

# *model* **Helicopter** *world*

March 1999 • Price: £3.25 (UK) • \$7.00 (USA)

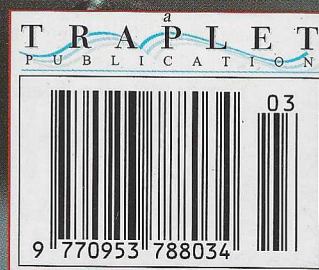
## **Ultra Star**

**Flying the  
Beginner's Deal**

**Big Boys  
Blades  
How  
good?**

**Visiting  
Vario's H/Q**

**Reports:  
Australian Hirobo Cup and the  
American Helicopter Museum**



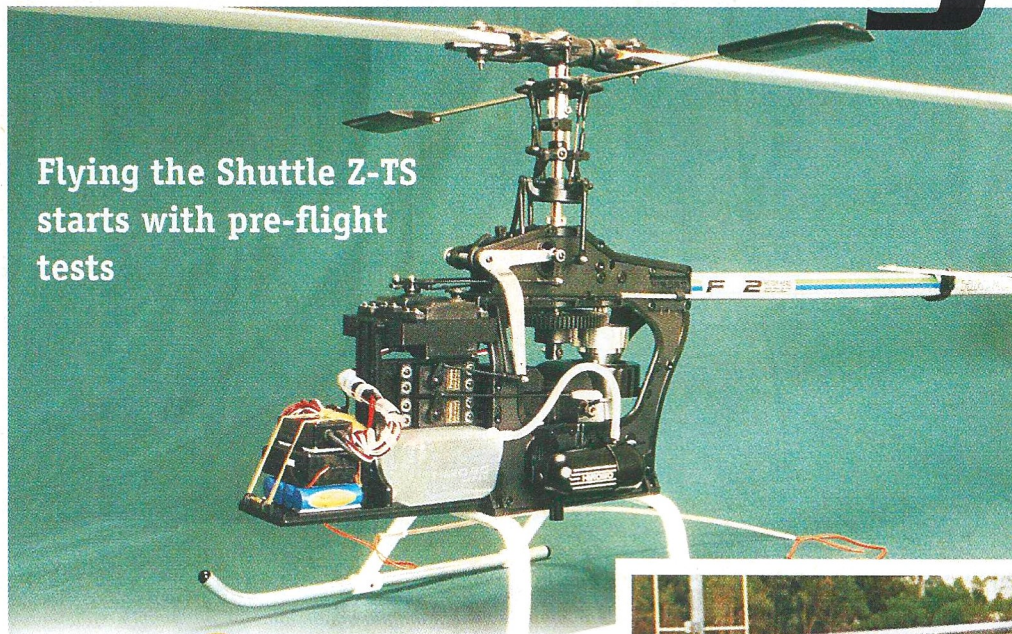


# a Beginner's Package

## Part Two

# The Flying

Flying the Shuttle Z-TS starts with pre-flight tests



The kit quickly builds in to this.

**I**n my last exciting instalment, I had built this great little package. So I hope you had a chance to 'read all about it'. And what a ball I had! But why am I so enthusiastic? - read on and all will be revealed.

I needed about an hour and a bit on the bench to set the 'Z' and radio up. To see what a newcomer will experience, I set it up absolutely 'box stock', i.e. standard.

The first thing I encountered was that the pitch range was a tad fiddley to get just right (this turned out to be a portent of what happened on the field). It seemed to have heaps of negative pitch, plus was too low in hover and top end. With a bit of mucking about with the length of the pitch rods, I got the figures the book said I should have.

As a final bench check, I decided to confirm the operation of the fuel level monitor. I took out my trusty and cherished MK fuel pump (a gift from Cliff Hiatt at the recent Turkish World Champs - thanks Cliff!), filled the tank and turned on the radio. The fuel monitor flashed away, showing all was OK. I then started to empty the fuel out, slowing down as it neared the end of the copper strip glued to the tank, keeping going, no change. I got well past the end of the strip, like it was empty(!), still no change. What the, er heck, was going on? I tried it all again, same result. OK, so what had I done wrong?

Back to first principles, when all else fails, read the instructions. Read, read, read. Damn, damn, damn, I found, quote,

possible. This is for a variety of reasons. First, you can spend quite a bit of time fiddling about, thereby hogging a frequency - by being more or less on my own keeps peace with my fellow modeller. Second, there are usually the 'urgers' looking on. They want a show, and will keep pushing to see something spectacular, especially a prang. These guys are also the ones who will give you the loudest 'Bronx Cheer', when and if anything goes wrong, and your chopper ends up head butting the ground. Won't help your ego, or hip pocket nerve, at all. Avoid these guys like the plague. Third, I like to know that I can fly around without worrying about others coming out onto the flight line. If anything goes wrong, and I need to make an emergency landing,



Confidence here with the rugby posts looking close - the beginner needs a lot more open space.

'To set the low fuel warning point, adjust pot on control unit'. By this time everything had been nicely and securely mounted on the chopper. A quick look revealed, you guessed it, the said pot was in a place where I couldn't get a screwdriver on it. Oh well, pull it apart.

Once this pot was adjusted, the low fuel point came on as required. Why, oh why, don't I listen to my own advice, and read the instructions properly instead of just scanning them? My excuse, er let's say, was that I was carried away by enthusiasm - that's my story and I'm sticking to it. (One day I'll learn, I hope!)

### To the field

Now I was pretty sure everything was working as advertised. No more excuses, off to the field. Time to take it out and play with it, as that's what it's all about.

I like as a matter of course, to try out new machines as much on my own as

the last thing I want is someone doing their own thing just where I am urgently needing to land.

Anyway, we're here to have fun, not pontificate. Back to the flying.

I've read heaps of articles where the reporter said, the chopper started first pop, and idled away merrily. Well I can report it did genuinely happen to me. The OS 32 SX-H just burst into life, first go. As it was a brand new motor, I had richened the main needle up by a quarter turn, from the factory recommended setting. I don't like to give the motor abuse (from new anyway - when it's run in, that's another matter!). I also liked the fact that the clutch was working exactly as it should, i.e. no grabbing at idle.

As a result of some investigation on 'Hot Motors/Cool Running', I left the hot pocket glow starter on the motor as I carried the 'Z' out to the flight line. I set the model down, it's at this point I've

### QUICK SPEC

AUTHOR: Peter Rieksts  
PHOTOGRAPHER: Peter Rieksts  
and Jon Tanner



seen many a chopper self destruct. The pilot, being in a hurry to get his new toy in the air, gets carried away by enthusiasm. This is the point at which I like to make the final check re sense of control by looking at the, by now rotating, disc. You should be able to easily see the whole disc tilt in the right directions. I advance the throttle a touch, and give it left and right tail rotor to see which way the nose moves - ever so slightly.

So far so good, hadn't done anything obviously wrong. So I advanced the throttle/pitch, nothing. More throttle/pitch. Still nothing, except it's trying to rev its, er head, off. Then I tried the hovering pitch knob a bit, then a lot. Finally, it hovered. But the revs were way, way, too high.

At this point, I found the new piezo gyro, the GWS PG-01, seemed to be pretty good as the tail was real solid, with no hunting. OK, no undue shakes, so hover up to eye level. Tracking error on the main blades. Revs way too high, therefore bring the low blade up. A couple of half turns sorted that out. I then spent the rest of the first tank just getting used to the feel of the 'Z'. All I did was just hover in one spot more or less. Did a few pirouettes, both directions no worries. However, I was very prepared to land/shut down, at the first sign of a problem. I knew the radio and the 'Z' as such shouldn't fail, but had I forgotten to do something correctly?

I kept an eye out for the low fuel warning, and it came on just as needed. By this time, I had the photos needed to keep our esteemed editor happy, so I shut the 'Z' down, not by the throttle trim, but by pinching the fuel line. By running the engine out of fuel, you can avoid a liquid lock the next time you try and start the

chopper. Plus, I will let out a little secret at this point. Listen to the engine as you pinch the fuel line. If it immediately stops, or speeds up, you are too lean on the idle mixture. If it doesn't change at all, for a couple of seconds, and then revs up a bit, before stopping, you're spot on. And then if it is reluctant to idle, by wanting to keep slowing down or even stops, you're pretty much on the rich side.

OK back to the pits, but I'm definitely not in the pits. This is turning out to be one heck of a nice flying chopper! The only major hassle was the lack of pitch, otherwise it was pretty good for a first go.

Instead of resting on my laurels, I checked the whole chopper for obvious signs of a screw loose - on it, not me, I already know I've got heaps! Again at this point I've seen too much enthusiasm take over, where the pilot just wants to refuel the chopper, and get back into the air again. Take your time, check everything. It doesn't take that long. Rebuilding does - been there, done that. I mucked about with the pitch, but will need to sit down on the bench at home to properly sort it all out. Intrigued that it was so wrong. Why?

With the second flight, I was more confident to try things out. I started out by confirming that the engine was happy to be in the hover. Revs still a little bit high. Go into the radio menu, retarded the



Peter Rieksts with the beginner's package is clearly impressed.

throttle curve quite a bit. Ah, that's much better, but not perfect. But what's this? Now there was a slight tremble to the 'Z'. Please, no disparaging remarks about the 'Z' being scared of my flying! Now where did that tremble come from? I know the blade balance was spot on. Hum, must look into this. (Usually at this point, I try dynamically balancing the blades - I put a piece of electrical tape on the C of G of one blade, and rev it up again to see if the vibration level was better or worse - then would take the appropriate action, but I left the tape at home didn't I!) Anyway, it wasn't that bad that a quick buzz around wouldn't warrant it safe.

However, I'll let you in on another little secret. Before I put the machine way up there in the wild blue yonder, I check to see just how well the blades will auto. Just in case! The test is very simple, and easy to do. All I do is a hovering auto. Starting at about eye level, (lower is OK if you're a bit iffy about this), popped an auto. What I'm looking for is how the chopper behaves.

### A little digression

I'll digress at this point for a moment. It is essential that the hovering pitch point and the pitch on the auto curve are identical at this point. When you pop the auto, there must be no change in the pitch of the main blades. If there is, adjust the auto pitch mid point until it coincides with the hovering pitch point.

Now, back to the popped auto. What do the blades do? If they slow down immediately, and the chopper drops as well, then the blades are real iffy for an auto. As the chopper drops, with light blades, pitching on makes the situation worse, as they will really, really, slow down.

If the chopper hangs before it drops, then they should be OK. Pitch on here should be able to arrest the drop comfortably, before the blades run out of energy. This test has worked for me every time.

What I found here was that the blades were iffy. Not surprised, as this 'Z' is aimed at the newcomer, and really they wouldn't be expected to pop full on autos from the beginning. So really this is not an important, or major, criticism of the 'Z'.

The fix is easy, albeit expensive, just fit your best pair of fibreglass specials! I have a nice pair of Hi Products blades just



Again not for the beginner, you need to be confident both in the model and pilot. Says a lot for the model that this was taken first time out.





Add some fuel and it's all you need.

waiting to show off. But for now, will stick to the box stock ones.

Now that I know an auto is on the iffy side, I need to be a bit conservative. I started out by doing larger and larger figures of eight - wanting to get a feel for the 'Z' before I try anything radical.

But, hey, this is one really nice flying machine. It really locks into an attitude, and stays there. Then it dawned on me why. The good people at Hirobo have made a set of very forward C of G flybar paddles. I have similar paddles from K&S that I have used on my 60 size F3C machines - and they are very good for stable, fast forward flight. Now I have finally found 30 size paddles that make a model groove as well as the best of my F3C choppers. I became so impressed by these paddles, that I've ordered some extra pairs to be used on my other 30 size choppers.

As my confidence with the 'Z' increased, I got it further away, higher and higher. I was having a ball. It has been a long time since I've been this impressed with a 30 chopper, especially a supposedly base model - there was nothing lacking in the flight performance department. All too quickly the second tank of fuel was used up. Again a quick check in the pits to see that all was still looking good, and it was. Next flight, must try some aero's.

Third tank. Ah, now the engine is beginning to run in. On starting up, the engine is rich. This was expected. As an engine runs in, it frees up somewhat. This means that the engine doesn't have to work so hard any more, i.e. overcoming internal friction, a leaner fuel setting can be made. Adjusting the idle needle valve only, left the top end still a quarter turn richer. Now I felt we were really smokin'. I had to hold myself back, as I was having so much fun. Went off for some more high speed runs. The 'Z' just stayed where it was pointed. Brilliant.

Oh, I want to do aero's, not just admire the fast forward flight. Taking it easy, I did some 180 stall turns first off. No worries. Engine still sounds good. It's got to be looping time - big anticlimax, just went around. I didn't fool around with the throttle/pitch, I wanted to see how a first timer would go at a loop - pull back on elevator and hang on grimly. The 'Z' just

With the tremble, I solved it by default. Looking at the Hirobo brochures (hate these things as they show all those really, really, nice choppers and goodies, in glorious close up living colour!), of the 'Z' et al, I noticed that both the ZX and ZXX had boom stays. The 'Z' is no different in terms of performance capabilities, so I think I'll do a quick mod here. A quick rummage in the old spares box found some suitable alloy (aluminium) tubing. A quick hack with a saw, squish the ends in a vice, drill some 3 mm holes, use four self tappers, and it just looked like a store bought one.



Like this, it looks a daunting task for the beginner, but fear not!

went straight around. A bit of a figure 9, but it felt solid and safe. What more could you want for your first time loop? Nothing really. Better see how the fuel is going, been up for a while. Did a pretend auto - lowered the collective to the bottom stop, didn't hit throttle hold. Came in nicely, with no tendency to float. But could feel that the blades had little in reserve, I did tense up as I added pitched, but the OS didn't let me down.

At this point I decided to call it a day, having had a ball with a brand new machine. It just doesn't get any better than this, and why push my luck? I still had the slight over revving problem in the hover, so I really should sort that out, plus look for the source of the annoying 'tremble'.

#### Post run checks and tweaks

An evening was spent sorting out the pitch rods and pitch and throttle curves. Now that I knew exactly what settings the chopper liked to fly at, I could make the adjustments so that I could centre the hovering pitch knob and throttle hovering pitch point in the menu. It is very important to get the chopper right mechanically. Whilst computer radios give you lots of adjustment potential, it is not the correct way to solve any setting problems long term. A bit of a concern was that the factory recommended settings were a bit out. Newcomers have enough of a steep learning curve, without these sort of complications thrown in.

The next time I flew the 'Z' I had tape in my pocket with which to do the dynamic rotor balancing I mentioned earlier. Anyway, with the new added boom stays, it was solid - that was easy for once!

#### Summing up

There you have my straight from the flying field report. The whole package just performed spot on. Performance was nothing short of great - no bull! I have absolutely no reservations in reinforcing the recommendations as to how good everything was from the building review.

If you want a good 30 chopper to start out with, or fool around with, or look to turn into a scalie, then take a good look at the Shuttle, in any of its versions. The Futaba T6 XA/XH was good enough for the sort of flying I wanted to ultimately do, i.e. scale mucking about. And the GWS PS-01 piezo gyro did its job so well that I didn't really notice it - the tail was just so solid, the best sign ever of a good gyro. And the Hirobo Battery and Fuel monitor worked as advertised. I couldn't check the low battery warning, but then I don't fly to the limit of the batteries. Still, good to know it was there.

Now if they only made a nice scale body of Elle McPherson to suit the 'Z', I would be in chopper heaven. Oh well, at least I can dream.

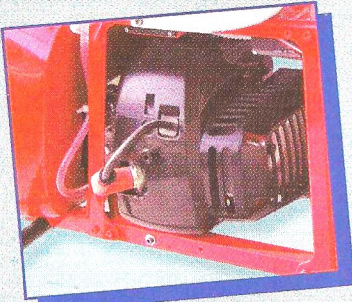
Until next time, HAPPY HOVERING, as I certainly am!



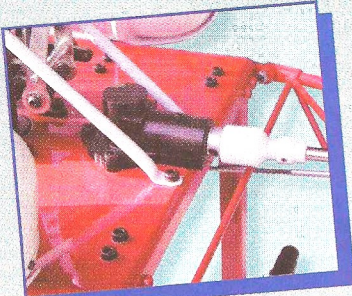
# HIROBO



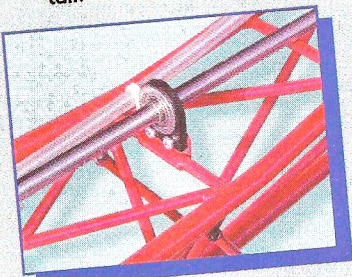
Superbly stable in the air due to its Hirobo FFR rotor head.



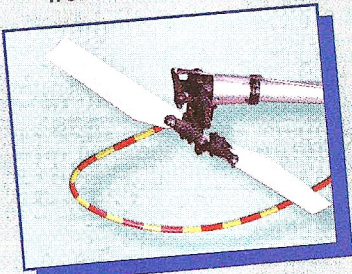
Tuned TAS 24cc petrol engine offers smooth, realistic sounding power.



Lightweight 90° gearbox ensures low loss drive to the tail.



Fully ballraced pipe tail drive. Scale boom pre-fabricated from stainless steel.



Inclined tail protected by tubular stainless steel hoop - just like the full-size.

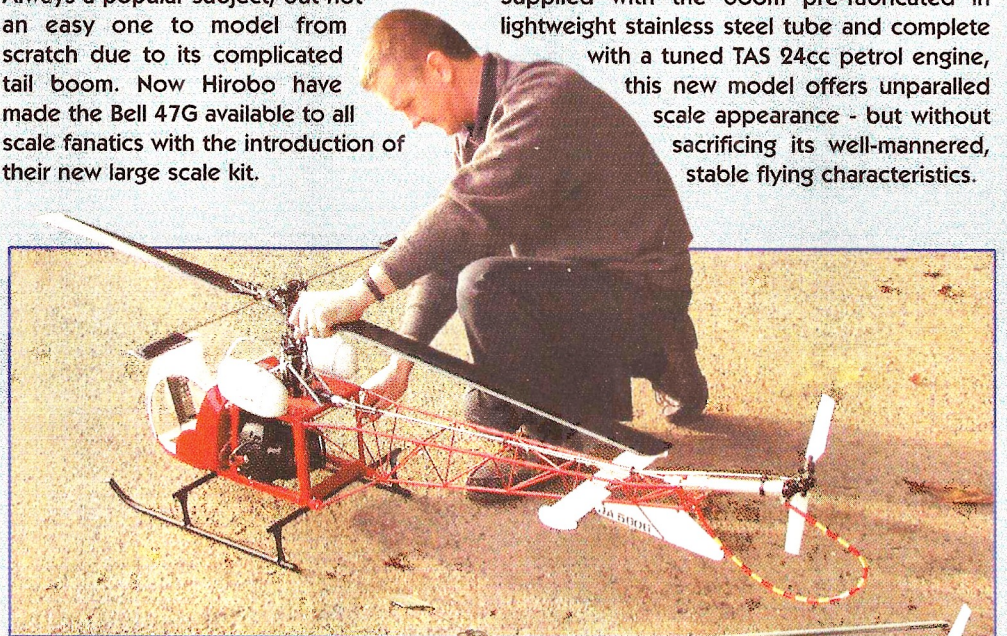


**New!**

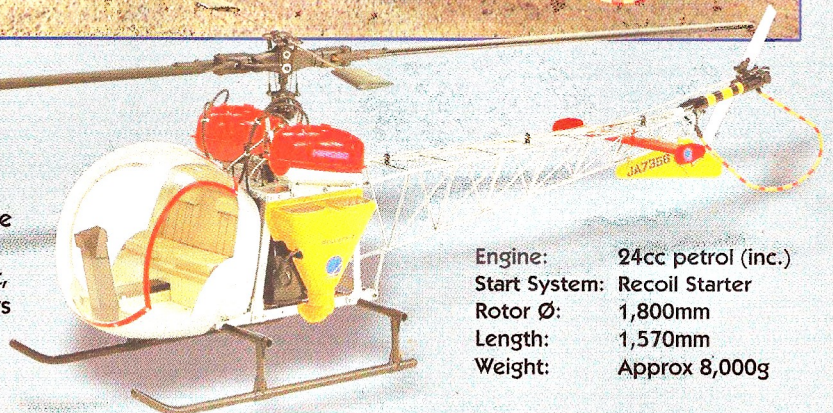
## SCALE MATTERS

Always a popular subject, but not an easy one to model from scratch due to its complicated tail boom. Now Hirobo have made the Bell 47G available to all scale fanatics with the introduction of their new large scale kit.

Supplied with the boom pre-fabricated in lightweight stainless steel tube and complete with a tuned TAS 24cc petrol engine, this new model offers unparalleled scale appearance - but without sacrificing its well-mannered, stable flying characteristics.



Supplied complete with the cockpit detail shown right, the Bell 47G offers incredible realism and is a joy to fly.



Engine:	24cc petrol (inc.)
Start System:	Recoil Starter
Rotor Ø:	1,800mm
Length:	1,570mm
Weight:	Approx 8,000g

**IRVINE** Leading the way again . . .

The Hirobo Bell 47G is distributed in the U.K. by: **IRVINE LIMITED**  
Unit 2, Brunswick Industrial Park, Brunswick Way, New Southgate, London, N11 1JL.  
Tel: 0181 361 1123 Fax: 0181 361 8684

**BELL 47G Manufactured by: HIROBO LIMITED**  
530-214 Motoyama-Cho, Fuchu-Shi, Hiroshima-Pref., Japan 726.  
Fax: 0847-41-9361