

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. Although, as most modelers, I got involved in the world of construction kits at an early age, I 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, several people have asked if I would create a 'build log' for future builds.

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 1:32 scale resin model of the Mosca-Bystritsky MB bis by 'Omega Models'.

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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.

Sorted



AFTER MARKET

AFTER MARKET

Figures and accessories

'Kellerkind Miniaturen' Russian pilot 1914-17 (54060).

Decals

'Aviatic' Clear Doped Linen (CDL) bleached (ATT32044),
'Aviatic' Walnut woodgrain (dark and light) (ATT32060),
'Airscale' WW1 Generic instrument dials (AS32 WW1).

Rigging accessories (as required)

'GasPatch Elite Accessories' Turnbuckles 1/48 scale,
'Albion Alloy's' micro-tube (Brass or Nickel Silver - various diameters),
'Albion Alloy's' 'Connec+o' joiners (C-04 and C-08),
'Steelon' or 'Stroft' mono-filament 0.12 mm diameter,
'Steelon' or 'Stroft' mono-filament 0.08 mm diameter.

Weapon

'GasPatch' Lewis Mk.1 Standard type (stripped front).

Seat

'BarracudaCast' British wicker AGS seat (BR32234).

Wheels

'GasPatch' Palmer 700x75 spoked wheels.

Photo-etch

'Jadar' WW1 1:48th scale control horns (S48087).

Sundries (as required)

Paints ('Tamiya' Acrylic, Humbrol Acrylic, 'Mr. Metal Colour'),
'AK Interactive' Primer and micro-filler (Grey AK758, White AK759),
'AK Interactive' Filters (Wood AK-261) and Washes (Kerosene AK-2039 and Oil AK-2019),
'Alclad II' metal lacquers, 'Alclad' Aqua Gloss 600, 'Mr. Colour' Levelling Thinners,
'Vallejo' Model Colour, PVA Adhesive (e.g. 'MicroScale' Micro Krystal Clear),
'VMS Fleky' CA adhesive (Standard and Thin), 'UHU' White Tack,
'AV' Masilla Plastica (401) putty, 'De-Lux Materials' Perfect Plastic Putty,
Sanding and/or Polishing sticks from 'Flory Models', 'Humbrol' Maskol,
'Milliput' or 'Green Stuff' two part putty, 'White Spirits', 'MicroScale' MicroSol/MicroSet,
'Mr. Surfacer' 500, 1000 or 1200, 'Mr. Metal Primer R', 'Artool' Ultra Mask sheets,
'DecoArt Crafters Acrylic' (water based) paints, 'Plastruct' styrene rod, 'PlusModel' lead wire,
'ANYZ' silver braided line (AN015), 'Tamiya' extra thin liquid cement,
'Plastic Magic' liquid cement, 'Black-It' blackening solution, 'Albion Alloy's' Connec+o C-08,
'Chipquik' T3 solder paste, 'Krylon' Acryli-Quik acrylic lacquer, 'MFH' Black tube (P-961),
'Posca' metallic pens (PC-1MR).

Weathering mediums (as required)

'Flory' Clay washes, Flory Pigments, AK Interactive engine 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 G (4707) mat.

THE AIRCRAFT

THE AIRCRAFT

Reference:

Various online sources, such as Wikipedia.
'Planet Models' kit instructions data.

This model represents a Mosca-Bystritsky MB bis fighter, flown by the Imperial Russian Air Force from 1916.

The Italian aircraft designer Francesco E. Mosca worked at the Russian Duks factory, along with Bezobrasov, Lerkhe and Yankovski.

The initial MB design, first flown in 1915, was a two-seat reconnaissance aircraft, similar to the French Morane-Saulnier G. That aircraft was licensed in 1914 to the Duks company for building aircraft for the Russian army, but the war started before any were produced. Therefore it's probable that the MB design was based on the Morane-Saulnier G design.

During 1916, a smaller and faster single seat version was developed as the MB bis.

The MB bis was similar in construction to the MB, being constructed largely of wood with a linen covering. The wings were mounted in the shoulder position with gaps between the wing roots and sides of the fuselage, which allowed for easier access to the cockpit and gave the pilot an improved field of view. When being transported on the ground, the wings were folded to lay along the fuselage sides and the tail plane halves were folded forward and upwards. The aircraft used wing warping, rather than aileron control and was powered by a 80 hp (60 kW) Le Rhone 9C engine.

The armament consisted of a single 7.7 mm Colt machine gun. The machine gun was mounted in one of two ways. The forward firing machine gun was fuselage mounted and fired through the arc of the propeller, which was fitted with deflector plates to prevent damaging the propeller.

Otherwise, the machine gun was mounted on the fuselage to fire either upwards and outside of the propeller arc, or was mounted parallel to the fuselage, similar to the earlier French Nieuport fighters, again to fire outside the arc of the propeller.

A total of 50 MB bis fighters were built up to 1918 and a few additional aircraft of this type were reportedly built after the revolution.

General specifications:

Length – 20ft (6.1m)

Wingspan - 25ft 11 in (7.9 m)

Wing area - 130 sq ft (12 m²)

Empty weight - 710 lb (322 kg)

Gross weight - 1,074 lb (487 kg)

Engine:

Le Rhone 9C nine cylinder rotary 80hp (60kW)

Propeller - 2 bladed fixed

Armament:

Single 7.7 mm Colt machine gun

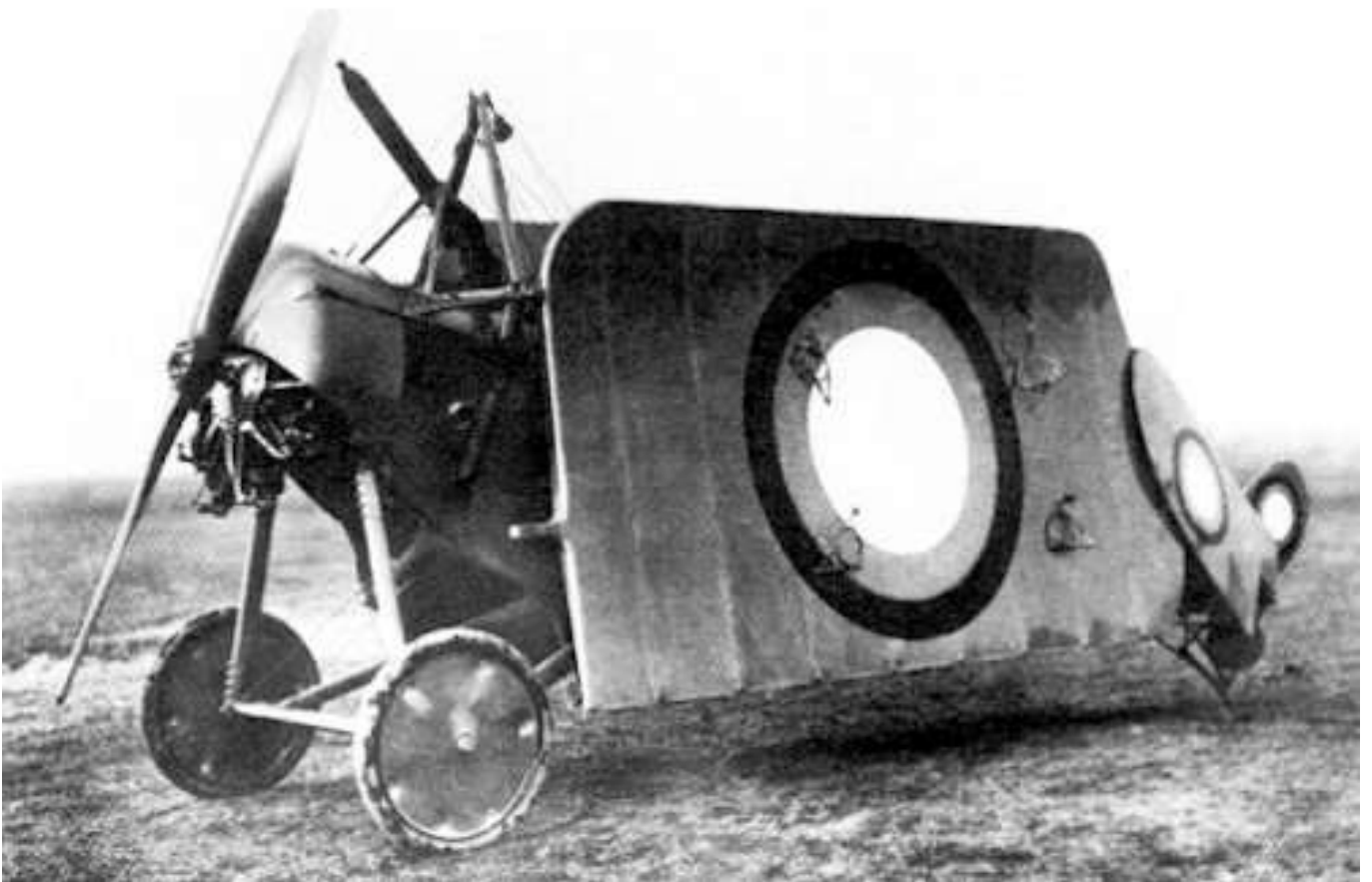
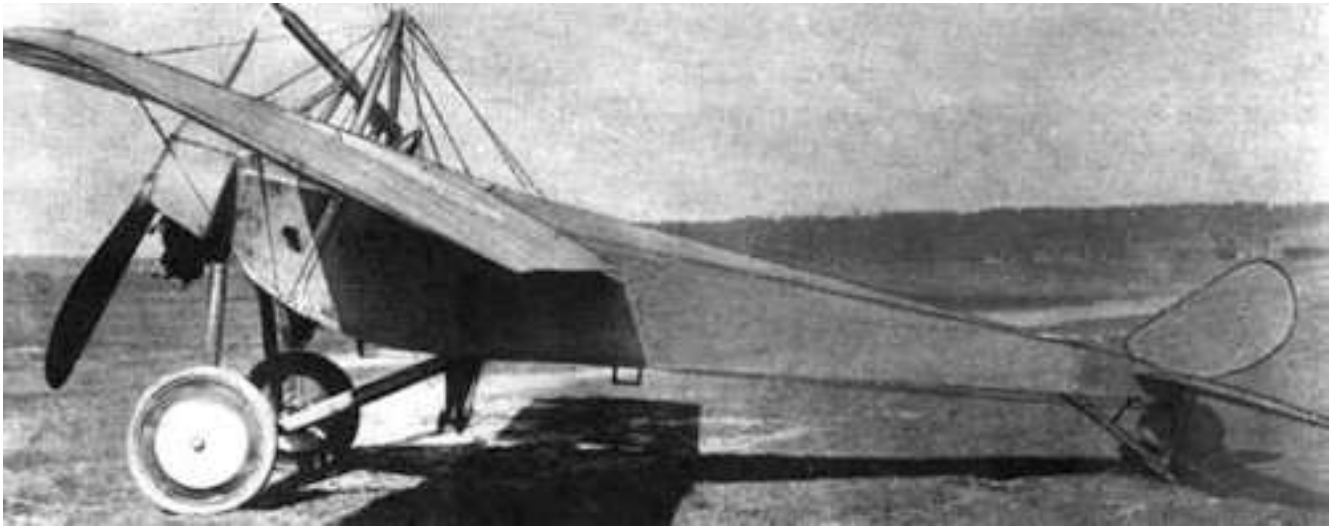
Performance:

Maximum speed - 81 mph (130 km/hour)

Climb rate - 2,000 m in 10 minutes

Range - 190 miles (300 km)

Service ceiling - 10,500 ft (3,200 m)



PART 1
MODEL
DESCRIPTION

PART 1 - MODEL DESCRIPTION

(‘Omega Models’ - Kit No:32-003)

This 1:32nd scale model is manufactured by ‘Omega Models’, a Czech company who make models of the more obscure designs. The kit is manufactured from resin, which for some modellers can be problematic in building.

The following is a list of what I consider to be problem areas in the building of this model:

1. The supplied kit itself comprises of parts which are solely resin and unlike many more up market companies, ‘Omega Models’ do not reinforce parts, such as wing struts, with metal rods. This makes the supplied resin struts very weak when flexed and could be replaced with metal tube and rod struts..
2. All of the resin parts have mould ‘flash’ that will need to be removed and larger items, such as the wings, do have some warping, which is not uncommon in resin kits.
3. The kit does not supply many parts required to make this an accurate model, for example an instrument panel.
4. The kit parts have no locating pegs or holes, which can cause alignment problems during assembly.
6. The instructions supplied for assembling the model are virtually non-existent, being only several sheets of photo-copied data with only very basic assembly instruction, section views of the aircraft, three-view drawings and colour profile.
7. The decals supplied are of reasonable quality but are not the normal, ‘cookie’ cut slide transfer. Instead the decals are printed on sheets and the normal carrier film does not cover decals on the sheets. Therefore each decal will need to be carefully cut out from its sheet before application to the model. Also the surface of these decals are easily damaged, such as from being scratched. Great care is needed handling these decals.
8. The resin moulding is not of good quality, being very thin with surface imperfections, such as resin blemishes and irregularities.

In light of the above the model would need to be heavily modified to make it a reasonable representation of the actual aircraft. Such modifications could be:

Making metal tube replacement struts for the model.

Adding support rods for attaching the wings to the fuselage.

Replacing the kit supplied decals and adding after market decal, such as linen effect decal from ‘Aviatic’.

Adding basic cockpit detail, such as controls and pipework etc.

NOTE: *Given the lack of accurate information on this aircraft, enhancements will be limited.*

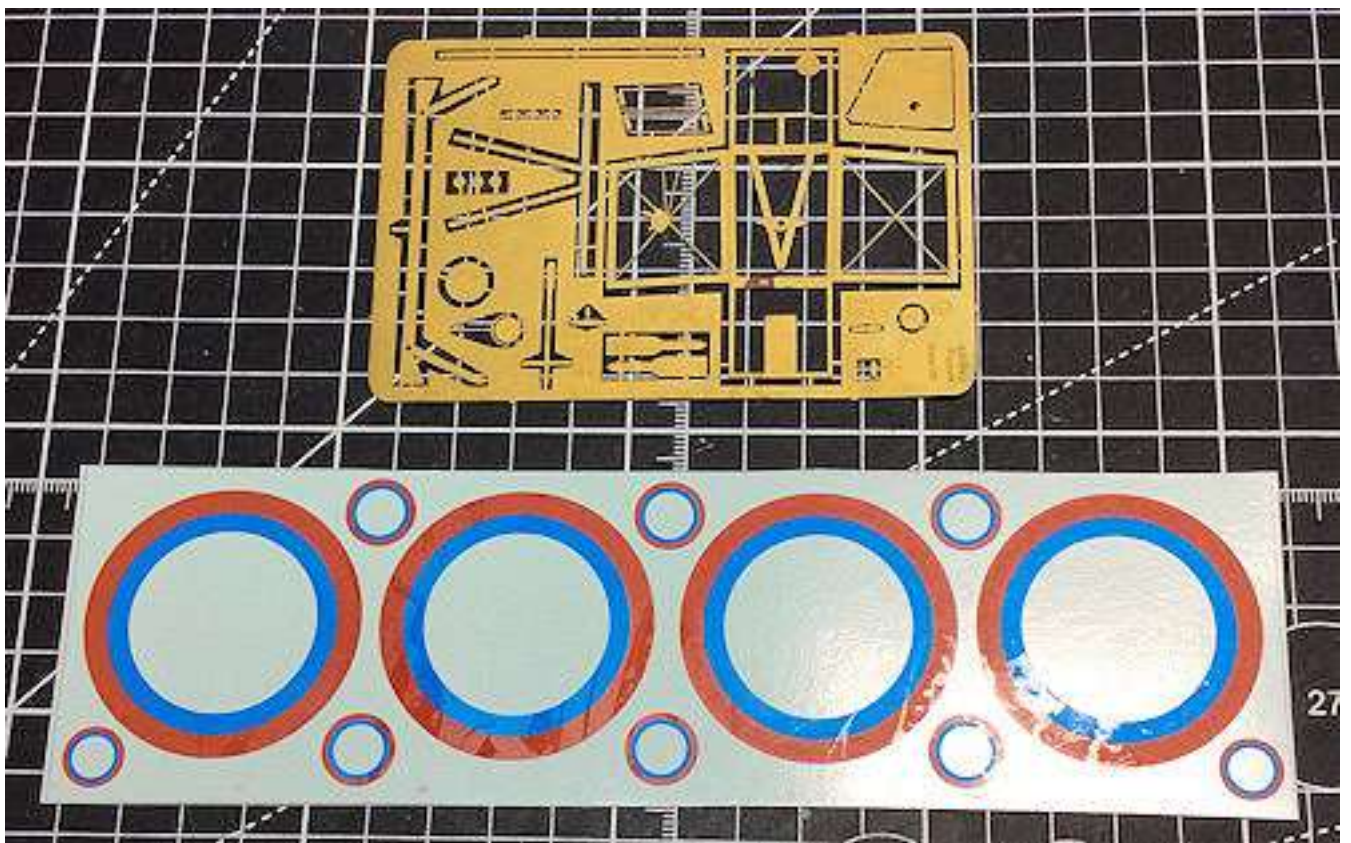
I chose to replace:

Kit parts 29 and 30) with the ‘GasPatch’ Lewis Mk.1 Standard type (stripped front), which more closely resembles the Colt machine gun commonly fitted to this aircraft.

Kit part 1 with a ‘BarracudaCast’ British wicker AGS seat (BR32234).

Kit parts 20 ‘GasPatch’ Palmer 700x75 spoked wheels.

In any event, this kit is certainly not for the less experienced modeller!!



cm)

OMEGA
 Modely
 Masca - Bystrinskí
 MB bis



Valový vzletový motor

OMEGA Modely predstavuje v tomto oddelení 1:48. Prvá časť je venovaná motoru valového vzletového typu. Motor je vyrobený z plastu a je vybavený všetkými potrebnými detailmi. Motor je vhodný pre modely s rozpätím 100-120 cm. Motor je vybavený všetkými potrebnými detailmi. Motor je vhodný pre modely s rozpätím 100-120 cm. Motor je vybavený všetkými potrebnými detailmi. Motor je vhodný pre modely s rozpätím 100-120 cm.

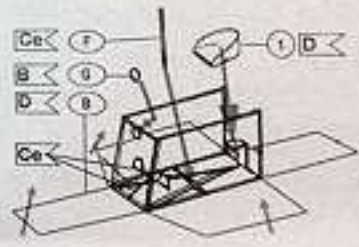
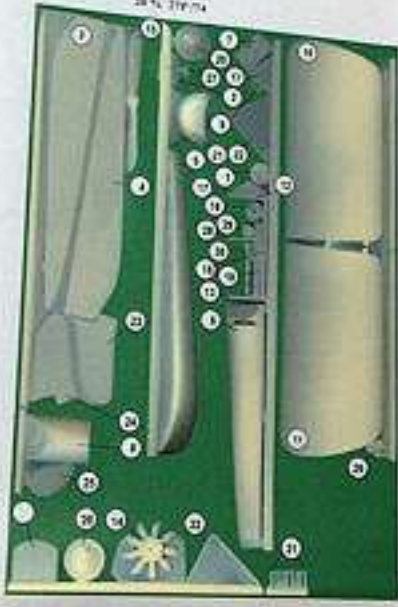
Dear modeler
 Omega Modely presents a new model in our production 1:48. We present Russian fighter biplane. The plane was constructed by Stefan Masca and Bystrinskí. In the East from WW1 was by 1915 year. The MB bis was our unarmoured machine gun. In reality of view was Latham being soldward up. Total production was about 50 planes. MB bis was used Imperial Russian AF and later Red Army and worked Red Army and the name "white dove". The plane was powered with cylinder rotary engine of Gnome, Clerget or Le Rhone.

Technická data / Data

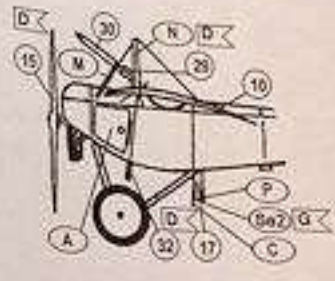
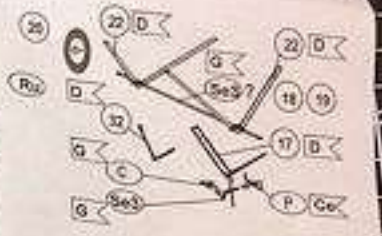
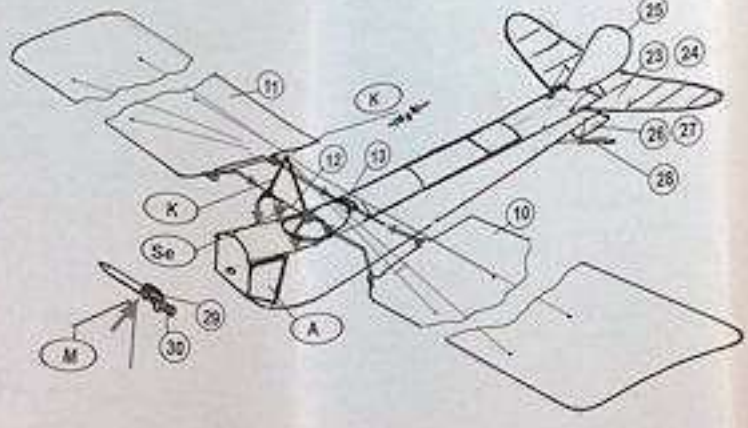
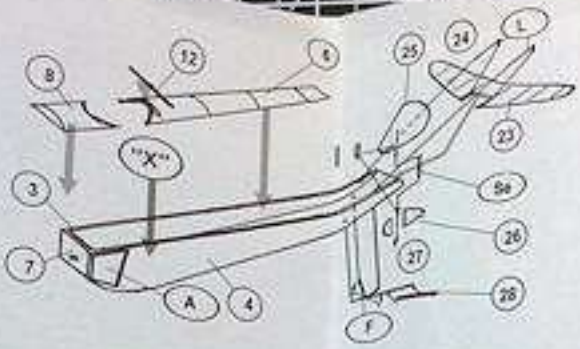
Model / Model	1:48	m
Wingspan / Rozpätie	490	mm
Weight / Hmotnosť	135	g
Speed / Rýchlosť	200	km/h

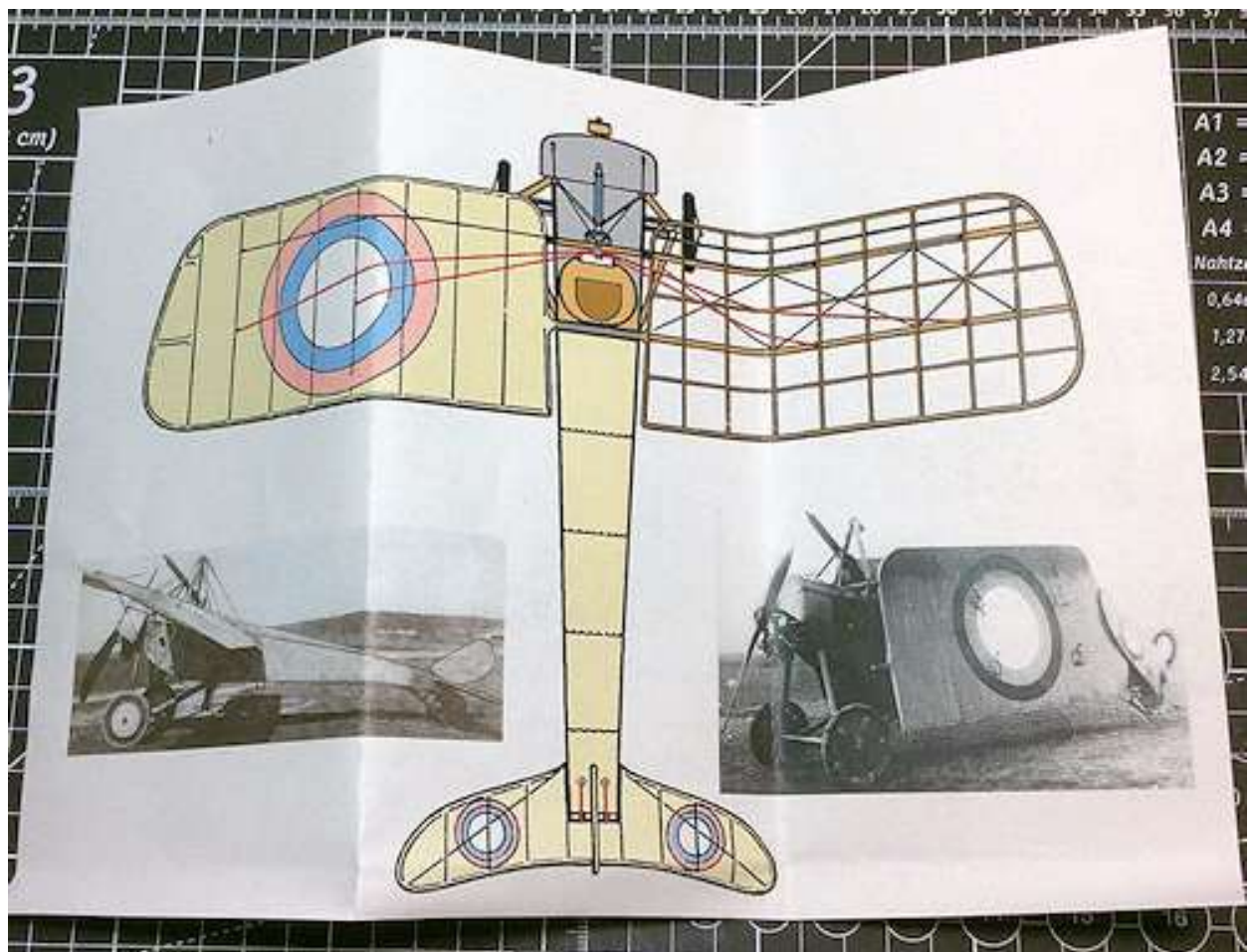
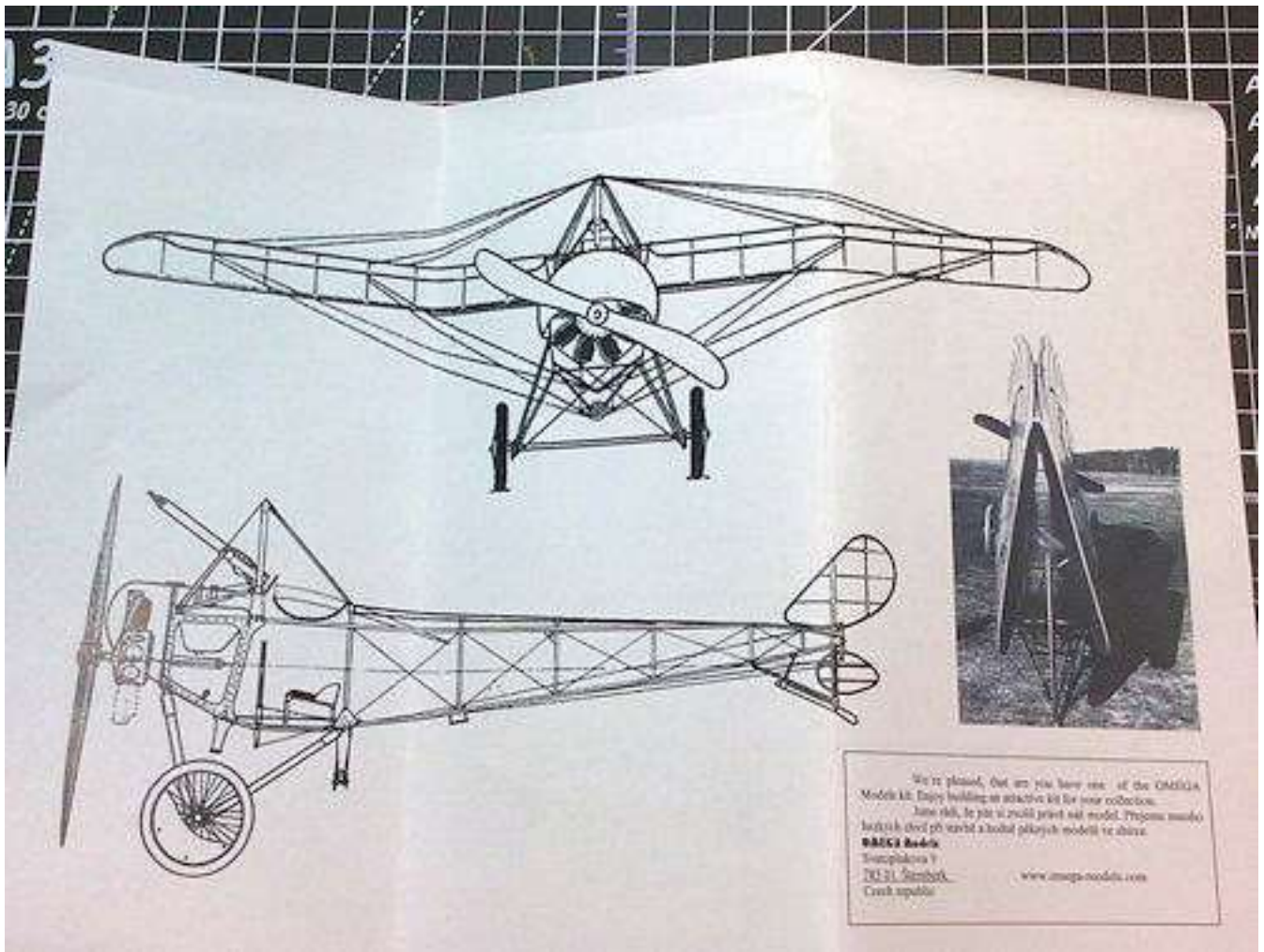
GAMMA / Handbook

F	Plastic	Md	Model
D	Clay	B	Base
C	Card	Ca	Card
Ma	Mount	Al	Aluminum
AF	Paint	W	White



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30





PART 2
WOOD EFFECTS
(General)

PART 2 - WOOD EFFECTS (General)

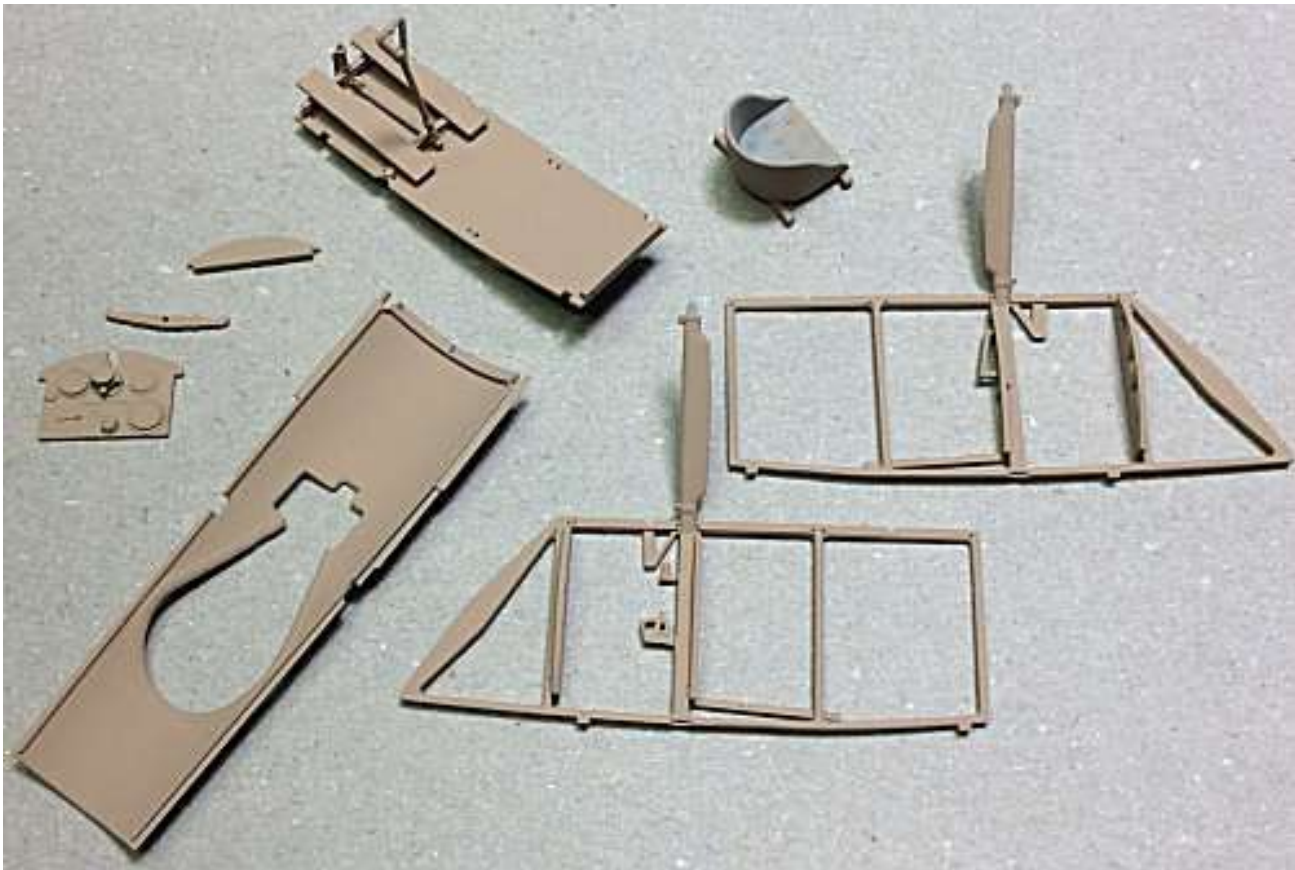
A basic technique:

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 'Tamiya' Aerosol Light Grey (Fine) or White (Fine) acrylic primer. Once the primer is dry, you can start applying the wood effect to the applicable cockpit items, such the cockpit framework, decking, seat supports, rudder bar, instrument panel and of course, the wing struts. With practice, this method can also be used on fuselage panels and propellers.

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).



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.



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 this instance, 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, prior to fitting them to the model.

PART 3
WEATHERING
(General)

PART 3 - WEATHERING (General)

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. Once dampened, the dried clay is re-activated and the clay wash can be removed or worked as required.

First I seal the surface with airbrushed '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 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.

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. I use a soft brush, which has been very slightly dampened, to brush off the clay wash. For smearing effects, a very slightly damp brush or absorbent paper should be used, but even then I dab them onto a dry piece of the paper, until it's almost dry. Any wetter and you'll find that you are removing too much of the clay wash. If that happens you would have to re-apply the wash and start again. That said, 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 more or less straight away. Then I'll very lightly brush and/or use a piece of damp absorbent paper to remove as much as I want until I get the desired effect. If I remove too much I just reapply clay wash to that area and repeat the removal procedure. Once finished, just run the brush under a tap to rinse out any residual clay pigments. Finally I usually seal the surface with airbrushed 'Alclad' Light Sheen (ALC-311), which will seal in the applied clay wash.

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 used as-is or mixed to create many colour shades for weathering.



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
(General)

PART 4 - DECALS (General)

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 'Johnson' Pledge Floor Care finish 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 'Johnson' Pledge Floor Care finish, 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 'Johnson' Pledge Floor Care finish 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 are not 'cookie cut'*** and therefore they 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. 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. For this model I chose to use the 'clear' decals, in order to show the linen effect more visibly.

Application:

First airbrush a primer coat of 'AK Interactive' primer and micro-filler (White - AK759) 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 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 'Johnson' Pledge Floor Care finish (similar to 'Future'), all of which will 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

RESIN (General)

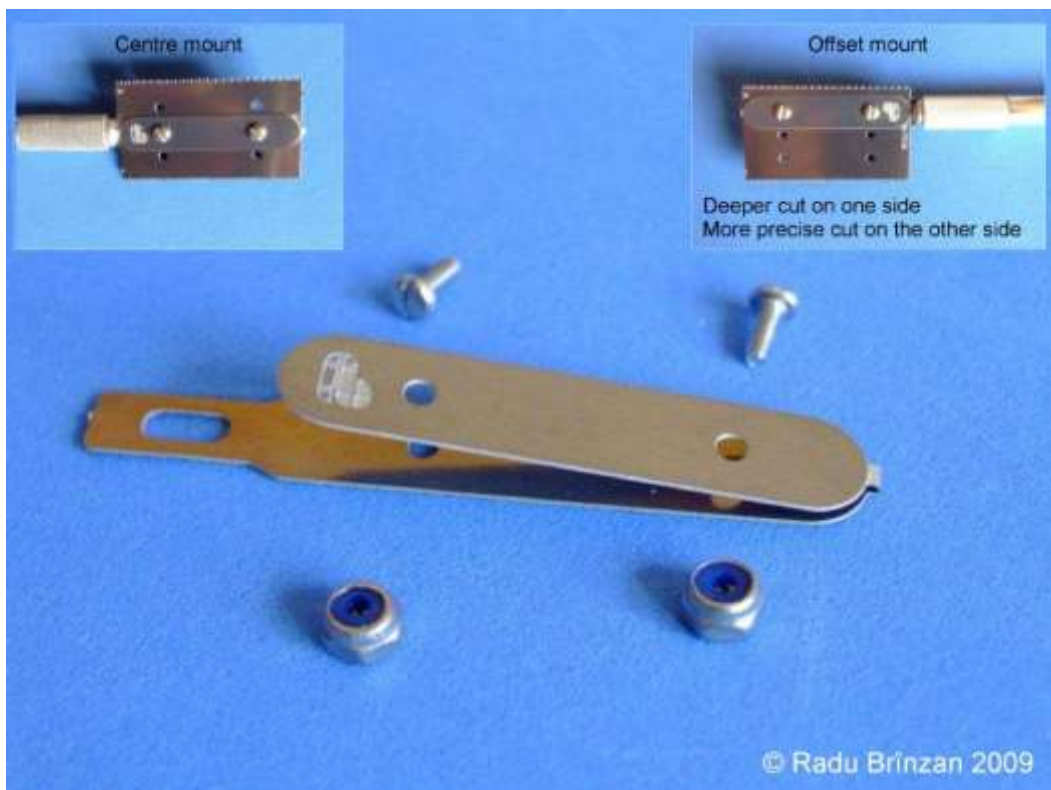
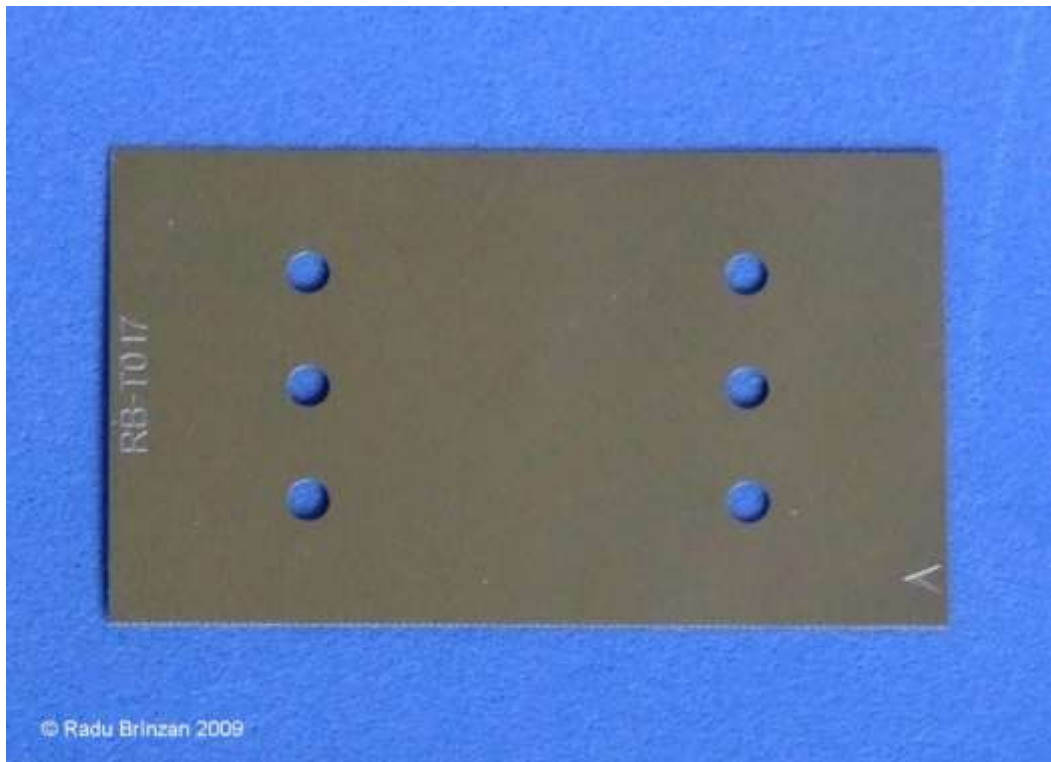
PART 5- RESIN (General)

This model contains aftermarket resin parts, as opposed to the normal plastic used. The reason for creating resin kits is that in years gone by, resin kits were able to produce much finer detail on kit parts than the plastic kit equivalents. Even today, there are many producers of resin kits and particularly after market replacement parts. However, plastic kit manufacturers have come a long way now and kits, such as those from 'Wingnut Wings' and 'Copper State' are equal to, if not better than resin kits. Manufacturers of resin kits these days tend to make kits to order or have 'limited' runs, although aftermarket parts are usually readily available. Working with resin does present different challenges to the modeller, especially if it's the first time of building a resin kit. The properties of resin differ radically to those of plastic kits.

Below I have listed what I have found to be the primary differences for resin kits from plastic kits:

1. When resin kits are cast in their moulds, a release agent is applied to enable the cast resin parts to be more easily removed, which is similar to plastic kit moulding. This release agent can leave a film on the surface of the kit parts, which, if not removed, can prevent paint or adhesives from adhering to the surfaces. The easiest way to remove this film is to carefully and fully wash all of the model parts in warm soapy water, using an old, soft tooth brush, then rinse all of the parts thoroughly and leave to dry. Alternatively wipe the parts with isopropyl alcohol (e.g. 'Tamiya' X20A thinners).
2. Resin, by its nature, is very brittle and can be damaged or broken easily, especially when handling small parts. This is particularly evident when separating the individual items from the resin cast. The best way to remove item is to cut them away with a razor saw, then clean them up afterwards.
3. Once removed from the resin cast, parts will normally have 'resin flash' around or amongst parts, especially small items. This is easily removed with a sharp scalpel blade. Heavier residue can be scraped, filed or sanded away.
4. Plastic kits are assembled using solvent adhesives, which melt the surface where it is applied and 'weld' the joint together. Resin however will not react to this type of adhesive and can really only be glued using CA adhesive. This adhesive reacts to moisture in the air and on the surface to be joined. As most people know, it will also bond skin to whatever it touches, if the skin has CA adhesive on it. Obviously extreme care needs to be exercised when assembling resin kits using CA adhesive.
5. Cutting, sanding and drilling resin will create swarf and more importantly, resin dust. The dust in particular is dangerous, especially if inhaled. Therefore always vacuum the working area, and yourself, regularly. If you have a face mask or filtered respirator and find you can wear it whilst working, then do so. Resin can easily be drilled or scraped, but remember how brittle resin is when it is being handled.
6. It is not unusual to find imperfections in resin cast parts, such as surface blemishes, small 'blow' holes or ragged edges. This can be common on some resin kits. These imperfections can be rectified by sanding/polishing and/or filling with modelling putty, then sanding/polishing.
7. Generally CA adhesive is supplied as 'instant bond' adhesive, but there are some manufacturers, such as 'VMS Fleky', that supply CA adhesive as standard, thin, slow and specific resin adhesive. Whichever adhesive is used you must ensure parts are correctly positioned and aligned before applying the adhesive. Trying to separate mis-aligned parts once the adhesive sets will prove very difficult and may result in irreparable damage to the parts.

NOTE: To separate resin parts from the thin moulding backing sheet, use sharp scissors or a scalpel blade. To separate larger parts from the moulding base block, use a fine modellers saw. The saw I use has a double sided and fine 'drag' saw blade and with its holder was available from 'RB Productions'.



PART 6
RIGGING
(General)

PART 6 - RIGGING (General)

General:

The general rigging of this aircraft follows that used on most aircraft of the period that used wing warping to roll the aircraft. The rigging was the traditional round, wire wound type, which was tensioned with turnbuckles.

Wing warping wires:

NOTE: *As there is no information for the controls of the aircraft, the following description is based on similar wing warping aircraft.*

A torsion bar fitted to the bottom of the control column. At the rear end of the torsion bar was a double ended bell crank, which had a control cable fitted at each end. These cables were routed down and out of the bottom of the fuselage to the wing warp control horn, located on rear of the V strut under the fuselage. This control horn was attached to a forward operating pulley and control horn, to which the wing underside warping wires were attached. These wires were routed up to the underside of both wings and attached inboard and outboard on the rear spar of the wings. Similarly wires were attached to the upper surface of the wings and routed up to a pulley on the top of an inverted V frame, mounted over the front of the cockpit

As the pilot moved the control column left or right, the control cables would work in opposition, one control cables pulling and the other relaxing. This would turn the forward operating pulley and control horn in the required direction and the relevant wing underside warping wires on one side of the aircraft would deflect the wing and the wing warping wires on the other side of the aircraft would follow the deflection, but in the opposite direction. The warp wires above the wings would move with wing deflections, moving over the pulley on the cockpit V strut. This would cause the aircraft to roll in the required direction. Turnbuckles were fitted to the wires at the wings.

Landing wires:

Landing wires were attached above and below both wings, similar to the wing warping wires. The differences are that the wires were attached to the wings at the front wing spar and the wires from the underside of the wings were attached to a V frame on the forward, bottom of the fuselage. Turnbuckles were fitted to the wires at the wings.

Bracing wires:

Two crossed bracing wires were attached to the landing gear, between the bottom, inner sides of the landing gear struts (above the axle) and the top, inner sides of the forward landing gear struts. Turnbuckles were probably fitted at the axle ends of the wires.

Two bracing wires were attached to the upper inverted V strut and the top of the fuselage at each side of the engine cowl. Turnbuckles were probably fitted at the upper inverted V strut .

Rudder control cables:

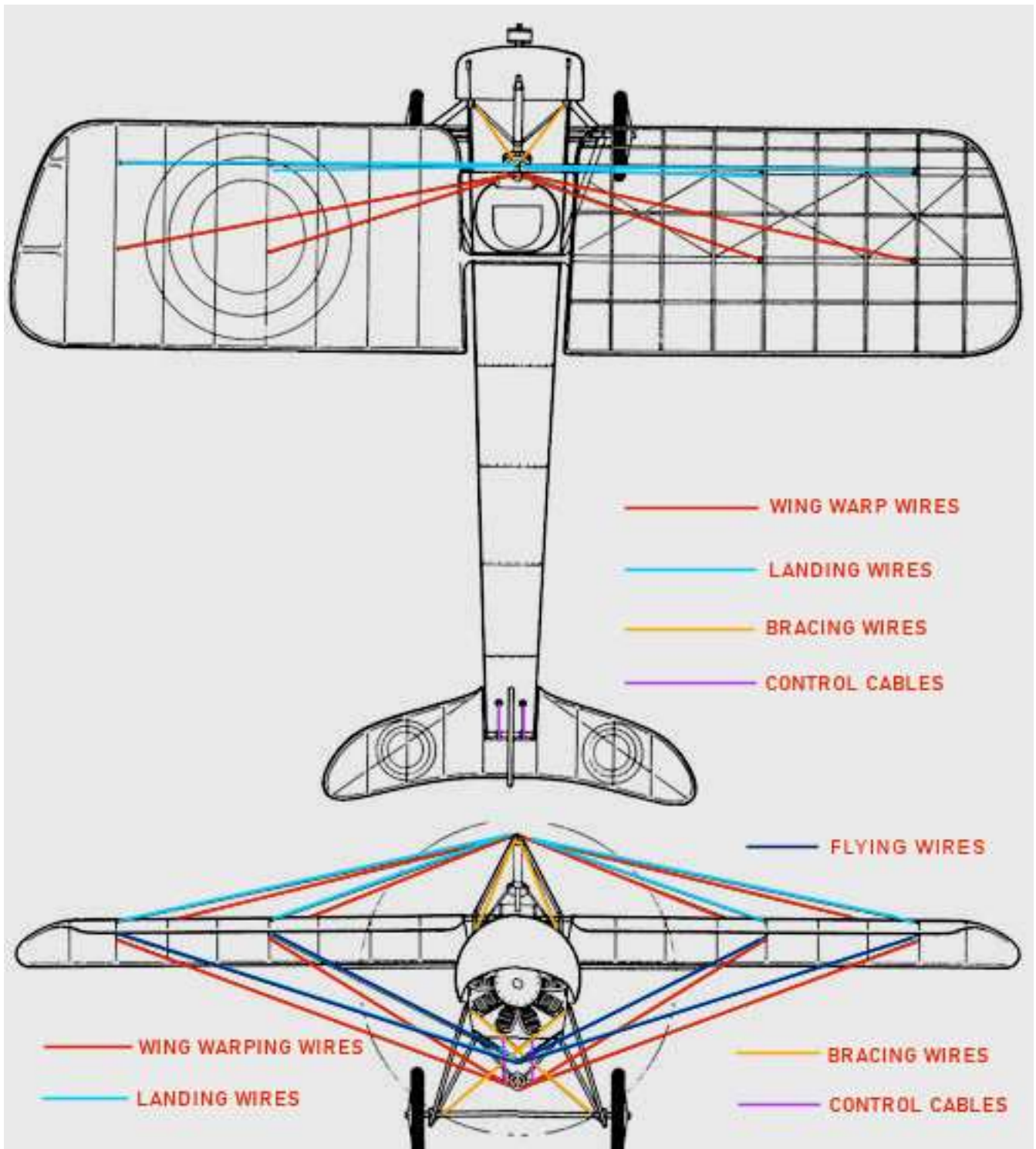
Two control cables were attached to the outer ends of the pilot's rudder bar and routed rearwards through the fuselage. The cables exited from under the fuselage and were routed each side to the control horns fitted to the rudder post at the lower rudder. It's unclear if the upper 'rudder' is actually combined with the 'fin' and moves as one assembly. It's assumed that turnbuckles were fitted to the control cables within the cockpit.

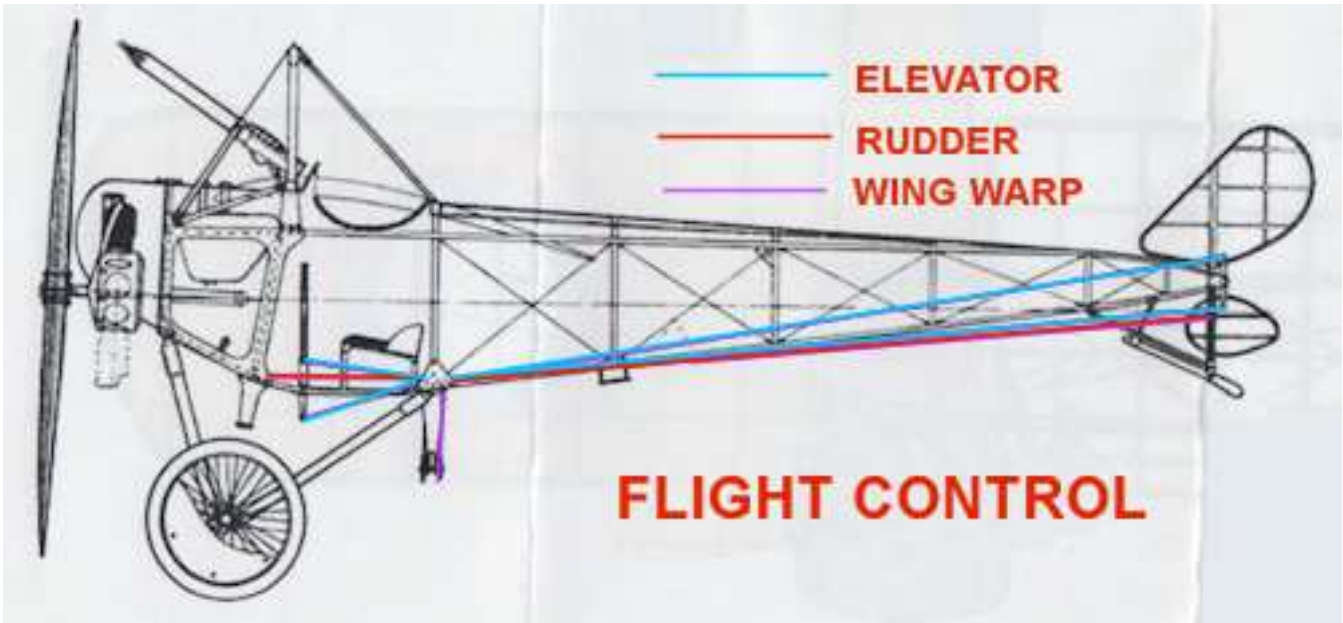
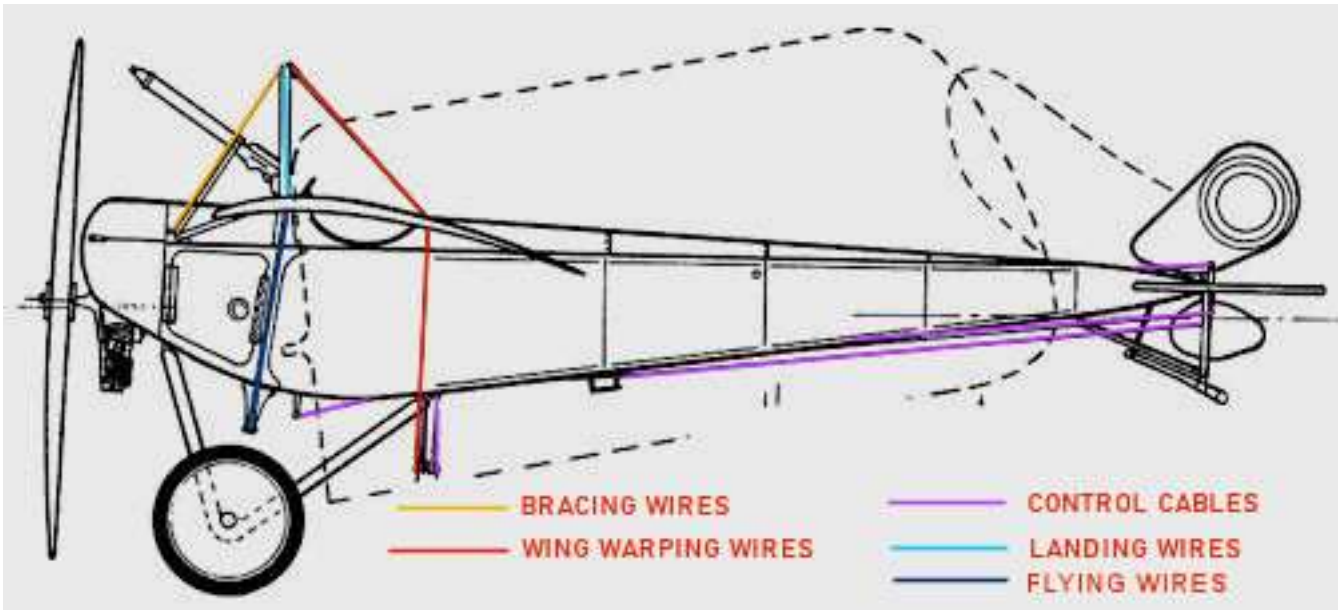
As the pilot moves the rudder bar left or right, one control cable pulls in tension whilst the other cable relaxes. This moves the rudders in the required direction and causes the aircraft to yaw in that direction.

Tail plane control cables:

The control column had an upper and lower attachment where the tail plane control cables were fitted. The upper cables were routed rearwards through the fuselage and exited each side of the 'fin/rudder' assembly and were attached to the upper control horns fitted on the tail plane front spars. The lower cables were attached to the bottom of the control column, which extended below the underside of the fuselage. These cables re-entered the fuselage to the rear of the cockpit and then rearwards. The cables exited midway along the underside of the fuselage and were routed to the lower control horns fitted on the tail plane front spars. It's assumed that turnbuckles were fitted to the control cables within the cockpit.

As the pilot pushed or pulled the control column, one pair of control cables pulled in tension whilst the other cables relaxed. This moved the tail plane in the required direction and caused the aircraft to pitch up or down.





PART 7

PREPARATION

PART 7 - PREPARATION

NOTE: *Refer to Part 5 (Resin) for working with this material*

Parts not required:

As this model kit is not of the best quality, some parts will be discarded as being too badly moulded or weak or not necessary, in which case they will be replaced.

Parts preparation:

Remove all of the resin parts required from their moulding blocks, taking care not to break any parts. Some parts are either small or thinly moulded.

Sand away all resin moulding 'flash' or seams from around the edges of all parts.

Check the surface of all parts for small air 'blow' holes, imperfections and miss moulded parts ('short shots'). Sand away any surface imperfections and using a modelling filler, fill any surface holes and once set, sand flush to the surrounding area.

Distortion:

Distortion of resin moulded parts is a fairly common problem. The type of resin used to create the model parts varies, dependant on the kit manufacturer. Some resin parts are created from an off-white and softer resin, which I have found to suffer from distortion and has surface imperfections and surfaces pitted with air 'blow' holes. Other manufacturers use a higher grade resin, which looks similar to the standard styrene used in plastic kits. This type of resin is less prone to the surface imperfections and distortion.

Some higher end kit manufacturers, such as 'Aviatic' and 'Lukgraph' package their model parts carefully and tape parts either together or on backing boards, so as to reduce the chance of the parts distorting. However, other less main stream kit manufacturers don't and it's their parts that can warp.

In this particular kit I found that the bottom of the fuselage (kit part 5) was twisted at the rear and mould thicker on one side than the other.

Removing distortion:

NOTE: *As the kit parts are resin and some parts are very thinly moulded, extreme care should be taken if using the following methods to remove distortion. Otherwise the parts could be damaged beyond repair.*

Hot water:

The parts should be immersed in hot water and left to heat soak. Thinner or smaller parts will take less time than larger, thicker parts. The parts should be regularly checked to test how flexible the resin has become. Once the part can be carefully manipulated to remove the distortion, it should either be immersed in cold water or held on a flat surface until the resin cools and can retain its shape.

Hot air:

Using hot air is basically the same procedure as for using hot water, but the heat source is from a hair dryer. Blow hot air across the distortion on the part. The heat setting required will depend on the type, size and thickness of the resin part.

Location of parts:

It's common with styrene (plastic) model kits to have locating pegs and associated holes so as to accurately position model parts during assembly. However, this is not the case with many resin model kits.

For example, the fuselage of this model is constructed from four parts, none of which have location holes or pegs. Alignment can be helped by using strips of thick plastic card and using thin CA adhesive, secure them in position around the mating edge of one of parts, making sure to leave only a small plastic card overhang at the edges. Too much overhang can stop the parts from joining fully.

PART 8

WEAPON

PART 8 - WEAPON

NOTE: *As this model is resin, CA adhesive must be used to secure parts together.*

The resin Lewis type machine gun supplied in the kit will be replaced with the 'GasPatch' Lewis Mk.1 Standard type (stripped front).



Preparation:

Cut away the shoulder stock of the machine gun as this is not required.

Disregard the empty cartridge collection bag, as this is not required.

Painting:

NOTE: *Painting of the weapon is carried out after it has been fitted to its support mounting frame - refer to Part 10 (Fuselage) of this build log.*

Airbrush the weapon with a black primer, such as 'AK Interactive' Black (AK757) or similar.

Lightly airbrush the machine gun with steel, such as 'Alclad' Steel (ALC-112) or similar.

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

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

Sponge 'Tamiya' Weather Master Set B (Soot) around the muzzle and front of the barrel.



PART 9

ENGINE

PART 9 - ENGINE

The kit supplied resin engine has to be used, rather than replacing it with an after market engine. This is because only the kit engine will fit inside the kit supplied and fragile resin engine cowl.



NOTE: *The supplied engine can't be easily fitted into the engine cowl as the cylinder heads contact the inside surface of the cowl and the engine needs to be fitted such that the propeller shaft is below the lip of the cowl. Also, the Brass support rods for the cowl to fuselage joint stop the top cylinders from moving fully up into the cowl. Therefore there will be the need to remove large amounts of resin from the tops of some engine cylinders. However, those cylinders will not be seen on the finished model. Due to the quality of the kit supplied engine and the restrictions it has fitting into the engine cowl, the assembled engine is not an accurate representation of the engine.*



Assembly:

Remove any resin mould flash from around the engine. If the moulding leaves mis-aligned seams down the edges of the cylinders, remove as much as possible without removing too much of the cylinder cooling fins.

NOTE: My kit as supplied only had six fuel induction manifolds (kit parts 31) and there should be nine, one for each cylinder. Therefore those parts were taken from a similar rotary engine in my 'spares' box and modified to fit the kit engine. If the kit has the correct number of manifolds, use the kit parts.

Using thin CA adhesive, secure the fuel induction manifolds to the top edge of the engine crankcase and the top, right side of each cylinder.

Cut away the pre-moulded propeller shaft.

Using the witness mark of the propeller, drill a hole of 1.4 mm diameter into the centre of the engine crankcase.

Cut a length of 1.4 mm diameter Brass tube, such as 'Albion Alloy's' MBT14 or similar.

Using thin CA adhesive, secure the tube into the pre-drilled hole in the engine crankcase.

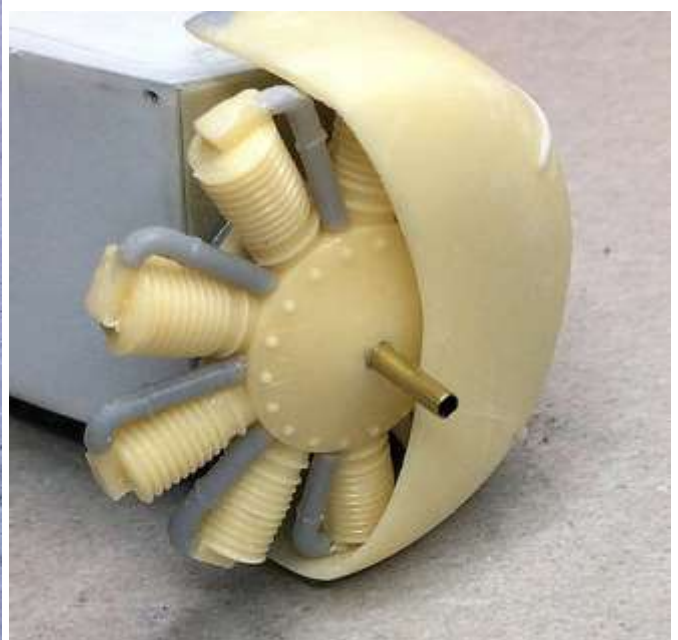
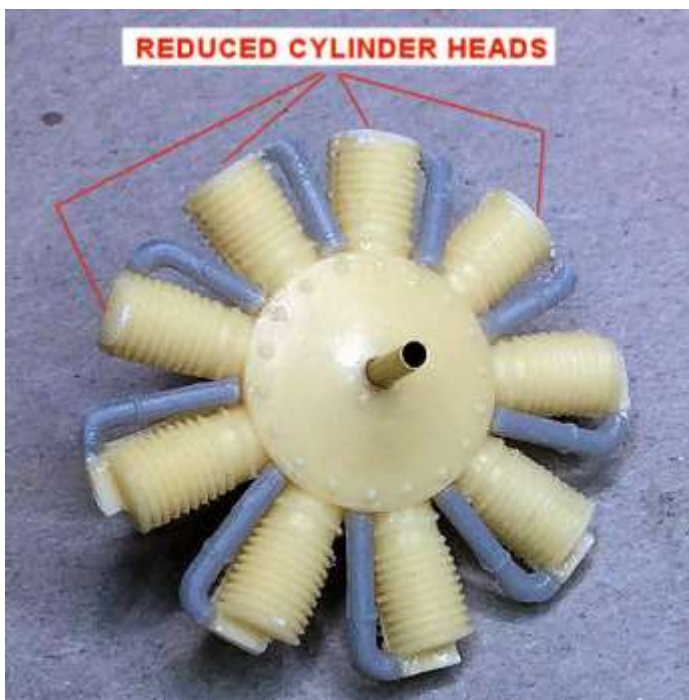
Using the hole in the rear of the kit supplied propeller (kit part 15) as a guide, drill a hole of 1.4 mm diameter into, but not through, the rear of the propeller.

Test fit the engine into the cowl - refer to the previous drawing for the correct positioning of the engine in the cowl.

NOTE: During the following step, you may need to also chamfer the edges of some of the cylinders to allow the engine to fit against the curved moulding inside the engine cowl.

If necessary, file or sand away the top of four adjacent cylinders. Repeat test fitting until the engine will fit into the engine cowl and in the correct position.

Cut discs of plastic card and using CA adhesive, fill the recess in the rear of the engine crank case and then to fill the gap between the rear of the engine such that when located in the cowl, the front of the engine crank case is closer to the engine cowl.



NOTE: *The kit does not supply spark plugs or valve push rods, all of which will need to be made.*

Drill holes of 0.7 mm diameter through the centre of the valve gear 'block' on the top of the five cylinders not reduced.

Drill holes of 0.4 mm diameter through the centre of the bottom of the five cylinders not reduced.

Cut five short lengths of 0.6 mm diameter Nickel-Silver tube, such as 'Albion Alloy's' NST06 or similar.

Cut nine lengths of 0.3 mm diameter Nickel-Silver tube, such as 'Albion Alloy's' NST03 or similar.

Using thin CA adhesive, secure one end of five 0.3 mm diameter tubes into the cut 0.6 mm diameter tubes.

Bend the 0.3 mm tubes to 90 degrees at the 0.6 mm diameter tubes.

Insert the 0.6 mm tubes into the pre-drilled holes in the five cylinders heads.

Mark the 0.3 mm diameter tubes where they align with the pre-drilled 0.4 mm diameter holes in the bottom of the five cylinders and again 4 mm lower on the tubes.

Bend the 0.3 mm tubes to 90 degrees at the first mark.

Cut the 0.3 mm tubes at the second mark.

Insert the two bent ends of the tubes into their pre-drilled holes in the five cylinders. And secure in position using thin CA adhesive.

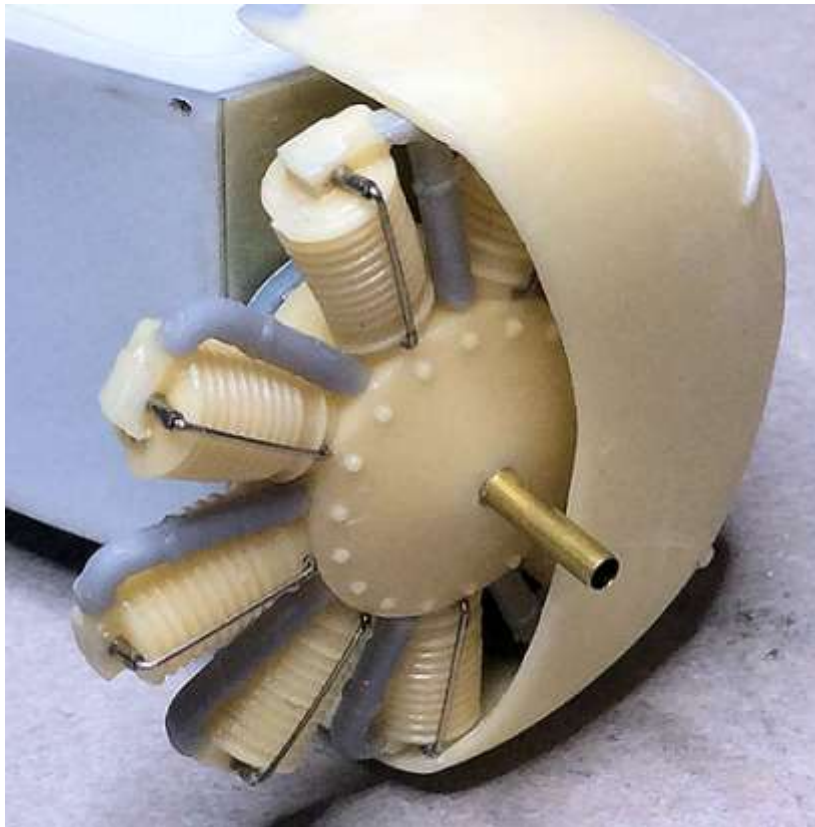
Bend one end of the four remaining 0.3 mm tubes to 90 degrees 5 mm from the end.

Cut the 0.3 mm tubes at the second mark.

Insert the bent ends of the four tubes into their pre-drilled holes in the four remaining cylinders.

Cut the top of the tubes flush with the top of the cylinders.

Secure the four tubes in their pre-drilled holes in the four cylinders, using thin CA adhesive.



Painting:

Airbrush the engine with a black primer, such as 'AK Interactive' Black (AK757) or similar.

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

Brush paint the nine inlet manifolds with 'Alclad' Engine Exhaust (ALC-123) or similar.

Carefully scrape off the paint and primer from the nine Nickel-Silver push rods.

Brush 'Tamiya' Weathering Master (Set D) burnt Blue around the tops of the cylinders.

Brush 'AK Interactive' Kerosene wash (AK-2039) over the engine.

Spark plugs:

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

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

Drill holes of 0.5 mm diameter into the upper, left side of the five cylinders.

Secure the copper wires into the cut tubes using thin CA adhesive.

Brush paint the five spark plugs with 'Tamiya' White (X2) or similar.

Secure the tubes into the pre-drilled holes in the cylinders, using thin CA adhesive.

Secure the ends of the copper wires onto the rear of the engine, using thin CA adhesive.



PART 10

FUSELAGE

PART 10 - FUSELAGE

NOTE: *As this model is resin, CA adhesive must be used to secure parts together.*

Basic fuselage:

NOTE: *The fuselage of this model is constructed from six resin parts, which are the right side, left side, top forward panel, top rear of the fuselage, engine bulkhead and the underside.*

The underside of the fuselage is a single piece, but the moulding of this part is bad. Not only is the part twisted and with air 'blow' holes, but the thickness of the moulding is uneven, being thick on the right side and wafer thin on the left side. This makes the underside of the Fuselage virtually unusable.

Therefore I decide to discard this part and make the underside from 0.8 mm thick plastic card.



Sand the top edge of the two fuselage sides to ensure they are flat along their entire length. Check by placing those edges on a flat surface.

Using clamps, such as small bulldog clips or similar, secure the two fuselage sides together, making sure the flat top and front edges are aligned.

Following the moulded contour, sand the bottom edges of the fuselage sides to align them.

Remove the clamps.

Trace the outline of the resin underside part onto a sheet of 0.8 mm plastic card, making sure you include the front curve.

Add the thickness of the fuselage sides to the traced outline of the fuselage underside.

Cut out the shape from the plastic card sheet.

Apply thin CA adhesive to the bottom edge of the right fuselage side, but only at the front curve.

Locate the cut underside onto the adhesive, making sure the front edge overlaps the front edge of the fuselage side by 1 mm and the side edge is aligned to the edge of the fuselage side. Hold in position to allow the adhesive to set.

Working rearwards from the secured front edge and in stages, align the edges of the fuselage side and cut underside and apply thin CA adhesive to secure the two together.

Apply thin CA adhesive along the inside of the joint to re-enforce the joint.

Using thin CA adhesive, secure the engine bulkhead to the front edge of the fuselage side and the protruding lip of the underside. Make sure the bulkhead is vertically aligned with the fuselage side and the bottom is at 90 degrees.

Apply thin CA adhesive along the inside of the joint to re-enforce the joint.

Using thin CA adhesive, secure the top forward panel to the top edge of the fuselage side and against the top of the engine bulkhead. Make sure the panel is horizontally aligned with the fuselage side and the top of the bulkhead.

Apply thin CA adhesive along the inside of the joint to re-enforce the joint.

Test fit the left fuselage side, particularly how the front fits between the edges of the underside, top panel and bulkhead and that the fuselage side is vertical. If necessary sand the curved bottom edge to achieve the correct fit.

Apply thin CA adhesive to the bottom edge of the left fuselage side, but only at the front curve.

Locate the left fuselage side, making sure the front edge is against the engine bulkhead and the underside edge of the top panel. Also that the fuselage side is vertical.

Apply thin CA adhesive to the edge of the top panel and engine bulkhead. Hold in position to allow the adhesive to set.

Hold the top rear of the fuselage in position on the tops of the fuselage sides and against the rear edges of the top front panel.

Make sure the fuselage sides are aligned with the edges of the top rear of the fuselage.

Working rearwards from the secured front edge and in stages, align the edges of the left fuselage side and top rear of the fuselage and apply thin CA adhesive to secure the fuselage side to the underside.

Remove the top rear of the fuselage.

Apply thin CA adhesive along the inside of the left fuselage side joint to re-enforce the joint.

Sand the exposed edges around the fuselage to blend the parts of the fuselage together.

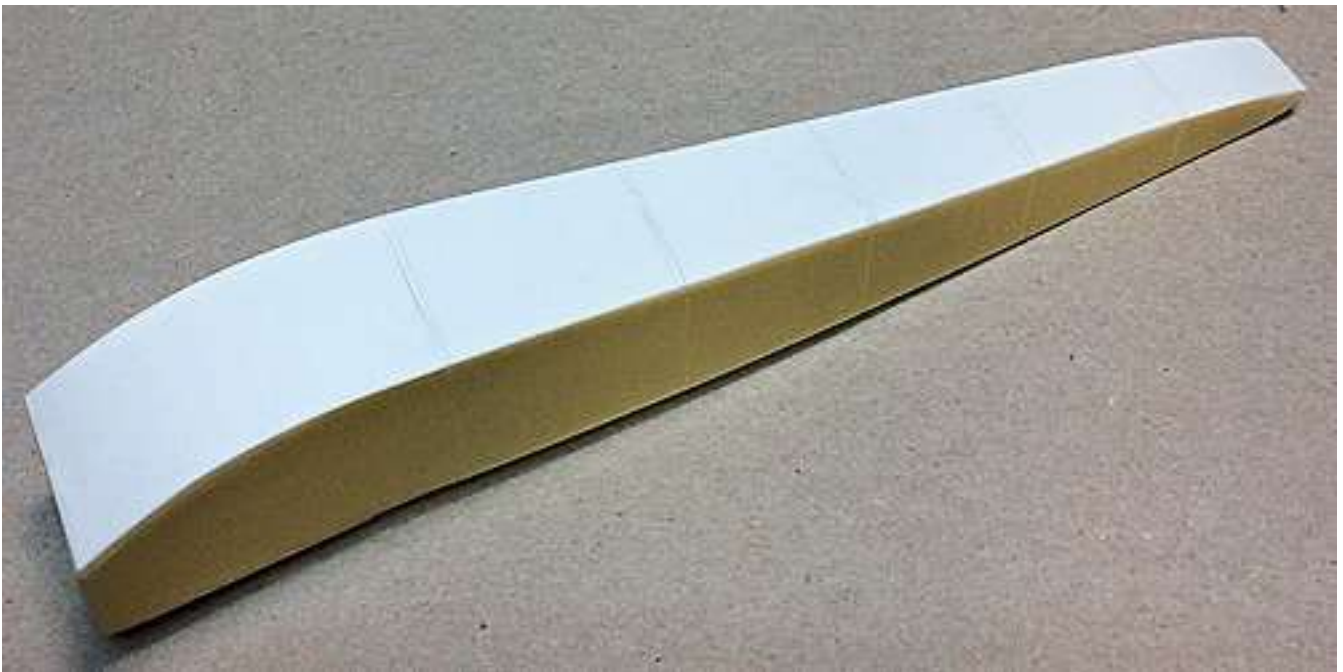
To represent the tapes over the fuselage underside frames, cut thin strips of 0.2 mm thick plastic card.

Mark the location of the fuselage tapes at the bottom edge onto to underside.

Using the marks as guides, cement the strips across the underside.

Cut away any strip overhang.

If necessary, lightly sand the strips to blend reduce their thickness.



Cockpit details:

NOTE: *The kit supplied cockpit is photo-etch and too flat and two dimensional. Therefore I decided to discard the photo-etch cockpit and scratch build it instead. As there seems to be no information available for the cockpit detail of this aircraft, I think 'Omega Models' made their photo-etch cockpit more from generic guesswork than fact. Therefore I have based my own construction of the cockpit on theirs, but with added detail.*

Exact dimensions and location of parts is up to how you want the cockpit to be configured. If desired use the kit supplied photo-etch cockpit and follow the kit instructions.

*Be aware that the **part number** call outs in the kit instructions **don't always match** the actual parts supplied in the kit.*

Structure:

NOTE: *Refer to the following photographs for guidance on part locations.*

Using 1.0 mm plastic rod, cut four long lengths for the cockpit longerons.

Using thin CA adhesive, secure the rods along the top and bottom of the fuselage edges.

Using 1.0 mm plastic rod, cut eight lengths for the cockpit vertical frames, cutting the rods to the correct length to fit between the fitted longerons.

Using thin CA adhesive, secure the rods vertically between the longerons on both fuselage sides. The third vertical from the front should be positioned to align with the rearmost edge of the cockpit opening edge on the fuselage top rear. Position the part onto the fuselage and mark the frame location on the inside of the fuselage sides.

Using 1.0 mm plastic rod, cut three lengths for the cross frames on the floor of the cockpit. Cut the rods to the correct length to fit between the fitted longerons at the first, third and fourth vertical frames on each side of the fuselage.

Using thin CA adhesive, secure the rods across the floor of the cockpit, between the longerons.

Using 0.85 mm plastic rod, cut two lengths for the bracing bars on the cockpit floor, between the first frame back to the centre of the second cross frame on the cockpit floor.

Using thin CA adhesive, secure the rods onto the cockpit floor.

NOTE: *The cockpit had a upper front and rear cross frame fitted. The upper front was used to mount instruments and the upper rear was fitted above the rear of the seat. The rear frame will be fitted after the seat.*

Using 1.0 mm plastic rod, cut a length to span across the cockpit, between the top of first vertical frames.

Using thin CA adhesive, secure the rod across the cockpit between the first frames.

NOTE: *The seat used is the resin BarracudaCast' British wicker AGS seat (BR32234).*

Cut the seat away from its moulding block and sand the underside flat.

Cut a 8 mm length of kit sprue or similar (I used triangular rod) and secure it onto the two bracing bars on the cockpit floor, just forward from the second floor cross frame.

Position the seat onto the added support to ascertain how tall the control column should be and where the control column should be located, in relation the seat.

Using 0.8 mm thick plastic card, cut a 1.5 mm wide strip long enough to span across the two bracing rods added to the cockpit floor and between the second vertical frames.

Drill a hole of 0.9 mm diameter through the centre of the strip.

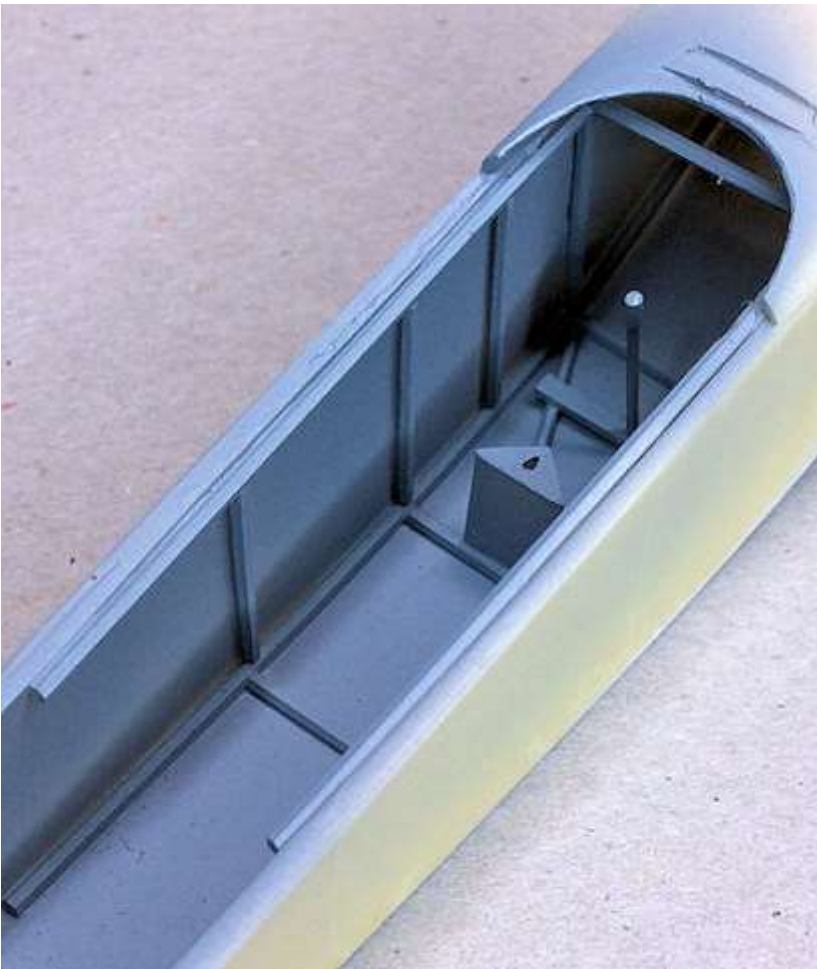
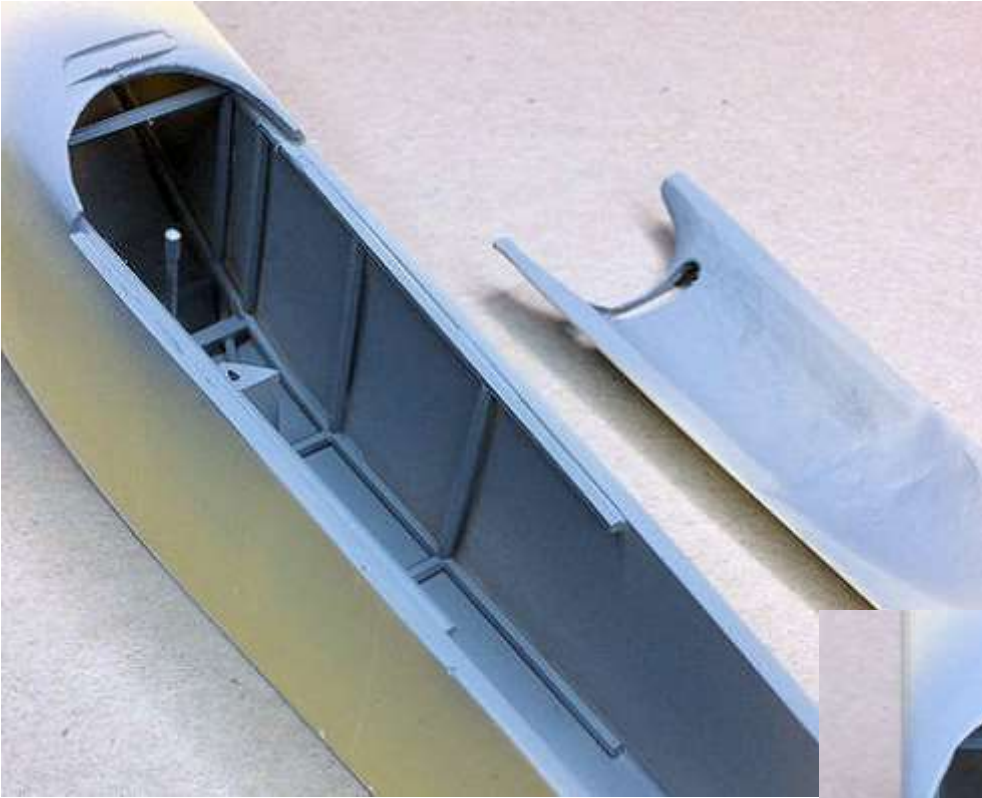
Cut a length of 0.9 mm diameter Brass tube, such as 'Albion Alloy's' MBT09 or similar, to represent the control column.

Using CA adhesive, secure the tube into the pre-drilled hole in the strip.

Cut a length of 1.1 mm diameter Brass tube, such as 'Albion Alloy's' MBT11 or similar, to represent the hand grip of the control column.

Secure the strip on the control column across the cockpit bracing bars, using CA adhesive.

Remove the seat and airbrush the internal fuselage and underside of the top rear fuselage with a grey primer, such as 'AK Interactive' Grey (AK-758) or similar.



Instrument:

Cut photo-etch part G from the kit supplied sheet.

Using thin CA adhesive, secure the part centrally onto a piece of 4mm long and suitable diameter plastic kit sprue.

Cut a groove (to locate onto 1.0 mm rod) into one side of the sprue and just away from the rear of the added part G. This will be used to locate the instrument in the cockpit.

Airbrush the instrument with a grey primer, such as 'AK Interactive' Grey (AK-758) or similar.



Rudder bar:

The rudder bar was a suitable part from my 'spares' box from previous kits. I also added the foot straps from my 'spares'.

Airbrush the rudder bar with a grey primer, such as 'AK Interactive' Grey (AK-758) or similar.



Seat:

Airbrush the seat with a grey primer, such as 'AK Interactive' Grey (AK-758) or similar.



Compass:

Remove the photo-etch compass (kit part I) from the kit supplied sheet.

Carefully twist the compass to 90 degrees from the mounting stem.

Using thin CA adhesive, secure the compass stem into a 11 mm length of 0.7 mm diameter Brass tube, such as 'Albion Alloy's' MBT07 or similar.

Using thin CA adhesive, secure the compass stem tube into a 10 mm length of 1.0 mm Brass diameter tube, such as 'Albion Alloy's' MBT10 or similar, leaving 1.0 mm of the 0.7 mm tube protruding at the bottom.

Using thin CA adhesive, secure the compass stem tube into a 10 mm length of 1.2 mm Brass diameter tube, such as 'Albion Alloy's' MBT12 or similar, leaving 1.0 mm of the 0.7 mm tube protruding at the bottom.

Using 0.8 mm thick plastic card, cut a small mounting base for the compass stem.

Drill a hole of 0.7 mm diameter centrally in the mounting base.

Using thin CA adhesive, secure the compass into the mounting base.

Airbrush the compass with a grey primer, such as 'AK Interactive' Grey (AK-758) or similar.



Throttle control:

The throttle control was a Sopwith Camel part from my 'spares' box from previous kits. It was cut to fit between the first and second vertical frames on the left fuselage side.

Airbrush the throttle control with a grey primer, such as 'AK Interactive' Grey (AK-758) or similar.



Hand priming pump:

Cut a 10 mm length of 1.4 mm Brass tube, such as 'Albion Alloy's' MBT14 or similar.

Using CA adhesive, secure a length of 0.5 mm diameter lead wire, such as that from PlusModel' or similar, into one end of the tube.

Create a 'T' handle from 0.8 mm diameter plastic rod and secure it into the other end of the tube.

Airbrush the priming pump with a grey primer, such as 'AK Interactive' Grey (AK-758) or similar.



Basic fuselage - painting:

Airbrush the internal fuselage and underside of the top, rear fuselage with Clear Doped Linen, such as 'MRP256 or similar.

Refer to Part 2 (Wood Effects) of this build log. Apply your desired wood effect to the added fuselage frames and the cockpit floor, seat mounting and forward of the rudder bar. I brush applied 'DecoArt' Burnt Umber acrylic.

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

Refer to Part 3 (Weathering) of this build log. Apply your desired weathering to the internal fuselage. I used 'Flory Models' Dark Dirt fine clay wash. Remove the wash as necessary to achieve the weathering effect desired.



Brush paint the control column with 'Tamiya' Rubber Black (XF85) or similar.

Brush paint the control column hand grip with 'Tamiya' Hull Red (XF9) or similar.

Airbrush a sealing coat of semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar, over the internal fuselage.

Cockpit details - painting:

Instrument:

Brush paint the instrument with Brass, such as 'Mr. Colour' Brass (219) or similar.

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

Apply a suitable decal from the 'Airscale' WW1 Generic instrument dials (AS32 WW1) to the face of the instrument.

Seal the decal by brushing with a clear gloss coat, such as 'Tamiya' Clear (X22) or similar over the face of the instrument.



Priming hand pump:

Brush paint the body of the priming pump with Brass, such as 'Mr. Colour' Brass (219) or similar.

Brush paint the pipe and handle stem with Steel, such as 'Mr. Colour' Stainless Steel (213) or similar.

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



Compass:

Brush paint the compass with 'Tamiya' Rubber Black (XF85) or similar.

Brush paint the compass support ring with Brass, such as 'Mr. Colour' Brass (219) or similar.

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

Apply a suitable decal from the 'Airscale' WW1 Generic instrument dials (AS32 WW1) to the face of the compass.

Seal the decal by brushing with a clear gloss coat, such as 'Tamiya' Clear (X22) or similar over the face of the compass.



Throttle control:

Refer to Part 2 (Wood Effects) of this build log. Apply your desired wood effect to the throttle control beam. I brush applied 'DecoArt' Burnt Umber acrylic.

Brush paint the pipes and throttle control with Steel, such as 'Mr. Colour' Stainless Steel (213) or similar.

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



Rudder bar:

Refer to Part 2 (Wood Effects) of this build log. Apply your desired wood effect to the rudder bar. I brush applied 'DecoArt' Burnt Umber acrylic.

Brush paint the forward supports with Steel, such as 'Mr. Colour' Stainless Steel (213) or similar.

Brush paint the foot straps with Leather, such as 'AK Interactive' Brown Leather (AK3031).



Seat:

Airbrush the seat with 'Tamiya' Desert Yellow (XF59) or similar.

Brush the seat with 'AK Interactive' Light Wood filter (AK-261).

Refer to Part 3 (Weathering) of this build log. Apply your desired weathering to the seat. I used 'Flory Models' Dark Dirt fine clay wash.



Seat straps:

Cut the two photo-etch seat straps from the kit supplied sheet.

Apply heat, such as a flame from a cigarette lighter, over the seat belts to anneal (soften) them for bending.

Cut away the edges of the thick section of the seat belts to the same width as the lap straps.

Pass the cut end of the straps through the opening at the front corners of the seat.

Bend the end of the straps slightly onto the underside of the seat then form the straps over the seat sides and onto the seat itself.

Remove the straps without, as far as possible, altering the shapes.

Brush 'Mr. Colour' Metal Primer R over the two seat belts.

Brush 'Tamiya' Desert Yellow (XF59) or similar over the two seat belts.

Brush paint the metal fitting on the seat belts with 'Mr. Colour' Stainless Steel (213) or similar.

Secure the two seat belts in their position on the seat.

Internal bracing wires:

NOTE: *The following procedure should be used for each of the cockpit bracing wires. The wires should be fitted diagonally crossed between the following frames:*

The three rear frame bays on the right side of the fuselage.

The four frame bays on the left side of the fuselage.

The two cockpit floor frames to the rear of the seat.

To blacken Brass or Nickel-Silver tube and rod, immerse the tube or rod in 'Black-It' blackening solution or similar.

Cut a length of blackened 0.1 mm diameter Nickel-Silver rod, such as 'Albion Alloy's' NSR01 or similar.

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

Secure a tube onto one end of the 0.1 mm tube, using thin CA adhesive.

Position the 0.4 mm diameter tube in a bottom corner of the frame, making sure the 0.1 mm tube is positioned diagonally to the opposite corner of the frame.

Secure the 0.4 mm tube in position using thin CA adhesive.

Slide the remaining tube onto the free end of the 0.1 mm rod.

Cut the free end of the rod such that it locates freely into its corner of the frame.

Slide the 0.4 mm tube up to the corner of the frame and secure in position using thin CA adhesive.

Control wires:

Rudder:

Cut two long lengths of 0.08 mm diameter mono-filament, such as 'Steelon' or 'Stroft' mono-filament .

Secure one end of each line onto the outer edge of the rudder bar, using thin CA adhesive.

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

Slide a tube onto each line and up to, **but not touching**, the rudder bar.

Secure each tube onto its line using thin CA adhesive.

Use thin CA adhesive to secure the rudder bar centrally onto the front cross frame on the cockpit floor.

Pass both lines rearwards on the cockpit floor and each side of the seat mounting.
Using thin CA adhesive, secure the ends of the two lines to the rear of the fuselage floor.
Cut away any residual line at the rear of the fuselage.

Tail plane:

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

Using thin CA adhesive, secure one end of the line to the rear of the fuselage floor.

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

Slide the tube onto the free end of the line and up to the control column.

Pass the line around the control and back to the rear of the fuselage.

Slide the remaining tube onto the free end of the line and up to the control column.

NOTE: *During the following steps, make sure you don't apply too much tension to the line or the control column may break away.*

Position the line towards the bottom of the control column.

Apply slight tension to the line to take out any line slack.

Using thin CA adhesive, secure the free end of the line onto the rear of the fuselage floor

Using thin CA adhesive, secure the two tube onto the line and at the control column.

Cut away any residual line at the rear of the fuselage.

Assembly:

Cockpit detail:

Apply CA adhesive to the groove cut into the instrument body and secure in position to left of centre on the front upper frame cross member.

Apply CA adhesive to the throttle control and secure in position towards the top and between the two front vertical frames on the fuselage left side.

Apply CA adhesive to the priming hand pump and secure in position at 45 degrees and across the two front vertical frames on the fuselage right side, making sure the handle end is angled upwards.

NOTE: *As the seat is not the small kit supplied part, the correct location for the compass (at the right of the seat) is not possible. Therefore it needed to be located further forwards.*

Apply CA adhesive to the underside of the compass mounting and secure in position at the right side of the cockpit floor, forward from the rudder bar.

Apply CA adhesive to the top of the seat mounting and secure the seat in position, making sure the rear of the seat is aligned with the rear of the cockpit opening on the top, rear of the fuselage (when fitted).

Cockpit rear frame:

NOTE: *Now the seat has been fitted, the cross frame above the rear of the seat can be added.*

Using 0.85 mm plastic rod, cut a length to fit between the top longerons at the vertical frames at the rear of the seat.

Using thin CA adhesive, secure the rod in position across the fuselage.

Refer to Part 2 (Wood Effects) of this build log. Apply your desired wood effect to the added fuselage frame. I brush applied 'DecoArt' Burnt Umber acrylic.







Fuselage top rear:

Test fit the fuselage top rear, checking for correct alignment to the fuselage sides and where the two halves of the cockpit opening meet. If necessary, sand away the resin to achieve the best alignment. If there is overhang at the fuselage sides, this will be removed after the part has been secured in position.

Secure the fuselage top rear to the fuselage sides, using CA adhesive.

NOTE: *I found that once fitted, the fuselage top rear was 5 mm too short and therefore does not cover the rear of the fuselage. This needed to be filled.*

Cut a strip of 0.8 mm thick plastic card.

Use CA adhesive to secure the strip across the opening at the top, rear of the fuselage.

Fill the gap at the rear end of the fuselage with a modelling putty.

Once the filler has fully set, sand the filled area to blend it with the surrounding fuselage.

If any obvious seams are visible, apply 'Mr. Surfacer' 500 by brush over the seams and when fully set, sand the seams to blend the surfaces.



NOTE: *If during sanding the linen tapes on the fuselage top rear are removed, it's best to sand all of them away and replace.*

To represent the tapes over the fuselage frames, cut thin strips of 0.2 mm thick plastic card.

Mark the location of the fuselage side tapes on the edges of the top rear.

Using the marks as guides, secure the strips across the fuselage top rear using thin CA adhesive.

Cut away any strip overhang at the seam joint of the fuselage top rear and sides of the fuselage.

If necessary, lightly sand the strips to blend them to reduce their thickness.



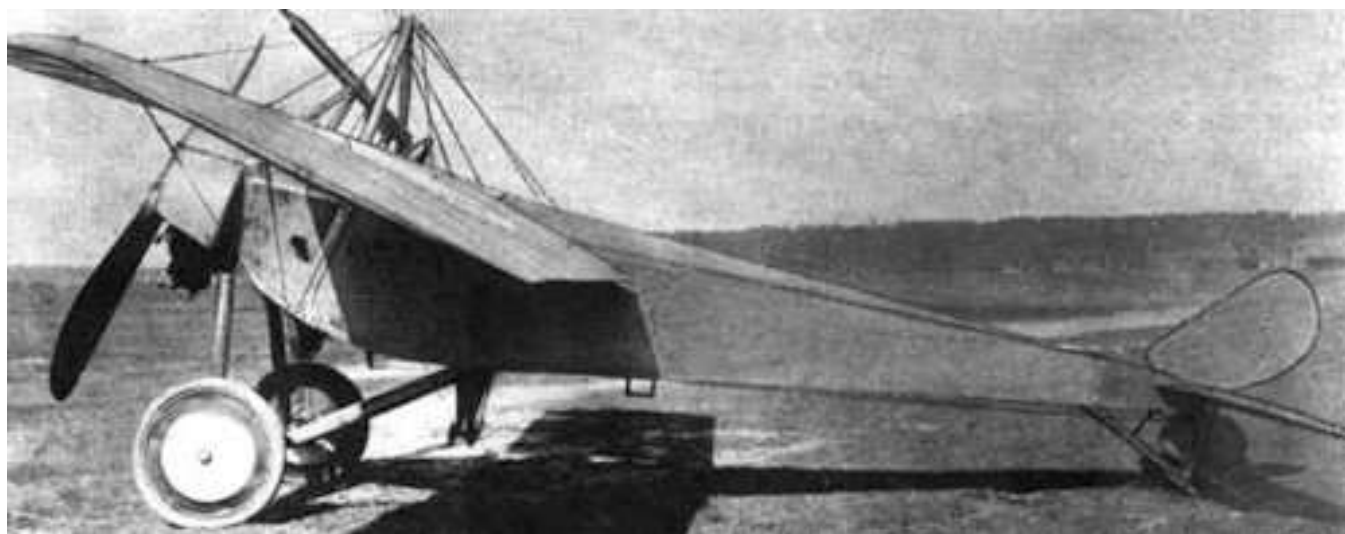
Front side panels:

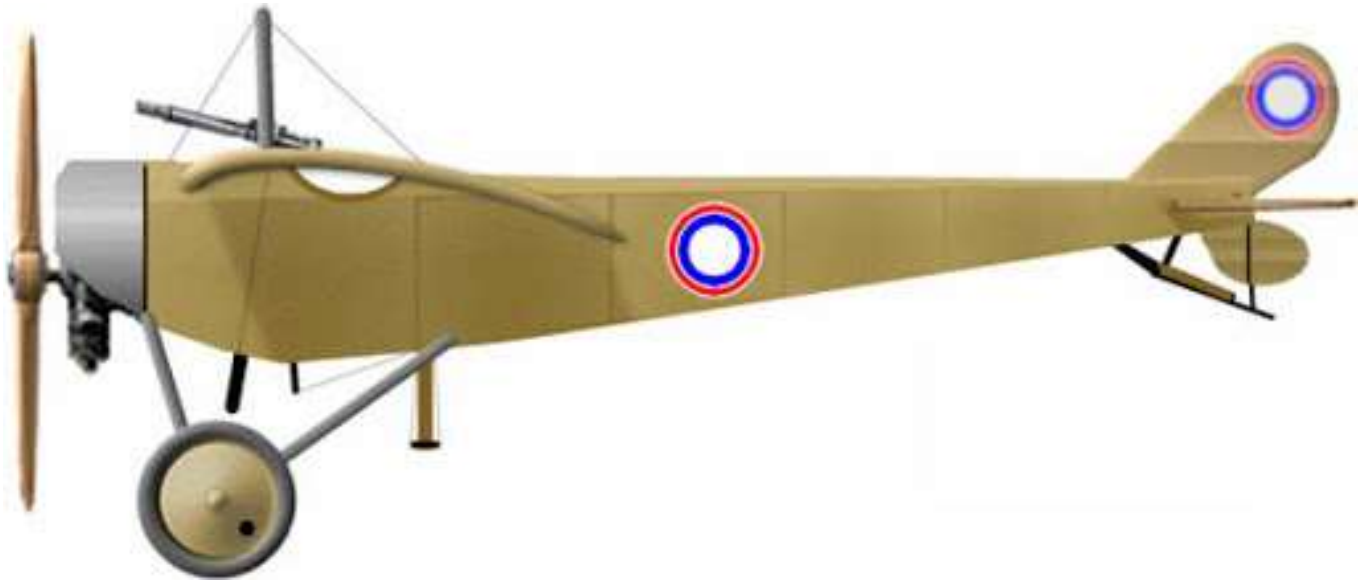
NOTE: *The kit supplies one photo-etch access panel (PPA) for fitting to the forward, left side of the fuselage. This panel was used to gain access to the fuselage internal components. The few available photographs of this aircraft and subsequent colour profiles seem to show that some aircraft had this access panel fitted and some did not.*

Those that did had the panels fitted into wood or metal fuselage panels (certainly not into just the fuselage linen covering). Also, some profiles show the wood access panel to be fitted into either a plywood or metal covered forward fuselage. However, all reference material shows only the left side of the aircraft, not the right side.

My assumption - *I believe it's probable that early versions of the aircraft had no forward fuselage side or access panel, but instead had just the fuselage linen covering. On later versions it seems likely that the wood access panel was fitted and into fuselage forward side panels of metal, as used over the forward top of the fuselage and engine cowl. It also seems probable that these panels were fitted to both sides of the aircraft, so full access to fuselage internal components was possible.*

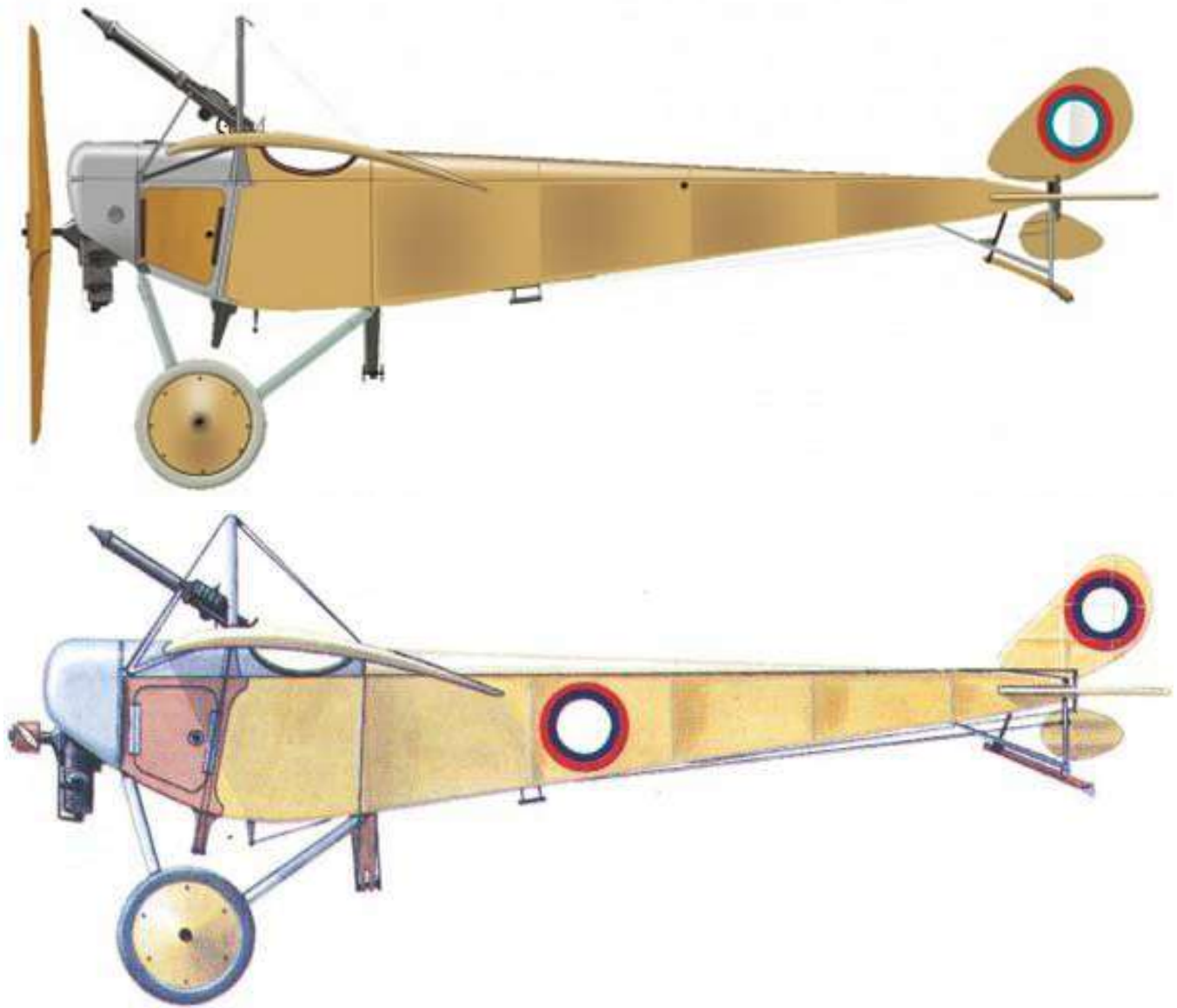
Without access panel





With access panel





Fuselage panel:

Cut a paper template to shape such that it fits the forward side panels of the fuselage on both sides (refer to above illustration).

Trace the outline of the template onto a piece of 0.2 mm plastic card.

Cut out the panels from the plastic card.

Using thin CA adhesive, position and secure each panel onto the fuselage.

Sand the upper, front and bottom edges to blend them with the fuselage.

Access panels:

Remove the kit supplied photo-etch panel (PPA) from the sheet and file off any tags from the edges.

Trace the outline of the panel, including the hole for the carburettor air intake, onto a piece of 0.2 mm plastic card.

Cut out the panel from the plastic card.

Test position the panel onto the previously fitted fuselage left side panel.

Drill the carburettor hole through the panel using a 2.0mm diameter drill.

Test position the panel onto the previously fitted fuselage right side panel.

If necessary, trim the edges to align the panel edges to those of the fuselage panel.

Sand the corners of the panel to round them off.

Repeat the procedure to create the access panel for the right side of the fuselage.

Cement both access panels in position on their fuselage forward panels.

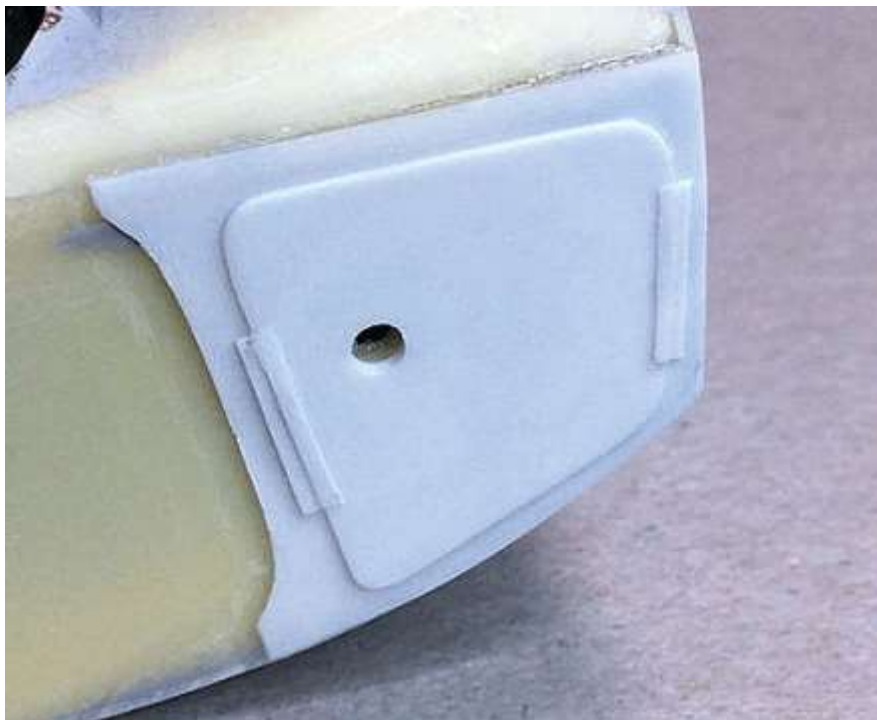
Cut eight 0.5 mm wide strips from 0.2 mm plastic card.

Refer to the previous illustration and trim the length of the strips to the length required for the panel front hinge and rear lock plates.

Secure the strips in position on the fuselage and access panels.

Lightly sand the strips to reduce their thickness.

Using the pre-drilled hole in the access panels as guides, drill a 2.0 mm diameter hole through the fuselage.



Tail plane slots:

NOTE: *The tail plane control horn on the bottom of the control column protruded through a slot in the underside of the fuselage. The control cables attached to the horn re-entered the fuselage through a slot further back in the fuselage underside.*

Along the centre line of the underside of the fuselage, mark a 1.0 mm wide and 4 mm long slot, which should be centrally below the bottom of the control column.

Along the centre line of the underside of the fuselage, mark a 1.0 mm wide and 5 mm long slot, the front of which should be below the rear of the pilots seat.

Drill holes of 1.0 mm diameter along the marked slots.

Using a sharp and straight blade, scrape or cut the edges of the slots flat.



Underside wing warp controls:

NOTE: *The wing warp control cables were routed through slots in the underside of the fuselage. The control cables were attached to a pulley control mounted on a V strut. At this stage of the build it's best to create the strut and controls before cutting the underside slots. The photo-etch parts of the kit for the wing warp control that will be used are the two control horns P and C, but the resin V support strut 17 will be replaced.*

Drill a hole of 0.6 mm diameter through the underside of the fuselage, 2.0 mm from the edges of the fuselage sides and aligned with the centre of the tail plane control cables rear slot.

Cut a long length of 0.5 mm diameter Brass rod, such as 'Albion Alloy's' MBT05 or similar.

Bend the rod around a suitable round former to recreate the basic shape of resin kit strut 17.

Cut two lengths of 1.6 mm diameter Brass tube, such as 'Albion Alloy's' (MBT16) or similar. The length of the tubes should allow for filing the required chamfers on each end, but still match the length of the struts legs of resin kit part 17.

NOTE: *The struts are created using the 'Strutter' from Model Skills (Albion Alloy's). The 'Strutter' is a pair of hardened steel jaws, one of which has two steel pins, the other has location holes for the pins. These are used in a normal medium sized bench vice. A length of tube, with an appropriate solid rod inserted is positioned across the two pins of the 'Strutter' and when the vice jaws are tightened, the 'Strutter' jaws crush the brass tube around the inserted rod. The strut tube and rod can then be soft soldered together. The protruding rod at each end of the strut is used to locate the struts into pre-drilled locating holes in the model.*



Slide the tubes onto a length of 0.5 mm diameter rod, such as 'MBT05'.
Using the 'Strutter' tool create the two struts around their supporting rod.
Remove the tubes from the rod.
At one end of each tube, file a chamfer of 45 degrees.

Slide the tubes onto the created V rod such that the chamfered ends are in full contact.
Using the kit resin part 17 as a strut length guide, remove each tube and file a chamfer of 45 degrees onto the top of each tube to align with the underside of the fuselage.
Refit the tubes to the V rod in their correct orientation.

NOTE: For soft soldering, I use 'Chipquik' T3 solder paste. This is tiny balls of solder suspended in a flux paste. When applied to the brass joint, only low heat is necessary to cause the flux and solder to flow. Afterwards there is minimal cleaning required.

Soft solder the tubes onto the V rod.
Bend the exposed ends of the rod at the tube tops, such that V strut can be located in the pre-drilled holes in the underside of the fuselage.
Cut the ends of the exposed rods to leave at 4 mm protruding from the end of each tube.
Test fit the V strut into the fuselage, making sure the struts are in full contact with the fuselage underside and the strut is central under the fuselage.
File or sand away residual solder and flux to clean the surface of the V strut ready for painting.



Remove controls horns C and P from the kit supplied photo-etch sheet.
File or sand away and residual tags from the edges of the two horns.
NOTE: Control horn C has a central mounting hole and a rigging hole at each end. However, control horn P does not.
Using the centre indentation on control horn P, drill a hole of 0.5 mm diameter through the control horn.
Drill a rigging hole of 0.2 mm diameter through the outer ends of the levers of control horn P.



Soft solder a length of 0.5 mm Brass rod into the bottom of the V strut.

Locate the photo-etch control horn P horizontally onto the added rod at the rear of the V strut.

Using thin CA adhesive, secure the control horn onto the rod at the rear of the V strut.

File down the protruding rod close to the control horn.

NOTE: *The control pulley was a photo-etch propeller boss plate from my 'spares' box, not the kit supplied part, which is solid photo-etch with no lightening holes.*

Secure the boss plate onto a piece of 0.5 mm thick plastic card, using thin CA adhesive.

Sand the outer edge of the plastic card to conform it to the boss plate.

Using a 0.9 mm drill and the existing holes in the boss plate, drill through the plastic card.

Drill a hole of 0.5 mm diameter through the centre of the plastic card.

Using thin CA adhesive, secure the pulley onto the rod at the front of the V strut.

Cut a 1.5 mm length of 0.7 mm diameter Brass tube, such as 'Albion Alloy's' MBT07 or similar.

Secure the tube onto the protruding rod at the front of the pulley, using thin CA adhesive.

Locate the photo-etch control horn C horizontally onto the rod and against the added tube at the front of the V strut.

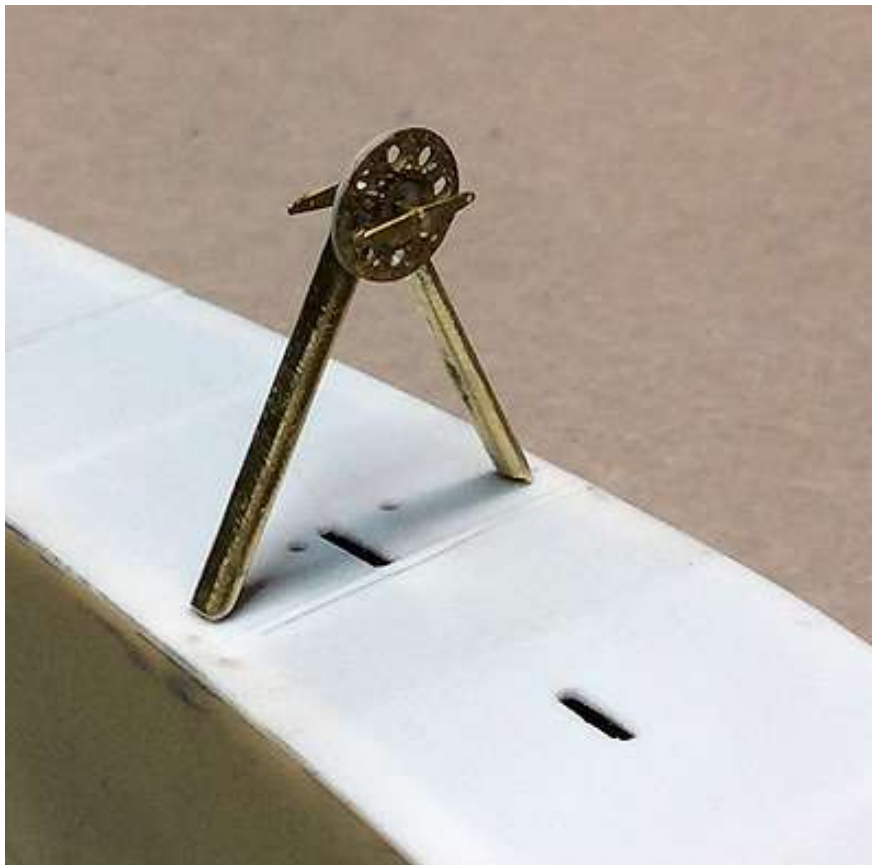
Using thin CA adhesive, secure the control horn onto the rod.

File down the protruding rod close to the control horn.

Wing warp cable holes:

Mark the underside of the fuselage, aligned vertically under the pre-drilled holes in the ends of the rear control horn

Using the marks as a guide, drill holes of 1.0 mm diameter through the underside of the fuselage.



Forward underside V strut:

NOTE: *The forward V strut on the underside of the fuselage is for attaching the flying and landing wires of the two wings.*

Drill a hole of 0.6 mm diameter through the underside of the fuselage, 1.0 mm from the edges of the fuselage sides and aligned with the rear edge of the added fuselage forward side panels.

Follow the same procedure (used to create the wing warp controls V strut) and create the forward V strut for the underside of the fuselage.

Test fit the V strut into its pre-drilled holes in the underside of the fuselage. The V strut should be centrally aligned to the wing warping controls V strut and be angled forwards at the tip of the V strut (90 degrees to the curve of the underside of the fuselage).

Soft solder a length of 0.5 mm Brass rod into the bottom of the V strut.

Cut two 1.0 mm length of 0.7 mm diameter Brass tube, such as 'Albion Alloy's' MBT07 or similar.

Using thin CA adhesive, secure the tubes onto the protruding rod at the front and rear of the V strut, leaving a gap of 0.5 mm.

File down the protruding ends of the rods flush with the added tubes.

Sand away any residual solder.



Upper V strut:



NOTE: *The V strut on the top of the fuselage, forward from the cockpit, provided attachment for the wing flying and landing wires as well as the pulley system for the wing warping wires. The kit supplied parts for this assembly are flat photo-etch and are weak and not realistic. Therefore these were made from tube and rod.*

Cross bar:

Cut a 19 mm length of 1.4 mm diameter Brass tube, such as 'Albion Alloy's' MBT14 or similar.

Cut a 40 mm length of 0.8 mm diameter Brass rod, such as 'Albion Alloy's' or similar.

Soft solder the tube onto the rod leaving equal rod protruding from each end of the tube.

V struts:

Cut two 25 mm lengths of 1.4 mm diameter Brass tube, such as 'Albion Alloy's' MBT14 or similar.

Use the 'Strutter' tool with 0.4 mm diameter support rod to create two profiled tubes.

Using flat nose pliers, flatten 4 mm at one end of each tube .

Drill a hole of 0.9 mm diameter centrally through the flattened tube and just below the non-flattened tube.

Slide the two struts onto the extending rod at each end of the previously made cross bar.

Locate the cross bar into the front pre-moulded groove forward from the cockpit.

Bend the flattened ends of the tubes such that when in full contact with the fuselage sides, the two struts form an inverted V with sides of 18 mm length.

Mark where the top of the tubes need to be cut.

Cut the tube to length and then chamfer the ends of the tubes such that when they are in contact with each other, they form the V strut.

Slide the tubes onto a 0.4 mm diameter Brass rod, such as that from 'Albion Alloys'.

Bend the wire to form the V Strut.

Soft solder the tubes to the wire making sure the profiles of the tubes are aligned.

Assemble the V strut onto the cross bar, making sure they are contacting the ends of the outer tube of the cross bar.

Soft solder the V strut to the cross bar.

Cut a 10 mm length of 0.4 mm diameter Brass rod into the inside of the V strut, with equal rod protruding from each side.

Forward struts:

Cut two lengths of 1.1 mm diameter Brass tube, such as 'Albion Alloy's' MBT11 or similar.

Use the 'Strutter' tool with 0.4 mm diameter support rod to create two profiled tubes.

Using flat nose pliers, flatten 2 mm at one end of each tube .

Drill a hole of 0.9 mm diameter centrally through the flattened tube.

NOTE: *'UHU' White tack or similar can be used to temporarily hold the V strut assembly onto the fuselage.*

Locate the V strut assembly onto the fuselage.

Slide the two forward struts onto the extending rod at each end of the cross bar.

Make sure the V strut is vertical to the fuselage.

Move each forward strut such that the front ends are at the front of the fuselage and above the top of the fuselage side panels.

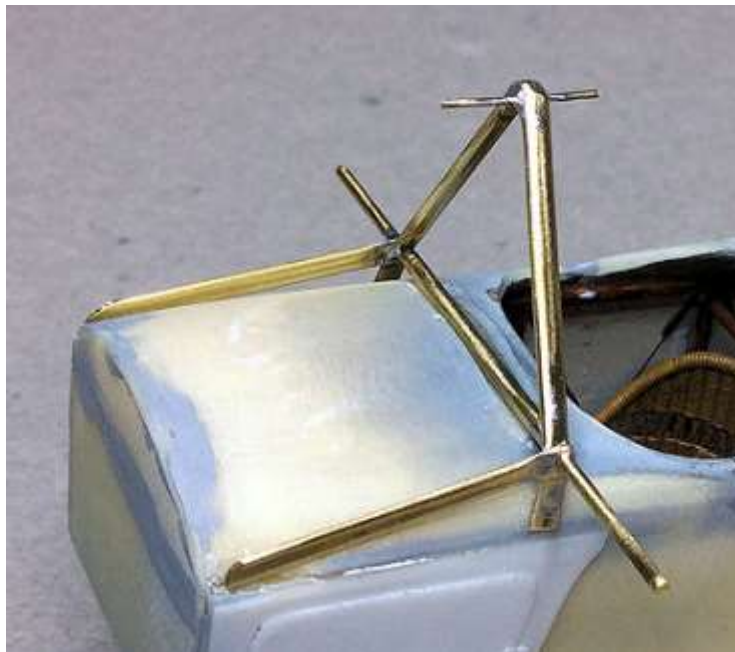
If necessary, chisel a notch out of the contact area to allow the strut ends to seat into the fuselage top.

Cut each tube to the required length.

With the assembly located, apply thin CA adhesive to secure the forward struts to the V strut assembly. If desired, the joint can be reinforced by soft soldering the joint, which is what I did.

File or sand away residual solder and flux to clean the surface of the V strut ready for painting.

NOTE: *The machine gun mounting bars and the rigging pulley and fittings will be added later in this build.*



Wing supports:

NOTE: *The method detailed in the kit instructions for attaching the two wings to the fuselage does not give sufficient strength. Therefore it needs to be modified to provide adequate location and support.*

Wings:

Drill holes of 0.8 mm diameter into the centre of the two wing mounting lugs on both wings. Don't drill too far into the thinner wing section.

Rear support bar:

Cut a length of 1.8 mm diameter Brass tube, such as 'Albion Alloy's' MBT18 or similar, the width of the fuselage at the groove to the rear of the cockpit.

Cut a length of 1.5 mm diameter Brass tube, such as 'Albion Alloy's' MBT15 or similar, to the same length.

Cut a length of 0.8 mm diameter Brass rod, such as 'Albion Alloy's' or similar and 8mm longer.

Slide the rod into the 1.5 mm tube, then it into the 1.8 mm tube.

Make sure the ends of the two tubes are flush and the internal rod protrudes 4 mm at each end.
Soft solder the rod and tubes together at the ends.

File or sand away residual solder and flux to clean the surface of the V strut ready for painting.

Test fit:

Locate the wing forward mounting lugs onto the protruding rods at the V strut.

Locate the wing rear mounting lugs onto the created rear cross bar.

Test fit the wing assembly onto the front and rear grooves on the fuselage.

NOTE: *It was at this stage of the build that I found the distance between the grooves in the fuselage was less than the distance between the wing mounting lugs. This meant that the wing assembly would not fit correctly into the fuselage. Therefore the easiest remedy was to create a new front groove and leave the rear groove as moulded.*

Locate the rear support bar into the groove to the rear of the cockpit.

Position the forward V strut assembly onto the fuselage.

Mark across the fuselage the position of the cross bar of the V strut assembly.

Remove the wing assembly.

Cut a new groove across the fuselage for locating the cross bar of the V strut assembly.

Test fit the wing assembly to make sure the cross bar and rear support bar are fully located in the fuselage and that the wings are aligned to each other and the fuselage.

Remove the wing assembly.

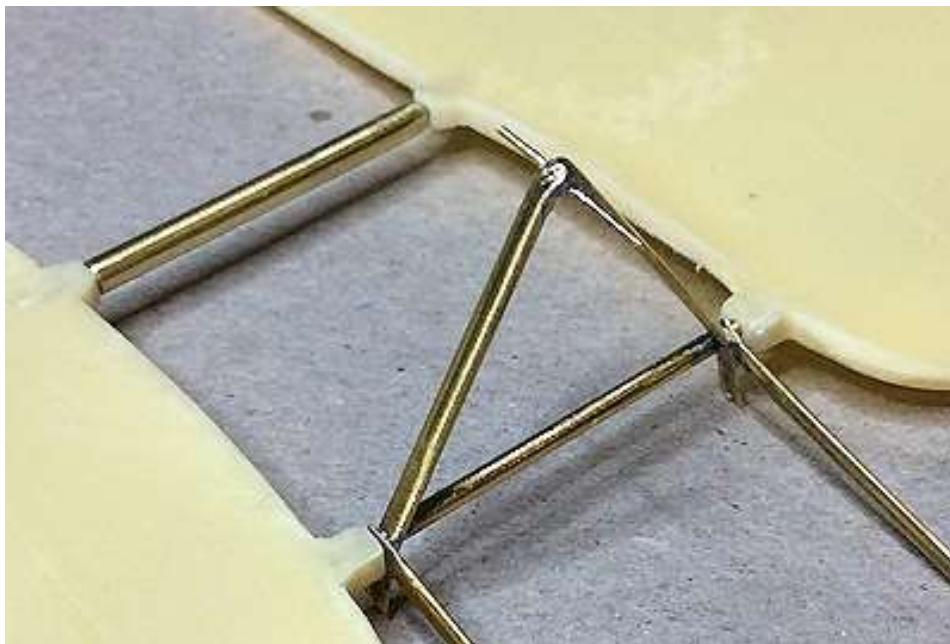
Cut a strip of plastic card of sufficient thickness to fill the original front groove.

Secure the strip into the original groove using thin CA adhesive.

Sand the fitted strip to blend it with the profile of the surrounding fuselage.

If necessary, brush 'Mr. Surfacer' 1000 across any visible gaps and once fully cured, sand to blend.

NOTE: *As the forward V strut assembly is moved slightly forwards, it may be necessary to trim the front of the forward struts such that they align with the front edge of the fuselage.*





Cockpit padding:

NOTE: *The cockpit opening would have had padding fitted around the opening, but this padding is not represented in the kit.*

Cut a length of ANYZ' silver braided line (AN015) longer than needed to fit around the entire cockpit opening.

Apply thin CA adhesive to the front rim of the cockpit opening.

Hold the ends of the line together forming a loop then place the loop onto the applied adhesive.

Hold one line clear and apply thin CA adhesive around that side of the cockpit rim.

Place the line against the applied adhesive, making sure the line fully contacts and follows the contour of the cockpit rim.

Cut the end of the line at the rear of the cockpit rim.

Follow the same procedure to secure the opposite line to the cockpit rim, cutting the end of the line such that it contacts the end of the fitted line.

Apply thin CA adhesive along the entire line to fully secure it to the cockpit rim and to secure the ends together. This will also harden the line and prevent it from flexing out of shape.

Filler cap:

NOTE: *The fuel tank would probably have been installed in the forward fuselage, but the kit does not supply a tank filler cap.*

The filler cap was made from a cockpit flat instrument from my 'spares' box and secure to the forward, top of the fuselage, using thin CA adhesive. A short length of 0.5 mm diameter Brass rod was secured to the top to represent the turn grip of the filler cap.

Cockpit rear wind shield:

Cut a strip of 0.5 mm thick plastic card.

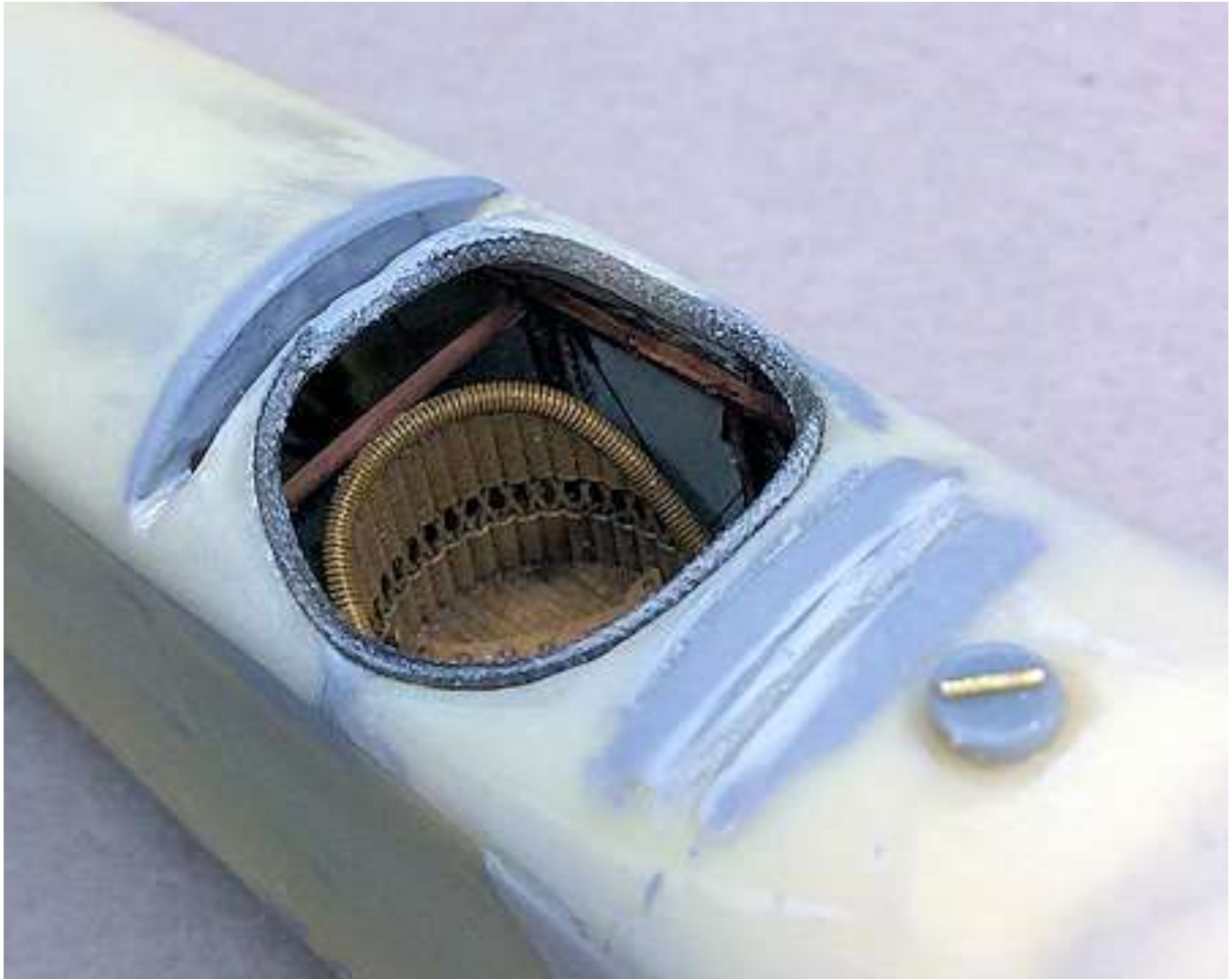
NOTE: *In the following step, it may be necessary to sand the pre-moulded groove in the fuselage to achieve the correct fit of the wing shield.*

Position the strip into the groove for the wing rear support bar and trace the outline of the curved top of the fuselage. Make sure the strip is against the rear edge of the groove and is vertical when viewed from the side. Also the bottom edge is horizontal to the fuselage.

Cut the shape of the wind shield.

Secure the wind shields in position in the groove, using thin CA adhesive.

Sand the outer edge of the wind shield to blend it with the curve of the fuselage.



Engine cowl:

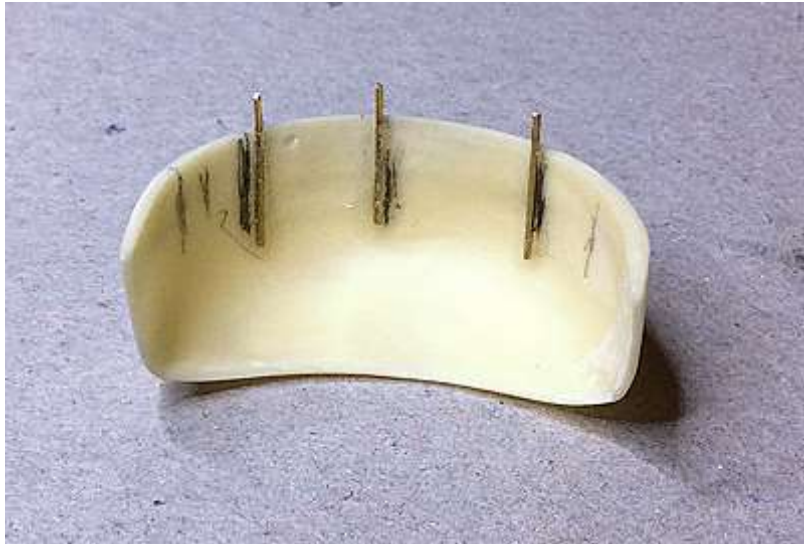
NOTE: *The resin engine cowl has no location pegs or holes and is very thinly moulded. This makes correct alignment when fitting difficult and possible damage to the cowl when handling after fitting. Therefore I reinforced the location of the cowl to the fuselage using Brass rods.*

Cut three lengths of 0.5 mm diameter Brass rod, such as that from 'Albion Alloys' or similar.

Hold the engine cowl in the correct position on the front of the fuselage.

Mark the inside of the cowl and the top, front of the fuselage at the 12 o'clock and the 10 and 2 o'clock positions.

Secure the three cut rods onto the marks on the inside of the cowl, making sure the rods are all parallel with the sides of the cowl.



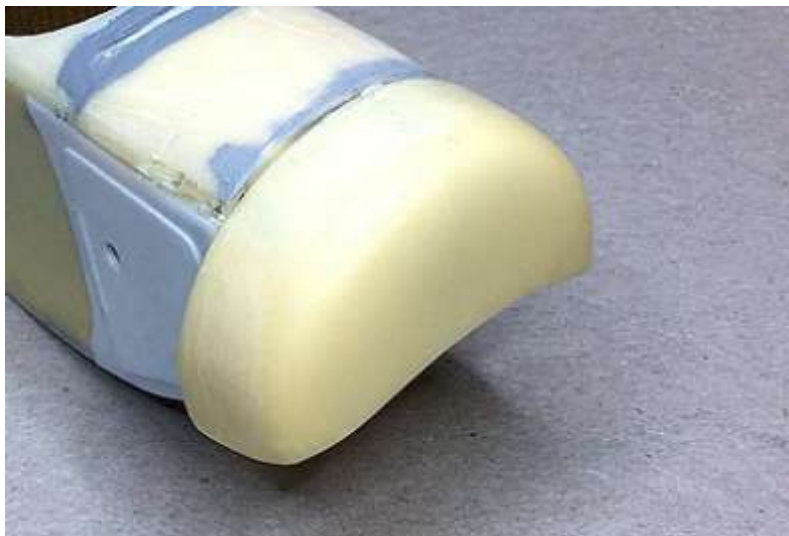
Position the cowl rods against the front of the fuselage and aligned with the fuselage marks. Make sure the outside of the cowl is aligned to the top curve of the fuselage.

Mark the position of the three rods on the fuselage marks.

Drill holes of 0.6 mm diameter into the front of the fuselage at the marked positions.

Test fit the engine cowl onto the fuselage, making sure it fully locates and is correctly aligned.

Secure the engine cowl onto the fuselage by applying thin CA adhesive to the joint from inside the cowl (the assembled engine will fit under the cowl).



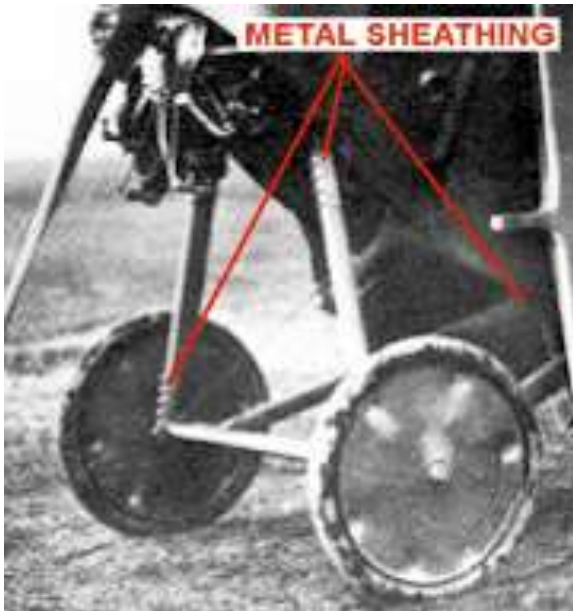
NOTE: During the following step, make sure you don't sand across the fitted engine cowl as the resin thickness of the cowl is thin and sanding may break through the cowl surface.

If necessary and once the adhesive has fully set, sand the fuselage top to blend it with the curve of the engine cowl.

Landing gear:

NOTE: Due to the poor quality and fragility of the kit supplied resin landing gear parts, I chose to replace them with Brass tube and rod. Also I believe the 'V struts are moulded to the scale drawing of the aircraft, but don't take into account the outboard angle of the struts at the bottom. Consequently, when fitted at the correct angle, the V struts are do not represent the correct ground to fuselage height.

It's unclear exactly how the axle of the landing gear was attached to the bottom of the V struts and what type of suspension was fitted for the axle. The landing gear for this aircraft is possibly the same, if not similar, to its predecessor, the two seat MB. That aircraft appears to have a curved axle retaining fitted between the legs of the V struts and over the ends of the axle. That being the case, the suspension used was most likely bungee type cord.



V struts:

Cut a 34 mm length of 1.6 mm diameter Brass tube, such as 'Albion Alloy's' MBT16 or similar.

Cut a 42 mm length of 1.6 mm diameter Brass tube, such as 'Albion Alloy's' MBT16 or similar.

Use the 'Strutter' tool with 0.5 mm diameter Brass support rod to create two profiled tubes.

Cut two lengths of 0.5 mm diameter Brass rod and bend both around a 4 mm diameter former to create two half hoop shapes.

Insert the ends of the two half hoops into one end of both tubes.

Position the loose strut assembly on the underside of the fuselage and at the outer edge of one side.

Bend the two legs either apart or together to achieve correct positioning of the struts. The shorter strut should be at the front outer corner of the fuselage underside and the longer, rear strut at the second linen tape.

Keeping the same shape of the strut assembly, soft solder the bottom of the two tubes to the two inserted 0.5 mm half hoops.

Check the position of the strut assembly on the fuselage. If necessary gently bend the struts apart or together to achieve the correct positioning

Repeat this procedure to create the opposite landing gear V strut.

File or sand the top ends of the tubes to form a slight chamfer and angle, such that when the struts are positioned on the underside of the fuselage and with the bottoms angled out by approximately 10 degree, the top of the struts fully contact the underside of the fuselage.

Insert a length of 0.5 mm diameter Brass rod into the ends of the tubes.

Soft solder the rods in the tubes.

Drill holes of 0.6 mm diameter through the underside of the fuselage and at the locations for the top of the landing gear V struts.

Trim the length of the protruding rods then bend each rod such that the V struts can be fully located into the pre-drilled holes and are at the correct outward angle and aligned with each other.

File or sand away residual solder and flux to clean the surface of the V strut ready for painting.

GasPatch wheels:

NOTE: *The kit supplied resin wheels are replaced with the 'GasPatch' Palmer 700x75 spoked wheels.*

Using the hole in the centre of each wheel as a guide, drill a hole of 1.4 mm diameter centrally through the hub of the wheel.

Carefully cut out each tyre from its moulding block.

Sand the outer edge of each tyre to remove residual casting resin.

Cut out the resin disc inside each tyre.

Use a half round needle file to carefully remove residual casting resin from the inner edge of the tyres. Make sure you don't remove too much resin or the wheels will be a loose fit.

NOTE: *When fitting the wheels into the tyres, make sure you only apply pressure only to the outer rim of the wheels, not the spokes, otherwise they will break.*

Test fit the wheels into their tyres by carefully pressing the wheel (by the rim only) into the tyres.

Axle:

Cut two lengths of 1.4 mm diameter Brass tube, such as 'Albion Alloy's' MBT14 or similar. The length of the tubes should be the same as the drilled out hub of the wheels.

Locate the V struts fully into their location holes on the underside of the fuselage.

Cut a length of 1.2 mm diameter Brass tube, such as 'Albion Alloy's' MTB14 or similar. The length should be 20 mm wider than the span at the bottom of the V struts.

Stand the fuselage on the V struts.

Slide the two cut 1.4 mm diameter tubes on to ends of the 1.2 mm tube.

Lay the axle tube onto the bottom V of the V struts.

Temporarily locate the wheels onto the end tubes of the axle.

Check the length of the 1.2 mm diameter axle tube. It should be flush with the outer face of the wheels and with a gap of 1.0 mm between the inner face of the wheels and the outer edge of the V struts.

If necessary trim the length of the 1.2 mm diameter tube to achieve the correct length.

Remove the wheel from the axle and the axle from the V struts.

Soft solder the 1.4 mm diameter tubes onto the ends of the 1.2 mm diameter tube.

Place the model onto a ceramic tile or similar and correctly position the axle into the V struts.

Soft solder the axle to the V struts.

Remove the landing gear assembly from the fuselage.

File or sand away residual solder and flux to clean the surface of the V strut ready for painting.

Retaining hoops:

NOTE: *To retain the axle should the 'bungee' suspension cord fail, metal hoops were attached over the axle ends and between the legs of the V struts.*

Cut two lengths of 0.4 mm diameter lead wire, such as that from 'PlusModel' or similar.

Bend the wires over a round former to create two half hoops.

Using thin CA adhesive, secure one leg of each hoop to the outer face of the V struts and close and to the rear of the outer axle.

Position the hoop centrally over the axle.

Using thin CA adhesive, secure the remaining leg of each hoop to the outer face of the V struts and close and to the front of the outer axle.

Cut away the excess wire at the edges of the V struts.

Test fit the landing gear assembly to the fuselage and check that:

The axle is parallel to the fuselage.

The spread of the V struts is equal each side of the centre line of the fuselage.

The landing gear struts are aligned with each other when viewed from the side.

The landing gear is at 90 degree to the fuselage when viewed from above or below.



Rigging points:

Drill a hole of 0.3 mm diameter through the forward struts, close to the trailing edge and 5 mm above the axle.

Control cable exit ports:

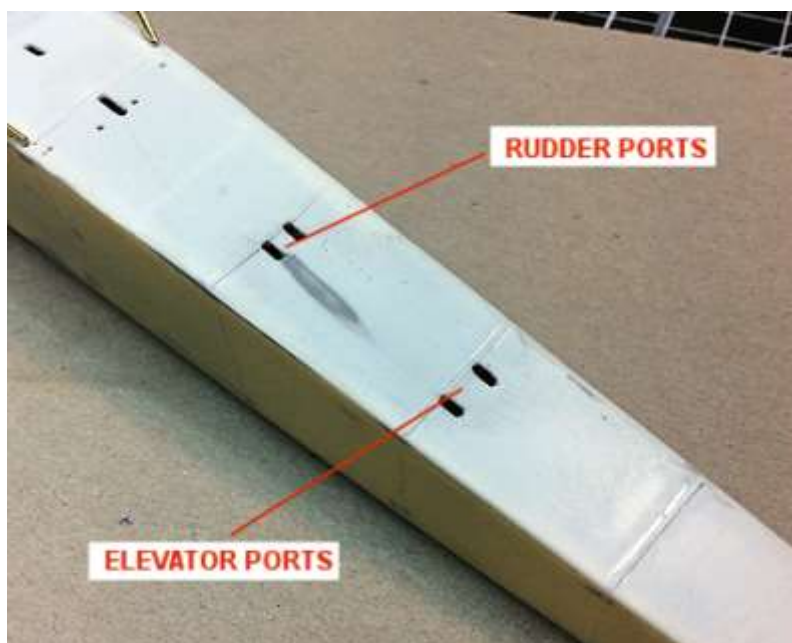
NOTE: *The rudder and lower tail plane control cables from the cockpit exited the underside of the fuselage and were then routed rearwards to their control surfaces.*

Rudder:

Create two side by side slots in the underside of the fuselage, by drilling holes of 1.2 mm diameter then cutting out the sides with a sharp, straight edge blade. The slots should start at the rear of the second linen tape and be 3 mm long with their centres 3 mm apart.

Tail plane:

Follow the same procedure to create the two tail plane slot. These slots should start at the rear of the third linen tape and be 3 mm long with their centres 5 mm apart.



Cowl retaining straps:

NOTE: Normally engine cowls of this type would be secured to the fuselage by metal retaining straps or latches. It seems that for this aircraft, because of the side overhang of the rounded cowl over the flat sides of the fuselage, the cowl could only be retained on the fuselage by straps fitted over the cowl to the top of the fuselage.



Cut two lengths of 0.5 mm diameter plastic rod.

Using thin CA adhesive, secure each rod onto the top of the engine cowl and aligned just above the notches cut in the front corners of the fuselage for the wing forward support struts.

Bend the front ends of the rods over the curve of the engine cowl and angled towards the centre of the cowl.

Secure the rods in position using thin CA adhesive.

Trim the ends of the rods then sand the rods to reduce their thickness and to flatten them.



Tail unit:

NOTE: *The kit supplied resin rudders are, I believe, mould too thin and the lower rudder was mis-moulded. Therefore I decided to replace these parts and the photo-etch tail skid.*

Construction of these components is for the more experienced modeller. If you doubt your abilities, use the kit supplied parts.

Rudders:

Using the kit supplied drawings, trace the outline of the upper and lower rudders onto 0.8 mm thick plastic card.

Cut out the top and lower rudders, making the lower rudder one-piece (not two parts as supplied in the kit).

Score a line down each side of the lower rudder to represent the rudder post (refer to the kit drawing).

Drill three holes across the scored line, 4 mm from the top of the lower rudder.

Cut through the holes to create a thin slot.

Remove a double ended control horn from the 'Jadar' WW1 1:48th scale control horns (S48087) set.

Insert the control horn into the cut slot and secure the control centrally in the slot, using thin CA adhesive.

Drill a hole of 0.3 mm diameter vertically into the top and bottom edges of the lower rudder, aligned with the ends of the scored line.

Cut two short lengths of 0.3 mm diameter Brass rod, such as that from 'Albion Alloy's' or similar.

Secure the rods into the pre-drilled holes in the top and bottom edges of the lower rudder.

Drill a hole of 0.5 mm diameter vertically through the rear of the fuselage, from the top and through the underside of the fuselage. The hole should be central across the fuselage and 6 mm from the rear edge of the fuselage.

Cut a length of 0.5 mm diameter Brass tube, such as 'Albion Alloy's' MBT05 or similar.

Secure the tube into the pre-drilled hole through the fuselage, using thin CA adhesive.

File or sand any protruding tube flush with the top and underside of the fuselage.

Drill a hole of 0.3 mm diameter vertically into the curved bottom edge of the upper rudder and 10 mm from the front edge of the rudder.

Cut a short length of 0.3 mm diameter Brass rod, such as that from 'Albion Alloy's' or similar.

Secure the rod into the pre-drilled hole in the upper rudder.

Test fit the upper and lower rudders into the fuselage tube. The bottom edge of the upper rudder should be just clear of the top of the fuselage. The top of the lower rudder should be 1.0 mm clear of the fuselage underside.

Tail skid support frame:

Drill two holes of 0.7 mm diameter into the underside of the fuselage. The holes should be 30 mm from the rear edge of the fuselage and 1.5 mm in from the outer edges. They should also be at an angle towards the bottom of the lower rudder.

Cut a length of 0.6 mm diameter Brass tube, such as 'Albion Alloy's' MBT06 or similar.

Carefully bend the tube at the centre to form a V shape.

Test fit the V tube over the rod at the bottom of the lower rudder and into the two pre-drilled holes in the fuselage underside.

Trim the ends of the tube until it fits into the pre-drilled hole without pulling on the lower rudder.

Mark the two legs of the tube where they pass over rear linen tape on the fuselage underside.

Remove the V strut.

Cut a length of 0.6 mm diameter Brass tube, such as 'Albion Alloy's' MBT06 or similar. The length should be such that it fits between the marks made on the V strut.

Place the V strut with the tube positioned correctly onto a ceramic tile or similar.

Soft solder the tube between the legs of the V strut.

File or sand away residual solder and flux to clean the surface ready for painting.

Relocate the V strut over the rod at the lower rudder and into the pre-drilled holes in the fuselage underside.

Drill two holes of 0.7 mm diameter into the underside of the fuselage. The holes should be 1.5 mm in from the outer edges and 2 mm to the rear, but angled toward the ends of the tube across the V strut.

NOTE: *The following tubes can only be permanently fitted later in this build.*

Cut two short lengths of 0.6 mm diameter Brass tube, such as 'Albion Alloy's' MBT06 or similar. The lengths should such that when located into the pre-drilled holes, they contact the V strut at the ends of the cross tube.

Drill two holes of 0.7 mm diameter into the underside of the fuselage. The holes should be 1.5 mm in from the outer edges and aligned with the scored line on the lower rudder. Also they should be angled towards the end of the V strut.

NOTE: *The following tubes can only be permanently fitted later in this build.*

Cut two lengths of 0.6 mm diameter Brass tube, such as 'Albion Alloy's' MBT06 or similar. The lengths should such that when located into the pre-drilled holes, they contact the end of the V strut. You may need to bend the fuselage end of the tubes to achieve the correct angle to the V strut.

Tail skid:

Cut a length of 0.8 mm diameter Brass tube, such as 'Albion Alloy's' MBT08 or similar. The length should be such that it overhangs the cross tube of the V strut by 2 mm and the end of the V strut (at the lower rudder) by 6 mm.

Insert a length of 0.4 mm diameter rod through the tube.

Using the 'Strutter' tool create the tail skid around the supporting rod.

Remove the tube from the rod.

File or sand a curve on one end and on one side of the tail skid tube.

Cut a 2.0 mm length of 1.2 mm diameter Brass tube, such as 'Albion Alloy's' MBT12 or similar.

File or sand away residual solder and flux to clean the surface ready for painting.

Slide the cut tube over the tail skid tube and position it such that, when the tail skid tube is correctly positioned over the V strut, the 1.2 mm tube is aligned with the rod at the rod at the bottom of the lower rudder.

Soft solder the tube to the tail skid tube.

Drill a hole of 0.4 mm diameter part way through the 1.2 mm tube, on the opposite side to the curved end and at an angle such that when located on the rod at the bottom of the lower rudder, the tail skid tube overhang at each end is correct and it is close to or touching the cross tube of the V strut.

Disassemble the parts for assembly later in this build.

Tail plane:

Sand flat the two mating faces of the tail plane halves.

Drill two holes of 0.4 mm diameter into the mating face of one on the tail plane halves. The holes should be 3.0 mm from each end.

Cut two short lengths of 0.4 mm diameter Brass rod, such as that from 'Albion Alloy's' or similar.

Secure the two rods in to the pre-drilled holes using thin CA adhesive.

Lay the two tail plane halves on a flat surface and push the aligned mating faces together to create rod 'indents' in the opposite tail plane mating face.

Using the indents as guides, drill two holes of 0.4 mm diameter into the mating face of the tail plane half.

Test fit the tail plane halves together, making sure the mating faces are in full contact and the tail plane halves are aligned and flat.

Secure the tail plane halves together using thin CA adhesive.

Test fit the tail plane onto the rear of the fuselage and if necessary, sand the edges to achieve a good fit.

Drill two holes of 0.4 mm diameter into the rear edge of the cut out in the tail plane. The holes should be aligned to the tail plane control cable slots in the rear, top of the fuselage.

Cut two short lengths of 0.4 mm diameter Brass rod, such as that from 'Albion Alloy's' or similar.

Secure the two rods in to the pre-drilled holes using thin CA adhesive.

Position the tail plane to the rear of the fuselage and mark the position of the two rods.

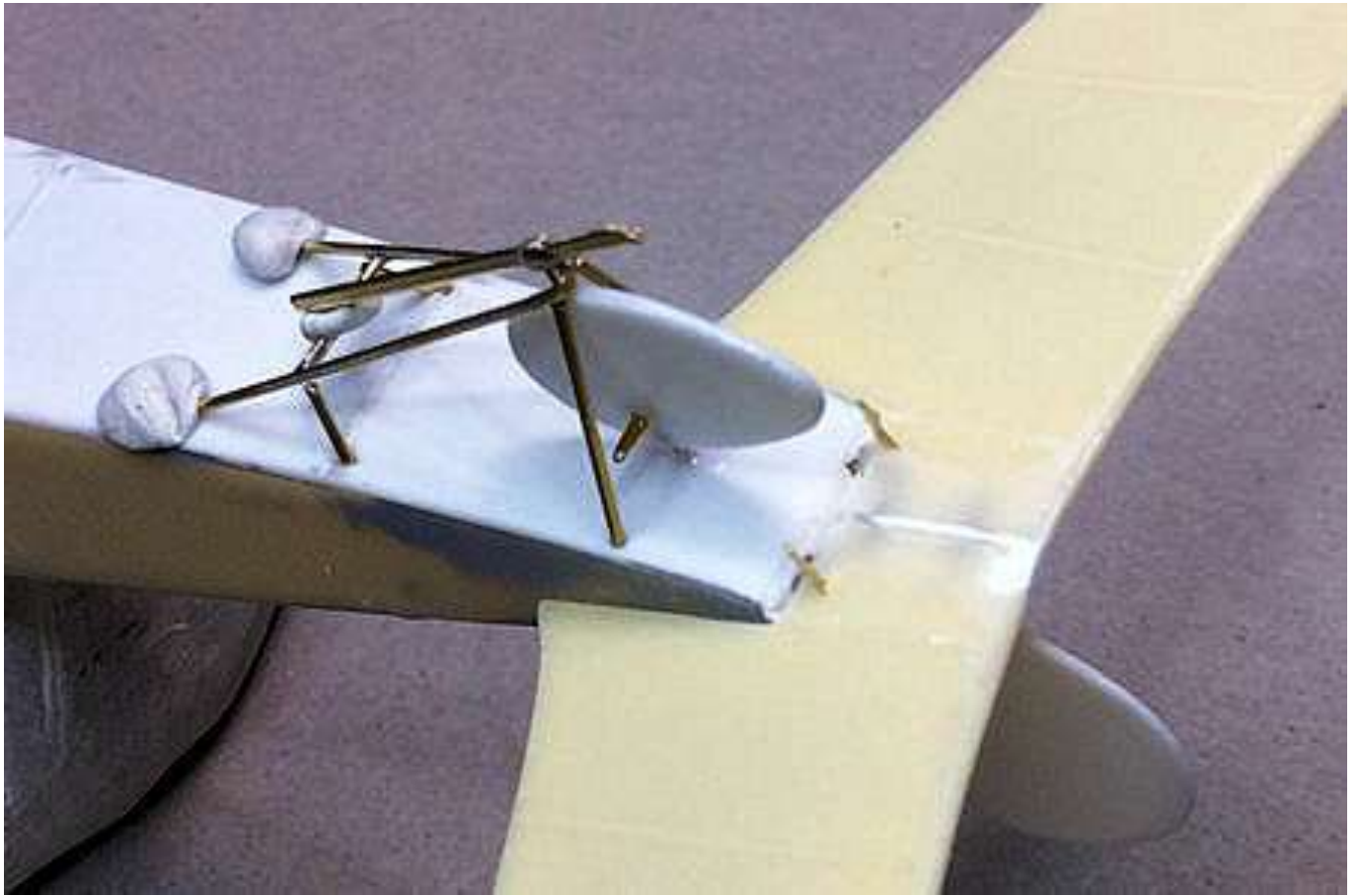
Drill holes of 0.5 mm diameter into the rear edge of the fuselage and across its centre line.

Drill holes of 0.4 mm diameter through the tail plane and 1.0 mm back and just outboard from the two locating rods.

NOTE: *The following control horns can only be permanently fitted later in this build.*

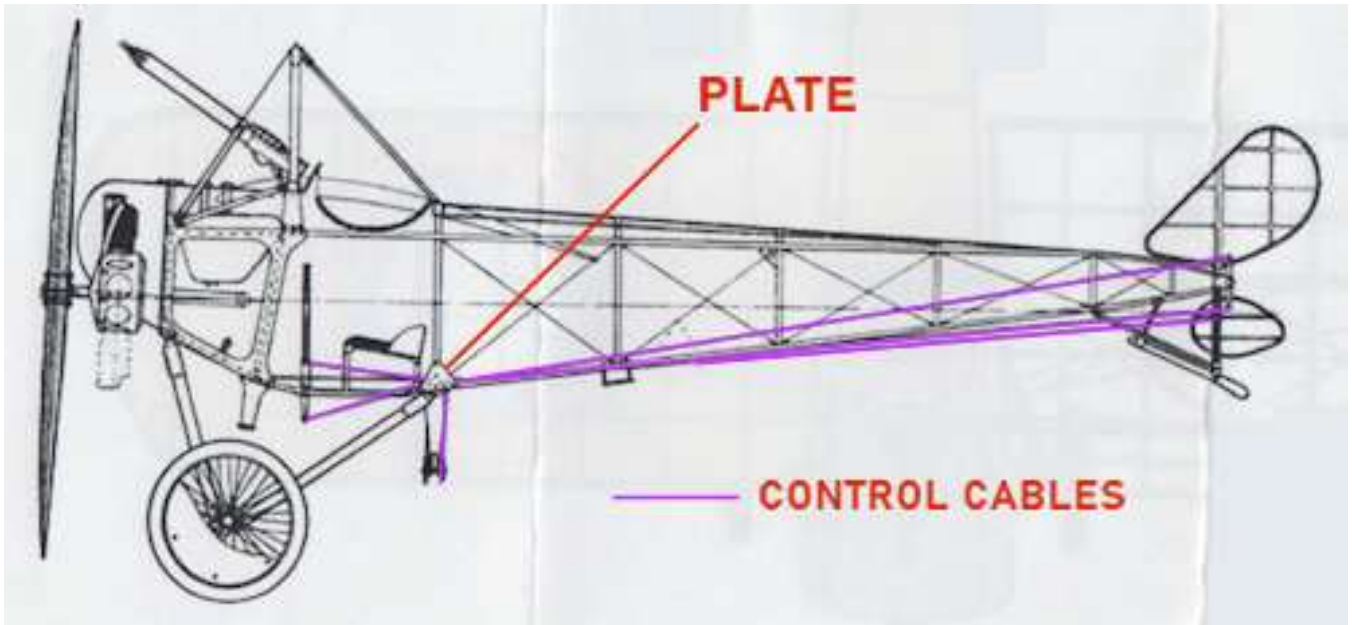
Remove four suitable single control horns from the 'Jadar' WW1 1:48th scale control horns (S48087) set. Leave the tail on the control horns as these will be used to fit the horns later.

**The following photographs show the tail unit components test fitted.
Final fitting of these parts can only be carried out later in this build.**



Landing gear plates:

Note: *The sides of the fuselage had metal plates fitted above the rear landing gear struts.*



The two plates were cut from spare photo-etch sheet and secured to the bottom edge of the fuselage sides using thin CA adhesive.



Cutting discs:

NOTE: *To cut discs from plastic card, I use a 'ThinnerLine' circle cutter. There is also a similar tool available from 'DSPIAE'.*

'Thinnerline' circle cutter



Rigging pulley:

NOTE: I chose not to use the kit supplied photo-etch pulley discs for the wing warping wires and instead cut them from plastic card.

Using 0.5 mm thick plastic card and the 'Thinnerline' circle cutter, cut three discs of 3.5 mm diameter and four discs of 2.5 mm diameter.

Cement the together with the smaller discs between the larger and at each end of the disc pack.

Drill a hole of .05 mm diameter through the centre of the disc pack.

Test fit the 'pulley' onto the rear rod at the top of the upper V strut assembly.

Trim the length of the rod flush with the pulley.

Cut a 1.5 mm length of 0.7 mm diameter Brass tube, such as 'Albion Alloy's' MBT07 or similar.

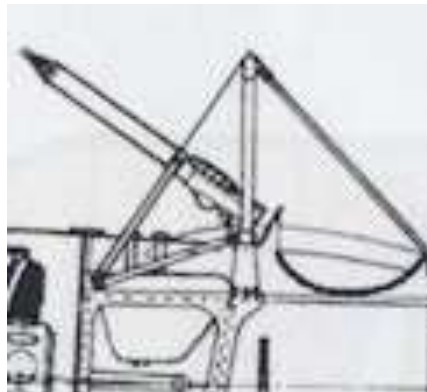
Using thin CA adhesive, secure the tube onto the front rod at the top of the upper V strut and 1.0 mm from the strut.

Trim the length of the rod flush with the added tube.



Gun mounting frame:

NOTE: The Lewis type machine gun was mounted on an inverted V frame at the front of the cockpit, enabling the weapon to be fired over the arc of the propeller. The weapon appears to be a Lewis Mk.1 standard type with a stripped front. The weapon was fixed in position on a bipod inverted V frame, being attached to the frame forward from the breach block. The normal shoulder butt was removed so as not to cross through the wind screen. The lower rear of the breach block would have been fixed to the top of the fuselage and the weapon would have been fired by the use of an operating cable, connected to the trigger mechanism and routed into the cockpit.



NOTE: *The machine gun needs to be held in its final position when checking the length of the mounting tubes.*

Cut two lengths of 0.7 mm diameter Brass tube, such as 'Albion Alloy's' MBT07 or similar. The length of the tubes should be such that when they are located into the forward corners of the fuselage, their tops are midway up the cooling jacket of the weapon.

Insert a length of 0.3 mm diameter rod through the tube.

Using the 'Strutter' tool create the mounting tubes around the supporting rod.

Remove the tube from the rod.

Cut a long length of 0.3 mm diameter Brass rod, such as that from 'Albion Alloy's' or similar.

Bend the rod over the cooling jacket of the machine gun to form an inverted V.

Secure the rod to the top of the cooling jacket using thin CA adhesive.

Slide the tubes onto the 'legs' of the rods and secure in place using thin CA adhesive.

Cut the ends of the rods to leave 5 mm of rod exposed.

Refer to the photograph below and drill a hole of 0.4 mm diameter through the forward corners of the top of the fuselage.

Bend the exposed rods of the mounting tubes such that when the machine gun is positioned into the pre-drilled holes in the fuselage, the machine gun is positioned as shown in the following photograph.

Cut a length of 0.3 mm diameter Brass rod, such as that from 'Albion Alloy's' or similar.

Anneal (soften) the rod over a heat source, such as the flame from a cigarette lighter.

Bend the rod around the cooling jacket of the machine gun to form a full circle.

Cut the rod to make the circle.

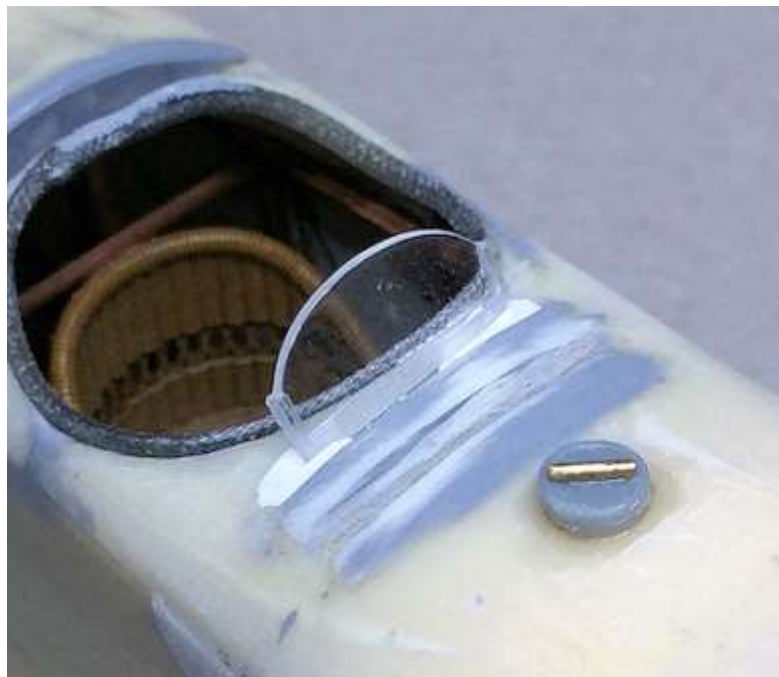
Using thin CA adhesive, secure the rod circle to the cooling jacket, forward from the rod of the mounting frame.



Windscreen:

NOTE: *The resin windscreen supplied in the kit is not the shape of the windscreen seen in photographs. Also it is poorly moulded.*

I modified a suitable spare windscreen from a previous model build by sanding away the base mounting to leave the curved screen intact. The pre-mould groove in the fuselage for the windscreen was widened to allow the replacement screen to fit correctly. Modelling paste was then added into the ends of the groove and the windscreen pressed into the paste to form its own mounting slot. Once the paste started to set I removed the screen and allowed the paste to fully dry and set. It was then sanded to conform to the surrounding fuselage surface.



PART 11

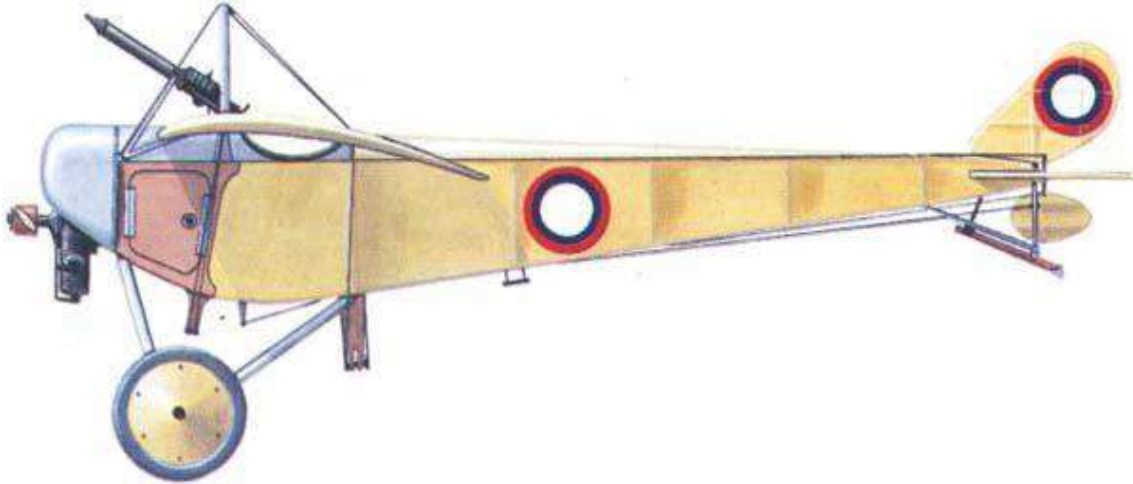
CONSTRUCTION

PART 11 - CONSTRUCTION

NOTE: *As this model is resin, CA adhesive must be used to secure parts together.*

Decal preparation:

NOTE: *A light coloured primer, such as white, is required for applying the 'Aviatic' Clear Doped Linen (CDL) bleached (ATT32044) decal. These decals are translucent and need a light base coat to better show the effects. Refer to the following colour profile for where the CDL, metal and wood surfaces are on the fuselage. The panel around the wood access panels **should be metal, not wood** as shown on the colour profile.*



Mask off the open cockpit, the support bar slot at the rear of the cockpit, the two holes in the forward sides of the fuselage for the carburettor air intakes (with pointed ends of wood tooth picks) and the control cable slots in the underside of the fuselage (with PVA adhesive applied with a tooth pick).

Prime the fuselage, wings, tail plane and the upper and lower rudders with a white primer, such as 'AK Interactive' White (AK-759) or similar.

Make sure all surfaces are smooth and free from surfaces imperfections. If necessary, sand and re-prime.

Pre-shading:

NOTE: *Pre-shading under the CDL decals is intended to show the 'ghost' outline of the internal structure through the decals.*

Airbrush 'Tamiya' Smoke (X19) along each rib tape on the wings, fuselage and tail plane. The paint should be applied thinly, otherwise it will show too dark through the applied CDL decals, as the intention is to create a 'ghost' shadow of the internal structure, not a solid line.

Mask off the front and rear spars on both sides of the wings.

Airbrush 'Tamiya' Smoke (X19) between the spar masking strips to create 'ghost' front and rear spars, then remove the masking tape.

Cut a small piece of the CDL decal and apply it over a flight surface pre-shaded area.

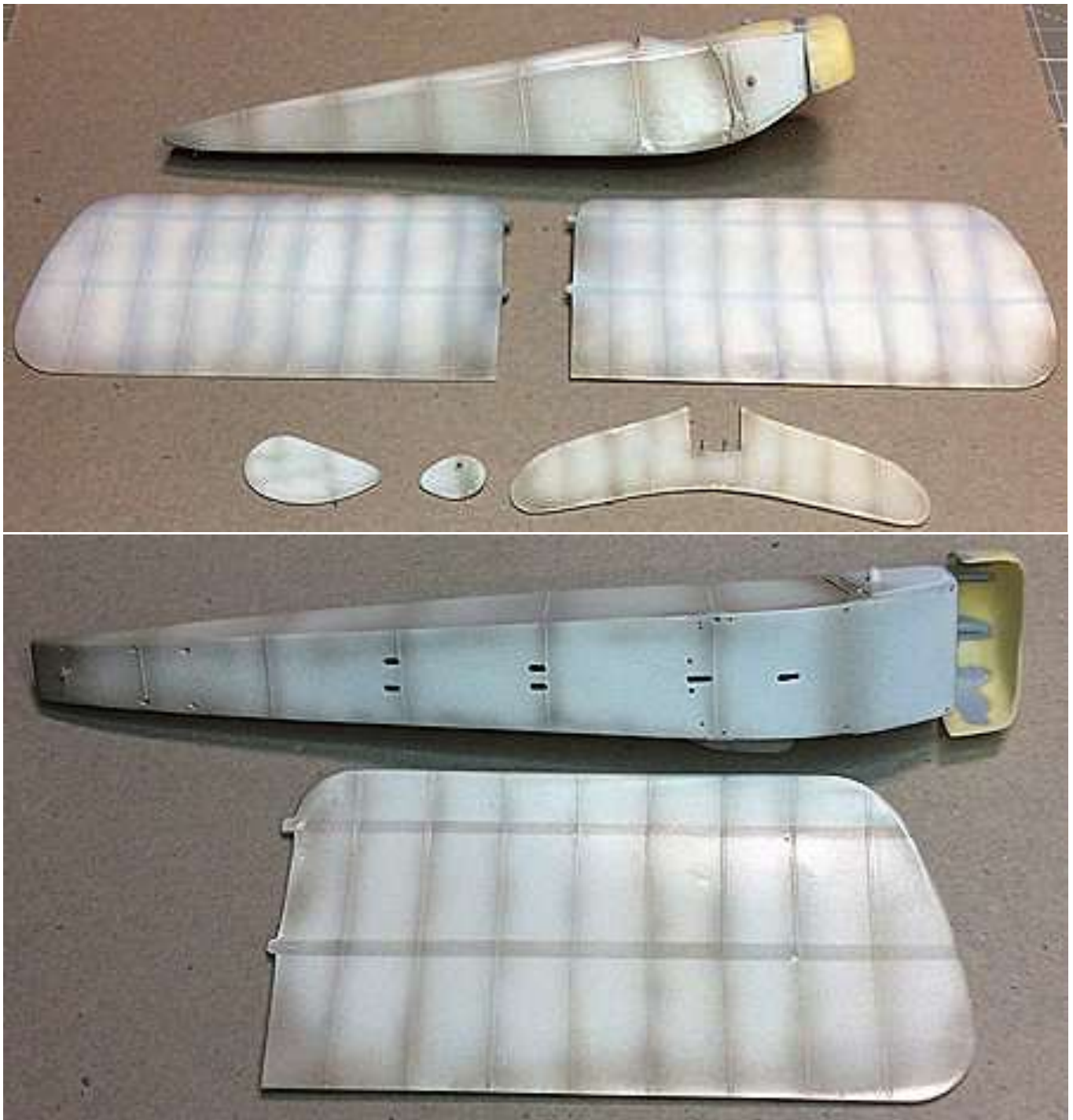
Check how much the pre-shading shows through the decal then remove the test decal.

If too prominent (dark), lightly over spray the pre-shading with the white primer used to 'knock back' the pre-shading to a more acceptable appearance. Alternatively the pre-shading can be sanded back to lessen its intensity.

If too light (faded), lightly over spray the pre-shading with the 'Tamiya' Smoke (X19) to increase the pre-shading to a more acceptable appearance.

Airbrush a clear gloss coat, such as 'Alclad' Aqua Gloss (600) or similar, over the white primed surfaces. This will provide a good surface for the applied decals.

Remove all of the applied masking.



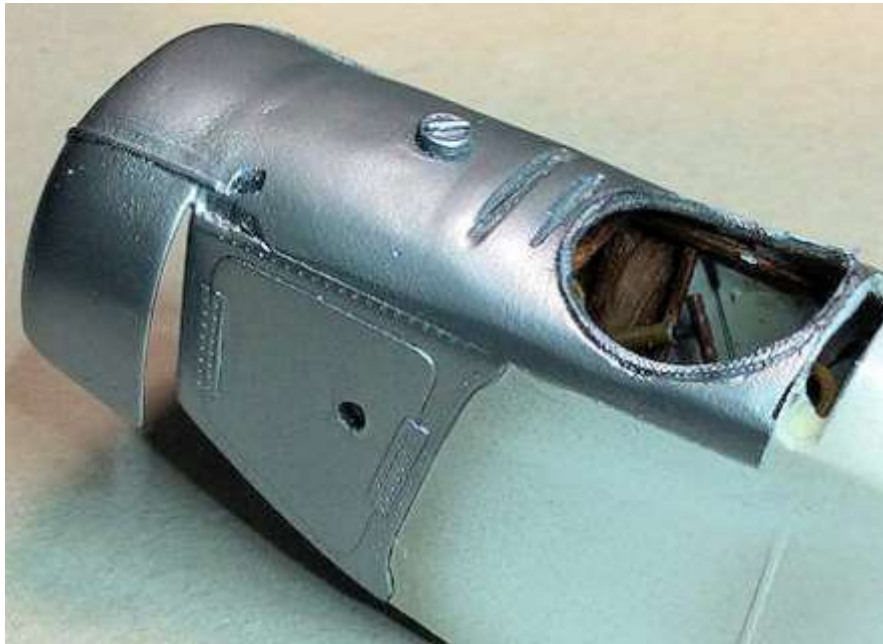
Fuselage metal areas:

Mask off the primed and sealed CDL areas of the fuselage and the cockpit opening.

Airbrush a gloss black, such as 'Tamiya' X1 or similar, over the exposed fuselage top forward from the cockpit, the metal side panels, the engine cowl, the fuselage engine bulk head and the underside panel.

Airbrush an aluminium colour, such as 'Alclad' Duraluminium (ALC-102) or similar, over the black primed areas.

Remove all of the applied masking.



Decals:

CDL decals:

NOTE: The 'Aviatic' CDL decal sheet is not 'cookie' cut for any particular model. Therefore the decals need to be cut to the correct shape. Refer to the colour profile for the areas to be covered with CDL decal. Note that the forward fuselage is metal and wood surfaces, not CDL.

WARNING: The resin moulding of the wings, fuselage sides and tail plane are very thin. When applying decals, do not apply too much pressure or the resin may be damaged.

Cut a paper template for the shape of the wings (top and underside surfaces), fuselage (sides, top and underside), upper and lower rudders and the tail plane.

Check that each cut template aligns correctly with the edges of the intended surface.

Trace the outline of each paper template onto the **back** of the 'Aviatic' linen effect decal sheet.

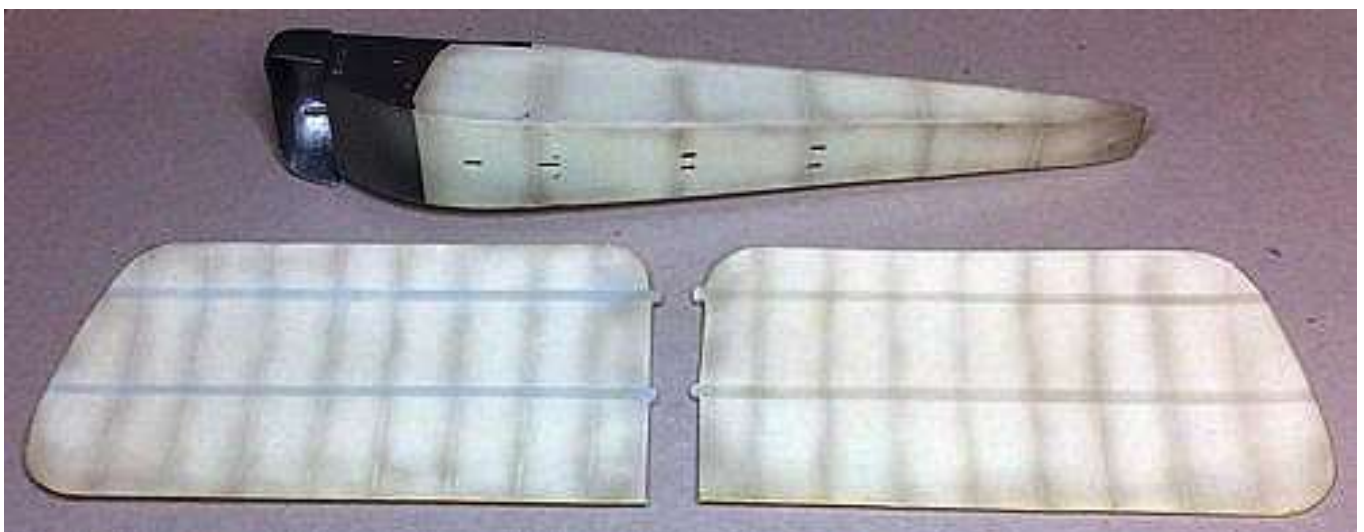
NOTE: *To improve decal adhesion, you can add PVA adhesive (white glue) to the decal water.*

Refer to Part 4 (Decals) for information - apply each cut decal onto its surface.

Once fully dry and set, carefully trim away any overhang of decal at the edges of the flight surfaces.

If decal can't be conformed around bends etc, apply 'MicroScale' Micro Sol. If necessary, apply **sparingly** 'Tamiya' X20A thinners onto the affected area of the decal. Do not touch or try to move the decal until the area has fully dried, otherwise the softened decal will distort or lift.

Where decal covers pre-drilled holes, point puncture through the decal and apply 'MicroScale' Micro Sol or if necessary apply **sparingly** 'Tamiya' X20A thinners around the hole.



Plywood decals:

NOTE: *The fuselage forward wood access panels are represented by using the 'Aviatic' Walnut woodgrain (dark and light) (ATT32060). The decal sheet is not 'cookie' cut for any particular model. Therefore the decals need to be cut to the correct shape.*

Cut a paper template for the shape of the two wood access panels.

Check that each cut template aligns correctly with the edges of the access panels and added hinges.

Trace the outline of each paper template onto the back of the 'Aviatic' wood effect decal sheet. Make sure the decal is **cut with the grain of the wood** running from the front to the rear edges of each panel decal.

NOTE: *To improve decal adhesion, you can add PVA adhesive (white glue) to the decal water.*

Refer to Part 4 (Decals) for information - apply each wood effect decal onto its access panel.

Where decal covers pre-drilled holes, point puncture through the decal and if necessary, apply 'MicroScale' Micro Sol around the hole.



Kit decals:

NOTE: *The decals supplied in the kit are inkjet printed and some are out of register (not aligned). These types of decals are also easily surface damaged, before or after application. Also some are not the correct size. Therefore I chose to create replacement decals using an inkjet printer and white backed decal paper.*

Create the decal in Photoshop Pro software or similar.

Test print on paper to check size.

NOTE: *As the centre of the Russian markings are white, I used Mr. Decal **White** decal paper, to avoid the surface below the applied decal showing through.*

Place the decal paper into the printer feeder tray with the glossy side facing up.

Adjust the printer setting for the paper to 'Premium Gloss Photo paper' or equivalent and set the print resolution to high.

Print the decal sheet.

Leave the printed decal sheet for several hours to allow the ink to fully dry.

NOTE: *During the following step, do not apply too much sealer over the decals, otherwise it will flood and 'fish eye' as it dries. Also spray at a shallow angle to the decal sheet, not at 90 degrees and at a distance of 12 inches or more away. Wear a respirator and spray in a well ventilated area.*

Apply a several light coats of sealer over the decals, using such as 'Krylon' Acryli-Quik acrylic lacquer or similar.

Allow each coat to thoroughly dry before applying another coat.

Check decals are fully covered and sealed with the clear coat.

NOTE: *If using **White** decal paper, make sure you cut around the decals as close to the outline as possible, to avoid the white decal paper showing at the edges.*

Carefully cut out the decals from the sheet.

Make sure the model surface is smooth and has clear gloss acrylic coat, such as 'Alclad' Aqua Gloss 600 or similar.

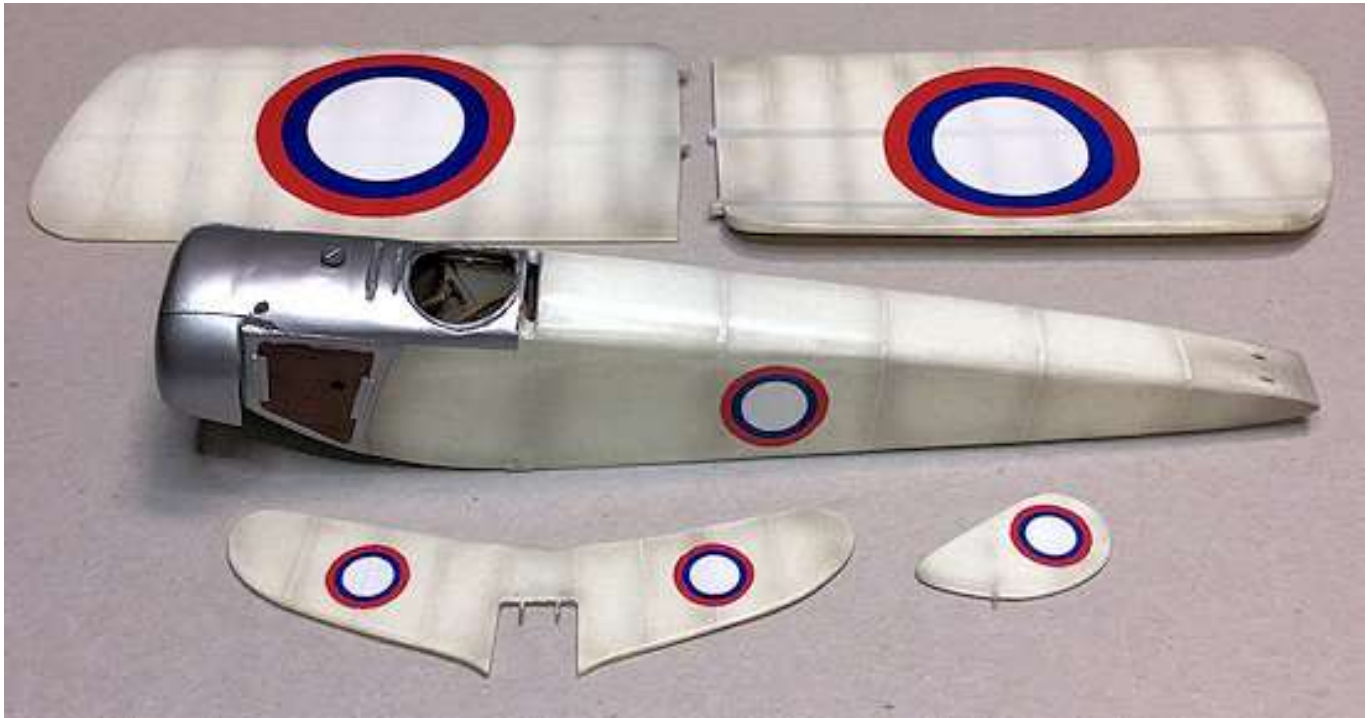
NOTE: *Adding PVA adhesive (white glue) to the water, used to detach the decal from its backing paper, can improve adhesion of the decal to the model and help prevent 'silvering' (trapped air) under the decal. Also take care not to 'stretch' the decals when removing the water.*

Refer to Part 4 (Decals) of this build log if necessary - Apply the decals to the model as for standard water slide decals.

Once the decals have fully set, airbrush a clear coat, such as 'Alclad' Aqua Gloss 600 or similar, over the decals to seal and protect them.

Created print for the decals





Propeller:

Airbrush the propeller with a grey primer, such as 'AK Interactive' Grey (AK-758) or similar.

Airbrush the propeller with 'Tamiya' Buff (XF57) or similar.

Refer to Part 2 (Wood Effects) of this build log and apply the desired wood effect to the parts. I used the 'DecoArt' Crafters Burnt Umber acrylic paint.

Airbrush a coat of semi-matte clear, such as 'Alclad' Light Sheen (ALC-311) or similar, mixed with 'Tamiya' Clear Orange (X26) over the propeller.

NOTE: *I sanded away the pre-moulded centre boss plate and replaced it with a spare 'ProperPlane' boss plate.*

Brush paint the centre boss plate with 'Mr. Colour' Stainless Steel (213) or similar.



Wheels:

Airbrush the 'GasPatch' spoked wheels and with a black primer, such as 'AK Interactive' Black (AK757) or similar.

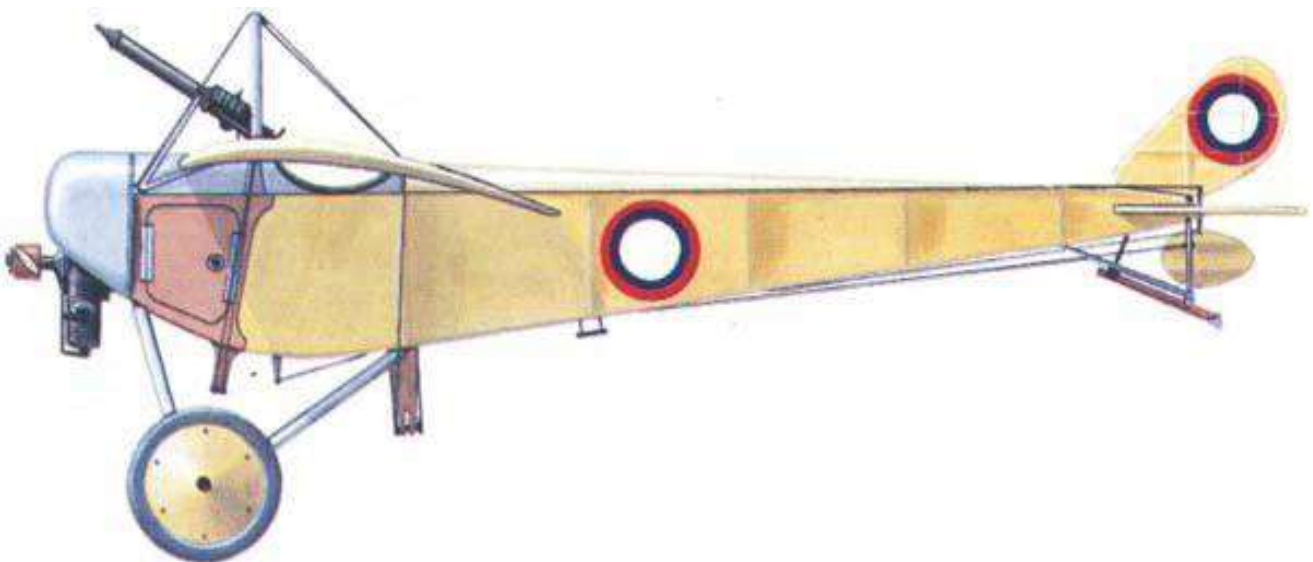
Airbrush the 'GasPatch' tyres with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

NOTE: *When fitting the wheels into the tyres, make sure you only apply pressure only to the outer rim of the wheels, not the spokes, otherwise they will break.*

Fit the wheels into their tyres by carefully pressing the wheel (by the rim only) into the tyres.



Metal work:



Prior to painting all of the created metal struts and other parts, brush the parts with 'Mr. Metal' Primer R, to form a base coat for painting.

NOTE: *It's impossible to tell from colour profiles or photographs of this aircraft what the various struts were made from, either painted wood or metal tube. Therefore I decided to paint them as follows:*

Upper support frame:

Airbrush with a Steel colour, such as 'Alclad' Steel (ALC-112) or similar.

Gun mounting frame:

Airbrush with a Steel colour, such as 'Alclad' Steel (ALC-112) or similar.

Tail skid support frame parts:

Airbrush with a Steel colour, such as 'Alclad' Steel (ALC-112) or similar.

Wing rear support bar:

Airbrush with a Steel colour, such as 'Alclad' Steel (ALC-112) or similar.

Landing gear:

Airbrush with 'Tamiya' Medium Sea Grey (XF83) or similar.

Brush paint the metal end fittings with a Iron colour, such as Mr. Metal' Iron (212) or similar.

Tail skid:

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

Refer to Part 2 (Wood Effects) of this build log and apply the desired wood effect to the parts. I used the 'DecoArt' Crafters Burnt Umber acrylic paint.

Airbrush a coat of semi-matte clear, such as 'Alclad' Light Sheen (ALC-311) or similar, mixed with 'Tamiya' Clear Orange (X26) .

Brush paint the metal 'shoe' on the tail skid with 'Mr. Colour' Stainless Steel (213) or similar.

Lower front and rear inverted V frames:

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

Refer to Part 2 (Wood Effects) of this build log and apply the desired wood effect to the parts. I used the 'DecoArt' Crafters Burnt Umber acrylic paint.

Airbrush a coat of semi-matte clear, such as 'Alclad' Light Sheen (ALC-311) or similar, mixed with 'Tamiya' Clear Orange (X26) .

Brush paint the metal pulley fitting on the rear strut with 'Mr. Colour' Stainless Steel (213) or similar.

Carburettor air intakes:

Cut two short lengths of 2.0 mm diameter Brass tube, such as 'Albion Alloy's' MBT20 or similar.

Secure the tubes into their pre-drilled holes in the wood access panels on the forward sides of the fuselage, using thin CA adhesive.

Brush paint the tubes with 'Mr. Colour' Iron (212) or similar.

Rear landing gear strut plates:

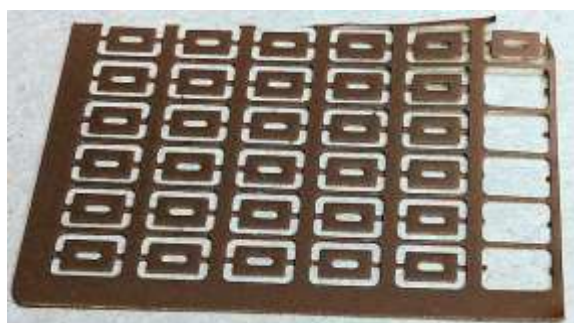
Brush paint the added plates, on the bottom edge of the fuselage sides, above the rear landing gear struts, with 'Mr. Colour' Iron (212) or similar.

Control cable ports:

NOTE: *The surrounds for the control cable exit ports on the underside and top, rear of the fuselage are the rectangular photo-etch parts from the 'Jadar' WW1 1:48th scale control horns (S48087).*

Prior to painting, brush six of the photo-etch parts with 'Mr. Metal' Primer R, to form a base coat for painting.

Airbrush one side only with 'Tamiya' Red Brown (XF64) or similar.



Cut out six parts from the sheet

Secure two parts over the two rudder cable exit ports on the underside of the fuselage.

Secure two parts over the two tail plane cable exit ports on the underside of the fuselage.

Secure two parts over the two tail plane cable exit ports on top, rear of the fuselage.

Cockpit surround padding:

Brush paint the added cockpit surround padding with 'AK Interactive' Brown Leather (AK3031) or similar.

Landing gear 'Bungee' suspension:

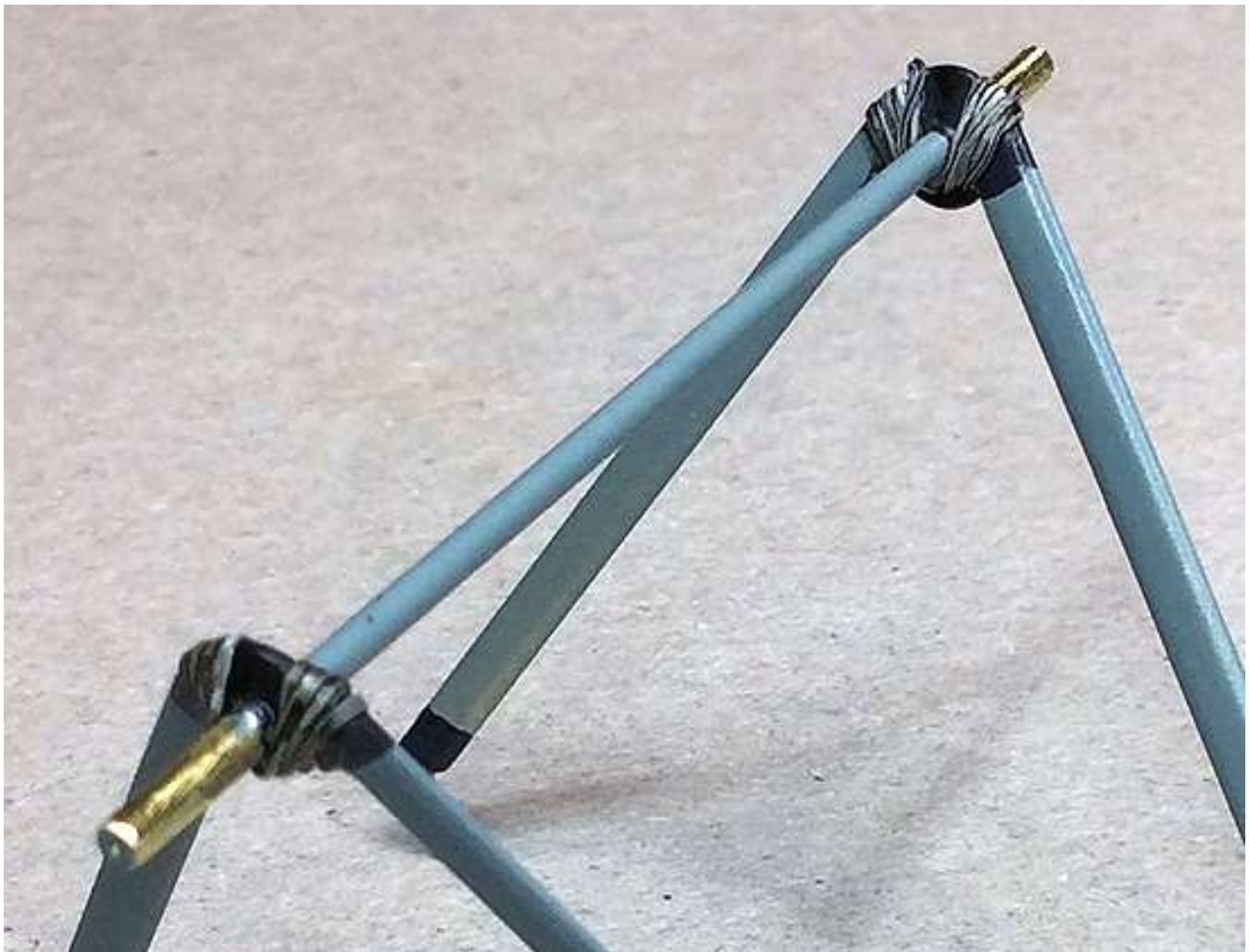
NOTE: *The landing gear suspension was formed by 'bungee' cord, which was wrapped separately around the front and rear of the axle bars. This suspension is not represented in the kit so needs to be created.*

Cut two long lengths of 'EZ' stretch line (heavy white).

Using thin CA adhesive, attach one end of each line to the bottom of the landing gear struts.

At each side, wrap a line several times through the retaining loop at the bottom of the struts and around the opposite side of the other axle then back again. Secure in position using thin CA adhesive.

Brush several coats of 'AK Interactive' Kerosene wash (AK2039) over the 'EZ' line to darken the colour.



Weathering:

NOTE: *In order for the applied weathering to the model parts, the surfaces need to have a semi-matte clear coat. This provides enough 'grip' for the weathering and also protects the surfaces.*

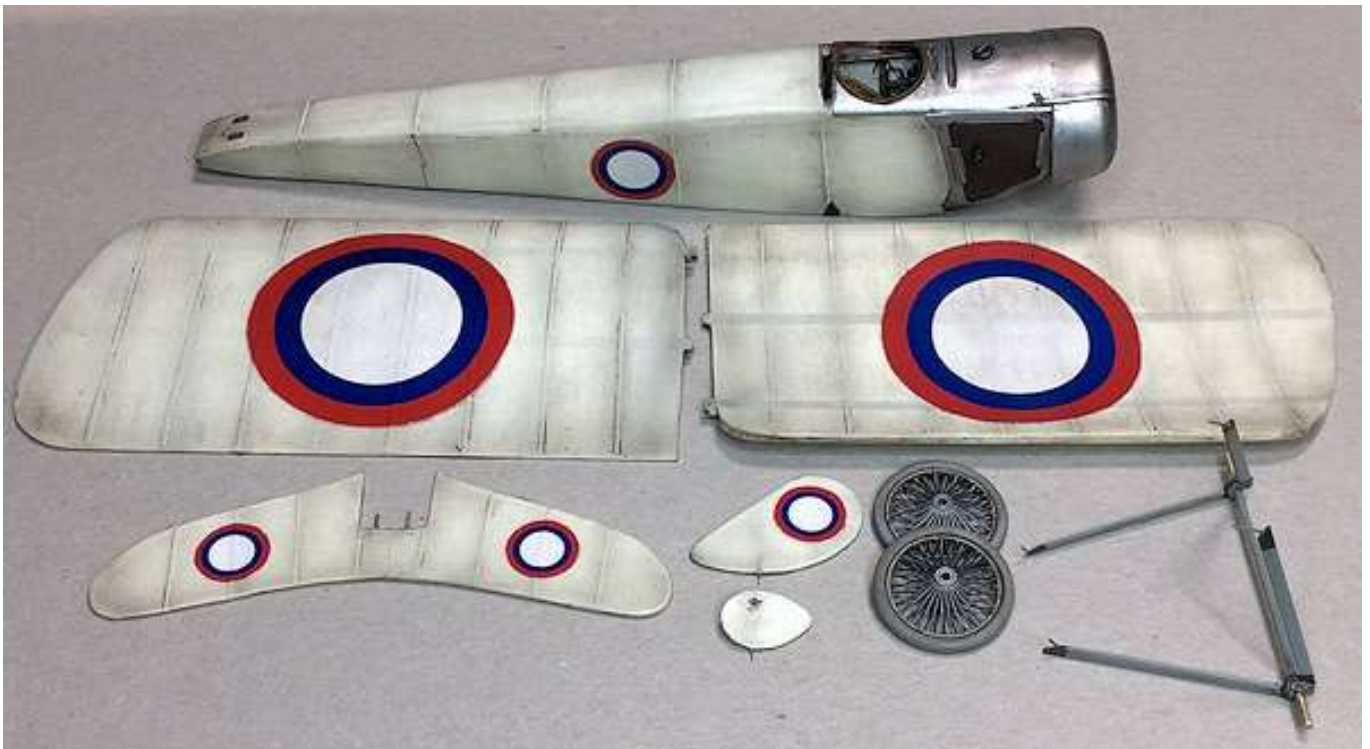
Airbrush a light semi-matte clear coat, such as 'Alclad' Light Sheen (ALC-311) or similar over the following parts:

Both wings, both rudders, tail plane, fuselage, machine gun, top support frame, both underside V frames, tail skid support, tail skid, landing gear and rear wing support bar.

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

Weather the parts to the desired effect, using 'Flory Models' Dark Dirt and/or Grime fine clay wash.

Once the desired effect has been achieved, seal the weathering by airbrushing with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC-311), 'Tamiya' Semi-Clear (X35) or similar.



Landing gear:

Make sure the outer ends of the axle are clear of paint and primer.

Make sure the pre-drilled landing gear location holes in the forward, underside of the fuselage are clear of paint and primer.

Make sure the four protruding locating rods at the top of the landing gear struts are clear of paint and primer.

Secure the landing gear onto the underside of the fuselage, using thin CA adhesive.

Temporarily fit the two wheels to the axle.

Check that the fitted landing gear is correctly aligned to the fuselage when viewed from the front and top or underside.

Remove the wheels.



Tail skid assembly:

Using thin CA adhesive, secure the lower rudder onto its locating rod on the rear, underside of the fuselage, making sure the rudder is aligned along the centre line of the fuselage.

Position the V support frame over the protruding rod at the bottom the lower rudder and into the two pre-drilled holes in the rear, underside of the fuselage.

Secure the V support frame in position using thin CA adhesive.

In turn, position the each of the four side tubes into their pre-drilled holes in the rear, underside of the fuselage with their tops against the V support frame.

Secure the four side tubes in position using thin CA adhesive.

Locate the tail skid fully onto the protruding rod on the bottom of the lower rudder.

Hold the forward end of the tail skid centrally onto the cross bar of the V support frame.

Secure the tail skid in position using thin CA adhesive.

Cut a long length of 'MFH' Black tube (P-961).

Secure the middle of the tube onto the tail skid using thin CA adhesive.

Using thin CA adhesive to secure in position, route the two ends of the tube several times around the legs of the V support strut and over and under the tail skid, such that the tail skid is held between the 'Bungee' suspension cords.

Cut away any residual ends of the tubes.

Brush paint the four side tubes with 'Mr. Metal' Stainless Steel (213) or similar.

Weather the tail skid using 'Flory Models' Grime fine clay wash



Upper rudder:

Using thin CA adhesive, secure the upper rudder rod into its locating tube on the top, rear of the fuselage, making sure the rudder is aligned along the centre line of the fuselage.



Engine:

Using CA adhesive, secure the engine up into the engine cowl and against the fuselage front bulkhead. Make sure the four reduced cylinders are at the top of the engine, inside the cowl.



Tail plane:

Using thin CA adhesive, secure the four photo-etch control horns into their pre-drilled holes in the tailplane.

Brush paint the four control horns with 'Tamiya' Rubber Black (XF85) or similar.

Locate the tail plane rods into their pre-drilled holes in the rear end of the fuselage and secure in position using thin CA adhesive.

Tail unit rigging:

NOTE: *At this stage of the build it's best to rig the tail unit rudder and tail plane, before the wings and associated struts are fitted. The end fittings used are 'GasPatch' 1:48th scale turnbuckles (Type C) and Anchor Points with 0.5 mm or 0.4 mm tubes.*

NOTE: *Brass or Nickel-Silver tube and rod can be chemically blackened by soaking in a solution such as 'Blacken-It' blackening solution.*

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

Cut six long lengths of 0.08 mm diameter mono-filament, such as that from 'Steelon' or 'Stroff'.

NOTE: *The following procedure should be applied to the four tail plane control horns and the two rudder control horns.*

Pass one end of a line through a 0.4 mm diameter tube, then through the hole in the end of the control horn.

Pass the line back and through the tube.

Move the tube up to, **but not touching**, the control horn.

Apply thin CA adhesive, at the opposite end from the control horn, to secure the lines in the tube.

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

Insert the other end of the line into its exit port in the fuselage.

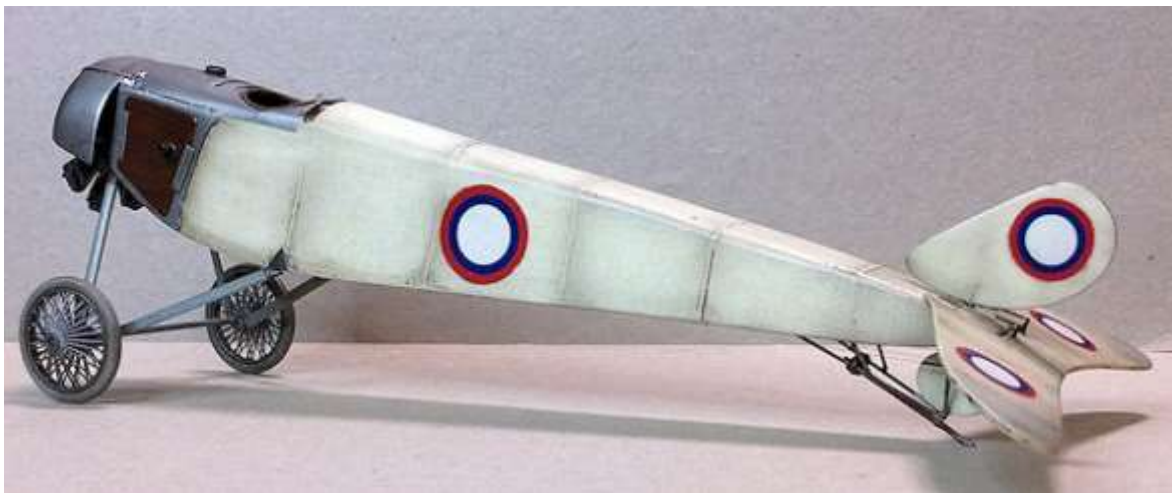
Keeping the line taut, secure it into the exit port using thin CA adhesive.

Wheels fit:

Using thin CA adhesive, secure the wheels onto the ends of the axle (flat face inboard).







Landing gear bracing:

Cut four long lengths of 0.12 mm diameter mono-filament, such as that from 'Steelon' or 'Stroff'.

Cut six short lengths of 0.5 mm diameter blackened Brass tube, such as 'Albion Alloy's' MBT05 or similar.

Using thin CA adhesive, secure a 'GasPatch' 1:48th Anchor Point into the two pre-drilled holes in the edges of the underside of the fuselage, midway between landing gear forward struts.

Pass a cut line through a cut tube then through the 'eye' of a 'GasPatch' 1:48th scale turnbuckle (Type C).

Pass the line back and through the tube.

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

Using thin CA adhesive, secure the tube to the lines at the opposite end from the turnbuckle.

Cut away any residual tag of line.

Repeat the procedure to add a line to the other end of the turnbuckle.

Repeat to create a second turnbuckle line.

Pass a line through a cut tube then through the 'eye' of a fitted Anchor Point.

Pass the line back and through the tube.

Move the tube up to, **but not touching**, the 'eye' of the turnbuckle, making sure the other end of the turnbuckle line is 5 mm from the pre-drilled hole in the opposite landing gear forward strut.

Using thin CA adhesive, secure the tube to the lines at the opposite end from the Anchor Point.

Cut away any residual tag of line.

Pass the other end of the turnbuckle line through the pre-drilled hole in the opposite landing gear forward strut.

Keeping the line taut, secure the line in the strut hole, using thin CA adhesive.

Cut away the protruding excess line at the outside of the strut.

Brush paint the centre section barrel of the turnbuckle using 'Tamiya' Hull Red (XF9) or similar.

Repeat the procedure to fit the opposite bracing wire to the landing gear.

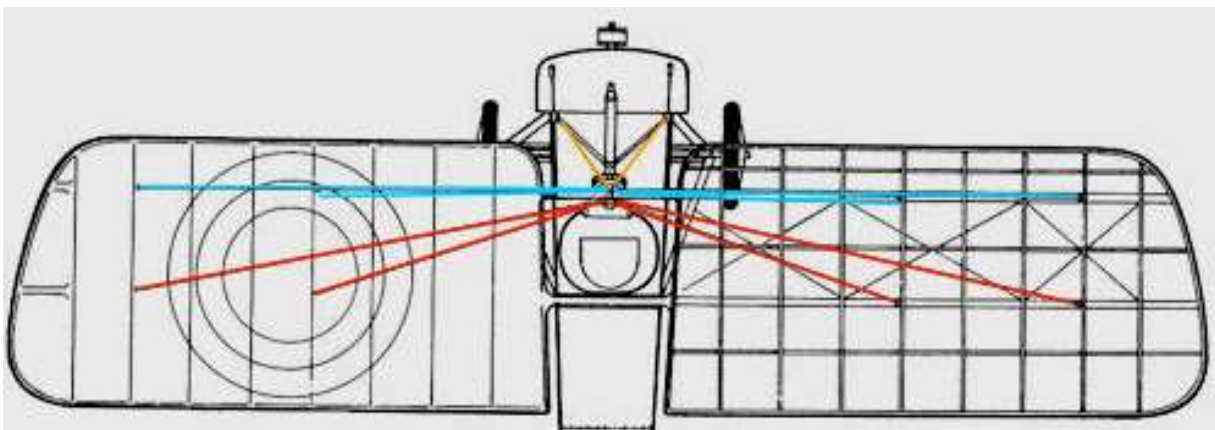


Wings pre-rigging:

NOTE: At this stage of the build it's best to pre-rig the wing control wires before the wings and associated struts are fitted. The end fittings used are 'GasPatch' 1:48th scale turnbuckles (Type C) and Anchor Points with 0.5 mm or 0.4 mm tubes. The rigging wires are either 'Steelon' or 'Stroft' mono-filament of 0.08 mm and 0.12 mm diameter.

Wing preparation:

NOTE: Use the following illustration as a location guide for the landing wires and the wing warp control wires.



Drill holes of 0.3 mm diameter vertically through the two wings at the four wire entry/exit positions shown on the previous illustration.

Wing wires:

NOTE: *There is no information as to exactly how the wing warping wires were connected to the control horn/pulley at the front of the underside V strut. I'm assuming that the warping wires that were attached inboard on wing rear spars would be required to move the wings less than the wires attached outboard on the wing rear spars. This would control the roll of the aircraft in a similar manner to ailerons.*

As the diameter of the pulley is greater than the span of the control horn, it's reasonable to assume the wires attached to the pulley were attached outboard on the wing rear spars (greater movement and more wing flex). The wires attached to the control horn would have been attached inboard on the wing rear spars (less movement and less wing flex).

The following procedure should be carried out at each of the pre-drilled holes in both wings.

Cut a long length of 0.08 mm diameter mono-filament line.

Cut two short lengths of blackened 0.4 mm diameter Brass tube.

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

Pass the line back through the tube.

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

Secure the tube to the lines (not at the turnbuckle end) using thin CA adhesive.

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

Pass the free end of the line through a pre-drilled hole in a wing.

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

Pass the line back through the tube.

NOTE: *During the next step and when positioning the tube, make sure that the both tubes will be clear of the upper and underside surfaces of the wing. Do not secure the line in the wing, but be free to move.*

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

Secure the tube to the lines (not at the turnbuckle end) using thin CA adhesive.

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

There should now be a free moving line through the wing with a turnbuckle fitted at each side of the wing.



Cut ten long lengths of 0.12 mm diameter mono-filament line. The length of each should be longer than the span between the two wing tips, when the wings are fitted to the fuselage.

Cut ten short lengths of blackened 0.5 mm diameter Brass tube.

NOTE: *The following procedure should be carried out to the eight pre-rigged turnbuckles **on one wing only.***

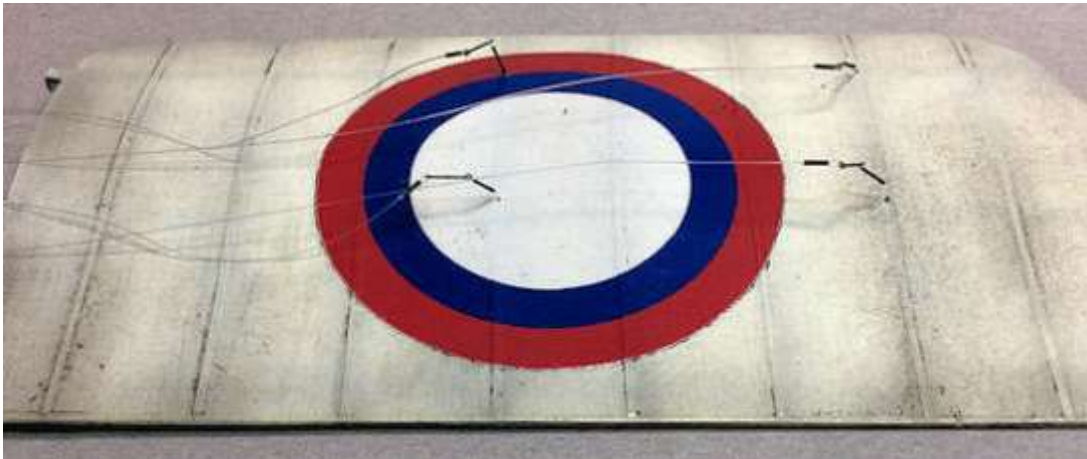
Pass each line through a cut tube then through the free 'eye' end of the turnbuckles.

Pass the line back through the tube.

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

Secure the tube to the lines (not at the turnbuckle end) using thin CA adhesive.

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



NOTE: *The following procedure should be carried **only to the two rear turnbuckles on the underside of the opposite wing.***

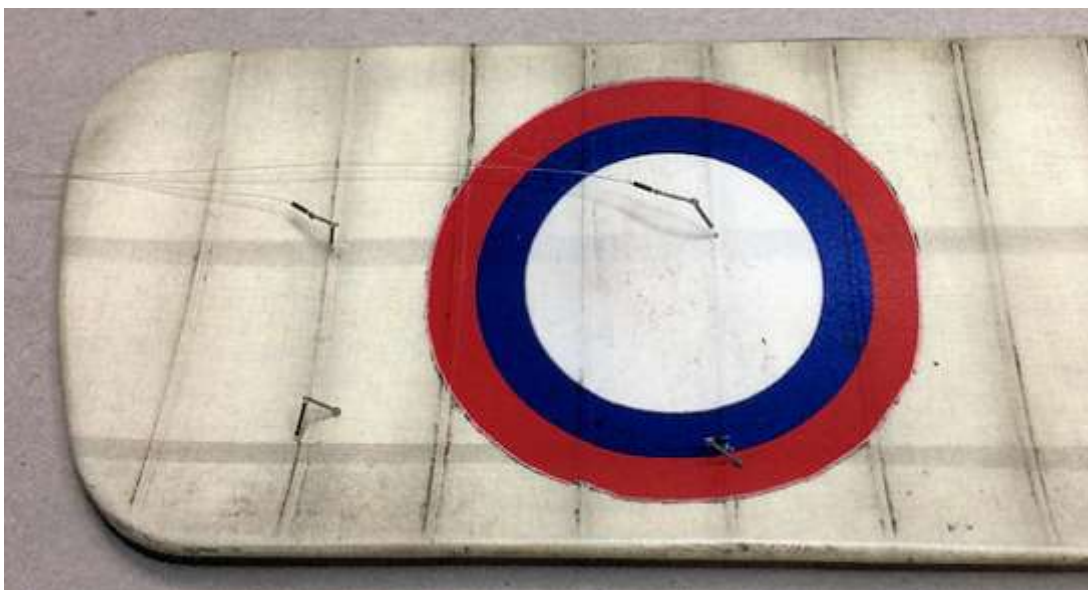
Pass each line through a cut tube then through the free 'eye' end of the turnbuckles.

Pass the line back through the tube.

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

Secure the tube to the lines (not at the turnbuckle end) using thin CA adhesive.

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



Wing warp V strut:

Cut a long length of 0.08 mm diameter mono-filament line.

Cut a short length of blackened 0.4 mm diameter Brass tube.

Pass the line through the tube then through a hole in the photo-etch control horn at the rear of the wing warp V strut.

Pass the line back through the tube.

Slide the tube up to, **but not touching**, the control horn.

Secure the tube to the lines (not at the control horn end) using thin CA adhesive.

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

Repeat the procedure to add a line to the opposite side of the control horn.



V struts fit:

Make sure the pre-drilled location holes on the underside of the fuselage, for locating the two V struts, are clear of decal and paint.

Make sure the protruding location rods at the top of the two V struts, are clear of paint.

Using thin CA adhesive, secure the rear V struts into its location holes, making sure the pulley and control horn are facing forwards.

Using thin CA adhesive, secure the forward V struts into its location holes.



Warp control horn:

NOTE: *Through the fuselage and below the control column is the tail plane control horn, which connects the control cables to the tail plane. This is not supplied in the kit.*



An appropriate photo-etch control horn was taken from the 'Jadar' WW1 1:48th scale control horns (S48087) set.

Drill a 0.5 mm diameter hole through the centre and midway along the control horn.

Cut a short length of 0.5 mm diameter Brass rod, such as from 'Albion Alloy's' or similar. The length of the rod should be slightly longer than the width of the forward slot in the underside of the fuselage.

Locate the rod in the pre-drilled hole in the control horn, with an equal amount at each side.

Secure the rod in the control horn using thin CA adhesive.

Cut a long length of 0.12 mm diameter mono-filament line.

Cut a short length of blackened 0.5 mm diameter Brass tube, such as 'Albion Alloy's' MBT05 or similar.

Pass the line through a tube then through the hole in the end of the control horn.

Pass the line back through the tube.

Slide the tube up to, **but not touching**, the control horn.

Secure the tube to the lines (not at the control horn end) using thin CA adhesive.

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

NOTE: *During the following step, the intention is to achieve an 'interference' fit for the control horn in the slot.*

Test fit the control horn into the forward slot in the underside of the fuselage. If necessary, either carefully sand the rod ends or scrape the sides of the slot to achieve the correct fit.

Brush paint the control horn with 'Tamiya' Rubber Black (XF85) or similar.

Secure the control horn in the forward slot using CA adhesive.

Pass the control line rearwards and into the next slot.

Keeping the line taut secure the line in the slot using thin CA adhesive.

V strut control cables:

Pass the two wing warp control lines, attached to the rear control horn on the lower rear V strut, up into their pre-drilled holes in the underside of the fuselage.

Keeping the lines taut secure them in their fuselage holes using thin CA adhesive.



Wings fit:

Make sure the wing locating rods on the rear support cross bar and the upper V strut support frame are clear of paint.

Make sure the rod locating holes in the two wing root stubs, on both wings, are clear of paint.

Test fit the cross bar and support frame into the wings, making sure the rods fully locate.

Locate the two wings onto the rear support bar and the V strut support frame, making sure the side struts of the frame are facing forwards.

Apply thicker, slow setting CA adhesive into the fuselage grooves for the rear support bar and V strut support frame.

Fully locate the wing assembly onto the fuselage, making sure the rear support bar and V strut support frame are fully seated in their grooves. Also making sure the forward ends of the two side struts of the V strut support frame are fully seated in their notches.

Once the CA adhesive has fully set, reinforce the bond by applying thin CA adhesive around:

The rear support bar and the cross bar of the V strut support frame.

The forward ends of the two side struts at their fuselage notches.

The bottom of the side struts of the V strut support frame, where they rest against the top sides of the fuselage.



Wings - underside rigging:

Underside pulley:

NOTE: *The following procedure should be carried out for the two **outboard** pre-rigged lines at the rear wing spar on the underside of the wings.*

Pass the line through cut a short length of blackened 0.5 mm diameter Brass tube, such as 'Albion Alloy's' MBT05 or similar.

Pass the line through a hole in the pulley on the front of the underside, rear V strut.

Pass the line back through the tube.

Keeping the line taut, slide the tube up to, **but not touching**, the pulley.

Secure the tube to the lines (not at the pulley end) using thin CA adhesive.

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

Underside control horn:

NOTE: *The following procedure should be carried out for the two **inboard** pre-rigged lines at the rear wing spar on the underside of the wings.*

Pass the line through cut a short length of blackened 0.5 mm diameter Brass tube, such as 'Albion Alloy's' MBT05 or similar.

Pass the line through a hole in the end of the control horn on the front of the underside, rear V strut.

Pass the line back through the tube.

Keeping the line taut, slide the tube up to, **but not touching**, the control horn.

Secure the tube to the lines (not at the control horn end) using thin CA adhesive.

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

Landing wires:

NOTE: *The following procedure should be carried out for the two landing wires on the pre-rigged wing, underside front spar.*

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

Pass the line through a short length of blackened 0.5 mm diameter Brass tube, such as 'Albion Alloy's' MBT05 or similar.

Route the line across the forward underside V strut to its opposite pre-rigged turnbuckle, making sure the 0.4 mm tubes are kept each side of the V strut.

Pass the line through the free 'eye' end of the turnbuckle.

Pass the line back through the 0.5 mm diameter tube.

Make sure the line is located over the protruding rod on the front of the V strut.

Keeping the line taut, slide the tube up to, **but not touching**, the turnbuckle.

Secure the tube to the lines (not at the turnbuckle end) using thin CA adhesive.

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

Slide the two 0.4 mm tubes up to the V strut and secure them in position using thin CA adhesive.

Wings - upper side rigging:

Landing wires:

NOTE: *The following procedure should be carried out for the two landing wires on the pre-rigged wing, upper side front spar.*

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

Pass the line through a short length of blackened 0.5 mm diameter Brass tube, such as 'Albion Alloy's' MBT05 or similar.

Route the line across the upper V strut to its opposite pre-rigged turnbuckle, making sure the 0.4 mm tubes are kept each side of the V strut.

Pass the line through the free 'eye' end of the turnbuckle.

Pass the line back through the 0.5 mm diameter tube.

Make sure the line is located over the protruding rod on the front of the V strut.

Keeping the line taut, slide the tube up to, **but not touching**, the turnbuckle.

Secure the tube to the lines (not at the turnbuckle end) using thin CA adhesive.

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

Slide the two 0.4 mm tubes up to the V strut and secure them in position using thin CA adhesive.

Wing warp wires:

NOTE: *The following procedure should be carried out for the two wing warp control wires on the pre-rigged wing, upper side rear spar.*

Pass the line through a short length of blackened 0.5 mm diameter Brass tube, such as 'Albion Alloy's' MBT05 or similar.

Route the line across the pulley on the rear of the upper V strut to its opposite pre-rigged turnbuckle.

Pass the line through the free 'eye' end of the turnbuckle.

Pass the line back through the 0.5 mm diameter tube.

Make sure the line is located over the pulley groove on the rear of the V strut.

Keeping the line taut, slide the tube up to, **but not touching**, the turnbuckle.

Secure the tube to the lines (not at the turnbuckle end) using thin CA adhesive.

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

Turnbuckles:

Brush paint the centra barrels of each turnbuckle with 'Tamiya' Hull Red (XF9) or similar.

Gun mounting:

Locate the gun mounting assembly into its two pre-drilled holes in the fuselage with the ammunition drum of the machine gun positioned between the legs of the upper V strut.

Secure the gun mounting in position using thin CA adhesive.

Drill a hole of 0.3 mm diameter through the top of the fuselage, outboard from the forward ends of the V strut side struts.

Secure a long length of 0.12 mm diameter line mono-filament line into one of the holes, using thin CA adhesive.

Cut two 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 around the landing wires at the top of the upper V strut.

Pass the line through the remaining tube and into the opposite pre-drilled hole.

Keeping the line taut, secure the line into the hole using thin CA adhesive.

Slide the two tube down to the ends of the line and secure in position using thin CA adhesive.





Pilot step:

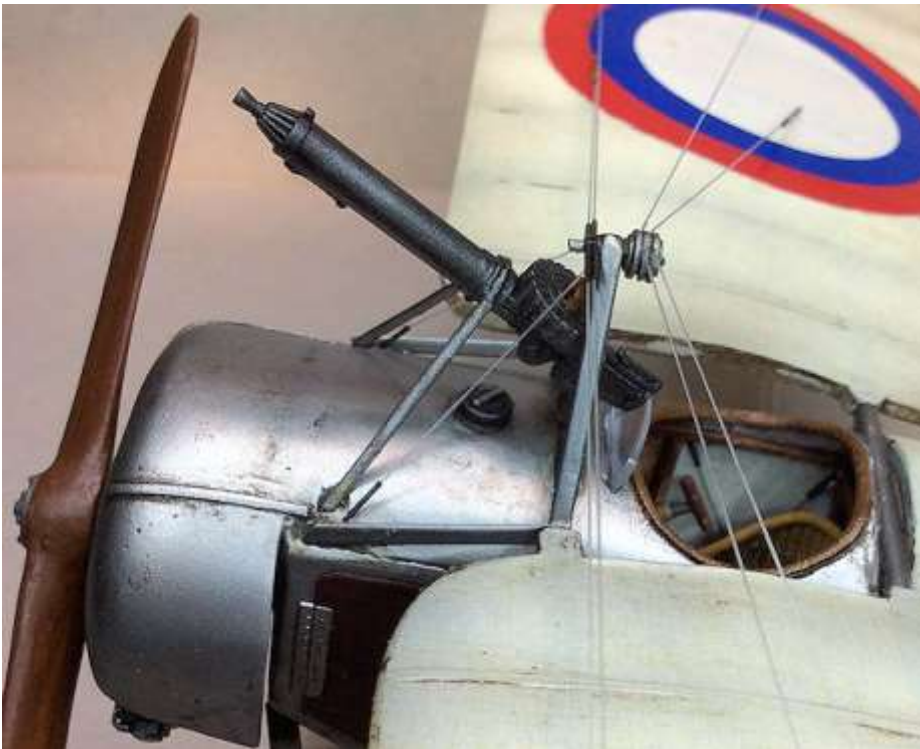
I did not use the kit supplied resin step, but instead bent a step from 0.4 mm diameter Brass rod, which was secured into two 0.5 mm diameter holes drilled into the underside of the fuselage. The step was brush painted with 'Mr. Colour' Iron (212).

Propeller:

Secure the propeller, in the desired position, onto the propeller shaft of the engine, using thin CA adhesive.

Windscreen:

The bottom and side edges of the replacement windscreen were painted using a Silver colour 'Posca' metallic pen (PC-1MR) then secured in its fuselage groove using 'Microscale' Micro Kristal Clear adhesive.



PART 12

FIGURE

PART 12 - FIGURE

The figure I chose to use is the 'Kellerkind Miniaturen' Russian pilot 1914-17 (54060).

Preparation:

Cut away the moulding blocks from the two feet and the left arm.

Scrape clean away any mould seam lines.

Drill a hole of 0.9 mm diameter up into one of the legs.

Cut a length of 0.8 mm diameter rod, such as from a standard paper clip.

Secure the rod into the pre-drilled hole in the leg of the figure. This can be used to hold the figure while painting and for mounting the figure onto the final display base.

Assembly:

Secure the left arm into the figure, using CA adhesive.

Painting:

Airbrush the figure with a black primer, such as 'AK Interactive' Black (AK-757) or similar.

NOTE: *Thinners used - 'Tamiya' X20A, 'AK Interactive (AK712).*

Brush paint the figure as follows:

Shoes and gaiters:

'Tamiya' semi-gloss black (X18).

Trousers:

'Tamiya' Rubber black (XF85), 'Tamiya' Flat Red (XF7) piping.

Jacket:

'Tamiya' semi-gloss black (X18), 'Tamiya' Buff (XF57) epaulettes, 'Tamiya' Flat Red (XF7) piping, 'Mr. Metal' Stainless Steel (213) buttons.

Scarf:

'Tamiya' JA Green (XF13).

Pouch/strap:

'AK Interactive' Brown Leather (AK3031).

Glove inner lining:

'Tamiya' Red Brown (XF64) and Buff (XF57).

Cap:

'Tamiya' semi-gloss black (X18), 'Tamiya' Rubber black (XF85), 'Mr. Metal' Stainless Steel (213 and Brass (219).

Flesh:

'Citadel' Base - Bugmans Glow, Cadian Flesh Tone, Layer - Kislev Flesh, Shade - Reikland Flesh Shade. Rubber Black (XF85).

Cigarette:

'Tamiya' White (XF2).

Weathering:

'Tamiya' Weathering Master set A (Mud), set D (Oil Stain) and set B (Soot).



PART 13

DISPLAY BASE

PART 13 - 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 G (4707). 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 figure 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 figure were then positioned on the base in their final positions and the support pins in the figures leg 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 figure was then test fitted and where necessary, the support pin 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 figure, which was then located, in the desired position, into its pre-drilled location hole. 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 14
COMPLETED
MODEL
PHOTOGRAPHS





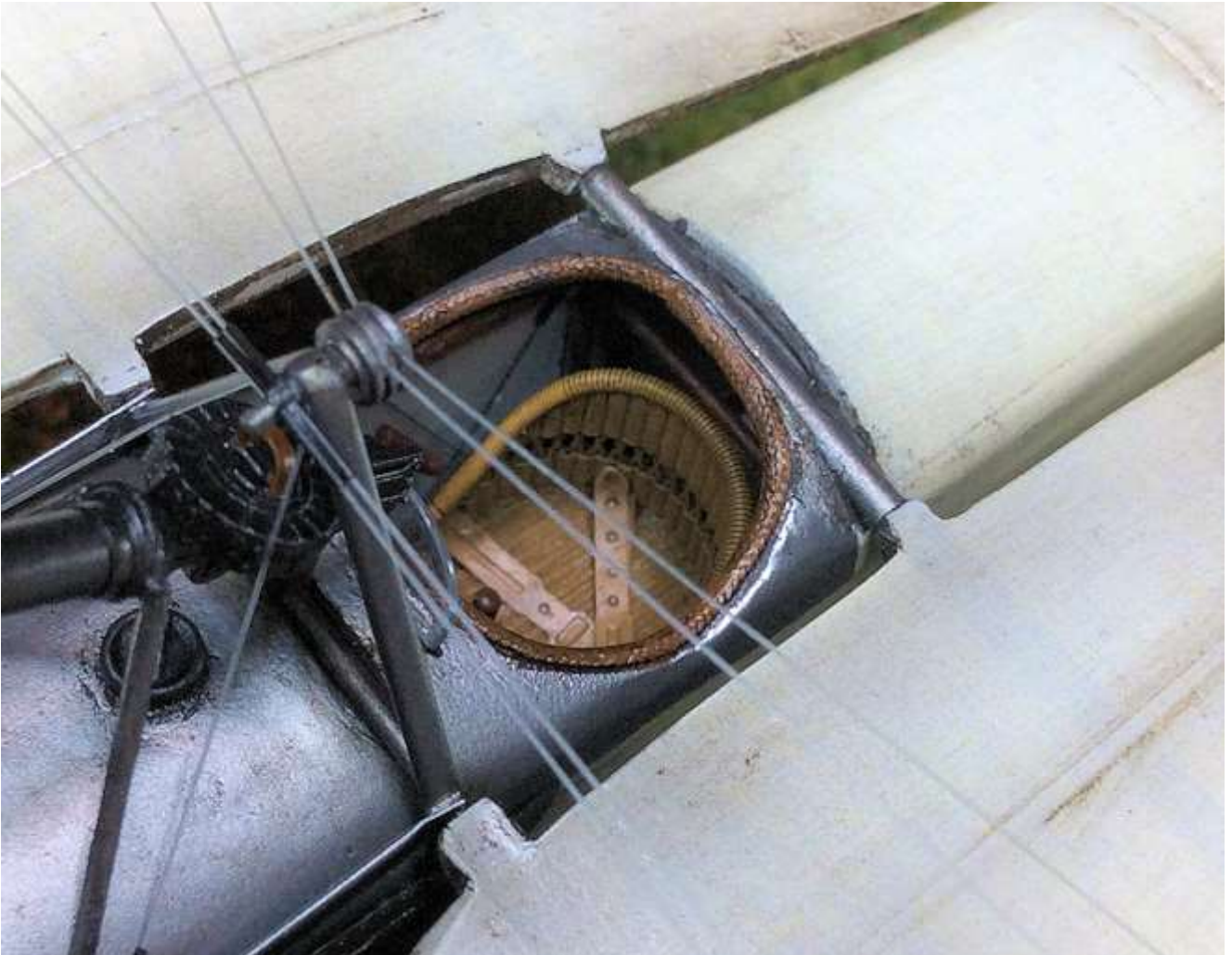












END