

## Range Video

# RVJET

## Part 1 of 2



*Factory supplied photo of a ready to go RVJet complete with aerials for FPV transmission back to the ground based pilot.*

It's no secret that First Person View (FPV) video piloting has become one of the most popular segments of the entire RC industry and for good reasons. The ability to be able to go to a suitable and safe location, put on some video goggles and takes off and fly in real time from the safety and comfort of the ground has understandably created a real worldwide craze. In my recent multi part series introducing Airborne readers to this new aspect of our hobby (FPV for beginners) I was inundated with questions from our readers like never before. One of the most burning questions was "what is the best FPV aircraft available?" This was a challenge I was happy to take on. There are many models that lend themselves very well to FPV, but surprisingly few that are designed purely for FPV and aerial cinematography. So it is with much excitement I am able to review a completely new and innovative flying wing like nothing you have ever seen before.

### Range Video – The Company

Range Video of Florida need no introduction to FPV Pilots as they are one of the pioneers of remote video flight and amongst the first to offer on screen displays (OSD) and various other hardware to the FPV community. So when they announced they were developing a purpose designed, moulded foam FPV wing with the full pan and tilt capabilities that would accommodate both a GoPro or more cost effective and lighter FPV camera in a front mounted clear dome, the FPV community sure took note! The RVJet was designed over the last year or two by a passionate team from Range Video by and is offered in one of the most comprehensive and very quick to build ARF packages I have ever seen. The RVJet promises a lot and delivers on this promise in spades.

### The RVJet Kit

As there is no local distributor I put an order in to Range Video in the States. The kit arrived double boxed to my door in Sydney in a very short time there after. As soon as you unpack the RVJet, things are immediately different to anything I have yet to experience. All the sub-assemblies are perfectly contained in a moulded storage bed that ensures no movement from each components and then acts as a secure storage box after construction is complete. How cool is that! No more hangar rash or transportation damage to worry about. Pulling each component out of the box you will be extremely impressed with the moulded foam EPO finish and strength. Each item is as smooth as glass and more reminiscent of a composite finish, but much lighter and easier to repair should the worst occur.



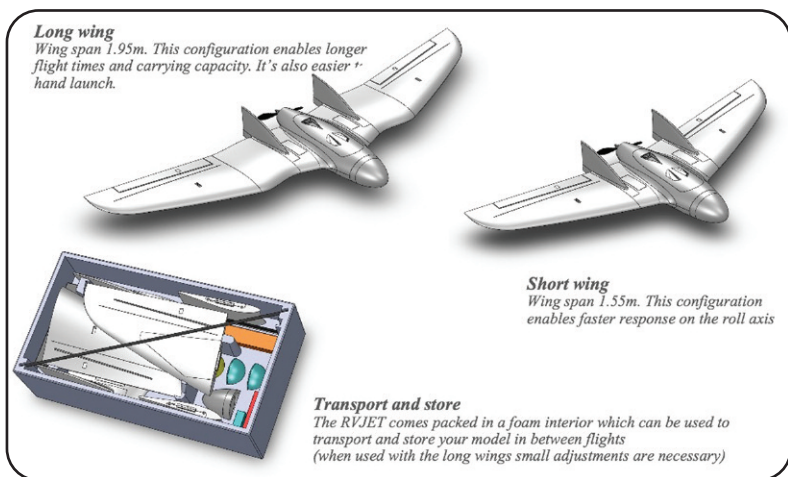
*Just unpacked the RVJet already impressed me with the most comprehensive package and detailed colour manuals.*



*The cavernous fuselage doubles as a storage bay with lots of electric goodies that are all included as standard.*

High quality metal gear servos are included with the kit as standard and come with a very high quality hardware package. The kit comes with 3 clear domes (all individually located in a dedicated moulded storage area in the box) for the pan and tilt system that are all beautifully finished to prevent any optical distortion from your camera, and feature an impressive 170 degree field of view. In addition to the clear domes, a matching white (the RVJet is also available in black) EPO nosecone is also included for your initial maiden flights in case of a nose in landing where all your expensive camera and pan and tilt systems are housed. This also works well if you're buying this aircraft just for the sheer beauty of it. Rest assured, it's not JUST for FPV pilots although it will tempt you to join in the fun of remote video flight if you're not yet hooked on FPV. The last impressive innovation is that the airframe is modular, so you actually get two versions in the one box! A short wing version at 1.55m span for high speed and aerobatics, and a bigger 1.95m version for longer flight times and greater load capacity for your FPV gear! This can easily be changed at the field by simply plugging in the wing extensions to match your flight mission, payload or weather conditions.

The last items that will really impress a builder are two full colours, amazing detailed construction manuals, the likes of which I have never seen before. The manual (not the normal generics



Getting started, the full colour manual is very impressive and as easy to understand as a child's book.

stuff we have got used to) covers everything from a detailed inventory list to every question you may have on building this model. It even includes a log book in the back of the manual, and that's just the first of two highly detailed manuals. The second fully detailed and colour manual is dedicated to assembling the pan and tilt system. It's a larger manual as it covers fitting a CCTV micro camera or GoPro flight camera. So let's do this impressive system justice and cover this in part 2 next issue.

But for now, let's get building, but before we do, get both a valid and an expired credit card ready. Why? This is getting interesting isn't it!

## Airframe Assembly

I say "building" but in honesty, getting the RVJet flight ready is more akin to a giant Lego kit as every part is superbly moulded and the construction manual so richly detailed that there really is no building to speak of as such. Not to get too ahead of myself here, but I spent one very enjoyable late afternoon 'till late evening completing the airframe. The next evening was spent assembling the pan and tilt with some setup and fine tuning. Adding the video link equipment and getting the range and video quality I needed is always a work in progress, which is part of the fun but it's worth an article in itself, so let's cover this next issue.

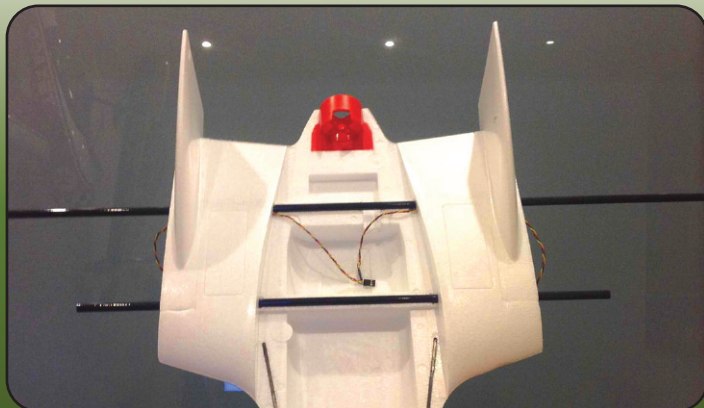
As I mentioned before, the standard RVJet package includes the servos, the servo extensions (nice high quality twisted ones) associated airframe hardware package and the complete pan and tilt kit with 2 servos for full access pan (left to right) and tilt (up and down) visual control. The RVJet power pack is optional, but I highly recommend it as it includes the Brushless 1200Kv, 35m motor, a high quality 65Amp ESC with built-in BEC and a set of carbon fibre folding props and matching alloy spinner all for \$99USD. Unless you have a suitable power system to hand I would recommend ordering the power pack as well.

To begin construction, simply thread the servo extension through a pre-moulded servo slot on the bottom of the fuselage then glue the bottom wing covers in place using CA and kicker. TIP: You'll want



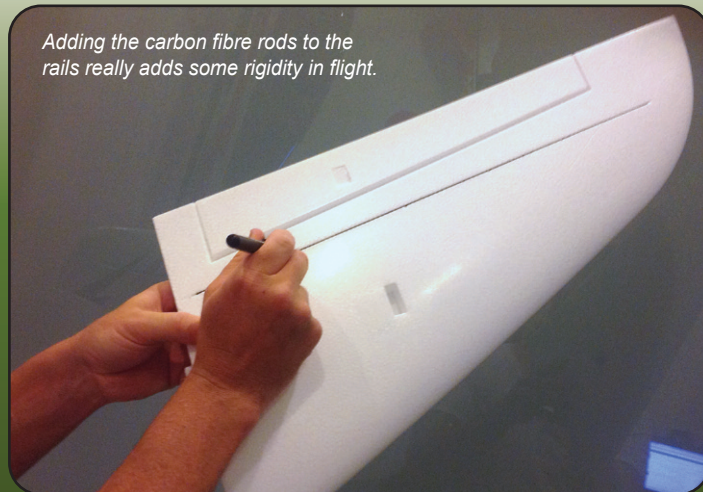
Here you can see the right side of the fuselage completed and sealed with the left ready to seal.

The landing skid is very sturdy and fits like a glove to its moulded placement.



The completed fuselage takes less than 30 minutes.

Note: you can clearly see the use of carbon fibre here but not excessively as video signals and carbon fibre don't play well together.



Adding the carbon fibre rods to the rails really adds some rigidity in flight.



Quality metal gear servos are included in the kit as standard but need their mounting hole plate removed to fit in the servo bays.

The options RVJet power pack is a perfect match and includes everything you see here.



You can clearly see the servo channel moulded in to the wing extension here. I removed this for ease of swapping out the long wing to the short wing as it meant one less servo extension.



to be able to adjust these servo extension cables later and as they are very close to an area you are applying a good amount of CA adhesive to. I'd recommend applying a little lubricant to prevent them being permanently attached to the fuselage. What that is curing, the next step is to glue the plastic fuselage skid in place (equipped with a bungee launch point) and both vertical fins to the fuselage. As the foam is so super smooth, I used some sandpaper to roughen up the area where the CA is to be applied to ensure the best bond possible. You start to get an immediate feel for the ease of construction and quality that is being undertaken, as everything just fits perfectly and you are only a few minutes into construction with a lot to show for it so far.

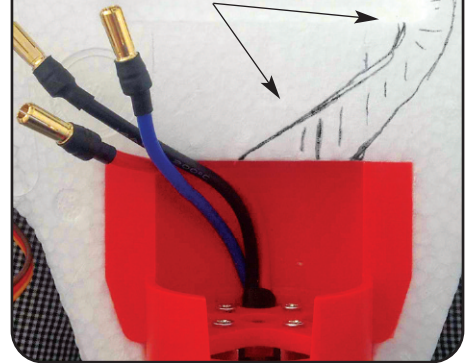
Moving down the fuselage we now glue in the motor mount ready for the motor installation. Tip: here you may want to try it to install the brushless motor prior to gluing in the motor mount as the lower screws were a little hard to access. If you do this, do ensure NO CA can get near the motor or wires. The front of the fuselage has pre-moulded recessed rails for the carbon fibre strengthening rods but the included rods were slightly too long so I needed to trim them down prior to adding some CA and bedding them in. The ESC fits in a dedicated space but the only thing I did find lacking here was the lack of an obvious way to route the ESC cables from the motor. The excellent manual does supply a colour picture so you have two easy choices here, either to cut out a route for them in the foam or fold them back over themselves. I choose the former as I like to keep them away from the heat of the ESC. The canopy hatch comes in two parts as you will have limited access to the cargo area once this is permanently glued in place, so I left this to last but not before gluing the top deck and rare earth magnets in position for easy access.

The outer wing panels (remember we have two wing length options to assemble here) are a real breeze to put together. There are slots to glue in carbon fibre strengthening rods, but unlike the fuselage these were a perfect fit and drop straight into their respective pre-cut slots. The elevons need the sides cut out to give them free movement and to do this ensure you have a very sharp new blade in your hobby knife and then after cutting, carefully sand away any excess to create minimal control gap. Flipping the wings over, the instructions call to glue in the servos. The final step is to glue in the wing panels, but keep in mind that once they are in its going to be very hard to remove or adjust anything, so do get everything set up with the correct throws prior to gluing in the bottom wing panels. I used bidirectional tape on the servo cables to ensure they were kept away from the CA and in their pre-cut slots. This also adds a bit of internal wing strength to boot.


## Wing Extension Panels

Range Video have in my option over thought this part, so I simplified the way I constructed each

Some foam needs to be removed to mount the motor wires otherwise it won't clear the top of the canopy. I used a soldering iron to remove the foam.



panel. These panels measure 20cm each, so required a 20cm servo extension lead glued in place. If you want to use this it means removing some foam from the internal wing area (prior to gluing in the bottom wing panel) to house the excess servo lead if you are using the extensions. I found this unnecessary and potentially another item that could fail and that I would not have service access to. I like the (K.I.S.S) keep in simple stupid approach, so I used my soldering iron to melt the excess foam and created a nice clean tunnel so I can simply drop the protruding servo wires from the wing though the wing extensions and into the fuselage when needed. To finish off the modification I then applied some smooth bi directions tape the rough surface of the tunnel after sanding it smooth to both strengthen the area that I removed some foam from and ensure the servo wire would not get caught on any unsmooth foam in the process. It really does works well. Whichever method you use, you will complete the process the same way as the wing by gluing in the bottom wing panel making sure not to leak excess CA in to the wing joining tube. The last step is to attach the wings, however the manual incorrectly states to glue in the wing extension panel. If you do this, there will be no way to swap back to the short wing version should you want to do so. To attach the wings, I simply used clear 3M tape that works very well. This completes the fuselage to a flyable standard, but next issue we get to the really cool stuff, assembling the pan and tilt dome, installing all the video camera equipment and extensive flight testing. Oh and I mentioned you needed two credit cards right? Well the valid one is to order one of these beauties at [www.Rangevideo.com](http://www.Rangevideo.com) and the other invalid one to recycle as prop stopper to prevent the propeller striking the fuselage. You can order a carbon fibre prop stopper from Range Video for \$5 if you prefer. We'll look at this next issue as well.

Blue Skies and happy landings Park Pilots,  till next issue. [Parkpilot@live.com.au](mailto:Parkpilot@live.com.au)

All 5 sections take just minutes to attach, thanks to a well thought out design.

