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Spitfires



Early War

A MIRACLE of DELIVERANCE

The "Phoney War" ended on 10 May 1940 when Hitler's armies rolled into France and Belgium. The Luftwaffe was able to provide air superiority over the battlefield as Guderian's Panzers raced toward the Channel. By the last week of May thousands of soldiers found themselves stranded on the beaches of Dunkirk awaiting annihilation from the ground and from the air. Many of them wondered "where is the RAF"? Fighter Command was in fact fighting desperately to keep the Luftwaffe from the kill zone, though out of sight of the troops on the beach. Their efforts were instrumental in making possible the most successful military evacuation in history, but the RAF's fighter tactics were inferior to those of the Luftwaffe. Still, what the RAF was not aware of immediately after Dunkirk was that while Luftwaffe pilots were at least mindful of and respected the Hurricane - they actually feared the Spitfire.



South African Roger Bushell studied law in England before joining the RAF. He was given command of 92 Squadron in October 1939 and promoted to Squadron Leader in January 1940.

His law background made him an obvious choice as an assistant in the successful defense of pilots John Freeborn and Paddy Byrne who were court martialled for a fatal friendly fire incident known as "The Battle of Barking Creek".

On 23 May 1940 Bushell led 92 Squadron on two patrols over Calais, Boulogne and Durkirk. During the second patrol Bushell damaged one Me110 before he was shot down by another (possibly flown by Günther Specht, Adjutant of I./ZG 26).

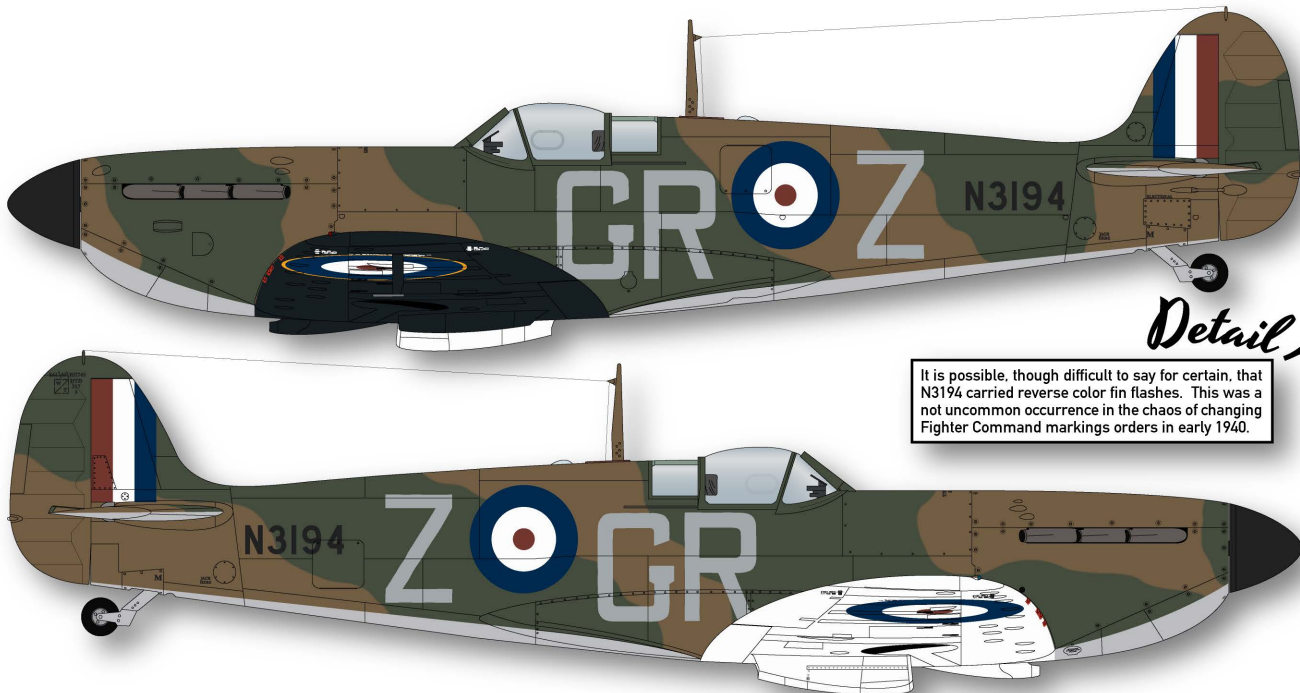
Bushell managed to crash land Spitfire N3194 GR-Z but was unable to avoid capture. As a POW Bushell was always thinking of escape. In June 1941 during one of his escape attempts Bushell made it as far as the Swiss border before being recaptured. He was eventually placed in Stalag Luft III where he became known as "Big X", and was the mastermind behind the "Great Escape". He was one of the 50 escapees who were murdered by the Germans on the direct order of Adolf Hitler.

Bushell was immortalized in the 1963 film epic "The Great Escape" by Richard Attenborough, fictionalized as Squadron Leader Roger Bartlett.



Two views of N3194 after Bushell had set fire to her to prevent her from falling into German hands. It would not be his last act of defiance toward the Third Reich.





Detail Note

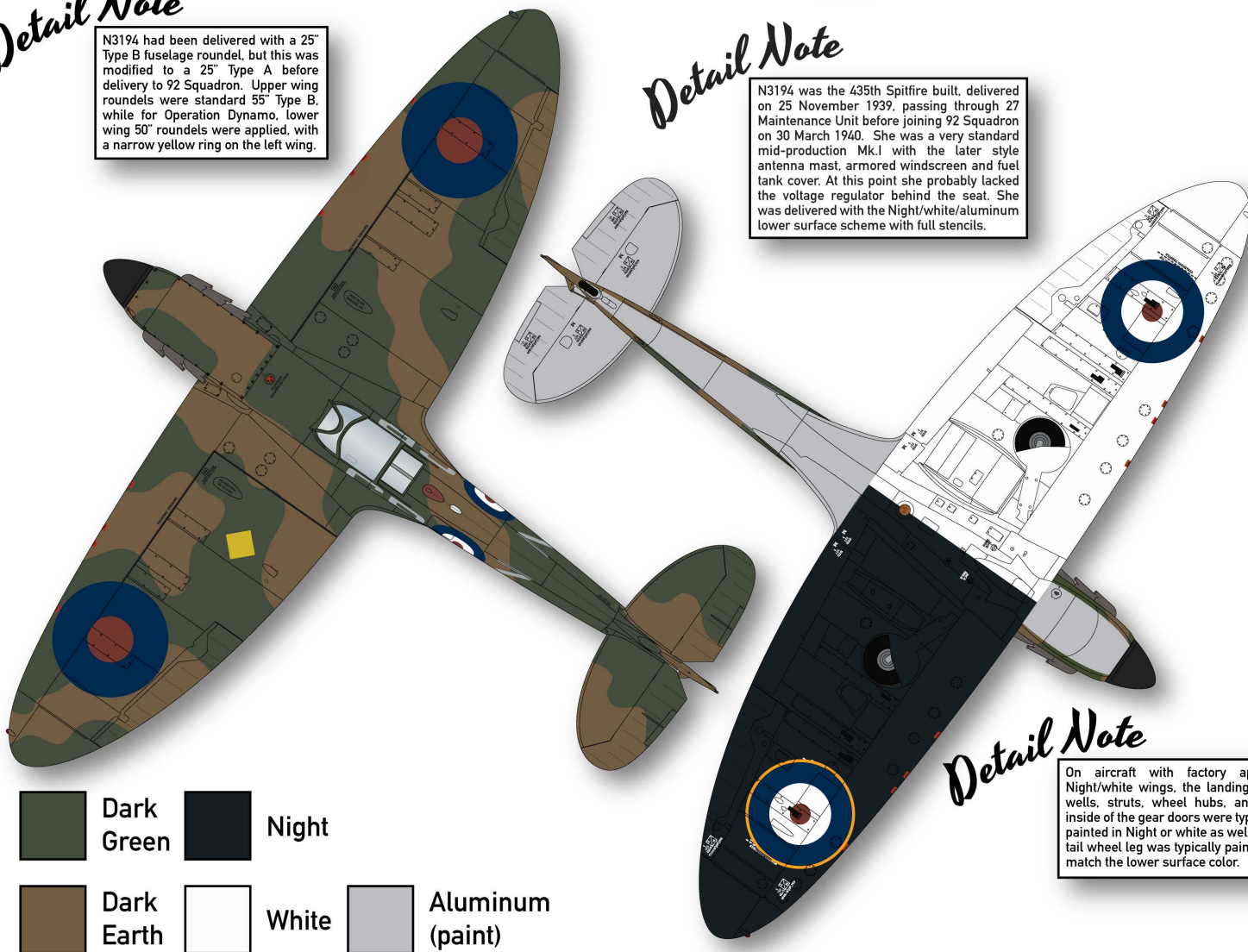
It is possible, though difficult to say for certain, that N3194 carried reverse color fin flashes. This was a not uncommon occurrence in the chaos of changing Fighter Command markings orders in early 1940.

Detail Note

N3194 had been delivered with a 25" Type B fuselage roundel, but this was modified to a 25" Type A before delivery to 92 Squadron. Upper wing roundels were standard 55" Type B, while for Operation Dynamo, lower wing 50" roundels were applied, with a narrow yellow ring on the left wing.

Detail Note

N3194 was the 435th Spitfire built, delivered on 25 November 1939, passing through 27 Maintenance Unit before joining 92 Squadron on 30 March 1940. She was a very standard mid-production Mk.I with the later style antenna mast, armored windscreen and fuel tank cover. At this point she probably lacked the voltage regulator behind the seat. She was delivered with the Night/white/aluminum lower surface scheme with full stencils.



Detail Note

On aircraft with factory applied Night/white wings, the landing gear wells, struts, wheel hubs, and the inside of the gear doors were typically painted in Night or white as well. The tail wheel leg was typically painted to match the lower surface color.

- | | | | |
|--|------------|--|------------------|
| | Dark Green | | Night |
| | Dark Earth | | White |
| | | | Aluminum (paint) |

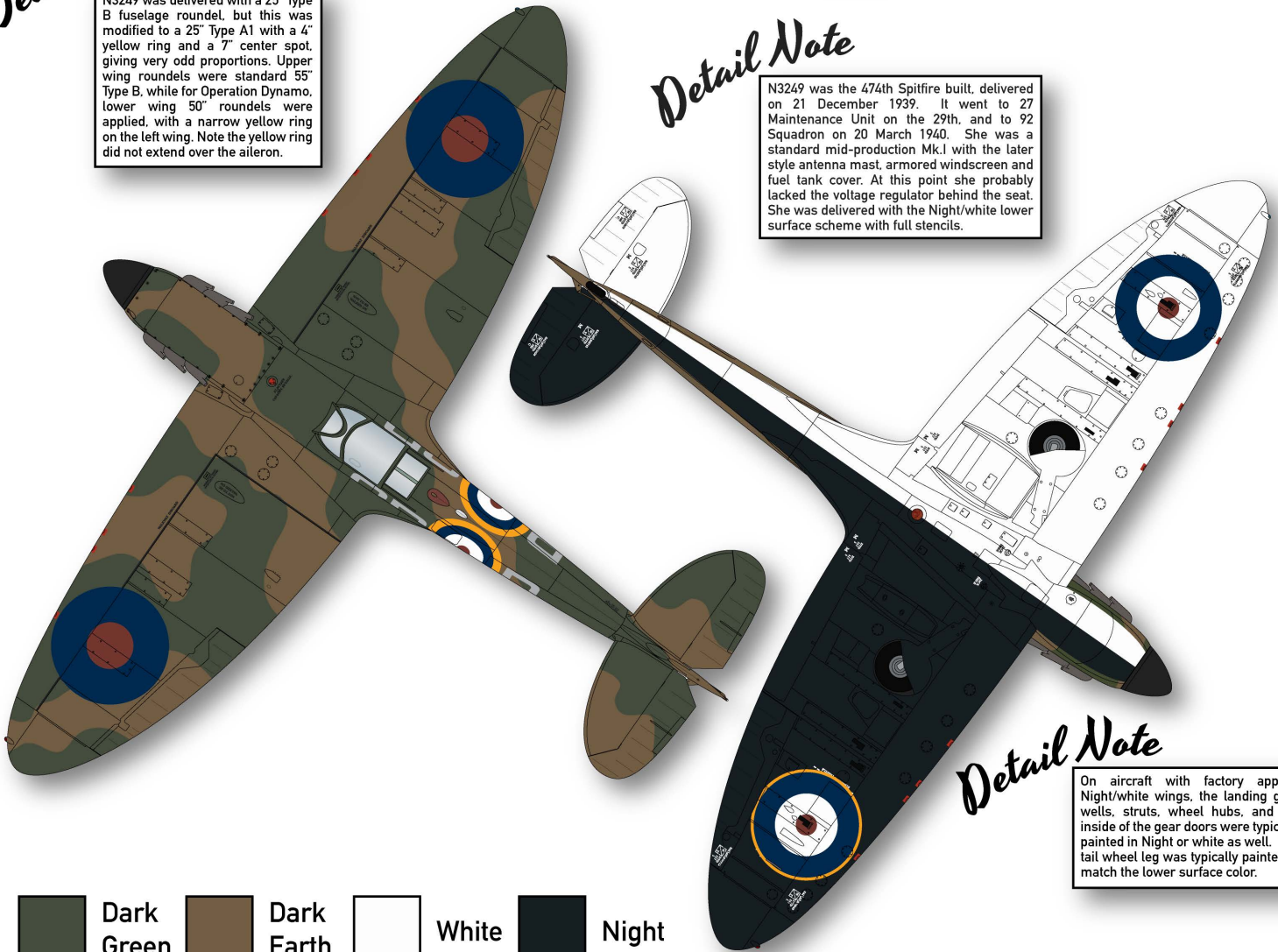


Detail Note

N3249 was delivered with a 25" Type B fuselage roundel, but this was modified to a 25" Type A1 with a 4" yellow ring and a 7" center spot, giving very odd proportions. Upper wing roundels were standard 55" Type B, while for Operation Dynamo, lower wing 50" roundels were applied, with a narrow yellow ring on the left wing. Note the yellow ring did not extend over the aileron.

Detail Note

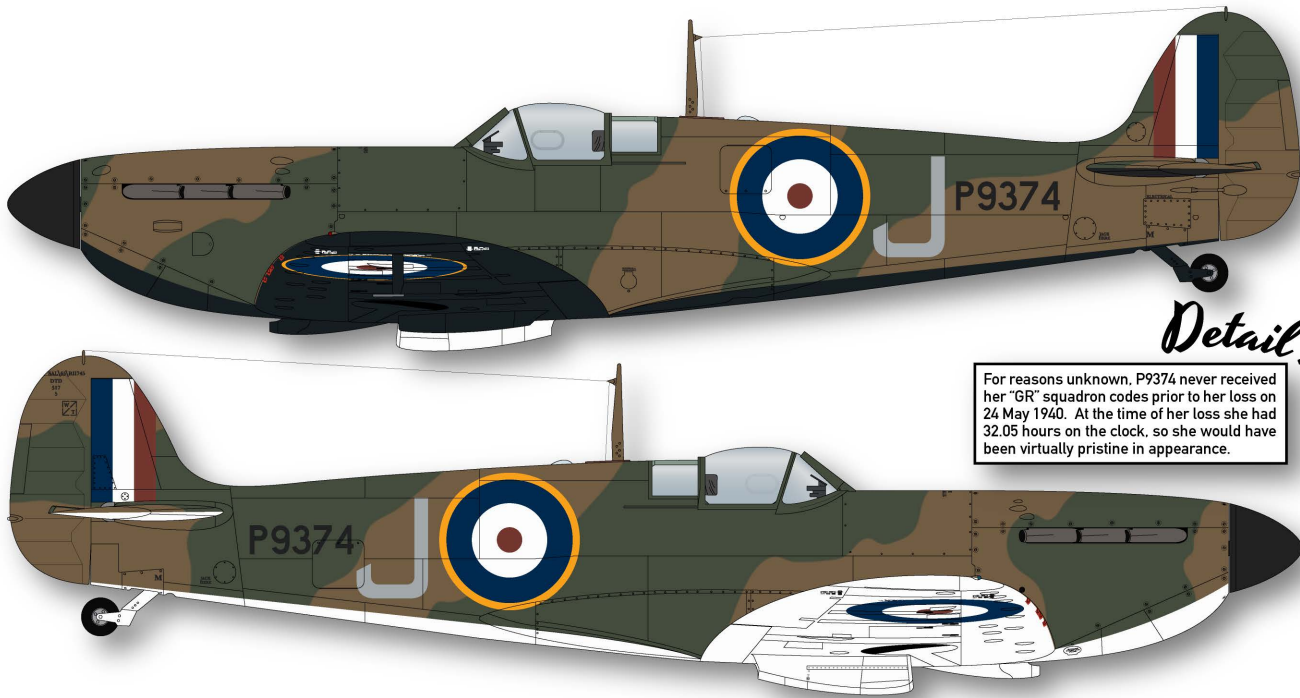
N3249 was the 474th Spitfire built, delivered on 21 December 1939. It went to 27 Maintenance Unit on the 29th, and to 92 Squadron on 20 March 1940. She was a standard mid-production Mk.I with the later style antenna mast, armored windscreen and fuel tank cover. At this point she probably lacked the voltage regulator behind the seat. She was delivered with the Night/white lower surface scheme with full stencils.



Detail Note

On aircraft with factory applied Night/white wings, the landing gear wells, struts, wheel hubs, and the inside of the gear doors were typically painted in Night or white as well. The tail wheel leg was typically painted to match the lower surface color.





Detail Note

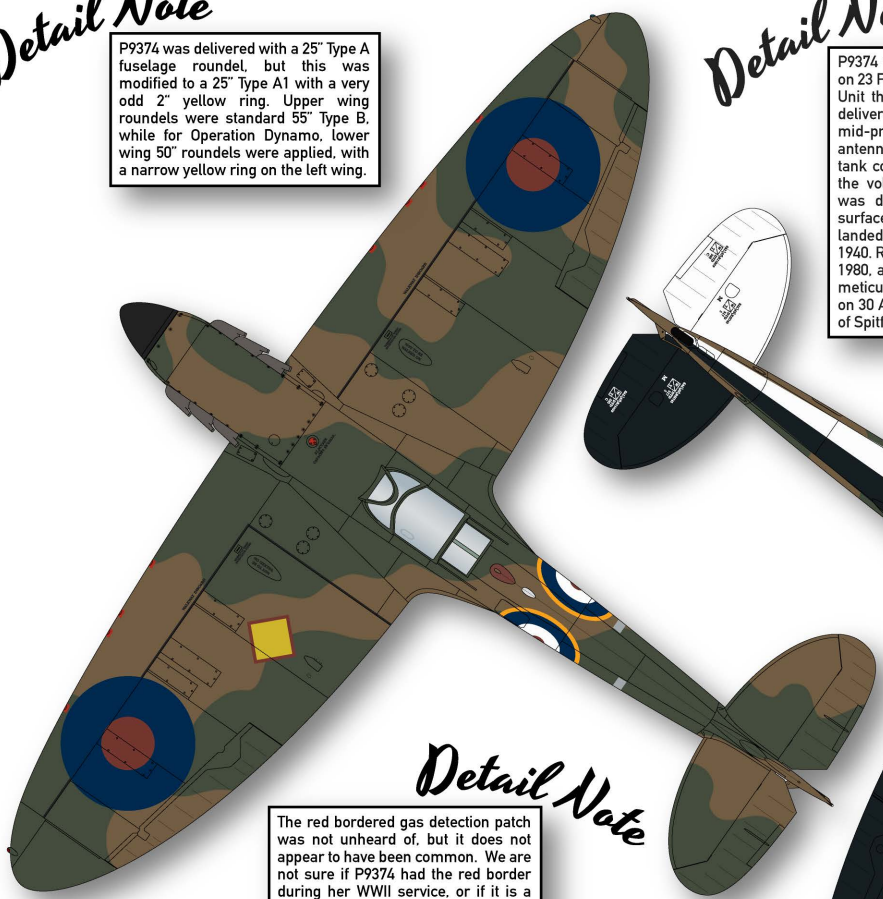
For reasons unknown, P9374 never received her "GR" squadron codes prior to her loss on 24 May 1940. At the time of her loss she had 32.05 hours on the clock, so she would have been virtually pristine in appearance.

Detail Note

P9374 was delivered with a 25" Type A fuselage roundel, but this was modified to a 25" Type A1 with a very odd 2" yellow ring. Upper wing roundels were standard 55" Type B, while for Operation Dynamo, lower wing 50" roundels were applied, with a narrow yellow ring on the left wing.

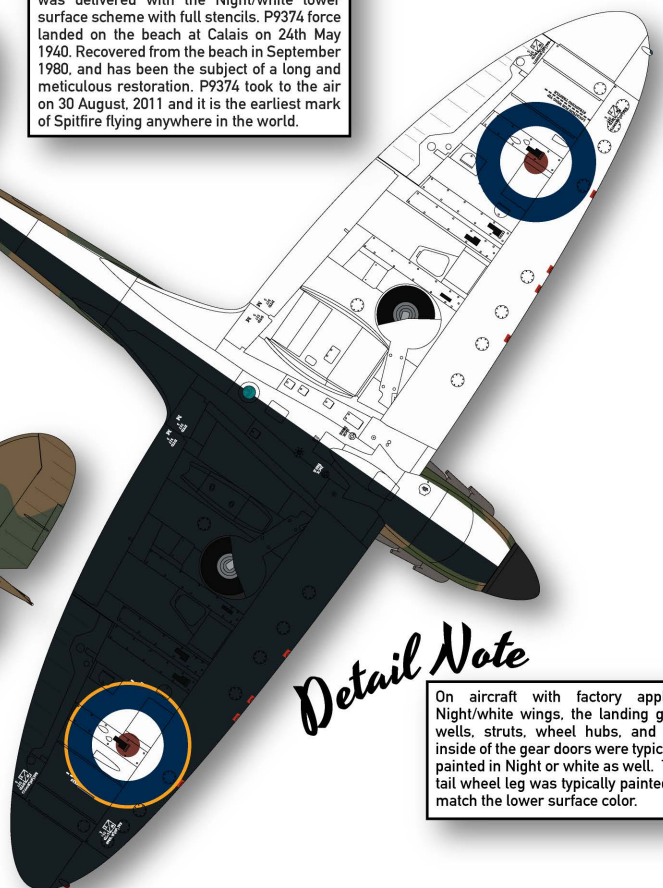
Detail Note

P9374 was the 557th Spitfire built, delivered on 23 February 1940. It went to 9 Maintenance Unit the next day, and on 6 March she was delivered to 92 Squadron. She was a standard mid-production Mk.I with the later style antenna mast, armored windscreens and fuel tank cover. At this point she probably lacked the voltage regulator behind the seat. She was delivered with the Night/white lower surface scheme with full stencils. P9374 force landed on the beach at Calais on 24th May 1940. Recovered from the beach in September 1980, and has been the subject of a long and meticulous restoration. P9374 took to the air on 30 August, 2011 and it is the earliest mark of Spitfire flying anywhere in the world.



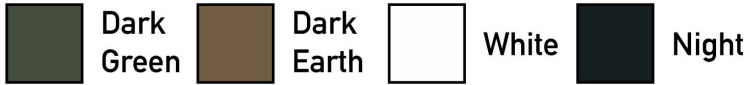
Detail Note

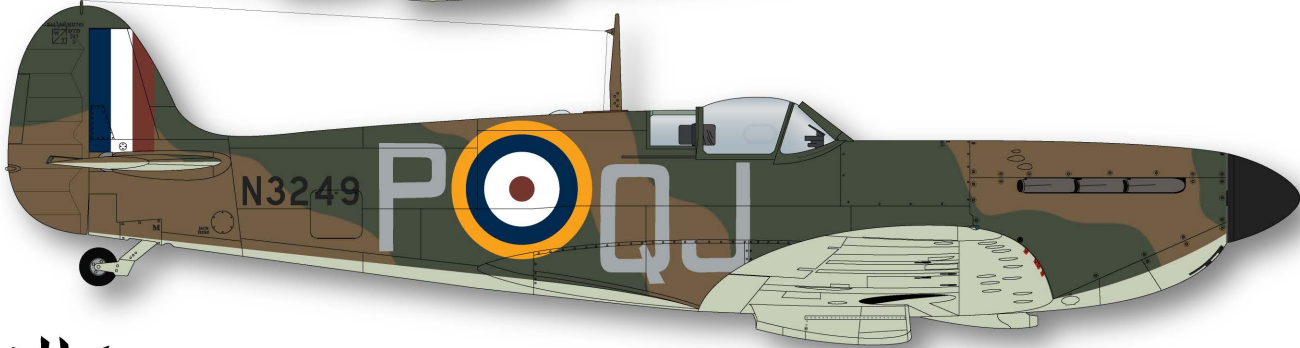
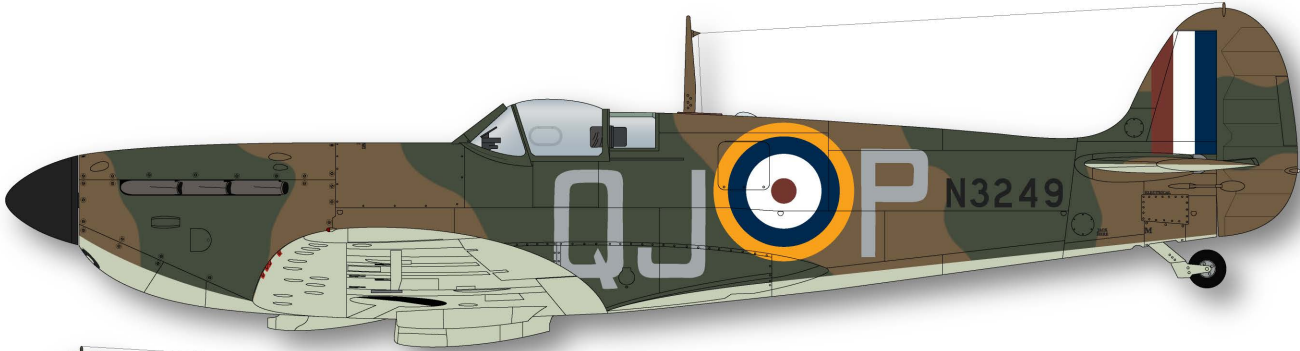
The red bordered gas detection patch was not unheard of, but it does not appear to have been common. We are not sure if P9374 had the red border during her WWII service, or if it is a feature of her modern restoration.



Detail Note

On aircraft with factory applied Night/white wings, the landing gear wells, struts, wheel hubs, and the inside of the gear doors were typically painted in Night or white as well. The tail wheel leg was typically painted to match the lower surface color.



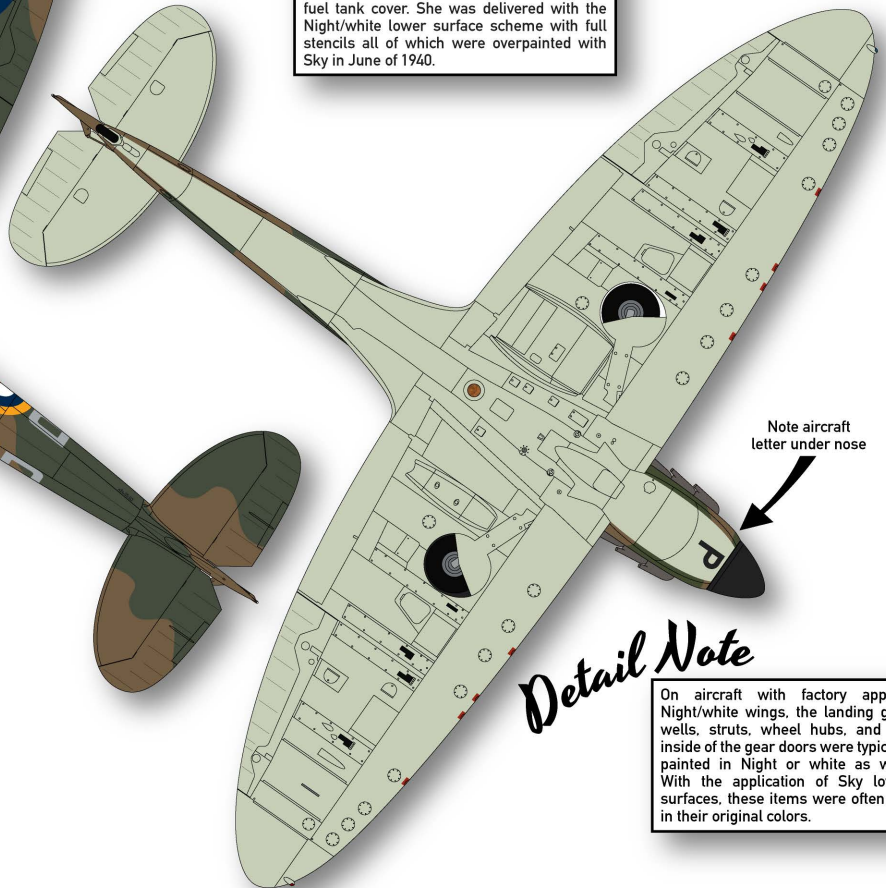
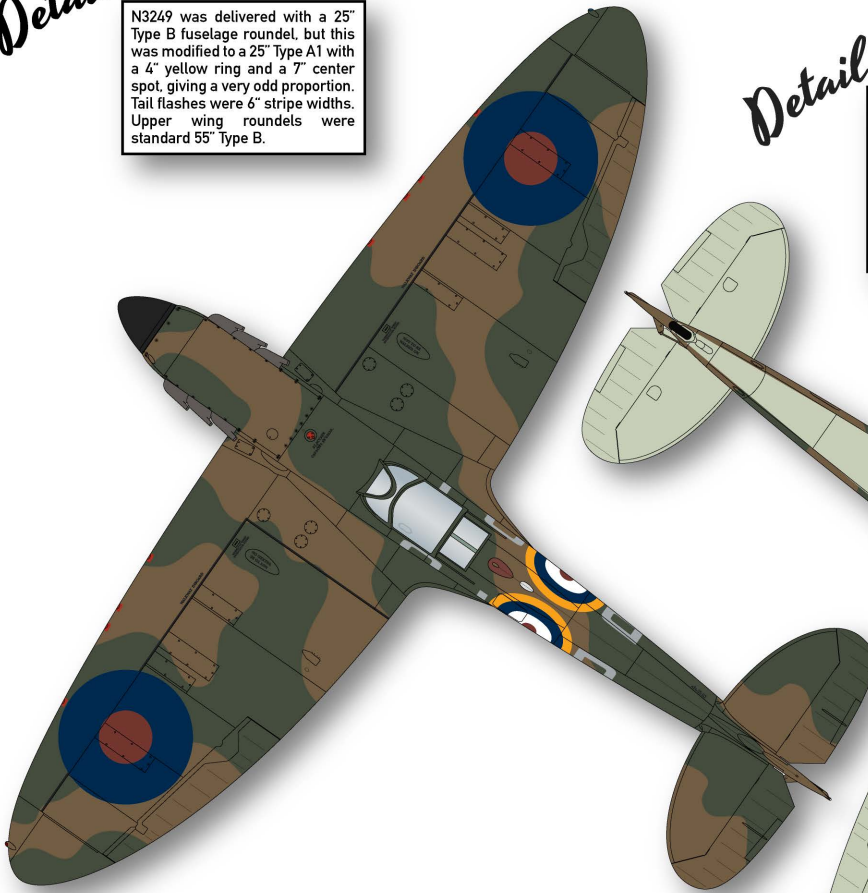


Detail Note

N3249 was delivered with a 25" Type B fuselage roundel, but this was modified to a 25" Type A1 with a 4" yellow ring and a 7" center spot, giving a very odd proportion. Tail flashes were 6" stripe widths. Upper wing roundels were standard 55" Type B.

Detail Note

N3249 was the 474th Spitfire built, delivered on 21 December 1939. It went to 27 Maintenance Unit on the 29th, and to 92 Squadron on 20 March 1940. She was a standard mid-production Mk.I with the later style antenna mast, armored windscreen and fuel tank cover. She was delivered with the Night/white lower surface scheme with full stencils all of which were overpainted with Sky in June of 1940.



Detail Note

On aircraft with factory applied Night/white wings, the landing gear wells, struts, wheel hubs, and the inside of the gear doors were typically painted in Night or white as well. With the application of Sky lower surfaces, these items were often left in their original colors.



Pilot Officer Desmond Williams

Although Spitfire Mk.I N3249 is sometimes associated with Bob Stanford Tuck (he did fly it once, on 24 May 1940 according to the ORB and claimed two Do17s destroyed) it was actually flown most often by Pilot Officer Desmond Gordon Williams. Williams flew N3249 GR-P on the first patrol of Calais-Boulogne-Dunkirk on 23 May, but for the afternoon patrol he switched to P9374 'J' and claimed an Me110 destroyed and two more damaged.

Williams flew N3249 most of June and into July. He was flying N3249 (now coded QJ-P) on 10 July when he claimed an He111 destroyed, albeit unconfirmed. On 14 August Williams and N3249 claimed an He111 destroyed and an He111 shared probable.

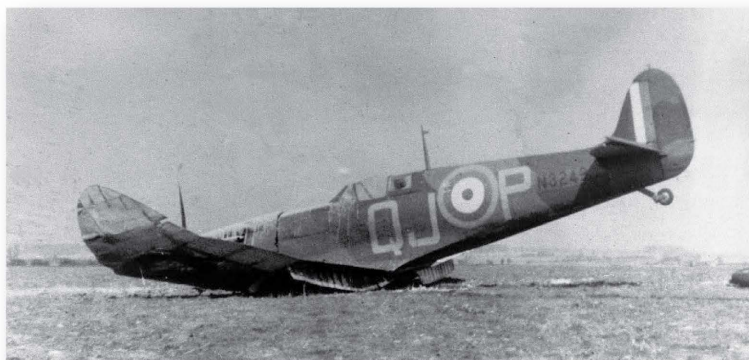
By early October his score had reached 5 and 1 shared destroyed, 1 and 1 shared unconfirmed, 2 probables, and 6 damaged. On 10 October Williams was killed when his Spitfire collided with another aircraft while attacking a Do17. He was 20 years old when he died.

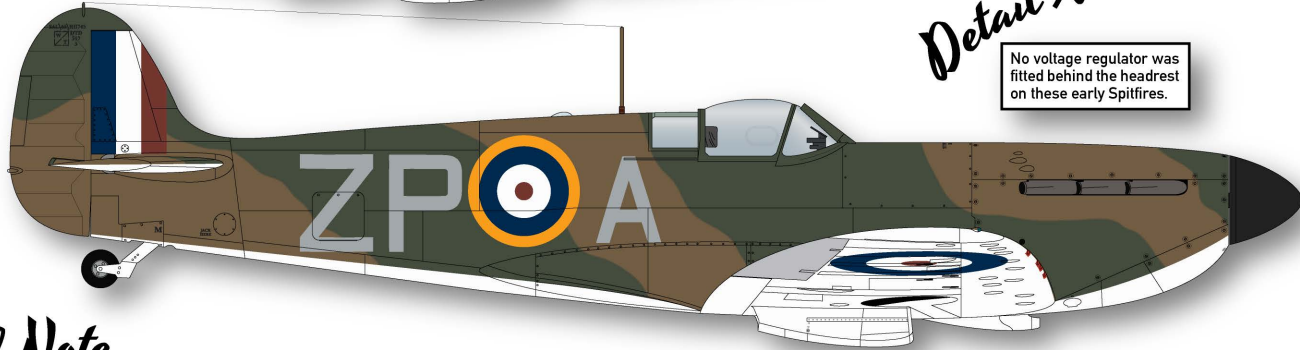
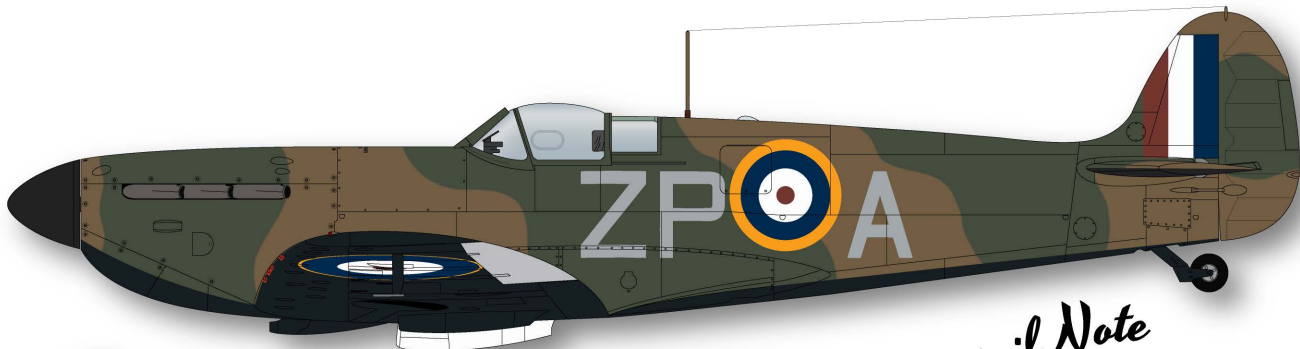


P9374 being slowly consumed by the sands of the Calais beach where she came down on 24 May 1940, flown by Flying Officer Peter Cazenove. She remained buried in the sand until she was recovered in 1980, and eventually underwent a complete restoration to flying status. She made her second "first flight" on 9 September 2011.



N3249 is seen here at the far end of the lineup above, and at left on the day she was pranged in late August 1940. In both cases she wears the revised "QJ" squadron codes.





Detail Note

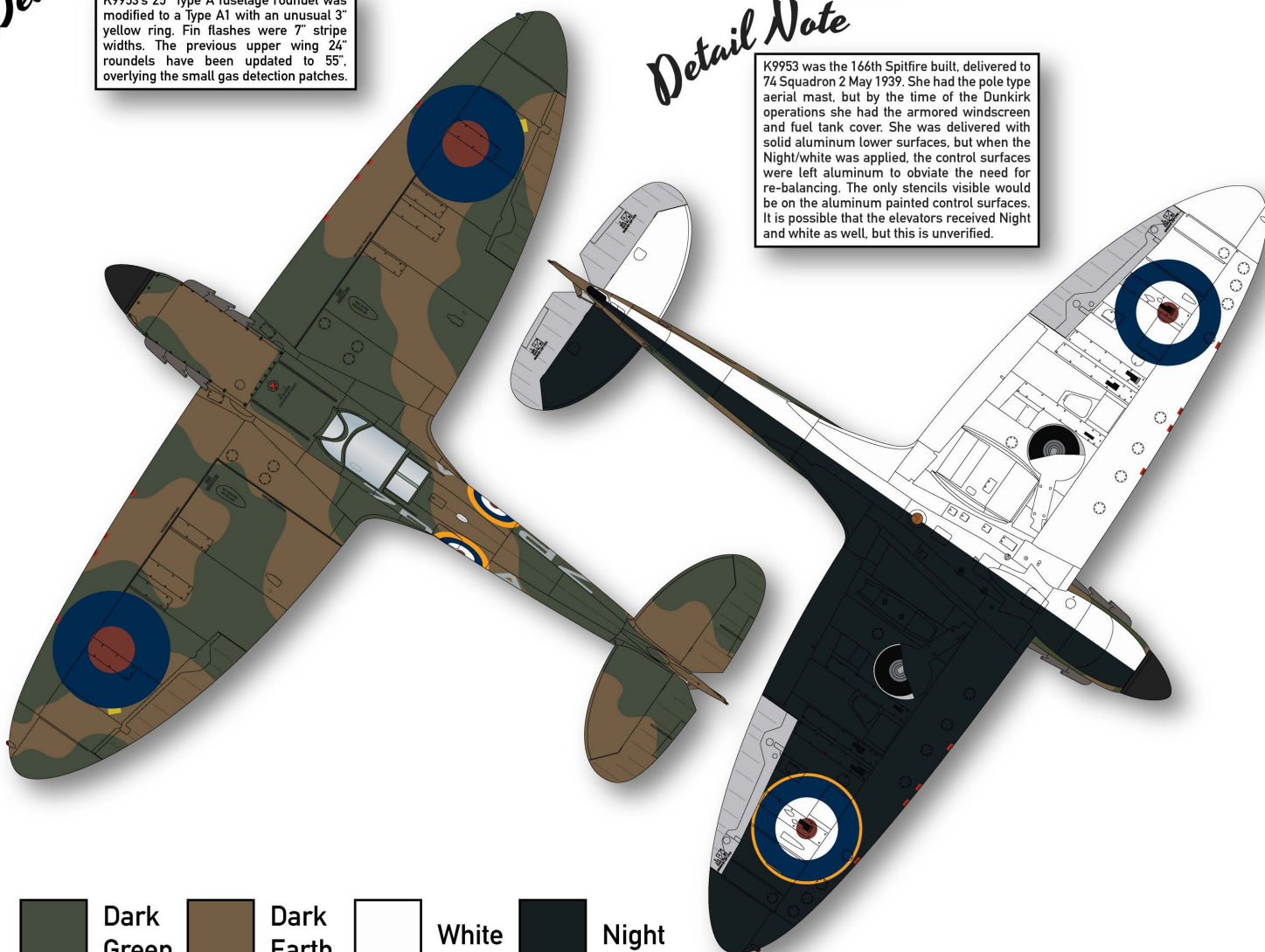
No voltage regulator was fitted behind the headrest on these early Spitfires.

Detail Note

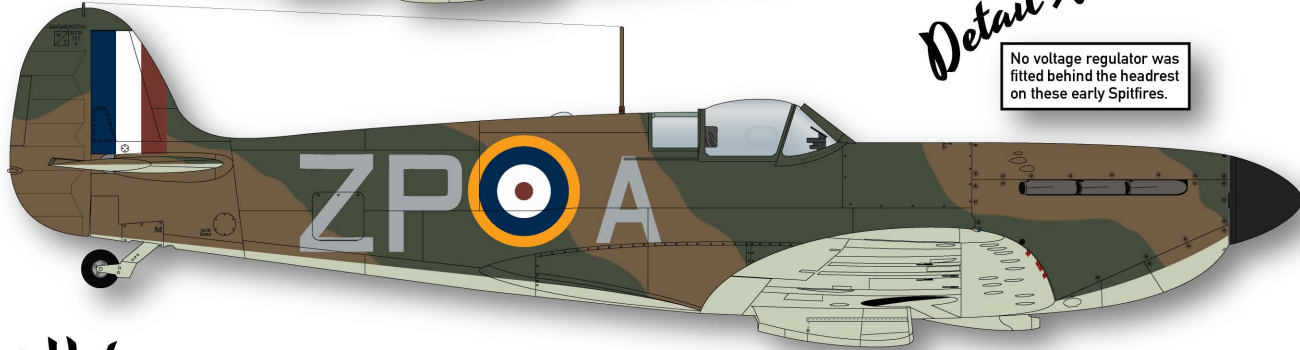
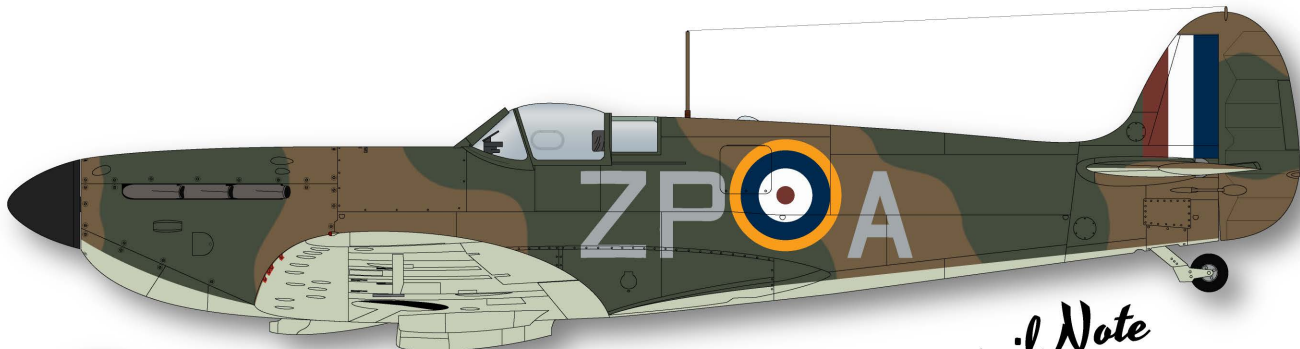
K9953's 25" Type A fuselage roundel was modified to a Type A1 with an unusual 3" yellow ring. Fin flashes were 7" stripe widths. The previous upper wing 24" roundels have been updated to 55", overlying the small gas detection patches.

Detail Note

K9953 was the 166th Spitfire built, delivered to 74 Squadron 2 May 1939. She had the pole type aerial mast, but by the time of the Dunkirk operations she had the armored windscreen and fuel tank cover. She was delivered with solid aluminum lower surfaces, but when the Night/white was applied, the control surfaces were left aluminum to obviate the need for re-balancing. The only stencils visible would be on the aluminum painted control surfaces. It is possible that the elevators received Night and white as well, but this is unverified.



Dark Green
 Dark Earth
 White
 Night



Detail Note

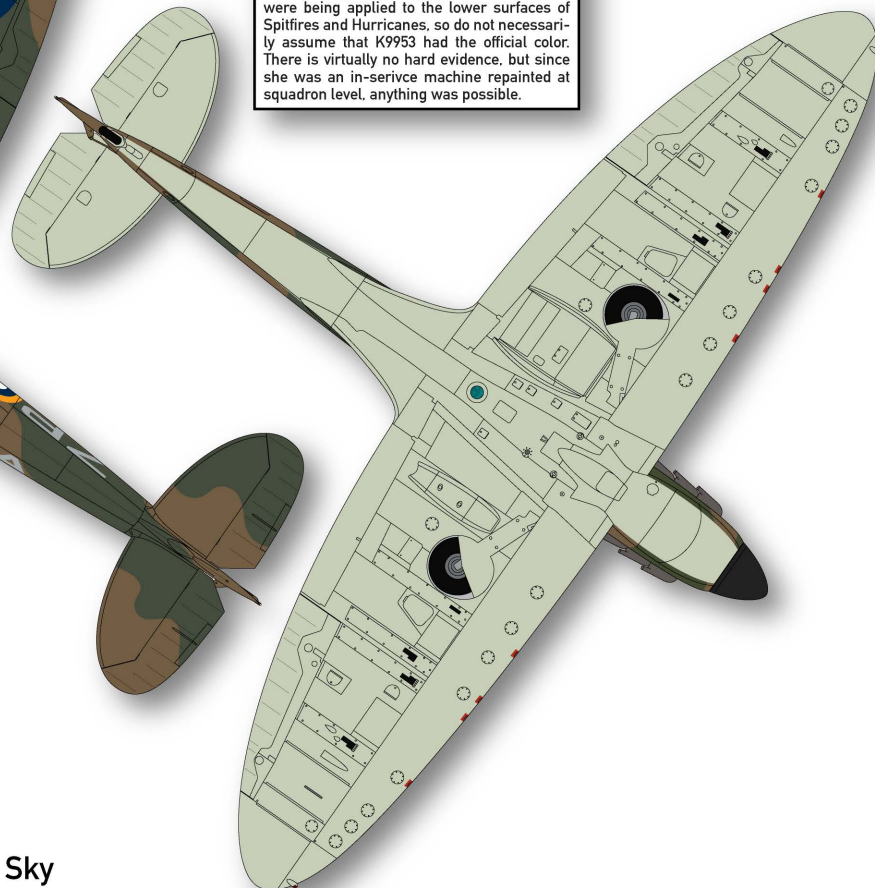
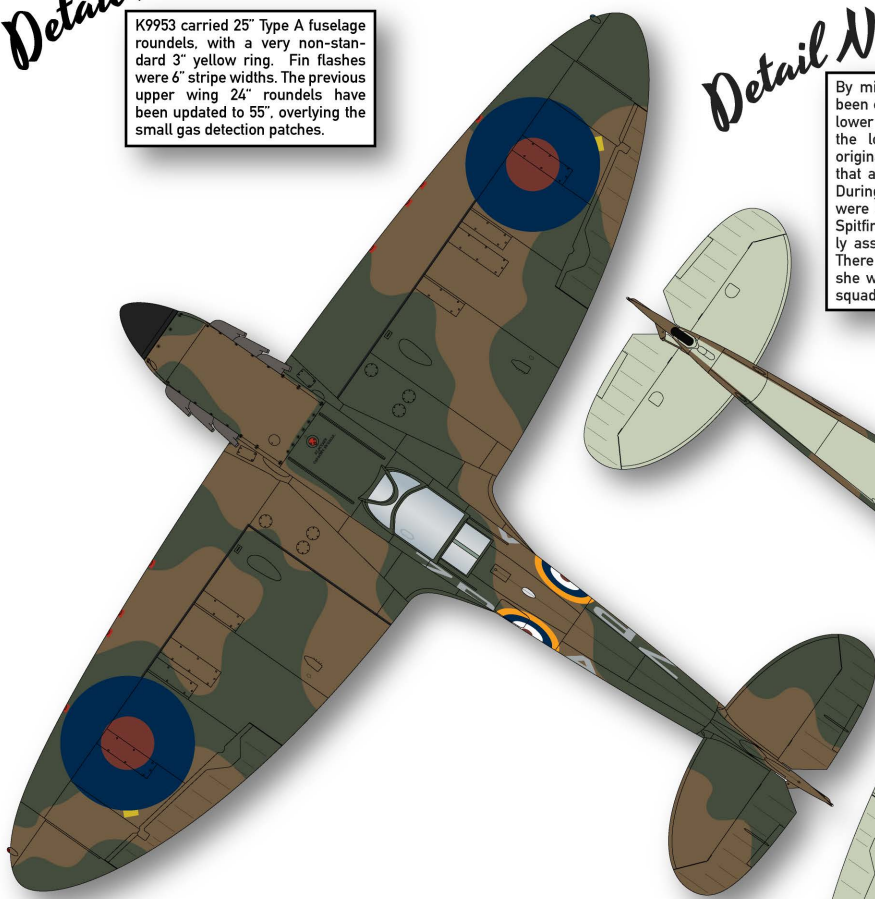
No voltage regulator was fitted behind the headrest on these early Spitfires.

Detail Note

K9953 carried 25" Type A fuselage roundels, with a very non-standard 3" yellow ring. Fin flashes were 6" stripe widths. The previous upper wing 24" roundels have been updated to 55", overlying the small gas detection patches.

Detail Note

By mid-June 1940, K9953's appearance had been changed by the addition of the new Sky lower surface camouflage. Note that it followed the low, curved demarcation line of her original Aluminium lower cowling colors, and that all previous markings were obliterated. During this period, a myriad of different colors were being applied to the lower surfaces of Spitfires and Hurricanes, so do not necessarily assume that K9953 had the official color. There is virtually no hard evidence, but since she was an in-service machine repainted at squadron level, anything was possible.



Flight Lieutenant "Sailor" Malan

Adolph "Sailor" Malan was already an experienced fighter pilot by the time 74 Squadron was covering the evacuation from Dunkirk. On 21 May 1940 he claimed an He111 destroyed (unconfirmed), a Ju88 destroyed, and another damaged. The following day he shared in the destruction of a Ju88 with three other pilots. On 24 May he claimed an He111 destroyed and shared in the destruction of a Do17 with five pilots.

We would like to be able to tell you that Malan was flying this or that Spitfire on the dates mentioned, but for whatever reason his name does not appear in the Operational Record Book (ORB) for those days, although we know he was flying the missions. There are appendices attached to 74 Squadron's history that confirm his claims, but actual mention in the ORB for missions flown and in what aircraft is sadly missing.

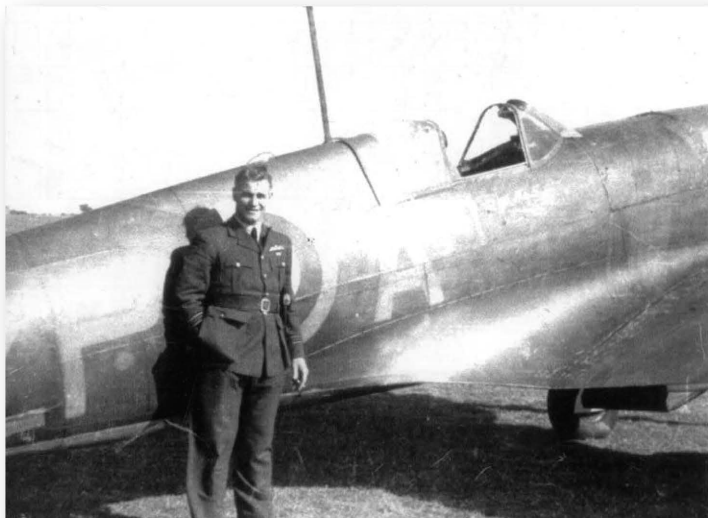
What is confirmed by the ORB is that on 27 May Malan was flying K9953 when he shot down a Bf109E, damaged 2 Do17s, and shared in the destruction of third Do17 (unconfirmed). Also confirmed by the ORB is that on the night of 18/19 June Malan shot down 2 He111s, again at the controls of K9953. We speculate that the claims for 21-24 May were also made with K9953 ZP-A.

Oddly, "Spitfire - The History" shows K9953 has having been transferred to 92 Squadron in April 1940, but this is not supported by evidence in 74 Squadron's ORB for June.

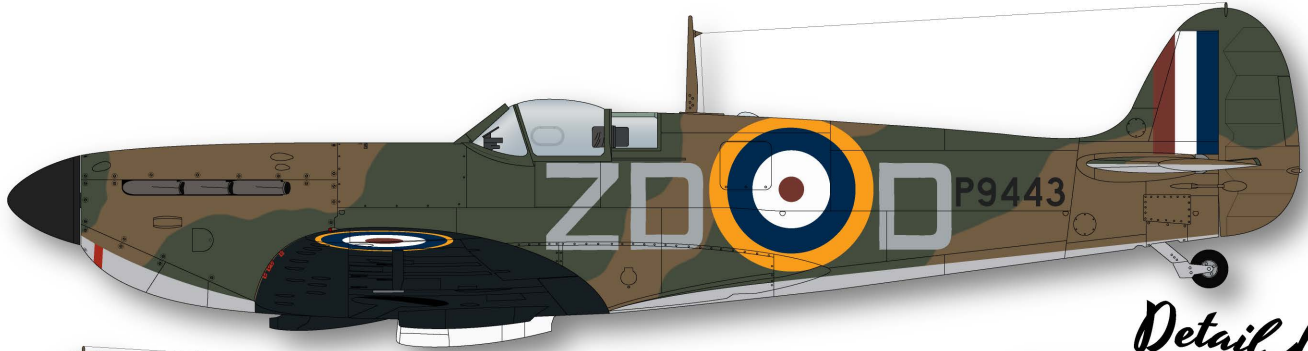
Malan finished the war with 27 confirmed, 7 shared, 2 unconfirmed, 1 shared unconfirmed, 3 probables, and 16 damaged.



Malan in the classic Spitfire pilot "hero" pose, later in the war

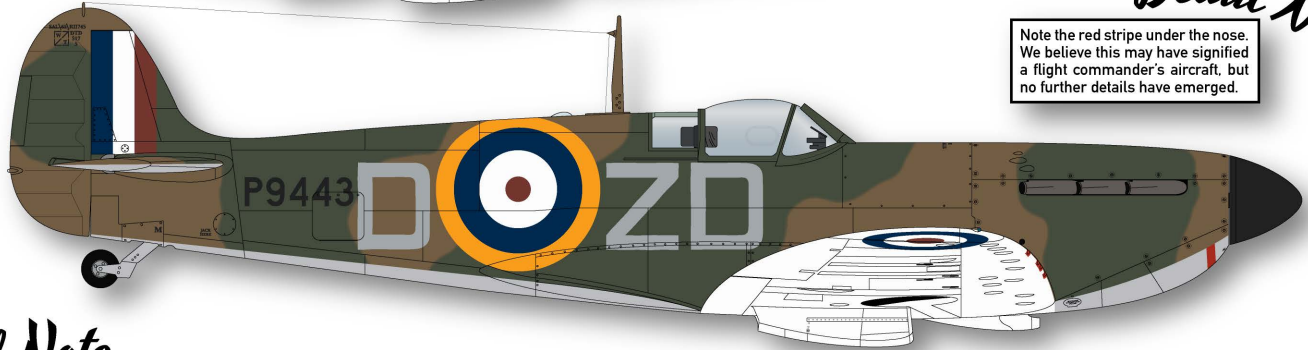


Malan poses next to K9953. Note the sheen of the camouflage paint.



Detail Note

Note the red stripe under the nose. We believe this may have signified a flight commander's aircraft, but no further details have emerged.

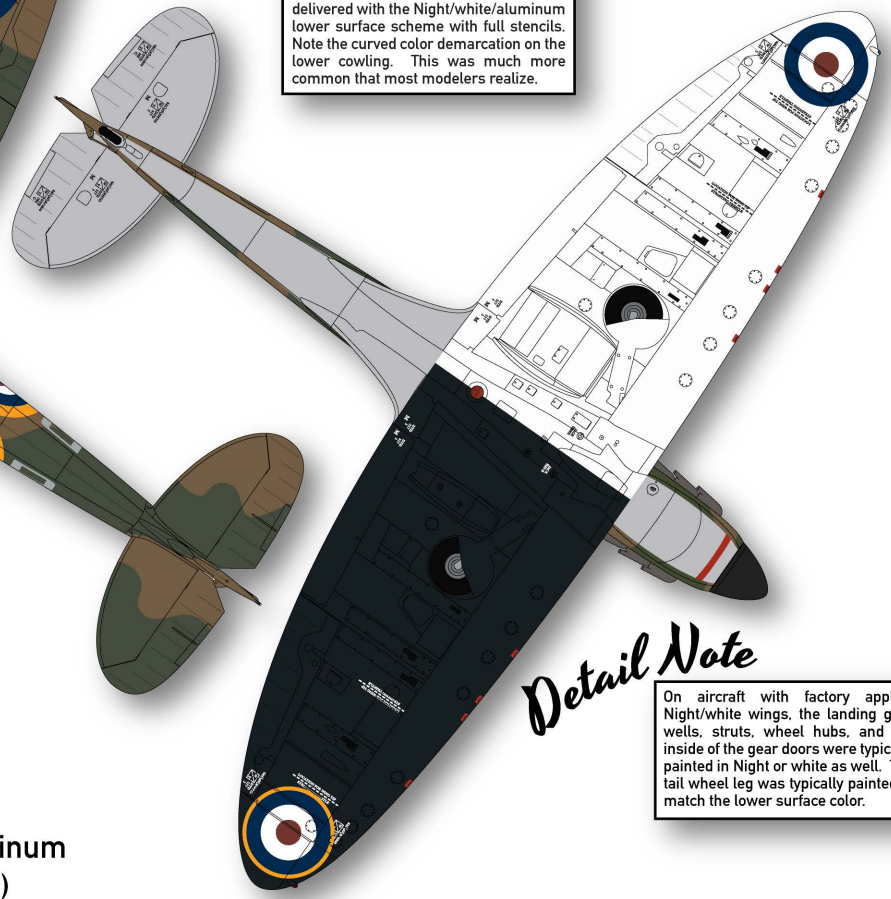
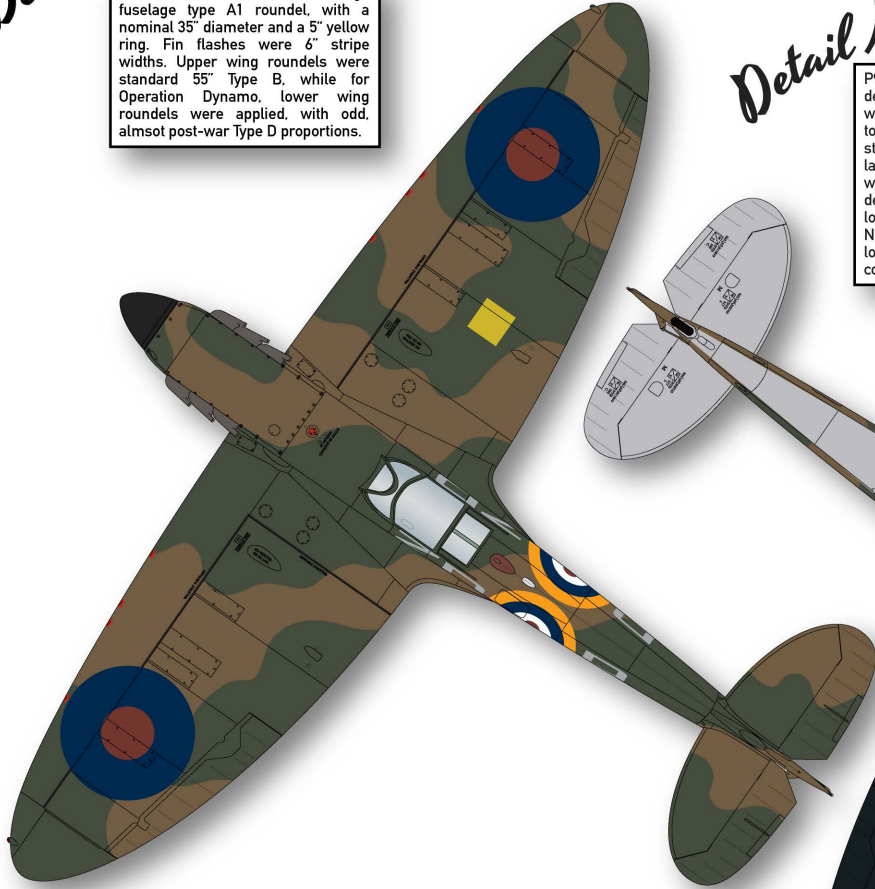


Detail Note

P9443 featured a rather strange fuselage type A1 roundel, with a nominal 35" diameter and a 5" yellow ring. Fin flashes were 6" stripe widths. Upper wing roundels were standard 55" Type B, while for Operation Dynamo, lower wing roundels were applied, with odd, almost post-war Type D proportions.

Detail Note

P9443 was the 606th Spitfire built, delivered on 1 April 1940. She spent time with 6 Maintenance Unit before delivery to 222 Squadron on 4 June. She was a standard mid-production Mk.I with the later style antenna mast, armored windscreen and fuel tank cover. She was delivered with the Night/white/aluminum lower surface scheme with full stencils. Note the curved color demarcation on the lower cowling. This was much more common than most modelers realize.



Detail Note

On aircraft with factory applied Night/white wings, the landing gear wells, struts, wheel hubs, and the inside of the gear doors were typically painted in Night or white as well. The tail wheel leg was typically painted to match the lower surface color.

	Dark Green		Night
	Dark Earth		White
			Aluminum (paint)

Flight Lieutenant Douglas Bader

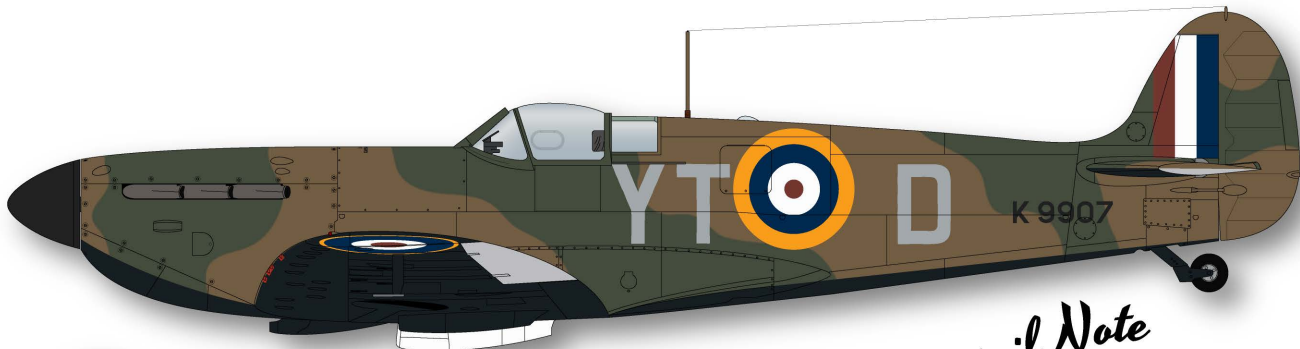
Douglas Bader entered the RAF College at Cranwell as a cadet in 1928, completing the two-year course in July 1930. He was commissioned as a pilot officer into No. 23 Squadron RAF based at Kenley, flying Gloster Gamecocks. He lost both lower legs in a flying accident in 1931, and was mustered out of the RAF.

After several failed attempts, the double-amputee Douglas Bader rejoined the RAF after the outbreak of WWII. Following a refresher course he was posted to 19 Squadron initially and then to 222 Squadron as a flight leader in March 1940. On the first day of June Bader bagged his fist Bf109E over Dunkirk, and an He111 shared probable. Later that month Bader was given command of 242 Squadron flying Hurricanes and stayed with 242 throughout the Battle of Britain. A picture of Bader and what is believed to be his 222 Squadron Spitfire P9443 ZD-D can be found on pg.66 of Dilip Sarkar's "Group Captain Sir Douglas Bader: An Inspiration in Photographs".



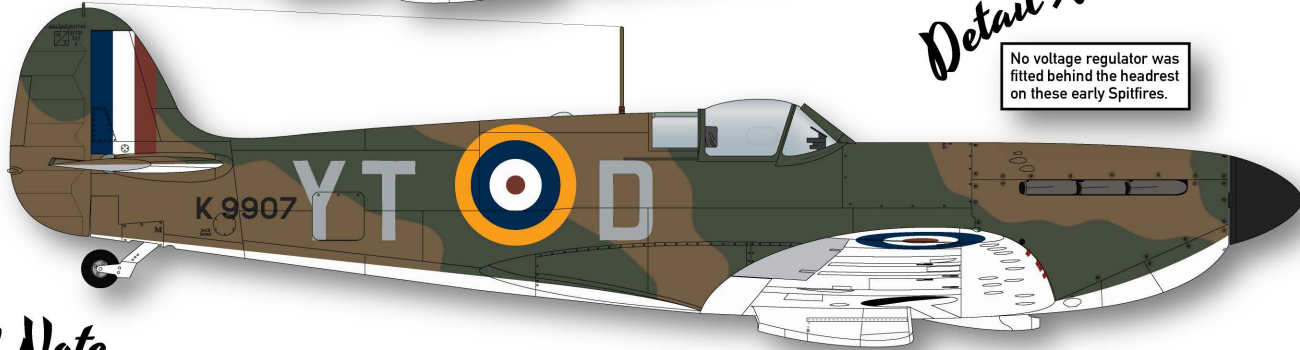
Fündekals collection

Flight Lieutenant Douglas Bader



Detail Note

No voltage regulator was fitted behind the headrest on these early Spitfires.

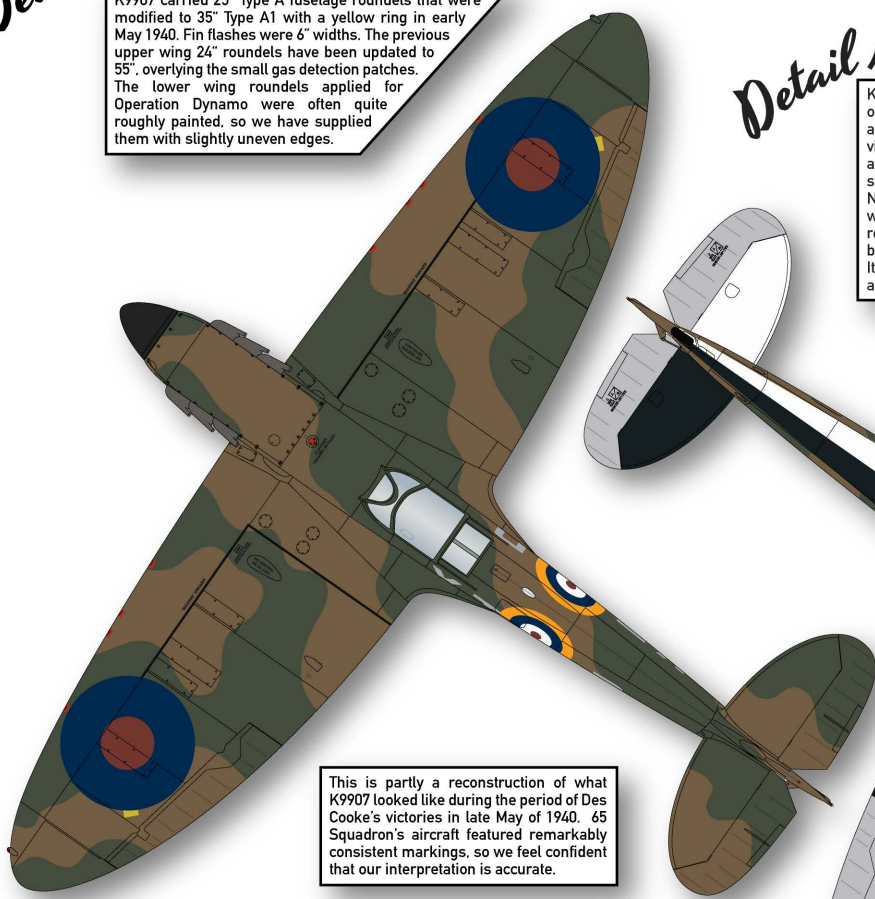


Detail Note

K9907 carried 25" Type A fuselage roundels that were modified to 35" Type A1 with a yellow ring in early May 1940. Fin flashes were 6" widths. The previous upper wing 24" roundels have been updated to 55", overlying the small gas detection patches. The lower wing roundels applied for Operation Dynamo were often quite roughly painted, so we have supplied them with slightly uneven edges.

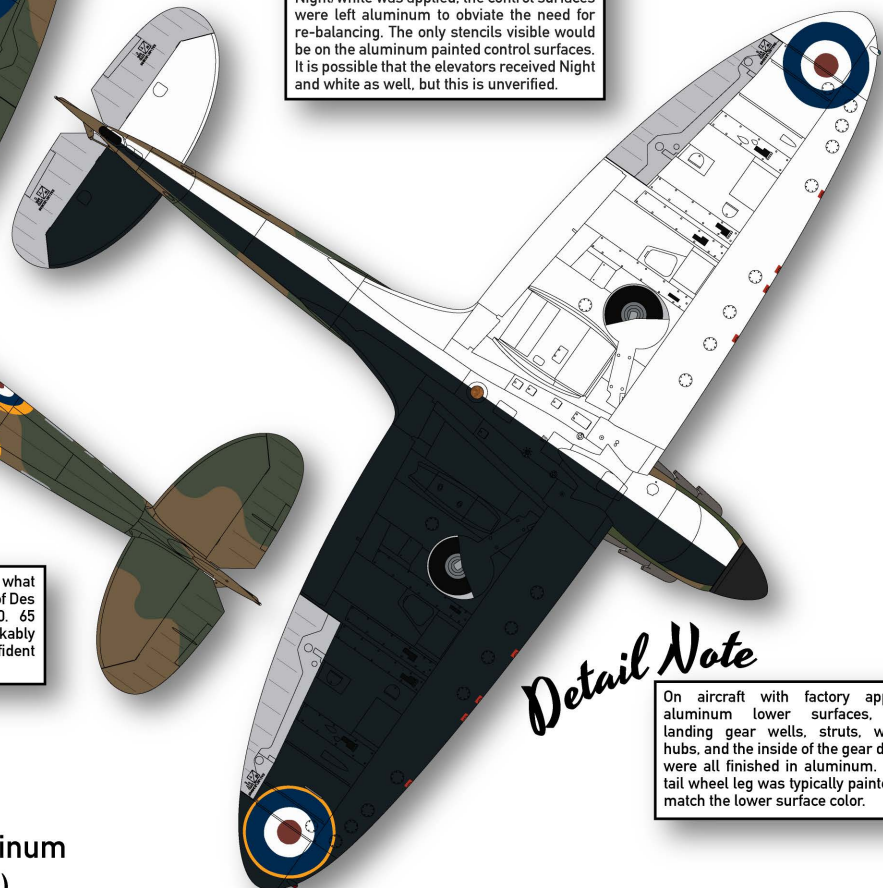
Detail Note

K9907 was the 119th Spitfire built, delivered on 23 March 1939. She had the pole type aerial mast, but by the time of Cooke's victories she had the armored windscreen and fuel tank cover. She was delivered with solid aluminum lower surfaces, but when the Night/white was applied, the control surfaces were left aluminum to obviate the need for re-balancing. The only stencils visible would be on the aluminum painted control surfaces. It is possible that the elevators received Night and white as well, but this is unverified.



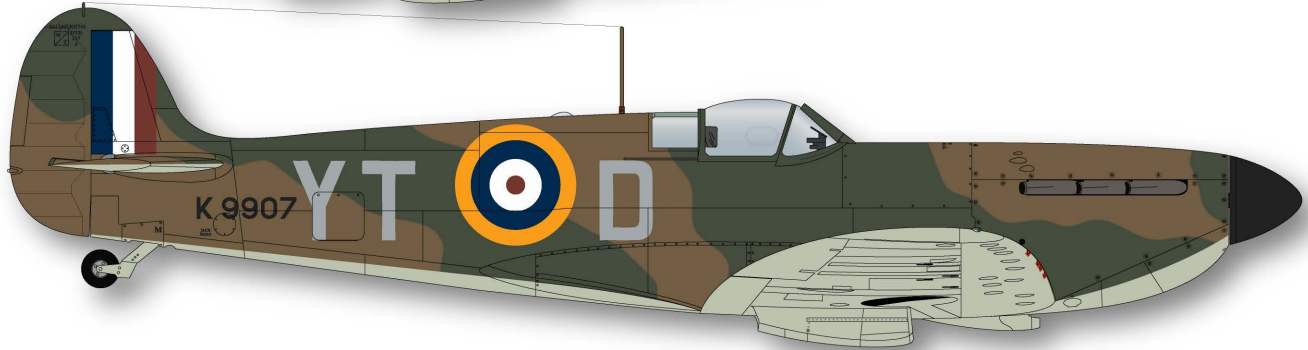
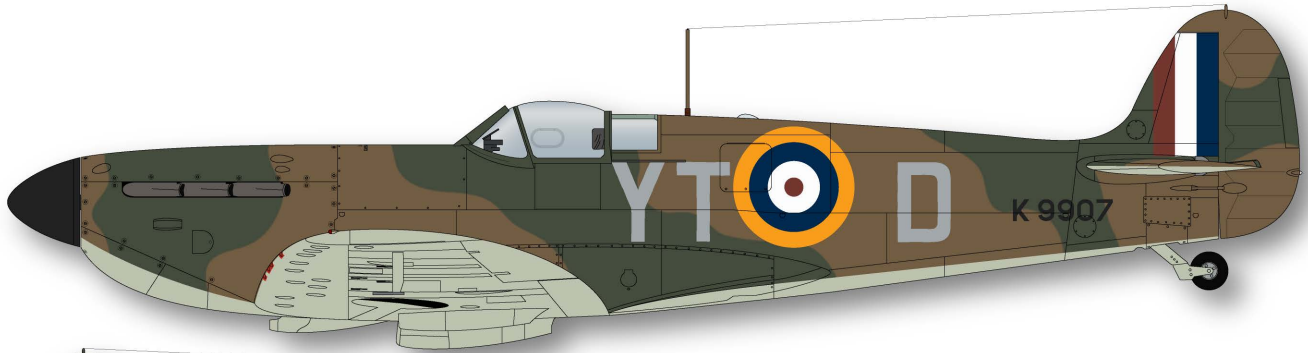
This is partly a reconstruction of what K9907 looked like during the period of Des Cooke's victories in late May of 1940. 65 Squadron's aircraft featured remarkably consistent markings, so we feel confident that our interpretation is accurate.

- Dark Green
- Night
- Dark Earth
- White
- Aluminum (paint)



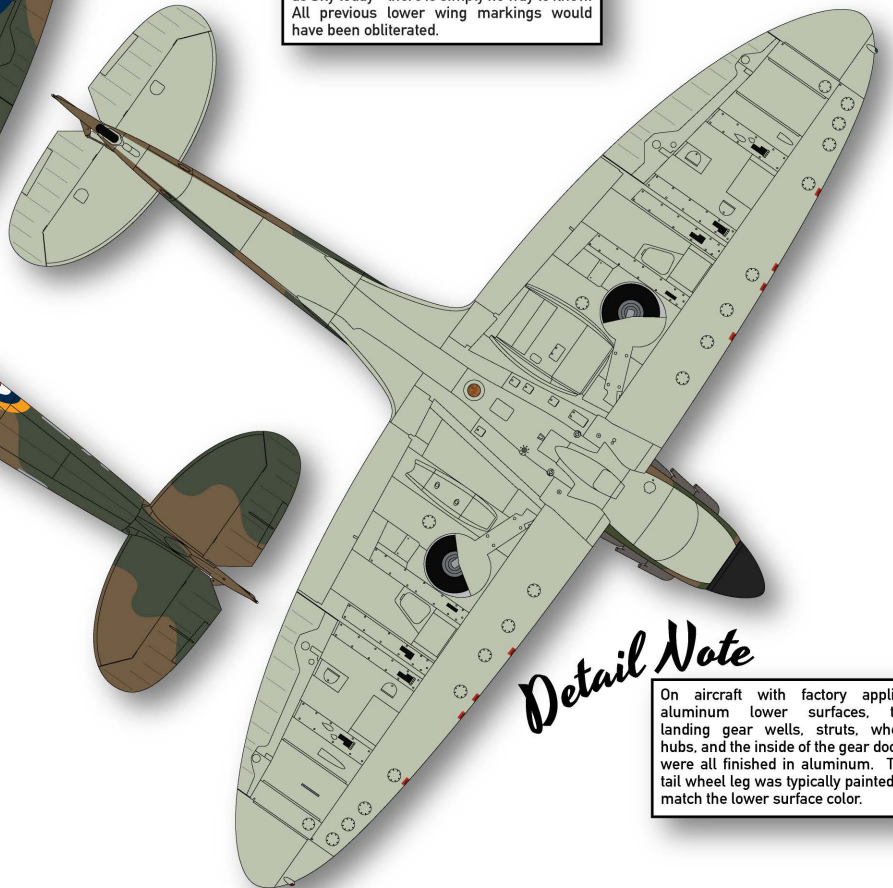
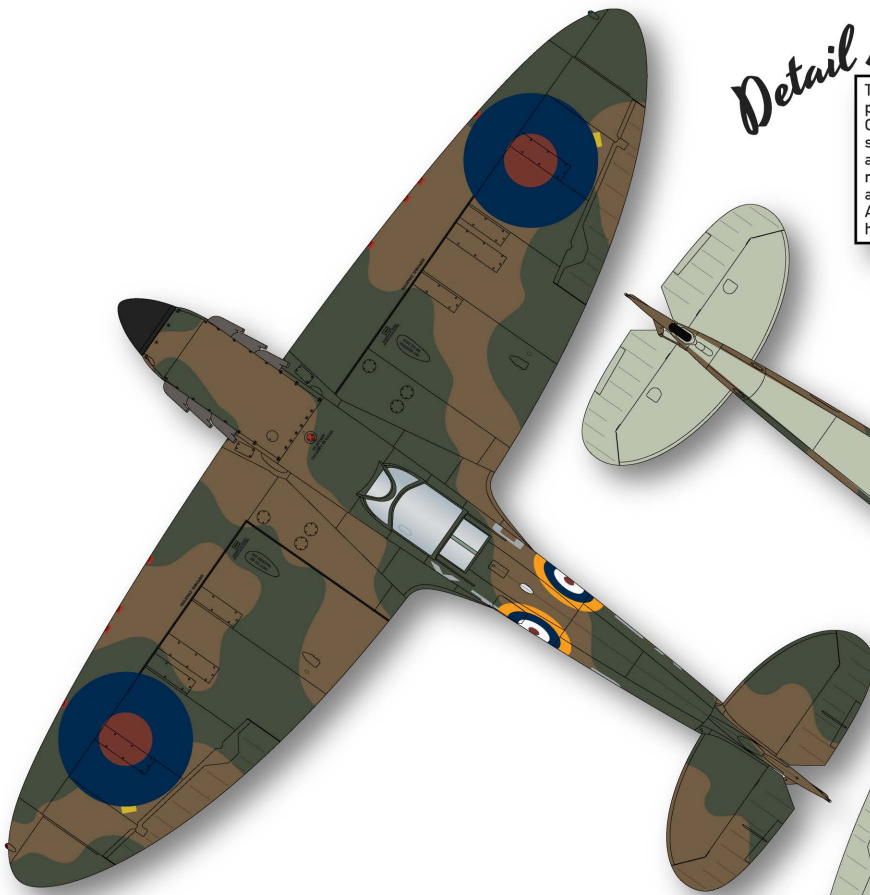
Detail Note

On aircraft with factory applied aluminum lower surfaces, the landing gear wells, struts, wheel hubs, and the inside of the gear doors were all finished in aluminum. The tail wheel leg was typically painted to match the lower surface color.



Detail Note

This is again a reconstruction of what K9907 probably looked like at the time of S/L Cooke's death in July of 1940. The Sky lower surface camouflage would have been applied at squadron level, so the color may or may not have matched what we commonly know as Sky today - there is simply no way to know. All previous lower wing markings would have been obliterated.



Detail Note

On aircraft with factory applied aluminum lower surfaces, the landing gear wells, struts, wheel hubs, and the inside of the gear doors were all finished in aluminum. The tail wheel leg was typically painted to match the lower surface color.



Squadron Leader "Des" Cooke

Squadron Leader DeLancey "Des" Cooke graduated from the RAF College at Cranwell in 1927. By 1937 he had reached the rank of Squadron Leader, and took command of 65 Squadron in October of that year. By the time the war started Cooke was already an "old man" by fighter pilot standards.

Cooke flew Spitfire K9907 YT-D exclusively in May 1940. On the 26th he claimed 2 Me110s destroyed (unconfirmed) near Calais and over Dunkirk. The following day he claimed a Do17 destroyed and shared in the destruction of another, and the day after that he destroyed a Do17 near Dunkirk. On 8 July 1940, S/L Cooke was shot down and killed by a Bf109 over Dover while flying K9907. This meant that 65 Squadron would be thrust into the coming Battle of Britain without their veteran Squadron Leader.

Cooke's death kept him from leading 65 Squadron into the Battle of Britain, however he did help shape the outcome of the Battle. A month earlier Cooke had asked De Havilland to fit a constant speed propeller to K9907 similar to the Rotol props that 54 Squadron had been experimenting with. This event led to widespread changes that tipped the balance in favor of Fighter Command. Because of Cooke's suggestion, the Spitfires (and Hurricanes and Defiants) that the Luftwaffe met over France would be radically different aircraft than the ones they would meet over England weeks later.



The only photo we (currently) have showing Des Cooke, who is seen standing at left wearing sunglasses.

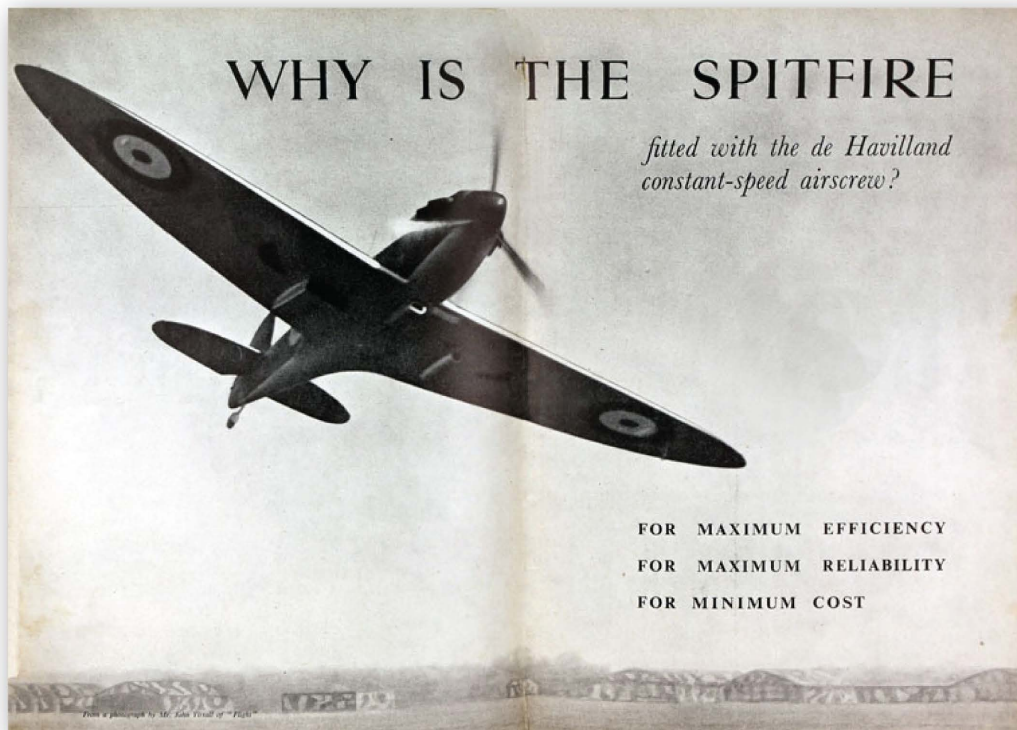
There has been some historical confusion over exactly what S/L Cooke's given name actually was. It has been almost universally assumed that "Des" was short for Desmond, and you see that name used almost everywhere. We have uncovered documentation however, that conclusively proves that his given name was actually DeLancey, after his father. Unhelpfully, his name inscribed on the Battle of Britain memorial wall is listed as "D. Cooke".



K9907 is seen parked in an earthen revetment (second aircraft) prior to the addition of the yellow ring on the fuselage roundels and the fin flashes, both of which happened in early May 1940. Also note the unique style and size (6") of the fuselage serials, which we have not seen on any other Spitfires. As-built, K9907 would have had a small serial on the vertical fin, which was overpainted at some point. Other items of note are the very small gas detection patches on the outer wings, and on K9911 YT-E in the foreground, the brackets for the night flying "blinkers" mounted on the fuel tank cover (not seen on K9907).

See information on the following pages - it turns out that K9907 may well be the single most historically significant Spitfire of the entire period!

The history you've probably never heard...



It never ceases to amaze us that even nearly 80 years on there is still significant history related to the Battle of Britain that is (or was to us at least) virtually unknown. Read on and we think you will find it fascinating too!

A constant-speed propeller, as opposed to a fixed-pitch, or two-pitch propeller, is a type variable-pitch propeller that automatically changes its blade pitch in order to maintain a chosen engine RPM. Without getting too technical, a constant-speed prop provides much better use of available engine power, and markedly improves climb performance, high speed performance, etc.

When the Spitfire and the Hurricane were designed, they were both fitted with a Watts fixed-pitch two-bladed wooden propeller. A fixed pitch prop can, obviously, not have its blade pitch changed, thus, it has to be a compromise between the best pitch for takeoff and climb performance, and the best pitch for cruise performance, while not being optimized for either. By 1938 both the Spitfire and the Hurricane were being fitted with a De Havilland

three-bladed, two-pitch propeller. While this was a major improvement over the fixed pitch prop, it was still only a compromise at best. Fine pitch was used for takeoff and climb, and coarse pitch was used for most other portions of a mission. Again, not optimal for the widely varying conditions at which a fighter aircraft is required to excel.

De Havilland had designed the propeller fitted to the Spitfire and Hurricane to be able to accept a constant speed mechanism, and the Merlin engine was easily adapted to take the required governor and associated oil piping that allowed the control of the prop pitch possible. Fortunately for modelers, there is no external difference between the De Havilland two-pitch prop and the modified constant speed prop. In fact, only the mechanism inside the prop hub was different.

We cannot do better than to have you read the following article from Flight Magazine in December 1943. It covers the entire history of the fitting of the constant speed prop to the Spitfire during the summer of 1940.

Pitch Panic

How Hurried Changes from Two-pitch to Constant-speed Airscrews Were Made in Time for the Battle of Britain

AS long ago as 1936 the De Havilland Co. had both Spitfire and Hurricane included in their programme for variable-pitch airscrews, but in those days the accent was on lightness where fighters were concerned, and as both types could leave the ground fairly well with fixed-pitch two-bladed wooden airscrews, the company was not instructed to provide v.p. until much later—in fact not until 1938, when pilots were beginning to say that they needed variable pitch for safety in night take-offs. The R.A.F. expansion was then going ahead strongly and two-pitch airscrews were specified for single-engined fighters because quantity deliveries of these could be given more quickly than of the constant-speed type. By the time Paris fell, De Havillands had delivered about 1,250 two-pitch airscrews for the Hurricane, 1,000 for the Spitfire and 325 for the Defiant. They were delivering constant-speed types then in quantity for Wellington Ic, Hampden, Beaufort, Beaufighter, Whirlwind, Stirling, Manchester, etc., but the single-engined fighters, the Blenheim and other types, were still being retained as two-pitch installations.

At the time of the Battle of France airscrew engineers and test pilots used to hear at the fighter stations that the Me 109s had a slightly greater ceiling than our fighters, though their manoeuvrability high up was not so good as ours, and that they had an advantage in accelerating and power diving. Our two-pitch fighters had to throttle back in the dive to avoid over-revving. It was also clear that constant-speed control would give us a much improved climb for intercepting. Changing from fine to coarse pitch with the two-pitch control, as set for the Spitfire's rated altitude, was rather like changing from bottom to top gear in a small four-speed car. In many talks with hard-worked pilots during Dunkirk week and thereabouts all agreed that constant-speeding would be a considerable help, especially as it did not mean new airscrews, but only governor units, piping, etc.

First Spitfire Converted

On Sunday, June 9, when the Germans were pouring across the Marne, De Havillands had a 'phone call from an engineer officer asking whether they could convert one Spitfire as a sample. They said they could, quite easily, and sent one of their test pilots with an engineer to explain that the work involved would not take many hours, but that if they were likely to be called upon to make conversions in quantity they would have to be given authority to divert materials and labour from the contracts upon which they were fully engaged.

They at once set about the parts and pipe lines for the trial conversion. These were ready in about four days, and half a dozen picked D.H. airscrew installation engineers effected the conversion at an airfield during one night, while the Huns were rejoicing in Paris and Goering was regrouping for the attack on England.

A report dated June 20, from a D.H. test pilot, Mr. E. Lane-Burslem, stated that he had flown the converted Spitfire and so had Sqn. Ldr. Cooke, who commanded 65 Squadron, and a number of his pilots. They estimated that there was more than 7,000ft. of increase in ceiling, and the manoeuvrability at height was much improved, not to mention the obvious advantages of reduced take-off run and increased rate of climb—in brief, the ability to use maximum efficiency at any altitude in all conditions.

Enthusiastic for other squadrons as well as his own, and backed up by his engineer officer Flt. Lt. McGrath, Sqn. Ldr. Cooke got in touch with the technical authorities and interest spread rapidly. Among the experienced operational pilots who were first to appreciate the advantages was Wing Cdr. H. Broadhurst.

Conversion in the Field

On Saturday, June 22nd, De Havillands were verbally instructed to convert in the field all Spitfires, Hurricanes and Defiants, with priority over other contracts, and the Spitfires had to be done first. Sqn. Ldr. Cooke, in his constant-speed Spitfire, led his two-pitch squadron into battle and the practical advantage was immediately apparent. Unfortunately, on his second sortie he was killed.

Minutes of a meeting held on June 22nd with the Senior Technical Officer of Fighter Command relate that de Havillands would start the conversion at twelve Spitfire stations on Tuesday, June 25th (less than a week after the first test flight) and could provide twelve men capable of supervising a station apiece; that the firm estimated that each squadron would take ten days to convert, and that all Spitfire squadrons could be completed by July 20th.

The same minutes recorded that de Havillands had put in hand the production of 500 conversion sets, without contract cover, and that these would be coming out at the rate of 20 sets daily from June 24th, two days later. Supermarines were to be supplied with 20 sets per week from June 25th for aircraft coming off the production line; this would mean that two-thirds of the Spitfire production from that day onward would be "constant-speed." After completing the squadrons the D.H. engineers were to modify any Spitfires in storage at Maintenance Units (the word "any" had a grim significance!)

A small quantity of constant-speed units produced for the French Government, useless to them after the collapse, formed the nucleus for the job that began on June 25th, and bulk production duly followed without a break. The conversion called for this constant-speed unit; a small shaft drive to connect it to the engine; four external engine oil pipes; a complete cockpit control with conduit, and detail parts. The airscrews did not have to be changed, having been designed for constant-speeding, but each had to be dismantled to move the index pins so as to give full pitch range and shift the range bodily several degrees towards the coarse limit. As Rolls-Royce could not, consistent with other heavy demands, produce the quill shafts for driving the c.s. units, or the engine oil pipes, the data were given to de Havillands and the facilities of the Gipsy engine factory were pressed into service to make over 1,000 sets of these parts. Everybody in the D.H. organisation who could contribute anything was transferred to this job. Several outside suppliers were involved, and in particular it may be recalled that M.R.C., Ltd., the makers of the pilot's control, astonished at the demands made on them, co-operated magnificently. Many of the "inside" people did remarkable work; for instance, Mr. Ivor Jones, of de Havilland's Progress Department, who chased and controlled all the parts supplied.

Day and night air raids on England began about Monday, June 24th. The next day 13 D.H. engineers set forth in cars for twelve Spitfire stations. (Two went to one station.) Each was provided with about six conversion

NOT until now has it become possible to tell the story of how a small band of men, working sometimes 20 hours or more out of the 24, converted Hurricane and Spitfire Merlins for constant-speed airscrews. It is no exaggeration to say that but for their heroic efforts the Battle of Britain might have ended differently.

DECEMBER 9TH, 1943

FLIGHT

649

PITCH PANIC

sets to be going on with. Their names were: W. E. Crease; J. B. Houston; S. C. Bentley; W. M. Bentley; B. J. de Sibour; A. Moser; C. A. Luke; A. Metz; W. Hook; T. Beavis; W. Pickford; S. J. Reed; A. J. Tribell.

At each station the D.H. man on arrival asked for a picked crew of N.C.O.s and fitters, converting the first aircraft himself and instructing the men at the same time. The second aircraft was then converted by the R.A.F. crew with his help, and the third with his supervision only. After that, if all was going well, he would proceed to the next station. Youthful engineers like de Sibour found themselves directing senior flight sergeants and quite big squads of fitters. Mr. Lane-Burslem flight-tested the first machine and instructed the R.A.F. pilots in the constant-speed operation, and then flew on to the next station.

Working 150 Hours a Week

The working times of the D.H. engineers during the ensuing weeks averaged about 105 to 110 hours (15 to 16 hours a day), with instances of 130 and up to 150 hours (19 to 21½ hours out of the 24). At some squadrons as many as four and five Spitfires were converted and test-flown in a day.

There was much improvisation at the stations. Home-made arbors were contrived for dismantling the airscrews and off-set spanners were made to get at nuts without having to remove the Merlin glycol header tanks.

Some of the squadrons which had borne the brunt at Dunkirk and were resting, in South Wales and elsewhere, flew their Spitfires across England in ones and twos to be converted, and some aircraft were flown for conversion to De Havilland's own factory.

The rush had its light moments. As all the initial production and conversion arrangements were made without contract cover of any kind, De Havillands had the authorities on one side pressing almost impossible promises

out of them, while other branches were cautioning them that their action was irregular. A contracts clerk said, "We shall probably never get paid for this," and an engineer was heard to reply, "If it isn't done we may never live to be paid for anything." Even in March, 1943, the De Havilland contracts department were still being called upon for the routine evidence that certain aircraft had been converted.

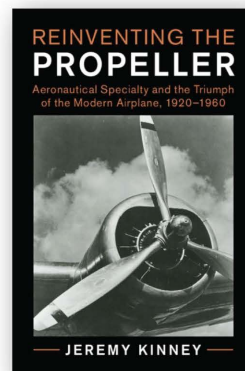
800 Sets in 44 Days

An entry dated Friday, August 2nd, records that by then, 44 days after the test flight of the first converted Spitfire, the production of conversion sets for all existing Spitfires (more than 800 sets, fulfilling the schedule of 20 a day) was complete, and they had therefore started producing for the Supermarine assembly line; De Havillands then had 400 Hurricane conversion sets in hand and expected to convert a total of 700, after which constant-speed airscrews would be embodied in the new aircraft.

The worst of the rush was over, six days before the *Luftwaffe's* mass attacks began, and a chance diary entry records that the company was already busy on another urgent job, of fitting airscrews to 24 Hurricanes to be sent at once to the Middle East! Another diary entry of that month which serves as a reminder of gloomy expectations records that De Havillands were doing 1,500 sets of bomb racks for Tiger Moths!

Those July raids had, fortunately, been little more than skirmishes. If only the German High Command had realised! The mass attacks on Channel ports and shipping which began the intended final assault upon Britain did not start until Thursday, August 8th—but all our Spitfires had constant-speed airscrews by then. By August 16th 1,051 Spitfires and Hurricanes had been converted—an average of 20.2 aircraft per day, over 52 days. In the eight days, August 8th to 15th, the German losses averaged 81 aircraft daily—four times our own losses. One of the highest officers of Fighter Command remarked to a D.H. engineer that but for the conversion job the figures might have been reversed.

In light of the last line of this article, it is arguable that were it not for the efforts of Des Cooke and De Havilland and the Herculean effort they put forth to modify Fighter Command's Spitfires and Hurricanes in the crucial summer of 1940, the outcome of the Battle of Britain, and indeed the course of the Second World War itself, might have been drastically different. Yet Squadron Leader Des Cooke remains virtually unknown, despite his pivotal role in this story. His mount, K9907, the first Spitfire to get a constant speed prop, may well qualify as the single most historically significant Spitfire Mk.I there is, given its role in this amazing story. We hope that our research will bring much-deserved attention to S/L Cooke's story, and that of the hundreds of other unsung heroes - the "erks" who put in the long hours in the dead of night to modify the Spitfires and Hurricanes that eventually achieved a spectacular victory for the RAF and Great Britain.



If you would like to read more on this fascinating, and little known subject area, we highly recommend this book by Jeremy Kinney. It provides an in-depth look at the history of the constant speed propeller and its contribution to the development of aviation in the 1920s onward.

ISBN 978-1107142862

THEIR FINEST HOUR...

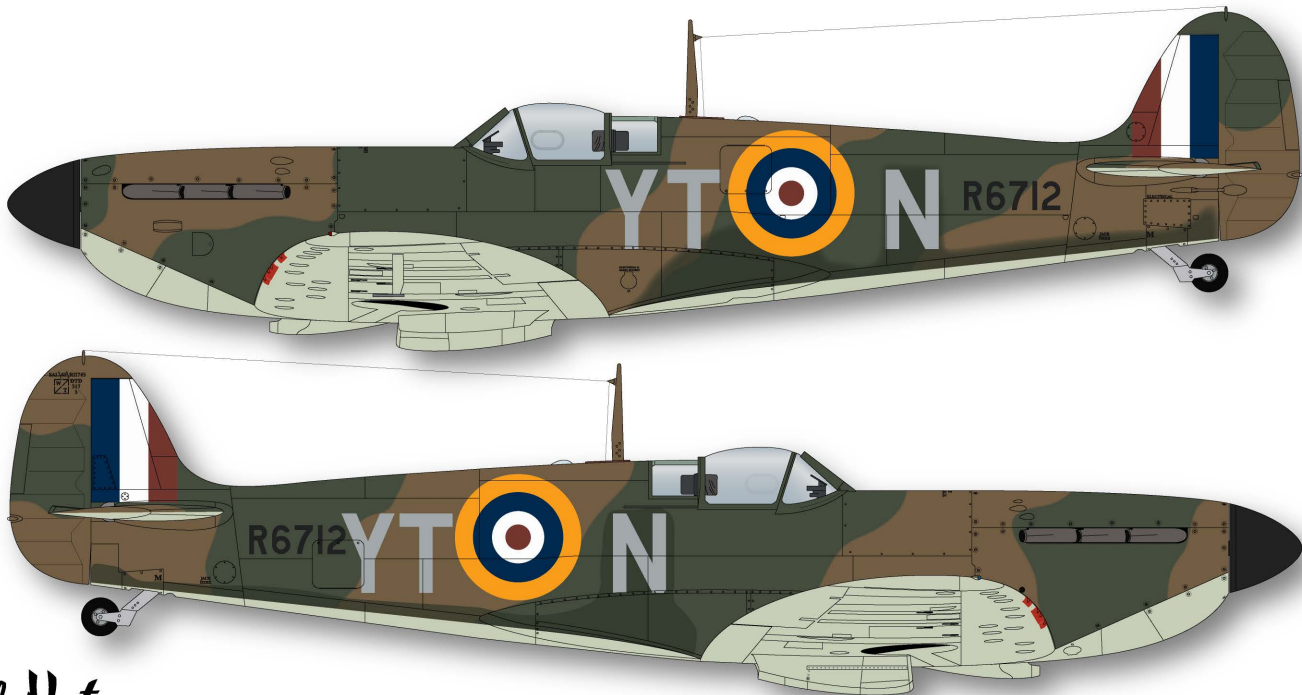


A rooftop observer peering toward the southern horizon, with the dome of St. Paul's in the background. On most days in the summer of 1940, he would likely have seen unwelcome visitors approaching.

In the summer of 1940 it fell to the young men of Fighter Command to defend England and stop Göring's Luftwaffe from wresting command of the air from the RAF. While the RAF was certainly fighting for country, it first had to save itself. The initial phase of Hitler's plan was to destroy the RAF both on the ground and in the air. As Battle of Britain veteran Tom Neal put it, "The Battle of Britain to me was just a horrendously tough rugby match in which the penalty of losing was death...". Tactics aside, the real truth is that as soon as Fighter Command pilots left the ground a *mêlée* would ensue and pilots would find something with a cross on it and shoot at it ... a "tumult in the clouds" as Yeats once put it. Pilots died young or aged years overnight. There seemed to be no in between. By August, Fighter Command was near the brink...



A classic view of a dogfight swirling high overhead during the Battle of Britain. Throughout the summer of 1940, this was an almost daily sight over the southeast of England. The spring and summer of 1940 were noted for their extremely fine weather, and very few days were unsuitable for flying.

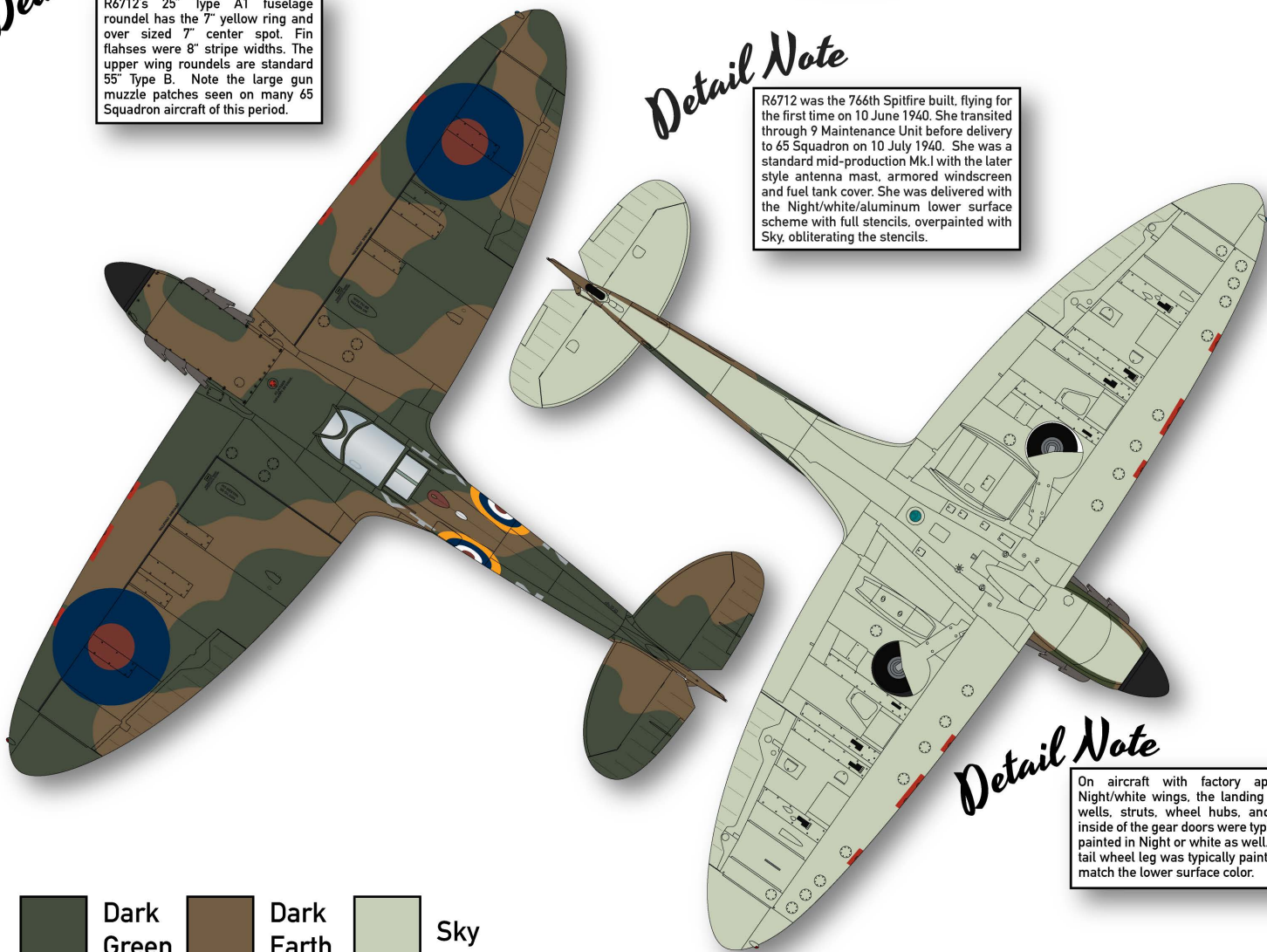


Detail Note

R6712's 25" Type A1 fuselage roundel has the 7" yellow ring and over sized 7" center spot. Fin flashs were 8" stripe widths. The upper wing roundels are standard 55" Type B. Note the large gun muzzle patches seen on many 65 Squadron aircraft of this period.

Detail Note

R6712 was the 766th Spitfire built, flying for the first time on 10 June 1940. She transited through 9 Maintenance Unit before delivery to 65 Squadron on 10 July 1940. She was a standard mid-production Mk.I with the later style antenna mast, armored windscreen and fuel tank cover. She was delivered with the Night/white/aluminum lower surface scheme with full stencils, overpainted with Sky, obliterating the stencils.



Detail Note

On aircraft with factory applied Night/white wings, the landing gear wells, struts, wheel hubs, and the inside of the gear doors were typically painted in Night or white as well. The tail wheel leg was typically painted to match the lower surface color.



Pilot Officer Kenneth Hart

Pilot Officer Kenneth Hart scored his first victory in a Spitfire with 65 Squadron over Dunkirk. On 12 August 1940 Hart was flying Spitfire R6712, YT-N when he shot down a Bf109E. By 1941 he was flying Tomahawks with 250 Squadron in the Middle East where he became an ace. By 1944 he had become a Squadron Leader flying Bostons with 18 Squadron in Italy. He was killed in action on 28 December 1944.

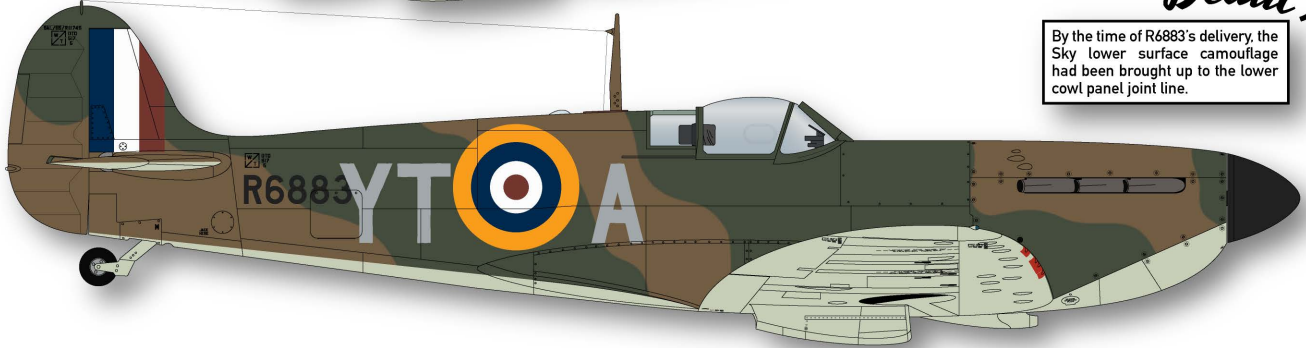
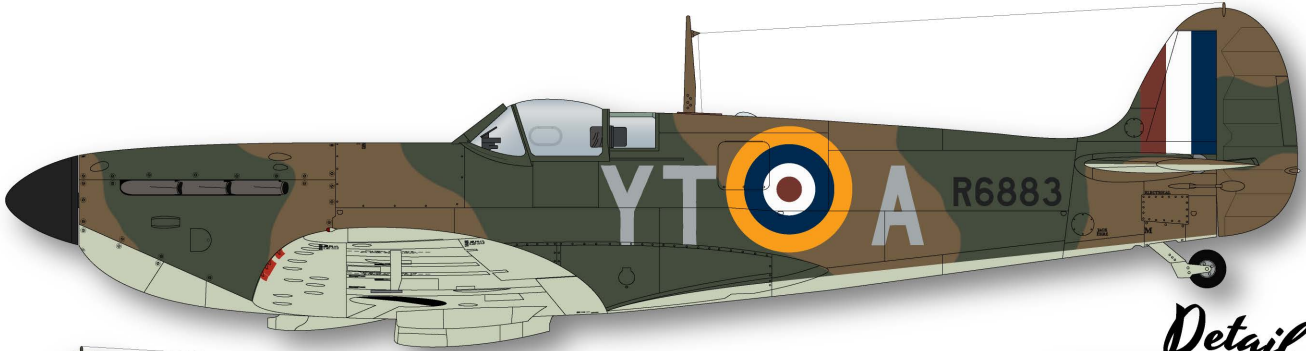
In the photo below, R6712 is shown taking off from RAF Hornchurch's grass runway at the height of the Battle. Note her Night left hand inner gear door, gear strut, and wheel hub. The right side would have been white (see note on previous page). We cannot determine what the significance of the dark staining visible along the upper/lower camouflage demarcation line. It appears another code letter may have been overpainted and the "N" applied on top, but that does not explain the rest of the dark color visible, nor whether the opposite side looked similar, but it is very unusual.

A brace of 65 Squadron Spits getting airborne from Hornchurch in August 1940. In front is R6712 with Hart at the controls. Note the dark paint behind the "N" and along the bottom of the upper surface camouflage. We don't have a good explanation for it...



Flying Officer Hart is seen at the controls of a Spitfire Mk.I, possibly R6712.





Detail Note

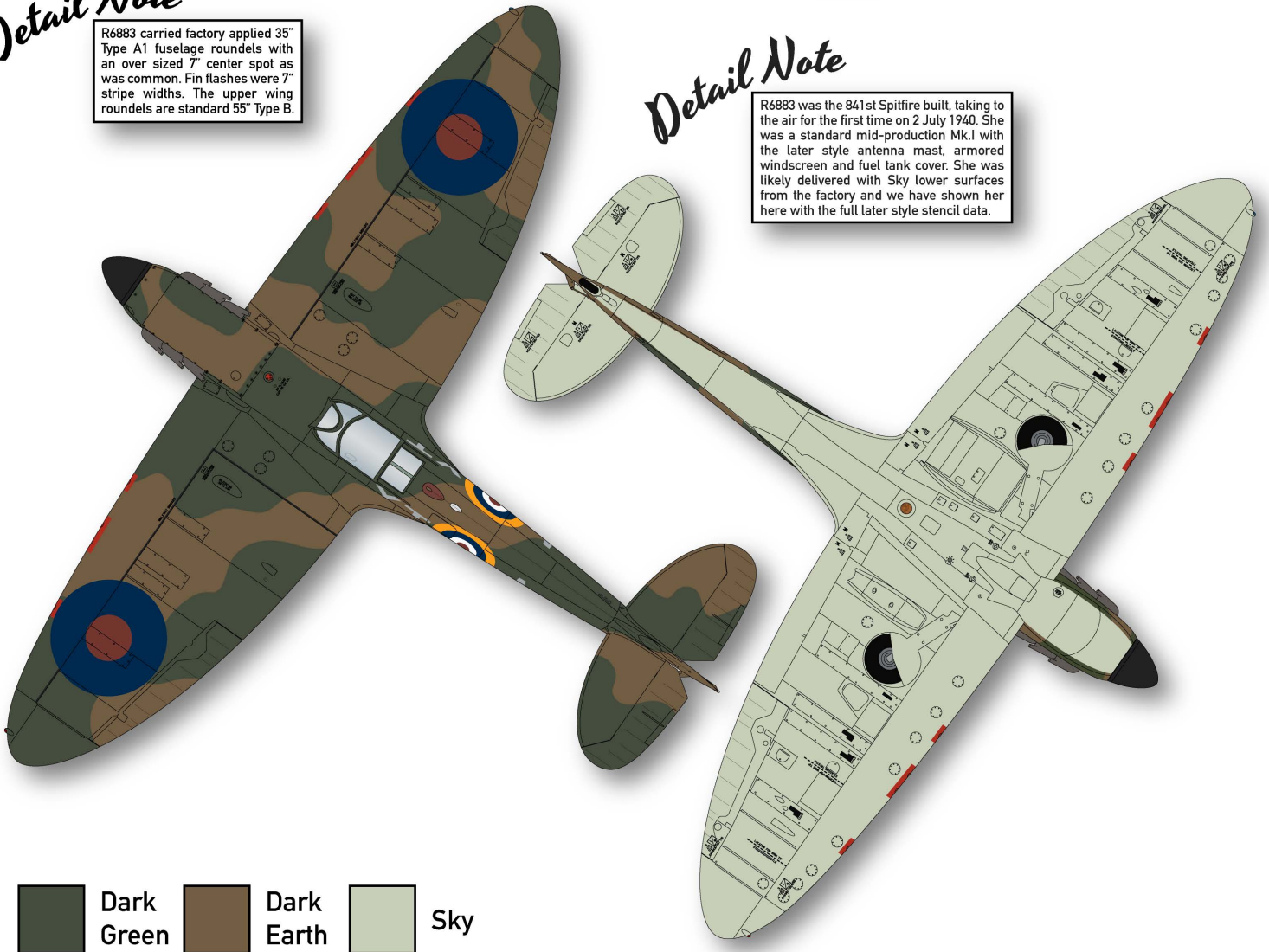
By the time of R6883's delivery, the Sky lower surface camouflage had been brought up to the lower cowl panel joint line.

Detail Note

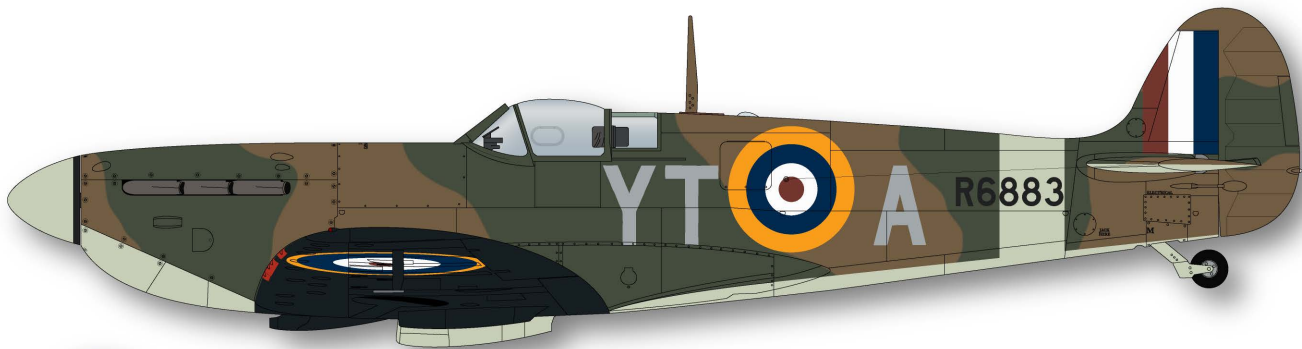
R6883 carried factory applied 35" Type A1 fuselage roundels with an over sized 7" center spot as was common. Fin flashes were 7" stripe widths. The upper wing roundels are standard 55" Type B.

Detail Note

R6883 was the 841st Spitfire built, taking to the air for the first time on 2 July 1940. She was a standard mid-production Mk.I with the later style antenna mast, armored windscreen and fuel tank cover. She was likely delivered with Sky lower surfaces from the factory and we have shown her here with the full later style stencil data.



Dark Green
 Dark Earth
 Sky

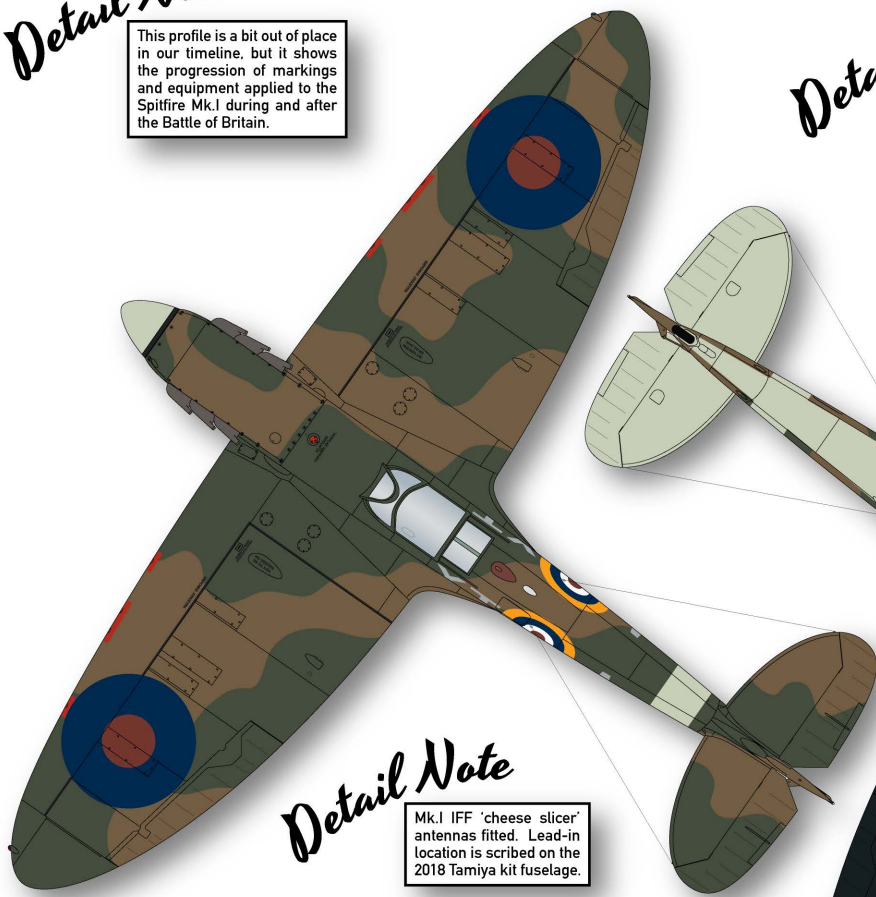


Detail Note

This profile is a bit out of place in our timeline, but it shows the progression of markings and equipment applied to the Spitfire Mk.I during and after the Battle of Britain.

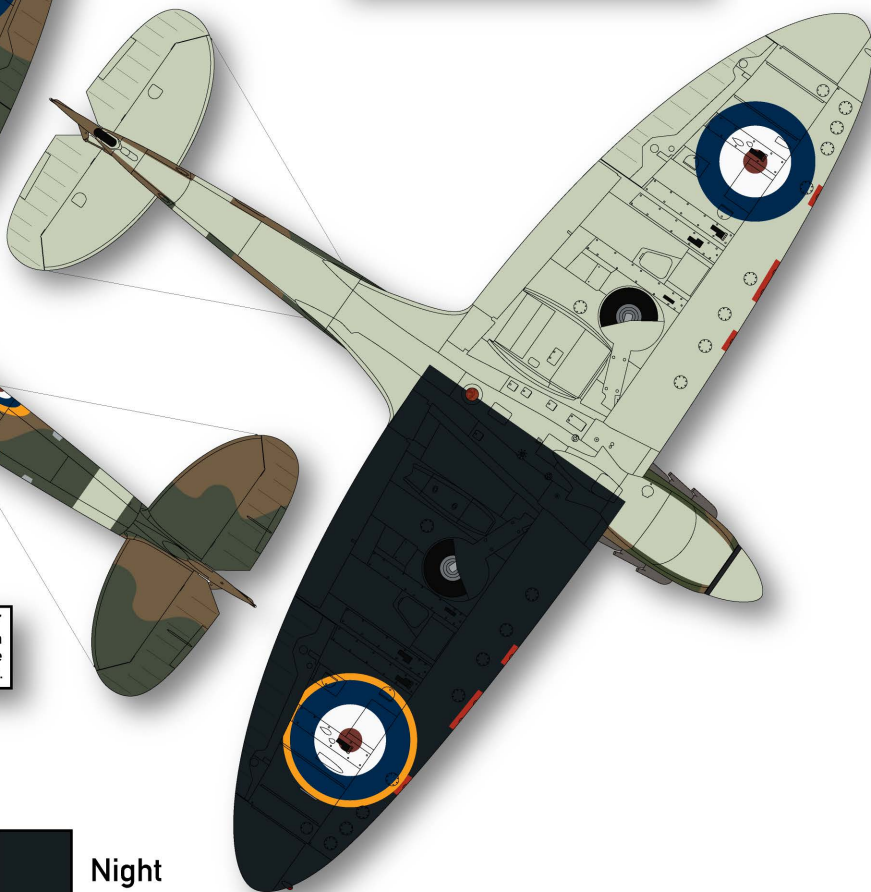
Detail Note

By late 1940, R6883 was likely fitted the new TR11333 VHF radio. The antenna was contained within the mast, and there was no wire leading to the rudder as with the previous TR9 HF set. The triangular wire guide at the top of the mast was also removed.



Detail Note

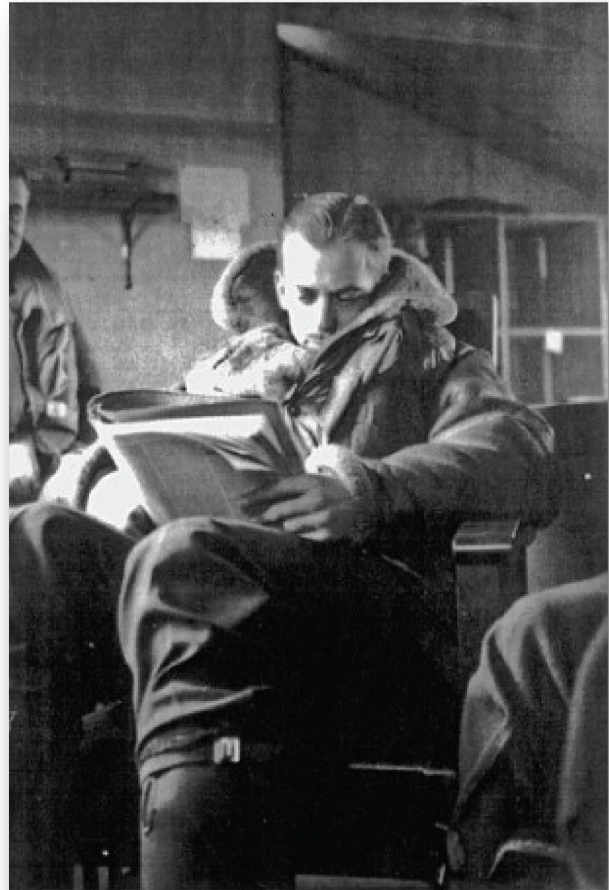
Mk.I IFF 'cheese slicer' antennas fitted. Lead-in location is scribed on the 2018 Tamiya kit fuselage.



Flight Lieutenant Gordon Olive

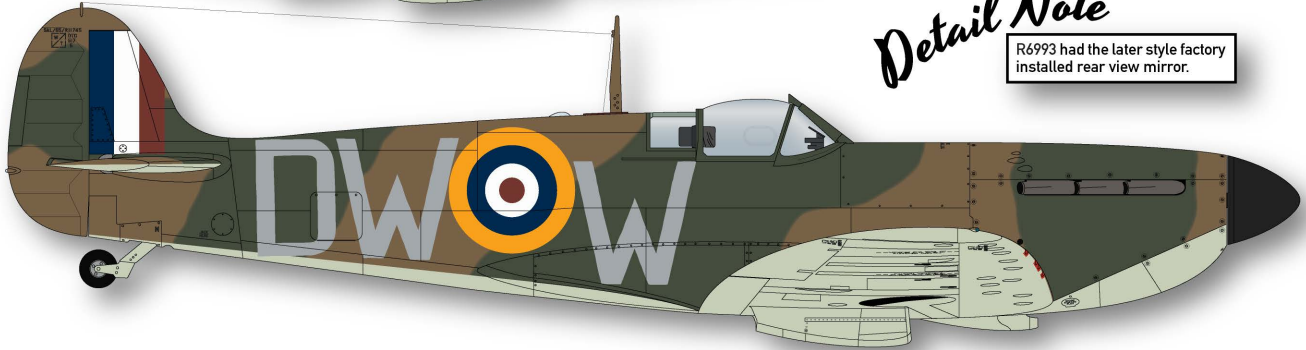
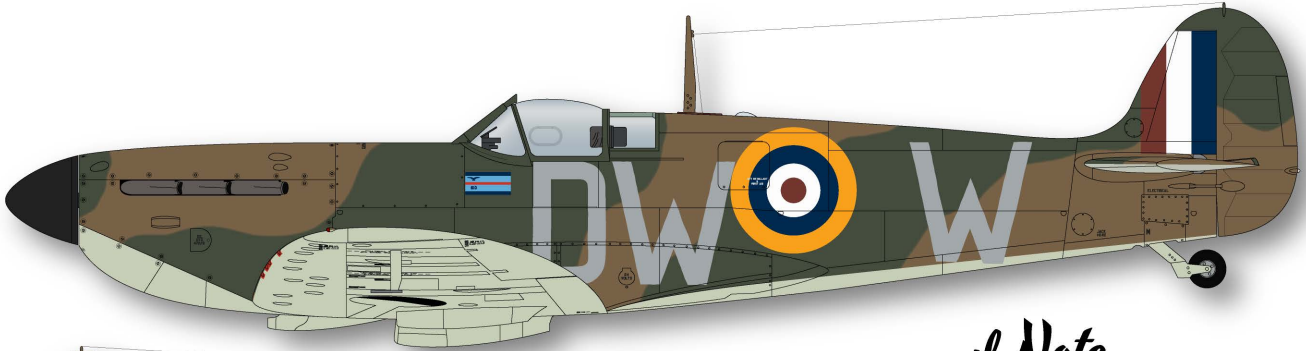
Australian-born Gordon Olive joined the RAAF in 1935 but transferred to the RAF in 1937. By 1940 he was a flight leader in 65 Squadron. Olive made 3 unconfirmed claims over Dunkirk and had a prolific month during the summer fighting. Between 20 July and 26 August F/L Olive claimed 3 Bf109s destroyed, 1 Bf110 destroyed, 4 probable Bf109Es, and a Ju88 damaged. On 13 August Olive shot down 2 Bf109Es and claimed a third probable while flying his regular Spitfire, R6883 YT-A, which he favored the last half of 1940. On 8 December Olive used R6883 to down a recce Bf110 near Portsmouth.

In a rather strange coincidence, Olive's aircraft, R6883, was lost in a mid-air collision with none other than "Sailor" Malan's K9953 while in service with 57 Operational Training Unit on 7 October 1943!



Fündekals collection

In an atmospheric setting, Gordon Olive relaxes between sorties in his full flying kit



Detail Note

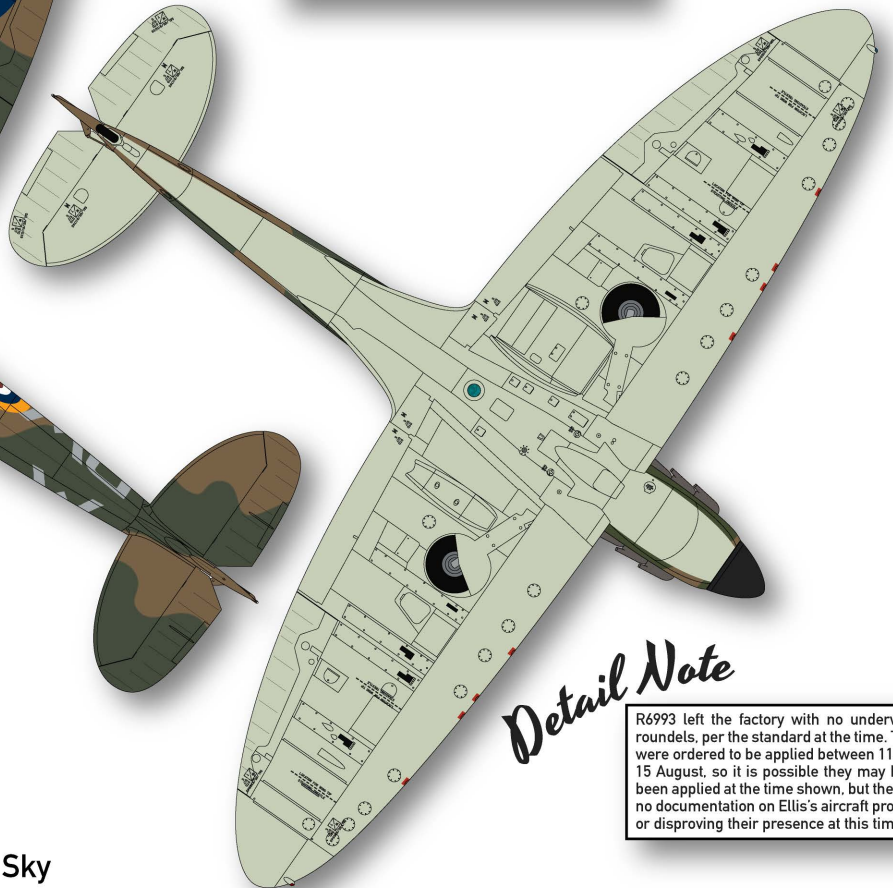
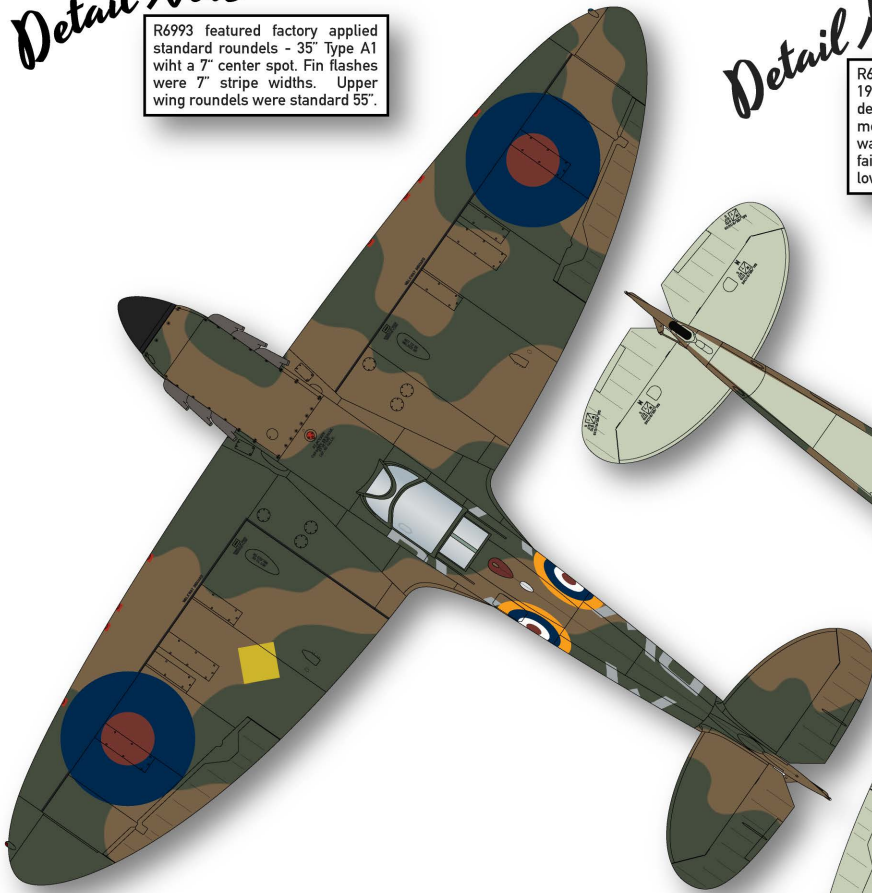
R6993 had the later style factory installed rear view mirror.

Detail Note

R6993 featured factory applied standard roundels - 35" Type A1 with a 7" center spot. Fin flashes were 7" stripe widths. Upper wing roundels were standard 55".

Detail Note

R6993 was the 926th Spitfire built, delivered on 22 July 1940. She passed through 8 Maintenance Unit before delivery to 610 Squadron on 26 July. 610 Squadron moved north from Biggin Hill on 31 August, so she was only a little over a month old, and thus likely still fairly fresh and clean as depicted here. She had Sky lower surfaces with full factory applied stencil data.



Detail Note

R6993 left the factory with no underwing roundels, per the standard at the time. They were ordered to be applied between 11 and 15 August, so it is possible they may have been applied at the time shown, but there is no documentation on Ellis's aircraft proving or disproving their presence at this time.



Squadron Leader John Ellis



John Ellis was born in 1917 and joined the RAF in 1936. After pilot training, he was eventually posted to 610 County of Chester Squadron in 1939 where he became a flight commander. In May of 1940 the squadron moved from Scotland south to Biggin Hill, and before the end of the month to Gravesend, Kent. There, 610 Squadron participated in Operation Dynamo, covering the evacuation from Dunkirk. Ellis saw much action during this time, achieving a number of solo and shared kills.

On 8 July 1940, 610 Squadron moved back to Biggin Hill, where it would be based throughout the heavy fighting in July and August. Ellis continued to rack up an impressive scoreboard, and was promoted to Acting Squadron Leader and given command of 610 Squadron on 26 July 1940.

While at Biggin Hill, Ellis destroyed a pair of Bf 109s on 24 July, three more on 25 July, damaged a Bf 109 with another probable on 12 August, damaged a Ju 88 on 16 August, destroyed a Bf 109 and an He 111 on 18 August, destroyed a Bf 109 on 26 August, and destroyed an He 111 on 27 August. This was a period of intense operations - Adlertag having been on 13 August. For his leadership and fighting skill, Andrews was awarded the DFC, which he received from the King on 3 September 1940.



Ellis surveys the wreckage of a Luftwaffe aircraft in mid-August 1940.

After the harrowing pace of operations during July and August, the squadron moved north to RAF Acklington for a rest period on 31 Aug 1940, with Ellis still in command. A few months later the squadron again moved, this time to RAF Westhampnett, West Sussex, where Ellis claimed an He 111 at night on 10 Mar 41.

In May of 1941, Ellis was posted to 55 OTU as an instructor, and received a Bar to his DFC for his impressive accomplishments.

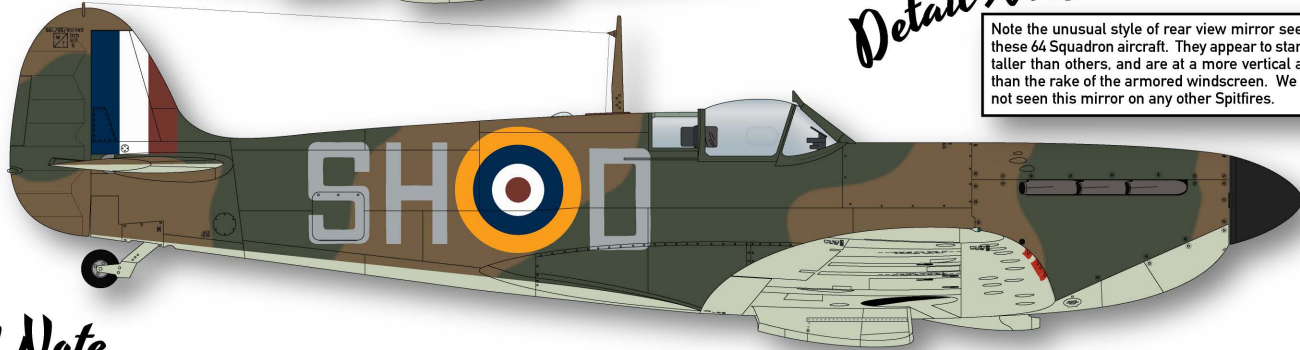
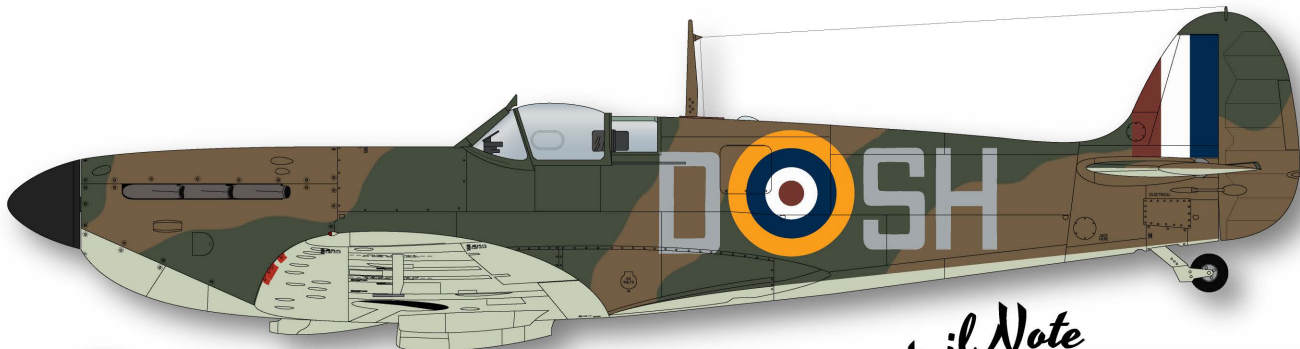
At the end of 1941, Ellis was posted to the Middle East, serving as Wing Commander Flying at 71 OTU in Khartoum, Sudan.

Finally, in April 1943, Ellis moved on to Malta, where he commanded the Krendi Wing, flying Spitfire Mk.Vc's. On 13 Jun 43, Ellis was posted missing during a mission escorting B-24s bombing Catania and Gerbini airfields in Sicily. He was shot down by Bf 109s, bailed out of his crippled Spit (JK533) and was eventually picked up by the Germans. Ellis' story then weaves its way back through our subjects here. He was transferred to Stalag Luft III - of "The Great Escape" fame - where he became second in command to Roger Bushell on the now famous escape committee. Ellis was one of the lucky survivors of the escape, and was repatriated in 1945.

Ellis took part in the Battle of Britain flypast in September 1945, and remained on active duty in the RAF, finally retiring as a Group Captain on 28 Feb 67. Ellis died on 19 Nov 2001.



Stalag Luft III, where Ellis served as Roger Bushell's deputy.



Detail Note

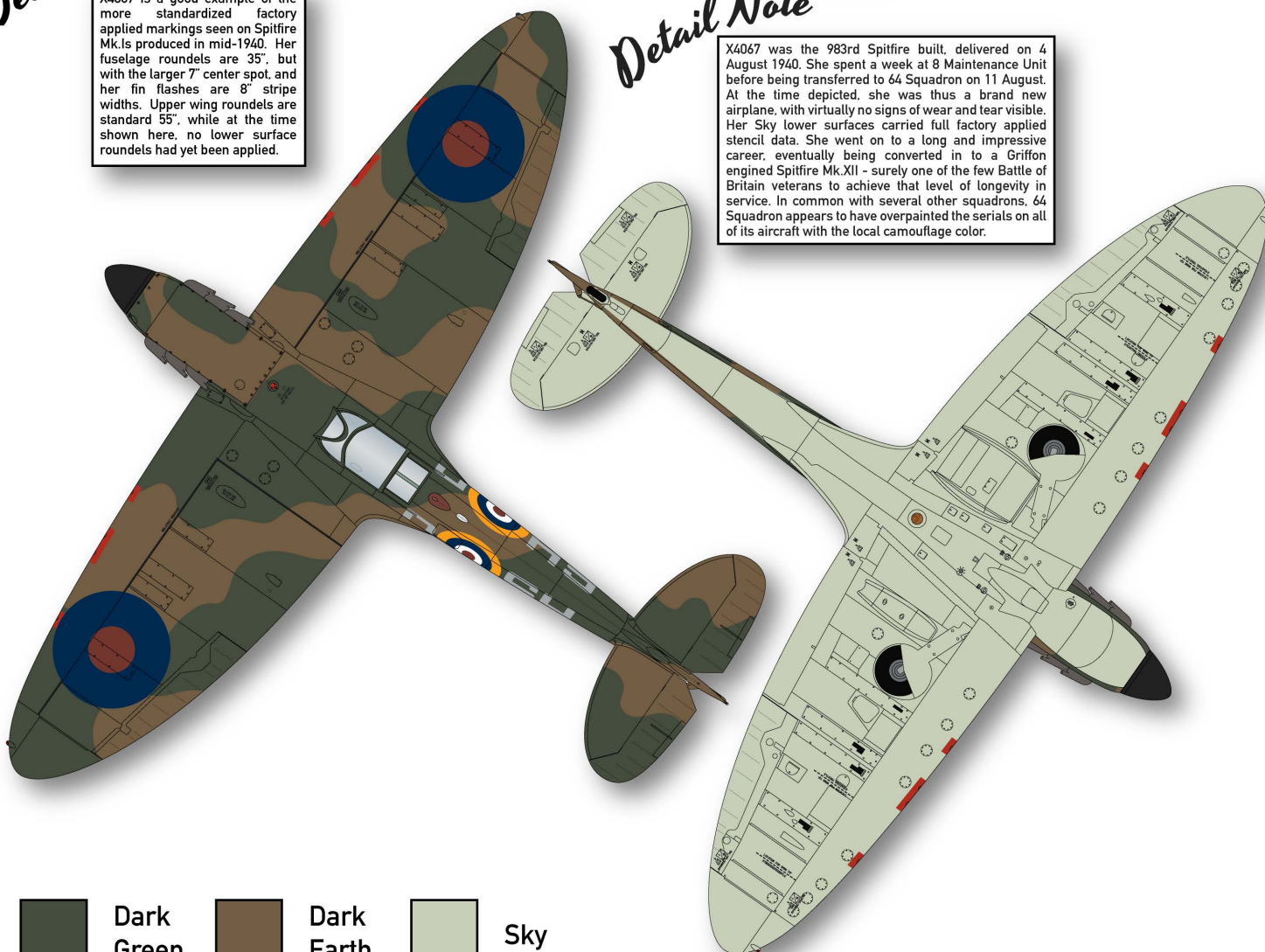
Note the unusual style of rear view mirror seen on these 64 Squadron aircraft. They appear to stand up taller than others, and are at a more vertical angle than the rake of the armored windscreen. We have not seen this mirror on any other Spitfires.

Detail Note

X4067 is a good example of the more standardized factory applied markings seen on Spitfire Mk.I's produced in mid-1940. Her fuselage roundels are 35", but with the larger 7" center spot, and her fin flashes are 8" stripe widths. Upper wing roundels are standard 55", while at the time shown here, no lower surface roundels had yet been applied.

Detail Note

X4067 was the 983rd Spitfire built, delivered on 4 August 1940. She spent a week at 8 Maintenance Unit before being transferred to 64 Squadron on 11 August. At the time depicted, she was thus a brand new airplane, with virtually no signs of wear and tear visible. Her Sky lower surfaces carried full factory applied stencil data. She went on to a long and impressive career, eventually being converted in to a Griffon engined Spitfire Mk.XII - surely one of the few Battle of Britain veterans to achieve that level of longevity in service. In common with several other squadrons, 64 Squadron appears to have overpainted the serials on all of its aircraft with the local camouflage color.



Squadron Leader Donald MacDonald

Squadron Leader Don MacDonnell flew Spitfire Mk.I X4067 on 15 August 1940, when he shot down a Bf109E and damaged another. MacDonnell finished the war with 9 and 1 shared destroyed.

Given their overpainted serials, we cannot be absolutely certain of the true identities of these aircraft and their tie-ins with specific pilots. If either of our assumptions is in error it will not affect the decal – which accurately portrays Spitfire SH-D in mid-August 1940.

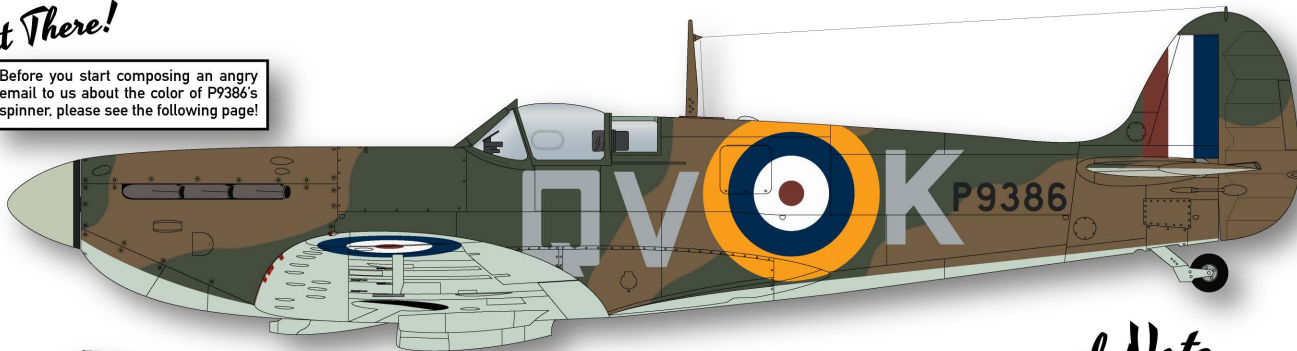


These two shots show what we believe to be MacDonald's aircraft. Note the rather tall rear view mirror – a style we have not seen elsewhere. It may have been a squadron level creation unique to 64 Squadron.



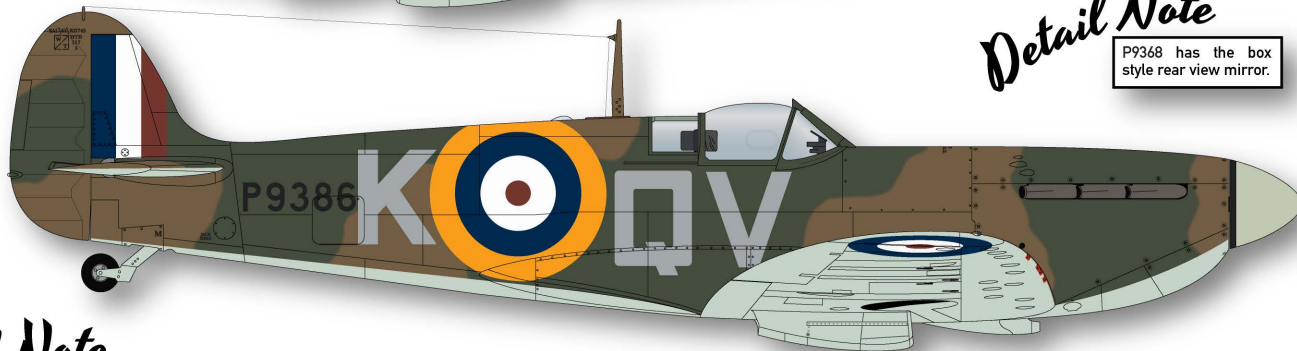
Stop Right There!

Before you start composing an angry email to us about the color of P9386's spinner, please see the following page!



Detail Note

P9386 has the box style rear view mirror.

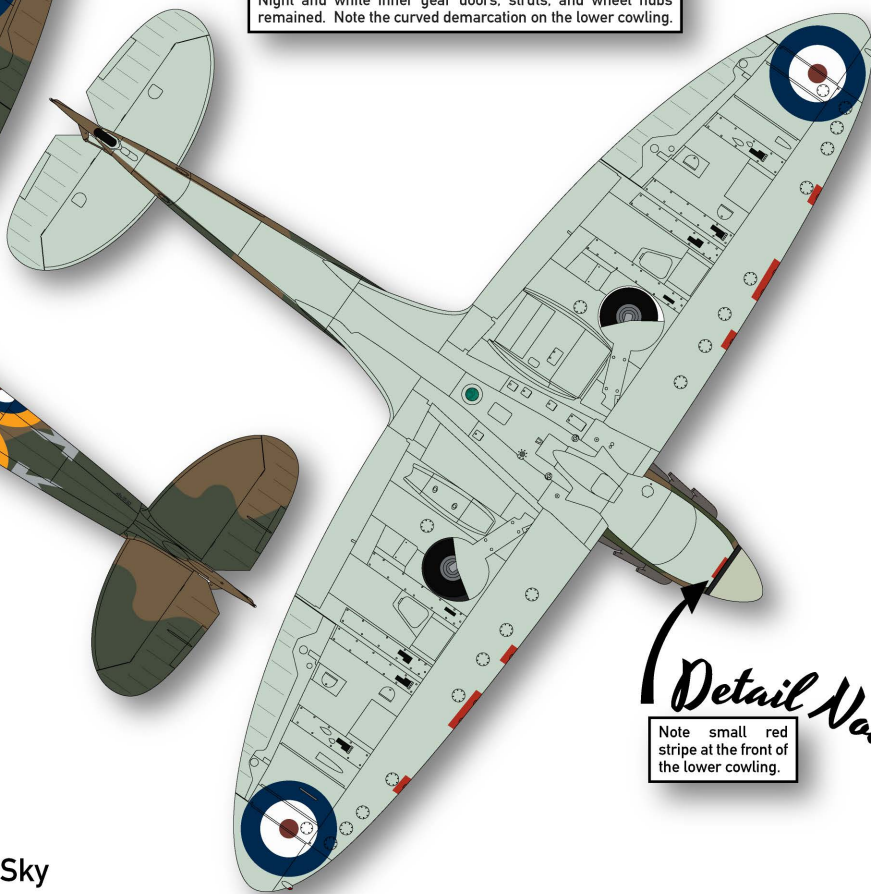
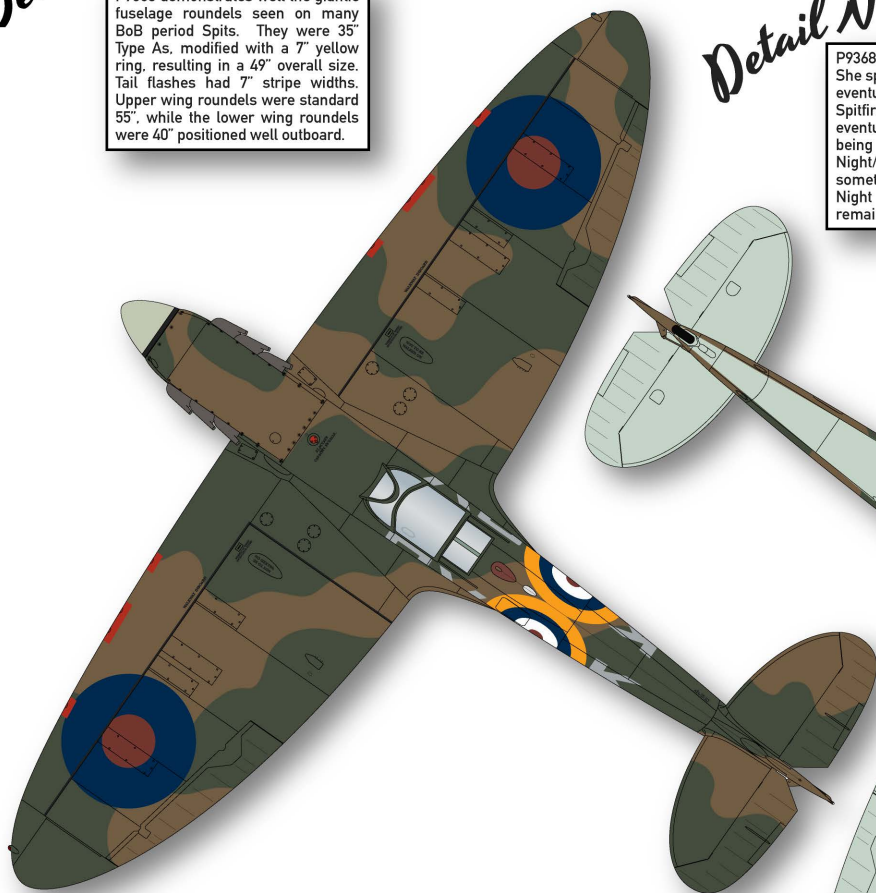


Detail Note

P9368 demonstrates well the gigantic fuselage roundels seen on many BoB period Spits. They were 35" Type As, modified with a 7" yellow ring, resulting in a 49" overall size. Tail flashes had 7" stripe widths. Upper wing roundels were standard 55", while the lower wing roundels were 40" positioned well outboard.

Detail Note

P9368 was the 569th Spitfire built, delivered on 1 March 1940. She spent two months with Supermarine on trials work before eventual delivery to 257 Squadron during its short tenure with Spitfires. She spent time with 19 and 152 Squadrons, and eventually went on to a long career with the OTUs, eventually being destroyed in a crash in May of 1944. She was built with Night/white/aluminum lower surfaces, so after Sky (or something similar) was applied obliterating the stencils, her Night and white inner gear doors, struts, and wheel hubs remained. Note the curved demarcation on the lower cowl.



Detail Note

Note small red stripe at the front of the lower cowl.



Squadron Leader Brian Lane

Shortly after the outbreak of war Brian Lane was posted from 213 Squadron to 19 Squadron. He made four claims during the Dunkirk evacuation (2 unconfirmed). Upon the death of S/L Pinkham on 5 September 1940 Lane was given command of the squadron.

At this time Lane regularly flew Spitfire P9386 QV-K. On 7 September Lane shot down a Bf110 and on the 11th he destroyed 2 more Bf110s and damaged an He111.

These were the only claims that Lane made while flying P9386, but he wasn't the only pilot to make claims flying QV-K. On 9 September F/L Walter Lawson was flying P9386 when he shot down a Bf110.

Lane led 19 Squadron throughout 1940 and handed it over to Walter Lawson in July 1941. On 28 August Lawson failed to return from a sortie. Brian Lane was posted missing the following year.

In the past, the spinner of P9386 has been universally depicted as yellow. This is almost always credited to the aircraft having previously been in an OTU, many of which used colored spinners. However, P9386's known history does not support this theory. She was with operational squadrons (257, 19, and 152) from her delivery in May of 1940 until late March of 1941, when she did go to an OTU - fully six months *after* she was photographed during the Battle of Britain. Compare the color of the spinner to the yellow surround on the roundel. The same? We don't think so.

Having a yellow spinner when swarms of "yellow nosed bastards" were coming across the channel to kill you would seem less than prudent, and we believe that for reasons we will likely never know, QV-K's spinner was some other color, possibly possibly Sky, or possibly some other color. Ultimately we will never know, since there are no known color photos of P9386, so all we can do is make educated guesses.



IWM

Above and below: Two photos taken apparently on the same day in the same light with the same camera, and the same roll of film, yet the spinner looks like a completely different color in both, and different again from the photo at the bottom of the page. Was the belly of the aircraft actually "Sky" or was it one of the rainbow of different colors hastily applied in the summer of 1940? We have depicted it as something closer to Eau de Nil, which was common. But we will never know for sure!

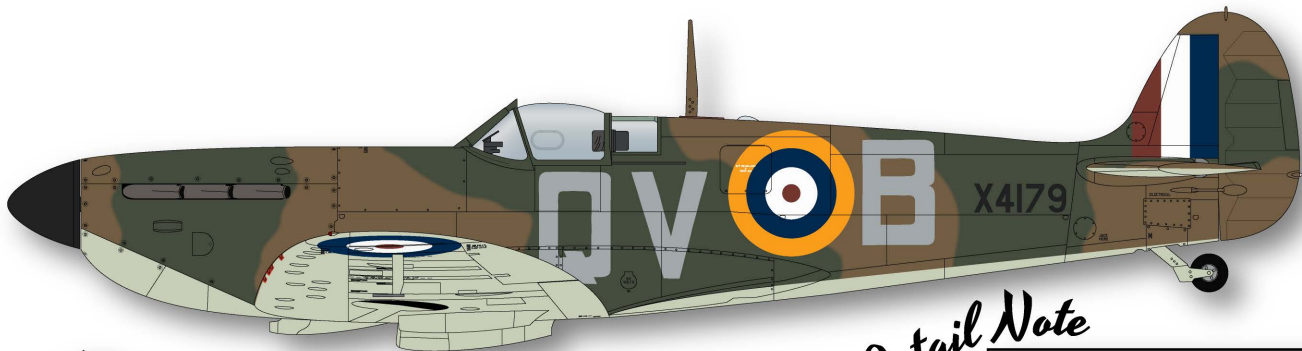


IWM



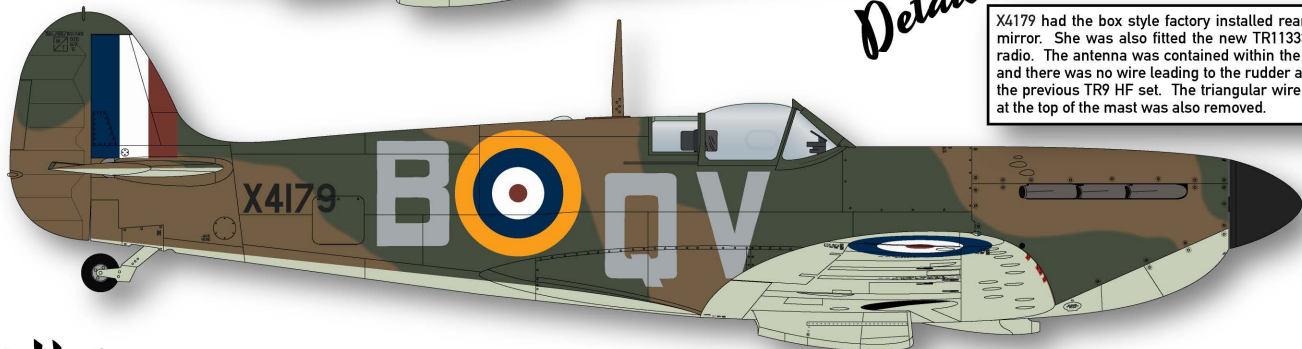
IWM

Right: A well known photo of P9386. Close examination shows the spinner - universally quoted as being yellow - is noticeably lighter than both the yellow roundel ring and the Sea Grey Medium code letters. We believe it to be white or Sky, but of course the choice is yours. Regardless, note the base of the spinner remains in Night. Also note her Night left main gear strut, wheel hub, and inner gear door.



Detail Note

X4179 had the box style factory installed rear view mirror. She was also fitted the new TR11333 VHF radio. The antenna was contained within the mast, and there was no wire leading to the rudder as with the previous TR9 HF set. The triangular wire guide at the top of the mast was also removed.

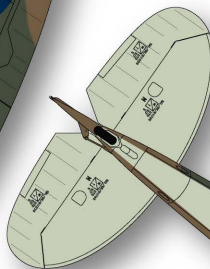
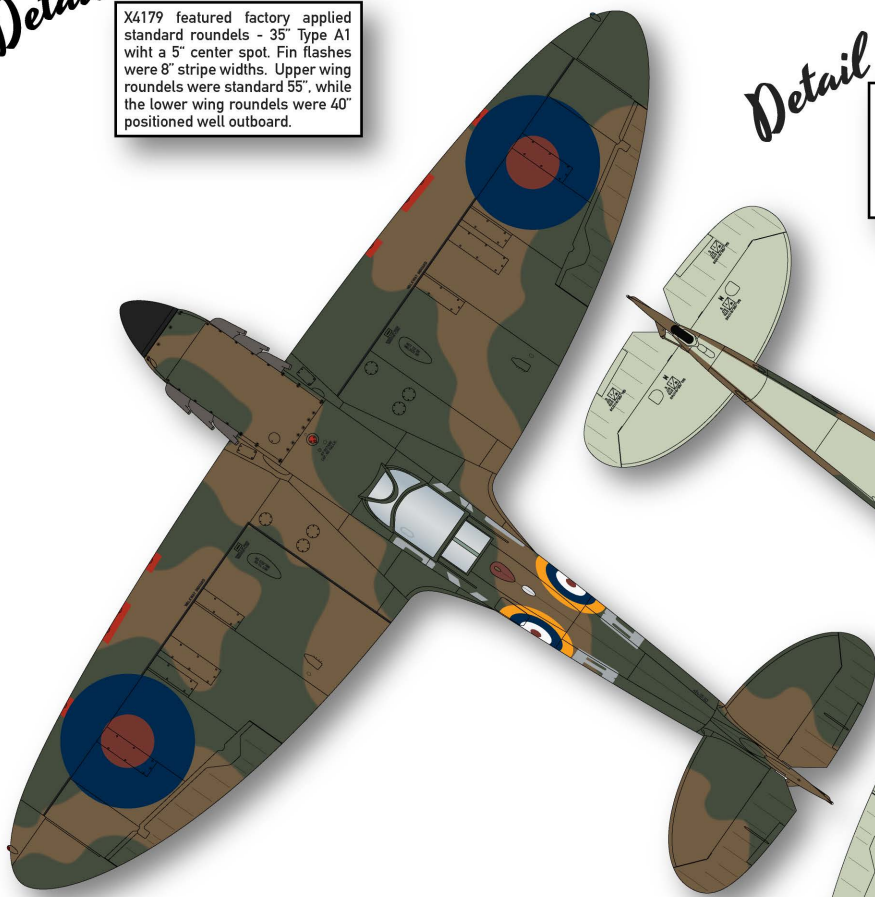


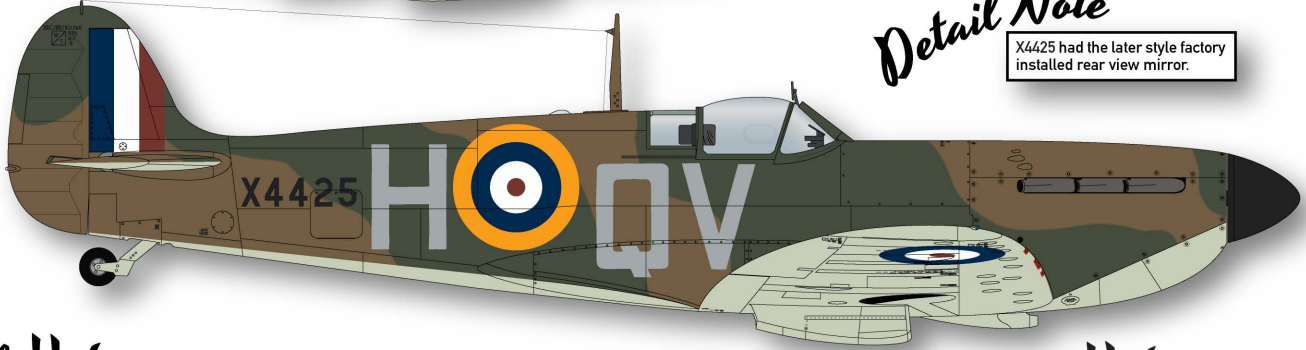
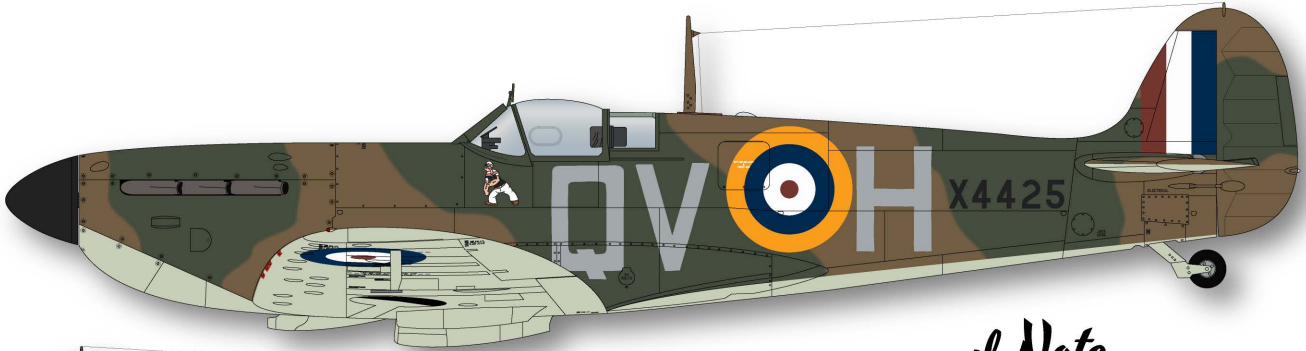
Detail Note

X4179 featured factory applied standard roundels - 35" Type A1 with a 5" center spot. Fin flashes were 8" stripe widths. Upper wing roundels were standard 55", while the lower wing roundels were 40" positioned well outboard.

Detail Note

X4179 was the 1019th Spitfire built, delivered on 12 August 1940. She passed through 266 Squadron before delivery to 19 Squadron on 13 September, so she was mere weeks old at the time depicted here. She had Sky lower surfaces with full factory applied stencil data.





Detail Note

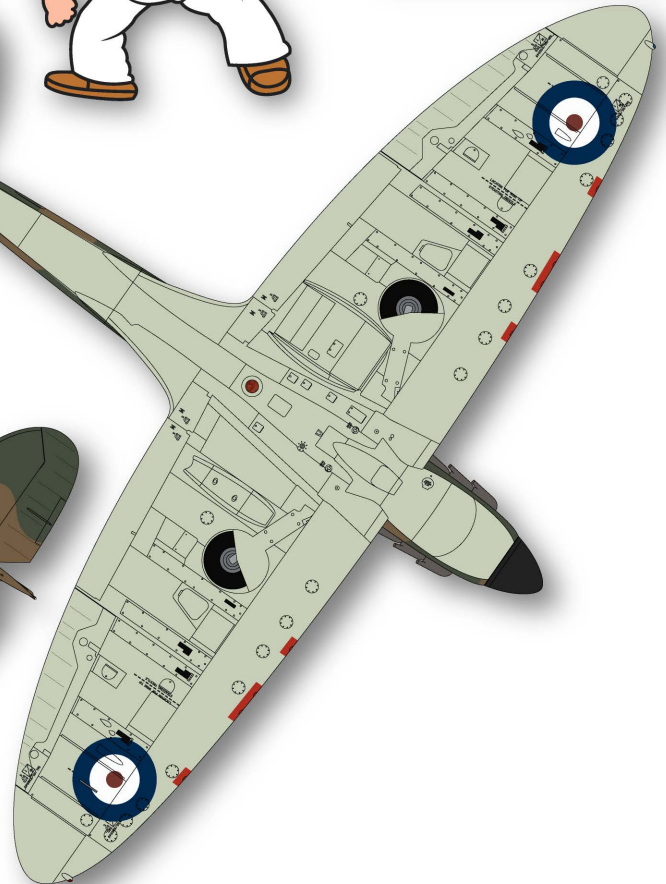
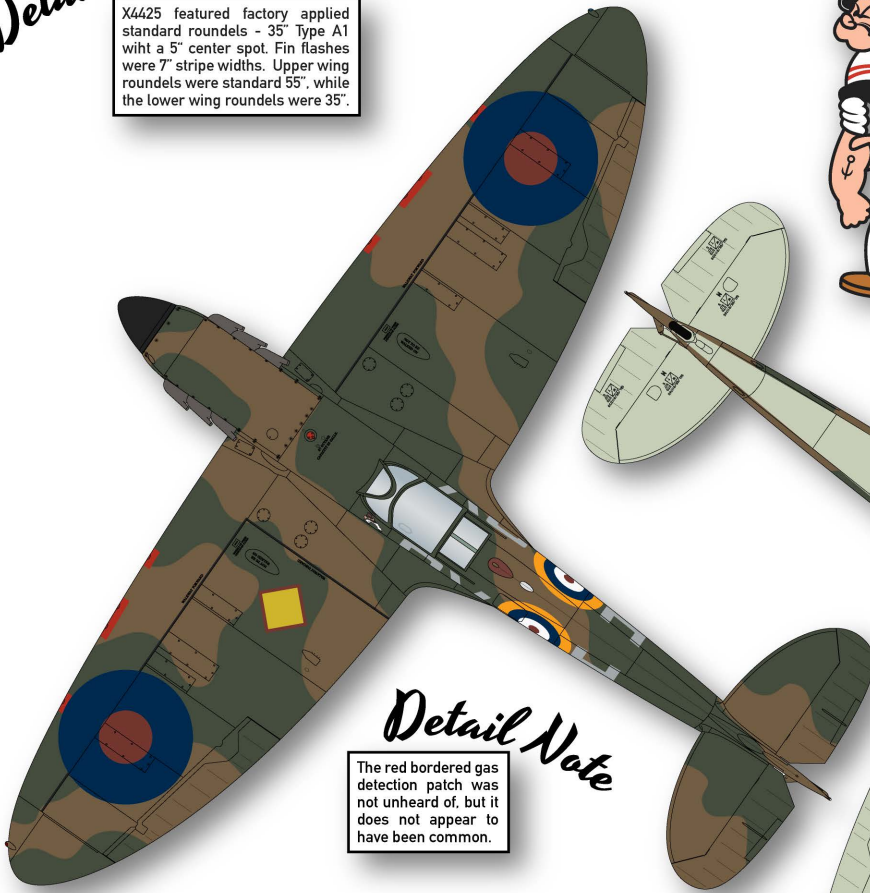
X4425 had the later style factory installed rear view mirror.

Detail Note

X4425 featured factory applied standard roundels - 35" Type A1 with a 5" center spot. Fin flashes were 7" stripe widths. Upper wing roundels were standard 55", while the lower wing roundels were 35".

Detail Note

X4425 was the 1141st Spitfire built, delivered on 13 September 1940. She passed through 8 Maintenance Unit before delivery to 19 Squadron on 18 September, so she had only seen 9 days of service with the squadron at the time depicted here. She had Sky lower surfaces with full factory applied stencil data.



Detail Note

The red bordered gas detection patch was not unheard of, but it does not appear to have been common.



Flight Sergeant "Grumpy" Unwin

Flight Sergeant George Unwin made five claims during the air battle over Dunkirk (3 confirmed). On one occasion he was angered for being left out of a mission, gaining him the nickname "Grumpy".

Unwin was a prolific scorer during the Battle of Britain and ended the year with 13 and 2 shared destroyed, 2 unconfirmed, 2 probables, and 1 damaged. On 15 September Unwin was flying Spitfire X4179 QV-B when he shot down 3 Bf109Es. Three days later, again flying X4179, Unwin shot down a Bf110. Pictures of X4179 QV-B show it's unusual codes and the odd placement of the underwing roundels.

A series of photographs taken by S.A. Devon captured 19 Squadron returning from a sortie in September 1940. Although the exact date is not known we believe the pictures were taken on 27 September 1940. The photos are very telling - one photo shows a white scarfed "Grumpy" Unwin exiting a Spitfire with "Popeye" under the windscreen. A couple of photos show a group of pilots talking to the squadron's "uncle," including S/L Brian Lane, F/L Walter Lawson, and F/S Unwin. One picture shows QV-H X4425 in the background which Unwin used to shoot down a Bf109E on this date.



IWM

A nice crisp photo of X4179 firing up for a sortie. Note the large gun muzzle patches favored by 19 Squadron at this period, as well as the dirty stained gun access panels under the wings. See the Spitfire details page for more information on this often overlooked detail.

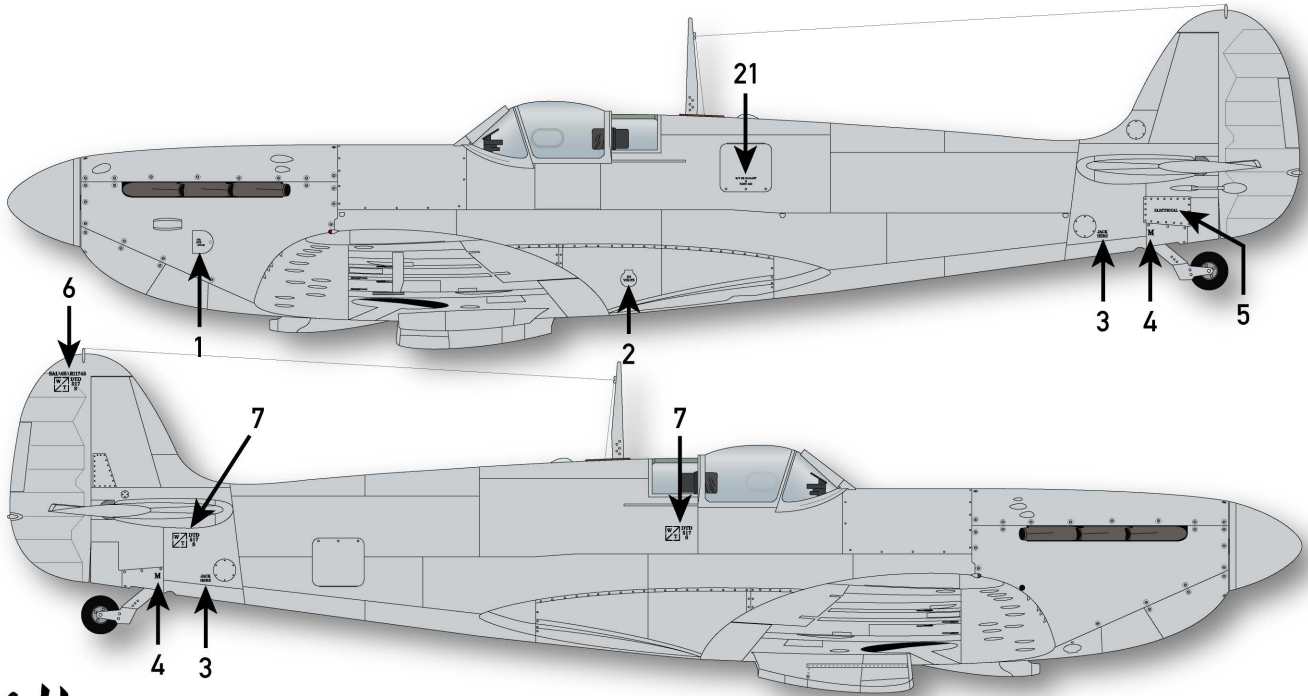


IWM

"Grumpy" Unwin is seen dismounting from X4425, with her Popeye artwork clearly visible. Shortly afterward, 19 Squadron pilot report to the intelligence officer (Unwin is blocked from view by the "Uncle"). In the background you can see X4425. Note the unusual red-bordered gas detection patch on the left wing.



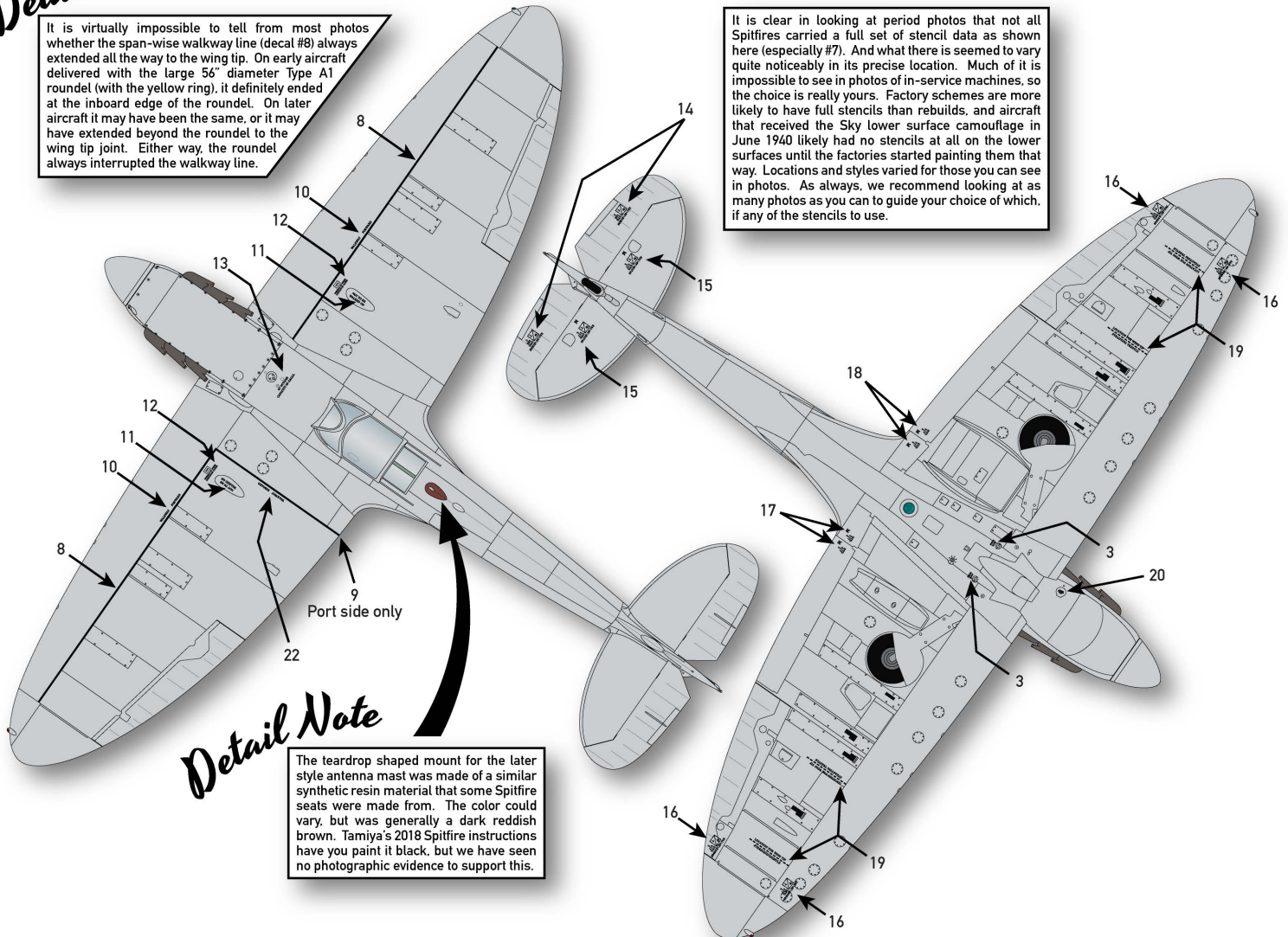
IWM



Detail Note

It is virtually impossible to tell from most photos whether the span-wise walkway line (decal #8) always extended all the way to the wing tip. On early aircraft delivered with the large 56" diameter Type A1 roundel (with the yellow ring), it definitely ended at the inboard edge of the roundel. On later aircraft it may have been the same, or it may have extended beyond the roundel to the wing tip joint. Either way, the roundel always interrupted the walkway line.

It is clear in looking at period photos that not all Spitfires carried a full set of stencil data as shown here (especially #7). And what there is seemed to vary quite noticeably in its precise location. Much of it is impossible to see in photos of in-service machines, so the choice is really yours. Factory schemes are more likely to have full stencils than rebuilds, and aircraft that received the Sky lower surface camouflage in June 1940 likely had no stencils at all on the lower surfaces until the factories started painting them that way. Locations and styles varied for those you can see in photos. As always, we recommend looking at as many photos as you can to guide your choice of which, if any of the stencils to use.



Detail Note

The teardrop shaped mount for the later style antenna mast was made of a similar synthetic resin material that some Spitfire seats were made from. The color could vary, but was generally a dark reddish brown. Tamiya's 2018 Spitfire instructions have you paint it black, but we have seen no photographic evidence to support this.

That extra bit of detail...

The Spitfire, like all combat aircraft, underwent continuous improvement from the day the first aircraft was delivered until the last one rolled out the factory door. We are gearing this discussion around the 2018 Tamiya 1/48 Spitfire Mk.I kit, although most applies to any other kit you may choose to use as well.

So in no particular order, here are some things to consider:

- Early aircraft had the unarmored windscreen, pole type antenna mast and unarmored fuel tank cover.
- The early pole antenna mast wire led from the tail to the top of the pole, then down through the mast into fuselage.
- All a/c featured here had the de Havilland three-bladed prop and spinner.
- All a/c except for X4179, R6883 (12/40), and X4683 had the wire antenna from rudder mast to antenna mast.
- The Mk.I IFF 'cheese slicer' wires from the horizontal stabs to the fuselage were fitted from late 1940, so only R6883 (12/40) and X4683 have it. On the rest, the lead-in on the fuselage sides should be filled. It did not exist on earlier a/c.
- The teardrop shaped mount for the later style aerial mast should be the same red-brown colored SRBP (Synthetic Resin Bonded Paper) as later Spitfire seats (see next page).
- The later antenna mast had triangular antenna wire guide, with the wire turning 90 degrees to go down into fuselage.
- No crowbars mounted on the pilot's entry hatch on any BoB period Spitfire.
- On early Mk.I's, the voltage regulator was mounted low behind the seat, and was not visible behind the headrest.
- By the beginning of the war, most, if not all operational Spitfires had the reflector gun sight fitted. Ring and bead sights were quickly replaced in service.
- Gas detection paint squares/diamonds were common but not universal. We have documented several different styles.
- At the risk of launching an all-out war, it is clear (to us anyway) that while camouflage mats made of leather or rubber may have been used in Spitfire production, their use was by no means universal, or (we believe) even common. Our evidence for that is that while camouflage patterns are similar, you would do well to find any two with identical patterns, even when they were adjacent on the production line. If mats were used, you should at least see groups of aircraft with more or less identical patterns as a result of using the same mats on them, but we have not found that to be the case. The edges of the upper surface colors appear (to us anyway) to have a very, very fine feathered edge. From any significant distance, this appears as a hard edge, and on a 1/48 model, you would probably be most correct in making it that way. As always, look at photos of your subject and try to replicate what you see rather than what you think you see or what you've been trained to see...



- The two photos above show the common pattern of dirt on the lower wings. Guns were re-armed via the panels on the lower wings - not the upper wings. Those allowed for the guns to be removed for cleaning. Routine servicing resulted in the lower wing panels being removed and placed on the ground (see lower photo). Those panels also received the smudges from the shell ejection chutes, which (according to a period report) would often be "cleaned" with gasoline. That usually resulted in simply smudging the entire panel and darkening the camouflage color, as can be clearly seen in the upper photo.
- We have noted the delivery dates for aircraft on this sheet. Bear in mind when you apply weathering, paint chipping, etc how old the aircraft was and how much weathering it would likely have had. Many aircraft were days to weeks old as depicted. You don't generally see a lot of heavy exhaust staining from the Merlin, and while you do see paint chipping on the left wing root, you usually see little or none elsewhere.
- Note in almost all photos that Spitfire camouflage had a slight sheen to it. The finish was specified to be "smooth", and a rough, dead flat texture was not accepted practice.

Spitfire Seats...

The late, great denizen of all things Spitfire, Edgar Brooks, whose loss is sadly felt in the modeling community, wrote the following notes on Spitfire seats. We are presenting them here in their entirety for your edification. Note that all Spitfire Mk.Is were built at the Southampton works. Castle Bromwich started producing Spfitfires with the Mk.II, so all aircraft on this decal were Southampton built.

* * * * *

There were no plastic seats until mid-May 1940, and no seat armour before June. As the armour was rushed into service, it could easily have been unpainted steel (initially at least), and black (metal) seats have been found at wreck sites.

Seats were interchangeable; the plastic seat was an alternative, not a replacement. It's not generally known, but the plastic seat was originally intended solely for Castle Bromwich, but the destruction of the Supermarine works probably changed everything.

There isn't truly a "correct" colour, since the material could vary quite substantially in colour even on the same seat. It wasn't Bakelite either (some mandarin in Whitehall has a lot to answer for for using that name), but a resin/paper (yes, really) mixture, and the colour depended quite a lot on how the material was made.

"Close enough for government work" is an often-used expression, and too close at times for comfort. Why "Bakelite" appeared in the manual is a mystery, but having talked to someone who's worked with the stuff, the seat would have been far too big in area for the required pressures and critical temperatures needed for acceptable moulds. Making an instrument case is bad enough, but an item the size of a seat would have been impossible with Bakelite.

Tufnol Composites, Ltd (who've been in existence since the 1930s) are in James Watt Place, East Kilbride, Glasgow. Aero-plastics, Ltd (who made the [Spitfire] seats) were in Earl Haig Road, Hillington, Glasgow. Same city, different companies, and I can't see Tufnol allowing another company to use their name, or Aero-plastics actually asking for permission either. It's possible that Tufnol bought out Aero-plastics post-war, because they simply disappeared. But an inquiry about that possibility went unanswered.

Plastic (not Bakelite, not ever, no how) seats were introduced on the production line on 14-5-40; they were intended to be used earlier, but were delayed due to problems with the material cracking. Castle Bromwich were to be the recipients, but it's likely that the bombing of the Supermarine works [in Southampton] caused a change of plan. It's doubtful that they were painted, at least in wartime, and their use extended beyond the end of the war, since there's an order demanding that they be rescued for future use; Hornets, Vampires, and Meteors used plastic seats as well, and I've found reference to a "comfort" seat for bombers, but never found one.

Seats were made of SRBP: Synthetic Resin Bonded Paper (not Bakelite, period, end of discussion forever more).

* * * * *



Metal seat

So essentially, on any Battle of Britain period Spitfire Mk.I built before 14 May 1940, the seat was metal. It could be Interior Grey-Green (as above), or it could be, according to Edgar's wisdom, painted black.

For aircraft built after 14 May 1940, it is possible they carried the Aero-plastics SRBP (not Bakelite, period, end of discussion forever more...) seat, which was unpainted and was any number of flavors of red-brown to dark brown, almost black. It seems logical to assume that supplies of the Aero-plastics seats took a while to catch up to production, so metal seats were likely to have been used on the production lines until well into 1941.



Aero-plastics seat

Sheer beauty!

These images of P9450 from the collection of the Imperial War Museum are simply too beautiful not to share. They depict a perfectly factory fresh Mk.I, flown by none other than Jeffrey Quill, cavorting around the sky in April of 1940. She was delivered to 8 Maintenance Unit on 8 April, and went to 64 Squadron on 2 June 1940. She was damaged in combat with a Bf109E near Rouen, France.





One small oddity that we have no explanation for is the lack of the fore-aft walkway stripe and the stencil that goes with it on the left wing root area. But note that the span-wise stripes go all the way out to the wing tip joint line, and that the roundel overlies them. Also note that the roundel almost, but not quite touches the edge of the aileron cutout in the wing skin.



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