main rotor head complete the picture. The rotor head is held in place on the shaft with a single cap screw. The head itself is supported on ballraces, while the stabiliser bar utilises a pair of plain bearings. The main blade holder is made up from an oblong bar to which are attached two pairs of pressed metal blade holders.

5. *Fuel Tank.*

Standard MFA fuel tank is held in place with two simple but effective metal clips.

6. *Tailboom and associated bracket.*

7. *Plywood housing for the radio gear and body support.*

8. *Bellcranks for cyclic controls.*

If we now move away from the main chassis to the tail rotor assembly, again the accent is on simplicity. The unit consisting of two main parts:-

1. *Tail rotor gearbox.*

Two gear shafts at right angles to each other, are supported by a combination of both plain

bearings and ball races. Held together in a strong black GRP housing. To one of these shafts connects the pitch change hub and tail rotor blade holder. Whilst to the other, drive from the main shaft is delivered courtesy of a wire coupling.

2. *Pitch change hub.*

Ballraces in evidence again here. This time between the blade holders (GRP) and the main hub.

Alright so far? Then lets visit the front end. Here a plywood box structure provides anchorage for four servos, receiver, battery pack and of course the gyro. Everything fits with room to spare. Standard Futaba Challenger radio gear with the excellent Morley Full Pilot Authority gyro were the equipment used. Power supply coming from a 1000 mAH battery pack. A larger capacity battery pack is essential for Helicopter flying, not only because of the extra current drain of the gyro. But also the servos that are tasked with keeping a Helicopter in the air really earn their keep. No napping here chaps, one makes a move, they all make a move-all of the time it seems to me!

Enclosing these hardworking servos and the rest of the radio equipment is a simple bubble type canopy, attached by means of two nylon screws to

*Now, this is a trainer which is really easy to see.*

the plywood framework.

Finally the blades themselves. Both the main and tail rotor blades are well finished items, requiring the minimum of finishing. The main blades are simply covered in white sticky backed plastic film. Whilst a quick lick of paint suffices for the tail rotor blades.

## What Do You Think Of It So Far?

I do hope that this gentle amble through and over the Sport 500 has enlightened anyone, who has bothered to read this far, just what this particular Helicopter is all about. That is, one straight forward, simple, affordable introduction to the fascinating world of R/C Helicopters.

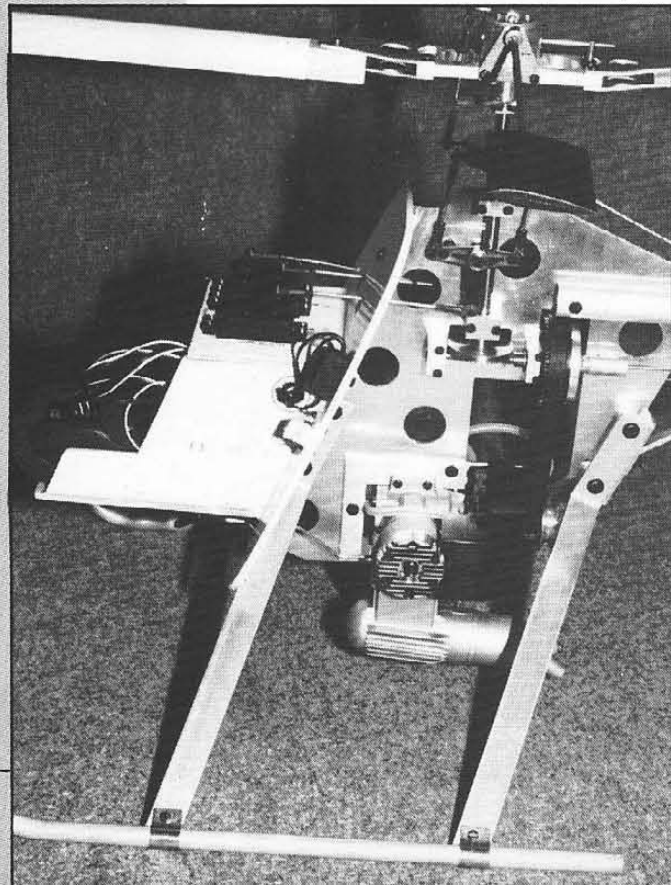
## Proof Of The Pudding.

So, follow the instructions, I did.

The kit went together that easily I began to wonder if I had missed something vital out! But no, on checking, everything was, where everything should be.

I chose one of the new OS46 Long Stroke engines for the power plant. These motors come with a really effective silencer as standard. Best illustrated by the fact that a neighbours motor mower two houses away makes a lot more noise!

What next? Well no more excuses, everything double checked, correction treble checked. A meeting was then



arranged with a certain Mr. Jim Davey, test pilot extraordinaire and chief overseer on this project.

It is at this point that I hand you over to Jim for his comments on both the flying and the quality of the Sport 500.

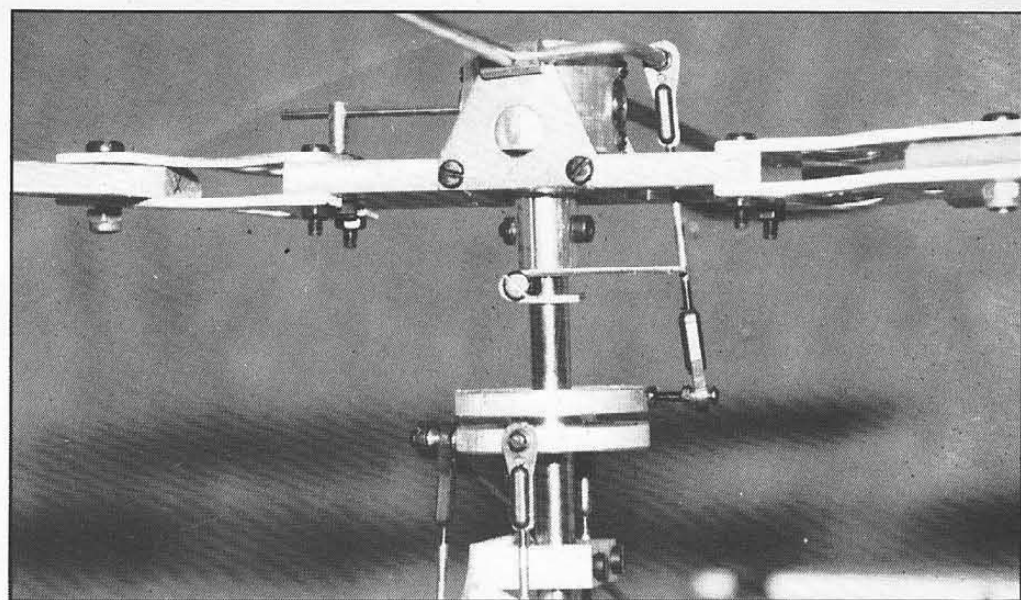
I would just like to add that since my meeting with Jim, following his advice on training gear and not hovering the Helicopter any higher than you would care to drop it! (very good advice that) even with the very limited time I have had flying it and the Sport 500 has performed exactly as advertised, this Helicopter in my opinion, is indeed an ideal starting point for anyone vaguely interested in this particular branch of R/C model flying.

Anyway enough of my ramblings, over to Jim for an experts view.....

### **CoFA And Acceptance Flight**

Less of the obsequiousness, lad, just throw money!

I was invited to inspect the newly constructed model by a somewhat nervous Clive, but he need not have worried. All the control went in the right direc-



tion and surprise, surprise, the gyro was set with the correct sensing. The model had obviously gone together very well and the only points I could find to complain about were the need for oil to be applied to all

*One of the main advantages of the simple fixed pitch head is the very simple linkage to the swash plate from the servos.*

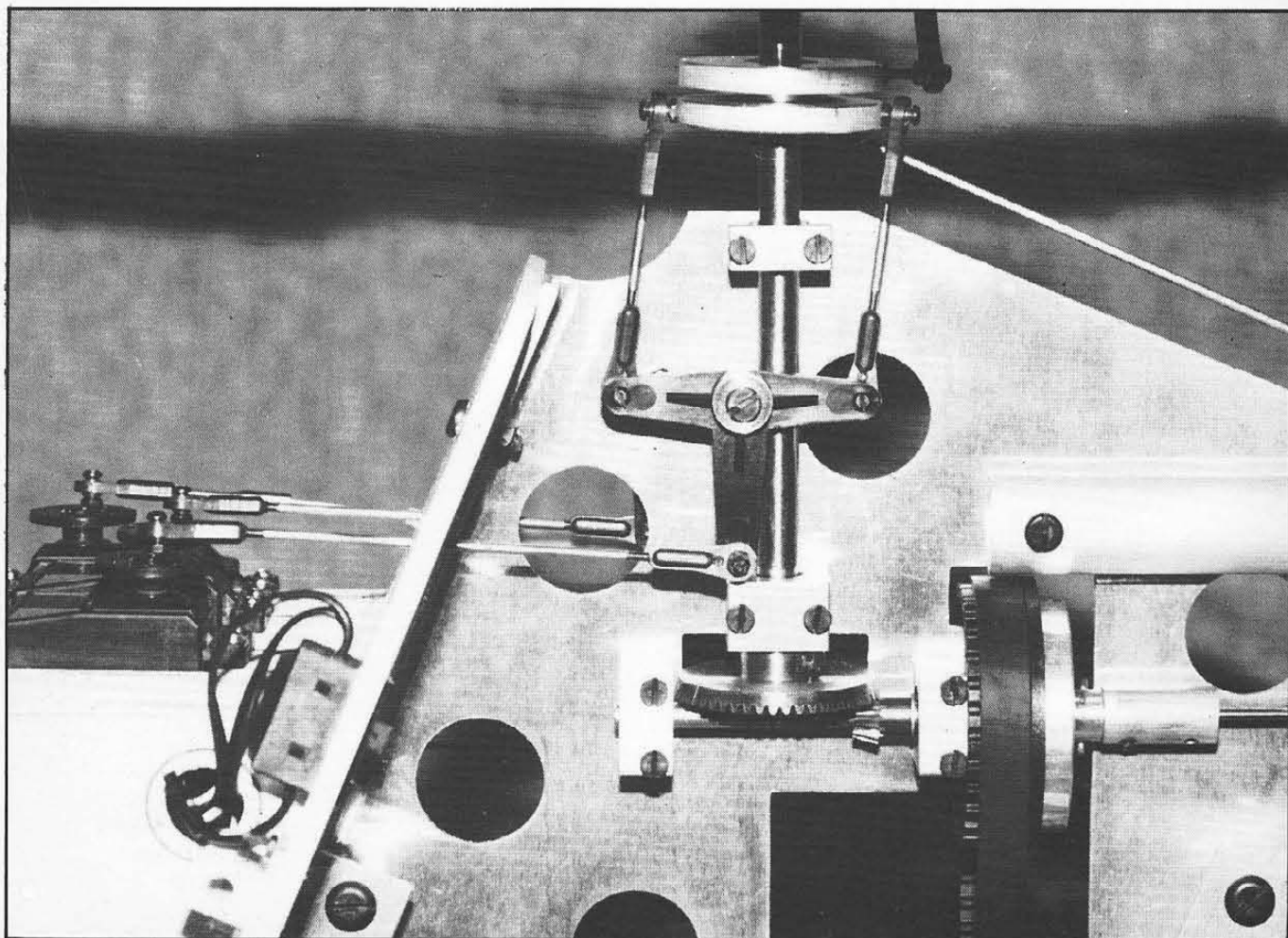
the bearings and the tail control cable which performed rather a sharp bend as it left the boom and was rather flexible.

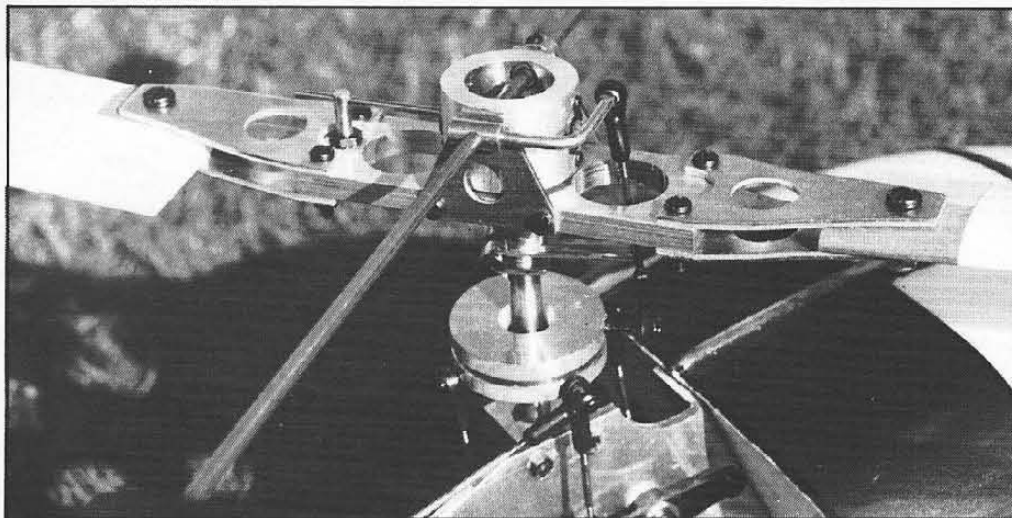
Having attended to the oiling, we elected to start up and fly.

This was something of an anti-climax, as the model simply flew. Initially, I was forgetting to squeeze in a little lateral cyclic at lift off — a characteristic I should have remembered from

*The head itself is very simple on this model. Note that the cyclic linkage has been adjusted out too far in this shot and is in danger of jumping clear of the driver.*

my Lark days, but this soon passed. The cyclic controls are reasonable positive, but there is a little lag, compared with a machine having some Bell/Hill-





*This view of the head shows the linkage — one only — and the teeter restraining wire. Flybar runs in oilite bearings — don't forget to oil them!*

ier mix. Vertical control is, of course, much slower than a collective model, but, having said that, it is really very good for a fixed pitch model. The day was rather blustery, which is not ideal for any sort of fixed pitch flying, but posing for photos was reasonably easy.

Moving on to circuits showed adequate handling, but also demonstrated that the tail rotor is not too powerful — you have to be prepared to use it all in a left hand turn to keep the tail up. However, the last thing the

beginner wants is a vicious tail so, you takes your money, etc.

At this point something happened that demonstrates conclusively that review kits are absolutely standard. As I turned out of the last circuit it became obvious that I didn't have an awful lot of control over much of anything! Fortunately, sufficient control remained to effect a safe landing.

The subsequent incident investigation showed that one of the tail blade retaining bearing cages had collapsed and that

the main rotor teeter restraining wire had broken.

A check with MFA indicated that some early kits did have some sub-standard bearings and wire in them, which has subsequently been corrected. A quick 'user survey has born this out, so newer customers should have no fear — certainly the sizes used would appear to be totally adequate. It is notable that the model was still flyable like this and that it did not shed a tail blade!

Clearly, the model is very easy

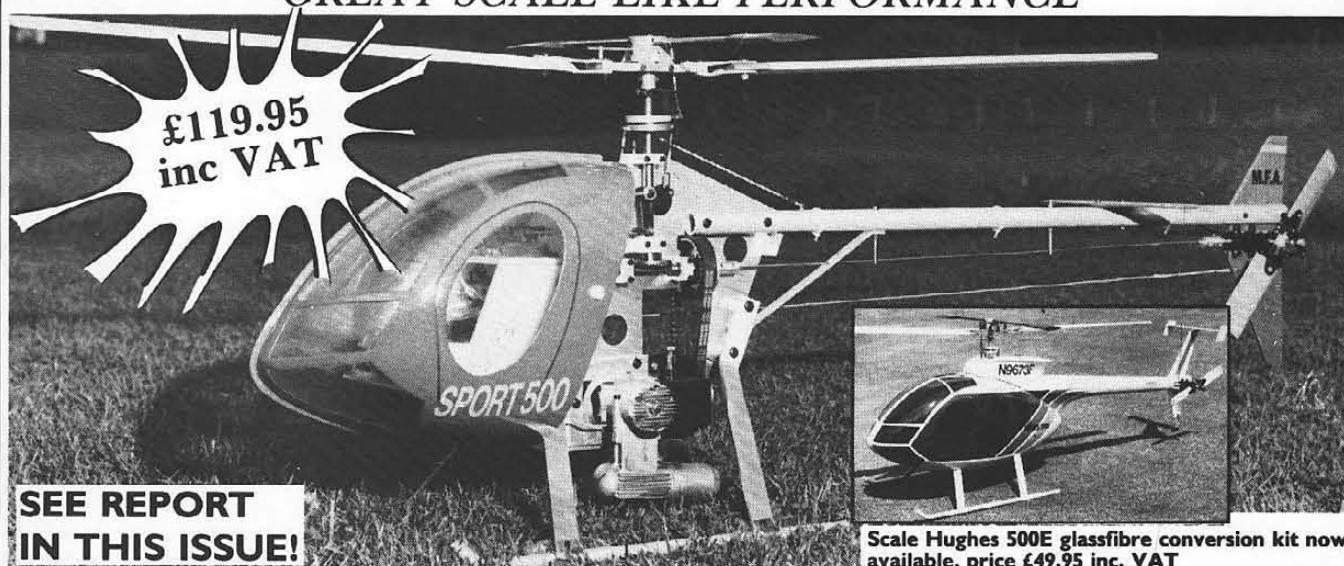
to build properly, Clive having had no previous helicopter experience whatsoever and flies very well indeed. The degree of hover stability is really very good. Like all fixed pitch machines, wind is not its forte, but in calm air, it will do everything you might want. There is no doubt, that at the asking price and needing only a standard radio and a decent 40 (the 46 was rather over the top), this model is bound to be a run-away success.

If you are getting into the hobby by this route, do take your time over building — it is simple, but don't rush it and you won't be disappointed.

We will be following Clive's learning curve with great interest and if you want to get a real expert's view on the model (just a few minor modifications — officer!) — read Martins piece; 'Pursuing the Sport in the Sport 500'.

# MFA SPORT 500

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