



Full Review

Italeri

Macchi MC.202 Folgore

1:32 scale

with

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(April 2024)

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The Macchi MC.202 Folgore...

The Folgore (Italian for Thunderbolt) was a WW2 Italian fighter aircraft produced by Macchi Aeronautica for the Italian Air Force. Up to this point the Italian Air Ministry had chosen to power their aircraft with indigenous radial engines and completely avoided the development of streamlined liquid-cooled designs. When Macchi Chief Designer Mario Castoldi, (hence the MC or C designation), designed the C.200 fighter, he was forced to rely on the aging Fiat A.74 radial as the power unit. Although the C.200 airframe proved to be highly manoeuvrable, the maximum speed of 315 mph meant the machine was soon considered obsolete.

In November 1939 Alfa Romeo acquired a license to produce the German DB601A engine as the RA.1000 R.C.41-1 Monson. Castoldi now commenced work on mating the C.200 wings, landing gear, and tail unit to a new fuselage designed to accommodate the new engine.

The prototype was ready for its first flight only seven months after the start of design work and quickly proved to be an advanced aircraft for the time and indicated Italy had finally produced a fighter on a par with both Britain and Germany.

The Folgore had retained the agility of its predecessor but its top speed had improved to 375 mph. The very strong construction also enabled it to dive steeply. One bad attribute, which it also inherited from the C.200, was its lack of stall warning. The aircraft would flick violently out of a high G turn and had a tendency to enter a flat spin from which it was reluctant to recover. The other drawback was the aircraft's weak armament - two Breda-SAFAT 12.7mm machine guns mounted in the nose and firing through the propeller disc. Although these were a

similar calibre to the American Browning .5 inch weapons, the cartridge was much shorter giving a much reduced muzzle velocity and therefore less range and hitting power. In later series, a 7.7mm (.303 inch) gun was added to each wing. On most of these aircraft the extra weight of guns and ammunition was considered detrimental to performance and these were removed in the field. The Italian HF radio fitted to the aircraft was so unreliable that pilots relied more on hand signals than R/T which was a real handicap in combat.

Despite these problems, the MC.202 and its refined successor, the MC.205 Vento, had quite a successful operational history making its combat debut against Malta before being moved to the deteriorating North African front where a number of Italian pilots achieved 'ace' status.

A Gruppo of Folgore was also sent to the Eastern Front at the beginning of Hitler's offensive against Russia. They did achieve some success here before the arrival of the winter proved the unsuitability of operating the aircraft in extreme cold weather.

By the time of the Italian armistice in 1943, most remaining aircraft had been withdrawn to Italy although attrition in the defence of Sicily and Sardinia had reduced numbers to about 100 serviceable aircraft.

Two MC.202s survive to this day. M.M.9667 is on display at the Italian Air Force Museum in Vigna di Valle Airport near Bracciano and M.M. 9476 at the US National Air and Space Museum, Smithsonian, Washington DC.



(Photo: Macchi C202 Folgore fighter at Smithsonian Air & Space Museum. Courtesy Wilson 44691)

The Italeri kit...

Now I have to say that I have not been a particular fan of Italeri kits in the past. In fact, the last one I built was quite a few years ago. To me they were reasonably cheap to buy but you got what you paid for in terms of imprecise engineering and

detail. When they brought out some new 1:32nd mouldings in the form of a Mirage III, Starfighter and Tornado, I thought Italeri were upping the ante as regards detail and fit of parts to match the increased prices. After reading mixed reviews on these new offerings, I still resisted the temptation to try another kit from this manufacturer.

What finally tipped me over the edge was this kit - Italeri's first WW2 subject in the larger scale. Italian WW2 aircraft have been somewhat neglected by the mainstream companies, even in the smaller scales, compared with the other nations. So, when I saw this kit was due to be released, I felt a twinge of excitement - enough to bite the bullet and order one.

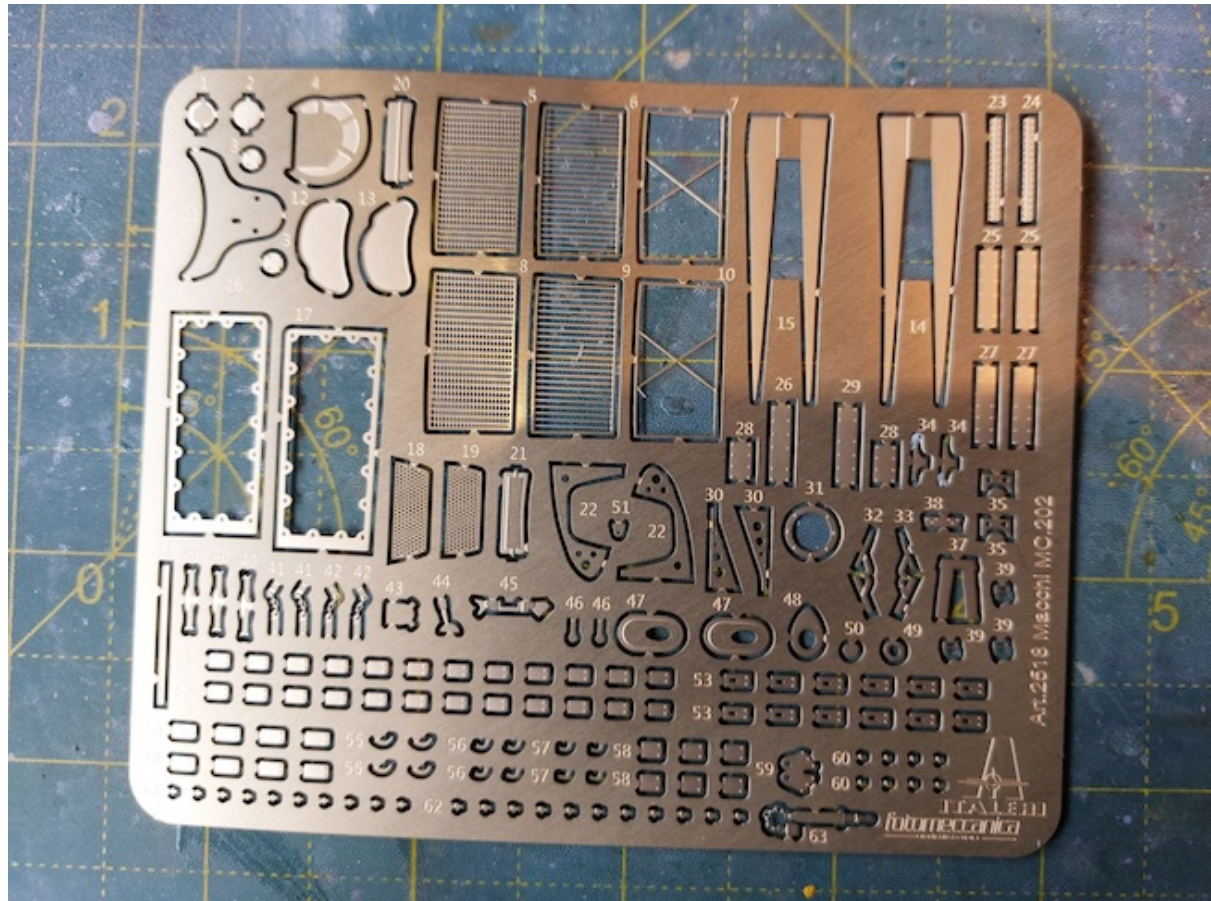
When the box arrived, I was even more excited to see the size of it - even bigger than a Tamiya Spit or Mustang! However, on opening this substantial box, I peered into it to find just four and a bit sprues of styrene lying on the very bottom.



Now, if Italeri are trying to attract buyers by making them believe that this packaging surely must contain a substantial kit instead of a sizeable chunk of the Earth's atmosphere, they are making a big mistake. Not only are us modellers a pretty canny lot, but we definitely do not like the wool to be pulled over our eyes. So not only are parts going to rattle around and break inside that large void but the box itself is made from fairly flimsy cardboard which will not withstand another couple of kits on top of it in your stash. The only similarity between a

Tamiya offering and this kit is the price. The only part of the packaging which I liked was the nice box art of the aircraft depicted in flight over what looks like North African terrain.

Okay, what else do you get in the box. There is a PE fret containing a lot of nice detail.

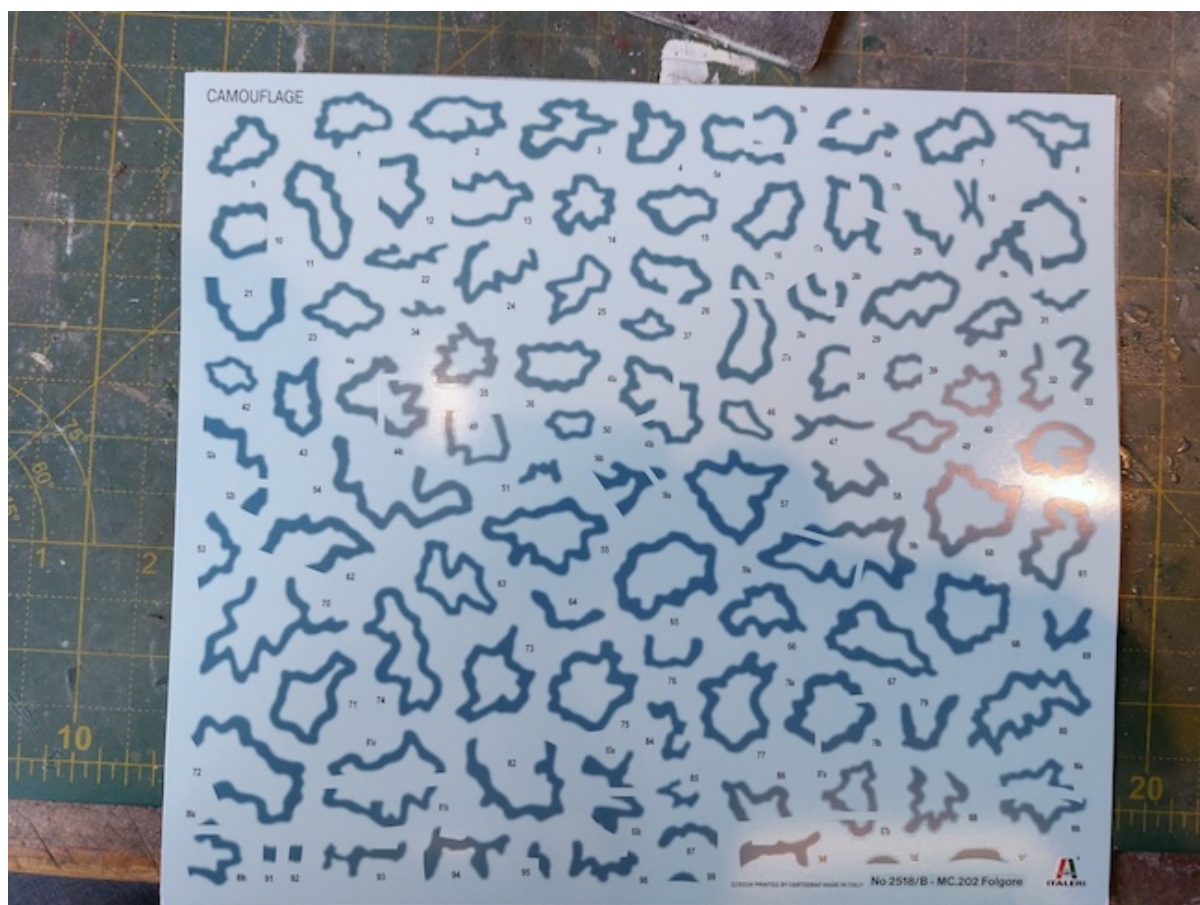


Some of these parts are tiny and will test those of you with even 20/20 vision! There is a small sprue of clear parts consisting of the windscreen, canopy and wingtip nav lights. These are a little on the thick size for such a modern kit. An instruction booklet looks, and will prove to be straightforward to follow. Colour call-outs are just for Italeri's own paint brand but thoughtfully, FS numbers are provided, so you can match to your own favourite paints. Also included is a small sheet of 3D printed decals for the instrument panel. I have used this medium on a couple of my models and they do look the business to my eye and so I was pleased to see this included.

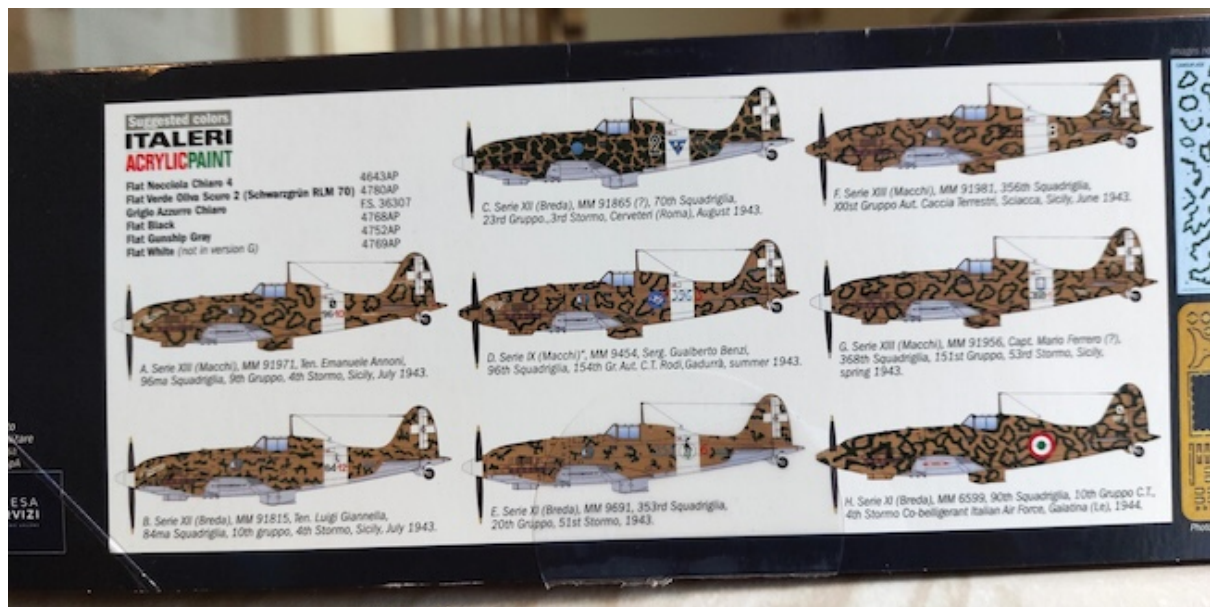
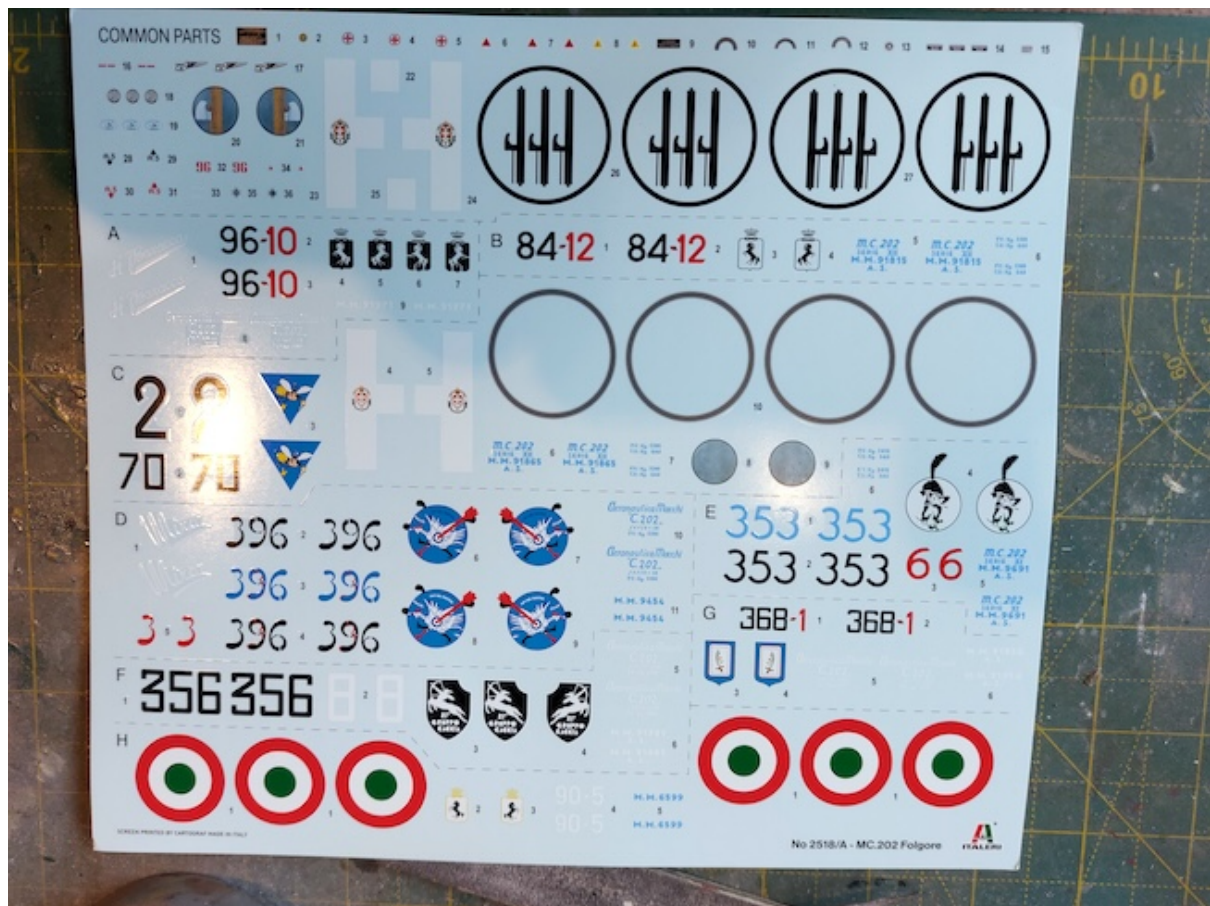


There are a total of no less than eight different schemes included, three of which have the distinctive 'smoke ring' camouflage pattern. Italian WW2 aircraft camo is notoriously difficult to reproduce accurately - particularly

for those without airbrush skills. Italeri have catered for this by providing smoke rings on a large decal sheet - all with individual numbers, which correspond to a marking diagram in the separate marking booklet. Nice touch!



Another decal sheet contains the remainder of the plumage for the six options.

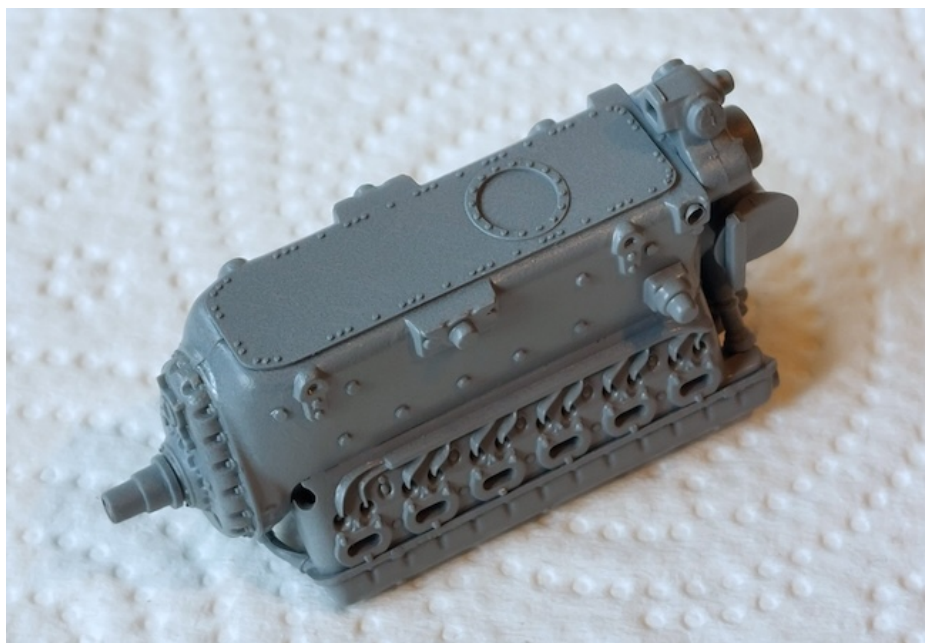
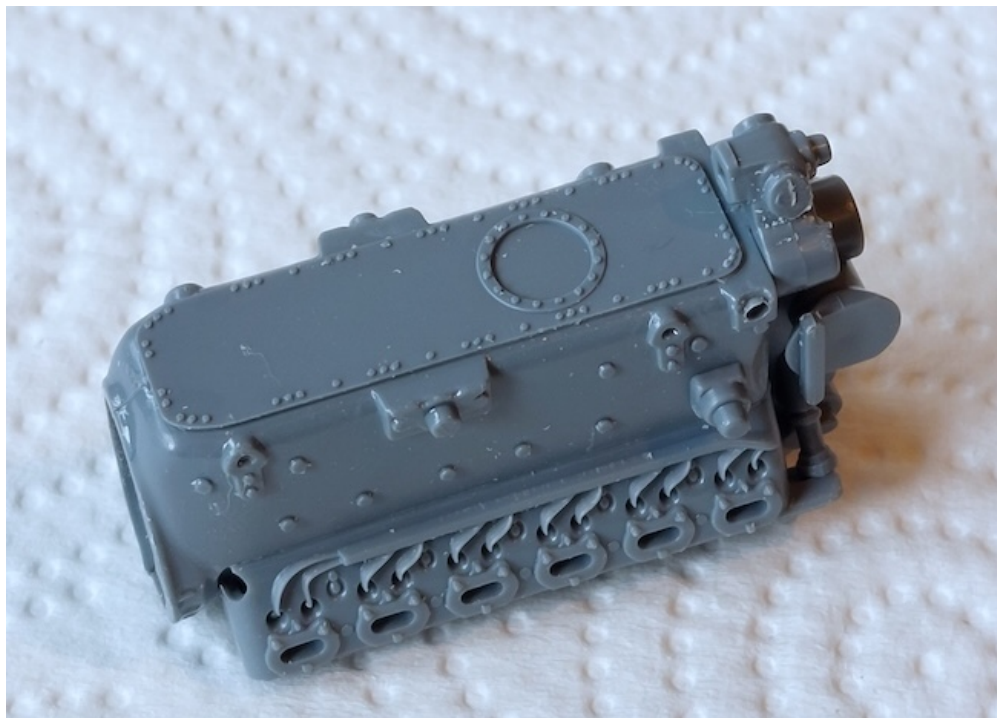


All the decals are produced by Cartograf so I didn't anticipate any problems here (I got them though, read on)!

Looking at the moulding quality revealed a bit of a mixed bag, as regards detail, and I was surprised to find some parts had small areas of flash present. I have done a [Here Now video review of the contents](#) of the box along with my initial thoughts before the build started so, if you want to see what you get for your money, have a look at this.

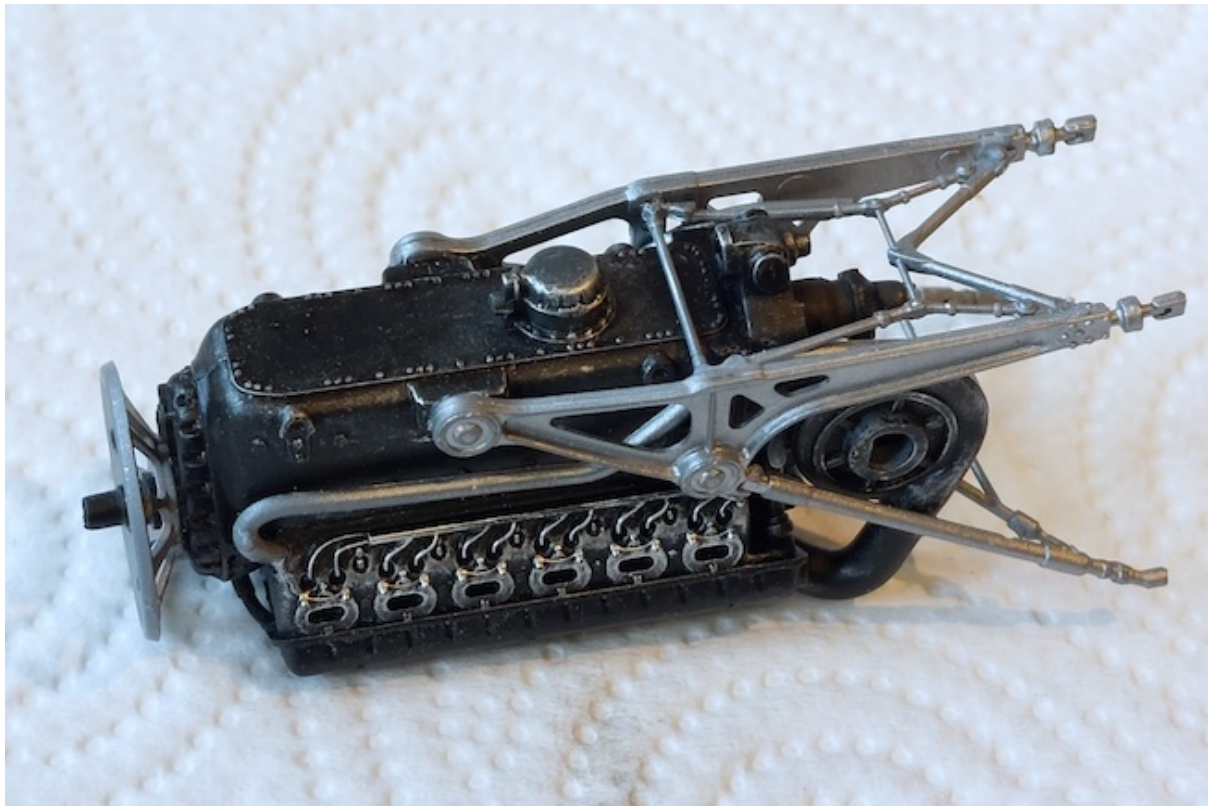
Construction Begins

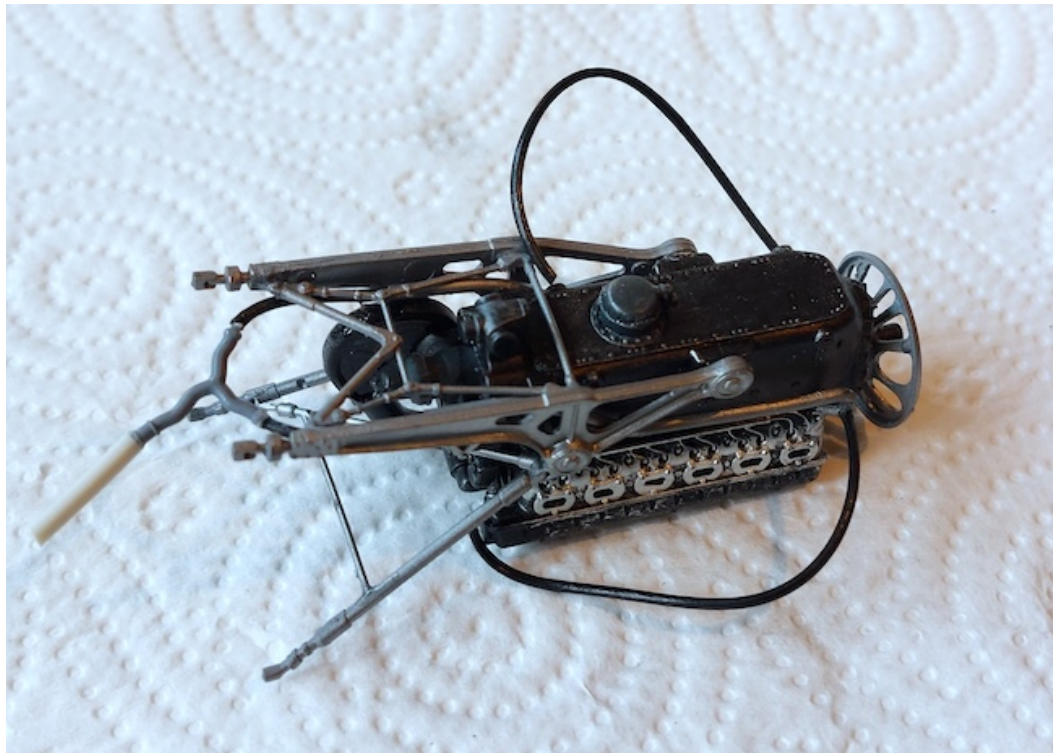
The construction sequence is not one we would normally find for a single engine WW2 fighter. We actually start with the engine. The distinctive DB601 builds up into a nice representation with most ancillaries and coolant pipes present.



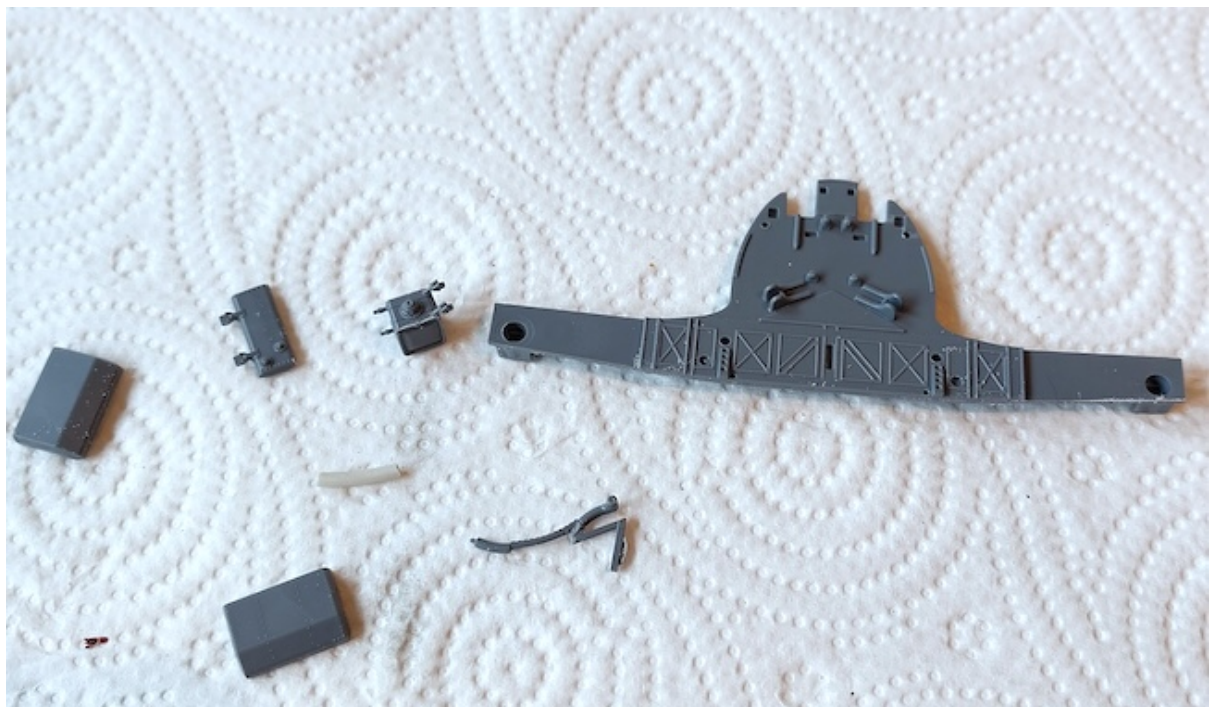
Some piping is provided in the form of flexible vinyl which makes routing easier. The engine bearers are identical to the BF109E installation but there is no oil tank attached as there is on the latter aircraft because this is positioned on

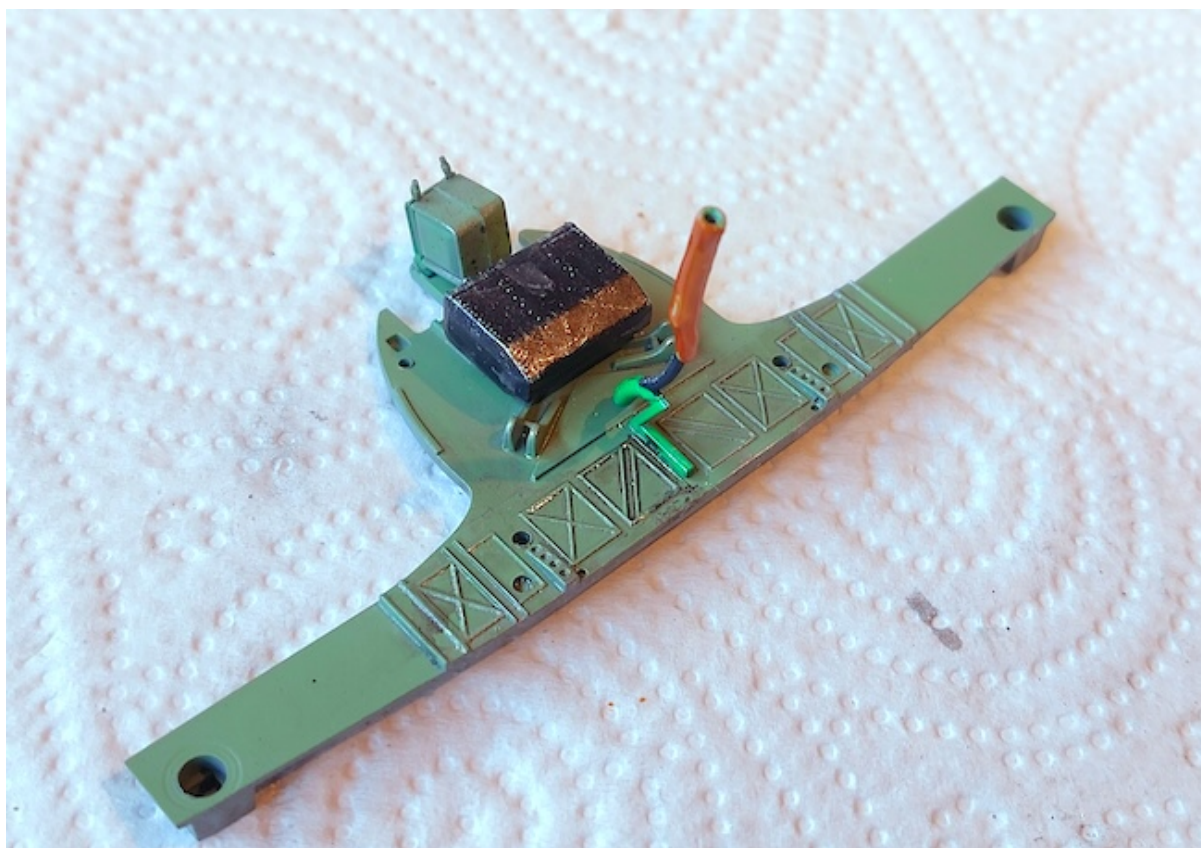
the firewall. The engine was painted Tamiya Nato Black with the bearers and various parts picked out in aluminium. There is some very nice moulded-in detail which really benefits from a dry-brushing with aluminium to make it 'pop'.





Next in the sequence is the engine firewall. This is moulded in one piece with the stub main spar incorporated. To the firewall are added the oil tank, coolant header tank and a longitudinal brace which has a coolant pipe moulded in. There are also two tiny PE parts to add here - the first of many! This carries coolant to the ventral radiator on the real aircraft. I used Tamiya XF-71 Cockpit Green as the main colour here with details picked out in accordance with the instructions.





Next up is the construction of the two main undercarriage units. These consist of the two wheel halves which are then trapped between the two forks of the main leg. The wheel is keyed to the leg at the correct angle for the aircraft on the ground. This is particularly vital as the tyres are moulded with an extreme 'flat' on them.

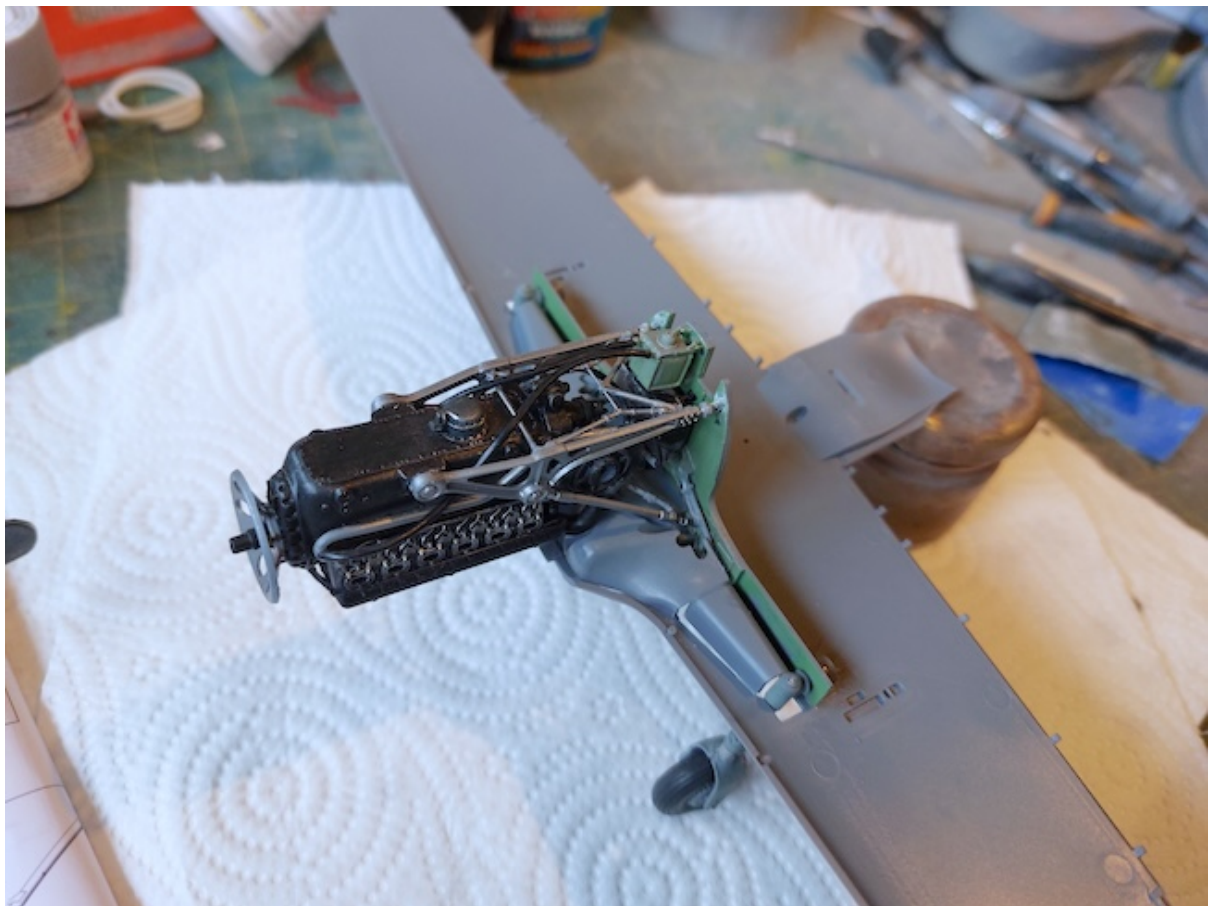


I don't know if the Regia Aeronautica operated their aircraft tyres with very low pressures, but these look to have about 5psi in them! The final part to add is the torque link each side.

The lower one-piece wing half needs some attention by removing the four moulded-in bulges on the lower surface. These are only present on the later MC.205 so obviously Italeri intend releasing this version in the future. With this done, the firewall/spar assembly can be placed into its recess on the lower wing. This is a bit of a faff as the two undercarriage legs have to feed from underneath into their mountings on the spar before this is finally cemented in place.

I do not like models which are designed to mount vulnerable landing gear this early in the build but, there is no other option in this case. The gear mounts are keyed into the spar but this is a very sloppy fit which enables the legs to move through a good ten degrees or so. Luckily there are two retraction jacks to add which will help with alignment. For this reason I recommend adding these before applying cement to the mounts. The undercarriage bay roof is a single piece which has two apertures which need to be carefully positioned around the two delicate jacks before cementing into place. The outer portions of the bays have two more inserts to attach along with more PE.

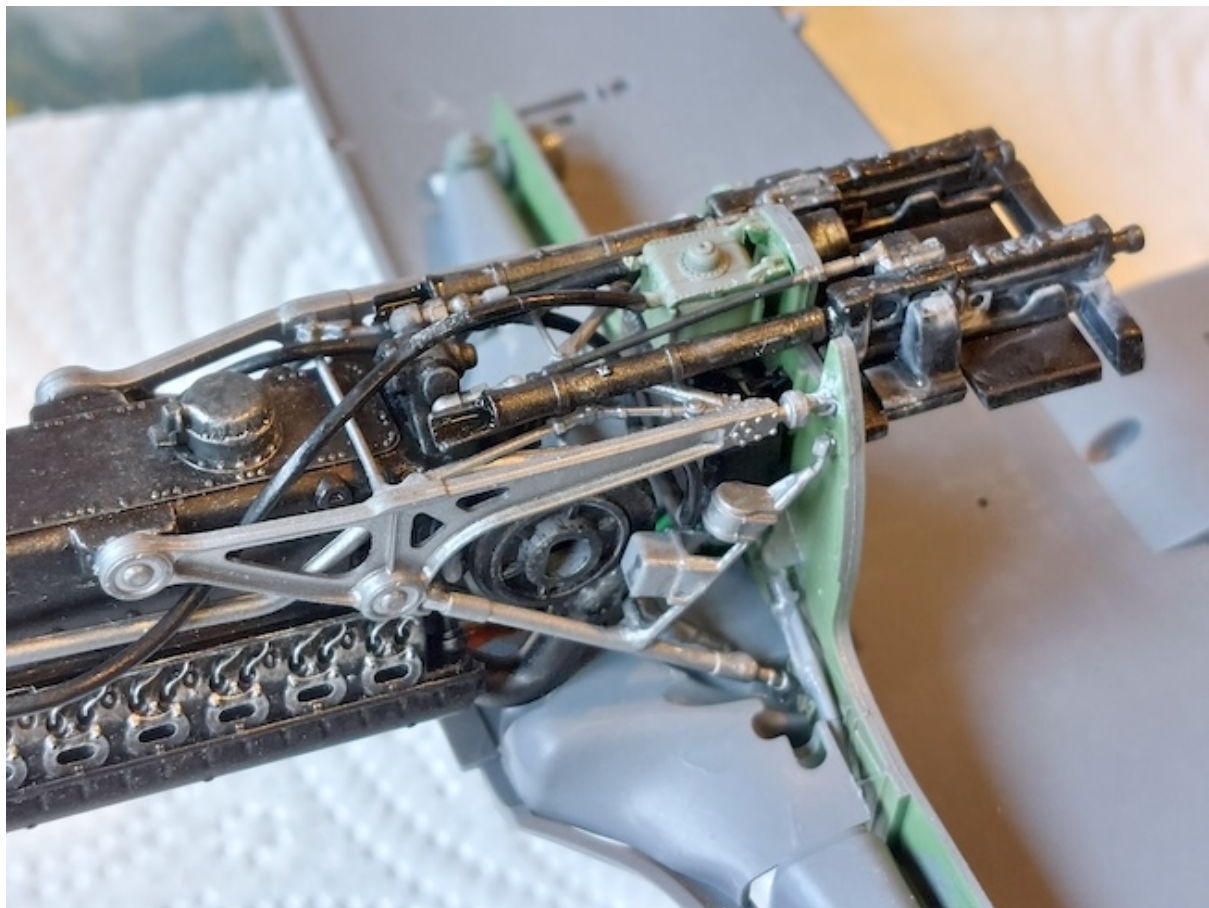
The engine assembly is now retrieved and is now to be joined to the firewall. The four pins on the bearers are designed to be inserted into their corresponding holes in the firewall. These proved to be far too tight so required a bit of reaming out. Making sure the pins are fully seated in the holes is crucial here otherwise the engine will sit at the wrong angle which I envisage would cause all sorts of fit problems later in the build. Next stage is connecting the flexible coolant pipes, which is straightforward.

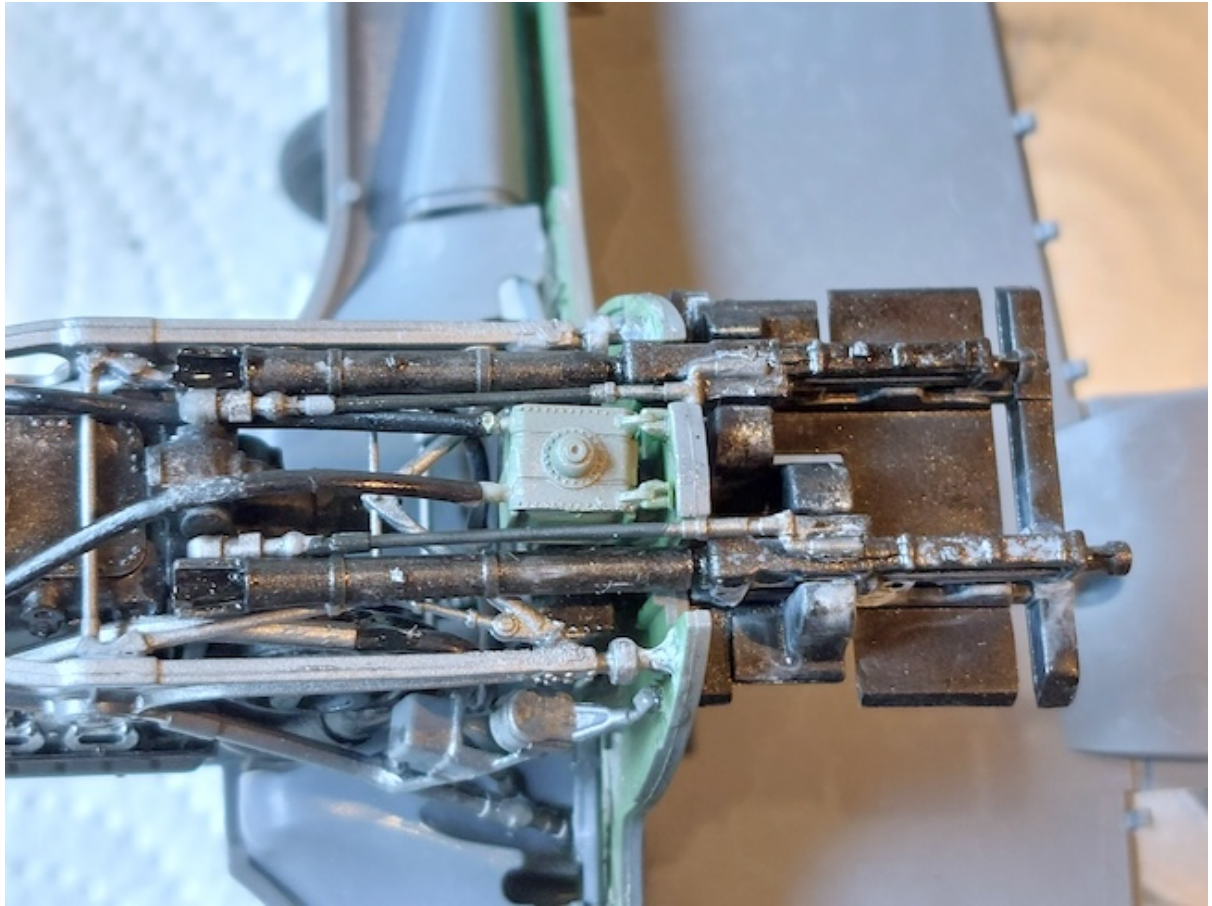


It was at this point that I needed to decide if the engine was to be on display because if so, it definitely needs the addition of some scratch detailing in the form of an electrical harness, fuel lines and the like. The engine installation is similar to the BF109 in that it has a one piece top cowling. I wanted to see if this could be

made removable on the model and so I glued together the three parts which make up this upper cowling. This immediately made it apparent that this cowling would not fit over the engine bearers without major surgery which would involve cutting away part of these therefore ruining all the previous work on the DB601. So, if like me, you prefer to have the cowlings buttoned up to show the sleek lines of the aircraft, I recommend just building the basic engine block and utilise only the rear bearer mounts to position the engine at this stage. Once the fuselage halves are added and the spinner backplate cemented to these, the engines final position is assured. The only reason the engine cannot just be omitted is because it provides the mounts for the twelve individual stub exhausts.

Attention now turns to the Folgore's extensive armament. The two Breda machine guns are cemented to their baseplate in which is moulded the ammunition feeds. Two pneumatic pipes are then added to complete the gun pack. The base and pipework I painted Nato Black and, of course, Gunmetal for the weapons. The fittings on the ends of the pipes are picked out in aluminium. This assembly now mounts on top and to the rear of the engine firewall.



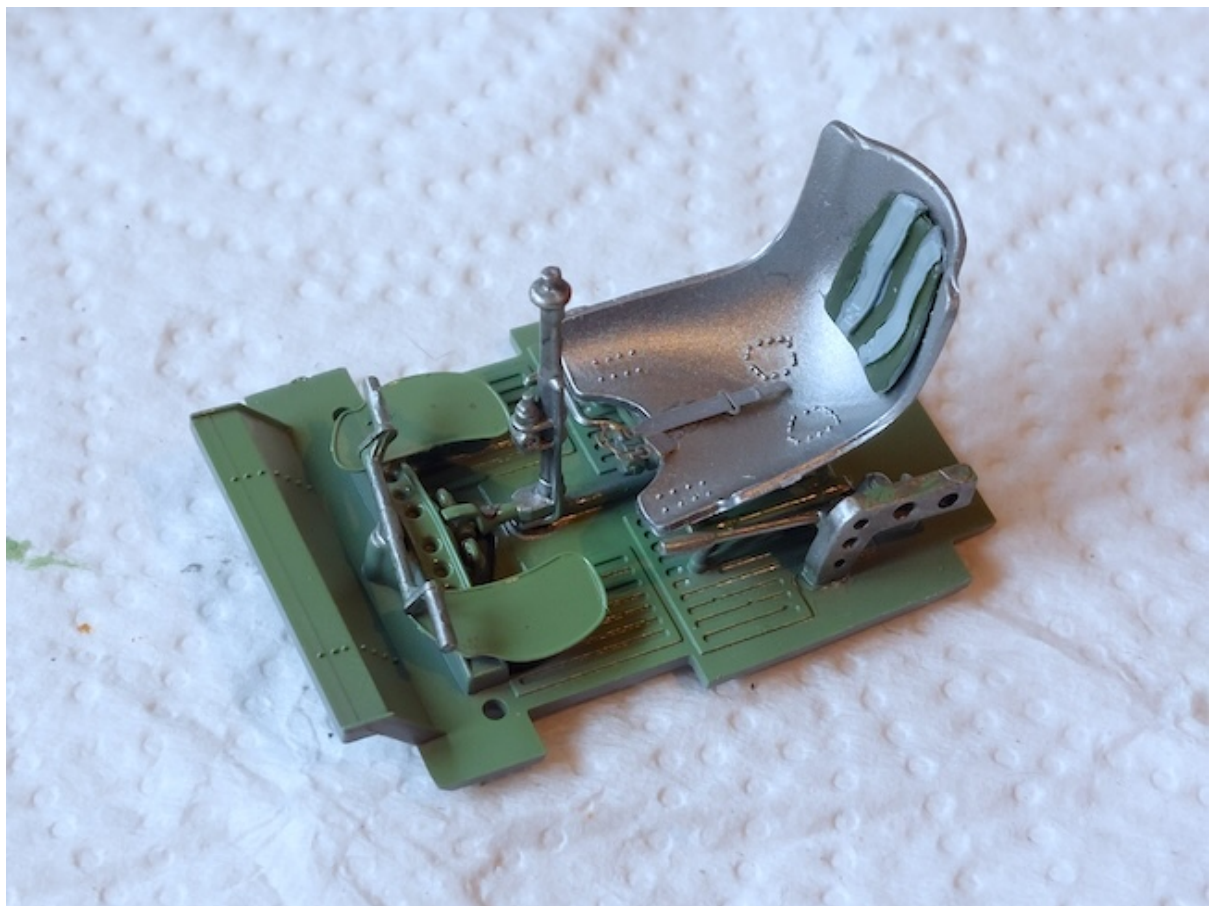


The instructions now call for the four-piece flaps to be fitted. Dry fitting of the wing upper halves proved it would be better to fit them later.



The next stage covers, at long last, the cockpit! The instrument fit consists of two separate panels which attach to a forward cockpit frame. There is no need to paint the panels as the 3D decals occupy all the space.

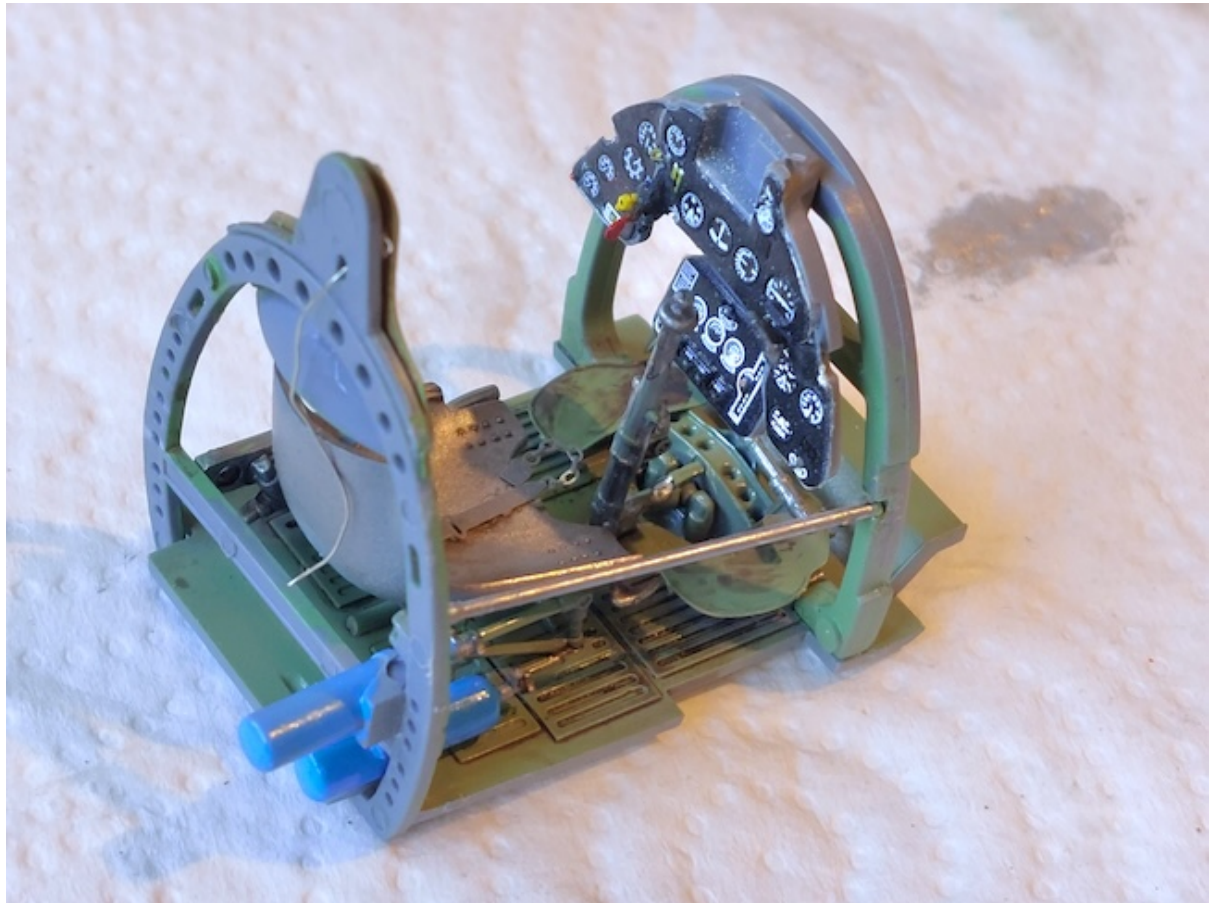
These decals are soaked off their backing paper as normal but do need an adhesive to attach them. I have seen PVA recommended for this but I decided to risk a thin smear of cyano for mine. This worked without any adverse reaction from the decals and of course the drying time is only seconds. PVA will give you much more 'wriggle' time though. There are two prominent styrene gun charging handles to add to the main panel along with a PE lever. The reflector sight can also be added at this point although it can be fitted at the end of the build if you prefer. The cockpit floor has some reasonable moulded-in detail and on this are mounted the rudder bar and control column. The rudder pedal foot straps are formed by bent PE. There are also two PE heel plates which also need bending to conform to the floor contours. Annealing of these parts with a candle flame will make this task much easier.



A rear frame cements to the aft part of the floor after two oxygen bottles have been added. The tubular frame for the pilot's seat is made up of five small parts which provide some great looking detail but will never be seen again after the seat is placed on top. More additions are the seat adjustment lever and a rod which runs between the two frames on the starboard side. No idea what the purpose of

this could be I'm afraid. There is also a PE armour plate to mount on the seat frame. For the main cockpit colour I again used XF-71 with other details picked out by using a photograph I found in a reference book of the Smithsonian's MC.202. AK dark wash was applied all over to give some extra 'depth' to the detail.

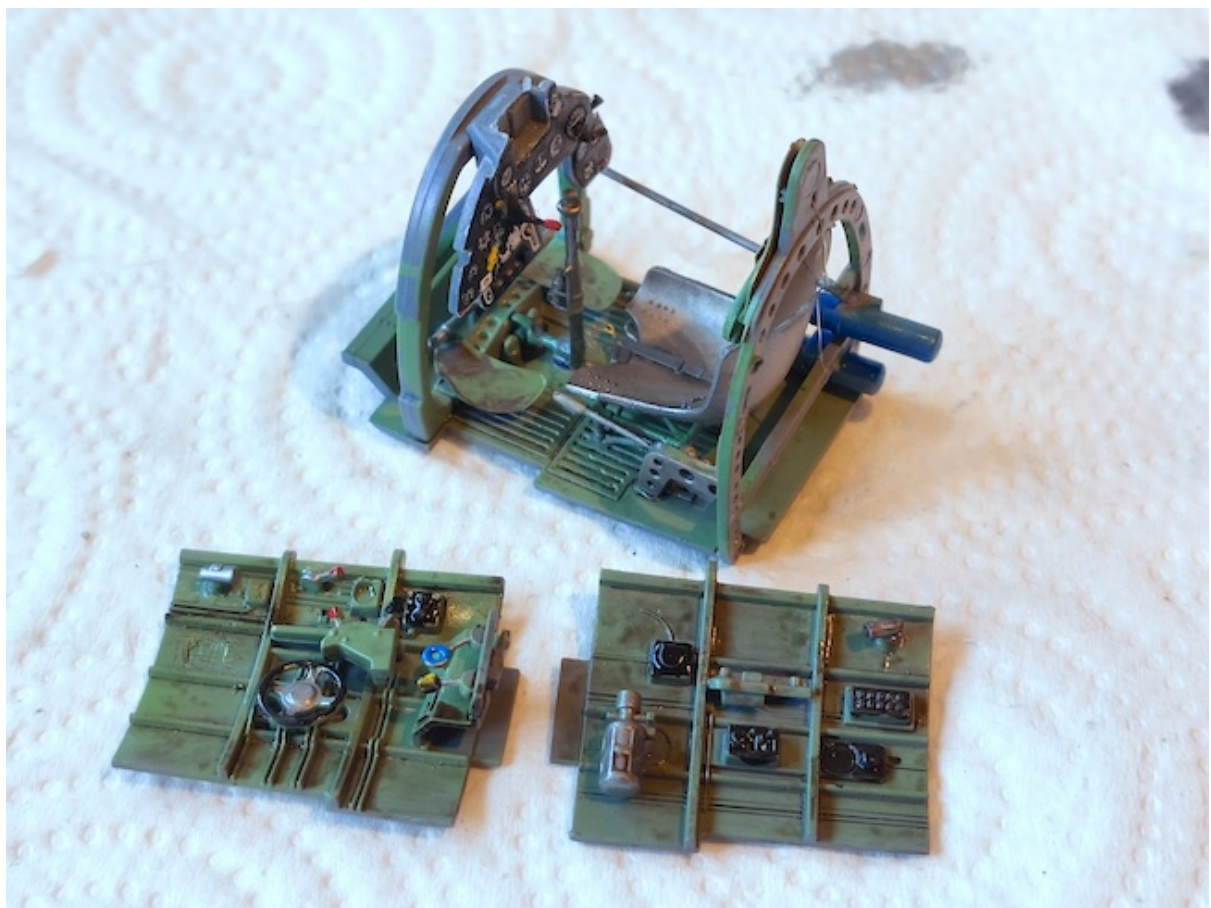
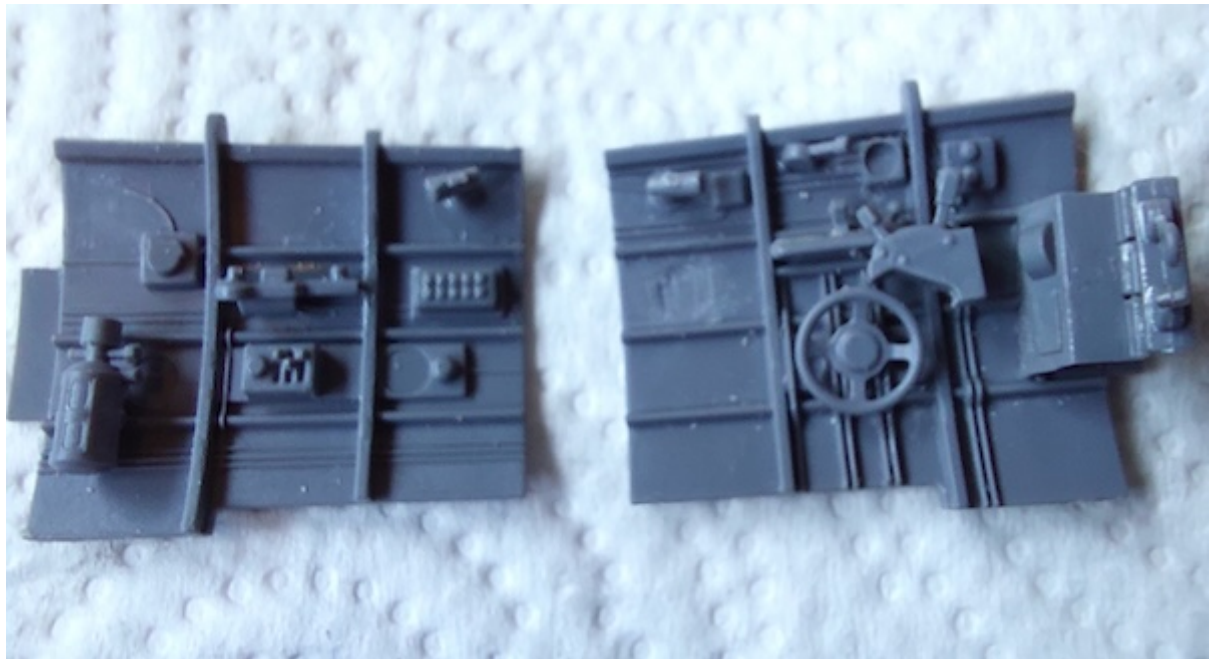
The unusually shaped pilot's seat is bare aluminium and the styrene back cushion I painted Khaki Drab.



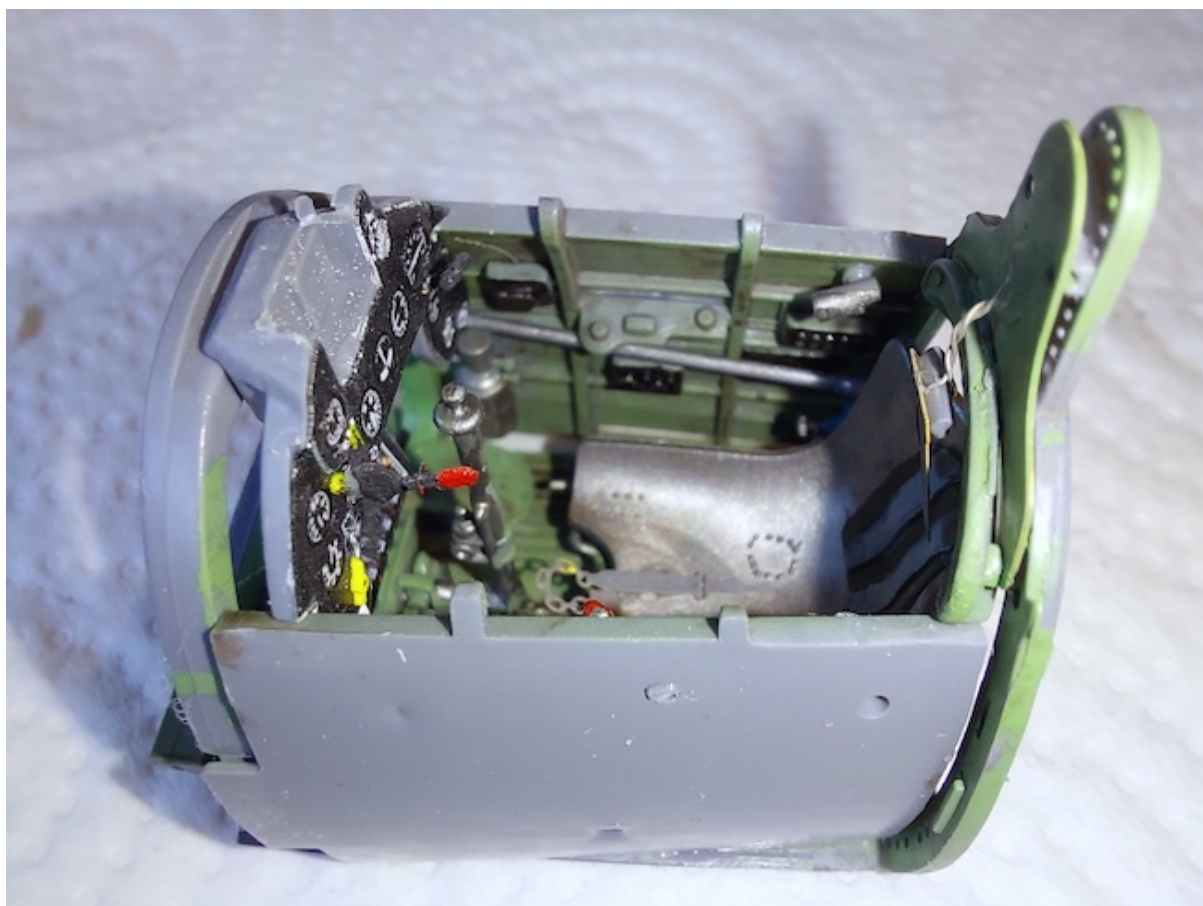
Now Italeri provide a single PE strap which attaches to the front of the seat via a short chain. This is the normal attachment in most Italian aircraft of the period by the way. There are also another couple of PE pieces which form the upper part of the shoulder straps. These are attached by a cable which runs rearwards through the armour plate to more PE chains which will be completely hidden inside the fuselage. I used some of the copper wire provided but saved myself some fiddly supergluing by omitting the chains. Where are the lower parts of the shoulder straps? They are moulded into the seat cushion. Why the two straps aren't provided as two complete lengths on the PE fret I cannot imagine! There is no indication of any lap straps being fitted either.



The two cockpit sides have some softish detail moulded in to which are added undercarriage and flap levers, throttle box, elevator trim, canopy release, oxygen regulator and lighting units. Also incorporated are some prominent ejector pin marks. These definitely needed to be filled and sanded smooth although not the easiest of jobs as they sit between the raised frame detail.



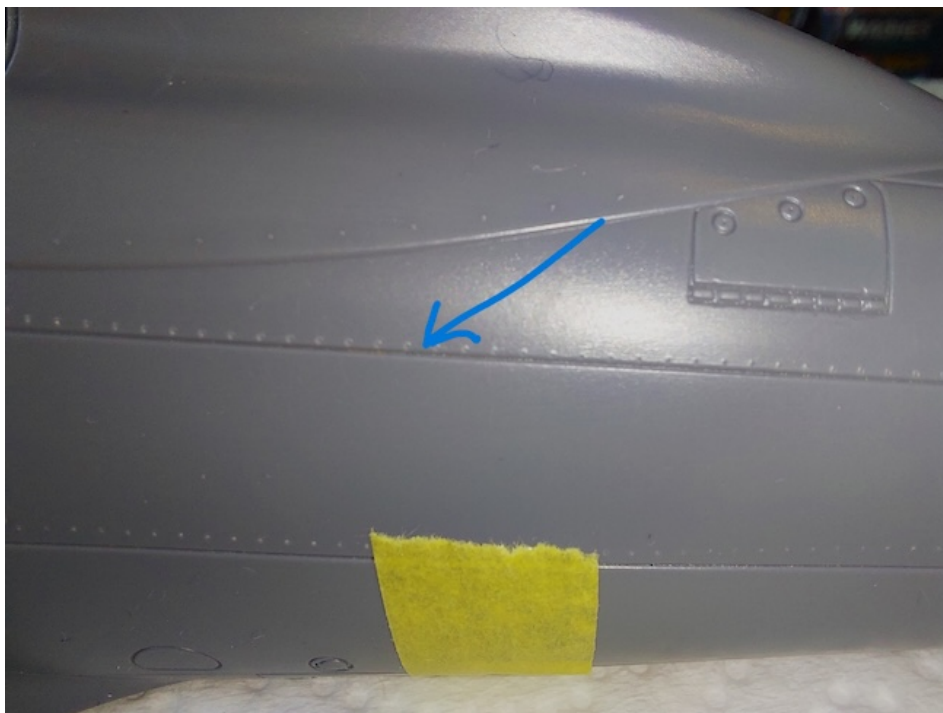
With the sides added to the floor assembly, the resulting cockpit tub does look pretty good to my eye.



The tub can now be cemented into the starboard fuselage half - location here is nice and positive. The tailwheel assembly must also be added at this point. Strangely the tailwheel tyre must have been inflated to 100psi, in stark contrast to the main wheel tyres, as there is no moulded-in 'flat' whatsoever. The port fuselage half is now joined to the starboard without problem. The fit is very precise meaning minimal clean-up of seams.



There is a complete lack of flush riveting on the fuselage. These rivets are barely discernible on photos of the preserved aircraft but need to be there on this 32nd scale model. So



it was out with the riveting tool to replicate these.

The completed fuselage can now be mated to the lower wing/engine assembly. I recommend careful dry fitting here before committing to cement as,

although the fit is mostly pretty good, a little bit of fettling will enable a filler-free join to be achieved. There is provision for the two 7.7mm wing guns to be added to the upper wing halves if required before they too can be added. Again dry fitting will mean a perfect wing to fuselage seam.



The single piece lower cowling has a PE grille to add to the oil cooler intake before this is added to the nose of the model. A good fit can be achieved with a bit of fettling.

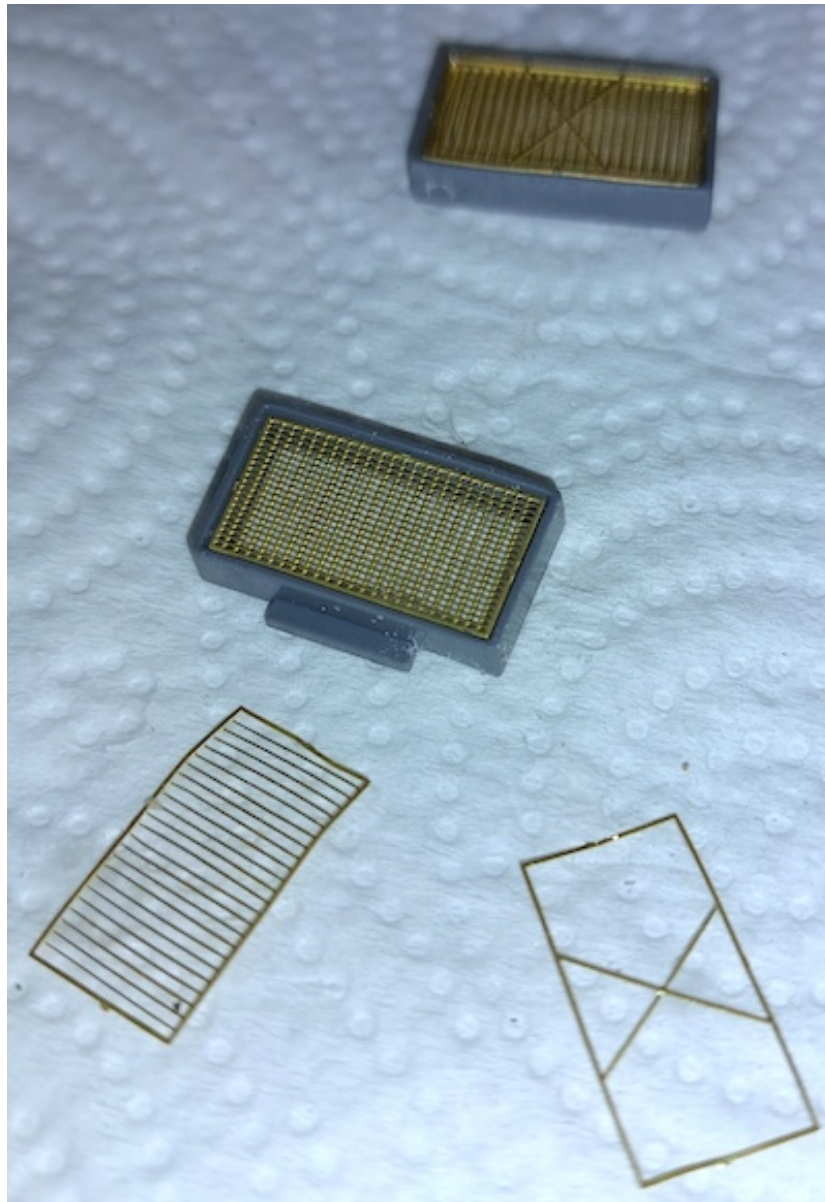


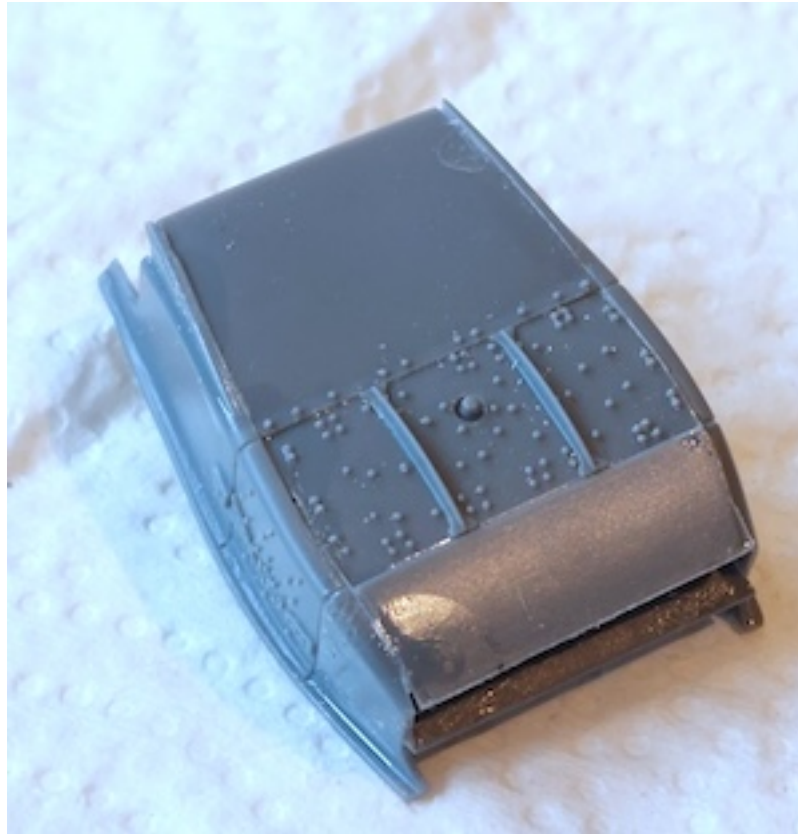
Next I added the four piece flaps. These can be either raised or lowered. I couldn't find a single photo of the aircraft with flaps lowered whilst parked so I cemented mine up. The fabric effect on the ailerons is, quite frankly, terrible. There should be no scallop effect on these as the fabric is drum tight to withstand air loads. The ribs and stitching look like hobnails. The best that can be done with the ailerons is to reduce this effect with a sanding stick as much as you dare. You will not be able to eradicate it entirely without thinning the surfaces too much however. The same problem exists on the elevators and rudder unfortunately. This is definitely something for the aftermarket boys to rectify. Now if you happen to be a fan of attaching tiny pieces of photo etch, you have lots of treats in store. You are eased into this pleasurable experience with four 7 x 1.5mm plates which sit on the wing roots two per side.



Things get a bit more challenging with the aileron hinge cover plates which are approx. 1mm square and are eight in number. Even using my sticky pencil as a placing aid, I found this task an eye-watering challenge. Turning the page, I now discovered that there are even more to be added to the undersurfaces of the flaps and the ailerons - twenty more in fact. If you pick my model off the shelf and have a look underneath, a dedicated rivet counter will notice there are no hinge covers present - sorry but I'd really had enough of PE particles by this time.

At least the four pieces of PE that make up the faces of the coolant radiator matrices are large enough to be visible to the naked eye and this unit builds up okay.





This can now be attached to the bottom of the fuselage along with its fairing. These all fit well. There is a small Venturi which you can add to the centre section; normally this would be vulnerable to be knocked off but, in this case, it will be protected by the landing gear which we had to add earlier. Unless, of course, that has been snapped off during all that PE work!

The main gear leg fairings are made up of five pieces of styrene and two more PE parts. These were added along with the inner doors and their linkages.

Now for another fiddly task - that of attaching the twelve stub exhausts to their holes in the cylinder heads. Again the fit was too tight and necessitated opening up these holes. After an hour spent getting the stubs in place and lining them up, the next addition are the two shrouds. These are PE and need carefully bending into shape before super-gluing in place. Being of scale thickness they do look good once in place so take a bit of time here.



The next task was to cement together the three pieces that make up the gun bay cover. This can be left to sit in place if you want to display an open bay as the fit is good. I opted to glue mine in position. If you

want this bay permanently open there are two PE internal frames that can be added for more detail. There are six small spring loaded access panels moulded on the cover. The tiny 'press to open buttons' on each of these are provided as PE parts. I wouldn't even attempt to try and remove them from the fret let alone attach these. There will be some masochists who will succeed in attaching them; I've no doubt, but not this modeller! Remember I had already joined the three pieces of the upper engine cowling to test fit earlier. Testing this again revealed the forward engine mounting points were the culprits in preventing the cowling from fitting over the engine. I ended up having to completely remove these mounts before the cowling dropped into place. Even now the fit was not too good and required some filler and careful sanding before I was satisfied. The supercharger intake with its tropical filter attaches to the port side of the cowling along with its fairing. In case you were pining for more small bits of PE, there are a couple more to add here.



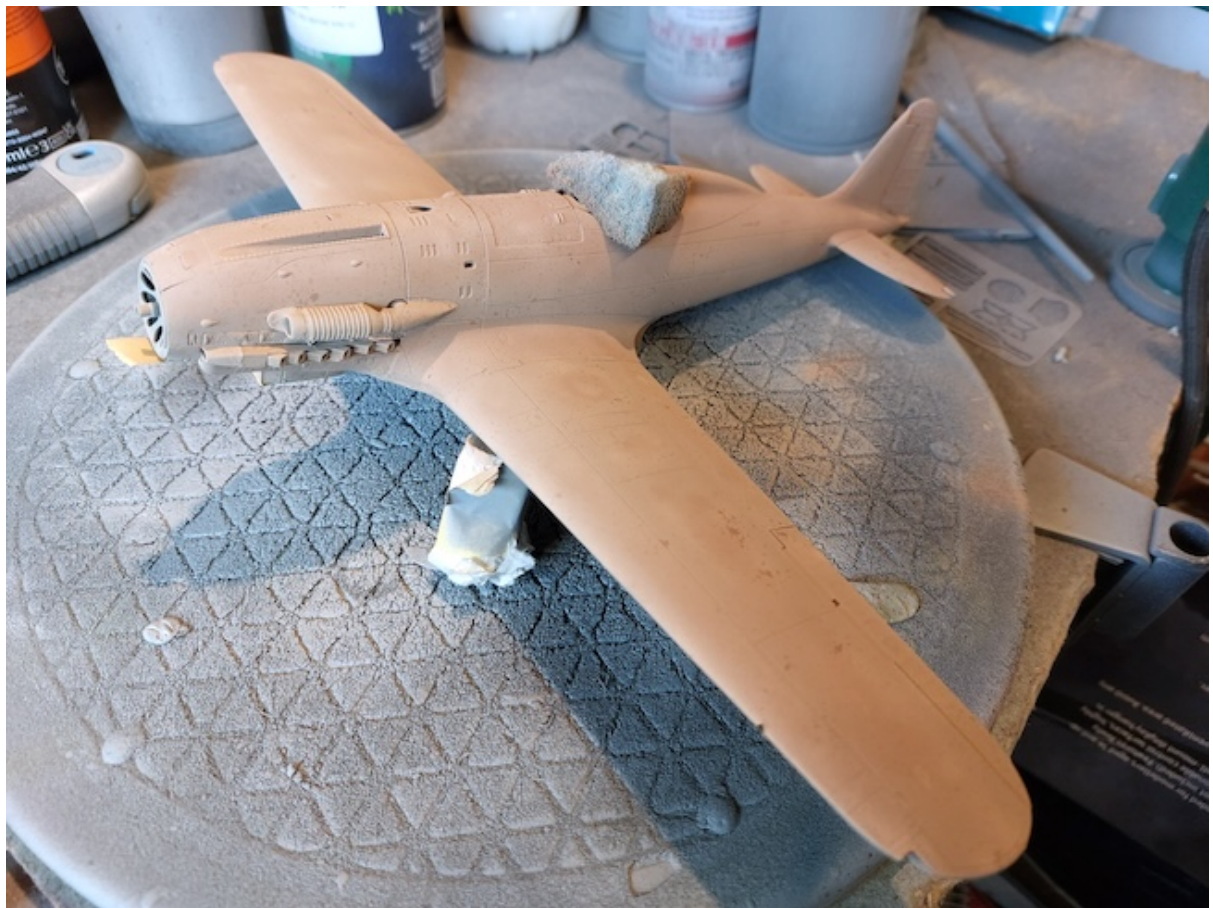
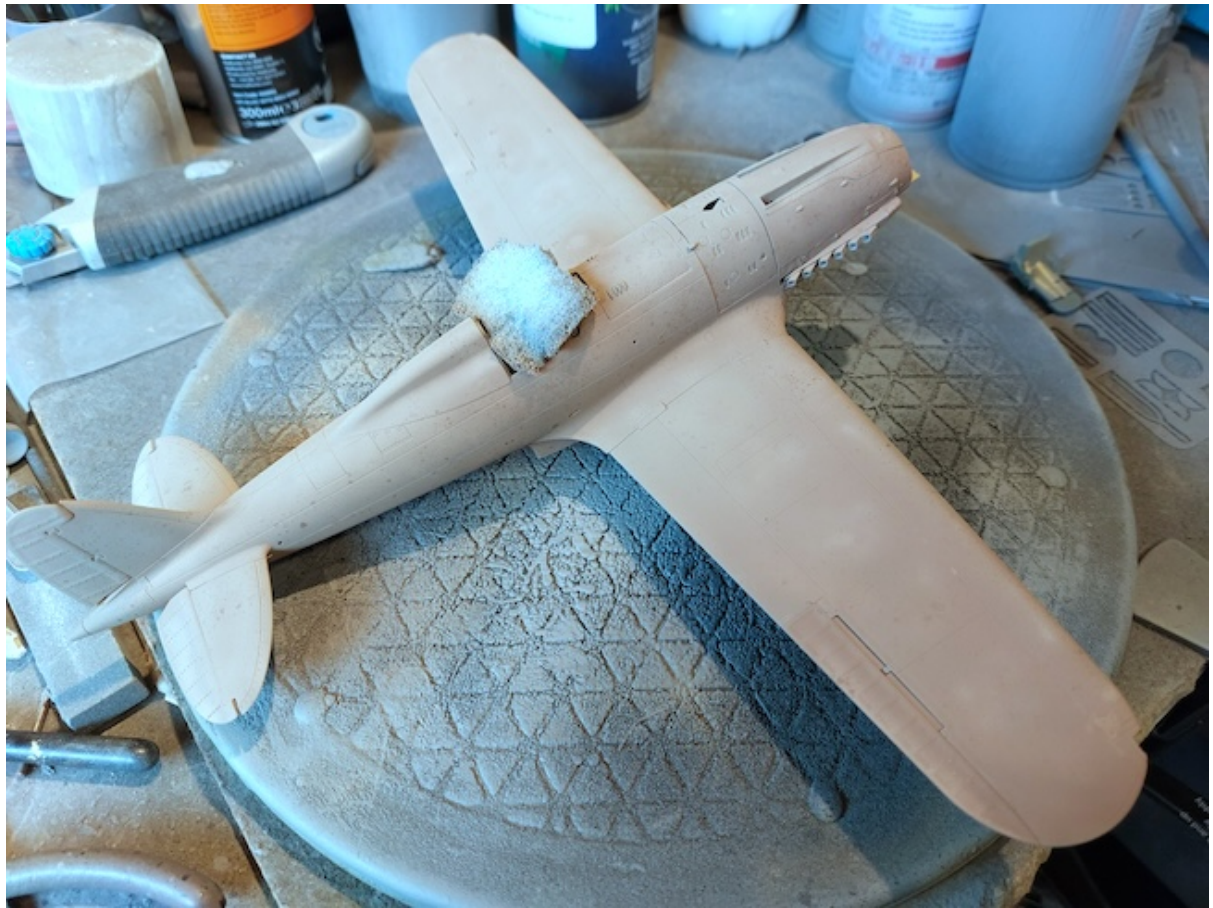
To complete the basic airframe, the tailplanes go on seamlessly followed by the toned down elevators and rudder. There is a choice of two different types of tailplanes provided depending on the option you are building. Finally there is a tailwheel fairing and the tail-cone to add.

Painting

With the model complete enough to paint, I began with a wipe down with isopropanol. I next wrapped the undercarriage legs with foam and tape - amazingly they were still intact. More foam was used to plug the cockpit and the gear bays. The model was now given coat of Halford's best primer and, when dry, a light sanding with 2000grit wet & dry.



All the options in the kit are painted with Nocciola Chiaro 4 over Grigio Azzurro Chiaro. For the odd one or two of us that might still be in the dark here, a trawl of the internet revealed the upper earth colour could vary from a light brown to a darker shade with a hint of green. Lots of recommendations on modelling forums saw me mixing Tamiya Flat Earth with a touch of Red Brown and a hint of olive green. Whatever variation of shade you choose will probably not be far out if you remember the bleaching effect of the sun drenched theatre of operations. The underside colour is a lot easier with Tamiya Light Sea Grey being a favourite. As I had this in the paint drawer two coats of this was airbrushed on. I did not apply any pre-shading here as I've decided that, although it gives a nice effect, it is not really representative of a real aircraft. I'll probably change my mind again next month! After 24 hours curing time, the demarcation lines were masked and my bespoke earth colour was airbrushed onto the upper surfaces.



Again when fully cured, the fuselage band was masked with Tamiya flexible tape before three coats of Tamiya Flat White were applied.

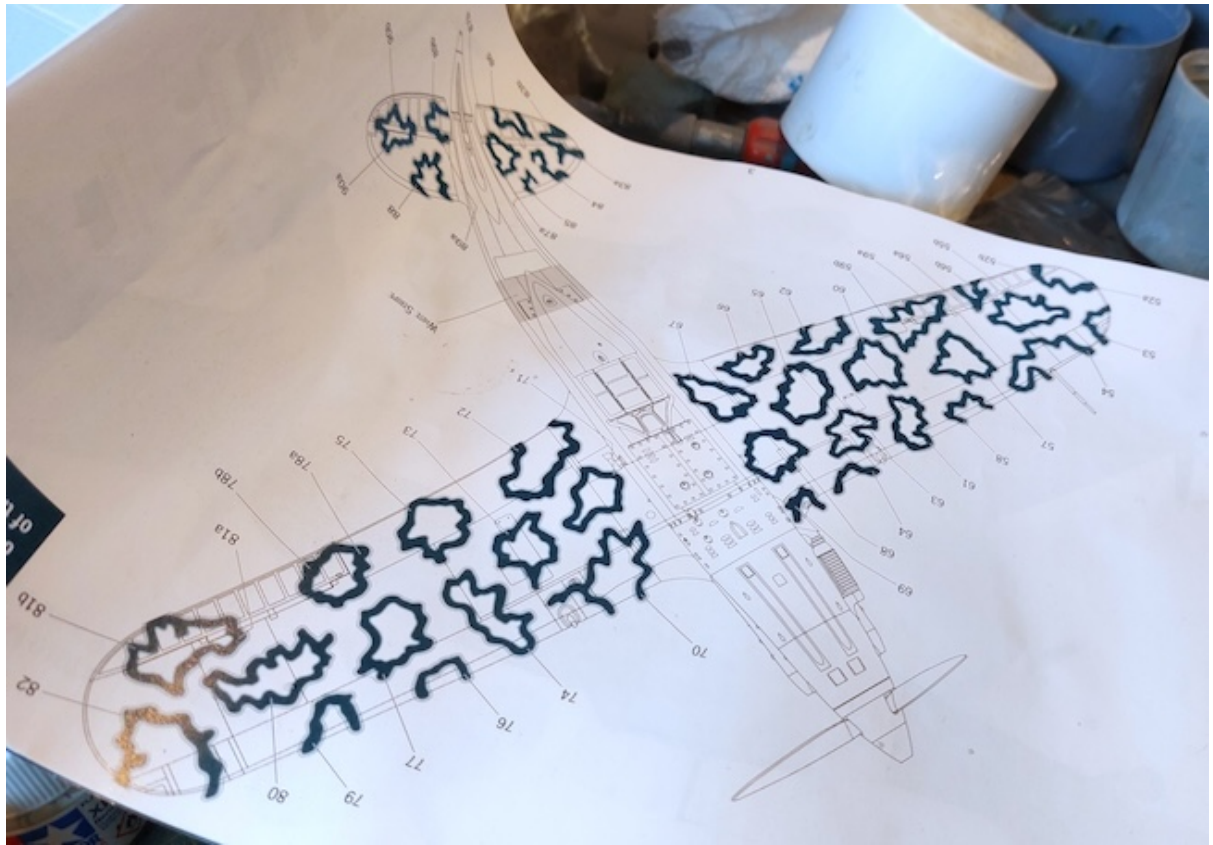


The propeller spinner was also sprayed white whilst the airbrush was still loaded. Next I lightened a small quantity of my earth mixture and lightly sprayed this into the centre of various upper panels to produce a sun weathered appearance. The model now received two brushed coats of Quickshine floor polish to provide a gloss surface for the decals.

Now comes one of those make or break jobs. Italian camouflage patterns are notoriously difficult to reproduce effectively. For those who choose the more complicated options in the kit, I salute you. The smoke ring options are much less challenging and if you have a 0.2mm nozzle for your airbrush, this is what I would use. Because Italeri have included the smoke rings as decals and because these are produced by Cartograf, I decided to try them. The colour of these rings is given as Verde Oliva Scuro 2. RLM 70 Schwarzgrün is perfect if you choose the airbrush method. Although the smoke rings were applied by hand in the field with no particular pattern, on the actual aircraft, Italeri provide an exact placement diagram for the individually numbered decals of which there are over a hundred. It is best to follow this diagram as a lot of the rings are split around the fuselage band and other areas.

So, starting at one wingtip, I soaked the first decal and slid it onto the wing using plenty of water. Whilst gently sliding into position it tried its best to crease and fold itself and proved very reluctant to resume its original shape. Luckily it was quite robust and withstood the pressure required to 'stretch out' the creases. For the next one I used even more water and this seemed to work better. Generally speaking, the complete rings were not too bad to apply. The broken rings however, continued to fight me all the way. Five full morning sessions were needed to complete this onerous task.











I could have completed this job in about an hour with the airbrush!

So how did it look? Standing back, I was quite pleased with the look although I judged it a little stark. The smoke ring decals do have a slight soft edge to them but to my eye they need a tad more. To those who have the requisite airbrush skills, I recommend this method. For those with less confidence, these decals do provide a viable alternative and pre-warned, will hopefully find applying these easier than I did.

The normal decals for the markings proved straightforward and were few in number. I don't know if the Italians used stencils on their aircraft but there are none provided on the sheet. I chose version A (as depicted on the box art). This was MM 91971, 96th Squadriglia, 9th Gruppo, 4th Stormo, Sicily, July 43.





To seal all those decals in I applied two more gloss coats. I didn't want to over weather this model as the aircraft hadn't been long in service. As it was flown off sandy surfaces I did apply some chipping to the inner leading edges of the wing and tail which would have been sandblasted on take-off. Similarly the prop blades, spinner, supercharger intake and nose enjoyed the same treatment. I used aluminium paint applied with a piece of sponge to achieve this effect. The port wing walkway also had some scuffing and chipping applied. The exhausts were now painted with True Metals Steel and the rear five treated with light earth pigment before airbrushing Alclad exhaust staining. The final weathering stage was to apply Flory Dark Wash over the whole airframe and allowing it to dry. Using a damp cloth, this was now wiped off leaving the panel lines nicely emphasised and a slight patina on the surfaces. This wiping off stage allows you to leave or remove as much as you think necessary to achieve the desired effect. In this case, the aircraft had only flown a few hours so I didn't want an overly worn look. I now airbrushed on a coat of Tamiya semi-gloss which actually gives a nice matt finish.

Final Touches

The separate propeller blades were painted Nato Black before being added to the hub and spinner. These were also given some aluminium sand scoured effect. The prop is simply a push fit on the shaft. The windscreen and canopy were given a plunge into Pledge to improve their clarity. When dry, I used the standard Tamiya tape and new scalpel blade to mask these before spraying with the bespoke earth colour. Don't forget to give the gloss/dirt/matt treatment to the frames otherwise they won't match the rest of the airframe. The windscreen fits beautifully on the fuselage - I used Krystal Klear as the adhesive. The sideways opening canopy has

two delicate styrene rods to attach to the inner lower framing. These incorporate two levers, the port one being the latch and the starboard the jettison mechanism. The canopy can be fitted open or closed and fits well in either position.



Finally, the aerial mast is added along with an insulator on the turtle deck. Because the aircraft had an HF radio, there is an aerial wire which runs from the fin to the mast and then down to the insulator. There is more PE provided for the fin and mast attachment as a final test of your patience and a roll of copper wire comes in the box for the aerial itself. I would normally have used EZ line for this but my supply had been used up. I was forced into using the copper wire but found it difficult to get any tension in it. I will definitely replace this with EZ in the near future.



Conclusions

I am honestly in two minds about this kit. On the plus side it is excellent that a manufacturer has produced an Italian WW2 aircraft in this scale. The finished model actually looks pretty good sitting on the display shelf - except for those flat tyres of course! On the down side is the over use of ridiculously small photo etch parts. I am sure this will deter a lot of modellers from purchasing the kit. Almost all mainstream manufacturers would have these details moulded in. The strange engineering design of how this kit goes together is another minus in my book. The undercarriage did actually survive all that handling during the build but that was more by luck than care. Having the gear attached also complicates the painting stage somewhat. The fit of the parts were excellent in some areas and not so good in others - the engine cowling being one example. The Cartograf smoke rings were another disappointment. I have never had any problems with this company's products until now and applying them was, quite frankly, a chore.

The biggest thumbs down from me however, is the price. The RRP for this kit is over £100. Now if you consider that one of the finest kits ever produced - Tamiya's superb Corsair range, can be bought for around the same amount, this is just too much money for what you get. To try and fool people that the Corsair sized box sitting temptingly on the shelf of your local model shop will be packed full of styrene, does not sit well with me I'm afraid.

Will I be buying any further similar releases? I think you may know the answer!

Rob R.

Here's my summary...

Quick Summary	Star rating out of 5
Quality of moulding	***
Accuracy	****
Instructions	****
Decals	***
Subject choice	*****
Build enjoyment	**
Value for money	**
Overall	***







