

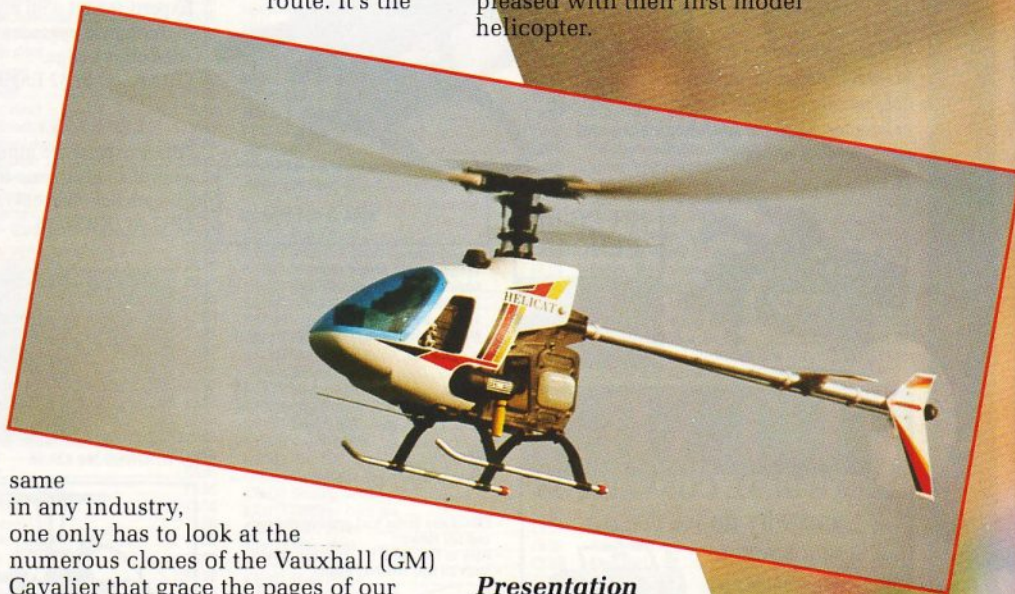


Lion Helicat Review

We check out the build qualities and flying performance of this new ARTF helicopter imported by Macgregor Industries.

designers that have followed the original 3 German pioneers of the early 70's have taken the same route. It's the

think Lion have good reason to be very pleased with their first model helicopter.



There's nothing new about 30 size ARTF (almost ready to fly) model helicopters and at first sight there's nothing new or revolutionary about the Helicat. Its general appearance is not unlike that of some of its competitors and in fact some parts of this model look so familiar that it's obvious that the Lion Co looked hard at all the current market leaders for their design inspiration. This is no criticism however, because if one were to point out any obvious 'cribbing' from another manufacturer, I'm sure that the same finger could have been pointed at his products at some stage because virtually all model helicopter

same in any industry, one only has to look at the numerous clones of the Vauxhall (GM) Cavalier that grace the pages of our Sunday supplements.

In the Helicat, this particular new blend of carefully selected features may not seem very inspiring — due to its lack of originality — but in fact they do serve to give the model its own individual character, which is unfortunately hidden until one gets the opportunity to fly the model extensively, but is then revealed as a pleasant surprise.

In the introductory part of the Helicat instruction manual it says that this design is the end result of almost 3 years of research and development. I

Presentation

The kit presentation is about what one would expect from an ARTF offering and opening the box was no disappointment. The whole thing is packed in a substantial polystyrene 'tray' which is then enclosed in a stout cardboard box that has colour photographs of the completed model and a written 'spec' of the model showing the size, weight and engine/radio requirements. A package that will not only enhance the model shop owners shelf, but will also help to persuade the potential buyer that there is something nice in there.

Opening the box

This reveals that almost all the work is done. The chassis is assembled, as is the transmission, control system (including all pushrods), main rotor, tail boom, tail feathers and tail rotor transmission. The main rotor blades are ready weighted, ready covered and ready assembled but need final balancing before they can be bolted on. All of which leaves very little for the builder to do. However there are one or two potential pitfalls so I'll go through the assembly sequence next.

Assembly

One is immediately tempted to bolt on the undercarriage (U/C) first — if only to make it easier to handle — and since this is the first step described in the manual, this is what I did. MacGregor also provided an ASP 32 Heli motor so this enabled me to start work immediately. They also include additional construction notes of their own, to complement the rather sparse manual from Lion and both should be read carefully before construction begins.

In the engine assembly part of the manual (which has no accompanying text) there is no evidence of the engine crankshaft nut being fitted after the fan/clutch unit has been screwed in place. This omission is an error but is highlighted in MacGregor's notes, where they recommend that this nut should be tightened well during the assembly stage, and to avoid unwanted disassembly later on (when the starter motor is applied to the top cone-start), they say, "the approved method of preventing rotation of the crankshaft when tightening this nut is to insert a suitable piece of hardwood through the exhaust port — it's crude but with care it works". I wasn't happy with this method since it means that the conrod would take the full force of the applied torque of the spanner - ugh !! A better method is to remove the carburettor and insert the piece of hardwood (or a toothbrush handle) down the intake to stop the crankshaft rotating. This method has held things together so far. The other point worth mentioning at this stage is that there is no extension provided for the throttle arm (although it is shown in the manual). When using the ASP motor one does need an extension but this can easily be made up by using a longer (20 mm) bolt for securing the brass ball to the throttle arm and a 12 mm spacer (a short piece of brass tube) between the ball and the arm.

The engine/mount/cooling shroud assembly can then be fitted to the main frames and if the additional notes are followed, no further problems should be met.



Tail feathers and gearbox casing are cleanly moulded, as is every other plastic part of this model. Note dual ball raced tail blade holders.

Radio Selection and Fitting

Since both the helicopter and engine came from MacGregor, I thought it appropriate that I should use a JR radio control system, which is another excellent product range imported by them.

The airborne pack consisted of 5 NES507 servos a 7 channel receiver, a 4N1000 (1 Amp) nicad pack and a BCM (Morley) Gold gyro. I didn't have a spare JR gyro but the Gold was fitted with JR leads and I know works well with this equipment. Fitting the servos was easy using the screws provided by JR but the manual suggest that you omit the brass eyelets. These are designed to avoid overtightening of the screws which will reduce the vibration absorption qualities of the rubber grommets and I could see no reason for this instruction and therefore ignored it. It could be that the mounting holes in some servos don't match those in the servo trays and the omission of these eyelets allows a little latitude here. With the airborne pack loosely placed in the recommended positions and the canopy added, my Helicat was slightly tail heavy and with a rearward tank position the addition of fuel could only aggravate the situation. So, what could be done? Nothing perhaps! I have flown other models with a rearward balance. Add lead weight — no, I couldn't do that. I took the most acceptable option (to me) of re-arranging the radio layout. The Receiver was moved further back to below the cyclic/tail servos and with the nicad strapped under the forward tray, there was enough room between the tray and canopy to bring the gyro to the front. This gave a slightly nose heavy balance with an empty fuel tank.

Making Good Connections

Now the servos were connected to the controls with the factory assembled pushrods. No problems were encountered with the cyclic, collective or throttle but the tail rotor pitch change mechanism was a bit of a

headache. There was too much friction in the operation of this control and it took a while to track down the cause, but eventually I diagnosed the fault to be an error in the moulding of the pitch slider yoke. Everything worked fine with only one blade holder connected but when the other ball was popped on, quite severe binding occurred. A little fettling with a scalpel made things better but it's still not perfect. Having spoken to other Helicat owners - none of whom have experienced problems in this area — it would seem that I have a faulty component and I'm sure a quick call to MacGregor would put things right in quick time.

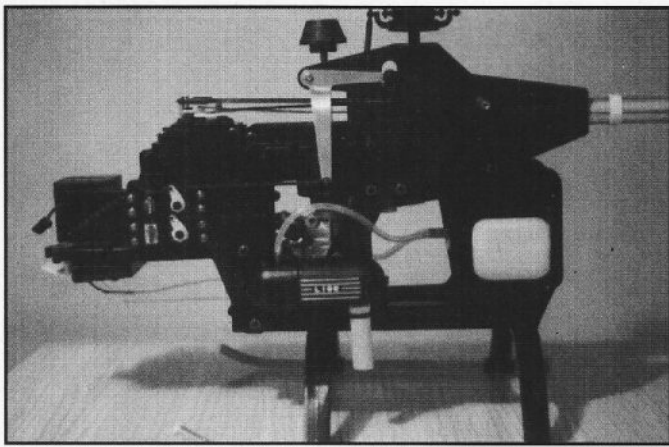
Making the Right Connections

Piping up the fuel tank with one line to the carburettor and the other to the silencer pressure nipple should be easy - and so it would if you could identify which tank outlet pipe went where. The fuel level in the tank is easily identifiable but the tank is opaque enough to make identification of the clunk line impossible. Disassembly showed in fact that they were fitted in the obvious pattern of the left one going to the pressure nipple on the left side of the model and the right one going to the fuel feed nipple of the carb' which is on the right side. But there's no mention of this (or anything at all about tank connections) in the instructions and this is bad, since incorrect connections by a novice could cause an early demise of the model.

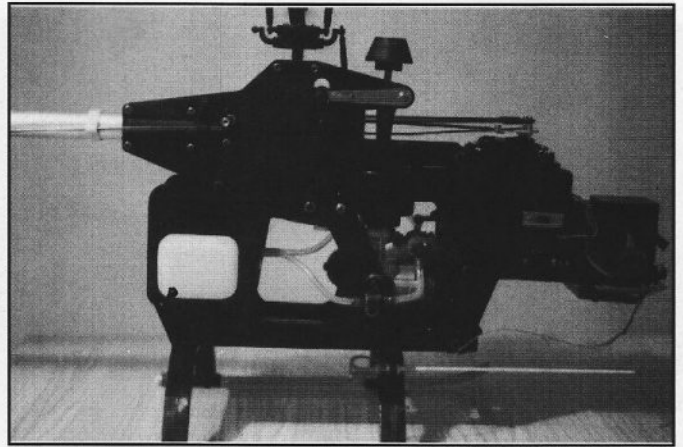
The silencer is included in the kit and I added a short silicone tube extension to the outlet, which so far has kept the model free of the dreaded coating of exhaust residue.

Final Assembly

The canopy was refitted after cutting out a section for the silencer, then applying the decals left me just the balancing and fitting of the main rotor blades. Final balancing was easily achieved using the trim strip section of ▶



Left hand view of the completed model (less canopy). The exhaust extension is not necessary but does keep the model clean. The top-cone start is of the disengaging type — no difficult alignment problems here.



Right hand side showing a couple of personal extras. An in-line fuel filter and a Deans 'whip aerial' — efficient to well beyond the limits of my eyesight.

strip the root section of its covering and epoxy the plastic doublers

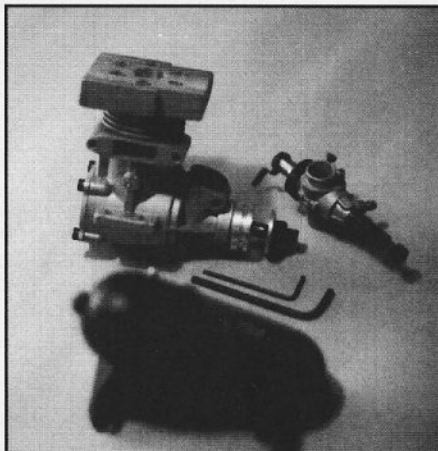
my impatience which was urging me to 'beat the patch up'. Further flights out of the hover proved to be a little uncomfortable because of

inconsistent engine running due to incorrect glowplug selection. With the recommended ASP No 4, fitted at the next session, I found no problems at all. As I stated earlier, the Helicat has its own individual character and I think this is due to Lions attempt to provide a helicopter for all requirements in one model so please bear in mind that the following comments refer to a model straight out of the box, with the standard muffler, no

add-on goodies and an engine running on straight (no nitro) fuel.

I feel it has the correct control responses for a beginners first model when set up as the manual says, which gives a very moderate head speed. One could reduce the response further by fitting Kyosho Concept DX metal control paddles but I think it would be easier to get used to the quicker response than it is to live with the

The Helicat as it arrives. The ASP is not normally included but the silencer is.



the decal sheet but a certain amount of unease was felt when fitting the blades to the rotor head. This was because when I'm using lead weighted blades (such as these) I am never happy unless they are fitted with glued on, profiled wooden reinforcements at the root or have substantial glued on plastic root doublers (like X-Cell). These blades just had small plastic doublers making up a sandwich thick enough to fit the blade holders, all held together with one self tap screw and the blade pivot bolt which is only 'nipped up' and doesn't aid root integrity in any way. I was tempted to

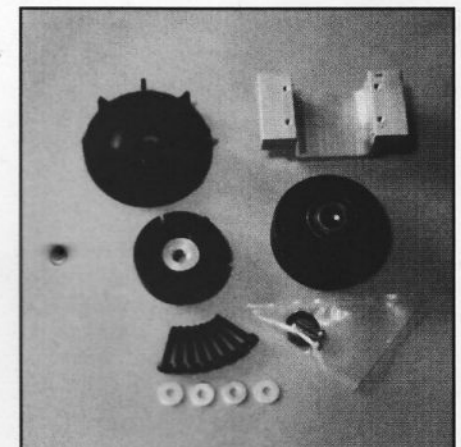
on, but I wasn't sure if epoxy would 'take' to this particular plastic and I have to admit that I didn't want to spoil the nicely applied covering. Since no mention of this was made in the instructions I 'bit the bullet' and fitted them as supplied. However I know that after the slightest bump involving the blades, I will not be happy to fly again without checking for unseen damage that can easily be hidden by the plastic heatshrink covering.

So Now We Have an ARTE, RTF

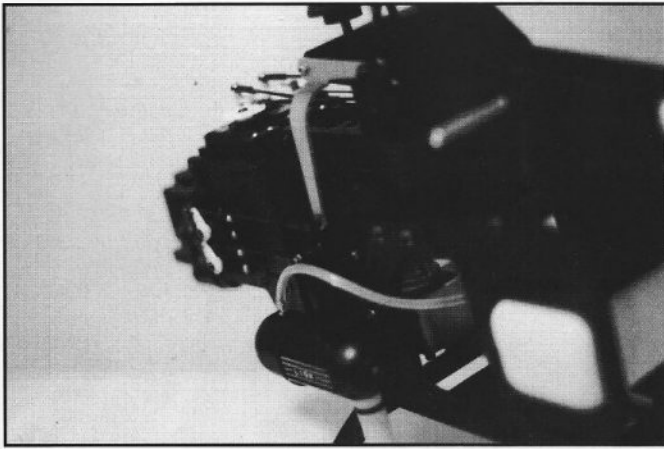
I was now becoming quite accustomed to the shape of this model and can imagine that most owners will feel a sense of pride when they take their Helicat to the field for the first time. It's a bit bigger than the average '30' and like most of these designs, what you take to the flying field is an exact replica of the pretty one on the box label that first took your eye and all that without having to resort to paint pots or extensive tool kits.

In The Air

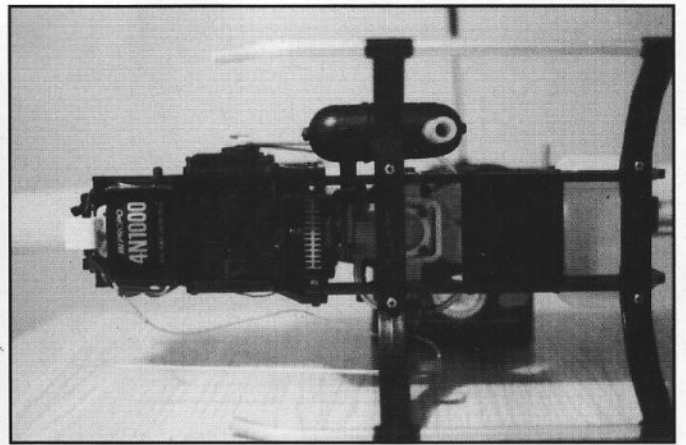
The first couple of tanks were flown just in the hover, fortunately in flat calm conditions and the hovering manoeuvres proved to be very precise and therefore pleasing enough to check



Clutch/drum, fan, motor mount and fasteners, all of which have to be assembled before fitting the motor.



This photo was taken to show the simple throttle arm extension, sorry about the focus elsewhere.



Underside view showing that a neat and tidy radio installation is made easy with this model. ASP 32 is a real 'powerhouse' — inexpensive too.

softer response and then have to re-acclimatise oneself when the lighter paddles are refitted at a later date.

The mechanical offset shown in the manual for the throttle and collective controls gives the required moderate head speed and soft responses and I recommend this set up for novices. I set these controls to neutral and then adjusted the transmitters hovering throttle/pitch to restore the offset. I did it this way because I knew that I would only use the advised settings for initial testing and evaluation.

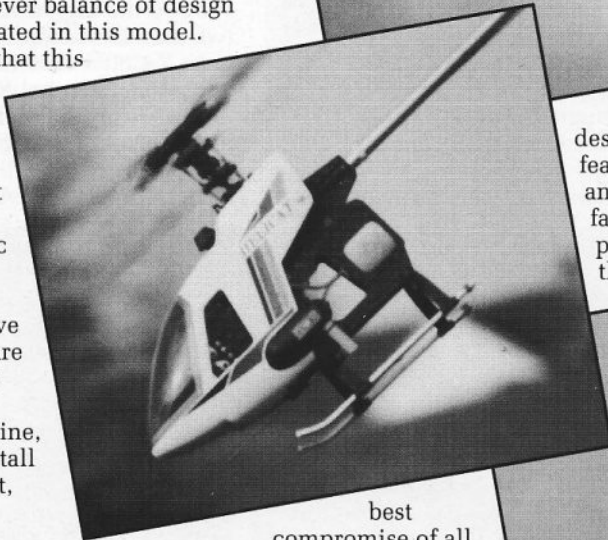
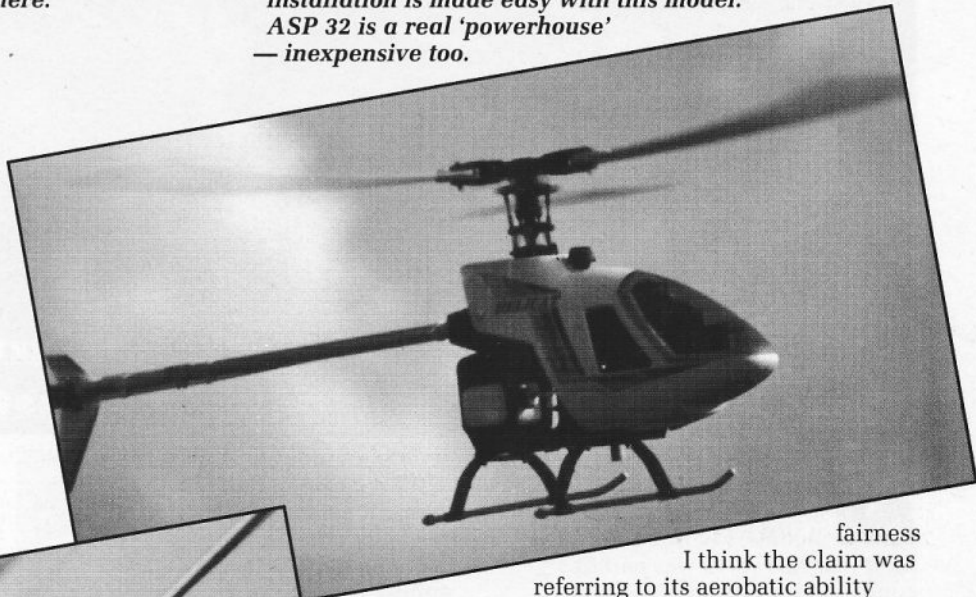
With the neutral trim the Helicat is noticeably livelier (and somewhat noisier) and this is where one can appreciate the clever balance of design features incorporated in this model.

Bearing in mind that this is probably the biggest and heaviest of all the 30 size plastic imports, it has quite an amazing aerobatic performance. Gaining height during consecutive loops is easy, as are axial rolls (left or right) and it is capable of a genuine, readable rolling stall turn. And I repeat, this is all done without add-on goodies, power pipes, glass blades or nitro-methane. Autorotations are good too.

Conclusion

Please remember I'm talking in 'out of the box' terms in the following comparisons.

It doesn't have the uncanny hover stability of the Kyosho Concept DX, it doesn't have the stunt ability of the Kalt Space Baron and it doesn't have the incredible straight line stability or autorotation reserves as the Hirobo Shuttle ZX. But what it does have is more than a modicum of all these

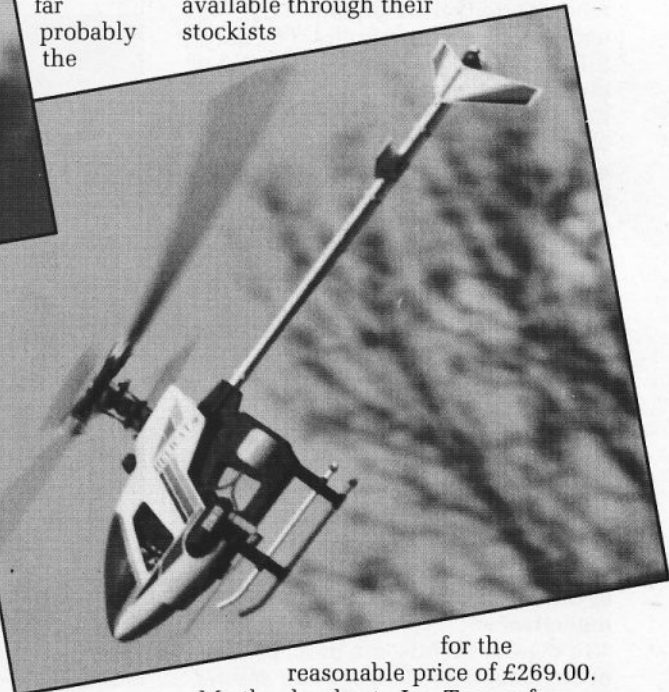


best compromise of all these things rolled into one model.

MacGregors staff claim that this model will do the FAI schedule with ease on a .32 and I would agree with that — with one exception — and I cannot think of any reason for fitting a larger engine. That one exception is the 180 degree auto, different blades may help but in standard trim these are a bit 'iffy'. However, in

desirable features and is so far probably the

fairness I think the claim was referring to its aerobatic ability and I think it's a fair claim. My thanks to MacGregor Industries for supplying the helicopter and engine for this review. The Helicat is available through their stockists



for the reasonable price of £269.00. My thanks also to Jon Tanner for taking the flying shots. □