

## **‘BoB Bits Box’ Part 4.**

### **R.A.F. Camouflage and Markings in the BoB.**

**Part Four** covers the camouflage schemes and colours, the markings, codes and serial number presentation, and other associated details, worn by aircraft of the R.A.F. during the period of the Battle of Britain, 10<sup>th</sup> July to 31st October, 1940. Please note that this is a general outline only, and should not be regarded as a comprehensive description of the schemes etc used. As with all modelling subjects, the reader is advised to consult written and photographic evidence of specific aircraft for detail information regarding a subject.

*(The term R.A.F. is used to describe all units under the control of R.A.F. Fighter Command during the Battle.)*

I had intended to include more colour illustrations in this section, but due to a slight technical problem, and not wishing to delay ‘publication’ further, some of the illustrations or diagrams are in black and white, or are tone drawings. (Sources stated where known.)

Note that the colour schemes used immediately prior to, and immediately after the ‘official’ Battle dates are shown first, in order to clarify the use of colours and markings during the actual Battle.

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#### **Colour Schemes before the Battle.**

In order to avoid possible confusion over the colour schemes presented in some published profiles of aircraft during the summer and autumn of 1940, it will be helpful to understand the changes in camouflage and other markings which took place from the outbreak of war in September 1939, up to the late autumn of 1940, some of which have been included in publications covering the Battle. As the Group Build is using the *official* dates of the Battle, from 10<sup>th</sup> July to 31<sup>st</sup> October, 1940, some published schemes will *not* be relevant to the Battle, and can be ignored for the purposes of the GB.

This is particularly important where the undersides, or part of the undersides, of some aircraft are shown as black, and it should be remembered that many published photographs depict scenes where the photograph was taken before the Battle, or shortly after, and particularly those from November 1940, and, in some cases, in 1941 !

When the Spitfire and Hurricane first entered squadron service, they were painted in a disruptive camouflage pattern of Dark Earth and Dark Green on the upper surfaces, with ‘Aluminium’ (silver) doped undersides. Soon after, the underside of the outer port wing was painted ‘Night’ (smooth matt black), and the starboard side smooth matt white, as a tactical recognition marking, and ‘Type A’ roundels were carried on these surfaces. The fuselage roundels were ‘Type A’, with ‘Type A1’ on the upper wing surfaces also. Serial numbers were also displayed under the wings, in 30 inch characters, black on white, and white on black surfaces, with smaller serial numbers shown on the rear fuselage.

At the time of the Munich Crisis, in August 1938, the under wing serials and roundels were removed. Around this time, the black and white of the undersides of the wings was extended

to the aircraft's centreline, with some aircraft also having a 50/50 demarcation down the length of the fuselage.

Squadron code letters at this time were in Medium Sea Grey, with the characters being 38 inches tall.

This scheme remained in operation up to the outbreak of war, on 3 September 1939, when under wing roundels were re-applied. Squadron code letter combinations were also changed at this time, as a security measure.

From 6 June 1940, the overall colour scheme and markings presentation was changed, and this will be covered later.

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### **Colour schemes after the Battle.**

How an aircraft might have looked *after* the Battle may seem irrelevant here, but it is this period, immediately after the 'official' ending of the Battle of Britain, when interceptions of Luftwaffe, and some Italian, daylight raids were still taking place, although much reduced in strength, which can be a cause for confusion with modellers. This is particularly so due to the relatively extensive amount of film footage, and 'still' photographs used in illustrating many descriptions and histories of the Battle of Britain, some still used today as the basis for profiles, illustrations in books, and decal sheets, often specifically aimed at the modeller.

The confusion can arise mainly due to the use of black as an underside colour where, to those with little knowledge of the subject, it may be thought that an aircraft from a particular squadron, shown with, for example, a camouflage scheme from May 1940, and another as it appeared in December 1940, would have looked that way throughout the Battle.

They did not.

From November 27<sup>th</sup> 1940, the camouflage scheme was changed again, possibly as a quick recognition aid for anti-aircraft gunners, where black was re-introduced as an underside colour. The undersides of the port wing on day fighters were painted black, up to the wing root (there were exceptions, where the demarcation could be further outboard), and a 'Type A1' roundel was carried on that wing, with a 'Type A' roundel on the starboard wing. At the same time, spinners were re-painted in 'Sky', and an 18 inch wide tail band, also in 'Sky' was added. Squadron code letters remained in Medium Sea Grey.

Both this and the previously described colour scheme are not relevant to the Battle of Britain during the period of the official dates, or to the Group Build.

(Note; *examples of roundel types are illustrated later.*)

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### **Colour schemes and markings DURING the Battle.**

An Air Ministry directive, effective as of **June 6<sup>th</sup> 1940**, ordered that the half black, half white undersides of day fighters should be re-painted in 'Sky' (sometimes referred to as 'Sky Type S', Duck Egg Green etc, etc.) overall, and that new aircraft on the production lines, or awaiting issue at M.U.s (Maintenance Units) or Storage Depots, should also be painted in this colour forthwith. This led to some variations on in-service aircraft in tones and shades to begin with, depending where, how, when and with what paints this re-painting was done.

Without going into all the technical specifications of the paint mixes, in brief, the underside colour could vary, between a pale blue, not dissimilar to the Luftwaffe RLM 65, to a blue-green tinge, to the 'true' Sky specification. Those aircraft painted on the production line, or re-painted later at M.U.s during major re-fit or repair, would, of course, carry the 'true', factory-mixed colour and, by around early August, the majority of day fighters were to be seen in the 'official' shade of 'Sky', although there were, of course, some exceptions. (*Note; 'Sky' and 'Sky Type S', are one and the same, the 'S' denoting 'Smooth finish'.*)

At the same time as the order for the change of underside colours, other areas, such as code letters, and serial numbers, also underwent changes.

#### **Camouflage colours & patterns.**

The upper surface colours of day fighters remained the same\*, Dark Earth and Dark Green, and were applied to one of two patterns, known as 'A Scheme' and 'B Scheme' (*illustrated later*), each a mirror of the other. The '**A Scheme**' was generally applied to aircraft with a serial number ending in an **odd** number, e.g. N2359, with the '**B Scheme**' being applied to aircraft with a serial number ending in an **even** number, e.g. P9386, although there were exceptions. (*Again, check references for a specific aircraft.*)

*[\* an exception was the Gloster Gladiator, which had been finished in the 'Shadow Compensating' scheme, but were re-painted in Dark Earth, Dark Green, Sky.]*

**Squadron code letters** consisted of a two-letter combination denoting the squadron, before the fuselage roundel, followed by a single letter denoting the aircraft within that squadron, the latter after the roundel, and these remained Medium Sea Grey, but the dimensions were now specified as **30 inch** high characters. However, this caused a minor problem with 'fit' on the Spitfire, and **24 inch**, or **27 inch** high characters were generally used in this instance. Again, there were exceptions, and some squadrons applied the taller letters, number 610 'County of Chester' Squadron being a notable example, where the code letters infringed well forward, over the cockpit entrance flap beneath the canopy of the Squadron's Spitfires.

Some Hurricane squadrons, on the other hand, also used the smaller code letters, on occasions, numbers 303 and 145 Squadrons being just two examples. It was also not uncommon for a squadron to use *both* sizes of code letters, and this can be seen on some of the Spitfires of number 609 'West Riding' Squadron, for example.

Note that although an official style was stipulated, with set dimensions for the width and angles of the strokes of each letter, there were some variations in both of these features, an example being the slightly 'stylised' code letters seen on some 19 Squadron Spitfires.

So, once again, check your references before committing yourself to a definite colour scheme and marking combination!

**Serial numbers**, now positioned only on the rear fuselage sides, were increased in height to **8 inches**, which remained more or less constant throughout the remainder of World War Two, and these were painted in 'Night' (black), although a small number of Medium Sea Grey serials have been seen. Two styles were used as standard, depending on the factory or paint shop where they were applied, an angular 'square' style with rounded corners, and a 'rounded' style.

**Roundels** carried on the fuselage and upper wing surfaces were standardised, with the fuselage roundel now being a **35 inch** diameter 'Type A1', although the interpretation of the proportions of each 'ring' could vary when it came to the red centre! Here, both the 5 inch and 7 inch red centres are known to have been used, and once again, specific references should be consulted.

Upper wing roundels were 'Type B', **49 inch** diameter, and this remained standard throughout the period of the Battle.

Under wing roundels were not displayed at this time (June 6<sup>th</sup> to July 31<sup>st</sup>), presumably as a result of the new 'Sky' finish having been applied, and possibly lack of time.

**Fin Flashes** were now positioned on the fin, with three equal stripes, **9 inches** wide, running from the vertical hinge line of the rudder forward on the Hurricane and Spitfire, and down from the horizontal rudder line to the joint with the fin and tail plane, with the red stripe forward, followed by white and blue. On some Hurricanes, the red extended forward to cover the small remaining area of the fin.

**Spinners and propeller blades** were finished in 'Night' (black), with the blade tips having a four inch yellow tip on both front and rear faces of each blade.

### Changes effective from 1<sup>st</sup> August 1940.

As of the above date, **under wing roundels** were re-introduced. These were to be 'Type A', **50 inch** diameter, positioned with the centres 80 inches from the wing tip. However, again due to the pressures of the time, some aircraft displayed 30 inch diameter 'Type A' roundels, positioned close to the wing tip.

**Fin flashes** were also changed at this time, being reduced in width to **24 inches**, with equal, **8 inch** wide 'stripes', still positioned (vertically) from the rudder line to the tail plane.

### Other colours and markings.

In addition to the standard instructional or warning stencils, shown later, various other markings and colours could be found on R.A.F. fighter aircraft. These included gas warning panels, gun port patches, rank pennants and 'kill' markings, although the latter were not as prevalent as popularly imagined.

**Gas Warning** panels were carried on the port wing only, and consisted of an 18 inch square (approximately) or 'diamond' panel, coloured a pale greenish yellow. Their purpose was to detect the presence of poison gas in case of an air raid, when the panel would change colour, just as present day carbon monoxide detection patches do. The panel was positioned just inboard of mid span (of the port wing), on the rear chord of the wing, and approximately 6 feet 6 inches from the centre line. Note that their use seems to have dissipated by the later stages of the Battle, and although examples are still to be seen in photographs taken as late as mid- September 1940, it appears that not all aircraft carried these.

**Gun port patches** were doped fabric patches sealed over the gun ports, to prevent dust and dirt entering the muzzles on the ground and, more importantly, to lessen the chances of the guns freezing from 'damp cold' at altitude. These were replaced each time the guns had been fired, and were a dull red to red/brown colour and, on the Spitfire, were normally individual patches over each gun port, although the two centre guns on each wing sometimes had one patch covering both ports. On the Hurricane, the patches tended to be applied as a single piece of fabric covering all four gun ports on each wing, but again, there were exceptions.

**Rank pennants** were only displayed on aircraft flown by a Squadron Leader or higher rank, and were not carried by all officers of these ranks. When displayed, they consisted of a rectangular 'pennant' (or possibly triangular for higher ranks), normally approximately 8 inches long, bearing the colours and stripes of the appropriate rank, and were generally positioned on the port side of the fuselage, beneath the windscreen. An example is illustrated later.

**‘Kill’ markings.** As already mentioned, these were not as prevalent as many think, being restricted, possibly by ‘privilege’ of rank, mainly to Flight Commanders or Squadron Commanders and above, although, of course, other individuals did use them. Lack of time, and the urgency of more important tasks, also contributed to their lack of display. They were partly frowned upon by the ‘authorities’, and at the same time partly condoned, as part of a moral-boosting exercise, sometimes in association with the Press and, at that time, the ‘Newsreels’ of the cinema. (Remember, there was no TV then, and the general public got its ‘News’ from the newspapers, BBC Radio broadcasts, and the weekly or twice-weekly ‘newsreels’ shown at every cinema, which most towns then had.)

Some pilots, including NCOs, who had perhaps gained a number of victories during the Battle, were made into popular personalities by the ‘media’, (the then) Sergeant Pilot James ‘Ginger’ Lacey being an example, and ‘victory’ markings would be painted on the side of the aircraft, very often for the benefit of the Press. When used, these could be in the form of ‘black crosses’ – miniature Luftwaffe Balkenkreuz, or white swastikas, the latter quite often painted in reverse, and were generally painted directly onto the camouflage paint, either immediately below the cockpit canopy rail, or commencing further forward, beneath the windscreen. Some were painted on a separately painted panel, often black, such as that seen on a Hurricane flown by R.R. Stanford Tuck.

It must be remembered that, apart from Flight commanders and above, few pilots had their ‘own’ allocated aircraft, although, for obvious reasons, they would try to use, or be allocated, the same machine when possible. However, as the operational strength of a fighter squadron was twelve aircraft (not counting reserves), and the strength in personnel (theoretically) could be twice that, it will be seen that very often, more than one pilot would use the same aircraft on a day to day basis.

Once again, references for a specific aircraft and pilot should be checked to ascertain if such markings were carried by that particular aircraft. (The same was sometimes the case in a Luftwaffe Jagdgeschwader.)

### **Squadron / unit badges.**

Although not unknown, it was relatively rare for aircraft to display Squadron badges or the official Squadron Crest, and this was chiefly for reasons of security. However, there were a few exceptions, such as the Hurricanes of 601 ‘County of London’ Squadron, A.A.F.\*

These aircraft carried a red, winged sword, which was the centrepiece of the Squadron crest, located centrally within the white stripe of the fin flash. This device was also seen in its full colours, shown later. (*Note; a Squadron Crest was the **official** badge of a Squadron, which incorporated the Sovereign’s crown above a wreath enclosing the device (badge), with a gilt scroll beneath, bearing the Squadron’s motto. These official crests were granted and bestowed upon a squadron by the Monarch, at that time, H.R.H. King George VI, and came into being on the formation of the R.A.F. as a separate Service, no longer a Corps within the Army, in April, 1918.*)

Other forms of Squadron identification were also used on occasion, although mainly unofficially, and these included the badges used by the two Polish Hurricane Squadrons in the Battle, 303 and 302 Sqns. Some, but not all of the aircraft in these two squadrons carried their (Polish) Squadron badges on the sides of the fuselage, above the code letters, forward of the roundel, or on the engine cowling. In addition, the red and white ‘checkerboard’, the flag of the Polish Air Force, was carried with official approval, and this has been noted at points on the mid fuselage, rear fuselage and also on the engine cowling, or beneath the cockpit.

There were also other forms of unofficial squadron 'devices', such as the booted leg kicking a cartoon figure of Hitler, used by Douglas Bader, and adopted by 242 Squadron, and the adaptation of the Hexagon, part of the Squadron crest, used by 85 Squadron; the latter was angled differently to denote 'A' Flight and 'B' Flight.

[\* *Auxiliary Air Force - the sixteen, pre-war, part-time squadrons, made up of volunteers, and formed within Counties of England and Scotland, and often referred to as the 'County Squadrons'. These squadrons were granted the title 'Royal' on 16 December 1947, in recognition of their service during WW2, when the title was then shown, abbreviated, as R.Aux.A.F.*]

### **Personal markings and 'Presentation' markings.**

This is an area that is really beyond the scope of this article, but has been included in order to provide at least a little clarification on the use of such markings.

It would be impossible to list, or illustrate, even a small percentage of personal markings, which were painted on the sides of some aircraft. These ranged from simple names, to cartoon figures, and, in some cases, elaborate Coats of Arms. There was sometimes a connection with the pilot concerned, whether it be a wife or girlfriend, a town, or a cartoon figure perhaps based upon a nickname. There were some personal markings however which, although applied at the personal behest of a particular pilot, had a connection, directly or indirectly, with the squadron concerned. One such was the 'Burma' flag, displayed beneath the cockpit, on the starboard side, of at least one of R.R. Stanford Tuck's 257 Squadron Hurricanes. Although a 'personal' marking, and not a device used by 257 Squadron, or generally painted on their other aircraft (as far as is known), this Squadron's crest had as its centrepiece the Burmese '*chinthe*', a lion-like creature, as well as a motto in Burmese, with the Squadron name 'Burma'. This was in recognition of the gifts received from Burma, and was, in many ways, similar to the use of 'presentation' titles or names, covered below.

'**Presentation**' titles came about mainly as a result of such organisations as 'The Spitfire Fund', where monies donated, by individuals, groups, businesses, town councils and so on, were collected to purchase a Spitfire aircraft in whole or part. In cases where at least one complete aircraft had been 'purchased' in this way, a suitable inscription was painted on the side of the aircraft, often beneath the cockpit, the windscreen, or on the engine cowling. Although the hectic pressures of the Battle often prevented this from being accomplished at unit level, whenever possible, and certainly very often in the factory or MU, the inscription would be applied. (This was more common after the battle, and certainly in the years following.)

Examples could be the name of a town, or Borough, who had donated the money, where the name might be applied at the factory, but the aircraft could be delivered to any of the squadrons; for instance 'The Borough of Lambeth', seen on a Spitfire later in the conflict. Some Squadrons might have an association with a country, and aircraft on strength paid for by donations from that country, examples being 74 'Trinidad' Squadron, more formally known as 'Tiger' Squadron, after the Tiger's head in the Squadron crest, and 92 'East India' Squadron, at least one of whose Spitfires carried a rectangular outline surrounding the words 'East India', in yellow, beneath the cockpit on both sides, whilst some aircraft of 74 Squadron bore the word 'Trinidad', in white, on the engine cowling, although it is thought that this practice was postponed for a time, due to the pressures of the Battle.

Again, details of these markings can only be determined by personal research, and the study of available photographic evidence.

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Other markings, such as the use of coloured spinners, or coloured bands or tip on spinners, were relatively rare, and certainly not a common practice, or in general use, during the Battle. That is not to say such markings did not exist, as it is known that there were some such markings used, but this is a subject definitely beyond the scope, or aim, of this article, and it will be down to the individual to investigate further, should he, or she, require.

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### **A note on paint finishes used on R.A.F. aircraft during the Battle.**

The colours mentioned in the preceding pages cover the external finish of the aircraft, and were all in the category known as 'Type S'. These were matt(flat) paints with a smooth finish which, when examined closely, did not have a totally matt, 'sooty' or 'dusty' appearance, as some other R.A.F. finishes of the time had. Rather, they had a very slight sheen, although not to the extent of being classed as semi-matt, as the Luftwaffe paints of the period were.

It is somewhat pointless providing exact colour matches for the paints used, as the effects of scale, not to mention variations in application on the full-sized aircraft would, to a greater or lesser extent, have some bearing on the shades and hues when applied to a model. As an example, if the Dark Green paint, to the exact shade as the original DTD specification, was used on a 1/72<sup>nd</sup> scale model Spitfire, the effect would be to make the model look far too dark, to the point where the green could be mistaken for, perhaps, a 'black green' shade. Add to this 'scale effect' the variations (on the full-size aircraft) in the age of the paint, how and when it was applied, the batch or source of the paint etc, and it will be seen that there are many, many variables which can affect the way a particular airframe may have looked at the time. Add to this also, the effects of dirt, oil and exhaust staining, fading from the effects of weather, and general paint wear and tear, and the variations increase even more.

There is something to note concerning what is generally referred to as 'weathering' by modellers, which is particularly pertinent to the aircraft of the Battle of Britain, and that is the average 'lifespan' of the aircraft concerned.

The term 'weathering' now seems to encompass all forms of 'alteration' to the general finish of the aircraft, including the staining mentioned above, but also includes, literally, the effects of the elements, both whilst the aircraft is airborne, and on the ground. The average aircraft in the R.A.F. during World War Two, spent more than 95% of its life outdoors, only going undercover, in a hangar of some type (often a small, open-ended 'blister' hangar in the case of fighters) for major servicing or repair. The British climate had a terrific effect on paint finishes, whether it was from hot sun (a relative rarity!), freezing fog, or torrential rain, sleet, snow and ice. This could, and did, cause some subtle variations in tones, even across part of an airframe, although, if it survived long enough, the aircraft would, at some time, be re-painted eventually.

However, although at the beginning of the Battle of Britain, many aircraft, Spitfires in particular, might have been in service for some time, perhaps two years or more, as the Battle progressed, the attrition rate, whether by enemy action, accident, or being unserviceable, ensured that these airframes became fewer and fewer, with new aircraft being delivered from the MUs and factories.

Also, some of these new aircraft, only just delivered to a squadron virtually straight from the factory, might only survive three or four days, perhaps less, before being lost. This meant that paint schemes, on average, did not have time to show the effects of weathering in the sense of the wear caused by the elements. It is worth bearing this in mind when selecting a subject to model, and wherever possible, try to establish the history, or at least the age of the aircraft at the time being depicted by the model.

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## **Illustrations of colour scheme patterns, roundels and other markings.**

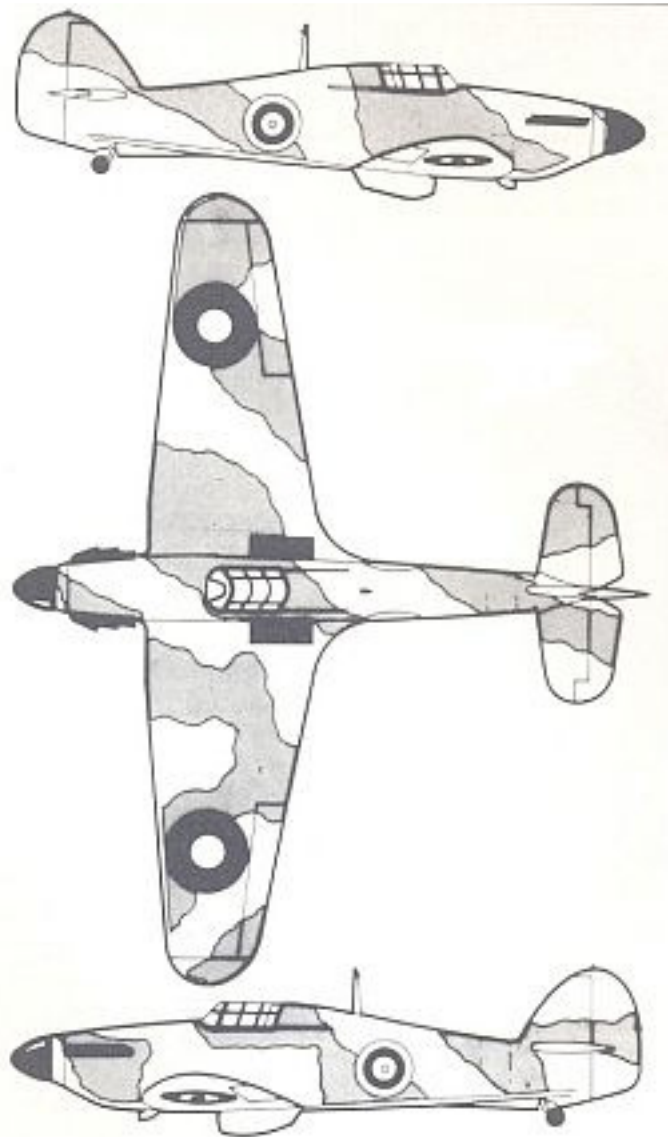
Please note that the colours used in the illustrations of the types of roundels, and other colour artwork, are to show orientation only, and are not to be taken as the actual colour tones used on the original insignia. The dark tones in the diagrams of the camouflage patterns represent Dark Green.

**Camouflage patterns, 'A Scheme' and 'B Scheme'**. (Example used Hurricane, Spitfire similar.)



**'A Scheme' used on aircraft with serial numbers ending with an odd number.**





**'B Scheme' used on aircraft with serial numbers ending with an even number.**

Note; The shaded areas in both drawings represent Dark Green.  
The black rectangles on the wing roots are the anti-slip walk-way panels, and were not present on all aircraft, or where sometimes painted over. They were not used on Spitfires.  
[Roundels are shown in standard positions, but fin flashes omitted for clarity.]

The patterns shown above are taken from the Air Ministry directive drawings of the period, and show the 'regulation' shape and style of each scheme. However, slight variations to these shapes were not uncommon, and again, the study of reference material for a specific aircraft is recommended if complete accuracy is required.

## Roundels



**'B Type', wing upper surface**



**'A Type', wing lower surface**



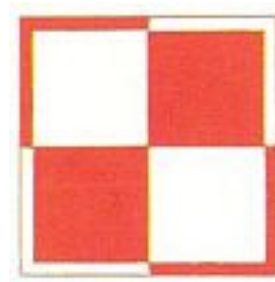
**'A1 Type', fuselage**

[Note; not to scale, colours are approximate.]

## Examples of Squadron markings



**601 'County of London' Sqn, A.A.F.**  
Sometimes displayed as a red silhouette



**Polish Air Force Flag**  
Sometimes reversed.



**303 (Polish) Sqn (Kosciuszko)**  
Kosciuszko was a Polish-born  
Hero of the American War of Independence.  
The disc was painted direct onto the camouflage.



**242 Sqn. (unofficial)**

## Example of rank pennant



**Squadron Leader.** This one being that of Douglas Bader, which incorporates the Squadron number, 242, in the lower stripe. The stripes represented the same stripes, or rings, of the associated rank, as worn on the sleeve or shoulder of the R.A.F. uniform. These pennants could be triangular, particularly for senior officers, with the apex of the triangle facing the rear of the aircraft.

## Examples of typical ‘Presentation’ markings.



Used by 92 Squadron, this simple device was painted in yellow, as an outline and words, directly onto the camouflage colour, and was normally located on either side of the fuselage, below the cockpit. Later versions had three short, parallel lines on each side of the rectangle.

## **TRINIDAD**

When applied to the Spitfires of 74 Squadron, the ‘Trinidad’ logo was painted in plain white characters, in a similar style as shown, on the side of the fuel tank cover, immediately in front of the windscreen.



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The above information, details and illustrations are, to the best of my knowledge, correct, and are intended as a guide only. As mentioned already, there were exceptions to the 'rule' in many areas covering camouflage and markings in the R.A.F. during World War Two, and particularly during the hectic four months during which the Battle of Britain raged. It is recommended that further research is undertaken by those wishing to accurately model aircraft engaged in this historic conflict, and more so if a specific aircraft, and date, are the required goal.

I hope that this brief overview will at least go some way in answering the basic needs.

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***Coming soon ! Part Five, Luftwaffe camouflage & markings.***