AVIATIK ‘BERG’ D.I

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 after.
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 my 1:32 scale model build of the Austro-Hungarian Aviatik ‘Berg’ D.I fighter.

Mike ‘Sandbagger’ Norris

sandbaggeruk@sky.com
http://igavh2.xara.hosting

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INTRODUCTION

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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

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Model Kit
'HPH Models' Aviatik 'Berg' D.I (HPH 32042R).

Figures
'Copper State Models' Austro-Hungarian flying ace (F32-032).

Seat belts
'HGW Models' seat belts - Roland D.VIb (HGW132543).

Tail skid
'Scale Model Conversions' - Modified from Fokker D.VII set (32088).

Propeller
'ProperPlane' laminated wood - 'Knoller Jaray' propeller.

Additional decals
'Airscale' Generic WW1 Instruments (AS32 WW1),
'LF Models' Austro-Hungarian WW1 (C3205) propeller logos,
'Aviattic' Clear Doped Linen - aged varnish (ATT32094),
'HGW Models' Light Plywood (532034),
'Xtradecal' black stripes (XPS1).

Rigging accessories
'Gaspatch' Elite 1:48th scale turnbuckles,
'Albion Alloy' Micro-tube (Brass or Nickel Silver), 'EZ' Fine Black line,
'Stroft GTM' Silicon-PTFE tempered monofil (0.08mm diameter),
'Steelon' Mono-Filament 0.12mm diameter.

Pipes, cables, wires and mesh
'PlusModel' lead wires, 'T Force' XPS 0.148 mm mono-filament,
'ANYZ' Black braided line 0.5 mm diameter (AN011),
'RB Productions' Radiator Mesh (RB-T027).

Sundries (as required)
'Araldite' two part epoxy adhesive, Paints ('Tamiya' Acrylic, Humbrol Acrylic,
'Mr. Metal Colour', 'AK Interactive' Primer and micro-filler (Grey AK758 or White AK759),
'AK Interactive' Filters (Wood AK-261, Kerosene AK-2039, Oil AK-2019 and Wash AK-2033),
'Alclad' Lacquers, 'Alclad Aqua Gloss', 'Mr. Colour' Levelling Thinners, 'Vallejo' Model Colour,
PVA Adhesive, 'VMS Fleky' Resin CA adhesive, Blue or White Tack, 'Perfect Plastic Putty,
Sanding and/or Polishing sticks from 'Flory Models', 'Humbrol' Maskol,
'UHU' White Tack or 'Blue Tack, 'Milliput' two part putty, 'White Spirits',
'MicroScale' MicroSol/MicroSet.

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

Display Base
'Polak' Wild Meadow grass mat (4705),
Commercially made Acrylic base and cover,
Etched Plaque (name plate).

AIRCRAFT BACKGROUND

AIRCRAFT BACKGROUND

References:

Various on-line data (e.g. 'Idflieg.com', Wikipedia).
Windsock International Vol.4, No.2 dated Summer 1998.
Windsock Centenery Datafile 171 - Aviatik Berg D.I at war (by Paolo Varriale).
Windsock Data file No.45 - Aviatik D.I (by P.M. Grosz).
Profile Publications No. 151 - Aviatik 'Berg' D.I (George Haddow).
'Osprey' Aircraft of the Aces 46 - Austro-Hungarian aces of WW1 (Christopher Chant).
'Osprey Aviation' Aircraft of the Aces - Austro-Hungarian Aces of WW1 - Eastern Front (Cristopher Chant).
'Jaro Publications' - Aviatik D.I and D.II (Jan Zahálka, Petr Aharon Tesař, Zdeněk Skolil).

NOTE: *Narrative partially extracted from 'Idflieg.com', 'Wikipedia', Windsock Data file No.45.*

Background:

The Austrian air service had begun in 1893 as a balloon corps and in 1912 was re-organized and renamed as the 'Der Kaiserliche und Konigliche Luftfahrtruppen (The Imperial and Royal Aviation Troops), abbreviated as k.u.k. LFT.
On 28 June 1914, Archduke Franz Ferdinand visited the Bosnian capital of Sarajevo, during which he and his wife Sophie were assassinated by Gavrilo Pricip, a Serbian and one of six assassins on that day. This gave Austria the 'political' excuse to declare war on Serbia, which started in August 1914. Although Austria, Germany and Italy formed an alliance, Italy remained neutral and in fact eventually joined forces against Austria and Germany.

The Aviatik 'Berg' D.I was the first indigenous fighter aircraft built in Austro-Hungary and was designed by Oberingenieur Julius von Berg, which is why 'Berg' was included in the naming of the aircraft. He was appointed as head designer at the Aviatik company and designed the first prototype late 1916. Work on the prototype began in August 1916 and the first flight of the prototype, marked 30.14, took place on the 16th October 1916 at Aspern, but crashed killing the test pilot. Further modifications were made and three more prototypes were manufactured, labelled 30.19 (for tests on the ground), 30.20 (for tests in flight) and 30.21 (as a reserve). Tests of the modified aircraft were positive and the first unit to receive the first serial batch of the D.I was Fluggeschwader I (FLG I, later to be renamed to Flik 101G) on the Divacca airfield in Italy. The D.I eventually went into full service with various Austro-Hungarian squadrons and remained in service throughout the war, despite being overshadowed by later designs.

Design:

The D.I was manufactured in various series and under license by a numbers of subcontractors.
Aviatik - built the series 38, 138, 238 and 338. Lohner - built the series115 and 315.
LLoyd - built the series 48, 248 and 348. MAG - built the series 84 and 92.
Thöne & Fiala - built the series101 and 201.
Wiener Karosserie Fabrik (WKF) - built the series184, 284 and 384.

The Aviatik 'Berg' D.I was a single-seat biplane fighter aircraft. The pilot sat in a high-mounted central position, providing him with a high level of visibility both below and above the upper wing. To enable this seating position, the design featured an uncommonly high decking, which was faired to offer minimal resistance where possible. Much of the design was shaped by the industrial circumstances of the Austro-Hungarian Empire. Due to a lack of skilled labour, much of the airframe was as simplified as possible in order to make the type easier to manufacture and capable of being produced in relatively small facilities. The rectangular fuselage was composed of a single longeron set at each corner and spaced via bulkheads in the forward section of the fuselage, which provided a mounting point for the engine bearers.

Additional reinforcement was provided in the form of tubular steel diagonal struts that ran along the sides of the fuselage between the bearer and the lower wing root. Aft of the cockpit, the bulkheads were dispensed with for lighter frames composed of spruce, which were strengthened by diagonal struts. No internal wire bracing was used throughout the structure, relying upon the external plywood panels for rigidity. The wings of the D.I used an orthodox structure for the time, composed of spruce spars and leading edges. Steel tubing was used for the compression members while wires were used for internal bracing. A wire based trailing edge gave the wing a distinctive scalloped appearance. The single-piece upper wing was fixed to the fuselage using the W-shaped struts, while the lower wing was bolted directly onto the side of the lower fuselage. Non-balanced ailerons were only fitted onto the upper wing; these were hinged onto false spars set within the framework of the wing and actuated from a projecting lever set into the wing itself. During its later service, the wings had to undergo strengthening in order to support the use of more powerful engines that were adopted during the type's production run. The D.I incorporated a relatively unconventional innovation in the form of an unusual aerofoil section. Specifically, the upper camber of the wing had a pronounced reflex curvature towards its trailing edge, while the maximum depth was further aft than was standard amongst contemporary fighter aircraft. To enable this unusual construction, the rear-portion of the ribs were somewhat thin and flexible, resulting the wing "giving" under sudden forces such as gusts of wind, but without losing equilibrium. Accordingly these features of the wing were attributable for the D.I's high level of stability, which allegedly did little to lessen or undermine its responsiveness to control inputs, as would normally be the case amongst typical aerodynamically stable fighters. Early production D.I's were powered by a single Austro-Daimler built engine, capable of providing 185 hp, but the majority of aircraft would be fitted with more powerful 200, 210, and 225 hp units instead. The adoption of the 225 hp engine proved to be too powerful for the airframe, requiring various changes to increase structural strength, particularly within the wing area. Regardless of the engine power, a two-bladed propeller was used, manufactured by either 'Knoller Jaray', 'Jaray' or 'Heiduk'. Some D.I's were fitted with four bladed propellers made by 'Jaray'.

The majority of aircraft were fitted with a car-type radiator mounted in the aircraft's nose. Two different types were used, a more common rounded-top model and a more angular flat-top unit. Alternatively, some D.I's were provided with a twin-block radiator mounted one above the other on the forward fuselage, which enabled a more streamlined nose to be adopted. Regardless of the version of the radiator used, cooling was a persistent issue suffered by the type. As a result, many D.I's would be flown with the engine cowling being completely removed by ground crews. A solution to the overheating issue was fitted on later-built aircraft in the form of a simple low-cut fringe cowl that kept the engine cylinders exposed and an elongated block radiator fixed onto the leading edge of the wing.

The D.I was fitted with various armaments. It was initially armed with a single 'Schwarzlose' machine gun, which was mounted onto braces set into the upper fuselage; this arrangement was clear of the propeller blades yet still allowed for easy in-flight access to the breach mechanism. Ammunition was stored in a drum within the fuselage decking and belt-fed to the gun via a purpose-built conduit. However, this arrangement was commonly judged to have been outmoded by the time that the D.I was entering service; accordingly, a new armament arrange was soon adopted. A twin 'Schwarzlose' gun arrangement, which featured synchronisation gear as to allow the rounds to pass directly between the propeller blades without striking them; however, the locally produced interrupter mechanism was found to be unreliable in service when the engine was ran at certain speeds. In spite of the issue, which made the guns prone to striking the propeller blades, this newer armament arrangement was rolled out.

Further changes, including the guns being set further back, were also made late on into production. The D.I had excellent flying characteristics and an enviable rate of climb. Although the D.I fuselage was deep, the pilot was sat high and enjoyed and excellent field of view. Although early models suffered from structural weakness of the wings, later models proved better. With a 6 cylinder Austro-Daimler in-line engine the plane was a fast fighter. However, throughout its career it suffered from engine overheating and various radiator arrangements were tried to overcome this deficiency. On early models only one machine gun was mounted on the top wing, but later versions had two machine guns mounted on either side of the engine or in front of the cockpit.

Combat formations:

A front-line combat group was known as a Fliegerkompagnie (Flik) with seven or eight pilots (though on paper it should have as many as 20). By late 1918 there were 82 Fliks. In 1917 the Flik's were designated by their roles, determined by the letter appended to the Flik's identification number:
Jagdfliegerkampagnie (j, fighter squadron).
Photoaufklarerkompagnie (p, photo reconnaissance squadron).
Divisionsfliegerkompagnie (d, short-range reconnaissance squadron).
Fernaufklarerkompagnie (f, long range reconnaissance squadron).
Grossflugzeugkompagnie (g, bomber squadron).
Schlachtfliegerkompagnie (s, ground attack squadron).
Korpsfliegerkompagnies (k, another short range reconnaissance squadron).
Reihenbildaufklarerkompagnie (Rb, a photo recon unit specializing in serial photography).
Several 'aces' flew the D.I, particularly with Flik41j and included Austria's leading ace, Godwin Brumowski, who was a friend and admirer of the German ace Baron Manfred von Richtofen. Other aces who flew with Flik 41j were Linke-Crawford, Gräser, Kaszala, and Gruber. Most of the aces were commissioned officers of the upper class in society, although there were some NCO aces.

Colour schemes:

The colour schemes applied to the D.I were varied and in some cases quite complex. Essentially the colour schemes fall into the following categories:

Reference: - Windsock Data file No.45 - Aviatik D.I (by P.M. Grosz).

Plain:
Wood areas clear varnished, linen coverings Clear Dope (CDL), metal panel, plates and struts painted blue/grey. Few D.I's received this scheme and many were subsequently camouflaged in the field by the application of green mottling or 'splotching' over the upper surfaces.

Factory schemes:

1. *Autumn Leaf scheme* - three colours of dull yellow, medium green and red-brown, applied by rag or sponge to the upper surfaces. The metal panel, plates and struts were painted blue/grey, although some were later camouflaged.
2. *Streaky* - The base colour was light (possibly tan) with a darker colour (possibly dark brown) streaked over, similar to the that employed on German Fokker aircraft. This was applied, usually at approximately a 45º angle over the upper surfaces of the wings and tail plane, but vertically on the sides of the fuselage, fin and rudder.
3. *Transition* - This scheme was a combination of the Autumn Leaf and Streaky colour schemes and aircraft could be painted with mottling, splotches and streaks.

Lozenge camouflage:

From the Spring of 1918, lozenge camouflage was applied to the D.1. This scheme consisted of hand painted hexagons of various colours, grouped in light or dark colours three to seven hexagons in width. This was applied to upper and side surfaces, but rarely to the undersides, which would normally be CDL. Variations of the basic scheme were applied by primarily four manufacturers of the D.I, namely Aviatik, Lohner, WFK and Thöne & Fiala.

Aviatik scheme - Hexagons were equilateral and applied vertically (points up and down) or horizontally (flat sides up and down) to the fuselage, fin and rudder. On the wings and tail plane, the hexagons were painted with either the points or the flat sides facing the leading and trailing edges.

Lohner scheme - Hexagons painted in two forms - One scheme had equilateral hexagons vertically on the fuselage, fin and rudder with the points facing the leading and trailing edges of the wing and tail plane. A second scheme had small, more rectangular hexagons applied horizontally on the fuselage, fin and rudder, with the points of the hexagons on the wing and tail plane facing the leading and trailing edges.

WFK schemes - Large, slightly rectangular hexagons applied obliquely across the fuselage, from forward top to rearward bottom, which was specific to WFK application. On the wings the points faced the leading and trailing edges.

Thöne & Fiala - Hexagons were equilateral and applied vertically (points up and down) or horizontally (flat sides up and down) to the fuselage, fin and rudder. On the wings and tail plane, the hexagons were painted with either the points or the flat sides facing the leading and trailing edges.

Serrated bands:

In the Summer of 1918, this colour scheme was adopted for the top and sides of the wings, fuselage and tail. The scheme was painted with oblique bands of light and dark colour with a ‘saw tooth’ margin, suggesting a simplified version of the hexagonal patterns. The colours appeared to be tan and dark green and seem to have been hand painted with defined edges, although Lohner built D.I’s may have been sprayed as the demarcation lines were soft edged. The metal panel, plates and struts were painted blue/grey.

Wavy bands:

Late 1918 saw Aviatik, Lloyd and MAG built D.I’s adopt a variation on the serrated colour scheme, whereby the demarcation between the lines of colour were applied in a wavy fashion. On MAG built D.I’s the demarcation edges were sharp, whereas the scheme applied by Aviatik were less defined and possibly applied by rag brushing. The scheme applied on Lohner built D.I’s had softer demarcation edges, possibly created by painting ‘splotches’ with heavily soaked sponges.

Typical specifications:

Wingspan: 8.00 m (26 ft 3 in), Length: 6.86 m (22 ft 6 in)
Wingspan: Height: 2.48 m (8 ft 2 in), Wing area: 21.80 m²
Empty weight: 610 kg (1,345 lb), Gross weight: 852 kg (1,878 lb)
Maximum speed: 115, Service ceiling: 20,400
Armament: 2 ‘Schwarzlose’ machine guns.
Powerplant: Austro-Daimler 6-cylinder water-cooled in-line, 147 kW (200 hp)
Propeller: Two blade ‘Juray’ propeller - some fitted with a four bladed variant.

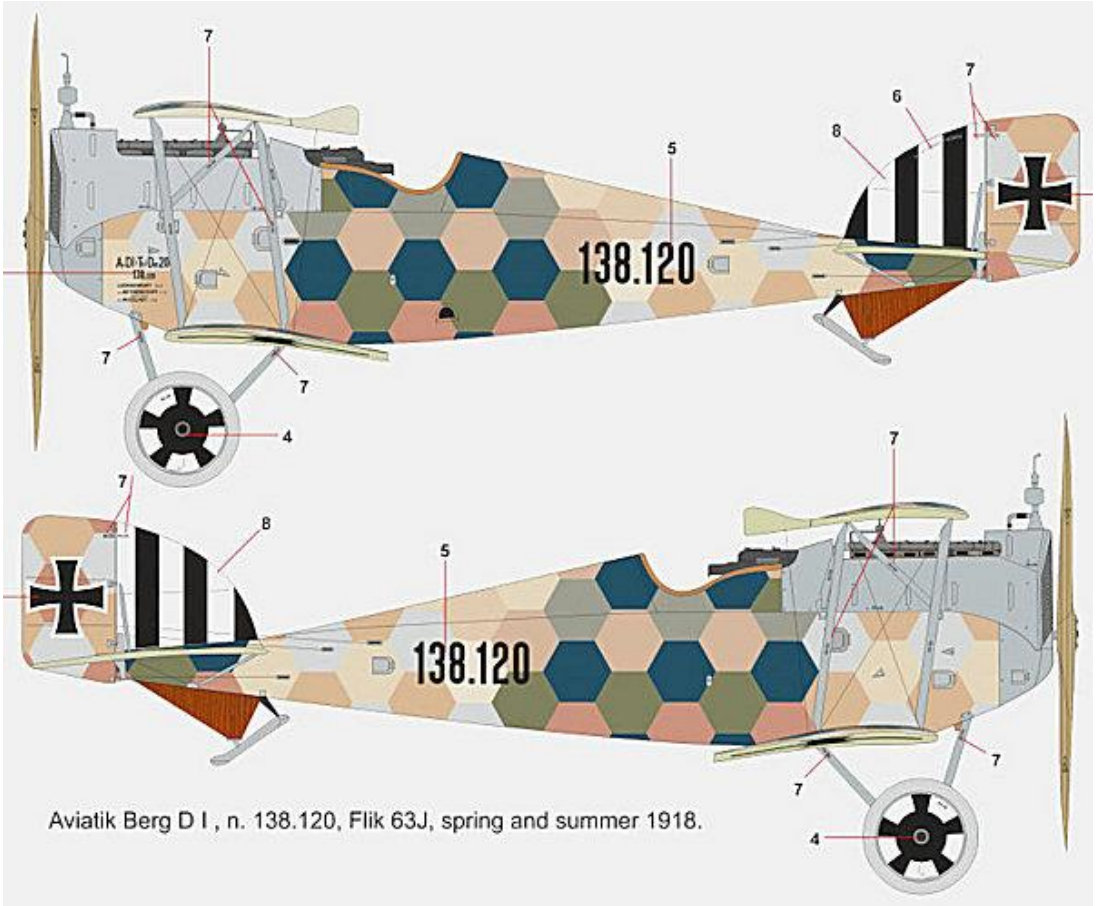
An actual Aviatik ‘Berg’ fighter of Flik 63J.

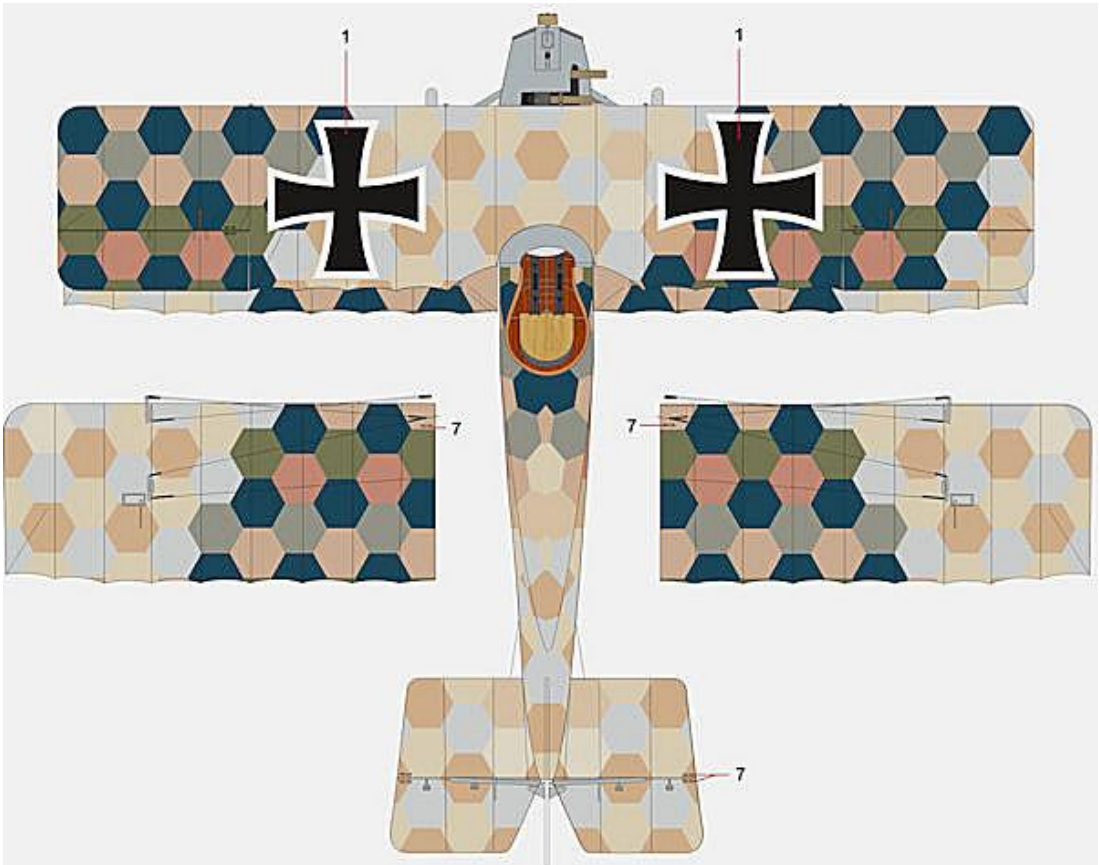
A typical Aviatik ‘Berg’ fighter of the period.

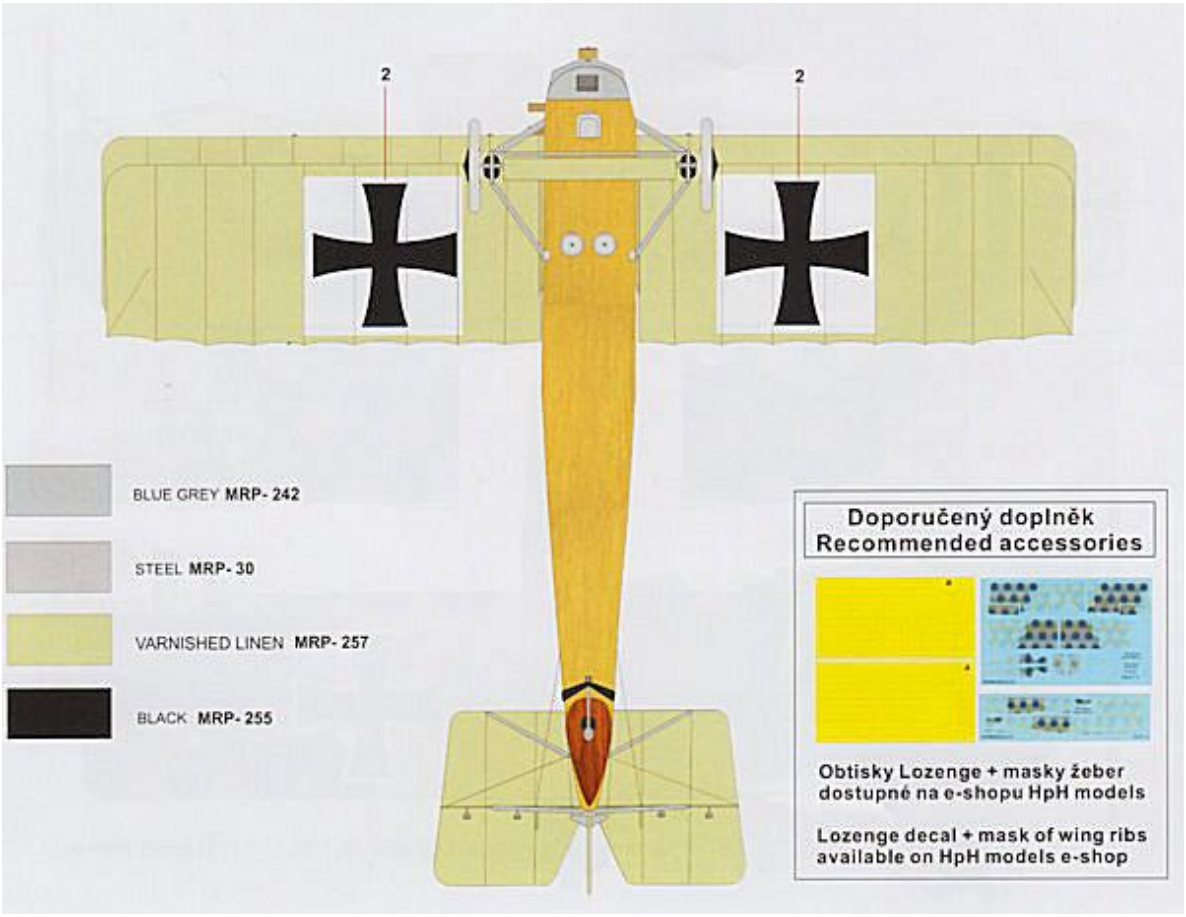
THE MODEL

THE MODEL

This ‘HPH Models’ specific aircraft is an Aviatik ‘Berg’ D.I, serial number 138.120, which was operated by Flik 63J during the Spring and Summer of 1918 and flown by the unit commander Fp.Oblt. Rupert Terk (4 victories). The colour scheme for this aircraft is the hexagonal lozenge type and fits the description for an aircraft built by Aviatik.







This model kit is more suited to more experienced modellers, especially those who have experience working on resin models. That said, with care and attention, most modellers would be capable of building this resin model.

This model is created entirely from resin, not the ‘standard’ styrene, so a different approach to building the model must be considered. In many ways resin parts are not as forgiving as styrene. Resin is brittle by comparison and smaller parts are easily damaged. Also CA adhesive must be used t join parts together, as styrene cement has not effect on resin. Although ’HPH Models’ cast their resin parts with care, some kit manufacturers can create parts that are warped, incomplete (‘short shots’) or covered to one degree or another with air ’blow holes’, leaving the surface pock marked. Finally resin kits tend not to have the traditional location pins and receiving holes moulded in the parts, for example to join the fuselage halves together. This means additional care is needed to ensure parts are correctly aligned, especially as they are joined using fast setting CA adhesive. The model parts are packed, in some cases bubble wrapped, in separate compartments within the sturdy kit box. The overall quality of the moulded parts is good with no obvious evidence of warping or surface imperfections. As resin is heavier than styrene, HPH have beefed up the struts in the kit by moulding them with integral metal rods, for additional strength. Great care is needed when working with some of the very small and fragile parts, not only in cutting them away from the base block, but also making sure they are not lost to the ‘carpet monster’ we so often fall foul of. All parts of the model are moulded onto base blocks or on very thin sheet. Therefore care needs to exercised when cutting these parts away from their bases - parts can easily be damage at this early stage. As is always the case with resin model parts, there is a lot of ‘cleaning up’ of parts once cut away from their bases, especially with regard to resin ‘flash’. In some cases it’s best to leave a small amount of resin at joints etc, so the remaining can then be removed once parts are joined. It’s too easy to remove all flash only to find there’s a gap in the joint as too much was removed.

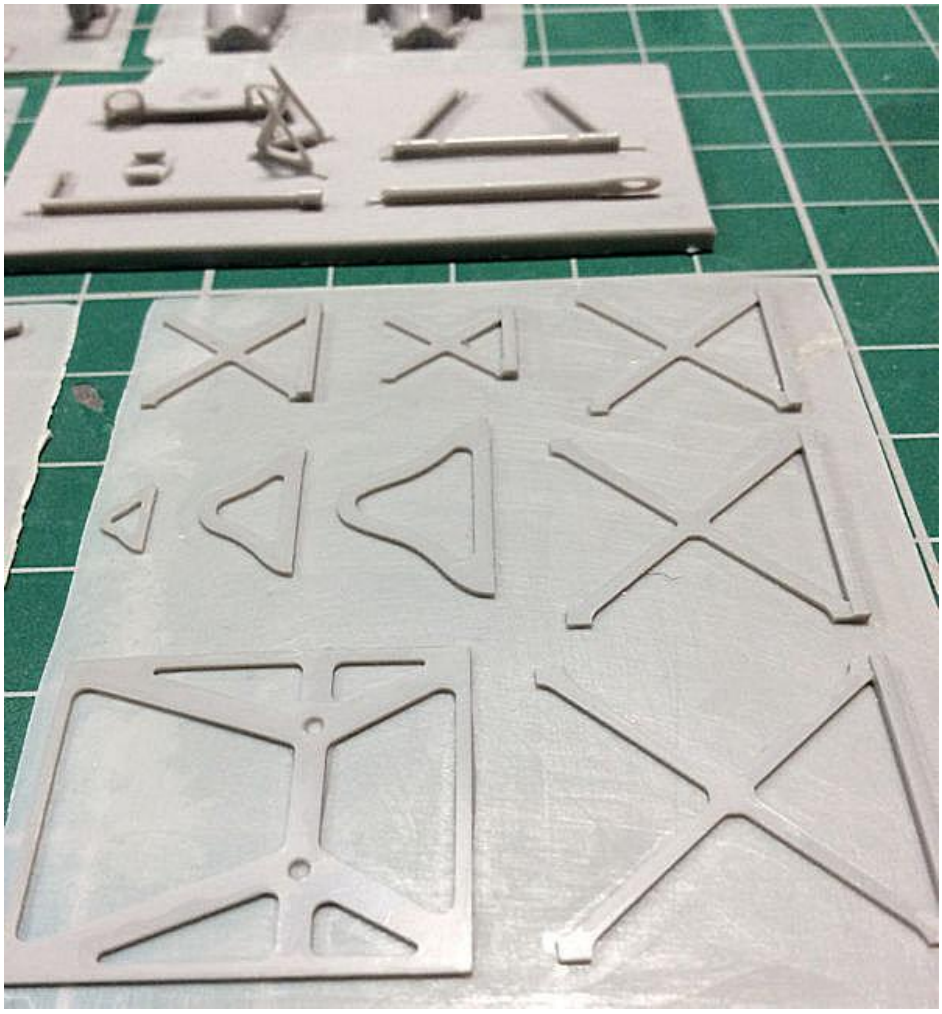
The kit comes with the typical ‘HPH Models’ instruction manual, which is in booklet form with captioned photographs for the various stages of the build. At the rear of the manual are colour plates covering the various markings and decals. On the rear cover are a few detail photographs of the aircraft. Although the kit is supplied with masks sets for painting the lozenge camouflage, the manual contains no guidance as to how these masks are used, so the modeller will need to explore these techniques further, such as online videos and modelling forums. Although the instruction manual appears at first sight to be rather scant, it does cover all of the salient points throughout the build, including a rigging diagram. However given the small size of the photographs, the modeller will need to study them carefully before committing to assembly of the parts.

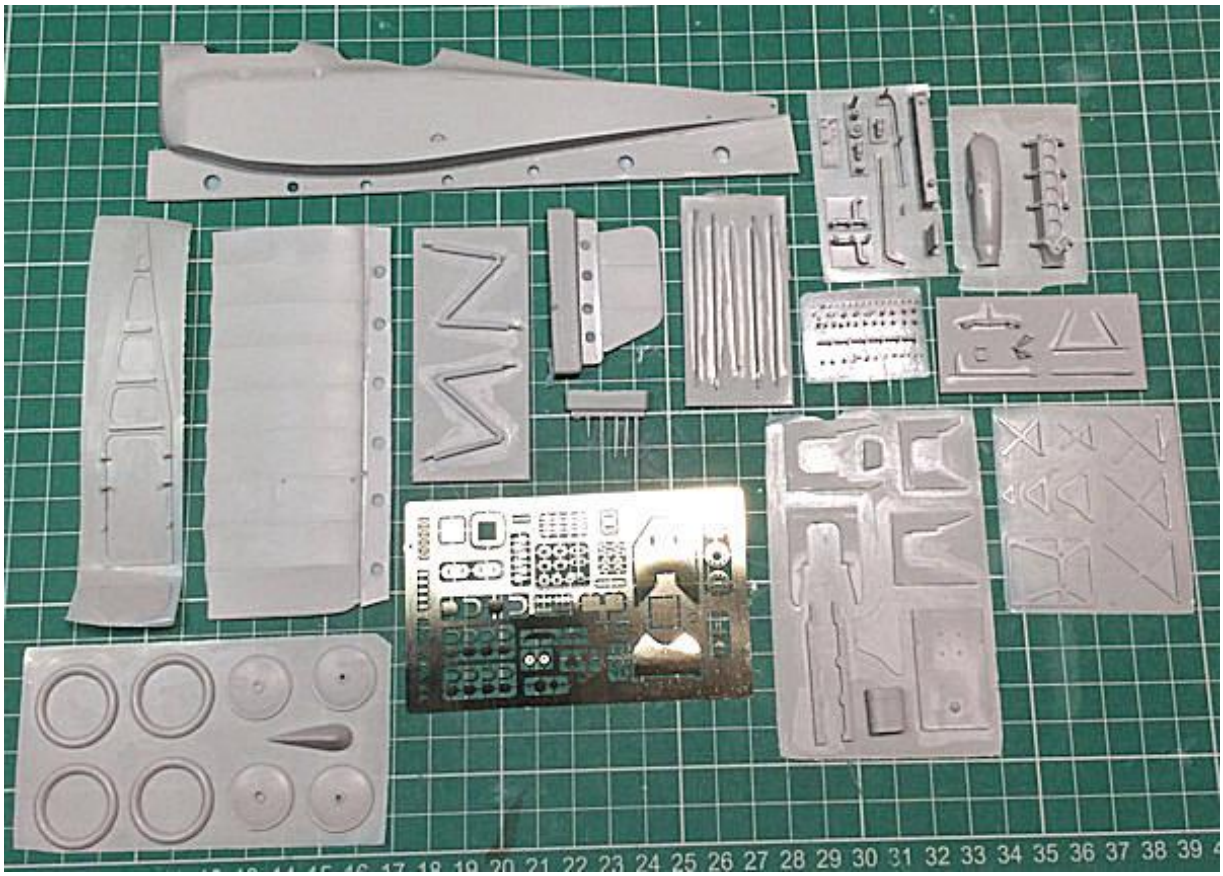
Three good online sources for information on the Aviatik ‘Berg’ D.I can be found here:

Aces Flying High - https://acesflyinghigh.wordpress.com/2017/11/18/austrian-aviation-heritage-aviatik-berg-d-i-a-hidden-treasure-from-world-war-one/

Idflieg.com - http://www.idflieg.com/aviatik-berg-di.htm

Aviattic - https://www.aviattic.co.uk/hph-aviatik-berg-d1.html#

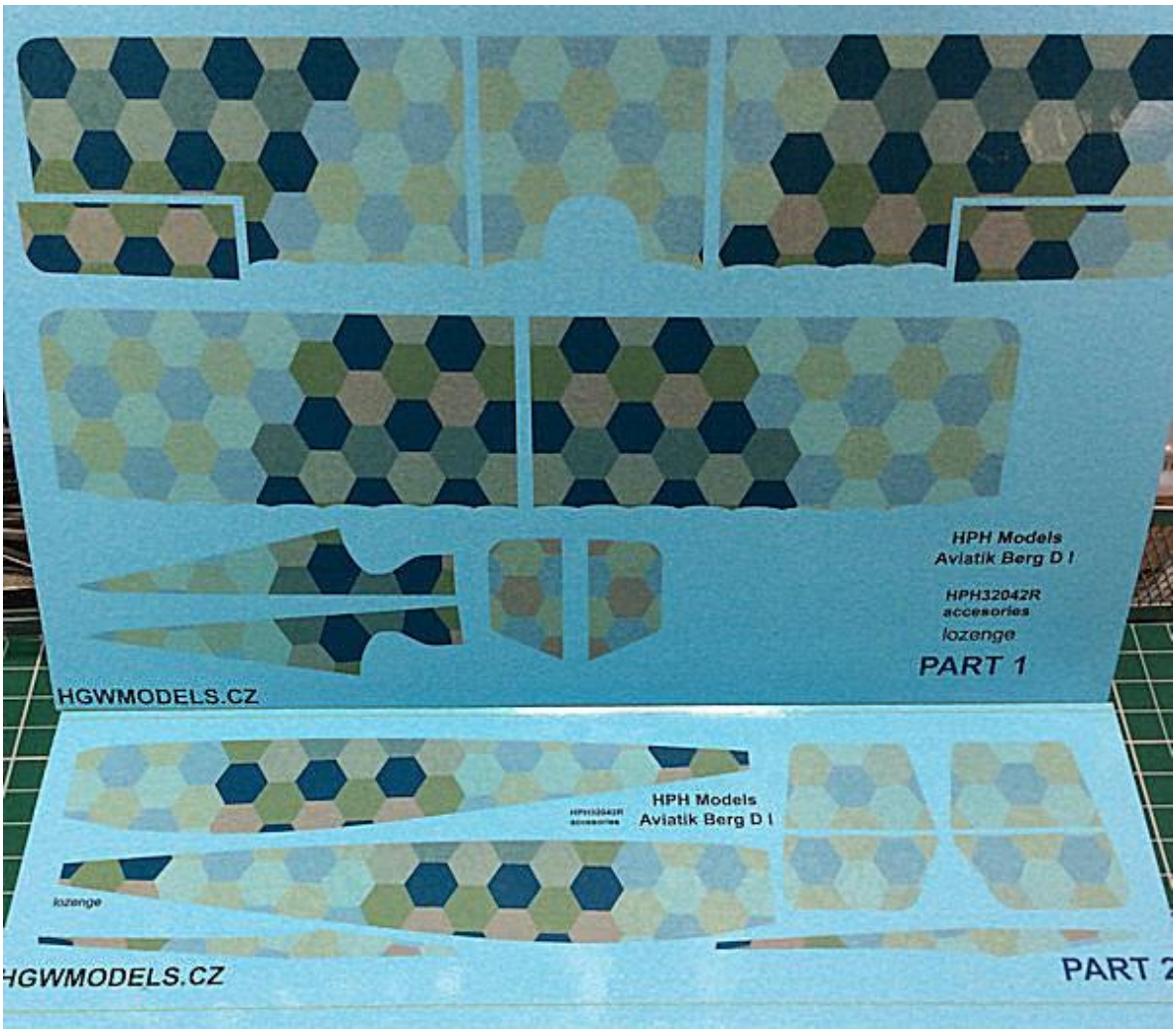




A separate high quality photo-etch sheet is supplied in the kit in addition to a set of fabric seat belts. The photo-etch parts for the seat belts are contained on the kit photo-etch sheet, rather than separately with the seat belts. However I chose to use their seat bet set for the Roland D.VIb aircraft (HGW132543), which is effectively the same. Some parts, such as the blast tubes for the machine guns and wind screen are not supplied in the kit and some details, such as the circular windows in the forward decking are not moulded on the kit. Also the rigging diagram does not detail cross bracing at the rear cabane struts.
The model is supplied with a set of individual and national marking as well as masking sets for applying the lozenge colour scheme. However some modellers find masking to this extent daunting and would rather go down the easier route of applying decals instead. For this reason and as an after market set, HPH have a decal set which can be purchased separately.

NOTE: *The set I ordered arrived sealed in a plastic bag and without protective tissue covering the decals. Because of this the bag stuck to the decals and when it was carefully removed, left blemishes over all of the decals. Additionally some of the decals were chipped by being stuck to the bag. I ordered another set of decals from HPH, thinking this may have been a 'one off', but that set arrived in the same packaging with similar damage. I've since emailed HPH Models to suggest they revise the packaging of their decals. It may be the undamaged but marked decals can be applied without showing surface blemishes, but it's worth noting before purchasing these decals. Additionally and although packaged with tissue covering, the supplied kit decal sheet also had minor surface blemishes. Unfortunately there doesn't seem to be 1:32 scale alternatives for the lozenge decals available from any other manufacturer, so painting the lozenge by using their masks may be the only alternative.*

NOTE: *The decals supplied with the kit 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. Refer to Part 4 of this build log.*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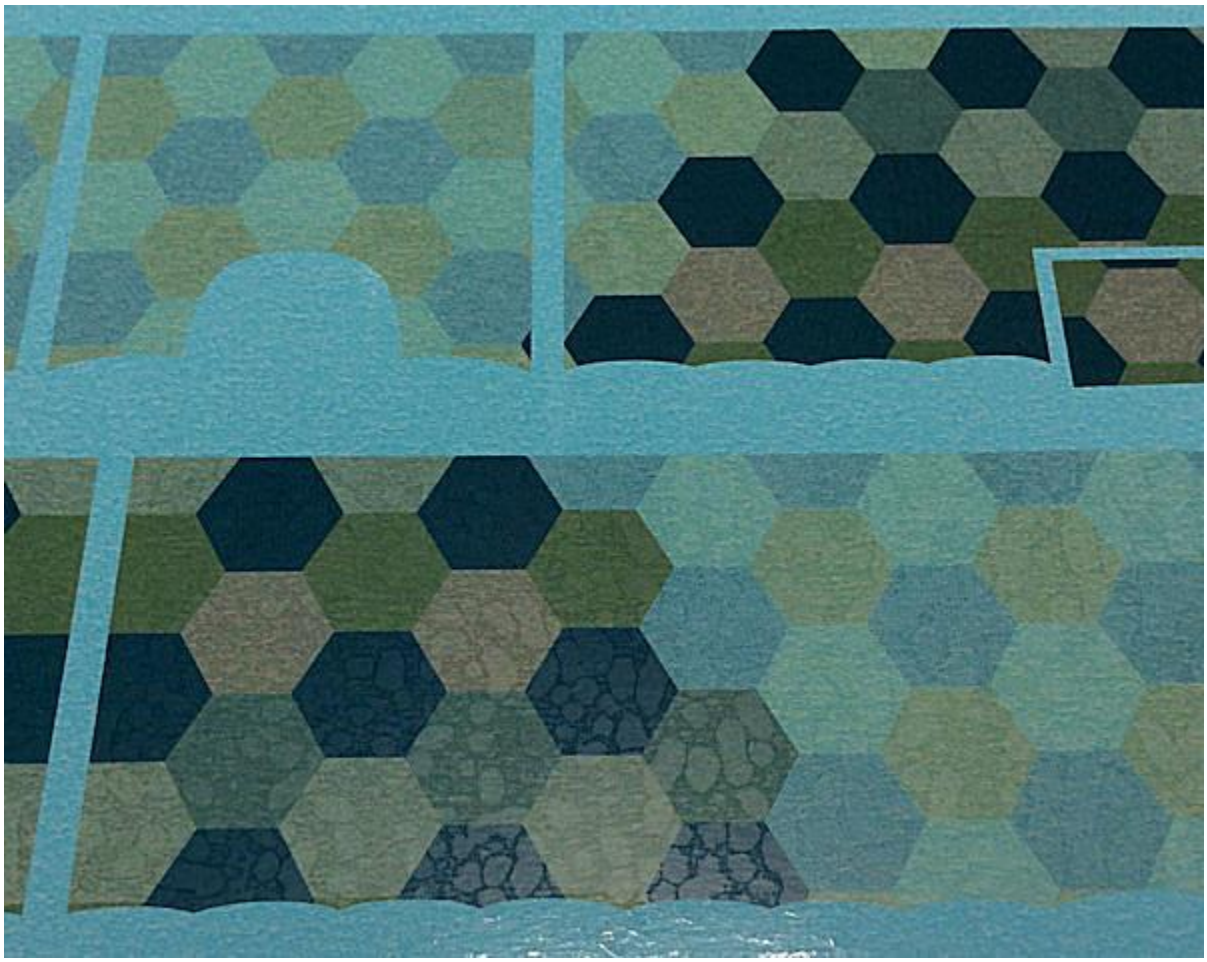
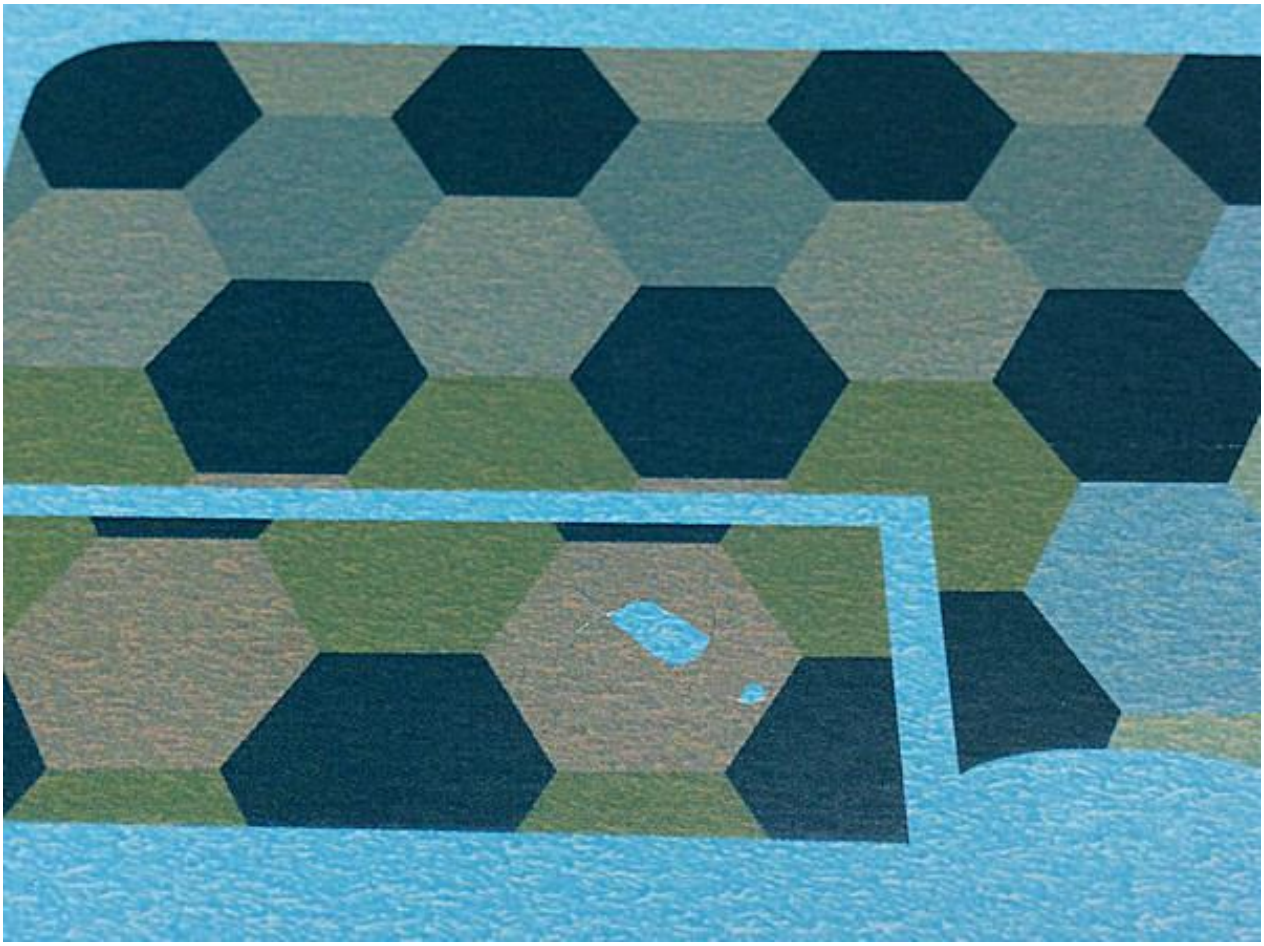
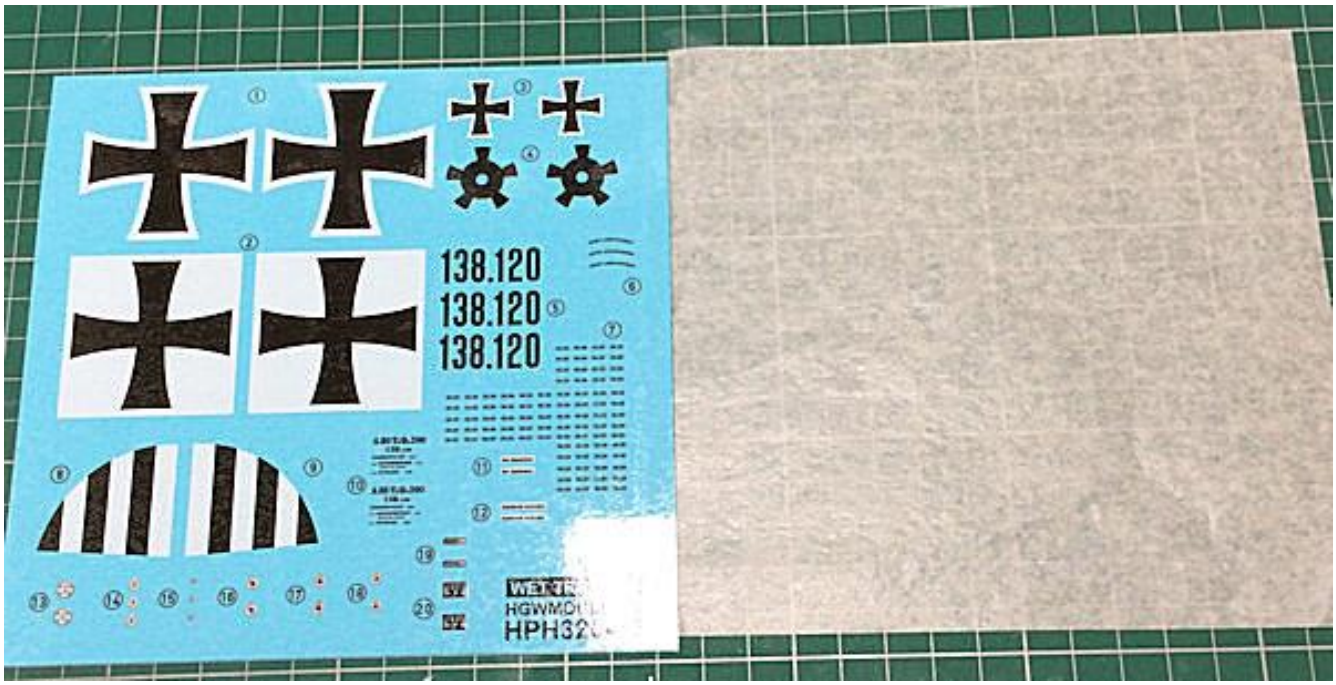
PART 2



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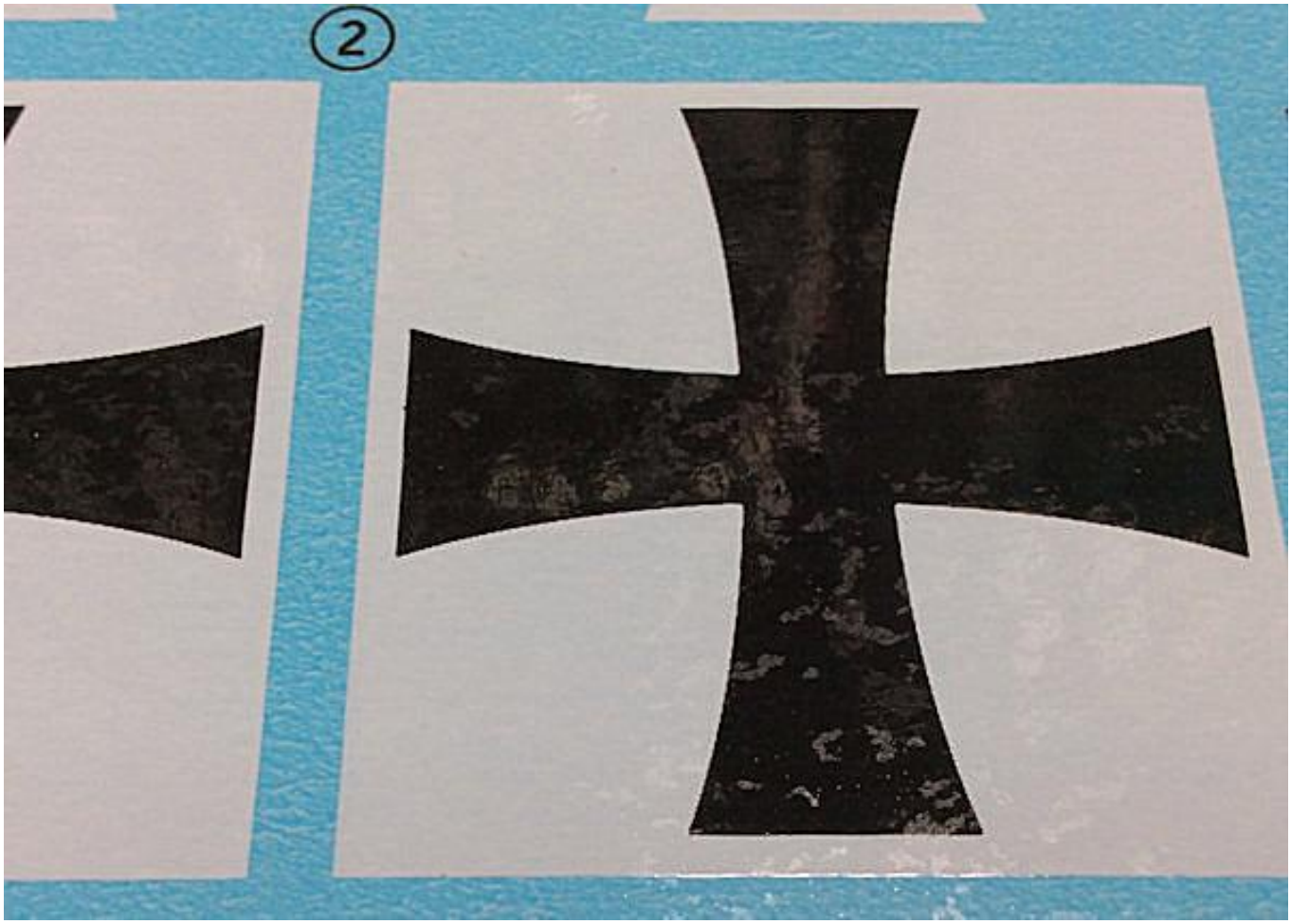
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PART 1

WORKING WITH RESIN

PART 1- WORKING WITH RESIN

This Model is made from resin, 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.

PART 2

WOOD EFFECTS (General)

PART 2 - WOOD EFFECTS (General)

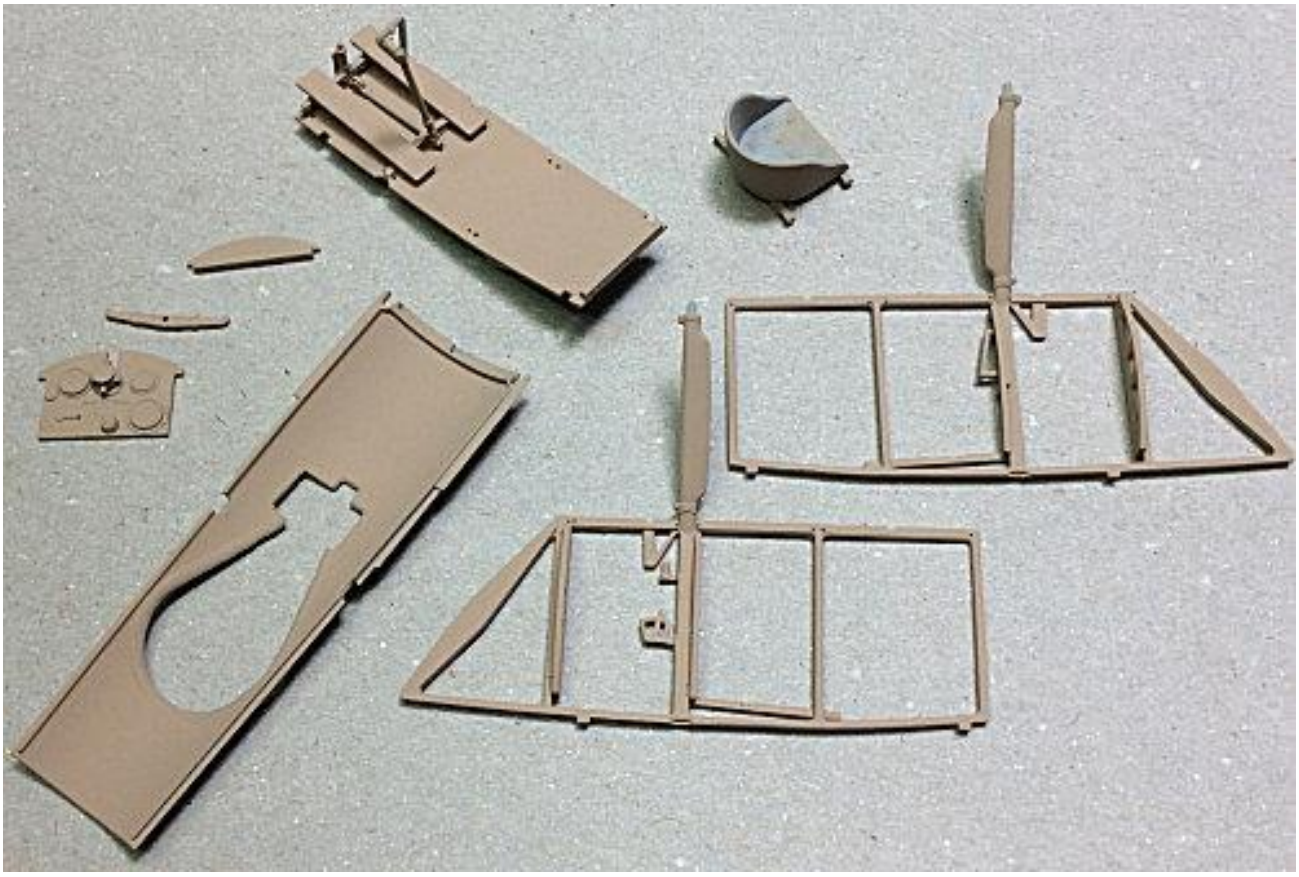
A basic technique:

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, for example 'AK Interactive' Grey (AK-758) primer and micro-filler. Once the primer is dry apply the base colour, after which you can start applying the wood effect to the applicable parts, such as fuselage panels, cockpit items, decking panels and wing struts. With practice, this method can also be used on fuselage panels and propellers.

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. After priming, apply a suitable base colour. For most wood effects, use 'Tamiya' Deck Tan (XF55), Wooden Deck Tan (XF78), Dark Yellow (XF60), suitably thinned with 'Tamiya' Thinners (X20A). The colour used affects the colour of wood effect applied, so experiment before hand to ascertain the effect you require. 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’ (water based) oil 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, you can 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.

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

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) or Semi-Matte (ALC-312).
Although it's a lacquer, I've found that the 'Alclad' 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) or Semi-Matte (ALC-312) 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) or Semi-Matte (ALC-312), 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/'Tamiya' 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) or Semi-Matte (ALC-312), which dries quickly. A gloss coat tends to stop the clay wash 'gripping' the surface when it is applied and it can run off or just puddle. A matte coat can cause the clay wash to 'grip' too much, making it difficult to remove or even to wash it off completely.

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

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

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

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

NOTE 5: *If the wash 'beads' on the surface instead of spreading evenly, add a few drops of washing up liquid to the wash, which will break the surface tension of the wash, allowing it to spread.*

NOTE 6: *When the wash is finally sealed it will darken slightly. As the weathering effect is intended to be subtle, it's best to remove more than you think is necessary before sealing. Sealed weathering can't be removed. Additional wash can be applied onto the sealed weathering, as required, and sealed again.*

To apply the clay wash is just a matter of brushing all over the surface to be weathered. It doesn't matter really how much is applied as it can be left on for any period, as it is easily removed without any effect on the surface underneath. If you don't achieve your desired effect, you can wash it all off and start again. I use a soft brush, which has been very slightly dampened, to brush off the clay wash. For smearing effects, a very slightly damp brush or absorbent paper should be used, but even then I dab them onto a dry piece of the paper, until it's almost dry. Any wetter and you'll find that you are removing too much of the clay wash. If that happens you would have to re-apply the wash and start again. That said, if you're not happy with the final effect, you can easily remove the clay wash by brushing with a wet brush or even airbrush water over the surface.

Dry off the surfaces washed and then re-apply the clay wash and try again until you are satisfied. The technique is to 'damp' brush or wipe over the surface to re-activate the clay wash and at the same time, to smear it over areas that had no clay wash. It'll dry more or less straight away. Then I'll very lightly brush and/or use a piece of damp absorbent paper to remove as much as I want until I get the desired effect. If I remove too much I just reapply clay wash to that area and repeat the removal procedure. Once finished, just run the brush under a tap to rinse out any residual clay pigments. Finally I usually seal the surface with airbrushed 'Alclad' Light Sheen (ALC-311) or Semi-Matte (ALC-312), which will seal in the applied clay wash.

Chipping effects:

I wanted to give the effect of chipped and weathered paint/varnish to the metal engine cowl and forward fuselage panels. To achieve this effect, I first primed the areas with 'Tamiya' Fine Surface primer (Grey) then airbrushed 'Tamiya' Aluminium (XF16). Once dry I airbrushed 'AK Interactive' Medium Chipping fluid (or Vallejo chipping fluid) and when dry, top coated with 'Tamiya' Ocean Grey (XF82). Once fully dry I moistened 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) or Semi-Matte (ALC-312).

'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 brushed and fixed with solutions, applied sparingly, such as White Sprit or 'Tamiya' X20a thinners.

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.

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: *'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').*

Standard decals:

The supplied markings decal sheet and the optional 'lozenge' 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 decals appear not to be laser printed, as with for example 'Cartograph' decals, and the backing sheet is thicker than standard decal sheets. This makes it difficult to achieve a clean cut around the decals and the cut-out decals need to be soaked rather longer to release the decals from the backing sheet.

There are no 'after market' replacement decals in 1:32 scale for this scheme.
An alternative to using the 'Lozenge' decals would be to use the mask set from 'HPH Models' and airbrush the markings, although this is not a method advised for the less experienced modeller. Even so, the specific models decals would still need to be used unless replacements from retailers or your 'spares' box could be used.

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

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

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

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

Wet the area using a light coat of water.

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

Carefully move the decal into the correct position.

Carefully press out any residual water from the decal by gently brushing across the decal using a large soft brush or by rolling across the decal with cotton buds.

I find that wearing lint free cotton gloves and using my fingers to press over the decal helps to remove residual water and conform the decal more firmly to the model surface.

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

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

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

Once fully dry and set, airbrush a sealing coat over the decal, dependant of your desired finish. I tend to use either ‘Alclad’ Light Sheen (ALC-311) or Semi-Matte (ALC-312) lacquer or ‘Tamiya’ Semi Gloss (X35).

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

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

Once the decals have been applied and are dry I airbrush a final sealing coat of ‘Alclad’ Light Sheen (ALC-311), Semi-Matte (ALC-312) or ‘Tamiya’ Semi-Matt (XF35) over the decals.

To ‘knock back’ the sheen for applying weathering effects (refer to Part 3 of this build log), for example ‘Flory’ clay washes or oil paint, I airbrush a sealing coat ‘Alclad’ Light Sheen (ALC-311) or Semi-Matte (ALC-312) mixed with Flat (ALC-314) at a 3 to 2 ratio.

‘Aviattic’ linen effect decals:

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

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

Aviattic’ decals are laser printed onto either ‘clear’ or ‘white’ backing, the ‘clear’ being dependent on the base coat you apply and the finished effect you desire. The decals are supplied with very clear instructions on their application, including when to add pre-shading to the base coat, where desired, before you apply the decals. For this model I chose to use the ‘clear’ decals, in order to show the linen effect more visibly.

Application:

First airbrush a primer coat of ’AK Interactive’ primer and micro-filler (White - AK759) on all of the surfaces to have the decals applied. Once dry, check the surfaces for any imperfections, such as trapped dust or raised areas of paint, which will cause ‘silvering’ under the decals. Any surface imperfections found should be carefully polished out.

Airbrush at least two light sealing coats of either ‘Alclad’ Clear Coat Gloss (ALC-310) lacquer, ’Alclad’ Aqua Gloss (ALC-600), ‘Tamiya’ Clear (X22) or ‘Johnson’ Pledge Floor Care finish (similar to ‘Future’), all of which will form a gloss surface for applying the decals.

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

The decals are applied following the supplied ‘Aviattic’ instruction sheet.

PART 5

RIGGING
(General)

PART 5 - RIGGING (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 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 structural strength I use mono-filament (fishing line) of various diameters. These can be semi-transparent but do give a look of steel, without the need of painting or colouring with a gel pen.

NOTE: *As you work your way through the rigging it is always good to check the rigging attachment points for any damaged paint. This can be rectified before continuing with the rigging, just in case access will be limited once all of the rigging is completed.*

Rigging and bracing cables fitted to aircraft of this period varied, dependent on the nationality of the aircraft and its individual design. For instance, German aircraft used traditional round, braided cables, whereas later in the war aircraft of the RFC and RAF used solid metal aerodynamic (streamlined) flight rigging and traditional round cables for flight controls. French aircraft used either and sometimes the flight rigging was coloured blue. Finally the methods of actually attaching and adjusting the flight rigging and controls varied. For instance, the attachments for RFC and RAF aerodynamic rigging was different to that for round braided cables, which for adjustment, required turnbuckles. Some German aircraft had attachments with ball end fittings to allow for self alignment of the rigging cables.

I choose to use mono-filament (fishing line) for all of the rigging, as it does add structural strength to a model and can be tightened after fitting by apply heat close and along the rigging line. My line of choice is mono-filament with 0.12 mm diameter by 'Steelon' for rigging and 0.08 mm 'Stroft' for control lines. When lightly airbrushed with a matt or semi-mat lacquer, it looks close enough to steel to be passable. Besides, to the naked eye it's difficult to tell the difference between the flat photo-etch and the round mono-filament.

Holes need to be provided for routing the rigging wires, so study the rigging illustration and model parts thoroughly to find the various rigging points.

PART 6

ENGINE

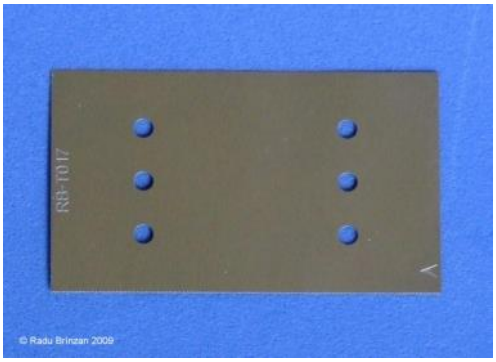
PART 6 - ENGINE

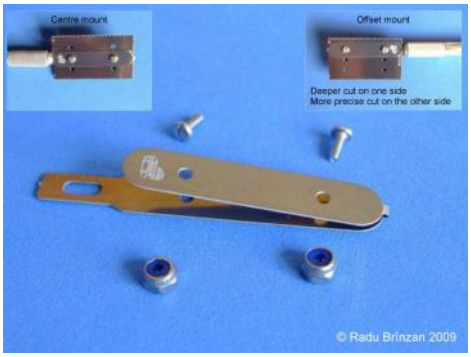
Contrary to the 'HPH Models' instruction manual, I decided to build the engine first.

WARNING: *Many resin parts for the engine are extremely small and being resin, are very delicate. Great care needs to be exercised when cutting the parts away from the resin backing and in subsequent 'cleaning up'. Also take precautions to avoid losing small parts to the 'carpet monster' as although there are odd spares, if you do lose a part you may end up having to contact 'HPH Models' to see if they can supply replacements, which may not be possible.*

NOTE 1: *The instruction manual has small photographs with little instruction of exactly where some parts are fitted. Following the manual and this Part 6 of the build log should help in assembling the engine correctly.*

NOTE 2: *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'.*





The following photographs is of a Austro-Daimler 185 hp engine (*similar design to model engine*).

NOTE: *Some of the call out illustrations at the start of the instruction manual do not reflect the actual parts supplied in the kit, particularly those resin moulds for the engine assembly parts. Additionally there seems to be extra items, presumably spares. This make it unnecessarily difficult to follow the instructions, so care needs to be exercised when selecting parts to assemble.*

Separate the engine block (63) and sump (62) from the resin backing.

Separate from the resin backing:

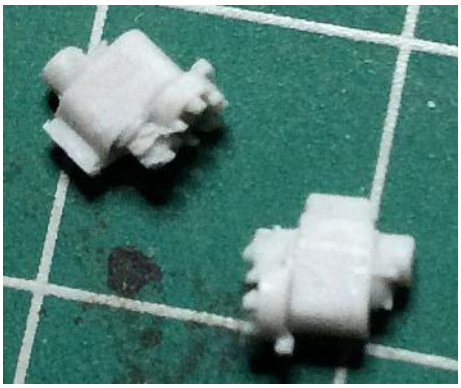
> Six cylinders (80), two magnetos (70), ignition rail (76), valve gear (77), camshaft (82), magneto drive shaft (67), carburettor housing (78), two intake manifolds (72, 73).

Carefully support fragile parts and by sanding, scraping or filing, remove the remaining resin backing from the parts.

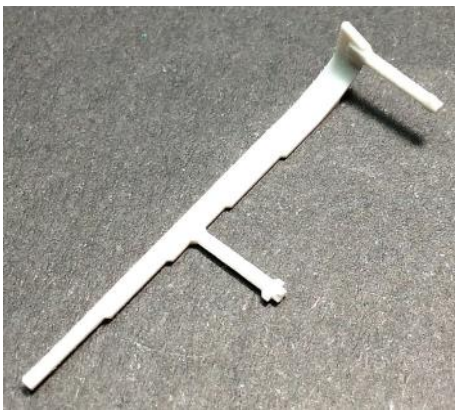
NOTE: *To aid in removing the resin backing from the parts, refer to the photographs that follow.*

Clean up the base of the cylinders (80) to allow them to locate fully into the engine block (63). Also scrape out the three cooling grooves of any unnecessary resin.

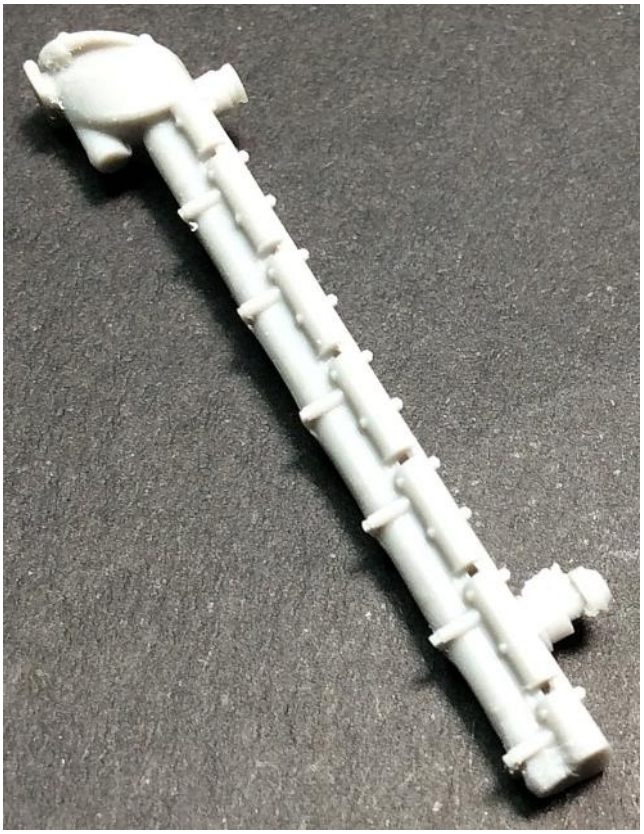
Clean up the bottom of the two magnetos, but leave a flat stub on the bottom of the curved mounting. This will be used to hold the part whilst painting, then removed.



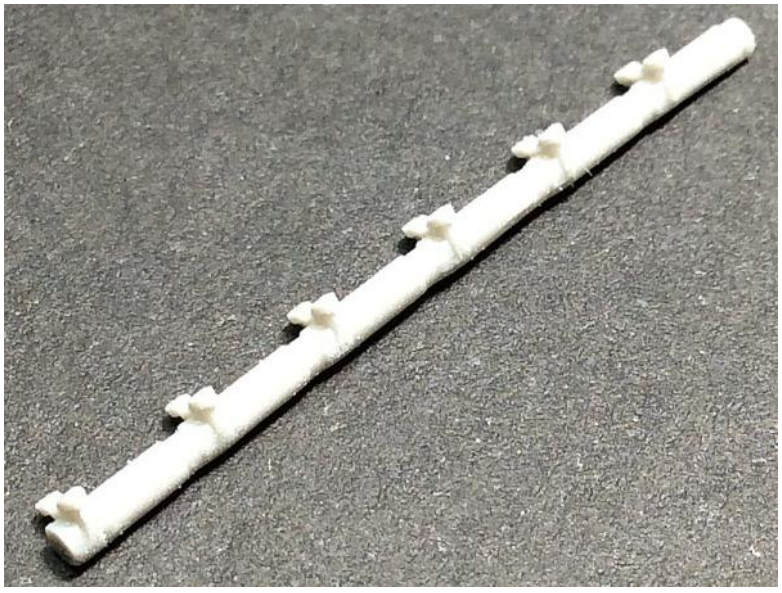
Clean up the non-serrated edge of the ignition rail (76). Use the mould line as a guide.



Clean up the bottom of the valve gear (77) shaft level with the clamp rings.



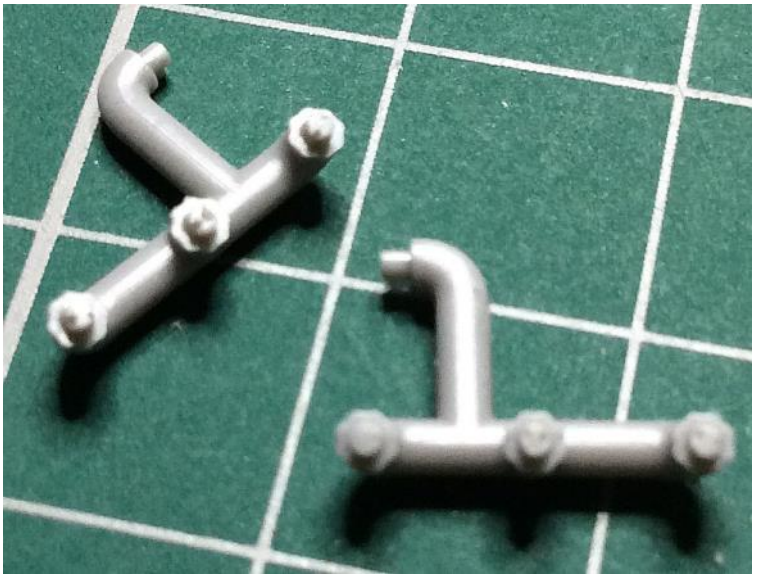
Clean up the top of the camshaft (82) level with the clamping rings. Camber the sides of the clamping rings to the shaft.



Clean up the magneto drive shaft (67).

Clean up the base of the carburettor housing (78).

Clean up the two intake manifolds (72, 73).



Test fit the engine block (63) to the sump (62) and ensure that the joint has no gaps and the peripheral pre-moulded locking bolts align.

Apply a small amount of CA adhesive to one end of the mounting face of the engine block (63) then carefully position the sump (62).

Make sure the two parts are aligned correctly and apply CA adhesive to the joint to secure the parts together.

NOTE: *The following two steps provide a hole for inserting a wood tooth pick for holding the parts whilst painting.*

Drill a hole of 1.0 mm diameter into the centre of the joined engine block and sump, at the end of the assembly where the propeller shaft will be fitted.

Drill a hole of 1.0 mm diameter into the bottom and centre of each cylinder.

Insert a wood tooth pick into the holes in the cylinders and engine assembly. This will help in holding the parts for painting.

NOTE: *The painting guide in the instruction manual merely states the colours to use, but does not indicate the tone of colours used. For example the cylinders are to be painted copper, but this this was the case only for the cooling water jackets (the cylinders were steel). Standard copper would be too bright and in reality needs to be darkened, as would be the case with copper being heated over time. This should be borne in mind when applying suggested colours in order to give a more realistic and less 'toy like' finish to the model.*

The following photographs is of a Austro-Daimler 185 hp engine (*similar design to model engine*).

NOTE 1: *Compare the call out parts listing in the instruction manual to what is actually supplied in the kit, as in some cases they do not match.*

NOTE 2: *No primer was applied to the small parts as with a colour top coat applied, too much paint would be built up stopping the items from fitting to the engine locations (e.g. spark plugs, valve springs etc).*

Carefully separate the photo-etch timing handle crank (PE 43) from the PE sheet and bend it through 180º to form the lever.

Airbrush the following engine parts with 'Alclad' Steel (ALC-112):

Six spark plugs (83).

Twelve valve levers (81).

Coolant pipe (74).

Water pump (69).

Timing handle body (71) and ball (87).

NOTE 1: *All assembly of all parts is carried out using CA adhesive.*

NOTE 2: *Due to restricted access, not all parts are assembled following the instruction manual.*

Secure all six cylinders (80) into the engine block, making sure the larger holes for the exhaust ports are position to the right side of the engine and are vertical with the grooves in the tops centrally aligned.

Secure the cam shaft (82) to the underside of the valve gear (77), making sure the shaft is the correct way around with the clamps aligned.

Secure the ignition rail (76) into its two location recesses in the engine block.

Remove the flat stub left on the base of each magneto (for holding whilst painting) and carefully file or sand the profile to fit into the mounting recesses at the front of the engine block.

Locate the magneto drive shaft (67) into its location recess at the front of the engine block. Do not glue at this point. Make sure the double headed ‘arrowed’ plate on the shaft is positioned at the top facing forwards with the two magneto locators at the base facing rearwards towards the cylinders.

Position the valve gear and cam shaft assembly (82, 77) onto the grooves in the tops of the cylinders, making sure the top of the located magneto drive shaft (67) is vertically aligned with the flange under the front of the assembly.

Secure the assembly and magneto drive shaft is position with adhesive, making sure that the assembly is sat vertically in the cylinder grooves.

NOTE: *The spark plugs were fitted as pairs at the top, left side of each cylinder head. The ignition leads for these plugs were connected to both magnetos and were routed through the ignition rail on the left side of the cylinders. The assumption is that this required the ignition leads from the right side magneto to be routed around the rear cylinder and into the ignition rail, merging with the ignition leads from the left side magneto. Each ignition lead exited the ignition rail through a hole and was then connected to its spark plug.*

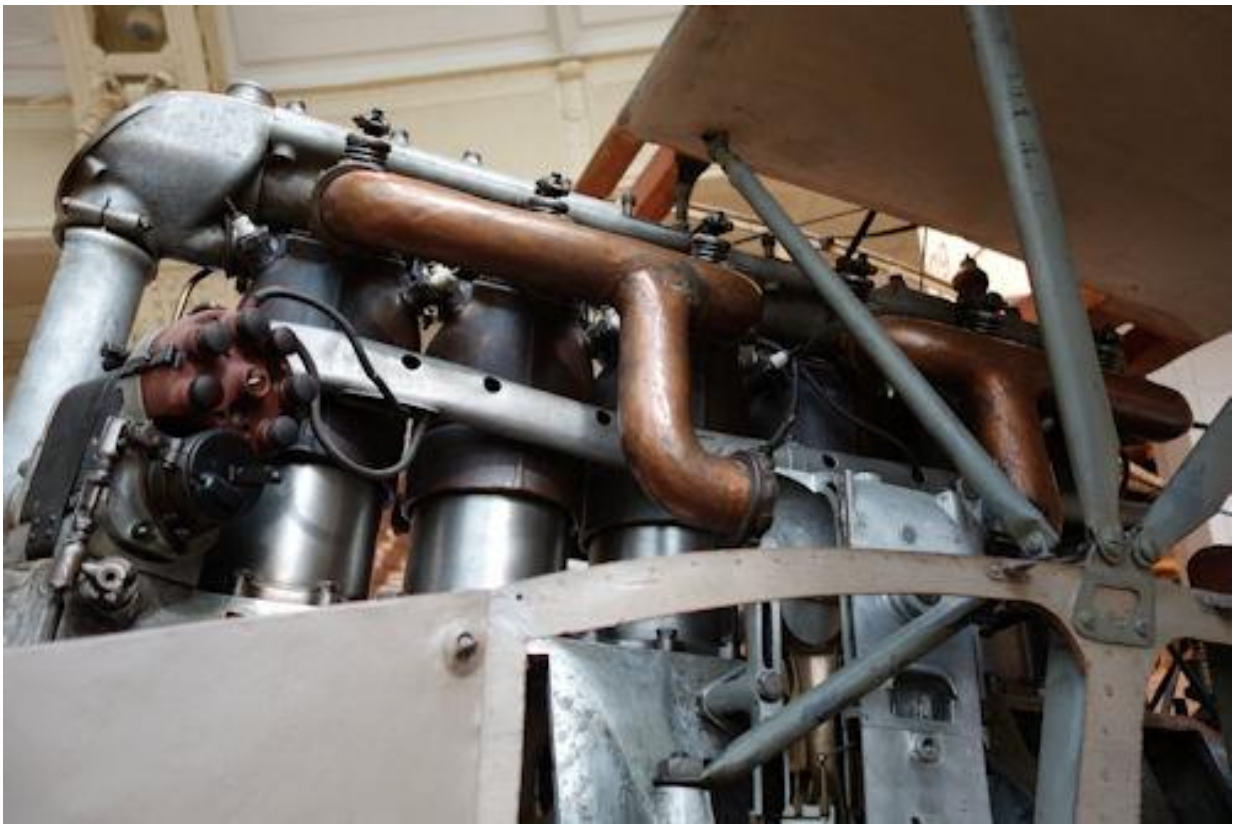


Photo-etch timing handle lever (PE43).

Two oil caps (88).

NOTE: *Parts 66 and 85 are illustrated in the instruction manual, but with no indication where they are fitted. Examination of the manual photographs show it is fitted on top of the carburettor housing, facing rearwards.*

Pipe (66) and cap (85).

Airbrush the following parts with ‘Alclad’ Black Gloss primer (ALC-305):

Engine block assembly 62, 63), Ignition rail (76), magneto drive shaft (67), carburettor housing (78), cam shaft (82), valve gear (77), cylinders (80) and inlet manifolds (72, 73).

Airbrush the engine block assembly (62, 63) and ignition rail (76) with ‘Alclad’ Aluminium (ALC-101).

Airbrush the magneto drive shaft (67), carburettor housing (78) and cam shaft (82) with ‘Alclad’ Steel (ALC-112).

Airbrush the valve gear (77) with ‘Alclad’ Duraluminium (ALC-102).

Airbrush the six cylinders (80) and the two inlet manifolds (72, 73) with ‘Alclad’ Copper (ALC-110).

Brush paint the lower barrels of the six cylinders (80) with ‘Mr. Colour’ Stainless Steel (213) and once dry, buff the painted surface with a cotton bud to create a metallic sheen.

Sponge ‘Tamiya’ Weathering Master Set (Set D - Oil Stain) over the copper painted intake manifolds (72, 73) and the cooling jackets on the six cylinders (80). This will dull down the paint sheen and give a look of old, heated copper.

Carefully separate the coolant pipe (74), water pump (69) and timing handle body (71) from their resin backing , clean up the remaining resin backing and touch up those area with ‘Alclad’ Steel (ALC-112).

Brush paint the body of each spark plug with ‘Tamiya’ white (X2) mixed with a small amount of Deck Tan (XF55).

Brush paint the support bands around the coolant pipe (74) with ‘Tamiya’ Rubber Black (XF85).

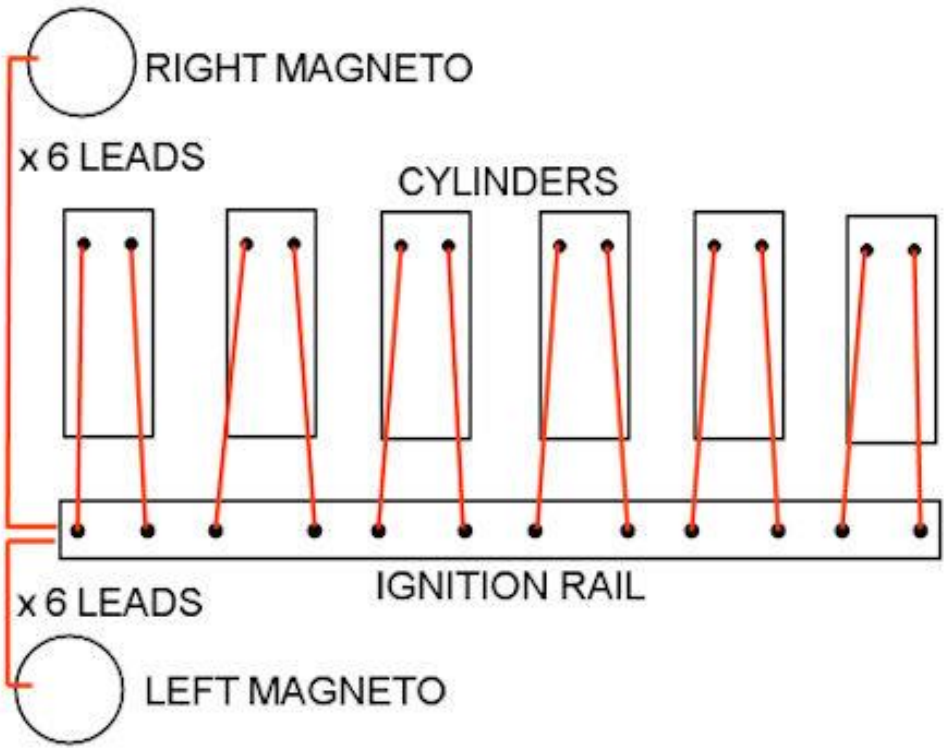
Brush paint the timing handle ball (87) with ‘Tamiya’ Hull Red (XF9).

Carefully separate twelve spark plugs (83) from the resin backing.

Stepping up from 0.5 mm diameter, open up the spark plug location holes to 0.8 mm diameter.

Carefully secure each spark plug into its location hole.

Carefully drill twelve holes in total through the ignition rail. The first eight from the magneto end are 0.4 mm diameter, the last four are 0.2 mm diameter as the rail is too thin. The holes should be positioned as shown in the following illustration.



Ignition leads - right side:

Cut six lengths ‘T Force’ XPS 0.148 mm diameter mono-filament.

Secure one end of each of the lines together to form a group with the other ends free.

Secure the grouped ends to the inside end of the ignition rail.

Individually cut and secure the free ends of each line to the six ’stubs’ on the face of the right magneto.

Carefully cut away any excess line from the edge of the magneto.

Ignition leads - left side:

Repeat the same procedure for the ignition wiring on the left magneto, except secure the grouped ends to the inside of the ignition rail as close to the magneto as possible.

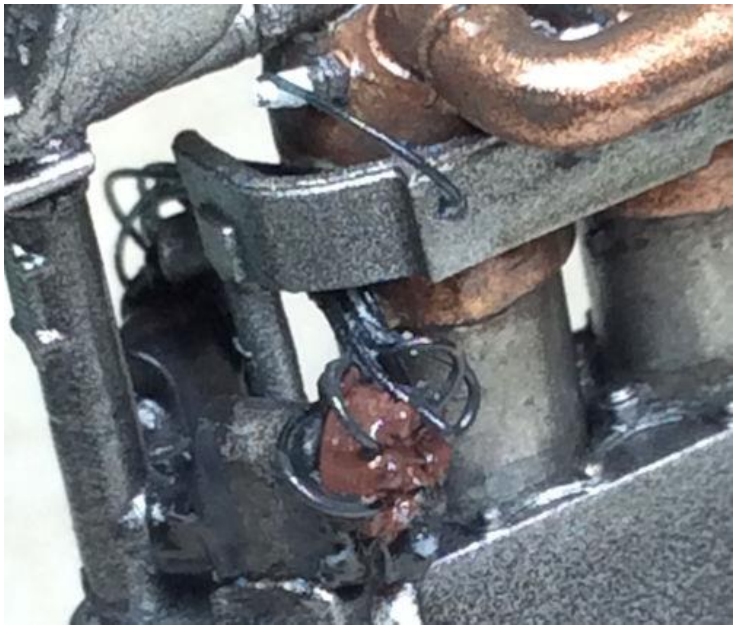
Ignition leads - cylinders:

Cut twelve lengths ‘T Force’ XPS 0.148 mm diameter mono-filament.

Secure each line into one of the pre-drilled holes in the ignition rail and the other end to its spark plug (refer to the illustration above).

Carefully cut away any excess line from the spark plugs and from the inside face of the rail.

Carefully brush paint the end of each line at the spark plugs with ’Mr. Colour’ Brass (219).



Test fit the two intake manifolds (72, 73) into their location in the tops of the cylinders and the carburettor housing (78). Remove any primer and paint from the location stubs to achieve a good fit.

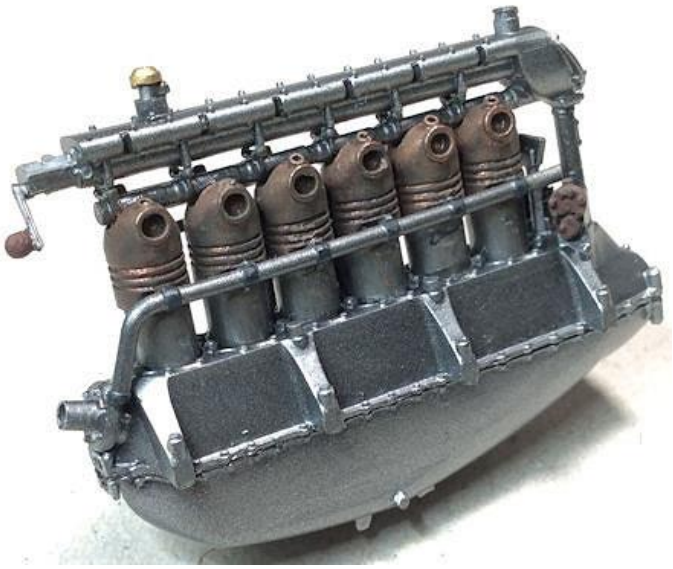
Test fit the manifolds and carburettor housing onto the engine. The housing should be vertical and fully against its back and bottom location. If the housing will not allow the manifolds to engage correctly, carefully file or sand away the bottom mounting face on the housing until a full fit is achieved.

Locate the two manifolds and carburettor housing onto the engine. Ease the housing away from the engine block and apply adhesive between the two, then push and hold the housing against the engine to secure it in position.

Apply adhesive to each of the intake manifold locations.

If necessary re-sponge ‘Tamiya’ Weathering Master Set (Set D - Oil Stain) over the intake manifolds and the cooling jackets on the six cylinders, to replace any weathering removed.

Spark plugs and ignition leads not shown.



Carefully remove the two oil filler caps (88) from the resin backing.

Secure the two filler caps onto their locations on the right side of the engine block.

Carefully remove twelve valve lever assemblies (81) from the resin backing.

Trim the tab on the ends of the levers and test fit them into the slots in the valve gear (77) and valve recesses in the tops of the cylinders.

Secure the levers in position between the valve gear and cylinders.

Brush paint the exposed cut surfaces of the levers with ‘Mr. Colour’ Stainless Steel (213).

Secure the 90º pipe (66) to the top of the carburettor housing and facing rearwards.

Secure the cap (85) to the exposed end of the pipe (66).

NOTE: *Try to avoid airbrushing the sealing coat over the intake manifolds and cylinder heads. These area were treated with ‘Tamiya’ Weather Master, which has a waxy finish and may cause the sealing coat to ‘bead up’ on the surface or dissolve the weathering. If this occurs, reapply by sponge ‘Tamiya’ Weathering Master Set (Set D - Oil Stain) over the copper painted intake manifolds and the cooling jackets on the six cylinders.*

Lightly airbrush a semi-matte sealing coat over the engine (e.g. ’Alclad’ Light Sheen ALC-311).

NOTE: *The decals supplied with the kit 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.*

Cut out and apply the kit decals 19 and 20 to both sides of the engine block.

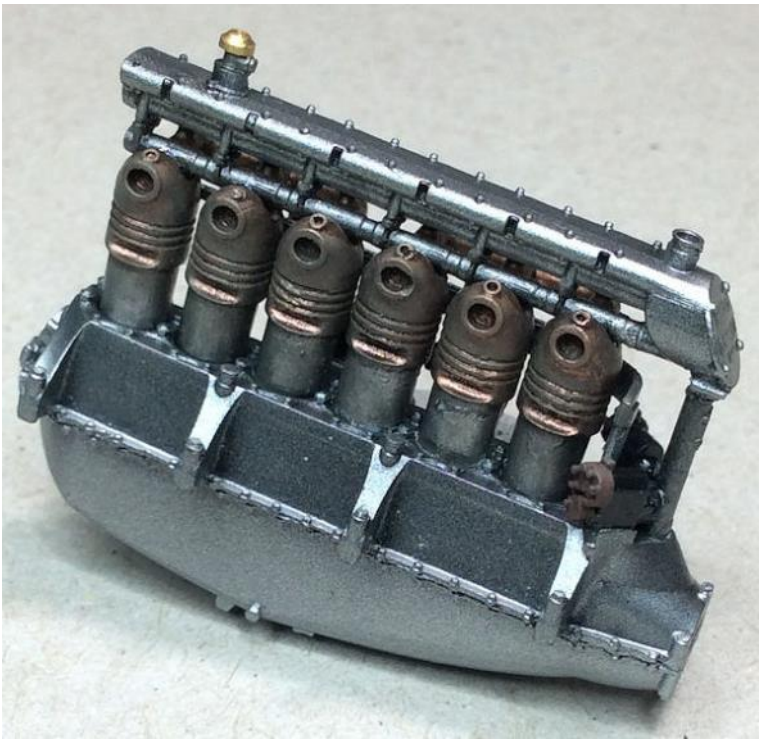
Refer to Part 3 of this build log and weather the engine, as desired, using ‘Flory’ Dark Dirt clay wash.

Re-apply semi-matte sealing coat over the engine (e.g. ’Alclad’ Light Sheen ALC-311) to seal in the weathering.

Apply ’AK Interactive’ Engine Oil (AK-2019), Kerosene (AK-2039) or Engine Wash (AK-2033) as desired around appropriate areas of the engine (e.g. AK-2019 along the cam shaft).

Spark plugs and ignition leads not shown.

Spark plugs and ignition leads not shown.



Position the coolant pipe (74) onto the grooves on the sides of the cylinders and the water pump (69) onto its location on the rear of the engine. Make sure the pipe aligns with the outlet on the water pump.

Secure the pipe and pump in position.

Secure the timing handle body (71) onto the rear of the valve gear and cam shaft assembly (77, 82). Make sure the handle faces vertically down or it may interfere with fitting the two machine guns.

Secure the timing handle lever (PE43) onto the timing handle body (71).

Separate the knob (87) for the timing handle from its resin backing and secure it to the bottom of the timing handle lever (PE43).

Engine exhaust pipes:

NOTE 1: *Instead of using the kit supplied resin exhaust pipes, I chose to make them out of brass tube instead.*

NOTE 2: *The 'N' shaped cabane struts on each side of the fuselage are nearly vertical, when viewed from the front or rear of the aircraft. The outlet ends of the pipes were close to the right cabane strut. Photographs taken at the time and subsequent drawings of this aircraft show that for various versions of build, the exhaust pipes were either straight, bent downwards and even had two of the pipes bent to a curve to avoid being in close proximity to the cabane strut. To avoid this on the model, which has straight exhaust pipes, two were made 1 mm shorter than the other four pipes.*

Cut six 5 mm lengths of 1.4 mm diameter brass tube (e.g. 'Albion Alloys' MBT14).

Run a 1.2 mm diameter drill inside the tube to remove internal 'burrs'.

File or sand the cut edges to remove any 'burrs'.

Cut lengths of 1.8 mm diameter brass tube (e.g. 'Albion Alloys' MBT18). Four tubes to a length of 8 mm and two tubes to 7 mm.

File one end of each tube to approximately 45º.

File or sand the cut edges to remove any 'burrs'.

Run a 1.6 mm diameter drill inside the tubes to remove internal 'burrs'.

Insert a 1.4 mm tube inside a 1.8 mm tube at the non-chamfered end, leaving just enough exposed to fit into the holes in the cylinder heads.

Secure in position with CA adhesive.

Prime the tubes by airbrushing 'AK Interactive' Primer and micro-filler (AK-758).

Airbrush the tubes using 'Tamiya' Rubber Black (XF85).

Lightly dry brush the tubes with 'Tamiya' Hull Red Deck Tan (XF9).

Lightly dry brush 'Tamiya' NATO Brown (XF68) sporadically along the each tube.

Lightly sponge the pipe open angled end of each tube with 'Tamiya' Weathering Master (Set B-Soot).

Lightly sponge the base ends of the tubes with 'Tamiya' Weathering Master (Set D-Burnt Blue).

Lightly sponge along the centre areas of each tube with 'Tamiya' Weathering Master (Set B-Rust).

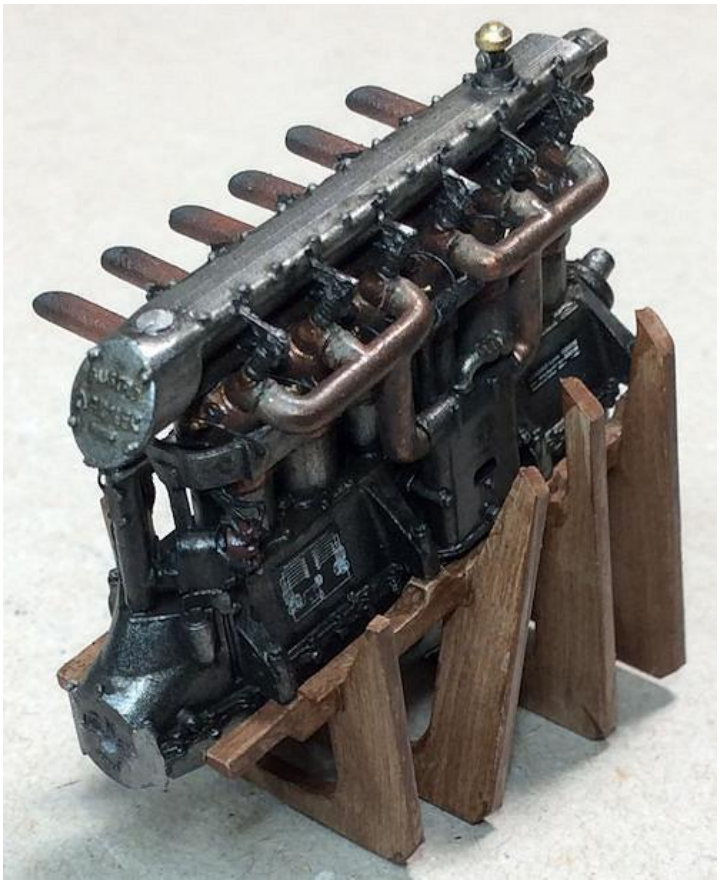
NOTE: *Due to the close proximity of the exhaust pipes to the right side cabane struts, the two shorter pipes into the second and fourth cylinders from the rear of the engine.*

Test fit, **but do not secure**, each pipe by its 1.4 mm 'stub', into its cylinder head. Make sure the chamfered ends are outboard and facing rearwards.

Remove the exhaust pipes until later in the build.

NOTE: *Photographs show the engine fitted to its support frames (covered later in this build log).*

NOTE: *The following photographs show the exhaust pipes test fitted and before the second and fourth pipes from the rear were retrospectively shortened.*



PART 7

PROPELLER

PART 7 - PROPELLER

The Aviatik 'Berg' D.1 was fitted with propellers from various manufacturers, which also included experimental four bladed types. However one of the most common type used was the 'Knoller Jaray' propeller.

Example of a 'Knoller Jaray' propeller.

The kit supplies a resin propeller, however I chose to replace this with a handmade laminated wood propeller from 'ProperPlane' ('Knoller Jaray' type). The following photograph shows the propeller as supplied from 'ProperPlane'.

The photograph above shows the front face of the propeller

Cut a length of 2.0 mm diameter tube to a length that when inserted into the propeller hole, it is flush with the front of the propeller hub and protrudes from the rear side by approximately 3 mm.

Secure the tube into the propeller using CA adhesive.

Make sure the wooden propeller is perfectly smooth and lightly sand if necessary.

To represent a varnish finish to the propeller, airbrush light coats of ‘Tamiya’ Clear Orange (X26) thinned with ‘Tamiya’ X20A thinners.

Once dry, airbrush a sealing coat - use either ‘Alclad’ Clear Coat Gloss (ALC-310) lacquer, ‘Alclad’ Aqua Gloss (ALC-600), ‘Tamiya’ Clear (X22) with added ‘Mr. Colour’ levelling thinners or ‘Johnson’ Pledge Floor Care finish (similar to ‘Future’). This will provide a good surface for applying the decals.

NOTE: *The decals from ‘LF Models’ are not ’cookie’ cut and therefore need to be carefully cut out from the supplied sheet, before being applied to the propeller.*

Cut out and apply the ’Jaray Wein’ or ‘Aviatik’ propeller decals from the ‘LF Models’ Austro-Hungarian set (C3205).

Airbrush a light sealing coat over the propeller - e.g. either ‘Alclad’ Light Sheen (ALC-311) or Semi-Matte (ALC-312) lacquer or similar (e.g. ‘Tamiya’ Semi Clear (X35) with added ‘Mr. Colour’ levelling thinners, mixed with a few drops of ‘Tamiya’ Hull Red (XF9) to slightly darken the finish.

Carefully cut off the two supplied propeller bosses from their moulding block.

Sand the mounting faces to the correct thickness.

Brush paint the two propeller bosses with ‘Mr. Metal Colour’ Stainless Steel (213) and once dry, buff to a metallic sheen.

Position the front boss onto the propeller and secure in position using CA adhesive.

Position the rear boss onto the propeller and secure in position using CA adhesive.

Brush paint the forward half of the propeller shaft with ‘Mr. Colour’ Stainless Steel (213).

Lightly sponge ‘Tamiya’ Weathering Master Set A (Mud) along the leading edges of the propeller to simulate dirt and impact wear.

PART 8

FUSELAGE CONSTRUCTION

PART 8 - FUSELAGE CONSTRUCTION

NOTE 1: *All assembly of all parts is carried out using CA adhesive.*

NOTE 2: *The following assembly of the fuselage details does not follow the instruction manual, but is the order that I found the easiest.*

The engine has been built and completed in Part 6 of this build log. Now the construction of the fuselage and its internal detail can be started.

Preparation and painting:

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'. When removing parts from their resin backing or base blocks, always leave a small amount on the part, to avoid cutting into the model part itself.*

Remove from their resin backing or blocks the following items:

Two engine bearers (35, 36).

Support frames (27, 28, 29 and 30).

Fuselage frame (44).

Top frames (54, 55, 56).

Head rest board (32).

Instrument panel (43).

Forward cockpit bulkhead (62).

Cross member frame (49) (50, 51, 52, 53 not required - not visible in completed model).

Rear cockpit frame (48).

Cockpit floor (33).

Left and right fuselage halves.

File or sand all edges of the parts to remove residual resin flash, including the pilot's fuselage foot step, rectangular gun ports in the nose and propeller shaft openings.

Remove the instrument panel (26) from the kit supplied photo-etch sheet.

File away any photo-etch tags from the edges of the instrument panel (26), using a diamond photo-etch file.

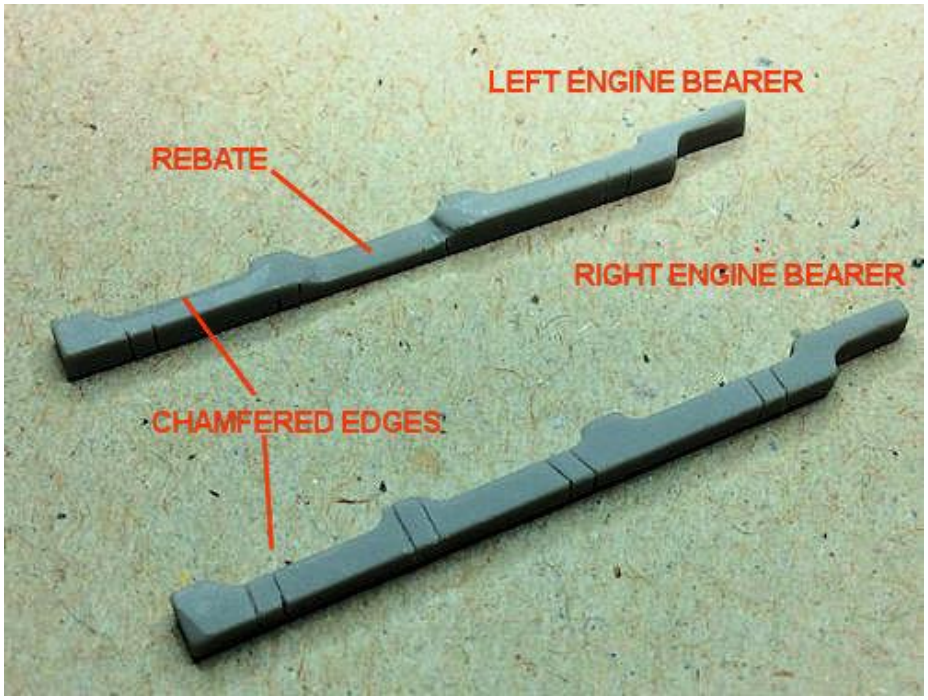
Secure the photo-etch instrument panel (26) to the side of the resin instrument panel (43) that has the matching cut-outs.

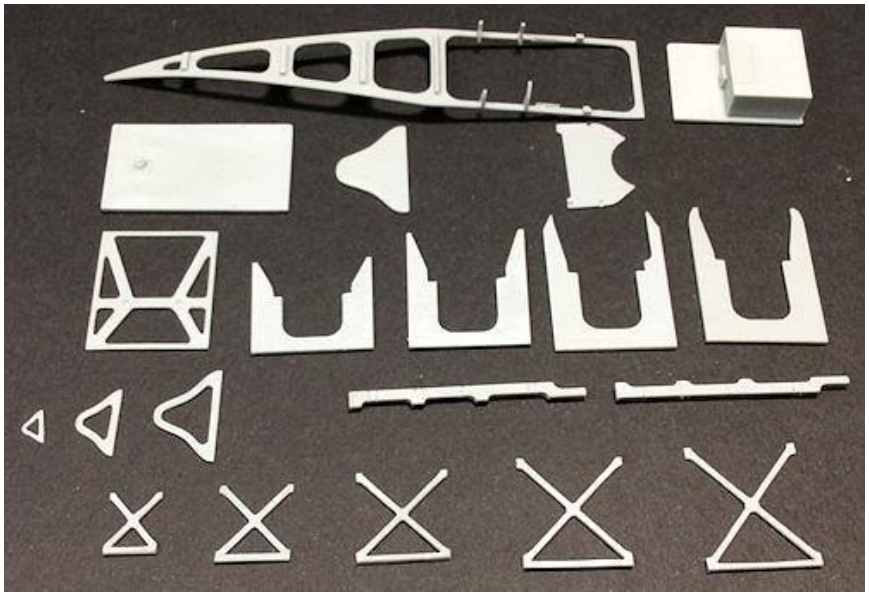
Using the photo-etch panel (26) as a guide, carefully cut out the two side slots (for locating onto frame 44) and the small slot and the bottom right of the panel (43).

NOTE 1: *The engine bearers 35 and 36 locate under the four lugs, equally spaced along the join of the engine sump and engine block. The bearers, when positioned and viewed from above the engine, are intended to sit against the engine with their outer edges aligned with the outer edges of the location lugs. However I found they tended to sit slightly proud of the location lugs, due to the inner edge of the bearers touching the engine sump, especially the centre of the left engine bearer, which fouls the tapered area below the carburettor housing. Therefore the bearers need to be modified to achieve a correct fit against the engine.*

NOTE 2: *During the next two steps test fit the engine bearers until the correct fit is achieved.*

File a rebate into the inside, centre section of the left engine bearer to allow the bearer to sit over the tapered area on the engine sump, below the carburettor housing.


LEFT ENGINE BEARER
REBATE
RIGHT ENGINE BEARER
CHAMFERED EDGES



File or sand a slight chamfer along the top, inside edge of each engine bearer (36, 36) to allow the bearers to sit against the engine and aligned with the outer edge of the location lugs.

NOTE: *After assembly, some parts of the fuselage internal details won't be visible. Therefore only certain parts need to be primed and painted.*

Airbrush prime the following parts with 'AK Interactive' Grey primer (AK-758), except for the side of the instrument panel (43) with the photo-etched panel (26):

Two engine bearers (35, 36).

Support frames (27, 28, 29 and 30).

Fuselage frame (44) (forward from the pilot's head rest board only required).

Head rest board (32) (one face only required).

Instrument panel (43).

Forward cockpit bulkhead (62).

Cross member frame (49) (one side only required).

Cockpit rear frame (48) (one side only required)

Cockpit floor (33) (top side only required).

Internal surfaces of the two fuselage halves.

Airbrush the primed surfaces of the parts above with 'Tamiya' Deck Tan (XF55).

NOTE: *If the following step, I chose to use Burnt Sienna for the internal fuselage sides and cross member frame (49) and for the remaining parts Burnt Umber.*

Refer to Part 2 of this build log and apply the desired wood effect to the painted surfaces parts of the parts above and the photo-etched instrument panel (26)

Refer to the instruction manual and secure the two engine bearers (35, 36) to the engine.

Refer to the instruction manual and secure the support frames (27, 28, 29 and 30) to the engine bearers and in the correct order. The engine bearers have marker lines to aid in positioning the frames.

Test fit the engine and bearer/frame assembly into the right fuselage half, using the guide lines moulded to the fuselage inner surface.

NOTE: *The engine assembly was built following the instruction manual. Despite this, I found that when test fitted into the fuselage halves, the assembly did not allow the fuselage halves to fully join as it was contacting the inside surfaces in several areas. This required modifying the engine assembly and fuselage halves as follows:*

Engine:
The four support frames (27, 28, 29 and 30) were shortened in height to avoid contacting the top insides of the fuselage halves.

The bottom corners of the Support frames (27, 28, 29 and 30) were cut at 45º to avoid contacting the bottom corners of the fuselage halves.

The vertical bolts at the front of the engine/sump joint were filed away to avoid contacting the inside nose of the fuselage halves.

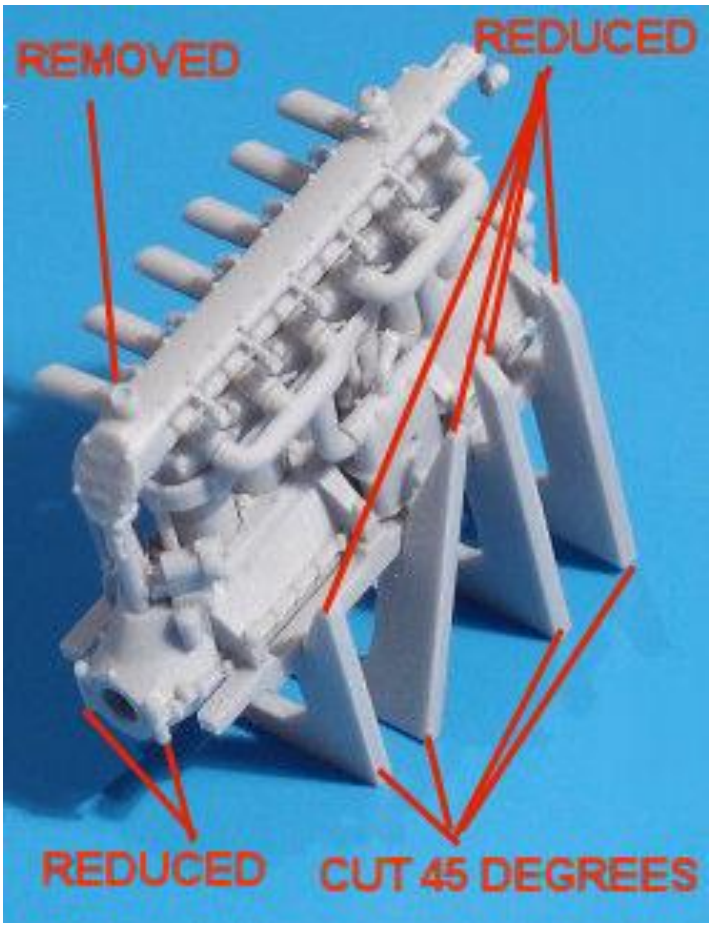
The cylindrical projection at the top, front of the engines valve gear was removed to avoid the top of the fuselage halves.

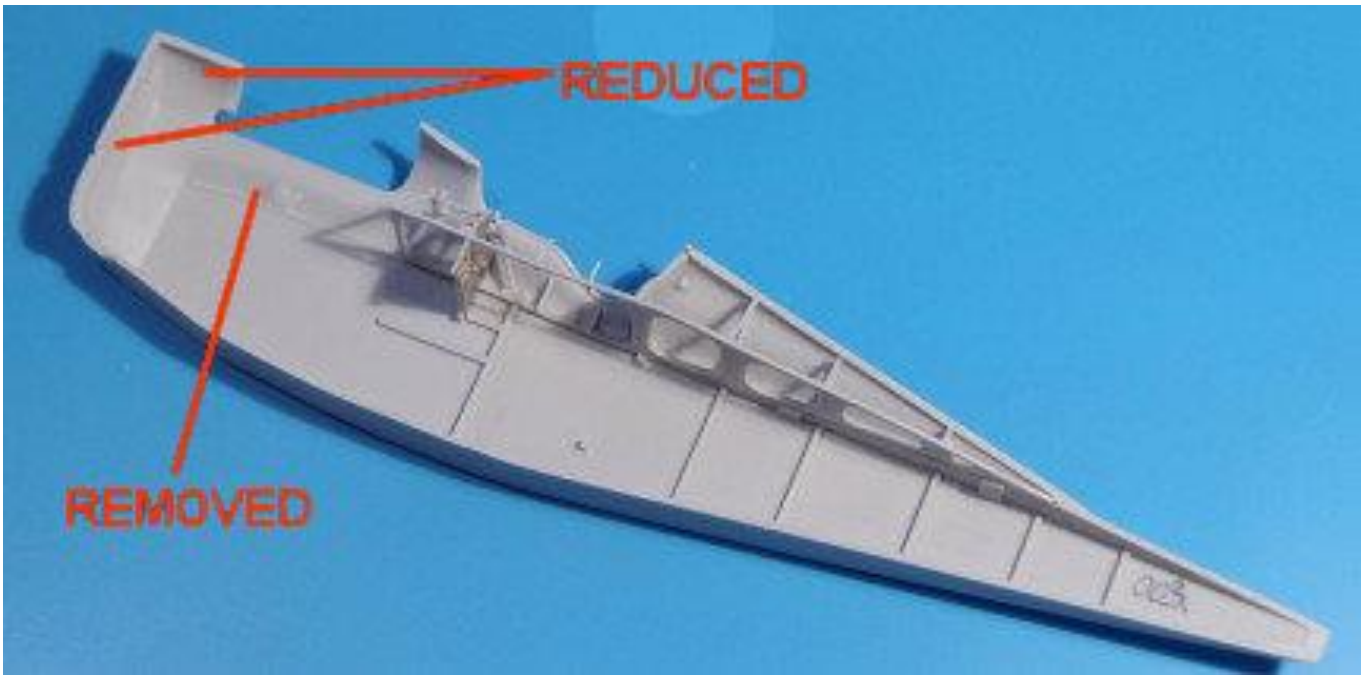
Fuselage halves:
The inside surface of the fuselage halves, above the front of the engine valve gear, was thinned down.

The inside surface of the nose of the fuselage halves, around the propeller shaft hole, was thinned down.

The horizontal side baton, pre-moulded into the inside of the fuselage halves at the engine bay area, were removed.

NOTE: *The following photographs show the exhaust pipes test fitted and before the second and fourth pipes from the rear were retrospectively shortened.*





NOTE: *The panels on the fuselage halves are unrealistically thick around the engine openings and the forward cockpit area. Using a curved and a straight scalpel, scrape away the inside edges of the engine openings and forward cockpit to reduce their thickness.*

Touch-up any areas where resin has been removed with the applicable paint.

Refer to Part 3 of this build log and weather the wood effect surfaces, as desired, using 'Flory' Dark Dirt clay wash.

Brush paint the inside of the fuselage halves, over the inside faces of the forward metal panels around the engine bay, with 'Mr. Colour' Stainless Steel (213) and buff when dry to create the metallic sheen.

Refer to the instruction manual and carefully scrape away the paint from the instrument and switch locations on the photo-etch instrument panel (26)

Secure the photo-etch instruments (PE14, 15 and 16) onto their specific locations on the photo-etch instrument panel (26).

Refer to Part 4 of this build log and apply either the kit supplied decals or aftermarket decals (e.g. 'Airscale' Generic WW1 Instruments (AS32 WW1) to the instrument panel (26).

Remove two switch levers (PE24) and one lever (25) from the kit supplied photo-etch sheet.

Using a diamond file, remove any cut tags from the edges of the three levers.

Drill through the applied decals on the three switch locations with a 0.4 mm diameter drill, which will allow fitting of the switch levers (PE24, 25).

Secure the three switch levers (PE24, 25) into the holes it the instrument panel (26) locations.

Remove from their resin backing and the photo-etch (PE) sheet the following items:

Support frame (46 x 2, 47 x 2).

Cabinet plates (PE 22).

Rudder bar (39).

Support tripod (40).

Cabinet bar (57).

Control column (41).

Pilot's hand grip (38).

Torque bar (37).

Trigger pads (PE 13).

Seat support frame (42, 58 x 2).

Pilot's seat (61).

Throttle lever (64).

Control quadrants (PE 37, 20, 19, PE 17 x 2).

Container (34).

Tank (60).

Head Rest (31).

Machine guns (17 x 2).

File or sand all edges of the parts to remove residual resin flash.

Secure the pilot's hand grip (38) onto the control column (41).

Secure the trigger pads (PE 13) to the bottom edge at the top of the pilot's hand grip (38).

Secure the two throttle quadrants (PE 17) together.

Secure the throttle lever (64) to the quadrant assembly.

Secure the two quadrant halves (PE 19, 20) together, with the lever PE 37) between them.

Airbrush prime the above prepared parts with 'AK Interactive' Grey primer (AK-758).

Support frame (46 x 2, 47 x 2).

Cabinet plates (PE 22).

Rudder bar (39).

Support tripod (40).

Cabinet bar (57).

Control column (41).

Pilot's hand grip (38).

Torque bar (37).

Trigger pads (PE 13).

Seat support frame (42, 58 x 2).

Pilot's seat (61).

Head Rest (31).

Machine guns (17 x 2).

Control quadrant assemblies (PE 37, 20, 19, PE 17 x 2).

Airbrush the following parts with 'Alclad' Black Gloss primer (ALC-305):

Container (34).

Tank (60).

Airbrush or brush paint the primed parts as follows:

'Tamiya' Light Grey (XF66):

Support frame (46 x 2, 47 x 2).

Cabinet plates (PE 22).

Rudder bar (39).

Support tripod (40).

Cabinet bar (57).

Control column (41).

Pilot's hand grip (38).

Torque bar (37).

Seat support frame (42, 58 x 2).

‘Alclad’ Duraluminium (ALC-102):

Control quadrant assemblies (PE 37, 20, 19, PE 17 x 2).

Container (34).

Tank (60).

‘Humbrol’ Leather (62) with Tamiya’ Hull Rad (XF9) highlights:

Head Rest (31).

Pilot’s inner seat covering (61).

Pilot’s seat cushion (61).

‘Tamiya’ Hull Red (XF9):

Handles on levers of the two photo-etch control quadrants.

Grips on pilot’s hand grip (38).

‘Alclad’ Gun Metal (ALC-120).

Machine guns (17 x 2).

‘Mr. Colour’ Stainless Steel (213):

Rudder bar mounting on the cockpit floor (33).

Pilot’s seat outer panels (61).

Trigger pads (PE 13) on control column.

‘Tamiya’ Red Brown (XF64):

Pilot’s seat outer support frame and base (61).

Airbrush a sealing coat over the pilot’s seat and head rest (e.g. ’Alclad’ Light Sheen ALC-311).

Refer to Part 3 of this build log and weather the pilot’s seat, head rest and any other cockpit parts, as desired, using ‘Flory’ Dark Dirt clay wash.

Airbrush a sealing coat over the cockpit parts (e.g. ’Alclad’ Light Sheen ALC-311).

Lightly apply by sponge ‘Mr. Colour’ Stainless Steel (213) over the machine guns (17 x 2) to give a worn metallic finish.

Assembly:

Secure the painted photo-etch panels (PE 22) onto the bulkhead container (62).

Carefully slide the control column (41) onto the torque bar (37), making sure the pilot’s grip (38) faces rearwards. *Leave the control column loose* so that it can be positioned after the assembly is fitted to the fuselage.

Secure the support tripod (40) to its locations in the cockpit floor (33).

Drill a hole of 0.3 mm diameter through each end of the rudder bar (34) then insert and secure in position a long length of ‘EZ’ Fine black line into each hole.

NOTE: *For the next step and hole of 0.9 mm diameter may need to be drilled part way into the under side, central location of the rudder bar.*

Secure the rudder bar (39) to its location stub on the cockpit floor (33) mounting.

Secure the torque bar (37) onto the support tripod (40) with the end of the 90º bend to the cockpit floor, just inside the guide line on the forward edge of the cockpit floor (for aligning the bottom of the forward bulk head (62).

Secure the forward bulk head (62) to the forward edge of the cockpit floor assembly, making sure the bulk head and floor are at 90º.

Secure the head rest (31) to the lower centre of the head rest board (32).

Secure the head rest board (32) and frames (54, 55 and 56) to the fuselage frame (44), making sure they are fitted to the forward side of the pre-moulded support bars.

NOTE 1: *The fuselage parts will be fitted to the right fuselage half only and once complete the fuselage halves will be joined.*

NOTE 2: *From the next step onwards, routinely check fit the two fuselage halves together to make sure there are no obstructions or misaligned parts interfering with a good fit. If when test fitted the fuselage joint seam will not fully close, investigate what part is causing the problem and rectify as necessary.*

Secure the frame assembly (44, 31, 32, 54, 55 and 56) onto and against the pre-moulded locations in the right fuselage half.

Carefully insert the instrument panel assembly between the sides of the fuselage frame (44) and position the panel against the rear of the pre-moulded stops with the panel slots located over the sides of the frame. Make sure the panel is vertical to the fuselage and secure in position.

Secure the cockpit rear frame (48) against the forward sides of the pre-moulded stops in the right fuselage half, making sure it is at 90º to the fuselage half.

Secure the cross member frame (49) against its location in the right fuselage half, making sure it is at 90º to the fuselage half.

Thread a length of ‘EZ’ Fine Black line through each hole pre-drilled through the ends of the rudder bar (34) then secure in position.

Position the cockpit floor assembly into the right fuselage half, with the edge of the rear end of the floor contacting the bottom of the rear cockpit frame (48). The top of the cabinet on the forward bulk head (62) should be in contact with the underside of the cockpit frame (44).

Secure the cockpit floor assembly in position.

NOTE: *The next three steps need to be carried out before the CA adhesive has time to fully set, as the three parts will need to be positioned during assembly.*

Secure the seat support frame (42) into its location recesses in the cockpit rear frame (48). The front of the frame is angled upwards.

Secure the two seat frame support bars ()58) into their location recesses either side of the cockpit floor (33).

Tilt the tops of the frame support bars (58) inwards and secure them to the recesses on the underside of the front bar of the seat support frame (42).

NOTE: *When assembling the seat straps, use CA adhesive. To avoid the adhesive soaking through the seat belts and sticking to the working surface, assemble the belts on a shiny surface, such as tile. When holding down the belt joints to allow the adhesive to set, keep the belt moving over the shiny surface, which should stop the adhesive sticking the belt to the working surface.*

Following the included instruction card, assemble the seat belts (’HGW Models’ Roland D.VIb belt set - HGW132543). Cut the ends of the laps straps as these are fitted in the base of the seat and exit from the sides of the seat cushion.

Brush over the assembled seat belts with ’AK Interactive’ Filters (Wood AK-261) thinned with White Spirits.

Secure the seat belts to the pilot's seat (61).

Position the pilot's seat onto its support frame in the cockpit.

Pass the two shoulder straps from the seat up through the top opening in the fuselage frame (48) behind the seat.

Secure the pilot's seat centrally on the seat support frame.

Secure the ends of the shoulder straps to the fuselage frame, just in front of the first 'hollow' frame (54).

Secure the throttle quadrant assembly (64, PE17) to the vertical frame forward from the pilot's seat.

Secure the speed select quadrant assembly (PE19, PE20, PE37) to the inside of the **left fuselage half** on the vertical frame forward from the pilot's seat.

Position the control column (41) on the horizontal torque bar (37) so it is approximately 5 mm from the front of the pilot's seat (61). Make sure it is vertical in the cockpit and secure in position.

Slide a length of 0.4 mm diameter brass tube (e.g. 'Albion Alloys' MBT04) onto each of the two rudder 'EZ' lines and position the against the rudder bar (39).

Secure the tubes onto the lines.

Route each rudder line past the outside the legs (58) of the seat support frame, through the outer aperture in the fuselage frame (48) behind the pilots seat and to the bottom corners of the fuselage cross member frame (49).

Tension each line and secure in position on the cross member frame(49).

Keeping the lines in tension, secure them to the internal rear of the fuselage then cut away any excess line.

Secure the tank (34) centrally against the bottom of the forward face of the forward bulk head.

Cut a length of 0.4 mm diameter Nickel-Silver tube (e.g. ‘Albion Alloys’ NST04). The length of the tube should reach from the throttle quadrant, past the outside of the cabinet on the cockpit forward bulk head, to just before the bulk head.

Cut a second tube to the same length.

Secure one tube horizontally from the bottom of the throttle quadrant to the cockpit bulk head.

Secure the second tube horizontally from the bottom edge of the speed select quadrant in **the left fuselage half**, to the cockpit bulk head.

Cut two long lengths of ‘EZ’ Fine Black line.

Route one line around the control column above the torque bar and one line below.

Tension the lines, making sure the lines are against the join of the torque bar and control column.

Secure the lines to the control column.

Keeping the lines in tension, secure them to the internal rear of the fuselage then cut away any excess line.

Cut two lengths of ‘PlusModel’ lead wire of 0.3 mm diameter.

Secure one end of each wire to the gun triggers (PE13) on the pilot’s grip at the top of the control column.

Carefully loop the wires down then up and behind the instrument panel to the rear cross member of the gun support frame (47).

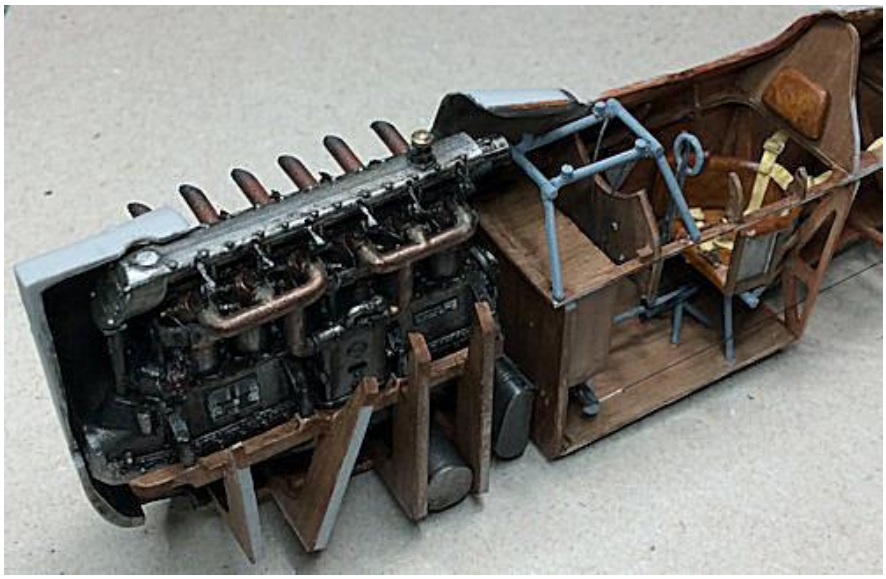
Secure the wires to the cross member.

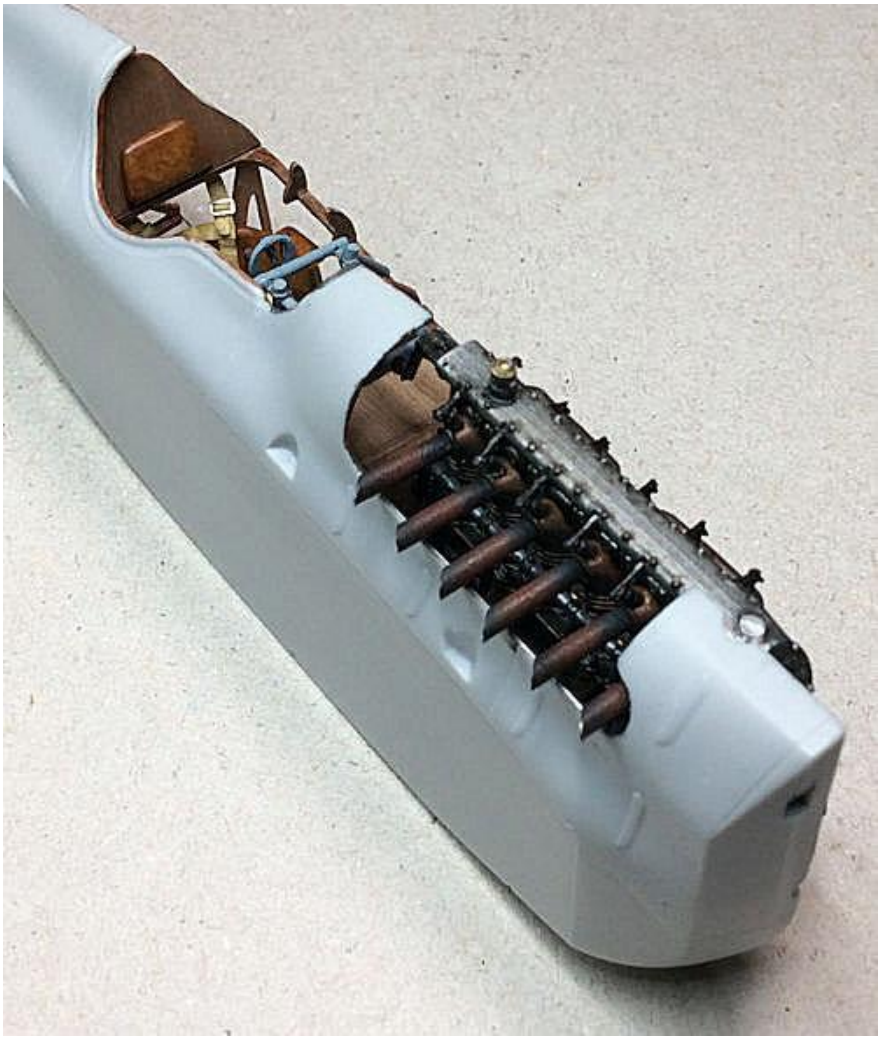
NOTE: *As soon as the engine is fitted into the right fuselage half, quickly locate the left fuselage half and check the halves join fully, as the engine may tip slightly and cause an obstruction. Quickly adjust as necessary before the adhesive sets. Alternatively use spots of PVA adhesive (White Glue) to position the engine, as this adhesive will not set quickly. Once it has set you can follow up with CA adhesive.*

Secure the engine/support frame assembly into the right fuselage half.

Secure the cylindrical container (60) on the right fuselage floor and between the two rear engine support frames (29, 30).

NOTE: *The following photographs show the exhaust pipes test fitted and before the second and fourth pipes from the rear were retrospectively shortened.*





If further weather is desired on the added cockpit parts, first airbrush a sealing coat over the cockpit parts (e.g. 'Alclad' Light Sheen ALC-311).

Refer to Part 3 of this build log and weather the added cockpit parts using 'Flory' Dark Dirt clay wash.

Airbrush a sealing coat over the weathered cockpit parts (e.g. 'Alclad' Light Sheen ALC-311).

Weapons:

The machine guns fitted to this version of the aircraft were a pair of 'Schwarzlose' M7/12 or M16, which were mounted on a tubular steel frame in front of the pilot. The barrels of the guns extended from the gun breech blocks and forward past the sides of the engine, through the two protective blast tubes, to rectangular apertures in the radiator at the front of the fuselage.

NOTE: *I found that with the tubular mounting frame (46 x 2, 47 x2) fitted to its locations on the fuselage frame(44), the machine gun breech blocks (17 x 2) were stopped from being located on the frame by being in contact with the inside of the fuselage. Therefore modifications were required as follows.*

The inside of the fuselage halves, adjacent to where the breech blocks are fitted needed to be heavily thinned. This was done using a curved scalpel blade as a scrapper.

The two cross members (47 x 2) of the assembled mounting frame were carefully cut away.

The 'stub' at the bottom, front of each machine gun (17 x 2) were filed off, to allow the machine guns to be position farther back on the mounting frame.

The cross bar on the remaining rear mounting frame was scrapped flatter on its top surface, to allow the machine gun to sit horizontal.

The two apertures in the radiator were increased in size to allow the blast tubes, when fitted, to be as central in the apertures as possible.

NOTE: *When carrying out these modifications to the model, frequently check the fitting of the guns and adjust as necessary. Temporarily locating the left fuselage half will be necessary to check the fitting of the gun on that side. Make sure the guns are in a position such that when the blast tubes are eventually fitted, they are aligned correctly to the front of the guns.*

Secure the two machine gun breeches to the front and rear cross members of the mounting frame on the right fuselage half. Make sure the guns are horizontal to the fuselage when viewed from the side and aligned with the centre line of the fuselage when viewed from above.

Blast tubes:

NOTE 1: *The kit does not supply the gun barrels or blast tubes, which need to be 'scratch' made. After carrying out the above modifications for the machine guns, it seems fairly obvious that the design of the model was never intended to include the blast tubes. Even with the modifications, the guns are too close together and the engine assembly does not allow the tubes to align with the centre of the gun breech, so some compromise is required to represent these blast tubes.*

NOTE 2: *The blast tubes protrude through the apertures in the engine radiator and therefore it's better not to fit the tubes until after the fuselage halves are joined.*

Cut two lengths of 0.7 mm diameter brass tube (e.g. 'Albion Alloys' MBT07). The tubes should be long enough to reach the gun breech blocks and be flush with the outside of the radiator.

Prime the tubes by airbrushing 'AK Interactive' Primer and micro-filler (AK-758).

Airbrush the tubes using 'Alclad' Steel (ALC-112).

Lightly sponge along the tubes with 'Tamiya' Hull Red (XF).

Lightly sponge along the tubes with 'Tamiya' Rubber Black (XF85).

Crash pads:

To protect the pilot's head in the event of a crash, pads of padded leather were attached to the ends on the breech blocks on the machine guns. From photographs at the time the pads were sometimes 'pear' shaped with the narrower end at the bottom and tilted slightly outboard. Alternatively they could be more rectangular in shape. To represent the crash pads, which are supplied in the kit, I used two spare crash pads from a set of 'Gaspatch' Spandau machine guns, which were brush painted with 'Humbrol' Leather (62) and highlighted with 'Tamiya' Hull Red (XF9).

Pipes and cables:

To represent the pipes and cables from the instrument panel to the engine bay and tanks, I cut five lengths of 0.4 mm diameter lead wire from 'PlusModel'.

The three from the panel selector switches were secured to the rear of the panel, then routed over the cabinet of the cockpit forward bulk head then down to the two tanks under the engine support frame.

The remaining two wires were secured to the rear of the panel behind the two dials, routed over the cabinet of the cockpit forward bulk head then down the inside of the right fuselage half to the bottom rear of the back support frame.

Joining the fuselage halves:

Apart from fitting the gun blast tubes and crash pads, the internal fuselage detail is complete.

Apply CA adhesive along the bottom edge only of one fuselage half.

Working quickly join the two fuselage halves making sure the edges are all aligned.

Once the bottom fuselage joint has set, carefully prise open slightly the top fuselage joint to the rear of the cockpit.

Apply CA adhesive into the length of the joint then close the joint, making sire the edges are aligned.

Once the top fuselage joint is set, apply CA adhesive into the joint just forward of the cockpit and close the joint.

Once that joint has set, apply CA adhesive to the fuselage top forward the fuselage nose joint.

Once fully set, carefully sand the fuselage joints to remove residual adhesive and to create a seam free and profiled join around the fuselage.

Fill any seams using a good putty (e.g. 'Perfect Plastic Putty).

Re-sand the seams to achieve a smooth joint.

Airbrush prime the fuselage seams (e.g. 'AK Interactive' Grey primer (AK-758) and when dry, check for any seams that require further filling and sanding. Repeat until you achieved a seam not visible under the primer, which is required if applying decals later in the build.

Fitting last detail:

Secure the crash pads to the ends of the machine gun breech blocks.

Brush paint the inner edges of the two barrel apertures in the engine radiator with 'Mr. Colour' Stainless Steel (213).

NOTE: *The two blast barrels on the actual aircraft were located below the intake manifolds on the left side of the engine and below the exhaust pipes on the right side. This is not possible on the model as it was not designed to have these fitted. Therefore they need to be fitted above, not below the manifolds and exhaust pipes.*

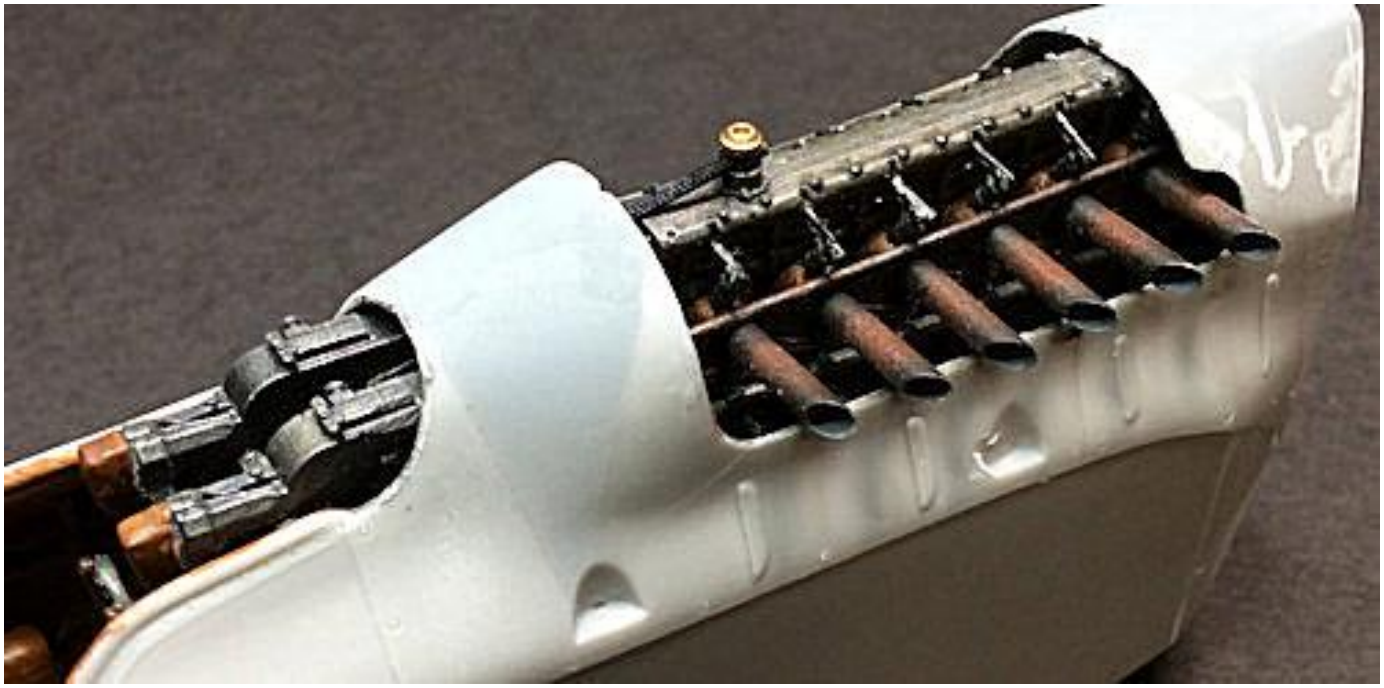
Insert the two prepared blast tubes through the barrel apertures in the radiator and against the bottom of the valves on each side of the engine. The rear of the tubes should contact the front face of the machine gun breech blocks with the front ends just inside the front face of the radiator. Secure the two tubes in position against the breech blocks and the top of the engines front exhaust pipe (right side) and intake manifold (left side), using CA adhesive.

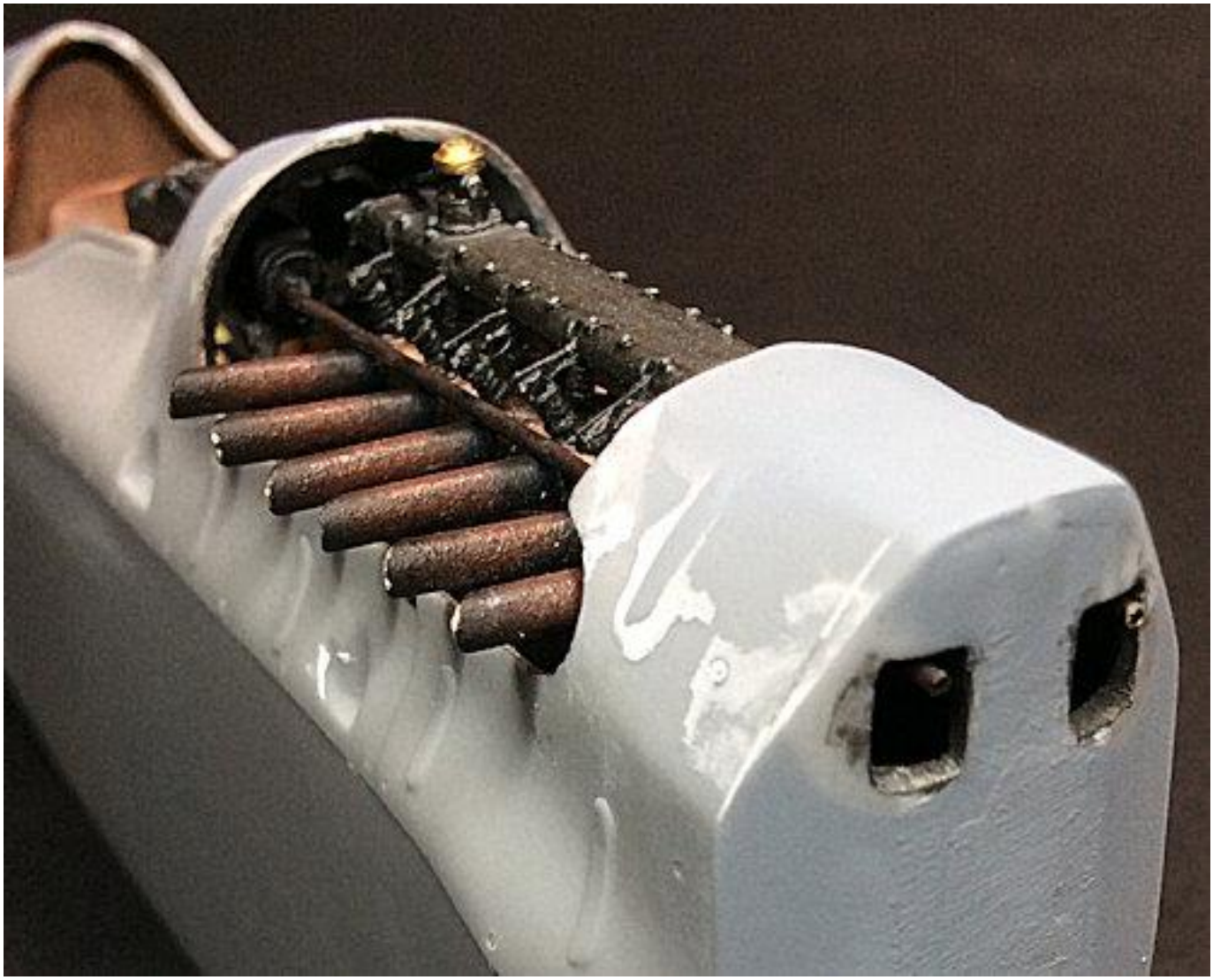
Cut a length of 'ANYZ' Black braided line 0.5 mm diameter (AN011)..

Insert one end of the line down through the rear, left side of the engine to the bottom of the cockpit forward bulk head. Secure the other end to the rear of the filler located on the top rear of the engine, to create a natural looking bend from the filler down the rear of the engine.

The following photographs show the fuselage completed for this stage of the build.

NOTE: *The following photographs show the exhaust pipes test fitted and before the second and fourth pipes from the rear were retrospectively shortened.*





PART 9

COMPLETION OF CONSTRUCTION

PART 9 - COMPLETION OF CONSTRUCTION

Now that the fuselage itself is as complete as possible, it's time to move on to the model construction.

Parts preparation:

NOTE 1: *The kit supplied propeller (13), shaft (65) and associated photo-etch (PE32) are being replaced.*

NOTE 2: *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'. When removing parts from their resin backing or base blocks, always leave a small amount on the part, to avoid cutting into the model part itself. Use a saw to separate the fragile parts from the backing and cut away most of the backing to allow you to get closer the parts.*

NOTE: *Some of the parts have wire reinforcing rods moulded inside.*

Remove from their resin backing or blocks the following items:

Lower wing halves (4, 5).

Cabane 'N' struts (22, 23).

Wing struts (20 x 4).

Upper wing (3).

Tail plane halves (6, 7).

Fin/rudder (12).

Tail plane support struts (45 x 4).

Tail skid fairing (89).

Tail skid suspension anchors (59 x 2).

Elevators (10, 11).

Ailerons (8, 9).

Wheel covers (14 x 2, 15 x 2).

Tyres (16 x 2).

Undercarriage struts (25, 26).

Undercarriage axle/fairing (24).

Undercarriage bracing bar (21)).

Radiator filler (18).

File or sand all edges of the parts to remove residual resin flash.

NOTE: *'Packing pads' were fitted in the leading edge of a wing. The wing would be stored or transported in a vertical position, leading edge down and resting on the pads, which protected the wing from damage.*

File or sand off the pre-moulded leading edge 'packing pads' on the upper and lower wings. These will be replaced later in the build.

NOTE 1: *The wheels are supplied in halves - each wheel has two tyre and two cover halves, which need to be carefully aligned before securing in position.*

NOTE 2: *The wheel inner and outer wheel covers are different - the outer cover has the rectangular 'patch'.*

Secure each wheel cover (14,15) into a tyre half (16) ,making sure the covers are fully seated in the tyres and are not tilted.

Flat sand the joining faces of the assembled wheel halves.

Secure the wheels halves together, making sure the outer edges of the tyres are aligned.

Sand the join seam around the tyre of both wheel halves.

Elevator hinges:

When the elevators (10, 11) are placed against the tail planes halves (6, 7), the pre-moulded hinge outlines no not align. As there are photo-etch parts to be added for the hinges, it's best to carefully scrape away the pre-moulded hinge outlines.

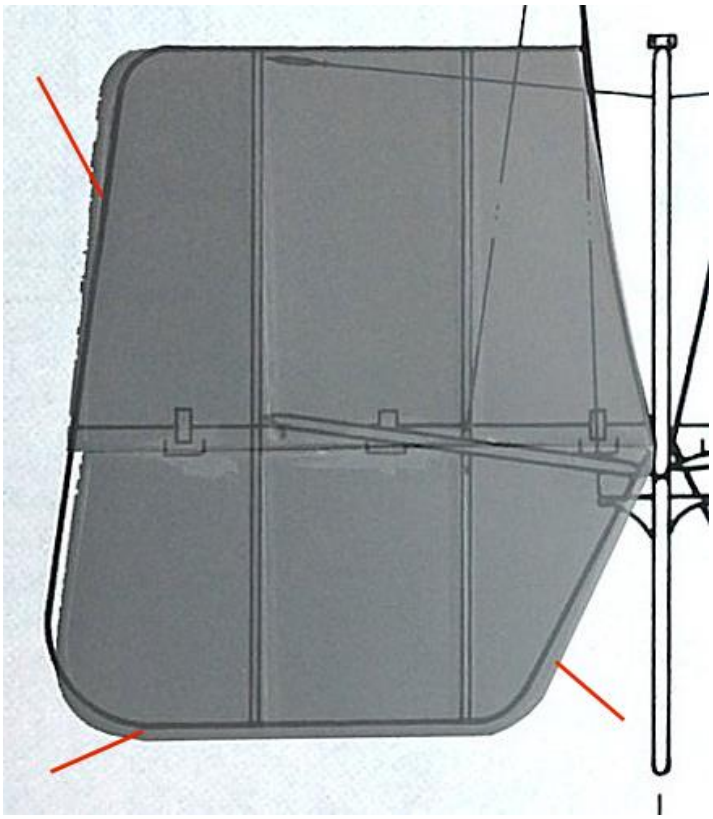
Elevator and tail plane - shapes:

Comparing the shape of the kit supplied tail plane halves (6,7) and the elevators (10, 11) to the drawings from such noted publications as various 'Windsock Data Files 45', 'Centenery Data File 171' and 'Jaro Publications', it shows that there are discrepancies in the shape and alignment of the parts. As can be seen, with the existing pre-moulded rib tapes aligned, the profile of both tail plane and elevators seem to be slightly out, although there are variations between the publications. Given that the 'Centenary Data File 171' is probably the latest, revised publication for this aircraft, I've chosen to use it as the reference.

To re-profile the tail plane and elevators (12):

With the ribs stitching lines aligned, reduce the outer edge of the tail plane to match the outer edge of the elevator.

Reduce the trailing edge of the elevator, including blending in the outer curve.



Fin and rudder - shapes:

Comparing the shape of the kit supplied fin and rudder(12) to drawings from such noted publications as various 'Windsock Data Files' and 'Jaro Publications', it shows that there are discrepancies in the shape and alignment of the parts. Given that the 'Centenary Data File 171' is probably the latest, revised publication for this aircraft, I've chosen to use it as the reference.

To re-profile the fin and rudder assembly (12):

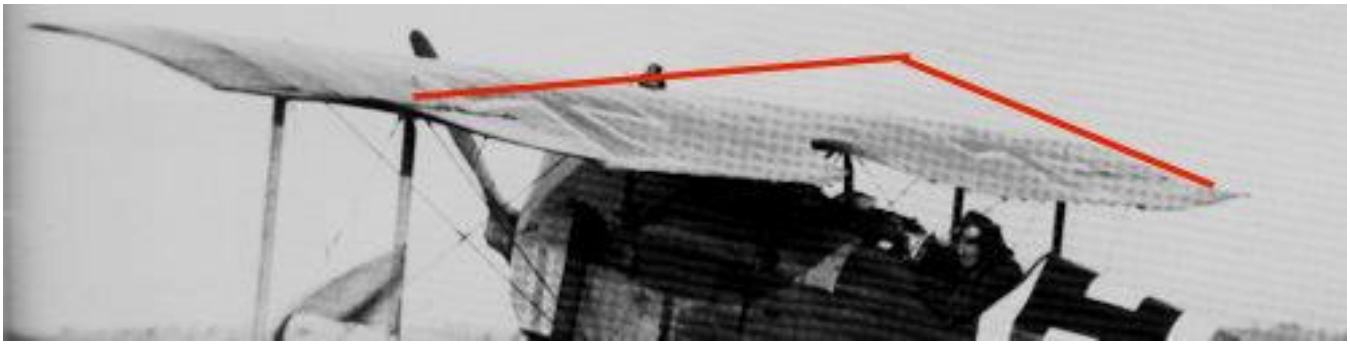
Reduce the angle of the bottom of the rudder so that its forward end is just below the bottom of the fuselage.

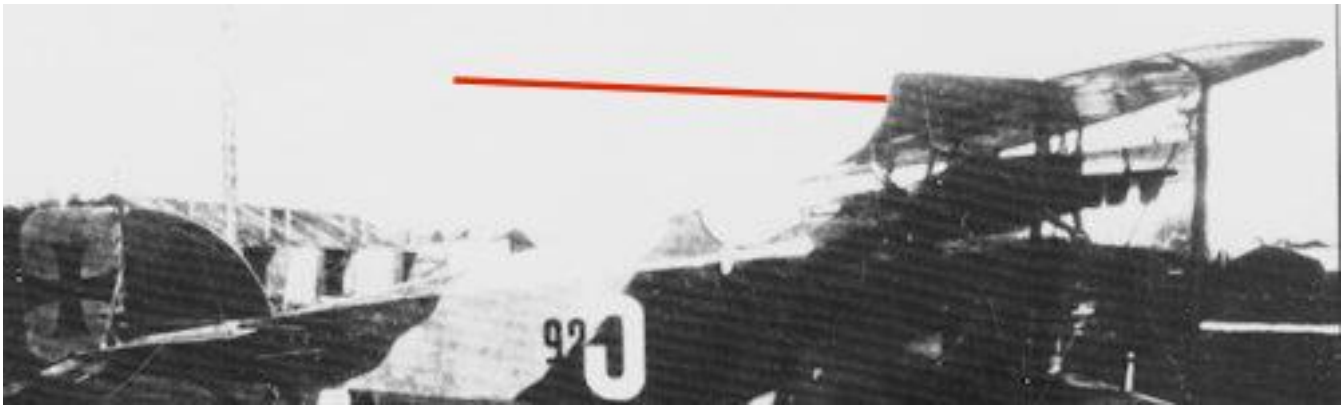
Increase the curve at the forward bottom of the fin.

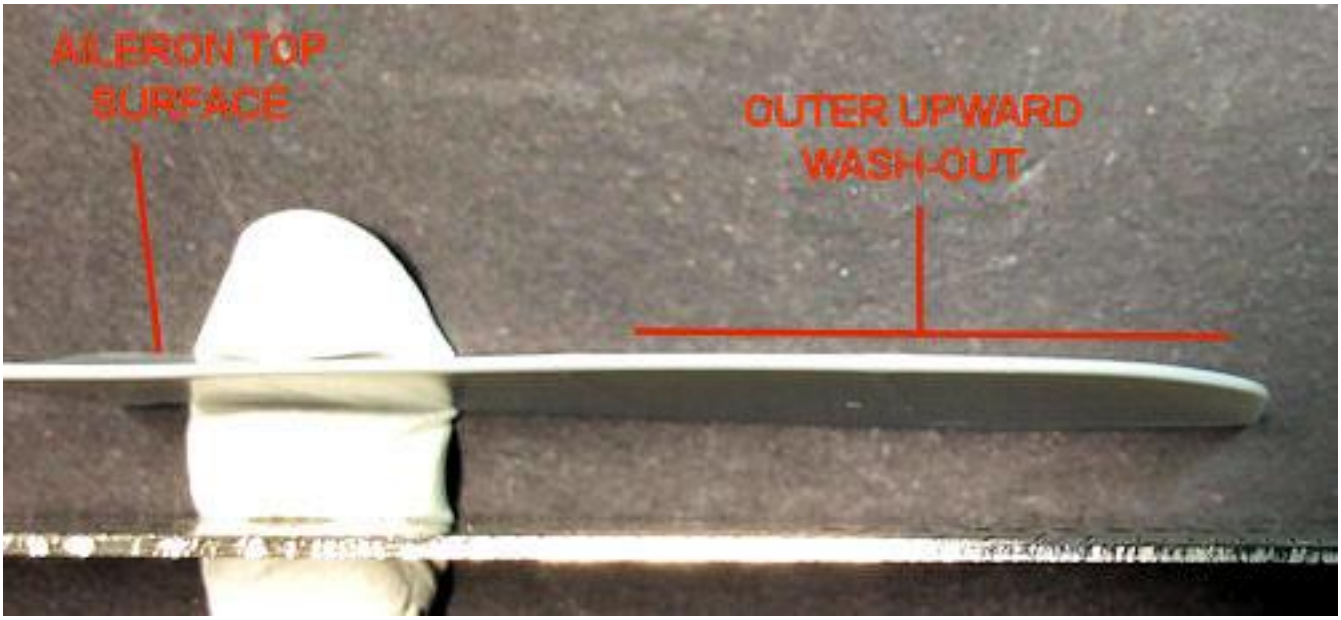
Slightly increase the angle of the top of the rudder and fin from the top rear joining to the front curve.

Aileron - wash-out:

The ailerons of the Aviatik ‘Berg’ D.I had pronounced ‘wash-out’ (upward flare) at the outer two aileron ribs. Although this appears to have been moulded into the kit ailerons, the flare is not as pronounced as it should be.







<u>WARNING:</u> *Take care during the next step, as **boiling water is used.***

Fill a shallow dish with boiled water and a second dish with cold water.

Wearing protective rubber kitchen gloves, immerse only the outer end of the aileron into the water and hold there for approximately 30 seconds (to hear soak the resin).

Remove the aileron from the water and quickly bend the trailing, outer edge into an upward curve.

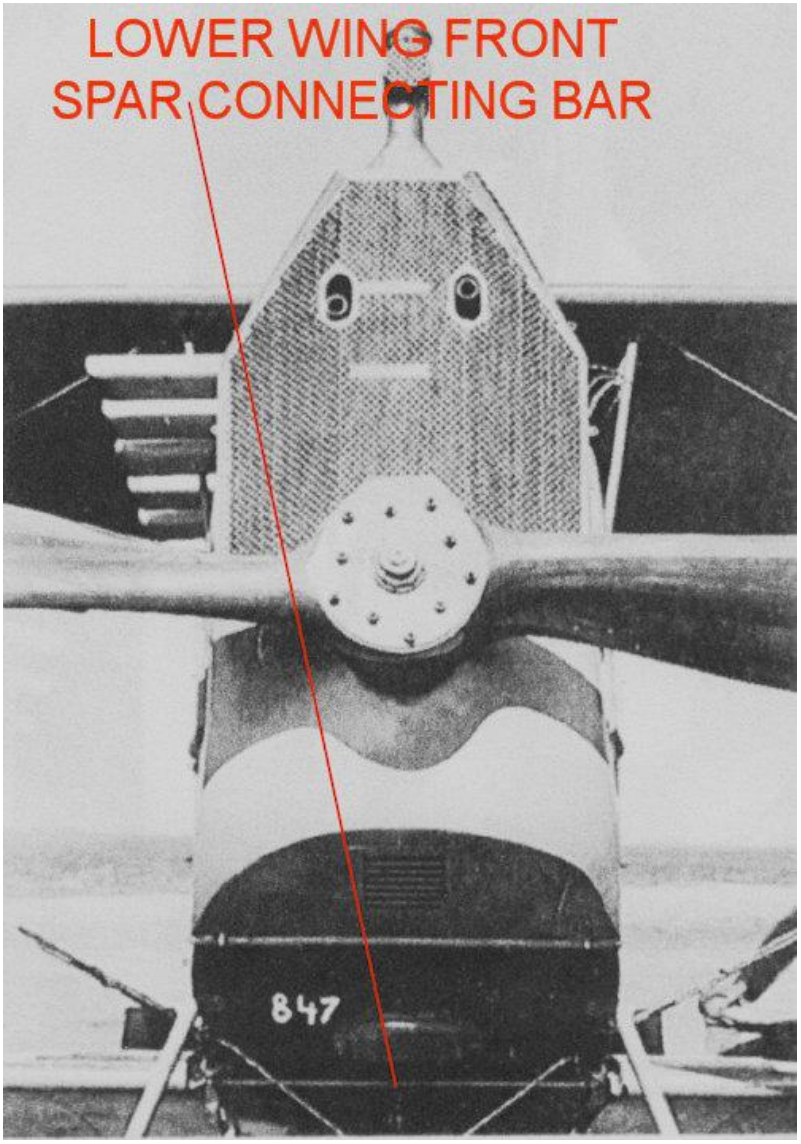
Hold the curve for a few seconds then immerse the aileron into the dish of cold water (to set the resin).

If necessary, repeat this procedure to alter the curve to your satisfaction.

Once you are satisfied with the ‘wash-out’, repeat the procedure on the opposite aileron, making sure the curve is bent in the correct direction (the ailerons are not top/bottom side specific).

Lower wings - support locations:

The instruction manual indicates that both lower wings should be supported in the fuselage by the addition of metal pins, as the wings are moulded as a flush 'butt' joint. In reality the front spar of the lower wings were connected by a steel bar, which was located on the bottom surface of the fuselage. As such the leading edges of the lower wings sat slightly below the fuselage.



Drill a hole of 1.0 mm diameter through the each side of the fuselage at the pre-moulded location at the bottom edge, making sure you gently 'break through' into the cockpit, to prevent damaging the cockpit arts.

At the pre-moulded location in the wing root ends of each wing (approximately central), drill a hole of 1.0 mm diameter to at least 10 mm depth, making sure the drill is kept horizontal when viewed from the front of the wing and at 90º to the wing root when viewed from above/below.

Cut two length of 1.0 mm diameter brass rod (e.g. 'Albion Alloys') such that when inserted fully into the wing root holes there is 2 mm protruding.

Secure the rods into the wing root holes using CA adhesive.

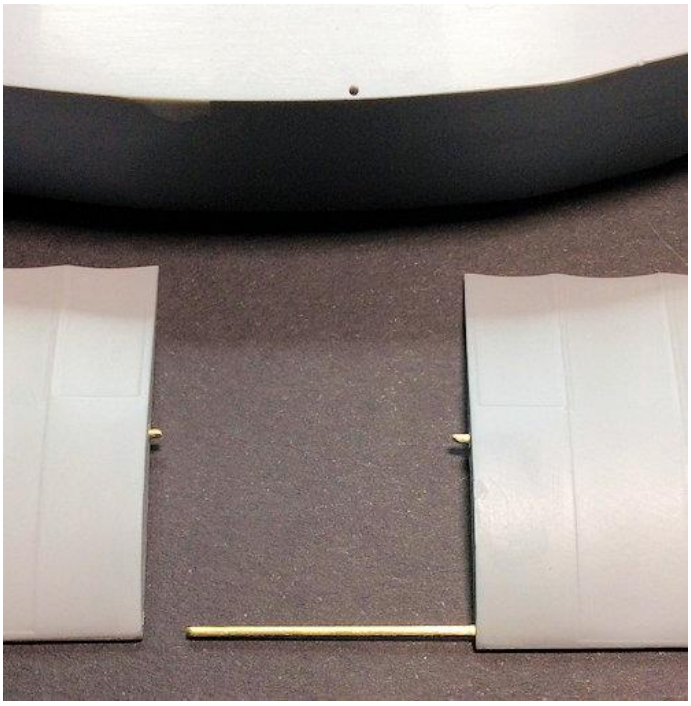
At the leading edge of the wing root ends, drill a 1.0 mm diameter hole centrally and 1.0 mm from the front edge. Drill the hole as deep as possible making sure the drill is kept horizontal when viewed from the front of the wing and at 90º to the wing root when viewed from above/below.

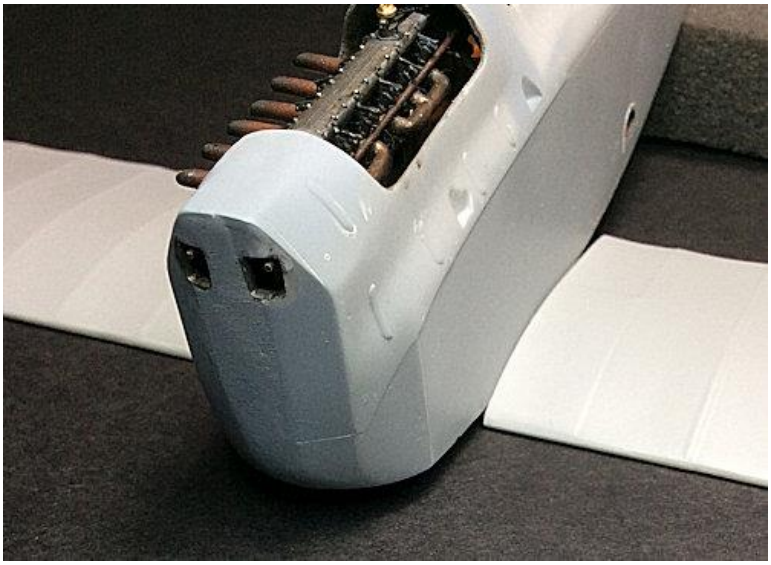
Cut a long length of 1.0 mm diameter brass rod and fully insert one end into a drilled wing root hole.

Locate the rear rod of that wing into its hole in the fuselage with the long forward rod up against the bottom of the fuselage.

Locate the other wing onto the long rod then trim the rod length so the wing is able to contact that fuselage side with its rear rod located in its hole in the fuselage.

Secure the longer rod fully into its hole in one wing and secure using CA adhesive.





Undercarriage:

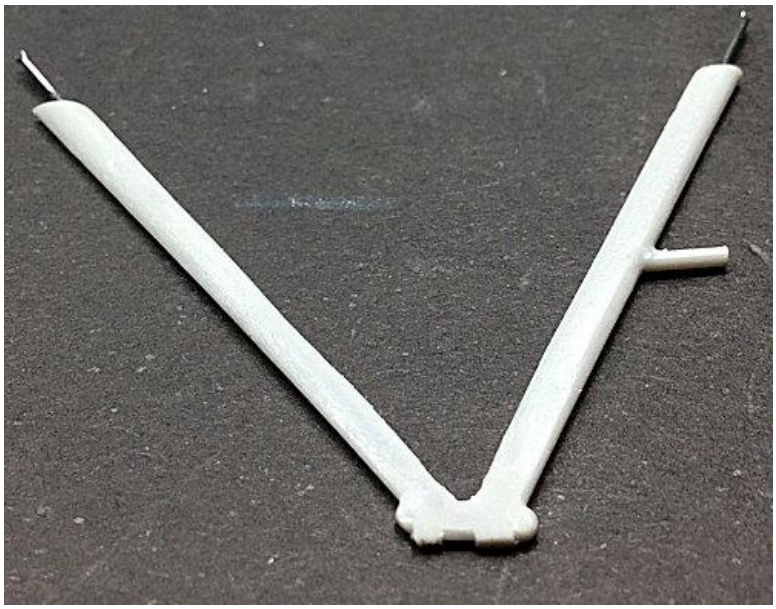
The kit supplied resin undercarriage struts have solid moulded axle ends including the bungee suspension cord. The undercarriage fairing has, for strength, a 'solid steel' pin moulded into the fairing.

The instruction manual has a small photograph which indicates that the axle ends are drilled out of the struts, leaving the bungee suspension cords in place. The holes are presumably to allow the steel pin in the fairing to be inserted. The steel pin in the axle fairing can't be fitted to the undercarriage struts as supplied, so modification of the struts is required.

The options are limited:

The steel pin can't reasonably be drilled to insert a smaller diameter rod which could then be inserted into a hole drilled into the axle ends.
Drilling out the moulded resin axle ends to the same diameter as the steel pin in the fairing and leaving just the moulded bungee cord intact (as illustrated in the instruction manual) would be difficult to achieve. Even if it was successful, it would mean the entire weight of the model would be taken up by the tops of the remaining bungee cord suspension, which probably are not strong enough and breakage is a possibility.
Therefore the method I chose was to remove the axle ends and bungee cords from the struts. The steel fairing pin are then secured to the 'V' created at the bottom of each strut. Finally the bungee cord suspension replicated with wire.

Carefully sand and scrape away the entire axle ends and bungee suspension cords from the bottom of each undercarriage strut.



Drill a hole of 0.4 mm diameter into the bottom, forward ‘lugs’ of the front struts.

Into each hole secure a ‘Gaspatch’ 1:48th scale ‘Anchor Point’ (used later for cross bracing).

Drill a hole of 0.6 mm diameter into the pre-moulded indent located on each side of the fuselage, at the bottom corner of the fuselage towards the nose. Make sure the hole is drilled at approximately the outward angle that the front undercarriage will sit.

Insert the pin in the front undercarriage strut fully into the drilled hole, then mark the bottom of the fuselage at the centre of the pin in the rear strut.

Drill a hole of 0.6 mm diameter vertically into the bottom of the fuselage and close to the fuselage side.

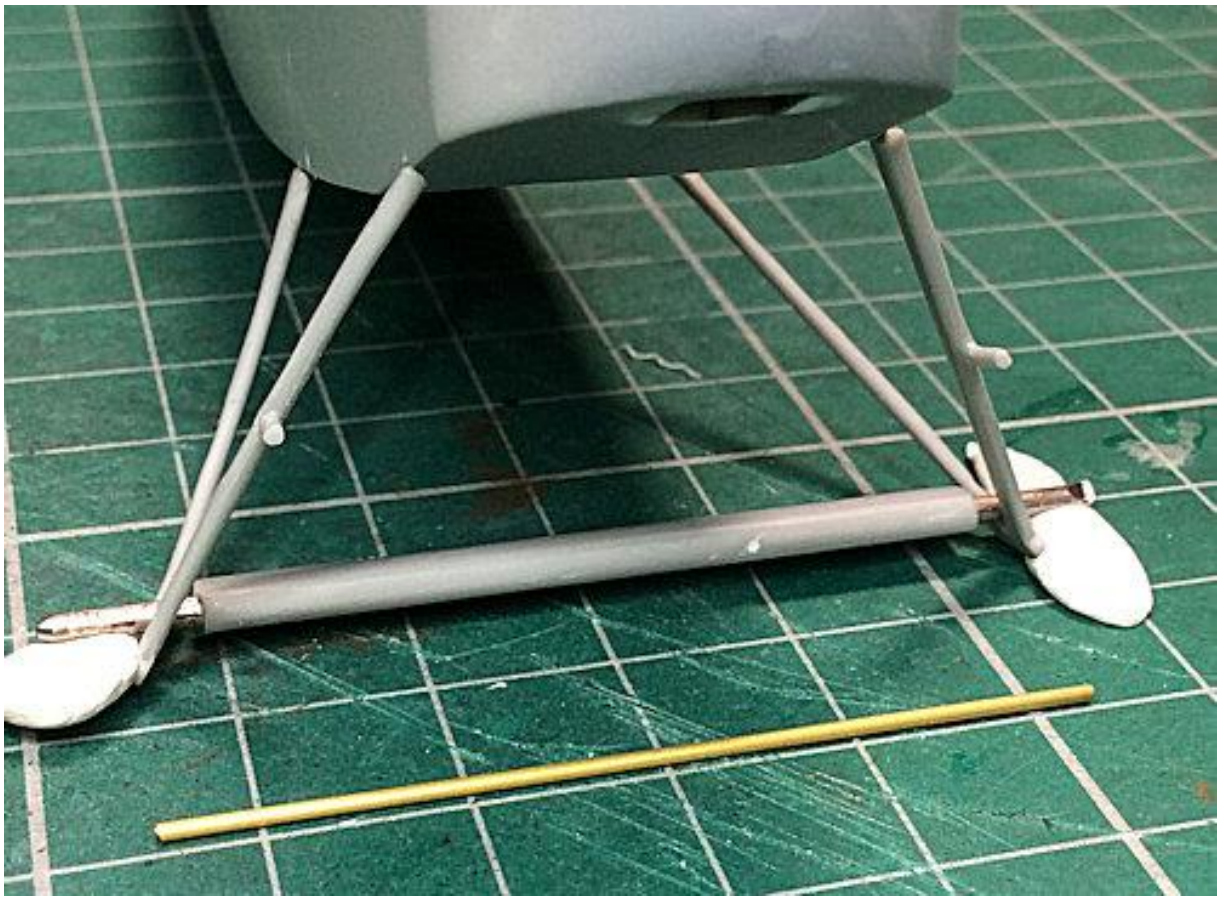
NOTE 1: *During the next step, take care not to stress the ends of the resin struts as the resin may chip.*

NOTE 2: *The undercarriage struts should be temporarily held in place using, for example, ’UHU’ White Tack.*

Using flat nose pliers carefully bend the pins in the ends of each strut and test fit into the drilled holes in the fuselage. Adjust the bends until the struts can be fully inserted into the holes and the spread of the struts is such that the axle fairing can be position between them with the metal axle rod laying in the ’V’ of the struts. The two struts should be symmetrical around the fuselage centre line and not bowed due to being stressed.

With the axle fairing in position, apply CA adhesive to the steel pins of the axle fairing to secure them to the undercarriage struts.

Check that the kit supplied strut shaft (21) will span between the undercarriage struts. If it’s found to be too short, replace it with 0.9 mm diameter brass rod (e.g. ’Albion Alloys’ MBT09).



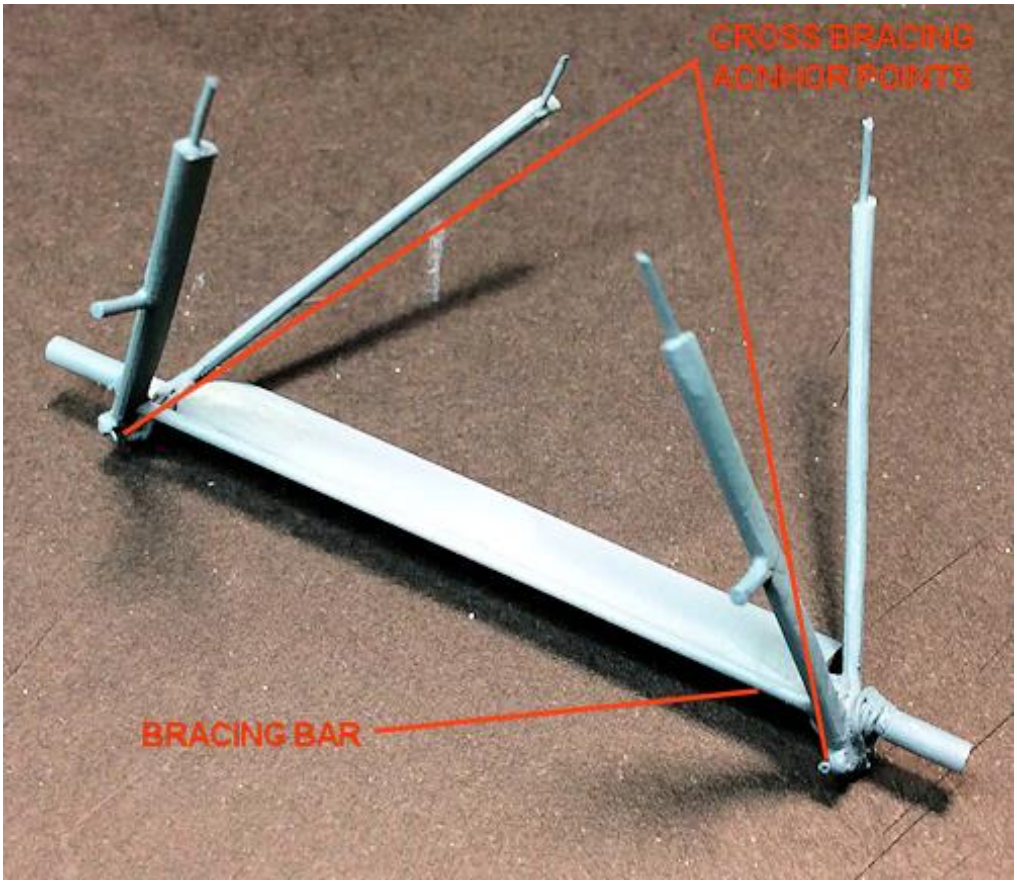
Carefully remove the undercarriage assembly from the fuselage.

Apply CA adhesive around the underside of the steel pins of the axle fairing to complete securing them to the undercarriage struts.

Apply CA adhesive to secure the bracing bar to the leading edge of the axle fairing and inside of the undercarriage struts.

Using two lengths of ‘PlusModel’ 0.4 mm diameter lead wire, wrap the wires around the bottom of the struts and over the steel axle to replicate the removed bungee suspension cords.

Once wrapped, secure the wires to the axle and struts with CA adhesive.



Upper wing and ailerons:

To animate the ailerons on the upper wing requires support pins to be added, as the kit parts are designed to be a simple ‘butt joint’, which doesn’t allow for animation.

Drill two 0.5 mm diameter holes into the trailing edge of the upper wing at the two ailerons locations. The holes need to be approximately 10 mm from each end and central in the wing trailing edge.

Drill two holes at the same positions but into the leading edge of the ailerons.

Cut four lengths of 0.5 mm diameter brass tube (e.g. ‘Albion Alloys’ MBT05).

Insert the tubes into the drilled holes in the upper wing and secure with CA adhesive.

Locate the ailerons onto the pins and make sure they are fully against the wing.

Carefully bend one aileron slightly up and the other the same amount, but down.

Remove the ailerons, leaving the pins secured in the wing.

Tail plane and elevators:

To animate the elevators on the tail planes requires support pins to be added, as the kit parts are designed to be a simple ‘butt joint’, which doesn’t allow for animation.

Drill three 0.4 mm diameter holes into the trailing edge of the tail planes. The holes need to be equally spaced along the tail planes and central in the trailing edges.

Drill three holes at the same positions but into the leading edge of the elevators.

Cut six lengths of 0.4 mm diameter brass tube (e.g. ‘Albion Alloys’ MBT04).

Insert the tubes into the drilled holes in the tail plane trailing edges and secure with CA adhesive.

Locate the elevators onto the pins and make sure they are fully against the tail planes.

Carefully bend both elevators slightly down.

Remove the elevators, leaving the pins secured in the wing.

Rudder and fin assembly:

The rudder and fin are a single piece moulding and have no locations for mounting onto the top, rear of the fuselage, so support pins will be required.

Drill two 0.4 mm diameter holes into the bottom of the fin. The holes need to be equally spaced along the fin and central in the bottom edge.

Cut two lengths of 0.4 mm diameter brass tube (e.g. ‘Albion Alloys’ MBT04).

Insert the tubes into the drilled holes in the bottom edge of the fin and secure with CA adhesive.

Position the fin and rudder onto the top, rear of the fuselage. The assembly must be central on the fuselage with the bottom of the rudder touching the rear of the fuselage.

Mark the position of the two support pins then drill holes 0.4 mm diameter through the fuselage top.

Check fit the fin into the drilled holes and make sure it is central and aligned correctly.

Fitting tail plane assembly:

The only locations on the fuselage for fitting the two tail plane/elevator assemblies are two indents on each side of the fuselage at the rear. The tail planes have no actual locations so again, support pins will be required.

Drill 0.4 mm diameter holes through the fuselage at the four location indents (two on each side).

Drill a 0.4 mm diameter hole holes into the tail plane edge that will butt up against the fuselage. The holes must align with those drilled into the fuselage. The front holes need to be close to the leading edge of the tail planes.

Cut three lengths of 0.4 mm diameter brass tube (e.g. ‘Albion Alloys’ MBT04).

Pass one tube through the fuselage at the rear drilled hole.

Insert the remaining tubes into the holes drilled at the leading edge of each tail plane.

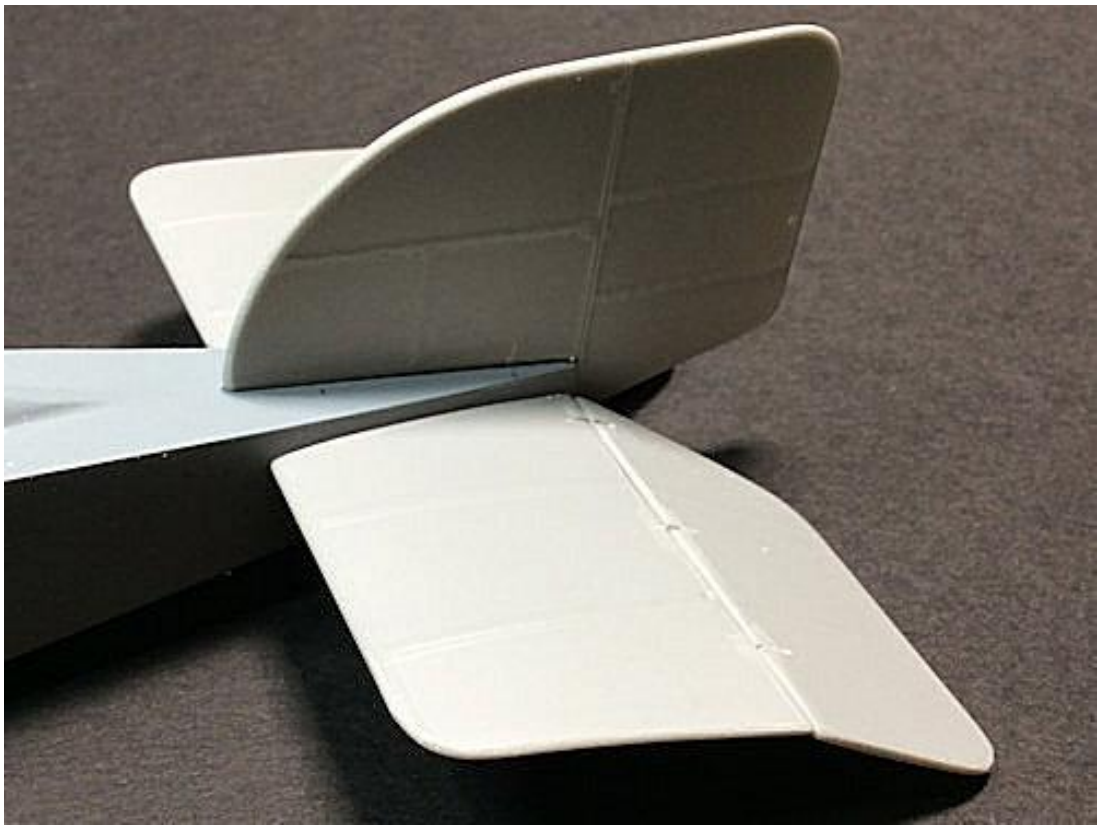
Locate both tail planes onto the pins and make sure the joint at the fuselage is good.

By eye, carefully bend the tail plane to make them horizontal to the fuselage when viewed from the front and rear.

Remove the tail planes from the fuselage.

Secure the pins in the tail plane leading edges using CA adhesive.

Insert the rear pin into the rear hole in one of the tail planes and secure with CA adhesive.



Wings and support struts:

Support struts connect the upper wing to the fuselage and lower wings. The kit parts have 0.5 mm steel pins moulded into them for additional strength. There are four separate wing struts and two ‘N’ shaped cabane struts.

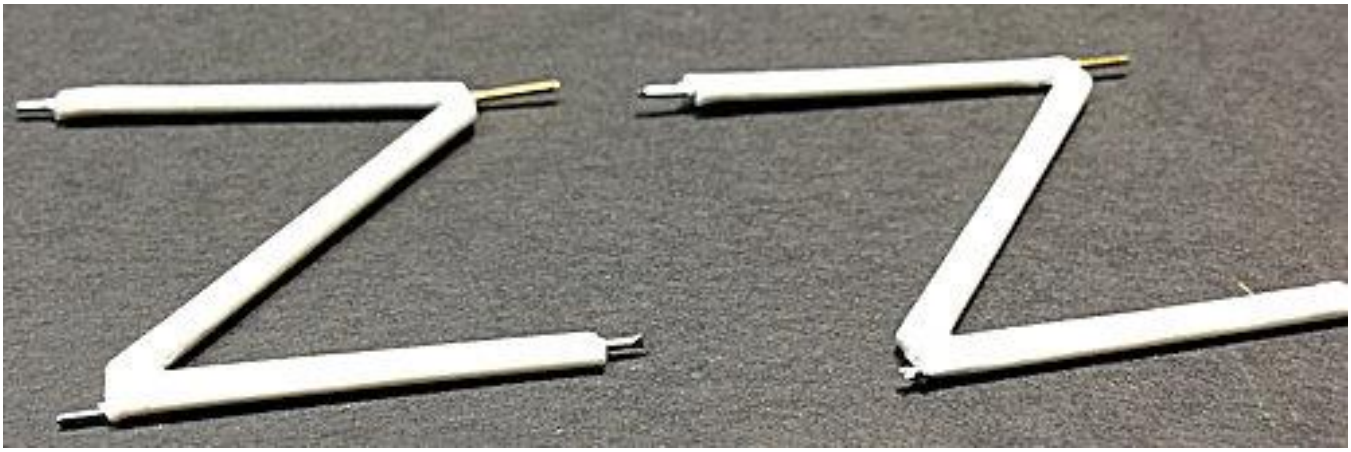
For each of the four wing struts and the two cabane struts, trim the protruding pins to approximately 2 mm length. This will ensure they do not protrude from the other side of the wins.

At each of the strut locations (eight in total) on the upper surface of the lower wings and the underside of the upper wing, drill into the locations with a 0.6 mm diameter drill**. Make sure you do not drill through the wings.**

NOTE: *The underside of the upper wing has four locations for fitting the cabane struts and indent on the fuselage sides. However the cabane struts I received did not have protruding pins at each location point and the indents in the fuselage had no location holes. I found this strange and decided to pin the struts at each location, which needed modifications.*

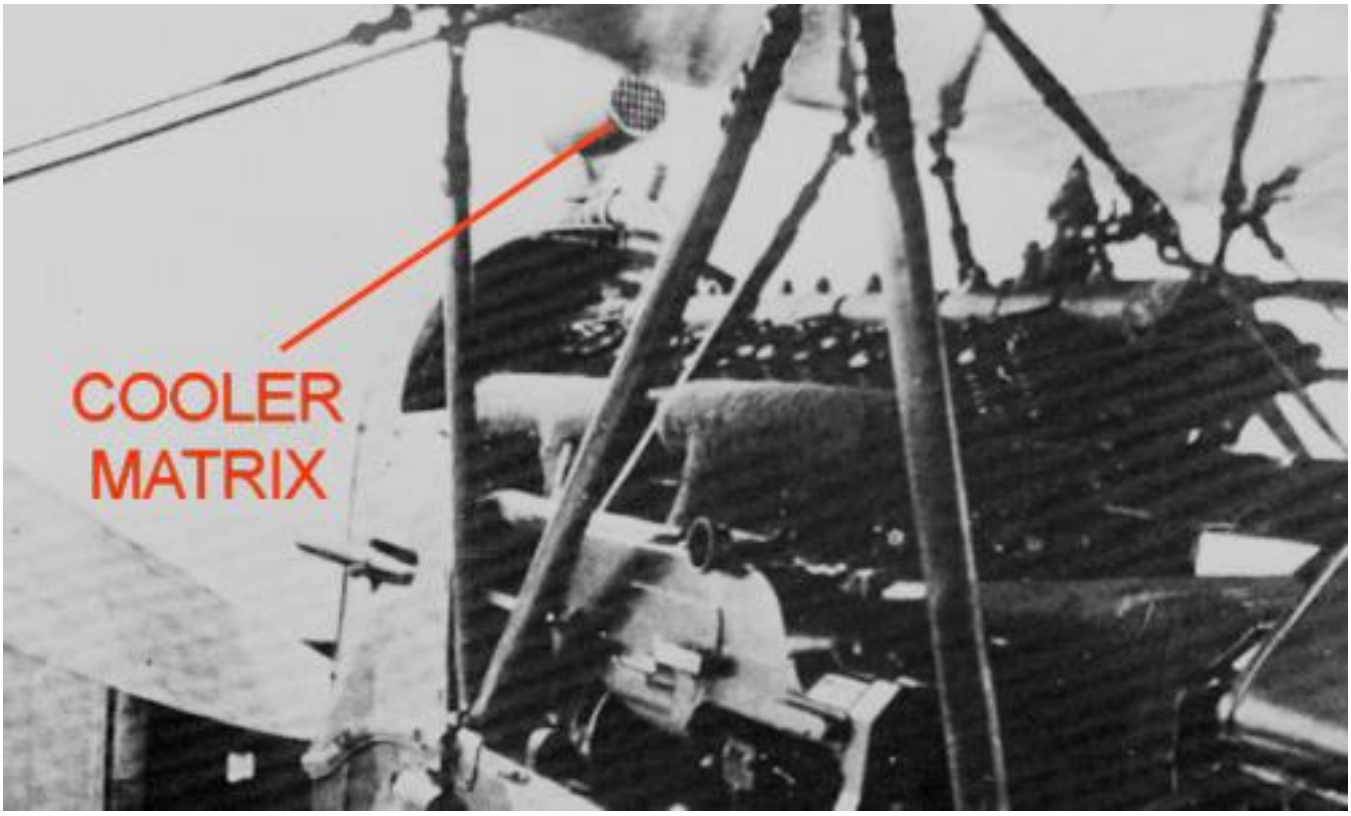
Where pins were missing at the struts mounting positions, drill a holes of 0.5 mm diameter into the location the insert a 0.5 mm brass tube, and secure using CA adhesive.

At the four fuselage indents, drill a hole of 0.5 mm diameter to allow the cabane struts to be Located, making sure the struts are correctly orientated (refer to the instruction manual).



Condensator matrix:

Fitted on top of the fuselage, to the rear of the radiator is condensation device that helped to keep the radiator cap from being blown open by a build up of pressure and losing coolant overboard. As steam rose to the top of the radiator it would enter the device where the cooler airflow passing through the tubes would cause the steam to condensate and drain back into the cooling system via the pipe coming out the rear of the device



NOTE: *This is represented in the kit by part 18, which I found not to be well moulded. The top was slightly off centre and the base was I felt too wide. There is a photo-etch 'matrix' (PE30) supplied in the kit, but only the one? Therefore I decided to modify the part.*

Separate the base from the cooler.

Reduce the height of the base and the 'foot print' size of the base, by either scrapping or sanding.

Clean up any resin flash from the cooler.

Drill holes of 0.3 mm diameter into the rear face of the cooler body to represent the matrix.

Secure photo-etch (PE30) onto the front face of the cooler body.

Drill a hole of 0.5 mm diameter vertically through the centre of the base and into the centre, underside of the cooler body.

Cut a short length of 0.7 mm (e.g. 'Albion Alloys MBT07) and 1.0 mm diameter brass tube.

Slide the 0.7 mm tube inside the 1.0 mm tube and secure with CA adhesive.

'Roll cut' the combined tubes to create a length of 1.0 mm.

Run a 0.5 mm diameter drill through the inner tube to remove any metal burrs.

Cut a length of 0.5 mm diameter brass tube mm (e.g. 'Albion Alloys MBT05), insert it through the inner tube.

Insert one end of the 0.5 mm tube into the drilled hole in the underside of the cooler body and secure with CA adhesive.

Slide the other end of the 0.5 mm tube through the drilled hole in the base, with the narrow top of the base against the combined tubes.

Position the base at 90º to the cooler body and secure with CA adhesive.

Drill a 0.6 mm diameter hole on the centre line of the fuselage top, approximately 3 mm from the top, front of the radiator.

Cut the excess 0.5 mm tube to leave approximately 5 mm.

Insert the 0.5 mm tube into the drilled hole in the fuselage top.

Position the base at 90º to the cooler body (base across the fuselage, cooler in-line with the fuselage) and secure with CA adhesive.

Heat anneal a length of 0.8 mm diameter brass rod (e.g. 'Albion Alloys MBR08).

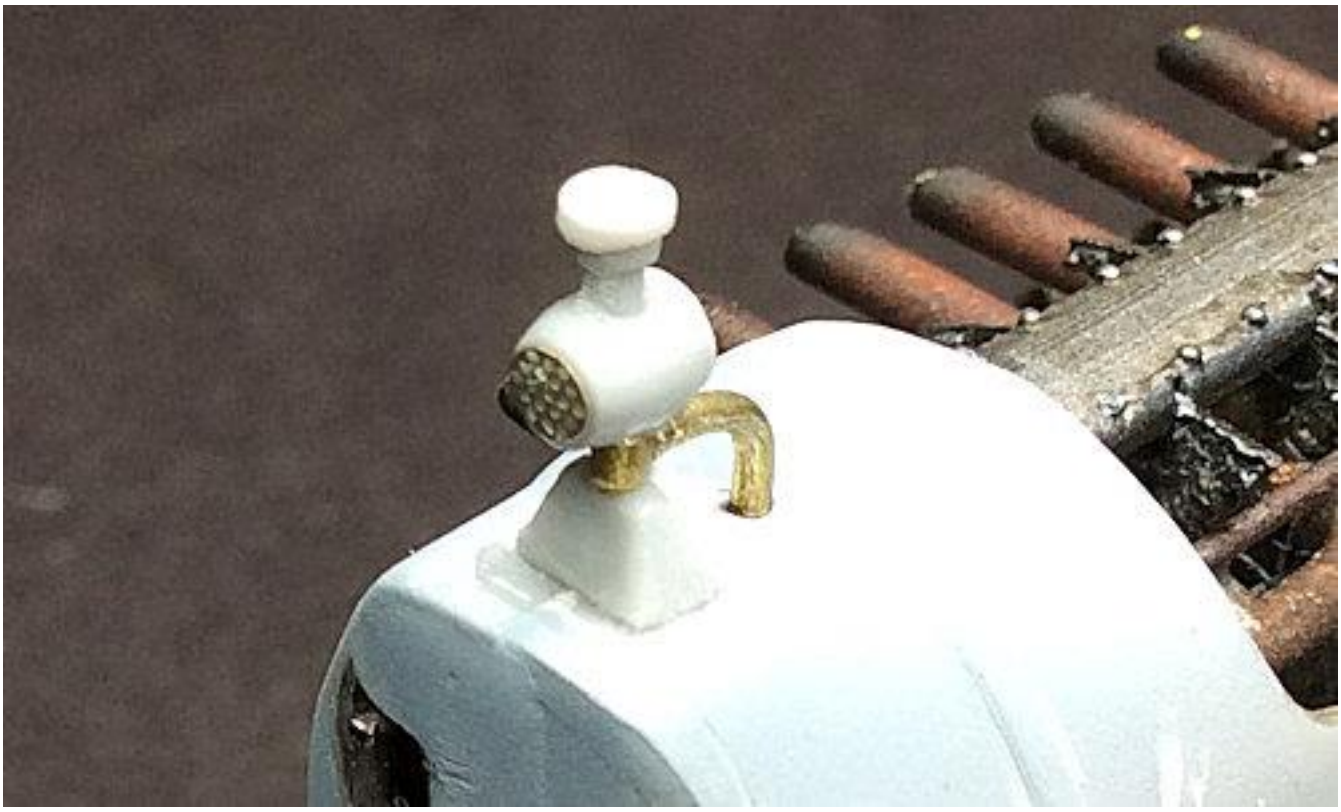
Bend the rod around a circular mandrel to form a 90º bend.

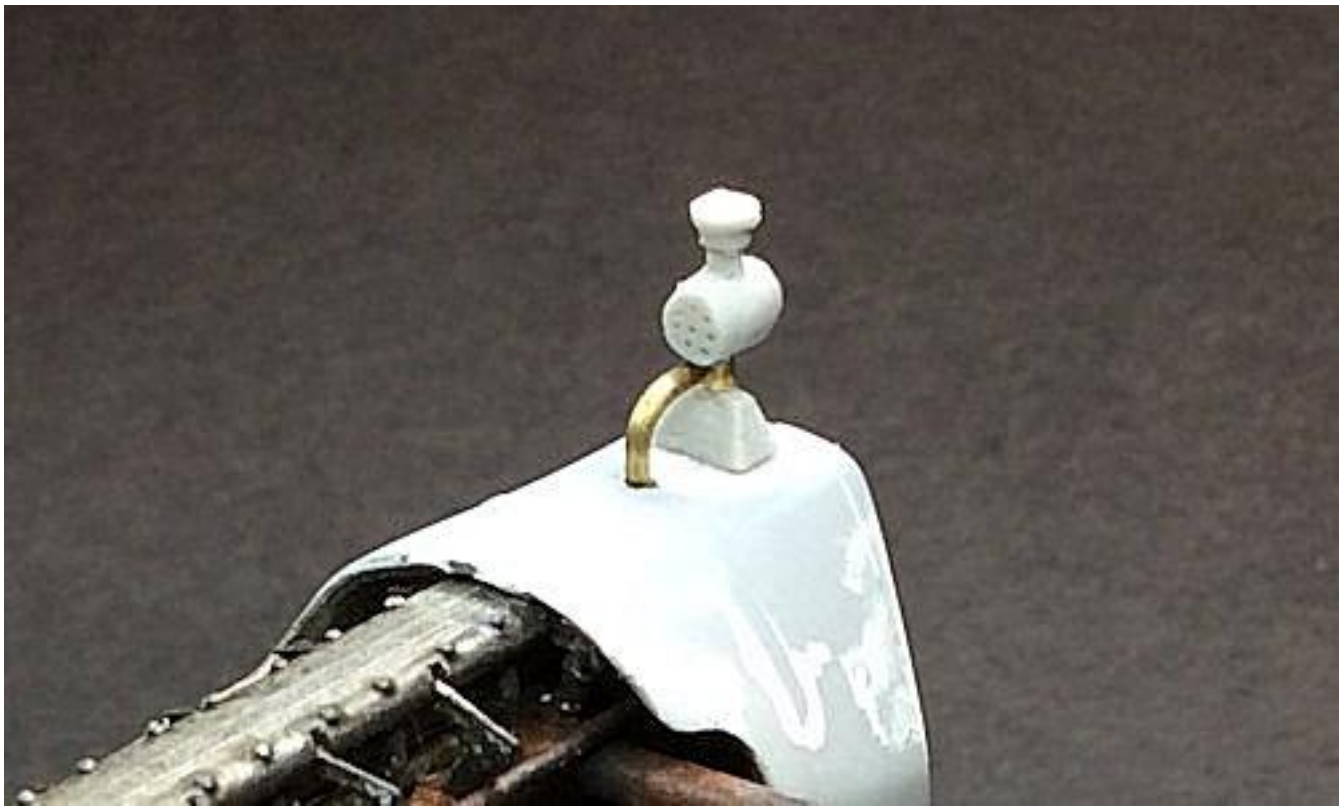
Drill a 1.0 mm diameter hole through the top of the fuselage centre line, approximately 3 mm to the rear of the cooler base.

File the ends of the bent tube so it can be inserted into the drilled hole and rest against the exposed tube on the cooler.

Secure the pipe in position with CA adhesive.

NOTE: *The following photographs show the exhaust pipes test fitted and before the second and fourth pipes from the rear were retrospectively shortened. Also the filler cap pipe is not shown as this will be fitted later in the build, to avoid it being damaged.*





Tail skid:

NOTE: *The tail skid (19) is made of resin and intended to 'butt' joint only onto a stub on the tail skid fairing (89). This is not well designed as it may prove to be too weak a joint to support the weight of the model and therefore may break away at some point. Unfortunately the tail skid is too thin to allow a hole to be drilled through it and into the fairing for adding a metal support metal pin. Therefore I replaced the kit tail skin with a modified white metal tail skid from the 'Scale Model Conversions' Fokker D.VII set (32088).*

Shorten the tail skid to the length of the kit part.

Drill a 1.0 mm hole through the top end of the tail skid.

Drill a hole into the skid fairing to suit the stub on the tail skid.

Secure the tail skid to the tail skid fairing using CA adhesive.

Engine exhaust pipes:

NOTE: *To this point the engine exhaust pipes have only been test fitted. So as not to get in the way or get damaged at this this stage of the model build, the exhaust pipes should be removed and put to one side for fitting later.*

Forward fuselage and struts:

NOTE: *Refer to the colour profiles (grey areas) at the rear of the instruction manual.*

Mask off the fuselage to leave exposed the engine cowl panels and top decking.

Make sure the engine cowl panels and top decking as well as the wing struts, undercarriage struts and the tail skid have been primed (e.g. 'AK Interactive' Grey (AK758).

Airbrush the engine cowl panels and top decking as well as the wing struts, undercarriage struts and the tail skid with 'Tamiya' Ocean Grey (XF82).

Remove all masking from the fuselage.

Brush paint the condensator assembly and rear 90º pipe (forward, top of fuselage) using 'Mr. Colour' Stainless Steel (213).

To represent the rubber pipe fittings, brush paint the ends of the 90º pipe (rear of condensator) with 'Tamiya' Rubber Black (XF85).

Decals 1:

NOTE: *Refer to the colour profiles (decal application) at the rear of the instruction manual.*

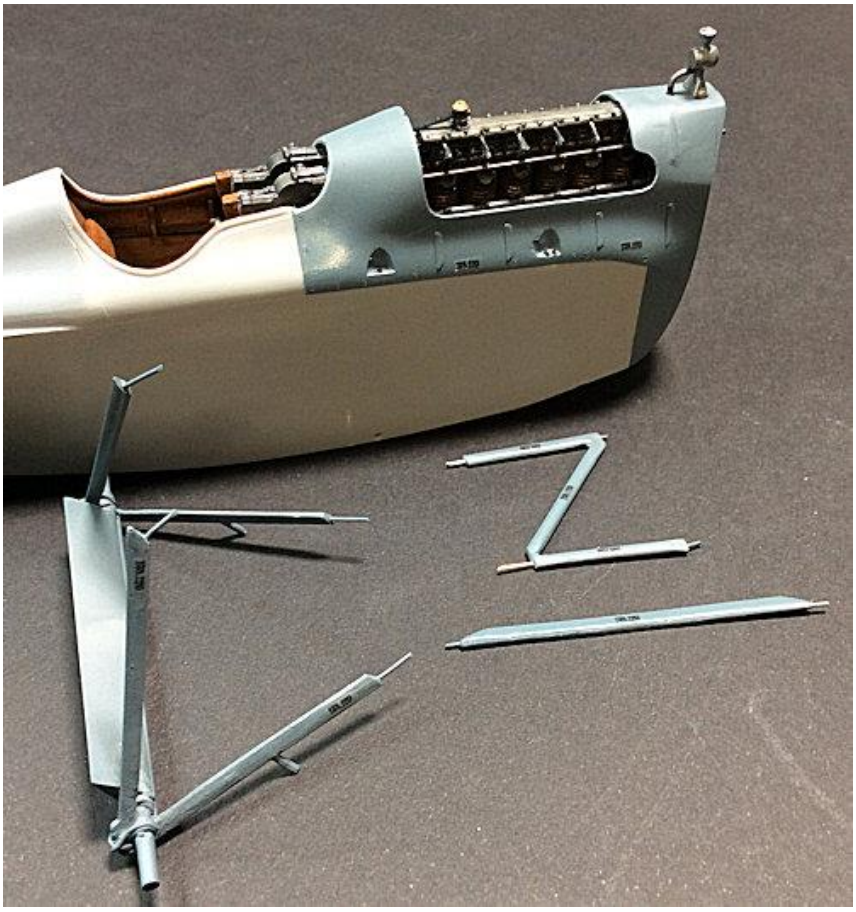
Airbrush a gloss sealing coat (e.g. 'Alclad' Aqua Gloss ALC-600) or similar acrylic sealer, over those areas that require decals to be applied (decals 7).

NOTE: *When applying the decals to the wing, cabane and undercarriage struts, make sure the decals are correctly orientated.*

Refer to Part 4 of this build log and apply decals 7 to the required locations.

To conform the decals to the surface, apply 'MicroScale' MicroSol over the applied decals and leave to evaporate.

Once fully set, to protect the decals, airbrush a light semi-gloss sealing coat over the decals (e.g. 'Alclad' Light Sheen (ALC-311) or 'Tamiya' Semi-Matt (XF35) .



NOTE 1: *The wood effect decals used in the following steps are 'HGW Models' Light Plywood (532034). Although applied in the same manner as 'Aviattic' linen effect decals, the 'HGW Models' decals are very thin and delicate and not as resilient as those from 'Aviattic'. Great care is needed when cutting the decals before application and during.*

NOTE 2: *Refer to Part 4 of this build log.*

Mask off the fuselage to leave just the under fuselage exposed.

Airbrush prime the surface with 'AK Interactive' Grey primer (AK-758).

Airbrush the surface with a base colour of 'Tamiya' Deck Tan (XF55).

Airbrush a gloss sealing coat (e.g. 'Alclad' Aqua Gloss ALC-600) or similar acrylic sealer, over the underside of the fuselage.

Cut four decal rectangles to approximately 23 mm wide. Cut one to 60 mm length, two to 45 mm and one to 30 mm length.

NOTE: *After applying each decal, carefully trim away the excess decal from the fuselage edge using a new straight edged scalpel blade. Remove the excess decal using a shaving/slicing action, through the decal towards the top of the fuselage.*

Apply a 45 mm long decal to the forward end of the fuselage underside, butting its edge up to the previously painted underside of the nose.

Next, apply the 60 mm long decal, butting its edge up to the previously applied decal.

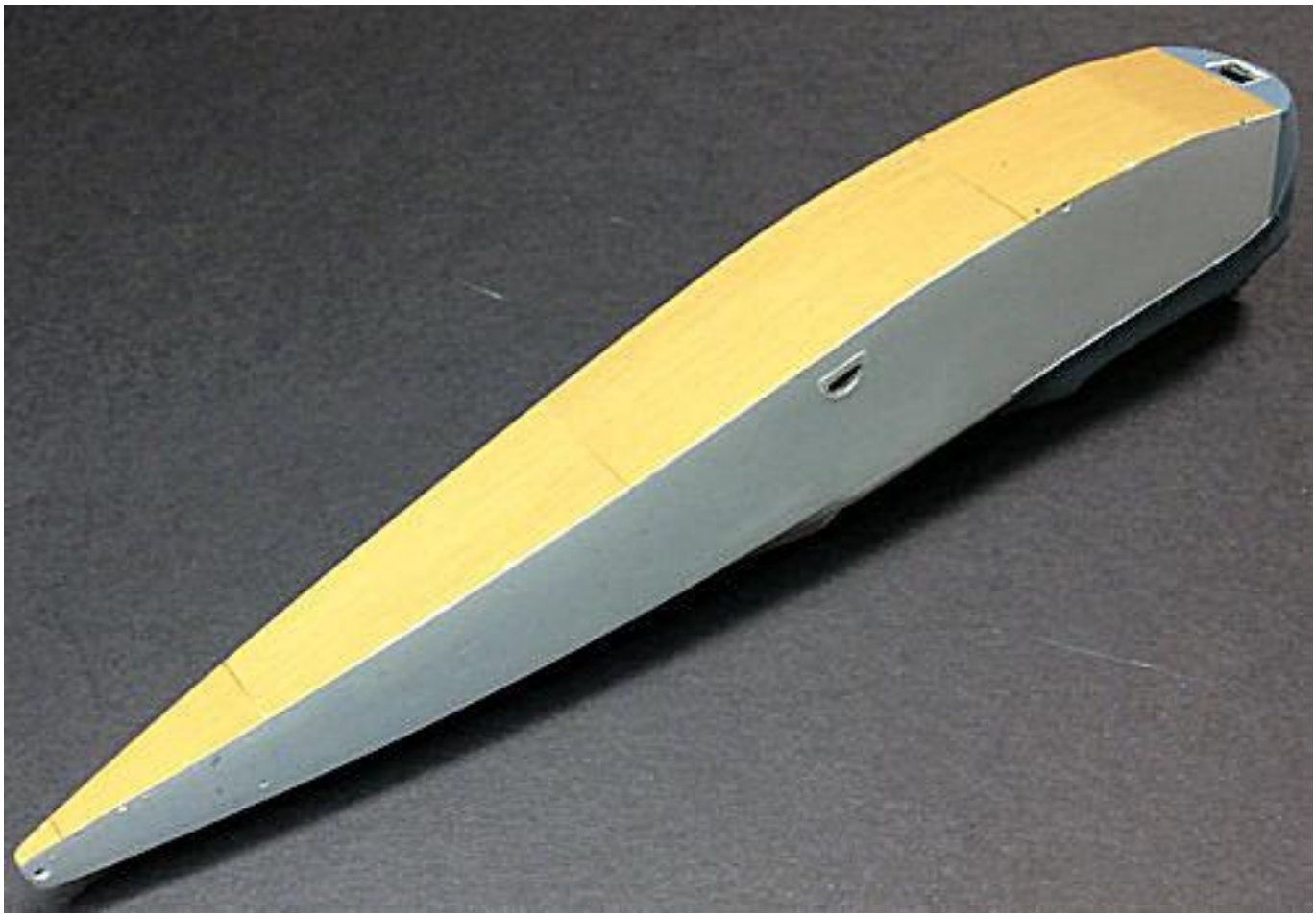
Next, apply the remaining 45 mm long decal, butting its edge up to the previously applied decal.

Finally, apply the 30 mm long decal, butting its edge up to the previously applied decal.

To conform the decals to the surface, apply ‘MicroScale’ MicroSol over the applied decals and leave to evaporate.

Once fully set, to protect the decals, airbrush a light semi-gloss sealing coat over the decals (e.g. ‘Alclad’ Light Sheen (ALC-311), Semi-Matte (ALC-312) or ‘Tamiya’ Semi-Matt (XF35)

NOTE: *Weathering etc on the decals will be carried out later in this build.*



Tail skid and fairing - wood effect:

NOTE: *Refer to Part 2 of this build log for applying wood effects.*

Mask off the fuselage to leave just the under fuselage exposed.

Airbrush prime the surface with ‘AK Interactive’ Grey primer (AK-758).

Airbrush the surface with a base colour of ‘Tamiya’ Deck Tan (XF55).

Apply by either sponge or oil brush your chosen oil paint, such as ’Burnt Umber.

Brush paint the tail skid with ‘Mr. Colour’ Iron (212).

Airbrush a light semi-gloss sealing coat over the tail skid (e.g. ‘Alclad’ Light Sheen ALC-311 or Semi-Matte ALC-312) or ‘Tamiya’ Semi-Matt (XF35).

Preparation for decal application:

Refer to Part 4 of this build log.

The surfaces that will have the ‘Aviattic’ Clear Doped Linen (CDL) - aged varnish (ATT32094) linen effect decals and the kit supplied ‘Lozenge decals need to be prepared with a smooth, white base colour.

Make sure the fuselage decal surfaces, lower and upper wings, ailerons, tail planes, elevators and rudder are free from surface imperfections. Sand and polish if necessary.

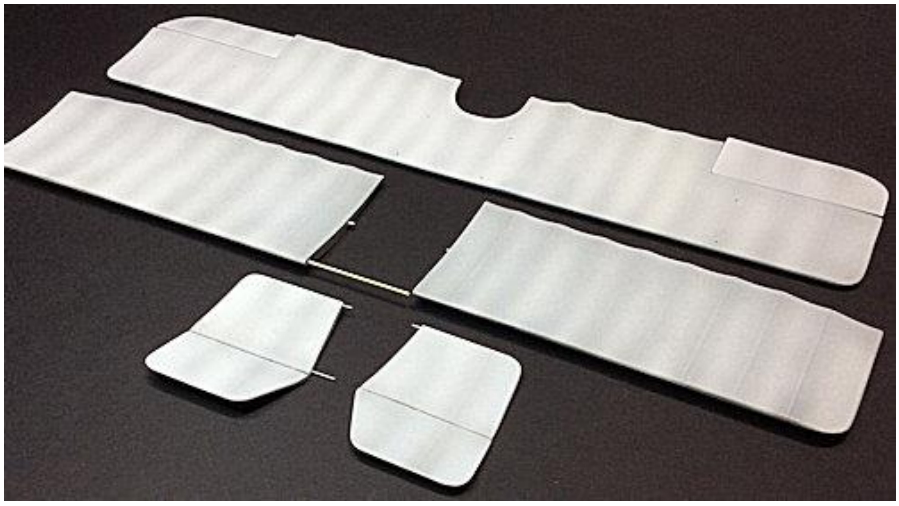
Airbrush prime the surfaces with a white primer (e.g. ‘AK Interactive’ White (AK-759). Make sure the surfaces are free from imperfections.

Airbrush the surfaces with either ‘Alclad’ Gloss (ALC-310), ‘Alclad’ Aqua Gloss (ALC-600), Tamiya’ Clear (X22) or ‘Johnson’ Pledge Floor Care finish.

Lightly airbrush the rib tapes of the wings, ailerons, elevator, rudder and tail planes and the panel lines on the fuselage sides and bottom using ’Tamiya’ Smoke (X19), thinned 50/50 with ’Tamiya’ thinners (X20a). If too much is applied:

‘Knock’ it back by airbrushing a misting coat of the white primer over the pre-shading OR using a soft polishing stick (e.g. ‘Flory Models’ green/white), gently rub away the applied pre-shading as required, making sure not to polish through the white base coat.

Using a soft polishing stick (e.g. ‘Flory Models’ green/white), gently rub away the applied pre-shading from just the rib tapes themselves and only on the upper surfaces of the wings, ailerons, elevator, rudder and tail planes, leaving the pre-shading in place on either side of the rib tapes. This will show the rib tapes through the applied decals as lighter than the surrounding pre-

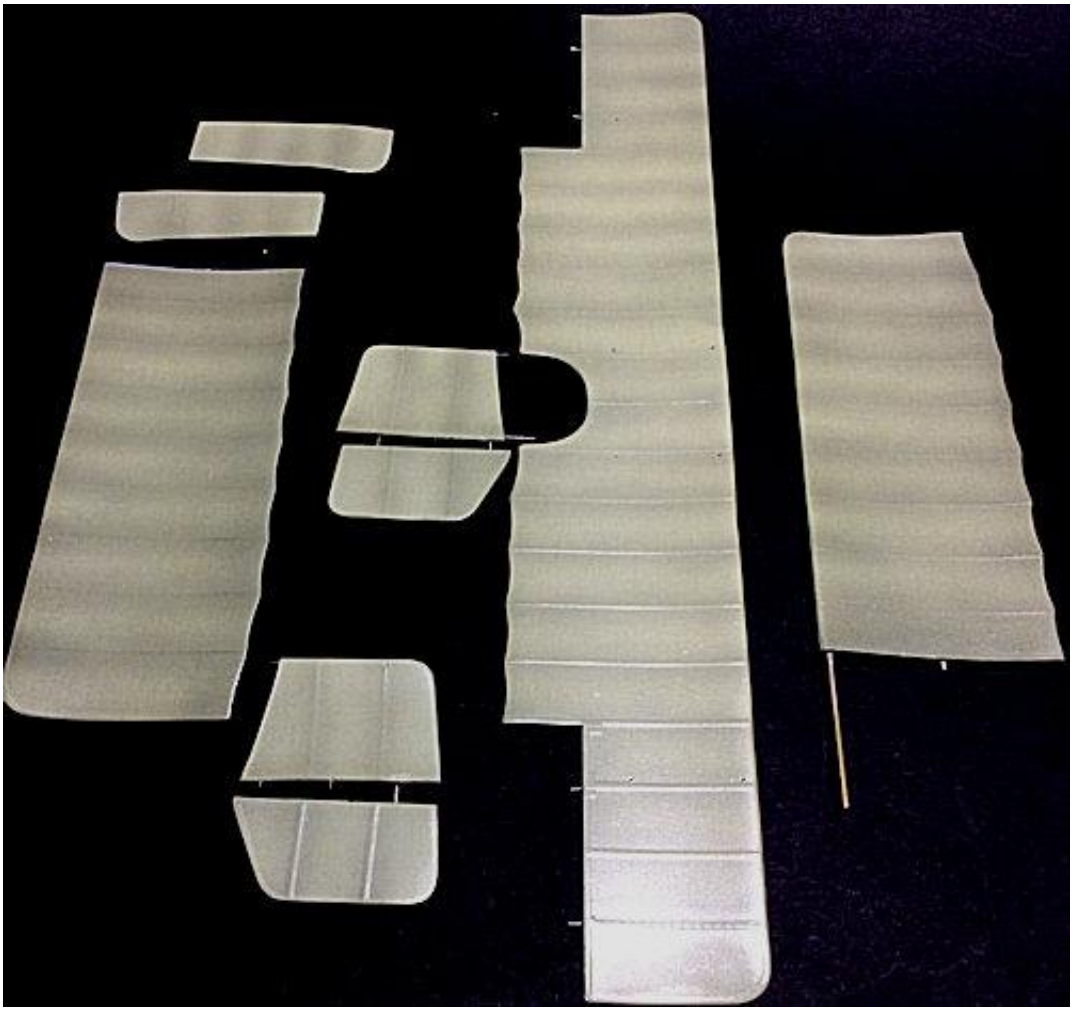


Applying ‘Aviattic’ CDL decals:

Refer to Part 4 of this build log.
The ‘Aviattic’ CDL decals need to be applied to the underside surfaces of the wings, ailerons, tail plane and elevators.

Cut and apply the ‘Aviattic’ CDL decals to the underside surfaces. Refer to Part 4 of this build log.

If necessary, remove any unnecessary decal edges by gently sanding them off with a fine sander. Any decal edges that may have lifted can be re-conformed to the surface by applying ’MicroSol’ or by gently brushing with a very light application of ’Tamiya’ X20a thinners.



Applying kit supplied ‘Lozenge’ decals:

Refer to Part 4 of this build log.

The kit supplied ‘Lozenge’ decals need to be applied to the top and sides of the fuselage, top surfaces of wings, ailerons, tail plane and elevators and to both sides of the rudder.

NOTE 1: *During application*, *carefully follow the kit supplied illustration to accurately position the decals.*

NOTE 2: *These decals need to be soaked in luke warm water for longer than normal, due to the thickness of the their backing sheets.*

NOTE 3: *Take care when applying these decals as they are large and thin and can tear or fold over on themselves. If in doubt, carefully cut the decals and apply them is smaller sections, taking care to accurately match the joins.*

NOTE 4: After cutting out the decals from their backing sheet, check the decal size on the model part. I found that some, such as the rudder, elevator and aileron decals, were oversized. If the decals are not the correct size, decal overlap will occur, causing decal darkness at the overlap.

Cut the ‘Lozenge’ decals accurately from their backing sheets.

Apply the ‘Lozenge’ decals.

If necessary, remove any unnecessary decal edges by gently sanding them off with a fine sander. Any decal edges that may have lifted can be re-conformed to the surface by applying ’MicroSol’ or by gently brushing with a very light application of ’Tamiya’ X20a thinners.

Applying kit remaining decals:

Refer to Part 4 of this build log.

The kit supplied decals need to be applied to the model following the illustration at the back of the kit supplied instructions.

NOTE: *These decals need to be soaked in luke warm water for longer than normal, due to the thickness of the their backing sheets.*

Cut the various decals (discard the supplied black/white fin decals) accurately from their backing sheets.

Apply the various decals to their locations on the model.

Once fully set, weathering can be added, as required, by lightly airbrushing a 50/50 mix of 'Tamiya' Smoke (X19) and thinners X20a. Areas that can be weathered are across wing rib tapes od national markings, along the wing leading, trailing edges and wing roots. Also the elevators, rudder and ailerons and along the fuselage edges and rear decking.

NOTE: *The black stripes on the fin are applied using the 'Xtradecal' black stripes (XPS1) over the previously applied white primer coat. Any slight gaps left between the decals at the top edge of the fin can be covered using 'Tamiya' Semi-Gloss Black (X18).*

Cut stripes from the No.3 strip black stripes from the decal sheet and apply three to each side of the fin.

Once the decals and further weathering have been applied, airbrush a semi-matt sealing coat (e.g. 'Alclad' Light Sheen (ALC-311), Semi-Matte (ALC-312 or 'Tamiya' Semi-Matt (XF35) over the decaled areas. This will not only seal and protect the applied decals but also provide a good surface for applying final weathering effects, such as clay washes, oil paints, filters etc.

Cockpit surround padding:

Brush paint the cockpit surround padding with 'Humbrol' Leather (62) with highlights using 'Tamiya' Hull Red (XF9).

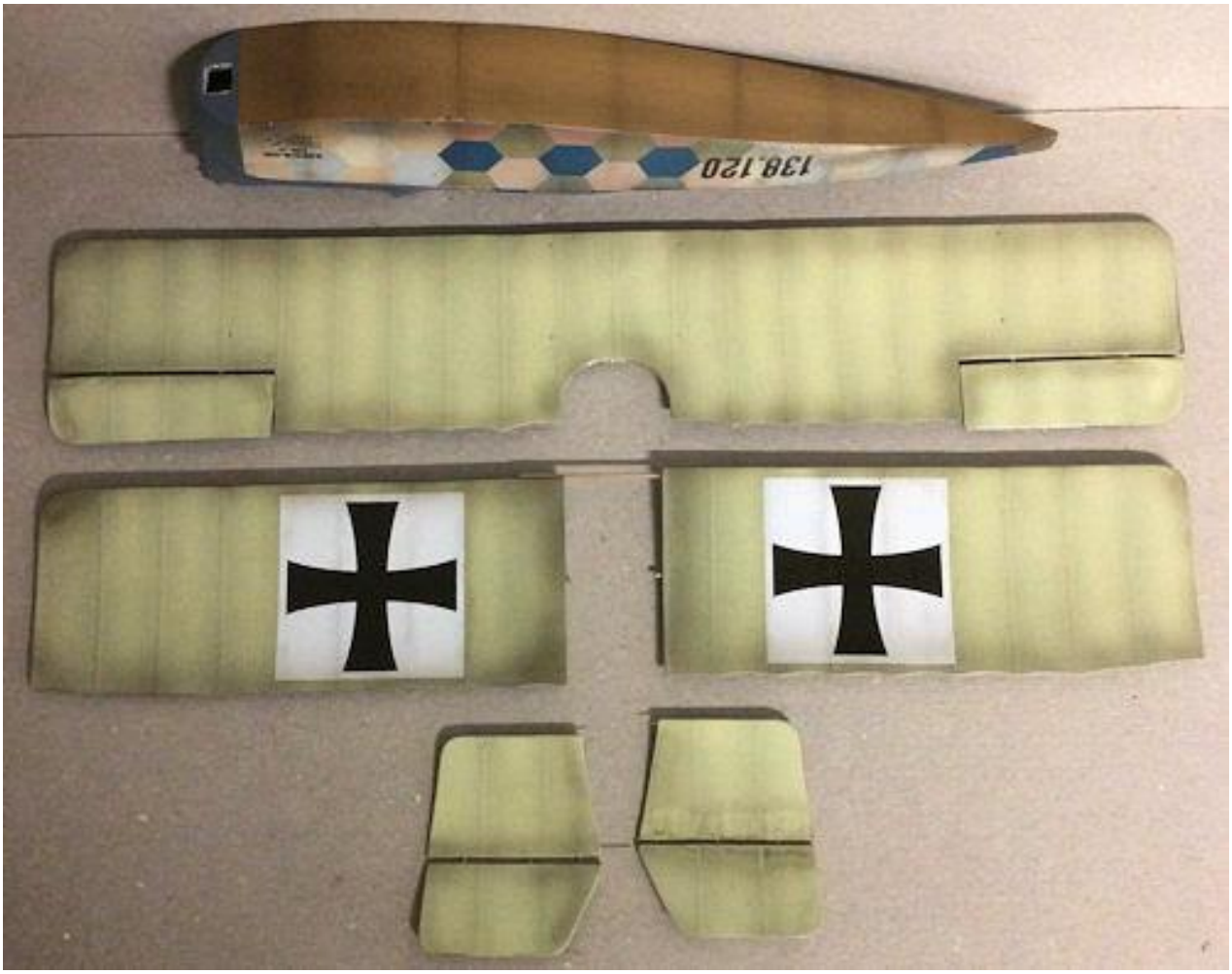


Photo-etch parts:

At this stage the various photo-etch parts can be added to the fuselage lower wings and the tail unit. Throughout is life the Aviatik 'Berg' D.1 was produced in various production batches and each was slightly different from the others, with various changes and modifications being incorporated. Therefore research of this aircraft is somewhat confusing and some assumptions had to be made.

The kit supplies a full photo-etch sheet and there are location illustrations in the instructions. However, after studying drawings and photographs from various publications, I believe some of the photo-etch parts are either not required, mis-labelled or are shown in the incorrect locations.

These findings that follow are what I believe are correct:

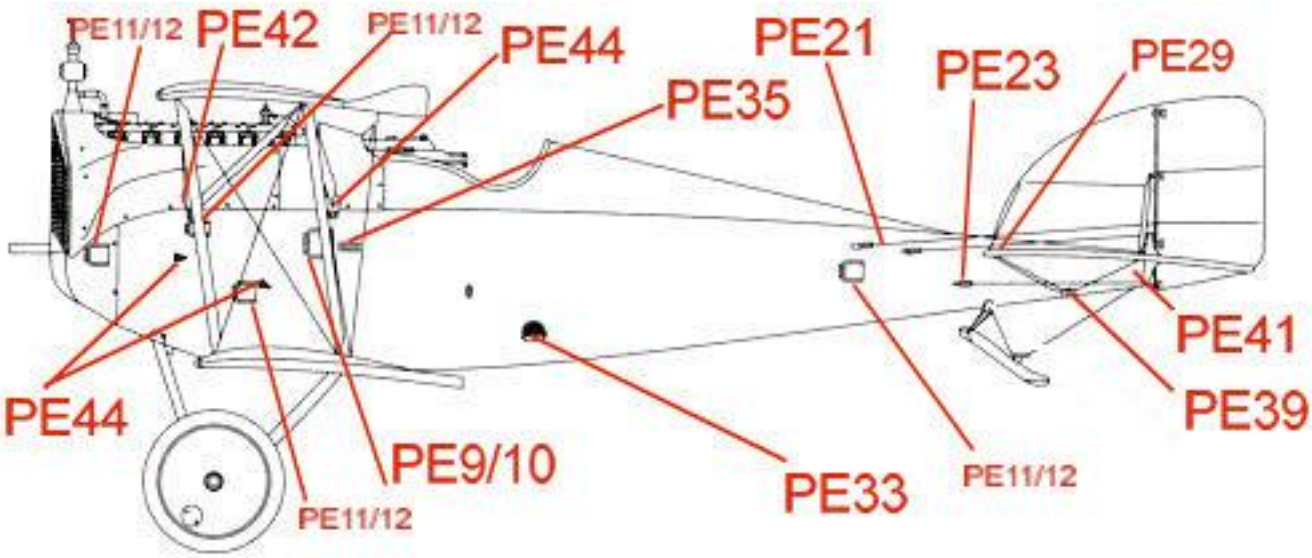
1. The photo-etch guide sheet has two different parts labelled 44. The four rectangular parts (brackets) should logically be 45, but are marked in the instructions as 46. There are no parts 45 in either the guide or instructions.
2. The instructions show two of the rectangular brackets 44 (46) being fitted to each side of the fuselage. However I can find no evidence of the rear of the two being fitted.
2. The triangular parts 44 on the photo-etch sheet are shown in the instructions as having only one fitted to each side of the fuselage. In reality two were fitted to each side.
3. There are 8 access panel assemblies of parts 11 and 12, although only 6 are required.

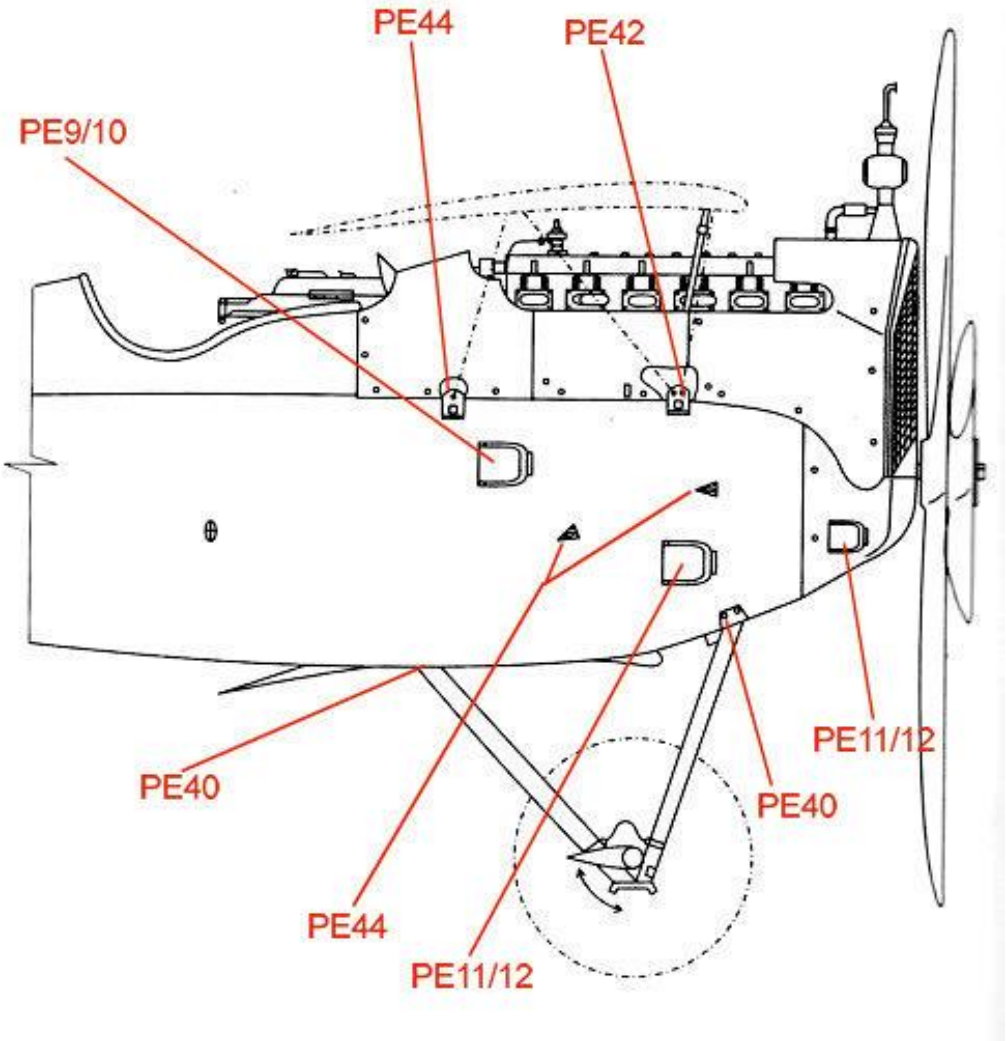
4. The 2 access panel assemblies of parts 9 and 10 are shown fitted to only the left side of the fuselage, whereas one is fitted to both sides of the fuselage.

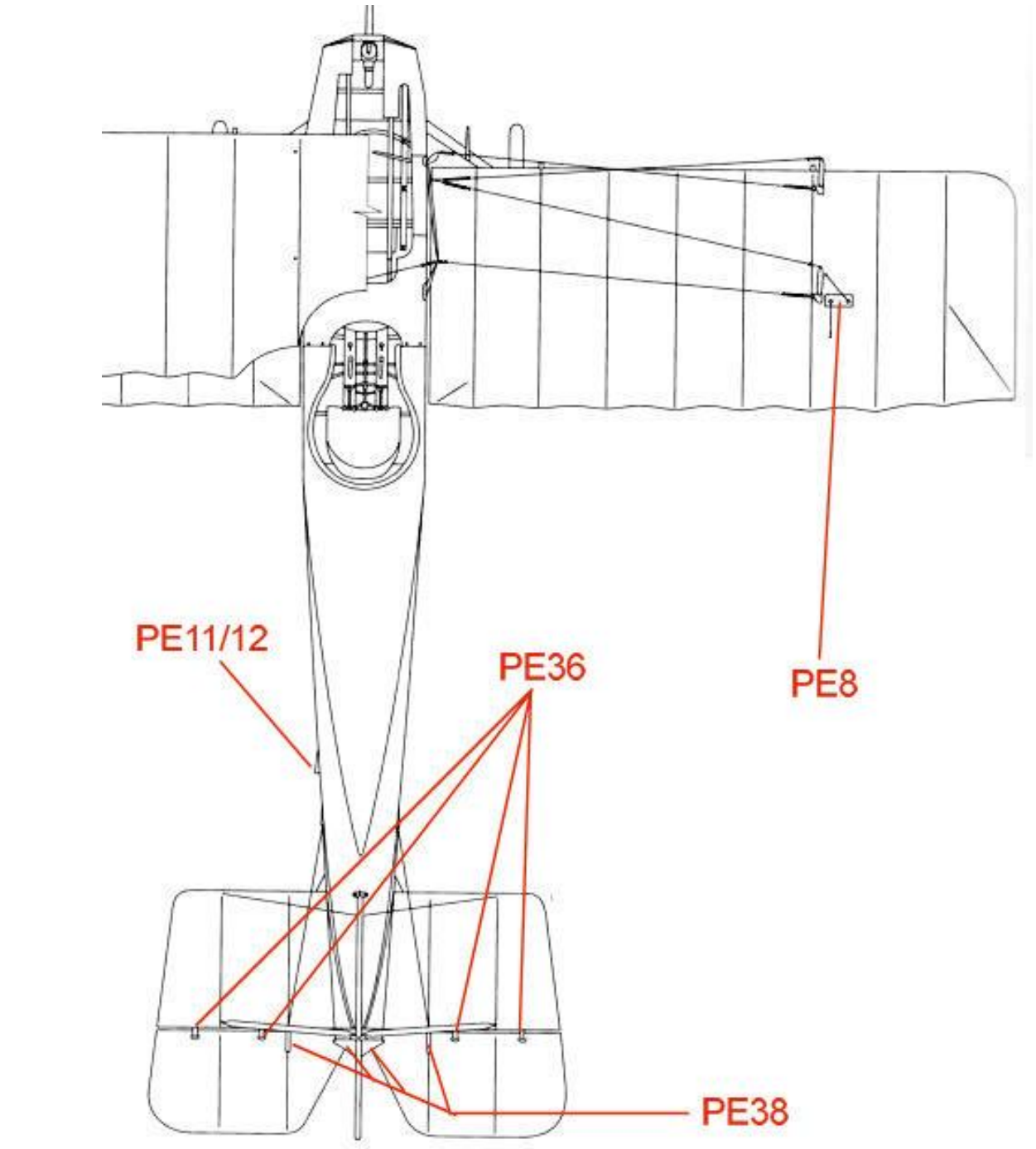
5. The sheet has two parts 35, but only one was fitted to the left side of the fuselage.

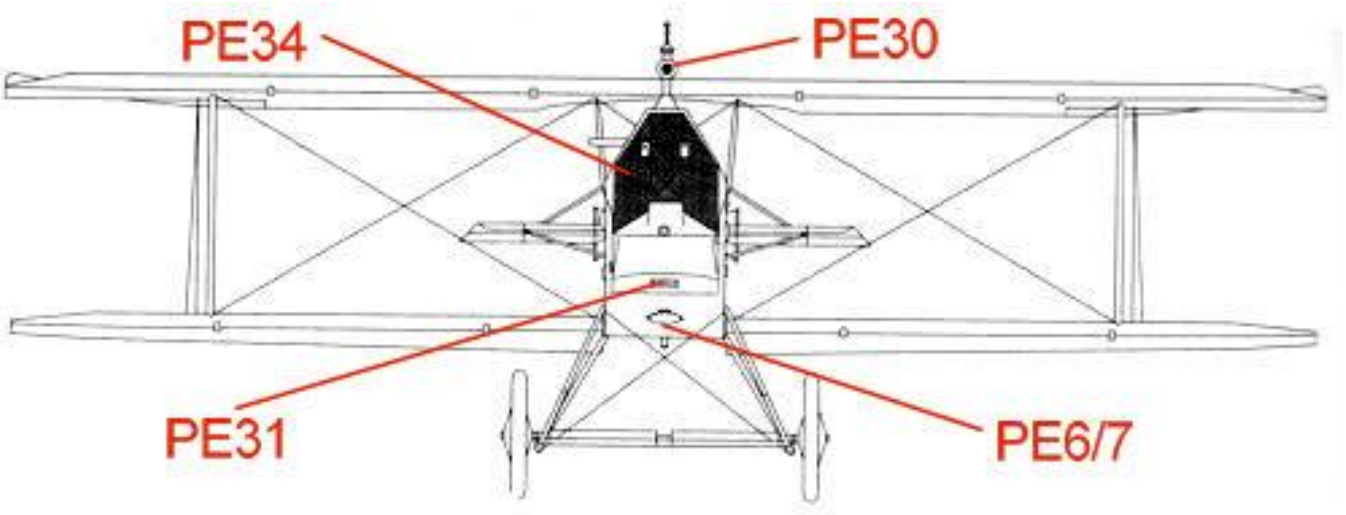
6. To clarify, parts 40, 21, 23, 29, 39 and 41 are fitted to both sides of the fuselage.

<u>The following illustrations show what I believe are the correct photo-etch locations.</u>

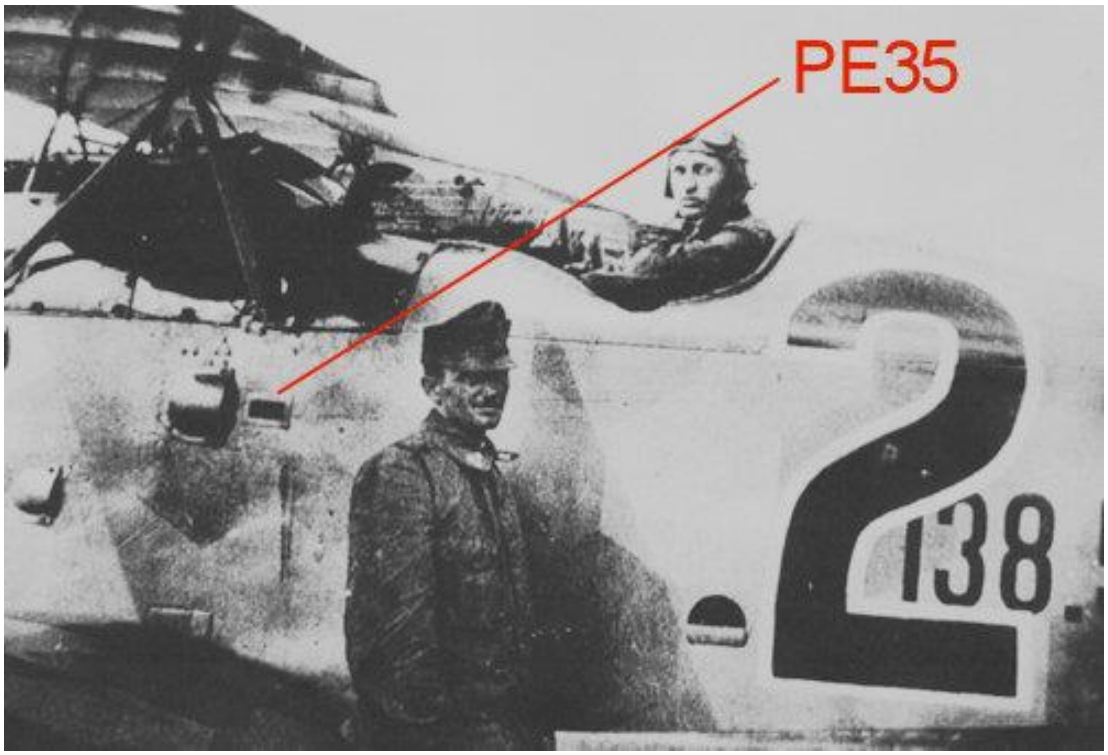





PE11/12
PE36
PE8
PE38


PE34
PE30
PE31
PE6/7

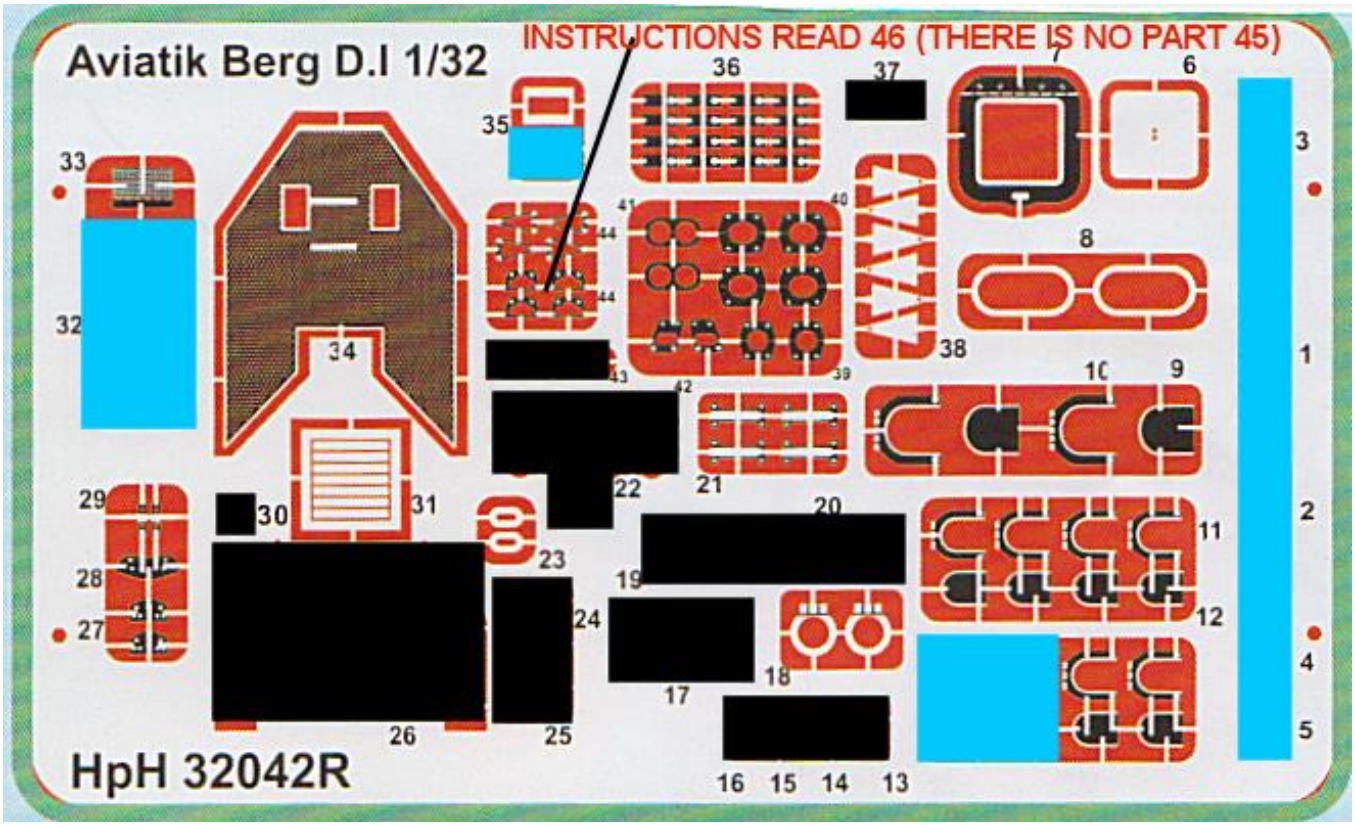
Although not reproduced on the kit left fuselage half, I believe part 35 is the surround of what is a rectangular opening in the fuselage, the purpose of which is unclear.



The following illustration shows the photo-etch sheet with areas coloured for this stage of the model build.

Those parts coloured BLUE are not required.

Those parts coloured BLACK are parts that have already been used in the build to this point.



NOTE 1: *Take care when handling the various photo-etch parts as some a very small and easily lost to the 'carpet monster'.*

NOTE 2: *The following kit supplied photo-etch parts will not be used:*

32 (propeller bosses) - the 'ProperPlane' propeller being used is supplied with these parts.
1 to 5 (seat harness) - seat harness replaced by a 'HGW Models' harness.
35 (rectangular surround) - only one required.
11/12 (access panel assembly) - only 6 required.

NOTE 3: *When cutting out parts from the photo-etch sheet, try to keep the sheet flat otherwise some parts can become distorted.*

WARNING: *Take care when handling photo-etch, as the thin metal, especially after being cut out, can be sharp and cause injury.*

Cut from the photo-etch sheet those parts not required - Parts 1 to 5 and Parts 32.

Cut the radiator grill (Part 34) from the photo-etch sheet.

Radiator grill:

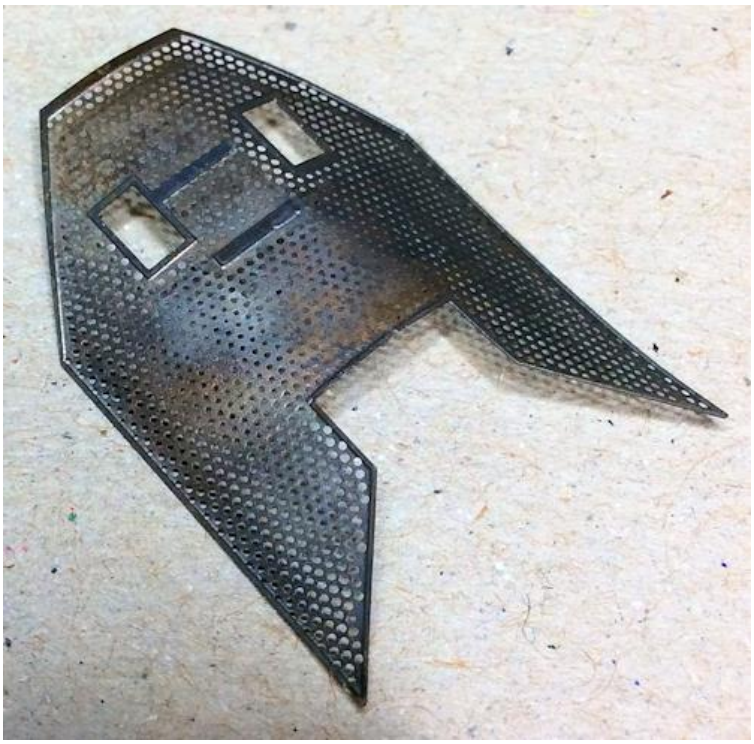
Remove any stubs of photo-etch from the edges of the grill.

Using a low heat source (e.g. cigarette lighter or candle) 'wave' the grill over the flame and watch for the grill to discolour. *Don't linger over the flame or the photo-etch may distort or even melt.* Doing this not only anneals the photo-etch, making it easier to bend, but also creates a finish of heated metal.

To aid adhesion of paint primer and adhesive, clean the grill carefully by wiping both sides of the grill with a degreaser, such as spectacle wipes or Isopropyl Alcohol (airbrush cleaner).

Offer up the grill to the front of the fuselage and check alignment to the fuselage and the two barrel apertures. If necessary, increase the size of the apertures, as required, to align with those in the photo-etch grill.

Using a suitable 'former' carefully wrap and bent the grill so it conforms more readily to the shape of the fuselage front.

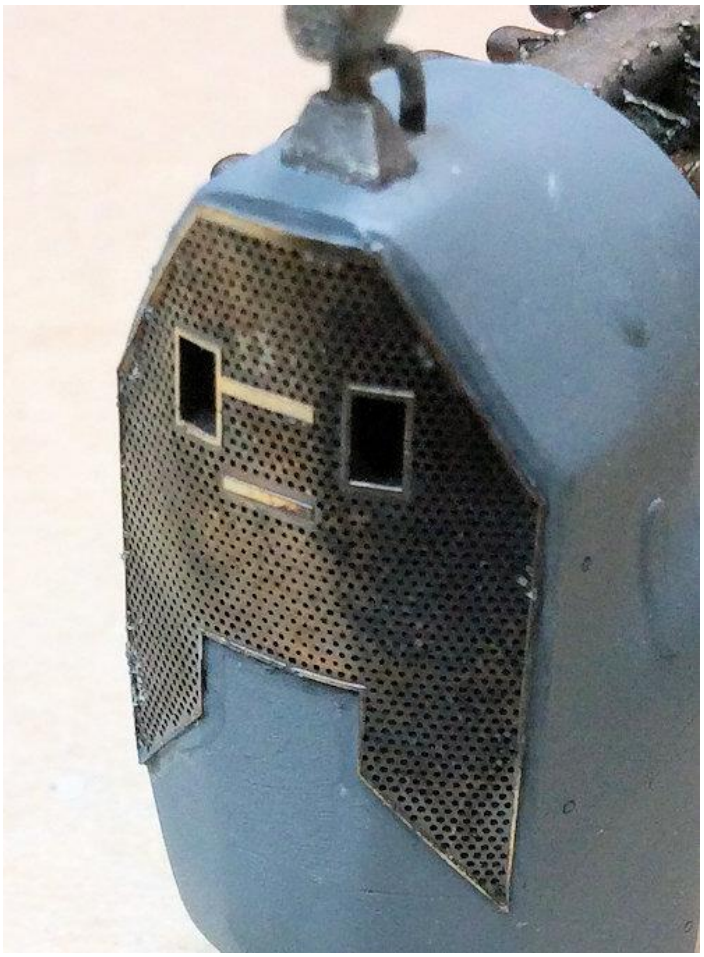


Offer up the grill to the front of the fuselage and carefully and lightly mark the outline of the grill.

Brush paint the marked grill area with ‘Tamiya’ Rubber Black (XF85) thinned with X20a.

Secure the radiator grill in position on the fuselage front, with ‘thin’ CA adhesive, applied around the edges only, otherwise it will seep under the grill and block the holes in the grill.

If necessary, touch up the fuselage edges around the grill with thinned ‘Tamiya’ Ocean Grey (XF82).



Remaining photo-etch - Preparation:

To aid adhesion of paint primer and adhesive, clean the grill carefully by wiping both sides of the parts with a degreaser, such as spectacle wipes or Isopropyl Alcohol (airbrush cleaner).

Cut from the photo-etch sheet the grill PE31.

Carefully twist each slat in the grill PE31 to an angle so all slats are angled the same.

Cut from the photo-etch sheet parts PE9 (x2) and 10 (x2), PE11 (x6) and 12 (x6).

Using ‘thin’ CA adhesive around the edges only, assemble the 6 hinged access panel (PE 11 and 12).

Using ‘thin’ CA adhesive around the edges only, assemble the 2 hinged access panel (PE 10 and 9).

Cut from the photo-etch sheet part 6 (panel).

Using ‘thin’ CA adhesive around the edges only, assemble the panel 6 onto the panel surround 7 on the photo-etch sheet.

NOTE: *Prime and paint only surface of each part that will be visible, not the surface used for mounting the part to the model. That surface should be left clean. The parts already removed from the photo-etch sheet and assembled can be temporarily held on 'BlueTak' or WhiteTak'.*

Lightly prime the assembled parts and those remaining on the photo-etch sheet by airbrushing with a grey primer (e.g. 'AK Interactive' Primer and micro-filler - Grey AK758).

Lightly paint all parts by airbrushing with a 'Tamiya' Ocean Grey (XF82).

Cut from the photo-etch sheet all required parts.

Remove any stubs of photo-etch from the edges of each part.

Where necessary, touch up the edges with a 'Tamiya' Ocean Grey (XF82).

NOTE: *To avoid added photo-etch parts being damaged or dislodged during handling of the model, they will be fitted at the appropriate stage of this build.*

Tail unit assembly - fitting:

NOTE: *Refer to pages 98 and 99 as well as the kit instructions.*

At this stage of the build, the tail unit, consisting of the fin, rudder, tail planes, elevator and their associated support struts can be fitted.

Fit photo-etch 41 to each side of the rear of the fuselage, using thin CA adhesive. The rear hole in the part should be centrally located over the pre-drilled hole through the fuselage for inserting the locating rod added to the tail planes.

Fit photo-etch 29 to each side of the rear of the fuselage, using thin CA adhesive. The part should be vertical on the fuselage and just to the rear of the pre-drilled hole through the fuselage for inserting the locating rod added to the tail planes.

Slightly bend photo-etch parts 27 and 28 along their centre line.

Wrap parts 27 around the inboard leading edge of the two tail planes and secure in position using thin CA adhesive.

Wrap part 29 around the bottom, forward edge of the fin and then secure in position using thin CA adhesive.

NOTE: *Do not cut away the locating tag at the bottom of each photo-etch part 38.*

Cut photo-etch parts 38 from the sheet and remove any 'stubs' from their edges.

Drill a hole of 0.5 mm diameter through the elevators and rudder, at the locations shown in the instructions.

Fully locate the pins in the elevators into the tail planes and secure with thin CA adhesive.

Carefully bend the elevators to the desired 'droop' angle.

Drill rigging and anchor holes of 0.3 mm diameter through the tail planes and fin, at the rigging locations shown in the kit instructions.

At the rigging holes on the undersides and upper surfaces of the tail planes (not the fin), insert a 'Gaspatch' 1:48th scale 'anchor point' and secure in position using thin CA adhesive.

Add the hinges (part 36) to the elevators and rudder, using thin CA adhesive.

Add the control horns (part 38) into the pre-drilled 0.5 mm holes in the elevators and rudder, using thin CA adhesive.

Paint the bare metal sides of the control horns with ‘Tamiya’ Ocean Grey (XF82), making sure not to block the rigging holes at the tip of each horn.

Locate the right tail plane locating pins into the pre-drilled holes in the rear right of the fuselage then apply thin CA adhesive and push the tail plane fully against the fuselage.

Locate the left tail plane front locating pin into the pre-drilled hole in the rear right of the fuselage and the protruding rear pin into the pre-drilled hole in the tail plane. apply thin CA adhesive and push the tail plane fully against the fuselage, making sure not to dislodge to right tail plane.

Position the four tail plane support struts and secure in position using CA adhesive.

Check that the tail planes are horizontal when viewed from the front and rear of the fuselage.

Drill rigging holes of 0.5 mm diameter into both sides of the fuselage, just to the rear of the tail plane lower support struts.

Tail skid fairing assembly - fitting:

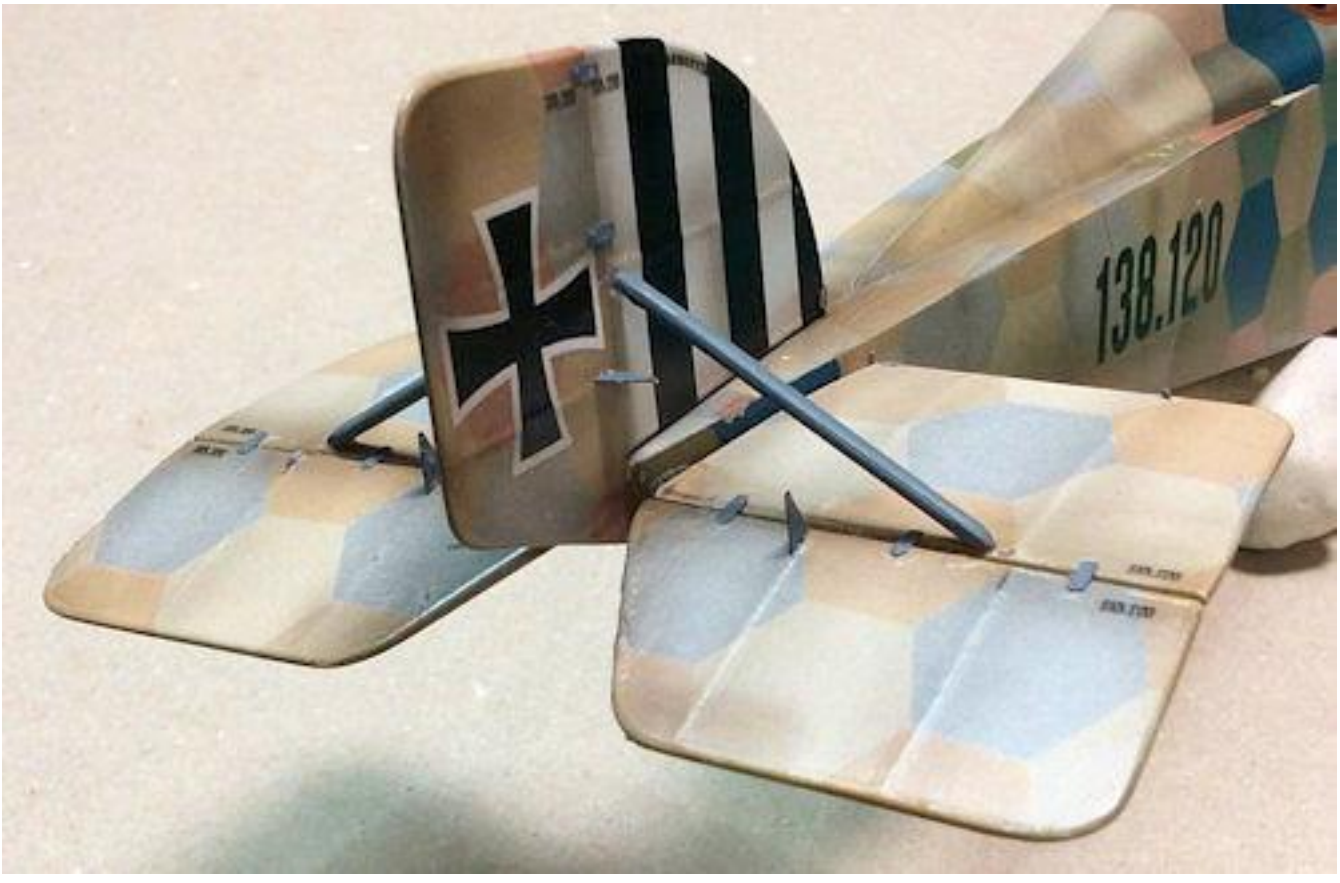
For added support, drill two holes of 0.8 mm diameter into the mating face of the tail skid fairing along its centre line.

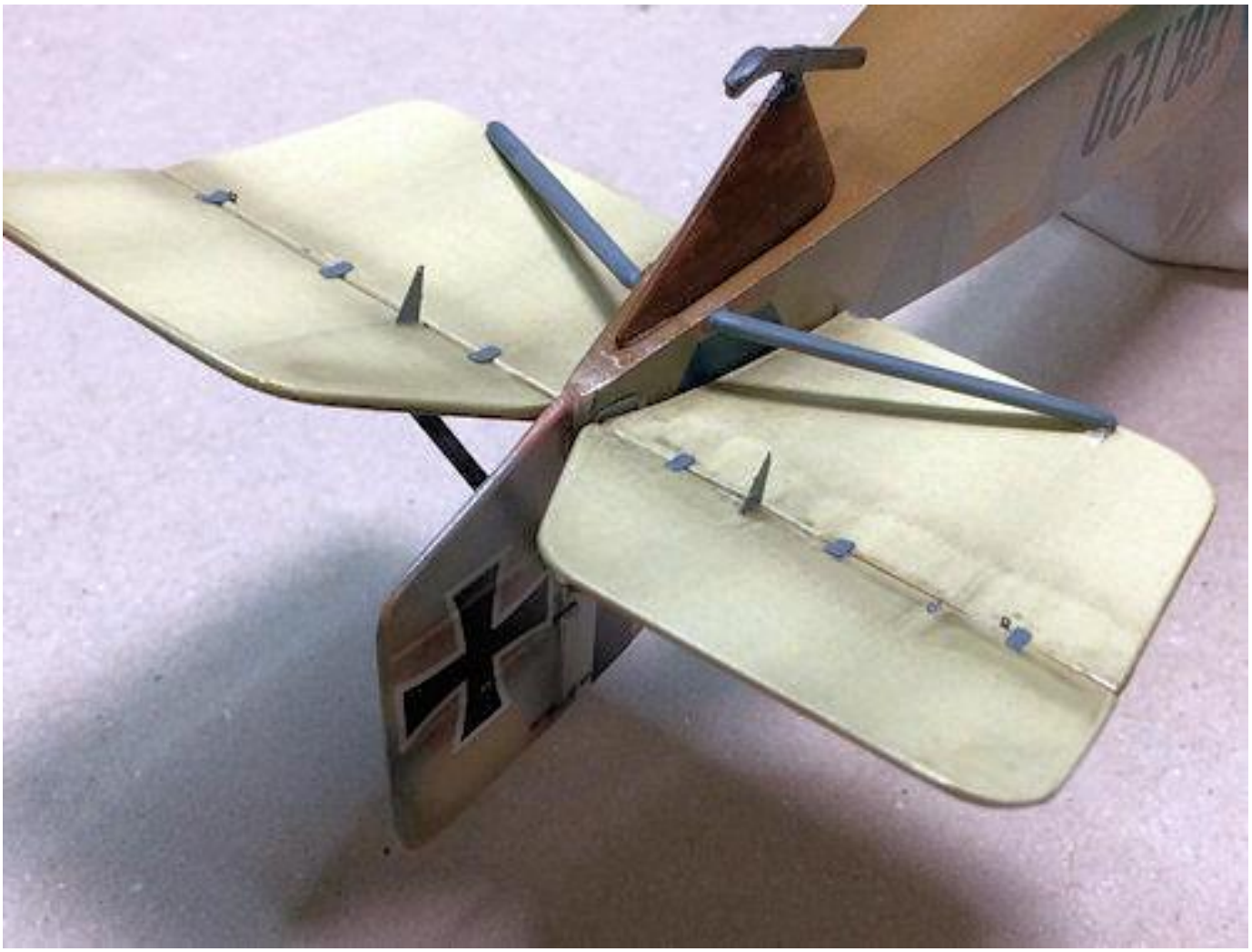
Cut two short lengths of 0.8 mm diameter tube (e.g. ‘Albion Alloys’ MBT08) and secure them into the drilled holes using CA adhesive.

Offer up the tail skid fairing to the underside of the fuselage rear and mark the position of the two pins. The rear of the tail skid fairing should be 5 mm from the end of the fuselage.

Along the centre line of the fuselage drill two holes of 0.8 mm diameter sat the marked locations.

Apply CA adhesive to the two locating pins then insert them into the drilled holes and push the tail skid fairing against the bottom of the fuselage.





Tail skid - Bungee suspension:

NOTE: *Photo-etch parts 39 and 90 need to be bent to allow them to conform to the model, using either a specific photo-etch bending tool or wide end tweezers.*

Bend photo-etch parts 39 to 90 degrees to fit along the lower edge of the rear of the fuselage.

Using thin CA adhesive, secure parts 39 to the fuselage edge, just forward from the front of the tail skid support fairing.

Drill a hole of 0.9 mm diameter through the fuselage, in the centre hole of part 39 and at a slight forward and outward angle.

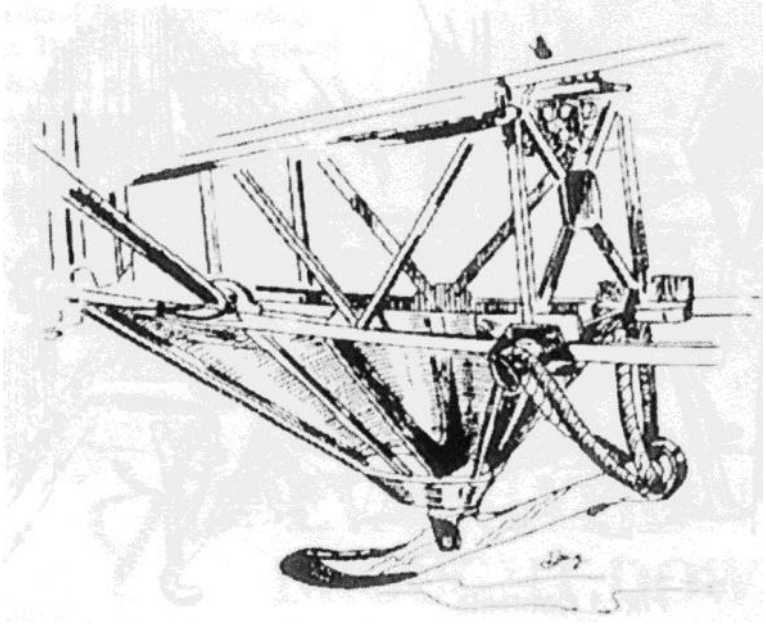
Secure the suspension support rods into the holes using CA adhesive.

Brush prime the rods (e.g. 'AK Interactive' Grey AK-758).

Brush paint the rods using 'Tamiya' Ocean Grey (XF82).

NOTE:

The tail skid was mounted on a forked swivel fitted into the bottom of a 3-ply wood covered streamlined fairing. This allowed the tail skid to pivot up and down as well as swivel. The type of suspension for the tail skid consisted of double sprung rings, the ends of which were looped over extended support bars located on the bottom edge of the fuselage. The other end of the rings passed through the forward end of the tail skid.



To replicate these suspension rings using ‘ANYZ’ Black braided line 0.5 mm diameter (AN011):

Cut a long length of ‘ANYZ’ Black braided line 0.5 mm diameter (AN011).

Apply thin CA adhesive to both ends and when set cut the ends to a point to enable threading through the pre-drilled hole in the tail skid.

Thread the line through the hole in the tail skid and loop it around one of the support bars then secure it in position using thin CA adhesive.

Thread one end back through the hole in the tail skid, gently pull the lines tight and secure at the tail skid with thin CA adhesive.

Then loop one free end of a line around the other support bar and secure in position using thin CA adhesive.

Cut away excess line at the support bar.

Loop the remaining line around the support bar and secure with thin CA adhesive.

Cut away any excess line.

Undercarriage assembly - fitting:

At this stage the main undercarriage assembly should be fitted as this will support the fuselage, preventing damage occurring to the underside decals:

NOTE: *The undercarriage assembly has already been constructed and was also test fitted to the fuselage.*

Drill a rigging anchor hole of 0.3 mm diameter into both forward undercarriage struts, close to the top of the struts and through the forward half.

At the drilled rigging holes insert a 'Gaspatch' 1:48th scale 'anchor point' and secure in position using thin CA adhesive. The anchor need to be cut to shorten the shank, otherwise it will protrude from the outside face of the struts.

Bend photo-etch parts 40 (x4) to 90 degrees.

Position photo-etch parts 40 at the four undercarriage location holes and secure in position using thin CA adhesive.

Locate the pins at the top ends of the four struts into the pre-drilled holes in the fuselage.

Apply thin CA adhesive to the exposed portion of the pins then push the struts fully into contact with the fuselage.

Brush paint the bungee cords around the axle with 'Tamiya' Dark Yellow (XF60).

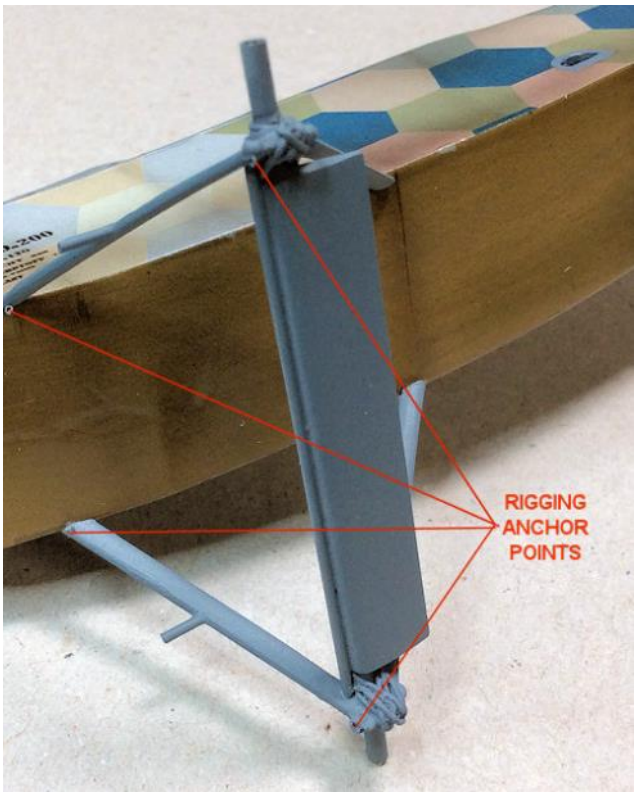


Photo-etch parts - fitting

NOTE 1: *Photo-etch parts 39 (x2) need to be bent to allow them to conform to the model, using either a specific photo-etch bending tool or wide end tweezers.*

NOTE 2: *Do not fit parts photo-etch parts 42 (x2) and 44 (x2) (cabane strut brackets). These will be added after the struts have been fitted.*

Following the previous location illustrations on pages 98/99, add the required photo-etch parts to the fuselage and lower wings, using thin CA adhesive.

Carefully drill out the opening inside part 35 on the left side of the fuselage.

Brush paint the cut-out with ‘Tamiya’ Ocean Grey (XF82).

Drill holes of 0.3 mm diameter at the rear end of parts photo-etch 21 (x4) and in the centre of parts 23 (x2). These will be used for rigging rudder and elevator control cables later in the build.

Exhaust pipes - fitting:

NOTE: *Due to the close proximity of the exhaust pipes to the right side cabane struts, fit the two shorter pipes into the second and fourth cylinders from the rear of the engine.*

Secure each pipe, by its 1.4 mm ’stub’, into its cylinder head using CA adhesive, making sure the chamfered end is outboard and facing rearwards.

Flare pistol and cartridges:

Although not supplied in the kit, flare pistols were often carried on this aircraft. I used a spare ‘Wingnut Wings’ pistol and flare rack from the German weapons sprue.

Prime the pistol and cartridge rack by airbrushing with a grey primer (e.g. ‘AK Interactive’ Primer and micro-filler - Grey AK758).

Brush paint the cartridges in the rack with ‘Tamiya’ Flat Earth (XF52).

Brush paint the percussion caps of the cartridges in the rack with ‘Mr. Colour’ Brass (219).

Brush paint the stock of the flare pistol and flare rack with ‘Tamiya’ Deck Tan (XF55).

Brush paint the pistol with ‘Mr. Colour’ Stainless Steel (213).

Apply the desired wood effect finish to the pistil stock and flare rack - Refer to Part 2 of this build log.

Attach the flare rack to the right side of the fuselage, below the cockpit rim, using CA adhesive.

Cut a small strip of ‘Tamiya’ masking tape and place it over the flare pistol to represent the pistol holder.

Brush paint the pistol holder with ‘Mr. Colour’ Stainless Steel (213).

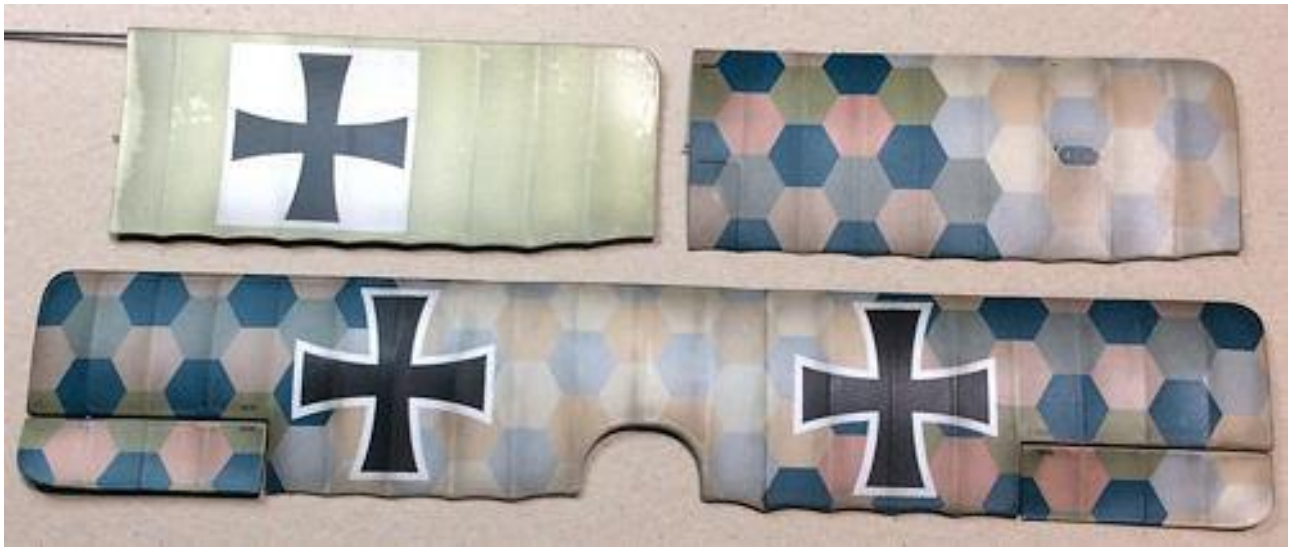
To prepare the fuselage, wings and wing struts for weathering with ‘Flory’ Dark Dirt clay wash, airbrush the surfaces with two light misting coats of semi-matte sealer - e.g. ‘Alclad’ Light Sheen (ALC-311), Semi-Matte (ALC-312) lacquer or ‘Tamiya’ Semi Gloss (X35).

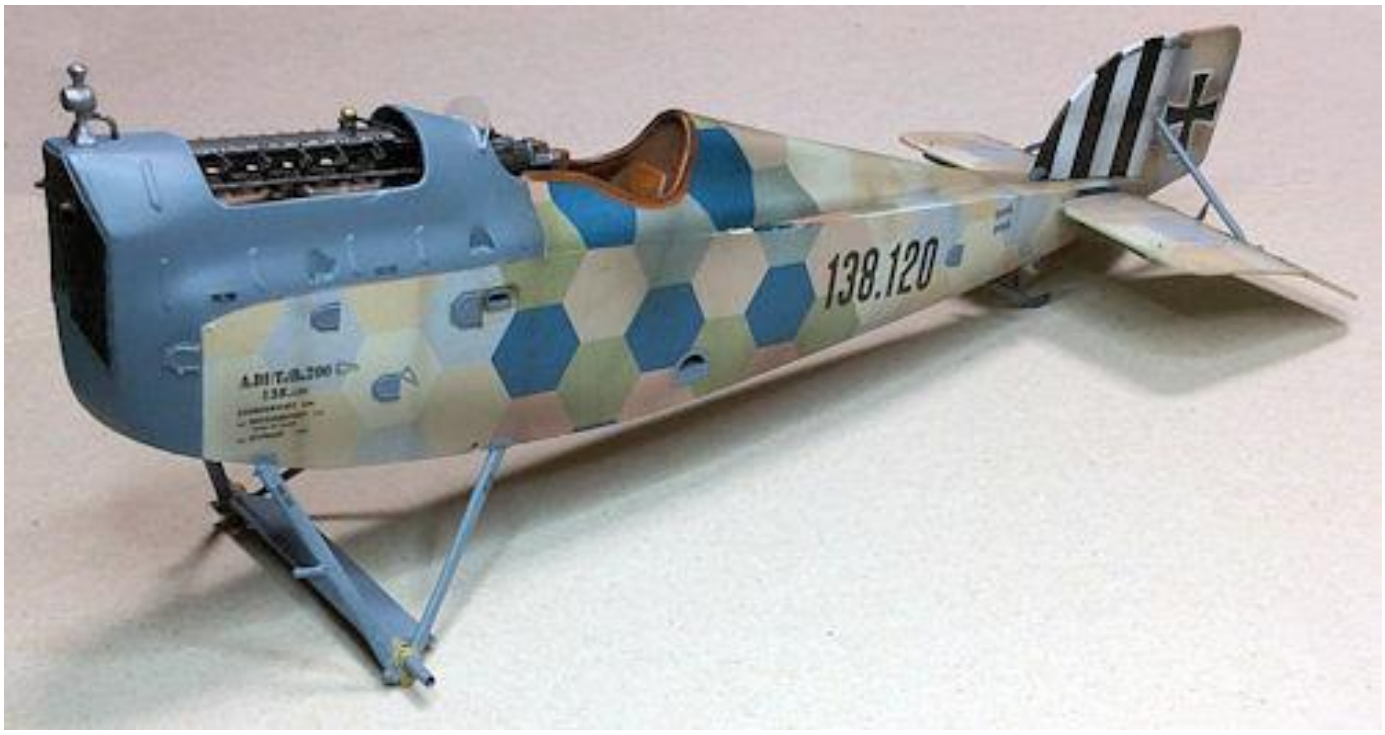
After the sealing coat has full dried, clear any paint or sealing coat from the holes in the rudder and elevator control horns and the eyelets of the rigging anchors on the tail planes (x4) and the undercarriage (x4). Use a pin or carefully drill through with a 0.2 mm diameter drill.

Windscreen:

A windscreen transparency is not supplied in the kit, despite this aircraft being fitted with one. Again I used a suitable spare windscreen from a ‘Wingnut Wings’ kit. The windscreen was filed to conform to the profile of the cockpit forward decking.

Position the windscreen onto the cockpit forward decking and secure using PVA adhesive (white glue), which stops ‘misting’ of transparent parts caused by using CA adhesive.

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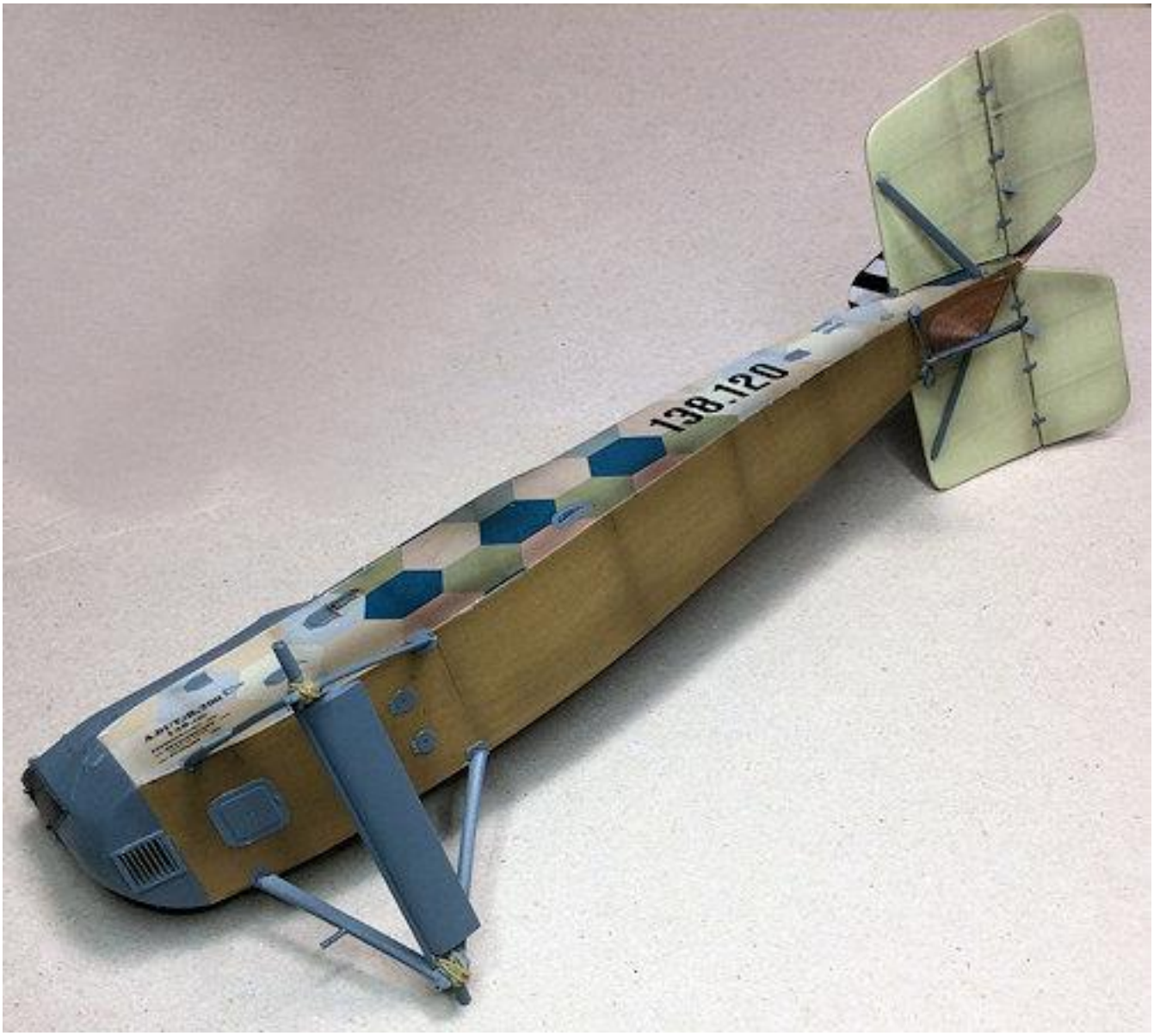
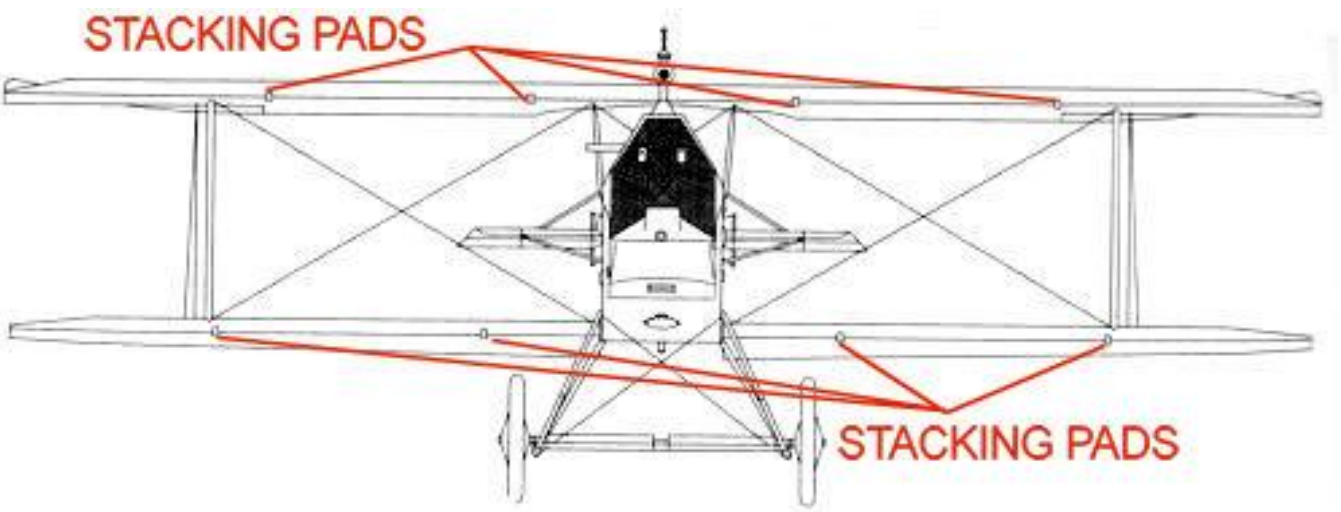


Wing stacking pads:

The leading edges of the wings had ‘stacking pads’ fitted so that the wings could be stored or transported vertically and resting on the leading edges, without and damage occurring to the wing itself.



To replicate these ‘stacking pads:

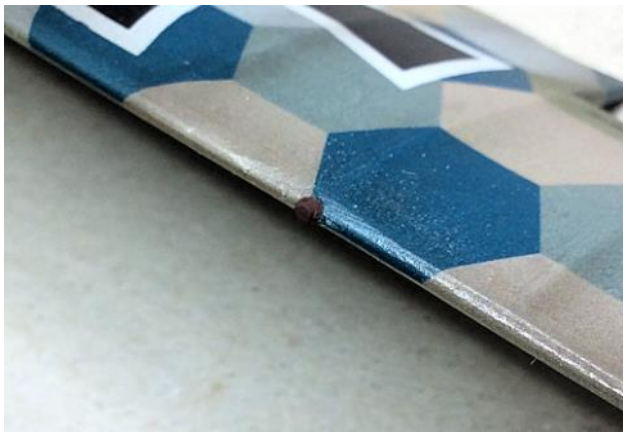
Drill into the leading edges of the wings, at the locations shown on the previous illustration, holes of 0.9 mm diameter.

Cut eight short lengths of 0.85 mm diameter plastic rod and round off one end.

Insert a cut rod (rounded end exposed) into each pre-drilled hole and secure in position using thin CA adhesive. The exposed rounded end should be just proud of the leading edge.

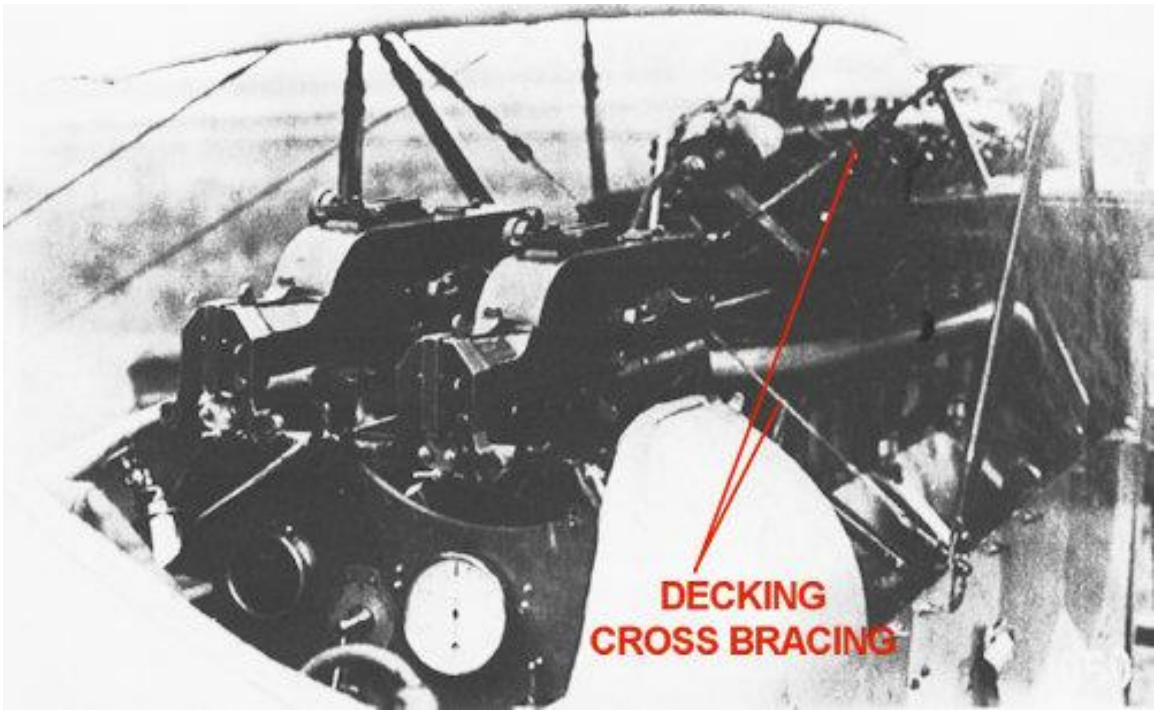
If necessary, carefully sand excess rod until it’s close enough to the leading edge.

Brush paint each stacking pad with ‘Tamiya’ Hull Red (XF9)

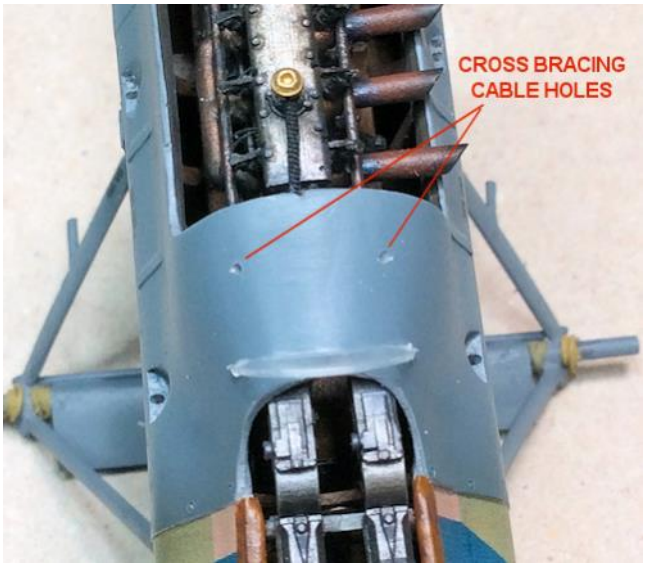


Decking cross bracing:

At this stage in the build and before the upper wing is fitted, the two cross bracing cables, fitted at the cockpit forward decking should be fitted. This is a modification that is not detailed in the kit or its rigging instructions.



Prepare for the cross bracing rigging, which will be fitted later in this build, drill two holes of 0.6 mm diameter through the cockpit forward decking. The holes should be angled diagonally from the top of each rear cabane strut to the bottom of the opposite rear cabane strut. To gauge the angle, temporarily fit the two ‘N’ cabane struts into their pre-drilled locations in the fuselage.



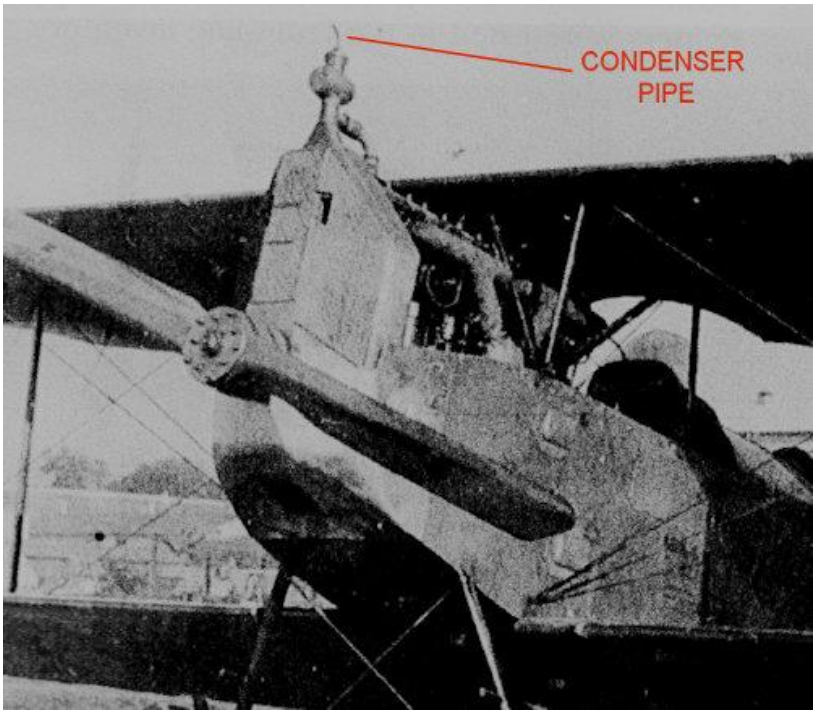
Ailerons - fitting:

Locate the two ailerons by their pins onto the upper wing.

Apply thin CA adhesive to the locating pins and push the ailerons fully against the upper wing.

Radiator condenser pipe:

Photographs at the time show a small diameter pipe fitted to the top of the radiator condenser assembly. This pipe is not detailed or supplied in the kit.



Drill a hole of 0.5 mm diameter into the top of the radiator filler cap.

Cut a length of 0.4 mm diameter Nickel-Silver tube (e.g. ‘Albion Alloys’ NST03), bend it to 90º and secure into the drilled hole with the top bend facing forwards.

Propeller shaft hole:

To fit the propeller to the model ;later in this build, drill a hole of 2.2 mm diameter through the front of the fuselage. The drilled hole should be inline with the bottom tips of the installed radiator matrix.

Rigging:

The rigging required on the Aviatik 'Berg' D.1 is as follows:

Tail Plane - cross bracing:

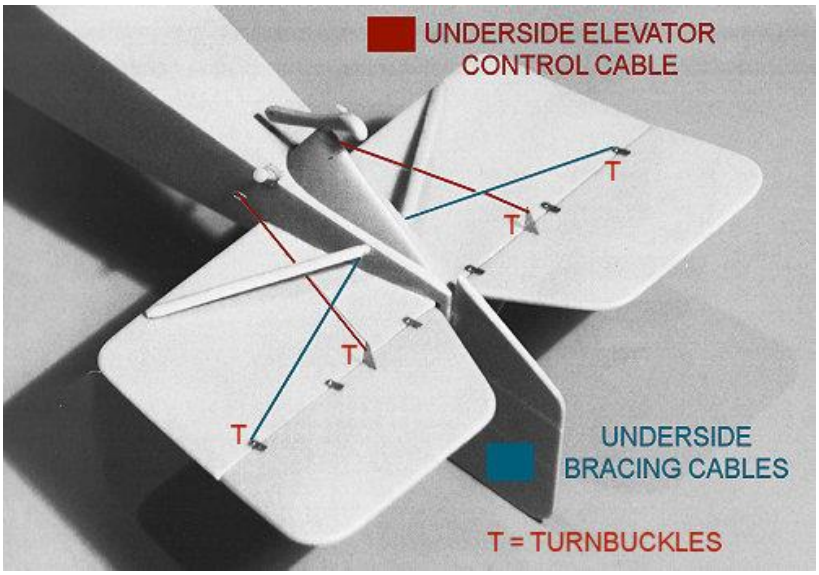
The tail planes were cross braced by two separate cables. The first was routed from the upper sides, from near to the leading edge, up and through the fin and down to the other side. The second was routed from the underside trailing edge and down to the bottom edge of the fuselage, to the rear of the tail plane support strut location. Turnbuckles were fitted to each cable at the leading and trailing edges.

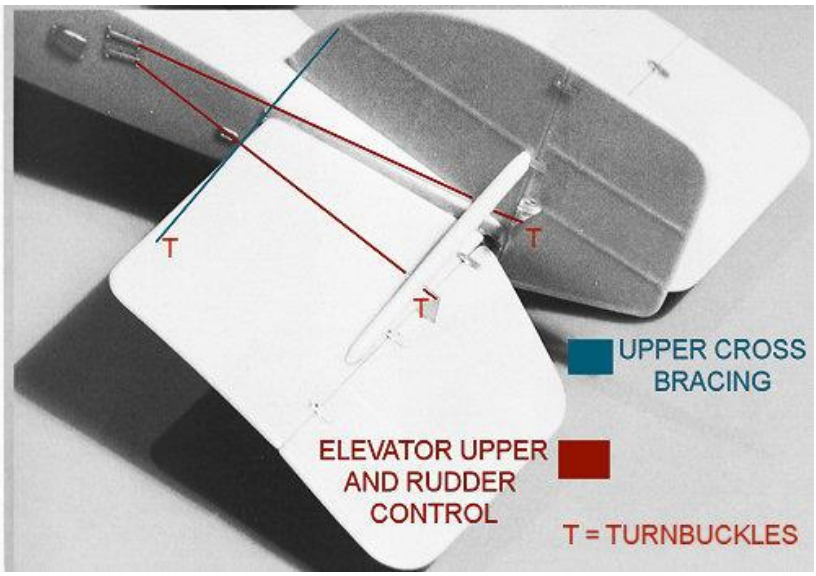
Elevators - control cables:

Both sides of the elevator were connected to the pilot's control column by two control cables, each of which were attached to control horns on the upper and undersides of the elevators. The cables (four in total) were routed into the fuselage at cable access points. Turnbuckles were fitted to each cable at the control horns.

Rudder - control cables:

Both sides of the rudder were connected to the pilot's rudder bar by two control cables, each of which were attached to a control horn located on the rudder pillar bar. The cables (two in total) were routed into the fuselage at cable access points. Turnbuckles were fitted to each cable at the control horns.





Landing wires:

Landing wires were fitted at each side of the aircraft, between the top of the two cabane struts and the bottom of the two interplane struts. A turnbuckle was fitted to each wire at the interplane struts.

Flying wires:

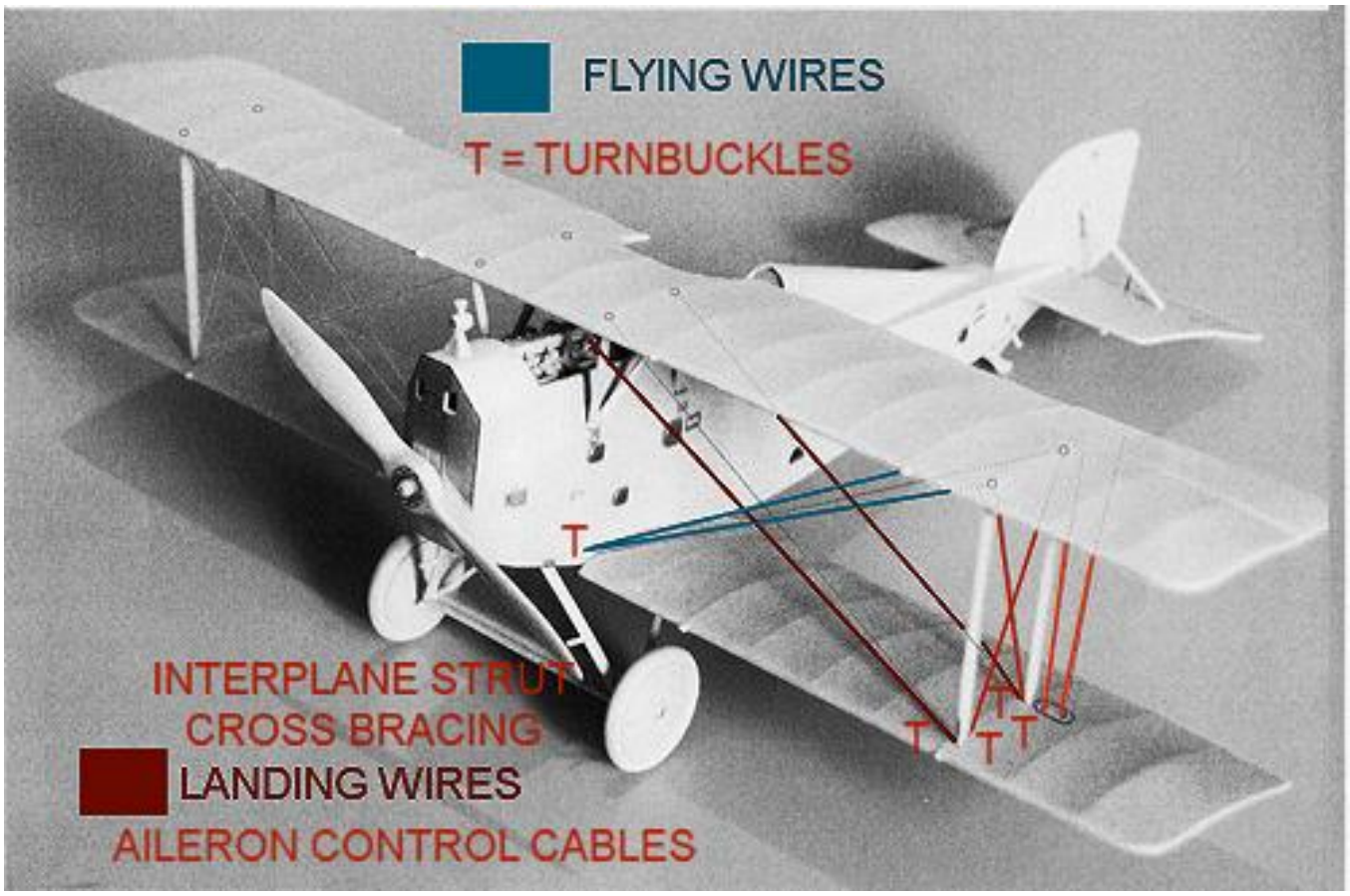
Flying wires were fitted at each side of the aircraft, between the upper wing and fuselage. Each of the two wires was attached to the inboard top of its interplane strut. The two wires converged down to a dual location at the bottom of the fuselage, just above and to the rear of the leading edge of the lower wing. Turnbuckles were fitted to the wires at the fuselage location.

Wing struts - cross bracing:

The two interplane struts, fitted to each side of the aircraft, were diagonally cross braced between each other, with turnbuckles fitted at the bottom locations.

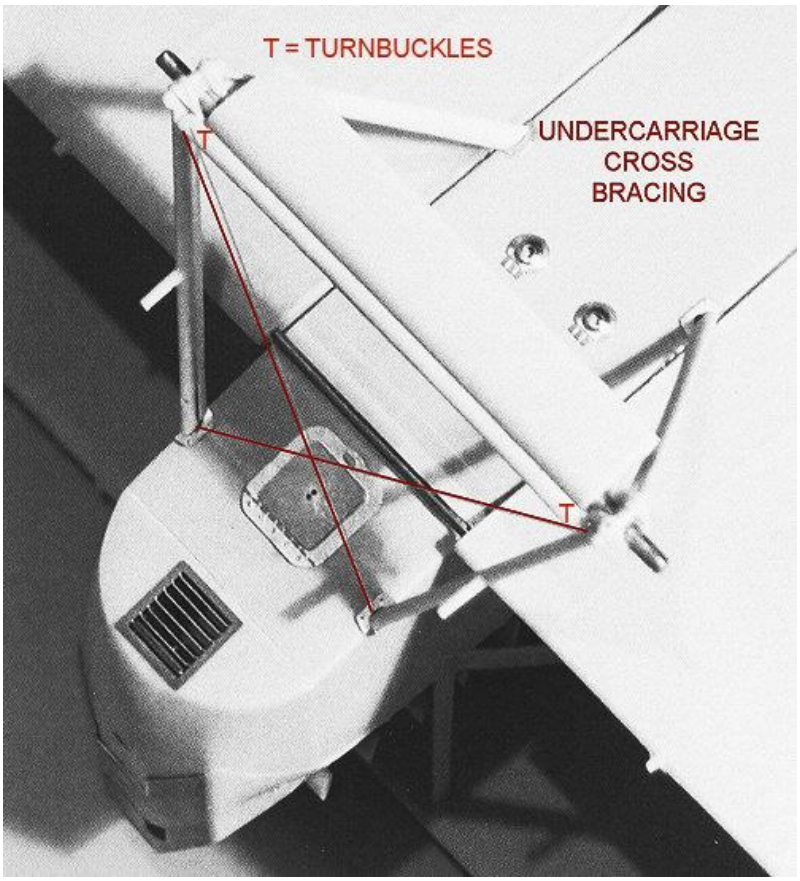
Ailerons - control cables:

Two aileron control cables were fitted at each side of the aircraft, between the underside of the upper wing and aileron and the upper surface of the lower wing.
The forward cables were routed from behind the top of the wing rear interplane struts and down into the inboard location of the aileron plates on the lower wing.
The rear cables were routed from the underside of the aileron and down into the outboard location of the aileron plates on the lower wing. No turnbuckles were externally visible on these cables.



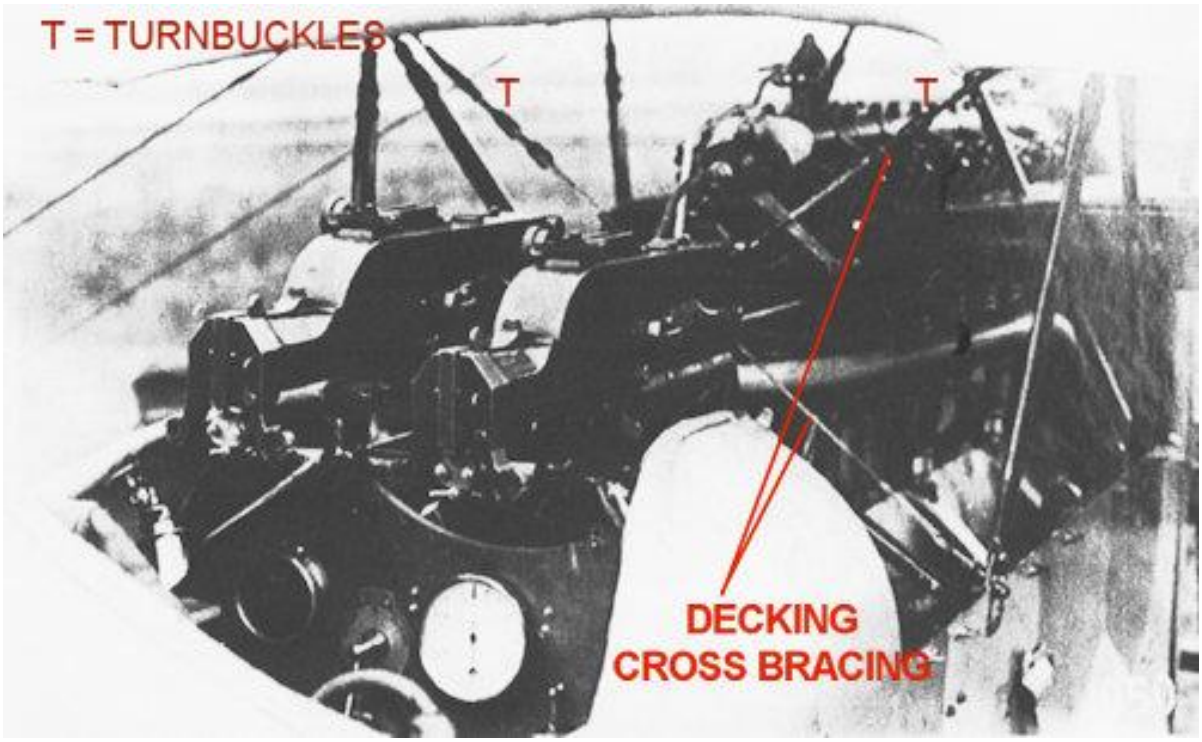
Undercarriage struts - cross bracing:

The two forward undercarriage struts were diagonally cross braced between their tops and the bottom of the diagonally opposite strut. Turnbuckles were fitted at the bottom locations.



Cockpit front decking - cross bracing:

Cross bracing was fitted between the inboard side of the rear cabane struts and the bottom of the diagonally opposite cabane strut. Turnbuckles were fitted at the top cabane strut locations.



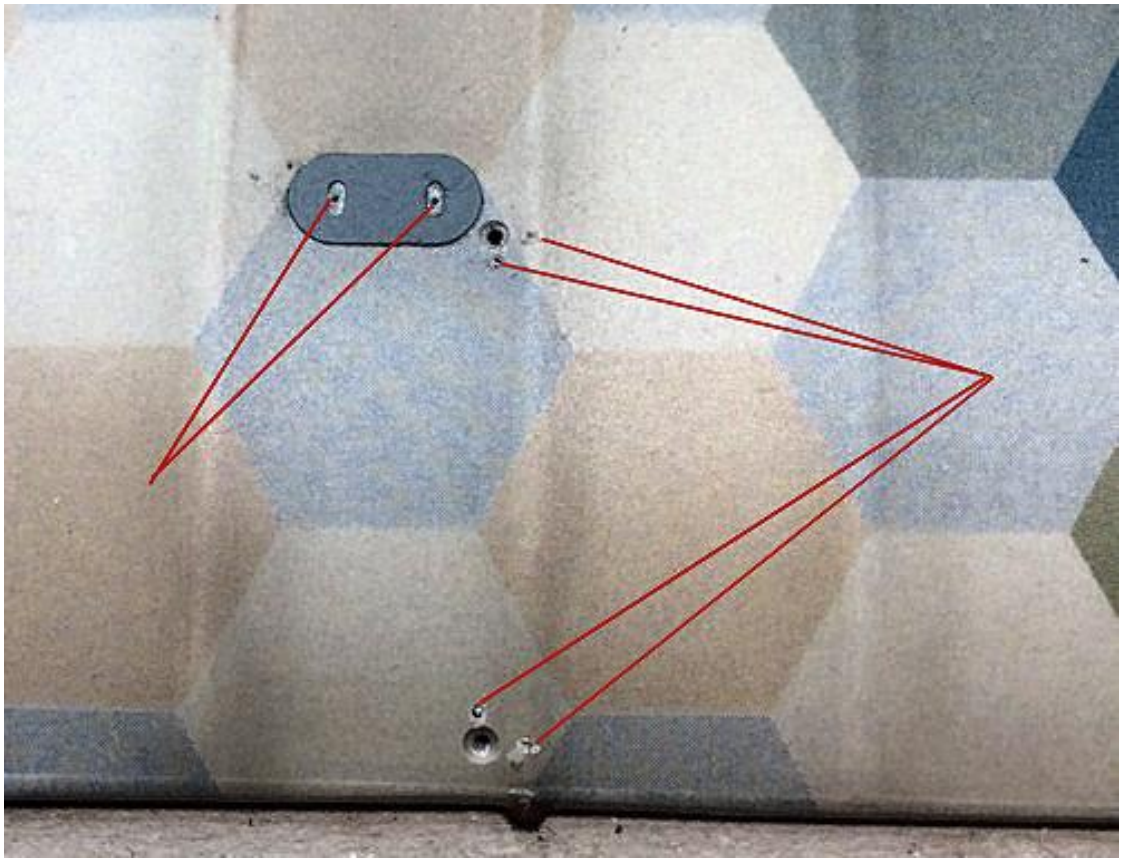
Pre-rigging - holes:

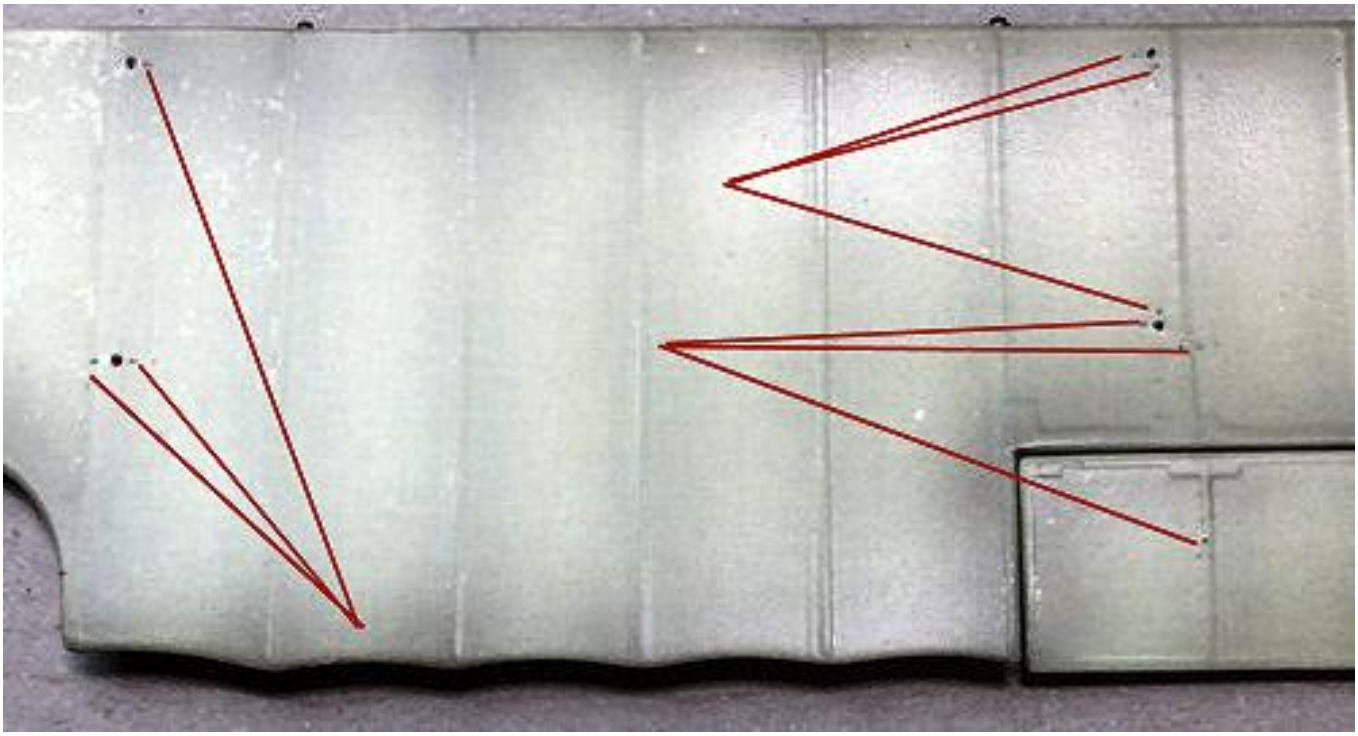
Before adding the wings to the fuselage, it's best to fit as much of the rigging as possible so as to avoid working in a constrictive area.

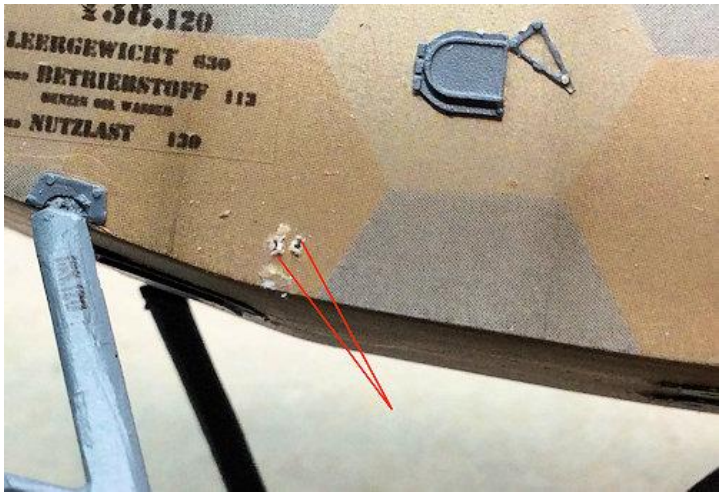
NOTE 1: *The rigging holes in the fuselage and tail unit, for the rudder and elevator control cables and the tail plane cross bracing should already have been drilled.*

NOTE 2: *Refer to the previous and following rigging illustrations for guidance.*

Drill holes of 0.3 mm diameter into both sides of the fuselage and wings and at the correct angles for adding rigging line or turnbuckles. Make sure you don't drill through the wings.







Pre-rigging - preparation:

Before continuing, pre-rigging of the control lines and rigging cables should be done, so that rigging can be finished more easily after the model has been assembled.

NOTE: *For rigging the control lines (ailerons, rudder and elevators) I use 'Stroft GTM' Silicon-PTFE tempered monofil (0.08mm) and for flying, landing and cross bracing I use 'Steelon' Mono-Filament 0.12mm diameter.*

Rigging consists of using the appropriate line, micro-tube and 1:48th scale turnbuckles from 'GasPatch.

Basically the line is passed through a short length of either 0.5 mm diameter tube (for flying, landing and cross bracing) or 0.4 mm line (for control lines) then through the 'eye' end of the turnbuckle. The line is then looped back through the tube, which is the slid close to the turnbuckle 'eye' end and secure in position using thin CA adhesive.
The other end is prepared in the same way, but without a turnbuckle.
Before assembly of the model, only one end of a line is attached and the other end attached and the line tightened only after assembly of the model. In this way the rigging can be tightened and aligned correctly.
Always prepare each line with much more line than required as this aids in final rigging.
Always use a sharp straight edged scalpel blade for 'roll' cutting tube and a shield razor blade for cutting line.
When cutting line, angle the end cut, which helps the line to feed through the tubes.

Prepare the line types as follows:

Create 14 lines with just a turnbuckle 'GasPatch' turnbuckle Type A. Leave the other clean.

Create 12 lines with just a turnbuckle 'GasPatch' turnbuckle Type C. Leave the other clean.

Total of 26 prepared cables and lines.

Brush paint the centre barrel of each turnbuckle with 'Mr. Colour' Brass (219).

Example of a prepared cable or line
(turnbuckle ‘GasPatch’ turnbuckle Type A)

Example of a prepared cable or line
(turnbuckle ‘GasPatch’ turnbuckle Type C)

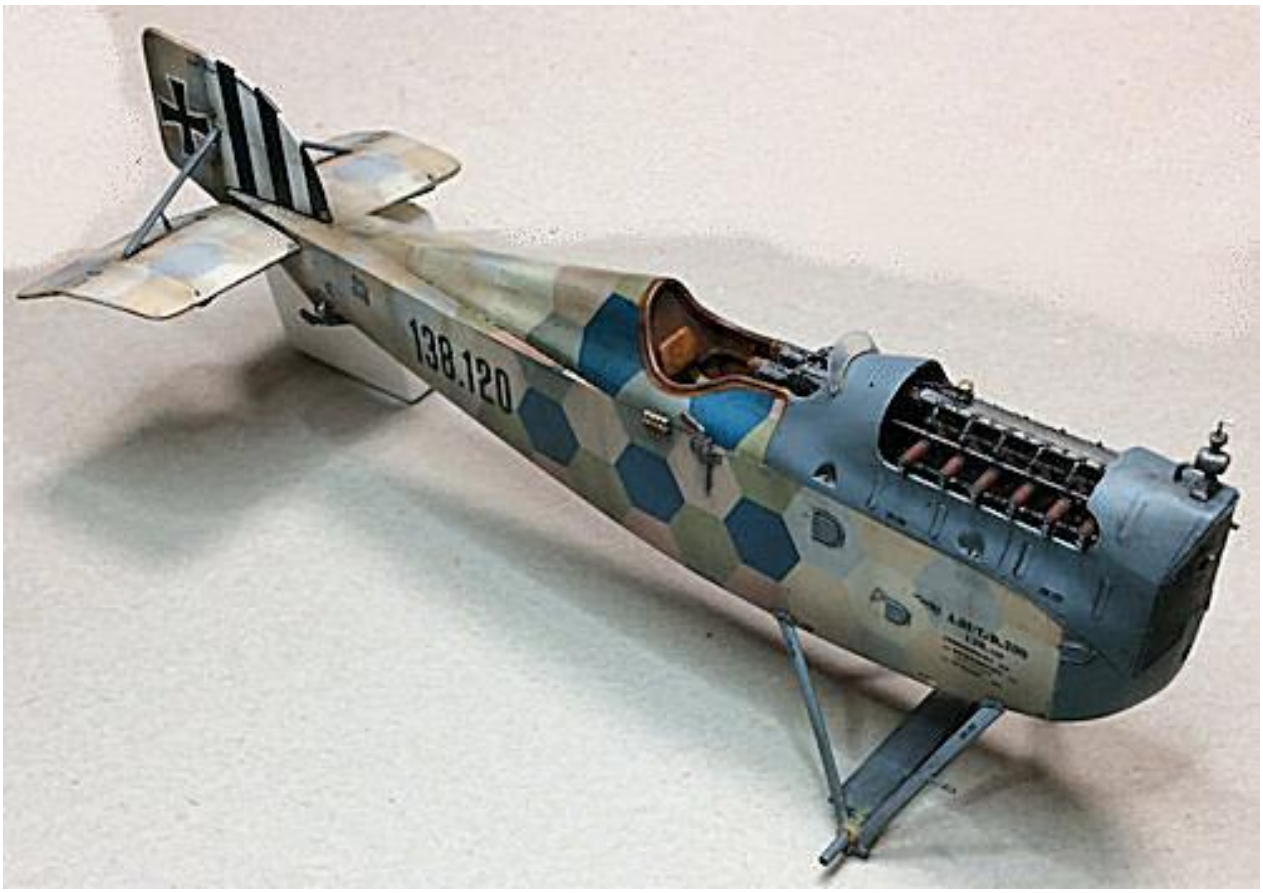
Weathering with clay wash:

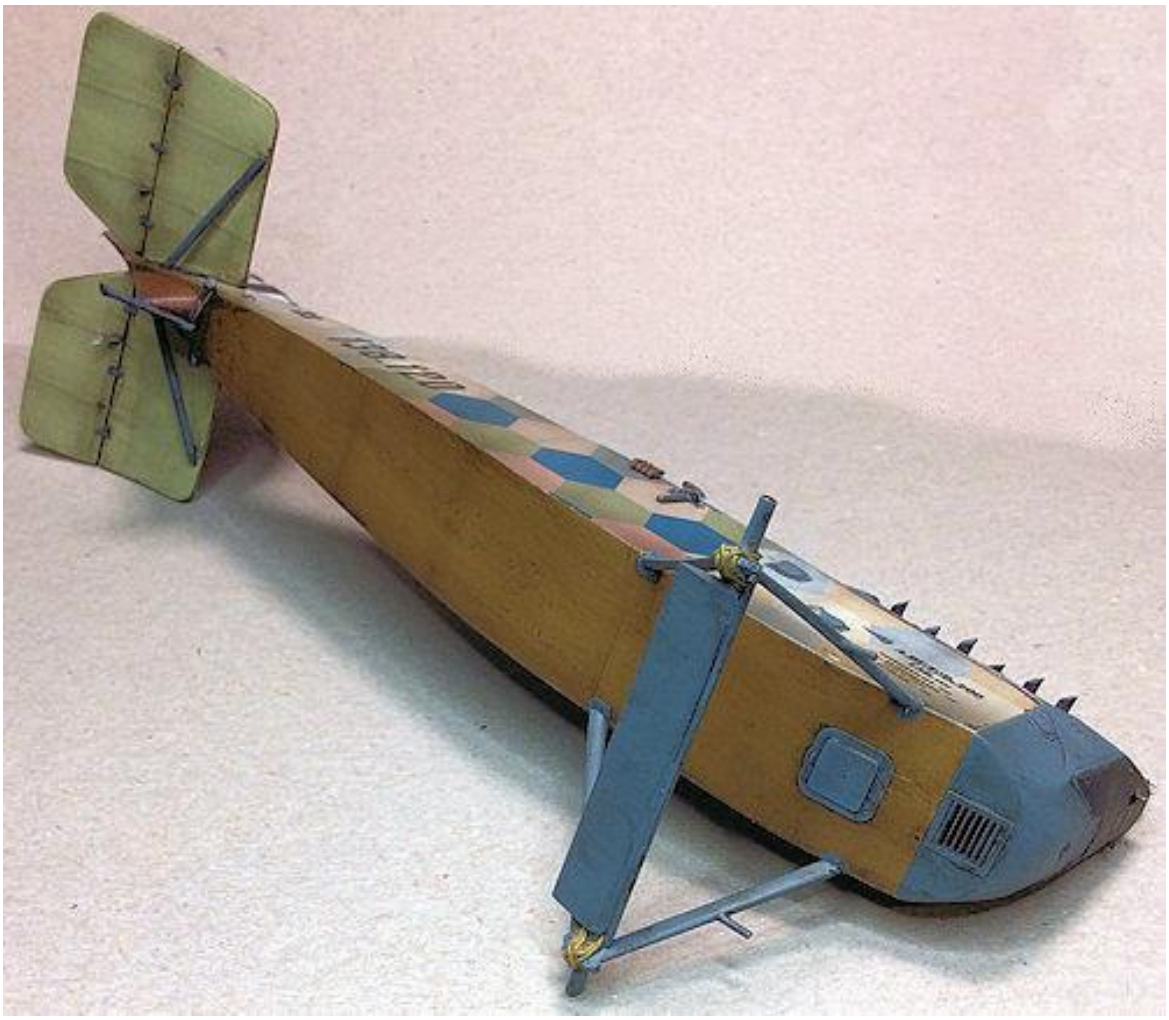
At this stage a clay weathering wash, if desired, can be applied. For this type of weathering I use the fine clay pigmented clay wash, which is available from 'Flory Models'. The wash used is the Dark Dirt, although other colours are available.

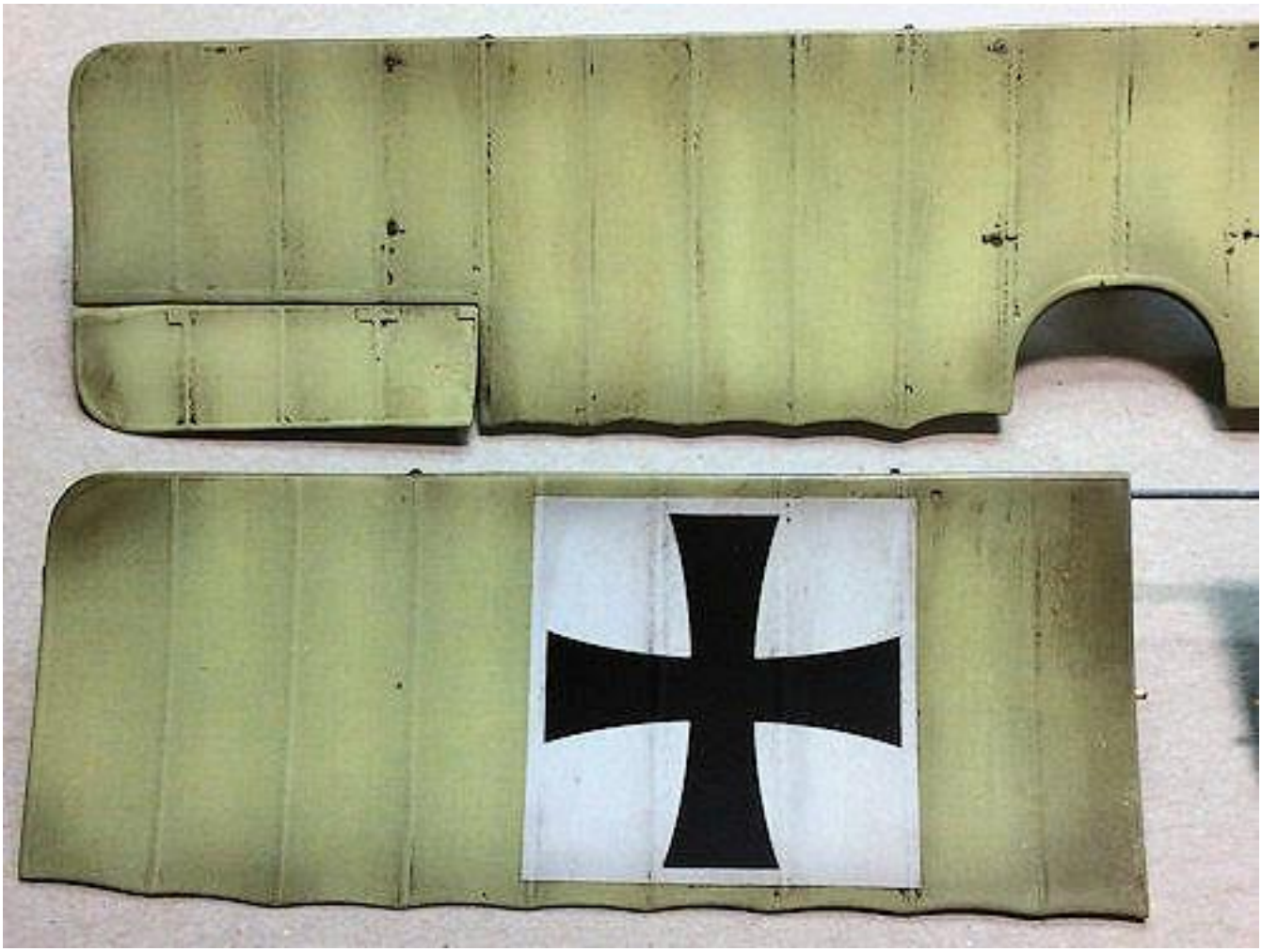
NOTE: *To apply a 'Flory Models' clay wash, refer to Part 2 of this build log for guidance.*

Applied wash

Wash removed







Once the weathering wash has been applied, seal the weathering wash by airbrushing a light misting coat of semi-matte sealer - e.g. ‘Alclad’ Semi-Matte (ALC-312) or Light Sheen (ALC-311) lacquer or ‘Tamiya’ Semi- Gloss (X35).

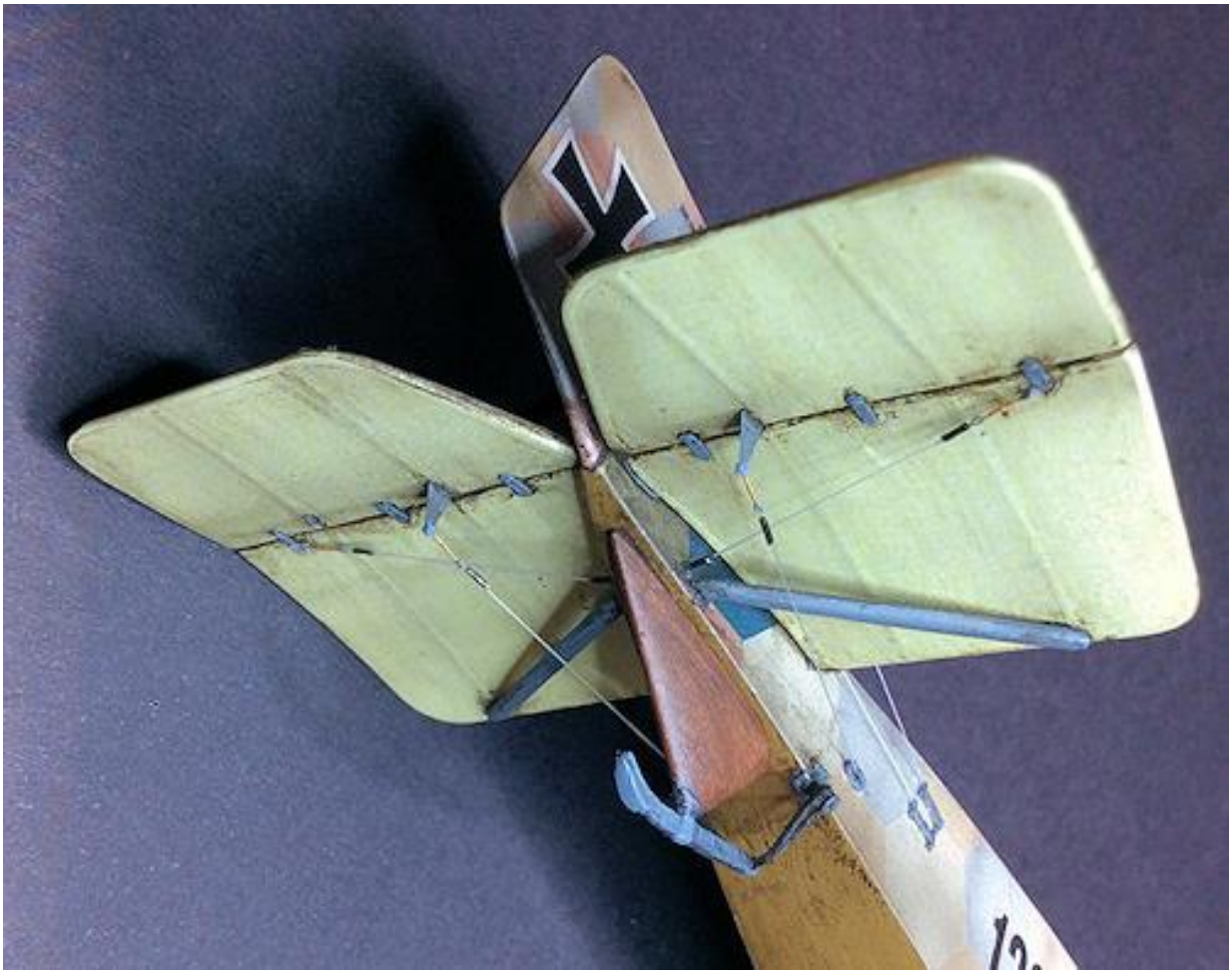
Tail unit rigging - fitting:

Before continuing to fit the wings etc, the prepared pre-rigged cross bracing and control lines at the tail unit should be fitted.

As ‘Gaspatch’ anchors were fitted to the tail planes for attaching the cross bracing wires, the Type C turnbuckles can only really be attached to the anchors by threading 0.08 mm diameter line through both the eye of the turnbuckle and its anchor, then tying a small knot to hold them both together. After securing with CA adhesive, the excess tags of line can be carefully cut away.

The top bracing wire is threaded through the pre-drilled hole in the leading edge of the fin, with a short length of 0.4 mm tube (e.g. ’Albion Alloys NST04) slid onto the wire both sides of the fin. Once attached to the anchors at both sides and tensioned, the two tubes can be secured against the fin using CA adhesive.

The bottom bracing wire is fitted in a similar manner, passing the line through the fuselage at the 0.5 mm pre-drilled hole

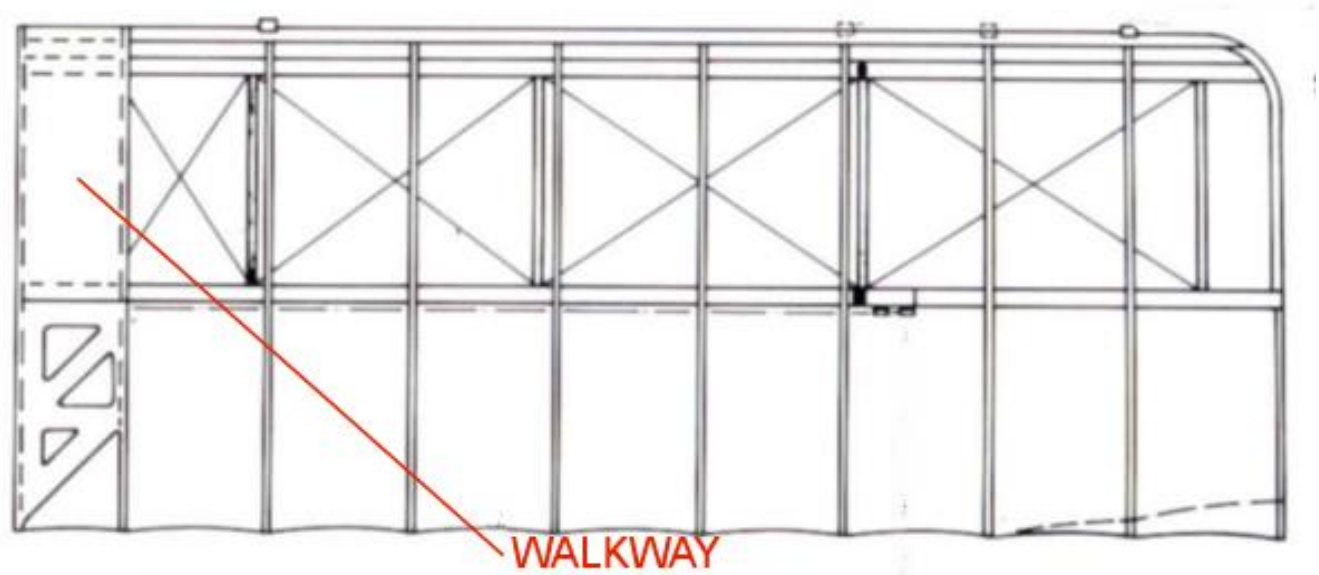


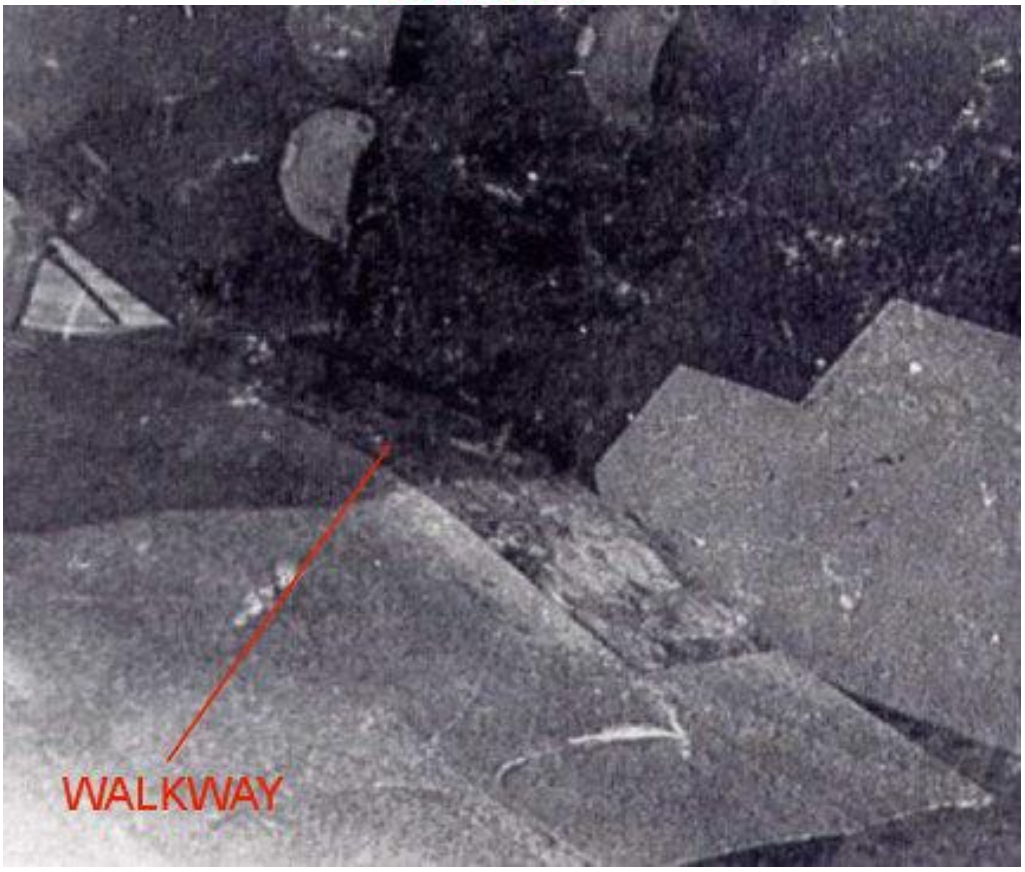
Lower wings - walkways:

NOTE 1: *At this stage I noted that the upper surfaces of the lower wings, at the forward wing root area, had protective 'walkways' fitted, presumably to protect the wing surfaces from being damaged whilst the engine area was being worked on by ground crew (too far forward for pilot's access). As no details of this could be found, I've assumed this was possibly reinforced plywood or a thin metal design and fitted over the lozenge linen covering of the wings.*

NOTE 2: *Refer to Part 3 of this build log for information on applying weathering.*

NOTE 3: *The two previously applied serial number decals at the lower wing inboard leading edges will now be covered by the walkway mesh. Therefore, using the spare decals in the kit, re-apply these decals on the upper surface of the lower wings, but outboard from the walkway meshes.*





To represent these walkways as metal mesh:

Cut two ‘walkways’ from the sheet of ‘RB Productions’ Radiator Mesh (RB-T027), using the moulded area on the lower wings as a guide.

Apply thin CA adhesive sparingly around the contact edges of the meshes and place each one in position on the lower wings. Make sure they are pressed to conform to the wing aerofoil shape.

Carefully mask around the edges of the mesh.

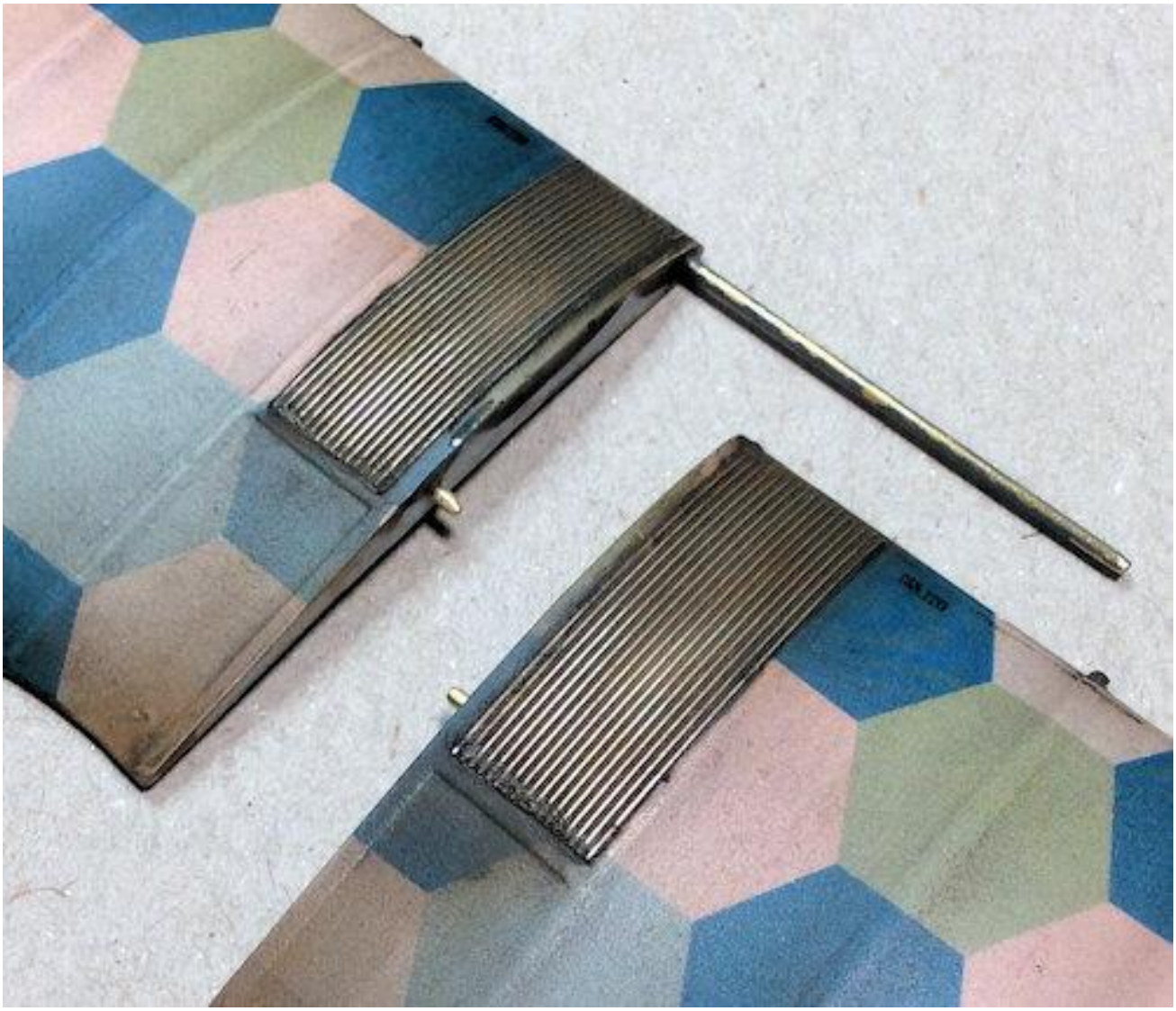
Seal the mesh by airbrushing a light misting coat of matte sealer - e.g. ‘Alclad’ Matte (ALC-310) lacquer or ‘Tamiya’ Matte (XF86).

Apply ’Flory Models’ Dark Dirt and Grime clay wash over the meshes and when dry, carefully remove wash from around the edges only, leaving the wash in the mesh itself.

Once the weathering wash has been applied, seal the weathering wash by airbrushing a light misting coat of semi-matte sealer - e.g. ‘Alclad’ Semi-Matte (ALC-312) or Light Sheen (ALC-311) lacquer or ‘Tamiya’ Semi-Gloss (X35).

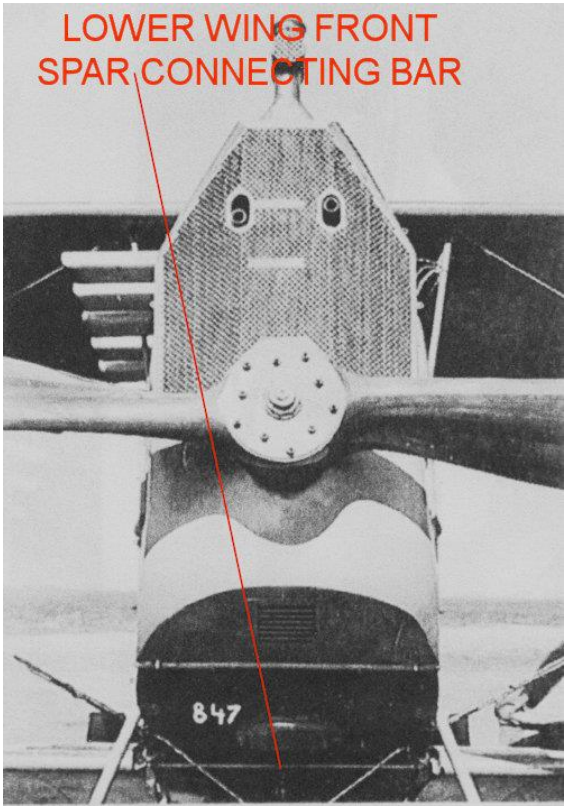
If desired, pigment powders of the appropriate colours can be applied to ‘dirt dust’ the mesh.

If pigments have been applied, seal them by airbrushing a light misting coat of semi-matte sealer - e.g. ‘Alclad’ Semi-Matte (ALC-312) or Light Sheen (ALC-311) lacquer or ‘Tamiya’ Semi- Gloss (X35).

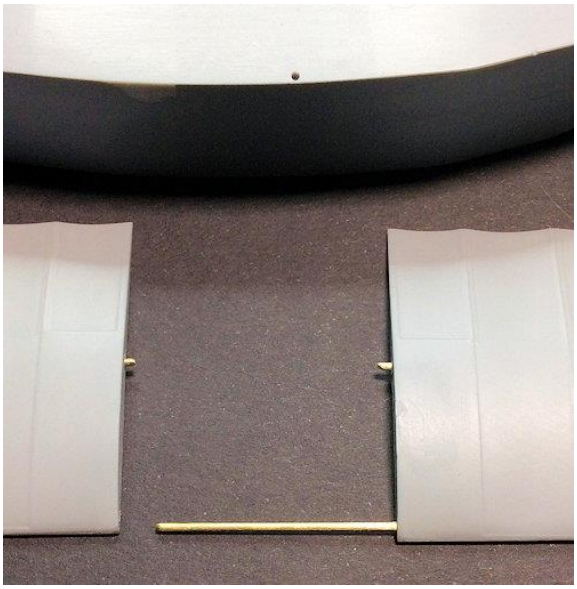


Lower wings - fitting:

The actual aircraft had a bracing bar fitted between the leading edges of the wing roots and across the underside of the fuselage.

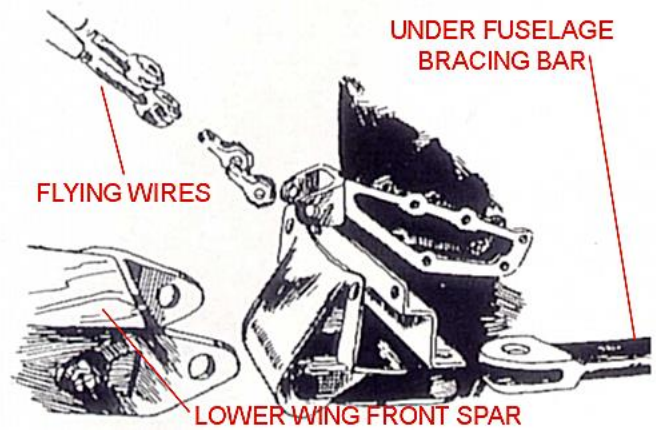


On the model, the lower wing are ‘butt’ joined to the fuselage, but with a support pin in wing root at the trailing edge and a front wing ‘spar’ bar in the wing root at the leading edge and across the underside of the fuselage.



This configuration does leave the lower wings with weak attachment and support to the fuselage. With subsequent handling, especially during the wings rigging phase, the lower wings could become detached from the fuselage and pivot on the rear support pins. Additionally this would cause the front spar ‘bar’, previously attached with CA adhesive, to pull away the wood effect decals applied to the underside of the fuselage.

The bracing bar had a ‘U’ end fittings, which were attached to the same bracket assembly as the lower wings front spars.



There seems to be no clear evidence that the bracing bar was physically attached to the underside of the fuselage. Therefore to give the model additional support at the bracing bar, some ‘poetic license’ was taken to fit support hoops to the bracing bar, as follows:

Position the rear support pin in the left lower wing into its pre-drilled location hole in the fuselage.

Position the fitted front spar bracing bar onto the underside of the fuselage, making sure the wing is in full contact with the fuselage and is horizontal when viewed from the front.

Secure the wing in position using CA adhesive.

Position the rear support pin in the right lower wing into its pre-drilled location hole in the fuselage.

Position the wing pre-drilled location hole onto the front spar bracing bar, making sure the wing is in full contact with the fuselage and is horizontal when viewed from the front.

Secure the wing in position using CA adhesive.

If necessary, add CA adhesive to the secure the bracing bar to the underside of the fuselage.

Airbrush ‘Tamiya’ Smoke (XF19) thinned with X20a over the wing roots at the lower wings and adjacent fuselage.

Using heat, anneal a length of 0.8 mm diameter brass rod (e.g. ‘Albion Alloys’).

Cut two lengths of the rod and bend each around a 1.0 mm rod to create two ‘U’ shape support brackets.

Locate each bracket at the outer end of the bracing bar and over the bracing bar.

Mark the position of the ends of each bracket.

Drill holes of 0.9 mm diameter into the underside of the fuselage to accept the brackets.

Locate each bracket over the bracing bar and fully into the pre-drilled holes.

Secure the brackets in position using CA adhesive.

Prime the two bracket and when dry, brush them with ‘Tamiya’ Ocean Grey (XF82).

Seal the brackets by airbrushing a light misting coat of semi-matte sealer - e.g. ‘Alclad’ Semi-Matte (ALC-312) or Light Sheen (ALC-311) lacquer or ‘Tamiya’ Semi- Gloss (X35).

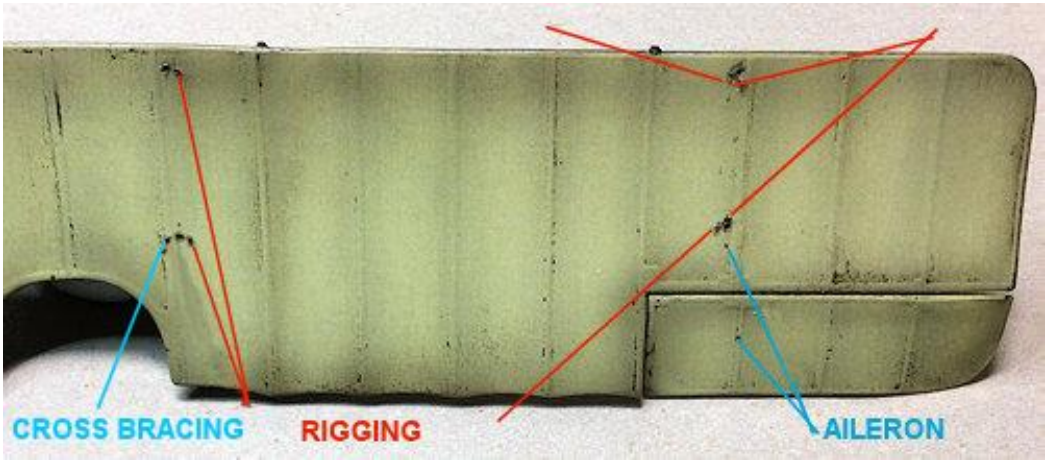
Apply ’Flory Models’ Dark Dirt wash over the brackets and bracing bar and when dry, carefully remove wash from around the edges.

Once the weathering wash has been applied, seal the weathering wash by airbrushing a light misting coat of semi-matte sealer - e.g. ‘Alclad’ Semi-Matte (ALC-312) or Light Sheen (ALC-311) lacquer or ‘Tamiya’ Semi-Gloss (X35).

Pre-rigging - fitting:

Before continuing to fit the upper wing, the prepared pre-rigged cables and wires should be fitted.

Into each of the twelve pre-drilled rigging holes (rigging wire holes only, **not aileron control or cross bracing**) on the underside of the upper wing, insert a 'Gaspatch' anchor and secure using thin CA adhesive.



Make sure the 'eye' ends of the anchors are free of adhesive. If necessary carefully run a 0.2 mm diameter drill through the 'eyes' to clear any adhesive.

Roll cut twelve short lengths of 0.5 mm diameter tube (e.g. 'Albion Alloys' MBT05).

Pass the free end of a prepared rigging line (with 'Gaspatch' type A turnbuckle fitted) through a cut tube.

Pass the line through the 'eye' end of a rigging anchor then loop it back and through the tube.

Leave the line loop slack as it will be tightened and secured after the upper wing has been fitted.

Repeat this procedure for the remaining eleven rigging lines.

Locate the shank of the two prepared cross bracing wires ('Gaspatch' type A turnbuckle fitted) into the pre-drilled holes in the centre section of the upper wing, inboard of the rear cabane strut and secure them in position using thin CA adhesive.

Undercarriage cross bracing - fitting:

Pass the free end of a prepared rigging line (with ‘Gaspatch’ type C turnbuckle fitted) through a cut tube of 0.5 mm diameter.

Pass the free end of the line through the ‘eye’ end of a fitted rigging anchor at the top of an undercarriage strut then loop it back and through the tube. Leave the loop loose.

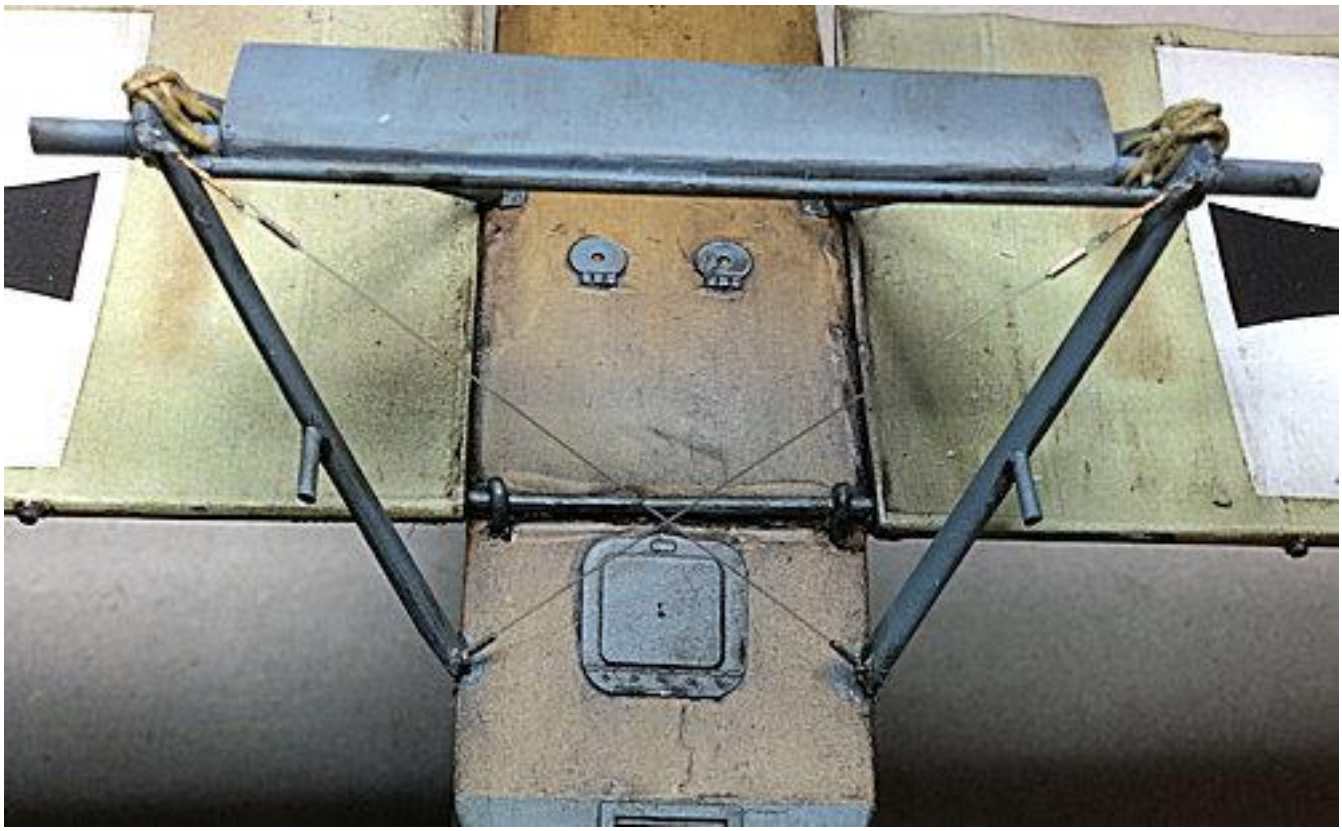
Pass a length of 0.08 mm diameter mono-filament (e.g. ‘Stroft GTM’ Silicon-PTFE tempered monofil) through the free ‘eye’ end of the turnbuckle then through the ‘eye’ of the anchor fitted to the bottom of the diagonally opposite strut.

Tie off the turnbuckle to the anchor and secure with thin CA adhesive.

Pull the other end of line to tension it as well as moving the tube up to the anchor.

Secure in position with thin CA adhesive.

Repeat this procedure on the other cross bracing line.



Upper wing - fitting:

With the lower wing and wing pre-rigging installed, the upper wing can now be fitted.

NOTE 1: *During the fitting of the upper wing and struts, it’s important to make sure the pre-installed rigging is kept clear of adhesive. If not the rigging may become contaminated with adhesive.*

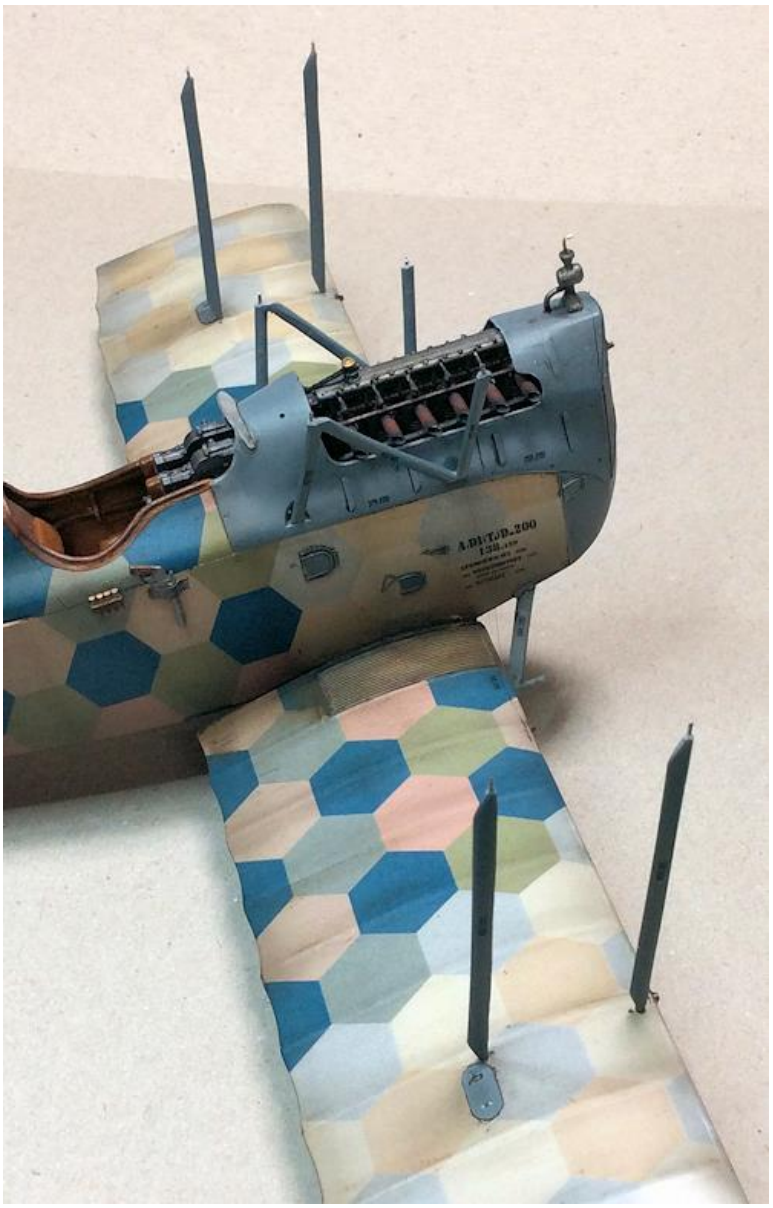
NOTE 2: *Make sure the lower wings are adequately supported. This will avoid the fixings of the lower wings from being strained or damaged during installation of the upper wings and struts.*

Make sure all pre-drilled rigging holes are clear of paint, weathering and sealing coat.
If necessary, clear the holes by running a 0.3 mm diameter drill into the holes.

Make sure the locating pins in the interplane and cabane struts fit fully into their respective pre-drilled holes. If necessary, clear the holes by running a 0.5 mm diameter drill into the holes.

Fit the bottom locating pins of the two ‘N’ cabane struts fully into their location holes in the sides of the fuselage. Secure in position using thin CA adhesive.

Fit the bottom locating pins of the four interplane struts fully into their location holes in the lower wings, leaning them slightly forwards to align with the tops of the cabane ‘N’ struts. Secure them in position using thin CA adhesive.



Lay the upper wing, top surface down, onto soft tissue, such as kitchen roll, to protect the decaled surface.

Invert the fuselage assembly and carefully position it onto the underside of the upper wing.

Support the fuselage with sponge or similar to protect the decaled surface. Make sure that the support is such that the fuselage is at the correct angle to the enable the pins in the struts can be located fully into the upper wing location holes.

Make sure that all pre-rigging is clear of the upper wing location holes. If necessary hold them clear using small, lightly applied, pieces of masking tape.

Carefully check fit the upper wing by locating it onto pins of the four interplane struts and the pins in the tops of the cabane ’N’ struts.

Make sure when the struts are fully located that the upper and lower wings align when viewed from above and lay at the same angle when viewed from the sides.

Apply sparingly thin CA adhesive to the strut locations at the upper wing and leave to set.

NOTE: *The brackets 42 are fitted at the base of the forward struts and brackets 44 (mis-labelled 46 in the instructions) are fitted at the base of the rear struts of the cabane 'N' struts.*

Using thin CA adhesive, fit the cabane 'N' strut brackets (PE42 (x2) and PE44 (x2).

Final rigging - fitting:

Now that the pre-rigged upper wing has been fitted, the completion of the flying, landing and cross brace wires can be carried out.

NOTE: *Refer to page 116 of this build log for guidance on the rigging.*

For each of the flying, landing and wing strut cross bracing wires do the following:

Insert the tang of the type A turnbuckle into it's pre-drilled hole, making sure it is angled correctly so the rigging aligns with the anchor at the other end.

Secure the turnbuckle in position using thin CA adhesive.

Slide the tube at the other end of the line slightly away from the anchor to allow tensioning of the line. Make sure you don't slide the tube too far along the line and allow the free end of the line out of the tube.

Carefully pull the free end of the line to tension it whilst sliding the tube close to the anchor.

Secure the tube to the line using thin CA adhesive.

Carefully cut away any excess line as close as possible to the tube.

Brush paint the tubes to 'knock back' the metallic finish (I use 'AK Interactive' Kerosene AK-2039)

Rear cabane 'N' strut - cross bracing:

Thread the free end of one of the cross bracing lines from the centre section of the upper wing diagonally across and into the pre-drilled hole in the cockpit front decking. If necessary trim the length of the line so approximately 5 mm only will enter the hole.

Pull the line to tension it and apply thin CA adhesive to secure it into the hole.

Repeat this procedure for the remaining cross bracing line.

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

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

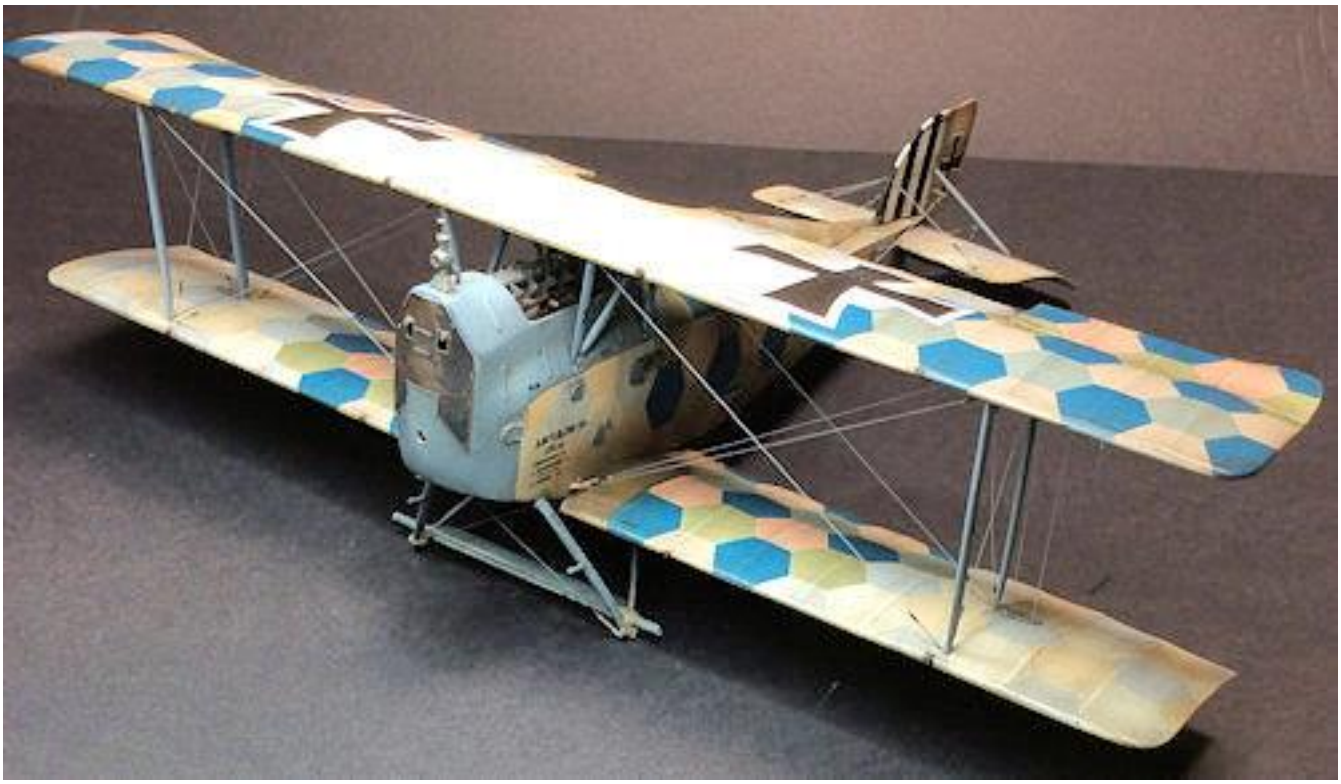
WARNING: *Care needs to be taken when using this method to tension line, as using a heat source is required.*

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

Rigging - finish:

NOTE: During the next step, protect the fitted wind screen from airbrushing over spray.

To reduce the 'sheen' of the mono-filament rigging, airbrush over all of the rigging with a light misting coat of semi-matte sealer - e.g. 'Alclad' Semi-Matte (ALC-312) or Light Sheen (ALC-311) lacquer or 'Tamiya' Semi- Gloss (X35).



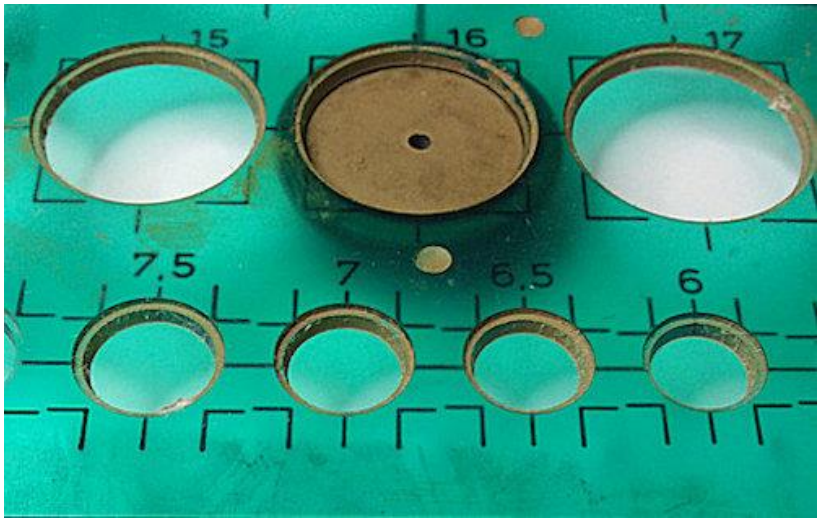
Wheels:

Prime both of the previously assembled wheels by airbrushing with a grey primer (e.g. 'AK Interactive' primer and micro filler - Grey AK758 or similar).

NOTE: *To airbrush the face of the wheels without over spraying the surrounding tyres, I use a circle drawing tool (Linex 1217 T).*

Select the best sized hole in the drawing tool that matches the covers (not including tyres) of the wheels. Position the wheel under the hole.

Example of using the drawing tool.



Prime the wheel cover on both sides by airbrushing with a white primer (e.g. 'AK Interactive' primer and micro filler - White AK759 or similar).

Once dry, airbrush a sealing coat over the outer wheel covers - use either 'Alclad' Clear Coat Gloss (ALC-310) lacquer, 'Alclad' Aqua Gloss (ALC-600), 'Tamiya' Clear (X22) with added 'Mr. Colour' levelling thinners or 'Johnson' Pledge Floor Care finish (similar to 'Future'). This will provide a good surface for applying the decals.

NOTE: *The decals for the wheel markings are not 'cookie' cut and therefore need to be carefully cut out from the supplied sheet, before being applied to the propeller.*

Carefully drill or cut out the centre hole from the wheel decals (to allow the decal to fit over the axle stub).

Carefully cut around the wheel decals and remove them from the backing sheet.

Apply the decals to the wheel outer covers.

Brush paint the white axle stub with 'Tamiya' Semi-gloss Black (X18).

Airbrush a light sealing coat over the propeller - e.g. either 'Alclad' Light Sheen (ALC-311) or Semi-Matte (ALC-312) lacquer or similar (e.g. 'Tamiya' Semi Clear (X35).

Refer to Part 3 of this build log and apply a 'Flory Models' Dark Dirt clay wash. Once dry, remove the wash to achieve your desired 'weathered' look.

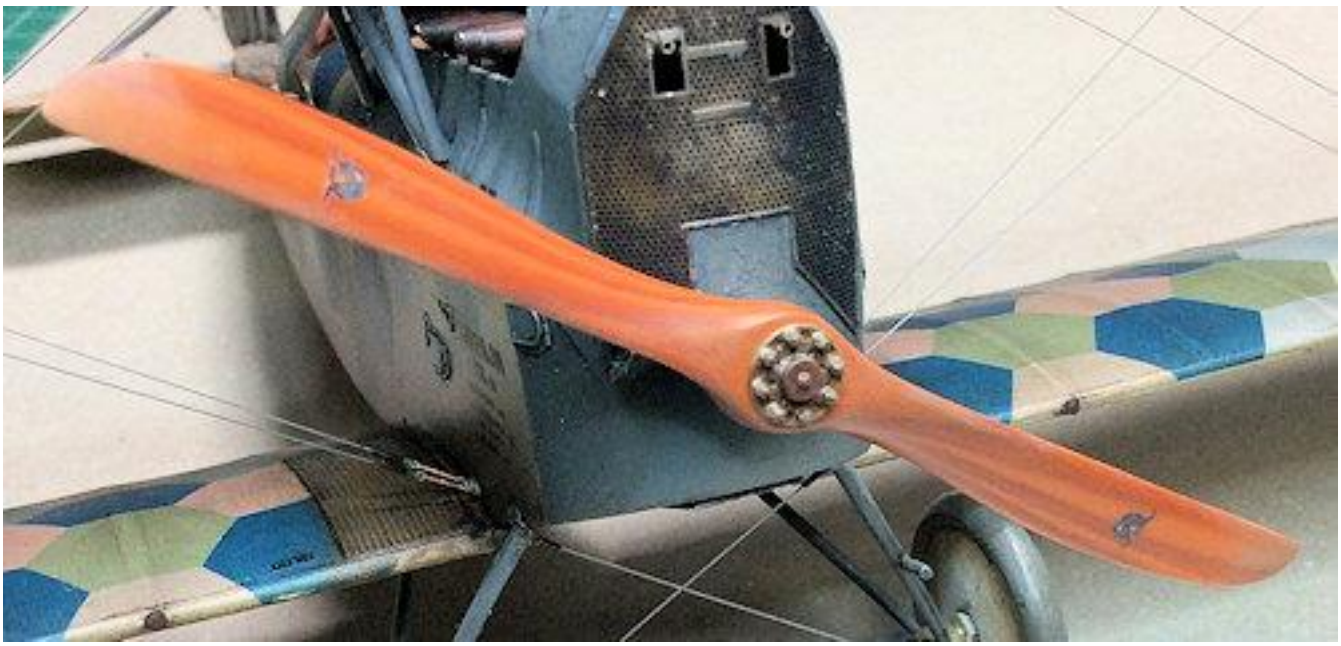
Airbrush a light sealing coat over the propeller - e.g. either 'Alclad' Light Sheen (ALC-311) or Semi-Matte (ALC-312) lacquer or similar (e.g. 'Tamiya' Semi Clear (X35).

Sponge apply, as desired, 'Tamiya' Weathering Master (Set A - Mud) and/or suitable pigment powders around the tyres and wheel cover rims.

Locate the two wheels onto the axle ends and secure in position using CA adhesive.

Propeller - fitting:

Locate the shaft of the propeller into its locating hole at the front of the fuselage and set it to your desired position. Secure in position using CA adhesive.



PART 10

FIGURE

PART 10 - FIGURE

NOTE 1: *Resin is brittle and small or thin parts can easily be broken*.

NOTE 2: *When working with resin, dust or particles are harmful if they are inhaled or ingested.*

NOTE 3: *The casting of many resin items can leave small 'blow' holes and other types of imperfections.*

NOTE 4: *Resin parts need to be assembled using CA adhesive, as normal plastic model cement will not bond the parts together.*

NOTE: *The figure chosen for this model is the 'Copper State Models' Austro-Hungarian flying ace (F32-032).*

Preparation:
Before assembly, remove imperfections and seam lines by scraping with a sharp scalpel blade.

Wash the figure parts in warm water with washing up liquid added and then thoroughly dry the parts. This will remove any residual 'release agent' used during casting of the figures, which if not removed, may cause problems when applying paint to the figure.

The figure is comprised of the body, two arms and the head. The figures right arm has the 'hand' inserted into the pocket. However the pocket where the hand is 'inserted' is too flat. Therefore I added 'Deluxe Materials 'Perfect Plastic Putty' over the pocket to bulk it out.

Assembly:
Secure the figures arms and head onto the body using CA adhesive.

Carefully drill a hole of 0.8mm diameter up into one leg of the figure.

Cut a length of 0.8mm diameter rod from a standard office paper clip.

Insert the cut rod into the hole drilled in the figures leg and secure in place using thin CA adhesive. This rod will serve to hold the figure whilst being painted and also to secure the figures to the finished display base.

Fill any 'blow' holes, gaps or imperfections using a modelling putty, such as 'Deluxe Materials' Perfect Plastic Putty.

Painting:

NOTE: *Unless stated otherwise, 'Tamiya' acrylic paints thinned with 'Tamiya' 20A were used.*

Prime the assembled figure by airbrushing with 'AK Interactive' Primer and micro-filler (Grey-AK758).

Brush paint the various parts of the figure with 'Tamiya' acrylic paints, thinned as required with 'Tamiya' thinners X20a.

Flying jacket - Rubber Black (XF85).

Uniform jacket and trousers - RLM Grey (XF22) - highlights Ocean Grey (XF82)/Rubber Black (XF85).

Puttees - Neutral Grey (XF53) - highlights Rubber Black (XF85).

Shoes - Red Brown (XF64).

Metal fittings - Rubber Black (XF85), 'Mr. Colour' Brass (219).

Jacket collar decorations - 'Mr. Colour' Stainless Steel (213).

Officers Cap - RLM Grey (XF22) - highlights Ocean Grey (XF82)/Rubber Black (XF85), Rubber Black (XF85), 'Mr. Colour' Brass (219).

Flight badge - 'Mr. Colour' Brass (219), Stainless Steel (213).

Hair - Flat Earth (XF52).

Flesh - 'Vallejo' Model Colour base flesh (70.815 and light flesh 70.928.

Airbrush the figure with a sealing coat of 'Alclad' Flat (ALC-314).

Airbrush the black flight jacket with a sealing coat f 'Alclad' Light Sheen (ALC-311).

PART 11

DISPLAY BASE

PART 11 - DISPLAY BASE

The display case is made from sheets of 3 mm thick piano black Acrylic sheet, cut and cemented together to form a 'shouldered step' for seating the transparent top, which is fabricated from 3 mm thick clear Acrylic sheet. This was made to measure for this model by an on-line manufacturer, who also made the angled plaque mount, which was secured to the display base with a contact adhesive. The brass (brushed silver) plaques were also made by an online manufacturer and were secured to the angled mount with contact adhesive.

Grass mat:

The grass mat used for the display base is the 'Polak' Wild Meadow variant E (4705).

The grass mat was cut to the desired shape. The clear plastic backing was removed from the grass mat, which was then positioned on the base. The mat was laid onto the display base and positioned to ensure the model would clear the display top when located. A soft pencil was used to lightly trace the outline of the mat on the display base. PVA adhesive was then applied to the backing (underside) of the mat, which was then laid back onto the base, aligned to the pencil outline and gently pushed down to make proper contact. The grass mat was covered with a sheet of kitchen 'Cling Film' and several heavy books were then stacked onto the cling film, to press the grass mat fully in contact with the display base. The books and cling film were removed after two hours, when the edges of the grass mat were checked for contact (apply PVA adhesive if not). The grass tufts were gently brushed to remove any flatness.

Aircraft model:

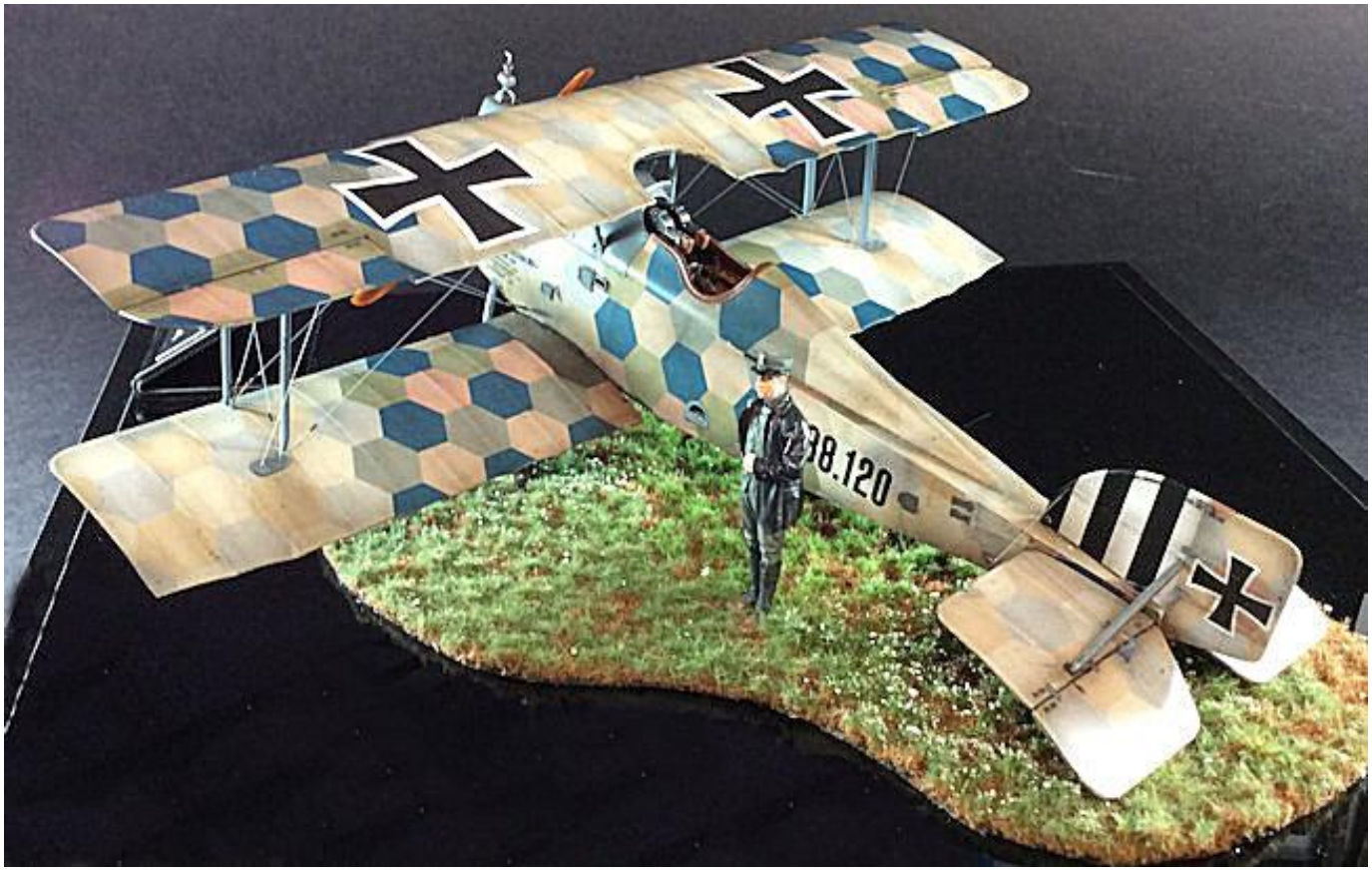
The aircraft was not fixed to the display base, but left as 'free standing'. Although this may not be as secure as fixing the model to the display base, it does mean the model will not be subjected to shock loading when being moved around, as it might be if fixed on the display

The figure:

The figure was positioned on the base in its final position and the location of the pin in the leg of the figure was marked on the grass mat. A hole of 1.0 mm was drilled through the grass mat and into (not through) the base. PVA adhesive was then applied to the pin of the figure, which was then carefully seated into the drilled hole. Light pressure was applied to the figure to ensure it was fully located in the base.

PART 12

COMPLETED MODEL PHOTOS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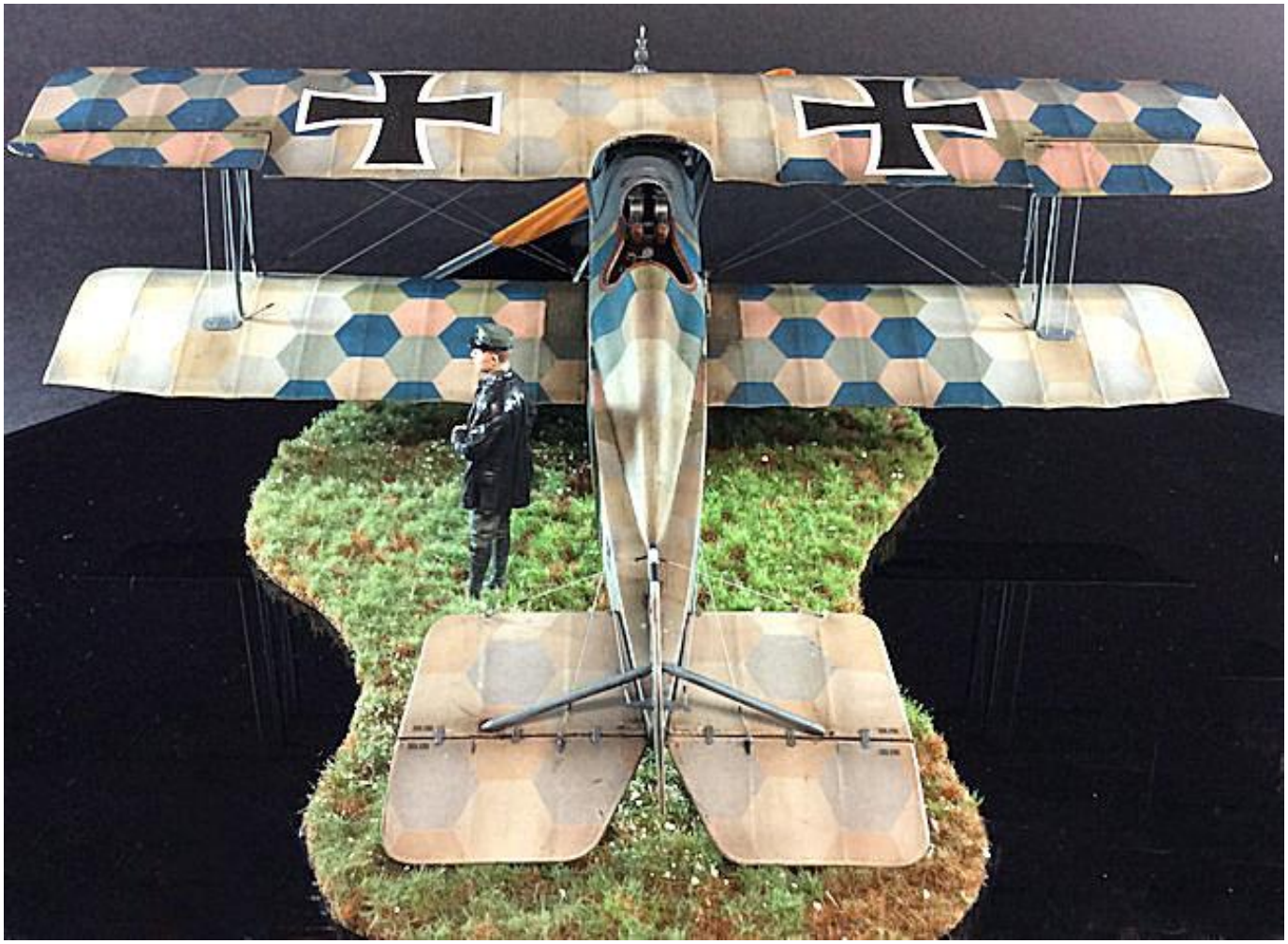


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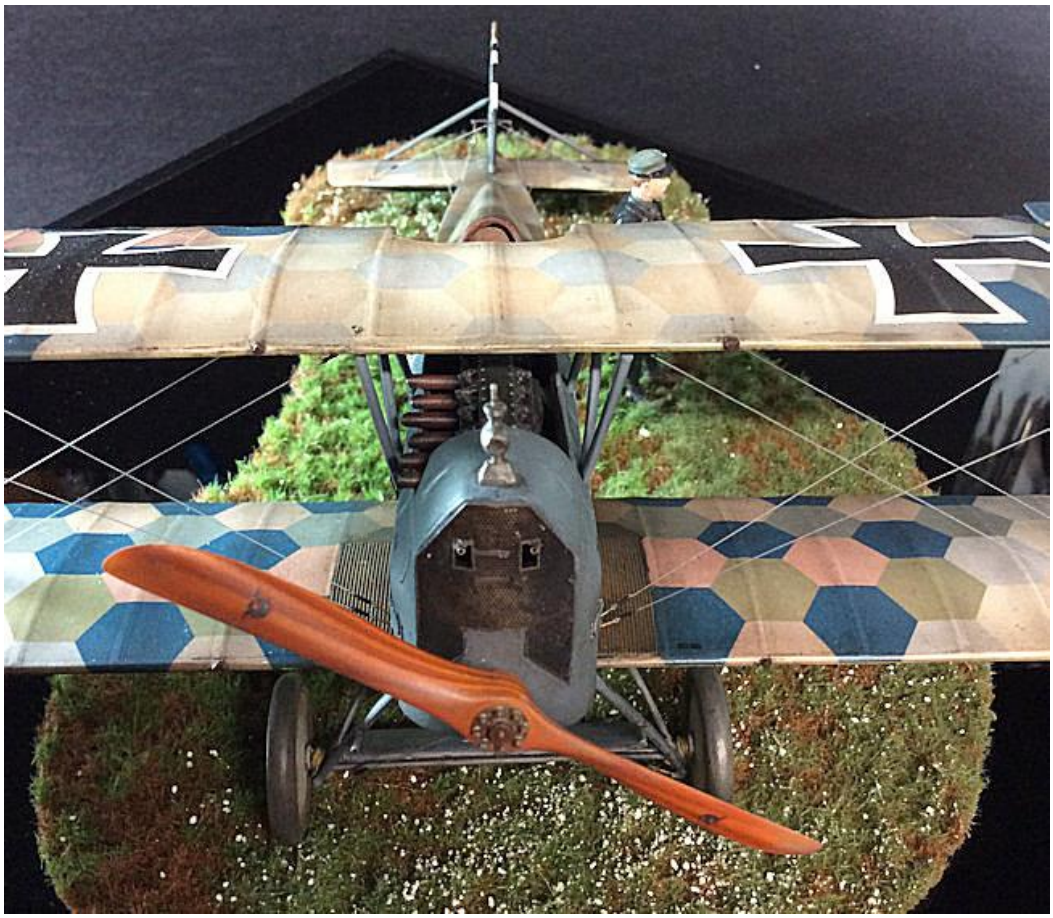

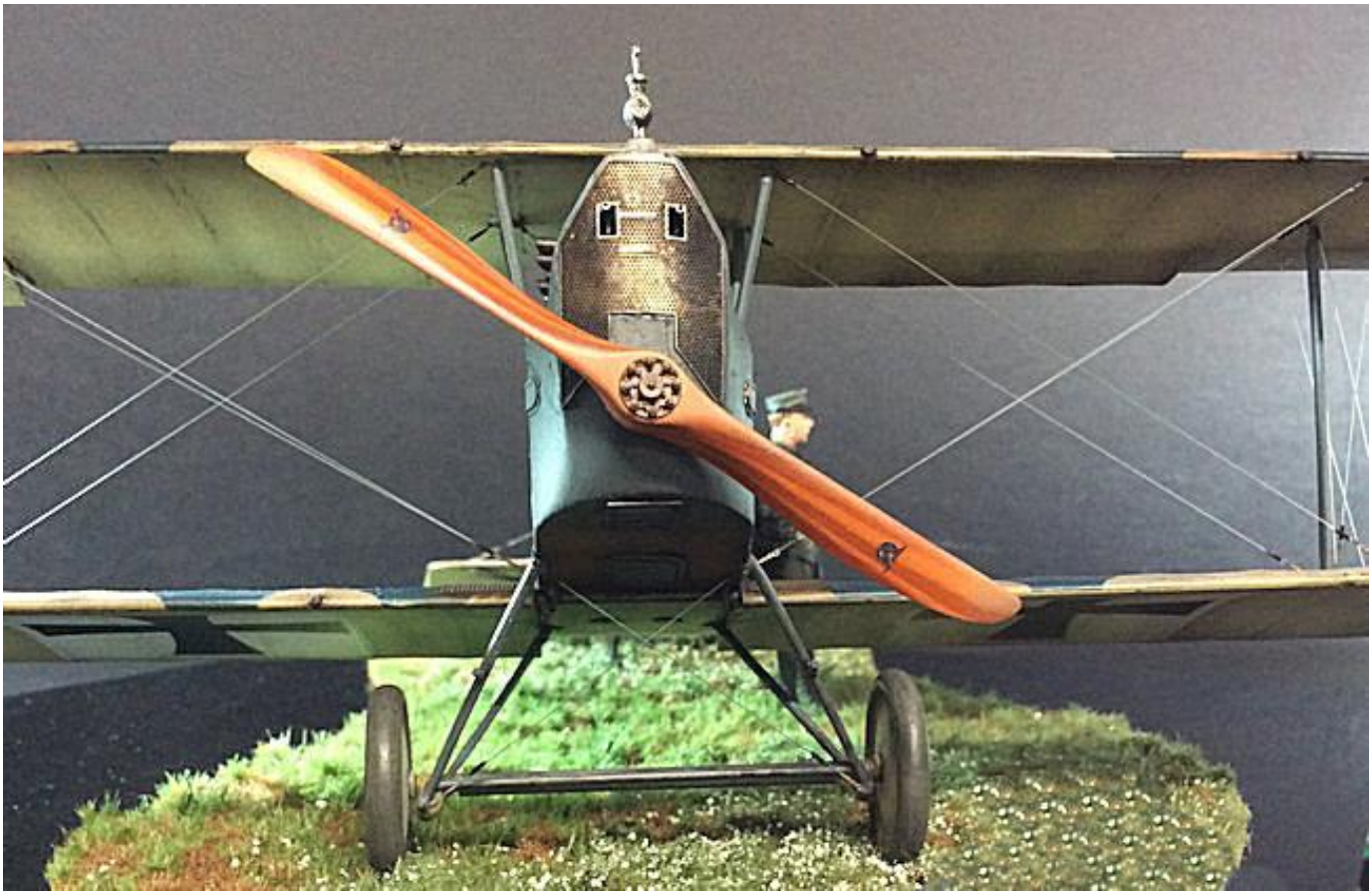


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