



**P**RESENTATION may not be everything, but Schluter certainly believe it counts, for their *Mini-Boy* kit box design really inspires the would-be builder. The same care that makes the outside so attractive has been applied to the internal packaging, with neat little numbered plastic bags, beautifully marked out high quality ply, clear plastic canopy plus all the other bits and bobs that go to make a model helicopter, but were there enough bits? Everything looked so small compared with our others upstairs! The half scale plan, 9 pages of photographs and a very complete instruction book plus a supplement would shortly help to answer that question.

Construction is shown in eleven steps, stick to them and you can't go wrong. The secret is to get the photograph showing all the parts of the helicopter laid out and numbered, then when a packet is opened refer to the photographs and all will be revealed. Oh, by the way, don't lose anything as only the exact amount is packed.

### Building

As with most helicopters the chassis is assembled first and everything else is built onto it.

The clutch and starting shaft are pre-assembled, as is the clutch bell and gear, and there are no problems whatsoever with this

*reviewed by John and David Beckinsale*

assembly. One may, however, have difficulty judging the approximate 0.1mm axial play required for the whole unit! The fabled engineers' fag paper helps here. Do follow the instructions with regard to greasing, as in many instances once something has been assembled it is very difficult to get as it again without taking everything to pieces. It is advisable to grind a flat on the starting cone shaft as the two set screws will not hold the cone if the engine compression is high.

The engine chosen was an HGK 45 FSH. Before the engine is put into its support plates, the cooling fan and flywheel are fitted onto the propeller shaft. Here Herr Schluter's gadget for holding the flywheel whilst the nut is being tightened comes into its own. (Before this holder many helicopter pilots could be recognised by the fan blade imprints on the palms of their hands!) Make sure that the propeller nut is done up, in fact I always fit non-slip washers between the brass flywheel and the prop-driver and, if room, one behind the nut, otherwise the starter sometimes jerks it undone. Cyanoacrylates do not seem to be sufficient here. If the back of the fan is going to touch the carburettor use the spacer provided in the kit.

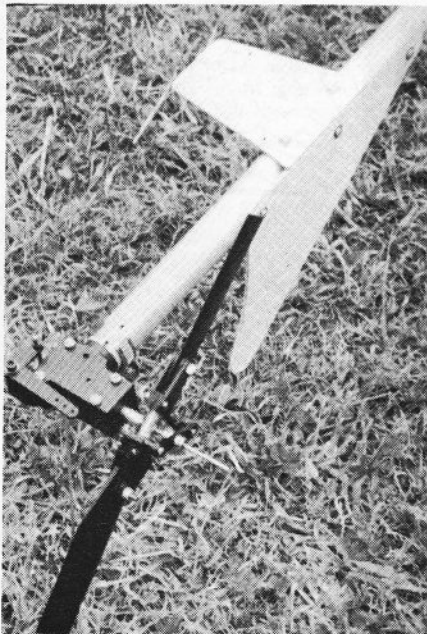
When fitting the engine, the supports and the spacer 'disc' (which in reality are rectangles) should be loosely bolted onto the chassis, making sure that there is a little play and that all is in line before tightening up the fitting bolts. I used very sharp nail scissors when cutting the cooling duct initially slightly oversize, then a very sharp knife can be used later to trim any surplus that may foul moving parts.

### Tail Rotor Drive and Boom

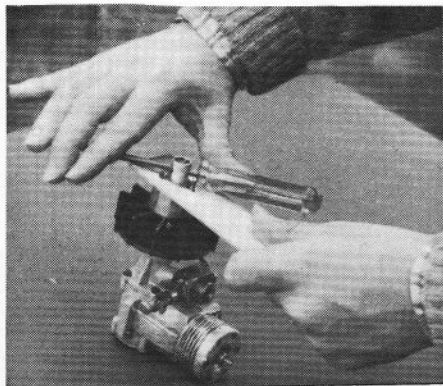
The tail rotor is driven by a shaft running inside the metal tail boom, driven by a crown gear meshing with the gear on the clutch bell. Don't be over enthusiastic when tightening the bolts that hold the boom or the bearing supports, for the crown gear ball races may get distorted. Holes for the stabilisers are already drilled in the boom and the stabilisers themselves are easily cut out of the plastic provided with a fret saw. In this kit the tail rotor and gearbox has to be constructed, and the warning on the packet — the larger of the two gears is for the tail rotor axis — should be heeded, put them on the wrong way and the rotor will whizz round too fast and the lot will probably fly to pieces!

### Main Rotor and Drive

*Mini-Boy* can be purchased with or without collective pitch, the review model having the collective option. Following the photographs, diagrams and construction notes once again







Above: the unique 'engine fan holder' is used when securing the flywheel and fan to the engine. Right: first flights were carried out with a training undercarriage.



make it almost impossible to go wrong. When constructing the main rotor shaft and drive, check that the pitch linkage — which fits into a slot in the main shaft — is not pinched by any of the set screws or by the 'carrier' bolts and washers. The one difficulty that I did have was getting the plastic main gear into position ready to be screwed up. Many Anglo-Saxon words and Cornish incantations were aimed at it and one of them must have worked for it suddenly went into place, so sharply that I thought that I had broken it.

After the rotor head is assembled with all its appendages and the blades are covered in the approved manner and bolted on, the completed head has to be removed from the shaft to be balanced. Do not omit this as an apparent waste of time for if the whole unit is not correctly balanced it will try to shake itself to pieces. Added to this it won't fly! I followed the instructions as printed and the result was excellent, not a sign of vibration.

**The Cabin**

The plywood cabin is simplicity itself to make. The later versions of the kit have an extra tray to cater for additional servos or a gyro unit, should they be needed. I omitted this as I felt that it looked more realistic without the additional floor. The tank has to be assembled and fitted in place before the wooden unit is bolted on. Put the instrument panel on afterwards otherwise you may knock it off.

I painted the inside of the canopy with three coats of Humbrol before joining it with cyanoacrylate glue. Later I reinforced the join with adhesive tape for if the canopy had a hard knock it tended to fly apart. While you have the glue handy run a little round the tank as we found that the circular tank tended to rotate in flight.

Whatever r/c gear is used the battery and receiver must be as far forward as possible (I ended up adding 6oz. of lead to make it balance). This may be a case for using the additional servo tray, for then battery and Ni-

Cad would have been over the top of one another and less lead would be needed. Everything was wrapped up well in foam and then taped into place so that nothing could move.

There will be little difficulty in getting the necessary lift on the linkages but unless you have a pitch gauge the next stage is impossible. Some kits supply wooden ones and I think this is the one thing that could be added to this kit. Static tracking can be checked quite simply by using the aerial of a transmitter as a height gauge under the blade tips. The *Mini-Boy* with the HGK 45 fitted and 6oz. of lead weighed 6lb. 13oz. Check again that everything is done up tight, especially the grub screws on the pre-assembled parts, secure *Mini-Boy* to your box, start up, check the tracking now that the blades are revolving and be ready for lift off.

**Flying**

As the *Mini-Boy* is advertised as a trainer, our first test was to see of the model would fly with a 'training undercarriage' built from light wood and rubber ball 'feet'.

At about 1/4 throttle the model rose slowly, then the test-pilot, my son, floated it to check on minor adjustments, *Mini-Boy* had flown with the training legs and the piece of string.

Now to the pilot for his reactions. "Having tested the *Mini-Boy* with the training legs and the string it was now time to test it in free flight. Despite the gusty wind cyclic control was as stable as could be, moving left or right, backwards or forwards, up or down with ease and the instructions are right with regard to the movable fly-bar weights. With the weights locked at the extreme ends of the bar this model could be an ideal trainer. However, a slight drawback is that the tail rotor is very sensitive and rapid

movements of the throttle cause the tail to kick. This could cause a problem to a beginner who tries to go it alone but if one sought help from an experienced helicopter pilot, this is only a minor difficulty.

It is obvious that when we have finished experimenting with the weights on the stabiliser this is going to be a magnificent machine. However, each aeroplane is different, so do start with the weights at the extreme ends. One more thing, please, Mr Schluter, do something about that starter cone, it eats starter inserts. I spent a very pleasurable time flying *Mini-Boy* and hovering it whilst the pictures were taken, being impressed with it and would have no hesitation in recommending it to anybody".

**Summary**

*Mini-Boy* is a very complete kit. It can be built without having to use any special tools or expert knowledge, provided that the instructions are followed carefully. Setting up the blades may cause a problem to the beginner. I would like to see a pitch gauge included and perhaps the struts for the skids made a little more robust, they tend to bend with pressure from the starter. In my opinion a high-revving engine with adequate power is a must.

Set up as instructed *Mini-Boy* is ideally suited for training. An acquaintance has a *Mini-Boy* with an OS.40 FSR and a tuned pipe and its aerobatic potential satisfies the expert.

Distributor: Jack Williams, Eastwood Beverley Road, Walkington, N. Humberside.

Price £158.95 (with collective pitch and auto-rotation).

Right: John and test pilot son David with the completed *Mini-Boy*. Below: two views of the model in flight.

