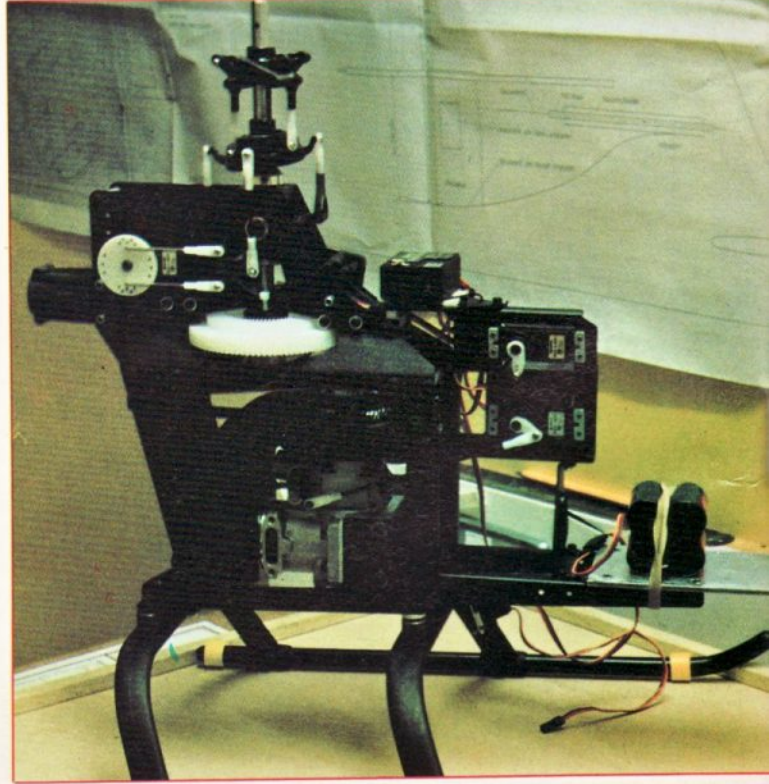




OMEGA PRO



M. B. builds and flies Kalt's flagship.



In late 1988 J. Perkins Distribution Ltd., took over the importation of Kalt helicopters — amongst other important lines — and retained the services of John Wallington as — in his words — Manager responsible for anything to do with helicopters.

Your editors have always had a close and friendly relationship with John and we were delighted to see him again by invitation to inspect the JP premises which now house the Kalt Helicopter lines.

In recent times the Kalt reputation had become somewhat tarnished as a result of a shortfall in spares back-up. And it's precisely because of this that JP (Dist) have literally gone over the top in the spares department.

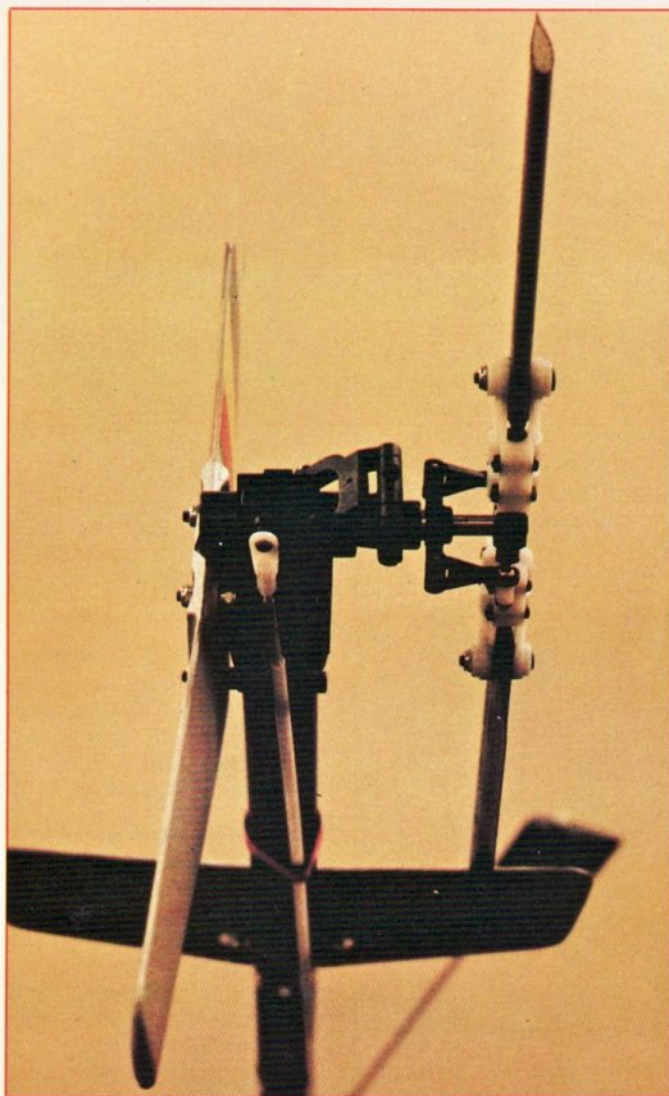
It is their intention to put Kalt on the top rung of the ladder and if sheer effort is the medium for success we're sure they will make that position.

Never before have we seen such a vast stock of spares in one location, plus of course large stocks of kits, engines and radio outfits. And they say that there is more to come.

To any helicopter flier it would look like Aladdin's Cave

Far left, a rear view of Omega showing how tidy the exhaust system is.

Left, this represents about seven hours of concentrated effort, including removing and refitting the clutch top bearing which is offset longitudinally. This is pointed out in the instructions but was printed in Japanese. Otherwise no problems.



Tail rotor box comes prebuilt but dry. Good job we checked and filled with lubricant. It runs so fast it sounds like a .45 turning a 9 x 7.

to make our way home, John Wallington presented us with a kit for the Omega Pro and asked us to review it for them.

And here you have it.

Introduction to the Omega Pro

Last year we had seen the Kalt display team flying the Omega Pro in pod and boom form and John Wallington also had one in the beautiful Omega Jetstream fuselage which was a factory built model. What we didn't realise then — as we do now — was that the Omega was a completely new model. Certainly in our kit the only commonality with its predecessor was the carbon fibre tail boom and the fuel tank. As we go through the review you will see that Kalt have discarded the usual development route of improving an established set of mechanics. This time it's a whole new deal, even a new design in ball links.

The kit presentation

Presented in two boxes, the first contains what is called the Omega Pro Accessory Set. This includes the canopy, u/c, tail boom, tail gearbox, main rotor head, tank, boom supports, tail surfaces, main blades (H series), tail blades, tail snake, decals, the nuts and bolts pack and an instruction manual pertaining to the pod and boom version of the model.

The second box comprises two vac-formed trays which

and in the few hours that we had available to us, it was impossible to take it all in.

We did get to inspect two new helicopter kits. The first was the Baron 60EC, a sort of economy Baron 60. The other one was the all new Omega Pro.

The Omega Pro is intended

to be the new flagship for Kalt, ousting the Baron 60 from a position it has held for a long time, although as far as we know the Baron will continue to be sold alongside its new stablemate.

As we departed from the Greenwich High Road premises

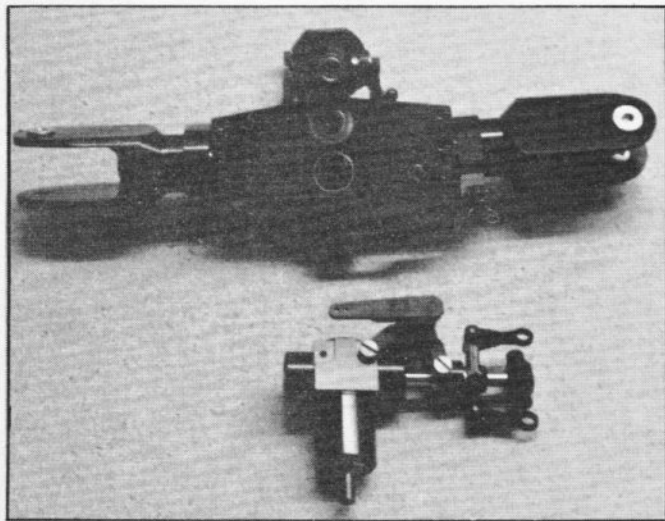


contain the complete Omega Pro mechanics set and a smaller box containing the clutch/fan assembly, cooling duct, duct mounting kit and starter belt.

Looking a bit deeper

We could fill this issue with descriptions of the new parts which go together to make the Omega Pro. That wouldn't do so we'll briefly run through the items of most interest.

With so many goodies in the boxes it would be easy to bury the facts in superlatives but we'll try to contain our enthusiasm and exercise some restraint here.



The main rotorhead

Starting from the top — so to speak — the rotorhead supplied is the Blackhead 10S. This head is designed for both aerobatics and hovering and is of the see-saw type, which refers to its single teeter pivot. The Omega can be purchased with the 10FS head, the FS refers to 'flapping and see-saw' type teeter control. Others refer to this type as DDF but what's in a name?

Kalt recommend the 10FS for added precision and the 10S for increased aerobatic performance.

The rotorhead is built to very high standards, thrust races are fitted on the blade feathering spindles and just about every moving part is ball-raced.

The blade grips are supplied with spacers to accommodate the standard Kalt 12mm blade roots but when these spacers

The paddles and weighting kit. It might be wise to start with the full length weights if the relatively light wooden blades in the kit ('H' series) are to be used.

are removed the grips open up to 18mm which is wider than the other standard — 14mm — recognised by Hirobo, Schlüter and Heim etc., — very puzzling.

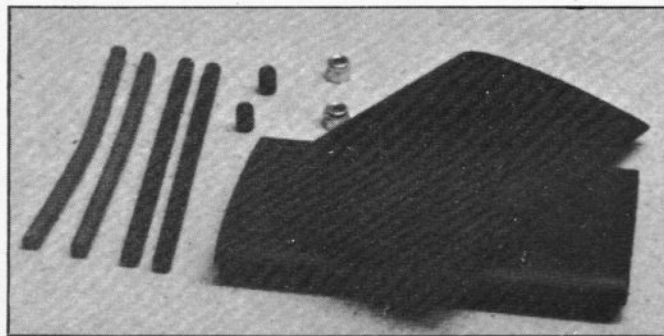
This rotorhead is fully built, only the flybar, paddles and pushrods need fitting.

The flybar/paddle assembly is unique. The flybar is longer than usual but the paddles go fully over the end of the flybar and are followed by 4mm Nyloc retention nuts. This might seem a bit OTT, but the leading edge of the paddles is moulded with a deep hole along the leading edge to take lead rod weights, used to load up the flybar disc.

Pre-built main and tail rotor assemblies, built and finished to a very high standard. The tail box can be rebuilt for opposite rotation — should you want to use it in a scale fuselage.

These rods have to be cut to length to suit your own taste (no guidance is given), any unused space is filled with a light plastic rod cut to match and a 5mm set screw keeps it all tight. You can see now the reason behind the Nyloc nuts on the ends of the flybar.

The theory is that the additional weights increase the rotor disc stability but reduce the aerobatic potential. We are



flying our Omega without any added weights but with 200 gram blades. It's possible with lighter blades the paddles will need loading up in order to maintain disc stability.

Tail rotor and gearbox

The gearbox is another precision made item and its appearance suggests that it could have been made by a quality camera manufacturer, as does the pitch change mechanism. This mechanism is a departure from Kalt's usual 'rod through the shaft' set up. Here we have a bridled bellcrank operating a sliding plate situated between the box and the rotor, rather like the Heim method but without using a ballraced assembly. The lack of ballraces does not mean that the pitch change function is in any way inferior however. It has been very cleverly designed to be completely free of backlash and friction, the slightest tweak on the tail blades can be felt at the servo output end.

While we are on the subject of tail blades, those supplied are of the hardwood type — symmetrical in section and require ply root strengtheners to be

Component layout for the clutch/fan/duct etc., three different 'propnuts' are provided in the kit to suit a wide variety of engines. This complete package is available as a retrofit item for the Baron 60.

glued on before the wood grain is filled with paint or some kind of fuel proofer.

We decided to substitute those for the new type of carbon fibre blades from Northern Helicopter Products. Dave Whitney (Mr NHP) had heard of our acquisition and sent us two pairs of his revised (thicker) section blades for our comments. One pair was of the standard length but the other pair was of reduced length specifically made for the Omega pro which has a higher than usual tail rotor speed. The new NHP blades are now supplied with a metal bearing in the mounting hole and also come with plastic spacer washers for use on models with wider blade grips, such as Heim to name but one.

The tail rotor box is driven by a 2.2mm steel drive wire retained by a new style of coupling but utilising the usual 90 degree bent ends. With the Omega the coupling cores are ready fitted and the ends of the drive wire are present.

The drive wire is supported in the usual single plastic bearing, midway down the tail boom which doesn't inspire us with confidence but has proven to be trouble free so far.

The tail boom is supported by two thick wall light alloy tubes fitted with screw-in plastic ends

that are pinned with 2mm HT screws.

The tail feathers are another departure for Kalt in that they are — we think — plywood cores, sheathed in some kind of flexible but durable plastic.

Mainframes etc.

As mainframes go these are very heavy duty. They have a different profile to those previously seen on Kalt helicopters, having a much squarer appearance and a lightly textured finish. They are cross braced in many places with aluminium tubular spacers plus all the aluminium bearing support blocks and where the plastic u/c cross struts are fitted a metal strip is put in first to further preserve the integrity of the assembly. Resulting in a solid and rigid unit.

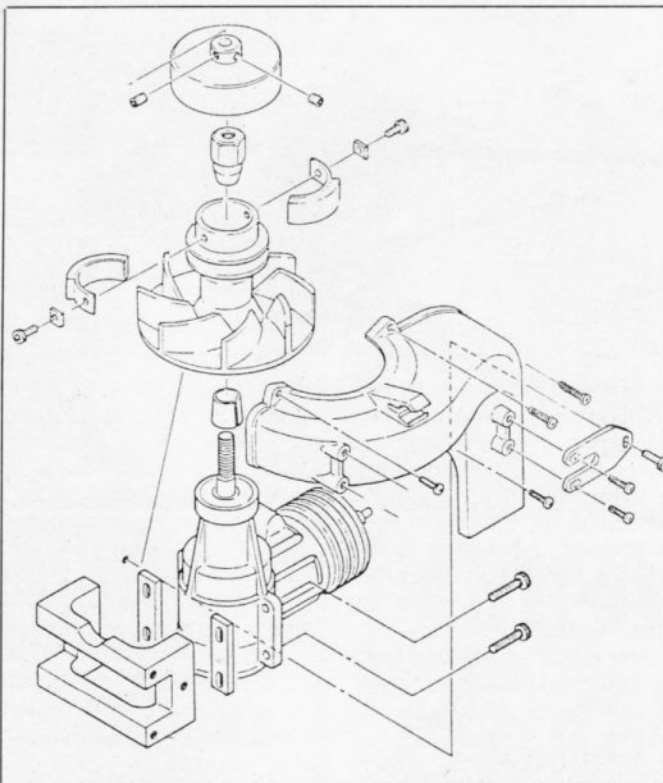
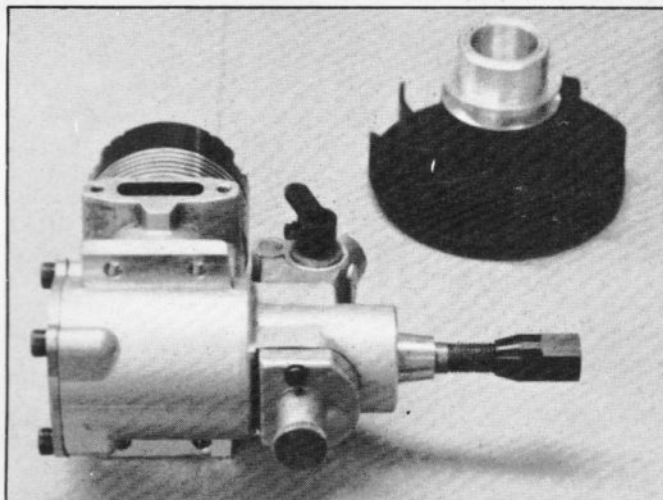
Before starting on the main frames, the fan/clutch assembly is mounted on the engine, after first removing the prop driver and in the case of the Yamada .61 that we are using one also needs to remove the Woodruff key which acts as a driver.

These are replaced by a split tapered collet and then the flywheel/fan is pushed over the crankshaft. This assembly is unique in having an internal taper at each end, the fan assembly is retained with a purpose made propnut — shown clearly in the photos — which has a taper on one end and is fitted with a recessed needle roller bearing at the other end that locates on the spigot in the centre of the clutch drum. The whole thing is then nipped up with a drop of thread-lock, ensuring exact concentricity first time, no wobbly bits here — what a relief!

Returning to the clutch, this is a simple but clever twin trailing show arrangement that is easier to illustrate in pictures than words — see the sketch. It has no separate springs or supports to break and the only points of wear are the friction pads which look as if they will outlast the rest of the helicopter.

The fan is of the convoluted vane type which is known to be more efficient than the usual straight vane example. It sits in a very tight fitting duct where the only escape for the cooling air it creates is over the cylinder and cylinder head.

The engine is first bolted to a light weight mount between the side frames and then the two piece ducting is fitted from either side, screwed together and secured with four rigid



stays that are retained by 3mm bolts which go through the side frames.

It goes without saying of course that we fitted the very

tasty Kevlar starter belt before bolting the engine in place.

Turning to the main shaft now, this is a hardened hollow item which promises to be im-

This shot combined with sketch 'A' shows how the unique design ensures automatic alignment of the clutch/fan assembly.

pervious to any kind of abuse except the most severe. If that is your concern it can be replaced with a Titanium version at £64.95. The main shaft — like the other shafts — is supported in sealed bearings which reduce wear and maintenance levels and the vertical loads on the main shaft are taken up by a thrust bearing fitted beneath the main gear. That should stop the uncalled for pirouettes in the dying throes of bungled autos.

The main gear is machine cut (not moulded) and the tail crown drive is also machined into the top rather than a separate metal item bolted on (as on the Baron 60). This could look like a retrograde step but it most definitely is not. It's lighter and quieter in operation and main gear replacement is not expensive — relatively speaking.

Radio mounts

The two cyclic servos are bolted through the side frames above the tail output drive, the other three servos sit at the front in a purpose made aluminium tray assembly which also acts as a gyro mount. Nicads, receiver, gyro amplifier and any other items are situated on the usual plywood tray in front of the tank position.

All servos are mounted with

It would be wrong to describe the Omega as pretty. We prefer to label a macho machine like this as 'andsom'. It's also a big one, as can be seen when compared to a Legend which is not exactly small either. Right handed tails are catching on eh!



cap-head screws through the grommets into purpose made tapped aluminium plates. All the mounting holes are elongated to accommodate differing sizes of servos. Both cyclic servos are sited so far back that extension leads are needed to reach the receiver unless of course you

The completed Omega Pro in flight, returning to the pad after its first gentle circuit.

The powerhouse

A word or two about the choice of motor wouldn't come amiss at this point.

Regular readers of this magazine may remember that Mike Billinton reviewed the Yamada YS61 in our very first issue. When he had completed his tests on this engine he then passed it on to us for a subsequent flying report.

We have been sitting on this

model these days is the 'through frame' system which is not only very effective but it's also compact and aesthetically pleasing.

Unfortunately the people who make these systems have not yet heard of the Omega Pro and therefore a suitable manifold was not available to us when we wanted one.

While we were pondering on this one we just happened to

see this one virtually encloses the whole of the sideframes and — in our opinion — looks to be far more streamlined and certainly more attractive than its predecessor.

Even the undercarriage is a revised item, the old Cyclone style cross struts have been replaced with a new design which has forward swept legs. They obviously won't improve the performance but they look nicer.

Setting up

With the exception of the two cyclic controls — which are quite specific — no setting up directives are supplied. Presumably Kalt believe that anyone purchasing a model helicopter of this calibre will want to do things his own way, a sentiment we would tend to agree with.

Nevertheless in the next issue we will describe our final settings and give a full report which will include all aspects of flying this thoroughbred machine, from the hover to the auto.

We have in fact test flown our Omega but with only four flights under our belt we think that more flying needs to be done to give full credit to a model such as this.

Why only four flights? Well we have sent the Omega to Earls Court exhibition centre on sales promotional duties for Jim Perkins. They have promised to look after it and return it as soon as possible so that by the time our next issue is out we will have done lots more flying, which will enable us to report fully on its performance capabilities.

See you all at Sandown Park. We'll have the Omega there.



place the receiver on the gyro mount.

Linkages

It soon becomes obvious to the builder that the control linkages have probably had more thought applied to them than any other area of design. All of the pushrods are short and therefore rigid, the cyclic controls are of a closed-loop design. This means that even the servo output backlash is reduced to an absolute minimum.

Where possible all control pivot points are ballraced to reduce friction and sloppy operation and the collective pitch slider mechanism is of a revised design using two diametrically opposed push rods, again reducing backlash.

Even the drop-arms that drive the inner ring of the swashplate are dual ballraced. All this adds up to an amazingly tight but friction free control system. Just as in the tail linkage the slightest tweak on the blade grips can be felt immediately at the servo end of the controls.

Just for future reference it's worth noting that the sideframes are pre-drilled to accept the mounting plates for the Jetstream fuselage option, in fact the brackets and other hardware for this exercise is included in this kit.

motor now for a few months waiting for a model such as the Omega to come our way, not wanting to fit the engine into the first model to come to hand. We feel that the Omega is a perfect match, if it is to be used in serious competition circles then a powerful engine is the first consideration.

We can also claim to be keeping things in-house since JP also import the Yamada range of engines.

Naturally we also wanted to get the best out of the engine, which meant using a tuned pipe exhaust system. The obvious choice for any pod and boom

notice that the manifold that is made for the MAS Excell looked about right, except the angle was wrong. A word in the right ear, in this case Brentford R/C, and we had the Excell item the very next day.

Using the soap and heat treatment and a little caution we were able to open out the 180 degree bend to one more suitable for our needs. As you can see in the photographs, the manifold looks like it was made for the Omega.

The cosmetics

To finish off there is the new Omega Pro canopy. As you can

