



World War One Aircraft Models

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

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

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

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INTRODUCTION

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

Sorted



AFTER MARKET

AFTER MARKET

Figure

'Model Cellar' WWI German Pilot in Heinecke Parachute Harness (with Mechanic).

Decals

'Aviatic' linen effect Lozenge four colour decal set (ATT32120),
'Aviatic' Black Knights linen effect decal (ATT32024),
'ProperPlane' wood effect decal set (PDW-501230).

Exhaust Pipe

'ReXx' exhaust pipe (32012).

Propeller

'ProperPlane' hand made laminated wood (Heine type).

Weapons

'GasPatch' Spandau 08/15 extended loading handle set.

Rigging accessories (as required)

'GasPatch Elite Accessories' Turnbuckles 1/48 scale,
'Albion Alloy's' Micro-tube (Brass or Nickel Silver - various diameters).
'Steelon' mono-filament 0.12 mm diameter',
'Stroff' mono-filament 0.08, 0.12 mm diameter,
'Maxima' Chameleon mono-filament 0.12 mm diameter.

Sundries (as required)

'Araldite' two part epoxy adhesive, Paints ('Tamiya' Acrylic, Humbrol Acrylic, 'Mr. Metal Colour', 'AK Interactive' Primer and micro-filler (Grey AK758, White AK759), 'AK Interactive' Filters (Wood AK-261) and figure paints, Kerosene AK-2039, Oil AK-2019 and Wash AK-2033), 'Alclad II' Lacquers, 'Alclad' Aqua Gloss 600, 'Mr. Colour' Levelling Thinners, 'Vallejo' Model Colour, PVA Adhesive (e.g. 'MicroScale' Micro Krystal Clear), 'VMS Fleky' CA adhesive (Standard and Thin) and Metal Prep 4K, 'Bostik' Blue, UHU White Tack, 'AV' Masilla Plastica (401) putty, 'De-Lux Materials' Perfect Plastic Putty, Sanding and/or Polishing sticks from 'Flory Models', 'Humbrol' Maskol, 'UHU' White Tack, 'Milliput' two part putty, 'White Spirits', 'MicroScale' MicroSol/MicroSet, 'Mr. Surfacer 500, 1000, 1200', 'DecoArt Crafters Acrylic' (water based) paints, 'Artool' Ultra Mask sheets, 'Vallejo' Still Water (26.230), 'Milliput' two part clay, 'Mr. Surfacer' primer and filler, 'Hataka' lacquer paints, 'Plastruct' styrene rod, 'PlusModel' lead wire, 'ANYZ' black braided line (AN001), 'Tamiya' extra thin liquid cement, 'Plastic Magic' liquid cement, 'Prismacolor' Verithin Argent Metallique 753, 'Bare-Metal' Matte Aluminium foil.

Weathering mediums (as required)

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

Display Base

Etched Plaque (name plate),
'Inperspective' custom made Acrylic base and cover,
'Polak' Wild Meadow (Variation F - 4706).

THE AIRCRAFT

THE AIRCRAFT

References:

1. 'Wingnut Wings' instruction manual.
2. 'Windsock' Data File No:37 - Roland D.VI (P.M. Grosz).

This model represents the Roland D.VIa, Ser No: 3615/18 during 1918 (Pilot and Jasta not known).

The Roland aircraft company was re-named from Luft-Fahrzeug-Gesellschaft (LVG) to avoid confusion with another aircraft company, Luft-Verkehrs-Gesellschaft (LVG). Roland built various pre-WW1 aircraft, but in December, 1914, received its first military contract for two battle planes, their G.I and G.II, which were followed by sub-contracted builds of Albatros aircraft for the army and Friedrichshafen and Sablatnig floatplanes for the Navy.

Roland military designs started to reach the front, such as the C.II 'Walfisch' reconnaissance aircraft and the less successful D.I, D.II and D.IIa 'Haifisch' fighters, due primarily to the poor performance from its Argus engine. The D.III variant was fitted with the better Mercedes engine but was still outperformed by fighters such as the Pfalz D.III and its development was cancelled.

Efforts were now concentrated on the D.IV variant, which had a fuselage clad in overlapping plywood planks, known as 'lapstrake', which was similar to that used on clinker built boats. This proved to be as strong but lighter than existing constructions provided, which was an important factor for a fighter aircraft. Also the lower wings were located under, not into, the lower fuselage. Two prototype aircraft were built and tested in October 1917 as the D.VIa, powered by the 160hp Daimler-Mercedes D.III engine. A third prototype, the D.VIb was powered by the more powerful Benz Bz .IIIa engine.

Although many in service D.VIa aircraft were powered by the 200hp Daimler-Mercedes D.IIIaü (over-compressed engine), by the wars end, many were still powered by the 160hp D.III engine. A total of 157 D.VIa and 201 D.VIb aircraft were manufactured. The first D.VIa aircraft were at the front by mid-May 1918 and were operated by Jasta 23b, 32b, 33 and 35b, with possibly a few with Jasta 30 and 34b. By the end of June a total of 55 were in service, but records do not exist after that period.

However, both the D.VIa and the D.VIb were found to be generally inferior to the front line fighters at the time, such as the Fokker D.VII and even the Albatros D,V and Pfalz D.IIIa fighters.

General specifications:

Length - 6.4 m
Wingspan - 9.4 m
Empty weight - 531.6 kg
Loaded weight - 845 kg

Engine:

Daimler-Mercedes 160hp D.III

Performance:

Maximum speed - 190 kph
Endurance - 1.5 hours
Service ceiling - 5,800 m

Weapons:

Two 7.92mm LMG 08/15 'Spandau' machine guns.



PART 1
MODEL
DESCRIPTION

PART 1 - MODEL DESCRIPTION

(‘Wingnut Wings’ - Kit No:32022)

Normally in the Part of the build log, I would give a basic break down of the kit and my initial impressions. However, this is a ‘Wingnut Wings’ kit.

Therefore I’ve added the link below to Brett Greens review for ‘Hyperscale’, which only states what I would have written here.

http://www.hyperscale.com/2011/reviews/kits/wingnutwings32022reviewbg_1.htm



Replacement parts

My only comments are that certain parts of the kit will be replaced with aftermarket items, which I feel are of better quality and will enhance an already great kit:

1. The kit supplied lozenge decals will be replaced with the ‘Aviatic’ linen effect decals (ATT32118), which are purpose made for this model.
2. The kit supplied machine guns and associated photo-etch sheet will be replaced with the ‘GasPatch’ Spandau 08/15 extended loading handle set.
3. The kit supplied propellers will be replaced with the ‘ProperPlane’ Heine propeller.
4. The kit supplied engine exhaust will be replaced with the version created by ‘ReXx’ (32012).
5. The kit supplied wheels will be replaced by those from ‘ProperPlane’ (continental 760x100 (RW-002).

PART 2
WOOD EFFECTS
(General)

PART 2 - WOOD EFFECTS (General)

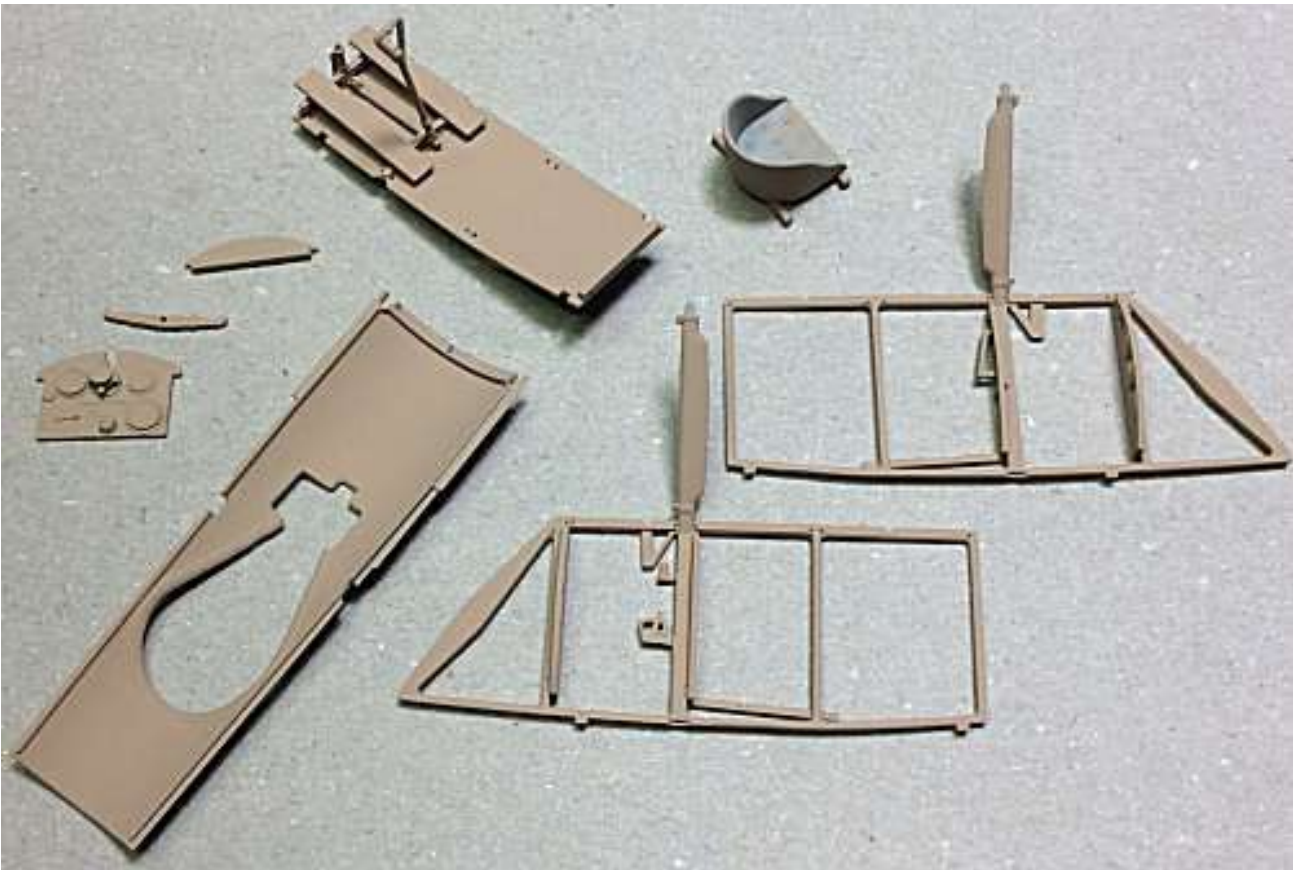
A basic technique:

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

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

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

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



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

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

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

Once painting is complete, clean the brush in water.

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



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

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

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

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

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



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

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

PART 3
WEATHERING
(General)

PART 3 - WEATHERING (General)

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

Flory Model clay washes:

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

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

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

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

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

To apply the clay wash is just a matter of brushing all over the surface to be weathered. It doesn't matter really how much is applied as it can be left on for any period, as it is easily removed without any effect on the surface underneath. If you don't achieve your desired effect, you can wash it all off and start again. I use a soft brush, which has been very slightly dampened, to brush off the clay wash. For smearing effects, a very slightly damp brush or absorbent paper should be used, but even then I dab them onto a dry piece of the paper, until it's almost dry. Any wetter and you'll find that you are removing too much of the clay wash. If that happens you would have to re-apply the wash and start again. That said, if you're not happy with the final effect, you can easily remove the clay wash by brushing with a wet brush or even airbrush water over the surface. Dry off the surfaces washed and then re-apply the clay wash and try again until you are satisfied. The technique is to 'damp' brush or wipe over the surface to re-activate the clay wash and at the same time, to smear it over areas that had no clay wash. It'll dry more or less straight away. Then I'll very lightly brush and/or use a piece of damp absorbent paper to remove as much as I want until I get the desired effect. If I remove too much I just reapply clay wash to that area and repeat the removal procedure. Once finished, just run the brush under a tap to rinse out any residual clay pigments. Finally I usually seal the surface with airbrushed 'Alclad' Light Sheen (ALC-311), which will seal in the applied clay wash.

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



Chipping effects:

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

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



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



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



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



Water colour pencils:

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



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

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

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

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



PART 4
DECALS
(General)

PART 4 - DECALS (General)

Standard decals:

The supplied markings decal sheet and the optional 'lozenge' decals sheets are not 'cookie cut' to the required shapes, but are part of the overall carrier film on the sheet. Therefore you will need to carefully cut the individual decals from the sheet. The decals appear not to be laser

printed, as with for example 'Cartograph' decals, and backing sheet is thicker than standard decal sheets. This makes it difficult to achieve a clean cut around the decals. The decals are not of the best quality, which is to be expected from a 'limited run' kit of this type and given that they have to be carefully cut out from the sheet may make the end result less than favourable.

One alternative to using these decals is, where possible, is to source replacements from commercial retailers or from your 'spares' collection if you have one. This would only apply to the larger 'standard' markings as the smaller and specific model decals are unique and would still need to be used.

A second alternative for the larger markings would be to create masks and airbrush the markings, although this would require specific masks and is not a method advised for the less experienced modeller. Again the small and specific models decals would still need to be used.

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

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

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

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

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

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

Carefully move the decal into the correct position.

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

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

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

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

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

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

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

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

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

'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:

If the decal is to be applied without a coloured undercoat (green, brown etc), first airbrush a primer coat of 'AK Interactive' primer and micro-filler (White - AK759) on all of the surfaces to have the decals applied.

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

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

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

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

Soak each decal in warm water for approximately 20 seconds.

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

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

Align the decal to the shape of the model part.

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

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

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

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

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

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

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

PART 5

RESIN (General)

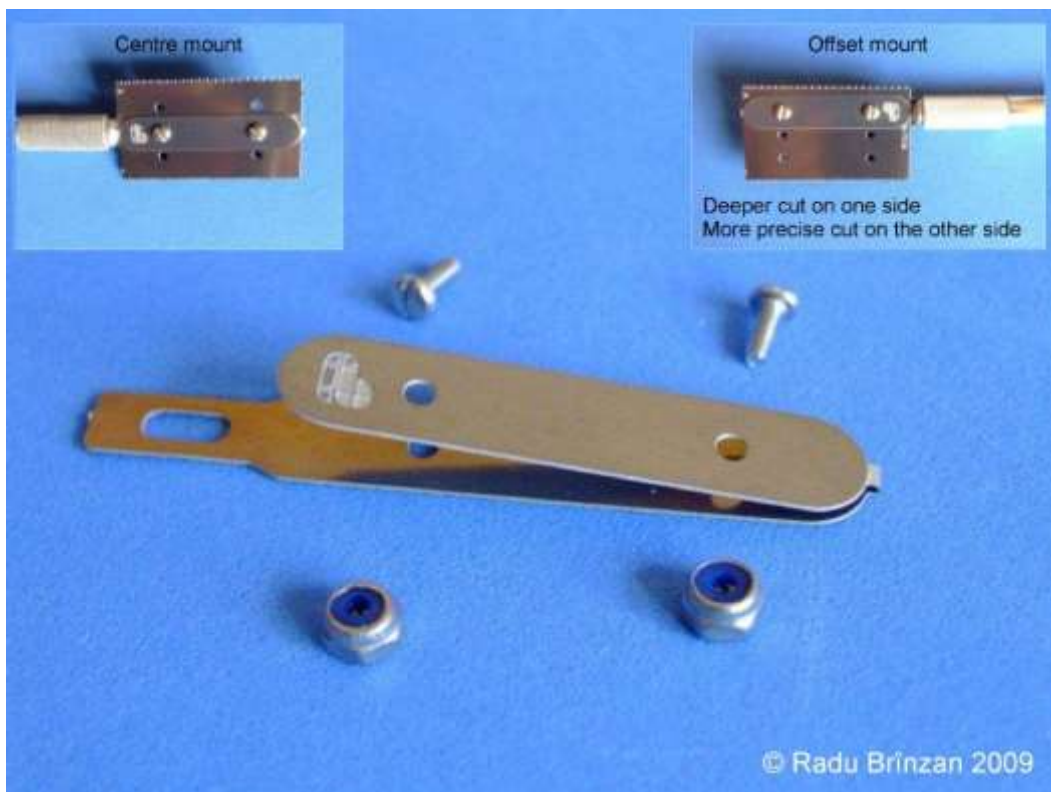
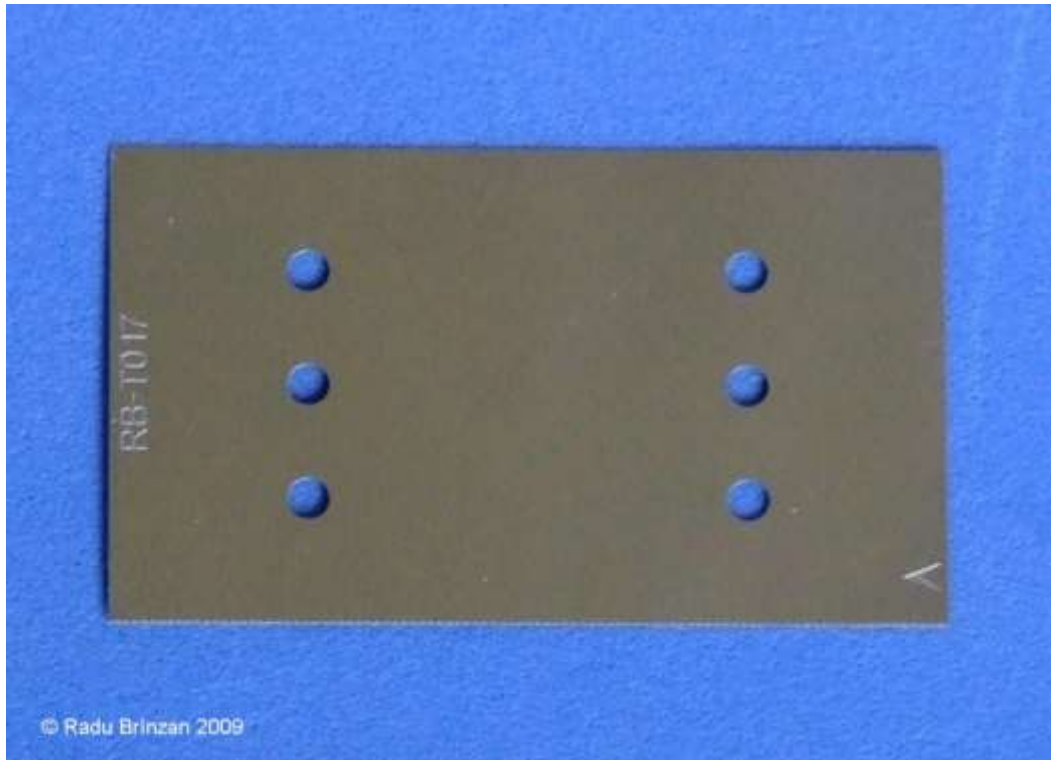
PART 5- RESIN (General)

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

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

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

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



PART 6

RIGGING

PART 6 - RIGGING

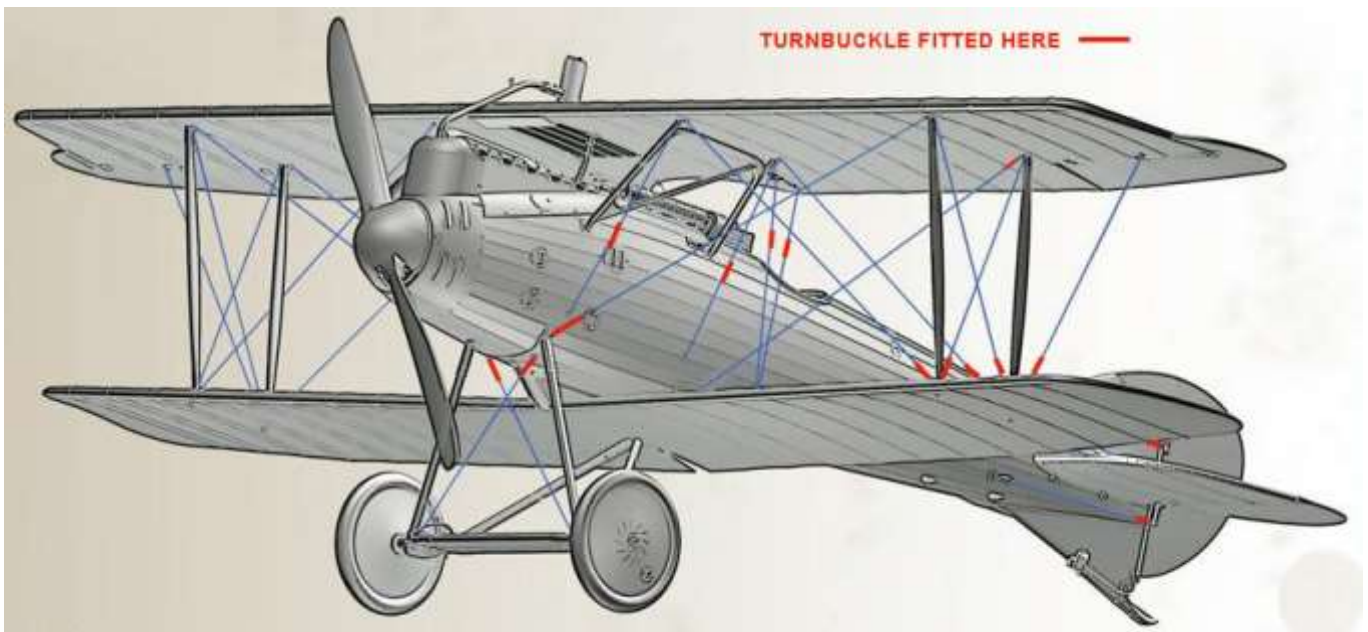
General:

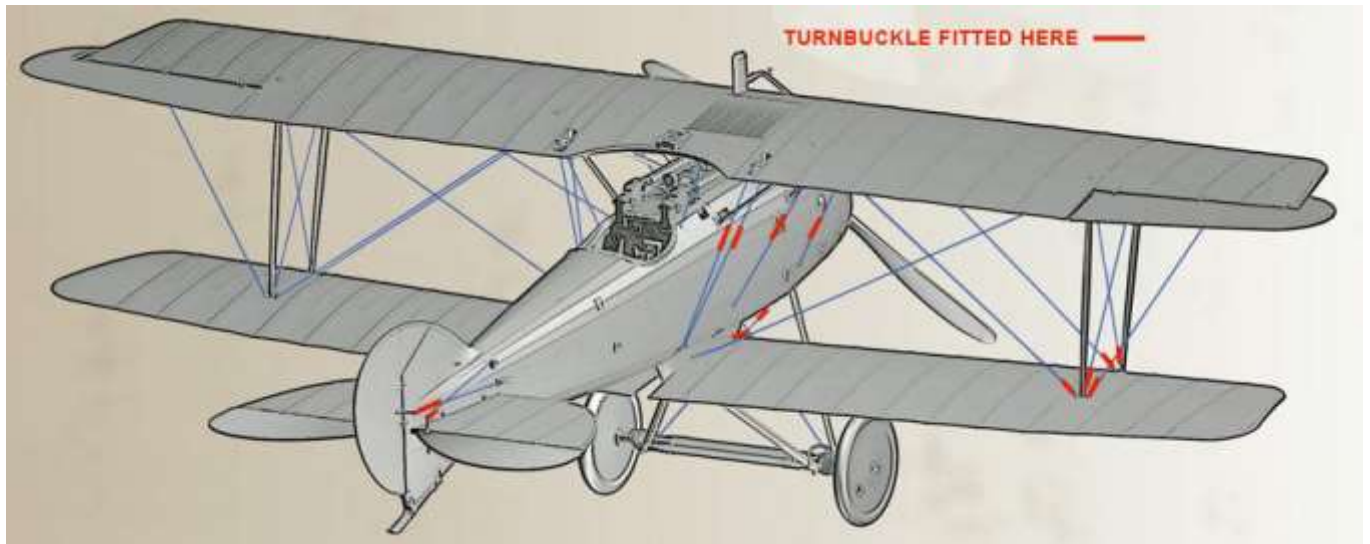
The first thing to check is that you have already drilled out the rigging attachment points. Most models have these located on the model, but it's best to carry out research in reference books or research on line before drilling. Some modellers use micro drills manufactured for drilling printed circuit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

Some modellers drill through the wings etc of the model and rig by pulling through the rigging line/EZ thread etc, gluing in position and then rubbing down the exposed line 'tag' and then re-painting that area. I prefer to drill only part way into the plastic and attach the applicable rigging fixture with CA adhesive.

With your research complete and all necessary holes pre-drilled, the rigging can start. For the primary rigging, such as flying and landing wires and cross bracing wires, I used 'Steelon' mono-filament (fishing line) of 0.12 mm diameter and for flight controls I used 'Stroft' 0.08 mm diameter mono-filament. These are effectively transparent but do give a look of steel, without the need of painting or colouring with a gel pen. The turnbuckles used are either sintered metal or resin and obtained from 'Gaspach Models'. Although the newer resin turnbuckles are better detailed, they are resin and therefore can break if stressed in the wrong direction. If in doubt, use the metal versions, which are much stronger.

The basic aircraft external rigging is shown in the following illustrations. The aircraft is rigged with round, wire wound wires with adjustable turnbuckles.





Internal rigging:

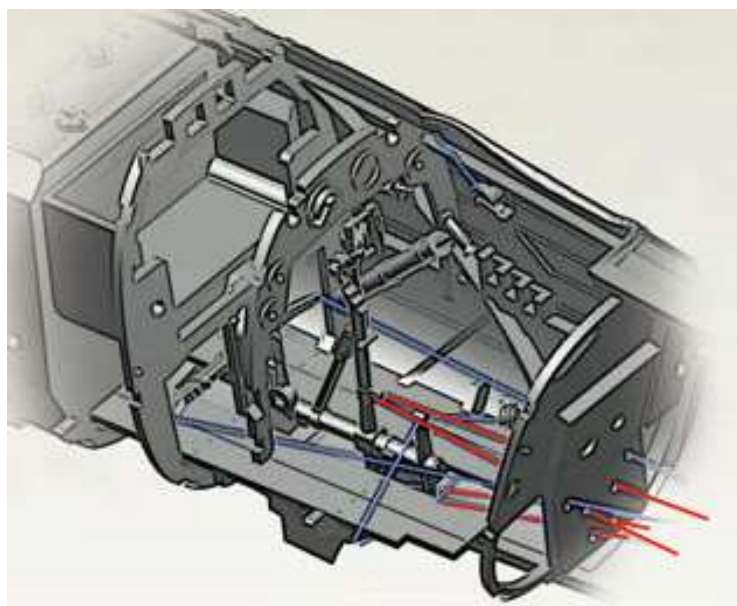
Internal bracing:

Detailed photographs or illustrations of the cockpit area do not seem to be available. However, due to the particular construction method used for this fuselage it is probable that very little, if any, internal bracing wires were fitted. This seems to be confirmed by the 'Wingnut Wings' instruction manual, which does not detail and cockpit bracing.

Elevator control:

The control column was attached to aileron control torque tube in two positions. The torque tube passed through the circular base of the control column and was attached by a pin through both. This was a type of universal joint that allowed the control column to be moved left, right, forward and back. A stay bar was attached between the front of the control column and the aileron torque tube by half round clamps, which allowed the stay to move with the control column.

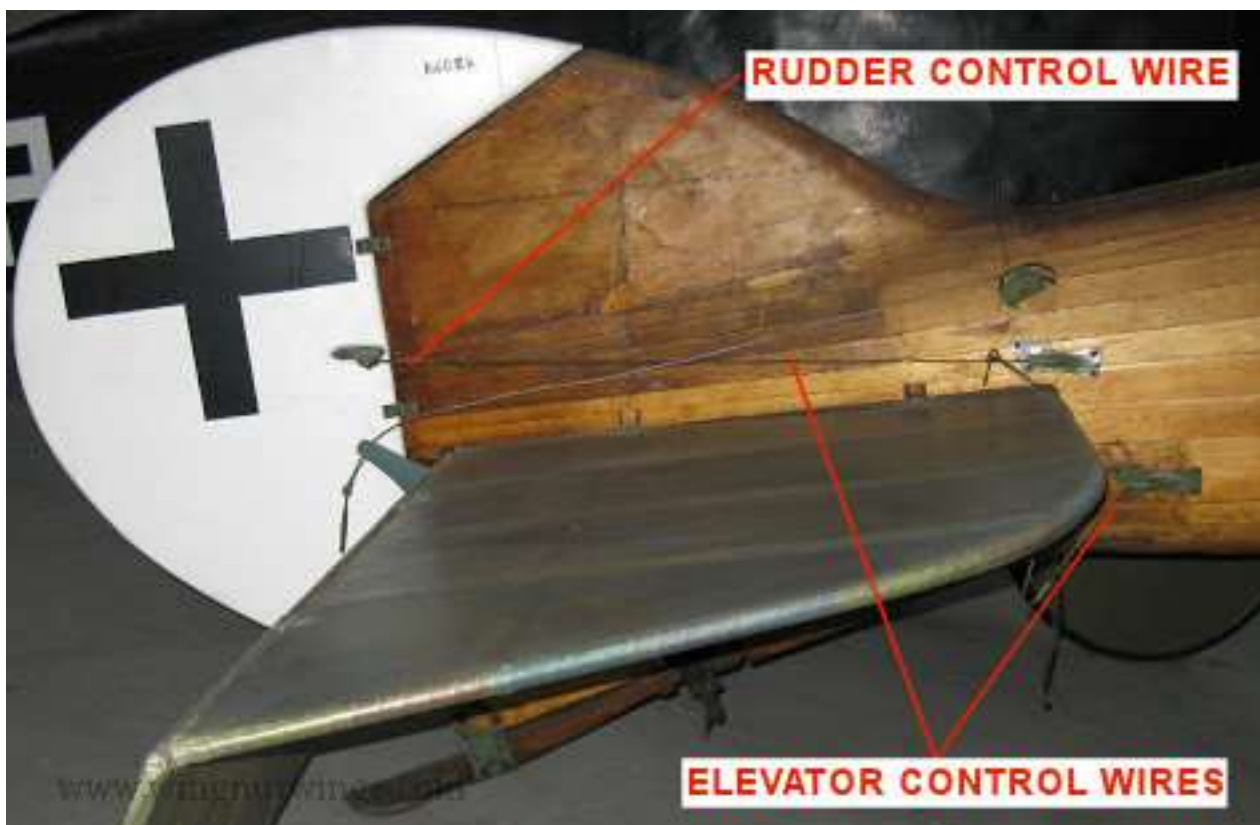
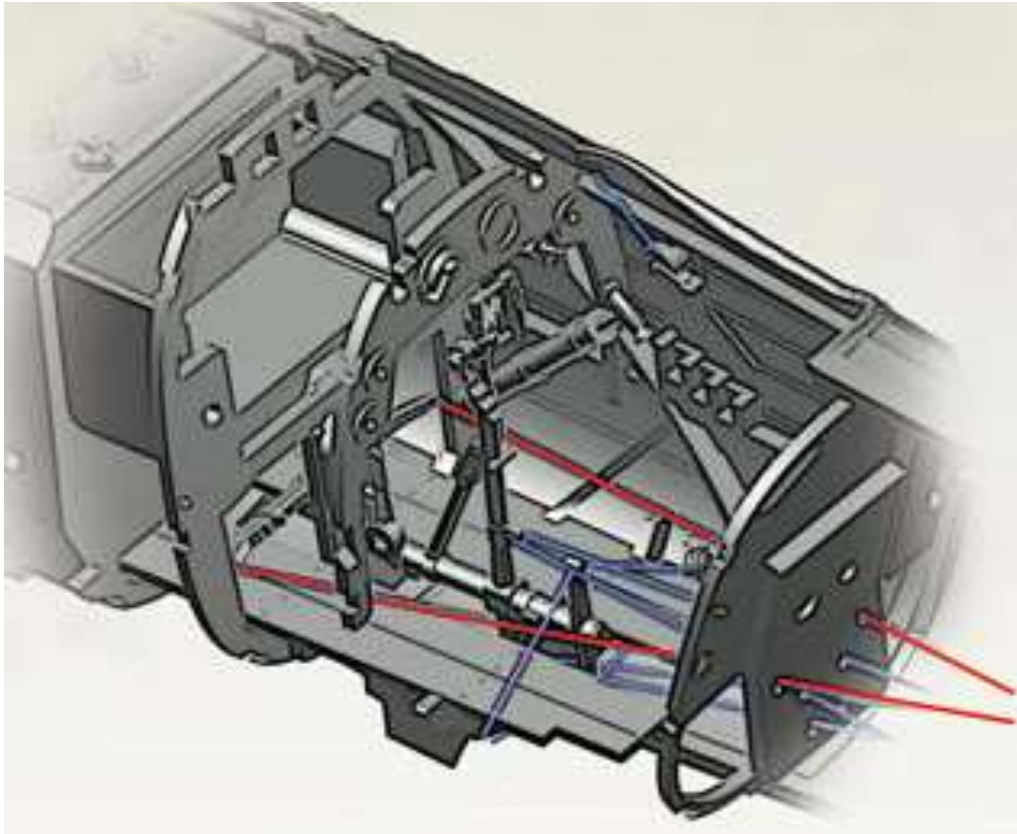
Twin control cables were attached above and below the pivot point of the control column and were routed rearwards through the fuselage and out, over pulleys, through openings at the rear of the fuselage. At the rear of the fuselage the upper cables were attached to the upper control horns on the elevators and the lower cables to the underside control horns on the elevators. Turnbuckles were fitted at the control horns. As the pilot moved the control column forwards or rearwards, the control cables would move the elevators to pitch the aircraft up (climb) or down (dive).



Rudder control:

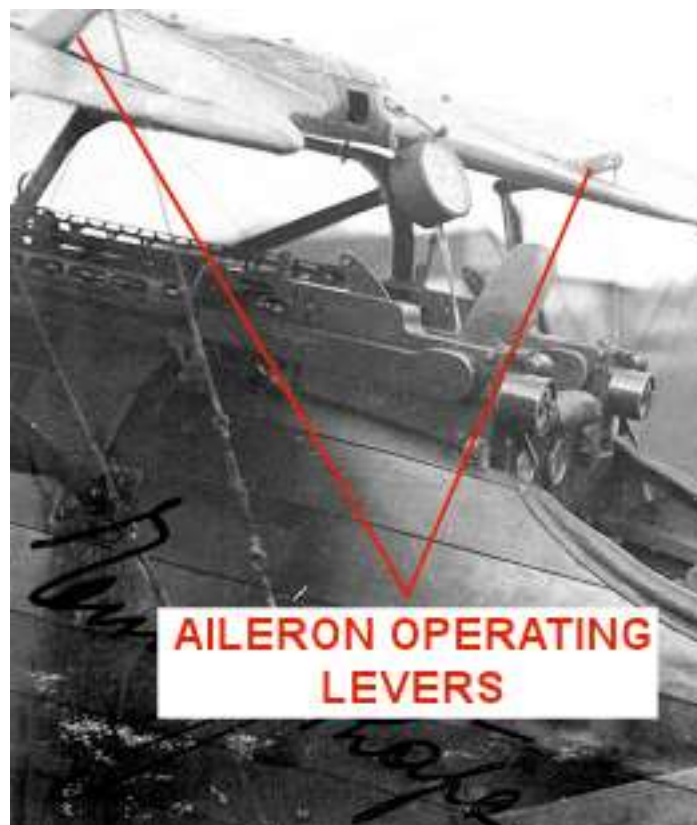
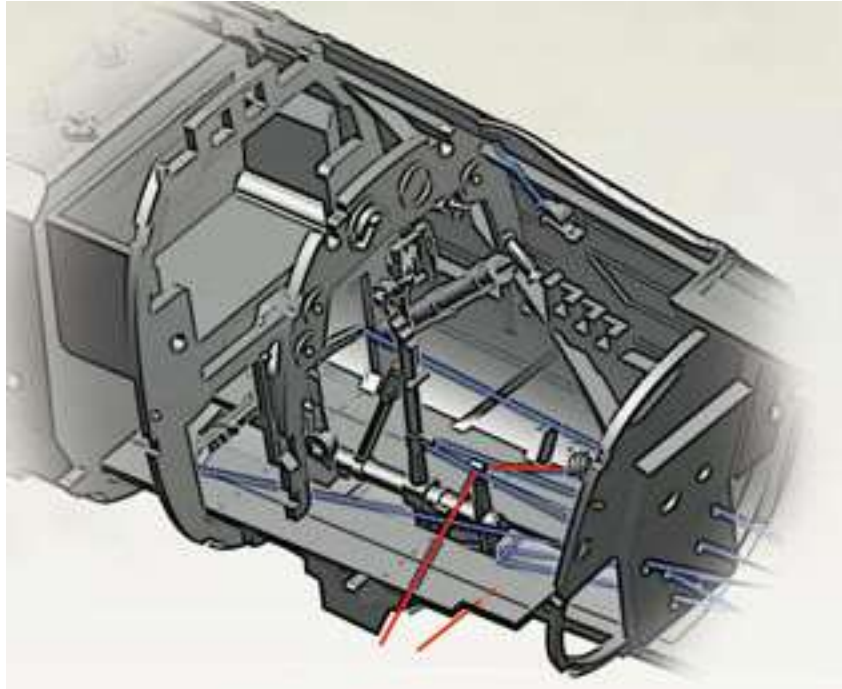
A rudder control cable was attached to each side of the pilots rudder bar. These cables were routed rearwards through the fuselage. The cables exited from the fuselage and crossed the upper elevator control cables, to be attached to the rudder control horns on each side of the rudder. Turnbuckles were fitted at the control horns.

As the pilot pushed the rudder bar left or right, the control cables pulled the rudder in the required direction, causing the aircraft to yaw to the left or right.



Aileron control:

This aircraft had an aileron control system that operated torque tubes in the upper wing. These tubes were attached to their respective aileron. In the centre section of the upper wing were two slotted openings, in which the ends of the torque tubes and their attached double ended levers were located. The operating cables from each end of the two aileron levers were routed down and into the cockpit, where they were attached to the ends of a double ended lever, which was attached, fixed, to the rear of the aileron torque tube. The aileron control cables were arranged in such a way that when the control column was moved to the left or the right, the cables would move the ailerons either up or down, dependant on the movement of the control column. This would cause the aircraft to roll to the left or the right. Turnbuckles were fitted part way along the external operating cables.



External rigging:

Flying wires:

Two single flying wires were fitted on each side of the aircraft, one between the top of the forward landing gear strut and the underside of the upper wing, inboard from the top of the front interplane strut. The other from the bottom, rear of the lower wing fairing (landing gear rear strut attachment) and the underside of the upper wing, inboard from the top of the rear interplane strut. Turnbuckles appear to have been fitted at the fuselage end of the wires for the forward wire and at the strut end for the rear wires.

Landing wires:

Two single landing wires were fitted on each side of the aircraft, between the top surface of the lower wings, inboard from the bottom of the interplane struts and the underside of the upper wing, outboard from the top of the fuselage cabane 'N' struts. Turnbuckles were fitted at the lower wing end of the wires.

Incidence wires:

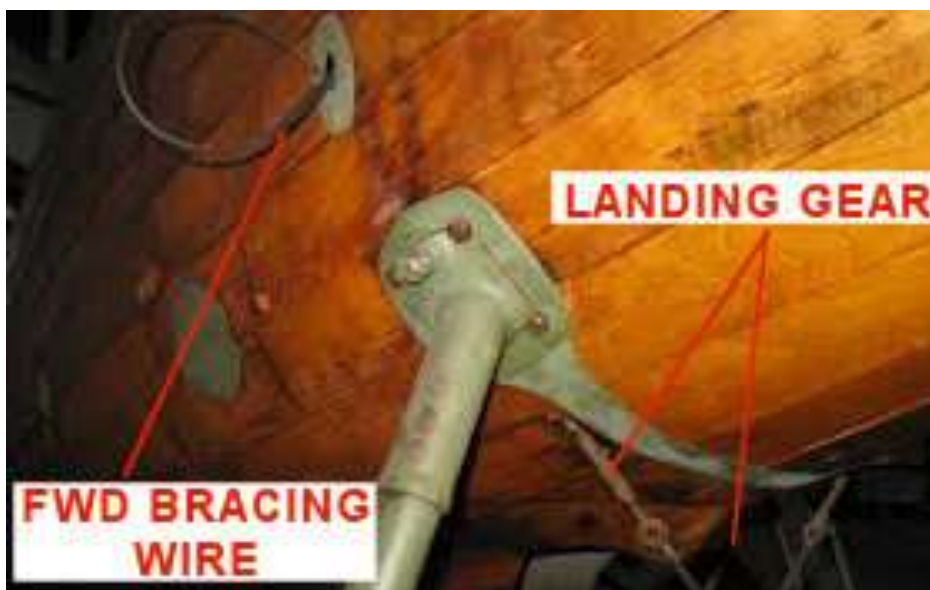
Two single and crossed incidence wires were fitted on each side of the aircraft between the interplane struts. The forward wires were attached to the top surface of the lower wings, from rear of the forward strut then diagonally up to the underside of the upper wing, forward from the top of the rear strut. The rear incidence were attached to the top surface of the lower wings, forward from the bottom of the rear struts, then diagonally up to the underside of the upper wing, to the rear of the top of the forward strut. Turnbuckles were fitted at the lower wing end of the incidence wires.

Bracing wires:

A pair of single bracing wires were fitted at each side of the aircraft, between the lower fuselage and the underside of the upper wing, outboard from the top of the fuselage cabane 'N' struts. A turnbuckle was fitted to the forward bracing wire at the top wing end of the wire. A turnbuckle was fitted part way along both bracing wires.

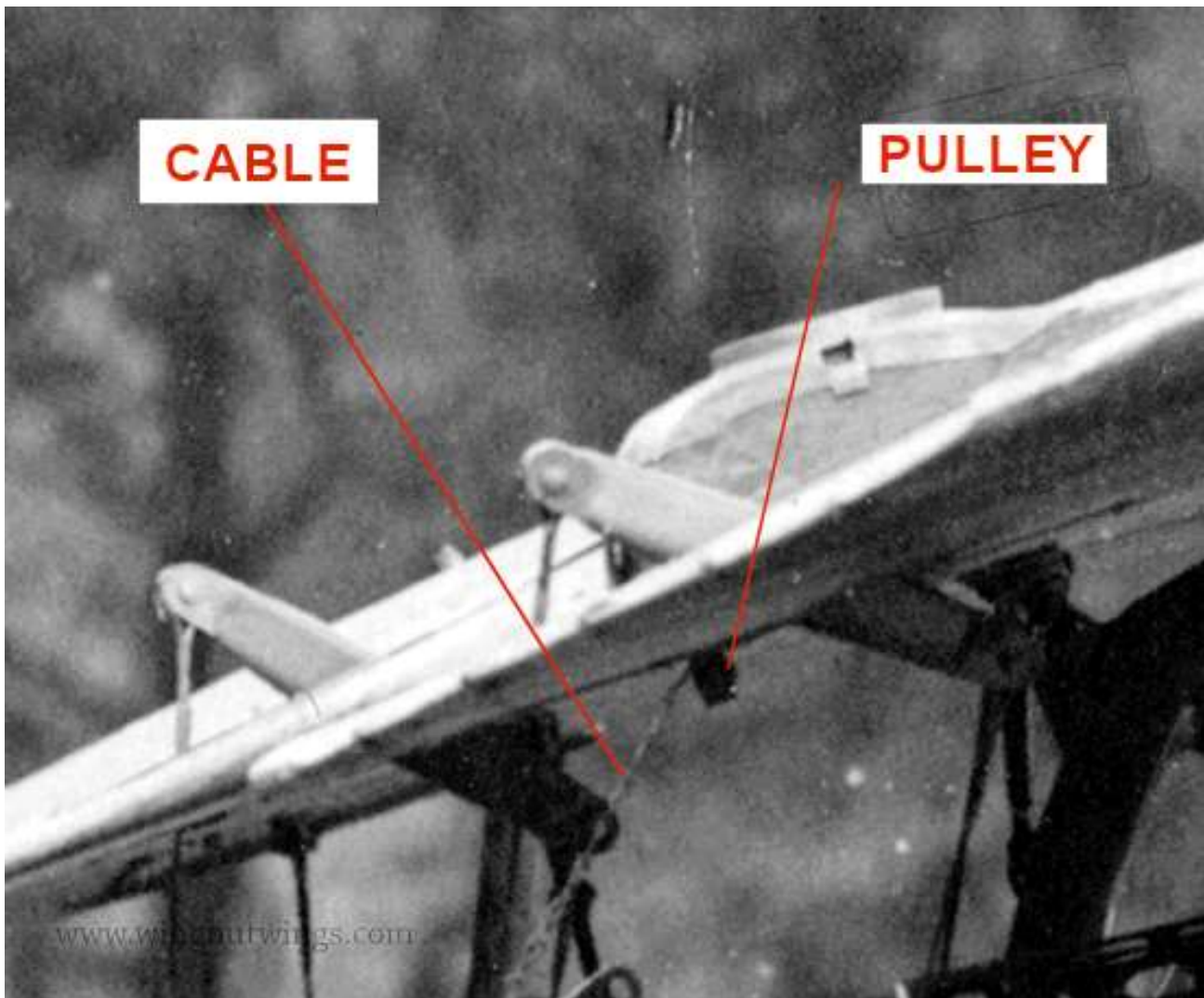
A single bracing wire was fitted at each side of the aircraft, between the top surface of the lower wings, outboard from the bottom of the rear interplane struts and the underside of the upper wing, at the trailing edge midway along the aileron. A turnbuckle was fitted at the lower wing end of the wires.

Two crossed bracing wires were fitted between the outer, top of the axle fairing, inboard from the bottom of the forward landing gear struts and underside of the fuselage, inboard from the top of the forward struts. Turnbuckles were fitted at the fuselage end of the wires.



Radiator cable:

An operating cable for the upper wing mounted radiator flaps was routed from the rear of the radiator down and through the right side of the cockpit fuselage front decking into the cockpit.



PART 7

ENGINE

PART 7 - ENGINE

NOTES:

The engine being fitted to this particular aircraft model is the Daimler-Mercedes D.III 160hp. Reference to the 'Wingnut Wings' instruction manual should be made throughout the build of the engine.

Refer to page 4 in the 'Wingnut Wings' instruction manual and build the engine, but do not fit the intake manifold assembly (E4, E22) to the engine yet.

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

Airbrush the engine and manifold assemblies with a gloss black, such as 'Tamiya' Gloss Black (X1) or similar.

Brush paint the following parts as stated or with similar coloured paint:

'Mr. Colour' Stainless Steel' (213) or similar - Engine Sump (E10), Engine Crankcase (E14), Magneto drive (E9), Propeller shaft (E13), Valve (E5), Carburettor body (on E4), Engine front cover (E7), Rear flange (E8), Camshaft tube (E6), Fuel pipe (F16).

'Mr. Colour' Brass (219) or similar - Speed selectors (E22), Coolant pipe joints to engine (E3), valve tappets on camshaft (E6), caps on front of Magnetos (E19 and E20), oil tank (F6).

'Mr. Colour' Copper (215) or similar - Bands around speed selectors (E22).

'Tamiya' Hull Red (XF9) or similar - Ignition lead support tubes (E11 and E15), Magneto front faces (E19 and E20), Handle on decompression lever (E12), coolant pipe (E3).

'Mr. Colour' Iron (212) or similar - Camshaft tappet covers (E6).

'Tamiya' Gloss Black (X1) or similar - Bands around coolant pipe (E3), end connectors on coolant pipe (F16).

Spark plugs:

Using the pre-moulded spark plug locations on both sides of each cylinder, drill holes of 0.5 mm diameter into each cylinder.

Cut twelve 5 mm lengths of blackened 0.5 mm diameter tube, such as 'Albion Alloy's' MBT05 or similar.

Insert a cut tube into each of the pre-drilled holes, leaving 3 mm protruding. If necessary secure in position using thin CA adhesive.

Into each tube, insert a length of 0.3 mm diameter wire, such as that from 'PlusModels' and secure in position using thin CA adhesive.

Loop each wire down and under the ignition support tubes.

Secure each wire to the support tubes using thin CA adhesive.

Cut twelve lengths of 0.3 mm diameter wire, such as that from 'PlusModels'.

Using CA adhesive, secure the wires to the six connector stubs on the face of the two magnetos.

Loop the wires up to the rear of the support tubes, trim their lengths accordingly and secure them together in position to the rear of the tubes, using thin CA adhesive.

Manifold: Fit the intake manifold assembly (E4, E22) to the engine.

Front oil pipe:

Drill a hole of 0.4 mm diameter into, but not through, the right side of the valve (E5) on the front of the engine camshaft.

Drill a hole of 0.5 mm diameter into the right side of the crankcase, below the flange joining the crankcase halves.

Anneal a length of 0.4 mm diameter copper wire.

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

Route the wire down and around the crankcase flange and into the pre-drilled hole in the crankcase.

Using thin CA adhesive, secure in position in the hole and to the crankcase.

Weathering

NOTE: Refer to Part 3 (Weathering) for more information. For this I used 'Flory Models' Dark Dirt clay wash.

Apply the 'Flory' Dark Dirt' clay wash over the engine crankcase and other areas of the engine that can be accessed once the wash has dried.

If desired, apply 'AK Interactive' engine oil (Ak2019) around the two filler pipes.

Decals:

NOTE: The decals to be applied are the data plates 55 and 56.

Apply the two decals to the engine crankcase.

NOTE: The following photographs show the replacement 'ReXx' exhaust pipe, which will be fitted later in this build.





PART 8

WEAPONS

PART 8 - WEAPONS

NOTES:

Both of the kit supplied machine guns are to be replaced with the 'GasPatch' Spandau 08/15 extended loading handle set.

Handle the 'GasPatch' parts with care as being resin, there can easily be broken.

Refer to page 53 (Part 10 - Fuselage) of this build log and **modify both weapons as detailed before painting the weapons.**

'GasPatch' weapon set - as supplied and before modification



Painting

Airbrush prime the weapon with a gloss black primer, such as 'Alclad' Black ALC-305-60, 'Tamiya' Gloss Black (X18) or similar.

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

Brush paint the ammunition ports on either side of the breech blocks with 'Mr. Colour' Bronze (215).

Using 'Tamiya' weathering master Set B (Soot), lightly sponge over the weapon to darken the finish, especially around the gun muzzle.



PART 9

PROPELLER

PART 9 - PROPELLER

For this build I chose to replace the kit supplied propeller with wood laminated, hand made 'Heine' propeller from 'Proper Plane' (32-003), which is supplied with resin propeller bosses. The propeller comes pre-varnished and has a smooth surface. The 'Heine' propeller has the same shape and profile as the 'Wotan' propeller supplied in the kit and the type fitted to this particular aircraft.

NOTE: *As the hub of the propeller will be inside the spinner, there is no need to use the supplied resin propeller bosses, as they won't be seen.*



If necessary, drill out the mounting hole in the propeller to fit the propeller shaft on the engine.

Apply the kit supplied 'Wotan' decals (59).

Seal the propeller using 'Alclad' Light Sheen lacquer (ALC-311) or similar semi-matte coat.

If desired, lightly sponge brush weathering to the leading edges and tips of the propeller using 'Tamiya' Weathering Master Set B (Soot).

Test fitting:

Remove the kit supplied propeller spinner (A38) and backing plate (A14) from the kit sprue and remove any residual sprue tags.

Carefully cut away the mounting boss on the kit supplied backing plate, as this is not required for the 'ProperPlane' supplied propeller.

Drill out the centre of the backing plate to fit onto the propeller shaft on the engine.

Test fit the propeller into the spinner and then add the backing plate to the rear of the spinner. Make sure the propeller is fully seated into the spinner and the backing plate fully fits into the rear of the spinner.



PART 10

FUSELAGE

PART 10 - FUSELAGE

NOTES:

The basic aircraft being built is the late version of the Roland D.VIa.

Reference to the 'Wingnut Wings' instruction manual should be made throughout the build of the fuselage.

General

Kit mould 'flash', rough or badly fitting joints and seams, moulding artifacts, such as surface blemishes - all need to be removed before any assembly is attempted.

Assembly:

NOTE: *During the following step **do not attached** the separate assemblies together. This will be done after they have been painted.*

Refer to pages 1, 2 and 3 in the 'Wingnut Wings' instruction manual and build:

Floor boards and frame assembly - A37, F8, A28, A1 and A5.

Control column assembly - A6, A2, A16.

Magazine assembly - A13 and A20.

Fuel tank assembly - A23, A24, A32 and A21.

Left side frame - A39.

Right side frame - A15.

Fabric bulkhead - A10 and A17.

NOTE: *This model build represents a late version Roland D.VIa, when the pilot wore a parachute. Therefore the seat without cushion is used. For earlier version of this aircraft, use parts A12 and A31.*

Seat assembly - A22 and A31.

Engine bay assembly - F3, F4, F10, F12 and F17.

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

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

Floor boards and frame assembly - A37, F8, A28, A1 and A5.

Fuel tank assembly - A23, A24, A32 and A21.

Left side frame - A39 and A9.

Right side frame - A3, A15 and A30.

Fabric bulkhead - A10 and A17.

Seat assembly - A22 and A31.

Inside surfaces of fuselage halves - D8 and D10.

NOTE: *Refer to the photograph on the following page for colour change locations.*

Mask off the Buff coloured surface on the inside surfaces of each fuselage half.

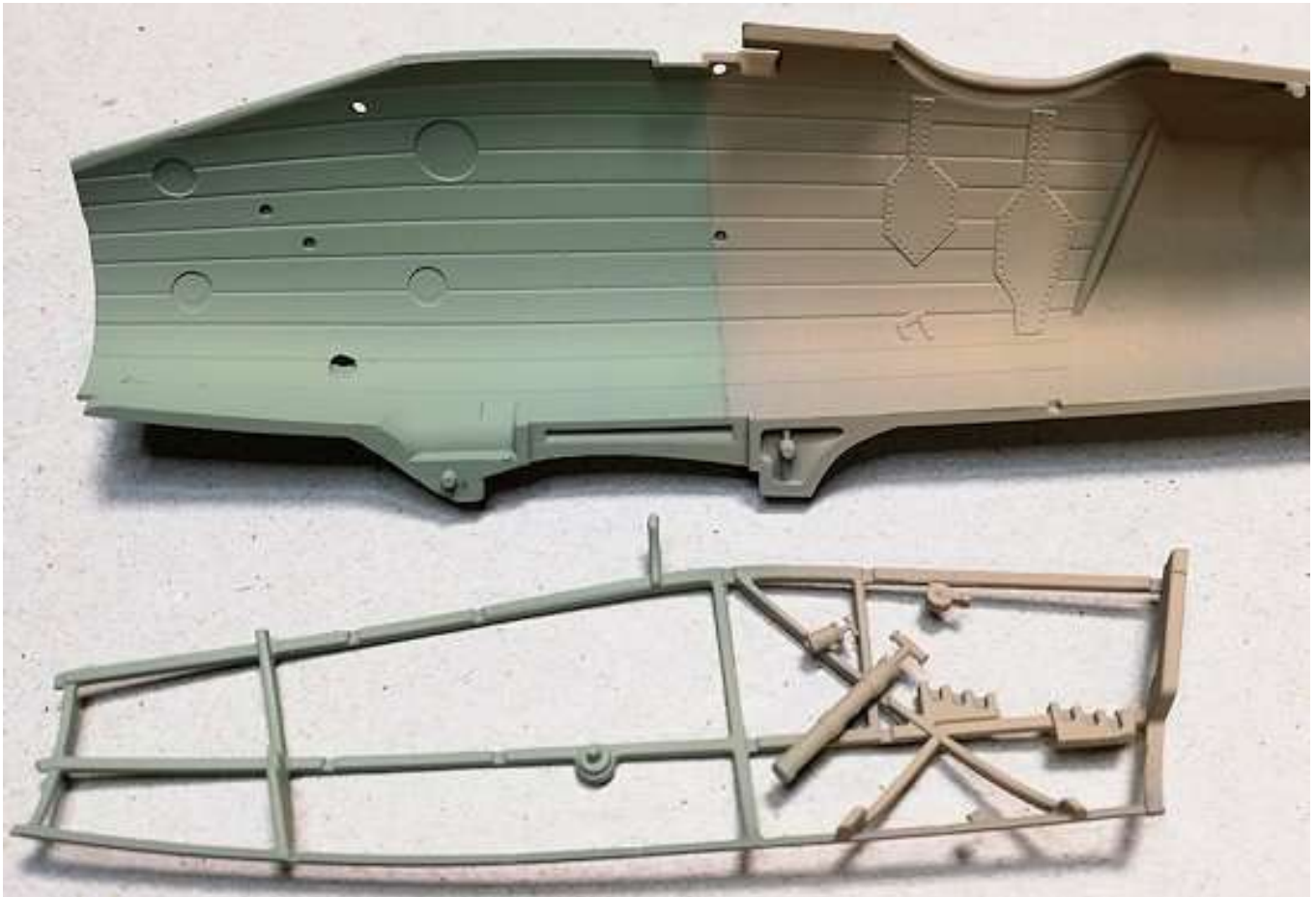
Airbrush the following with 'Tamiya' Grey Green (XF76) or similar:

Control column assembly - A6, A2, A16.

Fuel tank assembly - A23, A24, A32 and A21.

Forward section of left side frame - A39 and A9 and the right side frame - A3, A15 and A30.

Forward section of inside surfaces of fuselage halves - D8 and D10.



NOTE: *Make sure all mating surfaces are clear of primer and paint.*

Cement the control column assembly (A6, A2, A16) in position on the floor boards and frame assembly (A37, F8, A28, A1 and A5).

Cement the magazine assembly (A13 and A20) in position of the cockpit frame F8.

Cement the fuel tank and empty belt box assembly (A23, A24 and A21) in position on the forward face of cockpit frame F8 and the magazine assembly (A13 and A20).

Brush paint the following:

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

Hand pumps A3 and A30, filler caps on top of fuel tank A29, switch on frame F5.

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

Magazine assembly - A13 and A20 and empty belt box A21 (part of fuel tank assembly), support bands around hand pump A30, throttle lever A9.

'Tamiya' Rubber Black (XF85) or similar.

Support plate on rear bulkhead (A17), Magneto and winder A1 and A5, top of control column A2.

'Tamiya' Hull Red (XF9) or similar.

Handles and hand grips on throttle A9, hand pumps A3 and A30.

To prepare the surfaces for applying wood effects, airbrush a semi-matte clear coat all assemblies and the internal fuselage surfaces, using 'Alclad' Light Sheen (ALC-311), Tamiya' Semi-Gloss Clear (X35) or similar.

Flight control lines:

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

Rudder:

Pass one line through a blacked 0.4 mm diameter tube, such as 'Albion Alloy's' NST04 or similar.

Loop the line back and through the tube.

Move the tube up the lines to form a small loop, enough to slip onto and over the end of the installed rudder bar.

Secure the lines in the tube using thin CA adhesive.

Cut away the residual tag of line.

Pass the loop over one end of the rudder bar and along to the rearward facing stub.

Hold the line horizontal to the foot board and secure the line loop to the rudder bar using thin CA adhesive.

Repeat the procedure to add the rudder control line to the opposite side of the rudder bar.

Elevator:

Drill a hole of 0.3 mm diameter through the rear attachment points on the control column (above and below the foot boards).

Drill two holes of 0.5 mm diameter through the curved support frame, under the foot boards and rear of the control column. The holes should be either side of the bottom aileron operating lever and approximately 4 mm apart.

Pass one line through a blacked 0.4 mm diameter tube, such as 'Albion Alloy's' NST04 or similar, then through the pre-drilled hole in the control column, above the foot boards.

Slide a blacked 0.4 mm diameter tube onto the other end of the line.

Make sure the line is equal on both sides of the control column.

Slide the two tubes up to, but not touching, the control column and secure the tubes to the line using thin CA adhesive.

Pass one end of a line through a pre-drill hole in the lower support frame, then through the pre-drilled hole at the bottom of the control column, then through the opposite pre-drilled hole in the lower support frame.

Slide a blacked 0.4 mm diameter tube onto both ends of the line.

Slide the two tubes up to, but not touching, the rear face of the lower support frame and secure the tubes to the line using thin CA adhesive.

Ailerons:

Drill a hole of 0.3 mm diameter through the top and the bottom of the aileron operating lever. The holes should be drilled across the lever (as across the cockpit).

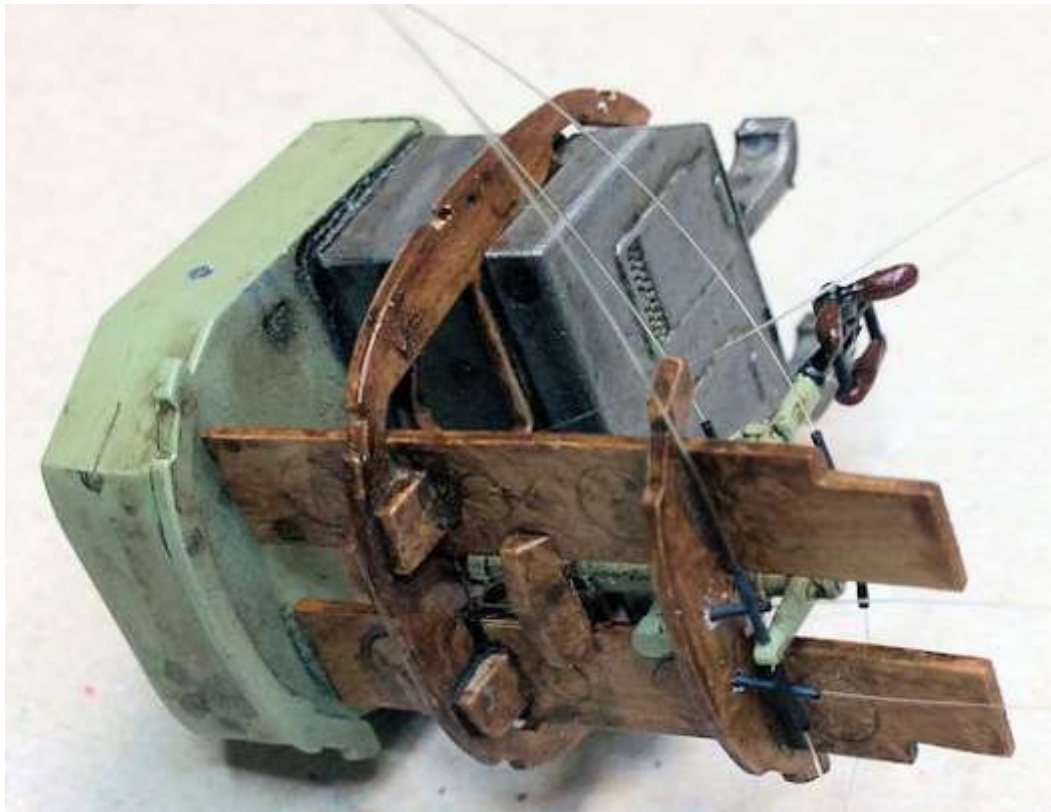
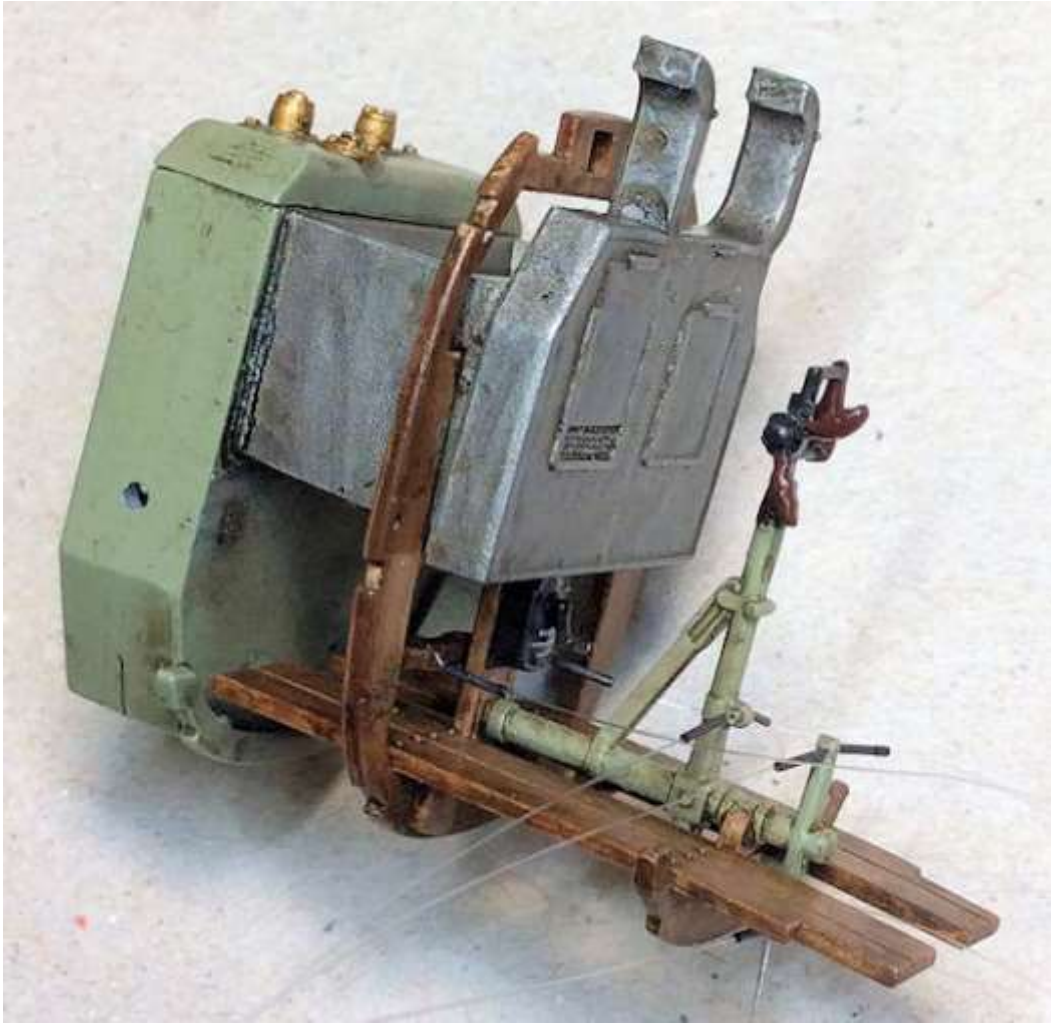
Pass a line through the pre-drilled hole at the top of the aileron operating lever.

Slide a blacked 0.4 mm diameter tube onto both ends of the line.

Slide the two tubes up to, but not touching, the aileron operating lever and secure the tubes to the line using thin CA adhesive.

Repeat the procedure to add the other aileron control line to the opposite end of the aileron control lever.

NOTE: *The rudder, elevator and ailerons control lines will be completed later in the build.*



Wood effect:

NOTE: Refer to Part 2 (Wood Effects) for more information. For this I used 'DecoArt Crafters Acrylic' Burnt Umber over the following to create the wood effect:

Inside surfaces of the fuselage halves, instrument panel frame, cockpit assembly foot boards, pilots seat, forward section (buff coloured) of the side frames and around the rear bulkhead edge/

Once the desired wood effect is achieved, seal the surfaces by airbrushing the treated parts with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC-311), Tamiya' Semi-Gloss Clear (X35) or similar.

Decals:

NOTE: The decals to be applied are the Magneto 72 - Instrument panel 71, 73, 74 and 75 and the rear bulkhead lower lozenge.

Prepare the following surfaces for decal application by airbrushing a gloss clear coat, such as 'Alclad' Aqua Gloss (600), Tamiya' Gloss Clear (X22) or similar.

Instrument panel, magneto and the forward face of the rear bulkhead.

Apply the kit supplied decals to the instrument panel and the magneto.

Using the kit supplied lower lozenge, cut out the shape of the 'fabric' forward face of the rear bulkhead and apply the decal. If necessary, use 'MicroSol' solution to conform the decal around the openings around the frame.

Once applied and set, seal the decals by airbrushing a light semi-matte clear coat, using 'Alclad' Light Sheen (ALC-311), Tamiya' Semi-Gloss Clear (X35) or similar.

Weathering:

NOTE: Refer to Part 3 (Weathering) for more information. For this I used 'Flory Models' Dark Dirt clay wash.

Apply the 'Flory' Dark Dirt' clay wash over all cockpit assemblies and parts, including the internal surfaces of the fuselage halves.

Once the desired weathered effect is achieved, seal the surfaces by airbrushing the treated parts with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC-311), Tamiya' Semi-Gloss Clear (X35) or similar.



Assembly (cont'd):

NOTE: Refer to pages 2 and 3 in the 'Wingnut Wings' instruction manual and build the cockpit and frame structure.

Make sure all mating surfaces for the various parts are clear of primer and paint.

Build the cockpit assembly, including the frames and engine bearer assemblies.

Attach the throttle A9 and hand pumps A3 and A30.

NOTE: To locate the cockpit assembly onto the right fuselage half, the assembly needs to be located from the fuselage front so that the ammunition feed chute can be positioned into the slot at the top of the fuselage half.

Test fit the cockpit assembly into the closed fuselage halves. Make sure the assembly is located correctly on the two stubs on the outer edge of the two side frames and the rear is against the ledges in the fuselage halves. Also, make sure the ammunition feed chute is able to fit into the slot at the top of the right fuselage half.

If there is a gap anywhere along the joint between the fuselage halves, ascertain where the cockpit structure is preventing the fuselage halves from mating correctly and rectify the obstruction. Usually, this can be achieved by carefully sanding the outer edges of the cockpit structure to remove the offending obstructions.

Control wires:

NOTE: When securing the control lines, make sure they are arranged such that they don't push on and deflect each other.

Pass the end of the two rudder control lines rearwards and through the top two holes in the rigging plate behind the rear bulkhead.

Hold the lines taut and secure them to the rear of the rigging plate, using CA adhesive.

Repeat the procedure for the top two elevator control lines on the control column, but use the two middle holes in the rigging plate.

Repeat the procedure for the bottom two elevator control lines on the control column, but use the two bottom holes in the rigging plate.

Drill a hole of 0.3 mm diameter through the bottom of the aileron pulleys located on the bottom side frame member.

Pass the top and bottom aileron control wires across and through the pre-drilled hole in their respective pulley.

Hold the wires taut at the pulley and secure in position using CA adhesive.

Assembly (cont'd):

Cement the pilot's seat in position.

NOTE: Refer to page 6 in the 'Wingnut Wings' instruction manual to add the engine, pilot's seat harness, oil tank and closing up the fuselage.

Seat belts:

NOTES:

The pilot's seat harness is attached to the back of the rear bulkhead (A10).

Cut away the seat harness from the kit supplied photo-etch sheet.

Remove any sheet attachment tags from the parts.

NOTE: *During the next step, avoid applying too much heat, especially at the end fitting. Too much heat will melt the photo-etch parts.*

Anneal the parts over a heat source, such as a cigarette lighter to soften the photo-etch parts.

Pass the two shoulder straps through the upper openings in the rear bulkhead and carefully bend the straps over the seat to the desired positions.

Pass the two laps straps through the lower openings in the rear bulkhead and carefully bend the straps over the seat to the desired positions.

Carefully remove the straps taking care not to deform the shape of the straps.

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

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

Brush paint the buckles and end fittings with 'Mr. Colour' Iron (212) or similar.

Carefully refit the straps in their intended positions on the pilot's seat.

Secure the ends of the four straps to the back of the rear bulkhead using CA adhesive.

Secure the straps to the pilot's seat using CA adhesive.

If desired, refer to Part 3 (Weathering) and apply 'Flory Models' pigment (Medium Earth) or similar over the harness to give a weather look.

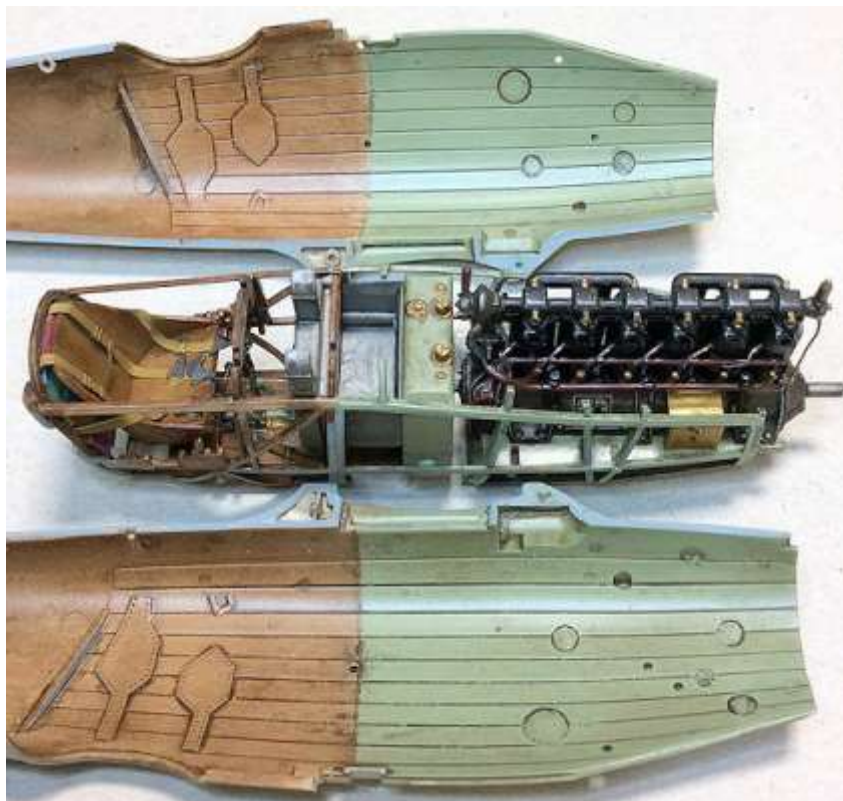
Assembly (cont'd):

Cement the built engine in position on its for location slots on the engine bearers.

Cement the oil tank F6 in position in its location slots on the right side engine bearer.

If desired, add some 'AK Interactive' Oil wash (AK2019) at the filler on the oil tank.

NOTE: *Don't fit the pipe F16 to the engine yet as it may get damaged during handling. This pipe will be fitted later in this build.*



Apply cement to the inside of the right fuselage half, at the side frame location holes and down the rear bulkhead location protrusion.

Locate the cockpit assembly onto the fuselage half.

Apply cement to the inside of the left fuselage half, at the side frame location holes, down the rear bulkhead location protrusion and at the fuselage location holes around the edge.

NOTE: *When initially joining the fuselage halves, do not apply cement all around the seam joint. This will be done after the initial application of cement has set.*

Join the two fuselage halves together, making sure the cockpit assembly is located correctly.

If necessary, use elastic bands around the fuselage and self-gripping clamps on the lower wing fairing on the underside of the fuselage. These will hold the assembly together until the initially applied cement has set.

Once the cement has set, remove any elastic bands or clamps and apply cement along the fuselage seam joint, the fin and tailskid joints and the front of the engine bearer frame to fuselage joint.

NOTE:

'Wingnut Wings' instruction manual, Page 6, Item C - The removal of the access hatch (Kissenberth's aircraft) is not required for this build. Refer to page 8 in the 'Wingnut Wings' instruction manual (there is not a page 7 in the manual).

Airbrush the underside of the forward decking panel D16 with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Airbrush the underside of the forward decking panel D16 with 'Tamiya' Grey Green (XF76) or similar.

Cement the forward decking panel to the fuselage.

NOTE: *Certain parts should not be fitted as the fuselage is to be covered with wood decals, not painted. Also both of the kit supplied machine guns are to be replaced with 'GasPatch' version of better quality.*

At this stage of the build, do not fit the tachometer (A4), fuel gauge (A7) windscreen (C1), ammunition chutes (A33 and A36) or any of the kit supplied machine guns and their parts.



Machine guns:

NOTES:

Both of the kit supplied machine guns are to be replaced with the 'GasPatch' Spandau 08/15 extended loading handle set.

The kit supplied parts D12, D13, D7, D14 and the photo-etch parts P3 and P4 can be discarded for this build, as can the 'GasPatch' ammunition belts (won't be seen) and the padding blocks for the end of the breeches (not required).

Handle the 'GasPatch' parts with care as being resin, there can easily be broken.

Prepare the kit supplied empty ammunition belt ejection chutes A33 (right gun) and A36 (left gun).

Right machine gun:

Insert the barrel through the hole in the front of the cooling jacket and secure in position using thin CA adhesive.

Remove the detail under the front of the breech block, as indicated in the following photograph. This is required to be able to fit the weapon into the right slot in the fuselage front decking panel.

Test fit the weapon, making sure the ammunition slot on the right side aligns with the ammunition feed chute in the fuselage. Also that the weapon is not tilted to one side or the other and lays horizontal to the fuselage.

With the weapon in position, test fit the empty ammunition belt ejection chute (A33) and make sure it aligns with the ammunition exit port on the left side of the breech block.

Left machine gun:

Insert the barrel through the hole in the front of the cooling jacket and secure in position using thin CA adhesive.

Remove the detail under the front and on the right side of the breech block, as indicated in the following photograph. This is required to be able to fit the weapon into the right slot in the fuselage front decking panel.

Test fit the weapon, making sure the ammunition slot on the right side aligns with the ammunition feed chute in the fuselage. Also that the weapon is not tilted to one side or the other and lays horizontal to the fuselage.

With the weapon in position, test fit the empty ammunition belt ejection chute (A36) and make sure it aligns with the ammunition exit port on the left side of the breech block.

Refer back to Part 8 (Weapons) of this build log for the painting of the modified weapons.



Wood effect decals:

NOTE: *The wood effect decals to be applied are from the 'ProperPlane' wood effect decal set (PDW-501230). These decals are translucent so a base colour needs to be applied to the model surface before the decals are applied. It is important that the surface of the applied paint is smooth, free of surface imperfections and has a gloss surface.*

Carefully sand along the fuselage seam joints to remove any extruded cement and to blend the joint with the surrounding fuselage surfaces.

Make sure the surface of the fuselage is free of surface imperfections. If necessary, lightly sand away any imperfections, taking care not to sand over raised details, such as access panel etc.

Mask or cover the engine bay area and cockpit. Block off any other openings, such as the lower wing location slot, gun slots in the forward decking panel and all openings in the fuselage, using 'UHU white tack, kitchen food wrap and the ends of wooden tooth picks.

Airbrush the entire external surface of the fuselage with a white primer, such as 'AK Interactive' White (AK-759) or similar. This colour helps lighten the subsequent base coat.

Airbrush the entire external surface of the fuselage with 'Tamiya' Desert Yellow (XL59) or similar. I thinned the 'Tamiya' acrylic paint with 'Mr. Colour' self-levelling thinners 400, which improves the surface finish and dries quickly.



Make sure the surface of the fuselage is free of surface imperfections. If necessary, lightly sand away any imperfections, taking care not to sand over raised details, such as access panel etc.

Airbrush the entire external surface of the fuselage with a gloss clear coat, such as 'Alclad' Aqua Gloss 600, 'Tamiya' Clear Gloss (X22) or similar. If necessary, apply a second light coat to achieve a good gloss finish.

Remove all masking from the fuselage.



NOTE: The wood effect decals supplied by 'ProperPlane' are not 'cookie' cut and therefore need to cut out from their backing sheets.



Carefully cut out the four decals for the upper and lower sides of the fuselage from their backing sheet.

NOTE: On a relatively flat fuselage these decals would not be a problem. However, this model's fuselage has a lot of raised surface detail, such as access hatches, metal fittings and protruding pulleys near the tail unit. The decals, not being 'cookie' cut, have no transparent areas for the raised details, so they can't be cut out before applying the decal. Also the decals really need to be laid as single pieces, as to cut them into more manageable sections would mean aligning them correctly on the model. If not aligned correctly any overlap of decal will show darker. Therefore, when applying the decals, any raised detail will cause the decal to remain clear of the model surface, causing the water and air to be trapped underneath. Both need to be removed to conform the decal to the surface, otherwise any creases left in the applied decal will show as darker lines.

Lower right decal:

Soak the decal in warm water for approximately 15 seconds then remove and place on a non-porous surface, such as acetate sheet or similar. I started with the right fuselage, lower decal.

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

Slide the decal onto the rear of the fuselage then hold in place and remove the backing sheet, guiding the decal along the fuselage. The following illustration from 'ProperPlane' shows where to apply the decal. **Make sure the decal is applied exactly according to the illustration.**



NOTE: *Some of the decal applied decal may overlap its intended finishing edge, due to minor differences in the model build and decal stretch during application.*

Align the top edge of the decal accurately along the top of the wood plank as shown above.

NOTE: *In the following step, cutting across the decal is alright as the decal over raised detail on the unpainted wood fuselage will be removed and the detail painted later in this build*

Carefully cut across the decal where it is being held clear by raised detail on the fuselage.

Using a broad, soft brush and cotton buds, carefully brush and roll out the water from under the decal, making sure it remains in position.

Roll and press a cotton bud over and onto raised detail to force the decal down onto the model surface and to remove trapped air and water.

To fully conform the decal onto the model, I wear lint free cotton gloves and use finger pressure to finally remove any residual air and water and to smooth out the decal.

Before the decal sets and if necessary, use a sharp, curved blade to gently cut along areas where the decal is not required, such as at the top of the tail skid, lower wing root fairing and along the bottom fuselage seam joint (as shown above). These areas will be covered separately.

Once the decal is applied, use a decal solvent, such as 'MicroSet' MicroSol, across the applied decal and leave it to dry and conform the decal to the model. If you find areas of the decal that are difficult to conform, you can use 'Tamiya' X20A acrylic thinners, which although having a much stronger reaction, should conform the decal.

Once dry and set, check the decal for any small air bubbles trapped under the decal. If found, prick the bubble with a needle or similar then apply more solvent to remove the bubble and adhere the decal to the model surface. Also carefully cut away any overhang of decal, as may be found around the cockpit, tailplane slot and front of the fuselage. Always cut away from the applied decal, not towards it, otherwise you may lift and damage the decal.

Upper right decal:

Follow the same procedure to apply the fuselage upper right decal, making sure the joining edges of the two decals do not overlap at the side of the fuselage and the top edge of the decal aligns with the top fuselage join seam.

Before the decal sets and if necessary, use a sharp, curved blade to gently cut along areas where the decal is not required, such as at the base of the fin and along the top fuselage seam joint (as shown below). These areas will be covered separately.



NOTE: If you find that after the decal has set there is still overlapping decal, such as along the fuselage seam joint, this can be remedied as follows:

De-tack a strip of masking tape on the back of your hand then apply it onto the required decal along the edge of the fuselage join seam.

Airbrush along the exposed decal with the base colour, in this case 'Tamiya' Desert Yellow (XL59) or similar. I thinned the 'Tamiya' acrylic paint with 'Mr. Colour' self-levelling thinners 400.

Carefully remove the masking tape.

Airbrush the re-painted area with previously used gloss clear coat, such as 'Alclad' Aqua Gloss 600, 'Tamiya' Clear Gloss (X22) or similar.

Upper left decal:

Follow the same procedure as before to apply the upper left fuselage decal, making sure the top edge of the decal is against, but not overlapping, the opposite decal. Also that the bottom edge of the decal is aligned correctly to the fuselage planking (shown as the grey area on page 56).

Lower left decal:

Follow the same procedure as before to apply the lower left fuselage decal, making sure the top edge of the decal is against, but not overlapping, the opposite decal on the side of the fuselage. Also that the bottom edge of the decal is aligned correctly to the opposite decal along the fuselage join seam (as show for the left side above).

Fin, tail skid/lower wing fairing and cockpit front decking panel:

NOTE:

The decals required to cover the fin, tail skid/lower wing fairings and the cockpit front decking panel need to be cut to the correct shape from the separate decal sheet supplied. The best option is to cut paper templates.

Cut out paper templates to fit these areas, making sure that they wrap half way around any leading and trailing edges.

Trace the outline of each template onto the back of the supplied decal sheet, making sure you have the template correctly orientated, otherwise you will cut a reversed decal.

NOTE: *The front of the lower wing fairing has a pre-moulded curved access panel, which does not need decal covering as it will be painted later in this build.*

Accurately cut out each decal. The lower wing fairing is best cut as separate sides.

Apply the decals to their respective areas, making sure there is no decal overlap at the joins, otherwise the overlap will show much darker due to double thickness decal. Any overlap of decal can be cut along with a sharp curved scalpel blade and then removed before the decal sets.



Fuselage decals applied to model



Fuselage 'scarf' joints:

NOTE:

The separate wood strips covering the fuselage were nailed to the fuselage internal frames and were joined at their ends with 'scarf' joints. These are represented on the separate decal sheet and are of different wood tones for variation.

The only surviving Roland fighter of this type is a D.VIb, which is similar in construction to the D.VIa. It's difficult to ascertain where the 'scarf' joints are located along the separate wood strips, but the following photographs taken at the time seem to show that the 'scarf' joints were located at three locations along each run and in alternate runs and with other random joints.

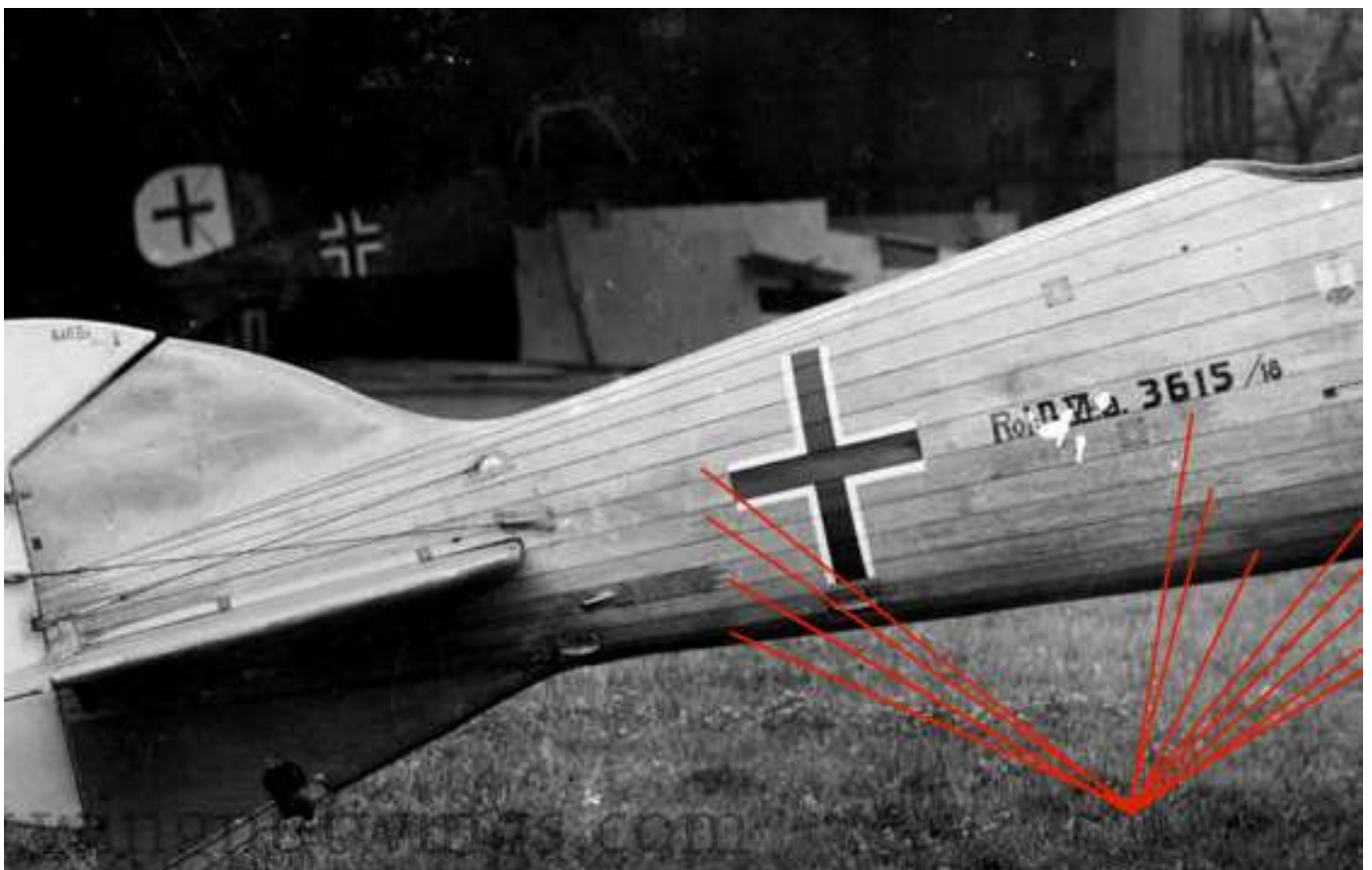


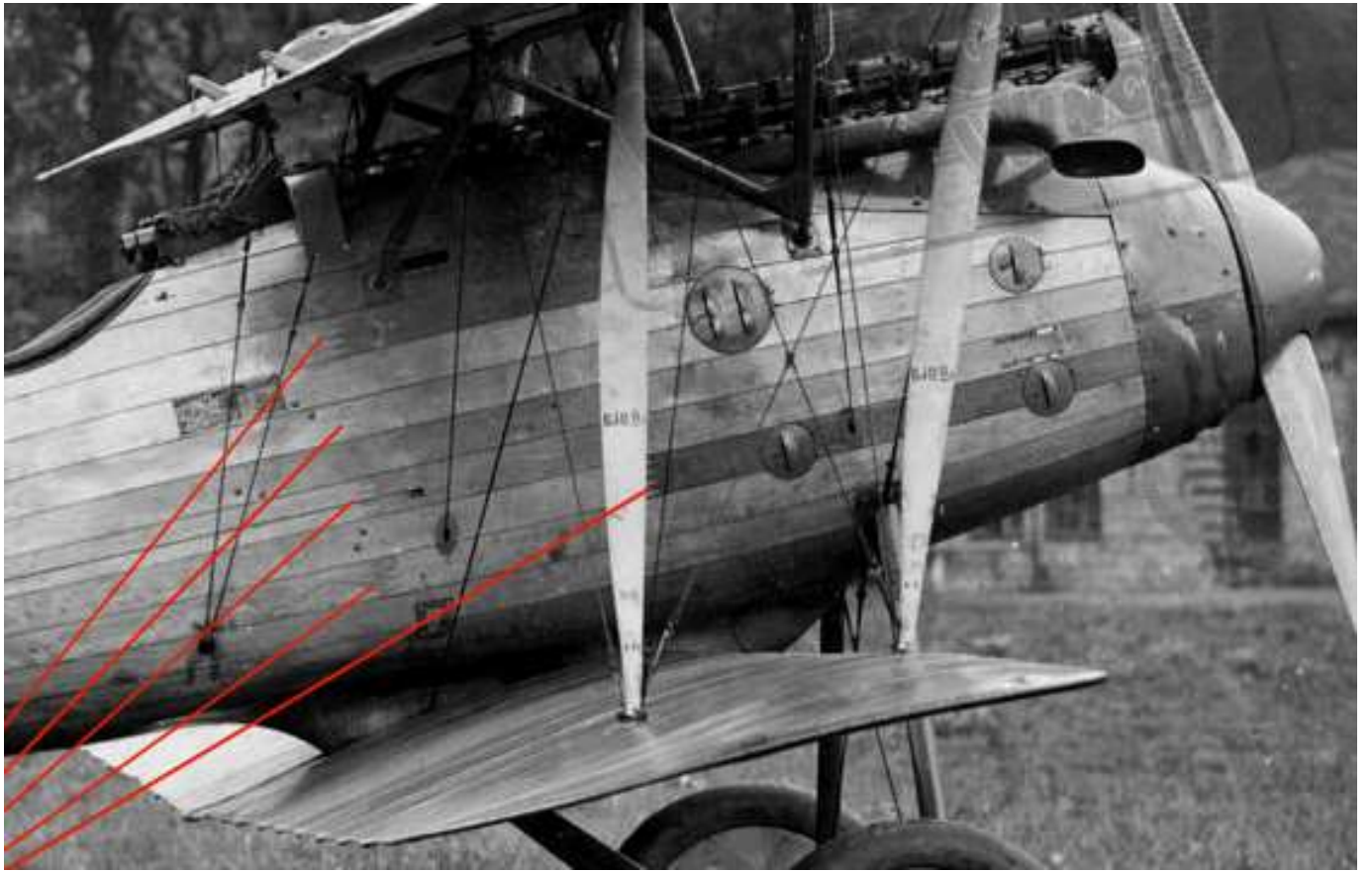
Select the type (colour tone) of the strips you will apply. You may want to test several types before you decide which type to use.

NOTE: *The plywood strips along the fuselage are wider towards the front of the fuselage and taper thinner towards the rear of the fuselage. Therefore each strip must be cut tapered to the correct width to match its location on the fuselage.*

Cut the strips to the same width as the fuselage strips you are applying them to.

Select the position for each decal and apply them around the decal covered fuselage. I chose to locate them in three position along the fuselage and on alternate fuselage wood strips. Also I added random joints.







Fuselage decals applied to model



Remaining fuselage decals:

NOTE: *At this stage it's best to apply the remaining decals to the fuselage as they can then be sealed to protect them.*

The decals are:

Fin (65), Lifting point (49), Datum line (64), Data plate (54), the fuselage cross (17) Serial No (16), Roland logo (62), Data marking (52), Access panels (53) and fin (65).

Apply the decals following the illustration for 'Common Stencil Details' on page 23 of the 'Wingnut Wings' instruction manual and the remainder on page 21.

Painting:

Brush paint the cockpit surround padding and rear padding on the decking panel with 'Humbrol' Leather (62), highlighted with 'Tamiya' Hull Red (XF69).

Brush paint the fuselage metal fittings, rudder hinges and the ammunition empty belt chutes with 'Tamiya' Grey Green (XF76).

Brush paint the fuselage tail skid with 'Tamiya' Wooden Deck Tan (XF78).

Brush paint the bungee suspension cords with 'Tamiya' Deck Tan (XF55).

Brush paint the fuselage ammunition feed chutes, rudder rear pulleys and tail skid shoe with 'Mr. Colour' Stainless Steel (213).

Apply a gloss coat to the circular access panel in the top of the cockpit forward decking panel with 'Tamiya' Clear Gloss (X22).

Apply kit decal 50 to the decking access panel.

Tachometer and fuel gauge:

Brush paint the Tachometer (A4) with 'Tamiya' Semi-Gloss Black (X18).

Brush paint the Fuel Gauge with 'Mr. Colour' Stainless Steel (213).

Apply a gloss coat to the faces of the Tachometer and the Fuel gauge with 'Tamiya' Clear Gloss (X22).

Apply kit decal 70 to the Tachometer and decal 69 to the Fuel gauge.

Cement the two gauges into their locations in the cockpit forward decking panel.

Machine guns:

Secure each of the two machine guns into their locations in the cockpit forward decking panel, using CA adhesive. Make sure the correct modified weapon is fitted into the correct location (refer to Part 8 Weapons for the correct left and right modified weapon).

Cement the two ammunition empty belt chutes into their location on the left of the breech blocks. Make sure the correct chute is located in the correct position.

Windscreen:

NOTE: *The windscreen will be fitted towards the end of this build.*

Sealing:

Airbrush a sealing coat of 'Alclad' Light Sheen (ALC-311) or 'Tamiya' Semi-Matt (XF35) over the fuselage. This provides a good surface for the application of weathering to the fuselage.



Weathering:

NOTE:

Refer to Part 3 (Weathering) of this build log for information on weathering.

For this model I applied 'Flory Models' Dark Dirt clay wash to weather the fuselage, which was allowed to dry then removed with a very slightly moist kitchen paper towel and brush.

Once the desired effect is achieved, airbrush a light sealing coat of 'Alclad' Light Sheen (ALC-311) or 'Tamiya' Semi-Matt (XF35) over the fuselage to seal the applied weathering.

Instrument faces:

Brush 'Tamiya' Clear Gloss (X22) onto the faces of the Tachometer and the Fuel gauge to represent the glass faces.



Fuselage rigging points:

NOTE: At this stage of the build it's best to prepare the various rigging point on the fuselage. All of the rigging points are pre-moulded into the sides of the fuselage, except the rear flying wire point at the bottom, rear of the lower wing fairing, the access hole for the radiator control cable in the cockpit front decking panel and the landing gear cross bracing.



Temporarily fit the lower wing into the support fairing on the bottom of the fuselage. If necessary, scrape or file the edges of the lower wings to avoid damaging the applied wood effect decals on the fairing.

Point mark the rear flying wire anchor point into the sides of the fairing, just above the top surface of the lower wing where the rear struts of the landing gear will locate.

Using the point mark as a guide, drill a hole of 0.5 mm diameter through both sides of the lower wing fairing.



Drill a hole of 0.3 mm diameter through the right side of the cockpit front decking panel, just to the right of the right machine gun. The hole should be drilled at an angle down towards the pilot's seat. This will allow the fitting of the radiator shutters control cable.

Drill a hole of 0.3 mm diameter through both sides of the underside of the fuselage, inboard and to the rear of the landing gear cross strap (for landing gear bracing wires).



Refer to the previous illustration (page 63) and drill holes of 0.3 mm diameter through the sides of the fuselage for the remaining rigging points.

PART 11

CONSTRUCTION

PART 11 - CONSTRUCTION

Flight surfaces - preparation:

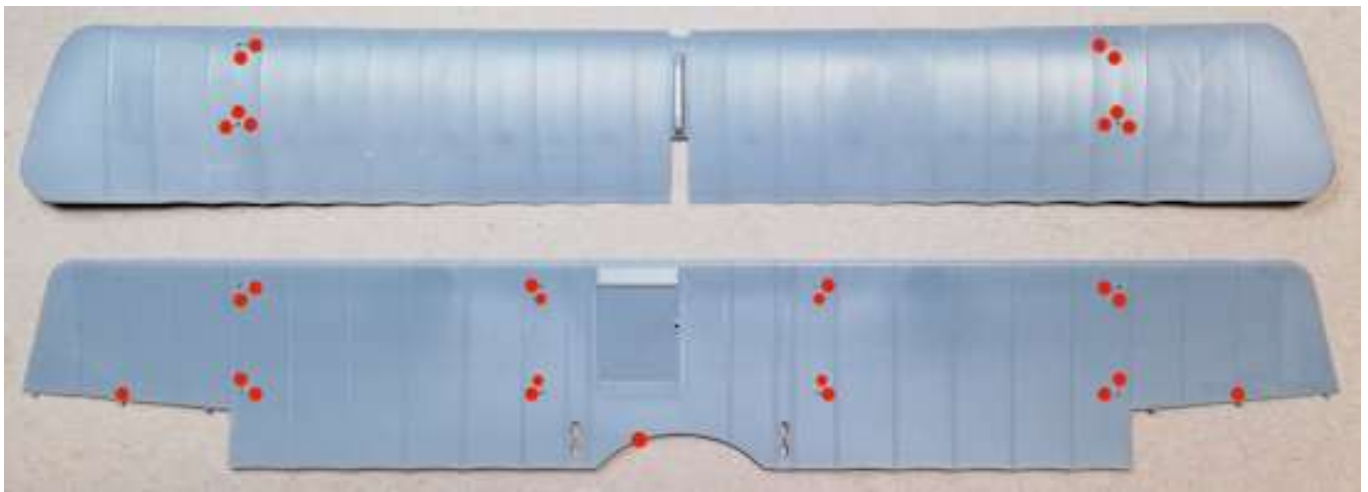
Remove the upper and lower wings, ailerons, rudder, tail plane and elevators from their kit sprues and remove any sprue tags from around the edges.

Remove the rudder control horn (A19) and elevator control horns (D15) from their kit sprues and remove any sprue tags from around the edges.

Drill a hole of 0.3 mm diameter through both ends of the rudder and elevator control horns (for rigging wires).

Cement the rudder and elevator control horns into their locations on the rudder and elevators.

Refer to the following photograph and drill holes of 0.3 mm diameter into, but not through, the underside of the upper wing and the top surface of the lower wing. Note the hole for the radiator shutter operating cable in the trailing edge of the centre section in the upper wing (drill vertically into the 'stub').



Pre-decal painting:

NOTE: The 'Aviatic' decals to be applied (ATT32120) are translucent and the colour of the surface underneath the applied decal will show through. Therefore pre-shading can be painted before the decals are applied. Also these type of decal are best applied to a light coloured surface, such as white, light grey or buff colours.

Make sure the surfaces of the upper and lower wings, ailerons, rudder, tail plane and elevators are smooth and free of any surface imperfections.

Airbrush the upper and lower wings, ailerons, rudder, tail plane and elevators with a white primer, such as 'AK Interactive' White (AK-759) or similar.

Airbrush 'Tamiya' Smoke (X19) thinned with 'Mr. Colour Self-Levelling thinners 400 along the wing ribs on the upper and lower wings and tail plane. Also around the leading and trailing edges of the wings, ailerons, tail plane and the elevators.

Check that the surfaces of the upper and lower wings, ailerons, tail plane and elevators are smooth and free of any surface imperfections. If necessary polish the surfaces to remove any surface roughness or imperfections.

Airbrush the wings, ailerons, tail plane and elevators with a clear gloss, such as 'Alclad' Aqua Gloss 600 or similar.



Decals:

NOTE: Refer to Part 4 (Decals) of this build log for more information. The decals to be applied are from the 'Aviatic' linen effect Lozenge four colour decal set (ATT32120). These decals are supplied in two sheets and cover the decals for the D.VIa and the D.VIb aircraft. Also the decals are supplied with or without the lozenge edging tapes. Therefore not all of the decals are required.

The photograph below shows decals with lozenge edging tapes, marked with a red disc. **These are the decals that will be applied for this D.VIa aircraft model.**



Cut out each of the required decals as close as possible to their outline.

The four decals for the elevators need to be positioned on the elevators and cut to fit around the already fitted control horns.

NOTES:

- 1. The two ailerons for the upper wing have 'wash out' (an upward turn) pre-moulded at the outer ends. When fitted, the 'wash out' of the ailerons must be upwards. **Therefore make sure the lozenge decals are applied to the correct faces of the ailerons.***
- 2. When applying the decals to the upper wing, **apply the centre section decals first**, followed by the outer sections.*
- 3. If any decal proves difficult to conform around curves, apply a decal solution, such as 'MicroScale' MicroSol to soften and conform the decal. Particularly stubborn decal can, if necessary, 'Tamiya' X20A thinners can be applied **sparingly** to conform the decal. Whichever solution is used, **do not touch the decal while it is setting**, as this will cause the decal to be damaged.*
- 4. Some of the surfaces have raised detail and location holes. These will trap air and water under the decal when it is applied. Use a needle or similar to prick through the decal around raised detail and into location holes. This will allow the trapped air and water to be removed and also allow decal setting solutions to get under the decal to conform it to the surface.*
- 5. Any large 'over hang' of a decal should be gently sand away, sanding away from the decal, not towards it. This should be done only after the decal has fully dried and set.*

Refer to Part 4 (Decals) of this build log and apply the decals to their correct surfaces. The dark lozenge decals are for the upper surfaces, the light lozenge decals are for the undersides.

Once all of the 'Aviatic' lozenge decals have been applied and are fully set, the kit supplied decals for these parts can be added.

Refer to the decal illustrations on pages 21 and 23 of the kit instruction manual for decal locations and apply the following kit decals:

- 1, 2, 4, 5, 15, 44 (x 2), 68a and 68b - top surface of upper wing
- 7 (x 2) -underside of lower wing
- 15 (x 2) - top surface of lower wing

Once fully dry and set, apply 'Tamiya' Clear Gloss (X22) onto decals 68a and 68b.



Parts preparation:

Remove the following parts from their kit sprues:

Rear interplane struts D6 (x 2) Front interplane struts D5 (x2).
Cabane 'N' struts left A26 and right A25.
Landing gear struts left A34 and right A35.
Wheel D9 (x 2) and outer covers D11 (x 2).
Propeller spinner A38 and back plate A14.
Engine side cowls left F9 and right F11 and fuselage front cowl F7.
Pipes F16 and F13.

Remove any residual sprue tags from the edges of the parts.

Refer to Part 9 (Propeller) of this build log for test fitting the propeller into the spinner with the added backplate.

Airbrush the parts (except for the wheel outer covers) with a grey primer, such as 'AK Interactive' Grey (AK-758) or similar.

Airbrush the inner surfaces only of the propeller spinner, the two engine side cowls and the fuselage front cowl and pipe F13 with 'Alclad' Duraluminium (ALC-120) or similar.

Airbrush or brush paint the following with 'Tamiya' Grey Green (XF76) or similar:

Landing gear struts left A34 and right A35.
Propeller spinner A38 (**outer surface only**).
Engine side cowls left F9 and right F11 (**outer surfaces only**).
Fuselage front cowl F7 (**outer surface only**).
Centre panelling on underside of lower wing.
Upper wing aileron hinges, tailplane elevator hinges, rudder hinges and compass housing.
Rudder and elevator control horns.

Airbrush the following with 'Tamiya' Light Grey (XF80) or similar:

Rear interplane struts D6 (x 2) Front interplane struts D5 (x2).
Cabane 'N' struts left A26 and right A25.

Brush paint 'Tamiya' Semi-Gloss Black (X18) or similar:

The axle restraining cables at the bottom of the landing gear struts.
The exposed axle at each end of the axle fairing.

Brush paint 'Tamiya' Buff (XF57) or similar:

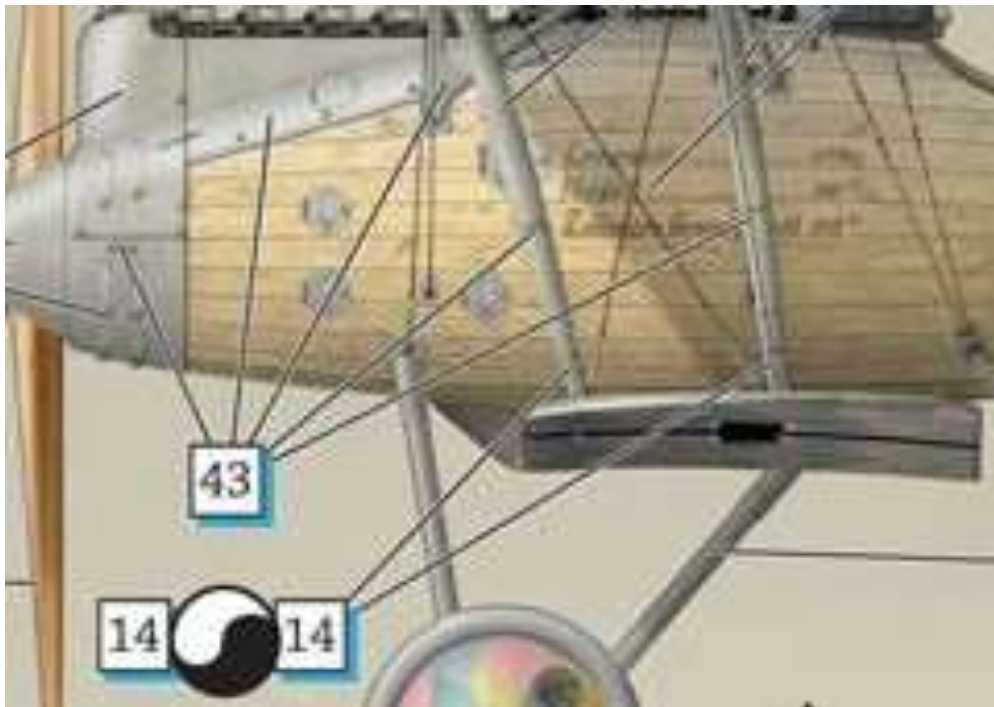
Bungee cord suspension at the axle outlet on each landing gear strut.

Required decals:

Airbrush a gloss clear coat, such as 'Alclad' Aqua Gloss 600, 'Tamiya' Clear Gloss (X22) or similar, over the front cowl, two side cowls, the front and rear interplane struts and left and right fuselage cabane 'N' struts. If necessary, apply a second light coat to achieve a good gloss finish.

Refer to the decal illustration on page 23 of the kit instruction manual for decal locations and apply the following kit decals:

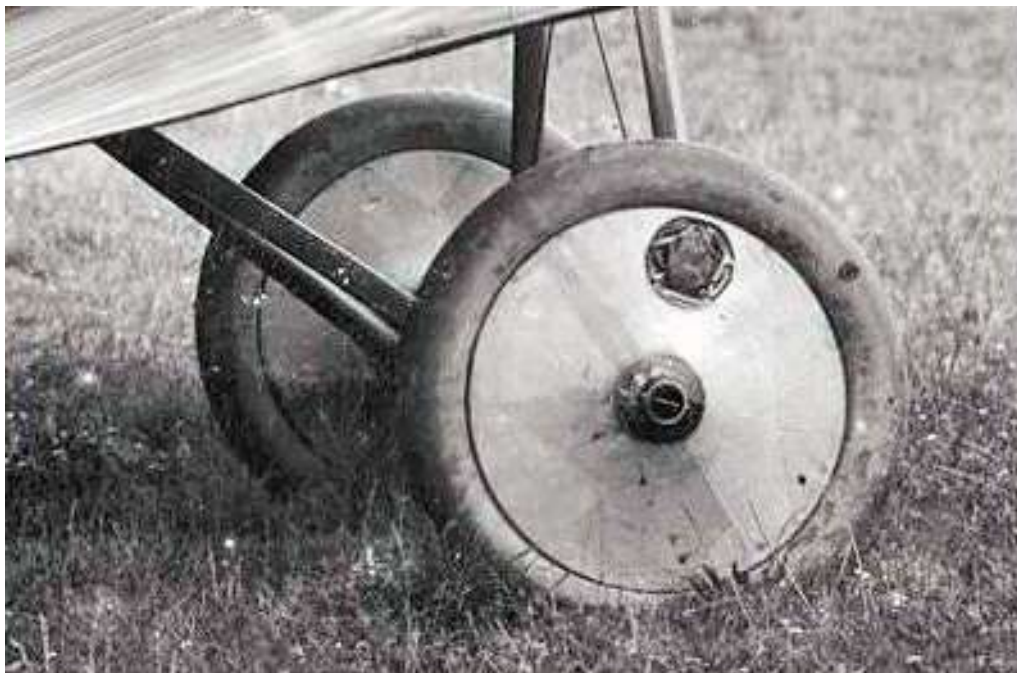
43 - Front cowl, two side cowls, front and rear interplane struts and left and right fuselage cabane 'N' struts.
14 - Front and rear interplane struts.



Wheels:

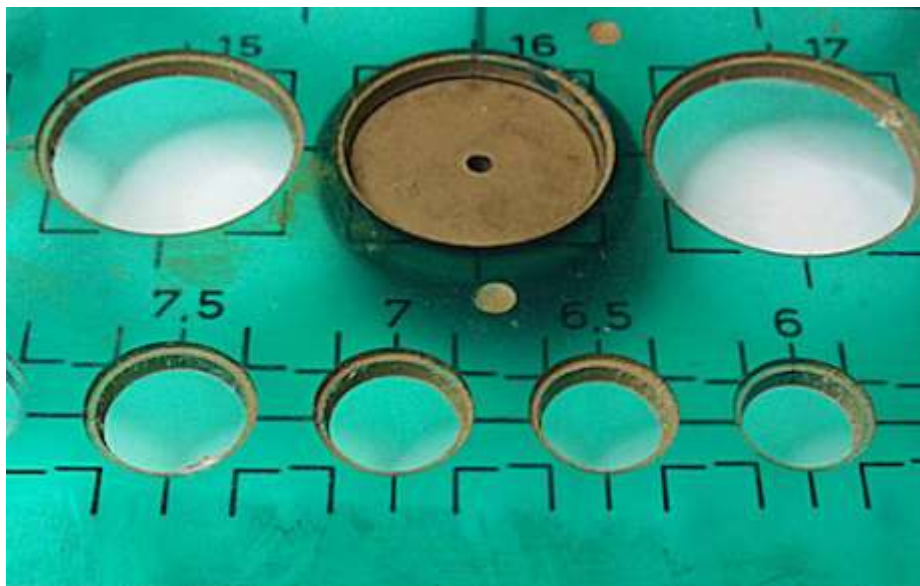
NOTE:

The outer and inner covers on both landing gear wheels were covered with lozenge linen and what appears to be a circular leather patch sown over the access to the tyre inflation valve.



NOTE:

To airbrush the faces of the wheel covers without over spraying the painted surrounding tyres, I use a circle drawing tool (Linex 1217 T). I selected the correct size of hole for the wheel only and positioned the wheel face under the hole, temporarily holding it in position using masking tape. Then I airbrushed the required colour through the hole onto the wheel face. This leaves the tyre colour intact.



Airbrush the outer wheel covers and the rear cover on the wheels with a white primer, such as 'AK Interactive' White (AK-759) or similar. This is required for the application of lozenge decals.

Airbrush the white painted covers of the wheels with a gloss clear coat, such as 'Alclad' Aqua Gloss 600, 'Tamiya' Clear Gloss (X22) or similar. If necessary, apply a second light coat to achieve a good gloss finish.

NOTES:

To cut the required lozenge decals for the wheel covers, I used a 'Thinnerline' circle cutter.



Using the 'Thinnerline' circle cutter, cut out templates from paper until the correct size is achieved for the wheel covers.

Use the cutter to cut out the circular decals from the extra 'Aviatic' darker upper surfaces or lighter underside lozenge decal supplied (I used the darker lozenge).

Drill a hole through the centre of the decal disc, large enough for the decal to fit over the axle stub on the wheel cover.

Using a sharp blade, cut a straight line from the pre-drilled hole outwards. This is to allow the template to conform to the slightly conical shape of the covers with the cut ends aligning.

Refer to Part 4 (Decals) of this build log - Apply the decals onto the wheel covers.

To represent the dark patches that were stitched over the opening for the tyre inflation valves, small discs were cut from the 'Aviatic' Black Knights linen effect decal (ATT32024) and applied over the openings.

Brush paint the axle in the centre of the outer covers and the axle bearing in the centre of the inner covers with 'Tamiya' Semi-Gloss Black (X18) or similar.

Brush paint the securing clevis pin in the axle of the outer covers with 'Mr. Colour' Steel (213) or similar.

NOTE: *The outer covers will be fitted to the wheels later in this build.*



Weathering:

NOTE:

Refer to Part 3 (Weathering) of this build log for information on weathering.

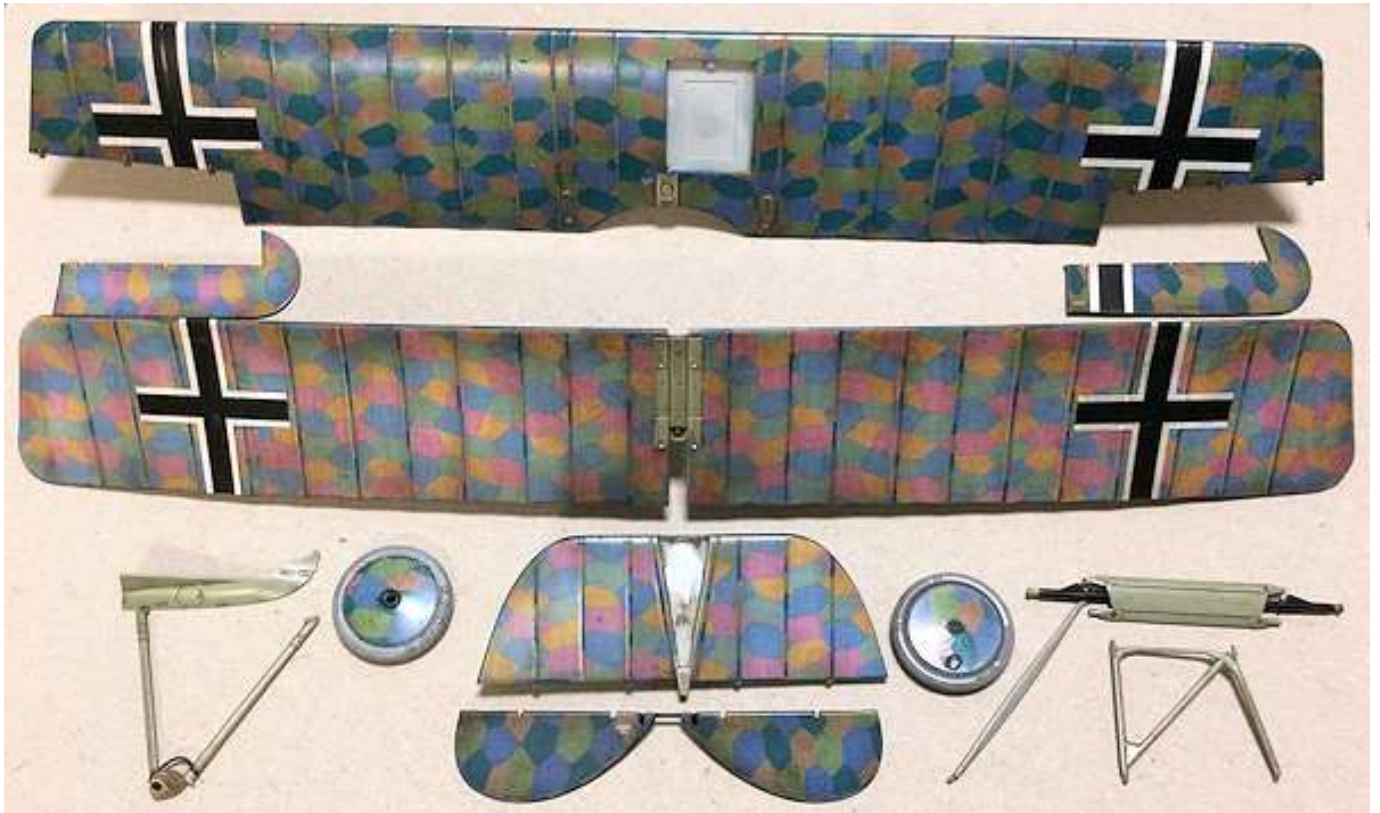
Airbrush a sealing coat of 'Alclad' Light Sheen (ALC-311) or 'Tamiya' Semi-Matt (XF35) over all parts, **except the completed fuselage**. This provides a good surface for the application of weathering to the fuselage.

For this model I applied 'Flory Models' Dark Dirt clay wash to all parts, **except the completed fuselage**, including the two wings and ailerons, tail plane, elevators and the rudder.



Allow the wash to dry then remove with a very slightly moist kitchen paper towel or brush.

Once the desired effect is achieved, airbrush a light sealing coat of 'Alclad' Light Sheen (ALC-311) or 'Tamiya' Semi-Matt (XF35) over treated parts to seal the applied weathering.



Radiator:

NOTE: *The radiator has a different weathering technique to that of the upper wing. It can now be fitted.*

Brush paint the separate radiator () for the upper wing and the radiator in the underside of the wing with 'Mr. Colour' Stainless Steel (213) or similar.

Apply a wash over the painted radiators of 'Abteilung' 502 Shadow Brown oil paint, thinned heavily with a good enamel thinner, such as 'Tamiya' X20 or similar.

Cement the separate radiator into its location on the top surface of the upper wing.

Landing gear:

NOTE: *The axle fairing has, at both ends, a support tube to the rear and front of the axle. When fitting the landing gear struts, the shorter of the two tubes should be at the rear.*

Cement the two landing gear struts to the axle fairing.

Cement together the tops of the landing gear rear struts.

Locate the wheels onto the ends of the axle.

Clip over the recess in the axle ends the wheel retaining rings (D2).

Cement the outer wheel covers into their recesses in the wheels. Make sure the cut-outs in the covers are aligned at the tyre valves.



Pre-rigging:

NOTE: Refer to Part 6 (Rigging) of this build log for rigging information. At this stage of the build it's best to carry out pre-rigging of the flight control cables and general rigging wires, as access to some rigging points will be restricted once assembly starts. The various items to be prepared for rigging the model are as follows:

Turnbuckles - 1:48th scale metal Type A from 'GasPatch'.

Turnbuckles - 1:48th scale metal Type C from 'GasPatch'.

Anchor points - 1:48th scale metal from 'GasPatch'.

Control cables - 'Stroff' GTM 0.08 mm diameter mono-filament.

Rigging wires - 'Stroff' GTM 0.12 mm diameter mono-filament.

Tubing - 0.4 mm and 0.5 mm diameter from 'Albion Alloy's' (blackened with 'Blacken-It' solution).

The 'GasPatch' metal turnbuckles can have blocked holes in the 'eye' end and tags at one end where they have been snapped away from their casting blocks. Before fitting any turnbuckle, check the holes through the 'eye' ends are clear by carefully using a 0.2 mm diameter drill. File off and metal tags using a 'Tamiya' #400 diamond file or similar.

The various turnbuckle rigging points to be pre-rigged are as follows:

Rudder control cable (x 2) at the rudder control horns.

Elevator control cables (x 4) at the elevator control horns.

Landing gear bracing wires (x 2) on the bottom of the fuselage.

Fuselage bracing wires (x 4) from the underside of the upper wing.

Flying wires (x 4) at the fuselage.

Landing wires (x 4) on the top surface of the lower wing.

Aileron control cables (x 4) at the levers in upper wing.

Interplane strut bracing wires (x 4) on the top surface of the lower wing.

Outer bracing wires (x 2) on the top surface of the lower wing.

The various rigging anchor points to be pre-rigged are as follows:

Flying wires (x 4) at the underside of the upper wing.

Landing wires (x 4) on the underside of the upper wing.

Interplane strut bracing wires (x 4) on the underside of the upper wing.

Outer bracing wires (x 2) on the underside of the upper wing.

Fuselage to upper wing bracing wires (x 4).

Radiator shutter control cable - centre trailing edge of upper wing.

Some rigging wires and control cables will be secured directly into pre-drilled holes as follows:

Rudder control cable (x 2) into the rear of the fuselage.

Elevator control cables (x 4) into the rear of the fuselage.

Fuselage bracing wires (x 4) into the forward sides of the fuselage.

Aileron control cables (x 4) into the fuselage at the wing roots.

Landing gear bracing wires (x 2) in the ends of the axle fairing.

Radiator shutters operating cable into underside of upper wing.

Anchor points:

Prepare the fourteen 'GasPatch' anchor points.

Clear the pre-drilled holes in the underside of the upper wing of paint.

Using thin CA adhesive, secure a 'GasPatch' anchor point into each pre-drilled hole in both under sides of the upper wing. The 'eye' ends of the anchor points should be in line with the air-flow over the wing, except for the radiator cable anchor point, which should be across the wing.

Once secured in place, check the 'eye' ends are clear of adhesive and if necessary, carefully clear with a 0.2 mm diameter drill.



Aileron control cables:

Remove the two aileron control levers (D1) from their kit sprue and remove any residual sprue tags.

Drill a hole of 0.2 mm diameter through both ends of the two levers. When located in their slots in the upper wing, the holes through the ends of the levers should be aligned with the fuselage.

Brush paint the two levers with 'Tamiya' Grey Green (XF76) or similar.

Clear the pre-drilled holes of paint.

Cut eight long lengths of 'Stroft GTM' 0.08 mm diameter mono-filament.

Pass a cut line through a pre-drilled hole in one end of an aileron control lever.

Slide onto the line a blackened 0.4 mm diameter tube ('Albion Alloy's' NST04) or similar.

Pass the other end of the line, from the lever and back through the tube.

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

Secure the tube to the lines using thin CA adhesive, then cut away the residual tag of line at the tube.

Pass the free end of the line through another tube then through an 'eye' end of a 'GasPatch' turnbuckle (Type C).

Pass the line back and through the tube.

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

Slide onto another cut line a blackened 0.4 mm diameter tube ('Albion Alloy's' NST04) or similar.

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

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

NOTE: *At this stage you should have a line attached to one end of an aileron control lever. The other end of that line should be attached to a turnbuckle, which should have another line attached to its opposite end.*

Repeat the procedure to create a pre-rigged line to the other end of the aileron control lever.

Repeat the procedure to add two pre-rigged lines to the other aileron control lever.



NOTE: *Do not tighten or secure the lines at this stage. Final installation of the aileron control lines can only be carried out once the upper wing has been fitted.*

Forward flying wires:

Cut a long length of 'Stroft GTM' 0.12 mm diameter mono-filament.

Slide onto a cut line a blackened 0.5 mm diameter tube ('Albion Alloy's' MBT05) or similar.

Pass the line through the 'eye' end of a 'GasPatch' Type A turnbuckle, then back through the tube.

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

Secure the tube to the lines using thin CA adhesive.

Cut away from the tube the residual tag of line.

Repeat the procedure to create a second flying wire.

Rear flying wires:

NOTE: *The fitting of the rear flying wires will be carried out after the upper wing is fitted.*

Landing wires:

Cut a long length of 'Stroft GTM' 0.12 mm diameter mono-filament.

Slide onto a cut line a blackened 0.5 mm diameter tube ('Albion Alloy's' MBT05) or similar.

Pass the line through the 'eye' end of a 'GasPatch' Type A turnbuckle, then back through the tube.

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

Secure the tube to the lines using thin CA adhesive.

Cut away from the tube the residual tag of line.

Repeat the procedure to create three more landing wires.

Interplane incidence wires:

Repeat the **landing wire** procedure to create four interplane incidence wires.

Outer bracing wires:

Repeat the **landing wire** procedure to create two outer bracing wires.

Landing gear bracing wires:

Repeat the **landing wire** procedure to create two landing gear bracing wires.

Fuselage to wing bracing wires:

Repeat the **rear flying wire** procedure to create four fuselage to wing bracing wires.

Rudder control cables:

Cut a long length of 'Stroft GTM' 0.08 mm diameter mono-filament.

Slide onto the line a blackened 0.4 mm diameter tube ('Albion Alloy's' NST04) or similar.

Pass the line through the free 'eye' end of a 'GasPatch' Type C turnbuckle then back through the tube.

Pass the free ends of the two lines through the pre-drilled hole in one side a rudder control horn. Make sure you pass the through from opposite sides of the control horn.

Pull the free ends of the two lines taut so that the turnbuckle and tube are pulled close to, but not touching, the front of the control horn.

Apply thin CA adhesive to the rear of the control horn to secure the two lines in position.

Cut a long length of 'Stroft GTM' 0.08 mm diameter mono-filament.

Slide onto the line a blackened 0.4 mm diameter tube ('Albion Alloy's' NST04) or similar.

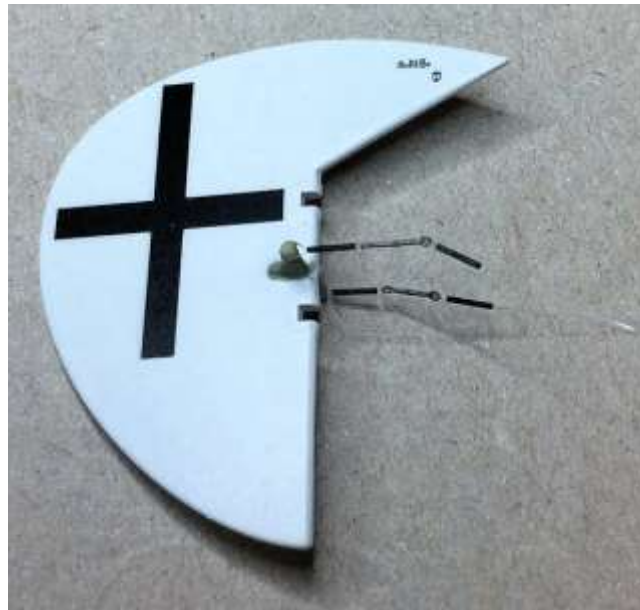
Pass the line through the free 'eye' end of the 'GasPatch' Type C turnbuckle then back through the tube.

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

Secure the tube to the lines using thin CA adhesive.

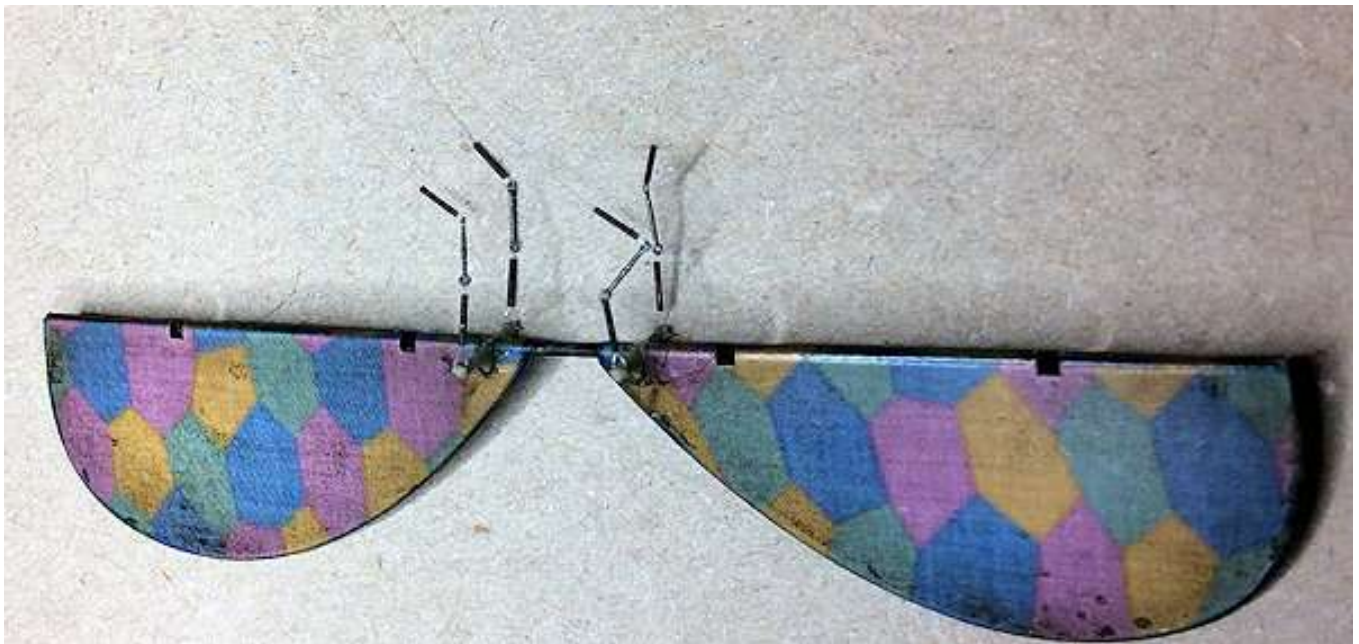
Cut away the residual 'tags' of line from the tube and control horn.

Repeat the procedure to add a line to the other rudder control horn.



Elevator control cables:

Repeat the procedure for the rudder control cables to add four elevator control cable, one to the ends of both control horns.



Turnbuckle painting:

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

Assembly:

Clear any paint or primer away from the locating tang on the lower wing and its associated slot in the bottom of the fuselage and all upper and lower wing strut location holes.

Test fit the lower wing into the fuselage, making sure the wing locates fully into the fuselage.

Test fit the interplane and fuselage cabane 'N' struts into their location holes in the upper and lower wings.

Cement the lower wing into the fuselage.

NOTE: *In the following step, the rear of the side cowl panels should be slid under the cooling jackets of the two machine guns.*

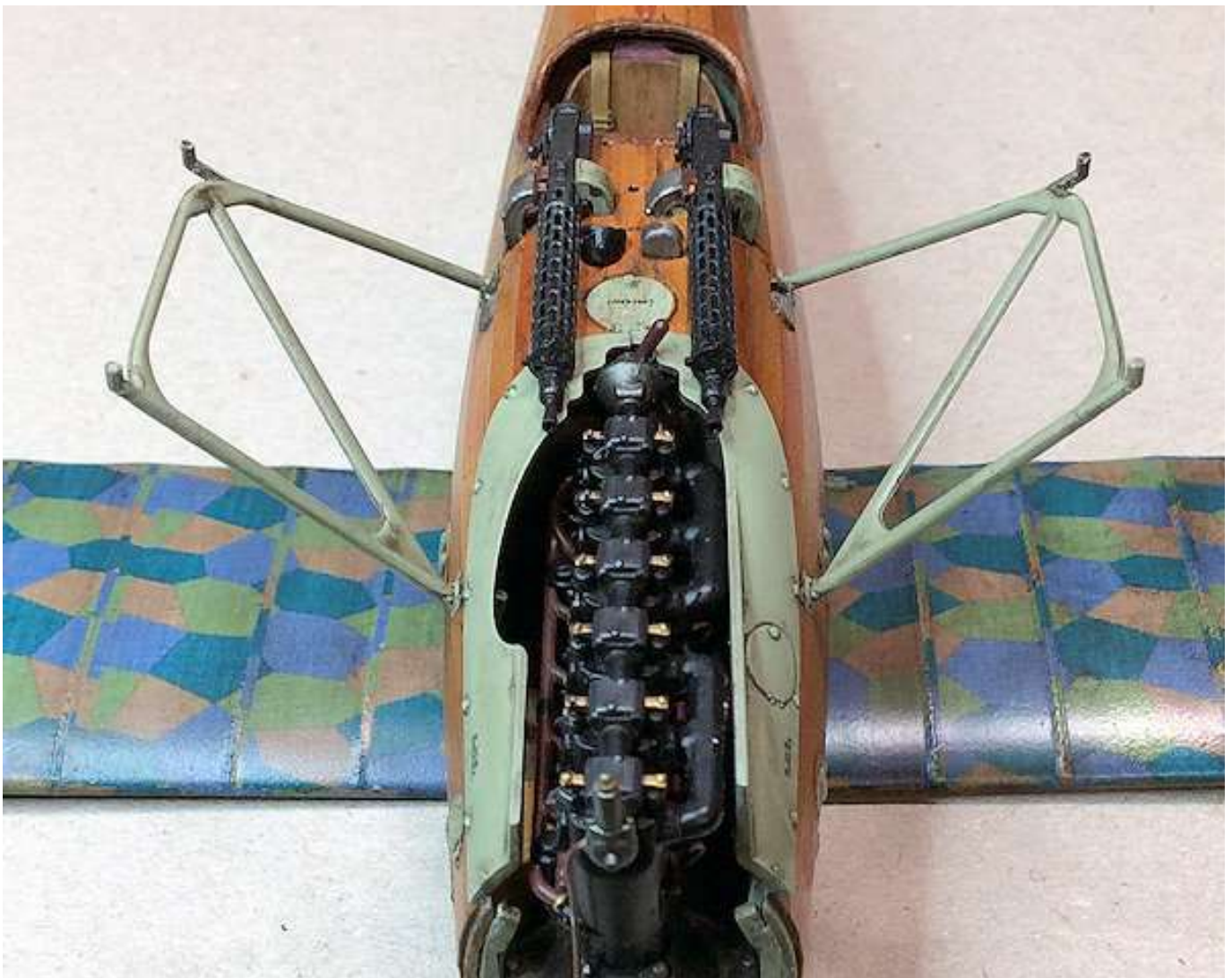
If the engine is to be covered by the side cowl panels, cement these in position on the fuselage, each side of the engine. Test fit the front cowl to make sure the front of the side panels align correctly. If the engine is to be left exposed, do not fit the side cowl panels.

Clear any paint or primer away from the locating holes in the fuselage for the two cabane 'N' struts.

Test fit the two cabane 'N' struts into the fuselage, making sure when fully located, the top location stubs are vertical when viewed from the front, so as to align correctly with their locating holes in the underside of the upper wing.

NOTE: *The cabane struts are fitted at this stage so that the landing wires, when fitted, can be correctly aligned.*

Cement the two cabane 'N' struts into the fuselage.



Pre-rigging - fitting:

NOTE: *For correct alignment, some of the wing rigging will be fitted after the upper wing has been fitted. This rigging will be:*

Aileron control cables.

Flying wires.

Fuselage to wing bracing wires.

Wing outer bracing wires.

Radiator operating cable:

Cut a long length of 'Stroft GTM' 0.08 mm diameter mono-filament.

Slide onto one end of the line a blackened 0.4 mm diameter tube ('Albion Alloy's' NST04) or similar.

Secure the tube to the line using thin CA adhesive.

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

Secure the tube to the underside of the upper wing at the centre, rear edge of the radiator.

Pass the line through the 'eye' of the 'GasPatch' anchor point previously secured into the trailing edge.

Landing wires:

Test fit each of the four landing wires into their pre-drilled holes in the top surface of the lower wing, inboard from the bottom of the interplane struts. Gently pull the line up to the top of the relevant fuselage cabane 'N' strut. Make sure the turnbuckle is aligned with the line.

Secure the four landing wire turnbuckles into their pre-drilled holes at the correct angle.

Interplane strut bracing wires:

Test fit the two interplane struts (forward strut is the longer strut) into their location holes in the top surface of the lower wing.

Test fit each of the four interplane strut bracing wires into their pre-drilled holes in the top surface of the lower wing, between the struts. Gently pull the lines diagonally up to the top of the opposite strut. Make sure the turnbuckle is aligned with the line.

Secure the four interplane strut bracing wires into their lower wing location holes.

Remove the four interplane struts.

Assembly (continued):

Insert the four interplane struts into their lower wing location holes.

Locate the upper wing onto the four interplane struts and the fuselage cabane 'N' struts.

Make sure the upper and lower wings are fully located on the struts.

Apply cement to the struts mounting locations and leave to fully set.

Engine external pipes:

NOTE: *Fuel pipe F16 has already been painted in Part 7 (Engine) of this build log.*

Brush paint the coolant pipe F13 with 'Mr. Colour' Stainless Steel (213) or similar.

Brush paint the rubber connectors at each end of the pipe with 'Tamiya' Black (X1) or similar.

Brush paint the two filler caps on the pipe and tank using 'Mr. Colour' Brass (219).

Position pipe F16 into the left side of the engine bay and locate the top of the pipe into its location hole in the radiator on the underside of the upper wing.

Cement to top of pipe F16 in position.

Position the bottom end of pipe F13 to the left, front side of the engine with the base of the tank at the top of the pipe, into its location recess in the upper wing.

Cement pipe F13 in position.

Cement the front cowl F7 in position on the front of the fuselage.



Rigging:

NOTE: *This stage of the build will complete the fitting of all rigging and flight control cables. The rigging should be fitted in the following order as this will give the easiest access to the various rigging lines.*

Fuselage to upper wing bracing wires:

Cut one end of a prepared fuselage to upper wing bracing wire so that when that end of the line is inserted into the pre-drilled hole in the side of the fuselage, the turnbuckle is positioned midway between the fuselage and upper wing anchor point at the top of its fuselage cabane 'N' strut anchor point.

Repeat to cut the remaining three bracing lines for their locations

Slide onto the cut end of a line a blackened 0.4 mm diameter tube ('Albion Alloy's' NST04) or similar.

Keeping the tube away from the fuselage and using CA adhesive, secure the cut end of the line into its pre-drilled hole in the side of the fuselage.

Slide onto the other line a blackened 0.5 mm diameter tube ('Albion Alloy's' MBT05) or similar.

Pass that end of the line through the 'eye' of its pre-fitted anchor point in the underside of the upper wing at its cabane 'N' strut location.

Loop the line back and through the tube.

Keeping the line taut, slide the tube up to, but not touching, the anchor point.

Secure the tube to the lines using thin CA adhesive.

Cut away from the tube the residual tag of line.

Repeat the procedure to add the three remaining fuselage to upper wing bracing lines.



Landing wires:

Slide onto a prepared landing wire a blackened 0.5 mm diameter tube ('Albion Alloy's' MBT05) or similar.

Pass the free end of line through the 'eye' end of its associated 'GasPatch' Anchor Point, previously fitted just outboard from the fuselage cabane 'N' strut on the underside of the upper wing.

Loop the line back and through the tube.

Keeping the line taut, slide the tube up to, but not touching, the anchor point.

Secure the tube to the lines using thin CA adhesive.

Cut away from the tube the residual tag of line.

Repeat the procedure to fit the remaining three landing wires.



Interplane strut bracing wires:

Slide onto a prepared interplane strut bracing wire a blackened 0.5 mm diameter tube ('Albion Alloy's' MBT05) or similar.

Pass the free end of line through the 'eye' end of its associated 'GasPatch' Anchor Point, previously fitted diagonally up and at the top of the opposite strut, on the underside of the upper wing.

Loop the line back and through the tube.

Keeping the line taut, slide the tube up to, but not touching, the anchor point.

Secure the tube to the lines using thin CA adhesive.

Cut away from the tube the residual tag of line.

Repeat the procedure to fit the remaining three interplane strut bracing wires.



Forward flying wires:

Slide onto a prepared flying wire a blackened 0.5 mm diameter tube ('Albion Alloy's' MBT05) or similar.

Pass the free end of line through the 'eye' end of its associated 'GasPatch' Anchor Point, previously fitted diagonally up and at the top of its interplane strut, on the underside of the upper wing.

Loop the line back and through the tube but leave the loop slack.

Insert the tang of the 'GasPatch' Type A turnbuckle into its pre-drilled hole at the top of the forward landing gear strut. Check that the turnbuckle is aligned to the anchor point.

Secure the turnbuckle into the fuselage using thin CA adhesive.

Keeping the line taut, slide the tube up to, but not touching, the anchor point.

Secure the tube to the lines using thin CA adhesive.

Cut away from the tube the residual tag of line.

Repeat the procedure to add the opposite forward flying wire.



Rear flying wires:

NOTE: *The rear flying wires should have a turnbuckle fitted at the lower wing fairing. However, this is not practicable on the model. Therefore the turnbuckle will be represented by a blackened tube.*

Cut a very long length of 'Stroft GTM' 0.12 mm diameter mono-filament.

Slide onto the line a blackened 0.5 mm diameter tube ('Albion Alloy's' MBT05) or similar.

Pass the line through the 'eye' end of a one of the fitted 'GasPatch' fitted anchor points inboard from the rear interplane struts on the underside of the upper wing.

Loop the line back and through the tube.

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

Secure the tube to the lines using thin CA adhesive.

Cut away from the tube the residual tag of line.

Slide onto the line a blackened 0.5 mm diameter tube ('Albion Alloy's' MBT05) or similar.

Pass the line through the pre-drilled hole in the rear of the lower wing support fairing so that it exits through the pre-drilled hole on the opposite side of the fairing.

Slide onto the line **two** blackened 0.5 mm diameter tubes ('Albion Alloy's' MBT05) or similar.

Pass the line through the 'eye' end of the remaining 'GasPatch' fitted anchor point inboard from the rear interplane struts on the underside of the upper wing.

Loop the line back and through the tube.

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

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

Cut away from the tube the residual tag of line.



Wing outer bracing wires:

Slide onto a prepared Outer bracing wire a blackened 0.5 mm diameter tube ('Albion Alloy's' MBT05) or similar.

Pass the free end of line through the 'eye' end of its associated 'GasPatch' Anchor Point, previously fitted at the underside, outer trailing edge of the upper wing.

Loop the line back and through the tube but leave the loop slack.

Insert the tang of the 'GasPatch' Type A turnbuckle into its pre-drilled hole in the top surface of the lower wing, outboard from the rear interplane strut. Check that the turnbuckle is aligned to the anchor point.

Secure the turnbuckle into the fuselage using thin CA adhesive.

Keeping the line taut, slide the tube up to, but not touching, the anchor point.

Secure the tube to the lines using thin CA adhesive.

Cut away from the tube the residual tag of line.

Repeat the procedure to add the opposite outer bracing wire.



Aileron control cables:



NOTE: All of the lines on the prepared aileron control cables and levers should be slack, as they need to be adjusted to position the turnbuckles.

Pass all of the aileron control lines from the aileron levers down through their slots in the upper wing.

Fully locate the lever pivots into their location grooves in the wing slot.

NOTE: The lever will be positioned assuming that both ailerons are aligned to the trailing edge of the upper wing.

Position the levers as shown in the previous photograph.

Cement the levers in position.

NOTE: *The following procedure is applicable to all four of the aileron control cables.*

Slacken the loop of line at the top of the 'GasPatch' Type C turnbuckle by sliding the tube away from the turnbuckle.

Gently pull on the end of the exposed tag of line to slowly move the tube up the line towards the control lever. Stop when the turnbuckle is approximately midway between the upper wing and the cable entry hole pre-drilled into the fuselage.

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

Secure the tube to the lines using thin CA adhesive.

Cut away from the tube the residual tag of line.

At the opposite end of the turnbuckle, slide the tube up to, but not touching, the 'eye' end of the turnbuckle.

Secure the tube to the lines using thin CA adhesive.

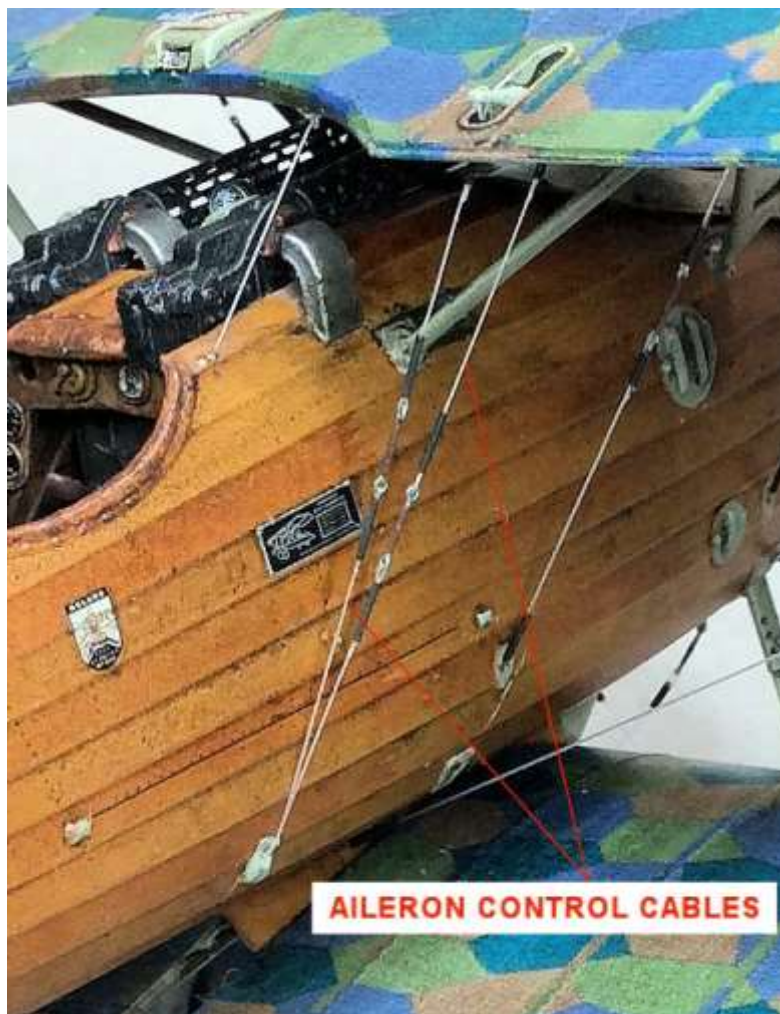
Cut away from the tube the residual tag of line.

Make sure the line is straight and the turnbuckle is aligned the cut the bottom such that it can be fully inserted into the aileron cable exit hole in the fuselage.

NOTE: *The following procedure is applicable to both pairs aileron control cables.*

Keeping the ends of both aileron lines taut and together, insert them into the pre-drilled hole in the fuselage side.

Secure the lines in the hole using thin CA adhesive.



Radiator shutter control cable:

Pass the free end of the pre-installed shutter control cable on the underside of the upper wing, down and through the pre-drilled hole to the rear, right side of the cockpit forward decking panel.

Keeping the line taut, secure it in the holes using thin CA adhesive.

NOTE: *Inside the cockpit, the end of the cable would normally have a hand grip, such as a 'T' bar. However, to represent this inside the cockpit is not feasible.*

Cut the line from inside the cockpit such that it can be secured up and against the fuselage side.

Secure the end of the line in position, using thin CA adhesive.

Assembly (continued):

Tailplane and elevator - fit:

NOTE: *Any primer or paint on the mating surfaces of the tailplane and its location slot in the fuselage will stop the tailplane from fully locating.*

Test fit the tailplane into its location slot in the rear of the fuselage. Make sure it is the correct way up and do not try to force the tailplane to fully fit.

If necessary, use a flat blade to scrape the mating surfaces in the fuselage slot and the location trough on the underside of the tailplane, until the tailplane fully locates without any force required.

NOTE: *Keep the elevators control lines clear when fitting the elevators to the tailplane.*

Locate the centre bar of the elevators into its locating groove at the rear of the tailplane.

Push the elevators down onto their hinges at the trailing edge of the tailplane.

Position the elevators either aligned with the tailplane or is slightly down.

Apply cement to secure the elevator centre bar and hinges to the tailplane.

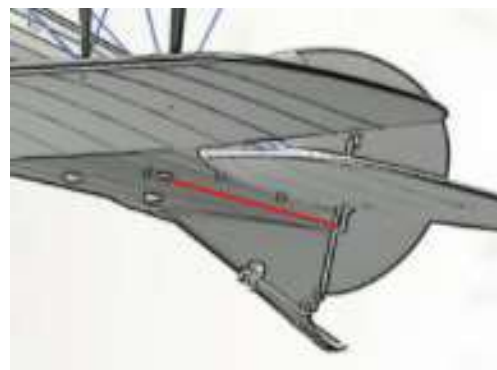
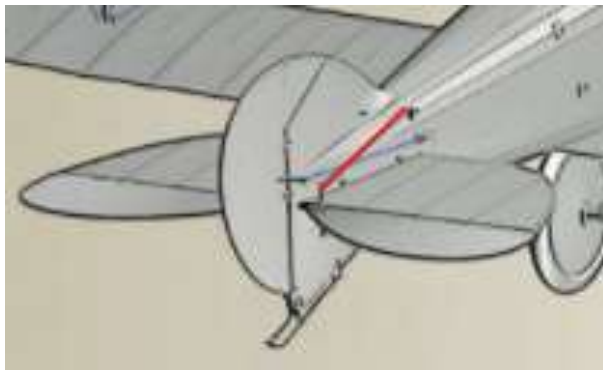
Fully locate the tailplane assembly into its slot in the fuselage.

Cement the tailplane assembly in position in the fuselage slot.

Rigging (continued):

Elevator control cables:

NOTE: *Make sure the elevator control cables are inserted into their correct location holes in the fuselage.*



Cut each of the pre-fitted elevator control lines such that they can be inserted fully into their pre-drilled holes in the fuselage.

Insert each line into its hole and keeping the line taut and turnbuckle aligned, secure the line into the hole using thin CA adhesive.

Assembly (continued):

Rudder - fit:

Clean away any primer or paint from the mating surfaces of the two rudder hinges on the rudder and fuselage.

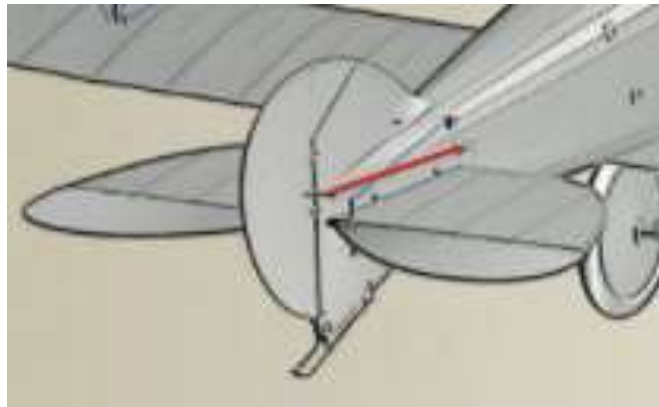
NOTE: *Make sure the two rudder control cables are clear of the mating faces.*

Locate the rudder fully onto the two hinges on the fuselage. If, desired, turn the rudder slightly either left or right.

Cement the rudder to the fuselage hinges using thin CA adhesive.

Rigging (continued):

Rudder control cables:



Cut each of the pre-fitted rudder control lines such that they can be inserted fully into their pre-drilled holes in the fuselage.

Insert each line into its hole and keeping the line taut and turnbuckle aligned, secure the line into the hole using thin CA adhesive.



Tightening of rigged lines:

NOTE: *No-matter how careful you are to keep all installed rigging taut, there will be instances when after completing the rigging, one or more of the lines will be slack. This can be remedied by the careful application of heat close to and along the relevant line. Heat causes the mono-filament to shrink and therefore the line tightens.*

WARNING: *Apart from the obvious hazards associated with a heat source, care should also be taken not to apply too much heat, hesitate at one location along the line or touch the line. Otherwise the line will melt and snap. Also take care not to touch the model.*

If a rigging line requires tightening a suitable heat source will be required. I use a small electrical soldering iron.

Move the heat source close to and along the line watching for the line to shrink. Keep the heat source moving and avoid touching the line or the model.

Landing gear bracing wires - fit:

Temporarily position the landing gear assembly onto the fuselage.

Make sure the tangs of the two prepared bracing lines for the landing gear locate fully into their pre-drilled holes in the fuselage. Also make sure they are aligned with the diagonally opposite ends of the axle fairing.

Secure to two bracing wires into the fuselage using thin CA adhesive.

Remove the landing gear assembly.

Assembly (continued):

Landing gear - fit:

Make sure the three fuselage locations for the landing gear struts and the associated mating surfaces of the struts are clear of primer and paint.

Cement the landing gear into the fuselage.

Drill a hole of 0.3 mm diameter vertically through the ends of front stub axles of the landing gear fairing.

Slide onto each line a blackened 0.4 mm diameter tube ('Albion Alloy's' NST04) or similar.

Pass the free ends of the two bracing lines diagonally across and to the ends of the axle fairing and through the drilled holes in the stub axles.

Keeping the lines taut, secure them to the underside of the axle fairing with thin CA adhesive.

Secure the 0.4 mm diameter tubes to the bottom of their lines using thin CA adhesive.

Cut away the residual tag of line from under the axle fairing.



Ailerons:

Clean away any primer or paint from the mating surfaces of the two ailerons hinges on the upper wing and the slots in the ailerons.

Locate the ailerons fully onto their hinges on the upper wing (for this model aligned with the wing).

Cement the ailerons to the upper wing hinges.

Windscreen:

Brush paint the frame of the windscreen (C2) with 'Tamiya' Grey Green (XF76) or similar.

Secure the windscreen in position (locating hole) on the cockpit forward decking panel, using a PVA adhesive, such as 'MicroScale' Krystal Clear.

Engine exhaust - fit:

NOTES:

The engine exhaust pipe being used is the replacement 'ReXx' exhaust pipe (32012). This exhaust pipe has no stubs to locate into the engine exhaust ports. There it needs to be secured in position using a thicker CA adhesive, which will better hold the pipe in position until the adhesive sets.

The 'ReXx' exhaust are fragile and easily damaged. Take care when handling these exhaust pipes, especially when gripping as they are easily crushed.

Test locate the 'ReXx' exhaust against the engine exhaust ports.

Secure the exhaust pipe onto the engine exhaust ports using a thicker, slower action CA Adhesive, such as 'VMS' Fleky slow CA adhesive.



Propeller -fit:

Locate the 'ProperPlane' propeller into the spinner, making sure the propeller is the correct way around.

Locate the spinner back plate into the rear of the spinner, making sure it's outer rim is flush to the rear edge of the spinner and that the holes (for the engine propeller shaft) in the centre of the backing plate and the propeller hub are aligned.

Cement the backing plate into the rear of the propeller spinner.

Secure the propeller assembly, at your desired angle, onto the engine propeller shaft using CA adhesive.



PART 12

FIGURES

PART 12 - FIGURES

The figures I chose to use are the 'WW1 German Pilot in Heinecke Parachute Harness with Mechanic (MC32029 from 'Model Cellar'. The figures were sculpted by Mike Good.

Preparation:

NOTE:

The pilot figure is supplied as the main body, two arms, two hands and the head as well as two flying gloves as ground accessories.

The mechanic figure is supplied as the main body, two arms, right boot and the head.

*The figures are made of cast **resin** (refer to Part 5 - Resin) of this build log).*

Pilot:

Check the figure for any moulding marks, resin 'flash', seams or surface imperfections and if found, fill and/or carefully scrape or sand away.

Mechanic:

Check the figure for any moulding marks, resin 'flash', seams or surface imperfections and if found, fill and/or carefully scrape or sand away.

Assembly:

Pilot:

NOTE: *As the pilot's arms, when fitted, cover detail on the body, I suggest the arms are not fitted until after they have been painted.*

Secure the pilot's head to the body using thin CA adhesive.

Drill a hole of 0.9 mm diameter up and into the right leg, taking care to keep the drill central, so as not to drill through the sides of the leg.

Cut a length of 0.8 mm diameter rod, such as from a standard paper clip.

Secure the rod into the hole in the right leg, using CA adhesive. This will be used to hold the figure for painting and for mounting the figure on the final display base.

Mechanic:

Secure the mechanics head, arms and right boot to the body using thin CA adhesive.

Drill a hole of 0.9 mm diameter up and into the knee of the right leg, taking care to keep the drill central, so as not to drill through the sides of the leg.

Cut a length of 0.8 mm diameter rod, such as from a standard paper clip.

Secure the rod into the hole in the right leg, using CA adhesive. This will be used to hold the figure for painting and for mounting the figure on the final display base.

Painting Pilot:

NOTE: *Brush paint the figure with your preferred medium. I use mainly 'Tamiya' acrylic paints thinned slightly with 'Tamiya' X20A thinners, blending colours where required whilst the paints are still wet.*

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

Shoes and gloves - 'Tamiya' Hull Red (XF9) with 'Humbrol' Leather (62) highlights.

Flying overalls and arm sleeves - Base coat 'Tamiya' RLM Grey (XF22) and Neutral Grey (XF53) mixed 60/40 ratio. Lowlights same mix with a few drops of NATO Black (XF69) added.

'Heinecke' parachute - 'Tamiya' Buff (XF57) with Dark Yellow (XF60) mixed for highlights.

Helmet - 'Humbrol' Leather (62) with 'Tamiya' Hull Red (XF9) highlights.

Goggles - 'Tamiya' Flat Earth (XF52), Clear Yellow (X24) and 'Mr. Colour' Stainless Steel (213).

Metal fittings - 'Mr. Colour' Stainless Steel (213).

Flesh - 'Tamiya' Flat Flesh (XF15) with AK Interactive' Light Flesh (AK3012) highlights and eyes Rubber Black (XF85).

Surface finish:

Shoes - 'Tamiya' Weathering Master Set A (Mud).

Flying Overalls - 'Tamiya' Weathering Master Set D (Oil Stain).

Painting Mechanic:

NOTE: *Brush paint the figure with your preferred medium. I use mainly 'Tamiya' acrylic paints thinned slightly with 'Tamiya' X20A thinners, blending colours where required whilst the paints are still wet.*

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

Boots - 'Tamiya' NATO Black (XF69) with Red Brown (XF68) soles

Trousers - 'Tamiya' Buff (XF57) then mixed with Desert Yellow (XF59) for the lowlights.

Jacket - 'Tamiya' NATO Black (XF69) then mixed with Neutral Grey (XF53) for highlights..

Hat - 'Tamiya' Neutral Grey (XF53), peak Semi Gloss Black (X18), hat band NATO Black (XF69).

Metal fittings - 'Mr. Colour' stainless Steel (213).

Flesh - 'Tamiya' Flat Flesh (XF15) with 'AK Interactive' Light Flesh (AK3012) highlights and eyes Rubber Black (XF85).

Hair - 'Tamiya' NATO Brown (XF68).

Surface finish:

Boots - 'Tamiya' Semi-Gloss (X35) the weathering Master Set A (Mud).

Trousers - 'Tamiya' Weathering Master Set D (Oil Stain).



'Heinecke' parachute:

NOTE: *The 'Model Cellar' figures depict a mechanic helping the pilot to prepare the harness for his 'Heinecke' parachute. Unfortunately the parachute itself is not supplied with the figures. Therefore if desired, the parachute must be created.*





Parachute:

NOTE: *For general information, refer to the photographs on the previous page.*

Mix up a piece of 'Milliput' two part putty or similar in a 50/50 ratio.

Place the putty onto a piece of this glossy sheet, such as tin foil or acetate. This will make it easier to remove once the putty has set.

NOTE: *The parachute was designed for the pilot to sit on it instead of the usual seat cushion.*

Form the putty into the approximate shape of a seat cushion. Add creases etc into the surface of the parachute then leave to fully set and harden.

Remove the parachute from the backing material and sand or file away any residual edges of hardened putty.

Prime the parachute with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Brush paint the parachute with 'Tamiya' Tamiya' Buff (XF57) then mixed with Desert Yellow (XF59) for the lowlights.

Seal the paint by Airbrushing a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC-311), 'Tamiya' Semi-Gloss (X35) or similar.

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

If desired, apply weathering to the parachute. I chose to use the 'Flory Models' Dark Dirt fine clay wash.

Parachute ropes:

Cut three lengths of 0.3 mm diameter of either annealed (softened by heat) copper wire, lead wire, such as that from 'PlusModels' or similar.

Cut two lengths of 0.4 mm diameter of either annealed (softened by heat) copper wire, lead wire, such as that from 'PlusModels' or similar.

Drill a hole of 0.6 mm diameter into the centre at one end of the parachute.

Drill three holes of 0.4 mm diameter into the parachute. Drill a hole midway between the pre-drilled 0.6 mm diameter hole and outer edges of the parachute. The third hole should be drilled centrally into the underside of the parachute.

Twist one end of the two 0.4 mm diameter wires together for approximately 10 mm. Bend the free ends of the two wires into small loops.

Bend one end of the three 0.3 mm diameter wires into small loops.

Use thin CA adhesive to secure the twisted ends of the 0.4 mm wires into the pre-drilled 0.6 mm hole in the parachute.

Use thin CA adhesive to secure the non-looped ends of the 0.3 mm wires into the pre-drilled 0.4 mm holes in the parachute.

Brush paint the wires with 'Tamiya' _____ or similar.

Brush paint the end loops of the wires with 'Mr. Colour' Stainless Steel (213) or similar.

NOTE: *The painted wires representing the ropes of the parachute will be positioned after the parachute is fixed in position on the display base.*



PART 13

DISPLAY BASE

PART 13 - DISPLAY BASE

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

The grass mat was cut to shape from a sheet of 'Polak' grass mat (Wild Meadow variation 4706). The cut mat was then positioned on the base and the model and figure test placed to achieve the best effect and to make sure the transparent cover of the case would be able to be located without touching the model. The model and figures were then removed with the grass mat left in position on the display base. The edges of the grass mat were then carefully lifted and a soft marker pen was used to mark the outline of the grass mat, but approximately 5 mm inside the mat edge. The grass mat was then removed and the area of the display base inside the marks was scuffed using a coarse grit sand paper, in order to give a key for the adhesive.

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

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

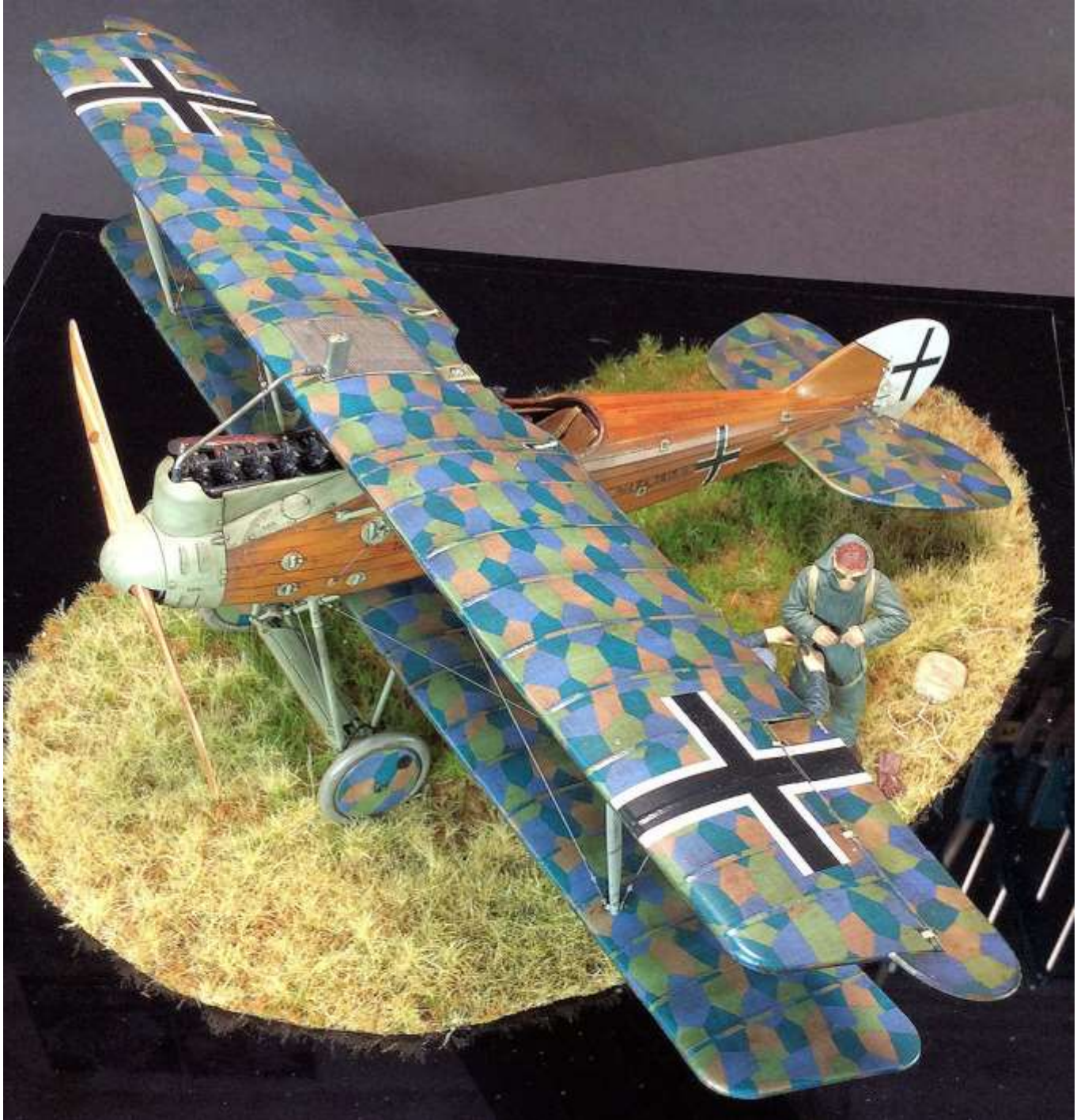
Finally an acrylic plaque stand was positioned to the left, front corner of the display base (just in from the edges of the shoulder for locating the transparent acrylic cover. The area on the underside of the stand and its contact are on the display base were scuffed using a coarse grit sand paper,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

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

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

Thin CA adhesive or PVA adhesive was then applied to the support pins of the figures, which were then located, in the desired positions, into their pre-drilled location hole. The aircraft itself, being light in weight, will tend to sit on top of the grass on the mat, rather than seat fully down, as would a real aircraft. Therefore the location of the aircraft wheels and tail skid were marked onto the grass mat and those areas scrapped through the mat to create slight and unobstructed troughs, into which the aircraft could be located. The same applied to securing the parachute into the grass mat, so it did not just sit on the top of the grass detail.

PART 14
COMPLETED
MODEL
PHOTOGRAPHS















END