

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 'Wingnut Wings' 1:32 scale model of Germany's Junkers D.I fighter.

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INTRODUCTION

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 Kit

'Wingnut Wings' Junkers D.I (kit No.32065).

Figures

'Wings Cockpit Figures' LSK leaning pilot (LSK 14),
'Copper State Models' German ground crew (F32-012).

Weapons

'GasPatch' Spandau 08/15 Extended Loading Handle (14-36020).

Engine

'Taurus Models' fuel primers (D3219) and spark plugs (D3218).

Propeller

'ProperPlane' wood laminated 'Axial' propeller.

Rigging accessories

'Gaspatch' Elite 1:48th scale turnbuckles,
'Albion Alloy' Micro-tube (Brass or Nickel Silver), 'EZ' Fine Black line,
'Stroft GTM' Silicon-PTFE tempered monofil (0.08mm diameter),
'Steelon' Mono-Filament 0.12mm diameter.

Sundries (as required)

Paints ('Tamiya' Acrylic, Humbrol Acrylic, 'Mr. Metal Colour'),
'AK Interactive' Primer and micro-filler (Grey AK758, White AK759),
'AK Interactive' Filters (Wood AK-261) and Washes (Kerosene AK-2039 and Oil AK-2019),
'Alclad II' metal lacquers, 'Alclad' Aqua Gloss 600, 'Mr. Colour' Levelling Thinners,
'Vallejo' Model Colour, PVA Adhesive (e.g. 'MicroScale' Micro Krystal Clear),
'VMS Fleky' CA adhesive (Standard and Thin), 'UHU' White Tack,
'AV' Masilla Plastica (401) putty, 'De-Lux Materials' Perfect Plastic Putty,
Sanding and/or Polishing sticks from 'Flory Models', 'Humbrol' Maskol,
'Milliput' or 'Green Stuff' two part putty, 'White Spirits', 'MicroScale' MicroSol/MicroSet,
'Mr. Surfacer' 500, 1000 or 1200, 'Mr. Metal Primer R', 'Artool' Ultra Mask sheets,
'DecoArt Crafters Acrylic' (water based) paints, 'Plastruct' styrene rod, 'PlusModel' lead wire,
'ANYZ' silver braided line (AN015), 'Tamiya' extra thin liquid cement,
'Plastic Magic' liquid cement, 'Blacken-it' blackening solution, 'Albion Alloy's' Connec+o C-08,
'Chipquik' T3 solder paste, 'Krylon' Acryli-Quik acrylic lacquer, 'MFH' Black tube (P-961),
'Posca' metallic pens (PC-1MR), 'Mr. Hobby' dissolved putty.

Weathering mediums (as required)

'Flory' Clay washes, Flory Pigments, AK Interactive engine washes,
Tamiya Weathering Master sets.

Display Base

'Polak' Wild Meadow variation D (4704),
Commercially made Acrylic base and cover,
Etched Plaque (name plate).

THE AIRCRAFT

The AIRCRAFT

References:

Various on-line data (e.g. 'ldflieg.com', Wikipedia).

'Wingnut Wings' instruction manual (Model 32065).

'Karaya Publications' - Wings Cat No.001 - Junkers D.I(J9) by Seweryn M. Fleischer.

'Windsock' Centenary WW1 Modelling Special No.6 - Building the Junkers D.I by Ray Rimell.

'Windsock' Data File No.33 - Junkers D.I by Peter M. Grosz.

'Flight Magazine' article - 1st April 1920.

NOTE: *Narrative partly based on Junkers D.I (J9) by Seweryn M. Fleischer.*

Design:

The lineage of this aircraft traces back to Professor Hugo Junkers, when in 1912 he patented a design for a thick, cantilever constructed initially of corrugated steel. The first Junkers J.1 and J.2 monoplanes were built but proved too heavy for operational use. Therefore the Junkers J.3 was redesigned during 1916 using an aluminium alloy (Duraluminium). However it was shelved when production was switched to the Junkers J.1 biplane, which entered service in 1917. Due to the positive response for the J.1, work recommenced on a n armoured single seat monoplane, starting with the Junkers J.5 through to the J.9, which eventually became the operational Junkers D.1. The maiden flight took place in May 1918 and further changes to the design saw 4 aircraft of the final version dispatched to the front in October 1918. The design of this aircraft was revolutionary for its time, a monoplane of metal construction and with only cross brace rigging on the undercarriage. The airframe was essentially of tubular construction with corrugated Duraluminium covering. Various engines were fitted during the prototype stages, but it seems the Daimler-Mercedes D.IIIa (180hp) or D.IIIaü (200hp) engines were fitted to operational aircraft. Armament consisted of twin 7.92 mm LMG 08/15 'Spandau' machine guns.

Operational background:

The Junkers D.I was designated as a 'battle plane', meaning its perceived operational role was to be that of ground attack, rather than as a fighter. Only 40 aircraft were built between June 1918 and February 1919 and it seems of these, only 5 were delivered to the front. It is not certain than any of these aircraft took part in actual combat, although there were reports from the British late in the war that there were 'encounters with German monoplanes that were covered with corrugated sheet'. These 5 aircraft were eventually abandoned on the German landing field of Hombeek in Belgium. However the aircraft did see active service after the war, in action against the Bolshevik forces in the Baltic countries, serving with the 'Kampfgeschwader Sachsenburg' volunteer regiment, commanded by Gothard Sachsenburg, a former pilot of the German naval 'Marine Jasta'. The regiment consisted of 3 squadrons, being FA413 (reconnaissance), FA416 (fighter) and FA417 (ground attack). Both FA416 and FA417 operated the Junkers D.I as well as the Junkers CL.I (two seat version) aircraft. A few aircraft were lost in combat, including a Junkers D.I being flown by Josef Jacobs. When hostilities ceased, those aircraft remaining were found by Soviet forces, abandoned on an airfield near Riga.

General statistics:

Wingspan - 9 m

Height - 2.6 m

Length - 7.25 m (long version) - 6.7 m (short version)

Weight (empty) - 654kg

Weight (max) - 834kg

Wing area - 148 sq/m

Speed (max) - 225 km/h (180hp engine)

Rate of Climb - 3.5 m/s

Ceiling - 6000 m

Standard fitted engines - Daimler-Mercedes D.IIIa (180hp) or D.IIIaü (200hp)

Armament - Twin 7.92 mm LMG 08/15 'Spandau' machine guns.

PART 1
MODEL
DESCRIPTION

PART 1 - MODEL DESCRIPTION

'Wingnut Wings' Junkers D.I (Kit No.32065)

This model depicts a Junkers D.I that was involved in a flying accident, possibly during testing, on the 3rd of October 1918. It was most likely repaired and possibly given the Ser No: 5188/18, before being operated by either MFJG in Belgium or with Kampfgeschwader 'Sachsenburg', operating in the Baltic during 1919.

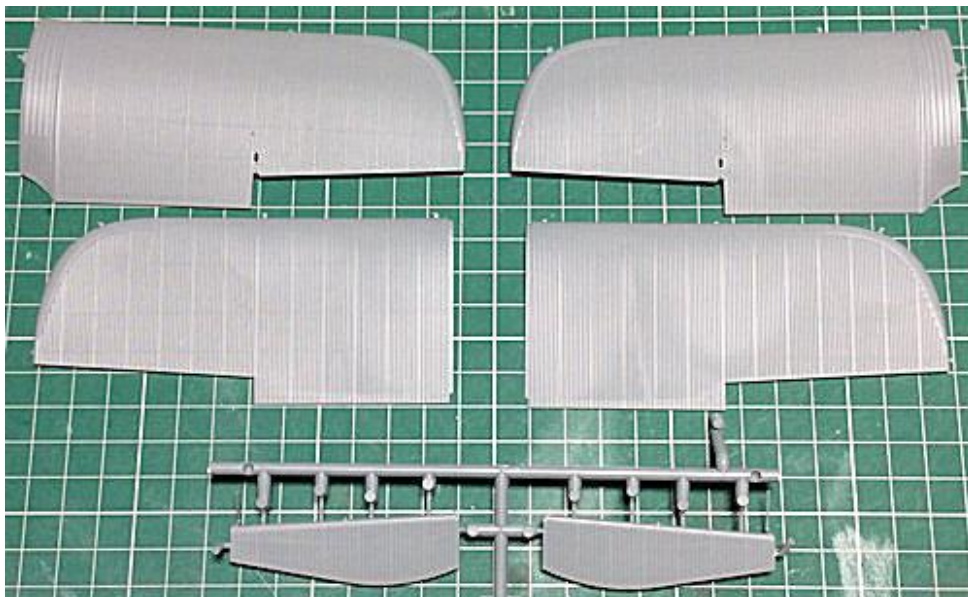
There were various WW1 colour schemes adopted for this aircraft, the most common being brush painted irregular pale green and light mauve on the upper surfaces with either off-white, pale cream or light blue under sides. Variations on this scheme included over painting the upper surfaces with black or chocolate brown.

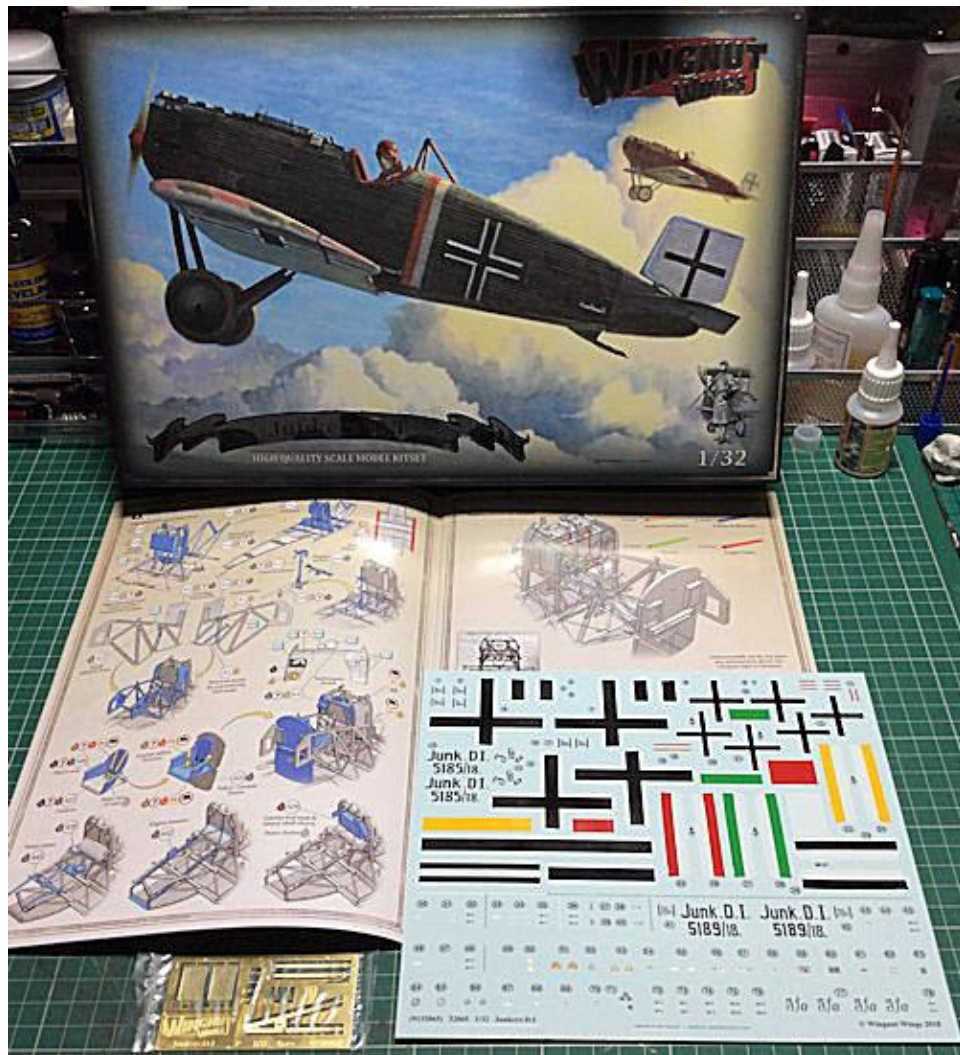
For this model I chose to show the aircraft as it was photographed at the time, which was as bare metal with no camouflage applied.

As expected, any model from 'Wingnut Wings' (WNW) is at the top of quality and accuracy. The kit components are not a numerous as many of their kits, which is good if you are building a WNW kit for the first time. The parts are manufactured from traditional 'plastic', not resin. There is minimal mould flash that needs to be removed and also virtually no ejection pin marks that need to be filled and sanded away. All of the main sprues, including the transparencies and photo-etch (PE) parts, are sealed in separate plastic bags, which prevents and sprue damaging another. There are four main sprues and one photo-etch for this model, however some parts supplied are not required. The hit is well designed with regard to how the fuselage halves join around the corrugated surface. As this aircraft was a monoplane of metal construction, there is virtually no external rigging required, which makes this a good 'starter' kit for those not versed in the 'art' of rigging WW1craft.

The decal sheets supplied are by 'Cartograf' so should be of the best quality in both colour and registration.

The instruction manual is in the well known format that WNW produce and has clear and concise instructions, including coloured illustrations and photos for reference. Also the manual has a lot of information on the aircraft including colour profiles of various colour schemes used. Even though 'Wingnut Wings' are no longer in business, their web site is still open and has many archive photographs available for each of their aircraft models.





PART 2
WOOD EFFECTS
(General)

PART 2 - WOOD EFFECTS (General)

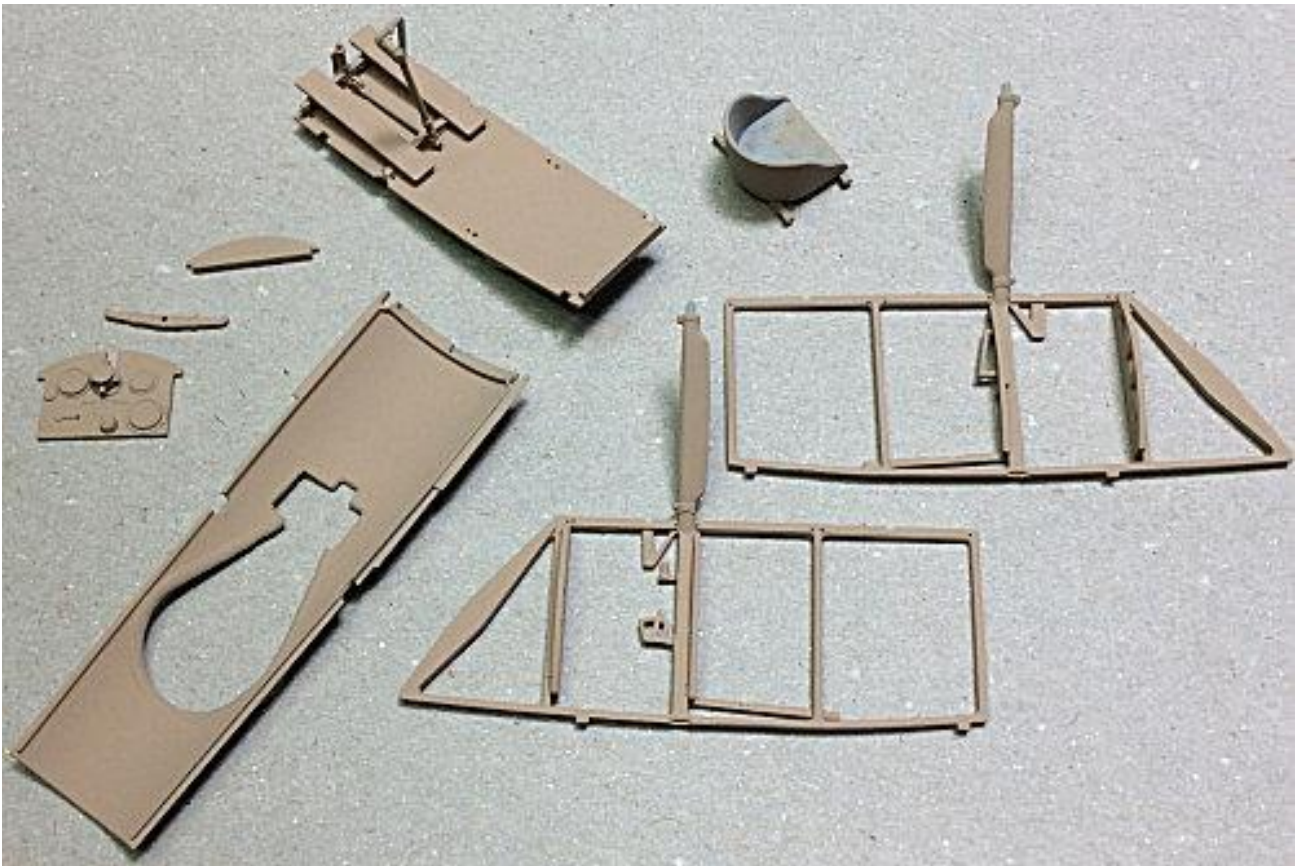
A basic technique: *(This Part 1 has limited application for this particular model).*

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, for example 'AK Interactive' Grey (AK-758) primer and micro-filler. Once the primer is dry apply the base colour, after which you can start applying the wood effect to the applicable parts, such as fuselage panels, cockpit items, decking panels and wing struts. With practice, this method can also be used on fuselage panels and propellers.

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. After priming, apply a suitable base colour. For most wood effects, use 'Tamiya' Deck Tan (XF55), Wooden Deck Tan (XF78), Dark Yellow (XF60), suitably thinned with 'Tamiya' Thinners (X20A). The colour used affects the colour of wood effect applied, so experiment before hand to ascertain the effect you require. 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, you can use a small piece of fine sponge to apply the paint.

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

Once painting is complete, clean the brush in water.

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



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

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

Although it's a lacquer, I've found that the 'Alclad' 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/'Tamiya' 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) or Semi-Matte (ALC-312), 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.*

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.*

NOTE 5: *If the wash 'beads' on the surface instead of spreading evenly, add a few drops of washing up liquid to the wash, which will break the surface tension of the wash, allowing it to spread.*

NOTE 6: *When the wash is finally sealed it will darken slightly. As the weathering effect is intended to be subtle, it's best to remove more than you think is necessary before sealing. Sealed weathering can't be removed. Additional wash can be applied onto the sealed weathering, as required, and sealed again.*

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) or Semi-Matte (ALC-312), which will seal in the applied clay wash.



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) or Semi-Matte (ALC-312).



'Tamiya' Weathering Master sets:

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



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



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



Water colour pencils:

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



Oil paint:

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

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

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



Another good product are the oil brushes, produced by 'Ammo' by Mig Jemenez. These are made with modellers specifically in mind. The oil paint is applied from the brush then blended using their odourless thinners. The oil brushes are supplied as specific colouring sets or individually.



Oilbrusher2
Oil paint with fine brush applicator for modelling



PART 4
DECALS
(General)

PART 4 - DECALS (General)

Standard decals:

NOTE: *The following is **applicable only** for decals on a **painted surface**. If decals are to be placed on top of **previously applied decals**, the decal setting solutions may 'eat' into the previous decals. In this case a sealing coat of either 'Alclad' Gloss (ALC-310), 'Alclad' Aqua Gloss (ALC-600), Tamiya' Clear (X22) or '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 similar over areas of decals where more decals are to be applied.

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

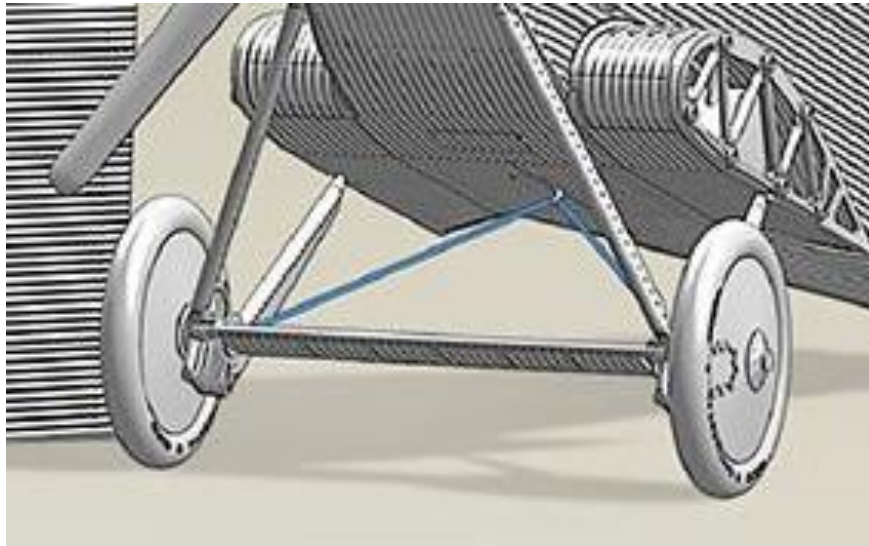
To 'knock back' the sheen for applying weathering effects (refer to Part 3 of this build log), for example 'Flory' clay washes or oil paint, I airbrush a sealing coat 'Alclad' Light Sheen (ALC-311) mixed with Flat (ALC-314) at a 3 to 2 ratio.

PART 5
RIGGING
(General)

PART 5 - RIGGING (General)

General:

This aircraft was a late WW1 design and one of the first to be clad in metal, rather than the more traditional linen. Also being an advanced mono-plane, there were no external struts or flight rigging. In fact, apart from cockpit internal flight controls, the only visible external visible rigging was the crossed bracing wires between the ends of the landing gear axle and the underside of the fuselage. Turnbuckles would probably have been fitted to the wires at the axle ends.



PART 6
PREPARATION

PART 6 - PREPARATION

This model is essentially built as supplied. The kit offers two options for the model, being the complete aircraft or the fuselage with one, or both wings detached, showing the internal wing structure. I chose to build the complete aircraft rather than displaying the model with its wings detached.

The parts required need to be carefully identified in the 'Wingnut Wings' instruction manual, as there are some differences between parts for your chosen schemes of A thru E.

These differences are:

- The engine type.
- The top, rear fuselage decking panel.
- The machine gun mountings.
- The left engine cowl panel.
- The foot step.
- The weapon flash guards.
- The forward sides of the cockpit rim.

Therefore some parts supplied in the kit will not be required or will need to be modified.

1. Read through the instructions manual to determine which scheme you are building and which kit parts will be required.
2. Check that all parts required are actually in the kit.
3. When parts are removed from their sprue, make sure all traces of the remaining sprue 'gates' are filed or sanded away.
4. Check the parts for any mis-moulding ('short shots'), breakage or distortion.
5. Check all parts for any surface imperfections, such as blemishes or moulding 'sink' marks.
6. Check parts for any mould ejector pin marks or indents, especially those that will be visible on the finished model.
7. Generally it's best to wash all parts in warm soapy water then rinse and leave to dry. This will remove any residual moulding release agent from the parts, which can affect the finish of the subsequent painting of the parts.

If parts are found to be damaged or missing, the supplier or manufacturer should be contact. As 'Wingnut Wings' no longer trade, replacement parts may prove to be difficult to obtain.

Warped or distorted parts can be corrected either by immersion in hot water or by applying hot air, such as that from a hair dryer. Once heated the part can usually be corrected. **Never** attempt to correct a part **by manipulation when it is cold**, as this will cause stress marks on the part and either weaken or break it.

Surface imperfections, such as sink marks or ejector pin indents can usually be corrected by filling with a modelling paste or surfacer, such as 'Mr. Surfacer 500 thru 1200' or 'Mr. Hobby' dissolved putty. Once fully cured the surface can be sanded to blend with the surrounding area.

PART 7

ENGINE

PART 7 - ENGINE

The engine for this version of the model is the Daimler-Mercedes 200 hp D.IIIaü.

NOTE: Make sure you check the parts required for this version of the engine on page 6 of the instruction manual.

Preparation:

Remove the required parts from Sprue E.

Cut and sand away residual sprue gates and any moulding seam lines from all parts, including the sprue gates inside the cylinder halves ((E16 and E25).

Cement the propeller shaft (E13) into its location in the engine sump (E31).

Cement the crank case (E14) onto the sump.

Cement the cylinder halves (E16 and E25) together, making sure the halves are correctly aligned.

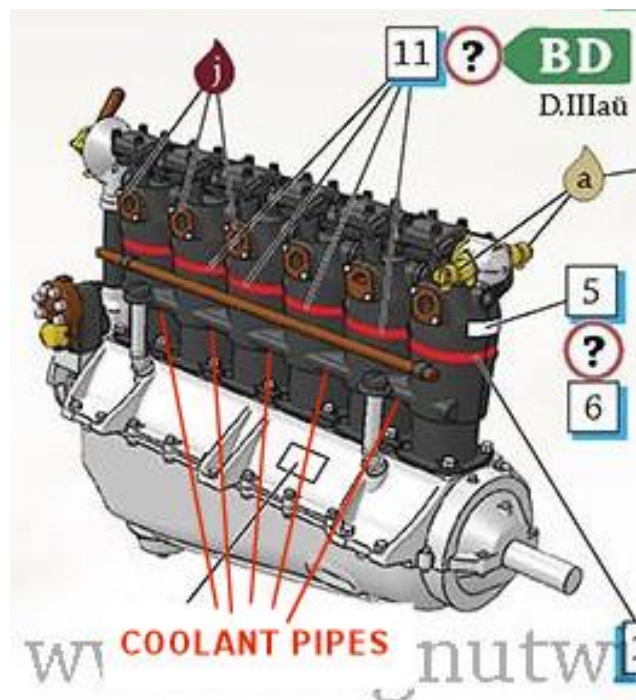
Cement the cylinder assembly onto the crankcase (E14), making sure the cylinder bank is vertical when viewed from the front or rear of the engine.

Cement the front cover (E28) onto the front of the engine.

Cement the flywheel (E8) to the rear of the engine.

Water jacket pipe:

NOTE: The interconnecting coolant pipes between the cylinders, on the right side of the engine, are pre-moulded as part of that side of the cylinders. The pipe is not realistic so I chose to modify the engine.



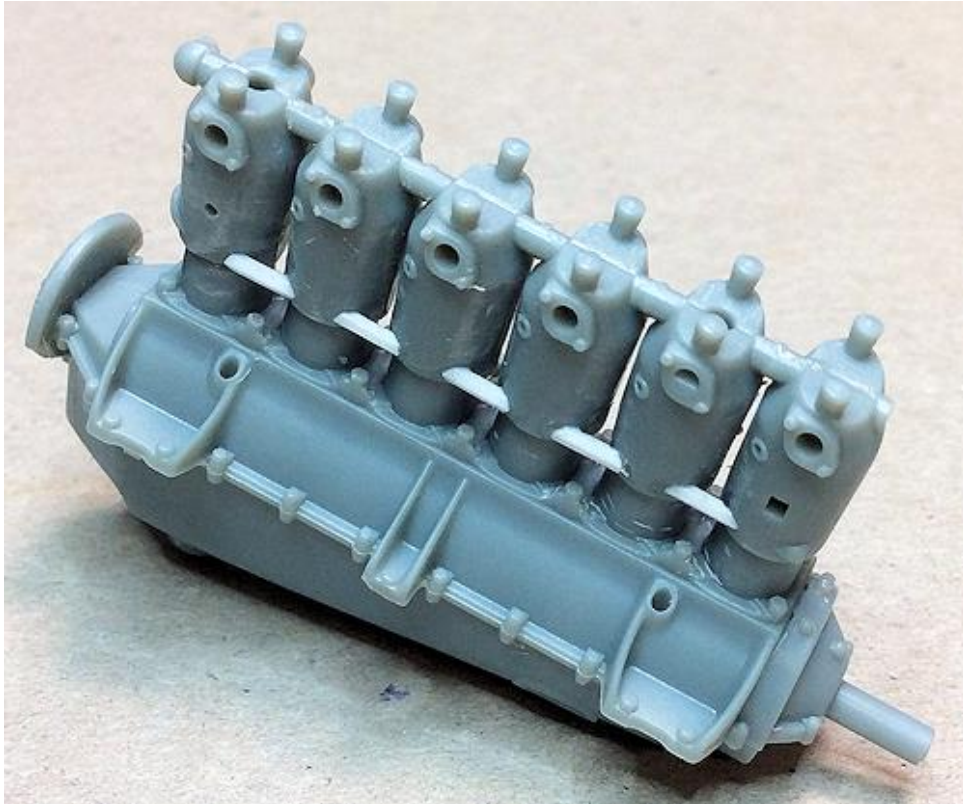
Carefully cut away the pre-moulded pipes between each of the cylinders. Make sure you don't cut into or through the engine detail above and below the pipes.

Scrape or sand the cut areas to blend them to the surrounding cylinders.

Cut short lengths of 0.8 mm diameter plastic rod, with a chamfer at each end, such that they fit between the cylinders where the original pipes was located.

Cement the plastic rod in position.

Repeat the procedure to add the remaining pipes in position between the cylinders.



Fuel primers

NOTE: Manual fuel primers were fitted to left side of each cylinder, to the rear of the spark plugs. As these are not supplied in the kit I chose to fit the resin 'Taurus Models' fuel primers (D3219).

On the left side of each cylinder, to the rear of the spark plug holes, is the 'disc' where the fuel primers would be located. Point mark the centre of each disc.

Using the mark as a guide, drill a hole of 0.9 mm diameter into the cylinder, starting with 0.5 mm and gradually increase to 0.9 mm diameter.

Carefully cut six fuel primer bases (Part 1 in the 'Taurus Models' set) from their moulding block.

Using thin CA adhesive, secure each into the pre-drilled hole in the cylinders, making sure they are horizontal and with the cup (for mounting the lever) facing to the left.

NOTE: The levers will be fitted later in the engine build.

Carefully cut six fuel primer levers (Part 2 in the 'Taurus Models' set) from their moulding block.

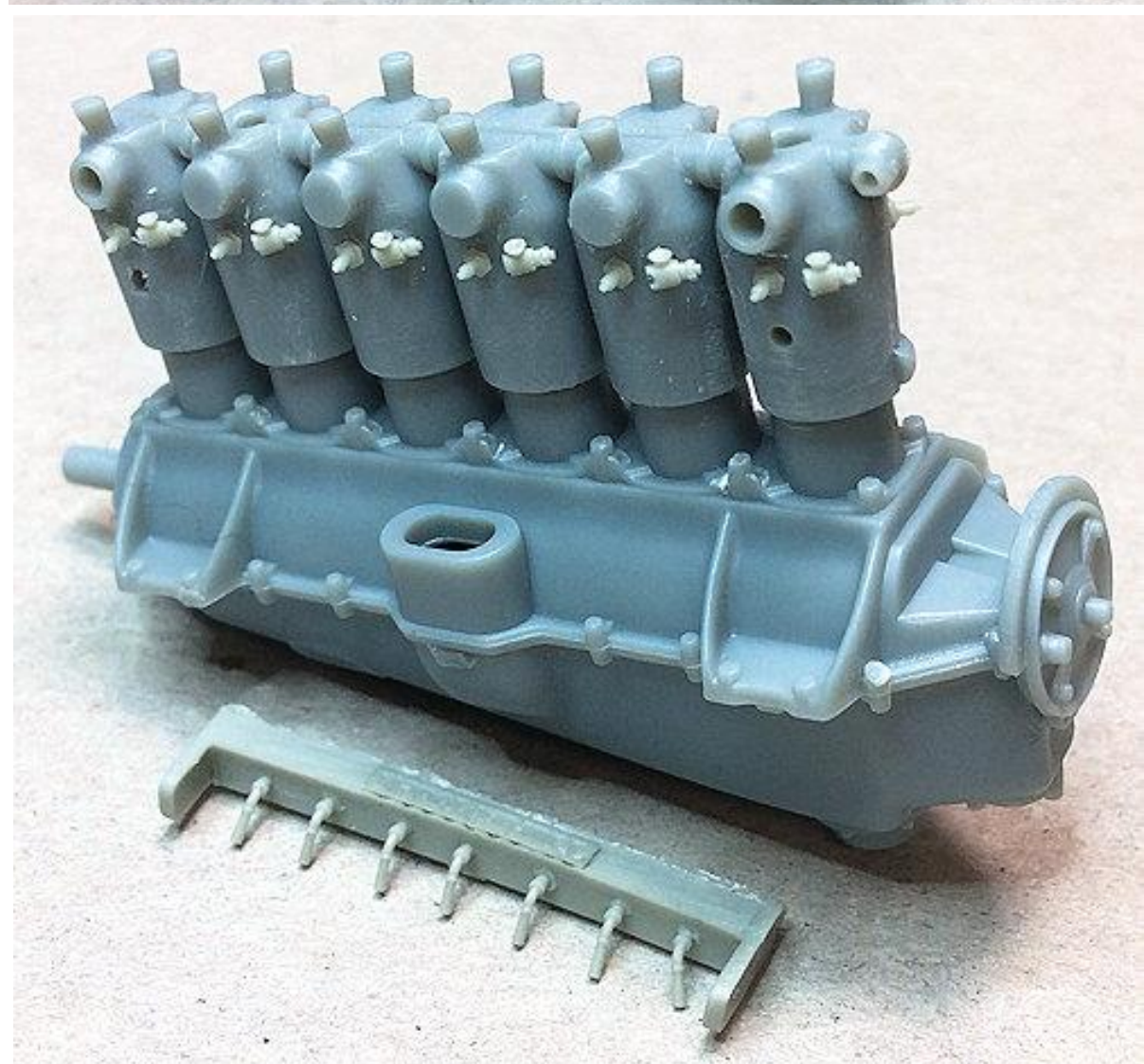
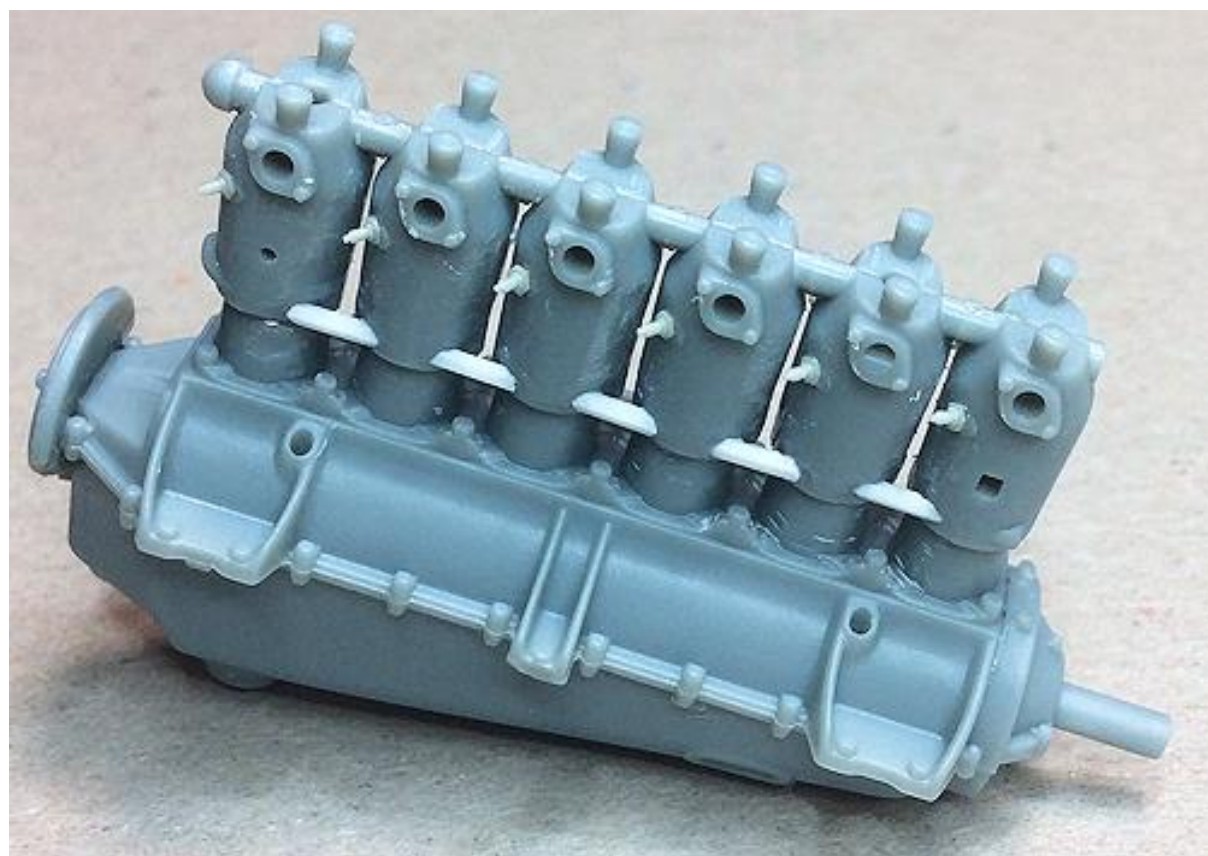
Spark plugs

NOTE: Each cylinder had a spark plug fitted to the left and right sides. The kit cylinders have pre-moulded holes for spark plugs. As the spark plugs are not supplied in the kit I chose to fit the resin 'Taurus Models' spark plugs (D3218).

Carefully cut twelve spark plugs from their moulding block.

Drill out the twelve pre-moulded holes for the spark plugs to 0.9 mm diameter, starting with 0.5 mm and gradually increase to 0.9 mm diameter.

Using thin CA adhesive, secure a spark plug into each pre-drilled hole in the cylinders.



Cement the float bowl assembly (E22) onto the carburettor and intake manifold assembly (E33).
Cement the two magnetos (E19 and E20) onto the drive shaft (E26).

Ignition lead support pipes:

NOTE: *The actual engine has various pipes, not all of which are represented in the kit. Also those that are fragile and easily broken. Therefore I chose to make or replace these pipes from Brass rod. Use the kit parts E11 or E15 as a guide for the tube length and the exit holes for the six ignition leads.*

Cut a length of 1.0 mm diameter Brass tube, such as 'Albion Alloy's' MBT10 or similar.

Mark along one side of the tube the position of the exit holes for the six ignition leads.

Using a sharp, strange blade, carefully 'V' nick the tube at the six marks.

Use the nicks as a drill guide and drill through that side only of the tube.

Sand the drilled holes to remove any metal burrs.

Drill out the pre-moulded mounting hole in both sides of the rear cylinder, using a 0.6 mm diameter drill.

Drill a hole of 0.6 mm diameter through both sides of the front cylinder and in the centre of the pre-moulded mounting recess.

Lay the tube on the side of the engine cylinders, making sure the six exit holes are facing down and the front of the tube is aligned with the forward edge of the front cylinder.

Mark the side of the tube facing the cylinders with the position of the front and rear pre-drilled mounting holes.

Using a sharp, strange blade, carefully 'V' nick the tube at the two marks.

Use the nicks as a drill guide and drill through that side only of the tube.

Sand the drilled holes to remove any metal burrs.

Cut two short lengths of 0.5 mm diameter Brass rod, such as that from 'Albion Alloy's' or similar.

Secure the two cut rods into the mounting holes in the tube, using thin CA adhesive.

Repeat the procedure to create an ignition lead support pipe for the other side of the engine.

NOTE: *When test fitting the left ignition lead support pipe, make sure that when the carburettor assembly E33 is fitted to the engine, it clears the test fitted support pipe.*

Test fit the tube assembly onto the engine cylinders.





Sump breather pipe:

Drill a hole of 0.6 mm diameter through the centre web on the right side of the engine crankcase. Drill a hole of 0.6 mm diameter into the engine crankcase and aligned with the previously drilled hole.

Cut a length of 0.5 mm diameter Brass rod, such as that from 'Albion Alloy's' or similar.

Bend one end of the rod around a suitable circular former to create a bend past 90 degrees.

Pass the straight end of the rod through the pre-drilled hole in the centre web of the crankcase.

Test locate the bent end of the rod into the hole drilled into the engine crankcase.

Trim the bent end of the rod until it can be fully located into the hole and still be vertical through the web in the crankcase.

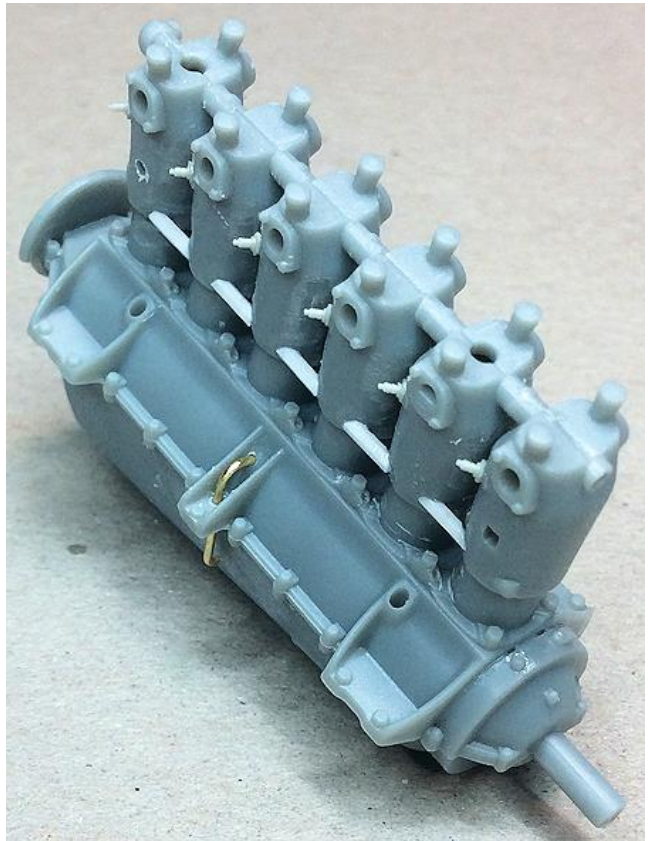
Mark the bottom of the rod at a the same distance from the crankcase and sump flange joint as the top portion of the rod.

Remove the rod and bend the rod at the mark to 90 degrees.

NOTE: *During the following step, the bottom bend on the rod may contact the surface of the sump when attempting to locate the top in its hole. Trim the bottom bend gradually until it can be located without damaging the surface of the sump.*

Refit the rod through the pre-drilled hole in the centre web and fit the top bend into its hole in the crankcase. The bottom bend needs to rest against the side of the sump. Remove the rod and trim the bottom bend until the correct fit is achieved.

Secure the tube in position on the engine, using thin CA adhesive.



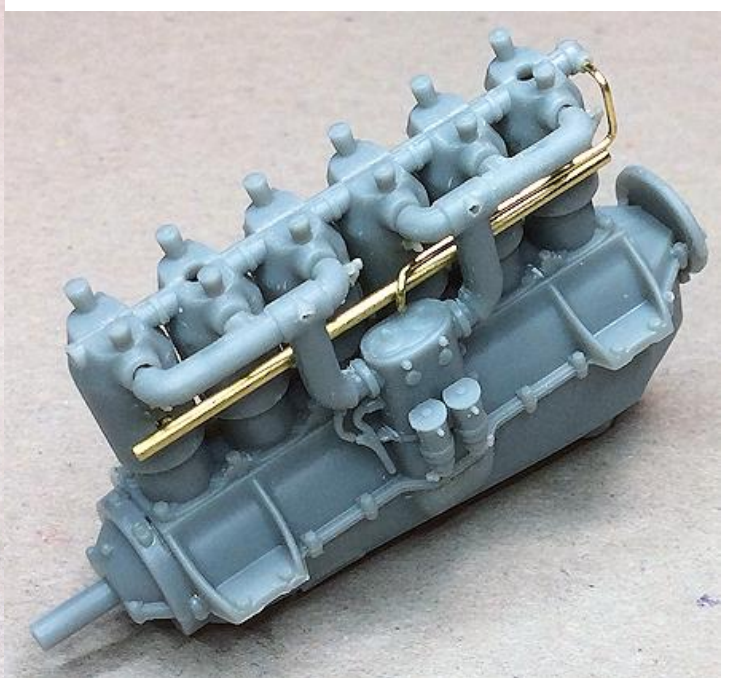
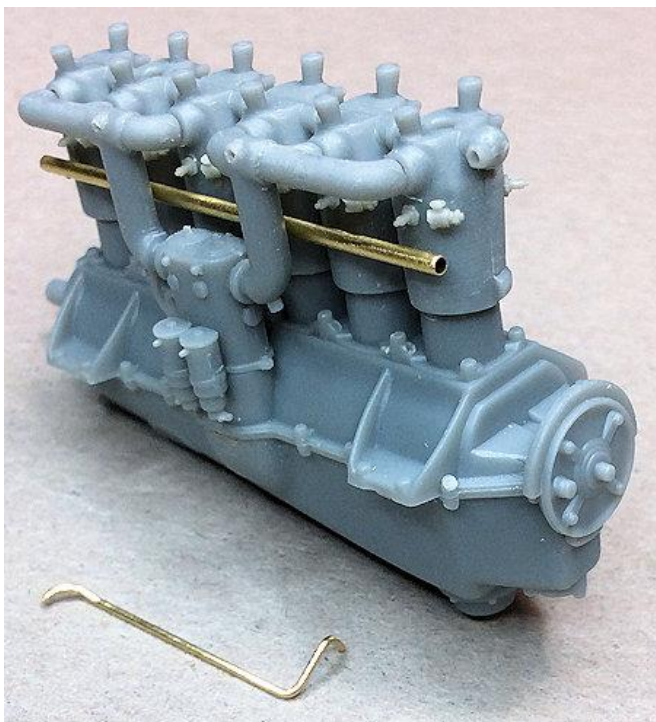
Carburettor pre-heat pipe:

Temporarily fit the left ignition lead support pipe and the carburettor assembly to the engine.

Using the kit part E21 as a guide, bend a length of 0.4 mm diameter Nickel-Silver tube, such as 'Albion Alloy's' NST04 or similar, to the same shape.

Test fit the created pipe, which should lay along the top of the lead support pipe with the front end touching the top, centre of the carburettor housing and the rear end locating into the pre-moulded locating hole.

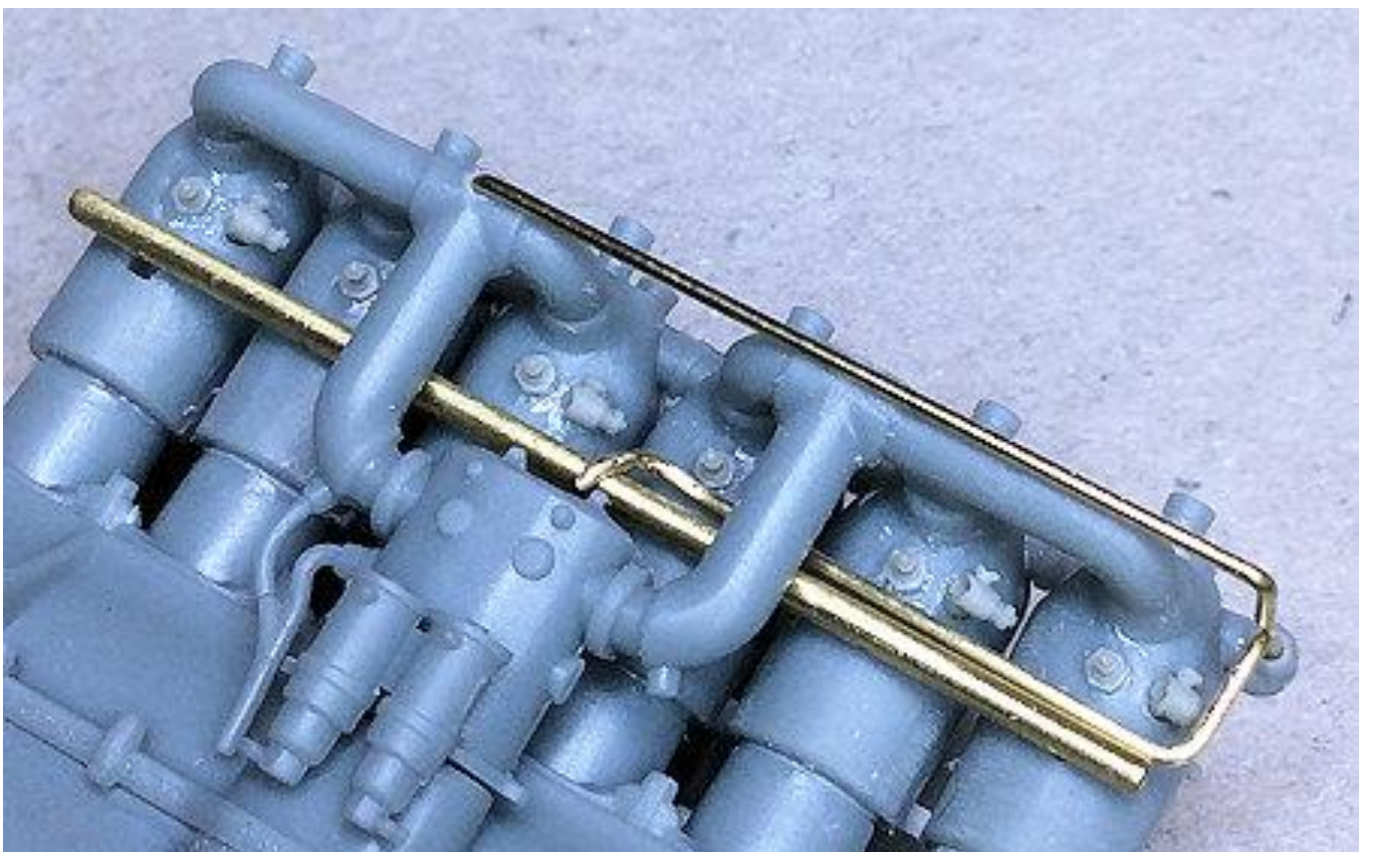
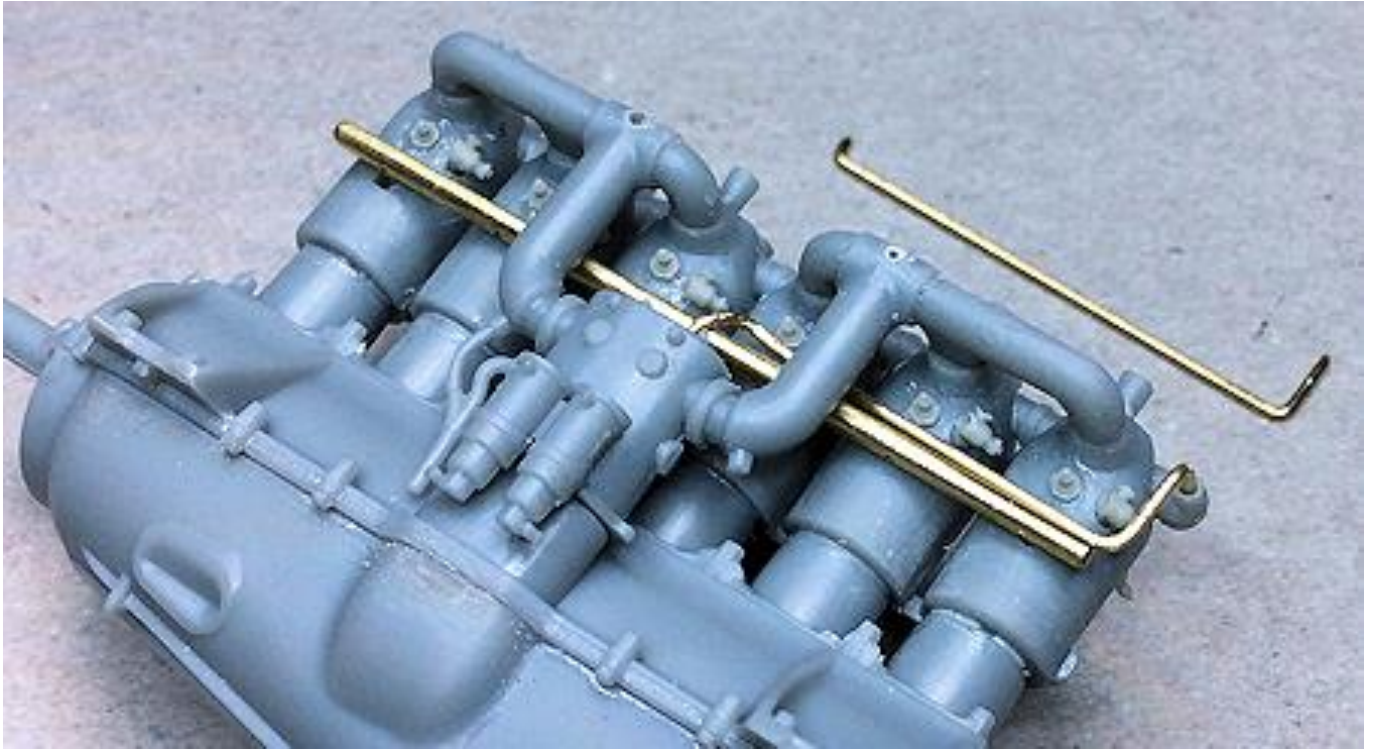
Leave the parts temporarily fitted for the following manifold pre-heat pipe (E42).



Manifold pre-heat pipe:

Using the kit part E42 as a guide, bend a length of 0.4 mm diameter Nickel-Silver rod, such as that from 'Albion Alloy's' NST04 or similar, to the same shape.

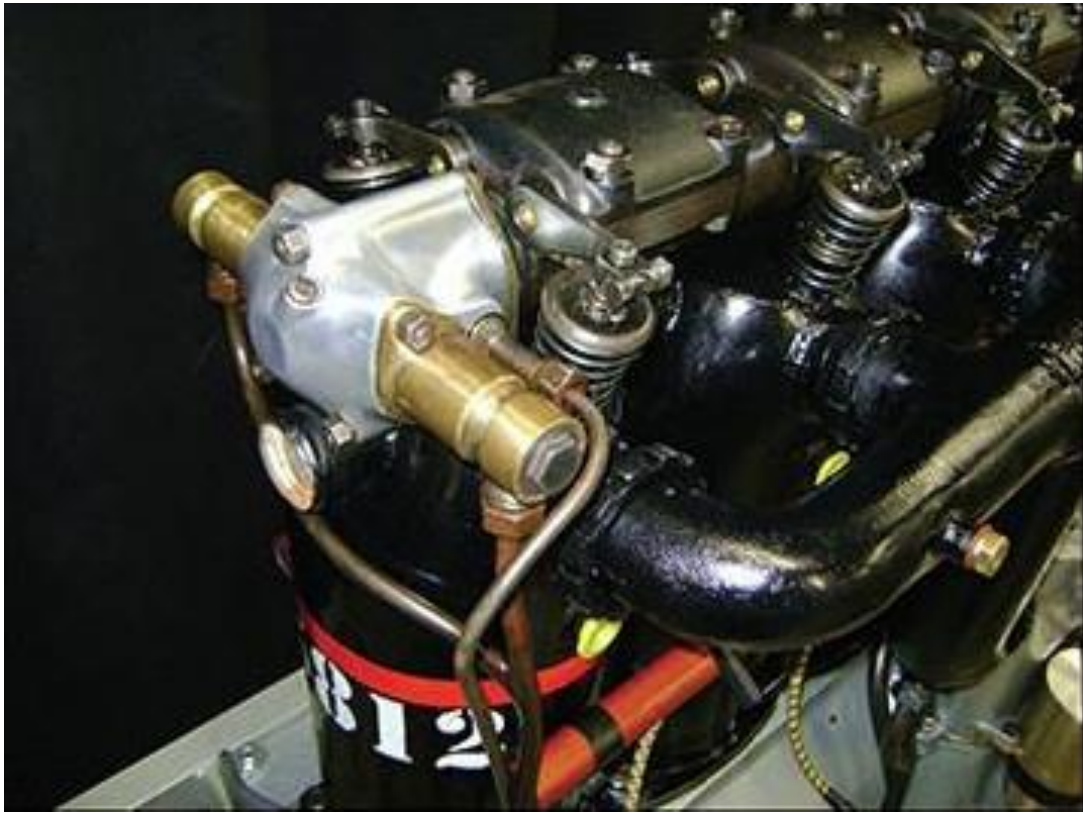
Test fit the created pipe, which should lay across the two horizontal manifold pipes with the front end in the pre-moulded hole in the forward manifold pipe and the rear end chamfered to lay on the E21 replacement pipe.



Air pump pipes:

NOTE: Refer to the following photograph for the location of the three into two air pump pipes. The left and right pipes join at the left side. The left rear is a single pipe. Both pipes are connected into the engine crankcase at the left side.

Air pump and pipes



'Bleed' valve



Temporarily locate the Rocker box assembly (E27) onto the top of the engine.

Locate the air valve (E37) onto the front end of the rocker box assembly.

Make sure the air pump is horizontal to the engine then cement it to the rocker box assembly. Make sure the air pump is cemented **only** to the rocker box assembly and not to the engine.

Remove the rocker box assembly.

Drill a hole of 0.4 mm diameter vertically into, **but not through**, the underside of the two side air pump barrels.

Drill a hole of 0.5 mm diameter into the side of the air pump body, to the rear of the left side air barrel.

Drill a hole of 0.5 mm diameter into the top, left of the upper propeller shaft housing.

Cut a short length of 1.2 mm diameter Brass tube, such as 'Albion Alloy's' MBT12 or similar.

Drill a hole of 0.5 mm diameter midway into one side of the tube.

Using thin CA adhesive, secure the tube over the bolt head of the second cylinder base clamp on the left side of the engine.

Seal the top of the tube with modelling putty or CA adhesive.

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

Bend one tube to fit into the pre-drilled hole on the underside of the right side barrel of the air pump, across and under the pre-moulded hole at the top of the front cylinder to the left side of the cylinder. Then down and rearwards to fit into the pre-drilled hole in the added 1.2 mm diameter tube.

Secure the tube in position using thin CA adhesive.

Bend the second tube to fit into the pre-drilled hole on the underside of the left side barrel and down to join the first tube.

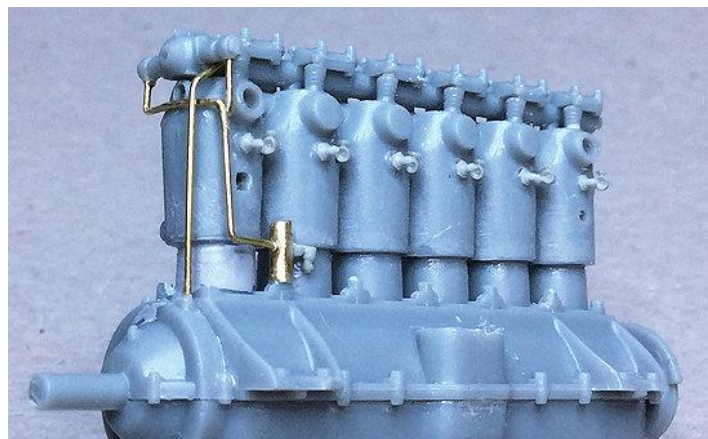
Secure the tube in position using thin CA adhesive.

Bend the third tube to fit into the pre-drilled hole in the left, rear of the air pump body, then forwards and down to fit into the pre-drilled hole in the top, left of the upper propeller shaft housing.

Secure the tube in position using thin CA adhesive.

Carefully cut a fuel primer bases (Part 1 in the 'Taurus Models' set) from its moulding block.

Secure the fuel primer base onto the rear or the added 1.2 mm diameter tube.



Magneto assembly:

Cement the two magneto's (E19 and E29) onto the tower shaft (E26).

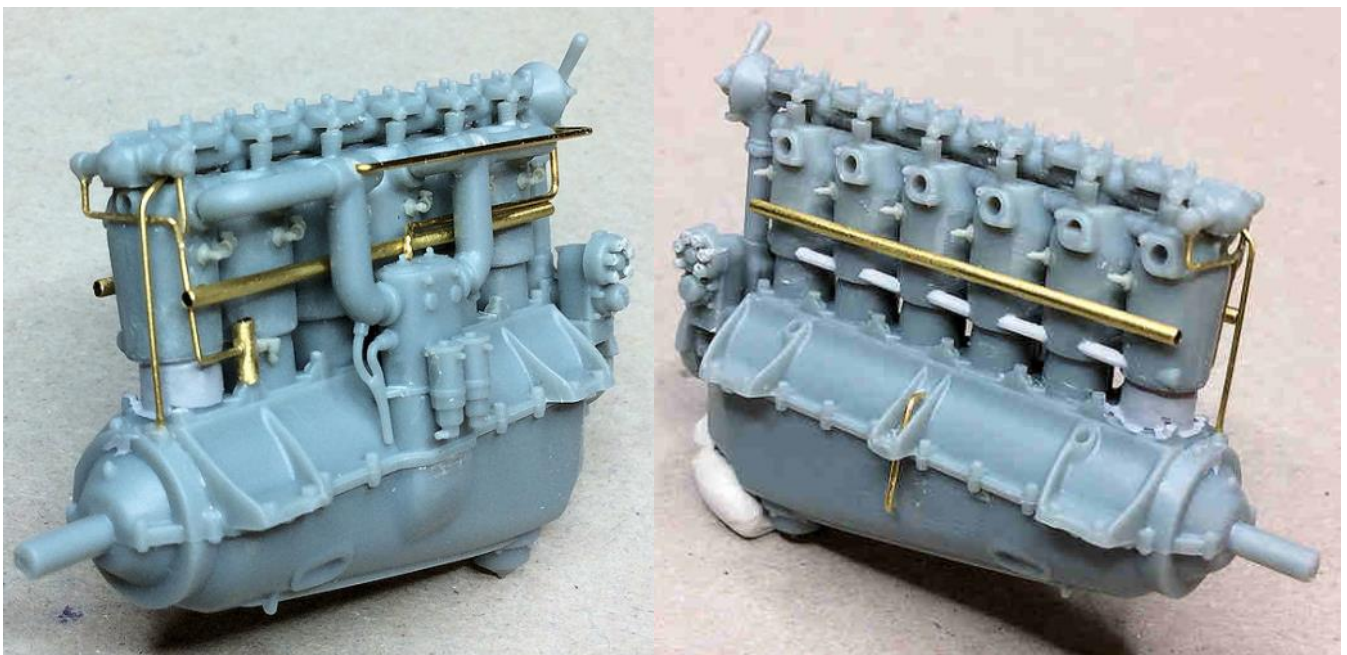
Cement the compression lever (E12) onto the top of the tower shaft.

On the face of the two magneto's (E19 and E20), point mark the centre of each of the six connection points for the ignition leads.

Using the point marks as guides, drill holes of 0.3 mm diameter into the two magneto's. These will be used to attach the spark plug ignition leads.

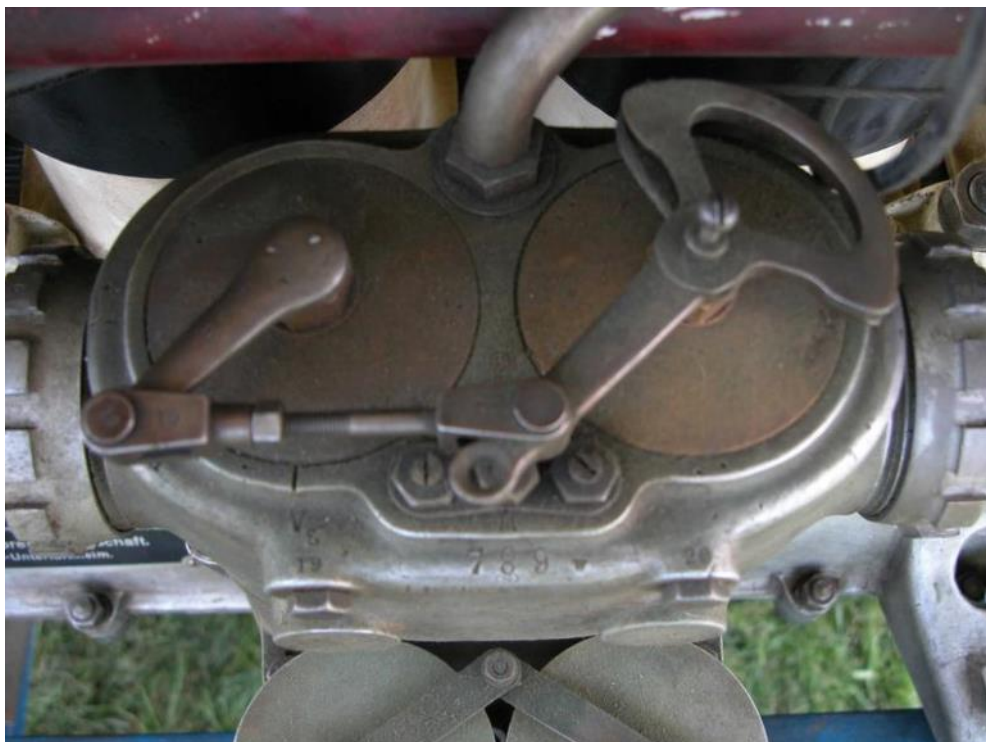
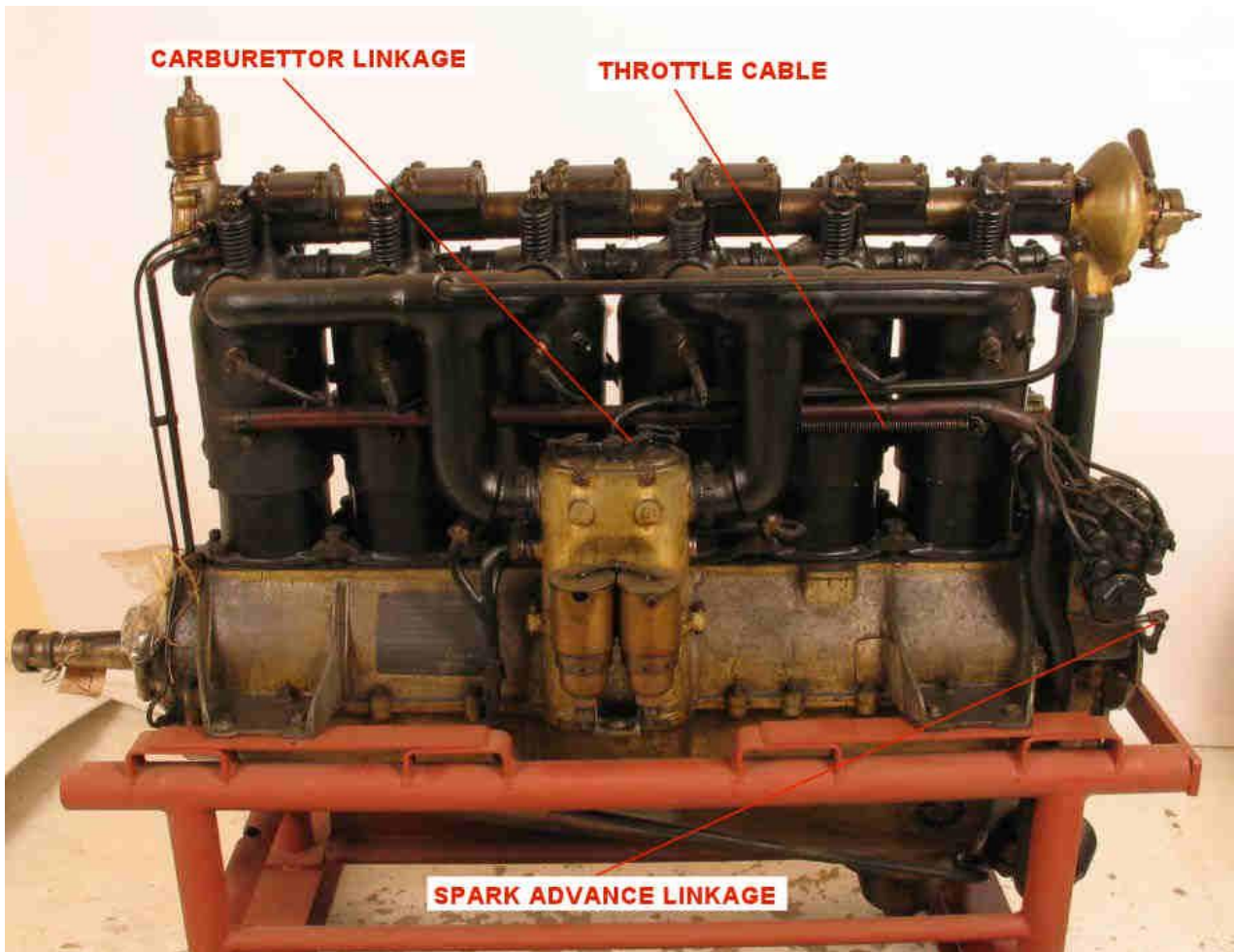


When all of the tubes are test fitted, the engine should look as shown below.



Controls:

NOTE: The basic engine controls consisted of a throttle control to the carburettor and spark advance control to the magnetos. These are not represented in the kit. The throttle control was cable operated from the hand throttle levers on the control column. The spark advance was operated by rod from the spark advance lever on the left side of the cockpit.



Throttle control:

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

Temporarily fit the left ignition lead support tube onto the engine.

Temporarily fit the carburettor manifold assembly onto the engine.

Trim the length of the 0.4 mm diameter tube as shown in the following photograph.

Use a 0.2 mm diameter drill to clear each end of the tube of Brass burrs.

If necessary, cut a small notch in the rear of the rear carburettor inlet manifold pipe, to allow the tube to be positioned against the outer edge of the ignition lead support tube.

Position the tube as shown in the following photograph and secure it in position using thin CA adhesive. The throttle control cable will be routed through the tube later in the engine build.

The throttle linkage on the top of the carburettor was made using 'spare' photo-etch parts, which were secured in position using thin CA adhesive.



Carburettor fuel pipes:

NOTE: Refer to Part 10 (*Fuselage - fuselage interior*) for construction of the fuselage interior.

Drill a hole of 0.4 mm diameter into the bottom of the two carburettor cylinders at the base of the carburettor housing.

Cute two lengths of 0.375 mm diameter copper wire and bend one end of each wire to 90 degrees.

Insert the bent ends of the wires into the pre-drilled holes, making sure they are up against the bottom of the cylinders.

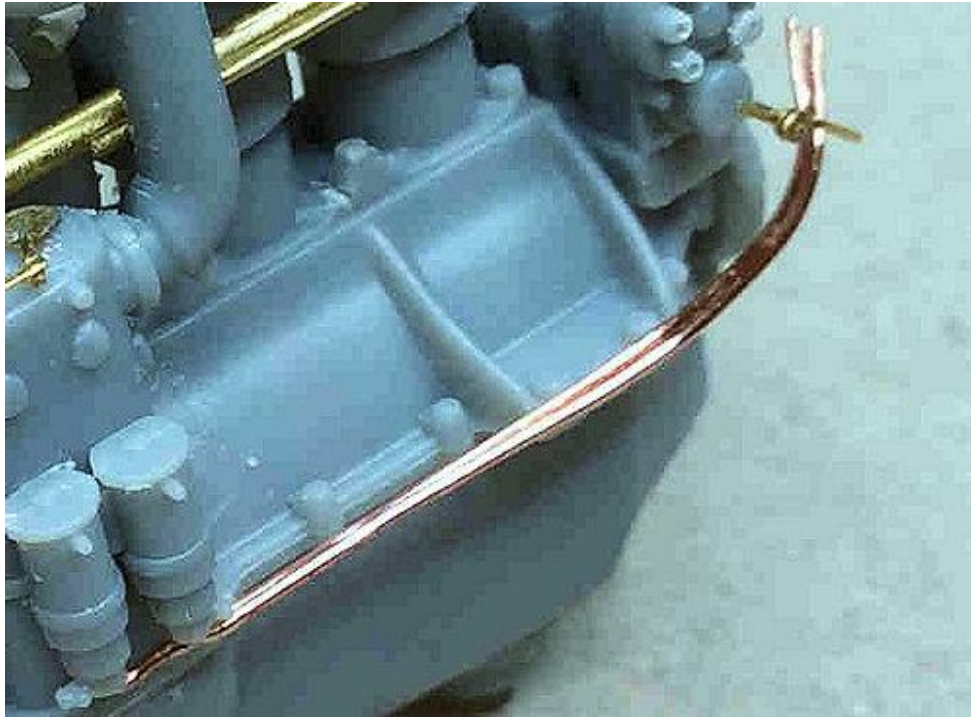
Temporarily fit the carburettor manifold assembly onto the engine.

Temporarily locate the engine into the engine bearers on the constructed fuselage.

Trim the ends of the wires and route the two wires together and along the engine to the underside of the gravity fuel tank.

Secure the wires together using thin CA adhesive.

Remove the carburettor manifold assembly from the engine.



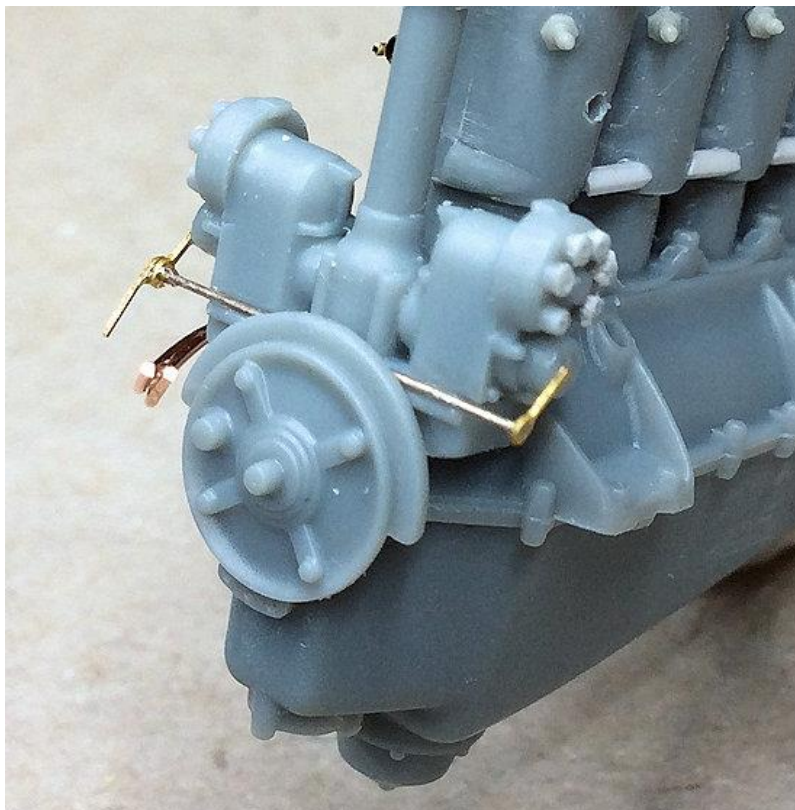
Spark advance control:

Cut a length of 0.4 mm diameter Nickel-Silver tube, such as 'Albion Alloy's' NST04 or similar. Trim the length of the tube so it spans between the outer face of the two magneto's.

Secure the tube onto the ridge on the lower, rear of the magneto mounting.

NOTE: *Three spark advance levers are required. Two are attached between the ends of the tube and the face of the magneto's. The third lever is for attaching to the operating rod from the Cockpit and is attached to the left end of the tube.*

The three spark advance levers were made using 'spare' photo-etch parts, which were secured in position on the ends of the tube, with two using thin CA adhesive.



Painting:

For thinning 'Tamiya' acrylic paints, I mostly use 'Mr. Colour' self-levelling thinners (400).

Airbrush the **engine** and **all parts** (*except the created pre-heat pipes for the carburettor and the manifold*) with a gloss black base coat, such as 'Tamiya' Black (X1) or similar.

Mask off the cylinders of the engine.

Airbrush the engine sump, carburettor housing and the magneto tower shaft assembly with 'Alclad' Duraluminium (ALC-102) or similar.

Remove the masking.

Details:

Spark plugs - 'Tamiya' Deck Tan (XF55)

Fuel priming cups - 'Mr. Colour' Brass (219)

Fuel primer levers - 'Tamiya' Hull Red (XF9)

Camshaft - 'Mr. Colour' Stainless Steel (213)

Rocker covers - 'Mr. Colour' Iron (212)

Valve levers and springs - 'Mr. Colour' Stainless Steel (213)

Air pump barrels - 'Mr. Colour' Brass (219)

Sump pipe filler caps - 'Mr. Colour' Brass (219)

Decompressor body - 'Mr. Colour' Brass (219)

Magneto cylinders - 'Mr. Colour' Brass (219)

Magneto faces - 'Tamiya' Hull Red (XF9)

Ignition lead support tubes - 'Tamiya' Hull Red (XF9)

Carburettor barrels - 'Mr. Colour' Brass (219)

Carburettor fuel supply pipes - 'Mr. Colour' Stainless Steel (213).

Decals:

Preparation:

Airbrush the engine cylinders and the top sides of the engine sump with a clear gloss coat, such as 'Alclad' Aqua Gloss 600 or similar.

Apply the shorter red high compression bands (11) around each side of the four middle cylinders.

Apply the longer red high compression bands (19) around the front and rear cylinders.

Apply the engine plates (59 and 60) to the top sides of the engine sump.

Apply the cylinder number (5 or 6) to the front of the forward cylinder.

To represent the support clamps for the ignition lead support tubes, apply 1.0 mm wide decal stripes ('Xtradecal' black parallel stripes (XPS1) set) around each end of the two support tubes. The stripes should align with the centre of the front and rear cylinders.

Assembly:

Make sure the pre-drilled holes in the two ignition lead support tubes and the two magnetos are clear of paint.

Cement the magneto tower shaft in position on the rear of the engine with the spigot on the rear of the valve gear drive shaft located into the hole in the front of the decompression valve body.

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

Secure the line into the front end of the created throttle cable support tube on the left ignition lead support tube.

Cut twelve lengths of 0.3 mm diameter lead wire, such as that from 'PlusModel' or similar.

Using thin CA adhesive, secure a wire into each of the pre-drilled holes in the ignition lead support tubes.

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

Using thin CA adhesive, secure the ignition lead support tubes into their pre-drilled holes on the sides of the cylinder bank.

Carefully loop each wire up and over the support tube and trim the wire length such that it contacts the end of its spark plug with a loop under the support tube.

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

Using thin CA adhesive, secure each fuel primer lever to its base on the left side of the cylinders.

Cement the carburettor assembly into its location recess and engine intake manifold locations.

Trim the length of the mono-filament (in the front end of the throttle cable support tube) such that it contacts the rear of the added throttle control linkage on the top of the carburettor housing.

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

Using thin CA adhesive, secure the created (carburettor to engine rear) pipe in position.

Using thin CA adhesive, secure the created (intake manifold to engine rear) pipe in position.

Cement the two sump oil filler tubes in position on the right side of the engine.

Cement the coolant pipe (with the bottom end cut away as per the instructions) to the rear, right location on the rear cylinder.

Cut twelve lengths of 0.3 mm diameter lead wire, such as that from 'PlusModel' or similar.

Using thin CA adhesive, secure a wire into each of the pre-drilled holes in the face of the two magneto's.

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

NOTE: *During the following step, not all of the six wires from each magneto will fit inside their support tube. Therefore the ends of some wires will need to be secured as a group at the end of the tube.*

Loop each wire up to the end of its ignition lead support tube and secure in position using thin CA adhesive.

Cut a length of 0.12 mm diameter mono-filament, such as that from 'Steelon' or 'Stroft' or similar. It should be longer than that needed for the line to reach the cockpit area from the rear of the throttle control cable support tube, when the engine is fitted into the fuselage.

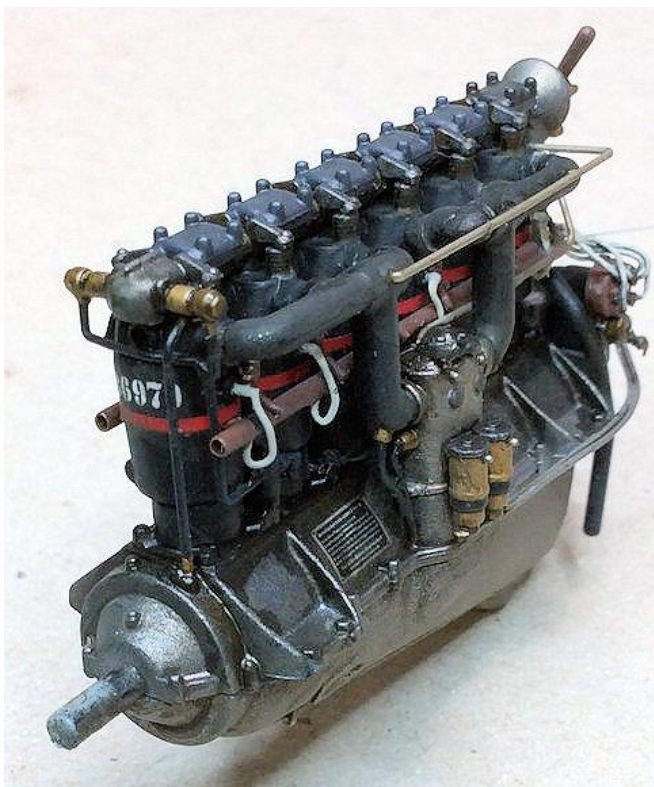
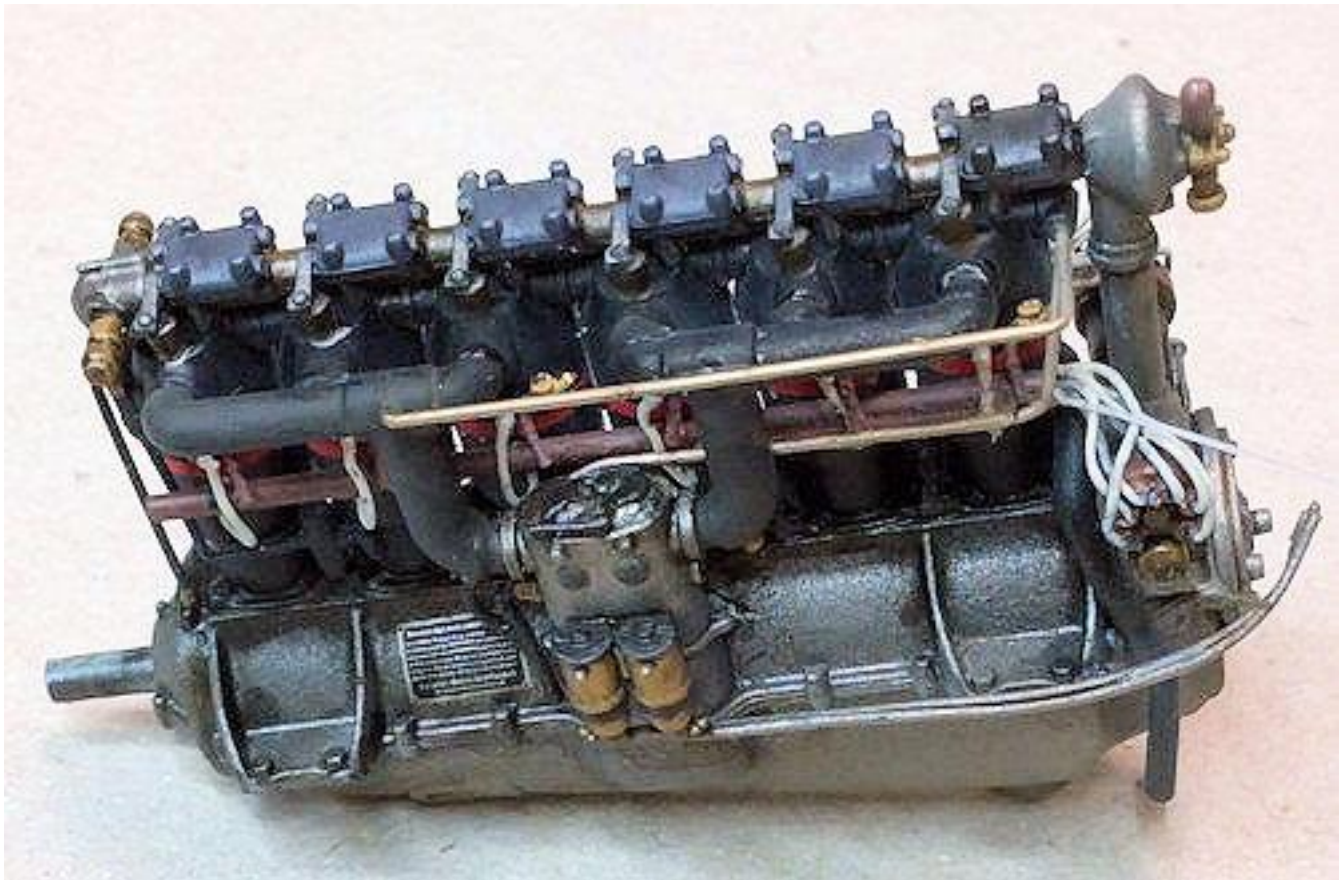
Secure the line into the rear end of the created throttle cable support tube on the left ignition lead support tube.

Weathering:

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

Refer to Part 3 (Weathering) of this build log - I applied 'Flory Models' Dark Dirt fine clay wash. Once the desired weathering effect is achieved, seal the treated surfaces with a clear matte coat, such as 'Alclad' Flat(ALC314) or similar.

If desired, apply 'AK Interactive' engine oil (AK2019) and/or kerosene (AK2039) as streaks or stains around various areas of the engine.



PART 8
PROPELLER

PART 8 - PROPELLER

The supplied 'Wingnut Wings' propeller represents one manufactured by 'Axial'. Although good enough to use, I chose instead to use a hand made and laminated 'Axial' wood propeller from the 'Proper Plane'.



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' Flat Brown (XF10), thinned with 'Mr. Colour' self levelling thinners 400, to obtain a 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) or similar. This will provide a good surface for applying the decals.

Apply the 'Wingnut Wings' kit supplied propeller decals (51 and 52).

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 central. Secure in position using CA adhesive.

Position the rear boss onto the propeller, making sure it is central. Secure in position using CA adhesive.



PART 9
FUSELAGE

PART 9 - FUSELAGE

NOTE: *Unless stated otherwise, follow the 'Wingnut Wings' instruction manual. This model is being **built as a complete aircraft**, not with the wings detached. Remove the required parts from their sprues and sand away residual sprue gates and any moulding seam lines from all parts.*

Interior:

NOTE: *Do not apply any of the decals (marked as square part numbers) until the various parts have been assembled and painted.*

Unless stated otherwise below, construct the basic cockpit frames as shown in step 1 on page 3 of the instruction manual.

Cement the altimeter (A3) to the empty belt box (A19).

Cement the assembly to the fuselage bottom (D11).

Cement the two side frames (A11 and A12) to the cockpit assembly.

Cement the instrument panel (A37) to the empty belt box (A19).

Cement the engine support frame (A28) in position.

Cement the water pump and pipes (A45) in position.

Cement the engine bearer frame (A32) in position.

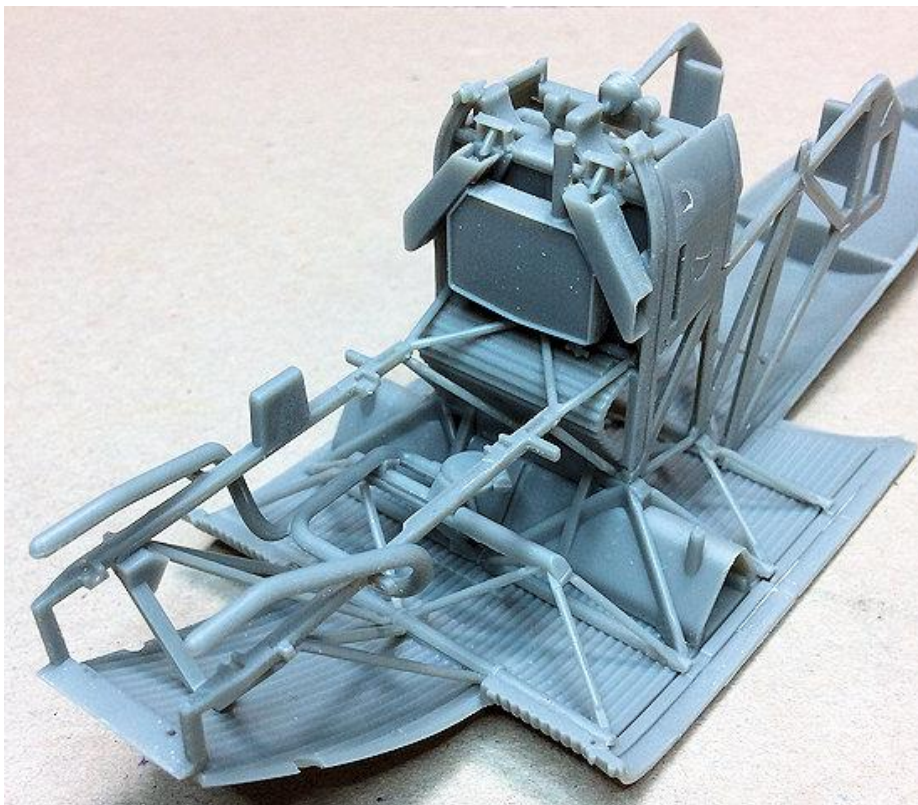
Cement the gravity fuel tank (A29) in position.

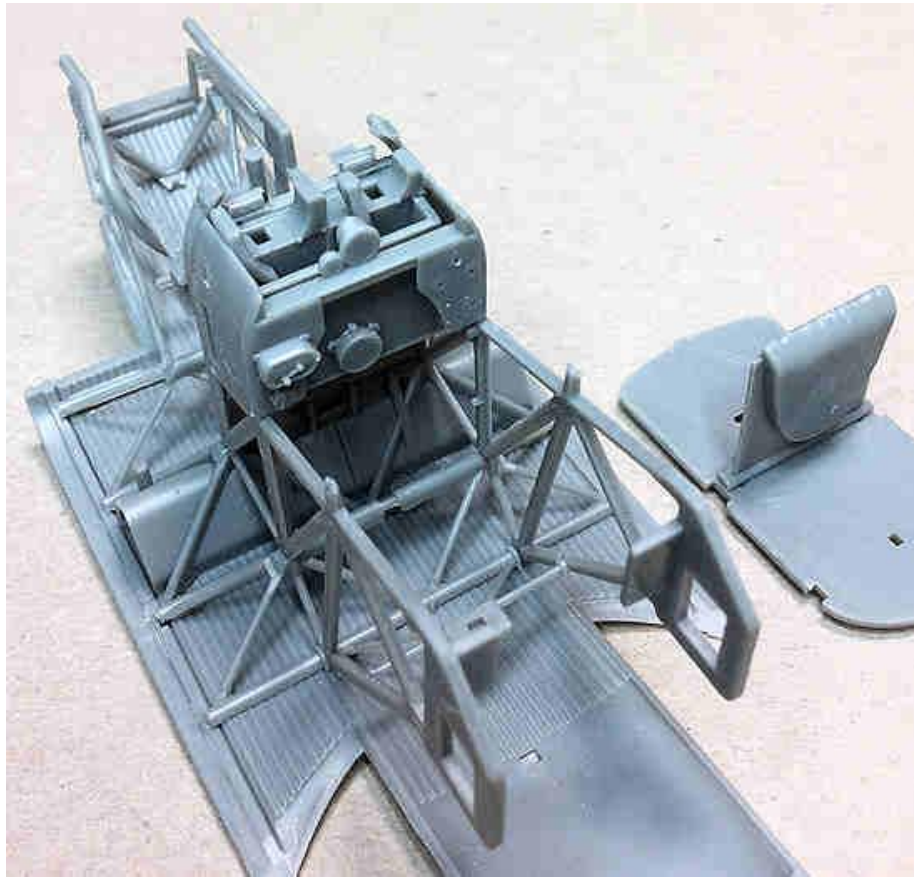
Cement the spark advance lever (A2), grease pump (A7) or the hand air pump (A1) onto their cockpit side frames.

NOTE: *At this stage of the cockpit interior construction, refer back to Part 7 (Engine) for the test fitting of the engine assembly and fitting of the engine throttle and spark advance controls.*

Cement the seat support (A22) onto the seat bulkhead (A23).

Construct, **but do not fit**, the control column and rudder pedals assembly (A14, A15 and A16).





Exterior:

NOTE: *Make sure you remove the required parts from their sprues and sand away residual sprue gates and any moulding seam lines from all parts.*

Prepare the following external parts:

- Fuselage sides (D1 and D6).
- Top rear panel (D9).
- Engine side panels (D4 and D5).
- Side vent panels (A25 and A26).
- Pilot's foot step (A39).
- Lifting handles (A38).
- Radiator (A5, A33 and A35).
- Radiator side panels (A47 and A48).

Cement the two side vent panels (A25 and A26) onto their fuselage sides.

Cement the pilot's foot step (A39) into its location on the left fuselage side.

Cement the two hand grips (A38) onto the locations on the rear of the fuselage sides.

Cement the rear of the radiator (A33) onto the radiator (A35).

Cement the two radiator side panels (A47 and A48) onto the sides of the radiator assembly.

Replace the pre-moulded radiator filler cap with cap (A5).

Seat harness:

Remove the seat harness shoulder and lap straps from the kit supplied sheet.

Remove any photo-etch tags from their edges.

Lightly heat the straps over a naked flame to anneal (soften) the parts.

Locate the shoulder straps onto the mounting lug on the rear of the seat, then bend the straps up and over the seat to the desired position.

Remove the straps.

Locate the thinner ends of the two lap straps through the slot in the rear of the seat support base.

Bend the straps up and over the sides of the seat to the desired position.

Remove the straps.

Painting:

NOTE: *For thinning 'Tamiya' acrylic paints, I mostly use 'Mr. Colour' self-levelling thinners (400).*

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

All of the cockpit assembly and internal surface of the lower fuselage.

Internal surfaces of the two fuselage sides, two engine side panels and top rear panel.

The radiator and control column assemblies.

Airbrush the following with 'Alclad' Duraluminium (ALC-102) or similar:

All of the cockpit assembly and internal surface of the lower fuselage.

Internal surfaces of the two fuselage sides, two engine side panels and top rear panel.

The radiator and control column assemblies.

Brush paint the following:

NOTE: *For thinning 'Tamiya' acrylic paints, I mostly use 'Mr. Colour' self-levelling thinners (400).*

'Tamiya' Light Blue (XF23) - pipe on hand pump.

'Tamiya' Neutral Grey (XF53) - spark advance lever.

'Tamiya' Red Brown (XF64) - control column throttle lever and hand grip, seat inner covering, seat cushion, hand pump handle.

'Humbrol' Leather (62) - seat cushion highlights.

'Tamiya' Grey Green (XF76) - engine bearer frame, coolant pipes and water pump.

'Tamiya' Deck Tan (XF55) - seat support bulkhead.

'Tamiya' Buff (XF57) - seat harness straps.

'Tamiya' Rubber Black (XF85) - starter magneto, rudder bar foot rests, top of control column.

'Mr. Colour' Stainless Steel (213) - seat rear covering, seat support base, seat harness fittings, ammunition ejector chutes from gravity fuel tank..

'Mr. Colour' Brass (219) - oil tank, triangular fuel tank, radiator filler caps, grease pump, gravity fuel tank and empty shell chutes, magneto switch.

'AK Interactive' engine oil (AK2019) - sight glass on oil tank.

Weathering:

Refer to Part 3 (Weathering) of this build log - I applied 'Flory Models' Dark Dirt fine clay wash to all assembled parts. I also applied the Grime wash to the seat harness straps.

Once the desired weathering effect is achieved, seal the treated surfaces with a clear matte coat, such as 'Alclad' Flat (ALC314) or similar.

Photo-etch switches:

Remove the four switch levers from the kit supplied sheet.

Using CA adhesive, secure the switches into the pre-moulded holes in the centre of the four decals on the instrument panel.

Rigging:

Rudder cables:

NOTE: *Tubing can be chemically blackened by immersion in a solution, such as 'Blacken-it' or similar*

Cut a length of 'EZ' Fine Black line and pass it through a short length of blackened 0.5 mm diameter tube, such as 'Albion Alloy's' MBT05 or similar.

Pass the end through a pre-moulded hole in a rear stem of the rudder bar.

Secure the line in the hole using thin CA adhesive.

Slide the tube up to the rudder bar and secure it on the line, using thin CA adhesive.

Repeat the procedure to the opposite stem.

Throttle cables:

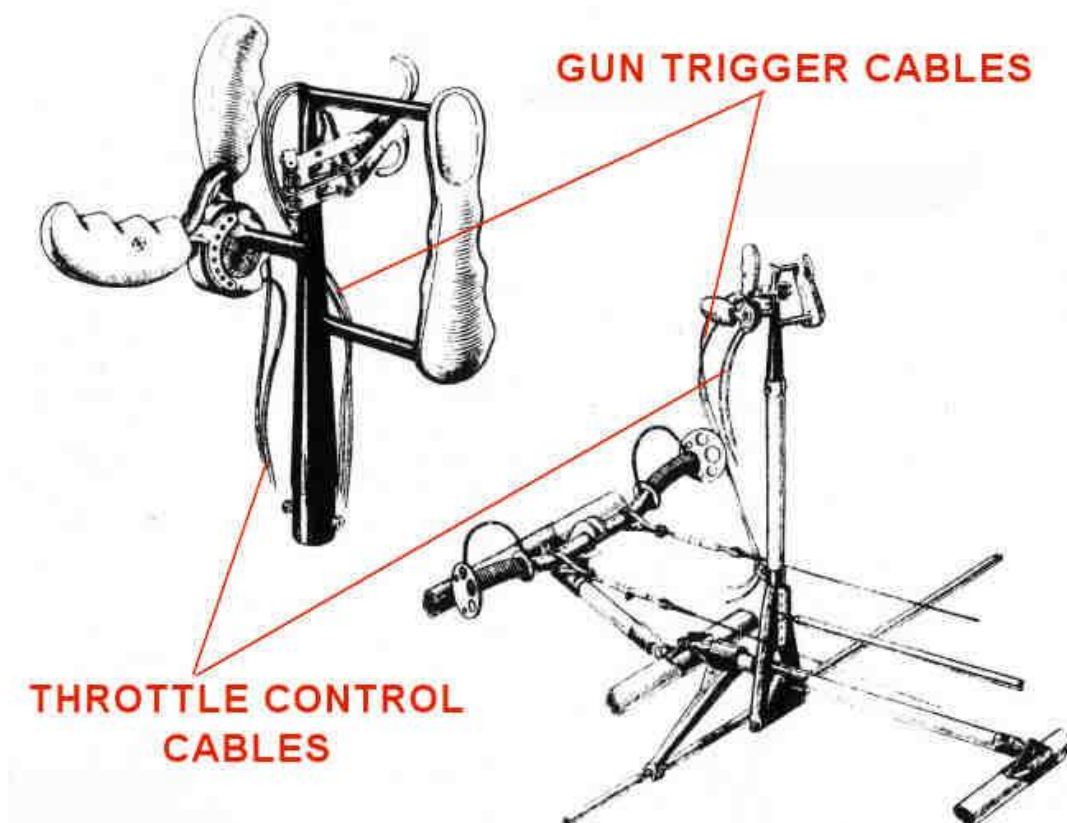
Cut two lengths of 'EZ' Fine Black line and secure one end of both lines together using thin CA adhesive.

Use thin CA adhesive to secure the joined ends of the lines to the arm of the gun triggers on the control column.

Trigger cables:

Cut two lengths of 'EZ' Fine Black line and secure one end of both lines together using thin CA adhesive.

Use thin CA adhesive to secure the joined ends of the lines to the hand throttle on the control column.



Seat:

Seal the seat inner surface and seat cushion by airbrushing with a semi-matte clear coat, such as 'Alclad' Light Sheen (ALC-311) or similar.

Secure the seat shoulder straps in position on the seat using thin CA adhesive.

Cement the seat in position on the seat support base and into the seat bulkhead.

Secure the seat lap straps in position in the slot of the seat support base and onto the seat, using thin CA adhesive.

Fuselage assembly:

Engine:

Cement the engine into the engine bearer frames, onto the four locating recesses.

Trim the length of the added throttle control cable (0.12 mm diameter mono-filament) such that it's as straight as possible and can be positioned on top of the gravity fuel tank and between the filler tube and empty shells chute.

Secure the throttle cable in position using thin CA adhesive.

Cut a length of blackened 0.3 Nickel-Silver tube, such as 'Albion Alloy's' NST03 or similar. The tube should be long enough to span between the spark advance lever in the cockpit and the photo-etch connection on the engine left magneto.

Secure the tube in position using thin CA adhesive.

Altimeter supports:

Cut three lengths of 0.3 mm diameter blackened Nickel-Silver tube, such as 'Albion Alloys' NST03 or similar.

Trim two lengths such that they span between the two upper lugs on the altimeter and the top corners of the panel.

Trim the third length such that it spans between the bottom lug on the altimeter and down and across to the diagonal strut of the cockpit left side frame.

Secure the three tubes in position using CA adhesive.

Control column:

Cement the control column in position on the cockpit floor locations.

Pass the ends of the two throttle control cables and the left gun trigger cable up through the gap at the top, left side of the instrument panel.

Pass the end of the right gun trigger cable up through the gap at the top, right side of the instrument panel.

Make sure that the cables are slightly looped down from the top of the control column.

Using thin CA adhesive, secure the cables in position.

Cut away any tag ends of the cables.

Seat assembly:

Cement the seat bulkhead between its locating plates and recesses in the cockpit side frames and the bottom recess in the fuselage floor.

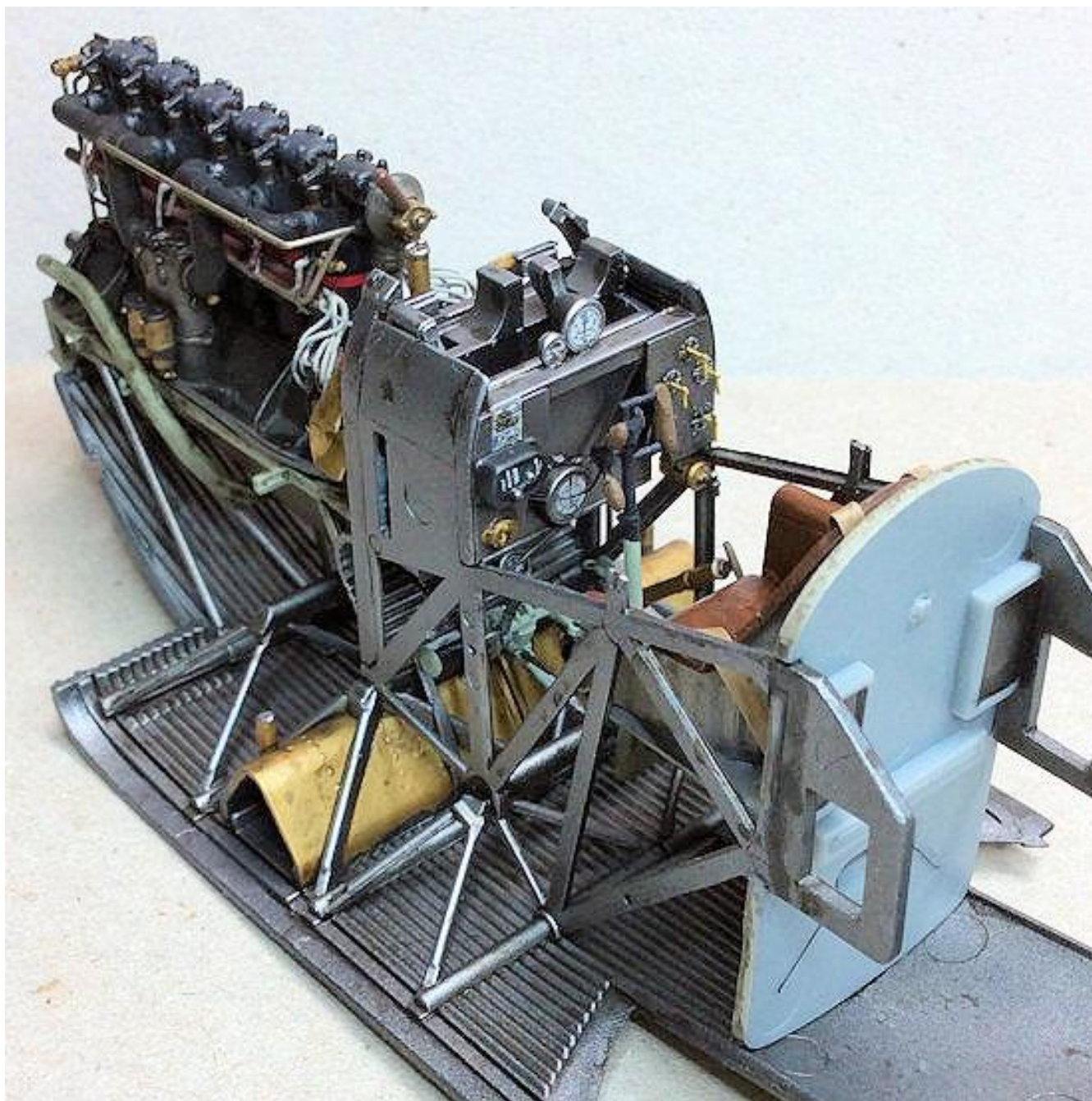
Rudder cables:

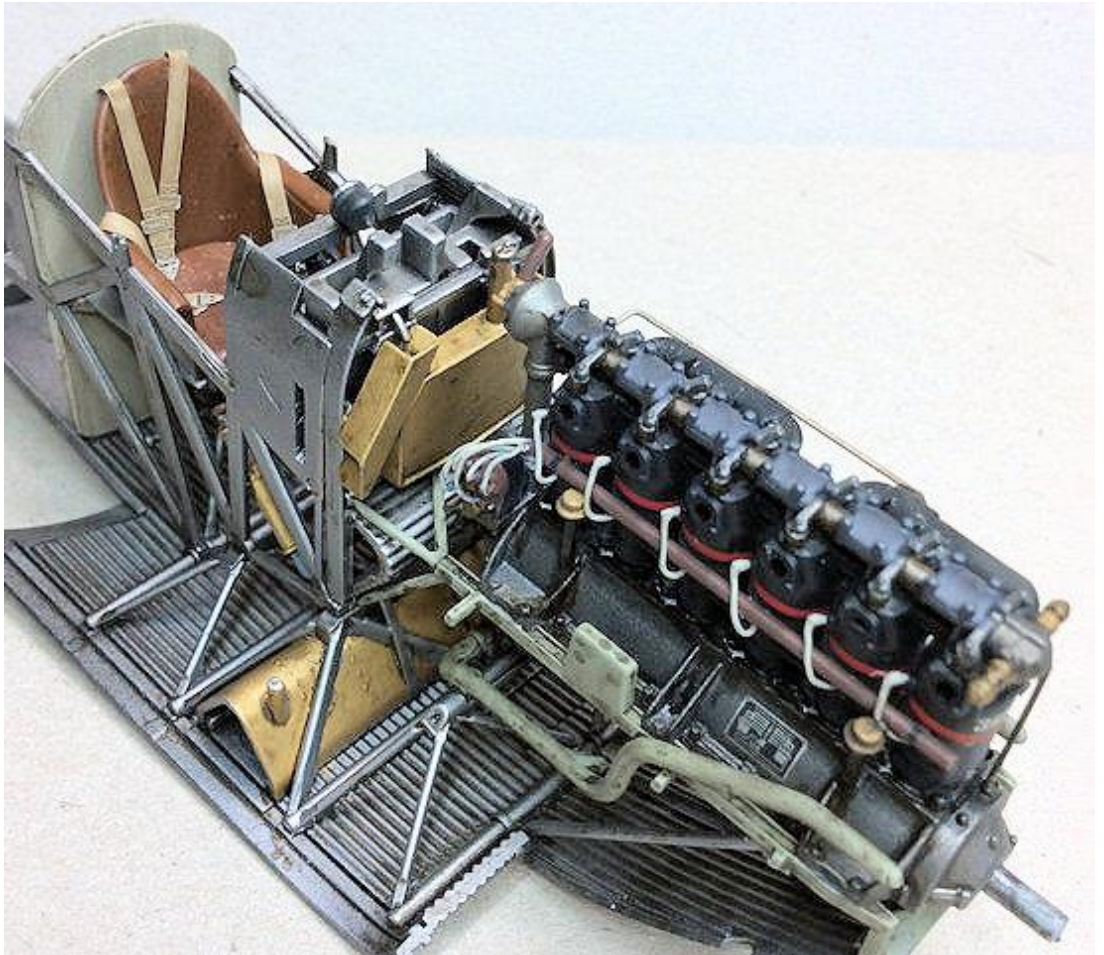
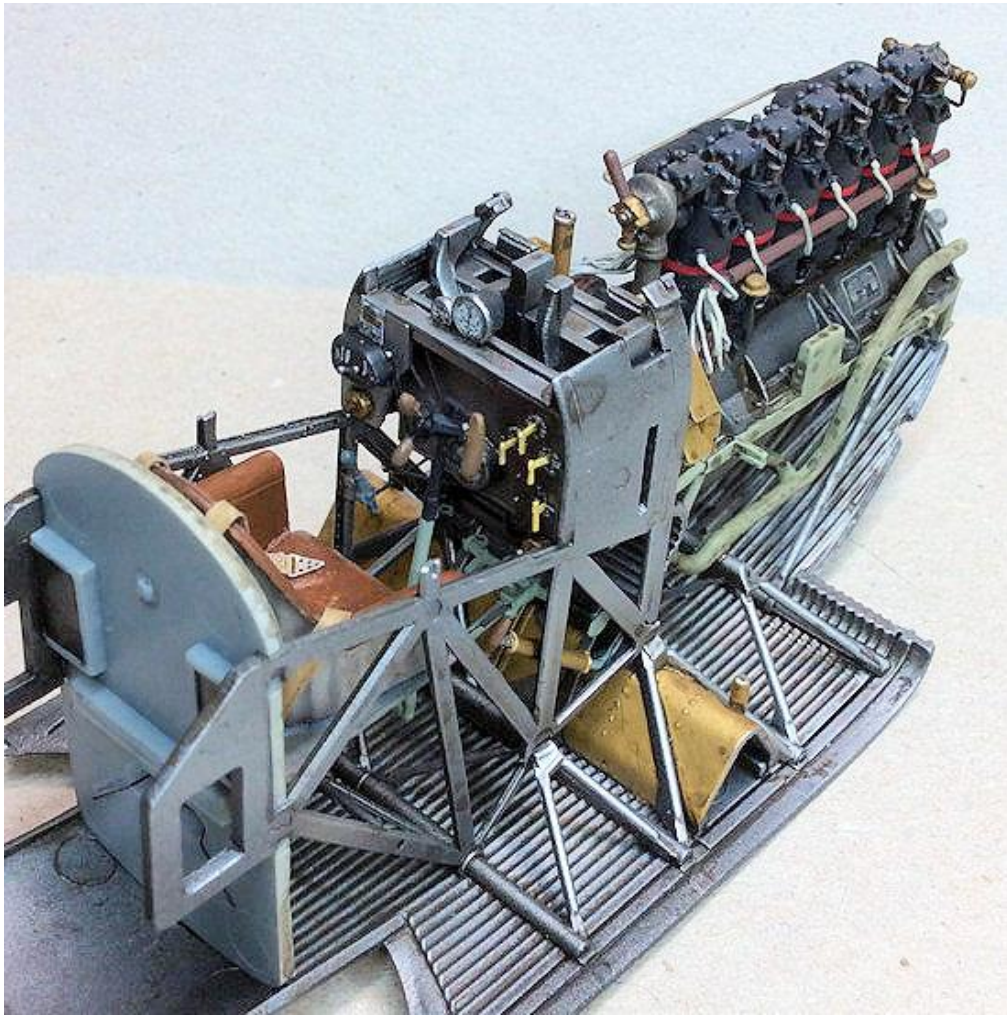
Route the ends of the two rudder cables through the slot under the seat in the seat bulkhead.

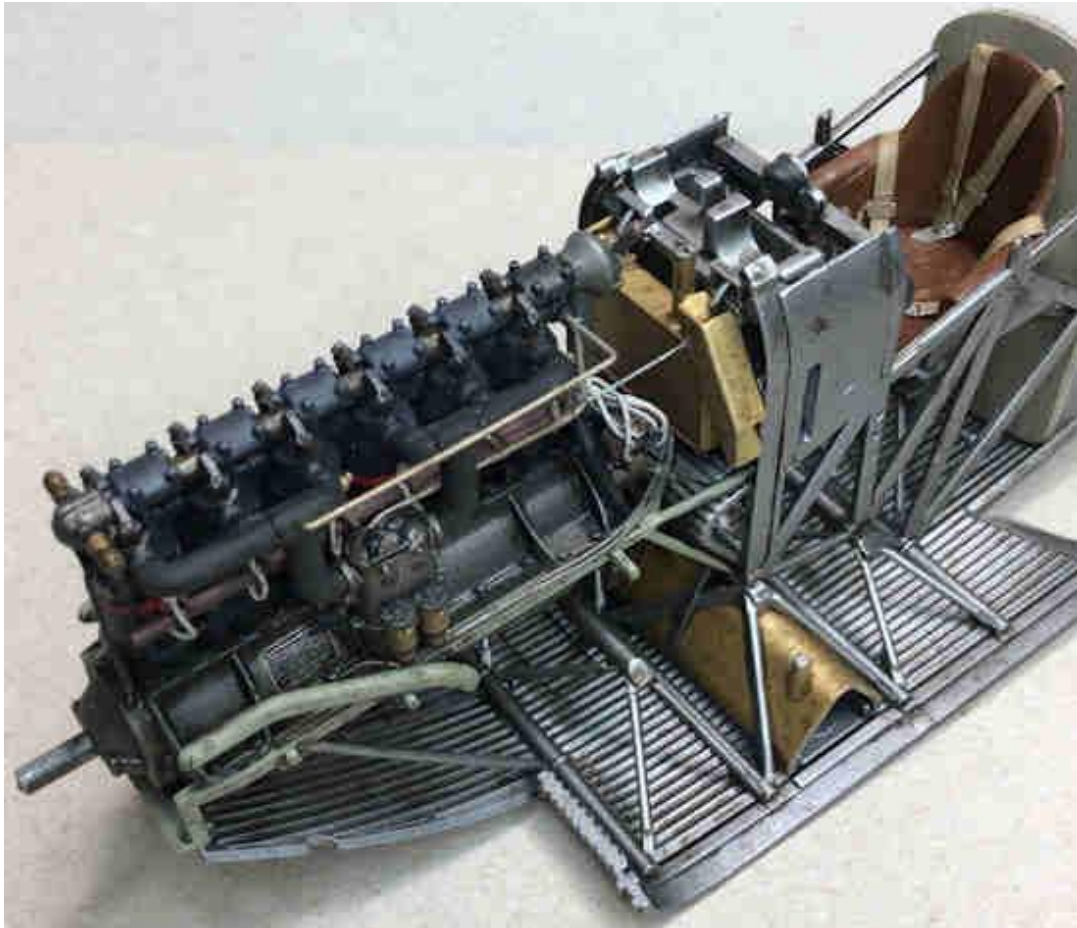
Gently tension to two rudder control lines and secure them to the rear of the seat bulkhead, using thin CA adhesive.

The following photographs show this stage of the build.

(NOTE: The ammunition ejector chutes from the gravity fuel tank were subsequently painted a Steel colour)







Fuselage sides:

Make sure both fuselage sides will locate fully, especially the locators into the slots in the sides of the instrument panel area.

Cement the **fuselage right side** onto the fuselage floor and cockpit. The locations are into the side of the instrument panel area, the raised shoulders on the fuselage rear floor and the rectangular locator in the cockpit side frames. Cement should also be applied along the fuselage join seams at the engine end and along the fuselage bottom edge.

Cement the **fuselage left side** onto the fuselage floor, cockpit and the fuselage right side. The locations are into the side of the instrument panel area, the raised shoulders on the fuselage rear floor, the rectangular locator in the cockpit side frames and the locator pegs and joint to the fuselage right side. Cement should also be applied along the fuselage join seams at the engine end and along the fuselage bottom edge.

Fuselage top rear:

Check fit the fuselage top, rear panel onto the fuselage, making sure it can be fully located and aligned with the fuselage sides.

Cement the fuselage top, rear panel in position on the fuselage.

Radiator assembly:

Check fit the radiator assembly onto the front of the fuselage, making sure it can be fully located and aligned with the fuselage sides and bottom.

Cement the radiator assembly onto the front of the fuselage with the top, rear peg into the hole in the front cylinder.

Oil tank:

Cement the engine oil tank in position on its location plate on the right side engine bearer frame.

Engine side panels:

NOTE: *The two engine side panels will not be fitted to the model as the engine is to be exposed.*

Tailplane:

Cement the tailplane halves (D7 and D8) together.

NOTE: *The underside of the elevator has the control horn, which needs to contact the control rod under the tailplane. If the elevator is position slightly down, the locating stubs will need to be removed and the control rod may need to be shortened.*

Locate the elevator (D3) into the tailplane and cement in position.

Cement the tailplane and elevator assembly into the rear of the fuselage.

Cement the post of the rudder through the opening in the top of the tailplane and down into its location inside the fuselage.

Gaps:

Check for any obvious gaps in any of the seam joints around the fuselage. If any need filling, use a liquid filler, such as 'Mr. Surfacer' 1000 or similar, as using this will reduce the need for sanding the filled areas.



PART 10
WEAPONS

PART 10 - WEAPONS

I chose not to use the two weapons supplied in the kit, but instead a pair of 'GasPatch' Spandau 08/15 Extended Loading Handle (14-36020).



'GasPatch' weapons:

Assembly:

Secure the barrel of each gun into the cooling jackets, using thin CA adhesive.

Secure the padding blocks onto the rear of the breech block of each gun, using thin CA adhesive.

Painting:

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

Airbrush the two guns with a steel colour, such as 'Alclad' Steel (ALC-112) or similar.

Brush paint the breech padding blocks with 'AK Interactive' Leather (AK3031) thinned with AK712 thinners.

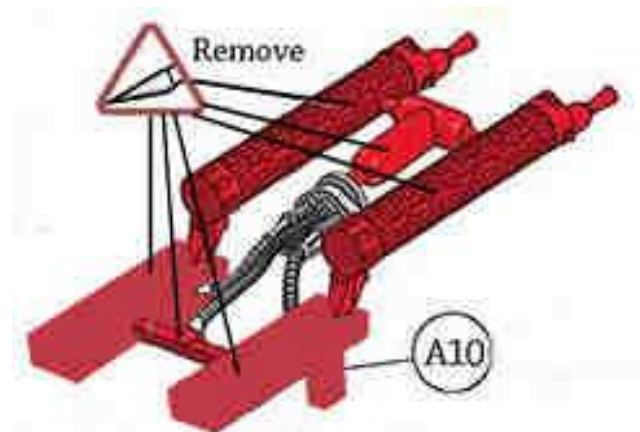
Sponge apply 'Tamiya' Weathering master Set B (Soot) around the muzzle area.

Kit parts:

NOTE: *The machine guns supplied in the kit are being replaced with those in the 'GasPatch' Spandau 08/15 Extended Loading Handle (14-36020) set. This requires modifications to the kit supplied parts. The kit parts not required are A13, A8, A4, some of A10, photo-etch P1 and the decals 49 and 50.*

Assembly:

Refer to the following illustration and remove the parts marked in 'red' from kit part A10. This will leave just the gun synchronising gear for use in the model.



Remove the following parts from their kit sprues and sand away any residual sprue tags:

The two blast deflectors (A42 and A43).

Inter panel (A27).

NOTE: *The following step is required as the engine modelled is the high compression Daimler-Mercedes D.IIIa engine.*

Refer to page 10 in the instruction manual and remove the pre-moulded cut outs in the two blast deflectors.

Painting:

Airbrush the two blast deflectors (A42 and A43), inter panel (A27) and the synchronisation gear (part of A10) with a gloss black primer coat, such as 'Tamiya' Black (X1) or similar

Airbrush the two blast deflectors (A42 and A43) and the inter panel (A27) with an Aluminium colour, such as 'Alclad' Duraluminium (ALC-102) or similar.

Airbrush the synchronisation gear (part of A10) with a Steel colour, such as 'Alclad' Steel (ALC-112) or similar.

Sponge apply 'Tamiya' Weathering master Set B (Soot) along the blast deflectors.

Weapons - fit:

Cement the two blast deflectors in position between the recesses in the top of the radiator and the support locations on the port edge of the fuselage upper side panels.

NOTE: *Plastic card packing pieces may be required under the rear of the breech blocks to level the machine guns. If so, brush paint the packing with a Steel colour once the adhesive has set.*

Using CA adhesive, secure the two 'GasPatch' machine guns in position. The weapons are positioned as follows:

The bottom rear of the breech blocks on the top of the instrument panel.

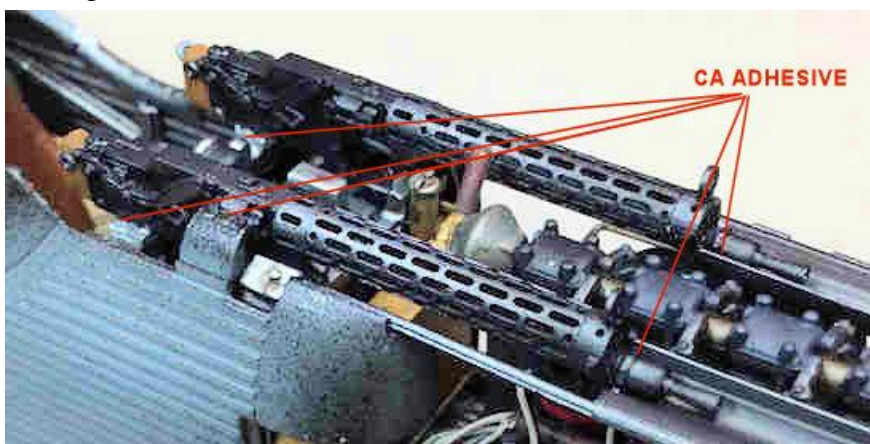
The drive gear on the bottom, front edge of the breech blocks onto the raised lugs at each side and behind the gravity fuel tank.

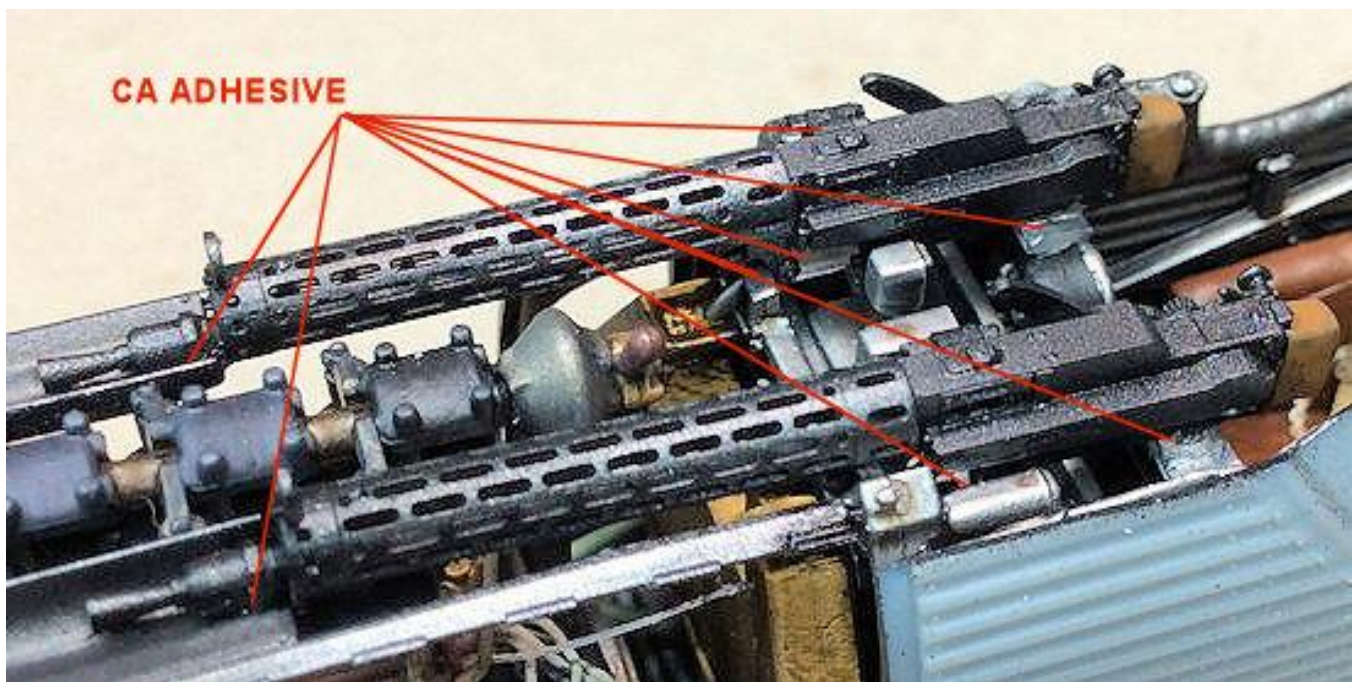
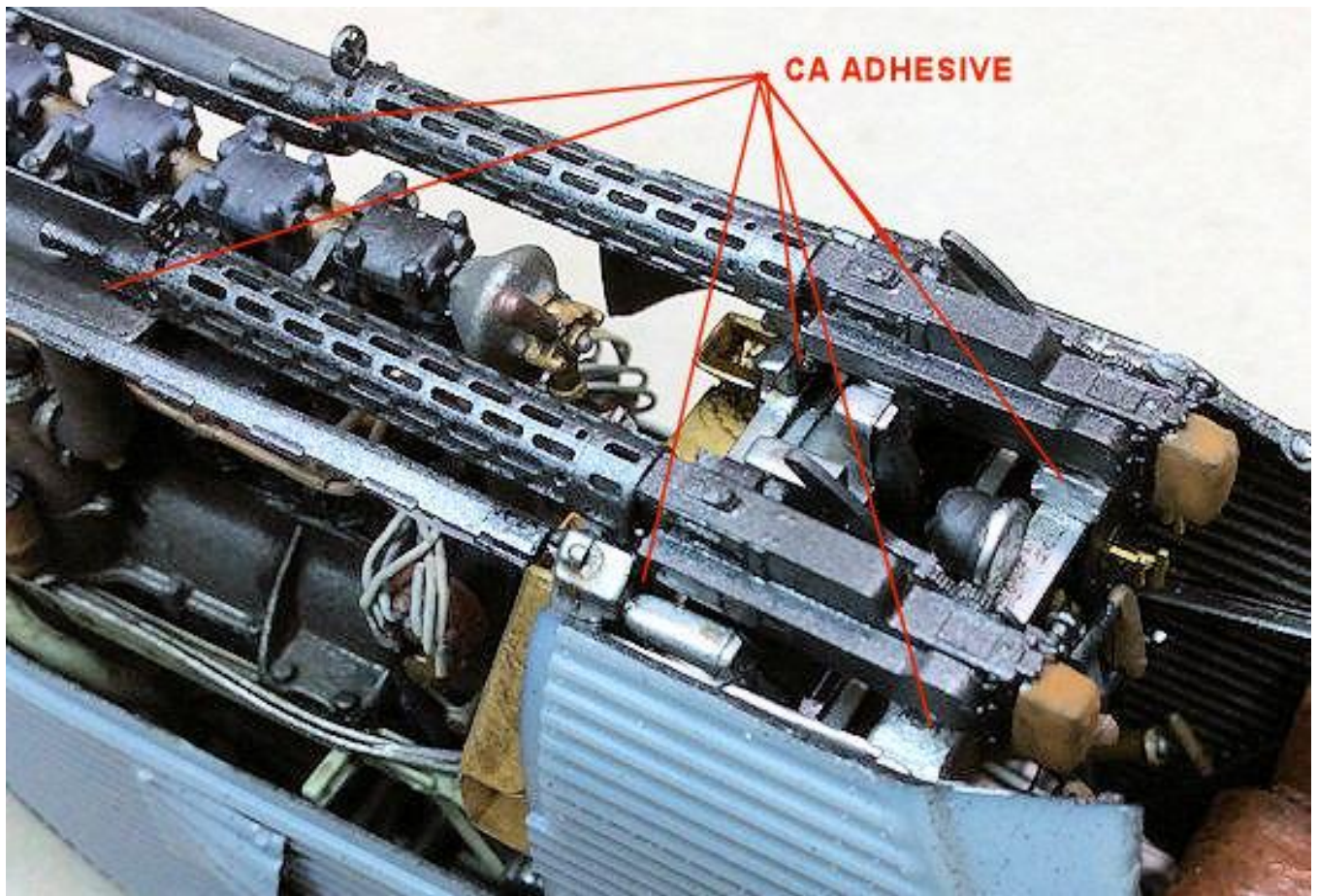
The ammunition inlet opening on the outer side of the right machine gun against the feed chute on the fuselage upper right side panel.

The ammunition outlet opening on the outer side of the left machine gun against the raised lug on the fuselage upper left side panel.

If necessary, apply thin CA adhesive to secure the muzzles of both weapons to the blast deflectors.

Make sure both machine guns are vertical when viewed from the front and rear and are horizontal on the fuselage.





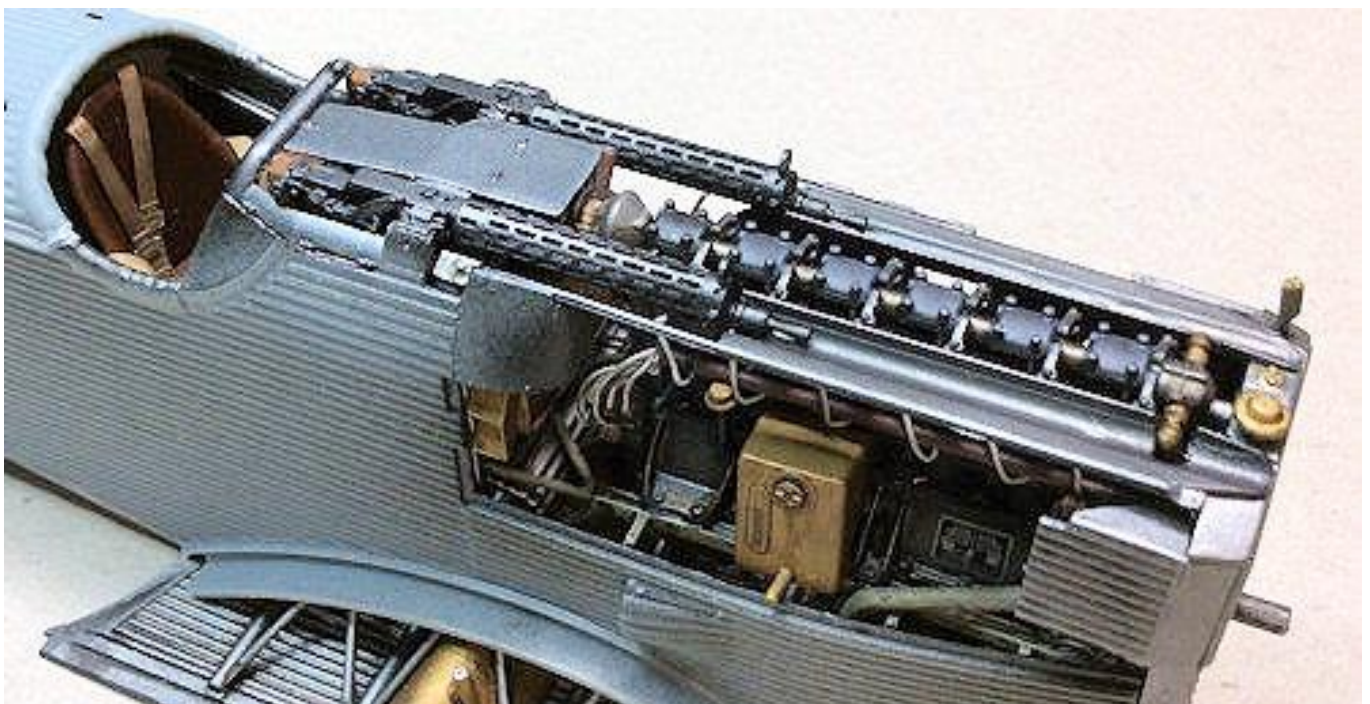
Test fit the synchronisation gear (part of A10) - the synchronisation gear housing locates on the rear of the decompression valve, located on the rear of the engine rocker shaft. The centre 'cable' should rest against the rear of the larger instrument on top of the instrument panel. If necessary, trim the ends of the three 'cables' to achieve the correct fit.

Cement the synchronisation gear in position between the two machine guns.



Test fit the inter panel between the two machine guns. Make sure the bottom edges of the panel fully contact the top edges of the fuselage upper side panels. Also make sure the panel locates without fouling either the weapons or the synchronisation gear.

Cement the inter panel in position onto the fuselage and between the two machine guns.



Surface finish:

Refer to Part 3 (Weathering) of this build log - I applied 'Flory Models' Dark Dirt fine clay wash to top surface of the inter panel.

Once the desired weathering effect is achieved, seal the surfaces with a clear matte coat, such as 'Alclad' Flat (ALC314) or similar.

Brush a semi-matte clear coat, such as 'Tamiya' Semi-Gloss (X35), over the two padding blocks on the rear of the breech blocks.

PART 11
CONSTRUCTION

PART 11 - CONSTRUCTION

NOTE: *Make sure you remove the required parts from their sprues and sand away residual sprue gates and any moulding seam lines from all parts. **Do not remove** the small rectangular tab at the wing root of the upper wing halves, as this is used to locate and support the assembled wings into the fuselage sides. Also **do not remove** the thin extension on the top of the locaters of the forward struts of the landing gear, as these are inserted into the fuselage at the strut locations.*

Wings assembly:

NOTE:

Cement the wing halves (B2/B3 and B1/B4) together.

NOTE: *The aileron control rods locate into the slots in the upper surface of the wings. If the ailerons are positioned one slightly up and the other slightly down, the locating stubs will need to be removed.*

Cement the two ailerons in position on the wings.

Check the joint seams around the wings, especially for any misalignment of the surface corrugations at the leading edges.

If misalignment is found, carefully and gently run a modelling saw around the grooves between the corrugations then brush clean and apply liquid cement to blend the grooves. Once dry and if necessary, brush apply a surface primer, such as 'Mr. Surfacer' 1200 over the leading edge grooves to cover the work done.

Landing gear assembly:

Drill a hole of 0.3 mm diameter through the top of the rear locating lug at each end of the axle fairing A34. These holes are for attaching the cross bracing wires.

Drill a hole of 0.3 mm diameter through the rigging lug located on the centre, underside of the fuselage underside.

Cement the axle A44 onto its location on the axle fairing A34.

Test fit the two landing gear 'V' struts into their fuselage locations, making sure the struts will fully locate.

Cement the front locating peg and rear locating lug onto the two landing gear 'V' struts. For additional security, apply cement between the axle and struts.

Engine exhaust assembly:

Cement the exhaust pipe end piece (A52) onto the engine exhaust (A51).

Roll over bar assembly:

Temporarily fit the roll over bar (A9) and the support bar (A6) to their fuselage locations on the fuselage, at the rear of the cockpit.

Cement the roll over bar (A9) and the support bar (A6) together.

Remove the roll over bar assembly from the fuselage.

Wings - fit:

Remove any paint and primer from all of the wing and fuselage mating surfaces.

Test fit both wings, making sure they fully locate into and against the fuselage and under wing roots.

Check for any gaps at the wings to fuselage joints. If necessary, fill any gaps by brushing a surface primer, such as 'Mr. Surfacer' 1000 along the gaps.

Painting:

Wings and fuselage:

Mask off the engine and cockpit areas, the openings in the bottom, front of radiator and the rudder.

Airbrush the wings and fuselage with a gloss black base coat, such as 'Tamiya' Black (X1) or similar.

Airbrush the wings and fuselage an Aluminium colour, such as 'Alclad' Duraluminium (ALC-102) or similar.

NOTE: *This particular aircraft was left in natural Duraluminium metal finish. However, the surface of the wings and ailerons, the tail plane and elevators and the fuselage were given a 'Tiger stripe' finishes. This appears to have been achieved by polishing alternate areas of the metal surface. Refer to the colour scheme of this aircraft, shown on page 16 of the kit instruction manual.*

Note - the lighter and darker stripes for the metal surfaces on the top surface of the upper wings are not in the same positions as those on the underside of the wings.

Refer to the colour illustration and mask off the lighter areas of the metal surfaces on the upper and undersides surfaces of the wings, ailerons, tail plane and elevator.

Airbrush between the masking a light metallic colour, such as 'Alclad' Steel (ALC-102) or similar.

For the fuselage sides, mask along the edge of the top and underside fuselage panels, along the middle side panel strip to the edge of the tail cone and the short panel strip to the rear of the wing roots.

Airbrush between the masking a light metallic colour, such as 'Alclad' Steel (ALC-102) or similar.

If the colour contrast of the applied steel is too much, 'knock back' the Steel colour by lightly airbrushing 'Alclad' Duraluminium (ALC-102) or similar over the Steel painted areas.

Remove all of the masking, including from the cockpit and engine areas.



Landing gear:

Airbrush the landing gear axle/fairing and the two 'V' struts, with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

Airbrush the landing gear axle/fairing and the two 'V' struts with 'Tamiya' RLM Grey (XF22) or similar.

Brush paint the 'bungee' suspension cords on the ends of the axle using 'Tamiya' Buff (XF57) or similar.

Roll over bar:

Airbrush the roll over bars (A6 and A9) with a grey primer, such as 'AK Interactive' Grey (AK758) or similar.

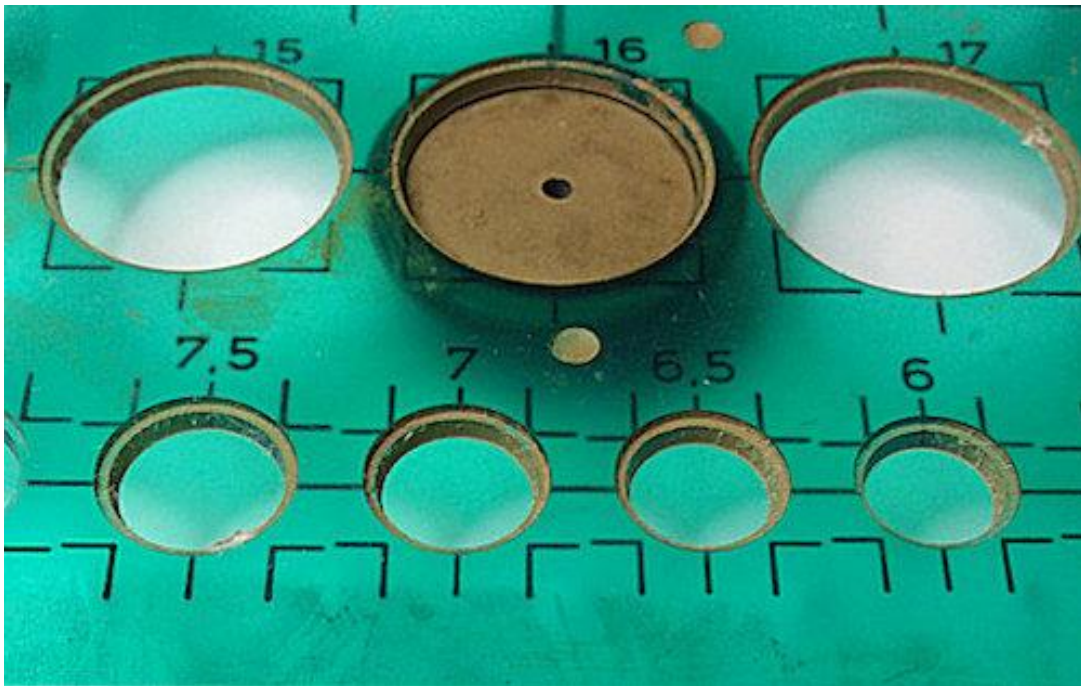
Airbrush the roll over bars with 'Tamiya' RLM Grey (XF22) or similar.

Wheels:

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

NOTE: *To airbrush the covers of the wheels without over spraying the surrounding tyres, I use a circle drawing tool (Linex 1217 T).*

Select the best sized hole in the drawing tool that matches the covers (not including tyres) of the wheels. Position the wheel under the hole.



Airbrush the central wheel covers and the two separate covers with 'Tamiya' RLM Grey (XF22) or similar.

Rudder:

Mask off the rear of the fuselage around the rudder.

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

Exhaust pipe:

Airbrush the exhaust pipe with a gloss black base coat, such as 'Tamiya' Black (X1) or similar.

Airbrush the exhaust a Steel colour, such as 'Alclad' Steel (ALC-112) or similar.

Airbrush a light 'dusting' coat of an Iron colour, such as 'Mr. Colour' Dark Iron (214) thinned with 'Mr. Colour' self levelling thinners 400 in a 1:2 ratio.

Lightly sponge brush 'Tamiya' Weathering Master Set B (Rust) over the exhaust pipe, then Set D (Burnt Blue) around the six outlet pipes and finally Set B (Soot) around and in the exit opening.

Fuselage details:

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

The two ammunition feed chutes (outer side of the machine guns).

The bars of the pilot's foot step and the two rear lift handles.

The two small 'stubs' on the upper surface of the wings, forward from the aileron operating rod/levers.

The four foot step strips at both wing roots at the fuselage sides.

Brush paint the cockpit surround padding with Leather, such as 'AK Interactive' Brown Leather (AK3031) or similar with 'Tamiya' Flat Brown (XF10) highlights.

Brush paint the cockpit surround padding with a semi-matte clear coat, such as 'Tamiya' Semi-Gloss (X35) or similar.

Pre-rigging:

NOTE: *It's easier to pre-rig the bracing wires for the landing gear before the landing gear is fitted to the model.*

Make sure the pre-drilled holes in the landing gear struts and rigging lug on the underside of the fuselage are clear of paint.

Cut two lengths of 0.08 mm diameter mono-filament line, such as that from 'Stroft' or similar.

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

Pass one line through a tube then through the 'eye' end of a 'GasPatch' 1:48th scale turnbuckle (Type C).

Pass the line from the turnbuckle back through the tube.

Pass the other end of the line through the pre-drilled hole in the lug on the outer, rear end of the axle fairing/landing gear strut.

Pass the line back through the tube.

Pull the two ends of the line to move the tube between, **but not touching**, the turnbuckle and the mounting lug.

Secure the tube to the lines (not at the turnbuckle end) using thin CA adhesive.

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

Repeat the procedure to add a turnbuckle to the opposite end of the axle fairing/landing gear strut.

NOTE: *The following step is required to pre-rig the bracing wire from the landing gear through the fuselage rigging lug.*

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

Pass the line through the remaining cut 0.5 mm diameter tube.

Pass the line through the free 'eye' end of one of the fitted turnbuckles.

Pass the line back through the tube.

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

Secure the tube to the lines (not at the turnbuckle end) using thin CA adhesive.

Cut way any residual tag of line at the end of the tube and mounting lug.



Decals:

Cut out the following decals from the kit supplied sheet:

Rudder Crosses -12 (x 2).

Fuselage crosses -10 (x 2).

Wing upper crosses -3 and 4, 7 and 8.

Wing underside crosses - 4 and 15, 8 and 18.

Wing tip markings - 37 and 38 (left), 39 and 40 (right).

Aileron outer edges - 31 (x 4).

Tail cone number - 9.

NOTE: *For positioning of the decals, refer to the colour scheme of this aircraft, shown on page 16 of the kit instruction manual.*

Airbrush the areas of the model where decals are to be applied, using a gloss clear coat, such as 'Alclad' Aqua Gloss 600, 'Tamiya' Gloss (X22) or similar. This clear gloss coat will provide a good surface the applying the decals.

NOTE: *To improve decal adhesion, you can add PVA adhesive (white glue) to the decal water.*

Refer to Part 4 (Decals) for information - apply each decal onto its surface.

If a decal proves difficult to conform to the surface corrugations, apply 'MicroScale' Micro Sol. Due to the surface corrugations, several applications may be required to fully conform the decals to the corrugations. If necessary, 'Tamiya' X20A thinners can be applied "**sparingly**" onto the affected area of the decal. Do not touch or try to move the decal until the decal has fully dried, otherwise the softened decal will be damaged.

Brush paint the central barrel of the two turnbuckles with 'Tamiya' Hull Red (XF9).

If the decal is still lifted in areas where air is still trapped under the decal, use a needle or better, a spiked rivet tool, such as a 'Rosie the Riveter', to prick through the raised decal. Then apply more conforming solution and leave to dry and conform.

Landing gear - fit:

Locate the two wheels onto the ends of the axle.

Locate the axle lock rings (A41) into their recesses in the ends of the axle. If the wheels are to be fixed in position, apply cement to the lock rings and axle ends.

Cement the outer wheel covers (A53) into the wheels.

Make sure any paint is removed from the location points on the tops of the struts and the four landing gear locations in the fuselage.

Cement the landing gear into the fuselage.

Pass the free end of the pre-rigged bracing line through a blackened 0.4 mm diameter tube, such as 'Albion Alloy's' MBT04 or similar.

Pass the line through the pre-drilled hole in the rigging lug on the bottom, centre of the fuselage.

Pass the free end of the pre-rigged bracing line through a second blackened 0.4 mm diameter tube, then a blackened 0.5 mm diameter tube, such as 'Albion Alloy's' MBT05 or similar.

Pass the line through the free 'eye' end of the opposite turnbuckle.

Pass the line back through the 0.5 mm diameter tube.

Tension the line (without distorting the landing gear) and slide the tube up to, **but not touching**, the turnbuckle.

Secure the lines to the tube (not at the turnbuckle end), using thin CA adhesive.

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

Slide the two 0.4 mm diameter tubes up to the fuselage rigging lug and secure in position using thin CA adhesive.

Roll over bar - fit:

Cement the roll over bar assembly into its three location point of the top of the fuselage, to the rear of the cockpit.

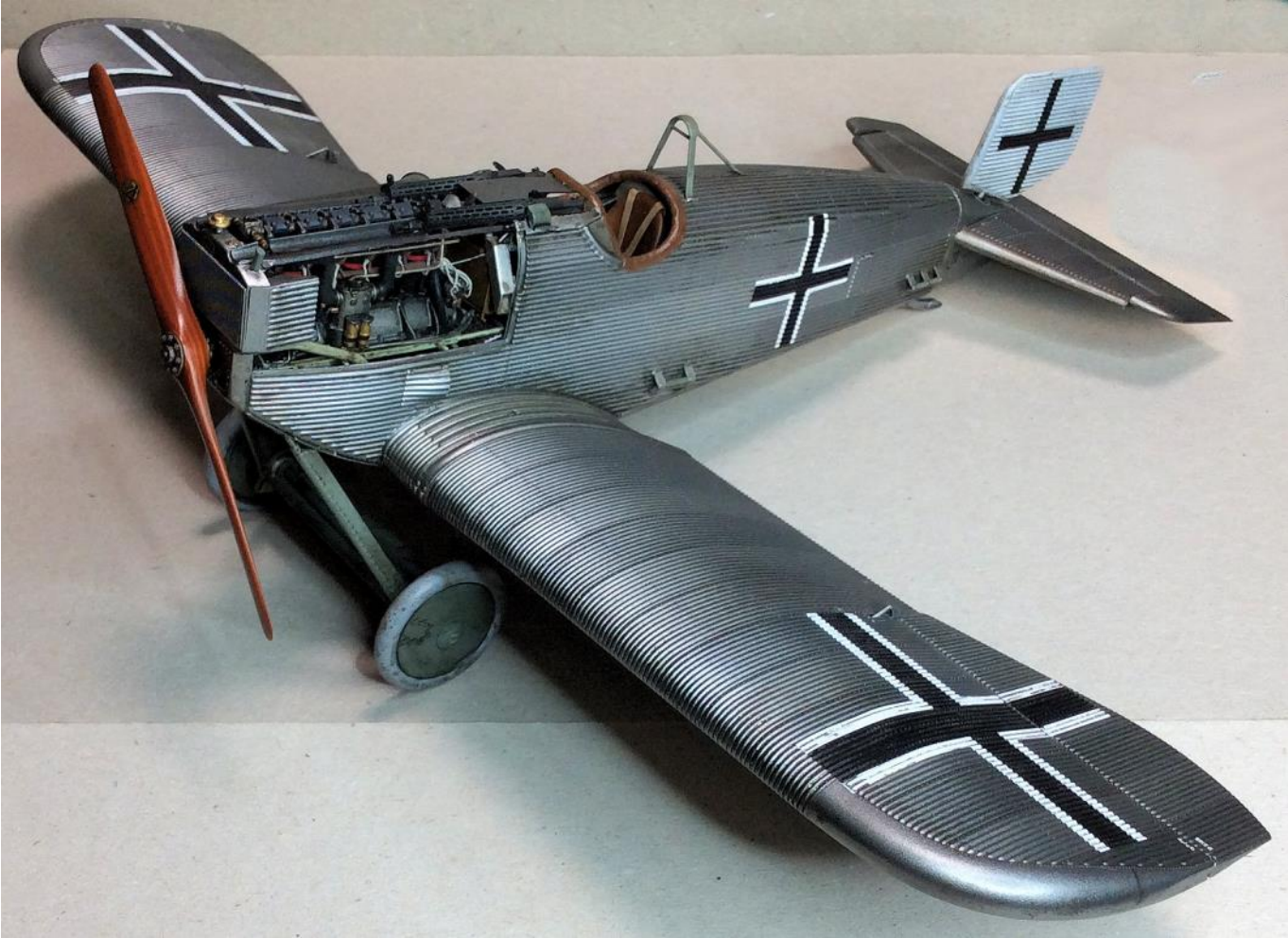
Weathering:

NOTE: *Take care when applying and removing the weathering, as the raised corrugations of the model surfaces may cause the applied decals to be damaged.*

Airbrush the entire model including over the applied decals (to seal and protect them) by airbrushing a **light** coat of semi-matte clear coat, such as 'Alclad' Light Sheen (ALC-311), 'Tamiya' Semi-Gloss (X35) or similar.

Refer to Part 3 (Weathering) of this build log - I applied 'Flory Models' Dark Dirt fine clay wash to all external surfaces.

Once the desired weathering effect is achieved, seal the treated surfaces with a clear semi-matte coat, such as 'Alclad' Light Sheen (ALC-311), 'Tamiya' Semi-Gloss (XF35) or similar.



PART 12

FIGURES

PART 12 - FIGURES

The figures I chose to use for this model are:

'Wings Cockpit Figures' LSK leaning pilot (LSK14).

'Copper State Models' German bomber crew set (F32-013).

Pilot figure:

Preparation:

Cut away the mould stubs from the bottom of the boots.

Remove any mould seam lines on of sides of the figure.

Cut away any excess resin from between the lend and boots.

NOTE: *I found that on my figure the right arm was mis-aligned at the rear of the right arm, where it joins the body.*

Fill the mis-alignment by on brushing 'Mr. Surfacer' 500.

Once dry and set, sand the area to blend it together.

Using a 0.8 mm diameter drill, remove the resin from between the pilot's flight coat and the two straps of the 'Heinecke' parachute harness.

Drill a hole of 0.9 mm diameter centrally up through the straight leg.

Cut a length 0.8 mm diameter rod, such as that from a standard metal paper clip. The length should be long enough to be fully inserted into the pre-drilled hole in the pilot's leg with enough of the rod protruding to enable the figure to be held for painting.

Secure the rod into the pre-drilled hole using thin CA adhesive.

Painting:

NOTE: *The acrylic paints used are 'AK Interactive' range, thinned with AK-712 thinners. The flesh colours are from the 'Citadel' range. Other paints are 'Tamiya' and 'Model Colour'.*

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

Brush paint the figure as follows:

Shoes - 'Model Colour' Black (70.950) or similar.

Gaiters, Gloves and Helmet - Brown Leather (AK3031), mixed with Black Uniform Base (AK3002).

Trousers and jacket under scarf - German Uniform (AK3091).

Flight coat - Brown Leather (AK3031), mixed with Black Uniform Base (AK3002) for shadow highlights.

'Heinecke' parachute harness - 'Tamiya' Wood Deck Tan (XF78).

Scarf - 'Tamiya' Light Blue (XF23).

Collar lining - 'Tamiya' White (XF2) with Deck Tank (XF57) highlights.

Goggles - Brown Leather (AK3031) strap and 'Tamiya' Clear Orange (X26) lenses.

Mug - 'Tamiya' White (XF2) with 'Humbrol' Leather (62) contents.



Moustache - British Uniform (AK3081).

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

Surface finish - Shoes, gaiters, coat, gloves and helmet - 'Tamiya' Semi-Gloss (X35) thinned with X20A. Shoes 'Tamiya' Weathering Master Set A (Mud).

Flesh - 'Citadel' Cadian Flesh' with Kislev Flesh highlights.



Ground crew figure:

Preparation:

NOTE: I chose to use the standing figure from the two figures supplied in the 'Copper State Models' German bomber crew set (F32-013). In order to be able to pose the mechanic's left arm correctly, I used the left arm from the kneeling figure in the set.

Remove any mould seam lines on of sides of the figure, arms and head.

NOTE: In the following steps, the arms will not align correctly into the body of the figure.

Locate the left arm into the figure using a small amount of thin CA adhesive, then position the figure on the left wing and position the left arm such that the hand rests appropriately on the rear end of the blast deflector under the left machine gun.

Repeat the procedure to attach the right arm in an appropriate position.

Once the correct position of the arms is achieved, secure the arms permanently into the figure by applying more CA adhesive.

File or sand the top of the arms to blend them to the body of the figure.

Fill any gaps around the joint of the arms to body with a modelling putty.

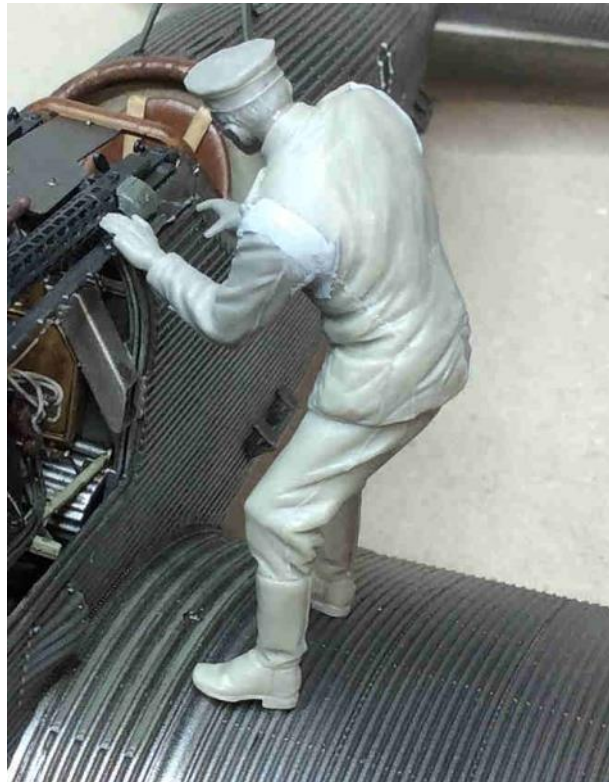
Finally file or sand the joints to blend the arms to the body of the figure.

Secure the head into the body in the desired position.

Drill a hole of 0.9 mm diameter centrally up through the left leg.

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

Secure the rod into the pre-drilled hole using PVA adhesive.



Painting:

NOTE: The acrylic paints used are primarily from the 'AK Interactive' range, thinned with AK-712 thinners. The flesh colours are from the 'Citadel' range.

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

Brush paint the figure as follows:

Boots - Brown Leather (AK3031).

Trousers and jacket - 'Model Colour' Black (70.950) or similar.

Cap - German Uniform (AK3091).

Piping - Red water colour pencil.

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

Flesh - 'Citadel' Cadian Flesh' with Kislev Flesh highlights.

Surface finish - Boots 'Tamiya' Semi-Gloss (X35), trousers and jacket 'Tamiya' Flat (X86), both thinned with X20A.

Weathering - Boots 'Tamiya' Weathering Master Set A (Mud), Stains on trousers, jacket and face/hands Set D (oil stain).

Remove the metal rod from the leg of the figure with a twisting action.



PART 13
DISPLAY

PART 13 - DISPLAY

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 variation D (4704) 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 aircraft was not fixed to the display base, but left as 'free standing'.

The pilot 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. CA 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.

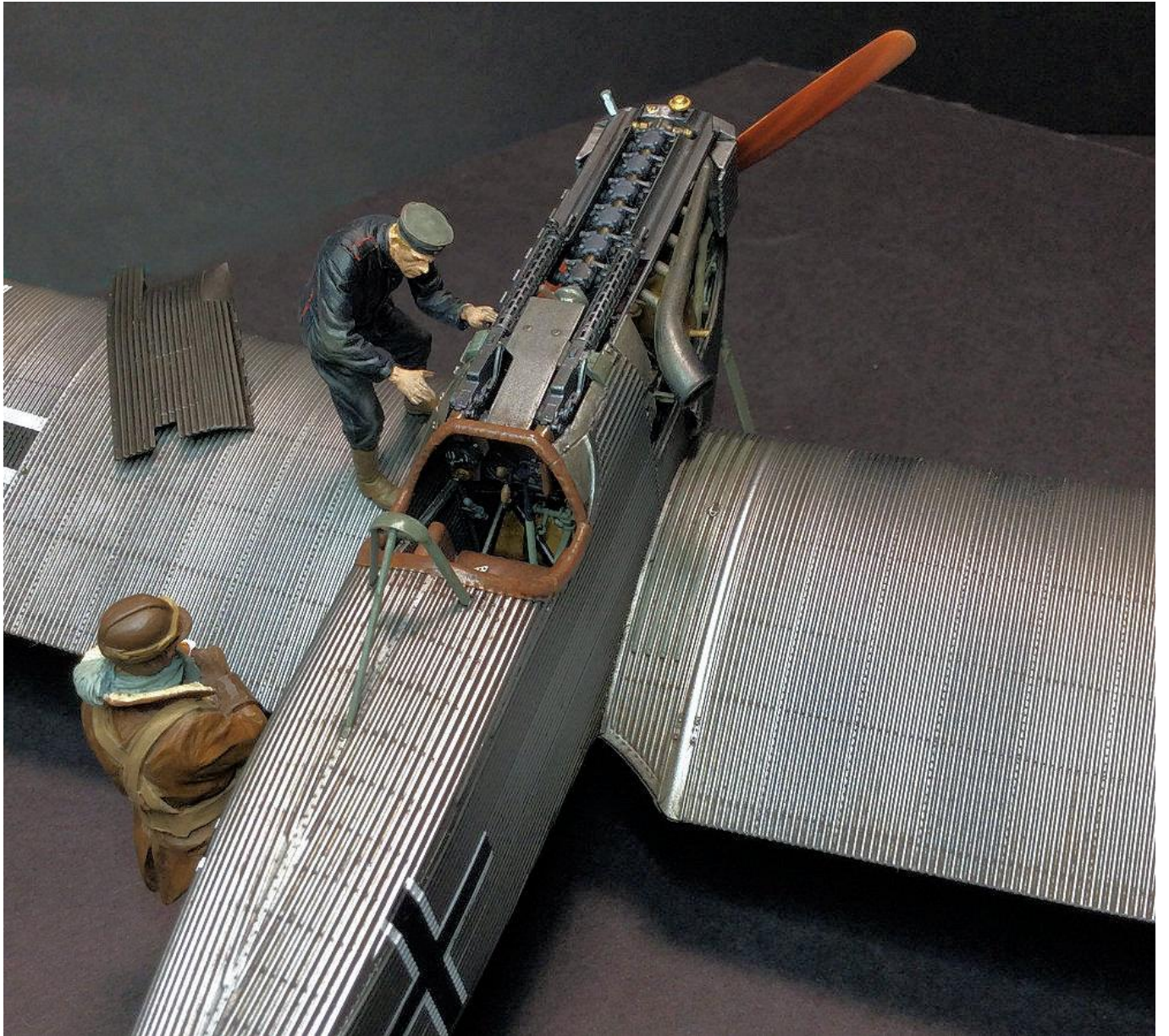
The mechanic figure was correctly positioned on the left wing and secured in position using thin CA adhesive.

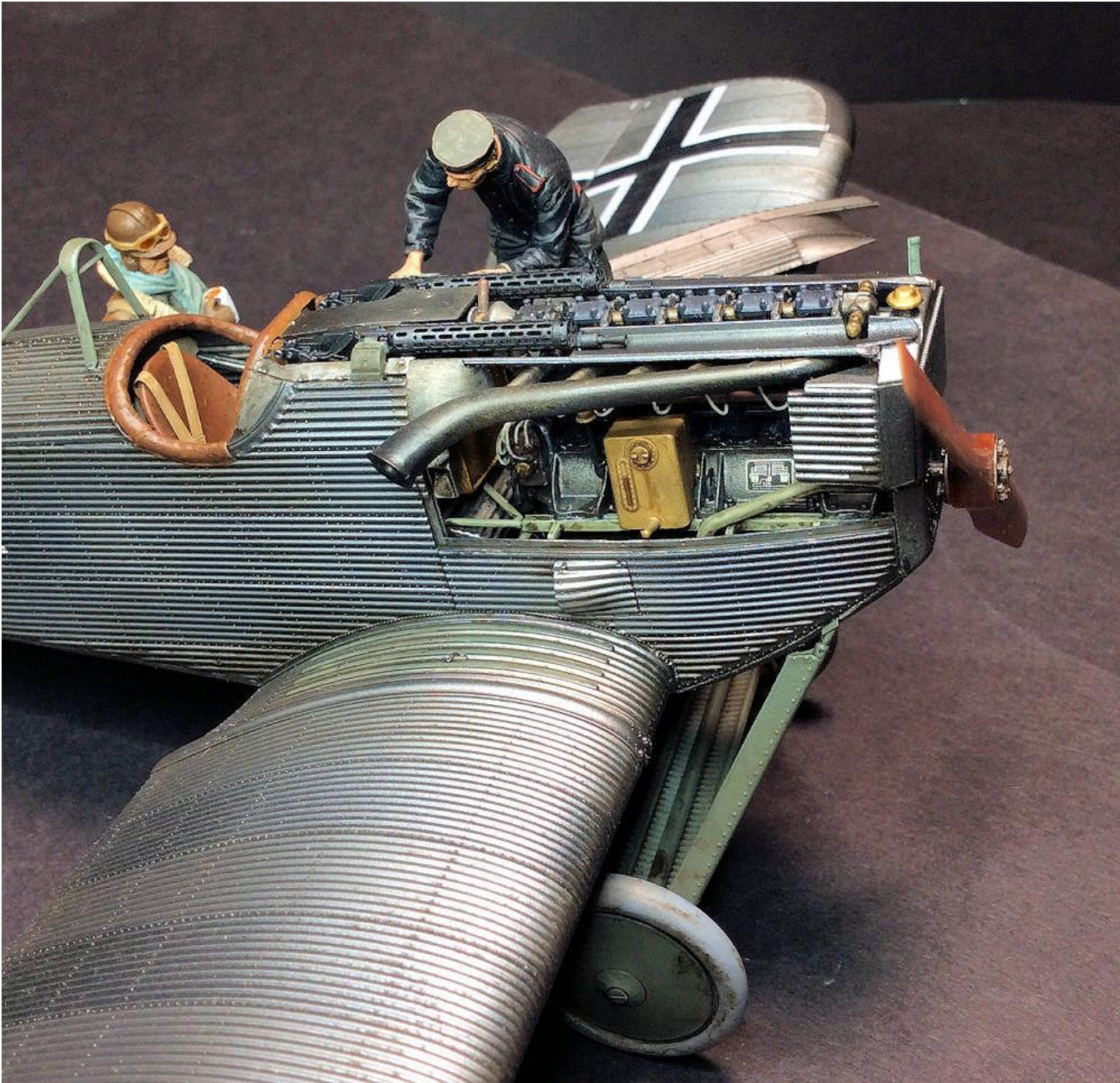
If desired the engine side panels can be fixed to the base of the display or one of the wings, using CA adhesive.

PART 14
COMPLETED
MODEL
PHOTOS











END