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LIMITED



Bf 109G-6 late • Bf 109G-14

GUSTAV

Pt.2

INSTRUCTION SHEET

1 2

DUAL COMBO

2145-NAVI

GUSTAV Pt.2

by VLADIMÍR ŠULC

During WWII, no other aircraft was more associated with the rise and fall of the Luftwaffe than the Messerschmitt Bf 109. It gradually developed through the war with the Gustav series being the most numerous of them all.

The history of the Bf 109 began at the end of March 1933, when the Reich Ministry for Aviation issued specification L.A. 1432/33 for the development of a single-engine fighter monoplane. Arado, Heinkel, Focke-Wulf and Bayerische Flugzeugwerke took part in the competition. In the last of these mentioned, the post of technical director was held by Willy Messerschmitt, whose reputation was greatly strengthened by the success of the Bf 108 courier aircraft, completed not long before. Messerschmitt's goal was to create an aircraft with the best possible power to overall weight and size ratio of the aircraft. The result was a low-wing airplane with subtle aerodynamic shapes and progressive design elements, such as an all-metal structure, retractable landing gear, slats, flaps, an enclosed cockpit, and a modern fuselage shell structure. As a result, Messerschmitt's Bf 109 somewhat surprisingly won the competition over the designs of more renowned competitors.

The first combat deployment of three test Bf 109s took place during the Spanish Civil War in December 1936. Units of the 2.J/88 Legion Condor gradually gained valuable combat and tactical experience with all development versions of the Bf 109, from the B-1 to the E-1, for which the original problematic Jumo 210 engine was replaced by the modern inverted twelve-cylinder inline DB 601. Together with the later DB 605, it powered several tens of thousands of produced 109s in more than twenty-five versions and subvariants.

Bf 109E

Introduced into Luftwaffe service in 1939, the Bf 109 E was fitted with a new Daimler-Benz DB 601 engine driving a VDM 9 three-blade variable pitch propeller. Production of the E-1 with four 7.9mm machine guns and the E-3 with two 7.9mm machine guns and two MG-FF 20mm cannon ran in parallel from the beginning of 1939. Thus, the Luftwaffe entered World War II armed with the most modern and powerful single-engine fighter in the world, forming the backbone of its units until the spring of 1941. From the invasion of Poland, through the Sitzkrieg on the Western Front, the invasion of Norway, the Battle of France to the Battle of Britain, the Bf 109 E ensured technical and tactical superiority of the Luftwaffe over its opponents. After the Battle of Britain in the autumn of 1940, however, it became increasingly clear that the time was ripe for change.

Bf 109F

This came in the form of the Bf 109 F, the development of which began as early as the autumn of 1938. It was designed for the new DB 601 E engine with an estimated power output of 1350 hp, compared to the 1100 hp of the DB 601 A engine. The result of the work of the design team under chief designer Robert Lusser, it was innovative both technically and visually, a machine that, among other things, brought about a change in the concept of installing on-board weapons, when the two MG FF cannons in the wing were replaced by a fuselage cannon, located between the engine cylinders and firing through the propeller hub, supplemented by a pair of 7.9 mm MG 17 machine guns. Apart from the aerodynamic refinement of the nose, the introduction of a new spinner and an air intake of circular cross-section feeding the turbocharger, the struts supporting the tail unit were eliminated. The wing received an elegant wingtip shape with a cutout for a position light on the leading edge and, more importantly, new glycol coolers were added, the control flap of which also formed the inner part of the flap system. The slats remained automatic as on the Bf 109 E, and the control surfaces with metal internal structure were covered with canvas. The tail wheel was retractable. The fuselage fuel tank, located under and behind the pilot's seat, had a volume of 400 liters.

Due to the delay in the development of the DB 601 E engine, the first production version of the Bf 109 F-1 used the DB 601 N rated at a maximum of 1175 hp. It was based on the DB 601 A engine, the increase in power was achieved by changing the compression ratio and using C3 fuel with an octane rating of 96. The new aircraft, of which probably a little over 200 were produced in this version, came one by one to the front-line units during the autumn of 1940, but none of the combat units were ever completely re-armed with it. The first to receive them in early October was Stab/JG 51, where the first two combat sorties were undertaken by Major Werner Mölders on October 9, 1940 with Bf 109 F-1 WNr.5628 coded SG+GW, and by October 11, he had shot down a Spitfire Mk.I from No.66 Squadron RAF over Folkestone.

Bf 109 F-2 and F-4

In January 1941, the first mass-produced version of the Bf 109 F, in the form

of the dash 2, again powered by the DB 601 N, but this time with a 15 mm MG 151/15 cannon as the main weapon, began arriving at combat units. In June 1941, the first Bf 109 F-4 arrived at the front. The main modification of the F-4 was the finally completed and fine-tuned DB 601 E engine with a maximum power rating of 1,350 hp, driving a three-blade, variable pitch VDM 9-12004.10 propeller. The engine used standard 87 octane B4 aviation fuel. Main armament was upgraded thanks to the installation of the MG 151/20 engine mounted 20mm cannon, and the 7.9mm MG17 machine guns were retained.

Around 600 Bf 109 F-4/Zs were equipped with the GM-1 boost system, which injected nitrous oxide into the cylinders, briefly increasing engine power at altitudes above 19,700 feet. These had a larger 9-6150 (Fö 870) oil cooler and a VDM 9-12087A propeller with wider blades. Part of the 576 tropicalized Bf 109 F-4 Trop aircraft also had a larger oil cooler, which also received a larger air intake to the turbocharger with a dust filter that could be closed off. Both the Bf 109 F-2 and F-4 could be converted to fighter-bombers by installing an under-fuselage bomb rack, and a part of the Bf 109 F-4 production was converted for photo-reconnaissance duties becoming the Bf 109 F-4/R2, R3, R4 and R8, carrying various types of on-board photographic equipment. A total of 3,617 Bf 109Fs were produced, production ending in May 1942.

Bf 109 G-2 and G-4

Further development of the Bf 109 was associated with the new DB 605 A engine with a power rating of 1,454hp at takeoff, combat power at an altitude of 18,700 feet was 1,231hp, emergency power at the same altitude was 1,335 hp. The DB 605 A engine was developed from the DB 601 E. There was an increase of displacement from 33.9 L to 35.7 L by increasing the cylinder bore by 4 mm. By changing the valve timing, an increase to a maximum of 2,800rpm from 2,600rpm was achieved. There was an upgrade of the compressor, the speed of which was now automatically controlled by a hydromechanical clutch depending on the barometric pressure at different altitudes. The changes led not only to an increase in performance, but also a slight increase in weight from 700 kg to 756 kg. The engine used 87 octane B4 aviation fuel and drove a 9-12087 propeller with wider blades. Due to the need for more efficient cooling of the more powerful engine, a larger Type 9-6150 (Fö 870) oil cooler was used, the same as installed on the Bf 109 F-4/Z.

The first production version of the Bf 109 G-2, manufactured from May 1942 initially at WNF and then also at Messerschmitt in Regensburg and at ERLA in Leipzig from June, was visually very similar to the Bf 109 F-4, but in fact introduced a number of changes. First of all, the fuselage structure was strengthened, especially in the area of the engine bulkhead and in the rear part of the fuselage between the 8th and 9th fuselage bulkheads, where it was already strengthened in the Bf 109 F-4. Changes took place in the cockpit, the wall between the cockpit and the space for housing the MG 17 machine guns was changed and strengthened, and the fuel tank was also redesigned. The tank filler neck moved from the port side under the canopy to the left side of the fuselage spine between the second and third bulkheads. Optically and structurally, the cockpit canopy underwent significant changes, which received a characteristic robust framing with integrated armored glass for the windscreen. The wing structure was strengthened, the tailwheel remained retractable with a tire size of 290x110 mm. The main landing gear of the G-2 retained the 650x150 mm tires, same as the F-4. A significant change was the standardization of fasteners for the mounting of weapons and equipment on the airframe, which facilitated the later modernization of the aircraft to higher versions with the help of modernization kits (Rüstsätzen). This design strategy was retained for all G-version subtypes from the G-2 to the G-10 and allowed the airframes of older machines to be suitable for conversion to higher standard versions. It also made it easier to train and maintain staff on later versions. All versions of the Bf 109 G were also produced with tropical modifications, and the G-2/G-4 versions were still listed in documentation as two versions, the standard G-2/G-4 and the tropicalized G-2/Trop and G-4/Trop.

Production of the subsequent Bf 109 G-4 began at Messerschmitt in September 1942, at WNF in December of the same year, and at ERLA the following January. The G-4 version did not differ in appearance from the G-2 at the start of production, and it is not entirely clear why the new type number was applied. At first, the only significant change was in the radio equipment, where the G-4's older FuG VIIa shortwave radios gave way to the new FuG 16 Z or FuG 16 ZY VHF units. In addition to the radios, the FuG 16 ZY equipment also had a built-in transponder for the Pegasus Y goniometric gunsight with a Moranmast rod antenna. Some machines were equipped with a ZVG 16 direction finding device with a PR 16 loop antenna on the back of the fuselage. This device was supplied as a Rüstsatz R7 Peilrufanlage set.

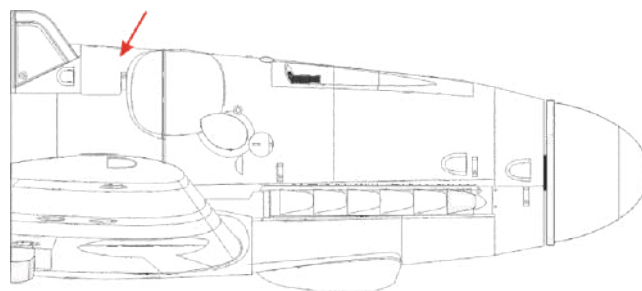
During the production of the Bf 109 G-4, probably in December 1942, there was a change in the size of the wheels of the main landing gear. The wheels received larger tires measuring 660x160 mm (compared to 650x150 mm for the Bf 109 G-2), and larger steel brake discs. This necessitated a deepening of the landing

gear bay by installing a bulge in the upper wing skin over the landing gear well. The tailwheel was enlarged to 350x135 mm, compared to 290x110 mm for the Bf 109 G-2. It continued to be fixed, non-retractable, with a leather sleeve covering its strut. The installation of larger tires was a response not only to the increasing weight of the aircraft, but also to persistent problems with tire life and stability of the aircraft during take-off and landing. Unfortunately, these features are not definitive for determining G-2 or G-4 variant, as the early production G-4s still had the original smaller wheels with a smooth wing surface without a bulge above the landing gear well and a small retractable tailwheel. Conversely, older G-2s were retrofitted to the G-4 standard by installing larger wheels and appropriate equipment.

A total of 1,586 Bf 109 G-2s and 1,242 Bf 109 G-4s were produced by May of 1943, in addition to which one license built Bf 109 Ga-2 and twenty-four Bf 109 Ga-4s were produced in Győr, Hungary. Additionally, 167 Bf 109 G-1s and 50 Bf 109 G-3s with pressurized cabins were manufactured. All versions could be equipped with an additional 300L drop tank, as well as pods containing MG 151/20 20mm cannon.

Bf 109 G-6

Starting in February and March 1943, all three involved German manufacturers ramped up production of the new Bf 109 G-6 version, Messerschmitt and WNF in February, Erla in March. Production of the G-4 and G-6 versions then ran in parallel until May 1943. From September 1943, licensed Bf 109 Ga-6s were also produced in Győr, Hungary. The main difference between the G-6 version and the G-4 was the installation of 13mm MG 131 fuselage machine guns. This was developed over a relatively long period of time, with the first tests already taking place on the Bf 109 F, but a production installation was not available until early 1943. The distinguishing feature of the G-6 version was the large oval bulges covering the MG 131 machine gun breech. These bulges were half on the engine cowling and half on the gun breech cover in front of the cockpit windshield. The Bf 109 G-6s could also carry MG 151/20 gun pods under the wings, or BR 21 cm rocket launchers, used to attack heavy four-engined bomber formations in the West, in the MTO and in the Reichsverteidigung (Reich Defence System). From the Bf 109 G-6 was derived the high altitude version Bf 109 G-5 with a pressurized cabin, its distinguishing feature, as with the previous high altitude versions of the Bf 109 F and G, was the head armor integrated in the central part of canopy to form the rear wall of the pressurized cabin. The G-5 version was also distinguished by a small bulge added below the large bulge on the right side, but this small bulge was also used on some of the Bf 109 G-6s produced by Erla and WNF. The Erla-built aircraft also had different shape of the machine gun barrels fairings. The Bf 109 G-6 was produced in many production blocks until December 1944. A total of about 13,000 were built, the exact number is unknown due to lack of documentation. The Bf 109 G-6s were continuously upgraded during the long production period and their appearance gradually changed. The Bf 109 G-6/AS, powered by the powerful DB 605 AS engine with a larger compressor, whose installation necessitated a complete change in the shape of the engine cowling, differed most significantly in appearance from the first Bf 109 G-6s. However, the classic Bf 109 G-6 with the DB 605 A engine also differed from each other, not only in appearance but also in equipment. The 1,634 Bf 109 G-6/U4 produced by WNF were armed with the MK 108 30 mm engine-mounted gun. The 345 Bf 109 G-6/U2s produced by Erla were equipped with the GM-1 boosting system (engine cylinder nitrous oxide injection), and 195 photo reconnaissance Bf 109 G-6/R2s from WNF received the MW 50 compressor air intake methanol-water mixture injection boost system. While the standard machines as the GM-1 equipped ones had standard DB 605 A engines using B4 fuel with an octane rating of 87, all of the machines equipped with the MW 50 boosting system had modified engines using C3 fuel with an octane rating of 96. From the summer of 1944, REVI 16 B sights were fitted to the Bf 109 G-6. Bf 109 G-6s were produced with tropical equipment as standard, and all could be fitted with a dust filter on the air intake to the compressor.



The small bulge on the right side of the engine cowling was on aircraft of the following production blocks: 15 000, 26 000, 27 000, 110 000, 410 000 to 413 000 (all Erla), 140,000 (WNF), and 165 000 to 167 000 (Messerschmitt).

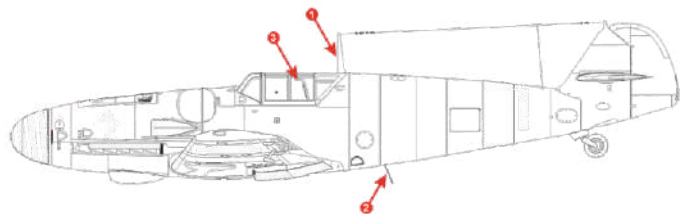
In general, the production of the classic Bf 109 G-6 with the DB 605 A engine can be divided into six production versions according to the changes introduced to the equipment and some parts of the airframe.

First Production Variation

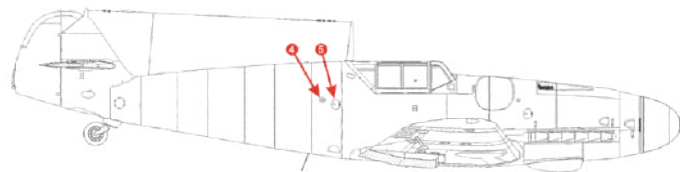
Production blocks 15 000 (Erla), 16 000 (Messerschmitt and Győr WF - Hungary), 17 000 (unknown producer), 18 000 (Messerschmitt), 19 000 (WNF) and 20 000 (WNF). These batches corresponded to the Bf 109 G-4 except for the installation of MG 131 machine guns and modernized landing gear including the new type of main wheels.

They were characterized thus:

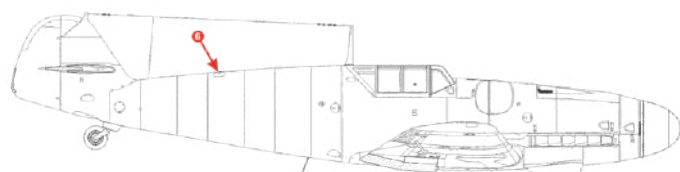
- Tall antenna mast (1)
- FuG 16Z Radio. Aircraft carrying this unit lacked the Morane whip antenna (Moranmast), which was a FuG 16Y specific item
- IFF system FuG 25a with its associated rod antenna under fuselage bulkhead No.2 (2).
- Straight steel armor headrest (3)



- Usually, these airframes lacked the ZVG 16 direction finding equipment with the associated PR 16 loop antenna on the spine
- The above mentioned pieces of equipment, the ZVG 16 / PR 16 antenna and the FuG 16ZY with the Morane antenna under the fuselage do appear on rare occasion in this production block.
- REVI C 12 D gunsight
- The right side of the fuselage featured an outlet for the connection of an external electrical power source (4) and an access hatch to access compressed oxygen bottles (5) between bulkheads 1 and 2.



From production block 19 000 (WNF), Bf 109 G-6s had a small engine-starting fuel tank between fuselage bulkheads 4 and 5, with a filler neck on the right side of the fuselage spine (6).



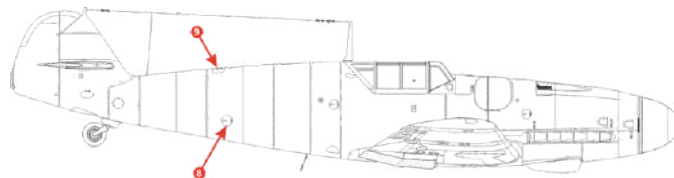
Bf 109 G-6/trop production blocks 15 000 (15 209 - 15 499, Erla, with a small bump on the right fairing above the fuselage gun breech), 16 000 (16 313 - 16 650, Messerschmitt) and 18 000 (18 001 - 18 903, Messerschmitt) had two sunshade mounts on the left side of the fuselage under the cockpit (7).



Production block in the 20 000 (WNF) range produced 35 photo-reconnaissance Bf 109 G-6/R3s and about 20 Bf 109 G-6/U3s. Their differences from the standard G-6 are described in the paragraphs dedicated to them.

The Bf 109 G-6/U4 of production block 20 000 from WNF had a cover on the right side of the fuselage between the 4th and 5th fuselage bulkheads to access the compressed air bottle for the MK 108 cannon (8). The aircraft of this production block also featured a small fuel

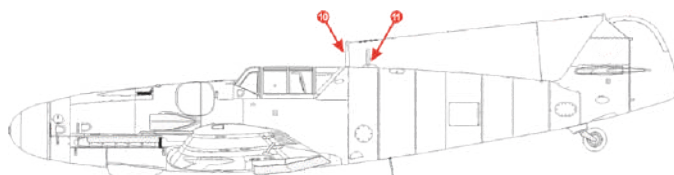
tank connected to engine starting located between fuselage bulkheads 4 and 5 on the top of the fuselage, with a filler neck on the right side of the spine (9).



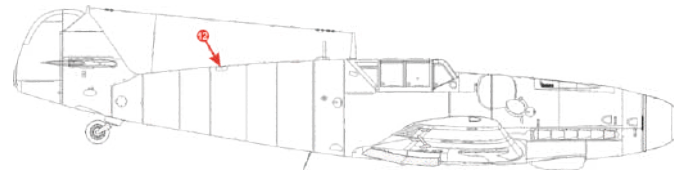
Some of the 15 000 series (Erla) machines did not have a bump on the right breech cover of the MG 131 machine gun, which is an anomaly for Erla production airframes.

Second Production Variation

Production blocks 26 000 (Erla), 27 000 (Erla), 32 000 (Erla), 33 000 (Erla) and 140 000 (WNF). These airframes could be identified by the following features:



- Short antenna mast (10)
- The FuG 16 Z radio was carried. Aircraft with the FuG 16 Z lacked the Morane whip aerial (Moranmast), which was specific to the FuG 16 ZY.
- They were usually equipped with a ZVG 16 direction finder system with a PR 16 loop antenna (Peilrahmen) on the fuselage spine (11), but not all aircraft carried this system.
- The Identification Friend or Foe (IFF) FuG 25a system with a rod antenna on the lower part of the fuselage behind the 2nd fuselage bulkhead.
- Commanders' machines could be equipped with a FuG 16 ZY radio with an on-board transponder for the Pegasus Y targeting system with a Morane-type whip antenna (Moranmast), located under the fuselage on the wing center section.
- Straight steel armor plate headrest
- From production block 26 000 (Erla), Bf 109 G-6s had a small fuel tank for used for engine starting between fuselage bulkheads 4 and 5 on the fuselage spine, with a filler neck on the right side (12).



- A REVI C 12 D gunsight
- Bf 109 G-6/trop production block 140 000 of the WNF (140 000 to 140 360) had two sunshade mounts on the left side of the fuselage under the cockpit (13).



- Five photo-reconnaissance Bf 109 G-6/R3s were built as part of the 140 000 (WNF) series production block. Their differences from the standard G-6 are described in the paragraphs dedicated to them in the article in the January 2024 issue of the Info Eduard magazine.
- The 26 000 and 27 000 (Erla), and 140 000 (WNF) series airframes had a bump on the right fairing above the breech of the MG 131 machine gun.
- Conversely, the 32 000 and 33 000 (Erla) series machines did not have the bump on the right fairing above the breech of the MG 131 fuselage machine gun, which is an anomaly for the Erla-built Bf 109 G-6.

Third Production Variation

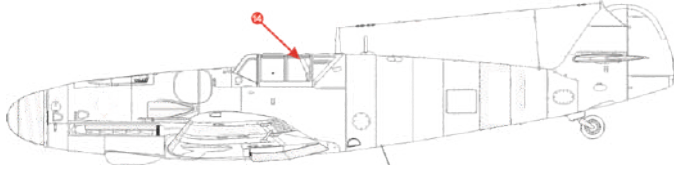
Production blocks 160 000 to 163 000 (Messerschmitt), 410 000 to 413 000 (Erla), 440 000 to 442 000 (WNF), 510 000 (WNF) and 760 000 (Győr, Hungary).

DUAL COMBO

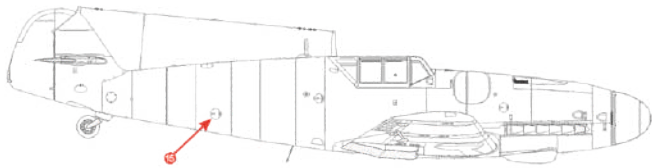
These aircraft were identical to the second production variation, the only visible change being the new Gallandpanzer armor with laminated armored glass behind the pilot's head. The question is whether or not it is necessary to consider this incarnation as a separate production variant, or whether it is merely an extension of the second production variant, which were retroactively equipped with this item.

These aircraft had the following distinctive features:

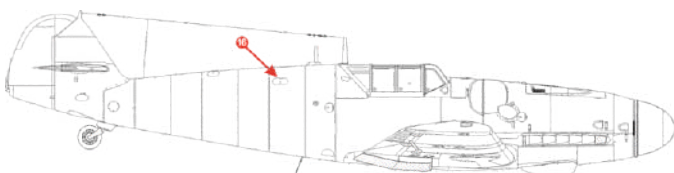
Armor plating behind the pilot's head made of laminated armored glass of the Gallandpanzer type (14).



- Short antenna mast
- FuG 16 Z radio unit
- ZVG 16 homing system with a PR 16 loop antenna (Peilrahmen) at the top of the fuselage (not always)
- Identification Friend or Foe (IFF) FuG 25a system with its rod antenna on the bottom of the fuselage behind bulkhead No.2
- Commanders' aircraft could be equipped with a FuG 16 ZY radio station with an on-board transponder for the Pegasus Y targeting system with a Morane-type whip antenna (Moranmast), located under the fuselage at the wing center section.
- REVI C 12 D gunsight
- A small fuel tank used for starting the engine, with a filler cap on the right side of the top of the fuselage between fuselage bulkheads 4 and 5.
- Bf 109 G-6/U4/trop from production blocks 440 000 to 442 000 (up to 442 099) from WNF had two sunshade mounts on the left side of the fuselage below the cockpit.



- Bf 109 G-6/U4/trop from production blocks 440 000 to 442 000 (up to 442 099) and Bf 109 G-6/U4 from 510,000 by WNF had a hatch on the right side of the fuselage between the 4th and 5th fuselage bulkheads providing access to the compressed air bottles for the MK 108 cannon (15).



- Bf 109 G-6/U2s from production blocks 410 000 to 412 000 (105 units) and 413 000 (240 units) from Erla had a GM-1 cylinder access hatch on the right side of the fuselage spine in front of the third fuselage bulkhead (16).
- From the summer of 1944, Bf 109 G-6s were fitted with the REVI 16 B gunsight. This applies to production blocks 162 000 (Messerschmitt), 413 000 (Erla), 442 000 and 510 000 (WNF).
- Series 410 000 to 413 000 (Erla) aircraft had a bump on the right fairing covering the breech of the MG 131 machine gun.

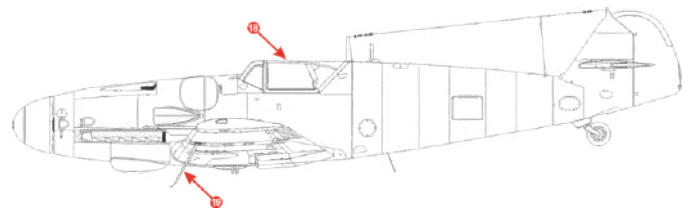
Fourth Production Variation

Production blocks 160 000 to 163 000 (Messerschmitt), 410 000 to 413 000 (Erla), 440 000 to 442 099 (WNF).



These airframes corresponded in their equipment and details to those of the previous production variant. In addition, they received a tall tail with a straight leading edged rudder. They also had the following characteristics:

- Aforementioned tall tail (17) and a standard canopy
- Tail surfaces and wing/fuselage interface could be of wood
- Short antenna mast
- FuG 16 Z radio
- Commanders' airplanes could be equipped with a FuG 16 ZY radio with a transponder for the Pegasus Y targeting system and its Morane-type whip antenna (Moranmast) located under the fuselage under the wing center section or under the left wing.
- Direction finding ZVG 16 system with its PR 16 (Peilrahmen) loop antenna on the top of the fuselage.
- Identification system Friend or Foe (IFF) FuG 25a with a rod antenna under the fuselage behind the 2nd fuselage bulkhead.
- Small engine starting fuel tank, with filler neck on the right side of the fuselage spine, between fuselage bulkheads 4 and 5.
- Bf 109 G-6/U4/trop from production blocks 440 000 to 442 000 (up to 442 099) from WNF had two sunshade mounts on the left side of the fuselage below the cockpit.
- Bf 109 G-6/U4/trop from production blocks 440 000 through 442 000 (up to 442 099) produced by WNF had a cover on the right side of the fuselage between the 4th and 5th fuselage bulkheads to access the compressed air cylinder for the MK 108 gun.
- Bf 109 G-6/U2s from production blocks 410 000 to 412 000 (105 units) and 413 000 (240 units) from Erla had a GM-1 cylinder access cover on the right side of the fuselage spine in front of the third fuselage bulkhead.
- A REVI 16 B gunsight from the summer of 1944. Applies to production blocks 413 000 (Erla) and 440 000 to 442 000 (WNF).
- Series 410 000 to 413 000 (Erla) machines had a bump on the right fairing covering the breech of the MG 131 machine gun.



Fifth Production Variation

Production blocks 163 000 to 167 000 (Messerschmitt)

The equipment of these airframes corresponded to those of the fourth production variant. They are characterized as follows:

- Erlahaube canopy (18)
- Small rudder
- Wing/fuselage interface could be of wood
- Short antenna mast
- They were alternatively equipped with a FuG 16 Z or FuG 16 ZY radio with an on-board transponder for the Pegasus Y targeting system with a Morane-type whip antenna (Moranmast) located under the left wing (19).
- Guidance system consisting of a ZVG 16 unit with its PR 16 (Peilrahmen) loop antenna on the top of the fuselage
- Identification Friend or Foe (IFF) FuG 25a system with a rod antenna under the fuselage behind the 2nd fuselage bulkhead
- A small fuel tank for starting the engine, with a filler neck on the right side at the top of the fuselage between fuselage bulkheads 4 and 5
- A REVI 16 B gunsight from the summer of 1944. A part of production block 163 000 still had the REVI C 12 D sight installed.
- Series 165 000 to 167 000 (Messerschmitt) airframes had a bump on the right fairing covering the breech of the MG 131 machine gun.

A significant number of this production variation were delivered to the Hungarian and Finnish air forces.

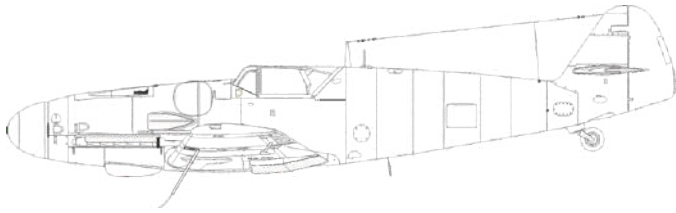
Sixth Production Variation

Production blocks 164 000 to 167 000 (Messerschmitt) and 413 000 (Erla).

These airframes displayed the following characteristics:

- Tall tail
- Erlahaube canopy
- Some sections of the airframe were made of wood (tail surfaces and wing/fuselage interface).

- Small fuel tank for use in engine starting with a filler neck on the right side of the fuselage spine between bulkheads 4 and 5.
- Most were equipped with a FuG 16 ZY radio with an its associated transponder for the Pegasus Y goniometric targeting system with a Morane-type whip antenna (Moranmast) located under the left wing.
- Short antenna mast



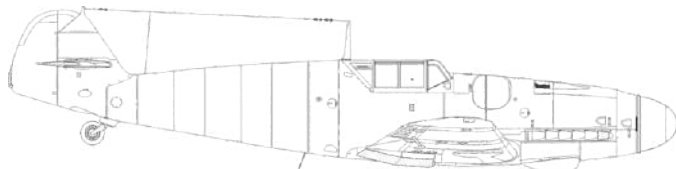
- ZVG 16 guidance system with its associated PR 16 (Peilrahmen) loop antenna on the top of the fuselage.
- Identification Friend or Foe (IFF) FuG 25a with a rod antenna under the fuselage behind the 2nd fuselage bulkhead.
- Some of the 167 000 production block airframes had a longer tailwheel strut without a cover sleeve.
- Series 165 000 to 167 000 (Messerschmitt) and 413,000 (Erla) aircraft had a bump on the right fairing covering the breech of the MG 131 machine gun.
- A REVI 16B gunsight was fitted.

Bf 109 Ga-6

An unknown number (probably around 300) license built Bf 109 Ga-6s were produced in Győr, Hungary at the Győr Wagon Fabrik. Between May and September 1943, 13 were produced in a production block serialised 16 000 (16 651 to 16 667), between September 1943 and May 1944 another 131 were produced in a production block in the 95 000 range, and between September, 1943 and September, 1944, a further 399 Ga -6s in production block 760 000 were added. In addition, an undetermined number of airframes in the 96 000 were made.

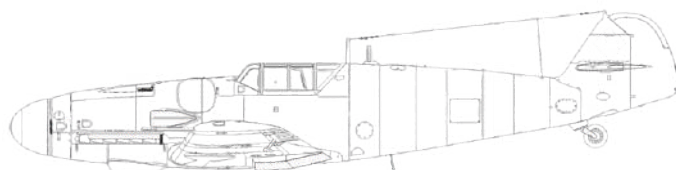
The Bf 109 Ga-6 in the 16 000 range corresponded to the equipment of the first production variant. They had the following characteristics:

- Tall antenna mast
- Straight armor plating behind the pilot's head
- On the right side of the fuselage, there was only a socket for an external electrical power source and the access hatch for the compressed oxygen bottle between fuselage bulkheads 1 and 2.
- All had the short gun troughs for the fuselage weapons.
- The sunshade mounts were lacking on the left side of the fuselage below the windscreen.

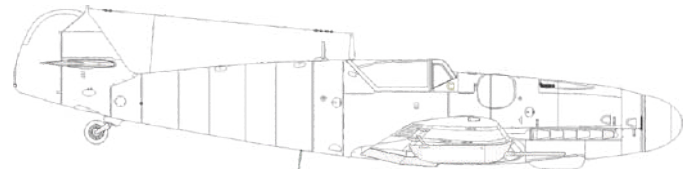


Bf 109 Ga-6s from production blocks 95 000, 96 000 and 760 000 were produced over a long time, corresponding to three different production variations over differing production spans:

- Early machines corresponded to the first production variant, had a long antenna mast, but were mostly equipped with a ZVG 16 direction finding equipment with a PR 16 loop antenna (Peilrahmen) on the top of the fuselage.
- Other airframes then corresponded to the second and third production variants.
- However, they probably did not have the additional fuel tank used in starting the engine, with a filler neck on the right side at the top of the fuselage, between fuselage bulkheads 4 and 5.



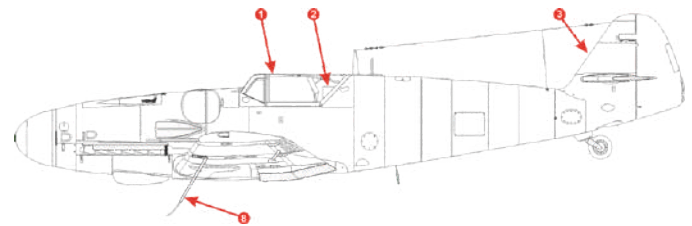
As part of production block in the 760 000 range, an unknown number of Bf 109 Ga-14s were produced in September, 1944. These units corresponded to the those of production block 781 000 from Messerschmitt in terms of their production variation, armament and equipment. They had an Erlahaube-type canopy and a small rudder.



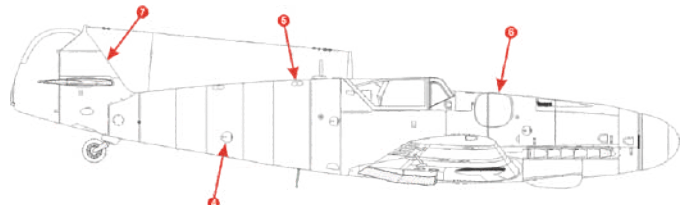
Bf 109 G-14

From July, 1944, Erla (and from August, Messerschmitt) produced the Bf 109 G-14 in parallel with the Bf 109 G-6, corresponding to the last production version of the Bf 109 G-6 with the Erla Vollsichtshaube type canopy and tall rudder. All Bf 109 G-14s were fitted with the MW 50 system as standard and therefore used C3 fuel with an octane number of 96 (100). A distinctive feature of all Bf 109 Gs with the MW 50 system installed was a box-shaped projection on the baggage compartment door in the rear sloped wall of the cockpit, behind the head armor plate (2). This arose because the installation of the water-methanol mixture tank for the MW 50 system in the space behind the first bulkhead forced the battery for the radio to be moved forward into the luggage compartment, which needed to be enlarged to accommodate it. All Bf 109 G-14s had a bulge under the fairing covering the right machine gun, and all were also fitted as standard with a FuG 16 ZY radio with an on-board transponder for the Pegasus Y goniometric sighting system with a Morane-type whip antenna (Moranmast) located under the left wing. The gunsight was the REVI 16 B as standard.

Most Bf 109 G-14s with the DB 605 AM engine were produced at the Erla factory in Leipzig. They were manufactured in blocks 413 000, 460 000 to 462 000, 464 000 and 465 000. These machines had a tall rudder (3), Erla Vollsichtshaube canopy (1) and Gallandpanzer armored headrest. Only a small number of airframes were produced at Messerschmitt in production block 165 000, but some of the total production of about 110 G-14s were to Bf 109 G-14/AS standard with a DB 605 AS engine.



The DB 605 AM engine was also installed in part of the Messerschmitt produced block of airframes in the 781 000 range, numbering about thirty birds, which had a low rudder. The remainder of this production block were Bf 109 G-14/ASs with the DB 605 AS powerplant. According to photos, there were standard G-14s with a low rudder even in the 782 000 series production block, in which H. H. Vogt lists only the G-14/AS. The six hundred Bf 109 G-14/U4s, production block 510 000 to 512 000, armed with a 30mm MK 108 fuselage/engine mounted cannon, produced by WNF, also had the low rudder and Erla Vollsichtshaube type canopy. These machines did not have the bulge on the fairing above the right fuselage machine gun breech (4), and between bulkheads 4 and 5, they had an access cover for the compressed air bottle for the MK 108 engine mounted weapon (4). There was also an MW 50 system tank filler cap on the right side of the fuselage spine behind the second bulkhead.



This kit

This kit offers the possibility to build a Messerschmitt Bf 109 G-6 of the fourth, fifth or sixth production variations, and a Messerschmitt Bf 109 G-14. For more details on these and other Messerschmitt Bf 109 G-6 and G-14 versions, as well as the high-altitude Bf 109 G-5, including the photo-reconnaissance Bf 109 G-6/R2, Bf 109 G-6/R3 and Bf 109 G-8, see the two-part Gustav VI article in the January and February 2024 issues of the online magazine INFO Eduard.

ATTENTION



UPOZORNĚNÍ



ACHTUNG



ATTENTION



注意



Carefully read instruction sheet before assembling. When you use glue or paint, do not use near open flame and use in well ventilated room. Keep out of reach of small children. Children must not be allowed to suck any part, or pull vinyl bag over the head.



Před započatím stavby si pečlivě prostudujte stavební návod. Při používání barev a lepidla pracujte v dobře větrané místnosti. Lepidla ani barvy nepoužívejte v blízkosti otevřeného ohně. Model není určen malým dětem, mohlo by dojít k požití drobných dílů.

INSTRUCTION SIGNS * INSTR. SYMBOLS * INSTRUKTION SINNBILDEN * SYMBOLES * 記号の説明

OPTIONAL
VOLBABEND
OHNOUTSAND
BROUSITOPEN HOLE
VYVRTAT OTVORSYMETRICAL ASSEMBLY
SYMETRICKÁ MONTÁŽREMOVE
ODŘÍZNOUTREVERSE SIDE
OTOČITAPPLY EDUARD MASK
AND PAINT
POUŽIT EDUARD MASK
NABARVITPLEASE, CHECK THE LATEST VERSION OF THE INSTRUCTIONS ON www.eduard.com

PARTS



DÍLY



TEILE



PIÈCES

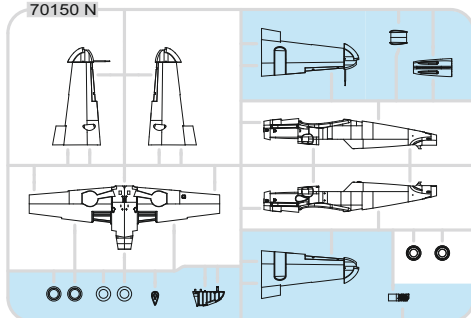


部品

PLASTIC PARTS

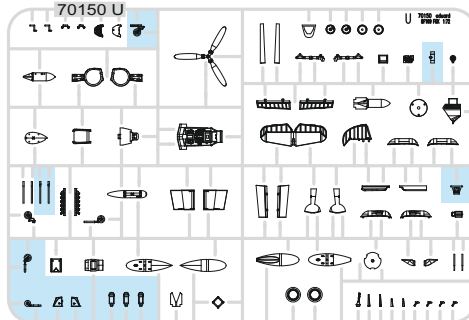
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70150 N



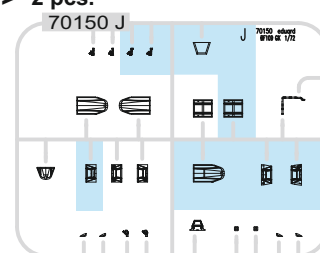
U > 2 pcs.

70150 U



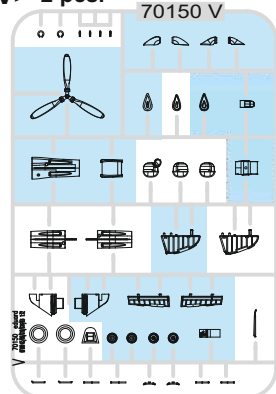
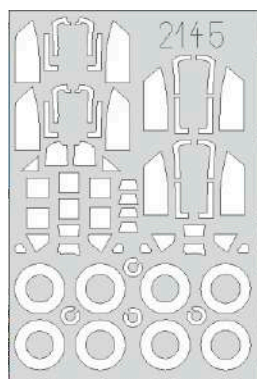
J > 2 pcs.

70150 J

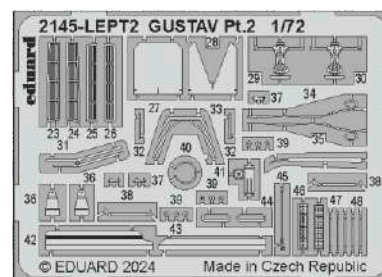


V > 2 pcs.

70150 V

eduard
MASK

PE - PHOTO ETCHED DETAIL PARTS 2 pcs.



-Parts not for use. -Teile werden nicht verwendet. -Pièces à ne pas utiliser. -Tyto díly nepoužívejte při stavbě. - 使用しない部品

COLOURS



BARVY



FARBEN



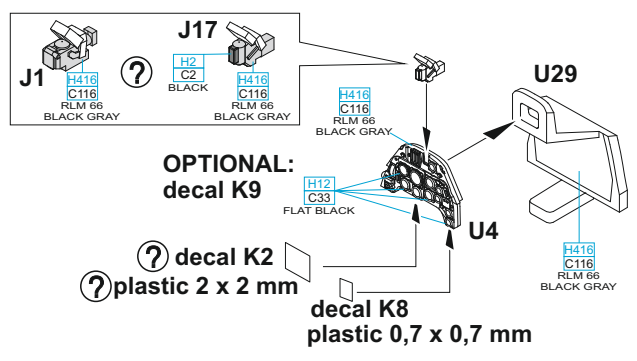
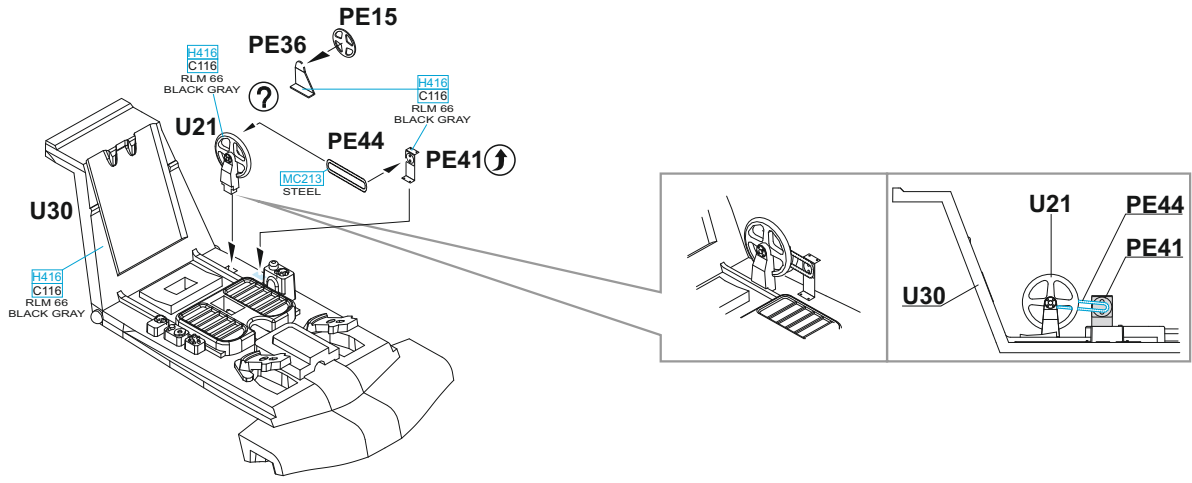
PEINTURE



色

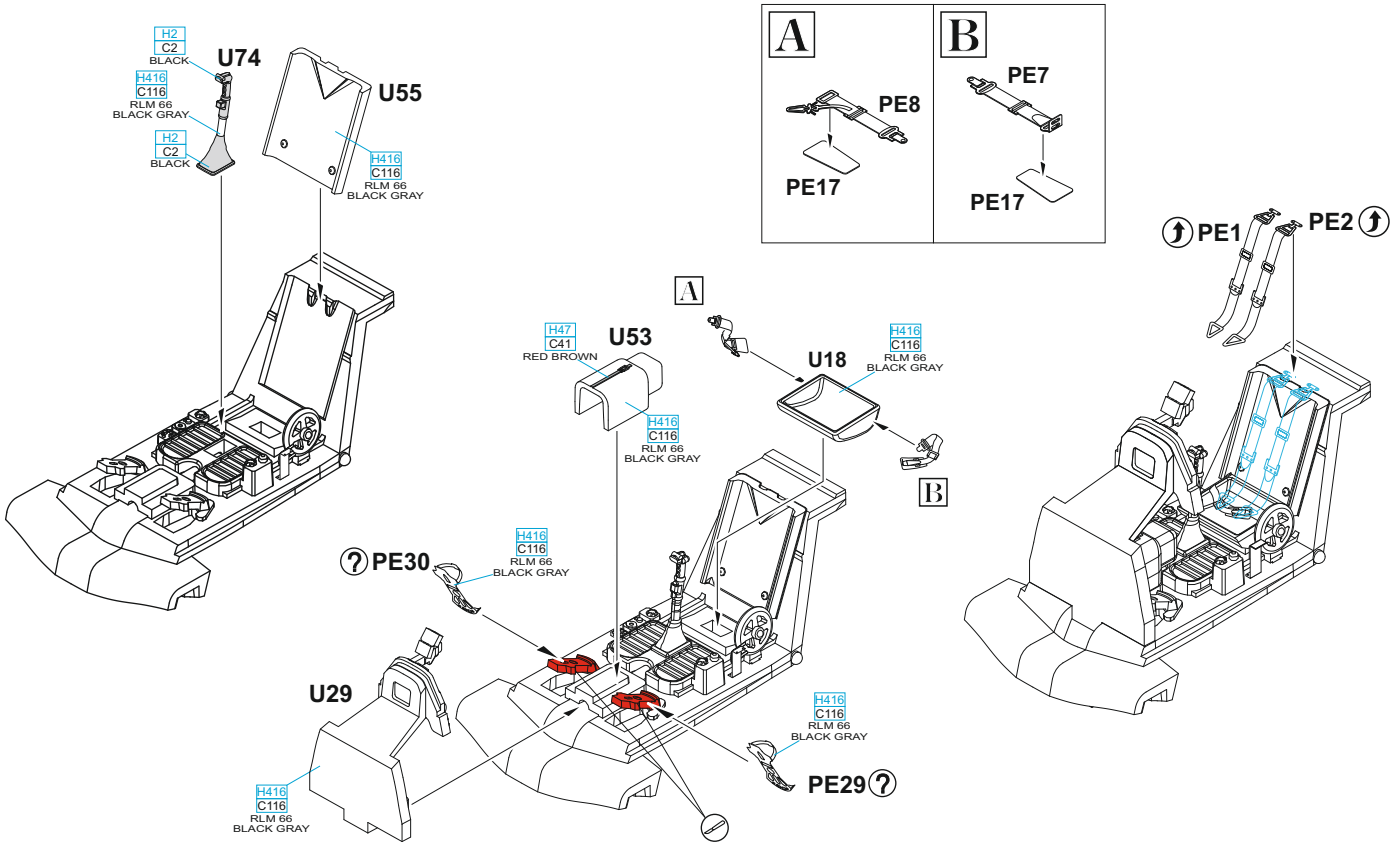
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AQUEOUS	Mr.COLOR	
H2	C2	BLACK
H11	C62	FLAT WHITE
H12	C33	FLAT BLACK
H47	C41	RED BROWN
H51	C11	LIGHT GULL GRAY
H65	C18	RLM70 BLACK GREEN
H68	C36	RLM74 DARK GRAY
H69	C37	RLM75 GRAY
H70	C60	RLM02 GRAY
H77	C137	TIRE BLACK
H80	C54	KHAKI GREEN
H90	C47	CLEAR RED
H94	C138	CLEAR GREEN
H319	C319	LIGHT GREEN

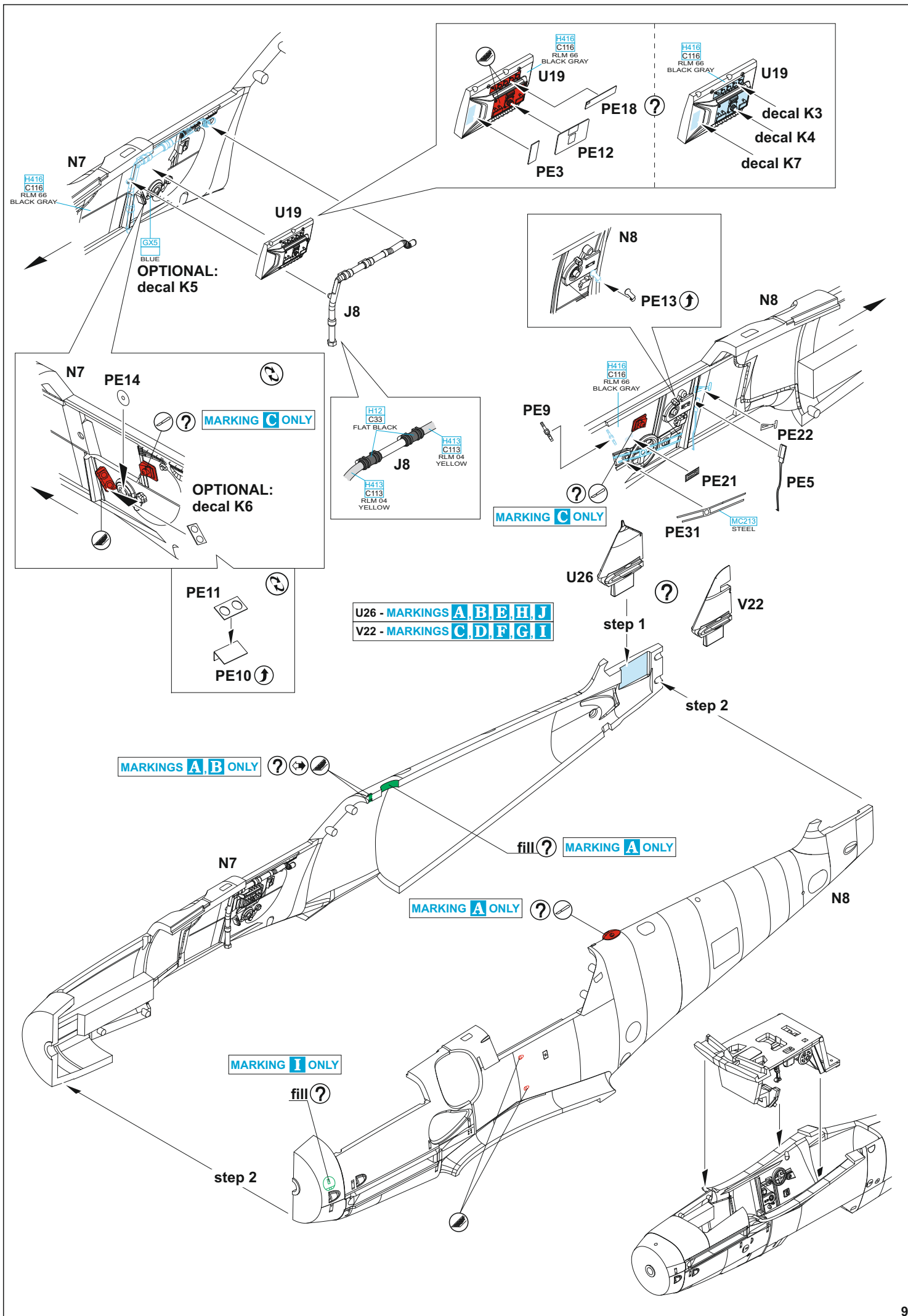
GSI Creos (GUNZE)		
AQUEOUS	Mr.COLOR	
H413	C113	RLM04 YELLOW
H414	C114	RLM23 RED
H416	C116	RLM66 BLACK GRAY
H417	C117	RLM76 LIGHT BLUE
H421	C121	RLM81 BROWN VIOLET
H422	C122	RLM82 LIGHT GREEN
Mr.METAL COLOR		
MC213		STEEL
MC214		DARK IRON
Mr.COLOR SUPER METALLIC		
SM201		SUPER FINE SILVER
Mr.COLOR GX		
GX05		SUSIE BLUE



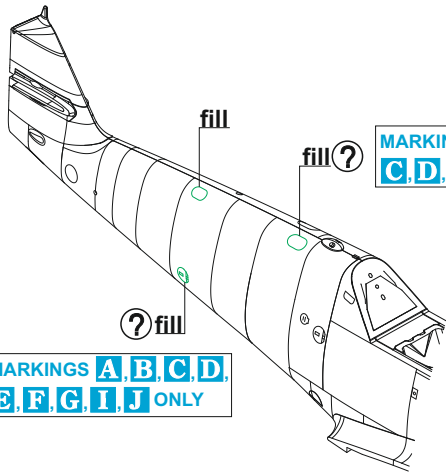
plastic, decal K2 - MARKINGS **A, B, C, F, G, H, J** ONLY

PE19 - MARKINGS **A, B, C, F, G, H, J** ONLY





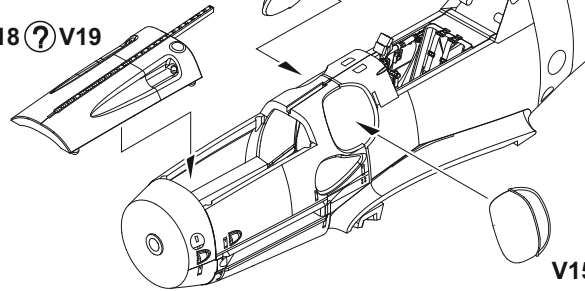
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E, F, G, I, J ONLY



MARKINGS **A, B,**
C, D, E ONLY

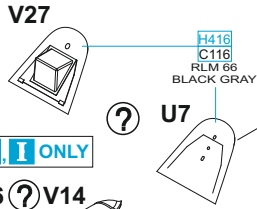
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V18 ? V19

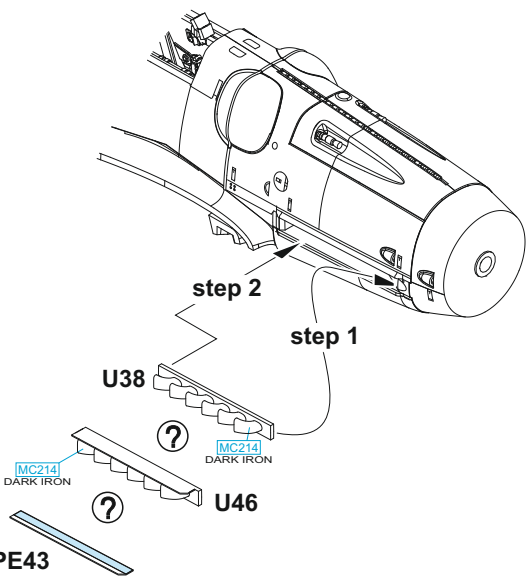


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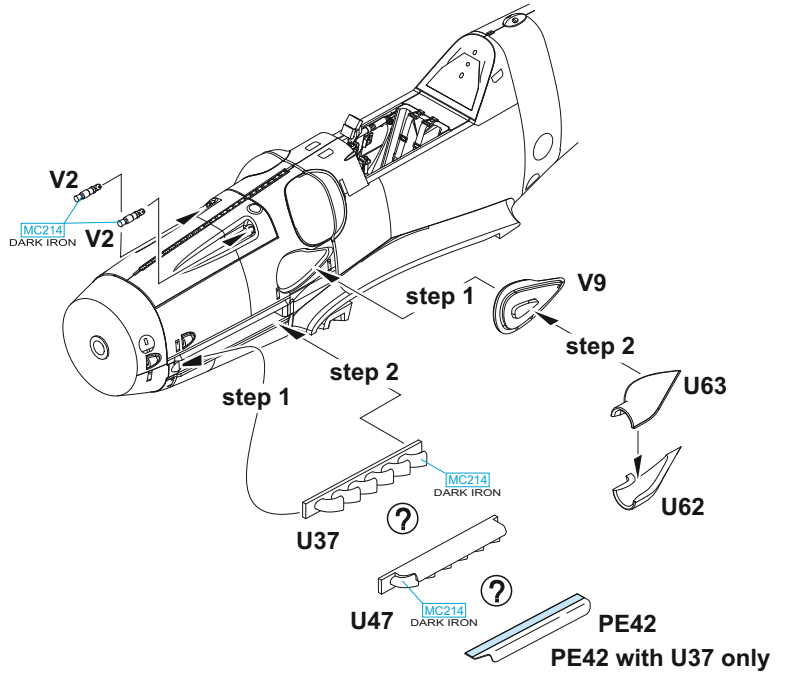
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V27 - MARKINGS **D, F, G, H, I, J**



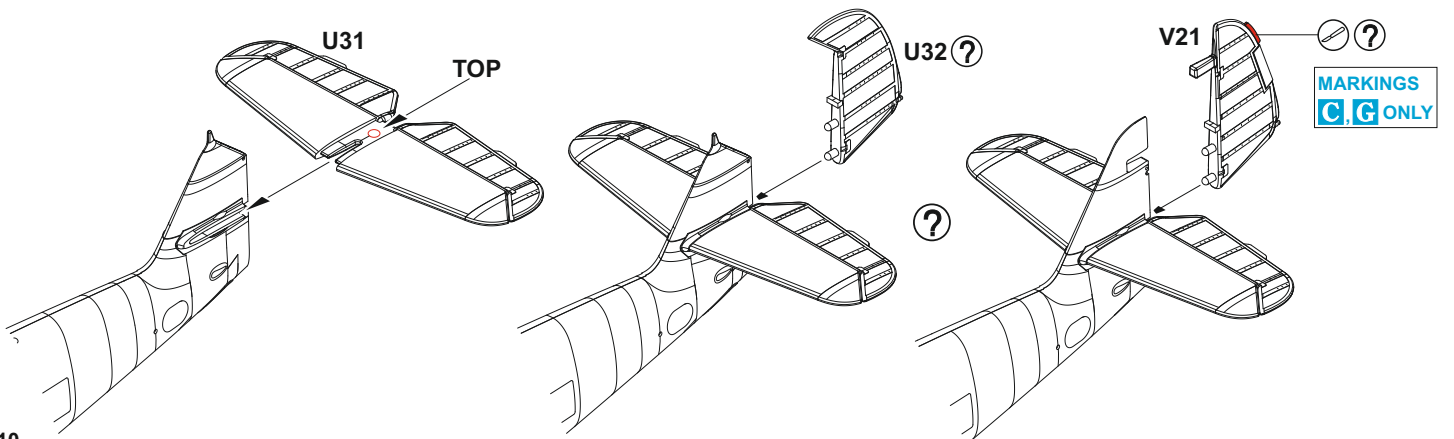
PE43
PE43 with
U38 only



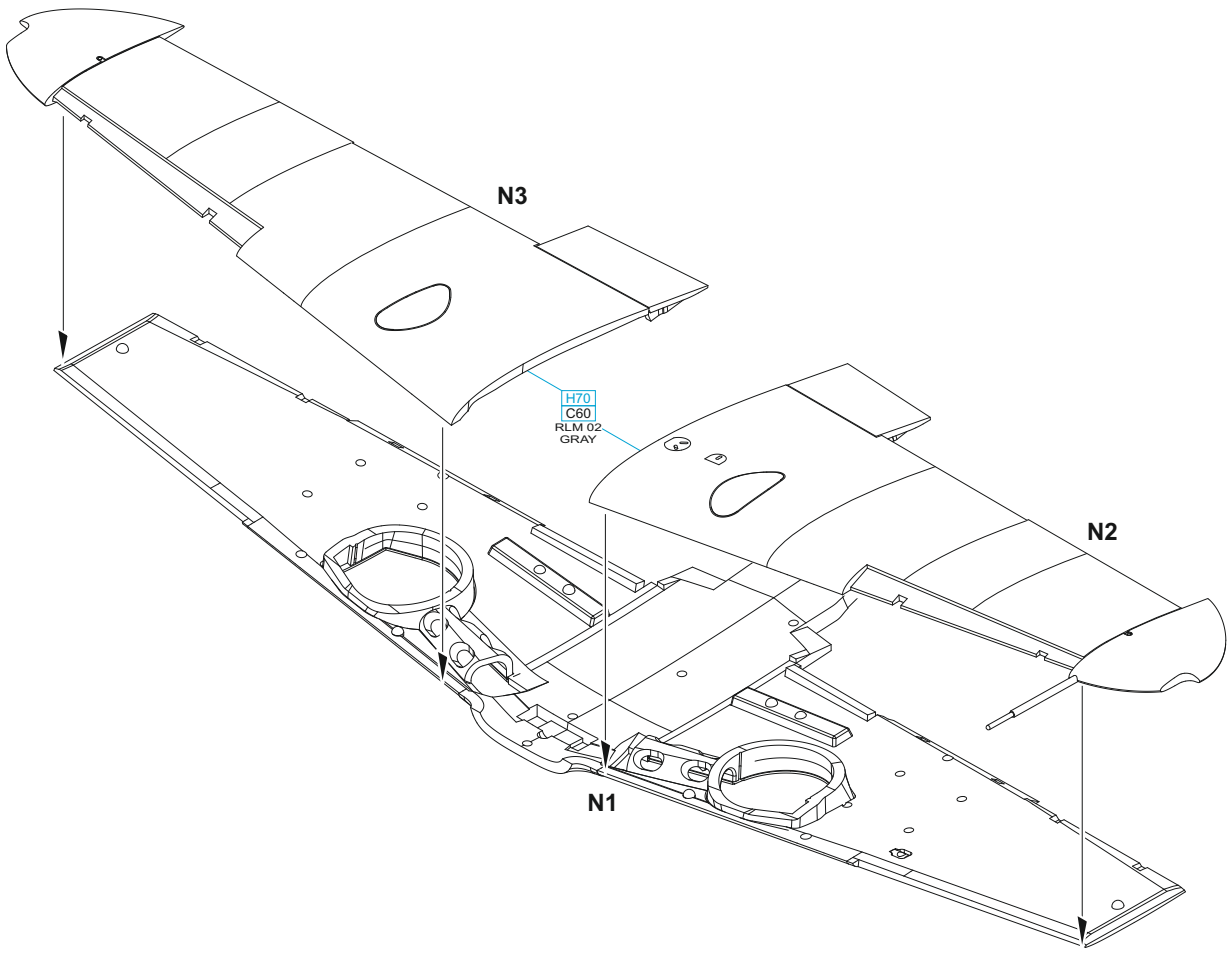
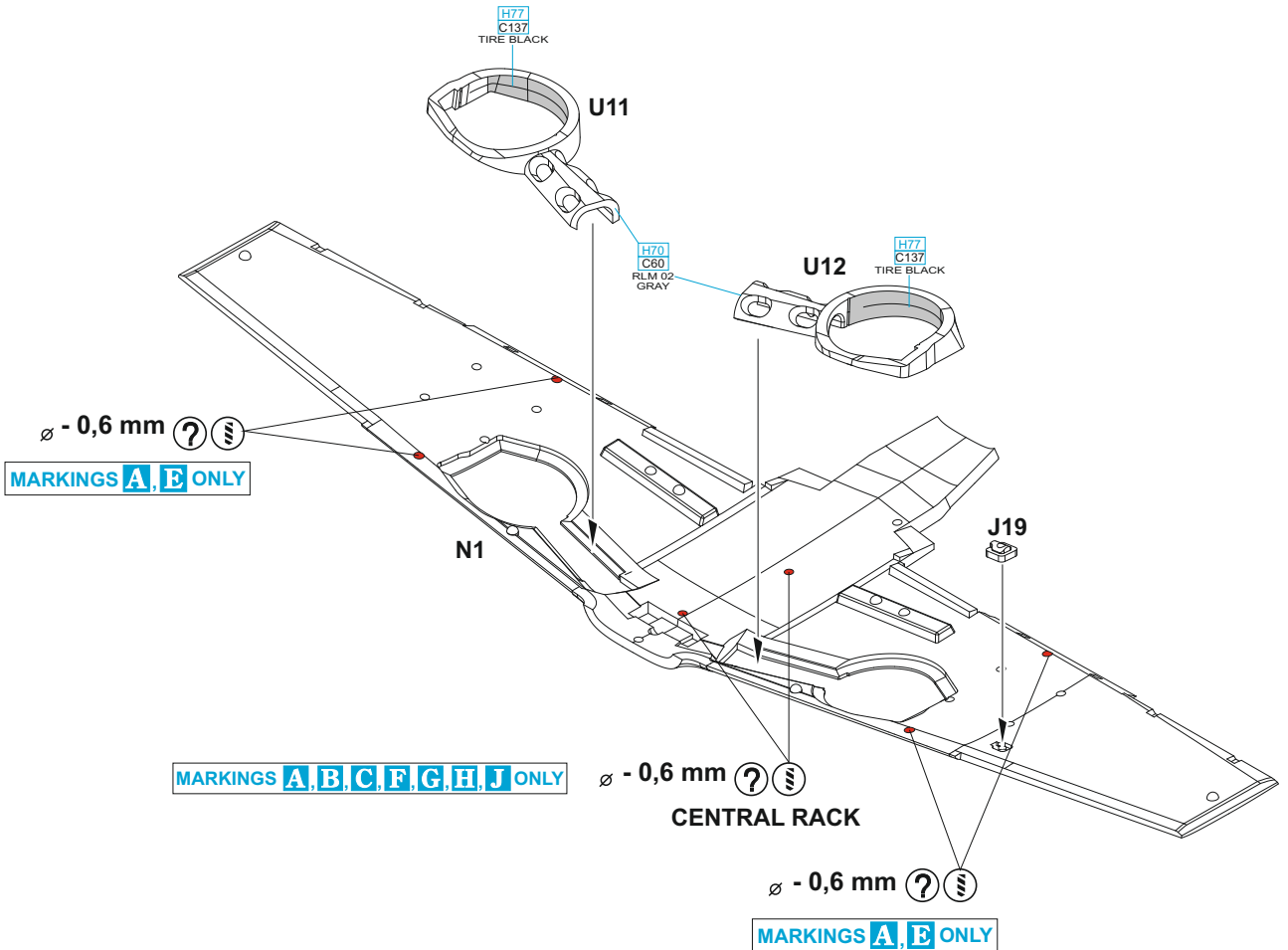
PE42
PE42 with U37 only



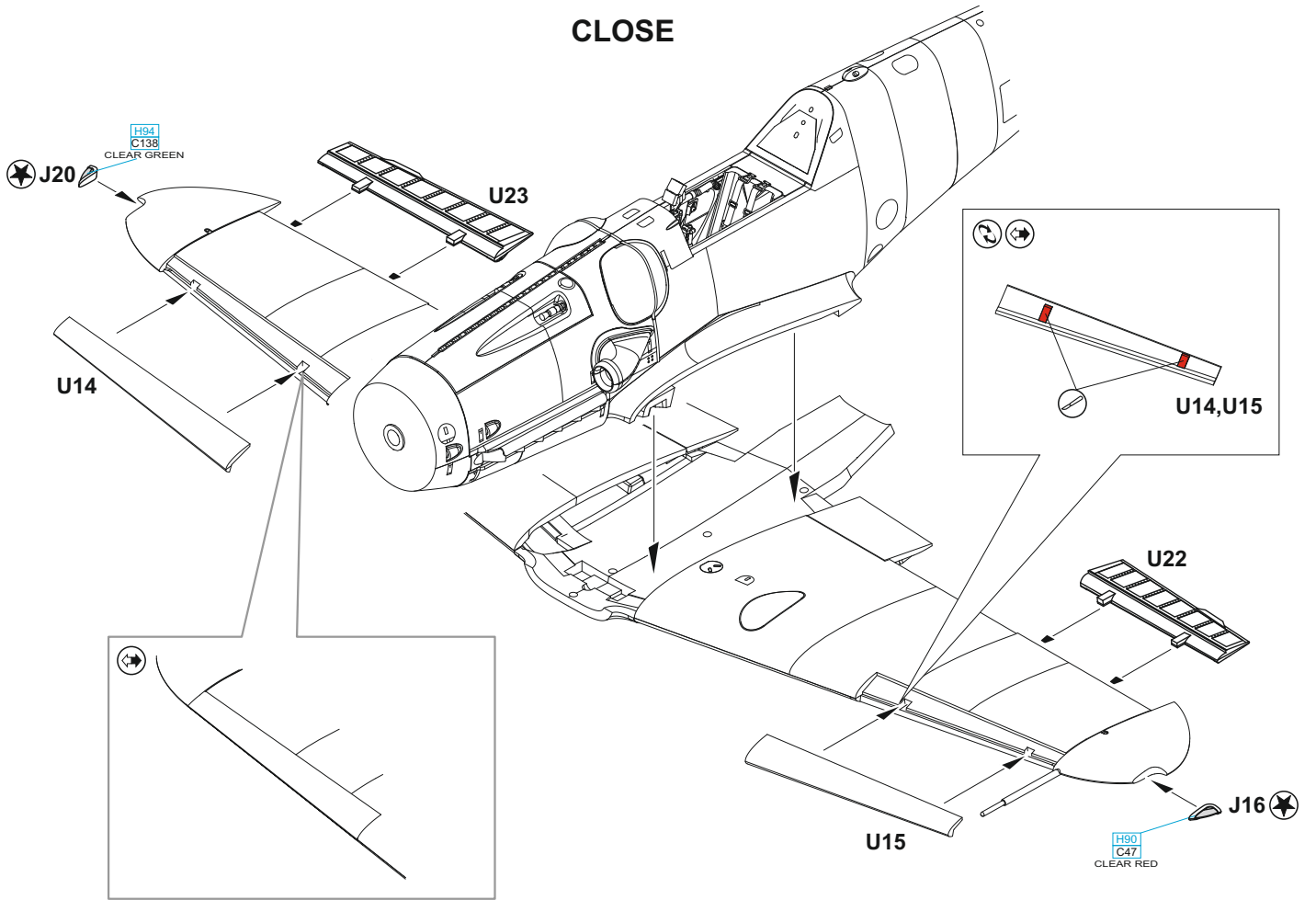
U32 - MARKINGS **A, B, E, H, J** ONLY



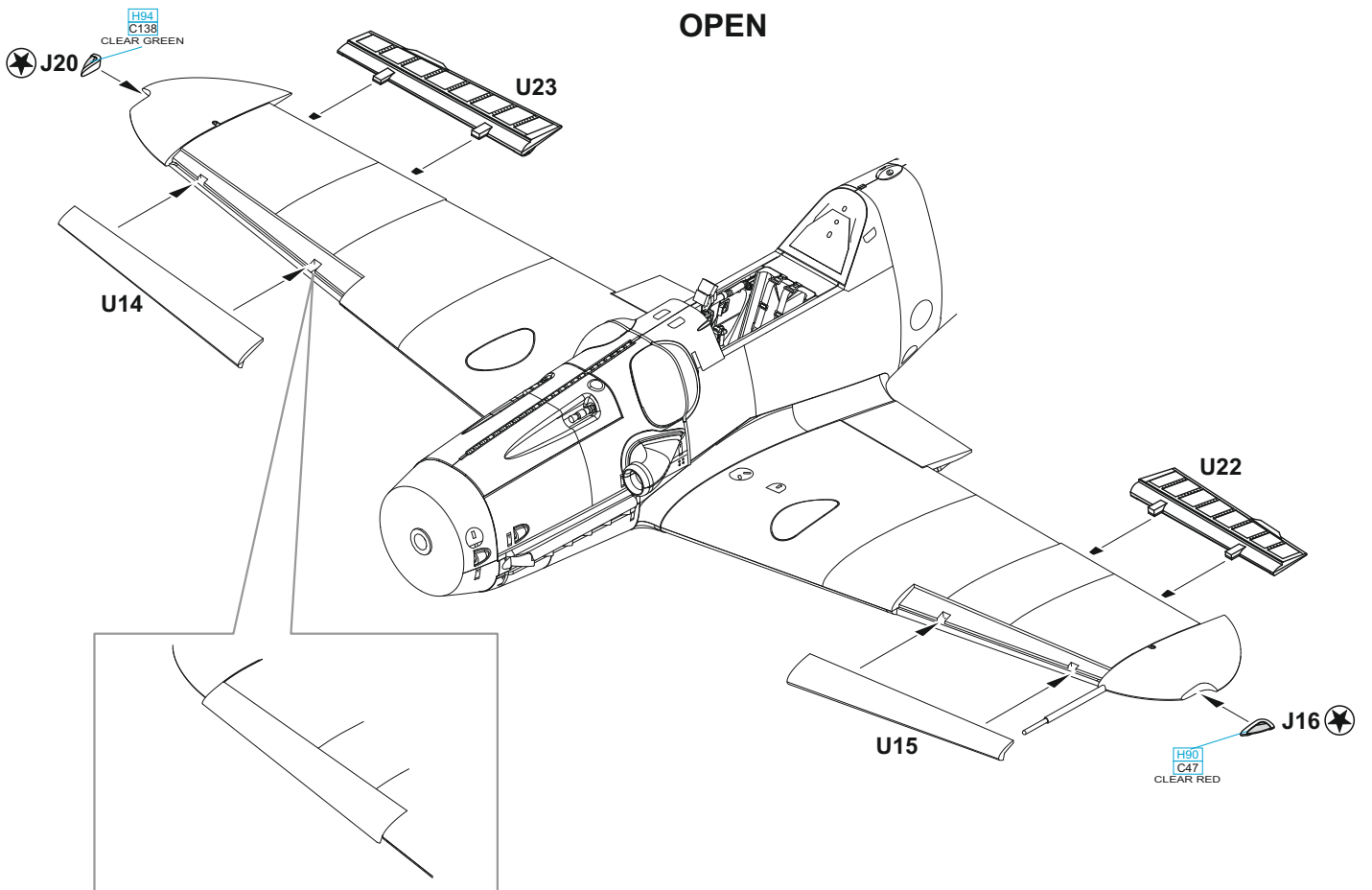
MARKINGS
C, G ONLY



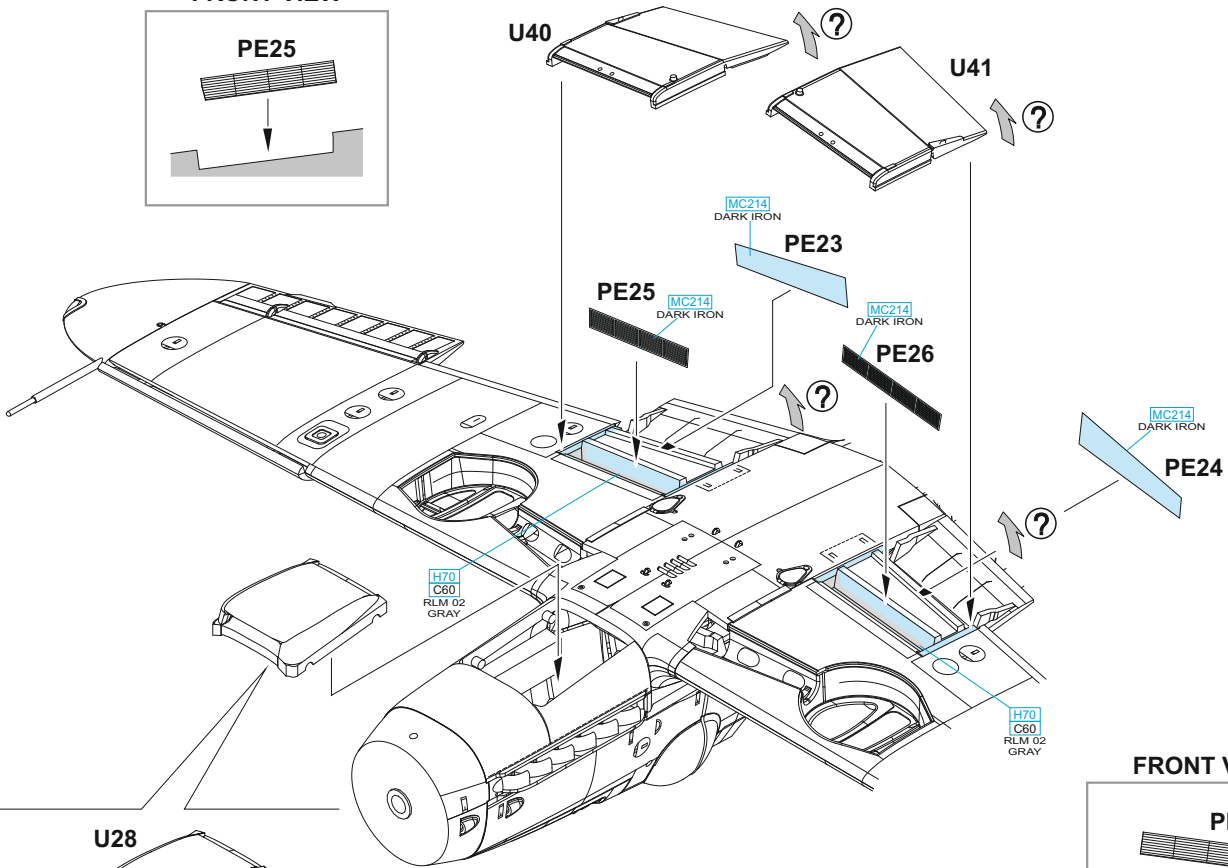
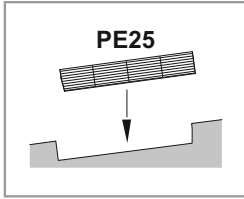
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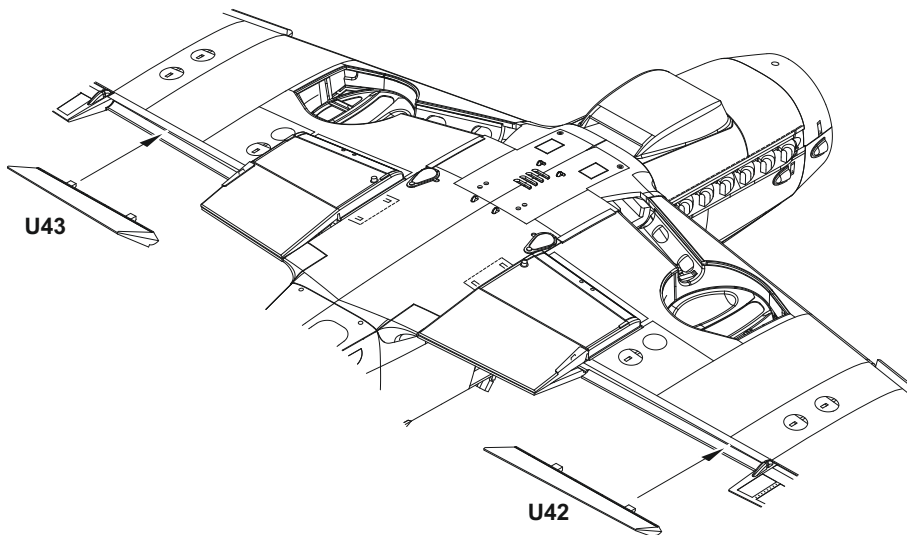
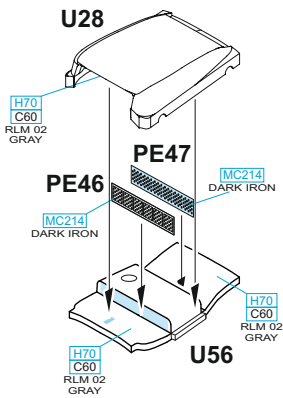
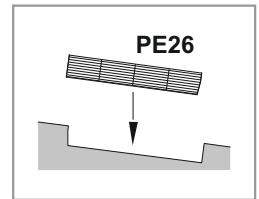
OPEN

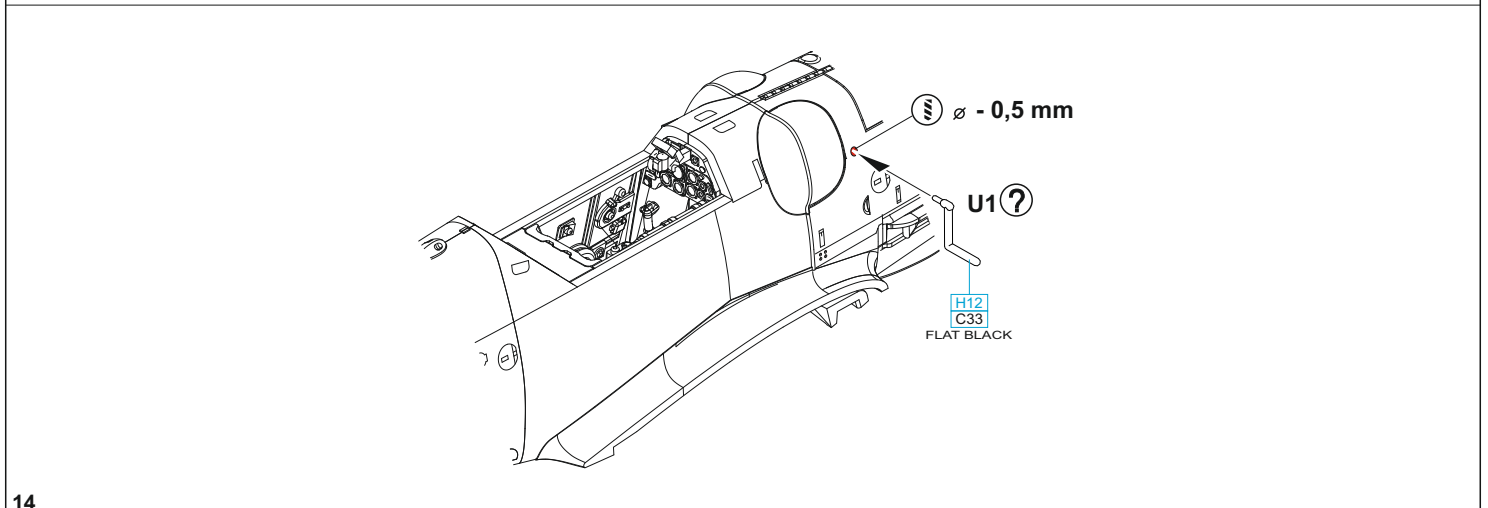
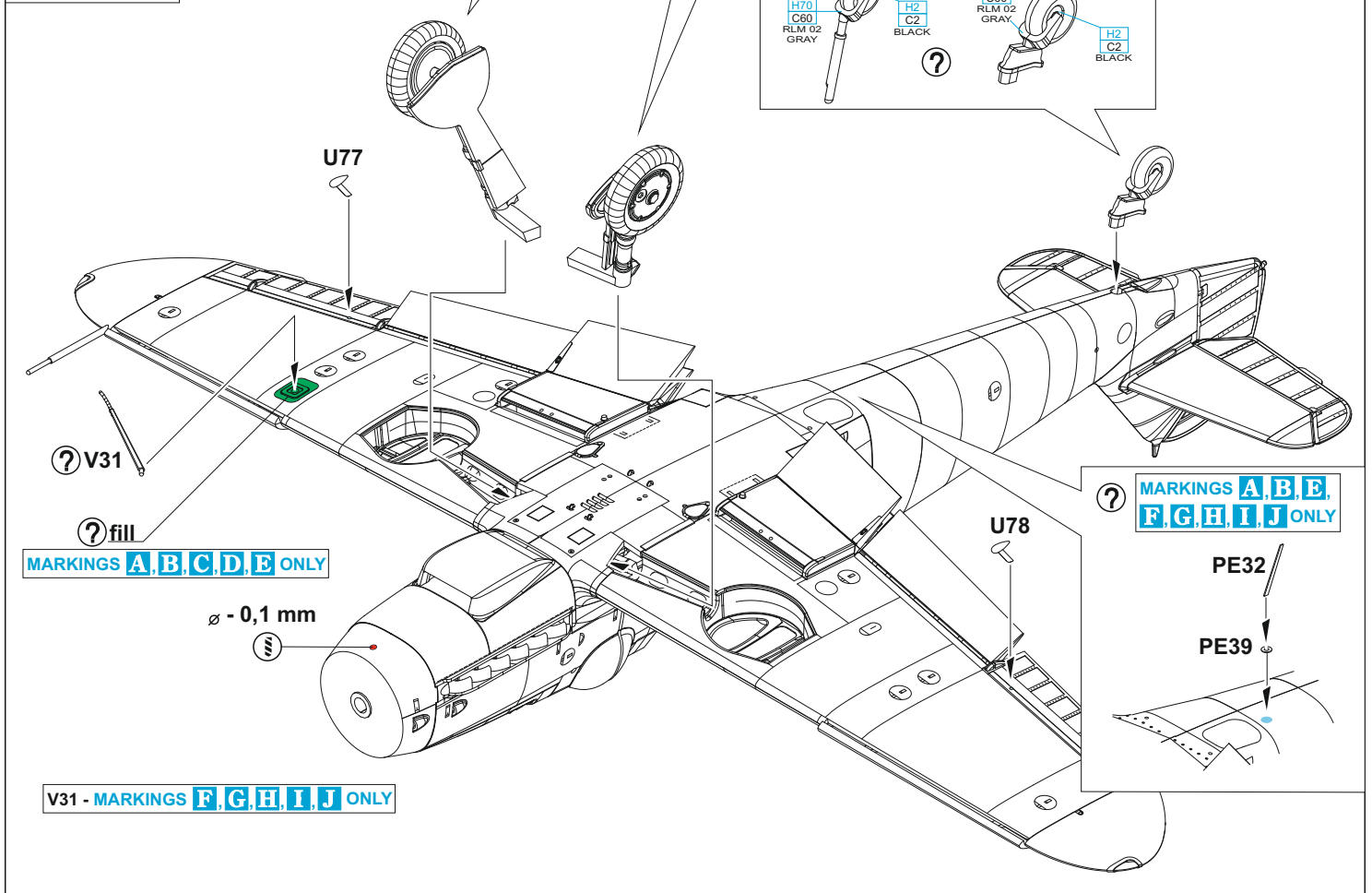
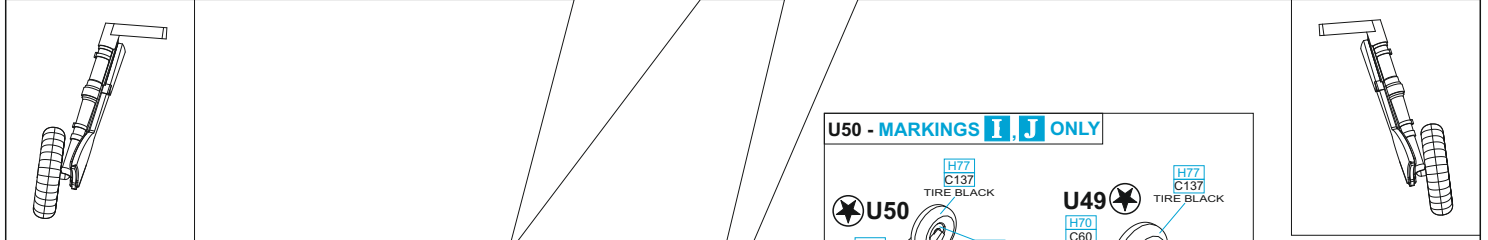
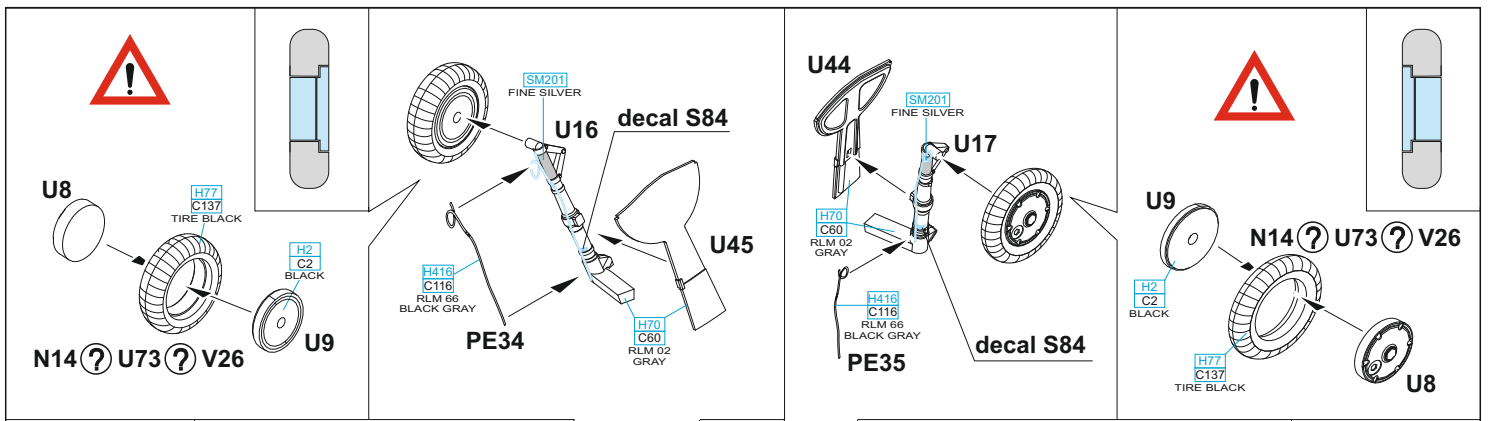


FRONT VIEW

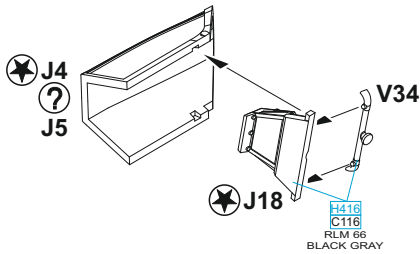


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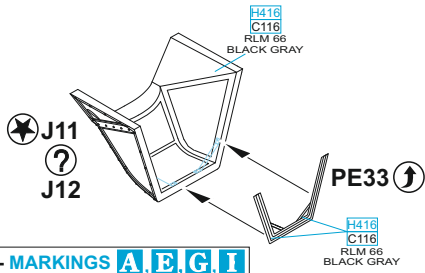
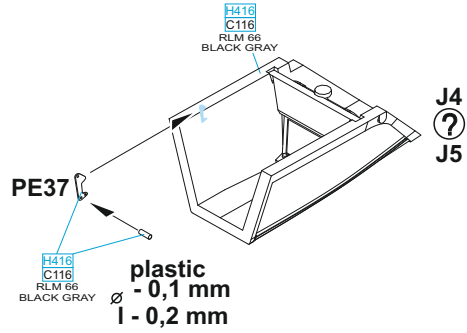
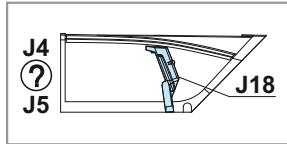




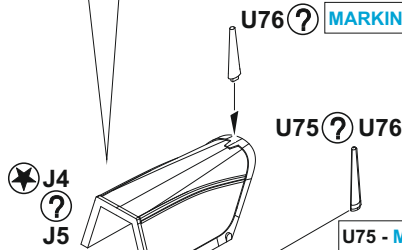
MARKINGS **A, B, D, E, F, G, H, I, J** ONLY



J4 - MARKINGS **E, F, G, H, I, J**
 J5 - MARKINGS **A, B, D**

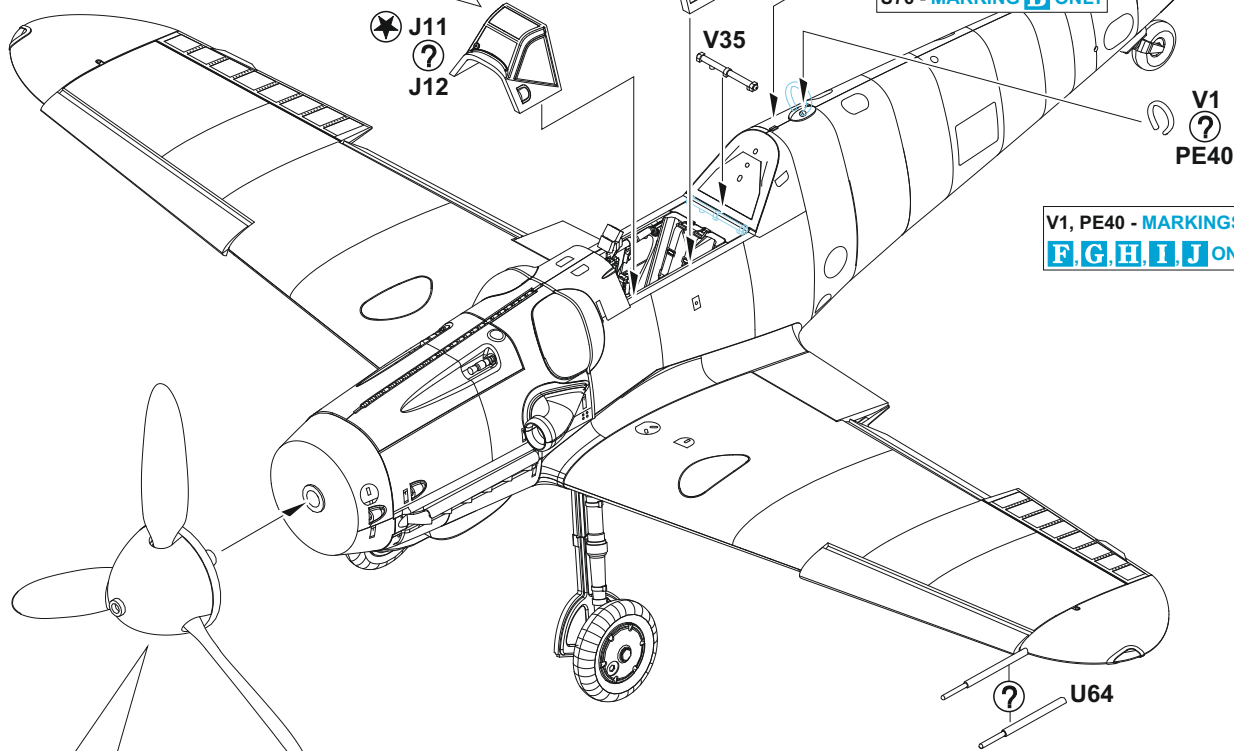


J11 - MARKINGS **A, E, G, I**
 J12 - MARKINGS **B, D, F, H, J**

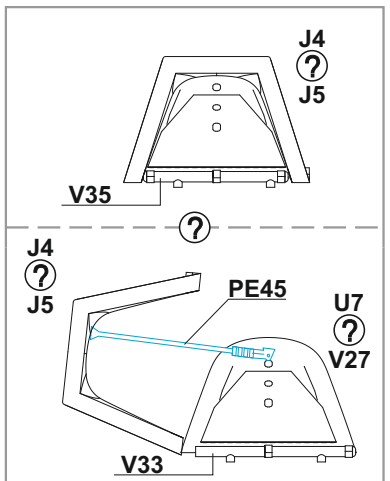
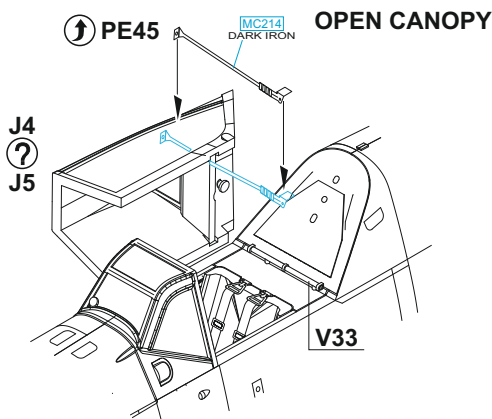
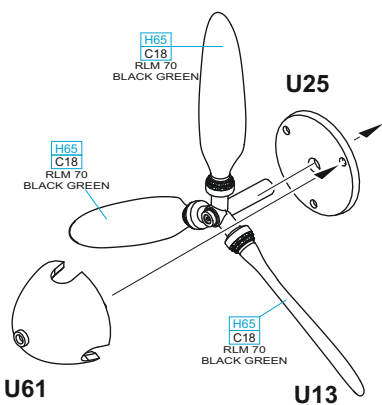


U76 - MARKINGS **E, F, G, H, I, J** ONLY

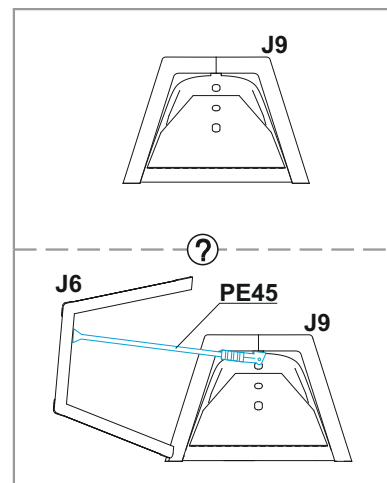
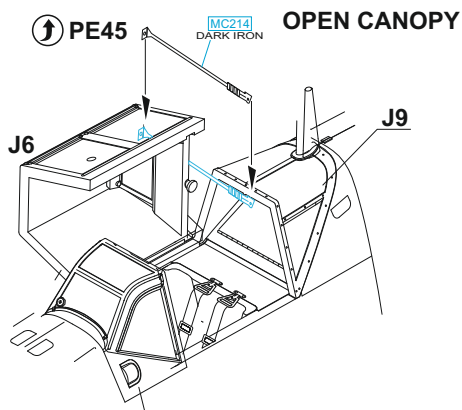
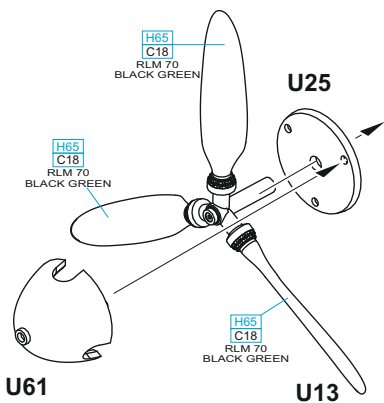
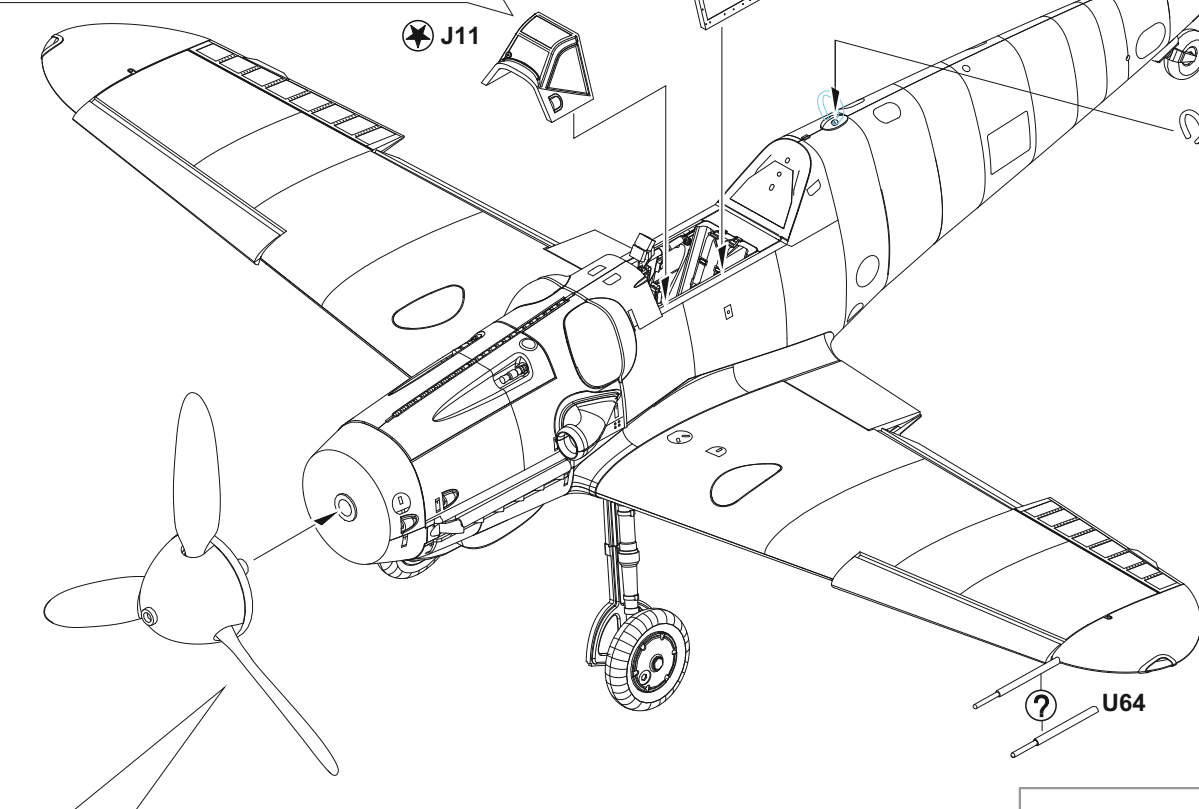
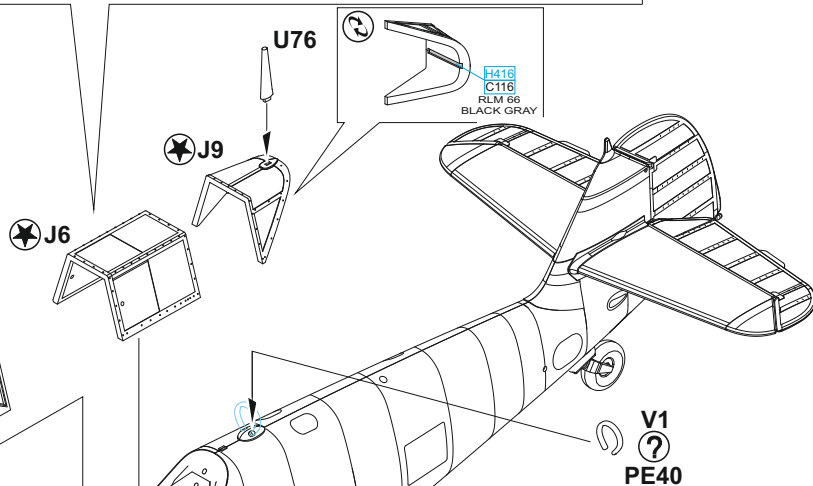
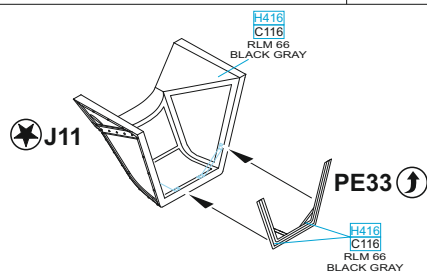
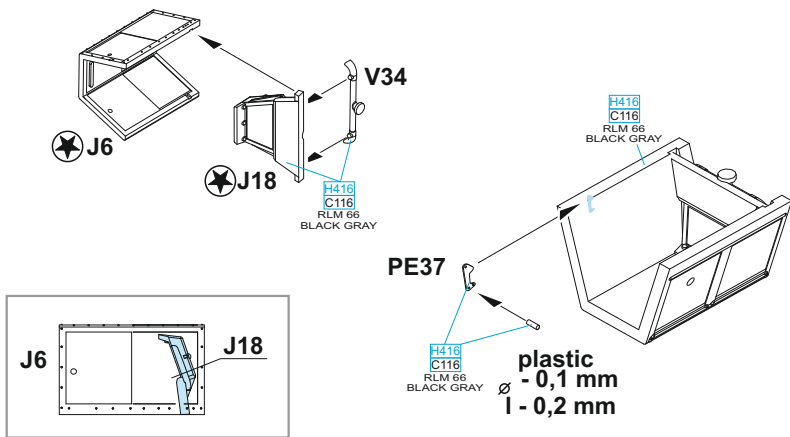
U75 - MARKING **A** ONLY
 U76 - MARKING **B** ONLY



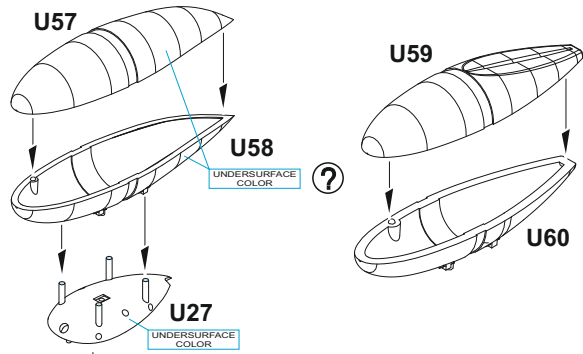
V1, PE40 - MARKINGS **B, C, E, F, G, H, I, J** ONLY



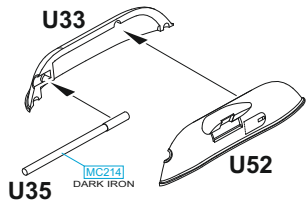
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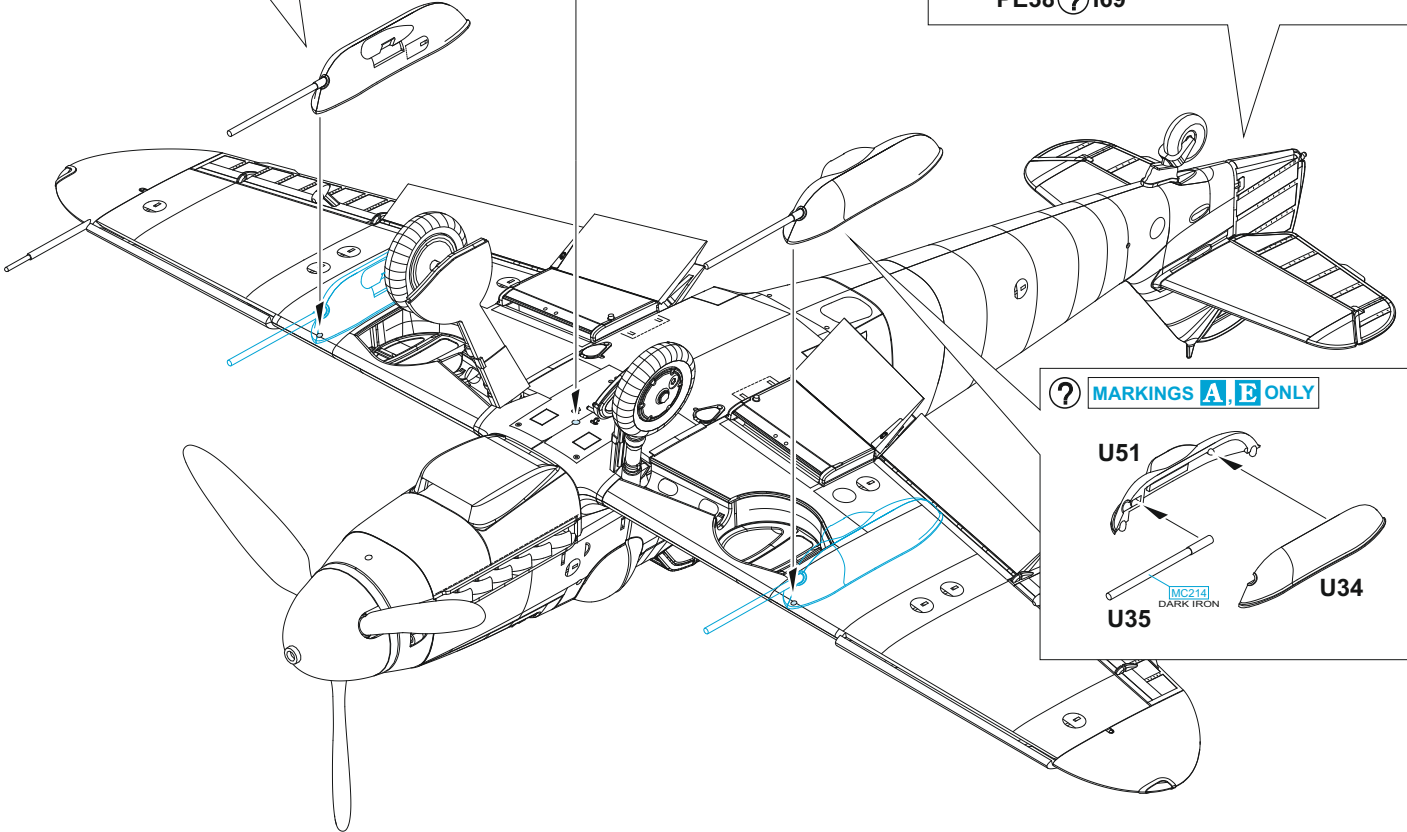
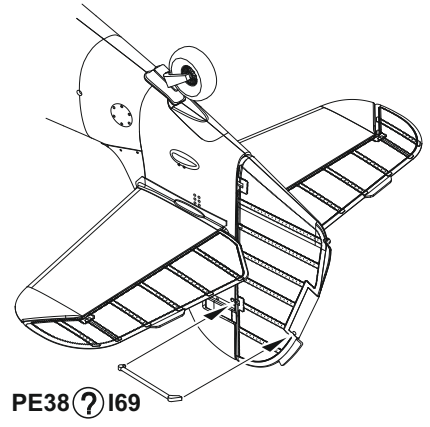
? MARKINGS **A, C, F, G, H, J** ONLY



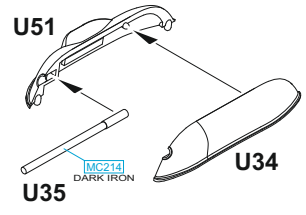
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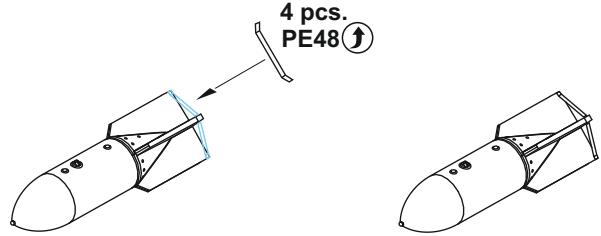
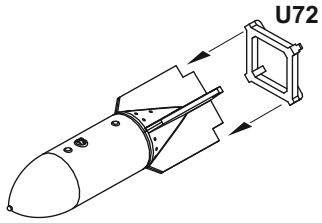
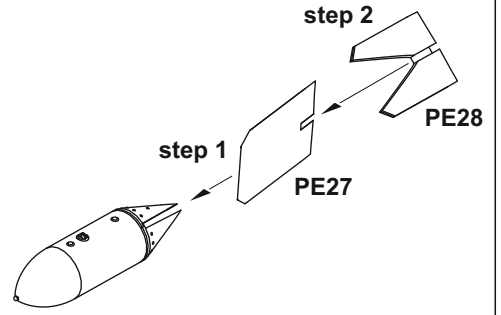
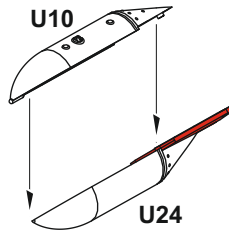
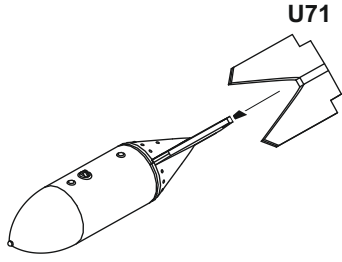
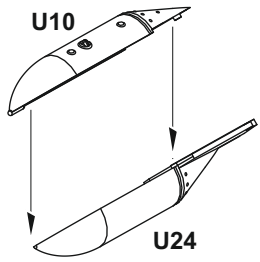


? MARKINGS **C, D, F, G, I** ONLY



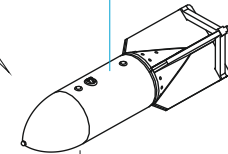
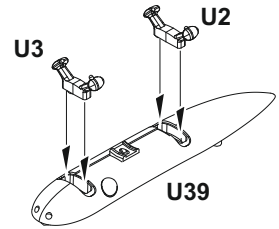
? MARKINGS **A, E** ONLY



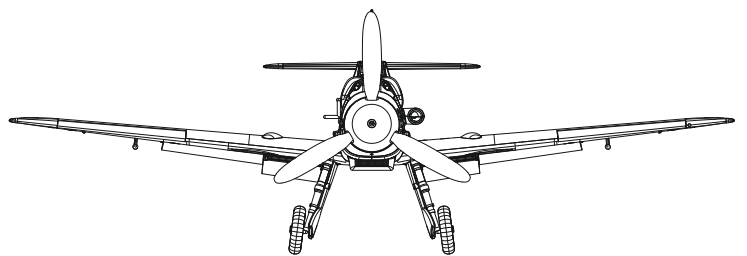
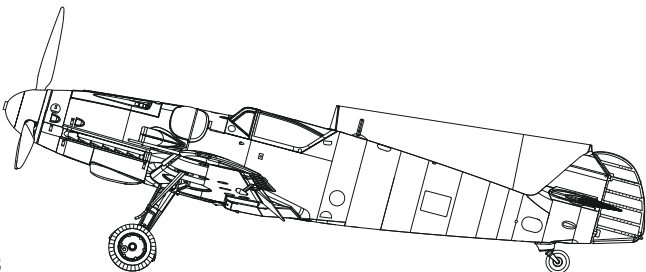
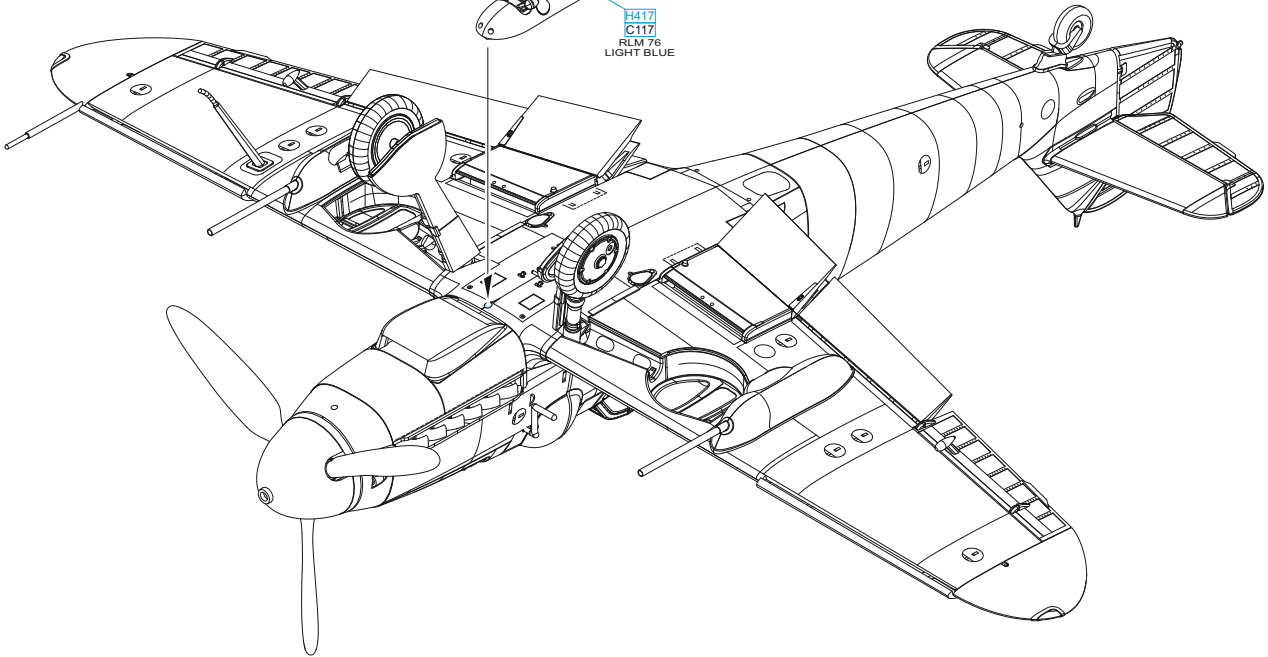


MARKING B ONLY

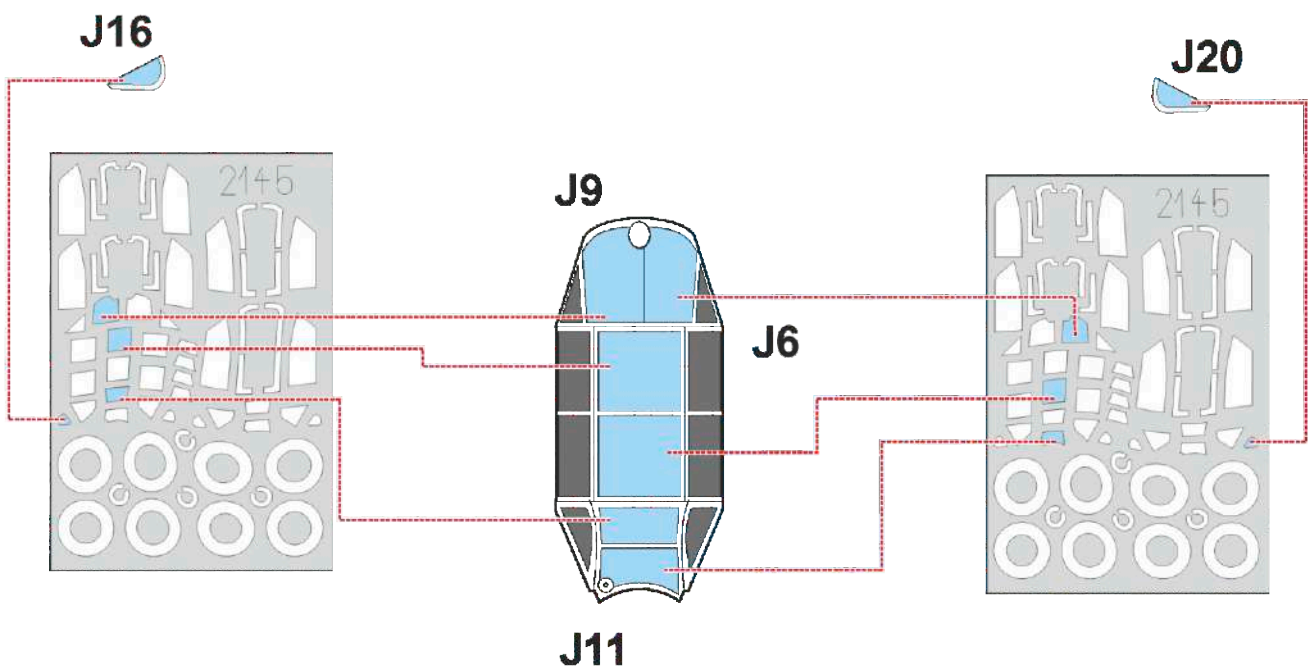
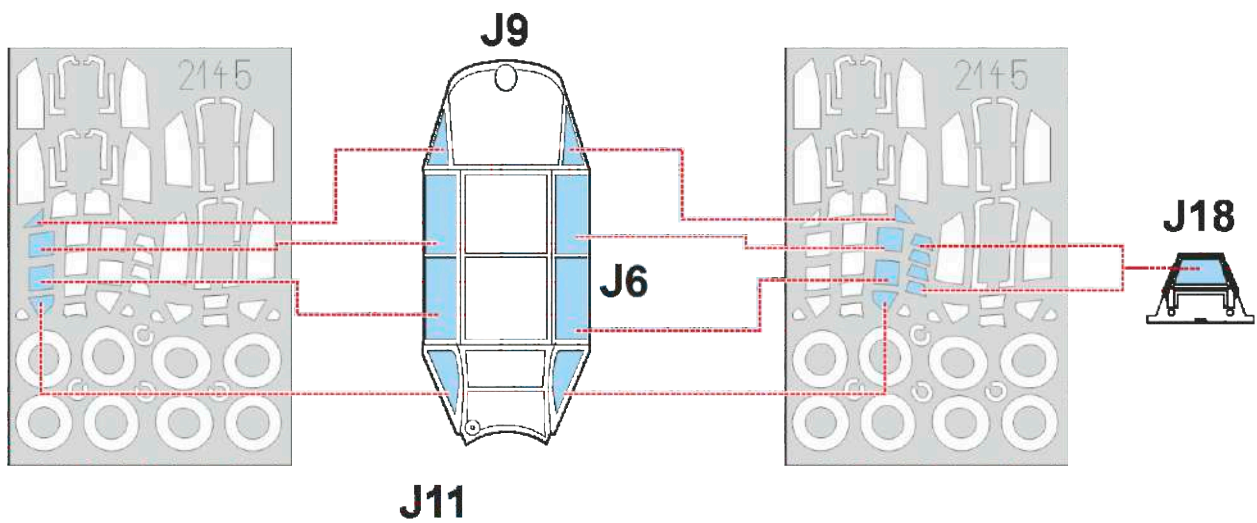
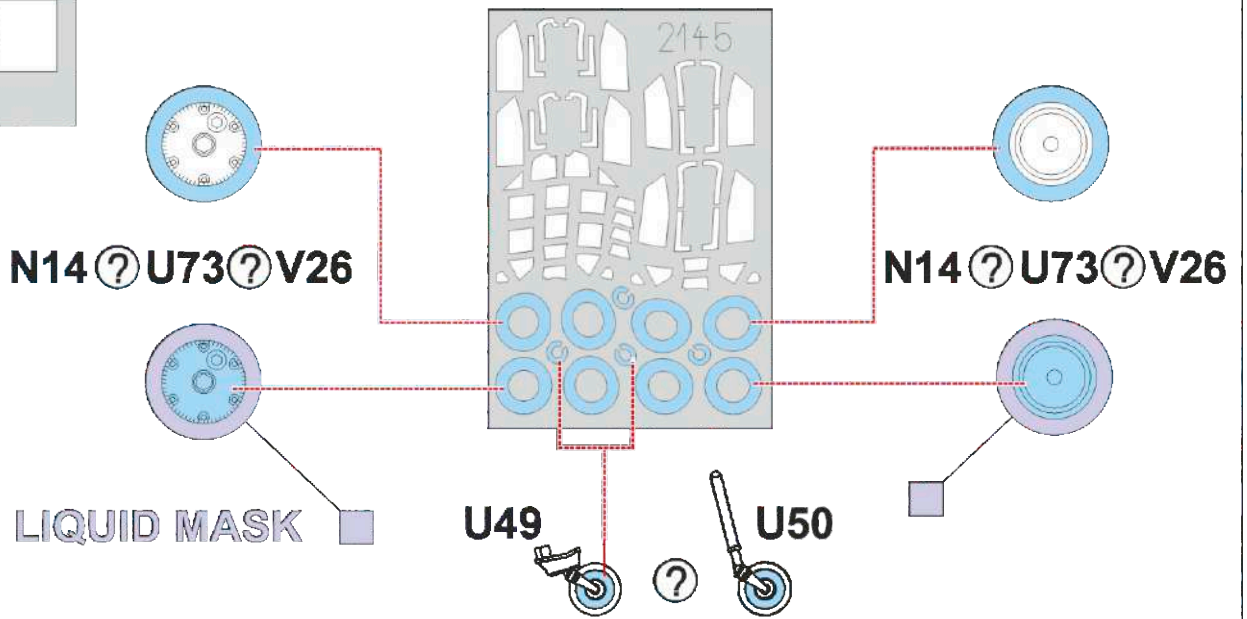
- H12 C33 FLAT BLACK
- H51 C11 GRAY
- H70 C60 RLM 02 GRAY
- H80 C54 KHAKI GREEN

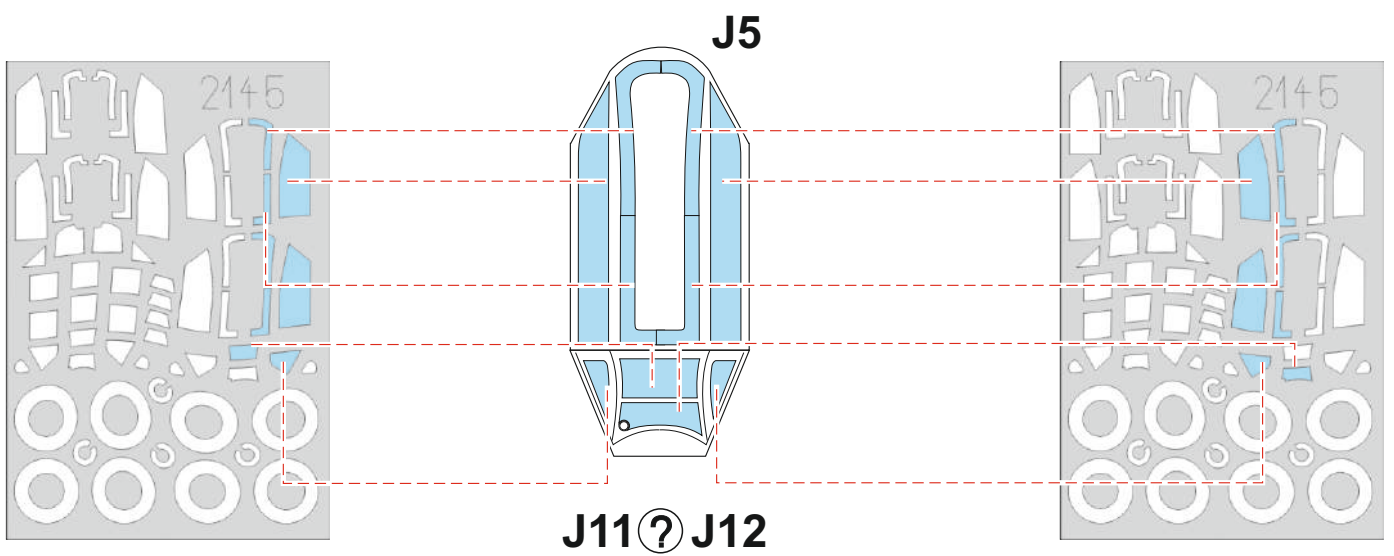
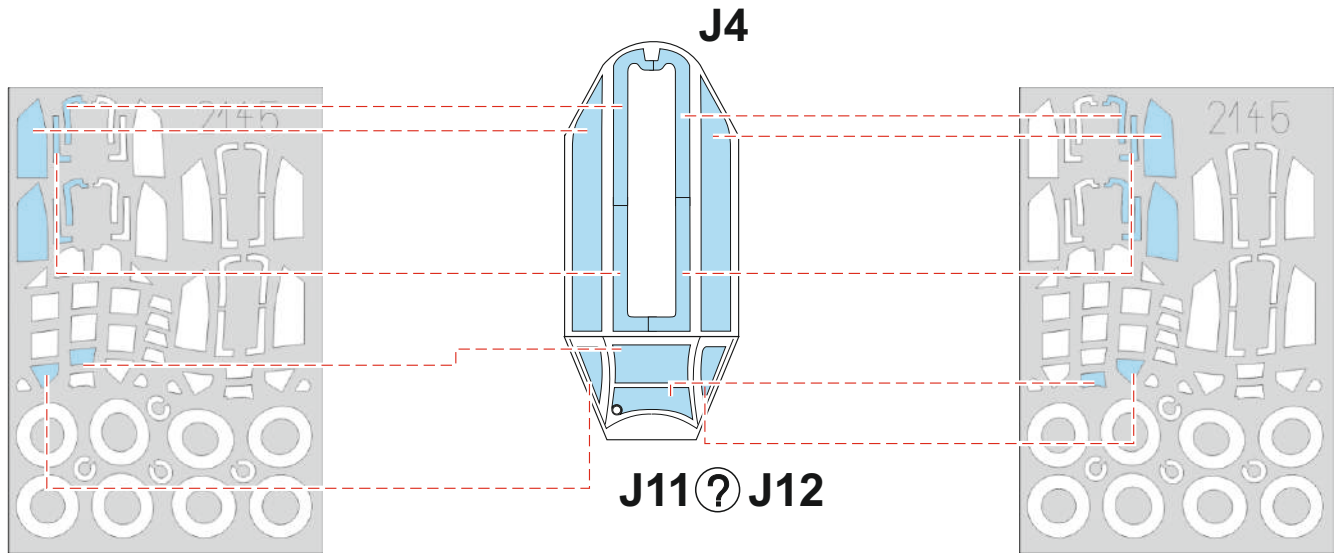


H417 C117 RLM 76 LIGHT BLUE



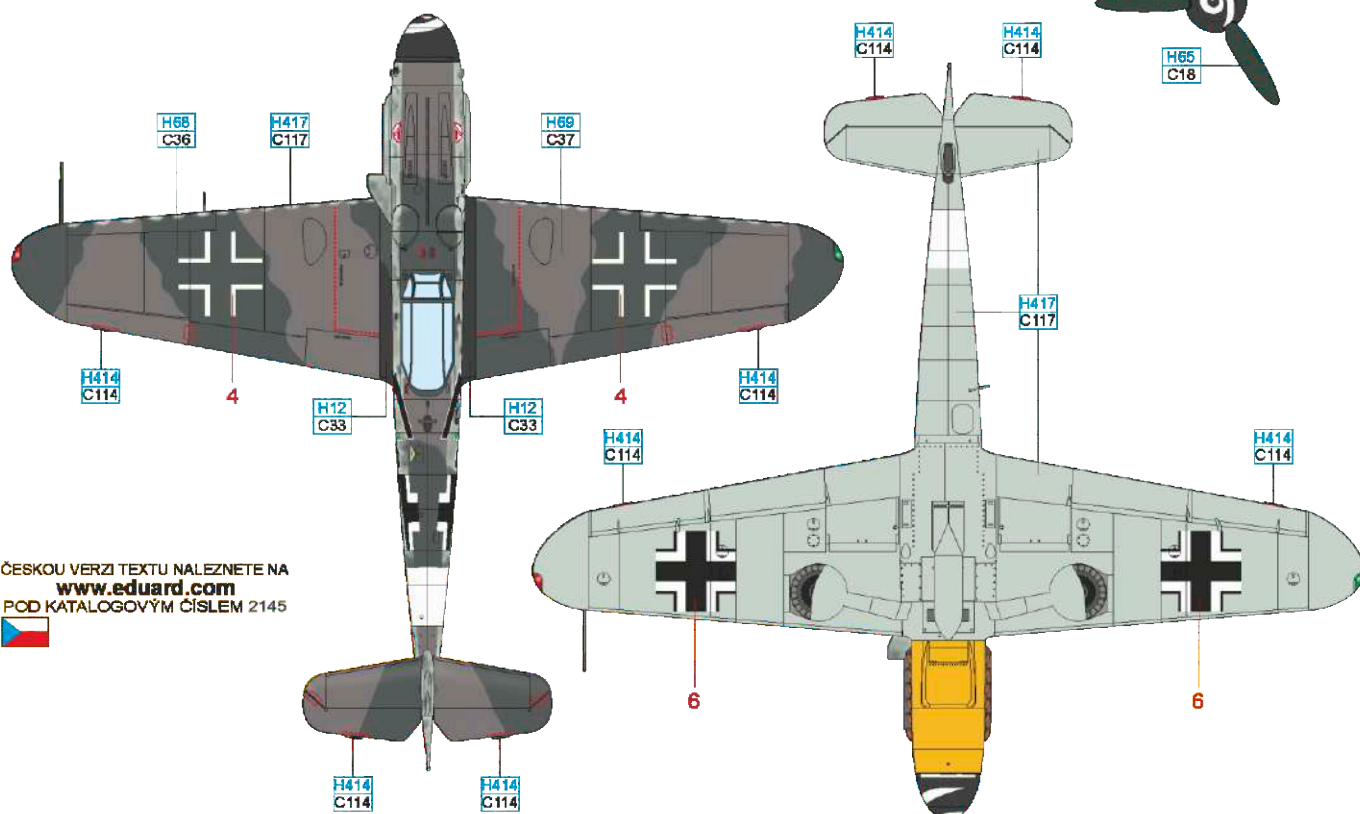
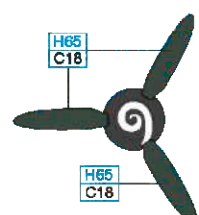
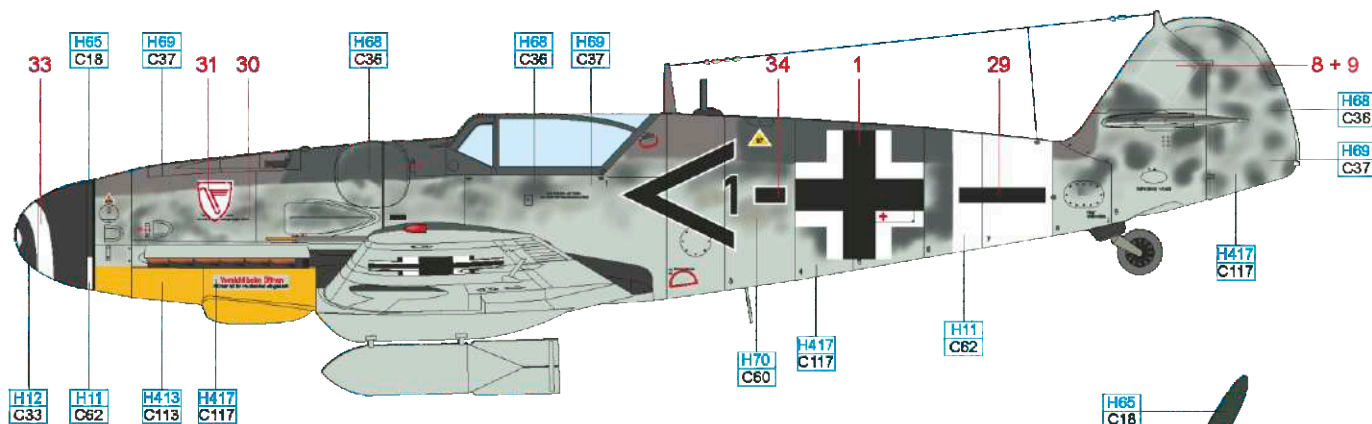
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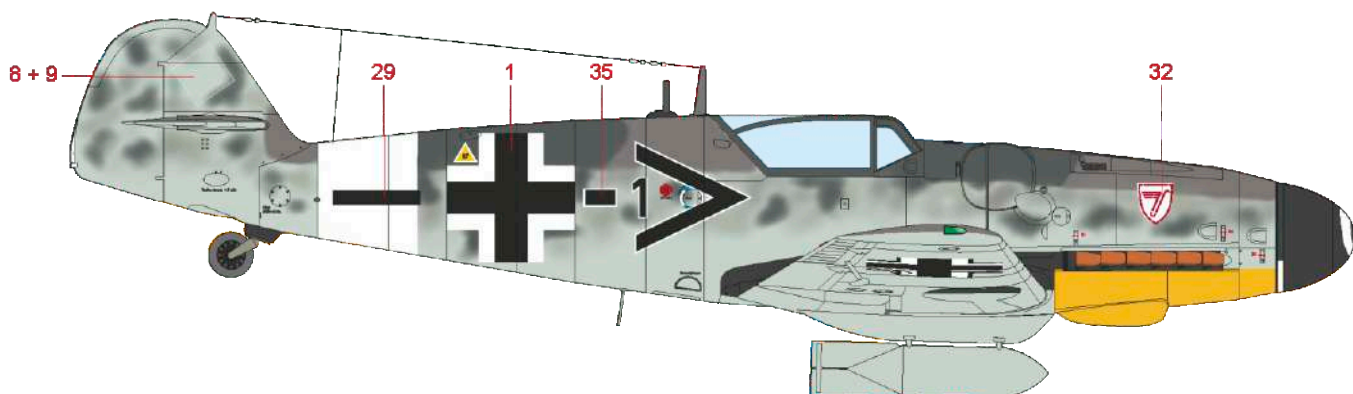


B Bf 109G-6/R1, Lt. Max-Bruno Fischer, Stab II./JG 3, Evreux-Fauville, France, June 1944

This aircraft was originally part of Geschwaderstab JG 3 "Udet" and bore the designation of one of the Kommodore's wingmen. The white band on the fuselage served as a quick identification element for JG 3 within fighter formations on the Western European battlefield. In early June 1944 Maj. Heinz Bär assumed command of JG 3 and he replaced the aircraft in his Stab with Fw 190As and transferred the original planes of his flight to Stab II./JG 3, commanded by Hptm. Gustav Frielinghaus (74 victories). However, at the beginning of the invasion, the CO of II./JG 3 was unfit for combat activities, and the Gruppe was led during the move to Normandy by his Adjutant, Lt. Max-Bruno Fischer. During the flight to Evreux base, Fischer was the sole II./JG 3 airman to arrive at the base due to poor weather conditions. He faced a field court martial threat for this, which was halted thanks to JG 2 Kommodore Maj. Bühligen. From the very first day of deployment in Normandy, II./JG 3 conducted strafing attacks against the invading forces. Fischer later became the Adjutant of III./JG 4 and achieved a total of three victories.



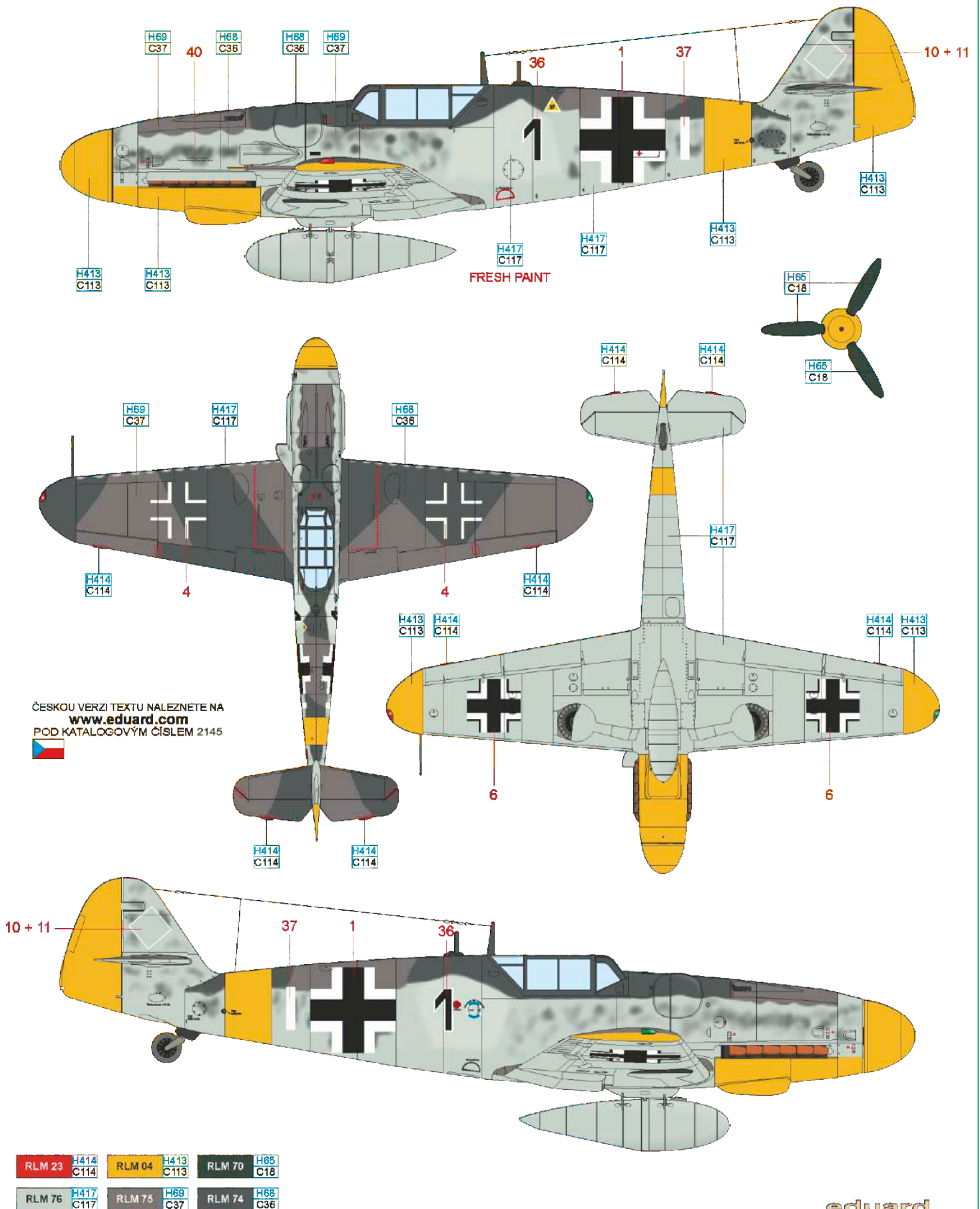
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RLM 76	H417 C117	RLM 75	H69 C37	RLM 74	H68 C36	RLM 02	H70 C60
					FLAT BLACK	H12 C33	

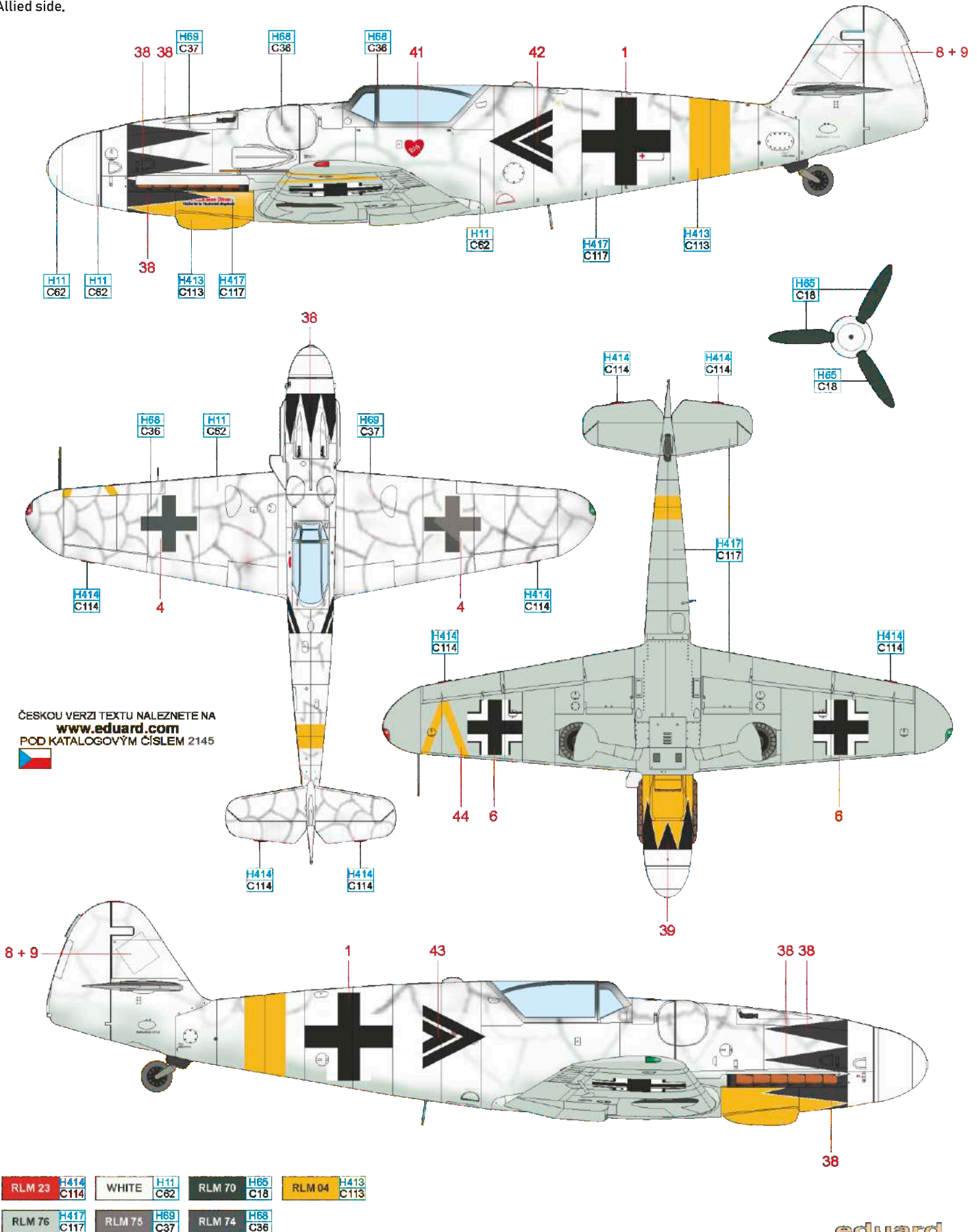
C Bf 109G-6, Lt. Anton Hafner, CO of 10./JG 51, Tilsit-East, the Soviet Union, August 1944

Anton Hafner achieved a total of 204 victories, all within the ranks of JG 51. He also fought with the unit in Tunisia, where he was shot down and wounded, but the vast majority of his successes were achieved on the Eastern Front. He was awarded the Knight's Cross on August 23, 1943, and received the Oak Leaves on April 11, 1944. He became the commander of 8./JG 51 (later redesignated 10./JG 51) in mid-May 1944. At that time, III./JG 51 completed the rearmament from Fw 190A to Bf 109G aircraft. Hafner, at the helm of his Staffel, achieved 68 victories. His last fatal engagement was on October 17, 1944, when he shot down a Yak-9, but then crashed into trees east of Schweizersfelde in East Prussia, apparently due to a pilot's error. He did not survive the impact. The Bf 109 shown is one of three Hafner aircraft that are photographically documented from the summer and autumn of 1944, but its serial number is unknown. The original Stab markings on the sides of the fuselage appear to have been painted over.



D Bf 109G-14, Hptm. Erich Hartmann, CO of I./JG 53, Veszprém, Hungary, February 1945

Erich Hartmann, the fighter ace with the highest number of claimed victories in history, commenced his combat career with 7./JG 52 on October 10, 1942. He remained loyal to JG 52 until the end of hostilities when he held command of I./JG 52. His tally of claims ceased at 352. In recognition of his achievements, he was bestowed with the Knight's Cross with Oak Leaves, Swords, and Diamonds on August 25, 1944. Post-war, he was handed over to the Soviets by the Americans and was not released until 1955. During the initial half of February 1945, he briefly assumed command of I./JG 53. The young airmen sought his guidance for experience and moral support, yet Hartmann remained notably passive, engaging in only one combat flight, during which he claimed his 337th victory. The standard RLM 74 and RLM 75 camouflage had large white patches on the upper surfaces. A black, white-lined tulip graced the nose, while a heart bearing Hartmann's wife's name was added under the cockpit on the left side. A yellow band denoted the machines serving on the Eastern Front. Additionally, a large yellow V on the left wing distinguished Bf 109 from Romanian machines in the area, as Romania at the time fought on the Allied side.



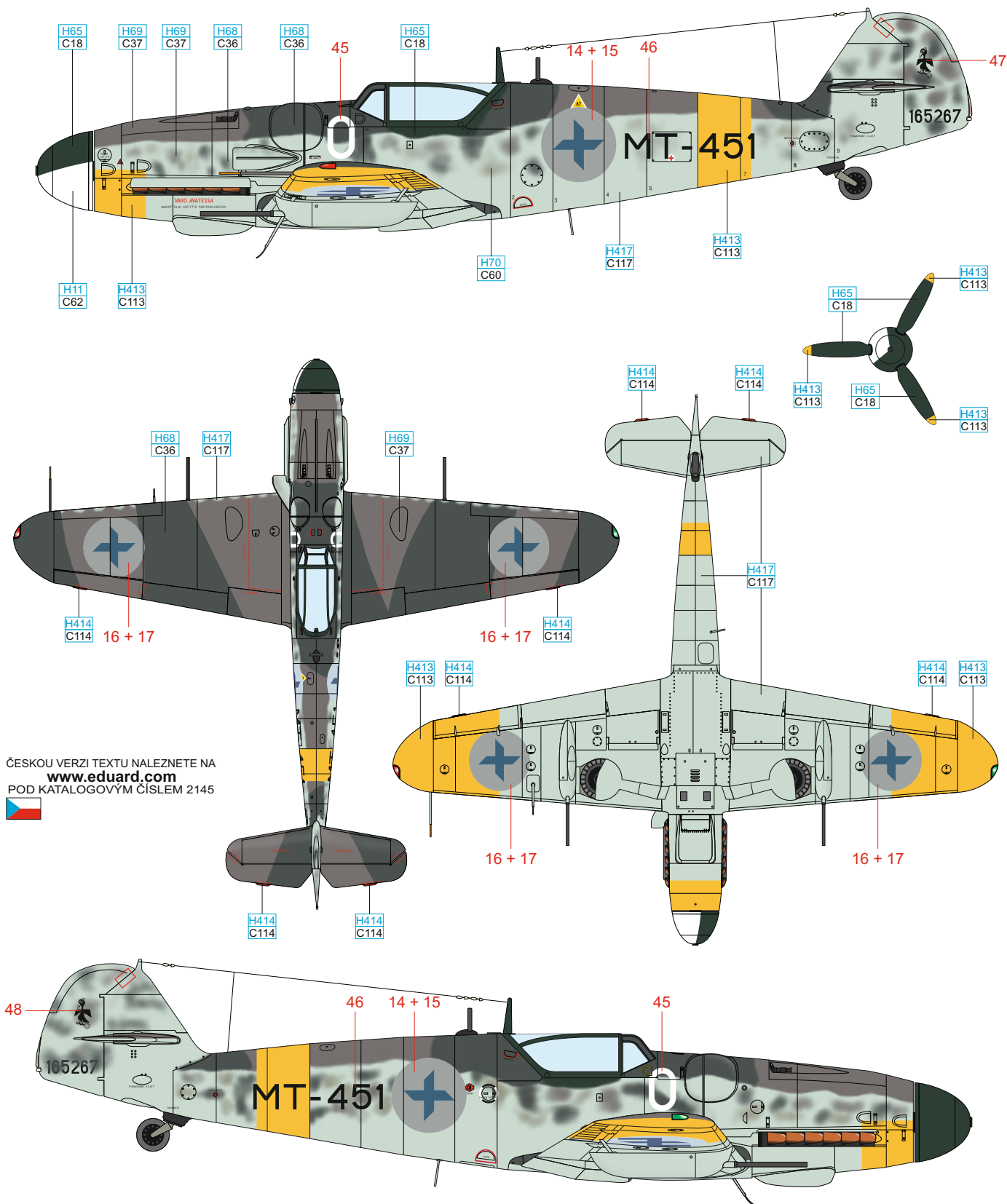
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RLM 76	H417 C117	RLM 75	H69 C37	RLM 74	H68 C36		

E Bf 109G-6, WNr. 165267, Majuri Eino Luukkanen, 1/HleLv 34, Taipalsaari airfield, Finland, July 1944

Eino Altero Luukkanen was born in 1909 in Jaakkima and started his military aviation service in 1930. In January 1938, he became Adjutant of Lentorikentti 1. During the Winter War he commanded 3/LLv 24 and achieved 2.5 victories in Fokker D.XXI. From the beginning of the Continuation War, he commanded 1/LLv 24 on Brewsters and achieved 14.5 victories. From March 1943 he led LeLv 34 with Messerschmitt Bf 109Gs at the rank of Major. Luukkanen was awarded the Mannerheim Cross on June 18, 1944. In the Bf 109G-6 (W.Nr. 165267) Eino Luukkanen achieved his last, 56th confirmed victory. His victim was a Soviet Yak-7 over Narvi, Karelia, on August 5, 1944, during a battle with a formation of six Il-2s and six Yak-7s from the 12 KIAP, KBF. It was the only kill achieved with this aircraft, which was delivered to Finland on June 23, 1943. The original German W.Nr. is visible on the rudder. At that time, it also carried wing nacelles with MG 151/20 guns. It was written off after a crash on August 25, 1947.



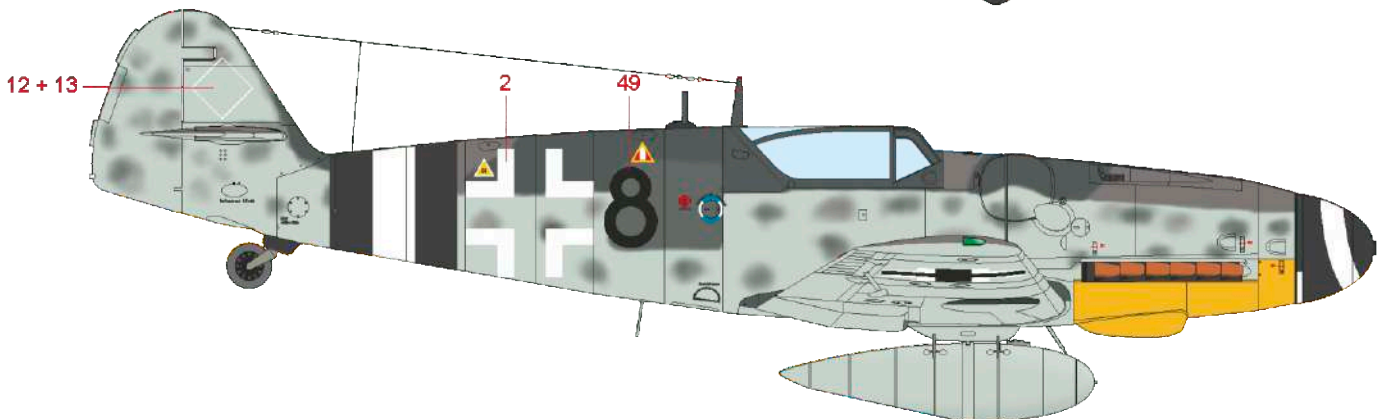
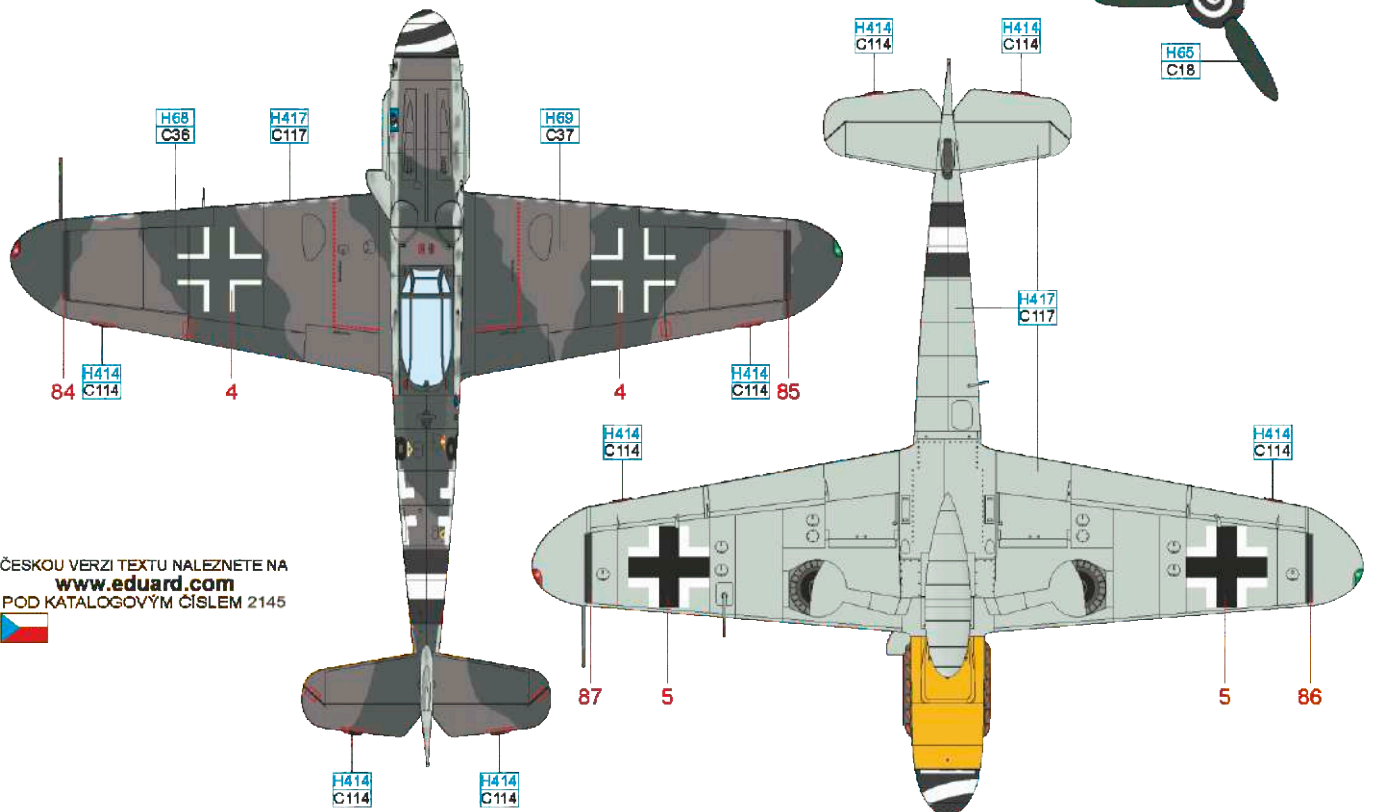
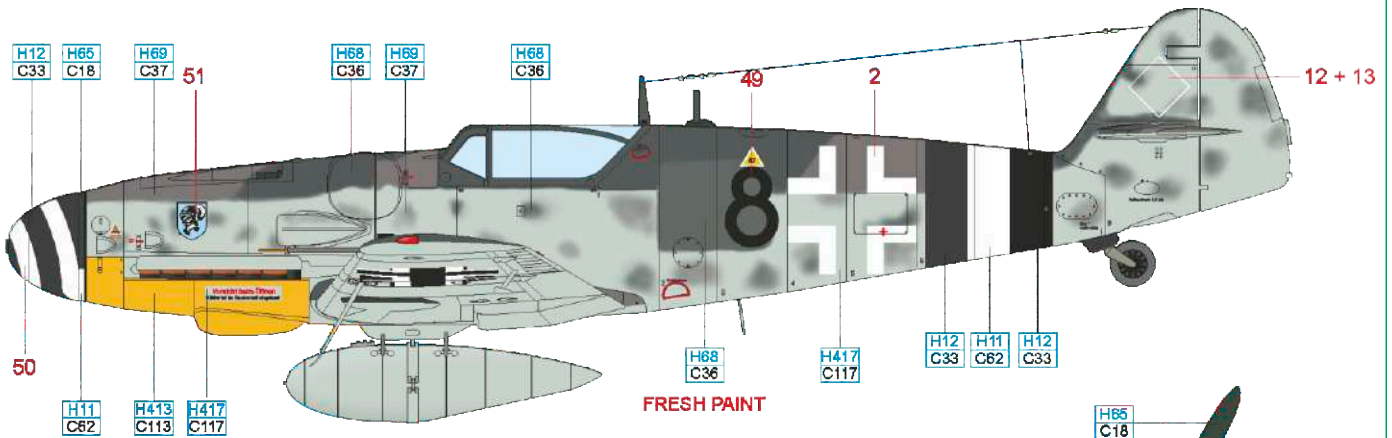
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RLM 76	H417 C117	RLM 75	H69 C37	RLM 74	H68 C36	RLM 02	H70 C60

F Bf 109G-14, Oblt. Rolf Schlegel, 10./JG 4, Jüterbog-Damm, Germany, March 1945

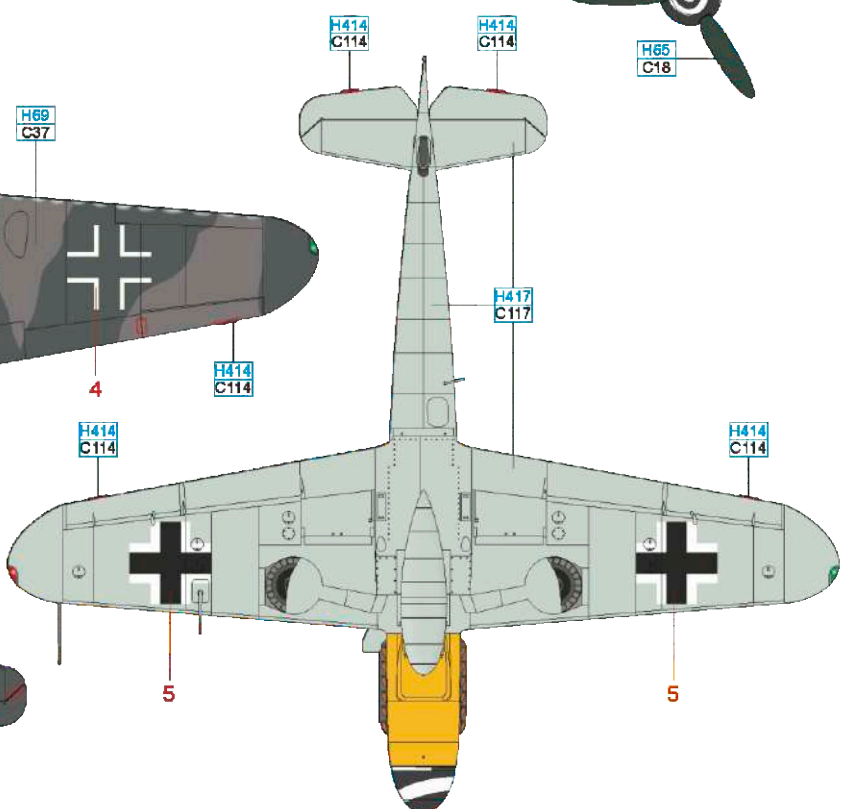
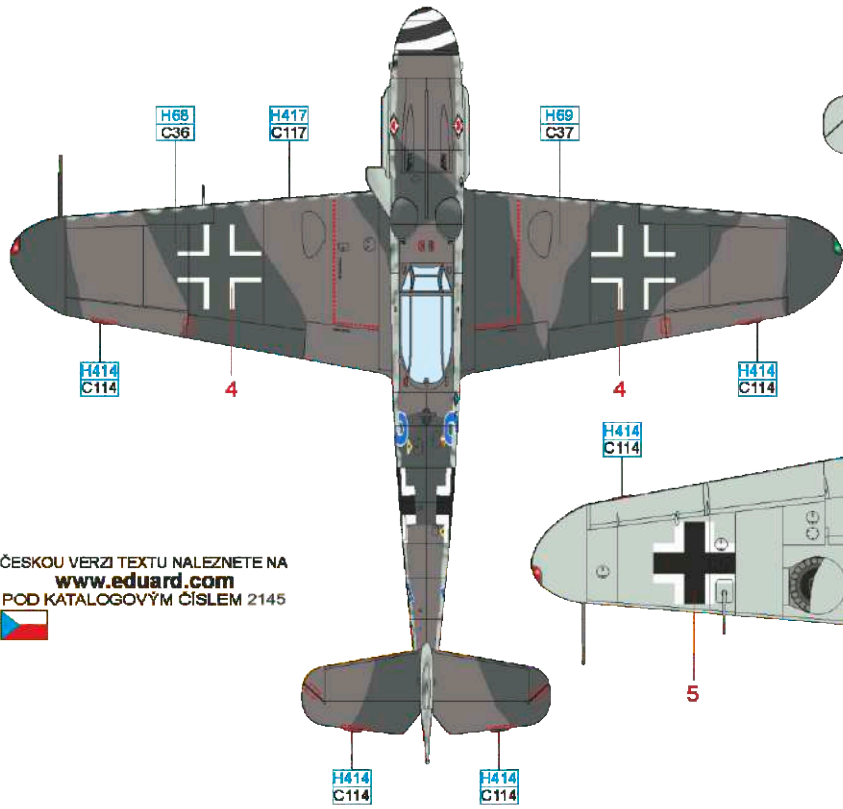
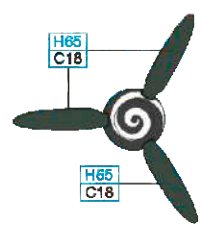
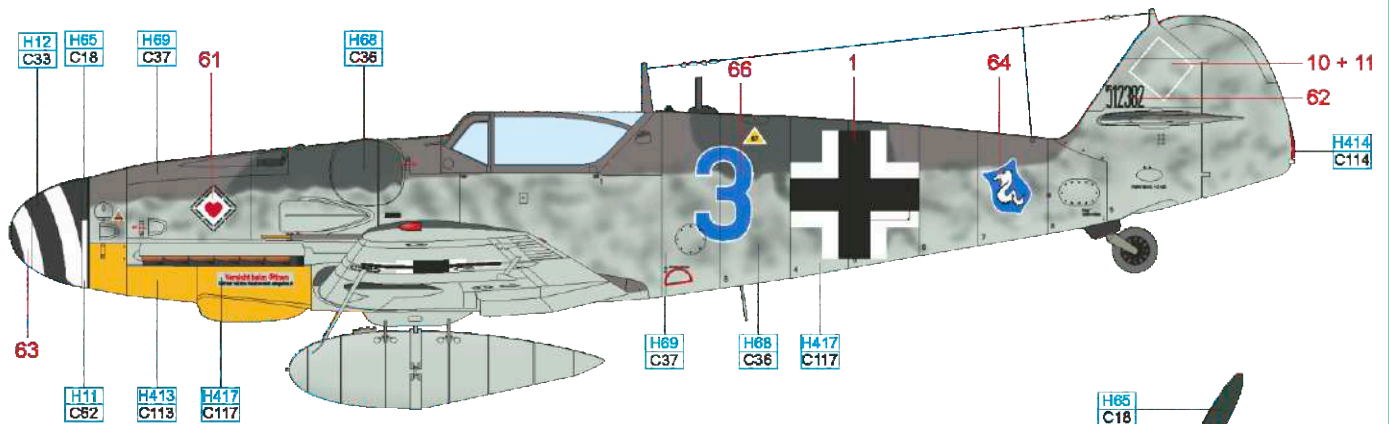
After completing his fighter training, he was assigned to 11./JG 2. With this unit, he soon moved to the African battlefield, and before the end of 1942, he was reassigned to 11./JG 53. Here, he suffered an injury, and after recuperation, he was directed to EKdo 16, a test unit designed to test the Me 163 rocket fighter. By the summer of 1944, he was already serving with JG 4, specifically its Sturmgruppe (II./JG 4), flying heavily armed Fw 190A-8/R2s. Later, he flew with JG 4's III. Gruppe in Bf 109s. Before the end of the war, he was transferred to III./EJG 2, flying the Me 262 jet, and his next unit was to be JG 7. In total, he achieved nine victories. The aircraft, in the typical camouflage of the late Bf 109G-14s produced in Leipzig at the Erla factory, had the original markings repainted in fresh RLM 74 and bore the emblem of JG 4 on the nose. The wide bands around the rear of the aircraft were an element for quick identification of JG 4 within the units fighting in Western Europe.



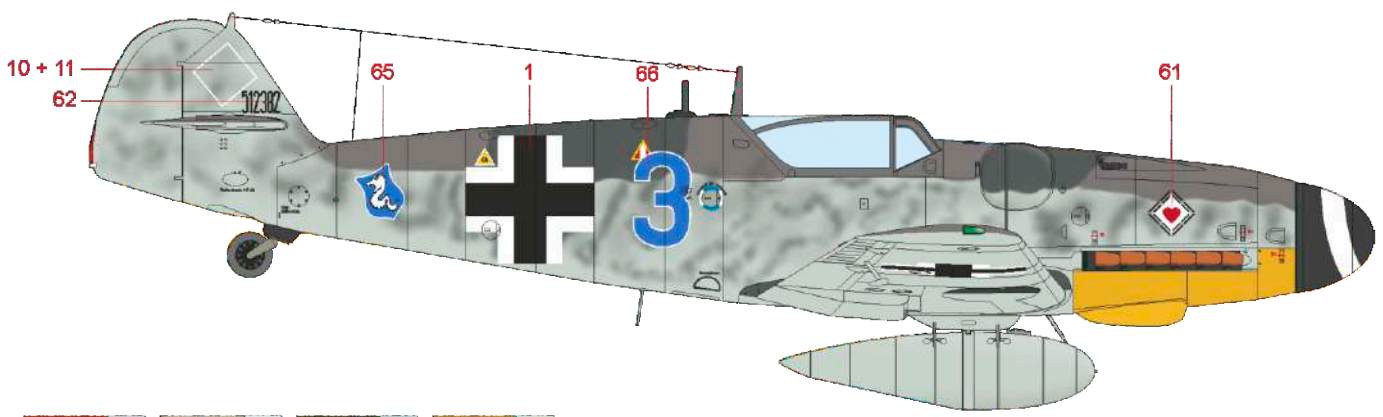
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RLM 76	H417 C117	RLM 75	H69 C37	RLM 74	H68 C36	FLAT BLACK	H12 C33

H Bf 109G-14/U4, WNr. 512382, Lt. Horst Schlick, 4./JG 77, Schönwalde, Germany, November 1944

Horst Schlick was born in 1921 in Bartenstein, East Prussia. From 1939, he served in I.(J)/LG 2, which was redesignated I./JG 77 in January 1942 in Mariupol. Schlick was a seasoned veteran who achieved two kills on the Eastern Front and at least thirty more on the Mediterranean and Western Fronts. He served most of the time as a member of its 1. Staffel. Change came in September 1944 when he took command of the 4. Staffel, with which he achieved his last three victories. In the spring of 1945, he was transferred first to training III./EJG 2, then to JG 7, equipped with Me 262 jets. However, he achieved no further success here. During the war, he participated in 480 combat sorties, during which he achieved 33 kills. The color scheme depicts Schlick's WNF-produced plane shortly after he achieved his 31st kill. It is possible that this Bf 109 had the engine cowling used on the machines produced by Erla in Leipzig. The emblem on the rear of the fuselage was the new designation for the 4. Staffel aircraft, and the emblem on the nose was Jagdgeschwader 77.



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RLM 76	H417 C117	RLM 75	H69 C37	RLM 74	H68 C36	FLAT BLACK	H12 C33

Bf 109G-14, WNr. 464380, Maggiore Mario Bellagambi, CO of 5° Squadriglia, 2° Gruppo Caccia ANR, Osoppo, Italy, March 1945

After the declaration of Italian Social Republic on September 18, 1943, a puppet state on the territory of Italy occupied by German military under the command of Benito Mussolini, Germany allowed this Republic to establish its own military force consisting of four divisions. Its air force component called Aeronautica Nazionale Repubblicana consisted of two fighter plane groups (Gruppo Caccia), torpedo groups (Gruppo Aerosiluranti Buscaglia) and several transportation squadrons. In 1945, both fighter plane squadrons flew Messerschmitts Bf 109G-6/G-10/G-14. The commander of 5° Squadriglia (called Diavoli Rossi) was Maggiore Mario Bellagambi, a fighter ace with 14 victories. In 1949 he was once again admitted to Italian air force where he became Generale di brigata aerea prior to his retirement. He died in Florence on June 25, 2001. Bellagambi's 109 was camouflaged with RLM 74/75/76 colors. The Verde Oliva Scuro 2 color is applied to the stain under the red devil painting, the emblem of 5° squadriglia. The rudder was supplied by one of the subcontractors and bears a camouflage consisting of RLM 81 and RLM 82. The yellow outline of fuselage ANR marking was either reversed or had yellow triangles around the flag as compared to other aircraft.

