

Precision  
Aerobatics'

# EDGE 540T

by Antonio Watkins



## Specifications

<b>Wing Span:</b>	84" / 2134mm
<b>Length:</b>	75" / 1900mm
<b>Weight:</b>	Approx 13.2 lb/ 6000g
<b>Engine:</b>	35-50cc
<b>Servos:</b>	5 high torque, 1 mini size
<b>Hardware:</b>	EVERYTHING included + carbon fibre wing and stab tubes and Kevlar tail wheel assy
<b>Covering:</b>	Ultracote

## The Kit

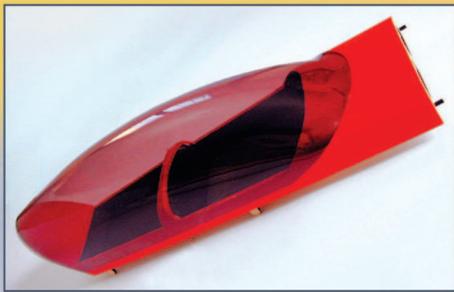
The plane came in a well packaged box, or should I say boxes: each part was packed in its own separate box so nothing can damage it and on top of that there were two outside boxes! I opened it up and removed all the parts and took inventory. All parts were accounted for. Thorough inspection of each part came next, everything was in great shape and I found the components to be extremely light.

The ARF did not require any ironing down of the covering like many ARFs on the market. The wings are very well built being completely built up with no foam. Comparing the Precision Aerobatics Edge 540T to other models in this category which I flew in the last few years, I found the wings to be surprisingly light, each designed for one servo. I checked to see how well the wing tube would fit into the wing. It was a very nice fit, neither too tight nor to loose - just perfect. The wing tube is made of carbon fibre and saves quite a bit of weight. I compared the weight to a similar aluminium wing tube I had and it is just half the weight! This is consid-

erable when putting together a 3D / IMAC airplane. The wings graphics look great on the plane. The size of the graphics is just right, on top of the wings "Precision Aerobatics" print is on one wing and "Edge 540T" is on the other panel. On the bottom of the wings is a large graphic of "Precision Aerobatics". I thought the large "Precision Aerobatics" graphic on the bottom of the wings would look wonderful while torque rolling and performing harrier manoeuvres. There is a big difference between the top covering and the bottom of the airplane which makes it very easy to spot in the sky.

I started with a mock build up of the plane to make sure all parts fit - they all did! You can find yourself sometimes spend hours on fitting - but not in this one. I then read the instruction a couple of times to make sure I understood all aspects of the build. The instruction manual is printed in colour and easy to follow. This is a high quality kit that is well thought out. You can see that Precision Aerobatics really thought about the flyer when producing this model. It is just the little things that you find during the assembly and you think "gee that is nice of them to do this!" Holes for the hinges had already been drilled and pre-slotted for you, pushrods are pre-cut to correct length, the fuel tank is pre built, canopy comes pre-cut, blind nuts are pre installed, the holes for the rudder cables are pre-cut and the rudder tray is installed by the factory. These things may seem small but they add up and having them done saves time and possible headaches!

Another very nice touch is the removable stabiliser. In most models in this category you cannot remove the stab and it is very easy to damage during transportation. Although it may seem a small thing, it is so much easier to transport



and store the plane with out the stabs fitted.

The adjustable motor box allows fitting of different engine brands and is an awesome feature you don't see very often. It makes the installation of the engine very easy and allows adjusting the location of the motor to fit the cowl as well as C of G adjustment.

## The Build

I like to put the landing gear on the Edge first, just to get the fuse up so the belly does not get a dose of hanger rash as I am building. I put the wheel axles on the gear first and used the wheel collars to hold the wheels on. The wheels are very lightweight made of foam. The wheel pants are made from fibreglass and resin and held on the gear with 2 screws (PA offer upgrade wheel pants made of carbon fibre which look absolutely awesome). The landing gear fits very well in the slots and was very simple to install. You simply slide the gear in and install the bolts. Next I installed the Kevlar tail wheel assembly supplied with the kit. All that was required to do that was to drill the necessary holes and screw in the hold down screws. The Kevlar is painted white and it really complements the airplane.

## Wings

Next, work on the wings began. There is a stick glued to the servo bay and a string that is attached to it and the same at the wings root. This string is to guide the servo wire to the root of the wing. You will need two 12" (30cm) extensions. The ailerons must now be hinged to the wings. I used the enclosed Robart hinges. Hinging was very simple due to the holes for the hinges having already been drilled and slotted for you. All you do is mix up some epoxy, fill the hole with it and install the hinge. I put grease on the elbow of the hinges to prevent the epoxy from sticking to the elbow joint.

I chose to use Hitec 5945 servos in each wing. I mounted the servos and installed the pre-cut connecting rods. The pre-cut rods save a lot of time in the build. This is another nice feature of this kit. Precision Aerobatics also offer carbon fibre arms set for their kits. Using them you're not only save a little weight but mostly get the strength of carbon fibre arms on the servos, plus they look cool. They are very easy to install: simply attach to the existing round servo arm using the supplied 4 nuts and bolts.

## Motor

I now re-read the instruction on installing the motor. You must adjust the sliding motor box so your engine protrudes out the front of the cowl the proper distance. Once that was



determined, I epoxied the box to the fuselage. You need to remove your motor from the box while epoxying the box to the fuselage so you would have the proper motor thrust alignment. I used a DA 50 motor fitted with a Slimline Pitts style muffler for my Edge. If you go this route, you will need four 3 inch motor extensions. Once the epoxy holding the box in the fuselage had dried, I put triangle stock around the outside of the motor box that connects to the fire wall. This is to ensure the box is very strong and will not break away from the fire wall. I mounted my ignition on the right side of the motor box via 2 zip ties. This was one of the easiest motor installations I have done on an ARF. The fuel tank is pre built. I was very happy about this because I hate building fuel tanks. The tank is held in place with a pre installed Velcro strap on a special tray. I chose a Menz 24 X 8 prop for the plane.

## Canopy

The canopy came pre-cut and tinted which saves a lot of time and headaches. Precision has done all the hard work! The canopy is attached to the canopy frame with screws or you can glue it down. I chose to use the screws because later I want to add a pilot. The frame is held to the fuselage via four bolts and pre installed blind nuts on the canopy frame. You simply measure the bottom of the canopy frame to the opening of the blind nut. You then place the frame on the fuse and with your measurements you drill the holes in the proper place and screw the bolts into the blind nuts and you are done.

## Stabs

Next came the elevator and stab build. You will need two 18" extensions for the elevator servos. The stab tube is carbon fibre. A lot of weight saving measures went into this kit just like a larger 40% style airplane. Again this is one

high quality ARF. The elevators are hinged to the stabs just like the ailerons. Again I used the included Robart hinges. The holes for the hinges are also pre-drilled. The stabs are held on to the fuselage by two bolts and blind nuts that are pre installed. Next I installed Hitec 5945 servos in the rear openings of the fuselage for the elevators. The connecting rods were already cut to the proper lengths. I used the enclosed hardware and connected the elevator servos to the elevator halves. The hole for the elevator horn is pre-drilled as well. This high performance aircraft is set up to use 2 elevator servos for very positive control.

## Rudder

I mixed up some 30 minute epoxy to glue the rudder stab to the fuse. The holes for the hinges are also pre drilled. I put epoxy in the holes and installed the hinges. The plane is set up for pull pull on the rudder. The kit comes with the rudder extra long control horn and awesome anodised nuts. The holes for the rudder cables are pre-cut. The rudder tray is installed by the factory. I used Hitec 5955 servo for the rudder. This servo has over 300 ounces of torque. I wanted to ensure this plane would knife edge with ease!

## Cowl

The cowl is made of fibreglass and resin, very lightweight and beautifully finished. I mounted the motor and slid the cowl on to the fuse. Once I had the proper distance of the front of the cowl to the motor, I taped the cowl to the fuse. Earlier I had measured the distance of the cowl hold down blind nuts. I applied the measurements to the cowl and drilled 4 small holes for the hold down bolts. They all lined up. Next I took the cowl off and installed the Slimline Pitts style muffler to the motor. I then re-applied the cowl. I had to cut away some of the bottom of the cowl to make it fit over the muffler. Be very careful in doing this and take your time, you do not want to mess up this nice cowl.

## Radio

A special tray for the receiver is already installed in the Edge and has Velcro on it to attach your receiver. There is an antenna tube mounted in the fuselage also. I attached my receiver and plugged in the elevators and installed extensions for the ailerons. I used two lithium ion batteries and I put both ignition battery and receiver battery just behind the fuel tank. This gave me the proper C of G. I like using 30% exponential on the elevator, ailerons and 50% on the rudder for low rates to start with and 50% on elevator, ailerons and 75% on rudder for high rates.

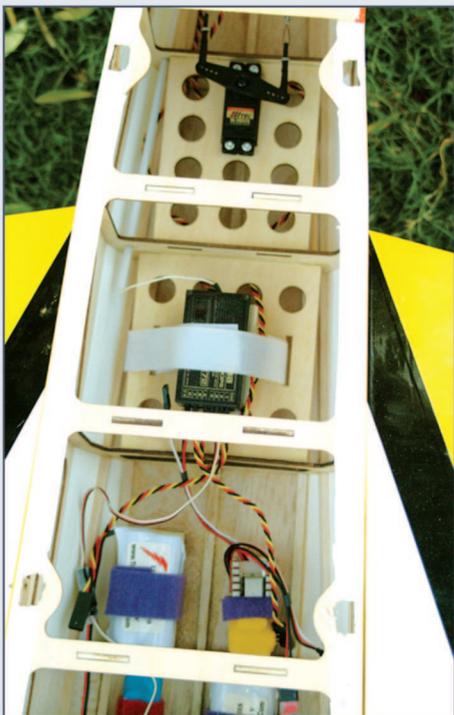


## Hits

- Very fast building (this is one TRUE ARF)
- Pre-cut connecting rods
- Ultracote covering
- Extremely light plane
- Carbon fibre wing and stab tube included!!!!
- Easy to do 3d
- Hardware included and can certainly be used (save \$\$ and time searching for suitable hardware)

## Misses

- Landing gear and tail wheel assembly may be weak for some



## Throws

I set up the throws by using the recommendations Precision Aerobatics gave. For me they were a very good starting point. After flying the Edge I changed the elevator low rate throws to 10 deg and kept everything else the same.

Ailerons	Elevators	Rudder
15 deg low	10 deg low	20 deg low
25 deg high	45 deg high	45 deg high

## Flying

The day came and the plane was ready for its maiden flight. I started the motor and taxied to the runway. Once there I advanced the throttle and the plane went down the runway and was airborne in no time. All that was needed to trim the Edge was a click of right aileron. The plane tracked very well and grooved nicely. Next, I did some loops and rolls and stall turns, I performed large loops and small loops and the Edge showed no signs of snapping out of a loop. Next I wanted to check the planes C of G. I rolled the plane inverted to check if the plane was nose or tail heavy. It was right on the money for me, just slightly nose heavy, determined by me having to apply a little down pressure on the elevator stick while inverted. I wanted to check the up and down thrust on the plane. I flew the plane right to left about 30 feet up and pulled a vertical line. I noticed the plane pulled to the belly a little, telling me I need a little more up thrust. My initial exponential settings were right on for me. I landed the plane and called it a day.

The next day, I added 1 washer between the fire wall and motor extensions. I then took the plane to the field for its second test flight. During the second flight I concluded I now had enough up thrust. The plane tracked superbly. Next came checking side to side thrust. I pulled a vertical line in front of me and the Edge tracked straight, no right thrust was needed. I then did a knife edge to see if mixing was needed. I determined a little up elevator and right aileron was needed to do a nice easy knife edge from one end of the field to the other. I only mixed in 3% up elevator and 4% right aileron. Now knife edge flight was a breeze. I did some mild 3D flying, hovering, waterfalls and inverted flat spins. The plane will get really flat during a flat spin especially with a little power. Hovering is almost hands off as I pulled the plane up into a hover. There was a 2-3 mph head wind. The plane hovered there almost by itself. I then began to pull a little more elevator to get the plane completely vertical to do torque rolls. If I change the C of G more to the rear I think I could have taken my hands off the sticks in the hover/torque roll for a few seconds. Waterfalls

are effortless. I pulled up to a vertical line and cut the power. As soon as the Edge looked like it was beginning to fall, I applied full down rate elevator and 3/4 power. The plane rotated about its axis. To maintain the waterfall, I had to work the ailerons a little. I put the plane through the intermediate IMAC sequence. I had no problem doing it. This plane will do any IMAC sequence with ease. This is an excellent IMAC plane! The 24 X 8 prop is a very good choice for the plane due to the plane being very light. A smaller prop would make the plane extremely fast and it was already fast with the 24 X 8 Menz. I was correct about the graphics on the bottom of the plane. It really gets your attention while torque rolling.

As final touch I used PA light aluminium coated glass spinner. The spinner has the carbon texture but is silver colour and is very light. I find it great value for money. It weighs half the weight of a comparable aluminium spinner and costs less. It is great to have a lightweight spinner, C of G wise. PA offers both this type and the carbon fibre type and the size (3.15") is especially made for their Edge.

Overall this is a great and easy building kit at a very good price, considering what you get for your money. A lot of the nice little things such as pre-drilled holes and pre-cut control horns and carbon fibre tubes you do not even find on much larger ARF kits. The plane flies very light and will do what you ask of it. It flies IMAC very well on low rates, but when you turn on the high rates you now have a 3D monster. It will make you look good right from your first flight! If you are in the market for a 50CC sized airplane, take a close look at this one. A video of myself flying the Edge can be found on PA website at [www.precisionaerobatics.com](http://www.precisionaerobatics.com). Edge 540T supplied by Precision Aerobatics, Sydney.

