

# **Building the MikroMir Flying Razor**

A Pictorial build log by Dave Hooper with help from Aviattic, Pheon Decals and Gaspatch



The Fokker E.V / D.VIII needs little introduction and is one of the better known WWI aircraft types, even though its operational lifespan during the Great War was limited to a few weeks in August 1918. A series of fatal wing failures caused by sloppy manufacturing processes resulted in the aircraft being grounded on the 24th August pending investigation. The type, now designated D.VIII with strengthened wing spars with a varnish coated interior began to return to active service in the last few weeks of the war, but there is no evidence that these aircraft were used in combat. The D.VIII did see combat after the Armistice, most notably in hands of the newly formed Polish Air Service.

#### The kit

The MikroMir Fokker E.V / D.VIII is a re-boxing of the Avis kit which was first released nearly ten years ago. The box consists of a collection of plastic sprues, a small fret of PE details, a set of masks, decals for four options and instructions.

I am not going to go in to a lot of detail here as there are many very good 'out of the box' reviews of this kit already in circulation. Needless to say that while the kit has some rough edges, the main parts are all very respectable and with a little effort it can be built in to a very nice model of the Fokker E.V / D.VIII parasol.





### Pheon Decals Aviation Decals for the Connoisseur

#### Aftermarket and additional Items

As an aid to enhancing the basic kit I used a collection of aftermarket items. The following is a list of additional items and raw materials that were used on this build.

#### Pheon decals: Fokker E.V Volume 1

One of the major Achilles heels of the MicroMir kit is in its choice of decal options, two of which are post-war colour schemes while the other two are of the bright yellow and black Marine feld machines of Osterkamp and Sachsenberg (for which the black harlequin markings would need extensive masking).

If you want to build a regular lozenge covered machine the best current option is to purchase one, or both of Pheon Models excellent decal sets which provide options for 13 machines including one Polish option. The sets include national markings for one machine.

I chose to use volume 1 on my build which includes seven German options, the majority of which are based on well known photos of the Jasta 6 line up in August 1918. The set also incudes the black fuselage harlequins for Sachsenbergs machine not including in the kit.

The set consists of two sheets of decals, plus a small replacement Jasta 6 cowling decal sheet, colour prints, comprehensive information and instructions and an extremely useful jig which is printed on self adhesive paper and very easy to assemble.

Volume 2 contains six marking options and all of the above (with the exception of the cowling replacement sheets).

Given the disappointing selection of decals within the kit these sets must be considered to be an essential purchase.

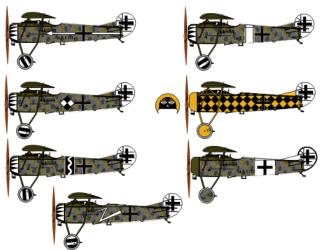
#### Aviattic: Fokker EV/DVIII 4 colour "lozenge" with factory fresh effect

Another essential aftermarket item if you intend to build the MikroMir kit in its factory colour scheme are these sets of four colour lozenge cookies from Aviattic. The sets consist of one large A4 sheet with enough lozenge cover two models and one small sheet printed on white which includes rib tape lozenge and reinforcement tapes for control openings. The sets are available in factory fresh or faded effect versions. I decided to use the factory fresh sheet on my build. The

decals are available here.

#### Aviattic: Fokker EV/DVIII cowling

The MikroMir cowling is a little basic in shape and detail. Aviattic produce a wonderful resin replacement which is designed specifically for the MikroMir/Avis kit and as such fits the fuselage like a glove and give your model a more refined appearance. The cowling is available <u>here</u>









#### Gaspatch 1/32 Spandau 08/15 Extended loading Handle (Late) machine guns

Actually I used the 08/15 Fokker version without the extended loading handles (which I fashioned from spare PE) as I had this set to hand. These excellent 3d printed machine guns are perhaps not as essential as the decal sets as I think you could get away with kits plastic / PE Spandau's however I rather think that they are worth the extra expense. Each set contains a pair of 3d printed guns that require minimal assembly.

This product can be purchased from **Gaspatch here** or **Aviattic here**.





#### Strutz

These are lengths of brass struts that were supplied in a range of sizes. Unfortunately Strutz are not commercially available any longer. Contrail also produced plastic stock strut in various sizes, but again unfortunately these are also no longer produced and there does not appear to be any currently available alternatives.

#### Evergreen plastic rod, strips and card

Evergreen produce a large range of plastic rod and strips in just about every size imaginable that are extremely useful for adding detail to models. In addition Evergreen are now one of the primary suppliers of plastic card for modellers and are one of the few suppliers that produce plastic card in a 0.005 (0.13mm) substance. On this model I used plastic rod to improve the internal framework and plastic card to add external detail such as the underside inspection hatch. You can find out about Evergreens products here



#### Albion Alloys brass rod

I find brass rod and tubing very useful for all kinds of purposes in modelling. It is particularly useful as a replacement for plastic

kit parts that a venerable to damage or even just too difficult to clean up. Brass is also useful for reinforcing joints. Although I use brass rod from many unbranded sources, Albion Alloys products are useful simply because of the sheer size of their range. You can visit Albion Alloys website here



#### Spares box

Every modeller should have a plastic spares box. This where you deposit all of the bits and pieces that you are left with when a model is completed. I tend to separate my spares in to various sections so that it is easier to find what I am looking for, as spares collections can become overwhelming after a while. For this build I used quite a few bits from my spares box including many wingnut wings items which I will try to document during the build.



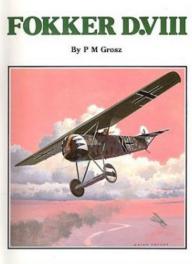


#### **Paper References**

There has been much written on the Fokker E.V / D.VIII over the years but I primarily used the following references during this build.

#### Windsock Datafile no 25: Fokker D.VIII by P.M.Grosz

Some of the information is a little out of date now, but this is still one of the single best references available on the Fokker D.VIII. As with all Windsock products this small affordable book has been produced with modellers in mind. A reprint of this book is available from Albatros Publishing here.



WINDSOCK DATAFILE 25

Tomasz J. Kopański

'TADEUSZ KOŚCIUSZKO'
7TH FIGHTER SQUADRON
1918–1921

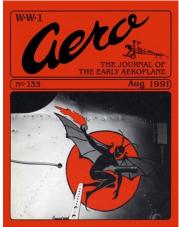
'Tadeusz Kosciuszko' 7<sup>th</sup> Fighter Squadron 1918 – 1921 by Tomasz J.Kopanski

This book studies the early history of the famous polish 7th Fighter squadron and while the Fokker D.VIII only played a minor role in the squadrons history, there are many nice photos of the D.VIII included within this book. What makes this book particular useful is the size and clarity of the photos. Many thanks to Richard Andrews for the loan of this book.

#### **WW1 Aero Magazines**

WW1 Aero magazines are a fantastic source of drawings and information on WWI and pre-war aircraft. Not surprisingly the Fokker E.V / D.VIII has featured heavily within its pages over the years. You can find out more about WW1 Aero (which is no longer published in paper form) here.

The site also includes a useful index of drawings



#### **Online References**

**Vintage Aviator** has built a pair of reproduction Fokker E.V/D.VIIs and a very useful set of walk-around photographs can be found on their website here

The **Aerodrome** forum archives are still available online and are a particular useful source for information on the discussions concerning wing colours. The original thread that highlighted the possibility of four colour wings <u>can be found here</u> while many other threads on the subject can be found by searching through the "Similar Threads" area at the bottom of each page.



Koloman Mayrhofer and his team made five reproduction wings for various clients including Vintage Aviator. An interesting and useful set of photos detailing the building process can be found on the **Craftlab** site which can accessed here. This includes photos of their interpretation of the four colour streaking. Access to these photos is not obvious, but if you click on the photograph in the centre of the page and scroll through the set of photos you will eventually find the photos of the finished wings.





# Building the Flying Razor

**T**he following is a photographic record (with notes) covering the building of the MikroMir / Avis Fokker E.V kit. As with most of my builds I have made mistakes which I correct if I can. I have not attempted to hide these errors as I am of the opinion that by highlighting these mistakes it will hopefully help others avoid the same traps and pitfalls.

As ever, my philosophy is that modelling should not be taken so seriously that it becomes elitist. I think that at heart we are all trying bring back a little of that childhood sense of wonder and enjoyment when we build these models and I would urge anybody building this kit to use my build (and others) as inspiration rather than a blueprint to building your own. Modelling should be all about enjoyment and satisfaction and as such the idea that there is only "one way to do something correctly" can seriously spoil the fun.

Enjoy and I hope you find the build useful.

#### Part 1. The Interior

began by cleaning up the sidewall parts. Aside from removing flash and tidying up the edges, I also opened up the air intakes and the control cable exit openings points.

The Aviattic Fokker E.V / D.VIII cookie lozenges are printed on a clear decal sheet and as such need to be applied to a white or pale coloured surface. I chose to prepare my interior with a white rattle-can which was subsequently smeared with a wash of a dark coloured paint over the white to produce some depth. In hindsight I should have used a paint wash to simulate the castor oil staining as I would later do on the outside of the fuselage.



The Aviatic Fokker E.V /D.VIII sheet thoughtfully includes all of the interior, including the plywood panelling. I began by applying the wood panelling, following on with the interior lozenge sections. The frames were hand painted a wood colour around the plywood panels and a German grey green primer colour else where.

#### Tips on applying Aviattic lozenge

Aviattic lozenge and textile decals are very easy to

apply, but as always the application instructions supplied with the decals should be followed.

I tend to dip the decal in to water for a few seconds and then place down on a dry surface for a minute or so. I wet the surface I want to decal with Future/ Klear. This helps

improve the long term adhesion of the decal and also helps to suck the decal in to sharp corners.

Care needs to be taken not to stretch the decal when removing it from its backer and I sometime peel the

decal from the sheet rather than try to slide it off.

I then carefully rub the decal down with a soft cloth with the aim

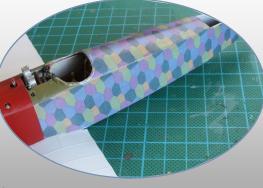
of pushing any air bubbles out to the edge of the decal.

If there are any ridges or sharp protrusions, I would recommend scoring the edge with a sharp scalpel as this will expel any trapped air and

allow the decal to settle better.

Once dry I tend to remove any unwanted edges with a fairly low

grade sanding stick an seal the decals



with Future / Klear.

Once sealed the decals can be masked for further painting if required, but I usually take away a little stickiness from the masking tape just to be on the safe side.

The kit side frame parts are very misshapen

particularly poor and replaced these with

and do not fit the fuselage very well.

I removed the sections that were

plastic rod (as pictured below)

The rear fabric panel and pilots seat were cleaned up and painted separately before assembly. The panel was spray white in readiness for the lozenge (again included within the Aviattic set). I used the kit seat, adding some thick white plasticard to the base of the seat to represent a cushion.

I used an Eduard pre-painted PE seatbelt which was part of a generic set of German WWI seatbelts. The seat belt was added after the seat was painted.

Note; Aviattic produces an accurate replica of a Fokker style seat that would be a suitable replacement for the kit part.

The kits throttle quadrant part is fairly basic looking and

I would suggest replacing it if you can. I found parts suitable for making a quadrant in my spares box. Unfortunately I based my quadrant on what I could see from photos of the only surviving D.VIII based in the <u>Caproni Museum</u> in Italy. This quadrant, which features two control arms, is not original and was fitted post war. The original Fokker quadrant should only have one control arm and I modified this part later in the build once I had realised my error.

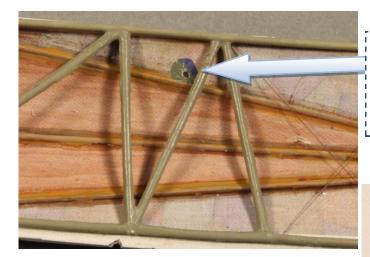
Likewise the throttle control rods, made from brass rod, were based on the Caproni machine and were later revised.

A small switching unit (pictured right) made from a combination of plasticard and spare PE was fitted to the port side frame, roughly in the position pointed out by the arrow in the picture of the frames above.



Once assembled and painted the frames were glued to the fuselage sides. Note in the picture on the right that I have also added bracing wires made from mending thread





Circular control opening lozenge tapes punched from the small white backed sheet in the Aviattic E.V / D.VIII lozenge cookie set were applied around the drilled out aileron control opening

> Elevator control bar opening

The floor board is glued to the base of the fuselage and painted. The position of the floor board is determined by aligning the two openings for the elevator control bar as pictured right.

Note: There should be two openings side by side in I would suggest plugging this hole with plasticard and

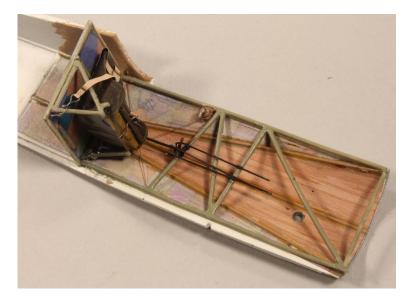
this position, which I did not alter until later in the build. This would be the best time to revise this area. using one of the Aviattic control opening tape decal supplied on the small white backed sheet in the E.V/ D.VIII lozenge cookie set as a template.

 ${f T}$ he control column as supplied with the kit is actually a good representation of a late war Fokker style column. I added a piece of wire between the trigger and the base of the column. I also replaced the horizontal bar with brass rod. Holes were also drilled in to the ends of the control horns ready for the aileron control wires.



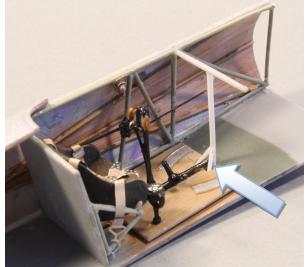
At this stage I also glued the seat and rear fabric panel assembly to one of the fuselage sides. This allowed me to dry fit and estimate the position where the compass is fitted to the floor board (as above)

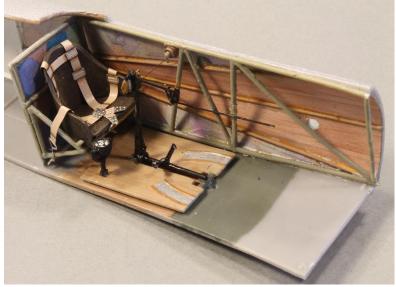
Once painted, the column is glued in to position on to the floor board. I also added the compass at this stage. I used the kit dial decals and white glued a suitable PE brass bezel on the top of the decal as pictured left.



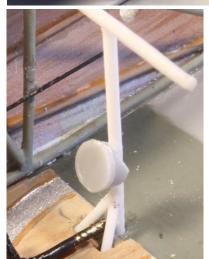


**N**ow the fuselage base is glued to the port fuselage side. Note that I have now revised the throttle quadrant.





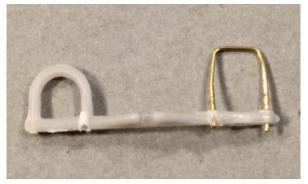
The T-shaped bar is fitted in to position. Note that I have also glued two small pieces of plastic rod to the base of the vertical section of the bar as pointed out by the arrow.



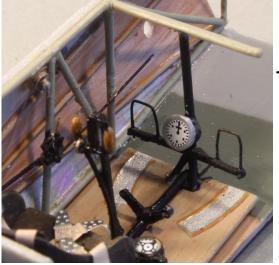
An instrument has now been fitted to the vertical bar. I initially created a groove in the rear of the instrument to allow a better bonding area (as pictured left), but this set the instrument too far back and I later removed and revised this part so that it sat further out from the vertical bar.

The foot straps on the kit rudder bar are curved whereas photos of the interior of the E.V show straps with a squarer shape. To revise this part I removed the curved strap

and carefully drilled holes though the base of the rudder bar to fit shaped brass rod. The photo on the right shows the difference between the kit strap and my replacement.

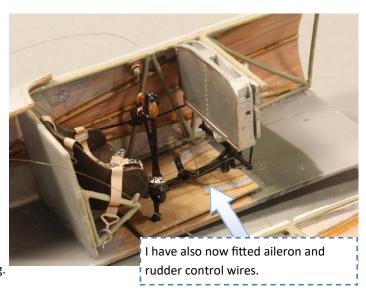


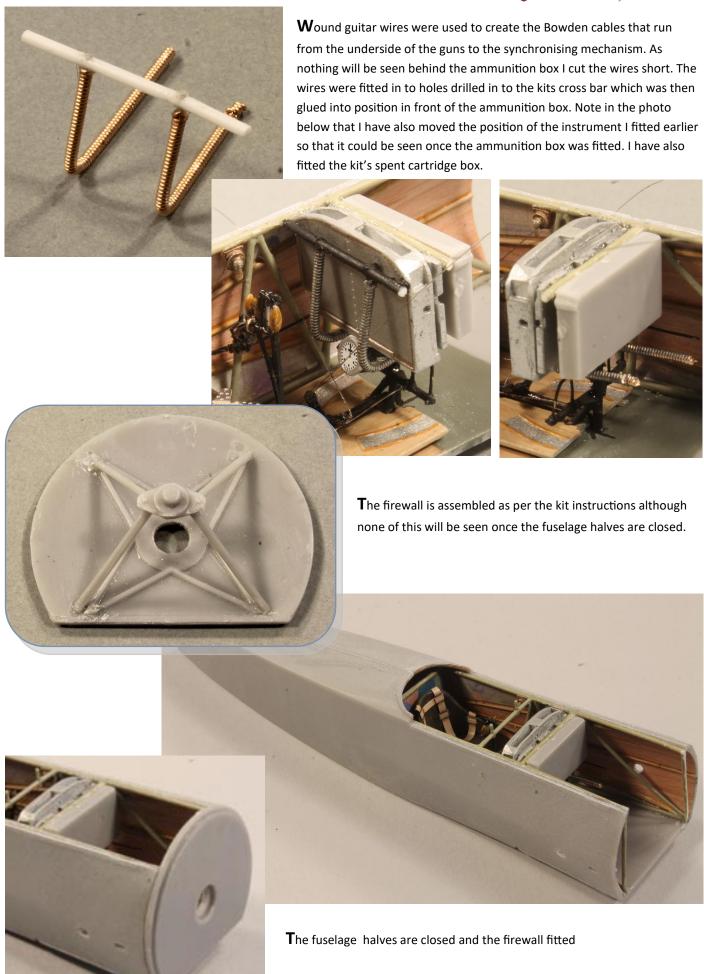
The rudder bar is painted and fitted in to position on to the vertical bar



I replaced the kits ammunition box with a Wingnut Wings item from my spares box (from a Fokker D.VII kit).

Ammunition feeders were removed so that I could position them accurately later. I used a piece of plastic as a spacer behind the box so that it aligned with the slots in the coaming.







#### Part 2. The Engine



The kits Oberursel Ur.II is actually quite well realised, although I suspect that the part is based on the engine from the Roden Dr.1 kit as the two are extremely similar. The one poorer area of the engine is the push rod section that slots on to the back of the engine.

I had some spare pushrods from a WNW Fokker E.III kit. They were the wrong shape and some were damaged but I reshaped, repaired and used in preference to the kit items

**T**he major engine parts were painted before final assembly



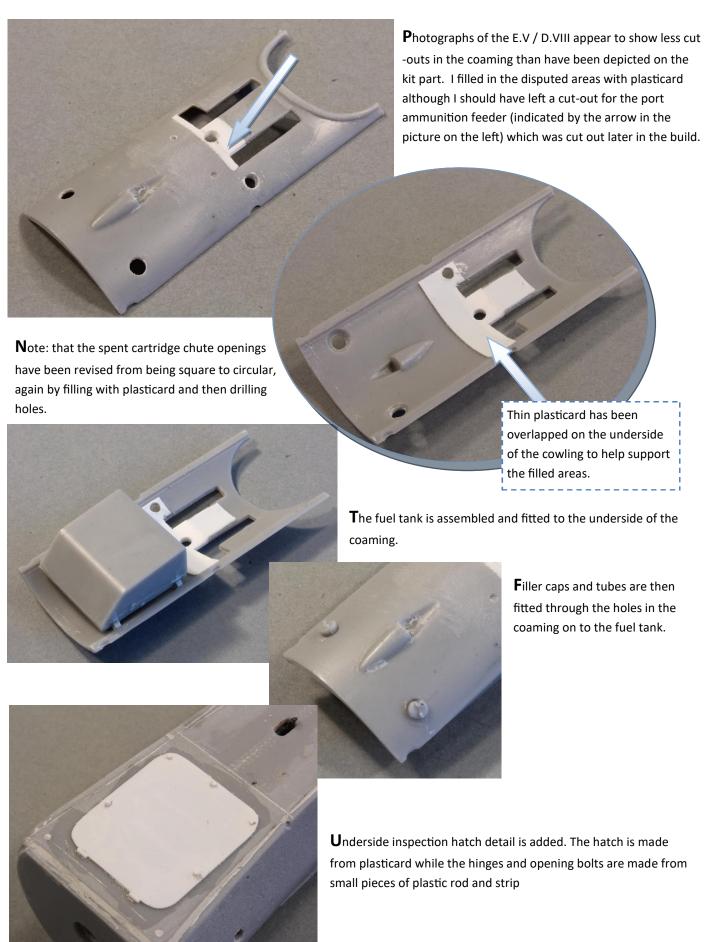
In the photo below some of the reshaped pushrods have been fitted



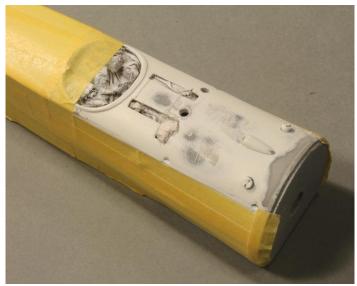
**S**park plug wires made from top E guitar string have also been fitted between the tips of each spark plug and the central hub as can be seen in the picture on the right.



#### Part 3. The Fuselage





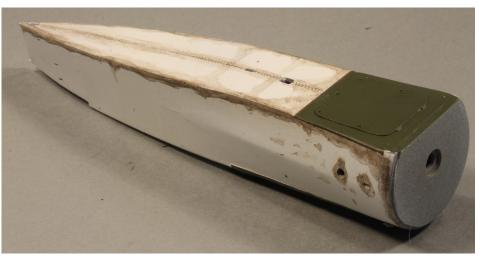


Once the coaming has been fitted to the fuselage and the joints cleaned, the entire fuselage is primed and then sprayed with a white rattle can. The coaming and underside inspection hatch areas were then masked ready for paint.

The best matching paint that I had available for what I imagined Fokker Olive should look like was a MIG paint from a WWI tank set called "Forest Green"

Rotary engines are very messy beasts, spewing castor oil down the length of the fuselage so that even after very a very short flying time the fuselage covering will become heavily stained. A good example of this effect can be seen on photos of the <a href="Vintage Aviator">Vintage Aviator</a> replica's found on their web site.

To simulate this effect I painted a brown wash on to the white base paint. I initially tried using an ink wash for this, but the ink dissolved during the application of the lozenge decal so I than used an acrylic wash.



I then began applying the Aviattic lozenge sections to the fuselage. The cookies are cut out flush to the edge of the lozenge and in the few areas where the cookies are a little small the decal is teased out to the edge by gently stretching.

Note that in the picture on the left the ink applied to the underside to simulate castor oil is visible but not as strong as it was when initially applied. After application of this section the staining was re-applied using an acrylic wash.



**N**ext I applied the rear decking lozenge part. The shape of the cookie around the cockpit opening is a little different from the kit part and I had to add a few dabs of paint around the front edge of the collar to cover this area.







**F**inally the side lozenge sections are applied.

The completely covered fuselage looks like the two photos below







**C**ontrol opening reinforcement tapes, cut from the small white backed sheet supplied within the Aviattic E.V / D.VIII set are applied to the openings in the rear of the fuselage (pictured left). The Aileron control openings under the forward coaming and the

elevator control openings on the underside (insert) are also applied at this stage.

One of the kits instrument dial decals is applied to the instrument in the coaming. Again I have used a spare PE part as a bezel.



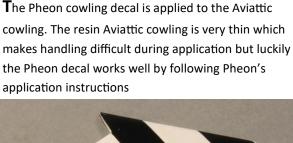
The Aviattic cowling is sprayed with a white rattle-can and then masked to allow me to spray the rear edge and fairings black in readiness for the Pheon cowling decal.







At this stage Pheon decals are also applied the horizontal stabilizer. Note that the control wire openings and the slot at the front of the stabilizer have been opened out





Once the horizontal stabilizer is fitted in to position on the rear of the fuselage, I began to apply the Pheon decals.

Note that the weight table and datum line are applied to the Port side of the fuselage only



The engine and cowling are also fitted at this stage in the build.





The Pheon lightning streak decals do not fit the rear decking very well and need some reduction in size. To do this without loosing the black outline of the lightning strike I cut the decal in to three parts and cut the ends of these sections down.

**O**nce all of the Pheon decal markings have been applied the fuselage is essentially complete, bar a few small finishing touches some of which are added later in the build.

**E**arth wire that wraps around the cowling is cut to size and loops created at each end by twisting the ends around a drill bit (pictured below).



**A** second loop is made through the initial loop and the ends of the second loop are glued to the edge of the firewall

The earth wire is the fitted in to the groove around the edge of the cowling, pulled tight and glued to the edge of the firewall on the opposite side.

**S**pare PE fret is cut and folded around the edge of the firewall which helps to hide the glued ends of the earth wire.



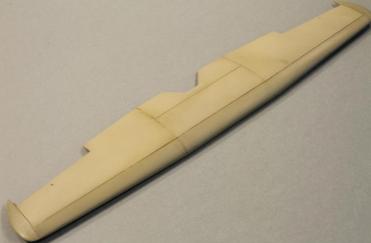
#### Part 4. The Wing

The Cantilever is supplied as two parts that fit together. While the wing is easy to assembled the fun comes once you begin to paint it.

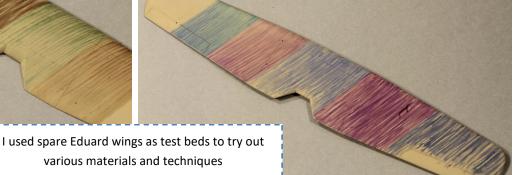
There was a time when it was generally accepted that the wing was painted in a solid olive green colour. These days however it is considered more likely that the wings were streaked in four coloured wood stains recorded on a factory drawing as:

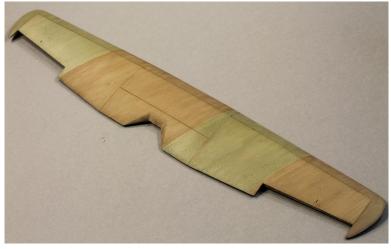
- Mocha Brown
- Azure Blue
- "Azin" Violet
- True Green

To begin with I had no idea of how I was going to approach the streaking effect or what exactly I wanted to achieve. I did however know that I wanted to build up the colour on a plywood coloured base with the intention that some of the differences in panel shade colours would show through the streaked colours.





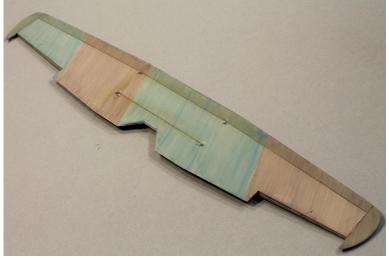




**E**ventually I decided on applying a base coat of <u>Lifecolour Tensocrom washes</u>. These products are intended as weather washes but their translucent properties made them perfect for what I was looking for.

The photo of the upper side of the wing on the left shows base coats of the Tensocrom <u>Grass</u> and <u>Earth</u> colours. The earth has a little dark brown ink wash mixed with it

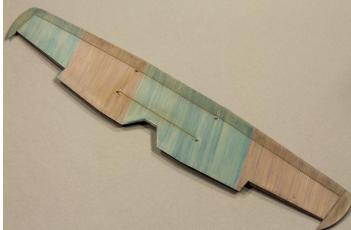




**T**he photo on the left shows the base application of Tensocrom washes on the underside. The turquoise colour is <u>Kerosene</u> while the Violet is a mixture of <u>Kerosene</u> and <u>Fuel</u>

**N**ext I added some streaking by mixing a little acrylic with the Tensocrom colours (pictured below)







The leather padded cut-out was masked off and painted (Pictured left)

**A**ilerons were treated in the same way.

Note that I have fitted brass rod pins for a solid attachment to the wing

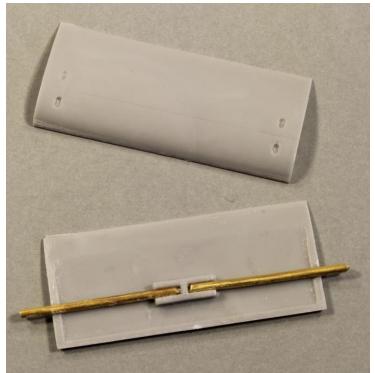




**F**inally Pheon decals are applied



### Part 4. The Undercarriage



**T**he aero-foiled axle section comes in two part with separate axle fittings. I replaced the kits plastic axles with brass rod.



 ${f T}$  he aero-foiled axle was painted in the same manner as the wing





**P**heon Decals produce a very useful undercarriage jig which is included in their E.V / D.VIII decal sets.





**W**hen using the Pheon undercarriage jig, the kit undercarriage struts show up as being very slightly too short.

I replaced the kit struts with items re-shaped from spare wingnut wings struts.

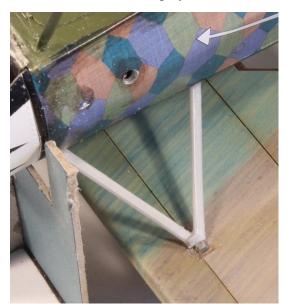
At this stage bracing wires made from mending thread were fitted to the undercarriage.

Part 5. Wing Struts



**P**heon models also produce an extremely useful jig as an aid in fitting the wing to the fuselage

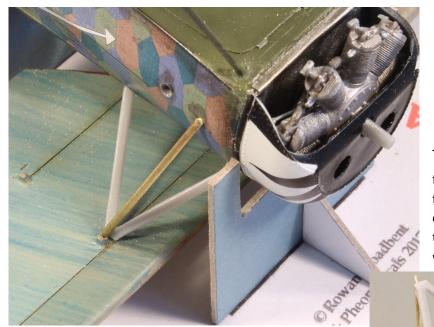
Using the jig to dry fit the struts it's noticeable that the kits V shaped struts are over-sized. It is best to try to reduce as much of the excess from the tip of the V as possible because if you reduce the size of the struts from the outer end the you will probably encounter fit problems with the fuselage. I also drilled out holes in the fuselage attachment points and fitted brass rod for a stronger joint.



The strut attachment lugs on the wing consist of two steps. I drilled a hole between the first and second step of each lug in preparation for the cabane struts and rightly or wrongly fitted and the V shaped struts from the fuselage to the base of the bottom step. Note that at this stage the V shaped strut was only glued in to the fuselage.



The kits forward cabane struts are oversized, very thin and weak. I decided to replace these with items made from brass strutz. Note from the picture on right that I have shaped location pins in to both ends of the strut (measured using callipers against the model in the jig) and bent the location lug intended to be fitted in to the fuselage to a suitable angle.





The cabane struts were then fitted between the fuselage and wing , the wing side location pin fitting in to the hole that I pre-drilled earlier. The cabane strut is only glued to the fuselage and the tip of the V shaped struts. It is not glued in to the wing yet.

**T**he fuselage is then lifted off of the jig and the forward strut assembly is painted.





**G**aspatch machine guns are assembled. At this stage I have not added extended loading handles which were made from PE spares. Note that I have also cut a pair of slithers of plastic which will become the dials that fit on the end of each gun and which I assume provides the pilot with a information on remaining ammunition.



**T**he machine guns are first sprayed black

**T**hey are then dry brushed with graphite powder shaved from an HB pencil.



**T**he guns, ammunition feeders (cut from the Wingnut Wings Ammunition box) and spent cartridge chutes were fitted on to the fuselage forward coaming.



**D**ials made from slithers of plastic rod, with decal dials and spare PE bezels where fitted to the butt of each gun



#### Part 7. Wing to fuselage assembly



The fuselage was placed back in to the Pheon Jig and this time the front cabane strut was glued in to the wing.

**A** rear cabane strut made from brass strutz was fitted and glued in position to both the fuselage and wing.

**T**he completed upper and wing assembly could then be safely removed from the Pheon Jig





The kits wheels are painted and decaled with Pheon and Aviattic decals. I made the assumption that the rear wheel covers were lozenge covered. I can see no photographic evidence that the black and white strips were repeated on the rear covers

**H**orizontal stabilizer struts are fitted. These are the kit parts. At this stage the tail skid has also been painted and glued in place.

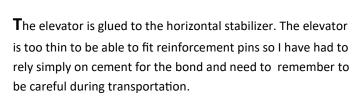




**T**he elevators, rudder and fin were sprayed with a white rattle can and decaled with Pheon markings and Aviattic lozenge.



The wheels were glued in to position. Note also that aileron control wires have been fitted between the fuselage and wing.





The elevator controller protruding from the base of the control column assembly through the underside of the fuselage had broken off during assembly. This was replaced with a piece of shaped plastic from my spares box.







**T**he kits wing control horns are fitted and control wires made from mending thread added

**E**levator control wires are also fitted

The rudder and fin were glued in position

I had always assumed that the elevator control cables simply passed through the slots in the horizontal stabilizer, however study of photos of the Vintage Aviator replica photographs reveal the presence of a turnbuckle style cable connector in the slot position.

To simulate this I glued a Gaspatch turnbuckle in to each slot at an angle Rudder and elevator control wires were then fitted.



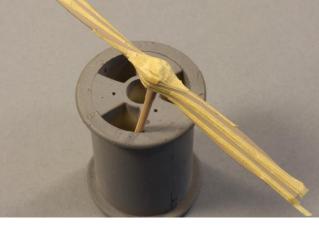


I found a replacement Wingnut Wings propeller in my spares box that was better than the kit prop. The replacement propeller needed cutting down a little at the tips but was otherwise a perfect shape.

The rear of the replacement prop need filling with plasticard and filler



The propeller was sprayed in a light wood colour and sections were masked off to create to contrasting colours of the wood laminations.



Once sprayed and the masks removed, a light wash of brown is added to the surface which helps to remove the starkness of the contrasting colours and simulate the effect of varnish.



**F**inally the propeller is fitted in position on to the engine spindle



# Pheon Decals Aviation Decals for the Connoisseur

#### Part 9. Photos of the finished model

**A**nd here are a few photos of the completed model



