

KALT K5 MINI TEST

Kalts plastic head on test by J.D.

The Kalt company have probably produced more rotor head designs than any other in the model helicopter business. It seems to be the way with any Japanese operation — in any engineering discipline — that redesign and retooling seem to be undertaken at the drop of a hat. All this may well be going on in the laudable search for excellence, but it is sometimes difficult to see what improvement has actually been achieved, rather than a cosmetic change to follow fashion. If you extend that argument back into model helicopters, I freely accept that not being able to tell the difference may be more a reflection on my lack of discernment rather than lack of technical progress. However, it must be said that Kalt's last "low end" head — the flex beam type that came as standard on the Cyclone for some time — was not universally loved. The latest head to adorn that machine, and others of the Kalt line, is a horse of a very different colour.

It's Plastic

Examination of this device shows considerable continental European influence. It is a "shaft through the centre supported on two rubber 'O' rings" type of deal, with very well engineered plastic parts and everything that moves is on either a ball race or a combination of ball races and thrust races. The substantial mixing levers are drilled and tapped to allow a choice of Bell/Hiller mix, and come set at 50/50.

Thanks to the Jim Perkins organisation I have been running one of these on the old Hoverpoint review Cyclone for some time. Although it would seem that this would be an ideal machine for the testing, in the sense that the Cyclone now comes as standard with this head, this was not entirely so. Unfortunately, my example has seen quite a lot of running — the model, not the head that is — and the collective system on it is, to say the least, rather sloppy. The engine — an old 50 — is also fairly exhausted. All in all, this is not the best way to test a new piece of kit!

I also have to say that there have been slight snags associated with one feature of the head. Because, unlike the Heim, of similar layout, the pushrod goes through, rather than round, the hub to drive the flybar, the bar through the centre has to be slotted. This, in turn, means that should the bar rotate, the pushrod will be trapped or severed. This is clearly unacceptable!

Kalt have solved this problem by arranging for a pivot pin to pass through the centre of the bar, and be retained by two plain bearings in the side of the head casting. This allows the bar to teeter, restrained as usual by the rubber 'O' rings, but prevents it from rotating unnecessarily. Unfortunately, it would appear, on some examples of the head, the added friction of the teeter pin and the geometrical fights which can result between it and the 'O' rings cause the model to develop a severe attack of the "nods". My combination demonstrated this to the full. At low rpm the model flew beautifully, and in fact the head was immediately impressive. However, any attempt to wind up to a more normal rpm resulted in severe nodding. Communications with John Wallington and, at his suggestion, Dave Whitney, indicated various possible 'fixes'. Summed up, these consist of either reducing the diameter of the pin at the ends, or removing the small plain bearings that the pin operates in. Both of these are accessed by removing the small aluminium plates, held by two self tappers, on the side of the hub.

Possibly the easiest solution is to disassemble the hub, pull out the plain bearings and then reassemble with the pin as original. This allows the bar through the centre to float both up and down and also slightly round and round — if you get my drift. Under these circumstances, there is no possibility of the pin causing a geometric fight with the 'O' rings, but the bar cannot rotate far enough to damage the pushrod. I went a slightly different route — mainly to avoid, at least initially, any per-

manent mutilation of the head, and, in fact, created a stepped pin by using a needle roller from a Porsche gearbox (poser) with a brass sleeve to bring it up to the original pin's diameter, where the mast fits. Either way

The Kalt K5 head on the M.H.W. G.M.P. Legend. Note the chunky blade holders, ball-raced mixing levers and the small plates at the side to cover the offending pin — see text.

this works and the result is an extremely effective head.

I have never been that comfortable with my Cyclone, I must say that this is more a reflection of my flying style than the Cyclone, in that I prefer the 'European' handling of instant action from movement of the stick. With the K5 head, modified as I've just described, I was happy to fly the Cyclone as fast as it would go, limited only by the power of the somewhat superannuated 50 driving it, and did a perfect loop on the



second high speed pass. Having said that, in the hover, the model was extremely comfortable, the black plastic Kalt blades offering very solid hovering stability and I would have no hesitation in saying that the model is now flying better than it has ever done before. The lack of power in this airframe due to the very tired engine, and the slop in the collective linkage has meant that I have not taken it as far as I would have liked but the experience does bode very well for the new Cyclone II

which features this head as standard.

Ringling The Changes

Having got this far, I felt the urge to experiment rather faster, as I felt I wasn't getting anything like the best out of the head, and cast about for a quality 60 size machine with a much more precise pitch-up system to try the K5 on. I was initially considering fitting it to my trusty and well-understood AvanteGarde, but it became apparent that the amount of surgery

that would be needed to run the head the other way was just not on. The result was the hybrid seen here.

What we have is the review GMP Legend fitted with the K5 — it dropped straight on. In order to operate the fly bar I fitted an old style Hirobo wash-out unit and am using Kalt symmetrical glass blades. I retained the Kalt flybar and black paddles, but moved the blade control links in to the inner holes for less Hiller and more direct mix.

The result is very satisfactory. There is good hovering stability, combined with remarkable control power — a set up that inspires a great deal of confidence. I handed it over to co-editor Briggs, recently, and he was doing disgustingly good rolls and loops right away. At the end of the session he suggested that the result would make a good F.A.I. machine. I certainly intend to fly the machine a lot more in this guise. In short, it works well and I like it — nice one Kalt. □

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