



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 Sopwith 5F.1 'Dolphin'.

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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

Figures

'Kellerkind Miniaturen' USAS pilot (54/090),
'Kellerkind Miniaturen' RFC Mechanic (54/073).

Decals

'Aviatic' Sopwith Dolphin set (ATT32155/154),
'Pheon' Dolphin Volume 1 (32077) (or as template if necessary),
'LF Models' British 'Lang' propeller logo's (C3207).

Propeller

'ProperPlane' wood laminated 'Lang' propeller.

Exhaust pipes

'REXx' metalized exhaust pipes (32.067).

Resin

'BarracudaCast' British wicker seat (BR32234).

Photo-etch

'Aber' 1/35th scale hand tools (35 A68).

Rigging accessories (as required)

'RB Productions' British streamline wire 2BA (RB-P32014),
'RB Productions' British streamline wire 1/4 BSF (RB-P32012),
'Albion Alloy's' Nickel-Silver tube (NST04 and NST05),
'Steelon' or 'Stroft' 0.08 and 0.12 mm diameter mono-filament,
'Gaspach' 1/48th scale Anchor Points and Type C turnbuckles.

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, '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.

Weathering mediums (as required)

'Flory' Clay washes, Flory Pigments, AK Interactive washes,
'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 Summer pasture.

THE AIRCRAFT

THE AIRCRAFT

This model represents Sopwith 5F.1 'Dolphin', Serial No: C4131 of No.79 Squadron RAF during June 1918.

References:

Wikipedia (online resource).

The Aerodrome forum (online resource).

'Osprey 48' -Dolphin and Snipe aces of WW1 (Norman Franks).

'Profile Publications No.169' – The Sopwith Dolphin.

'Windsock Data File No.64' – Sopwith Dolphin (J.M. Bruce).

'British Aviation Squadron Markings of WW1' (Schiffer Military History) (Les Rogers).

'Wingnut Wings' kit 32073 instruction manual - Aircraft information.

General (extract from 'Wingnut Wings' manual):

The Sopwith 5F.1 Dolphin was designed during the 2nd quarter of 1917 to make use of the promising new 200hp Hispano-Suiza V8 geared "Hisso" engine, which was also to power the SPAD XIII and SE.5a fighters. One other overriding consideration was to overcome the staggeringly poor visibility caused by the top wing centre section of the otherwise quite remarkable Sopwith Camel. The initial Dolphin prototype 5F.1/1 rolled out in May 1917 and featured wide twin bay wings with negative stagger, a completely open top wing centre section, unbalanced Sopwith Camel style rudder and fin and wooden undercarriage 'V' struts. The very deep fuselage occupied the full height of the wing gap and featured a tall radiator in front of the engine. Its first flight was delayed due to problems securing a suitable example of the engine. The 2nd prototype 5F.1/2 appeared in late July and incorporated numerous improvements, including a balanced rudder, cut outs in the bottom wings, removal of the frontal radiator (which allowed the streamlining of the nose) and replacing it with twin radiators mounted in the top wings. These radiators proved ineffective so were in turn replaced by versions mounted on the sides of the fuselage. The cut outs in the bottom wings were deleted for prototypes 5F.1/3 & 5F.1/4, which appeared during October and introduced a more substantial fin, lowered rear decking and twin upwards firing Lewis machine guns. In this form the initial production Dolphins were delivered in late November 1917, except they had reduced negative wing stagger and steel tube undercarriage 'V' struts. The twin Lewis guns proved heavy and cumbersome, so the port gun was quickly removed and frequently, the starboard gun was removed in service. Early production Sopwith 5F.1 Dolphins featured a Birch plywood tail skid, 4 inch radiators and vertical neck padding on the centre section. There were several attempts to provide "roll over" protection for the pilots exposed head, but none were adopted, although some late production aircraft featured a quick release for the port cockpit rigging to allow the pilot to escape from an upturned aircraft. Other improvements incorporated on late production aircraft included a steel tube tail skid, 8 inch radiators and a centre section with improved Aldis sight mounts and more streamlined padding. Supply and reliability problems with the 200hp Hispano-Suiza V8 geared "Hisso" engine would continue to plague the Dolphin for most of its service (as they did for the SE.5a "Hisso") but eventually it became well regarded as a high altitude fighter. The Sopwith 5F.1 Dolphin II was developed for the French in mid 1918, to utilize a 300hp direct drive Hispano-Suiza engine and the USAS ordered over 2000 to be built by SACA in France, but the Armistice was signed before any were delivered and the order was cancelled. The Sopwith 5F.1 Dolphin III was under development shortly before the Armistice and was to utilize the more reliable direct drive "Viper" version of the 200hp Hispano-Suiza engine. Only a handful of Dolphin II and III aircraft were produced and can be identified by their lower propeller thrust line and fully cowled Vickers machine guns.

Nearly 1,800 Dolphins were built by the 'Sopwith Aviation Company LTD', 'Hooper & Company Ltd', 'Darracq Motor Engineering Company Ltd' and the 'Société Anonyme de Constructions (SACA)'. The Sopwith 5F.1 Dolphin was officially declared obsolete by the RAF in September 1921, but a small number continued to see service within Poland.

General characteristics:

Crew - One pilot

Wingspan - 32' 5" (9.90m)

Length - 22' 3" (6.78m)

Maximum weight - 2,008lb (911kg)

Maximum speed - 128 mph (206 kph)

Maximum ceiling - +21,000' (6,400m)

Number manufactured - 1,779 of all types

Production period - June 1917 to July 1919

Engine - 200hp Hispano-Suiza (geared V8)

Weapons

Two fixed Vickers Mk.1 (.303/707mm) machine guns.

Optional two or one Lewis (.303/707mm) machine guns.

Optional 100lb (45kg) of bombs.

Sopwith 5F.1 'Dolphin' C 4131

The aircraft being modelled was produced by The Sopwith Aviation Company LTD as part of contract AS17137, issued on the 29th of June 1917. This contract was for 500 aircraft with the serial numbers C3777 - C4276. The contract was completed on the 20th of April 1918.

This aircraft was allocated to No.79 Squadron, which was formed at Gosport, England in August 1917 and went to France in February, 1918.

Initially the squadron marking was a white dumbbell, painted on the fuselage sides and behind the roundel marking. However, in March 1918 this marking was replaced by a white square.

During August 1918, 'Dolphin' C4131 was returned to Depot as time expired, having flown a total of 211 hours.

Pilots and their victories achieved whilst flying 'Dolphin' C 4131:

Capt. Frederic Ives Lord (No.79 Squadron, RAF - total victories 12)

Albatros D.V, 7th June 1918 near La Bassée

Albatros D.V, 27th June 1918 near Neuve Eglise

Fokker Dr.1, 27th June 1918 near Neuve Eglise

Albatros D.V, 27th June 1918 near Neuve Eglise

Capt. William Mays Fry (No.79 Squadron, RAF - total victories 11)

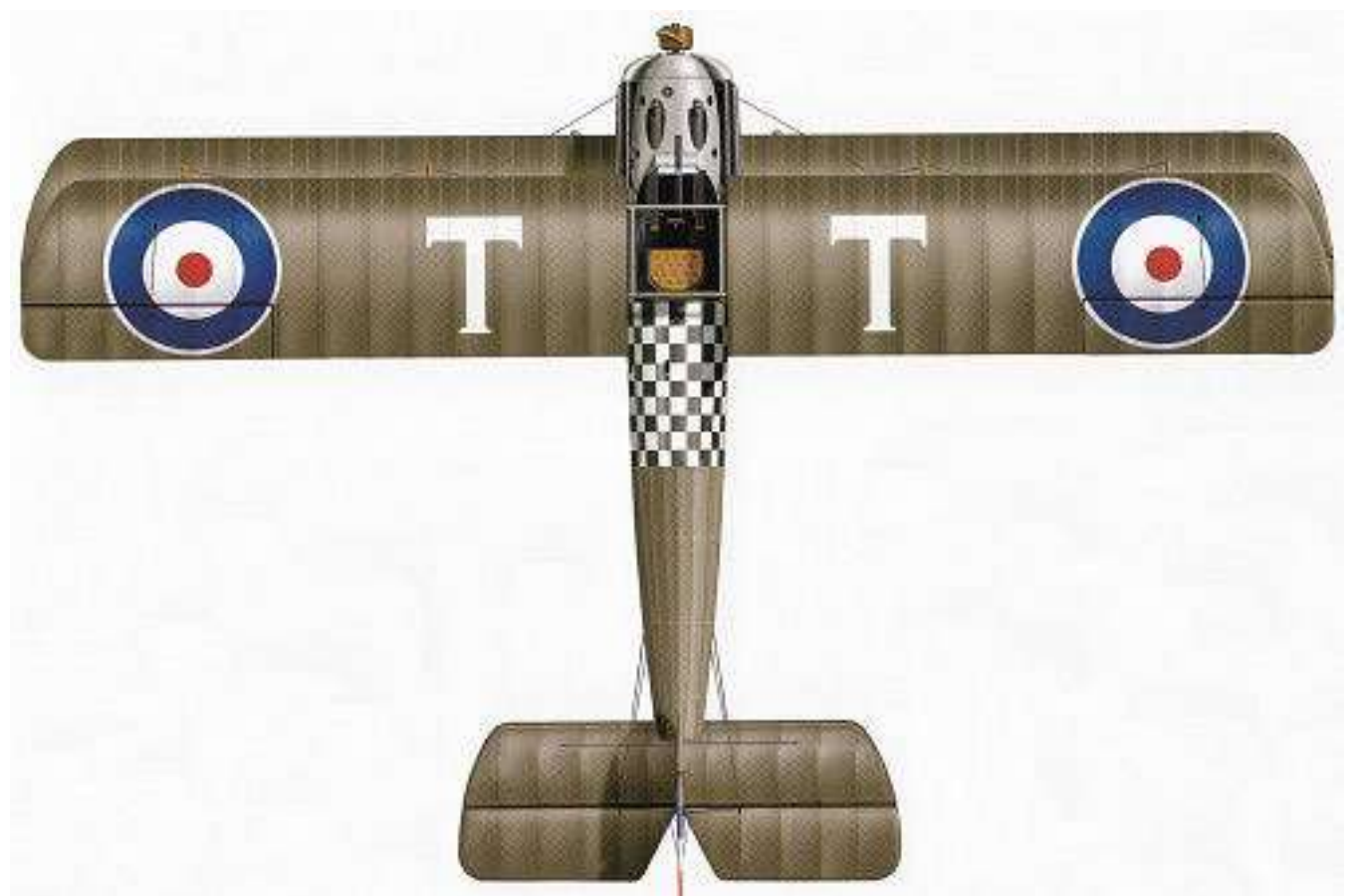
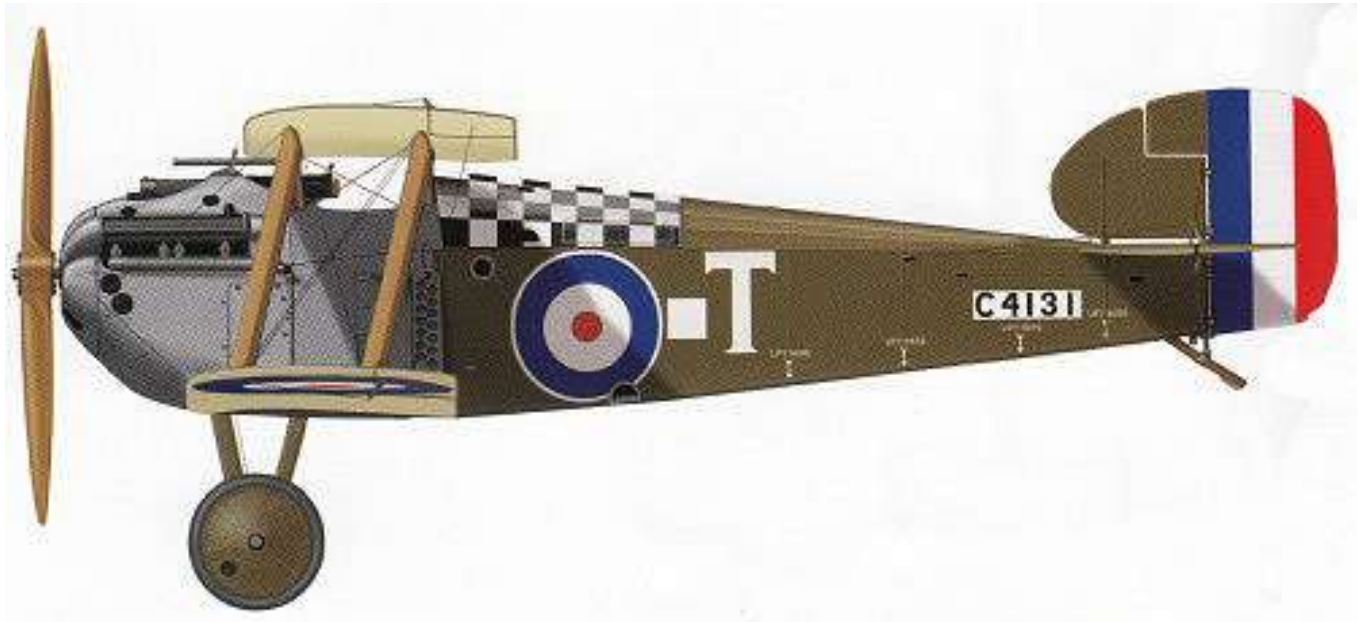
One victory (type not known) in May 1918.

Maj. Maurice Waldegrave Noel (No.79 Squadron, RAF)

Albatros scout, 20th May 1918 between Bac Saint Maur and Haltes.

Capt. J.D. Canning (No.79 Squadron, RAF)

One victory (type and date not known).



THE PILOT

THE PILOT

This model represents Sopwith 5F.1 'Dolphin', Serial No: C4131 of No.79 Squadron RAF during June 1918, as flown by Capt. Frederic Ives Lord.

Background:

Frederic Ives Lord was born on the 18th of April 18, 1897 in Manitowoc, Wisconsin, USA. His parents were Alma Mueller and Alman Ivory Lord. He had two siblings, Lucia Lord and Zayda Lord. By 1910 he was living with his maternal grandparents Lena Fred Mueller. By 1917 he and his mother and siblings were living in Houston, Texas USA. By 1920 his mother was a widow.

World War One:

One version is that he enlisted in the U.S. Army in 1917, but was discharged from the 3rd Texas Infantry when it was discovered that he was only 17 years old. However, in 1917, he would have been 20. Whatever the reason, he went to Toronto, Ontario, Canada, where he joined the Royal Flying Corps. He had to renounce his American citizenship on May 25, 1917 as follows:

"I was born in the town of Manitowoc in the state of Wisconsin, one of the United States of America. I have come to the city of Toronto from Houston, Texas, for the express purpose of enlisting and entering the Royal Flying Corps of the Canadian Army for service overseas. And I do hereby solemnly declare my purpose and intention to become a British subject and I do hereby renounce my citizenship as a Citizen of the United States of America."

After completing his training in England, he joined No.79 Squadron in France. The squadron had been formed at Gosport in August 1917 and was posted to France in February 1918, equipped with the Sopwith 5F.1 'Dolphin'. Between May and September 1918, he was credited with a total of twelve victories and was one of four squadron pilots to achieve ace status, the others being Francis W. Gillet, Ronald Bannerman, John McNeaney, and Edgar Taylor. Four of those victories were whilst fly C 4131, the subject of this model.

On one notable occasion, the 27th of June 1918, as a Lt (T./Capt), he shot down an Albatros D.V as his third kill. On his return to the airfield, he saw an allied formation engaged with German scouts. He joined in and shot down a Fokker Dr.I and a second Albatros D.V. For this action he was awarded the Distinguished Flying Cross (DFC). He eventually became a flight commander, but was wounded in October 1918, ending his operational flying.

	DATE	TIME	SQUADRON	AIRCRAFT	OPPONENT	LOCATION
1	28th May 18	07.30	No.79	Sopwith 5F.1 'Dolphin' C4182	'Draken' observation Balloon destroyed	Comines
2	7th June 18	0900	No.79	Sopwith 5F.1 'Dolphin' C4131	Albatros D.V scout destroyed	La Bessée
3	27th June 18	1930	No.79	Sopwith 5F.1 'Dolphin' C4131	Albatros D.V scout destroyed	Neuve Eglise
4	27th June 18	1945	No.79	Sopwith 5F.1 'Dolphin' C4131	Fokker Dr.I scout destroyed	Neuve Eglise
5	27th June 18	1945	No.79	Sopwith 5F.1 'Dolphin' C4131	Albatros D.V scout out of control	Neuve Eglise
6	21st August 18	2020	No.79	Sopwith 5F.1 'Dolphin' D3771	Two seater destroyed (type not known)	NW of Armentières

	DATE	TIME	SQUADRON	AIRCRAFT	OPPONENT	LOCATION
7	3rd September 18	1150	No.79	Sopwith 5F.1 'Dolphin' C4127	Fokker D.VII destroyed	Armentières
8	5th September 18	1900	No.79	Sopwith 5F.1 'Dolphin' (Serial not known)	Fokker D.VII out of control	E of Ploegsteert
9	16th September 18	0945	No.79	Sopwith 5F.1 'Dolphin' C4127	Fokker D.VII out of control	Messines
10	17th September 18	1010	No.79	Sopwith 5F.1 'Dolphin' C4127	Fokker D.VII destroyed	Comines
11	20th September 18	0635	No.79	Sopwith 5F.1 'Dolphin' C4127	Hannover CL destroyed	N of Habourdin
12	28th September 18	1315	No.79	Sopwith 5F.1 'Dolphin' C4127	Pfalz D.III destroyed	Wrecken

Post World War One:

Russian civil war:

After being released in March 1919 from hospital (from wounds received in October 1918), volunteered for service in Russia. He was given the job of Commanding Officer of the RAF base at Pinega, in addition to flying the RE.8 aircraft operated from there. He served with RAF forces during the Allied Intervention in Russia in 1919, earning a bar to his Distinguished Flying Cross, when on the 27th of June, 1919, he was piloting an RE.8 and located the position of the enemy on the Pinega River and "attacked the moving columns from a height of 200 feet with such effect that their transport was stampeded and their expected attack broke down, without any casualties being sustained by our forces." His RE.8 was found to have severe damage caused by enemy fire during this flight.

Mexican revolution:

Leaving the RAF in November 1919, he flew as a barnstormer and an aide to the Mexican air force during the Mexican Revolution. By 1927, he was living in New York City and was using the Chrysler Building as his address. Traveling with him was Constance, who was listed as his wife. However, by July 1937, he was married to a woman named Mildred.

Spanish civil war:

He flew Bréguet 19 two seater aircraft through 1936 for the Republican side in the Spanish Civil War, along with Bert Acosta and Eddie August Schneider in the Yankee Squadron.

Comments made during this period:

"I've had a wing fold up at a thousand feet while sitting on a dud parachute. I've been backed up against a wall looking down the rifle barrels of a firing squad. I've felt the automatic of my own commanding officer poked in my ribs. While being smuggled from Spain into France to visit my wife, I've had a speed boat pilot killed by Fascist bullets in the Bay of Biscay. I've fought half a dozen German pursuit planes in the air with an orchestra leader as a gunner. And of all places to be during a bombing raid I was there - locked up in jail - and with my wife. And these events have not been an accumulation of my war service in France, or Russia, or Mexico, but happened during the past few months while serving as a pilot with the Government forces in Spain. A Spanish pilot, Jose Galarza, bailed out from a crippled ship, during a fight, and landed safely in Franco's line.

But the next day a Junker bomber droned over our field and dropped a box. It contained the chopped up cadaver of Jose. Lafayette! Pulaski! Rochambeau! Who were they? Glorious foreign volunteers who aided us in time of need. We name bridges, boats, and towns after them now. Our kids read about them in our histories and over in Spain foreign volunteers are fighting that a friendly democratic nation may survive. In most instances those volunteers came from the army of unemployed in their countries where they were without hope. In all cases they are highly skilled technical men. Their hope is a new lease on life, but the usual reward has been a nameless grave”.

World War 2:

During World War II, he tried to join the RAF again and it is said he got so far as to be assigned to his old No.79 Squadron before the authorities caught up with him. Instead, he joined the Air Transport Auxiliary that transported aircraft to England. On January 3, 1941, he wrote to his sister Lucia, discussing his upcoming eye surgery:

“In less than a week now, I get the eye sliced up. And I know it'll be a success. Pray for me at 4pm on the tenth, will you. So here's hoping that when they take the bandages off on about the 20th, my eye will function. I just ain't got the dough for the hospital on the tenth. If can't get it, - well, then no operation as can't ask the doctor to actually fork out money for me in addition. So, sister, please see what you can do in addition to the usual ten-spot, will you please? And let me have it by Wednesday.”

He goes on to explain that he will soon be able to pay her back and will no longer be a financial burden to her “because a group of Chinese saw me today and want to take lessons from me and will even pay for a ship as soon as the eye is okay. Private flying, govt. jobs, city and state jobs all waiting”.

Death:

On the 21st of July 1967 at age 70, Frederic Ives Lord (DFC and Order of Saint Stanislas) was murdered by a vagrant in Apple Valley, California. He was buried in the cemetery at Victor Valley Memorial Park, Victorville, California.



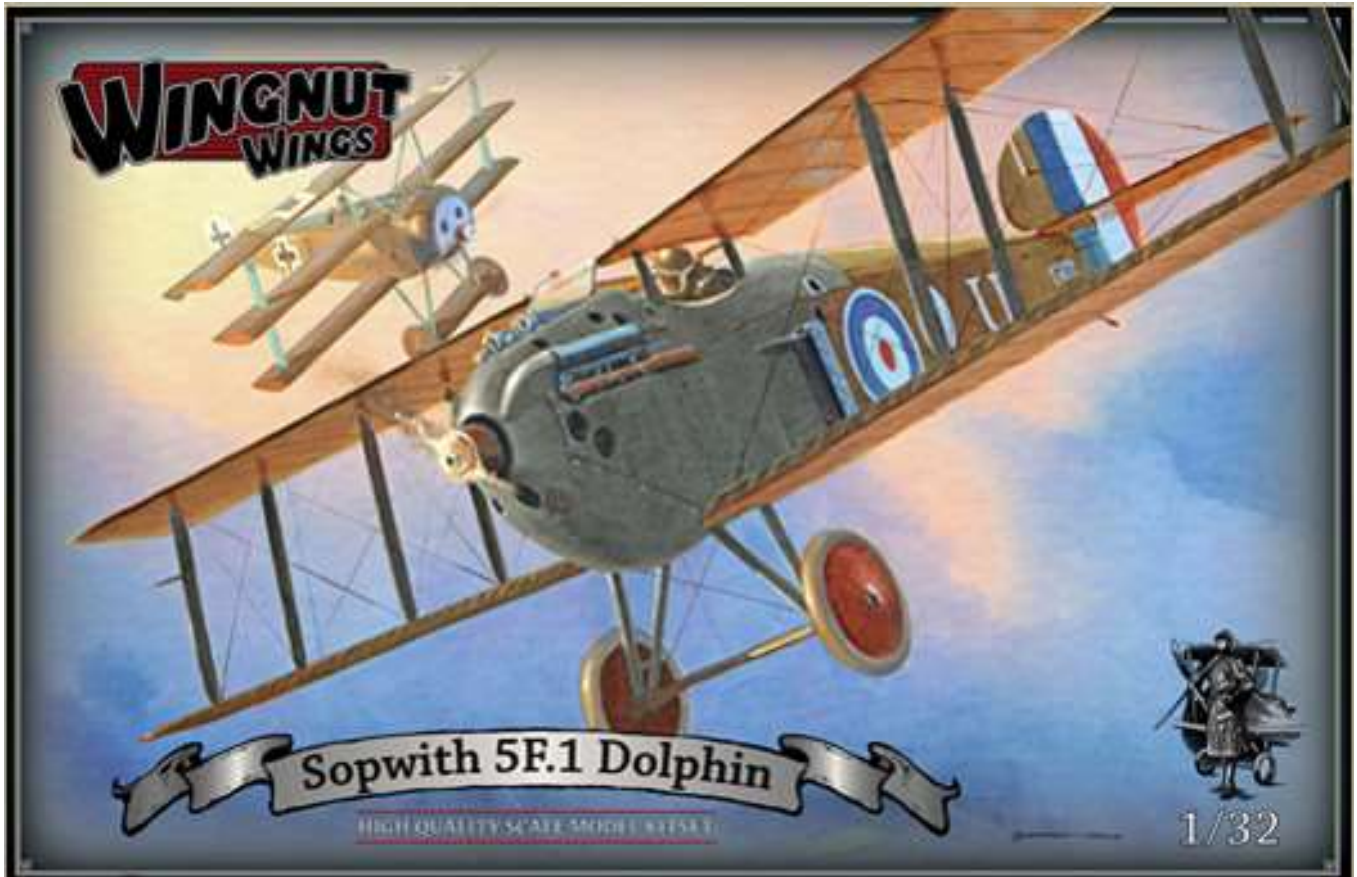
PART 1

MODEL

KIT

PART 1 - MODEL KIT

('Wingnut Wings' - Kit No:32073)



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/2017/reviews/kits/wingnutwings32073reviewbg_1.htm

When researching a particular aircraft, it's quite often found that some changes to the model may be required. These can be modifications to enhance the model to better represent the particular aircraft. Also some squadron aircraft had 'in-the-field' modifications made to improve the aircrafts operational capability. The following are changes that I found that were needed to reflect the particular aircraft being modelled.

Decals:

The decals provided with the kit does not include the markings required for the aircraft being modelled. Of the primary decals, only the roundels for the wings and fuselage and the rudder stripes can be used. 'Pheon Decals' did supply a set for the Sopwith Dolphin, which did have the required markings, but it seems that company are no longer trading. Therefore, printing decals of the markings or creating masks for painting the markings will be necessary.

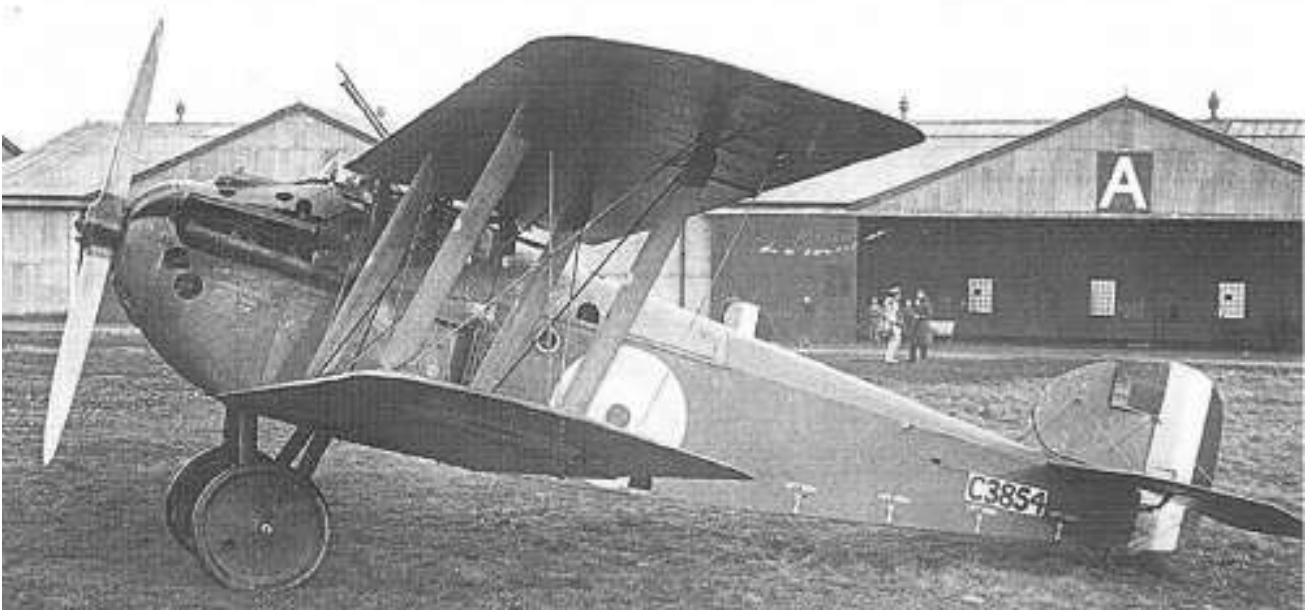
Pilots seat:

The pilots seat provided with the kit will be replaced with a 'BarracudaCast' British wicker seat (BR32234), which is of a better quality.

Propeller:

The kit supplies two types of propeller, one of which appears to be made by 'Lang'. There are not many photographs of No.79 Squadron Sopwith Dolphins and most of those available do not clearly show the propeller type fitted.

The kit instructions (page 11) show that the other type propeller should be used for its No.79 Squadron colour profile 'D'. However, the following photographs show Dolphin's of 79 Squadron with 'Lang' type propellers fitted



Dolphin C3854, which was originally allocated to No.79 Squadron



Dolphin C3900 allocated to No.79 Squadron

Therefore, of two types of propeller supplied in the kit, I chose to use the 'Lang' type propeller as being the most likely fitted to this particular aircraft. Rather than use the kit supplied propeller, I chose to replace it with a hand crafted wood layered 'Lang' propeller from Alexey Belov at 'Proper Plane'.

Weapons:

The Sopwith Dolphin is often modelled or illustrated as being fitted with two Lewis machine guns, mounted on the centre section of the upper wing, in addition to the two Vickers machine guns, which were located in the fuselage, forward from the cockpit.

Certainly the prototypes aircraft and earlier production aircraft were fitted with twin Lewis machine guns. However, during operations it was found that the weight of these weapons had an adverse effect on the aircraft's performance and constricted the pilot. Therefore, in many cases the Lewis machine guns were either reduced to one only or were both removed.

The following photograph is stated to that of Frederic Ives Lord stood besides Sopwith Dolphin C3944 of No.79 Squadron. As can be seen, only a single Lewis machine gun was fitted to this aircraft.



As I could not find any photographs of the particular No.79 Squadron aircraft being modelled, Sopwith Dolphin (C4131), my assumption is that it is probable it to was fitted with only a single Lewis machine gun, usually fitted to the right side of the centre section of the upper wing. Therefore, the kit supplied second weapon would not be required for this build.

Short films of Sopwith 'Dolphin' aircraft being launched on a mission are available on 'YouTube' at the following links:

<https://www.youtube.com/watch?v=fUQCqSw-Yds>

https://www.youtube.com/watch?v=Eq_Vu7ez7ZA

PART 2

WOOD EFFECTS

PART 2 - WOOD EFFECTS

General:

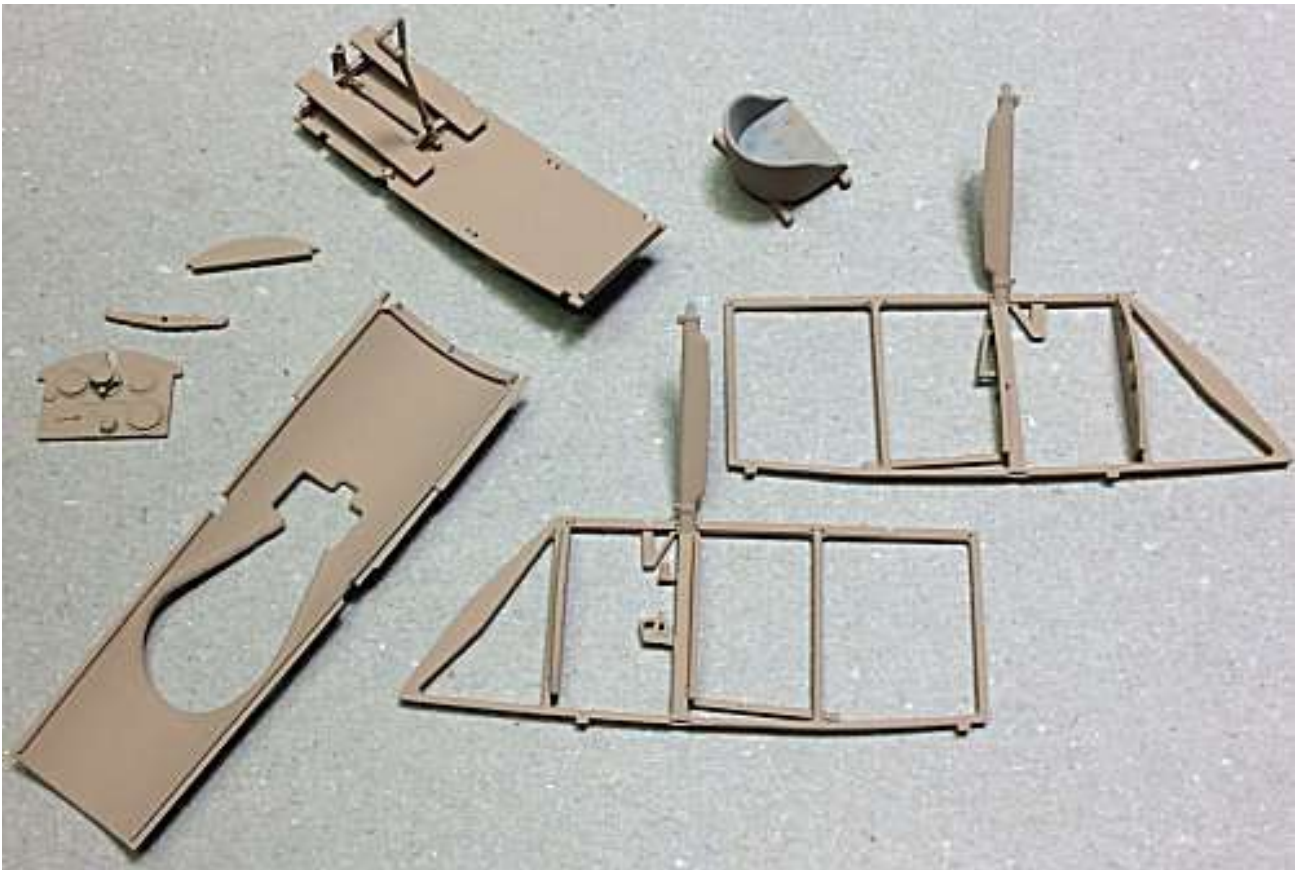
Parts of the model that are supposed to be made of wood can prove to be a challenge to replicate a wood finish to the part. Some after market companies produce accurate wood decals, which can be used to cover larger areas, such as cockpit decking and fuselage panels. However, decals can't easily be used 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 'Johnson' Pledge Floor Care finish, to provide a smooth surface.

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

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

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

Carefully move the decal into the correct position.

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

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

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

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

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

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

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

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

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

'Aviattic' linen effect decals:

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

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

'Aviattic' decals are laser printed onto either 'clear' or 'white' backing, the 'clear' being dependent on the base coat you apply and the finished effect you desire. The decals are supplied with very clear instructions on their application, including when to add pre-shading to the base coat, where desired, before you apply the decals.

Application:

First airbrush a primer coat of 'AK Interactive' primer and micro-filler White (AK759) or Gey (AK758) or similar on all of the surfaces to have the decals applied.

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

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

Airbrush the required base colours to the model surfaces.

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

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

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

Soak each decal in warm water for approximately 20 seconds.

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

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

Align the decal to the shape of the model part.

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

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

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

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

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

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

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

PART 5

RIGGING

PART 5 - RIGGING

References:

The 'Wingnut Wings' kit instruction manual.

Photographs from the 'Wingnut Wings' website archives.

'British Military Aircraft of WW1' (Vol 4 RAF Museum Series) (ISBN 0 85368 261 5).

General:

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

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

NOTE: *Photographs used are from the 'Wingnut Wings' web site archive and the internet.*

The illustrations used are from the 'British Military Aircraft of WW1' book.

These are intended to supplement the rigging diagram on page 12 of the kit instruction manual.

Wire wound rigging:

Initially the aircraft of the Royal Flying Corps (RFC) had structural rigging wires and control cables made from standard wire wound cable.

The structural rigging wires were, for example:

Flying and landing wires between the wings

Incidence wires between the interplane and the fuselage cabane struts

Drag wires between the fuselage and wings

Bracing wires (internal fuselage, landing gear, tailplane).

The control cables were typically used for the rudder, elevators, ailerons and if fitted, steerable tail skid.

These wires and cables would typically have been anchored at both ends with an adjustable 'turnbuckle' fitted to one end for adjusting the tension in the wire or cable. However, over time it was found that external rigging could cause vibration and drag in the airflow. Therefore, later RFC and then Royal Air Force (RAF) aircraft were rigged structurally with aerodynamic (streamlined) wires. Wire wound cable was retained for use on control cables.

Aerodynamic (streamlined) rigging:

Aerodynamic (streamlined) wires (sometimes referred to as RAF wire) were solid forged and designed to be fitted with their thin edge facing into the airflow, thus reducing their airflow drag. The wires had specific tension adjusters fitted at both ends, one having right hand threads and the other left hand threads. This allowed the wires to be adjusted at both ends. Nuts were fitted to lock the wires after adjustment.

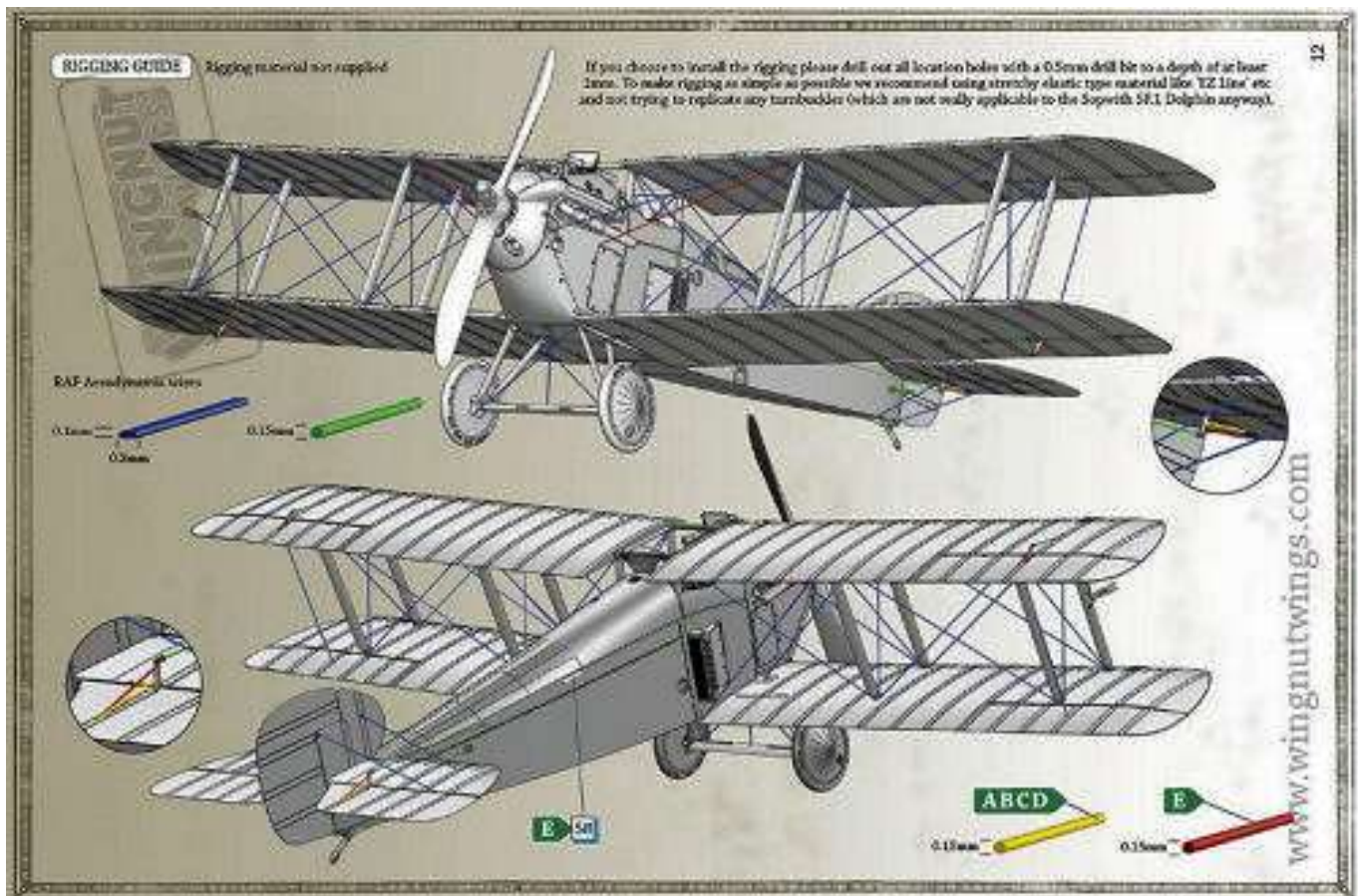
The following photograph shows typical streamlined wires and their adjustable tensioners, attached to their anchor points.



The wires were made in different sizes to suit their intended purpose. Typically they were given the nomenclature of imperial thread sizes British Association (BA) and British Standard Fine (BSF). Common wires used were 2BA, 4BA, 1/4 BSF, 9/32 BSF and 5/16 BSF.

Sopwith Dolphin rigging:

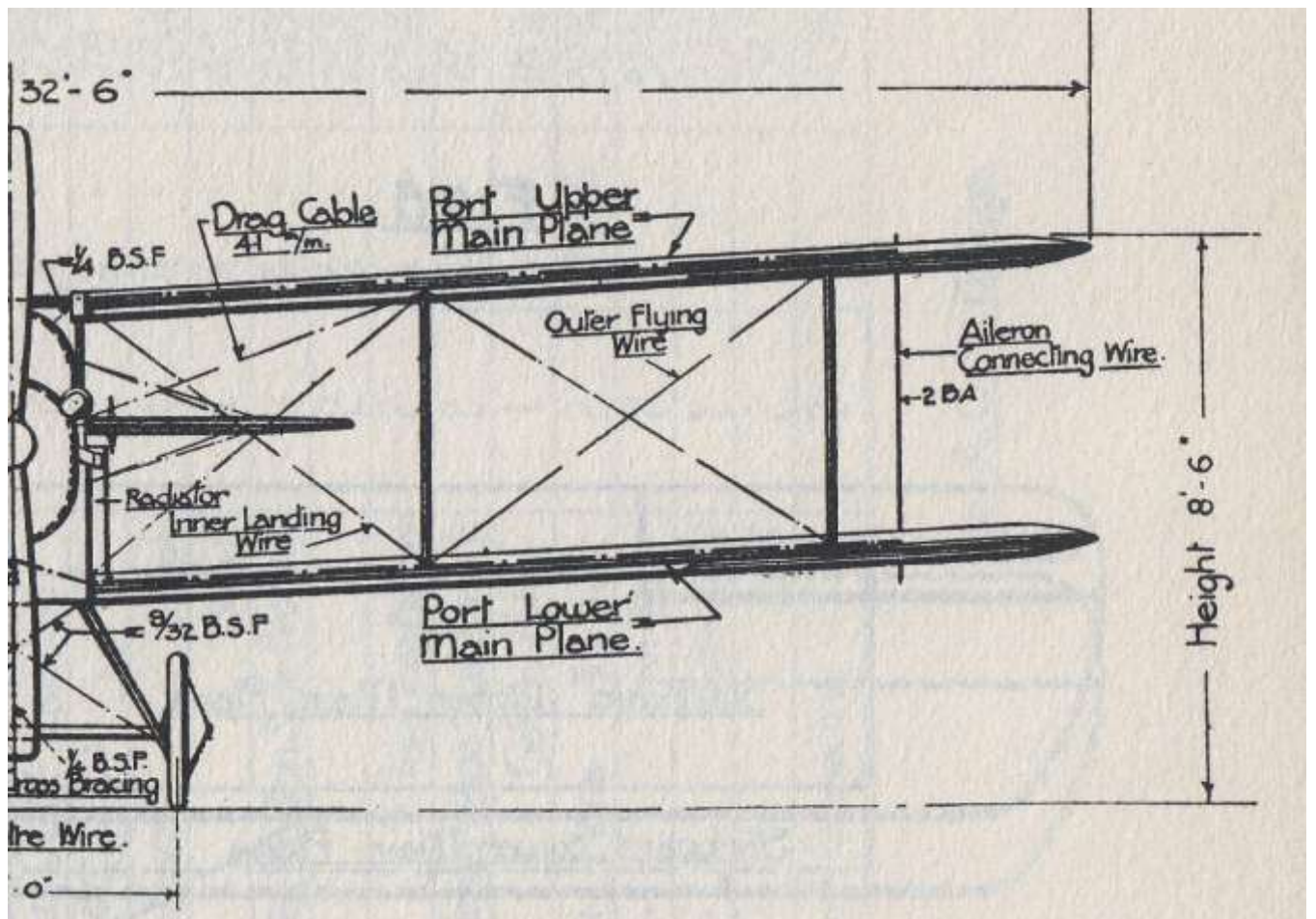
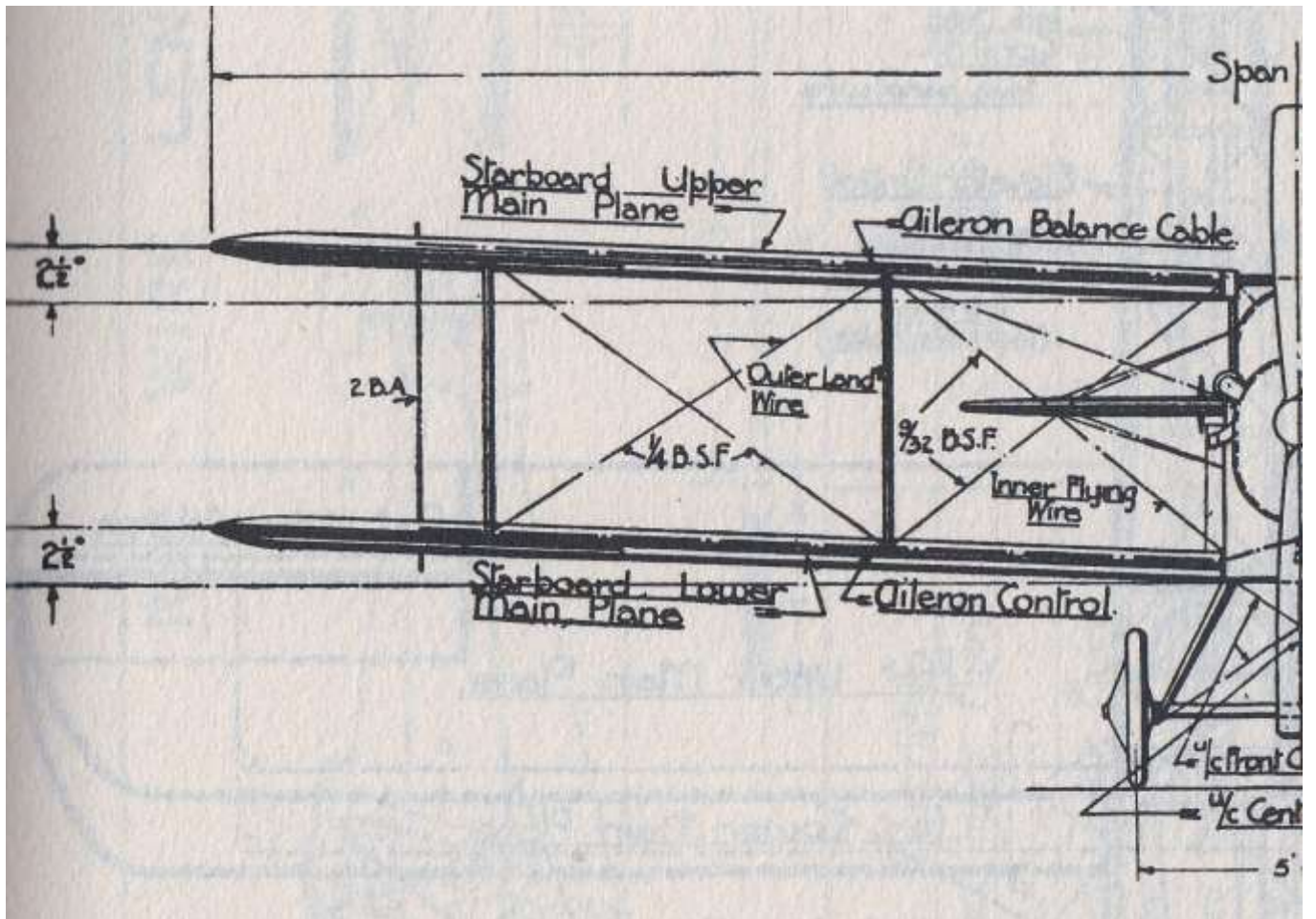
The Sopwith Dolphin had streamlined wires fitted throughout with wire wound cables used only for controls.

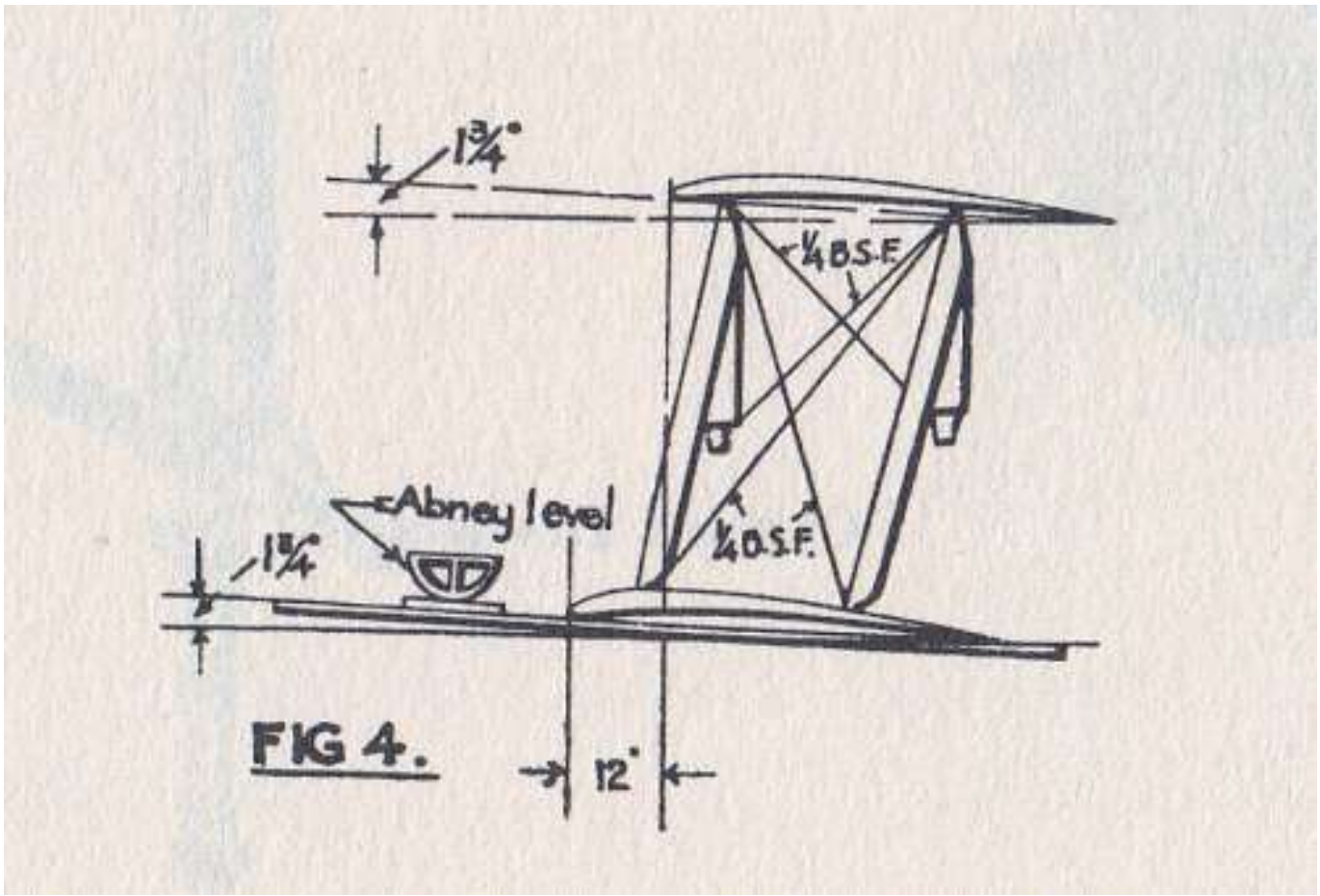
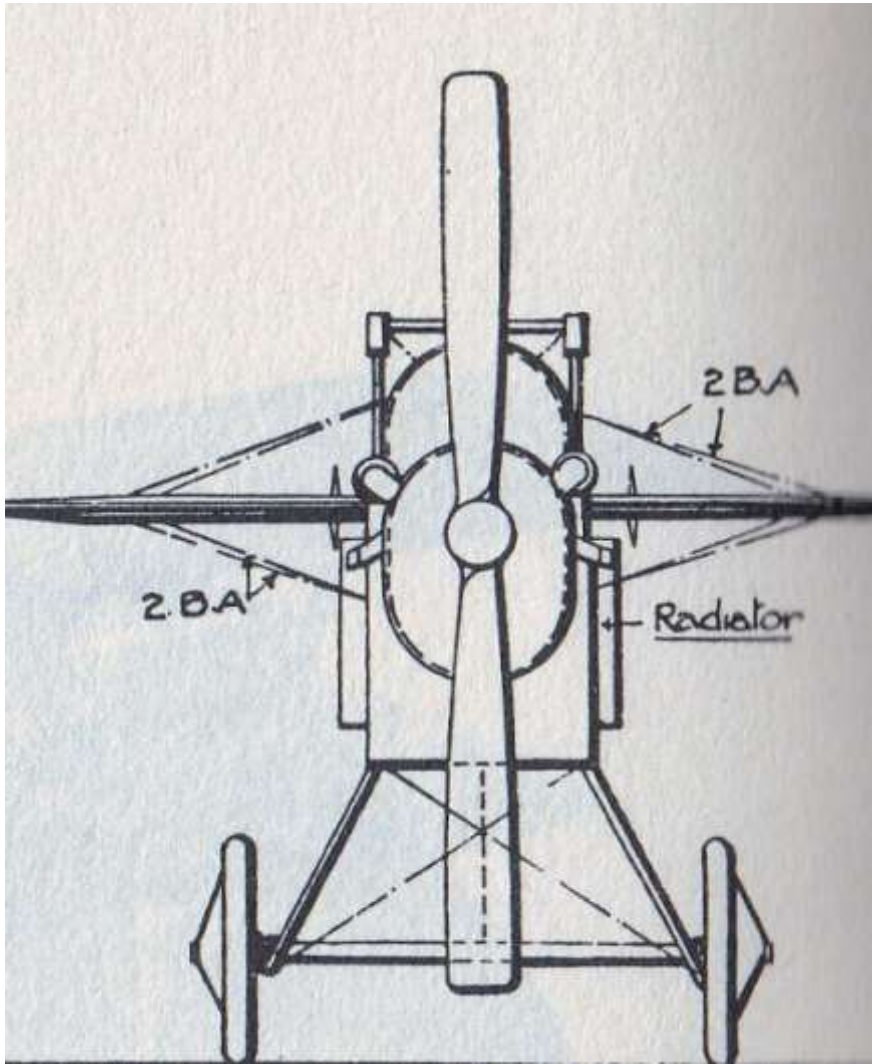


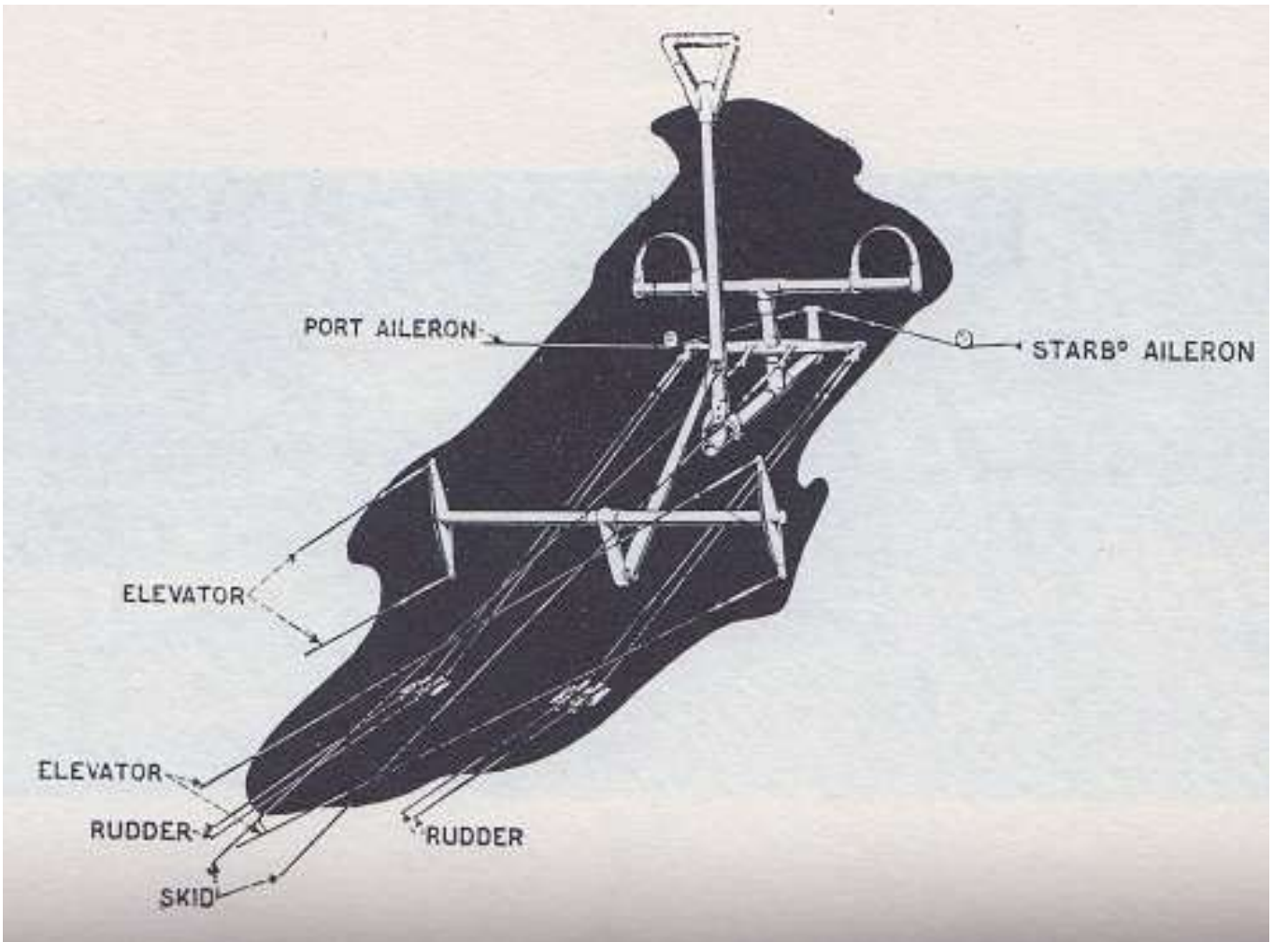
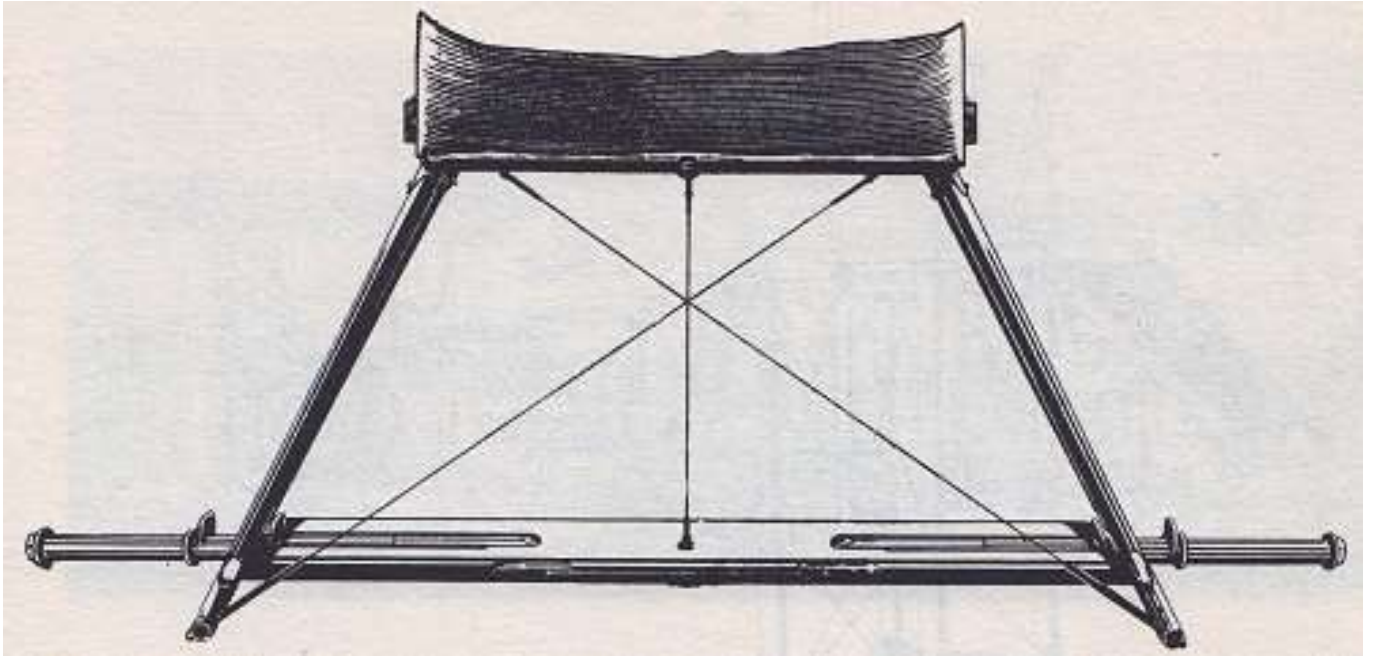
The following extracted illustrations from 'British Military Aircraft of WW1' (Vol 4 RAF Museum Series) (ISBN 0 85368 261 5) show the sizes of streamlined wires used to rig the aircraft and where they were fitted.

RAF - WIRE LENGTHS

Index Letter (see diagram).	Description	N ^o off	Size	Lengths.			Remarks.
				L ins.	S ins.	T ins.	
A	Front Inner Flying	2	$\frac{5}{16}$ B.S.F.	$74\frac{1}{2}$	74	$1\frac{1}{8}$	
B	Rear . . .	2	$\frac{5}{16}$.	$73\frac{3}{4}$	$73\frac{3}{4}$	$1\frac{1}{8}$	
C	Front Outer Flying	2	$\frac{1}{4}$.	$81\frac{3}{4}$	$81\frac{1}{4}$	$1\frac{3}{4}$	
D	Rear . . .	2	$\frac{1}{4}$.	$81\frac{3}{8}$	$81\frac{3}{8}$	$1\frac{3}{4}$	
E	Front Inner Landing	2	$\frac{3}{32}$.	$69\frac{1}{2}$	69	$1\frac{1}{8}$	
F	Rear . . .	2	$\frac{3}{32}$.	$69\frac{1}{2}$	69	$1\frac{1}{8}$	
G	Front Outer Landing	2	$\frac{1}{4}$.	$77\frac{3}{4}$	$77\frac{1}{4}$	$1\frac{3}{4}$	
H	Rear . . .	2	$\frac{1}{4}$.	78	$77\frac{1}{2}$	$1\frac{3}{4}$	
J	Incidence (Long)	4	$\frac{1}{4}$.	$53\frac{1}{2}$	53	$1\frac{3}{4}$	
K	. . . (Short)	4	$\frac{1}{4}$.	45.	$44\frac{1}{2}$	$1\frac{3}{4}$	
L	Centre Section Side Bracing	2	$\frac{1}{4}$.	$24\frac{3}{4}$	$24\frac{1}{4}$	$1\frac{3}{4}$	
M	. . . . .	2	$\frac{1}{4}$.	$25\frac{1}{2}$	25	$1\frac{3}{4}$	
N	. . . - Rear Cross Bracing	2	$\frac{1}{4}$.	$23\frac{1}{2}$	23	$1\frac{3}{4}$	
O	Undercarriage Cross Bracing	2	$\frac{3}{32}$.	40	$39\frac{1}{2}$	$3\frac{1}{2}$	
P	. . . Centre Wire	1	$\frac{1}{4}$.	$18\frac{3}{4}$	$18\frac{1}{2}$	$1\frac{3}{4}$	
Q	Tail Plane Top Front	2	2 B.A.	$32\frac{3}{8}$	$31\frac{3}{8}$	$1\frac{1}{8}$	
R	. . . . Rear	2	. . .	$38\frac{3}{4}$	$38\frac{1}{4}$	$1\frac{1}{8}$	
S	. . . Bottom Front	2	. . .	$27\frac{1}{2}$	27	$1\frac{1}{8}$	
T	. . . . Rear	2	. . .	$38\frac{3}{8}$	$37\frac{3}{8}$	$1\frac{1}{8}$	
U	Aileron Connecting	2	. . .	$45\frac{3}{8}$	$45\frac{1}{8}$	$1\frac{1}{8}$	

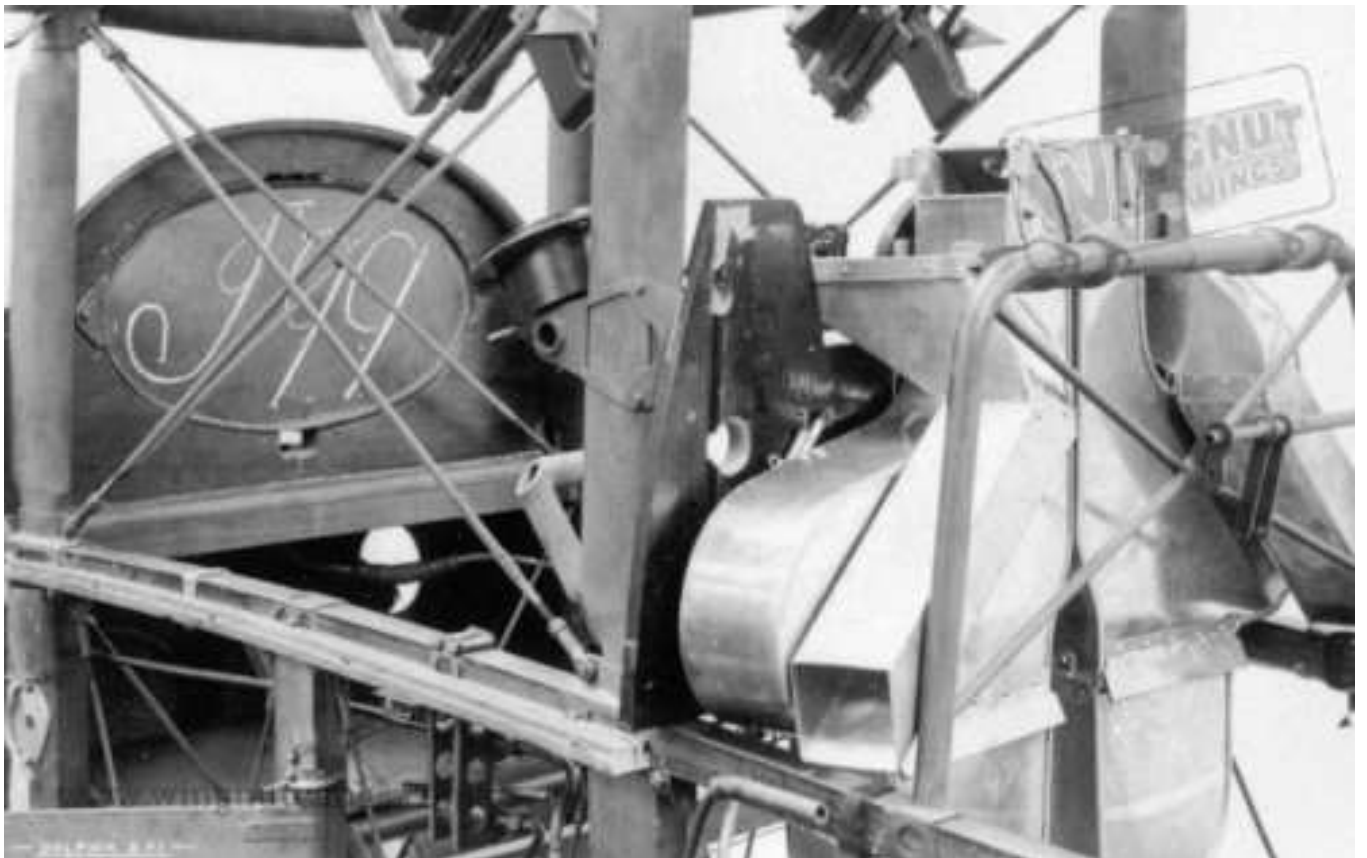














Rigging:

General:

For my previous WW1 aircraft model builds I used mono-filament (fishing line) for all rigging, as although not an accurate representation of streamlined wires, it does provide structural strength and rigidity to a model, especially larger models.

NOTE: If for whatever reason the modeler feels they are not capable of fitting streamlined wires or the photo-etch wires required are not available, rigging can be carried out using mono-filament (fishing line). For details on how to rig using mono-filament, refer to my previous model builds by visiting my website and downloading any of the Adobe (PDF format) build log, which detail fully the rigging techniques used.

<https://mikesww1aircraftmodels.com>

Searching online for WW1 aircraft model builds will provide examples of how some modellers have achieved streamlined rigging, using materials such as stretchable line ('EZ' or 'Prym') or photo-etch streamline wires, such as those once produced by 'RB Productions'. Also attaching streamlined wires to the model, such as securing directly into pre-drilled holes, insertion into microtubes at each end or using resin or metal tensioners at each end, such as those from 'Gaspach Models'.

One disadvantage of these methods is that they do not provide any rigidity or structural strength to the rigged model and may be prone to the effects of ambient temperature changes. High temperatures could cause the rigging to expand (photo-etch) and bow or sag (stretch lines). Low temperatures could cause the rigging to contract (photo-etch) or shrink (stretch lines) and detach from the model. If it's thought that the un-rigged model would be structurally strong and rigid enough without any rigging and it would not be subjected to high changes in the ambient temperature, then streamlined rigging is possible.

Streamlined wires:

Refer to the previous photographs and illustrations and research what streamlined rigging for the Dolphin is required and where it has to be fitted to the model.

NOTE: Unfortunately 'RB Productions' are no longer trading.

The materials for rigging streamlined wires are:

'RB Productions' British streamline wire **2BA** (RB-P32014) with 'Albion Alloys' Nickel-Silver **0.5** mm (NST05) diameter tube.

'RB Productions' British streamline wire **1/4 BSF** (RB-P32012) with 'Albion Alloys' Nickel-Silver **0.5** mm (NST05) diameter tube.

Drill a hole into, **but not through**, the model surface at the rigging point for the wire, making sure the hole is drilled at the approximate angle for the wire when finally fitted.

Cut two short lengths of the relevant tube required.

Secure a length of the streamlined wire into a tube, using thin CA adhesive.

Drill a hole into, **but not through**, the model surface at the rigging point for the opposite end of wire, making sure the hole is drilled at the approximate angle for the wire when finally fitted.

Using thin CA adhesive, secure a tube into the pre-drilled hole.

Run a drill into the fitted tube to remove any residual adhesive.

Cut the wire to longer than the final length required.

NOTE: *The wing wires can't be fitted until the upper wing is fitted.*

Insert the free end of a wire into its fitted tube, then gently bow the wire to fit its secured end tube into the opposite pre-drilled rigging hole. As necessary, trim the length of the wire until it can be fully located, but with a small amount of movement in the fixed tube. This allows for flexing of the model without distorting or bending the wire. When the fixed end tube is finally secured in its position, the wire should be edge into the airflow and not bowed. The other end of the wire is not secured, but left free to move, if necessary, in its tube.

The bright metallic sheen of the photo-etch wire and Nickel-Silver tube can be reduced before fitting by either light sanding and/or airbrushing with a matte clear coat, such as 'Alclad' Flat (ALC314) or similar. They can also, if desired, be airbrushed with a suitable metal coloured acrylic or lacquer paint.

Control cables:

The materials for rigging control cables and drag wires are:

'Albion Alloy's' Nickel-Silver tube (NST04).

'Steelon' or 'Stroft' 0.08 mm diameter mono-filament.

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

NOTE: *Mono-filament control cables are fitted through pre-drilled holes in the relevant parts.*

Cut two short lengths of 'Albion Alloys' Nickel-Silver 0.4 mm (NST04) diameter tube.

Drill hole of 0.3 mm diameter through the relevant part.

Pass a tube onto the line.

Pass the line through the pre-drilled hole in the part.

Loop the line back and through the tube.

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

Using thin CA adhesive, secure the line in the tube.

Cut away any residual tag of line at the tube end, leaving the line free to move in the part.

The bright metallic sheen of the tube and sheen of the line can be reduced before by airbrushing with a matte clear coat, such as 'Alclad' Flat (ALC314) or similar.

Rigging specific:

NOTE: *The rigging for this particular model is for a Sopwith 'Dolphin' 5F1 of No.79 Squadron. As such, **not all** of the rigging shown on page 12 of the kit instruction manual applies to this version of the aircraft. The following explanations apply to both sides of the aircraft.*

Landing gear:

Streamlined bracing wires were fitted from the underside of the fuselage from inboard of the forward gear stuts and diagonally crossed to the bottom ends of the axle and vertically down to the centre of the axle fairing.

Flying wires:

Streamlined flying wires were fitted from the bottom of the fuselage sides and lower wings diagonally up to the underside of the upper wings, inboard from the inner interplane struts. Also from the lower wings outboard from the inner interplane struts diagonally up to the underside of the upper wings, inboard from the outer interplane struts.

Landing wires:

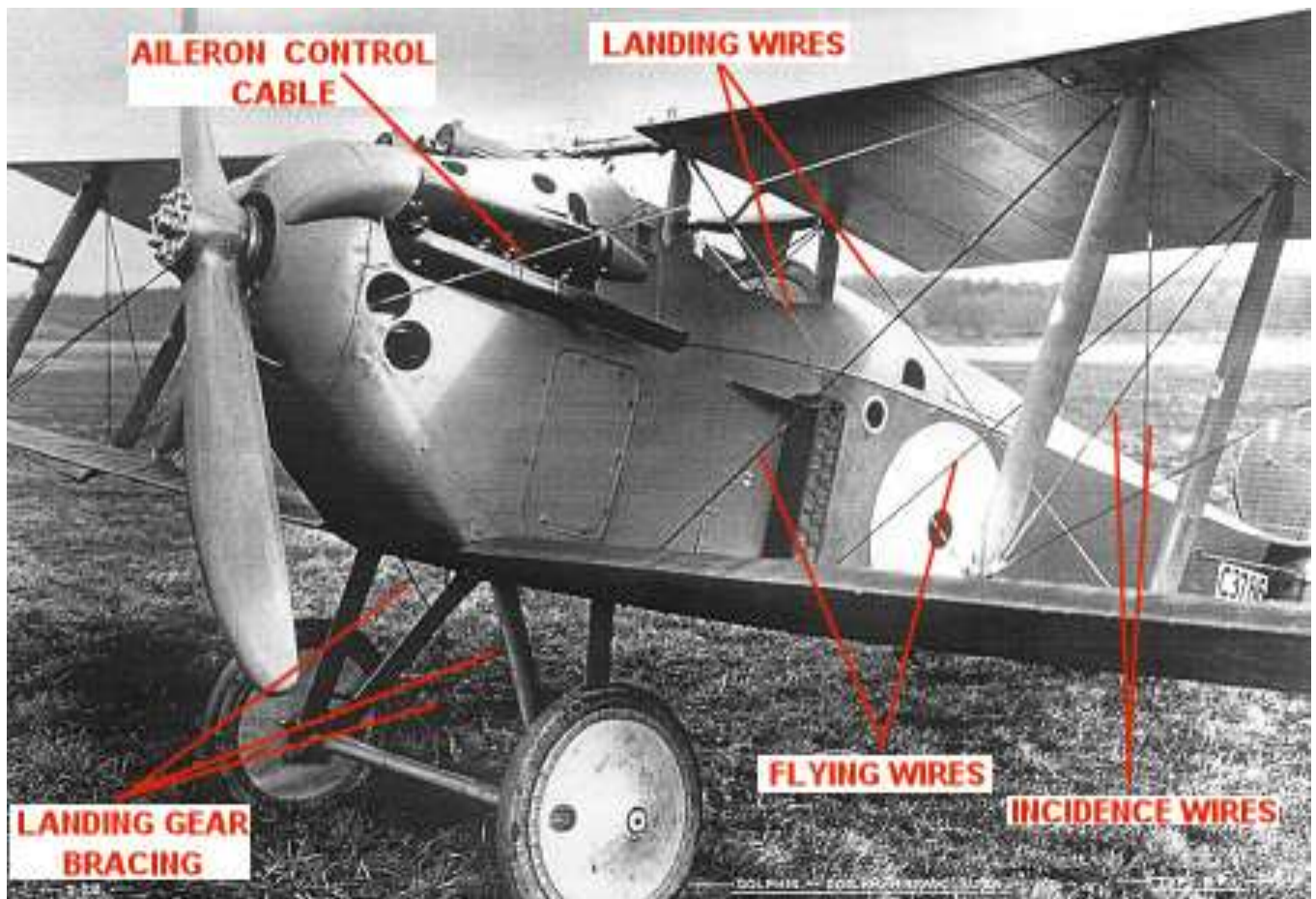
Streamlined landing wires were fitted from the undersides of the upper wing outboard from the tops of the fuselage cabane struts and diagonally down to the upper surface of the lower wings, inboard from the inner interplane struts. Also from the underside of the upper wings outboard from the inner interplane struts diagonally down to the upper surface of the lower wings, inboard from the outer interplane struts.

Drag wires:

Single drag wire **cables** were fitted from the front of the engine bearers and through the opening in the fuselage sides then up to the underside of the upper wings, inboard from the forward inner interplane struts.

Incidence wires:

Streamlined landing wires were fitted between the inner and the outer interplane struts. The wires were fitted from the underside of the upper wings, rear of the forward and forward from the rear interplane struts, the down and diagonally crossed the between the struts on the upper surface of the lower wings.



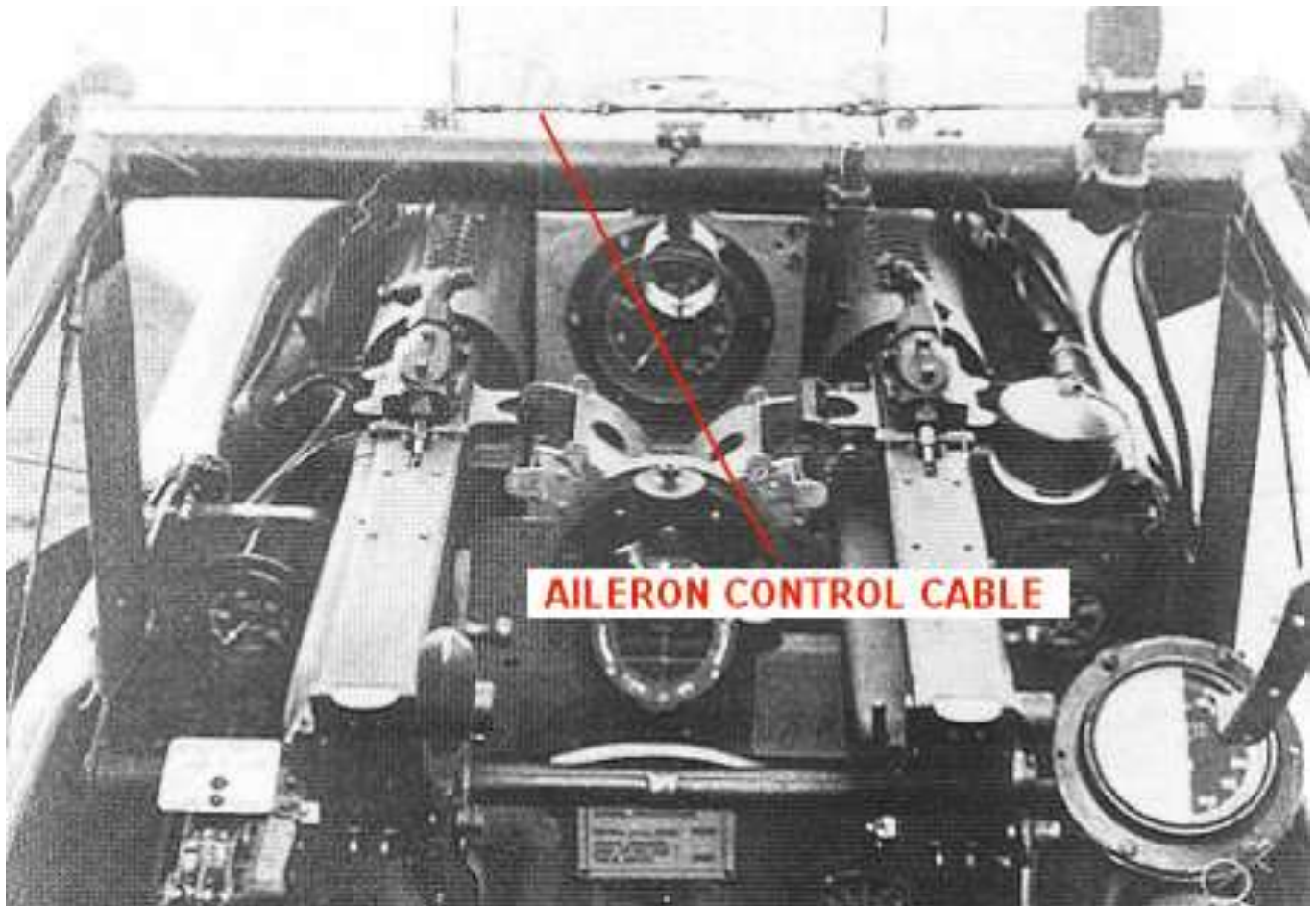
Aileron control:

Cables:

A single aileron control **cable** was routed inside the leading edge of the upper wing and across the open centre section, forward from the front frame cross bar. A turnbuckle was fitted in the centre of the cable run.

Cables were fitted from the underside of the lower wing to the aileron control horns and then to the underside of the ailerons.

Cables were fitted from the top surface of the upper wings to the aileron control horns and then to the top of the ailerons.



Streamlined wires:

Streamlined control wires were fitted between the top of the lower wing ailerons to the underside of the upper wing ailerons. These wires interconnected the control cables from the upper and lower wings.

Tailplane bracing:

Streamlined bracing wires were fitted between the bottom edge of the fuselage rear and diagonally up and through the tailplanes then diagonally up to the fin.

Rudder control:

Rudder control **cables** were routed through openings in the rear sides of the fuselage and rearwards to the ends of the rudder control horns.

Elevator control:

Upper and lower elevator control **cables** were routed through openings in the rear sides of the fuselage and rearwards to the ends of the upper and underside elevator control horns. Cables from the control horns were also routed rearwards and through the elevators, connecting the upper and underside control horns.

PART 6

ENGINE

PART 6 - ENGINE

NOTE: *The kit supplies parts that will not be required for this particular model build, including parts that will be replaced. These parts are Sprue E2, 11 and 17.*

The 'Wingnut Wings' instruction manual (page 4) is reference throughout this build. When removing any kit parts from their sprues, always remove any residual sprue tags and mould seams. Take care when removing the smaller or more fragile parts from their sprues. Too much cutting pressure or cutting too close to the part can cause deformation, breakage or stress marks in the parts.

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.

Assembly:

Cement the halves of the engine sump and propeller shaft (E3, 8 and 14), together.

Cement the halves of the two cylinder heads (E10 and 13).

Cement the cylinder head assembly onto the engine sump assembly.

Cement the halves of the two cylinder banks (E5 and 7, E9 and 12) together.

Cement the carburettor (E15) and air intake (A46) onto the intake manifold (A22).

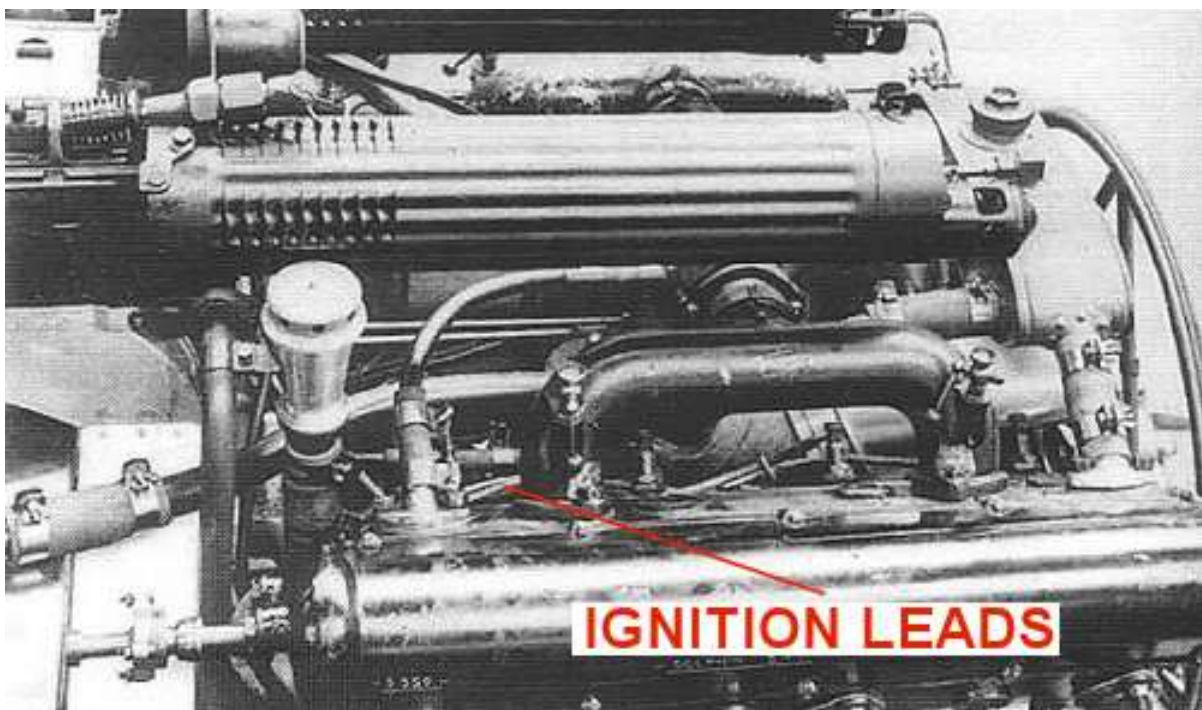
Prepare the remaining parts oil breather pipe (A55), cap (E18), water pipes (E1 and 4), oil pipe (E16) and the twin magnetos (E6).

Where necessary, sand joint seams to blend them with the surrounding surfaces.

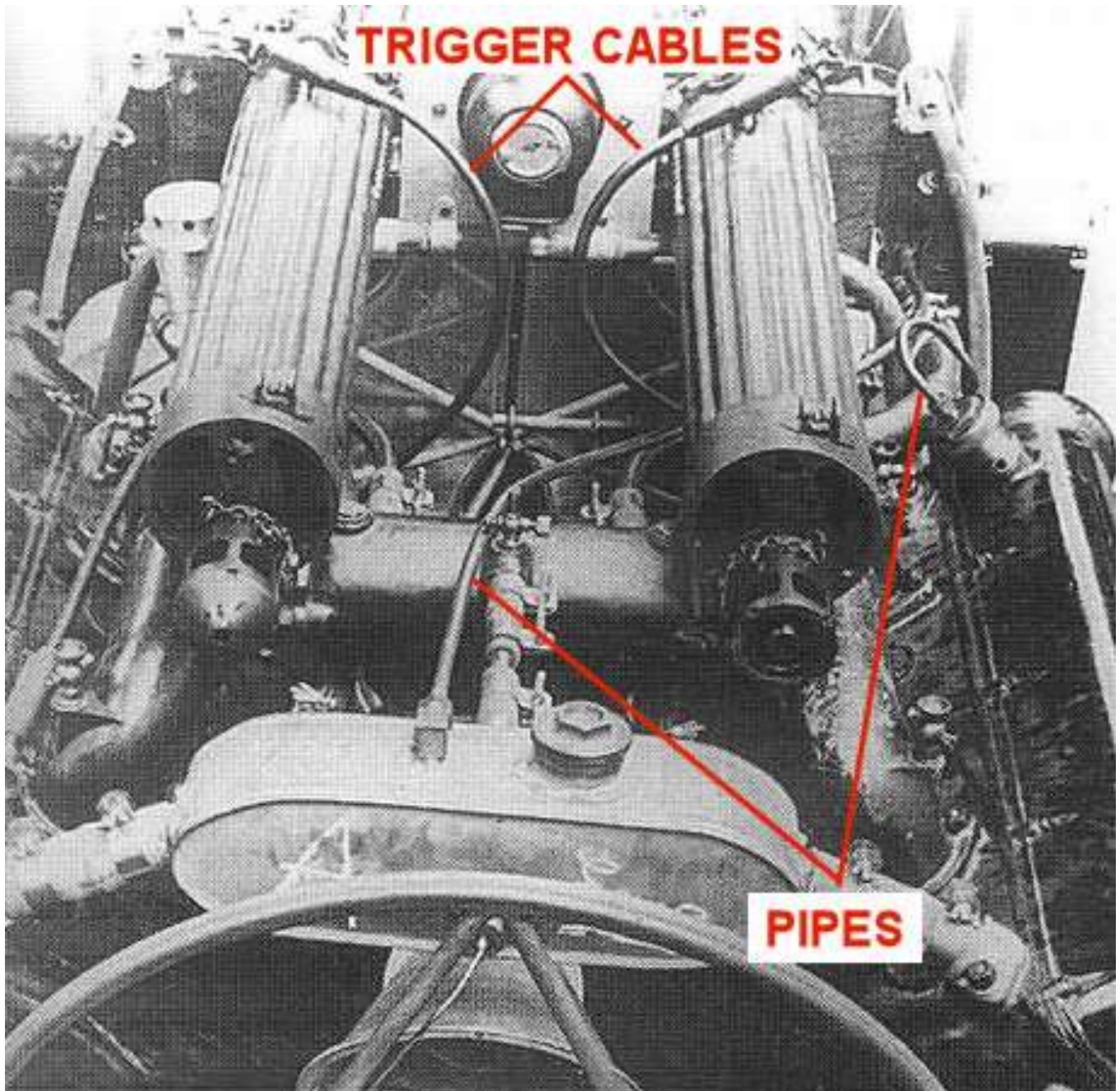
Enhancements:

NOTE: *To enhance the engine detail, spark plug leads and pipes can be added. If the top shield panel is to be fitted onto the fuselage, the engine is effectively covered, so any details added would not be seen. In this case it's best to add only the lower, outer side ignition leads.*

If the top shield panel is to be left off, then the following visible details can be added to the engine with the use of lead wire, such as that from 'PlusModels', for ignition leads and either lead wire or micro-tube, such as that from 'Albion Alloy's' or the additional pipes.



NOTE: The follow details will be visible with the top shield panel not fitted, but are best added after the engine and the two Vickers machine guns have been fitted into the fuselage - refer to Part 8 (Fuselage) of this build log.



Painting:

NOTE: The paint guide for the engine shown on page 4 of the kit instructions shows parts as Copper or Brass. This does not reflect the metals used on this engine, as can be seen on the following photographs of an engine, built under license by 'Wolseley'.





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

Airbrush all assemblies and parts with a gloss Black, such as 'Tamiya' (X1) or similar. This gives the required base coat for applying metallic top coats.

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

- Engine sump assembly
- Intake manifold assembly.

Airbrush the following with 'Alclad' Steel (ALC115) or similar:

- Twin magneto assembly (E6)
- Two rear water pipes (E1, E4)
- Oil pipe (E16).

Brush paint the exhaust ports on the cylinder banks and the faces of the two magnetos with 'Tamiya' Hull Red (XF9) or similar.

Brush paint the following with 'Mr. Colour' Steel (213) or similar:

- Magneto switch boxes and cross shaft
- Rear pipes on the two cylinder banks
- Oil breather
- Carburettor body
- Water tank
- Water pump (bottom of sump)
- Exhaust port cover plates.

Brush paint the filler cap on the water tank and the cap on the cylinder head 'Mr. Colour' Brass (219) or similar.

Brush paint the spark plugs with 'Tamiya' Deck Tan (XF55) or similar.

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

Assembly (continued):

General:

NOTE: Before assembly, make sure all paint and primer is removed from locating holes and the associated parts. Refer to 4 of the kit instructions.

Cement the two cylinder banks into their locating holes in the cylinder head.

Cement the intake manifold into its location holes in the cylinder heads.

Cement the oil breather pipe (A55) into its location hole in the top, rear of the engine sump.

Cement the under sump oil pipe (E16) into its location holes under the engine sump and the water pump mounting.

NOTE: Before the following step, I drilled out filler cap the location hole using a 0.7 mm diameter drill.

Cement the filler cap (E18) into its location hole in the inner, rear of the left cylinder bank.

Cut away the curved top of the two coolant pipes (E1, E4) then cement them into their location recesses in the top edges of the water pump. The top of the pipes were cements against the magneto mounting cross member.

Enhancements:

NOTE: *The only added detail that will be just visible on the completed model are the outer, lower ignition leads for the outer spark plugs.*

Cut eight lengths of 'EZ' stretchable line (Black - fine).

Using thin CA adhesive, secure each line to its spark plug.

Using thin CA adhesive, secure the other ends of the wires equally spaced around the edge of their magneto, allowing for a slight droop to each line

Cut away any residual line at the edges of the magnetos.

Weathering:

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

Refer to Part 3 (Weathering) of this build log for more information:

Apply your chosen weathering effects:

I used 'Flory Models' Dark Dirt clay wash as general weathering

'AK Interactive' Kerosene (AK2039) and Engine Oil (AK2019) washes for stains.

NOTE: *To dry brush the worn metal effect, wet a medium to large domed brush in the paint, such as 'Mr. Colour' Super Iron 2 (SM203) or similar. Then thoroughly wipe the brush on an absorbent tissue, such as kitchen roll, until there is virtually no paint left on the brush. Lightly brush across the model painted surfaces to leave a faint paint residue.*

'Mr. Colour' Super Iron 2 (SM203) for dry brushing the cylinder banks.







PART 7

PROPELLER

PART 7 - PROPELLER

The kit supplied 'Lang' type propeller is replaced with a hand crafted wood layered 'Lang' type propeller from Alexey Belov at 'Proper Plane'. The propeller blades for this aircraft have a reversed pitch due, to the direction of rotation from the engine. The 'Lang' manufacturer logo is from the 'LF Models' British 'Lang' propeller logo's (C3207).

NOTE: *The 'LF Models' decals are not 'cookie' cut and therefore need to be cut out from the decal backing sheet. The decals should be cut out as close as possible to the edges of the decal.*

Cut out from the 'LF Models' decal sheet the two 'Lang' decals (73 and 74).

Apply the two decals centrally and midway along the front face of the two propeller blades.

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

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

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

Using thin CA adhesive, secure the front hub into its recess in the propeller.

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

Check fit the fit of the propeller on the engine propeller shaft and if necessary, drill out the hole in the rear hub/propeller to achieve a good fit.

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

Propeller shown fitted later in this build.



PART 8

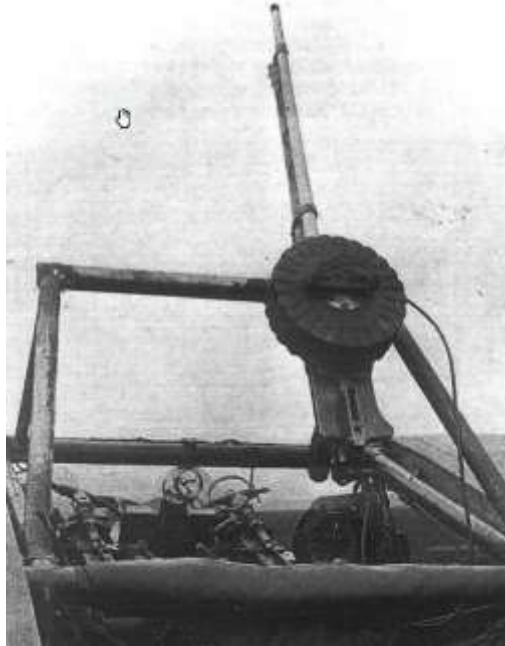
WEAPONS

PART 8 - WEAPONS

Lewis machine gun:

NOTE: *The Lewis and Vickers machine guns will be fitted later in this build.*

Example of a single Lewis machine gun installation (different mounting frame).



Preparation:

If necessary, sand the edges of the single Lewis machine gun (A42) and ammunition drum (A6).

Painting:

Airbrush the Lewis machine gun (A42) and ammunition drum (A6) with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Airbrush both with a 'Tamiya' Gloss Black (X1) or similar.

Airbrush both with 'Alclad' Gunmetal (ALC120) or similar.

Kit decal:

NOTE: *The kit supplied decal (70) is for the ammunition drum for the Lewis machine gun.*

Airbrush the top of the ammunition drum with a clear gloss coat, such as 'Alclad' Aqua Gloss 600 or similar.

Apply the decal 70 to the top of the ammunition drum.

Painting (continued):

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.*

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

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

Brush paint the grab handle on the ammunition drum with 'AK Interactive' Brown Leather (AK3031) or similar.

Brush paint the ammunition rounds cases in the ammunition drum with 'Mr. Colour' Brass (219) or similar.

Sponge 'Tamiya' Weathering Master (Set B - Soot) around the machine gun muzzle.

Cement the ammunition drum onto its locating stub on the machine gun.



Vickers machine guns:

Preparation:

If necessary, sand the edges of the gun barrel halves and their breech blocks, to remove any sprue tags.

Cement the pairs of machine gun barrel (A44, A45) halves together.

Cement the barrel assemblies onto their breech blocks (A41, A47).

NOTE: *The photo-etch parts for the Vickers machine guns are easier to secure in place using liquid cement, rather than CA adhesive.*

Locate the photo-etch end plates (P1) onto the front of the assembled barrels and secure them in position. The end plates should be positioned with the hole at the top aligned to the barrel forward gunsights.

Locate the photo-etch cocking levers (P9, P10) in position on their machine gun breech blocks and secure them in position.

Airbrush both weapons with a gloss black, such as 'Tamiya' Gloss Black (X1) or similar.

Airbrush both weapons with 'Alclad' Gunmetal (ALC120) or similar.

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

Brush paint the handles on the cocking handles of both weapons with 'Tamiya' Hull Red (XF9) or similar.

Brush paint the padded rear of machine gun breech blocks with 'AK Interactive' Brown Leather (AK3031) or similar.

Vickers machine guns shown fitted later in this build.



Bomb carrier:

NOTE: *The bomb carrier and 'Cooper' bombs will be fitted later in this build.*

Assembly:

Sand the edges of the bomb carrier (A21, A25).

Cement the bomb carrier (A21, A25) together.

Painting:

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

Airbrush the bomb carrier with 'Tamiya' Gloss Black (X1) or similar.

Brush paint the four 'feet' of each bomb rack with 'Tamiya' NATO Brown (XF68) or similar.

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

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



'Cooper' 20lb Bombs:

Assembly:

Cement the four bomb halves (A38 x4 and A43 x4) together.

Sand the bomb joints to blend them with the surrounding surfaces.

Painting:

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

Airbrush the body of the bombs with 'Tamiya' Yellow Green (XF4) with approximately 10% of Desert Yellow (XF59).

Brush paint the tail and fins of each bomb with 'Tamiya' Metallic Grey (XF56) or similar.

Airbrush each bomb with a gloss clear coat, such as 'Alclad' Aqua Gloss 600 or similar.

NOTE: Refer to Part 4 (Decals) of this build log for more information on applying the bomb (x4) 70 decals.

Apply the bomb decals 70.

Airbrush each bomb with a matte clear coat, such as 'Alclad' Light Sheen (ALC314) or similar.

Lightly sponge 'Tamiya' Weather Master Set B (Soot) along the body of the of each bomb.



PART 9

FUSELAGE

PART 9 - FUSELAGE

NOTE: *The kit supplies parts that will not be required for this particular model build, including parts that will be replaced. These parts are:*

Sprue D (including the Late sprue) - 8, 9, 15, 16, 17 (x2), 18, 19 (x2), 20 and 21.

Sprue A - 50.

Photo-etch - P3, P6 and P9 (x1).

Replaced - Sprue A - 27.

The 'Wingnut Wings' instruction manual is reference throughout this build. When removing any kit parts from their sprues, always remove any residual sprue tags and mould seams. Take care when removing the smaller or more fragile parts from their sprues. Too much cutting pressure or cutting too close to the part can cause deformation, breakage or stress marks in the parts.

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.

Preparation:

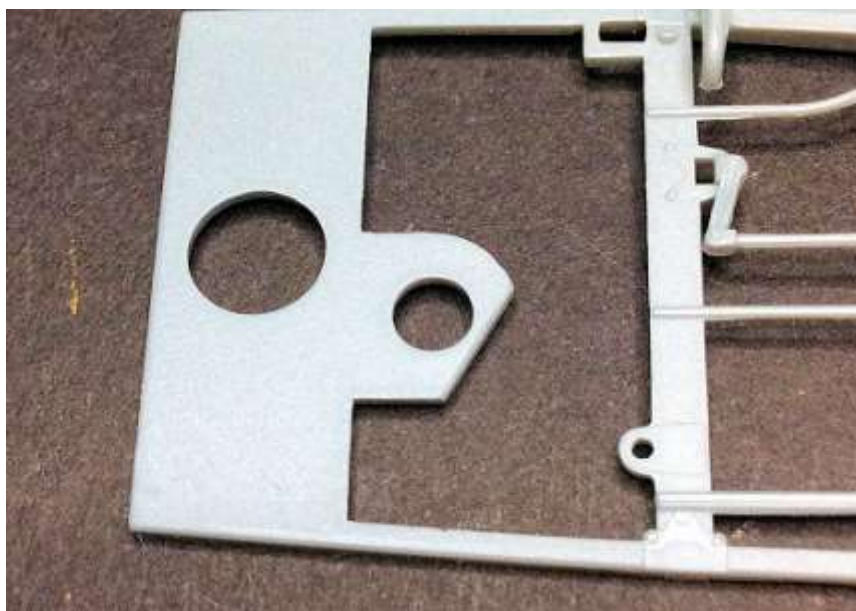
General:

NOTE: *Throughout this fuselage build, the parts used and the detail information in the instructions are for colour profile 'D' (No.79 Squadron).*

Remove from their sprues the fuselage parts shown on the kit instructions (pages 3, 5, 6, 7 and 8).

Remove any residual sprue tags and mould seams from the parts.

Cut away the areas of the fuselage halves shown in 'red' on page 3 of the kit instructions.

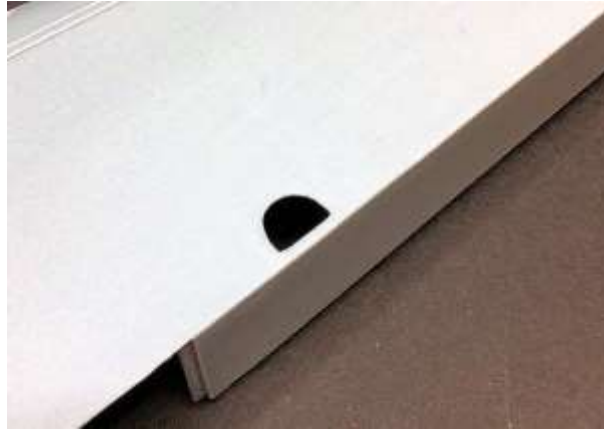


Drill out the profile of the forward foot step, as shown on page 7 of the kit instructions, making sure you stay inside the pre-moulded detail on the outside of the left fuselage half.

NOTE: *After opening the foot step, the thickness of the fuselage around the step is too thick and not realistic.*

Using a curved scalpel blade and working from inside the fuselage half, carefully cut around the opening to reduce the thickness of the fuselage around the foot step.

Sand away both foot step details pre-moulded on the outside of the left fuselage half, as shown on page 7 of the kit instructions (to be replaced by photo-etch later in this build).

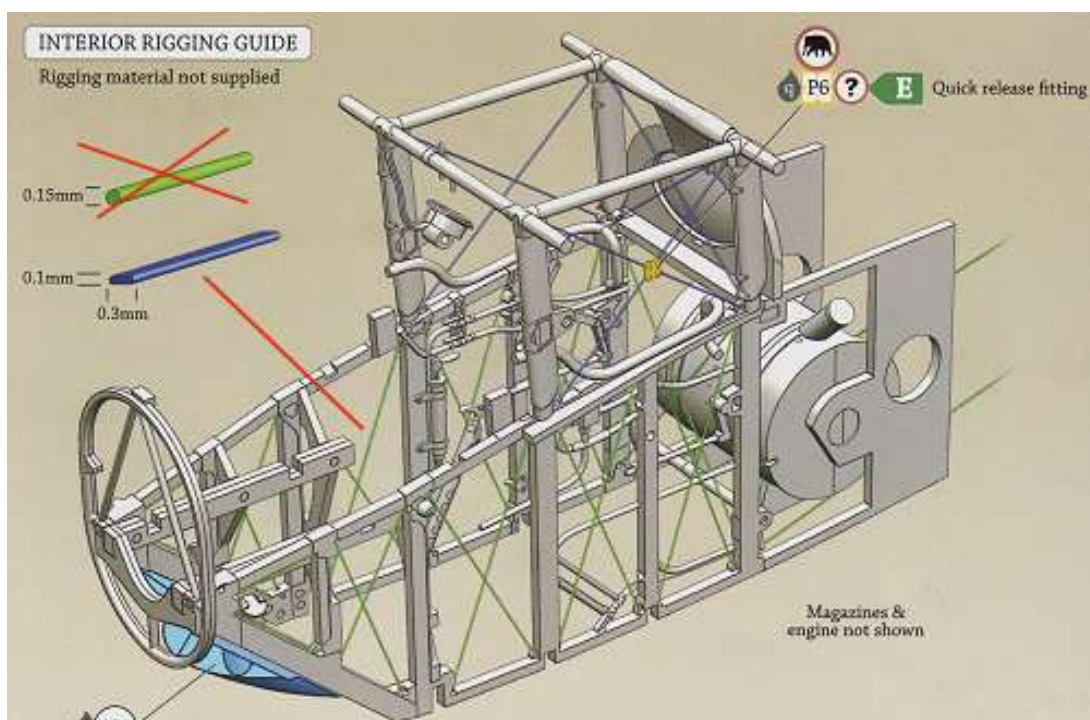


Test fit the two fuselage halves together and if necessary, lightly file or sand the edges of the detail shown below, to ensure it fully locates fully.



Bracing wire pre-rigging:

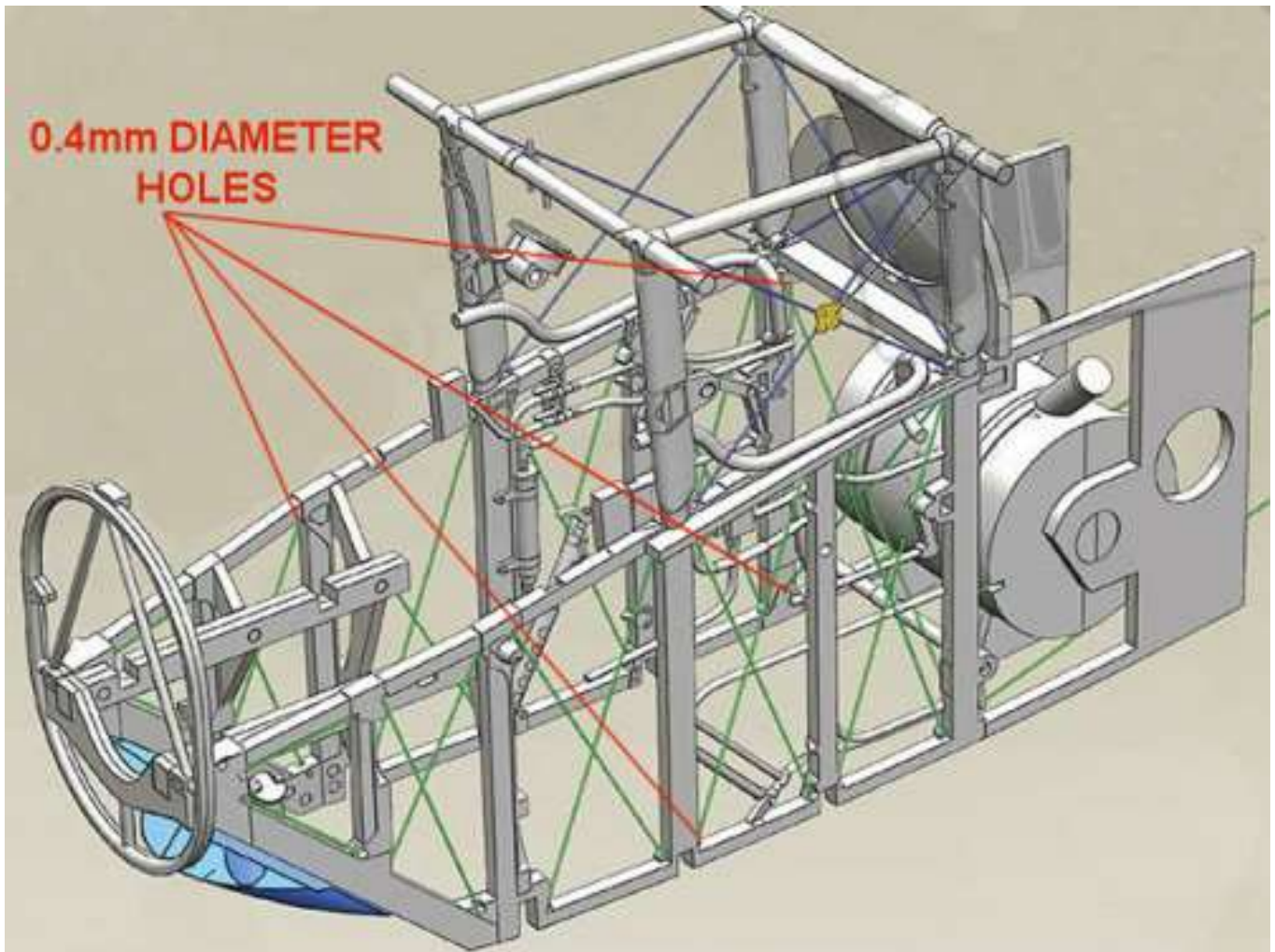
NOTE: The bracing rigging for the cockpit side frames, shown on page 6 of the kit instructions, suggests the wires were round wire wound cable. However, the photographs and the rigging table shown in **Part 5 (Rigging)** clearly show that these wires were in fact **streamlined** wires.



NOTE: Although the bracing wires for the fuselage cabane struts were 1/4 BSF, I chose to use the slightly smaller 'RB Productions' British streamline wire 2BA (RB-P32014) 2BA wires. This was done as the tubes required are 'Albion Alloys' Nickel-Silver 0.4 mm (NST04) and if the locating holes drilled into the cockpit sides frames are any larger they would cause weakness in the frames.

Drill a hole of 0.5 mm diameter through both cockpit side frames at each corner of the four frame bays (ignore the forward triangular frame bays). The holes should be drilled at the angle required to fit a wire diagonally, corner to opposite corner.

Drill a hole of 0.5 mm diameter through both cockpit side frames at the bottom corner of the rear vertical frame members. The holes should be drilled at the angle required to fit a wire diagonally, corner to the opposite corner forward from the fuel tank.

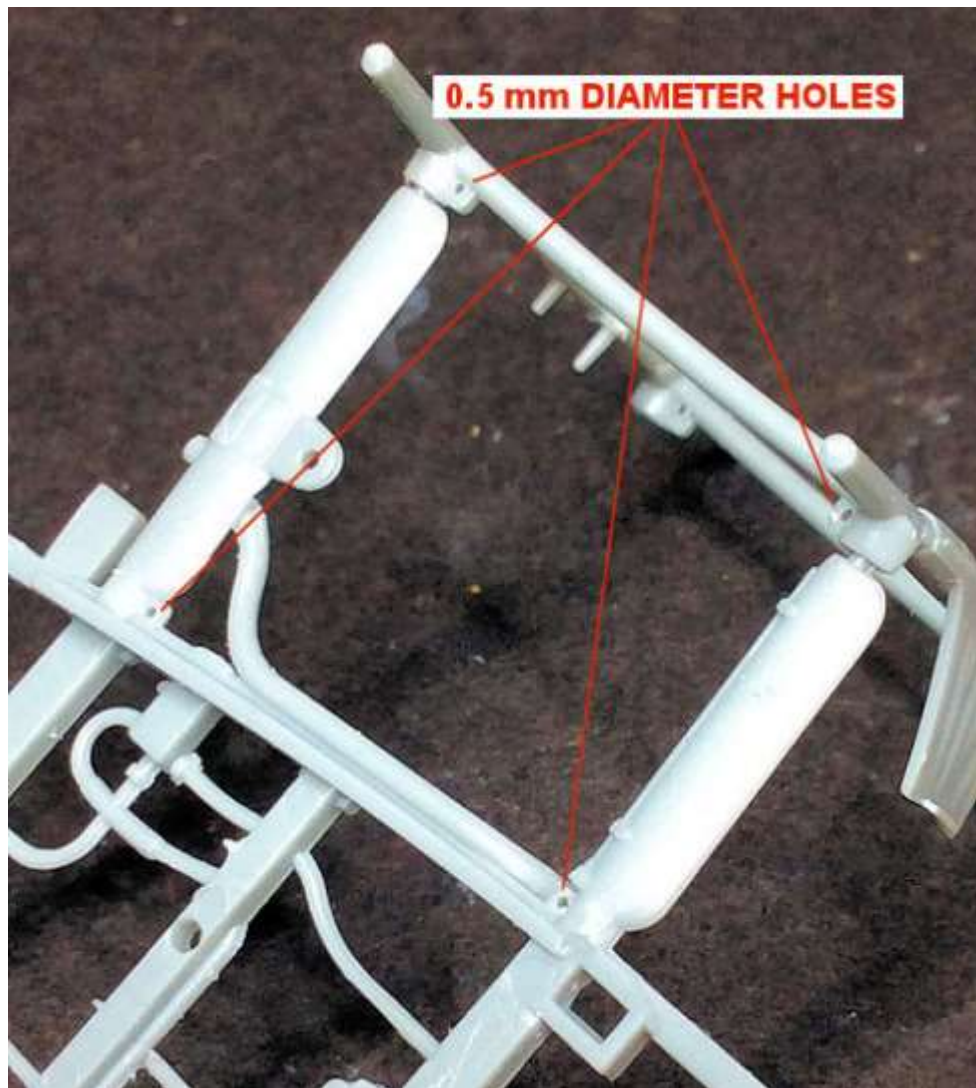
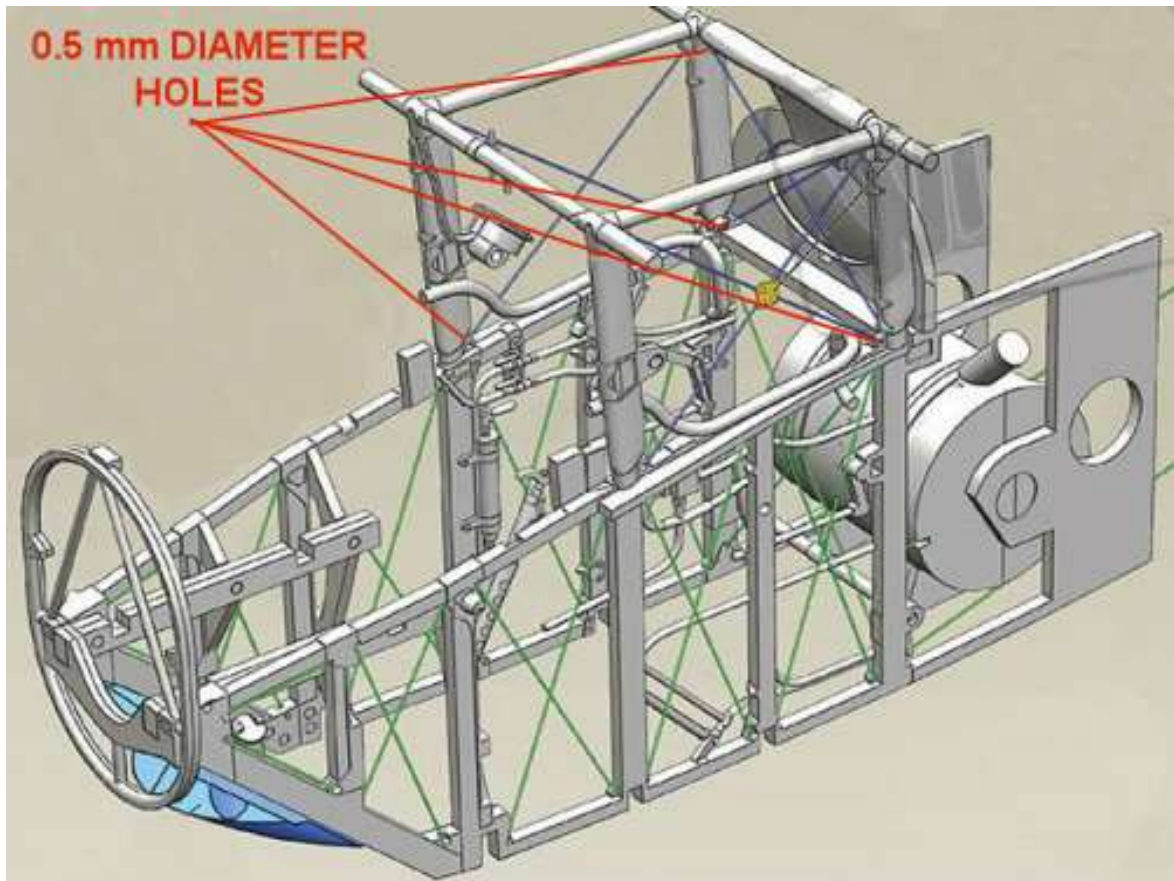


NOTE: To represent the streamlined wires for bracing the fuselage cabane struts, the materials used are the 'RB Productions' British streamline wire 1/4 BSF (RB-P32012) with 'Albion Alloys' Nickel-Silver 0.5 mm (NST05) diameter tube.

Drill a hole of 0.5 mm diameter through the pre-moulded rigging lugs in the bottom corners of the four fuselage cabane struts.

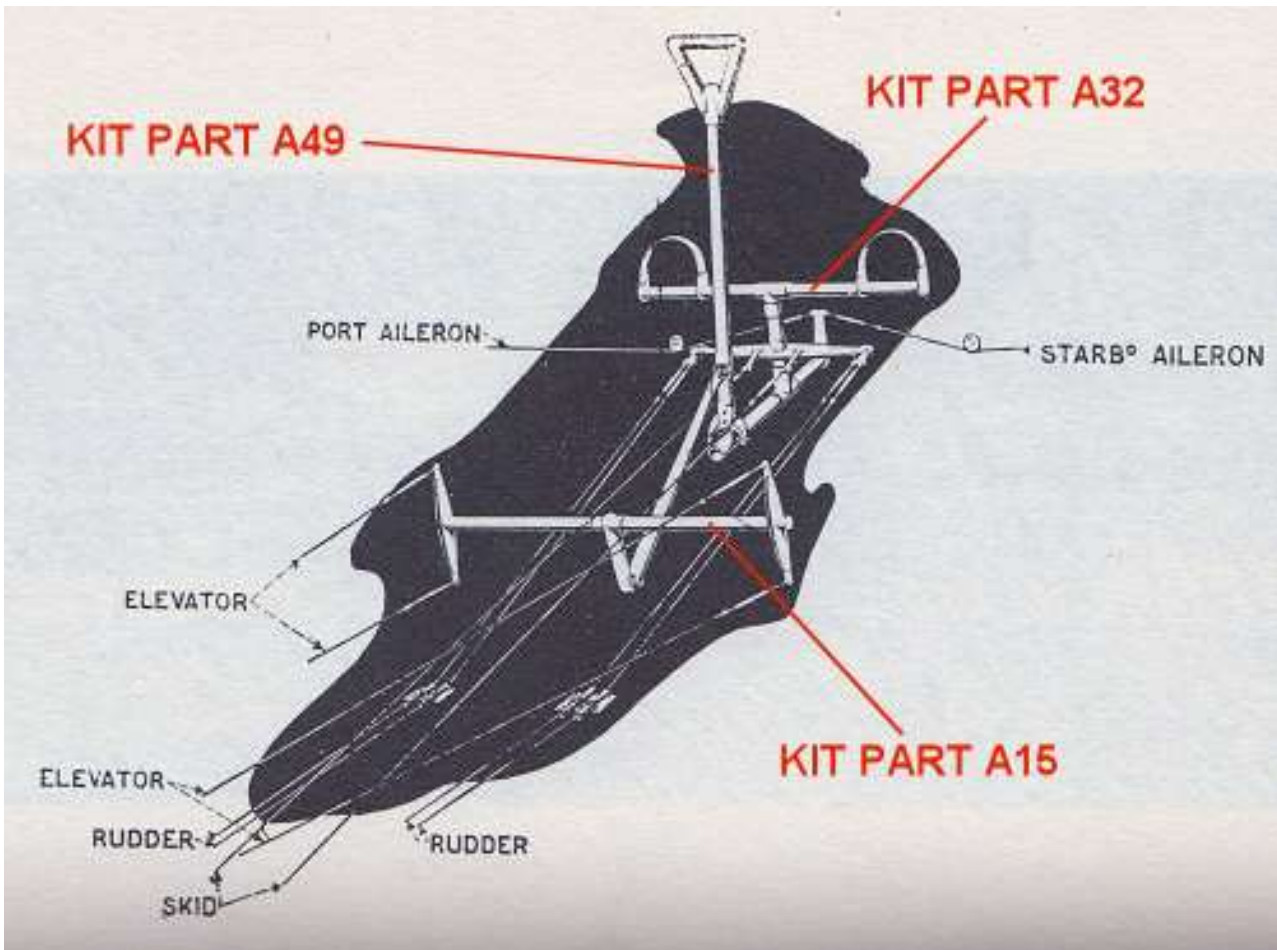
Drill a hole of 0.5 mm diameter through ends of the bottom cross member of the gravity fuel tank (A28).

Drill a hole of 0.5 mm diameter through the pre-moulded rigging lugs in the corners of the upper frame (D10), including the rear cross member.



Control cable pre-rigging:

NOTE: The attachment and routing of the cockpit control cables in the cockpit, shown on page 8 of the kit instructions, are not as easy to understand as the following illustration.



Drill a hole of 0.2 mm diameter through the ends of the elevator levers on kit part A15.

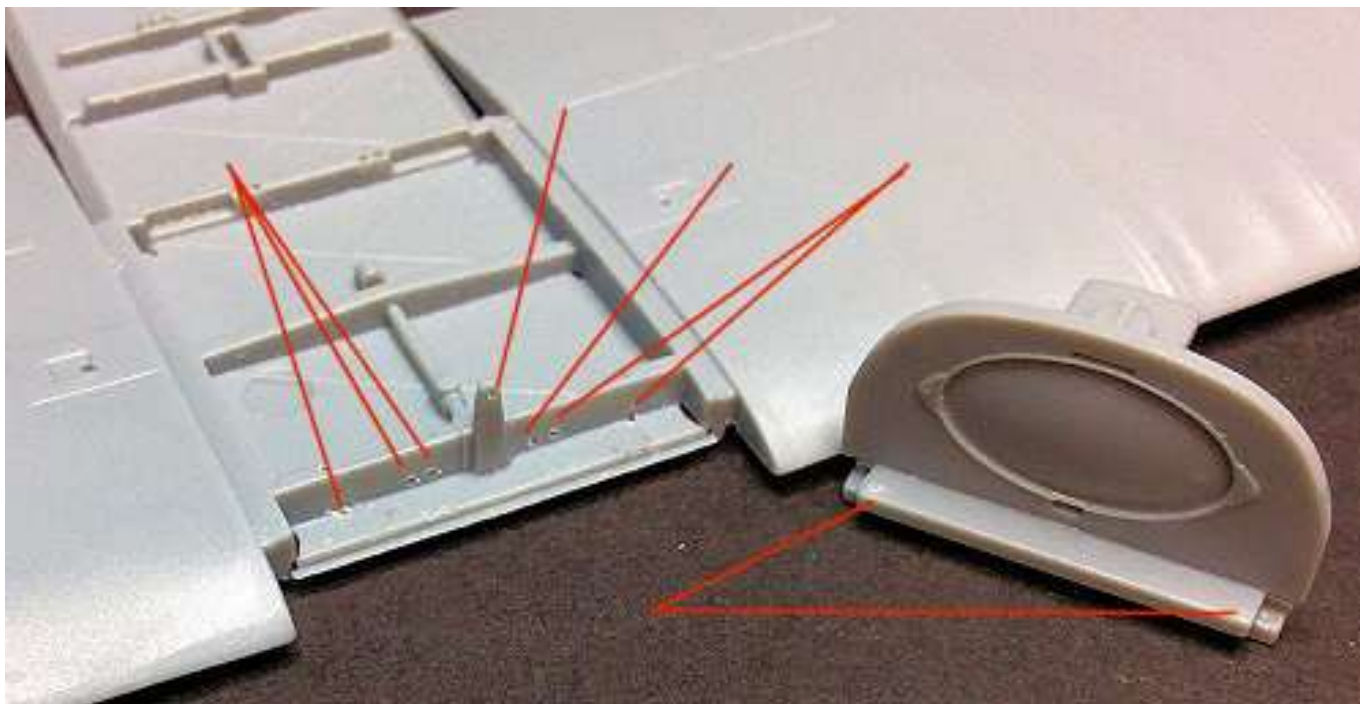
Drill a hole of 0.2 mm diameter through the top end of the aileron lever on the lower wing B1.

Drill a hole of 0.2 mm diameter through the two pre-moulded rings on the pilots foot boards assembly A37.

Drill two pairs of holes of 0.2 mm diameter through the cross member for the aileron control lever on the lower wing B1. The holes should align with the pre-moulded cable guides on the second from rear cross member.

Drill a hole of 0.2 mm diameter vertically through the cross member for the aileron control lever on the lower wing B1. The holes should be drilled in front of the cross member and be aligned with the ends of the foot boards assembly (A37) location slots. The holes are for the aileron control cables to the lower wings.





Assembly:

Cement the two engine bearers (A17) onto their location pegs on the forward inner sides of the cockpit side frames (D5, D6).

Cement the hand grip (A52) to the top of the control column (A49).

Cement the instrument panel (A43) onto the ammunition tank frame (A33).

Cement the two instruments (A2) into their location on the instrument panel.

Cement the instrument (A57) into its location on the instrument panel.

Cement the inner radiator grills (D11) into their recesses in the radiator housings (D12).

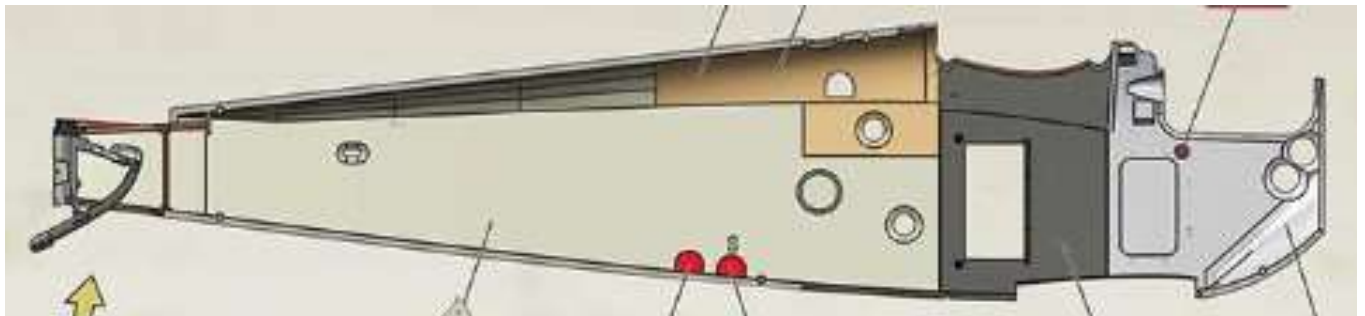
Locate the photo-etch ring sight (P2) in position at the left of the Tachometer on the top, left of the gun support (A36) and secure it in position.

Painting:

NOTE: *Specific parts required for this No.79 Squadron aircraft are listed a 'D' applicable on the kit instructions, pages 3, 5, 6, 7 and 8, which include photo-etch parts. The engine (page 5) has already been built in Part 6 (Engine) of this build log.*

Airbrush all assemblies and parts, including the inner surfaces of the fuselage halves and lower wing cockpit centre section, with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Mask off the Aluminium area of the forward, engine bay section of the fuselage halves.



Mask off the lower wing upper surfaces from the central cockpit floor area.

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

- Forward, engine bay section of the fuselage halves
- Lower wing central cockpit floor area
- Inside of the front cowl (D9)
- Inside of engine top panel (D3)
- Inside of the oil tank panel (A31)
- Constantinesco gear (A29)
- Instrument panel assembly
- Machine guns support cradle (A18)
- Aldis gun sight (D14)
- Throttle lever (A56)
- Hydraulic pump (A58)
- Control column assembly.

Airbrush the following with 'Tamiya' Ocean Grey 2 (XF82) mixed with Rubber Black (XF85) to slightly darken the grey:

- Petrol tank (A20)
- Gravity tank (A28)
- Elevator control levers (A15)
- Gun support (A36)
- Centre section frame (D10)
- Front frame (A35)
- Rudder pedals (A32)
- Outside of the oil tank panel (A31).

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

- Ammunition container (A30)
- Cockpit side frames (D5, D6)
- Tail skid (D13)
- Pilots foot board assembly (A37).

Mask off the instrument panel leaving only the ammunition container assembly exposed.

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

- Forward, engine bay section of the fuselage halves
- Lower wing central cockpit floor area
- Inside of the front cowl (D9)
- Inside of engine top panel (D3)
- Inside of the oil tank panel (A31)
- Instrument panel assembly
- Machine guns support cradle (A18).

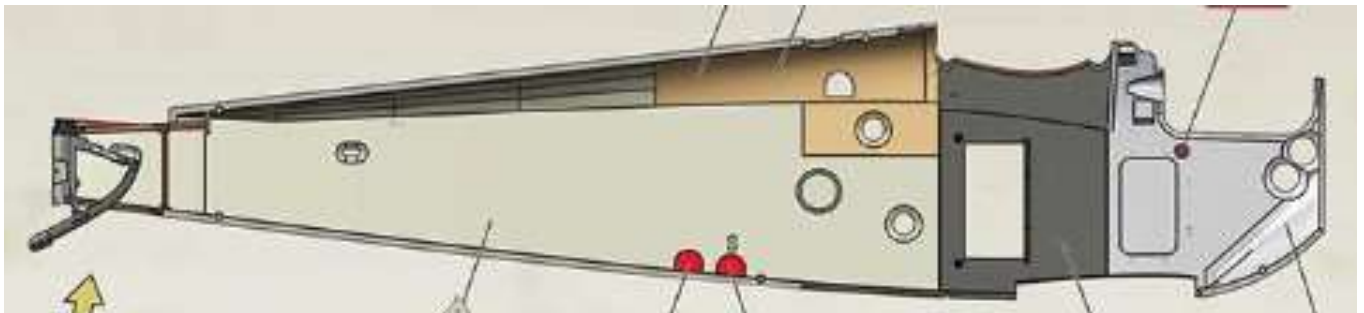
Remove the masking from the fuselage halves, lower wing and instrument panel.

Airbrush the hydraulic pump (A58) with 'Alclad' Pale Gold (ALC108) or similar.

Airbrush the following with 'Alclad' Steel (ALC112) or similar:

- Constantinesco gear (A29)
- Throttle lever (A56).

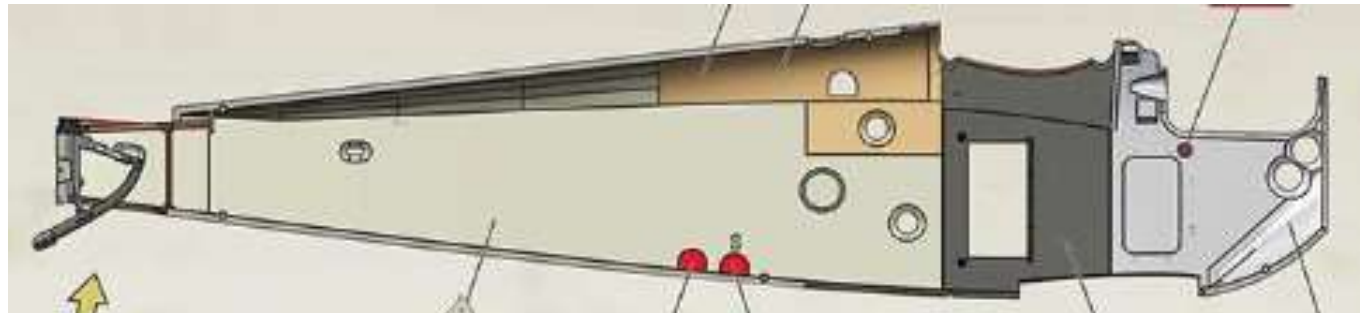
Mask off the Grey cockpit areas of the fuselage halves.



Airbrush the masked off areas with 'Tamiya' Ocean Grey 2 (XF82) mixed with Rubber Black (XF85) to slightly darken the grey.

Remove the masking.

Mask off the light wood areas of the fuselage halves.



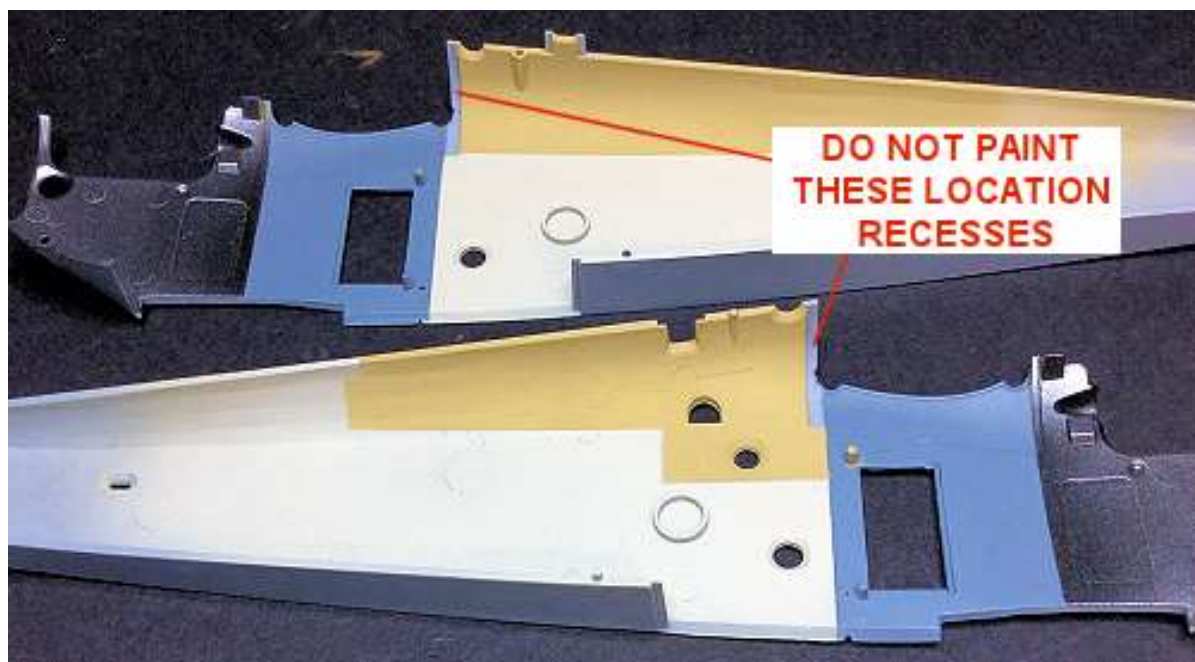
Airbrush the masked off areas with 'Tamiya' Dark Yellow (XF60) or similar.

Remove the masking.

Mask off the Clear Doped Linen (CDL) areas of the fuselage halves.

Airbrush the masked off areas with 'Tamiya' Deck Tan (XF55) or similar.

Remove the masking.



NOTE: The two pipe 'stubs' at the rear of the radiator opening on both fuselage halves are pipes supplying the externally mounted radiators.

Brush paint the two pipe 'stubs' at the rear of the radiator opening on both fuselage halves, with 'Mr. Colour Copper (215) and Iron (212) mixed.

Wood effect - Method 2:

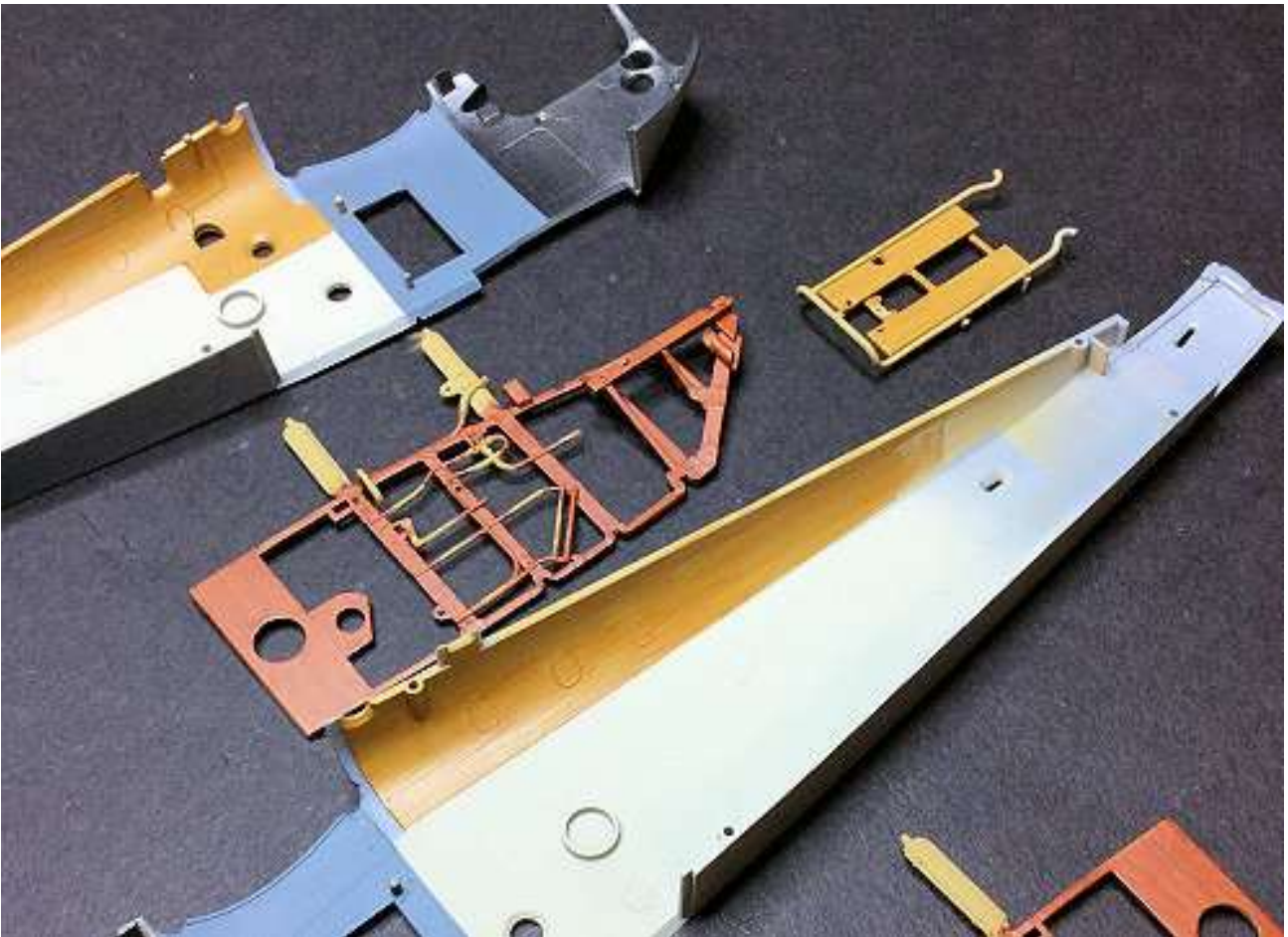
NOTE: Refer to Part 2 (Wood Effects) of this build log for more information.

Dark wood:

Use the chosen method to apply dark wood effect finish to the cockpit side frames (see page 6 of the kit instructions). I used Windsor & Newton' Griffin (Alkyd) **Burnt Sienna** oil paint.

Light wood:

Use the chosen method to apply light wood effect finish to the wood areas on the inner surface of both fuselage halves (see page 8 of the kit instructions), cockpit foot boards (see page 8 of the kit instructions), ammunition container (A30) and the tail skid (D13). I used Windsor & Newton' Griffin (Alkyd) **Raw Sienna** oil paint.



Dry brushing:

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

Petrol tank (A20)

Gravity tank (A28) (only the visible end of the tank, not over the entire panel)

Elevator control levers (A15)

Gun support (A36)

Centre section frame (D10) Front frame (A35)

Rudder pedals (A32).

Aldis gun sight (D14)
Hydraulic pump (A58)
Control column assembly.

Brush paint the following details:

'Tamiya' Hull Red (XF9) - Handles on the throttle lever (A56) and the handle of the hand pump (A58).

'Mr. Colour Brass (219) - Filler cap on the main fuel tank (A20), gravity fuel tank (A28) and the instrument panel details (see page 3 of the kit instructions).

'Tamiya' Semi-Gloss (X18) - Starter magneto below instrument panel and tachometer surround and ring sight (gun support frame A36).

'Tamiya' Buff (XF57) - Control column hand grips (A52).

'AK Interactive' Brown Leather (AK3031) - Rudder pedal (A32) foot straps and centre section frame (D10) rear padded screen.

'Mr. Colour Copper (215) and Iron (212) mixed - Pipe on the lower right and two top, forward pipes on the instrument panel (page 3 of the kit instructions).

'Mr. Colour Stainless Steel (213) - Lens ends of the Aldis gun sight (D14), straps around the main fuel tank (A20) and metal parts of the tail skid (D13).

'Tamiya' Clear Yellow (X24) - Lens ends of the Aldis gun sight (D14).

Right cockpit side frame:

'Tamiya' Ocean Grey 2 (XF82) mixed with Rubber Black (XF85) - Front end cap, frame brackets and seat adjuster mechanism.

'Tamiya' Semi-Gloss (X18) - Airspeed indicator.

'Mr. Colour' Brass (2019) - Hand pump and pipe unions.

'Tamiya' Hull Red (XF9) - Handle of the hand pump and seat adjuster lever.

'Mr. Colour Copper (215) and Iron (212) mixed - All pipes.

Left cockpit side frame:

'Tamiya' Ocean Grey 2 (XF82) mixed with Rubber Black (XF85) - Front end cap, frame brackets and seat adjuster mechanism.

'Mr. Colour' Brass (2019) - Pipe unions and filler cap (lower front of the side frame).

'Mr. Colour Copper (215) and Iron (212) mixed - All pipes.

'Tamiya' Hull Red (XF9) - Handle of the control valve.

Cockpit foot boards assembly:

'Mr. Colour Copper (215) and Iron (212) mixed - All pipes.

'Tamiya' Ocean Grey 2 (XF82) mixed with Semi-Gloss (X18) - Rudder lever.

Lower wing central cockpit floor area:

'Tamiya' Ocean Grey 2 (XF82) mixed with Rubber Black (XF85) - Control rod and lever.

'Tamiya' Ocean Linoleum Deck Brown (XF79) - Cross members.

Removing paint:

NOTE: *Painting the following detail is not really possible. Therefore, scraping off the paint to reveal the lighter coloured styrene underneath is best.*

Using the tip of a curved scalpel blade, carefully scrape off the paint from:

Instrument panel details (White paint on page 3 of the kit instructions).

Pre-moulded crossed bracing wires on the lower wing cockpit centre section (page 8 of the kit instructions).

Tube from the airspeed indicator (page 6 of the kit instructions).

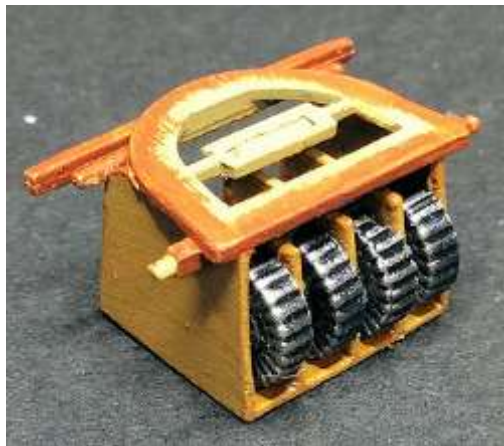
Fuel contents tube (left cockpit side frame - rear tube shown as Brass - page 6 of the kit instructions). To represent fuel in the indicator tube, brush paint 'Tamiya' Clear Yellow (X24) part way up the tube.

Pilots seat:

NOTE: *I managed to lose the kit supplied ammunition container (A30), so had to scratch build it, using 0.5 mm thick plastic card and Lewis machine gun ammunition drums from my 'spares'. I decided to make the container slightly larger to carry four ammunition drums, instead of the three on the kit part.*

Sand away the seat cushion part of the kit supplied seat base (A26).

Created container with seat cushion removed for seat replacement



Seat belts:

NOTE: *The pilots seat belts are photo-etch and will resist being easily formed to shape over the seat. To soften the photo-etch for bending, heat the seat belts over a naked flame, such as that from a cigarette lighter, until the parts change colour to a light grey. Make sure to keep the flame moving otherwise the photo-etch can melt.*

NOTE: *The pilots seat back supplied in the kit (A27) is replaced with a 'BarracudaCast' British wicker seat (BR32234).*

Cut away from its mould base then temporarily position the 'BarracudaCast' seat onto the modified seat base.

Carefully bend to shape the two seat belts over the seat (page 3 of the kit instructions).

Remove the belts from the seat without, as far as possible, altering the shapes achieved.

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

Brush paint the two seat belts with 'Tamiya' Desert Yellow (XF59) or similar.

Brush paint the end of the right seat belt (P5) with 'AK Interactive' Brown Leather (AK3031) or similar.

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

Seat:

Airbrush the modified seat base and the 'BarracudaCast' seat with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Airbrush the seat with 'Tamiya' Desert Yellow (XF59) or similar.

Brush paint the seat cushion 'AK Interactive' British Uniform Shadow (AK3083) or similar.

Decals:

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

Brush a clear gloss coat, such as 'Tamiya' Clear Gloss (X22) or similar, over the areas requiring decals on the instrument panel and the cockpit right side frame (shown on page 5 and 6 of the kit instructions).

Apply the relevant decals to the instrument panel and cockpit right side frame.



Rigging:

NOTE: Refer to Part 5 (Rigging) of this build log for more information.

The following procedure was used for each of the cross bracing wires on the cockpit side frames. The forward bay bracing frames will not be seen on the final model. Therefore these were ignored.

The materials for rigging the streamlined wires are:

'RB Productions' British streamline wire **2BA** (RB-P32014) with 'Albion Alloys' Nickel-Silver **0.4** mm (NST04) diameter tube.

Side frame cross bracing:

Run a drill of 0.5 mm diameter into the pre-drilled holes in the corners of the frame bay to remove any oil paint, paint and primer.

Cut two short lengths of 'Albion Alloys' Nickel-Silver 0.4 mm (NST04) diameter tube.

Cut a length of 'RB Productions' British streamline wire 2BA (RB-P32014) long enough the span across the corners of the frame.

Secure a tube onto one end of the wire, using thin CA adhesive.

Slide the second tube onto the wire.

Pass the wire with its tubes through one of the pre-drilled holes.

Pass the free end of the wire diagonally across and into its pre-drilled hole.

Make sure the fixed tube does not protrude outside the frame.

Make sure the wire is turned so that the wider face of the wire is facing inwards towards the Cockpit.

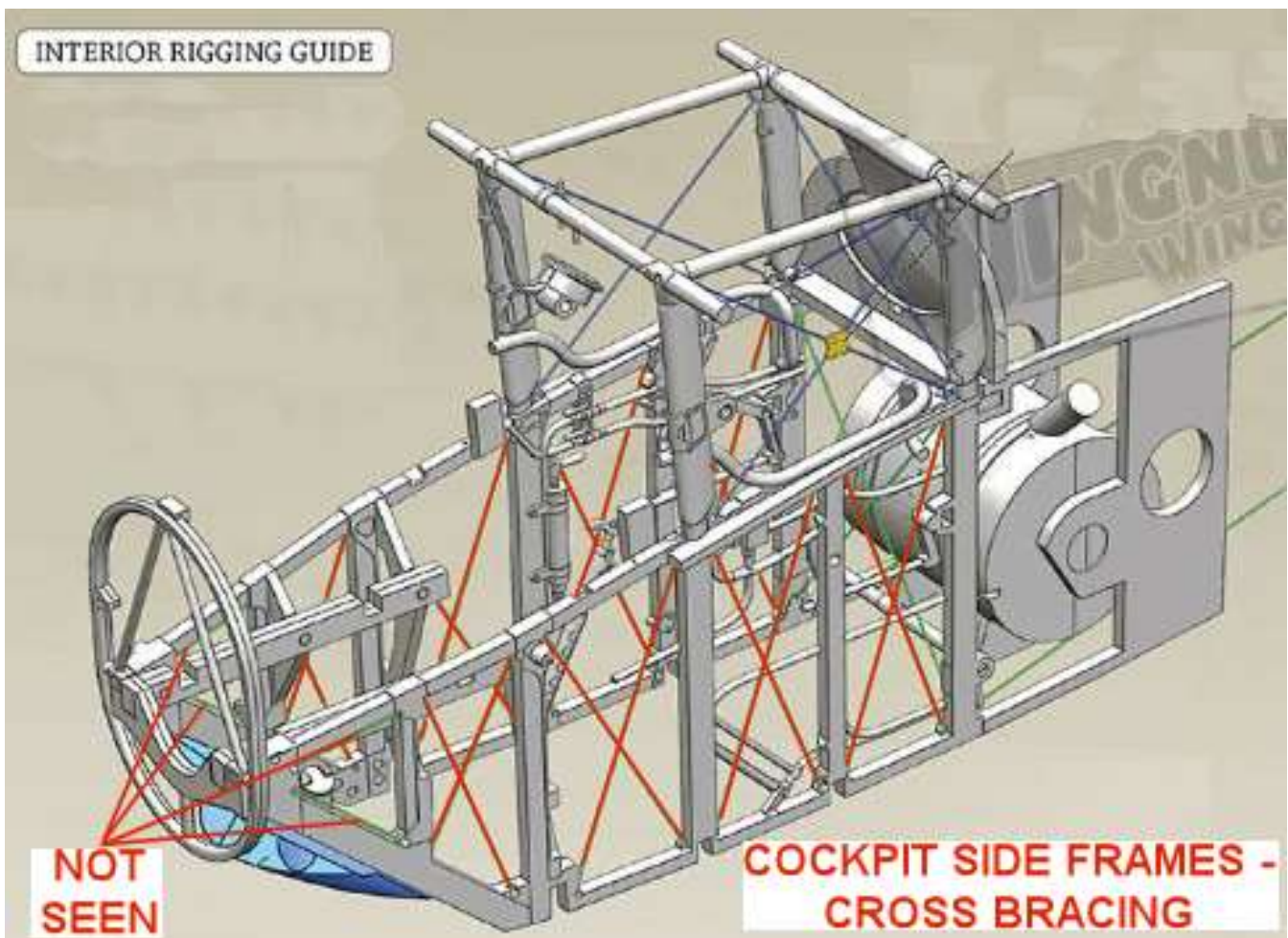
Using thin CA adhesive, secure the fixed tube into its pre-drilled hole.

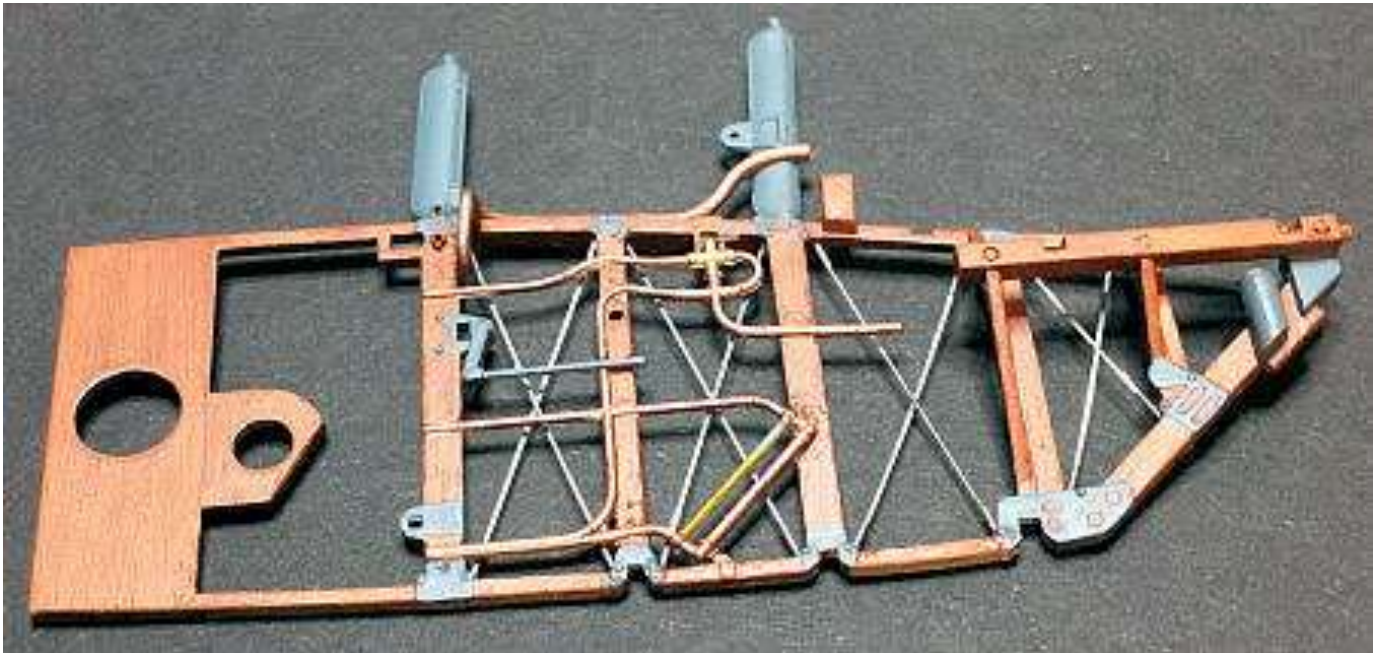
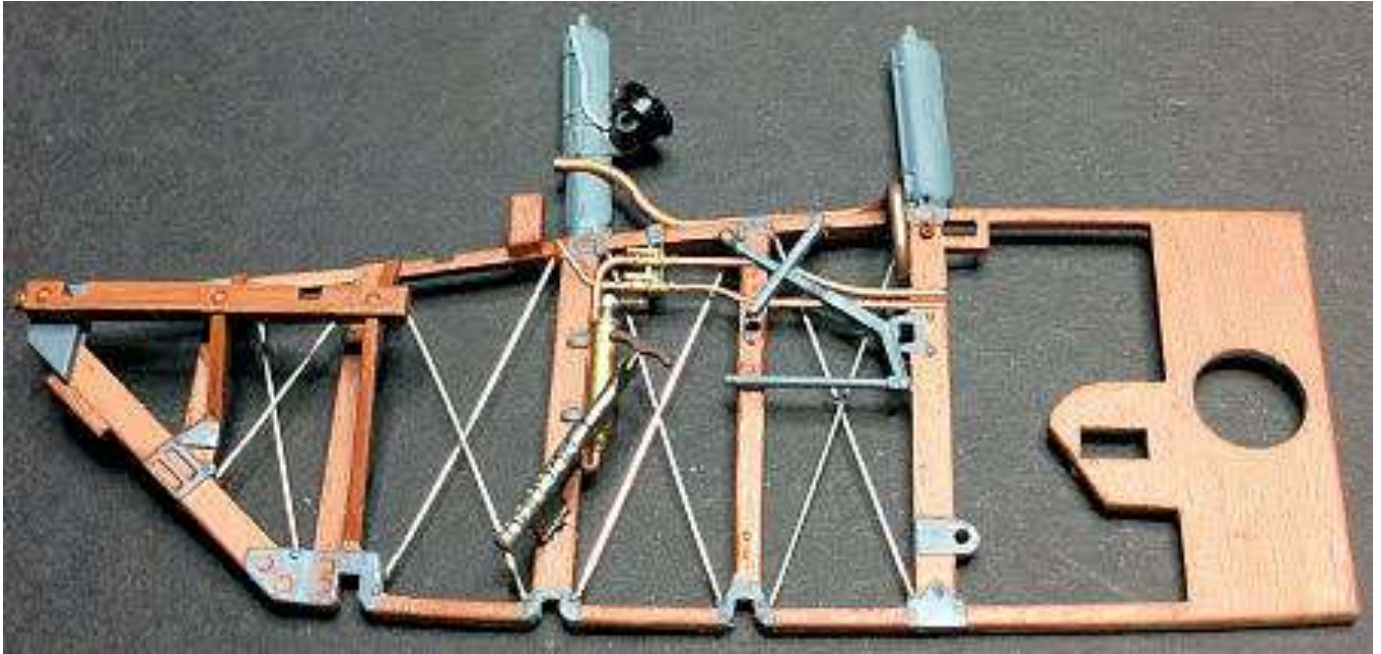
Make sure the free tube on the wire is fully located into its pre-drilled hole and that the wire is straight and without any bowing.

NOTE: *During the following step, do not secure the wire in the tube. It should be free to move within the tube.*

Using thin CA adhesive, secure the free tube into its pre-drilled hole.

NOTE: *The fuselage cabane strut and rear frame bracing will be added later in this build.*





NOTE: Refer to Part 5 (Rigging) of this build log for more information.

The materials for rigging control cables are 'Albion Alloy's' **0.4** mm diameter Nickel-Silver tube (NST04) and 'Steelon' or 'Stroft' **0.08** mm diameter mono-filament.

Tail skid control cables:

Tail skid:

NOTE: The following procedure applies to fitting both of the tail skid control cables.

Drill a hole of 0.2 mm diameter through the end of the two control levers on the tail skid D13.

Cut a short length of 'Albion Alloys' Nickel-Silver 0.4 mm (NST04) diameter tube.

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

Pass the tube onto the line.

Pass the line through the pre-drilled hole in the control lever on the tail skid.

Loop the line back and through the tube.

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

Using thin CA adhesive, secure the line in the tube.

Cut away any residual tag of line at the tube end, leaving the fitted line free to move on the lever.

Rudder bar:

NOTE: *The following procedure applies to fitting both of the tail skid control cables.*

Run a drill of 0.2 mm diameter through the two pre-moulded rings on the pilots foot boards assembly A37, to remove any oil paint, paint and primer.

Cut a short length of 'Albion Alloys' Nickel-Silver 0.4 mm (NST04) diameter tube.

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

Pass the tube onto the line.

Pass the line through the pre-drilled hole in the pre-mould ring on part A37.

Loop the line back and through the tube.

Slide the up to, **but not touching**, the ring.

Using thin CA adhesive, secure the line in the tube.

Cut away any residual tag of line at the tube end, leaving the fitted line free to move in the ring.



Rudder control cables:

NOTE: *The attachment of the rudder control lines to the at the cross member will not be seen as they will be hidden by the pilots foot boards (A37). Therefore, fitting of tubes is not necessary.*

Cut four long lengths of 0.08 mm diameter mono-filament.

Pass the lines through the pre-drilled holes in the lower wing cross member.

Using thin CA adhesive, secure the line in the cross member.

Pass each line rearwards and between its locating stubs on the cockpit floor.

Pull the end of each line taut.

Using thin CA adhesive, secure each line onto the top of the rear edge of the cockpit floor.

Cut away any residual tags of line at the cross member and rear edge of the cockpit floor.

Aileron control cables:

Run a drill of 0.2 mm diameter through the pre-drilled hole in the end of the aileron control lever and vertically through the holes in the cross member for the aileron control lever on the lower wing B1, to remove any oil paint, paint and primer.

Cut two short lengths of 'Albion Alloys' Nickel-Silver 0.4 mm (NST04) diameter tube.

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

Pass the line through the pre-drilled hole in the aileron control lever.

Pass a tube onto both ends of the line.

Pass the free ends of the line across and down through the pre-drilled hole in the lower wing cross member.

NOTE: *During the next step, keep the two tubes away from the adhesive.*

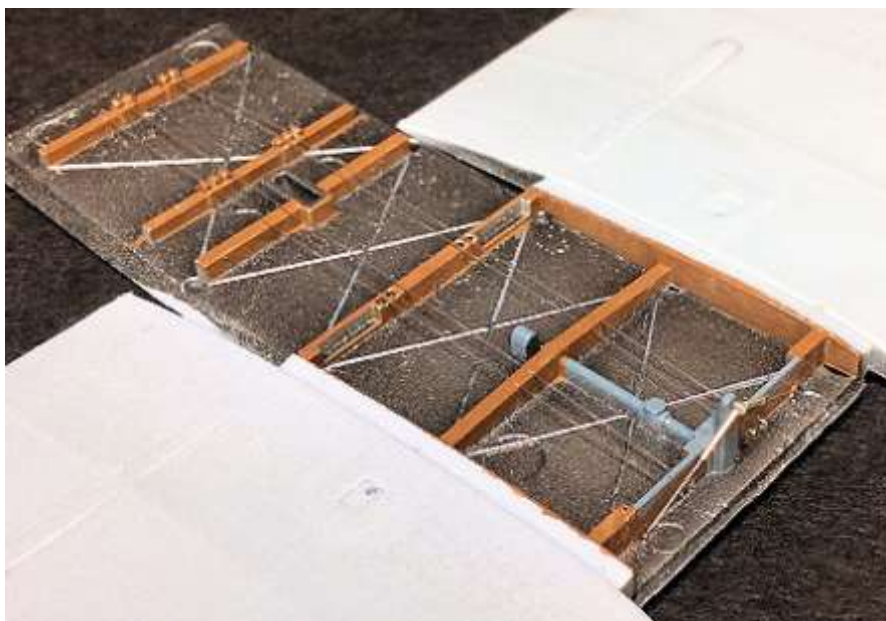
From the underside of the lower wing, pull the ends of the line taut.

Using thin CA adhesive, secure the lines into the lower wing holes.

Slide the two tubes up to the aileron control lever.

Using thin CA adhesive, secure the tubes to the line.

Cut away any residual tag of line at the underside of the lower wing.



Elevator control cables:

NOTE: *The following procedure applies to fitting the four elevator control cables. Tubes are not used as they will contact the front of the main fuel tank when fitted.*

Run a drill of 0.2 mm diameter through a pre-drilled hole in the end of an elevator control lever on part A15, to remove any oil paint, paint and primer.

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

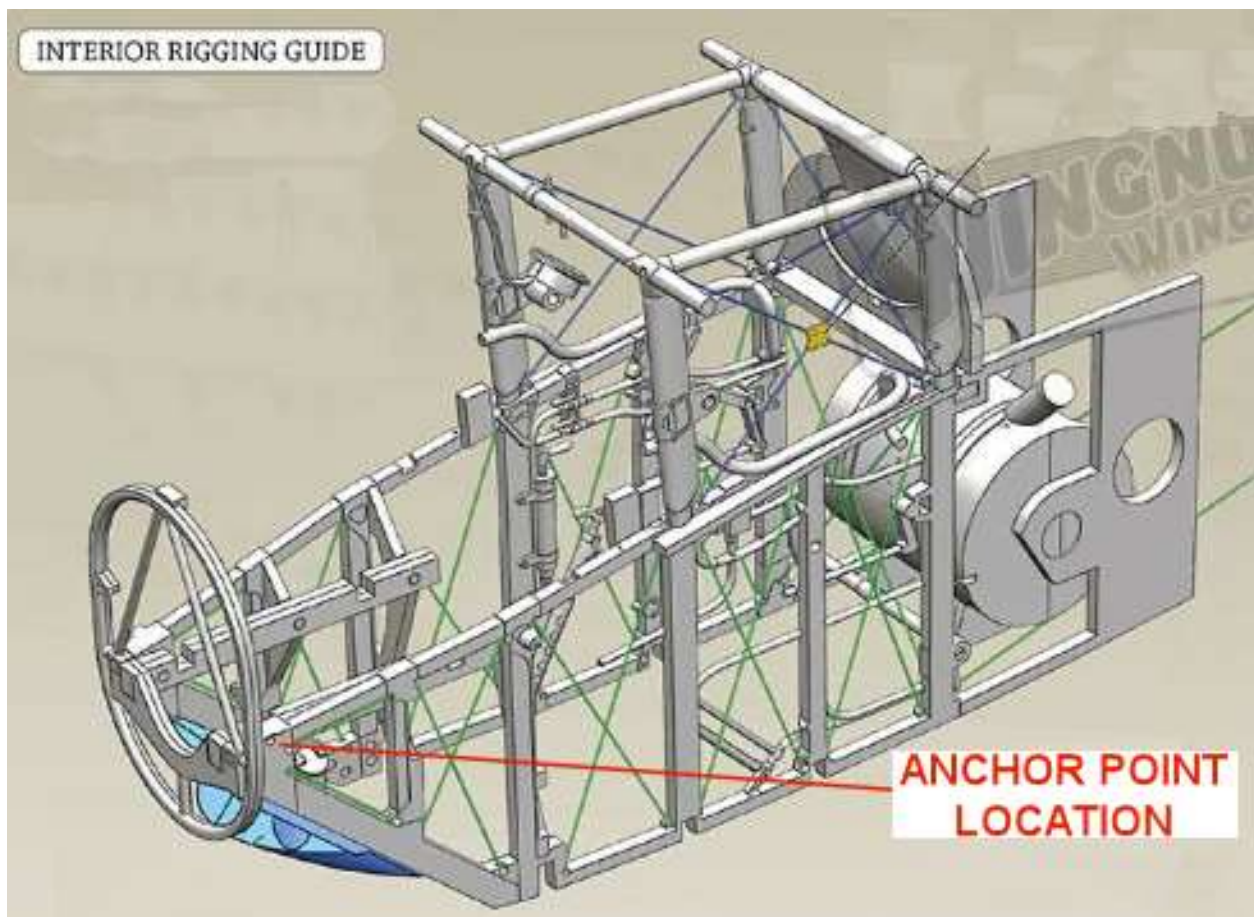
Pass the line through the pre-drilled hole in the end of the elevator control lever.

Using thin CA adhesive, secure the line in the tube.

Cut away any residual tag of line at the tube end, leaving the fitted line free to move on the lever.

Drag wire anchor points:

NOTE: *'Gaspach' 1/48th scale Anchor Points are added to the cockpit side frames so that the drag wires can be fitted later in this build. Refer to Part 5 (Rigging) of this build log for more Information.*



Remove two 'Gaspach' 1/48th scale Anchor Points from the supplied sintered metal or the resin casting.

Make sure the 'eye' ends of the Anchor Points are clear to allow 0.12 mm diameter mono-filament to pass through.

Using the pre-moulded guides, drill a hole of 0.3 mm diameter into the front, top outer side of the two cockpit side frames.

Using thin CA adhesive, secure an Anchor Point into the pre-drilled hole on both cockpit side frames.

Weathering:

Airbrush the following parts with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar:

- Inside of the fuselage halves D4, D7
- Pilots foot boards A37
- Cockpit floor on the lower wing B1
- Pipes and cabane struts on the cockpit side frames D5, D6
- Main and gravity fuel tanks A20, A28
- Lewis ammunition container A30
- Ammunition containers on the instrument panel A34
- Gun support A18
- Gun support frame S36
- Centre section frame D10
- Constantinesco gear A29
- Fuselage front frame A35
- Control column hand grip (A52)
- Inside front cowl D9
- Oil tank panel A3
- Top panel D3
- Pilots seat/belts and ammunition container assembly.

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

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

Instrument glass:

To represent the glass of the instruments, brush a clear gloss coat, such as 'Tamiya' Clear Gloss (X22) or similar, over the applied instrument decals on the instrument panel and the cockpit right side frame (shown on page 5 and 6 of the kit instructions).

Assembly (continued):

Clear any primer, paint and oil paints from all of the location holes, pegs, openings and mating surfaces for all of the fuselage parts.

Fully locate all parts into their locations, making sure they fully locate, including when the two fuselage halves are joined together. All parts should fully locate without any resistance or gaps obvious.

Using CA adhesive, secure the pilots seat onto the Lewis gun ammunition container.

Using thin CA adhesive, secure the seat cushion onto the seat.

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

Cement the hand pump (A58) into its location holes on the cockpit right side frame.

Cement the Vickers machine gun support (A18) onto the top of the ammunition container (A43).

Cement the throttle lever (A56) onto its location on the gun support (A18).

Cement the gun support frame (A36) into its locations on the forward face of the ammunition container (A33).

Cement the tail skid D13 into its locating recesses in the rear of the left fuselage half.

Using thin CA adhesive, secure the two tail skid control lines onto the inside, bottom of the left fuselage half and close to the edge.

Cement the main fuel tank (A20) into its rectangular location on the right cockpit side frame.

Cement the elevator control lever (A15) into its location hole in the right cockpit side frame.

Cement the base (A27) of the pilots seat assembly into its location holes in the right cockpit side frame.

Cement the gravity tank panel (A28) into its rectangular location in the right cockpit side frame.

Cement the cockpit left side frame onto the locators of the parts fitted onto the right cockpit side frame.

NOTE: *During the next step, make sure there is no cement on the outer surfaces of the cockpit side frames that can come into contact with the inside surfaces of the fuselage halves, otherwise the frames may be cemented in place, which is not required at this stage.*

Align the cockpit left frame to its ring locator on the left fuselage half then fully join the fuselage halves together, making sure there is no restrictions stopping the halves fully mating together.

Leave the assembly together until the cemented parts on the cockpit frame have fully set.

Gently separate the two fuselage halves and remove the cockpit frame assembly.

NOTE: *The instrument panel/ammunition container has six location points to fit it onto the cockpit frame assembly in front of the fuselage forward cabane struts:*

The two vertical side frame locators fit into slots on the underside of the ammunition Container (A33).

The ends of the cross bar on the rear of the gun mounting (A18) fit into holes in the fuselage front cabane struts.

The forward legs of the gun support frame (A36) locate into recesses in the top of the cockpit side frames.

Cement the instrument panel/ammunition container assembly fully in position on the cockpit side frames.

NOTE: *The magnetos on the rear of the engine assembly are a tight fit through the cockpit side frames. The engine may need to be carefully manoeuvred into position. The engine locates onto the engine bearers (A17) with four locating lugs into recesses in the bearers.*

Cement the engine assembly fully in position onto the two engine bearers, making sure the engine is fully seated. If the front of the cockpit side frames are not fully in contact with the front of the engine bearers, it may be necessary to clamp them together until the cement has set.

Cement the oil tank panel (A31) onto its locating points on the forward, underside of the cockpit side frames.

Cement the pilots foot boards (A37) onto its four locations recesses on the centre section of the lower wing, making sure the two tail skid control lines are routed rearwards to the rear edge of the centre section.

Secure the two tail skid control lines to the rear edge of the centre section, using thin CA adhesive.

Cut away the residual lines at the rear edge of the centre section.

Cement the rudder bar (A32) into its three locations on the floor boards and rudder bar centre section.

Cement the control column (A49) into its two locations on the centre section.

Using thin CA adhesive, secure two lengths of 0.2 mm diameter lead wire ('PlusModels or similar) from the triggers and down the control column then under the floor boards.

Cement the grills (D11) for the two fuselage side radiators into their recesses on the inside of the radiator bodies (D12). Make sure the grills are flush with the radiator to fuselage mating faces. If necessary, file or sand to achieve a flush fit to the fuselage.

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

Brush paint the inner surfaces of the two radiator assemblies with 'Mr. Colour' Stainless Steel (213) or similar.

Cement the two radiator assemblies onto their locations on the sides of the fuselage.

Temporarily locate the cockpit assembly between the fuselage halves, making sure it locates fully when the two fuselage halves are joined together. All parts should fully locate without any resistance or gaps obvious. Use masking tape to hold the fuselage halves together.

NOTE: *To ensure a better fit to the fuselage, I chose to fit the front frame to the front cowl first. The kit instructions on page 7 show the Constantinesco gear (A29) fitted after the front frame and before the front cowl are fitted. However, it can be fitted when the front cowl and the front frame assembly is fitted to the fuselage.*

Dry fit the front frame (A35) into its recess in the front cowl (D9).

Test fit the front cowl assembly onto the front of the fuselage, making sure it locates fully with no gaps at the fuselage front.

If necessary, scrape away any styrene to achieve a fully fit against the front of the fuselage.

Remove the cowl assembly and cement the front frame inside the front cowl.

Recheck the fit to the fuselage.

Remove the masking tape and separate the fuselage halves to release the cockpit assembly.

Rigging (continued):

NOTE: *Refer to Part 5 (Rigging) of this build log for more information.*

Cockpit rear frame:

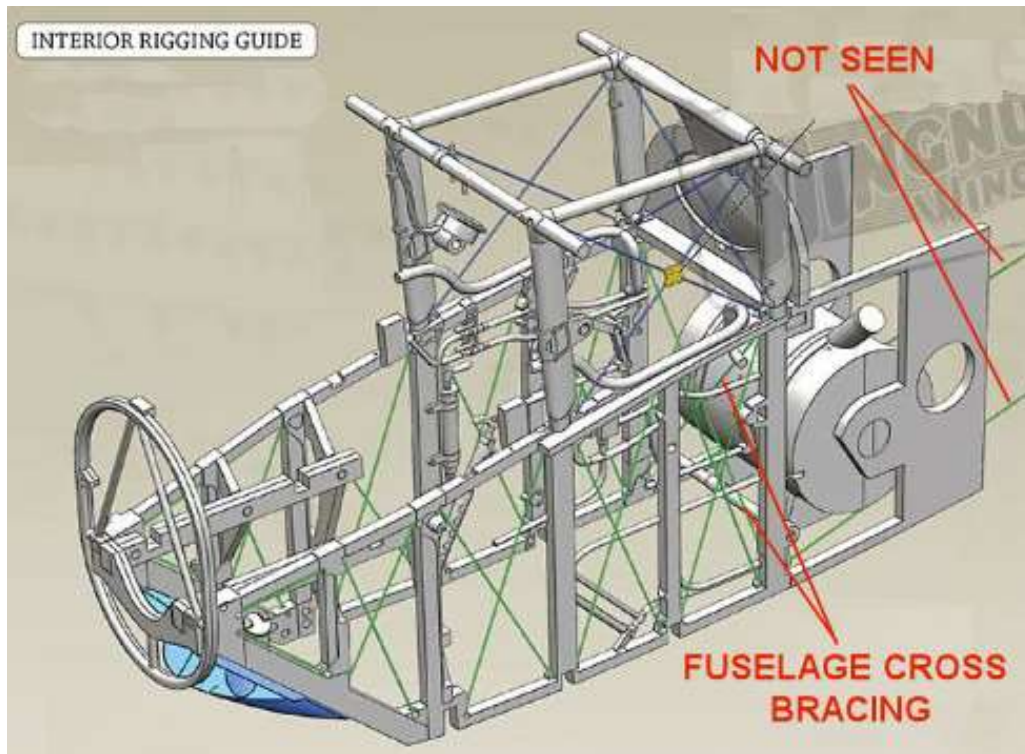
The materials for rigging the streamlined wires is the 'RB Productions' British streamline wire **2BA** (RB-P32014).

Cut two long lengths of the **2BA** (RB-P32014) streamlined wire.

NOTE: *During the next step, the wires should be cut such that when slightly bowed, they fit into their location holes when the wire should straighten.*

Trim the length of each wire until they will locate into their pre-drilled holes on the underside of the gravity tank cross member and at the bottom, inner face of the rear cockpit side frame struts.

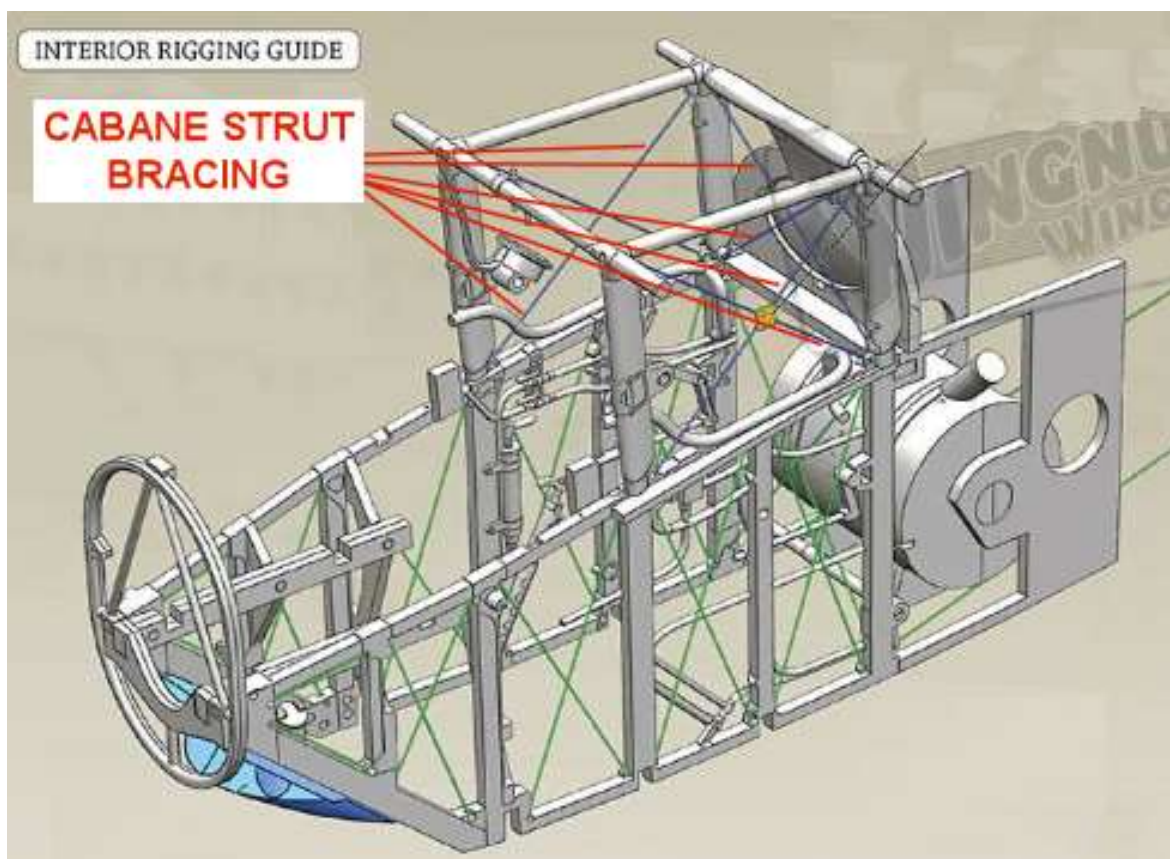
Using CA adhesive, secure the two diagonally crossed streamlined wires into their pre-drilled location holes.



Fuselage cabane struts:

The following procedure was used for each of the cross bracing wires on the fuselage cabane struts.

The materials for rigging the streamlined wires are 'RB Productions' British streamline wire **1/4 BSF** (RB-P32012) with 'Albion Alloys' Nickel-Silver **0.5 mm** (NST05) diameter tube.



Make sure the pre-drilled rigging holes in the fuselage cabane struts and the top frame (D10) are clear of any primer and paint. The holes were drilled using a 0.5 mm diameter drill.

Cement the top frame onto its locating pegs on the top of the four cabane struts. The tab at the bottom of the rear screen locates in its opening in the gravity tank panel.

Cut four long lengths of the **1/4 BSF** (RB-P32012) streamlined wire.

Cut eight short lengths of 0.5 mm diameter Nickel-Silver tube, such as 'Albion Alloys' Nickel-Silver (NST05) or similar.

NOTE: *The following steps apply to all four of the side bracing wires.*

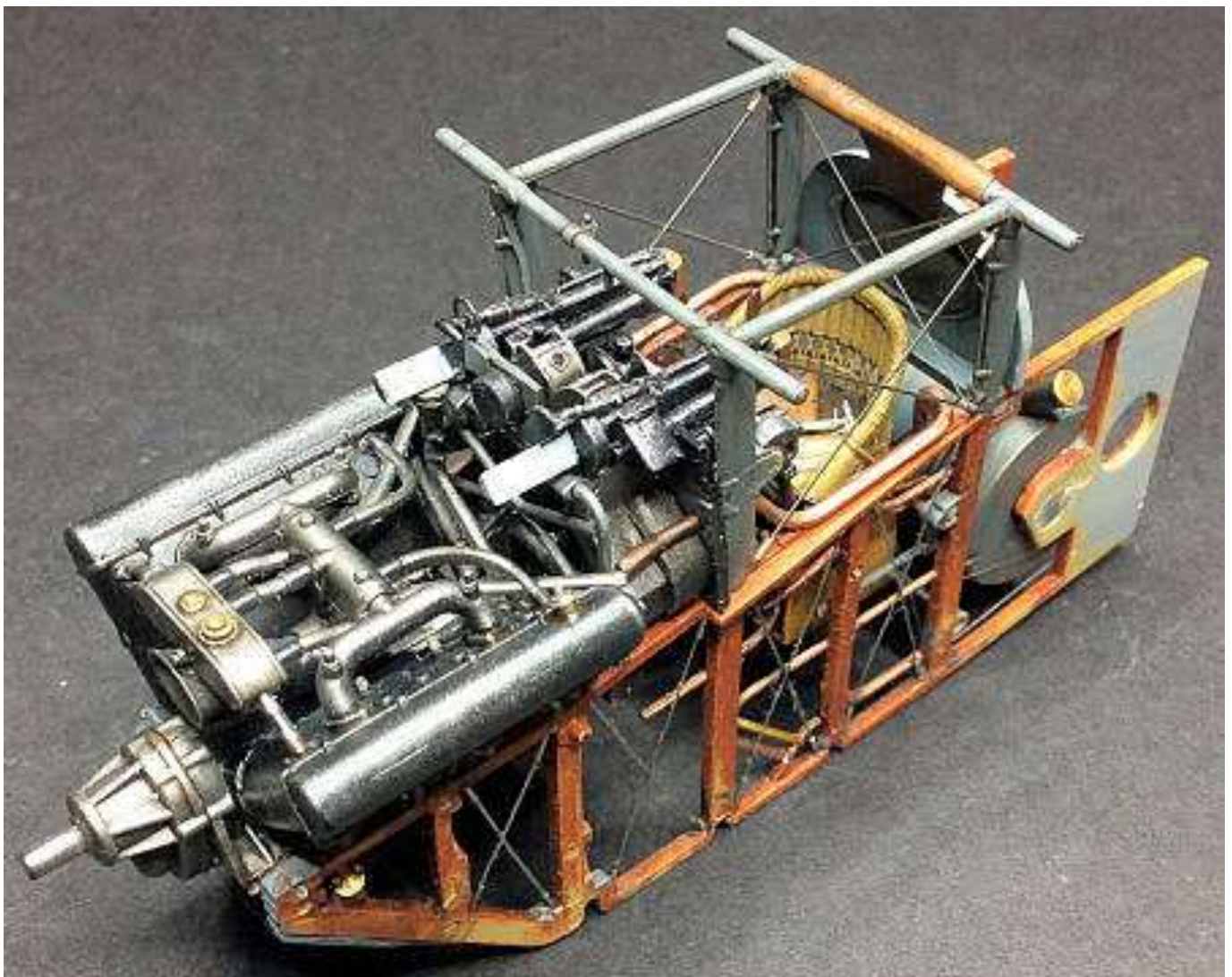
Bend one end of each wire to 90 degrees and just long enough to be inserted into the pre-drilled hole in the cabane strut, without protruding from the other side of the strut.

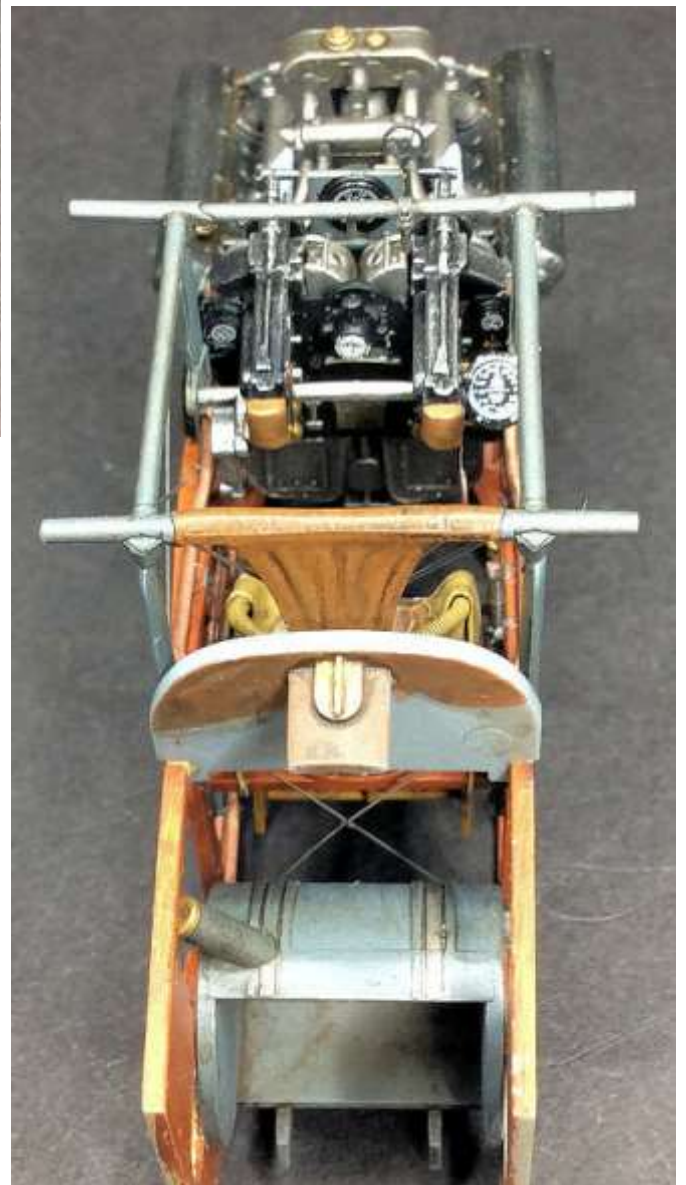
Slide two of the cut tubes onto the wire.

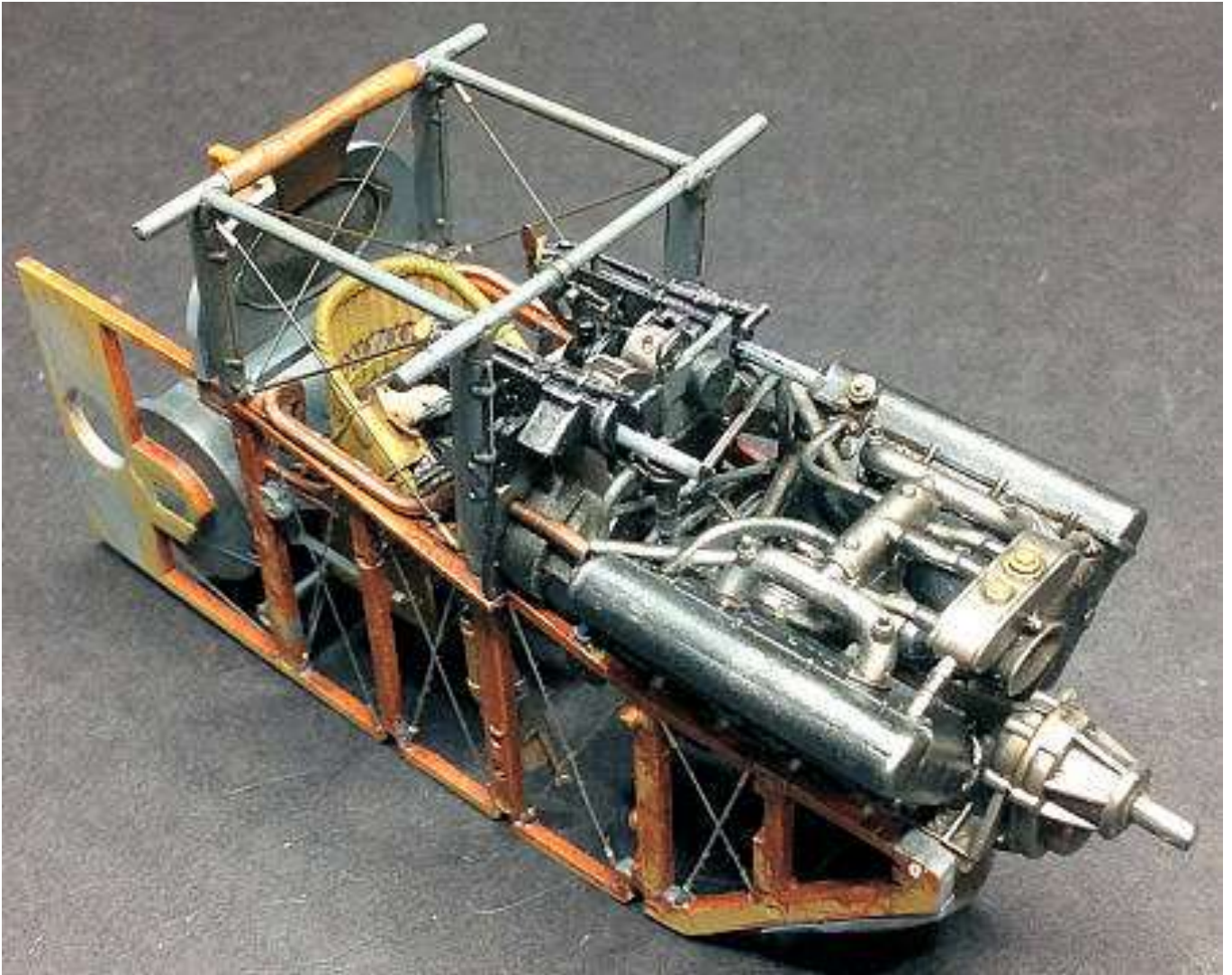
Trim the length of each wire allowing for a 90 degree bend in the opposite end of the wire, such that it can be inserted into the diagonally opposite hole in that cabane strut and without any bow in the wire.

Keeping the two tubes clear of the cabane struts, use thin CA adhesive to secure the wire bent ends into their holes in the cabane struts.

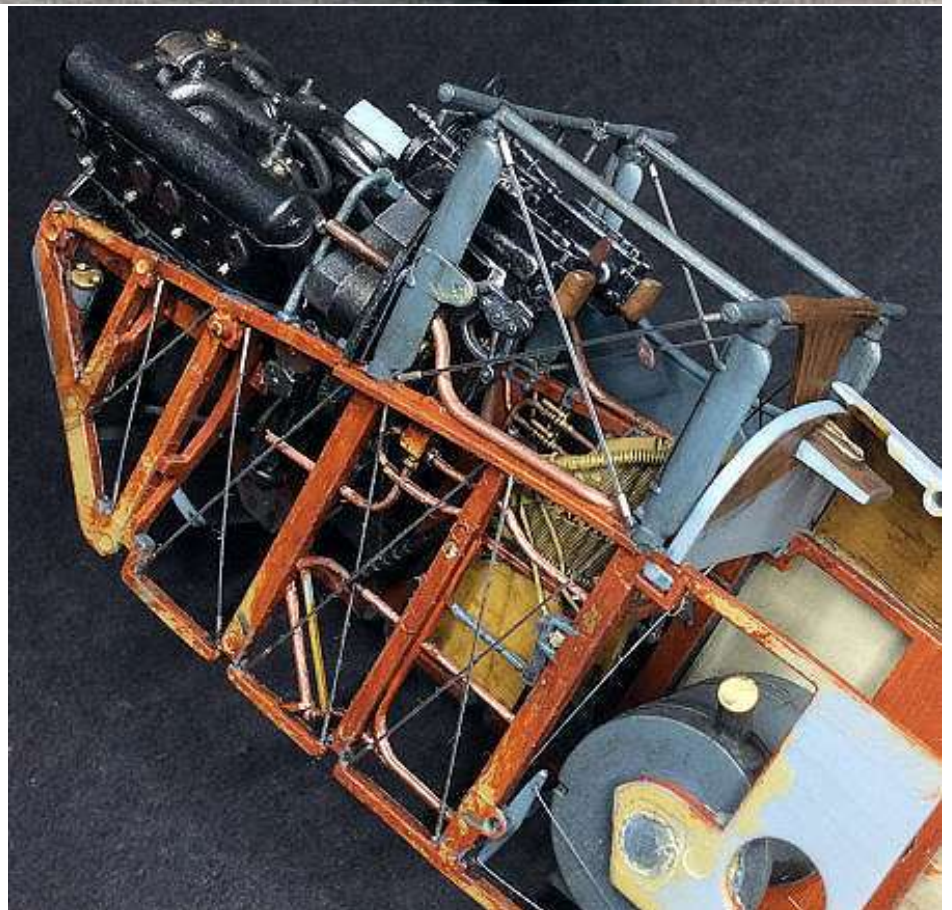
Slide the tubes to their cabane struts and secure in position using thin CA adhesive.

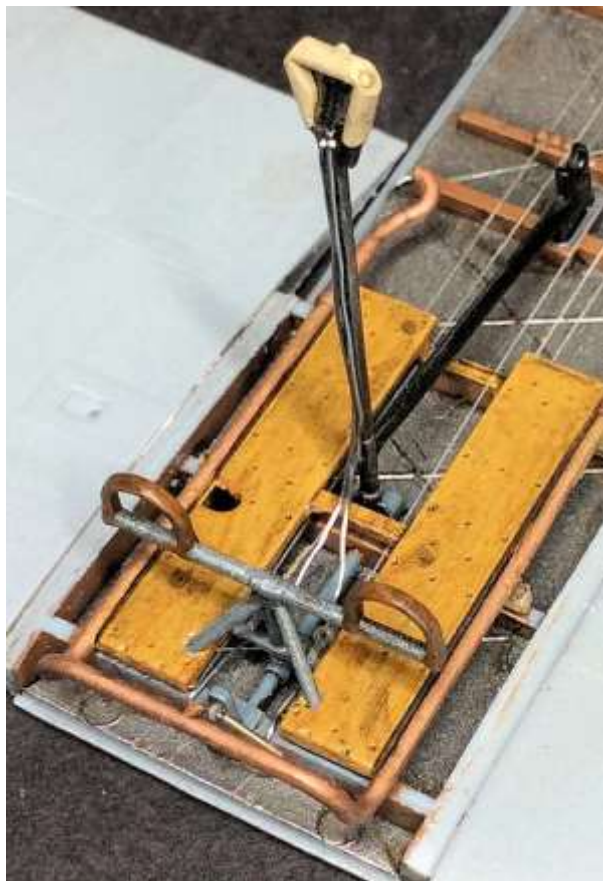






Cockpit assembly test fitted into the right fuselage half.





Painting (continued):

Mask off the internally painted surfaces of the two fuselage halves, to protect from overspray.

Mask off the forward, grey coloured area of the two fuselage halves.

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

Forward, grey coloured area of the two fuselage halves

Outside of the front cowl (D9)

Outside of the top shield panel (D3).

Airbrush the above surfaces with 'Tamiya' Ocean Grey 2 (XF82) mixed with Rubber Black (XF85) to slightly darken the grey.

Remove all masking from the fuselage halves.



Assembly (continued):

Final check the fit of the cockpit assembly inside the closed fuselage halves to make sure it all locates fully without and restrictions.

Make sure all of the mating surfaces of the fuselage, outer edges of the cockpit assembly and top edge of the gravity fuel tank panel are clear of primer, paint or oil paint.

NOTE: *For additional bonding strength, I use 'Revell' Contacta Professional cement (39604) to join the fuselage parts.*

Apply cement to the outer right side edges of the cockpit assembly and the right top edge of the gravity tank panel then secure the assembly into the right fuselage half.

Apply cement to the outer left side edges of the cockpit assembly and the left top edge of the gravity tank panel then secure the left fuselage half to the right fuselage half, making sure the fuselage and cockpit assembly fully locate to each other.

Insert the Constantinesco gear (A29) into the front cowl (D9A35) assembly.

Position the front cowl with the Constantinesco gear located onto the engine propeller shaft.

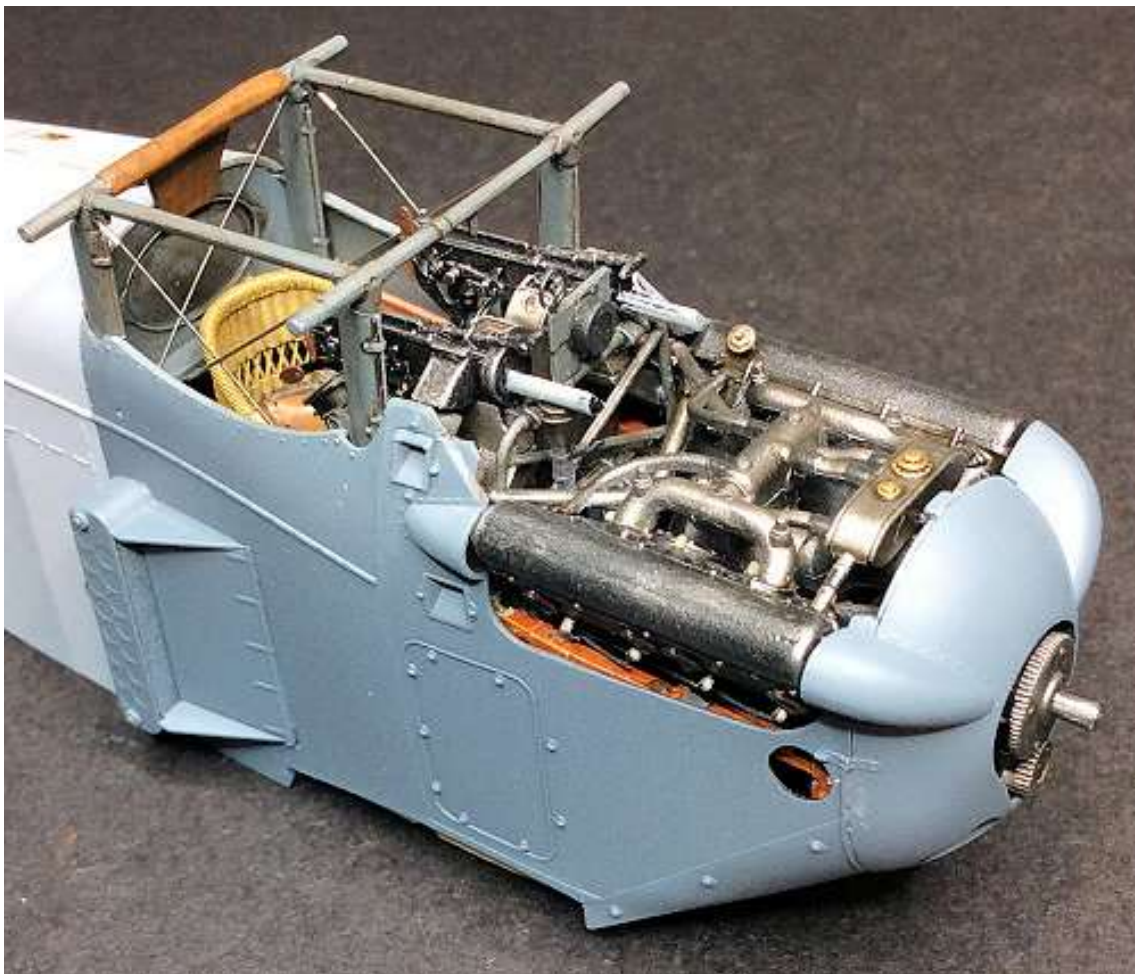
Hold the front cowl against the front of the fuselage with the fairings at the top aligned with the engine valve gear covers.

Apply liquid cement around the joint to secure the front cowl to the fuselage.

Cement the Constantinesco gear onto the engine propeller shaft.

Sand the fuselage joint seam to blend it with the surrounding surfaces.

The photograph shows the breech blocks for the Vickers machine guns test fitted only.



NOTE: I found that the fitting of the top shield panel (D3) onto the fuselage assembly to be problematic for the following reasons:

The engine was sat slightly too high in the fuselage, despite being apparently correctly and fully positioned within the cockpit assembly. As such the top shield panel would not seat down fully and correctly over the engine, as it was in contact with the engine, particularly the coolant tank.

The two slots in the top shield panel are not wide enough to allow the barrels of the two Vickers machine gun to fit through and locate onto their locating stems on the gun breech blocks.

As such **I chose to not fit the top shield panel**, which would also allow the engine detail to be visible. The separate top shield panel was removed from the aircraft in one piece with the windscreen attached. The Aldis gunsight could be left attached to the top cabane strut frame or if necessary, removed.

Cement the two Vickers machine gun assemblies onto the gun support (A18).

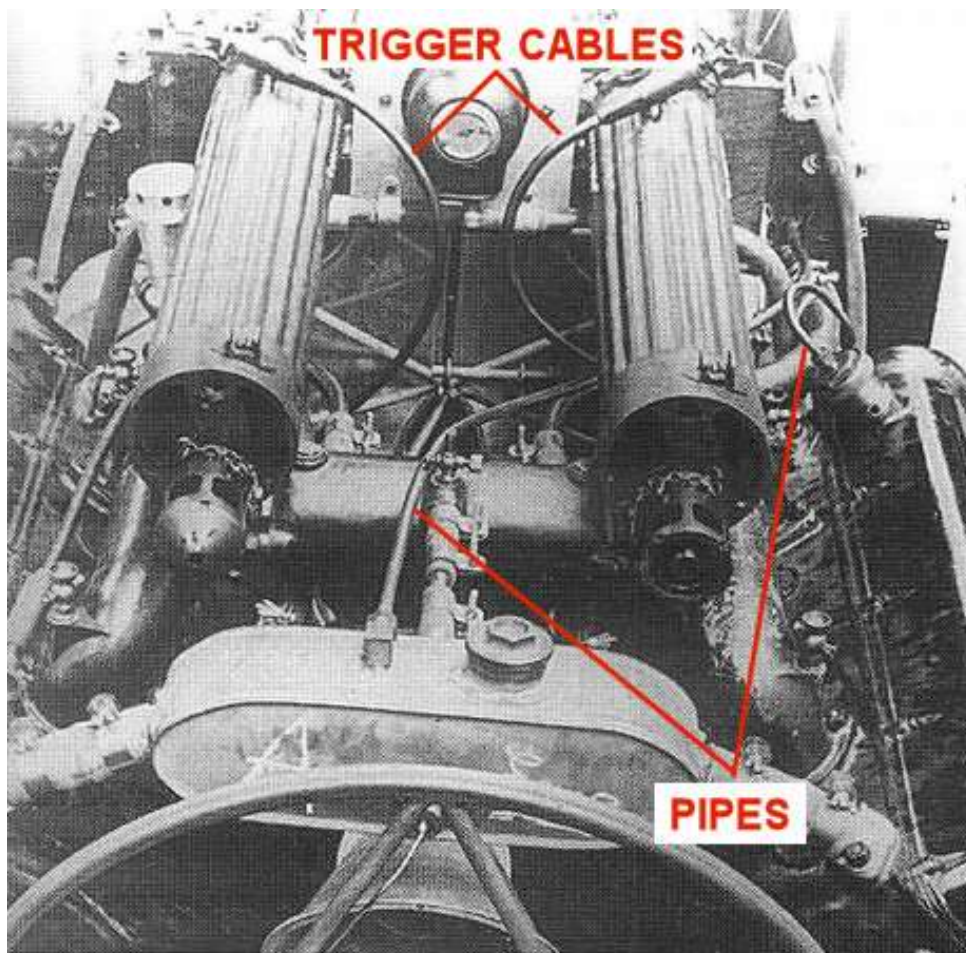
Additional engine detail:

NOTE: With the engine exposed, extra detail can be added to enhance the engine. The only visible details worth adding are:

The two trigger cables attached to the Vickers machine guns.

The extra pipe attached to the coolant tank.

The vent pipe attached to the breather on the rear of the engine left valve gear cover.



Trigger cables:

Cut two long lengths of 'MFH' Black tube (P-961).

Using thin CA adhesive, secure a tube onto the end of the pre-moulded gun trigger mechanism on the rear of the gun barrels.

Loop the tubes under their gun barrels and into the sides of the ammunition container on the rear of the instrument panel.

Using thin CA adhesive, secure the tubes in position.

Coolant tank pipe:

Drill a hole of 0.3 mm diameter into the top of the coolant tank cap.

Cut a long length of 0.3 mm diameter Nickel-Silver tube, such as 'Albion Alloy's' (NST03) or similar.

Bend one end of the tube to a short 90 degree bend.

Bend the pipe such that when the bent end is inserted into the pre-drilled hole, the pipe curves under the barrel of the left machine gun then into the fuselage fairing at the rear of the engine left valve gear cover.

Locate the pipe in position and using thin CA adhesive, secure the pipe in the filler cap, onto the top of the intake manifold cross tube and into the fuselage fairing.

Vent pipe:

Cut a length of 0.2 mm diameter Nickel-Silver rod, such as 'Albion Alloy's' (NSR02) or similar.

Bend one end of the rod into a small and short loop.

Drill a hole of 0.3 mm diameter into the top of the vent cap on the rear of the engine left valve gear cover.

Insert the bent end of the rod into the pre-drilled hole in the vent cap, with the remaining length of the rod located down and behind the engine left cylinder bank.

Using thin CA adhesive, secure the rod in position.



PART 10

CONSTRUCTION

PART 10 - CONSTRUCTION

NOTE: *The kit supplies parts that will not be required for this particular model build, including parts that will be replaced. These parts are:*

Sprue A - 6 (x1), 14 (x2), 19 (x2), 40, 48 and 53.

Sprue C - 1, 2, 4 and 5.

The 'Wingnut Wings' instruction manual is reference throughout this build. When removing any kit parts from their sprues, always remove any residual sprue tags and mould seams. Take care when removing the smaller or more fragile parts from their sprues. Too much cutting pressure or cutting too close to the part can cause deformation, breakage or stress marks in the parts.

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.

Throughout this build, the parts used and the detail information in the instructions are for colour profile 'D' (No.79 Squadron).

Refer to Part 4 (Rigging) of this build log for more information.

Preparation:

General:

Cement the landing gear struts (A4, A5) onto the axle (A16).

Lightly sand the outer edge of the two wheel covers ((A24, A25) to fit into their recesses in the wheels (A23).

Sand the edges of the tailplane (D2), ailerons (B4, B5, B6 and B7), upper wing halves (B2, B3) and the rudder/fin (D1).

If necessary, sand the edges of the interplane struts (A10, A11 x2, A12, A13 x2 and A39 x2).

As the interplane struts are made with 'hoops' for use with non-streamlined wires, the 'hoops' need to be removed from each end of the eight struts.

If necessary, sand the edges of the control horns:

Elevator (A8 x4), rudder (A51) and the ailerons (A3 x2 and A7 x2).

Using as a guide the pre-moulded 'dimple' in the fuselage sides above the side radiators, drill holes of 0.3 mm diameter into the fuselage sides and vertically aligned into the top of the side radiators (for fitting pipes later in this build).

Control surface animation:

NOTE: *The ailerons and elevators can, if desired, be animated to positions instead of being left attached and inline with the wings and tailplanes. If not desired they should be left as supplied on the kit parts. **The following procedure applies to all four ailerons.***

To animate the ailerons proceed as follows:

Point mark the leading edge of the relative aileron for its location on the upper or lower wing. The point marks should be central in the leading edge of the aileron and above the second pre-moulded 'hinges' from the inner end and outer tip of the aileron.

Point mark the trailing edge of the upper or lower wing aileron location. The point marks should be central in the trailing edge of the wing trailing edge and above the second pre-moulded 'hinge' recesses from the inner end and outer tip of the wing.

Using the point marks as guides, drill holes of 0.5 mm diameter into the wings and ailerons, making sure the holes are drilled straight and not angled.

File or scrape a slight curve along the top leading edges of the four ailerons to remove the square edges (as for actual ailerons).

Cut eight short lengths of 0.5 mm diameter Brass rod, such as 'Albion Alloy's' MBR05 or similar.

Using CA adhesive, secure a rod fully into each of the pre-drilled holes in the upper and lower wings.

Test fit each aileron onto its locating rods and if necessary, trim the ends of the exposed rods until the aileron locates fully against the trailing edges of the upper or lower wings.

With the ailerons fully located, slightly bend the ailerons on the right wings in one direction and the ailerons on the left wings in the opposite direction. The ailerons on right and left wings should be bent to the same angle.



To animate the elevators:

NOTE: *During the following step, scribe along the joint from both side of the tailplane/ elevator part.*

Using a sharp scrapper, carefully scribe along the pre-mould joint between the trailing edge of the tailplane and the leading edge of the elevator, until a gap is achieved. **Do not scribe through the pre-moulded hinges.**

Gently bend the elevators to a slightly down angle.



Pre-rigging:

Elevator control horns:

Using the pre-moulded 'dimple' as a guide, drill a hole of 0.2 mm diameter through the end of the control horns. Also drill a hole through the top of the 'lever just below the top fitting.

Aileron control horns:

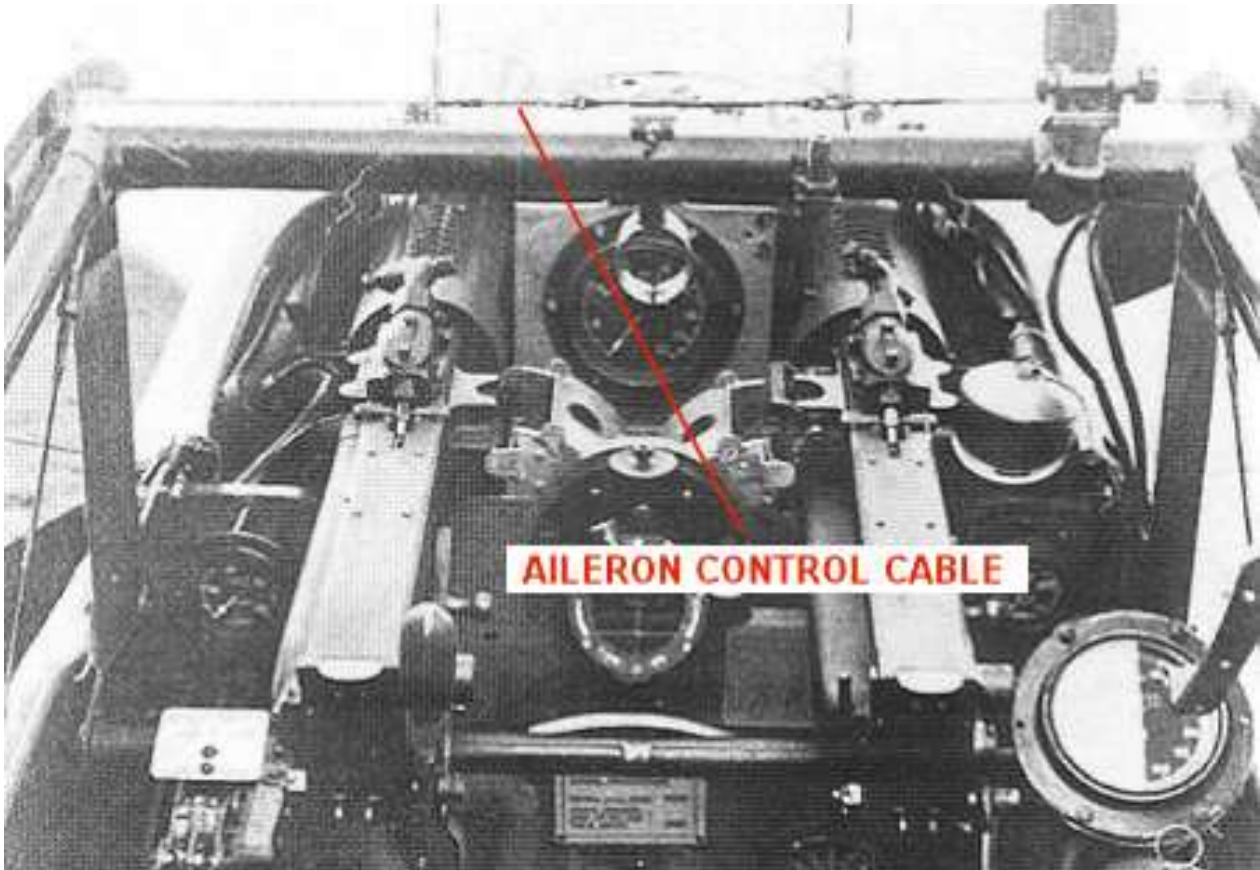
Using the pre-moulded 'dimple' as a guide, drill a hole of 0.2 mm diameter through the end of the control horns. Also drill a hole through the top of the 'lever just below the top fitting.

Rudder control horns:

Drill a hole of 0.3 mm diameter through the ends of the control lever.

Wing aileron cables:

NOTE: A single aileron control **cable** was routed inside the leading edge of the upper wing and across the open centre section, forward from the front frame cross bar.



Using the pre-moulded 'dimple' as a guide, drill a hole of 0.3 mm diameter into the wing root of the two upper wing halves.

Using the pre-moulded 'dimples' as guides, drill holes of 0.4 mm diameter into, **but not through**, the top of the upper wing halves and the underside of the upper wings. Drill the holes angled towards the aileron control horns, when fitted.

Ailerons:

Using the pre-moulded 'dimple' as a guide, drill holes of 0.5 mm diameter through the four ailerons.

Elevators:

Using the pre-moulded 'dimple' as a guide, drill holes of 0.3 mm diameter through the two elevators.

Sand away the pre-moulded upper elevator control cable outlets on the rear sides of the fuselage.

Using the pre-moulded 'dimple' as a guide, drill holes of 0.5 mm diameter through the rear sides of the fuselage at the upper elevator control cable outlets.

Tailplane bracing:

Using the two pre-moulded 'dimples' as a guide, drill holes of 0.5 mm diameter through the fin.

Using the four pre-moulded 'dimples' as a guide, drill holes of 0.5 mm diameter through the two tailplanes.

Flying wires:

NOTE: *To represent streamlined flying wires it's necessary to drill into the attachment points for the interplane struts, so that tubes on the ends of the photo-etch wires can be secured in position. This is best done after the wings have had their decals applied and the interplane struts are fitted into the lower wings. The required holes in the underside of the upper wing can then be drilled before the wing is fitted. **Therefore the flying wires will be fitted later in this build.***

Landing wires:

NOTE: *To represent streamlined landing wires it's necessary to drill into the attachment points for the interplane struts, so that tubes on the ends of the photo-etch wires can be secured in position. This is best done after the wings have had their decals applied and the interplane struts are fitted into the lower wings. The required holes in the underside of the upper wing can then be drilled before the wing is fitted. **Therefore the landing wires will be fitted later in this build.***

Incidence wires:

NOTE: *To represent streamlined incidence wires it's necessary to drill into the attachment points for the interplane struts, so that tubes on the ends of the photo-etch wires can be secured in position. This is best done after the wings have had their decals applied and the interplane struts are fitted into the lower wings. The required holes in the underside of the upper wing can then be drilled before the wing is fitted. **Therefore the incidence wires will be fitted later in this build.***

Drag wires:

Using the pre-moulded 'dimple' as a guide, drill holes of 0.5 mm diameter into, **but not through**, the underside of the upper wing halves at the forward interplane struts. The holes should be drilled to align with the drag wire opening in the forward sides of the fuselage, when fitted.

Landing gear:

NOTE: *Temporarily fit the landing gear so that the angle of the drilled holes can be gauged to have the correct angle of the wires, when fitted.*

Crossed bracing wires - using the pre-moulded 'dimple' as a guide, drill holes of 0.5 mm diameter through the bottom of the landing gear forward struts and into the underside of the lower wing centre section.

Centre bracing wire - using the pre-moulded 'dimple' as a guide, drill holes of 0.5 mm diameter into the underside of the lower wing centre section, centrally between the forward struts and into, **but not through**, the centre of the axle fairing.

Painting:

Preparation:

Make sure that the surfaces of the wings, fuselage, ailerons, tailplane/elevators and the fin/rudder are smooth and free of any surface imperfections.

Mask off the following areas:

Fuselage grey painted surfaces (masking tape)

All fuselage openings (fill with a masking solution such as 'Humbrol' Maskol or similar)

Engine and cockpit. (masking tape)

Cockpit area on the centre of the lower wing (masking tape)

Interplane strut locations (fill with a masking solution such as 'Humbrol' Maskol or similar).

Priming:

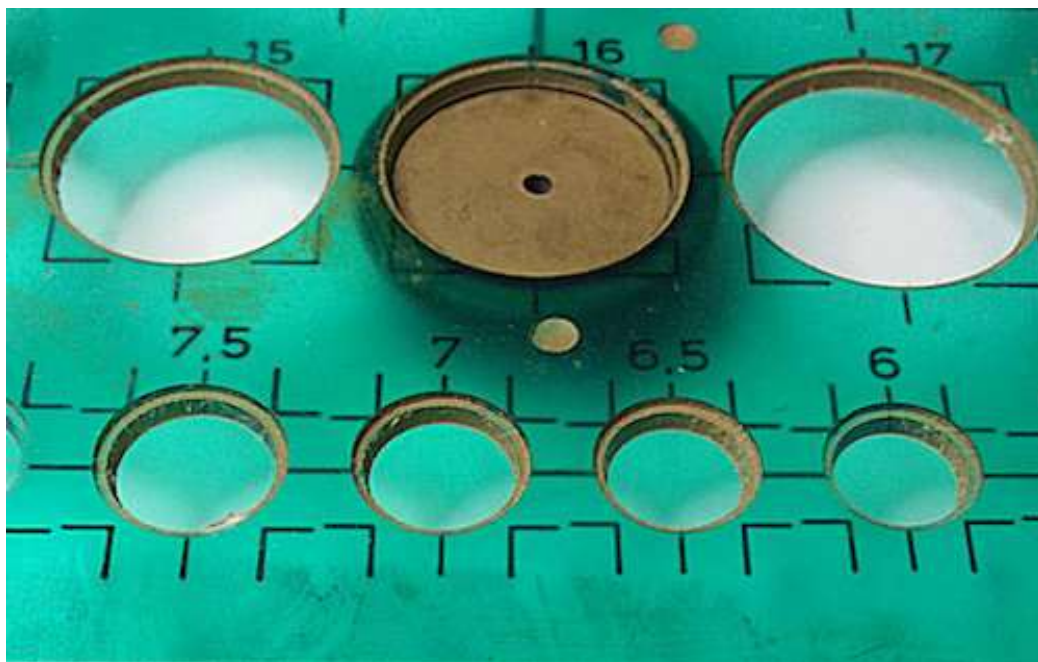
Airbrush the following with a grey primer, such as 'AK Interactive' Grey (AK758) or similar:

- Two wheels (A23) and covers (A24)
- Interplane struts (x8)
- Landing gear assembly
- All control horns (x 9)
- Underside of the lower wing cockpit panel.

Airbrush the two wheels with 'Tamiya' Neutral Grey (XF53) or similar

NOTE: The 'Aviatic' CDL and PC12 decals are produced as 'clear' backed, meaning applied base coat colours will show through the decals after they have been applied.

To airbrush the internal face of the wheels without over spraying the surrounding tyres, I use a circle drawing tool (Linex 1217 T). I selected the correct size of hole and position the wheel face under the hole.



Airbrush the exposed fuselage surfaces, wings, ailerons, tailplane/elevators, fin/rudder and the wheel covers A24 and wheels A23 (not the tyres) with a white primer, such as 'AK Interactive' White (AK759) or similar.

Remove all masking and the 'filling' in the various strut locations.

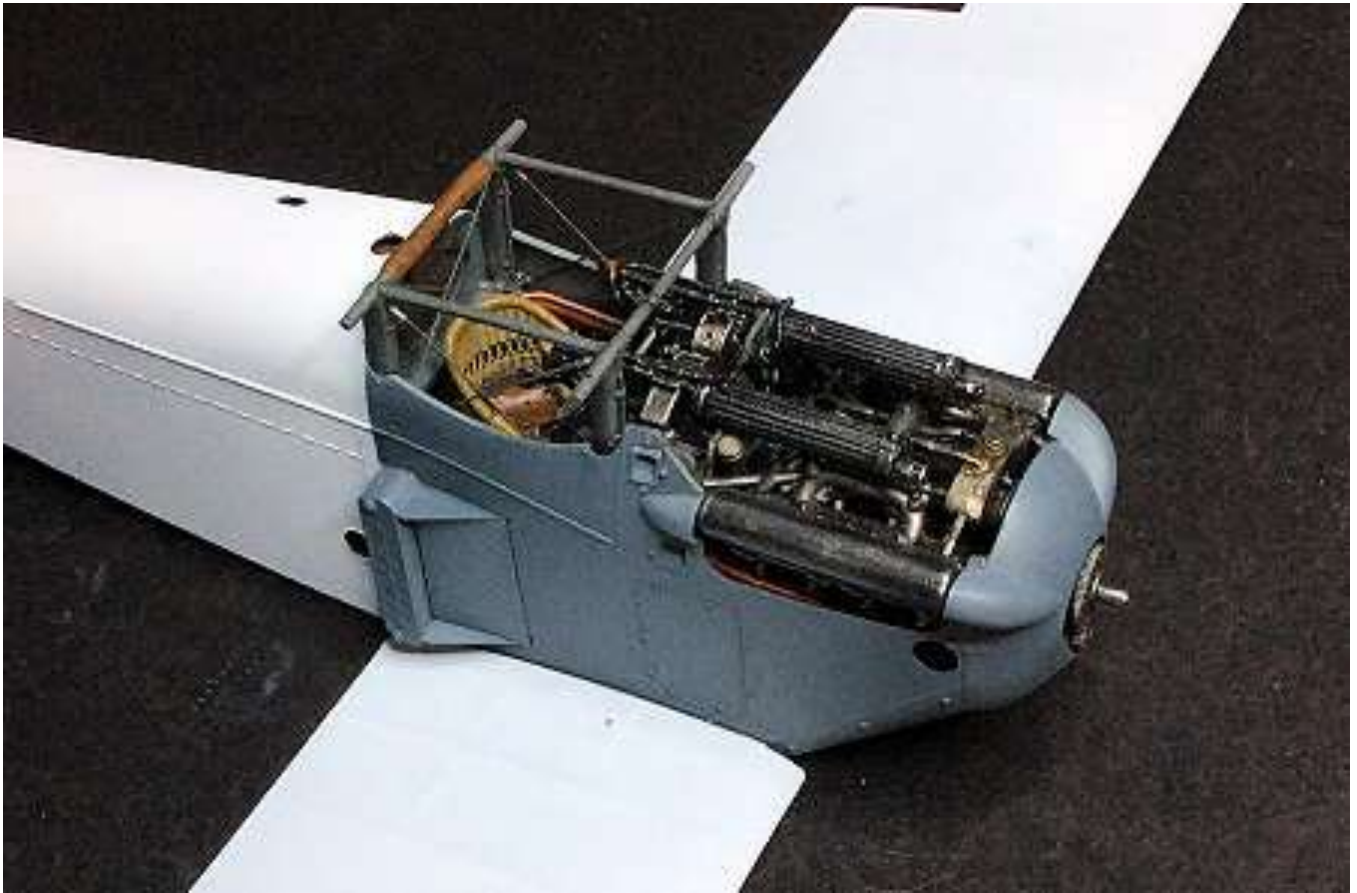
Assembly:

Final check fit the lower wing into the cockpit recess in the fuselage. Make sure all mating surfaces are clear of primer, paint and oil paint and that the assemblies fully locate to each other.

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.

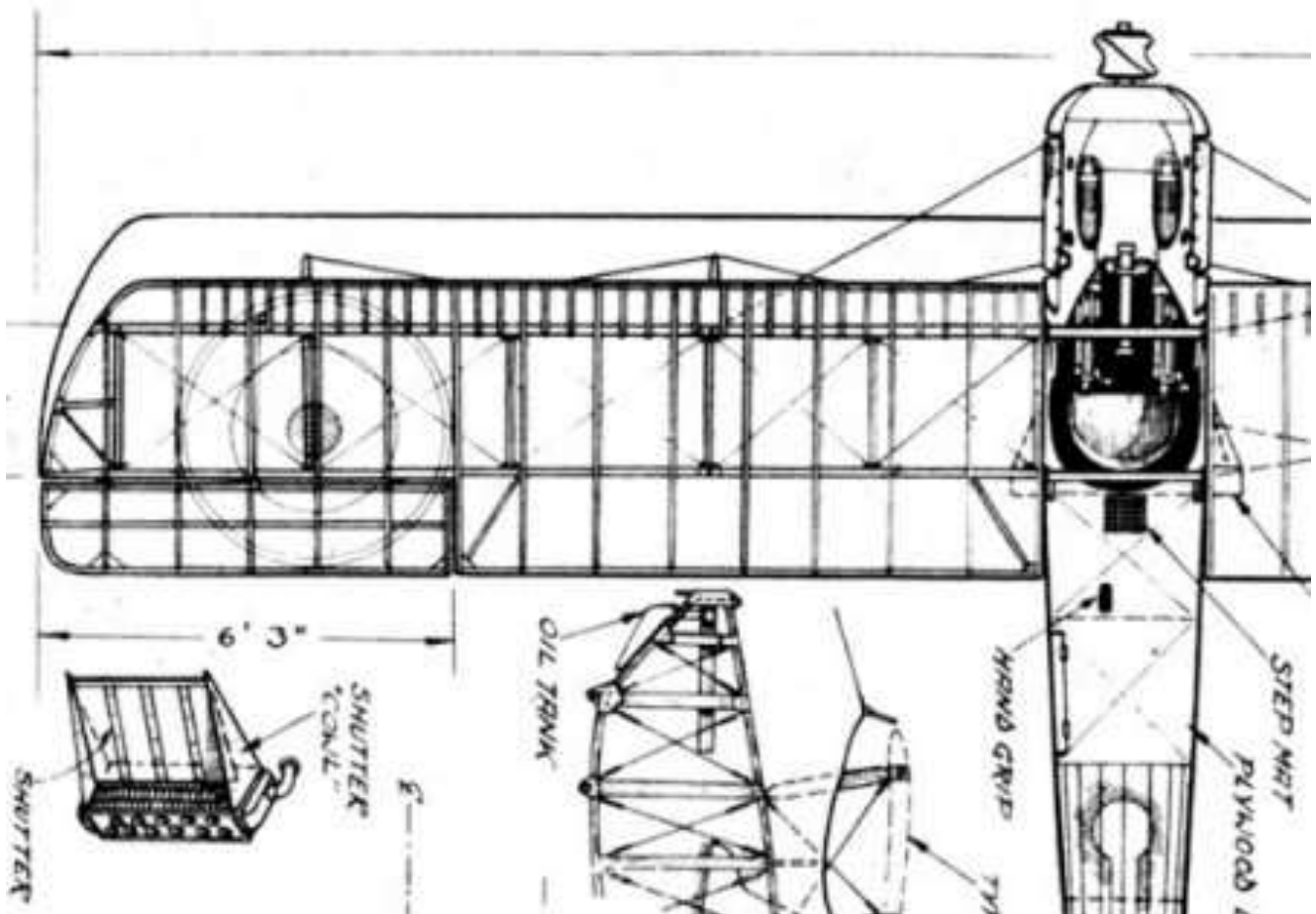
Apply the cement to the lower wing centre cockpit section, along the fuselage mating surfaces and over the locations for the bottom of the cockpit side frames.

Fully locate the fuselage onto the lower wing centre section, taking care to guide the control column through the fuselage cockpit.



Internal structure:

NOTE: The following illustrations show the internal structure of the aircraft. These can be used to



Pre-shading:

NOTE: *Applying pre-shading onto the white primer coat can show the shadows of the internal structures of the aircraft, primarily the fuselage formers and wing spars and ribs, through the 'Aviatic' CDL and PC12 decals. The pre-shading would normally be more obvious from the underside of the aircraft as the ambient light would penetrate through the linen from above, causing the internal structure to show as slight shadows. This is not so obvious with aircraft that have their upper surfaces painted with PC or other coloured dopes, as those colours tended to absorb much of the ambient light from above.*

For this model, rather than mask then airbrush pre-shading onto the model surfaces, I chose instead to use a polishing technique to create the pre-shading.

The polishers I used are the green polishing sticks from 'Flory Models', although these are no longer available. However, other suitable polishers are available.

Flight surfaces:

NOTE: *The following procedure applies to creating the pre-shading effects on the wings and ailerons, tailplane/elevator, fin/rudder and outer wheel covers. **Do not polish too hard** as the intention is to only partially polish through the applied white primer.*

Using the polishing stick, lightly rub across the raised detail on both sides of the upper and lower wings. The intention is to polish through the applied white primer coat to reveal the colour of the styrene below. The wing ribs and leading edge formers should be visible. Also polish across the wings (leading to trailing edges) between the ribs to create staining/wear over the wings.

Use the same technique to pre-shade the four ailerons, tailplane/elevators and fin/rudder.

NOTE: *Refer to the previous internal structure illustrations. The following pre-shading is only applied to the underside surfaces, as the PC12 dope colour on the upper surfaces would have blocked visibility of these details.*

Use strips of masking tape to mask off the front and rear spars on the **underside only** of the upper and lower wings. Polish between the masking tape strips to pre-shade the wing spars, then remove the masking tape strips.

Repeat the procedure to pre-shade the central spar across the **underside only** of the four ailerons.

Use a sharp pencil to softly draw on the internal bracing wires on the underside only of the upper and lower wings.

Fuselage:

NOTE: *Refer to the previous internal structure illustrations.*

Use strips of masking tape to mask off the bottom of the fuselage former frames on the underside of the fuselage. The forward former is at the join between the rear of the cockpit floor panel and the fuselage. The next should be 18 mm rearwards then every 18 mm to the last at the tail skid opening. A total of six.

Polish between the masking tape strips to pre-shade the underside of the fuselage, then remove the masking tape strips.

Using the underside pre-shading as guides, repeat the procedure to create the pre-shading of the fuselage formers vertically up both sides of the fuselage.

Wheel outer covers:

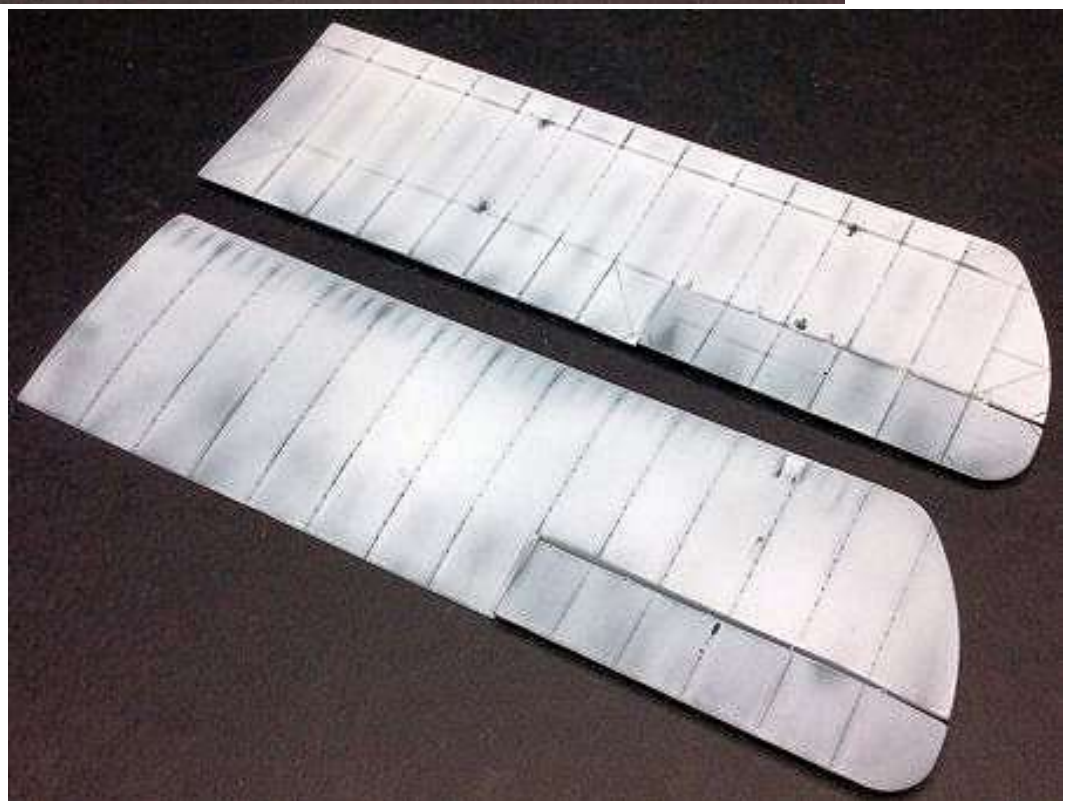
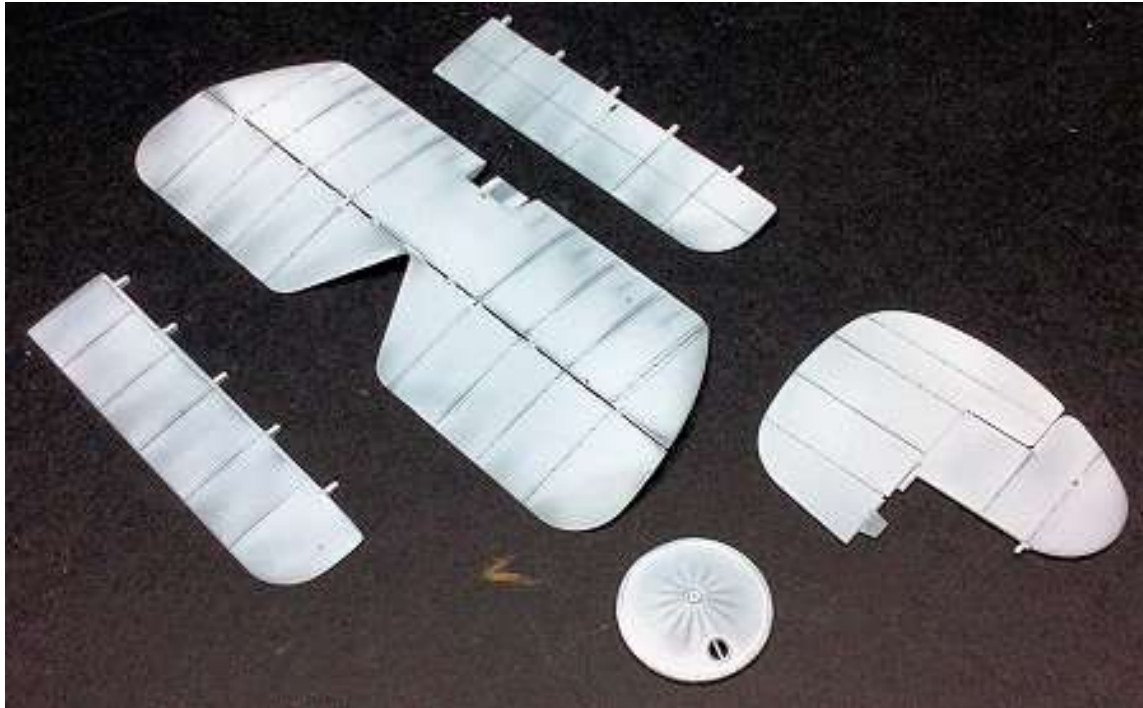
Use the polishing sticks to gently polish across the raised linen 'stretch' lines on the two outer covers for the wheels.

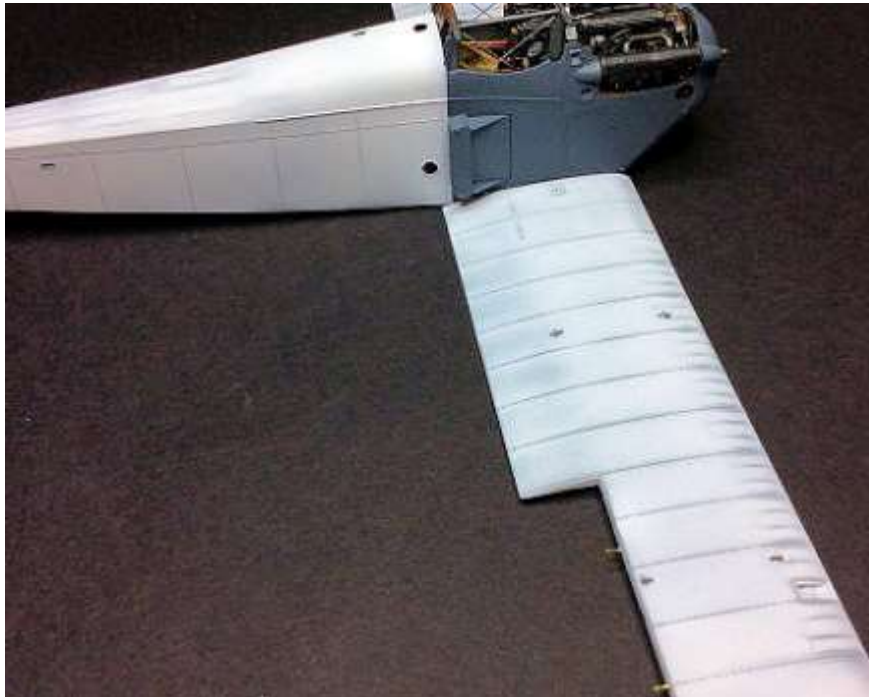
Finish:

Make sure any residual 'tack' from the masking tapes is removed from the model surfaces, as this can be difficult to see but will show under any applied paint or decals. I wear lint free gloves and rub the model surfaces to remove any residual 'tack'.

Make sure the surfaces are free from any surface imperfections, such as dust and fibres.

In preparation for applying the 'Aviatic' CDL and PC12 decals, airbrush the surfaces with a gloss clear coat, such as 'Alclad' Aqua Gloss 600 or similar.





Painting (continued):

NOTE: The 'Aviatic' PC12 decals give the option to not use the kit supplied clear covers for the four aileron pulleys in the wing leading edges, but instead to leave the decal clear 'windows' intact to cover the pulley openings. Therefore, whether using the clear parts or not, the pulleys should be painted.

Brush paint the floor of the pulley areas with 'Tamiya' Dark Yellow (XF60) or similar.

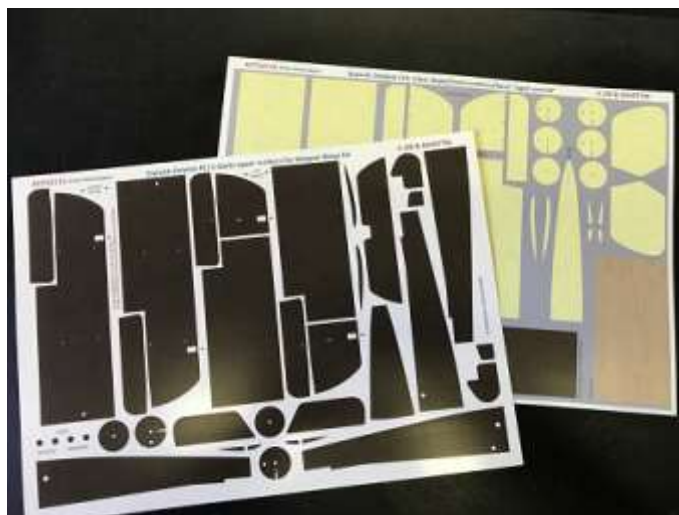
Brush paint the sides of the pulley areas with 'Tamiya' Deck Brown (XF79) or similar.

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

Decals:

'Aviatic' decals:

NOTE: The decals used are the 'Aviatic' Sopwith Dolphin set (ATT32155/154). The **Protective Coat (PC12)** decals are sheet ATT32155 and the **Clear Doped Linen (CDL)** decals are sheet ATT32154. These particular 'Aviatic' decals are 'cookie cut', meaning they are made to the correct shapes to fit the various model parts, as opposed to other 'Aviatic' sheet types, where the decal shapes need to be cut from the entire sheet. However, the 'cookie cut' decals will **still need to be cut out** from their backing sheet. They also contain alternative decals for some parts of this model.

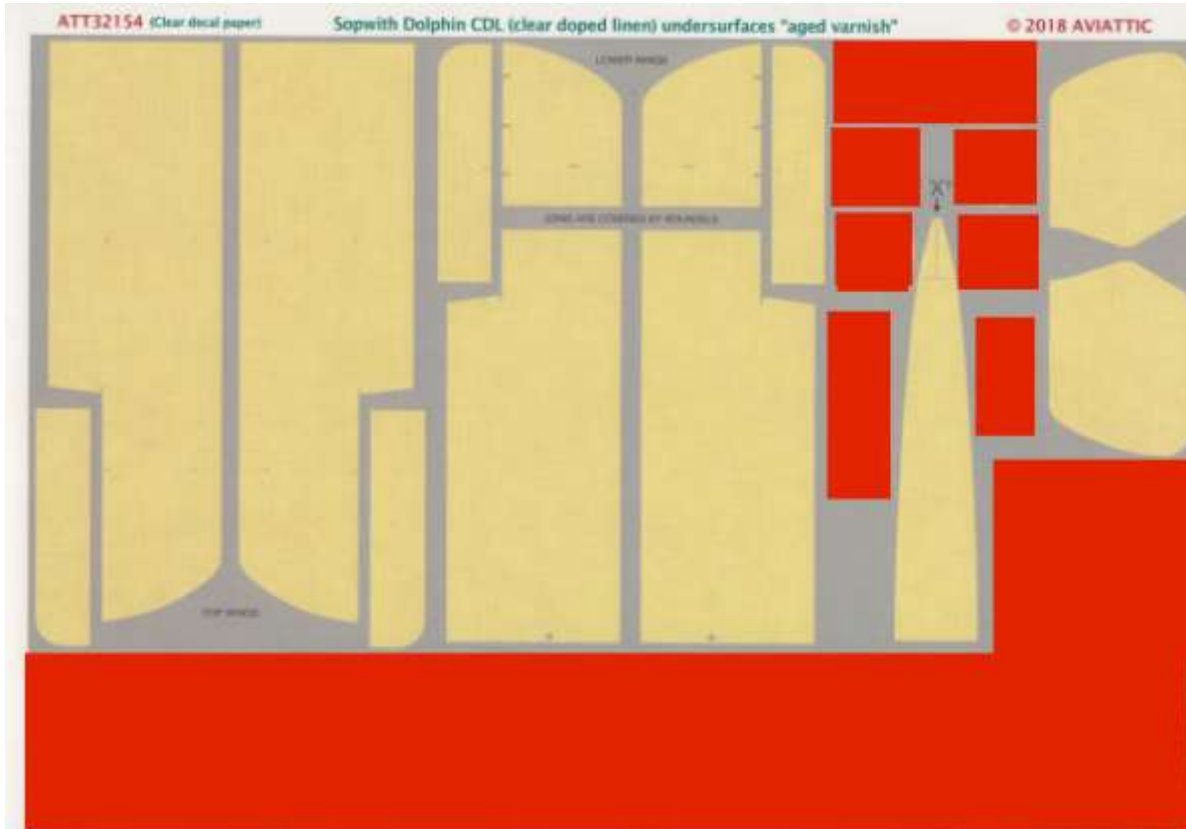


CDL decals (ATT32155):

The following **underside** surfaces are CDL, which **need to be cut out** from their backing sheet:

- Fuselage rear of the cockpit opening
- Lower wings
- Upper wing halves
- Ailerons (x 4)
- Tailplane/elevators.

Required CDL decals for this particular model of a No.79 Squadron 'Dolphin aircraft.



Carefully cut around each of the required CDL decals to remove them from the backing sheet.

Note the corner cut-outs at the aileron corners of the wings (to allow the decal to be wrapped over the edge).

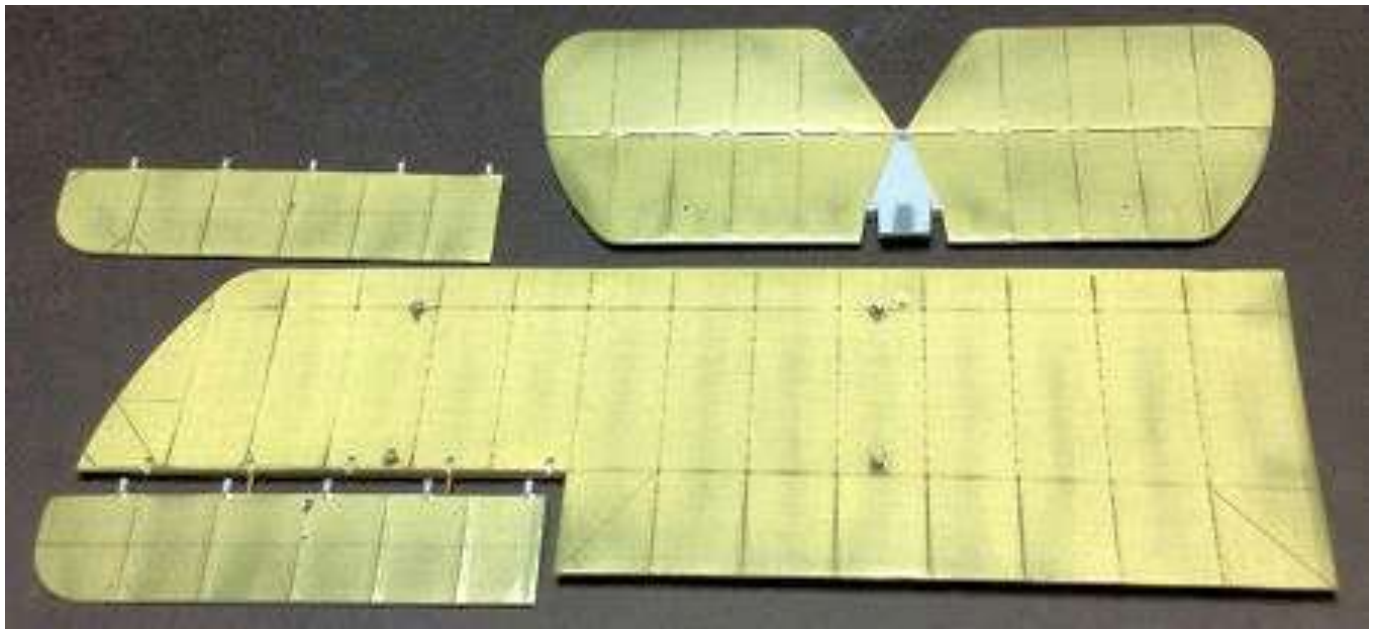
I chose to cut away the split tail skid part of the fuselage underside CDL decal, making easier to apply.

After applying the tailplane/elevator one pieces decals, I used a sharp scalpel blade to slice the decal along the joint, which allowed the two halves of the decal to be positioned more easily.

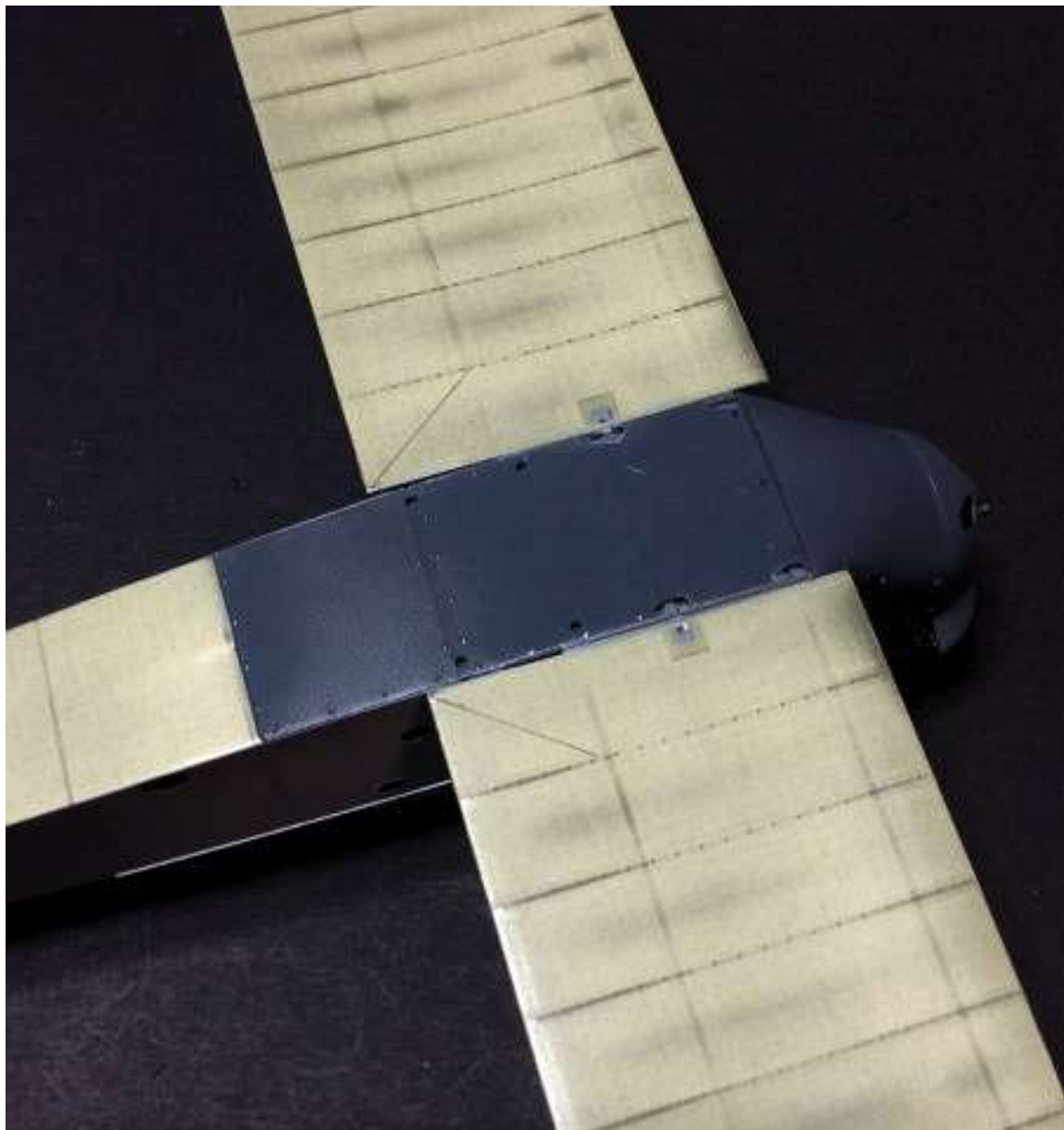
NOTE: Refer to Part 4 (Decals) of this build log for more information on applying these decals.

Apply the relevant CDL decal to its model part, making sure all water and air are totally expelled from under the decal. Once positioned correctly, I brush over the decal to expel water from the open edges, then, wearing lint free gloves, slide press over the decal to firmly adhere it to the model surface.

If necessary and once the decal has fully set and dried, carefully cut or sand away any excess overhang of decal from the edges. Also, edges can be made to fully conform by using a brush lightly dampened with 'Tamiya' X20A acrylic thinners (too much will melt the decal).



NOTE: The colours of the CDL decal are the same as above, but camera lighting alters the colour.

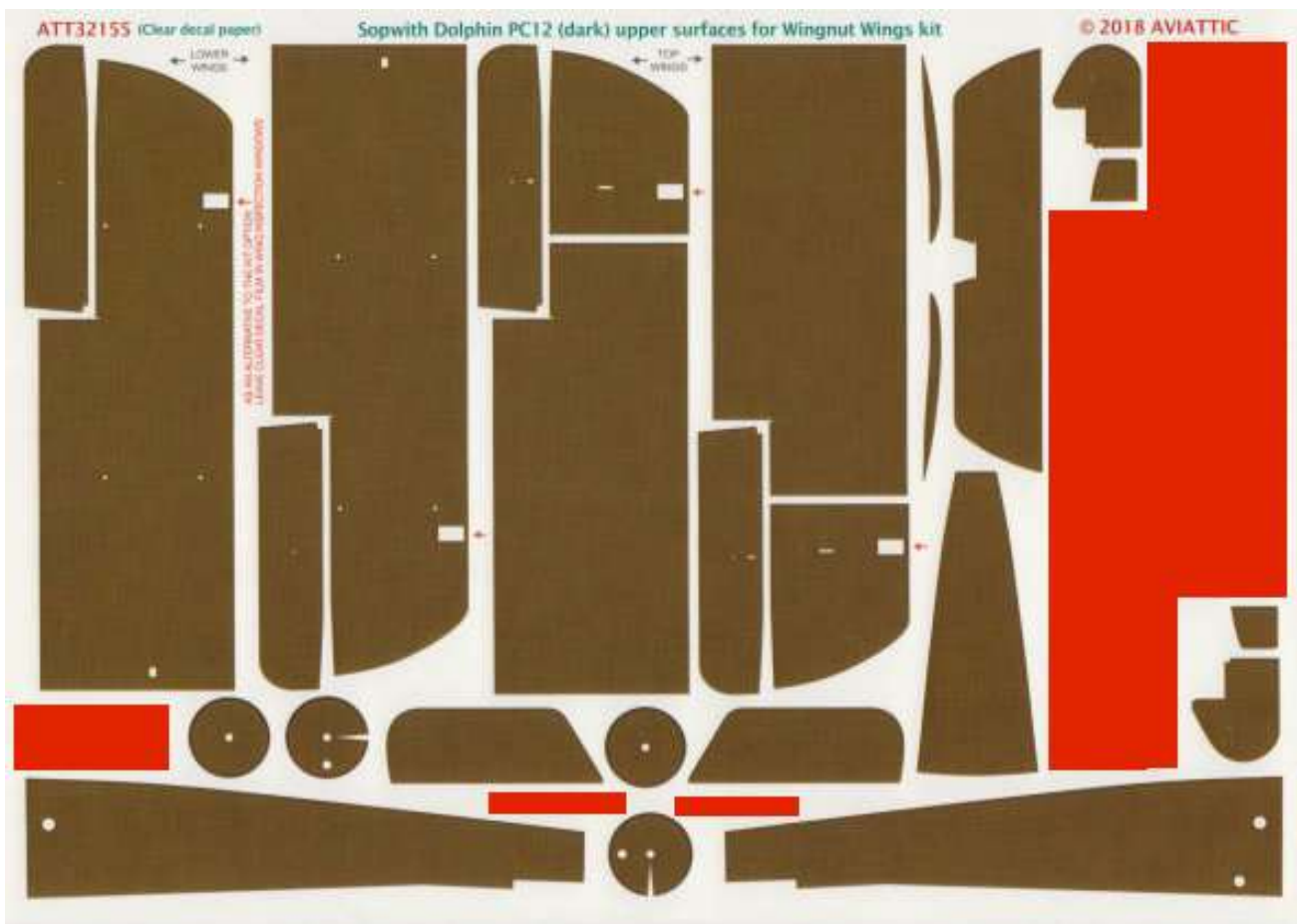


PC12 decal (ATT32154):

The following **upper** surfaces are PC12, which **need to be cut out** from their backing sheet:

- Fuselage sides and top (not including the checker board area at the rear of the cockpit)
- Fin and forward top of the rudder
- Wheel covers (both sides)
- Upper wing root faces
- Lower wings
- Upper wing halves
- Ailerons (x 4)
- Tailplane and separate elevators.

Required PC12 decals for this particular model of a No.79 Squadron 'Dolphin aircraft.



Carefully cut around each of the required PC12 decals to remove them from the backing sheet.

Note the corner cut-outs at the lower wing aileron corners (to allow the decal to be wrapped over the edge) and the in the outer wheel covers (to allow the decal ends to join).

The two upper wing decals are not long enough and when positioned, leave a gap between the joint ends. However, the kit supplied roundel decals will cover that area of the PC12 decals and subsequent weathering should cover the visible gap.

NOTE: Refer to Part 4 (Decals) of this build log for more information on applying these decals.

Apply the relevant PC12 decal to its model part, making sure all water and air are totally expelled from under the decal. Once positioned correctly, I brush over the decal to expel water from the open edges, then, wearing lint free gloves, slide press over the decal to firmly adhere it to the model surface.

If necessary and once the decal has fully set and dried, carefully cut or sand away any excess overhang of decal from the edges. Also, edges can be made to fully conform by using a brush lightly dampened with 'Tamiya' X20A acrylic thinners (too much will melt the decal).

Kit decal application:

NOTE: Refer to Part 4 (Decals) of this build log for more information on applying these decals. The specific kit supplied decals for this model of the 'Dolphin' are as follows. Some of the small serial number decals required for this aircraft will have different numbers to the required 'Pheon' supplied C4131. However, they are too small to read anyway:

Fuselage 90, 66, 67, 20, 55, 61 (x4 and x2 cut from not used serial numbers) and 67

Underside of right tailplane and elevator 59 (x2)

Underside of left and right elevator 60 (x2)

Underside of lower wings 4, 12, 6, 13, 50 (x2), 59 (x4)

Underside of upper wings 59 (x4), 50 (x2)

Underside of four ailerons 60 (x4)

Top side of upper wing 1, 3, 10, 11

Rudder 7, 25

Radiators 90.

NOTE: The kit supplied decals for the upper roundels have dotted line to show where the decals should be folded around the trailing edges of the wing and leading edges of the ailerons. However, these decals are too thick to bend over these edges, even when treated with decal softeners. The result is that the decal crack and chip.

I found the best way to avoid this is to cut away the dotted bend areas of the decals before they are applied. The 'wrap over' edges can then be brush painted afterwards.

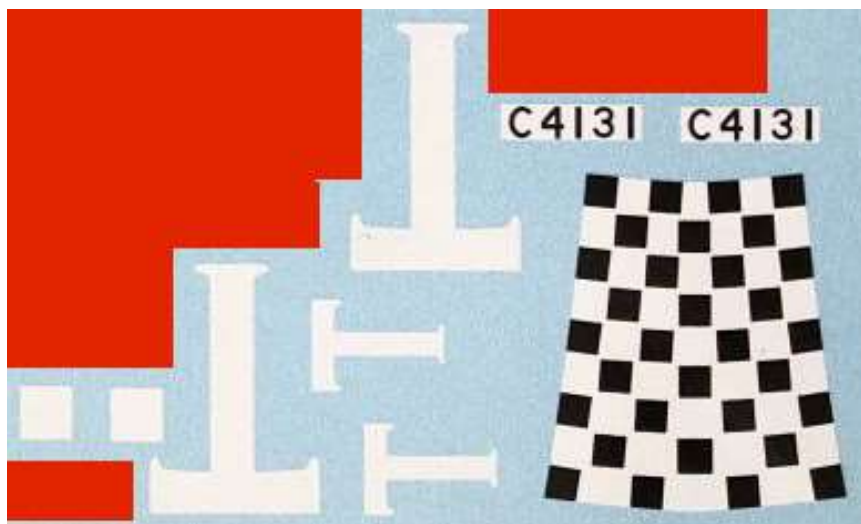
Apply the required decals directly onto the 'Aviatic' CDL and PC12 decals model.

Brush paint the 'wrap over' edges with 'Tamiya' Flat Blue (XF8), White (XF2), Red (XF7) and if necessary Olive Green (XF58).

'Pheon' decals:

NOTE: Unfortunately, these decals are **no longer available** from 'Pheon'. They should be used if they can be found online or from a private seller. Otherwise they can be reproduced using the procedure detailed following (Alternative 'Pheon' decals).

The following illustration shows the only 'Pheon' decals required for this model of the 'Dolphin'.



NOTE: Refer to Part 4 (Decals) of this build log for more information on applying decals.

Apply the above decals from the 'Pheon' sheet 32077 directly onto the 'Aviatic' PC12 decals on the upper wing and fuselage.

Once the checkerboard decal has fully dried and set, prick through the decal at the openings for the fuse tank filler cap, hand hold and foot step, then apply decal solvent ('MicroSol') or if necessary 'Tamiya' X20A acrylic thinners into the openings to conform the decal into the openings.

Alternative to 'Pheon' decals:

NOTE: The software used to create the decals can be 'Paint Shop Pro' (PSP 2019) or similar and prints on an inkjet printer, such as a 'Canon' IP7250 printer. The decal paper to use can be 'MDP white backed decal paper' for inkjet printers or similar. The decal sealer can be 'Krylon' Acryli-Quik sealer or similar.

A screen capture of the decal sheet should be used to create ink deck printed decals and paint masks. The scan (from online images) should be resized in 'PSP' 2019 or similar software and test printed to check for the correct sizes of the decals required.

Checker board decal and serial numbers:

NOTE: White colour can not be printed. Therefore, 'MDP white backed decal paper' for inkjet printers or similar should be used to create the two serial numbers C4131 and the checker board pattern for the fuselage turtle deck.

Create the checker board pattern in 'PSP 2019' or similar software, as a rectangular checker board pattern, which should then be angled to match the 'Pheon' decal, using the Effects - Geometric Effects - Perspective Vertical menu tool (in 'PSP' 2019). Then test print to check size and fit on the model, then final print on the decal paper.

Print the serial numbers C4131 in 'PSP 2019' or similar graphic software in the correct size and font type. Test print to check their size against the model then final print on the decal paper.

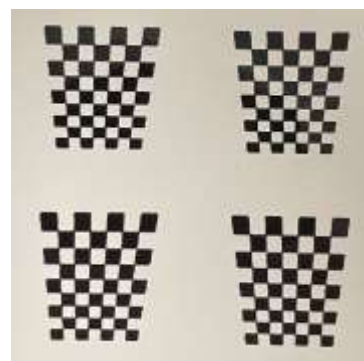
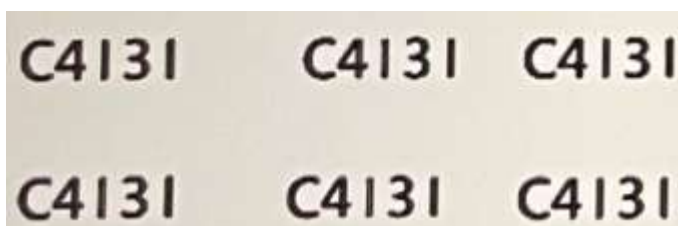
NOTE: Without sealing the printed ink decals, immersion in the decal water (when applied) will cause the ink to dissolve. Therefore, the decals should be sprayed with two coats of the 'Krylon' Acryli-Quik sealer or similar.

Once printed on the 'MDP' white backed decal paper, leave overnight to dry, then spray with two light coats of the 'Krylon' clear sealer or similar.

Cut the two serial numbers to size from the decal sheet. Cut the checker board pattern from the decal sheet with slightly curved ends to conform over the fuselage turtle deck.

NOTE: Refer to Part 4 (Decals) of this build log for more information on applying decals.

Apply the decals onto the model. The serial numbers directly on to the 'Aviatic' PC12 decals on the fuselage sides. The checkerboard decal applied directly onto the white gloss coated area behind the cockpit.



Masks:

Copy the letters 'T' for the fuselage sides and upper wings from the copy of the 'Pheon' decal sheet and then create in 'PSP 2019' graphic software or similar, in the correct sizes, using the colour profile as a size guide.

Test print to check their size against the model then import into the specific software for the a 'Cricut' Air 2 crafters cutting machine or similar cutter machine. Cut the masks from 'Artool' masking sheet, after which the letters should be removed from the masks, leaving the masks ready for use.



NOTE: During the next step do not press the masks too hard onto the 'Aviatic' applied PC12 decals, as when removing the masks they may lift of the PC12 decals.

Lightly position the masks on the model, making sure the **edges of the letters only** are sealed onto the 'Aviatic' applied PC12 decals.

Airbrush the exposed letters with 'Tamiya' White (XF2) or similar.

Carefully remove the masks.

The following photographs show the applied 'Aviatic', the kit supplied and the 'Pheon' decals.





Painting (continued):

Brush paint the following with 'Tamiya' Metallic Grey (XF56) or similar:

- Foot plates at the wing roots on the upper surface of the lower wings
- Front and rear cooling matrix of the two side radiators
- Matrix ports on the outer edge of the two side radiators.

Airbrush the eight primed interplane struts and the landing gear assembly with 'Tamiya' Dark Yellow (XF60) or similar.

Airbrush the landing gear assembly 'Tamiya' Ocean Grey 2 (XF82) mixed with Rubber Black (XF85) to slightly darken the grey.

Brush paint the landing gear axle with 'Tamiya' Rubber Black (XF85) or similar.

Brush paint the 'bungee' suspension cords at the ends of the landing gear axle with 'Tamiya' Buff (XF57) or similar.

Light wood:

Use the chosen method to apply light wood effect finish to the eight interplane struts. I used Windsor & Newton' Griffin (Alkyd) **Raw Sienna** oil paint.

Kit decals (continued):

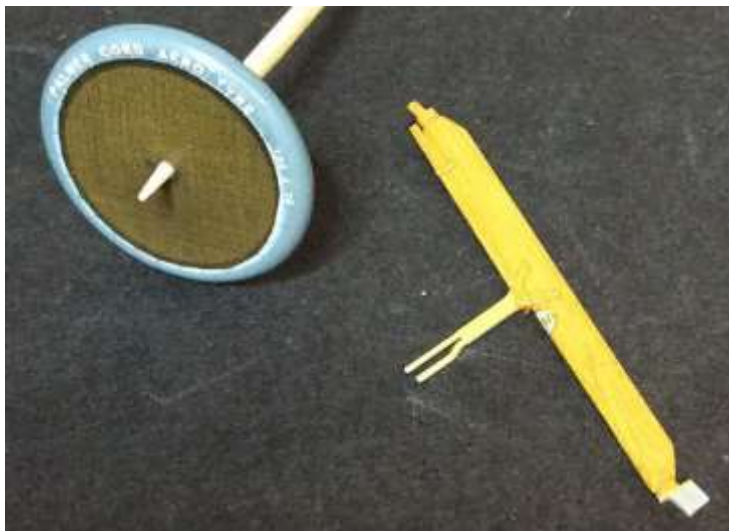
NOTE: *The kit supplied decals have twelve 'Sopwith' logos (62) for the struts. However, I could not find and evidence the these logos were applied to the four fuselage cabane struts. Therefore' only the eight interplane struts will require the logos.*

Airbrush the eight interplane struts and the tyres of the two wheels with a gloss clear coat, such as 'Alclad' Aqua Gloss 600 or similar'.

NOTE: *Refer to Part 4 (Decals) of this build log for more information on applying decals.*

Apply the tyre decals 77 to the tyres (both sides at the same position).

Apply the 'Sopwith' logo decals 62 around the leading edges of the eight interplane struts (at the same positions). As a location guide, just below the pitot probes on strut A10.



Apply the wheel cover decals 92 to the inner and outer wheel covers.

Apply the 'Sopwith' decal 64 onto the top centre of the forward engine cowl.

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

Painting (continued):

Brush paint the metal end brackets of the eight interplane struts, the landing gear assembly and the pitot head/pipes on interplane strut A10 with 'Tamiya' Rubber Black (XF85) or similar.

Weathering:

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

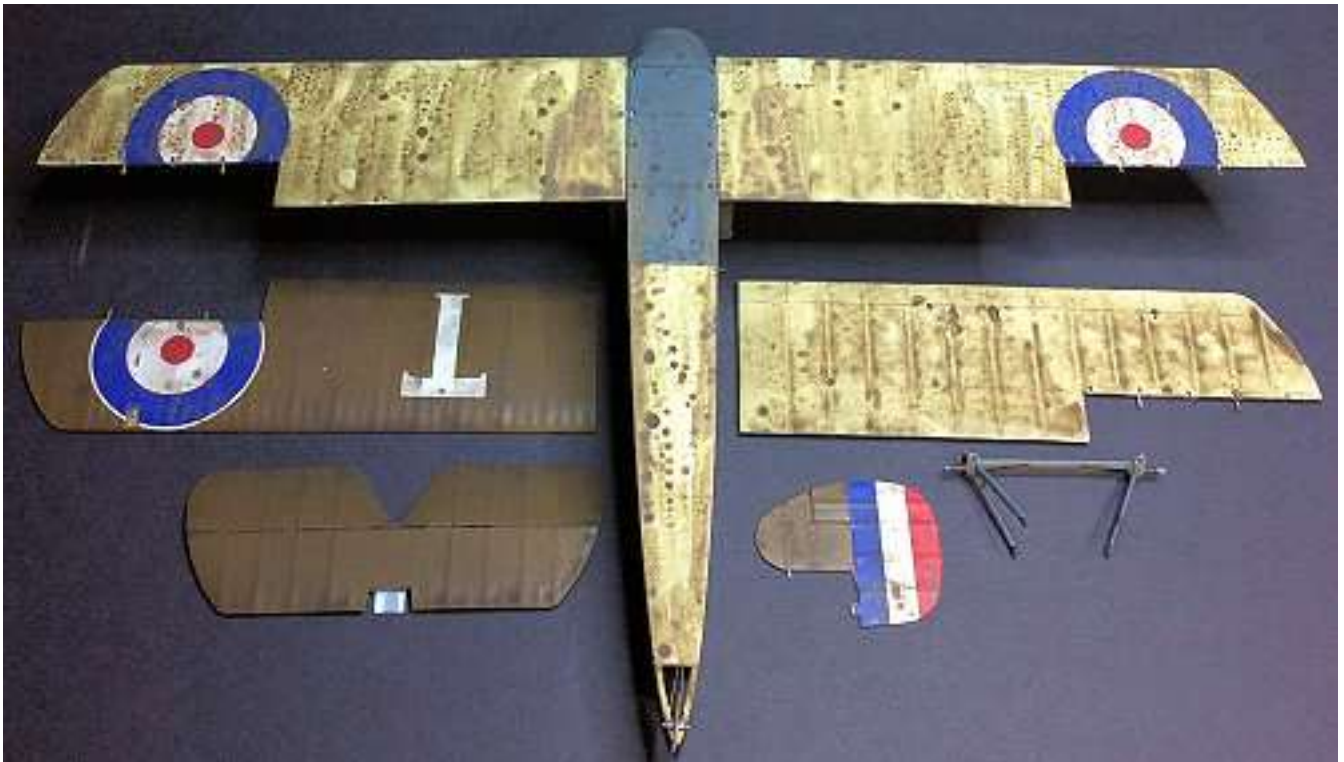
Mask the wing aileron pulley clear covers (**gently** if used the decal option).

Airbrush the all of the decal applied parts with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar.

Remove the masks from the wing aileron pulley clear covers (**gently** if used the decal option).

Apply your chosen weathering effects over all of the parts. I used 'Flory Models' Dark Dirt clay wash as general weathering.

The following photograph shows an example of applied weathering.

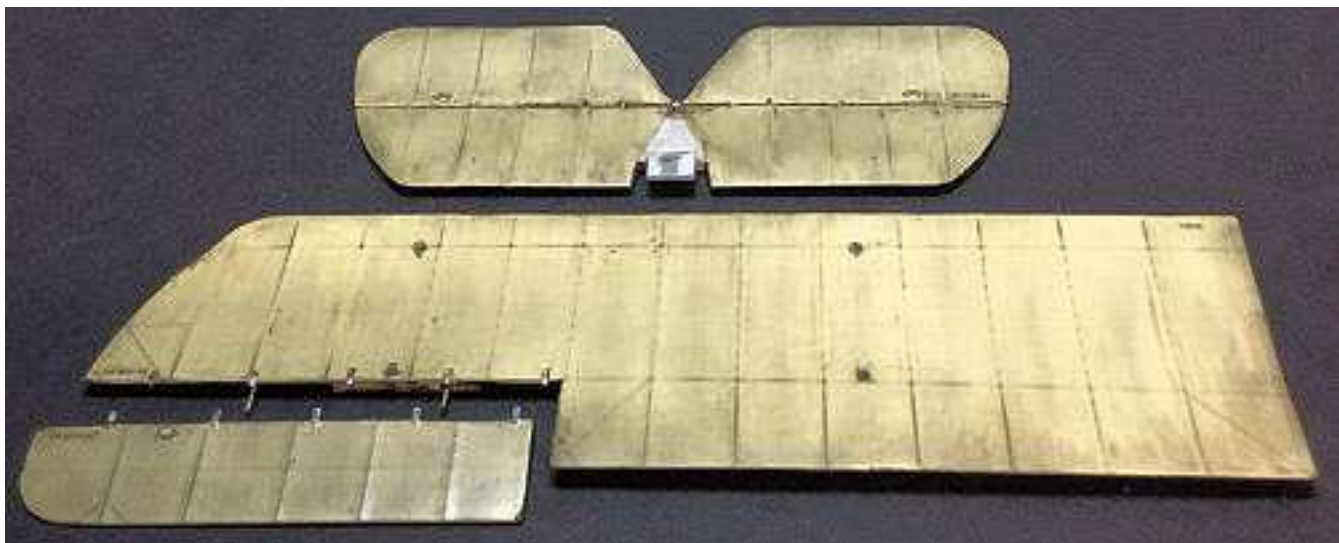
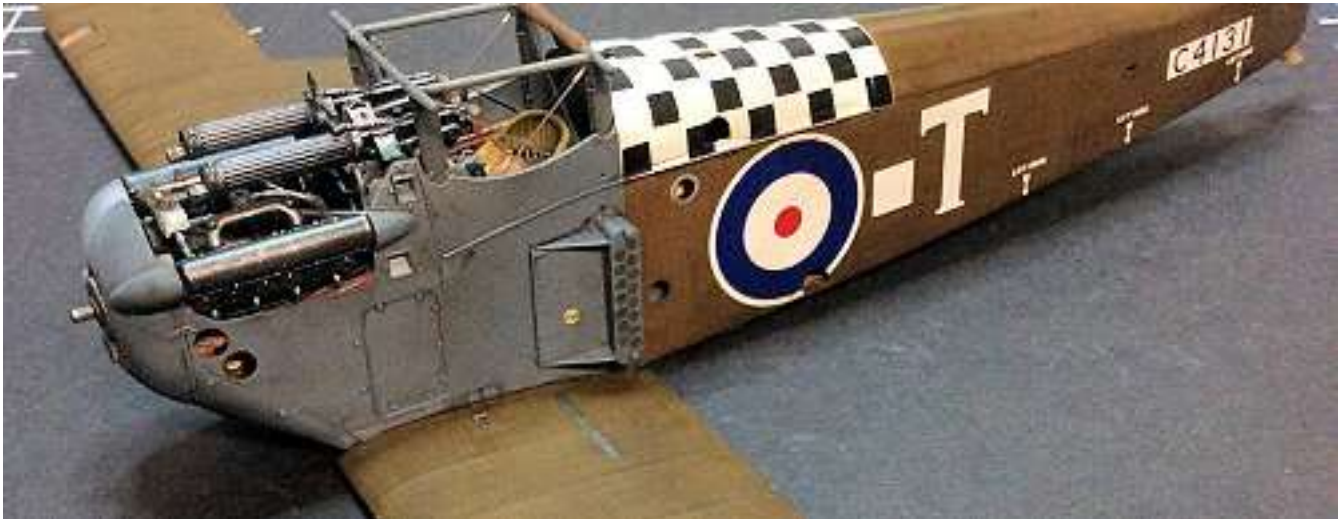


Remove the clay wash to achieve your desired weathered effect.

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

The following photographs shows removed and sealed weathering.







Assembly (continued):

Radiator pipes:

Make sure all of the pre-drilled holes in the side of the fuselage above the side radiators and in the top of the radiators are clear of primer, paints, weathering and clear coat. If necessary run a 0.3 mm diameter drill in the holes to clear them.

Cut a length of 0.3 mm diameter copper wire and anneal (soften) the wire over a naked flame, such as a cigarette lighter.

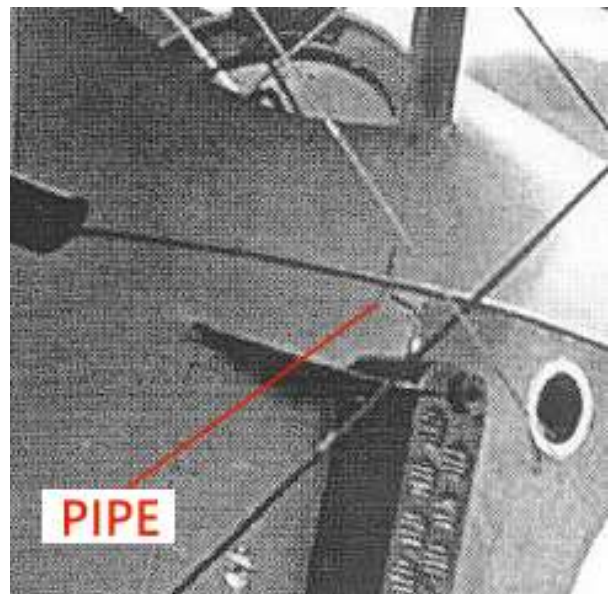
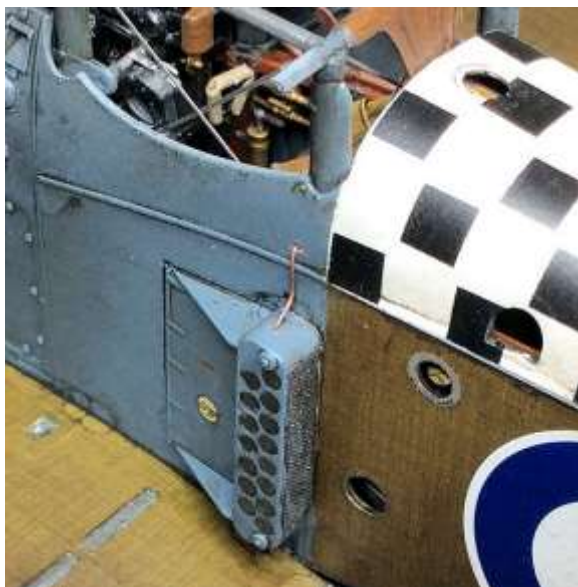
Insert the wire into the pre-drilled hole in the top of a side radiator and bend the wire towards the up the side of the fuselage to the pre-drilled fuselage hole.

Mark the wire at the fuselage hole then cut the wire just above the mark.

Bend that end of the wire, at the mark, to a inward 90 degree bend.

Insert the ends of the wire into their pre-drilled holes in the radiator and fuselage side.

Repeat the procedure to add a pipe to the radiator on the other side of the fuselage.



Landing gear:

Make sure all of the pre-drilled rigging holes (drilled earlier in the chapter) in the underside of the fuselage and ends of the landing gear axle are clear of primer, paints, weathering and clear coat. If necessary run the relevant size of drill in the holes to clear them.

Make sure the four locating tops of the landing gear struts are clear of primer and paint.

Cement the landing gear assembly into its location recesses in the underside of the fuselage.

Interplane struts:

NOTE: *The tubes to locate the flying, landing and incidence wires need to be drilled into the underside of the upper wings and top surface of the lower wing, close to the ends of the interplane struts.*

Therefore, it's best to fit the interplane struts into the lower wings before drilling the tube location holes, as they will drill into the strut ends.

Make sure all primer, paints, decal and clear coat has been removed from the interplane strut location holes in the lower and upper wings, including the four upper wing root holes for the fuselage top frame rods.

Make sure all primer, paints and clear coat has been removed from both location ends of the eight interplane struts and the four upper wing locating rods on the fuselage top frame.

Test fit the eight interplane struts into their lower wing location holes, making sure they fully locate.

NOTE: *Refer to page 10 of the kit instructions.*

Test fit the upper wings onto their location rods on the fuselage top frame, making sure there is the spacing.

NOTE: *Refer to page 9 of the kit instructions.*

Cement the eight interplane struts into their correct locations in the top surface of the lower wings.

Temporarily fit the upper wings onto their location rods on the fuselage upper frame and into the top location stems on the eight interplane struts.

If necessary, hold the outer ends of the wing together with elastic bands to make sure the interplane struts are fully located.

Check the upper and lower wings are aligned when viewed from the front, sides and from above.

Leave the cemented struts to fully set in the lower wings.

If used, remove the elastic bands.

Remove the upper wings from the tops of the interplane struts and the location rods on the fuselage top frame.

Pre-rigging (continued):

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

Aileron control horns (A3 x2, A7 x2):

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

Pass the line through the pre-drilled hole in the top of a control horn.

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

Loop the line back and through the tube.

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

Secure the lines in the tube (at the end away from the control horn), using thin CA adhesive.

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

Repeat the procedure to add a line to the pre-drilled hole in the rear of the control horn.

Repeat the procedure to add two lines to the remaining three aileron control horns.

Check fit, then cement the aileron control horns into their correct aileron locations.

Elevator control horns (A8 x4):

Repeat the previous procedure to add two lines to each of the elevator control horns.

Check fit, then cement the elevator control horns into their elevator locations.

Rudder control horns (A51):

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

Pass the line through the pre-drilled hole in one end of the rudder control horn.

Slide a 0.4 mm diameter Nickel-Silver tube, such as 'Albion Alloy's NST04 or similar, onto both ends of the line.

Keeping the lines taut, slide the tubes up to, **but not touching**, the end of the control horn.

Secure the tubes onto the lines (at the end away from the control horn), using thin CA adhesive.

Repeat the procedure to add two lines to the other end of the control horns.

Check fit, then cement the rudder control horn into its location on the rudder leading edge.

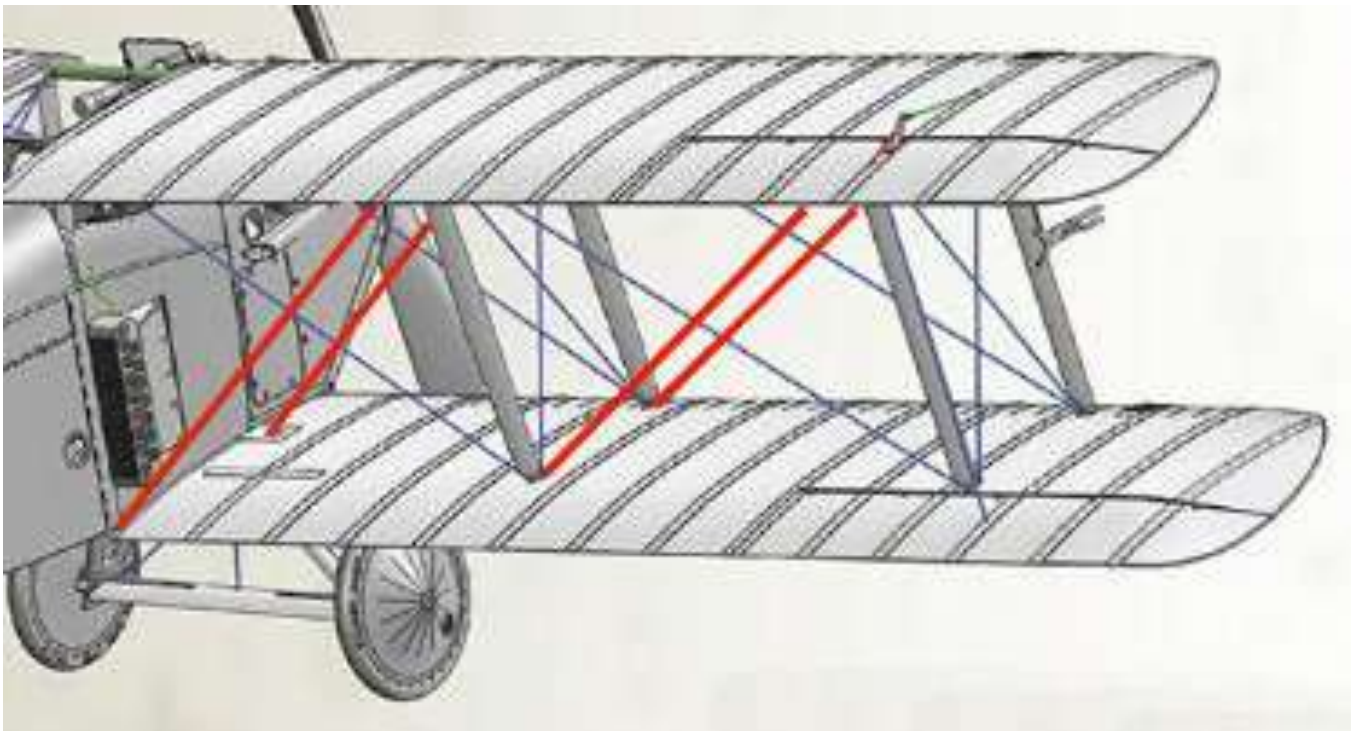
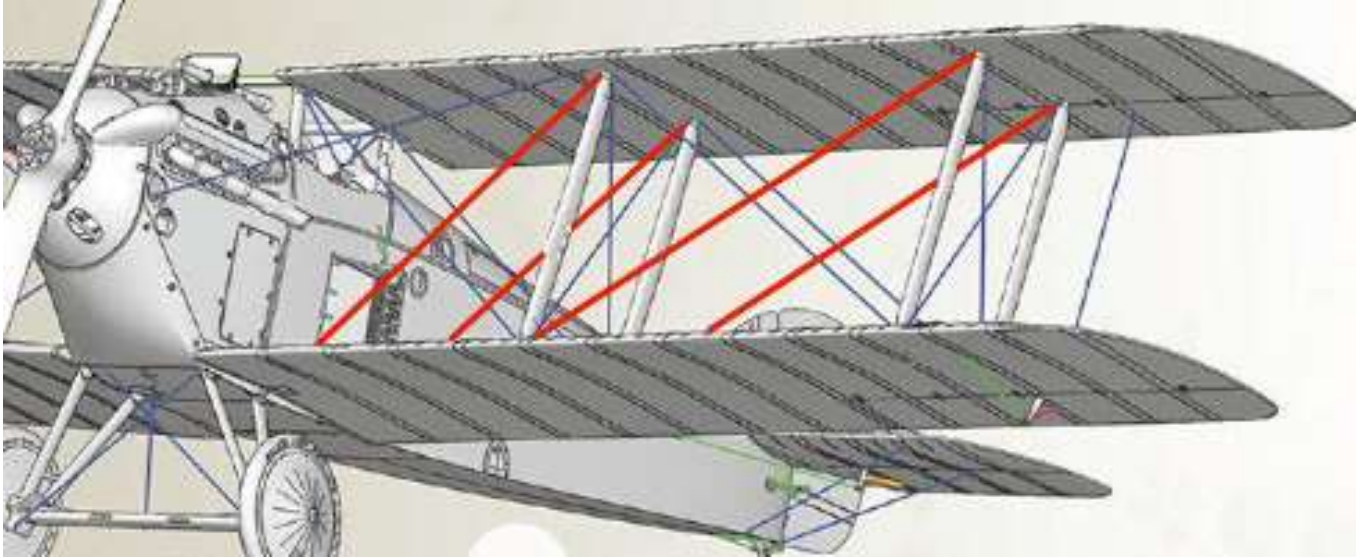


Rigging holes:

Make sure all of the pre-drilled rigging holes (drilled earlier in the chapter) are clear of primer, paints, weathering and clear coat. If necessary run the relevant size of drill in the holes to clear them.

Flying wires:

NOTE: *The flying wires were in reality 5/16 BSF streamlined wires. As these are not available now as photo-etch wires, I used the nearest, which are the 1/4 BSF wires from 'RB Productions'. When drilling rigging holes, secure a 0.5 mm diameter tube onto the end of a length of 1/4 BSF wire. It can be inserted into the hole to check the angle of the wire to its location at the opposite end.*



Drill a hole of 0.5 mm diameter into the location 'plate' on the top surface of the lower wings, near the wing roots and at an angle diagonally up to the inboard top of the forward inboard interplane struts.

Drill through the pre-moulded 'groove' at the bottom of the fuselage/rear wing root (under the radiator) and at an angle diagonally up to the inboard top of the rear inboard interplane struts.

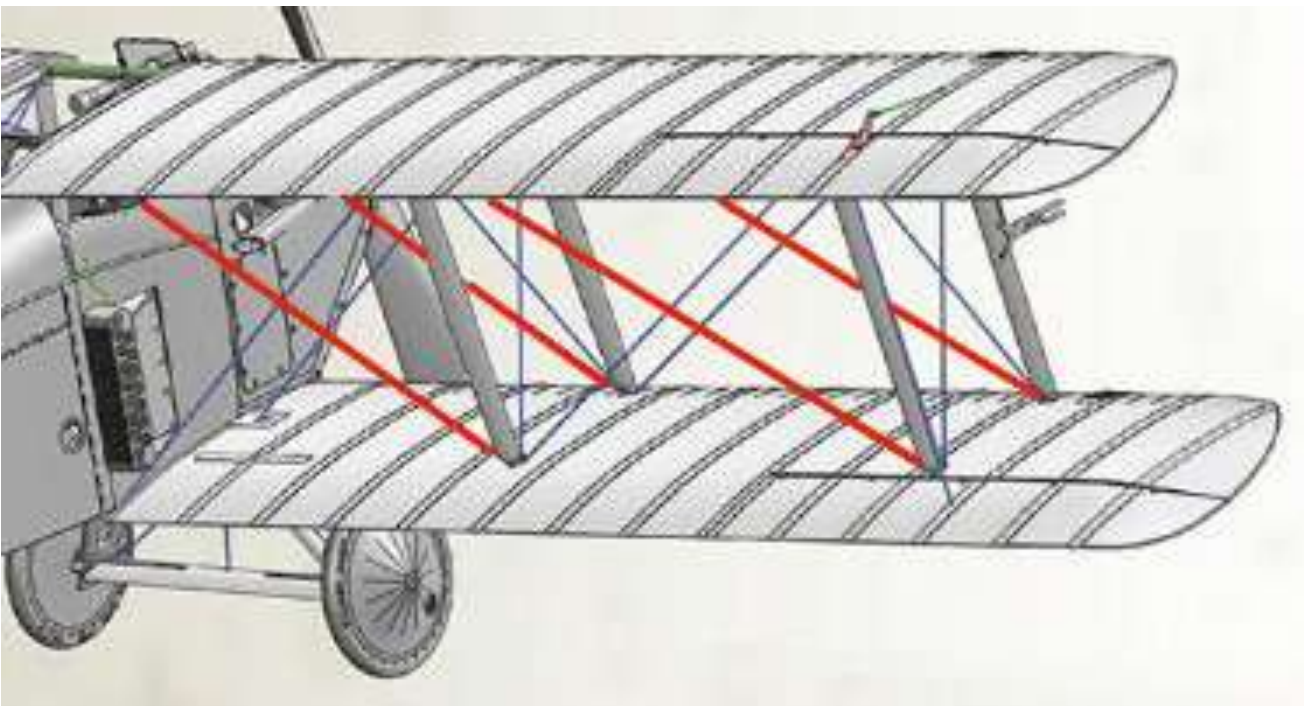
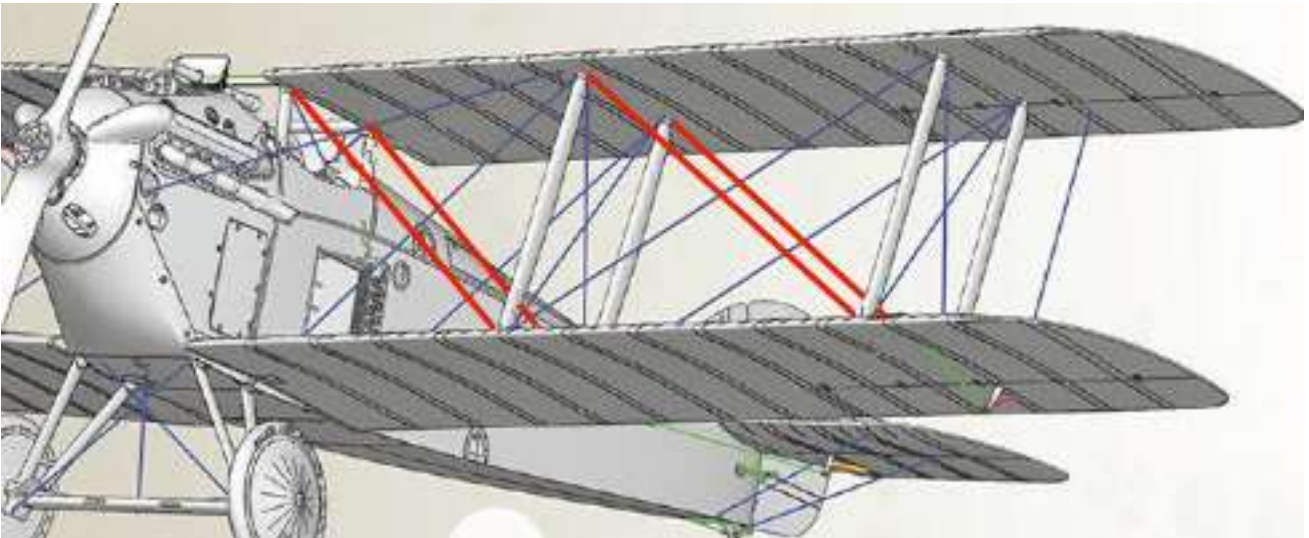
Drill a hole of 0.5 mm diameter into, **but not through**, the top surface of the lower wings outboard from the forward interplane struts and at an angle diagonally up to the inboard top of the forward outboard interplane struts.

Drill a hole of 0.5 mm diameter into, **but not through**, the top surface of the lower wings outboard from the rear interplane struts and at an angle diagonally up to the inboard top of the rear outboard interplane struts.

Carry out the same technique to drill tube location holes into the underside of the upper wing and at the correct angles to align with the lower wing tubes (refer to the previous illustration for the location of the tubes).

Landing wires:

NOTE: *The flying wires were in reality 5/16 BSF streamlined wires. As these are not available now as photo-etch wires, I used the nearest, which are the 1/4 BSF wires from 'RB Productions'.*



Drill a hole of 0.5 mm diameter into, **but not through**, the top surface of the lower wings inboard from the forward interplane struts and at an angle diagonally up to and outboard from the forward wing support rods on the fuselage top frame.

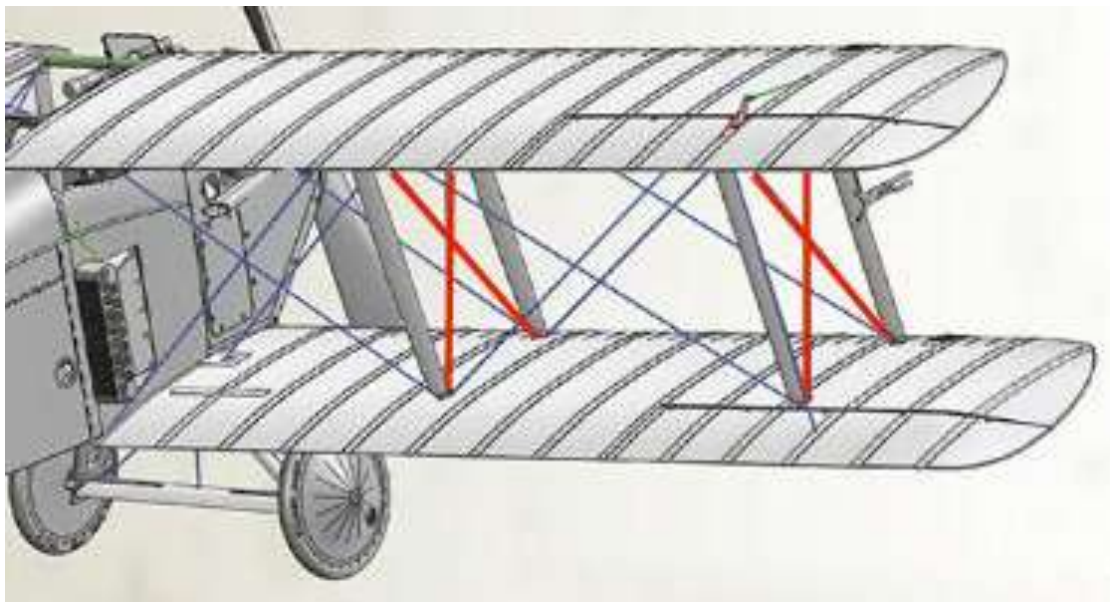
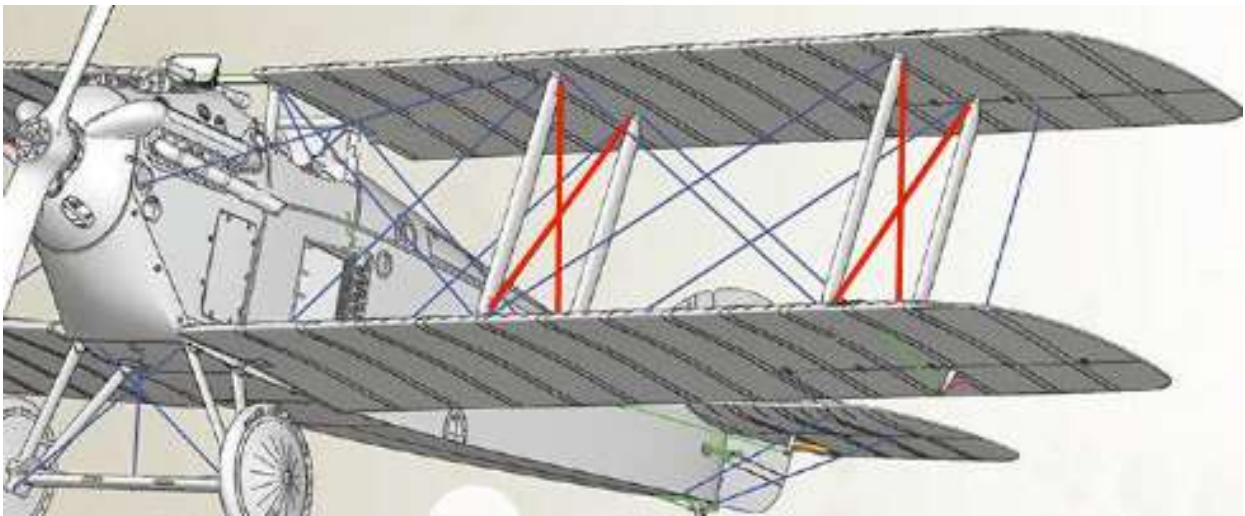
Drill a hole of 0.5 mm diameter into, **but not through**, the top surface of the lower wings inboard from the rear interplane struts and at an angle diagonally up to and outboard from the rear wing support rods on the fuselage top frame.

Drill a hole of 0.5 mm diameter into, **but not through**, the top surface of the lower wings inboard from the forward outer interplane struts and at an angle diagonally up to and outboard from the top of the forward inboard interplane struts.

Drill a hole of 0.5 mm diameter into, **but not through**, the top surface of the lower wings inboard from the rear outer interplane struts and at an angle diagonally up to and outboard from the top of the rear inboard interplane struts.

Carry out the same technique to add tube location holes into the underside of the upper wing and at the correct angles to align with the lower wing tubes (refer to the previous illustration for the location of the tubes). The inboard landing wires locations at the wing roots should be drilled at the correct angles and outboard from the locating holes for the support rods on the fuselage top frame.

Incidence wires:



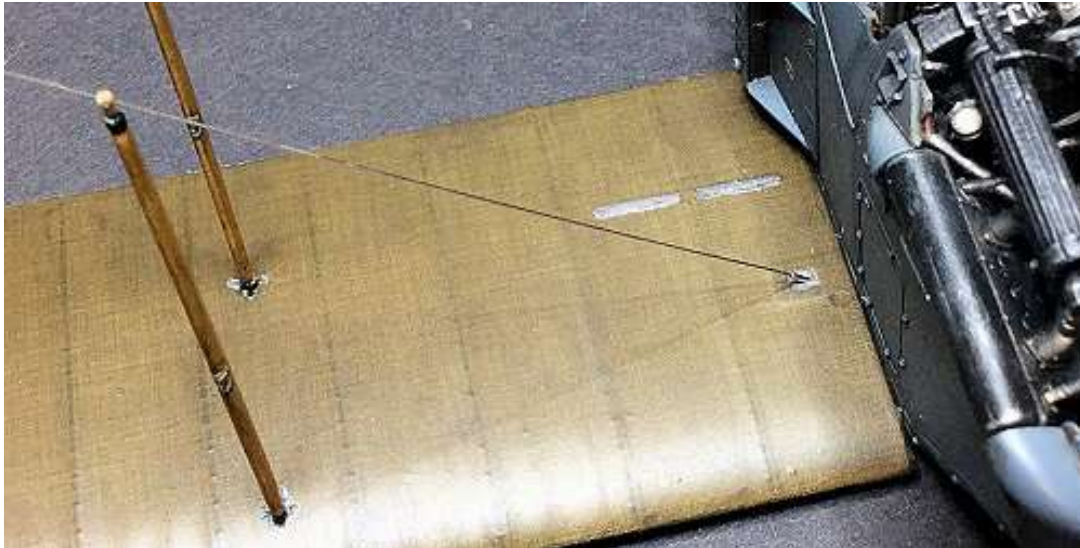
Drill a hole of 0.5 mm diameter into, **but not through**, the top surface of the lower wings and forward from the four rear interplane struts and at an angle diagonally up to the top, rear of the four forward interplane struts.

Drill a hole of 0.5 mm diameter into, **but not through**, the top surface of the lower wings and to the rear of the four forward interplane struts and at an angle diagonally up to forward from the top the four rear interplane struts.

Carry out the same technique to add tubes into the underside of the upper wing and at the correct angles to align with the lower wing tubes (refer to the previous illustration for the location of the tubes).

NOTE: *The locating holes for the tail unit, flight controls and landing gear were pre-drilled earlier in the build. Therefore these will be final rigged later in this build.*

Example of checking wire alignment between location points



Assembly (continued):

NOTE: *To avoid cement from entering the pre-drilled rigging holes, it's best to use a thicker cement, such as 'Revell' Contacta Professional cement (39604) or similar*

Apply cement to the four locating rods on the fuselage top frame and to the tops of the eight interplane struts.

Locate the upper wings onto their location rods on the fuselage top frame, making sure there is the spacing, as shown on page 10 of the kit instructions.

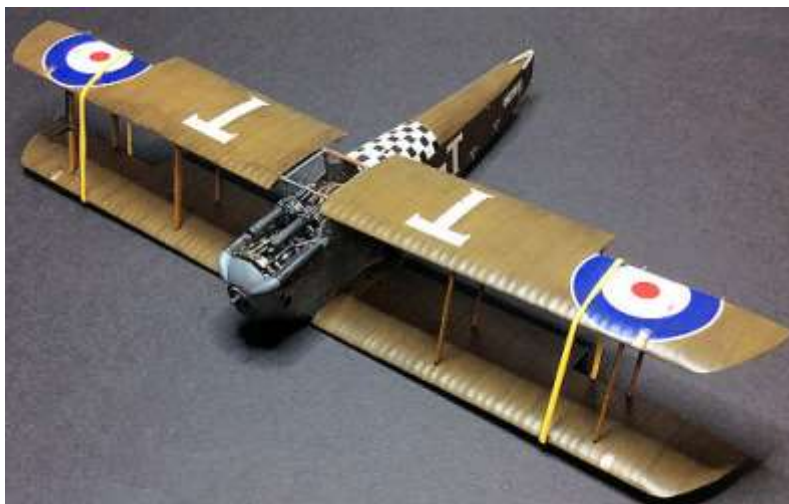
Locate the upper wings onto their top location stems on the eight interplane struts.

If necessary, hold the outer ends of the wing together with elastic bands to make sure the interplane struts are fully located.

Check the upper and lower wings are aligned when viewed from the front, sides and from above.

Leave the cemented wings to fully set on their locating rods and interplane struts.

If used, remove the elastic bands.



Rigging surface finish:

NOTE: *The metallic sheen from the tubes and photo-etch streamlined wires is too bright and needs to be dulled down before being fitted to the model.*

Cut forty eight 3 mm lengths of 0.5 mm diameter Nickel-Silver tube, such as 'Albion Alloy's' NST05 or similar.

Slide all of the cut Nickel-Silver tubes onto a length of 0.2 mm diameter wire or tube.

Cut lengths of the required streamlined 1/4 BSF wires from 'RB Productions' or the eight interplane, flying and landing wires.

Airbrush the tubes and wires with a matte clear coat, such as 'Alclad' Flat (ALC314) or similar, with 'Tamiya' Metallic Grey (XF56) and thinned with Mr. Colour' levelling thinners 400 or similar. The intention is to give a duller metallic look to the tubes and wires.

Remove the tubes from the wire or tube.

Final rigging:

Incidence, flying and landing wires

NOTE: *The following procedure is applicable to all eight incidence, flying and landing wires.*

Cut the relative wire to the length required so it can be located into its diagonally opposed pre-drilled holes in the underside of the upper wing and top surface of the lower wing.

Make sure the wire is cut so it can be easily located into its pre-drilled holes and without any bow in the wire.

Slide a cut tube onto each end of the wire.

Fully locate the wire into its diagonally opposed pre-drilled holes.

Slide each tube along the wire and into its pre-drilled location hole.

Make sure the wire is not bowed and the tubes are firmly located into their pre-drilled holes.

Make sure the wire is turned in the tubes so that its thin edge is facing forwards (into the airflow).

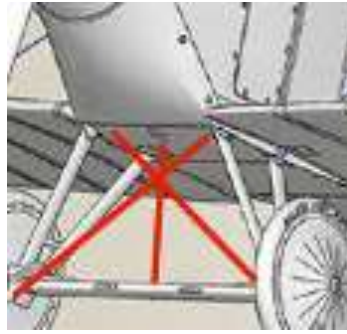
Using thin CA adhesive, secure **only the tubes** into their locating holes.

Using thin CA adhesive, secure **only one end of the wire** into its tube, leaving the opposite end free to move in its tube, allowing the wire to move if the model is flexed when moved.



Landing gear bracing:

NOTE: *The crossed bracing wires between the landing gear struts were 9/32 BSF streamlined wires. The single vertical bracing wire was 1/4 BSF streamlined wire. I used 1/4 BSF streamlined wires from 'RB Productions'.*



Cut six 3 mm lengths of 0.5 mm diameter Nickel-Silver tube, such as 'Albion Alloy's' NST05 or similar.

Cut two lengths of 1/4 BSF wire so it can be located into its diagonally opposed pre-drilled holes in the bottom of the forward landing gear struts and underside of the fuselage. Make sure the wire are cut so that they can be easily located into their pre-drilled holes and without any bow in the wires.

Slide a cut tube onto each end of the wires.

Fully locate the wires into their diagonally opposed pre-drilled holes.

Slide each tube along the wires and into their pre-drilled location holes.

Make sure the wires are not bowed and the tubes are firmly located into their pre-drilled holes.

Make sure the wires are turned in the tubes so that their thin edges are facing forwards (into the airflow).

Using thin CA adhesive, secure **only the tubes** into their locating holes.

Using thin CA adhesive, secure **only one end of the wires** into their tubes, leaving the opposite end free to move in its tube, allowing the wire to move if the model is flexed when moved.

Cut one length of 1/4 BSF wire so it can be located into its pre-drilled holes in the centre, underside of the fuselage and centre of the axle fairing. Make sure the wire is cut so that it can be easily located into its pre-drilled holes and without any bow in the wire.

Repeat the above procedure to secure the wire in position.





Aileron control wires/cables:

NOTE: *The aileron control wires between the upper and lower ailerons were 2BA streamlined wires. Therefore, I used that size wire from 'RB Productions'. The control cables from the aileron control horns into the wings and the single cable between the leading edge of the upper wing and between the centre section, were round, wire wound cable.*

Cement the pre-rigged aileron control horns (A3 x2, A7 x2) into their recesses in the four ailerons (refer to page 10 of the kit instructions).

Make sure the locating holes in the four ailerons and their locating rods in the wings are clear of any primer and paint.

Using thin CA adhesive, fully locate and secure the four ailerons onto their wing locating rods and if animated, at their correct and matched angles.

Cut a length of 'RB Productions' 2BA streamlined wire such that it can be inserted down through the pre-drilled holes in a pair of ailerons. The ends of the wire should not protrude from the ailerons.

Pass the mono-filament lines from the rear of the aileron control horns back and through the pre-drilled wire holes.

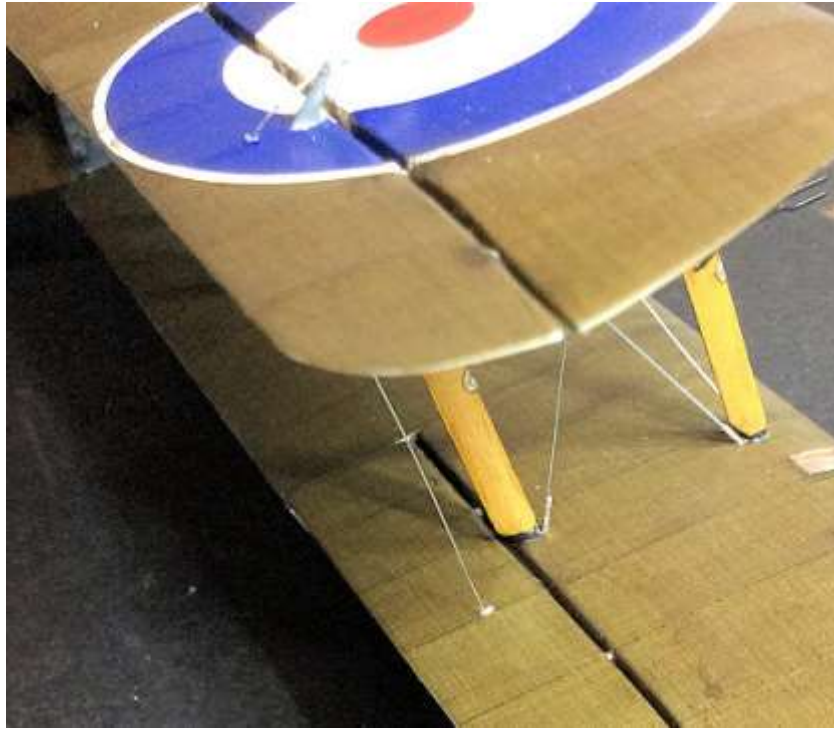
Position the streamlined wire with its thin edge into the airflow (forwards).

Keeping the mono-filaments taut, apply thin CA adhesive to secure the lines and ends of the streamlined wires into the ailerons.

Cut away any residual tags of mono-filament at the aileron/streamlined wires.

Repeat the procedure to add mono-filament and a streamlined wire to the other pair of ailerons.

Brush paint the four control horns with 'Tamiya' Ocean Grey 2 (XF82) mixed with Rubber Black (XF85) to slightly darken the grey.



Assembly (continued):

Cement the pre-rigged elevator control horns (A8) into their recesses in the elevators.

Cement the pre-rigged rudder control horn (A51) into its recess in the leading edge of the rudder (refer to page 9 of the kit instructions).

Make sure the tailplane mating surfaces on the rear of the fuselage and the tailplane are clear of any primer and paint.

Cement the tailplane assembly into its location in the rear of the fuselage.

Cement the fin/rudder into its recess in the rear of the fuselage and locating hole in the forward, top of the tailplane.

Final rigging (continued):

Elevators

NOTE: *The four elevator control wires from the fuselage were round, wire wound cable.*

Brush paint the four control horns with 'Tamiya' Ocean Grey 2 (XF82) mixed with Rubber Black (XF85) to slightly darken the grey.

Pass the free ends of the forward upper control lines into their upper pre-drilled holes in the top of the fuselage sides.

Holding the lines taut, secure them into the holes using thin CA adhesive.

Repeat to secure the forward lower control lines into their lower openings in the fuselage sides.

Pass both free ends of the rear upper and lower control lines into their pre-drilled holes in the elevators.

Holding ends of both lines taut (I used self gripping tweezers on each line), secure them into the holes using thin CA adhesive.

Carefully cut away residual excess lines at the holes in the elevators.

Rudder

NOTE: *The twin rudder control wires from the fuselage were round, wire wound cable.*

Brush paint the rudder control horns with 'Tamiya' Ocean Grey 2 (XF82) mixed with Rubber Black (XF85) to slightly darken the grey.

On both sides of the fuselage, pass the free ends of the pair of control lines into their opening in the fuselage sides.

Holding both lines taut, secure them into their opening using thin CA adhesive.



Fin/tailplane bracing:

Forward bracing wires:

NOTE: *The fin/tailplane bracing wires were 2BA streamlined wires. Therefore, I used that size wire from 'RB Productions'. The rigging holes were pre-drilled previously.*

Cut a length of 'RB Productions' 2BA streamlined wire and bend one end such that it can be inserted into its pre-drilled hole in the tailplane.

Cut the wire at the other end so that when the bent end is inserted into its tailplane hole, the other end is just too long to be inserted into the associated hole in the fin.

Cut two 0.4 diameter Nickel-Silver tubes, such as 'Albion Alloy's NST04 or similar and slide the tubes onto the straight end of the wire.

Bend the straight end of the wire such that the bent ends of the wire can be inserted into the tailplane and fin holes without any bowing of the wire.

Repeat the procedure for the same wire on the opposite side of the tailplane/fin.

Make sure the thin edge of the wires are facing into the airflow (forwards).

Keeping the tubes clear of the fin, secure the two ends of the wires into the fin, using thin CA adhesive.

Slide a tube up to the fin (on both sides) and secure in place using thin CA adhesive.

Turn the aircraft over onto its back.

NOTE: *During the following step, the bottom ends of the two wires are to be bent to lay on the underside of the fuselage at the front of the tail skid opening.*

Repeat the procedure to add a wire to the same rigging holes in the tailplane.

Using thin CA adhesive, secure the bent ends of the wires to the underside of the fuselage.

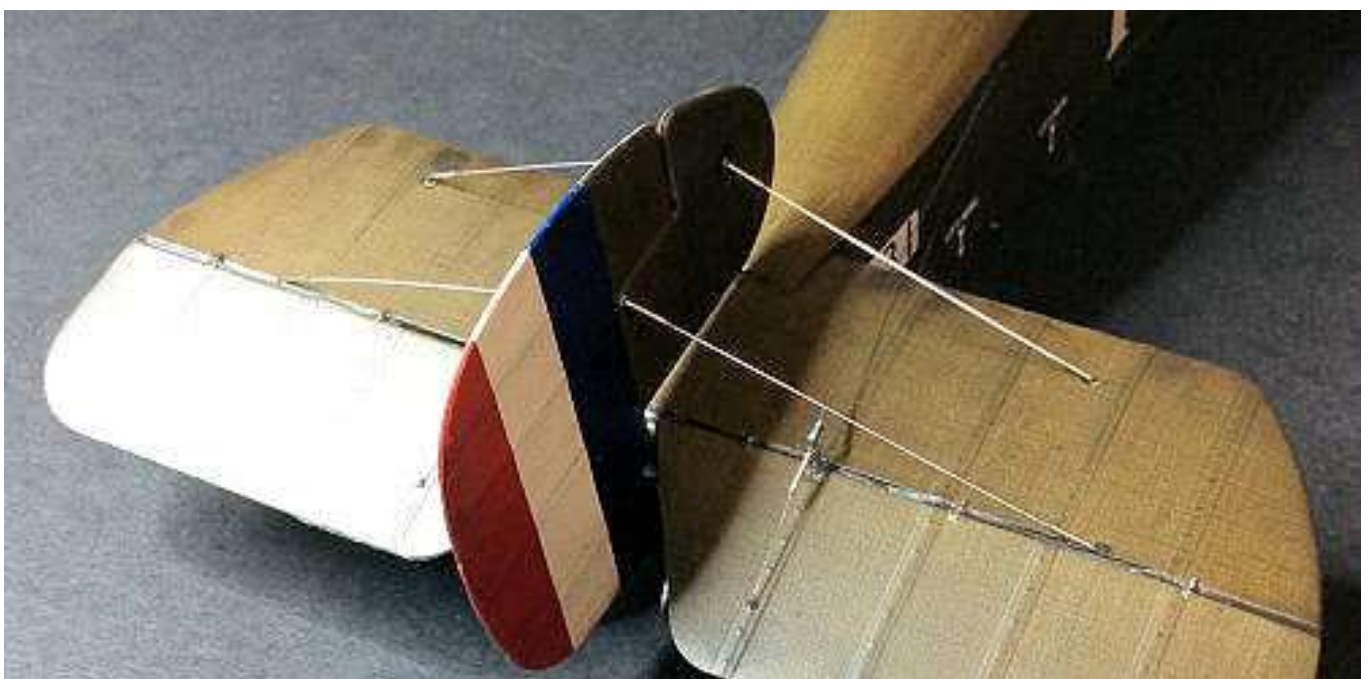
Make sure the wires on both sides of the tailplane are fully inserted into their rigging holes.

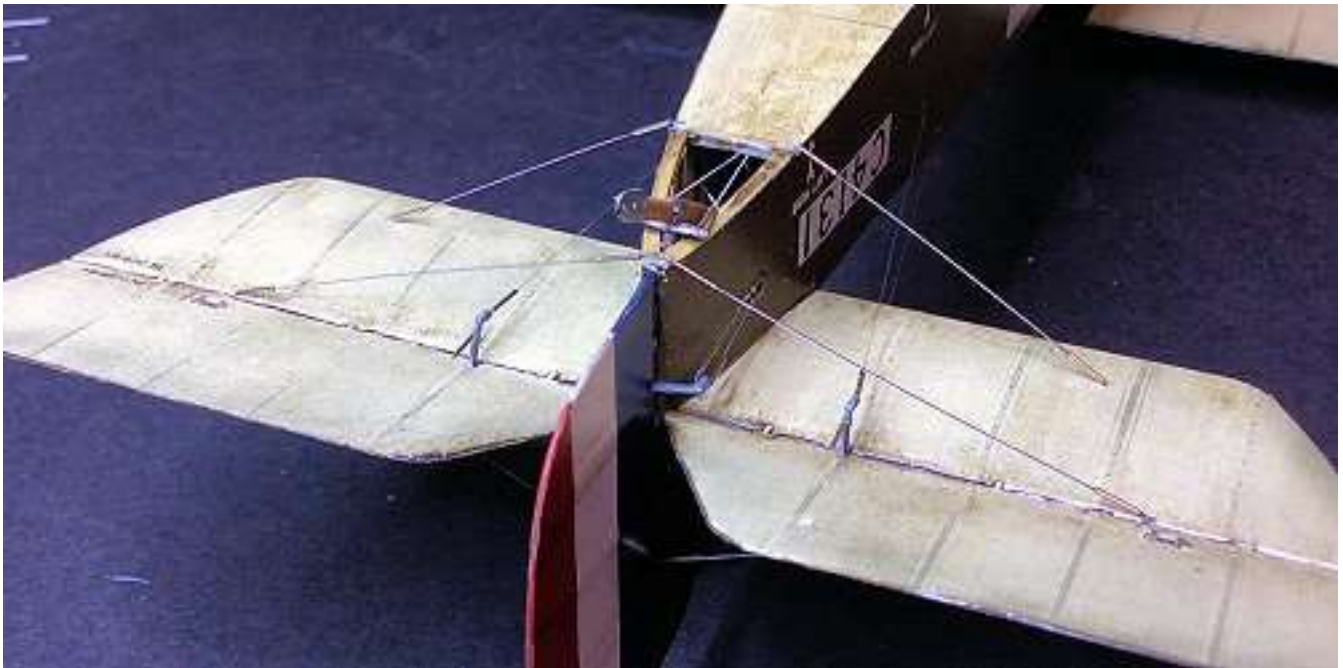
Keeping the tubes clear of the tailplane, secure the two ends of the wires into their rigging holes in the tailplane, using thin CA adhesive.

Slide the remaining tubes up to the tailplane (on both sides) and secure in place using thin CA adhesive.

Rear bracing wires:

Repeat the procedure to add rear bracing wires to both sides of the tailplane and fin. The bottom of the underside wires should be secured onto the raised locations at the bottom, rear end of the fuselage (above the tail skid).





Wing drag cables:

NOTE: *Single drag wire **cables** were fitted from the front of the engine bearers and through the opening in the fuselage sides then up to the underside of the upper wings, inboard from the forward inner interplane struts.*

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

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

Cut two short lengths of 'Albion Alloy's' Nickel-Silver tube (NST05) or similar.

Working through the opening in the fuselage, pass the 0.08 mm diameter line through the 1:48th scale Anchor Point (fitted previously in the engine bearer frame).

Pull both ends of the line out of the fuselage opening.

Using thin CA adhesive, secure one end of the 0.12 mm diameter line into the pre-drilled hole in the underside of the upper wing, inboard from the top of the forward, inboard interplane strut.

Pass one end of the 0.08 mm diameter line through a tube then through the 'eye' end of a 'Gaspatch' 1/48th scale Type C turnbuckle.

Pass the line back and through the tube.

Pass the other end of the line through the tube from the opposite end of the tube.

Pull both ends of the line to draw the tube and turnbuckle close the fuselage opening, making sure the loop of line through the 'eye' of the turnbuckle is free to move.

Apply thin CA adhesive to the end of the tube closest to the fuselage to secure the lines in the tube.

Pass the free end of the 0.12 mm diameter line through a tube then through the other 'eye' end of the turnbuckle.

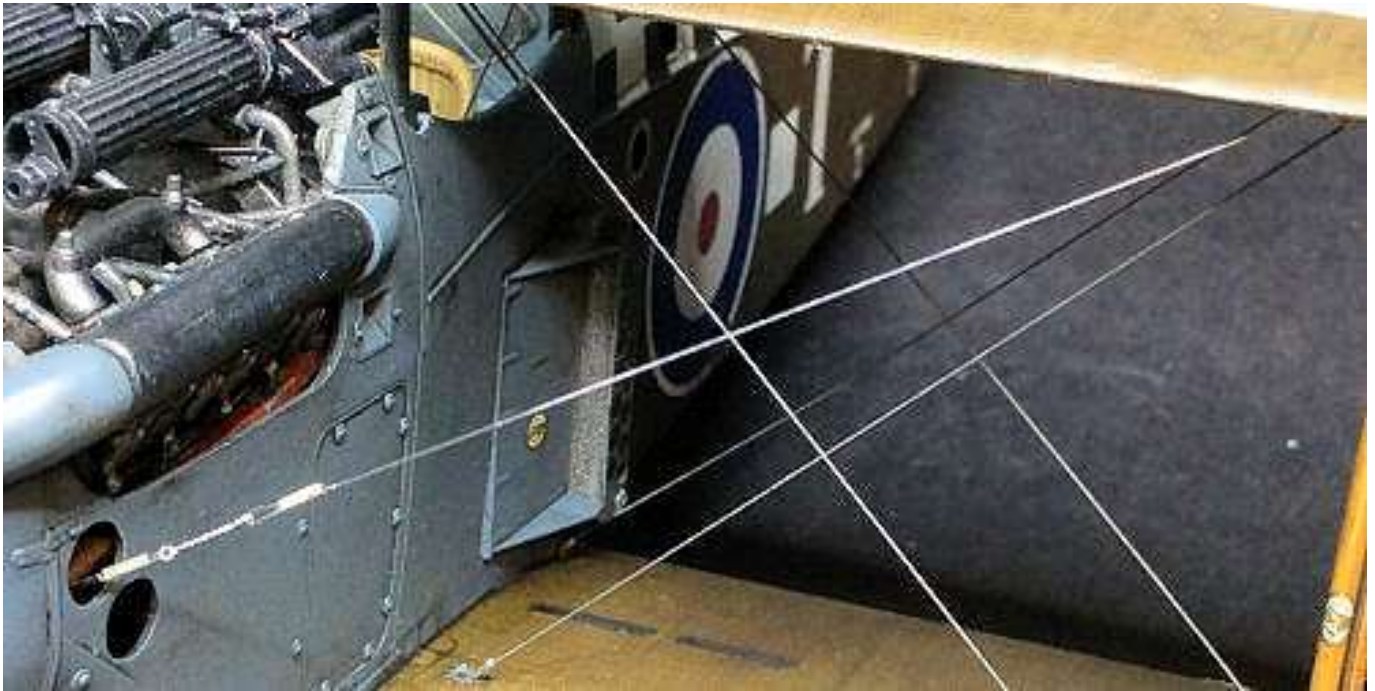
Pass the line back and through the tube.

Pull the end of the line to tighten the lines and draw the tube up to, **but not touching**, the 'eye' of the turnbuckle, leaving the loop free to move.

Keeping the line taut, apply thin CA adhesive to the end of the tube farthest from the turnbuckle to secure the line in the tube.

Carefully cut away the residual end tags of line at the two tubes.

Repeat the procedure to add the drag line to the other side of the aircraft.



Aileron cable upper wing:

NOTE: A single aileron control **cable** was routed inside the leading edge of the upper wing and across the open centre section, forward from the front frame cross bar. A turnbuckle was fitted in the centre of the cable run.

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

Cut two short lengths of 'Albion Alloy's' Nickel-Silver tube (NST05) or similar.

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

Pass the line back and through the tube.

Pull the end of the line to draw the tube up to, **but not touching**, the 'eye' of the turnbuckle, leaving the loop free to move.

Apply thin CA adhesive to the end of the tube farthest from the turnbuckle to secure the line in the tube.

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

Repeat the procedure to add a line to the other end of the turnbuckle.

Lay the line assembly over the centre section of the upper wing so that the turnbuckle is central between the upper wing roots.

Cut one end of the line, leaving enough to be inserted into the pre-drilled hole in that upper wing root.

Using thin CA adhesive, secure that end of the line into the pre-drilled hole in the wing root.

Keeping the line taut, cut the other end of line, leaving enough to be inserted into the pre-drilled hole in that upper wing root.

Keeping the line taut, use thin CA adhesive to secure that end of the line into the pre-drilled hole in the wing root.



Rigging - final tensioning:

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

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

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

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

Rigging finish:

Brush paint the centre barrels of the aileron control cable at the upper wing and the two drag wires with 'Tamiya' Metallic Grey (XF56) or similar.

Airbrush the aileron, rudder and elevator lines and the fitted aileron and fin bracing streamlined wires with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC311) or similar.

Foot step:

Remove the photo-etch foot step (P8) from the kit supplied sheet and sand away any residual edge tags.

Airbrush the foot step with 'Alclad' Steel (ALC112) or similar.

Using thin CA adhesive, secure the foot step onto its location around the opening on the lower, left side of the fuselage.



Bombs/carrier fit:

Make sure that the four mounting feet and their associated location holes in the underside of the fuselage are clear of any primer and paint.

Make sure that the mounting peg on the four bombs and their associated location holes in the bomb carrier are clear of any primer and paint.

Cement the four bombs in position on the bomb carrier.

Cement the bomb carrier assembly into its location holes in the underside of the fuselage.



Wheels fit:

Make sure that the ends of the landing gear axle and axle location holes in the wheels are clear of any primer and paint.

Fully locate the wheels on the ends of the axle.

Locate the wheel retainers (A1) over their recesses in the ends of the axle. If the wheels are to be fixed, apply cement to the retainers and inner face of the wheels.

Cement the outer wheel covers (A24) fully into the outer wheel faces.



Tie down rings:

Remove the two photo-etch tie down rings (P7) from the kit supplied sheet and sand away any residual edge tags.

Airbrush the two tie down rings with 'Alclad' Steel (ALC112) or similar.

Using thin CA adhesive, secure the two tie down rings into their location holes in the underside of the lower wings.



Lewis machine gun fit:

NOTE: *The Lewis machine (A70) is intended to be fitted to the right side of the fuselage top frame.*

Carefully clip the Lewis machine gun onto the right side of the forward cross member on the fuselage top frame, with the rear locating bar against the right side of the frame.

Cement the machine gun in position on the fuselage top frame.



Engine exhausts fit:

NOTE: *The kit supplied engine exhaust pipes (A14) are replaced with the 'REXx' metalized exhaust pipes. Take care when handling these exhaust pipes as they can be easily damaged if too much pressure is applied to them.*

Using thin CA adhesive, secure the exhaust pipes onto their ports on the engine.

Propeller fit:

Make sure that the engine propeller shaft is clear of any primer and paint.

Using CA adhesive, secure the propeller, in the desired position, onto the engine propeller shaft.

Windscreen:

NOTE: *As the engine top shield panel is to be shown removed (to allow access to the engine for the mechanic). The windscreen was fitted to the panel and was removed with it.*

Remove the windscreen (C3) from the kit supplied clear parts sprue.

Sand away any residual sprue tags from the edges of the windscreen.

Clear any primer or paint from the locating recess in the rear of the engine top shield panel,

Lightly scuff the mating surface of the windscreen.

Using a PVA adhesive, such as 'MicroScale' Kristal Klear or similar, secure the windscreen onto the engine top shield panel

Brush paint the windscreen support frame with 'Tamiya' Ocean Grey 2 (XF82) mixed with Rubber Black (XF85) to slightly darken the grey.

Refer to Part 3 (Weathering) of this build log for more information. I used 'Flory Models' Dark Dirt clay wash to blend the painted windscreen with the weathering on the panel.



'Aldis' gun sight:

NOTE: *The 'Aldis' gun sight is to be shown removed (probably required to remove the engine top shield panel and windscreen) and located with the engine top shield panel beside the aircraft.*

PART 11

FIGURES

PART 11 - FIGURES

Pilot:

The pilot figure I chose to use for this model is the 'Kellerkind Miniaturen' USAS pilot (54/090).

Preparation:

NOTE: This figure is supplied as a complete resin cast and therefore no assembly is required.

Cut away the figure from its base block.

Check the figure for any mould seams or flash and any surface artifacts and remove as required.

Drill a hole of 0.8 mm diameter centrally up into the left leg of the figure (used to hold and mount the figure).

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

Using thin CA adhesive, secure the rod into the pre-drilled hole in the left leg.

Painting:

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



Brush paint the figure as follows:

Flight overalls - 'AK Interactive' British Uniform Light (AK3082) with British Uniform (AK3081) as shadows.

Shoes - 'Tamiya' Red Brown (XF64) or similar. Overpaint with 'Tamiya' Semi-Matte clear coat (X35) or similar.

Gloves and helmet - 'Humbrol' Leather (62) with 'Tamiya' Hull Red (XF9) highlights or similar. Overpaint with 'Tamiya' Semi-Matte clear coat (X35) or similar.

Gloves and helmet lining - 'Tamiya' Deck Tan (XF55) with Wooden Deck Tan (XF78) highlights.

Belt and goggles - 'AK Interactive' British Uniform (AK3081) or similar. Overpaint with 'Tamiya' Semi-Matte clear coat (X35) or similar.

Goggle lenses - 'Mr. Colour' Stainless Steel (213) or similar, overpainted with 'Tamiya' Clear Yellow (X24).

Buttons and belt buckle - 'Mr. Colour' Brass (219) or similar.

Flesh and features:

NOTE: The following painting technique for flesh applies to all of the figures. These are water based and can be thinned as required using water, which is also used to clean the brushes. It's easier to use a 'wet palette' when applying these paints as this keeps the paint from drying and allows mixing of paints as required. A basic wet palette can be a water proof plastic lid with dampened kitchen roll paper laid inside. The paints are then dripped onto the damp paper and applied from there.

The paints used for the flesh of the figures are from the 'Citadel' colour range:

Base coat - 'Bugmans Glow'.

Shading - 'Reikland Flesh Shade'.

Flesh tone - 'Cadian Flesh Tone'.

Flesh highlights - 'Kislev Flesh'.

Brush 'Bugmans Glow' over the exposed head and hand of the figure and allow to dry.

Brush thinned 'Reikland Flesh Shade' over the painted head and hand of the figure and allow to dry.

Brush thinned 'Cadian Flesh Tone' over the painted head and hand of the figure and allow to dry. Do not apply the paint such that it completely covers the previous coat, as subtle shadows are necessary around such as the ears, eyes, nose and chin etc.

Brush thinned 'Kislev Flesh' over the painted head and hand of the figure and allow to dry. This application is very light and intended to highlight areas such as the eye brows, ears, bridge of the nose and jaw line etc.

Using a needle point, apply 'Tamiya' Rubber Black (XF85) or similar to create the eye pupils.

Brush paint the moustache/eyebrows *as desired* with 'AK Interactive' German Uniform Shadow (AK3093) or similar.

Brush paint the lips with 'AK Interactive' Light Flesh (AK3012) or similar.

Weathering:

Lightly sponge 'Tamiya' Weathering Master set A (mud) over the shoes.

Lightly sponge 'Tamiya' Weathering Master set D (oil stain) around the elbows, pockets and seat of the overalls.

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

Apply 'Flory Models' Grime clay wash as shadows in the creases.



Mechanic:

The mechanic figure I chose to use for this model is the 'Kellerkind Miniaturen' RFC Mechanic (54/073).

Preparation:

NOTE: This figure is supplied as three parts, body and two arms and assembly is required.

Cut away the figure and arms from their base blocks.

Check the figure and arms for any mould block residue, seams or flash and any surface artifacts and remove as required.

Drill a hole of 0.8 mm diameter centrally up into one of the legs of the figure (used to hold and mount the figure).

Check fit the two arms into the body sockets.

NOTE: The arms need to be fitted after the flesh has been painted, as access is restricted.

Drill a hole of 0.8 mm diameter into the two arms (used to temporarily hold while painting).

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

Using thin CA adhesive, secure the rods into the pre-drilled holes in the leg and arms.

Painting:

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

Brush paint the figure as follows:

Overalls and forage cap - 'AK Interactive' British Uniform (AK3081) with British Uniform Light (AK3082) as shadows.

Shoes - 'Tamiya' Red Brown (XF64) or similar. Overpaint with 'Tamiya' Semi-Matte clear coat (X35) or similar.

Cloth and shirt - 'Tamiya' Deck Tan (XF55) or similar.

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

Belt - 'AK Interactive' British Uniform (AK3081) or similar. Overpaint with 'Tamiya' Semi-Matte clear coat (X35) or similar.

Forage cap badge, belt buckle, buttons - 'Mr. Colour' Brass (219) or similar.

Flesh and features - Repeat the painting procedure used for the pilot figure.

Assembly:

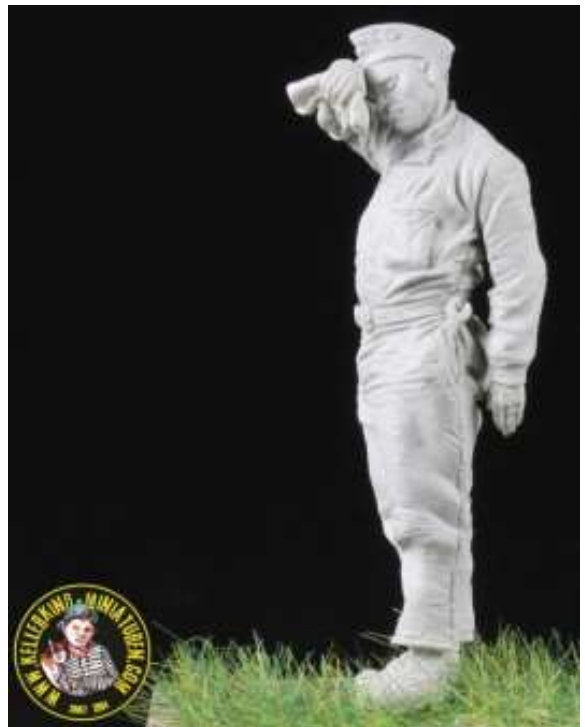
Removed the temporary rods from the two arms for the mechanic figure.

Using thin CA adhesive, secure the two arms for the mechanic into their body sockets, making sure the arms are correctly positioned.

Weathering:

Lightly sponge 'Tamiya' Weathering Master set A (mud) over the shoes.

Lightly sponge 'Tamiya' Weathering Master set D (oil stain) around the elbows, pockets, cloth and sides of the legs (hand rub marks).



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

Apply 'Flory Models' Grime clay wash as shadows in the creases.



Accessories:

NOTE: The accessories are tools and container from the 'Aber' 1/35th scale hand tools (35 A68) set. The metal box are from my 'spares' box.

Preparation:

Remove the photo-etch tool tray (3) and various tools from the sheet.

Remove any residual photo-etch tags from the edges of the parts.

Bend the tool tray into shape at the pre-formed bend lines.

Join the corners edges of the tool tray with either CA adhesive or by soft soldering.

Clean the surfaces of the tool tray box to remove any surface dirt or grease.

Painting:

Airbrush the photo-etch tools and box with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Airbrush the box and tool tray with 'Tamiya' Gloss Black (X1) or similar.

Airbrush the box and tool tray with 'Alclad' Steel (ALC112) or similar.

Airbrush the box and tool tray with a matte clear coat, such as 'Alclad' Flat (ALC314) or similar.

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

Apply your chosen weathering effects. I used 'Flory Models' Dark Dirt clay wash as general weathering.

Tools:

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

Brush any tool handles with 'Tamiya' Hull Red (XF9) or similar

Assembly:

Using thin CA adhesive, secure the tool tray onto the top of the box.

Using thin CA adhesive, secure the tools into the tool tray and on the top of the box.



PART 12

DISPLAY BASE

PART 12 - DISPLAY BASE

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

The grass mat was cut to shape from a sheet of 'Lars op't Hof' scenery Summer pasture. The cut mat was then positioned on the base and the model and figures test placed to achieve the best effect and to make sure the transparent cover of the case would be able to be located without touching the model. The model and figures were then removed with the grass mat left in position on the display base. The edges of the grass mat were then carefully lifted and a soft marker pen was used to mark the outline of the grass mat, but approximately 5 mm inside the mat edge. The grass mat was then removed and the area of the display base inside the marks was scuffed using a coarse grit sand paper, in order to give a key for the adhesive.

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

A coat of PVA adhesive (white glue) was applied to the scuffed area on the display base. 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. Any PVA adhesive that oozed at the edges of the grass mat were wiped off using a cotton bud moistened with water.

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

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

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

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

PART 13
COMPLETED
MODEL
PHOTOGRAPHS





END