Review of Quick 30 Pro

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Quick 30 SP
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It's a high spec model with a lot of potential, but what's it really like?
Body Text:

With little in the way of arm twisting, I jumped at the chance to review the new 30-sized model helicopter manufactured by Quick in Japan. The machine in question is the all metal 30 SP (e'CCPM) machine, which comes in Kit form with only the tail rotor grips assembled. The 30 SP features a belt driven tail rotor and has just about all the upgrades you could wish for. To name just a few, there is a metal swash plate, rear mounted tail servo, thrust raced main blade holders and CNC machined metal cooling fan and much, much more! The control system is 120-degree e'CCPM and to simplify matters, the servos slot into the 2-mm metal side frames and connect directly to the swashplate.

The first impression I had on investigating the contents of the kit was of a top of the range machine with mainly CNC machined components and a high quality epoxy glass canopy. The Quick 30 SP just oozed precision and the quality of the machined components was very impressive. A number of the components are anodised in electric blue, which gives a superb contrast to other items that come in plain aluminium alloy. The other thing that really caught my eye, was a CD- ROM for the instructions… very high tech! One point worth noting is that it does not come with any main blades, but as the 30 SP is a top quality 30-size machine, it makes sense to presume you will have your own preference. Of interest was that when looking at some of the plastic parts, they have TSK stamped on them. However, I understand that Quick have a tenuous link with what was TSK Japan, before it was sold a couple of years ago.

Building The 30 SP

This did not get off to the best of starts, as I had a problem obtaining a 100% successful download of the enclosed CD instruction manual. My PC informed me that the problem was with the ‘font transfer’ and upon opening, the text was unintelligible, leaving me with just 44 pictures and drawings to go on. So I turned to the Internet for relief and came across the Hobbies & Heli's web-site, who are the Quick distributors in the USA. From their web site, I was able to download a full set of instructions for the Pro 30 version sold in the States which is all but identical.

The side frames are of the traditional stacked frame arrangement, with the upper frames being made of 2-mm alloy and the lower frames being 1.5-mm. The upper frames also house the 3 e’CCPM servos, with these nestling in between the frames and being the first items I assembled. The servos we decided to fit were Futaba 3001’s, which should be more than adequate for a 30 sized machine. After the servos had been bolted into the side frames, the next items I fitted were the bearing holders for the main shaft, clutch bell and tail take off gear for the belt drive. One point to comment on here is that one of the tail servo mounting grommets came very close to the spacer that joined the two frames together. So I ended up shaving about ¼ of the exposed grommet away in order to get the spacer to line up with its mounting hole. Next I built up the lower frames which house amongst other things, the engine, tank and radio equipment. The radio mounts on an alloy tray and is a very nice piece of CNC machining. It obviously started from solid 6-mm alloy plate and after machining is fully recessed on one side to remove weight, whilst still making the radio tray a very ridged structure. Added to this is a vertical CNC machined bulkhead of the same material that joins the upper and lower frame sets together at the front end. Behind the radio tray is a gyro platform, which is once again CNC machined and all build up to a very strong front end. The rear sections of the lower frames are then joined to the upper stack with four 6-mm diameter stand off pillars, before the whole assemble is tied together by two 90-degree right angle undercarriage mounts.

The transmission drive begins with an aluminum clutch bell, into which the liner has to be cut and glued. I did this by wrapping tape around the clutch shoe until it was a snug fit in the housing, so to keep the liner in place until the epoxy glue had set. A steel drive pinion gear is then screwed into the clutch housing and the whole assembly is supported by two bearings and is one of the most accurate assemblies I have come across. Through the center of this assembly runs the starter shaft that engages into a one-way bearing in the center of the clutch shoe. I did have a small concern here, as only a very small flat had been ground onto the shaft to locate the hex

starter grub screw. Knowing that this area can take a large amount of stress on starting I did wonder if this would be sufficient to hold the hex drive in place, but decided to allow time to tell and did not enlarge the flat.

Moving on, the 10-mm main shaft is stepped down at one end to locate into the auto rotation hub unit. The whole main shaft assembly is then supported by two bearings seated in aluminum bearing holders. The main gear is nylon, but has been machine cut to give an accurate profile. The gear has 88 teeth and with the engine drive gear having 9 teeth, this gives a ratio of 9.77 to 1. Directly opposite the main gear is a 17-tooth aluminum tail pinion gear, which gives a tail ratio of 5.17:1. This gear is also supported by two bearings seated in aluminum bearing blocks. Both the tail drive and main mast bearing blocks are mounted through holes in the side frames, which have been slotted by 2-mm. This is barely perceptible, but does allow the mesh of each gear to be set individually and was felt to be a nice touch. I set the mesh of both gears by clamping a strip of printer paper between the teeth of both gears. When it was removed, the correct clearance was obtained releasing a very smooth running transmission. On top of the tail pinion gear, is the aluminum toothed drive pulley for the toothed tail belt. The tail drive belt terminates at the far end of the boom where it drives another beautifully finished aluminum toothed pulley. This is retained onto the tail rotor shaft with a grub screw that engages into a hole, so no chance of this coming loose! The tail rotor shaft is supported by two flanged bearings mounted into the CNC machined side plates, which are then mounted onto an aluminum boom fixture. The pulley on the tail shaft has a small spacer on each side to remove the end float. However, in this unit there was a slight amount of end float still present (0.25mm), but I am sure it was only the fact that this assembly moved so freely that I was able to detect this small amount. The tail rotor assembly is pre-assembled, but upon inspection found each cuff was supported by two bearings. The whole tail end of the 30 SP is aluminum and the majority of which is anodized. So not only is the complete tail assembly very precise with no binding anywhere, but it is also very attractive to the eye.

The 30 SP rotor-head is a fully machined and fully ball-raced affair and at first glance, looks a little on the chunky side. However, the blade holders accommodate up to 14-mm thick blade roots, which probably explains why. The blades are secured within the holders by 4-mm diameter bolts that are retained in steel bushings pressed into the holders. Support to the blade holders is via a single through feathering spindle of a very substantial 8-mm diameter. Rotor damping is then provided by a rubber O-ring on each side of the main head-block, which is anodized Black. A neat touch here is the 36-mm head button is machined on to the top of the rotor head block... so as I said earlier 'no up-grades needed'! The only slight problem I had with

the rotor head was when I attempted to fit the pitch arms. The blade holders have a 7-mm slot cut 0.5mm deep to accommodate the pitch arms that have a reciprocating lug on them. However, there was a slight tolerance build-up here as I had to take a file to the lugs and carefully trim them so they would fit. Once this was achieved, the hiller arms were then mounted directly on the blade holders with the control rods feeding down each side of the flybar. Sitting below the blade holders is a fully ball-raced assembly, which supports a 3-mm stainless steel fly-bar and aerodynamic paddles that weighed in at about 19gms each. Looking below the rotor head is a washout unit that gives a ratio of 2:1 and is completely slop free. The swashplate is pre-set for 120-degree eCCPM and is complimented with an anti -rotational bracket sitting to the rear.

The chosen engine was a previously used OS 32 that was believed to have performed well in its last environment. The kit is supplied with a very slick looking CNC machine aluminum fan, which is aligned onto the engine crack shaft with a split collect assembly and is tightened by a stepped spacer and nut. I was impressed to find that I had no trouble at all getting the whole thing to run within 0.02mm Total Indicated Reading (TIR). A substantial one-piece clutch with integral one-way start bearing then mounts onto the fan. The clutch also features a locating spigot on one side, so no chance of misalignment here!

Finishing Off…

Completing the 30 SP began with the polythene fuel tank, which is the best I have ever seen on a model! All the components within the tank are made of stainless steel and this even included the fixed tubing, which was a little difficult to bend. When it came to fitting the undercarriage, the builder is left to drill the mounting holes and the holes for the grub screws that secure the skids. The mounting holes were not a problem, but the holes for the grub screws did require careful drilling. Next in line was the tail boom supports, which sport separate aluminum end fittings. These have to be glued to the aluminum tube supports and I did have to rub down the tubes with wet and dry until the two went together correctly. The canopy is a one piece Epoxy design moulding of very high quality, but did require careful marking out of the mounting holes. Thus reminding me of that well-know phrase from my engineering youth of “Measure twice lad and CUT once”. Having managed to get this fitted correctly, I opted for the easy paint option and sprayed the canopy screen black, leaving the remaining canopy in its white gel coat. I then applied the decal set supplied with the kit and the Quick 30 SP was now ready to fit the radio and go fly.

The chosen radio was Futaba and all 5 servos were 3001's. The gyro selected was a CSM 400 and these were all powered by a 2000 Ma hour battery pack. The installation of these was a real non-event with there being plenty of room for all and a good neat installation was achieved. With the whole machine assembled and ready to fly (less fuel and blades), it came out at a very respectable 3.1Kgs (especially for an all-metal machine). The center of gravity came out spot on the main mast with the forward mounted tank empty, once again showing the quality of design input that has gone into this machine.

Setting up the machine did not take long with my Futaba field force 9 Transmitter. I found that I could easily get 22 degrees of pitch range, which is more than adequate for all types of flying. I have listed the pitch range's I selected below:

	Pitch position		
	Bottom stick	**Mid stick**	**Top Stick**
Norm	- 3	5	9
Idle up 1	- 5	5	9
Idle up 2	- 9	0	9
Hold	-3	4	12

Flying the Quick 30 SP…

We decided to fit an OS32 from a previous review model where we believed it had been performing consistently. After performing a range check and then starting the engine, all went very well at first. However, after several minutes of hovering, the engine quit and the machine floated down with no damage. So I changed the plug, reset the mixture richer and tried again. The engine did run much better after this, but still showed signs of running a little too warm. We contacted the Italian distributor, who expressed that they had not experienced any cooling problems, but sent us the plastic fan assembly used on the 'Learner version' on request. This seemed to help, but the engine still showed a slight tendency to run a little too warm in the hover. However, with the chosen OS 32 being a rather well used item, we are convinced that a newer engine would have performed better in this respect.

In the hover at about 1500-rpm rotor speed, this machine was very steady and with the e'CCPM set up, felt so very precise! At no time did I detect any unwanted interaction from the servos, which proved the geometry to be very good. I then put the machine into some fast forward flight scenarios and in conjunction with the CMT 550mm main blades, there was no tendency to pitch up or down when pushed really hard. I then performed quite a few high-speed turns from straight and level flight, which were such a non-event, that I had relaxed with the model and in no time had used up all fuel in the tank. After a quick re-fuel, I then tried some auto-rotations (my favorite maneuver!) and took the machine up fairly high, as it is always good to have that extra bit of height the first few times. Well, I need not have worried as the Quick 30 SP is an absolute dream to Auto with plenty of inertia left at the bottom of the descent. I generally put this down to that really smooth transmission system.

Back in the hover, I found the tail gives a very positive rate of rotation. Which no doubt is courtesy of the direct precise linkage, rear mounted servo and CSM 400 Gyro. Even backward flight with the stock plastic tail blades was very good, with the model managing a good turn of speed without complaint. So with confidence, I then put the 30 SP through all the various aerobatic maneuvers that I can manage and it performed these with ease! Here I selected my idle-up 2 setting and with the head speed pushing 1800-rpm, the transmission hummed like a turbine and the model became very brisk indeed! Rolls and loops were visibly fast, but the model still felt very easy to control. I did try some inverted hovering and the Quick 30 was just as stable inverted as the correct way up.

At the end of the flying session, I did notice that the mounting lug for one of the boom steadies had fractured. I have since re-positioned the boom supports to the base of the rear main frame, where due to the increase in horizontal support; appears to have solved the problem. I did also notice that one of the pre-assembled tail blade holders was slightly loose and this is one area that is worth checking prior to hard aerobatic flight. In all, I really enjoyed flying the Quick 30 SP and was very impressed with the model. It has a superb combination of precision, stability and agility. The transmission is silky smooth and this no doubt helps to provide the superb auto-rotation performance.

SPEC CHECK

Product:	Quick 30 Pro
Market Place:	Beginner to expert 30 model
Main Rotor Diameter:	1250 mm
Tail Rotor Diameter:	240 mm
Overall length:	1100 mm
All-up weight (less blades):	3.1Kgs (6.82lbs)
Main Gear ratio:	9.7:1
Main to tail gear Ratio:	5.17:1
Control requirements:	Heli radio (with 120 CCPM support) 5 servos and gyro
Power requirements:	.32 size helicopter engine

Verdict: this is a very high quality metal machine with a well-proven concept that should give years of trouble free flying with the minimum of maintenance. The quality of the machined components is most impressive and 99.9 % of tolerances were incredibly accurate. The model is fully ball-raced and does not require any up-grades or add-ons at all. In the air, the Quick 30 SP has a superb combination of accuracy, stability and agility, with a very impressive auto-rotation performance.
To sum up, this is a quality 30 size machine aimed at the discerning flyer who appreciates precise control and quality products.

We Used:
Transmitter: Futaba Tx T9CP
Receiver: Futaba
Servos: Futaba S3001 x 5 servos
Gyro: CSM 400
Engine: OS32
Silencer: Hatori
Fuel: 10% Nitro Fuel
Glow plug: Enya 3.