



**NIEUPOINT XVII C.1**

## **World War One Aircraft Models**

I have always held a fascination with early military aircraft. After serving for 27 years in the Royal Air Force, I became a Military Aerospace Technical Author. As most modelers, I got involved in the world of construction kits at an early age, but stopped for most of my service career and for some years afterwards. I started modeling again a few years ago and now enjoy the challenge of building aircraft of World War One. Since posting photographs of my completed models online, various modelers have asked if I would create 'build logs' for my future builds, which is what I now do for each build. I don't consider myself a 'master' of this craft, but hope to be able to pass on what I have learned. As such, here is my build log, which covers the 'Copper State Models' 1:32 scale model of the Nieuport XVII (17) C.1 (later version).

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*Completed: December 2022*

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# INTRODUCTION

Before I start with the build log, I'd like to show how I've set up my work area. I prefer to keep the work area as clear as I can (I've lost too many small items in the past). I think it's important to have the tools etc you need ready to hand and other, non-essential stuff tucked out of the way until needed. I'm lucky in that I have my 'man cave', which is sorted into a modelling area, airbrush spray booth in addition to my work station PC, games PC and games console.



# AFTER MARKET

## **AFTER MARKET**

### **Figures**

'Copper State Models' French airman smoking a pipe (F32-049),  
'Copper State Models' French mechanic resting (F32-048).

### **Decals**

'Kiwi Decals' 1/32 Lafayette Escadrille set,  
'Aviatic' Linen Weave Effect (ATT32236).

### **Propeller**

'ProperPlane' wood laminated 'Lang' type propeller.

### **Weapons**

'GasPatch' Vickers French extended cocking handle (13-32044).

### **Rigging accessories (as required)**

'Steelon' or 'Stroft' 0.08 and 0.12 mm diameter mono-filament,  
'Gaspatch' 1/48th scale metal Anchor Points and Type One End and C turnbuckles,  
'Gaspatch' 1/48th scale resin Type C turnbuckles.

### **Sundries (as required)**

Paints ('Tamiya' Acrylic, Humbrol Acrylic, 'Mr. Metal Colour', 'AK Interactive' Primer and micro-filler (Grey AK758, White AK759), 'AK Interactive' figure paints, Kerosene AK-2039, Oil AK-2019 AK-2033, 'Alclad II' Lacquers, 'Alclad' Aqua Gloss 600, 'Mr. Colour' Levelling Thinners, 'Vallejo' Model Colour, PVA Adhesive (e.g. 'MicroScale' Kristal Klear), 'VMS Fleky' CA adhesive (Standard and Thin), Metal Prep 4K or 'Mr. Colour' Metal Primer R, UHU' White Tack, 'AV' Masilla Plastica (401) putty, 'Mr. Hobby' dissolved putty, 'White Spirits', 'De-Lux Materials' Perfect Plastic Putty, 'Flory Models' sanding/polishing sticks, 'Humbrol' Maskol, 'Milliput' two part putty, 'Mr. Surfacer 500, 1000, 1200', 'DecoArt Crafters Acrylic' (water based) paints, 'Artool' Ultra Mask sheets, 'Plastruct' styrene rod, 'Tamiya' liquid cement, 'PlusModel' lead wire, 'ANYZ' 0.5 mm silver/black braided line, 'Plastic Magic' liquid cement, 'Blacken-It' solution, 'MFH' black 0.4 mm flexible tube (P-961), 'EZ' stretch line (fine or heavy black), 'Revell' Contacta Professional cement (39604), 'Citadel' paints range, 'MFH' Black tube (P-961), 'PlusModels' lead wire, 'Artool' mask sheet, 'MDP white backed decal paper for inkjet printer, 'Krylon' Acryli-Quik sealer, 'Abteilung 502 (ABT115) masking fluid or 'Molotow' pump masker, 'Windsor & Newton' Griffin Alkyd paints.

### **Weathering mediums (as required)**

'Flory' Clay washes, Flory Pigments, AK Interactive washes,  
'Tamiya' Weathering Master (Set C, D and E).

### **Display Base**

Etched Plaque (name plate),  
'Inperspective' custom made Acrylic base and cover,  
'Polak' Wild Meadow - variation C (4703).

# THE AIRCRAFT

## THE AIRCRAFT

**This model represents Nieuport XVII (17) C.1, Serial No: N1977 of N124 'Lafayette' Escadrille during March 1917 and as flown by Sgt. Robert Soubiran.**

### References:

'Copper State Models' instruction manual.  
On-line resources (various).

### General:

**NOTE:** *The following text by Marc Chassard, was copied from the 'Copper State Models' instruction manual and slightly altered to cover the particular aircraft being modelled.*

The Nieuport XVII (17) C.1 was a French sesquiplane fighter designed and manufactured by Société Anonyme des Etablissement Nieuport. It was a larger aerodynamically improved development of the Nieuport XI (11 'Bebe') and equipped with the more powerful 110hp (82Kw) Le Rhone 9J engine. The Nieuport type XVI (16) was only an interim and parallel development of the XVII (17). While the Nieuport was initially armed with an upper-wing Lewis machine gun, the new type XVII (17) was upgraded by the use of a fuselage mounted and synchronised Vickers machine gun.

At the time of its introduction in May 1916, the highly manoeuvrable 'Super Bebe' gave a significant advantage over other fighters on both sides. Eventually, all French fighter squadrons (Escadrilles) were equipped with this type during Summer of 1916, including the famous American volunteers, the 'Lafayette' squadron. The Nieuport XVII (17) also entered service with every Allied power. License manufacture was undertaken in Great Britain, Italy and Russia.

Most Allied aces gained victories flying the type, including Charles Nungesser (French), Georges Guynemer (French), Albert Ball (English), William Bishop (Canadian), Francesco Baracca (Italian) and Alexander Kazakov (Russian).

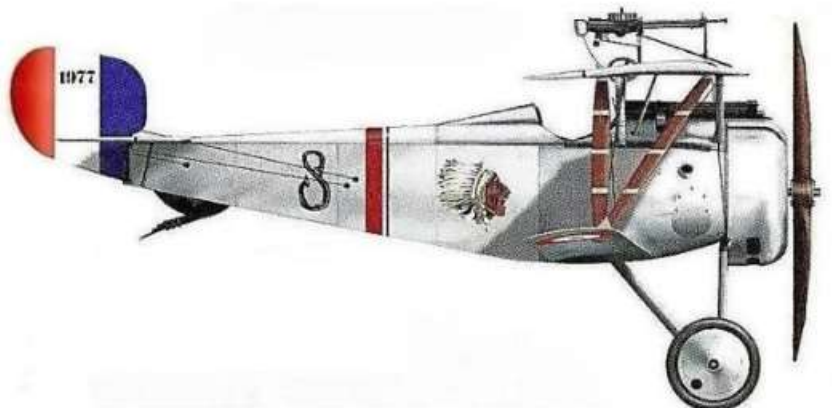
The later versions were characterized by the introduction of the fuselage mounted synchronized Vickers machine gun, which required modification of the forward part of the fuselage. The new engine cowling had a separate top segment and the fuel (petrol) and lubricant (oil) tanks were separated. The oil tank was moved forward of the engine bearing, while the petrol tank remained located rearward. The wings were strengthened with leading edge and the transparent panel in the centre of the upper wing gradually disappeared. The windshield was modified to facilitate the use of the Vickers machine gun. Most of the Nieuport XVII (17) were armed with an over-wing Lewis gun, or more rarely with a synchronized Alkan Lewis or Vickers machine gun. This particular aircraft appears to have the 'Moreau' type mounting for the Lewis machine gun.

Earlier applied camouflage on Nieuport XVII (17) aircraft gradually disappeared during the Summer of 1916 and on later aircraft was replaced by Aluminium dope, which was applied to the overall airframe. The purpose of this highly reflective dope was to reduce the visibility of the aircraft, rendering the determination of its altitude much more difficult. French roundels were also now painted on the upper surfaces of Aluminium doped aircraft and in addition to those on the underside of the upper and the lower wings.



Sgt. Robert Soubiran with his Nieuport XVII (17) C.1, Serial No:1977 at Cachy airfield in December 1916.

**NOTE:** A thin dark coloured band is apparent in front of the red fuselage stripe. Whether this was a painted line or an edge marker for painting the red stripe is uncertain. It does seem too insignificant to be noticeable as an aircraft personal marking. Therefore I chose not to include it.



# THE PILOT

## THE PILOT

**This model represents Nieuport XVII (17) C.1, Serial No: N1977 of N124 'Lafayette' Escadrille during March 1917 and as flown by Sgt. Robert Soubiran.**

### References:

On-line resources (various).

### Background:

Robert Soubiran was born on the 16th of March 1886 in France to Theodore and Clementine (Malapris) Soubiran, but grew up in New York City. As a young man, he had a knack for mechanical things and began maintaining and racing automobiles with Ralph de Palma, the winner of the 1915 Indianapolis 500.

### World War One:

On August 7 1914, three days after Germany declared war against France, Soubiran enlisted in the French Foreign Legion in Paris and was among the first group of 43 American volunteers. He served in the Chemin des Dames sector with other future Lafayette Escadrille pilots James Bach, Bert Hall, Kiffin Rockwell, Paul Rockwell, and William Thaw. When the French became aware of his mechanical abilities, he was tasked to drive a threshing machine to harvest the wheat within the war zone.

Soubiran served with the 2nd Foreign Regiment in the Battle of Champagne and the 170th Line Infantry Regiment. He was injured in October 1915 and spent four months recovering in the hospital. While there, he applied and was accepted into France's Service Aeronautique. He underwent aviation and gunnery training at Pau, Buc, and the G.D.E. earning his brevet flying a Caudron aircraft on the 27th of May 1916 and graduated on the 20th of October 1916. He joined the N124 Escadrille Americaine ('Lafayette') at Cachy in the Somme sector on the 22nd of October 1916.

A year later, on the 9th of November 1917, Soubiran received the French Croix de Guerre with Palm for an action on the 17th of October 1917, when he received his first and only confirmed victory over an enemy aircraft. His award citation read:

"An American enlisted since the beginning of the war in the Foreign Legion, where he took part in the combats in the Aisne in 1914 and in the Champagne attacks in 1915. Wounded on the 19th of October 1915. Passed into the Aviation, he showed himself an excellent pilot, fulfilling with remarkable ardour the missions confided to him. On the 17th of October 1917, while protecting an attack on Drachen's (enemy observation balloons), forced an enemy to land out of control."

When the United States entered the war, Soubiran was transferred to the American 103rd Aero Squadron and commissioned as a Captain. He flew combat patrols in the French built SPAD XIII. He was then assigned as the 3rd Pursuit Group's Operations Officer. On the 20th of August 1918, he married Ann-Marie Choudey in Langres, France with many of his Legionnaire and Lafayette Escadrille friends in attendance. On the 18th of October 1918, he was assigned back to the 103rd Aero Squadron as its Commanding Officer and served there until the end of the war. Soubiran accumulated over 400 hours of combat flight time in his 23 months with the French Air Service and in 10 months with the U.S. Air Service.

### Post World War One:

On the 19th of April 1919, France made Captain Soubiran a Chevalier de la Legion d'Honneur and he was also awarded a second Palm to his Croix de Guerre. This citation reads:  
"American citizen enlisted in August 1914 in the Foreign Legion. Was distinguished in the infantry (wounded in September 1915), then as a pilot in the 'Escadrille Lafayette', where he showed the highest qualities of courage and audacity."

**Foot note:**

Robert Soubiran owned a Kodak camera and photographed all aspects of life and death as an aviator during World War I. Fellow squadron pilot James Normal Hall said that the 'Lafayette Escadrille' pilots have Soubiran to thank for the squadron's only complete photographic record.

**Death:**

Robert Soubiran died on the 4th of February 1949 and was buried next to wife, who died in 1982, in Long Island, New York.



Robert Soubiran

As Commanding Officer 103rd Aero Squadron 1918



Sgt. Robert Soubiran at Cachy airfield in October 1917



Warrant Officer Robert Soubiran with N24 'La Fayette' Escadrille at Chaudun in July 1917



Capt. Robert Soubiran with his SPAD XIII, Serial No:S7714 of the 103rd Aero Squadron,



Commanding Officer of the 103rd Aero Squadron in 1918



# PART 1

# MODEL

# KIT

## **PART 1 - MODEL KIT**

(‘Copper State Models’ - Kit No:32002)

Normally here I would write a basic description of the model, noting any points of interest or flaws. However, there is a good review of the kit online. Paste the link below into your internet browser to view the review.

<https://forum.largescalemodeller.com/topic/5962-132%C2%A0-nieuport-xvii-copper-state-models/>

When researching a particular aircraft, it’s quite often found that some changes to the model may be required. These can be modifications to enhance the model to better represent the particular aircraft. Also some squadron aircraft had ‘in-the-field’ modifications made to improve the aircrafts operational capability. The following are changes that I found that were needed to reflect the particular aircraft being modelled.

### **Decals:**

The decal sheet provided with the kit does not include the markings required for the aircraft being modelled. Therefore, the kit supplied decals were supplemented with the specific decals required for this aircraft, supplied in the ‘Kiwi Decals’ 1/32 Lafayette Escadrille set.

### **Propeller:**

The kit supplied propeller appears to be a type manufactured by ‘Lang’. However, I prefer to replace the kit supplied propellers, where possible, by hand made wood laminated propellers from ‘Proper Plane’.

### **Parts not required:**

Kit parts not required for this particular build are:

- Fuselage side panel A2
- Engine cowling C7
- Upper wing centre section C2
- Lewis machine gun forward support B24
- Lewis machine gun B42
- Lewis ammunition drum B47
- Propeller B14
- Propeller hub A13
- Vickers machine gun A32
- Vickers machine gun half cooling jacket A39
- Cabane strut tops A46.



# PART 2

# WOOD EFFECTS

## PART 2 - WOOD EFFECTS

### General:

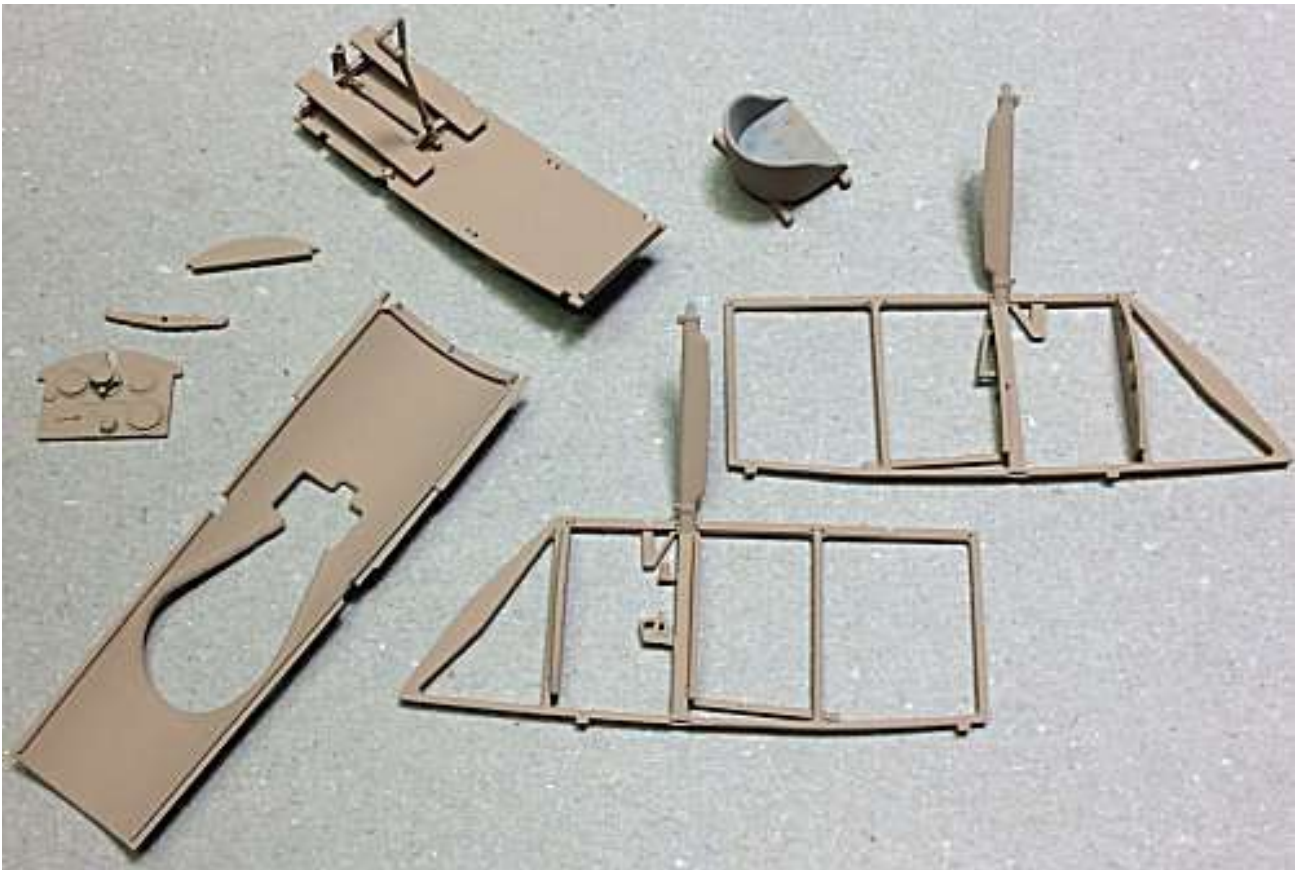
Parts of the model that are supposed to be made of wood can prove to be a challenge to replicate a wood finish to the part. Some after market companies produce accurate wood decals, which can be used to cover larger areas, such as cockpit decking and fuselage panels. However, decals can't easily be used to create realistic wood finish to smaller items or parts that don't lend themselves to having decals applied. To do this requires brush painting, using such as acrylic or oil paints, which can be enhanced with various washes or filters.

The first thing to do is to ensure the model parts are cleaned, normally with warm water with washing up fluid and something like an old tooth brush. Once cleaned and thoroughly dried, the primer coat can be applied. I use 'AK Interactive' Grey (AK758) or White (AK759) acrylic primer. Once the primer is dry, you can start applying the wood effect to the applicable parts, such the cockpit framework, decking, seat supports, rudder bar, instrument panel and of course, the wing struts and propeller. With practice, this method can also be used on larger areas, such as fuselage panels.

### Preparation:

To start, apply a suitable base colour. For most painting I use an airbrush and only resort to brush painting when dealing with small items, when I add a few drops of 'Mr. Colour' Levelling Thinner', which aids brush painting. For most wood effect, I use 'Tamiya' Wooden Deck Tan (XF78) or Dark Yellow (XF60), suitably thinned with 'Tamiya' Thinners (X20A). Allow this base coat to fully dry (if you can't smell the paint, then it's dry).

#### Example of base coat using 'Tamiya' Wooden Deck Tan (XF78)



## Wood effect - Method 1:

### DecoArt Crafters Acrylic' paints:

For the next step I use 'DecoArt Crafters Acrylic' paints, either Burnt Umber or Burnt Sienna. These are similar to standard acrylic oil paints, but are water based instead of oil based. This paint is not as thick as oil based paint and is more creamy, so can be brushed and controlled more easily. Also, as it is water based, it's easy to clean your brushes, and if really necessary, can be thinned slightly with water. In addition, the paints dry as quickly as normal acrylic paints, avoiding the disadvantage of using true oil paints, which can take days to fully dry.

Place a small amount of the oil paint onto a non-absorbent surface and using a suitable oil paint brush (I use a slightly curved brush), wipe a small amount of the paint onto the brush. For larger areas, such as decking or panels etc I use a small piece of fine sponge to apply the paint.

Apply the paint to the applicable item, using light strokes and in the required direction. Apply the paint along struts and across instrument panels and other smaller items. This gives variation to the wood effect and for the wing struts, is correct for the direction of the wood grain. If you apply too much paint, just brush or sponge it off immediately before it dries. Although the paint is water based, don't try to thin any applied paint with water as it will lift the paint, which builds up into clumps. If required, a second light coat can be applied. Always wait until a first coat has fully dried before applying a second coat, otherwise the first coat will 'drag' and lift from the surface.

Once painting is complete, clean the brush in water.

Below is an example of the Burnt Umber oil paint applied to a cockpit side frame.



## **Wood effect - Method 2:**

Windsor & Newton' Griffin (Alkyd) oil paints:

**NOTE:** *The wood effects can also be achieved using 'Windsor & Newton' Griffin (Alkyd) paints.*

Mask off the area as required.

**NOTE:** *When airbrushing 'Tamiya' acrylic paints, I thin the paints using 'Mr. Colour' Self-Levelling Thinners (400), which is commonly referred to as 'unicorn tears' or just 'MLT'.*

Airbrush the areas with 'Tamiya' Dark Yellow (XF60) or similar.

Brush a covering coat of the 'Windsor & Newton' Griffin Alkyd paint, such as Burnt Sienna, over the areas.

Leave the oil paint to settle for about ten minutes.

Decant a small amount of White Spirits into a suitable dish.

Dip a broad flat oil brush into the White Spirit then wipe the brush on a sheet of kitchen roll, which should not deposit any fibres in the oil paint.

Brush the oil paint over the area, in the desired direction, wiping the brush on the sheet of kitchen roll to remove residual oil paint.

Repeat dipping and wiping the brush in the White Spirits and brushing the oil paint until the desired density and finish is achieved.

Leave the oil paint to fully dry, which normally takes approximately 24 hours.

If desired and once the oil paint is fully dry, airbrush a semi-gloss clear coat, such as 'Alclad' Satin (ALC312) or similar, with a few drops of 'Tamiya' Clear Orange (X26) to give a varnished look to the finish.

## **Surface finish:**

Once the oil paint layers have dried, the final top coats can be applied to give the final effect of varnished wood.

'Tamiya' have 'Clear' coloured Acrylic paints, which are intended to be mixed with either Flat Clear (XF86), Semi-Gloss Clear (X35) or Clear (X22), to give the required finish but with a tint of the added 'Clear' colour. I use the Clear Yellow (X24) or Clear Orange (X26) to add a varnished tint to the clear coat. If using the 'Tamiya' Clear I add 'Mr. Colour' Levelling Thinners, which does improve airbrushing and avoids pooling. Otherwise I use 'Alclad' Light Sheen (ALC-311).

Although it's a lacquer, I've found that it will accept 'Tamiya' 'Clear' coloured Acrylics without any separation, which can happen with other paints. The 'Alclad' lacquers dry fast and provide a good sealing layer over the painted surfaces. When using 'Alclad' sealing coats, the golden rule is to allow the various painted surfaces to dry fully before applying 'Alclad' lacquers.

In the following example, I added a few drops of Clear Yellow (X24) into the 'Alclad' Light Sheen (ALC -311) and thoroughly mixed it. Only add small amounts to the 'Alclad' in order to control the amount of tint you desire. I increased my airbrush air pressure to around 20 psi to airbrush the sealing coats over the various cockpit items. The first coat usually dries to a more matte finish, which I assume is due to being sprayed onto the oil paint, rather than onto straight acrylic paint. Once this first coat has dried, I airbrushed several coats of just 'Alclad' Light Sheen (ALC -311), which added not only more sealing coats, but more importantly gave the desired semi-gloss 'varnished' finish I was after.

Below is an **example** of the applied 'Alclad' lacquer/X24 mix on the propeller.



**NOTE:** *Once you are confident using this method of replicating wood finishes, you can vary both the colour of the acrylic base coat and tinting of the sealing coat, to replicate other types of wood used in aircraft construction.*

Once the lacquer coats are thoroughly dry, any detail painting, decals or final weathering can be applied to the parts, as required.

# PART 3

# WEATHERING

### **PART 3 - WEATHERING**

There are many different types of weathering mediums available now to modellers of aircraft, ships, vehicles and figures, in model of any type. These weathering mediums can be washes based on enamel, clay or ink. Weather pastels, applied by sponge' as well as oil paints of various sorts are also plentiful. Some modellers have even used water colour paints, and pencils. The following are the basic weathering mediums I tend to use on most of my models.

#### **Flory Model clay washes:**

The washes I tend to use are the 'Flory Models' Clay Wash 'Grime' and 'Dark Dirt', which come in various shades and consist of a suspended and very fine clay pigment. They are brushed over the surface to be weathered and dry in around 30 minutes. When dry, use either a piece of good, absorbent kitchen roll or a soft brush to remove as much of the clay wash as you need to achieve the desired effect. The kitchen roll can be used dry or very slightly dampened. If dampened, the dried clay is re-activated and the clay wash can be more easily be removed or worked as required.

First I seal the surface with an airbrushed semi-matte clear coat, such as 'Alclad' Light Sheen (ALC-311), which dries quickly. A gloss coat tends to stop the clay wash 'gripping' the surface when it is applied and it can run off or just puddle. A more matte coat can cause the clay wash to 'grip' too much, making it difficult to remove or even to wash it off completely.

**NOTE 1:** The more glossy the applied sealing coat is, the more the chance there is that the applied 'Flory' clay wash will not spread fully, but rather form puddles or beads of wash. If this happens, add a few drops of ordinary kitchen washing up liquid to the clay wash. This will break the surface tension of the wash, allowing it spread fully.

**NOTE 2:** Always decant the amount of clay wash you need, rather than dipping the brush directly into the wash bottle. Dipping into the wash bottle can transfer contaminants from the brush into the wash, will can cause the wash to become thick and unusable.

**NOTE 3:** When a sealing coat is applied over areas treated with clay wash weathering, the intensity of the applied wash tends to darken. This should be considered when removing the clay wash, otherwise the final effect may appear too dark.

**NOTE 4:** 'Flory' current range of washes are: Dark Dirt, Grime, Black, Light (white), Mud, Sand, Rust and Concrete. All of these washes can be mixed to create many colour shades for different weathering finishes.

To apply the clay wash is just a matter of brushing all over the surface to be weathered. It doesn't matter really how much is applied as it can be left on for any period, as it is easily removed without any effect on the surface underneath. If you don't achieve your desired effect, you can wash it all off and start again. Use a soft brush or absorbent kitchen roll, which are dry or **very slightly** dampened, to brush or wipe off the clay wash in the direction of airflow over the model. Even then, dab them onto a dry piece of the paper, until they are almost dry. Any wetter and you'll find that you are removing too much of the clay wash. If that happens you can re-apply the wash and start again. If you're not happy with the final effect, you can easily remove the clay wash by brushing with a wet brush or even airbrush water over the surface. Dry off the surfaces washed and then re-apply the clay wash and try again until you are satisfied. The technique is to 'damp' brush or wipe over the surface to re-activate the clay wash and at the same time, to smear it over areas that had no clay wash. It'll dry within 30 minutes. Then very lightly brush and/or use a piece of damp absorbent paper to remove as much you want until you get the desired effect. Once finished, run the brush under a tap to rinse out any residual clay pigments. Finally, seal the surface with your chosen clear coat, which will seal in the applied clay wash.



**Chipping effects:**

To give the effect of chipped and weathered paint/varnish to metal engine cowls and forward fuselage panels etc, chipping fluids can be used. To achieve this effect, first prime the areas with a suitable primer then airbrush the metallic finish desired. Once dry, a chipping fluid, such as 'AK Interactive' Medium Chipping fluid or 'Vallejo' chipping fluid is airbrushed over the painted areas. An alternative is to use a cheap hair spray. This forms a barrier which will allow the top coat to be chipped off. Finally the required top coat colour is applied.

Once fully dry, moisten the top coat with water, which softens the paint. Then with a cut down (stiff) brush and wood cocktail stick, gently teased off the top coat paint. Take care when doing this as 'too much chipping' can't really be covered up. In that event you would have wet the top coat and remove it all with an old toothbrush or similar and then when dry, re-spray the top coat and try again. Once the desired effect was achieved, I sealed the surfaces with an airbrushed coat of 'Alclad' Light Sheen (ALC-311).



**'Tamiya' Weathering Master sets:** Each of these 'Tamiya' produced weathering sets contain three 'tablets' of different colours and an applicator, which has a brush on one end and a sponge on the other. The tablets have a wax look and feel and can be applied onto painted surfaces to reproduce various finishes. It's best to use these as the final surface treatment, as being a 'Wax', any treated surfaces can't be painted or sealed.





**Pigments:** Pigments, such as those produced by 'Flory Models' or 'Humbrol' are effectively very fine 'dusts', which can be applied to a model to re-create dust, dirt, stains etc. They can be applied by dry brushing or mixed with other mediums to create paintable solutions.



**Washes:** Washes can be applied to either enhance panel lines etc or to add a 'filter' of colour onto a painted surface. They can be purchased ready made from various manufacturers or can be 'home made' using such as oil paints with a suitable thinning agent. I tend to use 'AK Interactive' products.



### **Water colour pencils:**

Water colour pencils can be used to add weathering detail. The colour s applied to the model part then brushed gently with a brush, slightly dampened with water. This dilutes the pencil marking, allowing it to be faded as desired. 'AK Interactive' produce these 'weathering' pencils, which are marketed specifically for the modeller, although other artist water colour pencils can be used, such as 'Derwent' Inktense 24 ink pencils.



**Oil paint:** A technique used more frequently now is oil paint 'dot and drag'. Basically an oil paint of the desired colour is placed onto a piece of cardboard, which over a hour or so, soaks out the oil in the paint, leaving a drier pigment. The pigment is 'dotted' onto the painted surface where it is required then dragged with a brush previously wetted with 'Tamiya' X20 enamel thinners then wiped virtually dry.

Softly 'flick' the brush to drag the pigment in the direction required, which will blend it in a thin layer.

The amount of pigment left showing depends on the effect you require. Always keep the brush wiped clean to avoid a build up of pigment and remoisten and wipe dry often. The more paint you drag, the less pigment is left showing. Blending different coloured pigments can create stains from smoke/gun blast, rain marks/runs, dirt/dust and oil/fuel stains.

A good quality oil paint and thinners are essential to produce a good finish. Some quality oil paints can be too 'gritty' when leached of oil, so I use 'Abteilung 502' oil paints and 'Tamiya' Enamel thinners (X20).



# PART 4

# DECALS

## PART 4 - DECALS

### Standard decals:

**NOTE:** *The following is **applicable only** for decals on a **painted surface**. If decals are to be placed on top of **previously applied decals**, the decal setting solutions may 'eat' into the previous decals. In this case a sealing coat of either 'Alclad' Gloss (ALC-310), 'Alclad' Aqua Gloss (ALC-600), Tamiya' Clear (X22) or 'similar should be airbrushed over the first decals, to provide a barrier against the setting solutions.*

Ensure the painted surface is smooth and free from any surface imperfections.

Airbrush a sealing coat of 'Alclad' Gloss (ALC-310), 'Alclad' Aqua Gloss (ALC-600), 'Tamiya' Clear (X22) or similar to provide a smooth surface.

**NOTE:** *'MicroSet' solution softens the decal to allow it to conform to the painted surface. Do not attempt to move the decal too much or it may tear.*

Wet the area using a light coat of 'MicroScale' **MicroSet** solution.

Apply the decal after it has soaked in 'warm' water enough to start to loosen the decals from its carrier backing.

Carefully move the decal into the correct position.

Carefully press out any residual water from the decal by either pressing with a tissue or by gently rolling over the decal with a cotton bud.

**NOTE:** *'MicroSol' solution will soften the decal to allow it to conform fully to the painted surface. The solution usually causes the decal to wrinkle, but this is normal as the decal semi-dissolves to the surface. Once the solution has been applied, never try to disturb the decal as it will tear. Leave the solution for several hours to do its job, after which the decal will return to a smooth surface, but conformed fully to the painted surface.*

Wet the decal surface with a light coat of 'MicroScale' **MicroSol** solution.

Leave the solution for several hours to fully dry and set the decal.

Once fully dry and set, airbrush a sealing coat over the decal, dependant of your desired finish. I tend to use either 'Alclad' Light Sheen (ALC-311) lacquer or 'Tamiya' Semi Gloss (X35).

Once the decal is correctly positioned, use a flat brush to brush the water out from under the decal, working from the centre of the decal out towards the edges. I then use a dry cotton bud in the same manner. Finally, wearing cotton gloves, I apply slight pressure and slide my fingers across the decal to finally push the decal onto the surface.

Once the decals have been applied I airbrush a sealing coat of either 'Alclad' Clear Coat Gloss (ALC-310) lacquer ), 'Alclad' Aqua Gloss (ALC-600), 'Tamiya' Clear (X22) or similar over areas of decals where more decals are to be applied.

Once the decals have been applied and are dry I airbrush a final sealing coat of 'Alclad' Light Sheen (ALC-311) or 'Tamiya' Semi-Matt (XF35) over the decals.

To 'knock back' the sheen for applying weathering effects (refer to Part 3 of this build log), for example 'Flory' clay washes or oil paint, I airbrush a sealing coat 'Alclad' Light Sheen (ALC-311) mixed with Flat (ALC-314) at a 3 to 2 ratio.

### **'Aviattic' linen effect decals:**

The 'Aviattic' decals are different in both production techniques and application to those of the more traditional decal manufacturers. Traditional decals are normally created using processes such as silk screen printing and are pre-shaped for the particular model markings. When placed in warm water they will detach from the backing sheet and can then be slid onto the model surface and when they are correctly positioned, wiped with a semi-dry brush or cotton bud etc, to expel any water from under the decal. Once fully dry, decal softeners, such as 'MicroSol' and/or 'MicroSet' can be applied, if necessary, to 'weld' the decal to the model surface. Finally a sealing coat of acrylic or lacquer gloss, semi-matt or flat is applied over the decal, to seal and protect the seal and protect the decal.

However, 'Aviattic' decals are laser printed onto a very fine carrier film and although this film is thin, the decals are remarkably resilient and somewhat 'stretchy' when being applied. This allows them to be more easily moved and positioned before being finally applied. Also with most other decals, I've used softeners to help the decals conform to surface irregularities and contours, which is something I've found is not really required for 'Aviattic' decals, due to the nature of the carrier film. In addition, the decals need to be cut out from the sheet, so care is required to cut the decals accurately to avoid leaving gaps, especially at the edges, where the white base colour will show. That said, minor gaps may be able to be covered with weathering. For more information, refer to the 'Aviattic' instruction sheet supplied with the decals.

'Aviattic' decals are laser printed onto either 'clear' or 'white' backing, the 'clear' being dependent on the base coat you apply and the finished effect you desire. The decals are supplied with very clear instructions on their application, including when to add pre-shading to the base coat, where desired, before you apply the decals.

#### **Application:**

First airbrush a primer coat of 'AK Interactive' primer and micro-filler White (AK759) or Gey (AK758) or similar on all of the surfaces to have the decals applied.

**NOTE:** *'Silvering' is caused by air being trapped in the rough surface of the paint, such as on a matte finish, which after the decal is applied and dries, causes silver sheen patches showing in the decal ('silvering').*

Once dry, check the surfaces for any imperfections, such as trapped dust or raised areas of paint, which will cause 'silvering' under the decals. Any surface imperfections found should be carefully sanded or polished out.

Airbrush the required base colours to the model surfaces.

Once dry, check the surfaces for any imperfections, such as trapped dust or raised areas of paint, which will cause 'silvering' under the decals. Any surface imperfections found should be carefully sanded or polished out.

Airbrush at least two light sealing coats of either 'Alclad' Clear Coat Gloss (ALC-310) lacquer, 'Alclad' Aqua Gloss (ALC-600), 'Tamiya' Clear (X22) or similar over the decals to form a gloss surface for applying the decals.

**NOTE:** *The surface must be pre-wet with like warm water with. Care needs to be taken when you slide the decal from the backing sheet and onto the model surface, as the thin decal can fold over on itself.*

Soak each decal in warm water for approximately 20 seconds.

Wet the surface of the model where the decal is to be applied.

Carefully slide the decal onto the wetted surface. Make sure the decal does not fold over on itself.

Align the decal to the shape of the model part.

Using a broad, soft brush, brush the decal from the centre outwards to remove any water from under the decal.

Adhere the decal to the model part surface by either pressure rolling over the decal with cotton buds or, as I do, by wearing lint free cotton gloves and rubbing the decal with your fingers.

Check to make sure the decal is in full contact with the surface of the model part and that there are no areas exhibiting 'silvering' (trapped air under the decal). If so, gently prick through the decal and apply water then press out the water to adhere the decal back onto the model part.

Also check that there are no lifted decal edges around the model part.

Allow the decal to fully set, preferably overnight. Where decals have been applied to large areas, gentle heating using a hair dryer can accelerate the decal setting time.

Where decals cover location holes or other openings, prick or cut through the decal into the hole or opening then apply 'Tamiya' X20A thinners, which will soften and adhere the decal into the hole or opening. Using X20A can also conform decals around curves edges etc.

Protect and seal the decals by airbrushing a sealing coat over the decals. If more decals are to be added onto the applied decals a gloss sealing coat should be used. Otherwise a sealing coat of the desired finish can be applied, which should also be done once all of the required decals have been applied.

# PART 5

# RIGGING



## **PART 5 - RIGGING**

### **References:**

'Copper State Models' instruction manual.  
On-line resources (various).

### **General:**

Before any assembly, painting or application of decals, you should check that rigging attachment points are drilled out (Later in this build). Most models have these located on the model, but it's best to carry out research in reference books or research on line before drilling. Some modellers use micro drills manufactured for drilling printed circuit boards and these drill bits sometimes have identifying coloured collars fitted to the drill shanks to denote the drill diameters. I've found that care needs to be taken when using these drills, as they are sharp and instead of easing their way into the plastic of the model, they tend to bite in and effectively 'cork screw' their way in, which causes jamming and lots of broken drills. This is not only expensive but can leave broken drill bits in the model, which are virtually impossible to extract. An alternative is to use High Speed Steel (HSS) drill bits, which are cheaper and have less 'bite' when in use, although again, they are very fragile and can very easily be broken. Some modellers drill through the wings etc of the model and rig by pulling through the rigging line/EZ thread etc, gluing in position and then rubbing down the exposed line 'tag' and then re-painting that area. I prefer to drill only part way into the plastic and attach the applicable rigging fixture with CA adhesive.

### **Wire wound rigging:**

The later Royal Flying Corps (RFC) and Royal Air Force (RAF) aircraft had structural rigging wires which were of the streamlined drop forged type (with specific end tension adjusters) and control cables of the standard wire wound cable. However, other Nations, including the French, used standard wire wound cables.

The aircraft structural rigging wires were:

Landing wires between the wings

Flying wires between the fuselage and upper wing

Bracing wires (internal fuselage, landing gear and between the forward cabane struts).

The aircraft flight control cables were used for rudder and elevator control. (the ailerons were operated by rods and levers).

These wires and cables would typically have been anchored at both ends with an adjustable 'turnbuckle' fitted and one end for adjusting the tension in the wire or cable.

**NOTE:** *The following illustrations and photographs are intended to supplement the rigging and control cable illustrations in the kit instruction manual.*

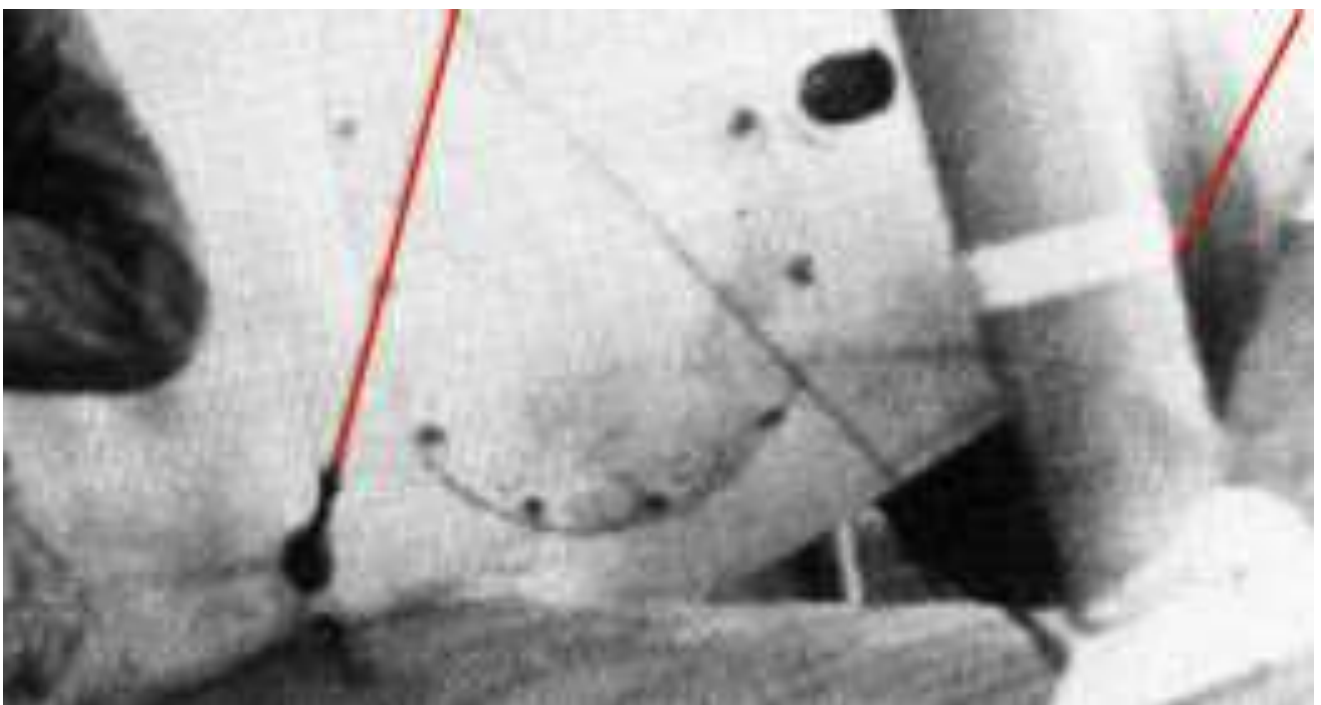
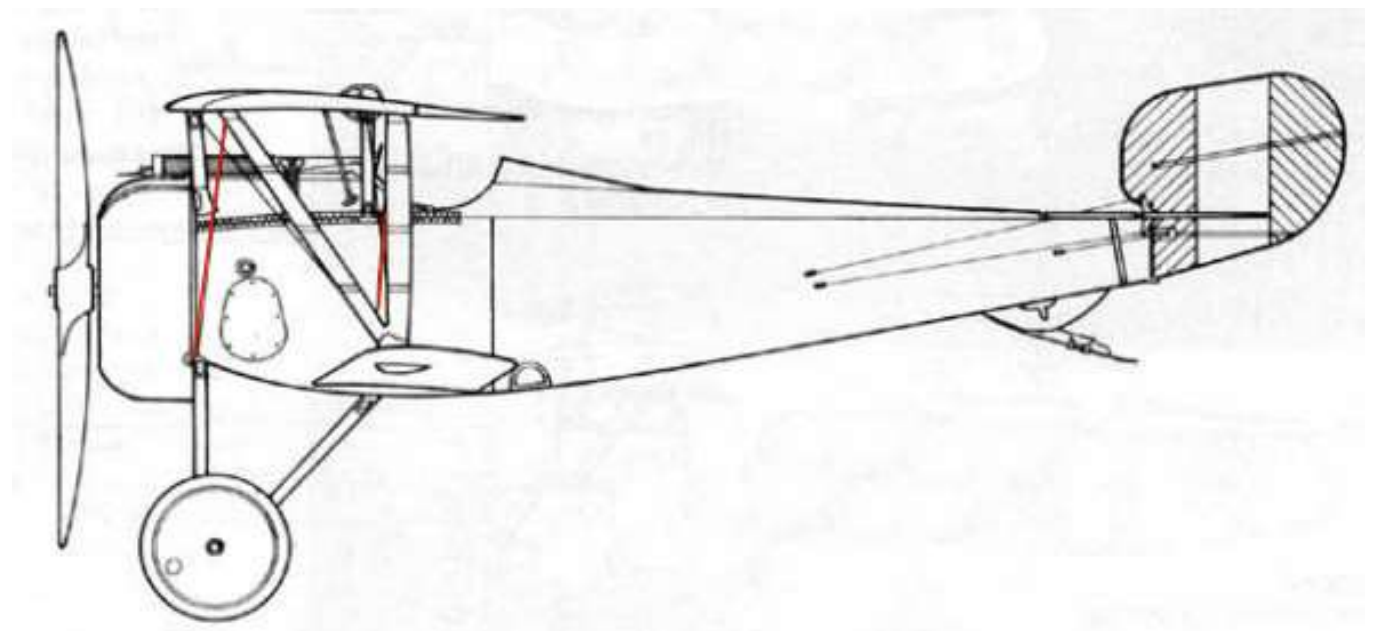
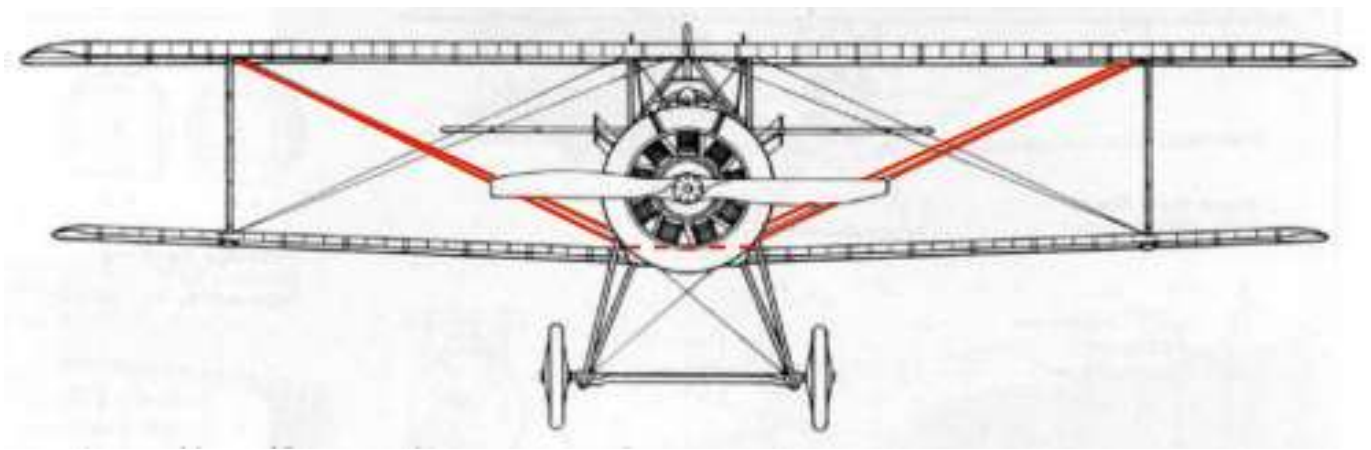
### **External rigging:**

#### **Flying wires (instruction manual pages 13 and 15):**

Two flying wires were fitted in the same location on both sides of the aircraft.

The forward flying wires were attached to the underside of the upper wing, inboard from the forward interplane struts and routed diagonally down and through the lugs at the bottom of the engine bulkhead, then across the bulkhead.

The rear flying wire was attached to the fuselage structure through a port above the lower wing root and was routed diagonally up to the underside of the upper wing, inboard from the rear interplane strut. A turnbuckle was fitted at the lower end of each flying wire.



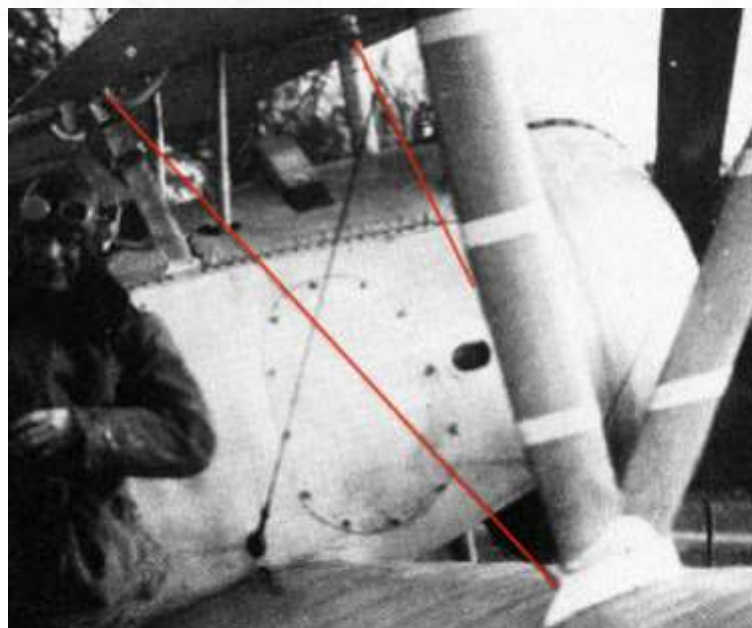
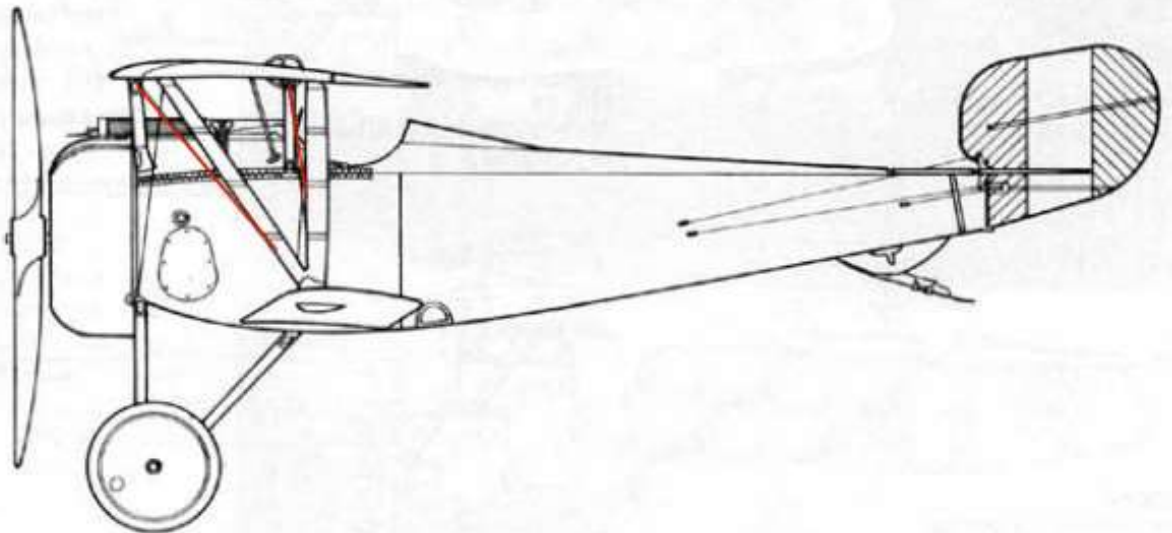
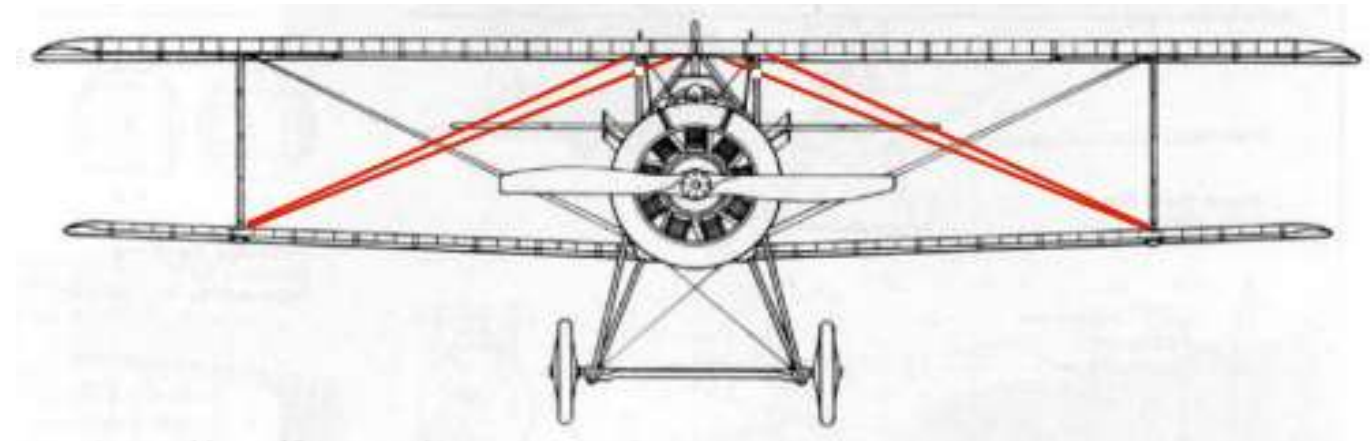
**Landing wires (instruction manual page 15):**

Two landing wires were fitted in the same location on both sides of the aircraft.

The forward flying wire was attached to the underside of the upper wing, outboard from the forward fuselage cabane strut and routed diagonally down to the top surface of the lower wing, inboard from base of the interplane strut.

The rear landing wire was attached to the underside of the upper wing, outboard from the rear fuselage cabane strut and routed diagonally down to the top surface of the lower wing, inboard from base of the interplane strut.

A turnbuckle was fitted at the lower end of each flying wire.



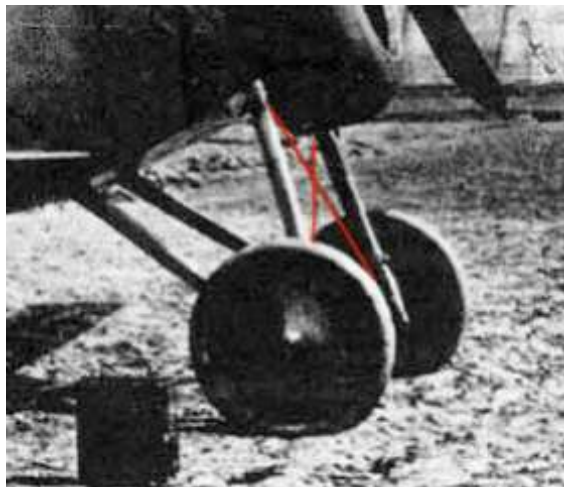
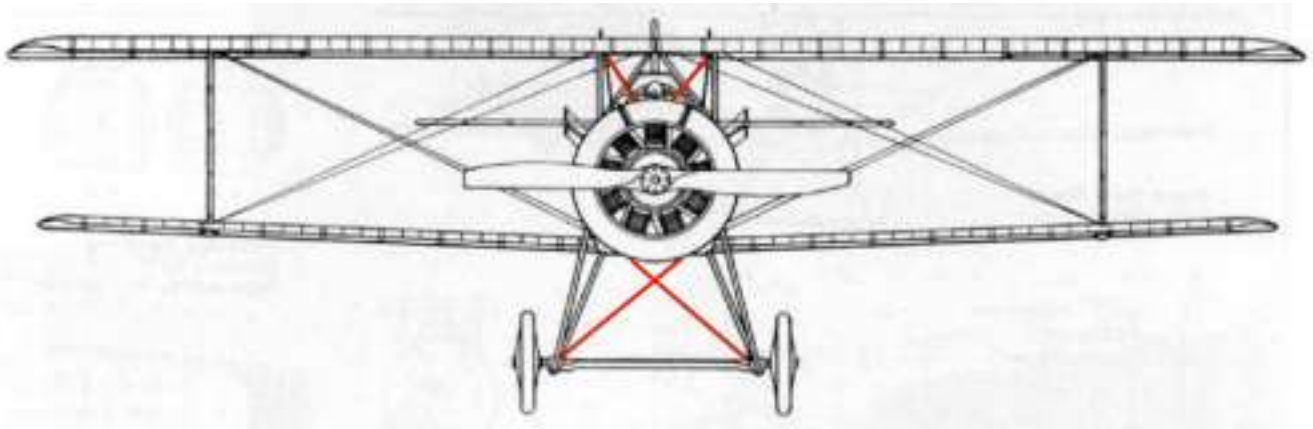
## Landing gear and cabane strut bracing wires:

### Landing gear (instruction manual page 15):

Two bracing wires were fitted to the underside of the fuselage, inboard from the forward landing gear struts and routed diagonally down and crossed to be attached to the outer ends of the axle fairing. A turnbuckle was fitted at the lower end of each wire.

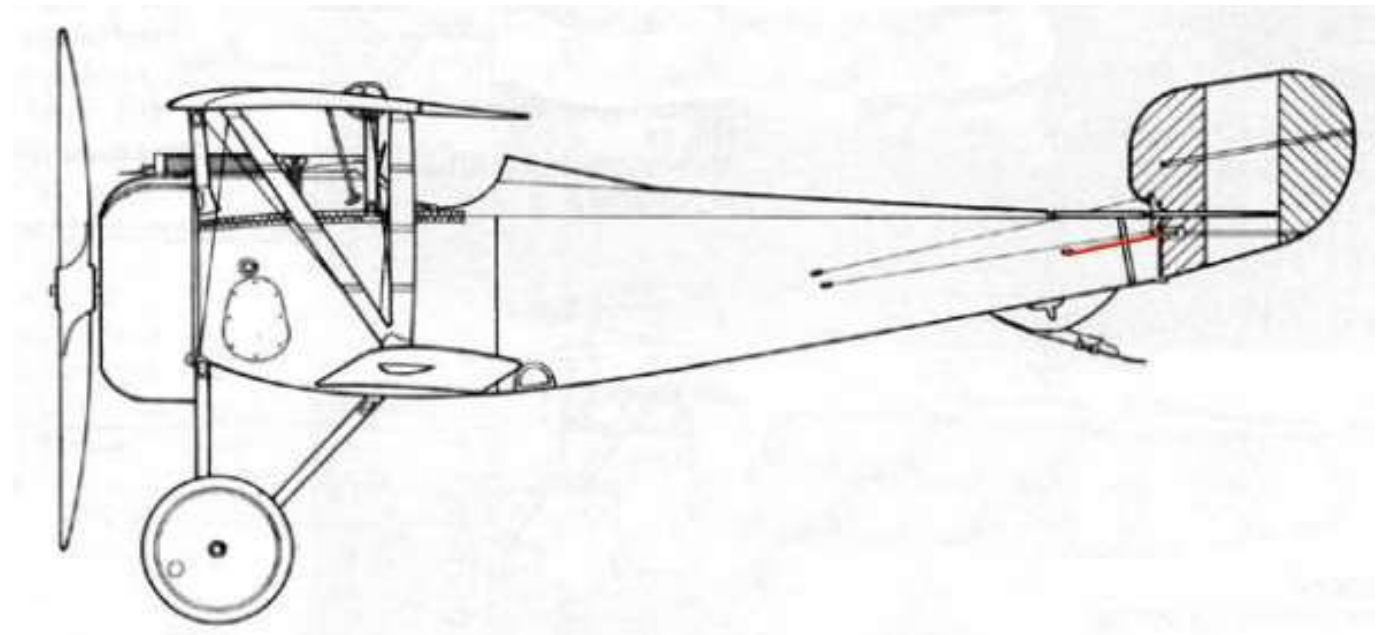
### Cabane struts (instruction manual page 13):

Two bracing wires were fitted to the underside of the upper wing, inboard from the forward cabane struts and routed diagonally down to each side of the forward mounting for the Vickers machine gun. The wires were interconnected and then routed outboard and attached to the top of the fuselage engine bulkhead. A turnbuckle was most likely fitted at the upper end of each wire.



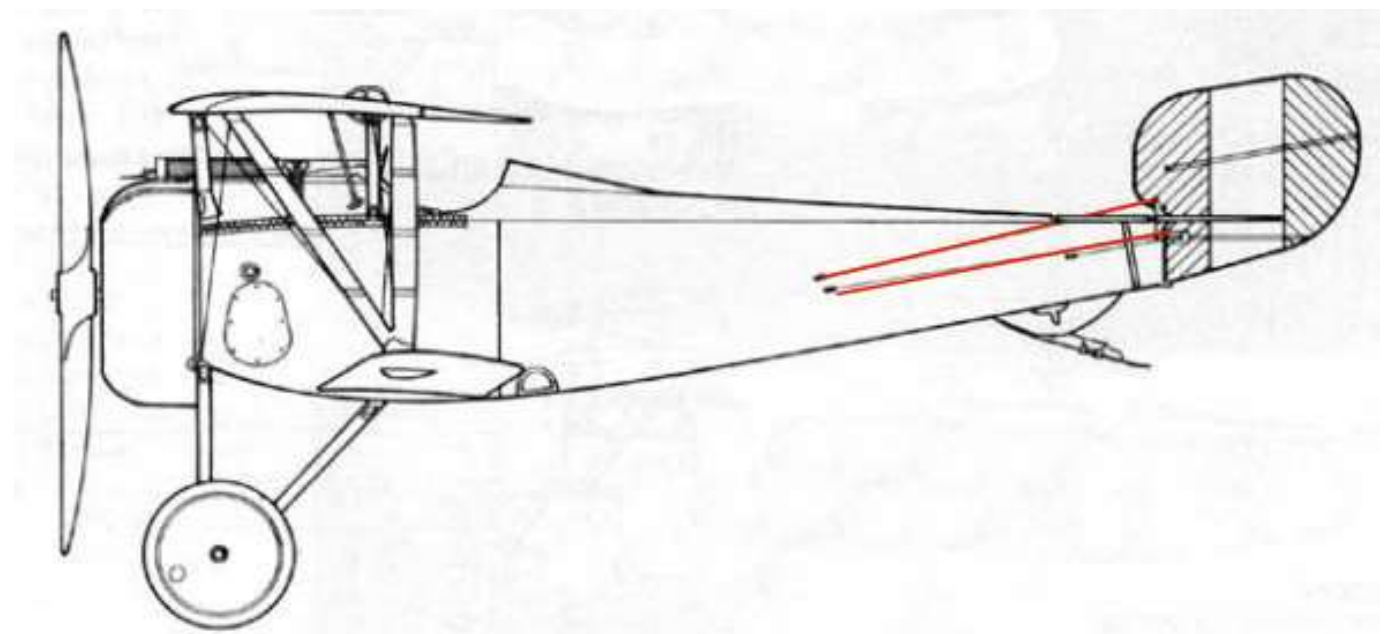
**Rudder control cables** (*instruction manual page 11*):

A rudder control cable exited through a port in each side of the fuselage rear and were routed rearwards to be connected to the ends of the rudder control horn. Turnbuckles were most likely fitted to the wires inside the fuselage so would not be visible externally.



**Elevator control cables** (*instruction manual page 11*):

An upper and lower elevator control cable exited through ports in each side of the mid-fuselage and were routed rearwards to be connected to the ends of the elevator control horns. Turnbuckles were most likely fitted to the wires inside the fuselage so would not be visible externally.



### **Internal rigging:**

**NOTE:** *How much of the internal rigging is fitted depends on how much of it will be seen, on the completed model, through the cockpit opening or through any fuselage panels not fitted. Therefore, the modeller must decide what, if any, of the rigging will be fitted.*

#### **Aileron control (instruction manual page 8):**

**NOTE:** *Control of the ailerons does not involve the use of control cables.*

The ailerons in the upper wing were not operated by traditional cables, but by operating tubes and bell-crank levers. A torsion tube was attached to a swivel adapter on the lower half of the control column. The tube was routed across the cockpit and a second tube was connected to each end with a moveable joint. These outer tubes were routed up and out of the cockpit through openings in the fuselage top decking panel. The top ends of these tubes were connected to swivel bell-crank levers located in slots in the centre section of the upper wing. Torque tubes were connected to the bell-cranks and were routed outboard, within the upper wing, to the aileron operating linkage.

As the pilot moved the control column left or right, the cross cockpit torque tube would move down on one side and up on the other, causing the tubes connected at each end to move correspondingly. This would move one bell-crank up and the other down, which in turn would rotate the connected tubes to the wing ailerons, moving the ailerons up or down. The effect of the aileron movement would cause the aircraft to bank (roll) left or right.

#### **Rudder control cables (instruction manual pages 7 and 11):**

The pilots rudder bar was mounted between the two foot boards. A centre post from the rudder bar passed vertically down to be attached to the rudder operating lever. Twin control cables were attached to both ends of the operating lever and were routed rearwards through the fuselage. It seems that within the fuselage the twin cables were connected to single operating cables, which exited the rear sides of the fuselage to be connected to the ends of the rudder control horns. It's unclear where turnbuckles were fitted in the cables, but most likely to the control cables within the cockpit area.

As the pilot moved the rudder bar left or right, that movement was transmitted down to the operating lever, which swivelled left or right causing the cables on one side to pull and the other side to relax. This in turn caused the rudder to move left or right, causing the aircraft to yaw (swing) left or right.

#### **Elevator control cables (instruction manual pages 8 and 11):**

Single control cables were connected to the control column, one at the bottom and one above the foot boards. These cables were routed rearwards through the fuselage. It seems that within the fuselage the single cables were connected to twin operating cables, which exited the rear sides of the fuselage to be connected to the ends of the upper and lower elevator control horns. It's unclear where turnbuckles were fitted in the cables, but most likely to the control cables within the cockpit area.

As the pilot pulled back or pushed forward the control column, that movement caused the cables to either be pulled or relaxed. This in turn caused the elevators to move up or down, causing the aircraft to pitch (climb or dive).

#### **Cockpit bracing wires:**

##### **Cockpit side frames (instruction manual pages 5 and 8):**

Single bracing cables were fitted diagonally across the corners of the cockpit side frames. A turnbuckle was fitted to the upper end of each cable.

Engine bulkhead bracing (*instruction manual page 5*):

A single bracing cable was fitted across the bottom of the engine bulkhead. It's unclear if a turnbuckle was fitted to this cable.

Seat support bracing (*instruction manual pages 8 and 9*):

Single cables were attached to the cockpit seat support frame and were routed down to the forward corners of the cockpit side frames below the pilots seat. Single cables were also crossed and connected between the four corners of cockpit side frames, again below the pilots seat. It's likely that turnbuckles would have been fitted in the cables at their lower ends.

Seat rear frame bracing (*instruction manual page 10*):

Single cables were crossed and connected between the four corners of the seat rear frame. It's likely that turnbuckles would have been fitted in the cables at their upper ends.

# PART 6

# ENGINE



## **PART 6 - ENGINE**

**NOTE:** *When cementing large kit parts, I use 'Revell' Contacta Professional cement (39604). This cement is a thicker liquid cement, which takes longer to fully set, but does provide a stronger bond between larger kit parts. 'Tamiya' liquid cement is used for smaller parts.*

***Before working with model parts, make sure that when removed from their sprues, all mould seams, sprue tags or mould 'flash' are removed from each part.***

*The engine fitted to this aircraft was the Le Rhône 9J rotary (110hp (83Kw)).*

### **Assembly:**

Cement the engine halves (E1 and E2) together, making sure the cylinder edges are aligned.

Cement the cylinder heads (E7) onto the top of the cylinders.

**NOTE:** *I found that the push rods on the induction manifold assembly E3 were very weak and several broke. Therefore I chose to replace the push rods with Nickel-Silver tube, retaining only the original top valve operating mechanism.*

Cut away (at their base) the nine push rods from the induction manifold assembly (E3).

Dry fit the induction manifold in position on the rear of the engine assembly.

Cement the slip ring (E4) onto the rear of the induction manifold assembly, making sure the holes in both are aligned.

Remove the induction manifold assembly.

Using the witness marks from the original push rods as guides, drill holes of 0.6 mm diameter down and through the rim of the engine rear crank case.

Cut away and retain the valve operating mechanisms from the removed push rods.

Working on the rear of the engine, cement the valve operating mechanisms onto the rear of the engine cylinder heads. Make sure the raised cylindrical portion of each is cemented to the flat block on the cylinder with the lever facing left and aligned radially with the cylinder heads.

**NOTE:** *The next step is necessary to allow the top of the induction manifold pipes to be positioned around the fitted valve operating levers.*

Cut away the raised position location 'key' from the inner rim of the induction manifold assembly.

### **Painting:**

Airbrush the engine and induction manifold assemblies with a light coat of grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Airbrush the engine assembly with a black primer, such as 'Tamiya' Gloss Black (X1) or similar.

Airbrush the engine assembly with 'Alclad' Steel (ALC-112) or similar.

Airbrush the induction manifold pipes with 'Alclad' Exhaust Manifold (ALC-123) or similar.

Brush paint the spark plugs with 'Tamiya' Deck Tan (XF55) or similar.

### **Assembly (continued):**

Cut nine lengths of 0.5 mm diameter Nickel-Silver tube, such as 'Albion Alloy's' NST05 or similar. Each tube should be long enough to be located into its pre-drilled hole then moved up and against the underside end of the valve operating lever.

Locate the induction manifold into the rear of the engine, making sure top tops of the induction pipes are in contact with the cylinder head blocks.

Apply cement at the engine/induction manifold joint.

Using thin CA adhesive, secure each tube into its pre-drilled hole, making sure its top is positioned under its valve operating lever.

Cut nine lengths of 0.125 mm or similar diameter copper wire.

Drill a hole of 0.3 mm diameter through the ignition slip ring, between each 'stub' on the ignition slip ring and the back of the engine.

Secure the nine copper wires into the nine pre-drilled holes in the ignition ring.

Pull each wire across to its spark plug on the cylinder and bend the wire around the spark plug.

Secure each wire to its spark plug, using thin CA adhesive.

Cut away any excess wire at the spark plug.

### **Weathering:**

Airbrush the engine with a matte clear coat, such as 'Alclad' Flat (ALC314) or similar.

Brush the engine with 'AK Interactive' Kerosene wash (AK2039).

Airbrush the engine with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar.

If desired, add a overheat effect to the top area of the engine cylinders by lightly brushing with 'Tamiya' Weathering Master set D (Burnt Blue).



# PART 7

# PROPELLER

## PART 7 - PROPELLER

The kit supplied 'Lang' type propeller is replaced with a hand crafted wood layered propeller from Alexey Belov at 'Proper Plane'.

### Kit supplied propeller



An actual propeller (linen wrap protected tips)



Apply the two kit supplied decals (6) centrally and midway along the front face of the propeller blades.

Airbrush the propeller with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311).

Saw the two propeller hub plates from their casting blocks and flat sand their rear faces to the thickness of the back plates.

Brush paint the two hub plates with 'Mr. Colour' Stainless Steel (213) or similar.

Using thin CA adhesive, secure the front hub plate centrally onto the front of the propeller hub.

Using thin CA adhesive, secure the rear hub plate centrally onto the rear of the propeller hub.

Check fit the fit of the propeller on the engine propeller shaft and if necessary, drill out the hole in the rear hub/propeller to achieve a good fit.

Brush 'AK Interactive' Kerosene wash (AL3029) over the two propeller hubs.



# PART 8

# WEAPONS

## **PART 8 - WEAPONS**

**NOTE:** *Before working with model parts, make sure that when removed from their sprues, all mould seams, sprue tags or mould 'flash' are removed from each part.*

### **Lewis machine gun:**

#### **Preparation:**

Remove the Lewis machine gun (B43) and ammunition drum (B48) from their kit sprue.

If necessary, sand the edges of the Lewis machine gun and ammunition drum to remove any sprue tags.

#### **Painting:**

Airbrush the Lewis machine gun/ammunition drum with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Airbrush both with a 'Tamiya' Gloss Black (X1) or similar.

Airbrush both with 'Alclad' Gunmetal (ALC120) or similar.

**NOTE:** *Dry brush by using a domed and soft brush, which has a very light dusting of paint. Dry off paint on the brush on an absorbent paper before dry brushing the part.*

Dry brush both with 'Mr. Colour' Super Iron 2 (203) or similar.

Brush paint the handle with 'Tamiya' Hull Red (XF9) or similar.

Brush paint the grab handle on the ammunition drum with 'AK Interactive' Brown Leather (AK3031) or similar.

Brush paint the ammunition rounds cases in the ammunition drum with 'Mr. Colour' Brass (219) or similar.

Sponge 'Tamiya' Weathering Master (Set B - Soot) around the machine gun muzzle.

Cement the ammunition drum onto its locating stub on the machine gun.



### **Vickers machine gun:**

**NOTE:** *The kit supplied Vickers machine gun was replaced by the 'GasPatch' Vickers French extended cocking handle (13-32044).*

#### **Preparation:**

Remove the photo-etch muzzle shroud from the sheet and remove any residual tags from its edges.

Using a suitable round former, bend the muzzle shroud such that its shape conforms to the forward, underside of the cooling barrel.

#### **Assembly:**

Using thin CA adhesive, secure the muzzle shroud in opposition on the forward, underside of cooling barrel, making sure it is positioned correctly.

#### **Modification:**

**NOTE:** *The replacement machine gun from 'GasPatch' and/or the fuselage top cowl panel (A42) need to be modified before the machine gun is painted. **Before painting, refer to Part 9 (Fuselage) for these modifications.***

#### **Painting:**

Airbrush the machine gun with a gloss black, such as 'Tamiya' Gloss Black (X1) or similar.

Airbrush the machine gun with 'Alclad' Gunmetal (ALC120) or similar.

Represent a worn paint effect by dry brushing the machine gun with 'Mr. Colour' Super Iron 2 (SM203) or similar.



# PART 9

# PRE-RIGGING 1



## PART 9 - PRE-RIGGING 1

### Pre-rigging:

**NOTE:** At this stage of the build it's best to pre-rig as much of the fuselage internal rigging wires and flight control cables as possible, as access will be restricted when the model is assembled. Refer to Part 5 (Rigging) of this build log for more information.

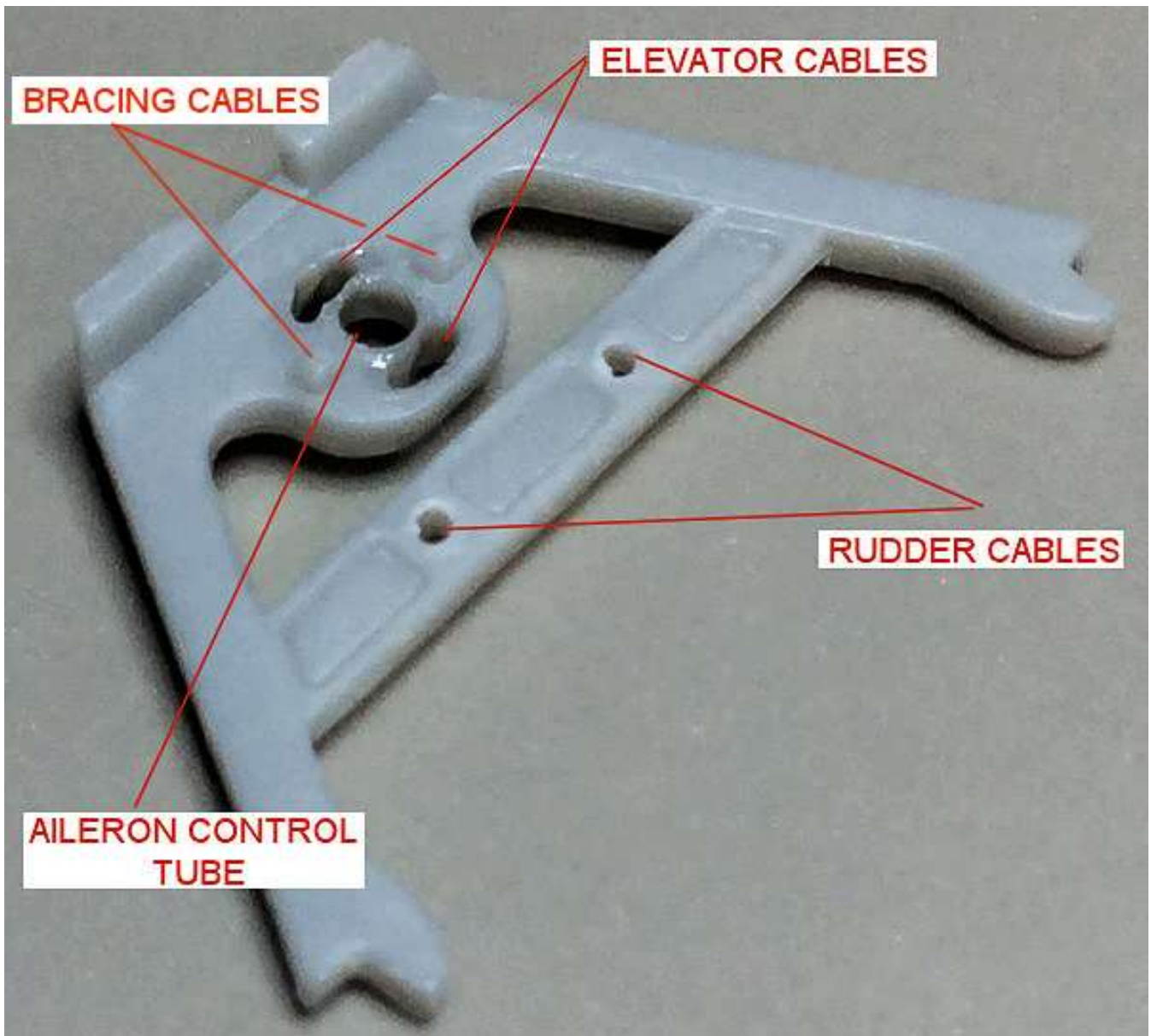
Seat support frame A20 cross bracing and control cables (page 8):

Run a drill of 1.2 mm diameter through the pre-mould hole for the aileron control tube.

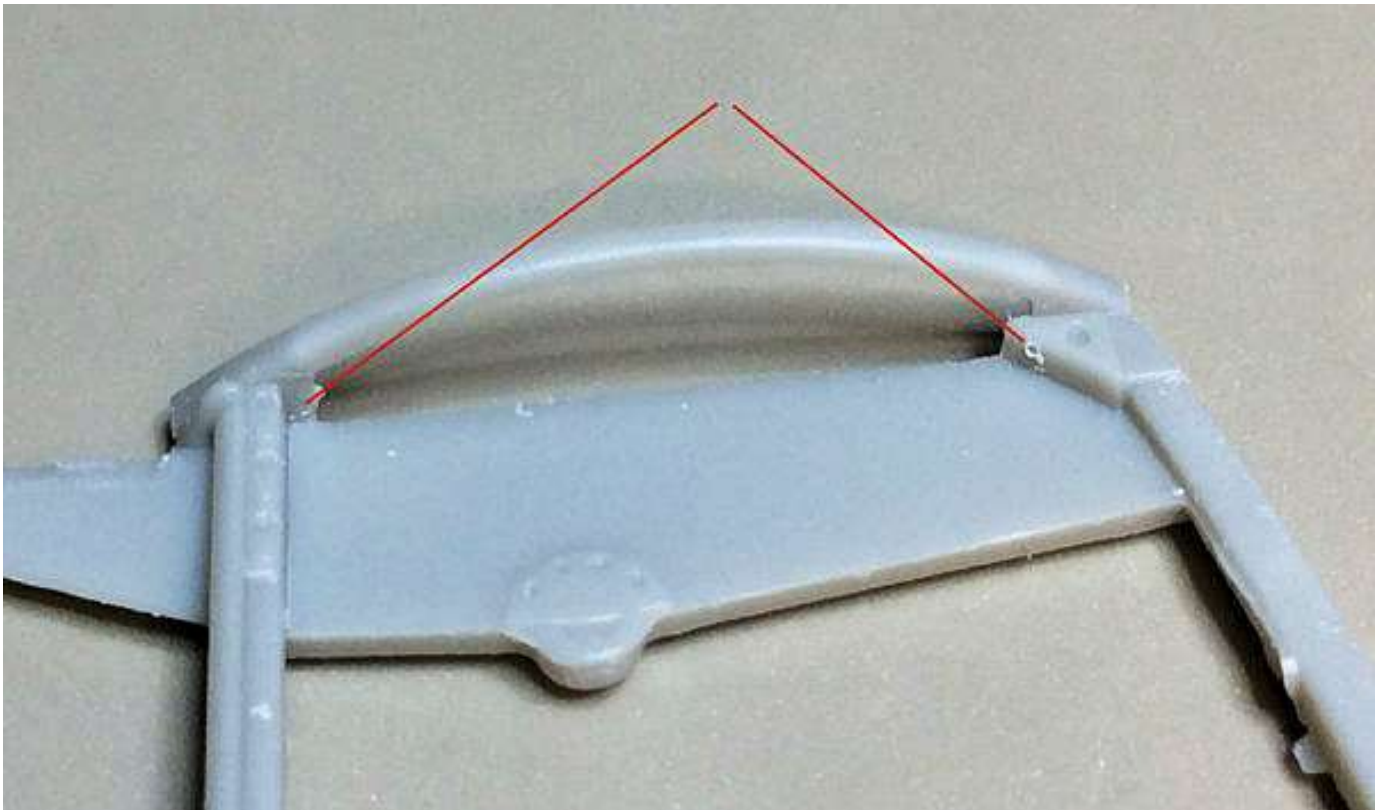
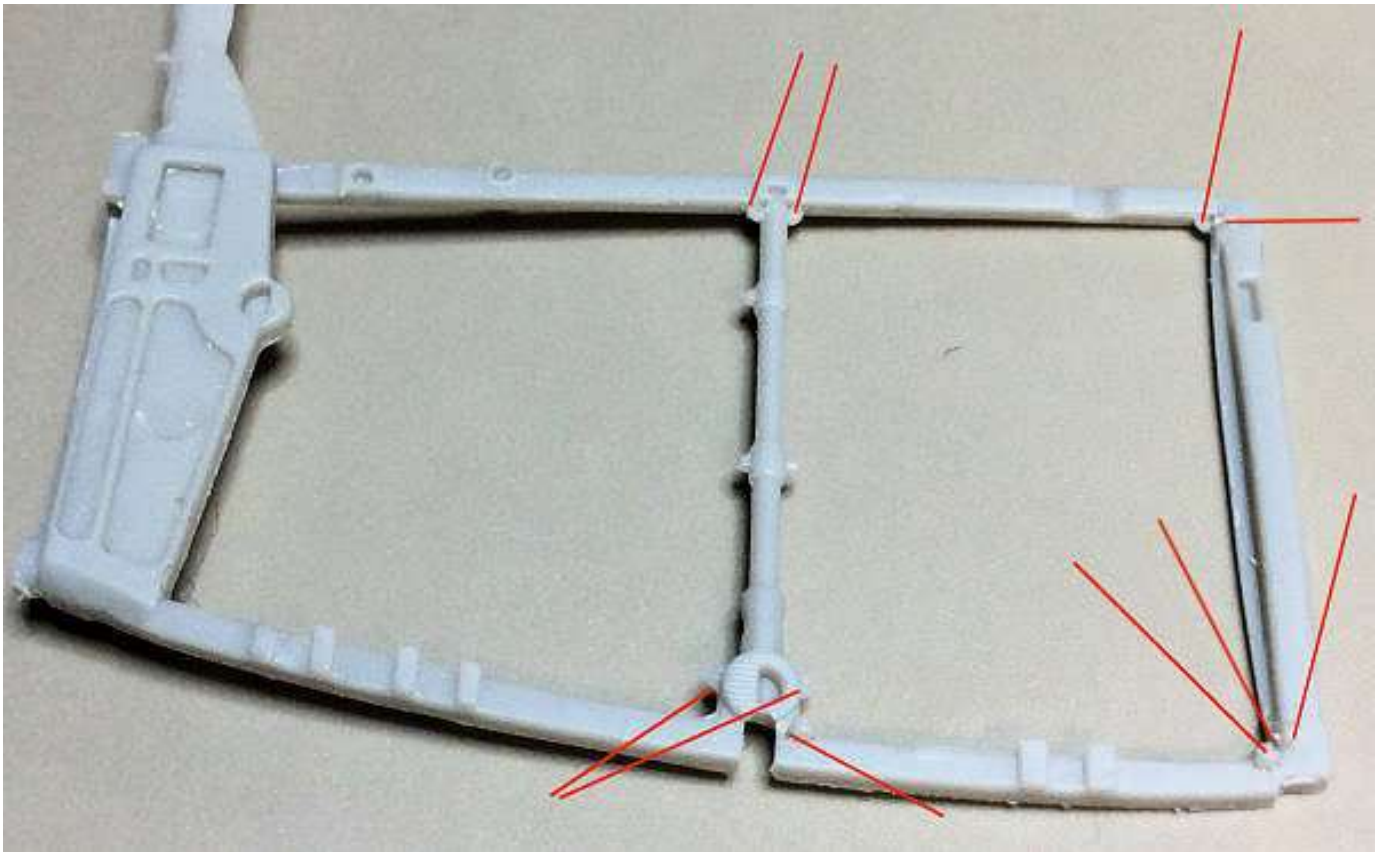
Run a 0.4 mm diameter drill through the pre-moulded locations for the rudder control cables.

Drill a 0.4 mm diameter hole through the pre-moulded locations for the bracing cables.

Using a 0.6 mm diameter drill, chain drill out the pre-moulded 'arcs' above and below the hole for the aileron control tube.



Cockpit side frames and seat rear frame cross bracing - drill holes of 0.2 mm diameter into the rigging locations of the cockpit side frames B15 and B49 (pages 5, 8, 9 and 10).



Elevator control cables - Drill holes of 0.2 mm diameter through the two pre-moulded rigging lugs on the control column A1 (page 8).



Elevator control cables - Drill holes of 0.2 mm diameter through the two pulleys on the pivot tube (page 9).

# PART 10

# FUSELAGE

## **PART 10 - FUSELAGE**

**NOTE:** *When cementing large kit parts, I use 'Revell' Contacta Professional cement (39604). This cement is a thicker liquid cement, which takes longer to fully set, but does provide a stronger bond between larger kit parts. 'Tamiya' liquid cement is used for smaller parts and the more delicate model parts.*

***Before working with model parts, make sure that when removed from their sprues, all mould seams, sprue tags or mould 'flash' are removed from each part.***

### **Preparation:**

#### **General**

**NOTE:** *The kit instruction manual (page 12) states that the hole in the underside centre section of the lower wing should be 3.8 mm. I believe this is too large as the ejection port for the Vickers machine gun and should be 1.8 mm diameter.*

Drill a hole of 1.8 mm diameter through the centre section of the lower wing (page 12).

Cut away the rear ends of the two ribs on the engine cowling C4 (page 15).

Drill a hole of 0.8 mm diameter centrally into the ends of the two air induction pipes A11 and A12 (page 6).



### **Assembly:**

**NOTE:** *The sequence of model assembly does not follow the kit instruction manual.*

Remove from their kit sprues and prepare:

All cockpit parts detailed on pages 5 to 10 in the kit instruction manual.

The lower wing (C1).

The fuselage halves (A16 and A17).

Tail skid parts (A8, A9, A14, A18, B9 and B25).

Fuselage panels (A42, B1 and B1).

Fuselage access panels (B3 and B4).

Engine cowling (C4).

Cement the oil tank (A21) onto its location on the engine bulkhead (A41).

Cement the ammunition container (A34) onto its front panel (A33).

File or sand the joint seam to blend it with the surrounding surfaces.

Cement the seat back (B34) onto the seat base (B7).

File or sand the joint seam to blend it with the surrounding surfaces.

Cement the seat support (A20) onto its location under the seat base, making sure the legs of the support are angled towards the rear of the seat.

Cement the two halves of the ammunition reel drum (B44 and B46) together.

Cement the magneto (E6) and oil pump (E5) onto their location recesses on the rear face of the engine bulkhead (A41).

**NOTE:** *During the next step, make sure the cross members are fitted correctly (refer to Fig 8 on page 7 of the instruction manual).*

Cement the floor boards cross members (front B11) and (rear B8) onto the underside of the floor boards (B6).

**NOTE:** *During the following two steps, use the engine bulkhead ((A41) to align the parts correctly (refer to Fig 4 on page 6 of the instruction manual).*

Cement the engine support tube (B40) onto the Camshaft (A10).

Cement the two mount braces (A28 and A29) into their locating recesses in the ends of the engine support tube (B40).

Remove from their kit sprues and prepare the tail skid parts detailed on page 11 in the kit instruction manual.

Cement the tail skid (B9) into its locating slot in the under fuselage rear panel (A4).

Cement the two side fairings (A8 and A9) onto the sides of the tail skid.

Cement the steel leaf (B25) into its locating recesses in the tail skid.

Cement the tail skid support (A14) in position in the left fuselage half (A17).

Cement the tail skid support (A18) in position in the right fuselage half (A16).

Anneal (soften) the photo-etch parts (PE1 to PE5) by moving them across a flame, such as that from a cigarette lighter, until the parts colour change to a light grey.

Remove the photo-etch seat belt parts from their photo-etch sheet.

Cut away any photo-etch tags from the edges of the parts.

Lightly sand the mating surfaces to improve the grip for the adhesive.

Using thin CA adhesive, secure the seat belt (PE2) onto the end of the right seat belt of the belt (PE1).

Using thin CA adhesive, secure the seat belt (PE4) onto the end of the left seat belt of the belt (PE1).

Using thin CA adhesive, secure the seat buckle (PE3) onto the end of the right seat belt (PE2).

Using thin CA adhesive, secure the seat buckle (PE5) onto the end of the left seat belt (PE4).

Bend the seat belts over the pilots seat to the desired position and shapes.

## **Painting:**

Airbrush over the following a grey primer, such as 'AK Interactive' Grey (AK758) or similar:

All cockpit assemblies and the parts detailed on pages 5 to 10 in the kit instruction manual.

Cockpit floor section on the lower wing (C1).

Engine cowling (C4).

Tail skid parts (A8, A9, A14, A18, B9 and B25).

Inner surfaces of:

The fuselage halves (A16 and A17).

Fuselage panels (A42, B1 and B33).

Fuselage access panels (B3 and B4).

Airbrush over the following with 'Tamiya' Dark Yellow (XF60) or similar:

Inner surfaces of:

The fuselage halves (A16 and A17).

Fuselage panels (A42, B1 and B33).

Fuselage access panels (B3 and B4).

Cockpit floor section on the lower wing (C1).

Tail skid assembly.

Both cockpit side frames.

Ammunition box.

Foot boards assembly.

Pilots seat.

Ammunition drum assembly.

Rear seat frame.

## **Wood effects:**

Wood effect (method 2):

**NOTE:** Refer to Part 2 (Wood Effects) of this build log for more information.

Walnut:

I used Windsor & Newton' Griffin (Alkyd) **Vandyke Brown** oil paint. Use the chosen method to apply Walnut wood effect finish to the following parts:

Forward members of both cockpit side frames.

Face of ammunition box.

Foot boards assembly.

Front bottom edges of pilots seat.

Tail skid assembly.

Plywood:

I used Windsor & Newton' Griffin (Alkyd) **Burnt Sienna** oil paint. Use the chosen method to apply Plywood wood effect finish to the following parts:

Sides of ammunition box.

Pilots seat.

Ammunition drum assembly.

Bottom and edges of rear seat frame.

Cockpit floor section on the lower wing.

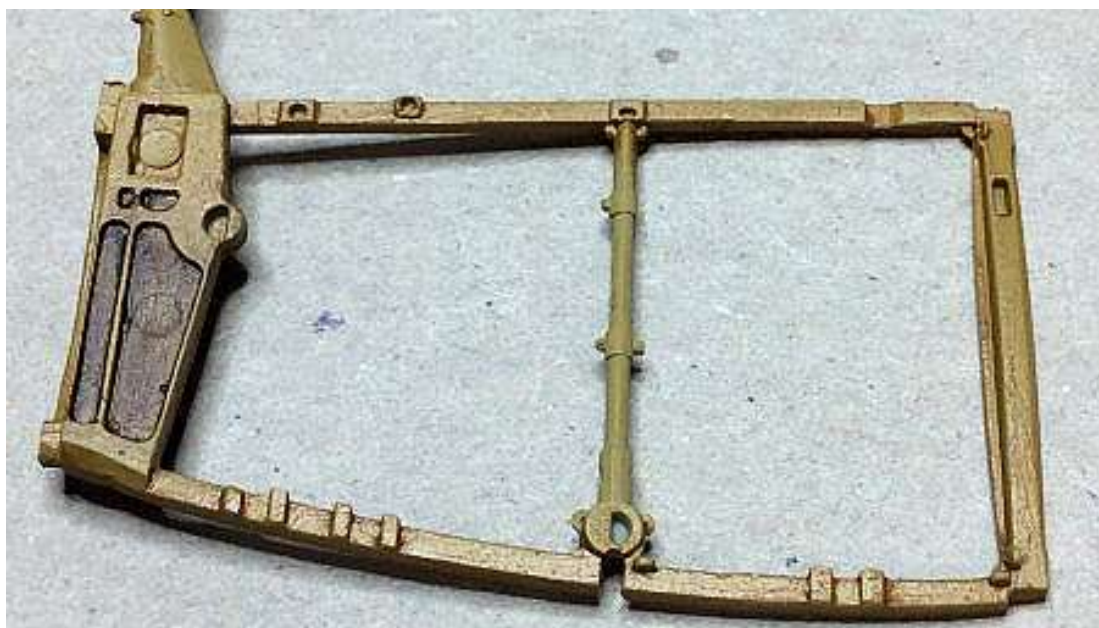
Both fuselage tail skid supports (not really necessary as they will not be visible).



### Spruce:

I used Windsor & Newton' Griffin (Alkyd) **Raw Sienna** oil paint. Use the chosen method to apply Spruce wood effect finish to the following parts:

Both cockpit side frames.





### **Painting (continued):**

Airbrush or brush paint the following parts with **'Tamiya' Medium Blue (XF18) or similar:**

- Cockpit side frame details (page 5 of the kit instructions)
- Engine bulkhead (page 5 of the kit instructions)
- Tachometer base (page 5 of the kit instructions)
- Tachometer drive (page 6 of the kit instructions)
- Engine mount brace (page 6 of the kit instructions)
- Fuel tank (page 6 of the kit instructions)
- Radial bar over ammunition box (page 6 of the kit instructions)
- Air induction tubes (page 6 of the kit instructions).
- Spreader tube (page 7 of the kit instructions).
- Spreader tube (page 7 of the kit instructions).
- Rudder bar lower (page 7 of the kit instructions).
- Rudder bar (page 7 of the kit instructions).
- Rudder bar mounting on foot boards (page 7 of the kit instructions).
- Bell crank and filter tap (page 7 of the kit instructions).
- Aileron push rods (page 8 of the kit instructions).
- Seat and control support (page 8 of the kit instructions).
- Control column (page 8 of the kit instructions).
- Seat support (page 9 of the kit instructions).
- Pivot tube (page 8 of the kit instructions).
- Spreader bar (page 9 of the kit instructions).
- Machine gun support (page 9 of the kit instructions).

Airbrush the inner surface of the fuselage top cowl (A42) and the engine cowling (C4) with **'Tamiya' Gloss Black (X1) or similar.**

Airbrush the inner surface of the fuselage top cowl (A42) and the engine cowling (C4) with **'Alclad' Duraluminium (ALC120) or similar.**

Brush paint the following with **'Mr. Colour' Copper (215) or similar:**

- Front face of engine bulkhead (page 5 of the kit instructions)
- Pulse meter tubes (page 7 of the kit instructions).

Brush paint the following with **'Mr. Colour' Aluminium (218) or similar:**

- Crankshaft housing (page 6 of the kit instructions)
- Ammunition chute on ammunition box (page 6 of the kit instructions)
- Front face of engine bulkhead - (page 5 of the kit instructions)
- Support bracket (page 7 of the kit instructions)
- Pulleys on pivot tube (page 9 of the kit instructions)
- Ammunition drum spool (page 10 of the kit instructions).

Brush paint the following with **'Mr. Colour' Stainless Steel (213) or similar:**

- Oil pump (page 5 of the kit instructions)
- Magneto (page 5 of the kit instructions)

Centre plate on both sides of engine bulkhead (page 5 of the kit instructions).  
Tachometer body (page 5 of the kit instructions)  
Crankshaft (page 6 of the kit instructions)  
Throttle quadrant (page 7 of the kit instructions)  
Belt end fittings (page 9 of the kit instructions).

Brush paint the following with **'Tamiya' Deck Tan (XF55) or similar:**

Front and rear fabric on rear seat frame (page 10 of the kit instructions)  
Rear inside surfaces of fuselage halves (page 11 of the kit instructions).

Brush paint the following with **'Mr. Colour' Brass (219) or similar:**

Oil tank filler cap (page 5 of the kit instructions)  
Magneto (page 5 of the kit instructions)  
Carburettor (page 5 of the kit instructions)  
Control levers, pulse meter, bell crank cylinder (page 7 of the kit instructions)  
Control column top and trigger (page 8 of the kit instructions)  
Belt buckles (page 9 of the kit instructions).

Brush paint the following with **'Tamiya' Gun Metal (XF10) or similar:**

Tachometer drive outlet (page 5 of the kit instructions)  
Machine gun uprights on engine bulkhead (page 5 of the kit instructions)  
Ammunition drum spool inners (page 10 of the kit instructions).

Brush paint the following with **'Tamiya' Rubber Black (XF85) or similar:**

Magneto (page 5 of the kit instructions)  
Lever on pulse meter (page 7 of the kit instructions).

Brush paint the following with **'Ak Interactive' Brown Leather (AK) 3031 or similar:**

Foot straps on rudder bar (page 7 of the kit instructions)  
Control column hand grip (page 8 of the kit instructions)  
Head rest (page 10 of the kit instructions)  
End area of the right seat belt.

Brush paint the following with **'Tamiya' Desert Yellow (XF59) or similar:**

Belt straps (page 9 of the kit instructions).

Brush paint the following with **'Tamiya' Buff (XF57) or similar:**

Ammunition belt (page 10 of the kit instructions).

### **Weathering:**

Refer to Part 3 (Weathering) of this build log for more information. Apply your chosen weathering effects. I used 'Flory Models' Dark Dirt clay wash as general weathering:

Engine bulkhead  
Aluminium cabane struts on cockpit side frames  
Underside of fuselage top cowl  
Inner surface of engine cowl  
Ammunition box.  
Pilots seat.

Cockpit floor section on the lower wing.  
Rear inner surfaces of fuselage halves  
Tail skid supports  
Pilots seat rear frame  
Fuselage side panels  
Access panels for fuselage side panels  
Pilots headrest.

Seal the applied weathering by airbrushing with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar.

### **Painting (continued):**

Airbrush all other painted parts with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar.



### **Assembly preparation:**

Make sure all primer and paint are removed from the mating faces and joints of all parts. Where possible, test fit or locate the parts together to ensure they fully locate.

### **Cockpit rigging:**

#### **Preparation:**

The required rigging holes were drilled into the parts earlier in this chapter. Use the appropriate sized drill to clear the pre-drilled holes of any primer or paint.

#### **Cockpit right side frame:**

**NOTE:** *The following procedure applies to the four cross bracing wires in the side frame.*

Cut two long lengths of 'Stroft GTM' or 'Steelon' 0.08 mm diameter mono-filament or similar.

**NOTE:** *Most metal tube can be chemically blackened by immersion in solutions, such as Blacken -It' or similar.*

Cut four short lengths of blackened 0.4 mm diameter Brass tube, such as 'Albion Alloy's' MBT04 or similar.

Pass the line through a tube then through the 'eye' end of a 'Gaspach' 1/48th scale resin Type C turnbuckle.

Loop the line back and through the tube.

Slide the tube up to, **but not touching**, the 'eye' of the turnbuckle.

Secure the lines in the tube using thin CA adhesive, making sure the line is free to move in the turnbuckle.

Cut away the residual tag of line at the end of the tube.

Repeat to add a line to the opposite end of the turnbuckle.

Pass one free end of a line through a tube then through a pre-drilled rigging hole in a top corner of the cockpit side frame.

Loop the line back and through the tube.

Slide the tube up to, **but not touching**, the rigging hole.

Pass the other line through a tube then diagonally down and through the opposite rigging hole in the side frame.

Loop the line back and through the tube.

Slide the tube up to, **but not touching**, the rigging hole.

Pull the free line at the top corner to draw the turnbuckle close to the corner of the frame.

Secure the lines in the tube using thin CA adhesive, making sure the line is free to move in the turnbuckle.

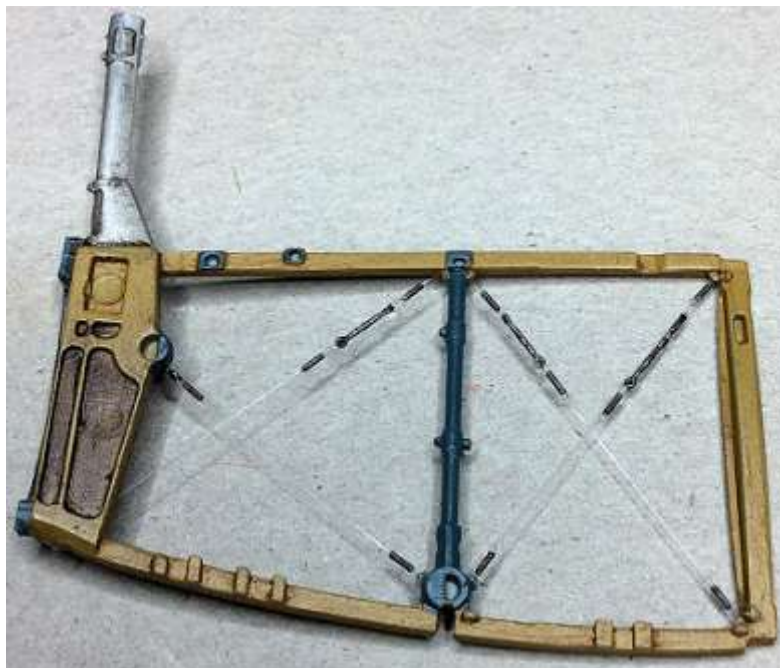
Carefully cut away the residual tag of line at the end of the tube.

Pull the other free line at the lower corner to draw the tube up to the corner of the frame, making sure the whole rigged line is kept taut.

Secure the lines in the tube using thin CA adhesive, making sure the line is free to move in the turnbuckle.

Cut away the residual tag of line at the end of the tube.

Repeat the procedure to add the remaining three crossed bracing wires to the cockpit side frame.



Cockpit left side frame:

Repeat the previous procedure to add the four cross bracing wires to the left side frame.

Rudder control cables:

**NOTE:** *The following procedure applies to the four rudder control cables. These cables will be finally fitted during the full cockpit build later in this build log.*

Cut four long lengths of 'Stroft GTM' or 'Steelon' 0.08 mm diameter mono-filament or similar.

Cut four short lengths of blackened 0.4 mm diameter Brass tube, such as 'Albion Alloy's' MBT04 or similar.

Pass the line through a tube then through one of the pre-moulded rigging holes in the ends of the rudder bar lower joint.

Loop the line back and through the tube.

Slide the tube up to, **but not touching**, the rudder bar lower joint.

Secure the lines in the tube using thin CA adhesive, making sure the line is free to move in the rudder bar lower joint.

Cut away the residual tag of line at the end of the tube.

Repeat to add the remaining three control cables to the rudder bar lower joint.

Elevator control cables:

**NOTE:** *The following procedure applies to both elevator control cables.*

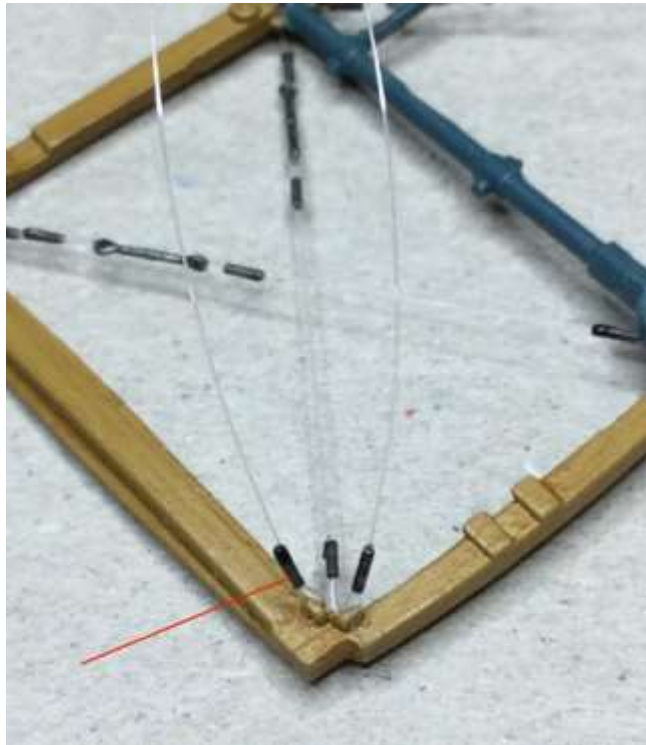
Repeat the previous procedure to add the two elevator control cables to the pre-drilled holes in the control column pulleys.



Seat rear frame bracing:

**NOTE:** *The following procedure applies to both bracing wires on the seat rear frame. These cables will be finally fitted during the full cockpit build later in this build log.*

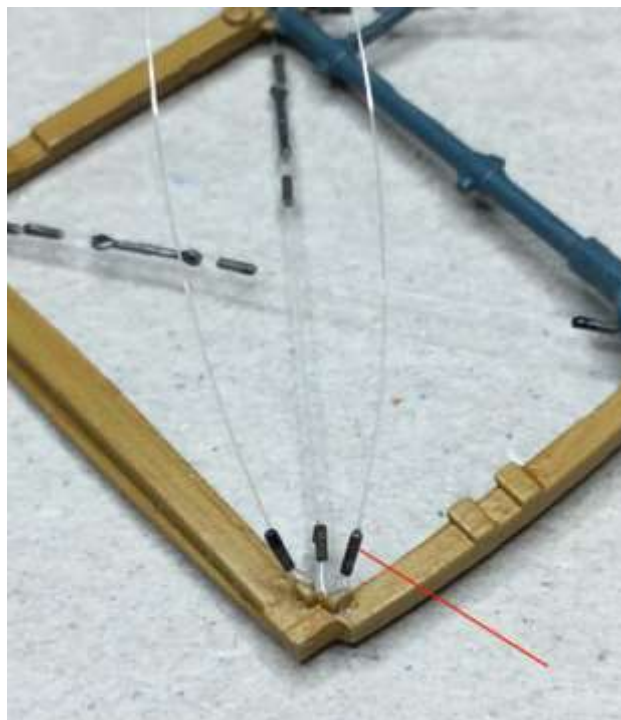
Repeat the previous procedure to add the two bracing wires to the bottom, rear corners at the rear of the two cockpit side frames.



Cockpit side frames - bottom bracing:

**NOTE:** *The following procedure applies to both bottom bracing wires for the cockpit side frames. These cables will be finally fitted during the full cockpit build later in this build log.*

Repeat the previous procedure to add the two bracing wires to the bottom, forward corners at the rear of the two cockpit side frames.



### **Decals:**

**NOTE:** *Only one decal is required for the cockpit.*

Brush a clear gloss coat, such as 'Tamiya' Clear Gloss (X22) or similar, over the rear face of the Tachometer.

Apply the kit supplied decal (5) onto the Tachometer.

**NOTE:** *I added a brass photo-etch bezel (from my spares box) onto the decal, using the clear coat to secure it in position.*

To represent the instrument glass, brush a thin clear gloss coat, such as 'Tamiya' Clear Gloss (X22) or similar, over the applied decal.

### **Assembly (continued):**

**NOTE:** *Refer to the kit instruction manual to see where the mating surfaces and locations for fitting of the various cockpit parts are located. Make sure all primer and paint is removed from these areas to ensure that the parts fully locate and fit together correctly.*

Cement the two fuselage halves together along the bottom edges and the slot at the rear end.

Cement the top former into its location slots in the top edges of the fuselage halves.

Cement the tail skid panel into its location in the underside, rear of the fuselage.

Cement the top cover onto the fuselage, making sure the central 'rib' on the underside of the top cover contacts the front face of the second frame of the top former.



### **Rudder control:**

**NOTE:** *Refer to page 7 of the kit instruction manual.*

Pass each pair of pre-rigged rudder control cables on the lower joint, through their inboard slots in the rear cross member.

Cement the top of the lower joint into its recess in the underside of the rudder bar mounting, making sure the lower joint is parallel between the two cross members.

Cement the rudder bar into its locating hole in the rudder mounting, making sure it's aligned to the cross members and lower joint.



Cockpit right side frame:

**NOTE:** Refer to pages 5 and 6 of the kit instruction manual.

Cement the cockpit right side frame onto its locations on the right edge of the engine bulkhead. Make sure the frame fully locates and aligns with the edge of the bulkhead. Once the cement has semi-set, test fit the frame/bulkhead onto the centre cockpit area of the lower wing. The frame should locate over the end of the cross member on the lower wing and the bottom of the bulkhead onto the forward edge of the lower wing.

Cement the crankshaft/ mounting /air induction pipes assembly into the hole through the centre of the engine bulkhead and the location in the cockpit right side frame and against the rear of the engine bulkhead.

Cement the fuel tank onto the forward face of the ammunition box.

Cement the fuel tank/ammunition box assembly into its locating recess in the cockpit right side frame, making sure it's at 90 degrees to the side frame and parallel with the engine bulkhead.

**NOTE:** Refer to page 7 of the kit instruction manual.

Cement the spreader tube into its location in the cockpit right side frame, making sure it's at 90 degrees to the side frame when viewed from above and from behind.

Cement the rudder bar/foot boards assembly onto its locations on the cockpit right side frame.

Left side frame:

**NOTE:** Refer to page 7 of the kit instruction manual.

Cement the two engine controls (1) onto their locations on the support bracket (B17).

**NOTE:** Refer to pages 7 and 8 of the kit instruction manual.

Cement the support bracket onto the cockpit left side frame. The support bracket is attached by its forward plate into its recess in the outer face of the cabane strut, the rear end onto the vertical tubular member and the oil pulsator against its support strut.



Locate the cockpit left side frame in position on the left outer edge of the engine bulkhead.

Locate the following into their locations on the cockpit left side frame:

Rudder bar/foot boards assembly.

Fuel tank/ammunition box assembly.

Spreader tube.

Crankshaft/ mounting /air induction pipes assembly.

Cement the cockpit left side frame onto it locations on the left edge of the engine bulkhead. Make sure the frame fully locates and aligns with the edge of the bulkhead.

Cement the following into their locations on the cockpit left side frame:

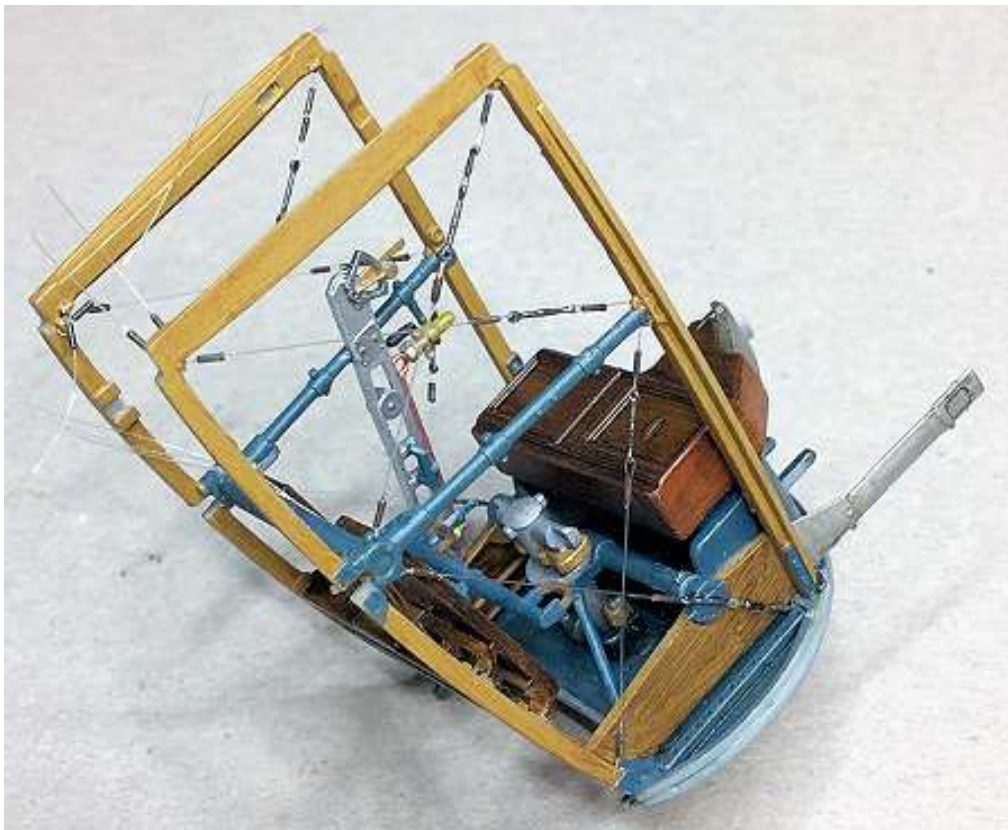
Rudder bar/foot boards assembly.

Fuel tank/ammunition box assembly.

Spreader tube.

Crankshaft/ mounting /air induction pipes assembly.

Test fit the cockpit assembly onto the centre cockpit area of the lower wing. The frames should locate over the ends of the cross member on the lower wing and the bottom of the bulkhead onto the forward edge of the lower wing. Make sure the rudder bar/foot boards assembly, the fuel tank/ammunition box assembly, the spreader tube and the crankshaft/ mounting /air induction pipes assembly are fully located and aligned correctly when viewed from above and from behind.



Engine and cowl:

**NOTE:** (Refer to page 15 of the kit instruction manual).

Test fit the engine and engine cowl onto the front of the cockpit assembly. Make sure the cowl fits over the engine and fully locates over the engine bulkhead.

### Fuselage top cowl:

**NOTE:** (Refer to step 48 on page 13 of the kit instruction manual).

Test fit the fuselage cowl panel (A42) onto the cockpit assembly. Make sure the cowl fits over the ammunition box and the two cabane struts and contacts the top of the cockpit side frames. If necessary, file or sand to achieve the correct fit. I found that the panel openings highlighted in step 48 did need to be enlarged slightly. Also the top, left corner of the ammunition box needed to be chamfered as it contacted the underside of the panel.

### Cockpit assembly - fit:

**NOTE:** (Refer to page 12 of the kit instruction manual). The cockpit assembly is fitted to the lower wing at this stage to allow for aligning the remaining parts and to allow easier handling of the cockpit.

Test fit the cockpit assembly onto the centre section of the lower wing. Make sure:

The two cockpit side frames locate fully over the cross member on the lower wing.

The front edge of the wing locates fully into its recess at the bottom, rear edge of the engine bulkhead.

The rear underside edges of the foot boards are in contact with the top of the spreader tube.

Cement the cockpit assembly in position onto the centre section of the lower wing.

### Carburettor air intake pipes:

**NOTE:** (Refer to pages 6 and 10 of the kit instruction manual). The air intake pipes are fitted at this stage to make sure they align with their exit holes in the fuselage side panels.

Temporarily locate the engine cowl onto the engine bulkhead and the fuselage side panels onto the cockpit side frames. Make sure the cowl and panels are correctly located and hold them in position using masking tape.

**NOTE:** The two carburettor air intake pipes are fitted at different angles to align with their exit holes in the fuselage sides panels. Work with straight tweezers from the rear of the cockpit assembly.

Pass pipe A11 (half shape end first) through its exit hole in the left fuselage panel and into the cockpit.

Align the half shape end fully onto its mounting end of the engine support tube.

Cement the air intake pipe to the end of the engine support tube.

Repeat the procedure to fit the right air intake pipe (A12) to the opposite end of the engine support tube.

**NOTE:** During the following step, take care not to dislodge or break away the added air intake pipes.

Once the cement has fully set, remove the masking tape and **carefully** remove the fuselage side panels and the engine cowl.



### Control assembly:

**NOTE:** Refer to page 8 of the kit instruction manual. The position of the control column will depend on whether the ailerons in the upper wing are aligned with the wing or re-positioned (refer to Chapter 10 - Construction of this build log).

*Control column central - both ailerons aligned with the upper wing.*

*Control column slightly left - left aileron angled slightly up, right aileron down.*

*Control column slightly right - left aileron angled slightly down, right aileron up.*

Cement the control column assembly onto its location lug on the rear face of the spreader tube and its top, horizontal bar at the rear of the left and right vertical members of the cockpit side frames.

### Pilots seat assembly:

**NOTE:** Refer to page 9 of the kit instruction manual.

Using thin CA adhesive, secure the pilots seat belts onto the seat.

Cement the pilots seat assembly onto its locations on the bottom members of the cockpit side frames and the seat front onto the top of the control column seat support bar.

### Rear vertical cross bracing:

**NOTE:** Refer to page 10 of the kit instruction manual.

Cut two short lengths of blackened 0.4 mm diameter Brass tube, such as 'Albion Alloy's' MBT04 or similar.

Pass each pre-rigged cross bracing wire through a tube then diagonally across and through the pre-drilled rigging point at the top of the cockpit side frames.

Loop the line back and through the tube.

Slide the tube up to, **but not touching**, the rigging point.

Keeping the lines taut (not enough to flex the side frames inwards), secure the lines in the tube using thin CA adhesive, making sure the line is free to move in the rigging point.

Cut away the residual tag of line at the end of the tube.

Rear horizontal cross bracing:

**NOTE:** Refer to page 9 of the kit instruction manual.

Pass the two pre-rigged horizontal cross bracing wires diagonally across and through the pre-drilled rigging point at the opposite, bottom corner of the cockpit side frame.

Pass the end of the lines diagonally up to their pre-drilled bracing wire holes in the seat support.

Keeping the lines taut, secure the lines at the rear of the seat support, using thin CA adhesive.

Cut away the residual tag of line at the end of the tube.

Control cables:

**NOTE:** Refer to pages 8 and 9 of the kit instruction manual.

Pass the two elevator control cables on the control column rearwards and through the top and bottom of the large opening in the control column/seat support frame, then rearwards and through their top and bottom slots in the seat support frame.

Pass the top cable through the pre-drilled hole in the top pulley of the pivot tube and the bottom cable through pre-drilled hole in the bottom pulley.

Keeping the cables taut, slide the pivot tube through the hole in the seat support frame and into the control column/seat support frame location, keeping the pulley end vertical.

Keeping the cables clear, cement the pivot tube in position in the two frames.

Pass the twin rudder control cables on each side of the of the rudder bar rearwards and through the large opening in the control column/seat support frame, then rearwards and through their holes in the seat support frame.

Cockpit rear wall:

Pass the twin rudder control cables through their respective holes in the cockpit rear wall B39.

Pass the two elevator control cables through the slot in the cockpit rear wall.

Keeping the lines taut, locate the cockpit rear wall into its location recesses in the ends of the cockpit side frame.

Cement the cockpit rear wall in position.

Control cables (continued):

Keeping the cables taut, secure them to the rear of the cockpit rear wall, using CA adhesive.

Cut away any residual tags of cable line.

Headrest:

**NOTE:** Refer to page 10 of the kit instruction manual.

Cement the headrest B36 in position on the rear of the cockpit side frames.

Tachometer and drive:

**NOTE:** Refer to pages 5 and 6 of the kit instruction manual.

Cement the Tachometer in position on the vertical tubular member of the cockpit right side frame.

Cement the Tachometer drive in position at the Tachometer and over the carburettor air intake pipe.

#### Vickers gun trigger cable:

**NOTE:** *I chose to add the trigger cable for the Vickers machine gun.*

Cut a long length of 0.2 mm diameter lead wire, such as that from 'PlusModel' or similar.

Using thin CA adhesive, secure one end of the wire on the front of the control column and under the trigger.

Using thin CA adhesive, secure the wire midway down the front of the control column.

Cut the other end of the wire to allow it to be curved up and centrally under the ammunition box.

#### Ammunition drum:

**NOTE:** *Refer to page 10 of the kit instruction manual.*

Cement the ammunition drum onto its location on the outer edge of the cockpit support bracket. Temporarily locate the fuselage left side panel against the cockpit side frame to hold the ammunition drum in its correct position until the cement sets.

#### Spreader tube:

**NOTE:** *Refer to page 10 of the kit instruction manual.*

Cement the spreader tube in its locations between the tops of the cockpit side frames.

#### Aileron control rods:

**NOTE:** *Refer to page 8 of the kit instruction manual.*

Temporarily locate the fuselage top cowl panel in position on the th cockpit structure.

Mark the top, outer side of both cockpit side frames inline with the pre-moulded slots (for the upper wing aileron control rods when fitted).

**NOTE:** *During the following steps, make sure the control rods are fitted in the correct side of the control column, as the vertical rods are tilted forwards.*

Cement aileron control rod A27 in its location on the right side of the control column. Make sure the bottom rod is horizontal across the fuselage when viewed from the side and from above. Also that the top of the vertical rod is aligned with the mark made on the cockpit side frame.

Cement aileron control rod A31 in its location on the left side of the control column. Make sure the bottom rod is horizontal across the fuselage when viewed from the side and from above. Also that the top of the vertical rod is aligned with the mark made on the cockpit side frame.

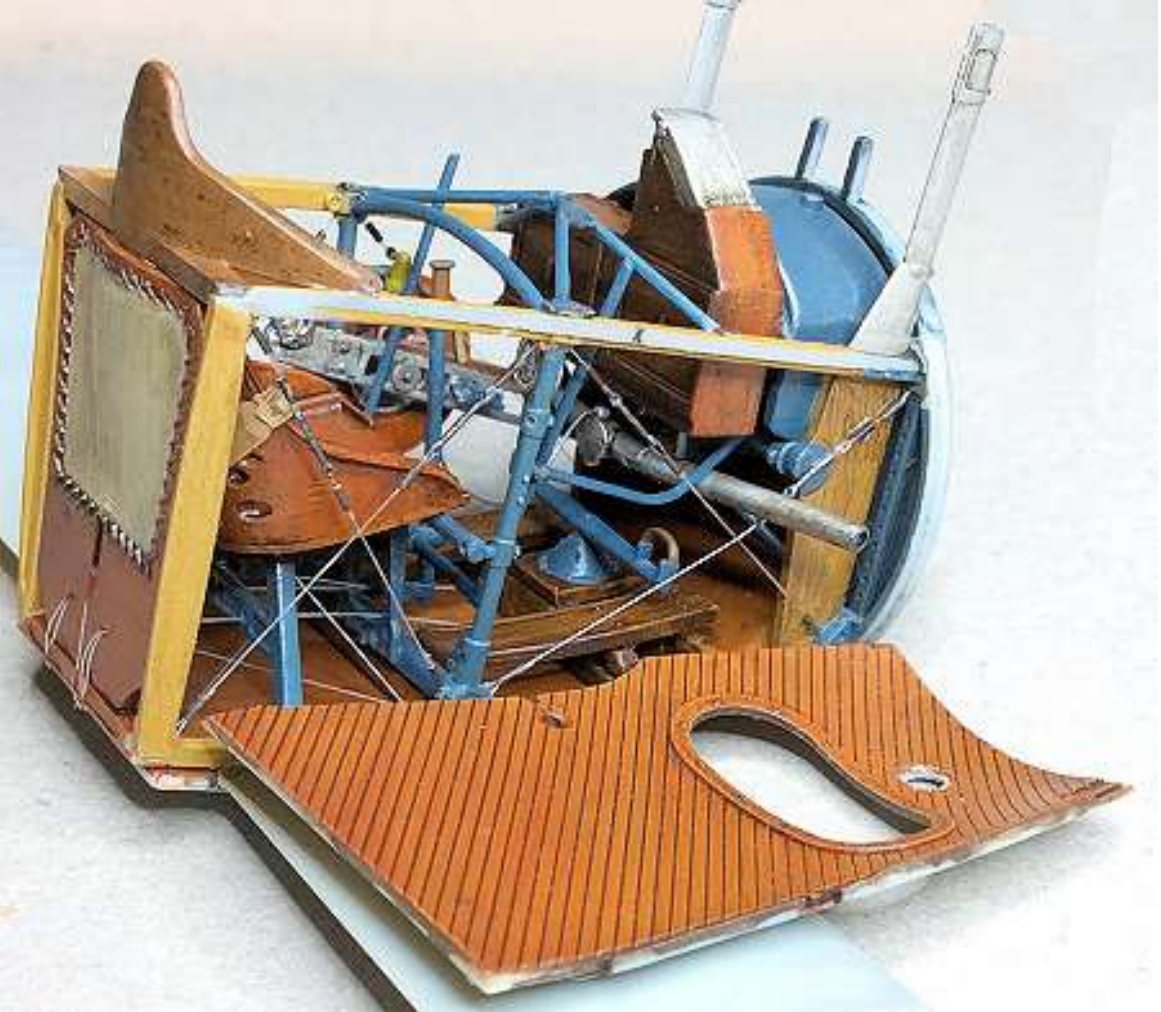
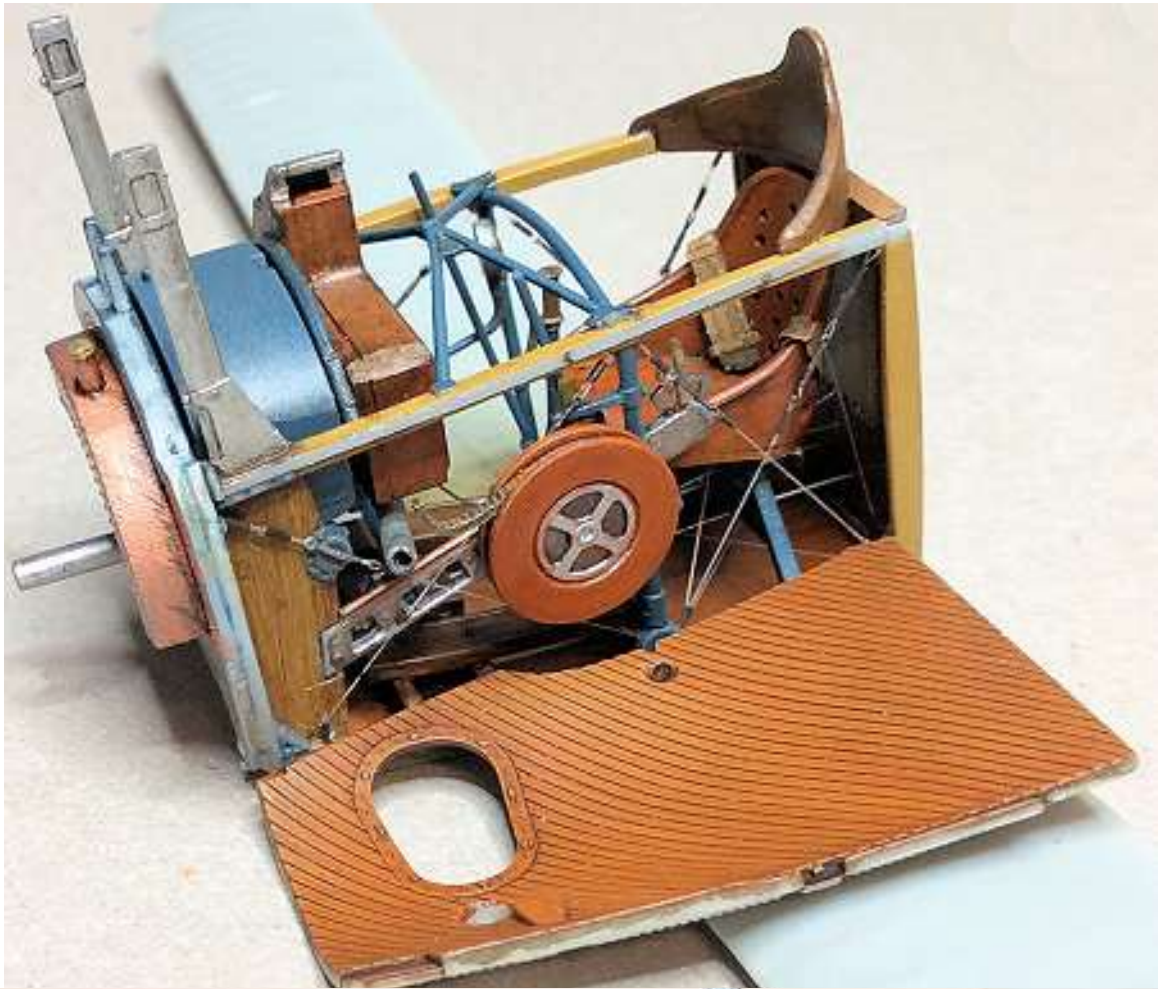
#### Machine gun support:

**NOTE:** *Refer to page 10 of the kit instruction manual.*

Cement the machine gun support in position between the cockpit side frames.

#### **Surface finish:**

To blend the cockpit parts together and to 'tone down' the applied rigging, airbrush the cockpit assembly with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar.



## Fuselage assembly:

**NOTE:** Refer to page 12 of the kit instruction manual.

Test fit the rear fuselage onto the rear of the cockpit/lower wing assembly. Make sure the fuselage locates fully onto the rear of the cockpit/lower wing assembly and covers the edge of the cockpit headrest. I found that some scrapping away of styrene around the rear fuselage edge was necessary to achieve a good fit.

Cement the rear fuselage in position on the rear of the cockpit/lower wing assembly.

**NOTE:** Refer to page 13 of the kit instruction manual.

Test fit the fuselage right side panel over the lower wing and onto the right cockpit side frame. Make sure the panel fully locates against the edge of the rear fuselage, top outer edge of the cockpit side frame and top of the lower wing. Also test fit the fuselage top cowl panel to make sure its outer edge aligns with the top edge of the side panel.

Cement the fuselage right side panel in position.

Test fit the fuselage left side panel over the lower wing and onto the left cockpit side frame. Make sure the panel fully locates against the edge of the rear fuselage, top outer edge of the cockpit side frame and top of the lower wing. Also test fit the fuselage top cowl panel to make sure its outer edge aligns with the top edge of the side panel.

Cement the fuselage left side panel in position.

Cement the fuselage top cowl panel in position onto the top of the fuselage side panels, making sure the tops of the aileron control rods in the cockpit are positioned in the pre-drilled slots in the panel. Also that the outer edges of the panel cover the top edges of the fuselage side panels.

Check all of the fuselage and panel joints for gaps. For large gaps use a modelling filler such as 'AV' Masilla Plastica (401) putty, 'De-Lux Materials' Perfect Plastic Putty or similar. For slight gaps use 'Mr. Surfacer' 500, 1000 or 1200, 'Mr. Hobby' dissolved putty or similar.

Sand the joints to blend them with the surrounding areas, making sure not to damage any moulded surface details.



# PART 11

## PRE-RIGGING 2



## PART 11 - PRE-RIGGING 2

### Pre-rigging:

**NOTE:** *At this stage of the build it's best to pre-rig as much of the external rigging wires and flight control cables locations as possible, as access will be restricted when the model is assembled. Refer to Part 5 (Rigging) of this build log for more information.*

*The kit parts have some pre-moulded rigging locations. Take care to not drill the holes too close to the strut locations for fitting 'Gaspatch' Anchor Points and turnbuckles.*

### Flying wires (pages 5 and 15):

#### Engine bulkhead:

Drill holes of 0.3 mm diameter through the rigging lugs on the lower, outer edges of the engine bulkhead.



#### Upper wing:

Drill holes of 0.3 mm diameter into, **but not through**, the underside of the upper wing, inboard from the interplane strut locations.

**NOTE:** *Make sure the adhesive does not block the 'eye' ends of the Anchor Points.*

Using thin CA adhesive, secure a 'Gaspatch' 1:48th scale Anchor Point into each of the pre-drilled holes.



## Fuselage:

**NOTE:** *The holes in the fuselage for these wires needs to have suitable tube added to secure the turnbuckle in position.*

Using thin CA adhesive, secure a 'Gaspach' 1:48th scale turnbuckle (Type One End) into the end of 0.5 mm diameter Nickel-Silver tube, such as 'Albion Alloy's' NST05 or similar.

Cut the tube such that it will locate into the pre-moulded holes in the sides of the fuselage.



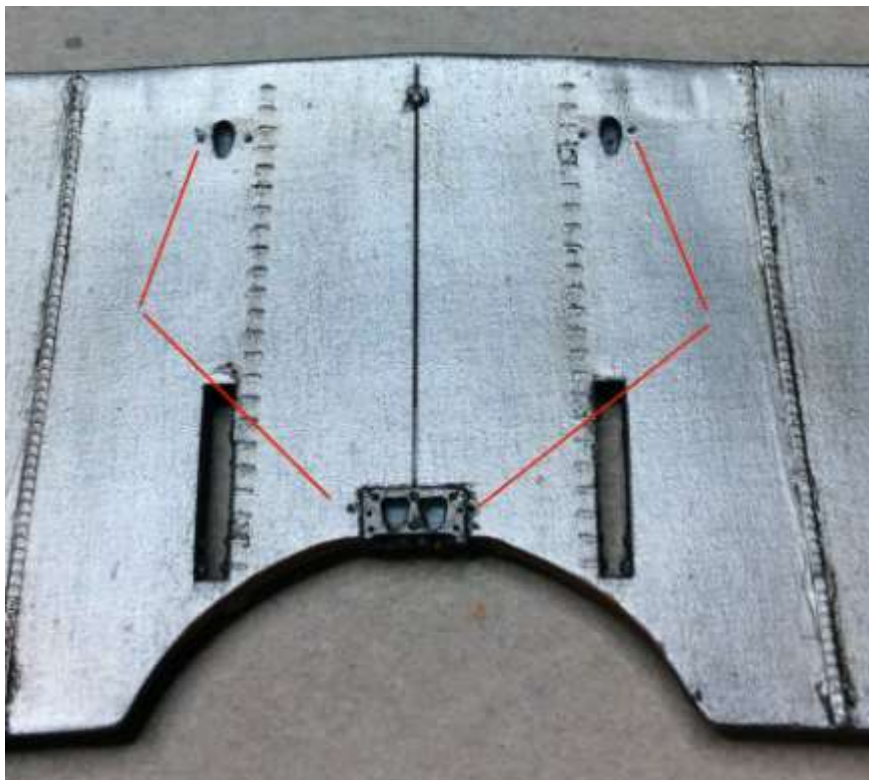
## **Landing wires (pages 5 and 15):**

### Upper wing centre section:

Drill holes of 0.3 mm diameter into, **but not through**, the underside of the upper wing centre section.

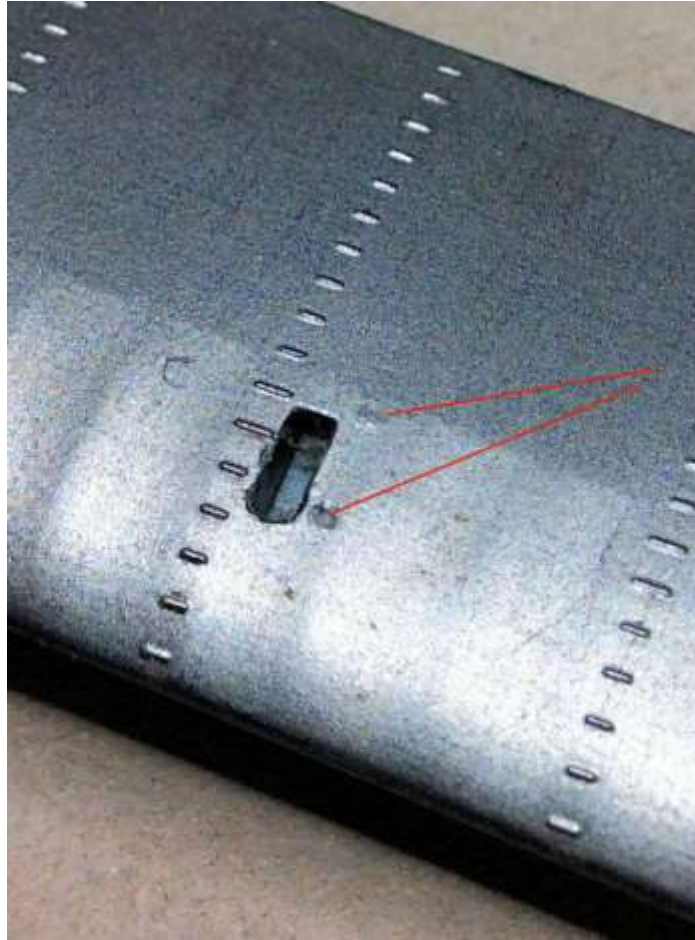
**NOTE:** *Make sure the adhesive does not block the 'eye' ends of the Anchor Points.*

Using thin CA adhesive, secure a 'Gaspach' 1:48th scale Anchor Point into each of the pre-drilled holes.



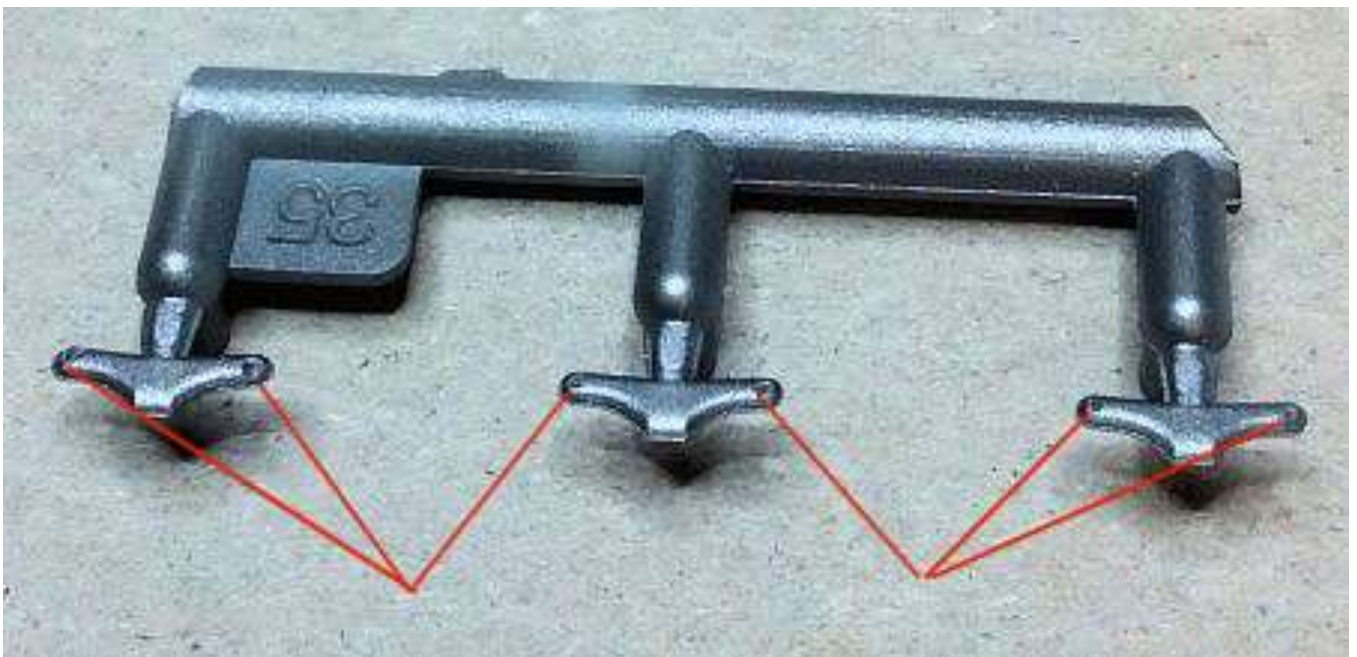
Lower wings:

Drill holes of 0.3 mm diameter into, **but not through**, the top surface of the lower wings, inboard from the interplane locators (page 15) and at an angle to the tops of the forward and rear (when fitted) fuselage cabane struts.



Control horns (pages 11 and 12):

Rudder and elevator control cables - drill holes of 0.2 mm diameter through the ends of the elevator and rudder control horns A35.



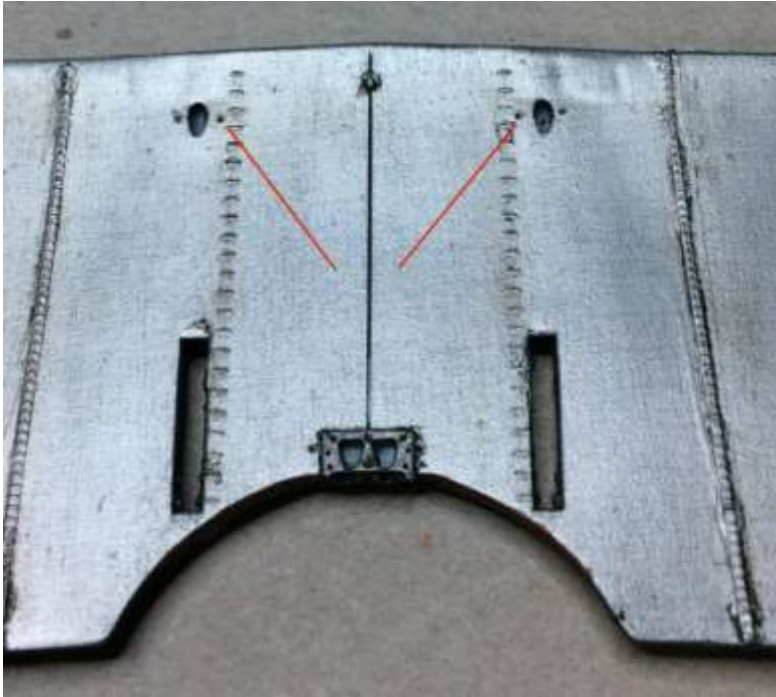
### **Cabane strut bracing (pages 13 and 15):**

Drill holes of 0.3 mm diameter into, **but not through**, the underside of the upper wing centre section.

Drill holes of 0.3 mm diameter into the top edge of the engine bulkhead and at an angle to the top of the forward fuselage cabane struts.

**NOTE:** Make sure the adhesive does not block the 'eye' ends of the Anchor Points.

Using thin CA adhesive, secure a 'Gaspatch' 1:48th scale Anchor Point into each of the pre-drilled holes in the **upper wing only**.



### **Landing gear bracing (page 15):**

Drill holes of 0.3 mm diameter **through** the rigging location lugs on the forward struts of the landing gear.



# PART 12

# CONSTRUCTION

## **PART 12 - CONSTRUCTION**

**NOTE:** *When cementing large kit parts, I use 'Revell' Contacta Professional cement (39604). This cement is a thicker liquid cement, which takes longer to fully set, but does provide a stronger bond between larger kit parts. 'Tamiya' liquid cement is used for smaller parts and the more delicate model parts.*

***Before working with model parts, make sure that when removed from their sprues, all mould seams, sprue tags or mould 'flash' are removed from each part.***

***Refer to Part 1 (The Model) of this build log for kit parts not required for this model build.***

### **Preparation:**

Flight control surfaces:

**NOTE:** *The elevator can, if desired, be positioned at a slight downward angle instead of being left attached and inline with the tailplane. If not desired it should be left as supplied in the kit.*

Using a sharp scribe, carefully scribe along the pre-moulded join between the trailing edge of the tailplane and leading edge of the elevator, avoiding the pre-moulded hinges. The intention is to scribe through from both sides, to remove the styrene, creating the necessary gap.



Gently bend the elevator down to a slight angle.

**NOTE:** *The ailerons can, if desired, be re-positioned instead of being left attached and inline with the upper wing. If not desired they should be left as supplied in the kit. Refer to the following photograph for the location of the added support rods.*

Point mark the centre of the upper wing halves (trailing edges) at the aileron cut-outs.

Using the point marks as guides, drill holes of 0.5 mm diameter 5 mm into the upper wing, making sure the drill is kept parallel to the wing (to avoid the drill breaking through the wing surfaces).

Cut four lengths of 0.5mm diameter Brass rod, such as that from 'Albion Alloy's' or similar.

Using thin CA adhesive, secure a rod into each of the pre-drilled holes.

Temporarily locate the ailerons onto their hinges in the upper wing and pencil mark the position of each rod onto the underside of the ailerons.

Point mark the centre of the aileron leading edges at the pencil marks.

Using the point marks as guides, drill holes of 0.5 mm diameter 3 mm into the aileron leading edges, making sure the drill is kept parallel to the ailerons (to avoid the drill breaking through the aileron surfaces).

Temporarily locate the ailerons onto their hinges and added rods in the upper wing.

**NOTE:** *If re-positioned, the ailerons should be at opposite angles on the upper wing. That is one should be angled slightly up and the other equally slightly down. Also they should match the position of the control column in the cockpit.*

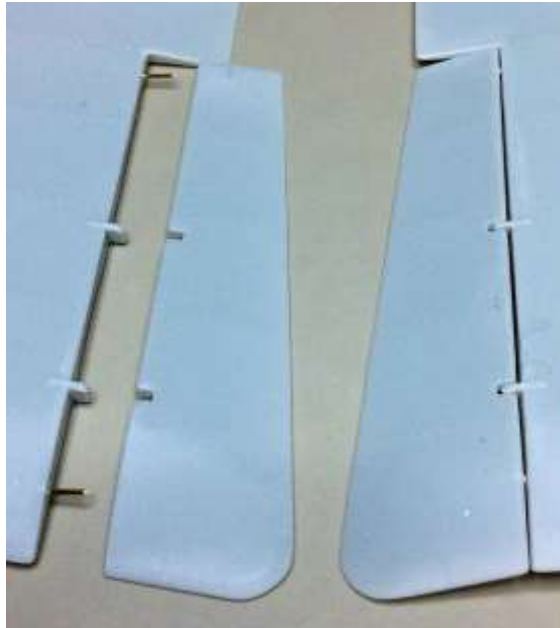
*Control column central - both ailerons aligned with the upper wing.*

*Control column slightly left - left aileron angled slightly up, right aileron down.*

*Control column slightly right - left aileron angled slightly down, right aileron up.*

Carefully bend the ailerons up and down to the required positions.

Remove both ailerons from the upper wing.

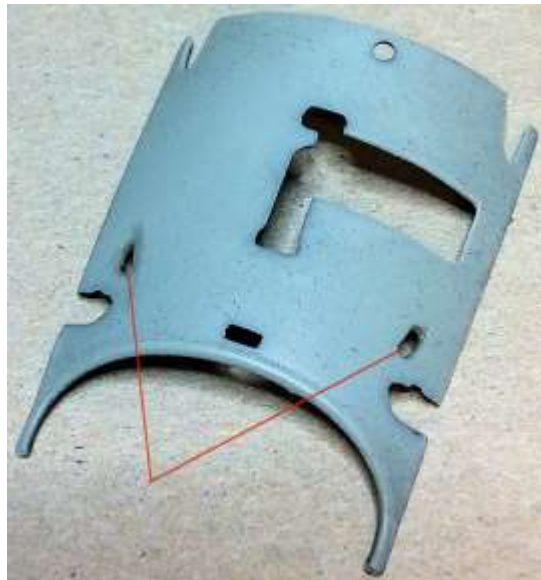


Fuselage top cowl panel:

**NOTE:** *The aileron control rods were routed from the cockpit up and through the fuselage top cowl panel to the upper wing. The following step is required as the pre-moulded slots in the panel, for the aileron control rods, are solid and should be open slots.*

Point mark along the centre of the pre-moulded slots.

Using the point marks as guides, drill through the slots using a 1.2 mm diameter drill.



## **Assembly:**

### **Landing gear assembly:**

**NOTE:** Refer to page 15 of the kit instruction manual.

Cement the landing gear axle onto its locations on the axle fairing, using the two locating lugs and recesses.

Cement the landing gear 'V' struts onto the ends of the axle, using the locating lug and recesses.

Cement the outer wheel covers into the wheel recesses, aligning them using the location lugs and recesses.

### **Upper wing assembly:**

**NOTE:** Refer to page 14 of the kit instruction manual.

Cement the upper wing left and right halves into the wing centre section, making sure the three parts are aligned and the assembly is level across its entire span.

Check the joints for gaps.

For large gaps use a modelling filler such as 'AV' Masilla Plastica (401) putty, 'De-Lux Materials' Perfect Plastic Putty or similar.

For slight gaps use 'Mr. Surfacer' 500, 1000 or 1200, 'Mr. Hobby' dissolved putty or similar.

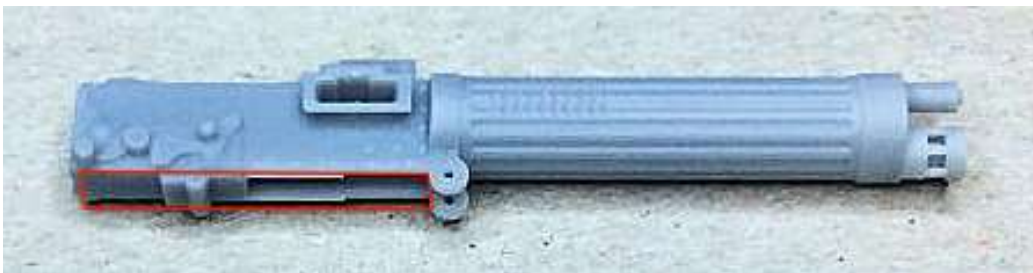
Sand the joints to blend them with the surrounding areas, making sure not to damage any moulded surface details.

### **Vickers machine gun modifications:**

**NOTE:** The replacement machine gun from 'GasPatch' and/or the fuselage top cowl panel (A42) need to be modified before the machine gun is painted. **After this modification, refer to Part 8 (Weapons) for painting the machine gun.**

#### **Vickers machine gun:**

Refer to the following photograph and file away the area marked in red.

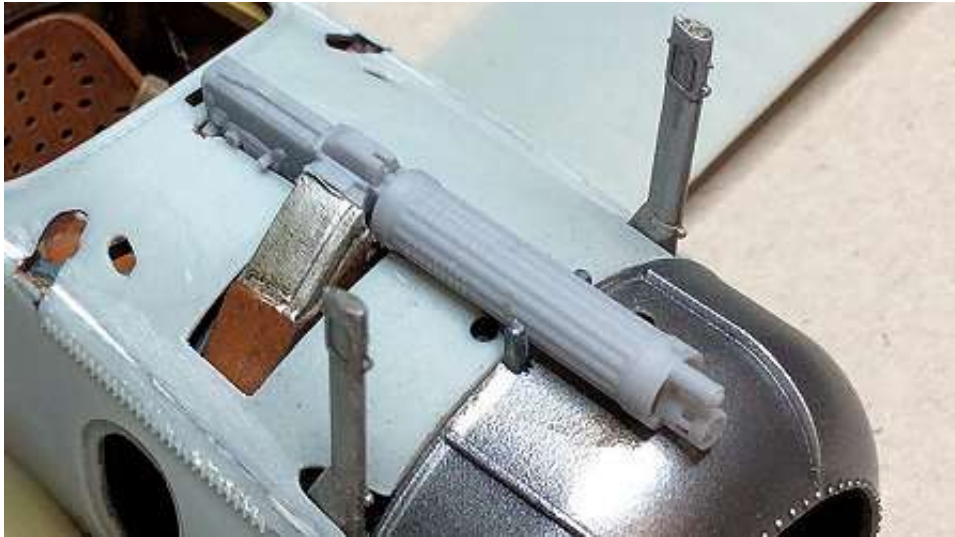


#### **Vickers machine gun:**

Refer to the following photograph. Carefully cut, file or sand away the ammunition chute, the sides and length of the locating slot in the fuselage top cowl panel and the two upright supports to allow the modified 'GasPatch' Vickers machine gun to be located correctly.







### **Painting:**

#### **Masking:**

**NOTE:** For masking you could use 'UHU' White Tack, kitchen Cling Film food wrap and liquid mask. For masking any strut location recesses, 'Abteilung 502 (ABT115) or similar.

To prevent overspray into the fuselage or over already painted parts, mask as follows:

Temporarily fit the two fuselage access panels into their openings.

Mask off the open cockpit and all other openings in the fuselage, including around engine bulkhead.

Mask off the various strut location points in the fuselage and wings for the interplane and cabane struts and the landing gear struts.

Mask off the face of the engine bulkhead and the tail skid.

#### **Priming:**

**NOTE:** Applying a grey primer first will show any surface imperfections and any joint or seams that still need to be filled.

Airbrush the fuselage and upper wing joints and seams with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Check the fuselage and upper wing joints and seams and if necessary, re-fill, sand and then re-prime until smooth joints or seams are achieved.

**NOTE:** Applying a black primer will provide a good reflective base coat for the final Aluminium top coat.

Airbrush the rudder with a white primer, such as 'AK Interactive' White (AK759) or similar

Airbrush the following parts with a black primer, such as 'Tamiya' Gloss Black (X1) or similar:

Fuselage/lower wing assembly.

Upper wing.

Tailplane/elevator.

Landing gear assembly.

Ailerons.

Outer surface of the two oval fuselage access panels.

Airbrush the same parts (except the rudder) with an Aluminium colour, such as 'Alclad' Duraluminium (ALC102) or similar.

Airbrush the following parts with one or more light coats of a clear gloss coat, such as 'Alclad' Aqua Gloss 600 or similar:

Fuselage:

**NOTE:** *The fuselage forward panels were not linen and will not have linen effect decals applied.*

Top surface - rearwards from the cockpit.

Sides - rearwards from the end edge of the fuselage side panels.

Underside - rearwards from the end edge of the underside panel.

Lower wings.

Upper wing.

Tailplane/elevator.

Ailerons and rudder.

Remove all applied masking from the model.

### **Aviatic' decal application:**

**NOTE:** *The decals to be applied to the linen covered areas of the model will be cut from the 'Aviatic' Linen Weave Effect (ATT32236) decal sheet. Refer to Part 4 (Decals) of this build log for more information on applying these decals.*

*The 'Aviatic' linen weave effect decals (ATT32236) are not 'cookie cut' (pre-shaped), but are supplied as A4 sheets. Therefore care is required to ensure the decals are cut out accurately to fit the various areas of the model.*

*Make sure you trace the decal outlines onto the **rear surface** of the decal sheet. Also, cut away the white border around the decal sheet before cutting out the decals. Otherwise the cut decals may include parts of the white borders.*

### **Flight surfaces:**

**NOTE:** *Due to the width of the upper wing, it is advisable to cut three separate decals, one for the centre section and one each for the outer wing sections. The centre underside of the lower wing (underside of the cockpit) does not require decal. It's best to cut separate decals for both sides of the tailplane and elevator halves, as this avoids covering the gap between them.*

Using the wings, two ailerons, tailplane/elevator as guides, 'lightly' trace the outlines of **each side** of the parts onto the **rear** of the 'Aviatic' decal sheets. Make sure you don't apply too much pressure when marking out the decals, otherwise the outline will show through on the printed decal surface.

Using sharp scissors or a scalpel blade, carefully cut out each decal. Make sure there is a clean cut through the decal sheet, as several cuts can cause slight 'fraying' at the cut edge, which can pull fine strips of the decal away when removed.

**NOTE:** *The 'Aviatic' linen decals are unlike normal screen printed decals, in that when being applied, have the ability to be handled with slightly less care than normal and they have the ability to stretch slightly, which standard decals do not. That said, if you handle them too roughly, damage can occur.*

Make sure the model surface for each decal to be applied is clean and smooth, otherwise particles on the surface will cause 'silvering' (trapped air) under the decals when dry.

You can add a small amount of PVA adhesive (white glue) to the luke warm decal water, as this will aid in the adhesion of the decals to the model surface.

Wet the model surface with clean water.

**NOTE:** *Apply the upper surface decals first followed by the underside decals. Make sure the edges of the decals do not overlap, as this will 'double' the decal and will show as such.*

Soak the decal in the prepared decal water for around 30 seconds or long enough to be able to move the decal on its backing sheet.

Lift the decal on its backing sheet from the water.

**NOTE:** *Make sure the decal does not fold over on itself, as it will be difficult to separate a fold once out of the water.*

Carefully slide the decal off one end of the backing paper and position the decal end onto the model and holding that end, slide out the backing paper to locate the remainder of the decal onto the model surface.

Position the decal correctly on the model surface.

Using a soft and wide brush, smooth out the decal, removing any residual water from underneath and smoothing the decal onto the surface. Continue this along the length of the decal, taking care not to touch the decal surfaces with your fingers, as this will cause ripples in the decal. If you must touch the decal, wet your fingers first.

Once the decal is smoothed down onto the model surface, apply pressure across the decal with a soft and dry tissue paper or cotton bud. This will expel any remaining water and press the decal onto the model surface. Check over the decal to make sure there are no tears, folds or trapped air bubbles, which need to be rectified before the decal sets.

Once the decals have set and if necessary, apply 'MicroSol' or similar decal solution around any lifted edges of the decals. Where decals cover location holes or other openings, such as wing strut location holes, aileron pulley apertures, prick or cut through the decal into the hole or opening then lightly apply 'Tamiya' X20A thinners, which will soften and adhere the decal into the hole or opening. Using X20A can also conform decals around curves edges etc. Applying too much X20A can melt and damage the decal.

Allow these decals to fully set.

**NOTE:** *Even when applied and sealed, the decals can easily be damaged if handled roughly or scraped with a sharp edge. Once decals have been applied, I use either lint free cotton or rubber surgical gloves when handling those surfaces.*

#### Fuselage surfaces:

**NOTE:** *Due to the shape of the fuselage with the pilots head rest, it is best to create two paper templates for the two sides and along the centre line for the top. The underside surface can be cut as a single decal. Use the templates as cutting guides for the decals. It's best to apply the fuselage side decals before the top and underside surfaces. The fuselage underside decal starts from the rear edge of the lower wing centre section (underside of the cockpit floor).*

Using the paper templates as marking guides, 'lightly' trace the outlines of template onto the **rear** of the 'Aviatic' decal sheets. Make sure you don't apply too much pressure when marking out the decals, otherwise the outline will show through on the printed decal surface.

Using sharp scissors or a scalpel blade, carefully cut out each decal. Make sure there is a clean cut through the decal sheet, as several cuts can cause slight 'fraying' at the cut edge, which can pull fine strips of the decal away when removed.

Apply the fuselage decals as previously described.

**Marking decals:**

**NOTE:** The particular aircraft national and personal markings to be applied are as follows:

Kit supplied decals:

Upper wing roundels (top 1, underside 2).

Lower wing roundels (underside 3).

Rudder (4).

Rudder markings - (made from larger 'N' and numbers).

Nieuport logo (Centre front of engine cowl 7).

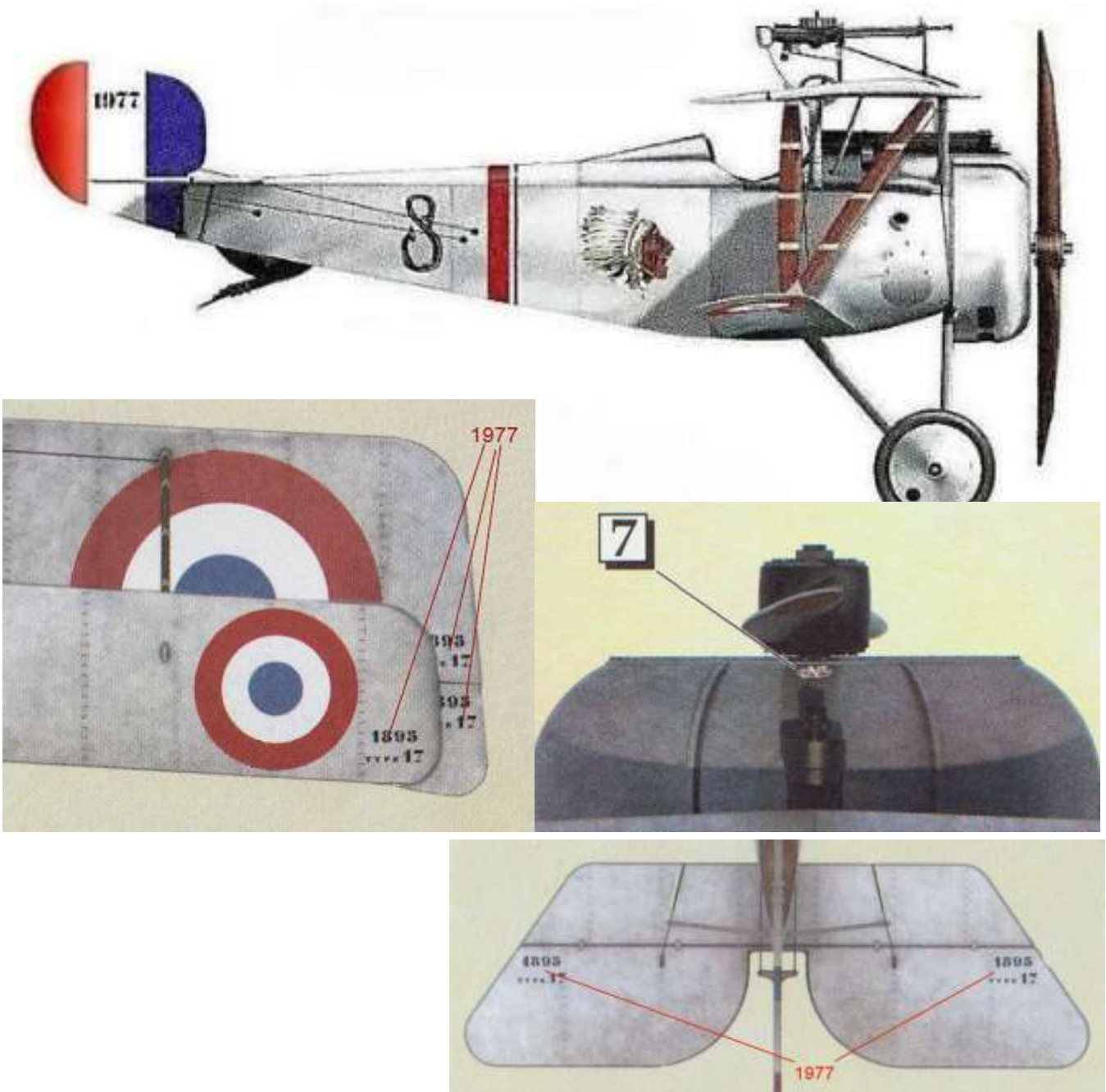
Wings, ailerons and elevator stencils (made from small 'Type 17' and numbers).

'Kiwi Decals' decals set:

Fuselage red side stripes (not the shorter stripe).

Fuselage fish hooks 8.

Fuselage Sioux warrior heads 12 and 13.



**NOTE:** *The decals can be applied directly onto the glossy surface of the linen applied decals. Refer to Part 4 (Decals) of this build log for more information on applying these decals.*

Refer to the previous illustrations and apply the relevant decals onto the model.

**Kit supplied decals:**

The upper wing roundels have fold lines, which are intended to wrap over the trailing edge of the upper wing and the leading edge of the ailerons.

The wing roundels lay over the raised pre-moulded rid tape stitching on the wings, which may prevent the decal from conforming to that area of the model surface. After applying decal setting solution, leave the decals to fully dry and set. Then carefully prick through any lifted area of the decals and apply more setting solution to draw the decal down onto the surface.

**'Kiwi Decals' decals set:**

The stencil decals for the wings, ailerons and the elevator should be created by using the kit supplied small 'Type 17' decals.

The '1977' serial for the wings, ailerons and the elevator by using the separate small numbers from the sheet.

**NOTE:** *The thin blue line on the fuselage red side stripes was cut away as not required (refer to 'The Aircraft' Part of this build log).*

The tops of the longer fuselage side stripes are not curved, meaning they cant be positioned correctly across the fuselage top. Therefore I discarded the shorter red stripe and applied the longer stripes up the fuselage sides, then scalpel cut across the decals at the top edge of the fuselage and removed the ends of the decals. These were then applied across the top of the fuselage with their ends meeting the fuselage side decals.

**Assembly (continued):**

Cement the engine assembly onto the fuselage propeller shaft, making sure the engine is aligned to the engine bulkhead when viewed from above and from the sides.

Locate the engine cowl over the engine and fully onto the front of the fuselage.

**Decal finish:**

**NOTE:** *To reduce the glare of the decal base coat of Aluminium and to provide a suitable base for weathering, it's best to apply a semi-matte clear coat over the surfaces.*

Airbrush the following parts with a semi-matte clear coat, such as 'Alclad' Light sheen (ALC211) or similar:

- Fuselage/lower wing assembly.
- Upper wing.
- Both ailerons.
- Tailplane/elevator assembly.
- Landing gear assembly.
- Both fuselage access panels (outer surfaces).

## **Painting (continued):**

### **Preparation:**

Check the following parts for any surface imperfections or mould seams and fill/remove as necessary:

- Both wheel assemblies.
- Interplane 'V' struts.
- Aileron control bell cranks (A38 and A40 for upper wing).
- Lewis gun support struts (B23 and B45).
- Vickers extended cocking handle (A23).
- Empty ammunition chute (B18).
- Ammunition belt chute (B32).
- Windscreen frames (B22 and B41).
- Windscreen mount (A5).
- Fuselage cabane struts (B10 and B13).
- Tailplane support struts (A24 and A25).
- Rudder and elevator control horns (A35 x 3).
- Fuel tank cap (A30).

### **Priming:**

Airbrush the following parts with a black primer, such as 'Tamiya' Gloss Black (X1) or similar:

- Lewis machine gun(B43).
- Lewis ammunition drum (B48).
- Vickers machine gun ('Gaspach').

### **Priming:**

Airbrush the remaining parts from the preparation list with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

### **Painting:**

Airbrush or brush paint the following parts:

Aileron control bell cranks, Lewis gun support struts, Vickers extended cocking handle, Ammunition belt chute, Tailplane support struts and the Rudder and Elevator control horns - **'Alclad' Steel (ALC112) or similar.**

Vickers extended cocking handle - **'Tamiya' Hull Red (XF9) or similar.**

Fuselage cabane struts - **'Alclad' Duraluminium (ALC102) or similar.**

Empty ammunition chute - **'Tamiya' Medium Blue (XF18).** Empty ammunition belt **'Tamiya' Buff (XF57) or similar.**

Fuel tank cap - **'Mr. Colour' Brass (219) or similar.**

Windscreen frames - **'Tamiya' Red Brown (XF64) or similar.**

Wheel tyres - **'Tamiya' Neutral Grey (XF53) or similar.**

**NOTE:** *To airbrush the wheel covers without over spraying the surrounding tyres, I use a circle drawing tool (Linex 1217T). I selected the correct size of hole and positioned the wheel face under the hole. Then I airbrushed through the hole onto the wheel face.*



Front and rear wheel covers - 'Alclad' Duraluminium (ALC102) or similar.

Interplane 'V' struts - 'Tamiya' Dark Yellow (XF60) or similar then oil painted with Windsor & Newton' Griffin (Alkyd) Raw Sienna. Linen bands 'Tamiya' Deck Tan (XF55). Top and bottom metal fitting 'Tamiya' Metallic Grey (XF56).

Windscreen mount - 'Tamiya' Dark Yellow (XF60) or similar then oil painted with Windsor & Newton' Griffin (Alkyd) Vandyke Brown.

Metal fitting on fuselage cabane struts and upper wing centre section - 'Tamiya' Dark Metallic Grey (XF56) or similar.

Cockpit surround padding and trailing edge of upper wing centre section - 'AK Interactive' Brown Leather (AK3031) or similar.

Forward side stitching - 'Tamiya' Red Brown (XF64) or similar.

Edges of access panels in fuselage - 'Tamiya' NATO Brown (XF64) mixed with 30% Hull Red (XF9) or similar.

**Marking decals (continued):**

**NOTE:** The particular aircraft markings to be applied are the kit supplied decals - Nieuport logos for the propeller (6) and for the interplane struts 7).



### **Assembly (continued):**

Cement the fuel tank filler cap (A30) into its locating hole in the fuselage top cowl panel.

Cement the windscreen mount (A5) into its locating slot forward from the cockpit.

Secure the empty ammunition belt chute (B31) into the breech block of the Vickers machine gun, using thin CA adhesive and cement at the fuselage pre-moulded recess.

Secure the prepared Vickers machine gun in position in its locating slot by applying thin CA adhesive between the gun breech block and the chute from the fitted ammunition box. Make sure the gun is aligned to the fuselage when viewed from the side and centrally along the fuselage when viewed from the top.

**NOTE:** *The empty ammunition chute (B18) will not fit the 'GasPatch' replacement machine gun, so is modified to be fitted after the gun.*

Test fit the chute through the cockpit and into the exit hole. Look through the fuselage access panel opening and check if the top of the chute needs to be reduced to clear the fitted gun support mount. If necessary, remove styrene from the top of the chute to achieve a correct fit.

Locate the chute in position and cement it at the fuselage exit hole.

### **Surface finish:**

Seal all of the previous painted and decal parts and assemblies by airbrushing with a semi-matte clear coat, such as 'Alclad' Light sheen (ALC211) or similar.

### **Weathering:**

Refer to Part 3 (Weathering) of this build log for more information. I used 'Flory Models' Dark Dirt clay wash as general weathering. 'Grime' can be used for the underside of the fuselage and for wheel spray under the lower wing. Apply your chosen weathering effects to the following parts:

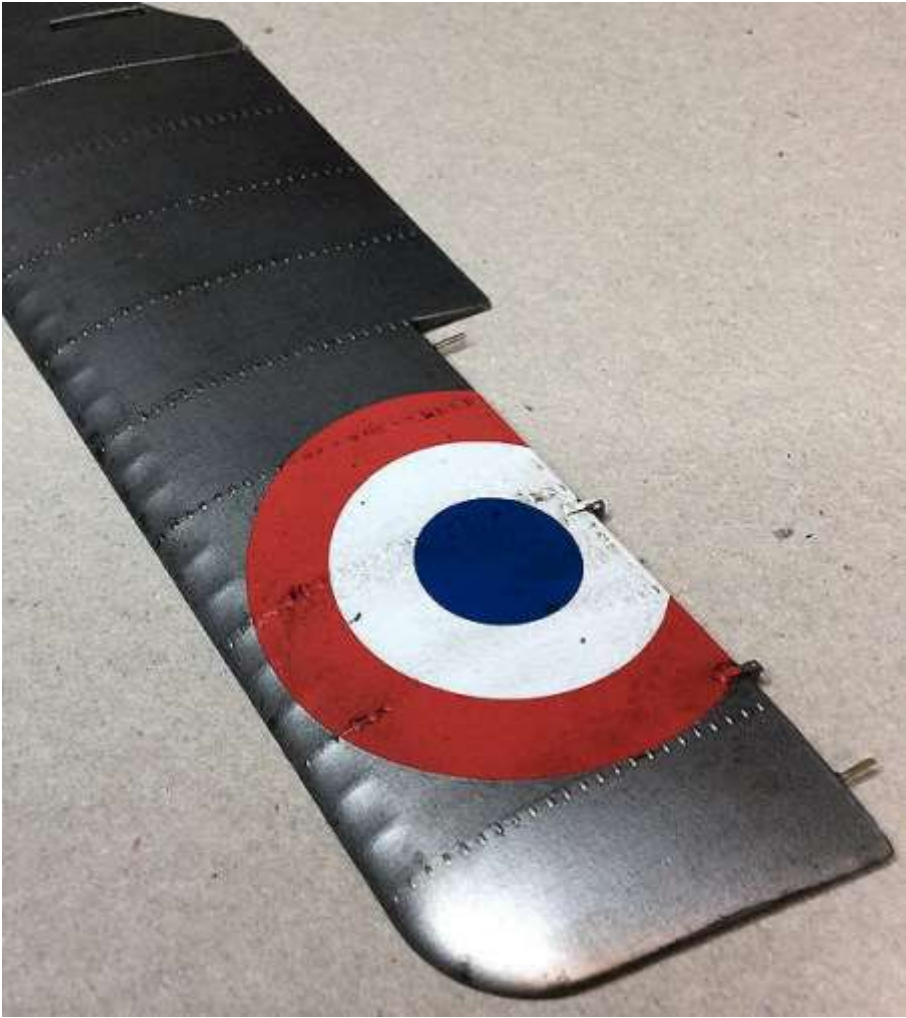
Fuselage/lower wing assembly, Upper wing, Both ailerons, Tailplane/elevator assembly, Landing gear assembly and wheels, Both fuselage access panels (outer surfaces).





Seal the weathering finish by airbrushing the parts with a semi-matte clear coat, such as Alclad' Light sheen (ALC211) or similar.





### **Assembly (continued):**

Cement the control horns in to their openings in the rudder (x1) and elevator (x2).

### **Pre-rigging:**

**NOTE:** *At this stage of the build it's best to pre-rig as much of the rigging wires and flight control cables as possible, as access will be restricted when the model is assembled. Refer to Part 5 (Rigging) of this build log for more information.*

### **Control horns:**

Cut six long lengths of 0.08 m diameter mono-filament, such as 'Steelon', 'Stroft GTM' or similar.

**NOTE:** *Most metal tube can be chemically blackened by immersion in solutions, such as Blacken-It' or similar.*

Cut six short lengths of blackened 0.4 mm diameter Nickel-Silver tube, such 'Albion Alloy's NST04 or similar.

Pass the lines through the drilled holes in the rudder and elevator control horns.

Slide a tube onto each of the lines.

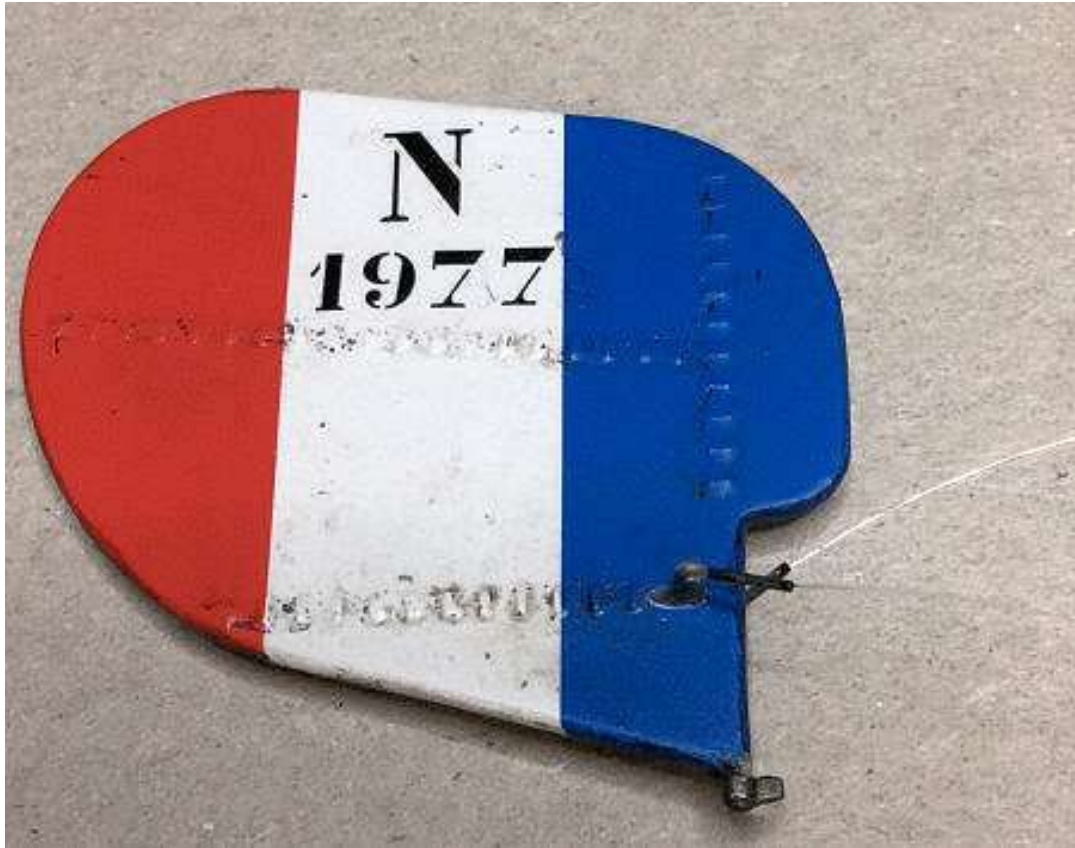
Loop the lines back and through the tubes.

Slide the tubes close up to, **but not touching**, the ends of the control horns.

Secure the tubes to the line using thin CA adhesive.

Cut away the residual tags of line at the end of the tubes.





Upper wing:

Make sure the 'eye' ends of the pre-fitted 'Gaspach' Anchor Points are clear (to allow rigging wires to be passed through).

**NOTE:** Make sure each of the lines fitted are long enough to span between their end rigging points, with extra line to make attaching turnbuckles and tubes easier.

Cut ten long lengths of 0.12 m diameter mono-filament, such as 'Steelon', 'Stroft GTM' or similar.

Repeat the previous procedure to add the ten rigging lines to the pre-fitted Anchor points in the underside of the upper wing, but using blackened 0.5 mm diameter Nickel-Silver tube, such 'Albion Alloy's NST05 or similar.



### Landing gear:

Make sure the pre-drilled holes in the landing gear forward struts are clear (to allow rigging wires to be passed through).

Cut two long lengths of 0.12 m diameter mono-filament, such as 'Steelon', 'Stroft GTM' or similar.

Repeat the previous procedure to add the two lines to the pre-drilled holes in the top of the landing gear forward struts.

**NOTE:** *During the next step, do not secure the line in the tube, as this will be completed later in this build.*

Repeat the previous procedure to attach the two rigging lines to one end of a 'Gaspach' 1:48th scale turnbuckle (Type C) using blackened 0.5 mm diameter Nickel-Silver tube, such as 'Albion Alloy's' NST05 or similar.



### **Assembly (continued):**

Locate the two ailerons onto their pre-fitted locating rods in the upper wing and cement them onto their wing hinge extensions.

**NOTE:** *During the following steps, make sure the rigging lines are kept away from the adhesive.*

Cement the tailplane/elevator assembly in position on the top, rear of the fuselage. Make sure the assembly is horizontal when viewed from the rear and its leading edge is 90 degrees to the fuselage.

Use a 0.8 mm diameter drill to drill into the lower, rear of the fuselage at the tailplane support strut location (to provide a more positive location).

Cement the two support struts for the tailplane onto the underside recesses on the tailplane and the holes in the fuselage.

Cement the rudder in position into its location recesses at the bottom and top of the fuselage rear edge.

Cement the two wheels fully onto the ends of the landing gear axle.

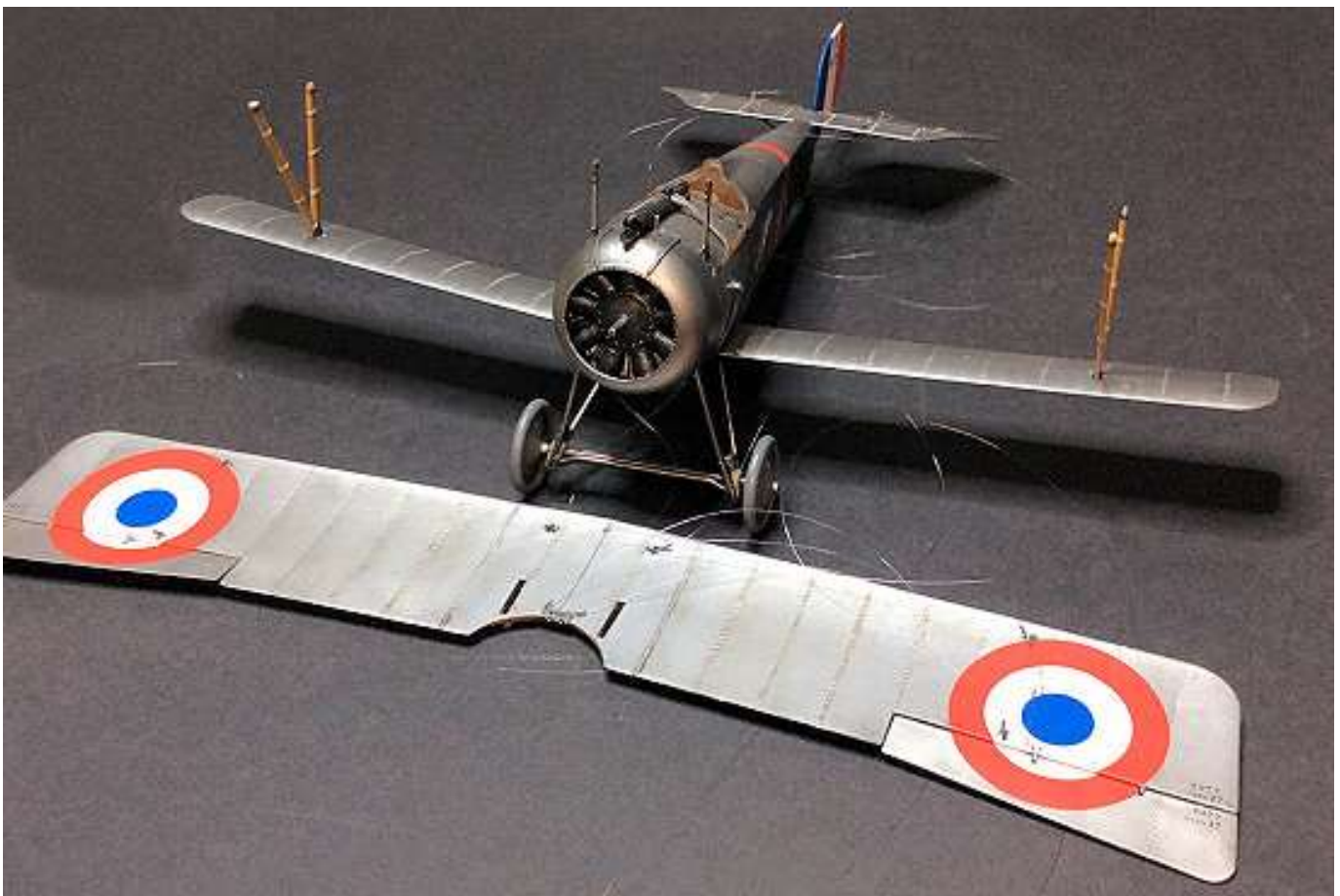
**NOTE:** *During the following step, align the strut locating recesses in the underside of the upper wing with the fuselage forward cabane struts and the fitted interplane struts. This is to check the position of the interplane struts. This will ensure that the interplane struts are positioned correctly to align the upper wing when fitted.*

Cement the two interplane struts into their locating recesses in the top surface of the lower wings.

Cement the two fuselage rear cabane struts into their locating recesses in the underside of the upper wing centre section.

Check that the previously drilled rigging holes for the two landing wires in both lower wings (inboard from the base of the interplane struts) are not blocked with cement from when the struts were cemented in position. If blocked, drill out using a 0.3 mm diameter drill.

The photograph shows the landing gear test fitted only.



**NOTE:** *During the following step, do not apply too much pressure or try to force the upper wing onto the various struts, as this could break or damage the struts.*

Check fit the upper wing onto the two interplane and for fuselage cabane struts. Make sure all of the struts fully locate into their locating recesses in the underside of the upper wing.

**NOTE:** *During the next step, make sure all of the pre-rigged lines are kept clear of the strut locating recesses in the upper wing, to avoid being affected by the cement.*

Cement the upper wing onto the two interplane and for fuselage cabane struts. Make sure all of the struts fully locate into their locating recesses in the underside of the upper wing.

Cement the bottom of the two fuselage rear cabane struts into their locations on the fuselage edges.

### **Final rigging:**

#### **Forward flying wires:**

**NOTE:** *The forward flying wires and cross bracing wire behind the engine cowl will be fitted after all of the inter wing lines have been fitted.*

#### **Rear flying wires:**

Pass the end of a rear flying wire through a short length of blackened 0.5 mm diameter Nickel-Silver tube, such 'Albion Alloy's' NST05 or similar.

**NOTE:** *Two 'Gaspatch' 1:48th scale One End turnbuckles, secured in 0.5 mm Nickel-Silver tubes, were prepared in Part 11 (Pre-rigging 2) of this build log.*

Pass the line through the 'eye' end of a 'Gaspatch' 1:48th scale turnbuckle (One End) then loop the line back and through the tube.

Pull the free end of the line to remove most of the slack in the line and to move the turnbuckle to its location hole in the lower, fuselage side.

Using CA adhesive, secure the tube of the turnbuckle into its location hole, making sure that the turnbuckle is angled diagonally towards the top of the rear interplane strut.

Pull the free end of the line to remove the slack in the line and to move the tube on the line up to, **but not** touching, the 'eye' of the turnbuckle.

Keeping the line taut, secure the tube onto the lines, using thin CA adhesive.

Cut away any residual end tag of line at the end of the tube.

Repeat the procedure to fit the opposite rear flying wire.

#### **Front and rear landing wires:**

Repeat the previous procedure to fit the two landing wires on both sides of the aircraft, securing the turnbuckles into the pre-drilled holes in the lower wings, inboard from the bottom of the interplane struts. Make each turnbuckle and line are aligned to the top of its associated fuselage cabane strut.

#### **Forward cabane strut bracing wires:**

Hold the free end of one of the forward bracing wires close to its pre-drilled hole in the top of the engine bulkhead.

Cut the line such that it can be inserted fully into its hole without any slack in the line.

Secure the line into its hole using thin CA adhesive.

Repeat the procedure to fit the opposite cabane bracing wire.

### Forward flying wires:

Pass the end of a forward flying wire through a short length of blackened 0.5 mm diameter Nickel-Silver tube, such as 'Albion Alloy's' NST05 or similar.

Pass the line through the 'eye' end of a 'Gaspatch' 1:48th scale (Type C) turnbuckle then loop the line back and through the tube.

Pull the free end of the line to remove most of the slack in the line and to move the turnbuckle to its location hole in the lower edge of the engine bulkhead.

Leave the turnbuckle and tube **loose on the line**.

Repeat the procedure to the opposite forward flying wire.

Cut long length of 0.12 m diameter mono-filament, such as 'Steelon', 'Stroft GTM' or similar.

Repeat the procedure to add this line onto the free 'eye' end of one of the fitted turnbuckles.

Pass the free end of this line through its pre-drilled hole in the bottom edge of the engine bulkhead.

Pass the end of the line through two short lengths of blackened 0.4 mm diameter Nickel-Silver tube, such as 'Albion Alloy's' NST04 or similar.

Pass the free end of the line through the pre-drilled hole in the opposite bottom edge of the engine bulkhead.

Pull the line to draw the turnbuckle to the outer edge of the engine bulkhead.

Keeping this line taut, pull the free end of the turnbuckle line to remove any slack in the turnbuckle line and draw the line tube up to, **but not touching**, the 'eye' end of the turnbuckle.

Secure the turnbuckle lines in the tube using thin CA adhesive.

Repeat the procedure to attach the line at the opposite side of the engine bulkhead to the free 'eye' end of that turnbuckle.

Pull the free end of the turnbuckle line to remove any slack in the turnbuckle line and draw the line tube up to, **but not touching**, the 'eye' end of the turnbuckle.

Secure the turnbuckle lines in the tube using thin CA adhesive.

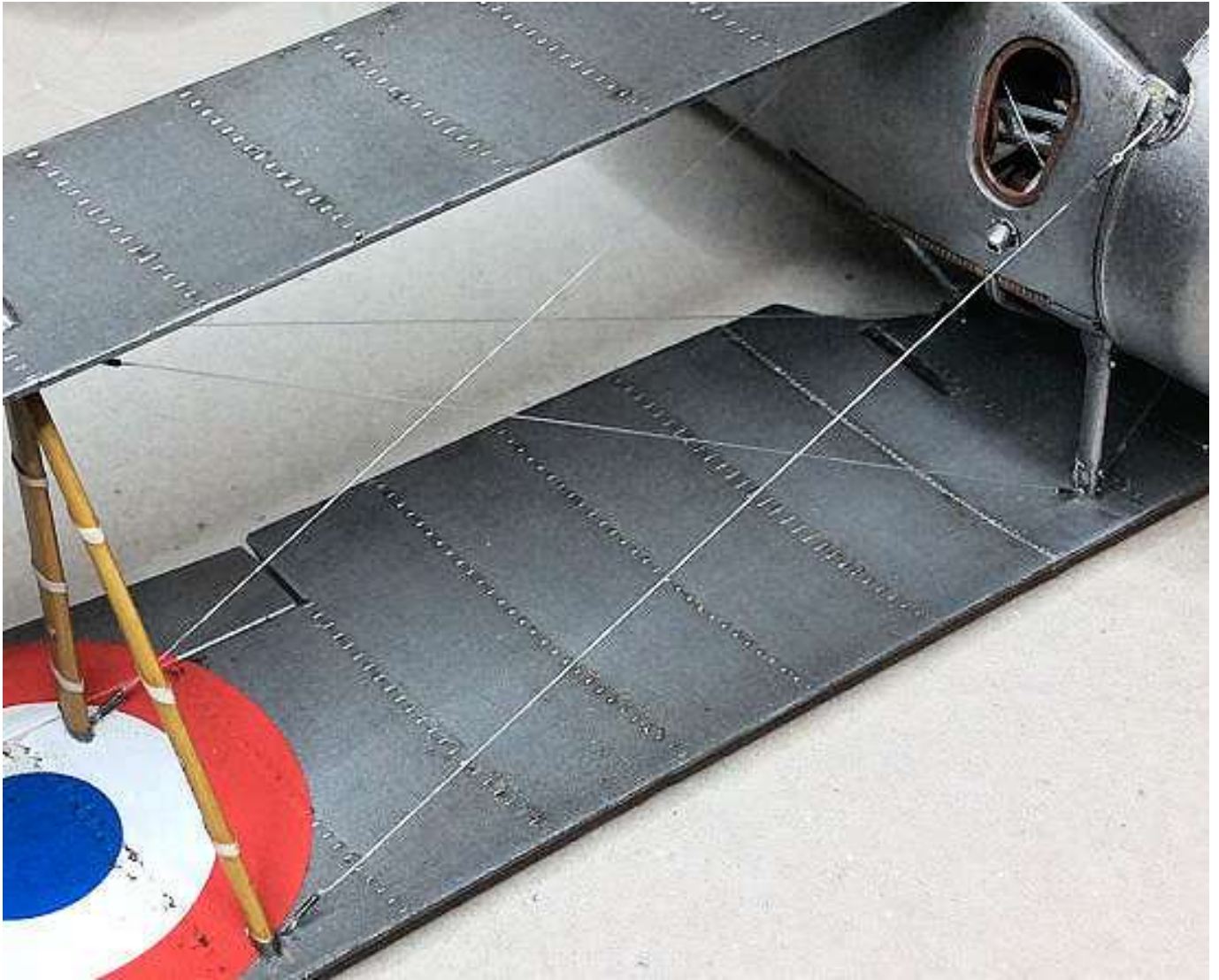
Cut away any residual end tags of line at the tube ends.

### Forward flying wire behind engine cowl.

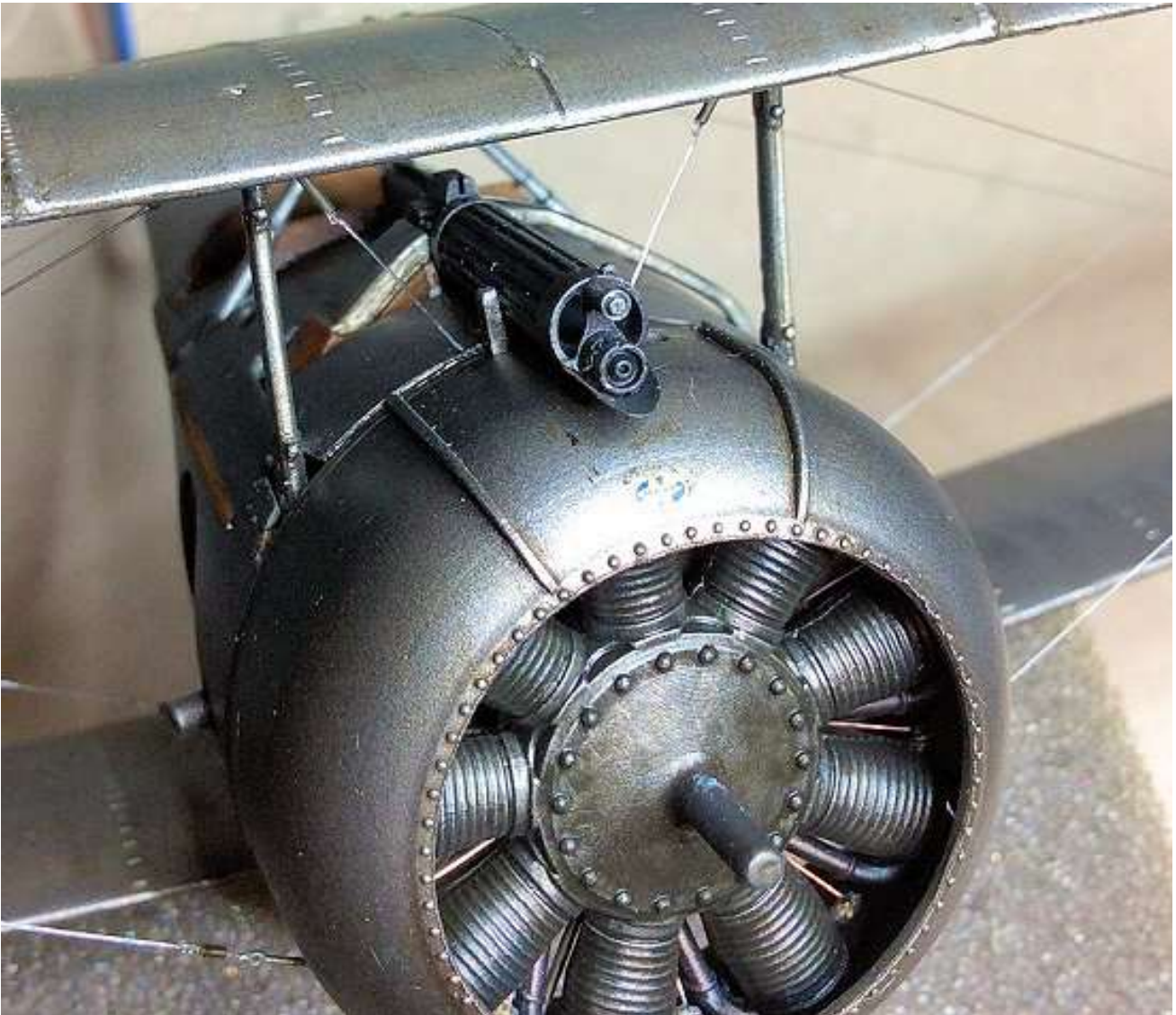




Flying and Landing wires.



## Forward cabane strut bracing wires.



### **Assembly (continued):**

**NOTE:** *The top, front edge of the landing gear forward struts may need to be reshaped to allow the struts to fully locate over the added rigging line or tubes.*

Cement the landing gear struts into their location recesses on the underside of the fuselage and at the bottom of the engine bulkhead/cowl.

### **Final rigging (continued):**

#### Landing gear:

**NOTE:** *The cross bracing wires on the landing gear were pre-rigged in Part 11 (Pre-rigging 2) of this build log.*

Make sure the pre-drilled holes in the lugs towards the bottom of the landing gear forward struts are clear of paint.

Cut a long length of 0.08 mm diameter mono-filament, such as 'Steelon' or 'Stroft GTM' or similar.

Pass the line through a pre-drilled hole in a lug towards the bottom of a landing gear forward strut.

Pass the free end of the line, from the front of the lug, through the 'eye' end of the turnbuckle on the diagonally opposite pre-rigged line.

Grip both ends of the line and gently pull the turnbuckle against the lug on the landing gear strut. Keep the gripped lines taut to hold the turnbuckle in position against the lug (I used self-gripping tweezers).

Pull on the free end of the turnbuckle line to remove any slack in the line and move the tube on the line up to the 'eye' end of the turnbuckle.

Use thin CA adhesive to secure the turnbuckle and 0.08 mm diameter line onto the lug on the landing gear strut.

Using thin CA adhesive and keeping the turnbuckle line taut, secure the line tube against the turnbuckle and onto the lines.

Repeat the process to attach the opposite bracing line to its landing gear strut.

Cut away any residual line tags from the lugs on the struts and the end of the turnbuckle tube.



#### Rudder control cables:

**NOTE:** *The rudder control cables were pre-rigged in Part 11 (Pre-rigging 2) of this build log.*

Cut the end of the two rudder control lines, leaving enough to be fully inserted into their holes at the rear of the fuselage sides.

Insert the end of each line into its fuselage hole and keeping the line taut, secure in the hole using thin CA adhesive.

Elevator control cables:

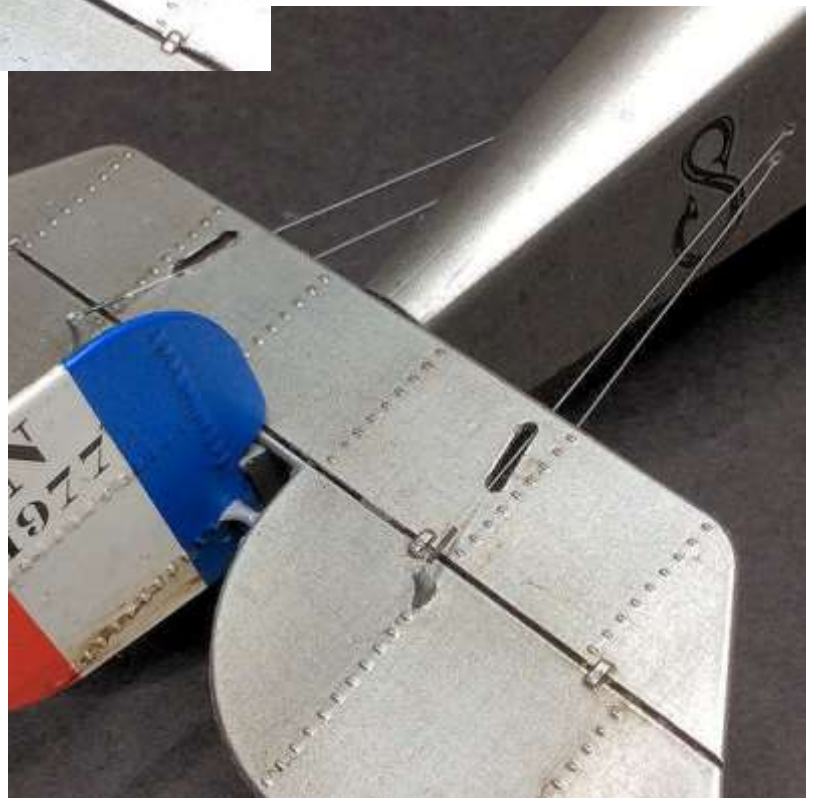
**NOTE:** *The elevator control cables were pre-rigged in Part 11 (Pre-rigging 2) of this build log.*

Pass the free end of the two upper elevator control lines down through the slots in the tailplane.

Cut the end of the upper lines, leaving enough to be fully inserted into the upper holes midway along the fuselage sides.

Cut the end of the two lower lines, leaving enough to be fully inserted into the lower holes midway along the fuselage sides.

Insert the end of each line into its fuselage hole and keeping the line taut, secure in the hole using thin CA adhesive.



### Rigging tensioning:

**WARNING:** *Care needs to be taken when using this method to tension line, as using a heat source is required.*

Invariably after rigging has been completed, some lines may be slack. This can be remedied by careful application of heat along the line, but should only be carried out once all rigging has been completed. Only then will you be able to see which lines require additional tensioning.

**NOTE:** *Take care not to linger at one area of a line with the heat source as this will melt the mono-filament causing the line to break. Also take care not to touch any part of the model or any other rigging, as this will also cause damage through melting.*

Carefully move a suitable heat source (I use a small electrical soldering iron) close to and along the slack line, keeping the heat source always moving. You will see the line tension as the applied heat takes effect, shrinking the line.

### Rigging finish:

Airbrush all of the added rigging lines with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar. This will dull down the surface sheen of the mono-filament.

### **Assembly (continued):**

#### Aileron bell-cranks:

Test fit the aileron control bell-cranks into their slots in the centre section of the upper wing. Make sure they are fully located in the slots and the bottom of the control rods are in the fuselage slots created earlier in this build.

Cement the aileron control bell-cranks in position in their upper wing and fuselage slots.



### Windscreen:

Remove the acetate windscreen (F1) from the supplied sheet.

Position the windscreen into the pre-moulded recess in frame B22.

Apply cement around the joint between the two frames.

Make sure any paint is removed from the bottom of the windscreen assembly and the top edge of the fuselage windscreen mount.

Cement the windscreen assembly onto the windscreen mount and between the two rear cabane struts.

### Vickers extended cocking handle:

Using thin CA adhesive, secure the extended cocking handle (A23) onto the lug on the top of the Vickers machine gun and also onto the top, centre of the windscreen.

### Lewis machine gun:

**NOTE:** *The Lewis machine gun was prepared in Part 8 (Weapons) of this build log. Assembly of the three parts of the machine gun is best carried at the same time, making it easier to align the parts.*

Cement the machine gun stand into its locating slot in the rear of the upper wing centre section.

Cement the two legs of the diagonal support frame into their locating recesses towards the leading edge of the upper wing.

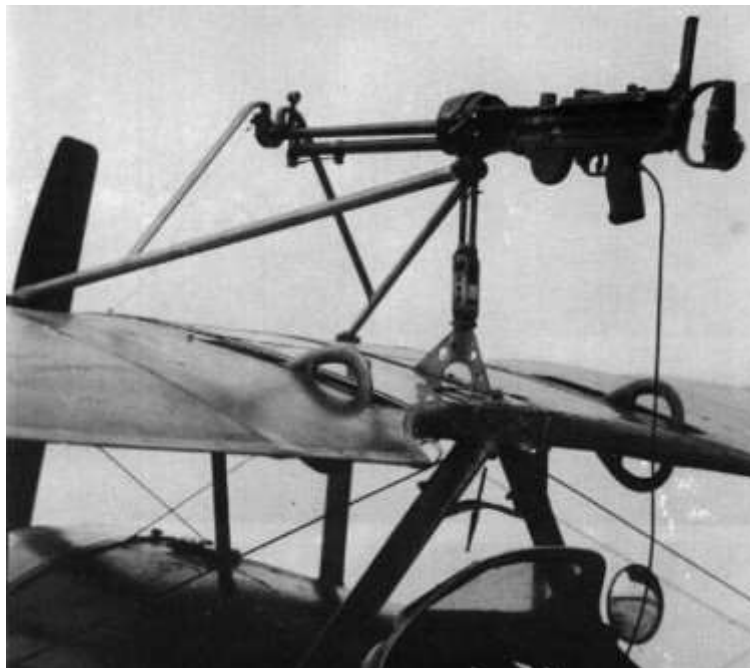
Cement the top of the diagonal support frame onto the top of the machine gun stand.

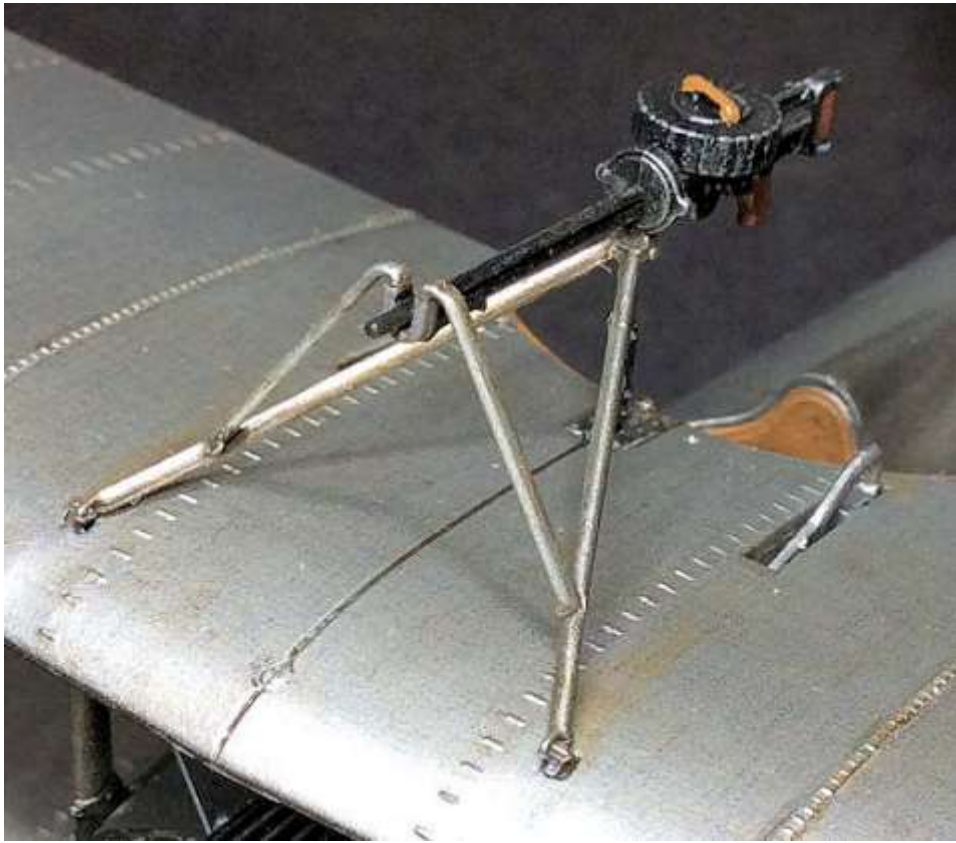
Cement the legs of the front support frame into their recesses in the legs of the diagonal support frame.

Cement the top of the front support frame onto the barrel of the machine gun.

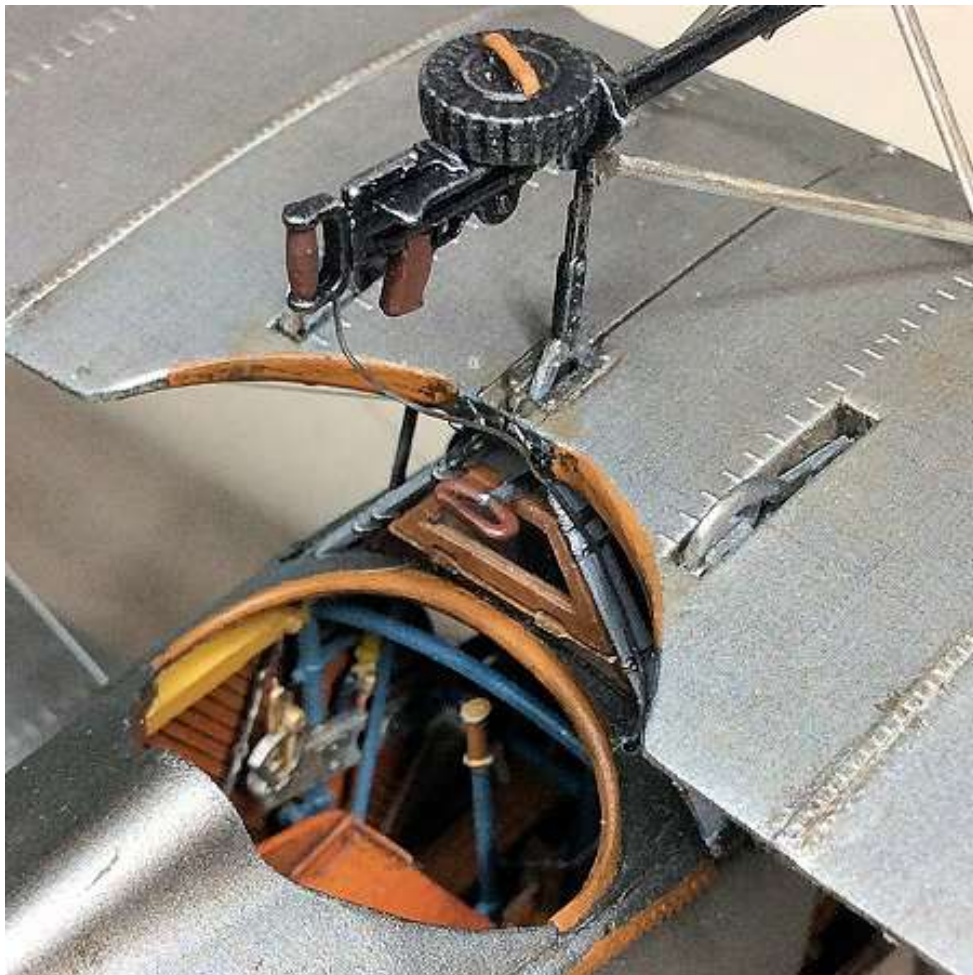
Make sure the assembly is aligned to the centre line of the wing (when viewed from above) and to the upper wing (when viewed from the side). Also the machine gun is vertical on the frame assembly.

### Typical Lewis machine gun installation.





To represent the trigger cable for the Lewis machine gun, I used a length of 0.2 mm diameter lead wire from 'PlusModel'. This wire was attached to the top, rear of the gun hand grip using thin CA adhesive, then routed down through a drilled 0.4 mm diameter hole to the forward, right of the cockpit and into the right side of the cockpit.



**Propeller:**

**NOTE:** *The replacement 'Gaspatch' propeller was prepared in Part 7 (Propeller) of this build log.*  
Using CA adhesive, secure the propeller in the desired position, onto the engine propeller shaft.





# PART 13

# FIGURES

## PART 13 - FIGURES

### Airman:

The airman figure I chose to use for this model is the 'Copper State Models' French airman smoking a pipe (F32-049).



### Preparation:

**NOTE:** This figure is supplied as seven separate parts, which require assembly. These are torso, two legs, two arms, head and hand/pipe.

Check the figure parts for any mould casting blocks, seams or flash and any surface artifacts, such as casting stubs and remove as required.

Test fit the two arms into their sockets in the body, making sure the arms fully locate.

Test fit the two leg halves together, making sure they join correctly.

Test fit the head into its body recess, making sure the neck locates to give the head a natural position. If necessary cut away the bottom of the neck to achieve this.

### Assembly:

Using thin CA adhesive:

Secure the two leg halves together.

Secure the torso onto the joined legs.

Secure the right arm in position on the body.

Secure the head in position on the body.

**NOTE:** The left arm needs to be attached to the torso after painting the lower half of the figure, as the hand/pipe would otherwise be difficult to access for painting.

Test fit the left hand/pipe into the left arm then the arm into the torso (to correctly position the hand).

Using thin CA adhesive, secure the left hand/pipe into the left arm.

Sand the joint seams to blend them with the surrounding areas. If necessary, fill any gaps with a modelling putty and once dry, re-sand to blend.

### Painting:

Airbrush the assembled figure and separate left arm with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Brush paint the figures as follows:

**Jacket, left arm and cap band** - 'AK Interactive' French Uniform Base (AK3101) with French Uniform Shadow (AK3103) shadows.

**Flying overalls** - 'AK Interactive' British Uniform (AK3081) with Brown Leather (AK3031) shadows.

**Shoes** - 'Tamiya' Red Brown (XF64) with Rubber Black (XF85) soles.

**Collar of flight overalls** - 'Tamiya' Buff (XF57) with Dark Yellow (XF60) highlights.

**Buttons** - Mr. Colour' Brass (219).

**Kepi (Cap) peak** - 'Tamiya' Gloss Black (X1).

**Kepi (Cap) top** - 'Tamiya' Red (XF7) mixed with 10% Rubber Black (XF85) to darken.

**Kepi (Cap) decoration** - 'Mr. Colour' Brass (219).

**Flesh** - 'Vallejo' Model Colour Base Skintone (70.815), Light Flesh (70.928) highlights and Rojo Red (70.804) shadows.

**Hair/moustache** - 'AK Interactive' British Uniform Light (AK3082).

**Eyes** - 'Tamiya' Gloss Black (X1).

**Pipe** - 'Tamiya' Gloss Black (X1), Red Brown (XF64), Flat Earth (XF52) and 'Mr. Colour' Stainless Steel (213).

#### Assembly (continued):

Using thin CA adhesive, secure the left arm into the body making sure it is correctly positioned.

#### Painting (continued):

Check the joint between the left arm and the body, If necessary, lightly sand the joint to blend it then re-paint the area as above.

#### Weathering:

Lightly sponge 'Tamiya' Weathering Master set A (mud) over the shoes.

**NOTE:** Refer to Part 3 (Weathering) of this build log for more information.

Apply 'Flory Models' Grime clay wash as shadows in the creases.



## Mechanic:

The mechanic figure I chose to use for this model is the 'Copper State Models' French mechanic resting (F32-048).



## Preparation:

**NOTE:** *This figure is supplied as five separate parts, which require assembly. These are body/ right leg, left leg, two arms and the head.*

Check the figure parts for any mould casting blocks, seams or flash and any surface artifacts, such as casting stubs and remove as required.

Test fit the two arms into their sockets in the body, making sure the arms fully locate and overlap correctly.

Test fit the left leg into the body, making sure it fully locates and joins correctly.

Test fit the head into its body recess, making sure the neck locates to give the head a natural position. If necessary cut away the bottom of the neck to achieve this.

## Assembly:

Using thin CA adhesive:

- Secure the left leg into the body.
- Secure the right arm in position on the body.
- Secure the left arm in position on the body.
- Secure the head in position on the body.

Sand the joint seams to blend them with the surrounding areas. If necessary, fill any gaps with a modelling putty and once dry, re-sand to blend.

## Painting:

Airbrush the assembled figure and separate left arm with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Brush paint the figures as follows:

**Jacket** - French Uniform Shadow (AK3103) with Black Uniform Shadow (AK3002). Dry brush highlights of German Uniform Base (AK3091).

**Trousers** - 'AK Interactive' British Uniform (AK3081) with Brown Leather (AK3031) shadows.

**Shoes** - 'Tamiya' Red Brown (XF64) with Rubber Black (XF85) soles.

**Forage cap** - 'AK Interactive' French Uniform Base (AK3101) with French Uniform Shadow (AK3103) shadows.

**Buttons** - 'Mr. Colour' Stainless Steel (213).

**Flesh** - 'Vallejo' Model Colour Base Skintone (70.815), Light Flesh (70.928) highlights and Rojo Red (70.804) shadows.

**Hair/moustache** - 'AK Interactive' British Uniform Light (AK3082).

Weathering:

Lightly sponge 'Tamiya' Weathering Master set A (mud) over the shoes.

Lightly sponge 'Tamiya' Weathering Master set D (oil stain) around the elbows, pockets and on wear areas of the trousers.

**NOTE:** Refer to Part 3 (Weathering) of this build log for more information.

Apply 'Flory Models' Grime clay wash as shadows in the creases.



# PART 14

# DISPLAY BASE

## **PART 14 - DISPLAY BASE**

The display case is made from two sheets of 3mm thick Piano Black Acrylic sheet cemented together with a transparent top fabricated from 3mm thick Clear Acrylic sheet. This was custom made for me by Paul Moss at 'Inperspective' (Ebay). The name plaque was also made by an on-line retailer 'The Engraving Shop'.

The grass mat was cut to shape from a sheet of 'Polak' Wild Meadow - variation C (4703).

The cut mat was then positioned on the base and the model and figure test placed to achieve the best effect and to make sure the transparent cover of the case would be able to be located without touching the model. The model and figures were then removed with the grass mat left in position on the display base. The edges of the grass mat were then carefully lifted and a soft marker pen was used to mark the outline of the grass mat, but approximately 5 mm inside the mat edge. The grass mat was then removed and the area of the display base inside the marks was scuffed using a coarse grit sand paper, in order to give a key for the adhesive.

**NOTE:** *When applying the adhesive, make sure it is not applied too thickly and close to the edges of the finally positioned grass mat. Otherwise the adhesive may be squeezed out from under the grass mat once weight is applied to hold down the mat during setting of the adhesive.*

A coat of PVA adhesive (white glue) was applied to the scuffed area on the display base and to the back of the grass mat. The grass mat was then laid onto the PVA adhesive and positioned correctly. Light pressure was applied to ensure the mat was in contact with the adhesive.

Finally an acrylic plaque stand was positioned to the left, front corner of the display base (just in from the edges of the shoulder for locating the transparent acrylic cover. The area on the underside of the stand and its contact are on the display base were scuffed using a coarse grit sand paper, in order to give a key for the adhesive. A thin coat of contact adhesive was then applied to both scuffed areas and once the adhesive started to set, the stand was carefully position onto the display base and pressed down to make full contact. The self-adhesive backed information plaque was the positioned onto the stand and pressed to make full contact.

The model and figures were then positioned on the base in their final positions and the support pin for the pilot figure marked into the grass mat. A hole of 1.0 mm diameter was then drilled through the grass mat and into, but not through, the base. The hole was cleared of residual acrylic to ensure the pin in the figure would fully locate. The figures were then test fitted and where necessary, the support pin for the pilot figure was snipped to the required length to fully locate into the display base.

**NOTE:** *The aircraft model is not secured to the display base as this can cause shock damage to the model if the display is transported to shows etc. For that the aircraft model would be packed separately for transporting.*

Thin CA adhesive or PVA adhesive was then applied to the support pin of the pilot figure, which was then located, in the desired position, into the pre-drilled location hole. The mechanic figure was secured in position standing on the wheel, using thin CA adhesive. The aircraft itself, being light in weight, will tend to sit on top of the grass on the mat, rather than seat fully down, as would a real aircraft. Therefore the location of the aircraft wheels and tail skid were marked onto the grass mat and those areas scrapped through the mat to create slight and unobstructed troughs, into which the aircraft could be located.

**PART 15**  
**COMPLETED**  
**MODEL**  
**PHOTOGRAPHS**















**END**