



# World War One Aircraft Models

I have always held a fascination with early military aircraft. After serving for 27 years in the Royal Air Force, I became a Military Aerospace Technical Author. Although, as most modelers, I got involved in the world of construction kits at an early age, I stopped for most of my service career and for some years afterwards.

I started modeling again a few years ago and now enjoy the challenge of building aircraft of World War One. Since posting photographs of my completed models online, several people have asked if I would create a 'build log' for future builds.

I don't consider myself a 'master' of this craft, but hope to be able to pass on what I have learned. As such, here is my build log, which covers my build of the 'Wingnut Wings' 1:32 scale model of the Hansa-Brandenburg W.12 floatplane.

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## INTRODUCTION

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



## **AFTER MARKET**

### **Figures**

'Kellerkind' German Naval mechanic (54094),  
'Kellerkind' Gotha pilot (54095),  
'Copper State Models' German Naval Observer (F32-036).

### **After Market Parts**

'Proper Plane' Wotan propeller (WP-019),  
'REXx' tall exhaust pipe (REXx-320.64),  
'Gaspatch' 1:32 scale Parabellum 14 machine gun (15-32068),  
'Gaspatch' 1:32 scale 'Spandau' early MG08 machine guns (15-32072),  
'Part' control horns and turnbuckle set (S48-087).

### **Decals**

'Aviatic' Bleached Clear Doped Linen (ATT32044),  
'Aviatic' German Naval Hex (faded) (ATT32113),  
'Aviatic' Linen Weave Effect (ATT32236),  
'Xtradecal' parallel stripes set (XPS2),  
Microscale's 'MicroSet/Sol' setting solutions.

### **Rigging accessories**

'GasPatch' Elite Accessories metal Anchor Points (1:48th scale),  
'GasPatch' Elite Accessories metal turnbuckles One Ended and Type C (1:48/1:32nd scale),  
'Proper Plane' 1/32nd scale 3D printed resin turnbuckles (RD-005),  
'Albion Alloy' Brass 0.4 and 0.5 mm diameter micro-tube,  
'Steelon' or 'Stroft GTM' Mono-Filament 0.08 and 0.12 mm diameter.

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

Paints ('Tamiya' Acrylic, 'Humbrol' Acrylic, Mr Metal Colour,  
'Alclad' or 'Hataka' lacquers, 'AK Interactive' acrylic),  
'AK Interactive' Primer and micro-filler (Grey AK758 or White (AK759),  
'Ammo Mig' Black anti-slip paint (AMIG2034),  
'Mr. Colour' Levelling Thinners, PVA Adhesive,  
'Fleky 5' CA thin adhesive, 'Flory Models sanding or Polishing sticks,  
'PlusModel' lead wires, 'Flory' pigments, 'UHU' White Tack,  
'EZ' stretch black line (fine), 'Microscale' Micro Kristal Clear,  
'Alclad' Aqua Gloss 600 or 'Ammo' Aqua Gloss Clear (A.MIG-2503),  
'Deluxe Materials' Perfect Plastic Putty, 'AK Interactive' weathering pencils.

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

'Flory Models' clay washes and pigments, AK Interactive engine washes,  
'Tamiya' Weathering Master sets, 'Tamiya' Enamel Thinners (X20).

### **Display Base**

Purpose built Acrylic base and cover, etched plaque (information plate),  
'Coastal Kits' Abandoned Airfield' display mat (1:32 scale).

# PART 1

# THE MODEL

**PART 1 - THE MODEL**  
(Wingnut Wings Kit No.32036)

This particular model kit was released by Wingnut Wings as a single model kit (32036), which offers five sets of different decal markings in addition the Naval hexagonal linen decals.

As expected, any model from WingNut Wings (WNW) is at the top of quality and accuracy. The kit components are not a numerous as many of their kits, which is good if you are building a WNW kit for the first time. The parts are manufactured from traditional 'plastic', not resin. There is minimal mould flash that needs to be removed and also virtually no ejection pin marks that need to be filled and sanded away. All of the main sprues, including the transparencies and photo-etch (PE) parts, are sealed in separate plastic bags, which prevents and sprue damaging another. There are nine main sprues, one transparency and one photo-etch for this model. The kit covers both the C2MG and C3MG types the number denoting how many machine guns the aircraft carried. There are parts supplied in the kit that are not required for this model. This model has minimal rigging, being between the interplane struts, across the two and the aileron and rudder controls, so is a good build for those who may struggle rigging a model. The decal sheets supplied are by 'Cartograf' so should be of the best quality in both colour and registration. However some modellers have experienced problems with the decals supplied in some 'Wingnut Wings' released kits, finding they can crack or break up when being applied. Therefore, extra care should be taken during application of the decals. The instruction manual is in the well known format that WNW produce and has clear and concise instructions, including coloured illustrations and photos for reference. Also the manual has a lot of information on the aircraft including a colour profiles of the various aircraft colour schemes.

Independent reviews of this model kit can be found at the following URLs:

1. **Hyperscale**  
[https://www.hyperscale.com/2015/reviews/kits/wingnutwing32036reviewrb\\_1.htm](https://www.hyperscale.com/2015/reviews/kits/wingnutwing32036reviewrb_1.htm)
2. **Aeroscale**  
<https://archive.aeroscale.net/review/11592/index.htm>

**A description of the particular aircraft being modelled can be found in the following  
Part 2 (The Aircraft).**

# PART 2

# THE AIRCRAFT

## PART 2 - THE AIRCRAFT

### References:

Windsock Data File No.61 - Brandenburg W.12 (Peter M Grosz).

Wingnut Wings kit instruction manual.

### Adapted from the 'Wingnut Wings' manual

Utilizing design cues and lessons learned from previous aircraft designed for the Austro-Hungarian Army and Navy, the Ernst Heinkel designed Hansa-Brandenburg W.12 went on to become one of the most successful sea-plane fighters operated by the German Navy in the First World War. The W.12 was designed to be a long range, highly manoeuvrable two-seat fighter and the extremely sturdy, triangulated, float strut arrangement ensured great strength, whilst almost doing away with the need for any wing rigging. Three Daimler-Mercedes 160hp D.III powered W.12 prototypes were ordered in October 1916 (numbers 1014 to 1016) and another 3 the following month (numbers 1011 to 1013). The W.12 initially lived up to its promise when prototype 1014 took to the air for the first time in late February 1917, which was fortuitous because the Navy had placed a production order for 10 Benz Bz.III 150hp powered W.12 aircraft the previous month. Eventually various problems arose, which delayed the remaining 5 prototypes and they were not delivered until July 1917, about the same time as the first of the production aircraft began arriving. The W.12 was not considered 'fully satisfactory' until the following month. Finally the German Navy had a seaplane capable of intercepting the fast British flying boats.

The first 6 prototype Hansa-Brandenburg W.12 'Kamel' (Camel) featured a rounded nose cowling, 160hp Daimler-Mercedes D.III engine and a radiator mounted in front of the top wing. The first 10 production aircraft ordered in January 1917 (numbers 1178 to 1187) were powered by the 150hp Benz Bz.III engine with a vertical 'car type' radiator in front of the engine. Most early W.12 were built to C2MG specifications (two-seat C type aircraft fitted with 2 machine guns), although photographic evidence confirms that a small number, possibly just 2 or 3, had an additional IMG 08 'Spandau' fixed to the port side of the fuselage effectively making them a C3MG. The remaining 20 early production W.12 were ordered in March 1917 (numbers 1395 to 1414). Photographic evidence indicates that some aircraft stationed at Zeebrugge had their top wing cut outs modified for increased visibility. Late production W.12s featured a lengthened fuselage, redesigned cabane struts, ailerons on the bottom wings and a revised tailplane. These aircraft were powered by both the Daimler-Mercedes D.III and Benz Bz.III engines and built to C2MG, C2MGHFT (C2MG with wireless equipment) and C3MG specifications. Although the Hansa-Brandenburg W.29 monoplane, introduced in mid 1918, was intended to replace the W.12, the 'Kamel' continued to serve until the Armistice. A version built in the Netherlands post war, as the Van Berkel WA, remained in service until 1933.

The basic aircraft statistics are:

Wingspan - 36.75ft (11.2m)

Length - 28.5ft (8.69m)

Maximum weight - 2712lbs (1230kg)

Maximum speed - 97mph (156kph)

Engine - 150hp Benz Bz.III

Weapon (observer) - One 7.92mm LMG 14/17 Parabellum machine gun.

Weapons (pilot) - One or two 7.92mm IMG08 'Spandau' machine guns.

Hansa-Brandenburg W.12, Serial No.1184

**This model represents Hansa-Brandenburg W.12, Serial No.1184 (C3MG) as flown by Fl.Mt. Urban and Lt. Ehrhardt of C-Staffel, Zeebrugge, during December 1917.**

Hansa-Brandenburg W.12, Serial No.1184 was one of a production batch of ten aircraft, the order for which was placed in January 1917. This aircraft was accepted into service sometime between the 1st and the 15th of September of 1917. The aircraft was powered by the Benz Bz.III engine and was an early short fuselage version, with the interim rounded tailplane and wing tips. Due to flight control issues, W.12 aircraft were re-designed from Serial No:2000 onwards to have a longer fuselage.

This particular aircraft was built as a C2MG version, meaning it was equipped with two machine guns, a fixed Spandau for the pilot and a moveable Parabellum for the observer. The pilot's machine gun would normally be fitted to the forward Starboard (right) side of the fuselage. However, photographs of this aircraft shown that a Spandau machine gun was fitted to the forward Port (left) side of the fuselage. Therefore the assumption made was that this aircraft was one of a few early W.12 C2MG aircraft modified to what would later become the C3MG version, meaning it was equipped with three machine guns. The pilot had two 7.92mm IMG 08 'Spandau' machine guns (one fitted to each side of the forward fuselage) and the observer had a single 7.92mm LMG 14/17 'Parabellum' machine gun.

The first official C3MG aircraft was Serial No.2023, which was accepted in early January 1918.

On the 11th of December 1917, Urban and Ehrhardt flew 1184 as part of a three aircraft patrol, which was led by the famous Naval ace Friedrich Christianson and his observer Bernhard Wladicka, flying aircraft Serial No.1396. During this patrol they encountered the Royal Navy airship C27, which was attacked and destroyed. Its crew of five, being J.F. Dixon, H. Fail, J.C. Collet, J.E. Martin and E.R. White were all killed. Observer Ehrhardt in 1184 took several photographs of the attacked airship.

Hansa-Brandenburg Serial No.1184 was eventually destroyed, along with several other aircraft, during a bombing raid on Zeebrugge on the 10th of May 1918.



# PART 3

# WOOD EFFECTS

### PART 3 - WOOD EFFECTS

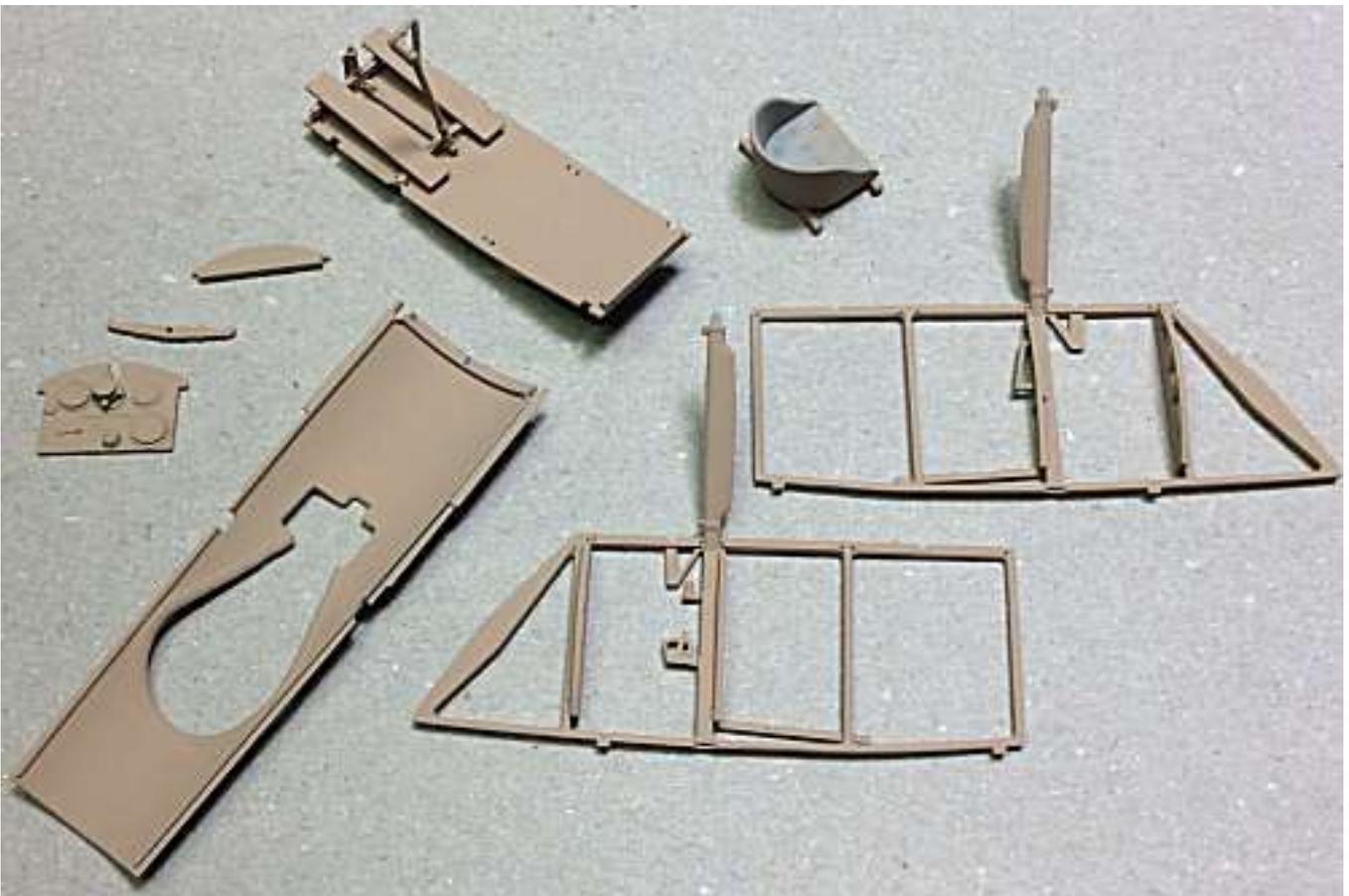
#### A basic technique:

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

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

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

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



## **Wood effect - Method 1:**

### **DecoArt Crafters Acrylic' paints:**

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

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

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

Once painting is complete, clean the brush in water.

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



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

Windsor & Newton' Griffin (Alkyd) oil paints:

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

Mask off the area as required.

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

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

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

Leave the oil paint to settle for about ten minutes.

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

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

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

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

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

If desired and once the oil paint is fully dry, airbrush a semi-gloss clear coat, such as 'Alclad' Satin (ALC312-60) or similar, with a few drops of 'Tamiya' Clear Orange (X26) to give a varnished look to the finish.

## **Surface finish:**

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

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

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

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

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



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

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

# PART 4

# WEATHERING

## **PART 4 - WEATHERING**

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

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

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

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

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

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

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

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

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



### **Chipping effects:**

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

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



### **'Tamiya' Weathering Master sets:**

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



### Pigments:

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



### Washes:

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



## Water colour pencils:

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



## Oil paint:

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

Softly drag 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 5

# DECALS

## **PART 5 - DECALS**

### **Standard decals:**

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

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

Airbrush a sealing coat of 'Alclad' Aqua Gloss (600), 'Ammo' Aqua Gloss Clear (A.MIG-2503), or 'Tamiya' Clear (X22) to provide a smooth surface.

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

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

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

Carefully move the decal into the correct position.

Once the decal is correctly positioned, use a flat brush to softly 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.

**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.*

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

### **'Aviatic' linen effect decals:**

The 'Aviatic' 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, 'Aviatic' 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 'Aviatic' 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 'Aviatic' instruction sheet supplied with the decals.

'Aviatic' 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:

As the decal is to be applied over a coloured base coat (green, brown etc), first airbrush a primer coat of 'AK Interactive' primer and micro-filler White (AK759) or Gey (AK758) or similar on all of the surfaces to have the decals applied.

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

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

Airbrush the required base colours to the model surfaces.

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

Airbrush at least two light sealing coats of 'Alclad' Aqua Gloss (ALC-600) or similar, which will form a gloss surface for applying the decals.

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

Soak each decal in warm water for approximately 20 seconds.

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

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

Align the decal to the shape of the model part.

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

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

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

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

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

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

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

**PART 6**  
**RIGGING**  
**(GENERAL)**

## **PART 6 - RIGGING (GENERAL)**

One of the first thing to do when pre-rigging a model is to make sure 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 'Steelon' or 'Stroft GTM' mono-filament (fishing line) of various diameters. This is effectively transparent but does 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.*

### **External:**

Fortunately for those modellers who dread rigging models, this particular aircraft has very little external rigging, compared to many of that era. The only external rigging required is:

- Float bracing wires (between the two floats)
- Aileron control cables (from lower to upper wing)
- Aileron control cables (above and below the upper wing)
- Rudder control cables (rudder to fuselage openings)
- Incidence wires (between wing interplane struts).

### **Internal:**

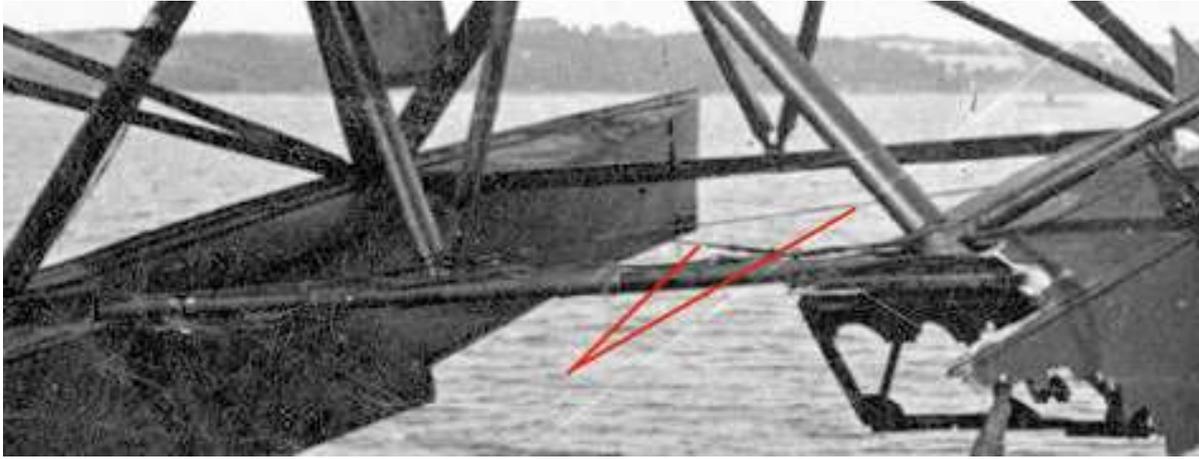
The internal rigging required for this model consist of:

- Observers flap down shelf
- Rudder control cables
- Elevator control cables
- Aileron control cables.

### **External rigging:**

#### **Float bracing wires:**

Crossed bracing wires were fitted between the front and rear support struts for the two aircraft floats. Turnbuckles were likely fitted in both bracing wires and rear of the front attachment points to the aircraft floats



Aileron control cables (from cockpit to upper wing):

**NOTE:** *The aircraft had a control steering wheel on the top of the pilots control column. The top, front of the wheel was fitted with a pulley around which the aileron control cable was routed. However, it's unclear as to how the ailerons, which were only fitted to the upper wing, were connected to the pulley on the pilots control column.*

*No information or clear photographs could be found that showed the routing of the aileron control cables. The only indication is the colour profiles in the kit instructions, which seem to show what could be the control cable externally routed up the rear of the forward interplane struts.*

***If this is correct then I believe the aileron control cables were routed as follows.***

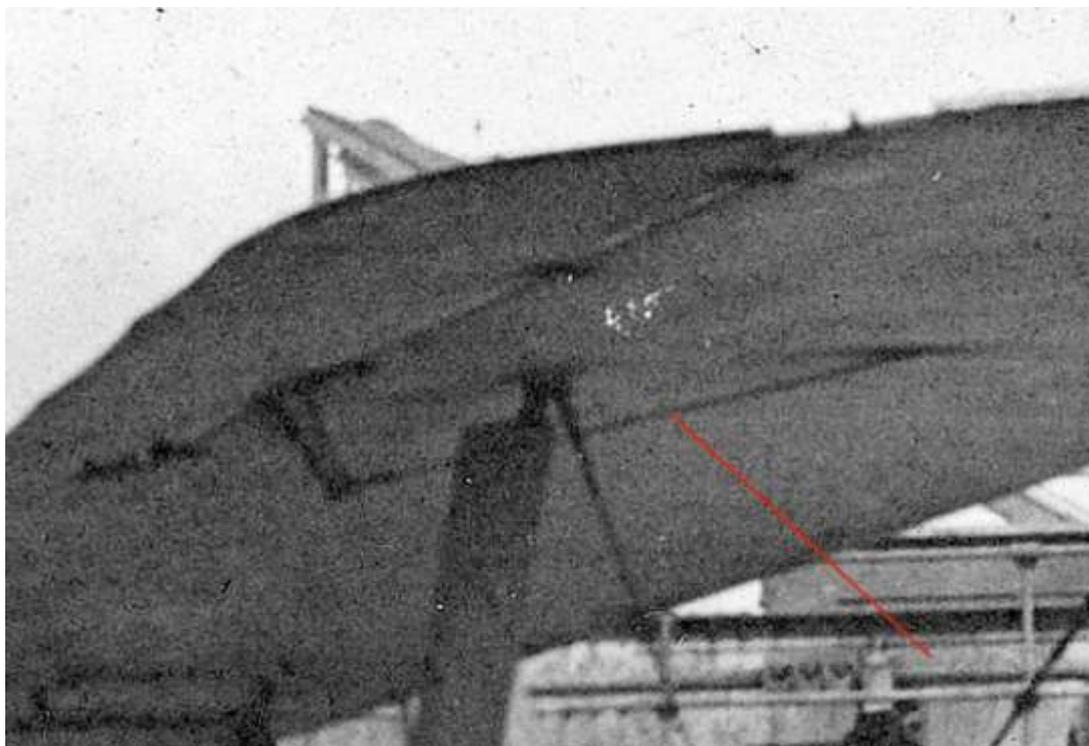


The cable at each side of the pilots control column was routed vertically down and I assume around pulleys either at or under the cockpit floor. From there the cables at each side were routed outboard and through the lower wings then around pulleys and forwards to the base of the forward interplane strut. From there the cables were routed out of the lower wings and up the rear of the forward interplane struts and into the underside of the upper wing. The cables were routed around pulleys inside the upper wing then across the wing and around more pulleys, to exit the top surface and underside of the upper wing. The cables were then attached to the upper and lower aileron control horns.

As the pilot turned the control wheel, the cable was tensioned at one side and relaxed at the other side, causing the ailerons to lift or lower (in opposition). This caused the aircraft to bank in the desired direction (roll). It's likely that no externally turnbuckles were visible as adjustment of the aileron control cables was probably carried out through access panel in the underside of the upper wing or from inside the cockpit.

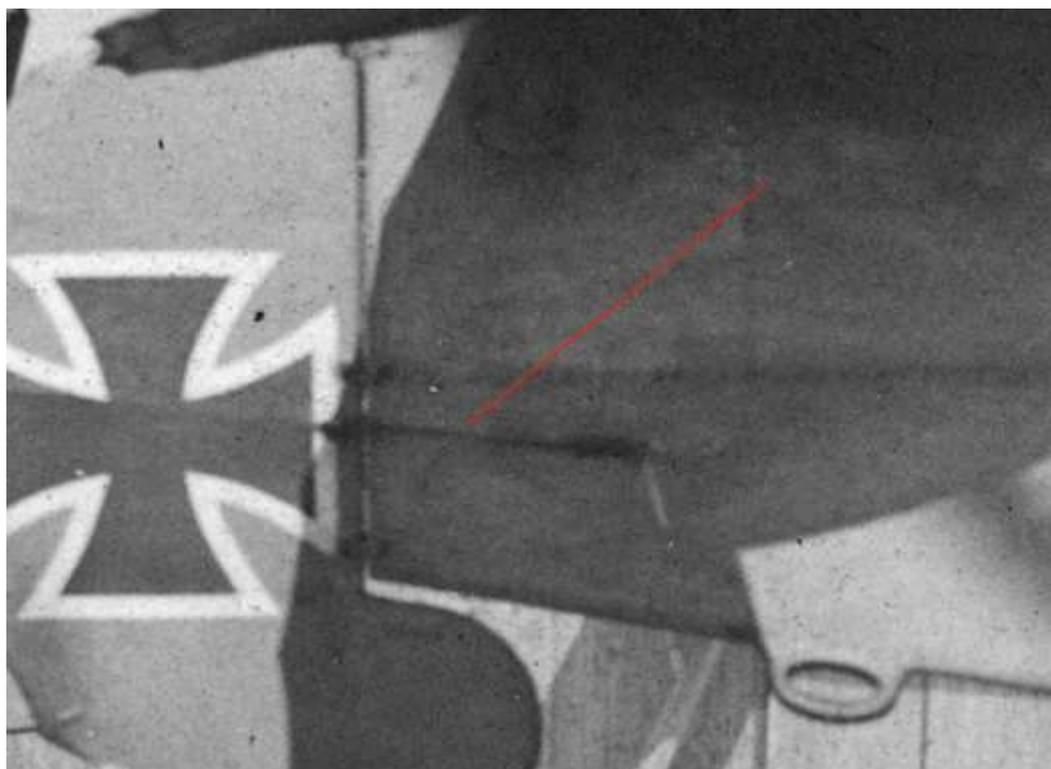
Aileron control cables (above and below the wing):

Aileron control cables were fitted to the aileron control horns at the top and underside ends. These cables were routed into the top and underside of the upper wing and were connected to the pilots aileron controls on the control column and flight control wheel. It seems no turnbuckles were visible externally.



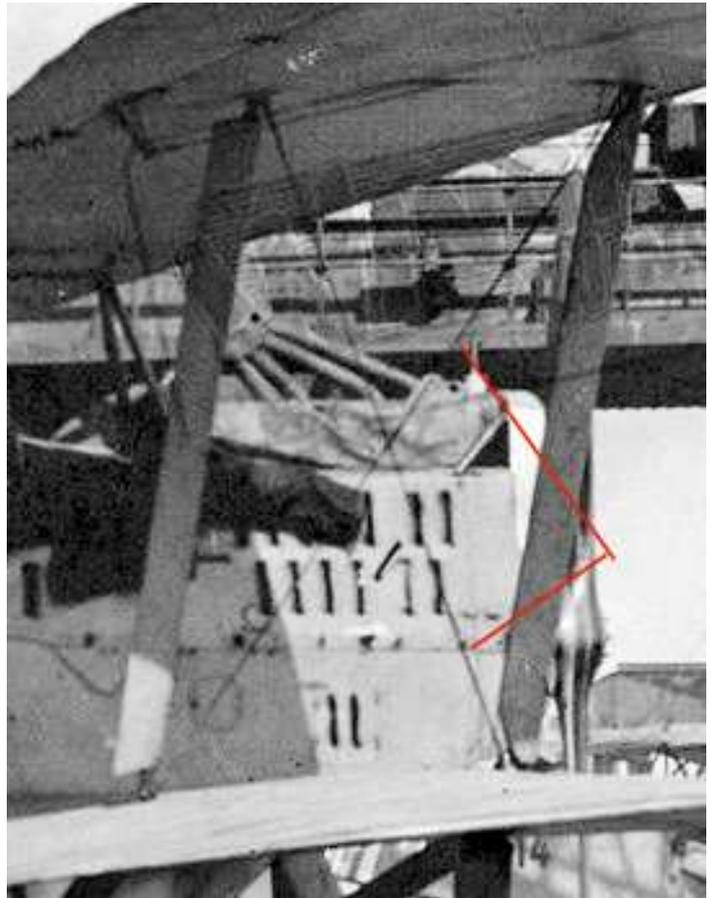
Rudder control cables (rudder to fuselage openings):

Rudder control cables were fitted to the both sides of the rudder control horn and were routed into the rear, sides of the fuselage. From there they were connected to the pilots rudder bar. It seems no turnbuckles were visible externally.



Incidence wires (between wing interplane struts):

Crossed bracing (incidence) wires were fitted between the wing interplane struts, as shown in the following photograph. Turnbuckles were likely fitted into each wire at the bottom of the interplane struts.

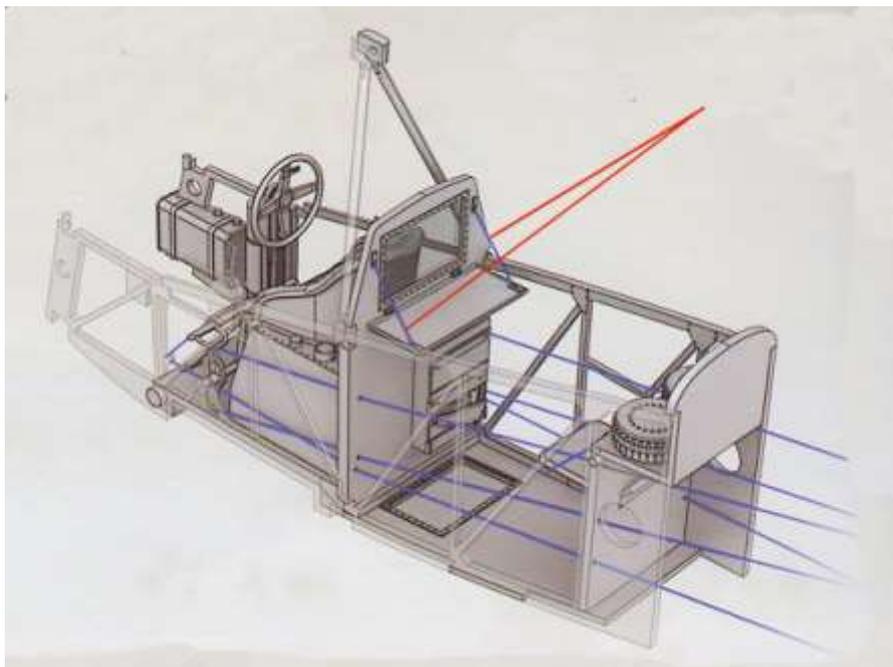


**Internal rigging:**

**NOTE:** *There is very little information or photographs of the cockpits or fuselage internal rigging, apart from that shown in the kit instruction manual.*

Observers flap down shelf:

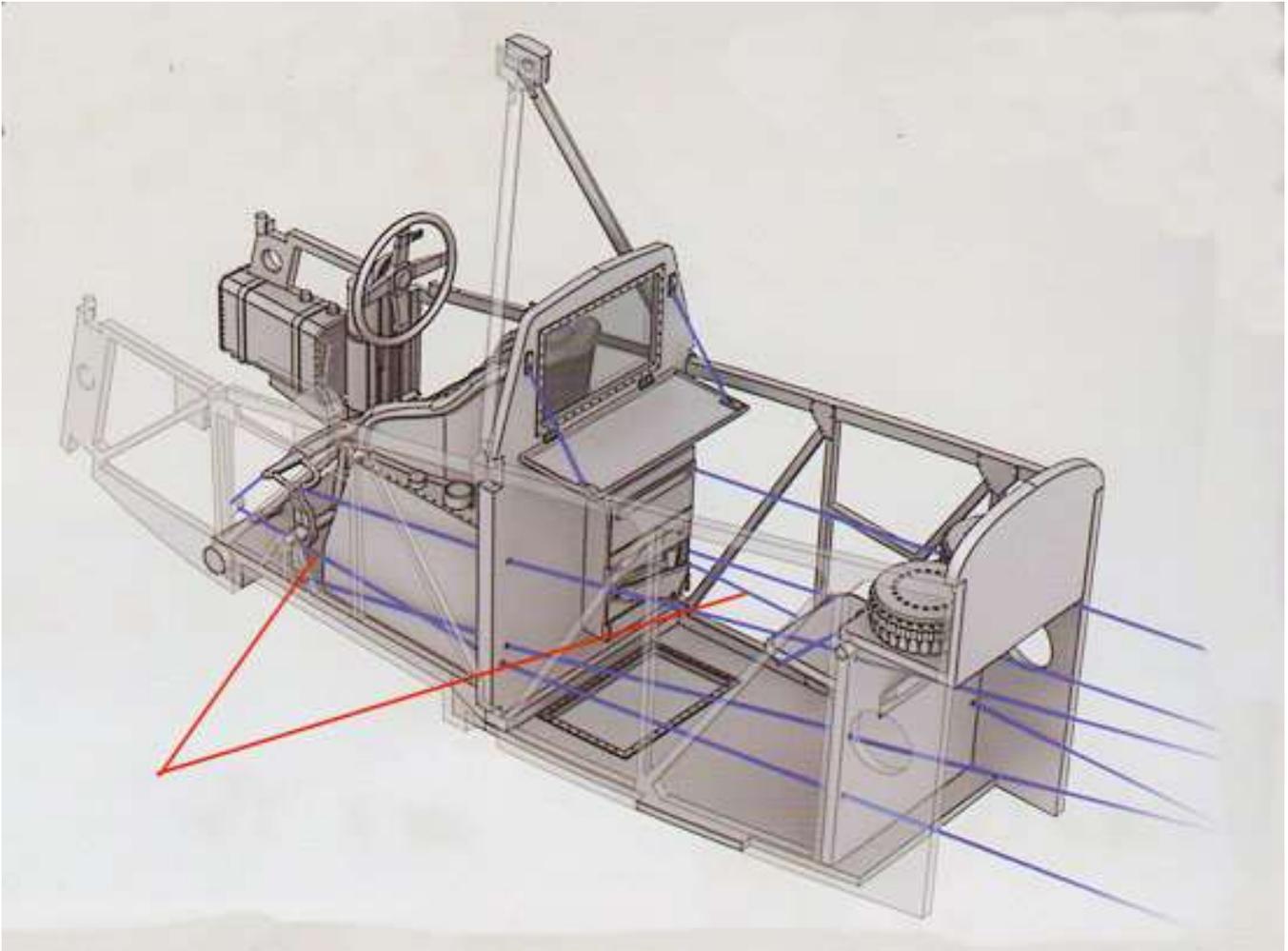
The observers flap down shelf acted as both a shelf and as a cover for the 'window' in the pilots rear bulkhead. The supporting wires would have had solid end fittings, so no turnbuckles would have been fitted.



### Rudder control cables:

A rudder control cable was routed across the curved front of the pilots rudder bar. The cable passed across the cockpit and around pulleys at the cockpit sides. From there the cable at each side of the fuselage was routed rearwards and through the pilots and observers bulkheads to the rear, sides of the fuselage. The cable at each side was connected to the ends of the rudder control horn.

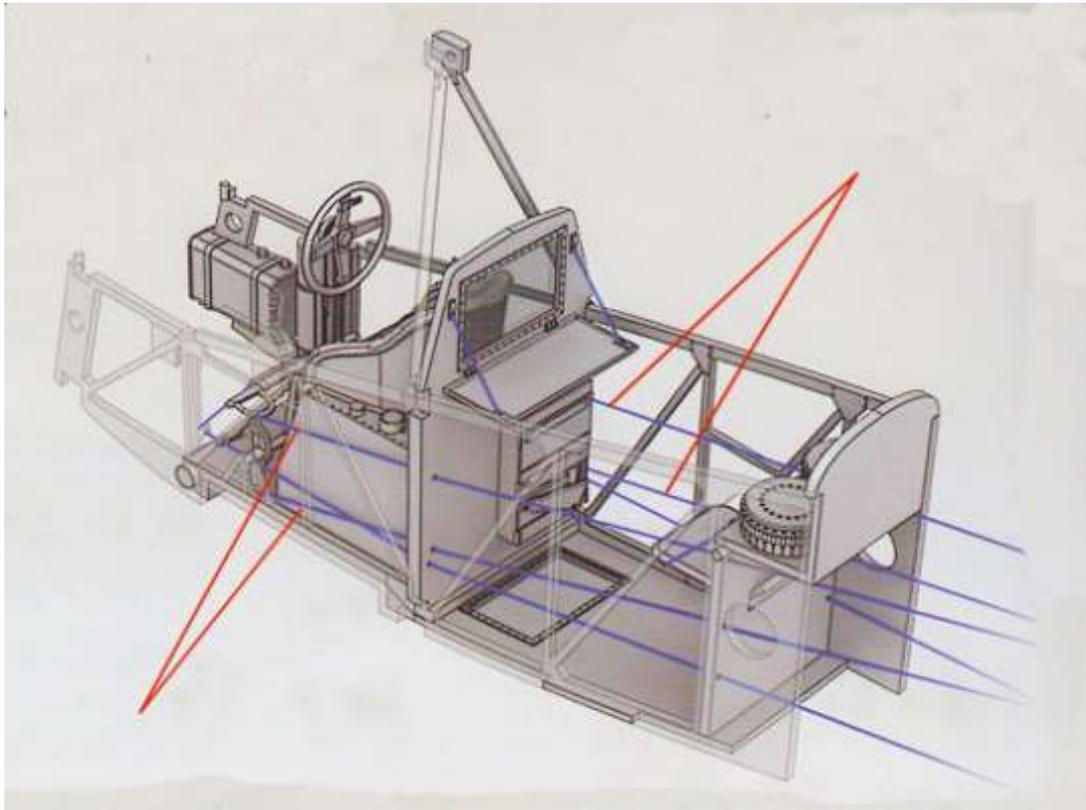
As the pilot pushed the rudder bar left or right, the cable was tensioned at one side and relaxed at the other side, causing the rudder to be pulled left or right. This caused the aircraft to turn in the desired direction (yaw).



### Elevator control cables:

A torque tube was fitted across the bottom of the pilots control. On each end of the tube were double ended control levers. A control cable was attached to both ends of both control levers. The cables from both control levers were routed rearwards and through the pilots and observers bulkheads to the rear of the fuselage. It appears that there were no externally visible elevator control cable or control horns at the actual elevator. Therefore, it's assumed that the control cables remained inside the rear of the fuselage and were attached to a torque tube that was fitted across the trailing edge of the tailplane. This tube was attached to the leading edge of the elevator.

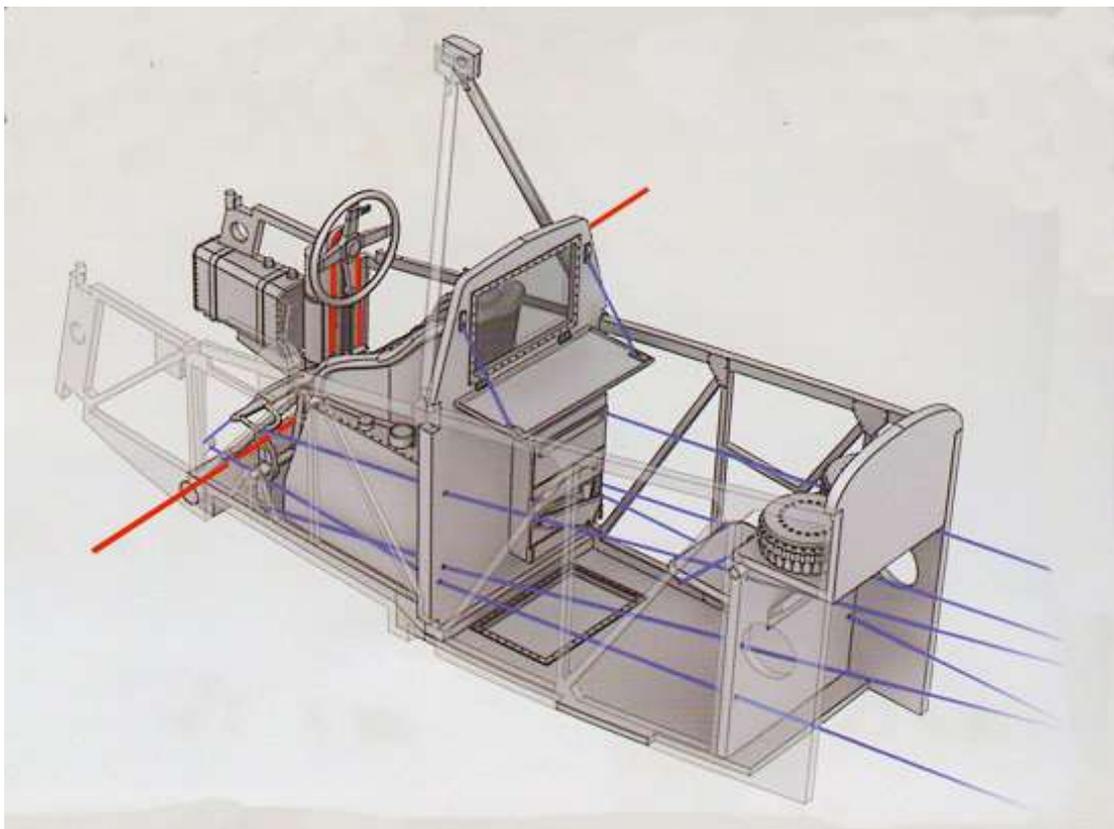
As the pilot moved the control column forwards or rearwards, the cockpit control levers rotated and tensioned the cables at one end and relaxed the cable at the other end, causing the elevator to be lifted or lowered, causing the aircraft to climb or dive (pitch).



Aileron control cables:

**NOTE:** *The following is based on the previous assumptions made for the routing of the aileron control cables.*

The cable at each side of the pilots control wheel was routed vertically down and I assume around pulleys either at or under the cockpit floor. From there the cables at each side were routed outboard and through the lower wings (refer to the previous assumptions for routing of the aileron control cables).



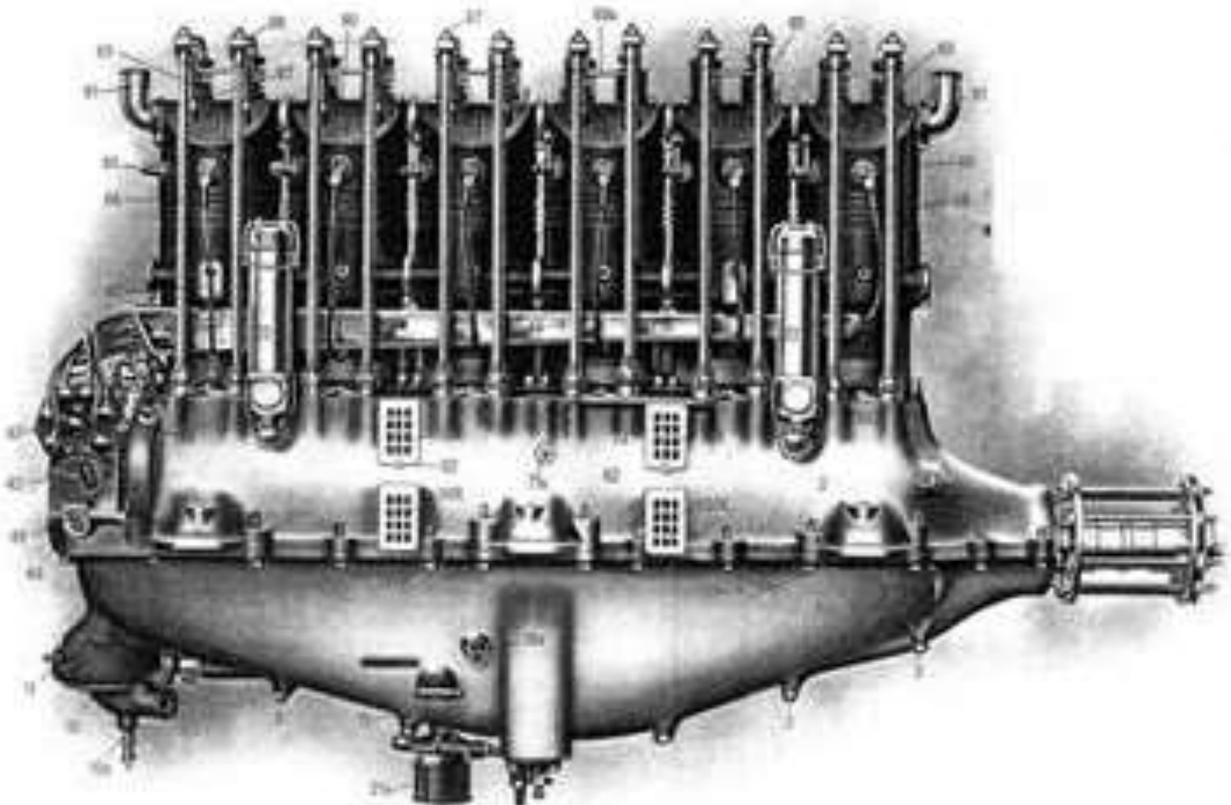
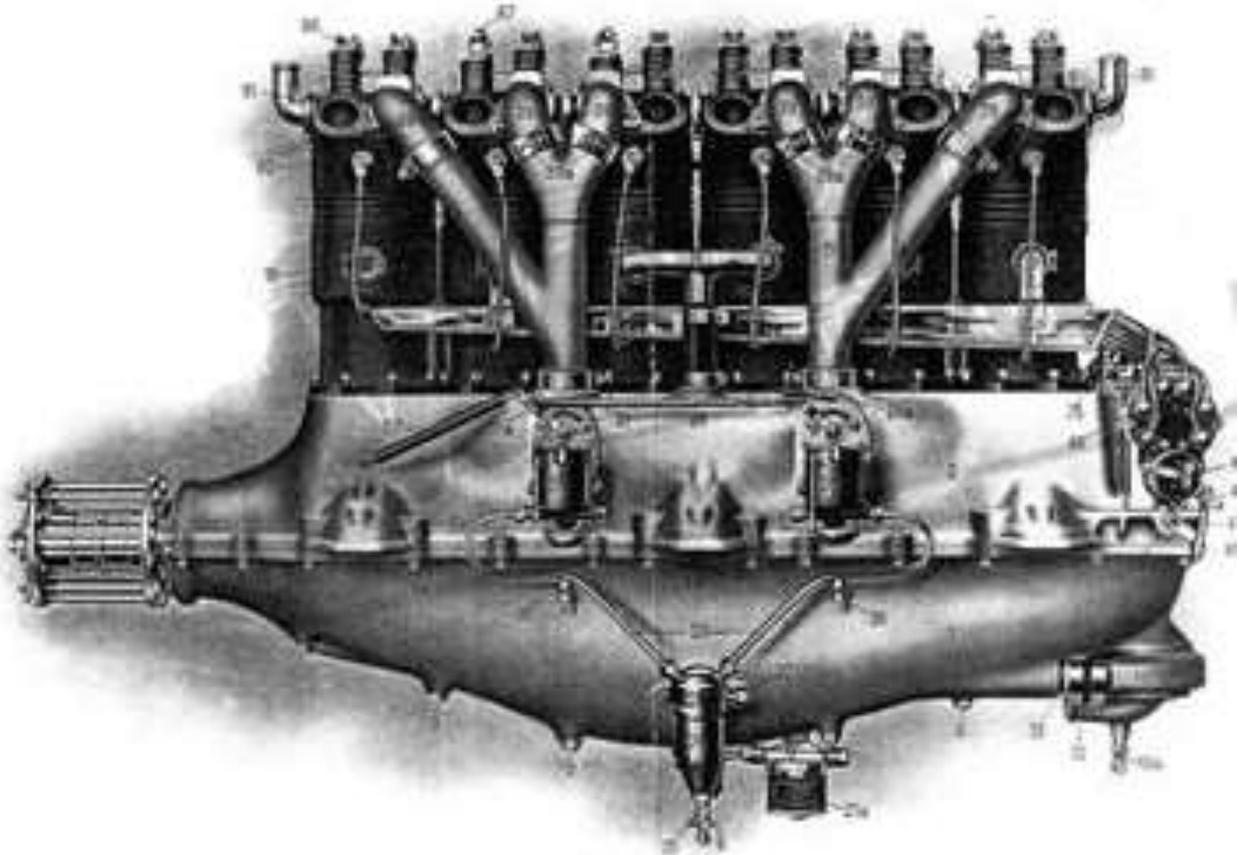
# PART 7

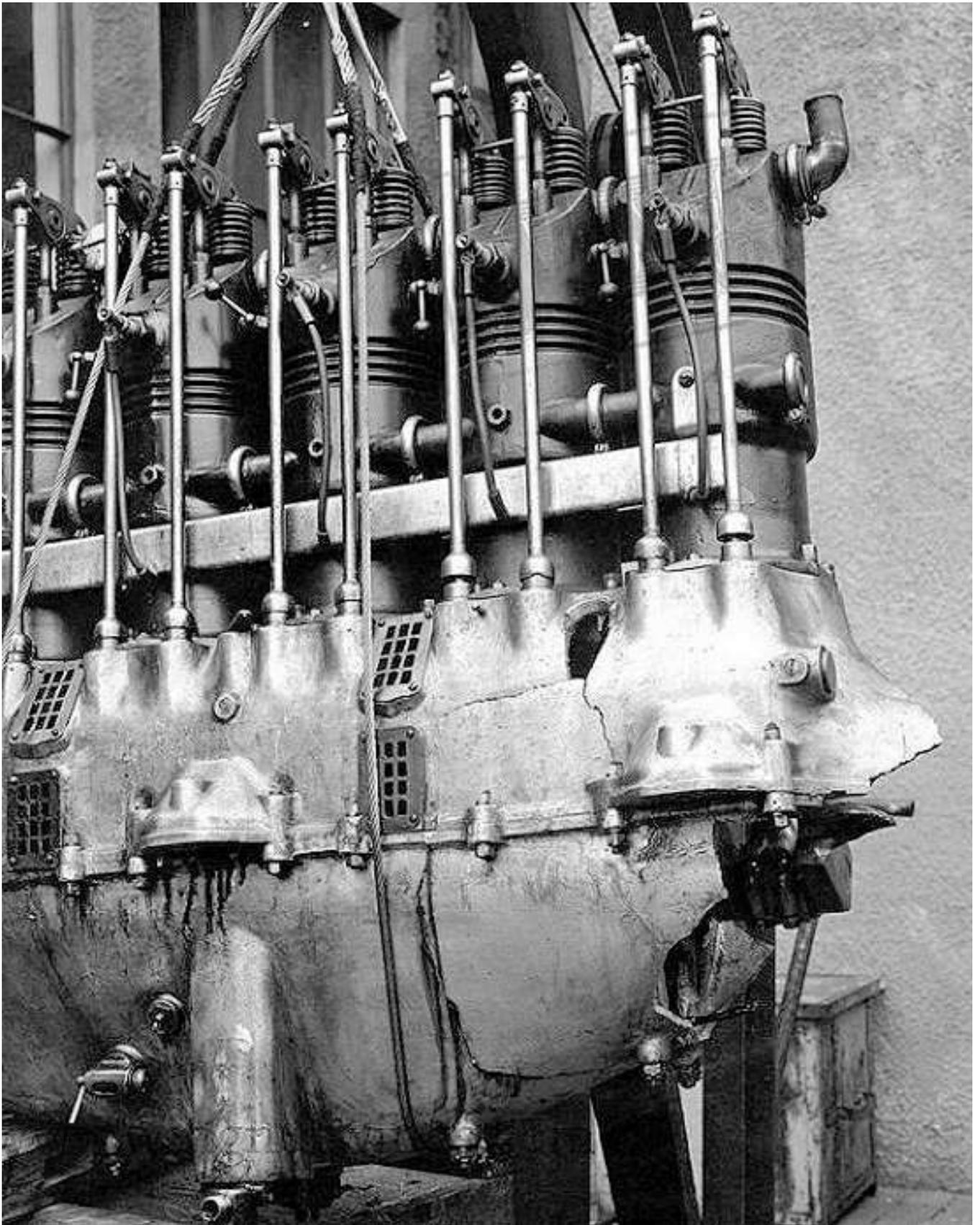
# ENGINE

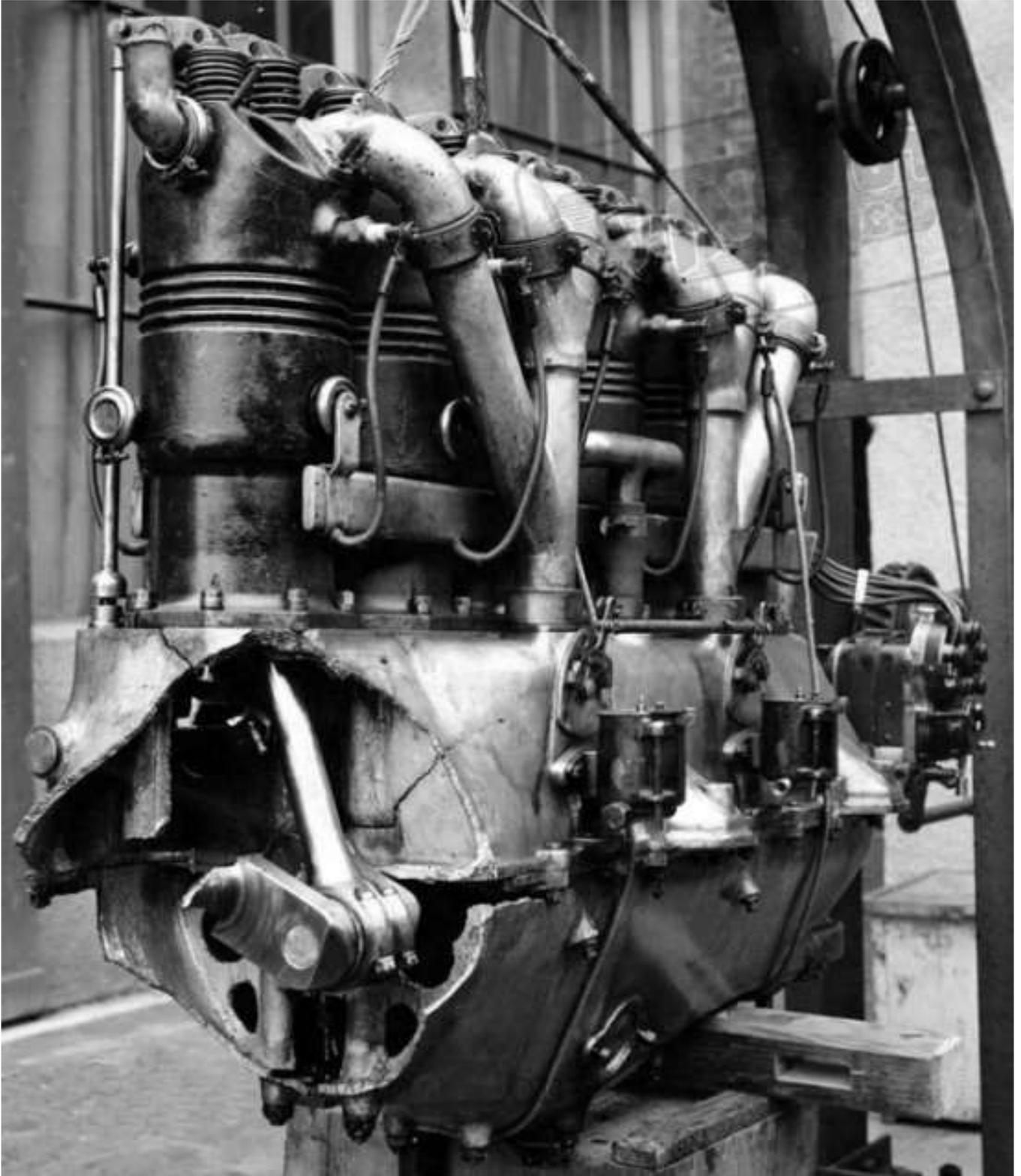
## PART 7 - ENGINE

The engine represented in the kit is the 150hp Benz Bz.III, a six cylinder water cooled in-line design.

Typical 150hp Benz Bz.III engine.







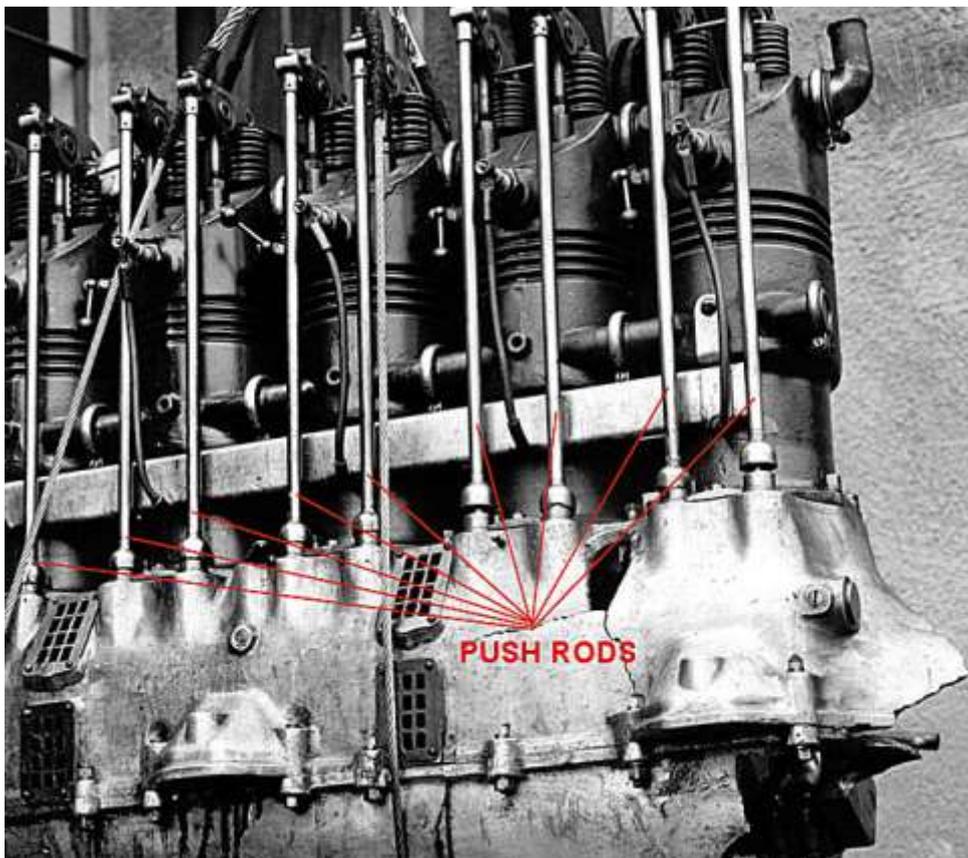
**Modifications:**

The kit supplied engine, although good, has certain detail pre-moulded into the cylinder head halves, which are intended to be used for the less experienced modeler.

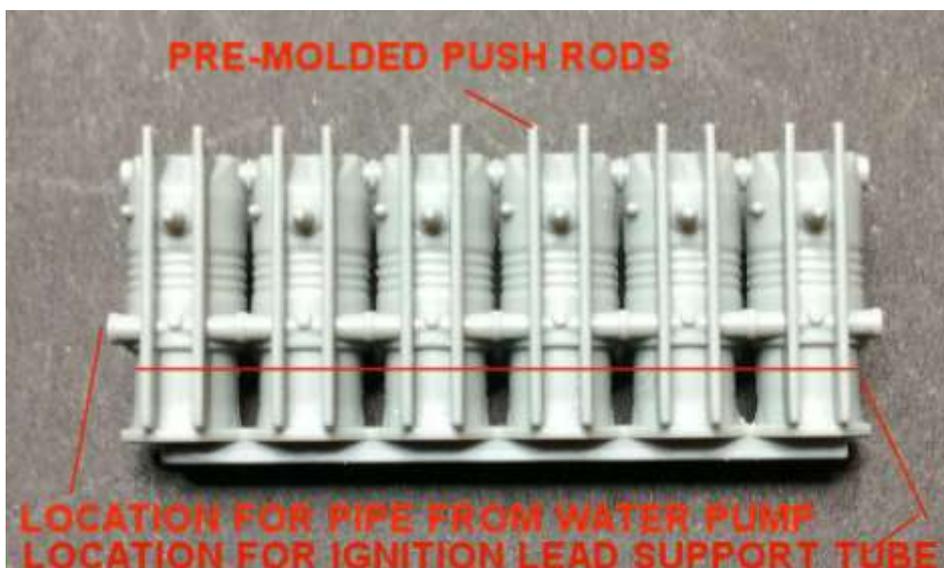
**Valve push rods and levers:**

**NOTE:** *The engine push rods will be fitted later in the engine.*

The left side of the engine (kit part E4) has the valve push rods moulded as flat 'bars', which looks unconvincing, as the push rods were individual and separate rods. Instead, I used the kit part E7, which requires the push rods to be added.



Basic kit part E4 (not used) - part E7 used instead



Carefully drill into the base of each push rod on the top right side of the engine crank case (E15), using a 0.6 mm diameter drill. Insert a length of 'Albion Alloy's' 0.5 mm Nickel-Silver (NST05) tube into each drilled hole to ensure it can locate fully.

Cement the two cylinder halves (E4 and E6) together.

Cement the propeller shaft (E13) into its locations in the engine sump (E14).

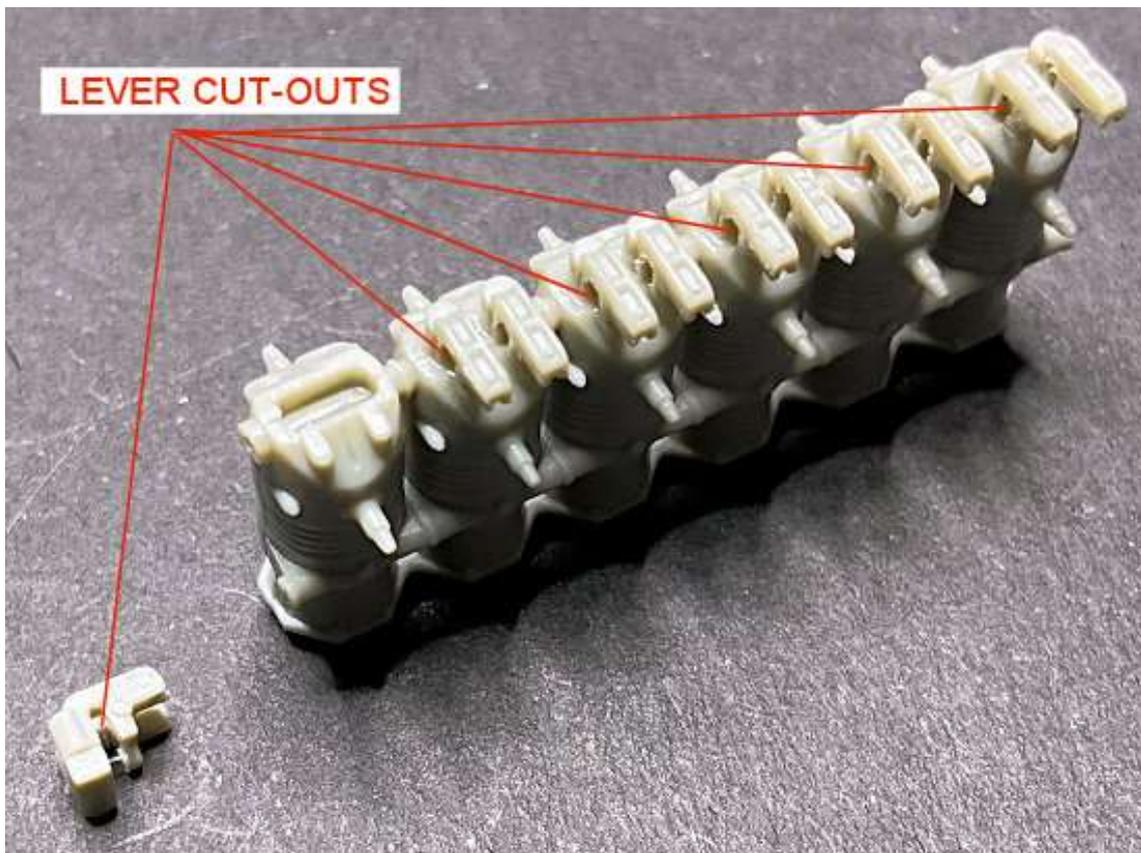
Separate the six double rocker arms/springs (E3) from their sprue.

Drill a hole of 0.6mm diameter through the underside of rocker arm.

Using a thin saw blade, cut vertically down through the underside of the rocker arms and into the pre-drilled holes to form a gap.

Remove the residual cut styrene to leave a gap between the locating block and the rocker arms.

Cement the rocker arm pairs into their locating recesses on the tops of the cylinders.

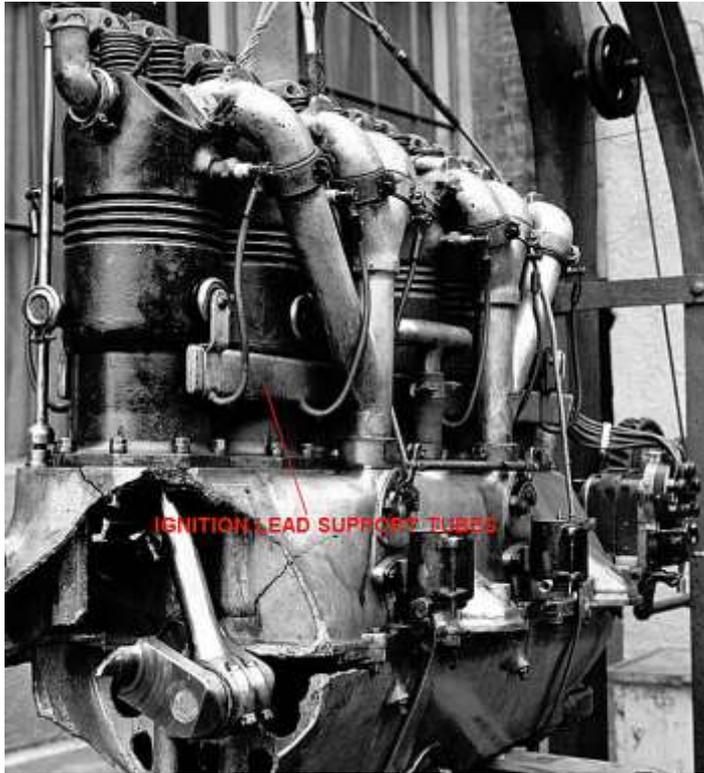


Cut twelve lengths of 'Albion Alloy's' 0.5 mm Nickel-Silver (NST05) tube. The lengths of the tubes should span between the pre-drilled holes on the top right side of the engine crank case and the underside ends of their associated valve lever.

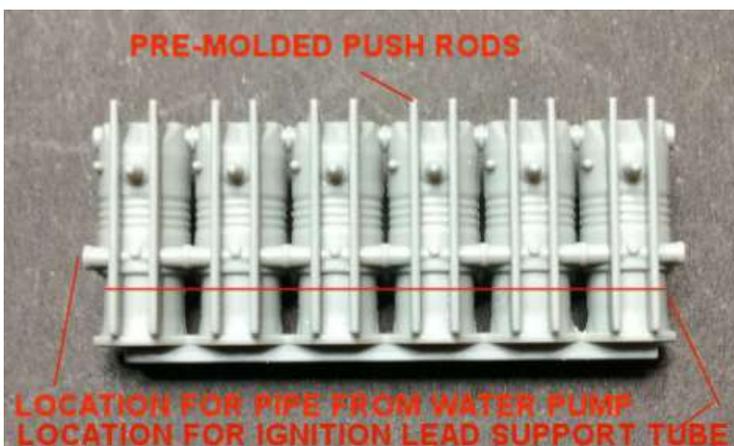
Ignition system:

**NOTE:** Both sides of the engine cylinder bank should have flat support tubes for the ignition leads.

*The Benz III engine had two magneto's (one each side of the engine), which connected ignition leads to the sparks plugs on each side of each cylinder. To support the ignition leads along the sides of the engine, flat support tubes were attached on each side of the cylinder bank. These tubes carried the six ignition leads from each magneto, decreasing in number the further forward they travelled as each was routed out of the tube and connected to its spark plug.*



Kit part E7 used



Basic kit part E4 (not used) - part E7 used instead

Support tubes:

**NOTE:** *The created support tubes will be fitted later in this engine build.*

Cut two lengths of 1.0mm diameter Brass tube, such as that from 'Albion Alloy's' or similar. The length of the tubes should span between the centres of the front and rear cylinders.

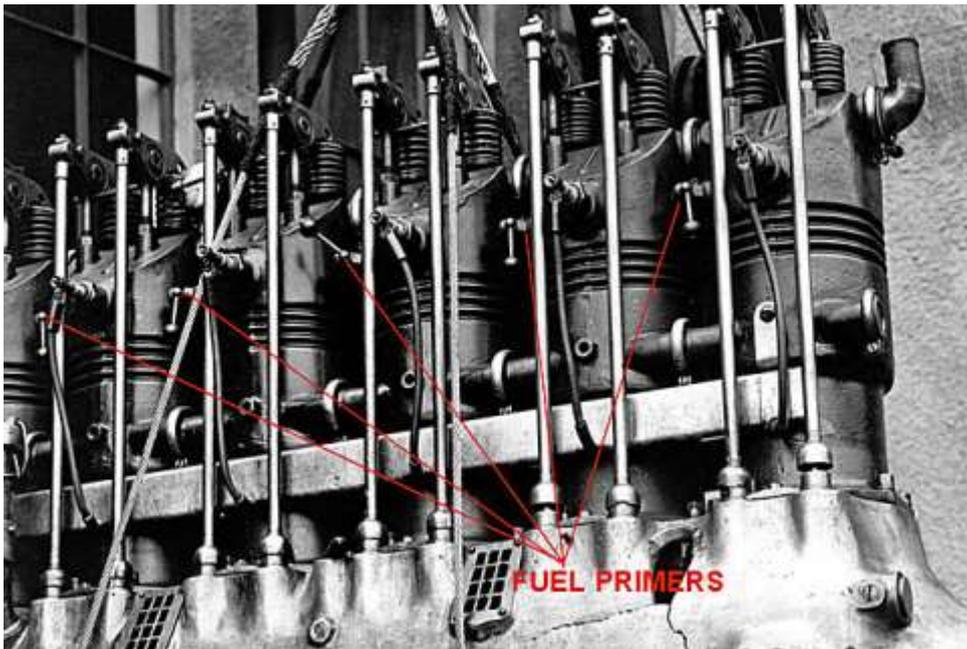
Slide the two tubes on a 0.4mm diameter rod such as that from 'Albion Alloy's' or similar.

Position the rod with the tubes between the jaws of a bench vice then tighten the vice to flatten the tubes onto the rod.

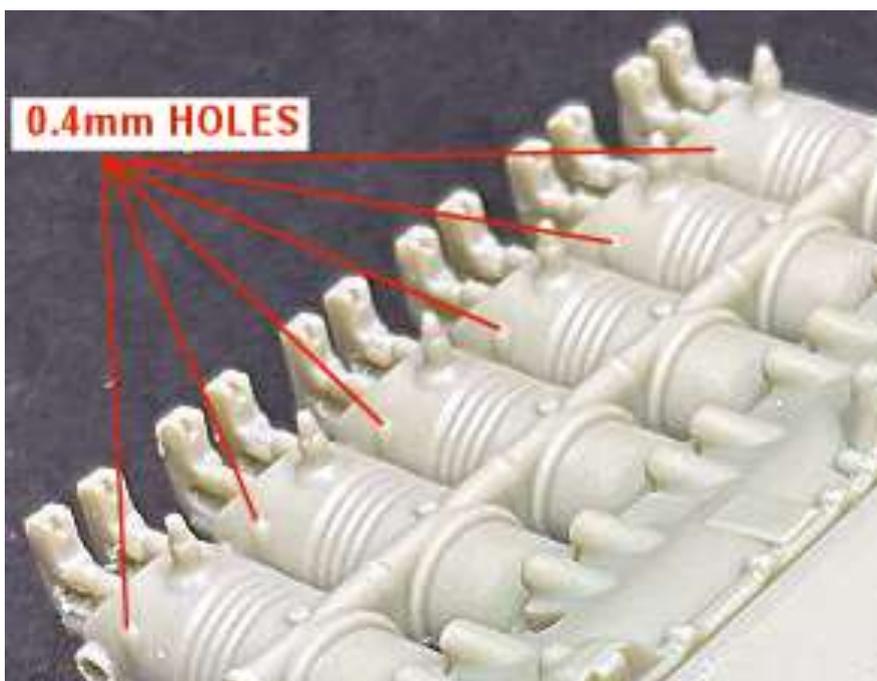
Remove the rod and tubes from the vice and slide the tubes off the rod.

Fuel priming valves:

The kit supplied engine has no fuel priming valves, which were fitted to the right, rear side of the cylinders.



Drill holes of 0.4mm diameter into, **but not through** each engine cylinder, using the pre-moulded locations on the cylinders.



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

Insert a cut tube into each pre-drilled hole, leaving the tube just proud from the surface of the cylinder.

**NOTE:** *Using styrene cement in the following step avoids blocking the internal bore of the tubes, which need to be kept clear. The priming levers will be created and added into the tubes later in the engine build.*

Secure the tubes in the cylinders by applying a small amount of cement around the base of the tubes.

### **Painting:**

Using an airbrush, prime all of the engine parts using 'AK Interactive' Primer and Micro-filler (Grey AK-758).

The various engine parts were airbrush painted as follows:

'Alclad' Duraluminium (ALC-102) - engine crank case (E15), induction manifolds (E11, E12), water pump (E16), breather pipe (E5).

'Tamiya' Semi-Gloss Black (X18) - engine cylinder head (E4, E6), magneto body (E8), oil filler pipe (A11).

'Tamiya' RLM Grey (XF22) - radiator stay (H15).

'Alclad' Steel (ALC-112) - created ignition lead support tubes.

'Alclad' Pale Gold (ALC-108) - magneto (E8) switch faces, oil filter (E10), carburettor chambers (E9), fuel filter (E1).

Brush paint engine parts as follows:

'Tamiya' Hull Red (XF9) - magneto (E8) front faces.

'Tamiya' Rubber Black (XF85) - band clamps around intake manifolds (E11, E12) and breather pipe (E5).

'Tamiya' Deck Tan (XF55) - spark pug insulators.

'Mr. Colour' Brass (219) - spark plug terminals, filler cap on oil filler pipe (A11).

'Mr. Colour' Stainless Steel (213) - clamp bands around the oil filler pipe (A11), rocker arms (E3).

'Mr. Colour' Dark Iron (214) - valve springs.

### **Assembly:**

Cement the fuel filter (E1) into its location on the engine sump (E14).

Cement the water pump (E16) into its location on the engine sump.

Cement the oil filter (E10) into its location on the engine sump.

Cement the cylinder bank assembly into its location slot on the engine sump.

Using thin CA adhesive, secure the two created support tubes for the ignition leads onto the sides of the cylinder bank. The ends of tubes should be located centrally on the front and rear cylinders with the top edge at the lower 'ridge' of the cylinders.

Cement the breather pipe (E5) into its locating recesses on the left side of the middle cylinders and engine crankcase.

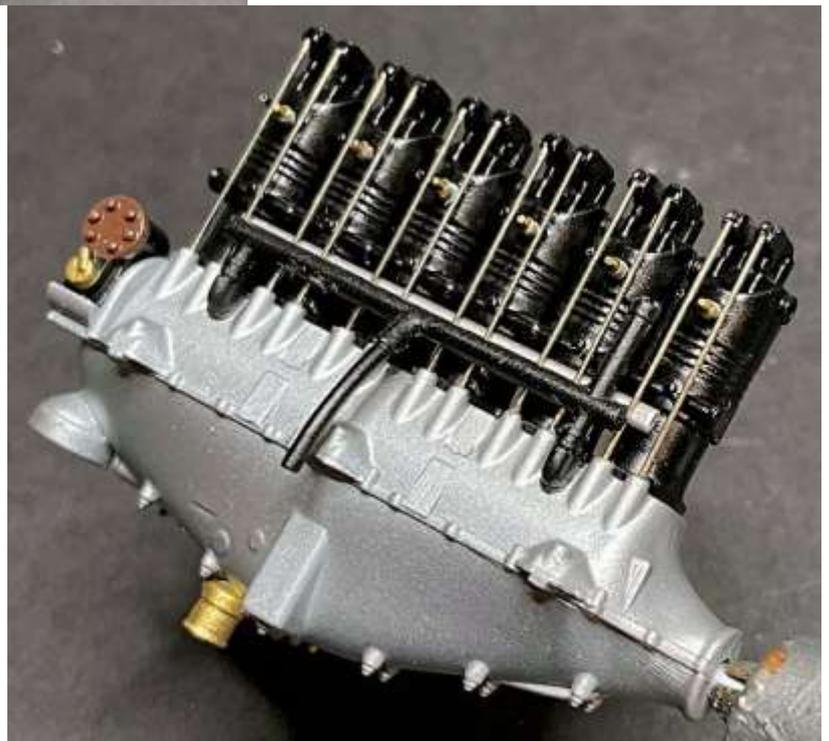
Cement the oil filler pipe (A11) into its locating recesses in the right side of the engine crankcase.

Cement the two magnetos' (E8) onto their locations on the rear of the engine.

Cement the two induction manifolds (E11, E12) into the locating slots on the left side of the engine.

Cement the two carburettor chambers (E9) into their locating slots in the bottom of the intake manifolds.

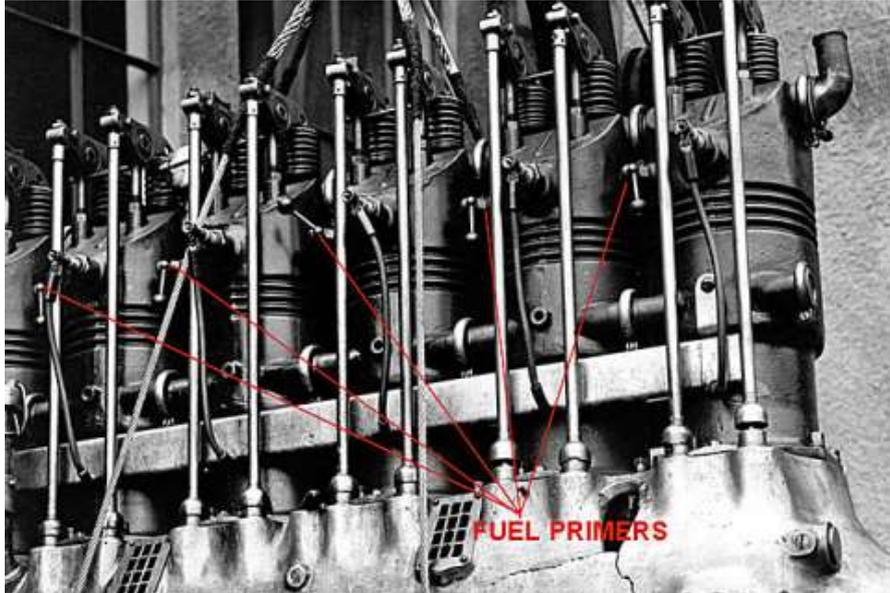
Locate the previously created push rods into their pre-drilled holes in the right side of the engine crankcase with their tops under the ends of their associated rocker arms. Secure the rods under the ends of the rockers arms, using thin CA adhesive.



## **Modifications (continued):**

### **Fuel primers:**

**NOTE:** Tubes to represent the bodies of the fuel primers were added to the engine cylinders earlier in this engine build. The following steps add the levers.



Cut six short lengths of 'Albion Alloy's' 0.2mm diameter Nickel-Silver rod (NSR02).

Bend each rod to a right angle (90 degrees).

Cut one 'leg' of the bent rods to it approximately 2mm long.

Insert the longer 'legs' of the bent rods into the bore of the 0.4mm diameter tubes added into the engine cylinders.

Position the short leg vertically down.

Secure the bent rods into the engine cylinders using thin CA adhesive.

Brush paint the ends of the levers with 'Tamiya' Hull Red (XF9), to represent the handle on the levers.



### Coolant pipe:

**NOTE:** *The kit does not supply the coolant pipe that was connected between the water pump and the inlet pipe on the right side of the engine cylinders.*

Using a 0.5mm diameter drill, drill slightly into the end of the engine coolant pipe to increase the depth of the recess.

Using a 0.5mm diameter drill, drill a hole into the underside of the fitted water pump.

Cut a length of 05mm diameter lead wire, such as that from 'PlusModel'.

Using thin CA adhesive, secure one end of the wire into the pre-drilled hole in the end of the Engine coolant pipe.

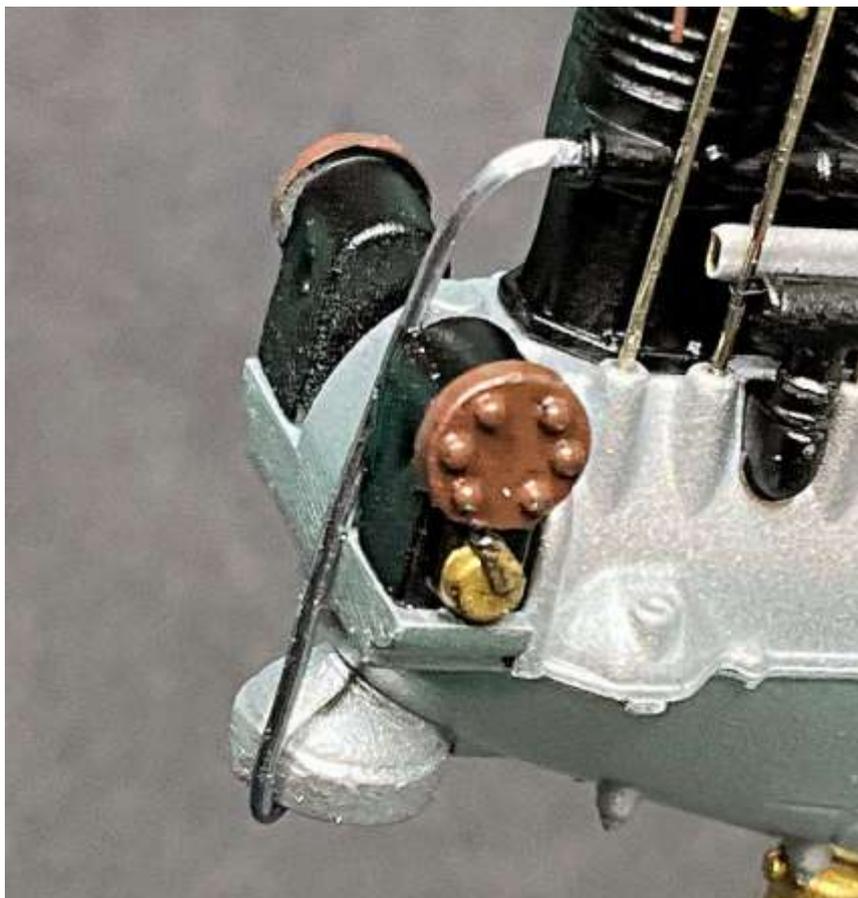
Carefully bend the lead wire down and close to the right magneto rear edge then over the rear of the engine to the side of the water pump.

Continue to bend the pipe across the lower face of the water pump.

Trim the end of the lead wire so that it can be inserted into the pre-drilled hole in the water pump.

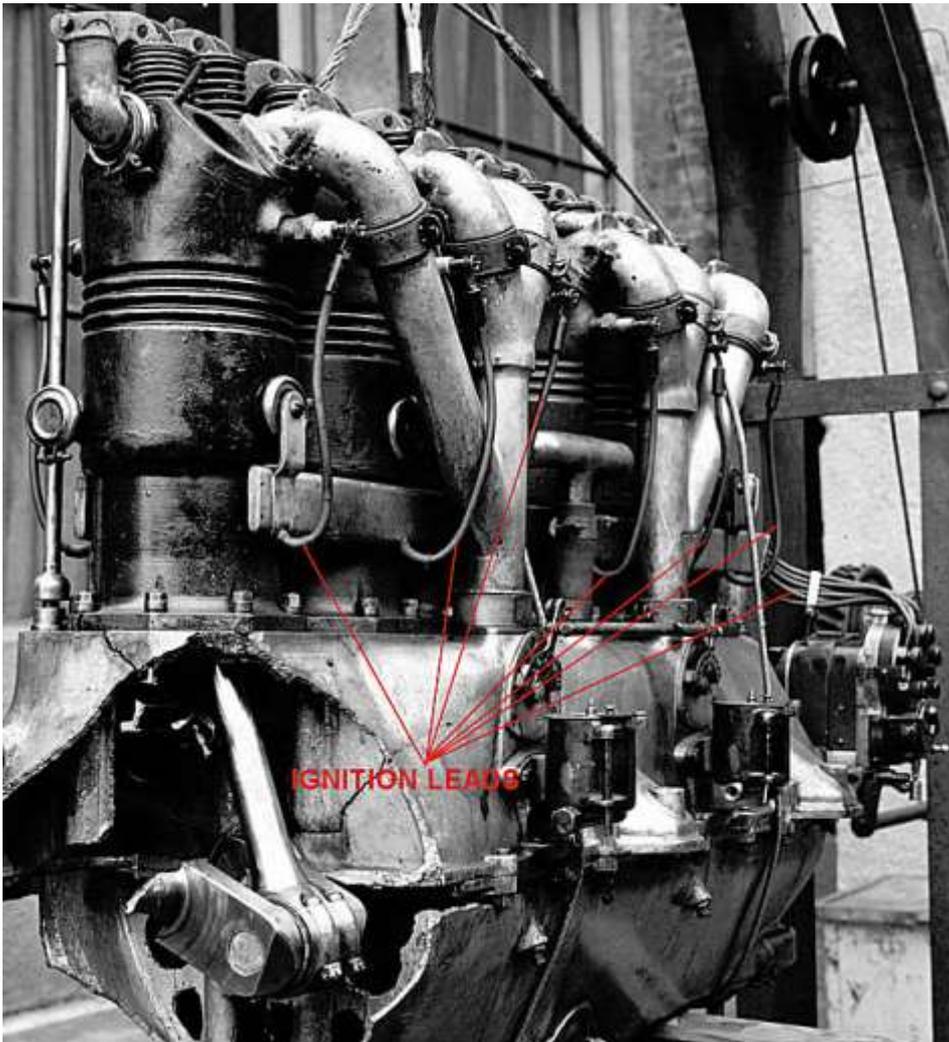
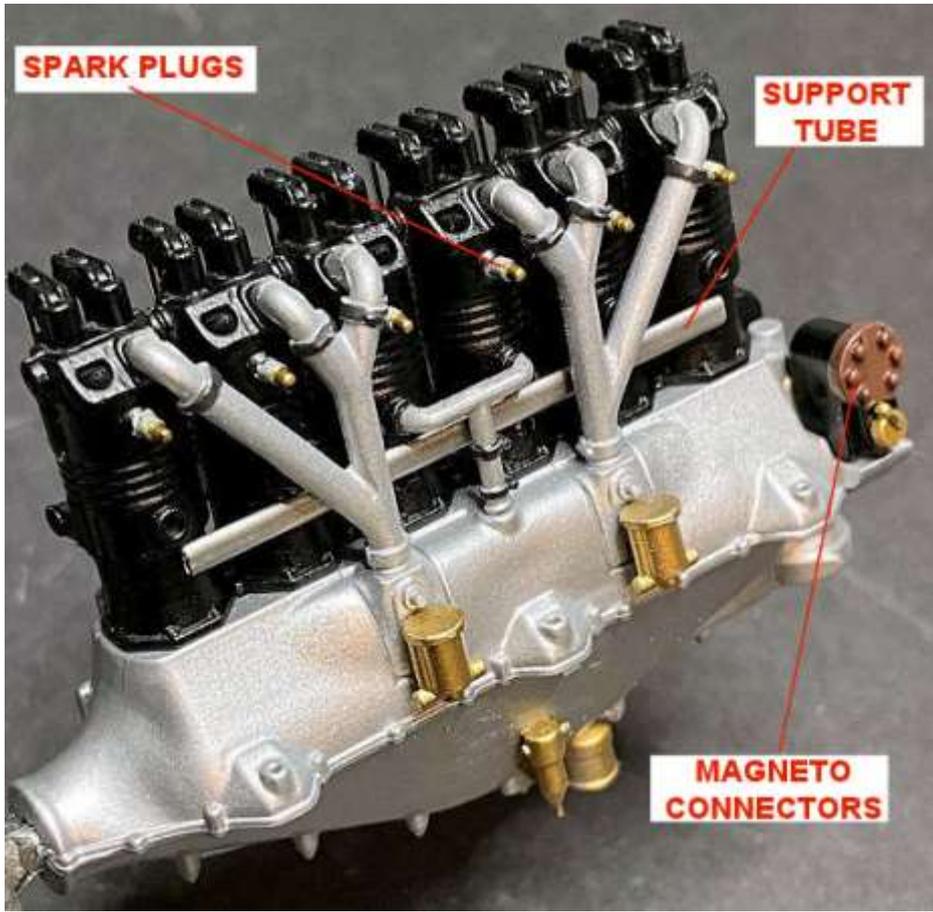
Keeping the wire as straight as possible, press the wire against the water pump and magneto.

Using thin CA adhesive, secure the wire onto the water pump and magneto.



### Ignition leads:

**NOTE:** *Although the kit supplied engine has pre-moulded spark plugs and magneto's, the actual ignition leads from the magneto's and into the added support tubes to the spark plugs, need to be created.*



Cut six long lengths of 'EZ' stretch black line (fine).

Slide the ends of the six lines into the open end of the ignition lead support tube on one side of the cylinder bank.

Secure the lines in the tube using a small drop of thin CA adhesive.

Loop each line back and over the magneto on that side of the engine.

Using thin CA adhesive, secure a line to each of the six connectors on the face of the magneto.

Cut away any residual tag of line from the magneto connectors.

Repeat the procedure to attach six lines to the support tube and magneto on other side of the engine.

Cut six long lengths of 'EZ' stretch black line (fine).

Using thin CA adhesive, secure the lines to the outside of an ignition lead support tube on one side of the engine. The leads should be attached below their associated spark plugs.

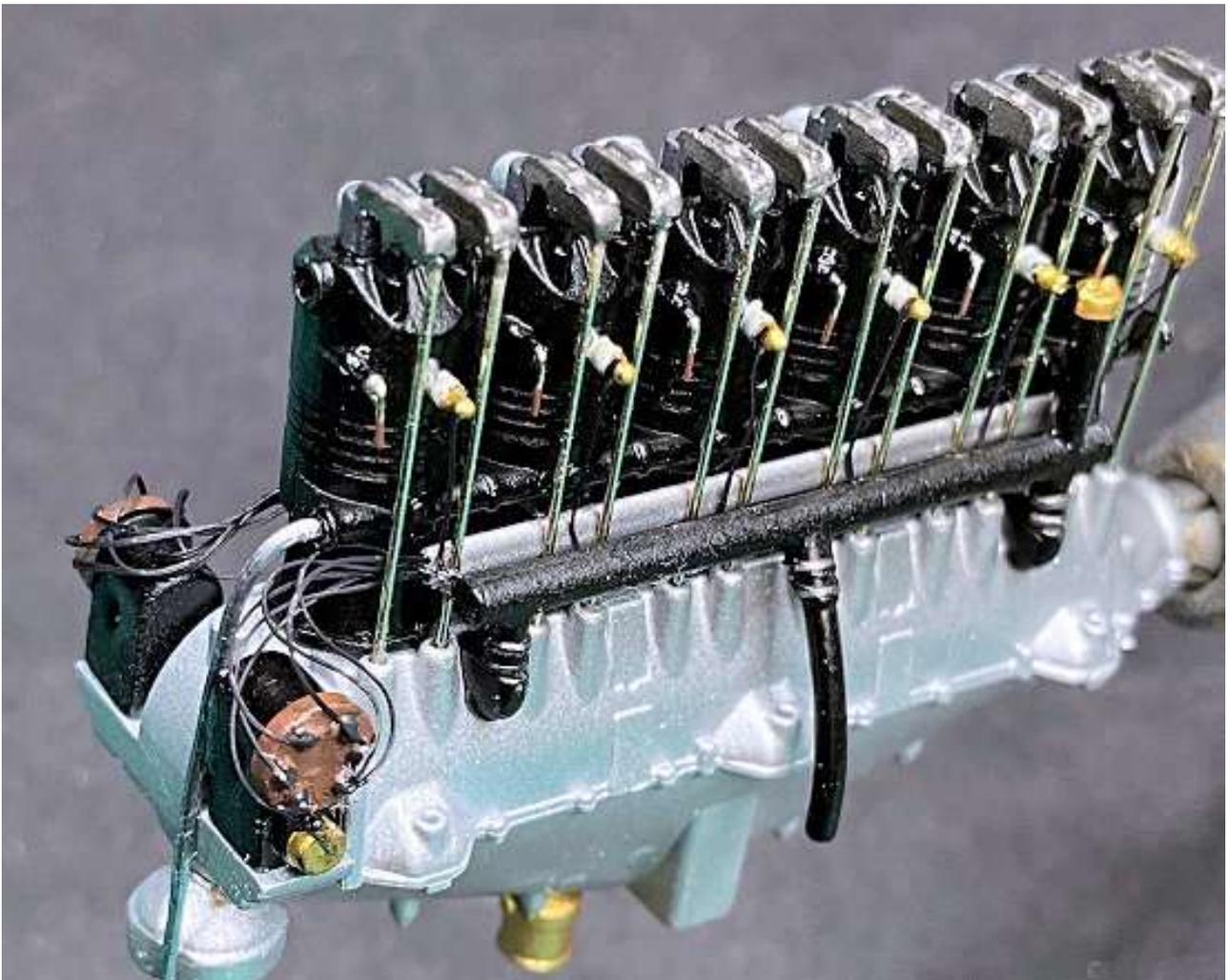
Pass the lines up and secure them to the ends of their spark plugs, using thin CA adhesive.

Cut away any residual tag of line from the ends of the spark plugs.

Repeat the procedure to attach six lines to the support tube and spark plugs on other side of the engine.

If necessary, touch up the face on the two magnetos using 'Tamiya' Hull Red (XF9).

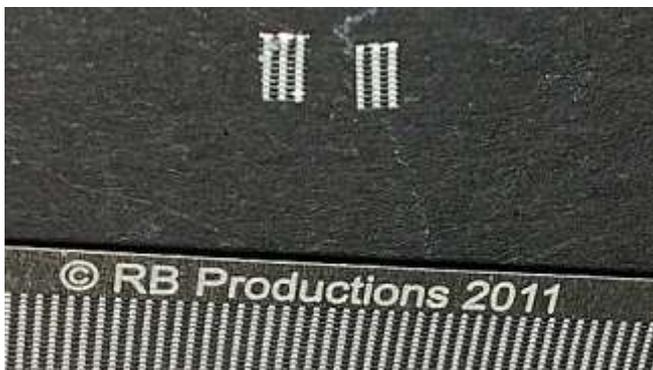
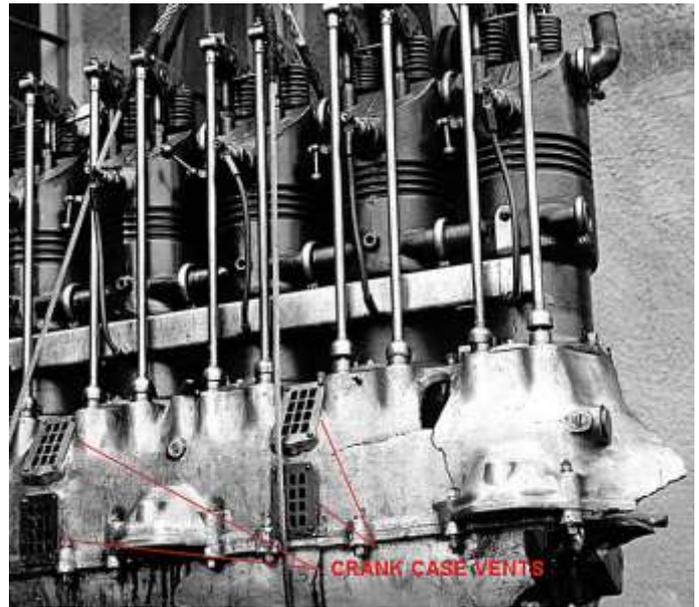
Brush 'Tamiya' Rubber Black (XF85) onto the six lead connectors on the two magnetos.



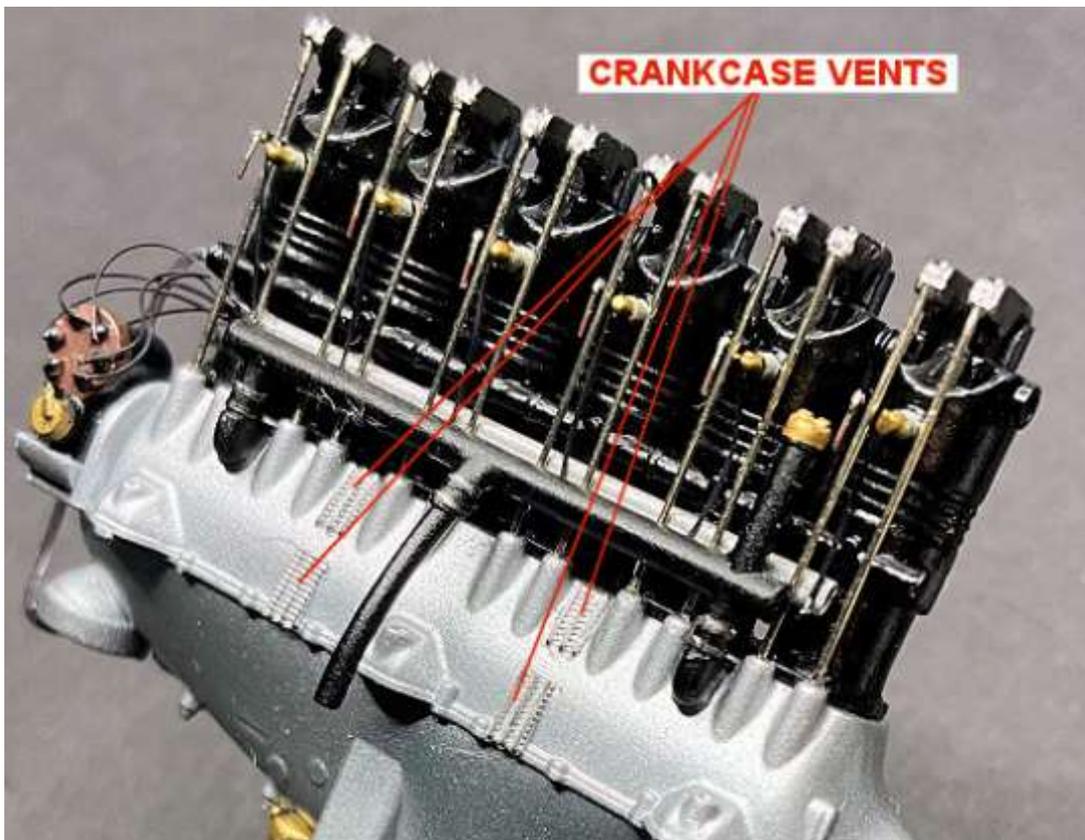
Crankcase ventilation:

**NOTE:** The kit supplied engine has four pre-moulded 'flats' on the right side of the crankcase. These are intended to represent crankcase vents.

Crankcase vents fitted to a similar engine.

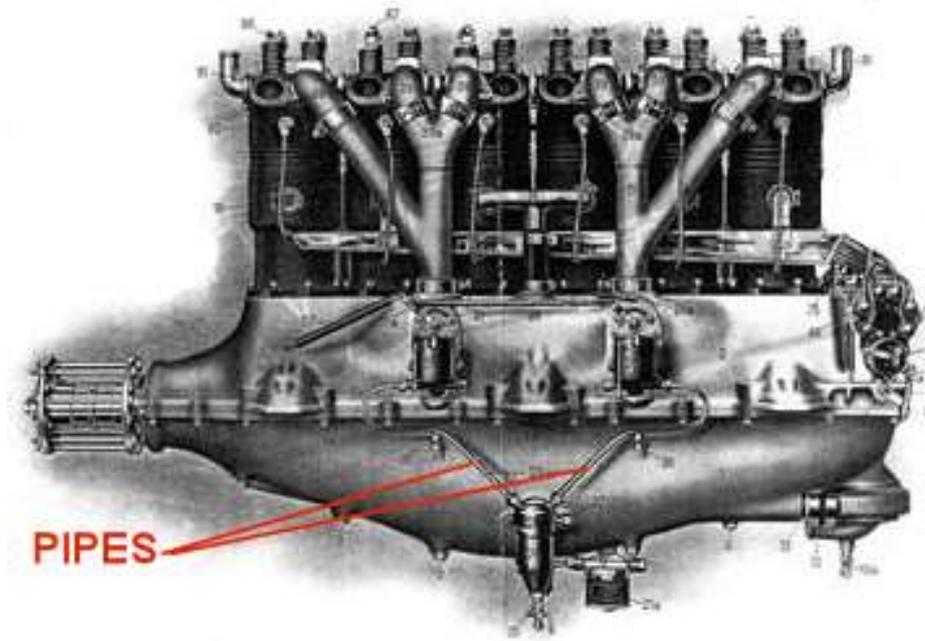


To represent the four vents, I cut four strips from the photo-etch 'RB Productions' Radiator Mesh (RB-T027) to match the shape of the flats. These were secured to the crankcase using thin CA adhesive.



Fuel filter pipes:

**NOTE:** The two speed controllers on the left side of the engine were connected to the fuel filter, which was located on the sump below the controllers.



Drill holes of 0.4mm diameter into the outer pipe stubs on the two carburettor chambers (E9).

Drill holes of 0.4mm diameter into the outer pipe stubs on the fuel filter (E1).

Cut two long lengths of 0.3mm diameter copper wire.

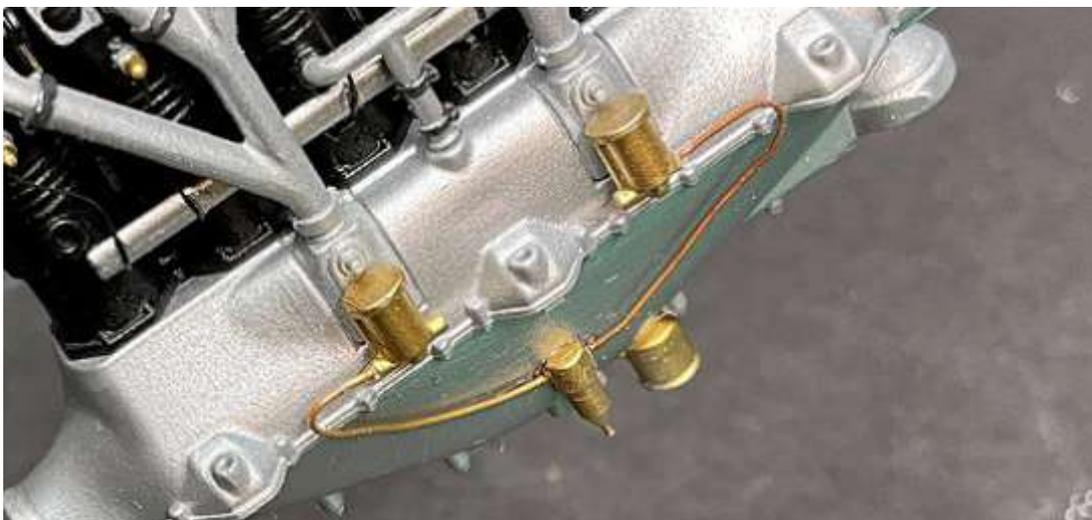
Anneal (soften over a flame) the copper wire to make it more pliable.

Using thin CA adhesive, secure one end of each wire into the pre-drilled holes in the carburettor chambers.

Bend the wire to loop over the edge of the engine crankcase and over the sump to the fuel filter.

Trim the length of the wires such that they can be inserted into the pre-drilled holes in the fuel filter.

Using thin CA adhesive, secure the end of each wire into the pre-drilled holes in the carburettor chambers.



**Decals:**

**NOTE:** Refer to Page 4 of the kit instruction manual for decal positioning.

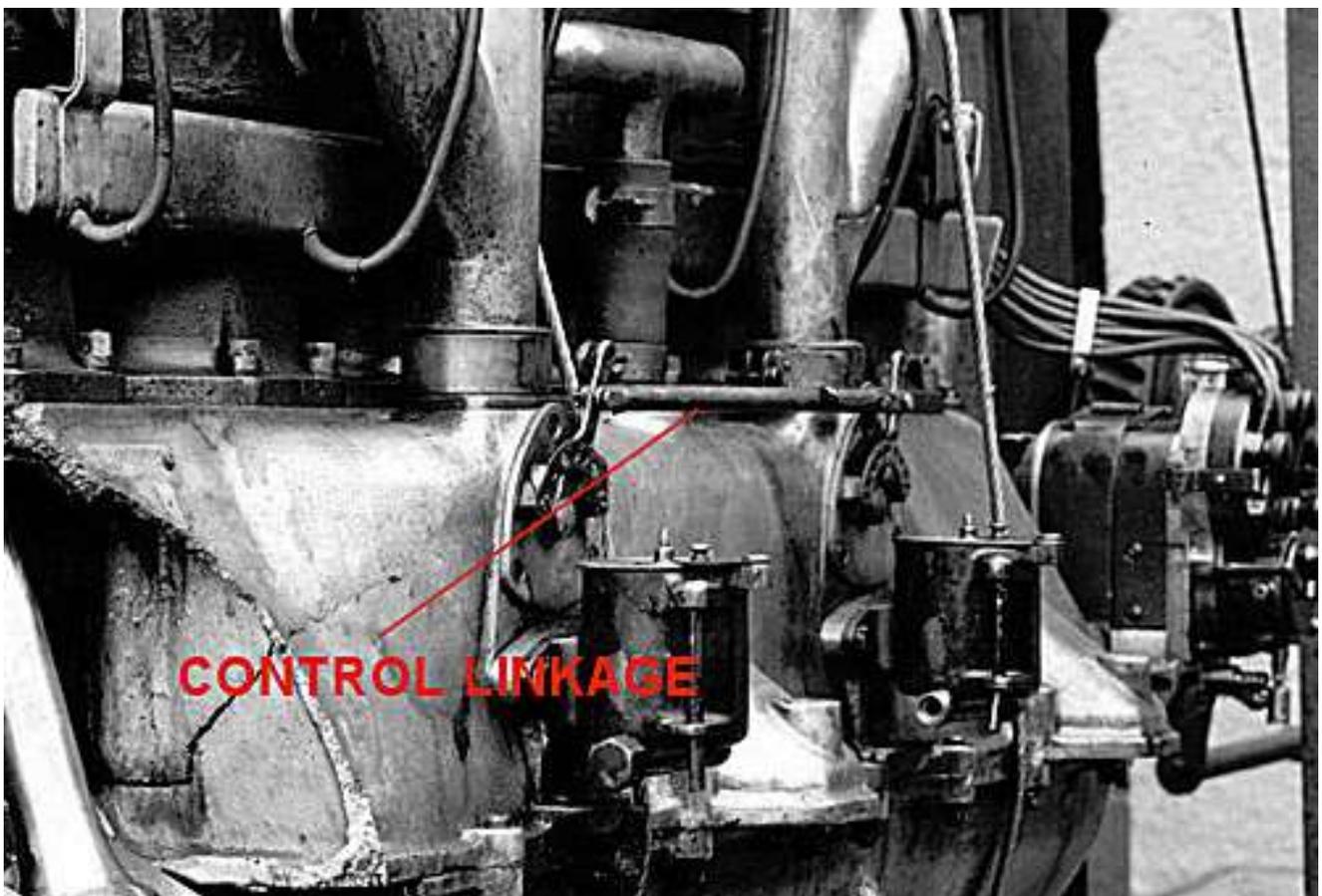
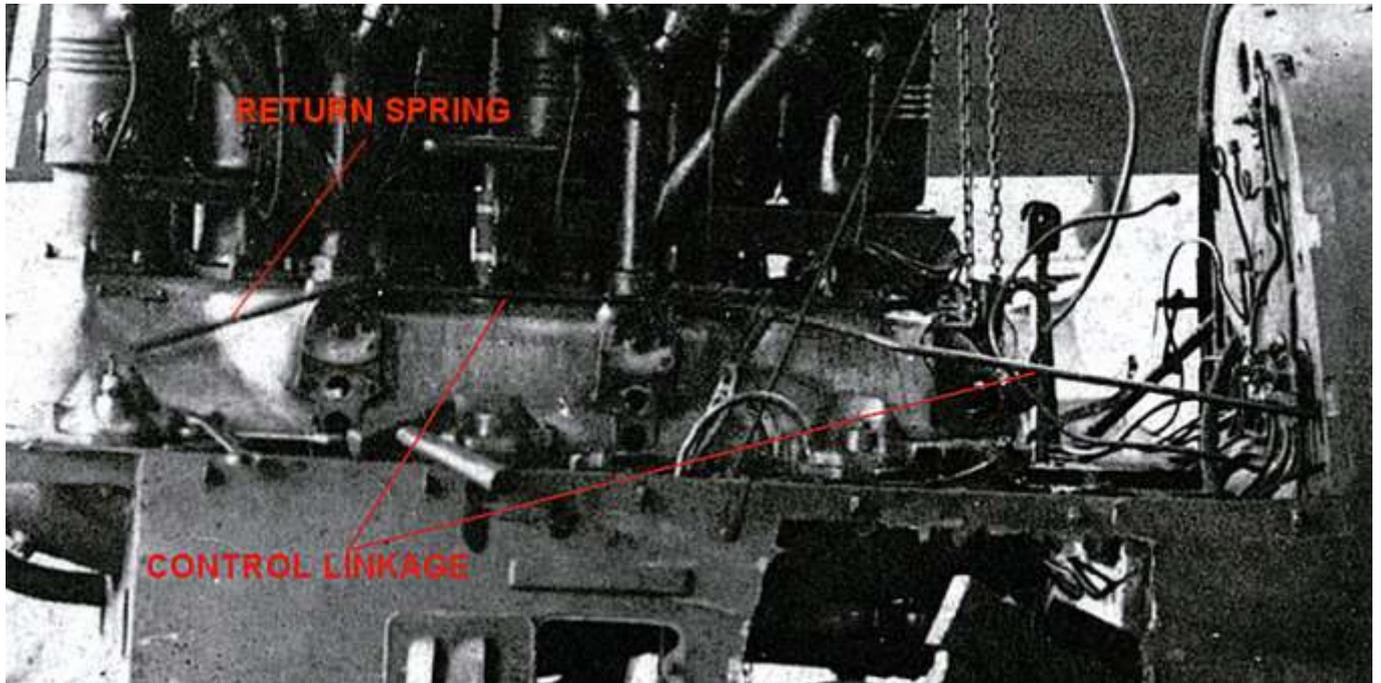
Apply decal 59 or 60 centrally on the upper part of the front cylinder.

Apply decal 53 or 54 or 55 to the forward, left side of the engine crankcase.

**Modifications (continued):**

On-engine controls:

**NOTE:** The kit does not have the engine control linkage for the engine, located at the left side.



**NOTE:** A cranked control rod from the engine bulkhead was attached to the rear pivot lever on the rear carburettor chamber. This was connected by a second control rod to the pivot lever on the front carburettor chamber. The front pivot lever was connected to the crank case by a long return spring.

Cut away the pre-moulded pivot stubs on the intake manifolds, just above the carburettor chambers.

Remove two control horns from the 'Part' control horns and turnbuckle set (S48-087).

Cut away the bottom portion of the control horns to reduce their height.

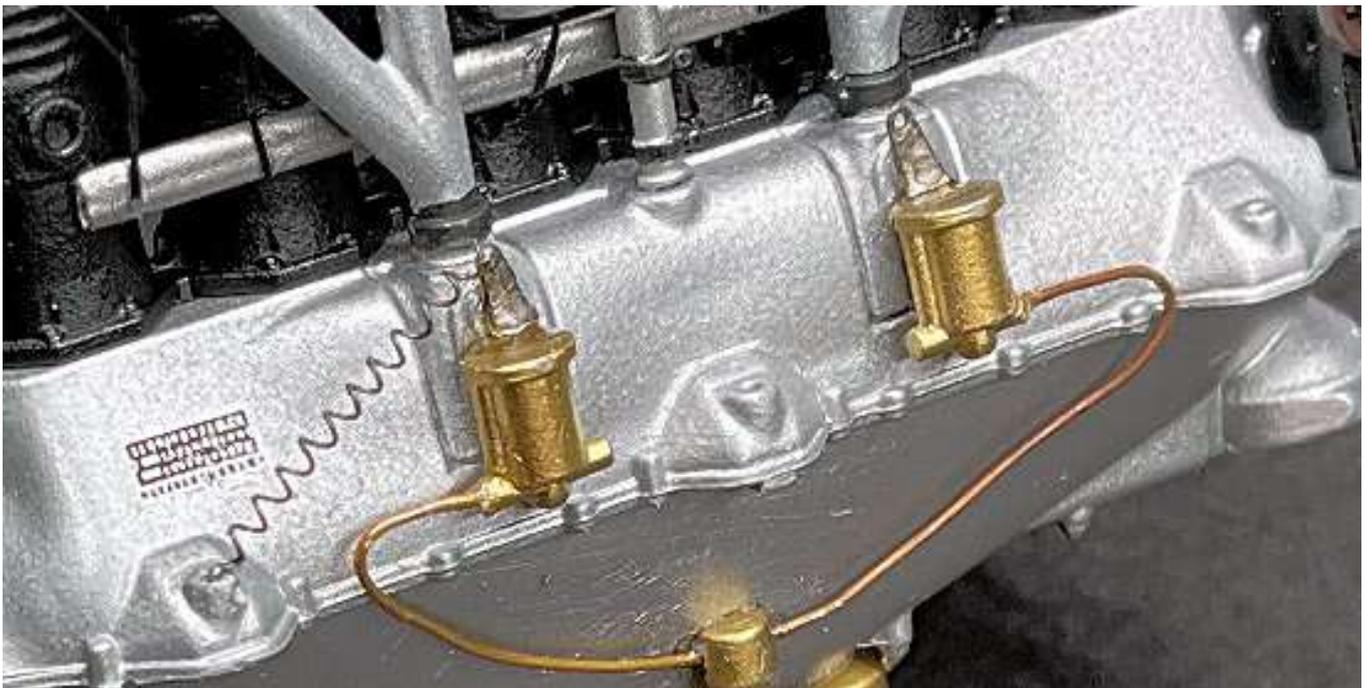
Using thin CA adhesive, secure a control horn onto the intake manifolds above the carburettor chambers and angled forwards slightly.

Wind a length of 0.125mm diameter copper wire around a 0.3mm diameter rod to form a long length of 'spring'.

Trim the length of the spring such that it spans between the top of the added front control horn and the pre-moulded recess in the front, left mounting flange of the engine. Make sure the ends of the spring are bent out for attaching to the control horn and engine recess.

Locate the ends of the spring into the front control horn and engine recess and secure with thin CA adhesive.

**NOTE:** The engine control rods will be added after the engine has been fitted into the fuselage.



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

**NOTE:** During the following step, brush paint gently along the spring, as too much pressure will distort the spring.

Brush paint the spring and the two control horns with 'Mr. Colour' Stainless Steel (213) or similar.

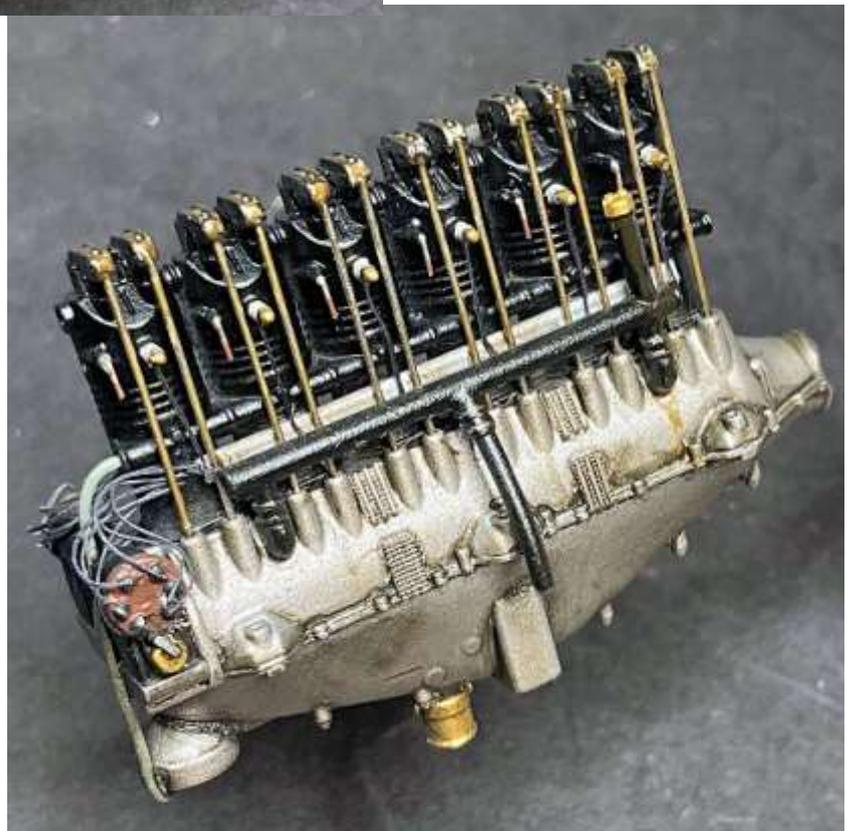
Paint the added coolant pipe with 'Tamiya' RLM Grey (XF22) or similar.

## **Weathering:**

Airbrush the engine assembly with a matte clear coat, such as 'Alclad' Flat (ALC-314) or similar. Refer to Part 3 (Weathering) of this build log - weather the engine assembly, as desired. I used 'Flory Models' Dark Dirt fine clay wash.

Apply by brush, as desired, a small amount of 'AK Interactive' Kerosene (AK2039) around the engine assembly joints and flanges.

Apply by brush, as desired, a small amount of 'AK Interactive' Engine Oil (AK2019) around the oil pipe filler cap, push rods and rockers arms.



# PART 8

# PROPELLER

## **PART 8 - PROPELLER**

I chose to replace the kit supplied two bladed propeller with a hand made, wood laminated Wotan propeller (WP-019) from Alexey Belov of 'Proper Plane'. This propeller was created to include Brass deflector plates attached to the propeller tips.

### **Propeller with chosen hub plates**



### **Preparation:**

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

Drill a hole of 2.0 mm diameter through the centre of the rear propeller hub plate.

### **Painting:**

Airbrush the two propeller hub plates with 'Alclad' Steel (ALC-112) or similar.

### **Assembly:**

**NOTE:** Make sure you know which is the front and rear of the propeller. The previous photograph shows the **front** side of the propeller.

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

Using thin CA adhesive, secure the rear hub centrally onto the rear of the propeller hub with the shaft holes aligned.

### **Decals:**

**NOTE:** Refer to page 17 of the kit instruction manual for decal positioning. I chose **not to apply** the kit supplied decal (8).

Apply the kit supplied decals (50 and 51) centrally and each side of the propeller hub.

Apply the kit supplied decals (48) centrally on the front face of the propeller blades and adjacent to the start of the Brass deflection plates.

Apply the kit supplied decal (49) centrally onto the front face of one of the propeller blades.

If necessary, conform the decals to the propeller by sparingly brush applying 'Microscale' MicroSol over the decals.

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

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

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



**PART 9**  
**PREPARATION**  
**FOR RIGGING**  
**(INTERNAL)**

## **PART 9 - PRE-RIGGING (INTERNAL)**

**NOTE:** *The following modifications will allow rigging of the cockpit flight control cables for the rudder, elevator and the elevator.*

### **Example of attaching lines to turnbuckles:**

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

Cut a short length of blackened tube (0.4 or 0.5mm diameter) Brass tube, such as that supplied from 'Albion Alloys' (MBT04 or MBT05) or similar.

Deburr the tube by running a 0.2 mm or 0.3 mm diameter drill through the tube.

**NOTE:** *Always cut the length of line **much longer** than needed to span between its attachment points.*

Cut a long length of 0.08 or 0.12 mm diameter mono-filament (fishing line), such as 'Stroft GTM' or 'Steelon'.

Pass the line through the tube, then trough the 'eye' of a turnbuckle.

Pass the line back and through the tube.

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

Secure the lines to the tube end away from the turnbuckle, using thin CA adhesive.



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

Brush paint the turnbuckle ends with 'Mr. Colour' Stainless Steel (213) or similar.

Brush paint the turnbuckle central barrels with 'Mr. Colour' Brass (219) or similar.

### **Rudder:**

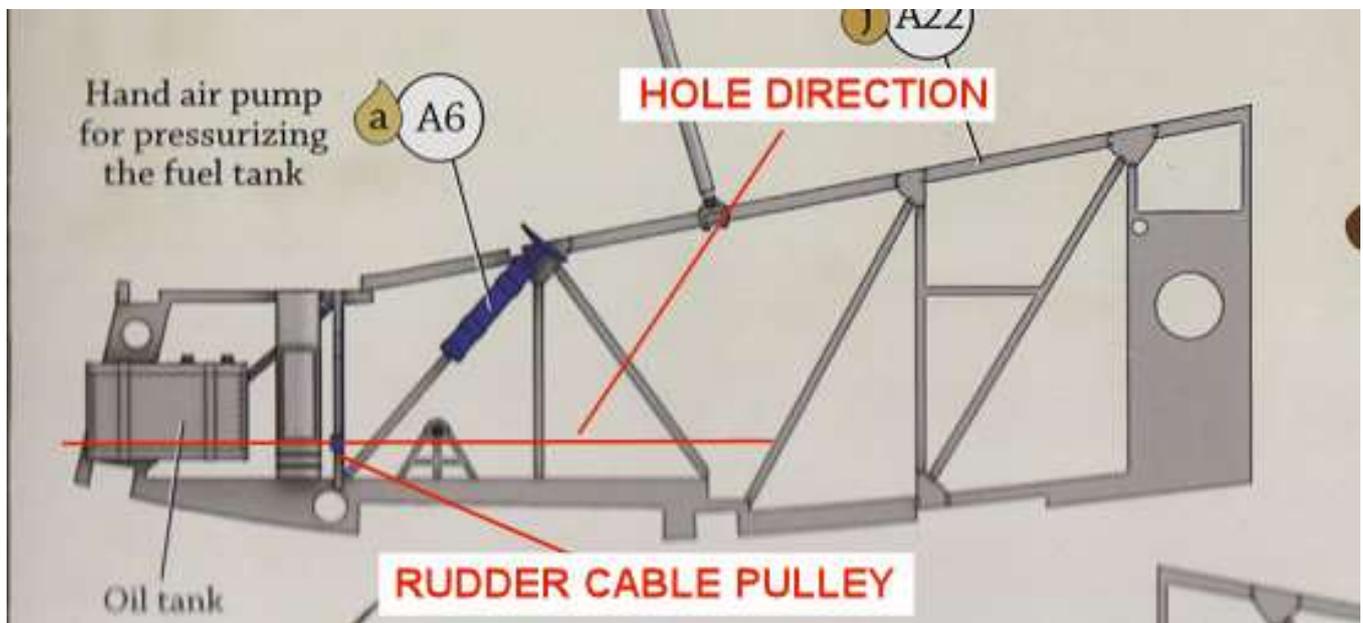
Drill two holes of 0.3mm diameter through the curved front of the rudder bar (A14).



### **Rudder control pulleys:**

**NOTE:** *The rudder control cable pulleys are located at the bottom of the first (forward) vertical strut on the cockpit side frames.*

Drill a hole of 0.3mm diameter through the front to rear of the rudder pulleys (to allow rigging later in the fuselage build).



### **Elevator:**

Drill a hole of 0.3mm diameter through both ends of the two elevator control levers on the control column (A10).

### **Ailerons:**

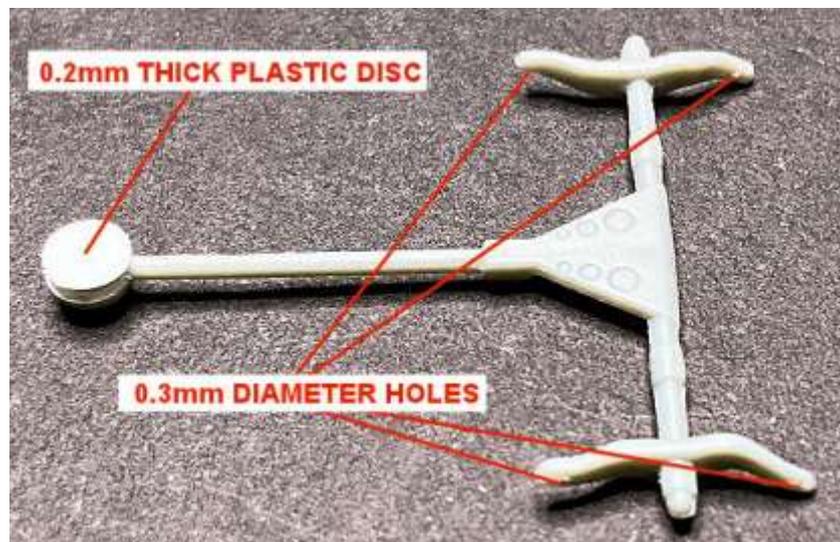
**NOTES:** *The following steps replace the kit supplied photo-etch aileron control part.*

From 0.2mm thick plastic card, cut a disc the same diameter as the pre-moulded pulley on the front, top of the control column (A10).

Cement the disc centrally onto the front extension of the pulley.

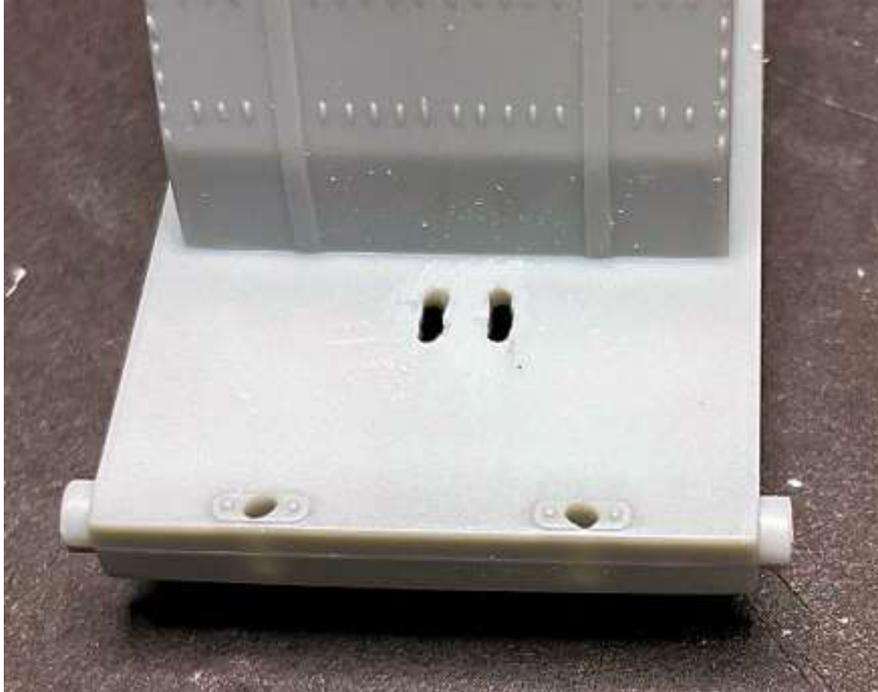
Cut away the triangular base plate from the kit supplied photo-etch part 3.

Using thin CA adhesive, secure the photo-etch base plate the bottom of the control column (control wheel/pilot side).



**NOTE:** I've assumed that the aileron control cables from the control wheel were routed vertically down and through the cockpit floor to pulleys, which directed the cables outboard through the lower wings.

Using a 0.7mm diameter drill, create two slots through the cockpit floor, forward from the bottom of the fuel tank. The distance between the slots should be the same as the diameter of the added disc on the top of the control column.



**PART 10**  
**CONSTRUCTION**  
**(FUSELAGE)**

## **PART 10 - CONSTRUCTION (FUSELAGE)**

### **NOTE:**

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

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

*Refer to the relevant pages in the kit instruction manual.*

***My sequence of building this model may not follow the kits instruction manual. This is due to incorporating modifications as I progress through the build.***

### **General preparation:**

Some modellers work the various pieces whilst they are still attached to the main sprue, but I prefer to remove the pieces first so that I can clean them up more easily. However pieces like the cockpit frames are delicate and can easily be damaged when being removed. When parts are cut from the sprues, care should be taken as they can either break or get stressed at the cut point, which causes 'white' stress and/or deforming. For plastic kits, I use fine sprue cutters to cut away the kit part, not too close to the part, then sand off the tag. When I cut resin parts away from their mould blocks, I use a fine cutting saw, which has a more gentle cutting action. Despite being a WNW kit, there are still some fine moulding lines around items such as the cockpit frames, but they are only slight and are easily removed using a sharp blade or sanding stick. I use a new scalpel blade to gently scrape off the mould lines. Some of the model items like the parts for the cockpit are very small and can easily 'fly off' when being handled, so take care. Remember to drill any holes needed for rigging or control lines by referring to the relevant pages and diagrams in the kit instruction manual.

Primer can be applied by brush, airbrush or from aerosol cans. These days I prefer to use 'AK Interactive' Primer and Micro-filler (Grey AK758) or (White AK759). These have good coverage as the base primer for acrylics. Take care when spraying the primer as if you apply too much it will result in 'pooling' or 'runs', which would then need to be removed once the primer has dried. Make sure you spray in a well ventilated area or preferably, if you have one, use an extractor booth.

To hold items for priming I use self locking tweezers or carefully insert a toothpick into the item or I use a small piece of sticky putty, such as 'UHU White Tack', on the end of a toothpick. Once applied the primer dries quickly, one of the main advantages of using acrylic paints rather than enamels or oil paints.

### **Modifications:**

Despite this model being produced by Wingnut Wings, there are still a few minor changes that can be made to the model to enhance the overall effect:

#### **Pilots control wheel (A16):**

**NOTE:** *The kit supplied pilots wheel for the pilot is detailed, but can be enhanced by adding 'wrapping' around the wheel rim.*

Cut four long lengths of 0.125mm diameter copper wire.

Heat the wires slightly over a flame to anneal them (soften).

Hold one end of a wire to the rim of control wheel at a wheel support.

Wrap the wire around the wheel to the next wheel support.

Using thin CA adhesive, secure both ends of the wire to the control wheel.

Cut away any residual end tags of the wire.

Repeat the procedure to add wire wrapping around the remaining three wheel rims.



#### Hand pressure pump (A6):

Drill a hole of 0.5mm diameter into the centre, bottom of the hand pressure pump (for adding a pipe later in the fuselage build).

#### Throttle rod:

Cut away the pre-moulded throttle control rod from the throttle quadrant on the fuse half (to be replaced later in the fuselage build).

#### Assembly:

**NOTE:** Refer to pages 4 to 6 and 8 of the kit instruction manual.

Remove and prepare all of the required parts.

Cement the observers rear bulkhead (A29) into its locating slot on the rear of the cockpit floor (A26).

Cement the shelf (A34) into its locating slot on the rear of the observer/pilot bulkhead (A19).

Cement the two halves of the camera (A35, A36) together.

Cement the radiator rear mesh (A15) into the rear of the nose cowl (H24).

#### Painting:

Prime **all of the parts** with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

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

Observer/pilot bulkhead (A19)

Cockpit floor (A26) (not the fuel tank)

Observer rear bulkhead (A29)

Cockpit side frame (A13)

Cockpit side frame (A22) (not the oil tank)

Instrument panel (H27)

Engine bearer (H4)

Inside fuselage halves (I1, I3) (not white areas - refer to page 8 of instruction manual).

Airbrush the following parts with 'Tamiya' RLM Grey (XF22) or similar:

Rudder bar (A14)

Camera ((A35/36)

Storage case (A17)  
Container (A12)  
Radiator stay (H8)  
Control column (A10)  
Rudder support frame (A30)  
Front cabane struts (H18).

Airbrush the following parts with 'Tamiya' Buff (XF57) or similar:

Pilot seat (A21)  
Pilot seat cushion (A18)  
Observers seat (A34).

Mask off the white area of the insides of the fuselage halves (not wood areas - refer to page 8 of instruction manual).

Airbrush the masked off areas with an off-white, such as 'Hataka' Insignia White (C049) or similar.

Mask off the cockpit floor assembly leaving just the fuel tank and top panel of the observers rear bulkhead exposed.

Airbrush or brush paint the following parts with 'Alclad' Steel (ALC-112) or similar:

Fuel tank (on cockpit floor)  
Top panel (observers rear bulkhead)  
Ammunition containers (A32)  
Pilots control wheel spokes/hub (A16)  
Radiator rear mesh (A15).

Spray one or two light coats of a cheap hairspray or aftermarket chipping fluid over the exposed fuel tank.

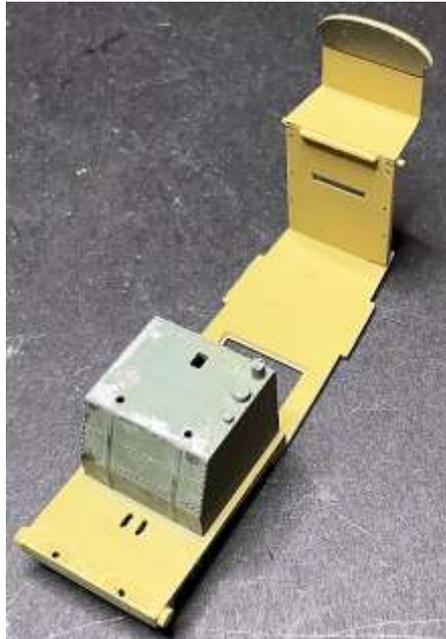
Airbrush the exposed fuel tank with 'Tamiya' RLM Grey (XF22) or similar.

Wet the painted surface of the fuel tank with water and leave for a few minutes.

Using a short, stiff brush or wood tooth pick, carefully scratch and remove the surface paint, as desired, to create chipping by exposing the steel coloured paint layer. Once complete, dry off any remaining water from the fuel tank.

Remove the masking from the fuselage halves and the cockpit floor assembly.





**Wood effect:**

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

Mask off the insides of the two fuselage halves, leaving only the Dark Yellow painted areas.

Mask off the painted fuel tank and top panel of the observers rear bulkhead.

Apply your desired wood effect to the parts listed below. I applied 'Wood effect - Method 2' with Windsor & Newton' Griffin (Alkyd) Raw Sienna oil paint.

Inside of the fuselage halves (I1 and I3)

Cockpit floor and observers rear bulkhead (A26, A29)

Pilot/observer bulkhead (A19)

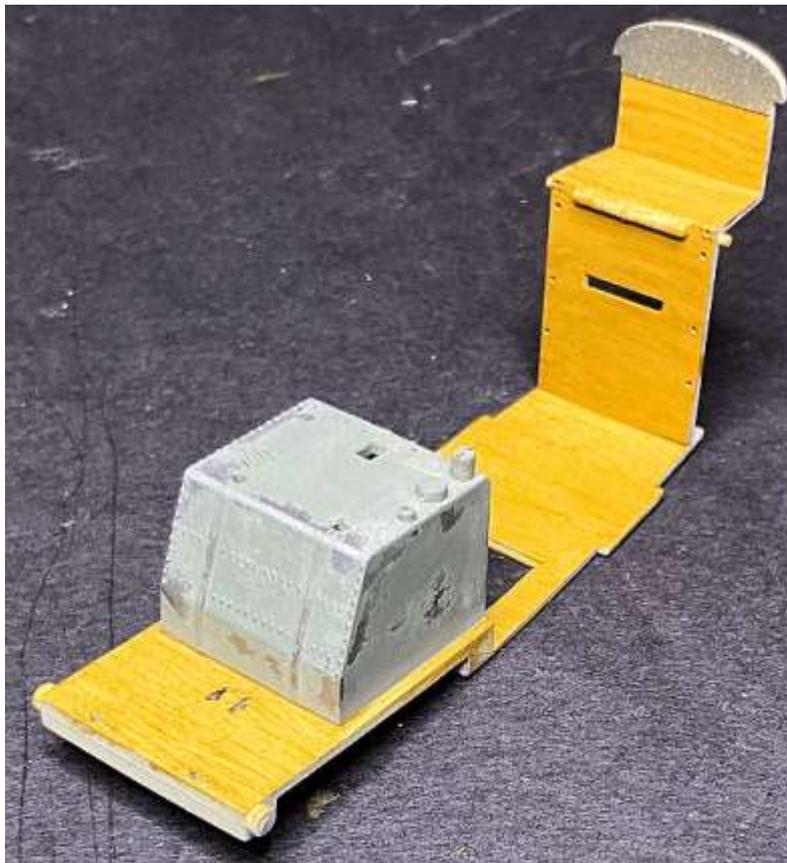
Instrument panel (H27)

Engine bearer (H4)

Cockpit side frames (A13, A22) (not the metal fittings or components).

Remove the masking from the insides of the two fuselage halves, the painted fuel tank and top panel of the observers rear bulkhead.





**Leather effect:**

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

Apply your desired leather effect to the parts listed below. I applied Windsor & Newton' Griffin (Alkyd) Burnt Sienna oil paint with Raw Sienna oil paint stippled on.

Observers fold down seat (A43)

Pilots seat (A21)

Pilots seat cushion (A18)



## **Painting (continued):**

Brush or airbrush paint the listed parts as follows:

### **Observers storage case details (A17):**

- Mallet handle - 'Tamiya' Hull Red (XF9) or similar
- Mallet head - 'Mr. Colour' Iron (212) or similar
- Maps edges - 'Tamiya' White (XF2) or similar
- Metal fittings - 'Mr. Colour' Stainless Steel (213) or similar.

### **Camera details(A35, A36):**

- Handle and trigger grip - 'Tamiya' Hull Red (XF9) or similar
- Lens cap and side straps - 'Humbrol' Leather (62) or similar
- Trigger assembly - 'Mr. Colour' Stainless Steel (213) or similar
- Metal fittings - 'Mr. Colour' Stainless Steel (213) or similar.
- Top viewer case - 'Tamiya' Rubber Black (XF85) or similar.

### **Parabellum ammunition containers (G17):**

- Airbrush 'Alclad' Gunmetal (ALC120) or similar
- Dry brush with 'Mr. Colour' Super Iron 2 (203) or similar or burnish edges with a pencil lead
- Ammunition canvas belts - 'Tamiya' Buff (XF57) or similar.

### **Container (A12):**

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

### **Control wheel (A16):**

- Throttle tab - 'Tamiya' Rubber Black (XF85) or similar.
- Added rim wrapping - brush lightly with 'AK Interactive' Brown Leather (AK3031) or similar.

### **Fuel tank filler cap:**

- Brush with 'Mr. Colour' Brass (219) or similar.

### **Tachometer drive (H19):**

- Brush with 'Tamiya' Rubber Black (XF85) or similar.

### **Fuel filter (A8):**

- Brush with 'Mr. Colour' Brass (219) or similar.

### **Hand air pump (A6):**

- Brush pump body with 'Mr. Colour' Brass (219) or similar
- Brush paint the pump handle with 'Tamiya' Hull Red (XF9) or similar.

### **Clear parts (C1 and C2 x2):**

- Brush surrounding frames with 'Mr. Colour' Stainless Steel (213) or similar.

### **Back rest on observers rear bulkhead:**

- Brush with 'Humbrol' Leather (62) or similar.

### **Observers window (C2 x2):**

- Metal frame - 'Mr. Colour' Stainless Steel (213) or similar.

### Cockpit side frame (A6) details:

Brush with 'Tamiya' RLM Grey (XF22) or similar:

Oil tank

Metal frame fittings

Cabane strut

Dry brush oil tank and container with 'Mr. Colour' Super Iron 2 (203) or similar

Brush oil tank straps with 'Tamiya' Rubber Black (XF85) or similar.

### Cockpit side frame (A13) details:

Brush with 'Tamiya' RLM Grey (XF22) or similar:

Metal frame fittings

Cabane strut

Throttle mounting.

Brush throttle quadrant with 'Mr. Colour' Stainless Steel (213) or similar.

### Instrument panel details (H27):

**NOTE:** Refer to page 6 of the kit instructions for detail painting.

Brush with 'Mr. Colour' Brass (219) or similar

Brush with 'Mr. Colour' Stainless Steel (213) or similar

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

### **Decals:**

**NOTE:** Refer to pages 4 and 6 of the kit instructions for decal locations.

Airbrush a clear gloss coat, such as 'Alclad' Aqua Gloss 600 or similar, over the following:

Instrument panel face

Fuel tank gauge

Mounting for throttle quadrant

Camera side

Observers shelf.

Apply the following decal to the kit parts as detailed in pages 4 and 6 of the kit instructions:

62 to 70

72 to 75

77 or 85.

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

**NOTE:** Refer to pages 4 to 8 of the kit instruction manual. Make sure all **primer and paint is removed** from any part locating holes/recesses and any part mating surfaces etc.

Using a 1.0mm diameter drill to drill through the left fuselage half (at the pre-moulded recesses) for mounting the left machine gun panel.

Cement the forward cabane strut fully into its locating recess and groove in the fuselage left half. The strut should lean back at a slight angle.

Cement the pilots control wheel to the control column.

Cement the fuel filter into its locating holes on the rear of the instrument panel.

Cement the ammunition container onto its location on the rear of the engine bearer.

Cement the instrument panel onto its location on the rear of the engine bearer. The panel should just lean against the ammunition container.

Cement the Tachometer drive into its locating recess in the rear of the instrument panel.

Cement the container onto its location on the cockpit left side frame.

Cement the hand pressure pump onto its locating stubs on the right cockpit side frame.

Cement the pilots seat onto the seat cushion.

Cement the pilots seat assembly into its locations on the top of the fuel tank.

Cement the observers storage case onto the lower right of the rear face of the pilot/observer bulkhead.

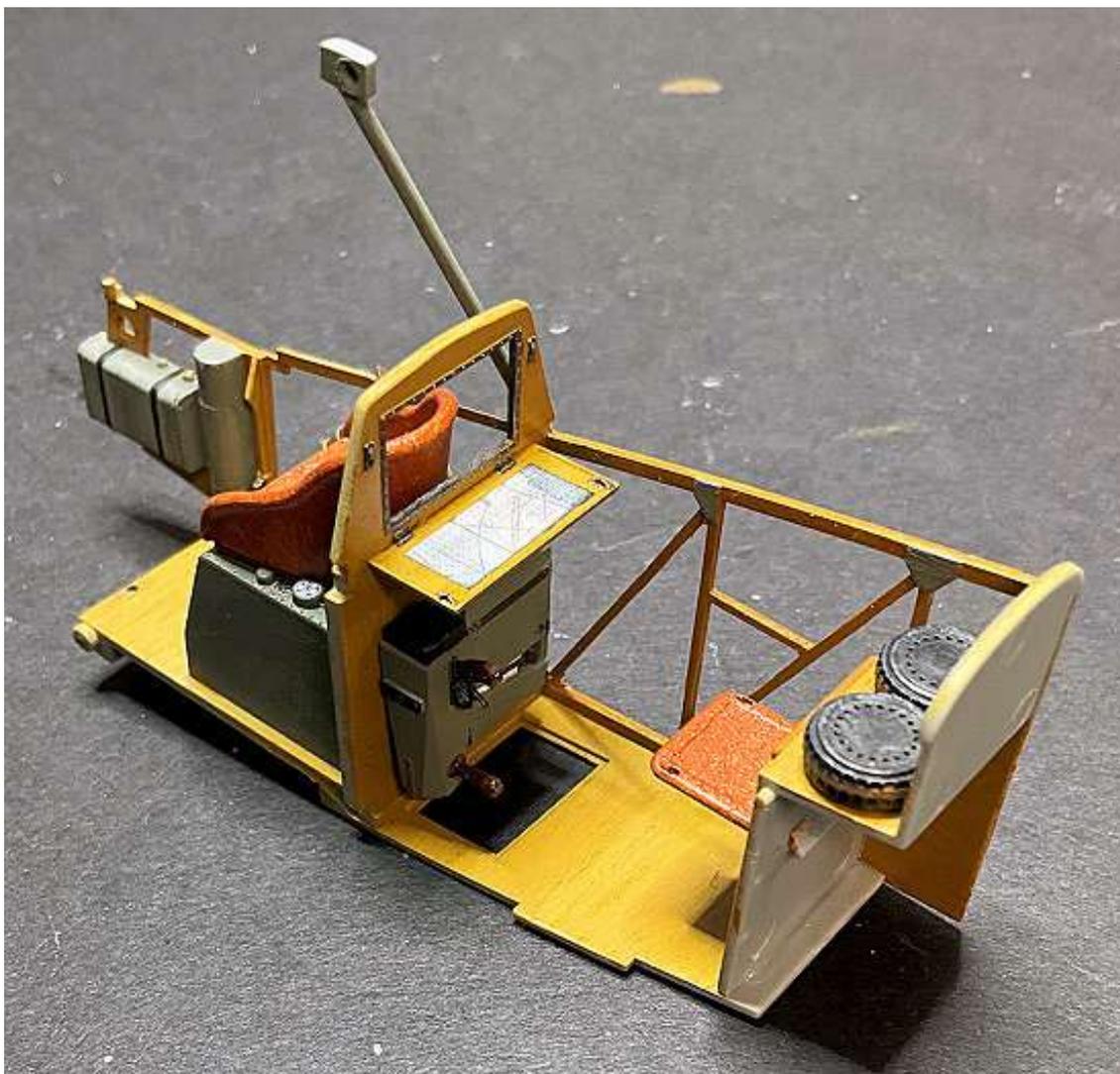
Cement the camera onto the lower left of the rear face of the pilot/observer bulkhead.

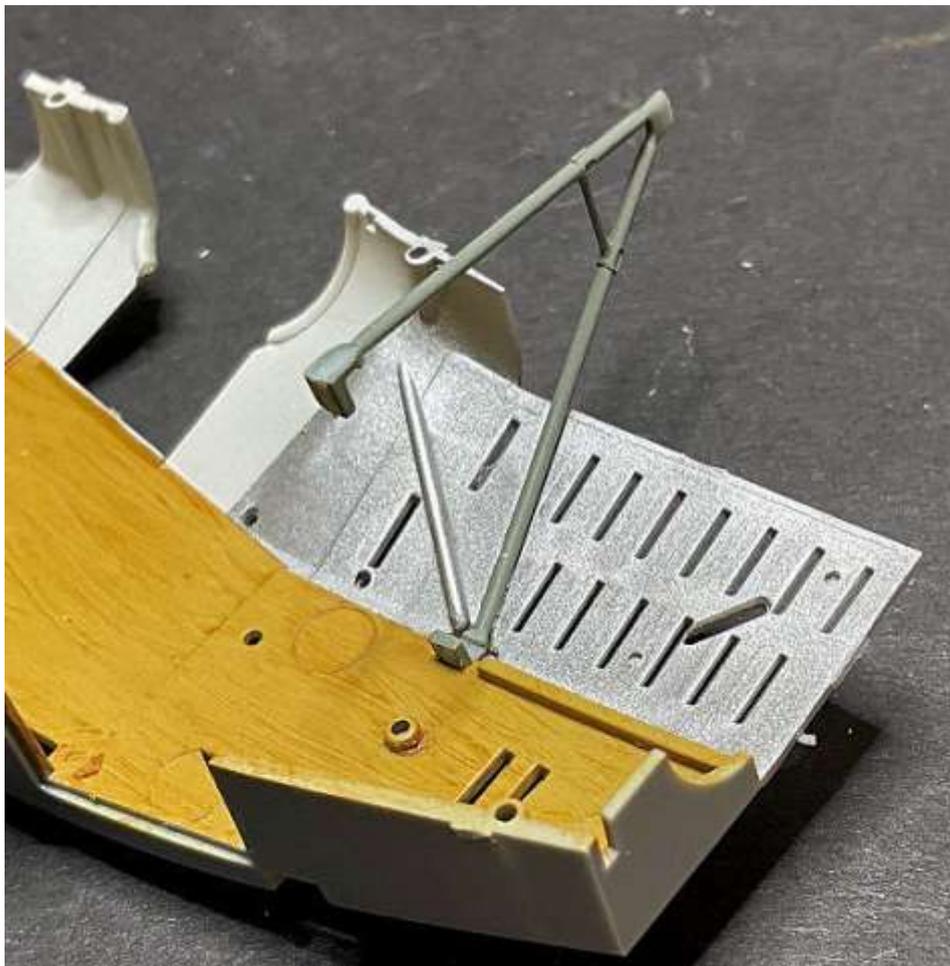
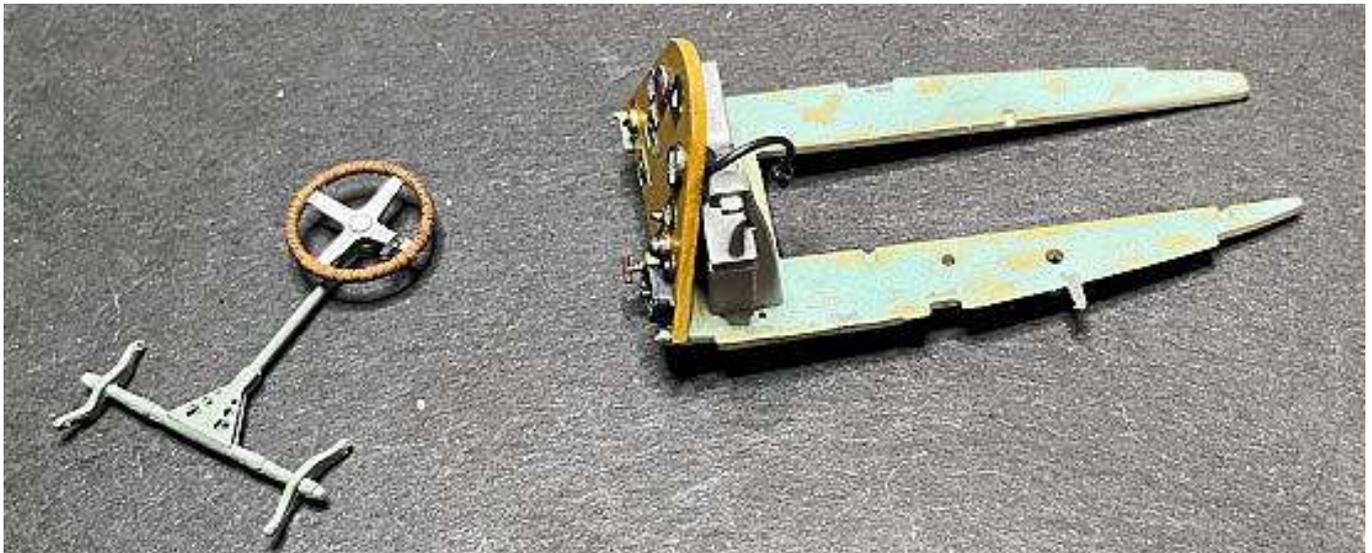
Cement the observers seat into its location slot in the observers rear bulkhead.

Cement the two Parabellum ammunition drums onto the shelf of the observers rear bulkhead.

**NOTE:** *The following step allows for final fitting of the right cockpit frame into the fuselage right half without the ammunition feed chute (on the ammunition container) fouling the engine panels on the fuselage left half.*

Cement the cockpit floor assembly fully into its locating holes and recess in the cockpit right side frame.





**Weathering:**

Airbrush a light coat of a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar, over the painted/assembled:

- Fuselage halves
- Engine bearer assembly
- Control column assembly
- Cockpit assembly
- Cockpit left side frame.

Refer to Part 3 (Weathering) of this build log - weather the parts, as desired. I used 'Flory Models' Dark Dirt and Grime fine clay washes.

### Rigging of controls:

#### Example of attaching lines to turnbuckles:

**NOTE:** *The holes for rigging the flight controls were drilled earlier in this build log. Brass tube can be chemically blackened by immersion in solutions such as 'Blacken-It' or similar.*

Cut a short length of blackened tube 0.5mm diameter Brass tube, such as that supplied from 'Albion Alloys' (MBT05) or similar.

Deburr the tube by running a 0.3 mm diameter drill through the tube.

**NOTE:** *Always cut the length of line **much longer** than needed to span between its attachment points.*

Cut a long length of 0.12 mm diameter mono-filament (fishing line), such as 'Stroft GTM' or 'Steelon'.

Pass the line through the tube, then through the pre-drilled hole in the kit part.

Pass the line back and through the tube.

Slide the tube up to, **but not touching**, the kit part.

Secure the lines to the tube end away from the kit part, using thin CA adhesive.

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

#### Rudder control cables:

Using the previous example, attach a long length of line to both pre-drilled holes in the rudder bar.

#### Elevator control cables:

Using the previous example, attach a long length of line to the two pre-drilled holes in both elevator control levers on the control column assembly.



### Ailerons control cables:

**NOTE:** In reality the rigging lines were passed through the 'eye' end of a turnbuckle then looped back and spliced together. The turnbuckles used are the 'Proper Plane' 1/32nd scale 3D printed resin turnbuckles (RD-005).

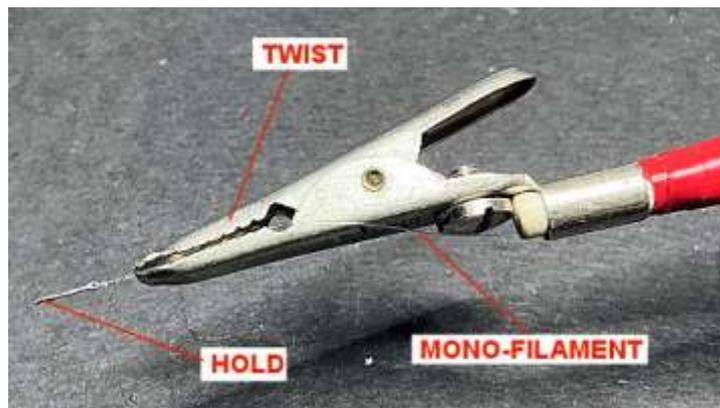
If necessary, carefully run a 0.3 mm diameter drill through the 'eye' end of the turnbuckle to remove any build up of metal.

**NOTE:** Always cut the length of line ***much longer*** than needed to span between its attachment points.

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

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

**NOTE:** To hold and twist lines together I used a paper 'crocodile' clip attached to one end of a rod.



Pass the line back and hold the lines together with the 'crocodile' tool.

Holding the turnbuckle firmly, twist the 'crocodile' tool to twist the lines together. Leave the loop of line in the turnbuckle 'eye' end free to move. Only twist approximately 4 mm of line from the turnbuckle.

Secure the twisted lines together using thin CA adhesive.

Cut away any residual tag of line leaving only the twisted joint of lines.

Repeat the procedure to add a turnbuckle to a second length of line.

Repeat the procedure to add a long length of line to the free 'eye' end of one of the lines.

Loop that line behind the add plastic card disc on the top of the control column.

Keeping the line taut, position the turnbuckle in the line midway up the control column.

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

Position that turnbuckle to match the position of the other turnbuckle.

Hold the line in the turnbuckle and repeat the previous procedure to attach the line to the turnbuckle.

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



**Assembly (continued):**

Cement the cockpit right side frame onto its round front location and rear recess between the frame and cockpit floor.

Cement along the mating edges of the side frame and cockpit floor and also at the observers rear bulkhead.

Pass the pre-rigged elevator control lines from the right side levers on the control column rearwards and through the holes in the pilot/observer bulkhead. The top lines pass through the upper holes and the lower lines through the middle holes.

Pass the same lines rearwards and through the same holes in the observers rear bulkhead.

Locate the end of the control column elevator bar into its locating holes at the tripod support on the bottom of the cockpit side frame.

Cement the cockpit left side frame onto its round front location and rear recess between the frame and cockpit floor, making sure to fully locate the left end of the control column elevator bar into its tripod support.

Cement along the mating edges of the side frame and cockpit floor and also at the observers rear bulkhead.

Cement the two top end of the rear cabane struts together.

Holding the control column vertical, cement the ends of the elevator bar into their tripod supports.

**NOTE:** *During the following steps, do not tension the four elevator control lines too much or the control column may be pulled from its vertical position.*

Gently tension the four elevator control lines then secure them to the rear face of the observers rear bulkhead, using thin CA adhesive.

Cut away any residual line tags at the rear of the bulkhead.

Cement the front legs of the rudder bar support frame into their locating holes at the front edge of the cockpit floor and the rear legs against the elevator control bar.

**NOTE:** *During the following step, make sure the rudder bar is correctly orientated, with the locating hole on the underside and the curved bar facing forwards in the cockpit.*

Pass each rudder control line through the pre-drilled hole in its pulley on the cockpit side frame.

Pass the ends of the lines rearwards and under the elevator control bar then through the bottom holes in the pilot/observer bulkhead.

Pass the line rearwards and through the lower holes in the observers rear bulkhead.

Cement the rudder bar onto its locating peg at the top of the support frame.

**NOTE:** *During the following steps, do not tension the two rudder control lines too much or the rudder bar may be pulled from its support frame.*

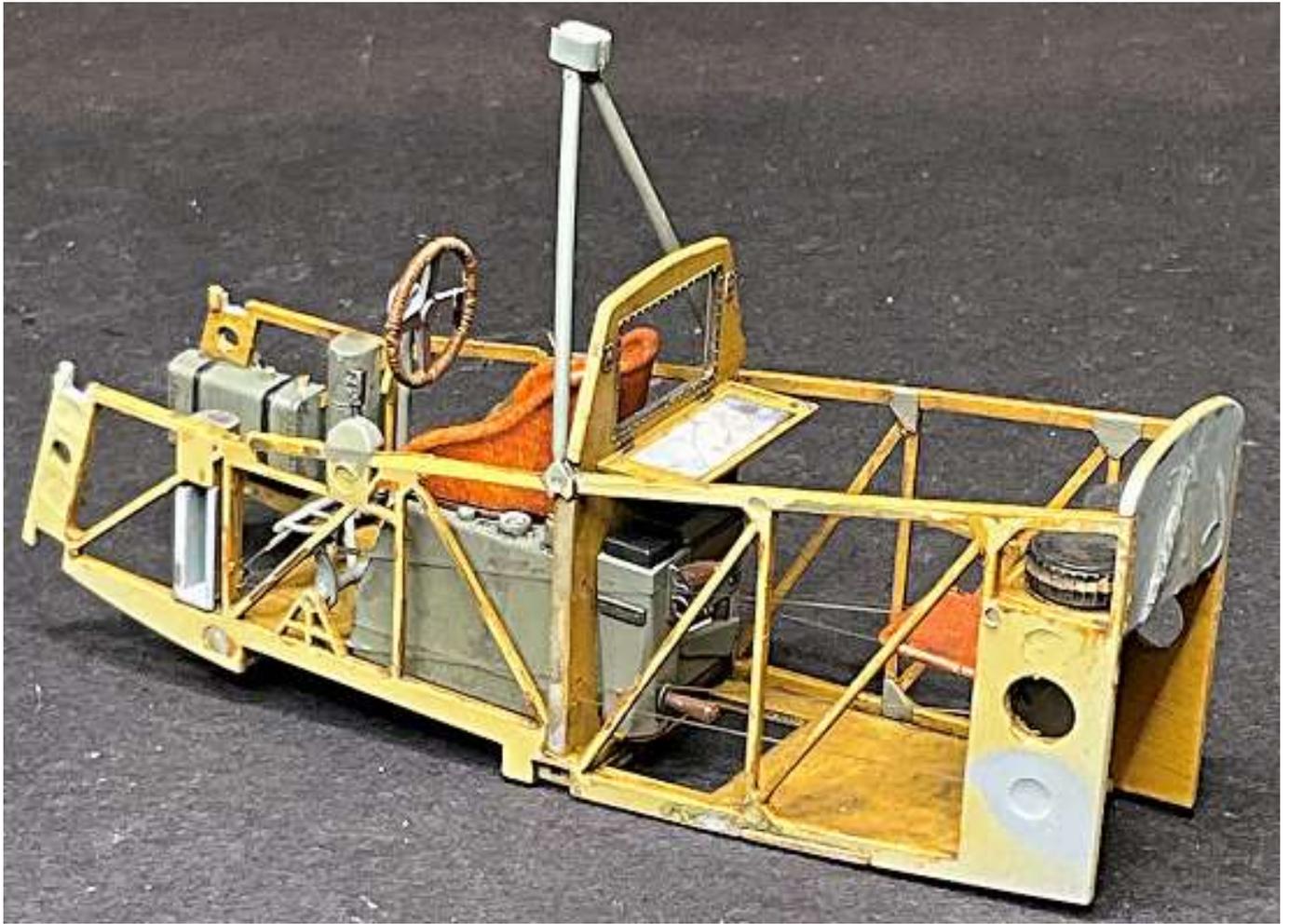
Gently tension the two rudder control lines then secure them to the rear face of the observers rear bulkhead, using thin CA adhesive.

Cut away any residual line tags at the rear of the bulkhead.

Pass each end of the created aileron control line down through the slots created in the cockpit floor, forward from the fuel tank.

Locate the line between the two turnbuckles behind the disc added to the top, front of the control column.

Keeping the lines taut, position both turnbuckles midway down the control column.  
Using thin CA adhesive, secure the two lines to the underside of the cockpit floor.  
Cut away any residual line tags at the underside of the cockpit floor.



**NOTE:** *The pilot and observers seat belts are the photo-etch parts P4, P5, P6 and P7.*

Remove the seat belts from their photo-etch sheet and file or sand away any residual edge tags.

**NOTE:** *During the following step take care to not overheat the photo-etch as too much heat can melt it.*

Gently anneal (soften) the seat belts over a naked flame until they change colour to a light grey.

#### Pilots belts:

Bend the pilots seat belts (P6 and P7) over the pilots seat to contour the two belts to the seat.

Remove the two seat belts without altering their shape.

#### Observers belts:

**NOTE:** *The following step may be necessary.*

Cut away the edges of the main belts in order to avoid them fouling the added rudder and elevator control lines.

#### Painting:

Airbrush all four seat belts with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Airbrush all four seat belts with 'Tamiya' Desert Yellow (XF59) or similar.

Brush paint the seat belt metal fittings with Mr. Colour' Stainless Steel (213) or similar.

Weather the four seat belts with 'Flory Models' fine clay wash (Grime) - refer to Part 4 (Weathering) of this build log.

#### Assembly:

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

Using thin CA adhesive, secure the observers seat belts onto the sides of the observers rear bulkhead.



### Fuel pressure pipe:

**NOTE:** *The pilots hand pump for pressurizing the fuel tank requires its supply pipe.*

Cut a long length of 0.4mm diameter lead wire, such as that from 'PlusModel' or similar.

Using thin CA adhesive, secure one end of the wire into the pre-drilled hole in the bottom end of the hand pressurising pump.

Bend the wire down then up the front side of the fuel tank, then around the bottom, rear of the pilots seat, the fuel gauge on the left side to the pipe connector stub.

Cut away any excess wire at the pipe connector.

Secure the wire in position using thin CA adhesive.



### Observers seat stays:

**NOTE:** *The observers seat requires a seat stay at each side. Nickel-Silver tube can be chemically blackened by immersion in solutions such as 'Blacken-It' or similar.*

Cut two lengths of blackened 0.4mm diameter Nickel-Silver tube, such as 'Albion Alloy's' (NST04) or similar.

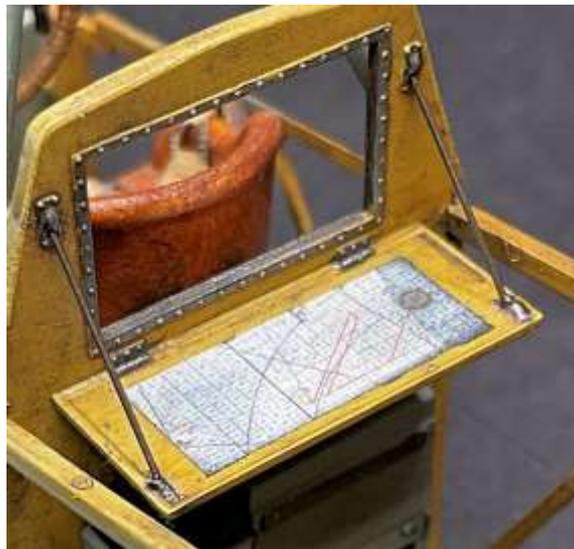
Trim the length of the tubes such that they locate into the pre-moulded recesses in the front corners of the observers seat and rest against the bulkhead (under the horizontal back rest).

Using thin CA adhesive, secure the tube in position in the pre-moulded recesses.



### Observers map shelf:

Repeat the previous procedure to add a shelf stay to each side of the observers map shelf.



### Windows:

Secure a window (C2) into the opening in the observers cockpit floor using a small drop of PVA adhesive, such as 'Microscale' Micro Kristal Clear or similar, in the corners of the window opening.

Use the same procedure to secure a window (C2) into the opening in the pilot/observers bulkhead.

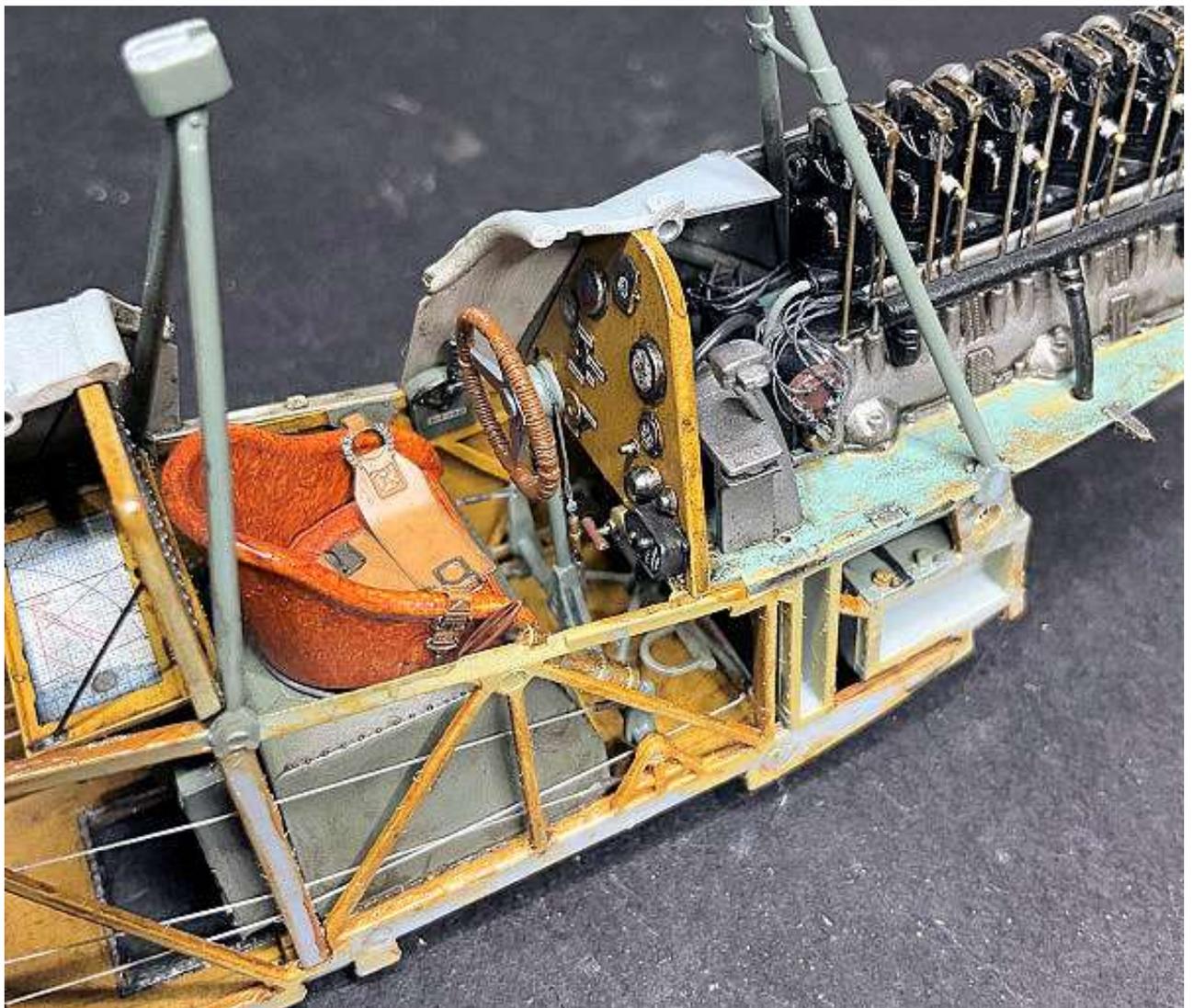
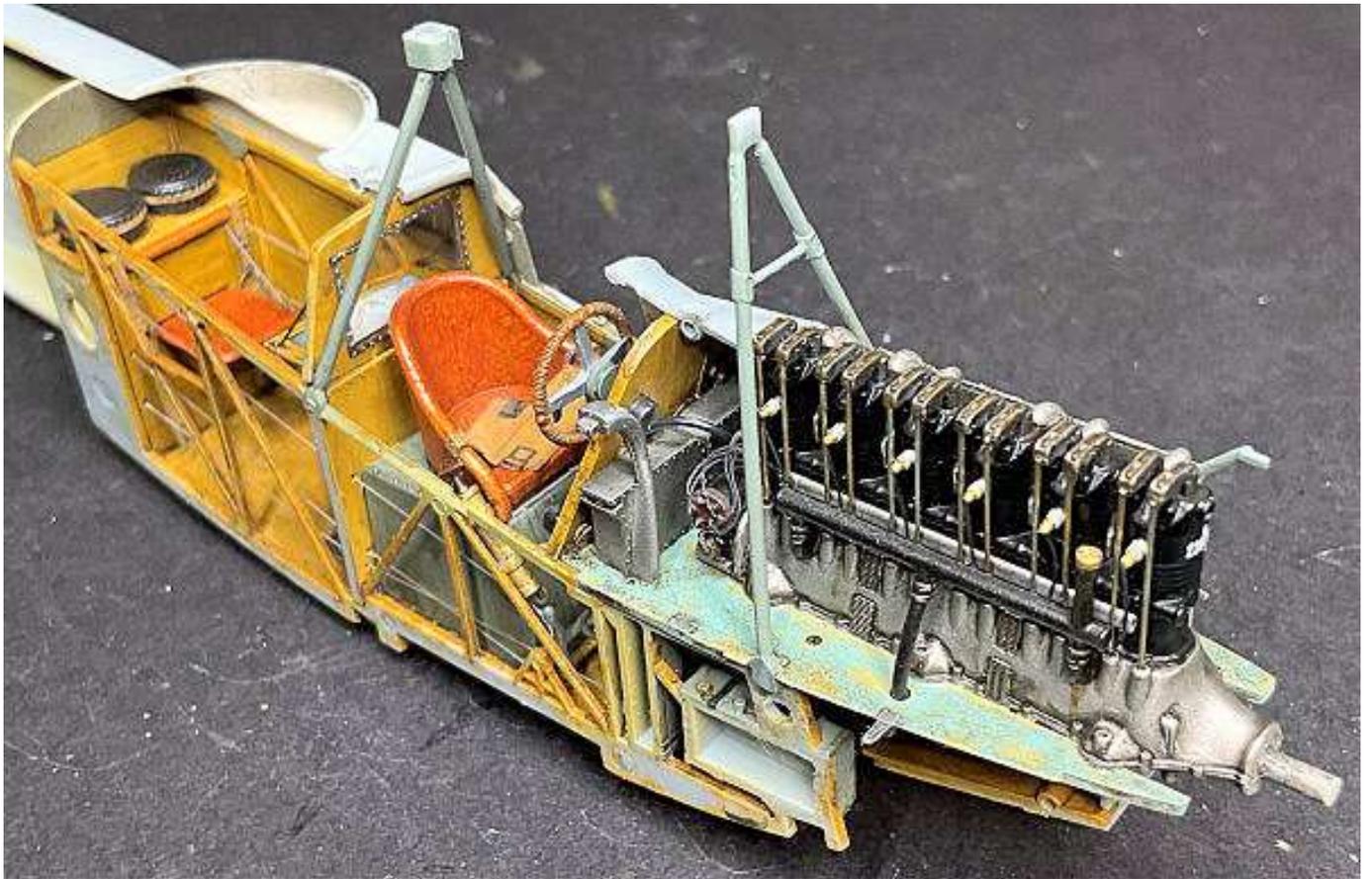
### Radiator left stay:

Cement the radiator left stay into its locating recesses in the inside of the fuselage left engine panel. The handle of the stay passes through the slot engine panel.

### Engine:

Cement the engine into its locating recesses in the engine bearer.





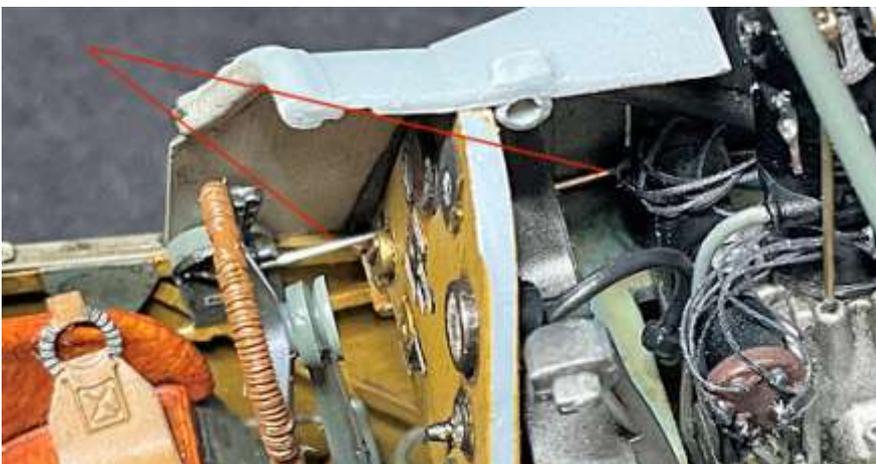


### Throttle control:

Cut a long length of 0.3mm diameter Nickel-Silver tube, such as 'Albion Alloy's' (NST03) or similar. Bend the tube such that it can be positioned at the left side of the engine and passed through the pre-moulded hole in the left, lower side of the instrument panel and up to the throttle quadrant. The engine side of the tube should be bent to lay across the tops of the two carburettor cylinders.



Position the tube and secure it onto the two carburettor cylinders using thin CA adhesive.



### Fuselage halves:

**NOTE:** *Make sure all primer and paint is removed from all fuselage mating surfaces.*

Test fit the fuselage right half onto the fuselage left half assembly, making sure the two halves fully locate to each other, without any obstructions.

Cement the fuselage halves together.

Once the cement has fully cured and set, file or sand over the fuselage seam joint to blend the surfaces of the fuselage halves together.

**NOTE:** *Refer to pages 9 and 10 of the kit instruction manual.*

Remove and prepare all of the required parts.

Cut away the 'spout' from the top, left side of the radiator (H24).

Cement the cabane strut (H22) into its pre-moulded recess on the fuselage left side and into the recess in the front at the top of the rear cabane struts.

### **Weapons:**

**NOTE:** *The following steps are to replace the kit supplied machine guns with the 'Gaspach' 1:32 scale 'Spandau' early MG08 machine guns (15-32072) and are intended **for the more experienced modeler.***

File or sand away the two mounting lugs on the underside of the 'Gaspach' machine guns (as not required).

#### Right side machine gun:

Carefully saw through the underside of the breech block of the machine gun on part H2 or H5 in order to separate the gun from the panel.

File flat the cut top of the panel.

File or sand away the raised ridge on the outside of the panel (as not required).

Cement the handle (H20) into its location recesses on the outside of the panel.

File or sand away the locating tabs on both ends of the ammunition feed chute (A23), as these will prevent correct fitting to the 'Gaspach' machine gun.

Cut the empty ammunition rounds chute away at its base from the fitted ammunition container (A32) and file or sand away the gun locating tab on the top. This is necessary to allow correct fitting to the 'Gaspach' machine gun.

#### Left side machine gun:

Carefully saw through the underside of the breech block of the machine gun on part H3 or H6 in order to separate the gun from the panel.

File flat the cut top of the panel.

Cut away the locating stub on the bottom of the empty ammunition rounds chute (H21) and the top locating tab for the gun opening, as this will allow correct fitting to the 'Gaspach' machine gun.

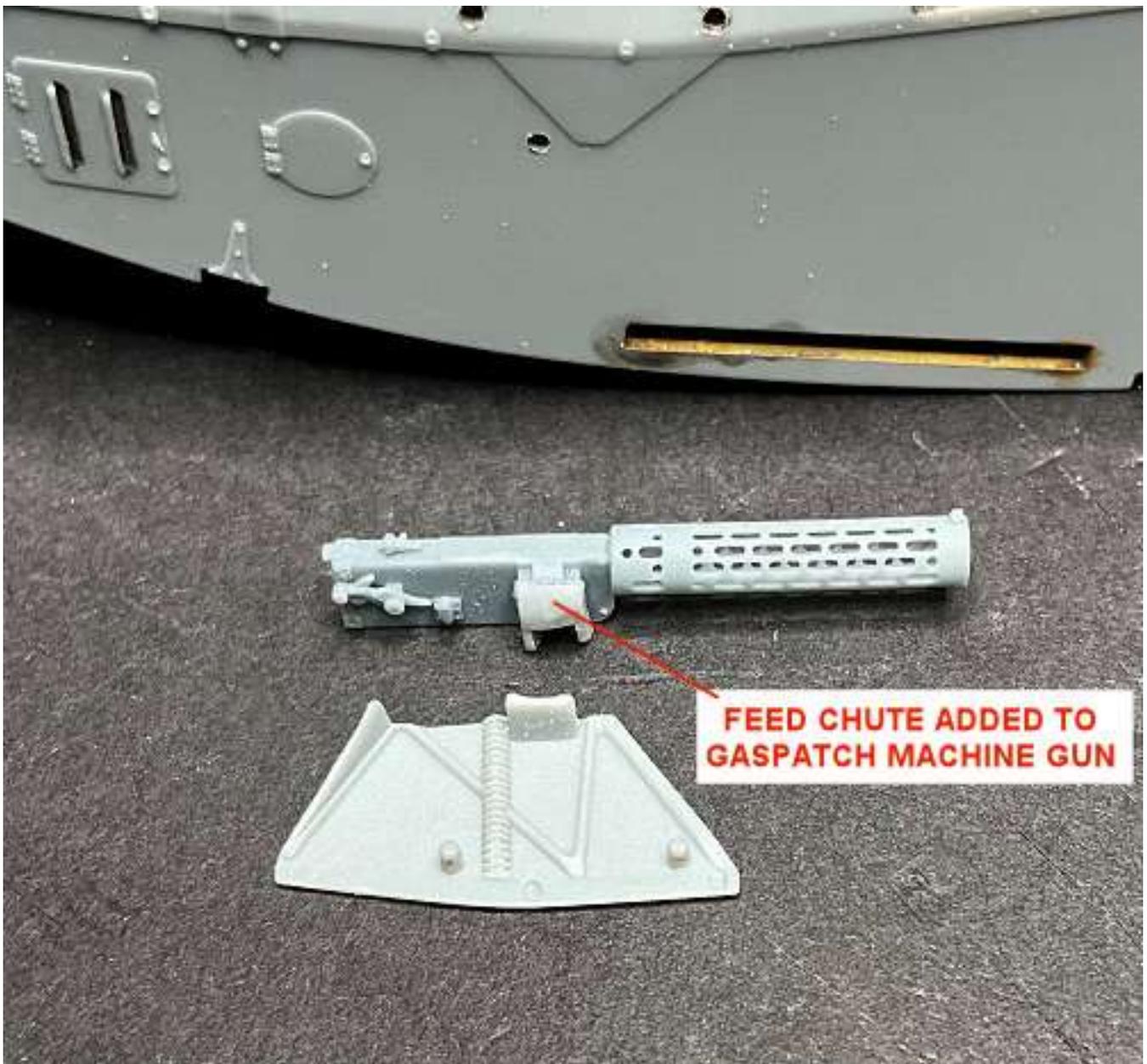
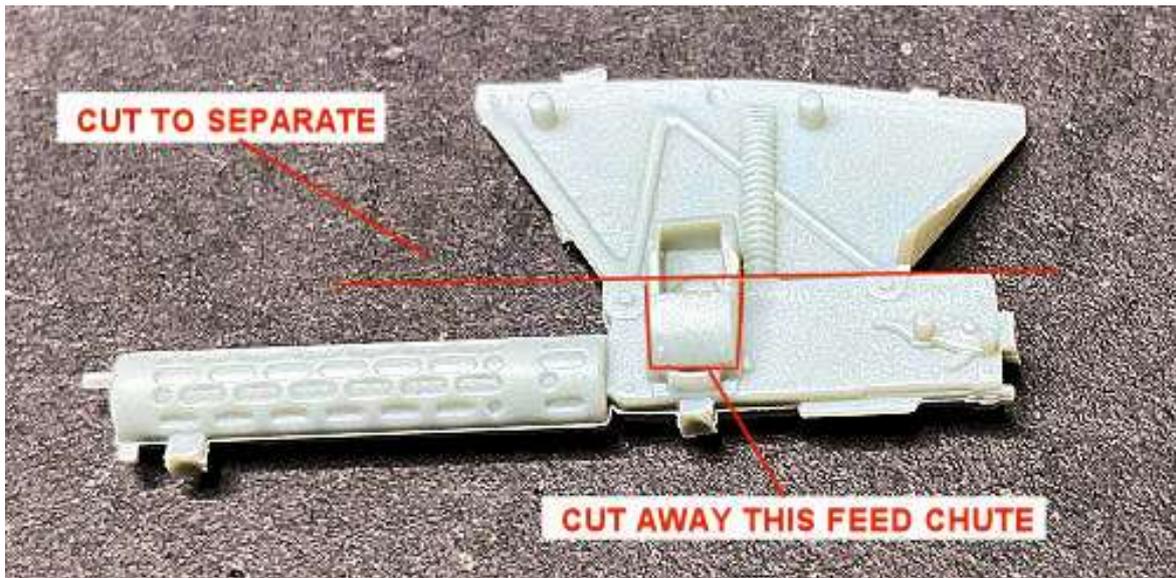
Carefully saw off the ammunition feed chute from the separated machine gun.

Using thin CA adhesive, secure the removed feed chute onto the ammunition feed slot on the right side of a 'Gaspach' machine gun.

Temporarily locate the separated panel into its locating holes in the left side of the fuselage.

Test fit the modified 'Gaspatch' machine gun onto the top of the panel with the added feed chute aligned correctly.

File or sand the parts, as required, to achieve the correct fit and alignment of the machine gun.





**Painting (continued):**

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

Nose cowl assembly, Cockpit doors (H9 and H14), Separated gun machine gun panels, Panel stay (H26), Engine right access panel (H1), Right ammunition feed chute (A23), Left ammunition empty rounds chute (H21), Coolant pipe (A38).

Airbrush the insides of the cockpit doors (H9 and H14) with 'Hataka' Insignia White (C049) or similar.

Airbrush the insides of the following with 'Alclad' Duraluminium (ALC102) or similar:

- Nose cowl assembly
- Separated gun machine gun panels,
- Engine right access panel (H1).

Airbrush the following with 'Alclad' Duraluminium (ALC102) or similar:

- Right ammunition feed chute (A23),
- Left ammunition empty rounds chute (H21).

Airbrush the coolant pipe (A38) with 'Tamiya' RLM Grey (XF22) or similar.

Brush paint the following with 'Tamiya' RLM Grey (XF22) or similar:

- Door latch and uprights on the inside of both cockpit doors
- Ribbed pipes and curved pipe on inside of separated gun panels
- Panel stay (H26).

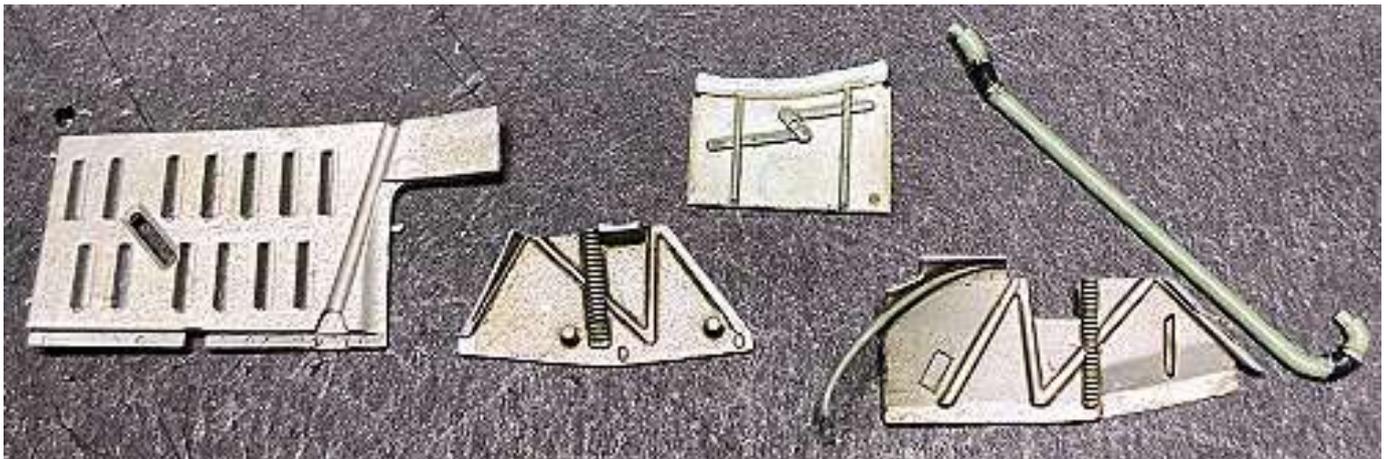
Brush 'AK Interactive' Kerosene (AK2039) over the rear of the radiator (A15) in the nose cowl.

Brush paint the rubber sleeves on the coolant pipe with 'Tamiya' Rubber Black (XF85) or similar.

Brush paint the clamp rings around the rubber sleeves on the coolant pipe with 'Mr. Colour' Stainless Steel (213) or similar.

Weather the following parts with 'Flory Models' fine clay wash (Grime) - refer to Part 4 (Weathering) of this build log.

- Insides of the separated gun panels
- Inside the engine right access panel
- Inside the two cockpit doors
- Lower inside of the nose cowl.



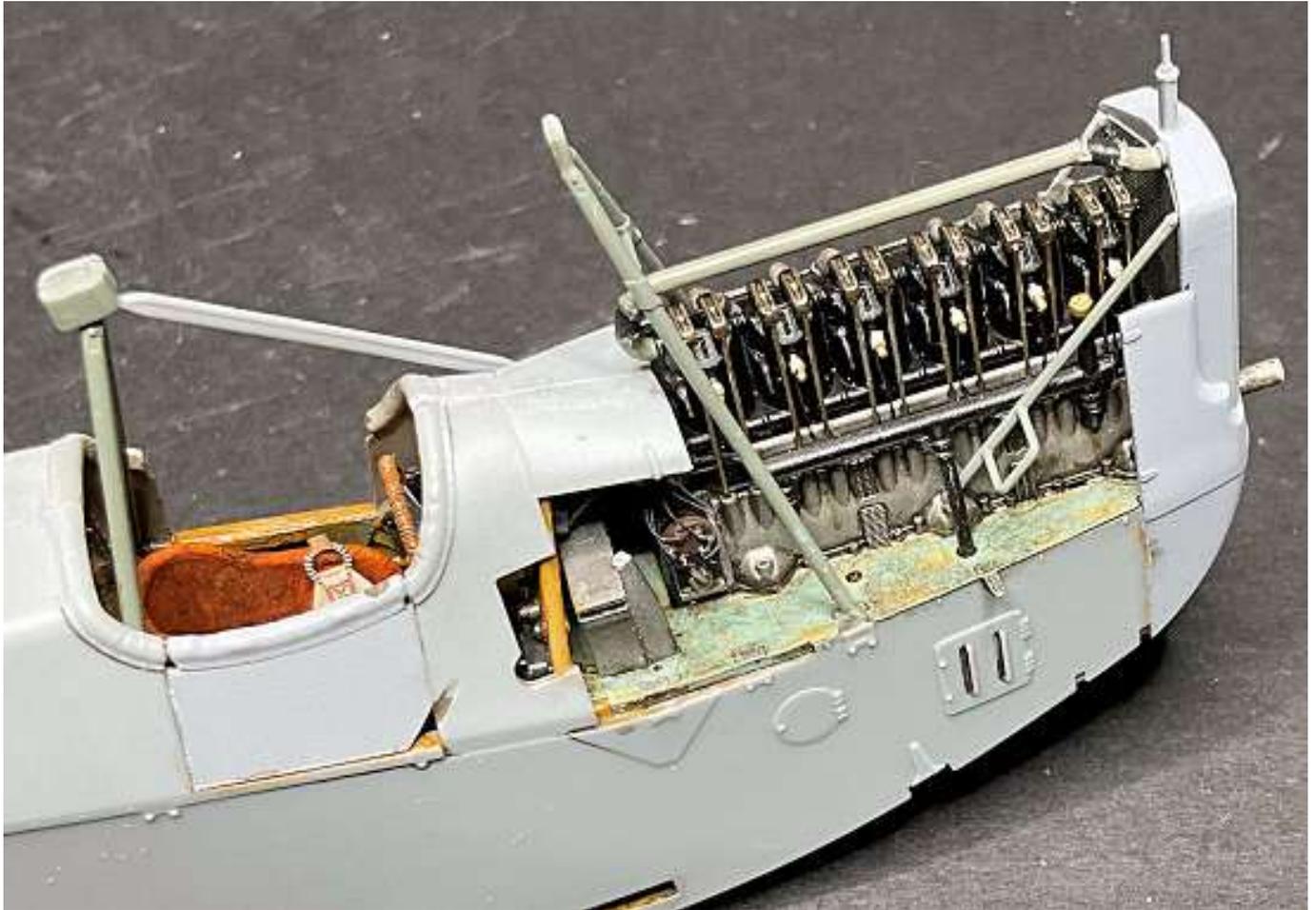
### **Assembly (continued):**

**NOTE:** Only the cockpit right access door, nose cowl and coolant pipe will be fitted at this stage of the build. The other prepared and painted parts will be fitted after the fuselage external surfaces have been painted.

Cement the cockpit right access door into its location on the fuselage.

Cement then nose cowl into its locating slot and the fuselage front face, making sure to locate the top of the two fitted radiator stays into their locating recesses in the top, outer corners on the rear of the radiator.

Cement the coolant pipe into its locating holes in the top, rear of the radiator and the engine.



**NOTE:** *The remaining fuselage and weapon parts will be painted externally and fitted in Part 14 (Construction continued) of this build log.*

**PART 11**  
**EXTERNAL**  
**SURFACES**  
**(REFERENCE)**

## PART 11 - EXTERNAL SURFACES (REFERENCE)

As with most colouring for World War One aircraft, it's debatable as to the exact colours and tints. New aircraft colours would differ from those that have 'seen service' and age and the ambient conditions would have altered these colours. In addition, the chemical mixture of the various dopes changed throughout the war, due to short supplies of some of the ingredients and the particular aircraft manufacturers take on a particular colour specification. Most colour photographs are of museum aircraft and modern replicas, which may or may not be accurate depictions of the actual colour at the time. The best we as modellers can achieve is what we, as individuals, consider is 'accurate'.

When researching the colour schemes and finish of the Hansa-Brandenburg W.12, I found that as usual, there are different interpretations available. The official standards laid down during WW1 for the finishes to be applied to aircraft of the German Naval Air Service were dependent on the time of issue.

### General Colour Schemes

#### Order 'B Nr F5952' dated 28th March 1917:

Printed hexagonal linen (hexagonal grey-brown, grey-blue and grey-violet) was to be applied to all upper surfaces (wing, fuselage, floats, tailplane and elevator). All side surfaces (fuselage, floats, rudder, tail fin and struts) were to be painted Grey-Blue. The underside surfaces to be a light Grey colour, but the underside surfaces of the wing (and presumably tail plane) were to be left as Clear Doped Linen (CDL). The painted surfaces were to be of a matt (flat) finish.

#### Later orders dated April 1918:

Printed hexagonal linen (hexagonal grey-violet) was to be applied to all upper surfaces (wing, fuselage, floats, tailplane and elevator). All side surfaces (fuselage, floats, rudder, tail fin and struts) were to be painted Grey-Blue. The underside surfaces to be a light Blue or left as Clear Doped Linen (CDL). The painted surfaces were to be of a matt (flat) finish. There were caveats that stated for the duration of the war, aircraft surfaces (not those linen covered) could be painted with acid free tar based varnish. Additionally all naval G- and R- types should either be painted or have printed linen applied, both of which should be three colour hexagonal.

#### Wingnut Wings kit instruction manual:

The colour profile and instructions shown for this particular aircraft scheme (A) show the upper surfaces of the wings, ailerons, tail plane, elevator, fuselage and floats in a three colour hexagonal lozenge scheme, being purple, blue and brown. The lozenge colours on the floats, fuselage and tailplane being of a darker purple and blue with a lighter brown. The undersides of the wings and elevator are shown as Clear Doped Linen (CDL).

The fuselage and underside of the tailplane are shown as a light grey, as are the sides and undersides of the floats.

#### Linen application.

Generally the patterned linen was applied to the various surfaces as follows:

*Wings* - Length of the bolt of linen applied chord wise (leading edge to trailing edge).

*Ailerons and elevator* - Length of the bolt of linen applied span wise (left to right).

*Tailplane* - Length of the bolt of linen applied span wise (left to right) although the Wingnut decals have it as for the wings (chord wise).

*Fuselage* - Length of the bolt of linen applied chord wise (front to rear).

#### Wing rib tapes.

Linen covered surfaces, particularly those on the wings and tailplane, were either applied from a continuous bolt of cloth or applied in sections. Care was taken to match the separate linen sections.

To strengthen the joins of linen, 'rib tapes' of linen were stitched and/or glued over the rib joins. These tapes could be either of the same colour or of a contrasting colour, including hexagonal and lozenge patterns. Photographs of that period are generally of a poor quality and make it difficult to make out such things as rib tapes, which maybe why 'Wingnut Wings' chose to not include rib tapes with their kit supplied decals.

I chose to use 'Aviatic' Bleached Clear Doped Linen (ATT32044) for the undersides of the Wings, ailerons and elevator.

# PART 12

# WEAPONS

## PART 12 - WEAPONS

### Pilots 'Spandau' machine guns:

#### Assembly:

**NOTE:** The kit supplied machine guns are replaced with the 'Gaspach' 1:32 scale 'Spandau' early MG08 machine guns (15-32072), which were modified to fit the model in Part 10 (Fuselage construction) in this build log. The only parts required from the 'Gaspach' set are the two machine guns, the two 'muzzled' barrels and the two round gun sights.

Remove the two barrels and gun sights from their 3D printed sprues and clean off any residual resin tags.

Using thin CA adhesive, secure the barrels into their locating holes in the front face of the Cooling jackets. If necessary, drill out the locating holes with a 0.9 mm diameter drill.

Using thin CA adhesive, secure the round gunsights vertically on the locating stubs on the top, front of the cooling jackets.

#### Painting:

Airbrush the two machine guns with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

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

Dry brush 'Mr. Colour' Super Iron 2 (SM203) over the two machine gun to represent metal wear.



### Observers 'Parabellum' machine gun:

#### Modifications:

**NOTE:** The kit supplied machine gun was replaced with the 'Gaspach' 1:32 scale Parabellum 14 machine gun (15-32068). The weapon has to be slightly modified to fit the kit supplied mountings. The kit supplied parts required are:

- Support for gun butt (A28)
- Swivel mounting base (G9)
- Gun mount (G4)
- Gun ring (A27)
- Ammunition drum (G14 and G15)
- Ammunition belt (G13).

Drill out the two mounting holes at the bottom, front of the breech block of the 'Gaspatch' machine gun.

Dry fit the top legs of the gun mount (G4) into the pre-drilled holes on the breech block of the 'Gaspatch' machine gun.

Dry fit the gun mount (G4) onto the swivel mounting base (G9).

Dry fit the swivel mounting base/gun assembly into its locating hole in the gun ring (A27).

Dry fit the support for the gun butt (A28) into its locating hole in the gun ring (A27).

**NOTE:** *During the following step the machine gun should move with the gun mount to allow it to self-align to the gun support.*

Rest the butt of the machine gun fully into the top of the gun support.

With the machine gun positioned, apply cement to secure the gun support and swivel mounting base into the gun ring.

Using thin CA adhesive, secure the top of the legs of the gun mount to the breech block of the machine gun.

Carefully unclip the gun mount (with attached machine gun) from the swivel mounting base.

Cement the two halves of the ammunition drum (G14 and G15) together.

Dry fit the ammunition belt (G13) onto the drum, making sure the vertical end plate clips fully into the latch.

Cut away the locating tab on the machine gun end of the ammunition belt (not required).

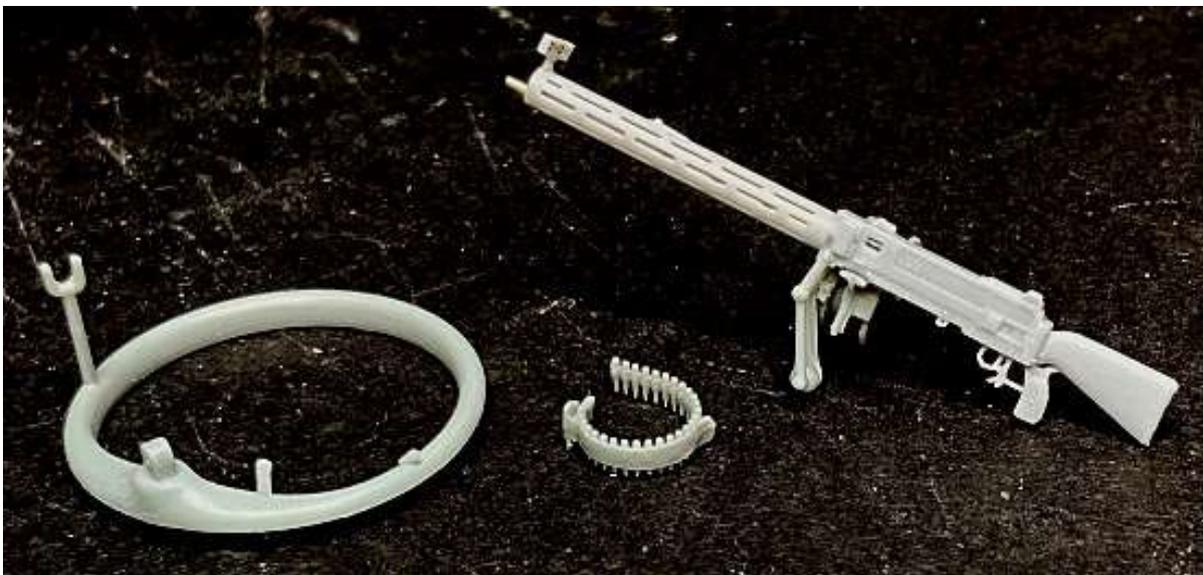
Test position the ammunition drum assembly to the right side of the machine gun with the ammunition belt align with the entry slot in the gun. If necessary, remove material from the front rim of the ammunition drum to allow it to locate correctly on the gun breech block without fouling the top of the gun mounting.

Remove the ammunition belt from the ammunition drum.

Using thin CA adhesive, secure the ammunition drum to the breech block of the machine gun.

**NOTE:** *Do not fit the ammunition belt until after it has been painted.*

Using thin CA adhesive, assemble the remaining parts of the 'Gaspatch' machine gun following the instructions supplied.



### Painting:

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

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

Dry brush 'Mr. Colour' Super Iron 2 (SM203) over the two machine gun to represent metal wear.

Brush paint the butt and hand grip of the machine gun with 'Tamiya' Dark Yellow (XF60) or similar.

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

Apply your desired wood effect to the gun butt and hand grip. I applied 'Wood effect - Method 2' with Windsor & Newton' Griffin (Alkyd) Burnt Sienna oil paint.

Brush paint the ammunition belt as follows:

Ammunition belt - 'Tamiya' Desert Yellow (XF59) or similar

Bullet cartridges - 'Mr. Colour' Brass (219) or similar

Bullet heads - 'Mr. Colour' Copper (215) or similar.

Brush paint the 'knob' handle on the gun mounting lever with 'Tamiya' Hull Red (XF9) or similar.

Brush paint 'AK Interactive' Kerosene (AK2039) along the ammunition belt.

Brush paint the gun mounting with 'Tamiya' Neutral Gray (XF53) or similar.

### Assembly:

Fully locate the ammunition belt onto the ammunition drum, making sure the vertical end plate clips fully into the latch with the ammunition against the feed slot of the machine gun.



**PART 13**  
**PREPARATION**  
**FOR RIGGING**  
**(EXTERNAL)**

### **PART 13 - PRE-RIGGING (EXTERNAL)**

**NOTE:** *The following modifications will allow rigging of the external aileron control and rudder cables, floats cross bracing and the interplane struts incidence wires.*

#### **Example of attaching lines to turnbuckles:**

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

Cut a short length of blackened tube (0.4 or 0.5mm diameter) Brass tube, such as that supplied from 'Albion Alloys' (MBT04 or MBT05) or similar.

Deburr the tube by running a 0.2 mm or 0.3 mm diameter drill through the tube.

**NOTE:** *Always cut the length of line **much longer** than needed to span between its attachment points.*

Cut a long length of 0.08 or 0.12 mm diameter mono-filament (fishing line), such as 'Stroft GTM' or 'Steelon'.

Pass the line through the tube, then trough the 'eye' of a turnbuckle.

Pass the line back and through the tube.

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

Secure the lines to the tube end away from the turnbuckle, using thin CA adhesive.



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

Brush paint the turnbuckle ends with 'Mr. Colour' Stainless Steel (213) or similar.

Brush paint the turnbuckle central barrels with 'Mr. Colour' Brass (219) or similar.

#### **Rudder control horn:**

Cut a long length of 0.08 mm diameter mono-filament, such as that from 'Stroft GTM'.

Cut a short lengths of blacked 0.4 mm Brass tube, such as 'Albion Alloy's' (MBT04) or similar.

Slide the tube onto the line.

Pass the line through a pre-drilled hole in one end of the rudder control horn then loop it back and through the tube.

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

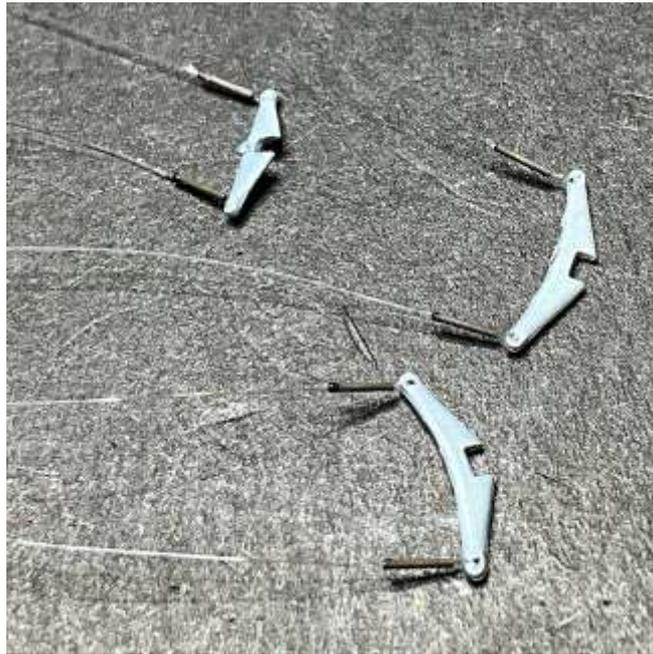
Secure the lines in the tube using thin CA adhesive.

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

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

### **Aileron control horns:**

Using the same procedure as used for the rudder control horn, attach a line to each end of the two aileron control horns.



### **Interplane strut incidence wires:**

**NOTE:** *The four interplane struts have pre-moulded rigging hoops at each end of the struts. Care is need when rigging using these hoops as too much tension in the rigging line will break the hoops. The bottom hoops on the struts will be removed to allow turnbuckles to be fitted.*

Cut away the pre-moulded rigging hoops on the bottom of the four interplane struts.

**NOTE:** *During the following step it helps to locate the interplane struts into their locating recesses in the lower wings. This will help to drill the holes at the correct angle to align with the top hoops on the opposite struts.*

Drill a hole of 0.4 mm diameter and at the correct angle, into the bottom of the four interplane struts.

Using CA adhesive, secure a 'gaspach 1:48th scale turnbuckle (One ended) into the pre-drilled holes in the struts.

Cut a long length of 0.12 mm diameter mono-filament, such as that from 'Steelon' or 'Stroft GTM'.

Cut a short lengths of blacked 0.5 mm Brass tube, such as 'Albion Alloy's' (MBT05) or similar.

Slide the tube onto the line.

Pass the line through the 'eye' of the turnbuckle then loop it back and through the tube.

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

Secure the lines in the tube using thin CA adhesive.

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

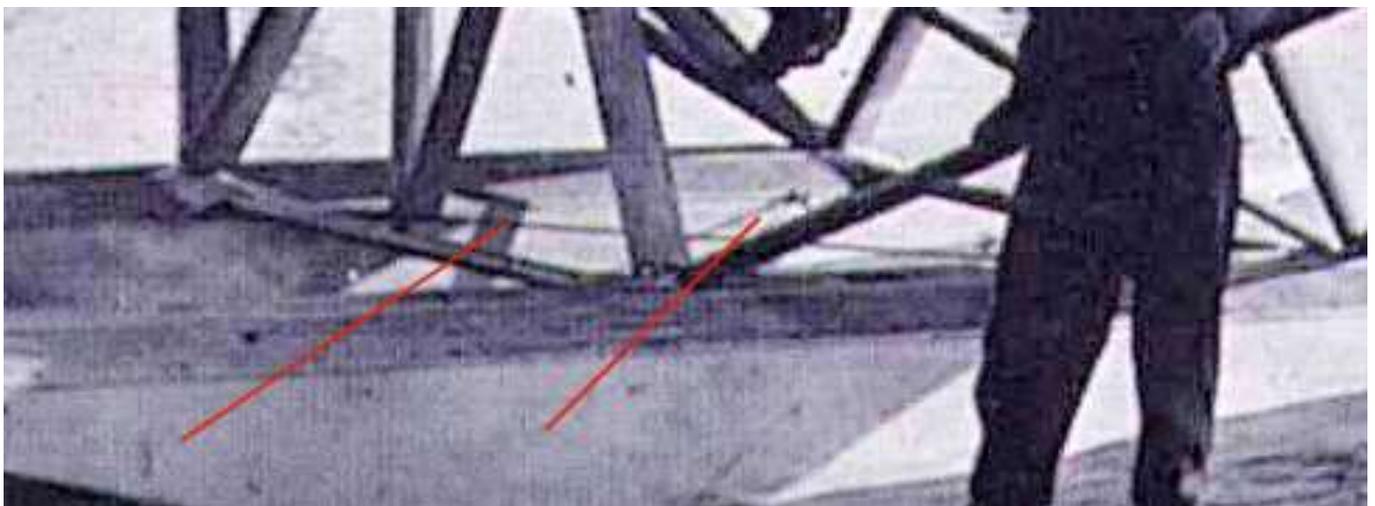
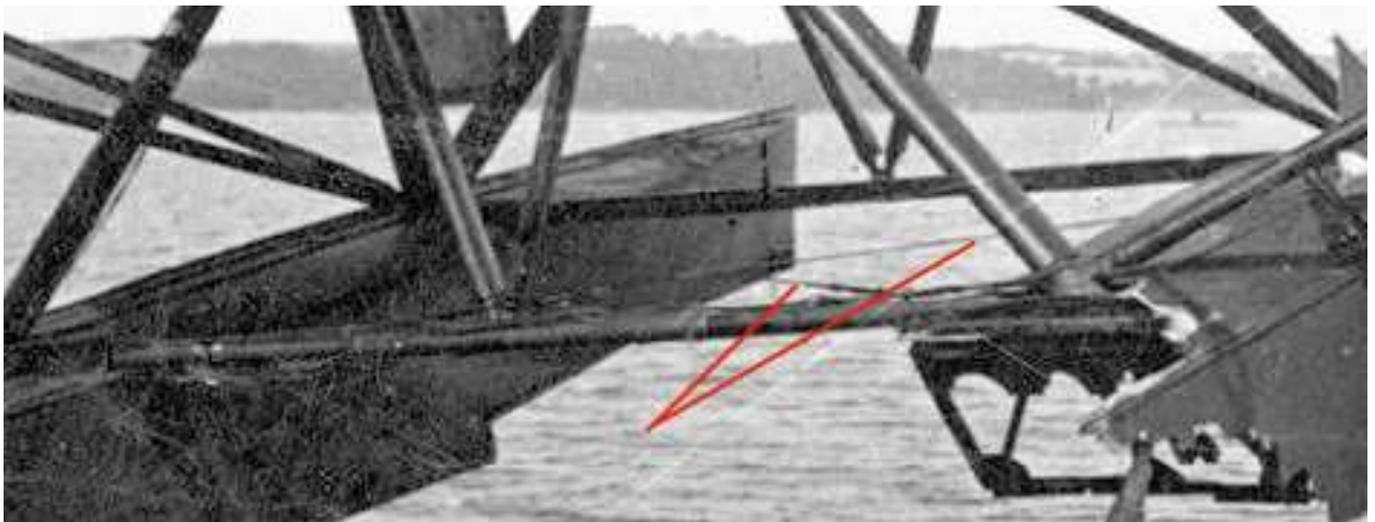
Brush paint the centre barrel of the turnbuckle with 'Tamiya' Gun Metal (X10) or similar.

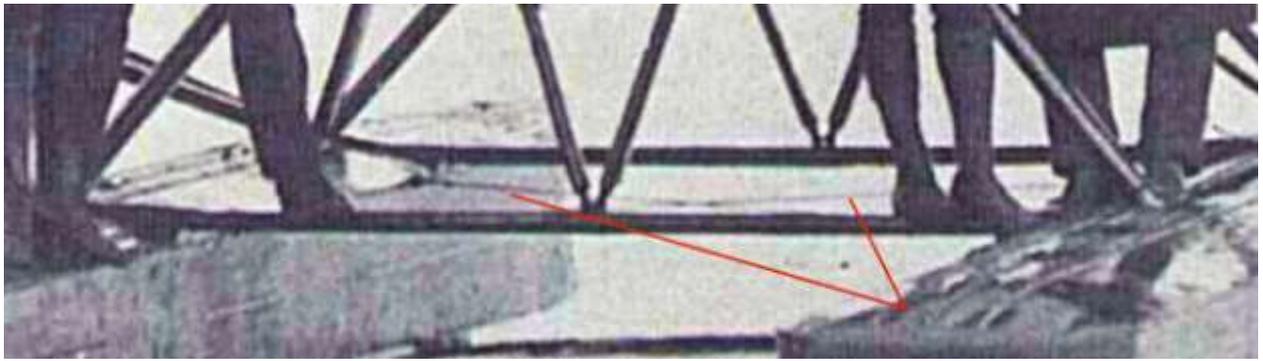
Repeat the procedure to attach a line to the bottom of the remaining three interplane struts.



**Floats cross bracing:**

**NOTE:** *The cross bracing wires between the two floats were attached to the top, inner edges of the floats, **not** to the float struts.*





Drill a hole of 0.3 mm diameter into the top, inner edges of the two floats. The holes should be located forward from the rear strut locations and rearward from the front strut locations.

Using thin CA adhesive, secure a 'GasPatch' Elite Accessories metal Anchor Point (1:48th scale) into each of the pre-drilled holes, making sure the adhesive does not contaminate the 'eye' end of the Anchor Points.

Cut two long lengths of 0.12 mm diameter mono-filament, such as that from 'Steelon' or 'Stroft GTM'. One should be longer than needed to span diagonally between the floats.

Cut three short lengths of blacked 0.5 mm Brass tube, such as 'Albion Alloy's' (MBT05) or similar.

Slide a tube onto the line.

Pass the line through the 'eye' of the Anchor Point at the front strut location on one of the floats then loop it back and through the tube.

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

Secure the lines in the tube using thin CA adhesive.

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

Slide a tube onto the line.

Pass the line through the 'eye' of a 'GasPatch' Elite Accessories metal turnbuckles Type C (1:32nd scale) then loop it back and through the tube.

**NOTE:** *During the following step, the turnbuckle should end up being located approximately 10 mm from the Anchor Point.*

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

Secure the lines in the tube using thin CA adhesive.

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

Slide a tube onto the second cut line.

Pass the line through the free 'eye' of the turnbuckle then loop it back and through the tube.

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

Secure the lines in the tube using thin CA adhesive.

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

Brush paint the centre barrel of the turnbuckle with 'Tamiya' Gun Metal (X10) or similar.

Repeat the full procedure to attach a turnbuckle line to the other float.

**NOTE:** *The other end of the two lines will be attached to the opposite floats later in this build.*



**Rudder control cables access:**

Drill a hole of 0.3 mm diameter through the fuselage sides at the pre-moulded rudder cable exits.



**Aileron control Cables access:**

Drill a hole of 0.3 mm diameter into, **but not through**, the pre-moulded aileron cable exits on the top and underside surfaces of the upper wing. The holes should be drilled at an angle that will align with the ends of the aileron control horns on the ailerons, when they are finally fitted.

**NOTE:** During the following step, temporarily fit the front interplane struts into their locating recesses in the wings. This will help in aligning the drilled holes with the struts.

Drill a hole of 0.5 mm diameter into, **but not through**, the pre-moulded aileron cable exits on the top and underside surfaces of the upper and lower wings, at the rear of the front interplane struts. The holes should be drilled at an angle that will align with the struts, when they are finally fitted.

**NOTE:** The following is to provide the aileron control cables that span between the lower and upper wings at the front interplane struts.

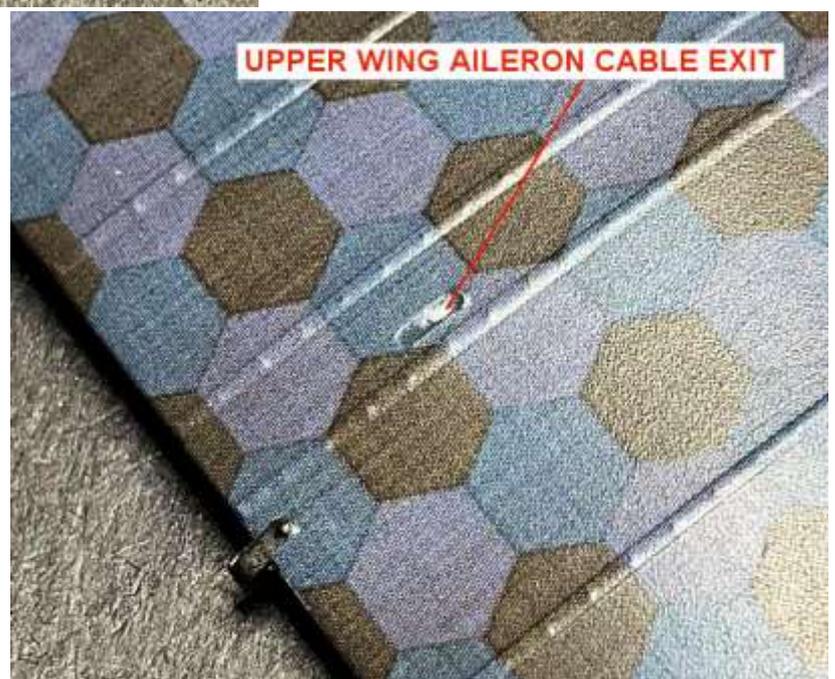
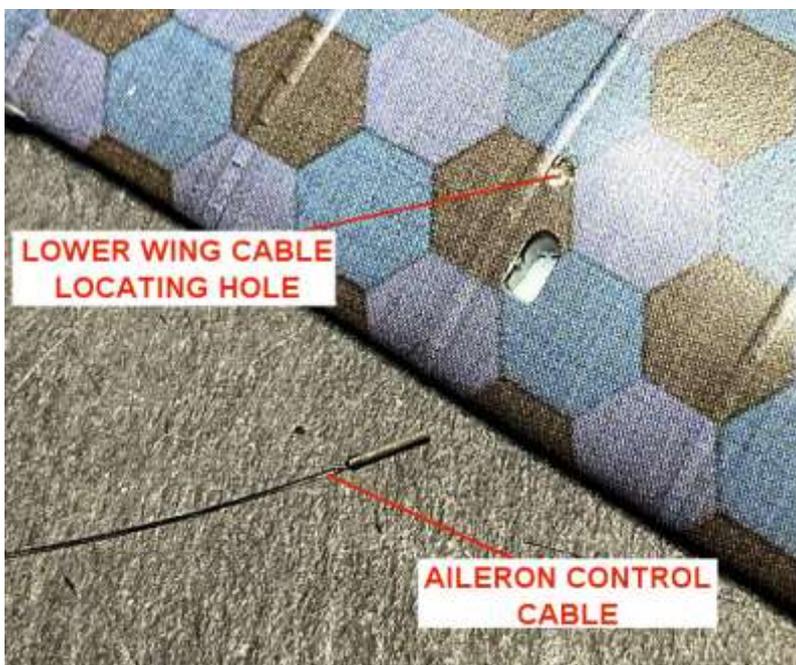
Cut two long lengths of 0.12 mm diameter mono-filament, such as that from 'Steelon' or 'Stroft GTM'.

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

Slide a tube onto the end of each line.

Secure the tubes to the lines using thin CA adhesive.

Cut away any protruding line at the end of the tube.





**PART 14**  
**CONSTRUCTION**  
**(CONTINUED)**

## **PART 14 - CONSTRUCTION (CONTINUED)**

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

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

*Refer to the relevant pages in the kit instruction manual.*

***My sequence of building this model may not follow the kits instruction manual. This is due to incorporating modifications as I progress through the build.***

### **General preparation:**

Some modellers work the various pieces whilst they are still attached to the main sprue, but I prefer to remove the pieces first so that I can clean them up more easily. However pieces like the cockpit frames are delicate and can easily be damaged when being removed. When parts are cut from the sprues, care should be taken as they can either break or get stressed at the cut point, which causes 'white' stress and/or deforming. For plastic kits, I use fine sprue cutters to cut away the kit part, not too close to the part, then sand off the tag. When I cut resin parts away from their mould blocks, I use a fine cutting saw, which has a more gentle cutting action. Despite being a WNW kit, there are still some fine moulding lines around items such as the cockpit frames, but they are only slight and are easily removed using a sharp blade or sanding stick. I use a new scalpel blade to gently scrape off the mould lines. Some of the model items like the parts for the cockpit are very small and can easily 'fly off' when being handled, so take care. Remember to drill any holes needed for rigging or control lines by referring to the relevant pages and diagrams in the kit instruction manual.

Primer can be applied by brush, airbrush or from aerosol cans. These days I prefer to use 'AK Interactive' Primer and Micro-filler (Grey AK758) or (White AK759). These have good coverage as the base primer for acrylics. Take care when spraying the primer as if you apply too much it will result in 'pooling' or 'runs', which would then need to be removed once the primer has dried. Make sure you spray in a well ventilated area or preferably, if you have one, use an extractor booth.

To hold items for priming I use self locking tweezers or carefully insert a toothpick into the item or I use a small piece of sticky putty, such as 'UHU White Tack', on the end of a tooth pick. Once applied the primer dries quickly, one of the main advantages of using acrylic paints rather than enamels or oil paints.

### **Assembly:**

Cement together the upper (I4) and lower (I2) centre sections for the upper wing.

Cement the outer sections of the upper wing (B3 and B4) into the upper wing centre section.

Cement the float upper sections (F2 and F9) onto their hull sections (F1).

### **Modifications or corrections:**

**NOTE:** *Despite this model being produced by Wingnut Wings, there are still a few minor changes that can be made to the model to enhance the overall effect.*

**Auxiliary fuel tank:**

### **NOTE:**

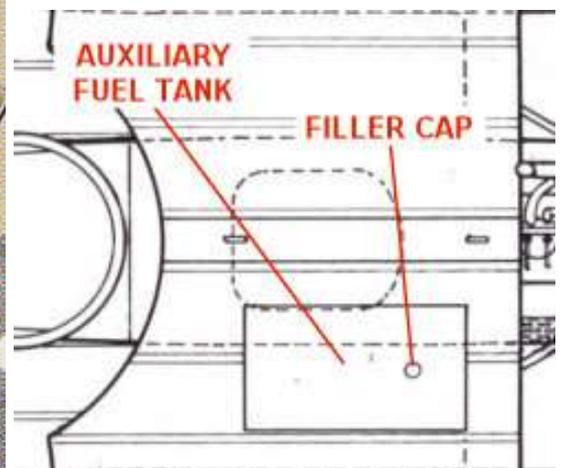
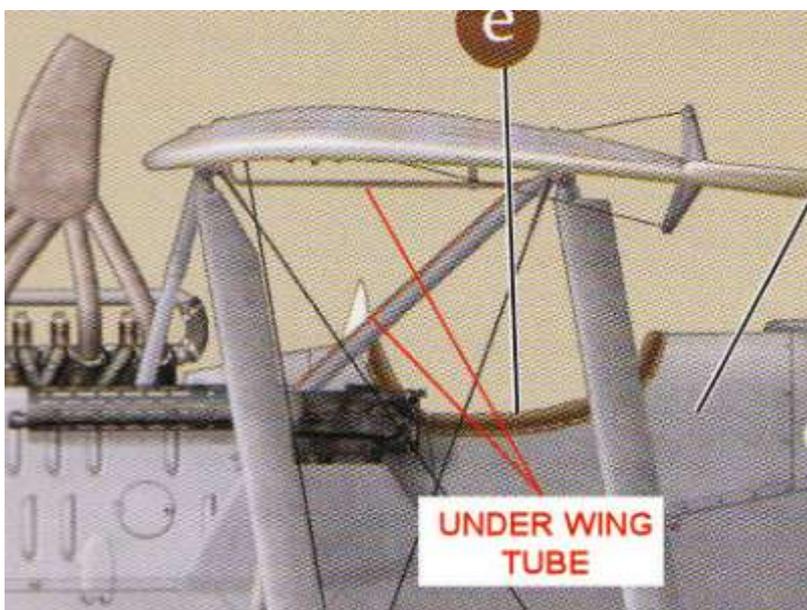
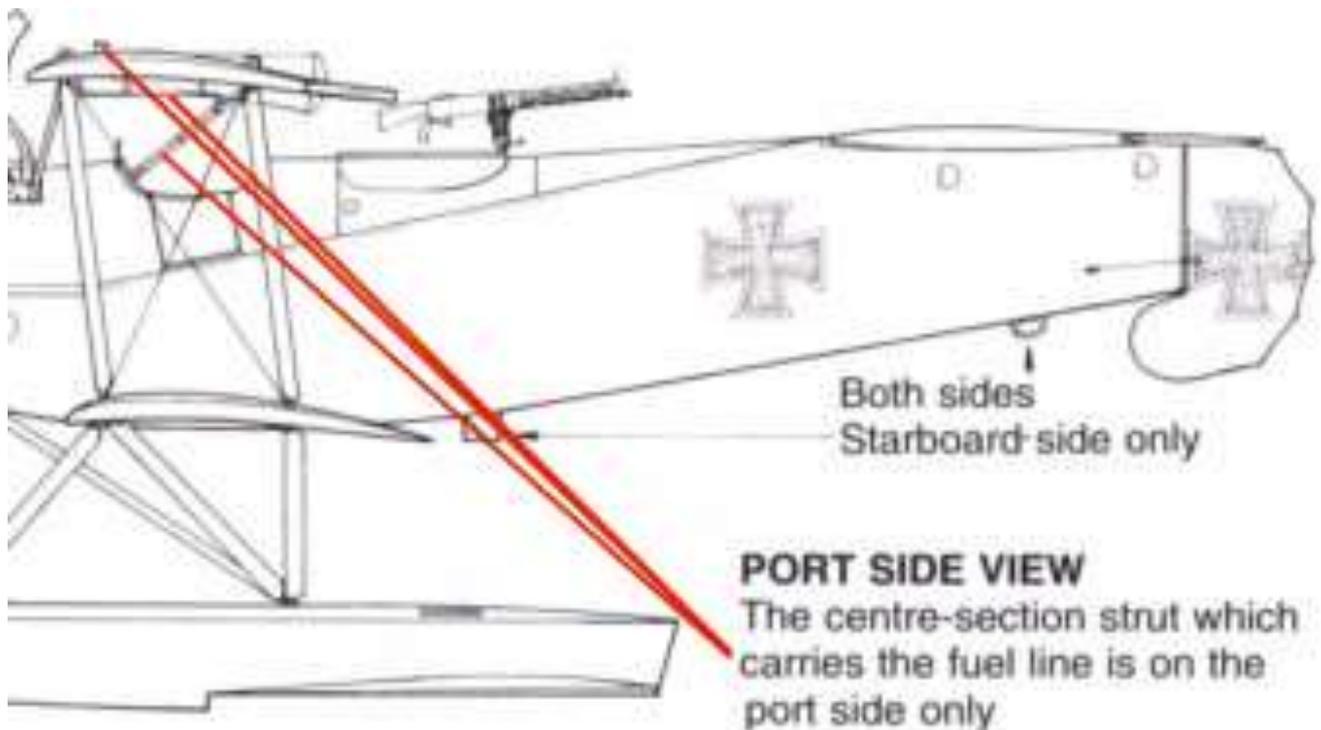
*The W.12 had a integral fuel tank fitted in the centre section of the upper wing.*

A fuel transfer pipe from the tank was fitted on the underside of the wing centre section and was connected to a pipe attached to a fuselage cabane strut and into the fuselage.

Auxiliary fuel tank:

**NOTE:** The W.12 had a integral fuel tank fitted in the centre section of the upper wing. A fuel transfer pipe from the tank was fitted on the underside of the wing centre section and was connected to a pipe attached to a fuselage cabane strut and into the fuselage. Many photographs of the W.12 aircraft shown the under wing fuel transfer pipe, but I could not find any photographs showing the upper surface of the wing with a visible fuel tank fitted. Therefore my assumption is that the wing fuel tank was flush fitted in the wing. However, the kit upper wing does not show any outline of this fuel tank or its external fuel filler caps.

Refer to the following illustration and photograph for detail positioning.



Example of an integral fuel tank under lozenge covering.



Apply double layered masking tape to the upper wing to outline the integral fuel tank.

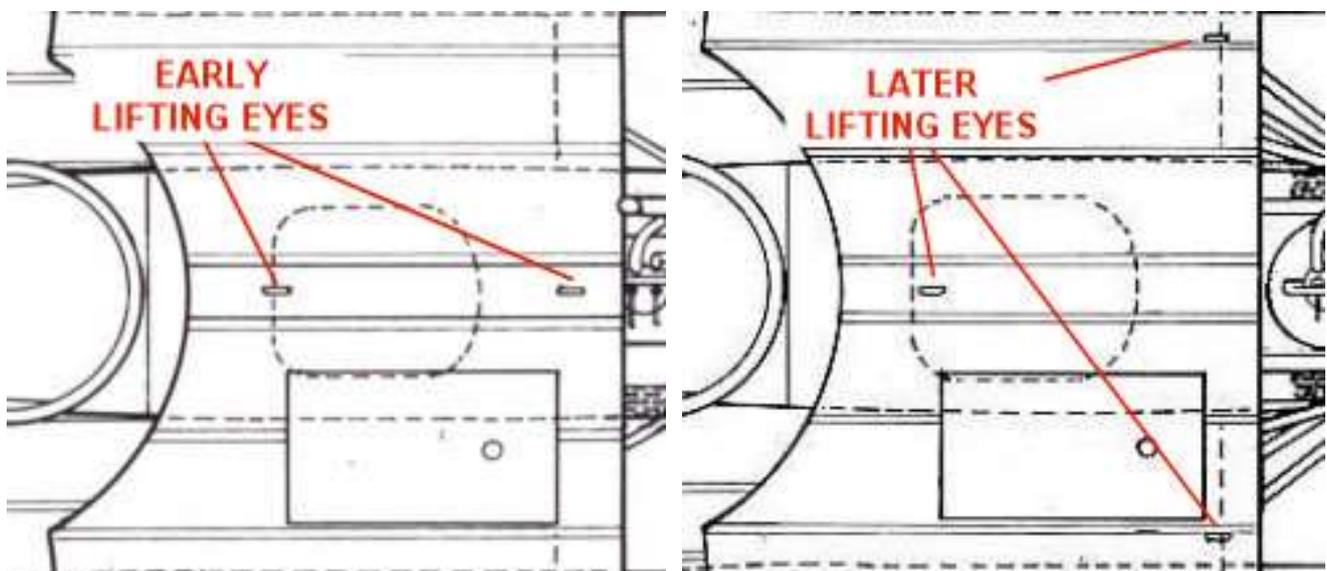
Using a sharp scribe, carefully score the wing surface along masking tape edges to outline the fuel tank.

To represent the fuel tank filler cap, I drilled a hole of 1.1 mm diameter into, **but not through**, the wing to locate a filler cap from my 'spares' box.

Lifting eyes:

**NOTE:** *The aircraft were fitted with lifting eyes on the upper wing centre section. These were used to attach a crane sling, used to lift or lower the aircraft from or to the water. The earlier W.12 aircraft had two lifting eyes, whereas the later 2000 series aircraft had three lifting eyes.*

*Refer to the following illustrations for detail positioning on the **earlier** W.12 aircraft.*



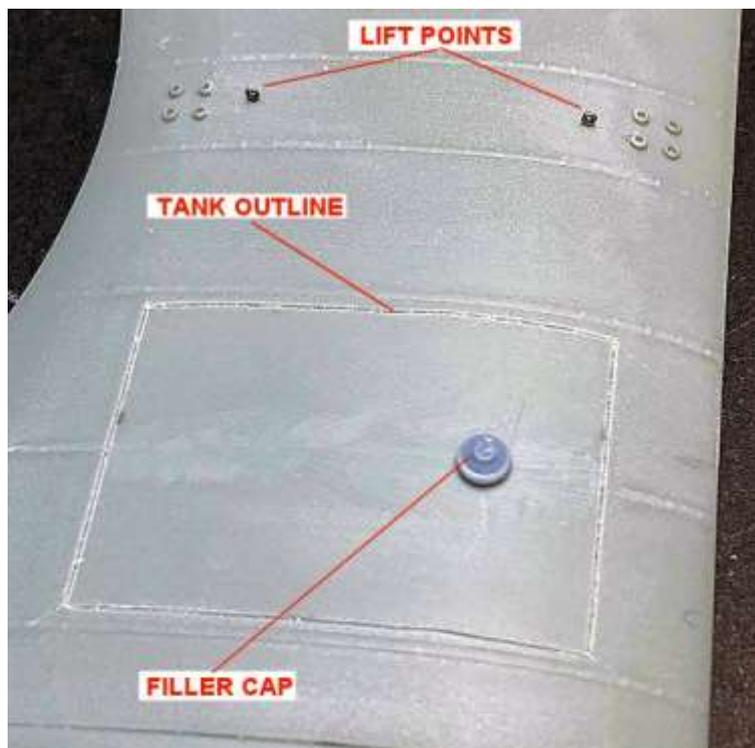
Drill two holes of 0.4 mm diameter into, **but not through**, the wing along the centre of the wing, between the two mounting plates for the fuselage cabane struts.

Break off a 'GasPatch' Elite Accessories metal Anchor Point (1:32nd scale) from its base.

Snap the Anchor Point at the centre to create two Anchor Point 'eye' ends.

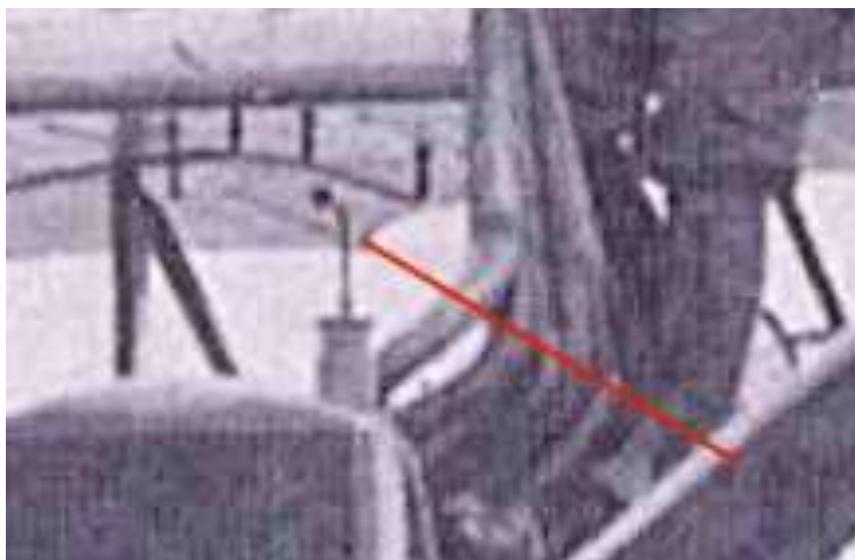
Scrape or sand away the raised rib tape from inside the outline of the fuel tank.

**NOTE:** *The fuel tank filler cap and the two lifting eyes will be fitted later in this build.*



### **Radiator pipe:**

**NOTE:** Photographs of these aircraft show that a pipe was fitted to the top of the radiator and was bent at 90 degrees, facing forwards. On the kit supplied radiator, this pipe is moulded as just a vertical pipe.



Cut away the existing pipe from the boss on the top of the radiator.

Drill a hole of 0.4 mm diameter hole down into the centre of the radiator 'boss'.

Bend the end of a length of 'Albion Alloy's' 0.3 mm diameter Nickel-Silver tube (NST03) to 90 degrees.

Cut a short length of 'Albion Alloy's' 0.5 mm diameter Nickel-Silver tube (NST05).

Secure the 0.5 mm diameter tube onto the bent end of the 0.3 mm tube, using thin CA adhesive.

Secure the straight end of the 0.3 mm tube into the pre-drilled hole, using thin CA adhesive.

**NOTE:** The radiator pipe will be fitted later in this build.



### Control surfaces - animation:

The kit parts used are A9 (elevator), A39/A2 (wing ailerons) and H7 (rudder). Some models have flimsy control surface attachments or no attachment locations at all. This would normally require the drilling of small holes into both parts and micro-tubes inserted to attach the control surface to its parent part.

However, this model does have all of the attachment points moulded onto the parts, and these are sufficiently strong to position the control surface at the desired angle, then apply cement.

However, this needs to be carried out once the parts have been assembled, painted, and have had decals applied, which are covered later in this build log.

### Rudder control horn:

Point mark the centre, ends of the rudder control horn (A4).

Using the point marks as guides, drill a hole of 0.3 mm diameter through the ends of the rudder control horn (for rigging the control lines later in this build).

### Aileron control horns:

Point mark the centre, ends of the two aileron control horns (A2).

Using the point marks as guides, drill a hole of 0.3 mm diameter through the ends of the two aileron control horns (for rigging the control lines later in this build).

### **Painting:**

**NOTE:** *White or a light colour is required to allow the linen weave effect to show on 'Aviatic' clear backed decals.*

Airbrush a white primer, such as 'AK Interactive' White (AK759) or similar over the following parts:

- Upper wing (both sides)
- Lower wings (both sides)
- Ailerons (both sides)
- Elevator (both sides).

Blank off all openings on the fuselage assembly, including both cockpits, the engine bay area, tailplane location, under fuselage window openings, locating holes etc.

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

- All wing and float struts
- Both floats
- Tailplane
- Rudder
- External surface of the cockpit door, the gun panels and engine access panel
- Rudder and aileron control horns
- Compass shield
- Underwing fuel pipe
- Foot steps
- Parabellum ammunition belt
- Parabellum gun ring assembly.

Airbrush 'Tamiya' Neutral Grey (XF53) or similar over the following parts:

- All wing and float struts
- Tailplane
- Rudder
- Both floats
- Rudder and aileron control horns
- Compass shield
- Foot steps.

Mask off the created fuel tank outline on the top surface of the upper wing.

Airbrush 'Tamiya' Neutral Grey (XF53) or similar over the fuel tank.

Remove the masking.

**NOTE:** *The following step is intended to create a slightly blotchy effect between the light primer coat and the applied darker grey.*

Airbrush in a **random 'blotchy' pattern, thinned** 'Tamiya' Neutral Gray (XF53) or similar over the following parts:

- Fuselage - Sides and underside of the two floats - Underside of tailplane
- External surface of the cockpit door, the gun panels and engine access panel.



Remove all masking from the fuselage assembly.

#### Pre-shading:

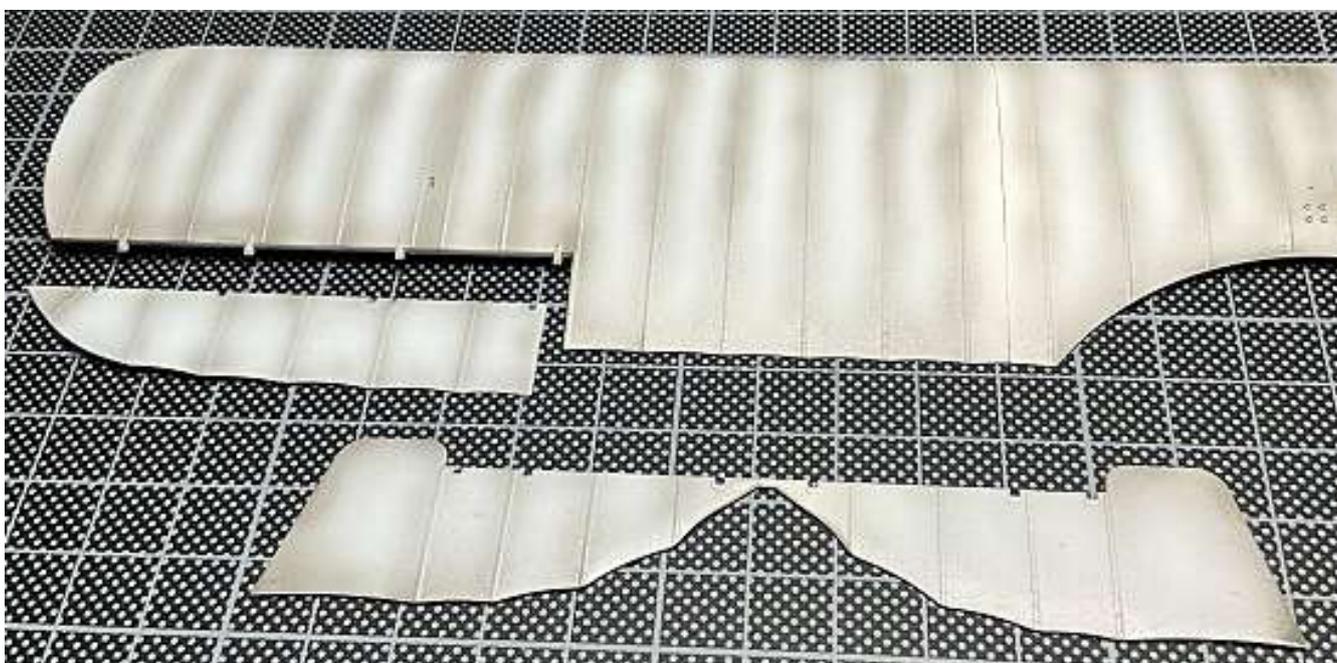
**NOTE:** *The following steps are intended to represent the internal ribs of the wings and flight control surfaces showing through the linen decals (when applied). The top surfaces should be airbrushed **slightly darker** than the undersides in order to be more visible through the lozenge decals (when applied).*

Lightly airbrush 'Tamiya' Smoke (X19) or similar along the ribs tapes and around the leading and trailing edges of the following:

- Upper and lower wings
- Ailerons and elevator.

Lightly sand or polish the pre-shaded surfaces and the fuselage, tailplane, rudder and floats to ensure the surfaces are as smooth as possible (to avoid decal 'silvering due to surface artifacts').

Airbrush several light coats of a gloss clear coat, such as 'Alclad' Aqua Gloss 600 or 'Ammo' Aqua Gloss Clear (A.MIG-2503) or similar.



#### Decals:

##### 'Aviatic' decals:

**NOTE:** *The decals to be applied to the underside linen covered areas of the model will be cut from the **'Aviatic' Bleached Clear Doped Linen (ATT32044)**, **German Naval Hex (faded) (ATT32113)** and **Linen Weave Effect (ATT32236)** decal sheets. Refer to Part 5 (Decals) of this build log for more information on the application these decals.*

*These 'Aviatic' decals are not 'cookie cut' (pre-shaped), but are supplied as A4 sheets.*

*Therefore care is required to ensure the decals are cut out accurately to fit the various areas of the model. Make sure you trace the decal outlines onto the **rear surface** of the decal sheet. Also, cut away the white border around the decal sheet before cutting out the decals. Otherwise the cut decals may include parts of the white borders.*

Flight surface CDL decals:

**NOTE:** *When cutting out the 'Aviatic' decals, make sure you don't apply too much pressure when marking out the decals, otherwise the outline will show through on the printed decal surface. Due to the width of the upper wing, the decal is best cut as **three separate decals**, one for the centre section and one each for the outer wing sections.*

Using the upper wing as a guide, 'lightly' trace its outline onto the **rear** of the '**Aviatic**' **Bleached Clear Doped Linen (ATT32044)** decal sheets. Mark the two outer sections and the centre section as separate decals. The joins of the decals should be at the wing joints at the centre section.

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

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

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

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

Wet the model surface with clean water.

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

Lift the decal on its backing sheet from the water.

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

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

Position the decal correctly on the model surface.

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

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

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

Allow these decals to fully set.

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

Repeat the procedure to apply '**Aviatic**' **Bleached Clear Doped Linen (ATT32044)** decals to the underside of the lower wings, ailerons and the elevator.

Flight surface Lozenge decals:

**NOTE:** *When cutting out the 'Aviatic' decals, make sure you don't apply too much pressure when marking out the decals, otherwise the outline will show through on the printed decal surface. Due to the width of the length of the floats, the decal is best cut as **two or three** separate decals.*

**NOTE:** Due to the raised detail on the top of the floats, conforming decal to the surfaces can prove difficult.

*I cut a single rectangle of the decal that was slightly larger than the top of the floats.*

*This was cut in half to make it easier to apply.*

*Each section was applied over the float and then I used a damp cotton bud to conform the decal over and into the raised 'runners' along the float. Then gradually worked outwards to the float edges.*

*The only problem areas were the four raised runners on each side (front and rear) of the floats. I had to slice the decal between the runners in order to conform the decal over them.*

*This does leave spaces between the decal slices but the runners will be painted over.*

*I made sure any over lap of decal at the float edges did not adhere to the sides of the floats, only on the top edge rim along the floats.*

*Once set, any lifting of the decal was pierced and MicroSol applied.*

*Any stubborn areas were given a light brushing with Tamiya X20A thinners (too much applied will melt the decal.*

*Lastly I ran a curved blade along the underside of the top edge rims to remove excess decal, leaving it adhered only onto the rim edges.*

Repeat the previous procedure to apply '**Aviatic**' **German Naval Hex (faded) (ATT32113)** decals to the top surfaces of upper and lower wings, ailerons, elevator, top, rear of the fuselage and the tops of the two floats.

Rudder weave effect decals:

Repeat the previous procedure to apply '**Aviatic**' **Linen Weave Effect (ATT32236)** decals both sides of the rudder.

**Painting (continued):**

**NOTE:** *Refer to page 17 of the kit instruction manual for positioning. When applying the masking tape, apply gently or the decals may lift when removing the tape. An alternative is to use paper 'Post-It' notes, which have less adhesive.*

Mask off the underside of the lower wing for the white background of the wing crosses.

Airbrush the back grounds with an off-white, such as 'Hataka' Insignia White (C049) or similar.

Remove the masking.

Airbrush over the white areas with several light coats of a gloss clear coat, such as 'Alclad' Aqua Gloss 600 or 'Ammo' Aqua Gloss Clear (A.MIG-2503) or similar.

## **Decals (continued):**

### Kit supplied decals:

**NOTE:** Due to the width of the upper wing and the length of the floats, the kit supplied decals for their top surfaces are supplied as three separate decals. **Refer to page 17 of the kit instruction manual for decal positioning.**

With reference, if required, to Part 4 (Decals) of this build log, apply the kit supplied decals as follows:

Upper wing crosses 1 (x 2)

Floats 56 (x 2)

Underwing crosses 9 and 11

Underwing/aileron stencils 14 (x 4)

**NOTE:** Due to the amount of carrier film on decal 16, I chose to paint them using masks.

Fuselage sides 16, 17 and 52

Rudder crosses 10 and 15

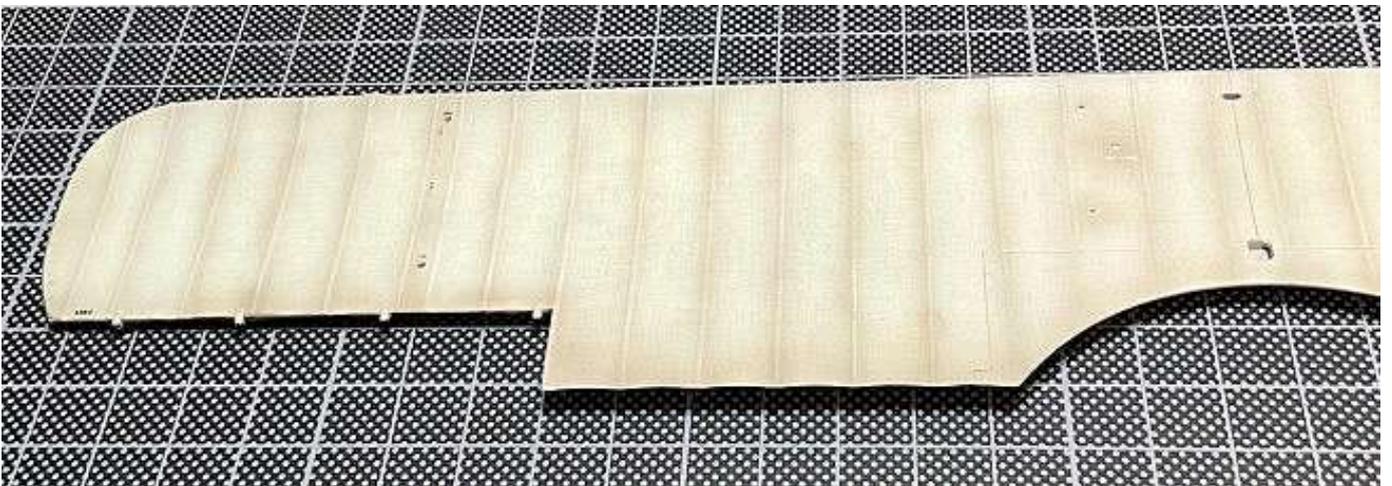
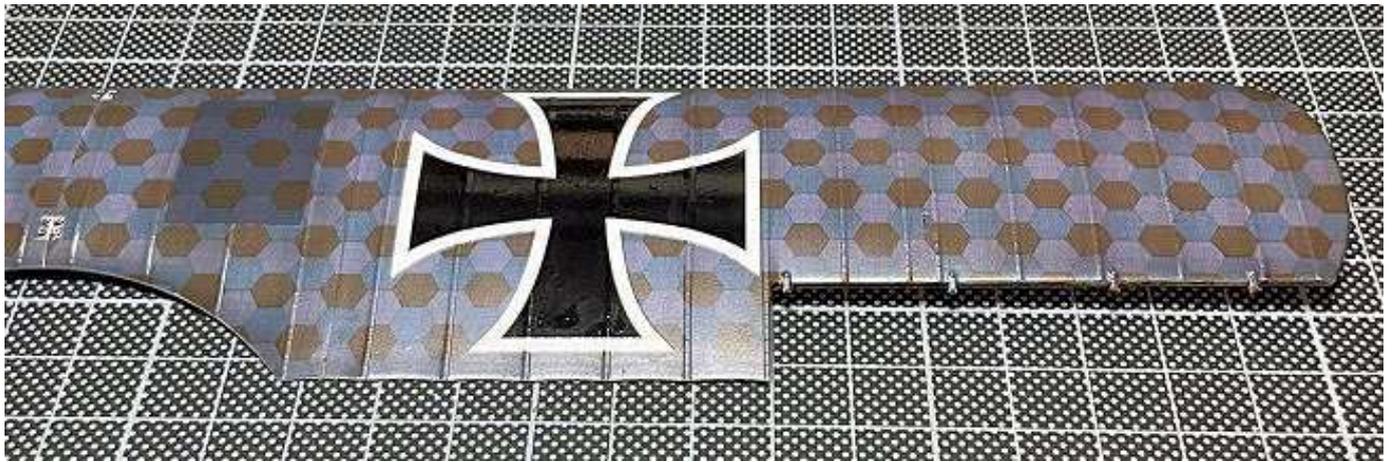
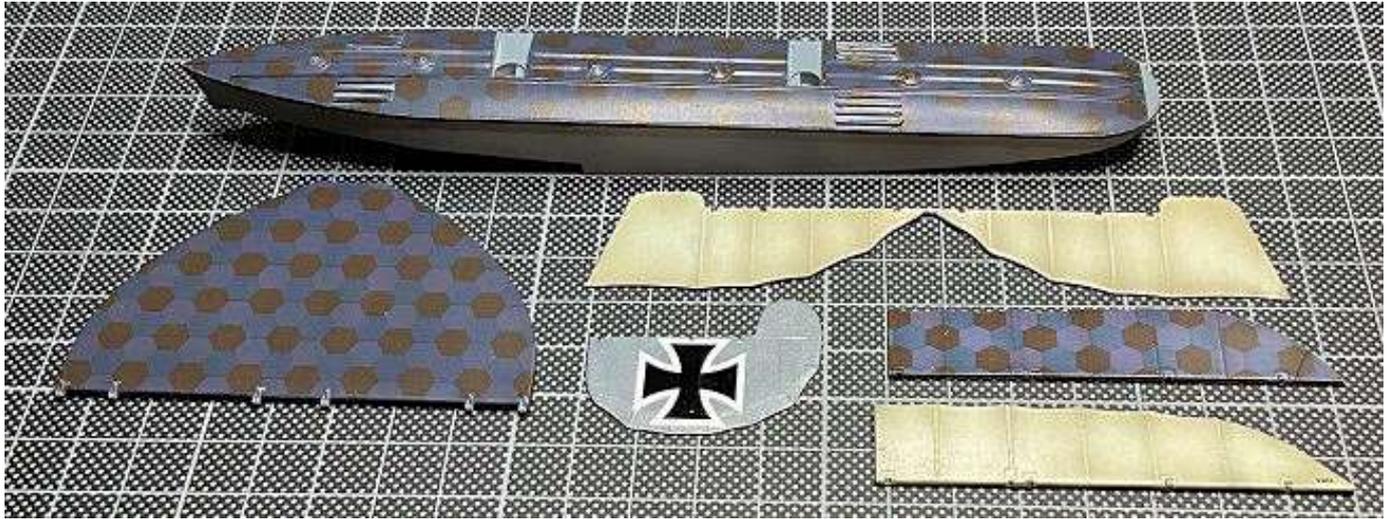
Interplane struts 14 (x 4)

Compass 86

Underwing/aileron stencils 14 (x 4)

Interplane struts 14 (x 4).





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

#### **Details:**

Brush paint the compass shield and metal fitting on the observers gun ring with 'Tamiya' RLM Grey (XF22) or similar.

Brush paint the fuel tank pipe (for under the upper wing) and the compass surround on the left, lower wing with 'Tamiya' NATO Black (XF69) or similar.

Brush paint the cockpit padding around the fuselage cockpit and on the separate left access door with 'AK interactive' Leather (AK3031) or similar.

Brush paint the following with 'Alclad' Steel (ALC-112) or similar:

- Radiator in the nose cowl
- Elevator hinges on the tailplane
- Aileron hinges on the upper wing
- Under wing panel on the upper wing
- Front and rear strut plates on the top, centre of the upper wing
- Under wing panels on the lower wings
- Caps along the upper centre of the two floats
- Front 'bumper' and tie rings on the front of the two floats.

Brush thinned (with White Spirit) 'AK Interactive' Kerosene (AK2039) over the front of the radiator (A15) in the nose cowl.

Brush paint the fuel transfer pipe (on the front edge of the left, rear cabane strut) with 'Tamiya' NATO Black (XF69) or similar.

Brush paint the added pipe on the top of the radiator and latches on the floats caps with 'Mr. Colour' Brass (219) or similar.

Brush paint the four raised runners on each side (front and rear) of the floats with 'Tamiya' Rubber Black (XF85) or similar.

**NOTE:** *The aircraft had protective 'wing walk' strips at the lower wing roots. These strips were between the leading edge of the lower wings back the wing rear spars. The paint used to represent the non-slip surfaces is the 'Ammo Mig' Black anti-slip paint (AMIG2034).*



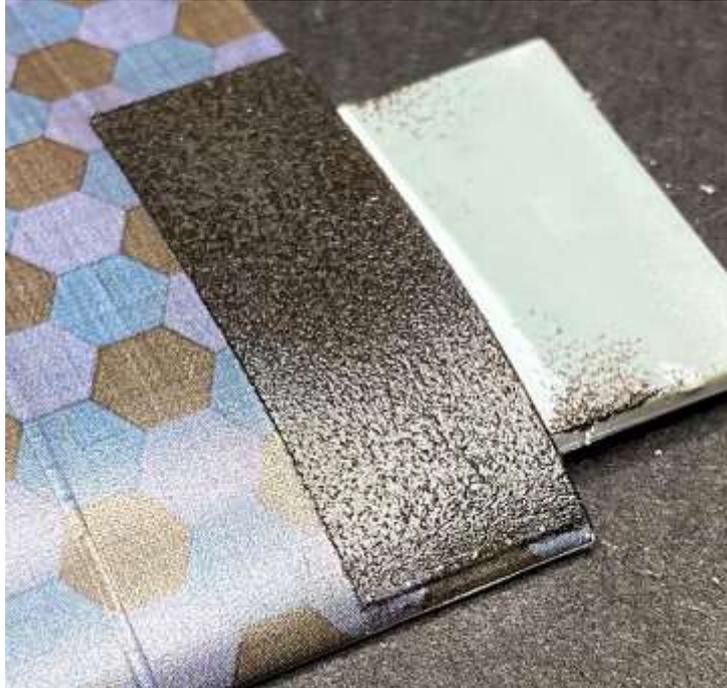
Mask off the walkways at the lower wing roots. I used paper 'Post-It' notes, which have less Adhesive and less likely to lift the lozenge decals when removed.

Apply a small amount of the 'Ammo Mig' Black anti-slip paint (AMIG2034) straight from the tube onto a piece of fine sponge.

Stipple (dab) the paint over the exposed wing walk ways until the surfaces are covered with a fine layer of 'raised' non-slip paint.

Remove the masking.

Leave the painted surfaces for at least 24 hours to fully set.



**Assembly (continued):**

Cement the fuel transfer pipe for the auxiliary fuel tank into its locating holes on the underside of the upper wing.

Cement the created filler cap for the auxiliary fuel tank into its locating hole in the top of the upper wing.

Cement the rudder control horn into its locating recess in the leading edge of the rudder.

Cement the two aileron control horns into their locating recesses in the leading edges of the two ailerons.

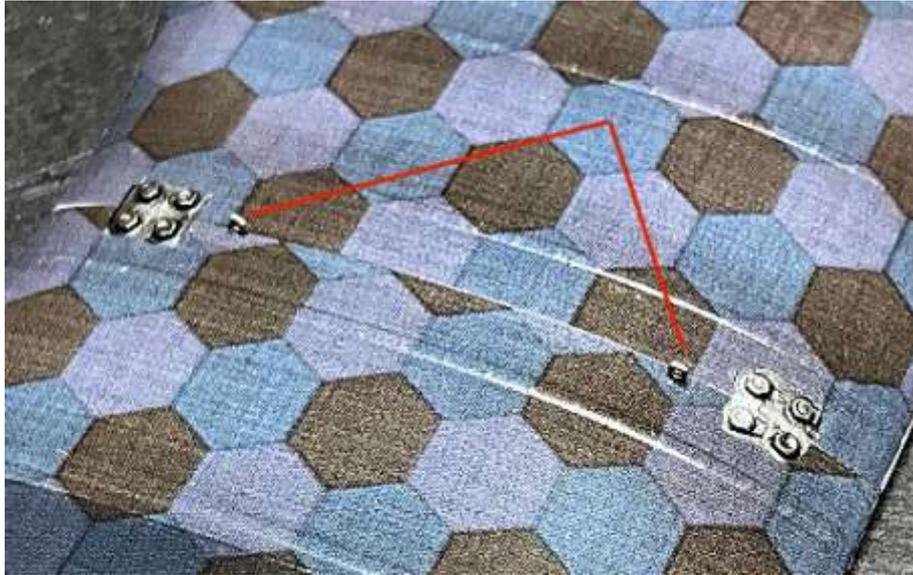
Cut a length of 'Albion Alloy's' 0.4 mm diameter Nickel-Silver tube (NST04) or similar to the width of the separate left access door for the pilots cockpit.

Secure the tube along the edge of the cockpit left door opening, using thin CA adhesive.

Secure the cockpit left access door onto the fuselage side and against the fitted tube, using thin CA adhesive.



Using thin CA adhesive, secure a 'Gaspach' 1:32nd scale Anchor Point (as lifting eyes) into the pre-drilled holes along the centre line at the top of the upper wing centre section.



#### Port 'Spandau' machine gun:

Cement the prepared left 'Spandau' machine gun support panel into its locating holes on the left side of the fuselage.

Using thin CA adhesive, secure the prepared left 'Gaspach' 'Spandau' machine gun onto the support panel.

Using thin CA adhesive, secure the top of the empty round chute (H21) onto the exit port on the left side of the machine gun and the bottom onto the side of the fuselage over the original locating hole.



#### Starboard 'Spandau' machine gun:

Cement the panel stay(H26) onto the inside of the prepared right machine gun support panel.

Cement the prepared right 'Spandau' machine gun support panel onto its locating recess on the right side of the fuselage with the front pipe inserted into its locating hole in the right engine bearer.

Using thin CA adhesive, secure the previously cut away ammunition chute (from the ammunition container A32) onto the ammunition port on the left side of the prepared right 'Spandau' machine gun.

Test locate the machine gun into its location on the top of the support panel. If necessary trim the length of the ammunition chute to avoid it fouling the ammunition container.

Using thin CA adhesive, secure the right 'Spandau' machine gun onto its support panel.

Using thin CA adhesive, secure the ammunition feed chute (A23) into its locating cut-out in the support panel and against the ammunition port on the right side of the machine gun.



Cement the observers gun ring assembly, in the desired orientation, into the opening in the observers cockpit.



Cement the compass shield into its location recesses on the left lower wing.

Cement the tailplane onto its location on the top, rear of the fuselage.

Cement the two lower wing into their locating slots in the lower sides of the fuselage.

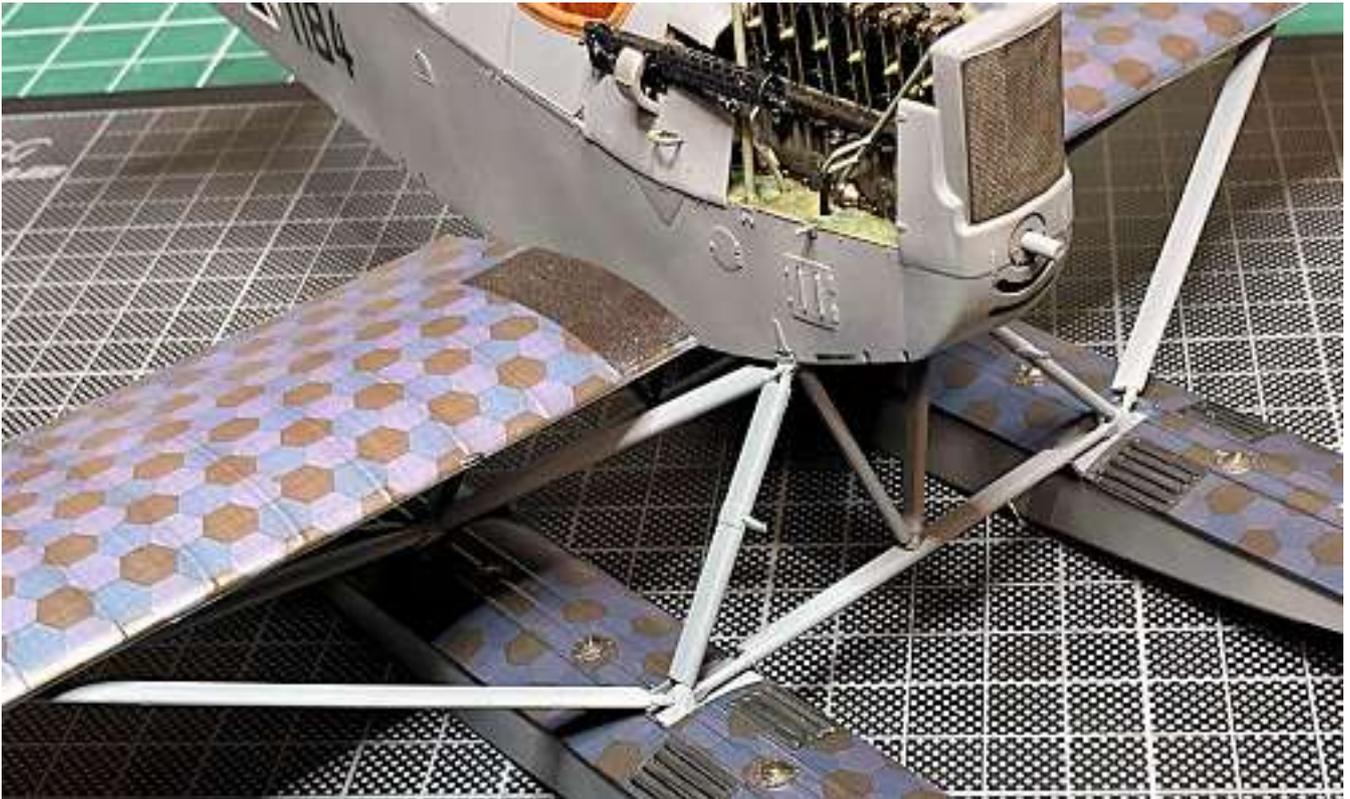


Cement the two float 'W' struts (F8 front, F3 rear) fully into their locating recesses in the two floats.

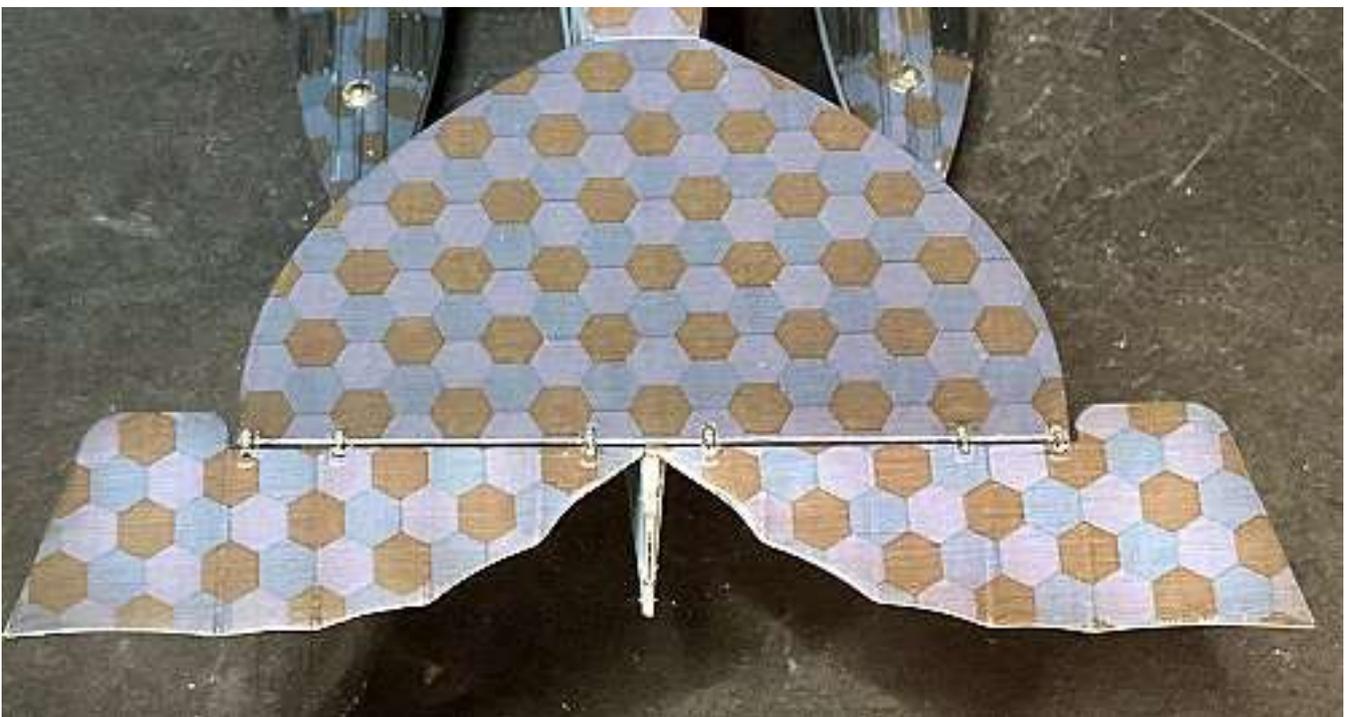
Cement the two side 'N' struts fully into their locating recesses over the 'W' struts in the two floats and their tops into the 'W' struts.

Invert the aircraft and cement the struts of the floats assembly into their locating slots in the bottom edge of the fuselage sides.

Cement the float to lower wing 'N' struts into their locating holes and recesses in the underside of the lower wings and base of the float struts.



Cement the elevator onto its hinges on the trailing edge of the tailplane.



Rigging the floats bracing:

**NOTE:** *The floats were pre-rigged earlier in this build.*

Cut two short length of blackened 0.5 mm diameter Brass tube, such as that supplied from 'Albion Alloys' (MBT05) or similar.

Slide a tube onto the free end of a pre-rigged float bracing line.

Pass the line diagonally between the two floats and through the pre-fitted Anchor Point on the opposite float.

Loop the line back and through the tube.

Keeping the line taut, slide the tube up to the Anchor Point.

Secure the lines in the tube using thin CA adhesive.

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

Repeat the procedure to attach the other bracing line.



### **Weathering:**

To create a good surface for weathering, airbrush the model assembly, upper wing, ailerons, Rudder and the four interplane struts with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar.

Refer to Part 3 (Weathering) of this build log - apply weathering as desired. I used 'Flory Models' Dark Dirt fine clay wash.

### **Surface finishes:**

**NOTE:** *The instruction manual colour profiles show which areas of the aircraft should have a gloss finish (for water protection) and areas that are a matte finish. Refer to page 17 of the kit instruction manual.*

***Matte surfaces*** - fuselage, rudder and underside of the tailplane.

***Gloss surfaces*** - wings, ailerons, elevator, floats, upper tailplane, fuselage/engine panels.

***Staining*** - Sides of the floats, fuel filler cap.

### Clear coats:

Mask off the models surfaces for gloss or matte finish as required.

Matte finish - Airbrush a matte clear coat, such as 'Alclad' Flat (ALC-314) or similar.

Gloss finish - Airbrush a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC-311) or similar.

### Staining:

Brush 'AK Interactive' Kerosene (AK2039) behind the fuel filler cap on upper wing.

Lightly dampen the 'AK Interactive' weathering pencil (Olive Green 1006) and apply 'algae' staining along the upper edges of both floats.

### Painting (continued):

Brush paint the frames of the following clear parts with 'Mr. Colour' Stainless steel (213) or similar:

Windscreen C4, Observers window C2 and Pilots windows C1.

### Assembly (continued):

Using small amounts of 'Microscale' Micro Kristal Clear adhesive, secure the following clear parts in position:

Windscreen C4, Observers window C2 and Pilots windows C1.

**NOTE:** *I chose not to use the kit supplied clear parts C3 (x2) for the fuselage ports.*

Apply 'Microscale' Micro Kristal Clear adhesive into the openings at the observers cockpit sides, using a tooth pick or similar. Start around the edges then towards the centre.

**NOTE:** *The rudder can be fitted aligned to the fuselage od angled slightly to one side.*

Cement the rudder onto its hinges on the rear of the fuselage.

**NOTE:** *The ailerons can be fitted level with the upper or fitted with one slightly up and the other similarly down.*

Cement the two ailerons onto their hinges on the trailing edge of the upper wing.

### Rigging (continued):

Using thin CA adhesive, secure the tubes of the previously prepared aileron control lines (between the lower and upper wings), into the pre-drilled holes in the underside of the upper wing at the front interplane strut locating recesses.

Trim the length of the four aileron control lines such that they can be inserted into the pre-drilled holes in the top and underside of the upper wing.

Keeping the lines taut, use thin CA adhesive to secure the lines into their associated holes in the upper wing.

Trim the length of the two rudder control lines such that they can be inserted into the pre-drilled holes in the rear sides of the fuselage.

Keeping the lines taut, use thin CA adhesive to secure the lines into their associated holes in the fuselage.

### Assembly (continued):

**NOTE:** *During the following steps, take care when handling the model, as it's large and can be difficult when fitting the upper wing.*

Test fit the upper wing into the front and rear cabane struts and if necessary, file or sand the tops of the struts to achieve an easy fit.

Test fit the four interplane struts into their locations in the underside of the upper wing.

Test fit the four interplane struts into their locations in the top surface of the lower wings.

Cement the four interplane struts into their locating recesses in the lower wings, making sure cement does not contaminate the pre-moulded rigging hoops on the top of the struts.

Carefully locate the upper wing onto the front and rear cabane struts and the four interplane struts.

Apply cement to secure the upper wing onto the struts.

Check that the upper and lower wings are aligned when viewed from the sides and parallel to each other when viewed from below.

### **Rigging (continued):**

#### Aileron (between wings) control line:

Trim the length of a control line such that when kept taut, it can be fully inserted into the pre-drilled hole in the top surface of the lower wing (at the bottom of the front interplane strut).

Cut a short length of blacked 0.4 mm Brass tube, such as 'Albion Alloy's' (MBT04) or similar.

Slide the tube onto the line.

Insert the line into the pre-drilled hole in the lower wing.

Keeping the line taut into the tube and the tube held into the wing, apply thin CA adhesive to secure the line and tube into the wing.

Repeat the procedure to attach the aileron control line on the opposite lower wing.

#### Interplane incidence wires:

Cut a long length of 0.12 mm diameter mono-filament, such as that from 'Steelon' or 'Stroft GTM'.

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

Slide the tube onto a pre-rigged incidence line.

Pass the line diagonally up and across and through the pre-moulded rigging hoop on the top of the opposite interplane strut.

Loop the line back and through the tube.

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

Secure the lines in the tube using thin CA adhesive.

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

Repeat the procedure for the remaining three incidence lines.



#### Rigging - final tensioning:

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

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

***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.

**Assembly (continued):**

Cement the front foot step into its locating recesses in the left, front of the fuselage and under the nose cowl.

Cement the rear foot step into its locating recesses in the left, lower edge of the fuselage below the observers cockpit.

Using thin CA adhesive at the observers gun rest and cement on the gun mount, secure the observers 'Parabellum' machine gun in position on the gun ring.



Using thin CA adhesive, secure the separate right engine access panel onto the top of right float and leaning against the leading edge of the lower wing.



### **REXx exhaust:**

**NOTE:** *The height of the REXx exhaust needs to be reduced. When handling the exhaust, avoid applying too much pressure as the exhaust can be crushed or distorted.*

Using a fine toothed saw, carefully cut away 3 mm from the top of the exhaust.

Lightly brush 'Tamiya' Rubber Black (XF85) or similar over the inside and the cut edges of the exhaust pipe.

Using thin CA adhesive, secure the replacement REXx exhaust pipe assembly onto the exhaust ports of the left, upper side of the installed engine.

### **Propeller:**

Using thin CA adhesive, secure the propeller in the desired position on the engine propeller shaft.



**PART 15**  
**BEACHING DOLLY'S**  
**AND**  
**TRESTLES**

## **PART 15 - BEACHING DOLLY'S AND TRESTLES**

### **Trestles:**

#### **Preparation:**

Prepare the kit supplied rear trestles parts (D2 and D13).

#### **Assembly:**

##### **Rear trestle:**

Cement the trestle parts (D13) together.

Cement the side spreaders (D2) between the trestle legs.

##### **Front trestle:**

Prepare the kit supplied front trestle parts (D14 and D15).

Cement the trestle parts (D14) together.

Cement the side spreaders (D15) between the trestle legs.

#### **Painting:**

Airbrush a grey primer, such as 'AK Interactive' Grey (AK758) or similar over the both trestles.

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

**NOTE:** *During the following step, apply the wood effect along the central supports.*

Apply your desired wood effect to the parts listed below. I applied 'Wood effect - Method 2' (Part 3 of this build log) with Windsor & Newton' Griffin (Alkyd) Burnt Sienna oil paint.

Lightly sponge on 'Tamiya' Weathering Master set B (Rust) over the wood effect.

Apply lightly dampened 'AK Interactive' weathering pencil (Dark Grey 10024) along the edges of the wood parts.

### **Beaching dolly's:**

#### **Preparation:**

Prepare the kit supplied beaching dolly parts (D10, D11 and D12).

Cement the wheel halves (D10 and D12) together.

#### **Painting:**

Airbrush a grey primer, such as 'AK Interactive' Grey (AK758) or similar over the both dolly's and their wheels.

Airbrush the two dolly's and four wheels with 'Tamiya' Dark Yellow (XF60) or similar.

**NOTE:** *During the following step, apply the wood effect around the curved wheel rims and along the central supports.*

Apply your desired wood effect to the parts listed below. I applied 'Wood effect - Method 2' (Part 3 of this build log) with Windsor & Newton' Griffin (Alkyd) Burnt Sienna oil paint.

If necessary, remove any residual oil paint from the wheel rims and their edges.

Light sponge on 'Tamiya' Weathering Master set B (Rust) over the wood effect spokes and rims of both wheels.

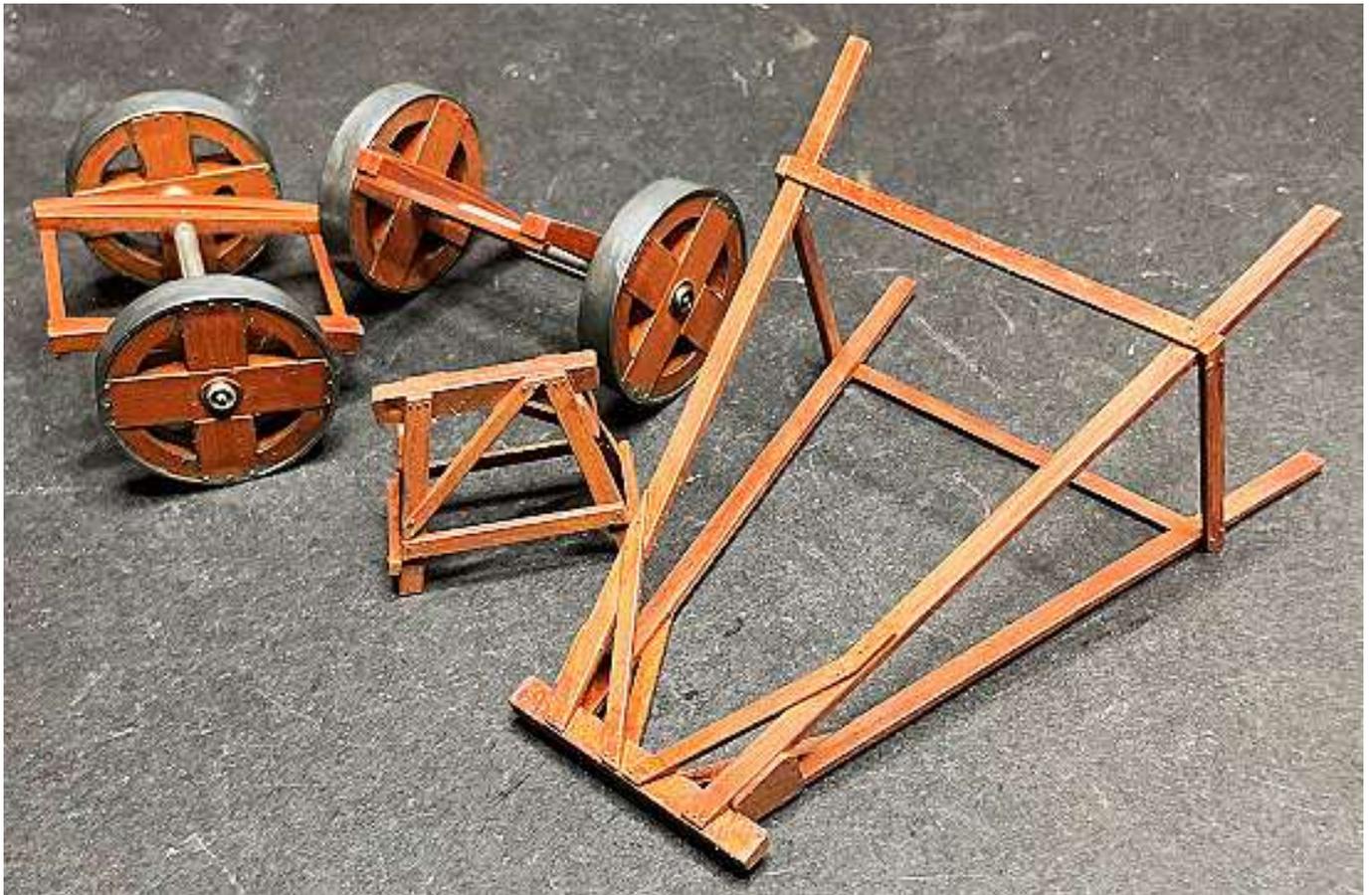
Brush paint the outer metal rim of the wheels with 'Mr. Colour' Iron (212) and outer central hub Stainless Steel (213) or similar. This type of paint, once dry, can be buffed to a metallic sheen using a cotton bud or similar.

Apply lightly dampened 'AK Interactive' weathering pencil (Dark Grey 10024) along the edges of the wood parts.

Apply lightly dampened 'AK Interactive' weathering pencil (Dark Green 10008) around the edges of the wheel rim and wood support struts.

Assembly:

Cement the wheel assemblies onto the axle ends of the two dolly's.



# PART 16

# FIGURES

## **PART 16 - FIGURES**

For this model I chose to use the 'Kellerkind' German Naval mechanic (54094) and Gotha pilot (54095) and the 'Copper State Models' German Naval Observer (F32-036).

### **German Naval mechanic:**

This figure is supplied in two parts, the body and the left arm.

#### **Preparation:**

Cut the casting blocks away from the bottom of the shoes and the arm.

Scrape or sand away any resin artifacts or mould seam lines.

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

#### **Modification:**

**NOTE:** *The figure will be located standing on the right float of the aircraft with its left leg resting on the step rod of the front strut. As the figure is intended to be looking at either the pilot or observer figure (stood on the base), the head of the mechanic needs to be tilted downwards slightly.*

Saw off the head of the figure at the bottom of the neck.

Drill a hole of 0.6 mm diameter at a slight forward angle into the neck of both the figure and the head.

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

Using thin CA adhesive, secure the rod into the pre-drilled hole in the neck of the figure.

Trim the end of the protruding rod such that the head can be located it with the head slightly turned to the left and the bottom of the jaw resting on the figure.

Using thin CA adhesive, secure the head in position on the rod.

**NOTE:** During the following step, I used 'Deluxe Materials' Perfect Plastic Putty, as it can easily be formed using a damp cotton bud or similar.

Using 'Deluxe Materials' Perfect Plastic Putty, fill the gap between the head and the figure and shape the putty to form the neck of the figure.

Allow the putty to fully set and then, if necessary, smooth the surface.



Preparation (continued):

Drill a hole of 0.8 mm diameter up into the straight right leg (for mounting on a ladder).

Cut a length of 0.8 mm diameter rod, such as 'Albion Alloy's' MBR08 or similar.

Secure the rod into the pre-drilled hole in the leg, using CA adhesive. This rod will be used to hold the figure for painting and for mounting on the aircraft's right float.

Assembly:

Secure the left arm in position on the figure using thin CA adhesive.

Painting:

**NOTE:** *The following photograph shows the uniform for seamen of the 'Imperial German Navy'. Typically the working dress was a jacket and trousers in dark blue with a lighter blue collar that had with three white stripes. The cap was probably grey with a black band and white text with two white tassels at the rear.*



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

Brush paint the figure as follows using the detailed paints or similar:

**Trousers and jacket:**

'Tamiya' Royal Blue (X3) with NATO Black (XF69) to darken.

**Collar:**

'Tamiya' Royal Blue (X3) with small amount of NATO Black (XF69) to slightly darken.

**Cap:**

'Tamiya' IJN Grey (XF75), Rubber Black (XF85), Red (XF7).

**Shoes:**

'Tamiya' Semi-Gloss Black (X18).

**Hair:**

'Tamiya' NATO Brown (XF64).

**Buttons:**

'Mr. Colour' Stainless Steel (213).

**Flesh:**

'AK Interactive' Light Flesh (AK3012) with Highlight Flesh (AK3013).

**Tie on collar front:**

'Tamiya' White (XF2).

**Spanner:**

'Mr. Colour' Iron (212).

**Modification (continued):**

**NOTE:** *Modifying the position of the head required the removal of the two 'tapes' at the rear of the cap.*

Cap tapes: -To represent the two white 'tapes' attached to the rear of the cap, I used second most thinnest white stripes from the 'Xtradecal' parallel stripes set (XPS2).

Cap legend: - To represent the legend on the front of the cap band I used an appropriate looking decal from my 'spare' decal collection.

Collar borders: - To represent the white borders around the collar I used the thinnest white stripes from the 'Xtradecal' parallel stripes set (XPS2).

**Finish:**

Airbrush the figure with a light clear coat of 'Alclad' Flat (ALC314) or similar.

**NOTE:** *During the following steps avoid any decals or damage to them may occur.*

Apply 'Flory Models' Clay Wash (Dark Dirt) (refer to Part 3 of this build log) over the figure.

Using a slightly damp brush, remove the wash to achieve your desired weathered finish.

Lightly sponge 'Tamiya' Weathering Master set D (Oil Stain) on the pockets, elbows and seat of the pants.

Lightly sponge 'Tamiya' Weathering Master set A (Mud) on the shoes.



## **Gotha pilot:**

### **Preparation:**

Cut the casting blocks away from the bottom of the shoes and the arm.

Scrape or sand away any resin artifacts or mould seam lines.

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

Drill a hole of 0.8 mm diameter up into the left leg.

Cut a length of 0.8 mm diameter rod, such as 'Albion Alloy's' MBR08 or similar.

Secure the rod into the pre-drilled hole in the leg, using thin CA adhesive. This rod will be used to hold the figure for painting and for mounting onto the display base.

### **Assembly:**

Secure the left and right arms in position on the figure using thin CA adhesive.

### **Painting:**

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

Brush paint the figure as follows using the detailed paints or similar:

#### **Over pants:**

'Tamiya' Light Grey (XF66).

#### **Boots:**

'Tamiya' IJN Grey (XF75), soles Flat Earth (XF52), fur White (XF2)/Flat Earth (XF52), straps 'AK Interactive' Brown Leather (AK3031).

#### **Balaclava:**

'Tamiya' IJN Grey (XF75).

#### **Coat:**

'Tamiya' NATO Black (XF69), collar fur White (XF2)/Flat Earth (XF52).

#### **Life Jacket:**

'Tamiya' Deck Tan (XF55).

#### **Helmet:**

'Tamiya' NATO Brown ((XF68).

#### **Gloves:**

'Tamiya' NATO Brown ((XF68), fur White (XF2)/Flat Earth (XF52).

#### **Goggles:**

'AK Interactive' Brown Leather (AK3031), 'Mr. Colour' Stainless Steel (213).

#### **Scarf:**

'Tamiya' Medium Blue (XF18).

#### **Metal fittings:**

'Mr. Colour' Stainless Steel (213).

#### **Flesh:**

'AK Interactive' Light Flesh (AK3012) with Highlight Flesh (AK3013).

Finish:

Airbrush the figure with a light clear coat of 'Alclad' Light Sheen (ALC-311) or similar.

Apply 'Flory Models' Clay Wash (Dark Dirt) (refer to Part 3 of this build log) over the figure.

Using a slightly damp brush, remove the wash to achieve your desired weathered finish.

Lightly sponge 'Tamiya' Weathering Master set D (Oil Stain) on the pockets, elbows and seat of the pants.

Lightly sponge 'Tamiya' Weathering Master set A (Mud) on the over-shoes.

Brush the lenses of the goggles with 'Tamiya' Clear Yellow (X24).



## **Observer:**

### **Preparation:**

Cut the casting blocks away from the bottom of the shoes and the arms.

Scrape or sand away any resin artifacts or mould seam lines.

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

Drill a hole of 0.6 mm diameter up into the left leg.

Cut a length of 0.5 mm diameter rod, such as 'Albion Alloy's' MBR05 or similar.

Secure the rod into the pre-drilled hole in the leg, using thin CA adhesive. This rod will be used to hold the figure for painting and for mounting into the display base.

### **Assembly:**

Using thin CA adhesive, secure the left and right arms in position on the figure.

Using thin CA adhesive, secure the head in position on the figure.

### **Painting:**

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

Brush paint the figure as follows using the detailed paints or similar:

#### **Flying Coat:**

'AK Interactive' Brown Leather (AK3031) mixed with German Uniform Shadow (AK3093) for shadow highlights.

#### **Helmet:**

'AK Interactive' Brown Leather (AK3031) mixed with German Uniform Shadow (AK3093) for shadow highlights.

Airbrush the figures coat and helmet with a light clear coat of 'Alclad' Light Sheen (ALC-311) or similar.

#### **Trousers:**

'AK Interactive' German Light Uniform (AK3092) with German Uniform Base (AK3091) mixed shadows.

#### **Puttees:**

'AK Interactive' German Uniform Base (AK3091) with German Light Uniform (AK3092) to lighten slightly.

#### **Shoes:**

'Tamiya' Semi-Gloss Black (X18).

#### **Goggles:**

'AK Interactive' Brown Leather (AK3031), 'Mr. Colour' Stainless Steel (213). Brush the lenses of the goggles with 'Tamiya' Clear Yellow (X24).

#### **Life Jacket and straps:**

'Tamiya' Deck Tan (XF55).

#### **Metal fittings:**

'Mr. Colour' Stainless Steel (213).

#### **Flesh:**

'AK Interactive' Light Flesh (AK3012) with Highlight Flesh (AK3013).

Finish:

Refer to Part 3 (Weathering) of this build log - weather the figure (not the flesh), as desired. I used 'Flory Models' Dark Dirt fine clay wash.

Lightly sponge 'Tamiya' Weathering Master set D (Oil Stain) on the pockets, elbows and seat of the coat.

Lightly sponge 'Tamiya' Weathering Master set A (Mud) on the shoes.



# PART 17

# DISPLAY BASE

## PART 17 - DISPLAY BASE

The display case is made from piano black and clear acrylic sheet of 3mm thickness. The base shoulder, for locating the clear cover, is a second thickness on top of the base plate. This case was purpose built by Paul Moss, who has a retail outlet on Ebay.

[www.inperspective.com](http://www.inperspective.com)

For this display I chose to use the 'Abandoned Airfield' display mat (1:32 scale), supplied from 'Coastal Kits'.

<http://www.coastalkits.co.uk/newstore>

### Preparation:

Position the completed model with the figures and ground equipment onto the mat and in their desired positions.

Using light pressure with a pencil, draw the outline of the desired shape for the mat, on the top surface. When drawing the outline, do not use excessive pressure or the mat will retain the pencil mark, which may not be easy to remove afterwards.

Using a sharp, sturdy blade, such as a 'Stanley Knife' or similar, carefully cut around the outline. Do not try to cut entirely through the mat in one pass. Instead, take several cuts to separate the outlined mat from the rest of the mat.

Clean the cut edge of the mat by sanding. Sand downwards from the photographed side of the mat, to prevent upwards sanding possibly lifting the photographed edge.

If necessary, brush paint 'Tamiya' Rubber Black (XF85) or similar around the cut edge of the mat.

### Enhancements:

**NOTE:** *The display mat consists of a photograph, taken from above and at a slight angle, then printed with odourless latex ink onto laminated matt vinyl over a 3mm thick 'Foamex' base board. These mats, when viewed from above, give a good representation of the chosen terrain, but when viewed from 'ground level' are obviously flat and featureless. A touch of 3D relief can be added, as desired, to the mat in an attempt to 'bring it to life'.*

*If you are not sure about applying these effects, cut a small piece off the main mat and experiment until you're happy to proceed.*

### Test piece.



The vinyl surface of the mat can be easily cut through, as if the 'Foamex' base underneath. Using a sharp edge tool, such as a modellers chisel, scrape away the vinyl surface where the photograph shows distressed surfaces, such as broken concrete and cracks. If deeper damaged surface is preferred, use the tool to gouge out more of the 'Foamex' base below, but be careful not to cut right through the base.

Apply PVA adhesive (white Glue) mixed with a suitably coloured pigment into the areas and slightly around the edges.

If desired, add self adhesive grass tufts sparingly around the opened up areas towards the rear of the mat. To give the effect of dry grass, dry brush the tufts with 'Tamiya' Desert Yellow (XF59).

Completion:

**NOTE:** *The aircraft will not be secured to the display base. This allows the aircraft, if required, to be protected and transported separately.*

Apply PVA adhesive to the underside of the mat and position it onto the display base.

Apply pressure on the mat, such as books or similar, until the adhesive dries.

**NOTE:** *During the following step, position the aircraft floats on the dolly's with the trestles in position. This helps to position the dolly's correctly under the floats.*

Temporarily position the aircraft onto the two beaching dolly's, rear and front trestles with aircraft positioned as desired on the base.

Secure the two dolly's fully onto the underside of the floats, using CA adhesive or PVA adhesive (white glue).

Secure rear trestle in position on the display base (under the rear of the fuselage) and secure in position on the mat, using thin CA adhesive.

Secure the smaller front trestle on the display base under the front of the left float and secure in position on the mat, using thin CA adhesive.

Temporarily position the pilot and observer figures.

Drill a hole of 0.9 mm diameter (pilot figure) and 0.5 mm diameter (Observer figure) through the display mat and into, **but not** through, the display base for locating the pilot and observer in the desired positions on the mat.

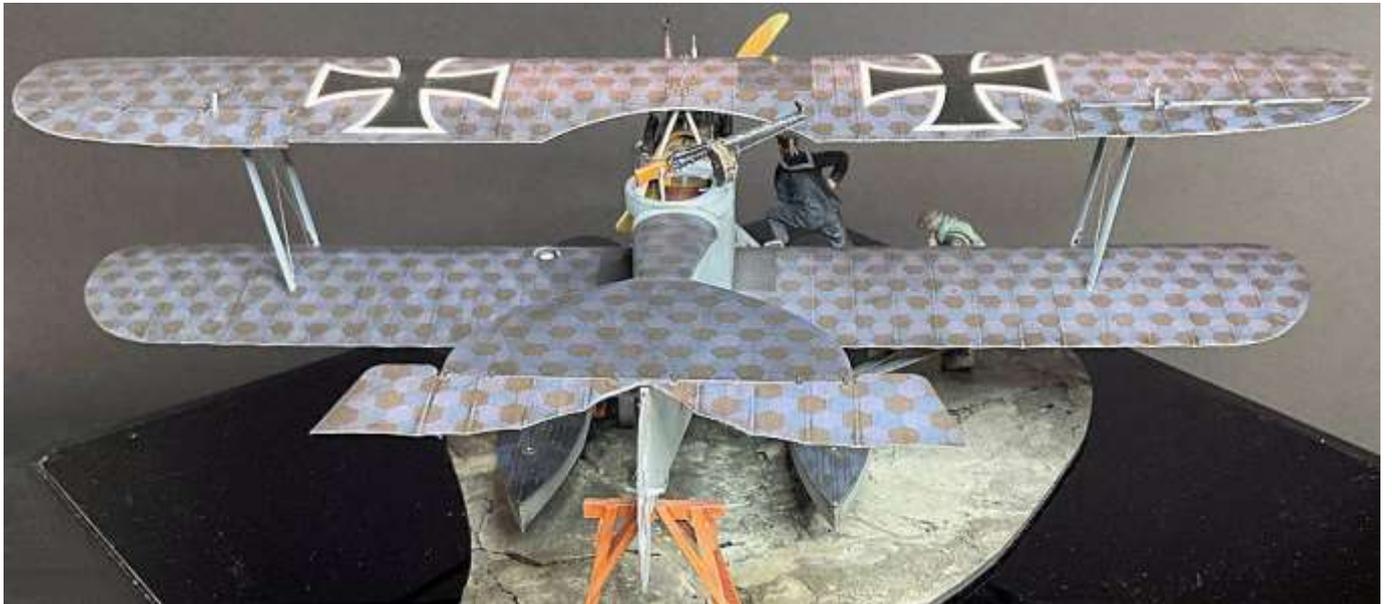
Secure the two figures into the base using CA adhesive or PVA adhesive (white glue).

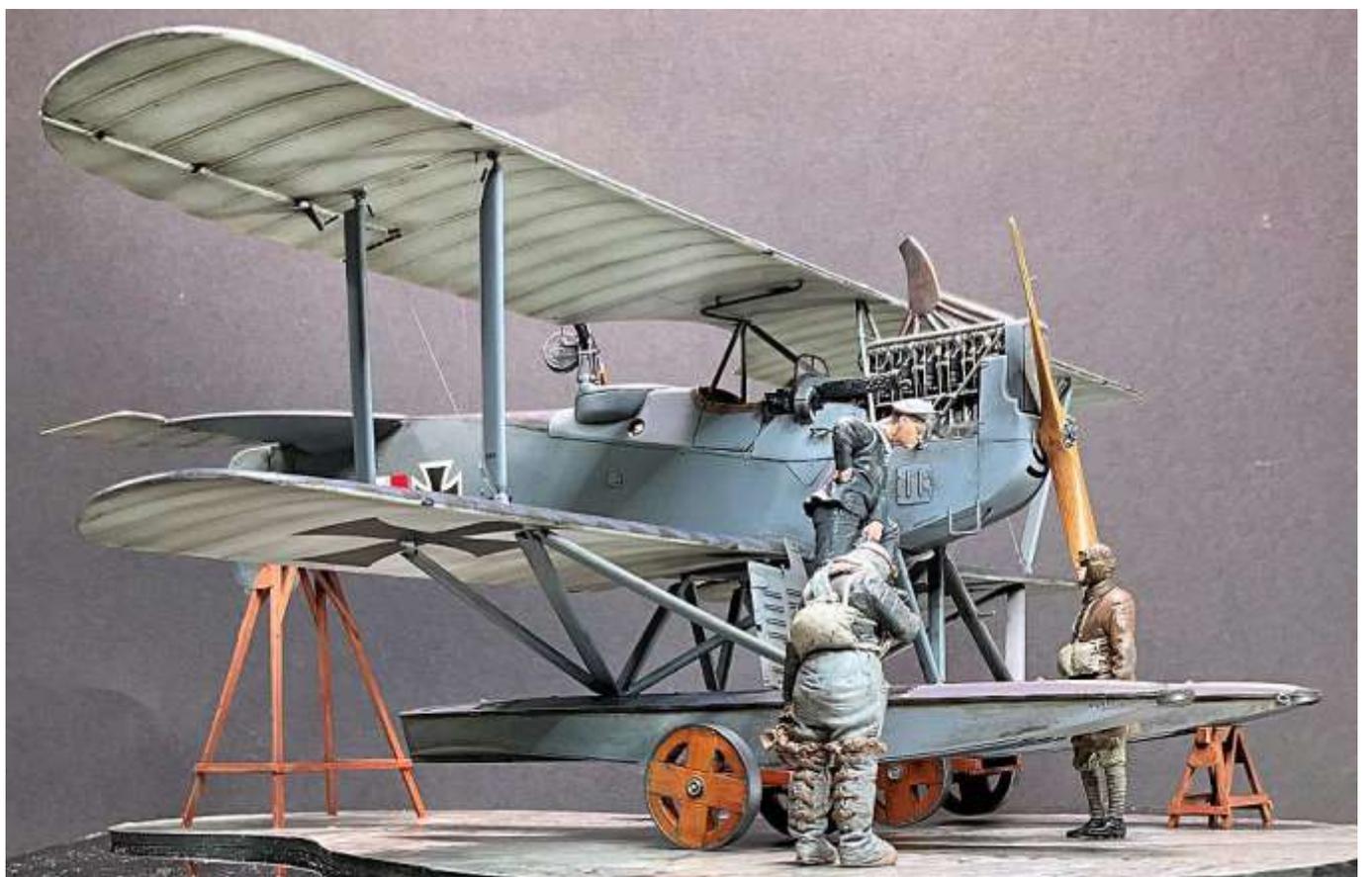
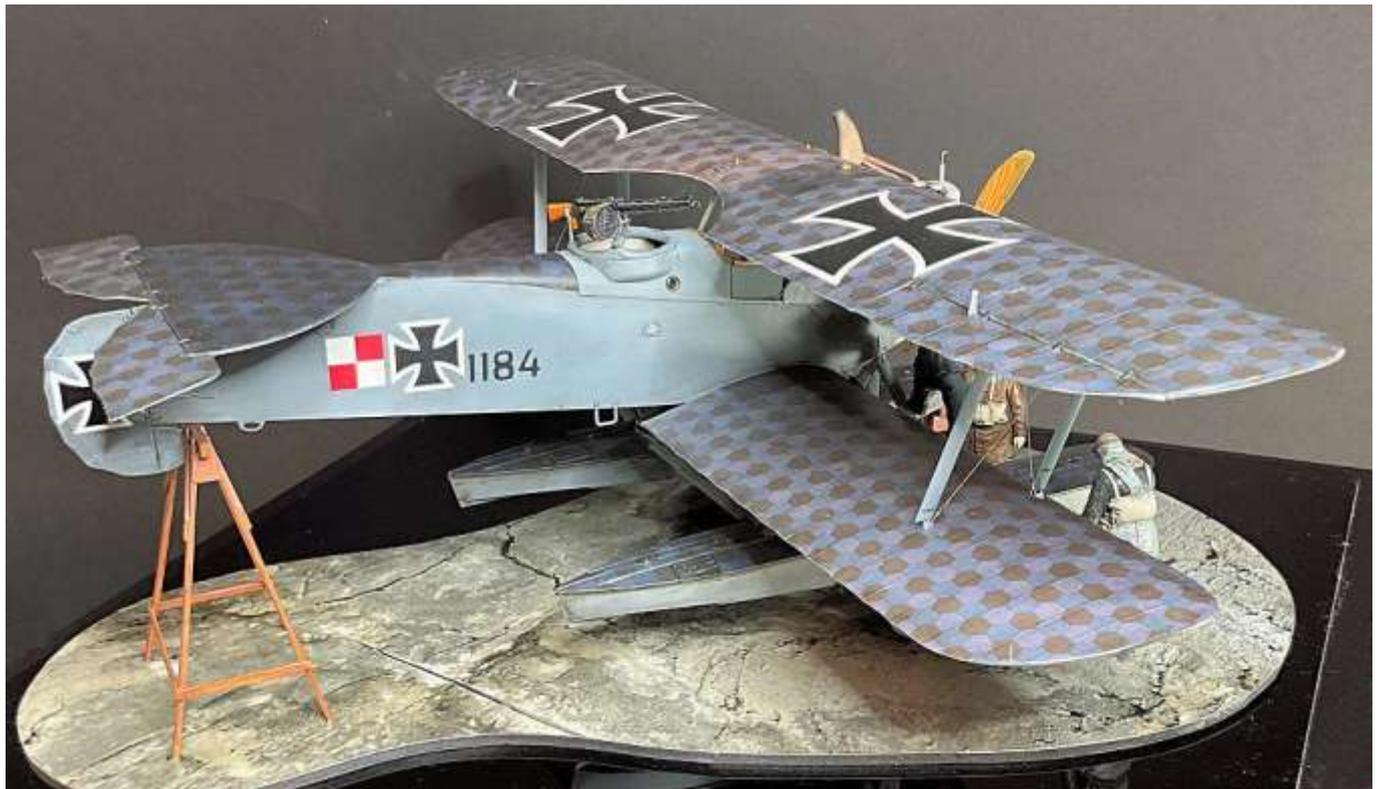
**NOTE:** *Removing the aircraft with attached floats and leaving just the two trestles and figures secured on the display base will allow the model to be separately protected for transport, if required.*

**PART 18**  
**COMPLETED**  
**MODEL**  
**PHOTOGRAPHS**

**PART 18 - COMPLETED MODEL PHOTOGRAPHS**



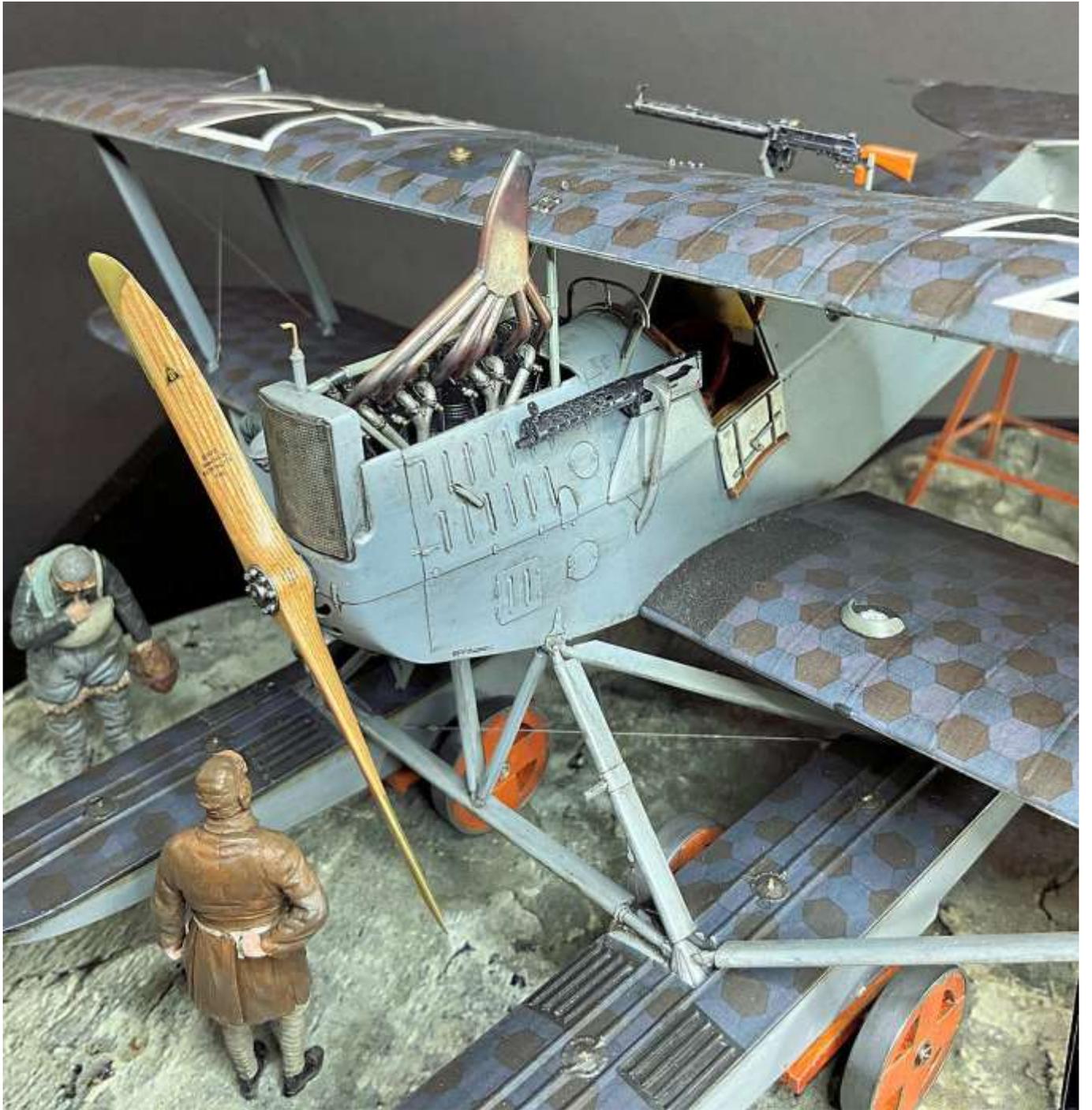






















**END**