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 Ansaldo A.1 'Balilla' by 'Aviattic'.

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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

‘Copper State Models’ Italian flying ace (F32-030),
‘Model Kasten’ mechanic from Set B,
‘Hornet’ bare heads-mature faces (HH/8).

Decals

‘Aviattic’ kit, specific supplied decals,
‘Airscale’ WW1 instruments (ASW WW1),
‘Xtradecal’ parallel stripes white (XPS2).

Photo-Etch (PE)

‘Aviattic’ kit, specific supplied photo-etch,
‘Aber’ hand tools (35-A68).

Ground equipment

‘Copper State Models’ tools and cans (AE32-005).

Rigging accessories (as required)

‘GasPatch Elite Accessories’ Turnbuckles 1/48 scale,
‘Albion Alloy’s’ Micro-tube (Brass or Nickel Silver - various diameters).
‘Maxima’ Chameleon Mono-Filament 0.12 mm diameter,
‘Stroft’ Mono-filament 0.08 mm diameter.

Sundries (as required)

‘Araldite’ two part epoxy adhesive, Paints (‘Tamiya’ Acrylic, Humbrol Acrylic,
‘Mr. Metal Colour’), ‘AK Interactive’ Primer and micro-filler (Grey AK758, White AK759),
’AK Interactive’ Filters (Wood AK-261), figure paints and filters (Kerosene AK-2039,
Oil AK-2019, and Wash AK-2033), ‘Alclad II’ Lacquers, ‘Alclad’ Aqua Gloss 600,
‘Mr. Colour’ Levelling, Thinners, ‘Vallejo’ Model Colour,
PVA Adhesive, ’MicroScale’ Krystal Clear,
‘VMS Fleky’ Resin CA adhesive (Standard and Thin),
‘Bostik’ Blue Tack or ‘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 epoxy putty, ‘MicroScale’ MicroSol/MicroSet,
‘Mr. Surfacer 500, 1000,1200’, ‘DecoArt Crafters Acrylic’ (water based) paints,
‘Artool’ Ultra Mask sheets, ‘Vallejo’ Still Water (26.230), ‘VMS’ Metal Prep 4K,
‘Mr. Surfacer’ primer and filler, ‘Hataka’ lacquer paints, ’Plastruct’ styrene rod,
‘White Spirits’, ‘PlusModel’ lead wire, ‘ANYZ’ black braided line (AN001),
‘Tamiya’ extra thin liquid cement, ‘Plastic Magic’ liquid cement,
‘Blacken-It’ solution, ‘Bare Metal’ Aluminium foil.

Weathering mediums (as required)

‘Flory Models’ Clay washes and Pigments, ‘AK Interactive’ engine washes,
‘Tamiya’ Weathering Master (Set A, C, D and E), ‘Derwent’ Inktense 24 ink pencils.

Display Base

Etched Plaque (name plate),
‘Inperspective’ custom made Acrylic base and cover,
‘Polak’ Wild Meadow variation F (4706).

THE AIRCRAFT

THE AIRCRAFT

References:

1. ‘Aviattic’ kit information book - Ansaldo A.1 ‘Balilla’.
2. Windsock Date file No.88 - Ansaldo A.1 ‘Balilla’ (by Gregory Alegi).
3. Online resources, including Wikipedia.

NOTE: ***This model represent the Ansaldo A.1 ‘Balilla’, Serial No:16558 of pilot Tenente Leopoldo Eleuteri of No:70a Squadriglia, operating from Gazzo Padovano during the September of 1918.***

The aircraft:

The A.1 ‘Balilla’ resulted from continued efforts by the Ansaldo company to create a true fighter. Their previous SVA design had proved unsuitable in this role, although it made an excellent reconnaissance aircraft and had been ordered into production as such. Ansaldo engineer Giuseppe Brezzi revised the SVA design, increasing the size of the lower wing and redesigning the interplane strut arrangement and rigging. While this produced more drag, it did increase the stiffness of the wing structure and reduced stresses in the airframe. Engine power was increased to 150 kW (200 hp) and a safety system to jettison the fuel tank through a ventral hatch (in case of onboard fire) was installed.

The first prototype was completed in July 1917, but acceptance by the air force did not occur until December. Test pilots were not enthusiastic in their evaluation. While they found a marked increase in performance over the SVA, the A.1 was still not as manoeuvrable as the French-built and designed types in use by Italy's squadrons, most notably the Nieuport 17, which was also produced by Macchi in Italy. This resulted in a number of modifications, including a slight enlargement of the wings and rudder, and a further 10% increase in engine power. This initially proved satisfactory to the air force, and the modified A.1 (designated A.1bis) was ordered into service with No.91 Squadriglia for further evaluation.

Reports from pilots were mixed. While the fighter's speed was impressive, its manoeuvrability good, it was difficult to fly. Nevertheless, with a need to clear a backlog of obsolete fighter types then in service, the air force ordered the A.1 anyway.

The first of an original order of 100 machines entered service in July 1918. The A.1s were kept away from the front lines and mostly assigned to home defence duties. In the four months before the Armistice, A.1s scored only one aerial victory, over an Austrian reconnaissance aircraft. It was during this time that Ansaldo engaged in a number of promotional activities, including dubbing the aircraft as *Balilla*, flying displays in major Italian cities and presentation 'Balilla's' to Italian pilots Antonio Locatelli and Natali Palli, for use as their personal property. Both of the aircraft were adorned with the 'Saint George' crest from the City of Genoa.
Despite all this, the air force ordered another 100 machines, all of which were delivered before the end of the war. At the armistice, 186 were operational, of which 47 aircraft were ordered to remain on hand with training squadrons, and the remainder were to be put into storage. The aircraft also saw post war service in Russia, Poland and Latvia. The name 'Balilla (little boy) was the nickname of Giovanni Battista Perasso, a Genoese boy who started the revolt of 1746 against the Habsburg forces that occupied the city of Genoa in the War of the Austrian succession by throwing a stone at an Austrian official.

Length: 6.84 m (22 ft 5 in) **Wingspan:** 7.68 m (25 ft 2 in) **Height:** 2.53 m (8 ft 4 in)
Wing area: 21.2 m^2 (228 ft^2) **Empty weight:** 640 kg (1,410 lb) **Gross weight:** 885 kg (1,950lb)
Powerplant: 1 × SPA 6A inline (164 kW (220 hp) **Maximum speed:** 220 km/h (140 mph)
Range: 660 km (410 miles) **Service ceiling:** 5,000 m (16,400 ft) **Rate of climb:** 2.7 m/s (520 ft/min)

Aircraft colour schemes:
The underside of Italian aircraft wings were covered in linen with the standard Italian tri-colour red and green outer panels, the rest being Clear Doped Linen (CDL). The colour of CDL was effectively raw linen, then doped, which would have weathered in and change the colour eventually.

Underwing of Palli's aircraft, Ser No:16552, held for restoration

The red and green colours applied to the underside of the wings would normally have shown through the CDL top surface as a 'ghost' area. This was evident, even on aircraft that had the upper surfaces of the lower wings painted olive green. The lower wings and underside of the upper wing and tailplane/elevators of this aircraft were left as Clear Doped Linen (CDL). The undersides of the upper and lower wings were painted with red and green outer sections with the central areas being left as Clear Doped Linen (CDL). The fuselage was stained with a dark, almost glossy finish over the wood panelling. These colours can be painted onto the model or can be represented by the decals supplied in the 'Aviattic' kit.

CDL - FS 27855 Red - FS 31302 Green - FS 34090

The inner ring of the National roundels were painted white where roundels were painted over coloured surfaces. However, a feature of Ansaldo built aircraft was not to paint the central band of the rudder marking white or the middle ring of roundels where painted on CDL surfaces, but to leave it as CDL.

Restored 'Balilla' Ser No:16553 of Tenente Antonio Locatelli, displayed in the Museo Storico di Bergamo

Unrestored ‘Balilla’ Ser No:16552 of Capitano Natale Palli,
displayed in the Gianni Caproni Air Force Museum.

Typical Ansaldo A.1 ‘Balilla’

Example of upper surface camouflage scheme

THE PILOT

THE PILOT

References:

1. ‘Aviattic’ kit information book - Ansaldo A.1 ‘Balilla’.
2. Windsock Date file No.88 - Ansaldo A.1 ‘Balilla’ (by Gregory Alegi).
3. Osprey Aircraft of the Aces No:89 - Italian Aces of WW1 (by Paolo Varriale).
4. Online resources, including Wikipedia and The Aerodrome Forum.

The pilot:

Leopoldo Eleuteri was born in Castel Ritaldi, a small town in Umbria, central Italy, on 17th of December 1894.
He was a student in a technical school until Italy entered the war and was conscripted in 1915. At first, he was assigned on clerical duties in ordnance factories before being sent to join the 3rd Infantry Regiment of the Royal Italian Army.
Passionate about all forms of mechanised flight he volunteered for aeronautical service as soon as he was old enough. He began his aviation training and in October 1916, he qualified as a pilot at Gabardini's flying school at Cameri in Piedmont, where he qualified for flying the Caudron G.3.

In April 1917, Eleuteri mastered the two-seater Lombardy-built SAML aircraft and was posted to the 73a Squadriglia, stationed in Verona (later redesignated as the 121a Squadriglia) to defend the city from possible Austrian air strikes. Later that year, still flying SAML’s and following the army’s defeat at the Battle of Caporetto, he was lucky to survive after his plane was attacked by three enemy fighters above Asiago, about 21km (13 miles) northwest of Bassano del Grappa. The plane was hit several times and his co-pilot was hit and wounded, but they managed to limp back to base and land successfully.

In January 1918 he underwent further gunnery training. On the 22nd of February 1918 he was re-assigned to the 70a Squadriglia of the Corpo Aeronautico Militare, the airborne arm of the Royal Italian Army. Here he teamed up with fighter pilots Aldo Bocchese, Alessandro Resch and Flaminio Avet and they often flew combat missions together. On 17 April, he teamed with Aldo Bocchese, Alessandro Resch, and Flaminio Avet in staking claims for an enemy two-seater and two fighters and Eleuteri was credited with two victories.
Eleuteri would go on to fly 151 combat sorties and would engage the Austro-Hungarian enemy 26 times. He had seven of his eight combat claims confirmed, usually in conjunction with Bocchese and Avet. His final success came in October 1918, when he forced an Austro-Hungarian pilot to land at the Corpo Aeronautico Militare airfield at Arcade, just north of Treviso.
Leopoldo Eleuteri was awarded the Silver Medal for Military Valour on three separate occasions, as well as the War Merit Cross.

Leopoldo Eleuteri was the only pilot to claim a victory flying the Ansaldo A.1 ‘Balilla’ fighter.

After being discharged, Eleuteri returned to his engineering studies, enrolling at the Milan Polytechnic from where he graduated in 1922.
In 1923, he joined the newly formed Royal Aeronautica as an officer in the engineering department where was also able to resume flying. He promoted to the rank of captain in October of that year. He was stationed at **Furbara,** about 50km (31 miles) northwest of Rome on the Tyrrhenian Sea.

Tragically, on the 19th of January, 1926, Eleuteri was flying a simulated combat mission when his aircraft, an Ansaldo AC.2, collided with the “enemy” plane, a Hanriot fighter. Both planes lost a wing and fell to the ground from about 1,000m (3,281ft), causing the death of both pilots.

The Castiglione del Lago fighter school was renamed in his honour, as was the flying club at Perugia airfield. There are statues of him in his home town, Castel Ritaldi, which also has a street named after him and further monuments at the civil airport of Via Salaria in Rome and in Furbara.

VICTORY	DATE	LOCATION	VICTIM	NOTES
1	17th April 1918	Valdobbiadene	Br C.I, Ser No: 169.35 of Flik 52/D	Accompanied by aircraft of pilots Avet and Bocchese
2	17th April 1918	Valdobbiadene	Albatros D.III, Ser No:153.152 of Flik42/J	Accompanied by aircraft of pilots Avet and Bocchese
3	15th July 1918	Vido	Aviatik D.I, Ser No: 38.63 of Flik 74/J	Accompanied by aircraft of pilots Avet and Bocchese
4	15th July 1918	Sernaglia	Fighter (not known)	Accompanied by aircraft of pilots Avet and Bocchese
5	4th October 1918	Moriago	Fighter (not known)	Accompanied by aircraft of pilots Reali and Luncetini
6	8th October 1918	S. Lucia de Piave	Albatros D.III	**When flying the Ansaldo A.1 'Balilla'**
7	28 October 1918	Arcade	Aviatik D.I of Flik 70/J	Accompanied by aircraft of pilots Avet and Bocchese

NOTE TO READERS

NOTES TO READERS

The ‘Aviattic’ produced build log for this model is available to download from their website. The build log is extensive and detailed and in Adobe PDF format. However the build log covers building of the model without any references to the painting and application of the various decals. Also there are some omissions and errors, particularly in the identification of some parts.

Therefore I decided to write this build log in my usual format, including step by step build details, highlighting each stage of the build.

The build log also includes hints and tips on areas that may or will cause problems and corrections to the ‘Aviattic’ build log, where applicable.

PART 1
MODEL DESCRIPTION

PART 1 - MODEL DESCRIPTION

('Aviattic' - Kit No:ATTKIT006)

This 1:32nd resin scale model is one of the best produced and presented kits and is available from 'Aviattic'. The 'Aviattic' team was headed up by Richard Andrews with the resin moulding carried out by Ron Kootje. Many other specialist were part of the team as were third party suppliers such as 'Pheon Decals', 'RB Productions' and 'HGW Models'.

The presentation box, once opened, reveals the following:

Ansaldo A.1 'Balilla' information book.
The resin kits parts.
Fully detail decal sheets.
Comprehensive photo-etch sheet.
Coloured cards.
Separate fabric seat harness.
Instrument decals and acetate windscreen.
Certificate.

In addition, a fully detailed step by step build log is available to download from the 'Aviattic' web site. This build log has every step of the build covered with text entries supported by detailed explanation photographs.

Information book.

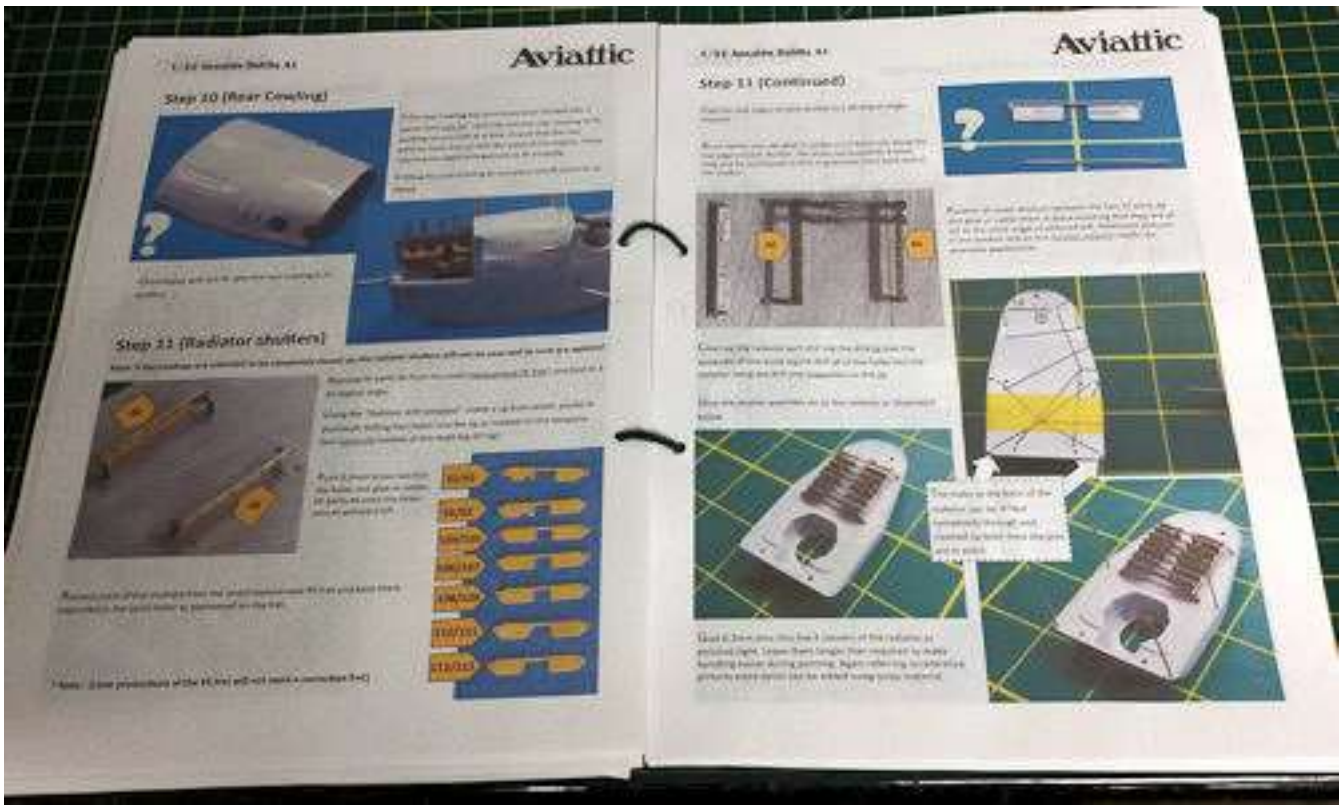
The information book is literally a reference work in its own right. It gives full information of the aircraft in both text and high quality supporting and coloured photographs. It also contains colour profiles of the various Italian and Polish schemes and markings as well as the aircraft flown after the war by American ace Eddie Rickenbacker.

Build log.

The downloadable build log, in Adobe PDF format, was compiled by Ron Kootje with further assistance from Dave Hooper. It shows in detailed photographs and text every step of the build, including the tools required and jigs designs to aid in the build.

Information book

Build Log



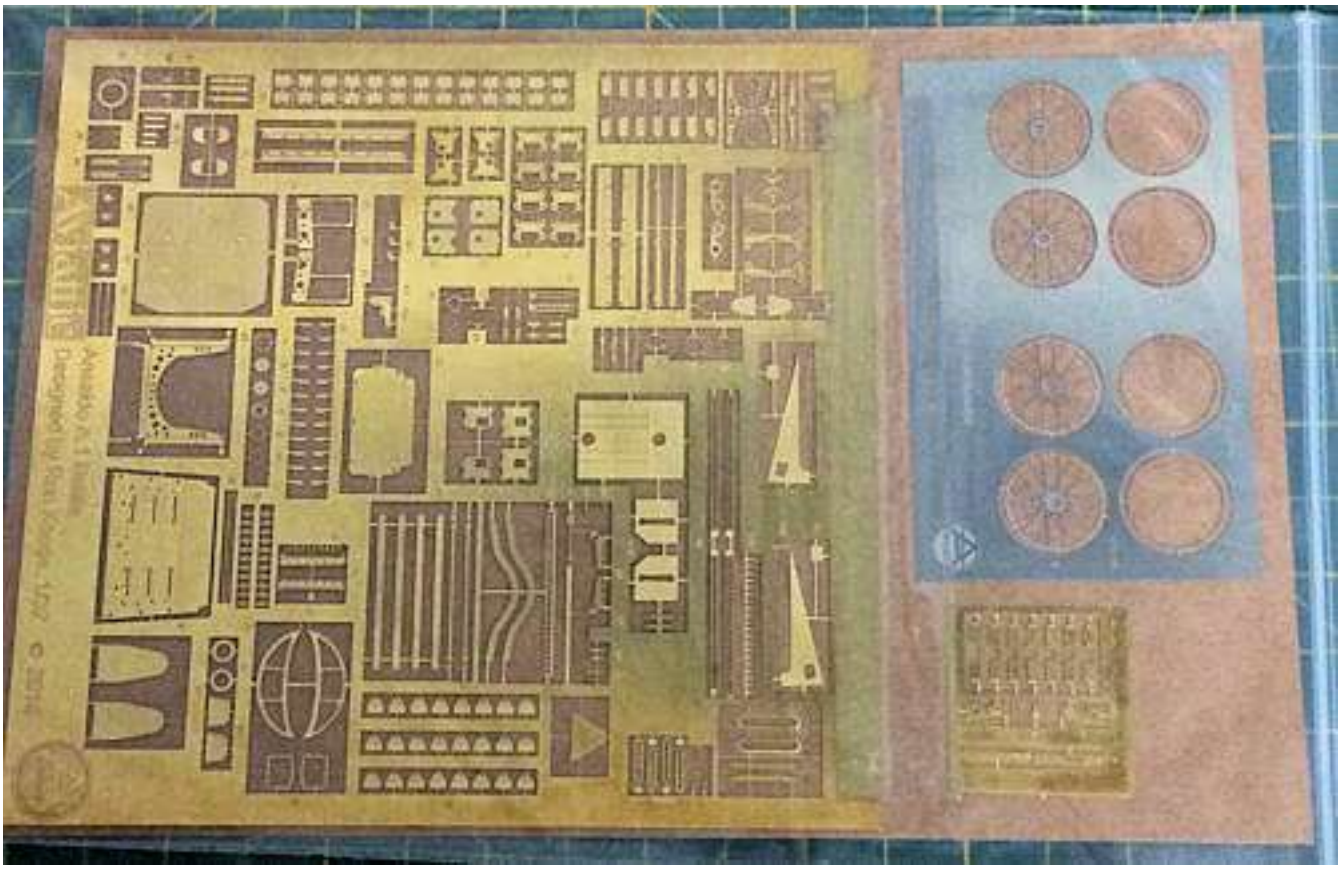
Resin kit parts.

The resin kits parts are separately bagged and protected for each phase of the build. The kits mouldings for all parts are clean and free from defects and surface imperfection and are manufactured in a grey coloured resin, which initially looks like standard styrene. Items that would require addition support, such as the lower wings, have metal reinforcing rods embedded with the parts.

Decal sheets.

The fully detailed decal sheets are produced by ‘Aviattic’ and ‘Pheon Decals’ and are up to the normal high standards expected from these producers. The decal sheets include the aircraft colour schemes, depending on whether the kit is for the Italian or the Polish version. Also included are the various makings and serial numbers etc as well as a full decal sheet containing all of the wood panel nail lines. This decal sheet has a supporting instruction sheet for placement of the nail lines.

Photo-etch sheet.
The supplied photo-etch sheet comprehensively covers all the detail required for the model. It includes detail for the cockpit, wheels and rigging anchor points.



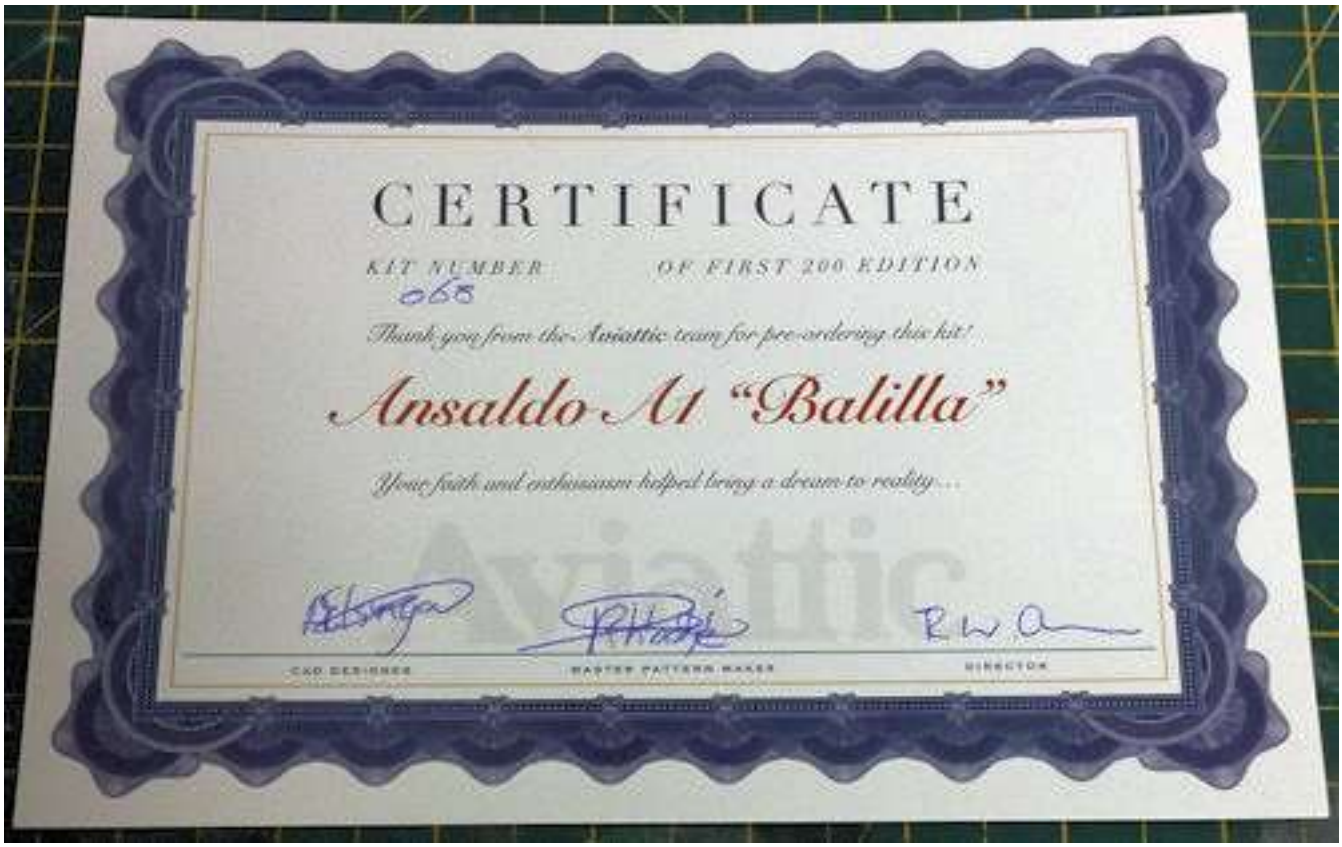
Coloured information cards.
High quality information cards with coloured photographs are included to supplement the information in both the information book and the build log.

Seat harness.
A fabric seat harness with photo-etch fitting is provided for the pilot's seat.

Instruments and windscreen.
An instrument decal sheet and an acetate windscreen are provided.

Certificate

Finally a certificate is included in each kit which has the kit mould number as well as signatures from Richard Andrews (Design and Project Manager), Ron Kootje (Master pattern maker) and Auke Elsinga (CAD design and casting).



PART 2
WOOD EFFECTS
(General)

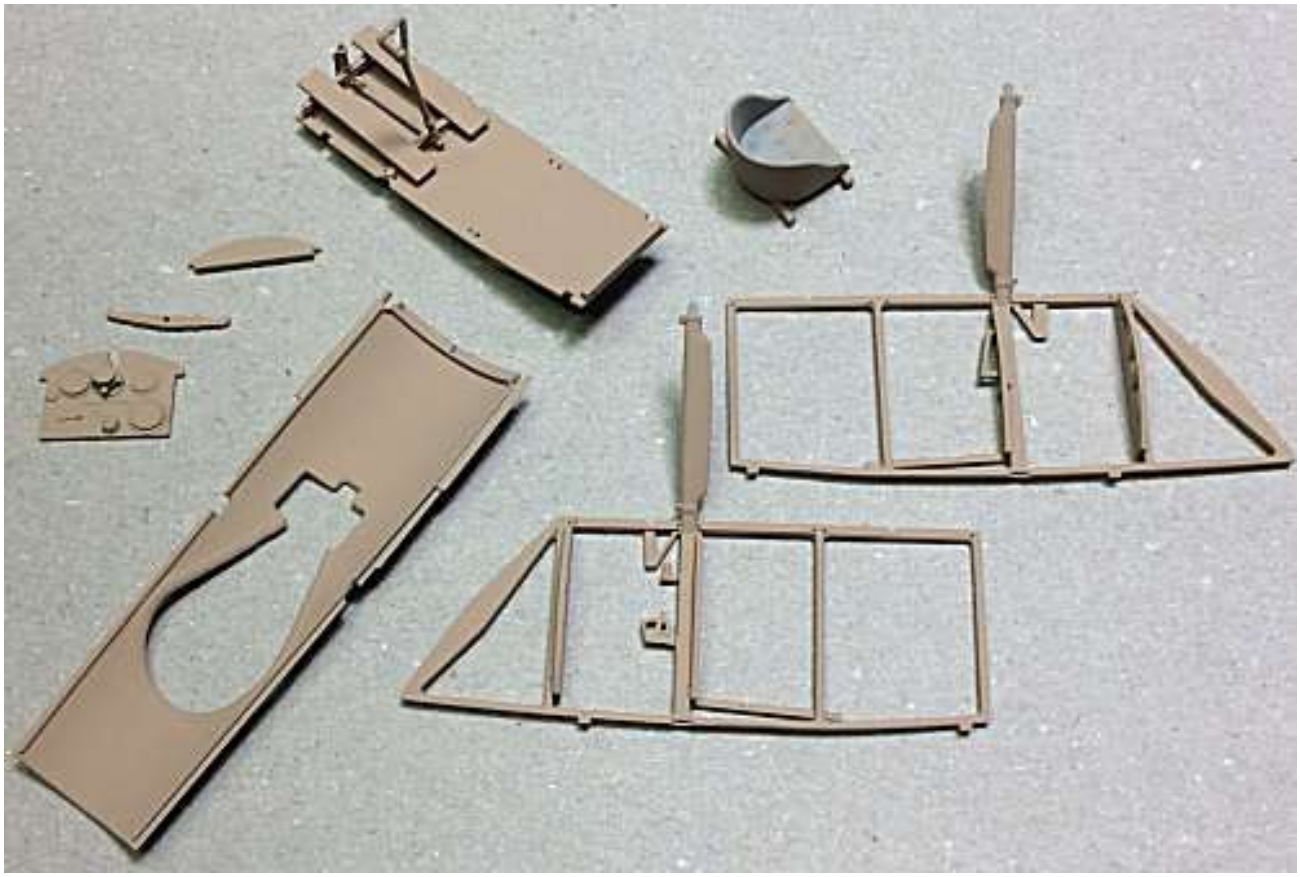
PART 2 - WOOD EFFECTS (General)

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.

NOTES:

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.

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.

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, other-wise the final effect may appear too dark.

'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.

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 semi-matte coat, such as 'Alclad' Light Sheen (ALC-311), which will seal in the applied clay wash. Applying a sealing coat over the weathering wash will tend to darken the weathering, so this needs to be considered.

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)

NOTE: *The supplied decal sheets for this model a combination of standard water slide decals and 'Aviattic' specific decals.*

Standard water slide decals:

The decals supplied for 'Aviattic' cover the serial numbers and aircraft markings and are made by 'Pheon Decals'. These decals are the standard water slide type of 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) or 'Tamiya' Clear (X22) 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) or 'Tamiya' Clear (X22) 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.

Aviattic' decals:

NOTE: *The supplied 'Aviattic' produced decals sheets are not 'cookie cut' to the required shapes, but are part of the overall carrier film on the sheet. Therefore you will need to carefully cut the individual decals from the sheet.*

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

Aviattic’ decals are laser printed onto either ‘clear’ or ‘white’ backing, the ‘clear’ being dependent on the base coat you apply and the finished effect you desire. The decals are supplied with very clear instructions on their application, including when to add pre-shading to the base coat, where desired, before you apply the decals. The camouflage decals for the top surfaces of the wings and the wood effect decals for the fuselage are printed on ’white’ backed sheets. This means pre-shading before applying the decals will not show through the decals. However the second decal sheet for the Clear Doped Lined (CDL) surfaces is on ’clear’ backed sheet, meaning pre-shading before these decals are applied will show through the decals.

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) or ‘Tamiya’ Clear (X22), 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.*

If required, carefully cut around each ‘white’ or ‘clear backed decal to be applied.

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 ant 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, airbrush a sealing coat of either ‘Alclad’ Clear Coat Gloss (ALC-310) lacquer), ‘Alclad’ Aqua Gloss (ALC-600) or ‘Tamiya’ Clear (X22) over areas of decals where more decals are to be applied.
>
> If no more decals are to be applied, airbrush a sealing coat of your desired finish. I tend to airbrush either ‘Alclad’ Light Sheen (ALC-311) or ‘Tamiya’ Semi-Gloss (X35) thinned with ‘Mr. Colour’ Levelling Thinners 400.
>
> 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).

Wood nail effect decals:

These decals are produced for ‘Aviattic’ by HGW Models’ and are not ’cookie’ cut, but instead printed as part of the overall carrier sheet. This means that they will need to be cut out around each decals before being applied. The disadvantage of these particular decals is the large amount of unused carrier film between the nail lines. This may trap air when these decals are applied causing unsightly ’silvering once d the decal has dried and set. Therefore extra care must be taken in the preparation of the surface prior to applying these decals, to ensure the surface is really smooth, glossy and free of surface imperfections. As these will be applied over existing decals and provided those decals are smooth, ’silvering’ should not prove to be a problem.

Instrument decals:

These decals are produced by ‘Aviattic’ on ‘white’ backed sheets, but are not ’cookie’ cut and printed as part of the overall carrier sheet. This means that they will need to be cut out around each decals before being applied. ‘Aviattic’ suggest using hole punches to do this.

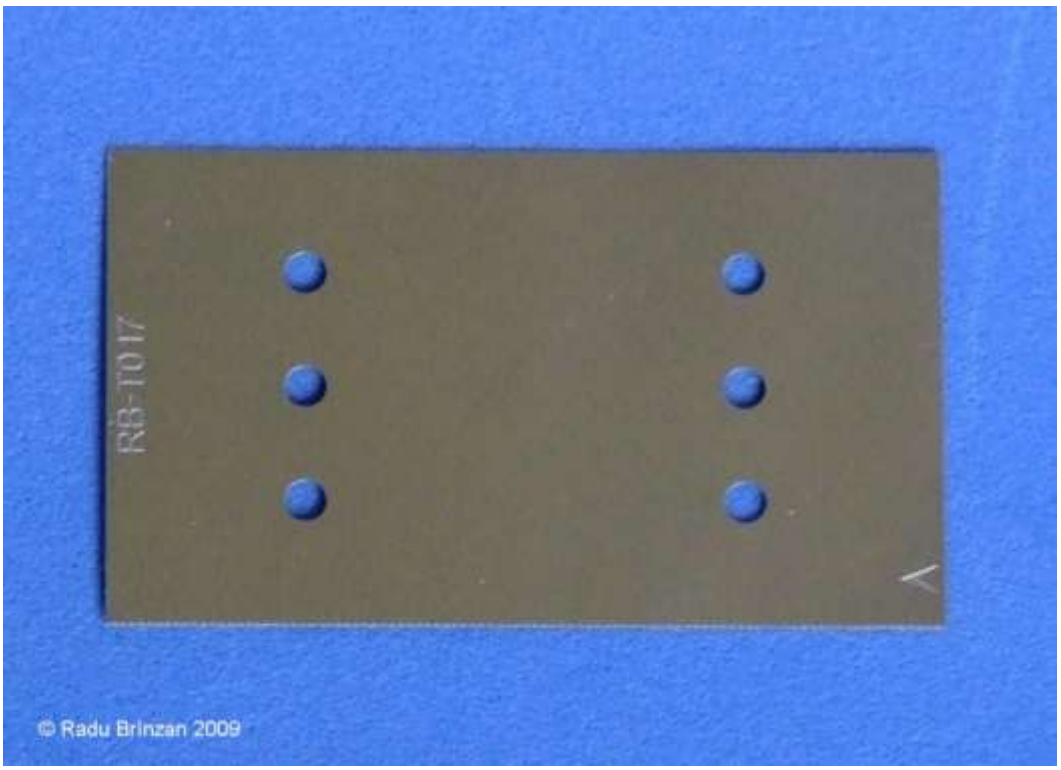
PART 5
RESIN (General)

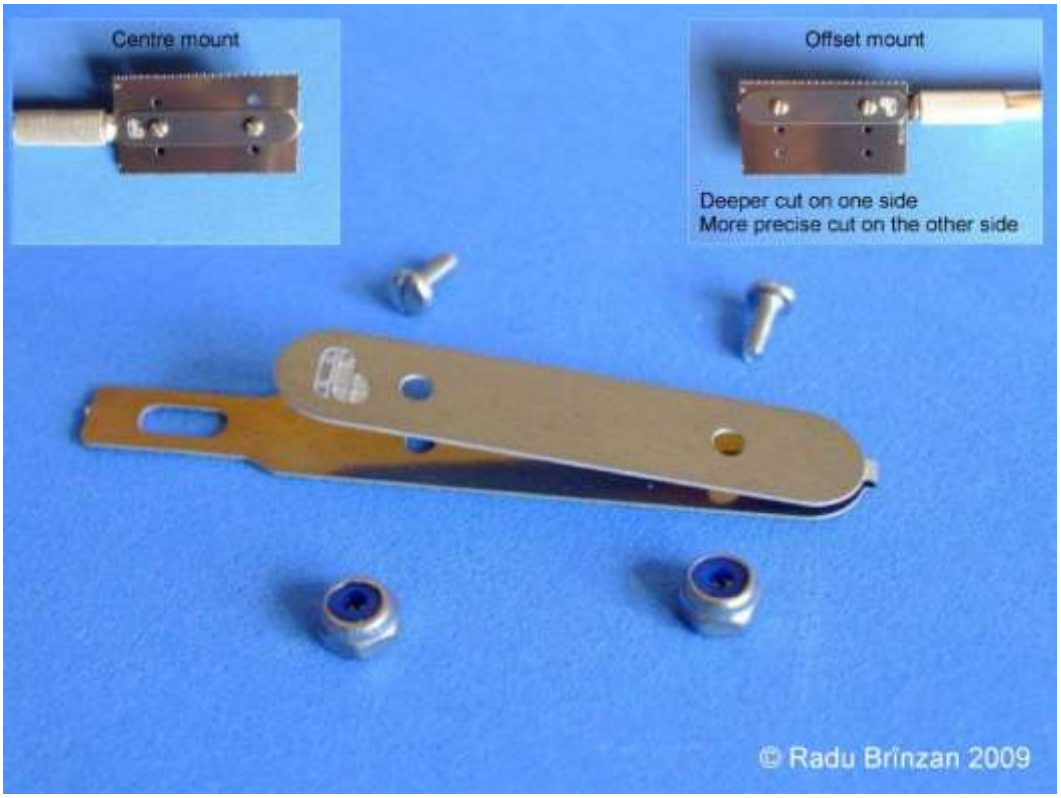
PART 5- RESIN (General)

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 is available from 'RB Productions'.*





PART 6
RIGGING
(General)

PART 6 - RIGGING (General)

General:

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

With your research complete and all necessary holes pre-drilled, the rigging can start. For this model and its primary rigging, such as flying and landing wires and cross bracing wires, I used 'Maxima' Chameleon mono-filament (fishing line) of 0.12 mm diameter and 'Stroft' 0.08 mm diameter mono-filament. The turnbuckles used are either sintered metal or resin and obtained from 'Gaspatch Models'.

Airframe rigging:

Flying wires

Twin flying wires were attached (in parallel) between the underside of the upper wing (inboard from the top of both wing struts) and the fuselage at the lower wing root. The pairs of wire had wood infill strips fitted between them and bound to the wires each side by wrap around strips. Turnbuckles were fitted to each wire at the fuselage anchor points.

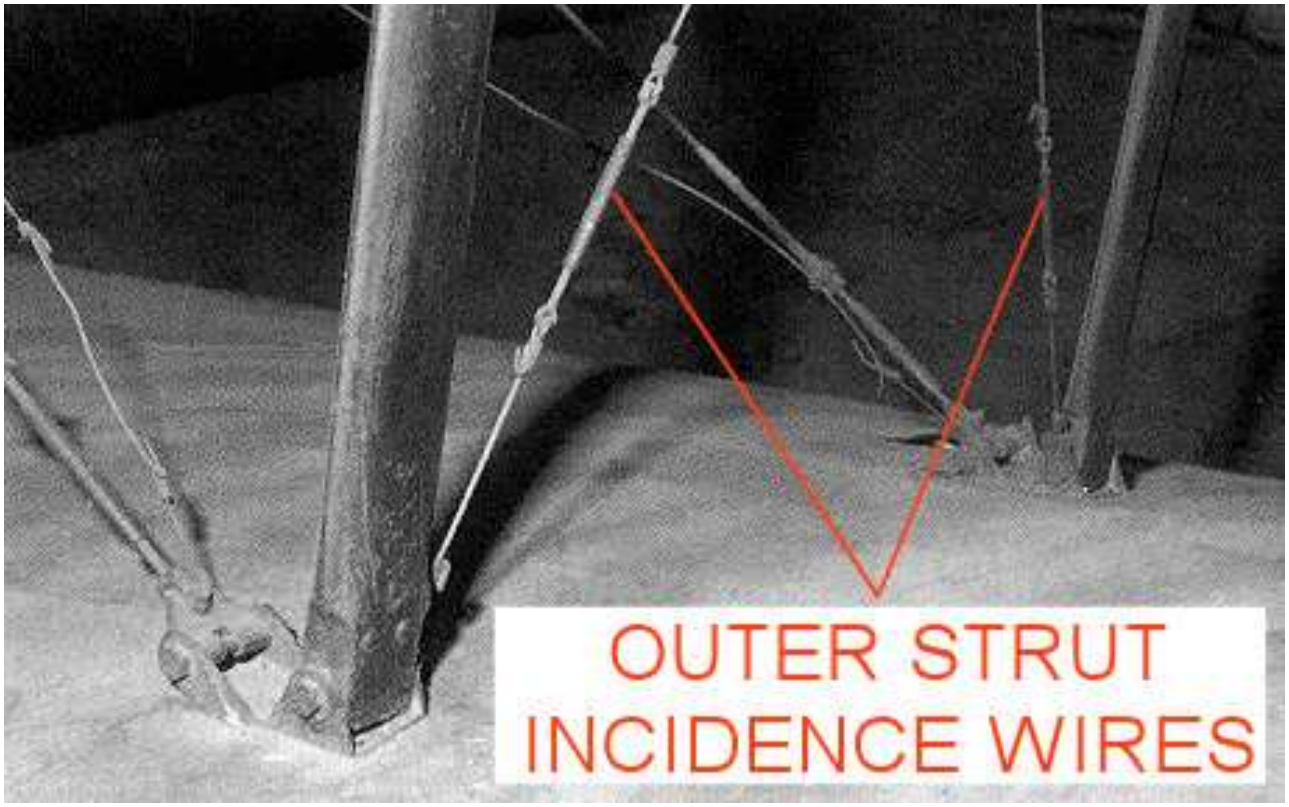
Landing wires

Twin landing wires were attached (in parallel) between the underside of the upper wing (outboard from the top of both fuselage cabane struts) and the top surface of the lower wings (inboard from the bottom of the outer wing struts). The pairs of wire had wood infill strips fitted between them and bound to the wires each side by wrap around strips. Turnbuckles were fitted to each wire at the bottom anchor points of the outer wing struts.

Strut incidence wires

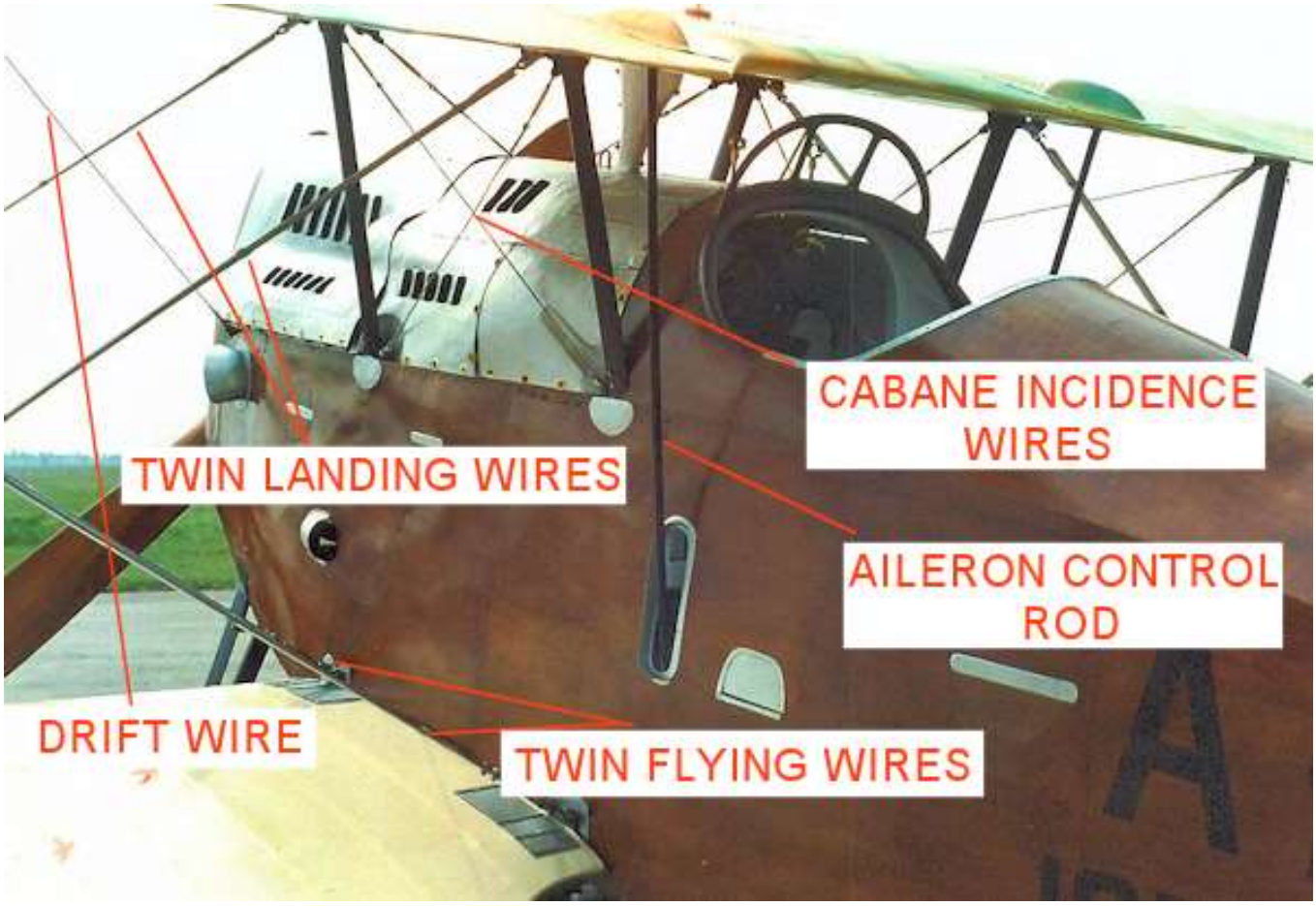
Crossed incidence wires were attached between the top surface of the lower wings and the underside of the upper wing. The wires were fitted to the rear of the front struts and forward from the rear struts and crossed diagonally. Turnbuckles were fitted to each wire at the bottom anchor points of the outer wing struts.

Similarly, crossed incidence wires were fitted between the front and rear fuselage cabane struts with the turnbuckles fitted at the anchor points at the top of the cabane struts.



Wing drift wires

Single wing drift wires were attached between the underside of the upper wing (midway between the rear outer wing struts and the rear fuselage cabane struts) and midway down the side of the fuselage at the rear of the engine radiator housing. Turnbuckles were fitted at the radiator end of the wires.

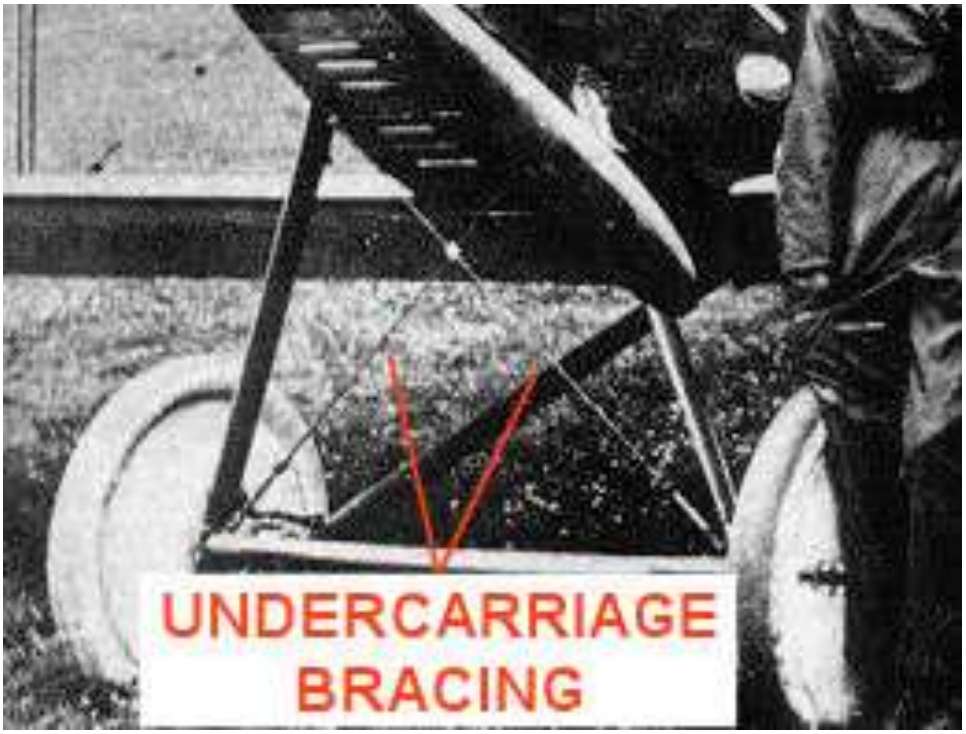


Fin bracing wires

Twin bracing wires were fitted between the top surface of the tailplane (midway along the trailing edge) and to top of the fin. Turnbuckles were fitted to both wires at the tailplane ends.

Landing gear bracing wires

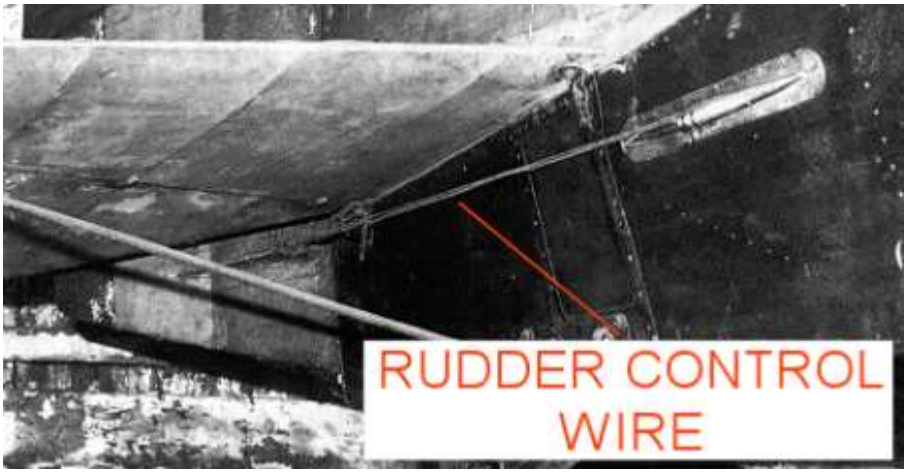
Crossed bracing wires were attached between the top surface of the axle assembly, inboard from the base of the forward landing gear and diagonally crossed and attached at the top, trailing edge of the front landing gear struts. Turnbuckles were fitted to each wire at the axle ends.



Flight control rigging:

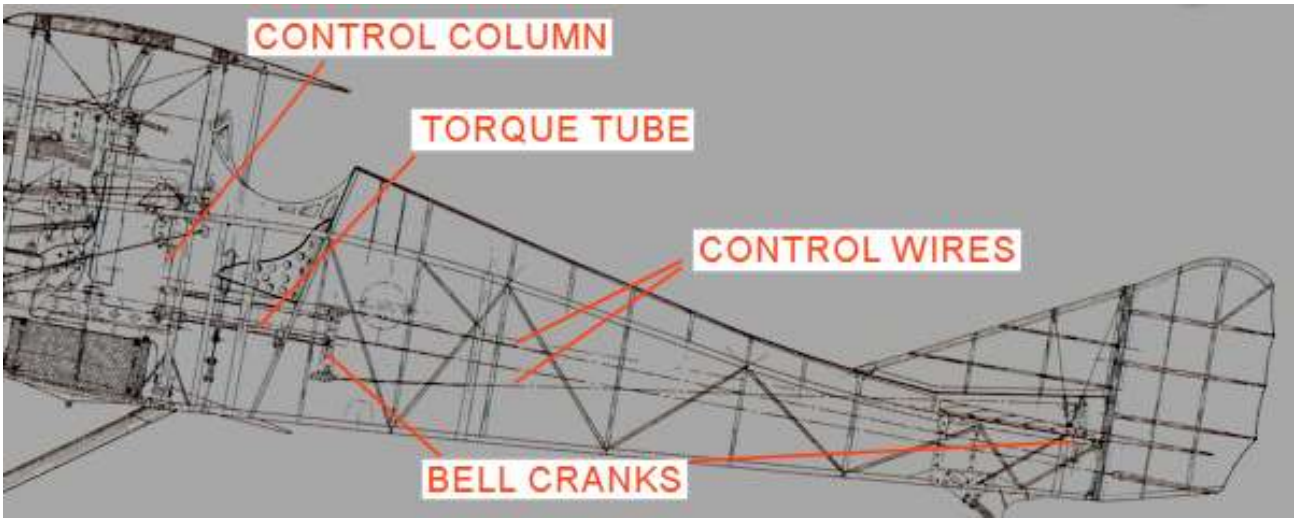
Rudder

Two rudder control wires were attached to the pilot's rudder bar in the cockpit. These wires were routed rearwards under the pilot's seat and exited from the rear sides of the fuselage and then onto the rudder control horns at each side of the rudder. As the pilot pushed the rudder bar left or right, the wires moved the rudder in the appropriate direction, causing the aircraft to turn left or right (yaw).



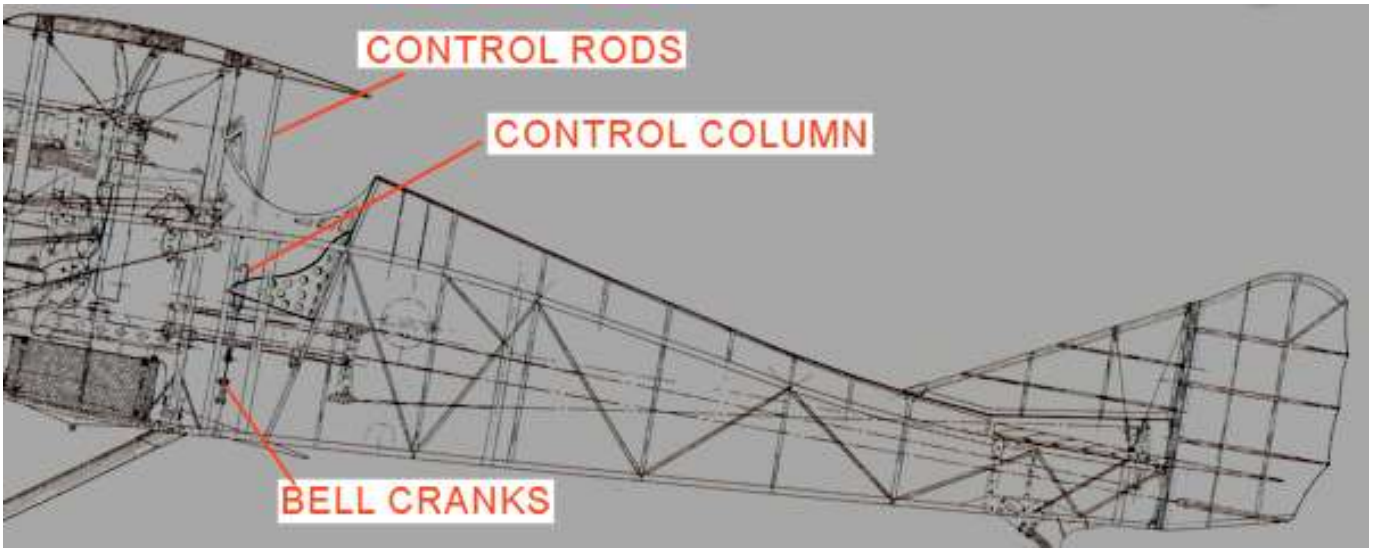
Elevators

The pilot's control column was attached to a torque tube that passed under the pilot's seat and attached to a bell crank assembly. Control wires were attached to the top and bottom bell cranks and were routed rearwards inside the fuselage. The wires crossed inside the fuselage and were attached to bell cranks on a lateral torque tube. The torque tube spanned outwards inside the tail-plane to both sides of the tailplane and was attached to the elevators. As the control column was moved forwards or rearwards, the control wires moved the elevators up or down to cause the aircraft to climb or dive (pitch).



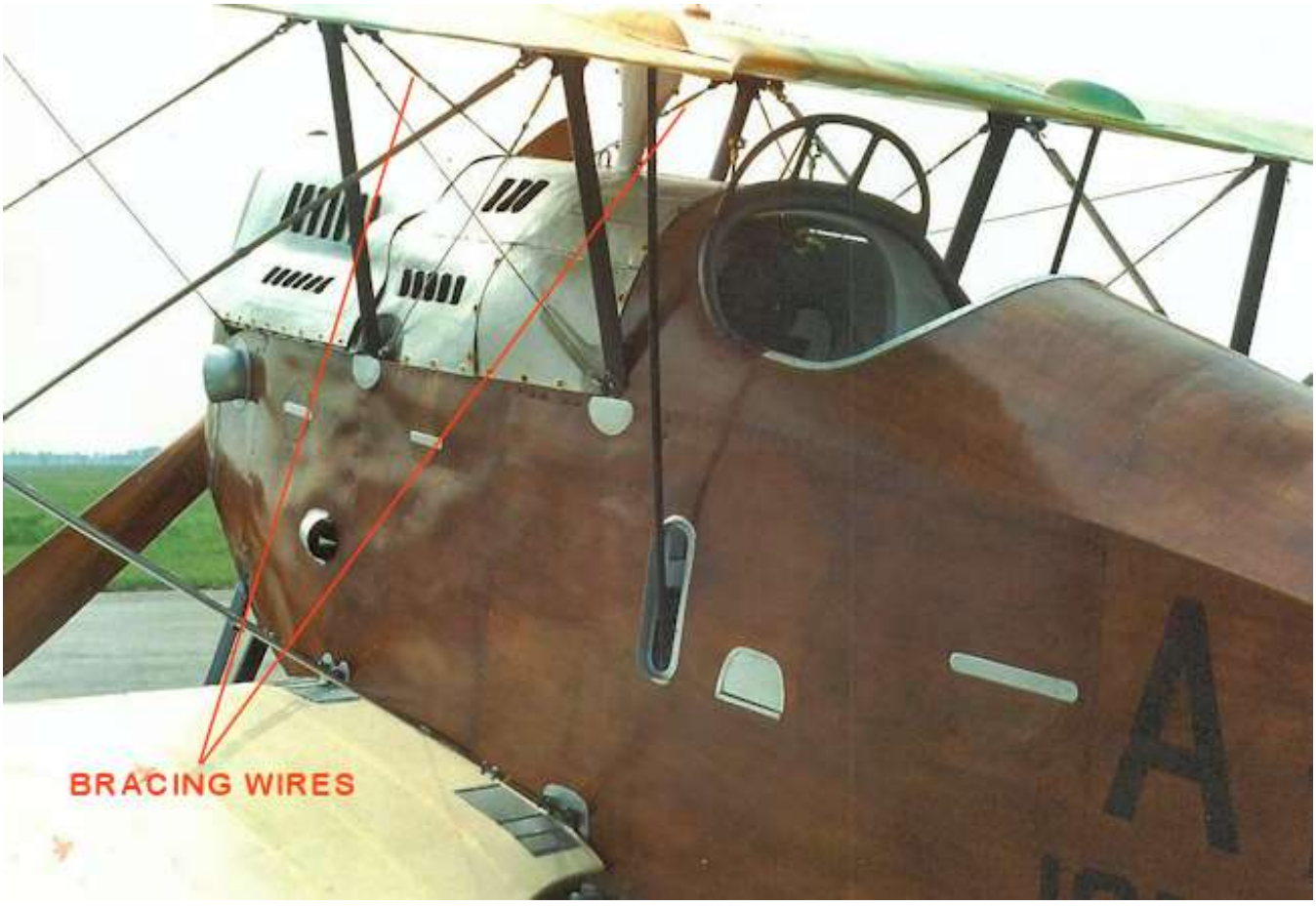
Aileron control

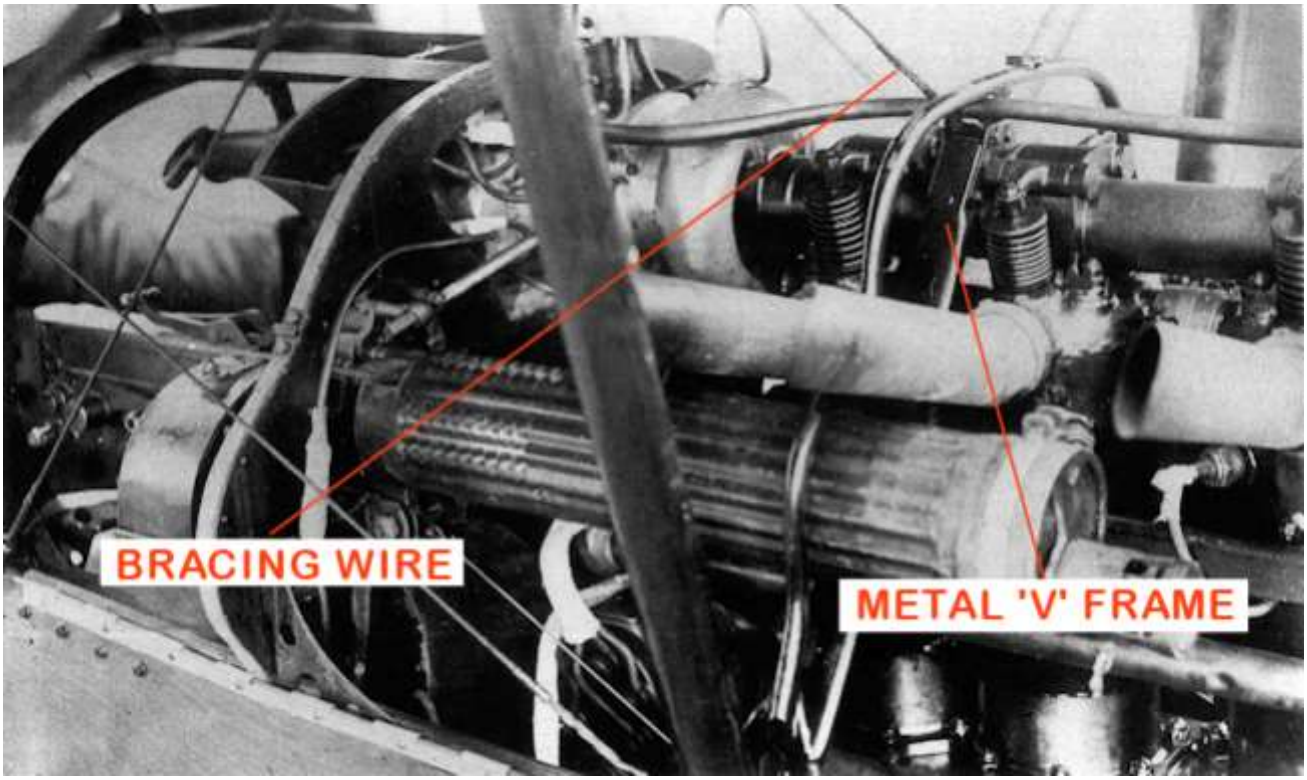
The pilot's control column was attached to a second torque tube which was fitted with a left and right bell crank. Control rods were attached to the top of the bell cranks and were routed up and out of the sides of the fuselage. The tops of these control rods were attached to bell cranks in the upper wing, which were in turn attached to separate torque tubes that spanned outwards inside the upper wing to the left and right ailerons. As the control column was moved left or right, the control rods moved up or down to turn the torque tubes in the wing. The torque tubes then moved the ailerons in opposition up or down to cause the aircraft to turn left or right (roll).

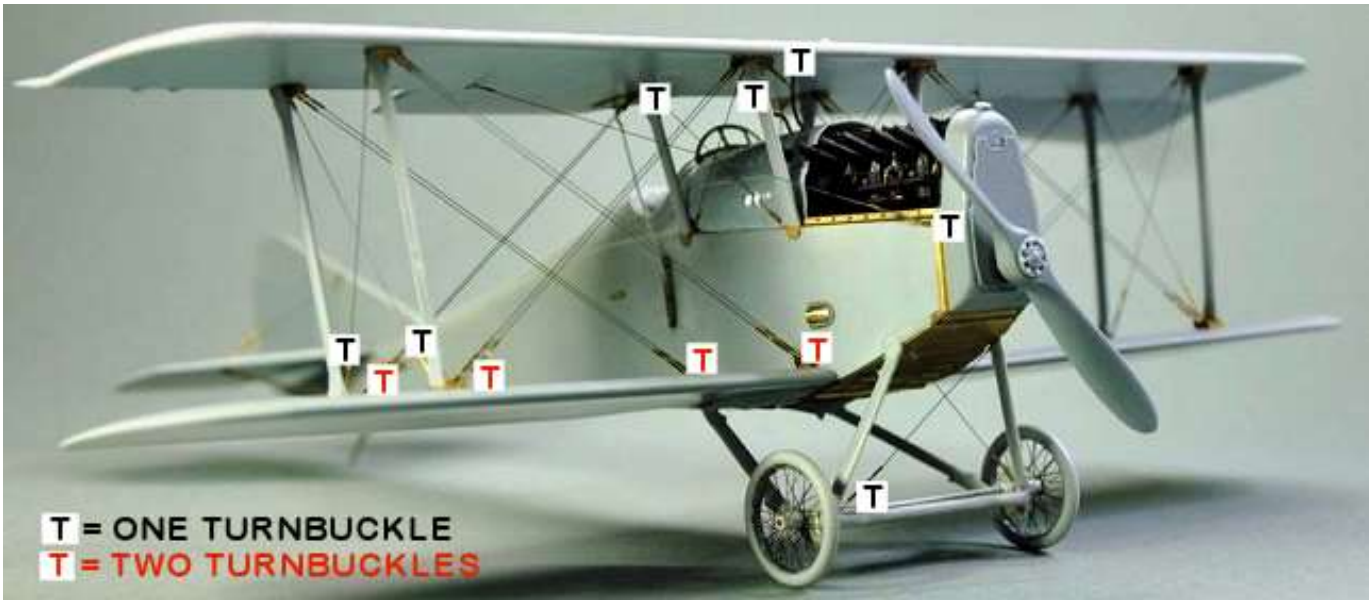


Bracing wires:

Two wires were fitted between the underside of the upper wing, inboard from the forward cabane struts, and the top of an inverted metal ‘V’ frame fitted between the insides of the fuselage and over the engine camshaft. Turnbuckles were fitted at the top of the wires.




BRACING WIRE
METAL 'V' FRAME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PART 7
HINTS AND TIPS

PART 7 - Hints and Tips

‘Aviattic’ build log - Section 2: Fuselage interior

NOTE: *Refer to the ‘Aviattic’ build log and follow this part for additional information.* ***Parts should be painted (Refer to Part 9 of this build log) before being assembled (refer to Part 10 of the build log).***

The ‘Aviattic’ build log uses very small parts of photo-etch, some of which need to be softened by annealing (lightly heating the photo-etch of a flame). Great care should be taken when annealing the very small photo-etch parts as they can easily melt. If in doubt do not anneal the parts and try to use them as supplied.

Some of the photo-etch assemblies are difficult to make, especially for the less experienced modeller. Therefore, if your skill level is in doubt, use where stated in the ‘Aviattic’ build log, the resin equivalent parts.

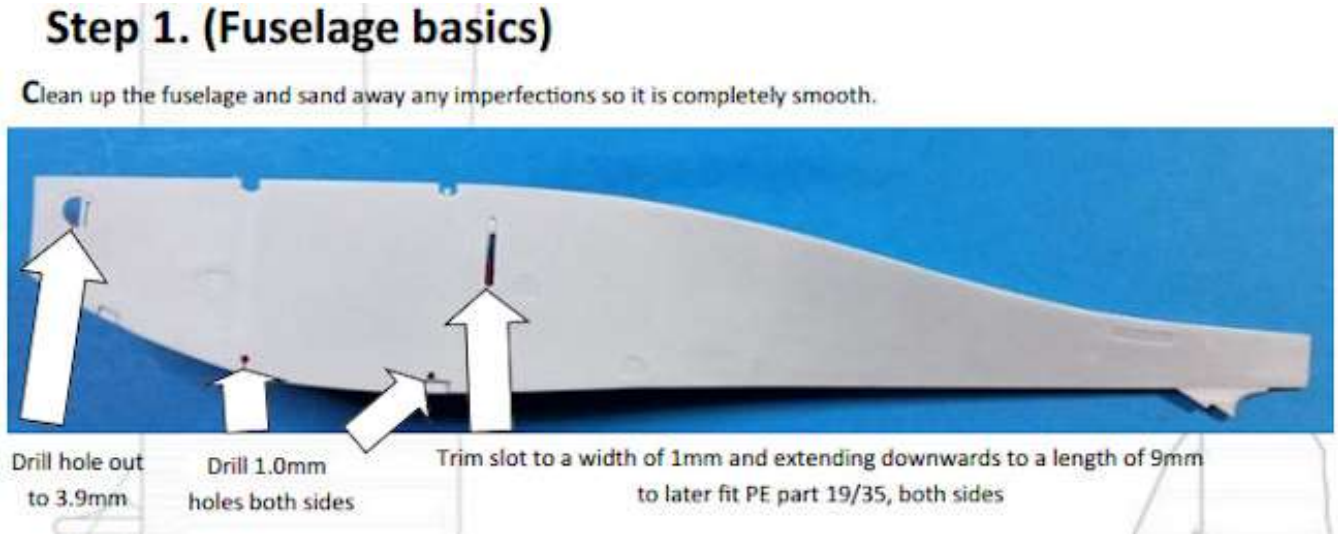
The holes and slots in the fuselage have thin ‘skins’ of resin, which is easily removed. To extend the slots for the aileron control rods:

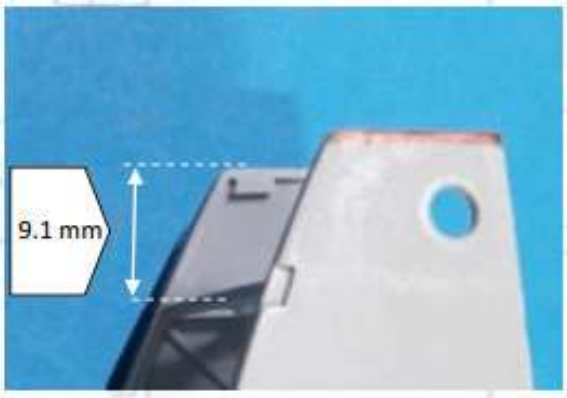
Pencil mark the fuselage 9 mm down from the top of the existing slots.

Point mark the centre line of the extended slots.

Using a 0.8 mm diameter drill on the point marks, drill through the fuselage.

Use a sharp, straight edge scalpel blade to clean the edges of the drillings to create the 1 mm wide extended slot.





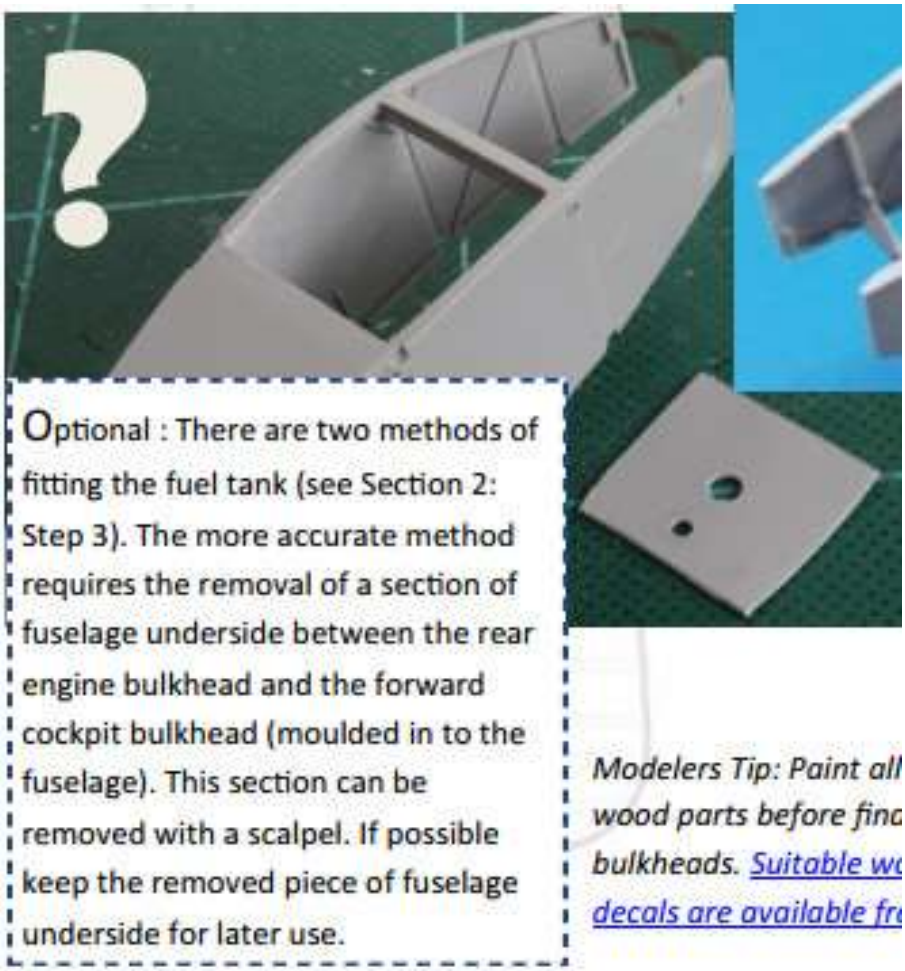
When cutting away the front of the fuselage, make sure you don't apply too much pressure or the fuselage could be damaged (thinner resin breaks easily). Also keep the ends of the fuselage sides level with each other.

When test fitting bulkheads 19 to 21, make sure the mating edges are slightly sanded to allow them to slide unobstructed into their location slots. If necessary, sand the bottom cross member of the rear, seat support bulkhead so that the outer edges of its curved top are not above the sides of the fuselage. **Importantly**, make sure that with the bulkheads dry fitted, the sides at the front of the fuselage match the width of the radiator (I found the fuselage opening too wide, so sanded the outer edges of the bulkheads to achieve a match.

If necessary scrape or sand the top of the fuselage and underside of the turtle deck to achieve a good fit with no pressure required to fully contact the two parts.

Fuel tank option:

If fitting the more accurate fuel tank, the floor under the tank needs to be removed. Using a sharp modelling scraper and working from the inside of the fuselage, score through the outline of the floor panel. Once the outline shows through the underside of the fuselage, use a straight edge scalpel blade to finish the cuts from that side and remove the panel. Scrape or sand flat the cut edges of the fuselage.

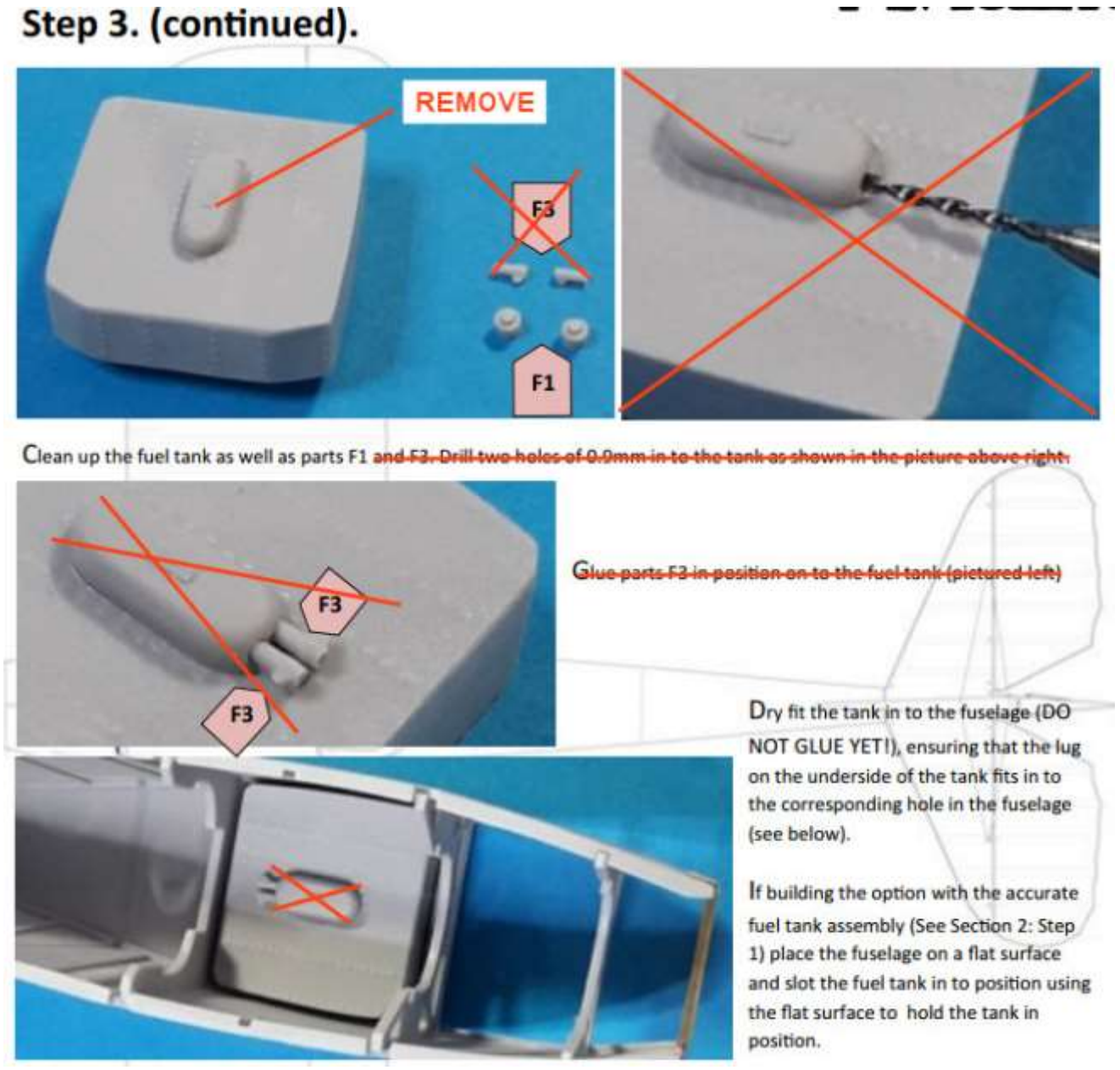


Optional : There are two methods of fitting the fuel tank (see Section 2: Step 3). The more accurate method requires the removal of a section of fuselage underside between the rear engine bulkhead and the forward cockpit bulkhead (moulded in to the fuselage). This section can be removed with a scalpel. If possible keep the removed piece of fuselage underside for later use.

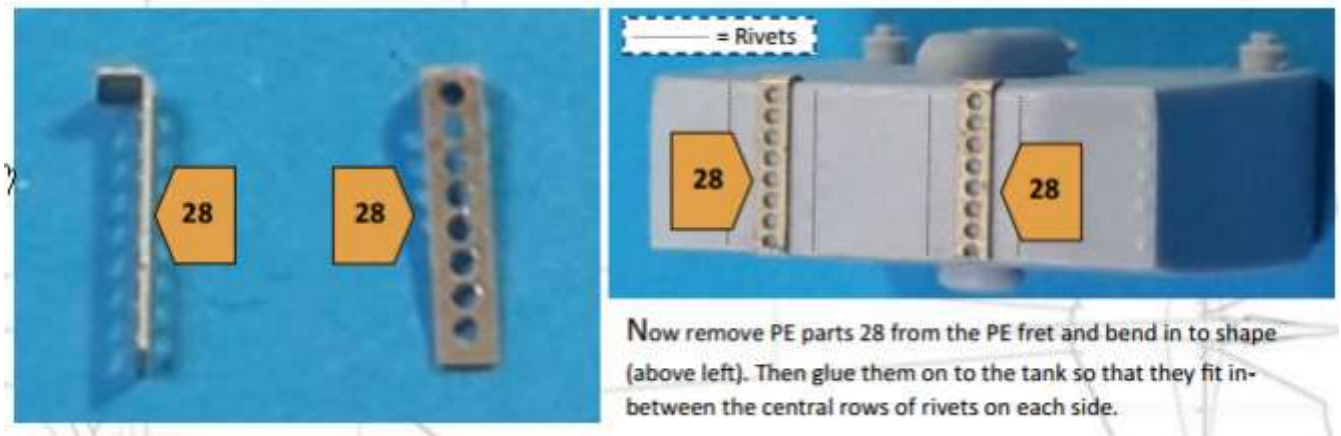
Modelers Tip: Paint all wood parts before fina bulkheads. Suitable wo decals are available fr

Section 2, Step 3

This covers the fitting of two pipes in the sump of the fuel tank top surface. This is not really necessary as the top of the fuel tank will be totally covered by the cockpit floor and nothing will be seen.

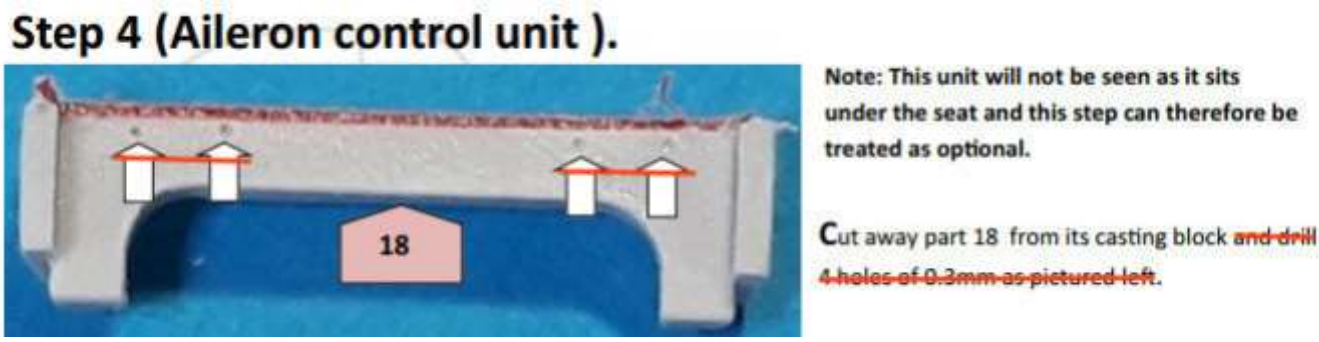


Two photo-etch straps (PE28) can be attached to the forward end of the fuel tank. However, these will be barely visible on the finished model. Therefore adding these straps is optional.



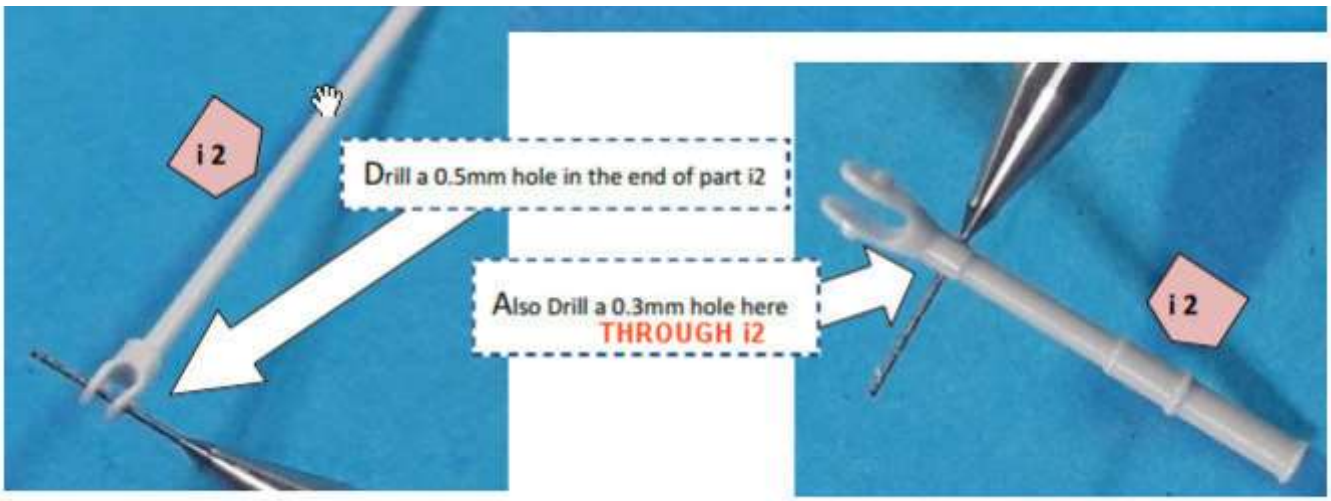
Section 2, Step 4: (Aileron control unit).

As stated in the 'Aviattic' build log, the aileron control unit will not be seen as it will be covered by the pilot's seat. As the photo-etch build of this control unit is complex I would suggest that only the cross member (18) is used and the photo-etch components disregarded.

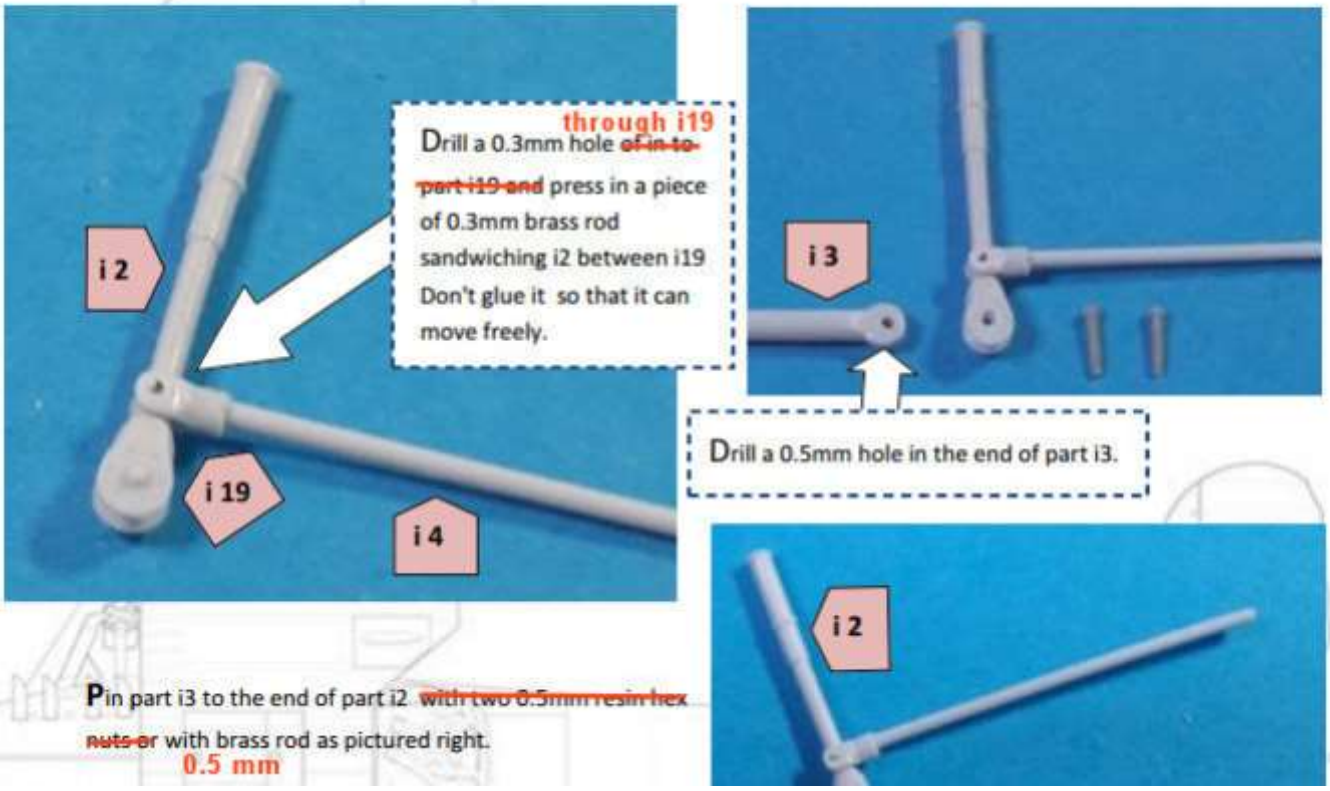


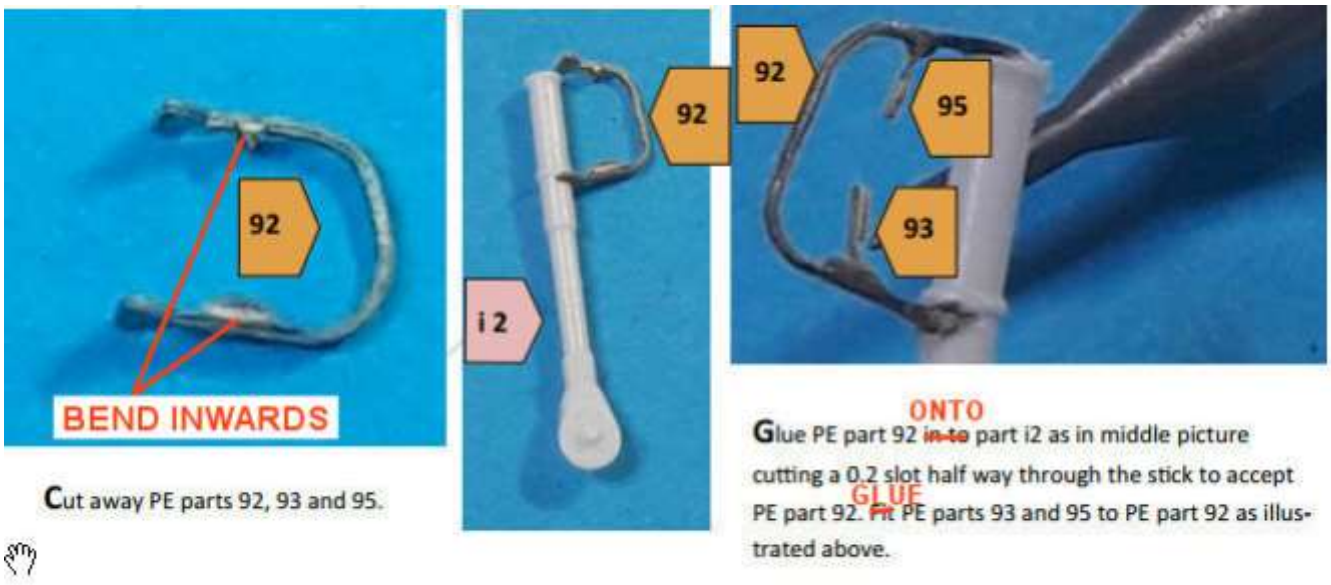
Section 2, Step 5 (rudder bar and floor).

Section 2, Step 6 (control stick).



Step 6 (continued).

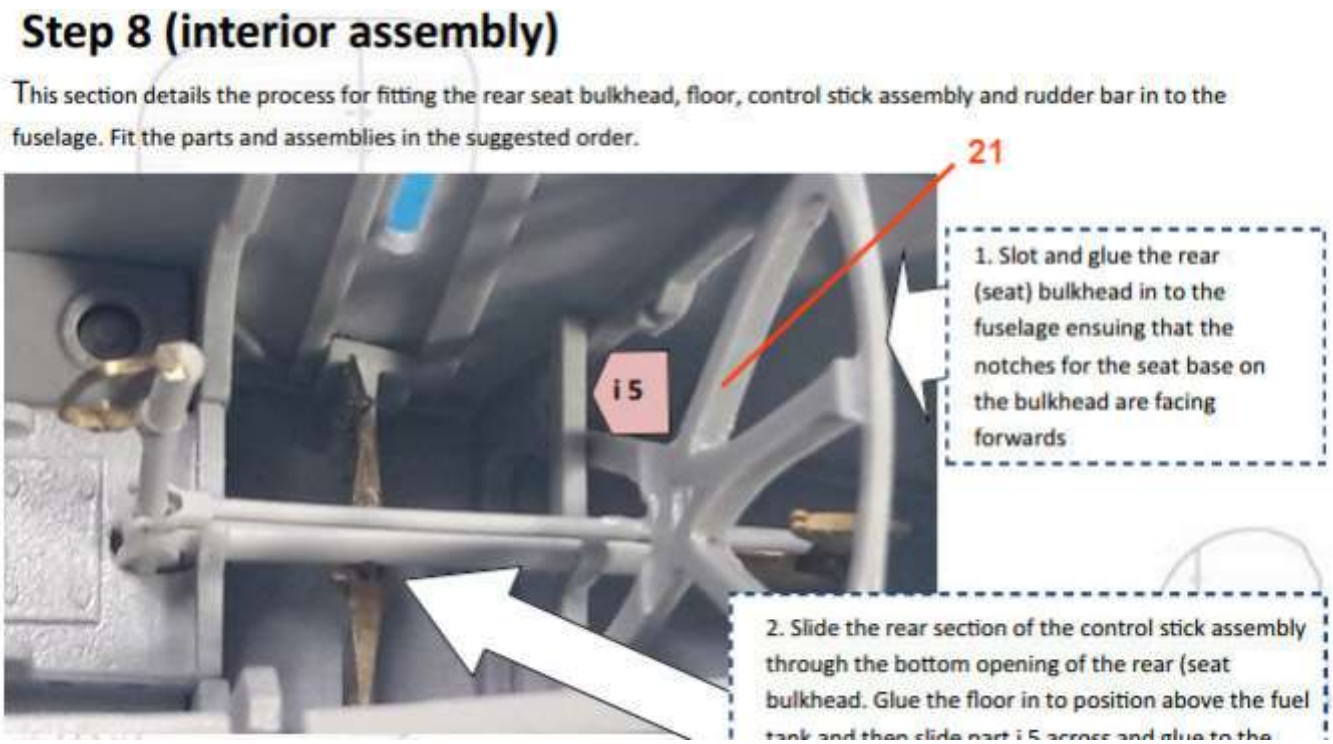




Section 2, Step 7: (Optional control bar detail).

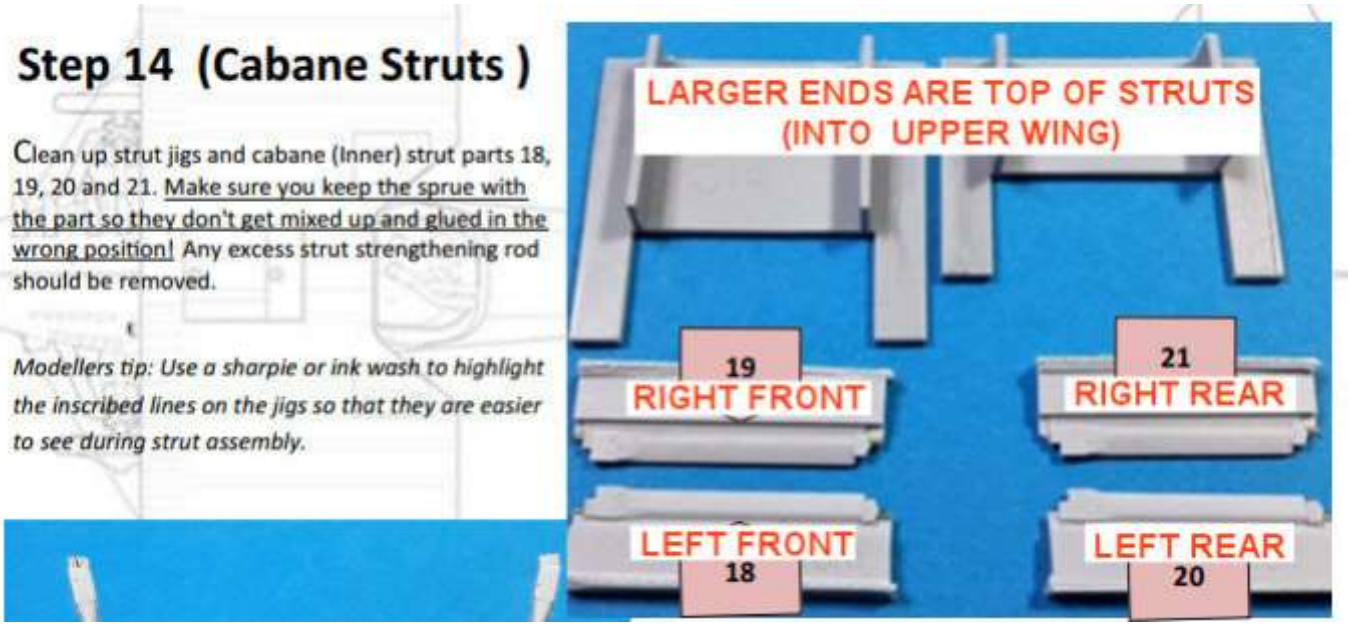
As stated in the 'Aviattic' build log, the optional control bar detail will not be seen as it will be covered by the pilot's seat. As the photo-etch build of this optional detail is complex I would suggest that it is totally disregarded.

Section 2, Step 8: (interior assembly).



Section 2, Step 14: (Cabane struts).

To avoid damage, do not secure the cabane struts in position at this stage.



Section 2, Step 19: (Optional aileron control rod assembly).

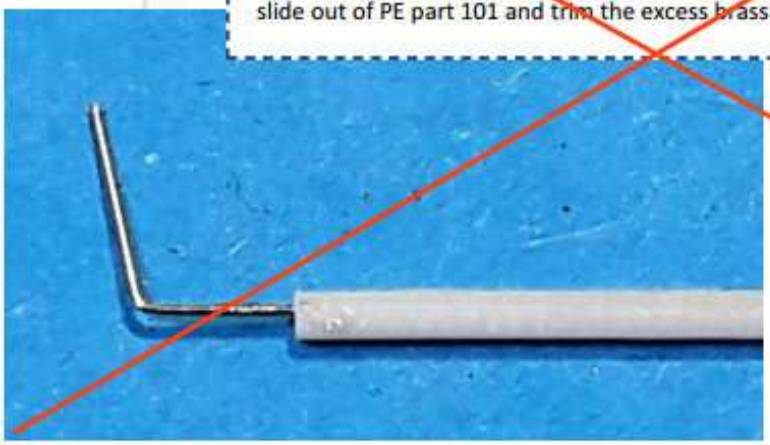
In the ‘Aviattic’ build log, the optional aileron control rod assembly need not be carried out, as the associated photo-etch controls have not been created. As such this step can be disregarded.

Step 19 (Optional aileron control rod assembly)

~~This step provides instructions on fitting the aileron control rods to the aileron control unit (see step 4). This option allows exact fitting to the aileron control unit.~~ Optionally control bars can be slotted in to the general area (which will not be visible) later in the build.

Drill a 0.3mm hole in to end of each aileron control rod and glue in a piece of 0.3mm brass or steel rod which has been bent to a 90 angle as illustrated below.

Slide each aileron control rod through the slot in each side of the fuselage and slide the brass or steel rod on the end of the control rod through the hole in the unused corner of PE part 101 (see step 4). Glue or lock off the brass / steel rod end so that it cannot slide out of PE part 101 and trim the excess brass / steel rod.

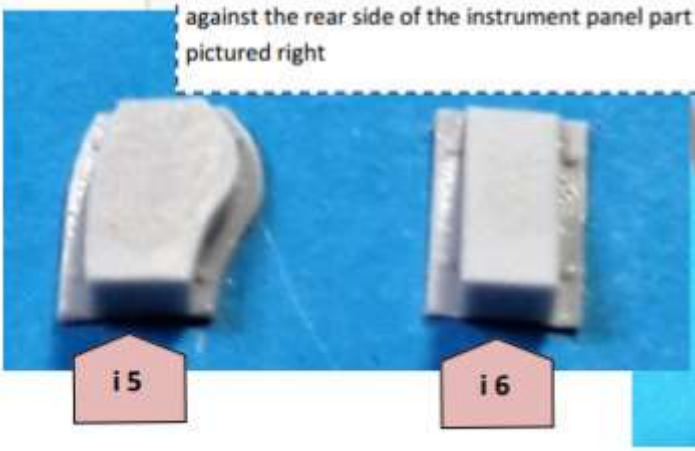


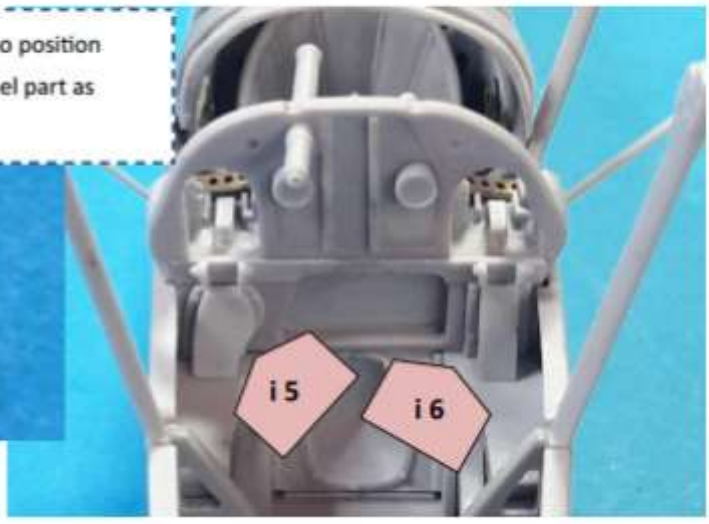
NOTE: ***The following components are detailed in Section 3 of the 'Aviattic' build log, but can be prepared and fitted at this stage of the build.***

Section 3, Step 5 (Empty shell drop boxes).

Step 5. (Empty shell drop box)

Clean up parts i5 and i6 and glue them in to position against the rear side of the instrument panel part as pictured right



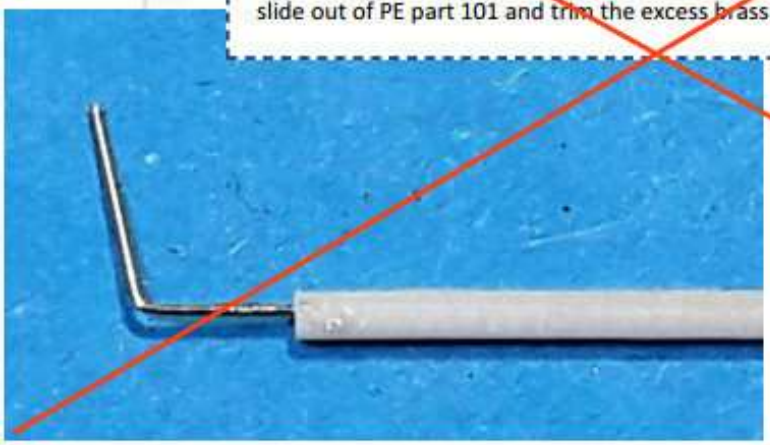


Step 19 (Optional aileron control rod assembly)

~~This step provides instructions on fitting the aileron control rods to the aileron control unit (see step 4). This option allows exact fitting to the aileron control unit.~~ Optionally control bars can be slotted in to the general area (which will not be visible) later in the build.

Drill a 0.3mm hole in to end of each aileron control rod and glue in a piece of 0.3mm brass or steel rod which has been bent to a 90 angle as illustrated below.

Slide each aileron control rod through the slot in each side of the fuselage and slide the brass or steel rod on the end of the control rod through the hole in the unused corner of PE part 101 (see step 4). Glue or lock off the brass / steel rod end so that it cannot slide out of PE part 101 and trim the excess brass / steel rod.

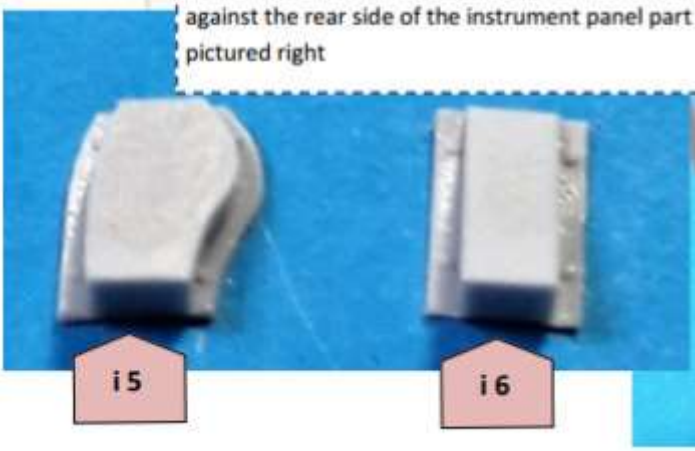


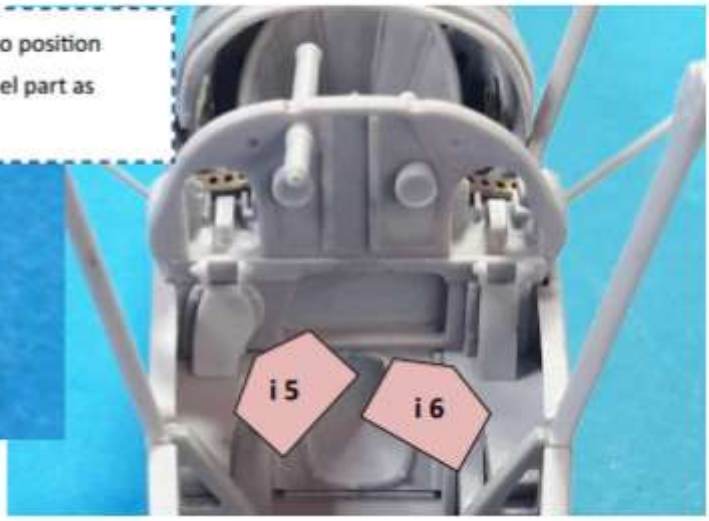
NOTES: *Follow the 'Aviattic' build log and/or refer to this for additional information.* ***Parts should be painted before being assembled - Refer to Part 9 of this build log***

Section 3, Step 5 (Empty shell drop boxes).

Step 5. (Empty shell drop box)

Clean up parts i5 and i6 and glue them in to position against the rear side of the instrument panel part as pictured right



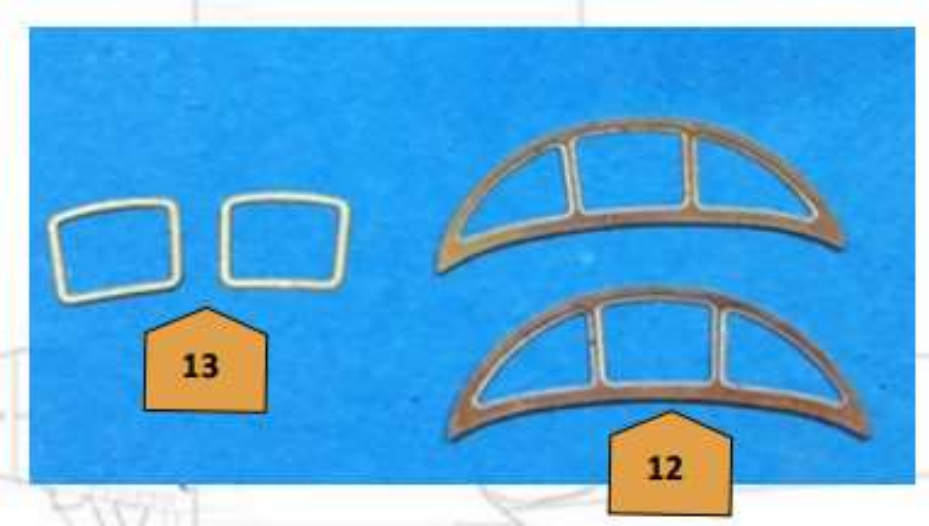


‘Aviattic’ build log - Section 3: Fuselage exterior, machine gun and engine installation.

NOTES: *Follow the ‘Aviattic’ build log and/or refer to this for additional information.* ***Parts should be painted before being assembled - Refer to Part 9 of this build log***

Section 3, Step 1 (Windscreen)

Instead of attempting to solder the windscreen photo-etch parts together, use PVA adhesive (white glue). This is easier and still allows for some flexibility of the assembled windscreen. **The windscreen will be completed and fitted later in this build.**



Section 3, Step 2 (Tail)

The photo-etch fin plates will be fitted later in this build.

Section 3, Step 7 (machine gun installation)

Section 3, Step 8 (Optional cowl trims)

For this model the rear engine cowl remains as one piece, therefore this step is not required.

Section 3, Step 9 (Optional synchronisation system)

For this model the rear engine cowl is fitted, therefore this step is not required.

Section 3, Step 11 (Radiator shutters)

NOTE: *The assembly of the radiator shutters is more easily achieved using the following procedure and if included in the kit, the small replacement photo-etch sheet (later released have modified photo-etch).*

Use the 'Aviattic' provided paper drilling guide to mark the **top two holes only** for the sides strips (parts PE46) on the rear face of the radiator.

Cut out the two side strips (parts PE46) and the radiator shutters.

Anneal (soften) the photo-etch parts over a flame, such as a cigarette lighter.

Bend the two side strips along the etched line to 90 degrees.

Using the marked holes, drill 0.4 mm diameter holes into, but not through, the rear face of the radiator.

Secure a short length of 0.3 mm diameter tube, such as 'Albion Alloy's' MBT03 or similar into the drilled holes.

Run a 0.3 mm diameter drill through all of the holes in the two sides strips (parts PE46).

Locate the two side strips onto the fitted tubes.

Position the side strips so they are parallel and vertical on the radiator.

Drill through the bottom location holes for the side strips using a 0.3 mm diameter drill.

Drill out the two bottom holes using a 0.4 mm diameter drill.

Secure a short length of 0.3 mm diameter tube, such as 'Albion Alloy's' MBT03 or similar into the two bottom drilled holes.

Locate the two side strips onto the fitted tubes and secure in position.

Cut seven lengths of 0.2 mm diameter tube, such as 'Albion Alloy's' NST02 or similar. The length should be just longer than the span of the fitted side strips.

Insert the tubes through and across the holes in the side strips and secure in position.

Cut away the mounting holes from each end of the radiator shutters.

NOTE: *Make sure the radiator shutters are fitted in the correct order (refer to the 'Aviattic' build log Step 11).*

Test fit each radiator shutter in its position between the side strips.

If necessary, trim the ends of the shutters to achieve a good fit between the side strips.

Check the angle required for the shutters by holding the radiator against the front of the fuselage. The shutters must not contact the engine.

Secure each radiator shutter in position, at the required angle, on its fitted tube.

Section 3, Step 12 (Radiator and front cowlings)

NOTE: *The only other work carried out on the radiator was fitting a coolant pipe to the header tank in the following (Additional details added).* **The radiator assembly will be fitted later in this build.**

Test fit of cowl panels:

NOTE: *The following steps are necessary to ensure the two front cowl panels and radiator fit and are aligned correctly.*

Cut the radiator from its mould block.

Secure a short length of 0.3 mm diameter tube, such as 'Albion Alloy's' MBT03 or similar into the drilled holes.

Run a 0.3 mm diameter drill through all of the holes in the two sides strips (parts PE46).

Locate the two side strips onto the fitted tubes.

Position the side strips so they are parallel and vertical on the radiator.

Drill through the bottom location holes for the side strips using a 0.3 mm diameter drill.

Drill out the two bottom holes using a 0.4 mm diameter drill.

Secure a short length of 0.3 mm diameter tube, such as 'Albion Alloy's' MBT03 or similar into the two bottom drilled holes.

Locate the two side strips onto the fitted tubes and secure in position.

Cut seven lengths of 0.2 mm diameter tube, such as 'Albion Alloy's' NST02 or similar. The length should be just longer than the span of the fitted side strips.

Insert the tubes through and across the holes in the side strips and secure in position.

Cut away the mounting holes from each end of the radiator shutters.

NOTE: *Make sure the radiator shutters are fitted in the correct order (refer to the 'Aviattic' build log Step 11).*

Test fit each radiator shutter in its position between the side strips.

If necessary, trim the ends of the shutters to achieve a good fit between the side strips.

Check the angle required for the shutters by holding the radiator against the front of the fuselage. The shutters must not contact the engine.

Secure each radiator shutter in position, at the required angle, on its fitted tube.

File or sand the bottom edge to remove residual mould resin and shape the edge.

Cut out and profile the hole in the radiator for the front of the engine.

Cut the two front engine cowl panels from their mould blocks.

Test fit each panel onto its side of the forward fuselage (with the rear cowl panel and radiator temporarily held in position). Carefully sand the front and/or rear edges to fit between the rear cowl panel and radiator.

Carefully remove the residual resin from the top hinges, exhaust pipe holes, cooling vents and machine gun openings.

‘Aviattic’ build log - Section 4: (Landing gear).

NOTES: *Follow the ‘Aviattic’ build log and/or refer to this for additional information.* ***Parts should be painted before being assembled - Refer to Part 9 of this build log***

Section 4, Step 1 (Basic strut assembly)

NOTE: *The photo-etch parts and spoked wheels were not used.* As detailed in the ‘Aviattic’ build log. Also, drill holes of 0.3 mm diameter through the rigging points on the top, trailing edge and the inboard bottom of the forward struts.

Section 4, Step 2 (Axle)

As detailed in the ‘Aviattic’ build log. The ‘bungee cord’ suspension will be fitted in the construction stage of this build log.

Section 4, Step 3 (Fitting to fuselage)

NOTE: *This step will be carried out in the construction stage of this build log.*

Additional details added:

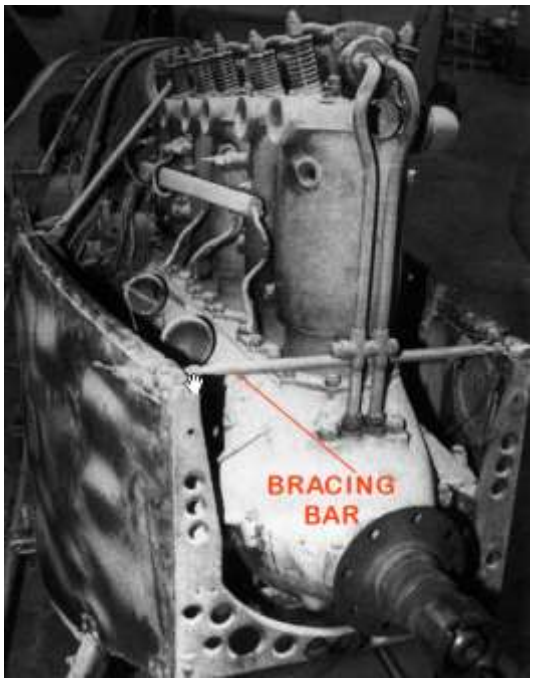
Bracing bar:

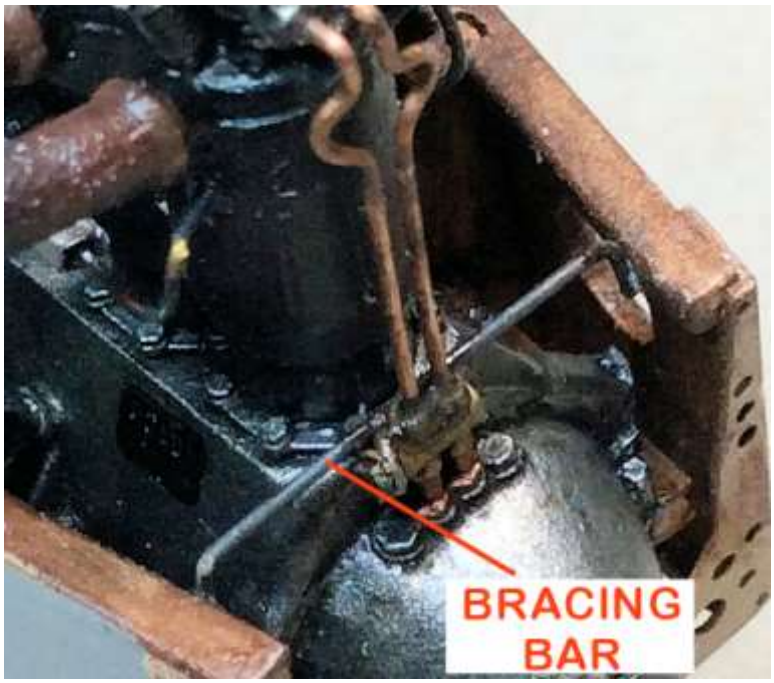
A bracing bar as fitted across the fuselage just in front of the engine.

Cut a length of blackened Nickel-Silver tube, such as ‘Albion Alloy’s’ NST04 or similar.

Bend the ends to 90 degrees so it will slide behind the two pipes at the front of the engine and across the fuselage.

Secure the tube in position.





Coolant pipe:

Drill a hole of 0.9 mm diameter into, but through, the top centre of the radiator and above the shutter assembly.

Cut a long length of blackened 0.5 mm diameter tube, such as ’Albion Alloy’s’ NST05 or similar.

Cut a short length of blackened 0.7 mm diameter tube, such as ’Albion Alloy’s’ MBT07 or similar.

Cut a short length of blackened 0.9 mm diameter tube, such as ’Albion Alloy’s’ MBT09 or similar.

Secure the 0.7 mm diameter tube onto the end of the 0.5 mm diameter tube.

Secure the 0.7 mm diameter tube into the 0.9 mm diameter tube.

Cut the 0.9 mm diameter tube to a length that when inserted into the pre-drilled hole in the radiator, only 1.5 mm of the tube protrudes.

Cut the end of the 0.5 mm diameter tube so that when the radiator is held in position against the front of the fuselage, the end of the tube finishes at the rear end of the camshaft.

Secure the tube into the pre-drilled hole in the radiator.

‘Aviattic’ build log - Section 5: (Fuselage detail).

NOTES: *Follow the ‘Aviattic’ build log and/or refer to this for additional information.* ***Parts should be painted before being assembled - Refer to Part 9 of this build log.***

Bending of annealed (softened with heat) of photo-etch parts is best achieved using specific tools, such as photo-etch pliers and bending formers.

Section 5, Step 1 (Rear fuselage detail)

Create as detailed in the ‘Aviattic’ build log, **but do not fit yet**.

Section 5, Step 2 (Actuator slot detail)

Create as detailed in the ‘Aviattic’ build log, **but do not fit yet**. **Bend the end curves around a wood tooth pick or similar.**

Section 5, Step 3 (Air vents)

Create as detailed in the ‘Aviattic’ build log, **but do not fit yet**. **Bend the air scoops around a tapered former, such as a wood tooth pick or similar.**

Section 5, Step 4 (Forward fuselage detail)

Create as detailed in the ‘Aviattic’ build log, **but do not fit yet**.

Section 5, Step 5 (Underside engine covers)

Create as detailed in the ‘Aviattic’ build log, **but do not fit yet**. **The bends on parts 9 and 59 are only slight, intended to conform the panels to the bottom of the fuselage sides.**

Section 5, Step 6 (Fuel tank detail)

Not required - this step previously carried out.

Section 5, Step 7 (Hatches)

Create as detailed in the ‘Aviattic’ build log, **but do not fit yet**.

Section 5, Step 8 (Engine air intake)

Create as detailed in the ‘Aviattic’ build log, **but do not fit yet**.

Section 5, Step 9 (Rudder and elevators)

Create as detailed in the ‘Aviattic’ build log, **but do not fit yet or drill rigging holes into rudder.**

Section 5, Step 10 (Tail struts)

Create as detailed in the ‘Aviattic’ build log, but do not fit yet. **I chose to not use the supplied photo-etch parts and instead flattened 0.8 mm diameter tube, such as ‘Albion Alloys’ MBT08, with a temporary 0.3 mm diameter rod inside. Then remove the 0.3 mm rod and using flat nose Pliers, flatten the two ends and file to shape. These struts will be fitted later in this build.**

‘Aviattic’ build log - Section 6: (Upper and lower wings).

NOTES: *Follow the ‘Aviattic’ build log and/or refer to this for additional information.* ***Parts should be painted before being assembled - Refer to Part 9 of this build log***

Section 6, Step 1 (Lower wings)

Use thin CA adhesive to secure the 0.3 mm rod in the formed photo-etch parts 7, otherwise the rod may slip out of the assembly. Also use the CA adhesive to secure photo-etch parts 36 to parts 38 and parts 34 to parts 39, making sure the holes are aligned.

Airbrush a light coat of steel, such as ’Alclad’ Steel (ALC–112) or similar, over the assemblies.

Make sure the hinge anchor plates can move freely and the rigging holes are clear of paint.

Section 6, Step 2 (Lower wing installation)

Do not secure the assemblies to the lower wings at this stage, as they will be fitted later in this build.

Section 6, Step 3 (Cabane strut rigging brackets)

Photo-etch parts 31 are intended to be used for the cross bracing wires between the rear and forward cabane struts. As such they need to be securely attached to parts 54 and 118. However these parts would be very difficult to solder and CA adhesive is liable to fail when tension is applied to the rigging lines. Therefore I chose to disregard parts 31 and instead bent the associated lugs on parts 54 and 118 out slightly, so that these can be used for the rigging. **Do not secure the assemblies to the cabane struts at this stage**, as they will be fitted later in this build. **The photo-etch parts for the rear left and right rear brackets were not used and will be replaced by ‘GasPatch’ anchor points.**

Blacken the assemblies using a solution, such as ‘Blacken-It’, or lightly airbrush with ‘Tamiya’ Rubber Black (XF85) or similar.

Make sure the hinge anchor plates can move freely and the rigging holes are clear.

Section 6, Step 4 (Interplane struts)

Create as detailed in the ‘Aviattic’ build log, **but do not fit yet**. Parts 14 have no rigging holes so can be disregarded

Section 6, Step 5 (Interplane strut rigging brackets)

The photo-etch parts for the interplane rigging brackets were not used and will be replaced by ‘GasPatch’ anchor points.

Section 6, Step 6 (Upper wing detail)

Do not secure the assemblies to the interplane struts at this stage, as they will be fitted later in this build. **Only the forward cabane struts rigging brackets are used. The remaining brackets will be replaced by ‘GasPatch’ anchor points.**

Section 6, Step 7 (Actuator slots)

Create as detailed in the ‘Aviattic’ build log, except for the following.
The suggested method of securing 0.5 mm diameter rod through the aileron operating lever and the width of the wing slot may allow the lever to be pulled out of the slot and photo-etch panel (part 118) when fitting the aileron control rod. To secure the lever in position, cut a groove across the front end of both wing slots, such that the 0.5 mm rod through the lever can be inserted. Once the cover plate (part 118) are fitted, the lever will be fully retained but still be able to move in its groove.

Also carefully scrape away the pre-moulded cover panel detail to allow the photo-etch panels (part 118) to fit flush against the wing surface.

Do not secure the assemblies at this stage, as they will be fitted later in this build.

Blacken the lever assemblies using a solution, such as ‘Blacken-It’, or lightly airbrush with ‘Tamiya’ Rubber Black (XF85) or similar.

Airbrush a light coat of steel, such as ’Alclad’ Steel (ALC–112) or similar, over the cover plates.

Make sure the lever rigging holes are clear of paint.

Section 6, Step 8 (Cowling and lower rigging points)

This step is not required and will be covered later in this build.

Section 6, Step 9 (Fuel lines)

This step is not required as for this particular aircraft, these fuel lines were covered by a fairing, which will be covered later in this build.

Section 6, Step 10 (Upper wing assembly)

This step is not required and will be covered later in this build.

Section 6, Step11 (Actuator rod)

This step is not required and will be covered later in this build.

Section 6, Step 12 (Fuel lines and windscreen)

This step is not required as a fairing will be used instead, later in this build.

General:

Upper and lower wings:

Cut the upper wing and both lower wings from their mould blocks and sand away any residual resin.

Cut the two ailerons from their mould blocks and sand away any residual resin.

Test fit the ailerons to the upper wing and if necessary, sand or scrape the wing hinges and/or the aileron cut-outs to achieve a correct fit.

Do not secure the ailerons to the upper wing at this stage, as they will be fitted later in this build.

‘Aviattic’ build log - Section 7: (Final details).

NOTES: *Follow the ‘Aviattic’ build log and/or refer to this for additional information.* ***Parts should be painted before being assembled - Refer to Part 9 of this build log.***

Section 7, Step 1 (Tail details)

This step is not required and will be covered later in this build.

Section 7, Step 2 (Wheels)

Create as detailed in the ‘Aviattic’ build log.

Section 7, Step 2a (Covered wheel option)

Create as detailed in the ‘Aviattic’ build log.

Section 7, Step 2b (Spoked wheels option)

This step is not required as the covered wheel option used.

Section 7, Step 3 (Tail skid)

This step is not required and will be covered later in this build.

Section 7, Step 4a (Propeller)

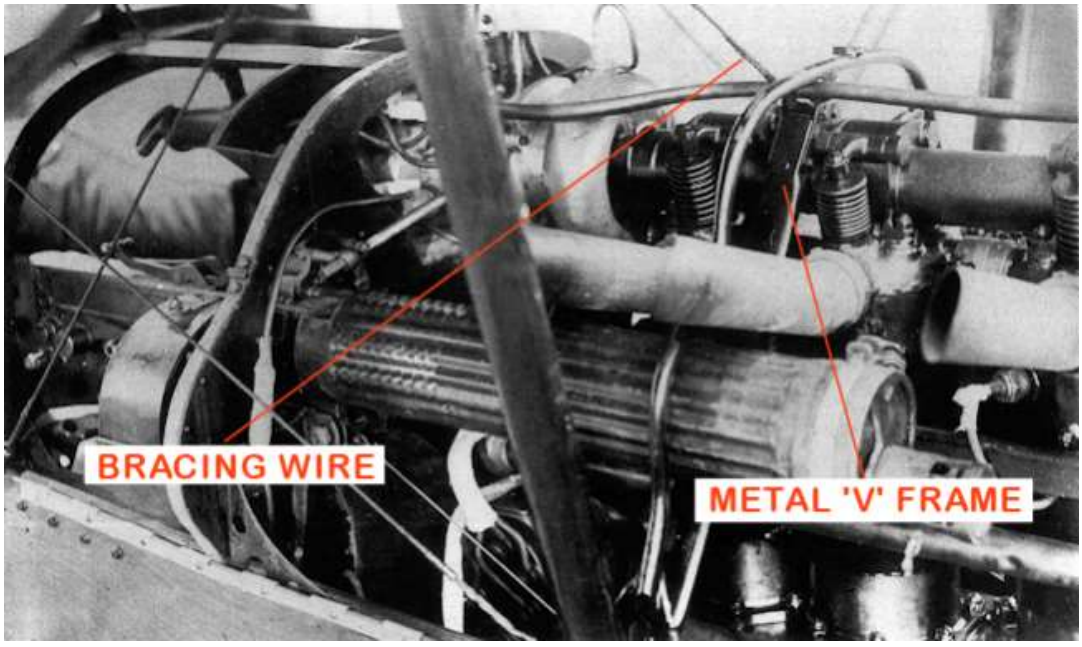
Create as detailed in the ‘Aviattic’ build log, **but do not fit yet**.

Additional detail:

Bracing wire frame:

NOTE: *These parts will be fitted later in this build.*

The metal frame in the engine bay needs to be added for attaching the two bracing wires from the upper wing (refer to Part 6– Rigging). This part is not supplied in the kit.



NOTE: *If the supplied photo-etch for the tailplane struts has not been used because as I did, they were replaced by created tubular struts, they can be used to create this frame. Otherwise cut two long 1.0 mm wide strips of spare photo-etch sheet.*

Anneal the strips of photo-etch to soften them.

Slide one strip down between the second and third exhaust pipe (from the rear of the engine) and note the angle the strip will need to be bent to lay against the inside of the fuselage.

Use flat nose pliers to bend one end of the strip to the required angle.

Reposition the strip and check that it is in full contact with the fuselage side with the upper part of the strip resting on the camshaft. Adjust the bend if necessary.

With the strip positioned against the fuselage, bend the upper half over the camshaft to form a curve.

Cut the curve such that the cut end on the strip rest on the centre line of the camshaft.

Drill a hole of 0.4 mm diameter through the centre of the strip and just below the centre line of the camshaft when viewed from the side.

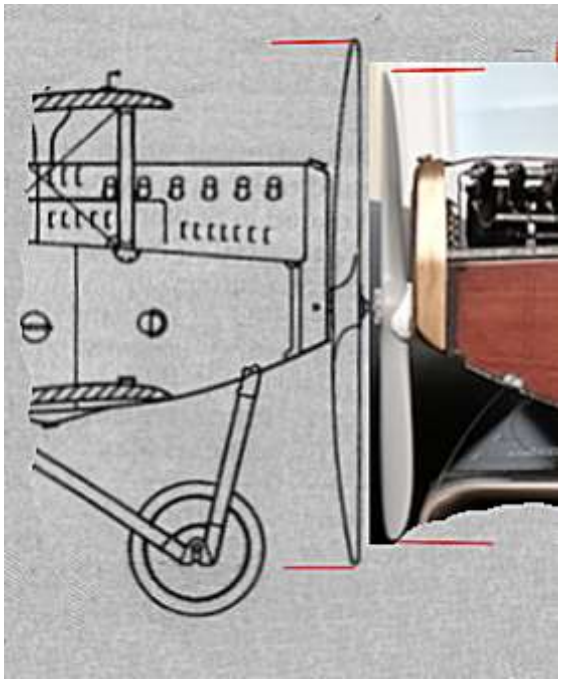
Secure a 'Gaspatch' 1:48th scale anchor point into the pre-drilled hole with the 'eye' of the anchor point on the outer face of the strip and inline with it.

Trim away any protruding tail of the anchor point from the strip.

Repeat the procedure to create a strip for the other side of the engine, to form the bracing wire frame.

Propeller:

NOTE: *The propeller supplied in the kit is of the correct type and shape for the 'Balilla'. However, my personal feeling is the overall diameter of the propeller is less than it should be. The 'Aviattic' kit for the 'Balilla' can be supplied as either the Italian or the Polish version. A Polish propeller from 1919 was posted online as being a genuine 'Balilla' and matches the shape of the kit supplied propeller.*
A photograph of the Polish propeller was scaled and added to a photograph of the restoration Italian 'Balilla' and also the model was scaled to the 'Windsock' data file drawings.
As can be seen, both indicate that the Italian propeller was larger in diameter than the Polish propeller. The tip of the bottom blade aligns with the bottom of the landing gear axle.
It's my personal belief that possibly the Polish size propeller was used for both the Italian and Polish model kits and if so, would mean the propeller is correct for the Polish kit, bit undersize for the Italian kit.
Therefore any modeller building the Italian version of the 'Balilla' must decide whether to leave the kit supplied propeller as it is or modify the propeller to increase its overall diameter, which would not be the easier option.



Extending the propeller:

Use a non-permanent marker to mark the front and back of the blades on the existing kit propeller and also line across the propeller hub (blade to blade).

Saw away one blade close to the propeller hub.

Drill a hole of 1.0 mm diameter centrally into the propeller hub, but only into the shaft hole (not through to the other side). Make sure the hole is drilled at 90 degrees to the hub, when viewed from two directions.

Cut a length of 1.0 mm rod (‘Albion Alloy’s or similar).

Use CA adhesive to secure the rod into the pre-drilled hole, but do not allow the rod to enter the shaft hole.

Drill a hole of 1.0 mm diameter, as far as possible, centrally into the propeller blade , but make sure the drill does not drill through the sides of the blade. Also make sure the hole is drilled at 90 degrees to the blade axis, when viewed from two directions.

Locate the propeller blade fully onto the rod and twist the blade to align the marked line on the hub and blade.

Measure the gap between the hub and blade, which should be 4 mm. If necessary, remove the blade and trim the end of the rod then relocate and check, until the 4 mm gap is achieved with the blade aligned with the hub.

Repeat the procedure to modify the other propeller blade.

With the two blades fully located and aligned to the hub marks, the distance between the blade tips should be approximately 40 mm. The blade tips should be approximately 45 degrees to the hub, when viewed at the tips.

Use CA adhesive to secure the blades onto their rods, making sure the blades are fully located and aligned.

If necessary gently bend the rods to align the two blades to each other and to the propeller hub.

Thoroughly mix equal parts of either ‘Milliput’ or ‘Green Stuff’ two part epoxy putty.

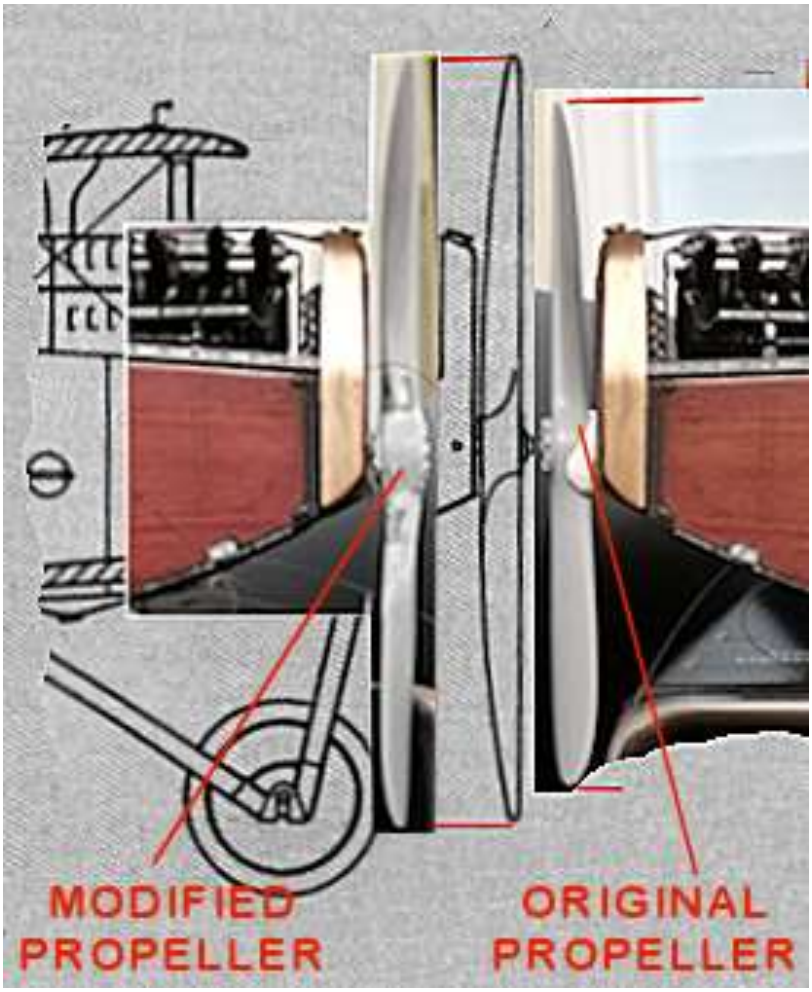
Wrap the putty around the exposed rods to fill the gaps between the propeller hub and blades.

Blend the putty to the blade profile using a damp or wetted finger.

Once the putty has fully cured and hardened, check for any gaps or areas that need building up and apply more putty as required and leave to fully cure and harden.

Once the applied fillers have fully cured and hardened, carefully sand to blend the two blade into the propeller hub and to the correct shape.

<u>Comparison of original and modified propeller scaled to drawing</u>



PART 8
ENGINE

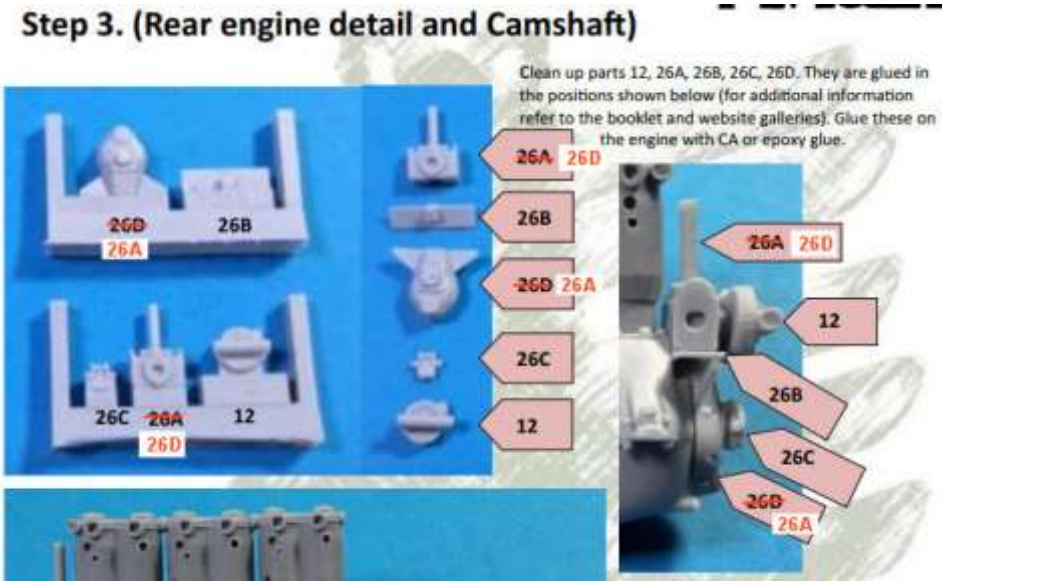
PART 8 - Engine

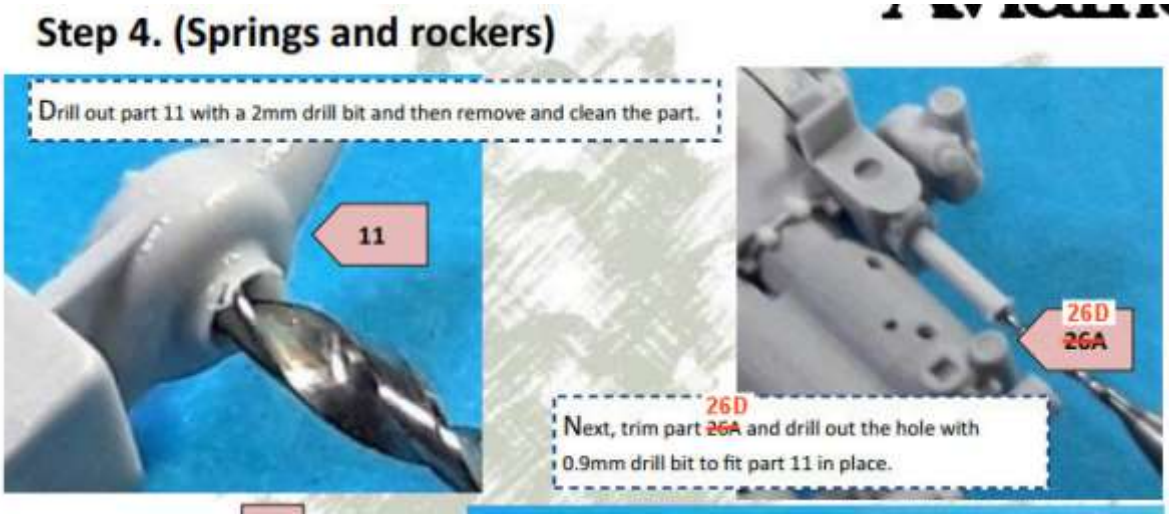
‘Aviattic’ build log - Section 1: Building the SPA 220 HP

NOTE: *Refer to the ‘Aviattic’ build log and follow this part for additional information.* ***Parts should be painted (Refer to Part 9 of this build log) before being assembled (refer to Part 10 of the build log).***

The ‘Aviattic’ build log uses very small parts of photo-etch, some of which need to be softened by annealing (lightly heating the photo-etch of a flame). Great care should be taken when annealing the very small photo-etch parts as they can easily melt. If in doubt do not anneal the parts and try to use them as supplied.

Hints and Tips:

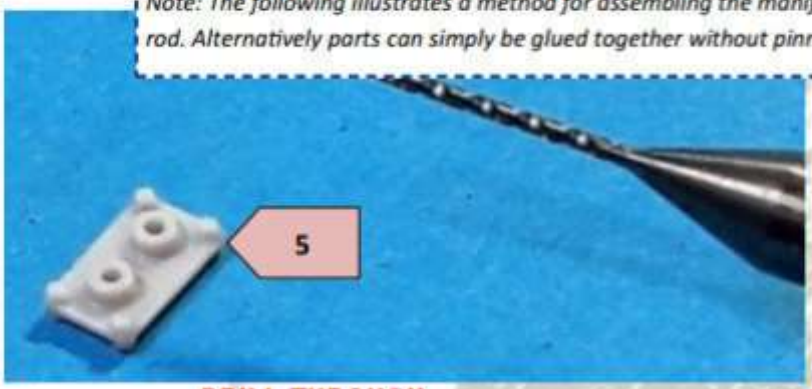


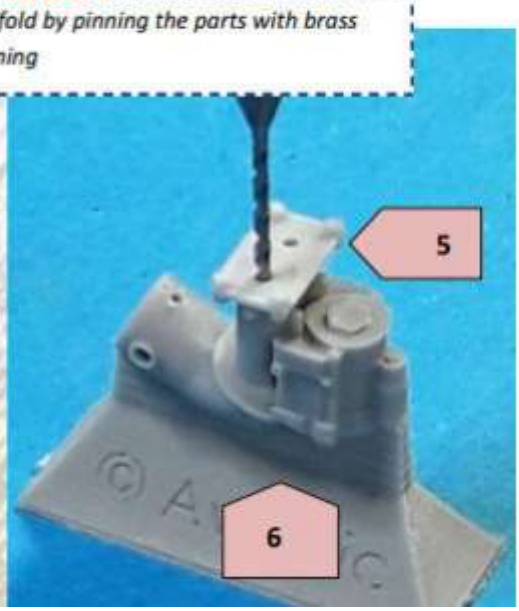


Step 5. ~~(Manifold assembly)~~

CARBURETTOR/MANIFOLD ASSEMBLY

Note: The following illustrates a method for assembling the manifold by pinning the parts with brass rod. Alternatively parts can simply be glued together without pinning





DRILL THROUGH

Clean up the part 5 and ~~open up~~ the two centre holes using a 0.5mm drill bit.

POSITION (LEAVE ON CASTING BLOCK)

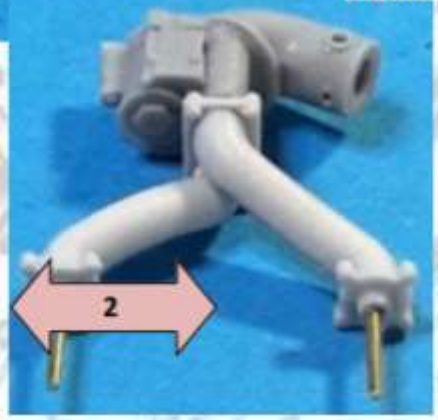
~~Then dry fit~~ part 5 on to part 6 ~~leaving it on the casting block for now.~~

~~Drill a 0.5mm hole in part 6 through .~~

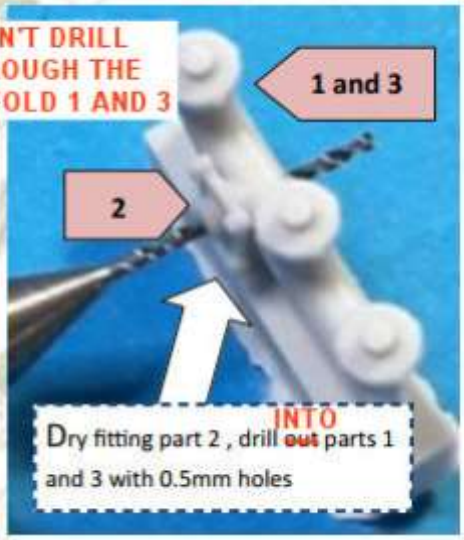
DRILL THROUGH THE TWO HOLES INTO PART 6

Clean up the part 2 (2 pieces) and open up the centre hole using a 0.5mm drill bit

Carry out the same procedure for pinning the part 2 pieces to the ends of the part 4. Do not glue yet! (right)



DON'T DRILL THROUGH THE MANIFOLD 1 AND 3



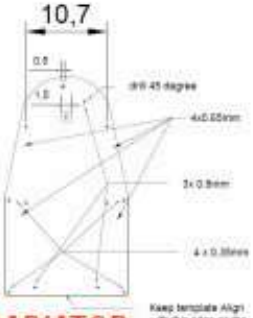
Dry fitting part 2 , drill ~~out~~ INTO parts 1 and 3 with 0.5mm holes

Appendix

JIGS

Right: Jigs for:

- The radiator (Section 3, step 11)
- Engine manifold assembly (Section 1, Step 5)
- Forward engine pipes (Section 1, Step 12)



RADIATOR

ENGINE MANIFOLD ASSEMBLY

~~Drill jig~~

~~Radiator rod option~~

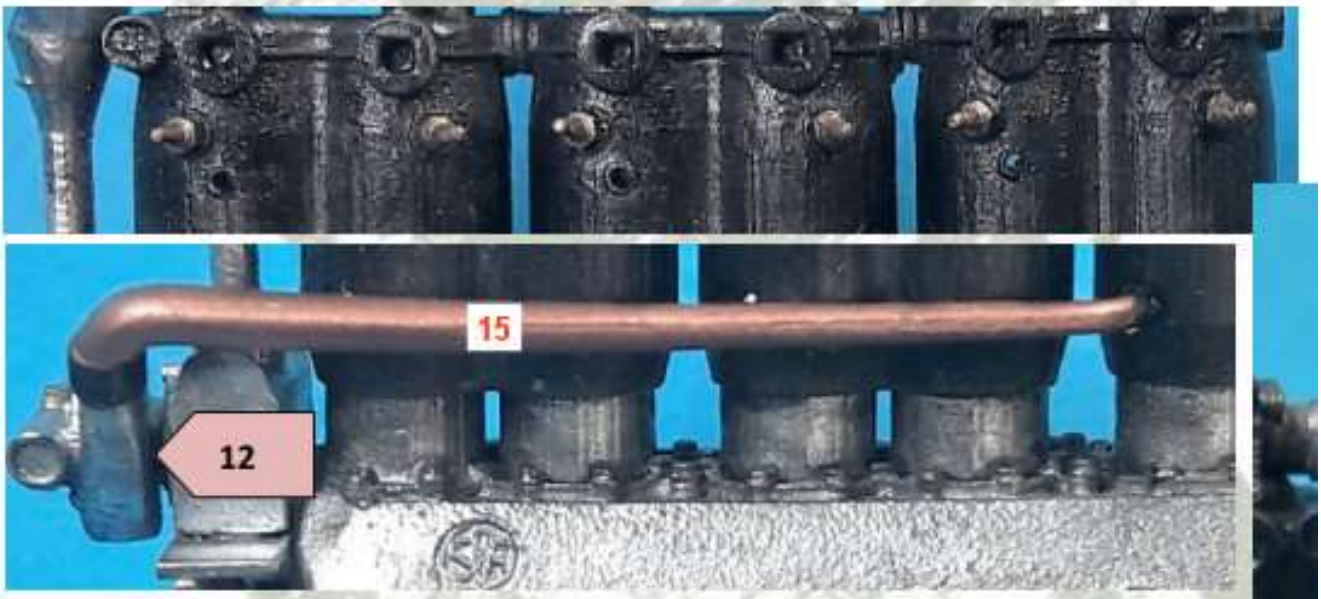
FORWARD ENGINE PIPES

~~Drill jig engine pipe~~

Step 5 (Continued)

To aid in the final assembly of the manifold either use the engine as a jig or construct a jig from plasticard or wood. A jig is included in the appendix section at the rear of this build log.

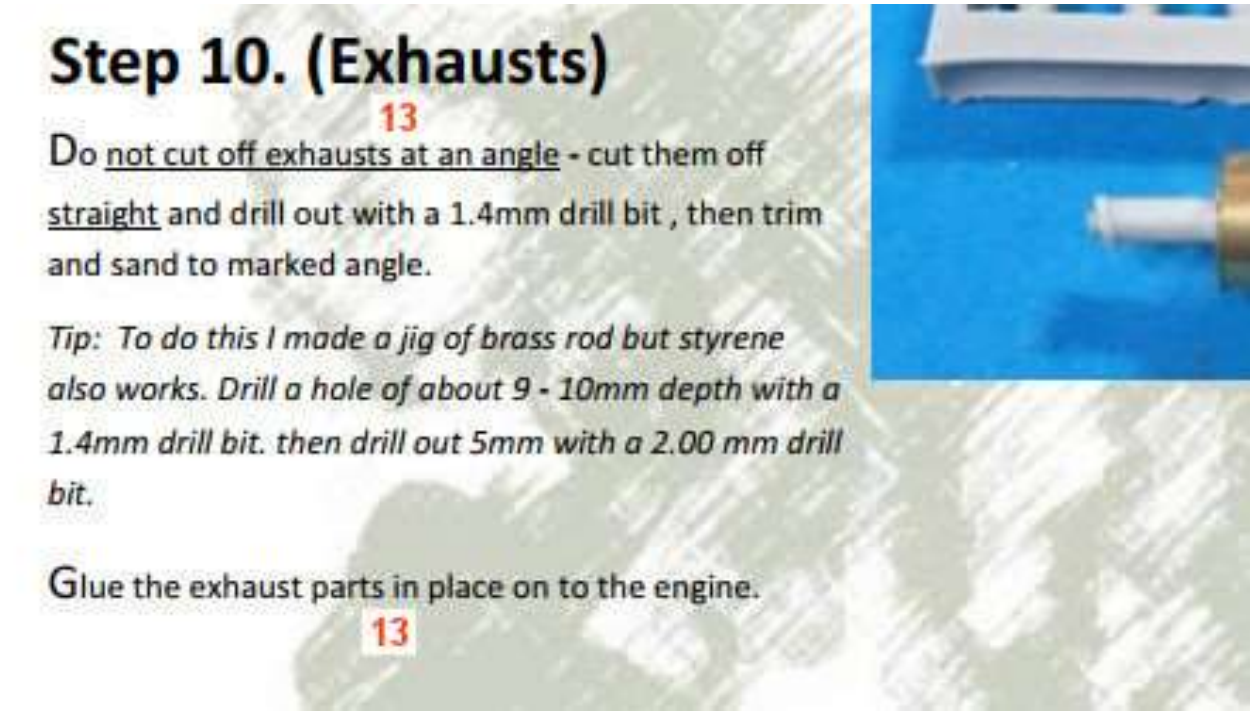
To use the jig drill six 0.8mm holes in the positions defined and assemble the ~~manifold~~ as illustrated ~~right~~
carburettor/manifold left



Then glue the turbo pipe in place which fits in to three holes near the base of the cylinder on the starboard side of the engine. The thicker end of the turbo pipe should fit ~~into~~ part 12 (above).
15
onto the sub on

Step 9. (Carburettor)

Glue the ~~carburettor~~ assembly in place.
carburettor/manifold



Personally I think the recommended method for drilling out the six exhaust pipes is beyond the scope of most modellers. I chose to use the following procedure to drill out the exhaust pipes:

1. Cut away the six exhaust pipes from their moulding block.
2. Cut the mould stem away just away from the tip of the angled end of each exhaust pipe.
3. Point mark the centre of the stem on each exhaust pipe.
4. Drill into the exhaust pipes using a 0.5 mm diameter drill and to a depth of 8-10 mm.

   Regularly rotate the exhaust pipe through 90 degrees as you drill to make sure you are drilling parallel into the pipes.
5. Drill out the holes using a 0.8 mm then 1.0 mm and finally 1.2 mm diameter drills.
6. Finally file or sand the angled end of each exhaust pipe using the pre-moulded edges as a guide.

NOTE: *Ansaldo and Breda supplied engines were fitted to the 'Balilla'.*

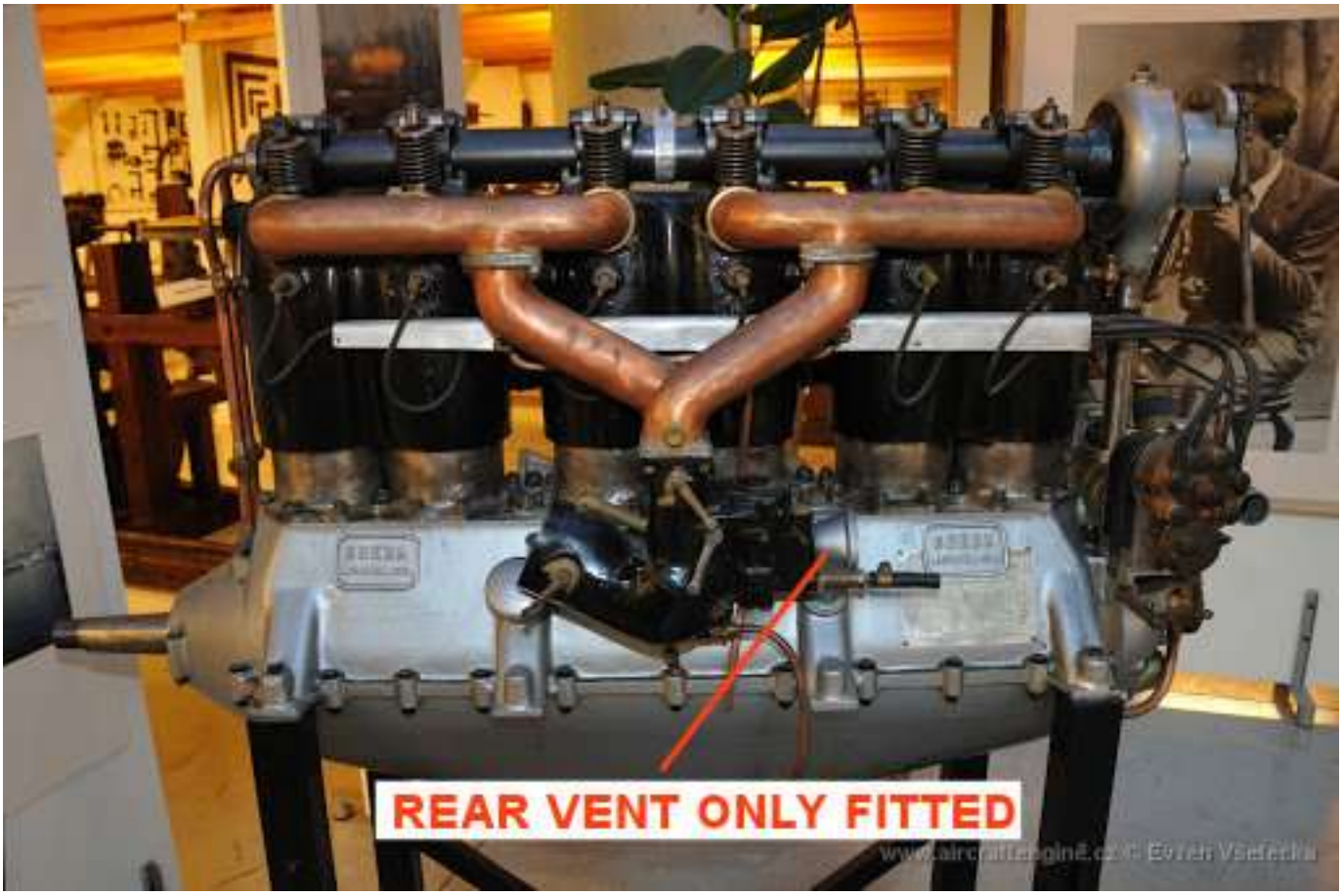
Ansaldo:

It seems that the Ansaldo engine had a carburettor and inlet manifold fitted that was slimmer than the Breda type. The engine crankcase carried the S.P.A stamp. Fitted into the left, upper side of the engine crankcase were what appear to be 'air vents', presumably to equalize the air pressure within the crankcase. It's assumed that these were fitted to both the Ansaldo and Breda supplied engines.

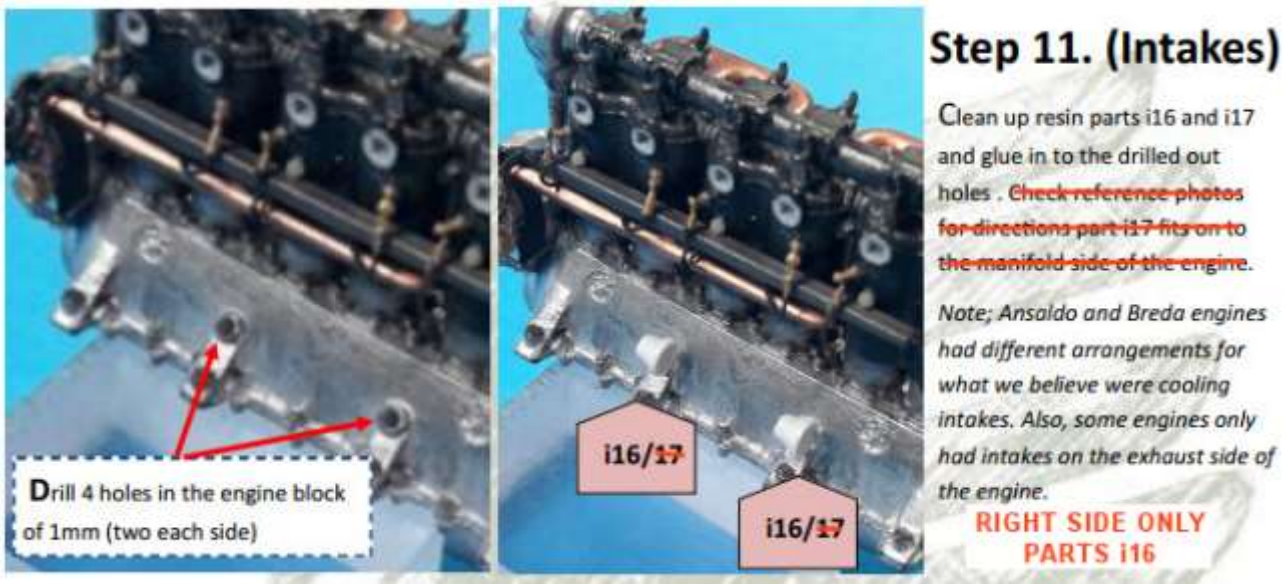
The Ansaldo engines also had the vents fitted into the upper right side of the engine crankcase and either side of the carburettor and inlet manifold assembly.

Breda:

The larger design of the carburettor and inlet manifolds fitted to the Breda supplied engine meant that there was not enough room to fit both vents on the left side of the engine crankcase. Some photographs show no vents fitted and others show just the rear vent fitted.



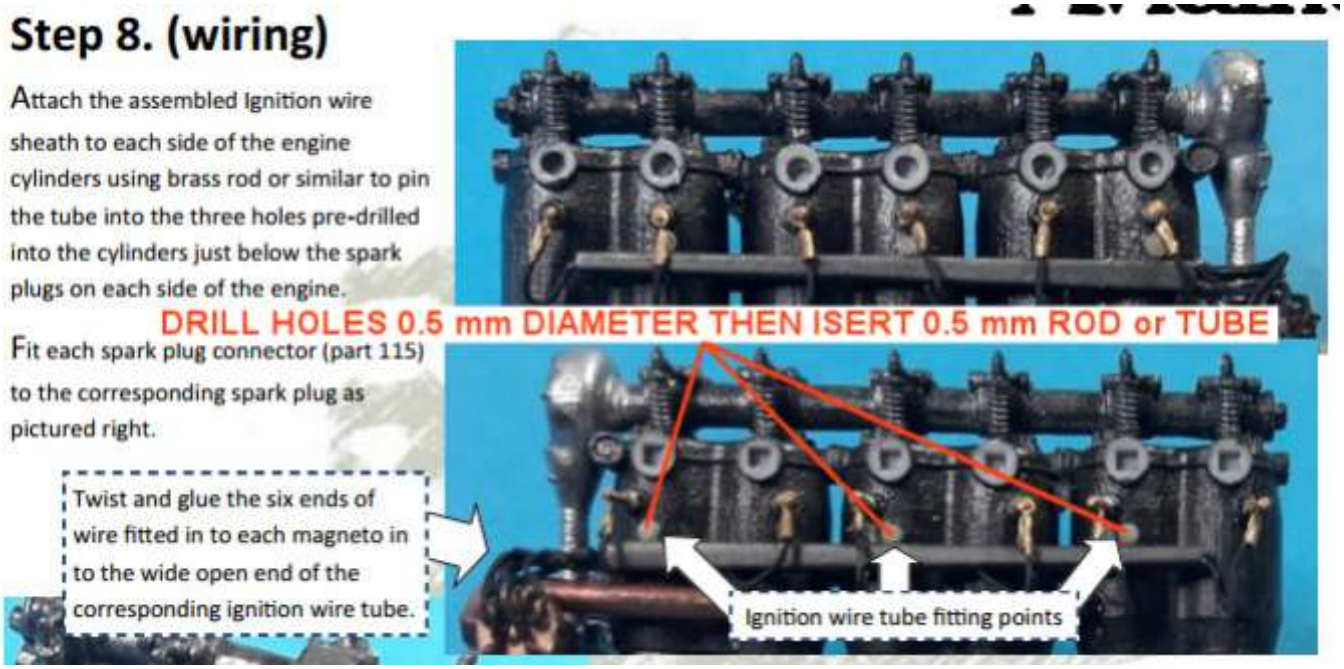
The engine supplied in the ‘Aviattic’ kit is the Breda version, with it’s carburettor and inlet manifolds assembly. However, the engine crankcase has the ‘SPA’ logo’s?. The kit does supply the ’Breda’ decals for the engine. Kit parts i16 (x 2) need to be fitted to the right side of the crankcase, but once the carburettor intake pipe (part i11) is fitted there will be no physical room to fit either of the vents (parts i17) onto the left side of the engine. Therefore drilling the location holes for the vents on that side is not required.



Section 8. (Wiring):

Using a 0.5 mm diameter drill, drill out the three pre-moulded location holes for the ignition support rails on the sides of the cylinders.

Secure short lengths of 0.5 mm diameter tube into the holes (e.g. ‘Albion Alloy’s’ MBT 05 or similar), leaving just 0.5 mm protruding.



Step 12. (Pipes):

Personally I think the recommended method for creating the two oil pipes at the front of the engine is beyond the scope of most modellers. I chose to use the following procedure to create these pipes:

NOTE: *These pipes should be created after the engine has been assembled.*

Cut two lengths of 0.4 mm diameter copper wire.

Anneal (soften) the wires over a naked flame, such as a cigarette lighter.

Bend each wire around a 0.8 mm diameter drill to form a U shape.

Position each wire against the front of the engine an trim the bottom of the wire so they will insert into the pre-drilled holes in Part i14 and with the U shapes around the end of the camshaft.

Mark the top of the inserted wires at the level of the pre-drilled holes in the end of the camshaft.

Bend the wires to 90 degrees and trim the wire so it can be inserted into the camshaft holes with the wire parallel to the forward cylinder.

Secure both wires into their positions.

Painting:

Airbrush all of the engine parts with a black base coat, such as ‘Alclad’ Black Base (ALC-305-60) or ‘Tamiya’ Semi-Gloss Black (X18). This base coat will help create the metallic finish of the engine parts.

Engine crankcase - Airbrush ‘Alclad’ Duraluminium (ALC-102) or similar.

Exhaust pipes - Brush paint with ’Tamiya’ Flat Brown (XF10) then dry brush with Hull Red (XF9). Internally ’Tamiya’ Sky Grey (XF19. Exterior sponge with ’Tamiya’ Weathering Master Set B (Soot) and Set D (Burnt Blue).

Cylinders (7, 8 and 9) - Leave as base coat black.

Camshaft (10) - Airbrush 'Alclad' Steel (ALC-112) or similar. Brush paint the lever cover with a mix of 'Mr. Colour' Brass (219) and Copper (215).

Spark plugs - Brush paint with 'Mr. Colour' Iron (212) or similar.

Magnetos (x 2) - Leave as base coat black but brush paint the ignition lead cover with 'Tamiya' Hull Red (XF9) with Rubber Black (XF85) lead caps.

Ignition leads - Brush paint with 3:1 of 'Tamiya' JA Green (XF13) and Rubber Black (XF85).

Carburettor/inlet manifold assembly (1 to 6) - Airbrush 'Alclad' Exhaust Manifold (ALC-123) or similar, then a light mist coat of Copper (ALC-110) over the inlet manifolds with the carburettor brush painted with 'Tamiya' Rubber Black (XF85).

Coolant tube (15) - Airbrush 'Alclad' Exhaust Manifold (ALC-123) or similar, then a light mist coat of Copper (ALC-110) with the connector to the water pump brush painted with 'Tamiya' Rubber Black (XF85).

Rear drive housing (26A)
Water pump (12)
Magneto drive block (26D)
Valve springs (16)
Valve followers (28) - Airbrush 'Alclad' Steel (ALC-112) or similar.
Magneto drive housing (11)
Ignition lead rails (PE 22, 23)
Magneto support plate (26B)
Rear cover plate (26C)

Assembly:

NOTES:
The following is the order of assembly that I followed.
*The adhesive used to assemble the engine is **CA adhesive** (superglue).*
Make sure all location holes and recesses are free from primer and paint.

Secure the three pairs of cylinders (parts 7, 8 and 9) onto the engine crankcase. Make sure the interconnecting pipe stubs at the top of the cylinders engage fully.

Secure the forward oil pipes (part i14) into the pre-drilled holes at the front of the engine crank-case.

Secure the camshaft (part 10) onto the top of the cylinders.

Secure the rear drive housing (part 26A) into it's location slot on the rear of the engine.

Secure the rear cover plate (part 26C) into it's location on the rear drive housing (part 26A).

Secure the magneto support plate (part 26B) onto its location recesses in the rear drive housing.

Secure the magneto drive block (part 26D) on the magneto support plate.

Secure the magneto drive housing (11) onto the rear end of the camshaft and top of the shaft on Magneto drive block (26D).

Secure the water pump (12) onto the rear of the rear drive housing.

Secure the two magnetos onto the magneto drive block and support plate.

Secure the air vents (i16) into their location holes on the right side of the engine crankcase (facing forward).

Secure an air vent (i17) into its rear location hole on the left side of the engine crankcase (facing rearwards).

Secure the six exhaust pipes into their locations on the right top of the cylinders with the angled ends facing rearwards.

Secure the twelve valve springs (16) into their location holes in the tops of the cylinders.

NOTE: *When fitting the valve followers (28), make sure they are fitted with the curve of the arms facing away from the valve springs (16).*

Secure the twelve valve followers (28) into their location recesses in the tops camshaft.

Secure the twelve spark plugs (17) into their location holes in the sides of the cylinders.

Secure the coolant pipe (15) onto its location on the water pump and the three cylinders.

Secure the two ignition lead support rails (PE22 and 23) onto the pre-installed 0.5 mm diameter tubes in the cylinders.

NOTE: *The instructions require the ignition leads to be secured to the end connectors (PE115) and then onto the ends of the spark plugs. I chose not to use these parts as I think they are over-scale and not necessary.*

Carefully loop each ignition lead down from its support rail then up to its spark plug.

Using small scissors, cut away the excess ignition lead.

Secure each lead to the end of its spark plug.

Brush paint the top of each ignition lead (at the spark plug) with ‘Mr. Colour Brass (219) or similar.

For each magneto, carefully loop each ignition lead to the opening in the rear of the ignition lead support rail and using small scissors, cut away the excess lead.

Secure the six ignition leads from each magneto into their ignition lead support rail.

Decals:

Apply the four ‘Breda’ decals to the engine crankcase, covering the four ‘SPA’ logo’s.

Final finish:

Airbrush the engine assembly with a semi-matte finish, such as ‘Alclad’ Light Sheen (ALC-311) or ‘Tamiya’ Semi-Gloss (X35) or similar.

Refer to Part 3 (Weathering) of this build log - Apply ‘Flory Models’ Dark Dirt clay wash over engine crankcase and cylinders. Once dry, remove the wash to achieve the desired weathered effect.

Seal in the ‘Flory Models’ wash by airbrushing the engine assembly with a semi-matte finish, such as ‘Alclad’ Light Sheen (ALC-311) or ‘Tamiya’ Semi-Gloss (X35) or similar.

Apply by brush ‘AK Interactive’ Kerosene (AK2039) and/or engine wash (AK2033) as desired.

PART 9
INTERNAL
FUSELAGE

PART 9 - Internal fuselage

NOTE: *Refer to the 'Aviattic' build log and follow this part for additional information.* ***Parts should be painted before being assembled (refer to Part 10 of the build log).***

Many photographs of the cockpit of the 'Balilla', including those in the supplied 'Aviattic' booklet, show the fuselage internal sides as painted white and the instrument panel painted as white and light blue. These are most likely from the restored 'Balilla' Ser No:16553 of Tenente Antonio Locatelli, displayed in the Museo Storico di Bergamo. The Windsock Data file No.88 - Ansaldo A.1 'Balilla' (by Gregory Alegi) states that 'period photographs indicate that these areas were originally left unpainted or, as implied by the SVA parts catalogue, merely protected with shellac'. ***As this model is not representing either of the two presentation aircraft, the cockpit will not be painted white or blue.***

Treat the photo-etch parts with 'VMS' Metal Prep 4K to prepare the surfaces for painting.

Airbrush the inside of the fuselage and all fuselage internal parts with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Airbrush paint:

Airbrush the following with 'Tamiya' Wooden Deck Tan (XF78) or similar:

- Complete inside of the fuselage.
- Cockpit floor panel.
- Pilot's seat support.
- Pilot's seat.
- Rudder bar.
- Instrument panel.
- Cross member (part i5).
- Turtle deck cockpit area.

Airbrush the following with 'Tamiya' Rubber Black (XF85) or similar:

- Control column assembly.
- Gun support cross member.
- Starter magneto.
- Temperature gauge (for turtle deck).

Airbrush the following with 'Mr. Colour' Duraluminium (ALC-120) or similar:

- Centre bulkhead plate (part G3).
- Side engine bearers (G1 and G2).
- Empty shell drop boxes (i5 and i6).

Airbrush the following with 'Alclad' Pale Gold (ALC-108) mixed 60/40 with Copper (ALC-110) or similar: - Fuel tank assembly and oil tank.

Wood effect:

Refer to Part 2 (Wood effects) of this build log. Apply 'DecoArt Crafters Acrylic' Burnt Umber over the following to create the wood effect:

- Complete inside of the fuselage, including turtle deck cockpit area.
- Cockpit floor panel, Pilot's seat support.
- Pilot's seat, Rudder bar.
- Instrument panel.
- Cross member (part i5).

Brush paint:

Brush paint the following:

Starter magneto - operating handle 'Mr. Colour' Stainless Steel (213) or similar.

Control column - Hand grip 'Tamiya' Hull Red (XF9), top of hand grip 'Mr. Colour' Brass (219), trigger levers 'Mr. Colour' Stainless Steel (213) or similar.

Starter switch - 'Mr. Colour' Brass (219), base 'Tamiya' Rubber Black (XF85) or similar.

Radiator shutter control (parts E11, 12, 13) - Handle 'Tamiya' Rubber Black (XF85) or similar.

Engine controls - quadrants 'Tamiya' Rubber Black (XF85), Handles 'Tamiya' Hull Red (XF9) or similar.

Rudder bar - Foot straps 'Humbrol' Leather (62), turnbuckles 'Mr. Colour' Stainless Steel (213) with centre barrel 'Tamiya' Hull Red (XF9) or similar.

Leather parts

NOTE: *Some sources shown that the leather colour was black.*

- pilot's cushion and seat back padding, cockpit rim padding and turtle deck padding 'Tamiya' Hull Red (XF9) with 'Humbrol' Leather (62) highlights or similar.

Cockpit floor panel - fuel tank access cover fasteners and filler cap surrounds and the two photo-etch brackets (94) 'Mr. Colour' Stainless Steel (213), or similar.

Instrument panel - gun mountings and surrounds 'Tamiya' Rubber Black (XF85), instruments, hand pump and wood inlay fasteners 'Mr. Colour' Brass (219), support frame for centre instrument 'Mr. Colour' Stainless Steel (213) or similar.

Fuel tank assembly - filler caps 'Mr. Colour' Brass (219).

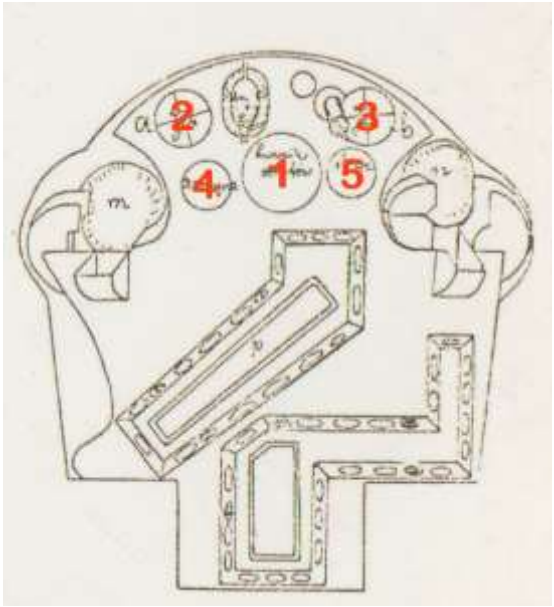
Decals:

Brush a gloss coat such as 'Tamiya' (X22) or similar onto the instrument faces and temperature gauge.

NOTE: *The supplied 'Aviattic' decals need to be cut from their backing sheet, preferably with a hole punch. If this is not possible, use equivalent decals from the 'Airscale' WW1 instruments (ASW WW1) set.*

Apply the instrument decals from the supplied sheet or the 'Airscale' equivalent decals.

Seal the instrument decal with a brush gloss coat such as 'Tamiya' (X22) or similar.



NOTE: *Any other required decals will be applied during construction (Part 10 of this build log).*

Airbrush the fin, rudder and undersides of the tailplane and elevators with a white primer, such as 'AK Interactive' White (AK759) or similar.

Windscreen:

Airbrush the windscreen with a black base coat, such as 'Alclad' Black Base (ALC-305-60) or 'Tamiya' Semi-Gloss Black (X18). This base coat will help create the metallic finish.

Airbrush the windscreen with 'Alclad' Duraluminium (ALC-102) or similar.

Tail photo-etch:

Airbrush the two fin side plates with a black base coat, such as 'Alclad' Black Base (ALC-305-60) or 'Tamiya' Semi-Gloss Black (X18). This base coat will help create the metallic finish.

Airbrush the two fin side plates with 'Alclad' Duraluminium (ALC-102) or similar.

Machine guns:
Airbrush prime the two machine guns with a gloss black primer, such as 'Alclad' Black ALC-305-60 or similar.

Lightly airbrush the weapon with 'Alclad' Steel ALC-112 or similar.

Brush paint the ammunition feed blocks with 'Mr. Colour' Bronze (215).

Radiator assembly:
Airbrush the radiator assembly with a black base coat, such as 'Alclad' Black Base (ALC-305-60) or 'Tamiya' Semi-Gloss Black (X18). This base coat will help create the metallic finish of the engine parts.

Airbrush the radiator housing and added coolant pipe with 'Alclad' Pale Gold (ALC-108) mixed 60/40 with Copper (ALC-110) or similar.

Brush paint the radiator matrix and shutter assembly with 'Mr. Colour' Stainless Steel (213) or similar.

Brush paint the radiator end of the coolant pipe with 'Tamiya' Rubber Black (XF85) or similar.

Engine cowls:
NOTE: *If the forward engine cowl panels are to be displayed removed from the aircraft, they should first be secured to each other along the top hinge line, as they were removed as one piece.*

Airbrush the engine cowl panels with a black base coat, such as 'Alclad' Black Base (ALC-305-60) or 'Tamiya' Semi-Gloss Black (X18). This base coat will help create the metallic finish of the engine parts.

Airbrush the engine cowl panels with 'Alclad' Duraluminium (ALC-102) or similar.

Engine bracing wire frame:
Airbrush the two photo-etch strips, which were created to form the bracing wire frame (created in Part 8 - Parts preparation) with black, such as 'Tamiya' Rubber Black (XF85) or similar.

Airbrush the various photo-etch parts and the resin carburettor intake pipe (i11) with a black base coat, such as 'Alclad' Black Base (ALC-305-60) or 'Tamiya' Semi-Gloss Black (X18). This base coat will help create the metallic finish of the engine parts.

Airbrush the various photo-etch parts and the resin carburettor intake pipe (i11) with 'Alclad' Duraluminium (ALC-102) or similar, **except the photo-etch at the tailskid, which be left as black**.

PART 10
CONSTRUCTION

PART 10 - Construction

NOTE: *Refer to the 'Aviattic' build log and follow this part for additional information.* ***Parts should be painted (Refer to Part 9 of this build log) before being assembled.*** *Make sure all mating surfaces are clean from primer and paint.*

Secure the two forward bulkheads and the pilot's seat support bulkhead into their location slots in the fuselage.

Secure the photo-etch forward frame onto the front of the fuselage.

Secure the two engine bearer beams into their location slots in the two forward bulkheads.

Secure the aileron controls cross member in position at the front, bottom of the seat support bulkhead.

Slide the lower control column torque tube through the hole in the rear edge of the cockpit floor panel.

Slide the lower control column torque tube through the hole in the separate cross member.

Secure the cockpit floor panel into the fuselage.

Slide the separate cross member rearwards and against the front surface of the pilot's seat support bulkhead.

Make sure the base of the control column is fully seated in its recess in the cockpit floor.

Secure the separate cross member against the front surface of the pilot's seat support bulkhead.

Secure the upper control column torque tube to the top of the cross member.

Rudder control lines:

Pass a long length of 'Stroft' Mono-filament 0.08 mm diameter through the 'eye' end of a rudder bar turnbuckle.

NOTE: *Brass or Nickel-Silver tube can be blackened by dipping in solutions, such as 'BlackenIt'.*

Slide a blackened 0.4 mm diameter Nickle-Silver tube, such as 'Albion Alloy's' NST04 or similar, onto the line.

Loop the line from the turnbuckle back and through the tube.

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

Secure the lines in the tube using thin CA adhesive.

Cut away the excess tag of line at the tube.

Repeat to attach a line to the other rudder bar turnbuckle.

Assembly (continued):

Secure the rudder bar onto it location spigot on the cockpit floor.

Pass the two rudder control lines rearwards and through the openings in the pilot's seat support bulkhead, at either side and below the slot for adding the seat support frame.

Gently tension the lines and secure in position around the pilot's seat support bulkhead.

Cut away the excess line at the bulkhead.

Secure the ignition switch and the lever control in their locations on the left side of the fuselage.

Secure the starter magneto in position on the right side of the fuselage.

Secure the pilot's seat support frame into its location recesses on the front of the seat support bulkhead. Make sure the frame is at 90 degrees to the bulkhead (for correct positioning of the seat in the fuselage).

Secure the throttle control quadrant in position on the left side of the fuselage above the starter switch.

Secure the radiator shutter controller in position on the right side of the fuselage.

Secure the two engine bearers in their positions, with the bottom slots engaged fully onto the their locating ribs either side of the cockpit floor.

Secure the centre panel in position between the two engine bearers, locating it fully against their shoulders.

Secure the instrument panel into its locating slots in the fuselage sides.

Secure the machine gun support bar across the fuselage and against the gun mountings.

Secure the fuel tank fully into its opening under the fuselage and onto the underside of the cockpit floor, making sure the two filler caps locate through the holes in the cockpit floor.

Cut two lengths of blackened 0.4 mm diameter Nickle-Silver tube, such as 'Albion Alloy's' NST04 or similar, long enough to span between the throttle quadrant and the recess at the left side of the instrument panel.

Cut a length of blackened 0.4 mm diameter Nickle-Silver tube, such as 'Albion Alloy's' NST04 or similar, long enough to span between the radiator shutter controller and the right side of the instrument panel.

Secure the three tubes in position.

Secure the two empty shell drop boxes in position against the front face of the instrument panel.

Secure the oil tank in position in its locating slot towards the bottom of the middle bulkhead.

Secure the two photo-etch brackets (94)in their positions on the fuselage sides and in front of the forward face of the instrument panel.

Weathering:

Airbrush a light sealing coat of clear semi-matte, such as 'Alclad' Light Sheen (ALC-311), 'Tamiya' Semi-Gloss (X35) or similar.

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

Apply 'Flory Models' Dark Dirt' clay wash to the internal fuselage and once dry, remove as required to achieve the desired effect.

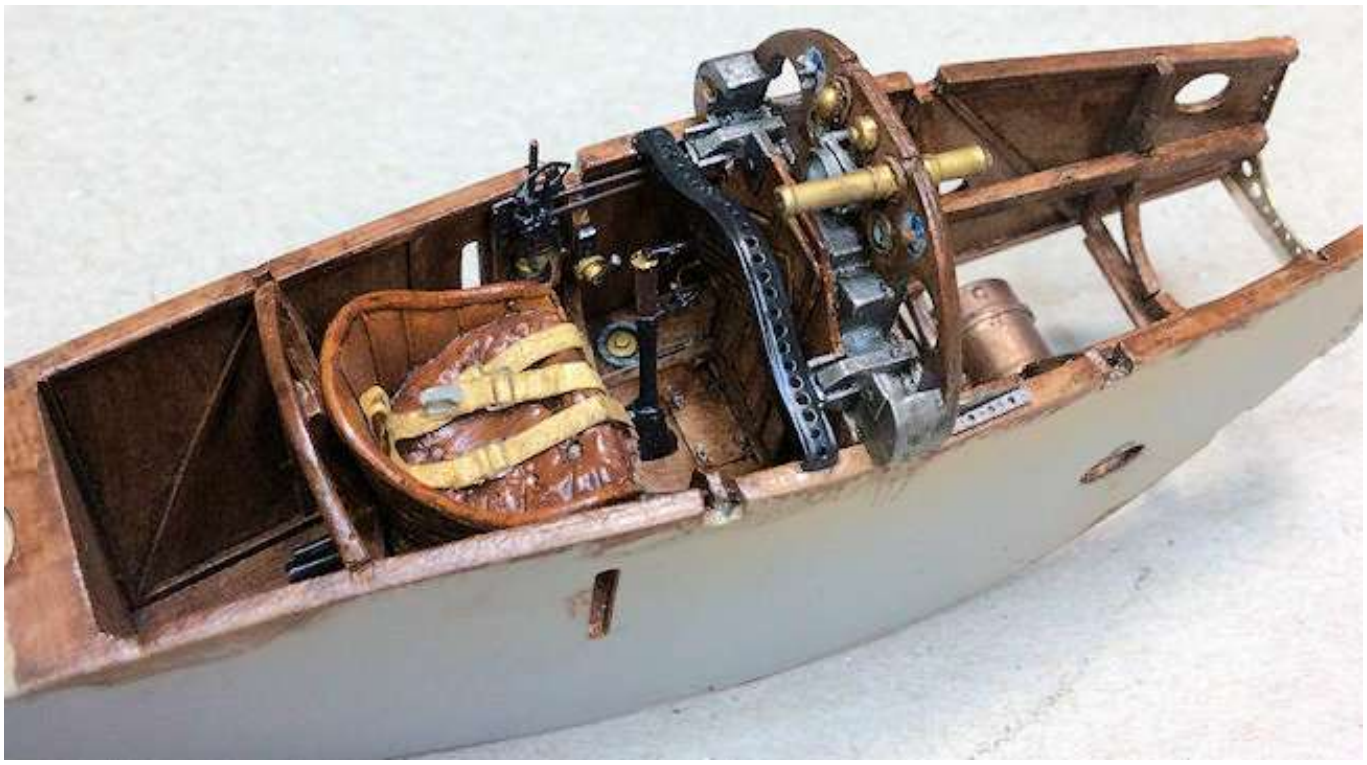
Airbrush a light sealing coat of clear semi-matte, such as 'Alclad' Light Sheen (ALC-311), 'Tamiya' Semi-Gloss (X35) or similar, to seal in the weathering wash.

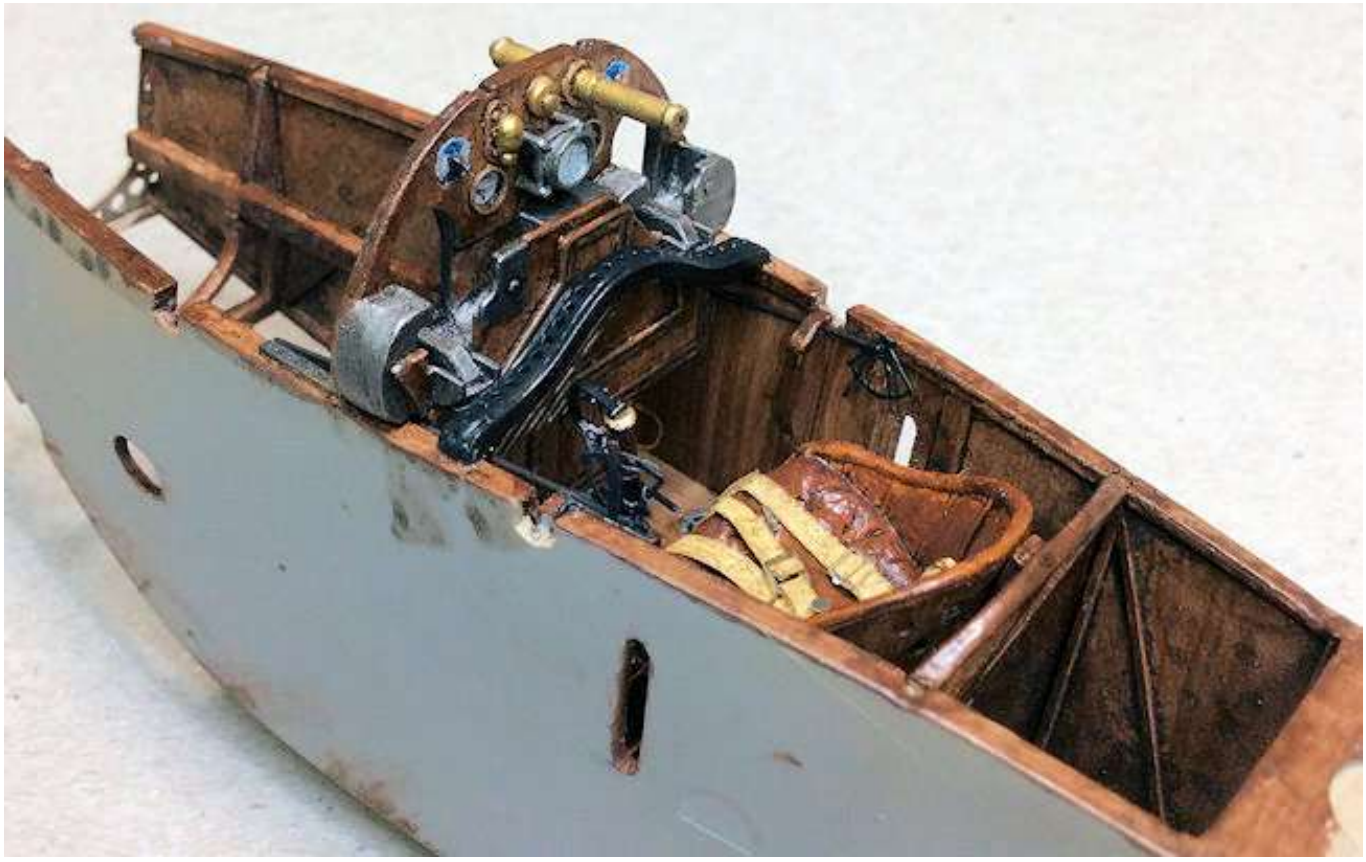
Seal the instrument decals with a brush gloss coat such as 'Tamiya' (X22) or similar.

Seat harness:

Secure the back strap of the shoulder harness to the seat back with the two shoulder straps looped forwards and onto the seat cushion.

Secure the single bottom strap to the seat front and up and onto the seat cushion.





Carry out the ‘Aviattic’ build log, Section 4, Step 9 (Rudder and elevators) before fitting the turtle deck, as it’s easier to drill and pin the parts.

Secure the turtle deck in position on the top, rear of the fuselage.

Secure the tail onto the rear of the fuselage.

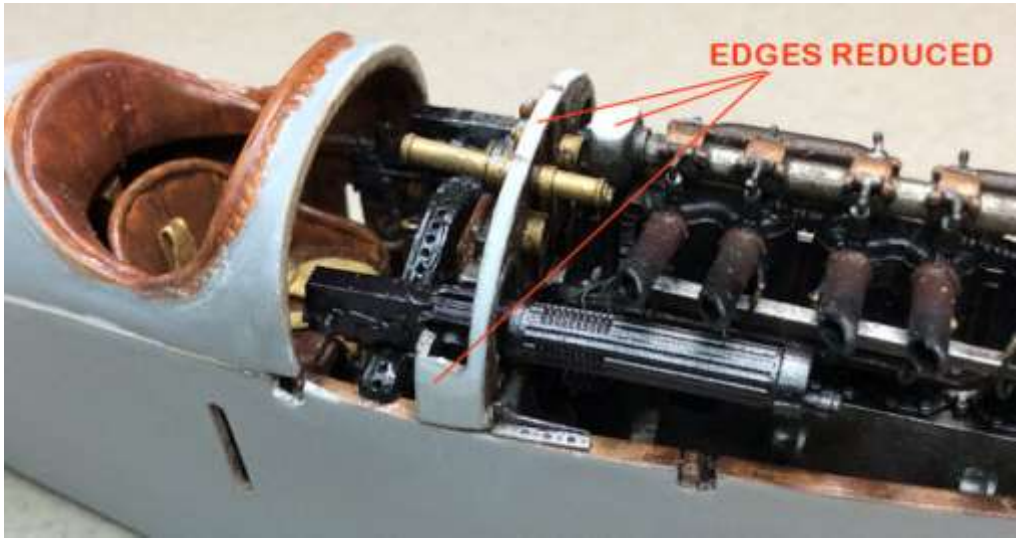
Fill and sand smooth any gaps in the joint seams.

Fit the engine following ‘Aviattic’ build log, Section 3, Step 6 (Engine installation) as detailed in the ‘Aviattic’ build log.

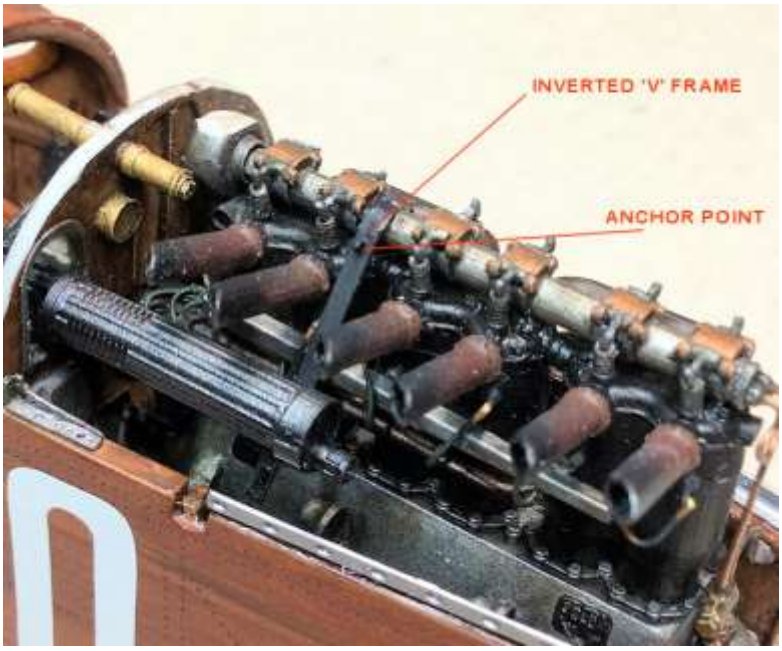
NOTE: *I found that the carburettor intake manifold stopped the left machine gun from being fitted correctly. This required cutting into the outer edge of the opening in the instrument panel and recessing the bottom of the breach block on the weapon to achieve an aligned fit.*

Secure the two machine guns in position.

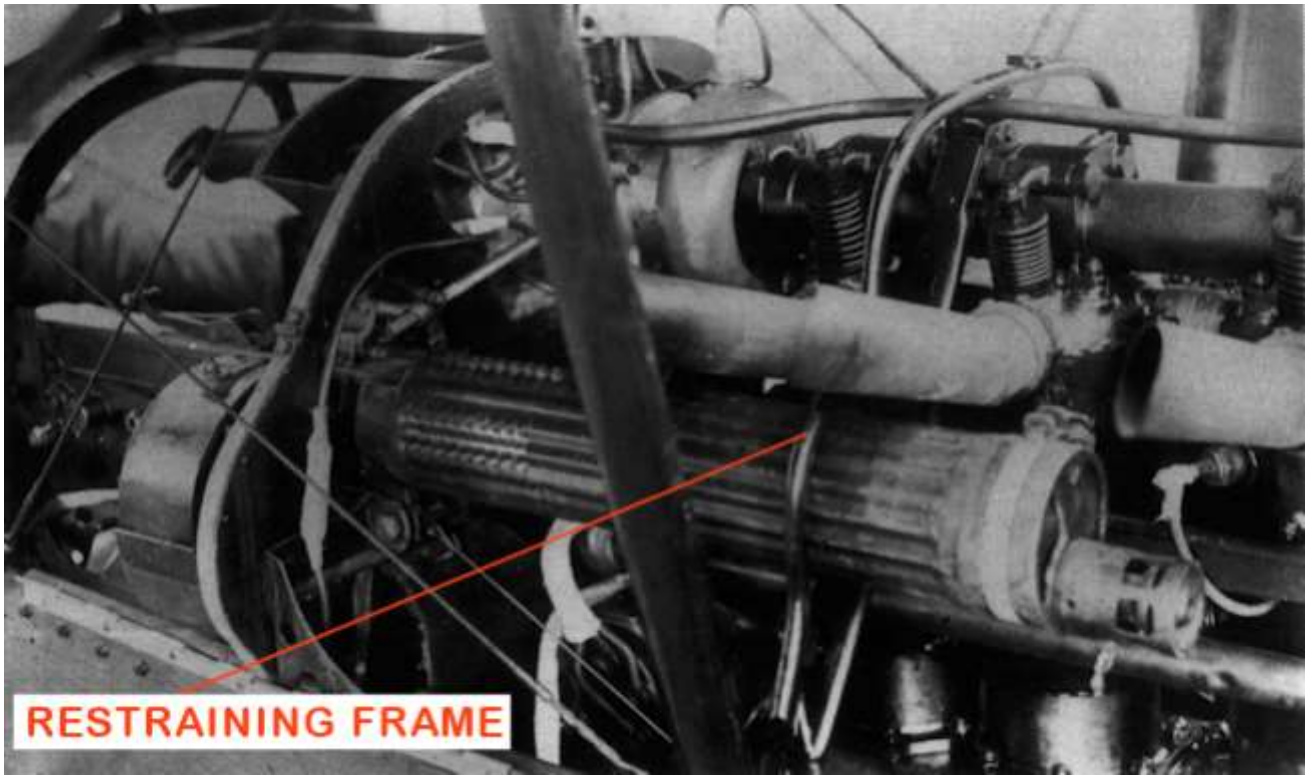
Check fit the rear engine cowl to ensure it fits correctly over the top of the instrument panel and machine guns and also seats fully onto the tops of the fuselage sides. Some sanding of the edge of the instrument panel and ammunition ‘bulges at the sides may be required.



Secure the two created strips (for the bracing wire frame) in position between the second and third exhaust pipes (from the rear of the engine) and against the fuselage side and the top of the engine camshaft, to form the inverted ‘V’ bracing wire frame.



NOTE: *A tubular retaining frame was fitted over the inverted 'V' frame and attached to the inside of the fuselage sides. It is possible this frame served to support the engine cowl panels and also to restrain movement of the forward ends of the cooling jackets of the two machine guns.*



Cut a long length of 0.375 mm diameter copper wire or similar.

Anneal (soften) the copper wire using a naked flame, such as that from a cigarette lighter.

Starting on the left side of the engine, carefully bend the wire over the top of the engine camshaft (above the inverted ‘V’ frame) and over the intake manifold and machine gun to the inside of the fuselage.

Airbrush prime the entire length of the wire with a grey primer, such as ‘AK Interactive’ Grey (AK-758) or similar.

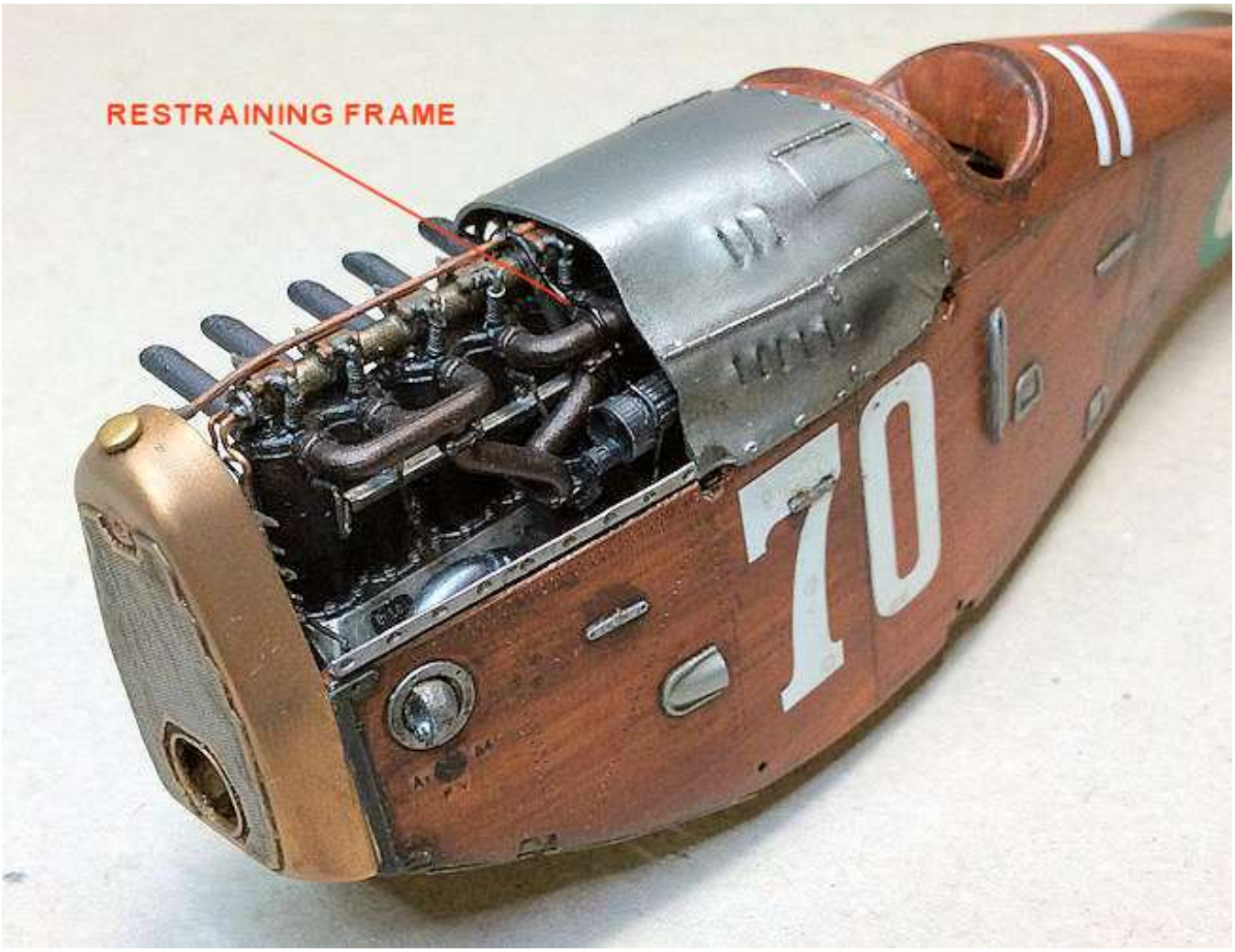
Brush paint the primed part of the wire with ‘Tamiya’ Semi-Black (X18) or similar.

NOTE: *During the following steps it is not possible to secure the end of the wire against the inside of the fuselage as there is insufficient access.*

Secure the bent part of the wire in position to the top of the engine camshaft (above the inverted ‘V’ frame) and either the intake manifold of machine gun cooling jacket. The free end of the wire should be, as far as possible, against the inside of the fuselage.

With the wire now attached to the engine, brush paint the remaining primed part of the wire with ‘Tamiya’ Semi-Black (X18) or similar.

At the right side of the engine, carefully bend the wire over the top of the engine camshaft (above the inverted ‘V’ frame) and between the exhaust pipes and over the machine gun to the inside of the fuselage.



Decals:

At this stage of the build it's best to apply the various 'Aviattic' decals to the fuselage and tail unit. This is done now as various fuselage photo-etch parts will need to be applied over of the decals.

The 'Aviattic' wood effect decals for the fuselage and the patterned decals for the upper surfaces of the tailplane and elevators are printed on a 'white' backing, which will block out any colour they are applied on. Therefore there is no need to prime or paint the basic resin of the fuselage.

The 'Aviattic' clear doped linen (CDL) decals for the fin, rudder and undersides of the tailplane and elevators are printed on a clear backing and will show through any base colour applied to the parts. A white base colour is best with pre-shading, if desired, applied before the CDL decals are added.

Make sure the surface of the fuselage, fin, rudder, tailplane and elevators are smooth and free off surface imperfections.

Airbrush a white base, such as 'AK Interactive' White primer (AK-759) or similar, over the fin, tailplane, rudder and elevators.

Airbrush a light coat of gloss sealer, such as 'Alclad' Aqua Gloss (ALC-600), 'Tamiya' Gloss (X22) or similar fuselage, fin, rudder, tailplane and elevators.

NOTE: *For this particular aircraft, the red and green rudder decals are those without the white centre band.*

Accurately cut out the various 'Aviattic' supplied wood effect decals and the various fin, rudder, tailplane and elevator linen effect decals (upper and undersides).

Refer to Part 4 (Decals) for information. Apply the various wood effect decals to the fuselage.

Refer to Part 4 (Decals) for information. Apply the various fin, rudder, tailplane and elevator linen effect decals (upper and undersides).

NOTE: *The supplied 'HGW Models' nail line decals, although perfect for a light coloured background, are too small and black, which means they are very difficult to apply on the dark wood decals on the fuselage. Also once applied are virtually impossible to see. Therefore I chose to create the nail lines using a 'Rosie the Riveter' 0.75 mm tool and pigment powder.*

Using the supplied 'HGW Models' illustration as a guide, create the nail lines on the fuselage.

Wearing a cotton glove, dip a finger into a Dark Earth pigment powder, such as that from 'Flory Models'.

Rub the powdered finger over the fuselage to fill the created nail lines.

Blown away any residual pigment powder from the fuselage.

In preparation for applying the remaining 'Aviattic' supplied decals and to seal the nail lines, airbrush a light coat over the fuselage with a clear gloss, such as 'Alclad' Aqua Gloss (ALC-600), 'Tamiya' Clear Gloss (X22) or similar.

Refer to Part 4 (Decals) for information. Apply the remaining fuselage decals:

NOTE: *The 'Aviattic' information gives the Serial No:16538 for this aircraft. However, the records of the four aircraft flown in No.70a Squadriglia show the Serial s as being 16550, 16555, 16556 and 16558. Therefore the most likely for this aircraft would be 16558 and the serial number needs to be changed using the spare number decals supplied..*

Fuselage roundels

Type letter and number

Serial number

Aircraft number

Logo (base of rudder)

Data (below carburettor intake - left side only)

Rib tapes to the fin and undersides of the tailplane and elevators.

Serial number changed after this photograph was taken

NOTES:

The fuselage wood effect decals have circular access panels printed, but these look rather 'flat' To raise these panels I added extra decal. To cut these circular decals I used a 'Thinnerline' circle cutter.
Refer to the 'Aviattic' build log (Section 5, Step 7 (Hatches), as there are some not printed on the fuselage wood effect decal.

Using the 'Thinnerline' circle cutter, cut out circular decals from the extra 'Aviattic' wood effect decal supplied.

Apply the decals onto the fuselage over the circular areas printed on the fuselage wood effect decals.

To seal the applied decals, airbrush a light coat over the fuselage with a clear gloss, such as 'Alclad' Aqua Gloss (ALC-600), 'Tamiya' Clear Gloss (X22) or similar.

Serial number changed after this photograph was taken

NOTE: *This aircraft had two light coloured bars painted onto the left side of the turtle deck, just to the rear of the cockpit. It's not known if these markings were also painted on the right side. The colour of these markings is not known, but they appear to be of a different shade to the white of the fuselage number 70 and the inner ring of the fuselage roundel. These were applied using the 1.5 mm stripes from the 'Xtradecal' parallel stripes white (XPS2).*

NOTES:

Airbrush the various fuselage photo-etch parts and the resin carburettor intake pipe (i11) with a black base coat, such as 'Alclad' Black Base (ALC-305-60) or 'Tamiya' Semi-Gloss Black (X18). This base coat will help create the metallic finish of the engine parts.

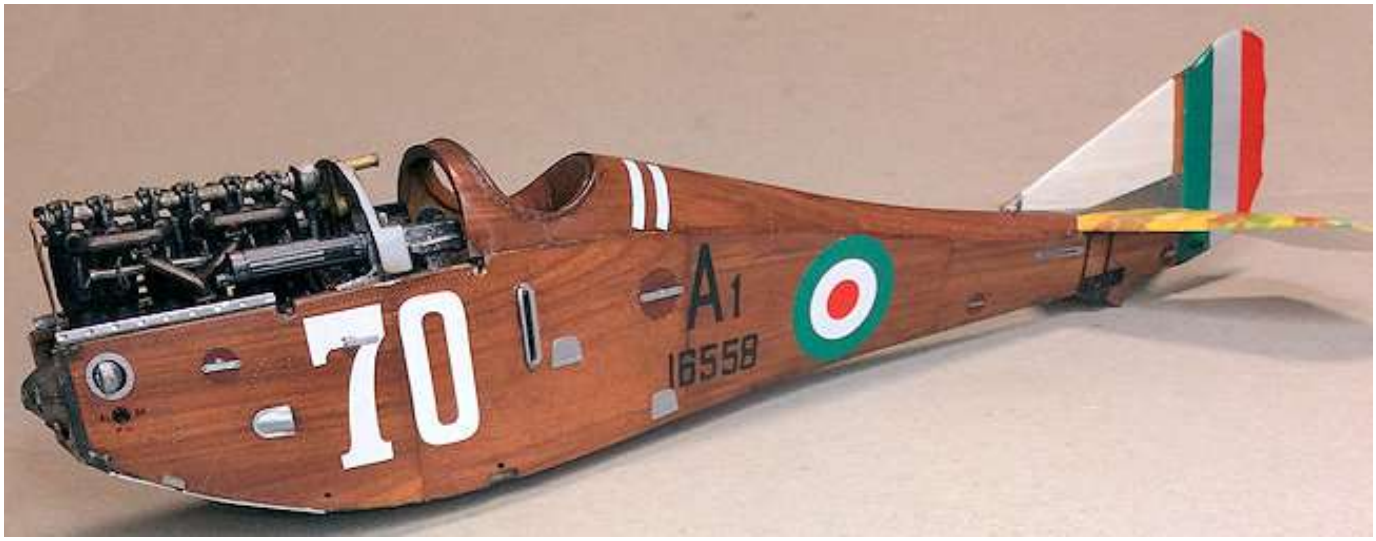
Airbrush the various fuselage photo-etch parts and the resin carburettor intake pipe (i11) with 'Alclad' Duraluminium (ALC-102) or similar, **except the photo-etch at the tailskid, which be left as black**.

During the next step, you can choose not fit the two air scoops and the two surrounds for the aileron control rods, which could be fitted later in the build. This would prevent those parts from being damaged or dislodged by handling during the subsequent handling of the fuselage.

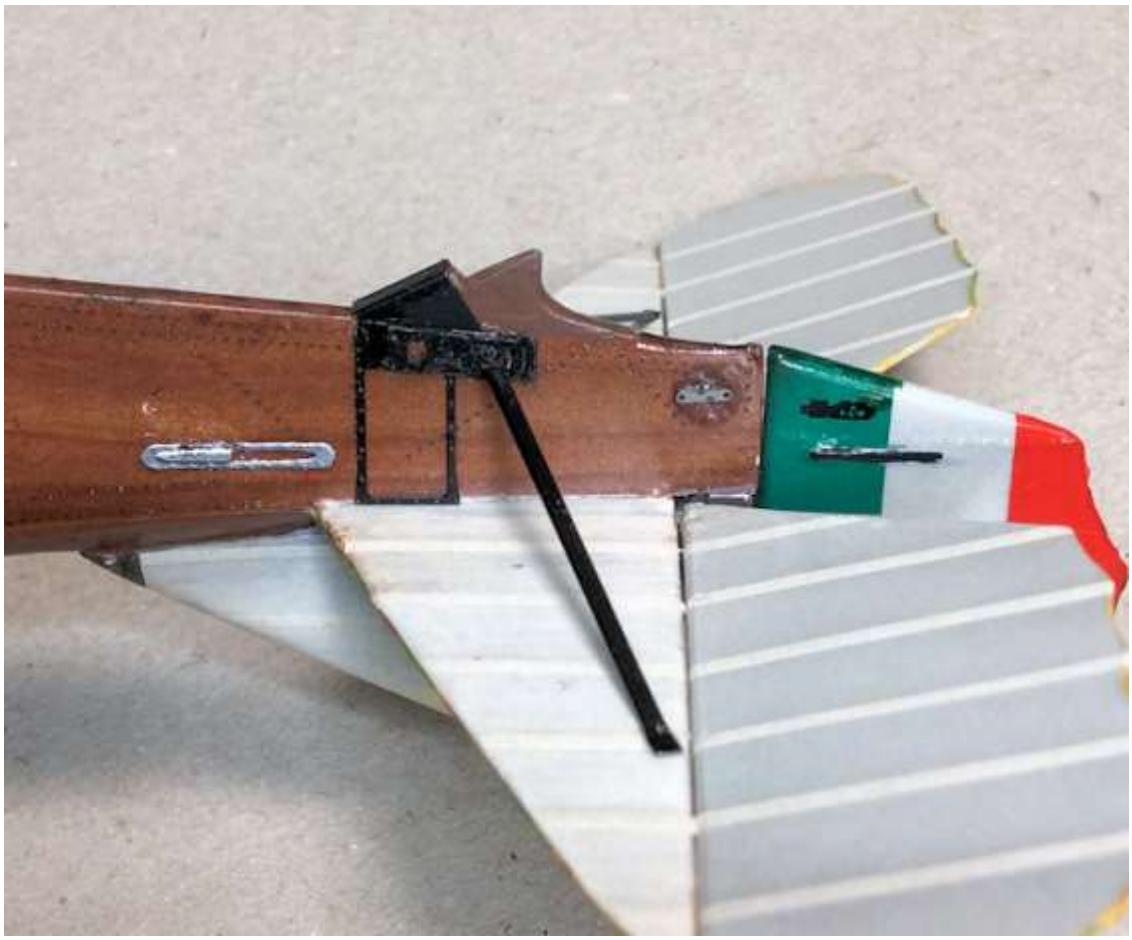
Do not fit the photo-etch parts 14 (cabane strut plates). These will be fitted after the struts.

Test fit the parts before securing in position, as some, such as the under fuselage panels, may need adjustments.

Secure in position the various fuselage photo-etch parts and the carburettor intake pipe (i11).



Secure the two tailplane support struts in position between the bent out tabs on the photo-etch at rear of the of the fuselage and the underside of the tailplane at its trailing edge. If necessary, adjust the bends at each end of the struts to ensure they are in full contact with the tailplane and photo-etch tab.



Fit the tail skid, drilling and pinning as detailed in the ‘Aviattic’ build log.

Weathering:

Refer to Part 3 (weathering) of this build log. Apply ‘Flory Models’ Dark Dirt clay wash over the fuselage assembly.

Apply ‘Flory Models’ Dark Dirt clay wash over the separate radiator assembly.

Once the desired weathering effect has been achieved, seal the weathering wash with a light coat of gloss, such as ‘Alclad’ Aqua Gloss (ALC-600, ‘Tamiya’ Gloss Clear (x22) or similar.

Assembly (cont’d):

NOTE: *I chose not to fit location pins to the radiator as per the ‘Aviattic’ build guide specifies.*

Test fit the radiator assembly to the photo-etch frame at the front of the fuselage with the added header tank pipe resting along the centre of the engine camshaft. If necessary, adjust the pipe to achieve a good fit with the radiator aligned to the sides of the fuselage.

Secure the radiator assembly in position on the front of the fuselage.

Airbrush the fuselage assembly with a light sealing coat of semi-matte, such as ‘Alclad’ Light Sheen (ALC-311), ’Tamiya’ Semi-Gloss (X35) or similar.

If desired, sponge ’Tamiya’ Weathering Master Set D (Oil Stain) behind areas such as engine bay vent in the cowl panels and under fuselage panels. Also in the machine gun troughs in the forward cowl panels.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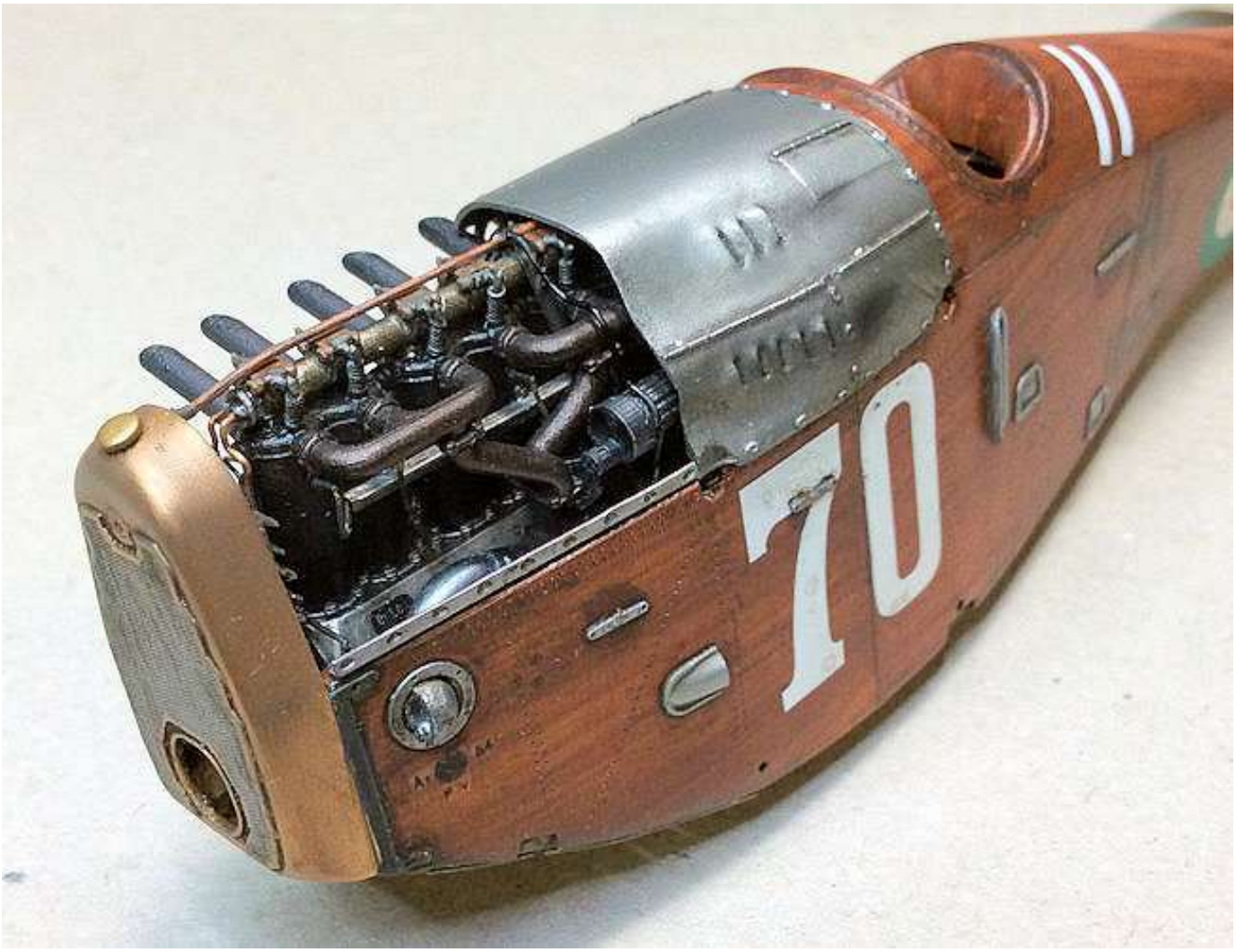
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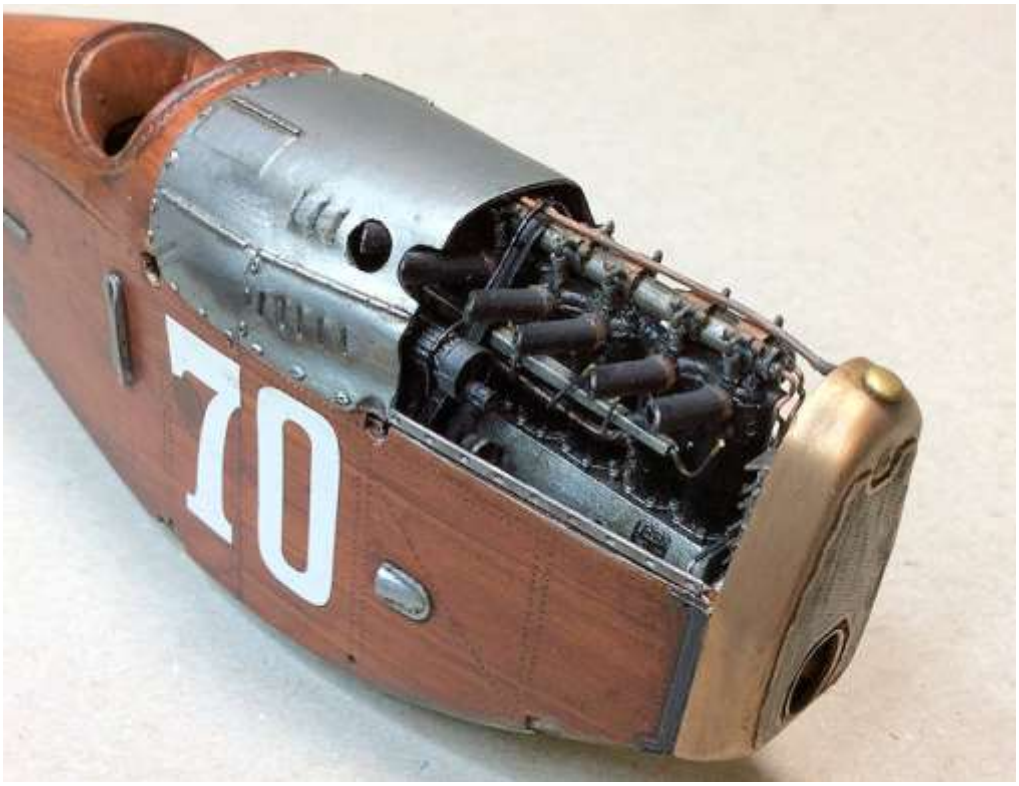


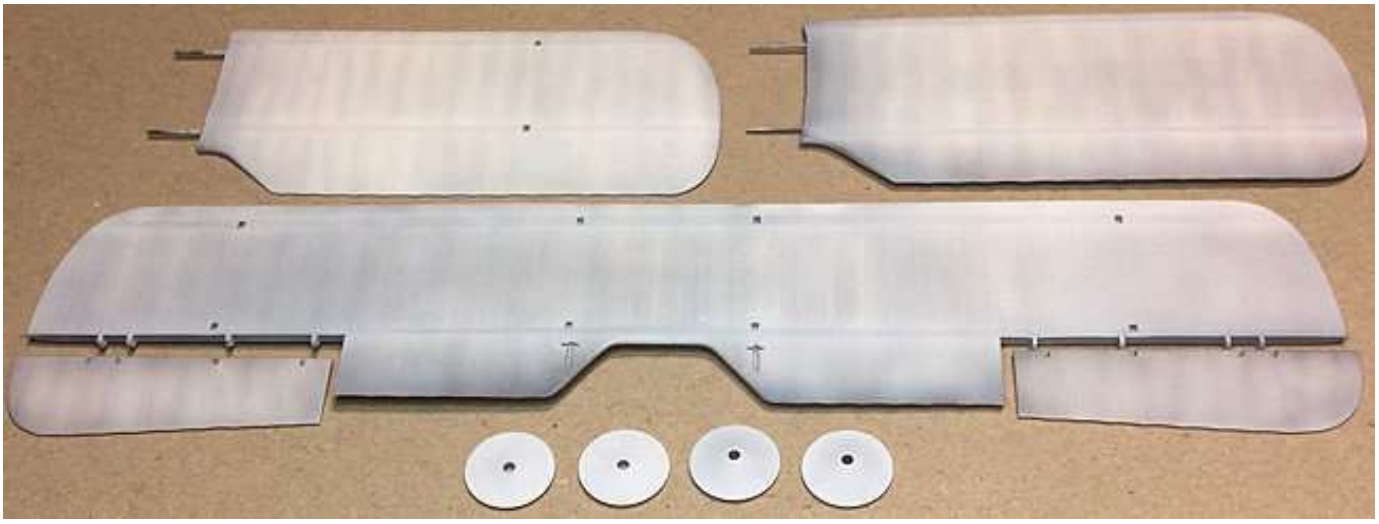
Wings:

Airbrush the wings and the two ailerons with a white primer, such as ‘AK Interactive’ White (AK759) or similar.

With reference to the following photograph, mask off and lightly airbrush across the underside of the upper and both sides of the lower wings with ‘Tamiya’ Smoke (X19) to pre-shade these areas for the front and rear spars.

Lightly airbrush along the rib tapes on the underside of the upper wing and ailerons and on both sides of the lower wings with ‘Tamiya’ Smoke (XF19) to pre-shade these areas for the wing ribs.

Airbrush across the underside of the upper wing and ailerons and both sides of the lower wings with a *light coat of* white primer, such as 'AK Interactive' White (AK759) or similar, to slightly fade the applied pre-shading so it will just show through the CDL decals.



Using the green side of 'Flory Models' polishing sticks (green/white), rub across the wings and ailerons to lightly polish away the white primer on the wing ribs, to highlight them more.

Make sure the painted surfaces of the wings and ailerons are smooth and free of any surface imperfections, such as dust or paint roughness.

Airbrush one or more sealing gloss coats over the wings and ailerons, such as 'Alclad' Aqua Gloss (ALC-600), 'Tamiya' Clear Gloss (X22) or similar, until a smooth glossy surface is achieved.

NOTES:

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

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

The 'Aviattic' linen effect and camouflage decals for the flight surfaces are not 'cookie' cut to the shapes required. Therefore the decals must be accurately cut from their backing sheets.

The national and personal markings, serial numbers etc are 'cookie cut' and are applied as normal decals. These decals are thicker than the linen or camouflage decals and are more brittle. Take care when applying, especially around curved edges.

If necessary, use a decal conforming solution, such as 'MicroScale' MicroSol, to conform decals around bends or detail surfaces. Alternately, apply 'Tamiya' X20A thinners, sparingly as this will melt the decal into shape.

Refer to Part 4 (Decals)

Apply the red and green outer section decals to the undersides of the upper and lower wings.

NOTE: *The Clear Doped Linen (CDL) decals for the undersides of the wings also cover the applied red and green outer section decals. Also I chose not to apply the wing rib decals, as I find even though these are printed as 'Clear' backing, they still double in intensity of the CDL , which I personally think makes them too prominent and not realistic.*

Accurately cut out the Clear Doped Linen (CDL) decals for the underside of the upper wing and ailerons, both sides of the lower wings and the four wheel covers.

Apply the Clear Doped Linen (CDL) decals to the underside of the upper wing and ailerons, both sides of the lower wings and the four wheel covers.

NOTE: *It is easier to cut the upper wing camouflage decal into three sections, using the indicated cut markers. This makes it easier to apply than as one large, single decal.*

Accurately cut out the camouflaged decal for the top surface of the upper wing and ailerons.

Apply the camouflaged decal to the top surface of the upper wing and ailerons.

Apply the two roundels to the white areas on the applied upper wing camouflage decal.

Once dry, lightly sand away any overhanging decals from the edges of the parts.

Assembly (cont'd):

Brush paint the two filler caps for the fuel tank and the aileron hinges on the upper wing with 'Mr. Colour' Stainless Steel (213) or similar.

Brush paint the two raised fairings (for the aileron controls) on the upper wing by mixing the appropriate 'Tamiya' acrylic paints to achieve the best possible colour matches to the surrounding camouflage colours.

Airbrush the wings, ailerons and wheel covers with a light sealing coat of semi-matte, such as 'Alclad' Light Sheen (ALC-311) or 'Tamiya' Semi-Gloss (X35) or similar. This provides a good surface for applying the weathering wash.

Refer to Part 3 (Weathering) of this build log - Apply 'Flory Models' Dark Dirt clay wash over the Wings, ailerons and wheel covers.

Once dry, remove the wash to achieve the desired weathered effect.

Seal the applied weathering wash by airbrushing the wings, ailerons and wheel covers with a *light* sealing coat of semi-matte, such as 'Alclad' Light Sheen (ALC-311) or 'Tamiya' Semi-Gloss (X35) or similar.

To represent dirt thrown up from the wheels onto the underside of the lower wings, brush earth coloured pigment powder, such as 'Flory Models' pigment, where the dirt spray from the wheels would be located.

Lower wing - test fit:

Clean any paint or primer from the two wing locating rods on both lower wings.

Use a 1.0 mm diameter drill to clear the pre-moulded lower wing locating holes in each side of the fuselage.

NOTE: *When test fitting the lower wings to the fuselage, do not apply undue pressure or try to force them to fully locate against the fuselage. Doing so may damage the fuselage or internal fuselage parts.*

Test fit the two lower wing into the fuselage. If the wings do not locate fully with only slight pressure applied, the locating rods will need to be filed or sanded until a slide fit is achieved. **Do not drill out the holes to a larger size as this will cause drill 'break through' under the fuselage.**

Pre-rigging:

NOTES:

The only photo-etch rigging brackets used from those supplied in the kit are the four 'twin' brackets fitted to the lower wing roots and the two forward brackets, located on the underside of the upper wing, for the forward cabane struts.

Pre-rigging the rigging lines to the photo-etch rigging brackets will make it easier to complete the final rigging before the wings are fitted. It's best to pre-rig at the end of rigging lines where turnbuckles are fitted, as these are more complicated to pre-rig than the non-turnbuckles ends of the lines. Refer to Part 6 (Rigging) of this build log for more information.

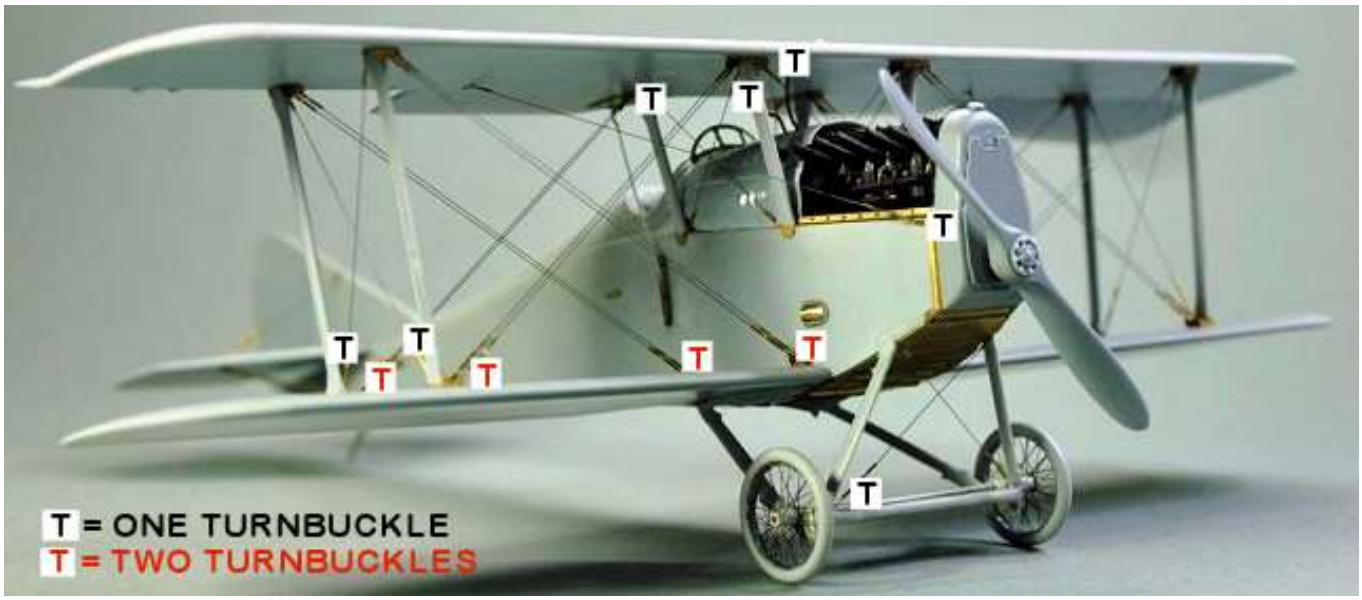


Photo-etch brackets:

NOTE: *The only photo-etch rigging brackets to be pre-rigged before the upper wing are fitted are the four 'twin' flying wire anchors at the lower wing root to fuselage.*

Cut a long length of 'Stroft' Mono-filament 0.08 mm diameter or similar.

NOTE: *The tubes used are blackened with a chemical solution, such as 'Blacken-It'.*

Pass the line through an 'eye' end of a 'Gaspatch' 1:48th scale turnbuckle (Type C) then through a blackened 0.4 mm diameter tube ('Albion Alloy's' MBT04).

NOTE: *The internal bore of the 0.4 mm diameter tube is 0.2 mm, so three 0.08 mm diameter lines will pass through the tube.*

Pass the end of the line through a rigging hole in the hinged plate on the rigging anchor.

Pass that end of the line back through the tube.

Pass the other end of the line (from the turnbuckle) back through the tube.

Pull the two free ends of the line to bring the tube up to, but not touching, the anchor plate and the 'eye' of the turnbuckle.

Apply thin CA adhesive to only one end of the tube, to secure the three lines.

NOTE: *During the next step, take care not to cut through the line loop through the anchor plate and 'eye' of the turnbuckle.*

Carefully cut away the two residual ends of the line at the tube ends.

Cut a long length of ‘Maxima’ Chameleon Mono-Filament 0.12 mm diameter (longer than the distance between the fuselage and top of the interplane struts (when fitted).

Pass the line through a blackened 0.5 mm diameter tube (’Albion Alloy’s’ MBT05).

Pass the line through the remaining ‘eye’ of the turnbuckle then back through the tube.

Slide the tube up to, but not touching, the ‘eye’ of the turnbuckle.

Apply thin CA adhesive to secure the line to the tube.

NOTE: *During the next step, take care not to cut through the line loop through the anchor plate and ‘eye’ of the turnbuckle.*

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

Repeat this procedure to add a pre-rigged line to the other hole in the hinged plate on the rigging anchor.

Use the same procedure to add pre-rigged flying wires to the remaining three photo-etch wing root anchors.

Pre-rigging - flying wire - wing root anchor

Replacement rigging anchors:

NOTE: ***I personally found that most of the supplied photo-etch rigging brackets were too weak and fragile for use, especially given the mono-filament will be used as the rigging lines. These required tensioning once fitted and I believe the photo-etch brackets are not strong enough and may distort, break or detach from the model surface when the rigging lines are tightened. To that end I have used only the wing root and forward cabane brackets. The remaining anchor points will be the 1:48th scale metal anchor points from*** **‘GasPatch’.**

The ‘GasPatch’ anchors to be pre-rigged before the upper wing is fitted are:

Lower wings - Turnbuckle ends:

Four ‘twin’ landing wire anchors at the bottom of the outer wing struts.
Strut incidence wires between the bottom of the front and rear outer wing struts.

Upper wing - Turnbuckle ends:

Bracing wires to engine bulkhead at the top of the front fuselage cabane struts.
Crossed bracing wires between the front and rear fuselage cabane struts.

Non-turnbuckle ends:

Drift wires at the underside of the upper wing to engine radiator.

Landing wire anchors - bottom outer wing struts

Use the same procedure to add pre-rigged landing wires to eight separate ‘GasPatch’ 1:48th scale anchor points (instead of the kit photo-etch brackets).

Incidence wire anchors - bottom outer wing struts

Use the same procedure to add pre-rigged incidence wires to four separate ‘GasPatch’ 1:48th scale anchor points (instead of the kit photo-etch brackets).

Bracing wire anchors - upper wing to engine bulkhead

Use the same procedure to add pre-rigged bracing wires to two separate ‘GasPatch’ 1:48th scale anchor points (instead of the kit photo-etch brackets).

Bracing wire anchors - cabane struts

Use the same procedure to add pre-rigged bracing wires to four separate ‘GasPatch’ 1:48th scale anchor points (instead of the kit photo-etch brackets).

Drift wire anchors - Radiator to upper wing

Drill a hole of 0.3 mm diameter into, but not through, the underside of the upper wing, midway between the locations for the rear outer wing struts and the rear fuselage cabane struts.

Secure a ‘GasPatch’ 1:48th scale anchor point into the pre-drilled holes.

Use the same procedure to add the single (non-turnbuckle) pre-rigged drift wires to the added ‘GasPatch’ anchor points in underside of the upper wing.

Cut a long length of ‘Maxima’ Chameleon Mono-Filament 0.12 mm diameter (longer than the distance between the inserted anchor point in the underside of the upper wing and the side of the radiator.

Pass the line through a blackened 0.5 mm diameter tube (’Albion Alloy’s’ MBT05).

Pass the line through the inserted anchor point in the upper wing, then back through the tube.

Slide the tube up to, but not touching, the ‘eye’ of the anchor point.

Apply thin CA adhesive to secure the line to the tube.

NOTE: *During the next step, take care not to cut through the line loop through the anchor plate and ‘eye’ of the turnbuckle.*

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

Repeat the procedure for the opposite drift wire.

Lower wings - fit:

NOTE: *Refer to the ‘Aviattic’ build log, Section 6, Step 2.*

Locate each of the four pre-rigged photo-etch rigging anchors onto their lower wing reinforcing rods.

Test fit the lower wings into their location holes in the fuselage.

Make sure that with the rigging anchors correctly located in their pre-moulded recesses, the lower wings fully contact the sides of the fuselage. If not, the rigging anchor recesses in the wings will need to be deepened, either by scrapping or filing, until the correct fit of the lower wings is achieved.

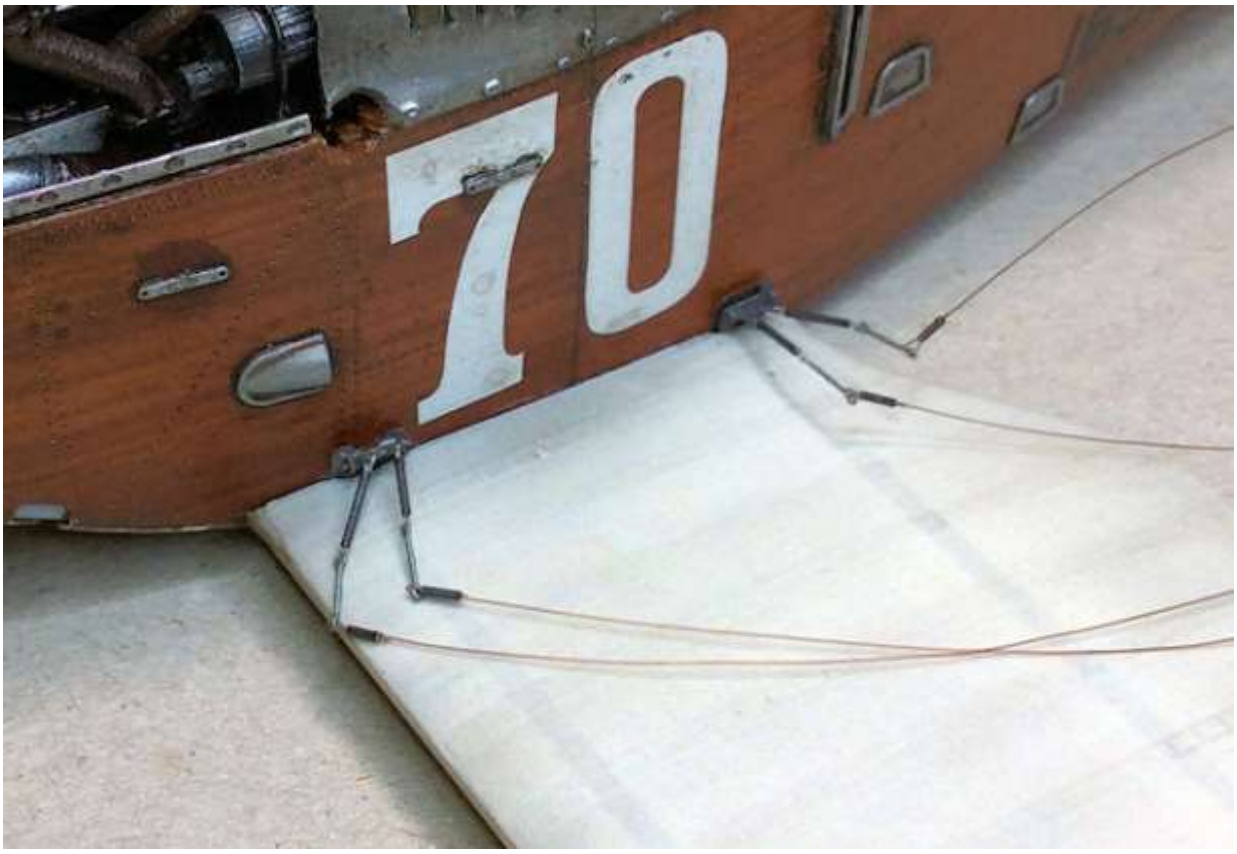
Secure the photo-etch rigging anchors in their recesses and against the lower wings.

NOTE: *When securing the lower wings in position, make sure the pre-rigged lines are kept clear of the fuselage and wing root joint.*

Partly locate the locating rods in each lower wing into their holes in the fuselage.

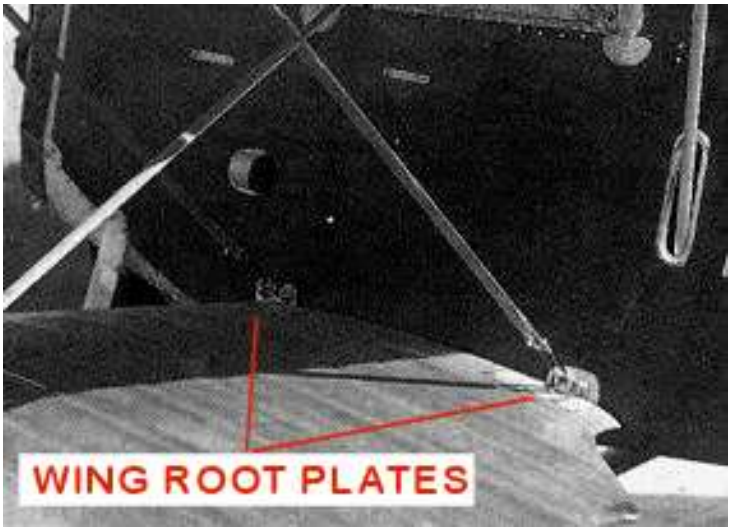
Apply CA adhesive to the exposed locating rods and contact surface at the wing roots.

Fully locate the lower wings against the fuselage.



Lower wing - wing root plates:

NOTE: *Photographs show that plates were fitted on the upper surface of the lower wings at the wing roots and opposite the twin rigging anchors. These plates are not pre-moulded on the lower wings or supplied as photo-etch.*



The four plates were cut 2 mm wide and 7 mm long from spare photo-etch sheet and airbrushed with a light coat of steel, such as 'Alclad' Steel (ALC–112) or similar.

Secure the four plates in position on the upper surface of the lower wings and adjacent to the rigging anchors.

Interplane and cabane struts:

NOTES:

Before fitting the interplane and fuselage cabane struts they should be test fitted into their various locations. ***Also note that the longer interplane struts (22) are to be fitted to the starboard (right) side of the wings.***

Test fit the four interplane and fuselage cabane struts into their various locations in the upper and lower wings. The fit should be as tight as possible without stressing the struts.

To achieve a good fit of the fuselage cabane struts into their fuselage locations and maintain the correct angle to the upper wing, it may be necessary to carefully trim the rear engine cowl panel and/or the fuselage around the four strut locations.

Airbrush the four interplane and cabane struts with a grey primer, such as ‘AK Interactive’ Grey (AK758) or similar.

Airbrush all of the struts with ‘Tamiya’ Semi-Gloss Black (X18) or similar.

Landing gear:

NOTE: *The landing gear assembly will be fitted after the wings have been fitted and fully rigged. This is to avoid damaging the lading gear whilst handling the model for wing fit and rigging.*

Airbrush the landing gear assembly with a grey primer, such as ‘AK Interactive’ Grey (AK758) or similar.

Airbrush the landing gear assembly with ‘Tamiya’ Semi-Gloss Black (X18) or similar.

Insert the end of a long length of ‘EZ’ stretchable line (Heavy White) or thread into the pre-drilled 0.8 mm diameter holes at the bottom of the landing stuts, to the rear of the axle.

Secure the ‘EZ’ lines or thread in the hole with CA adhesive.

Refer to the ‘Aviattic’ build log, Section 4, Step2 - Wrap the ‘EZ’ line or thread around the landing gear strut/axle to create the ‘bungee cord’ suspension. Secure the free end of the ‘EZ’ line or thread with CA adhesive.

Wheels:
Airbrush the two separate tyres with a mid-grey primer, such as ‘AK Interactive’ Grey (AK758) or similar.

Airbrush the two separate tyres with ‘Tamiya’ Rubber Black (XF85) or similar.

Airbrush the four wheel cover sides (both sides) with a white primer, such as ‘AK Interactive’ White (AK759) or similar.

Make sure the painted surfaces of the wheel covers are smooth and free of any surface imperfections, such as dust or paint roughness.

Airbrush a sealing gloss coat over the wheel covers, such as ‘Alclad’ Aqua Gloss (ALC-600), ‘Tamiya’ Clear Gloss (X22) or similar.

Accurately cut out the Clear Doped Linen (CDL) decals for the wheels covers.

Apply the Clear Doped Linen (CDL) decals to wheel covers.

Secure the outer and inner wheel cover into the separate tyres, making sure the covers are correctly positioned and central.

Weathering:
Airbrush the landing gear assembly and wheels with a semi-matte sealer, such as ‘Alclad’ Light Sheen (ALC-311), ‘Tamiya’ Semi-Gloss (X35) or similar.

Refer to Part 3 (Weathering) of this build log - Apply ‘Flory Models’ Dark Dirt fine clay wash over the landing gear assembly and wheels.

Once dry, remove the wash to achieve the desired weathered effect.

Seal the applied weathering wash by airbrushing the landing gear and wheels with a *light* sealing coat of semi-matte, such as ‘Alclad’ Light Sheen (ALC-311) or ‘Tamiya’ Semi-Gloss (X35) or similar.

Apply ‘AK Interactive’ Kerosene wash (AK2039) over the applied ‘bungee’ suspension cords.

Pre-rigging bracing wires:
Using the previously detail pre-rigging procedure, add a turnbuckle rigging line to the two pre-drilled rigging holes inboard of the bottom of the forward struts.

Pass the free end of the bracing lines through a blackened 0.5 mm diameter tube (’Albion Alloy’s’ MBT05).

Pass the lines diagonally up and through the pre-drilled holes at the trailing edge at the top of the opposite forward strut, then back through the tube.

Slide the tube up to, but not touching, the ‘eye’ of the anchor point. Leave the bracing line slack as it will be tightened once the landing gear has been fitted.

NOTE: *A restraining cable was fitted between the landing gear struts and above the bungee cords, to stop the axle from detaching if the suspension cords fail.*

Drill a hole of 0.4 mm diameter through each of the four pre-moulded lugs on the landing gear struts - one on the leading edge of the rear struts and one on the trailing edge of the forward struts.

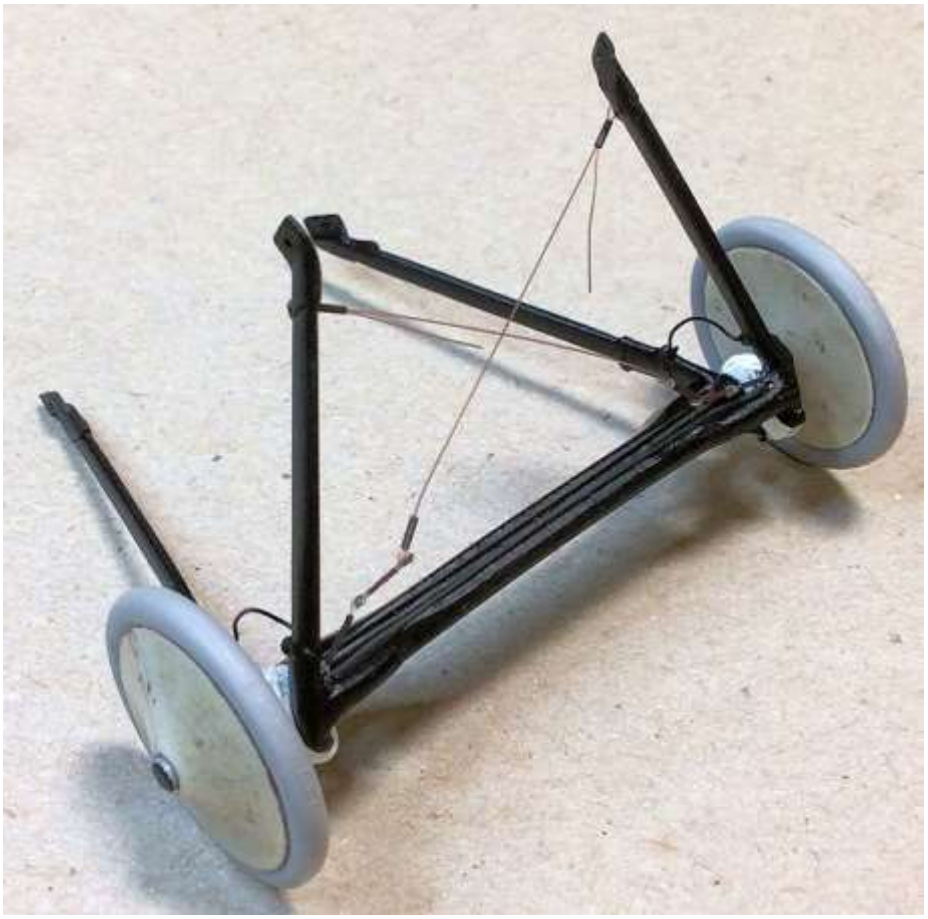
Anneal two lengths of 0.3 mm diameter copper wire.

Insert the ends of the wires into the pre-drilled holes between both pairs of struts to form a slight curve.

Trim the ends of the wires flush to the struts then secure in position using CA adhesive.

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

Test fitting of the wheels to the landing gear assembly



Upper wing - preparation:

Rigging brackets:

NOTE: *Refer to the 'Aviattic' build log, Section 6, for the correct location and orientation of the rigging brackets for the forward cabane struts, which will require securing in place using CA adhesive. Make sure when positioning the rigging brackets that the forward edge of the strut openings are aligned with the forward edge of the strut location recesses. If not, the struts will not locate correctly through the rigging brackets into their location recesses.*

Secure the two rigging brackets for the forward cabane struts in position on the underside of the upper wing. Make sure the hinged plates and rigging lines do not come in contact with the CA adhesive.

Test fit the forward cabane struts into their locating recesses, making sure they fit fully through their rigging brackets and into their recesses.

Aileron levers and covers:

Locate the rods on the two aileron levers into the pre-cut slots across the lever slots in the underside of the upper wing. Do not secure the rods in position as they will need to be moveable.

Secure the two aileron cover plates over the levers and onto the underside of the upper wing. Make sure the CA adhesive does not contact the lever rods.

Anchor points - fit:

NOTE: *The following uses 'GasPatch' 1:48th scale anchor points instead of the kit supplied photo-etch rigging brackets. Before drilling the holes, check that they will clear the inserted struts.*

Drill holes of 0.3 mm diameter into, but through, the underside of the upper wing, top surfaces of the lower wings and the fuselage sides as follows:
Underside of upper wing:

Two holes 1.5 mm apart and inboard from the outer interplane strut location recesses, a total of eight holes.

Two holes 1.5 mm apart and outboard from the rear only cabane strut location recesses, a total of four holes.

One hole:

To the rear of the forward interplane struts.

Forward from the rear interplane struts.

Forward from the rear cabane struts.

Total of six holes.

Lower wings :

Two holes 1.5 mm apart and inboard from the outer interplane strut location recesses, a total of eight holes.

One hole:

To the rear of the forward interplane struts.

Forward from the rear interplane struts.

Total of for holes.

Cabane struts:

One hole in the fuselage sides, forward from rear cabane strut recesses, a total of two holes.

One hole in the bottom of the trailing edge on the forward cabane struts, a total of two. holes.

NOTE: *During the following steps, make sure the rigging line is kept clear of the adhesive and that adhesive does not contaminate the 'eye' end of the anchor points.*

Using thin CA adhesive, secure the tang of the anchor point on the pre-rigged lines **(lower wings only)** into their pre-drilled holes. Make sure the line is long enough to be rigged to the model at the other end and that the line remains moveable in the anchor point.

Using thin CA adhesive, secure the tang of the anchor point on the pre-rigged lines **(rear cabane struts only)** into their pre-drilled holes. Make sure the line is long enough to be rigged to the model at the other end and that the line remains moveable in the anchor point.

Using thin CA adhesive, secure the tang of individual anchor points into their pre-drilled holes **(upper wing only):**

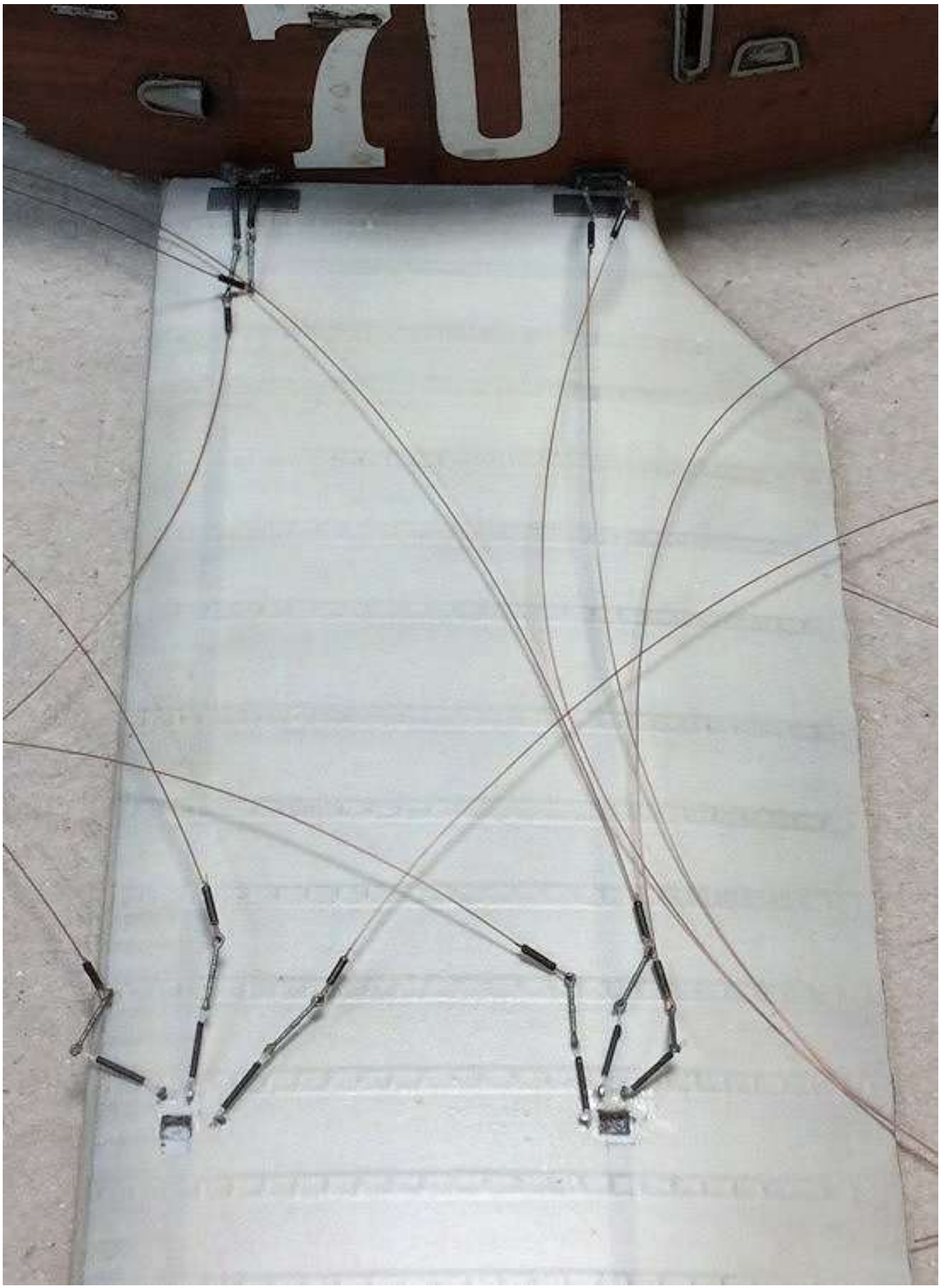
Inboard from the outer interplane strut location recesses. Total of eight.

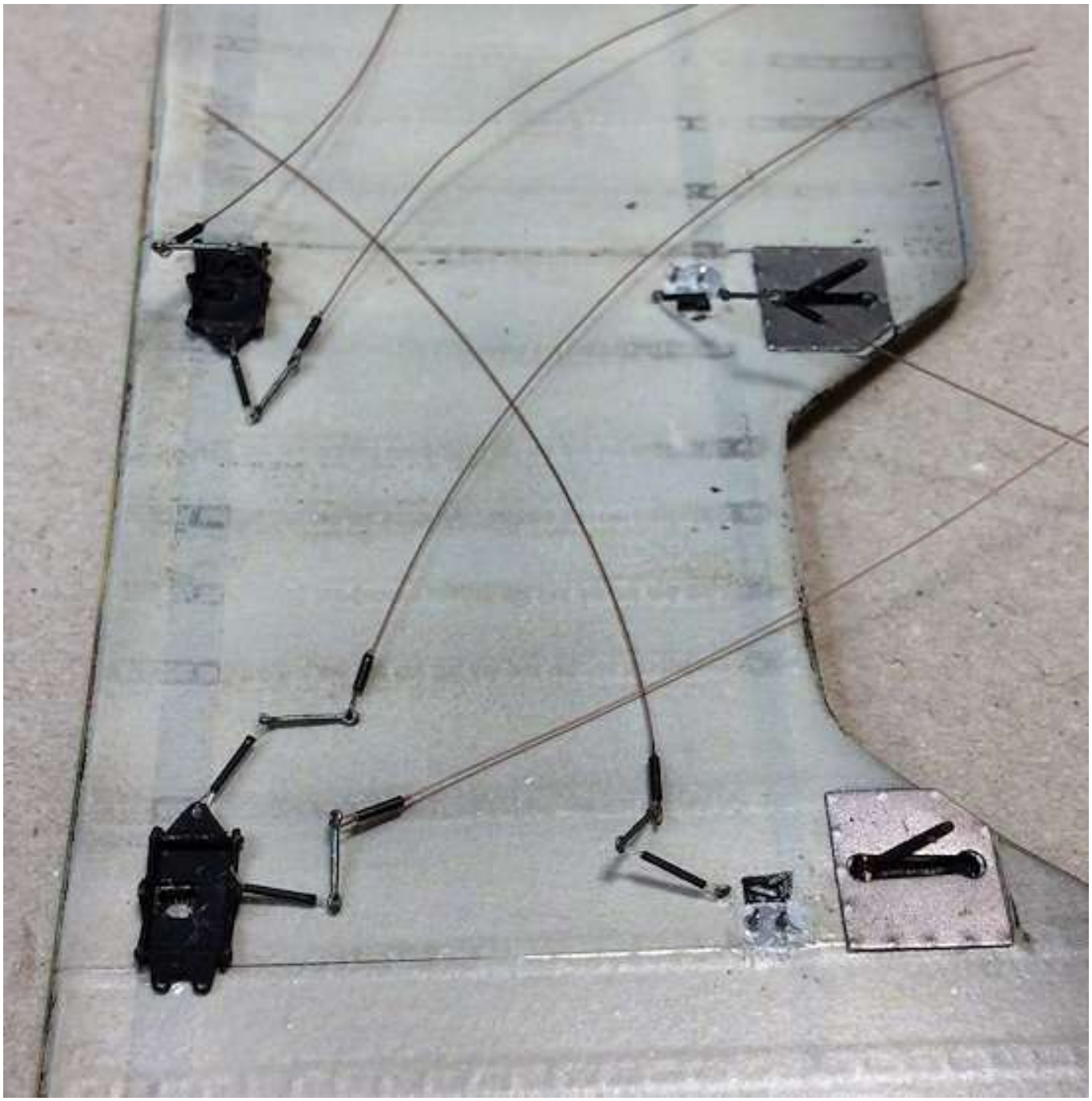
Rear of the forward interplane struts. Total of two.

Forward from the rear interplane struts. Total of two.

Outboard from the rear only cabane strut location recesses. Total of four.

In fuselage sides, forward of rear cabane only strut recesses. Total of two.





Upper wing - fit:

Make sure the locating ends of the four interplane and cabane struts are free of paint and primer.

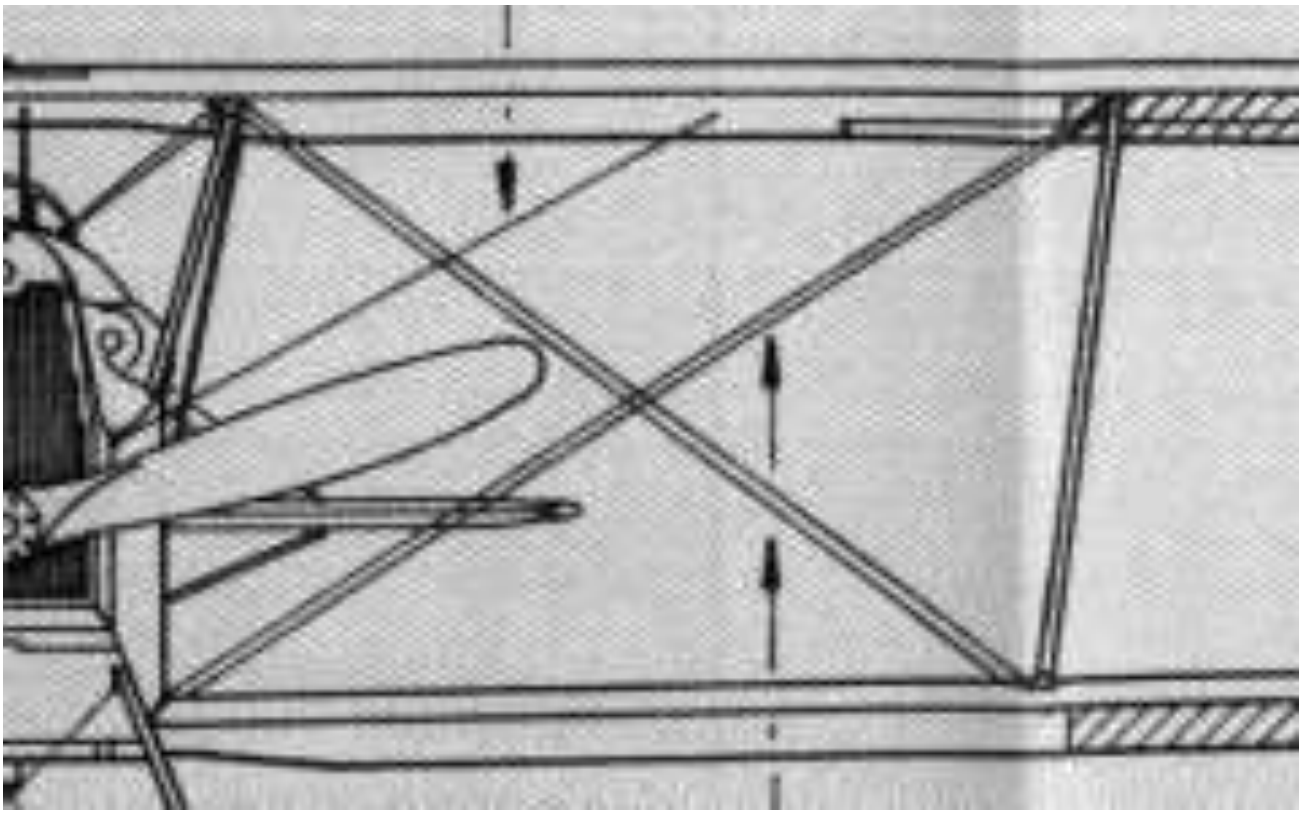
Make sure the upper and lower wing locating recesses for the four interplane struts are free of paint and primer.

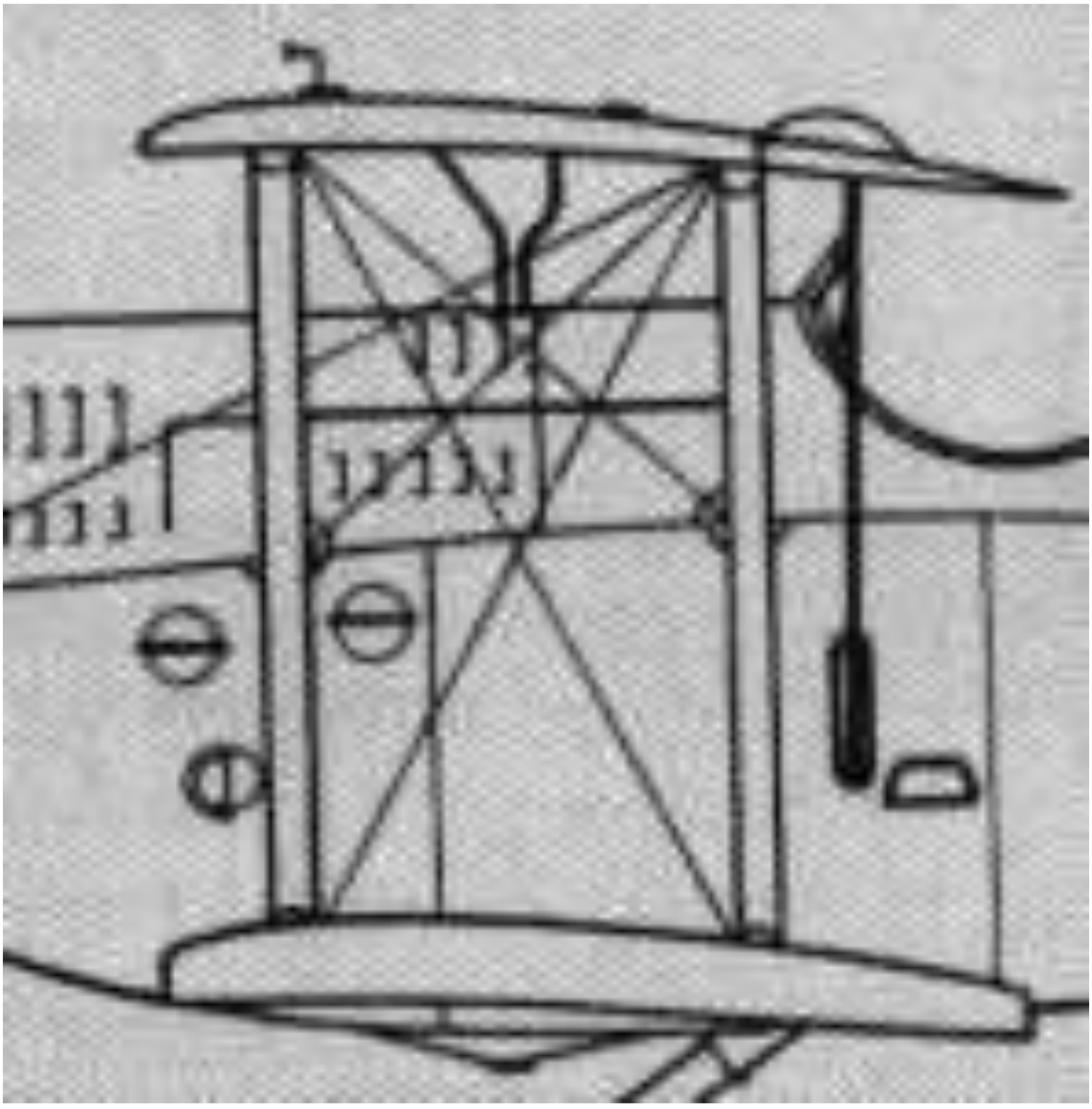
Make sure the upper wing and fuselage locating recesses for the four cabane struts are clear of paint and primer.

Test fit each strut end into its locating recess, making sure it is not a loose fit.

De-tack a strip of masking tape and use it to secure the rigging lines clear of the lower wing interplane struts.

Refer to the following illustrations and use them as a guide for the positioning of the interplane and fuselage cabane struts, when viewed from the front and sides of the model.





NOTE: *To allow time to align the struts into their locations, it's best to use a slower acting CA adhesive, such as 'VMS' Fleky 5K CA (Slow).*

With reference to the previous illustrations, secure each strut into its correct location in the underside of the upper wing. Make sure the struts are at their correct angles when viewed from the front and sides of the wing.

Carefully lower the upper wing onto the lower wing and fuselage, making sure the bottom of the cabane struts do not snag on the rear engine cowl panel.

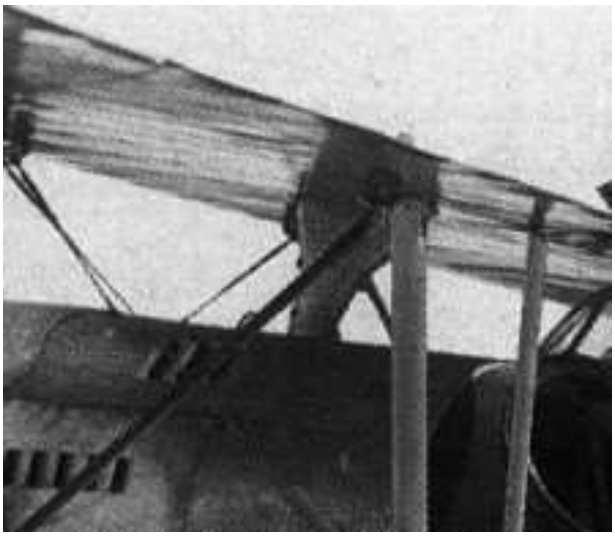
Carefully push down to fully engage the outer interplane struts into their location recesses in the lower wings.

Apply thin CA adhesive to the bottom of the outer interplane struts, **but only to the sides of the struts without rigging**.

Push the bottom of the cabane struts into their location recesses in the fuselage and secure in position using thin CA adhesive.

Fuel line fairing:

NOTE: *The 'Aviattic' build log shows two fuel lines between the fuel tank in the upper wing and the engine. Some 'Balilla' aircraft had these fuel pipes exposed, as shown for this model. However, this particular aircraft being modelled had the fuel pipes covered with a fairing. As the upper wing has now been fitted, the fuel pipe fairing can be created and fitted between the underside of the upper wing and the rear engine cowl panel.*



Cut the shape of the pipe fairing from 1.mm thick plastic card, leaving the base longer than required.

Hole the fairing with tweezers and position it against the fuselage with the top aligned with the fuel tank in the upper wing (use the tank filler caps as a positioning guide).

Carefully sand the base of the fairing until it can be located between the underside of the wing and top of the cowl panel. The fairing should be vertical and aligned under the fuel tank and should fit so it holds its position.

Sand the front and rear edges of the fairing to create a rounded profile.

Use a pointed tool to create three small indents on the front and rear edges (both sides). One at the top and bottom and one in the centre of the edges.

Apply the ‘Aviattic’ Clear Doped Linen (CDL) to cover both sides of the fairing.

Airbrush the fairing with a light sealing coat of semi-matte, such as ‘Alclad’ Light Sheen (ALC-311) or ‘Tamiya’ Semi-Gloss (X35) or similar. This provides a good surface for applying the weathering wash.

Locate the fairing in position and apply thin CA adhesive to the top and bottom to secure it to the upper wing and cowl panel.

NOTE: *During subsequent handling of the model, take care not to apply too much pressure around that area of the fairing, otherwise the fairing may break away. Once final rigging has is complete, access to this area will be restricted.*

Final rigging:

NOTE: *For the best access to complete the rigging between the wings, rig the lines in the following order:*

Bracing wires (1) - upper wing to engine bay.

Bracing wires (2) - between front and rear cabane struts.

Twin landing wires - between cabane struts and interplane struts.

Twin flying wires - between cabane struts and interplane struts.

Incidence wires - between front and rear interplane struts.

For access purposes, the two drift wires will be completed after the 'wood' inserts have been added to the flying and landing wires.

Bracing wires (1):

NOTES:

The two bracing wires are already pre-rigged to the underside of the upper wing, inboard from the forward cabane struts.

With the lines slack, the rigged turnbuckles will probably kink. Align them then clamp the free end of the line using self-clamping tweezers or similar. With the line pulled taut by the weight, secure the line in position until the adhesive sets.

Pass the free end of a bracing wire down and through the anchor point added to the inverted 'V' frame over the engine.

Pull the taut and secure the line to the anchor point.

Cut away the residual tag of line.

Repeat to add the opposite bracing wire.

Bracing wires (2):

NOTE: *The four bracing wires are already pre-rigged to the underside of the upper wing, to the rear of the forward cabane struts and forward from the rear cabane struts.*

Pass the free end of the forward cabane strut lines through blackened 0.5 mm diameter tubes ('Albion Alloy's' MBT05 or similar).

Pass the lines diagonally down and through the previously fitted 'GasPatch' anchor points in the fuselage sides, at the bottom of the rear cabane struts.

Pass the line back through the tubes.

Keeping the lines taut (as before) slide the tubes up to, but not touching, the 'eye' of the anchor points.

Secure the lines at the end of the tubes.

Cut away the residual tag of the lines.

Pass the free end of the rear cabane strut lines through blackened 0.5 mm diameter tubes ('Albion Alloy's' MBT05 or similar).

Pass the lines diagonally down and through the pre-drilled holes in the trailing edge at the bottom of the forward cabane struts.

Keeping the lines taut (as before) secure the lines to the struts.

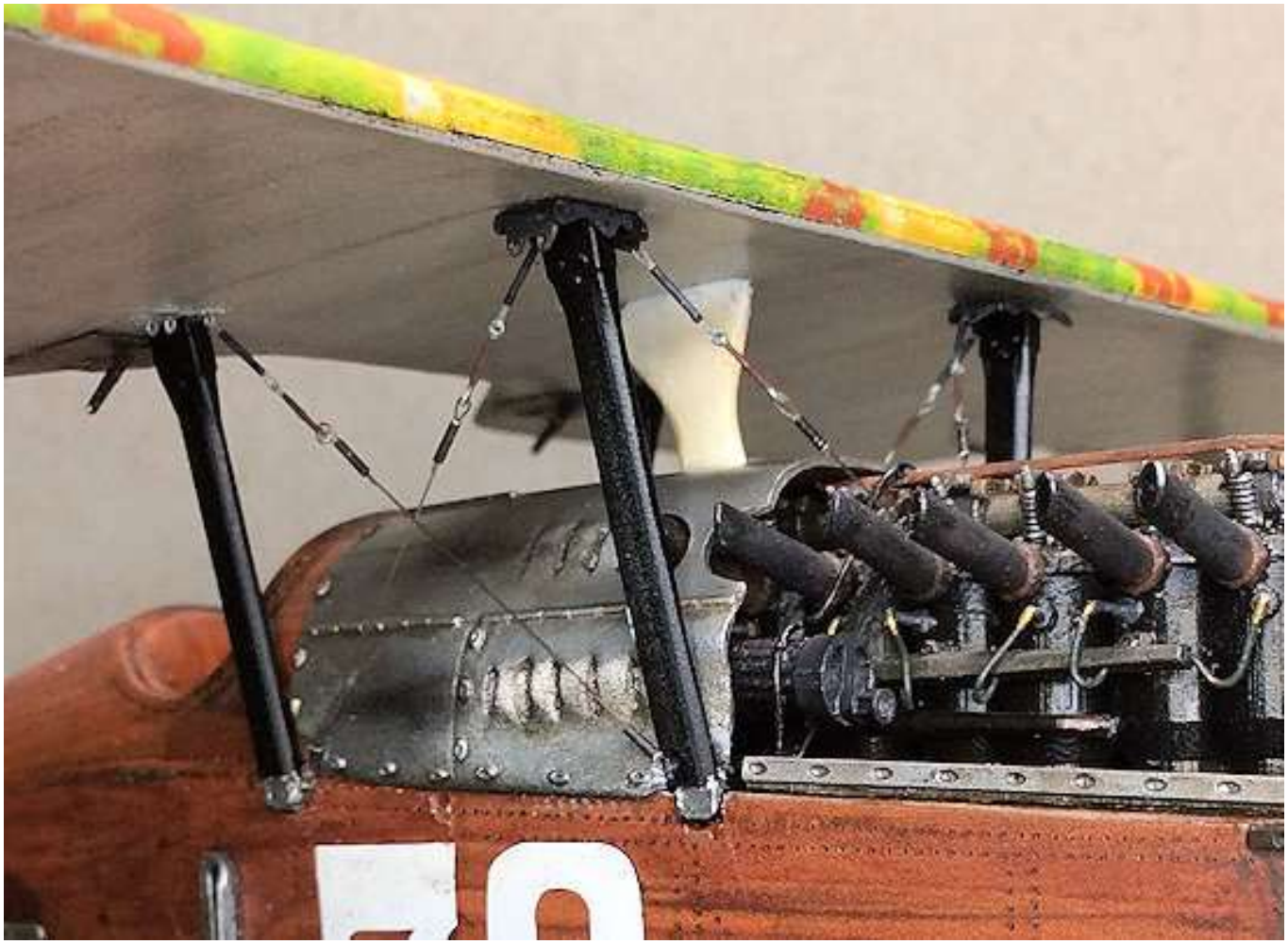
Slide the tubes up to the struts and secure them to the lines.

Cut away the residual tag of the lines.

Brush paint the centre section of each turnbuckle with ‘Tamiya’ Hull Red XF9) or similar.

Strut cover plates:

NOTE: *The supplied photo-etch cover plates for the bottom of the cabane struts have no rigging holes, so were discarded.*



Brush paint the bottom of the cabane struts with ‘Mr. Colour’ Stainless Steel (213) or similar.

Twin landing wires:

NOTE: *The four pairs of landing wires are already pre-rigged on the top surface of the lower wings, inboard from each of the four outer interplane struts.*

Pass the free end of a landing line through blackened 0.5 mm diameter tube (’Albion Alloy’s’ MBT05 or similar).

Pass the line diagonally down and through the previously fitted ‘GasPatch’ anchor point at the bottom of the relevant outer interplane strut. **Make sure the line and anchor point match (don’t cross the lines)**.

Pass the line back through the tube.

Keep the line taut and slide the tube up to, but not touching, the ‘eye’ of the anchor point.

Secure the line at the end of the tube.

Cut away the residual tag of the line.

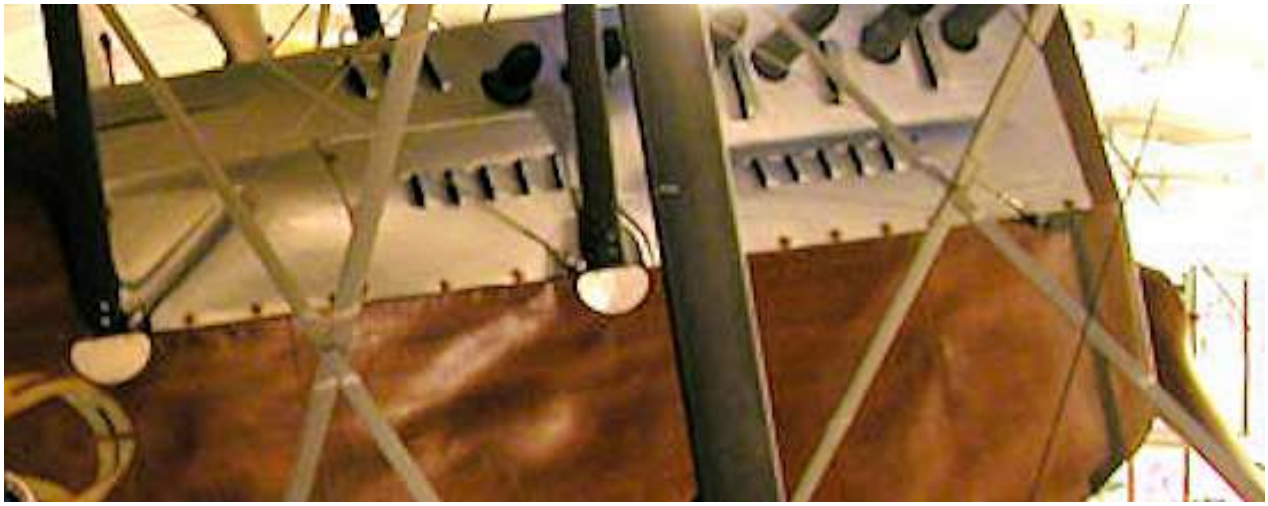
Repeat this procedure to rig the remaining seven landing wires.

Brush paint the centre section of each turnbuckle with ‘Tamiya’ Hull Red XF9) or similar.

Twin flying wires:

NOTE:

The four pairs of flying wires are already pre-rigged at the lower wing root to fuselage joints. The rear flying wire in each pair of flying wires passes between the pair of landing wires that it crosses. The flying and landing wires has wood inserts fitted between the wires.



Pass the free end of a flying line through blackened 0.5 mm diameter tube (’Albion Alloy’s’ MBT05 or similar).

Pass the line diagonally up and through the previously fitted ‘GasPatch’ anchor point on the underside of the upper wing, inboard from the cabane struts. **Make sure the line and anchor point match (don’t cross the lines)**.

Pass the line back through the tube.

Keep the line taut and slide the tube up to, but not touching, the ‘eye’ of the anchor point.

Secure the line at the end of the tube.

Cut away the residual tag of the line.

Repeat this procedure to rig the remaining seven flying wires.

Brush paint the centre section of each turnbuckle with ‘Tamiya’ Hull Red XF9) or similar.

Incidence wires:

NOTE: *The four incidence wires are already pre-rigged on the top surface of the lower wings, to the rear of the forward interplane struts and forward from the rear interplane struts.*

Pass the free end of an incidence line through blackened 0.5 mm diameter tube (’Albion Alloy’s’ MBT05 or similar).

Pass the line diagonally up and through the previously fitted ‘GasPatch’ anchor point in the underside of the upper wing.

Pass the line back through the tube.

Keep the line taut and slide the tube up to, but not touching, the ‘eye’ of the anchor point.

Secure the line at the end of the tube.

Cut away the residual tag of the line.

Repeat this procedure to rig the remaining three incidence wires.

Brush paint the centre section of each turnbuckle with ‘Tamiya’ Hull Red XF9) or similar.

Tail unit - rigging:

NOTES: *CA adhesive may not hold the photo-etch parts onto the surface of the fin and tailplane when tension is applied to the rigging wires, which will be mono-filament. Therefore I've made slight changes to the instructions in the 'Aviattic' build guide.*

The photo-etch parts and tubes used are blackened with a chemical solution, such as 'Blacken-It'.

Refer to the 'Aviattic' build log for positioning of the various photo-etch parts.

Tailplane bracket (PE part 76)

Cut a long length of 'Stroft' Mono-filament 0.08 mm diameter or similar.

Pass the line through an 'eye' end of a 'Gaspatch' 1:48th scale turnbuckle (Type C) then through a blackened 0.4 mm diameter tube ('Albion Alloy's' MBT04).

NOTE: *The internal bore of the 0.4 mm diameter tube is 0.2 mm, so three 0.08 mm diameter lines will pass through the tube.*

Pass the end of the line through a rigging hole in the tailplane bracket.

Pass that end of the line back through the tube.

Pass the other end of the line (from the turnbuckle) back through the tube.

Pull the two free ends of the line to bring the tube up to, but not touching, the tailplane bracket and the 'eye' of the turnbuckle.

Apply thin CA adhesive to only one end of the tube, to secure the three lines.

NOTE: *During the next step, take care not to cut through the line loop through the anchor plate and 'eye' of the turnbuckle.*

Carefully cut away the two residual ends of the line at the tube ends.

Cut a long length of 'Maxima' Chameleon Mono-Filament 0.12 mm diameter (longer than the distance between the tailplane bracket and the bracket at the top, rear of the fin (when fitted).

Pass the line through a blackened 0.5 mm diameter tube ('Albion Alloy's' MBT05).

Pass the line through the remaining 'eye' of the turnbuckle then back through the tube.

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

Apply thin CA adhesive to secure the line to the tube.

NOTE: *During the next step, take care not to cut through the line loop through the anchor plate and 'eye' of the turnbuckle.*

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

Repeat this procedure to add a pre-rigged line to the other hole in the tailplane bracket.

Use the same procedure to add pre-rigged flying wires to the other tailplane bracket.

Correctly position each tailplane bracket onto the trailing edge of the tailplane

Point mark the location of the two mounting holes in the bracket onto the surface of the tailplane.

Drill holes of 0.3 mm diameter through the tailplane.

Cut two long lengths of 'Stroft' Mono-filament 0.08 mm diameter or similar.

Pass the ends of the lines through the two mounting holes in the brackets then through the pre-drilled holes in the tailplane.

Apply CA adhesive onto the tailplane then pull on the 0.08 mm lines to pull the brackets down onto the tailplane.

Apply CA adhesive to the exposed 0.08 mm lines at the underside of the tailplane, to secure them in the tailplane holes.

Carefully cut away the residual tags of line at the underside of the tailplane.

Rear rigging line:

Secure in position the fin brackets (PE parts 60).

Pass the free end of the rear rigging line through blackened 0.5 mm diameter tube ('Albion Alloy's' MBT05 or similar).

Pass the line diagonally up and through the hole in the fin bracket.

Pass the line back through the tube.

Keep the line taut and slide the tube up to, but not touching, the fin bracket.

Secure the line at the end of the tube.

Cut away the residual tag of the line.

Repeat this procedure to rig the same line on the other side of the tailplane.

Brush paint the centre section of each turnbuckle with 'Tamiya' Hull Red XF9) or similar.

Forward rigging line:

NOTE: *Photo-etch parts 61 need to be flat, not bent .*

Secure one of the brackets in its correct position on the fin.

Drill a hole of 0.4 mm diameter through the top hole in the brackets and through the fin.

Pass the free end of the forward rigging line on that side of the fin through a blackened 0.4 mm diameter tube ('Albion Alloy's' MBT04) then through the hole in the bracket and fin.

Slide the remaining bracket onto the rigging line on the other forward rigging line, followed by a blackened 0.4 mm diameter tube ('Albion Alloy's' MBT04).

Pass that rigging line through the hole in the fin.

Pull both lines taut (using self-locking tweezers as weights) and apply thin CA adhesive at both sides of the fin to secure the lines to the fin.

Carefully cut away the residual tags of line.

Secure the free bracket onto its side of the fin.

Slide both 0.4 mm diameter tubes up against the fin and secure in position.

Additional detail:

NOTE: *A metal retaining band was fitted over the rear of the fuselage at each side, from the base of the fin to the surround for the rudder control wires.*

Represent the two metal bands by either:

Cutting 1.0 mm wide strips of 'Bare Metal' Aluminium foil.

Brush paint the bands using 'Mr. Colour' Stainless Steel (213) or similar.

Elevator hinges (PE parts 62):

Cut sixteen photo-etch elevator hinges from their sheet.

If the elevators have been fitted at an angle, bend the hinges to that angle. Eight for the upper surfaces and eight for the undersides.

Secure the hinges in position on the trailing edge of the tailplane and leading edge of the elevators.

Rudder control lines:

Cut a long length of 'Maxima' Chameleon Mono-Filament 0.12 mm diameter .

Pass the line through a blackened 0.4 mm diameter tube ('Albion Alloy's' MBT04).

Secure the line at the tube.

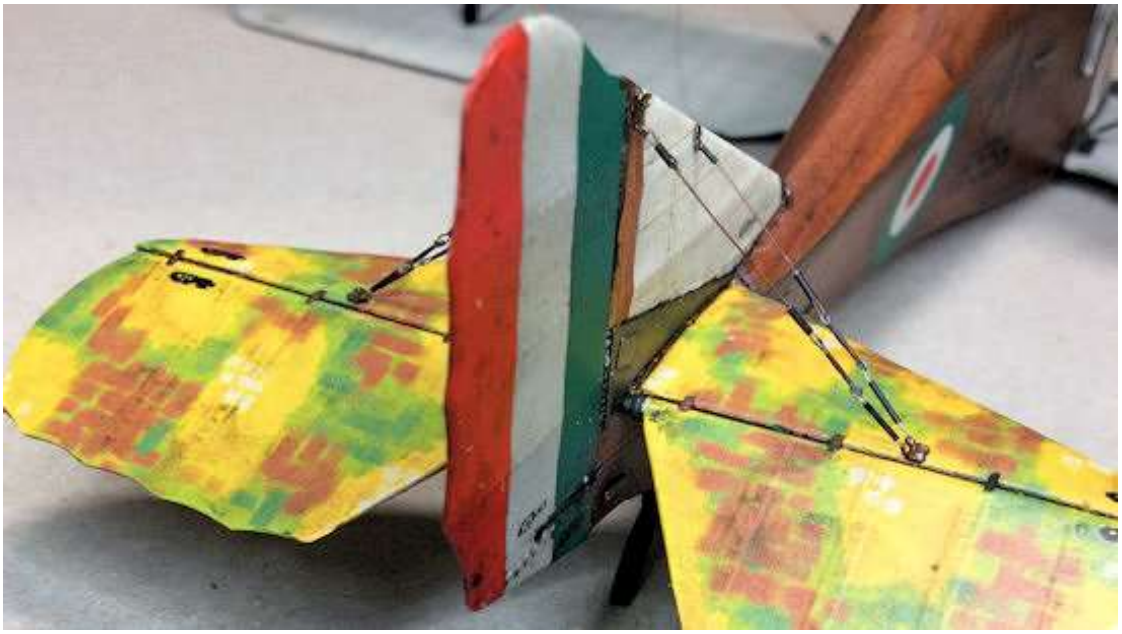
Trim away the line from one end of the tube.

Secure the tube against the rudder rigging point, with the line aligned with the rudder entry surround in the side of the fuselage.

Trim the free end of the line so that it lays flat against the side of the fuselage with the free end at the forward end of the entry slot in the surround.

Secure the line in the entry slot.

Repeat to add the rudder control line to the other side of the fuselage.



Rigging wires - inserts:

Strip wood inserts were fitted between the twin flying and landing wires to reduce vibration and flexing of the wires. The colour of these inserts in unclear from photographs of this aircraft taken at the time and the only reference is that of the restoration aircraft 16553, which appears to show the inserts were of a light grey colour.

NOTES: ***Representing the infill strips between the four pairs of flying and landing wires is possible. If in doubt it's best not to attempt this and instead leave the flying and landing wires without infills.***

For each pair of flying and landing wires, measure and note the distances between the tubes at the ends of the wires and the distance between them.

NOTE: *Due to possible variations in length and distance between the various pairs of wires, it's best to keep the cut strips for each pair of wires separated.*

Cut strips of baking parchment paper to the lengths noted for each pair of wires. The width of the strips should be the span between each pair of wires.

NOTE: *It appears the inserts fitted between the pairs of landing wires and flying wires may have been in two separate strips, the ends of which were met where the landing and flying wires crossed.*

Refer to the above photograph and cut the various strips where the flying and landing wires cross each other, creating upper and lower strips.

Working with one strip at a time, apply PVA adhesive by brush along the two wires and across one side of the strip.

Position the strip onto the wires, making sure the sides of the strip are aligned with the wires.

Gently brush a light layer of PVA adhesive along both sides of the applied strip to fully bond it to the wires.

Repeat this procedure to apply strips to the remaining halves of the flying and landing wires.

Retaining wrappings:

NOTE: *Refer to the following photograph on page 126 for the positioning of the retaining wrappings. On the actual aircraft, the inserts were held in place between the wires with fabric wound around the wires and inserts and at three separate locations along the wires.*

Brush paint both sides of the strips with a light grey, such as 'Tamiya ' Sky Grey (XF19) or similar, thinned slightly with 'Tamiya' X20A thinners, as this thinner will make the paint brush on smoother.

Brush paint thin white bands around the flying and landing wires to represent the wrappings, using 'Tamiya' white (X2) or similar.

To weather the flying and landing wires, brush earth coloured pigment powder, such as 'Flory Models' pigment, along the both sides of the wires.

Drift wires:

NOTE: *The two drift wires are already pre-rigged on the underside of the upper wing.*

Pass the free end of a drift wire through blackened 0.4 mm diameter tube ('Albion Alloy's' MBT04 or similar).

Pass the line under the flying wire towards the radiator at the front of the fuselage.

Drill a hole of 0.3 mm diameter through the side of the fuselage, at the inner corner of the photo-etch radiator surround.

Pass the line through the hole and across the engine to the other side.

Keep the line taut and secure the line in the fuselage hole using thin CA adhesive.

Slide the tube up to the fuselage and secure to the line using thin CA adhesive.

Cut away the residual tag of the line from inside the fuselage.

Repeat this procedure to rig the other drift wire.

Aileron control rods - fit:

NOTES:

The two ailerons operating levers in the underside of the upper wing should have already been fitted earlier in this build.

Remember to fit the aileron control rods to their levers in their correct positions, especially if the ailerons are to be at an angle.

> *Control column fitted vertical - both aileron control rods connected to their levers, which should be angled slightly down.*
>
> *Control column fitted leaning to the left - both aileron control rods connected to their levers, left lever angled further down, right lever angled further up.*
>
> *Control column fitted leaning to the right - both aileron control rods connected to their levers, left lever angled further up, right lever angled further down.*

The two aileron control levers in the underside of the upper wing should be free to move (as fitted earlier in this build).

Position the two aileron control levers, according to the angle you need to set the ailerons.

Apply CA adhesive to the pivot points of the aileron control levers to secure them in position.

Cut or sand a flat half way across one end of the resin control rods, just enough that the control rods will fully contact the inboard end of the control levers.

Slide the control rods into their slots in the sides of the fuselage.

Apply CA adhesive to the inboard end of the control levers and move the control rods up so the created flat on the end of the control rod fully contacts the end of the lever.

If necessary, apply thin CA adhesive where the control rods contact the side of their fuselage slots.

Windscreen - fit:

NOTE: *The windscreen frame should have already been created earlier in this build.*

Brush paint the windscreen frame with a brown colour, such as ‘Tamiya’ Brown (XF!)) or similar.

NOTE: *The supplied windscreen acetate sheet was not used.*

Using ‘Microscale’ Krystal Clear solution, dip and load the end of a cocktail stick or similar into the solution then touch it in a corner of the windscreen opening and slowly move it around the opening to fill the opening (similar to dipping bubble hoop into a child’s bubble solution).

Leave the film to fully dry, when it should change from milky white to clear.

Repeat this procedure to create transparencies in the remaining two openings in the windscreen.

Secure the windscreen in position on the top of the fuselage, just forward from the cockpit, using a PVA adhesive, such as ‘Microscale’ Krystal Clear or similar.

Ailerons - fit:

NOTE: *The two ailerons should have already been prepared earlier in this build.*

Test fit the two ailerons into position on the upper wing. Make sure the hinge extensions on the upper wing fit into the aileron slots.

NOTE: *Remember to fit the ailerons in their correct positions, especially if they are to be at an angle.*

Control column fitted vertical - both ailerons aligned with the upper wing.

Control column fitted leaning to the left - left aileron angled slightly down, right slightly up.

Control column fitted leaning to the right - left aileron angled slightly up, right slightly down.

Locate the two ailerons onto their hinge extensions at the trailing edge of the upper wing.

Position the ailerons at the angles (slightly up or down) required to conform to the positions of the control column/control rod levers.

Secure the two ailerons to the upper wing using CA adhesive.

Landing gear - fit:

NOTE: *The landing gear assembly should have be prepared earlier in this build log.*

Test fit each of the landing gear struts into their location recesses in the fuselage and, if necessary, adjust the recesses until the struts fit fully.

Apply thin CA adhesive into one of the rear fuselage recesses and fully fit that strut.

Repeat to fit the other rear strut into the fuselage.

Repeat to fit each forward strut, in turn, into their fuselage recesses.

NOTE: *The forward landing gear struts are only 'butt' secured against the fuselage recesses and could detach from the fuselage. Therefore I added a pin to each forward strut for added strength.*

Drill a hole of 0.4 mm diameter through the centre of the forward landing gear struts and into their fuselage recesses.

Cut two short lengths of 0.4 mm diameter rod, such as 'Albion Alloy's' MBR04 or similar.

Insert the cut rods through the struts and into the fuselage and secure with thin CA adhesive.

Pull each pre-rigged bracing line taut and slide the 0.5 mm tubes up to the top anchor points on the forward struts.

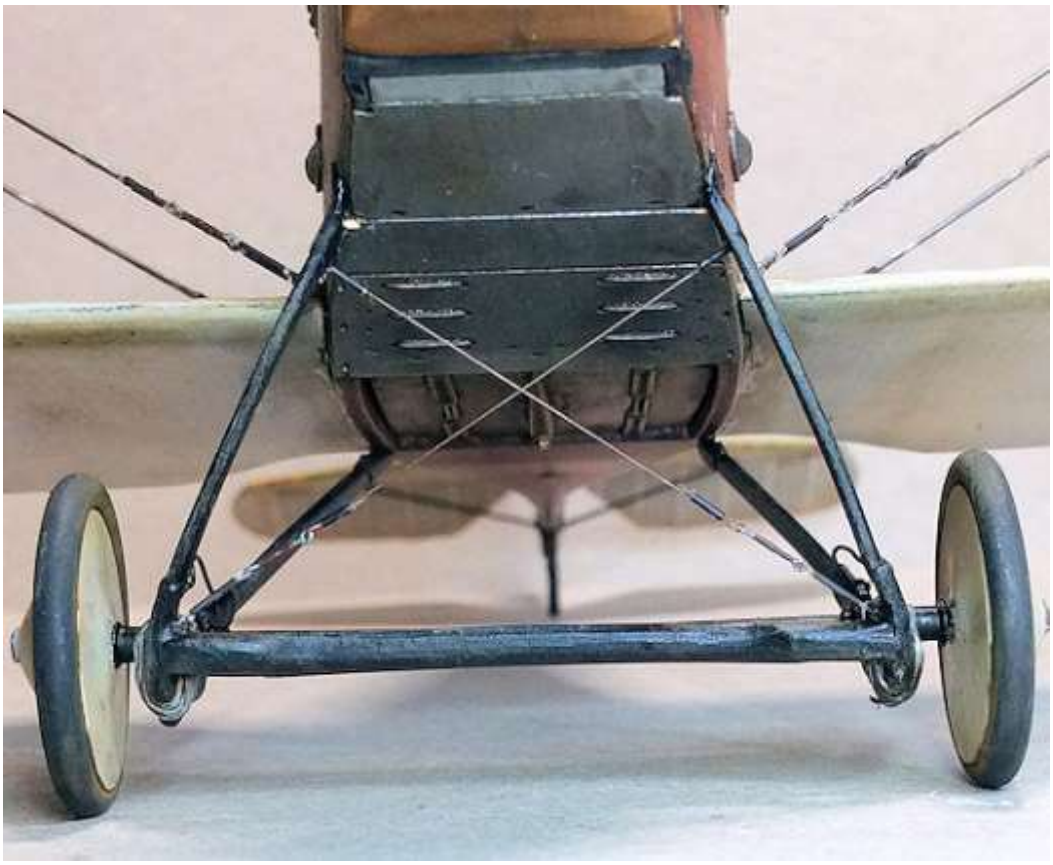
Secure the tubes to the lines using thin CA adhesive.

Cut away the residual tag of line at the tubes.

To apply weathering grime to the forward edges of the landing gear axle fairing and struts, apply by brush an earth coloured pigment powder, such as that from 'Flory Models' or similar. If it desired, apply the same around the wheels and their tyres.

NOTE: *During the following step, make sure the wheels are fitted with the flatter side inboard.*

Secure the wheels to their ends of the axle using thin CA adhesive.



Propeller:

Below is the original propeller fitted to the 'Balilla' Ser No: 16553 restoration, showing that the wood lamination layers were of light coloured woods, but were overpainted and sealed with a dark red/brown surface finish.

NOTE: *The propeller should have be modified and prepared earlier in this build log.*

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

Airbrush the propeller with a mix of 70% 'Tamiya' Flat Red (XF7) and 30% of Hull Red (XF9), thinned with 'Mr. Colour' Levelling Thinners 400.

Airbrush the propeller with thinned 'Tamiya' Clear Orange (X26).

Airbrush the landing gear assembly and wheels with a semi-matte sealer, such as 'Alclad' Light Sheen (ALC-311), 'Tamiya' Semi-Gloss (X35) or similar.

Brush paint the front and rear propeller bosses with 'Mr. Colour' Stainless Steel (213).

Apply 'AK Interactive' Kerosene (AL2039) wash over the front and rear propeller bosses.

Lightly sponge 'Tamiya' Weathering Master Set A (Mud) along the edges and tips of the propeller blades.

NOTE: ***Before fitting the propeller, carry out the display positioning checks, described in Part 12 of this build log.*** *This will ensure the propeller is fitted in the correct position on the aircraft so as not to conflict with the placement of the figures etc.*

Using thin CA adhesive, secure the propeller in its correct position, onto the engine shaft.

PART 11
FIGURES

PART 11 - FIGURES

The figures I chose to use are:

'Copper State Models' Italian Flying Ace (F32-030)
'Model Kasten' mechanic on ladder and the ladder from Set B
'Hornet' bare heads-mature faces (HH/8).

NOTES:

The 'Copper State Model' figure and the 'Hornet Heads' are made of resin (refer to Part 5 (Resin) of this build log). The 'Model Kasten' figure is not.

Use CA adhesive to assemble the figures and ladder.

Preparation:

Removed the figures, ladder and head chosen 'Hornet Head' (I used head H1) parts from their moulding blocks and sprues.

File or sand away residual mounting block resin and sprue gates from the parts.

Check that there are no surface imperfections and if necessary, fill and/or sand to restore the surface finish.

Assembly:

~~'Model Kasten' ladder:~~

~~Assemble the ladder in the following order:~~

~~Cross brace to one side frame of the ladder.~~
~~Top plank to the same side frame of the ladder.~~
~~Opposite side frame of the ladder to top plank and cross brace.~~
~~Steps between the ladder side frames.~~

~~Airbrush the ladder with a grey primer, such as 'AK Interactive AK-758 or similar.~~

'Model Kasten' mechanic figure:

NOTE: *The cast figure is a German mechanic and so slight changes are necessary to make the figure more generic.*

Scrape or sand away the seam lines on the trousers and the shoulder epaulets.

Secure the right leg to the torso.

Secure the left arm to the torso with the clenched fist resting against the left hip.

Secure the right arm to the torso.

Cut the neck of the chosen 'Hornet' head such that it looks a natural pose when positioned on the torso. I angled the cut slightly so the head would be looking down slightly.

Secure the head to the torso.

Drill a hole of 0.8 mm diameter up into the left leg, making sure the drill in central to avoid 'break through' from the sides of the leg.

Cut a length of 0.8 mm diameter rod from either a standard paper clip or rod from 'Albion Alloy's'.

Secure the rod into the pre-drilled hole in the left leg, leaving approximately 5 mm protruding. This rod will be used to hold the figure for painting.

‘Copper State Models’ pilot figure:

Assembly of the pilot figure is straight forward, although care should be taken separating the right hand with cane from its moulding block, as the cane is very fragile.

Secure the two arms to the torso.

Secure the right hand with cane into the right arm.

Drill a hole of 0.8 mm diameter up into the left leg, making sure the drill in central to avoid ‘break through’ from the sides of the leg.

Cut a length of 0.8 mm diameter rod from either a standard paper clip or rod from ‘Albion Alloy’s’.

Secure the rod into the pre-drilled hole in the left leg, leaving approximately 5 mm protruding. This rod will be used to hold the figure for painting and for mounting the figure to the display base.

Painting:

NOTE: *The figures and ground equipment were painted using 'AK Interactive' and/or 'Tamiya' acrylic paints. 'AK' paints are thinned with their acrylic thinners (AK712) and 'Tamiya' with their X20A thinners. Primed with 'AK Interactive' Grey (758).*

Copper State Models' pilot figure:

Boots
'Tamiya' Semi-Gloss Black (XF18).

Walking cane
'Mr. Colour' Brass (219) and 'Stainless Steel (213), Semi-Gloss Black (X18).

Flesh
'AK Interactive' Base Flesh (3011), Light Flesh (3012) then Highlight Flesh (3013).

Hair
'Tamiya' Brown (XF10).

Uniform

‘Tamiya’ Khaki Drab (XF51) with blended Rubber Black (XF85) creases.

Collar/Epaulets - ‘Tamiya’ Flat Red (XF7), ‘Mr. Colour’ Brass (219).

Decorations - ‘Mr. Colour’ Brass (219).

Belt - ‘AK Interactive’ Brown Leather (3031), ‘Mr. Colour’ Brass (219).

Gloves - ‘AK Interactive’ Brown Leather (3031).

Hat - ‘Mr. Colour’ Brass (219), ‘Tamiya’ Khaki Drab (XF51) with blended Rubber Black (XF85) creases, Semi-Gloss Black (X18), Flat White (XF2).

Medal ribbons - ‘Mr. Colour’ Brass (219), ‘Tamiya’ Flat Red (XF7), White (XF2), Yellow (XF4), Medium Blue (XF18).

‘Model Kasten’ mechanic figure:

Boots
‘Tamiya’ Flat Brown (XF10), Semi-Gloss (X35).

Uniform
‘Tamiya’ Khaki Drab (XF51) with blended Rubber Black (XF85) creases.
Buttons - ‘Mr. Colour’ Stainless Steel (213).

Flesh
‘AK Interactive’ Base Flesh (3011), Light Flesh (3012) then Highlight Flesh (3013).

Hair
‘Tamiya’ Semi-Gloss Black (X18) base then Brown (XF10).

Weathering
‘Tamiya’ Weathering Master Set B (Soot).

Ground equipment:

The following accessories were used to accompany the figures:

Photo-etch - ‘Aber’ hand tools (35-A68).

Resin - ‘Copper State Models’ tools and cans (AE32-005).

Mechanics box

Base colour ‘Tamiya’ Buff (XF57, ‘AK Interactive’ Wood wash (AK263).

Oil hand pump

‘Tamiya’ Flat Red (XF7) darkened with Rubber Black (XF85). Cap ‘Mr. Colour’ Brass (219). Oil stains with ‘AK Interactive’ Oil was (AK219), thinned with White Spirit.

Container

‘Tamiya’ Green (XF13). Cap ‘Mr. Colour’ Brass (219). Chipping by dry brushing ‘Mr. Colour’ Stainless Steel (213). Oil stains with ‘AK Interactive’ Oil was (AK219), thinned with White Spirit.

Spanners (photo-etch)

Airbrush with ‘Alclad’ Steel (ALC-112)

Funnel

‘Mr. Colour’ Stainless Steel (213). Oil stains with ‘AK Interactive’ Oil was (AK219), thinned with White Spirit.

PART 12
DISPLAY BASE

PART 12 - 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 'Inperspextive' (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' grass mat (Wild Meadow variation F - 4706). The cut mat was then positioned on the base and the aircraft **with the propeller test fitted**, was placed in position on the mat. The figures etc were then test placed to achieve the best effect and to make sure the propeller was positioned so as not to contact the figures or equipment. The transparent cover of the display case was also test fitted to make sure it was able to be located without touching the model. The model and figures were then removed with the grass mat left in position on the display base. The edges of the grass mat were then carefully lifted and a soft marker pen was used to mark the outline of the grass mat, but approximately 5 mm inside the mat edge. The grass mat was then removed and the area of the display base inside the marks was scuffed using a coarse grit sand paper 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.

The mat was left for several hours to allow the adhesive to set.

An acrylic information plaque stand was positioned to the right, 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 area 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 bae 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 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.

The model and figures were then positioned on the base in their final positions and the support pins in the figures legs and the mechanics box marked into the grass mat. A hole of 1.0 mm diameter was drilled for the pilot and mechanic figures and the box for the mechanics right foot to rest on, through the grass mat and into, but not through, the base. The holes were cleared of residual acrylic to ensure the pin in the figures and box would fully locate. The grass mat around the location points was also cleared of grass mat to the acrylic base surface. The figures and box were then test fitted and where necessary, the support pins were snipped to the required length to fully locate into the display base.

Assembly:

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 applied to the support pin in the pilot figure, which was then located into the pre-drilled location hole.

The mechanics box was also secured in position and the mechanic secured into the display base with its right foot resting on the top of the box.

The same was applied for any unpinned accessories (grass mat may need to be thinned down or removed to fully located equipment.

PART 13
MODEL PHOTOGRAPHS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