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REVIEWED

The Kalt 30 Baron S



The Rare Vario BO 108

EVENT REPORTS



SANDOWN '98

PÖTING CUP—
3D SHOWDOWN

TRAPLET
PUBLICATION



**TWO YEARS FURTHER ON AND KALT HAVE
RELEASED THE 30 BARON S WITH A
TOOTHED BELT TAIL DRIVE, HOW WILL IT
STAND UP TO 3D FLYING?**



Kalt's latest offering, the Baron 30 'S' certainly had some history and tradition to support it. Back in the days when I was a committed fixed wing flyer I remember Kalt's first competitor in the 'plastic fantastic era', the Space Baron. Next came two rather adventurous blokes chucking around the sky the up-rated version, the Space Baron 'S'.

No matter how disinterested I pretended to be, I couldn't help but be fascinated by these little machines and how aerobatic they were!

The Space Baron has also earned great respect in drag racing events and still appears to be a popular choice, being capable of handling the very high head speeds required to be competitive. Back in 1996 Kalt released a completely new 30 size model, the Baron 30. This was from the start designed with the intention of being a multi-role machine, capable of being flown with 2 stroke, 4 stroke or electric power. The Baron 30 has proved to be both popular and versatile with its light but durable

construction and Kalt has now demonstrated their commitment to this 30 size helicopter with the launch of the traditional 'S' version.

So What's Changed?

The most obvious difference is that Kalt has opted for a toothed tail belt driven tail. With so much emphasis on carbon tube drive systems, this may at first seem like a strange choice. However belt driven tails are powerful, reliable and durable in operation, especially so in small models where their overall length is shorter. The crash resistance of a tough, well constructed belt is also very good, so perhaps Kalt's decision isn't so curious after all. A machined one piece engine mount is also included, this improves the rigidity of the side frames and makes the engine mounting much simpler. The next obvious step is to improve the control system of the Baron, this is achieved through the addition of fourteen ball races and two thrust races. The ball races are strategically

installed throughout the mixer arms, flybar cradle and collective pitch cradle. Thrust races are installed in the main-blade holders, also increasing accuracy and durability at higher head speeds.

So sensible improvements have been made to the Baron 30 'S', concentrating on reliable increases in control accuracy, and tail power. The Baron already possesses a good, strong clutch and drive train system, top-start is standard and the cooling fan has proved to be very efficient despite its small size. The swashplate is adequate and metal balls are featured everywhere, a nice touch is that the metal balls are also supplied for the servo arms! The plastic parts of the helicopter can't truly be described as plastic, they are glass fibre reinforced and really are strong and stiff. The canopy is of the 'almost' unbreakable moulded plastic type. The tail fins are flexible and also give the impression that you could jump all over 'em and still cause no real damage. So all in all, the standard Baron 30 is a good package, perhaps stealing a little bit of the glory from the 'S' version. However even those entering this fascinating hobby, would without a doubt feel the benefits of the 'S' version very quickly indeed, noticing the improved precision in the hover and a more predictable tail response.

Despite its low price the Baron 30 'S' is probably more suitably aimed at the intermediate flyer up to and beyond the 'would be 3-D flyer' and whilst building this model I was certainly looking forward to seeing just what it is capable of!

Let's Get Building

As this model has been reviewed in both standard forms, 2 and 4 stroke! I'm not going to bore you to death with a blow by blow account of how to put it together. Instead preference will be given to the parts that actually differ in the 'S' version. However if I have been suitably 'impressed', then I will obviously pass on exactly what impressed me and why.

The first step in any kit construction is to read the instructions, and immediately I was impressed! They are more of an instruction 'bible', 128 pages of clear, concise instructions. I wish the manual for my car

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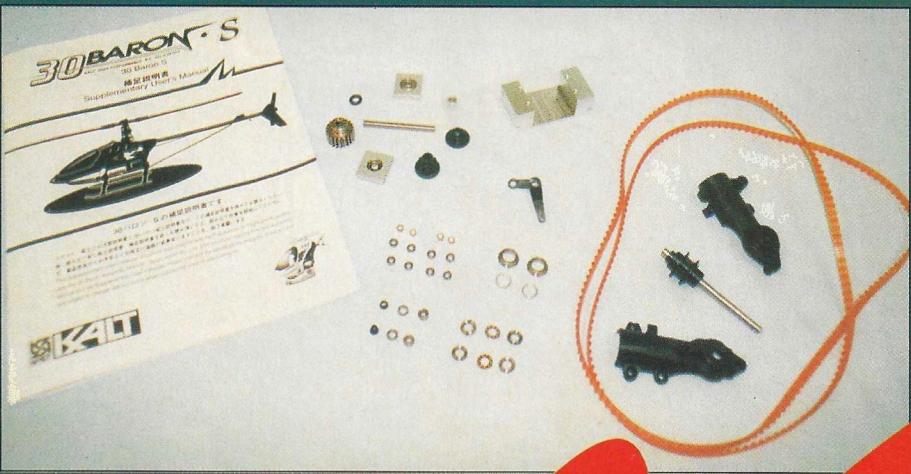
J Perkins Dynapipe is working well with the Webra 35. You can also see the length of unsupported tail pitch wire which worked surprisingly well.



was as clear as this! Kalt start by telling you what additional equipment you will have to purchase, then move on to tell you exactly which tools are required to build the Baron. Detailed descriptions are also given to the various types of nuts, bolts, screws, washers and bearings used throughout the kit. Construction sequences are clearly shown and when you eventually reach page 96, Kalt even tell you how to start the engine, then move into trimming, tracking, tuning etc. etc. 'Bit over the 'bloomin top 'init?', you say :- Mr Experionso.

'Not so', I say. If it's your first or second model, follow these instructions carefully and success is almost guaranteed! The Baron 'S' parts are covered by a supplement instruction booklet of 11 pages. The supplement is produced in the same format as the main book and reference is given to ▶

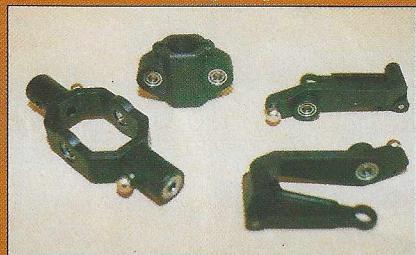
These are the new bits, toothed belt tail drive and one piece engine mount being the most obvious plus ball races are now more evident.



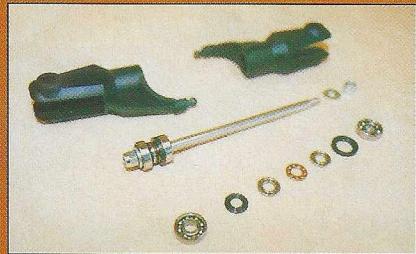
Baron S



New tail drive parts, note the substantial driven gear and the aluminium bearing blocks - designed for longevity!



Twelve ball races are now found in the mixer and flybar carrier. Note the ball located on the inner hole of the flybar carrier which reduces the flybar authority.



Thrust races in the blade holders are standard in this kit.



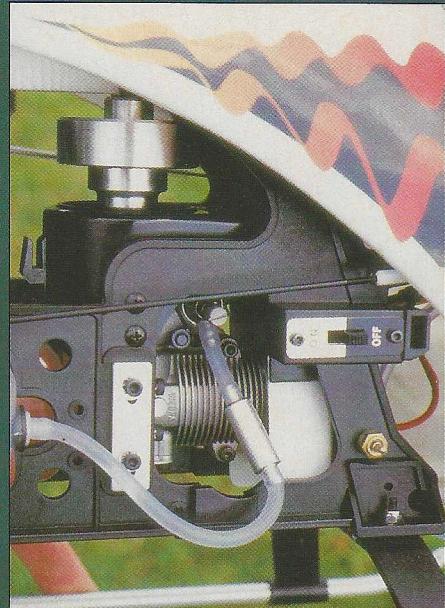
The simple but effective new tail gearbox parts, one shaft and two bearings in the mouldings and that's it!

what steps of the construction it will be relevant. If like me you tend to tear into the building a little, then it may prove worthwhile to highlight the sections in the main book, where the supplement will be required.

Step 1 requires the new pitch arm spacers to be placed, these spacers take out the side play in the pitch arm, when the flanged bearings are installed. The main instructions are then followed covering the clear fuel tank and the machined aluminium clutch drum. You will next have to grab the supplement at Step 4, where the tail driven gear and pulley are assembled. The driven gear is again a machined item and is substantial in size, the whole assembly is built onto the lay shaft. This operation is simple and the instructions highlight which way up the aluminium bearing blocks are positioned, a clear drawing of the completed assembly is also helpful. The main side frames are now quickly constructed until at Step 8 you are told to temporarily install the tail gear assembly. I could only presume this is in anticipation of checking the operation of the complete gear train at a later stage of the construction. No provision is made for the adjustment of the tail gear back lash, but it was later found to be spot on.

The new one-piece engine mount is covered at Step 11 and at Step 12 the assembly of the mixing levers begin. The bearings are a good fit in the arms and care should be given to pushing them home squarely. I also found that the M3 bolts were a tight fit when self tapped into the plastic mixing levers. I strongly recommend that you run the bolt in on its own, once or twice before assembly, to loosen the thread if necessary. Care should also be given in the final assembly of the mixer arms, they should be able to fall under weight, with no side play. How I achieved this was to slowly screw the bolts in until they wouldn't quite fall, then back off the bolts a little until they would!

In no time at all Step 27 is reached where the remaining four ball races are assembled into the seesaw, no problems encountered



Here is the Webra 35 which is a snug fit in the cooling duct.

here and the assembly felt smooth and slop free. Hang on to the supplement though, as at Step 28 the new thrust races are added to the blade holders. The only potential problem inexperienced builders may have is the placement of the thrust washers. They are situated either side of the thrust bearing assembly and the instructions are not clear in this area. Dia. 1 and the accompanying photo should help clarify this. At Step 32 the toothed belt and tail boom is then added. The tail gear assembly is dropped out and the belt and boom pushed in to the main frames. Next the belt is hooked over the drive pulley, before the assembly is then reinstalled permanently with the eight M3 bolts. I did find this operation a little fiddly and care is required not to kink the toothed belt.

At Step 33 the completely new tail gearbox is built. This was easy, but I did have to install a 0.25 mm shim to remove end play on the tail output shaft.

Page 10 clarifies how to check the tail rotor is running in a clockwise direction and also



Assembled tail box is simplicity itself.

shows how to tension the belt. At Step 37 the tail pitch control wire is added, this is one area where I feel Kalt have dropped a 'clanger'. This thin wire rod feels far too flexible and when connected to the servo easily distorts under load. However on the tail pitch bell-crank there is another hole which is further out and 2 mm in diameter, so perhaps future development is on the way?

Included in the Baron 'S' kit is a set of wooden blades similar to the ones supplied in the 30 Baron kits.

Construction Summary

The model builds easily and quickly, partly due to the excellent instructions, but equally due to the accurate and well engineered parts. Some minor 'potential' problems were found, these 'potential' problems were highlighted to aid less experienced builders. Advice should be followed regarding the plastic threads throughout the whole construction and correct fitting screw drivers etc., are essential. However, don't let me mislead you on the subject of 'tight plastic threads', they are, once installed, an absolute bonus, allaying any fears of working loose in flight. Those of you with an investigative mind, capable of close scrutiny may notice

the main gear has a slight bevel on the gears. This can be regarded as normal, fault can lie in the moulding process and the severity of the bevel varies. However, this substantial main-gear was originally designed for a 60 size model and should last well on a 30 size machine. The 0.25 mm of end play evident in the tail output shaft has already been relayed back to Kalt by J. Perkins Distribution Ltd. This minor problem should be isolated to the pre-production kits and by the time the Baron 'S' is in the shops it should have been fully sorted.

Let's Give It Some Go!

The decision to install the Webra 35 in to the Baron was reached entirely through my curiosity! This smaller offering from Webra has been available for about 12 months now, but I don't know of anyone 'locally' who's tried one. It is reputed to be smooth and powerful in its operation and basically I just wanted to find out for myself!

The first question is always, 'Will it fit?' A quick telephone call confirmed it would, but an alternative fan-hub is required. This is readily available and is a 'Kalt Part', distributed by J. Perkins Distribution. A spacer is also required to ensure the fan hub clears the crankcase, this is necessary



DIAGRAM 1

CLARIFIED THRUST WASHER INSTALLATION

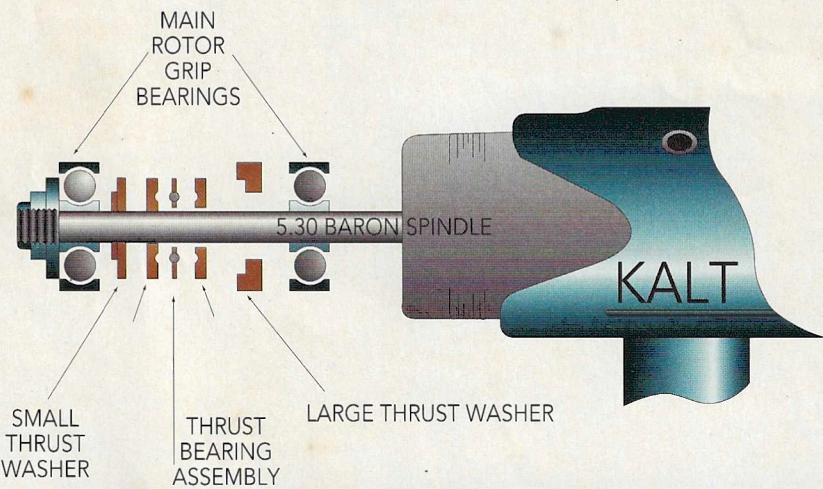
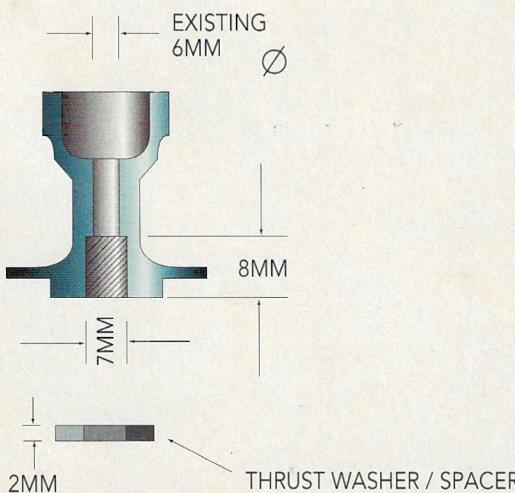


DIAGRAM 2

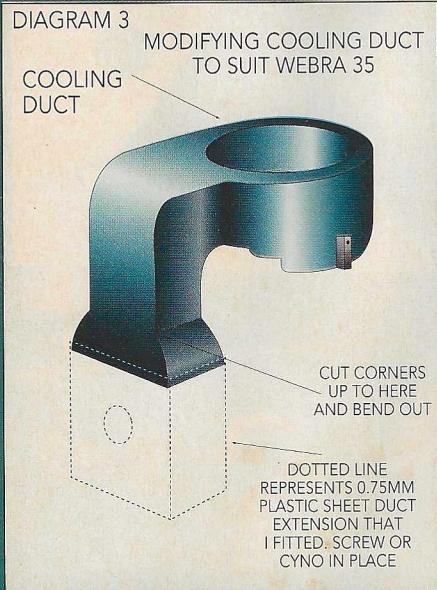
MODIFYING THE FLYWHEEL TO SUIT WEBRA 35



because of the recessed front bearing. Again this is available this spacer will be included with future Webra 35's. Due to time difficulties (i.e. I had a spare 5 min.) I decided to modify the existing fan-hub and use a thrust washer to space the hub. This operation was gratefully performed by my neighbour David Goff, who stated that it was easily modified on a metal work lathe. Finding a 7 mm thrust washer did prove a bit more of a problem though and I ended up drilling out a smaller one (see Dia 2). The only other minor difficulty was the fan shroud. Due to the reassuringly large heat sink head on the Webra 35, a very small amount of easing was required. This was performed by simply cutting the offending corners and reshaping the duct slightly as required (see Dia. 3).

Exhausting

A 'large' volume exhaust or tuned pipe is recommended for the Webra 35 and most 46 size pipes have been found to be acceptable. So no 'mini pipes' here please and low nitro (0-10%) coupled with a cold plug is a recommended starting point. In the interests of simplicity a J. Perkins Dynapipe (priced at £39.95) was easily clamped on, the exhaust bolt spacing on the Webra is identical to the O.S. 32 so no filing was necessary. The Dynapipe is substantially larger than earlier one piece pipe designs, it is lightweight at around 3 ounces and comes nicely polished and ready to fit. The overall length is 235 mm, the actual 'canister' is 170 mm long with a Dia of 38 mm. It is of a 'pipe in a can' ▶



design and would equate to an approx. overall length of 370 mm. The internal outlet diameter is 9 mm and if you try to use it as a musical instrument, you will notice little internal restriction.

When Can I Fly It?

I was suitably warned that the photos come first and that I would just have to be patient! A day was picked for the photo session and 'boy' what a day it was, it was windy, no it was 'very windy' but tamed somewhat by the sunny intervals that seemed to brighten both the light and our spirits. After a few static photos it was time to set it up. The Webra 35 had been allowed a tank-full on 'head loaders' earlier in the week and seemed to like the combination of contest 10% fuel and a Fire Power M3 plug. The piston ring provided easy starting and the large heat sink seemed to keep the engine cool. On the test day only a small amount of needle twiddling was required, before the Baron 'S' settled in to a surprisingly stable hover for the wind conditions. The revised control system was immediately noticeable,

showing much more precision in the cyclic and pitch control. After 2 or 3 minutes of hovering I soon got impatient and slowly pushed the collective stick up. The Baron climbed quickly to a good height, helped by its lightweight and the Webra 35 pulling 10 degrees of pitch with a slightly rich mixture. Both slow and fast circuits were then explored, showing well balanced controls and no instability when zipping around the sky. Loops and rolls were tried next, these were very acceptable but a little slower than what I am used to, but the model did track well and control felt predictable.

3D Out Of The Box?

'Yes', to our surprise the Baron 'S' was capable of stationary rolls and flips. This was on the supplied wood blades, completely standard and with a head speed of 1700 or less. Some inverted flying was tried and again the model felt very comfortable, either way up. After a quick refuel it was time to test the tail, this is where a big improvement was expected. Stall turns felt fine as did 540's etc., precise powerful control compared to the standard 30 Baron. Next time I climbed to about 300 ft and dropped the little Baron 'S' tail first vertically, the first 100 ft was spot on, but control became a little erratic with the accumulated speed after that. It was at this point that I was reminded by the 'photographer' that the model still had that flexible tail push rod fitted. It was also pointed out that my earlier 'winging pom' act was now not that justified after all!

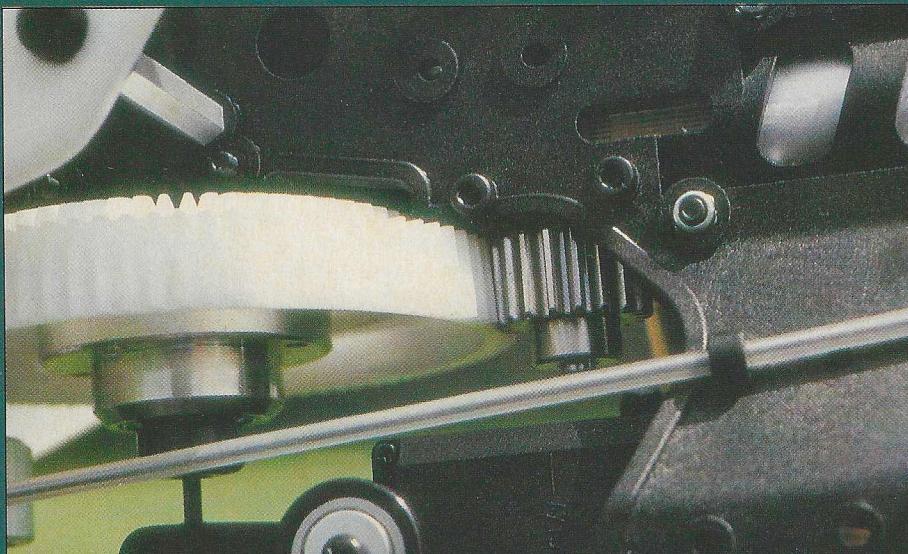
Curiosity was now expressed as to how fast it would fly sideways? Again with help from the CSM gyro it was surprisingly good, both in to wind and with the tail only showing signs of letting go at the extremes. My last test of the day was auto rotations, when powered down fast at about -7 degrees plenty of 'inertia' was reassuringly found, the approach and flare being both predictable and controllable. However at more modest negative values of about -3 degrees the



Much the same but now extensively ball raced.



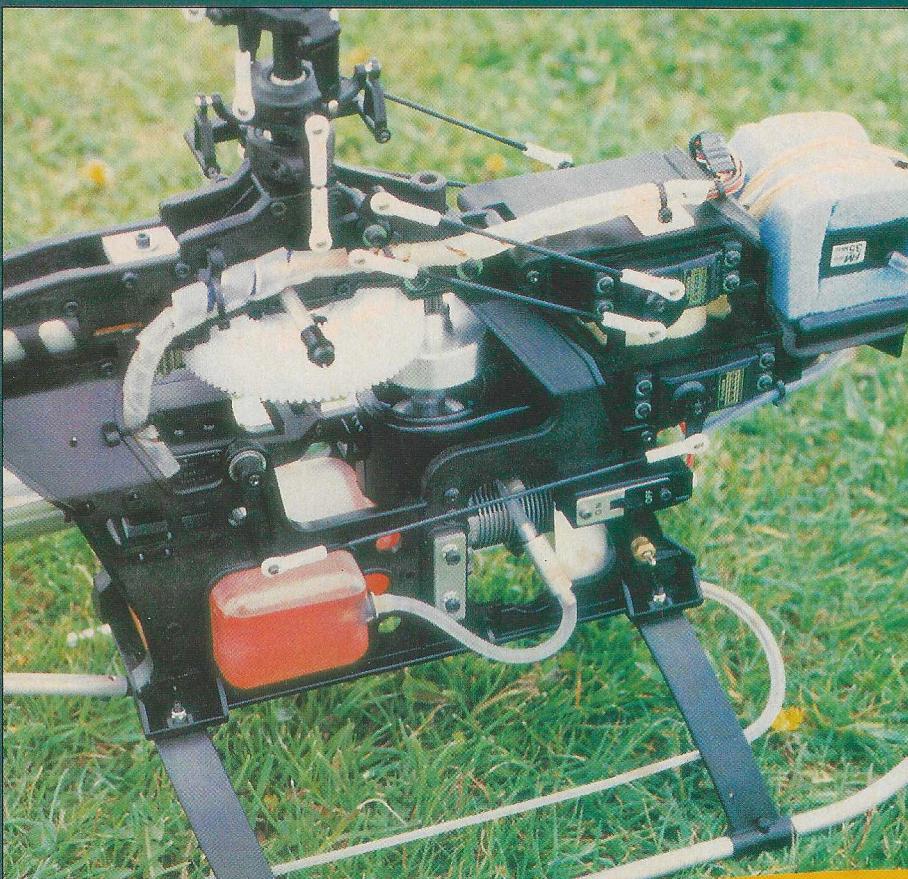
Cooling duct has been extended using plasticard - helps to keep things clean and cooler.



The big spur gear that provides tail drive from the main gear - we can't see this causing problems!



Tail drive, note the aluminium bearing blocks.



From the right there is little difference to the standard 30 Baron.

reserve was much reduced on the 85 gram wood blades. So I would recommend a value of no less than -4 degrees on the standard blades and perhaps a little caution on the calmer days. A low turn out on the day in question limited the amount of feedback from other heli-flyers, but the 'photographer' did want a go on the Baron 'S'. Once accustomed to my unusual switch set-up, he clearly confirmed the improved control system. He then used the rest of the fuel flying the model around in full V-throttle with 0 degrees in the centre stick position!

Despite the stick set up being quite from his own preference, he did undeniably seem impressed and stated how quickly he felt at home with Kalt's latest offering.

Conclusions

The 30 Baron 'S' flies well for its low cost, in fact surprisingly well in standard form. The flexible tail pitch control wire held up well under the circumstances, 'out of the box' this model would suit anyone up to '3D' level. Would be 3D maniacs would look towards the reassurance of glass or carbon blades. The popular K&S paddles could be used to provide as much control as required and the slight adjustment of the fly-bar mixing should provide some useful flexibility in control response. The fitment of a rear servo mount and carbon push rod is feasible, as in standard form with a 1300 Rx pack, the CG was well forward! The Webra 35 showed good potential but would require a 'header tank' for totally consistent running, the mixture did lean out a little as the tank

emptied. All in all, I think the Baron is excellent value for money and a good all round 30 size model, and I hope this review has been of help to anyone considering the purchase of the new Kalt Baron 30 'S'.

Future experimentation and coverage will be found in my regular column 'Close Encounters', happy shopping! □

Russ Deakin



SPEC CHECK

PRODUCT:**Baron 30 'S'****MARKET PLACE:****Intermediate 30 model****MANUFACTURER:****Kalt Sangyo Co****Ltd, Japan****UK IMPORTER:****J Perkins Distribution Ltd****90-96 Greenwich High Road,****London. SE10 8JE Tel: +44 (0) 181 692 2451****MAIN ROTOR DIAMETER:****1249 mm****TAIL ROTOR DIAMETER:****228 mm****OVERALL LENGTH:****1,160 mm****ALL UP WEIGHT:****6 lb 6oz****MAIN GEAR RATIO:****9.77:1****MAIN TO TAIL GEAR RATIO:****1:4.63****CONTROL REQUIREMENTS:****Heli Radio****with 5 Servos and Gyro.****POWER REQUIREMENTS:****.32 - .36 Heli****Two Stroke Engine****UK RECOMMENDED RETAIL PRICE:****£249.95**

MHW STAR RATINGS

SPECIFICATION:**KIT QUALITY:****INSTRUCTIONS:****BUILD QUALITY:****FLIGHT PERFORMANCE:****VALUE FOR MONEY:****OVERALL:**