

# Product Review

**Precision  
Aerobatics  
Electric Shock EP ARF**  
by  
Jason Pickering.



My wife has long been convinced that model aeroplanes spend most of their time sitting in the shed breeding. This of course is the explanation given for their apparent ability to replicate and multiply, and rather than dismiss the idea as a myth, I have infect indorsed it from time to time by bringing in one of their babies.....

This little cutie turned up at the doorstep via post. Rather than look like an abandoned baby, it was packaged in a small, well layed and attractive box with

all the guff clearly printed on the outside. It was taken to the workshop to be introduced around, but the instant the lid was lifted, the decision was made to bring it inside to be assembled in the comforts of the lounge, whilst sipping on hot chocolate or maybe a beer or two. It really is a simple plane to put together, and in fact needs very little work and equipment. It would actually be an ideal plane to be taken on holiday, built and then flown and flown and flown. Ah now that's a holiday but first things first.

## INITIAL IMPRESSIONS

What other hobby gives grown men that feeling of excitement you get when a box is opened on a quality ARF. No girls, they are not just a few sticks glued together and put in a box! Despite this, I have from time to time been mildly disappointed, usually from a lack of quality or originality, but not this time. I honestly have to say, I have never seen anything quite like it. It may be just a profile fuselage, but there is an astonishing amount of detail in it. Each piece is beautifully interlocked and appears to be of a 3 tier construction. There are bracing techniques that have not been used in this style of production before and of course huge amounts of the PA trademark.....carbon fiber. In fact, here's the list...CF fuselage boom, leading edge and trailing edge as well as double CF spars. Wing tube, wing sleeves and pushrods are CF as are the CNC machined control horns and motor mount. Even the elevator has a CF leading edge and if all that's not enough for you, there is optional CF servo arms and of course, Carbon fibre undercarriage.

There are more unique things crammed into this little plane than I have seen for a long time. Take for example, the aforementioned undercarriage. Not that flimsy wire sort that even some of the manufactures recommend omitting, but good solid CF legs and CNC cut composite wheels. While these are supplied separately, they are definitely worth the extra pennies if you need wheels although the manufacturer is certain many will be just as happy to fly with none. I guess it depends largely on where you fly. Also, the ailerons and elevator are pre-hinged and of course the wings are two piece slip on over a Carbon tube. For a plane of this size, these features are gems that we rarely come across.

## THE PACKAGE

There are many advantages to buying directly from the designer and manufacturer of any product. In this case the biggest advantage had to be the availability and



Wingspan 780mm  
Length 820mm  
Wing area 326sq.  
in Recommended  
motor setup  
930kv outrunner  
with 11.1V LiPo  
1000mAh battery  
and sub micro  
servo's and  
receiver



The Precision Aerobatics power setup consists of PA Thrust 10™ 930kv outrunner motor, PA 3S LiPo 1000mAh 15-20c battery pack, Electronic Speed control: PA 18A programmable brushless, Hyperion 6ch receiver with four BMS 306B Bluebird servo. With an APC 10X4.7 SF Power output: 900g of Thrust

easy fit of all the auxiliary equipment. The servos, motor, battery pack etc were all from PA and they are not only matched by performance but also fit perfectly as the plane is designed with these specific items in mind. The motor is the little PA Thrust 10™ outrunner, and is PA's own brand, as is the ESC and battery pack. The servos were the Blue bird 306BBs.

**THE BUILD**

Well I'm going to have to work hard to string this out!! The build is extremely simple and quick. While I took a little longer to be able to document the process, one evening should just about have this thing knocked over. The only tools you will need are a modeling knife, a small Philips screw driver, and a small amount of CA. The only other things required are a heat source such as a heat gun or a box of matches and

a soldering iron. The instruction manual is well written and worth following even though it's such a simple project as there are some steps that need to follow a certain chronological order.

The first step which is often overlooked by manufacturers and builders alike is the pre assembly ironing out of wrinkles and twists in the air frame. Any aircraft that comes from the northern hemisphere, down through the tropics and then to our changeable climate is going to suffer some (even if only minor) distortion. Even imported timber planks need to be acclimatized under controlled conditions. It doesn't take long, but it is much simpler to do before assembly and is imperative in this type of model. The review plane was actually fairly unaffected by its long voyage at sea in a shipping container, and required only a small amount of ironing to straighten things out.

Next job is the motor installation. The little Thrust 10 outrunner is PA's own brand and it comes with some rather impressive specs. Figures on it are readily available on their website but bottom line is, it produces a whopping 900grams of thrust....(hence the name I suppose). It also comes in a nice little box with some foam that is worth keeping to wrap your receiver in. The carbon motor mount is easily installed by screwing in through the predrilled holes after ensuring there is the right amount of offset and the little outrunner is slipped on and screwed in. The small pushrod guides are set in, centered and glued with CA. The wings are installed next to facilitate the servo installation then the pushrods can be trimmed to length. The pushrods are all carbon fibre with wire Z-bends bonded to the ends. One end is done in the factory for you, so it's just a matter of feeding them through the guides, trimming the rod to length, and bonding the other Z-bend to the far end.

The stabilizer fits easily into the slot and the rudder is attached. There is some fiddly work at this end to set those push rod ends, but it is bearable and one of those jobs you only have to do once. All the control surfaces bar the rudder are pre hinged and sealed so there is very little else left for you to do apart from installing your receiver. The ESC and battery are mounted and the prop and prop adapter are fitted. I ran a radio test and checked the ESC programming. Again the ESC is their own brand and has very comprehensive instructions. Programming can be done via the transmitter as with most modern ESCs but also for more detailed customizing, a separate programmer is available. With all systems go, the battery was topped up ready for the next available fly day.

**Radio setup**

	High rates	Low rates
Ailerons:	35 degrees	15 degrees
Rudder:	45 degrees	20 degrees
Elevator:	40 degrees	15 degrees

I used 60% exponential on all surfaces for high rates, and 20% on low rates.

**FLYING THE SHOCK**

All I can say for this plane is it's a keeper. It's absolutely rock solid for such a small plane and bag loads of fun. I can see that I am going to have to get another half a dozen batteries to keep me going. Vertical performance is spectacular, slow flight is ridiculous, harriers are stable, rolls are of course axial, and there are no vices present. Despite my limited ability, hovers and torque rolls are effortless. I decided to get the impressions of another more talented flier who could really throw this thing around through some extreme 3D manoeu-



Hit the brakes they'll fly right on by



vers. It was inspiring to watch, and I really think this is an ideal platform to improve anyone's skills as it has such a nice balance of stability and control. The long fuse helps smooth out those aggressive inputs and the 3 ply construction really pays off with its resistance to twisting. Dan, (the aforementioned pilot) had this to say:

"AMAZING! After a few various speed passes, I threw it into some aerobatics, and I have to tell you, this plane tracks really straight through them all. Despite its size it handles the wind very well and pushed through all the 4 point rolls, slow rolls, loops, hammerheads, very well. Its long profile fuse aids the pilot through any maneuver that requires longitudinal stabil-

ity. As far as 3D goes, it truly is a monster. Apply full elevator, and reduce throttle to put it in the nicest harrier you will ever see in a plane this size, knife edge flight is very easy, little to no coupling at all, hovers are super easy to control, waterfalls look really cool on this plane, it really chases its tail. 3D is a piece of cake on this plane. It's the perfect plane for a beginner looking to learn 3D, and a 3D monster to have on this size for any expert!"

#### MANOEUVRE NOTES

The Harrier the plane has no wing rock at all, and very easy to control. The plane holds a hover very nicely with minor inputs. Spins require a different technique to

enter, but once learned, it does the sweetest flat spins. High alpha knife edge is very easy knife edge, almost no coupling. Transition from knife edge to rolling harriers is also very easy and four Point or slow rolls the model has good precision when on it's side plus it tracks very well.

There is no signs of tip stall during The Wall just apply full elevator and you will have a nice wall. I love to do a wall and then a inverted waterfall, looks awesome on this plane. Blenders require a bit of practice to learn how to blender this plane, but once learned it's very easy to blender.

The plane goes down in an elevator really nice, transition to a harrier is also effortless and it stops right up with no signs of tip stalling entering a parachute.

#### CONCLUSION

There are a lot of "3D capable" aircraft of this size available out there at the moment. It truly is a modellers market. What separates this from the rest? I would truly say it has all the angles covered. It is well designed and built, using high quality materials. The finish of the kit is very good with high quality hardware putting it in a class of its own for a plane this size. It is not just "3D capable" but has been designed specifically for that purpose. Its hassle free power plant and manageable size make it a perfect choice for that evening fly down at the park, and its flight characteristics and capabilities would suit a wide range of skill levels and will certainly assist any one wishing to improve their 3D skills.

I would highly recommend not just the plane but also the entire package. At less than \$300 for the plane, motor, ESC and Battery this package is not only value that is hard to beat, but it also takes out any guesswork with power options, performance and CG placement. Its extremely light wing loading and 2.5:1 power to weight ratio gives you plenty of punch and assurance that you will be able to power out of any maneuver (particularly the ones that turn pear shaped) and its design features combined with the carbon fibre make for an airframe that is remarkably ridged for a small profile of this type. To top it off, it is truly "ARF" with a couple of enjoyable hours being all that is needed to get it in the air. All in all I'd say it's a worth while addition to any hanger. To see this plane in action, you can view some excellent videos at [www.PrecisionAerobatics.com](http://www.PrecisionAerobatics.com)

This aircraft and accessories are available directly from Precision Aerobatics via their website or by phoning (02) 95580443.

Trade inquires are also invited.



Lightly loaded there is no sign of tip stall which is a confidence building feature when pulling up into a low level Harrier.

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