World War One Aircraft Models

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

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

I don't consider myself a 'master' of this craft, but hope to be able to pass on what I have learned. As such, here is my build log, which covers my 1:32 scale model build of the monoplane prototype fighter of 1918, the Sopwith ' Swallow'.

Mike 'Sandbagger' Norris

sandbaggeruk@sky.com

Completed: October 2019

INTODUCTION

INTRODUCTION

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

Sorted

AFTER MARKET

AFTER MARKET

Model Kits

'Kiwi Resin' resin conversion set.,
'Wingnut Wings' Sopwith Camel F.1 'Clerget' (32074) donor kit.

Figures

'Model Cellar' Pilot Officer 1917-18 (MC32007)

Engine

'CMK Master Models' Le Rhöne 9J (110 hp) - (129-5105)

Weapons

'Gaspatch' Vickers machine gun, Hyland Type B loading handle - (13-32046)

Propeller

'Proper Plane' 'Sage' wood laminated (WP-006)

Decals

Linen effect decals - 'Aviattic' - CDL (32094) and PC12 Light (32092),
'Xtradecal' white stripes (XPS2), 'Xtradecal' black number/letters (X72157),
'Xtradecal' white number/letters (X72158), Modified 'Wingnut Wings' decals.

Rigging accessories

Gaspatch Elite Accessories Turnbuckles, 'Steelon' Mono-Filament 0.12mm diameter,
Various 'Albion Alloy' Micro-tube (Brass or Nickel Silver),
'Stroft GTM' Silicon-PTFE tempered monofil (Blue/Grey 0.08mm diameter),
'HGW Models' photo-etch set - Sopwith Triplane (132099),

Panel fasteners

'Taurus Models' wing nuts (M0025).

Sundries (as required)

'Araldite' two part epoxy adhesive, Paints ('Tamiya' Acrylic, Humbrol Acrylic,
'Mr. Metal Colour', 'AK Interactive' Primer and micro-filler (Grey AK758)
and (White AK759), 'Alclad' Lacquers, 'Alclad Aqua Gloss',
'Mr. Colour' Levelling Thinners, PVA Adhesive,
Cyanoacrylate (CA) glue (thin), 'Fleky 5' CA adhesive, Blue or White Tack,
Vallejo Plastic Putty, Sanding and/or Polishing sticks from 'Flory Models',
'PlusModel' lead wires, 'Perfect Plastic Putty, 'Flory' pigments, 'Humbrol' Maskol,
'UHU' White Tack, 'Johnson' Pledge Floor Care finish, 'Milliput' two part putty.

Weathering mediums

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

Display Base

'Polak' Grass Mat - Wild Meadow (G - 4707),
Commercially made Acrylic base and cover,
Etched Plaque (name plate).

PREFACE

THE SOPWITH 'SWALLOW'

References:
Various on-line data (e.g. Wikipedia etc).
Windsock International 14, No.4 - July/Aug 1998 (J.M. Bruce and Ian Stair).

In June 1918, the Sopwith Aviation Company designed an unarmed parasol monoplane, based on the Sopwith 'Camel'. The aircraft was known the Sopwith Monoplane No.1, but was also known as the Sopwith 'Scooter' (to scoot was to move around fast). The aircraft was built for the personal use of the 'Sopwith' test pilot Harry Hawker and was based on the their current Sopwith 'Camel', but with a single wing mounted just above the fuselage, but with limited space between the fuselage and the underside of the wing. The wing was supported by conventional cabane struts and also braced by RAF streamlined bracing wires, all of which were attached to the lower fuselage and a pyramid shaped strut assembly above the wing. The 'Scooter' was powered by a single 130 hp (97 kW) 'Clerget' 9B rotary engine. The 'Scooter' was used as a runabout and aerobatic aircraft by Harry Hawker and was able to demonstrate excellent maneuverability. Eventually it was used as the basis for a fighter design, originally known as the Monoplane No.2, and later named the Sopwith 'Swallow'.

Like the 'Scooter', the 'Swallow' used the fuselage of a 'Camel', but it had a larger, slightly swept wing of greater wingspan and area. Like the 'Scooter' the wing was mounted above the fuselage, but higher, to allow the pilot to access the two synchronized Vickers machine guns, which were fitted further apart than normal, again to give the pilot better forward visibility. For the same reason the 'hump' in the forward cockpit decking (hence the name 'Camel') was not used. The engine was also changed to that of a 110 hp (82 kW) 'Le Rhône' engine. Also the traditional oval shaped access panels on each side of the forward fuselage were omitted. Twelve strengthening ribs were fitted across the centre section on the upper surface of the wing.

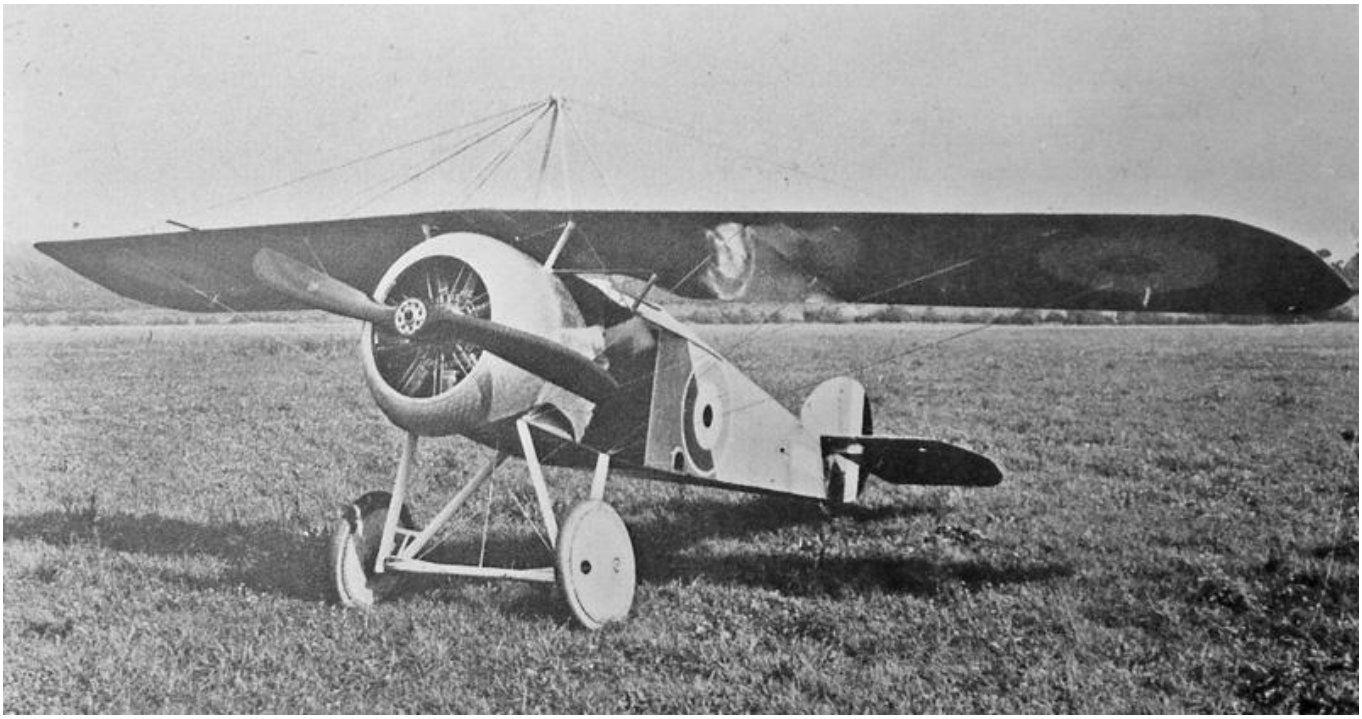
The 'Swallow' made its maiden flight in October 1918, and was delivered to RAF Martlesham Heath on 28 October 1918 for official testing. One considered role for the 'Swallow' was as a shipboard fighter. Engine problems delayed testing of the 'Swallow', but even when the engine problems were resolved, the 'Swallow' proved to have a lower overall performance than the then 'Le Rhône' engine powered 'Sopwith' 'Camel'. Testing of the 'Swallow' continued after the cessation of hostilities but by May 1919 all interest in the 'Swallow' was dropped. The fate of the 'Swallow' is not known, but presumably it was scrapped.

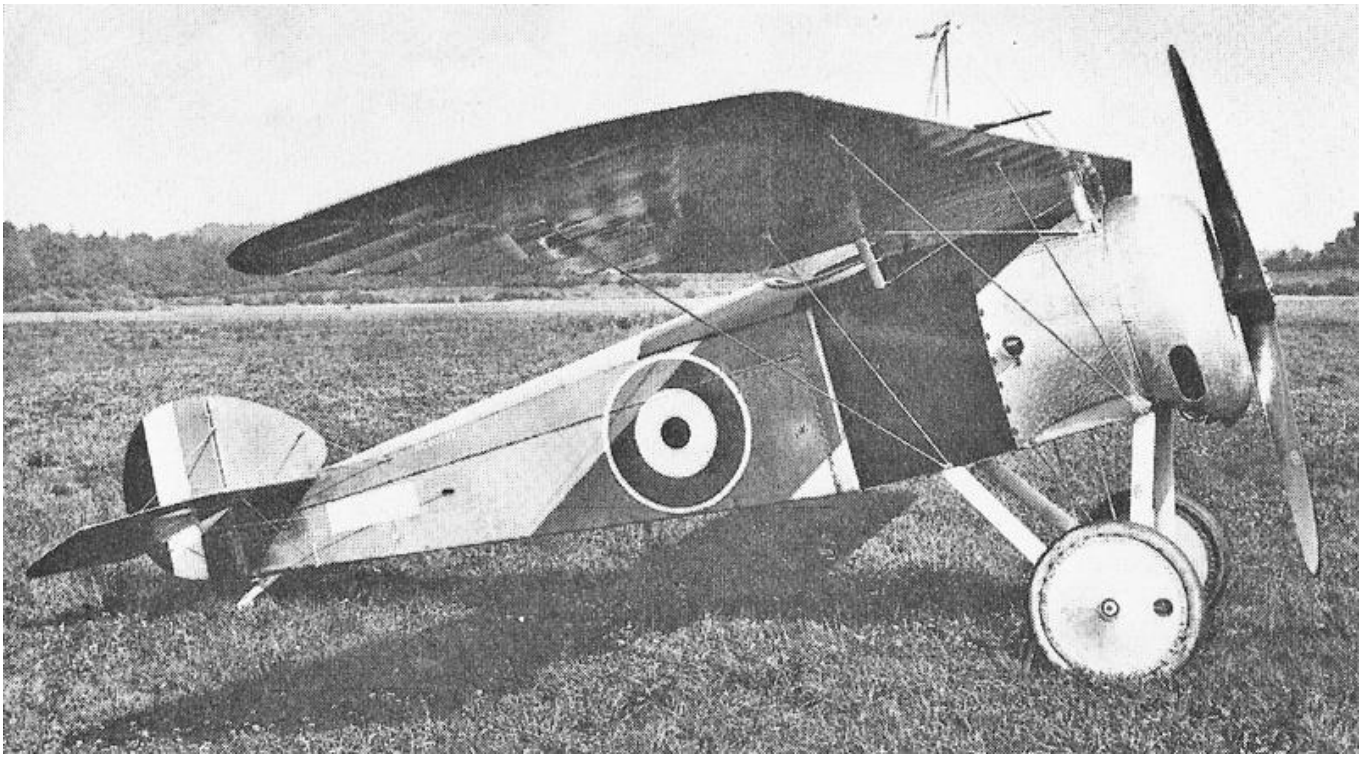
However the original 'Scooter' remained in use, and was given the civil registration K-135 and later to G-EACZ. In 1921, Harry Hawker purchased and flew the 'Scooter'. Harry Hawker died on the 12th July 1921 in a flying accident at Hendon, after which the 'Scooter' was put into storage. It was refurbished in 1925 and was used for aerobatic displays and for racing until 1927 when it was scrapped.

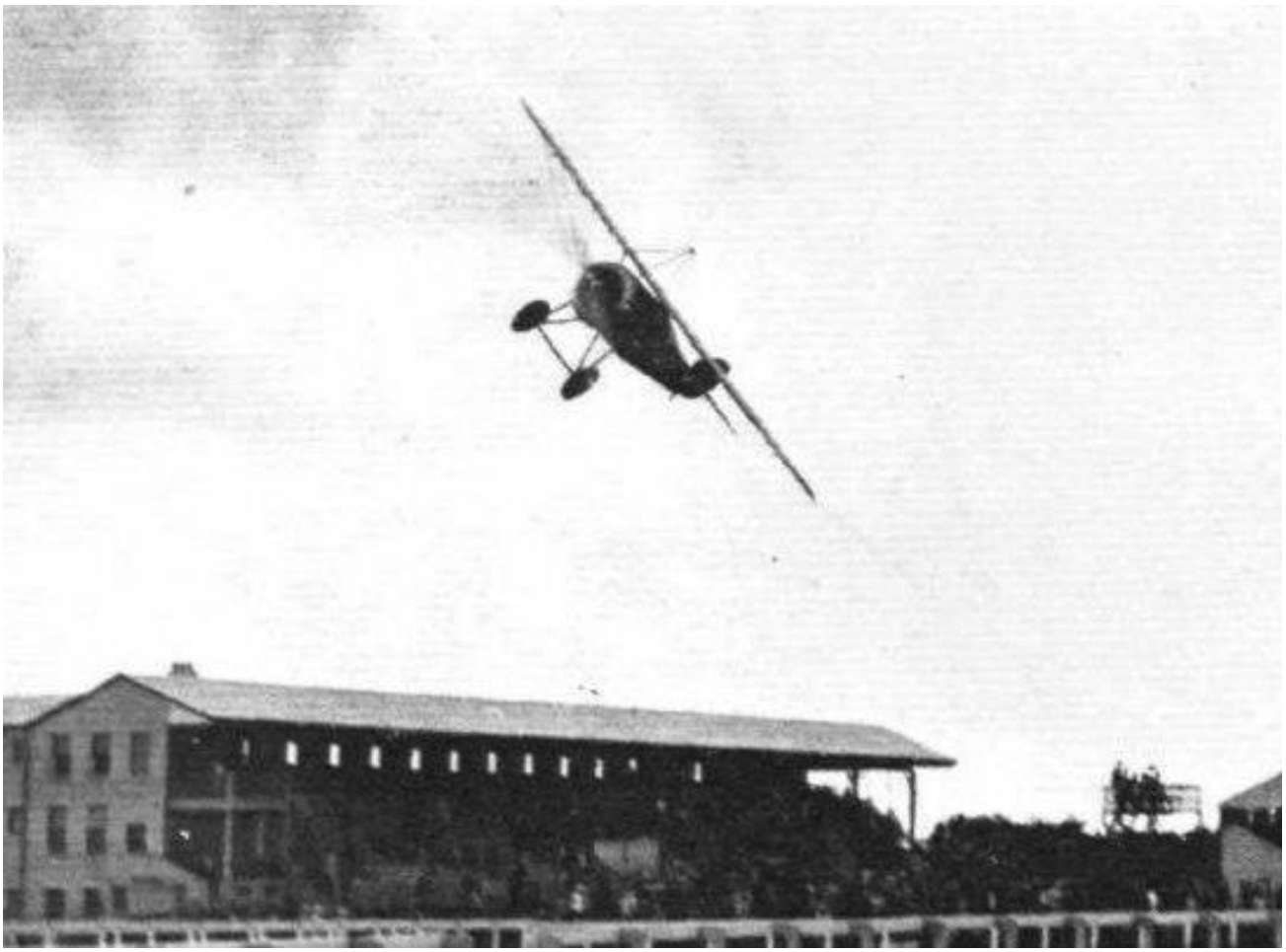
Length: 18 ft 9 in (5.72 m) **Wingspan:** 28 ft 10 in (8.79 m) **Height:** 10 ft 2 in (3.10 m)
Wing area: 160 sq ft (15 m^2)
Empty weight: 889 lbs (403 kg) **Gross weight:** 1,420 lbs (644 kg)
Powerplant: Le Rhône 9J nine-cylinder rotary engine, 110 hp (82 kW)
Maximum speed: 113.5 mph (183 km/h; 99 kn) at 10,000 ft (3,050 m)
Service ceiling: 18,500 ft (5,600 m) **Time to altitude:** 5 min 35 s to 6,500 ft (1,980 m)

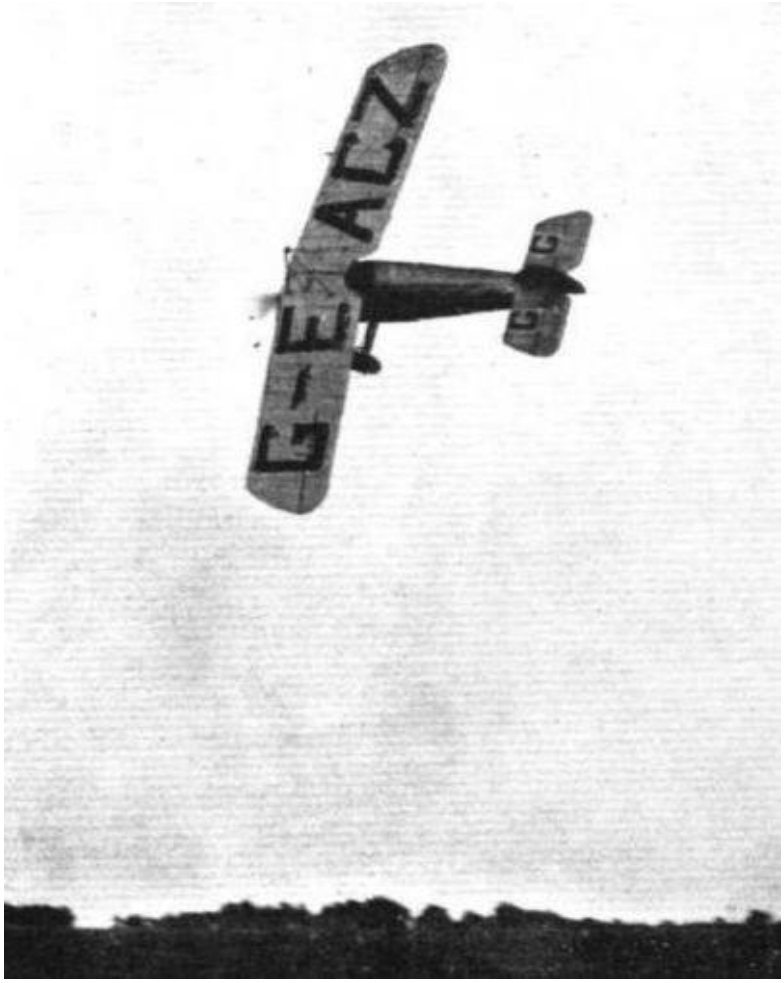
Armament: Two .303 in Vickers machine guns

Monoplane No.1 - Sopwith ‘Scooter’



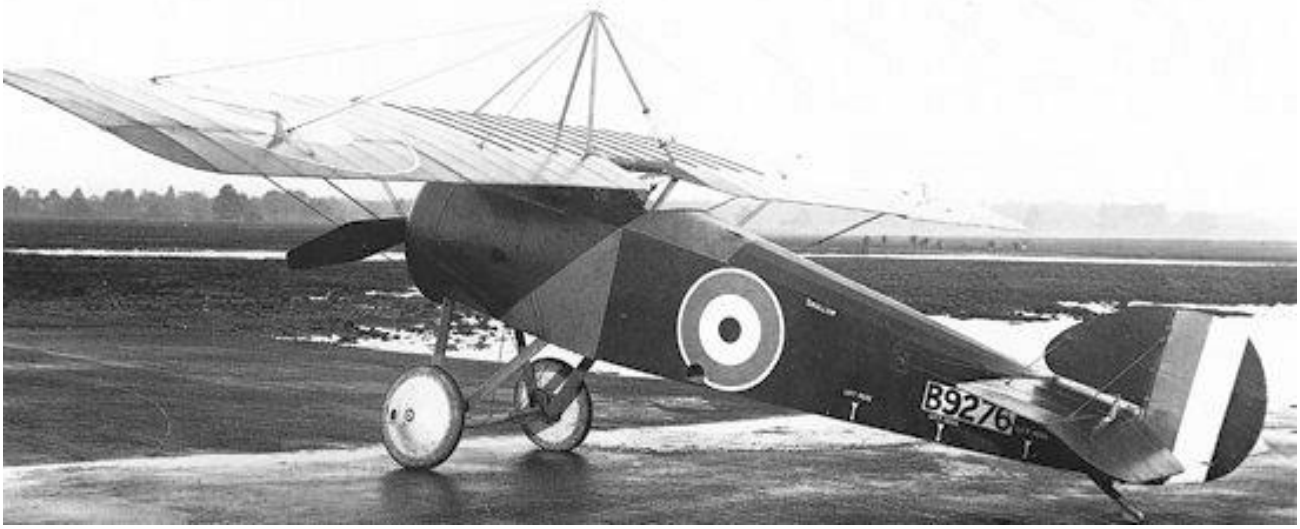


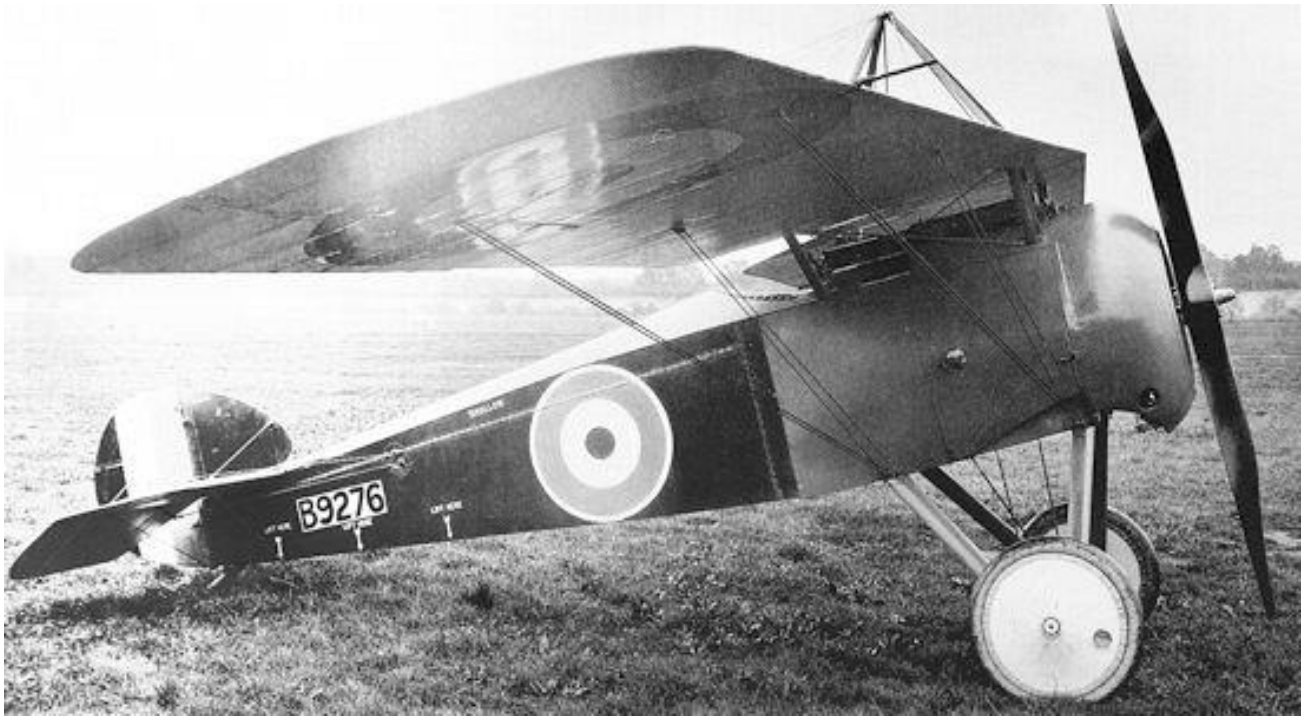


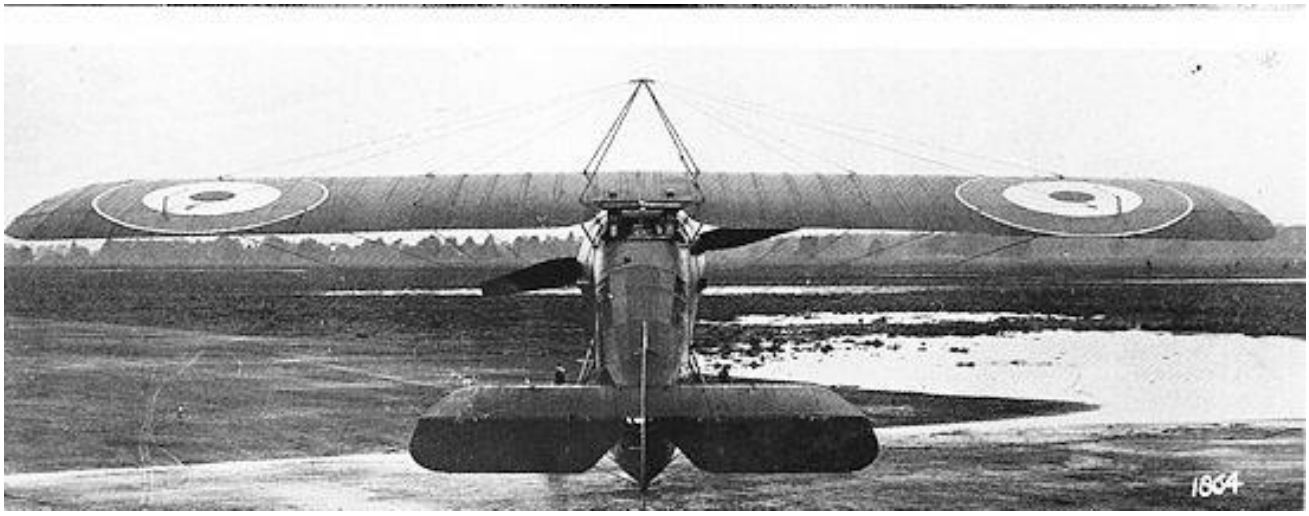

G-EACZ


G ACZ

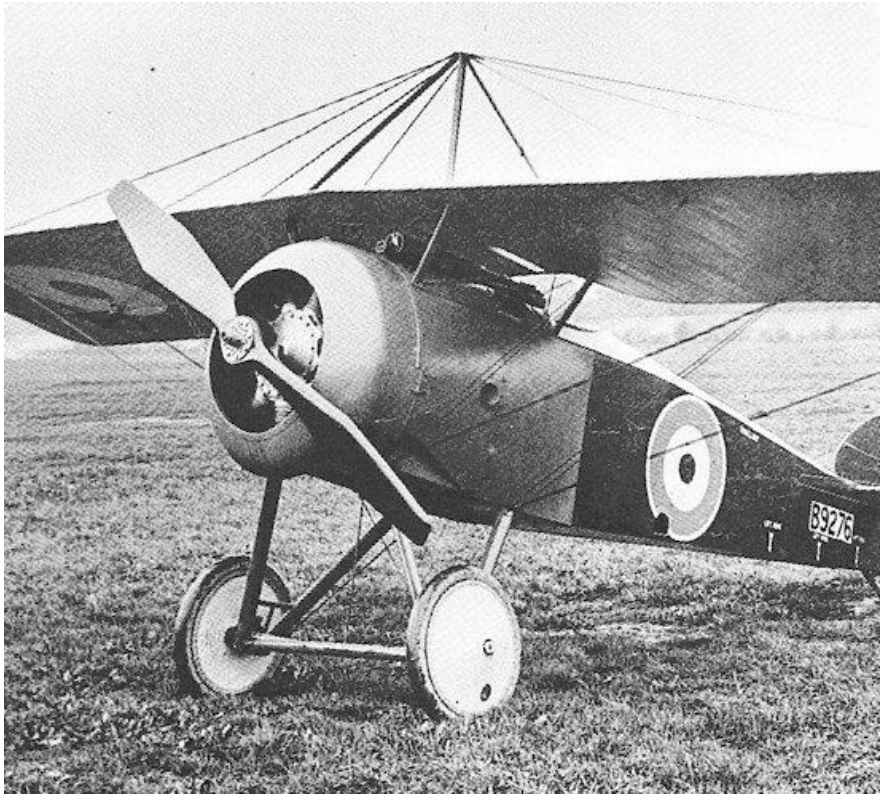
Monoplane No.2 - Sopwith ‘Swallow’



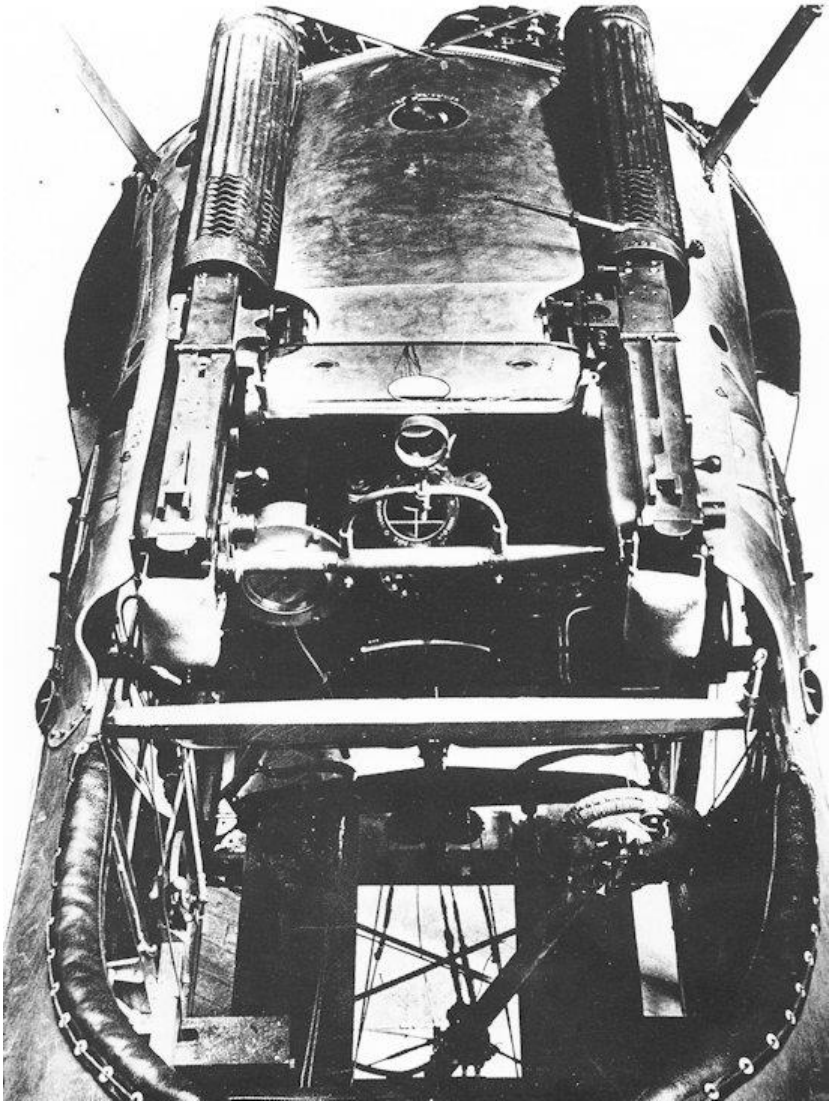



1864


1865


B9275


IWM



WORKING WITH RESIN

WORKING WITH RESIN

This Model is made from resin, as opposed to the normal plastic used. The reason for creating resin kits is that in years gone by, resin kits were able to produce much finer detail on kit parts than the plastic kit equivalents. Even today, there are many producers of resin kits and particularly after market replacement parts. However, plastic kit manufacturers have come a long way now and kits, such as those from Wingnut Wings, are equal to, if not better than resin kits. Manufacturers of resin kits these days tend to make kits to order or have 'limited' runs, although aftermarket parts are usually readily available.

Working with resin does present different challenges to the modeller, especially if it's the first time of building a resin kit. The properties of resin differ radically to those of plastic kits. Below I have listed what I have found to be the primary differences for resin kits from plastic kits:

1. When resin kits are cast in their moulds, a release agent is applied to enable the cast resin parts to be more easily removed, which is similar to plastic kit moulding. This release agent can leave a film on the surface of the kit parts, which, if not removed, can prevent paint or adhesives from adhering to the surfaces. The easiest way to remove this film is to carefully, but fully wash all of the model parts in warm soapy water, using an old, soft tooth brush. Then rinse all of the parts thoroughly and leave to dry.

2. Resin, by its nature, is very brittle and can be damaged or broken easily, especially when handling small parts. This is particularly evident when separating the individual items from the resin cast. The best way to remove item is to cut them away with a razor saw, then clean them up afterwards.

3. Resin casts will normally create 'resin flash' around or amongst parts, especially small items. Thin flash is easily removed with a sharp scalpel blade. Heavier resin cast can be scraped, filed or sanded away.

4. Plastic kits are assembled using solvent adhesives, which melt the surface where it is applied and 'weld' the joint together. Resin however will not react to this type of adhesive and can really only be glued using CA adhesive. CA adhesive reacts to moisture in the air and on the surface to be joined, and as most people know, will also bond skin to whatever it touches, if the skin has CA adhesive on it. Obviously extreme care needs to be exercised when assembling resin kits.

5. Cutting, sanding and drilling resin will create swarf and more importantly, resin dust. The dust in particular is dangerous, especially if inhaled. Therefore always vacuum the Working area, and yourself, regularly. If you have a face mask and find you can wear it whilst working, then do so. Resin can easily be drilled or scraped, but remember how brittle resin is when it is being handled.

6. It is not unusual to find imperfections in resin cast parts, such as surface blemishes, small 'blow' holes or ragged edges. This is common on resin kits. These can be rectified by sanding/polishing and/or filling with modelling putty, then sanding/polishing.

PART 1

THE MODEL

MODIFICATIONS OR CORRECTIONS

KIWI RESIN CONVERSION KIT

PART 1 - THE MODEL

Modifications and corrections

'Kiwi Resin' conversion kit

Although there have kits of this aircraft produced in smaller scales, none have been produced in a scale of 1:32. Therefore to make this aircraft in 1:32 scale, it needs to be an amalgamation of a standard styrene kit and a resin aftermarket conversion set.

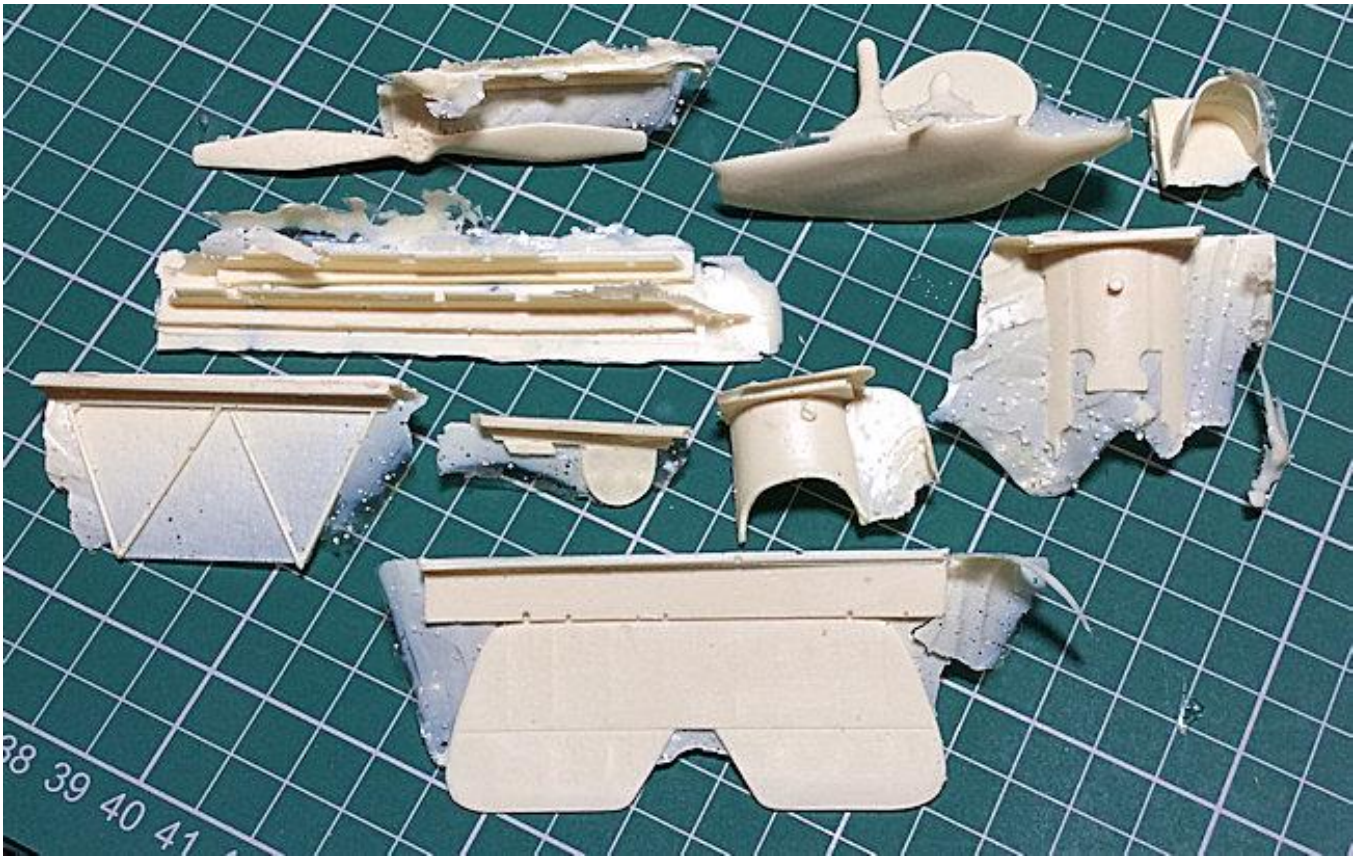
The resin conversion set for this kit is produced by Dave Lochead of 'Kiwi Resin'. The parts supplied are typical of limited run resin sets and display the sorts of imperfections normally found on kits of this type. The parts in the resin set I received have a lot of 'flash' surrounding the various parts and one of the two wing halves was warped. Also the wings in particular have many small 'blow holes' in the surfaces. The model parts are cast in resin, as opposed to the normally available styrene injection kits. Therefore the modeller must employ different build techniques, such as the use of CA adhesive instead of the normal polystyrene cements. Also, being resin, the health risk of inhaling resin dust must be taken into account. At the very minimum, a face mask should be worn and preferably a full face filtered breathing mask. Also cleanliness of the hands and work area are important.

As with most 'limited run' resin kits there is a large amount of 'flash' around the model parts, which must be carefully removed. Resin by its very nature, is brittle as easily broken if mishandled. The kit provides the basic components required for the model conversion. There is scope to add detail where possible. The kit instructions are basic with some background information, and include guidance as to which parts are to be used and donor kit modifications required.

Supplied in the conversion set are the wing halves, centre section support struts, upper wing cable pylon struts, front and rear decking panels, propeller, seat and cushion, tail skid, fin/ rudder and tailplane/elevator. This set is intended to be used with the 'Academy' kit, but as stated previously, I decided to use the better quality 'Wingnut Wings' kit.
The instructions supplied are fairly basic, giving information about the parts in the set, three detail drawings and several photographs. Instruction on how to correct errors for the intended 'Academy' donor kit are included, but obviously disregarded for this build. The colour scheme indicated is for PC10 upper surfaces with Clear Doped Linen (CDL) undersides, white wheel covers, forward fuselage and engine battle ship grey and wing strengthening ribs and fuselage panels wood effect varnished. Of course these are probably speculative as there are no accurate records available for colour schemes for aircraft in this time period.

There are problems with the resin parts though. The wings are slightly warped, but can be straightened by heating in hot water and then pressed flat whilst cooling. The forward decking panel is not long enough and needs to be supplemented to give the correct length. Some of the parts are deemed not strong enough and are created to be used as templates for creating stronger versions for fitting to the model. The main components from the kit that will be used are the wings and cockpit decking panels. All other parts supplied could be replaced by parts from the 'Wingnut Wings' kit, which will be determined during the build process.

NOTE: *Very little of the resin conversion set will be used or in fact can be used.*



Wing assembly

1. Using the wing root moulding block as a guide, carefully cut away the block from the end of each wing half, then file or sand the ends flat. To ensure a good joint, lay the two wing halves on a flat surface and check the joint for any gaps and adjust as necessary.

   NOTE: *As resin is known that resin can warp after being moulded, it's best to separate the ailerons from the wing halves before straightening out the warp in the wings, as cutting out the ailerons could cause the wing halves to warp more.*

2. Using a sharp scraper, carefully score, from both sides, along the ailerons pre-moulded joints to separate the ailerons from the wing halves.

3. File or sand the aileron openings on each wing half to create a square edge.

4. File or sand the corresponding edges on each aileron to make a good contact with the wing openings, then sand a round profile along the long edge of each aileron (that contacts the wing trailing edge surface).

5. Lay the two wing halves together, underside down, on a flat surface and press down at the wing roots. Check the top surfaces at the join for evidence of differing thickness between the wing roots. If one wing is thicker than the other it will stand proud, forming a noticeable edge. If this is the case, use a flat scalpel blade to scrap away the underside surface of the thicker wing until the two halves can be butted up against each other without a step.

6. Removing warp:
Once the wing roots can be butted up against each other without a step, the next step is to remove any warping across the two wing halves. Two methods can be used to achieve this:

WARNING: *Extreme care should be taken using either of the following methods, as hot water or air is used.*

NOTE: *The intention is to heat the resin to the point where you can feel the wing half start to soften and become slightly flexible.*

Hot water: Immerse the wing halves in boiled hot water (protect your hands with suitable gloves, such as rubber kitchen gloves). Allow the wing halves to 'heat soak' for approximately 5 minutes. This allows the heat to penetrate through the thicker parts of the wing halves. Remove each wing half in turn and gently flex the wing to test its flexibility. If too much resistance is felt, heat soak the wing half further and check again. Once the correct amount of flexibility is achieved, quickly place the wing half, underside down, onto a piece of absorbent paper towel (kitchen roll) on a flat surface, then place another sheet over the wing half. Rest a moderately heavy book (not too heavy or the weight may flatten out any aerofoil shape in the wing profile) on top and leave the wing half to cool down. Once cooled, remove the wing half, which should be relatively warp free.

Hot air: Direct the hot air blown from a standard hair dryer (protect your hands with suitable gloves, such as rubber kitchen gloves) around the warped area until you can gently flex the wing to test its flexibility. Once the correct amount of flexibility is achieved, quickly place the wing half, underside down, onto a piece of absorbent paper towel (kitchen roll) on a flat surface, then place another sheet over the wing half. Rest a moderately heavy book (not too heavy or the weight may flatten out any aerofoil shape in the wing profile) on top and leave the wing half to cool down. Once cooled, remove the wing half, which should be relatively warp free.

7. The next step is to join the two wing halves. The 'butt joint' surfaces at the wing roots have already been prepared.

Mark two hole centre points into the wing root of one wing half. The two centre points should be vertically central in the wing root. They should be as far apart as possible, without the holes of 1.2 mm diameter that will be drilled into the wing, breaking through the wing upper or underside surfaces.

Step drill the two holes horizontally into the wing half and at 90 degrees to the wing root. Start with a 0.6 mm drill then 1.0 mm and finally a 1.2 mm diameter drill. Drill the two holes to between 10 mm and 15 mm depth.

Cut two lengths of 1.0 mm diameter brass rod (e.g. ‘Albion Alloys’) to a long enough so when inserted into the holes, leave 3 mm proud. File a point on the end of each rod.

Insert the two rods, blunt end first, fully into the drilled holes, leaving the pointed ends proud.

Lay the wing half, underside down, on a flat surface and position the other wing half, aligning the leading and trailing edges of the wing halves.

Push down on both wing roots then push the two wing halves hard together. This should create indents in the other wing half where the rod centres are located.

Separate the two wing halves then remove and discard the two rods.

Using the two indents as hole centres, drill two holes in the other wing root, as done on the first wing half.

Cut two more rods, but this time long enough to fully penetrate into both wing halves.

Using CA adhesive, secure the two rods fully into one wing half.

Mix a small amount of two part epoxy adhesive (e.g. ‘Araldite Rapid’) and apply it along the wing root of the same wing half.

Apply CA adhesive to the exposed rods.

Place the two wing halves, underside down, over a piece of clear acrylic, enough to cover the glued joint.

Locate the two protruding rods into the other wing half then push the two wing halves fully together.

Use cotton buds or similar to wipe away extruded and excess adhesive.

Position small weighted objects (e.g. ‘Tamiya’ paint jars) onto the wings and particularly the wing root areas, to keep the wing assembly flat whilst the adhesives starts to set.

After a short time the epoxy adhesive should not be tacky, so the acrylic sheet can be easily removed. Remove the weights the on the assembly and remove the piece of acrylic sheet covering the butt joint (if the sheet has stuck firm, leave it and later, carefully trim, file or sand away the acrylic from the wing assembly). Replaced the weights onto the assembly and leave until the adhesive has set fully.

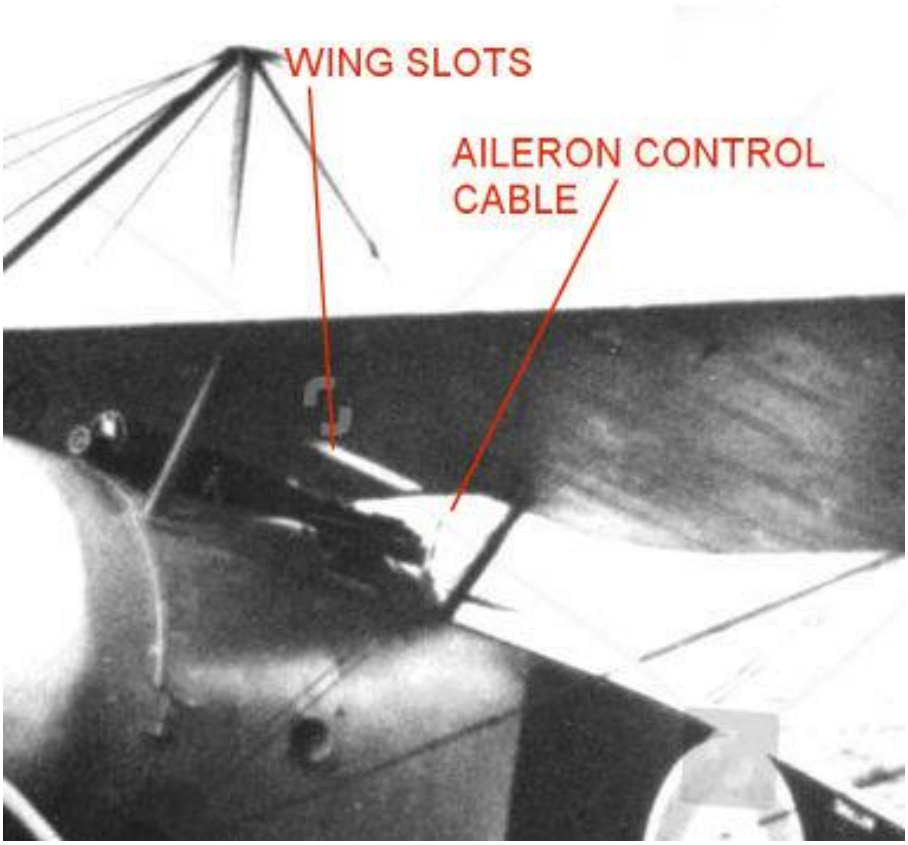
If necessary, file or sand the wing ‘butt joint’ area, to reduce the thickness and/or to clean up the joint. This may require the removal of the inboard wing rib ‘strengthening strips’ on the upper surface. If so these can be replaced with 0.2 mm thick plastic card strips, secured with thin CA adhesive.

8. Centre section cut-out:

The trailing edge cut-out above the cockpit is moulded with a slight curve, but the actual aircraft cut-out was straighter at the forward edge. File or sand the cut-out to correct this (refer to the following photographs).

9. Wing slots:

The wing had a cut-out slot at the centre section and each side of the centre wing joint. These were marked then drilled out with a 1.0 mm diameter drill and filed to shape. The previously fitted brass rods were filed through with the edge of the flat needle file.



10. Aileron animation:

The ailerons have been cut from the wing halves and profiled. However attachment to the wing assembly and control cable and control horns locations still have to be addressed.

In the wing apertures for the ailerons, mark three hole centres - one 12 mm from each end and one central.

Drill holes into the wing, starting at 0.6 mm diameter, then 0.8 mm and finally 0.9 mm diameter.

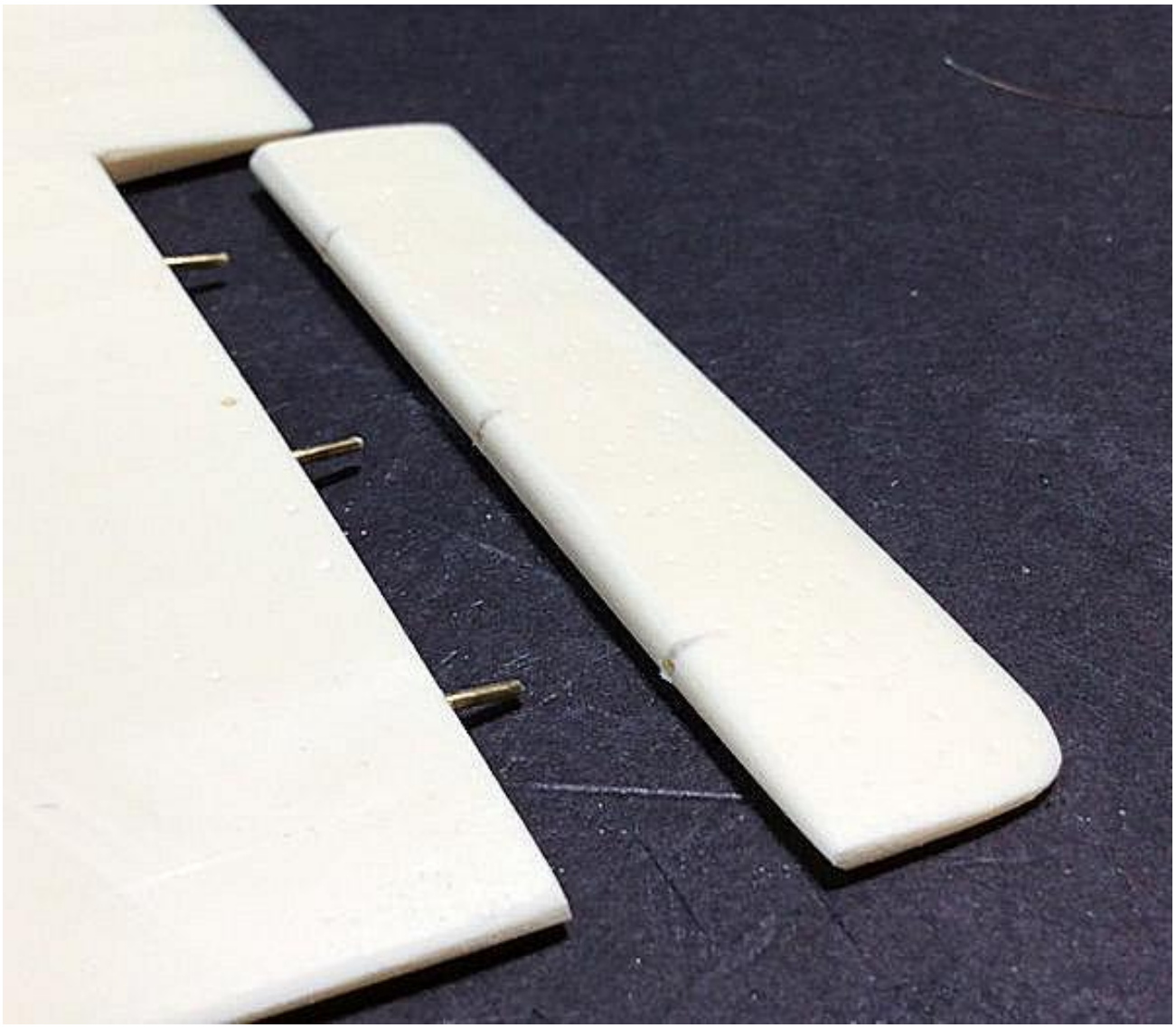
Cut six lengths of 0.8 mm diameter brass rod (e.g. ‘Albion Alloys’) and secure them into the drilled holes using CA adhesive.

Lay each aileron against its rods and mark the position of each rod with a pencil.

Mark the three hole centres in the leading edge of the ailerons.

Drill holes into the ailerons, starting at 0.6 mm diameter, then 0.8 mm and finally 0.9 mm diameter.

Locate each aileron fully onto its rods. If the ailerons are to be animated, carefully bend the ailerons up or down to the desired angle (remember one aileron up the other down). Otherwise leave the ailerons aligned with the wing.



11. Aileron horns:

Each aileron requires the fitting of control horns.

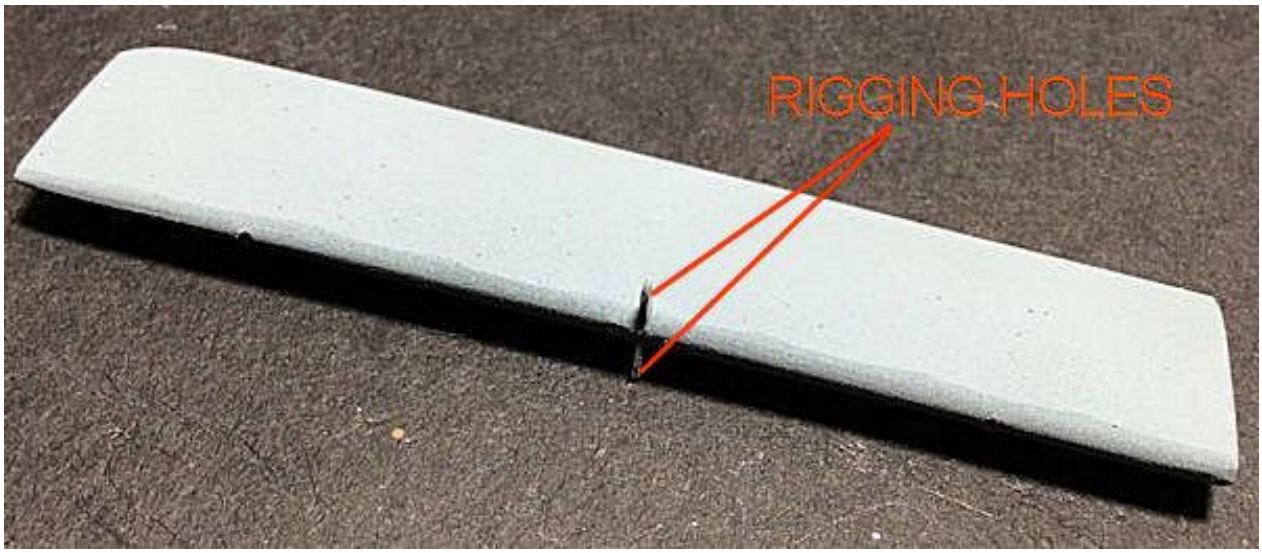
Two control horns were made from spare photo-etch metal. Each horn comprises two layer secured together with thin CA adhesive.

Each horn was filed to shape using a diamond impregnated photo-etch file (e.g. 'Tamiya').

A hole of 0.3 mm diameter was drilled trough each end of the control horns (for future rigging).

A slot was cut into the leading edge of each aileron, just inboard from the centre rod hole.

The control horns were then secured in the slots using thin CA adhesive.



12. Pitot tubes:

Twin pitot tubes were fitted into the wing right side leading edge, aligned just inboard from the aileron inboard end.

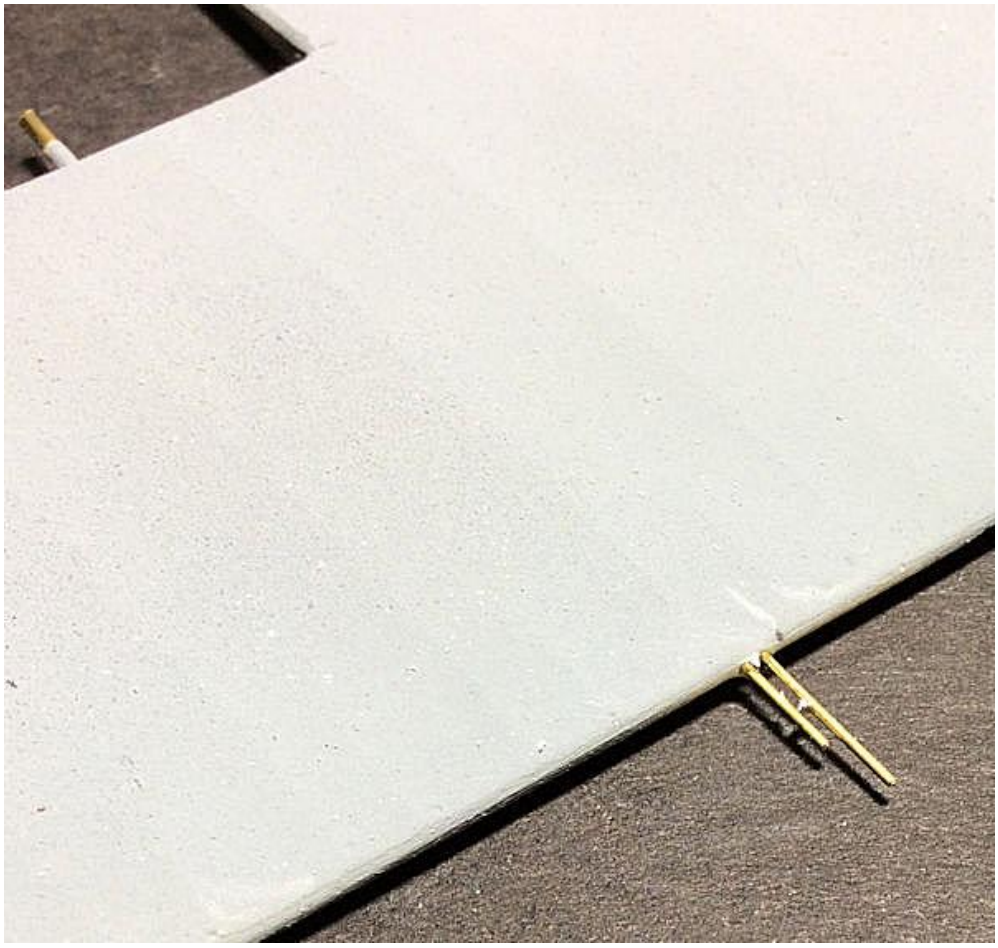
Drill two 0.5 mm diameter holes into the wing leading, approximately 2 mm apart.

Cut two lengths of 0.4 mm diameter brass tube (e.g. 'Albion Alloys'). One should be shorter than the other by approximately 4 mm.

Insert the longer tube into the inboard hole and the shorter into the outboard hole.

Secure the tubes in position using thin CA adhesive.

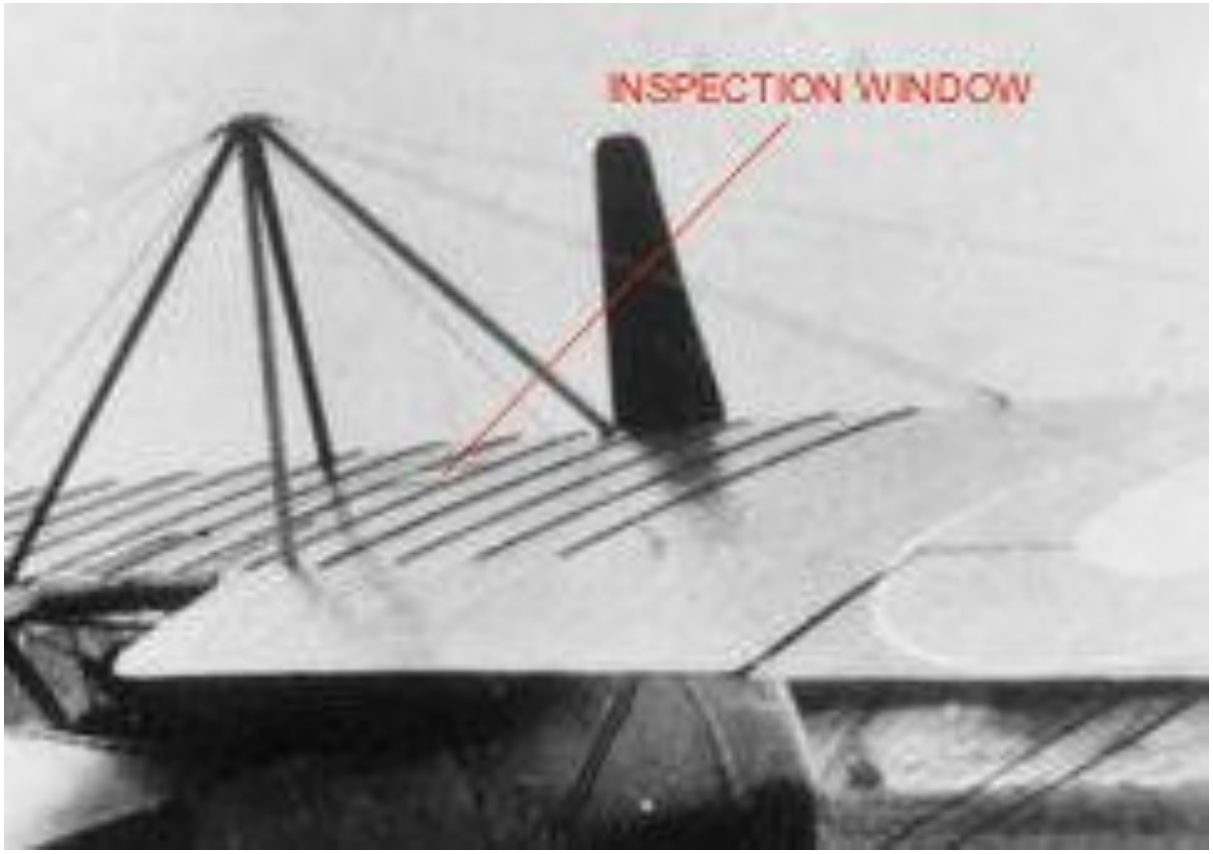
Apply CA adhesive between the two tubes and allow it to set. This represent the base housing the pitot tubes were housed in.

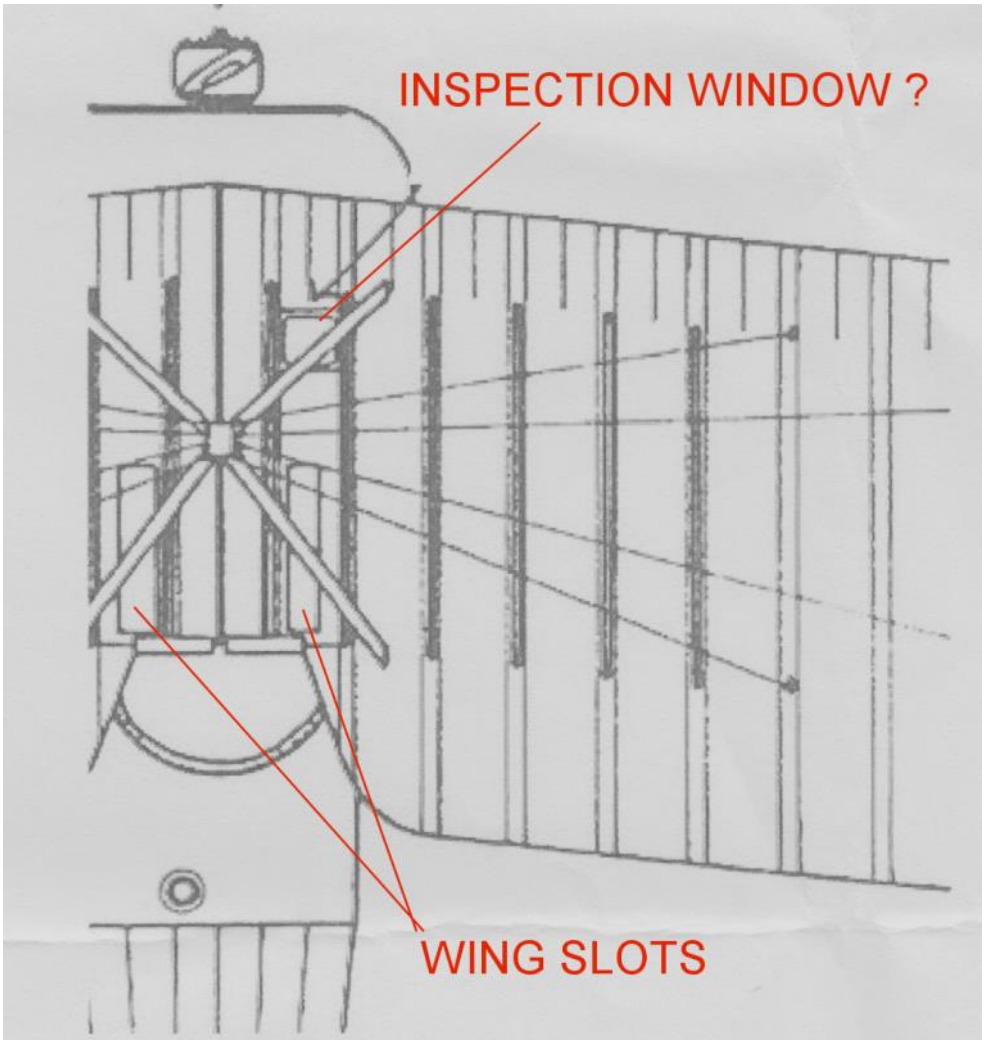


13. Aileron control inspection window:

Sopwith aircraft at the time, such as the Camel, Pup and Snipe, had inspection windows fitted into the leading edges of the upper and lower wings. These were used in adjusting the aileron control run pulleys.

It seems that an inspection window for an aileron pulley was under located in the upper wing, but it is possible that like other Sopwith aircraft, inspection windows were fitted farther outboard on the wing leading edge. Photographs do not show these outboard windows, but they may have be covered with protective linen patches, as was often the case.


INSPECTION WINDOW


INSPECTION WINDOW ?
WING SLOTS

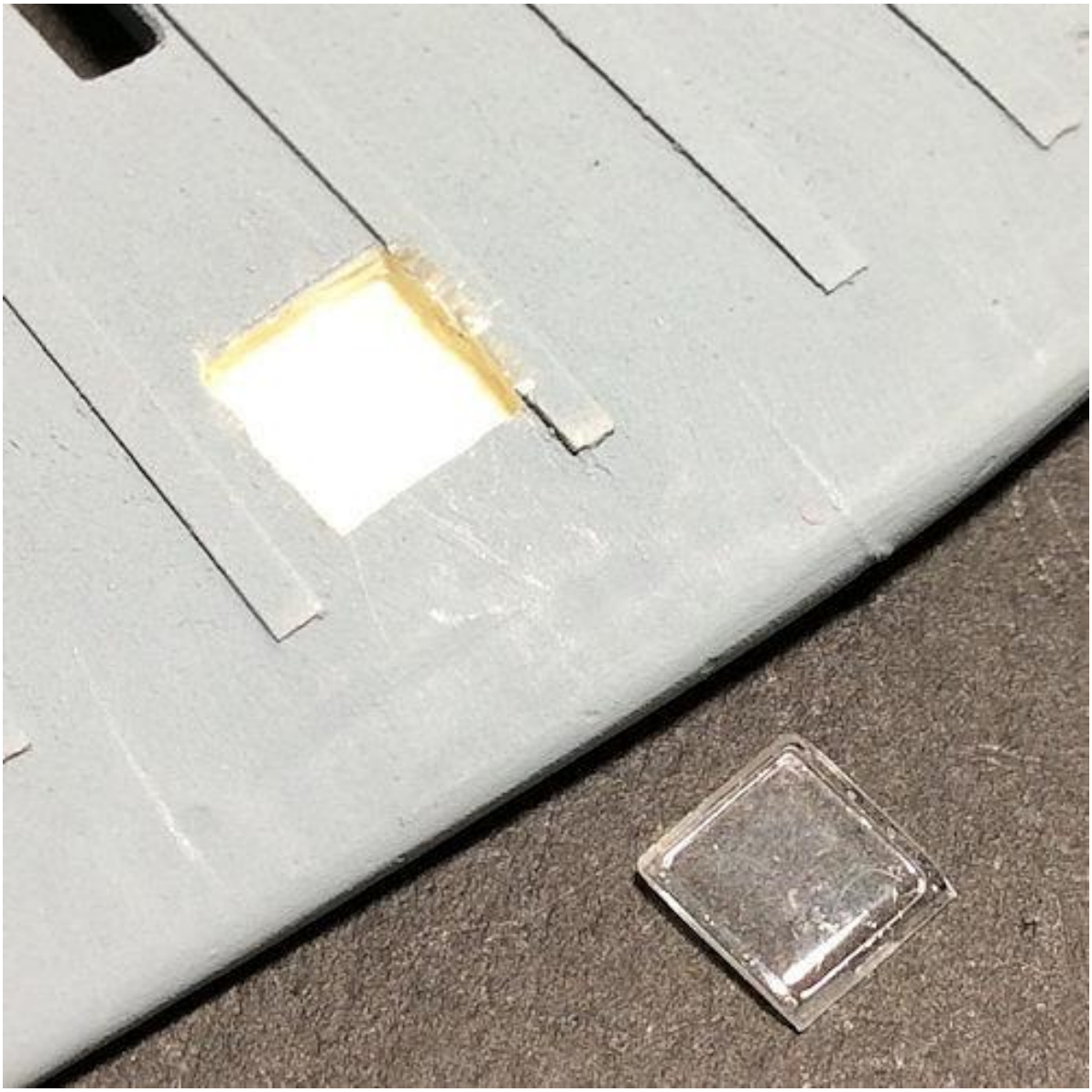
To represent this inspection window:

NOTE 1: *For the window transparency, I used a spare 'large' window (part C2) from a 'Wingnut Wings' Sopwith 'Camel' kit. However acetate sheet can be cut and used as an alternative.*

NOTE2: *The aileron pulley was made using parts from the photo-etch 'HGW Models' Sopwith Triplane (132099) set.*

Mark the outline of the window used, following the 'Kiwi Resin' illustration sheet.

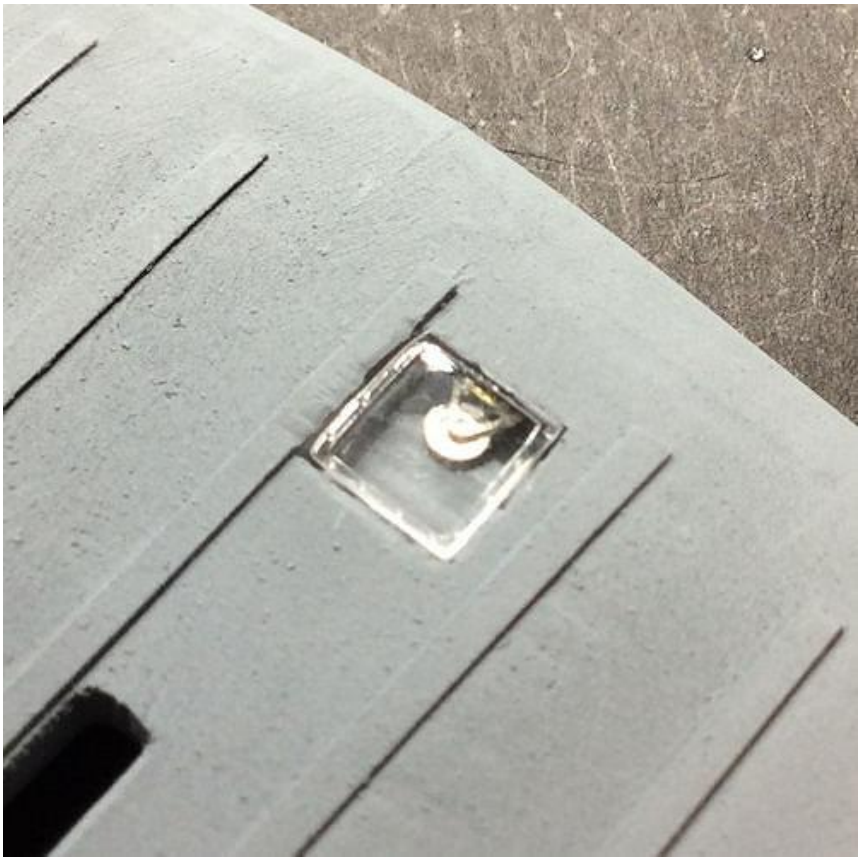
Using a sharp modelling chisel or similar, carefully cut out a recess for the window. Make sure the recess is not too deep or the window will sit lower than the surrounding wing surface, to which it should be flush.



Construct a pulley from the photo-etch set, following the set instructions. Use CA adhesive to secure the parts.

Cut a slightly deeper recess for the aileron pulley. This further recess should be cut to leave a shoulder around the edges of the primary recess, as this is needed as the mounting 'ledge' for the window. The front of this recess should meet the front face of the previously cut recess, which represents the rear face of the wing front spar.

Check the depth of the recess with the pulley and window inserted. Adjust the recess depth as necessary.



14. Defects check:

Check for any defects that need rectification. These include:

- Chips
- Scratches from the mould surface.
- Mis-moulded edges
- Holes
- Air 'blow holes'

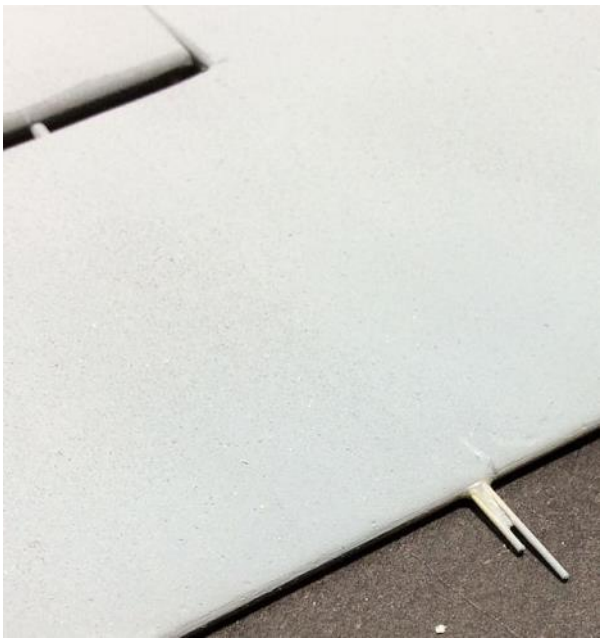
Use a good filler (e.g. 'Perfect Plastic' putty) to fill all imperfections. Once dry use a wet finger and rub in circular motion to remove excess filler.

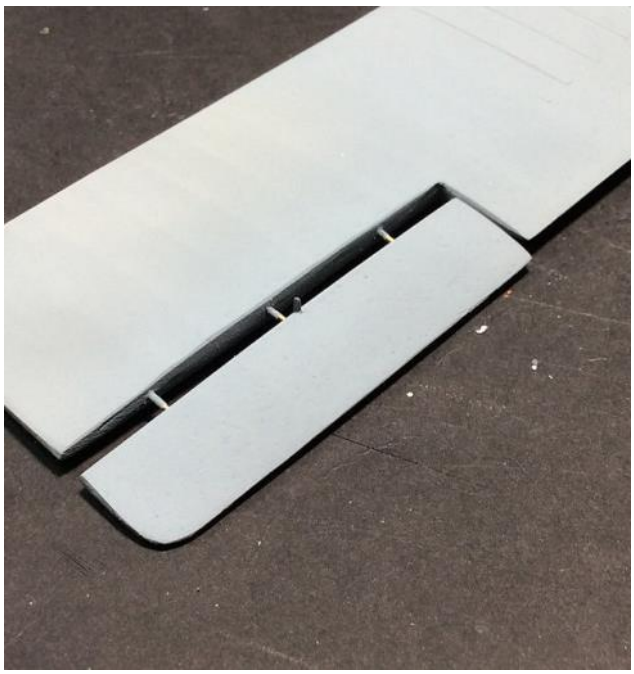
Sand or file imperfections on edges, remembering to retain the correct shape and profile.

Airbrush the assembly with the primer of your choice, which will show any areas that need attention. I use 'AK Interactive' primer and micro-filler (AK-758).

Rectify any imperfections shown up by the primer coat then re-prime and check.

Repeat as necessary until a good primed surface is achieved. This is important, whether the surfaces are painted or have decals applied.



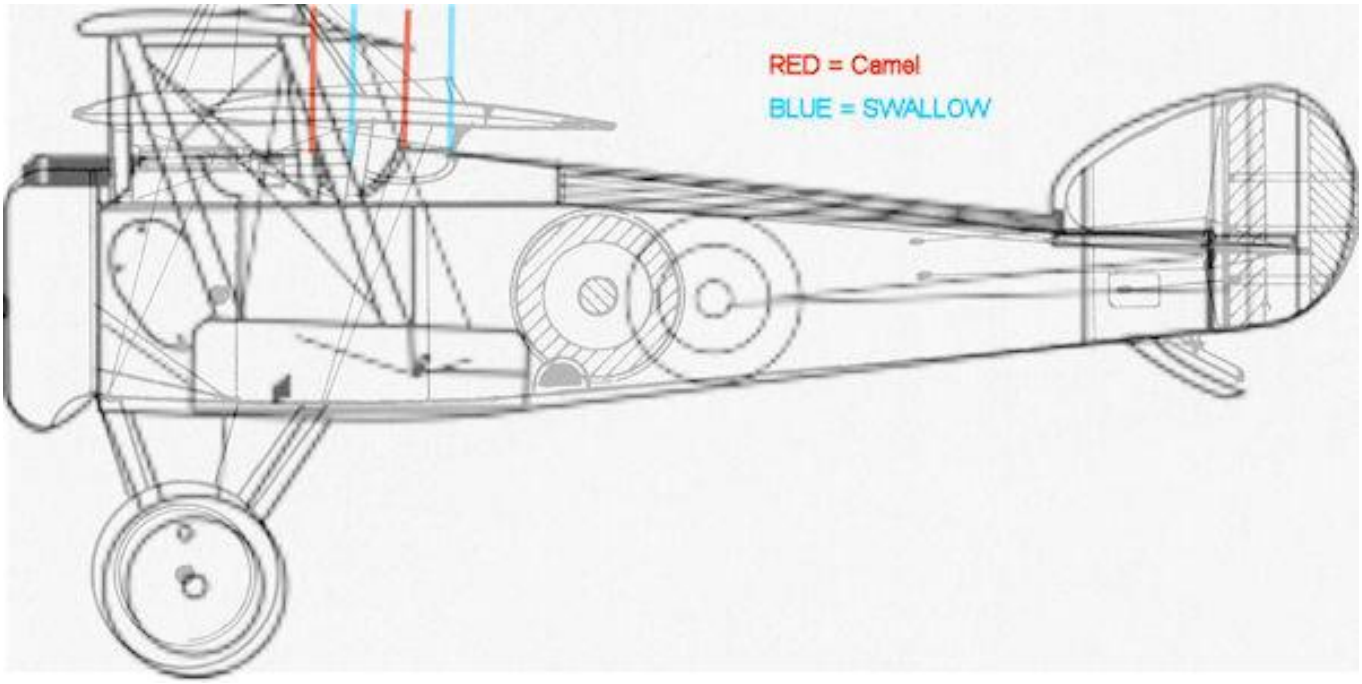


15. **Rear and front decking panels**

The supplied resin front and rear decking panels will require work in order to get them to fit the fuselage from the 'Wingnut Wings' kit.

The Sopwith 'Swallow' had a redesigned cockpit, which was farther rearwards than the 'Camel' cockpit. This was necessary in order to give the pilot better visibility over the wing. The primary changes to the cockpit rear and front decking panels were:

Cockpit access opening further rearwards.
Front cockpit decking panel re-profiled (no machine gun 'hump' fairings).
Machine guns located further apart than normal for better forward visibility.



Rear decking panel:

NOTE: *The resin moulded decking panel is not as wide as the fuselage of the 'Wingnut Wings' kit.*

Carefully remove the resin flash from around the decking panel.

Carefully saw off the mounting block from the rear face of the decking panel.

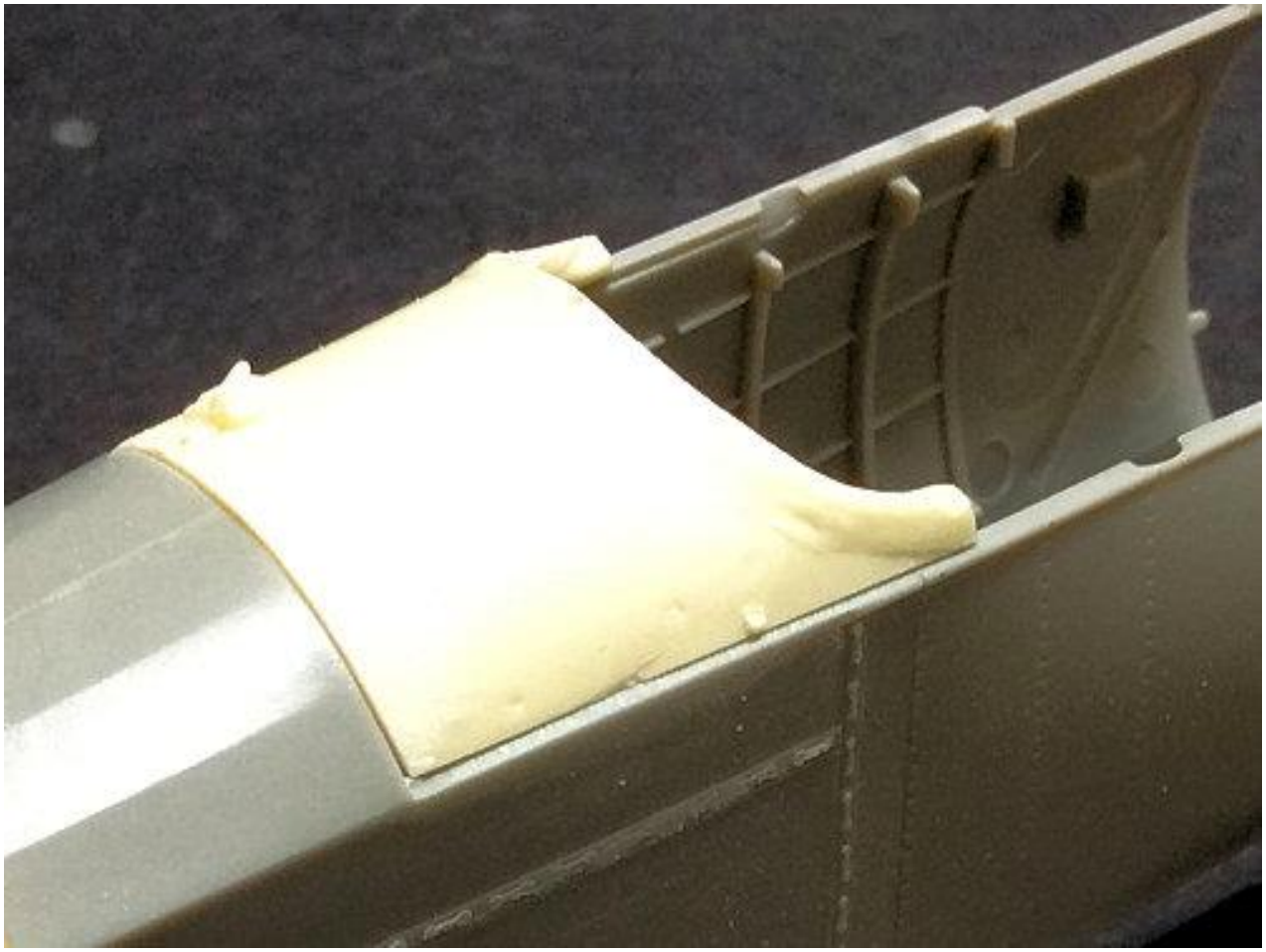
On the fuselage from the 'Wingnut Wings' kit, sand away the internal 'step', which would be used to locate the kit decking panel. This is necessary as the resin decking panel is too thick to locate on that 'step'.

Temporarily join the two kit fuselage halves using elastic bands.

File or sand the rear face of the resin decking panel so it butts up to the rear face of the fuselage cockpit aperture.

File or sand the bottom surfaces of the two sides of the resin decking panel. Regularly check that the decking panel sits flat on the fuselage sides and all joint faces have no gaps.

Continue until the decking panel sits correctly on the kit fuselage and that the rear of the decking panel is flush to the top of the kit fuselage. Lightly sand to achieve this, if it is found to be necessary.



Carefully saw along the centre line of the decking panel to create two halves.

File or sand the two cut faces so when butted up against each other, there are no gaps.

Cut a thin strip of 1.0 mm thick plastic card, just longer than the cut decking panel edges.

Secure the strip to one edge using CA adhesive. Make sure the plastic card strip stands proud of the top surface of the decking panel and protrudes slightly from both ends.

Temporarily secure the decking panel half onto the kit fuselage, using masking tape.

Temporarily secure the other half of the decking panel onto the kit fuselage, using masking tape. Make sure all edges are aligned correctly and the top surfaces of the decking panel halves are aligned.

Secure the two decking panel halves together by applying CA adhesive along the plastic card insert. Make sure you don’t get adhesive between the decking panel and the kit fuselage.

Once set, carefully remove the masking tape and decking panel from the kit fuselage.

Apply more CA adhesive along the joint if necessary.

Repeat the filing or sanding of the rear face of the resin decking panel so it butts up to the rear face of the fuselage cockpit aperture.

Repeat the filing or sanding of the bottom surfaces of the two sides of the resin decking panel. Regularly check that the decking panel sits flat on the fuselage sides and all joint faces have no gaps.

File or sand away the ends of the plastic card insert to align with the resin cockpit surround padding.

File or sand away the exposed plastic card strip on the inside of the decking panel.

NOTE: *During the next step, make sure you don't remove any pre-moulded detail from the decking panel surface, such as the fuel tank filler cap, cockpit surround padding, etc.*

If necessary apply filler to the joint then carefully sand the top of the decking panel and plastic card insert, maintaining the decking panel shape. Make sure the rear of the decking panel is flush with the kit fuselage.

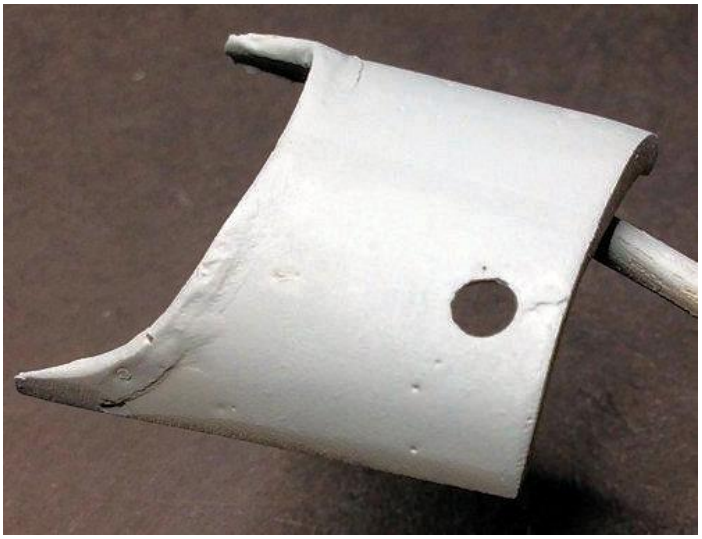
The decking panel is moulded with an integral fuel tank filler cap, which stands proud of the top of the decking panel. The actual aircraft had a circular opening at this location to access the fuel tank filler cap.

Carefully saw the moulded filler cap from the top of the decking panel. Retain the filler cap for use on the forward decking panel.

Drill a hole of 2.5 mm diameter (stepping up from smaller drill sizes) where the filler cap was located.

Carefully thin the thickness of the decking panel behind the drilled hole to better represent the panel thickness.

Apply a primer coat to the decking panel. This will show any surface imperfections that might need addressing.



Front decking panel:

NOTE: *The resin moulded front decking panel is shorter than it need to be to fit the 'Wingnut Wings' kit fuselage.*

Carefully remove the resin flash from around the decking panel.

Carefully saw off the mounting block from the forward face of the decking panel.

Temporarily join the two kit fuselage halves using elastic bands.

NOTE: *During the following step, make sure the four 'cowling retainers' on the front of the fuselage sides engage in the bulkhead cut-outs, otherwise they can be bent or broken off.*

On the fuselage from the 'Wingnut Wings' kit, temporarily fit the engine bulkhead using masking tape. This is necessary as the front of the resin decking panel needs to butt up against the bulkhead.

File or sand the rear forward face of the decking panel so it butts up to the rear face of the engine bulkhead.

File or sand the bottom surfaces of the two sides of the decking panel. Regularly check that the decking panel sits flat on the fuselage sides and all joint faces have no gaps. Make sure you create a 'step' so that the decking panel fits over the top, stepped fuselage sides.

Continue until the decking panel sits correctly on the kit fuselage.

Cut away the 'stump' of resin in the forward, top of the decking panel, between the gun troughs. This should be a flush sitting filler cap.

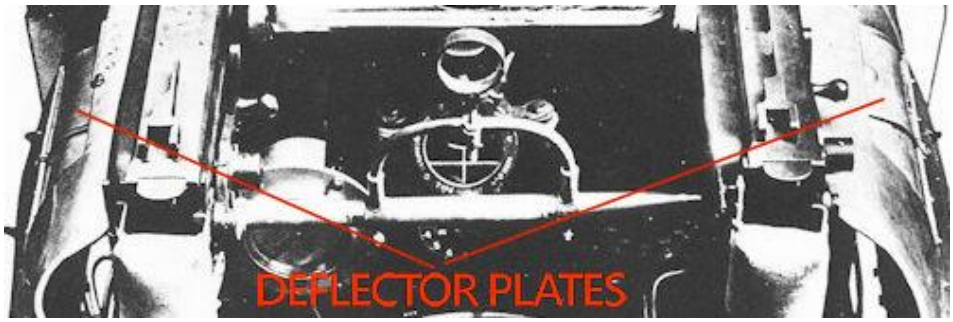
Drill through the decking panel where the 'stump' was located, stepping up in drill sizes, until a hole is made slightly larger in diameter than the filler cap removed from the rear decking panel.

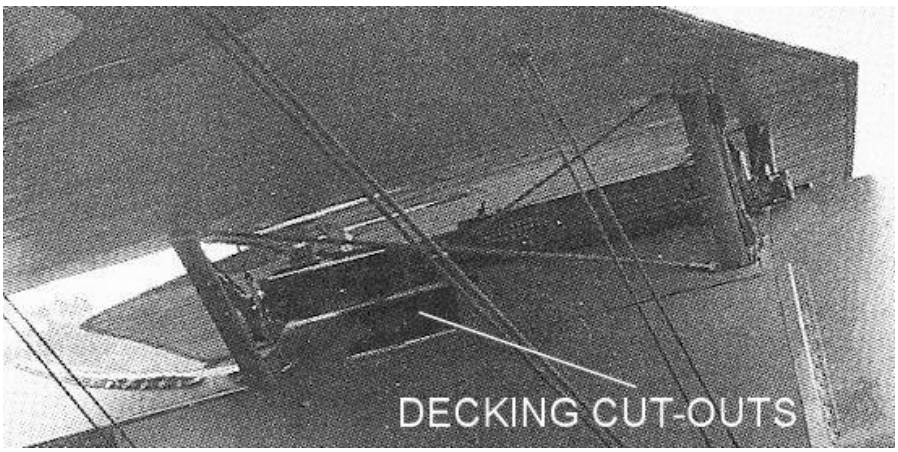
From the inside of the decking panel, fill the drilled hole with modelling putty until it oozes out from the top side.

Wipe the putty flush with the top of the decking panel then carefully press the resin filler cap into the hole and onto the putty.

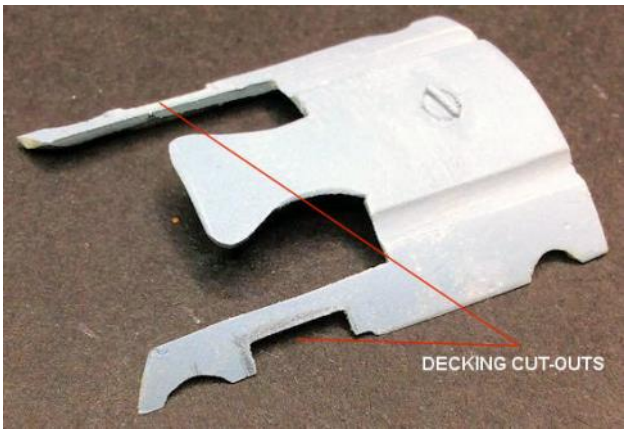
Make sure the filler cap is level and flush with the surface of the decking panel. Leave the putty to set.

I found that at the rear lower sides of the decking panel are cut-outs through the panel. Inside these cut-outs are what appear to be curved ‘deflector’ plates. However, given how high the breech blocks for the weapons are above the front decking panel, expended ammunition would be ejected from the breech blocks directly overboard. I can't find any information on how the ammunition was fed to both guns on the 'Swallow'. My assumption is the ammunition belts were fed from inboard of the guns and expended ammunition ejected straight out of the breech blocks and over the sides of the fuselage. Whatever the purpose is for these openings and plates, they will need to added, with the ammunition feed chutes, after the fuselage is ‘closed up’.





The cut-outs were carefully filed into the sides of the decking panel using a flat needle file.



Apply a primer coat to the decking panel. This will show any surface imperfections that might need to be addressed.

As can be seen in the following photograph, when the two resin decking panels are located on the fuselage, there is a gap between them. This is mentioned in the conversion set instructions. Missing is the rear of the front decking panel, which should join the rear decking panel. However, this area is where the wing rear support strut should be located, which would account for half of that area.

This missing area can be filled with modelling putty, once the wing struts and decking panels are finally fitted, later in this build.

The following parts from the ‘Kiwi Resin’ conversion set will not be used, because either the parts are too weak, not as detailed as the ‘Wingnut Wings’ kit parts or there is no noticeable difference:

Pilot’s seat and cushion (‘Wingnut Wings’ kit part used instead).

Fin and rudder (‘Wingnut Wings’ kit part used instead).

Tail plane and elevator (‘Wingnut Wings’ kit part used instead).

Wing struts (replaced with scratch made struts).

Over wing support pylon assembly (replaced with scratch made pylon).

Propeller replaced by ’Proper Plane’ wood propeller.

Tail skid (‘Wingnut Wings’ kit part used instead).

DONOR KIT

WINGNUT WINGS
KIT No. 32074

Donor kit - ‘Wingnut Wings’ (Kit No.32074)

Originally I was going to use the ‘Academy’ Sopwith Camel F.1 (Kit No. 12109). Although this kit is ‘passable’ for most modellers, it lacks the quality and detail now found in kits from such manufacturers as ‘Wingnut Wings’, ‘Copper State’ etc. The ‘Kiwi Resin’ conversion set has been made to be used with the ‘Academy’ kit. The only parts of the kit that are intended to be used are the fuselage and undercarriage assemblies. The upper and lower wings, tailplane, rudder and wing struts are not used. However, I decided to use instead the ‘Wingnut Wings’ model as the donor kit, as it is far superior to the ‘Academy’ kit, even though the ‘Kiwi Resin’ conversion set is not intended for this kit. It is an expensive kit to use as the donor, but I’d already ‘robbed’ several parts from the kit for another model, so it wasn’t complete.
This particular aircraft has been released by ‘Wingnut Wings’ as four separate kits, three of which depict a different engine version and one of the Naval ship version. That said there are common parts included within each of the kits.
As expected, any model from ‘Wingnut Wings’ (WNW) is at the top of quality and accuracy. The parts are manufactured from traditional ‘plastic’, not resin. There is minimal mould flash that needs to be removed and also virtually no ejection pin marks that need to be filled and sanded away. The instruction manual is in the well known format that WNW produce and has clear and concise instructions, including coloured illustrations and photos for reference.
As this is being used as a ‘donor’ kit, there are parts that will not be required for this build, as those will be replaced by parts from the resin conversion set.

NOTE: ***Normally the kit components would be prepared and rigging etc applied before the components are finally assembled. However, due to the modifications required, especially for the cockpit and forward fuselage area, it is necessary to finally fit components before rigging etc is applied. This needs to be carried out after assembly.***

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

Once the items have been removed from the sprue and prepared, I normally gently wash them in warm, soapy water, to remove any handling 'grease' or mould release agent remaining on the items. I use an old toothbrush to do this. Once dry they can be primed ready for painting. Primer can be applied by brush, airbrush or from aerosol cans. These days I prefer to use 'AK Interactive' Primer and Micro-filler (Grey AK758) or (White AK759). These have good coverage as the base primer for acrylics. Take care when spraying the primer as if you apply too much it will result in 'pooling' or 'runs', which would then need to be removed once the primer has dried. Make sure you spray in a well ventilated area or preferably, if you have one, use an extractor booth.

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

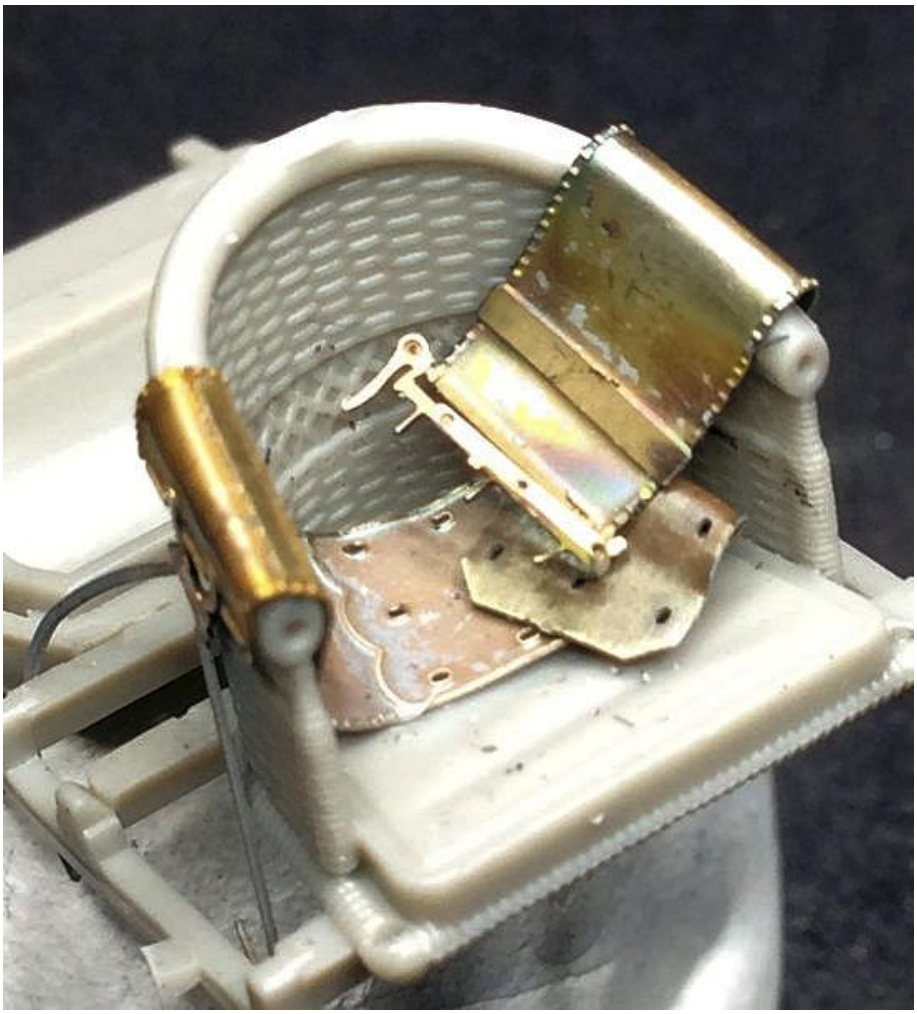
Cockpit internal assembly:
The internal assembly of the cockpit is obviously intended to fit the kit fuselage for a Sopwith 'Camel'. However, as the 'Swallow was a high wing monoplane design and for pilot visibility, the cockpit layout was different. The main differences were:

Throttle control further rearwards.
Pilot's seat and fuel tank further rearwards.
Fuel tank filler cap located on the top, left of the tank (not on the right).
Control column assembly
Fuselage lower wing aperture
Forward flooring and under shield
Instrument panel assembly
Wing support cabane struts shorter and located differently.

Pilot's seat belts:

During the build of the internal fuselage detail, the pilot's seat will initially only be attached to the left fuselage half, which means any undue stress on the seat may cause it to break away. Therefore it is best to create the pilot's seat belts before the seat is fitted.

1. Heat anneal (soften) the 'Wingnut Wings' supplied photo-etch seat belts. Apply heat (e.g. from a candle or lighter) only enough to discoloured the metal. Any more and it may melt.
2. Cement the pilot's seat (kit part A34) to the floor assembly (A23).
3. Pass the belt retaining straps over the second and third back cross members on the floor.
4. Bend the straps over the lip of the pilot's seat and onto the seat cushion.



5. Carefully remove the two straps.
6. Airbrush the two straps with primer (e.g. 'AK Interactive' Grey - AK758).
7. Airbrush the two straps with 'Tamiya' Buff (XF57).
8. On the longer belt, mask off to leave just the end portion (with holes in).
9. Brush paint that area with a thinned coat of 'Tamiya' Hull Red (XF9) and X20A.
10. Brush paint the metal fittings with 'Mr. Metal Colour' Stainless Steel (213).

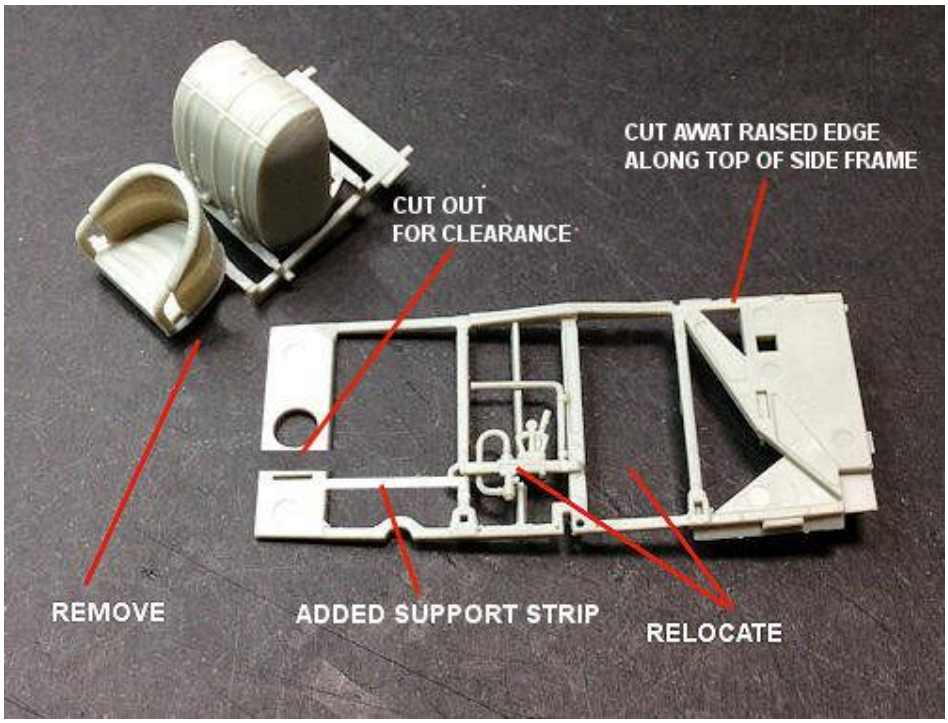
Throttle control further rearwards:
The throttle quadrant is moulded as an integral part of the cockpit left side frame and needs to moved rearwards. Using a fine saw cut the throttle quadrant, complete with the pipes and mounting cross beam away from its location on the side frame. In the next side frame bay rearwards, cut a small section out of the central former to give clearance for the throttle quadrant. Position the throttle assembly between the frame, at the same level and cement in position.

In preparation, cut away the two wing support cabane struts from both cockpit side frames. File or sand away the remaining 'stubs' from the outer edge of the cockpit side frames.

Temporarily fit the two cockpit side frames into their respective fuselage half. If necessary apply masking tape to hold them against the fuselage halves.

Fuel tank filler cap located on the top, left of the tank (not on the right):
Using a fine saw, cut off the filler cap from the top of the fuel tank. File or sand away the tank to recover the tanks profile. Retain the cut away filler cap.

Pilot's seat and fuel tank further rearwards:
Follow the kit instructions and assemble the fuel tank and pilot's seat assembly (A23, A34 and A35). Cut away the fuel selector switch and seat support frame from the front left of the seat mounting frame, back to the next seat cross member (to clear the relocated throttle assembly). Do this on the opposite side of the seat support frame. Cut a length of 0.5 mm plastic rod and/or a strip of 0.2 mm plastic card and cement in position on the cockpit side frames, to act as a support for the relocated tank and seat assembly. Repeat on the other cockpit side frame.



Cut a slot out of both cockpit side frames (see photo above) to give clearance.

Locate and cement the cockpit side frames into the fuselage halves, including inside the front cowl.

Locate the seat assembly onto the cockpit left side frame, on the added support rod/strip and aligned along its original location.

Insert the control cable cross member (D11) into its location in the cockpit left side frame (the location is different in size to the location on the cockpit right side frame).

Locate the right fuselage onto the left fuselage half and make sure the end of part D11 is located correctly into the right fuselage half.

Temporarily hold the fuselage halves together using elastic bands or masking tape.

Make sure the seat assembly is fully in contact with the added supports on both fuselage halves and part D11 is fully engaged into its location on the cockpit right side frame.

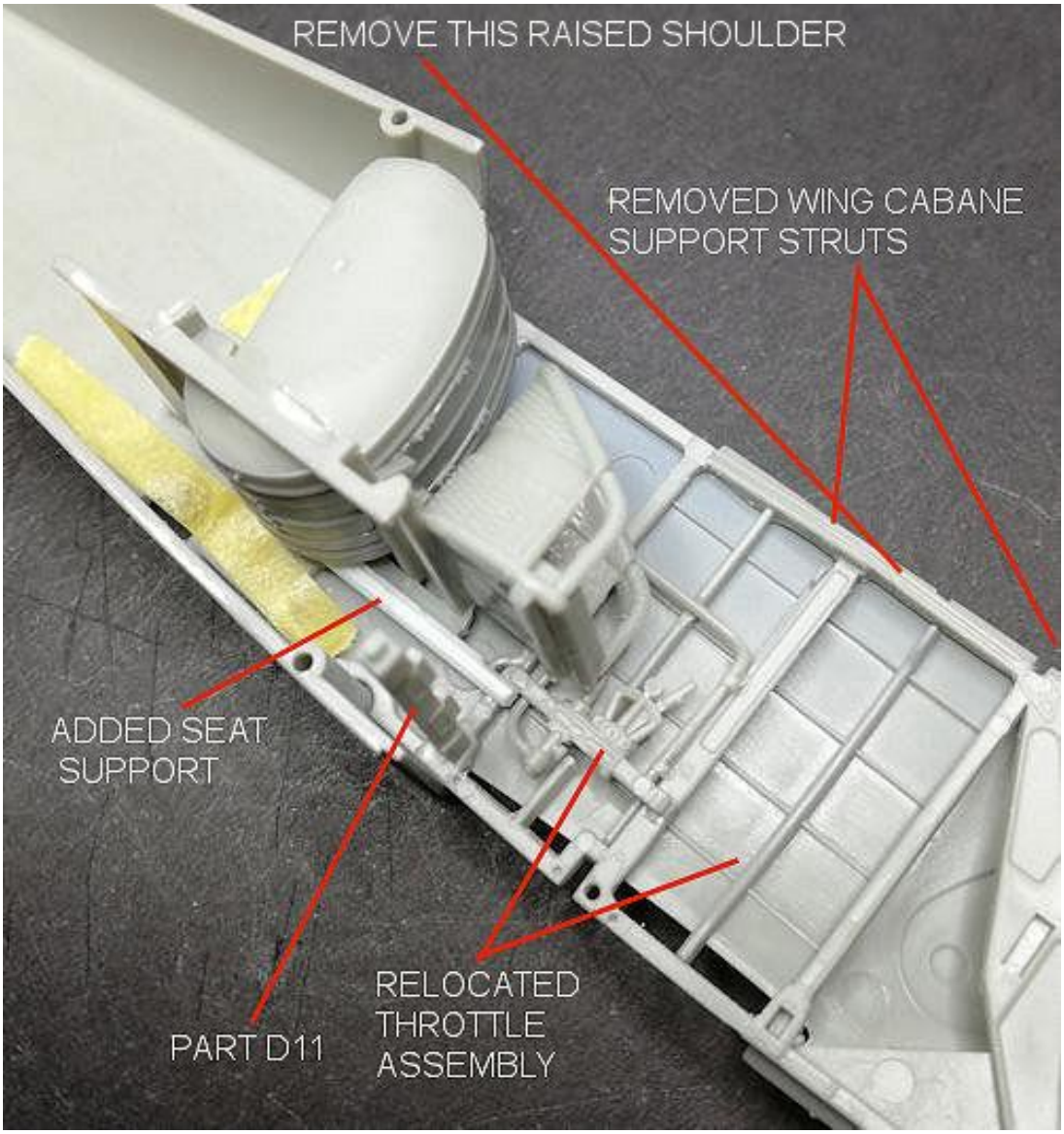
Cement the seat assembly and part D11 **onto the left fuselage half only**. Do not apply cement to the right fuselage half yet.

Temporarily locate the engine bulkhead on the front of the fuselage and hold in position using masking tape.

Position the pre-prepared resin rear decking panel and mark (through the drilled filler cap access hole) the position of the filler cap on the fuel tank.

Cement the filler cap onto the fuel tank at the marked location and check it's correctly positioned under the access hole in the rear decking panel.

File or sand away the raised 'shoulder' along the top edge of each fuselage half. This will allow the resin front decking panel to locate correctly.



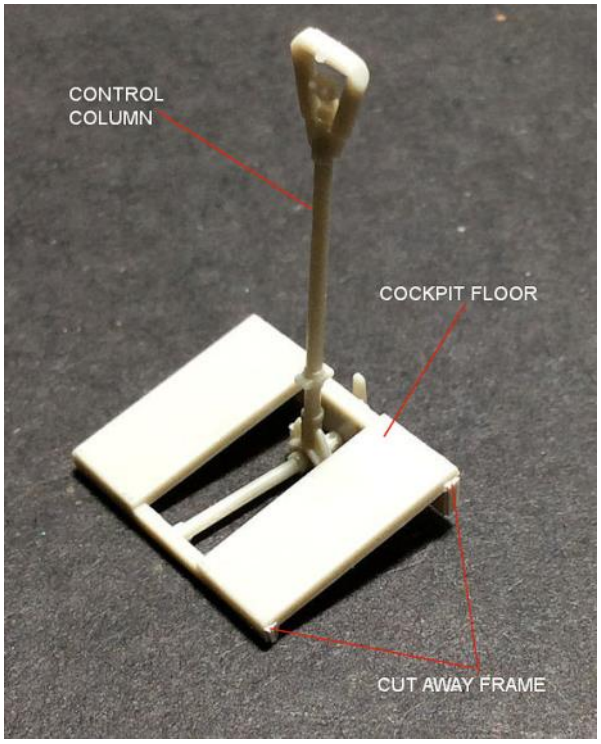
Control column assembly:

Assemble the control column and floor (A21 and D6).

To allow the assembly to fit between the cockpit side frames, cut away the protruding front and rear cross members, as shown below.

Cut away the bottom of the aileron bell crank lever at the front of the control column torsion bar (required to fit against the top rear of the under shield).

Test fit the assembly



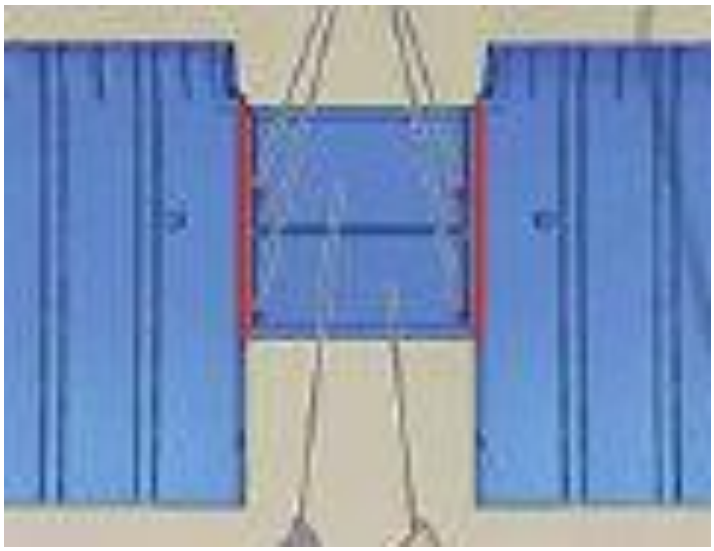
Fuselage lower wing aperture:

As the kit is designed to accept a lower wing, this area has to be filled in. *The correct fuselage profile at the side has to be corrected after the fuselage halves have been permanently joined, later in this build.*

Temporarily join the two kit fuselage halves using elastic bands.

Using a modellers saw, cut the outer wings away from the centre section of the lower wing to leave just the centre section.

Test fit the centre section into the recess in the bottom of the fuselage and file or sand the sides to achieve a good fit.



Forward flooring and under shield:
The kit is designed such that the under shield (A25) is fitted at the lower front of the fuselage at the engine bulkhead. The floor and control column assembly would locate on the rear of the under shield. However the under shield needs to be moved farther rearwards to meet the repositioned control column assembly.

Method 1:
The cockpit halves and engine bulk head should be temporarily joined.

Locate the under shield A25 (without the rudder bar attached) into the lower front of the fuselage, to fit at the engine bulk head.

From under the fuselage, insert the wing centre section.

Lower the control column assembly into the cockpit and onto the centre section, then slide it rearwards under the pilot's seat until it contacts the D11 cross member.

Cut a rectangle of plastic card to fit under the control column assembly and forward to meet the rear of the under shield assembly.

Adjust as necessary to obtain a good fit.

Cut a piece of kit sprue to act as a support for the rudder bar. It should be tall enough so that the rudder bar, when fitted, is above the level of the control column assembly floor.

NOTE: *The rudder bar will need to be drilled for the tail skid and rudder control lines. You may want to drill these holes before the rudder bar is cemented in position).*

Cement the rudder bar to the sprue mount then cement the sprue mount to the plastic card insert. Refer to the following photograph for positioning of the rudder bar.

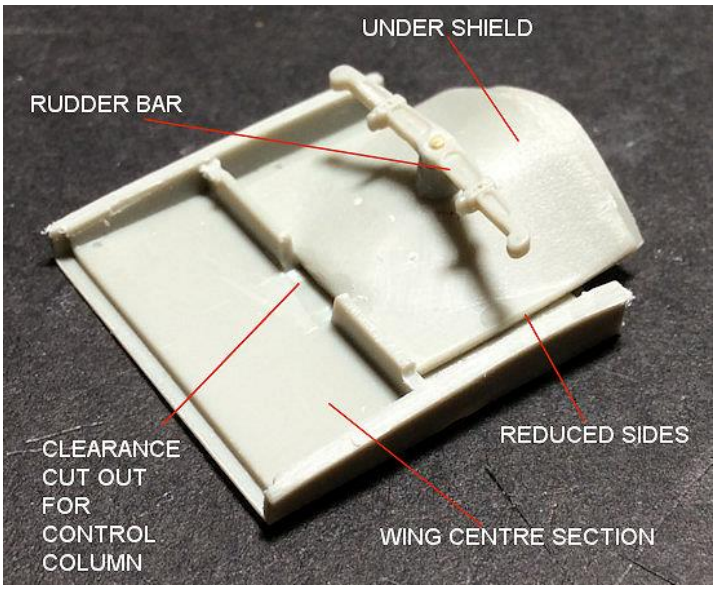
Method 2:
I had a spare under shield A25, so chose to use that as the fill in for the lower fuselage.

Assemble the rudder bar and undersheild (A25 and D7).

File or sand the chamfered sides of the under shield so it will fit between the side members of the wing centre section.

Cut a slot in the centre of the middle cross member of the wing centre section (for clearance of the control column).

Position the under shield onto the wing centre section and cement in position.



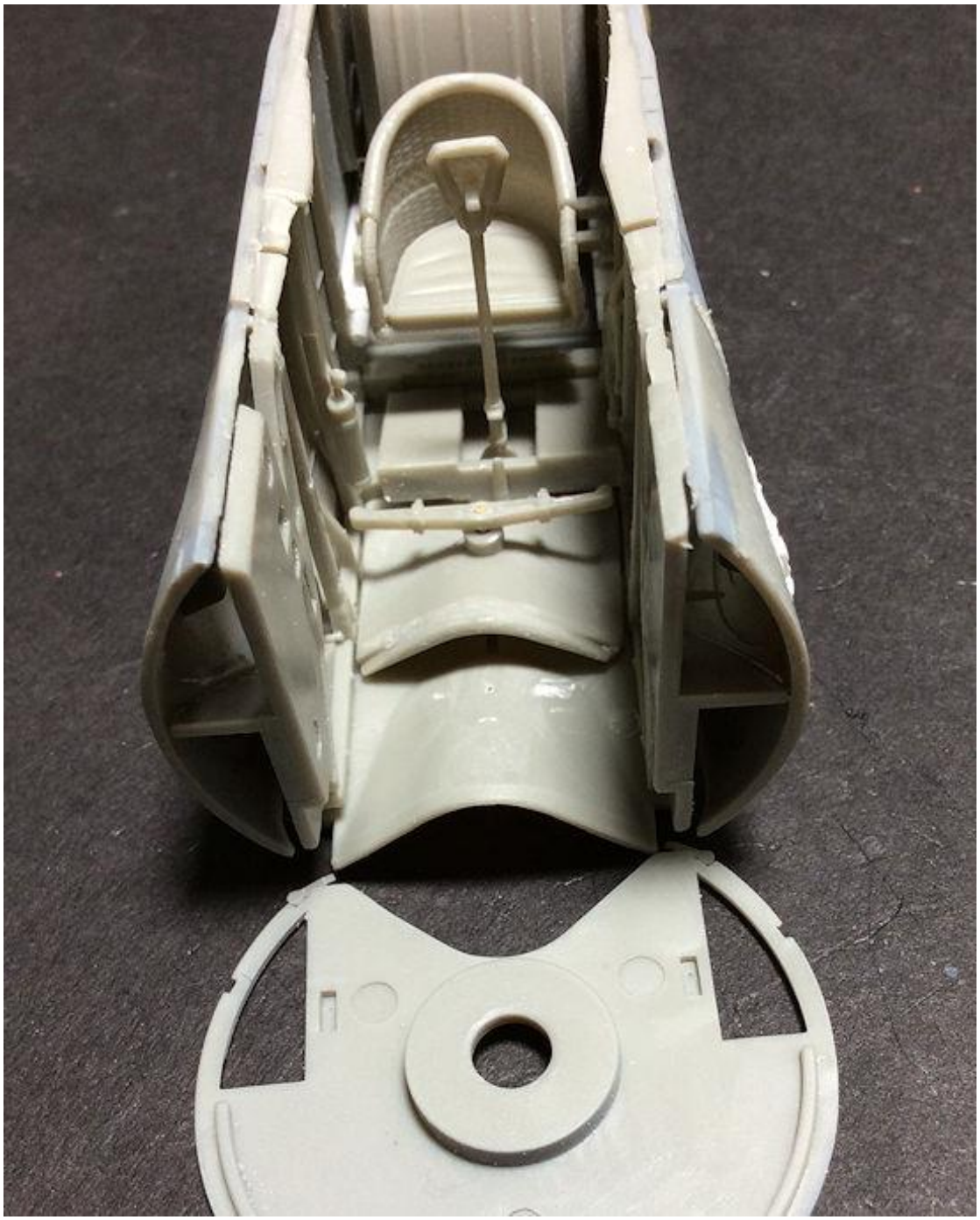
Test Fit:

NOTE: *The bottom of the fuel pressure hand pump, located on the cockpit right side frame, may need to be cut away to allow the control column assembly to fit.*

From under the fuselage, insert the wing centre section, lifting the front of the control column assembly so that it sits on the rear of the under shield.

With the cockpit halves and engine bulk head temporarily joined, lower the control column assembly into the cockpit and slide it rearwards under the pilot's seat until it contacts the D11 cross member.
Adjust as necessary to obtain a good fit for both assemblies (see following photograph).

Method 2 only:
The gap left at the lower forward fuselage is where the under shield was designed to fit. This needs to be filled. This was achieved by using a spare under shield A25, fitting between the engine bulk head and under shield/rudder bar assembly.



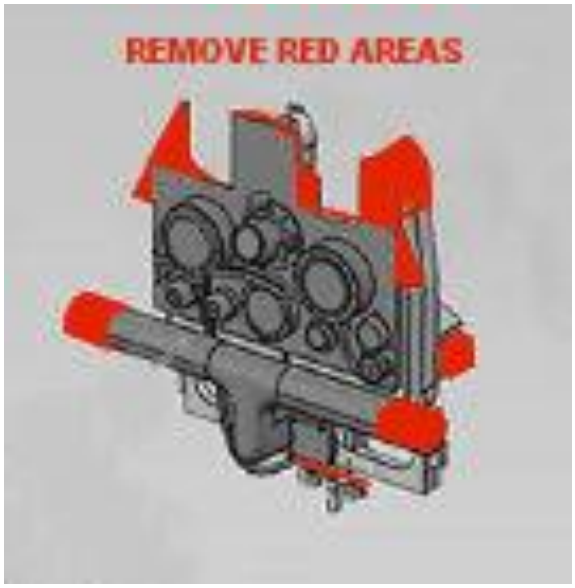
Instrument panel assembly:
Assemble the instrument panel (A22, A31, B9, D12 and A18).

In order to fit the instrument panel assembly under the resin front decking panel and further back in the cockpit, areas of the assembly must be cut away.

NOTE: *The following step should be carried out whilst frequently checking the assembly fit inside the fuselage.*

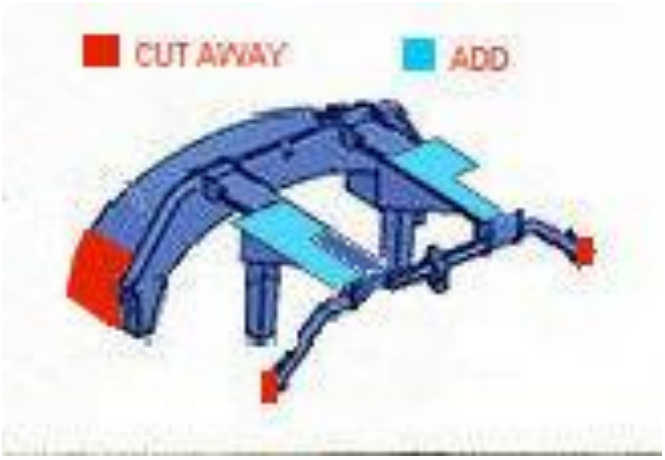
Cut away the areas marked red in the following illustration.

Retain the twin pulley cut away from the bottom of the assembly.

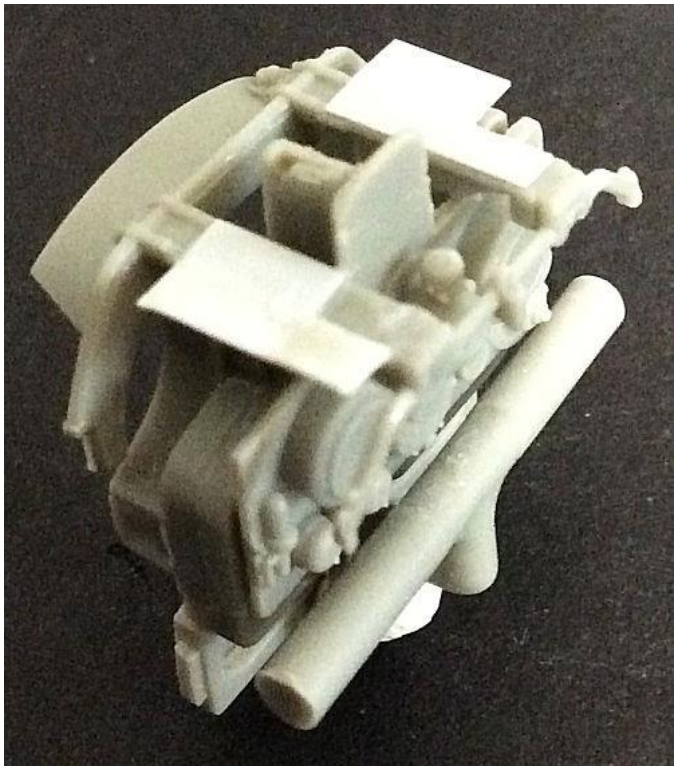


Cut away the areas marked in red (for clearance).

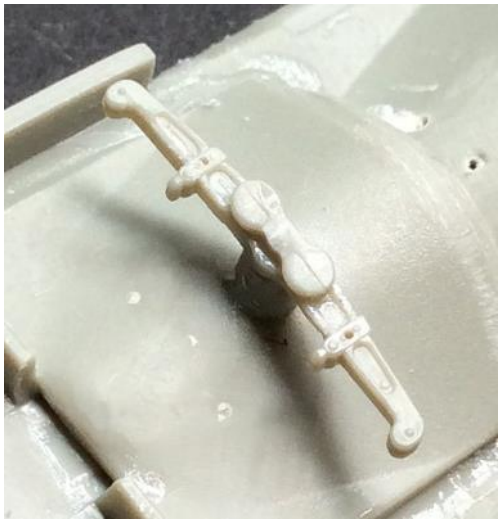
Add 0.2 mm thick plastic card inserts (marked in blue) onto the gun supports. These widen the kit gun supports to allow the machine guns to be seated correctly.



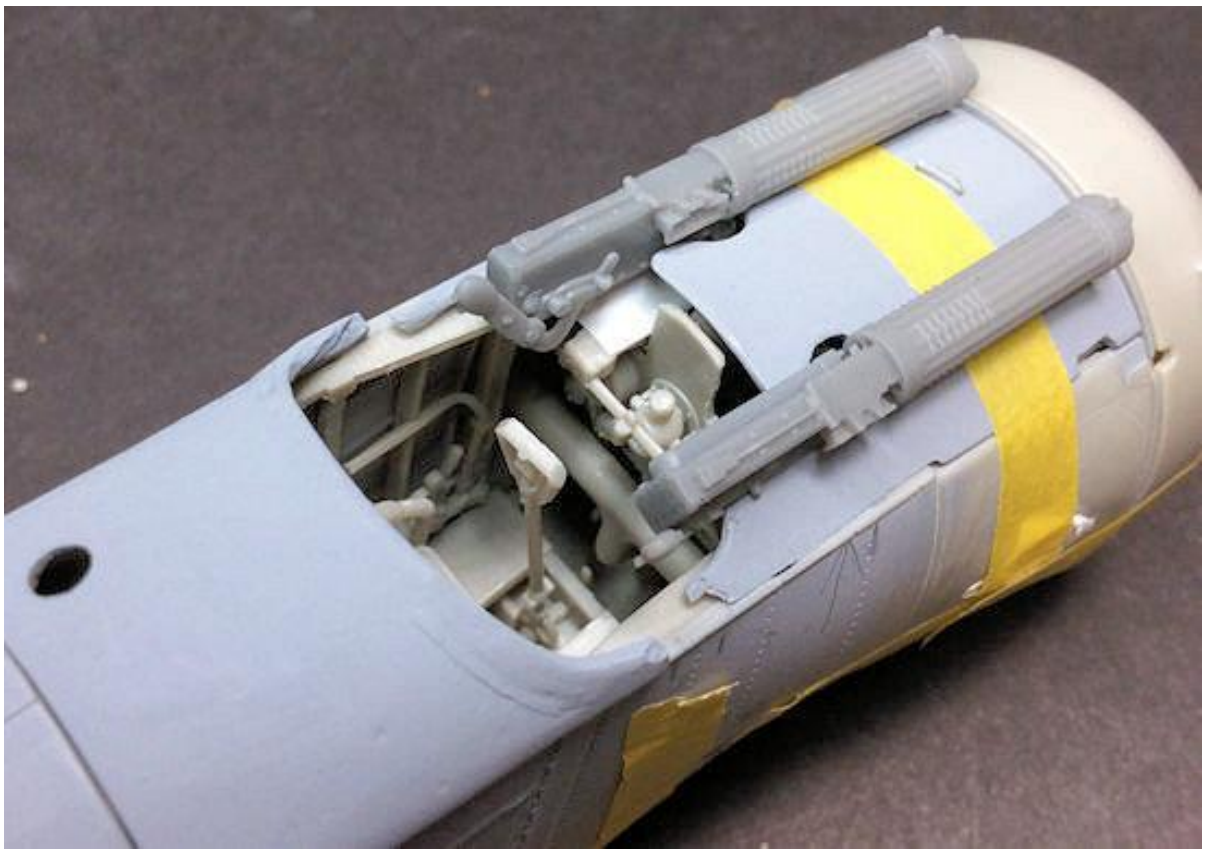
Cement the oil tank and gun support assembly (B10) into the instrument panel assembly.



Cement the twin pulley (cut away from the instrument panel assembly) onto the top centre of the rudder bar.



To test fit the various parts, insert the instrument panel assembly into the fuselage from the top. Manoeuvre the assembly such that the carburettor intake pipe touches the forward face of the vertical member on the cockpit side frames and the curved to of the assembly contacts the underside of the decking panel. The assembly should be vertical in the fuselage and at 90 degrees to the fuselage sides.
With the resin front decking panel temporarily fitted onto the forward, top of the fuselage, add the two ‘Gaspatch’ Vickers Hyland Type B loading handle - (13-32046) machine guns to check for rough alignment to the grooves in the decking panel and seating onto the added plastic card supports on the gun mountings.



I found that the following had to be carried out on the decking panel to get a good fit for the guns:

The two pre-moulded grooves were deepened using a round needle file (to drop the guns slightly deeper into the decking panel).

The apertures for each gun were widened (to allow the guns to sit vertically) and extended farther forward (to bring the muzzles closer to the edge of the engine cowl) and to allow the fitting of ammunition belts.

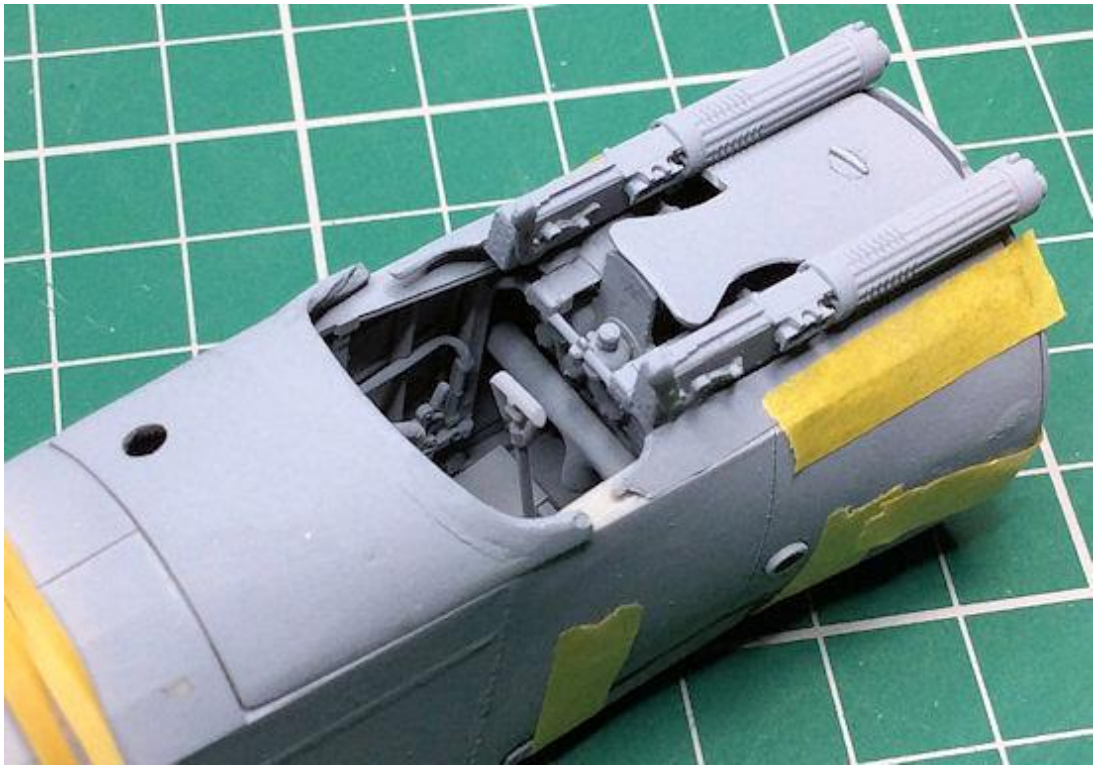
Prime all of the cockpit components and check for any surface imperfections.

Rectify as necessary.

Dry assemble the cockpit assemblies and check for any mis-alignments etc.

Rectify as necessary.

Re-prime the components.

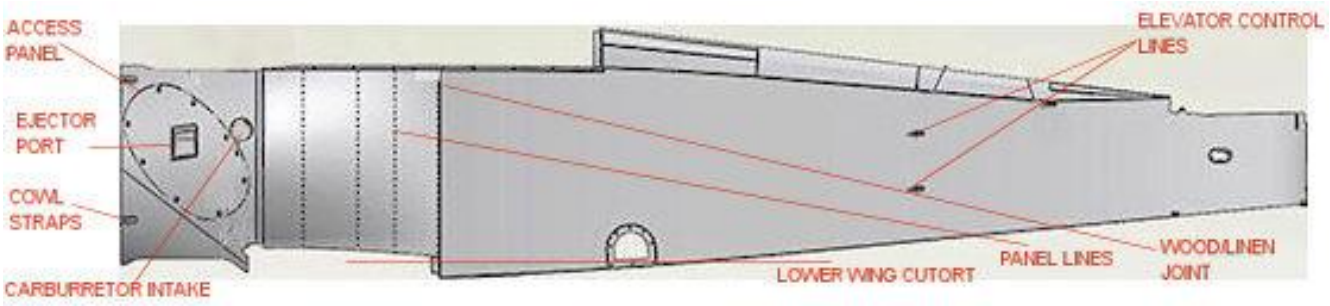


Fuselage external surfaces:

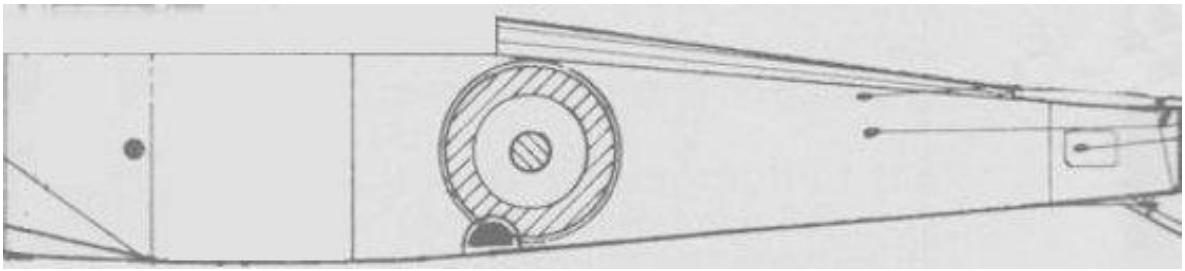
Due primarily to the different cockpit configuration in the ‘Swallow’ the donor ‘Camel’ fuselage does require modification. As can be seen on the following comparison side views, the primary differences from the ‘Camel’ fuselage are:

The oval side access panels are not fitted.
Ammunition ejector ports are not fitted (spent rounds ejected overboard).
Carburettor air intakes positioned differently.
Engine cowl retaining straps (upper replaced by retaining strip for the ‘Swallow’).
Forward wood side panel had no visible panel lines.
Joint between the two forward side panels is further rearwards.
Elevator control line openings positioned differently.
Lower wing profile (to be carried out only after the fuselage is permanently closed up).

Sopwith ‘Camel’ side view



Sopwith ‘Swallow’ side view.



For each fuselage half:

NOTE: *I use ‘perfect Plastic’ modelling putty for filling work. It dries quickly and can easily be smoothed out using a wet finger, which reactivates the putty.*

File or sand away the ammunition ejector ports on the fuselage forward panel.

File or sand away the carburettor intake aperture on the fuselage forward panel.

Using modelling putty fill in the carburettor intake apertures on the fuselage forward panel.

File or sand away the fuselage panel detail - oval access panel, forward to rear panel joint, rear panel vertical ‘nail’ rows.

File or sand away the four existing elevator control line access points at the rear of the fuselage.

Re-scribe the angled panel line at the lower front of the forward panel (upper line in the illustration above).

Using a modellers saw, carefully cut away the angled area at the bottom of the forward panel (lower line in the illustration above). Only cut away the outer panel, not all the way through the structure underneath.

Re-scribe the vertical joint between the rear and forward panels (20 mm from the front).

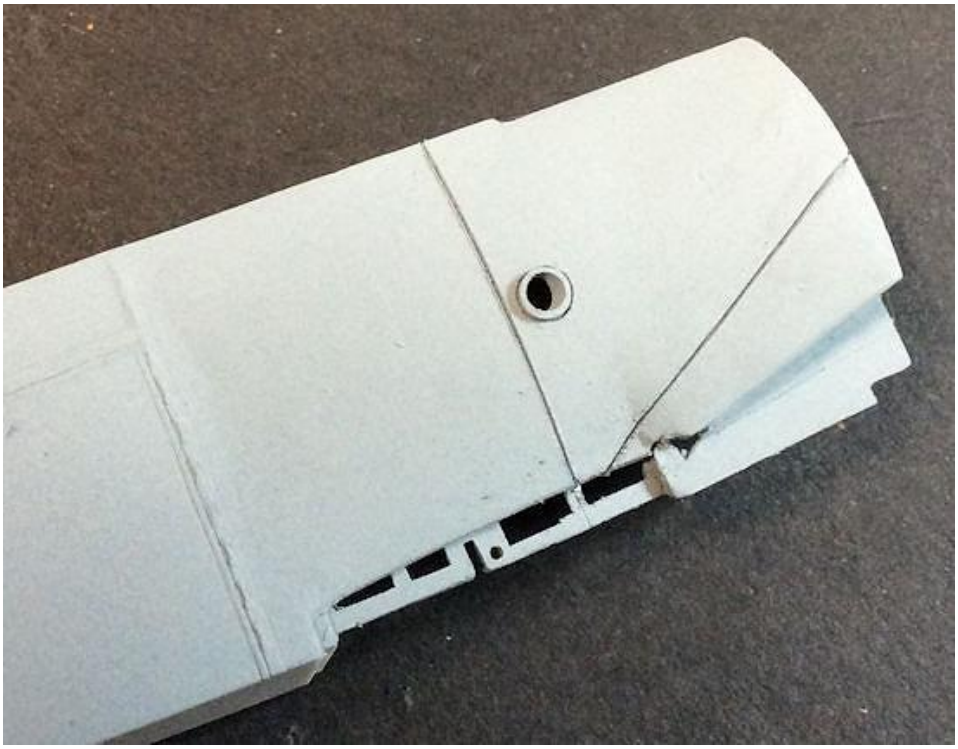
Cut a short length from a piece of sprue of approximately 3.0 mm diameter.

Drill out a hole of the same diameter for the carburettor intake (for positioning, refer to the illustration above).

Cement the cut sprue into the drilled hole, leaving approximately 0.5 mm protruding.

Mark the centre of the sprue and carefully drill out the centre to leave a thin outer edge.

Apply primer and check for surface imperfections and correct as necessary.

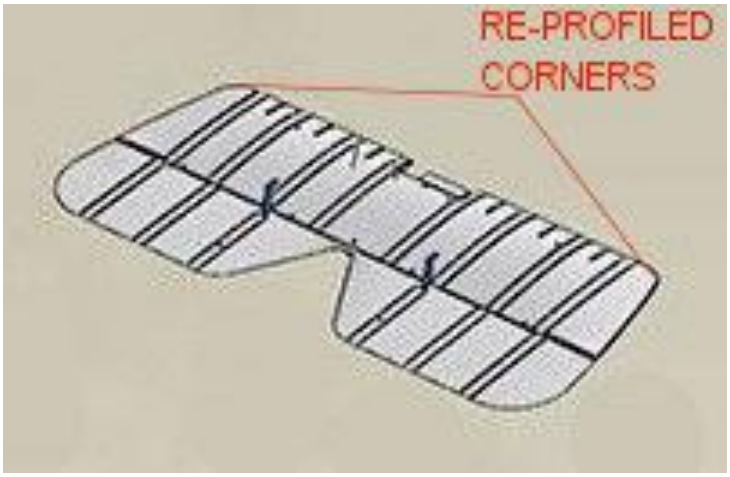


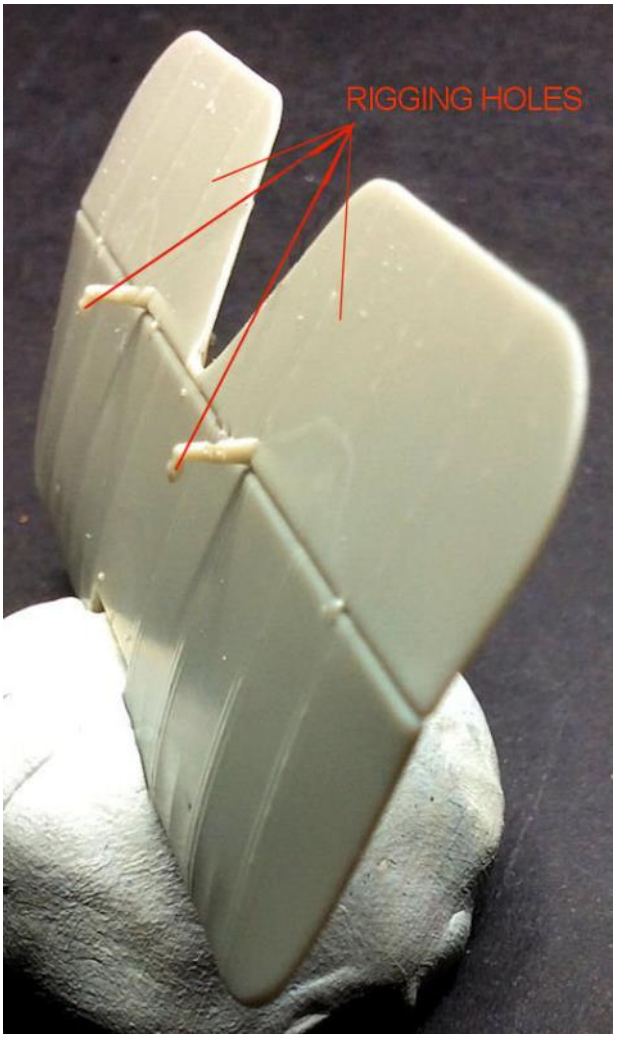
Tail plane and elevator assembly:

I decided to use the ‘Wingnut Wings’ kit assembly, rather than that supplied in the ’Kiwi Resin’ conversion set, as that item does not seem to be of the correct shape when compared to the drawing in the Windsock International 14, No.4 - July/Aug 1998 (J.M. Bruce and Ian Stair). The only change made to the kit part was slight reprofiling of the tail planes leading edge outer corners, which had slightly more curve than the kits ‘Camel’ supplied part.

Before cementing the elevator control horns (kit part D2) into the elevator (D4), drill a 0.3 mm diameter hole through the forward top of the horns, for rigging later in the build.

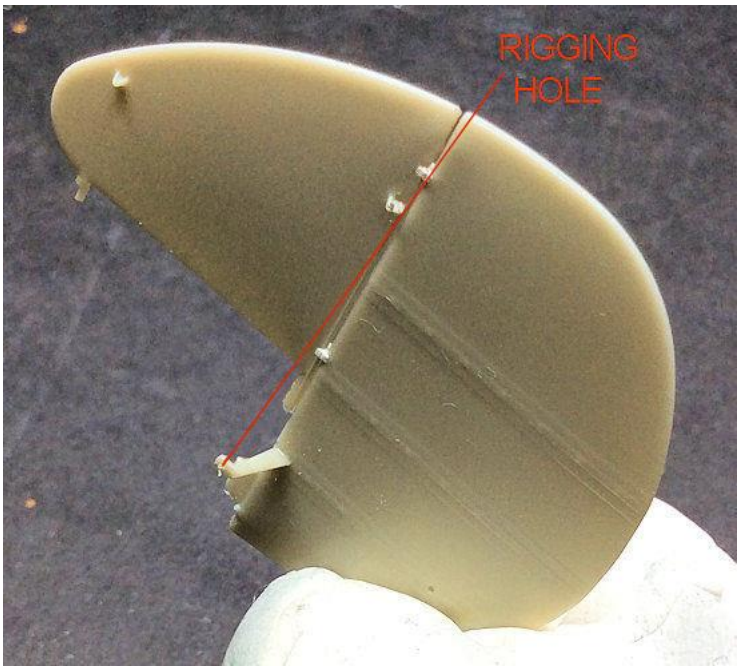
If desired, the elevator can be ‘animated’ down by carefully bending the elevator down along the tail plane to elevator joint. This would be the ’relaxed’ position seen in photographs taken at the time.





Fin and Rudder assembly:

The ‘Wingnut Wings’ kit assembly, rather than that supplied in the ’Kiwi Resin’ conversion set, was used as there appears to be very little difference between the parts. Before cementing the rudder control horn (kit part A17) into the rudder (D5), drill a 0.3 mm diameter hole through the forward end of each horn, for rudder rigging later in the build.



Undercarriage assembly:

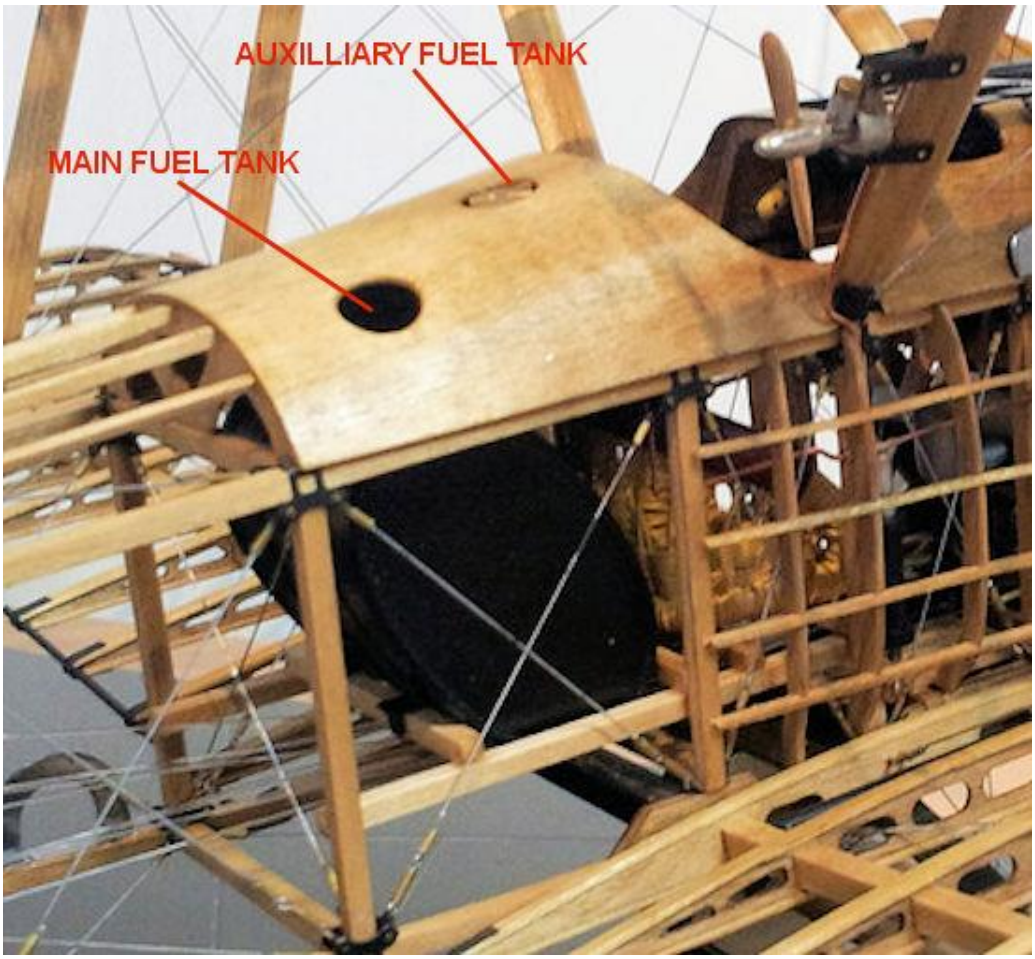
At this stage in the build, the undercarriage assembly can be built and test fitted to the fuselage.

Assemble the undercarriage struts (kit parts A8, A9), axle (A51) and ‘bungee’ suspension units (A45, A46).

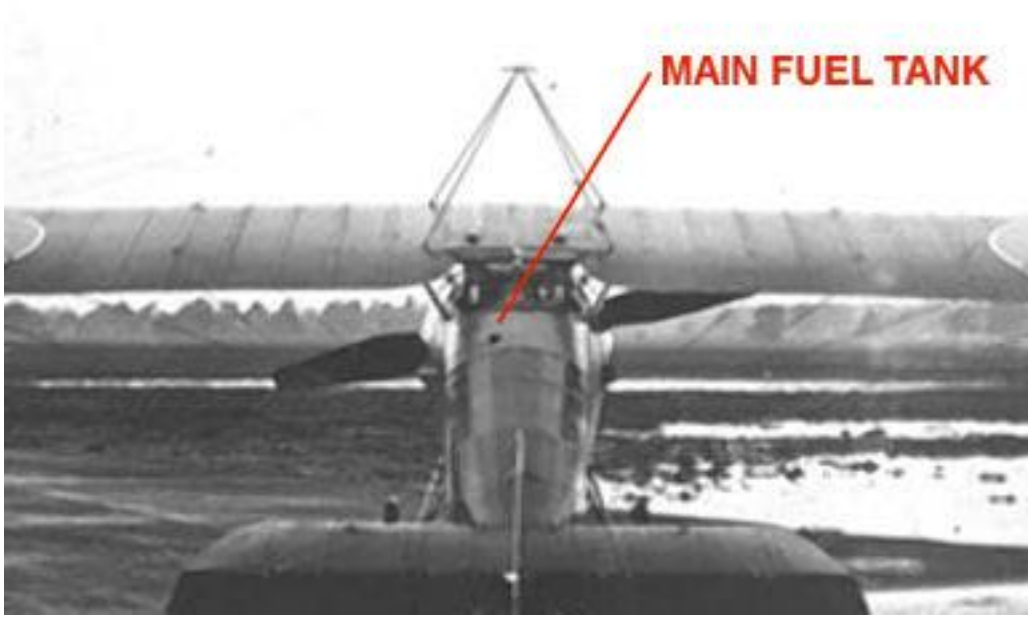
Assemble the two wheels (A38, A39) but not using the axle collars (D13). These are not needed as the wheels will be cemented in the fixed position (not able to rotate).

Cockpit wind break:

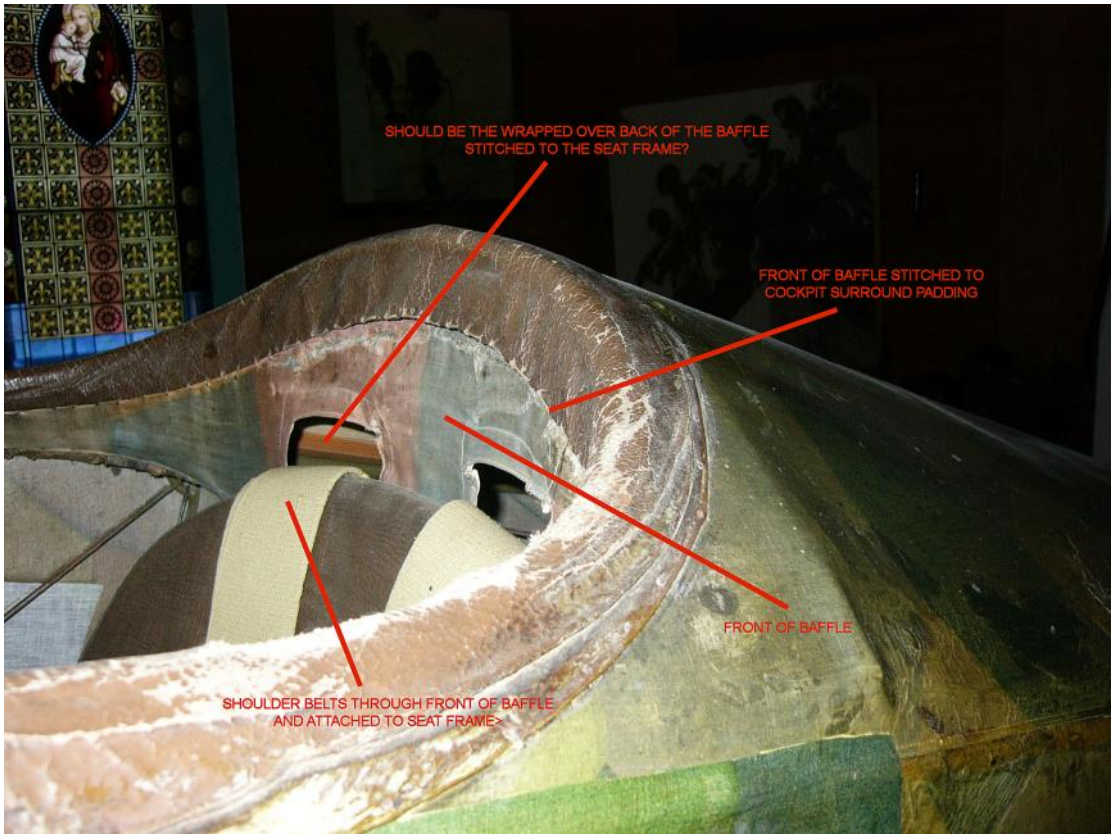
Photographs and information of the Sopwith ‘Camel’ show that it was fitted with an main fuel tank, located in the fuselage and behind the pilot’s seat. Above this tank was an auxiliary fuel tank. Photographs of the decking panel behind the pilot show the two access apertures for the separate tank filler caps.



The Sopwith ‘Swallow’ had only one filler cap aperture, which seems to indicate that it had only a main fuel tank and no auxiliary fuel tank located in that area.



If this is correct then having no auxiliary fuel tank would have left a large opening in the fuselage behind the pilot's head, which may have caused airflow to enter the rear of the fuselage causing structural damage. There are photographs of German aircraft that had 'wind breaks' of linen fitted in this area to help reduce the airflow into the fuselage. The following photograph shows this on a Fokker D.VII, a war trophy undergoing restoration in Canada.



Therefore it's possible that a 'wind break' may have been fitted to the 'Swallow'. To represent this on the resin rear decking panel:

Cut the shape of the forward underside of the rear decking panel from 0.8 mm thick plastic card.

Secure in position using CA adhesive.

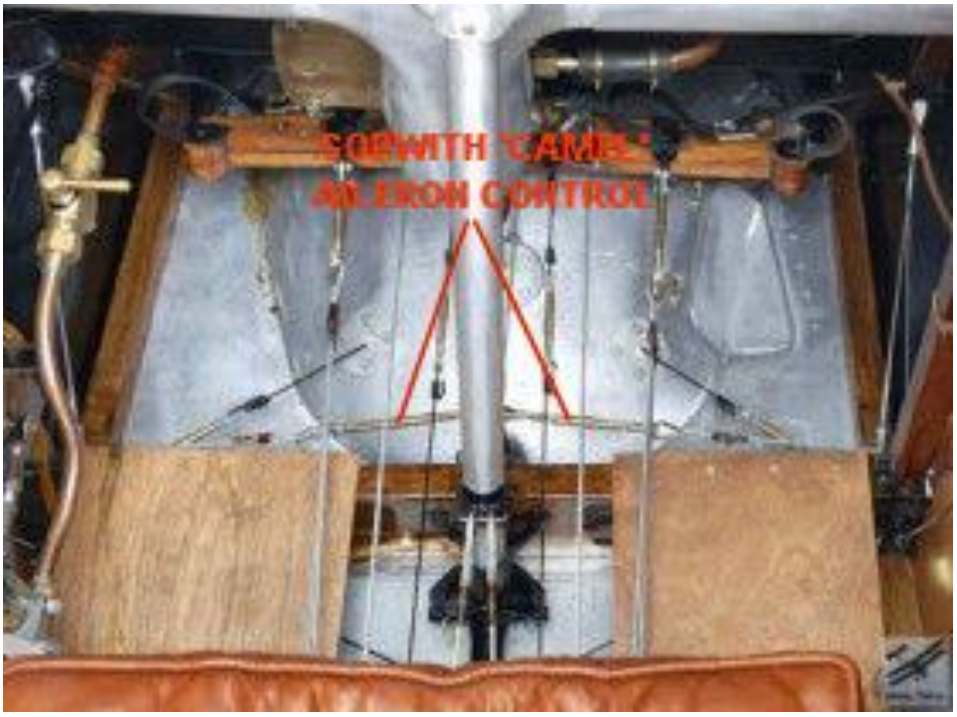
Once set, carefully file or sand the bottom edge of the insert level with the bottom side edges of the decking panel.

Aileron control detail:

NOTE 1: *The following description of the aileron control is assumed and based on photographs taken of the aircraft. Rigging of the aileron controls will be carried out later in the build.*

NOTE 2: *The following applies to* ***Method 2 on page 43****. If Method 1 was used a similar approach can be adopted.*

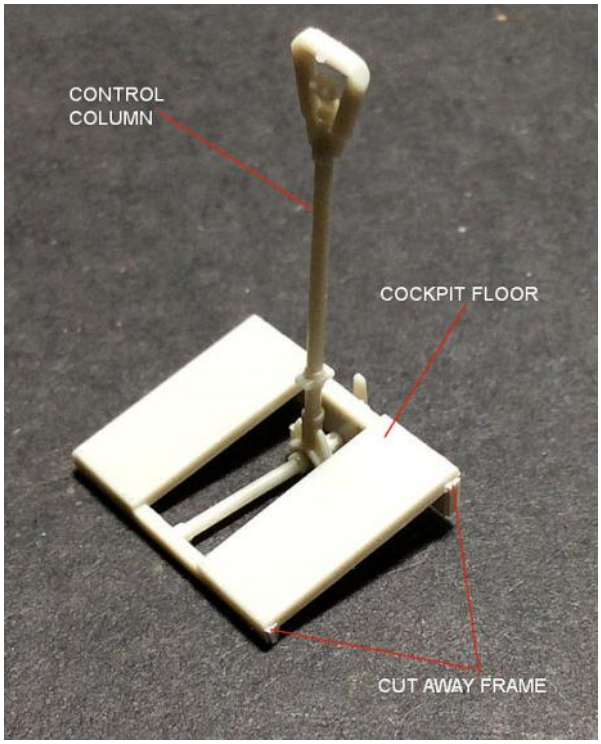
The control cables for the ailerons were routed differently to that for the Sopwith ‘Camel’ as the ‘Swallow’ had just the one wing.

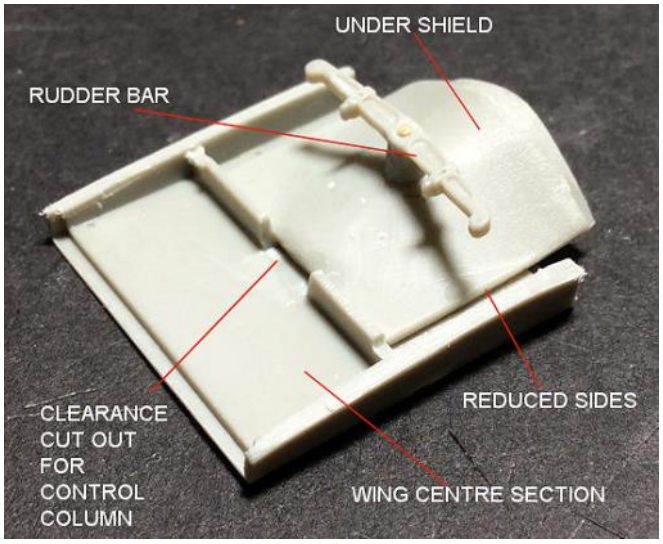


Control cables were attached to the base of the control column. Each cable was routed outboard and into box section containing a pulley. The cables were then routed around the pulley then up and out of the cockpit and into the underside of the wing centre section.
It appears from photograph of the ‘Swallow’ cockpit that the foot boards were extended forwards and secured to an additional cross member spanning the fuselage below the rudder bar.

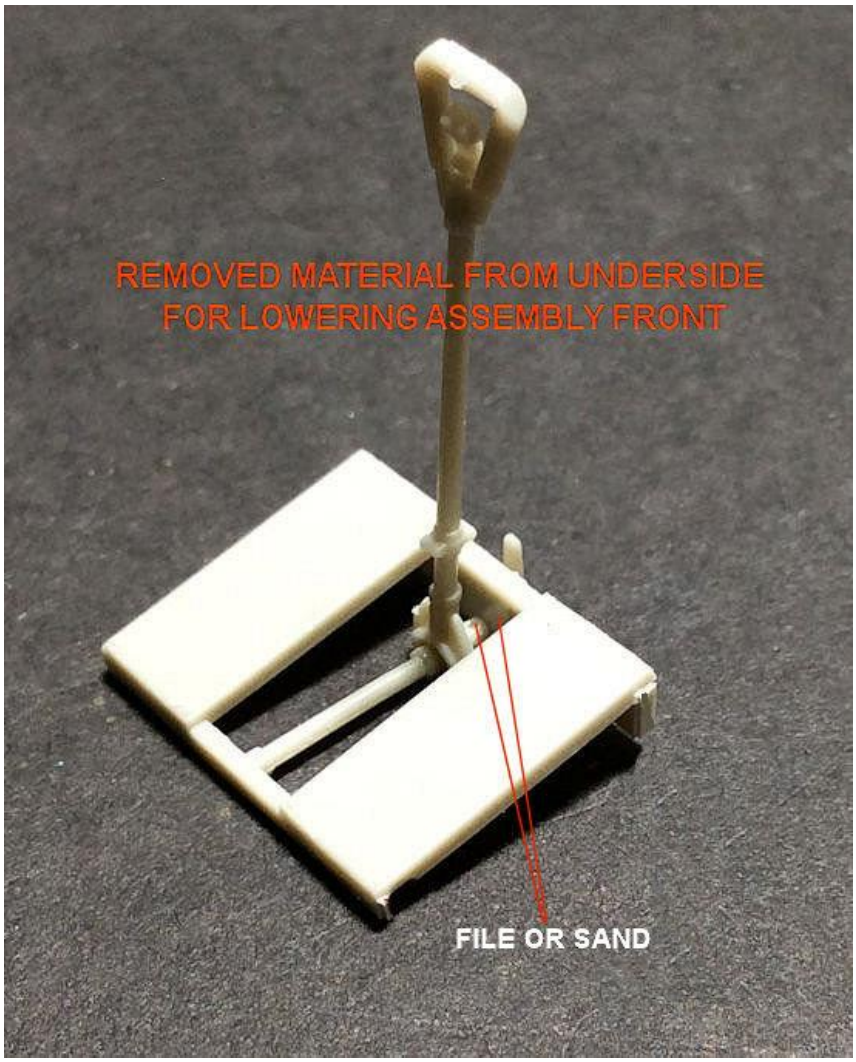
These changes will require extended foot boards, support cross member, box sections and modification to the cockpit floor.

NOTE: *The previously modified cockpit floor assemblies will be further changed.*





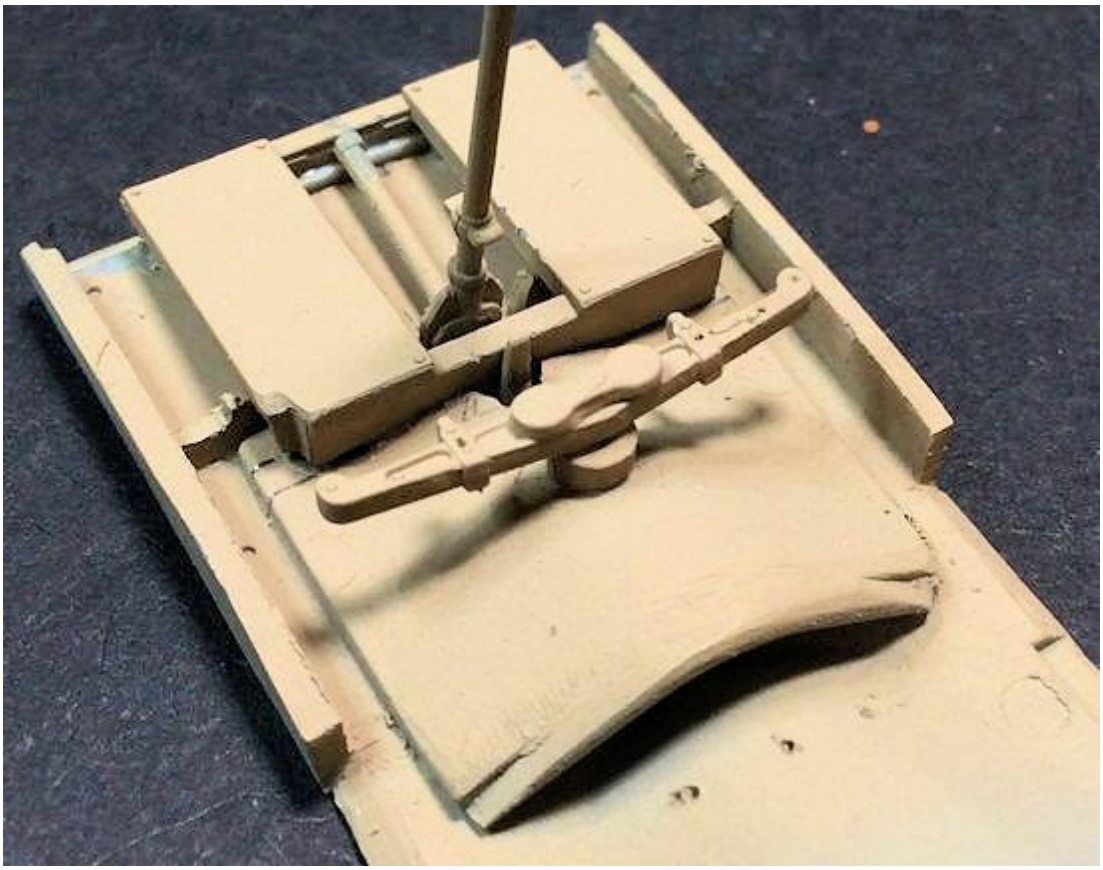
File or sand away the plastic from the underside of the front cross member of the control column/ floor assembly. This will require removing material from the torque tube and bottom of the aileron lever.

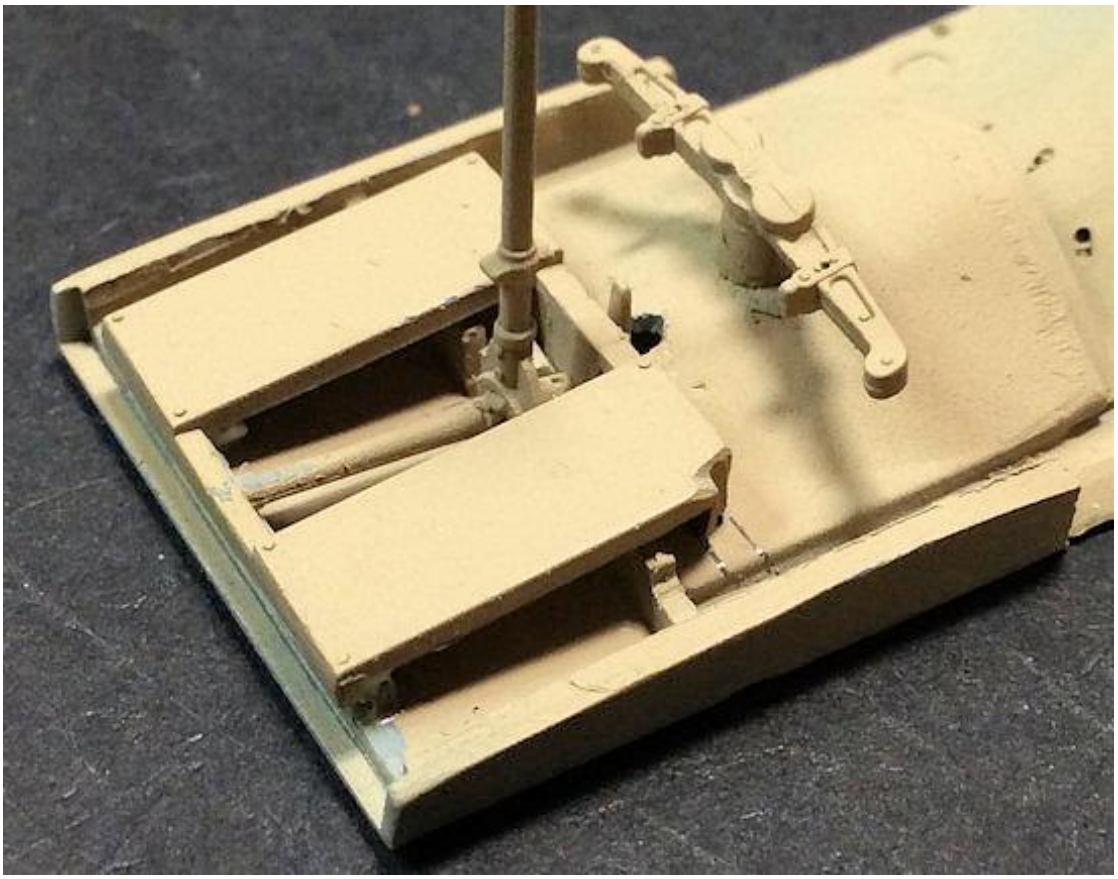


On the forward floor assembly, cut a slot across the curved rear of the under shield and a clearance cut out for the aileron lever.

Cement two short strips of 0.5 mm plastic card to the rear edge of the forward floor assembly, which will lift the control column/floor assembly when fitted. This allows the floor board extension to be positioned below the rudder bar.

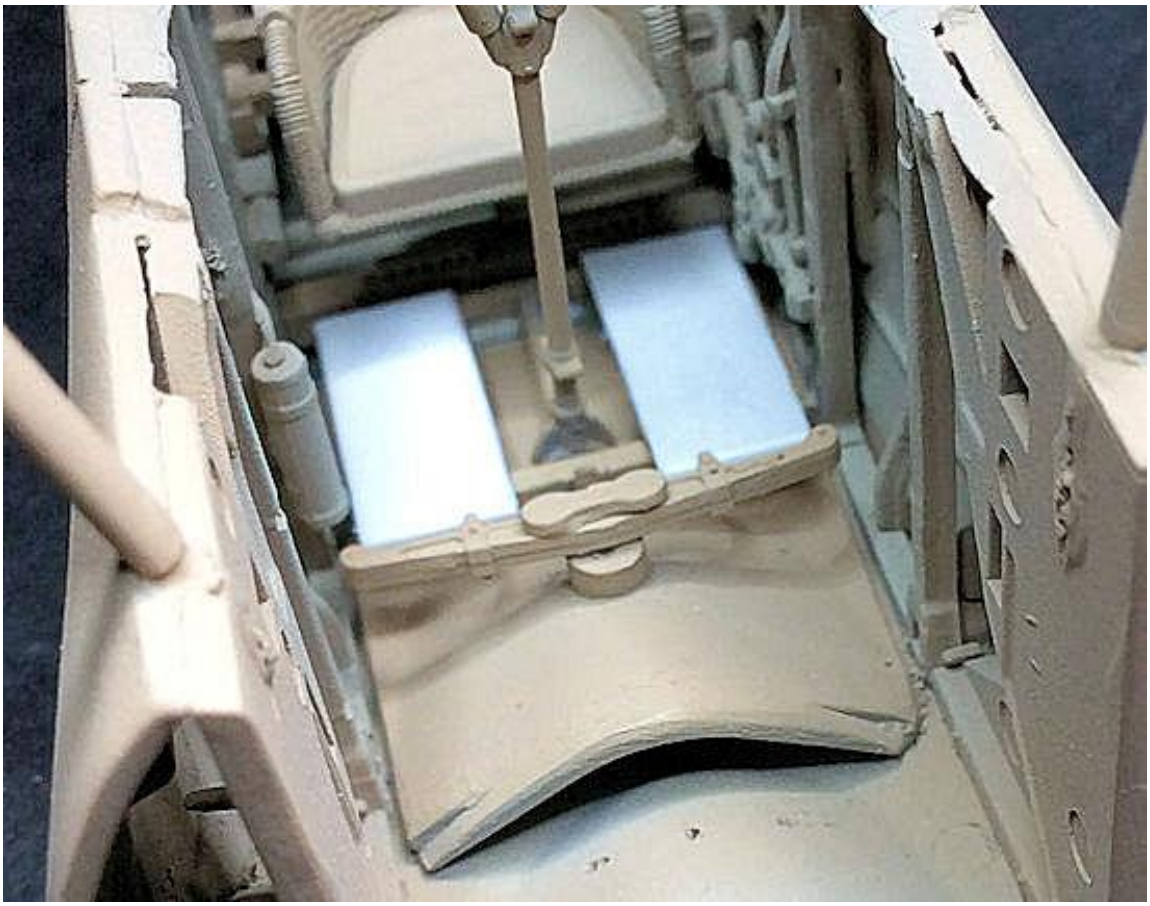
Cement the control column/floor assembly onto the forward floor assembly. Make sure the assembly is fully seated onto the added plastic strips at the rear and





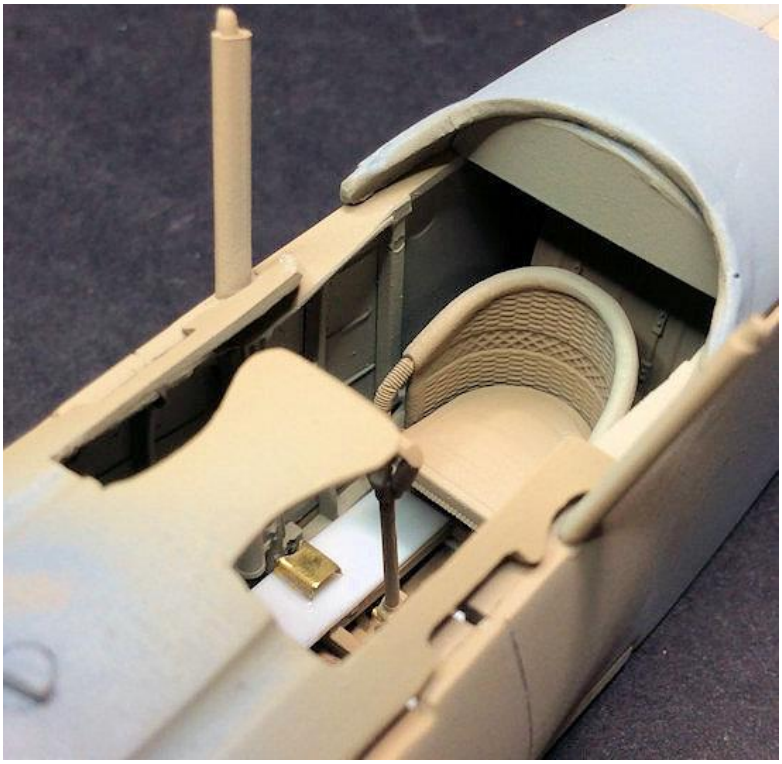
Cut two strips of 0.5 mm thick plastic card to extend the foot boards to under the rudder bar.

Cement the strips in position onto the existing floor boards.



To create the two aileron box sections, I bent a piece of scrap photo-etch into two half box section. I then filed an indent into one end of each for the aileron control cable entry. These were secured to the outboard edge of the extended foot boards (indent outboard) and inline with the control column, using CA adhesive.

To represent the aileron cable attachment to the control column, I secured a short length of 0.5 mm brass micro-tube (e.g. ‘Albion Alloys’), using CA adhesive.



PART 2

WOOD EFFECTS (General)

PART 2 - WOOD EFFECTS (General)

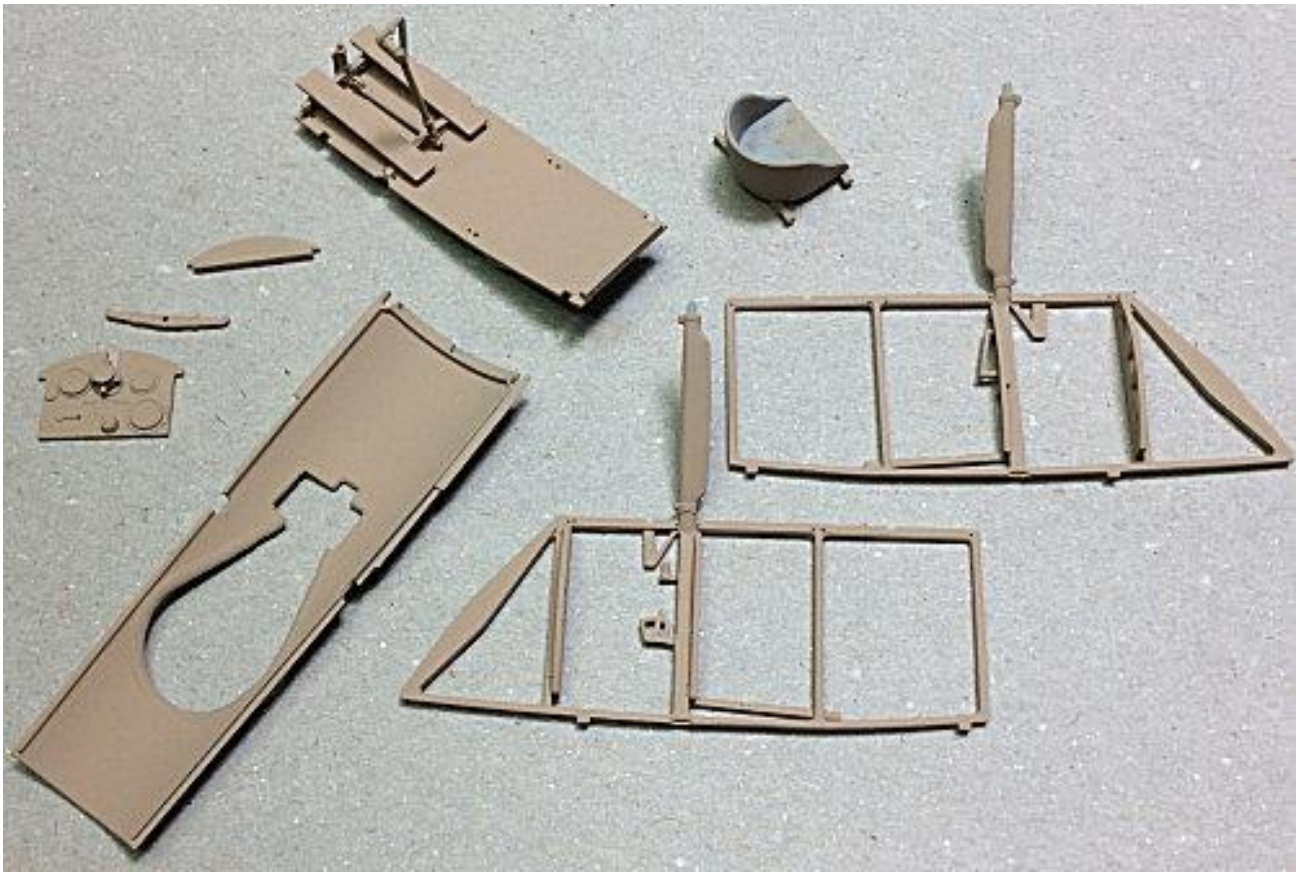
A basic technique:

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

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

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

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



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

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

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

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

'Tamiya' have 'Clear' coloured Acrylic paints, which are intended to be mixed with either Flat Clear (XF86), Semi-Gloss Clear (X35) or Clear (X22), to give the required finish but with a tint of the added 'Clear' colour. I use the Clear Yellow (X24) or Clear Orange (X26) to add a varnished tint to the clear coat. If using the 'Tamiya' Clear I add 'Mr. Colour' Levelling Thinners, which does improve airbrushing and avoids pooling. Otherwise I use 'Alclad' Light Sheen (ALC-311). Although it's a lacquer, I've found that it will accept 'Tamiya' 'Clear' coloured Acrylics without any separation, which can happen with other paints. The 'Alclad' lacquers dry fast and provide a good sealing layer over the painted surfaces. When using 'Alclad' sealing coats, the golden rule is to allow the various painted surfaces to dry fully before applying 'Alclad' lacquers.

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

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

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

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

PART 3

WEATHERING
(General)

PART 3 - WEATHERING (General)

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

Flory Model clay washes:

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

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

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

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

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

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

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

Chipping effects:

I wanted to give the effect of chipped and weathered paint/varnish to the metal engine cowl and forward fuselage panels. To achieve this effect, I first primed the areas with 'Tamiya' Fine Surface primer (Grey) then airbrushed 'Tamiya' Aluminium (XF16). Once dry I airbrushed 'AK Interactive' Medium Chipping fluid (or Vallejo chipping fluid) and when dry, top coated with 'Tamiya' Ocean Grey (XF82). Once fully dry I moistened the top coat with water, which softens the paint. Then with a cut down (stiff) brush and wood cocktail stick, gently teased off the top coat paint. Take care when doing this as 'too much chipping' can't really be covered up. In that event you would have wet the top coat and remove it all with an old toothbrush or similar and then when dry, re-spray the top coat and try again. Once the desired effect was achieved, I sealed the surfaces with an airbrushed coat of 'Alclad' Light Sheen (ALC-311).

'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.

Oil paint: A technique used more frequently now is oil paint ‘dot and drag’. Basically an oil paint of the desired colour is placed onto a piece of cardboard, which over a hour or so, soaks out the oil in the paint, leaving a drier pigment. The pigment is ‘dotted’ onto the painted surface where it is required then dragged with a brush previously wetted with ‘Tamiya’ X20 enamel thinners then wiped virtually dry.
Softly ‘flick’ the brush to drag the pigment in the direction required, which will blend it in a thin layer.
The amount of pigment left showing depends on the effect you require. Always keep the brush wiped clean to avoid a build up of pigment and remoisten and wipe dry often. The more paint you drag, the less pigment is left showing. Blending different coloured pigments can create stains from smoke/gun blast, rain marks/runs, dirt/dust and oil/fuel stains.

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

PART 4

DECALS
(General)

PART 4 - DECALS (General)

The national marking decals supplied in the kit will be used where possible, except for the roundels, which are too small. Heavily modified roundels will be created instead. For the overall PC12 colour and Clear Doped Linen (CDL) surfaces, I chose to use the linen effect decals from 'Aviattic' - CDL (32094) and PC12 Light (32092).

NOTE: *These particular decal sheets are not 'cookie cut' to the required shapes and therefore require you to cut the shapes from the sheets. This is covered in the build (Part 11 of this build log).*

Aviattic decals:

The 'Aviattic' decals are different in both production techniques and application to those of the more traditional decal manufacturers. Traditional decals are normally created using processes such as silk screen printing and are pre-shaped for the particular model markings. When placed in warm water they will detach from the backing sheet and can then be slid onto the model surface and when they are correctly positioned, wiped with a semi-dry brush or cotton bud etc, to expel any water from under the decal. Once fully dry, decal softeners, such as 'MicroSol' and/or 'MicroSet' can be applied, if necessary, to 'weld' the decal to the model surface. Finally a sealing coat of acrylic or lacquer gloss, semi-matt or flat is applied over the decal, to seal and protect the seal and protect the decal.
However, 'Aviattic' decals are laser printed onto a very fine carrier film and although this film is thin, the decals are remarkably resilient and somewhat 'stretchy' when being applied. This allows them to be more easily moved and positioned before being finally applied. Also with most other decals, I've used softeners to help the decals conform to surface irregularities and contours, which is something I've found is not really required for 'Aviattic' decals, due to the nature of the carrier film. In addition, the decals need to be cut out from the sheet, so care is required to cut the decals accurately to avoid leaving gaps, especially at the edges, where the white base colour will show. That said, minor gaps may be able to be covered with weathering. For more information, refer to the 'Aviattic' instruction sheet supplied with the decals.

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

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

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

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

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

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

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

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

Carefully move the decal into the correct position.

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

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

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

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

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

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

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

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

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

PART 5

RIGGING
(General)

PART 5 - RIGGING (General)

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

With your research complete and all necessary holes pre-drilled, the rigging can start. For structural strength I use mono-filament (fishing line) of various diameters. These can be semi-transparent but do give a look of steel, without the need of painting or colouring with a gel pen.

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

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

The 'streamlined' wires can be modelled using the relevant sized flat, photo-etched sets from 'RB Productions'. However, these can be difficult to install and require tiny photo-etch end fittings, which some modellers think are over-sized. More importantly, these wires add no structural strength the a model and apparently can be prone to 'sag' if the ambient temperature changes too much. It's for these reason I choose to use mono-filament (fishing line) for all of the rigging, as it does add structural strength to a model and can be tightened after fitting by apply heat close and along the rigging line. My line of choice is mono-filament with 0.12 mm diameter by 'Steelon' for rigging and 0.08 mm 'Stroft' for control lines. When lightly airbrushed with a matt or semi-mat lacquer, it looks close enough to steel to be passable. Besides, to the naked eye it's difficult to tell the difference between the flat photo-etch and the round mono-filament.

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

PART 6

WEAPONS

PART 6 - WEAPONS

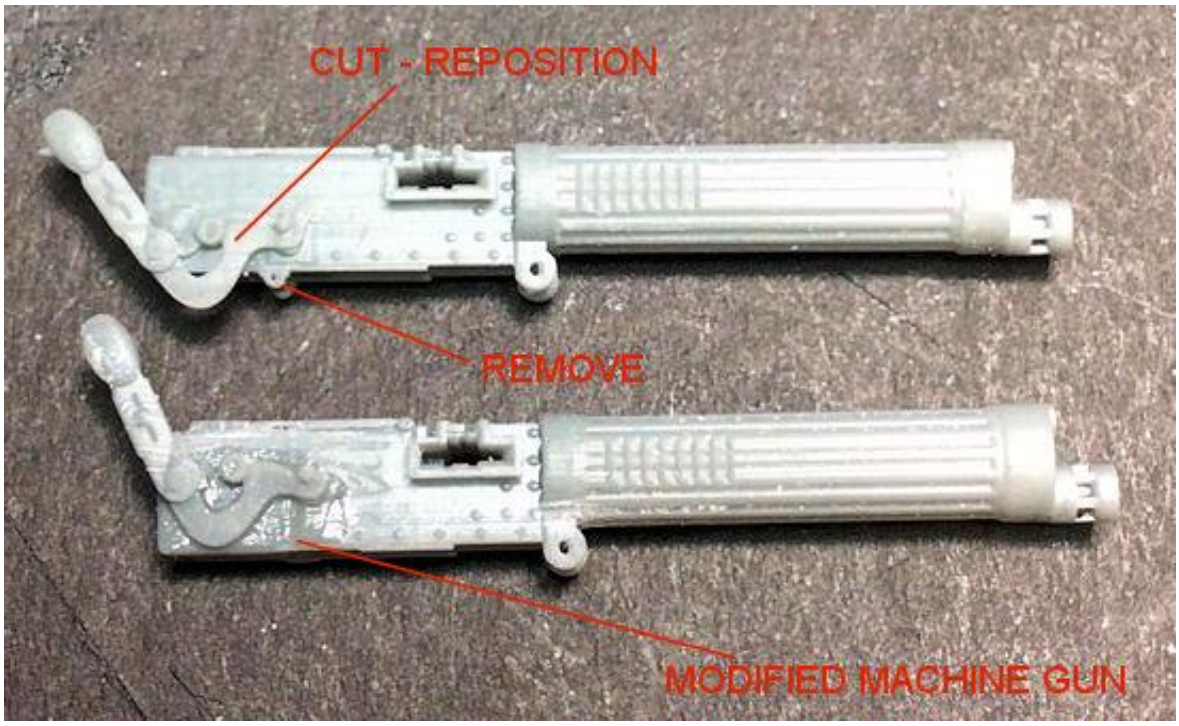
The final version of the Sopwith ‘Swallow’ was armed with two fixed ’Vickers’ 0.303 machine guns. To represent these weapons I chose to use the ‘Gaspatch’ Vickers Hyland Type B cocking handle (13-32046) machine guns. Although these are of the correct type fitted to the ‘Swallow’, the pre-moulded cocking handles are angled a little too far rearwards. The handles on the guns in photos taken of the actual aircraft seem to show the cocking handles at a higher angle, probably to allow adjustment of the cocking handles for pilot access to the cockpit.

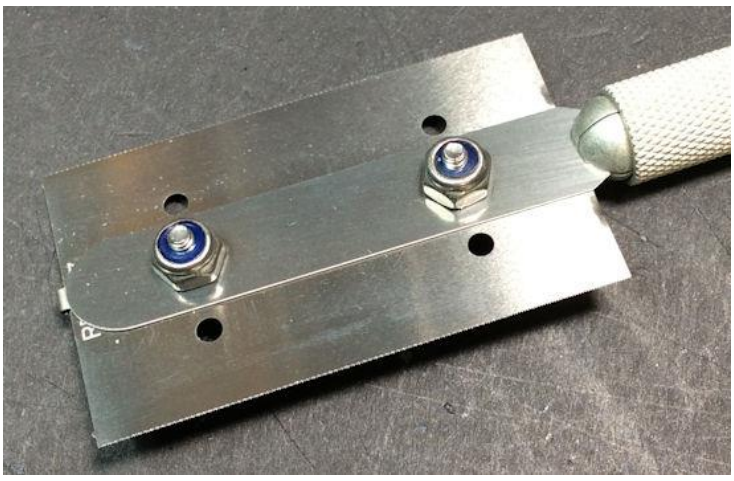
Using a very fine saw (e.g. ‘RB Productions’), carefully saw away the complete cocking handle and mechanism from each gun.

Sand flat the cut away area on the breech block of each gun.

File or sand away the two fixing points on the lower, rear of each breech block. This is to allow the breech block to sit flat on the instrument panel mounts.

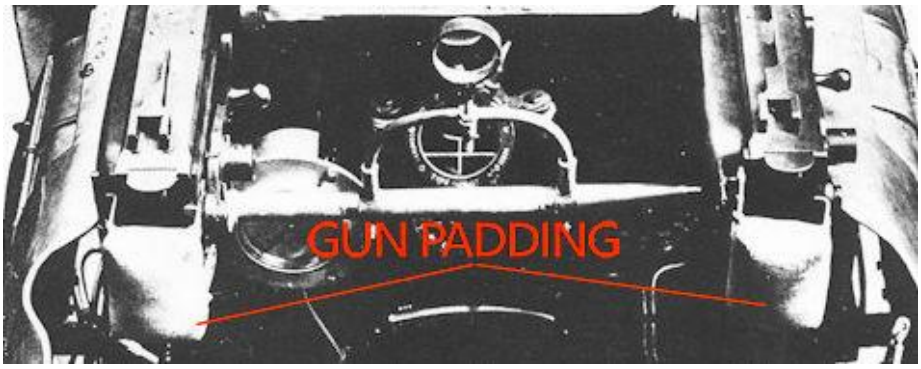
Using CA adhesive, reattach the cocking handle and mechanism to the gun breech blocks, but at a steeper angle to the gun. Make sure the bottom of the cocking mechanism does not protrude over the bottom edge of the breech block, as this will prevent the breech block from sitting fully on the instrument panel mountings.





The following photograph shows that inboard from the right machine gun was a traditional ’ring’ type gunsight. A photo-etch ‘ring’ gunsight (spare from a ‘Wingnut Wings’ Sopwith Pup kit) was attached using CA adhesive.

The following photograph shows that both weapons were fitted with padding attached to the rear of each breech block. These ‘pads’ are not supplied with the ‘Gaspatch’ machine guns and so were added from my ‘Gaspatch’ spares.



Prime the machine assemblies by airbrushing with ‘Alclad’ Grey Primer and Micro-Filler (ALC-302).

Airbrush all of the machine gun parts, except the gun padding, with a 50/50 mixture of ‘Alclad’ Gun Metal (ALC-120) and Duraluminium (ALC-102).

Once dry, dull the metallic look by ‘dry brushing’ the machine gun assemblies with ’Mr. Metal Colour’ Stainless Steel (212).

Brush paint the gun padding with ‘Humbrol’ Leather (62).

Brush paint the ammunition inlet port in the gun breech blocks with a 50/50 mix of ‘Mr. Metal Colour’ Brass (219) and Copper (215) to create a Phosphor Bronze colour.

Dry brush the gun muzzle area with ‘Tamiya’ Rubber Black (XF85).

Brush paint the wood hand grips on the two cocking handles with ‘Tamiya’ Hull Red (XF9).

Apply a wash of ‘AK Interactive’ Kerosene (AK 2039) over the front and rear boss.

PART 7

PROPELLER

PART 7 - PROPELLER

Both the ‘Wingnut Wings’ kit and the ‘Kiwi Resin’ conversion set supply propellers for this model. Although these propellers are of good moulded quality, I chose instead to use a hand made and laminated wood propeller instead. The propeller used is a ‘‘Proper Plane’ ‘Sage’ wood laminated (WP-006)

NOTE: *When the engine if fully located into the recess on the engine bulkhead, the propeller shaft does not protrude far enough beyond the engine cowl, which does not allow the propeller to be fitted. Therefore an extended propeller shaft must be made.*

Cut a length of 1.8 mm diameter brass tube (e.g. ‘Albion Alloys’ MBT18) at least 12 mm in length.

Insert the tube into the hole at the rear of the propeller.

Position the end of the tube flush or just below the rear face of the recess in the front of the propeller. Don’t have the tube protruding or it will stop the front propeller boss seating fully into the recess.

Secure the tube in position with CA adhesive.

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

Airbrush light coats of ‘Tamiya’ Clear Orange (X26) mixed with a small amount of ’Tamiya’ Hull Red (XF9), thinned with ‘Tamiya’ X20A thinners, to obtain the darker varnished look of the wood.

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

Apply the ‘Wingnut Wings’ kit supplied propeller decals (79, 80 and 81).

Airbrush a light sealing coat over the propeller - e.g. either ‘Alclad’ Light Sheen (ALC-311) lacquer or similar (e.g. ‘Tamiya’ Semi Clear (X35) with added ‘Mr. Colour’ levelling thinners.

Carefully cut off the two bosses from their moulding block and sand the mounting faces to the correct thickness.

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

Position the front boss onto the propeller, making sure it is seated fully in the recess. Secure in position using CA adhesive.

Position the rear boss onto the pre-installed propeller shaft and slide it up the rear of the propeller. Secure in position using CA adhesive.

PART 8

ENGINE

PART 8 - ENGINE

The engine supplied with the 'Wingnut Wings' kit is for the 'Clerget' 9B or 9Bf engines. However the last engine type to be to the Sopwith 'Swallow' was the 'Le Rhöne' 9J (110 hp), which is of a different design and copied by Germany as the 'Oberursel' Ur.II. Therefore I chose to use as a replacement engine the 'CMK Master Models' Le Rhöne 9J (110 hp) - (kit No.129-5105). Other manufacturers supply this engine, such as 'Roden' and 'Copper State Models.

The most obvious difference in external appearance between the 'Le Rhöne' and 'Clerget' rotary engines is that the valve push rods were fitted to the rear of the 'Le Rhöne' engine cylinders, whereas the 'Clerget' engine had these fitted at the front of the cylinders. Also the fuel/air induction pipes on both engine types were located at the rear of the cylinders, but whereas the 'Clerget' engine had these pipes connected to the rear of each cylinder head, those on the 'Le Rhöne' engine were connected at the side of each cylinder head.

The replacement 'CMK Master Models' Le Rhöne 9J engine has virtually no clean up of flash etc needed and has good detail moulding. The only thing required additional to the kit are the materials used for creating the ignition leads and valve push rods. The propeller back plate and ring PUR 1 and PUR 2 and spark plugs PUR 7 will not be required.

Wash the kit parts in warm water and kitchen washing up liquid. Rinse with clean water and allow parts to fully air dry.

Carefully cut the various kit parts from their moulding blocks. *Too much stress will break the more delicate parts.*

File or sand away excess moulding then test fit the parts to ensure they fit and are correctly aligned.

In preparation for adding the valve push rods, drill deeper into the nine push rod locations (between the intake manifold pipe locations) on the engine block. Use a 0.6 mm diameter drill.

In preparation for adding spark plugs, drill deeper into the spark plug locations on each cylinder head. Use a 0.5 mm diameter drill.

In preparation for adding ignition leads, cut away the nine location 'stubs' from the ring on the rear of the engine block PUR4.

In those nine locations drill holes of 0.3 mm diameter into the ring.

Cement the ’Wingnut Wings’ kit part E7 into its recess in the engine bulkhead A10. This will be used to mount the replacement engine.

NOTE: *To assemble the engine, secure the parts using CA adhesive.*

Secure the circular back plate (PUR 3) to the engine cylinder block (PUR 4).

Secure the nine cylinders PUR 6 to the engine block assembly.

Airbrush all parts with a light coat of ‘Alclad’ Gloss Black Base (ALC-305) lacquer.

Airbrush a light coat of ‘Alclad’ Steel (ALC-112) over the engine block/cylinder assembly.

Airbrush a light coat of ‘Alclad’ Copper (ALC-110) over the nine intake manifold pipes.

Secure the nine inlet manifold pipes PUR 5 to the each cylinder and the engine block.

Apply lightly by sponge ‘Tamiya’ Weathering Master (Set D - Burnt Blue) to the induction pipes at the cylinder heads.

Apply lightly by sponge ‘Tamiya’ Weathering Master (Set B - Soot) to the cylinder heads at the opposite side to the induction pipes (the exhaust valve).

Cut nine lengths of micro-tube (e.g. ‘Albion Alloys’ 0.4 mm Nickel-Silver - NST04) to fit into the push rod location holes in the engine block and against the cylinder head levers.

Secure the nine push rods in position between the engine block and cylinder head rocker arms.

Cut nine short lengths of brass micro-tube (e.g. ‘Albion Alloys’ 0.5 mm Brass - MBT05) and 0.3 mm Nickel-Silver tube (NST03).

Run a 0.3 mm diameter drill through the 0.5 mm tubes to remove and burrs from the bore.

Insert the 0.3 mm tubes into the 0.5mm tubes, leaving 0.5 mm protruding from one end then secure in position using CA adhesive.

Insert the 0.5 tubes into the spark plug location holes in the cylinder heads.

Brush paint the added spark plugs with ‘Tamiya’ White (X2) with a drop of Deck Tan (XF55) added to give an off-white finish.

Apply an wash of ‘AK Interactive’ Engine Oil (AK2019) to each end of the engine push rods.

Using a 0.2mm diameter drill as a mandrel and 0.125mm diameter copper wire (or similar), loop the wire over the shank of the drill.

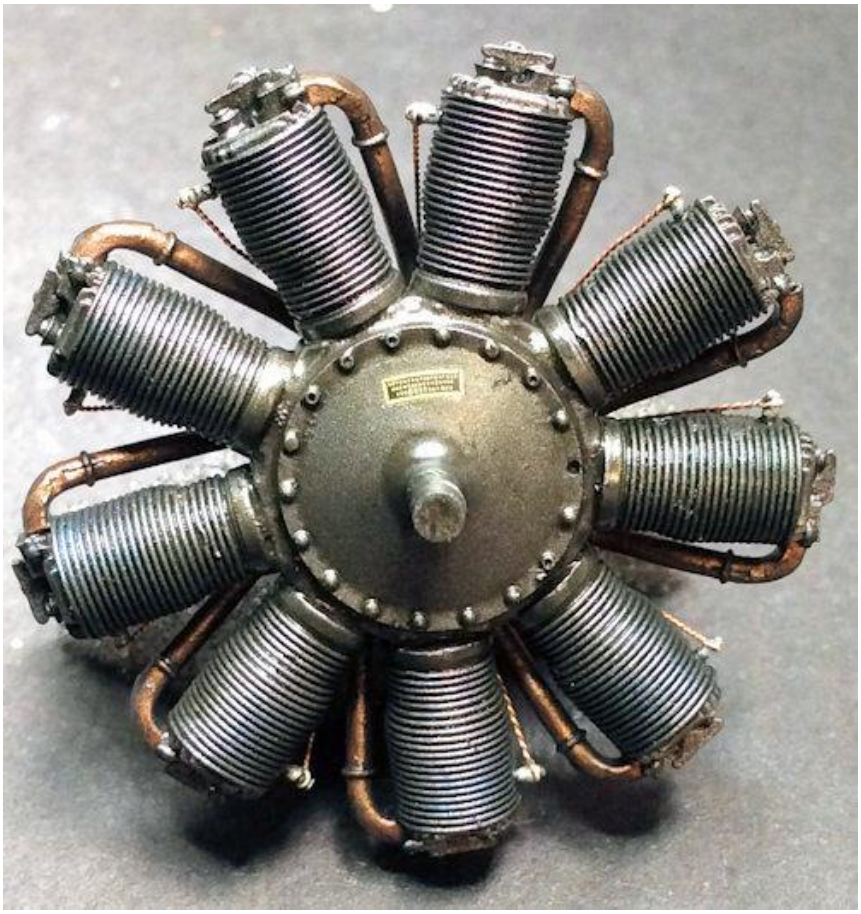
Twist the wire until you have a tight spiral of wire with a 0.2mm loop at the end.

Create nine such ‘ignition leads’.

Cut the nine lengths, at the non-looped end, long enough to be located onto the spark plugs of each cylinder with the other end between in the location holes drilled into the ring on the engine block PUR4.

Position each ignition lead into its location hole with the loop over the protruding 0.3 mm tube on the spark plug, then secure in position using CA adhesive.

Apply ‘AK Interactive’ Engine Wash (AK2033) along each ‘ignition lead’ in order to ‘knock back’ the shine of the copper wire.



NOTE: *When the engine if fully located into the recess on the engine bulkhead, the propeller shaft does not protrude far enough beyond the engine cowl, which does not allow the propeller to be fitted. Therefore the propeller shaft must be extended.*

Cut away the propeller shaft from the front of the engine.

File the remaining ‘stub’ flat.

Mark the centre of the ‘stub’.

Drill through the front half of the engine, stepping up to a 1.8 mm diameter hole.

NOTE: *The propeller on its pre-installed shaft will be fitted later in this build.*

PART 9

WHEELS

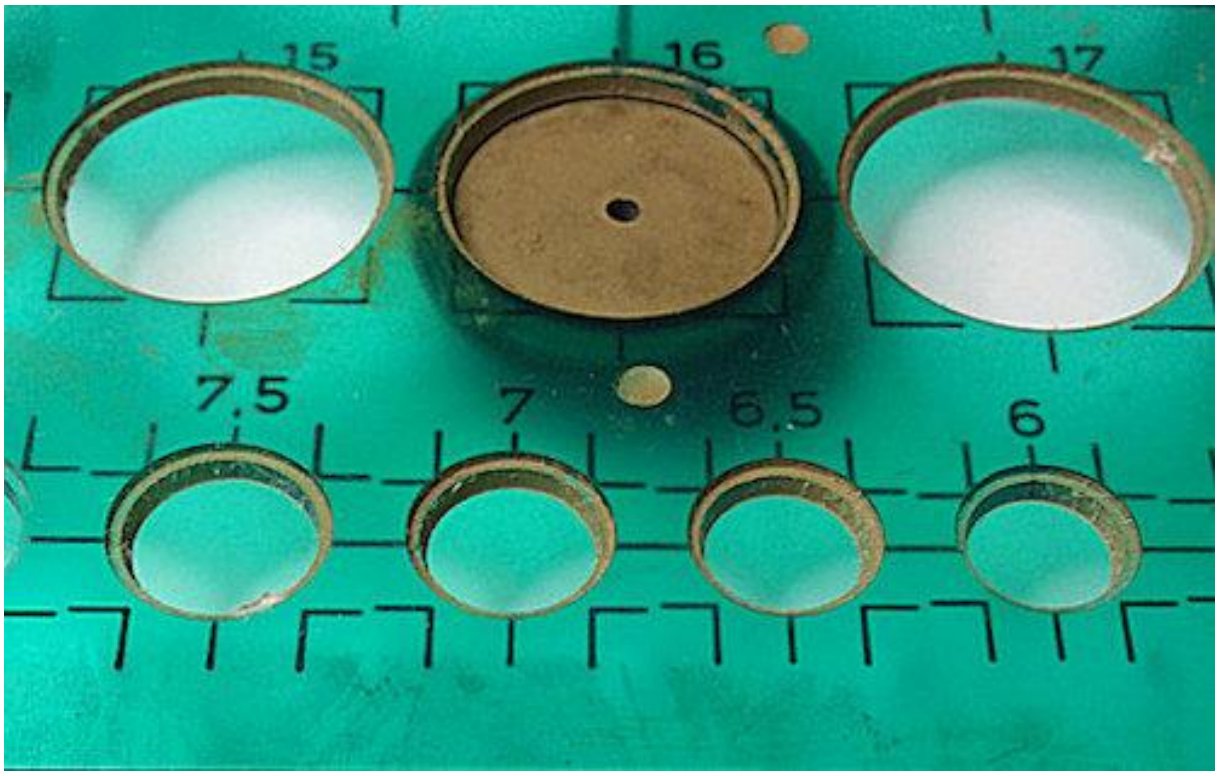
PART 9 - WHEELS

The assembly of the two wheels is straight forward. In the kit are two ‘clip over’ locking discs (D13), which are used to secure the wheels onto the axle and allow them to rotate. I didn't use these as the intention is to have the wheels fixed on the axle as a ‘static’ display.

Brush paint the wheels tyres with ‘Tamiya’ rubber black (XF85) mixed with a small amount of ocean grey (XF82).

NOTE: *To airbrush the faces 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 faces under the hole.*

Example of the ‘Linex 1217 T is use



The internal surfaces of the wheel were airbrushed with ‘Tamiya’ Deck Tan (XF 55).

Cement the front wheel covers in position in the two wheels.

Airbrush the wheels with a gloss sealer (e.g. ‘Alclad’ Aqua Gloss - ALC-600) or similar.

Aviattic’ decals - templates:

NOTE: *The decals used for the underside CDL on the wheel covers are cut from the linen effect sheet from ‘Aviattic’ - CDL (32094).*

The ‘Aviattic’ PC12 and CDL linen decals are not ‘cookie cut’ (pre-shaped), but are supplied as A4 sheets. Therefore care is required to ensure the decals are cut out accurately to fit the various areas of the model.

Use the wheel covers as a guide and cut appropriately sized discs from the CDL decal sheet.

Cut a shallow triangle on the outer wheel cover decals, with the tip of the triangle in the centre of the cover. This is required to allow the decal to sit correctly in the outer cover, which is not flat.

Apply the decals to the wheel covers (both sides of each wheel).

NOTE: *Ensure the tyre decals (112) are applied over the pre-moulded wording on the tyres.*

Apply the kit supplied decals for the tyre manufacturer ('Palmer Cord') around the edge of the tyres and over the raised wording moulded in the tyre itself.

Brush paint the exposed wheel spokes and centre of the axle in the outer wheel cover with 'Mr. Colour' Iron (219).

Airbrush the wheels with 'Alclad' Light Sheen (ALC-311) or similar.

NOTE: *As this aircraft was only a prototype and saw very little operational testing, weathering should be limited to standard flying and maintenance grime.*

The wheels can then be weathered with either brushed 'AK Interactive' Kerosene (AK-2039) or with 'Flory' dark dirt clay wash (refer to Part 3 of this build log). Weathering can be applied around the tyres, tyre rims and wheel covers.

PART 10

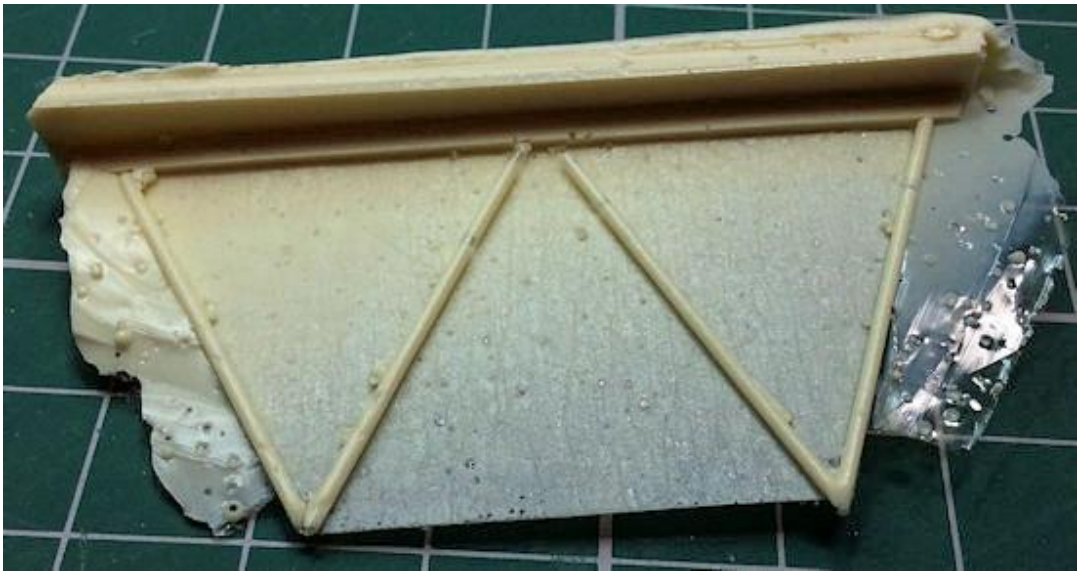
‘SCRATCH’ MADE DETAIL AND PARTS

PART 10 - 'SCRATCH' MADE DETAIL AND PARTS

NOTE: *The following parts will need to be 'scratch' made as the 'Kiwi Resin' parts are not strong enough to support the resin wing, especially as they do not have strengthening pins moulded into them.*

Over wing pylon cable support:

The instruction sheets supplied with the resin conversion set state that the pylon struts are for guidance only as being made of thin resin, are too weak.



NOTE: *If necessary, use the resin parts as a guide.*

Cut four lengths of 1.0 mm diameter brass micro tube (e.g. 'Albion Alloys) of 29 mm length.

Slide the cut tubes onto a 0.5 mm diameter brass rod (e.g. 'Albion Alloys).

If possible, compress the tubes to create an aerofoil shape. For this I used the 'Strutter' tool from 'Albion Alloys', which has pivoting jaws which form the shape when tightened in the jaws of a vice. Alternatively it may be possible to gently hammer the profile around the 0.5 mm brass rod.

Remove the tubes from the rod.

Slide two tubes onto the rod, the ends of which should be 0.5 mm apart.

Secure the tubes on the rod either by soft soldering or by using CA adhesive.

Repeat using the two remaining tubes.

Cut the exposed rod from each end of each tube pair, leaving at least 5 mm exposed.

Gently bend each tube pair at the exposed rod in the centre of the pair to form a ’V’ the same shape as the resin parts.

On the resin wing, drill four 0.6 mm diameter holes vertically through the wing and at the pylon mounting points (refer to page 26 of this build log for the location points for the pylon).

Pre-bend the exposed rod ends of each pylon ‘V’ to enable them to be inserted into the drilled holes in the wing.

Gently bend the base of each ‘V’ at the wing until the tops meet centrally above the wing.

Tie the two tops together using thin copper wire - I used 0.3 mm diameter wire).

Make sure the tops are aligned and the bases are fully into the holes in the wing.

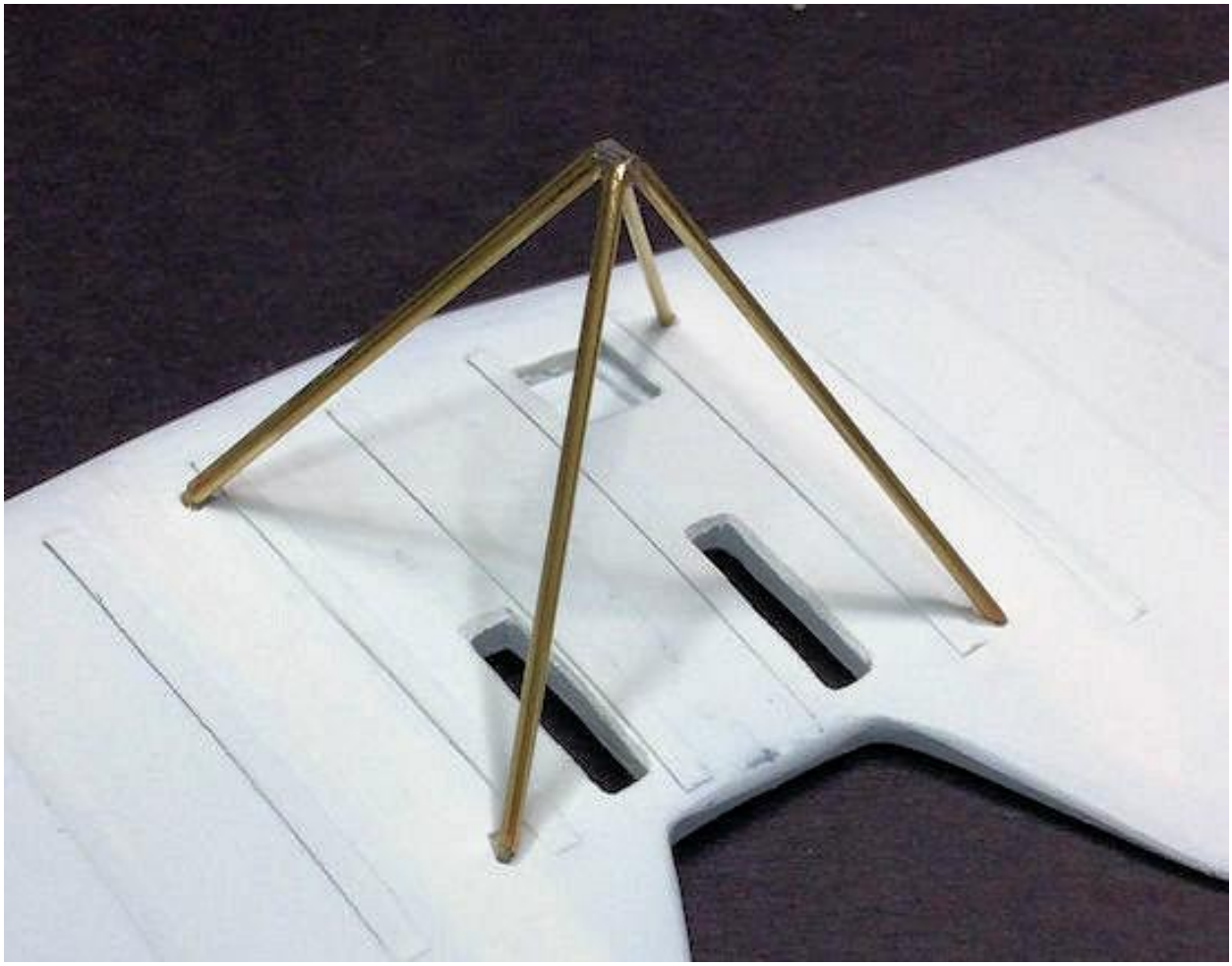
Secure the tops together either by soft soldering or by using CA adhesive.

Gently remove the pylon assembly from the wing.

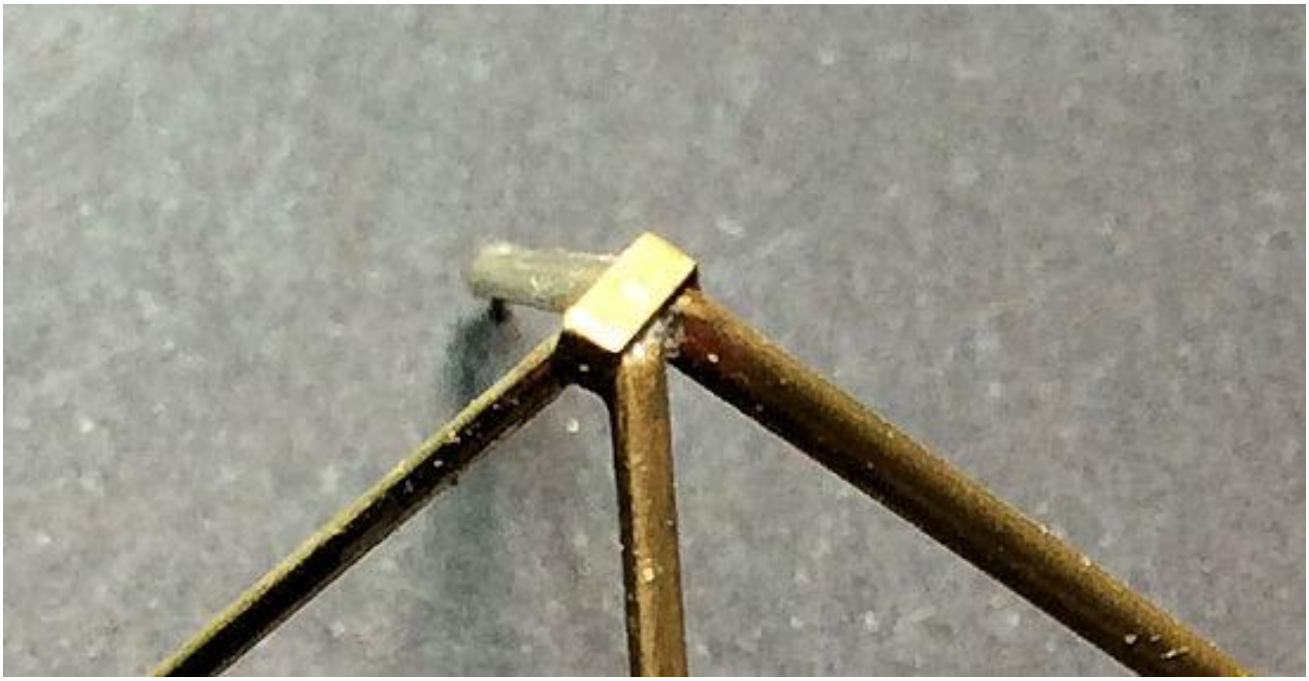
Cut away any excess copper wire.

File or sand the assembly to remove any excess solder or adhesive.

Test fit the pylon assembly.



I added a bent strip of photo-etch onto the top of the assembly to represent a cable retainer for the rigging wires over the wing.



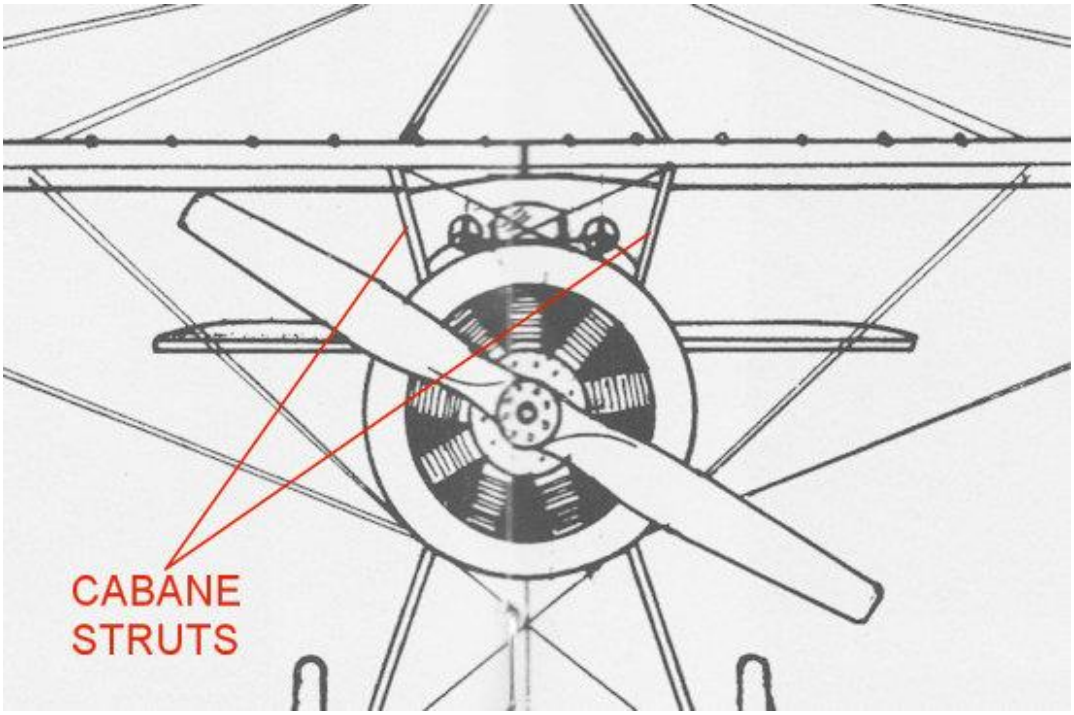
Wing strut locations:

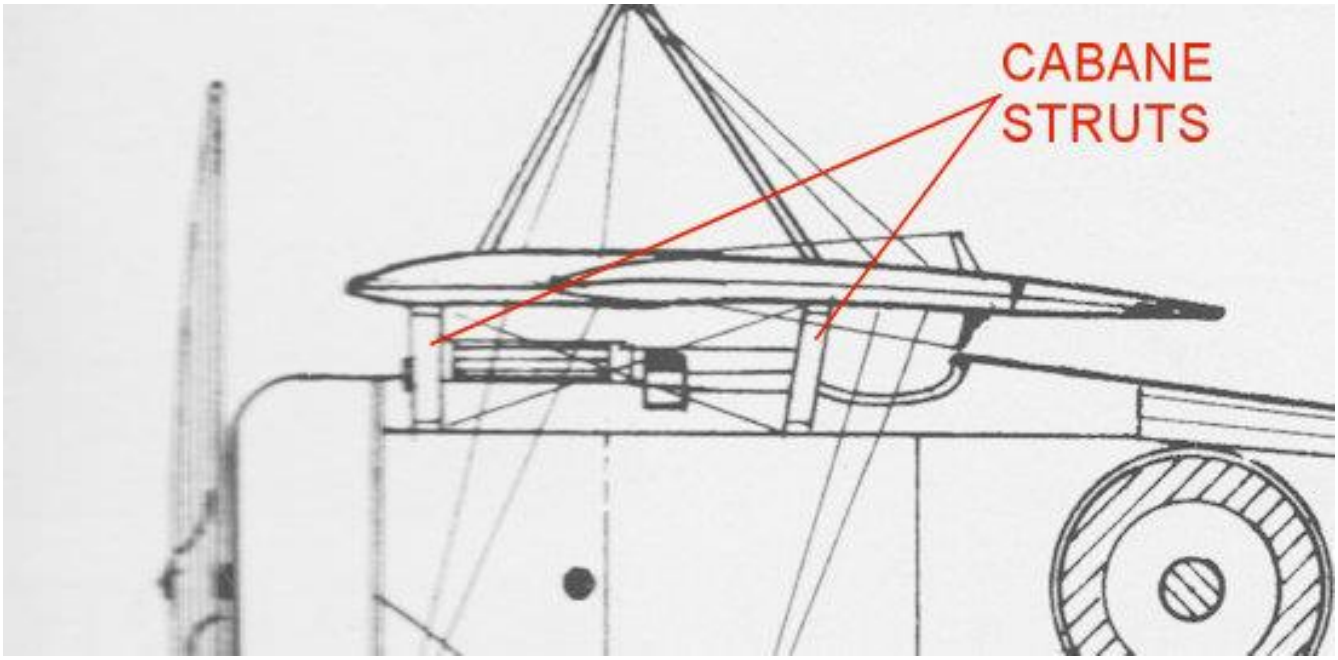
To create a positive location for the four cabane wing struts the locations on the underside of the wing need to be drilled.

NOTE: *The holes to drilled are the previously drilled holes for locating the over wing pylon assembly.*

WARNING: ***In the following step, make sure you do not drill through the wing as the holes are required to locate the over wing pylon assembly, which has smaller 0.5 mm diameter locating rods. Drill only enough to provide a positive location for 0.8 mm diameter rod.***

At the under side of the wing, at the four locating holes, use a 0.8 mm diameter drill and drill at an angle into the holes. The drill should be angled into the wing holes to align approximately with the struts in the following illustrations.



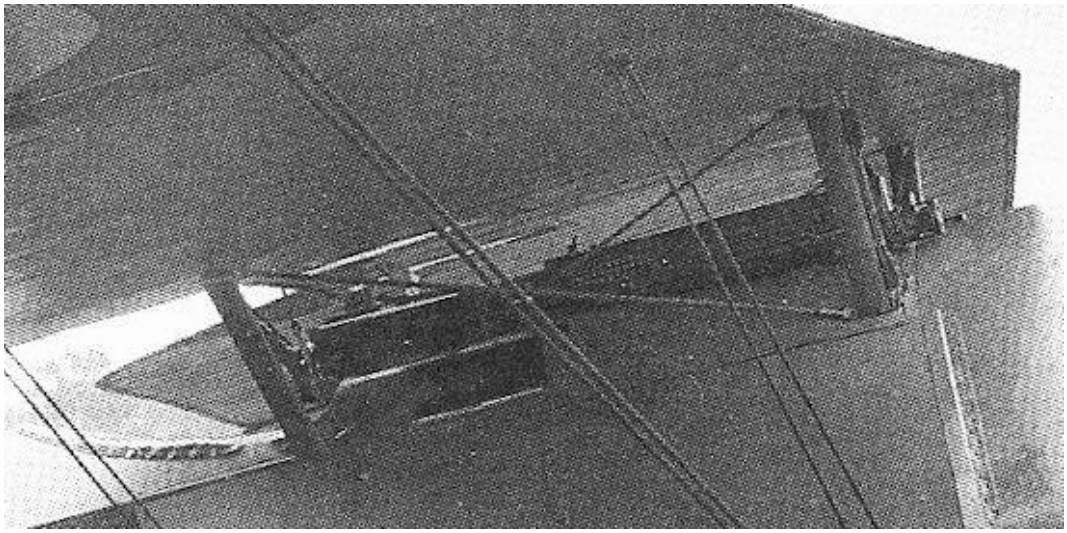


Centre section support struts:

Although the resin conversion set does supply the four wing support struts, I felt these may not be able to take the weight of the wing, especially when rigged under tension. Therefore I decided to ‘scratch’ make the struts in a similar manner to the pylon support assembly.

The four ‘cabane’ struts are located farther apart than the standard ‘Camel’ struts and much shorter in length. The forward struts were located in the same position on the fuselage as for the Sopwith ‘Camel’, but the rear struts were positioned farther rearwards and were inline with the rear of the machine gun breech blocks. As can be seen in the following photographs, the underside of the wing is not very far from the ring gun sight at the front of the right Vickers machine gun. As was normal, each pair of struts were cross braced with rigging wires.

The replacement struts will be made from brass micro-tube and rod using the same method for making the over wing pylon assembly.



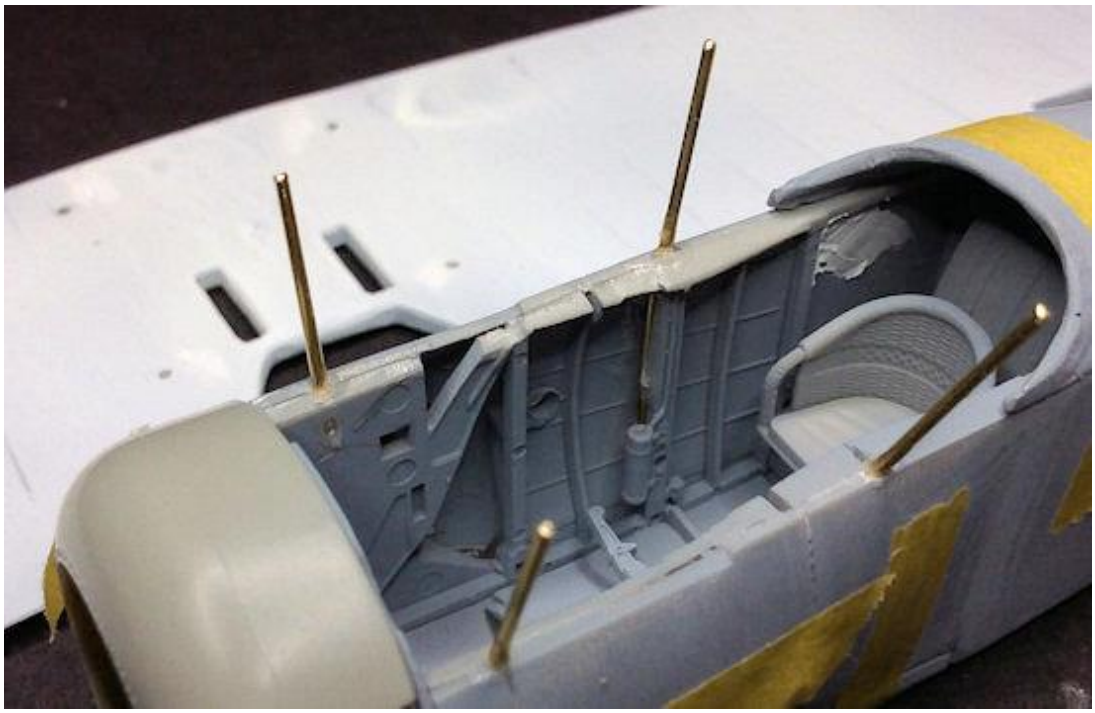
At the fuselage top joint between the fuselage sides and cockpit side frames inside the fuselage, mark for drilling in the joint 4 mm and 27 mm from the front of the fuselage.

Using a 0.8 mm diameter drill, drill as follows:

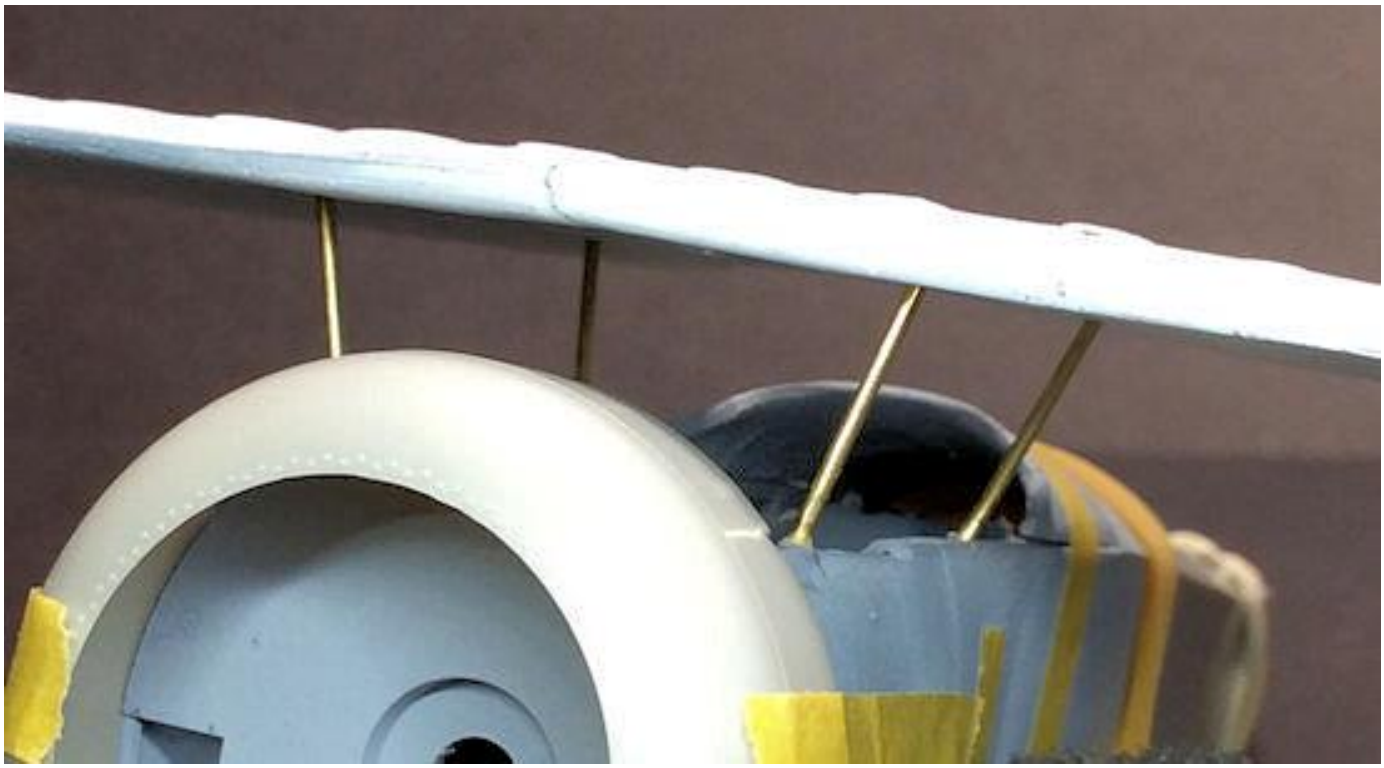
> At the two front marks, drill down and through the forward side of the cockpit side frames. The holes should be drilled vertical to the fuselage but inward so that the drill beaks through the cockpit side frame.
>
> At the two rear marks, drill down and through so the drill breaks through the fuselage just in front of the vertical former on the cockpit side frames. The holes should be inwards and angled slight rearwards.

Cut two lengths of 0.8 mm diameter brass rod long enough to insert into the two forward holes and leaving 12 mm exposed above the fuselage. Adjust the exposed rods above the fuselage so that they engage in the forward holes drilled in the underside of the wing.

Cut two long lengths of 0.8 mm diameter brass rod long. Bend the rods approximately 15 mm from one end and insert into the rear holes. Adjust the bend so that the rod inside the fuselage locates behind the vertical former. Adjust the exposed rods above the fuselage so that they engage in the rear holes drilled in the underside of the wing.



Locate the wing onto the four rods and check the wing from the front, side and top viewpoints and adjust the rods to ensure the wing sits correctly (horizontal to the fuselage from front and side view and at 90 degrees to the fuselage from the top view , centrally over the cockpit).



Cabane strut out aerofoils:

With the cabane strut inner rods fitted, the outer aerofoils can be made and fitted.

Cut four lengths of 1.6 mm diameter brass micro tube (e.g. ‘Albion Alloys MBT16) of 20 mm length.

Slide the cut tubes onto a 0.8 mm diameter brass rod (e.g. ‘Albion Alloys).

If possible, compress the tubes to create an aerofoil shape. For this I used the ’Strutter’ tool from ’Albion Alloys’, which has pivoting jaws which form the shape when tightened in the jaws of a vice. Alternatively it may be possible to gently hammer the profile around the 0.8 mm brass rod.

Remove the tubes from the rod.

Test fit the forward decking panel onto the fuselage and mark the location of the two rear cabane struts.

Use a half round needle file to create a slight recess in the sides of the decking panel as clearance for the two rear cabane struts.

File or sand one end of each tube so when slid onto the rods for the cabane struts, they sit flush to the fuselage sides and clear of the decking panel.

Remove the tubes making sure you note which tube fits which rod.

Remove the decking panel from the fuselage.

Measure the length of the four exposed rods.

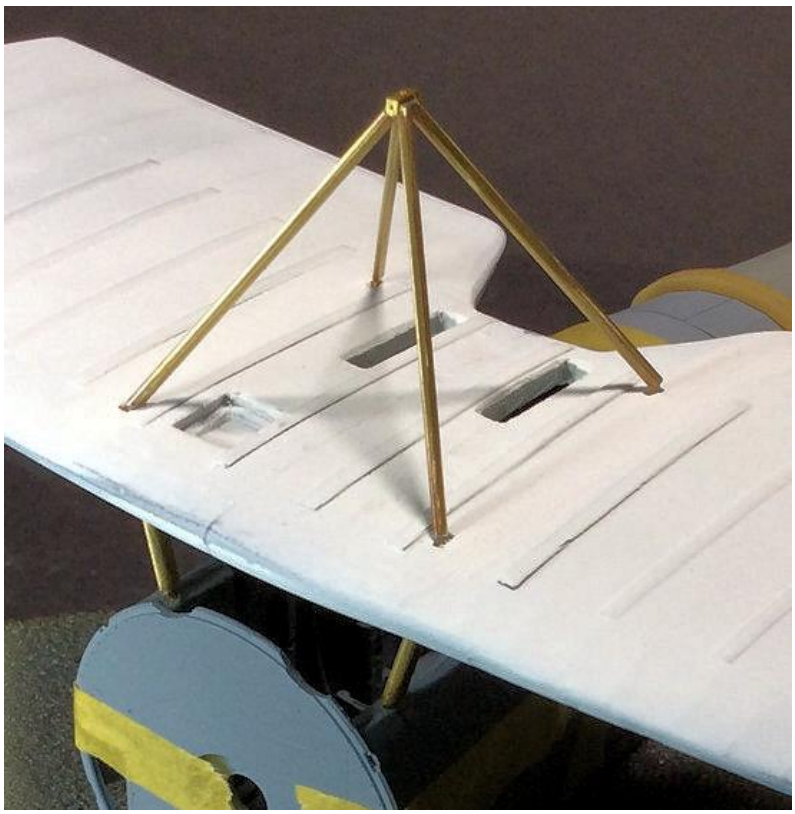
NOTE: *In the following step make sure you leave enough rod protruding from the top of the tubes to allow the wing to be positively located.*

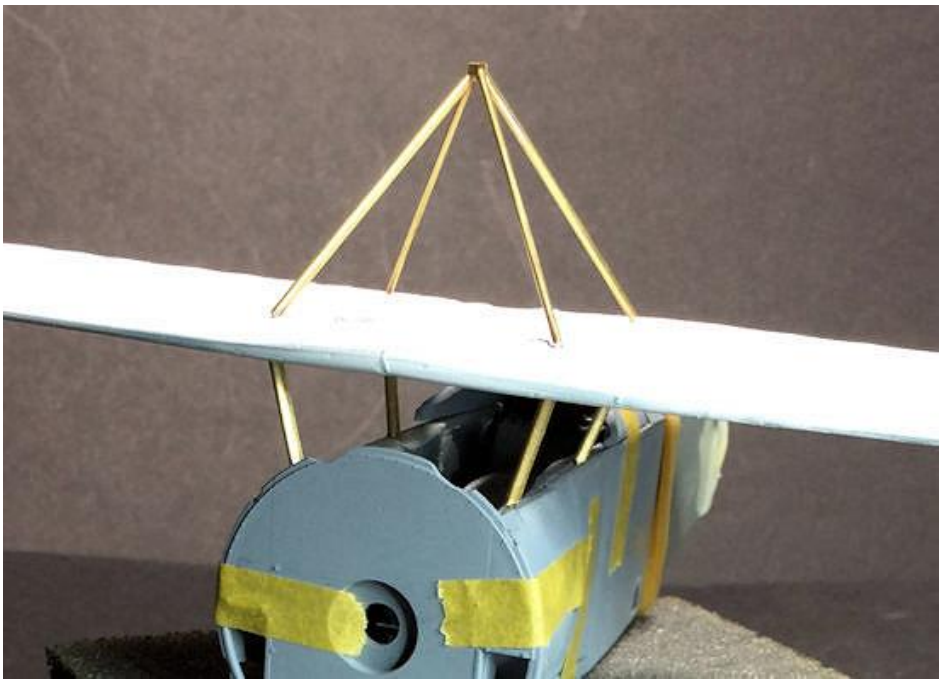
File or sand the end of one rod at a time to sit correctly to the underside of the wing. Locate the wing as required for testing the tube lengths and fit.

NOTE: *During the following step, make sure the aerofoil tubes are inline with airflow and twisted on the support rods.*

Once the tubes have been created and you are happy they sit correctly with the wing located, secure them in position **at the fuselage only**, using CA adhesive.

With the wing test fitted, locate the previously built over wing pylon onto the wing and make sure it can sit fully into its locations. If not carefully trim the length of its locating rods until it fits correctly.





PART 11

FUSELAGE CONSTRUCTION

PART 11 - FUSELAGE CONSTRUCTION

With the modifications to the model completed in Part 1 of this build log, painting and detailing and assembly of the fuselage can be carried out.

Airbrush primer (e.g. 'AK Interactive' Grey micro-filler and primer - AK758) to:
- The inside and detail of each fuselage half.
- Front and rear decking panels.
- Engine bulkhead.
- Engine cowl.
- Instrument panel assembly.
- Cockpit floor assembly.
- Photo-etch sheet from the 'Wingnut Wings' kit.

Airbrush 'Tamiya' Wooden Deck Tan (XF78) to:
- Under side of front and rear decking panels.
- Instrument panel assembly.
- Cockpit floor assembly.
- Photo-etch sheet from the 'Wingnut Wings' kit.

Airbrush 'Tamiya' Deck Tan (XF55) to:
- Forward face of the 'wind break' added to the rear decking panel.
- The inside faces of the fuselage side panels and rear fuselage.

Brush paint 'Tamiya' Wooden Deck Tan (XF78) to:
- The inside fuselage framework and forward panel.
- Cockpit floor assembly including pilot's seat.

Apply the desired wood effect (refer to Part 2 of this build log) to:
- Under side of front and rear decking panels.
- Instrument panel assembly.
- The inside fuselage framework and forward panel.
- Cockpit floor assembly including pilot's seat.

Brush paint 'Mr. Metal Colour' Stainless Steel (213) to:
- The fuel tank.
- Engine bulkhead.
- Engine cowl (inside only).
- Throttle quadrant.
- Carburettor intake tube on the instrument panel assembly.
- Ammunition containers.
- Oil tank.
- Control column.
- Cockpit side frames - top rail.
- Forward cockpit floor assembly.

Brush paint 'Mr. Metal Colour' Brass (219) to:
- Fuel tank filler cap.
- Oil tank filler cap.
- Fuel pressure hand pump.
- Instrument panel switches.
- Throttle levers.
- Instrument surrounds.

Brush paint ‘Mr. Metal Colour’ Copper (215) to:
Fuel pipes - left cockpit side frame.
Fuel pressure pipes - right cockpit side frame.

Brush paint ‘Tamiya’ Ocean Grey (XF82) to:
Machine gun mountings and cross rail.

Brush paint ‘Tamiya’ Rubber Black (XF85) to:
Instrument faces.
Instrument panel - bottom support frame.
Cockpit side frames - metal brackets.

Brush paint ‘Tamiya’ Clear Yellow (X24) to:
Fuel bulb in instrument panel.
Fuel tube on cockpit left side frame.

Pilot’s seat:
Brush paint a base coat of ‘Tamiya’ Deck Tan (XF55).
Brush ‘AK Interactive’ Light Wood filter (AK-261) over wicker.

Seat cushion:
Mix ‘Tamiya’ Hull Red (XF9) and ‘Humbrol’ Leather (62).

Airbrush ‘Tamiya’ Clear (X22) over the instrument panel.

Once fully dry, follow the ‘Wingnut Wings’ instruction manual and apply the relevant instrument panel decals (refer to Part 4 of this build log).

Airbrush ‘Alclad’ Semi Matte (ALC-312) lacquer or similar semi matte sealer over all of the painted surfaces.

Apply ’Flory’ clay wash to weather the surfaces (refer to Part 3 of this build log).

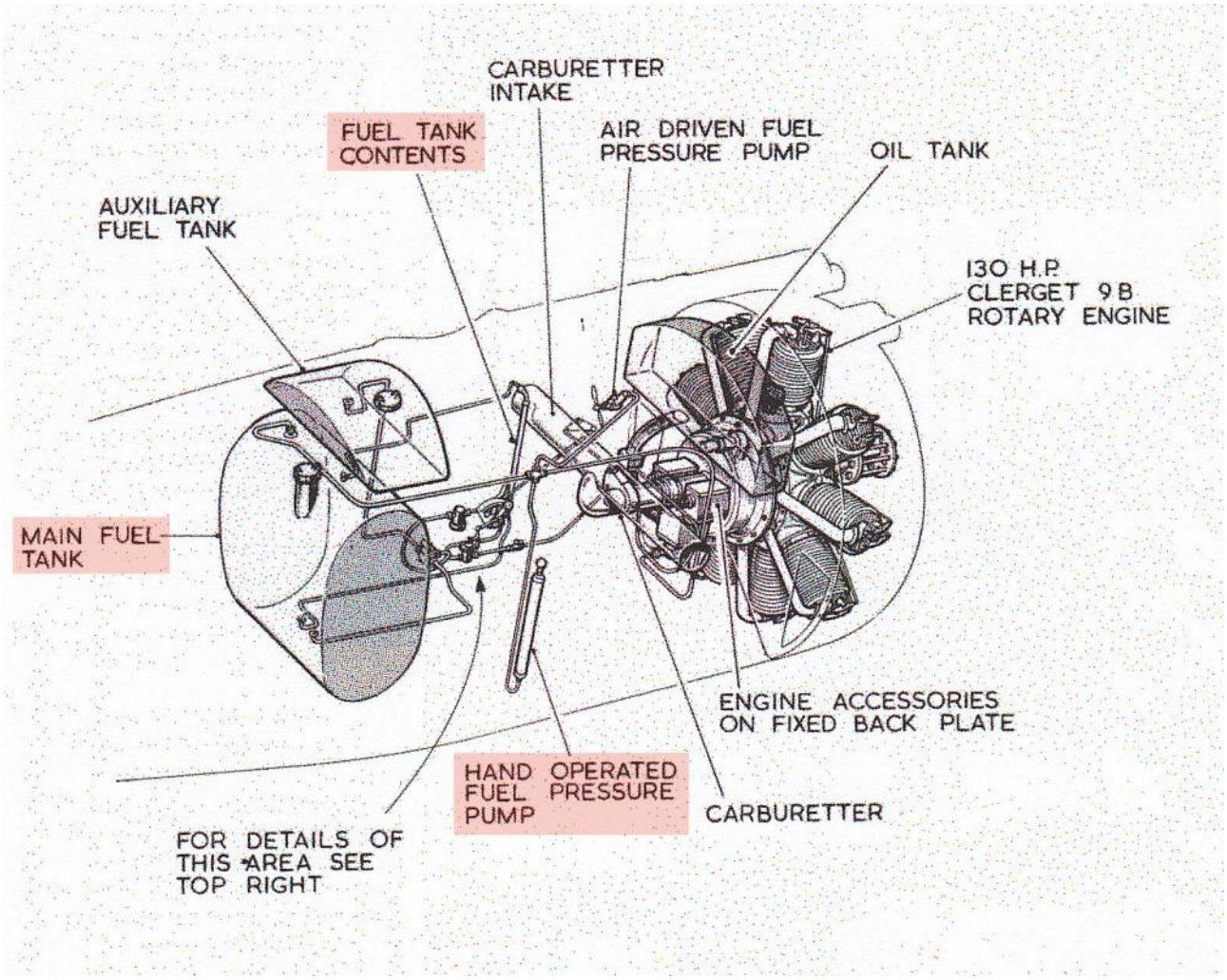
Additional pipes:

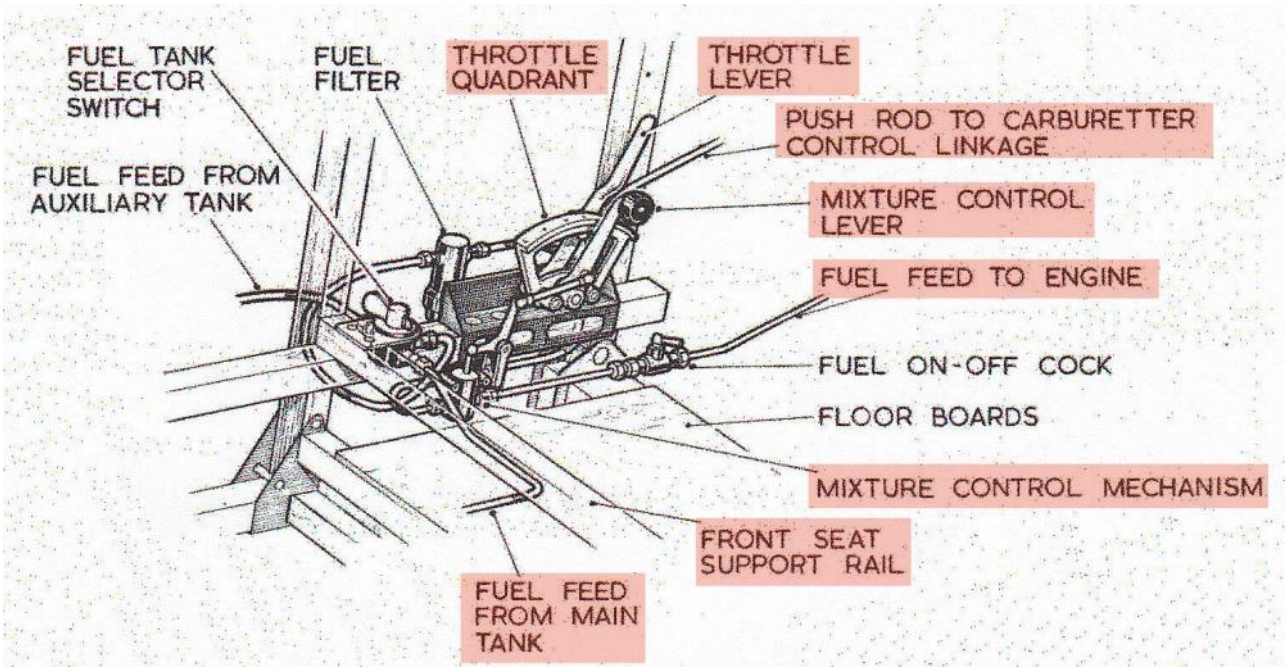
The Sopwith ‘Swallow’ aircraft was based on the Sopwith ‘Camel’.
The Sopwith ’Camel’ was fitted with a fuel tank selector switch (main/auxiliary) located at the lower left of the pilots seat. The fuel supply pipes from both the auxiliary fuel tank and the main fuel tank were connected to the fuel tank selector switch. From there a pipe supplied the selected fuel to the fuel filter, located outboard and to the rear of the throttle quadrant. A further pipe connected the fuel supply from the fuel filter to the mixture controller. Lastly, a fuel supply pipe was connected to the front of the mixture controller, located below the throttle assembly, then routed forwards along the left side of the cockpit, through an ON-OFF fuel cock, to the engine carburettor, which was mounted on the fixed back plate of the engine bulk head.
The Sopwith ‘Camel’ fuel main fuel tank was pressurized by two methods. The first was by a hand operated pump, located on the cockpit right side frame. In addition, a ‘Rotherham’ wind driven fuel pressurization pump was mounted externally. A four-way pipe union was located at the top of the cockpit right side frame. The connections to this union were routed to the top of the main fuel tank, vertically down to the pilot operated pressurization pump, up to the ’Rotherham’ wind driven fuel pressurization pump and finally a pipe was routed forwards and down and across to an area at the base of the engine.

The Sopwith ‘Swallow’ had only one fuel tank filler cap aperture, which seems to indicate that it had only a main fuel tank and no auxiliary fuel tank fitted. Also, from the available photographs, it seems that no external wind driven fuel pressure pump was fitted.
Therefore the only fuel pressurization pipes to be created will be from the hand operated pressure pump to the main fuel tank.
Therefore only those additional fuel pipes for the main fuel tank, engine supply, fuel tank contents and fuel pressurization will be created.

NOTE: *The fuel pressurization pipes will be added, but only after the fuselage has been closed and before the cockpit rear decking panel is fitted.*

The following illustrations shows a typical layout for the cockpit fuel supply and pressurization pipes, but for the **Sopwith ‘Camel’ only**. It can be used as a **guide for the Sopwith ‘Swallow’** pipes. Those marked faded red are assumed to be Sopwith ‘Swallow’ applicable.





Fuel contents indicator pipe:

Cut away the fuel contents pipe from the cockpit left side frame (top of the vertical indicator tube and rearwards along the frame).

Drill a 0.5 mm diameter hole centrally into the front face of the fuel tank, where the vertical and horizontal tanks ribs meet.

Anneal with heat a cut length of 0.375 mm diameter copper wire.

Bend the wire so that it will located on the top of the fuel indicator tube, ten rearwards along the side frame, bending inboard to the face of the tank, then up and into the pre-drilled hole.

Secure the pipe in position using CA adhesive.

Fuel tank supply pipe:

As there is no auxiliary fuel tank, the fuel tank selector switch was removed earlier from the left, front corner of the pilot's seat. There the fuel supply pipe only has to be represented by a copper, as used before.

Drill a 0.5 mm diameter hole centrally into the bottom of the front face of the fuel tank.

Anneal with heat a cut length of 0.375 mm diameter copper wire.

Secure the pipe in position into the hole and onto the bottom of the pilot's seat using CA adhesive.

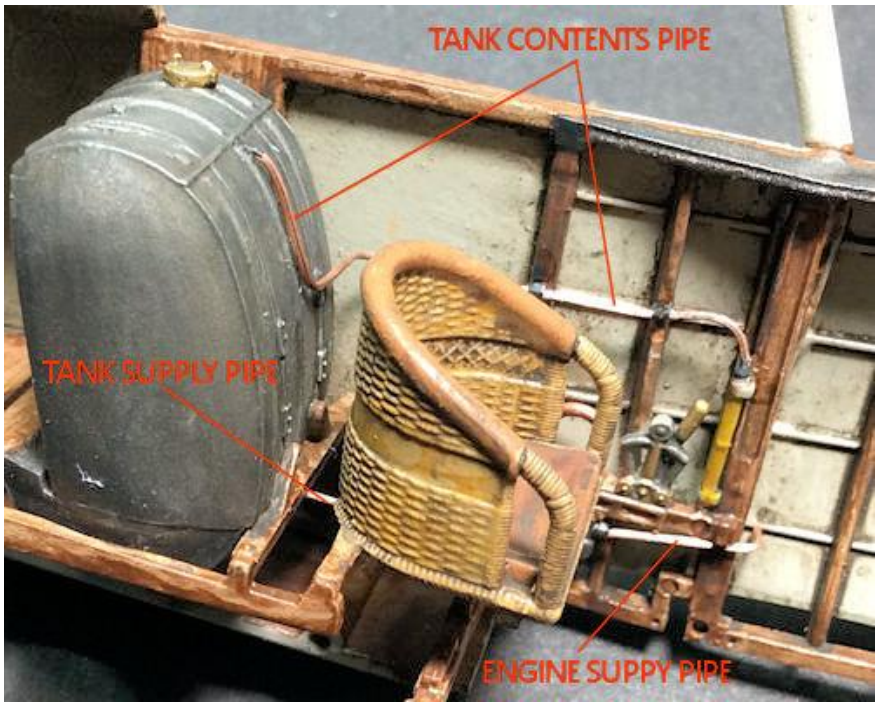
Engine fuel supply pipe:

The engine fuel supply pipe was connected to the fuel mixer valve underneath the throttle quadrant assembly the routed forwards towards the engine.

Anneal with heat a cut length of 0.375 mm diameter copper wire.

Bend the wire at 90 degrees then cut away the bent wire to 2 mm length.

Secure the pipe in position against the fuel mixture valve and against the vertical former of the cockpit side frame, forward from the throttle quadrant. The bend on the wire should face outboard. Secure in position using CA adhesive.



Engine fuel control:

The engine control for the Sopwith ‘Swallow’ is assumed to be similar if not the same as that for the Sopwith ‘Camel’.

The throttle quadrant was fitted with two selector levers, the throttle lever and the mixture control lever. These levers were connected by a control rod and levers to the engines carburettor.

Cut a length of 0.4 mm Nickel-Silver tube (e.g. ‘Albion Alloys NST04) to span between the base of the throttle quadrant to the vertical former on the cockpit side frame (second back from the front). Do not extend the tube past that point or it will foul the bottom of the instrument panel when it is fitted.

Flatten one end of the tube so it will locate against the throttle quadrant without standing proud.

File the flattened end to a slight angle.

Secure the tube in position using CA adhesive.

Internal rigging:
The rigging required inside the fuselage falls into three categories:

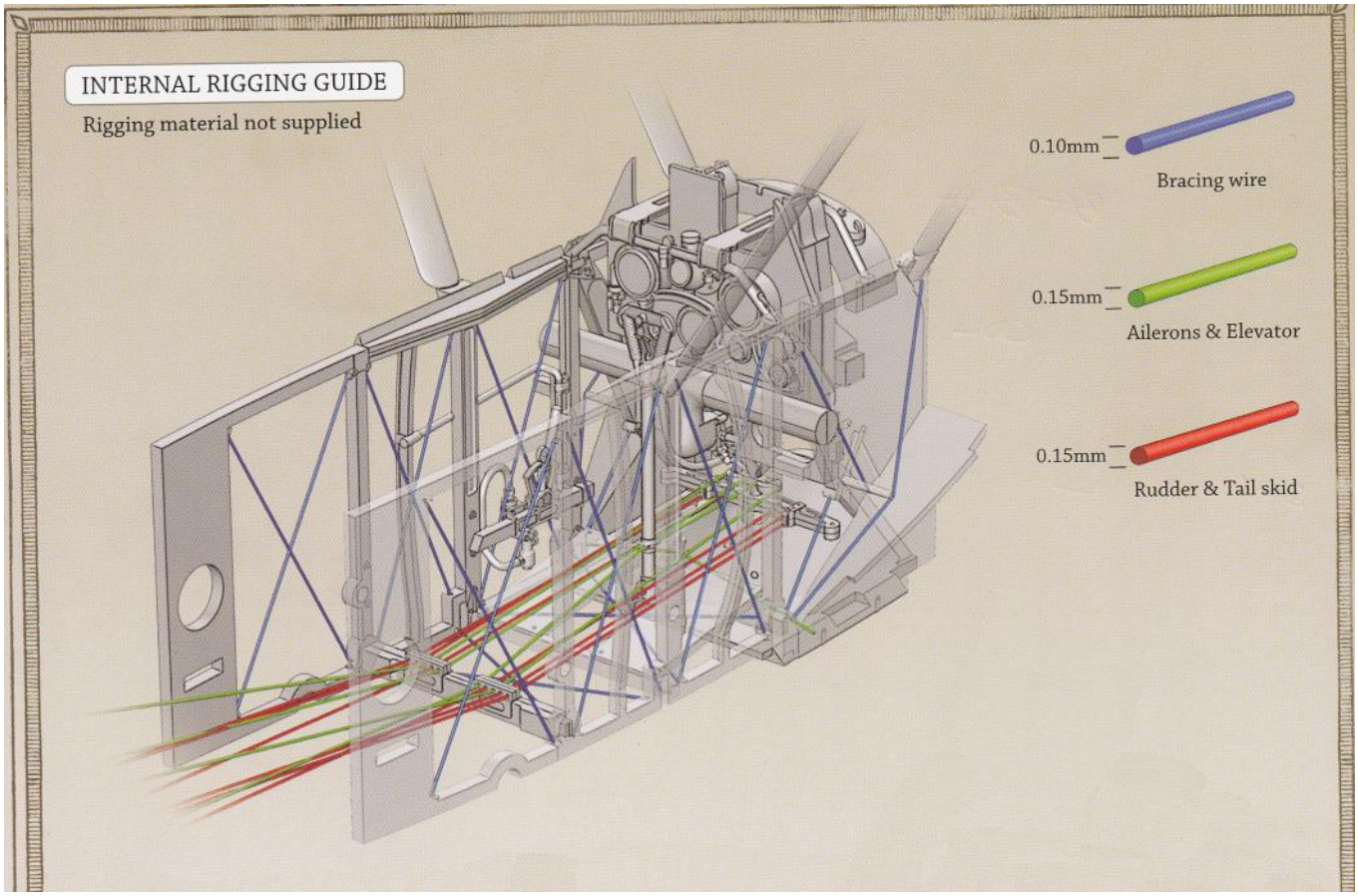
Structural cross bracing.
Flight Controls.
Gun trigger cables.

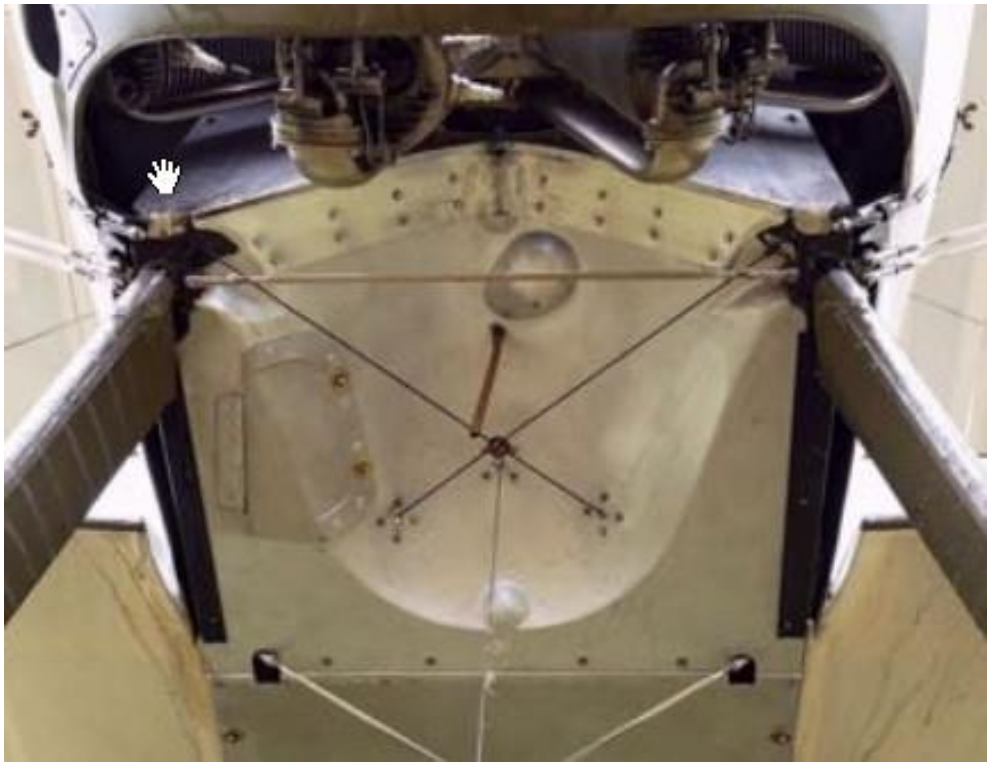
Structural cross bracing:
The cross bracing for the cockpit side frames is shown in the 'Wingnut Wings' Sopwith 'Camel' instruction manual. There are only very small and solid rigging 'stubs' in the corners of the kit supplied side frames. I chose to cut away these small 'stubs' in favour of drilling into the side frame corners to fit the cross bracing. The cross bracing is shown in 'blue' on the following 'Wingnut Wings' illustration.

There were also bracing wires that were anchored to each rear side of the 'metal' under shield panel, inside the cockpit. These wires were routed across and through the panel, where they crossed each other outside the panel. The crossed wires outside were attached to the top of the forward undercarriage struts.

NOTE 1: *The rigging illustrations, photographs shown are those for the Sopwith 'Camel'. It is assumed the rigging for the Sopwith 'Swallow' is similar, except for the aileron control.*

NOTE 2: *The restrictions of converting the cockpit of this model to that of the Sopwith 'Swallow' means that some of the cross bracing can't be fitted or won't be seen on the completed model. Only the cockpit side bracing for the two rear bays of the side frames and below the pilot's foot boards can be created.*

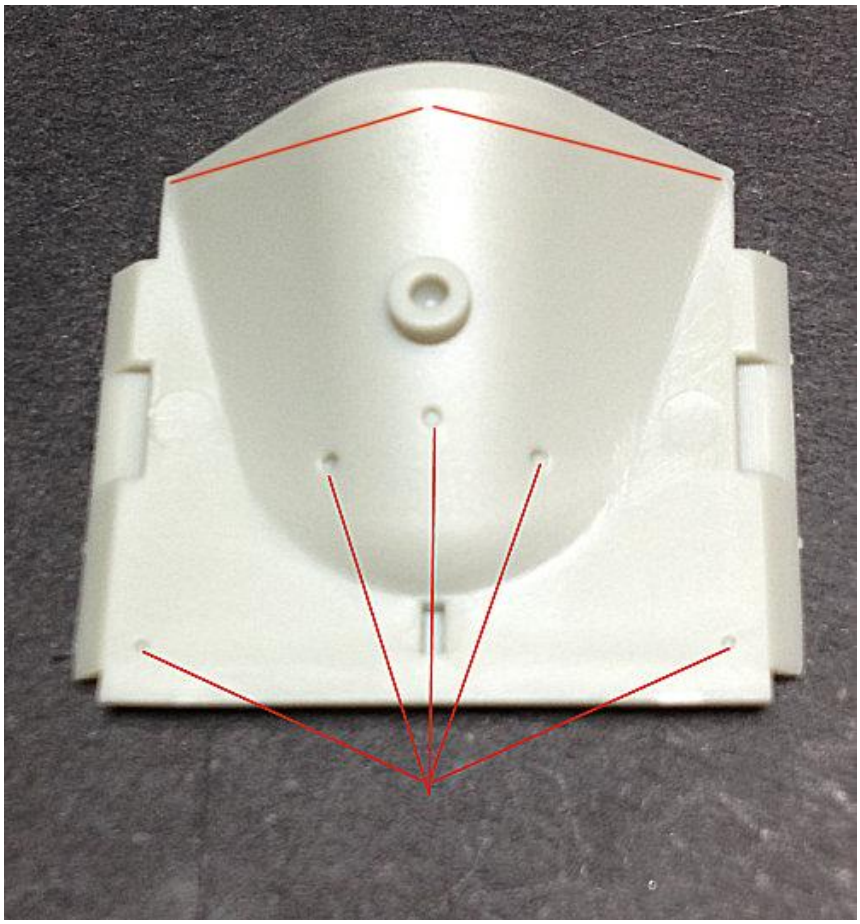




Cross bracing - forward floor panel:

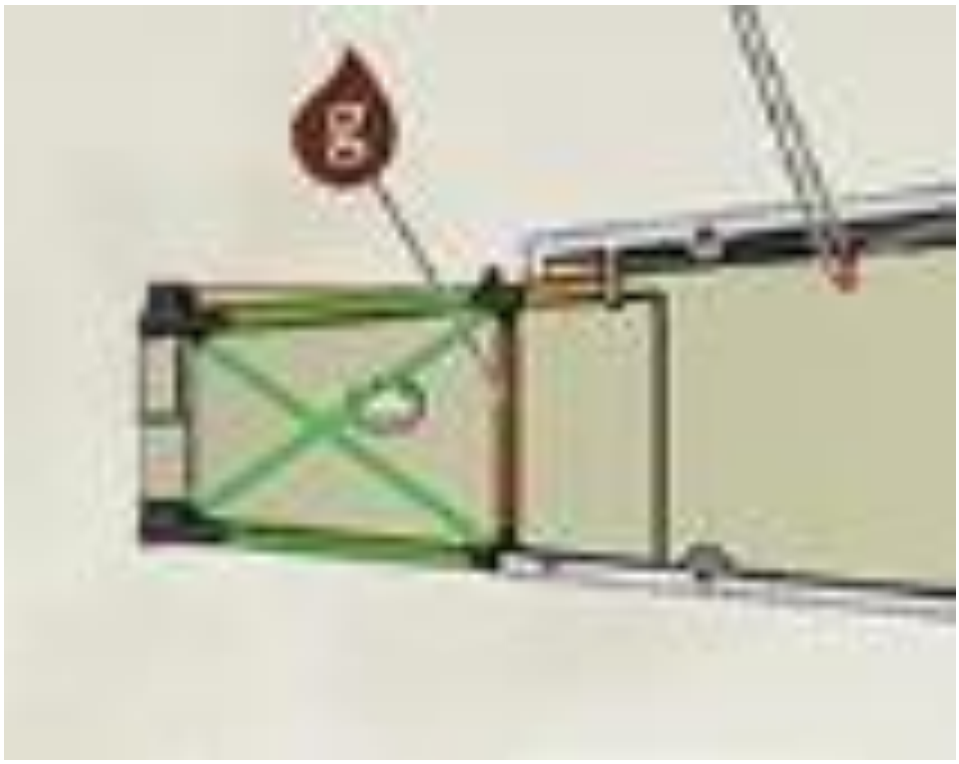
To prepare the model parts for adding the **cross bracing to the forward floor panel**:

Drill through the floor panel (kit item A25), using a 0.2 mm diameter drill, at the pre-moulded locations, which are the three across the centre rear of the panel and the one in each rear corner of the panel.



Cross bracing - rear fuselage:

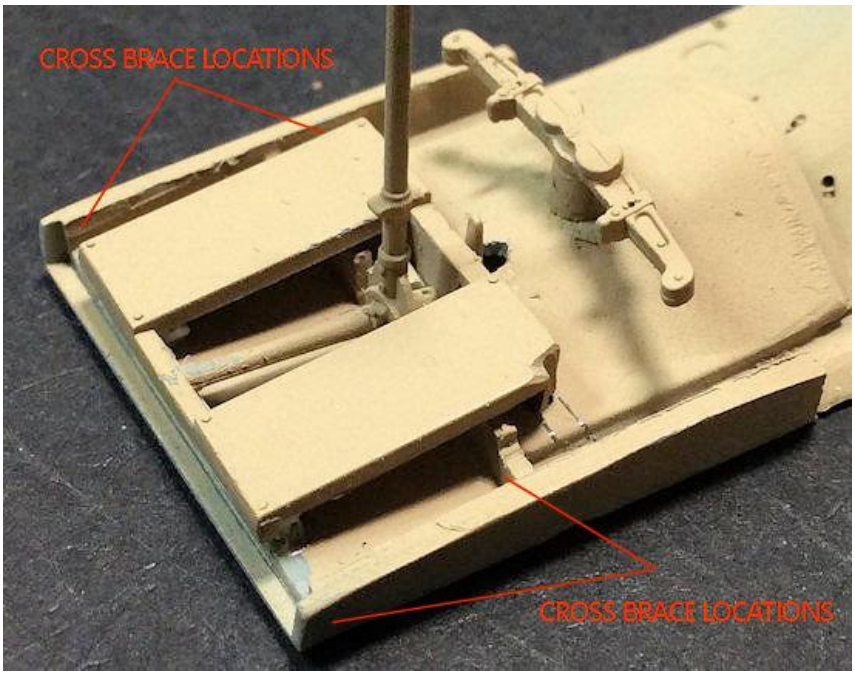
There were bracing wires fitted to the fuselage rear, at each side of the tail skid bay. These wires consisted of two crossed wires and two wires inline with the longerons.



Although this area of the fuselage will not be visible on a mounted model, they can be added by cutting lengths of ‘Albion Alloys’ 0.1mm Nickel-Silver rod (NSR01) and securing them in place using CA adhesive.

Cross bracing - under pilot's floor boards:

Drill holes of 0.3 mm diameter through the floor sides and forward cross member, as shown on the following photograph.



'Roll' cut four short lengths of 0.4 mm Nickel-Silver tube (e.g. 'Albion Alloys' NST04).

Cut two lengths of 0.08 mm 'Stroft' mono-filament line.

Pass one end of each line through the pre-drilled holes in the rear floor sides and secure in position using CA adhesive.

Slide a cut tube onto each line.

Thread each line under the pilot's floor boards and control column torsion bar to the diagonally opposite pre-drilled hole.

Slide a cut tube onto each line.

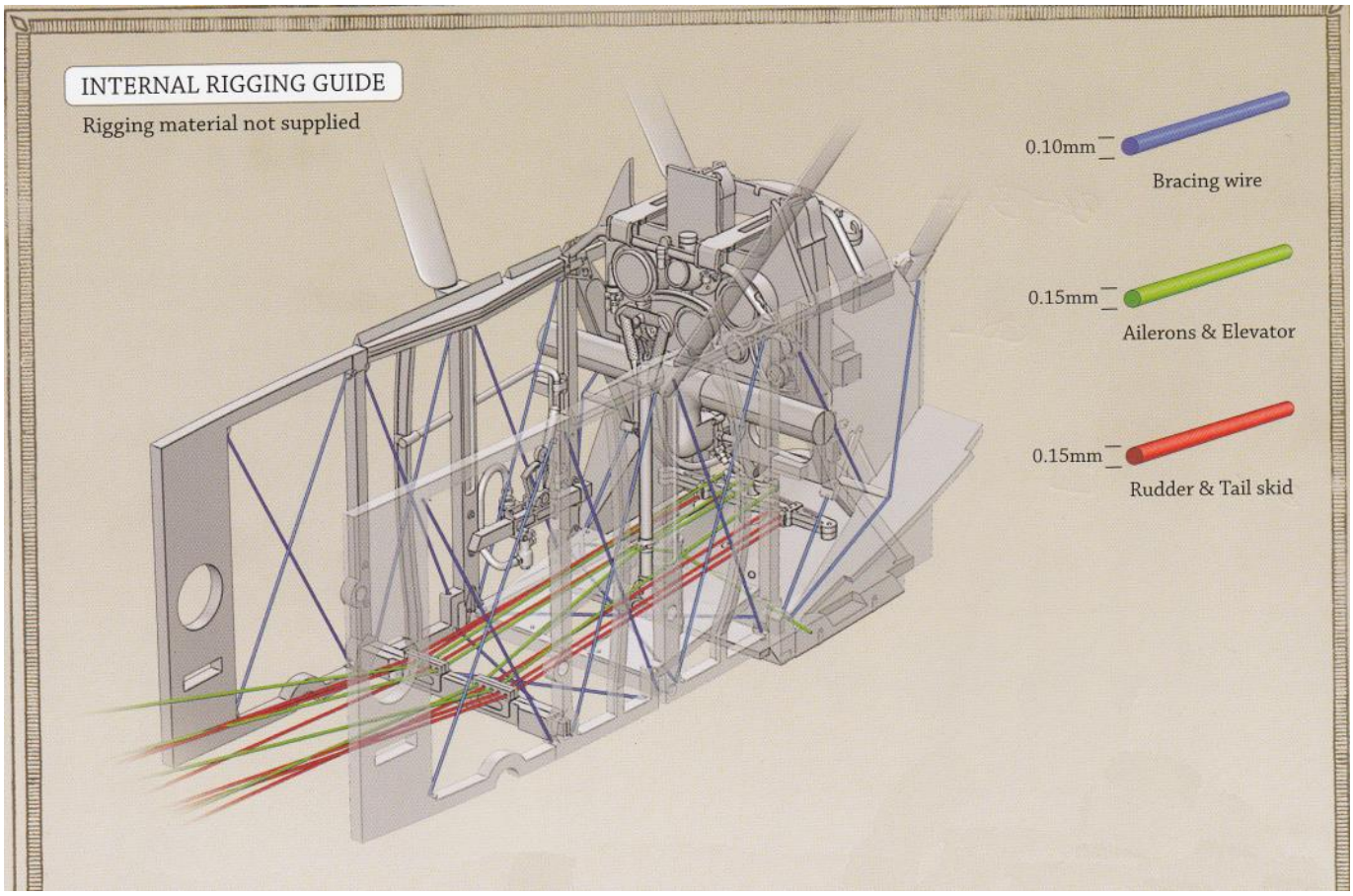
Pass the end of each line through the pre-drilled holes in forward cross member, pull taut and secure in position using CA adhesive.

Slide the four tubes up against the floor structure and secure to the line using CA adhesive.

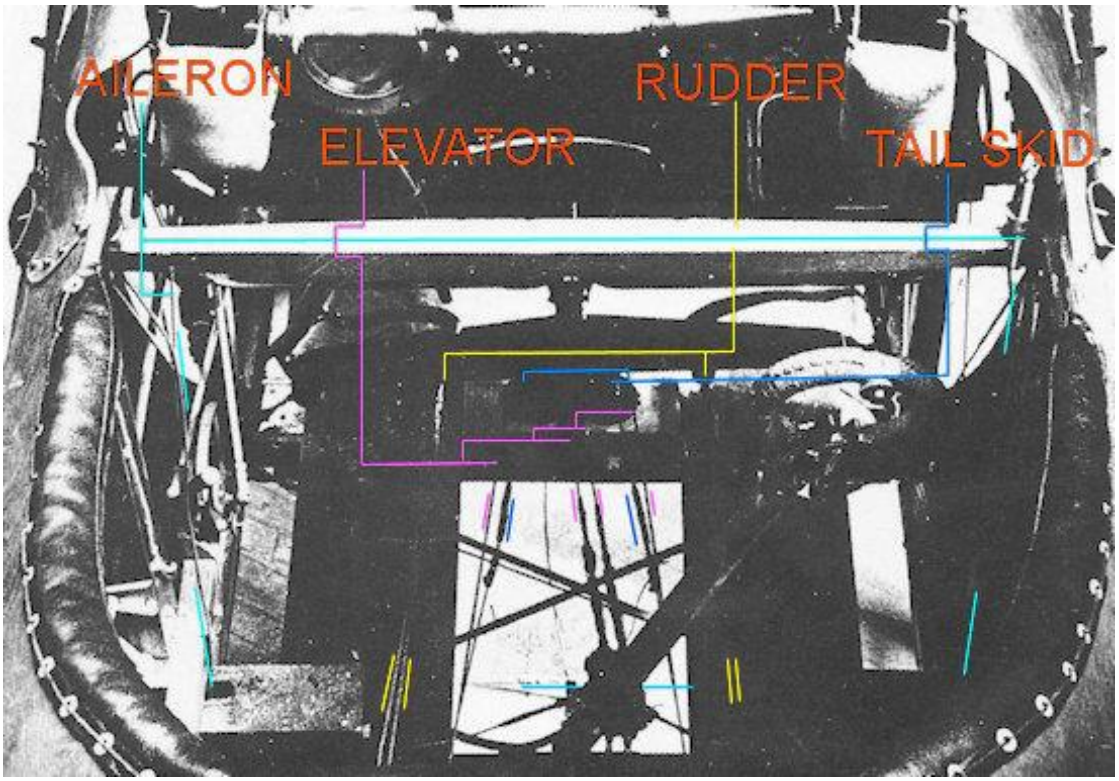
Cut away the excess line.

Flight controls:

The ‘Wingnut Wings’ instruction manual for the Sopwith ‘Camel’ provides a good illustration of the cockpit flight control cables, but the only kit part prepared for rigging is D11, which is the cross member below the pilot’s seat support frame. The flight control cables that will be required are for the rudder/tail skid, ailerons and the elevator.

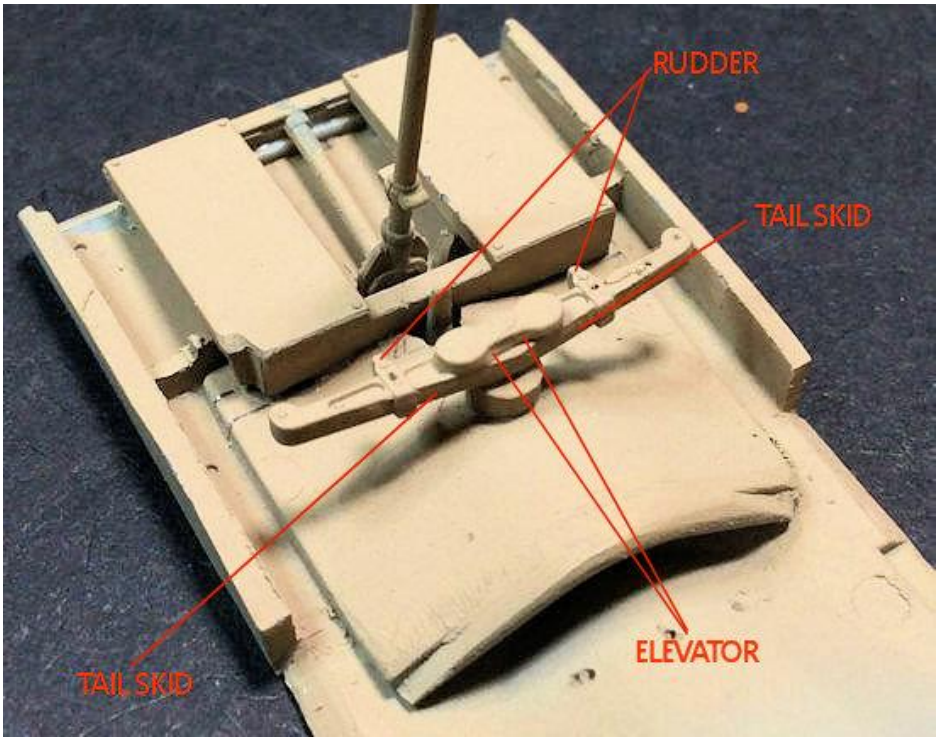


The photograph below shows the flight controls in the ‘Swallow’ cockpit.



Elevator:

A metal collar was fitted on the pilots control column. This collar was located towards the base of the control column. Attached to the front of the collar were two cables, which were routed forwards and around two pulleys mounted above the rudder bar. These cables were then routed rearwards under the pilots seat and the fuel tank and passed through a cross member (kit item D11). The cables were routed out of the fuselage and were attached to the upper elevator control horns. Attached to the rear of the collar were two more cables, which were routed rearwards and under the pilots seat and the fuel tank and passed through a cross member (kit item D11). These cables were routed out of the fuselage and were attached to the lower elevator control horns.



To prepare the elevator pulleys for the elevator control wires:

Rudder bar pulleys:

At the inside edge of both pulleys on the rudder bar, drill through from front to rear a hole of 0.2mm diameter. These holes will be used to route through the elevator control wires.

Pass a long length of 0.08 mm diameter ‘Stroft’ mono-filament forward through one hole, around the pulley then back out through the other hole.

Pull the line through to create two lines of the same length.

Pull the lines taut around the pulleys the secure the line to the rear of the pulleys using thin CA adhesive.

Pass the free ends of the inner lines through the tube previous attached to the front of the control column. Pass the lines through from the same side of the rudder bar.

Carefully pull the lines taut through the tube then secure the line to the tube using thin CA adhesive. **Don’t pull to much or the control column will break.**

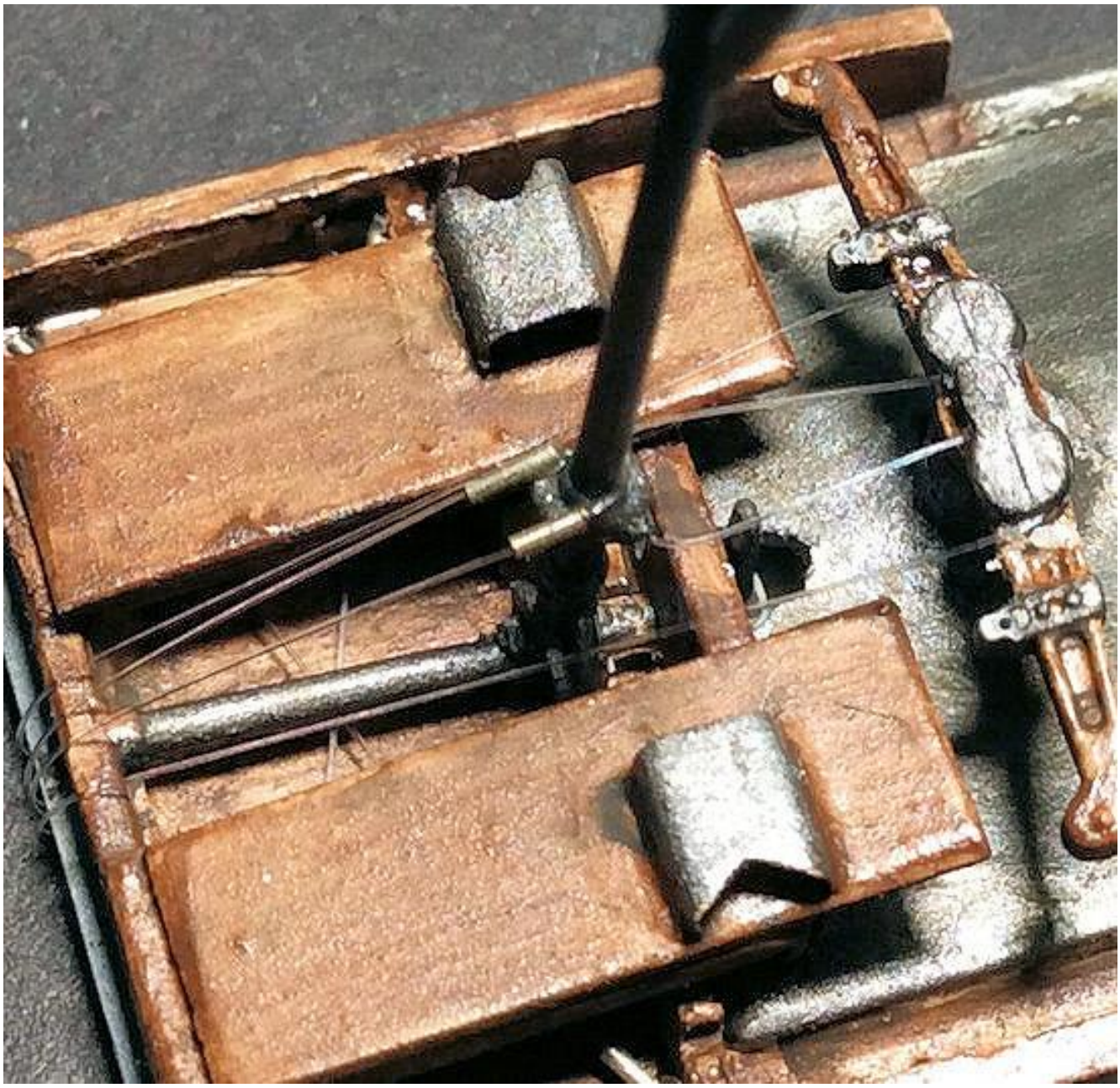
Control column:

Pass a long length of 0.08 mm diameter ‘Stroft’ mono-filament around the control, below the added tube.

Carefully pull the lines taut rearwards around the control column then secure the line to the control column using thin CA adhesive. **Don't pull to much or the control column will break.**

Slide a cut 0.4 mm diameter tube onto both sides of the line, slide up close to the control column and secure onto the lines using CA adhesive.

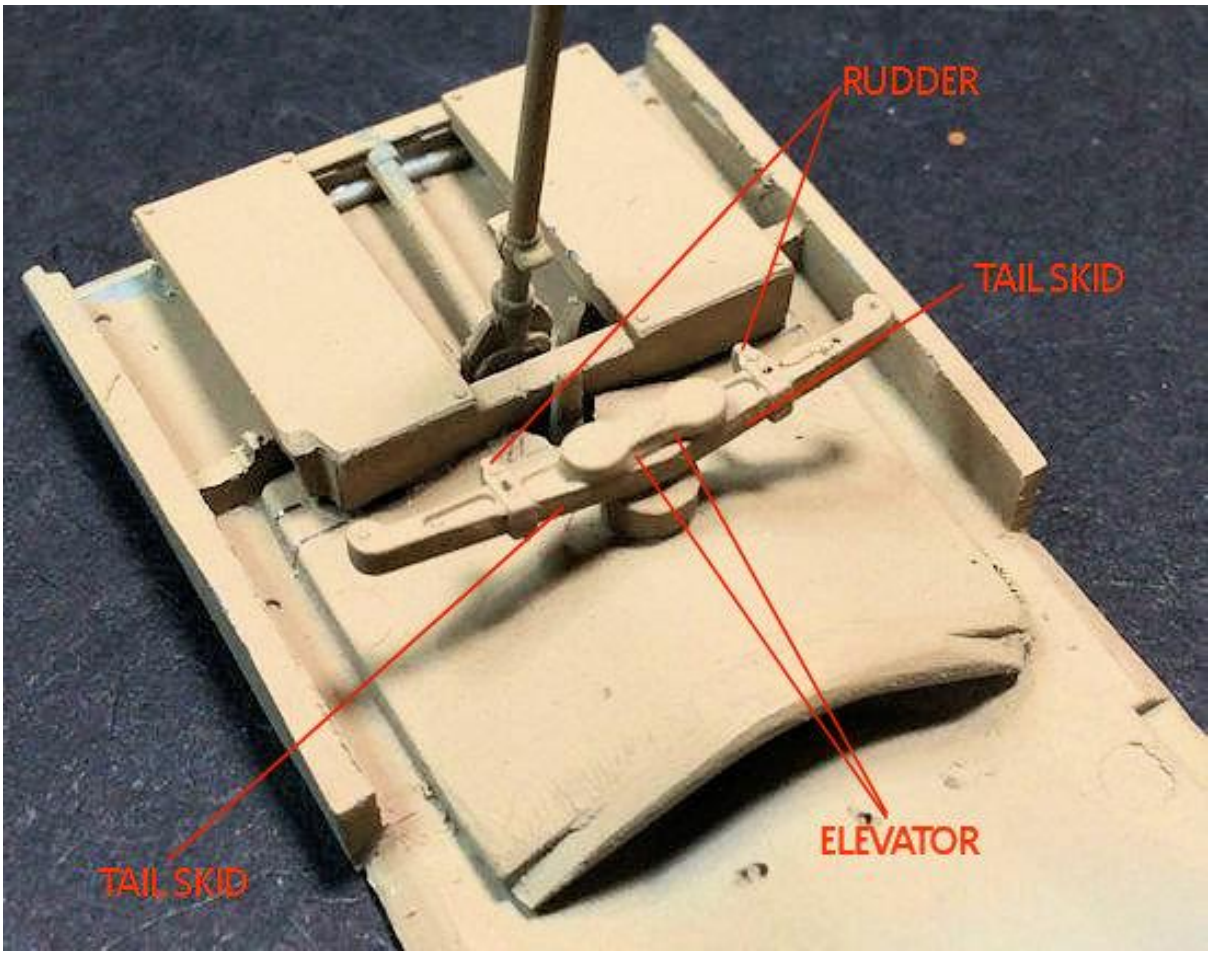
NOTE: *The elevator control lines will be completed later in the build.*



Tail Skid:

The steerable tail skid was controlled by cables attached to the rudder bar. These cables were located between the centre of the rudder bar and the outer cables controlling the rudder. The cables were routed under the pilot's seat then through the fuselage to the horns on the tail skid itself.

To prepare the rudder bar for the tail skid control wires:



Drill a 0.4 mm diameter hole through the rudder bar (rear to front faces) at the locations shown. These holes will be used for the tail skid control wires.

Paint the centre section of two ‘GasPatch’ 1:48 scale (Type One End) turnbuckles with ‘Tamiya’ Hull Red (XF9).

Cut a long length of 0.08 mm ‘Stroft’ mono-filament line.

‘Roll’ cut a short length of 0.4 mm Nickel-Silver tube (e.g. ‘Albion Alloys NST04).

Slide the cut 0.4 mm diameter tube onto the line then pass the end of the line through the ‘eye’ end of a turnbuckle.

Loop the line back through the tube then slide the tube up to, but not touching, the ‘eye’ end.

Secure in position using CA adhesive.

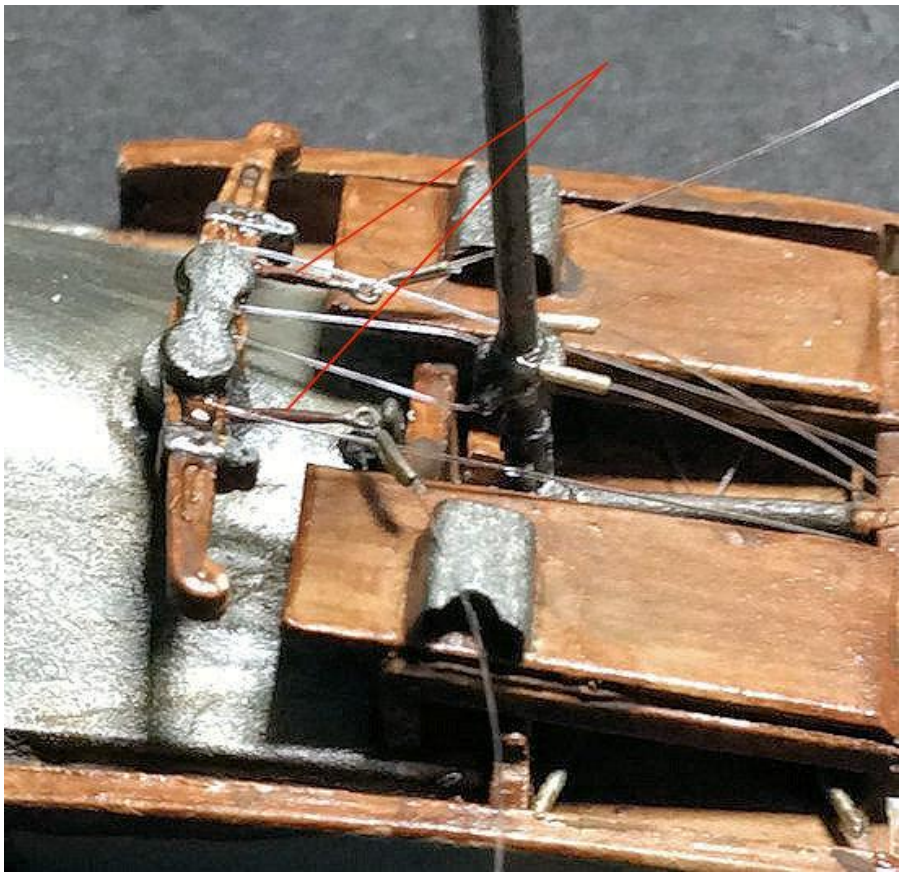
Cut away the excess line at the tube.

Insert the tang of the turnbuckle into the tail skid pre-drilled hole in the rudder bar and secure in position using CA adhesive.

Repeat for the other tail skid turnbuckle.

The result should be a tail skid turnbuckle each side of the rudder bar centre.

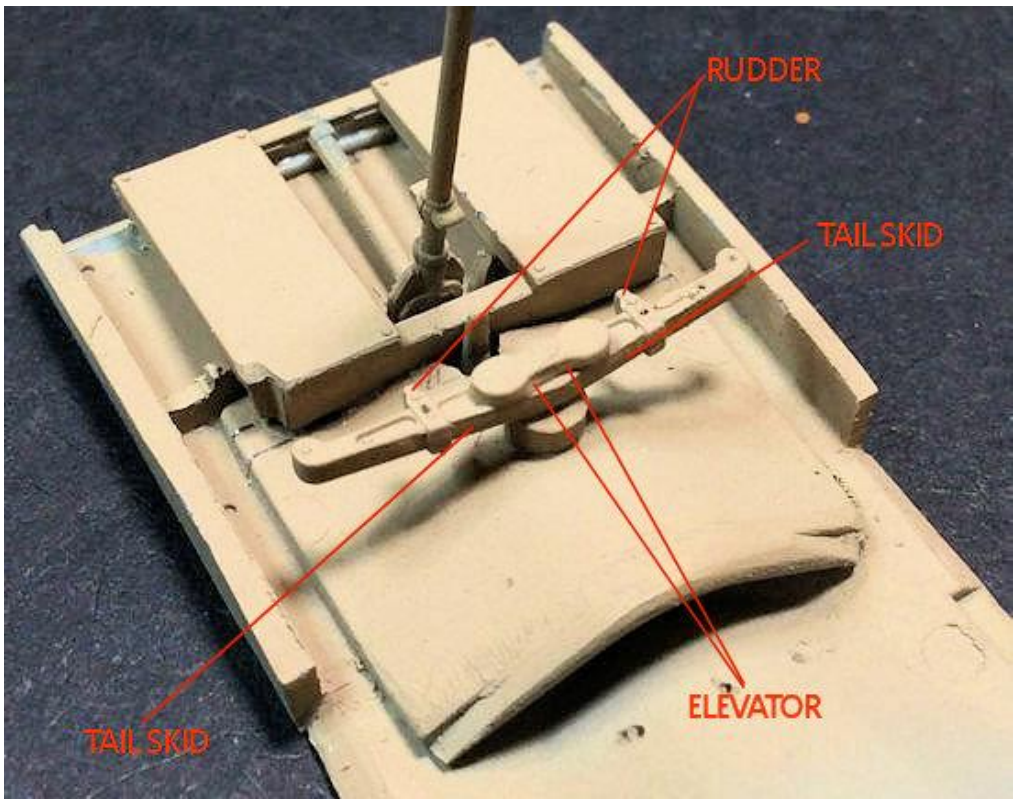
NOTE: *The tail skid control lines will be completed later in the build.*



Rudder:

The rudder was controlled by pairs of twin cables attached to the rudder bar. These were located outboard on the rudder bar and cables were routed from the rudder bar and under the pilots seat and fuel tank then through the cross member (kit item D11) to the rudder control horns.

To prepare the rudder bar for the rudder and tail skid control wires:



At the two locations for the rudder control wires, drill a 0.2 mm diameter hole down through each location.

Paint the centre section of four ‘Gaspatch 1:48th scale (Type C) turnbuckles with ‘Tamiya’ Hull Red (XF9).

Cut a long length of 0.08 mm ‘Stroft’ mono-filament line.

‘Roll’ cut a short length of 0.4 mm Nickel-Silver tube (e.g. ‘Albion Alloys NST04).

Slide the cut 0.4 mm diameter tube onto the line then pass the end of the line through the ‘eye’ end of a turnbuckle.

Loop the line back through the tube then slide the tube up to, but not touching, the ‘eye’ end.

Secure in position using CA adhesive.

Cut away the excess line at the tube.

Repeat to create a total of four cabled turnbuckles.

Cut two short lengths of 0.125 mm copper wire.

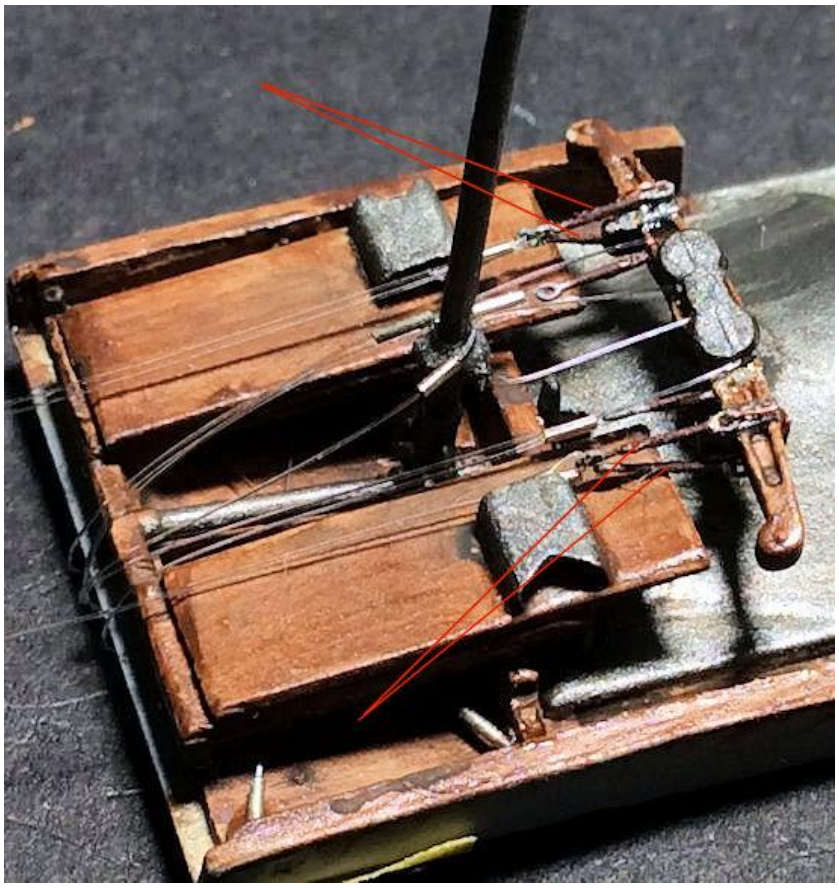
Thread a length of wire down through the rudder holes then through the eye ends of two of the cabled turnbuckles, such that one is located at the top and one at the bottom of the rudder bar.

Pull the wires forward over the rudder bar and secure in position CA adhesive. Make sure the turnbuckles are clear of the rudder bar and able to flex with the lines.

Paint over the exposed copper wire with ‘Mr. Metal Colour’ Stainless Steel (213).

The result should be a pair of rudder turnbuckles at each side of the rudder bar.

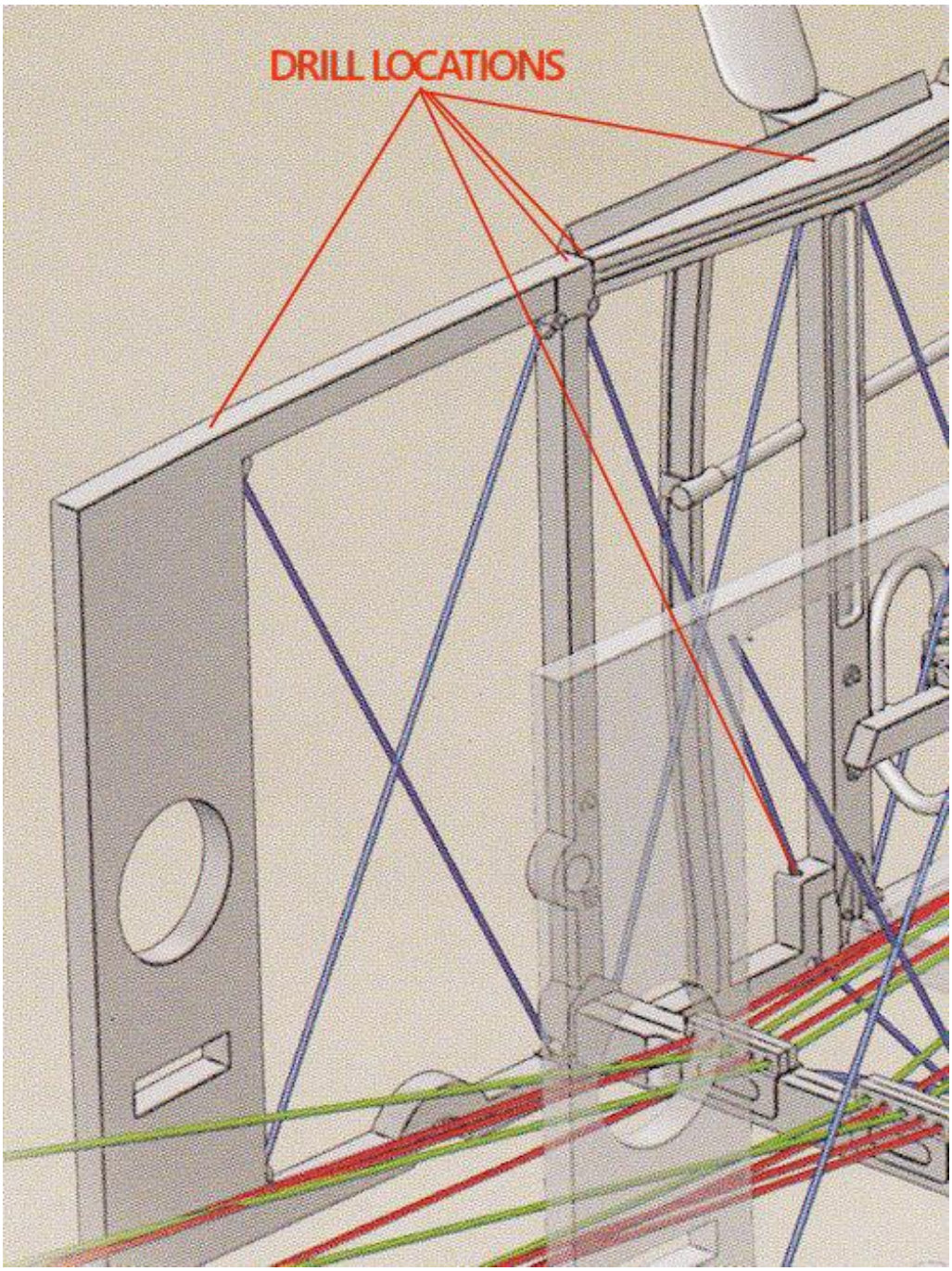
NOTE: *The rudder control lines will be completed later in the build.*



Cockpit side frame bracing:

Due to the build method for this cockpit, most of the cross bracing normally visible on a model of the Sopwith 'Camel' will either not be visible or if added, will obstruct cockpit assembly. Therefore only the cross bracing for the rear most frame bays in the cockpit left and right side frames needs to be created.

To prepare the model parts for adding the **cross bracing to the cockpit side frames**:



NOTE:

Due to the way the cockpit has been built, access to the bottom of the cockpit side frames is restricted. Therefore attaching the bottom of the cross bracing lines may need to be using the best access for attaching as possible.

On each side frame, drill holes of 0.4 mm diameter as indicated above and at angles to route the lines to the diagonally opposite corners of the two frames.

On each side frame, drill holes of 0.4 mm diameter as indicated above through the bottom of each side frame.

'Roll' cut a short length of 'Albion Alloys' 0.4mm diameter tube (NST04).

Cut a length of 0.0.08 mm 'Stroft' mono-filament line and pass one end through the tube and the eye end of a 'GasPatch' 1:48 scale turnbuckle (Type One End).

Pass the end of the line back through the tube then holding both lines, slide the tube up and close to (not touching) the turnbuckle eye end. Make sure the looped line is free to move in the turnbuckle eye end.

Secure the tube to the line using CA adhesive.

Separate the two lines where they exit the tube and cut away the free end close to the tube.

Repeat to create eight such lines.

Locate from the underside each turnbuckle into the pre-drilled holes in to top of the cockpit side frames.

Thread each line diagonally across to the opposite corner, pull the line taut and secure in position using CA adhesive.

Cut away excess line.

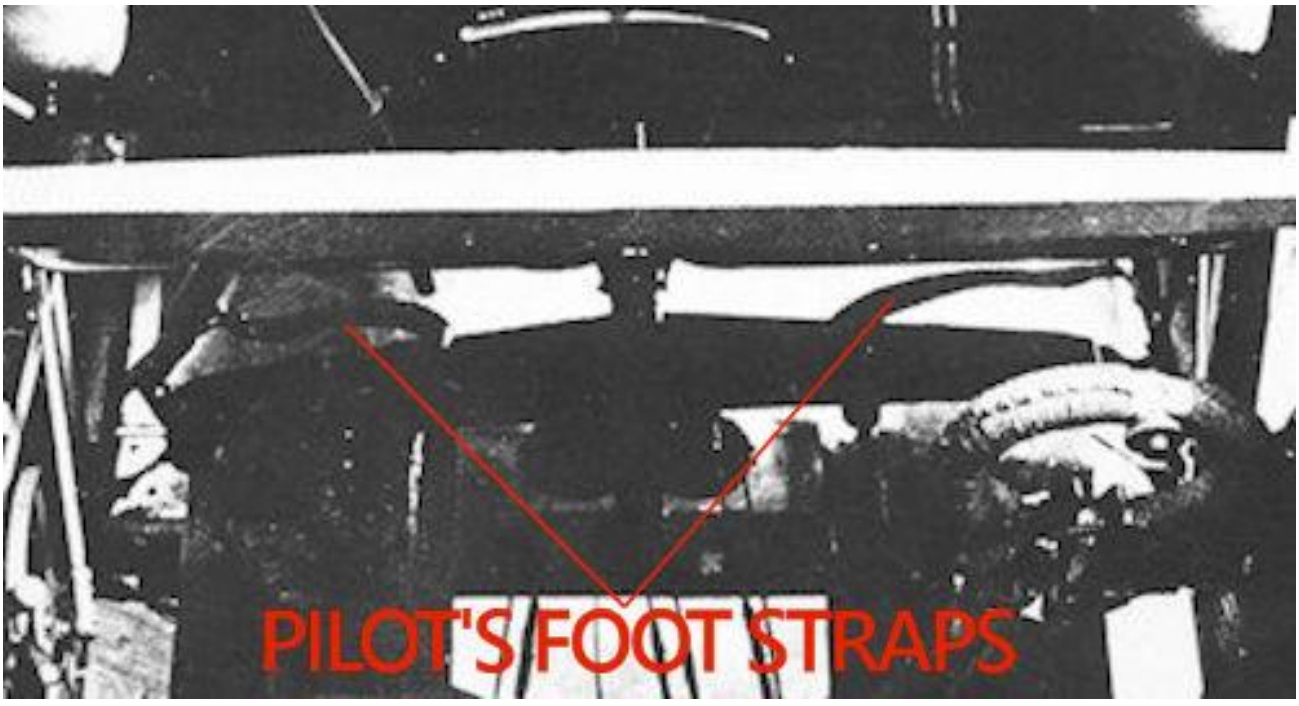
Paint the centre section of each turnbuckle with 'Tamiya' Hull Red (XF9).

NOTE: *As cross brace rigging has been added to the cockpit floor assembly and side frames, you will need to check its fit into the underside of the joined fuselage halves, particularly the tubes at the floor rear bracing line attachments. Create clearances where necessary.*

Temporarily join the two fuselage halves and test fit the cockpit floor and adjust as required to achieve as good fit..

Pilot's foot straps:

The cockpit photograph of the Sopwith 'Swallow' shows that foot straps were fitted to the ends of the rudder bar. These were added using thin strips of painted 0.2 mm thick plastic card, which were cemented in position.



Ailerons:

The control cables for the ailerons can only be added after the fuselage has been ‘closed up’, as they need to routed into and across the cockpit floor. This is covered later in this build log

Closing up the fuselage:

Now the components inside the fuselage have been prepared, the fuselage can be ‘closed up’.

Temporarily join the two fuselage halves together with either masking tape or elastic bands.

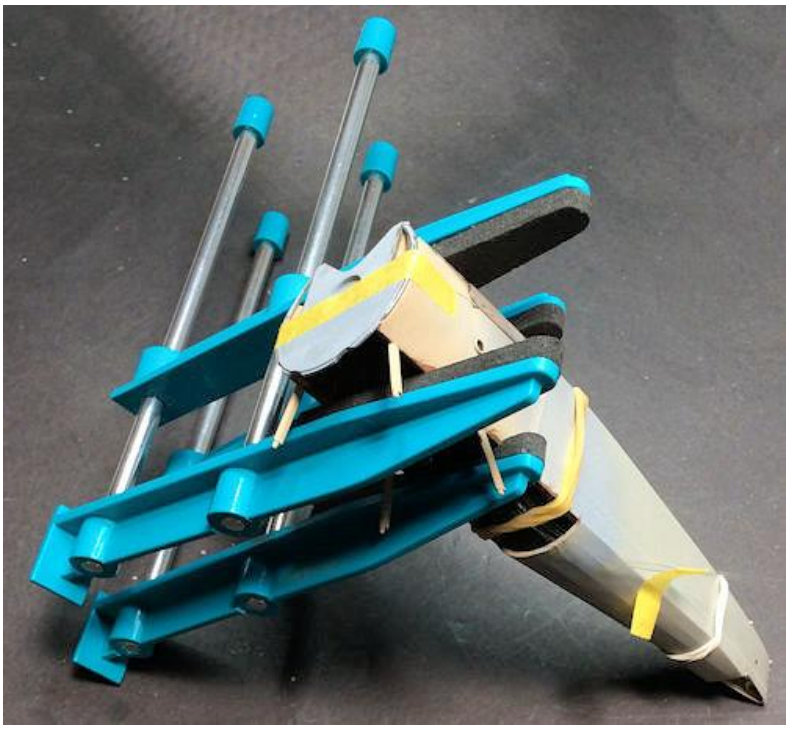
Temporarily fit the circular engine bulkhead to the forward fuselage with masking tape.

Route the cockpit control lines up through the fuselage.

Locate the cockpit floor into the bottom of the fuselage, making sure it is fully located.

Hold the cockpit floor into the fuselage with either clamps or masking tape.

Apply cement to the left side only of the cockpit floor to left fuselage half. Make sure you don’t apply cement across the rear joint of the cockpit floor as this may cement the fuselage halves together, which is not required at this stage.



Once the cement has fully set, remove the engine bulkhead then carefully separate the fuselage halves. This should leave the cockpit floor attached to the left fuselage half only.

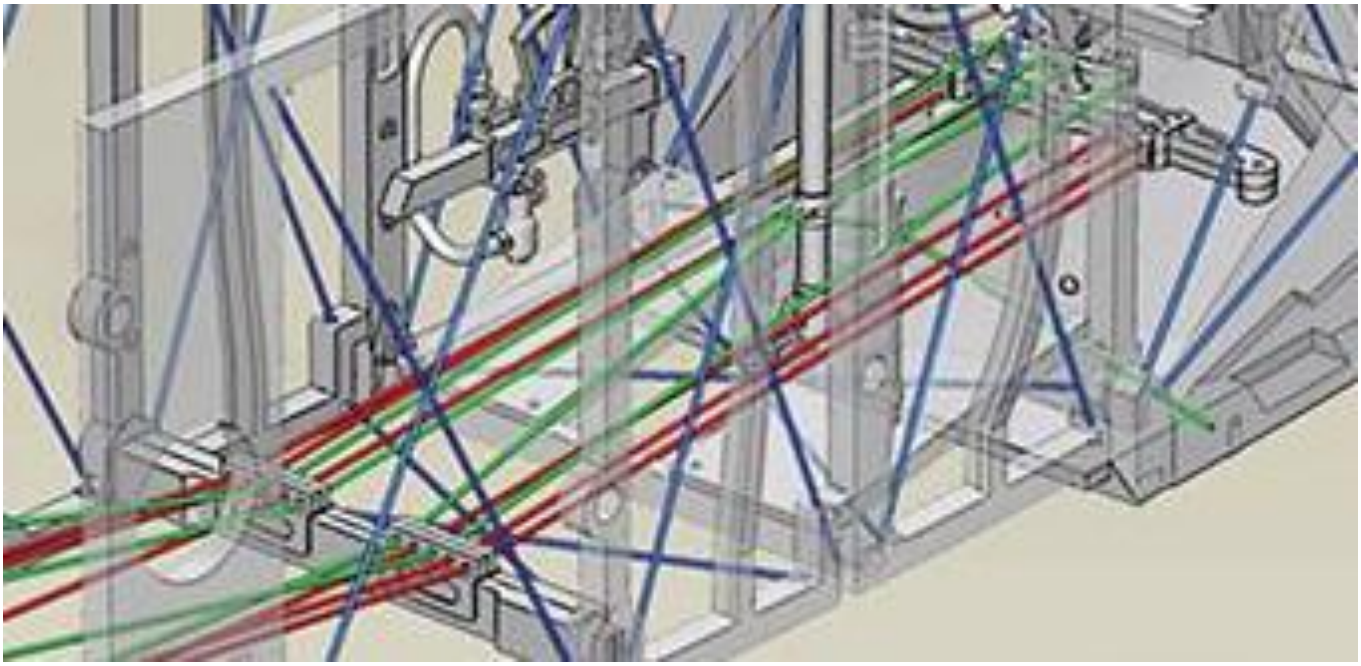
NOTE 1: *During the following steps the control lines for the rudder and elevator will need to be routed through the support beam (kit part A11), following the Sopwith 'Camel' illustration.*
NOTE 2: *When routing the cockpit control lines, make sure you don't exert too much tension on the lines, otherwise there is a chance the rudder bar may detach or break.*

Route each of the rudder and elevator control lines through the pre-moulded holes in the cross beam (A11) as follows:

Twin rudder lines through the two outboard holes.

Each tail skid line through the second hole from inboard.

Twin elevator at each side through the inboard hole and third from inboard hole.



Gently pull the left control lines taut and hold the ends against the inside rear of the left fuselage using masking tape.

Secure the lines to the inside of the fuselage half using CA adhesive.

Once set remove the masking tape and cut away excess lines.

Repeat for the right control lines.

Temporarily join the two fuselage halves together with either masking tape or elastic bands.

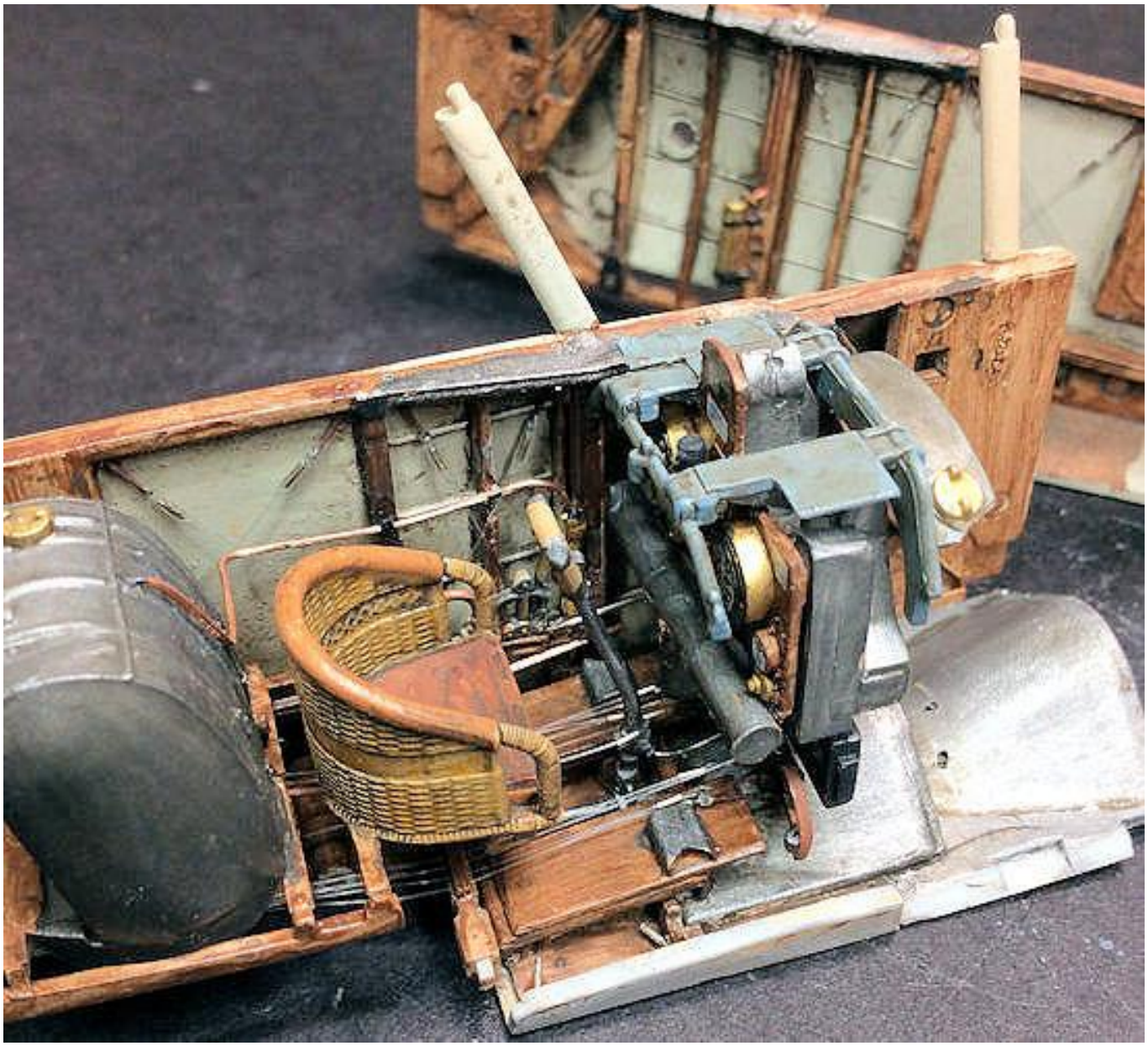
Temporarily fit the circular engine bulkhead to the forward fuselage with masking tape.

Carefully insert the instrument panel assembly into the fuselage and position it such that the horizontal carburettor intake tube rests against the forward face of the vertical formers on the cockpit side frames. Also the ends of the gun support rail rest against the top of the same formers

Dry fit the cockpit forward decking panel and make sure the instrument panel is correctly positioned and the gun support platforms are horizontally aligned with the top of the fuselage sides.

Apply cement or CA adhesive to the contact areas between the instrument panel assembly and the left fuselage half only.

Once fully set, remove the engine bulkhead then carefully separate the fuselage halves. This should leave the cockpit floor and instrument panel assembly attached to the left fuselage half only.



Airbrush the cockpit and fuselage halves with ‘Alclad’ Semi-Matte (ALC-312) lacquer or similar to seal and create a light sheen.

Brush on ‘Tamiya’ Clear Gloss (X22) onto the instrument faces.

Machine gun trigger cables:

The machine guns were fired by the pilot pressing trigger pads located at the top of the control column. These trigger pads were connected by operating cables attached to the left, rear side of the breech blocks of each machine gun. On the Sopwith ‘Camel’ the cables were clipped to the instrument panel each side of the altimeter located centrally at the bottom of the panel. However the two guns on the ‘Swallow’ were farther apart, therefore to represent these cables:

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

Secure one end to the left side of each gun support tray using CA adhesive.

Route each wire down and across the instrument panel towards the centrally located altimeter.

Attach the left cable to the left side of the altimeter and the right cable to the right side, using CA adhesive.

Route each wire down behind the carburettor intake tube then loop up to the front of the gun triggers on the control column.

Secure in position using CA adhesive.

Carefully press (using tweezers) the two wires against the control column, from the triggers to approximately half way down the column.

Secure the wires to the control column using CA adhesive.

Engine ‘blip’ switch:

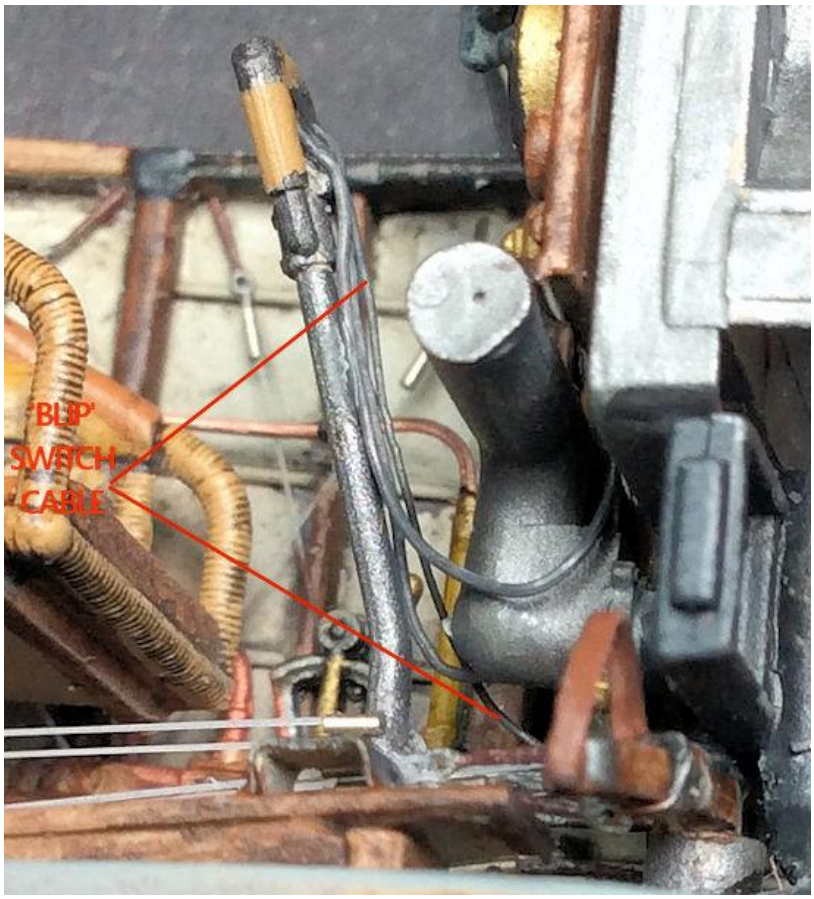
The rotary engine, once started, rotated at a constant speed. To enable the pilot to reduce the engine rotating speed for landing etc, a ‘blip’ switch was fitted to the top of the pilots control column. When momentarily pressed, this switch temporarily cut fuel supply to the engine thereby slowing its rotating speed. When released, the engine with hot spark plugs, would run back up to its operating rotational speed. The term ‘blip’ was due to the sound the engine made as it was cut then powered back up again. To represent this operating cable:

Cut a length of ‘PlusModel’ 0.2mm diameter lead wire.

Secure one end of the wire to the bottom, forward face of the cross member at the bottom of the instrument panel.

Route the wire rearwards into the cockpit and up to the ‘blip’ switch at the top of the control column.

Secure in position with secure with CA adhesive.



Pilot’s seat belts:

The pilot’s seat belts were previously prepared and painted.

Locate the restraining straps for longer (right) seat belt over the second and third back cross member on the floor.

Position the pre-formed belt over and onto the pilot’s seat.

Secure in position with CA adhesive.

Close up the ends of the restraining straps.

Repeat to fit the left (shorter seat belt.

Fuselage - Closing up:

Now that most of the fuselage internal detail is complete, the fuselage halves can be joined.

NOTE: *When joining the fuselage halves, it is important to ensure that the various parts locate correctly and fully. Any mis-alignment of parts or the need to use excessive force to join the parts may cause damage to the model.*

Brush paint the kit tail skid (D17) using 'Tamiya' flat brown (XF10) and for the metal parts 'Mr. Metal Colour' stainless steel (213). Drill a hole of 0.2 mm diameter through each end of the control horn. When dry cement into its location in the right fuselage.

Remove all traces of primer and paint from mating surfaces.

Apply cement to the floor mounting and the control line cross beam (D11) in the right fuselage side.

Carefully join the two fuselage halves, making sure that:

The seat floor sits onto the mounting right fuselage half.
The cross member D11 locates fully into its location in the right fuselage half.
The right side of the instrument panel assembly does not foul any fuselage detail.

Locate the engine bulkhead onto the front of the fuselage.

Apply cement along the fuselage seams, around the bottom cockpit panel and around the engine bulkhead joint.

Where possible, apply CA adhesive to contact points between the forward side of the instrument panel (blind side) and right fuselage half.

Apply CA adhesive to the fuselage contact surfaces for the rear decking panel.

Locate the rear decking panel onto the fuselage and make sure it is fully seated on to the CA adhesive.

NOTE: *A cross beam was located to the rear of the two machine guns and above the pilot's control column. It is assumed this was a brace between the two rear cabane struts.*

Cut a length of 0.85 mm diameter plastic rod and fix it in position across the top of the cockpit and rear of the gun support rail.

Prime the rod (e.g. 'AK Interactive' Grey micro-filler and primer - AK758).

Brush paint the rod with 'Tamiya' Ocean Grey (XF82).

Brush apply a light coat of 'AK Interactive' engine oil (AK 2019) over the seat belts.

Airbrush a final light coat of sealer (e.g. 'Alclad' Light Sheen - ALC311 mixed with Matte ALC-313) inside the cockpit area.

Brush paint the instrument faces with 'Tamiya' Clear (X22) again, to cover any sealer that may have dulled the surfaces.

Fuel tank pressurization:

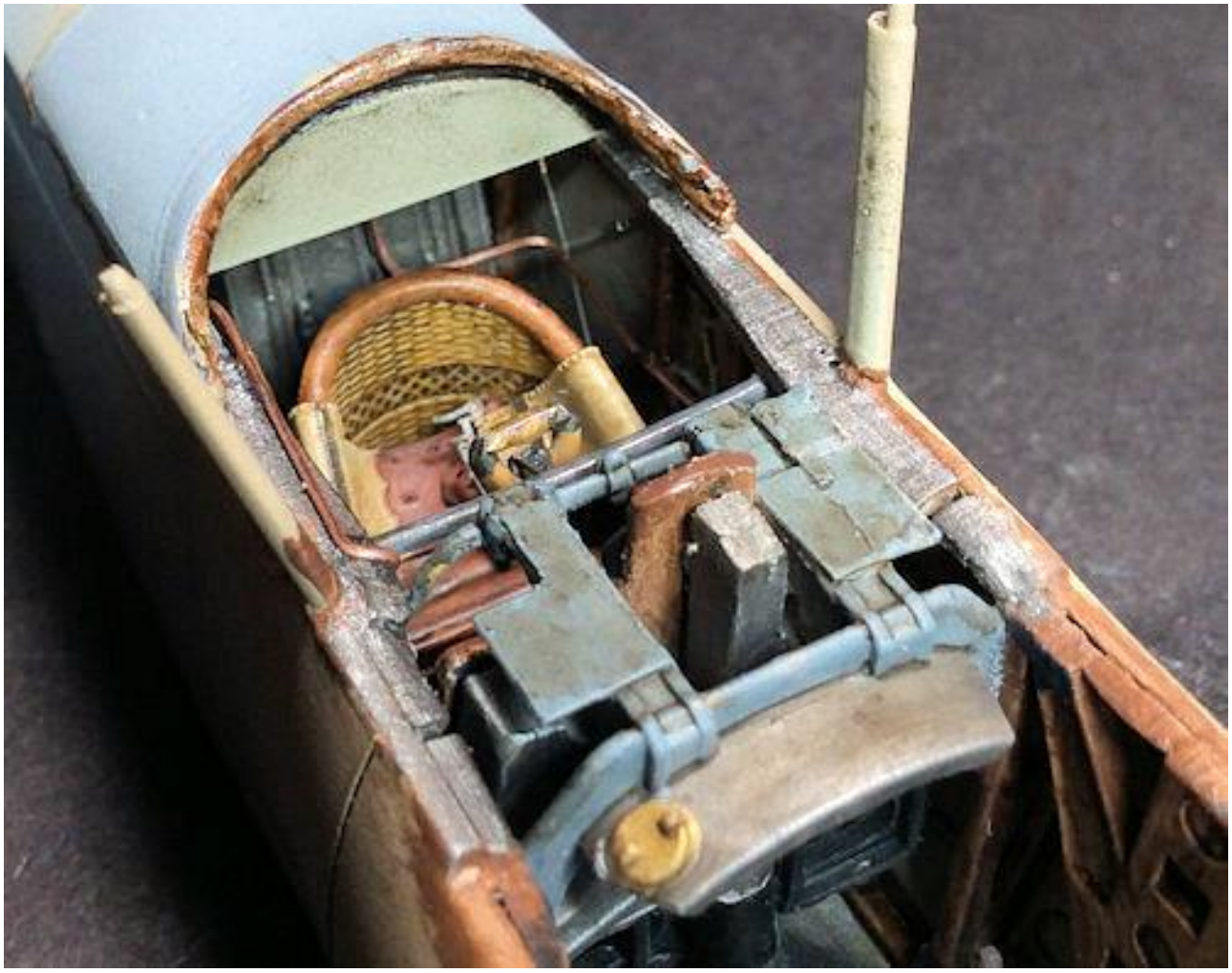
The Sopwith 'Camel' fuel main fuel tank was pressurized by two methods. The first was by a hand operated pump, located on the cockpit right side frame. In addition, a 'Rotherham' wind driven fuel pressurization pump was mounted externally. A four-way pipe union was located at the top of the cockpit right side frame. The connections to this union were routed to the top of the main fuel tank, vertically down to the pilot operated pressurization pump, up to the 'Rotherham' wind driven fuel pressurization pump and finally a pipe was routed forwards and down and across to an area at the base of the engine.

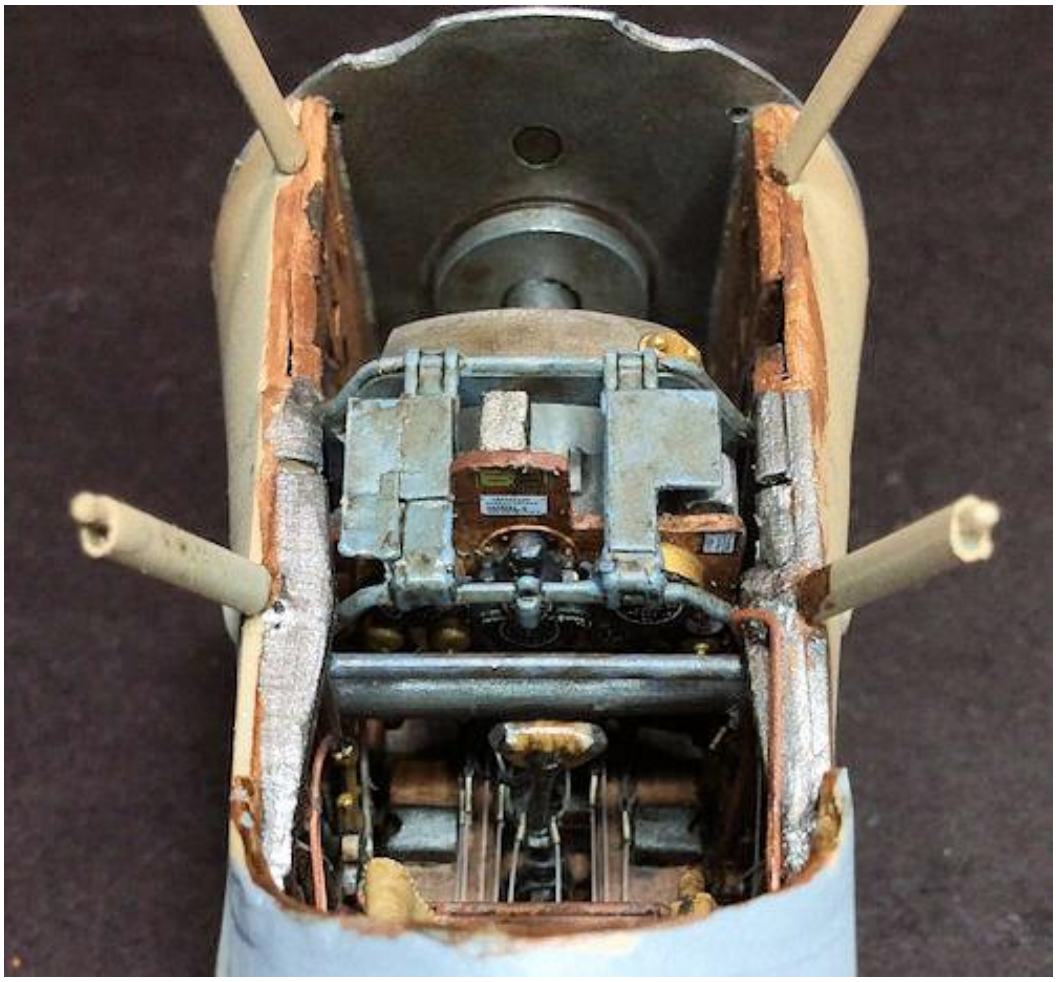
The Sopwith ‘Swallow’ had only one fuel tank filler cap aperture, which seems to indicate that it had only a main fuel tank and no auxiliary fuel tank fitted. Also, from the available photographs, it seems that no external wind driven fuel pressure pump was fitted.
Therefore the only fuel pressurization pipes to be created will be from the hand operated pressure pump to the main fuel tank.

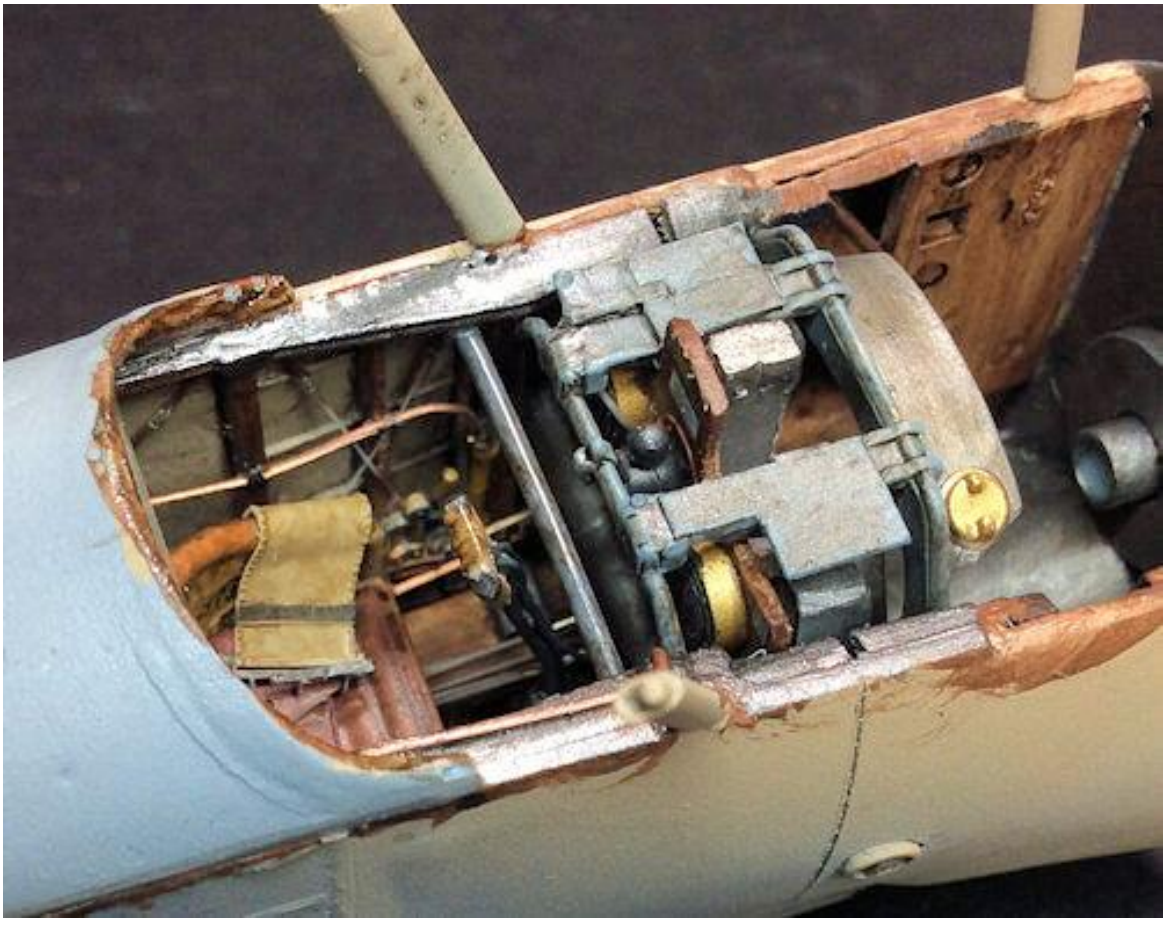
Cut and heat anneal a length of 0.375 mm diameter copper wire.

To represent the pipe from the hand pressure pump to the fuel tank, bend the wire to wrap under the right, top cockpit edge and back to under the rear decking panel.

Secure the wire in position with CA adhesive.





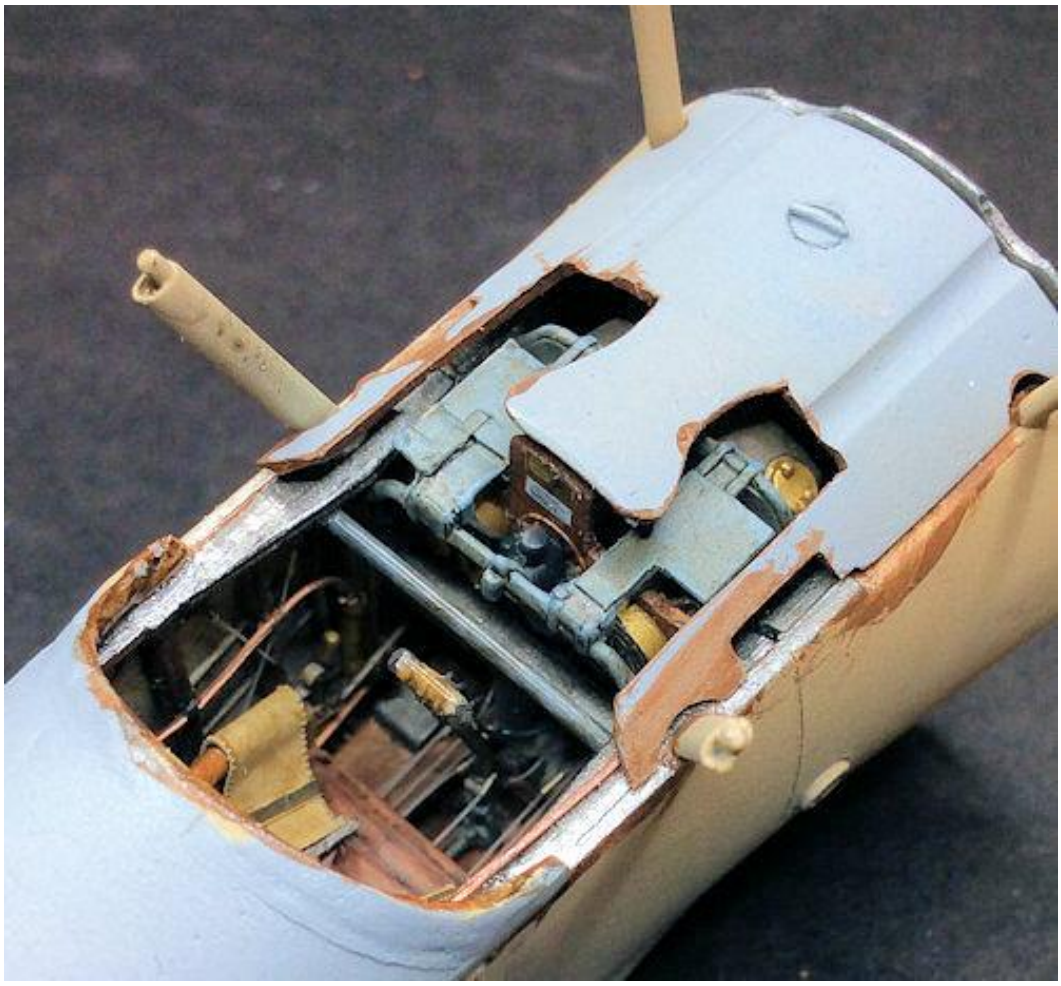


Remove any primer or paint from the mating surfaces for the front decking panel and the associated fuselage locations.

NOTE: *Check the fit of the front decking panel, especially where it butts up against the top of the engine bulkhead. When located into the two troughs in the decking panel, the front of the two machine guns should not contact the top of the engine cowl. If necessary, add appropriate plastic card packing strips to the fuselage to lift the decking panel to the correct height. Any added packing can be filled and profiled to the fuselage later in the build.*

Apply CA adhesive to the fuselage contact surfaces or any added packing strips.

Locate the front decking panel onto the fuselage, making sure it is fully seated and central.



Fuselage profiling:

The shape and detail of the Sopwith ‘Swallow’ fuselage is similar to that of the Sopwith ’Camel’, on which the ’Swallow’ was based. However there were marked differences, primarily at the forward sides of the fuselage.

Sopwith ‘Camel’

Sopwith ‘Swallow’

The primary differences were the contour and shape of the fuselage forward areas:

The lower ‘Camel’ wing root location was covered by the side panel.

The angled ‘cut out’ at the forward bottom of the fuselage was increased in height and length.

Other detail changes should already have been carried out earlier (no obvious panel ‘nail’ lines, no oval access panels fitted, no spent ammunition ejector chutes fitted).

To represent the fuselage differences:

Apply a filler (e.g. ‘Perfect Plastic Putty’) to the lower half of the fuselage to blend the exposed sides of the ’Wingnut Wings’ cockpit floor into the fuselage sides and forward towards the fuselage front.

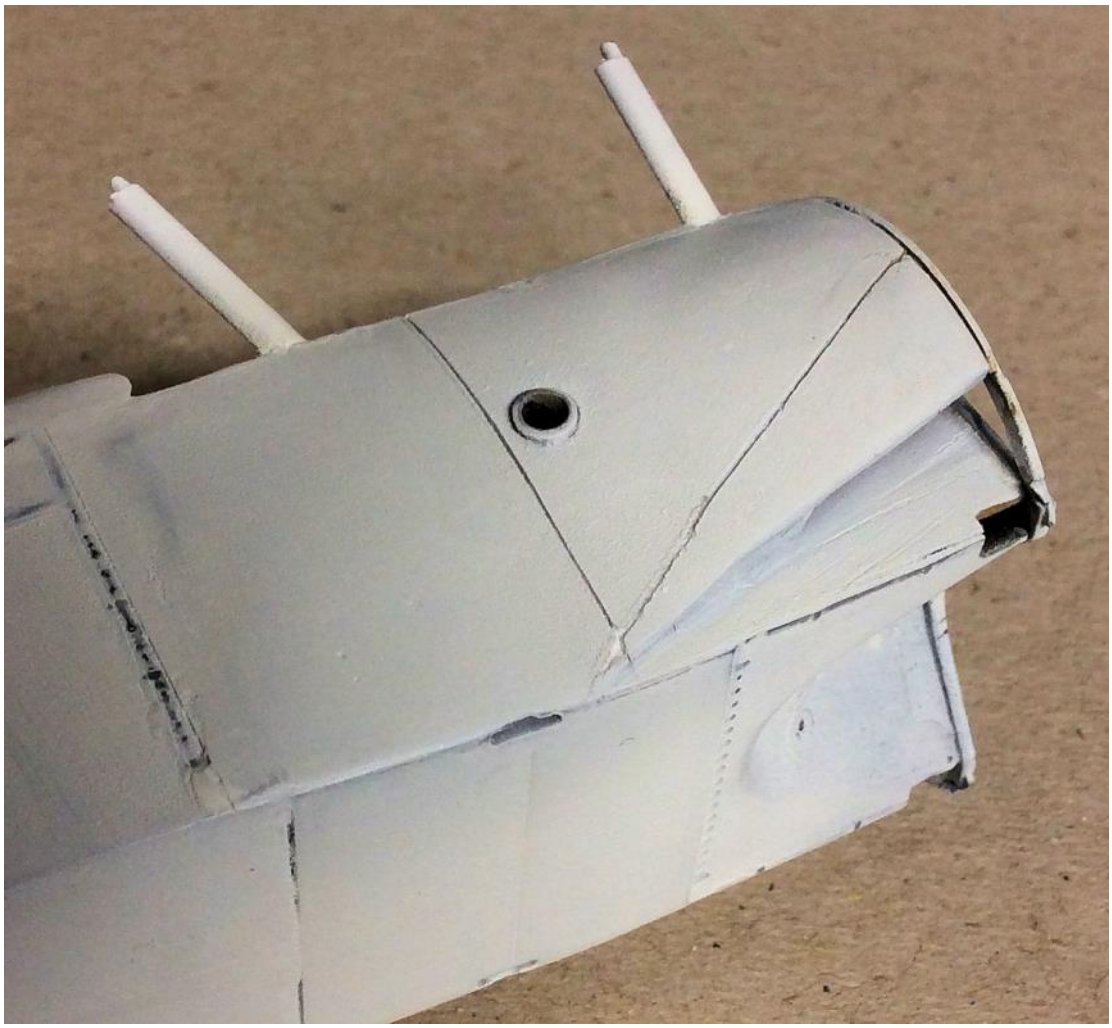
Once set, carefully sand away the filler to blend it into the fuselage. ‘Perfect Plastic Putty’ is easily worked if rubbed with a moist finger (moisture regenerates the filler).

Using a flat needle file, carefully create the angled ‘cut out’ to join the existing ‘cut out’.

NOTE: *Before applying primer, mask off all exposed cockpit areas to avoid ‘over spray’ on the finished cockpit detail.*

Airbrush primer (e.g. ‘AK Interactive Grey - AK758) over the prepared areas. This will show any areas that need further attention.

If necessary, rectify any areas and re-prime and check until you are satisfied the fuselage contours are correct.



PART 12

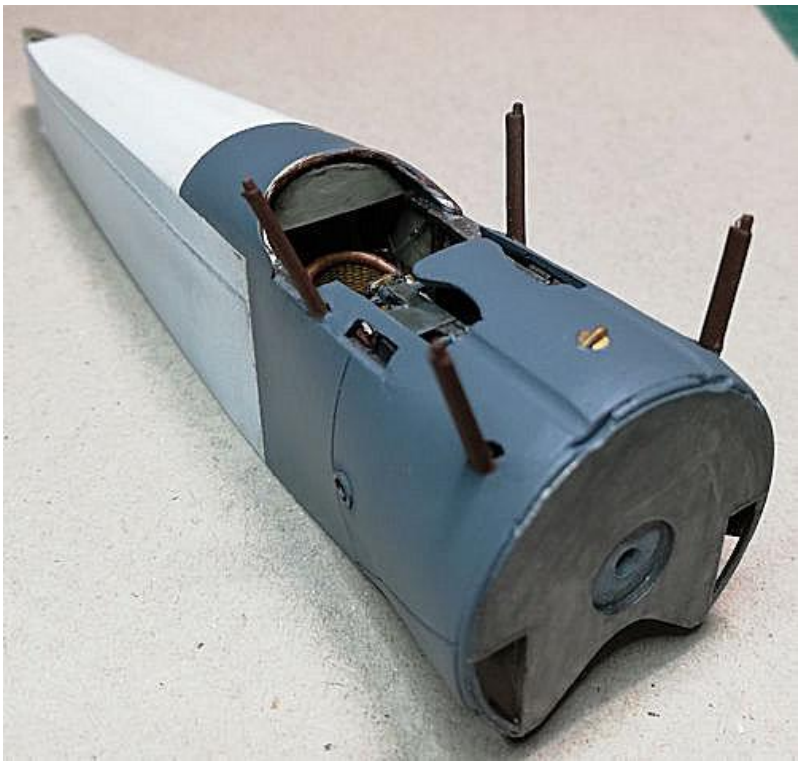
FULL MODEL CONSTRUCTION

PART 12 - FULL MODEL CONSTRUCTION

Now that the fuselage has been completed as far as possible, the complete model build can be carried out.

Forward fuselage:

1. Mask the cockpit area and any openings in the fuselage (e.g. masking tape, sponge etc).
2. Airbrush a primer coat of white over the complete fuselage, wing, rudder with fin, tail plane with elevator, wheels and the engine cowl (e.g. 'AK Interactive' white (AK-759).
3. Once dry, remove all masking and lightly sand or polish the primed surfaces. Make sure there are no imperfections and the surfaces are smooth (required for areas that will have decals applied).
4. Mask the cockpit area and any openings in the fuselage, also the fuselage areas to the rear of the fuselage rear side panels and to back of the rear decking panel (e.g. masking tape, sponge etc).
5. Airbrush 'Tamiya' ocean grey (XF82) thinned with 'Tamiya' X20A over both decking panels, fuselage side panels and the engine cowl (outside surface only).
6. Once dry, remove the masking.
7. Brush paint the fuselage undertray, engine bulk head and inside the engine cowl using 'Mr. Metal Colour' Stainless Steel (213).
8. Brush paint 'Tamiya' deck tan (XF55) thinned with 'Tamiya' X20A, over the fuselage underside panel, the four fuselage cabane struts, the created upper wing cable support pylon and the undercarriage struts.
9. Once dry, refer to Part 2 of this build log and apply your desired wood effect (I used Burnt Umber) to the four fuselage cabane struts, the created upper wing cable support pylon, undercarriage struts, underside panel and the rear decking panel.
10. Remove the masking from the fuselage sides.
11. Brush paint the filler cap in the front decking panel with 'Mr. Metal Colour' Brass (219).



Pre-shading:

Applying pre-shading to model surfaces on a white base coat will allow the shading to show through the applied top coat of paint. Pre-shading can be used to show the internal wing spars and ribs and also staining or shadows along wing ribs and trailing edges etc. Normally pre-shading is most effective on Clear Doped Linen (CDL) surfaces, as coloured doped surfaces (e.g. PC 10 or PC12) were too dark to show structure through.

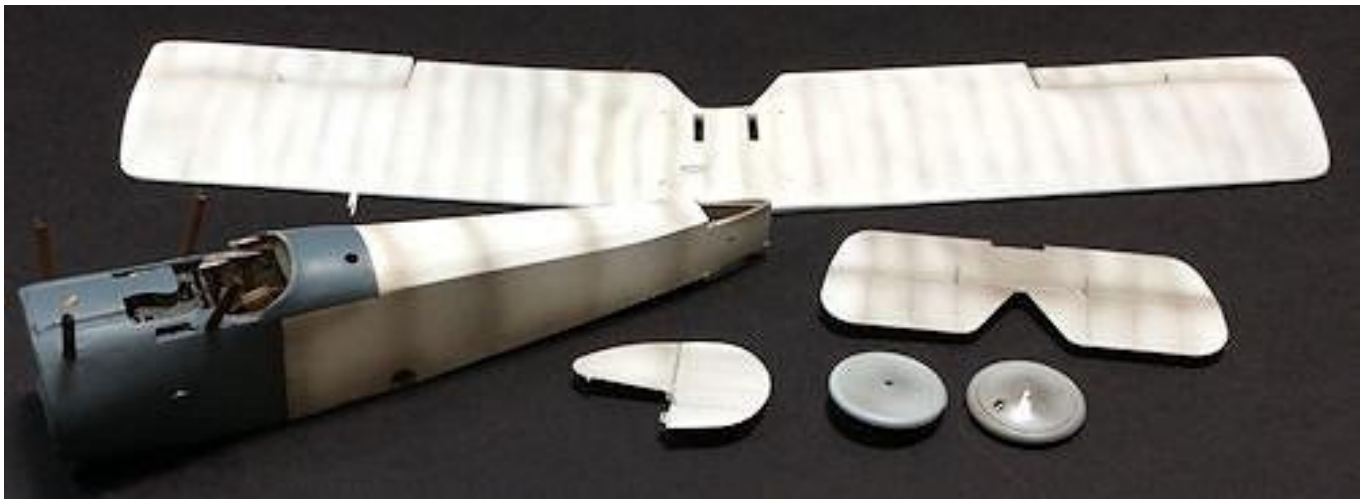
Remember that the under side pre-shading should include the front and rear wing spars, which were not normally visible through the PC colours applied to the upper surfaces.

12. Mask to leave just the fuselage exposed, from the rear decking panel, fuselage wood side panels and underside panel.

    NOTE: *Test the pre-shading and top coat of paint on a scrap piece of plastic card first. If the colours of the pre-shading do not look correct through the top coat, mix a slightly different shade of paint, airbrush again then check until you are happy with the results. If the pre-shading colour is too strong, airbrush a light and thinned 'misting' coat of the white primer over the pre-shading, in order to 'knock it back' to reduce the intensity.*

13. The underside CDL surfaces and wheels were pre-shaded to highlight the structural formers of the fuselage bays and the ribs of the wings, ailerons, tailplane and elevator. The front and rear wing spars tended not to be visible on this aircraft. In addition, any areas of stain or shadow were airbrushed.

14. The upper surfaces and fuselage sides were pre-shaded to highlight the structural formers of the fuselage bays, the ribs of the wings, ailerons, tailplane and elevator halves. Also any areas of stain or shadow were airbrushed.



Cockpit surround padding:

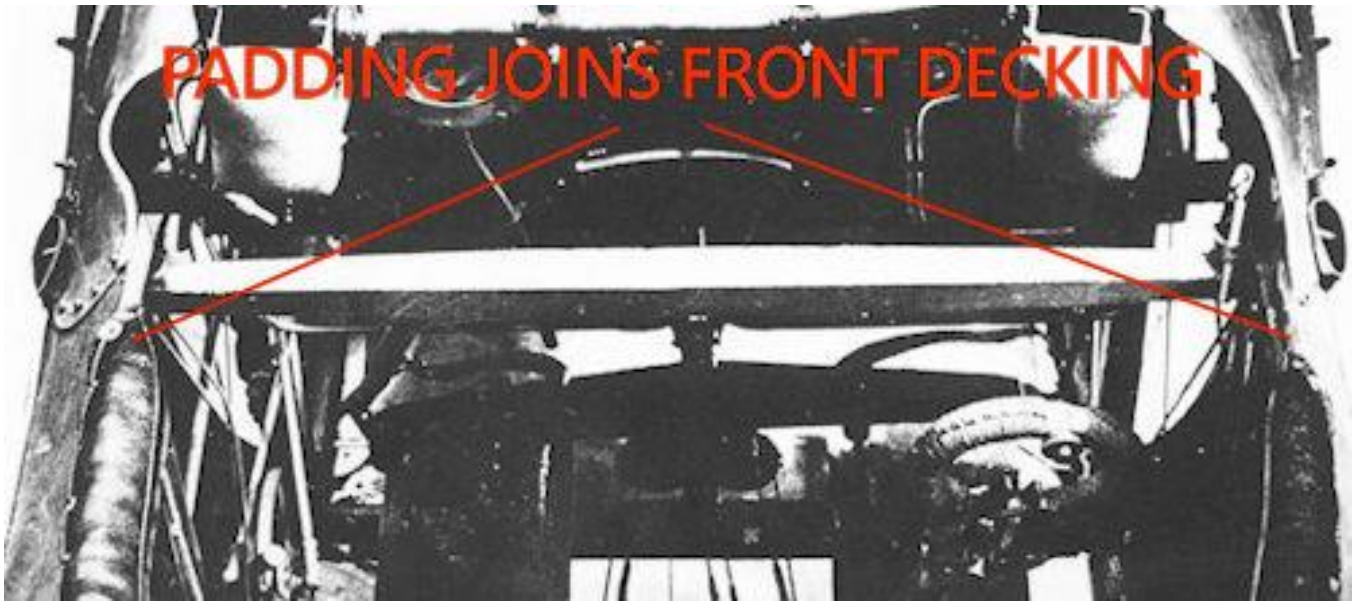
The edge of the cockpit was padded with a leather covered 'rim', which was fitted all around the cockpit opening.

The rear and front cockpit decking panels supplied in the 'Kiwi Resin' conversion set do not meet where the sides meet, as stated in the instruction sheets. Therefore the gap between the two, once fitted, needs to be filled.

15. Mix equal portions of 'Milliput' two part putty to an even consistency.

16. Roll out a thin line of the putty and cut away two short lengths.

17. Locate each length into the gap between the sides of the rear and front decking panels.

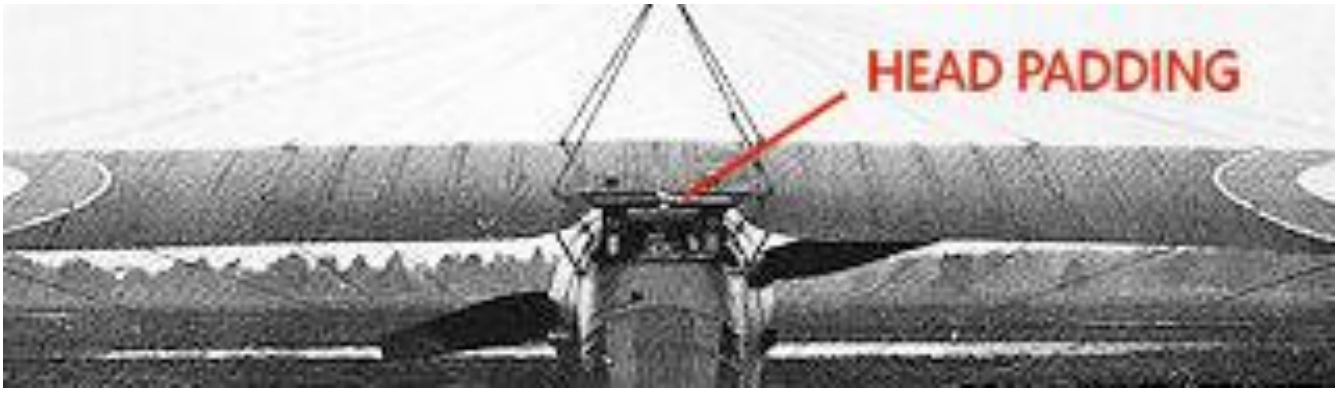


18. Using a suitable tool, keep the surface of the putty wet and carefully shape it to roughly a rounded profile.
19. Leave the putty until it has totally hardened.
20. If necessary, carefully file or sand the putty inserts to round off the profile.

21. Brush prime the total cockpit padding using Grey-758.
22. Brush paint the padding with ’Humbrol’ Leather (62) with highlights of ’Tamiya’ Hull Red (XF9).

Wing head padding:

The wing supplied in the ‘Kiwi Resin’ conversion set does not the pilot’s head padding, which was located in two halves on the trailing edge of the wing centre section cut-out.



23. Mix equal portions of ‘Milliput’ two part putty to an even consistency.
24. Roll out a line of the putty.
25. Locate the line of putty into the trailing edge of the wing centre section.
26. Using a suitable tool, keep the surface of the putty wet and carefully shape it to roughly a rounded profile.
27. Leave the putty until it has totally hardened.

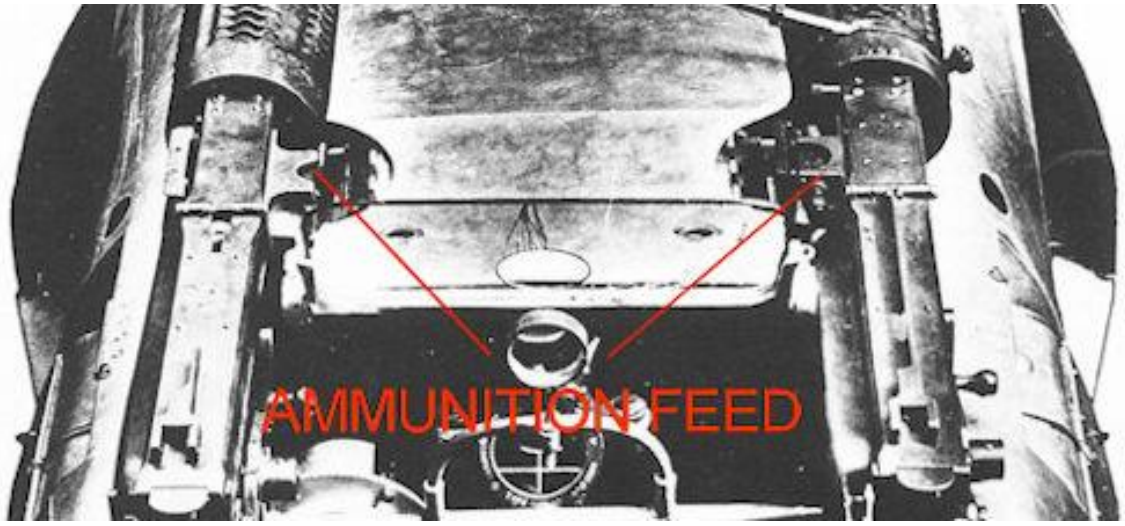
28. Carefully file or sand the putty inserts to round off the profile.
29. Carefully cut a gap through the padding, using a needle file or blade.

Engine cowl:

30. Clear any paint or primer from the mating edges for the engine cowl and engine bulkhead.
31. Apply cement into the hole in the engine bulkhead, then locate the mounting shaft on the rear of the engine into the bulkhead, making sure it is vertical to the bulkhead.
32. Cement the engine cowl into the engine bulkhead, making sure the cut-out at the bottom of the cowl is central to the bottom of the fuselage.

Machine guns:

Now that the engine and cowl have been fitted, any adjustment to the machine gun troughs in the front decking panel can be carried out. The two 'Vickers' machine guns sit high on the decking panel, more so than other contemporary aircraft. As can be seen from the following photograph, the breech blocks and cocking handles are nearly completely visible.



33. Locate a completed machine gun onto the right gun trough in the forward decking panel.
34. Make sure:

    The gun is seated fully forward in the recess.

    The breech block and forward gun sight are vertical to the fuselage.

    The weapon lays horizontal to the fuselage.

    The muzzle is clear and not in contact with the engine cowl.

    NOTE: *During the next step, make sure the gun trough is not filed too much or the muzzle of the gun will contact the engine cowl.*
35. If necessary, use a round needle to file into the gun trough until the correct fit is achieved.
36. Repeat for the left machine gun trough.

37. Test fit the two machine guns and check if the bottom of the breech blocks contact the gun mountings. If not add an appropriately thick piece of plastic card to the mounting as packing then paint them ‘Tamiya’ ocean grey (XF82).

38. Apply CA adhesive to each gun mounting and locate the two machine guns, making sure they are correctly aligned with the centre line of the fuselage (when viewed from above) and are horizontal to the fuselage.

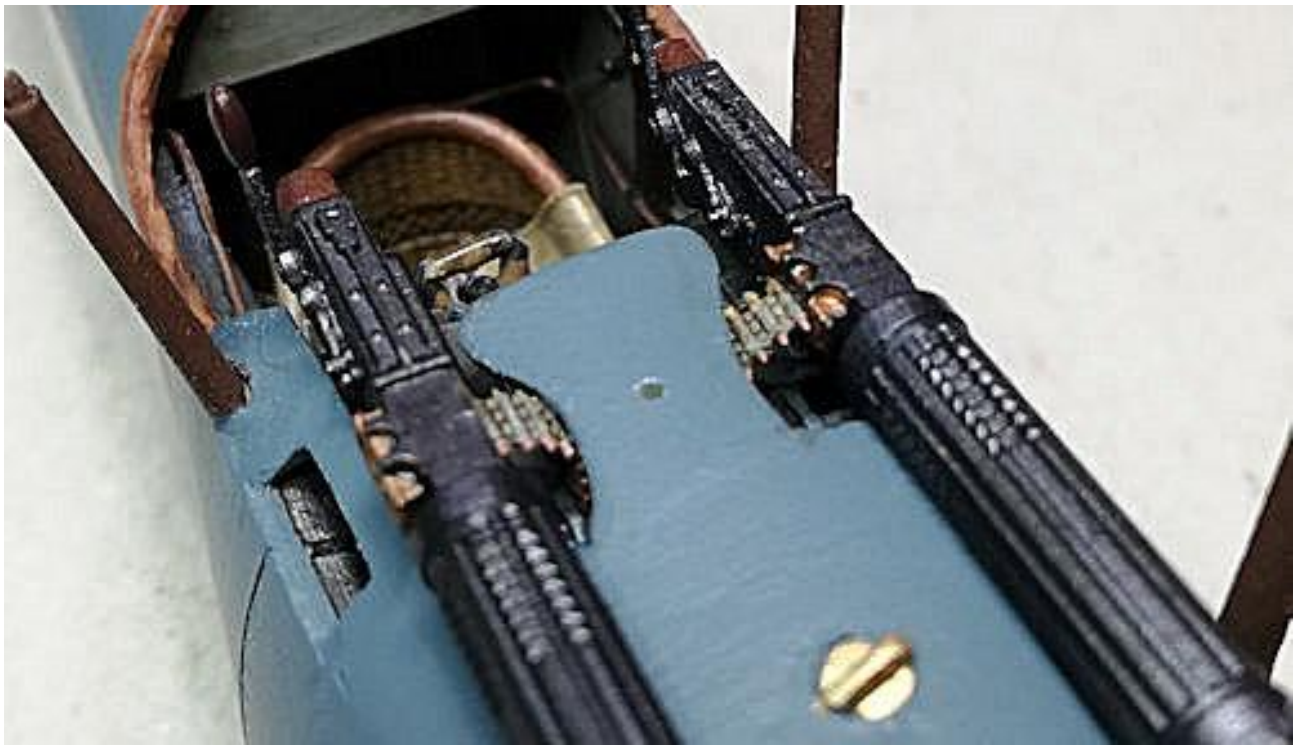
NOTE: *It seems the two machine guns were fed ammunition, possibly by ‘disintegrating’ belts, from inboard (left gun from right side, right gun from left side). The two ammunition belts supplied with the ‘Gaspatch’ machine guns have the ammunition moulded for for the belts to feed the guns from the left side only. Therefore the belt feeding the right machine gun will need to be turned 180 degrees before the ammunition rounds are painted accordingly.*

39. Brush paint the two ammunition belts supplied with the ‘Gaspatch’ weapons:

    Belts - ‘Tamiya’ deck tan (XF55).
    Ammunition - ‘Mr. Metal Colour’ brass (219) and copper (215).
    Once dry, apply a light coat of ‘AK Interactive’ wash (2033) over the belts.

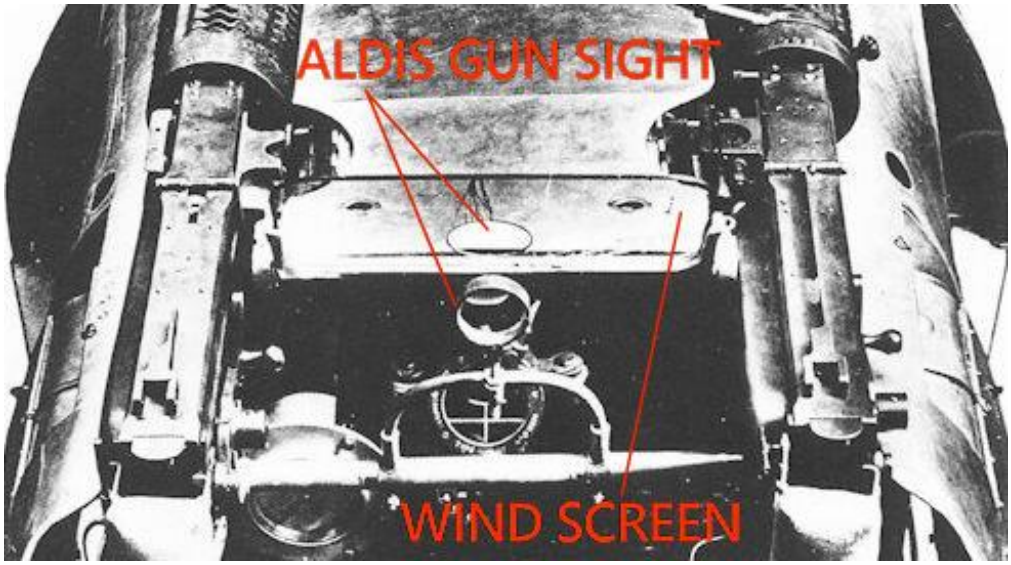
40. Test fit the ammunition belts - Locate the long ‘tail’ of each belt down into its gun aperture on the front decking panel, with the top of the belt at its guns inboard feed port. Trim the length of the belts to allow them to locate into the breech block.

41. Locate the long ‘tail’ of each belt down into its gun aperture on the front decking panel, with the top of the belt into its guns inboard feed port. Secure to the gun feed port using CA adhesive.



Windscreen and ‘Aldis’ gun sight:

The photograph of the ‘Swallow’ cockpit shows a mounting and hole in the wind screen for an ‘Aldis’ gun sight.



To replicate the wind screen and ‘Aldis’ I used the ‘Wingnut Wings’ kit parts C1 wind screen and D25 ‘Aldis’ gun sight.

42. Carefully cut a slot through the wind screen from the centre of the hole and through the base of the wind screen. This is required to allow insertion of the ‘Aldis’ sight, which has a vertical stem.

43. Carefully file away and cut back the base mounting of the wind screen to reduce its size and thickness. Also use a half round needle file to create a slight curve under the mounting so it will conform to the curved surface of the decking panel.

44. The ‘Aldis’ gun sight supplied in the kit needs to be modified:

NOTE: *Option 1 is the method I used to create a more 'in-scale' and sturdier front mounting rod. Option 2 is using the pre-moulded mounting rod on the kit part.*

Option 1:

Cut away the two vertical rods from the gun sight.

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

Cut a slightly longer length of 0.5 mm diameter brass rod (e.g. 'Albion Alloys' MBT06).

Slide the rod into the tube, leaving 1.0 mm protruding, secure with CA adhesive.

Drill a 0.5 mm diameter hole into, but not through, the gun sight at the location of the removed forward, shorter rod.

Insert the 0.5 mm diameter end into the pre-drilled hole in the 'Aldis' gun sight and keeping the inserted tube/rod vertical, secure in position with CA adhesive.

Lay the gun sight onto the top of the front decking panel, centrally between the two machine guns and with the inserted tube/rod forwards.

Position the pilot's eye piece (end of the gun sight) slightly to the rear of the cockpit support rail.

Mark the decking panel where the tube/rod is located.

At the marked location, drill a hole of 0.7 mm diameter through the decking panel.

Option 2:

Cut away the rear vertical rod from the gun sight.

Lay the gun sight onto the top of the front decking panel, centrally between the two machine guns and with short rod forwards.

Position the pilot's eye piece (end of the gun sight) slightly to the rear of the cockpit support rail.

Mark the decking panel where the short rod is located.

At the marked location, drill an appropriately sized hole through the decking panel.

Continued:

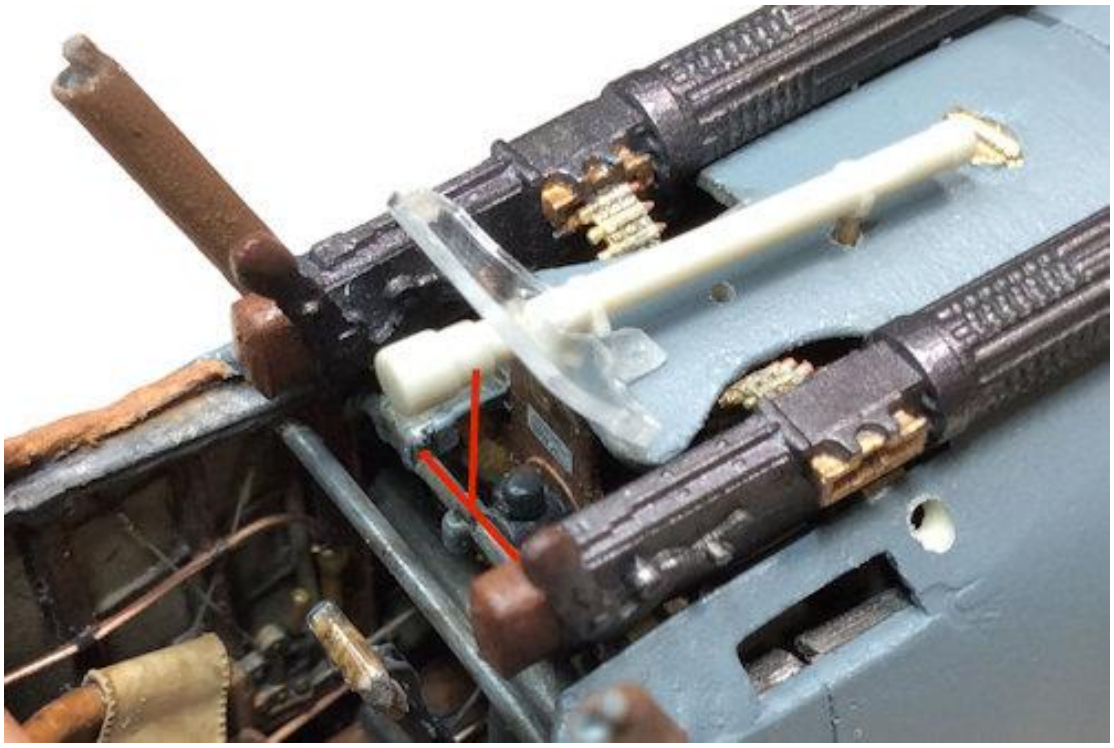
Pass the gun sight through the cut slot in the windscreen and locate the forward 'rod' into the pre-drilled hole in the decking panel.

Position the wind screen on the rear of the decking panel.

Make sure the gun sight remains horizontal to the fuselage.

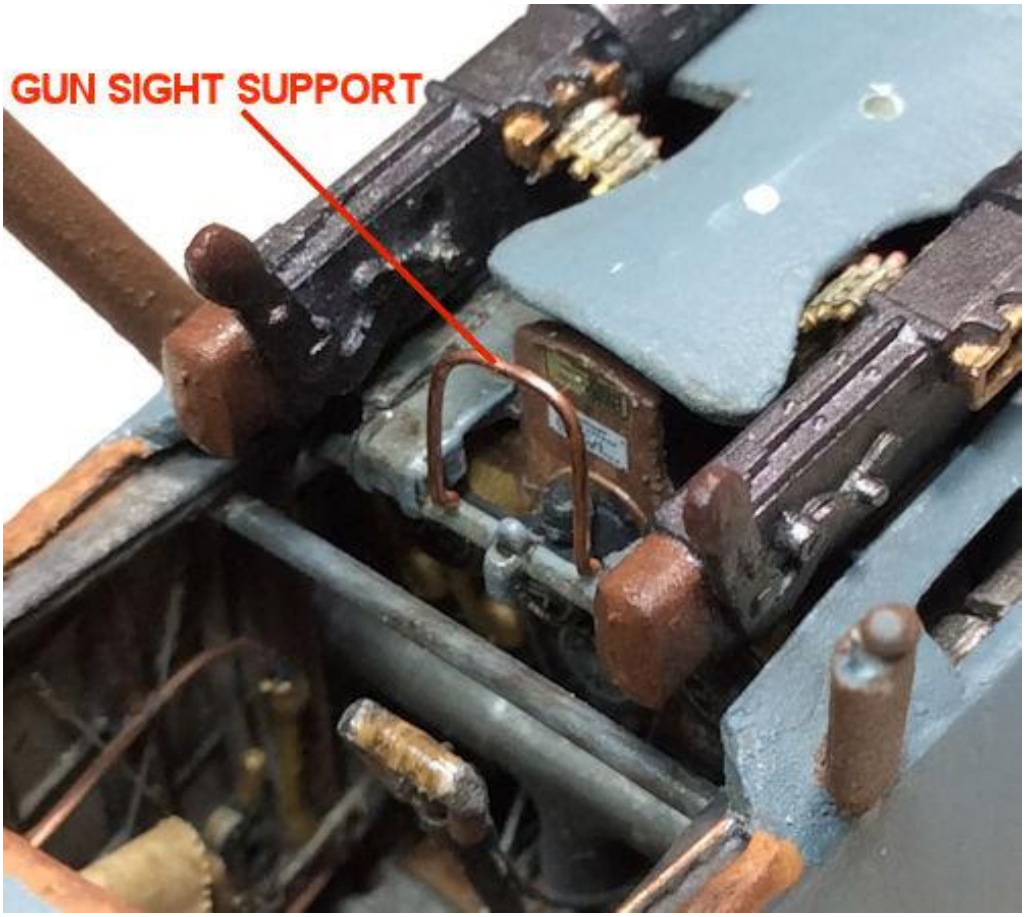
Heat anneal (to soften) a length of 0.4 mm diameter copper wire.

Bend the wire into a flattened semi-circle approximately 4 mm across and with the two 'legs' vertical.



Test fit the wire legs onto the cockpit cross bar so the curved top touches the underside of the gun sight. Trim the ‘legs’ of the wire to achieve this.

Secure the bottom of both ‘legs’ to the cockpit cross bar using CA adhesive.



45. Use suitable sized drills to create a ‘dimple’ in each end of the gun sight.
46. Prime the ‘Aldis’ gun sight (e.g. ‘AK Interactive’ Grey - AK758).
47. Brush paint the ‘Aldis’ gun sight ‘Tamiya’ rubber black (XF85).
48. ‘Infill’ the ‘dimples with ‘Tamiya’ Clear Yellow (X24) to represent the lenses.
49. Prime the created gun sight support (e.g. ‘AK Interactive’ Grey - AK-758).
50. Brush paint the gun sight support and the wind screen support frame with ‘Tamiya’ ocean grey (XF82).

Decking side plates:

I found that at the rear lower sides of the front decking panel are cut-outs through the panel. Inside these cut-outs are what appear to be curved plates. They seem to low to be deflector plates for expended ammunition from the gun breech blocks, given how high the guns are above the decking panel. I can't find any information on how ammunition was fed to both guns on the 'Swallow'. The assumption is that the ammunition belts were fed from inboard of the guns and expended ammunition ejected straight out of the breech blocks and over the sides of the fuselage.

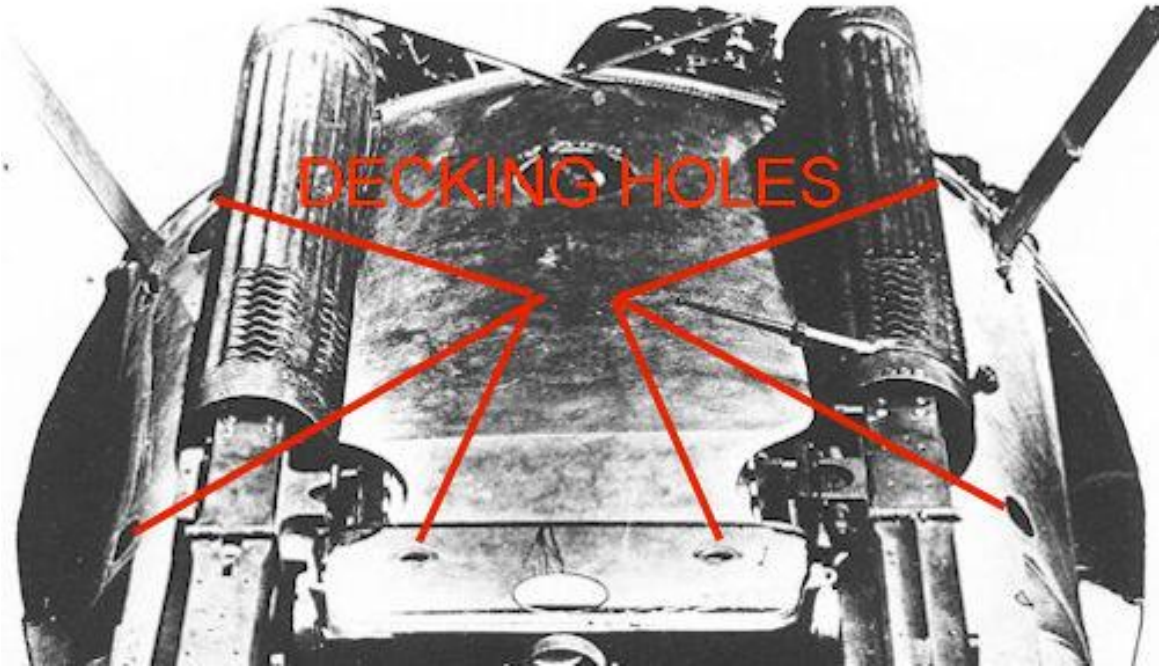
To represent these plates:

NOTE: *The two cut-outs in the sides of the front decking panels should have already been created.*

51. Cut two strips of 0.2 mm thick plastic card to the width of the created cut-outs in the front decking panel.
52. Bend to strips over a round surface to create a slight curve.
53. Test fit the ‘plates’ in the cut-outs and trim their length accordingly.
54. Position the plates in the cut-outs and secure them with CA adhesive on the edge of the fuselage.
55. Prime the ‘plates’ (e.g. ‘AK Interactive’ Grey - AK758).
56. Brush paint the ’plates’ with ‘Mr. Metal Colour’ Iron (212).
57. Brush paint a thin central line down each ’plate’ to represent the centre ’rib’.

Decking panel holes:

The photograph of the ‘Swallow’ cockpit show holes at each side of the decking panel and at each side just forward from the wind screen.



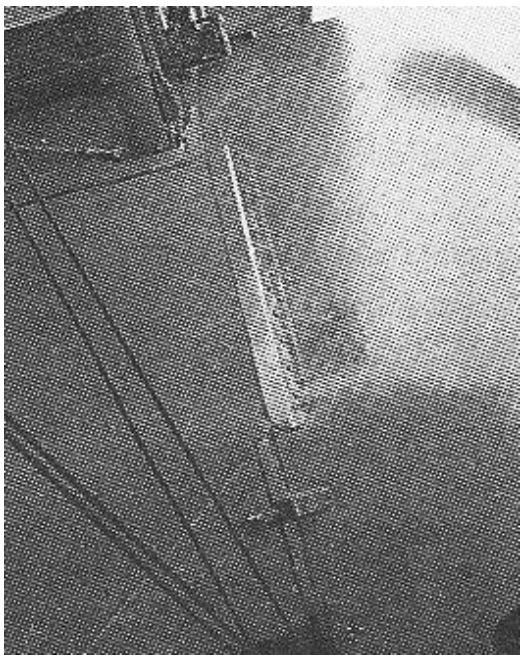
58. Drill holes of 1.8 mm diameter through each side of the decking panel and with the top of the holes aligned with the top of the cut-out and farther forward on the panel.

59. Drill holes of 1.8 mm diameter through each side of the decking panel, at the forward edge and between the forward cabane struts and the gun troughs.

60. Drill two holes of 1.0 mm diameter through the top of the decking panel, forward from the base of the windscreen and equally spaced from the centre line of the panel.

Engine cowl - straps and plates:

The engine cowl fitted to the Sopwith ‘Camel’ was retained with two straps fitted to each side between the fuselage and the cowl. However the ’Swallow’ had to two upper straps replaced by retainer strips.



To represent the straps and strips:

61. Cut them from 0.2 mm thick plastic card and round off the ends of the strips only.
62. Secure them in position using CA adhesive.
63. Prime the straps and strips (e.g. ‘AK Interactive’ Grey - AK758).
64. Brush paint straps and strips with ‘Tamiya’ ocean grey (XF82).

Weathering:

At this stage and before the windscreen and ‘Aldis’ gun sight are added, the weathering of the forward fuselage can be carried out.

65. Airbrush the forward fuselage with a semi-matte sealing coat (e.g. ‘Alclad’ Semi-Matte 312) lacquer.

    NOTE: *For applying weathering, refer to Part 3 of this build log.*

66. Once fully dry, apply a ‘Flory’ clay weathering wash of Dark Dirt (refer to Part 3 of this build log).

67. Remove the clay wash until your desired weathering effect is achieved.
68. Apply ‘AK Interactive’ engine oil (AK2019) behind the filler cap on the front decking panel and on the fuselage under shield, behind the engine.

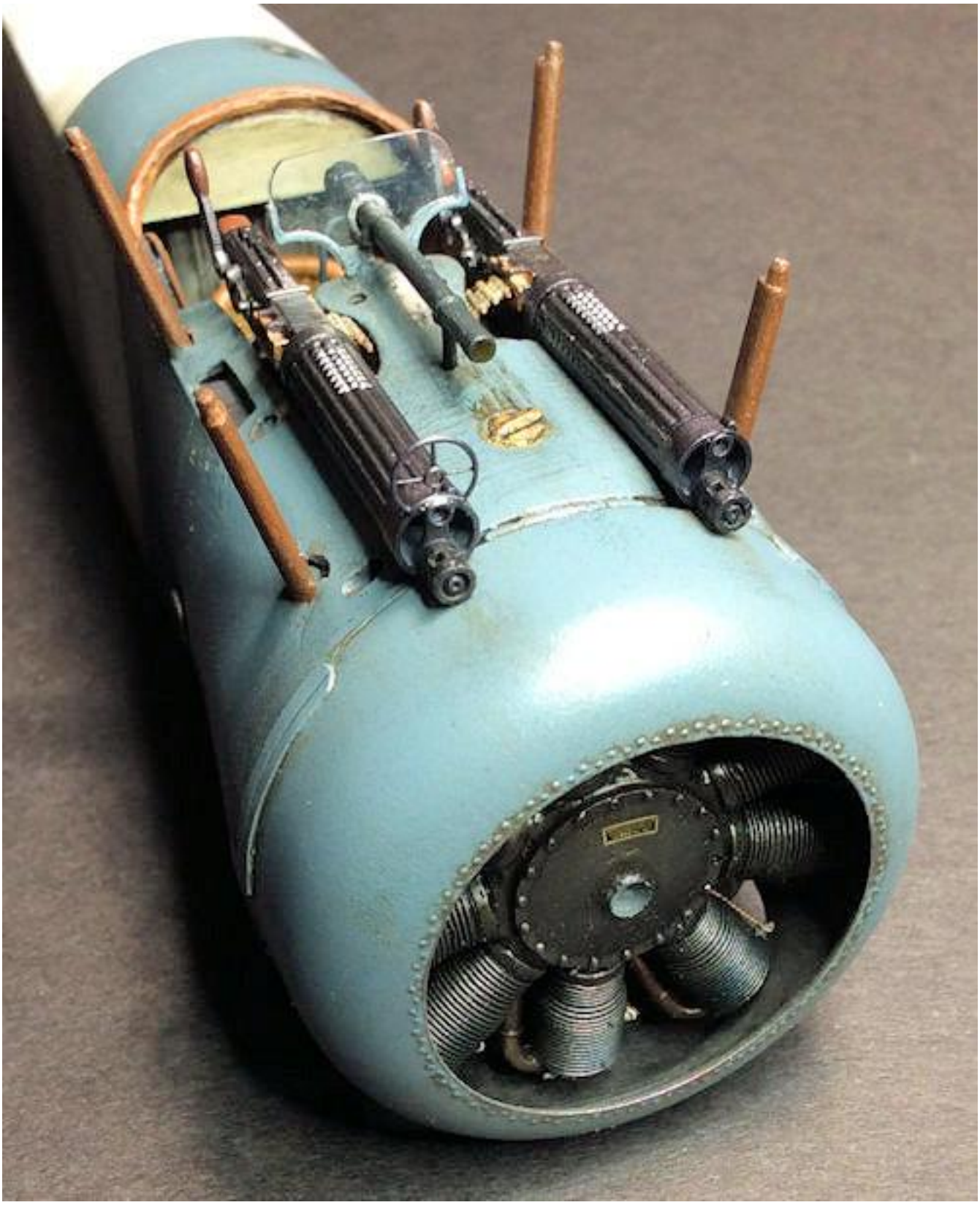
Wind screen and gunsight:

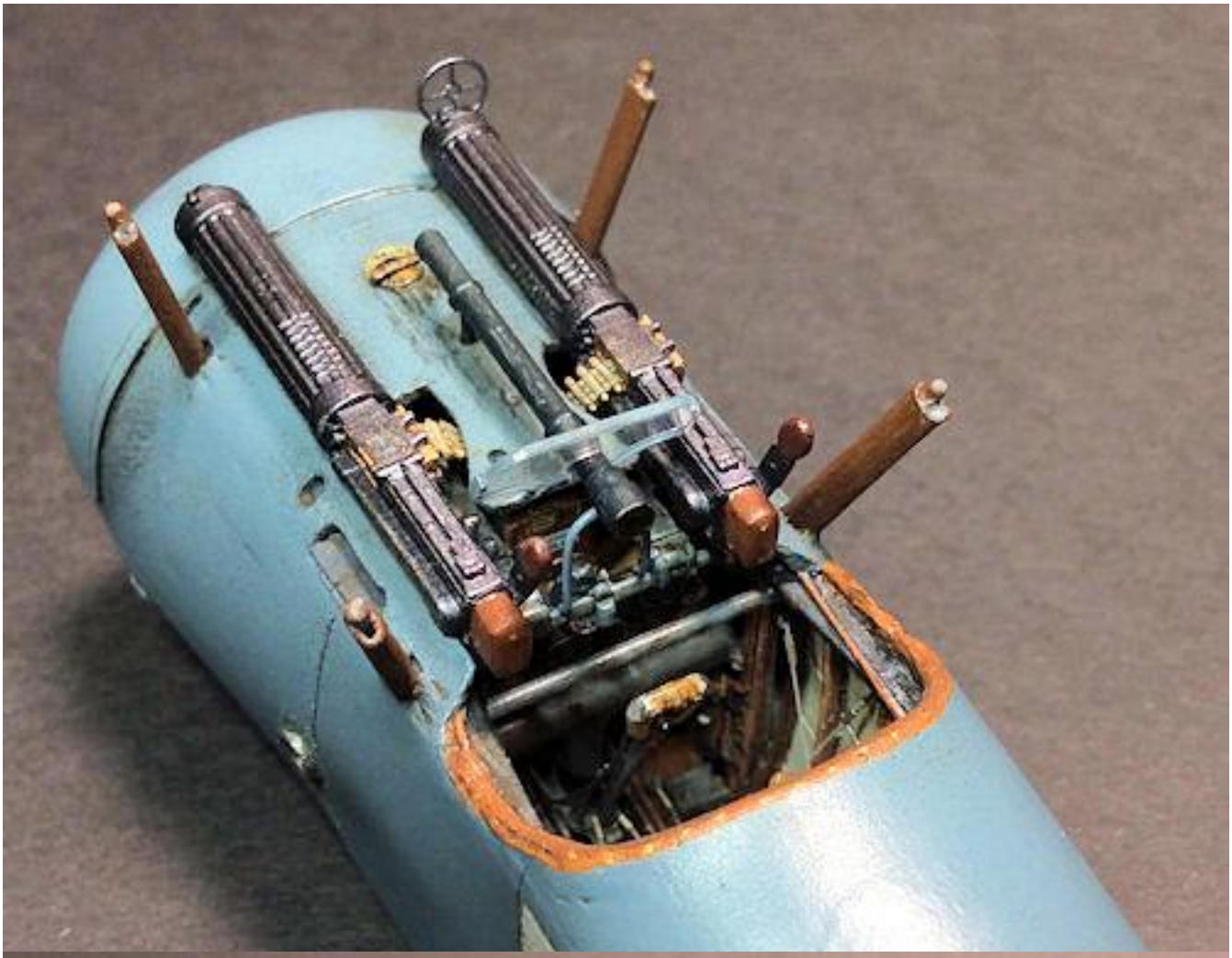
69. Slide the modified windscreen onto the ‘Aldis’ gunsight, making sure it is facing the correct way.
70. Locate the forward rod into the pre-drilled hole in the decking panel.
71. Make sure the rear of the gun sight rests on the created support frame and the gun sight is horizontal to the fuselage.

72. Apply CA adhesive to secure the gun sight onto the support frame and forward rod into the decking panel.

73. Apply a small amount of cement to the base of the wind screen to decking panel join.

74. For additional support apply a small amount of PVA adhesive (white glue) at the gun sight and hole through the wind screen.

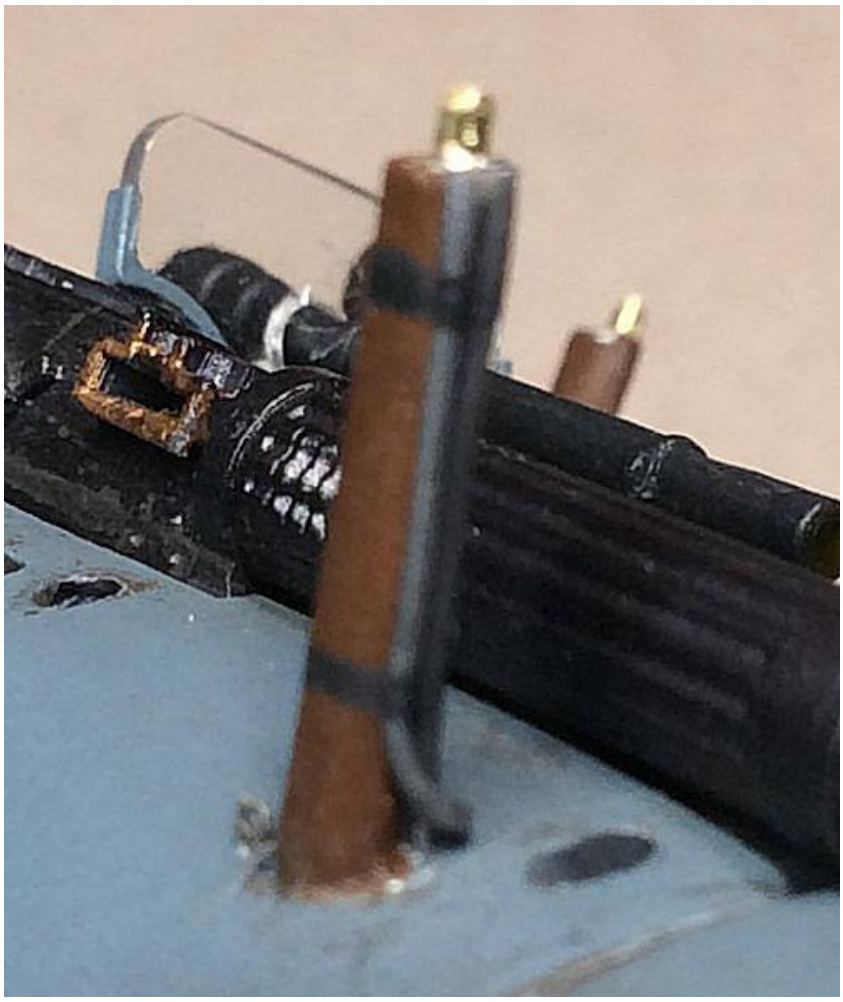




Pitot tubes:

The twin pitot-static probes were located on the right outboard leading edge of the wing and the air pressure from these probes was fed to the cockpit instruments through two tubes. These tubes were routed inboard through the wing then out and down the leading edge of the forward, right cane strut. To represent these tubes:

75. Cut two lengths of 0.4 mm diameter lead wire (e.g. ‘PlusModel’).
76. Secure one wire to the inside bottom of the forward, right cabane strut, using CA adhesive.
77. Secure this wire up the leading edge of the forward, right cabane strut, using CA adhesive.
78. Secure the second wire to the inside bottom of the forward, right cabane strut, using CA adhesive.
79. Secure this wire over the first then up the leading edge of the forward, right cabane strut, using CA adhesive.
80. Once the adhesive has set, trim away the excess wire level with the top of the strut (not including the protruding location rod).
81. Brush paint two lines around the strut and pipes using ‘Tamiya’ rubber black (XF85) to represent pipe clamping rings.



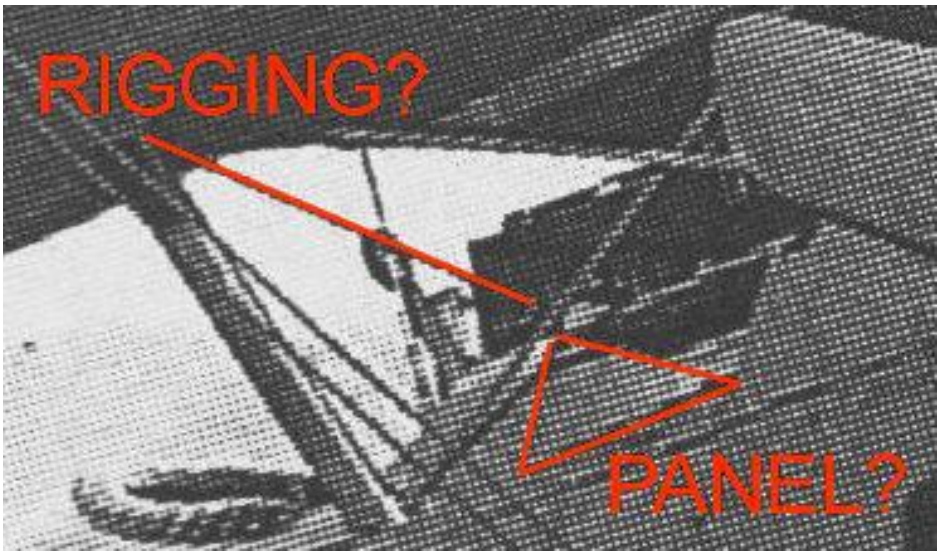
Unresolved items:

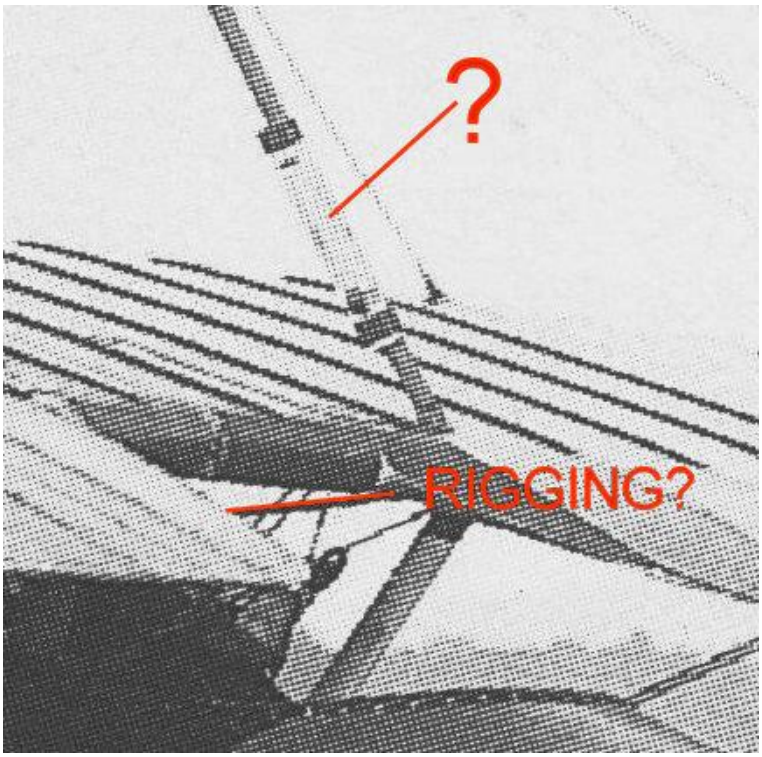
During research I found three items on photographs that I have been unable to determine their purpose. Therefore these items, highlighted in RED, have not been incorporated into the model.

There appears to be a rigging line between the top of the rear fuselage cabane struts and either to the front decking panel or to the rear of the machine guns. However I am unable to determine where the cable is routed to, possibly into the cut-outs in the sides of the front decking panel. Alternatively it could be cross bracing between the rear cabane struts, but I think that is unlikely as the crossed wires would be directly in front of the pilot's head in the event of a crash.

Also, on this photograph, the cut-outs in the side of the front decking panel appear to have been partly 'blanked off' with a diagonal half panel, which is not visible on other photographs of that area of the aircraft.

Lastly there appears to be a tubular item fitted to the right rear strut on the over wing cable support pylon. What this item is and its purpose can't be determined.





Undercarriage assembly - finish painting:

The struts of the undercarriage assembly should already have been treated with the desired 'wood effect'. At this stage the remainder of the undercarriage assembly can be painted.

82. Brush paint the axle fairing with 'Tamiya' ocean grey (XF82).

83 Brush pint the axle, bungee supports, strut tie-bard and strut top fitting using 'Mr. Metal Colour' stainless steel (213).

84. Brush paint the bungee cords with 'Tamiya' deck tan (XF55).

85. Once fully dry, apply a 'Flory' clay weathering wash of Dark Dirt (refer to Part 3 of this build log).

86. Remove the clay wash until your desired weathering effect is achieved.

87. Airbrush the undercarriage assembly with a semi-matte sealing coat (e.g. 'Alclad' Semi-Matte 312) lacquer.

88. Apply 'AK Interactive' engine oil' over the bungee cords.

89. In the centre of the axle fairing is a pre-moulded indent. Drill through the fairing at this location using a 0.2 mm diameter drill.

Rigging preparation:

Before continuing the build, the various rigging anchor and access points need to be created. These rigging points need to be drilled at the appropriate locations and at the correct angles for the particular rigging. The holes are either drilled through the model part, such as the fuselage points or at the correct angle into the model part, such as the in the wings. Of particular note are the where dual rigging wires are routed through the wing and upper pylon and the fuselage and undercarriage struts.

Reference: *Windsock International Vol 14, No. 4 dated July/August 1998.*

The flight control rigging for the tail skid, rudder and elevator were the similar to the Sopwith 'Camel' as was the cabane strut and undercarriage cross bracing. Only the control rigging for the ailerons was different.

The wing was rigged with single cables from the top wing surfaces to the over wing support pylon. However the underside of the wing had similar, but doubled rigging from the wing to the tops of the undercarriage struts.

This aircraft, as with many at that period, had streamlined 'cables' (aerodynamic) as opposed to the earlier round spliced cables. Therefore traditional adjustable turnbuckles were only fitted on the flight control lines, which were traditional cables. The streamlined 'cables' did not have the traditional turnbuckles fitted, but instead the tension in the 'cables' was achieved with adjustable end fittings.

NOTE 1: *The preparation of rigging anchors and access points for subsequent rigging of the model will depend on the type of rigging cable used - traditional or streamlined.*

Cross bracing anchors - forward fuselage:

Cross bracing wires were fitted between the two cabane struts on each side as well as from the from the front decking panel to the tops of the two forward struts. These bracing wires were crossed diagonally between the struts. Anchors for the bracing wires need to be added at this stage although the actual rigging of the wires can only be carried out once the wing is fitted.

90. Drill holes of 0.3 mm diameter into the decking panel:

    Close to the forward edge of the two rear struts.

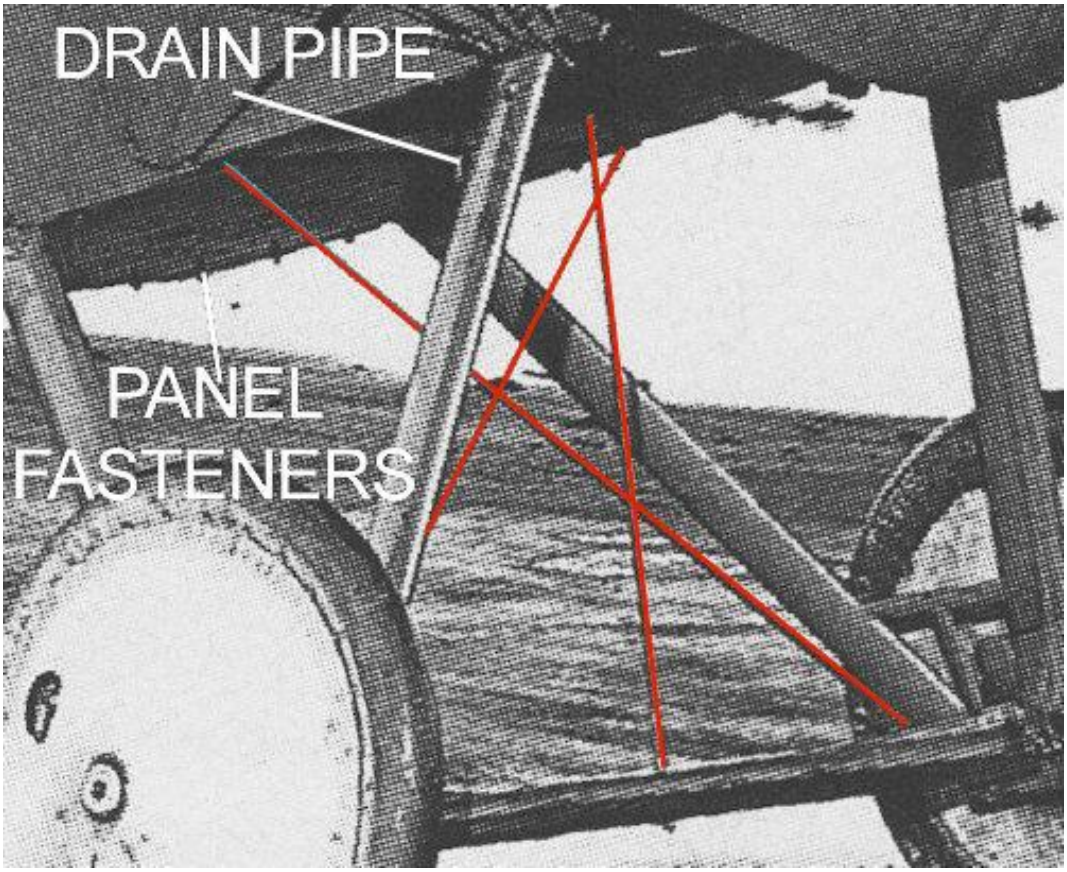
    Close the rear edge of the two forward struts.

    Either side of the filler cap and inline with the two forward struts.

91. Insert into each hole an anchor ('GasPatch' 1/48th scale) and secure in position using thin CA adhesive.

Undercarriage - bracing and details:

NOTE: *During this stage the drain pipe and panel fasteners can also be fitted.*



92. Prime the ‘Taurus Models’ wing nuts (M0025) (e.g. ‘Alclad’ Gloss Black - ALC305).

93. Airbrush the wing nuts (e.g. ‘Alclad’ Steel lacquer - ALC302).

94. Cut a short length of 0.4 mm diameter Nickel-Silver tube (e.g. ‘Alboin Alloys’ NST04).

95. Drill a 0.4mm diameter hole through the fuselage under shield panel at the pre-moulded rear, central location.

96. Insert the cut tune into the pre-drilled hole and secure in position using CA adhesive. The tube should protrude by approximately 2 mm.

97. Using CA adhesive, secure a total of fourteen wing nuts in position on the under fuselage panel.

98. Drill a hole of 0.3 mm diameter:

    Into each rear and front corner and the centre of the forward edge of the fuselage under shield.

    One each side of the centre of the fuselage under shield at the forward edge.

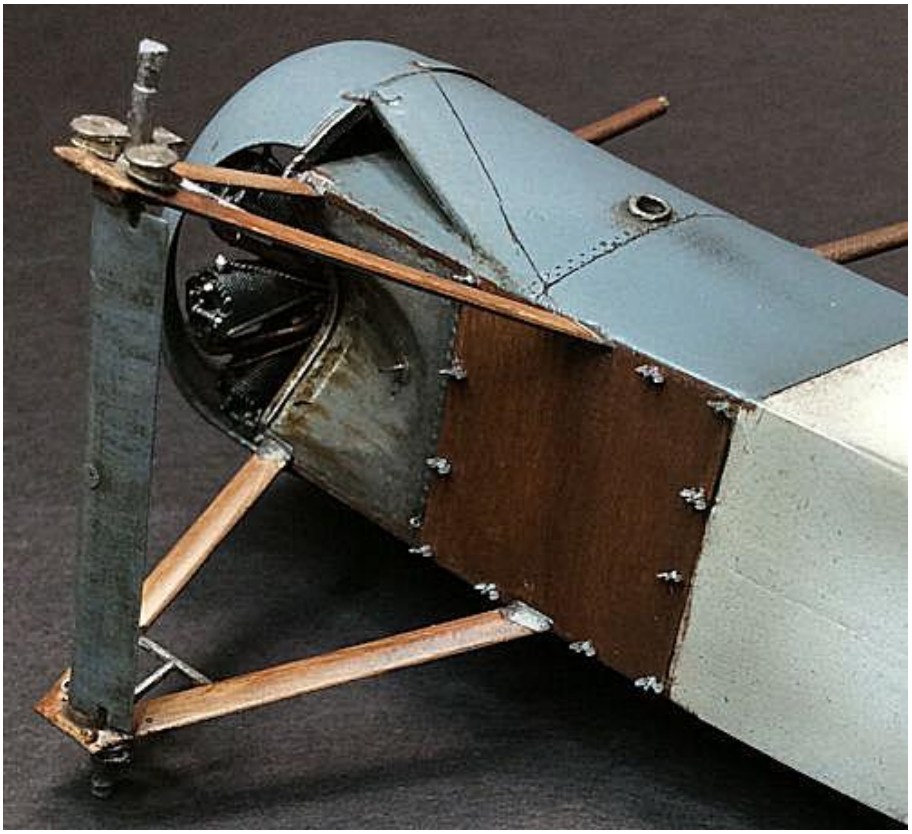
99. Insert into each of the two rear and the one forward holes an anchor (‘GasPatch’ 1/48th scale) and secure them in position using thin CA adhesive.

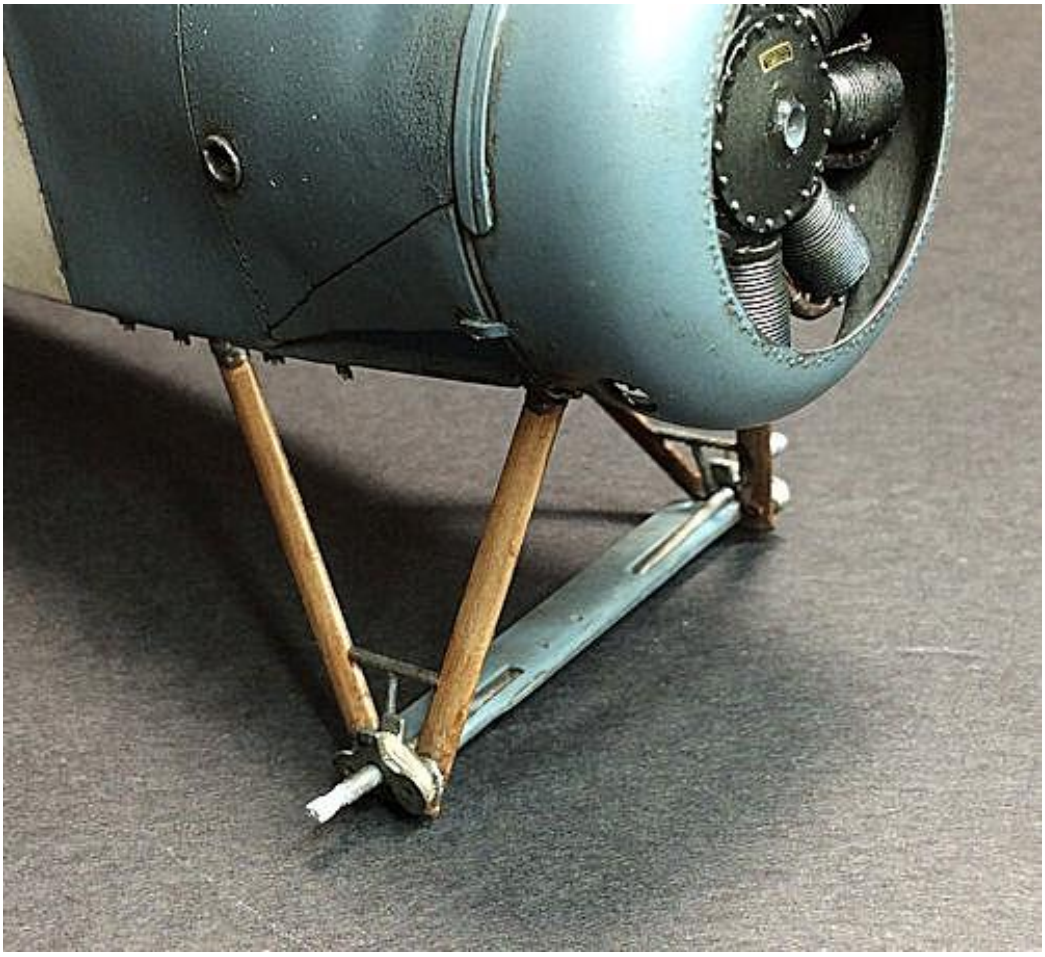
Undercarriage - fitting:

NOTE: *At this stage the undercarriage assembly can be fitted, as it will also protect the added wing nuts and stop them from being accidently knocked off.*

100. Remove any primer and paint from the top of the four undercarriage struts, then test fit the assembly into the fuselage locations to ensure a full and correct fit.

101. Fit the undercarriage assembly into the fuselage locations and secure in position using cement.

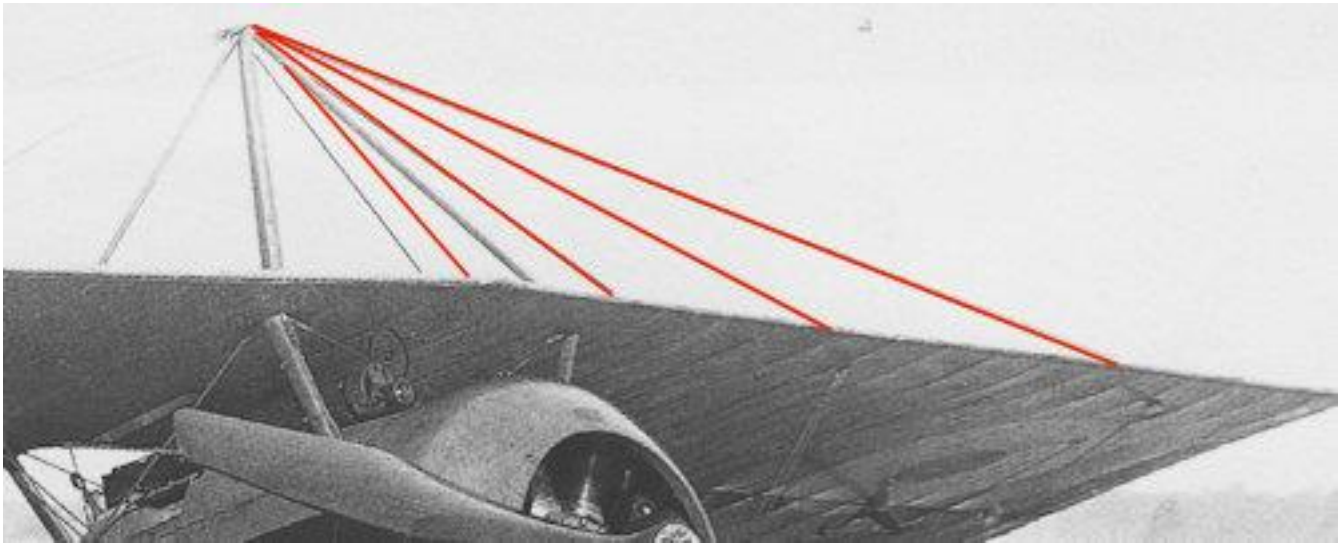


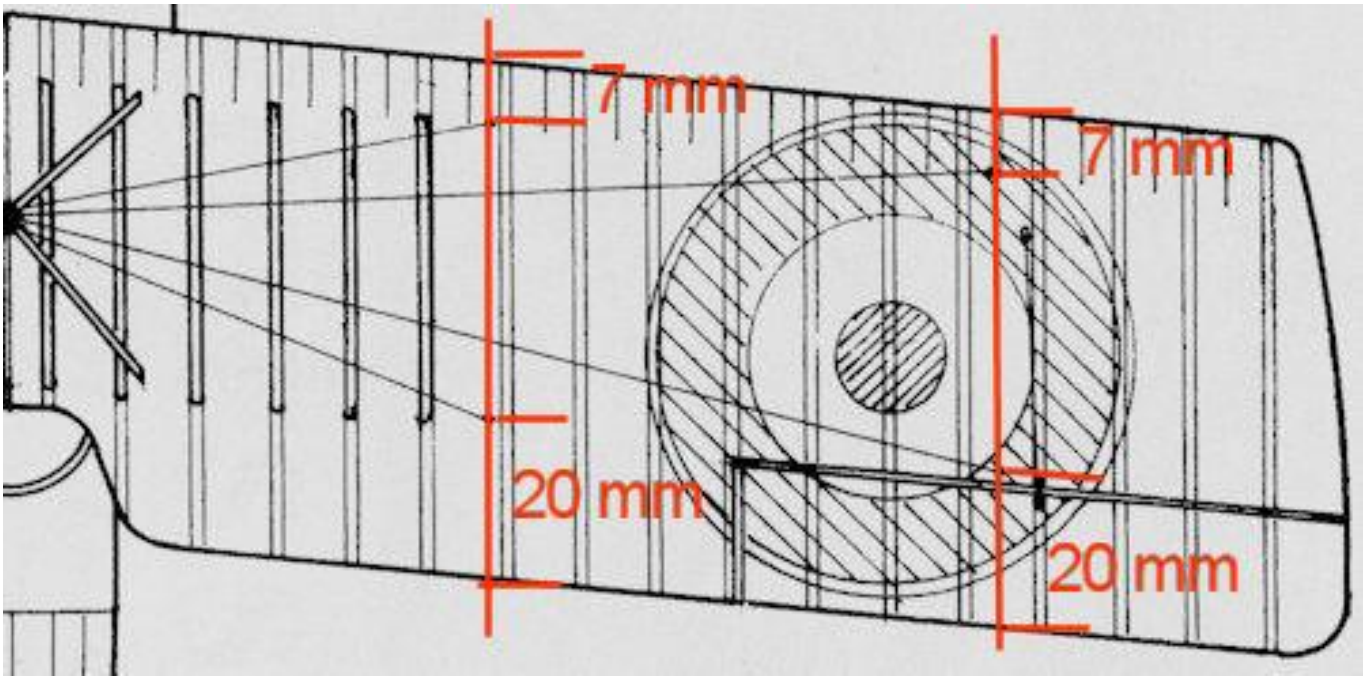


102. Wing - Flying and landing wires:

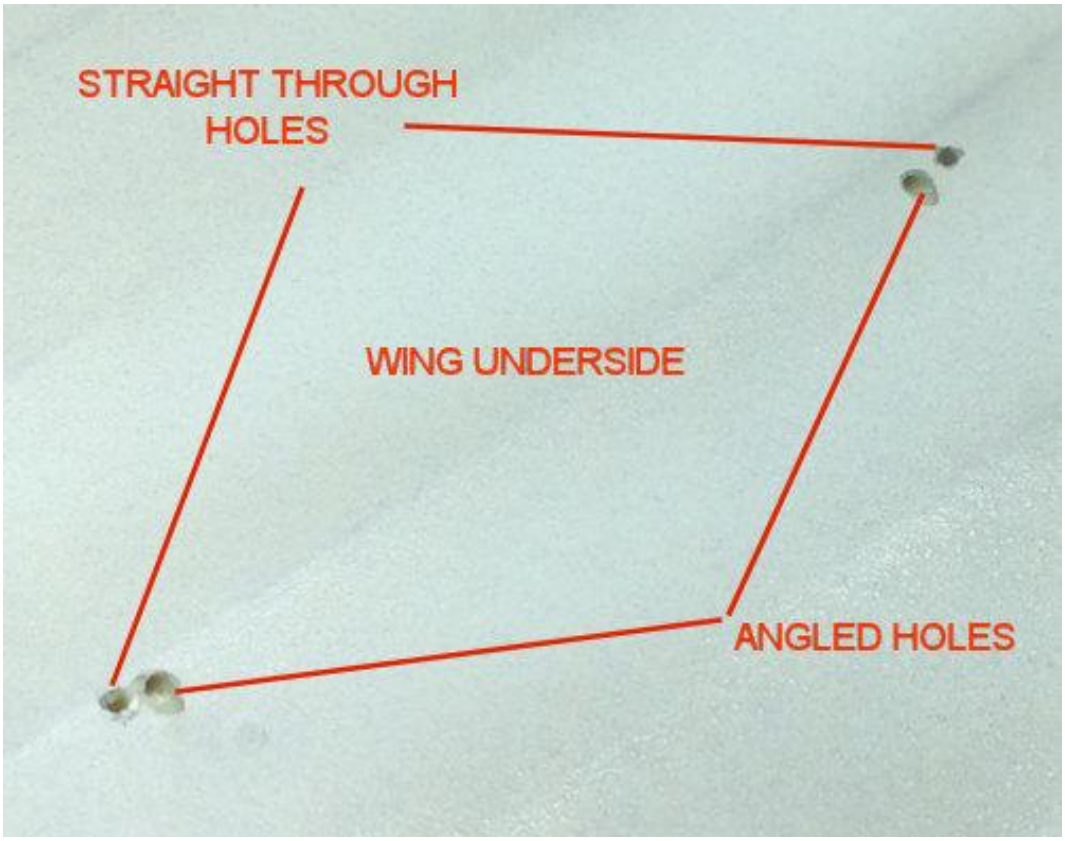
The wing was braced with four single landing wires at each side, all of which were attached to the over wing support pylon assembly. The wires were arranged as front and rear pairs and were attached inboard and outboard on the wing upper surface. The ends of each wire terminated in adjustable tensioners.

Wing landing wires (single wires)



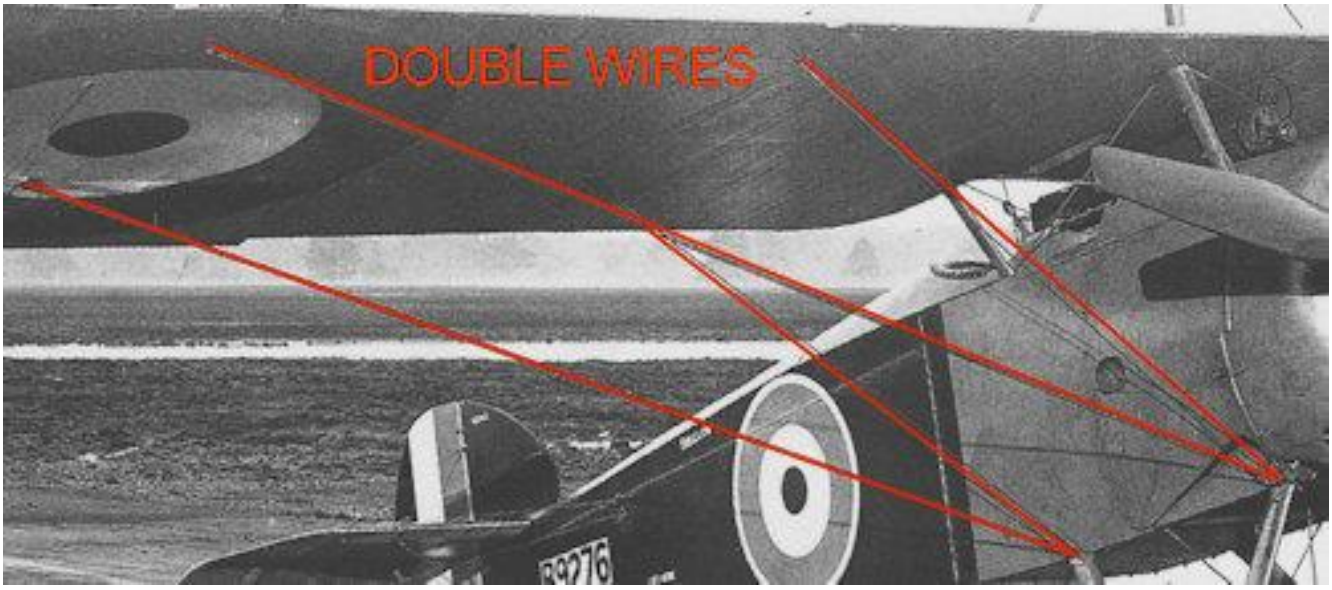


Drill holes of 0.5 mm diameter straight through the wing at the locations shown above.

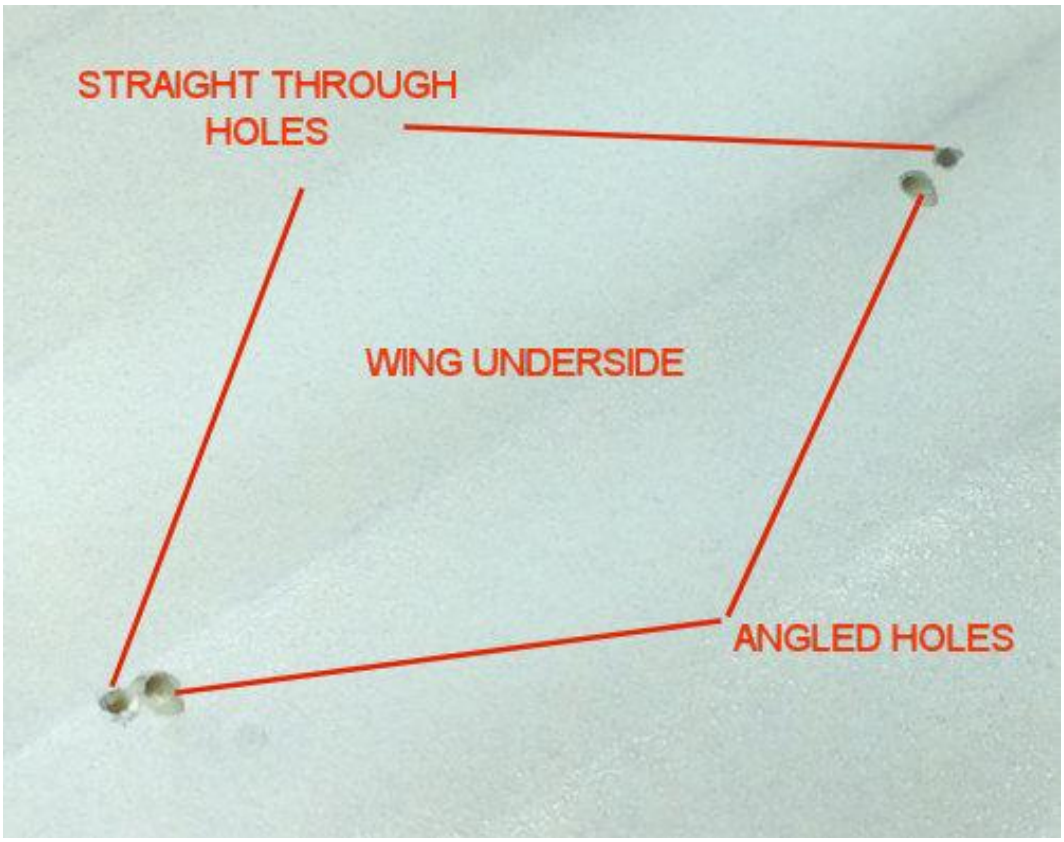


The wing was also braced with four pairs of ‘double’ flying wires at each side, all of which were attached between the underside of the wing and the front and rear undercarriage struts. The pairs of wires were attached to the wing under the locations of the single landing wires and the rear pairs were attached to the top of the rear undercarriage struts. Similarly the front pairs were attached to the top of the forward undercarriage struts. The ends of each wire terminated in adjustable tensioners.

Wing flying wires (double wires)

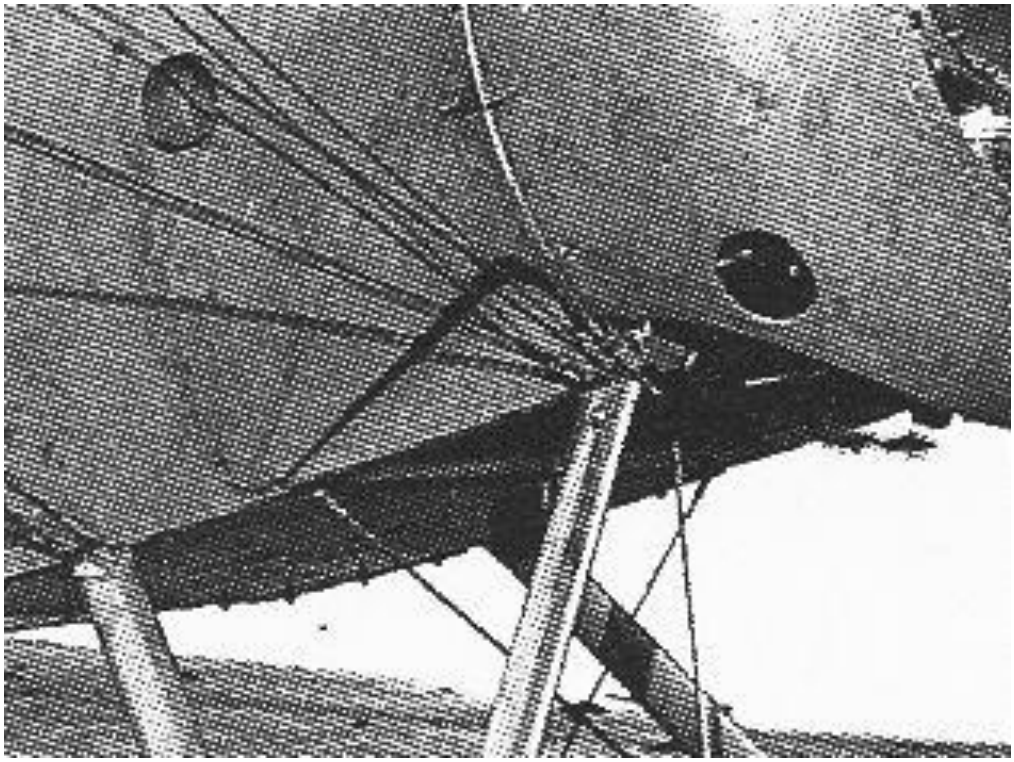


At an angle facing inboard towards the fuselage, drill holes of 0.5 mm diameter into, **but not through**, the underside of the wing. The holes should be 1.0 mm from the centre of the already drilled holes and towards the centre of the wing.



Drill two holes of 0.3 mm diameter, in a row horizontally across and through the tops of the four undercarriage struts, for attaching the flying wires, as can be seen in the photograph below.

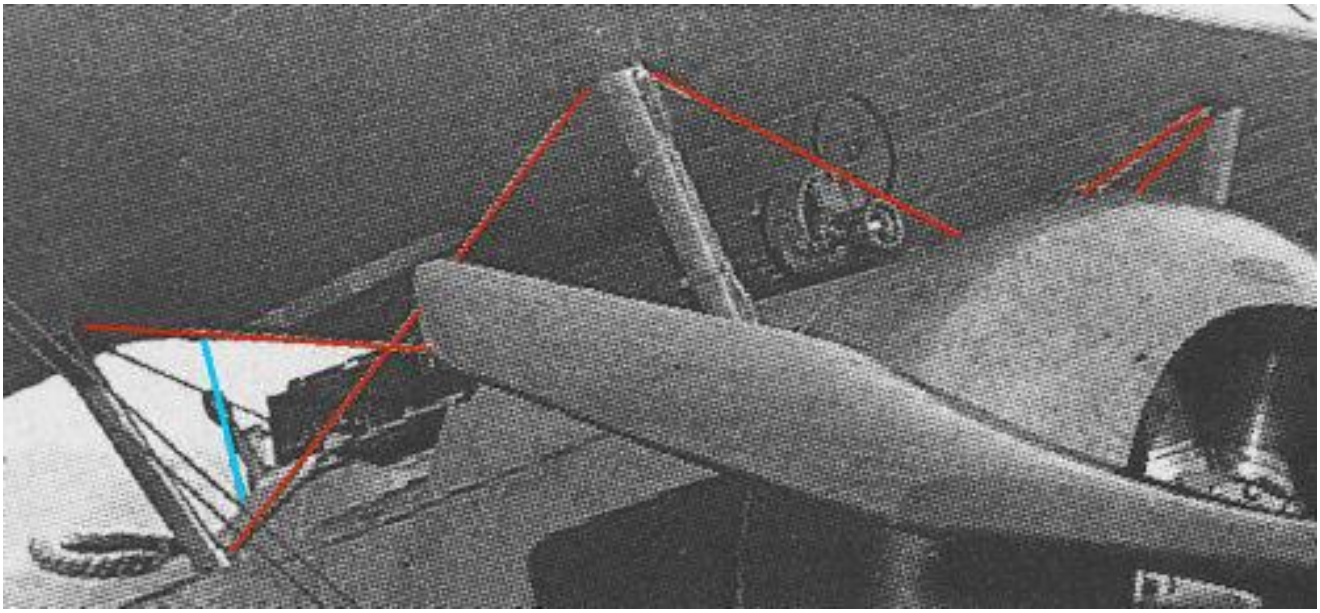
NOTE: *In the following photograph, there appears to be more then four wires attached to each undercarriage strut. This is due to wire 'shadows' being cast onto the fuselage.*



103. Cabane struts - cross bracing:

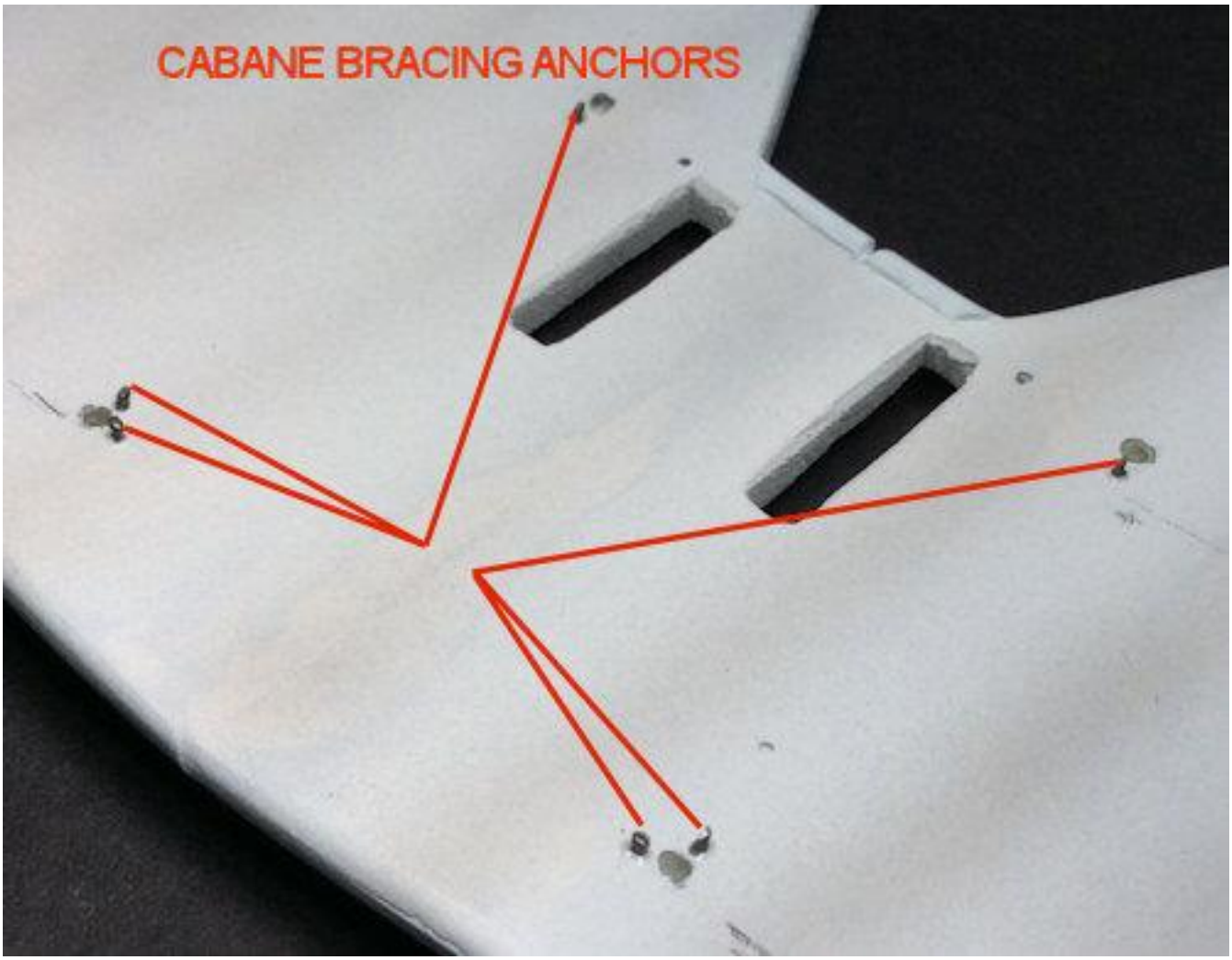
NOTE 1: *The anchor points for the fuselage should have already been fitted.*

NOTE 2: *One the following photograph, cross bracing is shown in RED (aileron control BLUE).*



Drill holes of 0.3 mm diameter into, **but not through**, the underside of the wing centre section, as shown below.

Insert a ‘Gaspatch 1:48th scale ‘anchor’ into each hole and secure using CA adhesive.



104. Tail unit:

NOTE: *All flight control cables had traditional turnbuckles fitted for adjusting the tension of the cables.*

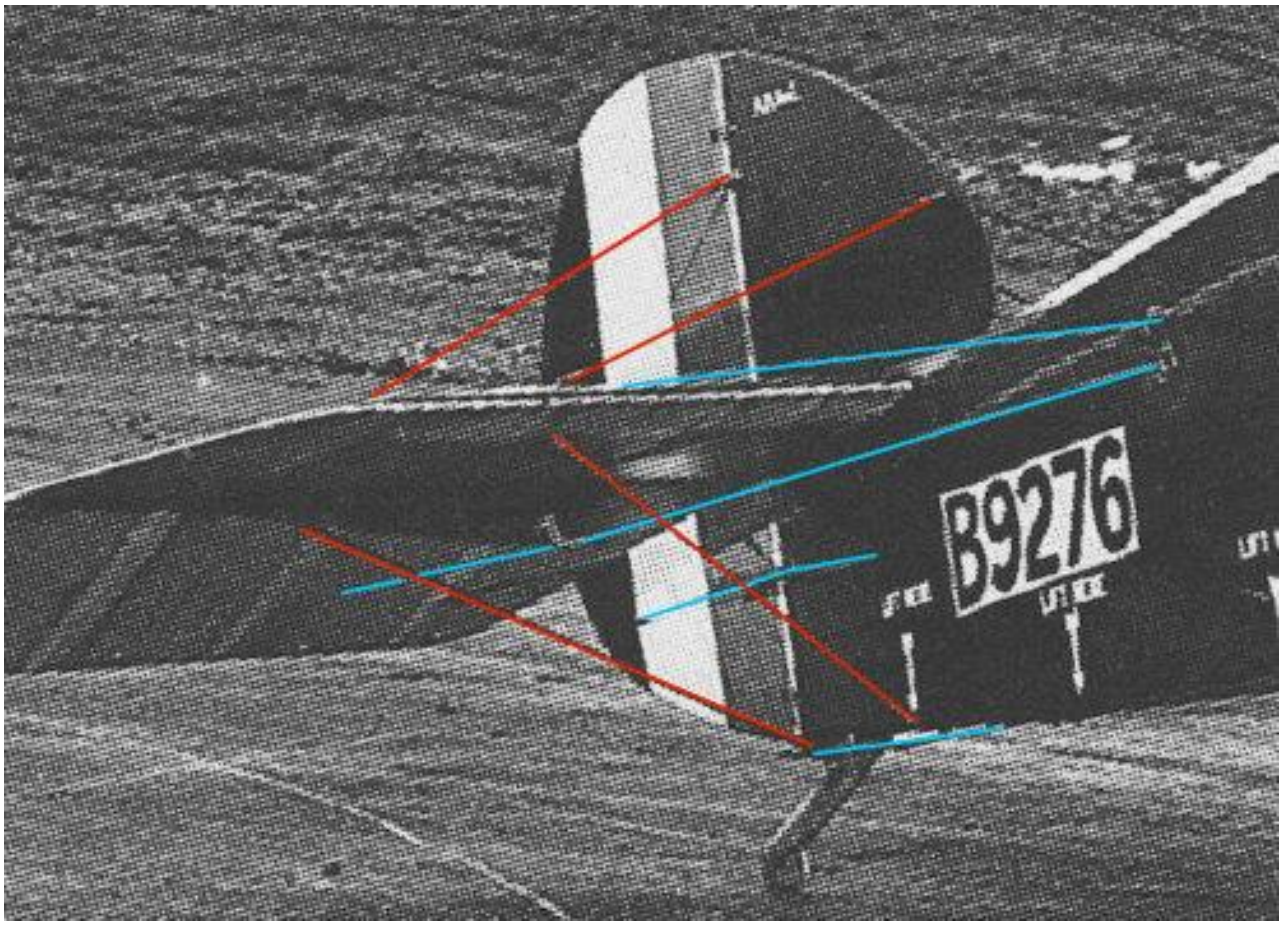
Elevator control cables exited as a pair from each side of the fuselage and were attached to the top and bottom control horns on each side of the elevator. Interconnecting cables were attached through the elevator to rear of the control horns.

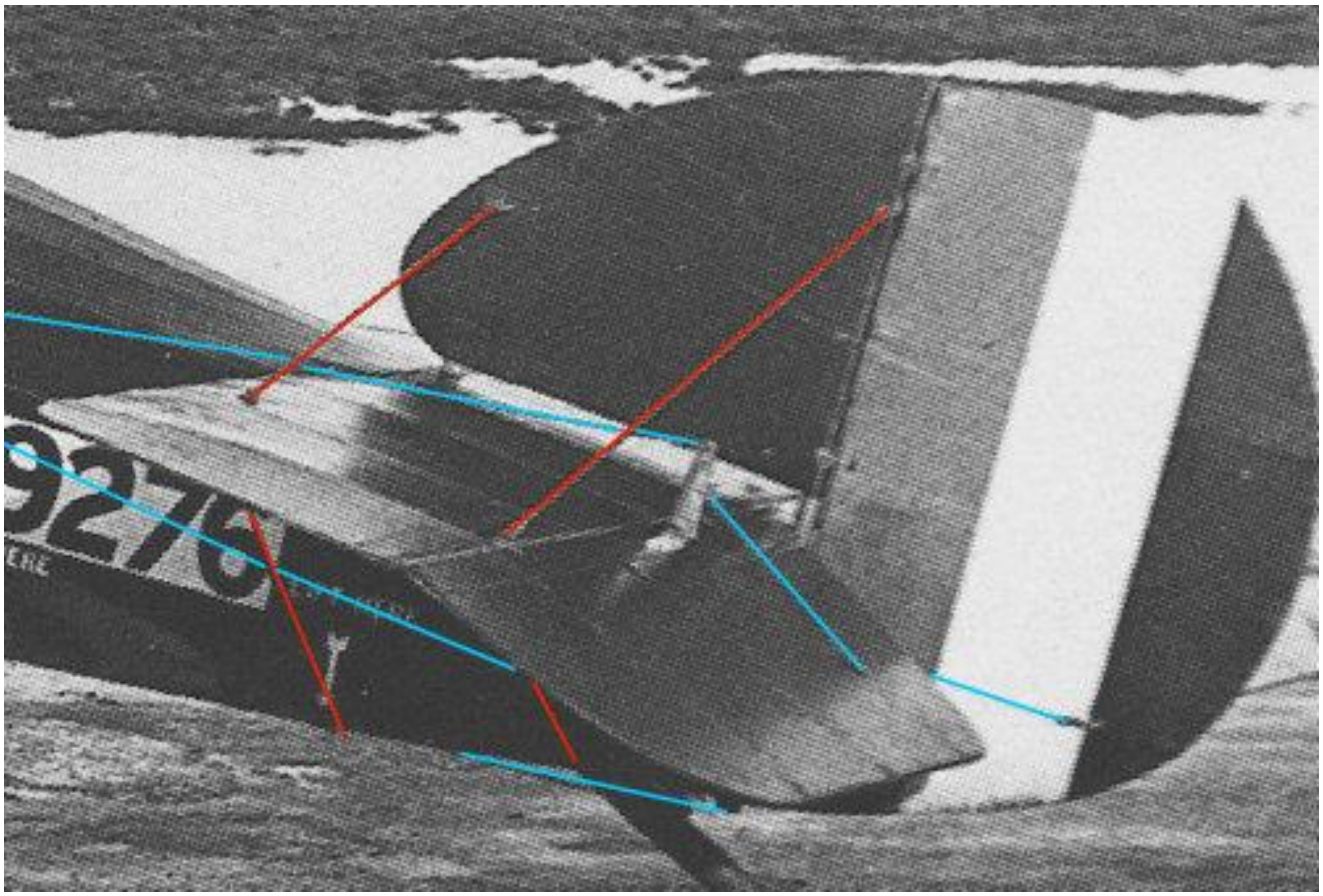
Rudder control cables excited from the fuselage and were attached to the rudder control horns on each side of the rudder. An interconnecting cable was attached, through the rudder to the rear of the control horns.

Tail skid control cables excited from under the rear of the fuselage and were attached to the control horns on each side of the tail skid.

Bracing wires were fitted as a pair, spanning from the front and rear of the fin and through the tail plane to the bottom of the fuselage.

NOTE: *One the following photographs, bracing is shown in RED, flight controls BLUE.*


B9276


9276

105. Elevator control cables:

NOTE: *The cable holes should have already been pre-drilled into the elevator control horns.*

Cut four discs of 2 mm diameter from 0.2 mm thick plastic card. These will represent the reinforcing patches sown onto the fuselage at the exit locations for the elevator control cables.

Drill a hole of approximately 0.4 mm diameter through the centre of each disc.

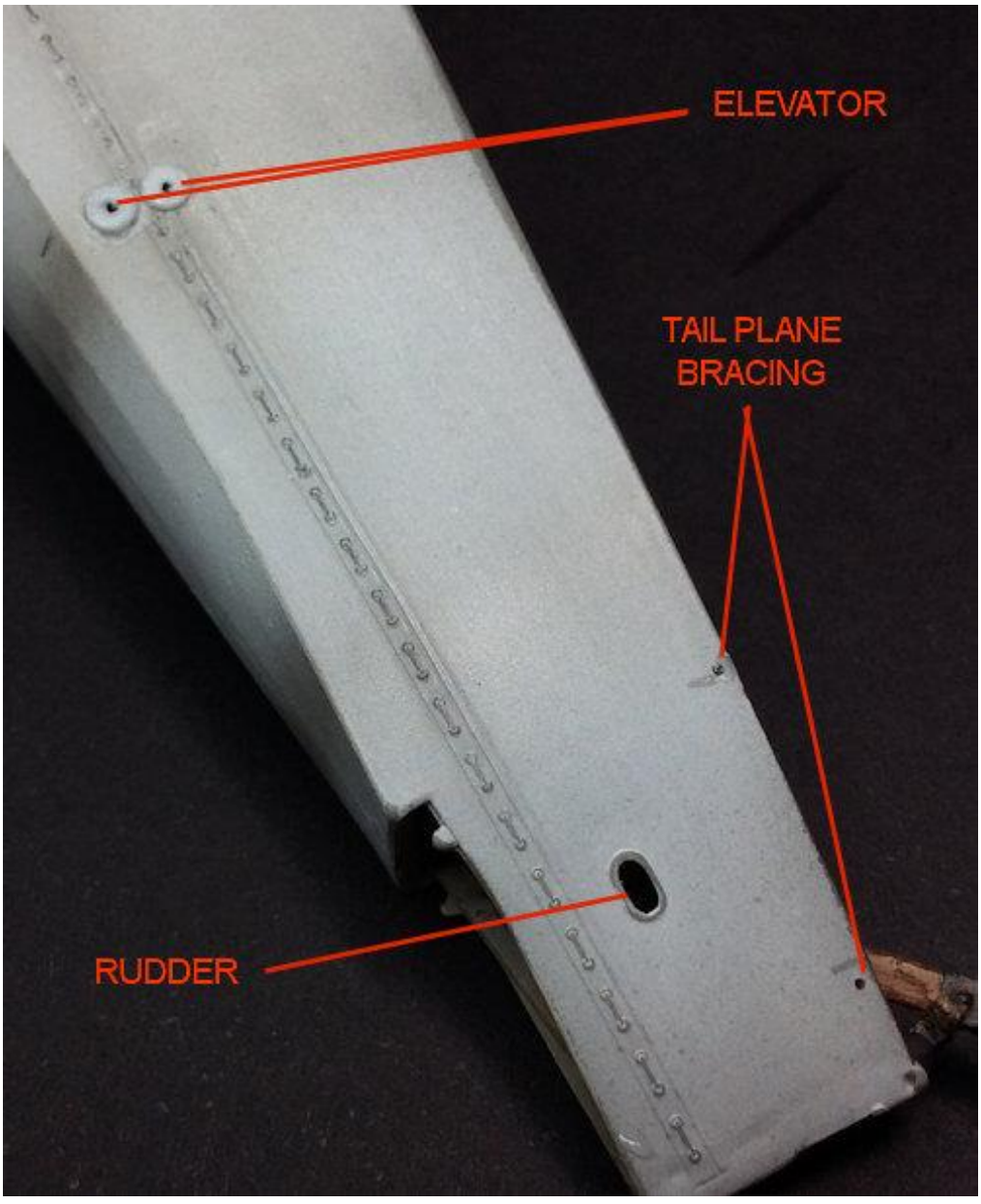
Drill a hole of 0.6 mm diameter through each side of the fuselage 45 mm from the rear of the fuselage and 2 mm down from the top edge of the fuselage.

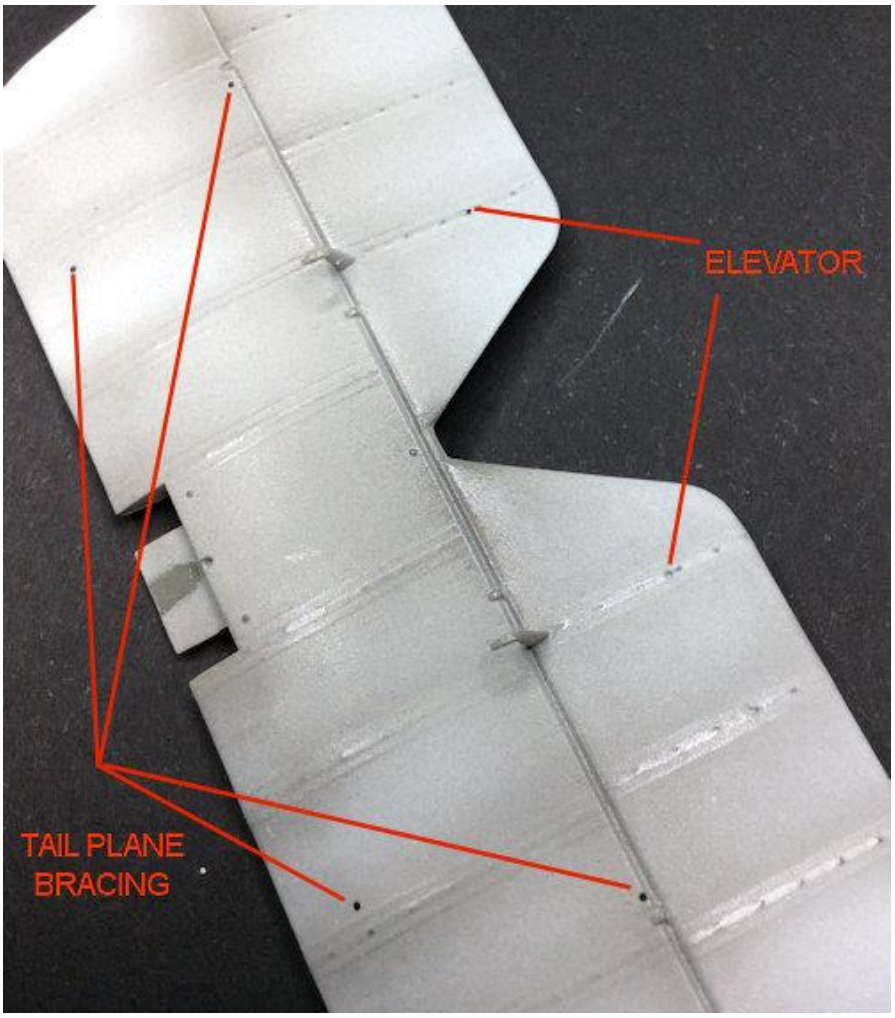
Drill a hole of 0.6 mm diameter through each side of the fuselage 2 point 5 mm vertically down from the previously drilled holes.

Cement a disc centrally over each of the pre-drilled holes in the fuselage.

Once the cement has fully set, drill through the holes in the disc and into the pre-drilled holes underneath, using a 0.4 mm diameter drill.

Drill a hole of 0.4 mm diameter through each side of the elevator, aligned with the control horns and 5 mm from the trailing edge.



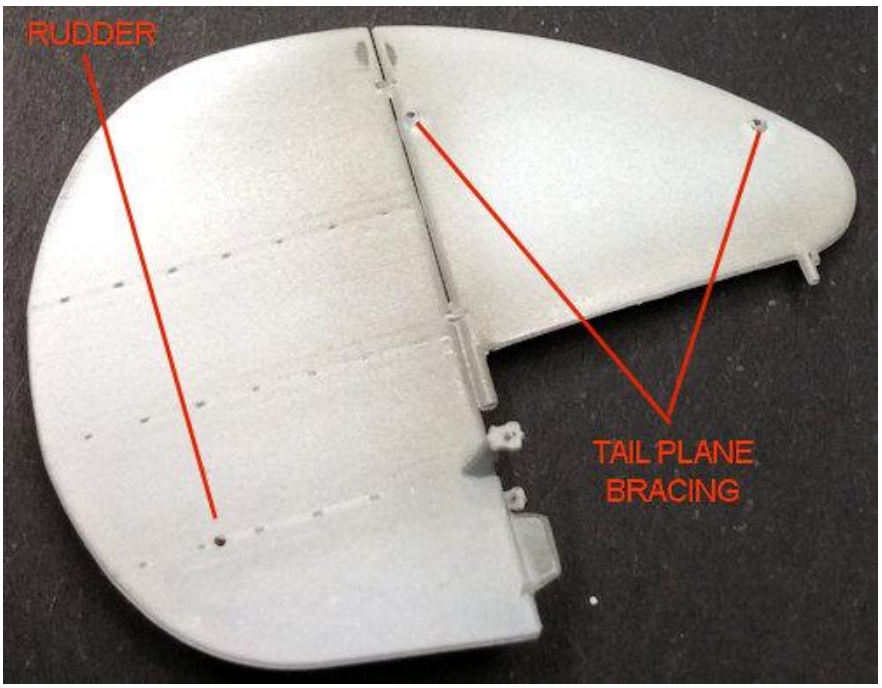


106. Rudder control cables:

NOTE 1: *The exit locations from fuselage are pre-moulded into the fuselage.*

NOTE 2: *The cable holes should have already been pre-drilled into the rudder control horns.*

Drill a hole of 0.4 mm diameter through the rudder, aligned with the control horns and 5 mm from the trailing edge.



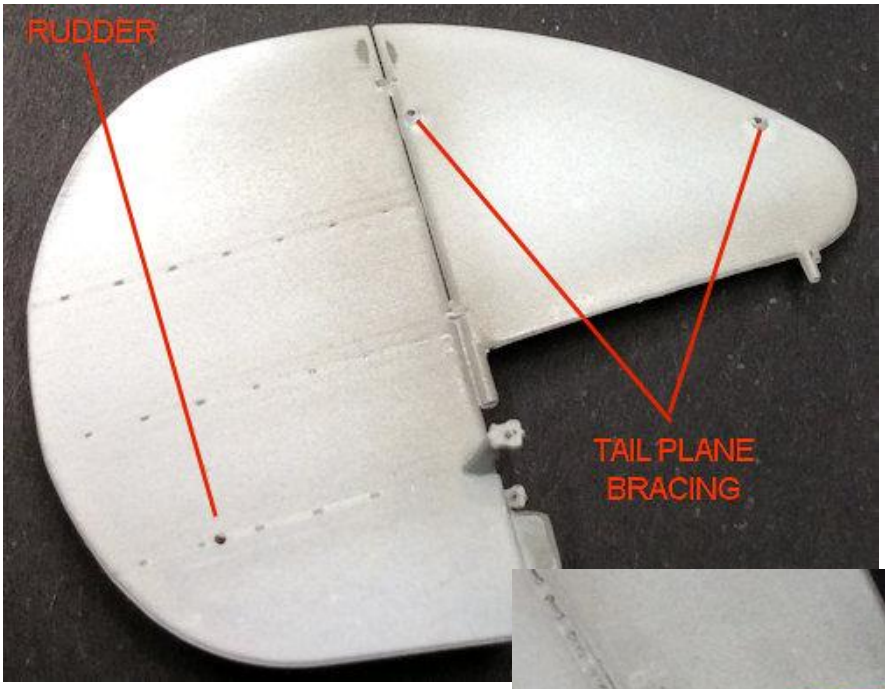
107. Bracing wires:

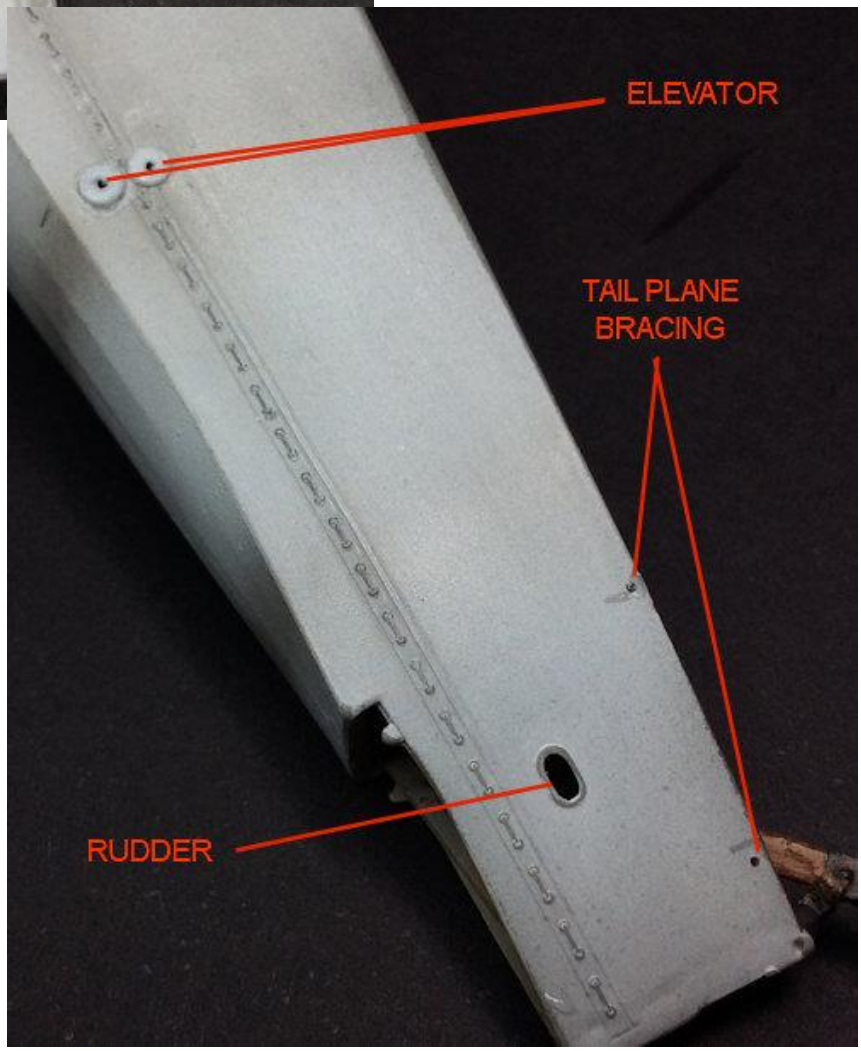
Cut away the pre-moulded ‘lugs’ at the two bracing wire locations at the top of the fin and the two on the bottom edge of the fuselage.

At the two locations, drill through the fin using a 0.4 mm diameter drill.

Drill 0.4 mm diameter holes through the tail plane at the pre-moulded locations (the rear holes are just inboard from the outer elevator hinges).

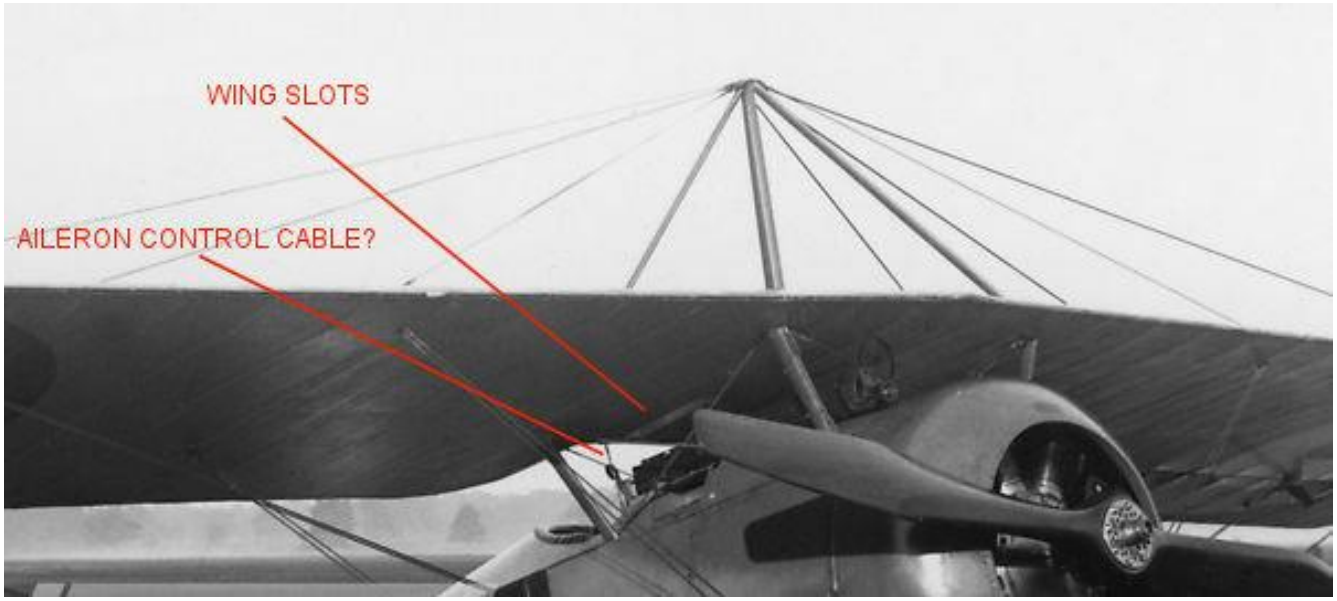
Drill 0.4 mm diameter holes through each side of the bottom edge of the fuselage 4 mm and 17 mm from the rear of the fuselage.

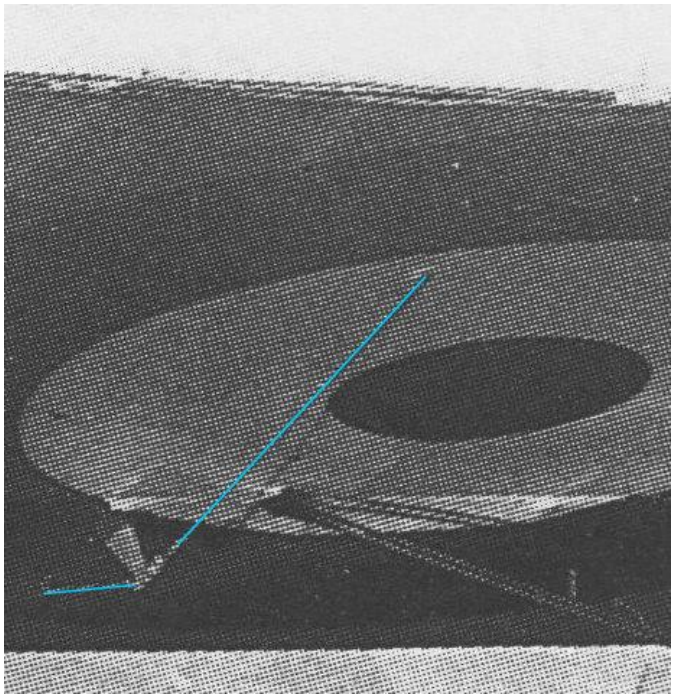




108. Aileron control:

The ailerons control cables will be modelled in to parts. Cables from the cockpit and up into the underside of the wing and cables from the top and bottom surfaces of the wing to the aileron control horns. An interconnecting cable was attached, through the ailerons to the rear of the control horns.



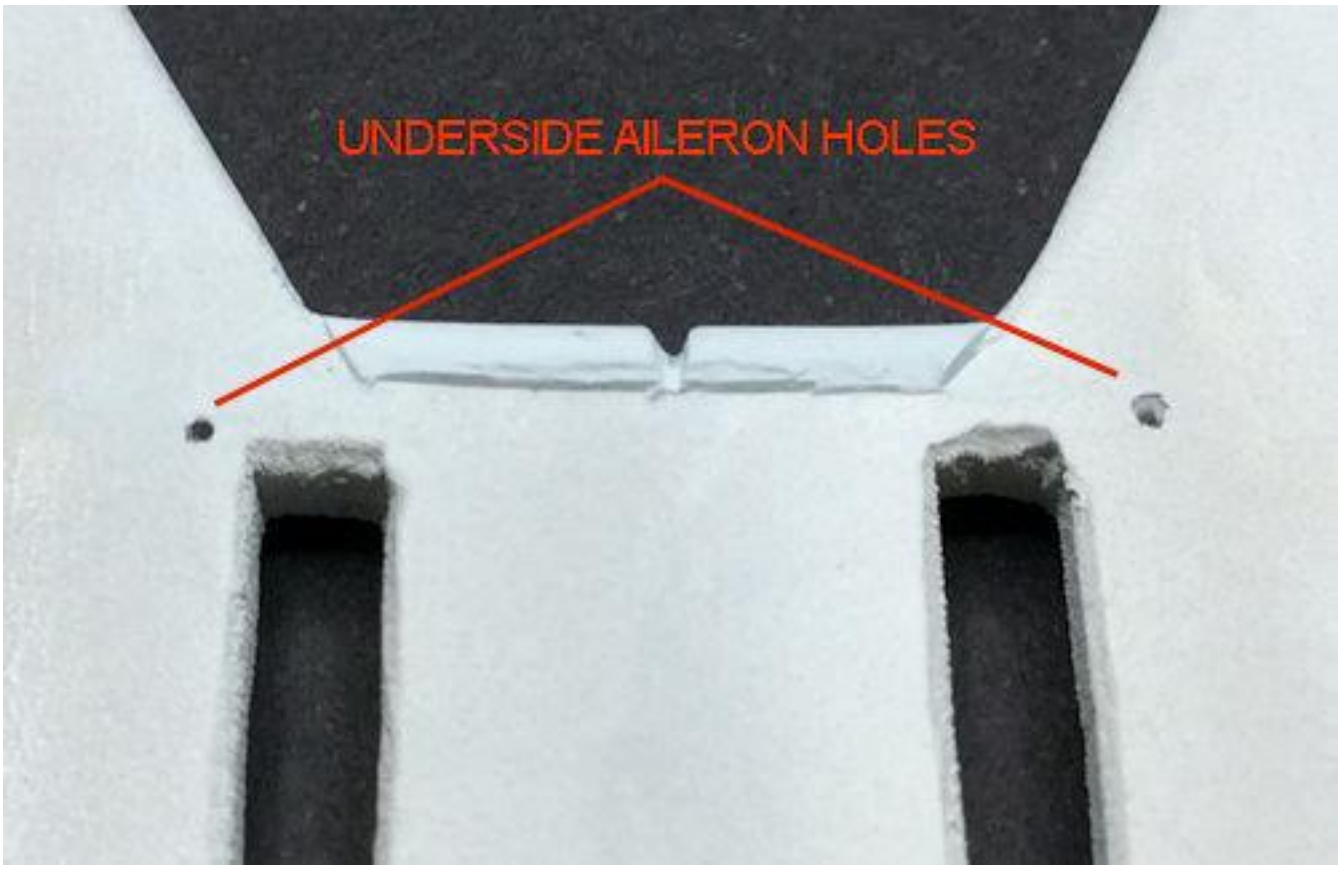


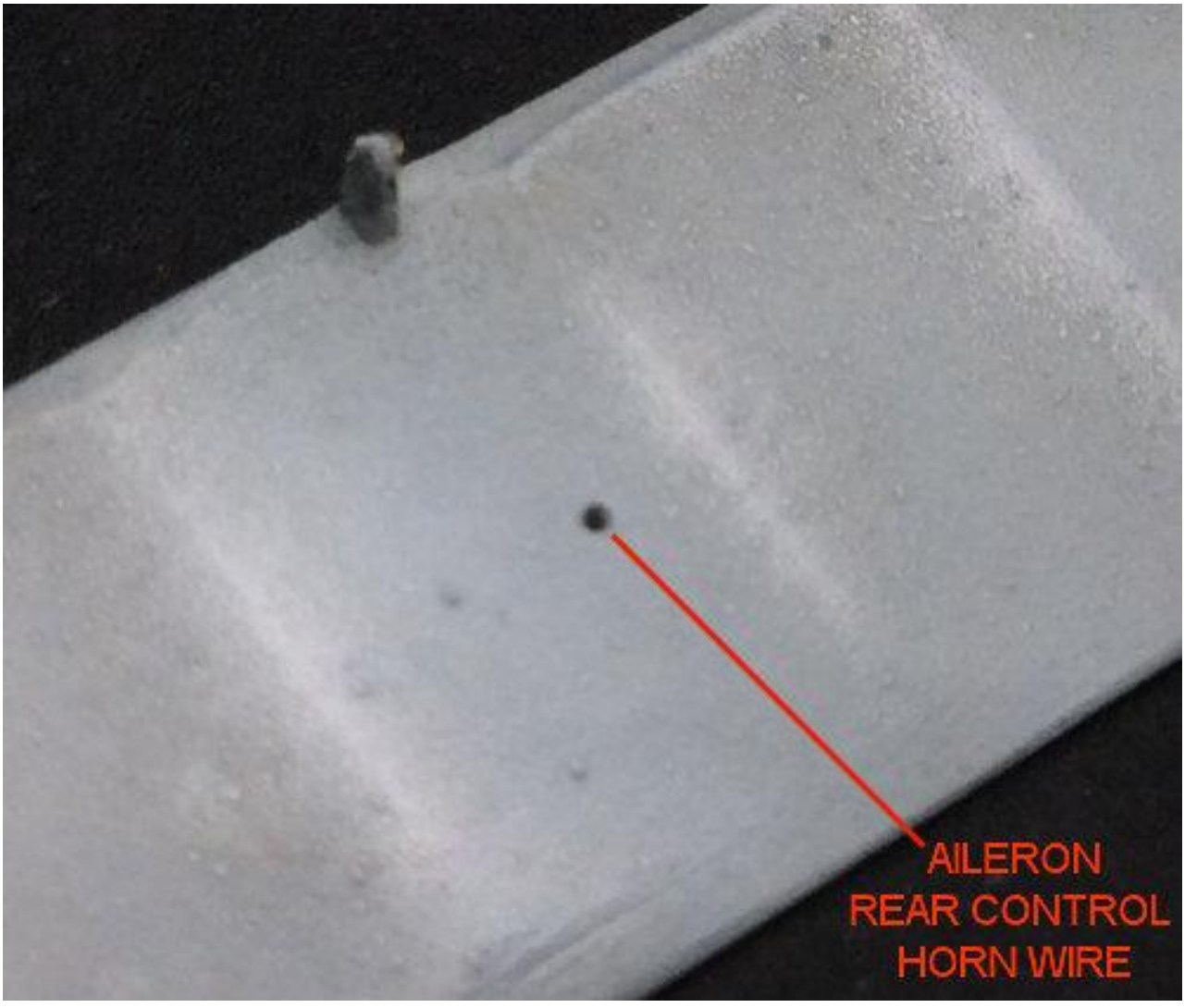
NOTE: *The cable holes should have already been pre-drilled into the aileron control horns.*

Drill a hole of 0.4 mm diameter through the ailerons, aligned with the control horns and midway between the control horns and the aileron trailing edges.

Drill two holes of 0.4 mm diameter into, **but not through**, the underside of the wing. The holes should be drilled 5 mm inboard from the two rear holes already pre-drilled for the location of the rear struts of the over wing support pylon.

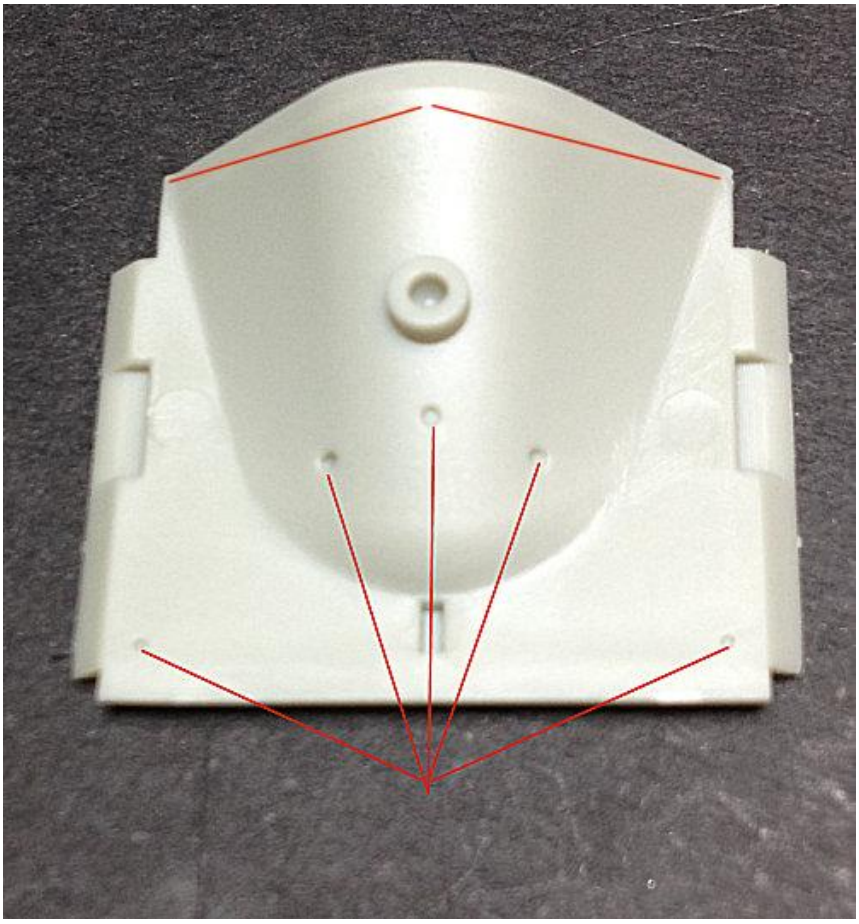
Drill two holes of 0.4 mm diameter through the wing, aligned with the aileron control horns and 13 mm from the wing leading edge.

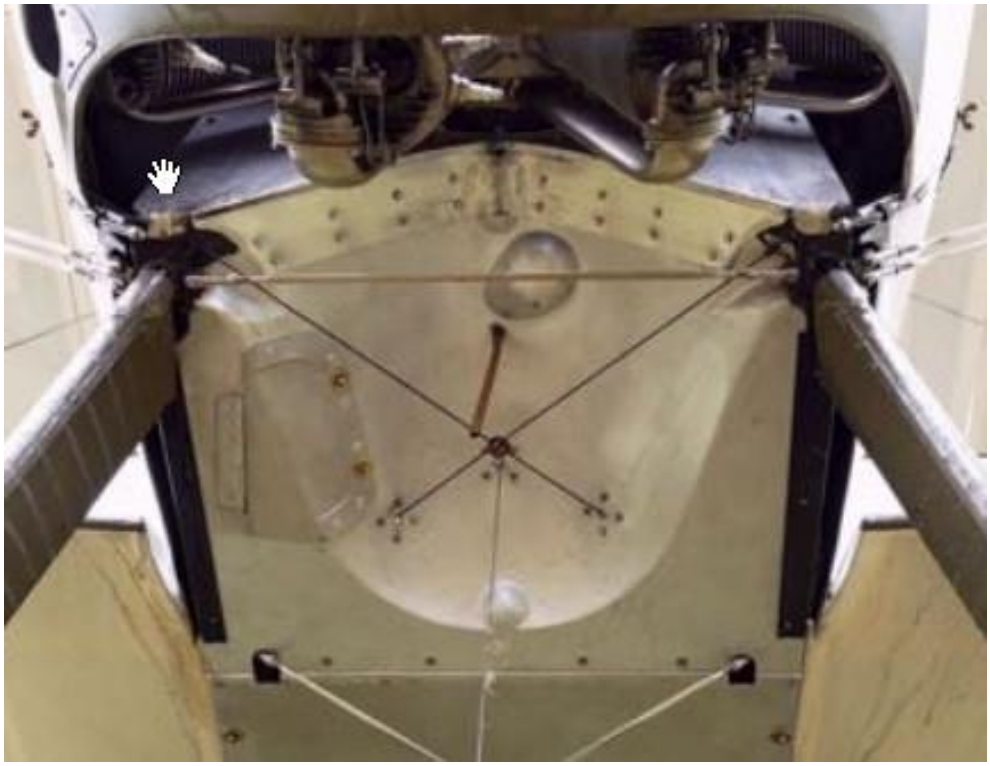

UNDERSIDE AILERON HOLES


AILERON
REAR CONTROL
HORN WIRE

109. Under shield cross bracing:

The holes for the external cross bracing of the under shield should have already been drilled during building of the fuselage internal detail.





110. **Decals:**

‘Aviattic’ decals - templates:

NOTE: *The decals used for the underside CDL and upper surface PC12 are the linen effect sheets from ‘Aviattic’ - CDL (32094) and PC12 Light (32092).*

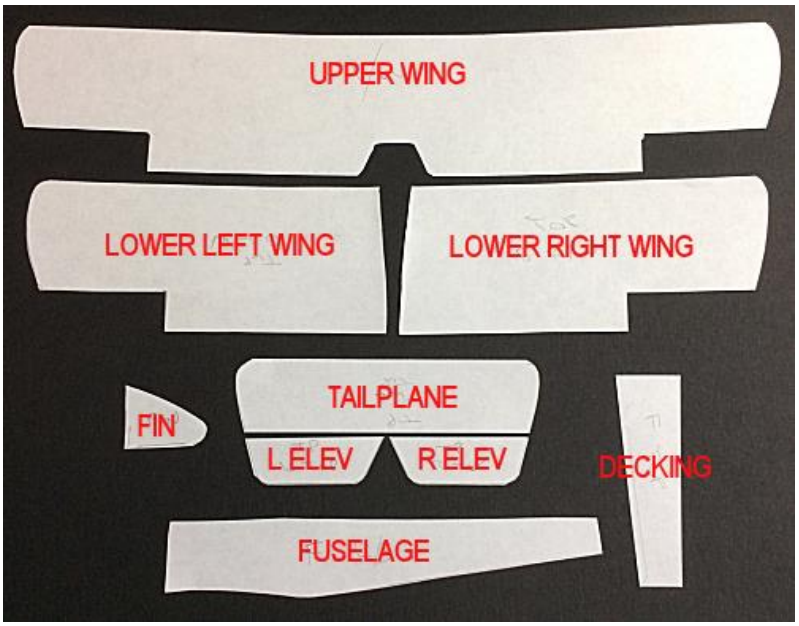
The ‘Aviattic’ PC12 and CDL linen decals are not ‘cookie cut’ (pre-shaped), but are supplied as A4 sheets. Therefore care is required to ensure the decals are cut out accurately to fit the various areas of the model.

Using the wing, two ailerons, tailplane, elevator and fin as guides, trace the outlines of each onto paper, ensuring to leave a slight overlap and that each paper template matches the relevant surface.

Mark each template so you can recognise which template fits on which surface.

The fuselage sides, top and underside can’t easily be ‘templated’ in the same way, so by trial and error cutting you can achieve the correctly shaped templates.

Below is an example of paper templates for a Sopwith ‘Pup’.



NOTE: *For under side decals (e.g. CDL) outline the shape on the backing paper side of the decal sheet, otherwise you will end up with a ‘mirrored ‘ template. Top and side surface deals can be outlined onto the decal side of the sheets.*

Using the paper templates, **‘lightly’** outline them onto the relevant ’Aviattic’ decal sheet. Make sure you don’t apply too much pressure when marking out the decals, as even a pencil can tear through the decal surface if too much pressure is applied.

NOTE 1: *Due to the width of the wing, it may be easier to apply the decal as two cut decal halves.*

NOTE 2: *The wing upper surface had wood strips attached at wither side of the centre section. Some modellers have taken this literally and painted these strips to represent wood. However, photographs of this area would imply that, like the wing itself, these strips would have been covered by the PC12 linen.*

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

'Aviattic' decal application:

The 'Aviattic' linen decals are unlike normal screen printed decals, in that when being applied, have the ability to be handled with slightly less care than normal and they have the ability to stretch slightly, which standard decals do not. That said, if you handle them too roughly, damage can occur. *Refer to Part 4 of this build log for general decal application information*.

NOTE: *Apply the upper surface (PC12) decals first - edge overlap of the underside CDL decals over the upper surface PC12 decals is less obvious than if the decals are applied the other way around.*

The areas of the model to have decals was first airbrushed with a sealing coat - use either 'Alclad' Clear Coat Gloss (ALC-310) lacquer, 'Alclad' Aqua Gloss (ALC-600), 'Tamiya' Clear (X22) with added 'Mr. Colour' levelling thinners or 'Johnson' Pledge Floor Care finish (similar to 'Future'), all of which will give a gloss surface for applying the decals.

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

Wet the model surface with clean, warm water.

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

Carefully lift the decal on its backing sheet from the water. Make sure the decal does not fold over on itself, as it will be difficult to separate a fold once out of the water.

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

Using a wide, soft brush, soft tissue paper or cotton buds, start to smooth out the decal at one end, removing any water from underneath and smoothing the decal onto the surface. Continue this along the length of the decal, taking care not to grip the decal surfaces with your fingers, as this will cause ripples in the decal. I use lint free gloves to handle wet transfers.

Once the decal is smoothed down onto the model surface, apply pressure along the decal with soft and dry tissue paper. This will expel any remaining water and press the decal on to the model surface.

Check over the decal to make sure there are no tears or folds, which need to be rectified before the decal sets.

Use a needle to carefully prick through the decal on any areas where air is trapped and can't easily be removed, such as wing strut location holes, aileron pulley apertures etc. With a sharp scalpel blade, slice the decals in corners and around pins etc to allow the decal to wrap around.

Once the decals have set and if necessary, apply 'MicroSol' or 'Tamiya' X20A thinners around any lifted edges of the decals. The thinners can also be used sparingly to 'seat down' areas of the decal that show evidence of 'silvering' (trapped air under the decal).

Allow the decals to fully set.

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

Once the upper surface decals have fully set and dried, the underside CDL decals can be applied using the same method.

The decals will cover any pre-drilled holes etc on the model. To 'open up' these locations, carefully prick through the decal with a needle the apply 'sparingly' 'Tamiya' X20 thinners, which should soften the decal and allow it to 'blend' into the area.

Using a sharp scalpel blade or fine sander, carefully remove any excess decal edges. Any areas of exposed primer can be weathered in to blend with the decal colour, using for example 'Tamiya' weather master sets.

'Standard' decal application:
Before finally sealing the decal areas and applying any weathering effects, it's best to apply any other decals, such as national markings, serial numbers etc, (e.g. those supplied in the donor kit).

NOTE 1: *For this model the following decals from the donor 'Wingnut Wings' kit will be used - rudder stripes (modified), 'Lift Here' markers and the white 'Palmer Cord' tyre markings. The upper wing roundels and lower wing roundels are too small. Therefore roundels were created by cutting and re-assembling spare decals from other 'Wingnut Wings' kits (Sopwith Pup RNAS and SE5a). The decals were also used for the fuselage roundels and to overlay the blue on the rudder markings, which is too dark on the kit decals.*

NOTE 2: *The serial number will created using 'Xtradecal' white stripes (XPS2) and the black number/letters (X72157), to represent B9276.*

NOTE 3: *The fin marking of 'AMAºE' and the name 'Swallow' with be created using 'Xtradecal' white number/letters (X72158).*

Apply the two fuselage roundels. Note that the left side roundel partially cover the pilots foot step. Once dry, carefully cut away the roundel inside the foot step using a straight scalpel blade. The right side roundel covers the fuselage stitch line, which is raised and will stop the decal from fully conforming to the fuselage Therefore once the decal is applied carefully slice the decal along both sides of the stitching with a shielded razor blade then apply 'MicroSol' solution, which will soften and conform the decal fully.

Apply three 'Lift Here' arrowed decals to each side at the rear, lower edge of the fuselage.

NOTE: *To create the serial number blocks requires 'Xtradecal' decals to be applied to the 'Xtradecal' white strips. This means the white serial number blocks need to be applied to the model first then sealed before the black numbers are applied. Otherwise*

Cut two blocks, 17 mm long, from the 4 mm wide white strip on the 'Xtradecal' white stripes (XPS2) sheet.

Apply the serial number blocks to the fuselage sides, above the centre 'Lift Here' marking.

Airbrush the decal areas with either 'Alclad' Clear Coat Gloss (ALC-310) lacquer, 'Alclad' Aqua Gloss (ALC-600), 'Tamiya' Clear (X22) with added 'Mr. Colour' levelling thinners or 'Johnson' Pledge Floor Care finish (similar to 'Future'), all of which will give a gloss surface for applying further decals.

NOTE: *The letters and numbers on the 'Xtradecal' sheets do not have individual carrier film, but instead the whole sheet is covered in carrier film. Therefore each decal required needs to be cut from the sheet with the minimum of carrier film around the decal.*

Individually cut the required numbers and letter from the 'Xtradecal' black number/letters (X72157) to create the serial number 'B9276'.

Apply the serial number letter and numbers onto the previously applied and sealed white blocks.

Individually cut the required letters from the 'Xtradecal' white number/letters (X72158) to create the 'AMA.E' marking on the right side only of the fin.

Individually cut the required letters from the 'Xtradecal' white number/letters (X72158) to create the 'SWALLOW' name marking on the upper edge, to the rear of the roundel on each side of the fuselage.

Once the decals have set and if necessary, sparingly apply 'MicroSol' over the decals.

Apply the kit supplied rudder markings to each side of the rudder. Don't exert too much pressure when doing this or the rudder may separate from the fin. The blue strips were overlaid with the blue strips cut from the 'Pup' and 'SE5a' rudder decals

Once the decals have set and if necessary, sparingly apply 'MicroSol' over the decals.

NOTE: *The wing of the Sopwith 'Swallow' had a wider chord than the Sopwith 'Camel' and the roundels on both sides of the wing were accordingly much larger, spanning the complete chord of the wing from leading to trailing edges. The roundel decals supplied in the 'Camel' donor kit are too small to be used. There are various options:*

1. Use the decals supplied in donor kit, although being small they are not to scale.

2. Use commercially available 'masks' and airbrush the roundels. However as the various masks will need to be applied and lifted several times, there is the risk of lifting the previously applied 'Aviattic' linen effect decals.

3. If available use commercially available decals, but in reality these would probably have to made to order, given the odd size of the roundels required.

4. Modify existing 'spare' decals to may have to create the roundels. ***This is the method I chose****, but it involves complicated cutting and re-assembly of the decals, which is too much to detail in this build log. As an example the upper wing roundels were made from four separately cut and modified pieces od decal from the 'Wingnut Wings' kits Sopwith Pup RNAS (32016) and the SE5a (32003).*

Example of the cut wing upper rondel.

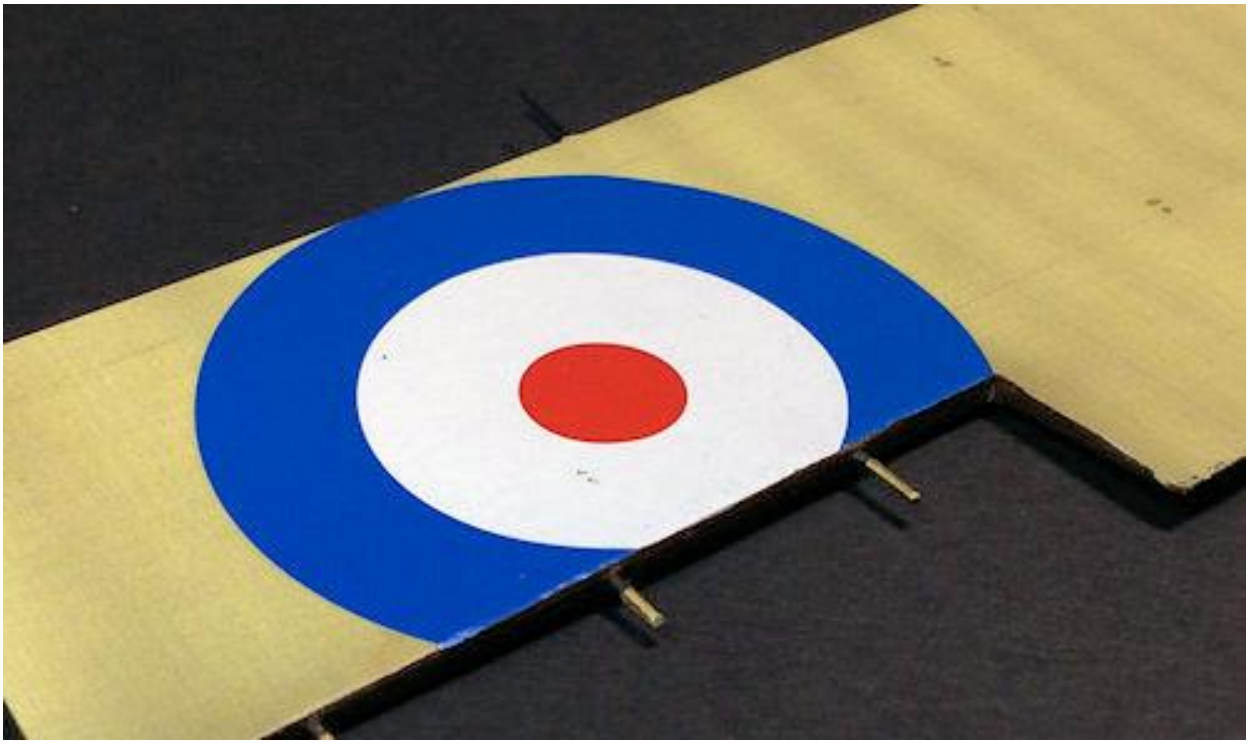
Apply the decals for the wing upper roundels. These should have a thin white border around the outer edge.

Apply the aileron upper roundel parts to the aileron. Make sure the decal aligns with the wing decal. The ailerons can be temporarily located onto their mounting pins in the wing to aid in decal alignment.

Apply the decals for the wing underside roundels. These have no thin white border around the outer edge.

Apply the underside aileron roundel parts to the aileron. Make sure the decal aligns with the wing decal. The ailerons can be temporarily located onto their mounting pins in the wing to aid in decal alignment.

Once the decals have set and if necessary, sparingly apply ’MicroSol’ over the decals.



Once all of the decals have been applied, check to ensure all openings and pre-drilled holes are not covered by decals. If necessary, holes can be ‘pricked through’ using a needle. Openings, such as the two slots in the centre section of the wing and the aileron pulley inspection recess can be ‘cross cut’ with a scalpel blade then treated sparingly with ‘Tamiya’ X20A thinners to shrink back any lifted edges on the ‘Aviattic’ CDL or PC12 decals.

111. Details:

Brush paint the wing pitot probes and the two pipes on the right front cabane strut with ‘Tamiya’ rubber black (XF85).

Brush paint the bottom of the aileron inspection window on the wing with ‘Tamiya’ deck tan (XF55).

Brush paint the rudder post with ‘Mr. Colour’ stainless steel (213).

Brush paint the inner surrounds of the aileron control inspection window in the wing, the trailing edges of the wing aileron cut-outs and inside the two wing slots, using ‘DecoArt’ burnt umber water based oil paint.

Brush paint the head padding on the trailing edge of the wing centre section with ‘Humbrol’ leather (62) highlighted with ‘Tamiya’ hull red (XF9).

112. Pre-weathering sealing:

NOTE: *Prevent overspray onto the fitted windscreen by covering it with ‘Humbrol’ Maskol or similar.*

Airbrush the decal areas with a sealing coat (e.g. ‘Alclad’ light sheen - ALC-311) lacquer or similar sealer. This will not only reduce the sheen of the decals, it will also seal and protect the decals and provide a good surface for applying further effects for weathering.

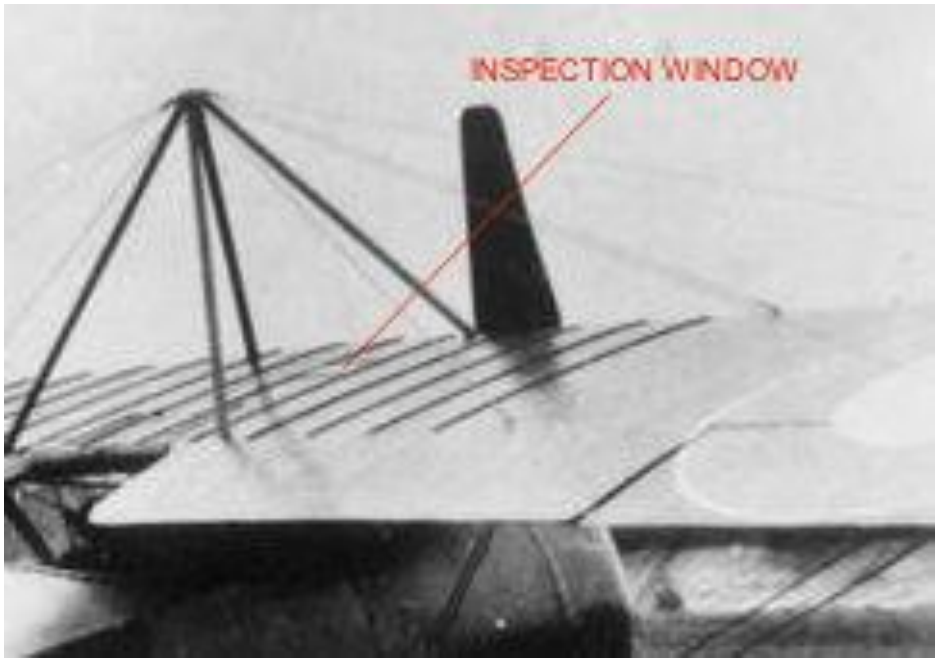
113. Detail (cont'd):

Brush paint the outer frame of the inspection window with 'Mr. Colour' Iron (219).

Remove the 'Humbrol' Maskol' or masking tape from the inspection window. Use a wood tooth pick or similar to aid in removal and to prevent surface damage to the window.

Brush paint the pulley and pulley mounting with 'AK Interactive' Kerosene (AK 2039).

Secure the inspection window into its location in the wing using small drops of PVA adhesive. Make sure the window lays as flush as possible to the wing surface.



114. Weathering decal surfaces:

NOTE: *Refer to Part 3 of this build log for information for weathering with 'Flory' clay washes.*

The forward fuselage area should already have been suitably weathered. Therefore at this stage and before further model assembly, weathering effects can be applied (refer to Part 3 of this build log) to the fuselage, wing and tail unit.

NOTE: *As this aircraft was only a prototype and saw very little operational testing, weathering should be limited to standard flying and maintenance grime.*

Apply 'Flory' clay wash (Grime) over both wing surfaces, tail plane/elevator, fin/rudder, ailerons, wheels and the fuselage to the rear of the cockpit.

Clay wash during application - some areas dry, others still wet

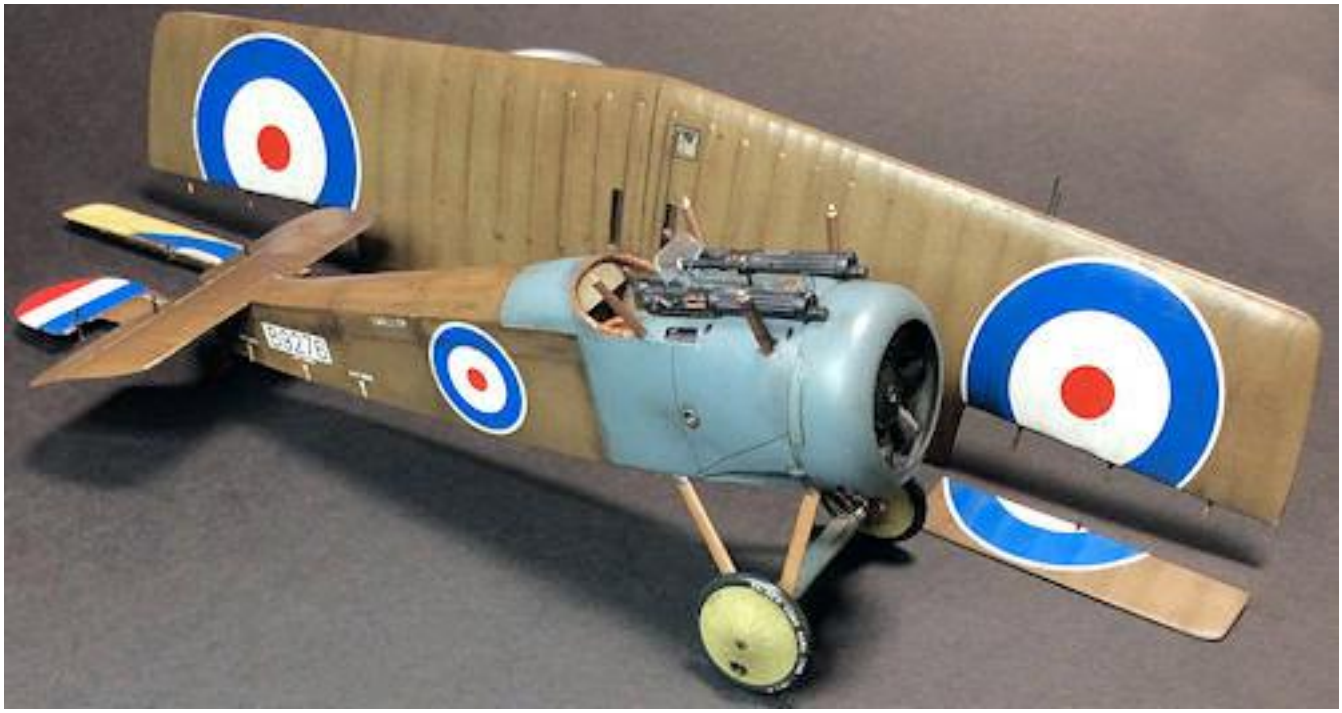
NOTE: *When a sealing coat is applied over areas treated with clay wash weathering, the intensity of the applied wash tends to darken. This should be considered when removing the clay wash, otherwise the final effect may appear too dark.*

Once dry, remove most of the wash to leave a slightly 'used' look for a prototype aircraft, not a heavily weathered operational aircraft.

If you want to add a different shade of wash over the first (to add variation etc), make sure you seal in the initially applied wash. This prevents it from being reactivated by subsequent applications of wash.

Airbrush the treated areas with a 'light' sealing coat (e.g. 'Alclad' light sheen - ALC-311) lacquer or similar sealer. This will seal in the applied clay wash weathering.

Remove any windscreen masking.




B9276

115. Initial rigging:

NOTE: *Refer to Part 5 of this build log for general rigging information.*

Before continuing with the final assembly of the model, it's best and easier to initially rig the various flight controls and cross bracing.

First, make sure all model parts that have rigging locations are clear of primer, paint and decal covering. If necessary, carefully clear with appropriate sized drills etc.

Pre-rigging will allow the lines to be attached to those model parts before they are finally fitted to the model. This prevents parts from being damaged if they are rigged after they are fitted.

The pre-rigging should be carried out on the following areas:

Control lines from the rudder control horns.

Control lines from the elevator control horns.

Control lines from the tail skid.

Control lines for the ailerons.

Bracing of the fuselage under shield and undercarriage.

Cross bracing between the fuselage cabane struts.

The following rigging will be finally attached to the model after it has been finally assembled:

Control lines from the rudder, elevator, tail skid and ailerons

Bracing between the fin, tail plane and fuselage.

Cross bracing between the fuselage cabane struts.

Wing landing lines.

Wing flying lines.

Rigging - Bracing, flying and landing wires:

For rigging bracing, flying and landing wires, using 0.12 mm diameter 'Steelon' mono-filament. The line is passed through a short length of the 'Albion Alloy's' 0.5 mm brass tube (MBT05), which represents the adjustable end fitting, then through the previously fitted anchor point. The line is then looped back through the tube, leaving the loop of line slack for the final tensioning of the line. Sometimes the free end of the line will need to inserted into a previously drilled hole in the model.

Rigging - Control wires:

Rigging control wires, using 0.08 mm diameter 'Stroft' mono-filament, will would normally involve the addition of turnbuckles in the control wires, used to adjust the tension of the wires. However this particular did not appear to have any externally visible turnbuckles, as adjustments were probably carried out to the flight control wires from the turnbuckles inside the cockpit. The line is passed through a short length of the 'Albion Alloy's' 0.4 mm Nickel-Silver tube (NST04), which represents the adjustable end fitting, then through the relevant control horn. The line is then looped back through the tube, leaving the loop of line slack for the final tensioning of the line. Sometimes the free end of the line will need to inserted into a previously drilled hole in the model.

Rudder:

The control horns on the rudder should already have been pre-drilled with holes of 0.2 mm diameter for attaching the control wires. Unlike the Sopwith 'Camel', which had twin control cables, the 'Swallow' appears to have had single control wires to control the rudder movement.

Control horns to fuselage wires:

NOTE: *These two lines will not be finally tensioned until the rudder is fitted to the model.*

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

Pass the line through a short length of the 'Albion Alloy's' 0.4 mm Nickel-Silver tube (NST04).

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

Loop the line back through the tube then position the tube close to, but not touching, the control horn.

Secure the tube in position using CA adhesive.

Repeat this procedure for the other end of the control horn.

Carefully cut away any excess line protruding from the tubes.

Control horns through the rudder:

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

Pass the line through a short length of the 'Albion Alloy's' 0.4 mm Nickel-Silver tube (NST04).

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

Loop the line back through the tube then position the tube close to, but not touching, the control horn.

Secure the tube in position using CA adhesive.

Pass the free end of the line through the pre-drilled hole in the rudder and to the opposite control horn.

Pass the line through a short length of the 'Albion Alloy's' 0.4 mm Nickel-Silver tube (NST04).

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

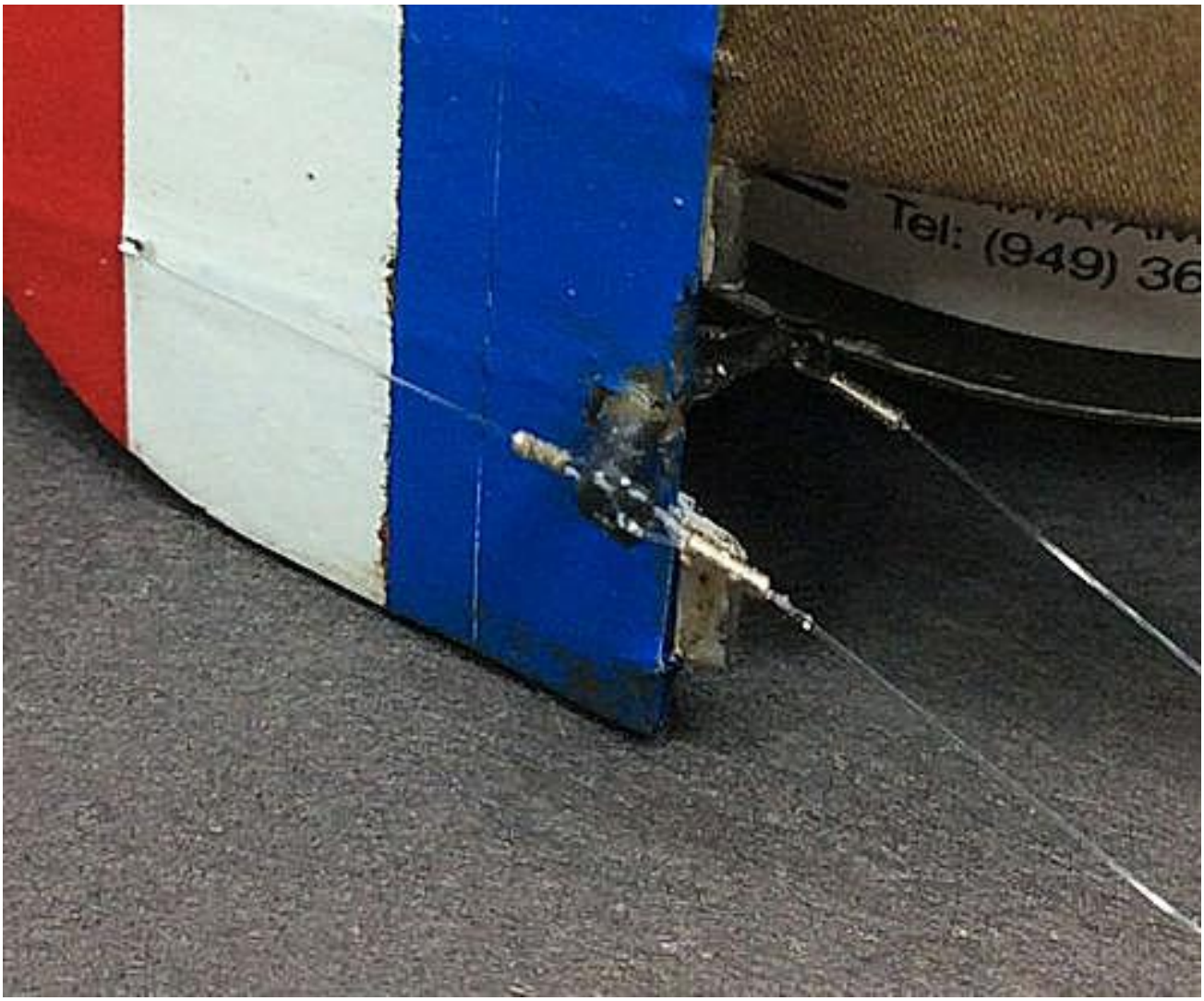
Loop the line back through the tube.

NOTE: *In the following step, do not apply too much tension in the line, as the attachment of the rudder to the fin is weak. Too much line tension may cause the rudder to separate from the fin.*

Keeping the line just in tension, position the tube close to, but not touching, the control horn.

Secure the tube in position using CA adhesive.

Carefully cut away any excess line protruding from the tubes.



Elevator:

The control horns on the elevator should already have been pre-drilled with holes of 0.2 mm diameter for attaching the control wires.

Control horns to fuselage wires:

NOTE: *These four lines will not be finally tensioned until the tail plane with the elevator is fitted to the model.*

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

Pass the line through a short length of the ‘Albion Alloy’s’ 0.4 mm Nickel-Silver tube (NST04).

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

Loop the line back through the tube then position the tube close to, but not touching, the control horn.

Secure the tube in position using CA adhesive.

Repeat this procedure for the other end of the control horn.

Repeat this on the opposite elevator control horn.

Carefully cut away any excess line protruding from the two tubes.

Control horns through the elevator:

Cut a length of 0.08 mm diameter ‘Stroft’ mono-filament.

Pass the line through a short length of the ‘Albion Alloy’s’ 0.4 mm Nickel-Silver tube (NST04).

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

Loop the line back through the tube then position the tube close to, but not touching, the control horn.

Secure the tube in position using CA adhesive.

Pass the free end of the line through the pre-drilled hole in the elevator and to the other end of the control horn.

Pass the line through a short length of the ‘Albion Alloy’s’ 0.4 mm Nickel-Silver tube (NST04).

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

Loop the line back through the tube.

NOTE: *In the following step, do not apply too much tension in the line, as the attachment of the elevator to the tail plane is weak. Too much line tension may cause the elevator to separate from the tail plane.*

Keeping the line just in tension, position the tube close to, but not touching, the control horn.

Secure the tube in position using CA adhesive.

Repeat this procedure for the opposite elevator control horn.

Carefully cut away any excess line protruding from the two tubes.

Tail skid:

The control horns on the tail skid should already have been pre-drilled with holes of 0.2 mm diameter for attaching the control wires.

Control horns to fuselage wires:

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

Pass the line through a short length of the ‘Albion Alloy’s’ 0.4 mm Nickel-Silver tube (NST04).

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

Loop the line back through the tube then position the tube close to, but not touching, the control horn.

Secure the tube in position using CA adhesive.

Repeat this procedure for the other end of the tail skid control horn.

Insert the free ends of each line into drilled holes of 0.2 mm diameter, located just in front of the forward edge of aperture under the rear fuselage and half way between the fuselage centreline and the outside fuselage edges.

Tension the lines from inside the fuselage and secure in position using CA adhesive.

Carefully cut away any excess line protruding from the two tubes.

Ailerons at the wing:

NOTE: *The control horns on the two ailerons should already have been pre-drilled with holes of 0.3 mm diameter for attaching the control wires.*

Control horns to wing wires:

NOTE: *The two lines from each aileron to the wing will not be finally tensioned until the ailerons are fitted to the model.*

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

Pass the line through a short length of the ‘Albion Alloy’s’ 0.4 mm Nickel-Silver tube (NST04).

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

Loop the line back through the tube then position the tube close to, but not touching, the control horn.

Secure the tube in position using CA adhesive.

Repeat to the other end of the control horn.

Repeat this procedure on the other aileron.

Carefully cut away any excess line protruding from the tubes.

Control horns to wing wires:

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

Pass the line through a short length of the ‘Albion Alloy’s’ 0.4 mm Nickel-Silver tube (NST04).

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

Loop the line back through the tube then position the tube close to, but not touching, the control horn.

Secure the tube in position using CA adhesive.

Pass the free end of the line through the pre-drilled hole in the aileron and to the opposite end of the control horn.

Pass the line through a short length of the cut tube.

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

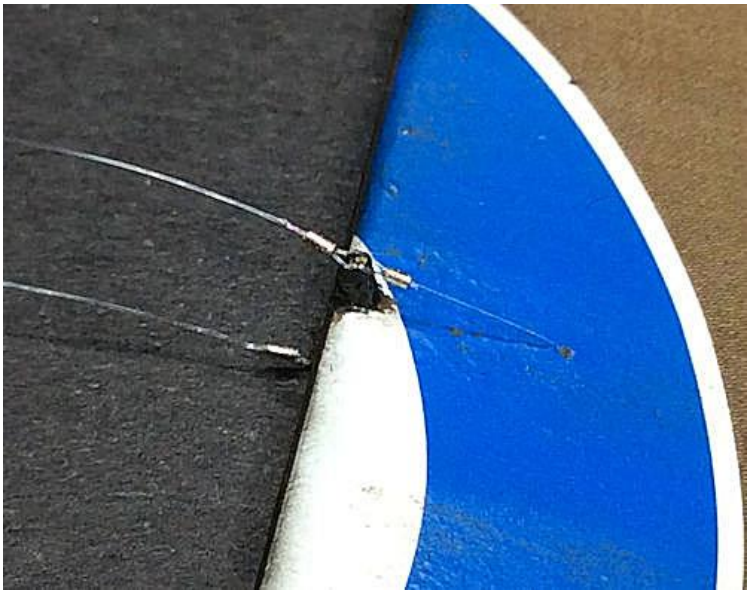
Loop the line back through the tube.

Keeping the line in tension, position the tube close to, but not touching, the control horn.

Secure the tube in position using CA adhesive.

Repeat this procedure on the other aileron.

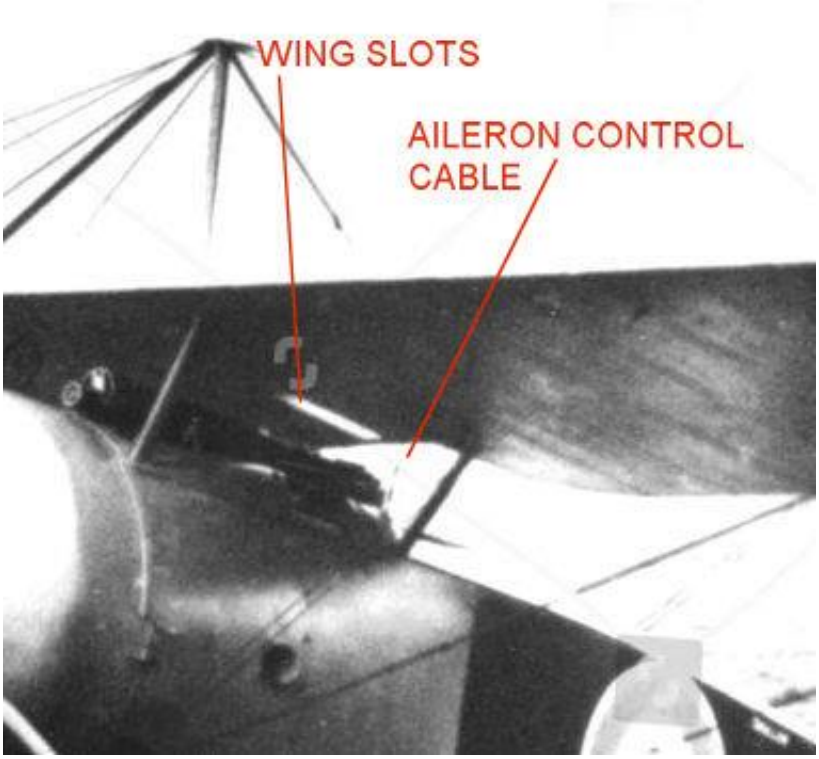
Carefully cut away any excess line protruding from the tubes.

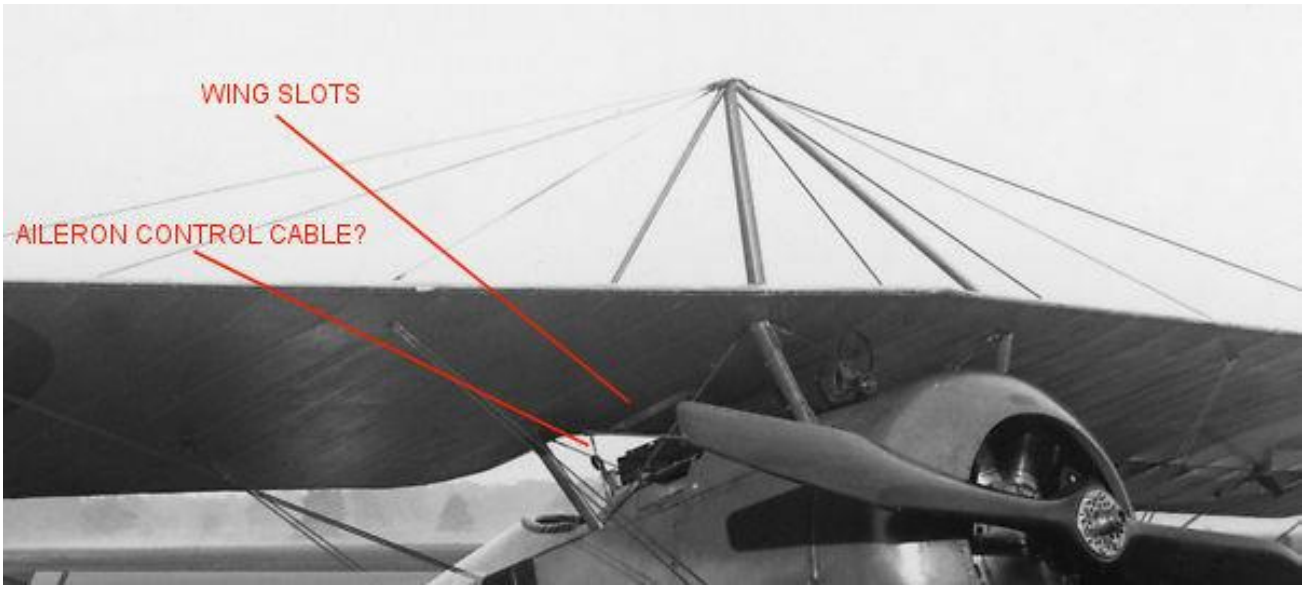


Control lines from the cockpit to the wing:

NOTE: *The following description of the aileron control is assumed and based on photos taken of the aircraft.*

The control cables for the ailerons were routed differently to that for the Sopwith ‘Camel’ as the ‘Swallow’ had just the one wing. Control cables were attached to the base of the control column. Each cable was routed outboard and into box section containing a pulley. The cables were then routed around the pulley then vertically up and out of the cockpit and into the underside of the wing centre section. The cables were routed around pulleys within the wing and connected to the upper and lower control horns on the two ailerons. The cables were routed in such as fashion that as one aileron was moved in one direction by moving the control column sideways, the other moved in the opposite direction.





NOTE: *The two aileron control lines fitted in the following procedure will be connected to the underside of the wing later in this build.*

Cut two long lengths of ‘Steelon’ 0.12 mm diameter mono-filament.

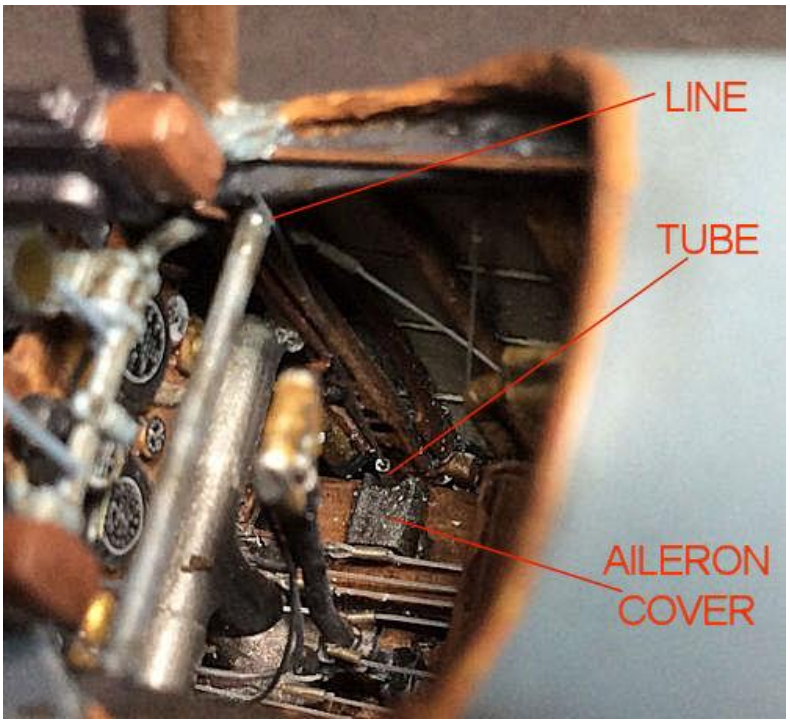
Cut two short lengths of 0.5 mm brass tube (e.g. ‘Albion Alloys’ MBT05).

Crush half way along each tube with flat pliers and bend the tube to form a 90º angle.

Insert a cut line into the non-crushed end of the each tube and secure in position using CA adhesive.

Working from the outer edge of the aileron cable covers fitted on the outer edges of the cockpit floor, position the crushed ‘flat’ side of each tube inside the cover. Secure in position using CA adhesive.

Gently tension each line up and against the outer edges of the cockpit cross beam and secure in position using CA adhesive.



Under shield and undercarriage bracing:

The bracing of the fuselage under shield and undercarriage is as follows:

Cross bracing from the cockpit.

Cross bracing from under shield to undercarriage axle fairing.

Vertical bracing - fuselage under shield and the centre of the undercarriage axle fairing.

Cross bracing from the cockpit:

Cut five long lengths of ‘Steelon’ 0.12 mm diameter mono-filament.

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

Insert the ends of two lines into the pre-drilled holes at the outer, forward edge of the fuselage under shield and secure in position using CA adhesive.

Insert the other ends of the lines diagonally into the pre-drilled holes, father back and at either side of the centre of the under shield.

Keeping the inserted lines in tension, secure in position using CA adhesive.

Cross bracing from under shield to undercarriage axle fairing:

Pass another cut line through a cut 0.5 mm tube.

Pass the line through the fitted anchor at the forward, centre of the under shield.

Loop the line back through the tube then position the tube close to, but not touching, the anchor.

Secure the tube in position using CA adhesive.

Pass the line vertically down and through the hole pre-drilled in the centre of the axle fairing.

Keeping the line in tension, secure in position underneath the axle fairing, using CA adhesive.

Vertical bracing - fuselage under shield and the centre of the undercarriage axle fairing:

Pass two cut lines through cut 0.5 mm tubes.

Pass the lines through the fitted anchors at the rear corners of the under shield.

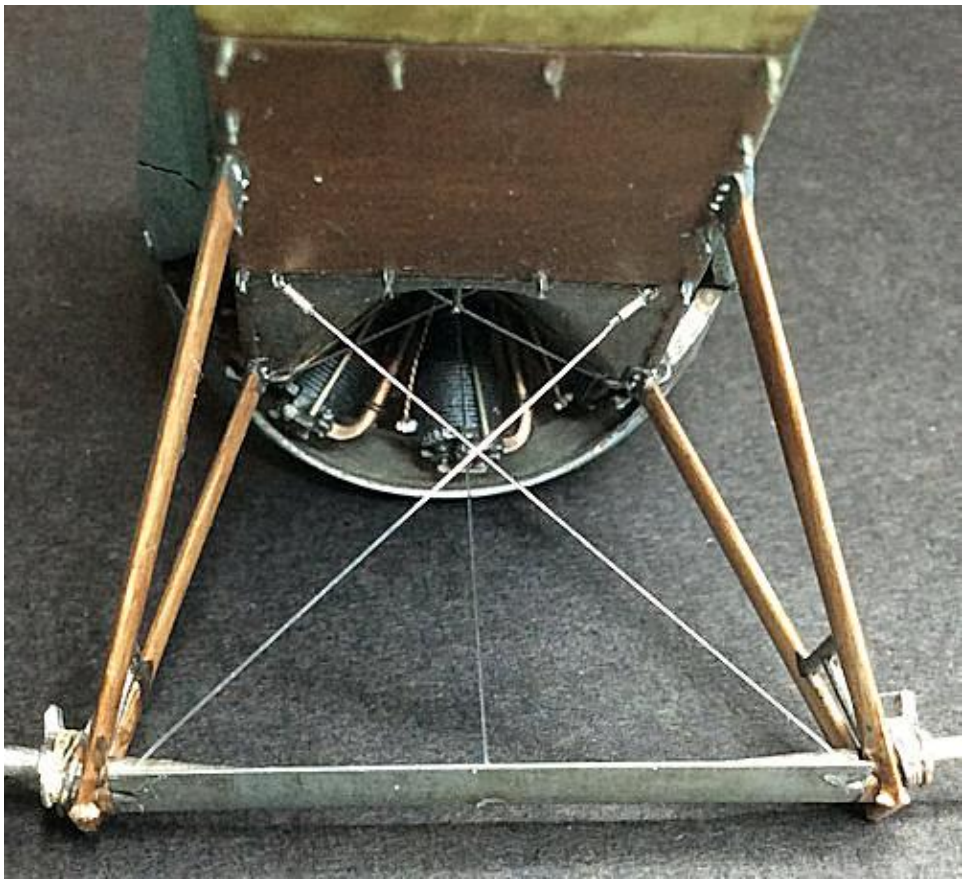
Loop the lines back through the tubes then position the tubes close to, but not touching the anchors.

Secure the tubes in position using CA adhesive.

Pass the lines diagonally across to the outer slots pre-moulded in the axle fairing.

Pass the lines through the slots and to the rear of the underside of the axle fairing.

Keeping the lines in tension, secure in position to the underside of the axle fairing, using CA adhesive.



116. Wing - installation:

Before the wing rigging can be completed, the wing must first be fitted to the supporting cabane struts on the fuselage.

NOTE: *The location holes should already have been pre-drilled into the underside of the wing.*

Use de-tacked masking tape to hold the various rigging lines clear of the wing location areas.

Test fit the wing onto the end location pins in the four cabane struts. Check to make sure that when fully located:

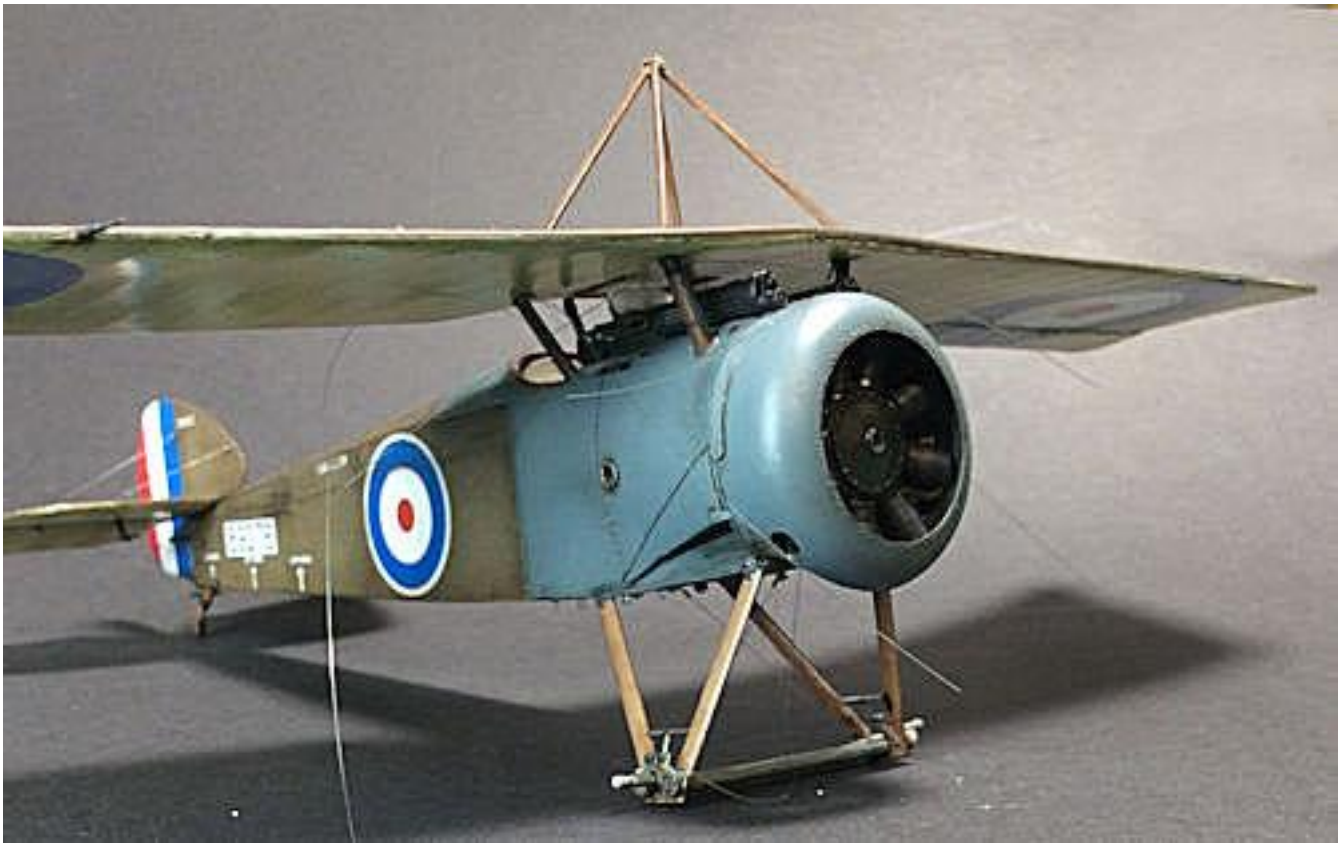
The wing sits horizontal when viewed from the front.

The wing is horizontally aligned with the front cockpit decking panel on the fuselage.

The centre line of the wing is aligned with the centre line of the fuselage and the wing trailing edge is at 90º to the fuselage.

If necessary, using an appropriately sized chisel and/or drill, carefully open up the relevant locations in the underside of the wing to achieve an aligned fit.

Once a good fit is achieved, secure the wing in position onto the cabane struts, using CA adhesive.



Cabane strut cross bracing:

A total of six rigging anchors should have already been fitted to the underside of the wing and to the fuselage front decking panel. Before fitting the wing to the model, the six bracing lines should be attached to the underside of the wing, as access to this area will be restricted once the wing is fitted.

Cut six long lengths of ‘Steelon’ 0.12 mm diameter mono-filament.

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

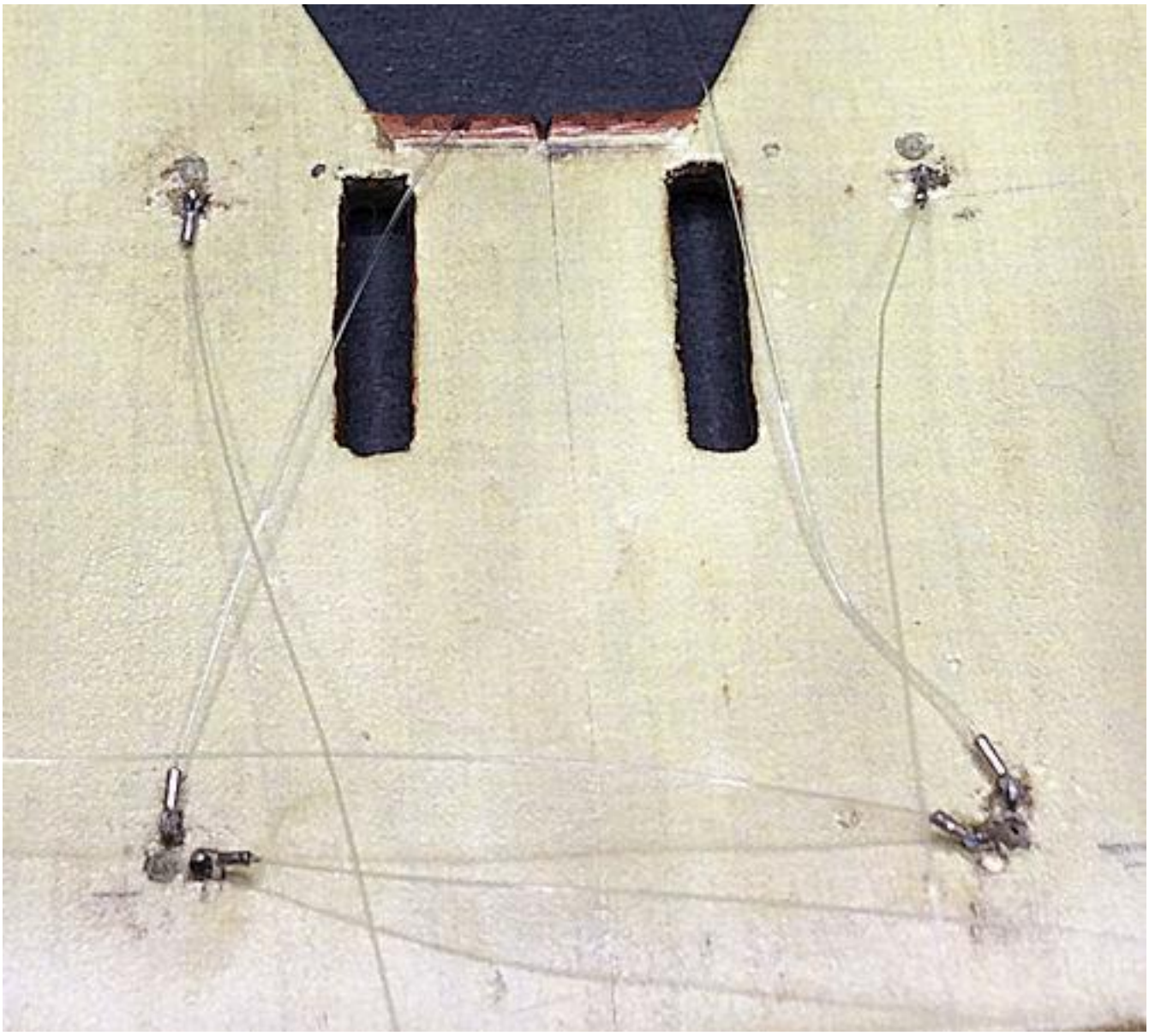
Pass a cut line through a cut 0.5 mm tube.

Pass the line through an anchor on the underside of the wing.

Loop the line back through the then move the tube up to, but not touching, the anchor.

Secure the tube in position using CA adhesive.

Repeat this procedure to attach lines to the remaining five anchors.



117. Tail unit - fitting:

At this stage the tail plane with elevator and the rudder can be fitted, including final control line attachment and fitting of the bracing lines.

NOTE: *During the following steps, make sure all of the various rigging lines are kept clear of glued joints.*

Locate and cement the tail plane and elevator assembly onto the top rear of the fuselage.

Locate the two ailerons onto their locating pins in the trailing edge of the wing and secure in position using CA adhesive. Make sure, if animated, that the ailerons are positioned as desired.

Locate the rudder and fin assembly onto the rear of the fuselage and top of the tail plane. The 'tang' on the rudder locates into the slot in the rear of the fuselage and the fin by its locating pin on the front, bottom of the fin (into the location hole at the centre, front of the tail plane).

118. Tail unit - final rigging:

With the tail unit fitted the final rigging to the fuselage can be completed.

Rudder:

Pass each of the forward lines of the rudder control horns into their access slots in the rear fuselage.

Access through the opening under the rear of the fuselage and carefully route these lines forward inside the fuselage.

Using CA adhesive on the end of a suitable 'probe', apply the adhesive to the inside of the fuselage, forward of each slot and hold the line taut and tensioned against and forwards inside the fuselage. This will leave the lines correctly positioned in the slots, when viewed from the outside.

Carefully guide the ends of the lines out through the opening under the rear of the fuselage and cut away the excess line.

Elevator:

NOTE: *The following steps apply to fitting all four of the elevator control lines.*

Pass the free end of an elevator control line forwards to its access location hole at the top, side of the fuselage.

Cut away excess line to leave enough to be inserted into the access hole.

Pass the line into its location hole.

Holding the line in tension at the access hole, apply CA adhesive to the hole to secure the line in position.

Bracing:

Cut two long lengths of 'Steelon' 0.12 mm diameter mono-filament.

Locate one end of each line into the two pre-drilled holes at the bottom edge on the rear of the fuselage and secure with CA adhesive.

Slide onto each line two cut, short lengths od 0.4 mm diameter tube (e.g. 'Albion Alloys' NST04).

Pass the lines through the pre-drilled holes in the tail plane.

Slide onto each line two cut, short lengths od 0.4 mm diameter tube.

Pass the lines through the pre-drilled holes in the fin.

Slide onto each line two cut, short lengths od 0.4 mm diameter tube.

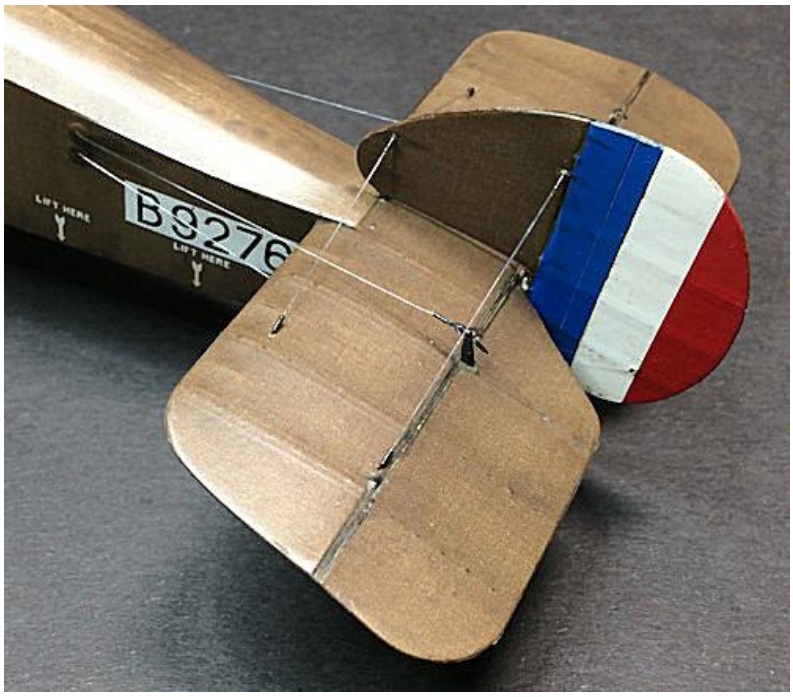
Pass the lines through the pre-drilled holes in the tail plane.

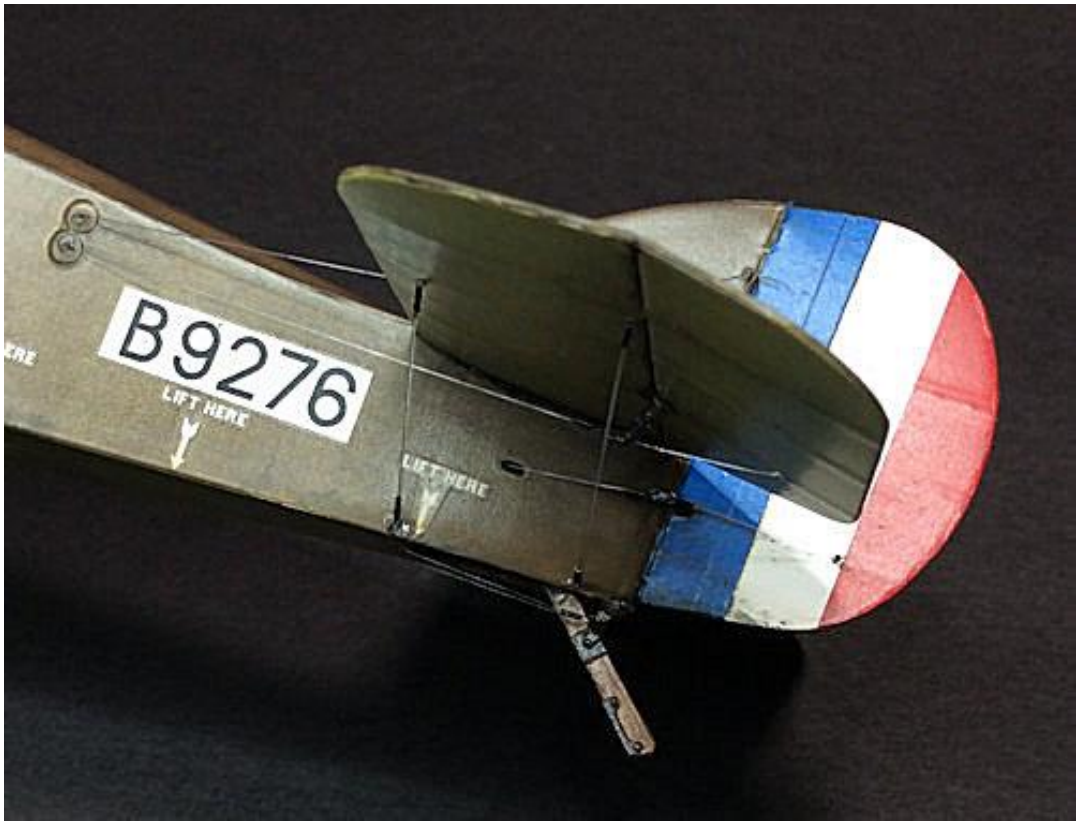
Slide onto each line two cut, short lengths od 0.4 mm diameter tube.

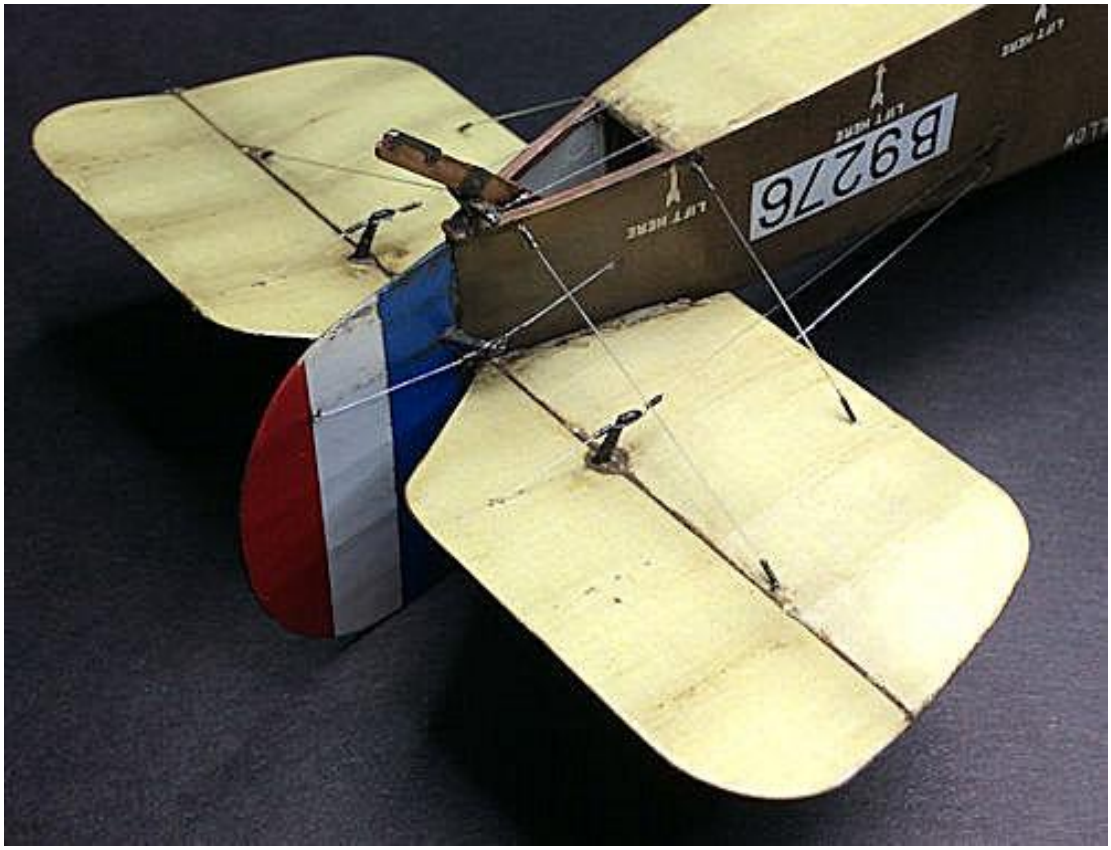
Locate one end of each line into the two pre-drilled holes at the opposite bottom edge on the rear of the fuselage.

Pull the lines taut and secure in position with CA adhesive.

Slide each tube up against the fuselage, tail plane and fin and secure in position using CA adhesive.







119. Aileron - final rigging:

With the ailerons already fitted to the wing, the final rigging to the wing can be completed.

NOTE: *The following steps apply to fitting all four of the aileron control lines.*

Pass the free end of an aileron control line forwards to its access location hole pre-drilled in the wing surface.

Cut away excess line to leave enough to be inserted into the access hole.

Pass the line into its location hole.

Holding the line in tension at the access hole, apply CA adhesive to the hole to secure the line in position.

120. Wing - final rigging:

With the wing fitted the final rigging can be completed. The rigging required is as follows:

Eight over wing landing wires (four each side).

Sixteen under wing flying wires (eight each side).

Two crossed bracing wires between the cabane struts (each side).

Two crossed bracing wires between the forward cabane struts.

Two aileron control cables from cockpit to underside of the wing.

Cabane struts:

NOTE 1: *The six crossed bracing for the fuselage cabane struts should already have been pre-rigged.*

NOTE 2: *The following steps apply to fitting the four cabane bracing lines (front to rear).*

Pass the free end of a cabane bracing line through a short length of the 'Albion Alloy's' 0.5 mm Brass tube (MBT05).

Pass the line diagonally across to the pre-installed anchor, already fitted to the decking panel at the base of the opposite cabane strut.

Pass the line through the fitted anchor then loop the line back through the tube.

Keeping the line tensioned, position the tube close to, but not touching, the anchor.

Secure the tube in position using CA adhesive.

Cut away protruding excess line from the tube.

Repeat this procedure to attach the two crossed bracing lines between the top of the two forward cabane struts and the pre-installed anchors at the front of the forward decking panel.

Landing and flying wires:

NOTE 1: *The four landing wires at each side of the top of the wing will be extended to the under side of the wing and continue as four of the eight flying wires under each side of the wing.*

NOTE 2: *The total of eight flying wires under the wing at each side are attached to locations on the undercarriage struts (see text).*

Negative of the flying and landing wires

Landing wires:

The four landing wires at each side of the wing are attached to the over wing support pylon and are routed to the four pre-drilled wing attachment points on the top of the wing. The wires pass through their respective hole to the underside of the wing, where they are then routed to the tops of the undercarriage struts on that side. Each of the four landing wires on each side of the wing are routed to the two undercarriage attachment points on that side as follows:

NOTE: *The following two landing wires share the same attachment location on the rear undercarriage strut.*

Inboard and outboard **rear** landing wires:

Cut two lengths of 'Steelon' 0.12 mm diameter mono-filament approximately 600 mm in length.

Pass the two lines through the pre-drilled **rear** hole in the top of a **rear** undercarriage strut.

Secure the two lines in position using CA adhesive.

Pass the free ends of both lines through a cut, short length of 0.5 mm Brass tube (e.g. 'Albion Alloys' MBT05).

Slide onto each line a short cut length of 0.4 mm Nickel-Silver tube (e.g. 'Albion 'Alloys' NST04).

Pass the free end of one line up and through the pre-drilled **rear** inboard hole in the wing.

Pass the free end of the other line up and through the pre-drilled **rear** outboard hole in the wing.

From above the wing, slide onto each line two short cut lengths of 0.4 mm Nickel-Silver tube.

Pass the free ends of the two lines through the top fitting of the over wing support pylon.

From above the other side of the wing, slide onto each line two short cut lengths of 0.4 mm Nickel-Silver tube.

Pass the free end of one line down and through the pre-drilled **rear** inboard hole in the wing.

Pass the free end of the other line down and through the pre-drilled **rear** outboard hole in the wing.

Slide onto each line a short cut length of 0.4 mm Nickel-Silver tube.

Pass the free ends of both lines through a cut, short length of 0.5 mm Brass tube.

Pass the two lines through the pre-drilled **front** hole in the top of the **rear** undercarriage strut on that side.

NOTE: *During the next step make sure all tubes are kept away from the applied adhesive.*

Pull the two lines taut and make sure there is no obvious slack in and part of the line runs.

Secure the two lines at the undercarriage strut using CA adhesive.

In turn, slide each tube up against the undercarriage strut and wing and secure in position using CA adhesive.

Inboard and outboard **front** landing wires:

Repeat the previous procedure for two lines, from the pre-drilled **front** holes in the top of the **front** undercarriage struts and pre-drilled front holes through the wing.

Remaining flying wires:

NOTE 1: *Four of the eight flying wires under each wing have already been installed as part of installing the landing wires.*

NOTE 2: *The four flying wires are attached to specific locations on the undercarriage struts (see text).*

NOTE: *The following two flying wires share the same attachment location on the rear undercarriage strut.*

Rear inboard flying wire: From the inboard location pre-drilled in the underside of the wing to the front location on the top of the rear undercarriage strut.

Rear outboard flying wire: From the outboard location pre-drilled in the underside of the wing to the front location on the top of the rear undercarriage strut.

NOTE: *The following two flying wires share the same attachment location on the front undercarriage strut.*

Front inboard flying wire: From the inboard location pre-drilled in the underside of the wing to the rear location on the top of the front undercarriage strut.

Front outboard flying wire: From the outboard location pre-drilled into the underside of the wing to the rear location on the top of the front undercarriage strut.

Cut eight long lengths of ‘Steelon’ 0.12 mm diameter mono-filament.

Cut eight short lengths of 0.4 mm diameter Nickel-Silver tube (e.g. ‘Albion Alloys NST04).

Insert each line into a cut tube and secure in position using CA adhesive.

Insert a tube into each of the pre-drilled under wing locations and secure in position using CA adhesive.

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

On one side of the wing, pass the free ends of both rear flying wires through a cut 0.5 mm tube, then through the pre-drilled hole in the top, front of the rear undercarriage strut.

On the same side of the wing, pass the free ends of both front flying wires through a cut 0.5 mm tube, then through the pre-drilled hole in the top, rear of the rear undercarriage strut.

For each pair of lines, pull the lines taut with the 0.5 mm tube positioned against the top of the undercarriage strut.

Secure the lines and tube to the strut using CA adhesive.

Repeat for the other wing to create the eight flying wires, all attached between the under side of the wing and the top of the undercarriage struts.

Aileron cockpit control cables:

NOTE: *The two holes for the aileron control lines from the cockpit should already have been pre-drilled into the underside of the wing each side of the wing centre line. Also the control lines should already have been fitted from inside the cockpit.*

Carefully cut each aileron control line from the cockpit so that the free ends can be fully inserted into the pre-drilled holes without the line being slack.

Holding the lines taut in the holes, secure in position using CA adhesive.

121. Tightening the lines:

WARNING: *If using heat to tighten lines, it's important not to get too close to line and to keep the heat source moving along the line without stopping in one area or touching the line or model parts, otherwise the model parts or the line will melt and break or the model. As the heat is applied, watch the line start to tighten and stop as soon as the slack in the line is removed.*

If any installed lines are slack, they can be tightened by applying heat along the length of the line, from for example an electricians soldering iron. This causes the mono-filament to shrink and tighten the line.

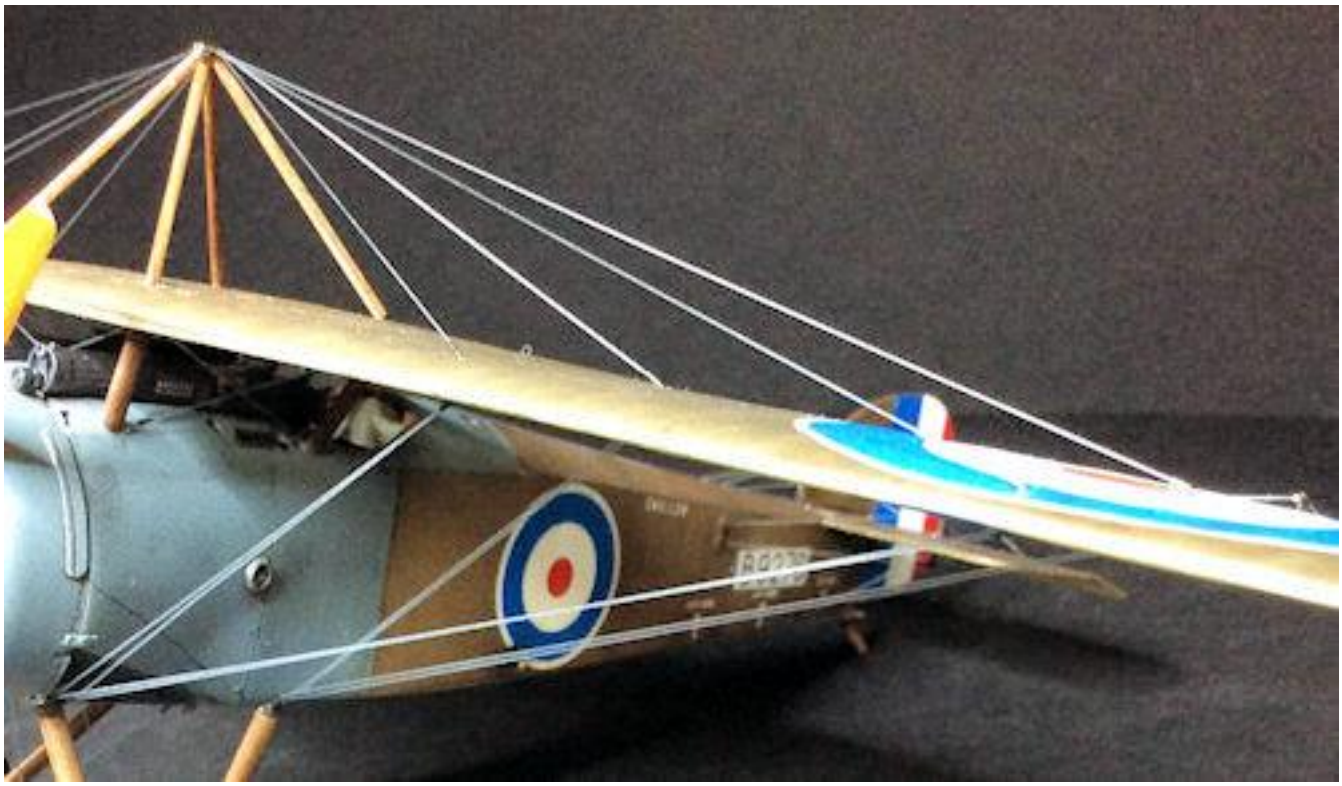
122. End fittings:

The end fittings for the control, bracing, flying and landing wires were created from metal tubes, which have a light and metallic finish. The actual end fittings were much darker in colour. To 'knock back' this finish, carefully apply, by brush, 'AK Interactive' Kerosene was (AK-2039).

123. Finish on wires:

NOTE: *In the following step, make sure the wind screen and aileron inspection window are masked. Remove the masking only after airbrushing.*

To heighten the finish on all of the control, bracing, flying and landing wires, lightly air brush all of the wires with a semi-matte finished (e.g. 'Alclad' Light Sheen ALC-311).



124. Wheels - fitting:
Cement the wheels onto the axle, making sure the wheels are not vertical but tilted slightly in at the tops, to align with the tilted axle ends.

125. Propeller - fitting:
Secure the propeller, at the desired angle, onto the propeller shaft, using CA adhesive.

PART 13

FIGURE

PART 13 - FIGURE

The figure I chose to use for this model is the 'Model Cellar' Pilot Officer 1917-18 (MC32007).

NOTE 1: *Take care when handling resin parts as resin is brittle and small or thin parts can easily be broken*.

NOTE 2: *Be careful when working with resin as resin dust or particles are harmful if they are inhaled or ingested.*

NOTE 3: *The casting of many resin items can leave small 'blow' holes and other types of imperfections.*

NOTE 4: *Resin parts need to be assembled using CA adhesive, as normal plastic model cement will not bond the parts together.*

Preparation:
Before assembly, remove imperfections and seam lines by scraping with a sharp scalpel blade.

Wash the figure parts in warm water with washing up liquid added and then thoroughly dry the parts. This will remove any residual 'release agent' used during casting of the figures, which if not removed, may cause problems when applying paint to the figure.

NOTE: *To aid in alignment and to strengthen joints, pins can be added where necessary.*

Drill a hole of 0.8mm diameter into the centre of the neck and body of the figure and if necessary, also into the arms and body.

Cut lengths, as required, of 0.8mm rod from an standard office paper clip.

NOTE: *The figure has a separate hat, which is not intended to be fitted to the head and is intended to be holding a cane from the left hand. However, I decided not to use the cane but to pose the figure holding the hat instead. The cigarette was also not used.*

Carefully cut away the pommel for the cane from the palm of the left hand.

Using a drill and curved scalpel blade, carefully hollow out the inside of the hat.

Test fit the peak of the hat into the left hand and adjust as required to achieve a natural looking fit.

Assembly:

Secure the figures arms and head onto the body using CA adhesive.

Carefully drill a hole of 0.8mm diameter up into one leg of the figure.

Cut a length of 0.8mm diameter rod from a standard office paper clip.

Insert the cut rod into the hole drilled in the figures leg and secure in place using thin CA adhesive. This rod will serve to hold the figure in a pin vice whilst being painted and also to secure the figures to the finished display base.

Fill any 'blow' holes, gaps or imperfections using a modelling putty, such as 'Deluxe Materials' Perfect Plastic Putty.

Painting:

NOTE:

Unless stated otherwise, acrylic paints used were 'Tamiya' thinned with 'Tamiya' 20A.

Prime the assembled figure by airbrushing with 'AK Interactive' Primer and micro-filler (Grey-AK758).

Brush paint the entire figure and hat with 'Humbrol' Leather (62) and highlights using NATO Brown (XF68) and Hull Red (XF9).

Belts, hat peak, boots and uniform creases toned with Hull Red (XF9).

Brass fittings and badges painted with 'Mr. Colour' Brass (219).

Stockings and inside hat painted with Rubber Black (XF85).

Stocking laces painted with Ocean Grey (XF82).

Pilot's brevet painted with Royal Blue (X3), White (X2).

Hair painted with 'Humbrol' Leather, highlighted with Flat Yellow (XF3).

Flesh:

Base coat painted with 'AK Interactive' Light Flesh (AK-3012).

NOTE:

Before finishing the figure, sealing coats were applied, primarily to give protection before applying oil paints.

'Alclad' Matte (ALC-313) airbrushed over figure and hat.

'Alclad' Light Sheen (ALC-311) airbrushed over boots.

'Tamiya' Semi Gloss (X35) thinned with X20A brushed over hat peak and belts.

Flesh:

Tonal highlights painted with 'Mig' basic flesh oil brusher, thinned with odour less thinner.

PART 14

DISPLAY BASE

PART 14 - DISPLAY BASE

The display case is made from sheets of 3 mm thick piano black Acrylic sheet, cut and cemented together to form a 'shouldered step' for seating the transparent top, which is fabricated from 3 mm thick clear Acrylic sheet. This was made to measure for this model by an on-line manufacturer, who also made the angled plaque mount, which was secured to the display base with a contact adhesive. The brass (brushed silver) plaques were also made by an online manufacturer and were secured to the angled mount with contact adhesive.

The 'Polak' Wild Meadow (G-4707) grass mat was cut to the desired shape. The clear plastic backing was removed from the grass mat, which was then positioned on the base. The mat was laid onto the display base and positioned to ensure the model would clear the display top when located. A soft pencil was used to lightly trace the outline of the mat on the display base. PVA adhesive was then applied to the backing (underside) of the mat, which was then laid back onto the base, aligned to the pencil outline and gently pushed down to make proper contact. The grass mat was covered with a sheet of kitchen 'Cling Film' and several heavy books were then stacked onto the cling film, to press the grass mat fully in contact with the display base. The books and cling film were removed after two hours, when the edges of the grass mat were checked for contact (apply PVA adhesive if not). The grass tufts were gently brushed to remove any flatness.

The aircraft was not fixed to the display base, but left as 'free standing'. The figure was positioned on the base in its final position and the location of the pin in the leg of the figure was marked on the grass mat. A hole of 1.0 mm was drilled through the grass mat and into (not through) the base. PVA adhesive was then applied to the pin of the figure, which was then carefully seated into the drilled hole. Light pressure was applied to the figure to ensure it was fully located in the base.

PART 15

COMPLETED MODEL PHOTOS

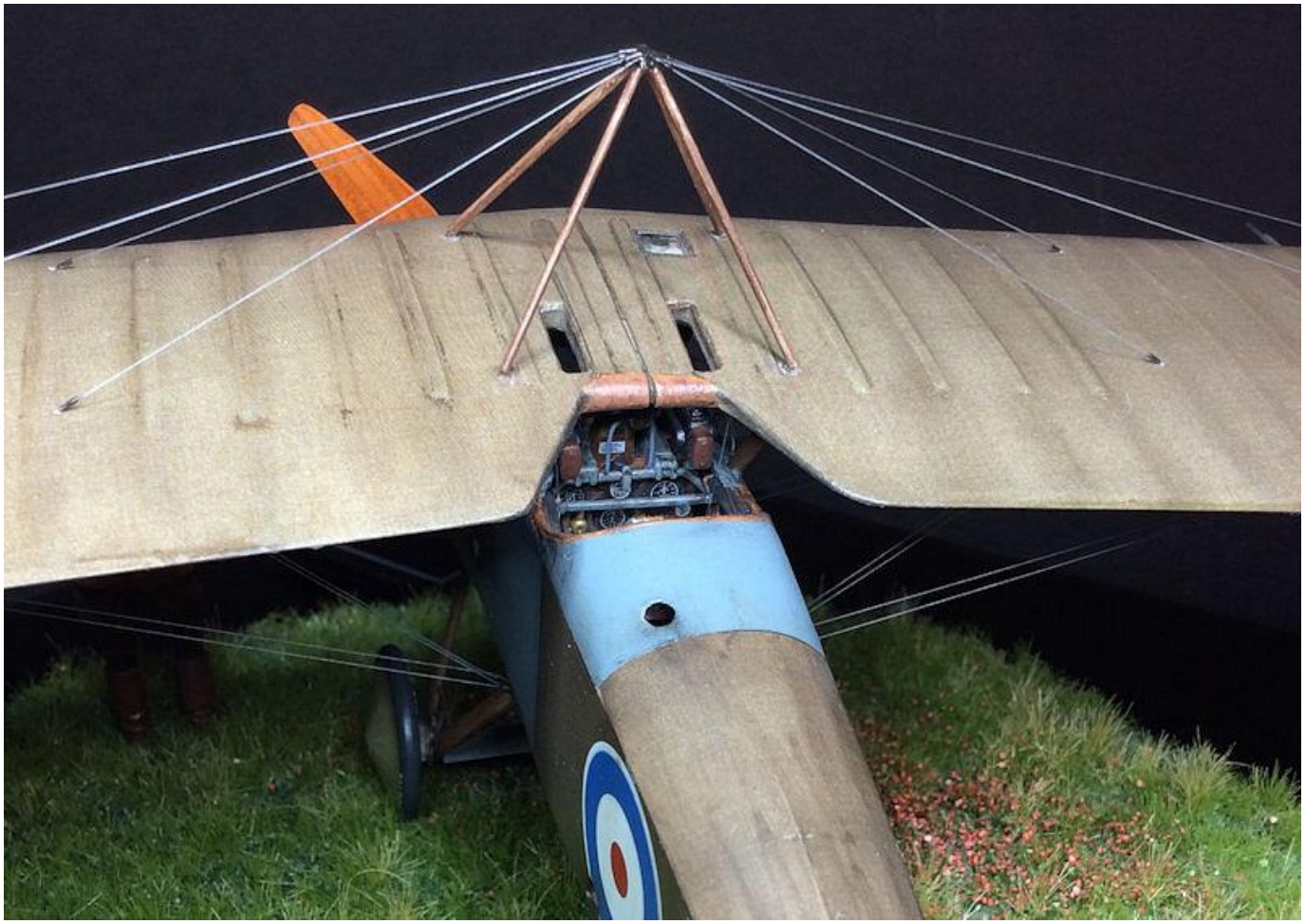

SWALLOW
B9276


B8276

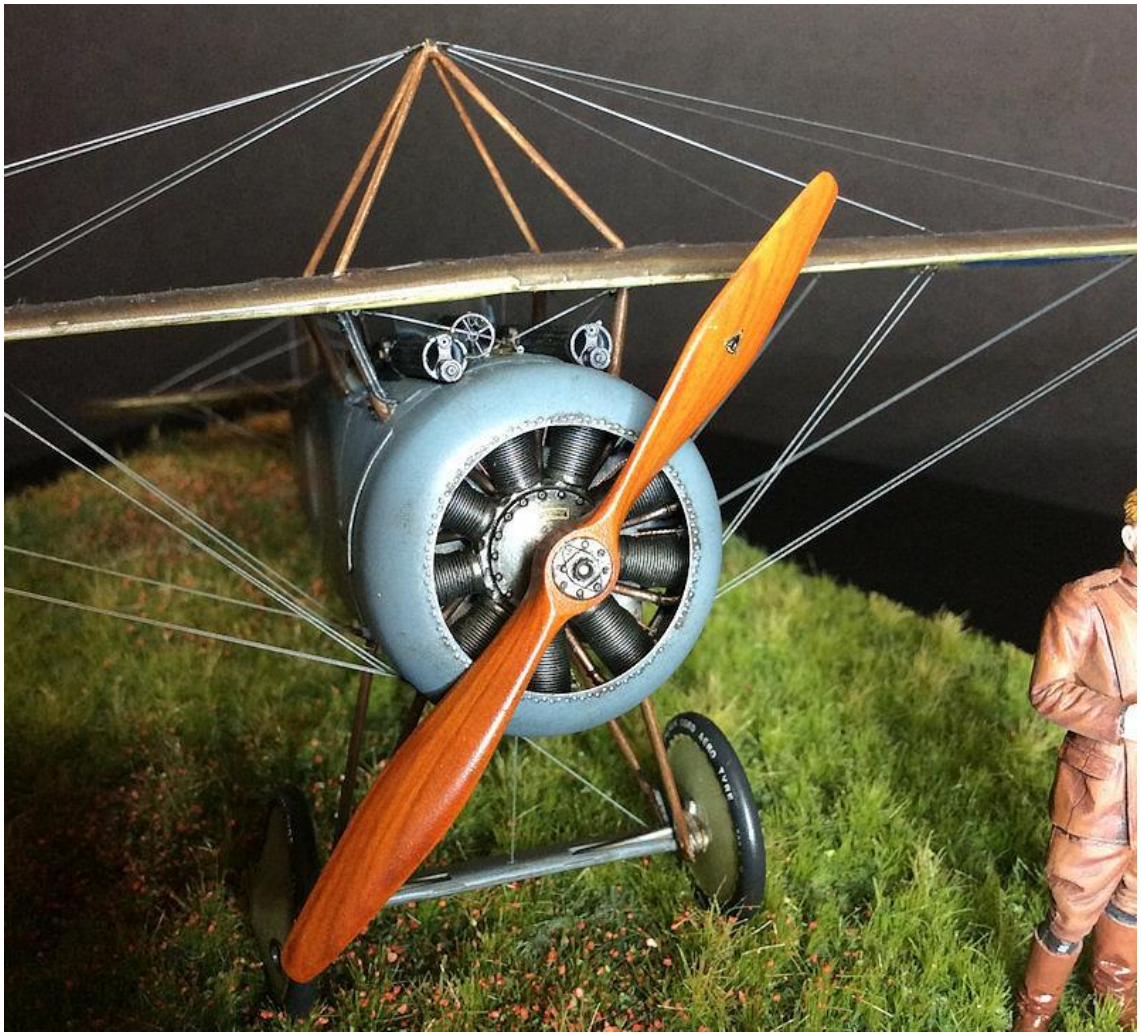

B8276


PALMER CORD AERO TYRE


B9276
SWALLOW
PALMER CORD AERO TYRE




SWALLOW
LIFT HERE
B92



END