

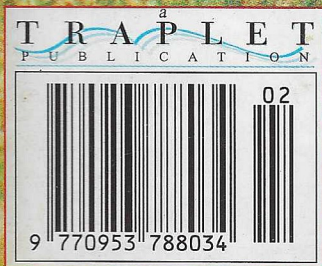
# *model* **Helicopter** *world*

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

## **EIGHT BLADES TO THE WIND**

**VARIO'S EC135 WITH  
FENESTRON  
TAIL!**

**A GREAT  
BEGINNER'S  
DEAL?**



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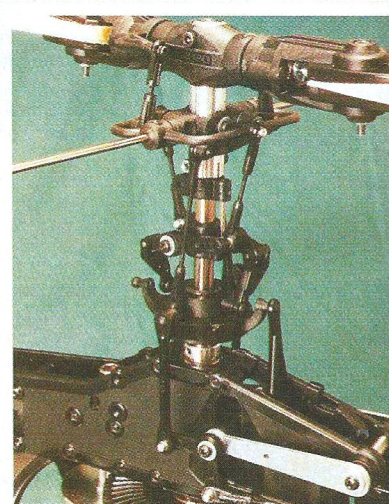
# A Beginner's Package

## Part One

### It's all you need!



**Putting together a Hirobo Shuttle Z-TS, Futaba T6XA/XH Radio, GWS PG-01 Piezo Gyro, and Hirobo Battery and Fuel Monitor.**



*Classic Shuttle rotorhead, the Z-TS does not use ball races in the levers etc. or thrust races in the blade grips, but it can be fully upgraded.*

#### QUICK SPEC

**AUTHOR:** Peter Rieksts  
**PHOTOGRAPHER:** Peter Rieksts  
**WE USED:** Hirobo Shuttle Z-TS, OS 32 SX-H engine, Futaba T6XA/XH Radio, GWS PG-01 Piezo Gyro, and Hirobo Battery and Fuel Monitor.

**E**arlier this year I had made a chance remark at the fantastic, brilliant, wonderful, entertaining OZ Shepparton Fun Fly (not a little bit biased am I?). It was to Chris Hebbard, 'Mr Speedline International', the importer and distributor of Hirobo models into Australia, that I had never owned a Shuttle. I'd flown them on occasion, when the owners were game enough to let me, but that was all.

Well a few weeks ago, I was made an offer too good to refuse - and it wasn't by any guys in black suits and glasses with very broken looking noses, carrying violin cases either! Anyway, a deal was struck, and shortly thereafter a rather large box appeared, as if by magic, at my doorstep. Couldn't open it up quick enough - they sure used a heap of packing tape to seal it up. Checking the contents showed everything survived the journey A OK.

I had opted for what a newcomer to this great sport of ours would be likely to go for. It was a little bit above the cheapest package deal that could be done, but still wouldn't cost you your first born! Plus, I wanted something that could be easily turned into a practical scale machine (I call them scalies), practical in terms of being reliable and easy enough to use on a weekly basis (i.e. no white knuckle rides, in that you simply don't want to fly it because it could crash etc.!).

#### What is it?

First and foremost was the Shuttle Z-TS. This is the entry level 'Z', upgraded to a top start system (i.e. the 'TS'). I opted for the top start for easy use in a scale body. Inside the big red box were oodles of little plastic packets. To save on costs, this version is as knocked down as you can get, i.e. everything has to be assembled.

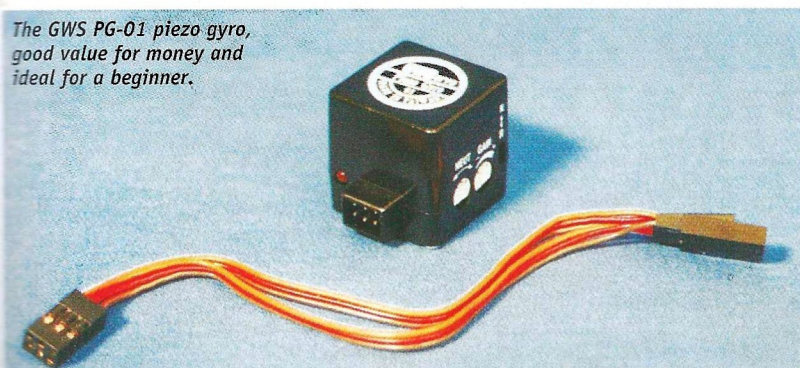
In my opinion this is a good way for the newcomer to go. Providing there are no complex/critical steps or stages (and I didn't find any), then they will learn much more about R/C choppers and this makes for a better, all round flyer in the long run.

Next was the Futaba radio, actually my first one in quite a while. Even though it was more or less a budget computer radio, it still had a good deal of features. I do try



The Futaba T6XA/XH transmitter complete with receiver, battery, switch harness and five servos etc.

The GWS PG-01 piezo gyro, good value for money and ideal for a beginner.



I quickly noted just how fast and easy the 'Z' was to put together

and read the instructions, and the features listed made for an excellent all round radio, i.e. it offered fixed wing options as well, but I'll leave it to the plank drivers to look into those!

Then I had opted for a couple of nifty new items.

Piezo gyros have been around for some time now, and they are THE toy to have. However, the biggest drawback to these brilliant gadgets has been their price. Well, that's just changed, for the better! A company in Taiwan, the Grand Wing Servo-tech Co. Ltd. (GWS), have produced a very compact (about a 1 inch or 25 mm cube), and light (16g) piezo gyro. The one I got was the PG-01, the single rate version. It was so easy to install that it was bordering on the ridiculous. It looked positively lost in all the space normally reserved for the old traditional mechanical variety of gyro (As an aside, the PG-01 would make an excellent choice for electric choppers, or for that really tight-for-space scale, e.g. an Apache or TOW Cobra).

As the aim of this exercise in the long run was to go for a scale, I also got hold of the Hirobo Battery and Fuel monitor. As the name says, it checks both battery condition and fuel level. It's simply done for us pilots, via one very bright and large LED. A slow blinking rate shows all is OK. A fast flash rate indicates low fuel level. A steady light, and you should land immediately, if not sooner, as the battery is about to give up the ghost.

### Putting it all together: the Z-TS

I'm going to cover mainly the highlights - no use in just rewriting the instructions. Pleasantly, there were very few lowlights as such.

The 'Z' instruction manual is reasonably well written. Note that they do cover the three versions of the Shuttle available, i.e. Z, ZX, and ZXX (A new super duper Shuttle, the RG, has just hit the market, and is outside this review.). Therefore you have to remember which one you have got, otherwise you'll be looking for parts that ain't there - now how did I figure that one out?



Left: Hirobo Fuel & Battery Checker.

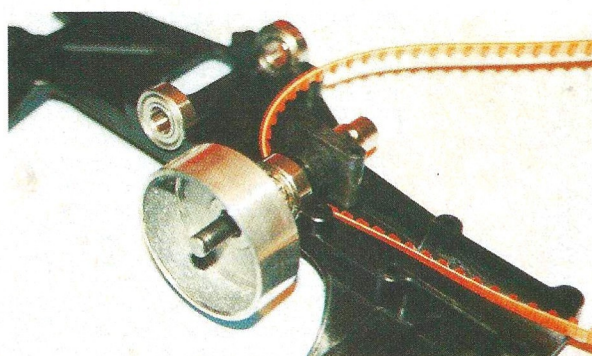
Below: Aluminium clutch bell with liner ready installed. A start shaft bearing block helps alignment and takes the load of the tail belt drive with the clutch bell upper bearing. The start shaft engages with the one way bearing in the clutch shoe.

The instructions rely on the old adage, 'That a picture is worth a thousand words'. Only where necessary, or something is important/vital, were written instructions given. Further, safety featured highly all through the manual. Several important areas had the text written in red ink for greater emphasis.

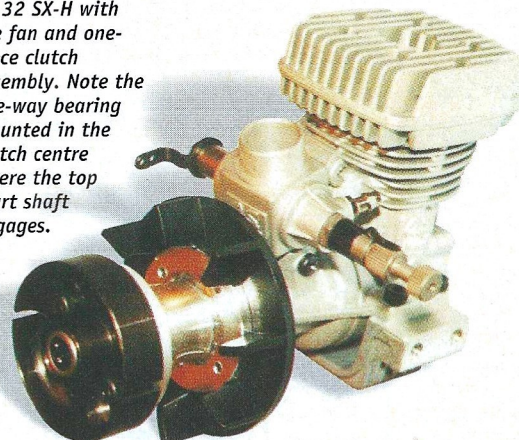
In the diagrams, Hirobo use colours to show the existing part/assembly (black), the added part/assembly (blue), with any vital part/assembly (red). Couldn't be more simple or clearer. Unless of course you are colour blind, in which case get help!

Hirobo have gone to using Phillips headed self tapping screws (except for the high stress areas where the traditional hex head screw is used). No problem with that, other than the assembly can get a bit tiring. Fortunately I had a battery operated screwdriver and the adjustable torque settings made assembly a breeze.

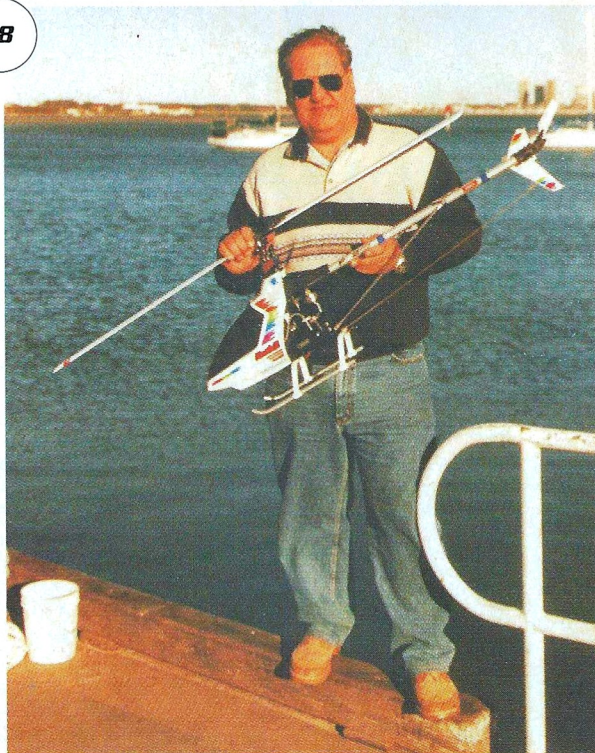
The thing that I quickly noted was just how fast and easy the 'Z' was to put together. The instruction step number corresponded with the appropriate labelled parts bag, but more importantly, and conveniently, it contained all the bits needed for that assembly. This makes for a much quicker and right first time procedure. I really hate it when you get one bag with all the screws and washers etc., and you have to keep trying to find the right length, shape size, etc., etc., for each different assembly step. Much easier this way and that's the way it should be.



OS 32 SX-H with the fan and one-piece clutch assembly. Note the one-way bearing mounted in the clutch centre where the top start shaft engages.







*Peter Rieksts is no beginner, but looks happy with the Z-TS - he won't look so happy if he takes a step back though!*

This chopper is directly aimed at the newcomer. The typical 'know it all expert' shouldn't experience too many hassles, so long as they follow the instructions of course!

Whilst the 'Z' went together very well and easily, there were no critical or awkward steps that had to be done just right, I do have a couple of 'irks'. Nothing major, but would make life a bit easier and a bit safer-with the potential to be less expensive. First, the engine assembly step should show the carb. fuel line attached prior to the engine being installed in the sideframes. Only because I had a pair of very fine and strong haemostats, a sort of a cross between a pair of pliers and tweezers, could I get the fuel tubing on in situ. Second, these instructions go into great detail about learning how to fly a R/C model helicopter, citing examples of how to go about it. Again, no problem with this, as it's just what a newcomer needs. But nowhere is there shown a training undercarriage. I think these things are universally accepted as the way to learn, especially for the tyro. So, a completely new chopper pilot may not even know of the existence of this item. Particularly if they bought a package deal by mail order and/or from a shop where they knew little about model choppers in detail (and of course if they had never been able to get hold of this great magazine!).

Now if this is all I could fault with the 'Z', then Hirobo have done a pretty good job, which I truly believe they have. Further, the staff at Hirobo have done some extra good things in the instruction manual about other aspects of the chopper, i.e. it's care and maintenance etc., which are perfect for the newcomer and for some of us forgetful 'experts'.

For example, they listed the various common faults that are likely to be encountered. Then the instructions show how to trouble shoot your way to the correct solution (this would have been a god send in my early model chopper days!). It is done via a flow chart, where

depending upon which way you answer the questions, you are led to the known solution for that problem. Also, the correct way to disassemble various parts is shown, together with exploded drawings of the sub-assemblies, listing all the relevant parts. A nice touch.

The time taken to completely assemble the 'Z' to flying stage was only about 15 hours - actually done over one rather wet weekend (yes, it does rain in OZ, the land of). And that included goofing off to watch TV, take photos, making notes and meals etc. So I would consider the average working 'Joe' could quite easily buy this whole package on a Monday, and have it flyable by the following Saturday lunch time (Pre-built versions would obviously be much quicker).

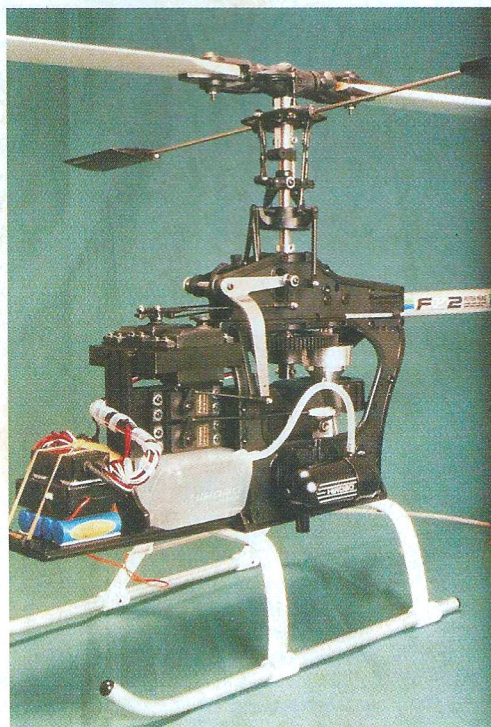
I did have to fit/use some extra parts. And that's no criticism of the 'Z'. Any single manufacturer just can't hope to cater to everyone's needs and/or tastes. Plus I tend to use certain parts simply as a matter of choice. Experience has taught me (the hard way of course!) what works and what doesn't. Now these items included:-

- 1, Cable ties, both long and short to sort out the 'rats nest' of wires.
- 2, Loctite the blue type.
- 3, Hirobo Glow Plug Spanner - essential due to the plug location.
- 4, OS remote glow plug fitting - see 3 above.
- 5, Double sided tape for the radio installation.

### Putting it all together: Futaba T6XA/XH Transmitter

As I said at the beginning, this is my first Futaba radio in quite a while (I remember that the original radio boxes used to be a nice shade of green, now they have gone to a dark grey - doesn't matter, as it ain't the box that performs on the flying field!). It appears to be the latest offering from Futaba, aimed directly at the sport minded flier, the backbone of our great sport. It offers 6 channels, 3 model memory, and is compatible with all previous PPM and PCM Futaba receivers.

The heli side of things has all the necessary features to be able to successfully operate a R/C model helicopter. The radio comes standard with 4 off S3003 servos. For the newcomer, it would have been nice to come with 5 servos - I had an extra Futaba S3003 servo amongst my spares, so it didn't affect me as such. Anyway, with 3.2 kg of torque, the S3003 is heaps good enough for any 30-46 size chopper. No batteries came as standard and whilst this on the surface seems to add to expense, I quite like it. Now I can order the exact batteries I want. In the past, I usually end up with extra packs I don't want/need. To me, no batteries is a cost saving - that sounds odd, but it's true! A thing that did stand out was the usually optional servo extension lead



*Left: From the left you can see the exhaust muffler supplied with the Z-TS. The collective pitch and throttle linkages are also clearly seen.*



*Final part of the top start system - the hex drive adapter which does away with the old belt start system making it easy to start and ideal for fuselage use.*



being offered here as standard. On some choppers you really need this on the rudder servo to gyro connection. Interestingly, on the 'Z', it wasn't needed. But nice to know it was there, just in case. You will no doubt find that the specification of radios and items included differs from country to country.

This radio is obviously aimed at the 30 size chopper market, especially for the newcomer through to advanced flyer. And this is precisely how I will be looking at it. What I really like about the latest generation of instruction manuals, is the depth of information they offer. For example, there are explicit diagrams, of the correct sense of the controls. It is all too easy for the newcomer (and expert) to get this wrong, especially on the rudder. By following the instructions to the letter, it is easy to get a nice flying model. A real boon to the newcomer.

I hate to show my age, but back in the beginning of choppers (not time, as I'm not that old!), I remember that the entire radio/chopper set-up instructions were less than a A4 piece of paper. Now it is pages and pages long, plus in great, usually minute, detail. Almost to the point of overwhelming the tyro. But it is there.

Even though I haven't used a Futaba radio in quite a while, with the instructions it was easily programmed.

### Putting it all together: Hirobo Battery and Fuel monitor

When I heard of the existence of this gadget, it sounded just like what I was looking for. As I'm in the process of building and flying a couple of scalies, being able to easily and accurately monitor fuel is a major concern. I don't mind doing autos with an F3C machine, but with a nice scalie is another matter! And as scalies tend to have all enclosing bodies, just being able to see inside the fuselage is hard enough, let alone being able to see the fuel level.

The battery monitor side is straightforward. It simply senses the battery voltage, lighting up the LED in a steady mode, when it drops below a pre-set level.

The fuel monitor works quite differently. Basically it monitors capacitance. Now what the heck is that, I hear you electronically challenged people ask? A capacitor is simply a pair of separated plates, usually metal, with an electric charge between them. The measure

of this charge is called capacitance. It is, amongst other things, affected by the amount of material (called a dielectric) between these plates. The Hirobo monitor has as one plate, a metal spring which is placed over the clunk fuel line. The other plate is a copper strip glued vertically to the outside of the fuel tank. Now, as the fuel level drops with use, the capacitance between these two plates changes. Once it reaches the set level, it shows this as a fast flashing mode on the LED. By changing the vertical position of this copper metal plate higher or lower on the fuel tank, you can alter the point at which the monitor gives the low fuel warning. (NB. Since writing this I've found out that there is a more sensitive way of setting this point - after having read the instructions more in depth - see the flying review for the correct procedure)

The unit is about the size of a receiver, and is mounted in the normal manner in the chopper. The LED is simply HUGE - I've never seen one as big! It certainly is bright, but it is very directional, at right angles to the long axis it is nothing out of the ordinary, but along the long axis it is really, really bright.

Two different fittings are supplied to mount the LED. It is obviously meant to be disguised as a strobe light, and it will even function as one anyway on the scalie. I ended up mounting the LED at the rear undercarriage strut, long axis mounted horizontally. Not in a scale manner, but then I was more interested in its operation as a fuel and battery level indicator, rather than trying to make it look like it was a scale fitting.

I hope you enjoyed the building expose on the 'Z', et al. It was a real pleasure to put together, and very easy to set up. As a complete package, or each individual part, I would have no hesitation in recommending it to all and sundry. So, if you are looking to get into this great sport of ours, and/or need/want some nifty gadgets, then take a good look at all of this. I don't think you will be disappointed in any way.

Next month we'll be taking the package to the flying field.

MHW



Finished Shuttle Z-TS pictured with the Futaba Skysport 6H non-computer radio - another popular option as a beginners radio.

There are all the typical heli features, e.g. revo mix, pitch/throttle curves, throttle hold, idle up, etc. One feature that is absolutely brilliant, especially for a budget radio, is that it beeps if you turn it on with idle up and/or throttle hold selected. All heli radios should have this feature; no ifs, buts, or maybes. It is simply too important a safety feature. Further, there is a visual indication on the display if and when any of these features is selected. Big gold star to Futaba for this!

The set offers a hovering pitch control knob, but no hovering throttle control knob. No big deal for the beginner, but if you are used to having both control knobs, then you will miss it.

In conclusion, I think that this radio offers quite a bit of 'bang for your dollars'.



Radio installation is simple with excellent instructions in the manual. The transmitter pictured here is the Futaba Skysport 6H, a non-computer set providing the basics a beginner would need.



**Problem:** *Want to fly an R/C helicopter  
but don't know where to start...*

**Solution:** **HIROBO**  
**Shuttle Z-TS**



**And here's why...**

- 1. The Hirobo Shuttle was one of the first (and we think the best) of the modern .30 class machines**
- 2. It's available in easy-to-build kit form or as an almost-ready-to-fly**
- 3. It's affordable to buy and fly**
- 4. It's easy to maintain**
- 5. Spares are cheap and easy to find at your local model shop**
- 6. It comes with fully illustrated step-by-step instructions**
- 7. It's fully upgradeable as your skills and confidence increases**
- 8. Best of all - it flies superbly**

Specifically designed to introduce new pilots to R/C helicopters, the Hirobo Shuttle Z-TS is really easy to assemble, simple to maintain and, best of all, great fun to fly.

With super-smooth controls and large rotor disc, it has to be just about the easiest flying R/C helicopter you can buy. Maybe that's why the Shuttle Z-TS is so popular at clubs and training schools.

It's great value, too! Now at a scorchingly low price and supplied complete with a precision top start system and machined clutch bell as standard it's never been better equipped or more affordable.

**SHUTTLE Z-TS SPECIFICATION**

Engine: .32-.36 class (not inc.)  
Start System: Top Start  
Rotor Dia: 1,240 mm  
Total length: 1,458 mm  
Total weight: Approx 2,300g



**HIROBO**

**HIROBO SHUTTLE - STILL THE FIRST CHOICE**

**IRVINE** <sup>x2</sup> *Leading the way again...*

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