

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. As most modelers, I got involved in the world of construction kits at an early age, but 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, various modelers have asked if I would create 'build logs' for my future builds, which is what I now do for each build. 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 'Wingnut Wings' 1:32 scale model of the Fokker E.IV 'Eindecker'.

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INTRODUCTION

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



AFTER MARKET

AFTER MARKET

Figure

'Wings Cockpit Figures' LSK pilot in greatcoat 1914-18 (LSK 10).

Propeller

'ProperPlane' wood laminated 'Garuda' propeller.

Weapons

'GasPatch' 1:32nd Spandau Early LMG08.

Rigging accessories (as required)

'Steelon' or 'Stroft' 0.08 and 0.12 mm diameter mono-filament,
'Gaspatch' 1/32nd scale metal turnbuckles (Type C),
'Gaspatch' 1/48th scale metal turnbuckles (One Ended and Anchor Points),
'Proper Plane' 1/32nd scale resin turnbuckles,
'Albion Alloy's' 0.4 and 0.5 mm Brass tube and rod.

Resin

'Taurus Models' Oberursel U.III engine (D3216),
'Gaspatch elite accessories' Spandau LMG 08 (early).

Sundries (as required)

Paints ('Tamiya' Acrylic, Humbrol Acrylic, 'Mr. Metal Colour', 'AK Interactive' Primer and micro-filler (Grey AK758, White AK759), 'AK Interactive' figure paints, Kerosene AK-2039, Oil AK-2019 AK-2033, 'Alclad II' Lacquers, 'Alclad' Aqua Gloss 600, 'Mr. Colour' Levelling Thinners, 'Vallejo' Model Colour, PVA Adhesive (e.g. 'MicroScale' Kristal Klear), 'VMS Fleky' CA adhesive (Standard and Thin), Metal Prep 4K or 'Mr. Colour' Metal Primer R, UHU White Tack, 'AV' Masilla Plastica (401) putty, 'Mr. Hobby' dissolved putty, 'White Spirits', 'De-Lux Materials' Perfect Plastic Putty, 'Flory Models' sanding/polishing sticks, 'Humbrol' Maskol, 'Milliput' two part putty, 'Mr. Surfacer 500, 1000,1200', 'DecoArt Crafters Acrylic' (water based) paints, 'Artool' Ultra Mask sheets, 'Plastruct' styrene rod, 'Tamiya' liquid cement, 'PlusModel' lead wire, 'ANYZ' 0.5 mm silver/black braided line, 'Plastic Magic' liquid cement, 'Blacken-It' solution, 'MFH' black 0.4 mm flexible tube (P-961), 'EZ' stretch line (fine or heavy black), 'Revell' Contacta Professional cement (39604), 'Citadel' paints range, 'MFH' Black tube (P-961), 'PlusModels' lead wire, 'Artool' mask sheet, 'MDP' white backed decal paper for inkjet printer, 'Krylon' Acryli-Quik sealer, 'Abteilung 502 (ABT115) masking fluid or 'Molotow' pump masker, 'Windsor & Newton' Griffin Alkyd paints, 'AK Interactive' oil brushers, 'AK Interactive' Odourless Thinners (A.Mig 2019).

Weathering mediums (as required)

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

Display Base

Etched Plaque (name plate), 'Inperspective' custom made Acrylic base and cover, 'Lars op't Hof' Scenery (Pasture Autumn Long).

THE AIRCRAFT

THE AIRCRAFT

This model represents Fokker E.IV 'Eindecker', Serial No: 161/16 of home defence unit Kest 6, April 1917 at Bonn Hangelar, Cologne. Flown by Leutnant Hans 'Garrelt' Müller.

References:

'Wingnut Wings' instruction manual.
'Windsock' Mini data file 7 - Fokker E.IV.
On-line resources (various).

General:

NOTE: *The following text is extracted from the 'Wingnut Wings' instruction manual and slightly altered to cover the particular aircraft being modelled.*

Background:

The legendary Fokker Eindecker, armed with a machine gun synchronized to fire through the propeller, made its first kill on the 1st of August 1915. It was a 80hp Oberursel U.0 (license built 80hp Gnome) powered wing warping Fokker E.1 flown by Max Immelmann and marked the beginning of the "Fokker scourge". It was inspired by the capture on the 18th of April 1915 of France's Roland Garros and his Morane-Saulnier Type L Parasol, which was fitted with a forward firing machine gun (using armoured deflector plates to protect the propeller from 'serious' bullet damage). The Germans set about coming up with their own version. Legendarily, the 25 year old Anthony Fokker created his own interrupter gear in just 48 hours after being inspired by the capture of the Garros aircraft, but this is undoubtedly a myth. A mechanical interrupter gear had been patented in 1913 by Hans Schneider of LVG, but it was not until Fokker perfected it, or a similarly inspired design, that it worked sufficiently well to be employed in combat. Lawsuits filed by Schneider against Fokker continued up until September 1933. Fokker's E.1 (armed Eindecker 80hp) types started shipping to front line units in June 1915. The 100hp E.II, developed concurrently with the E.1, started entering service the following month with the E.III following in August.

Fokker E.IV:

The 160hp Oberursel U.III powered Fokker E.IV, which used the wings and tailplane of the E.III, was initially fitted with three LMG 08 machine guns, which proved to be one gun to many and it was removed on production aircraft. It first appeared in September 1915. However, production aircraft did not arrive at the front in larger numbers until March-April 1916. In addition to the extra firepower of the second machine gun, the ability to keep fighting when one gun jammed was a considerable benefit. However, the weight of the extra gun and Ammunition, combined with the extreme gyroscopic forces of the 160hp rotary engine, meant that the wing warping Fokker E.IV was not the evolutionary success hoped for. By the time the E.IV was beginning to make its presence known over the front lines, the appearance of the highly manoeuvrable French Nieuport 11 and British DH.2 had already marked the beginning of the end of the "Fokker scourge". By December 1916, Eindecker aircraft had been withdrawn from operational flying and some were relegated to serving with the 'Kampfeinsitzerstaffeln' (Kests), which were the home defence units. The subject of this model served with Kest 6, which operated from Bonn-Hangelar and which eventually became Jagdstaffel 86 until the end of the war.

Kampfeinsitzerstaffeln' (Kests):

The 'Kampfeinsitzerstaffeln' (Kest) were single seater battle flights, formed for the defence of Germany from bombing attacks from the British and French.

Kest 1 through 6 were formed in August 1916.

Kest 1 and Kest 4 were divided on 15 April 1917 to become Kest 1a and Kest 1b and Kest 4a and Kest 4b.

Kest 7 through 9 were formed February 1917.

In 1918, Kest 3 and Kest 8 served on the Front with Jagdstaffeln forming Jagdgruppen.

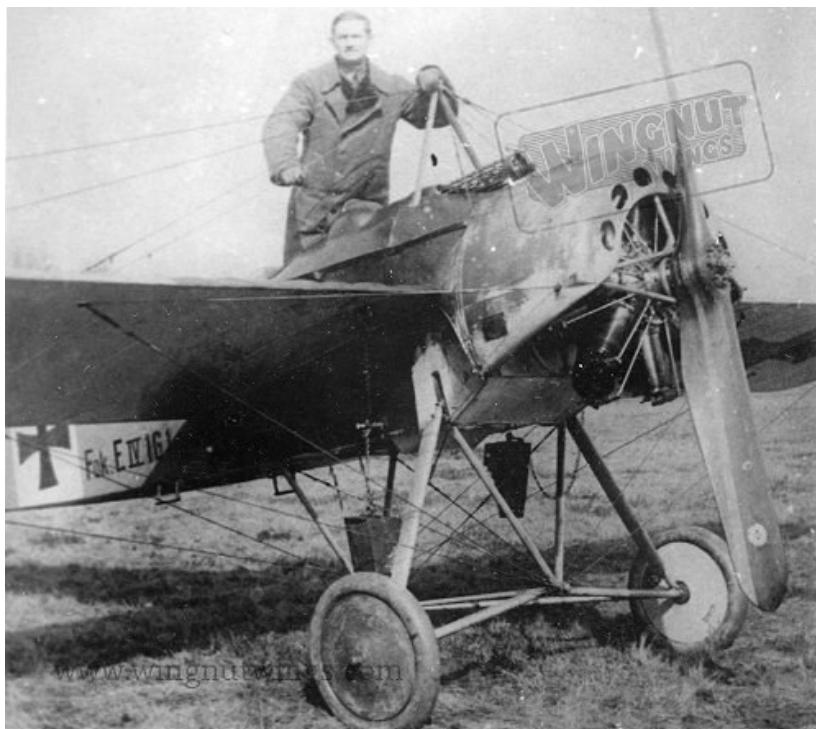
In 1916, the Kest's were equipped with Fokker E.III and Fokker E.IV as well as Fokker D.II and Fokker D.III aircraft.

In 1917 the Kest's re-equipped with Albatros D.II and Albatros D.III aircraft and later the Albatros D.V.

In 1918 the Kest's were equipped with Albatros D.V, Pfalz D.III, Fokker DR.I and later the early Fokker D.VII aircraft. The Pfalz D.VIII and the SSW.D.III equipped Kest 1,2,3,4,5, 6 and 8.

On the 29th of October 1918 the Kest's were redesignated Jasta 82 to 90.

Fokker E.IV Serial No:161/16 at Bonn Hangelar, Cologne in April 1917



THE PILOT

THE PILOT

This model represents Fokker E.IV 'Eindecker', Serial No: 161/16 of home defence unit Kest 6, April 1917 at Bonn Hangelar, Cologne. Flown by Leutnant Hans 'Garrelt' Müller.

References:

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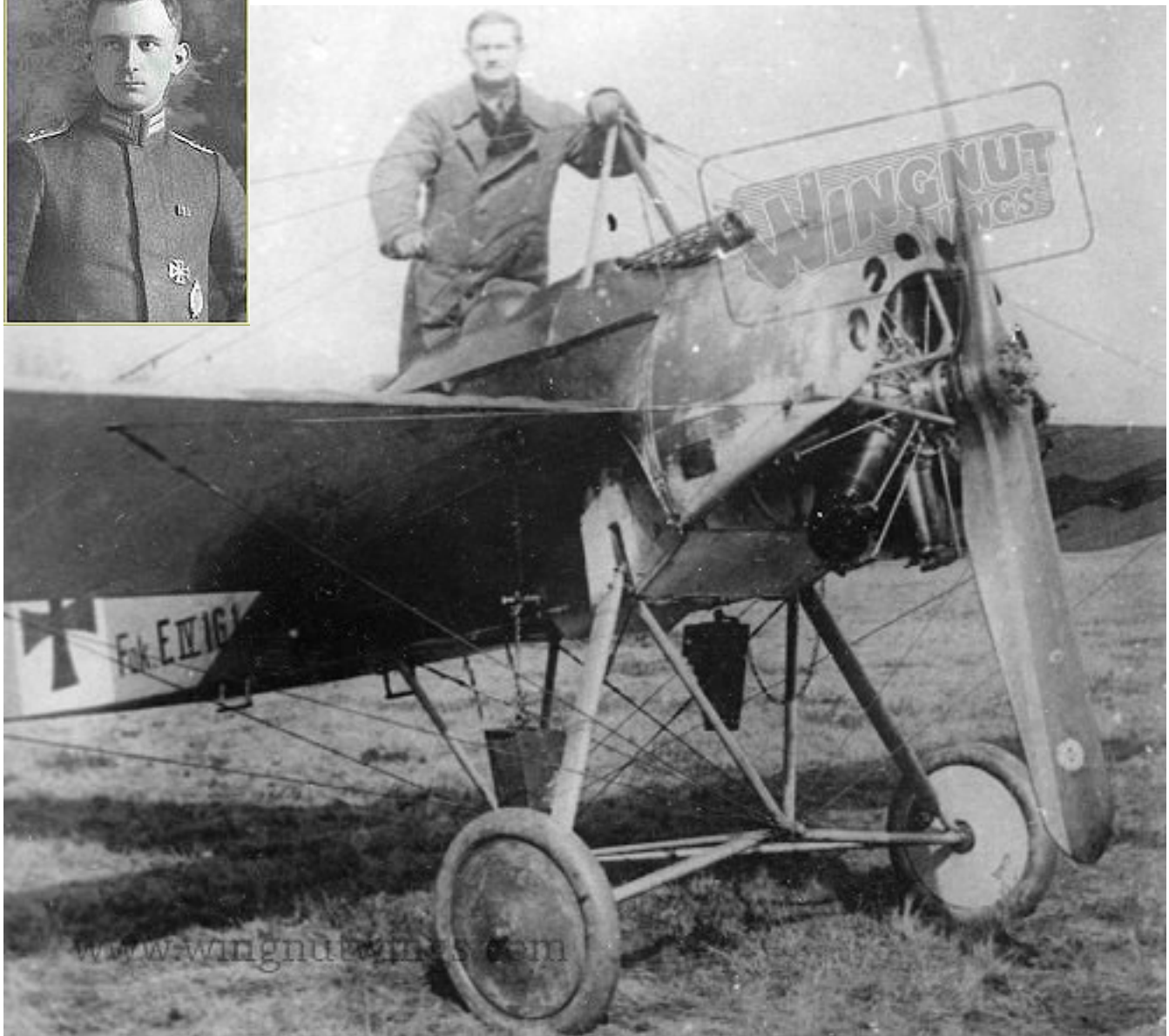
'Windsock' Mini data file 7 - Fokker E.IV.

On-line resources (various).

NOTE: Information for the pilot of this aircraft is either scarce or possibly being confused with another pilot of the same name.

Hans Karl Müller was a fighter pilot who scored 9 victories until being wounded in combat on the 26th of December 1916, after which he was withdrawn from operational flying and instead was given test pilot duties for the Siemens-Schuckert company.

Hans Müller was also a fighter pilot and survived the war and it's the similarity of the pilot in the following photographs that leads me to believe he is the correct person for this aircraft, given the photograph in the aircraft was taken in April 1917. However, given the information available, the identity of the actual pilot is my 'best guess' and may not be correct.



Hans Müller was born in Etzel, Ostfriesland on the 3rd of July, 1896.

WW1 service:

On the 1st of April 1914 Müller joined the army and served in Infantry Regiment No.13.

He transferred to the German Air Force in November 1916 and flew two-seaters until the end of 1917. During 1917 it seems he may have been serving on the home defence Kest 6, where he was photographed in Fokker E.IV Serial No:161/16.

In late 1917 he joined Jagdstaffel 12 then in early 1918 moved to Jagdstaffel 15 flying the Fokker DR.1 Triplane. On the 9th of January 1918 he scored his first victory and on the 29th he claimed two more victories, although the second was unconfirmed. In March 1918, after shooting down an RE8 for his third confirmed victory, his aircraft was badly damaged over no man's land, but he managed to make it back to his own lines.

He finally moved to Jagdstaffel 18 and it was between the 27th of March and the 22nd of September 1918, that he shot down and destroyed ten more opponents, one of which was possibly Paul Baer, the first American ace of the United States Air Service.

It was between 9:00 and 9:15 AM on 14 September 1918, Müller shot down three SPAD XIII aircraft from the 103rd Aero and at 2.40 that that same afternoon, he shot down a fourth Spad from that same squadron. A week later, he finished his tally with one last Spad. It was during this day that Müller scored Jasta 18's 100th victory. His total victory tally was twelve confirmed and one unconfirmed.

Footnote:

At some point in time, Müller changed his surname to "*Garrett*" as the name "Hans Müller" was rather common and he and another pilot with the same name were forever getting their mail confused.

Post WW1:

During World War II, Müller served on the staff of Luftlotte III under Generalfeldmarschall Sperrle.

Post WW2:

After WW2 he worked in civilian life as an engineer, designing steam locomotives for 'Hanomag and Henschel' before going freelance.

Hans Müller died of a brain tumour in Munich in 1964.

	DATE	TIME	UNIT	ENEMY	LOCATION
1	9 January 1918	1200	Jasta 15	AR2	Staubecken
2	29 January 1918	1515	Jasta 15	AR2	South of Staubecken
UC	29 January 1918	1515	Jasta 15	AR2 (unconfirmed)	South of Staubecken
3	27 March 1918	Not Known	Jasta 18	RE8	Miraumont
4	4 May 1918	1850	Jasta 18	Sopwith Camel	Nieppe Wood
5	22 May 1918	1053	Jasta 18	SPAD	Estaires
6	27 May 1918	1725	Jasta 18	DH 4	Diedenenhofen

	DATE	TIME	UNIT	ENEMY	LOCATION
7	13 September 1918	Not Known	Jasta 18	DH9	Thiaucourt
8	14 September 1918	0900	Jasta 18	SPAD XIII	Gorz
9	14 September 1918	0910	Jasta 18	SPAD XIII	West of Sillegny
10	14 September 1918	0915	Jasta 18	SPAD XIII	South of Goin
11	14 September 1918	1440	Jasta 18	SPAD XIII	West of Port-a- Mousson
12	22 September 1918	1905	Jasta 18	SPAD	Combres Hill

PART 1 MODEL KIT

PART 1 - MODEL KIT

(‘Wingnut Wings’ - Kit No:32029)

Normally here I would write a basic description of the model, noting any points of interest or flaws. However, there is a good review of the kit online. Paste the link below into your internet browser to view the review.

https://www.hyperscale.com/2013/reviews/kits/wingnutwings32029reviewrb_1.htm

Decals:

The decal sheet provides the markings required for the aircraft being modelled.

Propeller:

The kit supplied propellers represent types manufactured by either ‘Integra’ or ‘Garuda’. However, I prefer to replace the kit supplied propellers, where possible, by hand made wood laminated propellers from Alexey Belov of ‘Proper Plane’.

Parts not required:

The prototype version and other kit parts are not required for this particular build. Only the parts required for this particular model (**Version D on page 25 of the instruction manual**) are used. Other required parts may be replaced by scratch made parts.

PART 2

WOOD EFFECTS

PART 2 - WOOD EFFECTS

General:

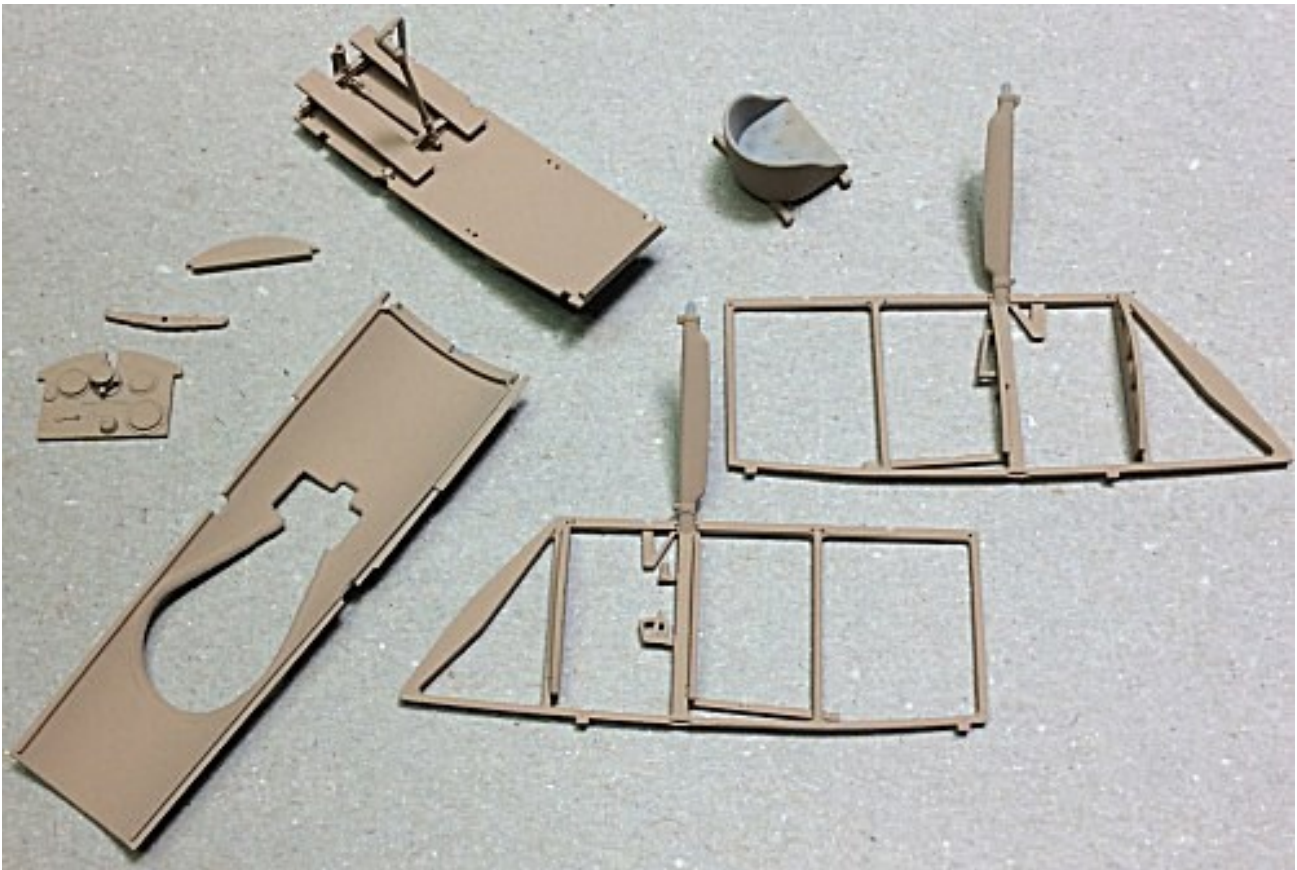
Parts of the model that are supposed to be made of wood can prove to be a challenge to replicate a wood finish to the part. Some after market companies produce accurate wood decals, which can be used to cover larger areas, such as cockpit decking and fuselage panels. However, decals can't easily be used 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 'AK Interactive' Grey (AK758) or White (AK759) acrylic primer. Once the primer is dry, you can start applying the wood effect to the applicable parts, such the cockpit framework, decking, seat supports, rudder bar, instrument panel and of course, the wing struts and propeller. With practice, this method can also be used on larger areas, such as fuselage panels.

Preparation:

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

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



Wood effect - Method 1:

DecoArt Crafters Acrylic' paints:

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

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

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

Once painting is complete, clean the brush in water.

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



Wood effect - Method 2:

Windsor & Newton' Griffin (Alkyd) oil paints:

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

Mask off the area as required.

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

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

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

Leave the oil paint to settle for about ten minutes.

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

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

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

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

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

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

Surface finish:

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

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

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

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

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



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

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

PART 3

WEATHERING

PART 3 - WEATHERING

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

Flory Model clay washes:

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

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

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

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

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

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

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



Chipping effects:

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

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



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



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



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



Water colour pencils:

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



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

Softly '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

PART 4 - DECALS

Standard decals:

NOTE: *The following is **applicable only** for decals on a **painted surface**. If decals are to be placed on top of **previously applied decals**, the decal setting solutions 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 'similar should be airbrushed over the first decals, to provide a barrier against the setting solutions.*

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

Airbrush a sealing coat of 'Alclad' Gloss (ALC-310), 'Alclad' Aqua Gloss (ALC-600), 'Tamiya' Clear (X22) or similar 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 similar 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.

PART 5

RIGGING

PART 5 - RIGGING

References:

'Wingnut Wings' instruction manual.
On-line resources (various).

General:

Before any assembly, painting or application of decals, you should check that rigging attachment points are drilled out (later in this build). 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 and these drill bits sometimes have identifying coloured collars fitted to the drill shanks to denote the drill diameters. I've 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.

Wire wound rigging:

The structural rigging and flight control cables were the standard wire wound cable. The aircraft structural rigging wires were the landing wires, flying wires, drag wires and bracing wires. The aircraft flight control cables were used for rudder and elevator control. Ailerons were not fitted as this aircraft employed 'wing warping' to roll (bank) the aircraft.

These wires and cables would typically have been anchored at both ends with an adjustable 'turnbuckle' fitted and one end for adjusting the tension in the wire or cable.

NOTE: *The following illustrations and photographs are intended to supplement the rigging and control cable illustrations in the 'Wingnut Wings' instruction manual.*

Flight controls

Wing warping:

NOTE: *Early aircraft did not have conventional ailerons fitted to the wings, which when moved caused the aircraft to roll (bank) to the left or right. Instead, wing warping was used, which required the trailing edge of one wing to be deflected up and the other wing down, causing the aircraft to roll (bank) to the left or right. The leading edges of the wings were fixed and were not deflected.*

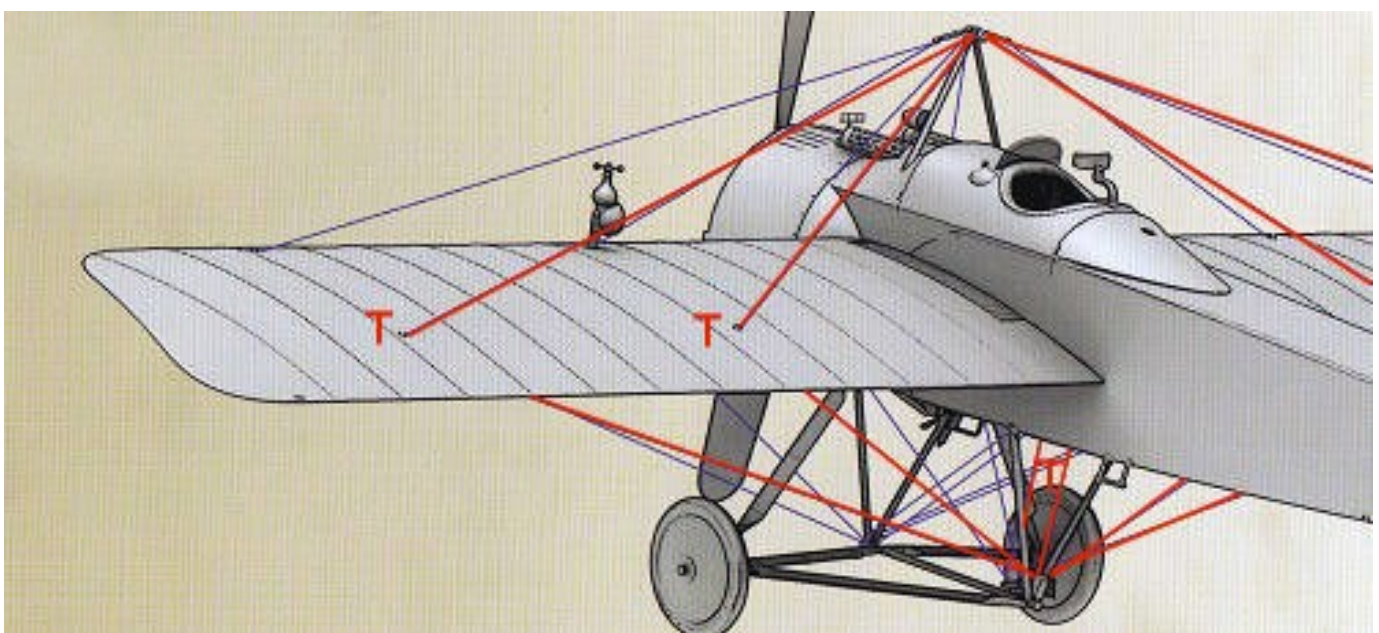
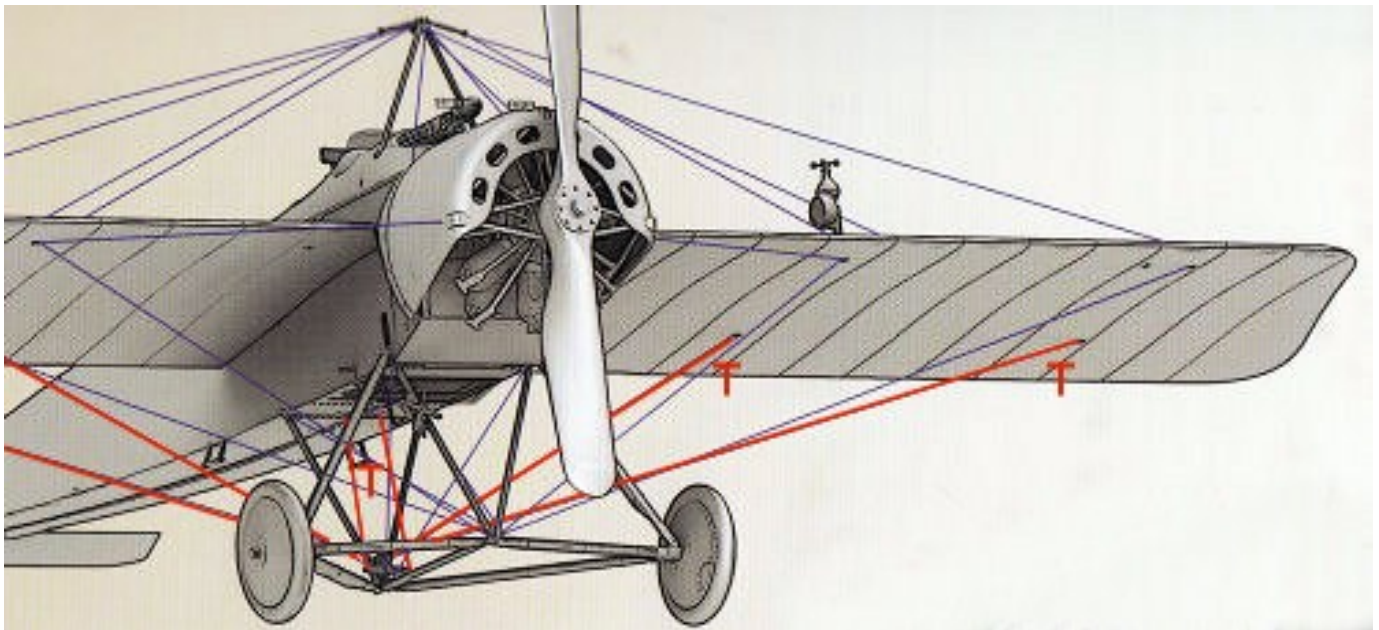
A torque tube was fitted at its front end to the bottom of the pilots control column. A control horn was fitted at the rear end of the tube. A control cable was attached to each end of the control horn and routed down through the underside of the fuselage and attached to a similar control horn at the bottom of the rear 'V' struts of the landing gear. This control horn was able to rotate in its mounting and had a control lever fitted at its rear end.

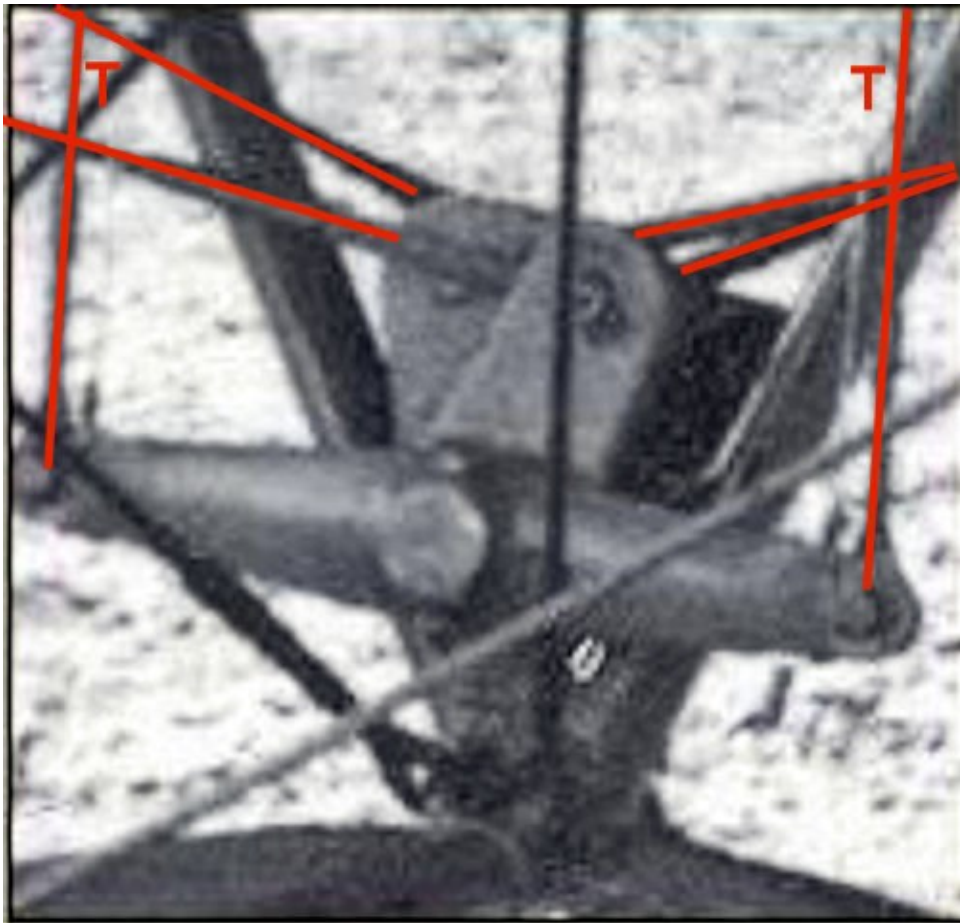
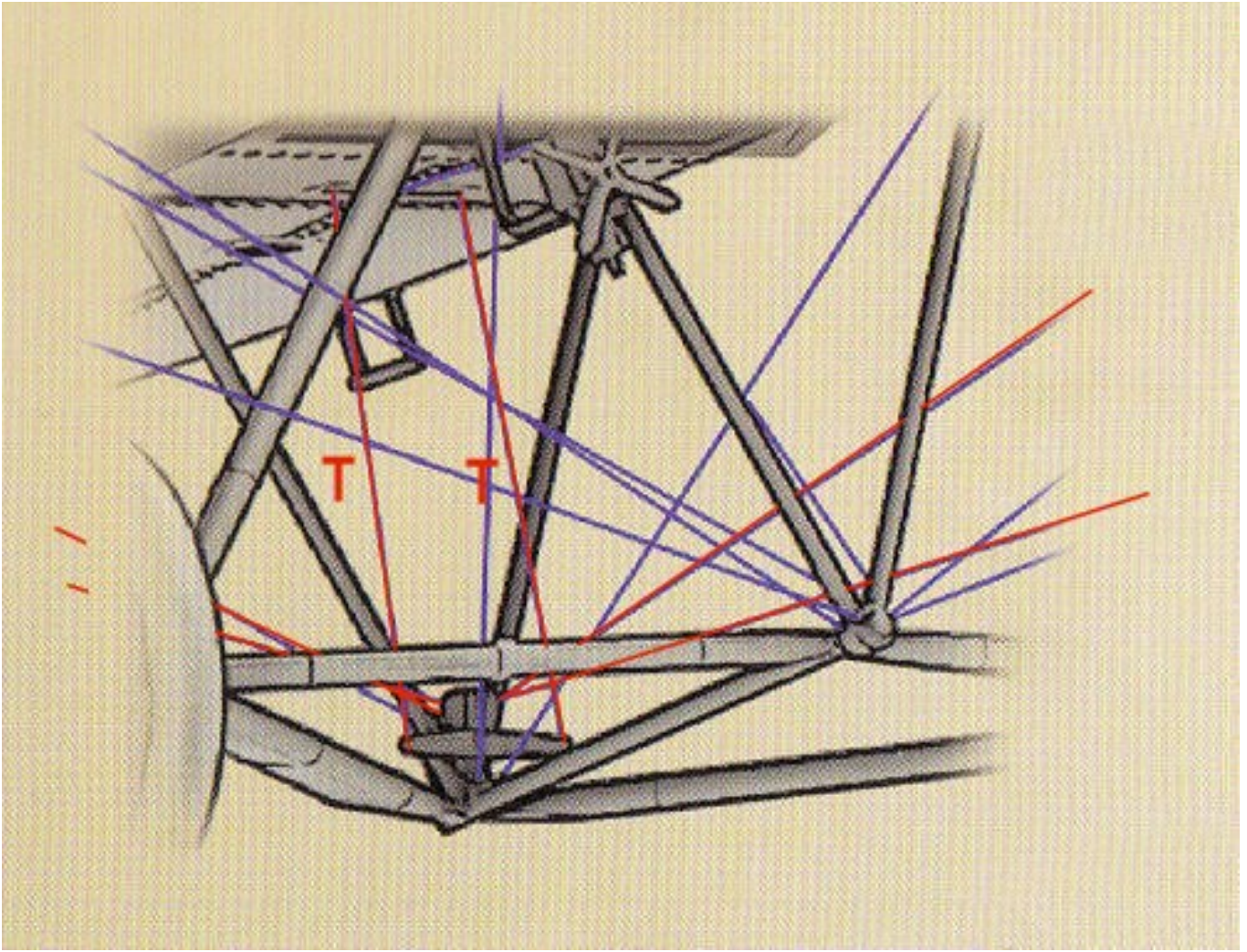
Inner and outer wing warping control cables for both wings were attached to the control lever. The two cables on one side of the control lever were routed up from the lever and out to the inboard and outboard trailing edge of the wing on that side of the aircraft.

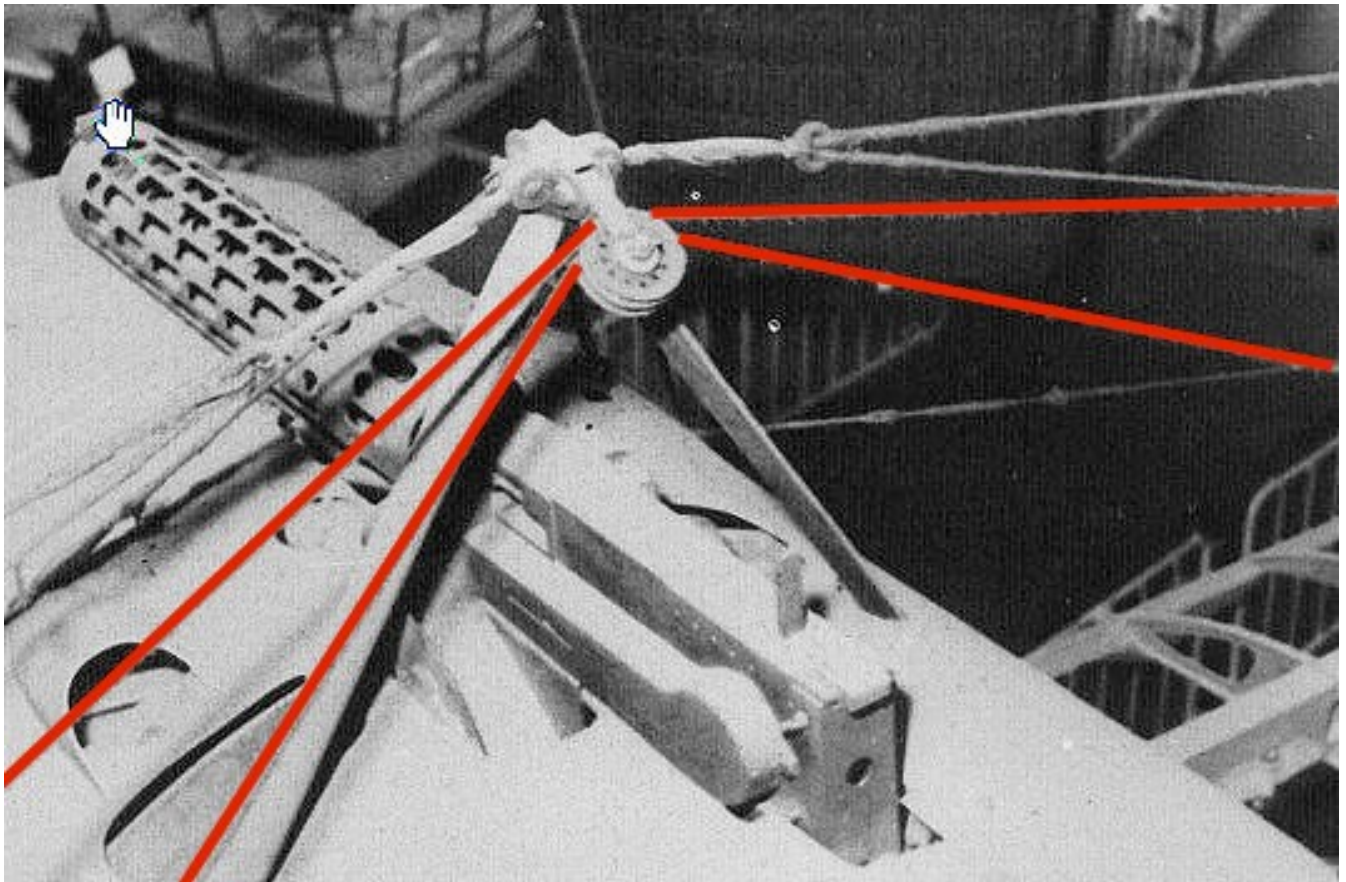
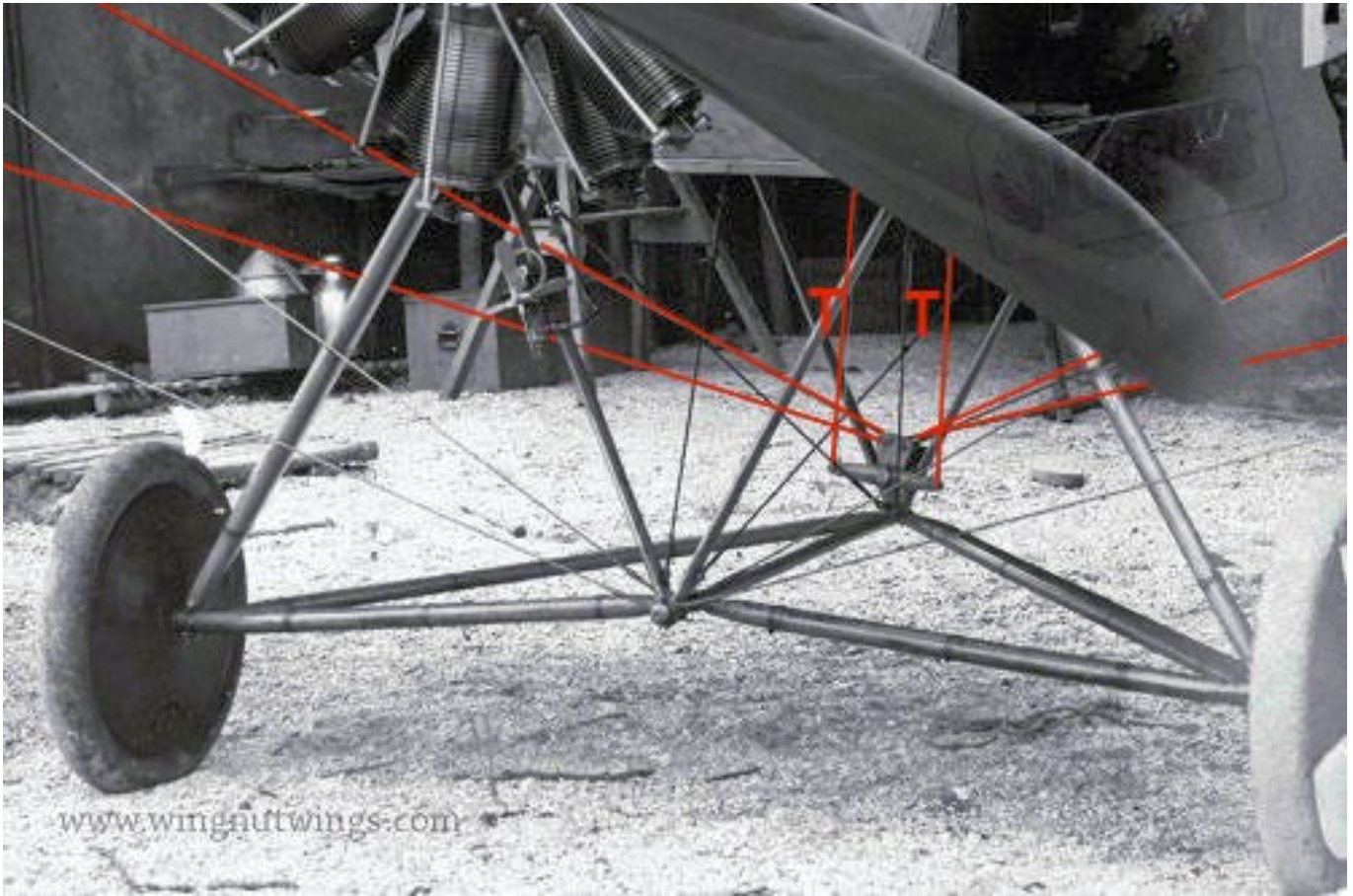
The cables passed through the wing and were then routed up and in to the cable support pylon located forward from the cockpit. The cables passed over pulleys on the top, rear of the pylon then across and through the opposite wing and back down to the control lever. Essentially each of the wing warping cables were a complete cable run from the control lever, through the wings, over the support pylon pulleys and back to the control lever.

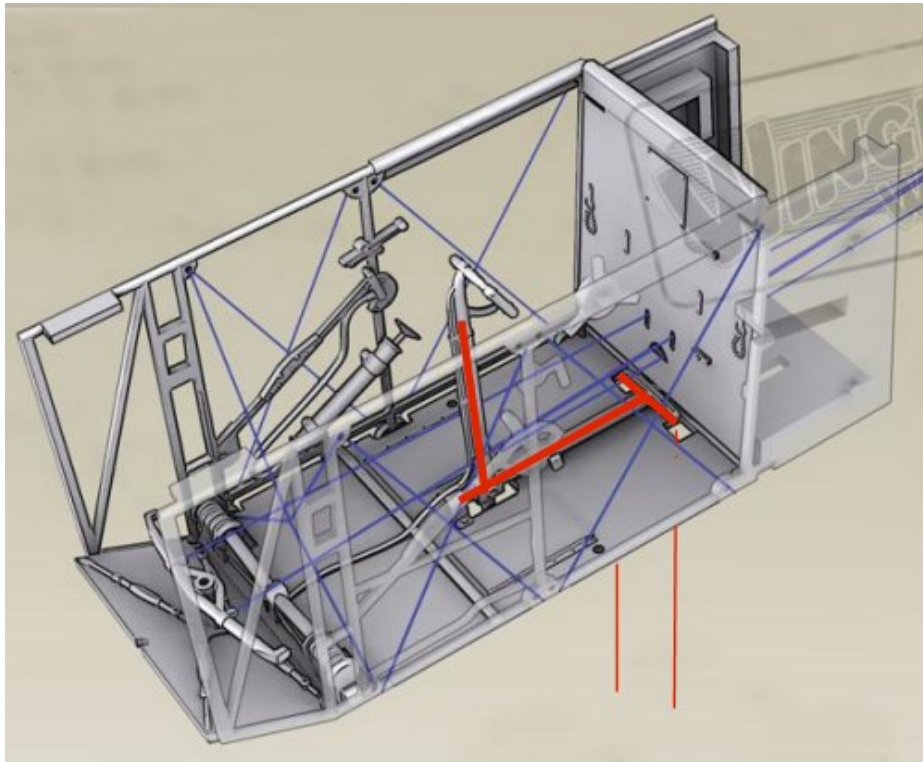
As the pilot moved the control column left or right, it rotated the control horn at the rear of the torque tube to rotate left or right. This movement was transmitted through the attached cable to the control horn on the landing gear. As it rotated is turned the control lever at its rear. As the control lever turned it pulled the wing warp cables on one side to deflect that wing trailing edge down and the trailing edge of the opposite wing up, which caused the aircraft to roll (bank) in the required direction.

Adjustable turnbuckles were fitted to the cables above and below the wings and in the control cables from the underside of the fuselage to the control horn on the landing gear.



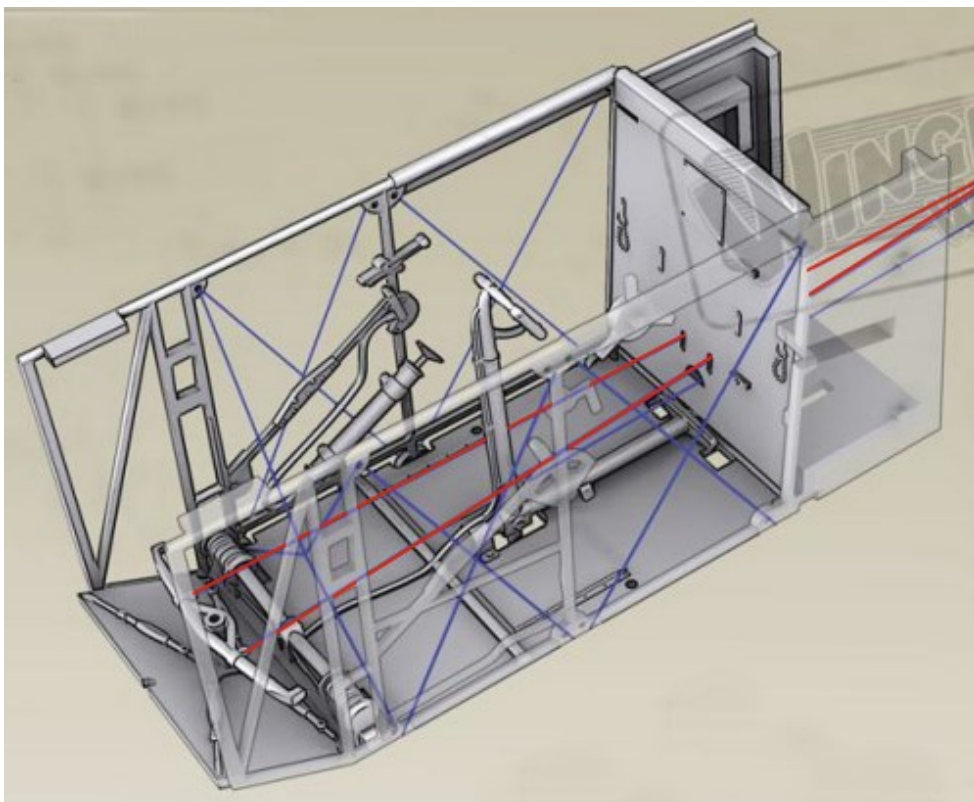


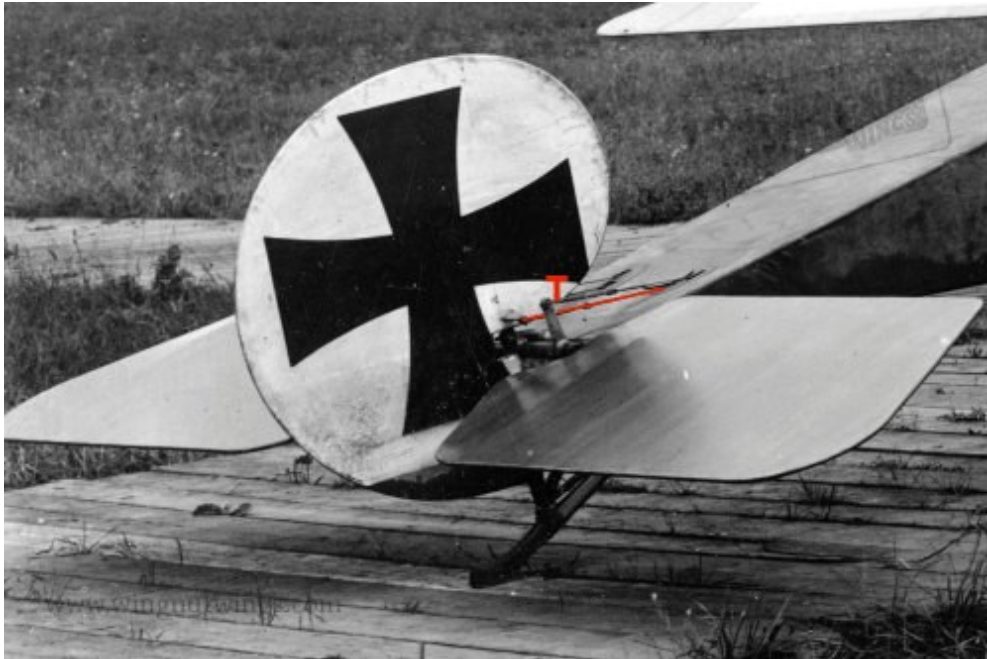




Rudder:

A rudder control cable was attached to each side of the pilots rudder in the cockpit. These two cables were routed rearwards under the pilots seat and through the cockpit rear frame and through to the rear of the fuselage. The cables exited through ports in the top, rear of the fuselage and rearwards, to be attached to the rudder control horn each side of the rudder. As the pilot moved the rudder bar left or right, the control cable on one side would tension and pull the rudder in the required direction whilst the opposite cable relaxed, allowing the rudder to move. This movement of the rudder caused the aircraft to yaw in the required direction. Adjustable turnbuckles were fitted to the cables at the rudder control horns.



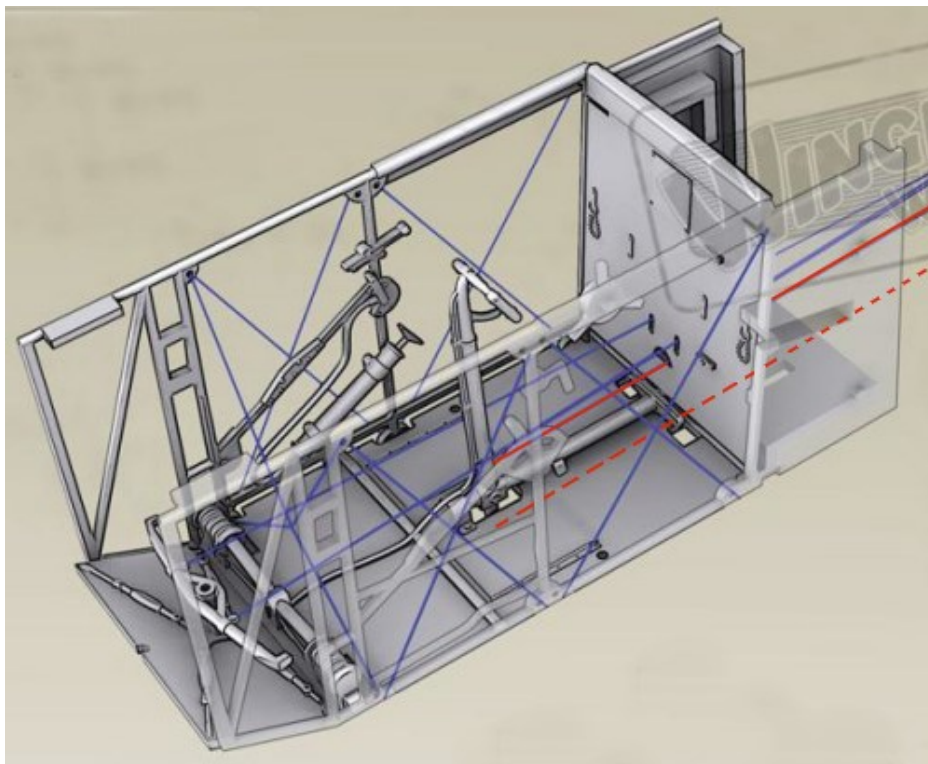


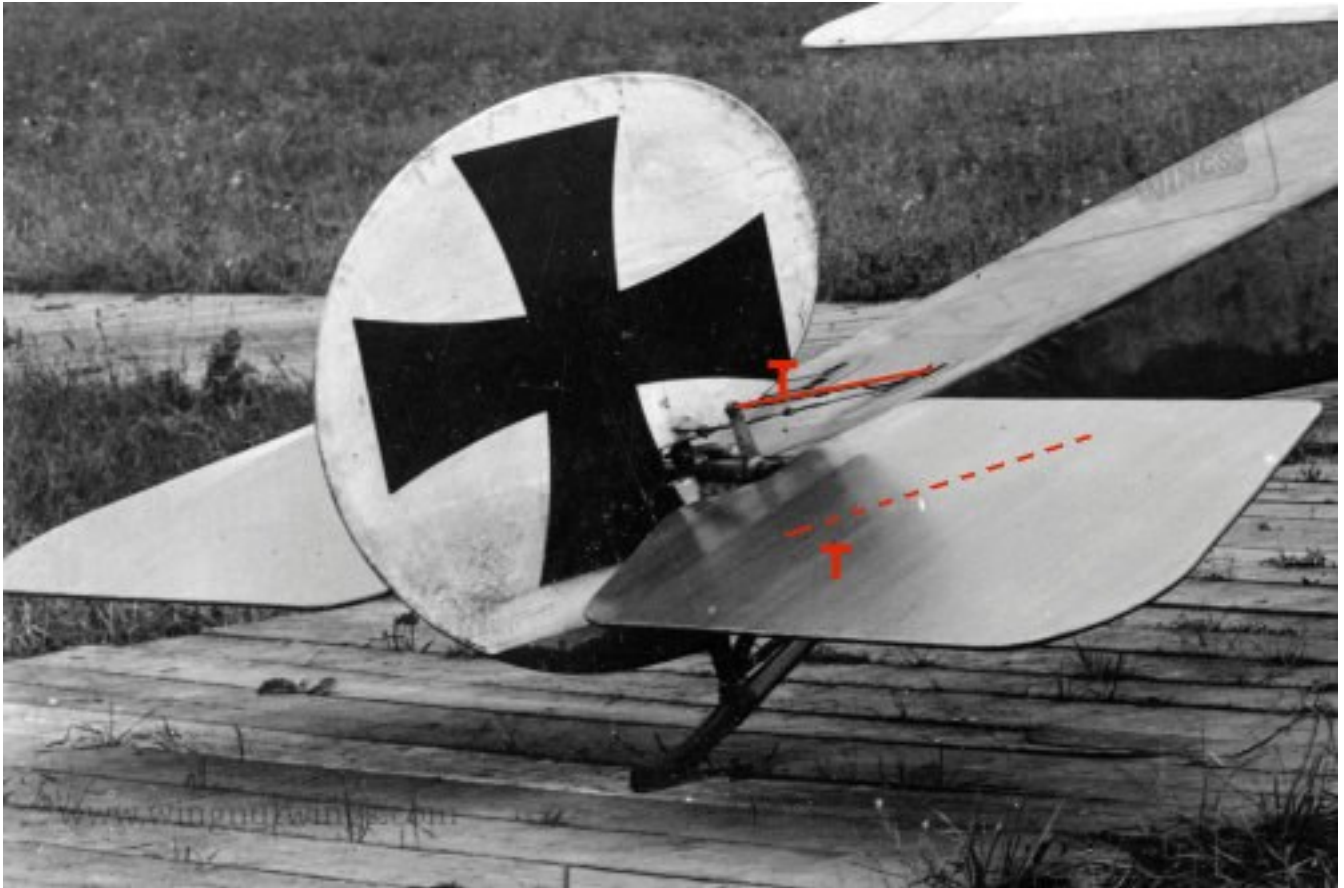
Elevator:

Two elevator control cables were attached to the pilot's control column. The upper cable was attached to the control column above the cockpit floor and the lower was attached below the cockpit floor. These two cables were routed rearwards under the pilot's seat and through the cockpit rear frame and through to the rear of the fuselage. There the upper cable was attached to two separate cables that exited through ports in the top, rear of the fuselage and rearwards, to be attached to the upper elevator control horns each side of the elevator. The lower control cable was similarly attached to separate cables to the underside elevator control horns.

As the pilot moved the control column forwards or rearwards, one control cable would tension and pull the elevator up or down whilst the opposite cable relaxed, allowing the elevator to move. This movement of the elevator caused the aircraft to climb or dive (pitch) in the required direction.

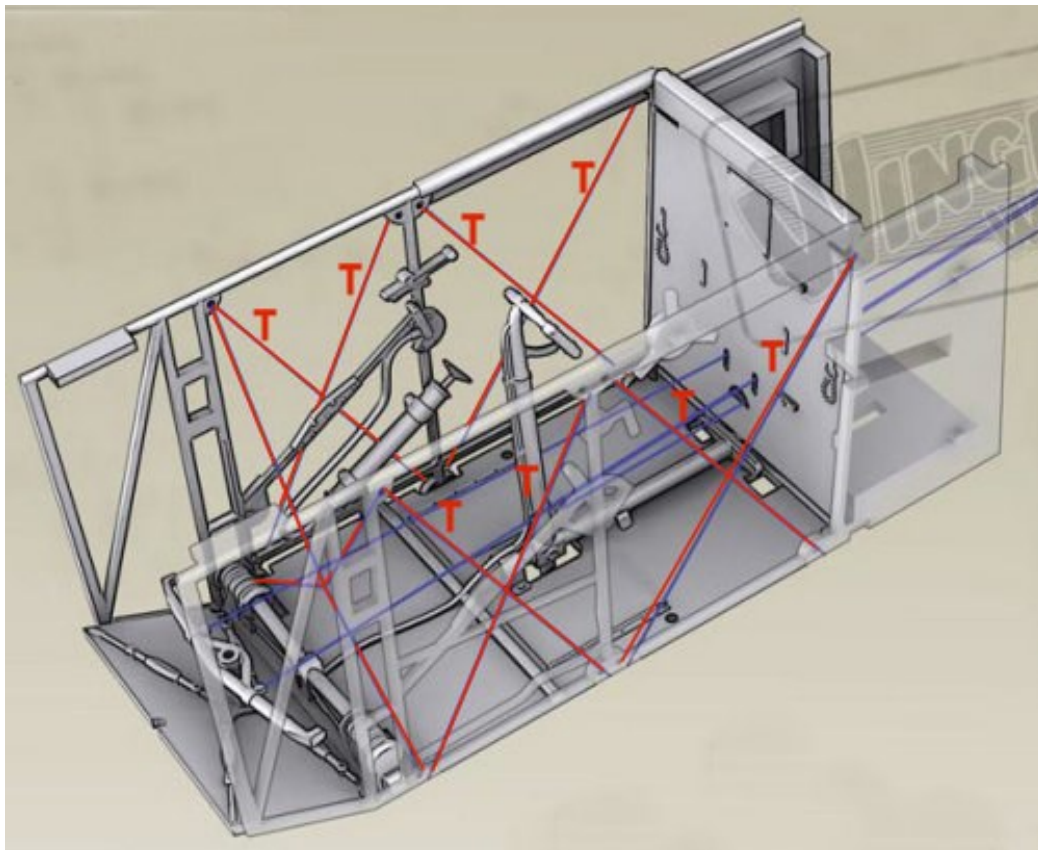
Adjustable turnbuckles were fitted to the wires at the elevator control horns.

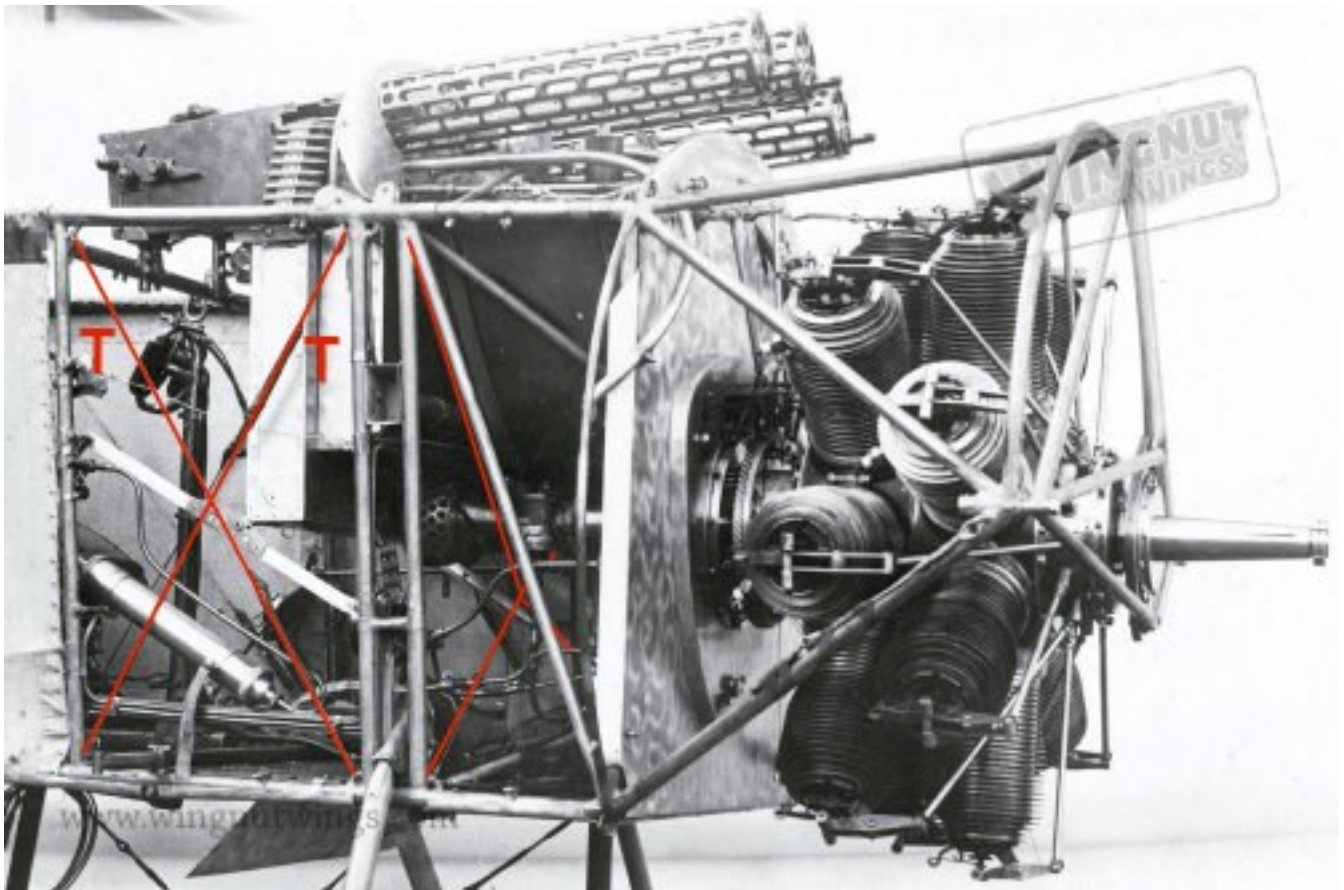




Cockpit bracing:

Crossed bracing wires were fitted between the vertical members of the cockpit side frames and across the front of the cockpit. Adjustable turnbuckles were fitted to the cables and probably at the top end of the cables for easier access.



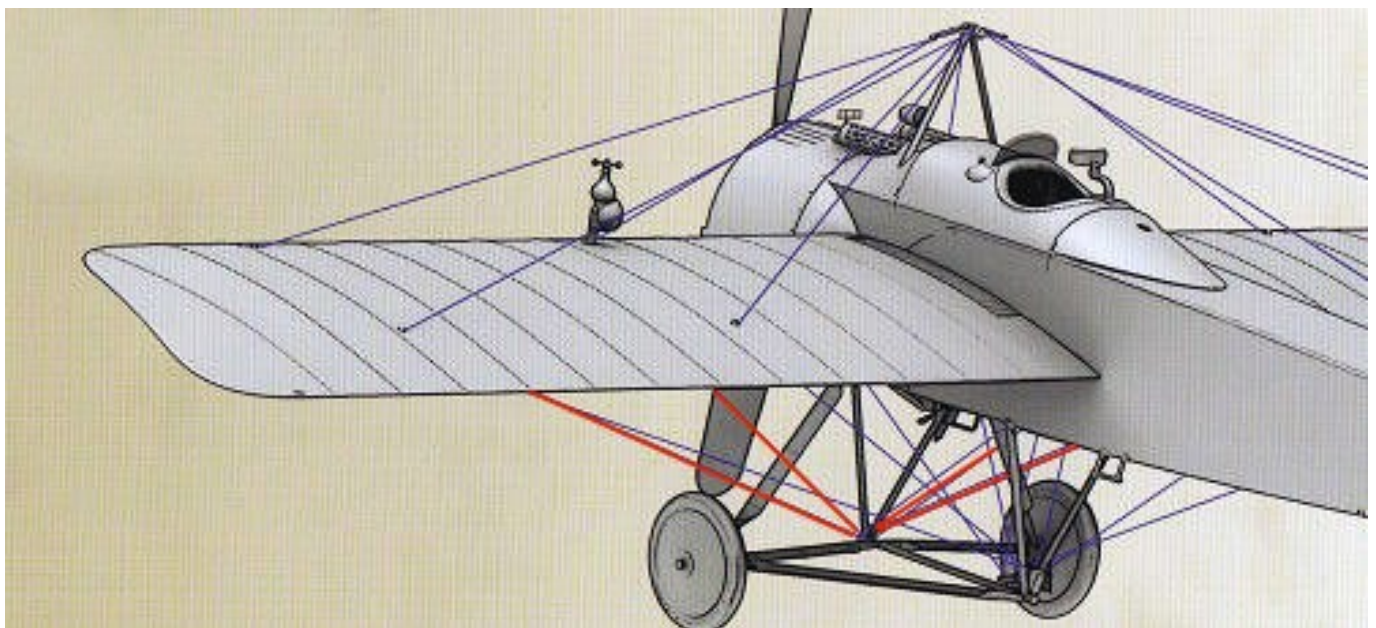


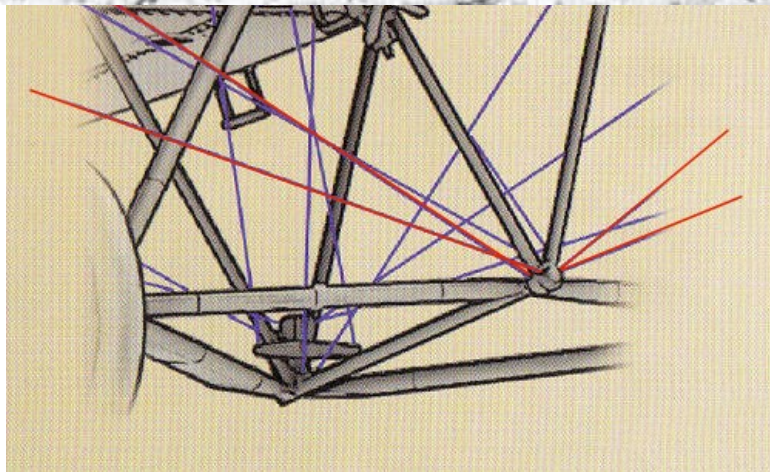
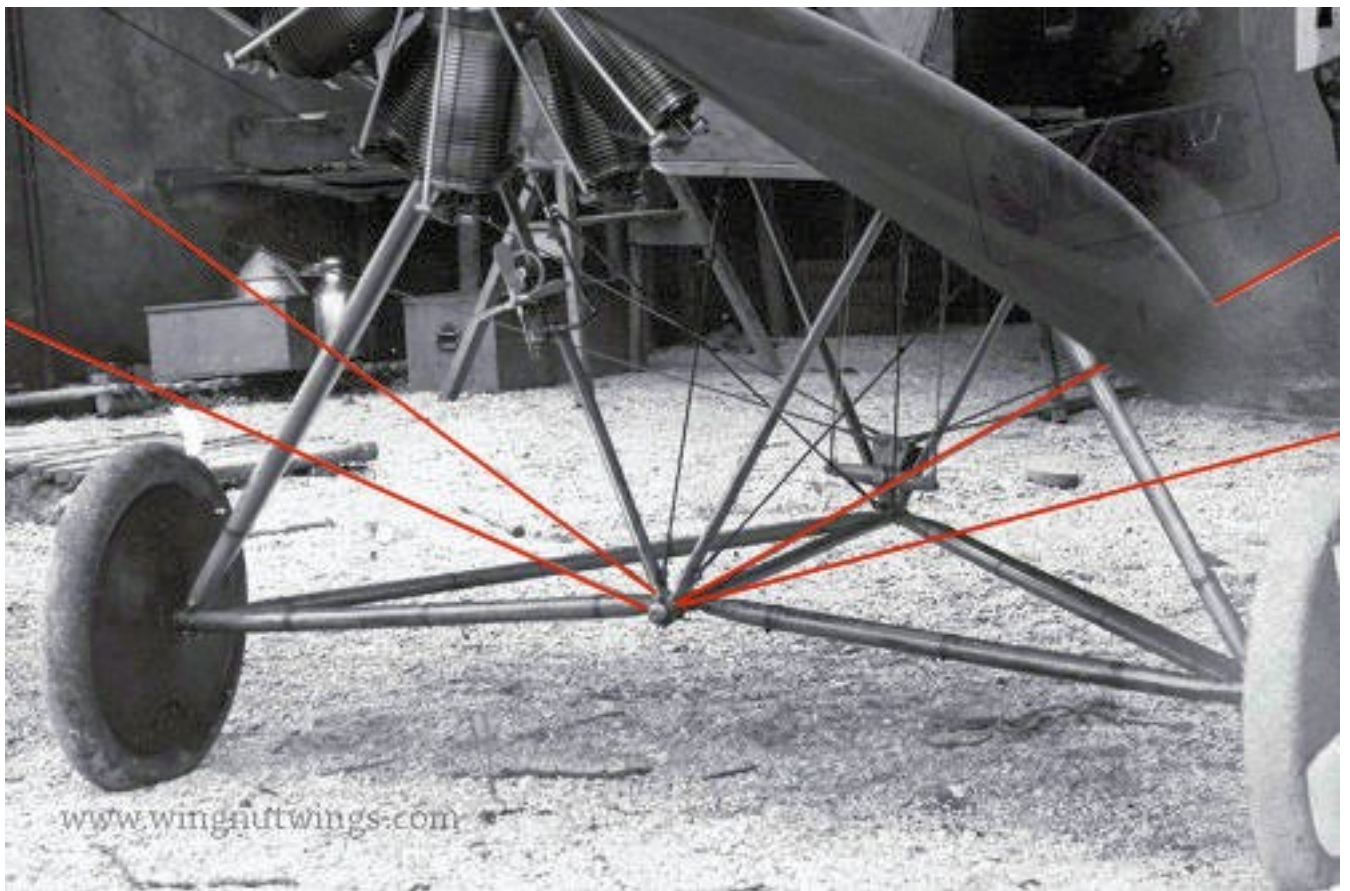
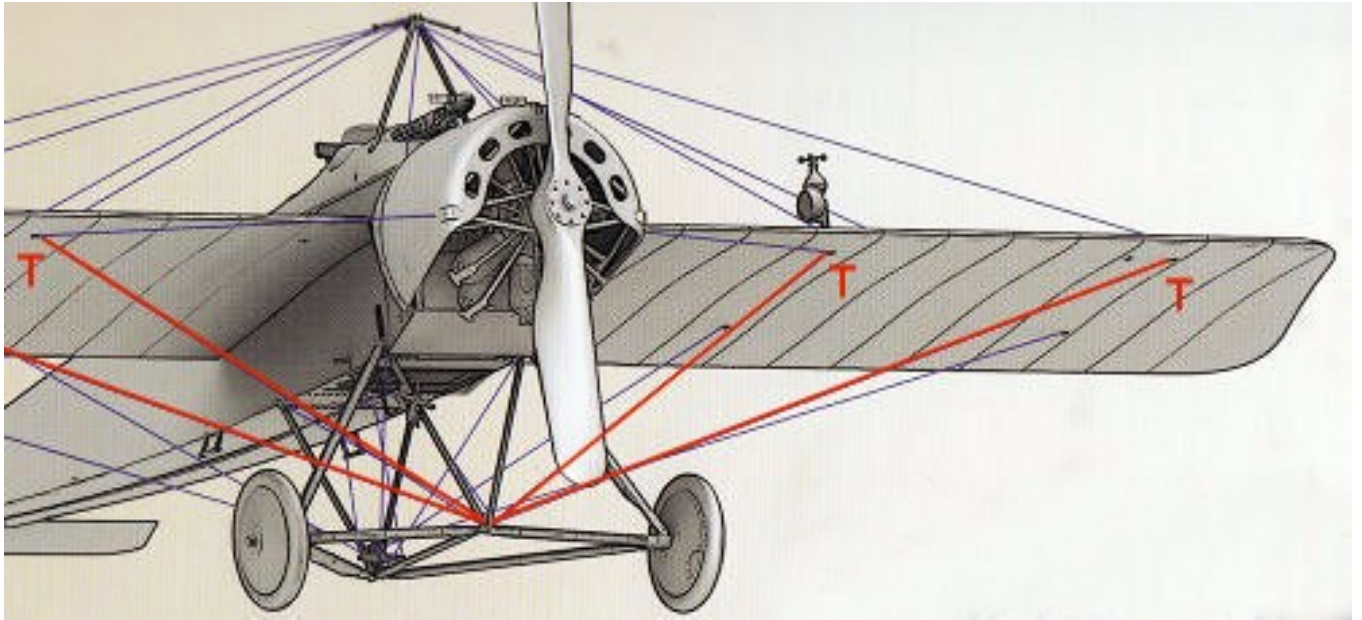
External rigging:

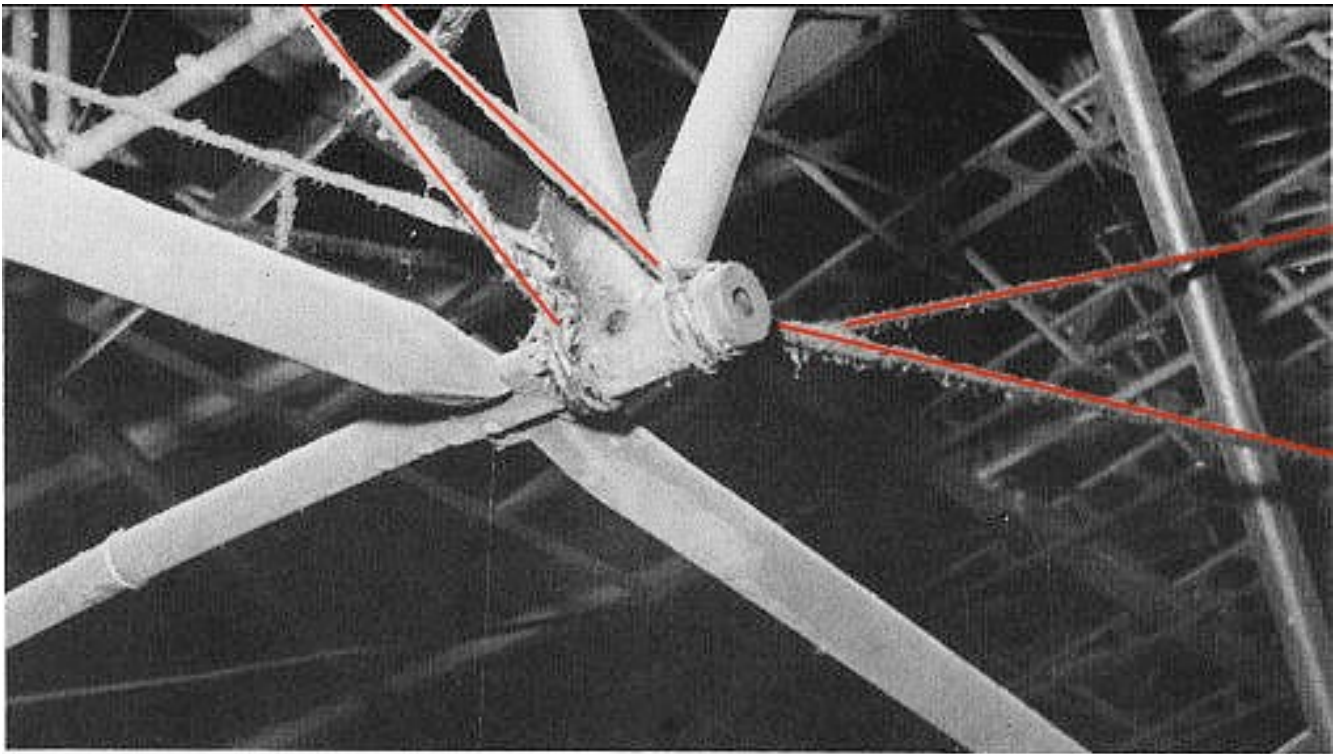
Flying wires:

Two flying wires were fitted to both sides of the aircraft. A wire for each side was attached to the forward centre spigot of the landing gear and each wire was routed out and up to the inboard Underside of the wing leading edges. A second wire for each side of the aircraft was attached to the rear of the spigot and each wire was routed out and up to the outboard underside of the wing leading edges.

Adjustable turnbuckles were fitted to the wires at the underside of the wings.



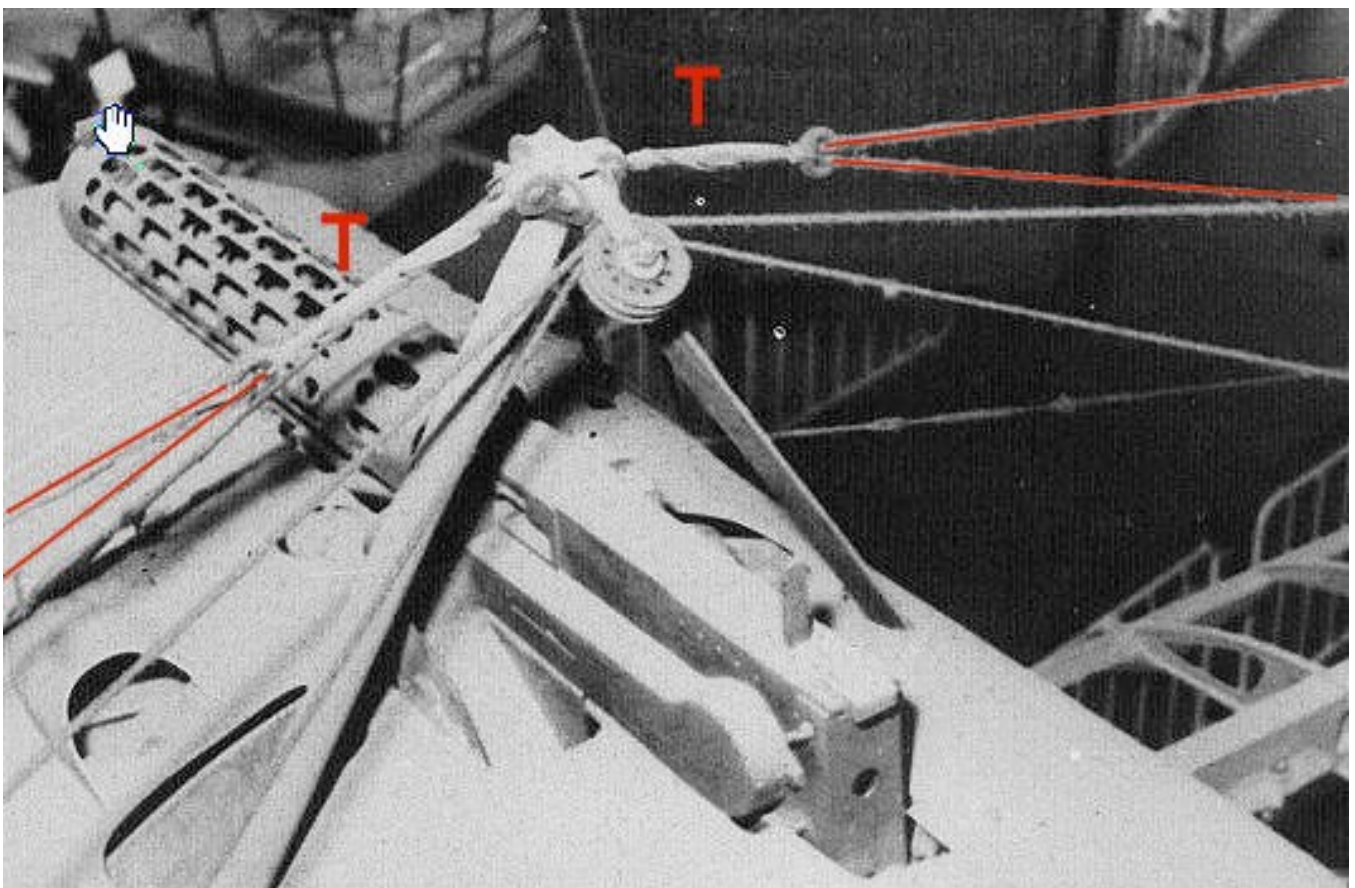


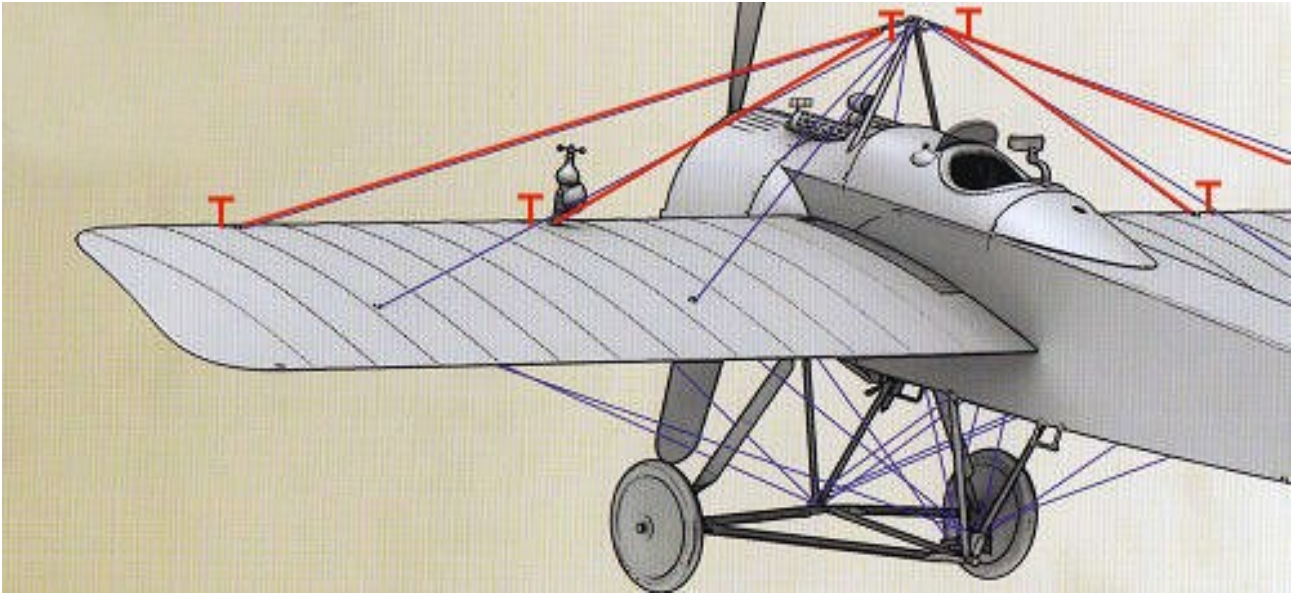


Landing wires:

Two flying wires were fitted to both sides of the aircraft. A wire for each side was attached to the turnbuckle on each side of the top of the cable support pylon, forward from the cockpit. These wires were routed down and outboard to the wing leading edge locations of the inboard flying wires. A second pair of wires were similarly attached, but routed to the location for the outboard flying wires.

Adjustable turnbuckles were fitted to the wires at the support pylon and above the wings.

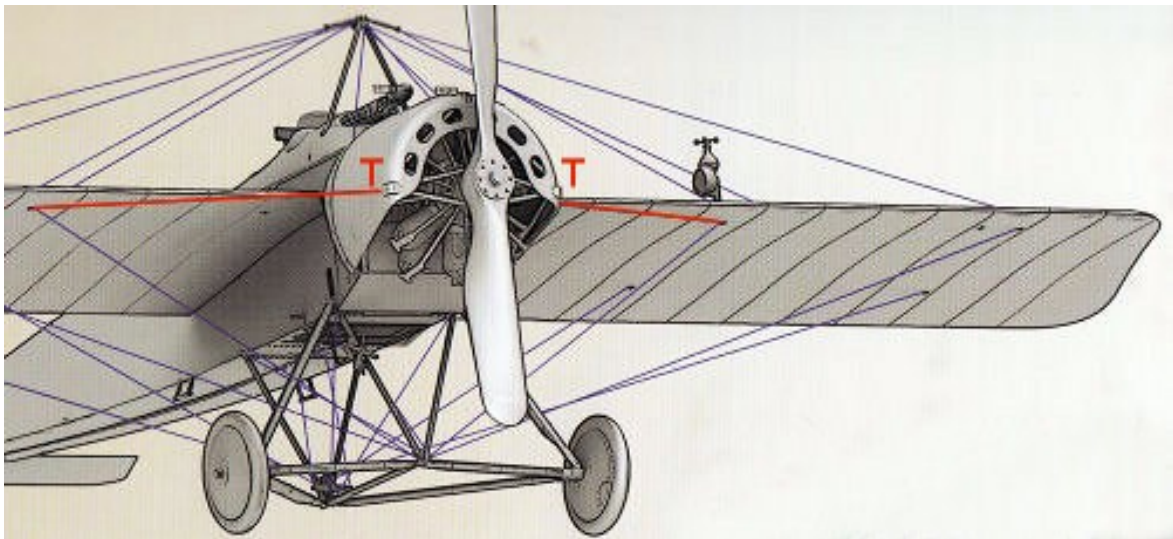




Drag wires:

A single drag wire was fitted to both sides of the aircraft. A wire for each side was attached to the side of the engine cowl and routed across to the underside of the wing at the location of the inboard flying wire.

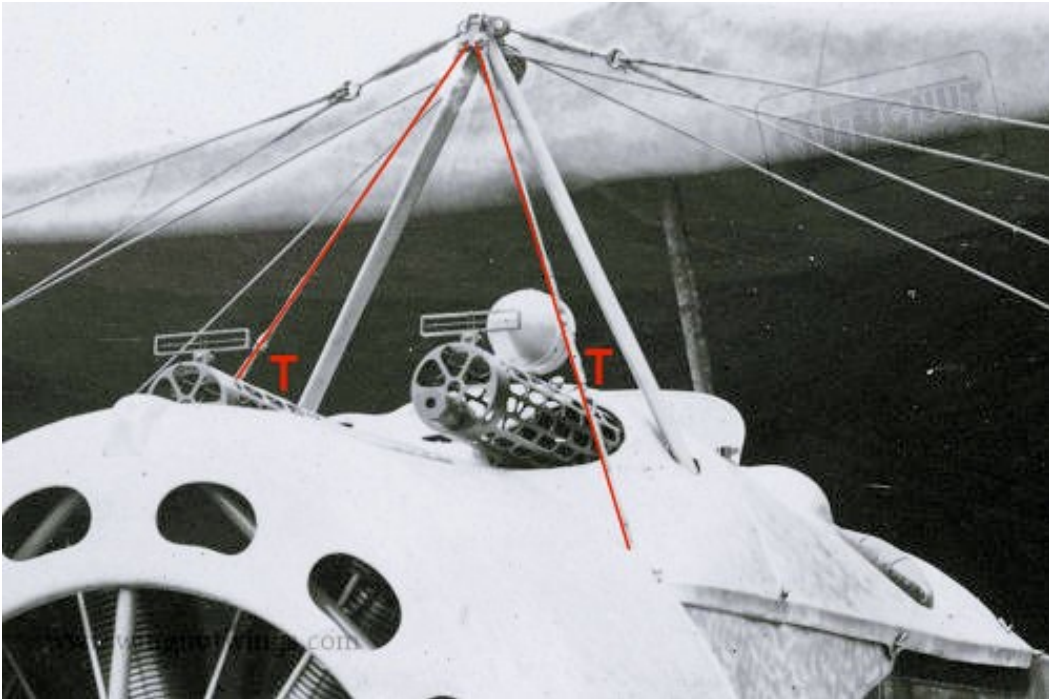
Adjustable turnbuckles were fitted in the wires close to the engine cowl.



Pylon bracing wires:

A single bracing wire was fitted to both sides of the aircraft. A wire for each side was attached to the top, front of the support pylon and routed down and forwards to the edge of the fuselage at the rear of the engine cowl.

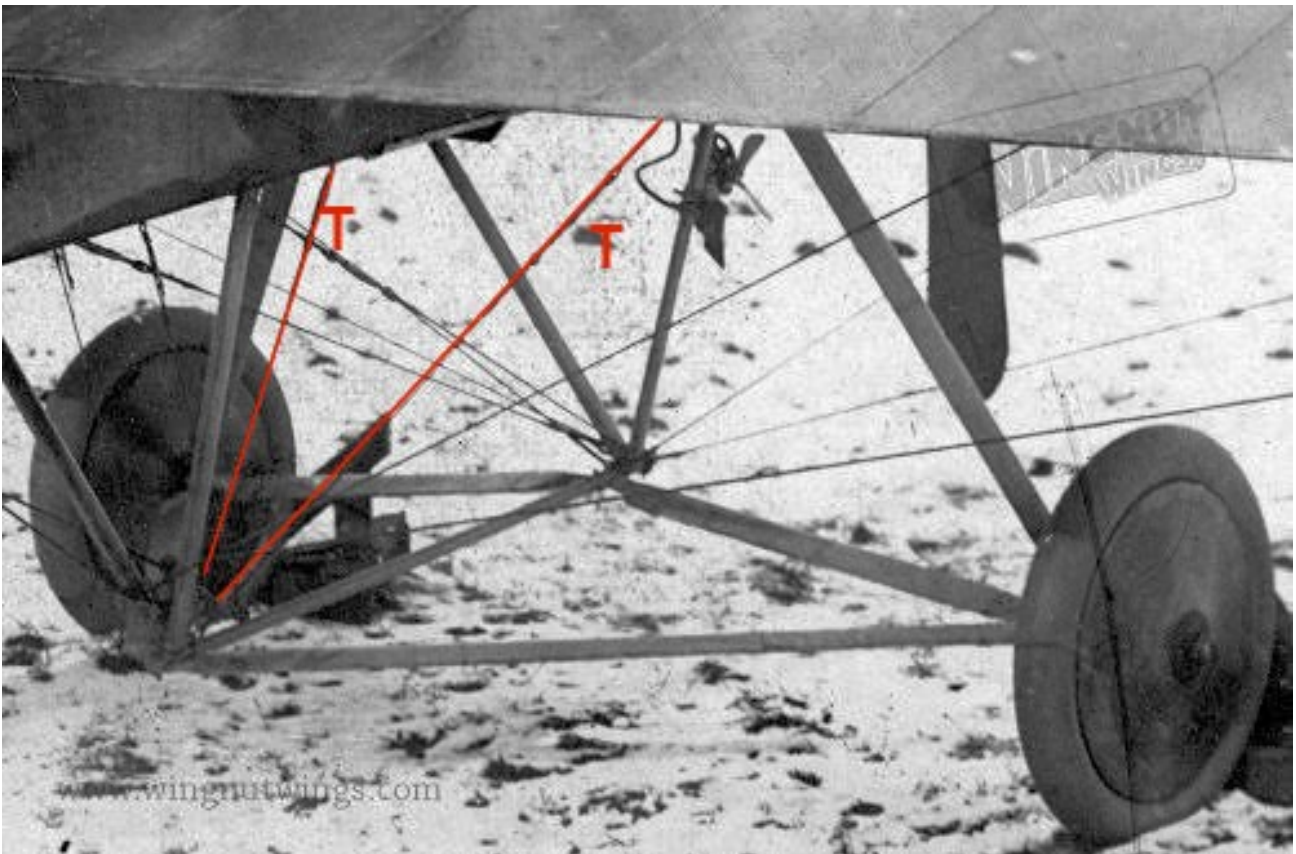
Adjustable turnbuckles were fitted in the wires close to the engine cowl.



Landing gear bracing wires:

Two landing gear bracing wires were fitted between the bottom of the rear landing gear rear 'V' strut and the top of the landing gear forward 'V' struts.

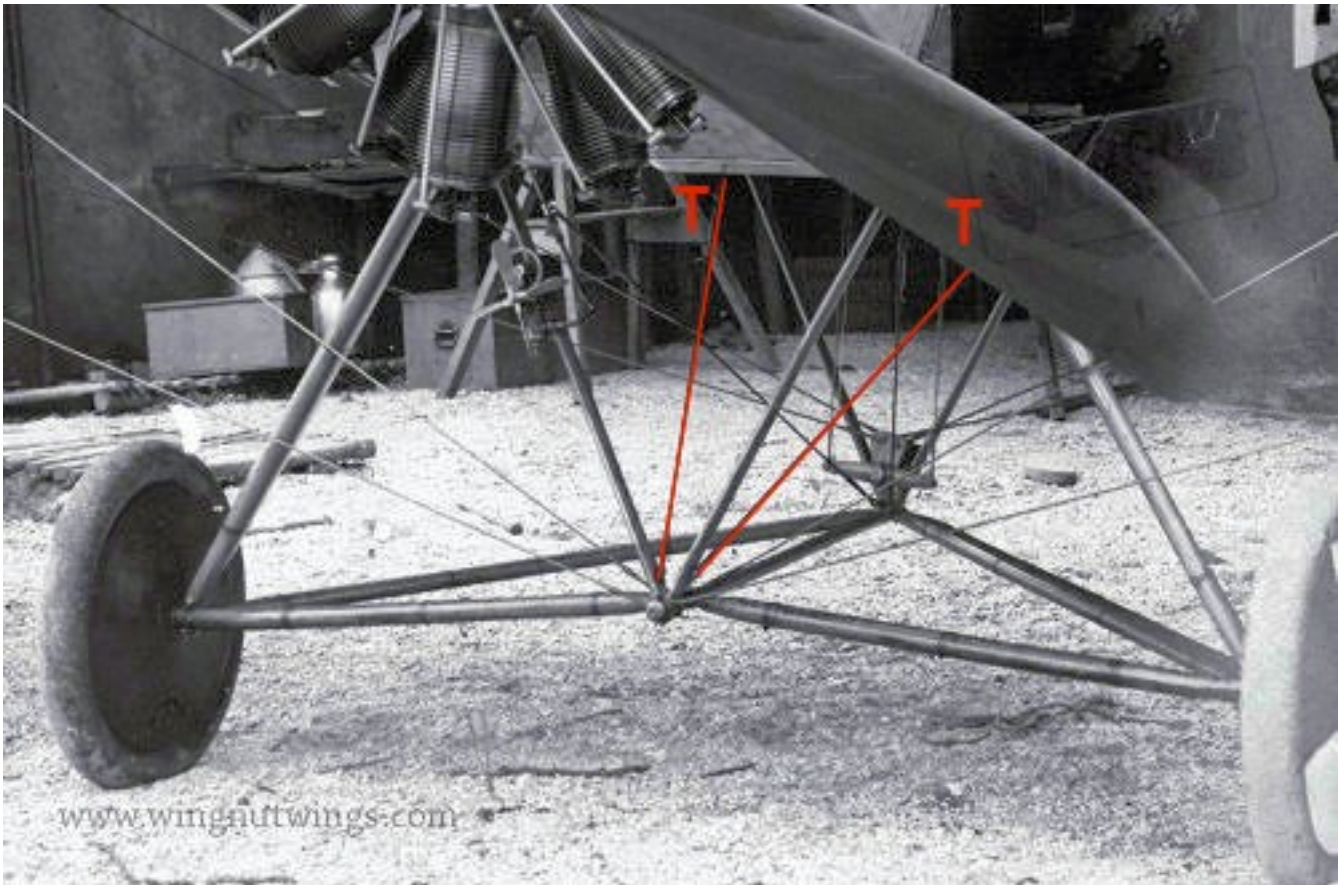
Adjustable turnbuckles were fitted in the wires towards the landing gear forward 'V' struts.

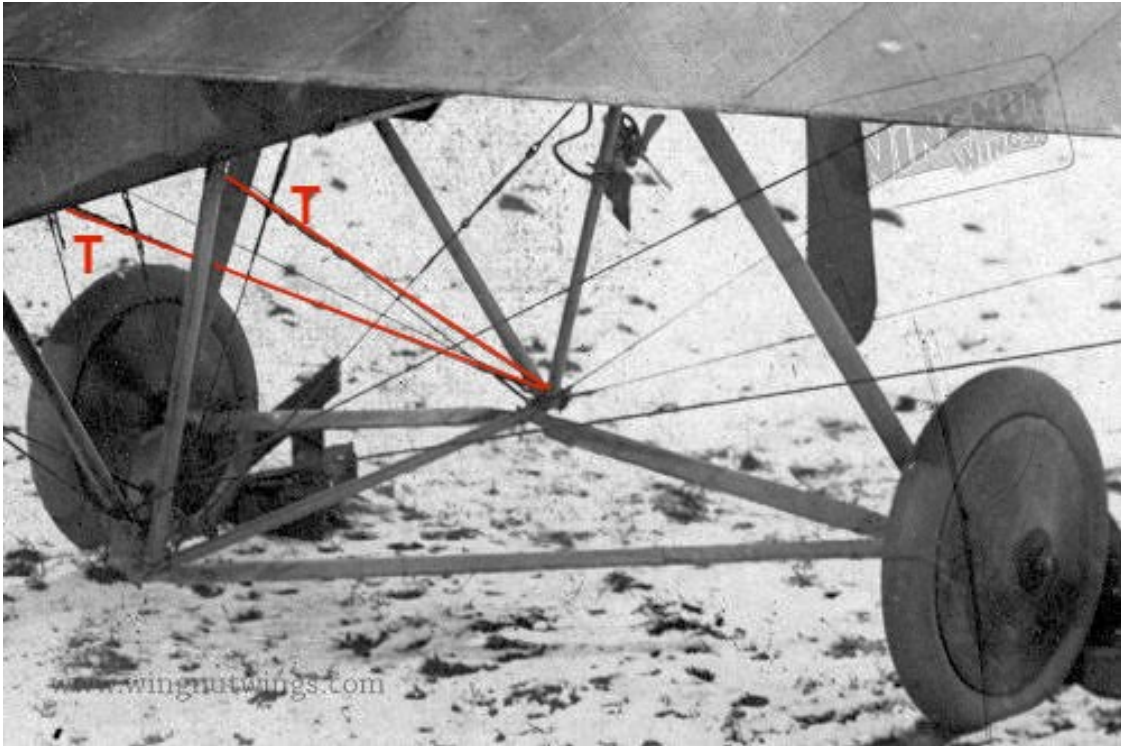




Two landing gear bracing wires were fitted between the bottom of the landing gear front 'V' strut and the top of the rear 'V' struts.

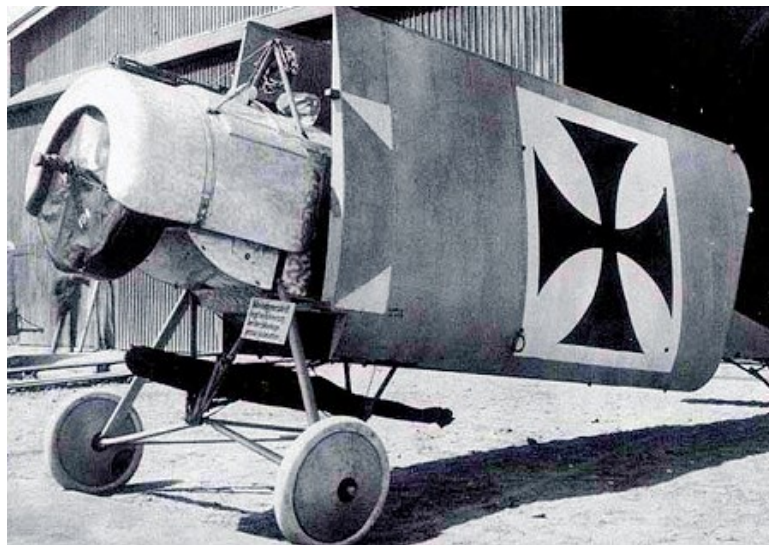
Adjustable turnbuckles were fitted in the wires towards the rear 'V' strut.





Colour coding of turnbuckles:

It seems that Fokker Eindecker aircraft used a colour-coded system for identifying the correct locations for the various turnbuckles. This was because the aircraft were regularly stripped down for transport by road or rail. The propeller was secured on the struts of the landing gear, the engine covered and the wing rigging wires detached. The wings were removed from the fuselage and attached to the sides of the fuselage.



When refitting the wings and rigging, it was important that the correct turnbuckles were fitted to their associated rigging wires. Therefore, the turnbuckles were colour-coded and instructions for the aircraft mechanics were marked on the wingtips. The capture report of Fokker Eindecker E.III 210/16 stated that the turnbuckles were coloured as follows:

- Starboard (right side) were coloured Red
- Port (left side) were coloured Green
- Fuselage and landing gear pylons were coloured Blue

It's interesting to note that it seems they **did not follow** the present day convention of Port (Red) and Starboard (Green).

PART 6

RESIN

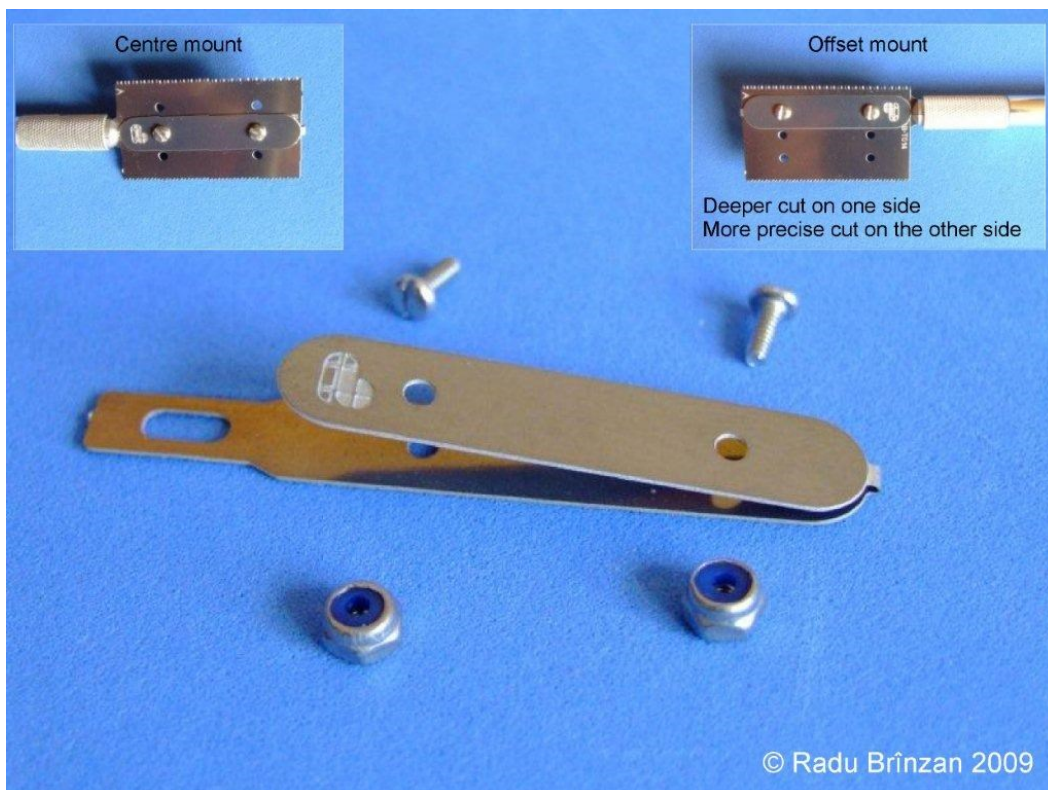
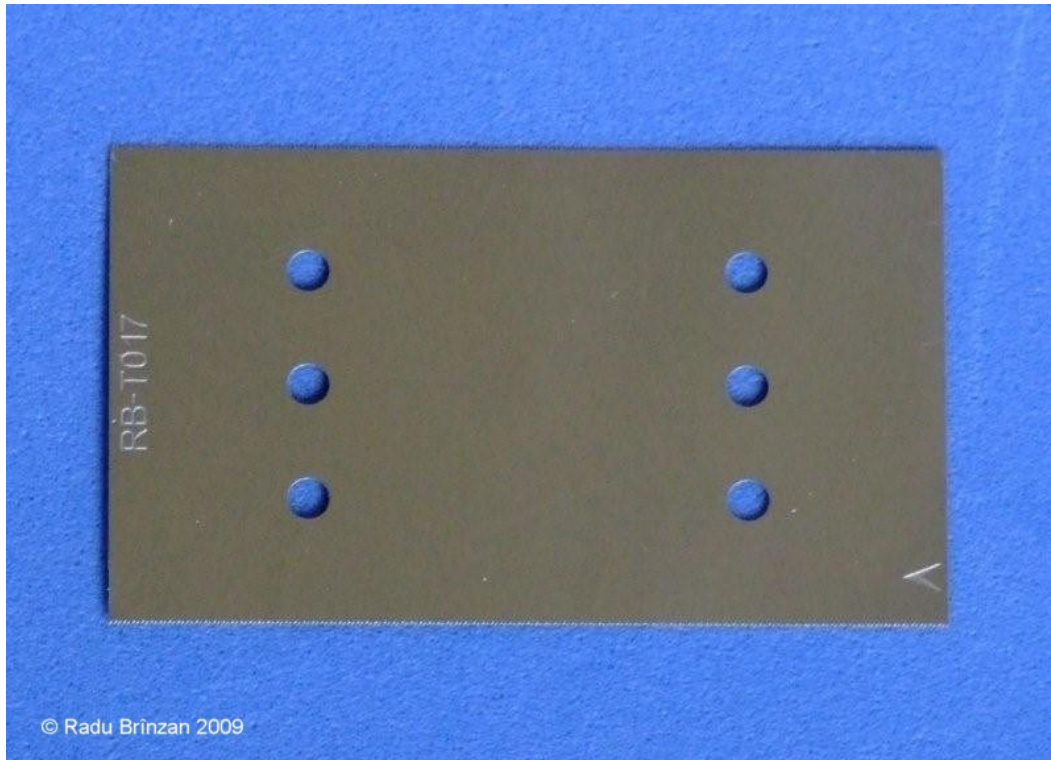
PART 5 - RESIN

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

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

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

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



PART 7

ENGINE

PART 7 - ENGINE

NOTE: The French designed Gnome 7 'Lambda' was a 7 cylinder 80hp rotary engine. A further design was made by essentially bolting two of the engines together to create the Gnome 14 'Lambda-Lambda' 14 cylinder (double banked) 160hp rotary engine. Britain and Germany built the 'Lambda' engines under license. Germany named their version of the engines as the 'Oberursel' U.0 ('Lambda 7) and the Oberursel U.III ('Lambda-Lambda 14).

Although the kit supplied engine is of good quality, I chose to replace it with the 'Taurus Models' Oberursel U.III engine (D3216), which is a resin version and highly detailed.

NOTE: This engine build uses parts from the 'Taurus Models' resin engine, as the engine assembly is more detailed and better defined. Alternatively the 'Wingnut Wings' kit supplied engine can be used.

Assembly:

NOTE:

Refer to Part 6 (Resin) of this build log for information on working with resin.

This engine build uses different parts from **both the 'Taurus Models' and 'Wingnut Wings' kit** supplied engines. This is because the small 'Taurus Models' resin parts, such as the valve lifters (5) were found to be extremely fragile and easily broken, so were **not used**.

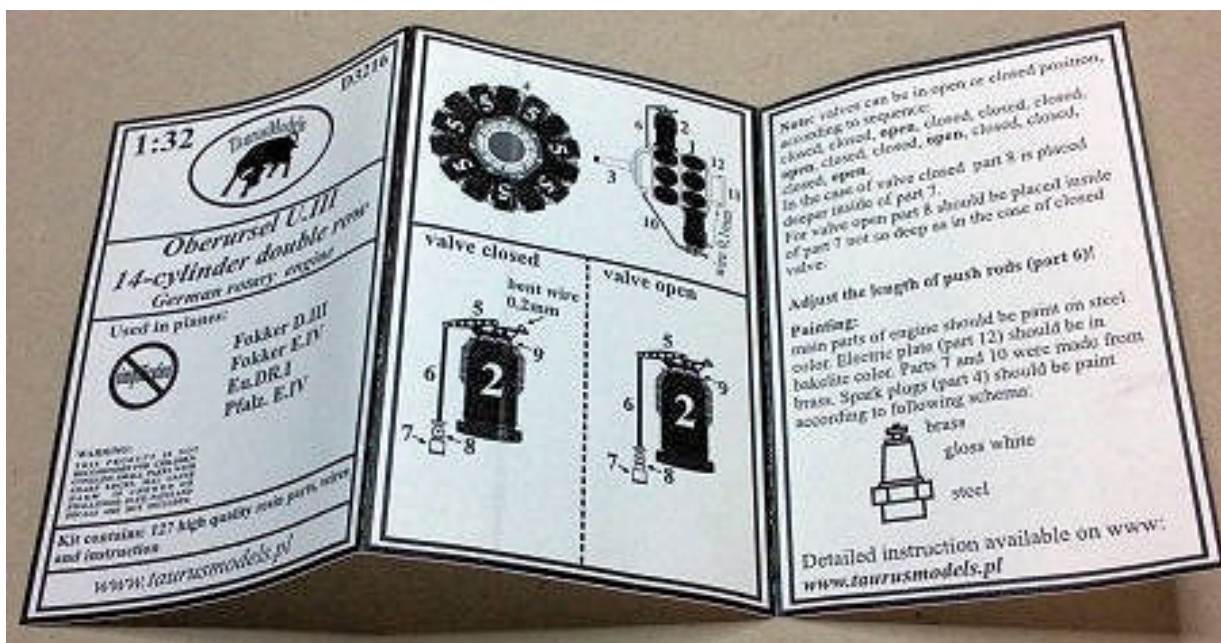
Therefore, the engine parts used for this engine build are as follows:

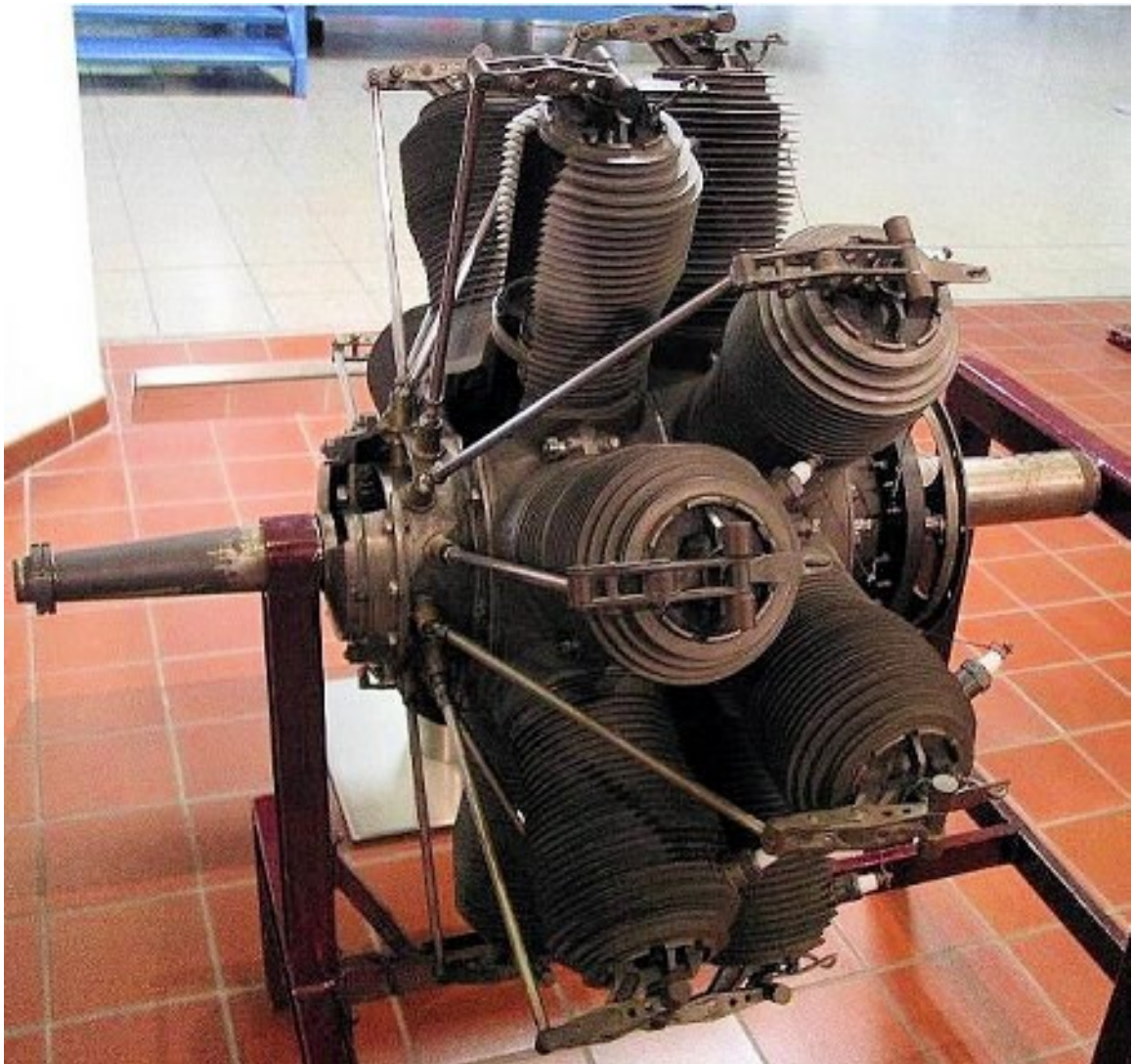
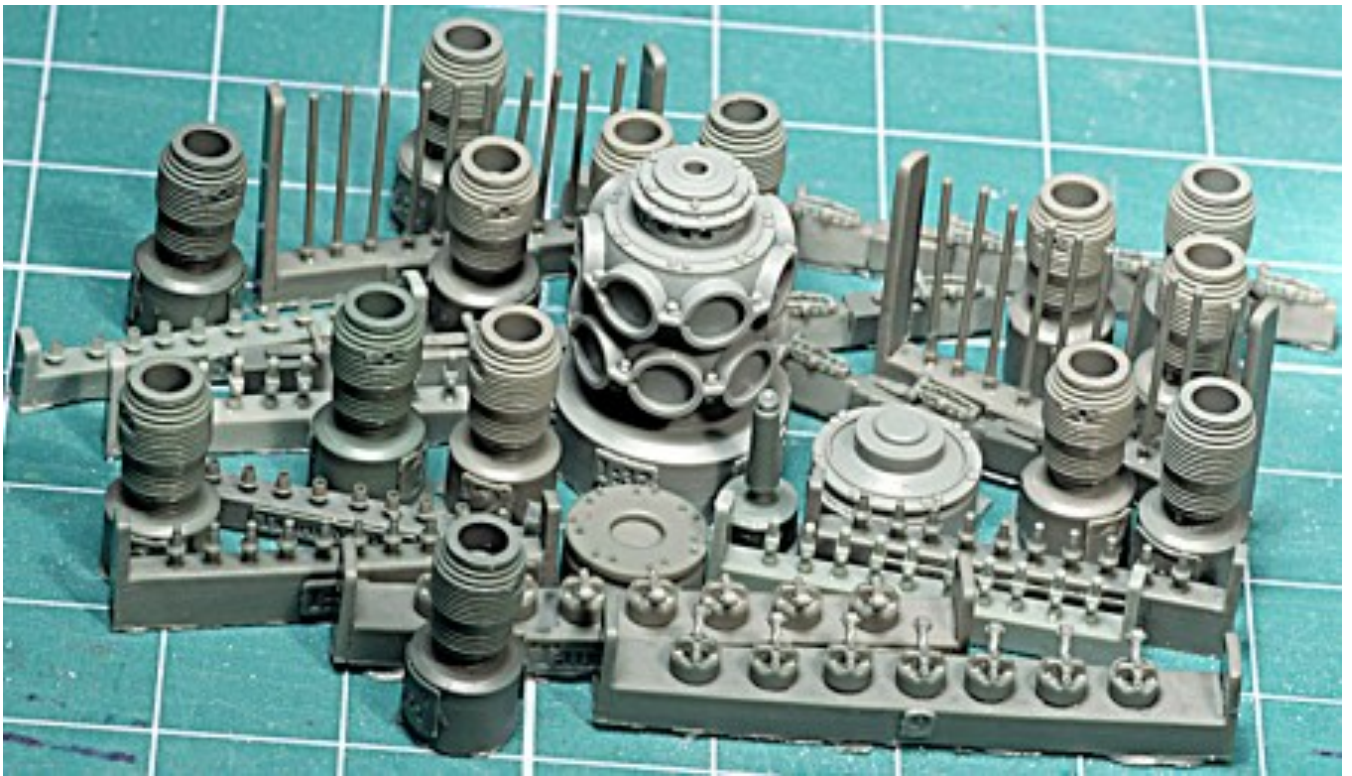
'Taurus Models' parts only:

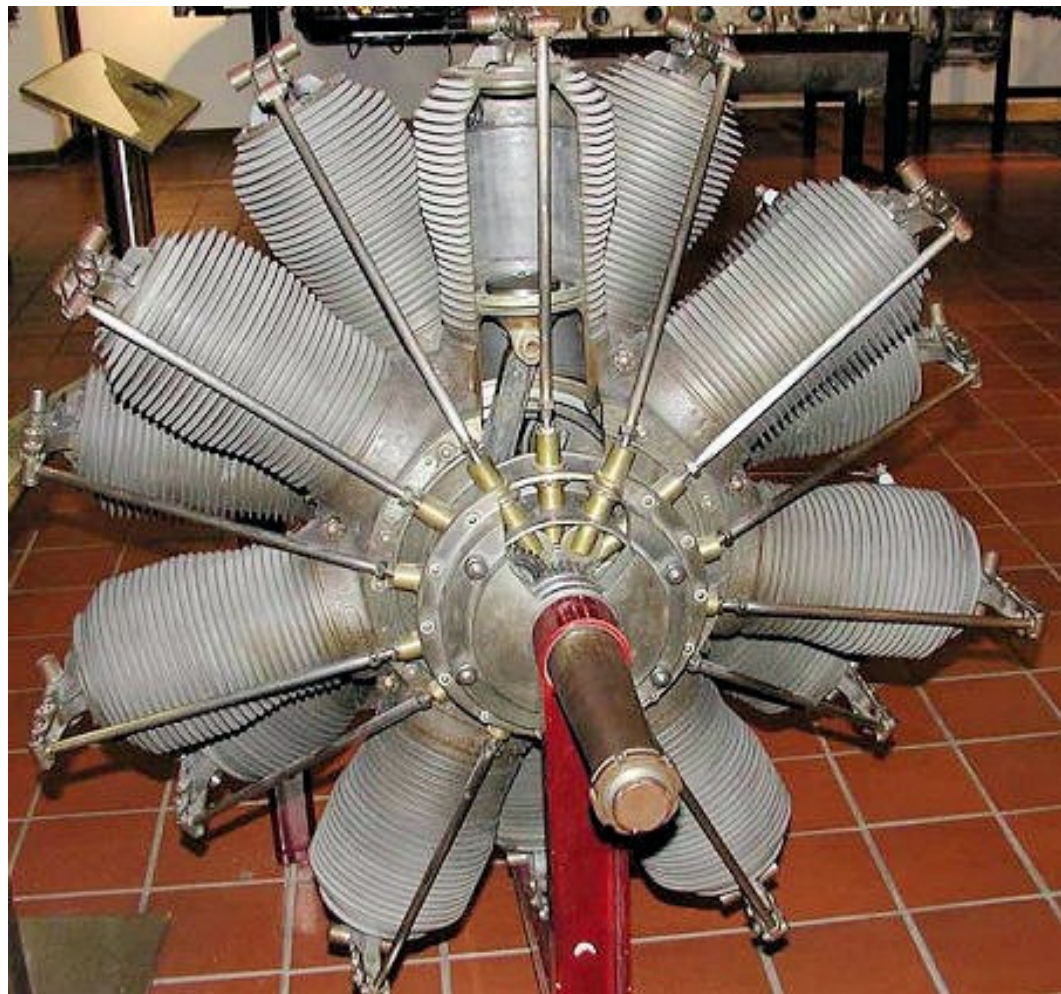
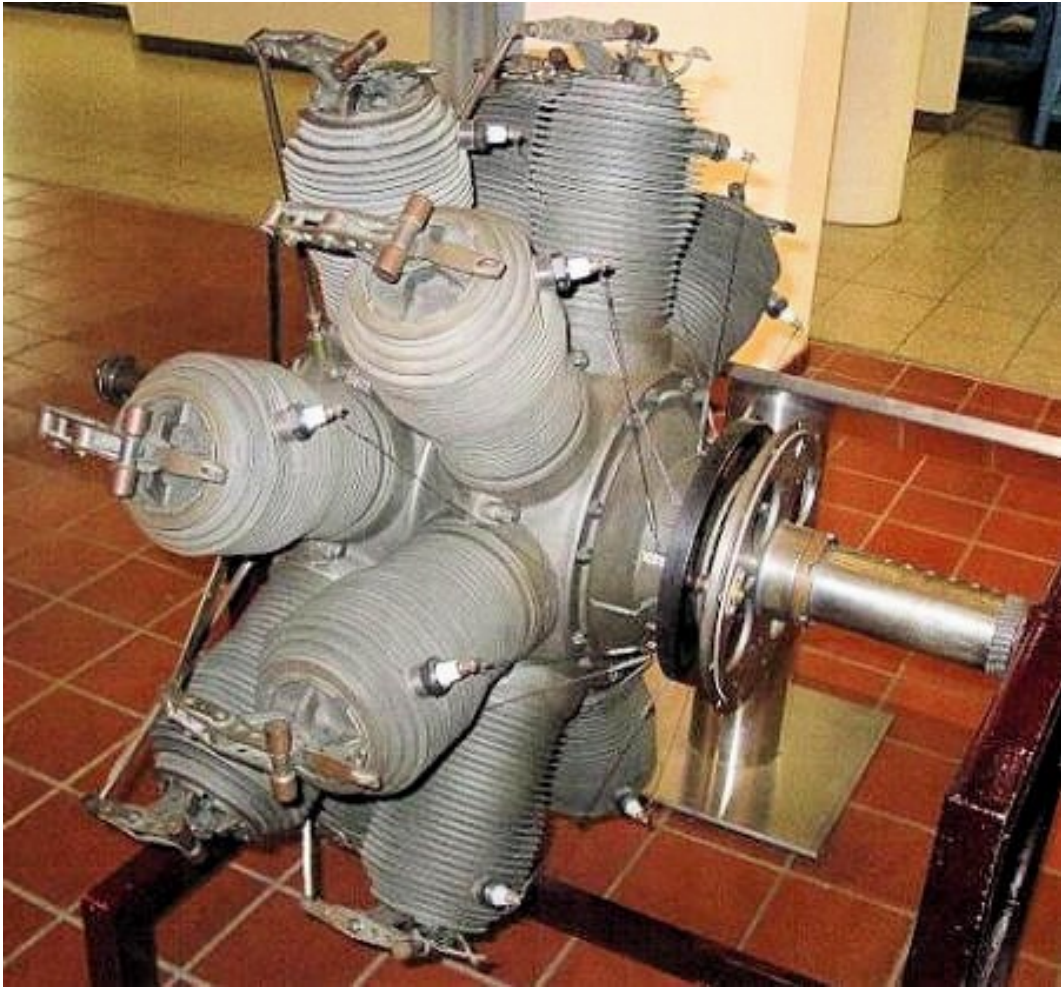
- Engine crankcase (1)
- Rear housing (12)
- Ignition slip ring (11)
- Engine cylinders (2 x 14)
- Spark plugs (4 x 14).

'Wingnut Wings' parts only:

- Push rod/valve gear (E6 x 7)
- Push rod/valve gear (E13 x 7)
- Back plate (E5).





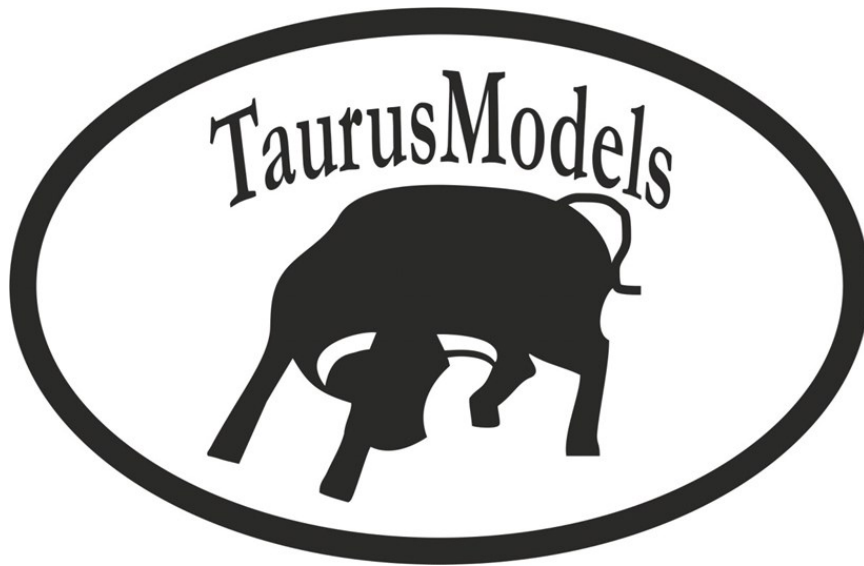


NOTE:

The following is an amended version of the detailed assembly instructions that is available of the 'Taurus Models' web site.

This engine build uses different parts from both the 'Taurus Models' and 'Wingnut Wings' kit supplied engines.

1:32
3216



Oberursel U.III

German rotary engine

Detailed instruction



Assembly:

NOTE: The following assembly/painting photographs were taken from the 'Taurus Models' instructions and may not reflect exactly this engine build.

During assembly of the engine:

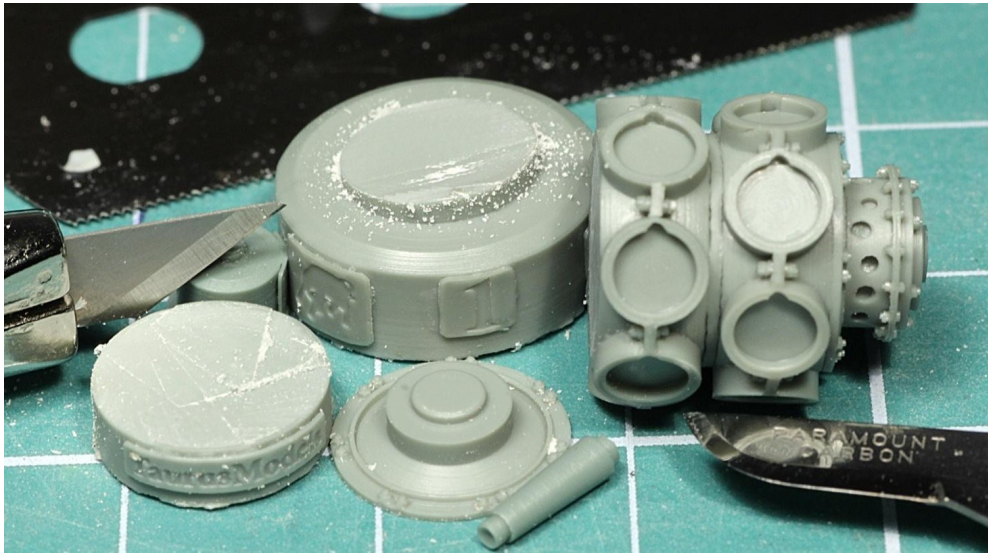
Use CA adhesive or a two part epoxy glue (if time is needed to position the parts) to secure the resin parts together.

Carefully remove the engine parts from their casting blocks using a razor saw.

When removing the parts from their casting blocks, leave some residual casting block resin on the parts to allow for sanding or scrapping flat.

Remove any residual casting block resin from the parts by carefully sanding or scrapping with a scalpel blade, making sure the mating surfaces are flat.

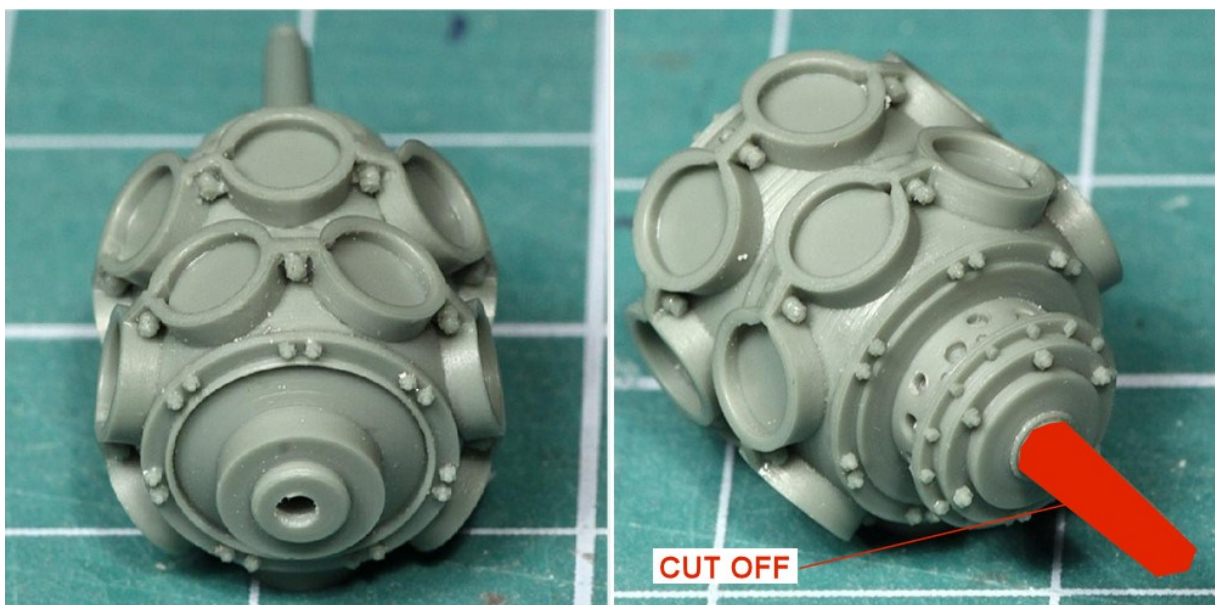
Remove the engine crankcase (1), rear housing (12) from their casting blocks.



Remove any residual resin then test fit the parts together, making sure they fully locate.

Secure the rear housing (12) to the rear of the crankcase (1).

Cut away the engine propeller shaft and at the centre drill a hole of 1.5mm diameter. This will be used to locate the shaft of the replacement 'Proper Plane' propeller.



NOTE: A rod or similar, temporarily inserted into the hole in the back of the rear housing (12), can be used to hold the engine when fittings the various engine parts.

Cut the fourteen engine cylinders (2) from their casting blocks.



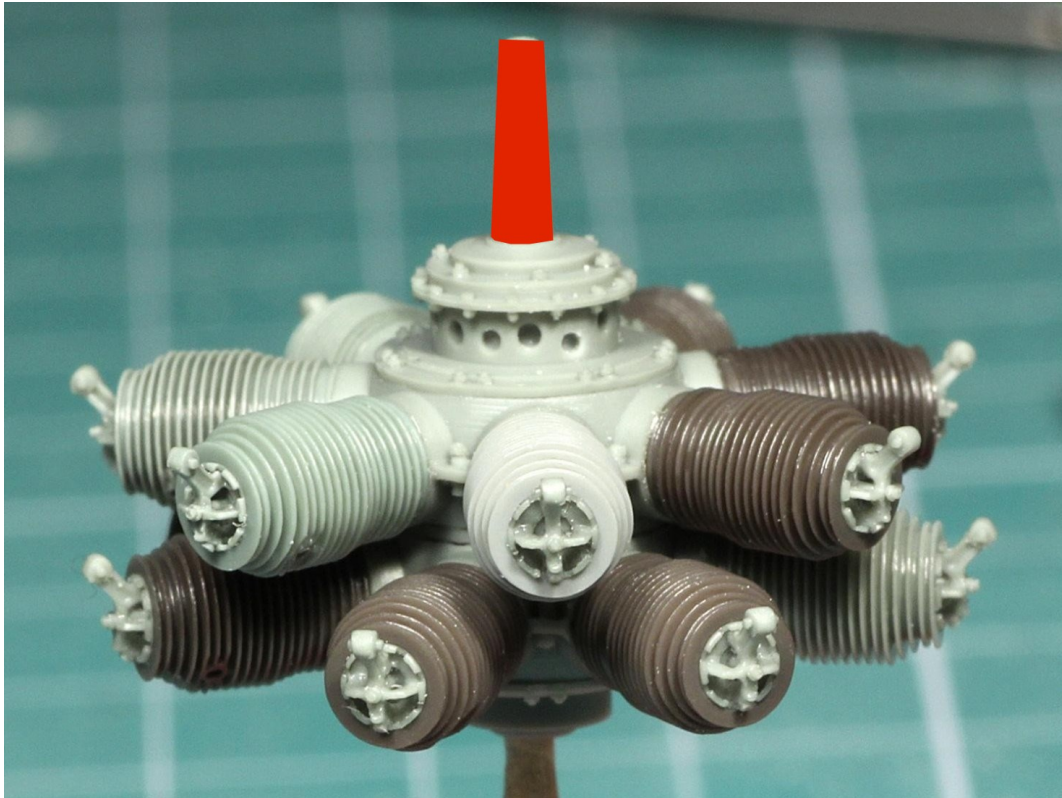
NOTE: During the following step, increase the size of the drill gradually up to 0.9 mm diameter, to avoid breaking away the fine moulded cylinder cooling fins.

Drill into the spark plug locations on each cylinder using a 0.9 mm diameter drill.

Secure the cylinders (2) into their locating recesses in the crankcase (1). The cylinders are 'keyed' to fit in one position only.



Secure the cylinder heads (9) into their locating recesses in the top of the cylinders. Their positions are not important as the exposed detail will be removed.



File or sand away the exposed valve gear detail from the top of each cylinder.

Remove seven of the 'Wingnut Wings' supplied valve/push rod parts for the engine front cylinders (E6).

Remove seven of the 'Wingnut Wings' supplied valve/push rod parts for the engine rear cylinders (E13).

File or sand away any residual sprue tags from each of the push rods (E6 and E13)

Drill into the pre-moulded push rod recesses in the engine hub, using a 0.7 mm diameter drill.

Cut away the underside of each of the cylinder tops of each push rod, such that the bottom of each push rod can locate into its pre-moulded locating recess in the engine and the cut away top rest on its flattened cylinder head.

Rear push rod/valve gear E13.



Front push rod/valve gear E6.



NOTE: I chose to remove the fourteen stubs from the ignition slip ring and instead drill holes to locate the ignition leads.

Remove the ignition slip ring (11) from its casting block, remove any residual casting block resin and the ignition wire stubs.

At each of the removed ignition stubs, drill a hole of 0.2 mm diameter through the ignition slip ring.

Secure the ignition slip ring (11) onto the rear of the engine assembly, making sure that the right hole of each pair of pre-drilled holes, is in view of its spark plug on the forward cylinder.

Drill a hole of 2.0 mm diameter into the centre of the slip ring and into the engine, then secure a length of 2.0 mm diameter rod into the drilled hole.

Cut away the disc from the 'Wingnut Wings' back plate (E5) then secure the remaining cylinder over the added rod and against the fitted ignition slip ring ((11)).

Painting:

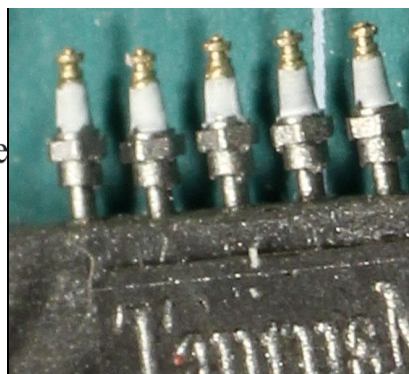
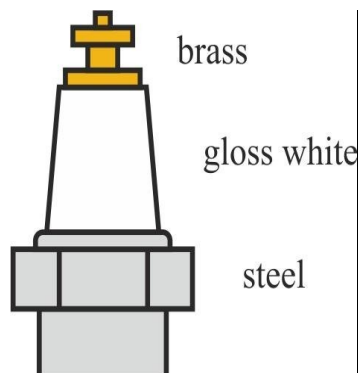
Airbrush the spark plugs with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Airbrush the spark plugs with Steel, such as 'Mr. Colour' Stainless Steel (213) or similar.

Brush paint the spark plugs (4) as follows:

Insulator body - White, such as 'Tamiya' White (XF2) or similar.

Cap - Brass, such as 'Mr. Colour' Brass (219) or similar.



Airbrush the 'Wingnut Wings' pushrod/valve gear parts (E6 and E13) and the engine assembly with a black base, such as 'Tamiya' Gloss Black (X1) or similar.

Airbrush the 'Wingnut Wings' pushrod/valve gear parts (E6 and E13) and the engine assembly with Steel, such as 'Alclad' Steel (ALC112) or similar.

Brush paint the bushes at the bottom of each push rod with Brass, such as 'Mr. Colour' Brass (219) or similar.

Brush paint the bushes on the valve lifters at the top of each push rod with Bronze, such as 'Tamiya' Bronze (X33) or similar.

Brush paint the ignition slip ring (11) with 'Tamiya' Hull Red (XF9) or similar.

Assembly (continued):

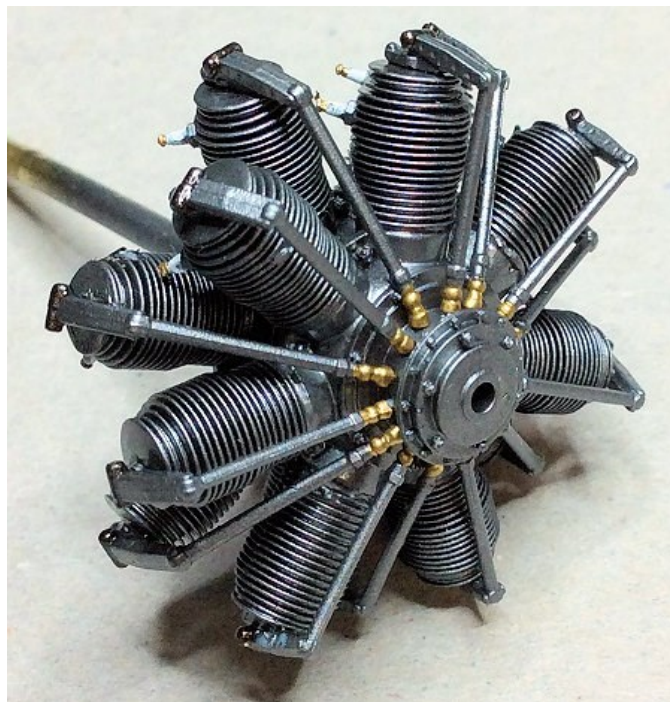
Make sure the location holes and mating surfaces for the engine parts are clear of paint and any primer.

Remove the fourteen painted spark plugs (4) from their casting blocks.

Secure each of the spark plugs into their location holes in the engine cylinders.

Locate the seven 'Wingnut Wings' painted push rod/valve gear parts (E6) into their location holes in the engine hub and secure onto the top of each engine front cylinder.

Locate the seven 'Wingnut Wings' painted push rod/valve gear parts (E13) into their location holes in the engine hub and secure onto the top of each engine rear cylinder.



Cut fourteen lengths of black 'EZ' stretch line (Fine).

Pass the each line through a pre-drilled hole in the ignition slip ring.

Secure one end of line onto each spark plug.

Pull each line taut and secure in its pre-drilled hole in the ignition slip ring.

Cut away any excess line at the rear of the ignition slip ring.

Cut away the exposed 2.0 mm diameter rod from the rear of the engine to allow the engine to locate into the locating hole in the engine bulkhead (later in this build).



Weathering:

NOTE: *Applying weathering to the engine assembly is best carried out before fitting any of the remaining parts.*

Airbrush the engine with a matte clear coat, such as 'Alclad' Flat (ALC314) or similar.

Brush the engine with 'AK Interactive' Kerosene wash (AK2039).

Brush the valve gear push rods with 'AK Interactive' Engine Oil wash (AK2019).

If desired, add a overheat effect to the top area of the engine cylinders by lightly brushing with 'Tamiya' Weathering Master set D (Burnt Blue).

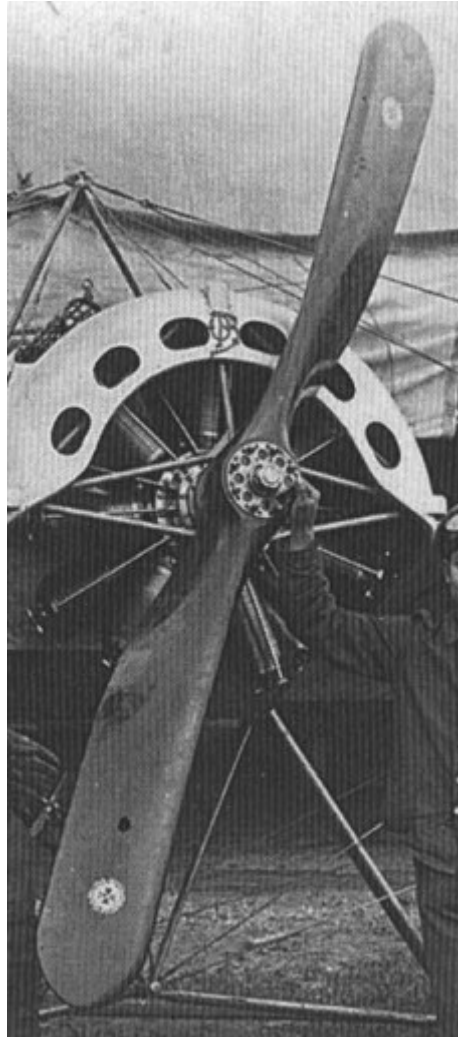


PART 8

PROPELLER

PART 8 - PROPELLER

The kit supplied propellers represent types manufactured by either 'Integra' or 'Garuda'. However, I preferred to replace the kit supplied propellers with a hand made wood laminated 'Garuda' propeller from Alexey Belov of 'Proper Plane'.



Apply the two kit supplied decals (11) centrally on the front face of the propeller blades and towards their outer ends.

Apply the kit supplied decal (17) centrally on one side of the propeller hub.

Airbrush the propeller with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311).

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

Brush paint the two hub plates with 'Mr. Colour' Stainless Steel (213) or similar.

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

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

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

NOTE: *The 1.5mm diameter hole in the engine for the propeller shaft was drilled in Part 7 (Engine) of this build log.*

Cut a length of 1.5 mm diameter 'Albion Alloy's MBT15 Brass tube.

Cut a length of 2.0 mm diameter 'Albion Alloy's MBT20 Brass tube.

Shorten the 2.0 mm diameter tube such that it will fully locate into the hole in the propeller and be flush with the rear plate.

Secure the tube onto and flush with one end of the 1.5 mm diameter tube, using thin CA adhesive.

Cut the exposed end of the 1.5 mm diameter tube such that when the assembly is fully inserted into the propeller, it can be fully inserted into the engine with the rear of the propeller close to the engine.

Secure the tube fully into the propeller using thin CA adhesive.



PART 9

WEAPONS

PART 9 - WEAPONS

NOTE: I chose to replace the kits supplied machine guns with the resin 'Gaspatch' Spandau LMG 08 (early) versions. Before working with model kit parts, make sure that when removed from their sprues, all mould seams, sprue tags or mould 'flash' are removed from each part.

The following kit supplied parts **are not required**:

Two machine guns (D7) and breech blocks (D6)

Barrel muzzles (D1)

Photo-etch cooling jackets (P5 and P11)

Photo-etch gun sights (P1 and P2).

Modification of both kit and 'Gaspatch' parts is required.

Refer to Part 6 (Resin) for more information when working with resin parts.



Preparation kit parts:

Remove and prepare the following kit supplied parts:

Ammunition magazines (G3)

Empty belt container (B1)

Gun rear mounting (G14)

Cockpit front coaming (B5).

Cut the clock decal (69) and placard (73) from the kit supplied decal sheet.

Preparation 'Gaspatch' parts:

Remove and prepare the following 'Gaspatch' supplied parts:

Both machine guns

Both crash pads

Both barrels (with larger muzzles)

Both ammunition belts

Both rectangular gun sights.

Assembly:

NOTE: The 'Gaspatch' gun sights for both machine guns can only be fitted after the guns have been final fitted into the cockpit front coaming (B5). This also applies for the modified kit supplied gun rear mounting (G14). This will be done in chapter 11 (fuselage) of this build log.

Cement the kit supplied empty belt container (B1) onto the ammunition magazines (G3).

Use a drill of 0.9 mm diameter to drill out the locating holes for the 'Gaspatch' barrels in the front of the machine gun cooling jackets.

Use thin CA adhesive to secure the 'Gaspatch' gun barrels (with the larger muzzles) into their locating holes in the front of the machine gun cooling jackets.

Use thin CA adhesive to secure the 'Gaspatch' crash pads to the rear of the machine gun breech blocks.

Modification:

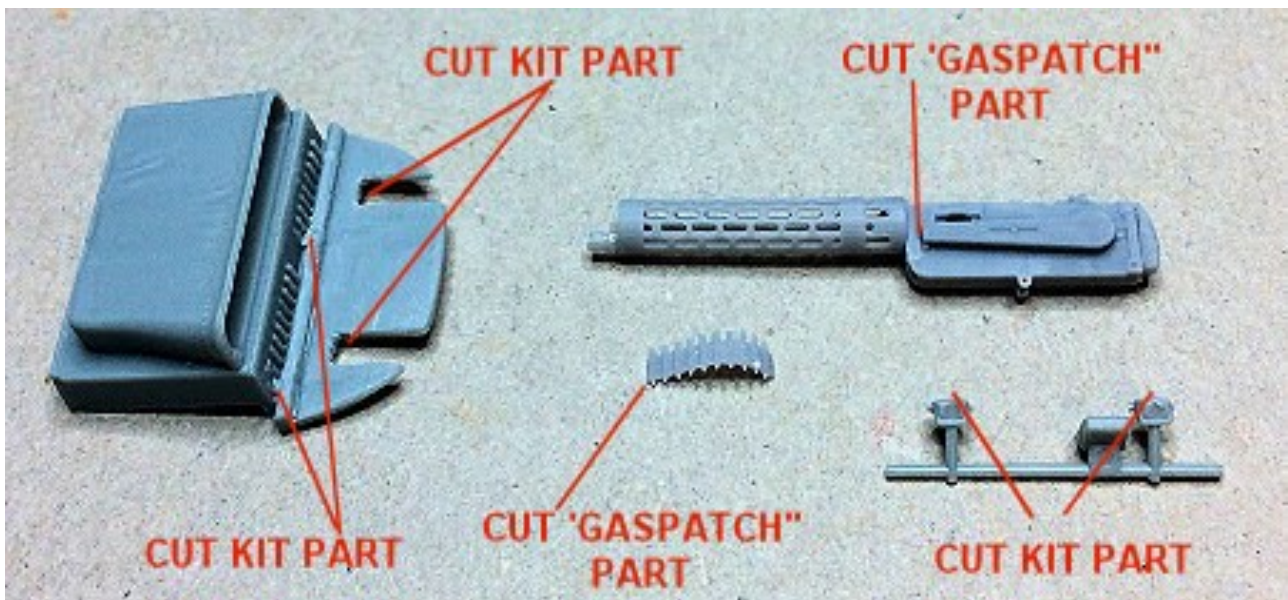
Cut away the pre-moulded ammunition belts from the kit ammunition magazines (G3).

Cut away the pre-moulded crash pads from the kit gun rear mounting (G14).

Cut away the small notch of resin on the left side of the 'Gaspatch' machine gun breech blocks (between the front of the spring chambers and rear of the cooling jackets).

Cut or file away the bottom of the gun locating slots in the top frame of the ammunition Magazines, until the 'Gaspatch' machine guns can be slid fully into the slots with the top of their cooling jackets just below the top edge of the magazine frame.

Temporarily hold each gun in position in the magazine frame. Cut away the bottom of the 'Gaspatch' ammunition belts and test fit until their tops locate into the feed slot in the right side of the gun breech blocks and their bottom edge rests on the top of the magazine.



Painting:

NOTE: Only the two machine guns are painted in this chapter. The other associated parts will be painted and assembled in chapter 11 (fuselage) of this build log.

Airbrush the two machine guns with a gloss black base coat, such as 'Tamiya' Gloss Black (X1) or similar.

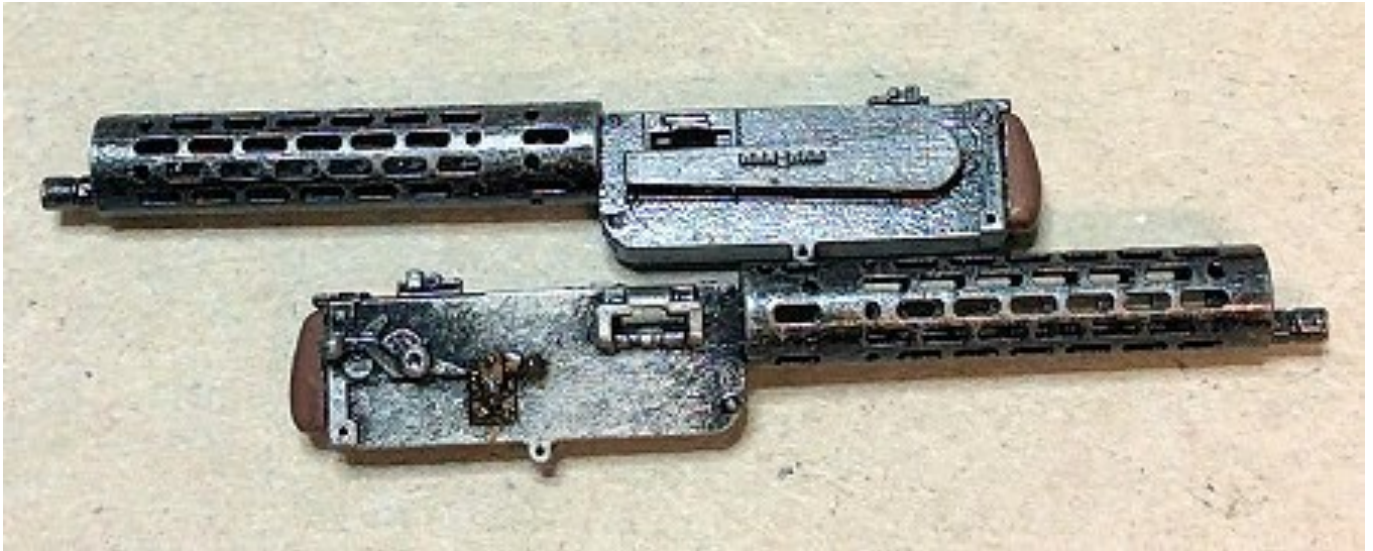
Airbrush the machine guns with 'Alclad' Gunmetal (ALC120) or similar.

NOTE: Dry brush by using a domed and soft brush, which has a very light dusting of paint. Dry off paint on the brush on an absorbent paper before dry brushing the part.

Represent a worn paint effect by dry brushing the machine gun with 'Mr. Colour' Super Iron 2 (SM203) or similar.

Brush paint the forward cocking mechanism on the right side of the breech blocks with 'Tamiya' Bronze (X33) or similar.

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



PART 10

PRE-RIGGING 1

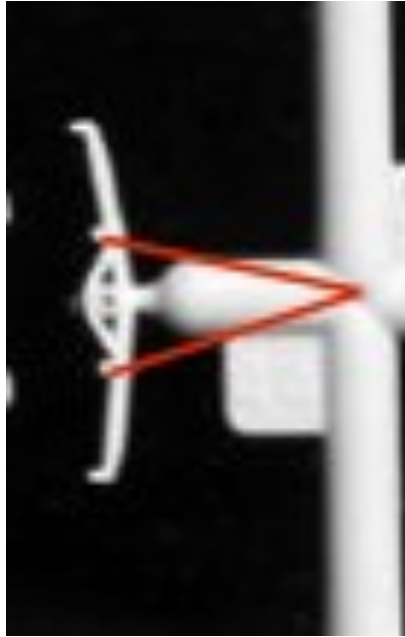
PART 10 - PRE-RIGGING 1

Pre-rigging:

NOTE: *At this stage of the build it's best to pre-rig as much of the fuselage internal rigging wires and flight control cables as possible, as access will be restricted when the model is assembled. Refer to Part 5 (Rigging) of this build log for more information.*

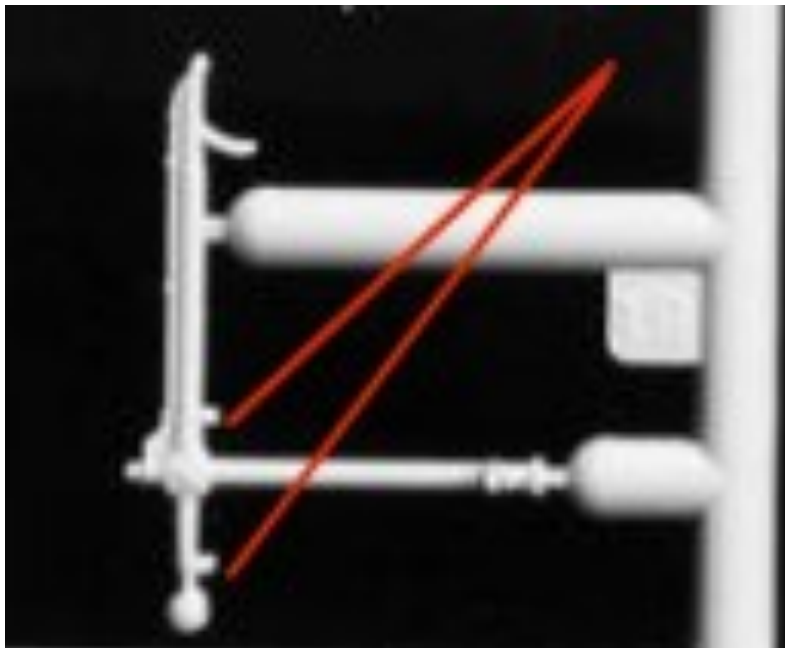
Rudder control cables:

The pilots rudder bar (A44) has two small lugs where the rudder control cables are attached. However, these lugs are moulded solid and need to be drilled through using a 0.2 mm diameter drill. These holes will be used to attached the rudder control cables later in this build.



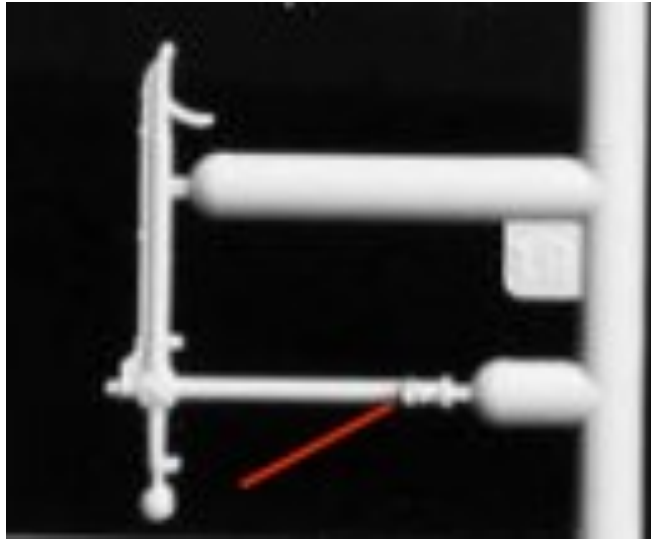
Elevator control cables:

The pilots control column (G19) has two small lugs where the elevator control cables are attached. However, these lugs are moulded solid and need to be drilled through using a 0.2 mm diameter drill. These holes will be used to attached the rudder control cables later in this build.



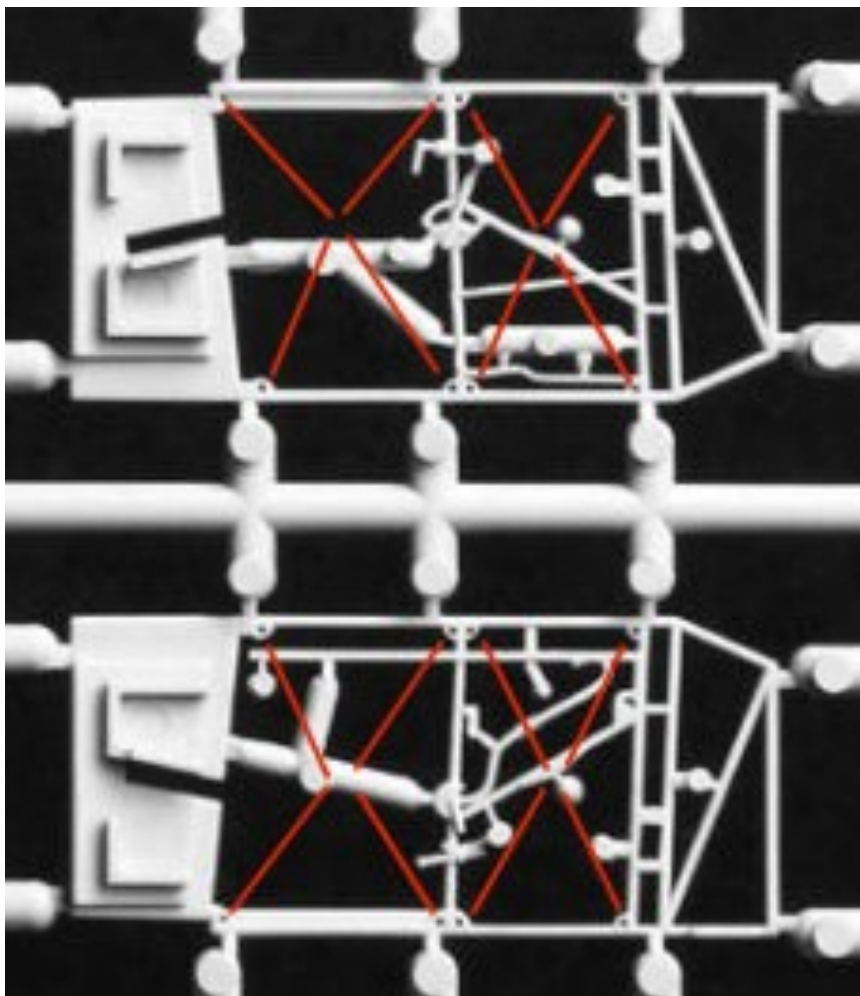
Wing warping control cables:

Moulded on the rear of the torque tube of the pilots control column (G19) is the control horn for the wing warping control cables. This control horn is moulded solid and the ends of the control horn need to be drilled through using a 0.2 mm diameter drill. These holes will be used to attached the wing warping control cables later in this build.



Cockpit bracing wires:

The two cockpit side frames (G6 and G9) have pre-moulded corner 'hoops' for attaching the cross bracing wing between the frame bays. Provided that not too much tension is applied to the 'hoops', they should be strong enough for attaching the bracing wires later in this build.



PART 11
PHASE 1
CONSTRUCTION

PART 11 - PHASE 1 CONSTRUCTION

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

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

Before any assembly of parts, make sure all decal, primer and paint is removed from locating holes, pegs and any mating surfaces. 'Wingnut Wings' models parts are made with very close tolerances and any primer or paint may stop parts locating fully together.

Preparation:

Prepare the following parts:

A - 5, 12, 18, 21, 24 and 44.

B - 2 to 6, 9 to 12 and 14 to 17.

D - 11 (x2).

F - 5.

G - 1, 2, 4, 6 to 11, 13, 15 to 20.

Photo-etch - P3, 4, 7 (x2), 10, 12 and 13.

Anneal (soften) the photo-etch parts by moving them across a flame, such as that from a cigarette lighter, until the parts colour change to a light grey.

Bend the photo-etch foot slides (P3 and P4) as shown on page 3 of the instruction manual.

Assembly:

Cement the pilots hand grip (A5) centrally onto the top of the control column (G19).

Cement the bulkhead (A18) onto the rear boxes (F5).

Cement the seat back (A21) onto the seat base (B3).

NOTE: *In the following step, the rear seat support is angled rearwards and the front support forwards. Use the cockpit floor (B15) locations to check the correct positioning of the supports.*

Cement the seat support (D11) onto the location pegs under the seat base.

Cement the altimeter (G15) onto its location on the cockpit left side frame (G6).

Cement the hand pump (G18) and the Tachometer (G16) onto their locations on the cockpit right side frame (G9).

Cement the top of the fuel tank (G2) onto the fuel tank (B16).

NOTE: *Before the following step, remove the red shaded area from the carburettor air intake.*

Cement the carburettor air intake (A24) into its location under the fuel tank.

Painting:

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

Mask off the inside of the fuselage halves (B2 and B14) to leave just the forward internal metal panel areas exposed.

Airbrush 'Alclad' Aluminium (ALC101) or similar over:

The masked off metal panel areas on the fuselage halves.

The engine bulkhead (G10, both sides).

The inner face of the fuselage underside panel (G7).

Remove the masking from the fuselage halves.

Airbrush 'Tamiya' Grey Green (XF76) or similar over:

The two cockpit side frames (G6 and G9).

Control column (G19).

Rudder bar (A44).

Suspension cross bar (A12).

Rudder bar frame (G11).

Mask off the painted forward internal metal panel areas of both fuselage halves.

Airbrush 'Tamiya' RLM Grey (XF22) or similar over :

The exposed inner surfaces of the fuselage halves.

The fuselage tank (assembly (G2 and B16).

Remove the masking from the fuselage halves.

Airbrush 'Tamiya' Dark Yellow (XF60) or similar over:

The cockpit floor (B15).

The cockpit rear frame (A18) on the cockpit rear assembly (A18 and F5)

The engine starter switch (G17).

Wood effect (method 2):

NOTE: Refer to Part 2 (Wood Effects) of this build log for more information.

I used Windsor & Newton' Griffin (Alkyd) **Vandyke Brown** oil paint to apply the dark wood finish on the cockpit floor (not the Aluminium panel area), engine starter switch (G17) and the cockpit rear frame (A18).

NOTE: During the following steps, refer to the colour illustrations on page 4 of the kit instruction manual for further guidance.

Brush paint the following

'AK Interactive' Brown Leather (AK3031) or similar - the rear top and side members of the cockpit side frames and the pilots seat cushion with British Uniform Light (AK3082) highlights

'Mr. Colour' Stainless Steel (213) or similar - Pilots foot plates, control column gun triggers, Altimeter on cockpit left side frame, the forward panel (with four turnbuckles and 'cables') on the front of the cockpit floor, lever and the throttle quadrant and tube on cockpit right side frame, engine starter switch (G17), panel hinges of cockpit floor panels, metal fittings on cockpit rear frame (A18) and the gun trigger cables on the front edge of the control column.

'Tamiya' Dark Yellow (XF60) or similar - Pilots seat back.

'Tamiya' Rubber Black (XF85) or similar - Tachometer on cockpit right side frame and centres of side beams.

'Tamiya' Gun metal (XFX10) or similar - Carburettor (under fuel tank assembly).

'Tamiya' Buff (XF57) or similar - Suspension 'bungee' cords on the ends of the suspension cross member.

'Mr. Colour' Brass (219) or similar - Hand pump on the cockpit right side frame and the engine starter switch (G17).

'Tamiya' Hull Red (XF9) or similar - Control column hand grips, handle of hand pressure pump on the cockpit right side frame.

'Mr. Colour' Copper (215) or similar - Pipes on cockpit left and right side frames.

'Tamiya' Grey Green (XF76) or similar - Pilots seat support frames, control column floor members and side bars of the rear frame (A18).

'Tamiya' Red Brown (XF64) or similar - pilots seat base.

'Tamiya' Metallic Grey (XF56) or similar - turnbuckles on forward panel of cockpit floor.

'Tamiya' RLM Grey (XF22) or similar - Support bands around the hand pressure pump.

Decals:

NOTE: Refer to Part 4 (Decals) of this build log for more information. During the following steps, refer to the colour illustrations on page 4 of the kit instruction manual for further guidance.

Brush a gloss clear coat, such as 'Tamiya' Gloss (X22) or similar over the following:

The face of the Altimeter (cockpit left side frame)

The throttle quadrant (cockpit left side frame)

The face of the Tachometer (cockpit right side frame)

Lever x2 (cockpit right side frame)

The gun triggers on the control column

Cockpit rear frame (A18)

Engine starter switch G17).

Apply decal (67) onto the Altimeter.

Apply decal (74) onto the throttle quadrant.

Apply decal (68) onto the Tachometer.

Apply decals (75 and 76) onto the levers.

Apply decal (66) onto the gun triggers.

Apply decal (78) onto the cockpit rear frame (A18)

Apply decal (77) onto the engine starter switch.

Weathering:

Refer to Part 3 (Weathering) of this build log for more information. Apply your chosen weathering effects of the desired parts. I used 'Flory Models' Dark Dirt clay wash as general weathering.

On the painted metal surfaces (cockpit side frames, fuel tank, carburettor air intake etc, lightly brush or sponge 'Tamiya' Weathering Master Set C (Silver), to give the impression of worn through paint.

Pre-rigging:

Cockpit right side frame:

NOTE: The following procedure applies to the four cross bracing wires in the side frame.

Cut two long lengths of 'Stroft GTM' or 'Steelon' 0.08 mm diameter mono-filament or similar.

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

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

Pass the line through a tube then through the 'eye' end of a 'Gaspach' 1/48th scale resin Type C turnbuckle.

Loop the line back and through the tube.

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

Secure the lines in the tube using thin CA adhesive, making sure the line is free to move in the turnbuckle.

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

Repeat to add a line to the opposite end of the turnbuckle.

Pass one free end of a line through a tube then through a pre-moulded rigging loop in a top corner of the cockpit side frame.

Loop the line back and through the tube.

Slide the tube up to, **but not touching**, the rigging loop.

Pass the other line through a tube then diagonally down and through the opposite rigging loop in the side frame.

Loop the line back and through the tube.

Slide the tube up to, **but not touching**, the rigging loop.

Pull the free line at the top corner to draw the turnbuckle close to the corner of the frame.

Secure the lines in the tube using thin CA adhesive, making sure the line is free to move in the turnbuckle.

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

Pull the other free line at the lower corner to draw the tube up to the corner of the frame, making sure the whole rigged line is kept taut.

Secure the lines in the tube using thin CA adhesive, making sure the line is free to move in the turnbuckle.

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

Repeat the procedure to add the remaining three crossed bracing wires to the cockpit side frame.

Cockpit left side frame:

Repeat the previous procedure to add the four cross bracing wires to the left side frame.

Side frame cross over bracing wires:

Not fitted as they will not be seen once the fuselage is completed.

Rudder control cables:

NOTE: *The following procedure applies to the two rudder control cables. These cables will be finally fitted during the full cockpit build later in this build log.*

Cut two long lengths of 'Stroft GTM' or 'Steelon' 0.08 mm diameter mono-filament or similar.

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

Pass the line through a tube then through one of the pre-drilled rigging holes in the rudder bar.

Loop the line back and through the tube.

Slide the tube up to, **but not touching**, the rudder bar.

Secure the lines in the tube using thin CA adhesive, making sure the line is free to move in the rudder bar lower joint.

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

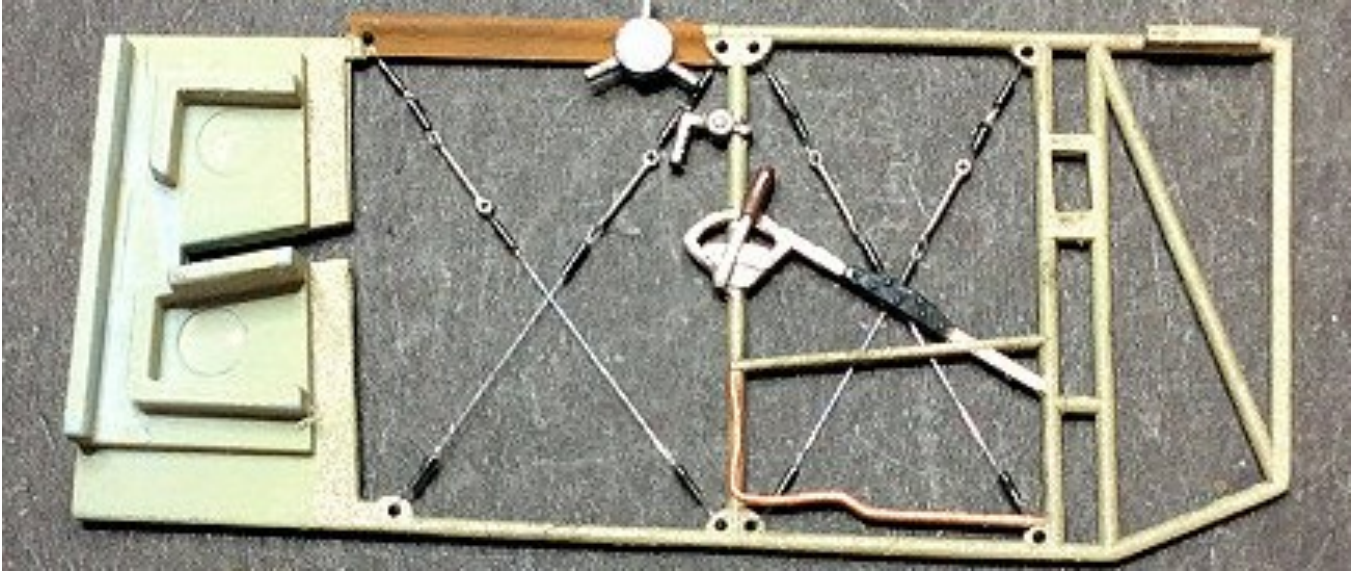
Repeat to add the remaining control cable to the rudder bar.

Elevator control cables:

NOTE: *The following procedure applies to both elevator control cables.*

Repeat the previous procedure to add the two elevator control cables to the pre-drilled holes in the control column.





Assembly (continued):

NOTE: Before any assembly of parts, make sure all decal, primer and paint is removed from locating holes, pegs and any mating surfaces. 'Wingnut Wings' models parts are made with very close tolerances and any primer or paint may stop parts locating fully together.

Cement the engine starter switch (G17) into its location inside the fuselage left half (B14).

Cement the suspension cross member (A12) into its locating holes at the front of the cockpit floor.

Cement the pre-rigged rudder bar (A44) into it's locating hole in the front of the cockpit floor. Make sure the bottom of the rudder bar stem **does not protrude** from the underside of the floor.

Locate the control column as follows:

The pre-rigged bottom of the control column should be located through the opening.

The wing warp control wires should be passed through their openings in the cockpit floor.

The rear of the bottom torque tube locates into the recess in the back of the cockpit floor.

The torque tube is also located into its half-hoop on the cockpit floor.

Cement the control column (G19) vertically in position on the cockpit floor.

Using thin CA adhesive, secure the two foot plates in position at the front of the cockpit floor.

Cement the rudder bar frame over the rudder bar and into its location holes/recesses in the cockpit floor. Make sure the top underside of the frame is located into the top of the rudder bar.

Cement the rear frame (A18) assembly into its location slots at the rear of the cockpit floor.

Make sure to two rudder cable slots in the frame are able to have the rudder control lines pass through. If not use a 0.3 mm drill to drill holes through the slots.

NOTE: The rudder and elevator control lines need to be passed under the pilots seat before it is fitted to the cockpit floor.

Pass the two rudder control lines and the top elevator (on control column) between the underside of the pilots seat and its support frames.

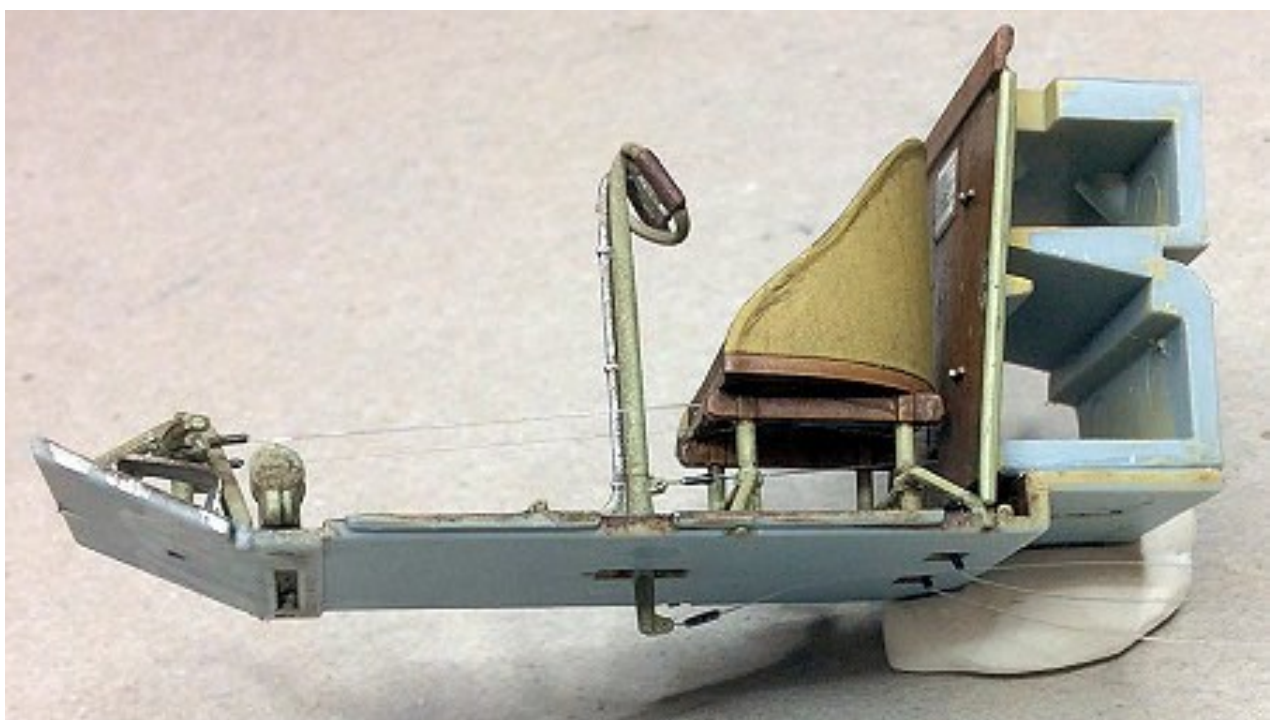
Pass the end of the elevator control line through the central opening in the rear frame.

Pass the rudder elevator control lines each side of the control column and through their respective hole in the rear frame slots.

Locate the ends of the pilots seat support frames into their locating holes in the cockpit floor.

Make sure the rudder and elevator control lines are not snagged and are in their correct positions (pull on the lines to check.)

Cement the pilots seat into its locating holes in the cockpit floor.



Seat belts:

Shaping:

Lightly sand the surfaces of the annealed photo-etch seat belts (P10, 12 and 13) to improve the grip for paint.

To allow the two lap belts (P12 and 13) to be attached to the rear legs of the pilots seat support frame, cut a small section from the bottom edge of the tethering circle on the bottom end of the belts.

Slip the cut circle of the lap belts over the legs of the seat rear support frame.

Hold the lap straps against the outer sides of the seat then bend the two lap belts over the pilots seat to the desired position and shapes.

Remove the belts from the seat without altering their shapes.

Insert the top ends of the shoulder belts (P10) into the top corner openings in the cockpit rear frame.

Hold the shoulder belts in the rear frame then bend the belts down and over the pilots seat to the desired position and shapes.

Remove the shoulder belts from the seat without altering their shapes.

Painting:

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

Airbrush 'Tamiya' Desert Yellow (XF59) or similar over the belts.

Brush 'Mr. Colour' Stainless Steel (213) or similar over the metal fittings on seat belts.

Weathering:

Refer to Part 3 (Weathering) of this build log for more information. Apply your chosen weathering effects to the seat belts. I used 'Flory Models' Grime clay wash as general weathering.

Assembly (continued):

Secure the cockpit side frame assembly (G6) in the fuselage left half by applying cement to the location pegs and face on the rear of the frame and to the bottom angled front and upright frame members.

Similarly, secure the cockpit side frame assembly (G9) in the fuselage right half.

Using thin CA adhesive, secure the shoulder belts (P10) into its top corner openings in the cockpit rear frame and onto the seat cushion.

Using thin CA adhesive, secure the lap belts (P12 and 13) onto the rear seat support frame and over the seat sides onto the seat cushion.

Cement the fuel tank onto its locating shelf on the top, front of the left cockpit side frame.

Cement the cockpit floor onto the cockpit left fuselage half (cockpit side frame). Make sure the wing warping control line is in the pre-moulded control slot in the fuselage underside.

Apply cement to the cockpit right side frame then fully locate the right fuselage half onto the left fuselage half. Make sure the elevator and wing warping control lines are clear of the fuselage and joints and the wing warping lines are located in the control line slot in the underside of the fuselage.

Apply cement along the entire joint between the fuselage halves. Hold the two fuselage halves together using pegs or clamps, until the cement has fully set.

Cement the tail skid panel (G4) onto its location on the underside, rear of the fuselage.

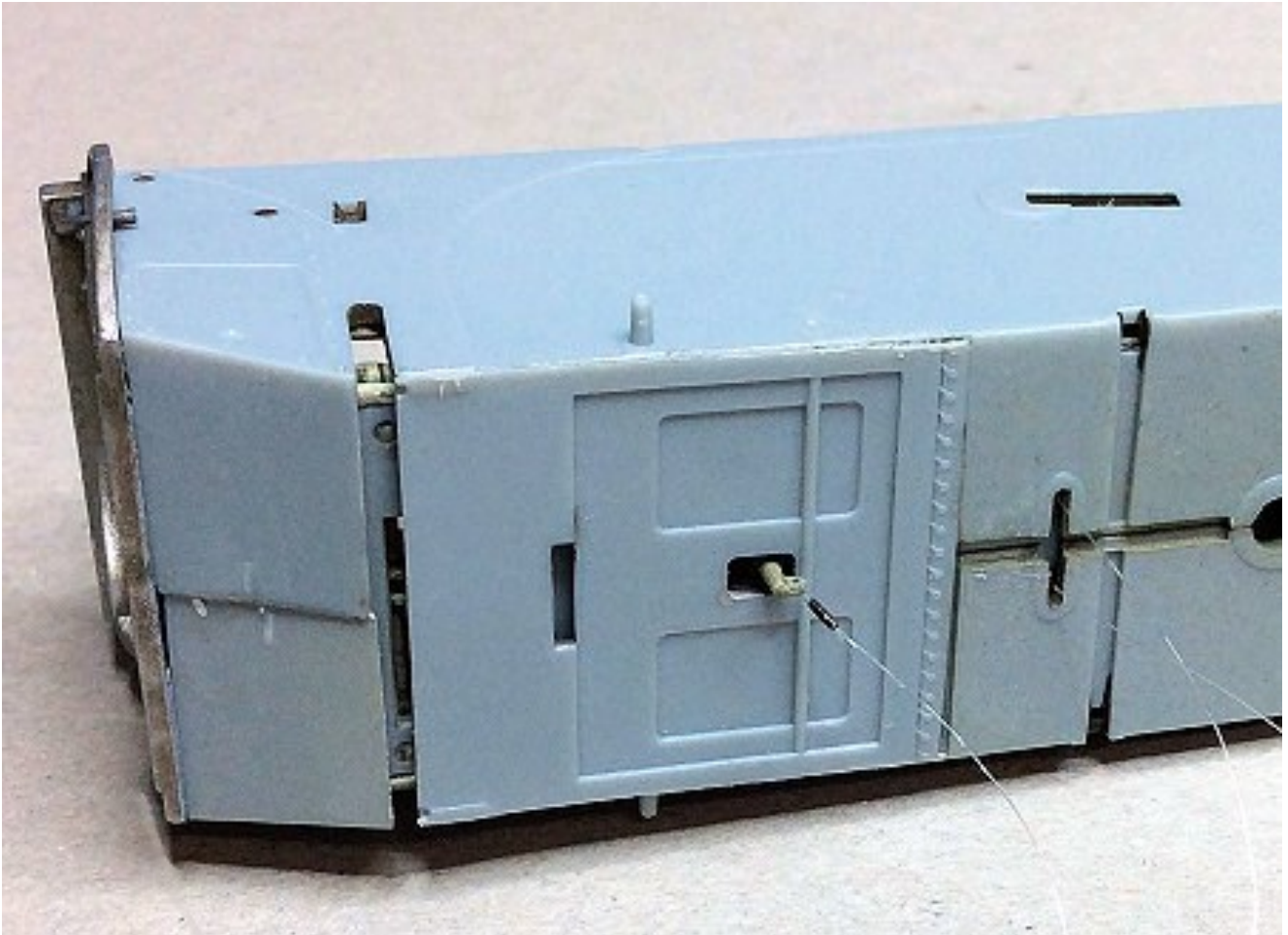
Locate the underside panel (G7) over the bottom of the control column (with attached control line) and cement the panel onto the fuselage.

Cement the engine bulkhead (G10) in position on the front of the fuselage.

Painting (continued):

Airbrush the cockpit internal assemblies and rigging with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar.





Assembly (continued):

Cement the two stitching runs (G8 and G20) into their recesses in the underside of the fuselage.

Cement the fuel filler cap (A8) into its hole in the top of the fuselage (rear from the cockpit).

Cement the Fuel gauge (G1) into its locating hole in the cockpit front coaming (B5).

NOTE: *The outlet ports (A34) for the rudder and elevator control cables will be fitted with control cables attached, later in this build.*

Check fit the top cross member of the front landing gear struts (G5) into its recess in the underside of the fuselage. If necessary, file or sand the recess to achieve a full location of the strut.

Check the joint between the fuselage halves, which should be aligned with no step. If necessary, fill and/or sand the joint to blend the surfaces smoothly together.

Anneal (heat soften) the two flash guards (P7).

Carefully bend them around a suitable round former such that they fit the outer surface of the engine cowl.

Carefully scrape or sand away the pre-moulded flash guards in the top of the engine cowl.

Temporarily locate the cockpit front coaming to the engine cowl using masking tape.

Use thin CA adhesive to secure the two photo-etch flash guard plates in position on the engine cowl, inline with the centre of the gun slots in the cockpit forward coaming and central on the engine cowl.



Painting (continued):

Airbrush both sides of the following parts with a gloss black base coat, such as 'Tamiya' Gloss Black (X1) or similar:

Cockpit front coaming (B5), engine cowl (B4), side fairings (B10 and B11), deflector plate (B17), fuselage rear fairing (B13) and cockpit surround coaming (B6) and the ammunition magazine containers (G3).

Fokker 'turned' metal effect:

NOTE: *'Wingnut Wings' provides hints and tips for representing the turned or burnished metal finish used by Fokker on outer exposed metal panels and coamings. However, this requires the use of thinned 'Tamiya' paints applied with a brush, which may be beyond the skill level of many modelers. Therefore I chose instead to use an standard 2B grade pencil, which is easier to control and to maintain consistent marking effects.*

Airbrush the gloss black based parts with 'Alclad' Duraluminium (ALC102) or similar.

Airbrush the painted parts with a matte clear coat, such as 'Alclad' Flat (ALC314) or similar.

Sharpen the tip of the 2B pencil, then round off the tip slightly on paper. This will help to prevent the pencil lead cutting through the painted surface.

NOTE: *During the following step do not press too hard with the pencil. Pressing too hard can tear through the painted surface.*

Carefully draw small, fine 'squiggle' lines over the **outer** surfaces of the Duraluminium painted parts. Avoid overlapping the lines and try to keep their sizes the same.

Airbrush the applied effects and the inner surfaces of the parts with a **light** semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar. This will seal in the applied effects and provide a good surface for weathering later in the build.

Use masking tape to mask off the entire cockpit opening.

Insert small pieces of sponge to mask off all holes and slots on the fuselage.

Use masking tape to mask the exposed pre-rigged control lines under the fuselage.

Use masking tape to mask off the fuselage, leaving just the metal panel areas on the fuselage forward sides and underside exposed.

Airbrush the exposed metal areas on the fuselage sides and underside with a gloss black base coat, such as 'Tamiya' Gloss Black (X1) or similar.

Airbrush the gloss black based areas with 'Alclad' Duraluminium (ALC102) or similar.

NOTE: *The Fokker 'squiggle' line effects will be added later.*

Remove all of the masking but leave the sponge infills and the masking over the cockpit opening.

Use masking tape to mask the Duraluminium painted areas of the fuselage.

Airbrush the exposed fuselage areas with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Airbrush the exposed fuselage areas with a light coat of 'Tamiya' Grey Green (XF22) or similar.

To represent the outline of the internal fuselage frames, *lightly* draw the lines using a standard 2B pencil and straight edge.

Airbrush a light dusting coat of 'Tamiya' Grey Green (XF22) or similar over the oil staining to blend it slightly with the fuselage colour.

Remove all fuselage masking tape and sponge infills.

Airbrush the fuselage (but not the cockpit area), including the Duraluminium painted areas, with a matte clear coat, such as 'Alclad' Flat (ALC314) or similar.

Sharpen the tip of the 2B pencil, then round off the tip slightly on paper. This will help to prevent the pencil lead cutting through the painted surface.

NOTE: *During the following step do not press too hard with the pencil. Pressing too hard can tear through the painted surface.*

Carefully draw small, fine 'squiggle' lines over the exposed Duraluminium painted areas. Avoid overlapping the lines and try to keep their sizes the same.

Brush paint the wing rear attachment circles on the fuselage sides with 'AK Interactive' Brown Leather (AK3031) or similar.

Airbrush the entire painted fuselage with a **light** semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar. This will seal in the applied effects and provide a good surface for weathering the whole fuselage later in this build.

NOTE: *The paint or dope applied to the metal parts eroded over time, due to chipping and the effects of engine exhaust and oil, leaving the metal surface showing through the green covering.*

The following parts are those that require the green paint or dope worn finish:

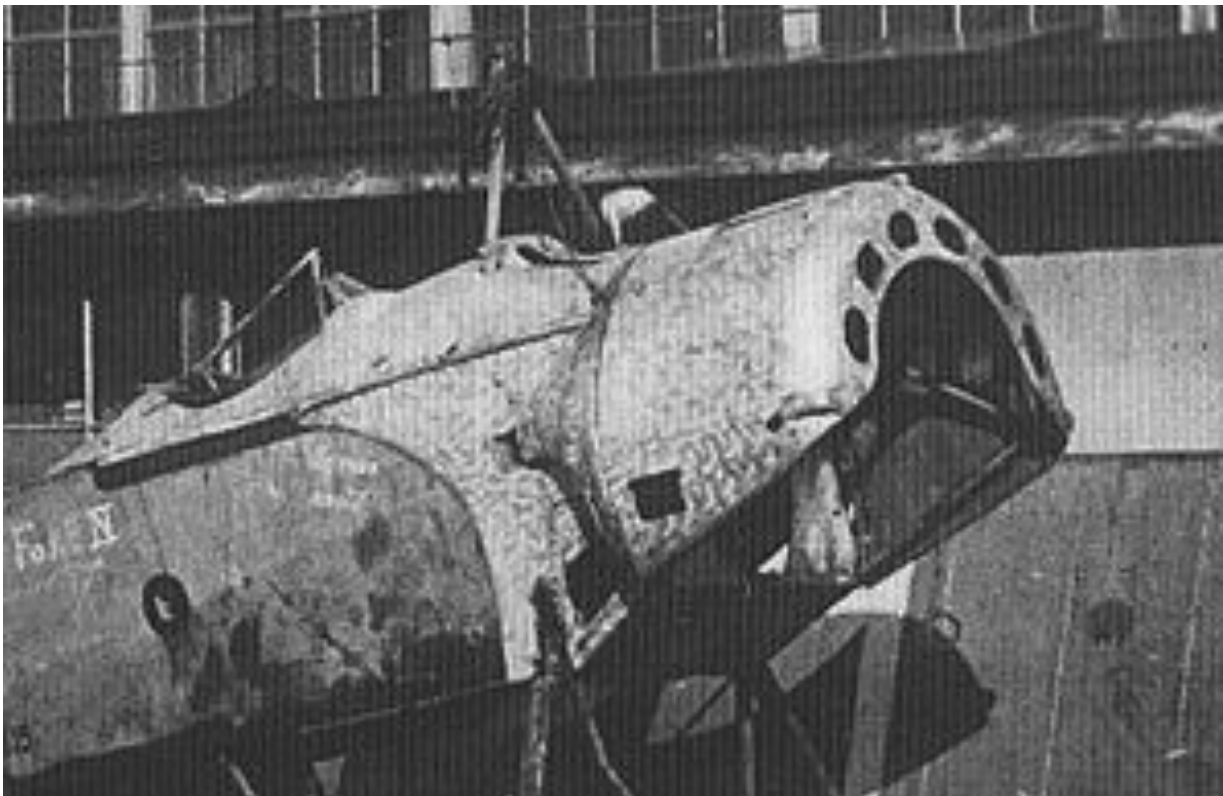
Engine cowl

Fuselage side fairings

Fuselage side and underside panels

Under fuselage deflector

The fuselage three top coaming panels.



NOTE: This particular aircraft had green paint or dope applied over the metal engine cowl and fuselage forward panels as well as the fuselage, wing and elevators. The paint on the metal panels eroded over time, due to chipping and engine exhaust and oil, leaving the metal surface showing through the green covering. The painting of these parts needs to be carried out **before** they are fitted to the fuselage. This is because the two machine guns, their gun sights, fuel gauge and ammunition magazine and belts must be fitted after the panels are painted. Therefore it's better to paint the forward area of the fuselage at this stage so that the metal panels and associated parts can then be fitted.



To represent the worn green paint or dope applied over the exposed Fokker effect Duraluminium parts:

Heavily 'dot' apply 'AK Interactive' Field Green oil brusher (A.Mig 3506) over the external surface of the parts.

Use primarily a soft, broad brush, very lightly dampened with 'AK Interactive' Odourless Thinners (A.Mig 2019), to lightly brushed away the paint to partially reveal the Fokker effect Duraluminium underneath.

Brush away the edges, raised areas and around openings to create chipping effects.



Airbrush the painted surfaces with a matte clear coat, such as 'Alclad' Flat (ALC314) or similar. This will seal in the applied effects and provide a good surface for weathering the whole fuselage later in this build.

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

Ammunition magazine assembly (G3 and B1)

Gun rear mounting (G14)

Two ammunition belts ('Gaspatch')

Fuel gauge (G1)

Engine cowl struts (G13, B9 and B12).

Airbrush paint the following:

'Alclad' Duraluminium ALC102 - Ammunition magazines (G3)

'Tamiya' Grey Green (IJN) (XF76) - Engine cowl struts (G13, B9 and B12) and gun rear mounting (G14).

Brush paint the following:

'Tamiya' Dark Yellow (XF60) - Empty belt container (B1)

'AK Interactive' Brown Leather (AK3031) - Cockpit opening surround padding (B6) and top edge of empty belt container (B1)

'AK Interactive' British Uniform Light (AK3082) - Highlights on cockpit opening surround padding (B6)

'Tamiya' Buff (XF57) - Ammunition belts (on ammunition magazines (G3) and the two 'Gaspatch' ammunition belts

'Mr. Colour' Brass (219) - Filler cap on Cockpit forward coaming (B5) and ammunition cases on the ammunition belts (on ammunition magazines (G3) and the two 'Gaspatch' ammunition belts

'Mr. Colour' Copper (215) - Ammunition heads on the ammunition belts (on ammunition magazines (G3) and the two 'Gaspatch' ammunition belts.

'Tamiya' Grey Green (IJN) (XF76) - Cross member on the ammunition magazine (G3).

'Tamiya' Rubber Black (XF85) - Clock (G4).

Decals (continued):

NOTE: Refer to Part 4 (Decals) of this build log for more information. During the following steps, refer to the illustrations on page 6 and 12 of the kit instruction manual for further guidance.

Brush a gloss clear coat, such as 'Tamiya' Gloss (X22) or similar over the following:

The face of the fuel gauge (G1)

The face of the ammunition magazine containers (top of frame)

The face of the clock (G14).

Apply decal (69) onto the clock.

Apply decal (73) onto the ammunition magazine containers (top of frame).

Apply decal (71) onto the fuel gauge.

Assembly (continued):

NOTE: Before any assembly of parts, make sure any decal, primer and paint is removed from locating holes, pegs and any mating surfaces. 'Wingnut Wings' models parts are made with very close tolerances and any primer or paint may stop parts locating fully together.

Loosely locate the two machine guns into their locating slots in the top frame of the ammunition magazine.

Pass the cooling jackets of the machine guns through their openings in the cockpit front coaming.

Locate the top edge of the ammunition magazine frame into position in the rear edge of the cockpit front coaming and cement in position.

Check fit the assembly into the front of the fuselage, making sure the bottom edges fully locate against the fuselage edges and the front of the coaming is against the top, rear of the engine bulkhead.

Check that the two machine guns are aligned, parallel to the fuselage when viewed from above and level when viewed from the sides.

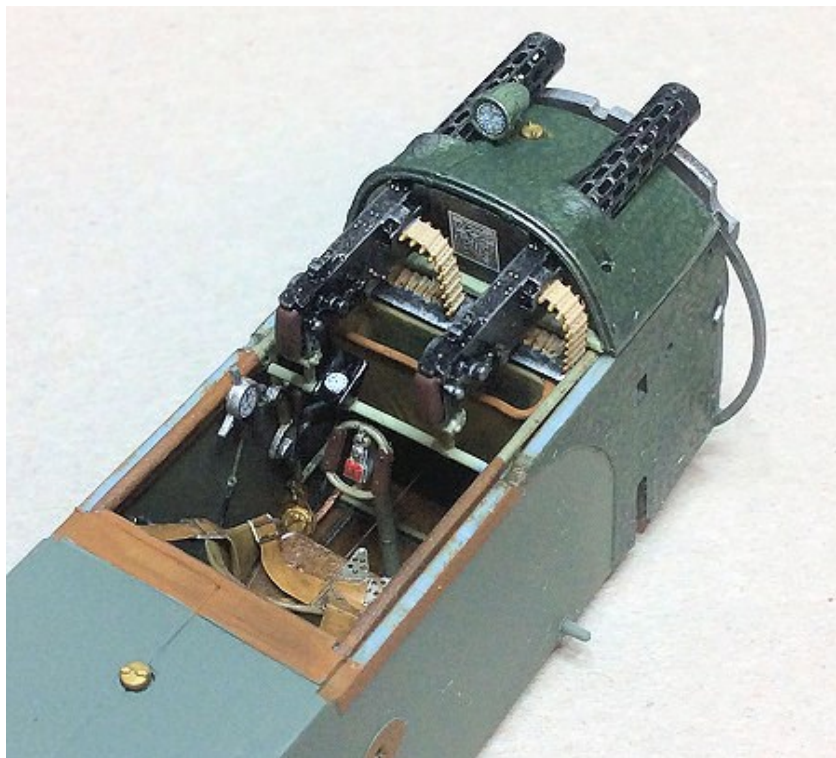
Remove the assembly and using thin CA adhesive, secure the two machine guns in their locating slots in the ammunition magazine top frame.

Cement the assembly into the fuselage.

Locate the top of the two 'Gaspatch' ammunition belts into the slots at the right side of the machine gun breech blocks, with their bottom edges resting on the top of the magazine container at the ends of the pre-moulded ammunition belts.

Use thin CA adhesive to secure the two ammunition belts in position in the breech blocks and magazine.

Use thin CA adhesive to secure the rear mount for the machine guns to the rear, underside of the gun breech blocks.



Check fit the cockpit rear coaming panel onto the fuselage, locating its peg into the hole in the fuselage.

Check fit the cockpit surround coaming onto the fuselage sides and between the fitted front and located rear coaming panels. Make sure the bottom edges of the cockpit surround coaming locate fully onto the fuselage side edges and its front and rear edges locate over the end edges of the front and rear coamings. If necessary, scrape away the inside surface of the cockpit surround coaming at any underside contact points to achieve the correct fit.

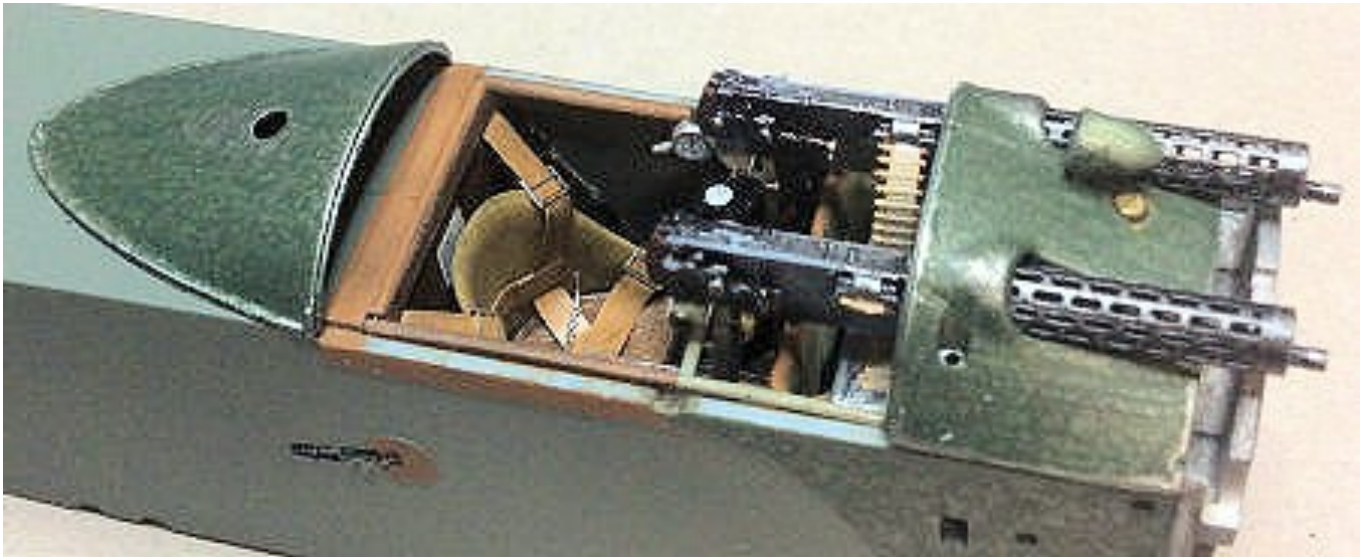
Remove the cockpit surround and rear coamings.

Cement the rear coaming onto the fuselage and into its locating hole in the fuselage.

Temporarily re-locate the cockpit surround coaming to make sure the rear coaming is correctly aligned on the fuselage.

Remove the cockpit surround coaming.

If necessary, apply cement from the inside of the rear coaming to the coaming to fuselage joint.



Re-locate and cement the cockpit surround coaming onto the fuselage sides and between the fitted front and rear coaming panels.

Cement the front engine support frame (G13) onto its three locating pegs on the inside of the engine cowl.



Cement the two cowl support struts (B9 and B12) into their locating holes and recesses on the inside of the engine cowl.

Test fit the prepared engine assembly into the engine cowl assembly, making sure the tops of the engine cylinders do not contact the engine cowl support frames.

Test locate the engine into its locating hole in the engine bulkhead, making sure the engine fully locates. If necessary, reduce the length of the engine shaft on the rear of the engine to achieve the correct fit.

Test fit the engine cowl assembly over the engine, making sure the rear edge of the cowl fully locates onto the fuselage front.

Remove the cowl and engine assemblies from the fuselage.

Weathering:

NOTE: Refer to Part 3 (Weathering) for more information using 'Flory' clay washes.

To represent engine oil staining and general grime inside the engine cowl, I applied 'Flory Models' Dark Dirt fine clay wash.

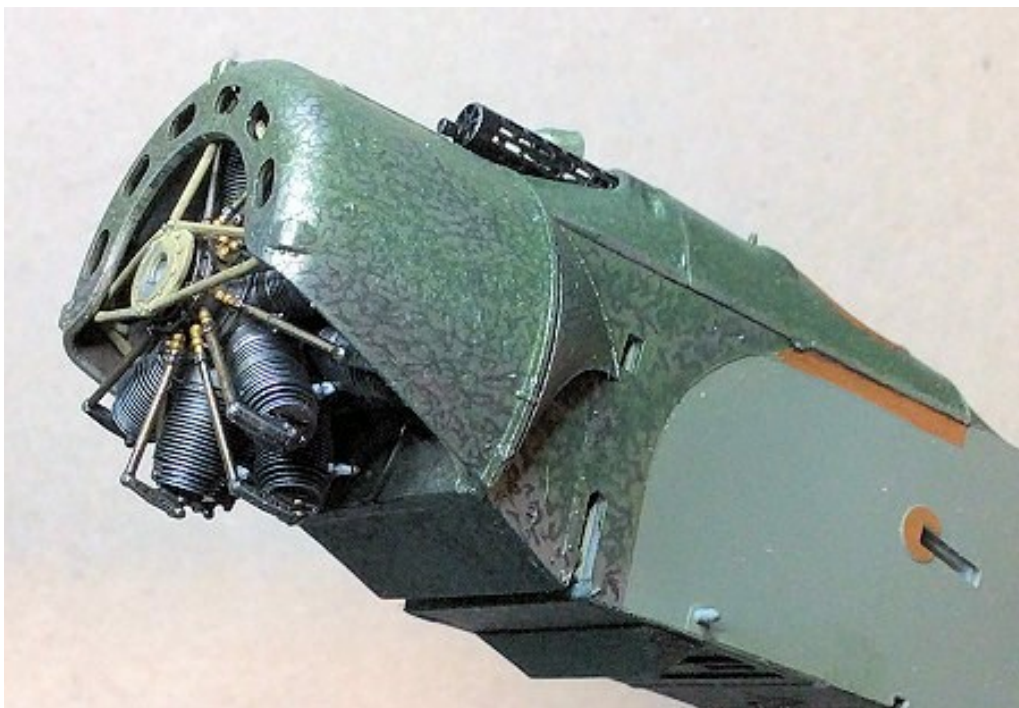
Assembly (continued):

Cement the engine assembly into its locating hole in the engine bulkhead.

Cement the engine cowl assembly over the engine and onto the front of the fuselage.

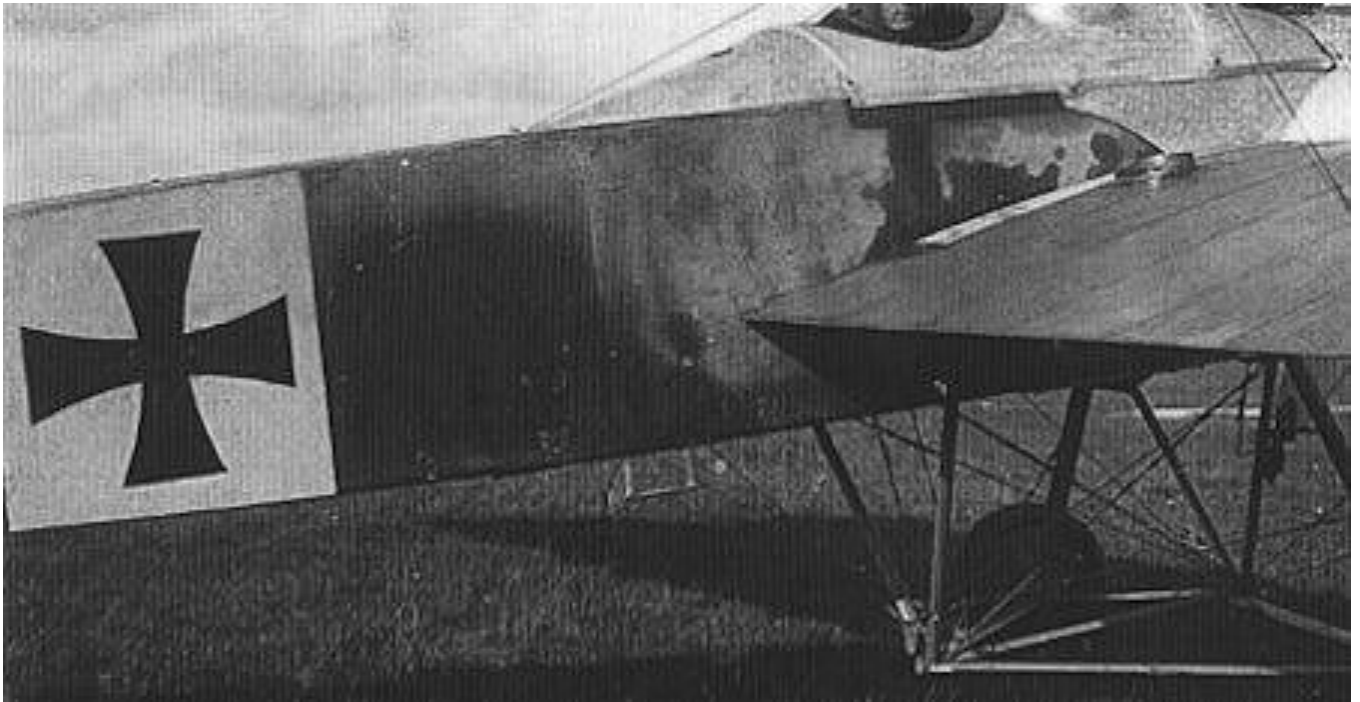
Make sure the engine cowl is fully located onto the fuselage with the rear edges of the cowl aligned to the curved supports on the fuselage sides. Make sure the propeller locating hole in the front of the engine is aligned to the hole in the front engine support frame.

Cement the two fuselage side fairings into their fuselage locating holes and with their front edges against the rear edge of the engine cowl.



Weathering (continued):

During flight the engine oil and exhaust gases were emitted from the cylinders of the rotary engine as it spun. The oil in particular would be blown rearwards and onto and into the linen covering of the aircraft. This over time resulted in heavy build up of oil stain along the fuselage and even the wing root on the left side, which was the direction the engine rotated (anti-clockwise). Examples of oil staining can be seen in the following photographs.





NOTE: Refer to Part 3 (Weathering) for more information using 'Flory' clay washes.

To represent engine oil staining and general grime on the linen covering of the fuselage, I applied 'Flory Models' Dark Dirt fine clay wash. This was 'dabbed' and wiped off using either a brush or kitchen roll slightly dampened with water.

The intention was to represent the oil staining to the forward fuselage and along the lower edge of the fuselage sides. Also some slight staining at the fuselage formers.

Once the desired effect has been achieved, airbrush the fuselage external surfaces with a light, clear gloss coat, such as 'Alclad' Aqua Gloss 600 or similar. Several coats may be required to achieve a smooth gloss coat. This will provide a good coat for applying the fuselage decals.

Decals (continued):

Kit supplied decals:

NOTE: During the following steps, refer to the illustrations on page 25 (with reference to page 19) of the kit instruction manual for further guidance.

Page 19 decals:

NOTE: Decals 53 will be applied to the underside rear fuselage later in this build.

Apply decals 51 and 52 to the rudder and elevator control cable ports (top rear fuselage)

Apply decal 55 to the port hole in the fuselage underside.

Page 25 decals:

NOTE: Decals 48 will not be used.

Apply decal 61 to the right, lower rear of the engine cowl

Apply decals 21 to both sides of the fuselage forward, lower edge

Apply decal 54 to the fuselage rear support slot for the wings

Apply decals 22 and 23 to the sides of the fuselage

Apply decals 47 to both sides of the fuselage upper edge

Apply decals 21 to both sides of the fuselage forward, lower edge

Apply decals 41 and 46 to the lower sides of the fuselage

Apply decals 42 and 45 to the lower sides of the fuselage.

Weathering (continued):

If desired, apply more 'Flory Models' Dark Dirt fine clay wash to the kit supplied decals applied to the fuselage, to merge them with their surrounding surfaces. Airbrush the with a matte clear coat, such as 'Alclad' Flat (ALC314) or similar **before** applying weathering.

Painting (continued):

Seal and protect the fuselage by airbrushing with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar.

Weathering (continued):

To represent engine oils runs on the underside of the fuselage, behind the engine, place several drops of 'AK Interactive' Kerosene' (AK) or Engine Oil (AK) onto the front edge of the fuselage.

Using an airbrush or by blowing from the mouth, blow the wash rearwards along the underside, to represent the oil runs.

If desired, lightly sponge 'Tamiya' Weathering Master Set C (Silver) onto the engine cowl to hight paint or dope wear.

If desired, lightly sponge 'Tamiya' Weathering Master Set A (Mud) along the lower edges of the fuselage.





PART 12
PHASE 2
CONSTRUCTION

PART 12 - PHASE 2 CONSTRUCTION

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

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

Before any assembly of parts, make sure all decal, primer and paint is removed from locating holes, pegs and any mating surfaces. 'Wingnut Wings' models parts are made with very close tolerances and any primer or paint may stop parts locating fully together.

Preparation:

Prepare the following parts:

A - 6, 10, 16, 17, 25, 34, 45.

B - 8.

D - 3 (x2), 5 (x2), 8 (x2), 9 (x2), 10 (x2).

F - 4, 6.

G - 5.

'Gaspach' - The two rectangular gun sights supplied with the replacement machine guns.

Replacement:

Support strut (A33):

NOTE: *The fuselage pylon strut that supports the wing landing and wing warp wires, is moulded to scale and is therefore quite weak and fragile. The strut (A33) and its pulley wheel (G12) will be replaced with stronger parts. The tube or rod used was from 'Albion Alloy's'.*

To represent the strut, I cut two lengths of 1.0 mm diameter Brass tube, the same length as the legs of the kit supplied strut. Each chamfered at the ends to form the correct angle of the pylon struts.

A length of 0.5 mm diameter Brass rod was passed through the tubes then bent to form the pylon strut at the correct angle. I soft soldered the two tubes and rod together to form the pylon strut.

The strut tubes of the pylon were flattened using flat nosed pliers. I then drilled a 0.5 mm diameter hole through the soft solder in the arch of the pylon, below the internal 0.5 mm rod.

A brass tube of 0.4 mm diameter was passed through the hole and two 'Gaspach' 1:32nd scale turnbuckles (Type C) were located onto the tube. That end of the tube was then bent up slightly (for mounting the pulley).

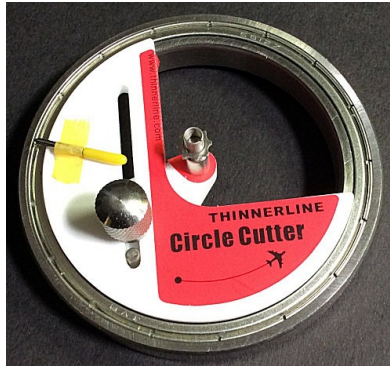
I then cut short length of 0.7 mm diameter Brass tube, which was passed onto the 0.4 mm diameter tube protruding from the opposite side of the pylon. The front 0.7 mm of the tube was flattened using flat nosed pliers and secured vertically in position using thin CA adhesive.

A hole of 0.2 mm diameter drilled through the flattened tube (to be used for rigging wires later in the build).

Pulley wheel (G12):

NOTE:

To cut circles in masking or plastic, I used a 'ThinnerLine Circle Cutter', although others are available.



Cut three 2.5 mm diameter discs of 0.2 mm thick plastic card.

Cut two 2.0 diameter disc of 0.2 mm thick plastic card.

Cement the two discs centrally between the three larger discs to create a twin grooved pulley.

Drill a hole of 0.5 mm diameter centrally through the disc assembly.

Locate the disc assembly onto the rear 0.4 mm diameter tube on the pylon and secure in position using thin CA adhesive.



Assembly:

Cement the landing gear forward frame (G5) into its locating holes on the outer ends of the base frame (A25) and onto the locating stub in the forward, centre of the base frame.

Cement the rear 'V' strut into its 'D' shaped recesses on the base frame.

Check fit the landing gear assembly into its locating recesses in the underside of the fuselage.

Cement the tail skid (A16) into its locating hole and recess on the tail skid frame (A10).

Check fit the tail skid assembly into its locating recesses in the underside rear of the fuselage.

Painting:

Airbrush the following parts with a base coat of gloss black, such as 'Tamiya' Gloss Black (X1) or similar:

- Landing gear assembly
- Tail skid assembly
- Over wing 'V' support strut
- Wing warp control levers (A45).

Airbrush the same parts with 'Alclad' Steel (ALC112) or similar.

Airbrush the rudder with a white primer, such as 'AK Interactive' White (AK759) or similar.

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

- Wings (x2)
- Elevators
- Wheel outer covers (x2)
- Wheel inner covers (x2)
- Exit port for rudder/elevator cables
- Foot steps (x2).

Airbrush the same parts (except the foot steps) and the bottom of the rudder (both sides) with 'Tamiya' Grey Green (XF22) or similar.

Mask around the walkways at the upper wing roots, then airbrush them with 'Tamiya' Gloss Black (X1) or similar.

Airbrush the walkways with 'Alclad' Duraluminium (ALC102) or similar.

Remove the masking from around the walkways.

Brush paint the following with 'Tamiya' Grey Green IJN (XF76) or similar:

- The two foot steps
- The elevator cross bar and control horns
- The rudder control horns.

Brush paint the wood tail skid and valve patches on the wheel inner covers with 'AK Interactive' Brown Leather (AK3031) or similar.

Brush paint the compass and pylon pulley wheel with 'Tamiya' Rubber Black (XF85) or similar.

Decals:

NOTE: *During the following steps, refer to the illustrations on page 25 (with reference to page 19) of the kit instruction manual for further guidance.*

The national insignia carried on German aircraft from 1914 to 1915 was the black 'Cross Pattée' on a white background. The shape of cross was changed from 1916 until March 1918, when the 'Balkenkreuz' (Iron Cross) was introduced.

This particular aircraft would have left the Fokker factory in Clear Doped Linen (CDL) with the 1916 version of the 'Cross Pattée' insignia. By January 1917 this aircraft was operating on a home defence unit and had already been over painted with a green dope and probably the later style of 'Cross Pattée'. I chose to show the over painted and later style of 'Cross Pattée' on the wings.

Airbrush a clear gloss coat, such as 'Alclad' Aqua Gloss 600 or similar over the areas of the wings, wheels and rudder that require the application of decals.

Kit manual Page 19 decals:

NOTE: *Decals 53 will be applied to the underside rear fuselage later in this build.*

- Apply decals 57 and 58 to the upper surface of the wings.
- Apply decals 59, 60 and 65 to the upper surface of the wings.
- Apply decals 63 and 64 at the compass on the right wings.

Kit manual Page 25 decals:

NOTE:

- Apply decals 1 and 2 to the underside of the wings.
- Apply decals 1 and 2 to the upper surface of the wings.
- Apply decals 49 to the wheel outer covers.
- Apply decals 56 to the wheel inner covers.
- Apply decals 21 to the bottom sides of the rudder.
- Apply decals 14 and 15 to the rudder.

Painting (continued):

Airbrush a clear matte coat, such as 'Alclad' Flat (ALC314) or similar over the applied decal 1 and 2 (to provided a key for painting).

NOTE: *During the following step, I applied too much paint and unintentionally covered the decals 1 and 2.*

Airbrush the wing decals 1 and 2 with **very light** coats of 'Tamiya' Grey Green (XF22) or similar. Check between coats as the intention is to merge the decals with the surrounding surfaces, but still leave the decals 1 and 2 just visible.

Once the desired finish is achieved, airbrush a clear gloss coat, such as 'Alclad' Aqua Gloss 600 or similar over the areas of the painted decals 1 and 2.

Decals (continued):

Kit manual Page 25 decals:

NOTE: *Decals 48 will not be used.*

- Apply decals 16 to the underside of the wings and over the over painted decals 1 and 2.
- Apply decals 9 to the upper surface of the wings and over the over painted decals 1 and 2.

Weathering:

NOTE: *Refer to Part 3 (Weathering) for more information using 'Flory' clay washes.*

Airbrush the previously painted and decal parts with a matte clear coat, such as 'Alclad' Flat (ALC314) or similar.

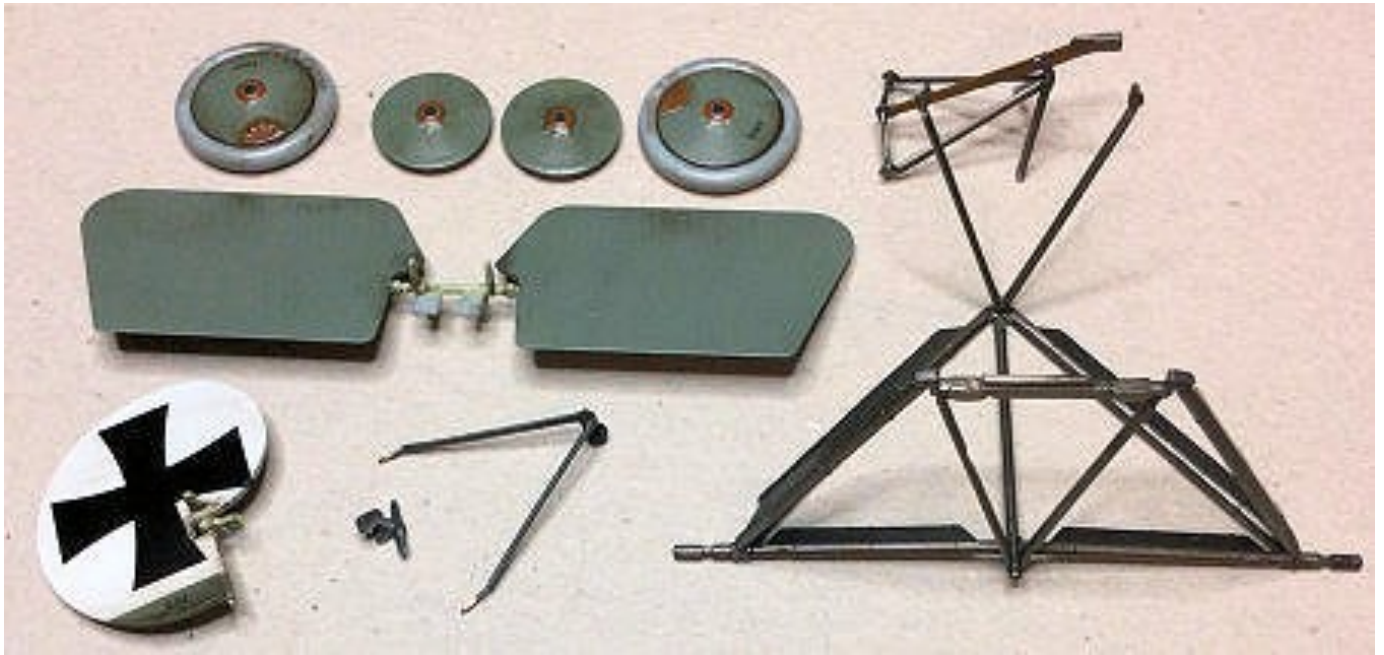
To represent engine oil staining and general grime on the linen covering, I applied 'Flory Models' Dark Dirt fine clay wash. This was 'dabbed' and wiped off using either a brush or kitchen roll slightly dampened with water.

The intention was to represent the oil staining to the wing roots and general grime or staining on the elevators and rudder, landing gear and wheels.

Painting (continued):

Seal and protect the parts by airbrushing with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar.

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



Assembly (continued):

NOTE: *The tail skid assembly should be fitted after the elevator control lines have been rigged, during Phase 2 of this build log.*

Locate the two wheel halves fully onto the ends of the landing gear axle.

Fully locate the wheel retainers (D5) over their axle recesses inside the wheel halves. If desired, cement the retainers to lock the wheel in position.

Cement the wheel outer covers fully into the wheel halves (the recess aligns with the tyre valve).

Fully locate and cement the landing gear assembly into its fuselage two rear locating holes and front locating slot.

PART 13

PRE-RIGGING 2

PART 13 - PRE-RIGGING 2

Pre-rigging:

NOTE: *At this stage of the build it's best to pre-rig as much of the external rigging wires and flight control cables locations as possible, as access will be restricted when the model is assembled. Refer to Part 5 (Rigging) of this build log and page 15 of the kit instruction manual for more information.*

The kit parts have some pre-moulded rigging locations. If drilling additional rigging points into the model, take care to not drill the holes too close to strut locations.

The rigging materials used are:

'Gaspach' 1/48th scale metal Anchor Points and Type C turnbuckles

'Proper Plane' 1/32nd scale resin turnbuckles

'Steelon' or 'Stroft' 0.08 and 0.12 mm diameter mono-filament

'Albion Alloy's' 0.4 and 0.5 mm Brass tube and rod.

Control cables preparation:

Cut four long lengths of 0.08 mm diameter mono-filament, such as 'Stroft GTM' or similar.

Pass a line through the top of each of the four slots in part A34 (cable outlet panel at top, rear of fuselage).

Use thin CA adhesive to secure the lines to the forward, underside of the panel.

Cut away any residual line at the edge of the panel.

Cement the panel into its recess in the top, rear of the fuselage.

Elevator upper control cables:

Cement the two tangs of the elevator into their locating slots in the rear edge of the fuselage, making sure the elevator is fully located.

Pass the two outer lines through an 'eye' end of a 'Proper Plane' 1:32nd resin turnbuckle.

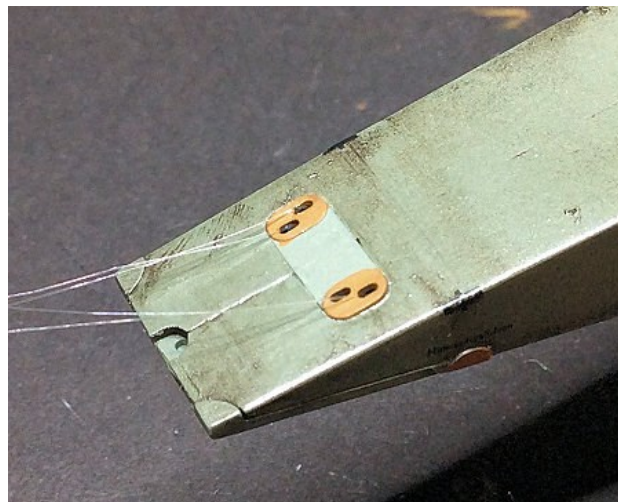
Pass the lines along (not around) the barrel of the turnbuckles then back through the opposite 'eye' ends.

Pass the free end of the lines through the pre-drilled holes in the upper elevator control horns.

Pull the lines taut and slide the turnbuckles up to the control horns.

Keeping the lines taut, secure the lines to their control horns using thin CA adhesive.

Cut away any residual line at the edge of the control horns.



Elevator underside control cables:

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

Using thin CA adhesive, secure each line into a pre-moulded outlet slot in the underside rear of the fuselage.

Pass the lines through an 'eye' end of a 'Proper Plane' 1:32nd resin turnbuckle.

Pass the lines along (not around) the barrel of the turnbuckles then back through the opposite 'eye' ends.

Pass the free end of the lines through the pre-drilled holes in the underside elevator control horns.

Pull the lines taut and slide the turnbuckles up to the control horns.

Keeping the lines taut, secure the lines to their control horns using thin CA adhesive.

Cut away any residual line at the edge of the control horns.

Brush paint the four elevator turnbuckles with 'Mr. Colour' Dark Iron (214) or similar.

Pass the end of the control line on the bottom of the control column rearwards and into the large hole in the fuselage underside.

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

Rudder control cables:

Cement the tail skid assembly into its four locating holes in the rear, underside of the fuselage.

Cement the rudder into its locating recess in the top, rear of the fuselage and into its locating hole in the rear of the tail skid frame.

Pass the two inner lines at the top, rear of the fuselage, through an 'eye' end of a 'Proper Plane' 1:32nd resin turnbuckle.

Pass the lines along (not around) the barrel of the turnbuckles then back through the opposite 'eye' ends.

Pass the free end of the lines through the pre-drilled holes in the rudder control horns.

Pull the lines taut and slide the turnbuckles up to the control horns.

Keeping the lines taut, secure the lines to their control horns using thin CA adhesive.

Cut away any residual line at the edge of the control horns.

Brush paint the two rudder turnbuckles with 'Mr. Colour' Stainless Steel (213) or similar.



Wing warp control cables:

Cut four long lengths of 0.12 mm diameter mono-filament, such as 'Stroft GTM', 'Steelon' or similar. Each length should be longer than needed to go from the wing warp control levers on the rear of the landing gear, up to the four rigging holes in the wings.

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

Slide a tube onto a line then pass one end of the line through one of the pre-drilled holes in the end of the levers on the warp control horn/levers (A45) part.

Loop the line back and through the tube.

Slide the tube on the lines up to, **but not touching**, the end of the lever.

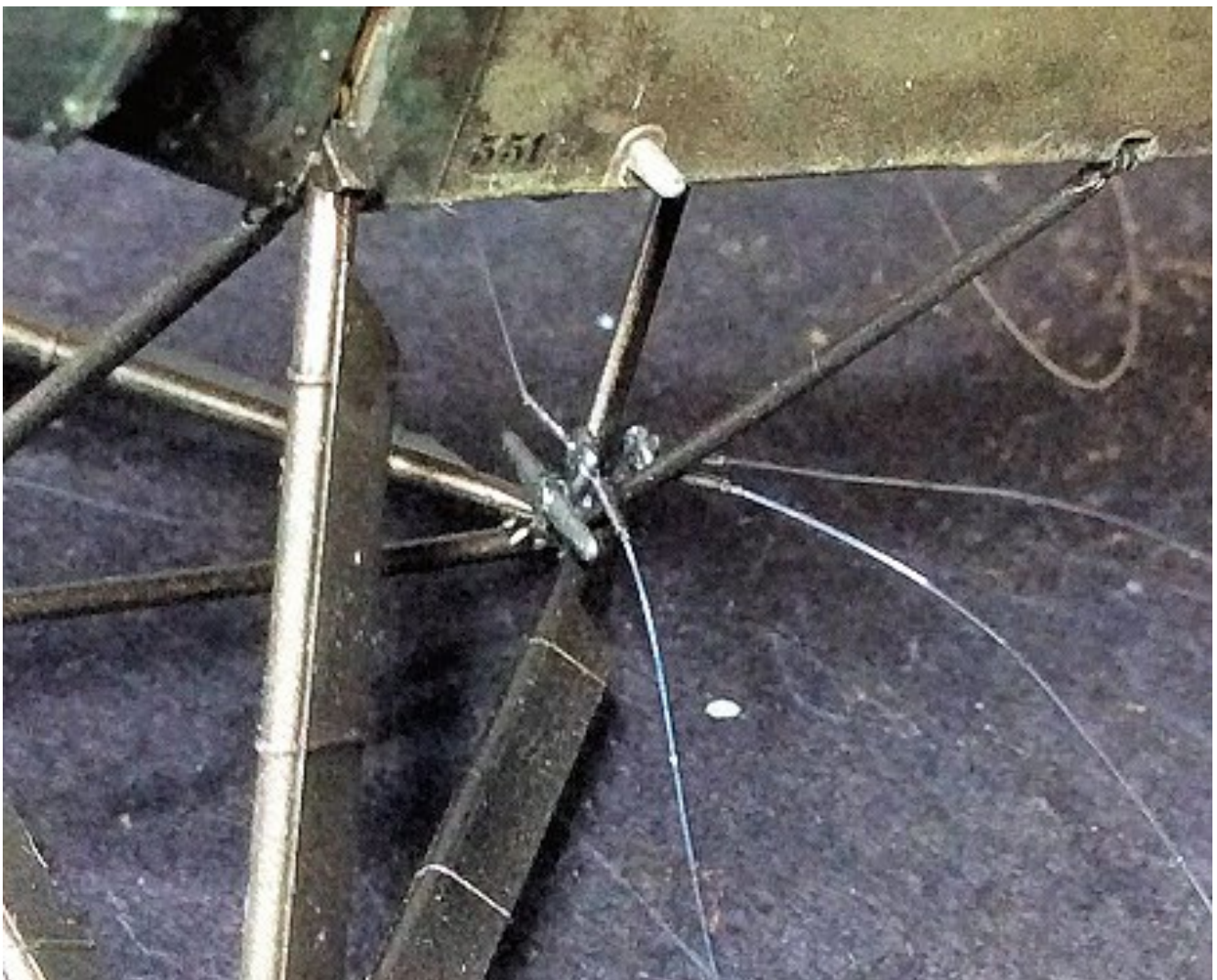
Secure the tube on the lines using thin CA adhesive at the tube end farthest from the lever.

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

Repeat the procedure to add a line to the remaining three pre-drilled holes in the levers.

Locate the part A45 into its locating recess in the bottom of the landing gear rear 'V' strut. Make sure the two lines on the forward and rear levers are on the correct side of the 'V' strut and that they are not trapped under part A45.

Cement part A45 in position in its locating recess in the bottom of the landing gear rear 'V' strut.



Pass each of the two lines from the cockpit through an 'eye' end of a 'Proper Plane' 1:32nd resin turnbuckle.

Pass the lines along (not around) the barrel of the turnbuckles then back through the opposite 'eye' ends.

Pass the free end of the lines through the pre-drilled holes in the wing warp control horns on A45.

Pull the lines taut and slide the turnbuckles to mid-way along the lines.

Keeping the lines taut, secure the lines to the control horns using thin CA adhesive.

Cut away any residual line at the edge of the control horns.

Brush paint the wing warp turnbuckles with Stainless Steel (213) or similar.



PART 14
PHASE 3
CONSTRUCTION

PART 14 - PHASE 3 CONSTRUCTION

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

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

Before any assembly of parts, make sure all decal, primer and paint is removed from locating holes, pegs and any mating surfaces. 'Wingnut Wings' models parts are made with very close tolerances and any primer or paint may stop parts locating fully together.

Assembly:

Fully locate the locating rods of the replacement fuselage pylon into their locating holes in the sides of the cockpit forward coaming. The pulley at the top should face rearwards (towards the cockpit) and the pylon should be vertical when viewed from the sides.

Secure the pylon into the fuselage using thin CA adhesive.

Cement the two wings into their front and rear locating slots in the sides of the fuselage. Make sure the wings fully locate against the fuselage and are level (horizontal) when viewed from the front.

Example or turnbuckle rigging:

Cut a short length of blackened tube (0.4 or 0.5mm diameter) Brass tube, such as that supplied from 'Albion Alloys' (MBT04 or NST05) or similar.

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

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

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

Pass the line through the tube, then through the 'eye' of a 'GasPatch' resin turnbuckle (Type C).

Pass the line back and through the tube.

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

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

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

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



Final rigging:

NOTE: Refer to Part 5 (Rigging) for more information.

Landing gear front bracing wires:

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

Refer to the previous rigging example and fit a line to each end of two 'Proper Plane' 1:32nd scale resin turnbuckles.

Using thin CA adhesive, secure one end of the lines around the top of the struts for the centre, forward 'V' strut of the landing gear. The turnbuckles should be positioned near to the struts.

Pass each line down and under the wing warp control horn then around the bottom, rear 'V' strut of the landing gear.

Keeping the line taut, secure the lines in position using thin CA adhesive.

Cut away any residual line at the struts.

Landing gear rear bracing wires:

Repeat the previous procedure to add rear bracing wires to the landing gear. The lines should be secured around the tops of the rear landing gear 'V' struts at the fuselage underside with the turnbuckles near to the strut tops. The opposite ends of the lines should be secured around the bottom of forward, centre 'V' strut of the landing gear.

Wing warp control cables:

Refer to the previous rigging example and fit a 'Proper Plane' 1:32nd scale resin turnbuckle to the free end of each of the pre-rigged wing warp control lines. Leave the turnbuckles and tubes loose on the lines.

Cut two long lengths of 0.12 mm diameter mono-filament, such as 'Steelon' or 'Stroft GTM'. The lines should be long enough to span between the wing warp rigging holes in the trailing edge of the wings and over the pulley on the rear of the fuselage support pylon.

Refer to the previous rigging example and fit a 'Proper Plane' 1:32nd scale resin turnbuckle to each end of the two lines. Leave the turnbuckles and tubes loose on the lines.

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

NOTE: The following procedure applies to each of the four wing warp rigging holes.

The underside lines from the rear wing warp control levers (A45) attach to the outer wing warp rigging holes.

The underside lines from the front wing warp control levers (A45) attach to the inner wing warp rigging holes.

The two double turnbuckle lines span between top rigging holes at the top surface of the wings and over the pylon pulley.

Pass a length of line through the free 'eye' end of the relevant turnbuckle.

Pass both ends of the line through the relevant rigging hole.

Pass one end of line through the free 'eye' end of the relevant turnbuckle at the other side of the wing.

Loop that line back and through the rigging hole.

Pull both ends of that line taut to pull the turnbuckle ends onto the wing surface at the rigging holes. Make sure the turnbuckle are angled to align with th

Use thin CA adhesive to secure the line and turnbuckles in position.

At each of the four loosely attached **underside** turnbuckles, pull on the free end of line to tighten the line and move the tube close to, **but not touching**, the turnbuckle.

Secure each turnbuckle to the lines using thin CA adhesive applied to the tube end furthest from the turnbuckle.

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

Locate the loosely attached line (from the inboard rigging holes on the top surface of the wings) over the rear groove in the pylon pulley.

Locate the loosely attached line (from the outboard rigging holes on the top surface of the wings) over the front groove in the pylon pulley.

At each of the four loosely attached turnbuckles above the wings, pull on the free end of line to tighten the line and move the tube close to, **but not touching**, the turnbuckle.

Secure each turnbuckle to the lines using thin CA adhesive applied to the tube end furthest from the turnbuckle.

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

Flying and Landing wires:

NOTE: *The four landing wires are above the wings and the four flying wires under the wings.*

Repeat the previous procedure to add **two landing wire lines only** to the free 'eye' ends of the two turnbuckles fitted on the fuselage pylon. The lines should be long enough to reach the inner and outer rigging holes in the leading edge on the top surface of the wings.

Refer to the previous rigging example and fit a 'Proper Plane' 1:32nd scale resin turnbuckle to each end of the four landing wire lines. Leave the turnbuckles and tubes loose on the lines.

Cut two long lengths of 0.12 mm diameter mono-filament, such as 'Steelon' or 'Stroft GTM'. The two flying wire lines should be long enough to span between the wing warp rigging holes in the leading, underside edge of the wings and around the end of the front, centre tube of the landing gear.

Refer to the previous rigging example and fit a 'Proper Plane' 1:32nd scale resin turnbuckle to each end of the two flying wire lines. Leave the turnbuckles and tubes loose on the lines.

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

Repeat the previous procedure (used for the wing warp wires) to tighten and attached the four upper landing wire and two underside flying wire lines. Attach one turnbuckle on each of the two flying wires to a wing, then wrap the line around the landing gear tube. Keep the line taut and secure the lines to the landing gear tube using thin CA adhesive. Then attach the remaining turnbuckles to the opposite wing.

Pylon bracing wires:

Drill holes of 0.3 mm diameter into the pre-moulded rigging points on the forward, outer edges of the cockpit front coaming. The holes should be drilled to align with the top of the fuselage pylon.

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

Repeat the previous procedure to add a 'Gaspatch' 1:48th scale metal turnbuckle (One Ended) to one end of the line. Leave the turnbuckle and tube loose on the line.

Pass the free end of the line through the pre-drilled holes in the front of the fuselage pylon.

Repeat the previous procedure to add a 'Gaspach' 1:48th scale metal turnbuckle (One Ended) to the remaining free end of the line. Leave the turnbuckle and tube loose on the line.

Using thin CA adhesive, secure the two turnbuckles into the pre-drilled holes in the cockpit front coaming. Make sure the turnbuckles are angled toward the top of the fuselage pylon.

At one of the turnbuckles, pull on the free end of line to move the tube close to, **but not touching**, the turnbuckle.

Secure each turnbuckle to the lines using thin CA adhesive applied to the tube end furthest from the turnbuckle.

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

At the remaining turnbuckle, pull on the free end of line to tighten the line and move the tube close to, **but not touching**, the turnbuckle.

Secure each turnbuckle to the lines using thin CA adhesive applied to the tube end furthest from the turnbuckle.

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

Drag wires:

Drill a hole of 0.3 mm diameter into, **but not through**, the underside of the wings just forward from the front, inboard rigging point for the flying wires.

Using thin CA adhesive, secure the Anchor Points into the pre-drilled holes in the underside of the wings.

Drill a hole of 0.3 mm diameter into the lower lugs on the front of the engine cowl. The holes should be drilled to align with the underside of the wings at the front, inboard rigging point for the flying wires.

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

Repeat the previous procedure to add a 'Gaspach' 1:48th scale metal turnbuckle (One Ended) to one end of each line.

Using thin CA adhesive, secure the turnbuckles into the pre-drilled holes in the engine cowl. Make sure the turnbuckles are aligned to the fitted Anchor Points in the underside of the wings.

Repeat the previous procedure to add the free end of each line to its Anchor Point.

Turnbuckle colour coding:

NOTE: *The following colour coding for the turnbuckles is based on the capture report of Fokker Eindecker E.III 210/16.*

Brush paint the eight right wing (starboard) turnbuckles with 'Tamiya' Red (X7) mixed to darken with Rubber Black (XF85) or similar.

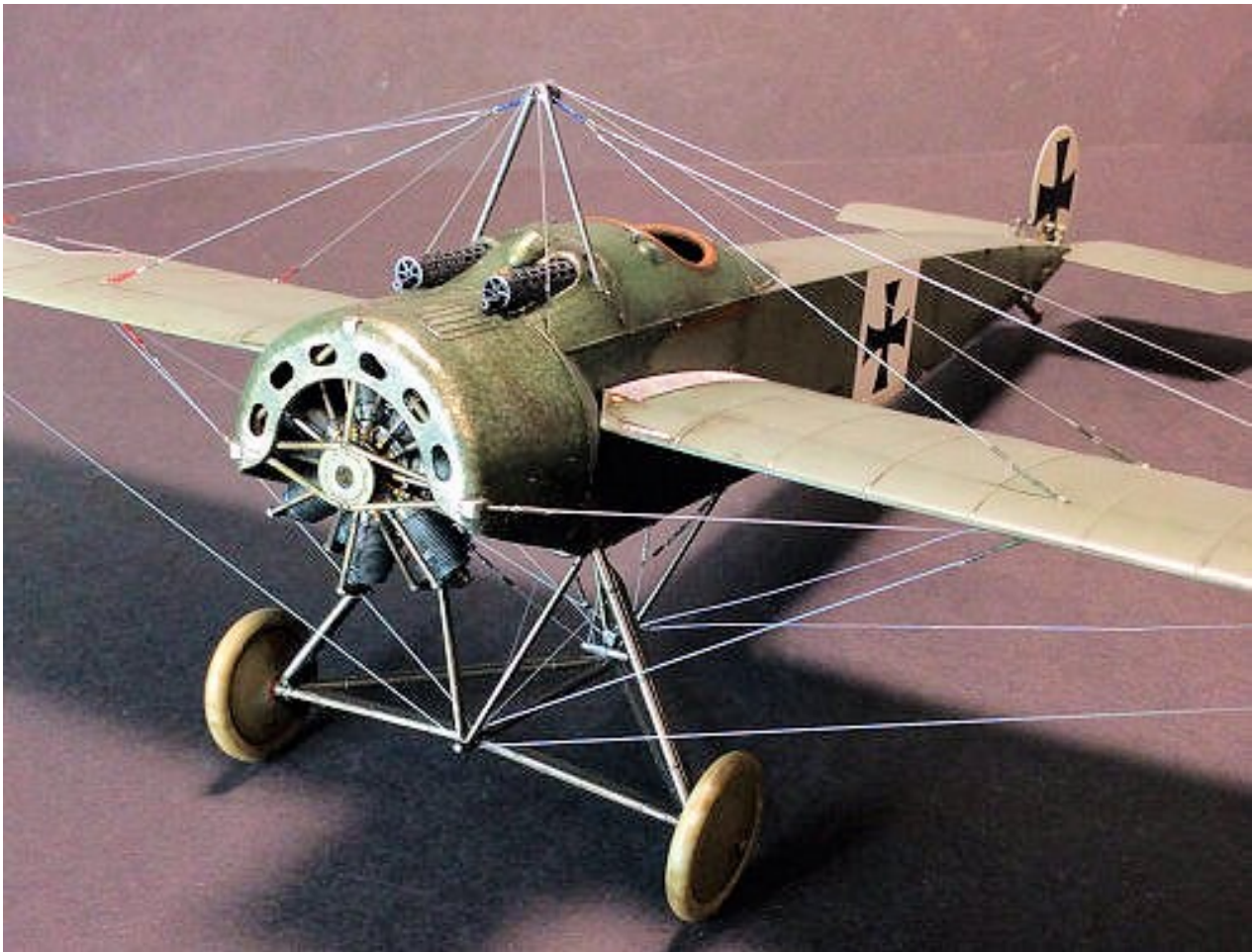
Brush paint the eight left wing (port) turnbuckles with 'Tamiya' J.A. Green (CF13) or similar.

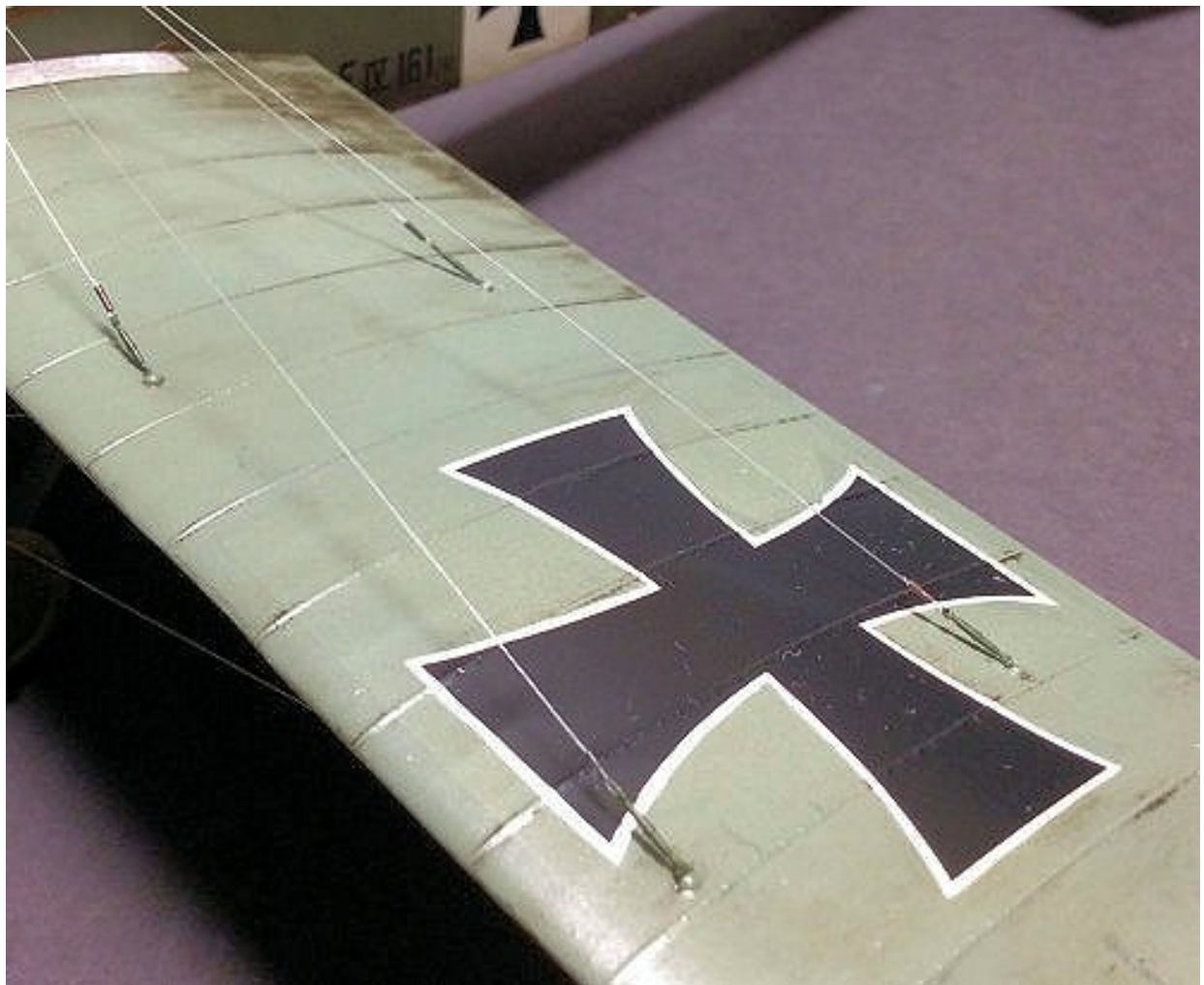
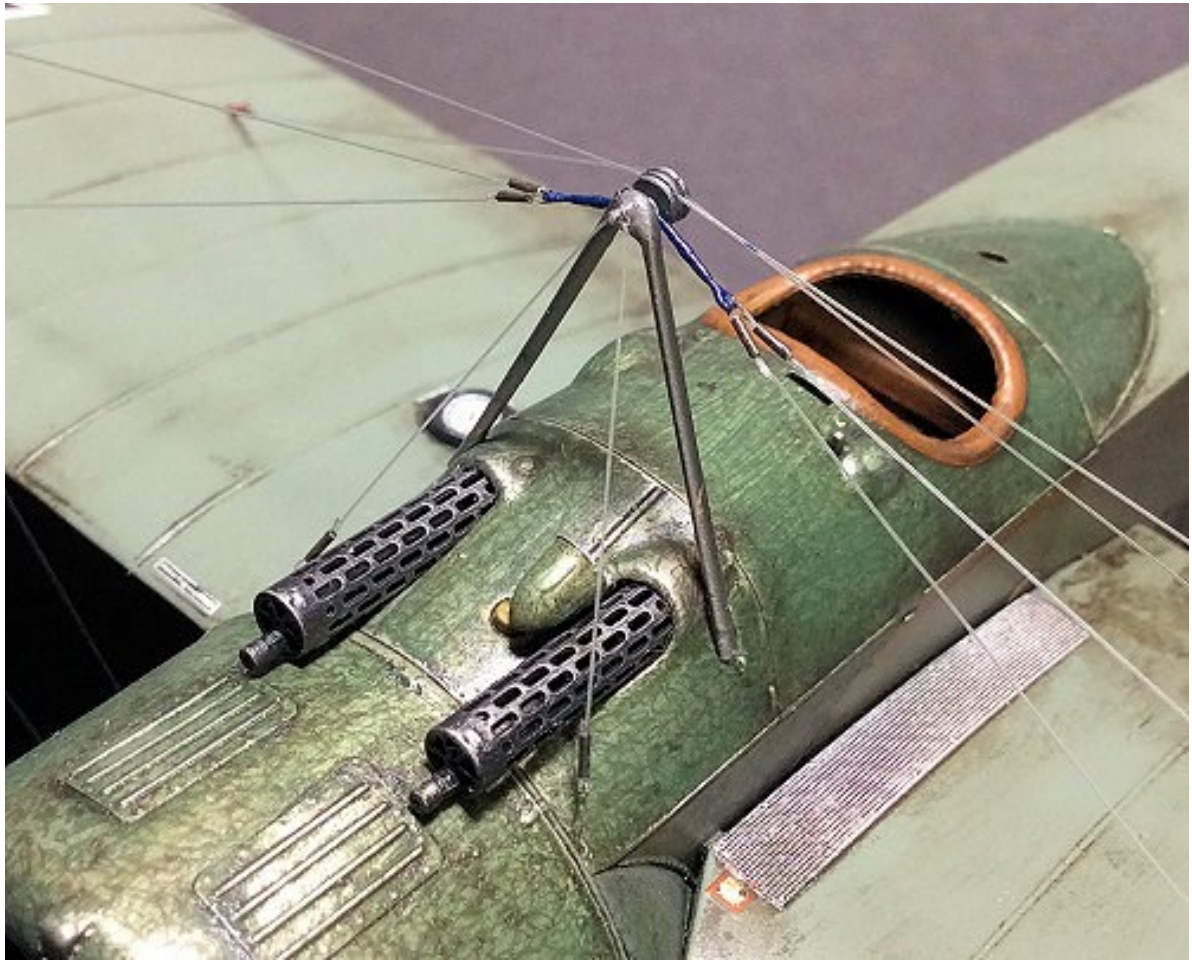
Brush paint the two fuselage pylon turnbuckles with 'Tamiya' Royal Blue (X3) or similar.

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

Rigging finish:

To 'knock back' the sheen of the mono-filament, lightly airbrush the rigging lines and turnbuckles with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar.





Assembly (continued):

Foot steps:

Cement the two foot steps into their locating recesses in the bottom edge of the fuselage sides.

Gun sights:

Use thin CA adhesive to secure the 'Gaspatch' supplied rectangular gun sights onto the top, front of the machine gun cooling jackets.

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

Windscreen:

Remove windscreen C3 from the kit supplied sprue.

Brush paint the windscreen surround with 'Mr. Colour' Stainless Steel (213) or similar.

Secure the windscreen into its locating slot in front of the cockpit, using PVA adhesive.

Propeller:

Secure the propeller in the desired position, into the pre-drilled hole in the engine, using CA adhesive.



PART 15

FIGURE

PART 15 - FIGURE

NOTE: The figure I chose to use for this model is the 'Wings Cockpit Figures' (LSK 10) pilot wearing a greatcoat 1914-18. Refer to Part 6 (Resin) for more information when working with resin parts.



Preparation:

NOTE: This figure is cast as a single, complete figure. No assembly is required.

Cut away the casting 'pegs' on the underside of the feet.

Scrape or sand away any casting seams or 'pegs' and any surface blemishes.

Drill a hole of 0.9 mm diameter up into the centre of the left leg, making sure the hole is drilled vertically and does not break through the side of the leg.

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

Use CA adhesive to secure the rod fully into the drilled hole in the left leg. The rod will be used to hold the figure when it's being painted and to mount the figure on the model display base.

Painting:

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

Brush paint the figure as follows:

Great coat - 'AK Interactive' Black Uniform Base (AK3002) with 'Model Colour' Black (70.950) shadows.

Coat buttons - 'Mr. Colour' Stainless Steel (213).

Great coat collar- 'Model Colour' Black (70.950) with 'AK Interactive' Black Uniform Base (AK3002) highlights.

Trousers and collar lining - 'AK Interactive' German Uniform Base (AK3091).

Shoes - 'Tamiya' Flat Brown (XF10) or similar.

Helmet - 'AK Interactive' Brown Leather (AK3031) with British Uniform (AK3081) high lights.

Goggles - 'AK Interactive' British Uniform (AK3081) with 'Mr. Colour' Stainless Steel (213) lenses. 'Tamiya' Clear Yellow (X24) over lenses.

Scarf - 'Tamiya' Deck Tan (XF55) or similar.

Flesh - 'Model Colour' Basic Skin Tone (70.815), Light Flesh (70.928), Beige Red (70.804) and Black (70.950).

Weathering:

Sponge 'Tamiya' Weathering Master Set A (Mud) over the shoes.

Sponge 'Tamiya' Weathering Master Set B (Soot) over the elbows, cuffs and pockets of the great coat.



PART 16

DISPLAY BASE

PART 16 - 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 'Lars op't Hof' Scenery (Pasture Autumn Long).

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

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

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

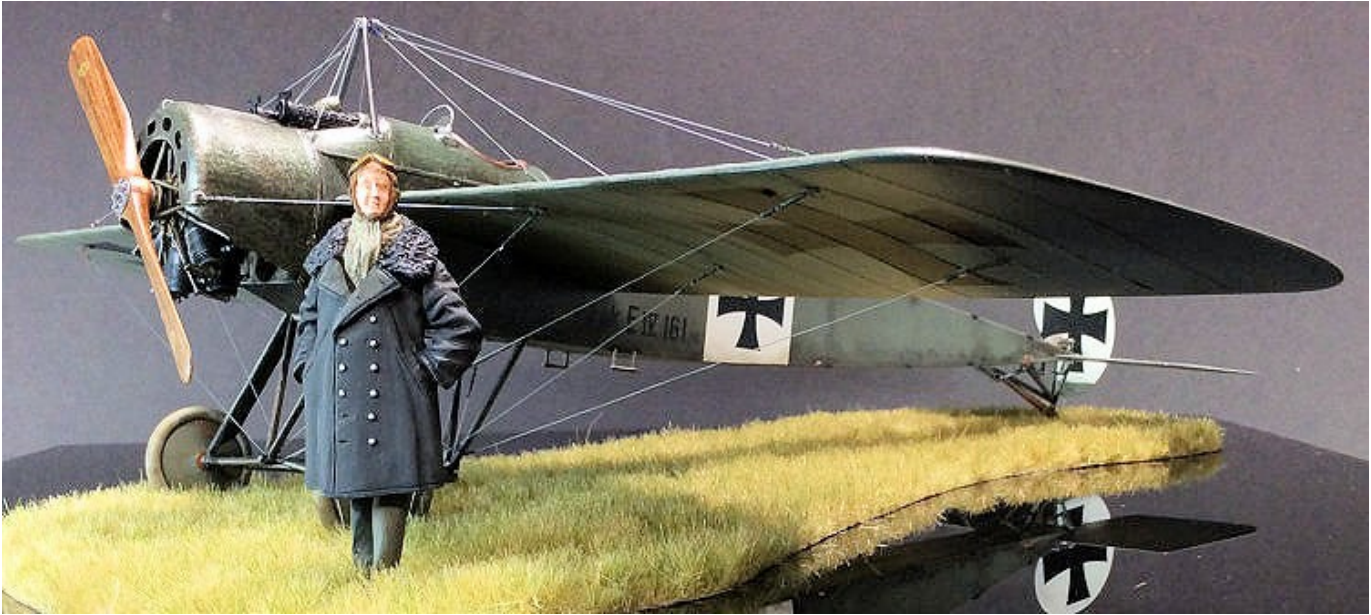
Finally an acrylic plaque stand was positioned to the left, front corner of the display base (just in from the edges of the shoulder for locating the transparent acrylic cover. The area on the underside of the stand and its contact are on the display base were scuffed using a coarse grit sand paper,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

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

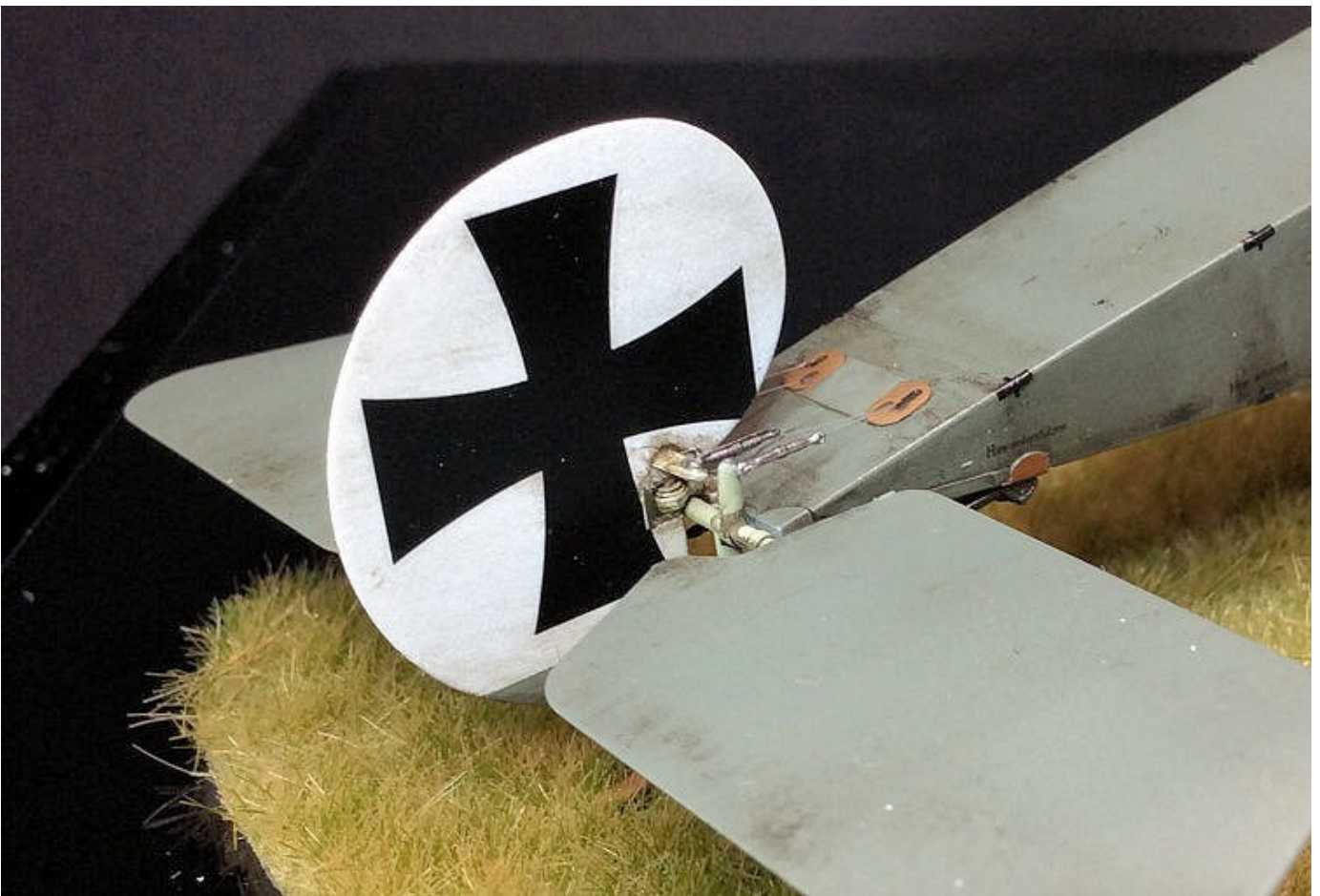
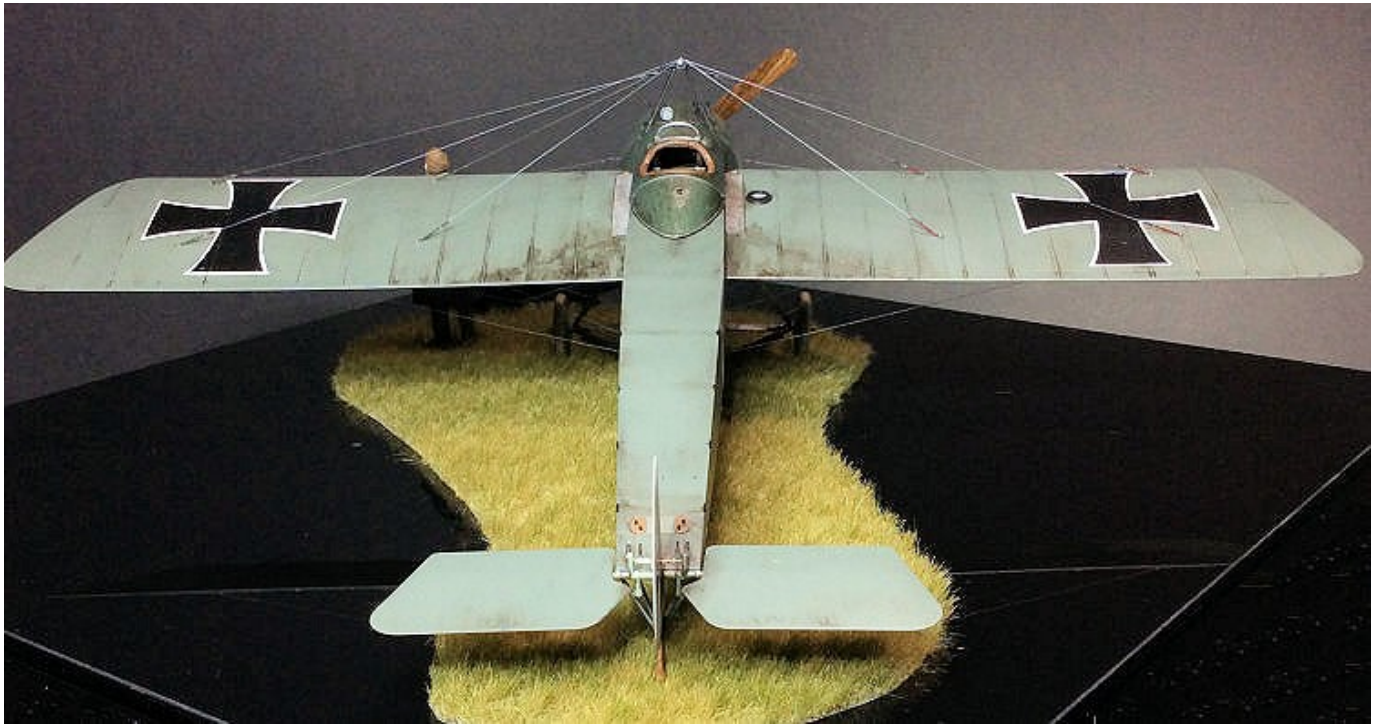
NOTE: *The aircraft model is not secured to the display base as this can cause shock damage to the model if the display is transported to shows etc. For that the aircraft model would be packed separately for transporting.*

Thin CA adhesive or PVA adhesive was then applied to the support pin of the pilot figure, which was then located, in the desired position, into the pre-drilled location hole. The mechanic figure was secured in position standing on the wheel, using thin CA adhesive. The aircraft itself, being light in weight, will tend to sit on top of the grass on the mat, rather than seat fully down, as would a real aircraft. Therefore the location of the aircraft wheels and tail skid were marked onto the grass mat and those areas scrapped through the mat to create slight and unobstructed troughs, into which the aircraft could be located.

PART 17
COMPLETED
MODEL
PHOTOGRAPHS











END