MESSERSCHMITT

Bf 109 F, G, & K Series

A SCHIFFER MILITARY HISTORY BOOK

An Illustrated Study

Jochen Prien & Peter Rodeike

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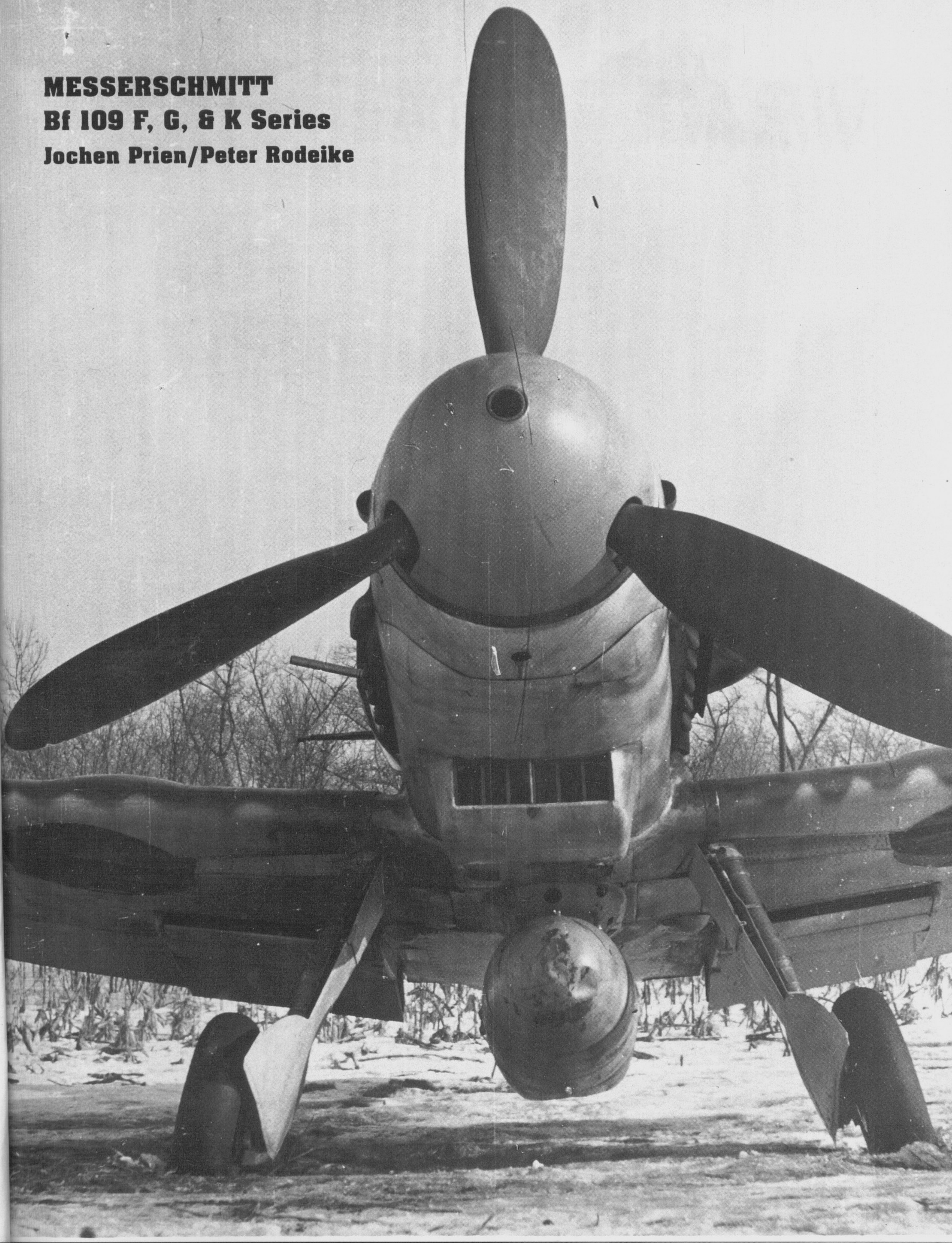

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Atglen, PA

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Translated from the German by David Johnston

Introduction

During its ten years as the Luftwaffe's standard fighter, the Messerschmitt Bf 109 had to adapt to keep up with the rapid pace of technological development and the various operational demands which were placed upon it. The result was a multiplicity of variants, and few aircraft appeared in as many variations as did the Bf 109.

A significant number of publications have attempted to come to grips with this multiplicity. This new work stands out through its methodology, which has led to new, different results. Supported by a large number of mostly until now unpublished photographs of the Bf 109, selected from more than 20,000, and detailed line drawings, this book offers a concise overview of the later versions of the Bf 109 based on the latest known information.

This work concerns itself with the F through K versions of the Bf 109. It is intended that it should supplement rather than replace the many previous treatments of this theme. We have therefore dispensed with the familiar specifications and dimensional data and instead concentrated on describing the salient points of the individual versions.

This presentation is based not just on well-known publications and handbooks, but on unknown material as well – in particular the loss reports submitted by Luftwaffe units, as well as extensive factory and RLM records. It has been possible to gather details of more than 21,000 machines from these records, details which have enabled the authors to correct errors present in existing publications.

The earlier series – Bf 109 B to E – will be dealt with in a later work. The numerous test machines and aircraft delivered to foreign air forces have been largely omitted from this work.

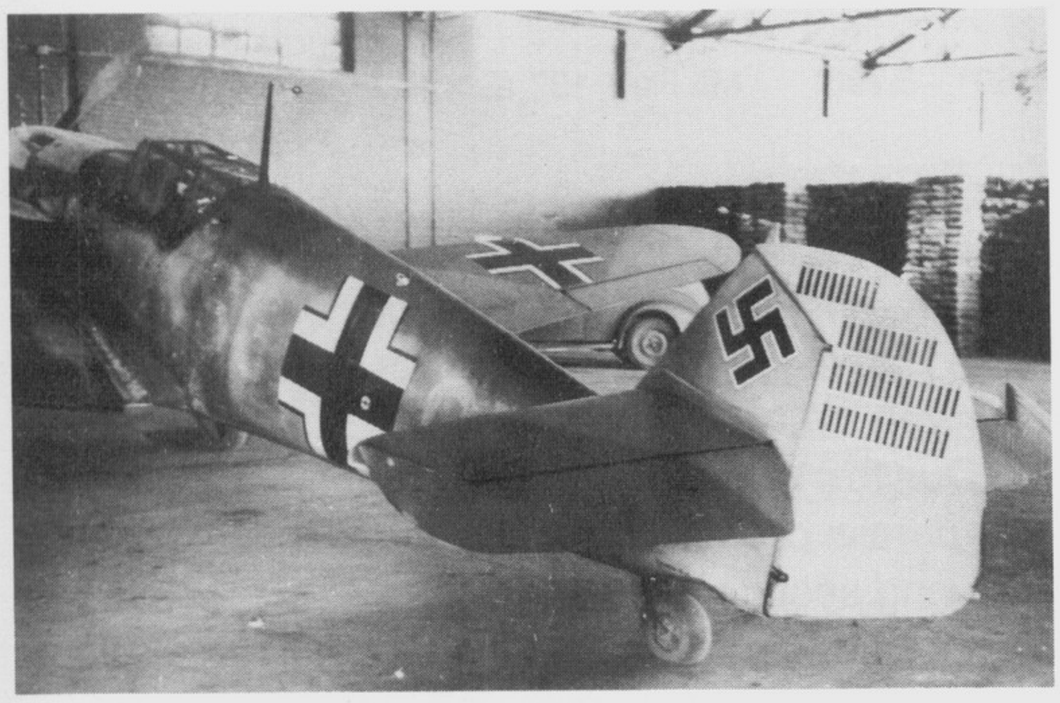
Bf 109 F Series

The F-Series, or *Friedrich*, which was introduced at the end of 1940, was a substantially redesigned version of the Bf 109 which many consider to have represented the apex of 109 development.

Compared to the E-Series, the Bf 109 F differed primarily in its considerably improved shape, which was the result of numerous aerodynamic changes. The most noticeable differences from the E-Series

The first Bf 109 F-1, WNr. 5628, Stammkennzeichen SG+GW, the aircraft of Major Werner Mölders, photographed in October 1940 soon after delivery to JG 51. The machine is still wearing its factory-applied Stammkennzeichen. Note the port beneath the windscreen for firing signal ammunition. (Petrick)

Shown here is WNr.5627, SG+GV. (Petrick)



In this photograph of WNr. 5628 the Stammkennzeichen has been overpainted, although its remnants are clearly visible. The 54 victory bars on the rudder of Major Mölders' machine indicate that the photograph must have been taken between October 29 and December 1, 1940. (Voggel)

were the revised engine cowling, the unbraced horizontal stabilizer and the redesigned wing with rounded wingtips and a revised flap arrangement.

Like the Bf 109 E, the F-Series was powered by the Daimler-Benz DB 601 engine. In contrast to the preceding series the Bf 109 F was armed with only three weapons, one of which was an engine-mounted cannon, which Messerschmitt had finally succeeded in introducing into series production. The rather light armament of the F-Series was the subject of considerable controversy from the time of its introduction.

The F-Series was preceded by a series of *Versuchs* machines, or prototypes, from the summer of 1940. The known V-Series aircraft are:

V 21	WNr. 5602	CE + BN
V 22	WNr. 1800	CE + BO
V 23	WNr. 5603	CE + BP
V 24	WNr. 5604	VK + AB

There was presumably also a small F-0 series.

Bf 109 F-1

According to the C-Amt program for the production of fighter aircraft (dated 01.10.1940), the Bayerische Flugzeugwerke and the Wiener Neustädter Flugzeugwerke (WNF) were to build a total of 133 F-1 series aircraft between July 1940, when production was to begin, and the end of the year. Deliveries of the Bf 109 F-1 to the Luftwaffe began in the autumn of 1940. The new version first saw action in October 1940 with Stab/JG 51, where Werner Mölders, as early as October 6th according to other sources, flew his first sortie in a *Friedrich* on October 25, 1940. From the beginning of November 1940 I./JG 51 also received several Bf 109 F-1 machines. The first known loss of one of these aircraft occurred on November 11, 1940, when the *Staffelkapitän* of 1./JG 51, Oblt. Georg Claus, failed to return following an engagement off the British coast. Claus, who was flying WNr. 5635, was listed as missing in action. Small numbers of Bf 109 F-1 aircraft reached the *Ergänzungsgruppen* of JG 26 and JG 51 in November 1940. They were apparently intended to be used to convert pilots based on the Channel to the new type close to the front.

Other *Gruppen* received their first *Friedrichs* in early 1941, the aircraft arriving simultaneously with the F-2 version, which will be described later. The following units are known to have received at least a few Bf 109 F-1 fighters:

I. and IV./JG 1, III./JG 2, Stab, I. and III./JG 3, Stab, II. and III./JG 26, Stab, I., II., III., and IV./JG 51, I./JG 52, Stab, I., II. and III./JG 53, as well as Stab and I./JG 54. JG 5 later received individual F-1s,

Two brand-new Bf 109 Fs of 3./JG 51, photographed at Mannheim in early 1941 while I. Gruppe was reequipping on the F-Series. Note the yellow engine cowling – still without the Geschwader emblem – and the aircraft in the background coded "Brown 3." (Voggel)

followed over the course of time by *Ergänzungs-Jagdgruppen West, Süd* and *Ost*. It should be mentioned that none of the *Gruppen* named above were ever completely equipped with the Bf 109 F-1 due to the small numbers which were in fact built.

Contrary to the original *C-Amt* plan, production of the Bf 109 F-1 in fact totalled 208 machines of which 157 were built at the Bayerische Flugzeugwerke's Regensburg factory and a further 49 by WNF. All known F-1 *Werknummern* are found within two blocks:

5,601 - 5,790	Mtt Reg	157 aircraft	08.40 - 02.41 incl. V-Series
6,601 - 6,650	WNF	49 aircraft	11.40 - 01.41

The first-mentioned *Werknummer* block also contained several V-Series machines and numerous F-2 aircraft.

Due to a lack of reliable information on the Bf 109 F-1, details of the F-Series will be presented in the following section on the F-2.

Fw. Werner Bielefeldt of 7./JG 51 on his aircraft "White 11," a Bf 109 F-2. (Bielefeldt)

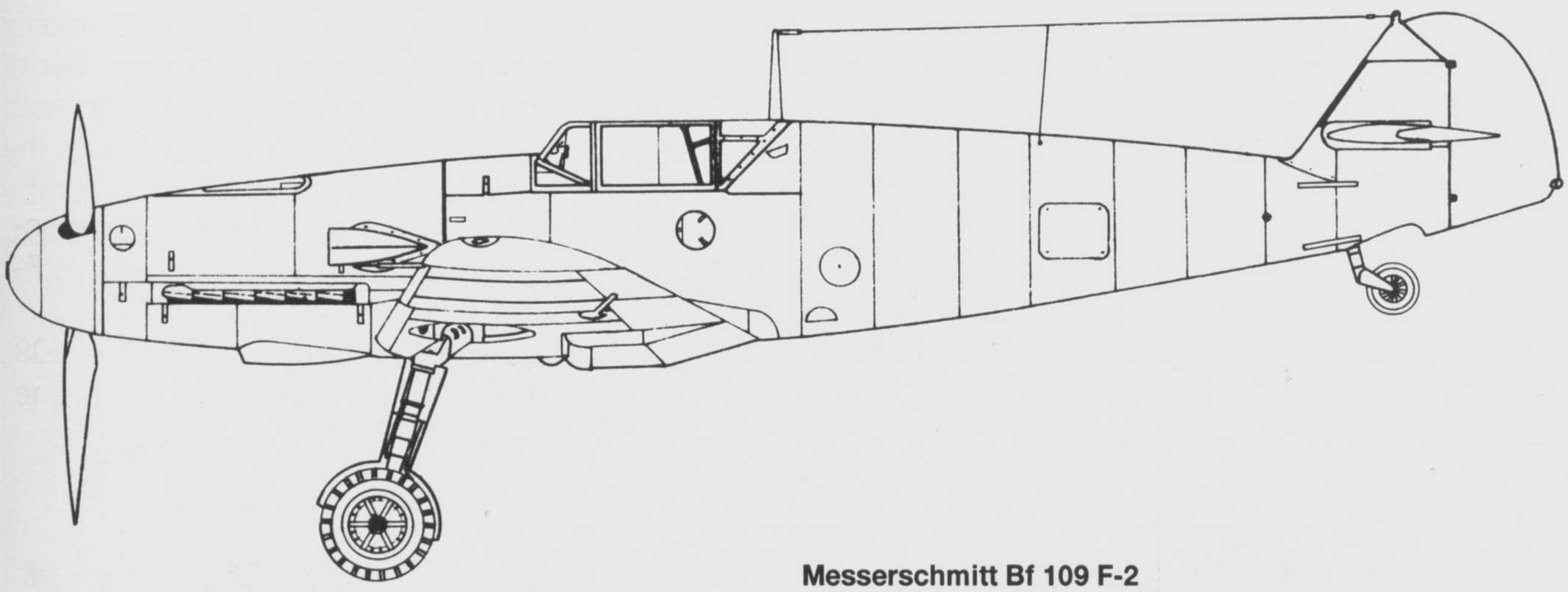
Another photograph of Bielefeldt's F-2. The first two digits of the Werknummer (67..) are visible behind the two victory bars on the aircraft's fin; both claims were obtained in the West. Visible beneath the horizontal stabilizer are the two reinforcing strips for the tail unit. Both photographs were taken in June 1941 before the unit moved east in preparation for the German invasion of the Soviet Union. (Bielefeldt)

Bf 109 F-2

Deliveries of the F-2, the first major production variant, began in January 1941. Although the *C-Amt* plan of October 1940 called for the production of only 120 Bf 109 F-2 aircraft, about 1,380 aircraft of this type were in fact built between October 1940 and August 1941. Production was spread out over the following *Werknummer* blocks and manufacturing plants:

5401 - 5558	Ar War	158 aircraft	02.41 - 05.41
5601 - 5790	Mtt Reg	33 aircraft	- 02.41
6651 - 6822	WNF	172 aircraft	01.41 - 04.41
8075 - 8266	Erla	192 aircraft	02.41 - 05.41
8901 - 9001	Mtt Reg	101 aircraft	03.41 - 04.41
9151 - 9250	Mtt Reg	100 aircraft	04.41 - 05.41
9535 - 9734	Ar War	200 aircraft	06.41 - 08.41
12601 - 12978	AGO	378 aircraft	11.40 - 06.41

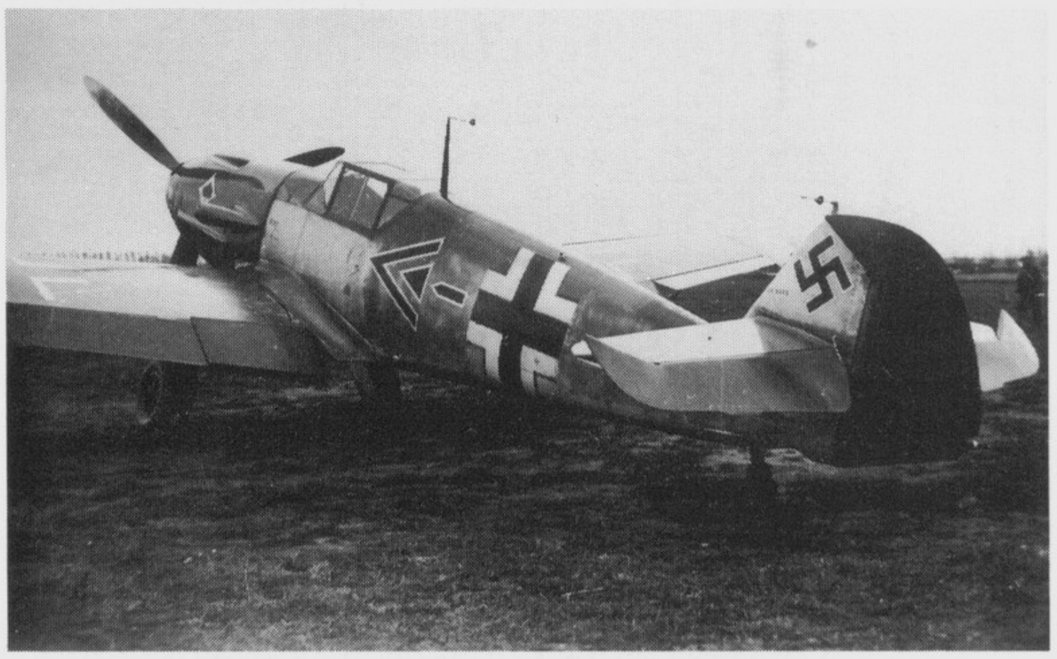
The Bf 109 F-2 was flown in action by Stab, I., III., IV./JG 1, Stab, I., II., III., 10./JG 2, Stab, I., II., III./JG 3,



Messerschmitt Bf 109 F-2

I., II., III., IV./JG 5, Stab, I., II., III., 10./JG 26, Stab, I., II., III., IV./JG 51, Stab, I., II., III./JG 52, Stab, I., II., III./JG 53, Stab, I., II. and III./JG 54, *Jagdgruppe Süd*, *Jagdgruppe Ost* and *Jabo-Gruppe Afrika* (also designated *Jabo-Gruppe* OB-Süd), as well as by various tactical reconnaissance (*Nahaufklärungs*) and close-support (*Schlachtflieger*) units. Many training units later received F-2 aircraft when they were replaced by newer versions of the Bf 109; no listing of these will be attempted however.

Like the F-1, the F-2 was powered by a DB 601 N engine driving a VDM three-bladed, all-metal propeller. Diameter of the propeller disc was three meters and the propeller blades were slightly wider than those of the E-Series. The spinner was considerably larger than that found on the E-Series and blended smoothly into the likewise revised contours



Bf 109 F-2, WNr. 6683, the aircraft of Major Günther von Maltzahn, Kommodore of JG 53 "Pik-As." It wears the early green/grey camouflage scheme worn by F-Series aircraft with a light mottle on the fuselage sides except in the area of the tactical markings where the mottling is much heavier. The engine cowling and rudder are yellow. (Conrad)

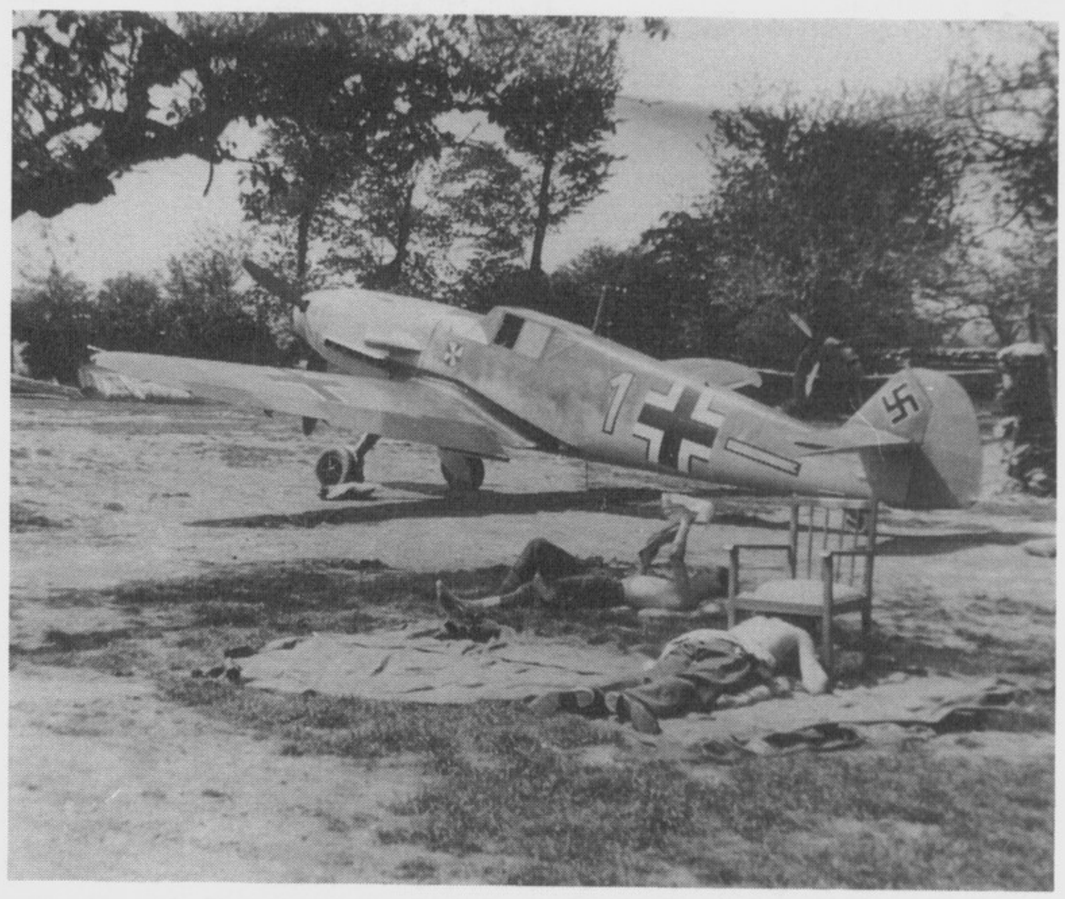
"Black 9," a Bf 109 F of 11./JG 51, following a landing accident in early 1941. The aircraft is possibly WNr. 5688, an F-1 which crashed while landing at Marquise on April 17, 1941, sustaining 45% damage. (Führing)

"Chevron Triangle," the aircraft of Hptm. Wolf-Dietrich Wilcke, the Kommandeur of III./JG 53, photographed presumably at Berck-Sur-Mer in early 1941. This F-2 wears a rather faded green-grey finish with a yellow engine cowling. Standing in front of the cockpit is Hptm. Wilcke; to his left is Lt. Vockelmann of 7./JG 53. (Conrad)

The reserve aircraft of the Gruppenstab of III./JG 53 with the tactical marking "Chevron R," the "R" presumably standing for reserve. This F-2 was photographed at Berck sur Mer in early 1941. (Conrad)

of the engine cowling. The ejector exhausts on both sides of the engine were enclosed somewhat differently from those of the Bf 109 E. A metal shield was fitted above the left row, which prevented exhaust fumes from entering the supercharger air intake mounted above. The supercharger air intake itself was considerably changed and now projected in an elbow shape from the left side of the engine cowling. The mouth of the intake was circular in profile.

One area of the Bf 109 extremely vulnerable to enemy fire was its cooling system. Even an insignificant hit could quickly lead to a complete loss of coolant and an inevitable engine seizure. This weakness was responsible for a large number of losses and led in 1941 to the introduction of radiator cutoff valves. These allowed either wing radiator to be shut down in the event of a hit in the cooling system, so as to preserve the remaining coolant for the other, intact radiator and thus enable the aircraft to return safely. These radiator cutoff valves were not installed on the production line, rather they were delivered to front-line units as kits to be installed in the aircraft, at least this is known to have been the case with JG 51 and JG 52. Though the system performed satisfactorily in service, for some obscure reason the number of modification kits was very limited. Indeed, the crash or forced-landing of a machine equipped with the cutoff valves often led to a race between nearby units to recover the coveted valves for their own use. For some unexplained reason the retrofitting of



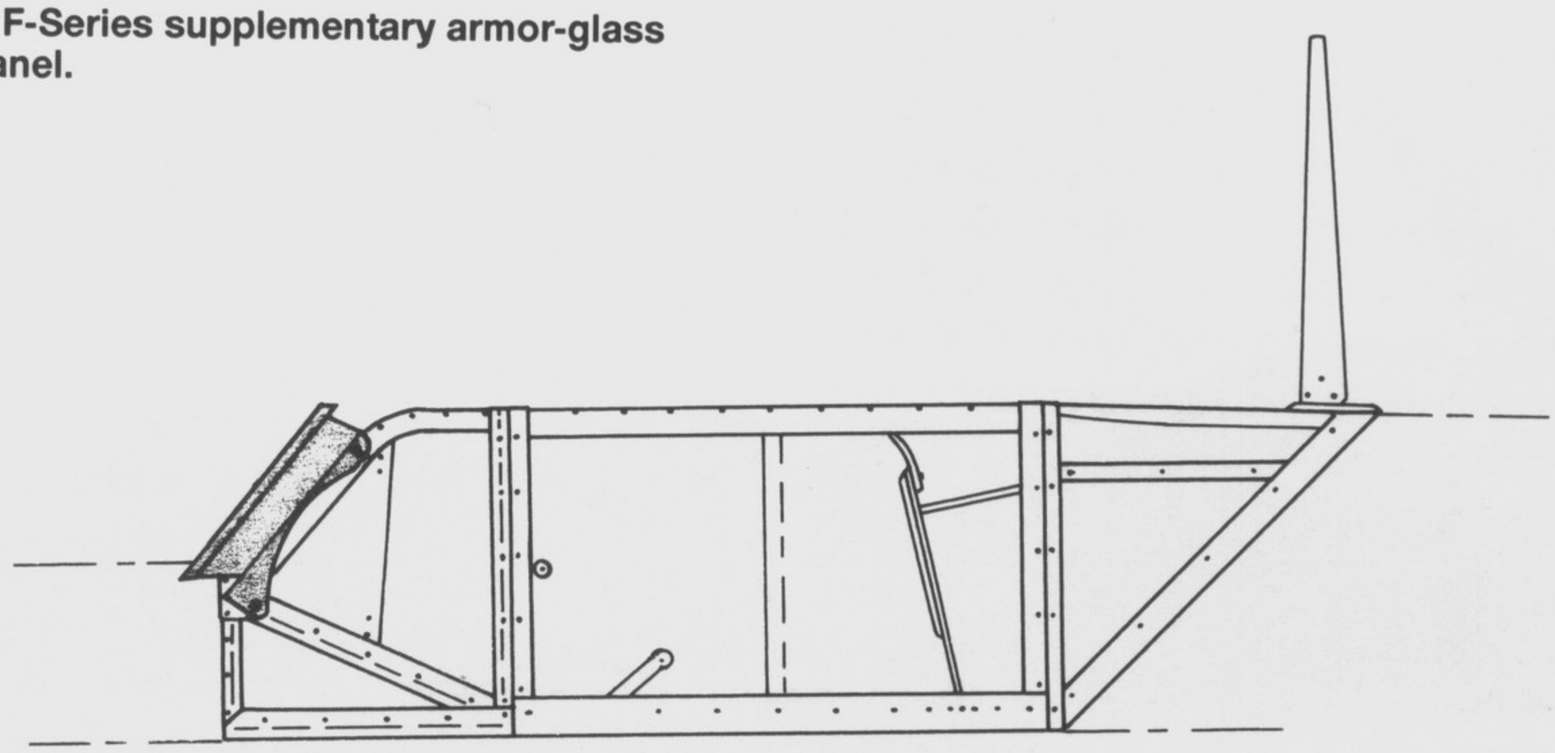
This Bf 109 F-2, "Yellow 1," was the aircraft of Oblt. Heinrich Sannemann, Staffelkapitän of 6./JG 3. The photo was taken in May 1941 at Monchy-Breton, where II./JG 3 was based prior to its transfer east in June. The machine wears a densely-mottled green/grey finish with yellow engine cowling and rudder. Note the black-painted area behind the ejector exhausts and the Gruppe emblem of II./JG 3 on the fuselage side in front of the cockpit. (Sannemann)

The yellow engine cowling of an F-2 of the Gruppenstab of III./JG 3 at Lilliers in May 1942. In the background is the Messerschmitt of Major Günther Lützow, the Kommodore of JG 3, a Bf 109 F-2 with the Werknummer 8117 and the tactical marking "White Triple Chevron." (Sochatzy)

"Chevron Triangle," a Bf 109 F-2 with the Werknummer 6674, during an engine run-up. The aircraft was flown by Hptm. Heinz Bretnütz, the Kommandeur of II./JG 53. Shown to advantage are details of the aircraft's green/grey finish with very light fuselage sides, yellow engine cowling, dark green mottling on the upper surface of the cowling as well as the propeller spinner, telescopic sight in the windscreen and the monogram "Peter" beneath the cockpit sill. (Petrick)

"Yellow 6," an F-2 of 6./JG 53, jacked up to have its weapons bore-sighted, at Berck sur Mer in early 1941. Noteworthy is the heavy mottling in dark green on the top of the yellow engine cowling as well as on the yellow spinner. (Reiterer)

Installation of F-Series supplementary armor-glass windscreen panel.

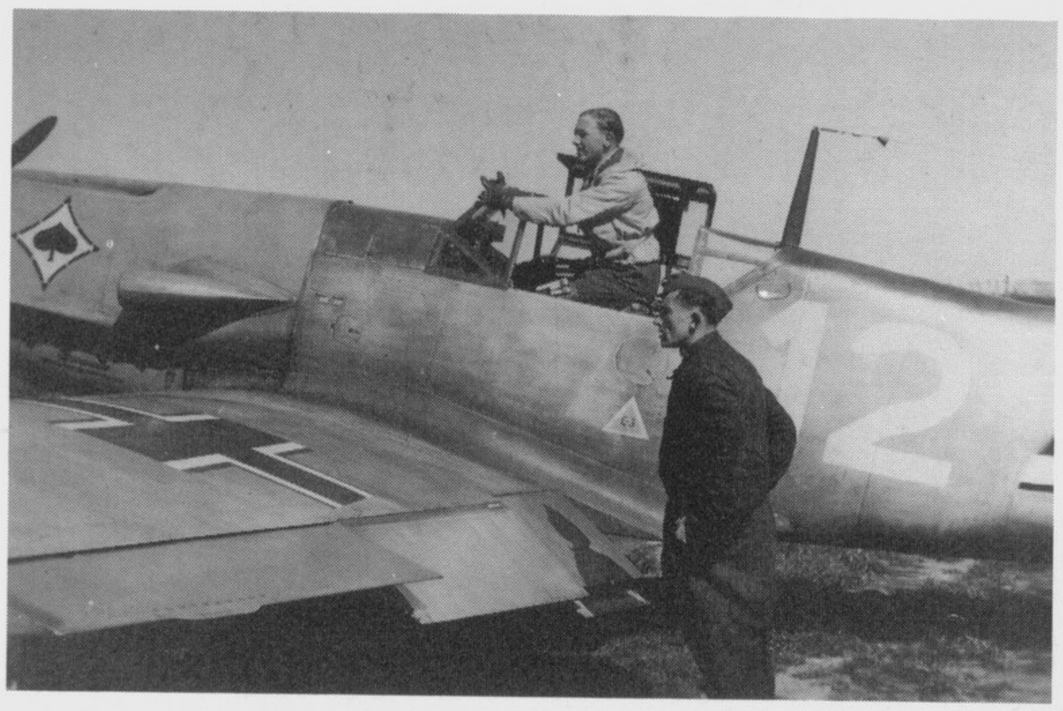


cutoff valves was restricted to the F-Series; they were neither fitted to the following G-Series during production nor were they made available as modification kits.

Compared to the E-Series there were only minor changes in the cockpit canopy. According to the pilot handbook for the Bf 109 F the forward, lower triangular panel on the right side of the windscreen was supposed to be replaced by a metal panel with a port for firing signal flares; externally this could consist of a forward-pointing tube or a simple opening. In fact a large number of Bf 109 Fs (probably limited to F-1 and F-2 machines) retained the conventional glazing. A two-piece, all metal armor shield for the pilot's head was fitted in the folding portion of the canopy on the production line. A supplementary armor-glass panel could be retrofitted in front of the windscreen.

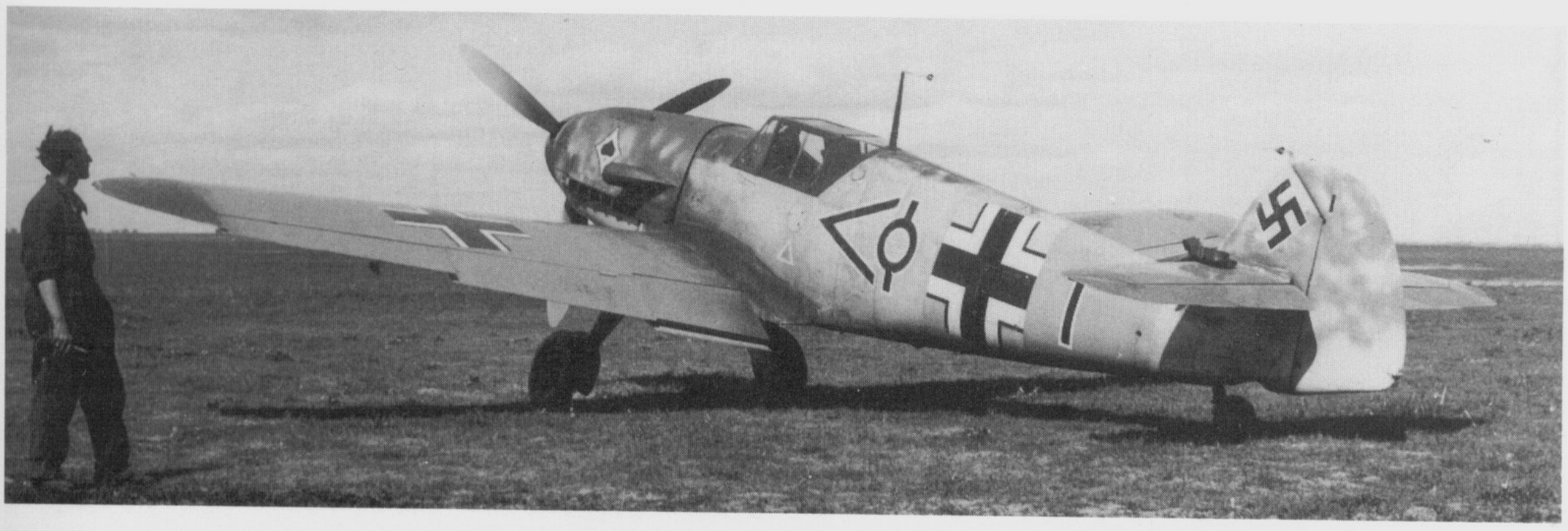
On the Bf 109 F the fuel tank filler point was moved from the fuselage spine to the left side of the fuselage beneath the cockpit sill.

The tail unit of the Bf 109 F was changed considerably; gone was the external bracing for the horizontal stabilizer. The revised tail unit proved to be too light, however, and this led to a series of crashes. As a result two narrow, horizontal metal bands were installed on both sides of the rear fuselage as stiffen-

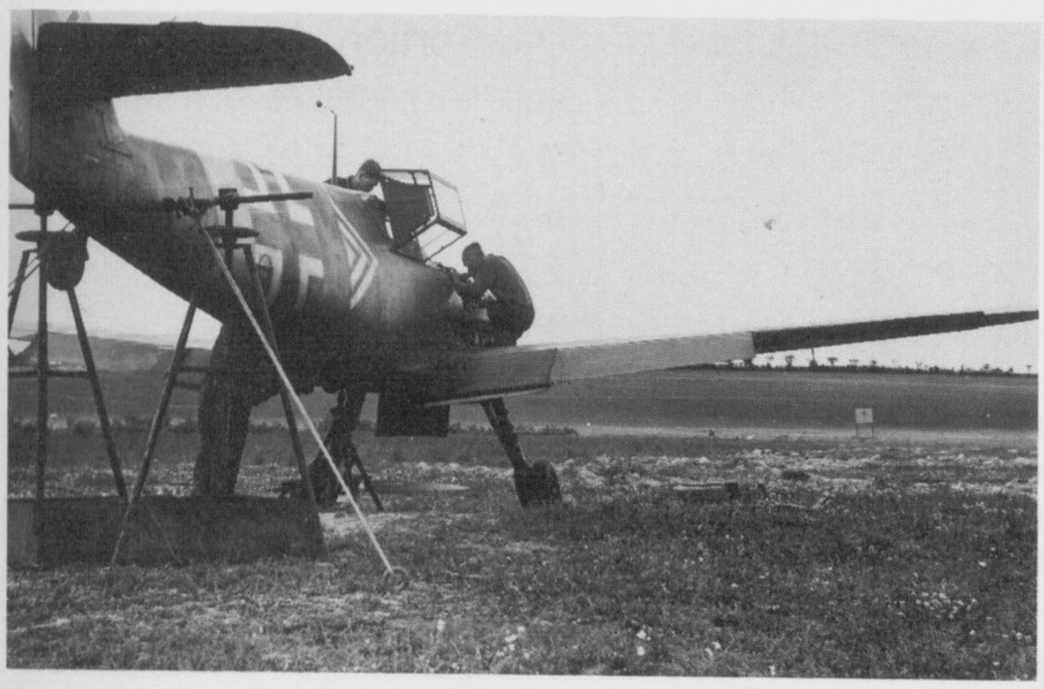


Lt. Karl Vockelmann of 7./JG 53, photographed in early 1941 at Berck sur Mer in the cockpit of his aircraft "White 12," an F-2 with the Werknummer 8093. This shot provides a good view of the arrangement of the aircraft's ailerons, landing flaps and radiator flaps as well as the narrow supercharger air intake on the yellow engine cowling. (Rauer)

A later photograph of Bf 109 F-2 Werknummer 6674, the mount of the Kommandeur of II./JG 53, Hptm. Bretnütz. (Compare with photo at the top of page 13) The aircraft's original scheme has been oversprayed with a heavy mottling of – probably – dark green on the fuselage sides and wing upper surfaces. The yellow identity markings from early 1941 have been overpainted in the process, while the victory bars on the rudder are barely visible. (Nitz)



The aircraft of Lt. Jürgen Harder of Stab III./JG 53, a Bf 109 F-2 with the Werknummer 8085, photographed at the forward airfield of Sobolewo on the first day of the Russian Campaign. While the finish on the fuselage sides is very light, the engine cowling is heavily mottled in a dark color, the original yellow finish having been oversprayed. (Harder)



One of the three Bf 109 F-2s flown by Major Günther Lützow as Kommodore of JG 3 on the Eastern Front in July 1941. It is very likely that this is Werknummer 9624. The aircraft wears a triple chevron in white as a tactical marking. Clearly visible are the external stiffeners beneath the tail unit, the head armor in the folding hood and the arrangement of the ailerons, landing flaps and radiator flaps. (Lützow)

Günther Lützow in the cockpit of "Triple Chevron." This photo provides a good view of the supplementary armor-glass panel installed in front of the windscreen. (Lützow)

ers (at the tail unit bearer attachment point across Frame 9). These external stiffeners were absent from early F-1s and F-2s, but were introduced as production went on. It is presumable that those machines already delivered were retrofitted accordingly. The rudder control cable was moved inside the fuselage and was no longer externally visible as on the Bf 109 E. The tailwheel (290 x 110 mm) was semi-retractable, so that part of the tailwheel was always visible in the tailwheel recess during flight.

The most noticeable difference in the F-Series wing, compared to that of the E-Series was its rounded wingtips. The pitot tube was moved to the forward edge of the left wingtip. The trailing edge flaps were likewise altered significantly; the landing flaps now extended only as far as the wing-mounted radiators. Behind the wing radiators, whose shape had also been revised considerably, were radiator shutters designed as split flaps, which were used as supplementary landing flaps.

A large part of the F-2 series retained the squared-off wheel wells of the E-Series. Others received circular wheel wells which were to become a characteristic feature of the F-Series. The mainwheel tires

These three photos of "Yellow 1," an F-2 flown by Oblt. Heinrich Sannemann, Staffelkapitän of 6./JG 3, in July 1941, also reveal details of the external armor-glass panel. During an engagement with Soviet bombers a bullet struck the armor-glass and caused it to shatter but failed to penetrate into the cockpit. (Sannemann) Below right: The same aircraft from the other side. Note the hand-hold cover on the panel in front of the windscreen and the flare port, which has quite obviously been sealed, below the windscreen side panel. (Sannemann)

remained unchanged at 650 x 150 mm and were mounted on the usual spoked rims. The shape of the mainwheel leg doors was changed somewhat.

The F-2 was armed with an MG 151/15 cannon between the engine cylinder banks in place of the MG-FF of the F-1, as well as the two MG 17 machine guns above the engine which remained unchanged. The F-Series radio installation consisted of an FuG VIIa and an FuG 25, whose whip antenna was visible beneath the underside of the fuselage behind Frame 3.

A number of F-2s were fitted with bomb racks for either one 250 kg bomb or 4 x 50 kg bombs; machines so equipped received the designation F-2/B.

This Bf 109 F-2, WNr. 5458, was flown by the Kommandeur of I./JG 3, Hauptmann Hans von Hahn, at the beginning of the Russian Campaign. Clearly visible are the narrow supercharger air intake, shallow oil cooler bath and the angular mainwheel wells. Also note the Gruppe emblem on the engine cowling and the original spiral on the propeller spinner. (Lorant) Below: Another view of Hptm. von Hahn's F-2. Worthy of note are the unusual Stab marking, von Hahn's personal emblem, a cock's head, and the unusual color scheme with its numerous dark-colored rings on the fuselage sides. (Lorant)

Provision was also to have been made for the installation of two 13 mm MG 131 machine guns above the engine in place of the usual MG 17s; such aircraft received the designation F-2/U1. Apart from test machines only one such F-2 is known; it was flown by Obstlt. Galland in the autumn of 1941 with Stab/JG 26.

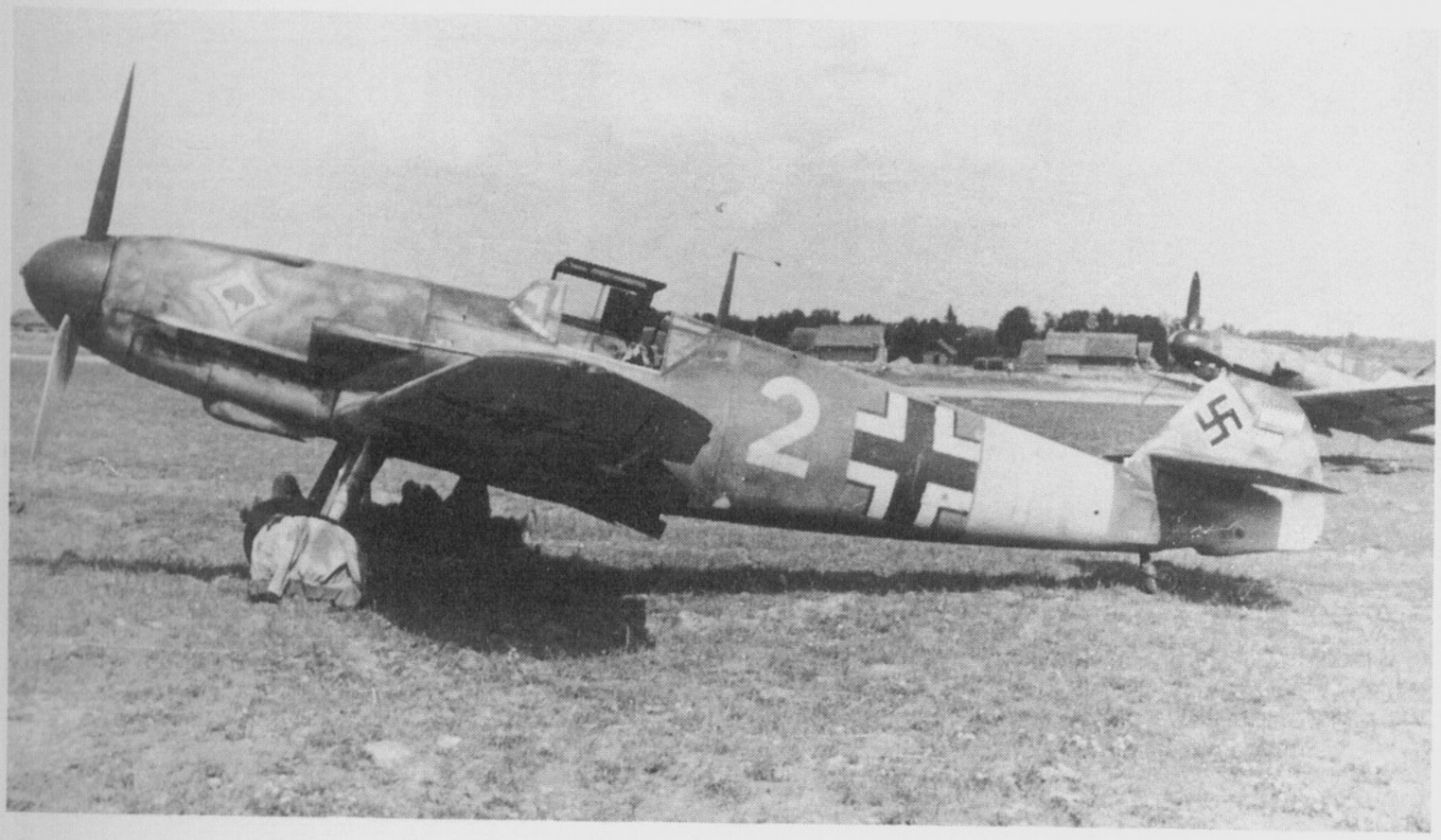
Use of a 300-liter long-range fuel tank carried beneath the fuselage was very widespread. The mounting for the jettisonable tank was installed between the main undercarriage legs, offset 40 mm to the left of the fuselage centerline. When the auxiliary tank was in use fuel was forced from it through a feed pipe into the main tank by compressed air from the supercharger. A pump limiter prevented the main tank from overfilling. The increased range modification reportedly received the Rüstsa*tz* designation R 5.

It was planned to install a GM-1 nitrous-oxide boost system in the F-2, which was to have resulted in the designation F-2/Z. As far as is known, no F-2 was ever so equipped. The same applies to the installation of tropical equipment for aircraft destined for the Mediterranean Theater; no F-2 trop series is known. Individual F-2s were retrofitted with a sand filter, most likely in conjunction with other modifications, such as the installation of camera equipment. One such "F-2 trop" was WNr. 5445, which was flown by 2.(H)/14 in North Africa as "Black 5."

Above left: "White 7," an F-2 with the Werknummer 6743, the aircraft of Oblt. Robert Olejnik, Staffelkapitän of 1./JG 3, at the beginning of the Russian Campaign. (Olejnik) Above Right: Oblt. Olejnik in the cockpit of his Bf 109 F-2. Visible here are details of the supercharger air intake and the shallow oil cooler. Note that this aircraft has the circular wheel wells. (Olejnik)

"White 3," an F-2 with the Stammkennzeichen GU+HE, that most likely belonged to 1./JG 51. The aircraft was photographed on the Eastern Front in the summer of 1941 after making a forced-landing in which its right wing sustained considerable damage. (Petrick)

The aircraft of Major Günther von Maltzahn, the Kommodore of JG 53, an F-2 with the Werknummer 8326, photographed in early July 1941 in the East. (Conrad)

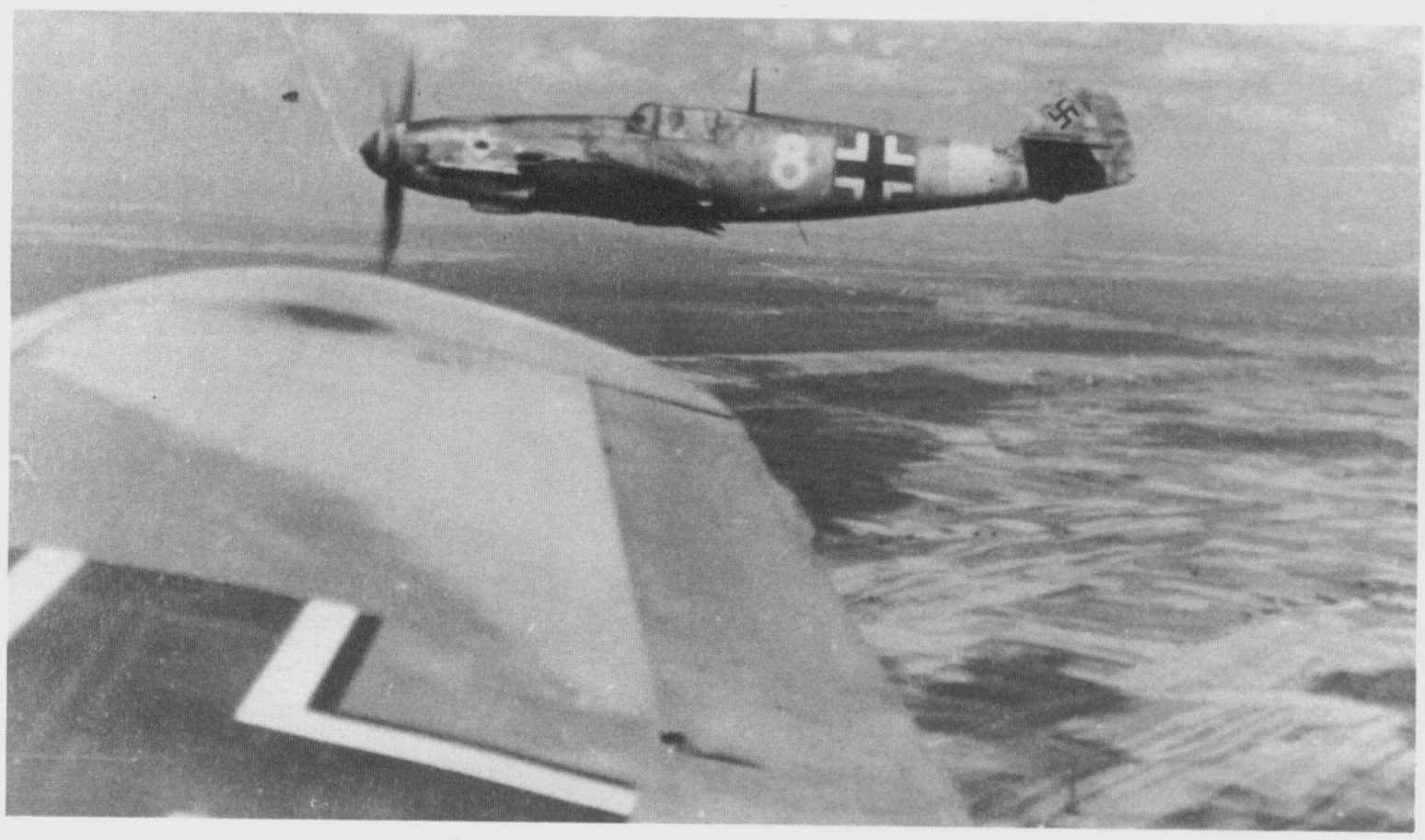


"White 2" of 7./JG 53, an F-2 with the Werknummer 6702, was the aircraft of Fw. Hermann Neuhoff. The photograph was taken at Lepel on or about July 6, 1941. This F-2 wears an obviously retouched green/grey color scheme and a broad yellow fuselage band on which the white Gruppe bar is just visible. On the rudder is a total of sixteen victory bars. (Neuhoff)

"White 11," a Bf 109 F-2, was the aircraft of Fw. Bielefeldt of 7./JG 51. Photographed at Bobruisk on July 11, 1941. (Bielefeldt)

Another F-2, "White 11," flown by Fw. Werner Bielefeldt of 7./JG 51 in the summer of 1941. Noteworthy is the rather light finish on the side of the engine cowling which contrasts sharply with the green/grey of the upper fuselage. (Bielefeldt)

"Yellow 4" belonged to 6./JG 54 in the summer of 1941. It wears the meandering camouflage scheme in standard use by II./JG 54 at that time and a broad yellow fuselage band with the Balkenkreuz superimposed. The identifying features typical of many F-2s are visible in this photo: narrow supercharger air intake, shallow oil cooler, round mainwheel wells and external stiffeners on the rear fuselage. (Biermann)



A Bf 109 F-2 of I./JG 53 photographed in flight over the Eastern Front in summer 1941. Note the retracted tailwheel, part of which remains visible in the tailwheel recess. (Seiz)

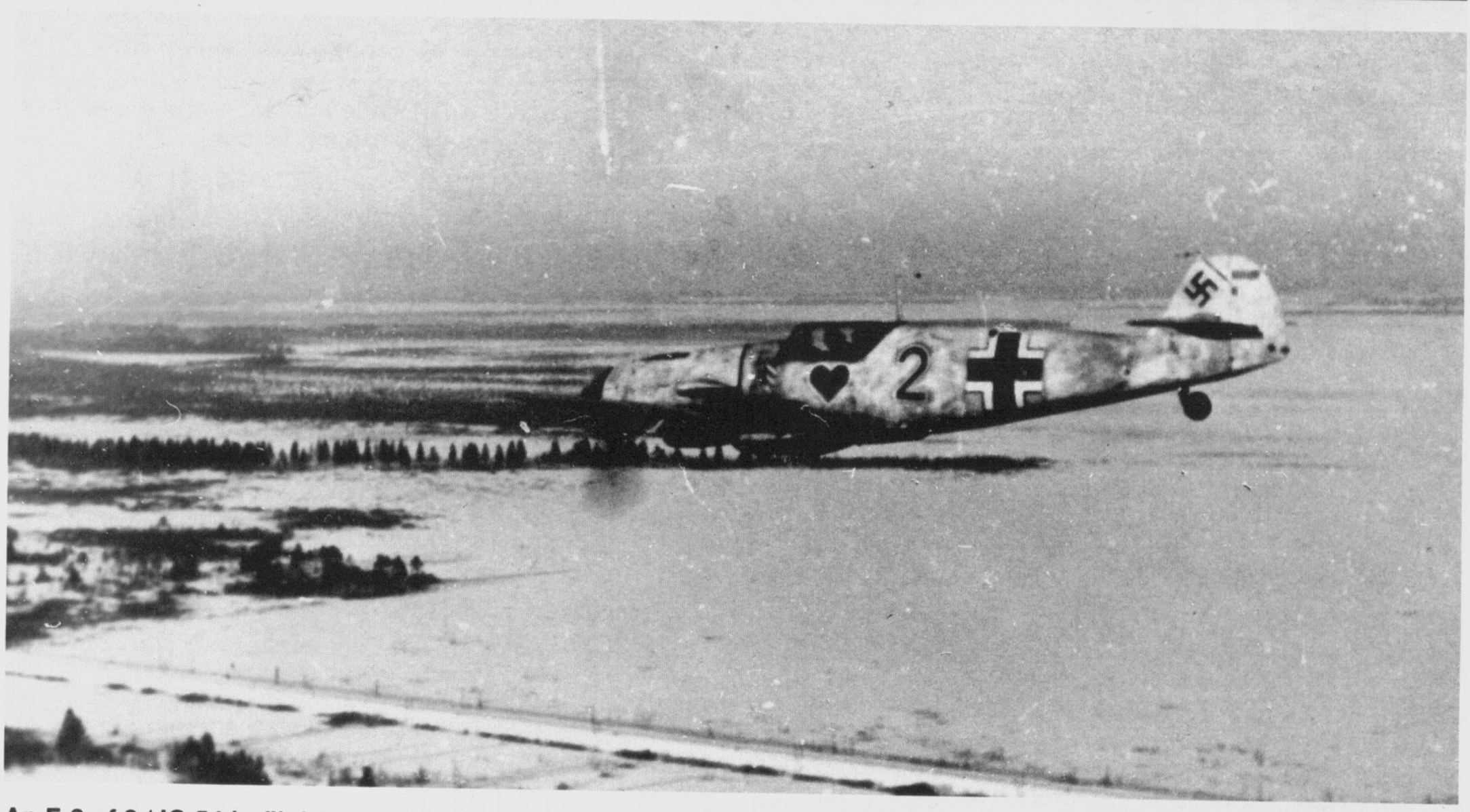
Bf 109 F-2 fighters of 8./JG 54 at Siverskaya airfield in the winter of 1941/42. The aircraft in the foreground, "Black 9," wears the makeshift winter scheme sometimes seen on III./JG 54 aircraft at the beginning of the winter; the wing and tail upper surfaces as well as the fuselage spine aft of the cockpit were painted white, while the rest of the green/grey scheme remained basically unchanged. Twelve victory bars are visible on the aircraft's rudder. (Brock)

The tail of Obstlt. Günther Lützow's F-2, WNr. 9704, with 101 victories. Lützow reached this figure on October 24, 1941, by shooting down an I-16 on his 272nd combat mission. Note the external stiffeners over the tail unit attachment point. (Lützow)

An F-2 of the Gruppenstab of I./JG 51 on a Russian airfield in the winter of 1941/42. Note the unusual Stab marking consisting of two opposite-facing chevrons. (Petrick)

"Black 12," an F-2 of 2./JG 54, in a hangar on a Russian airfield in the winter of 1941/42. The aircraft wears a lightly-spotted winter camouflage scheme. Beneath the canopy is the monogram "Hermännchen" (Little Hermann), the pilot's personal marking. (Riebel)

Right: "Black 1," an F-2 of 8./JG 54, following a belly-landing during the first winter in Russia. The yellow fuselage band in front of the Balkenkreuz is noteworthy. (Emmert)



An F-2 of 2./JG 54 in flight over the Chudovo area, photographed in the winter of 1941/42. A noteworthy feature of this winter-camouflaged machine is its completely blanked-off tailwheel recess; accordingly the tailwheel is in the down position. (Riebel)

In the background stands "Black 1," a winter-camouflaged F-2 of 11./JG 51, photographed on a front-line Russian airfield in the winter of 1941/42. Note the second Balkenkreuz used by IV./JG 51 as Gruppe symbol and the absence of mainwheel leg fairings, which have been removed for winter operations. (Greim)

This F-2, WNr. 5445, was converted for the photo-reconnaissance role and equipped with a sand filter. In this form it was delivered to 2.(H)/14 in Tunisia, where it served as "Black 5." The aircraft was shot down in air combat near Gaffour on March 1, 1943; its pilot, Lt. Metz, escaped uninjured and was able to return to his Staffel. Note the unusual color scheme, obviously applied at the unit level. (Prior)

Bf 109 F-3

According to the *C-Amt* plan of October 1940 the Wiener Neustädter Flugzeugwerke were supposed to build a small F-3 series. A total of 15 machines were to have been built between October 1940 and January 1941, but there are few confirmed facts concerning the actual production and fate of these machines. They may have received *Werknummern* in the 4,780-4,799 range, as a surviving loss report submitted by 9./JG 51 on June 24th, 1941, lists a Bf 109 F-3 with the *Werknummer* 4796 as damaged. Only four days earlier Stab/JG 51 had reported the loss of a Bf 109 F-3 with the *Werknummer* 4791. Whether or not these aircraft really were F-3s, it remains to be said that contrary to the *C-Amt* plan they were built at the Regensburg factory rather than by WNF.

According to the *Generalluftzeugmeister*'s list of aircraft types (October 1944) the F-3 was powered by the improved DB 601 E engine and was otherwise equipped like the F-1 with an MG FF/M and two MG 17 machine guns.

Bf 109 F-4

Deliveries of the second major production variant, the F-4, began shortly after the appearance of the F-2; the first F-4s reached the front-line units in June 1941. One of the first losses of an F-4 occurred on July 1, 1941, when *Werknummer* 7020, flown by Oblt. Lössnitz of 8./JG 52, struck the ground, killing the pilot.

The F-4 was flown in action by I., II., III., IV./JG 1, Stab, I., II., III., 10./JG 2, Stab, I., II., III./JG 3, Stab, I., II., III., IV./JG 5, Stab, I., III., 10./JG 26, Stab, I., II., III., 10./JG 27, Stab, II., III./JG 51, Stab, I., II., III./JG 52, Stab, I., II., III., 10./JG 53, Stab, I., II., III./JG 54, Stab, I., II., III./JG 77, Jagdgruppe Ost, Jagdgruppe *Süd*, *Jagdgruppe West*, *Jabo-Gruppe Afrika*, 4.(H)/12, 2.(H)/14, NAG 2, NAG 4, (F)/100, (F)/122, (F)/123, *Aufklärungsgruppe Ob.d.L.*.

Available sources indicate that a total of 1,841 F-4 aircraft were built, which received *Werknummern* from the following blocks:

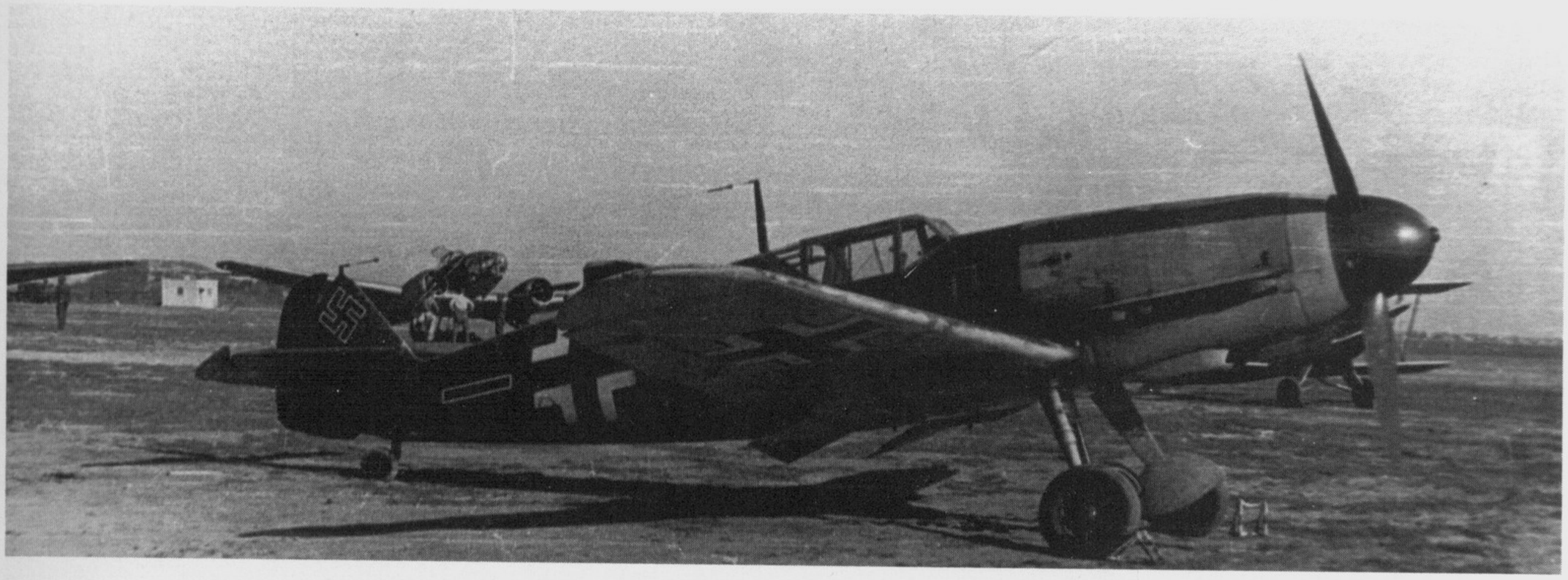
6999 - 7660	WNF	total of 1,046 a/c	05.41 - 12.41
13001 - 13391	WNF	252 F-4, 544 F-4/Z, 240 F-4/R1.	12.41 - 04.42
8267 - 8399	Erla	total of 795 a/c -	06.41 - 08.41
8400 - 8806	Erla	164 F-4, 55 F-4/Z and	08.41 - 12.41
10001 - 10290	Erla	576 F-4 trop	01.42 - 05.42

At first the F-4 differed very little from the F-2 externally. In place of the DB 601, which required 100 or 96 Octane C3 fuel, the F-4 received the improved DB 601 E engine which, in spite of improved performance, was satisfied with 87 Octane B4 fuel. The only external indication was the appropriate servicing triangle below the fuel tank filler point.

Three shots of the aircraft of the Kommodore of JG 52, Major Hans Trübenbach. Trübenbach flew this F-4, WNr. 7079, from July 15, 1941 until he was relieved as Kommodore of JG 52 in October 1941. These photos were taken at Tiraspol on October 10, 1941. (Trübenbach)

Major Trübenbach on the wing of his "Friedrich." The aircraft wears a rather dark finish with a yellow engine cowling and yellow fuselage band in front of the Balkenkreuz. Note the Stab marking partly outlined in white. Visible in this photo is the narrow supercharger air intake typical of early F-4s, as well as the octane triangle specifying 87 octane fuel for the aircraft's DB 601 E engine. (Trübenbach)

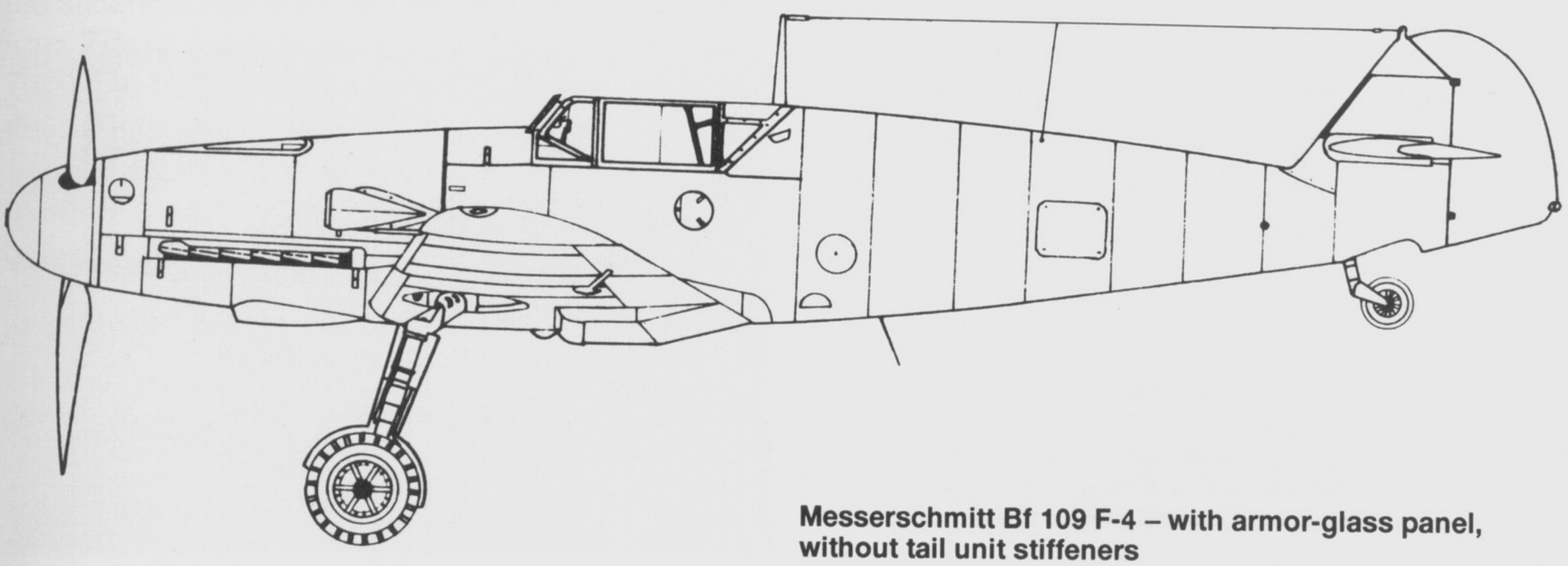
Major Trübenbach in the cockpit of his F-4. Discernable above the Geschwader emblem is the port for firing signal ammunition. The light canopy framing suggests that the dark camouflage scheme was applied sometime after the aircraft was delivered. (Trübenbach)



Two photographs of another Stab machine belonging to JG 52, taken at Tiraspol in October 1941. This aircraft wears the same Stab marking as WNr. 7079, however in this case the entire engine cowling has been painted yellow. (Trübenbach, Heggen)

In the course of series production the supercharger air intake was changed once again. While the first F-4s from *Werknummer* blocks 7000 and 8330 were built with the supercharger air intake used by the F-2, machines from production lots 10000 and 13000, which were built after the end of 1941, as well as F-4 trop aircraft from production lot 8330, received a new version. The revised supercharger air intake was of noticeably increased diameter and had a more sharply curved shape which tapered again toward the inlet. This supercharger air intake shape was to remain unchanged well into the G-Series. Individual machines from production lots 7000 and 8330 were fitted with the new intake, but it is not certain whether this took place at the factory or was the result of a later modification or repair.

The external stiffeners on the tail unit were more often absent from the F-4 series than the F-2; all the



Messerschmitt Bf 109 F-4 – with armor-glass panel, without tail unit stiffeners

The Kommandeur of I./JG 53, Hptm. Franz von Werra, climbs out of his aircraft "Double Chevron" – an F-4/Z with the Werknummer 7285 – after a mission off the Dutch coast. Katwijk, October 1941. (Seiz)

Lt. Karl Leonhard of 3./JG 53 in his aircraft "Yellow 8," an F-4/Z with the Werknummer 7299. Visible are the octane triangle specifying 87 octane fuel and the supplementary armor-glass panel in front of the windscreen. Katwijk, October 1941. (Leonhard)

The same machine a few weeks later. On December 27, 1941, "Yellow 8" ran out of fuel and just managed to reach the coast, making a forced-landing near Ragusa. (Leonhard)

"Yellow 9," an F-4 of 9./JG 3. The aircraft was photographed in early 1942 at Jesau, where the Gruppe was resting and refitting before returning to action on the Eastern Front. The aircraft wears a winter finish consisting of a heavy overspray of white. The underside of the engine cowling is yellow. Discernable on the engine cowling is the new, enlarged supercharger air intake. III./JG 3 in fact received its first F-4s at Jesau, aircraft from the later 8600 and 13 000 production batches. (Makowski)

"White 12," an F-4 of 7./JG 3, photographed at Szolzy in February 1942, soon after III. Gruppe had moved there after refitting at Jesau. The aircraft wears a winter camouflage finish which obviously consists of white sprayed over the standard temperate scheme. (Makowski)

A Bf 109 F-4 of 8./JG 53, here seen crossing the snow-covered Alps during III. Gruppe's move to Sicily in early December 1941. The area behind the pilot's head armor is packed with baggage, a typical indication of a transfer flight. Also note the retracted tailwheel. (von der Mey)

same a considerable number of F-4s were built with the stiffeners installed beneath the horizontal stabilizer. These seem to have been limited to the early 7000 and 8330 production lots, although they were absent in some cases.

The external armor-glass panel was to be seen more frequently on the F-4 than the F-2; it was not, however, installed in series and can therefore not be used as an identification feature in distinguishing between the F-4 and F-2. In place of the MG 151/15 the F-4 received the 20 mm MG 151/20 engine cannon; there was no external indication of this change. The vast majority of F-4s were built with circular wheel wells, although here too there were exceptions.

In general the F-4 could be retrofitted with the same range of equipment as the F-2. The installation of a bomb rack for one 250 kg bomb or four 50 kg bombs resulted in the F-4/B. Use of the underfuselage auxiliary fuel tank was also widespread. It is also known that a whole series of F-4s was delivered with GM-1 injection; these machines carried the designation F-4/Z. The most noticeable external indication of the installation of GM-1 was the enlarged oil cooler beneath the engine (this may have been the Fo 870 oil cooler standard on early G-Series aircraft) which was introduced on later F-4/Zs during the course of production. As well, several machines were equipped with a propeller with significantly wider blades. One well-known pilot who

A Bf 109 F-4 of III./JG 3 taxies out for takeoff on a snow-covered airfield in Russia, early 1942. The mainwheel leg fairings have been removed on account of the wintry conditions. Note the new, larger supercharger air intake and the Gruppe emblem of III./JG 3, which is just visible in front of it. (Makowski)

Major von Maltzahn (left) and Lt. Preu of Stab/JG 53 in front of the Geschwaderkommodore's F-4/Z, Werknummer 7282. Visible in the wing leading edge above the wheel well is the opening for one of the aircraft's two gun cameras. Contrary to standard practice JG 53 installed two gun cameras in the wings of three F-4s, the aircraft of Major von Maltzahn, Lt. Schiess and Oblt. Michalski, one with a wide-angle lens and one for close-ups. The window for the second camera is also visible in the right wing. (Schmitt)

lost his life in an accident in an F-4/Z was Hptm. Franz von Werra, *Kommandeur* ofI./JG 53. Von Werra came down in the sea of the Dutch coast on October 25th, 1941, and drowned after his aircraft, *Werknummer* 7285, developed engine trouble.

In 1942 the Wiener Neustädter Flugzeugwerke built a total of 240 aircraft of the F-4/R1 version. The R1 designation, for "*Rüstzustand* 1" (Equipment Condition 1), denoted provision for the installation of two MG 151/15 cannon in gondola-shaped fairings beneath the wings outboard of the wheel wells. Actual installation of this supplementary armament appears to have been relatively rare and its use has so far been confirmed only by I./JG 52 and I. and III./

JG 3. On the other hand numerous F-4/R1 aircraft were to be seen with JG 77 in the early summer of 1942 which carried no gondola-mounted weapons.

Far more widespread, on the other hand, was the modification of the F-4 for use in the Mediterranean Theater as the F-4 trop. The most significant feature of the tropical version was the installation of a cylindrical sand filter in front of the supercharger air intake. Two thin struts supported the front end of the filter against the engine cowling, while the rear end was attached to the inlet ring of the supercharger air intake by pins. The sand filter could be closed by operating two clamshell-shaped flaps at its front end. The flaps were opened while the aircraft was in flight and kept closed when the aircraft was on the ground or in low-level flight. Operation of the clamshell-flaps was by a Bowden cable whose handgrip was installed on the instrument panel in the cockpit. The sand filter was installed only in conjunction with the larger supercharger air intake of the late F-4. White-sidewall tires for protection against the sun were also supposed to be part of the tropical equipment, but these were usually dispensed with. Also comparatively rare on the F-4 trop was the supplementary armor-glass panel, possibly due to the dusty conditions in North Africa.

A substantial number of the F-4 variant went to reconnaissance units, equipped with various camera installations. The machines were assigned a *Rüstzustand* designation based on the type of camera installed:

F-4/R2 Erla	5 aircraft	1 x Rb 20/30, no radio
F-4/R3 Erla	36 aircraft	1 x Rb 50/30, no radio
F-4/R4 Erla	1 aircraft	1 x Rb 75/30, no radio
F-4/R8 Erla	1 aircraft	1 x Rb 50/30 or 75/30, with radio**

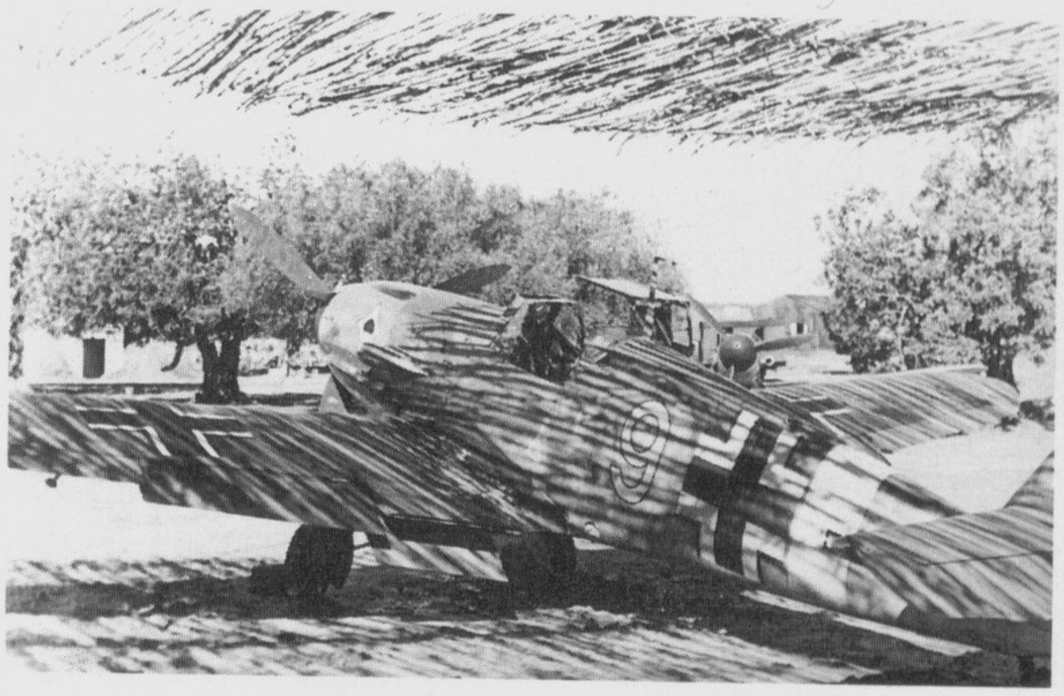
Details of the camera installation are provided in the drawing on page 50. The camera was installed vertically behind the pilot's seat and film cassettes were loaded and unloaded through the baggage hatch in the rear wall of the cockpit.

As was the case with the F-2, it was planned to replace the two MG 17 machine guns with two MG 131s. The modified version was supposed to have received the designation F-4/U1.

"Yellow 12," an F-4/Z of 6./JG 53, in its blast pen on Comiso airfield in early 1942. The aircraft wears the green/gray scheme with distinct segmentation on the wings still standard at the beginning of 1942. (Adelmann)

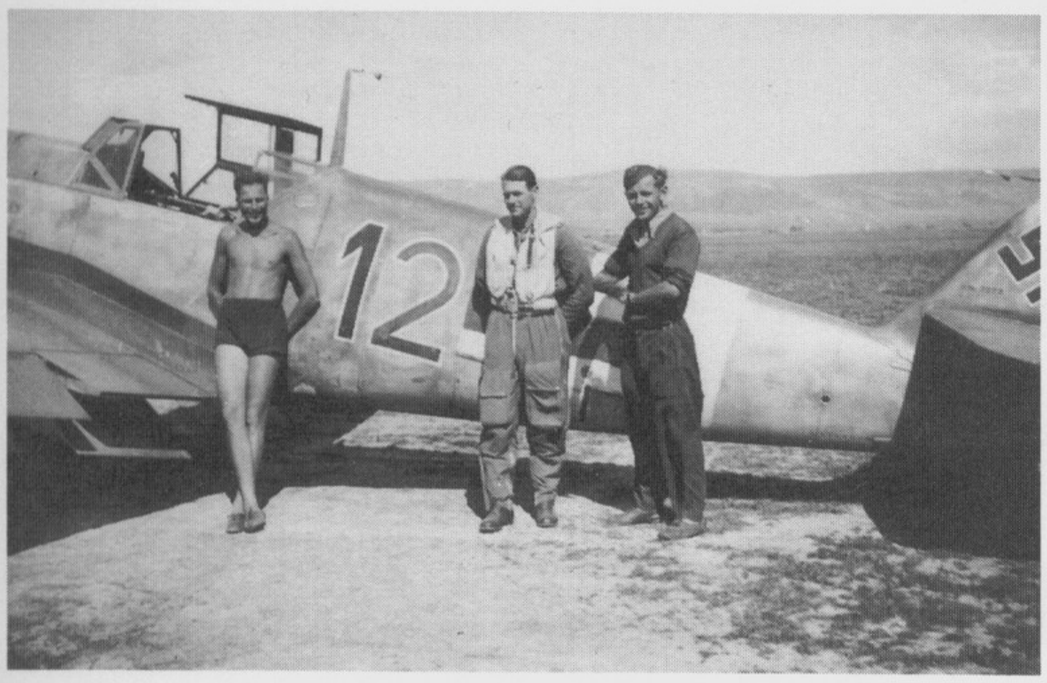
Fw. Lodde, the Geschwaderkommodore's maintenance crew chief, in front of Major von Maltzahn's F-4. The gun camera window in the leading edge of the wing is clearly visible. (Schmitt)

Hptm. Wilcke, Kommandeur of III./JG 53, preparing for another sortie over Malta in January 1942. (Deutsche Wochenschau)

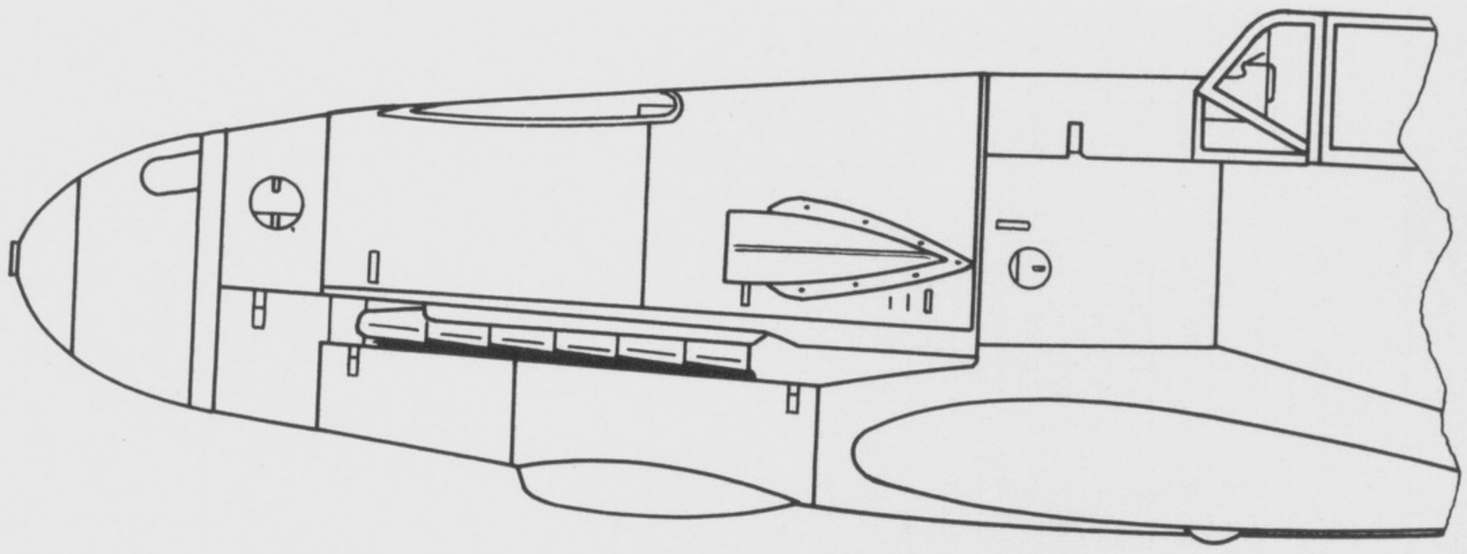


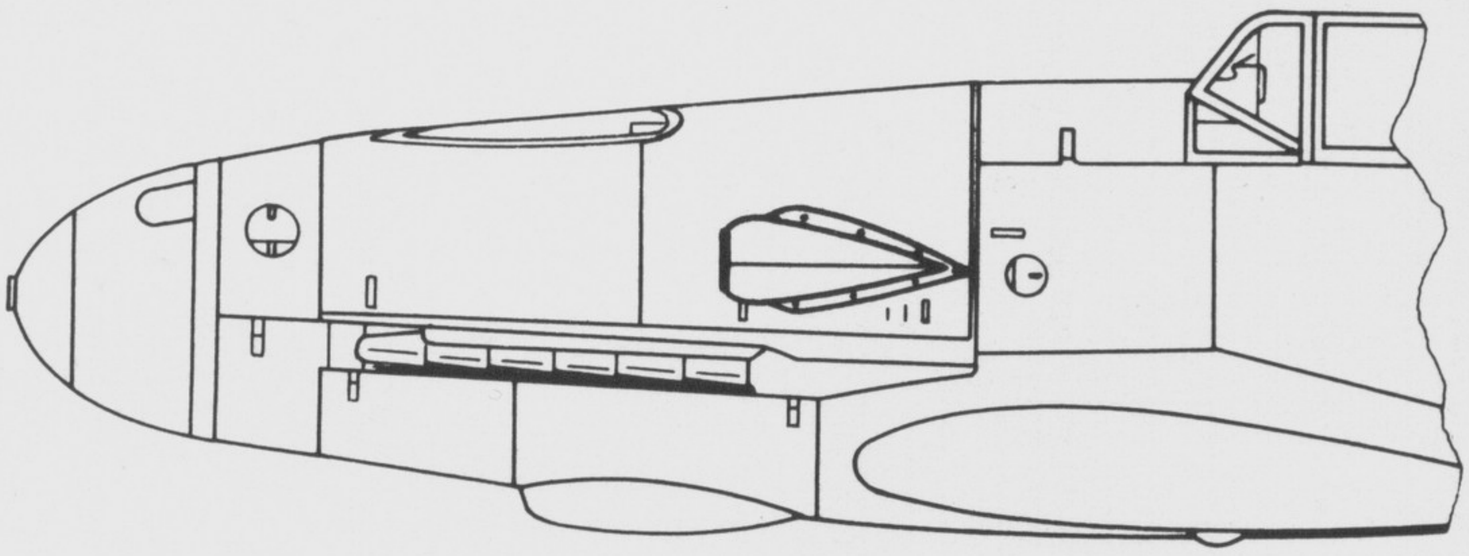
"Yellow 9," an F-4/Z with the Werknummer 7405, also belonged to 6./JG 53. The photograph was taken in early 1942 at Comiso, where II./JG 53 was based at that time for operations against Malta. (Olejniczak)

Major von Maltzahn preparing for a sortie. He was shot down in this F-4/Z off Gozo on May 11, 1942 and was forced to take to his parachute. Von Maltzahn was picked up safely soon afterwards by the sea rescue service. (Schmitt)



Two photographs of "Black 12" of 2./JG 53, an F-4/Z with the Werknummer 7278. The aircraft was flown by Uffz. Erich Juhls, seen here above left, in early 1942. (Weinlich) Above right: Gefr. Weinlich, a technician of 2./JG 53, in the cockpit of "his" F-4/Z, "Black 12." Note the two inscriptions, beneath the cockpit sill the instruction "Hax'n abputzen!" (wipe your feet!) and on the engine cowling the monogram "Heinrich von Schwerdtner," in memory of a Leutnant of that name who was killed in an accident on February 7, 1942. (Weinlich)

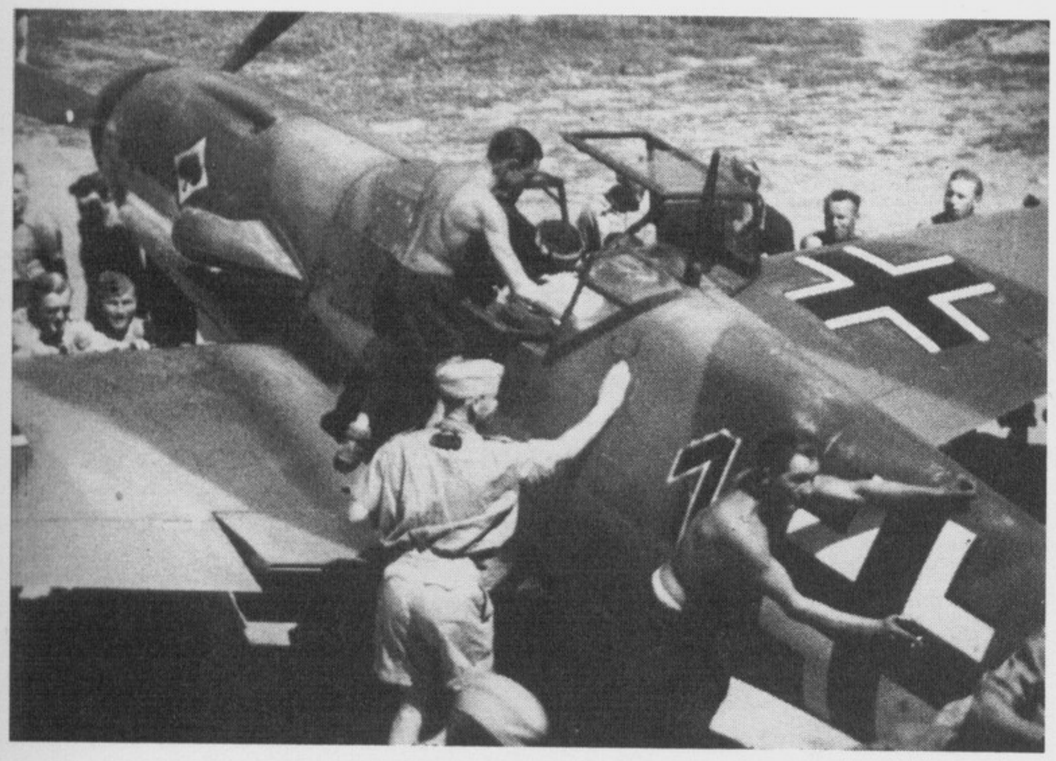


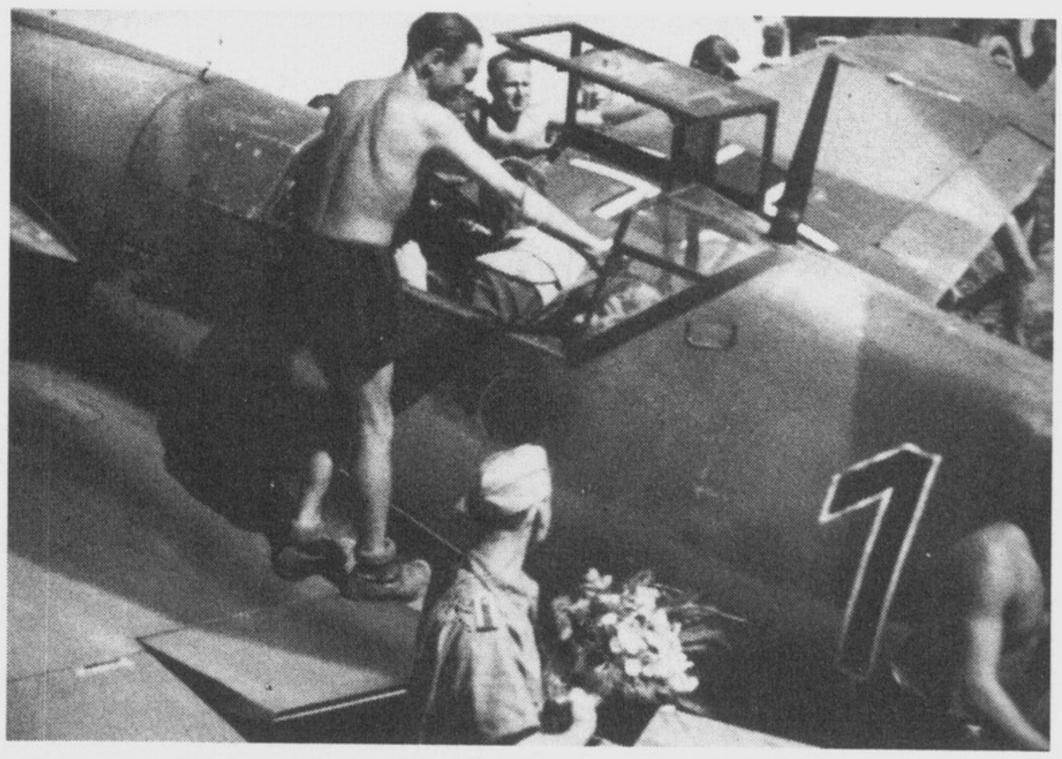


Comparison of early and late supercharger air intakes; installation of the sand filter as part of the tropical equipment always required the late version air intake.

An F-4/Z of 3./JG 53 in Sicily, early 1942. It is evident that this nitrous-oxide injection equipped F-4, an early production machine from WNF, has retained its shallow oil cooler and narrow supercharger air intake. (Crinius)

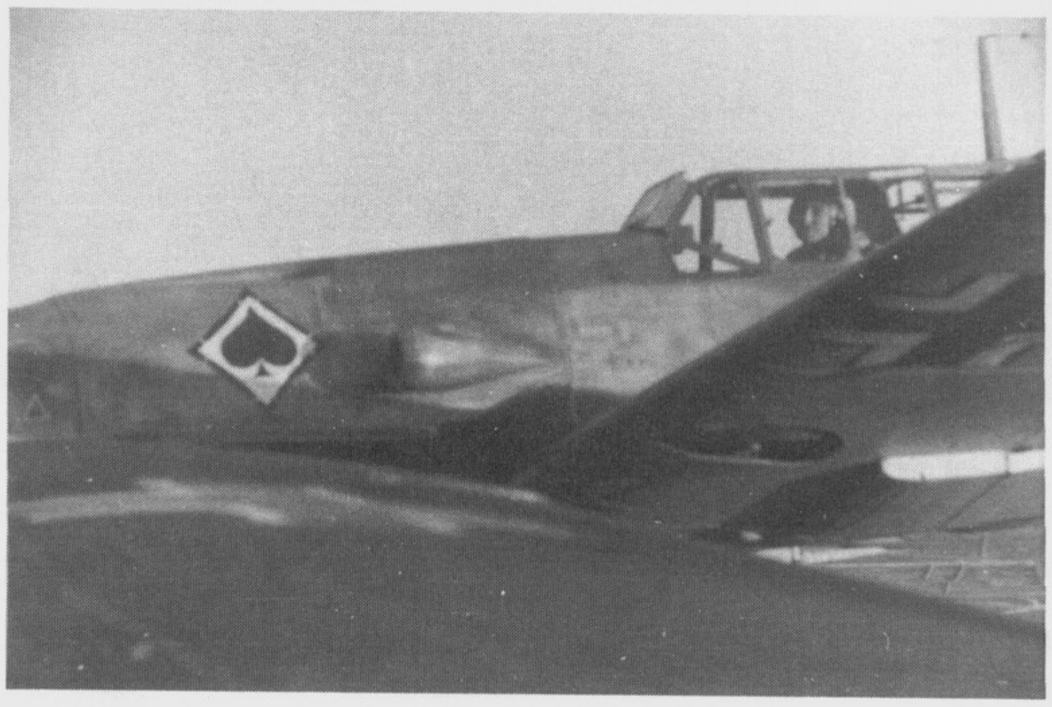
"White 4" of 4./JG 53, another F-4/Z, photographed on April 27, 1942 while escorting a Do 24 air-sea rescue aircraft in the Malta area. This aircraft, which was being flown by Fw. Heinz Koch, wears a new camouflage finish which was often seen on II./JG 53 aircraft at that time, consisting of large segments, probably of gray and brown, on the upper surfaces. (Hammer)





Two views of "Black 1," the aircraft of Hauptmann Kurt Brändle, Kapitän of 5./JG 53, photographed at Comiso, Sicily in early 1942. Brändle's aircraft also wears the segmented camouflage scheme introduced by II./JG 53 in early 1942. Note the later, enlarged supercharger air intake. (Schmitt)

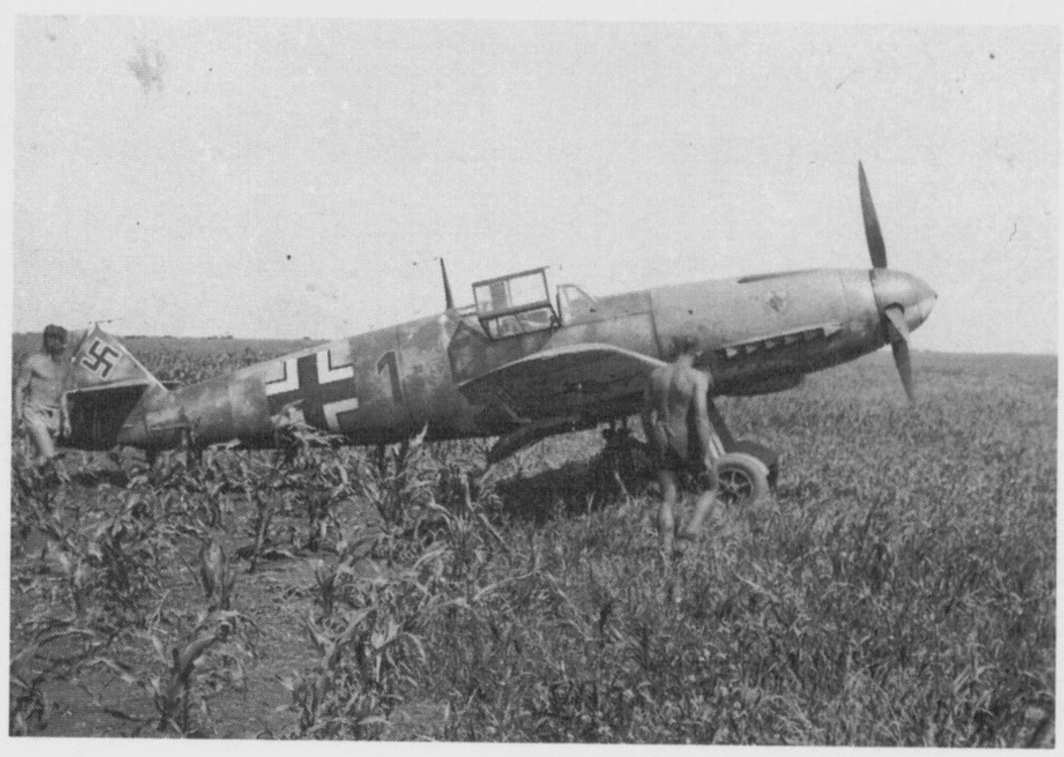
"White 1" of 7./JG 53, an F-4 equipped with an external fuel tank, during a sortie over the Mediterranean in early 1942. (Neuhoff)



Right: Ofw. Werner Stumpf of 9./JG 53 in his F-4, photographed in early 1942 while returning from a mission over Malta. Visible in this view are the larger supercharger air intake and the circular wheel wells. (Götz)

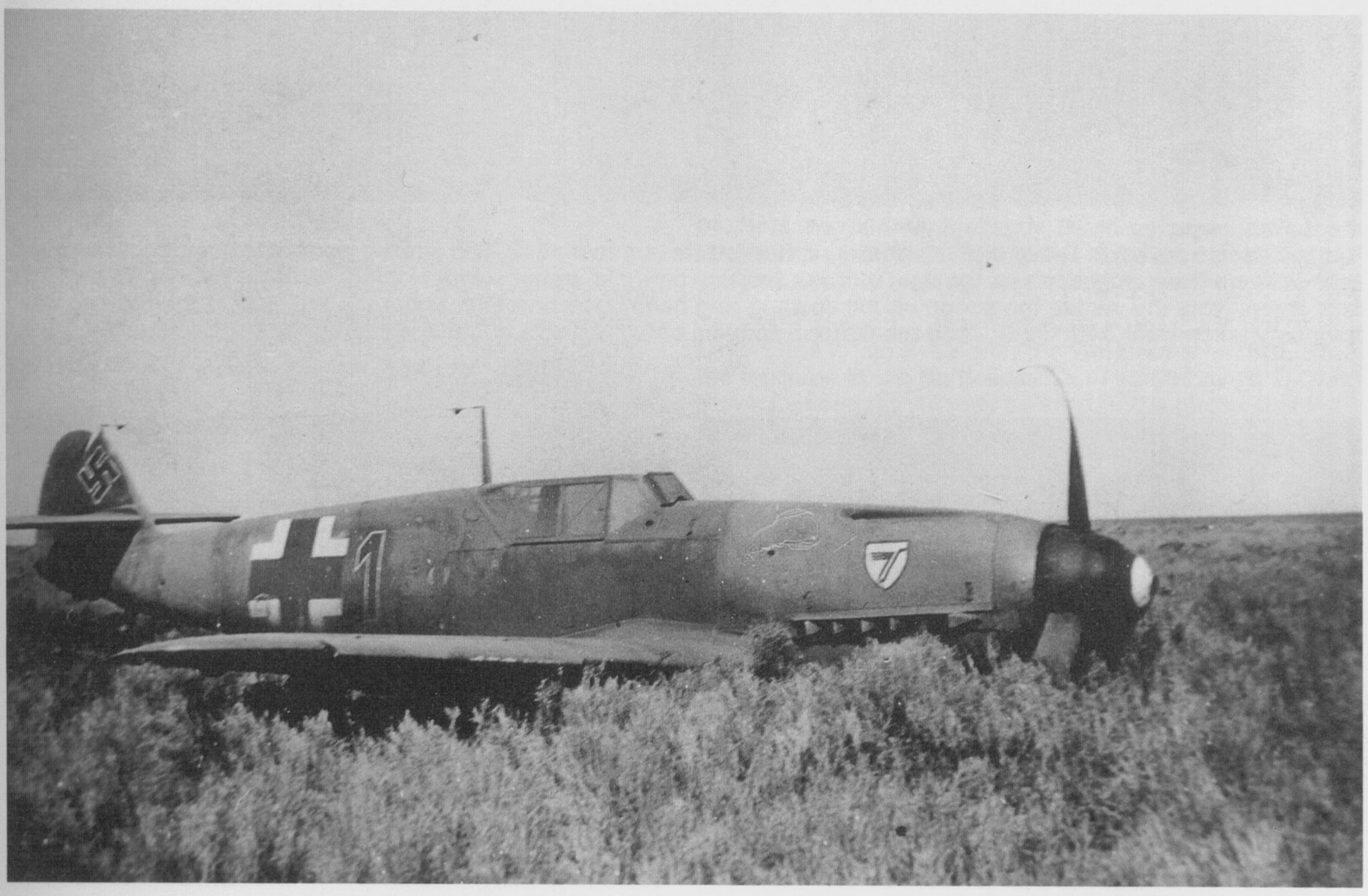
Engine maintenance on "Black 9," an F-4/Z of 5./JG 53. This photo was taken at Comiso in the summer of 1942. This aircraft has the later, deeper oil cooler. The propeller blades are also broader than those of early F-Series aircraft. (Schmitt)

"Black 11" of 5./JG 52 following a belly-landing near Izyum in June 1942. The aircraft wears a very dark finish and a broad yellow fuselage band. Discernable on the engine cowling is the Staffel emblem of 5./JG 52, while the vertical Gruppe bar, which was still not in general use by II./JG 52 at this time, is absent. (Emmert)



An F-4 of 2./JG 52, "Black 1," photographed at Pitomnik airfield in the south of the Eastern Front, summer 1942. This aircraft was flown by Ofw. Schwientek. On the obviously yellow engine cowling is the Gruppe emblem in predominant use by I./JG 52 at that time. (Schwientek)

Two photographs of "Chevron Triangle," an F-4 with the Werknummer 10 117, flown by Hptm. Kurt Brändle, who took over II./JG 3 as Kommandeur in mid-April 1942. Both photographs were taken at Gortschetnoje in August 1942. (Hennig) Right: Hptm. Brändle on the wing of his "Friedrich." Note the large supercharger air intake and the supplementary armor glass panel, as well as the Gruppe emblem of II./JG 3 beneath the windscreen. (Hennig)



"Black 1" of 2./JG 3, an F-4, after a successful belly-landing at the forward airfield of Tusow in summer 1942. The aircraft's pilot, Lt. Hellfritzsch, escaped unhurt. The engine cowling and fuselage band are yellow, on the engine cowling is the Geschwader emblem of JG 3 introduced a short time before. (Lösch)

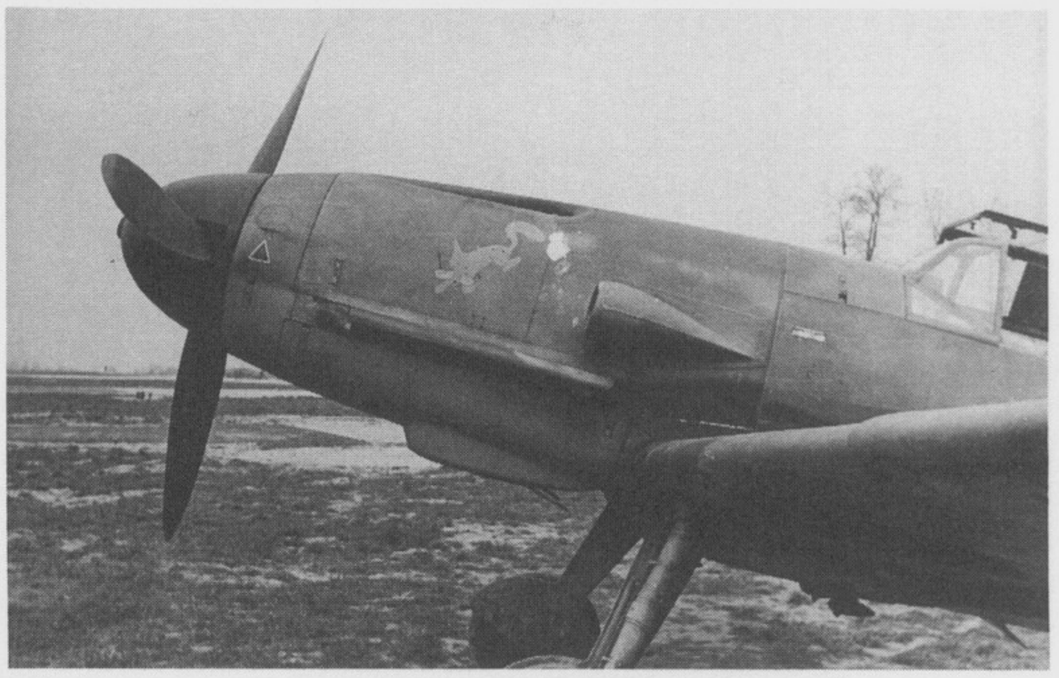
Four pilots in front of an F-4 of 6./JG 5, photographed in late summer 1942. The aircraft wears the segmented camouflage scheme frequently seen on the F-4s of II./JG 5 at this time; the upper surface colors were probably gray and dark green. Note the ventilation scoop on the cowling ring behind the propeller spinner – this part of the cowling was obviously taken from a Bf 109 G – and the Gruppe emblem of II./JG 5 above it and to the right. (Dölling)

"Black 9," an F-4 of 8./JG 54, has sustained considerable battle damage in the course of a nocturnal sortie over the Volkhov Front in the summer of 1942. (Emmert)

Oblt. Günther Fink of 8./JG 54 in the cockpit of his F-4, photographed in summer 1942 on the Volkhov Front, where III./JG 54 flew against the Soviet Air Force during the brief, bright nights. Fink was able to achieve a total of nine victories flying such sorties. (Emmert)

Above: Also photographed in the Volkhov area in the summer of 1942 was this F-4 of the Gruppenstab of III./JG 54. Note the external fuel tank, the large supercharger air intake, the white Stab chevron on the dark camouflage scheme and the emblem on the engine cowling. (Emmert)

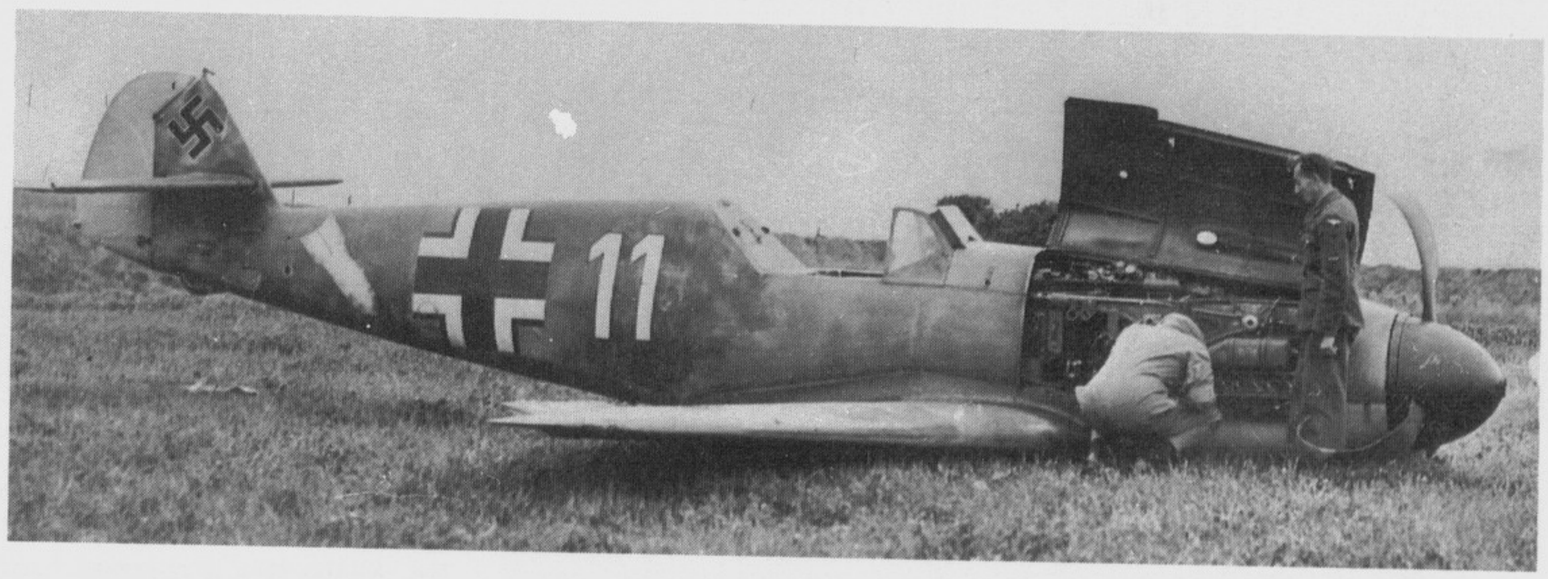
Left: "Blue 7," an F-4/B with the Werknummer 7629, was the machine of the Staffelkapitän of 10.(Jabo)/JG 2, Oblt. Frank Liesendahl. As may be seen in the photo, this F-4 was equipped with the larger supercharger air intake. (Voss)



The Staffel emblem of JG 2's Jabo-Staffel on the engine cowling of an F-4/B. This aircraft has the later, enlarged supercharger air intake but retains the early, shallow oil cooler. (Lorant)

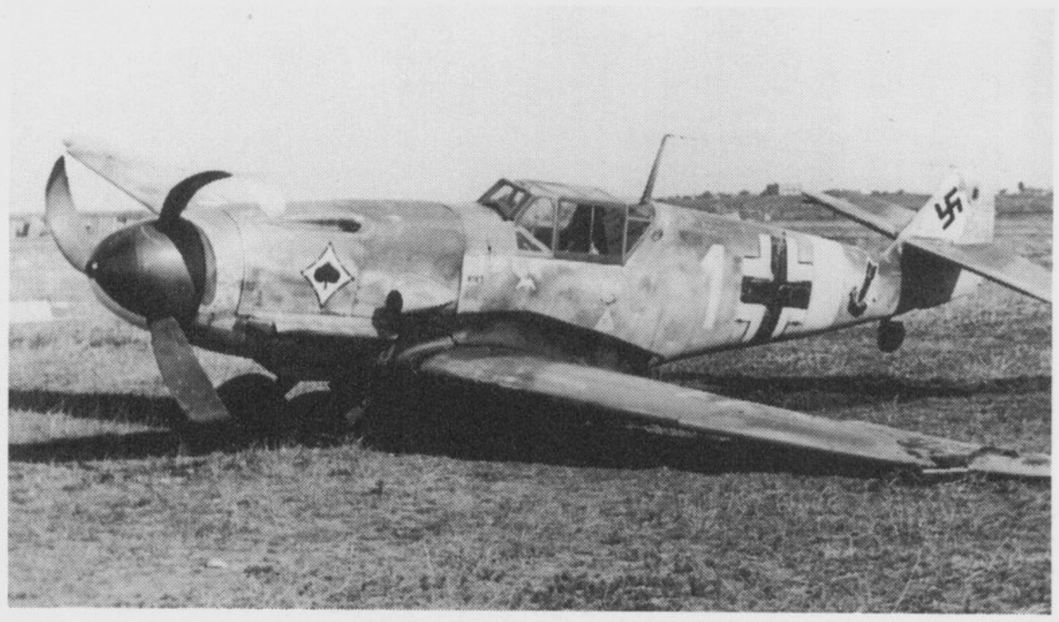
Another F-4/B of 10.(Jabo)/JG 26, "White 2," WNr. 8352. This aircraft was lost on June 6, 1942, when Fw. Görtz was shot down and killed while making a low-level attack. (Lorant)

Right: "White 11" of 10.(Jabo)/JG 26, an F-4/B with the Werknummer 7232, was shot down on May 20, 1942. Uffz. Fischer attacked a British corvette off Newhaven but was hit by return fire and had to force-land his machine near Beachy Head. The white bomb marking behind the fuselage Balkenkreuz was the Staffel emblem of 10./JG 26. (Keystone)



Parked fighter-bombers of 10./JG 2. In the foreground is "Blue 12," an F-4/B, Werknummer 13 005. This aircraft was lost together with its pilot, Gefr. Langhammer, on April 21, 1942. Note the chevron and bar in blue behind the Balkenkreuz, the identifying markings of 10.(Jabo)/JG 2. (Voss)

Servicing the engine of "White 2," an F-4/B of 10.(Jabo)/ JG 53, Werknummer 7488. The aircraft and its pilot, Ofw. Fronhöfer, were lost for unexplained reasons during a mission over Malta on April 4, 1942. Visible on the white fuselage band is the emblem of 10./JG 53, a bomb striking the island of Malta. (Sauer)



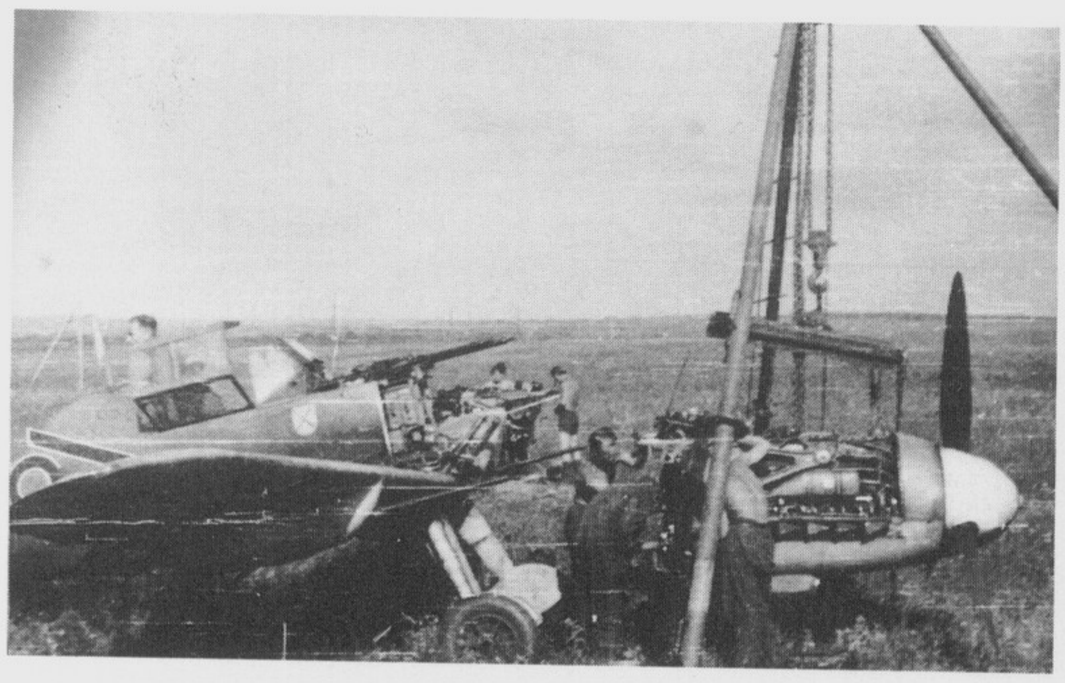
"White 1," an F-4/B of 10.(Jabo)/JG 53, photographed in early 1942 following a takeoff mishap on a Sicilian airfield. The aircraft wears the usual green/gray finish with a narrow white fuselage band, behind which may be seen the Staffel emblem. (Sauer)

On March 27, 1942 Uffz. Felix Sauer of 10.(Jabo)/JG 53 was forced to belly-land "White 3," an F-4/B with the Werknummer 7473, on the beach near Pozzallo, Sicily after developing engine trouble. The aircraft has meanwhile been partly swamped by the tide. (Sauer)

The following photos depict several F-4/R1 fighters of 3./JG 52. In May 1942, I./JG 52 was ordered to detach a Schwarm under the command of Lt. Rüttger to Tarnowitz for initial testing of the gondola armament. The four machines, which were obviously later followed by many others, transferred to Artemovsk with I. Gruppe on May 17, 1942, after completion of resting and refitting at Olmütz. Above: an F-4/R1 is seen parked in front of a hangar. The two added MG 151/15s are clearly visible beneath the wings. (Petrick)

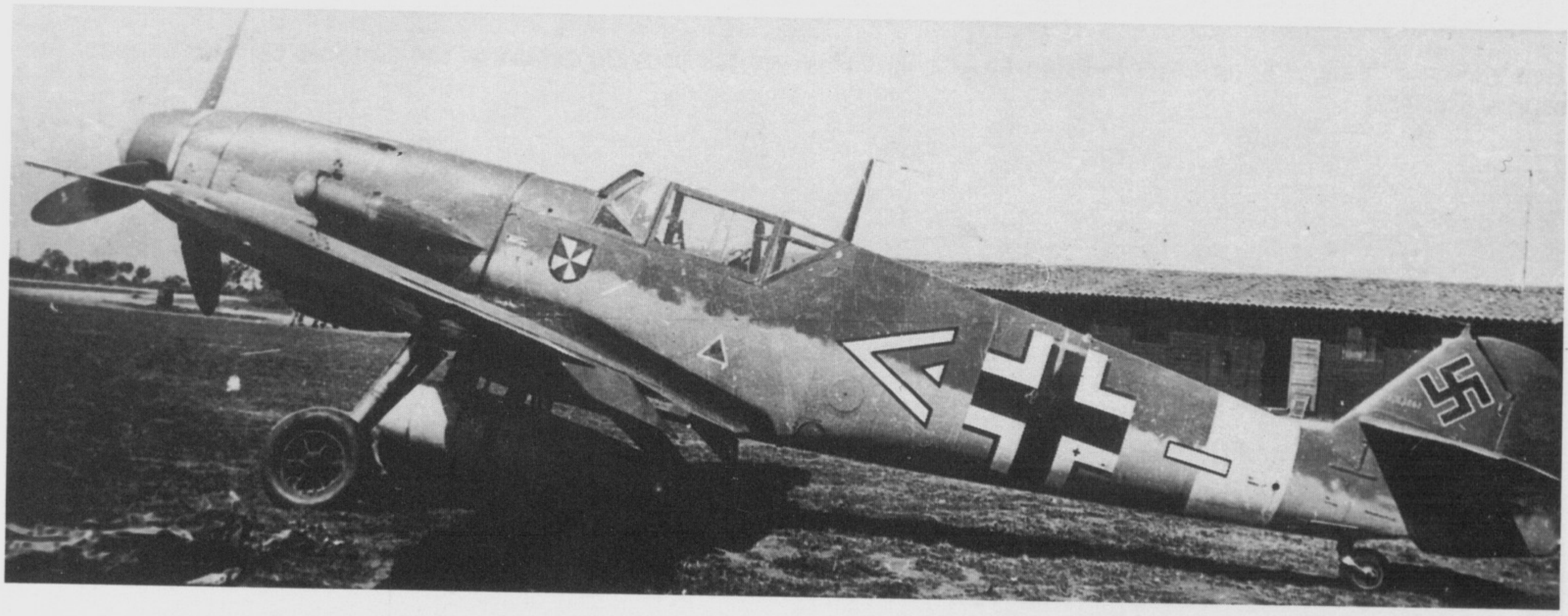
Three mechanics of I./JG 52 with another F-4/R1 which wears the Geschwader emblem of JG 52 beneath the windscreen. The aircraft probably had the deeper oil cooler in addition to the larger supercharger air intake. (Petrick)

Two views of "Yellow 1," another F-4/R1 of 3./JG 52. These photos provide details of the gondola cannon beneath the wings. (Petrick)

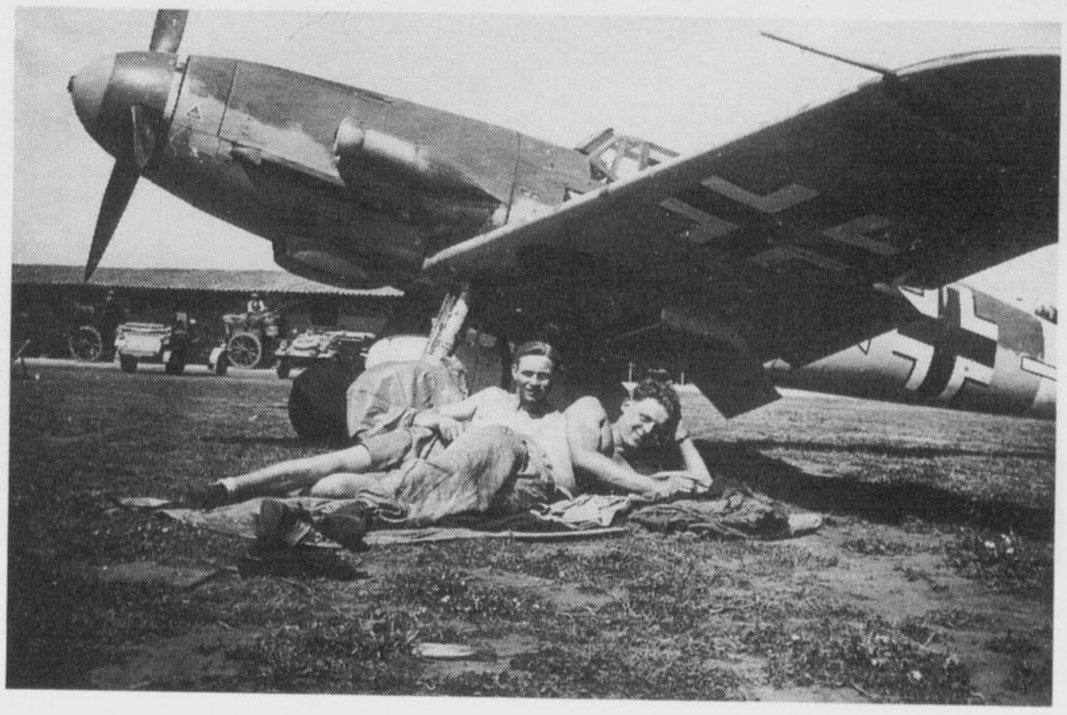


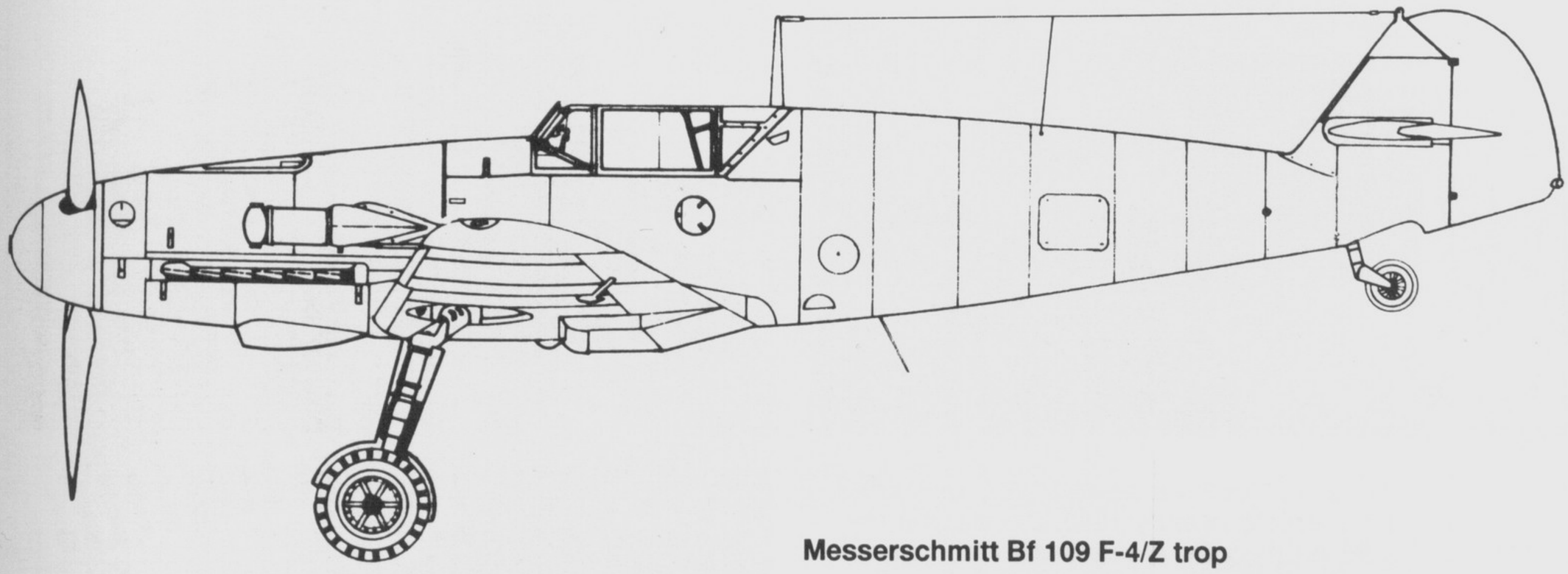
Like I./JG 52, I./JG 3 also received a number of Bf 109s of the F-4/R1 version, one of which is seen here undergoing an engine change in the south of the Eastern Front – probably at Jeruga – in the early summer of 1942. The fuselage markings indicate that the aircraft belongs to the Gruppenstab. Beneath the windscreen is the emblem of the newly-formed I./JG 3. (Knickrehm)

A view of the cockpit area of "White Chevron," an F-4 trop of the Stab, II./JG 3. The aircraft is ostensibly Werknummer 8665, or the same machine as in the two following photographs. When taken on strength by the Gruppenstab the machine was in rather poor shape and had to undergo a considerable amount of "ironing out" before Lt. Frielinghaus was satisfied with it. The aircraft's markings were subsequently changed to "Chevron Triangle" and it became the aircraft of Hptm. Krahl. Note the emblem beneath the windscreen, a combination of all three Gruppe emblems, a marking occasionally seen on aircraft of the Geschwaderstab. (Hennig)

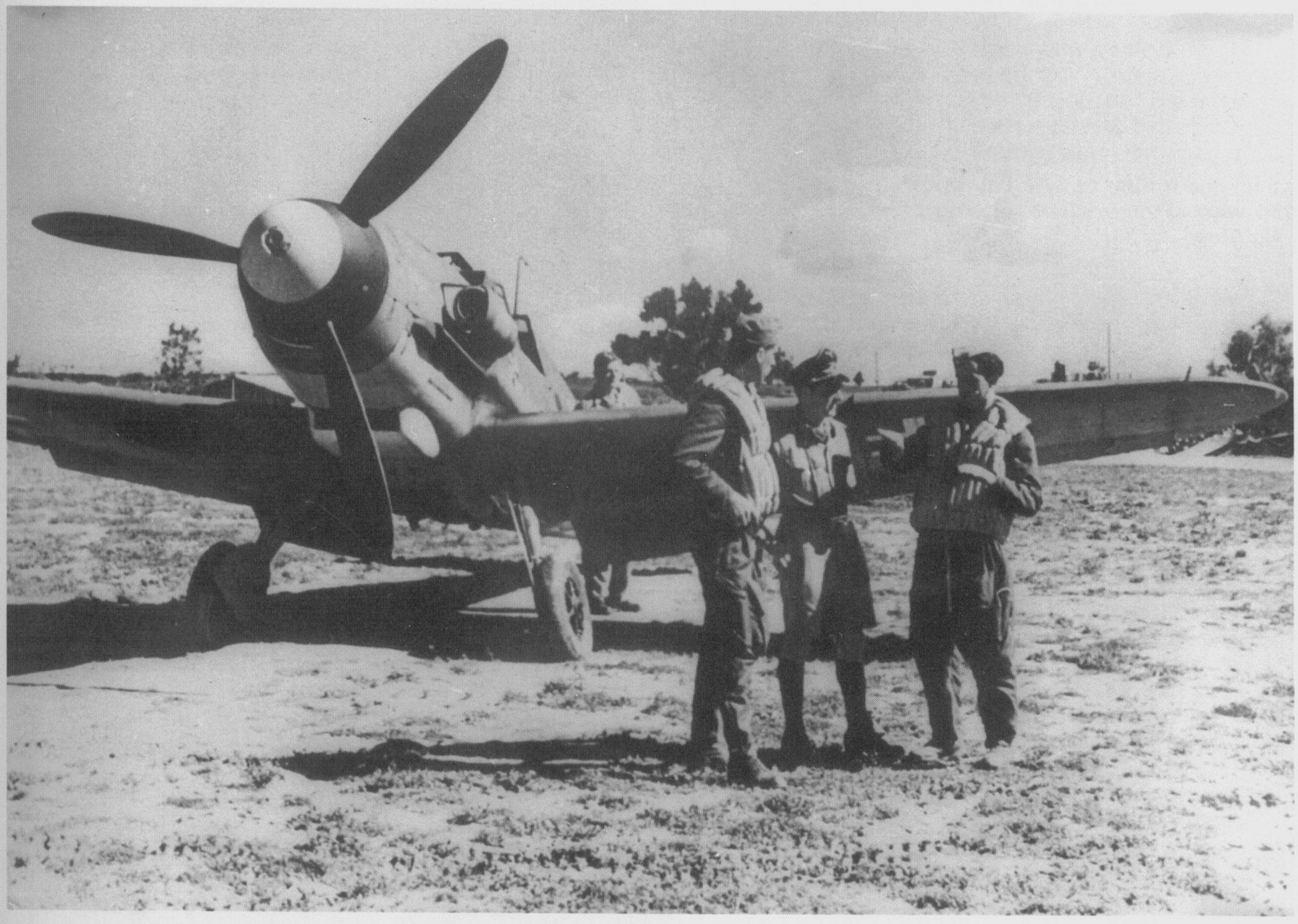


Two photographs of "White Chevron Triangle," the aircraft of Hptm. Krahl, Kommandeur of II./JG 3, photographed at San Pietro, Sicily in April 1942. The aircraft was an F-4 trop, WNr. 8665, with which Hptm. Krahl flew most of his sorties until he took off on his last mission in the newly-delivered F-4 trop, WNr. 8784, on April 14, 1942. WNr. 8665 was subsequently taken over by Hptm. Kurt Brändle, who flew it on the Eastern Front until June 1942. (Hennig) Right: In this shot one can clearly see the sand filter installed on the supercharger air intake and the deeper oil cooler. Also note the external stiffeners still present on the rear fuselage, external fuel tank, armor-glass panel in front of the windscreen and the Gruppe emblem of II./JG 3. The aircraft wears the Africa scheme typical for the tropical version with light brown upper- and light blue undersurfaces. (Hennig)



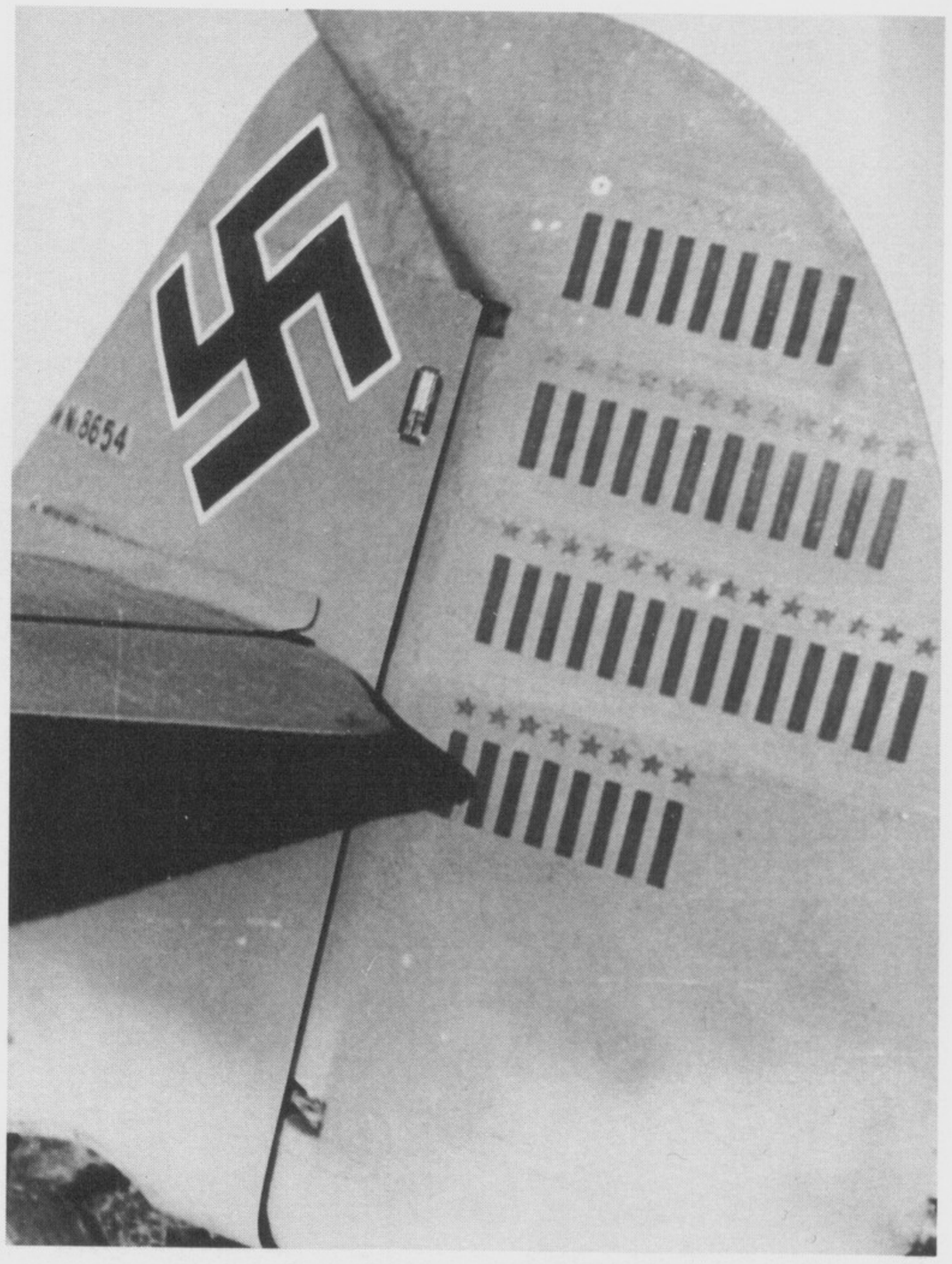


Messerschmitt Bf 109 F-4/Z trop

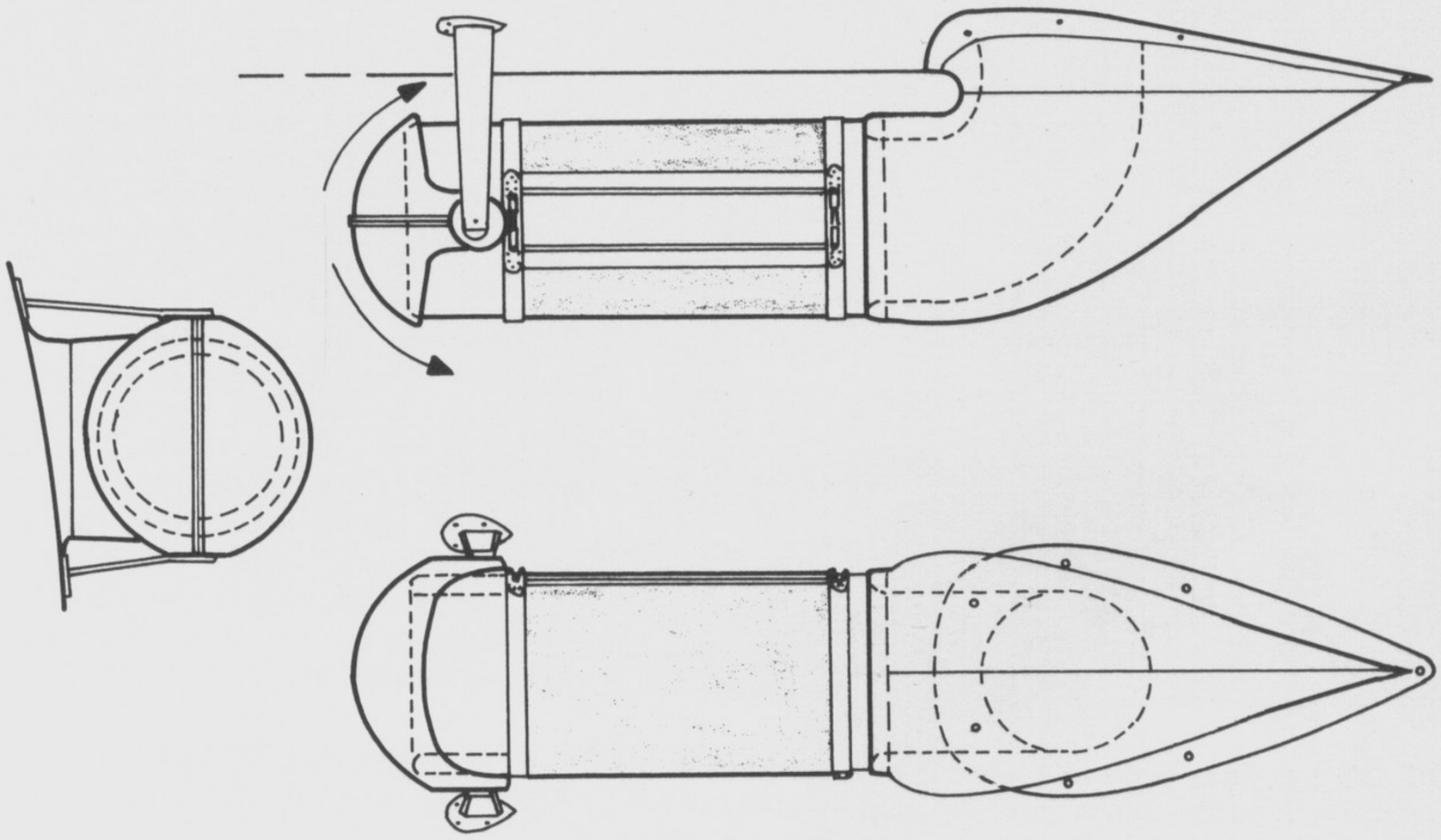


Another F-4 trop of II./JG 3 at San Pietro in early 1942. In contrast to the three Gruppen of JG 53, which were flying sorties over Malta from Sicily at the same time, the vast majority of the aircraft received by II./JG 3 were the tropical version of the F-4. Note the open sand filter and deeper oil cooler. (Hennig)

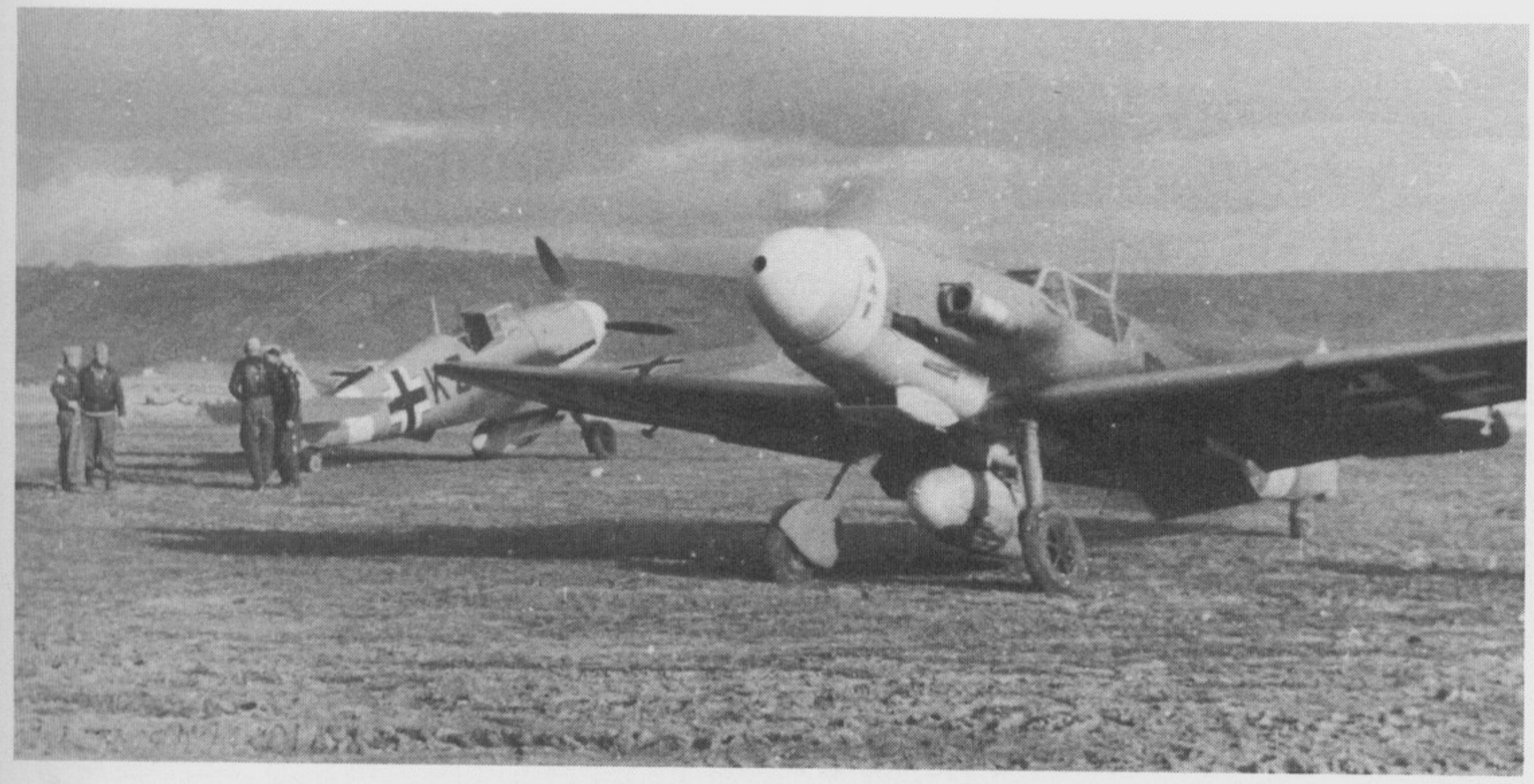
The pilot of "Black 10," an F-4 trop of 5./JG 3, at readiness on a Sicilian airfield in early 1942. Once again the sand filter and deep oil cooler are evident. Also noteworthy are the tires, which bear the remnants of white-painted sidewalls, as well as the green-mottled Africa scheme and the underside of the engine cowling, only part of which is yellow. (Petrick)



The fin and rudder of Ofw. Ohlrogge's F-4 trop, WNr. 8654, with 43 victory bars, photographed in Sicily in April 1942. (Seiz)



Three-view drawing of the sand filter installed on the tropical version



Newly-delivered F-4 trop fighters for II./JG 3 at San Pietro, April 1942. Both Messerschmitts wear the typical Africa scheme in sand brown/light blue with yellow cowling underside and white spinner and nose ring. (Seiz)

"White 11" of 7./JG 53, an F-4 trop, was the aircraft of Lt. Harder. It is seen here at Martuba airfield shortly after III./JG 53's arrival in North Africa in May 1942. Although fitted with tropical equipment, the aircraft still wears the "European" green/gray scheme. Note the white spinner and wingtips. (Harder)

"Red 2," an F-4 trop of 2./JG 27, taxis to its dispersal after landing at an African airfield in June 1942. The aircraft's pilot, Lt. Körner, had allegedly just scored JG 27's 1,000th victory, however the photograph may have been taken at a later date during a reenactment for the newsreels. Note the closed sand filter, the deep oil cooler and the empty drop tank mount. (Deutsche Wochenschau)

Three shots of "Yellow 14," the aircraft of Lt. Marseille of 3./JG 27. Marseille flew this F-4 trop, WNr. 10 059, in late May 1942. These photos may have been taken on June 1, 1942, when he scored his 69th victory. 68 existing victory bars are visible on the rudder (below right). The aircraft was later flown by Fw. Pöttgen and others as "Yellow 12," until it was lost on September 15, 1942 when it collided with another machine of 5./JG 27 during combat and crashed. (Deutsche Wochenschau) Above: Lt. Marseille rolls toward his dispersal with the aircraft's engine shut down. The sand filter is in the closed position. Note that the aircraft has the deeper oil cooler, while the propeller blades are still of the earlier type with comparatively pointed tips. (Deutsche Wochenschau)

Lt. Marseille climbs from the cockpit of "Yellow 14." (Deutsche Wochenschau)

Servicing the engine of the aircraft of the adjutant of III./ JG 27, an F-4 trop, in North Africa in early 1942. (Rieck)

Mechanics of 9./JG 27 with an obviously newly-delivered F-4 trop. The aircraft wears the standard Africa scheme, however no white markings are visible in this shot. (Petrick)

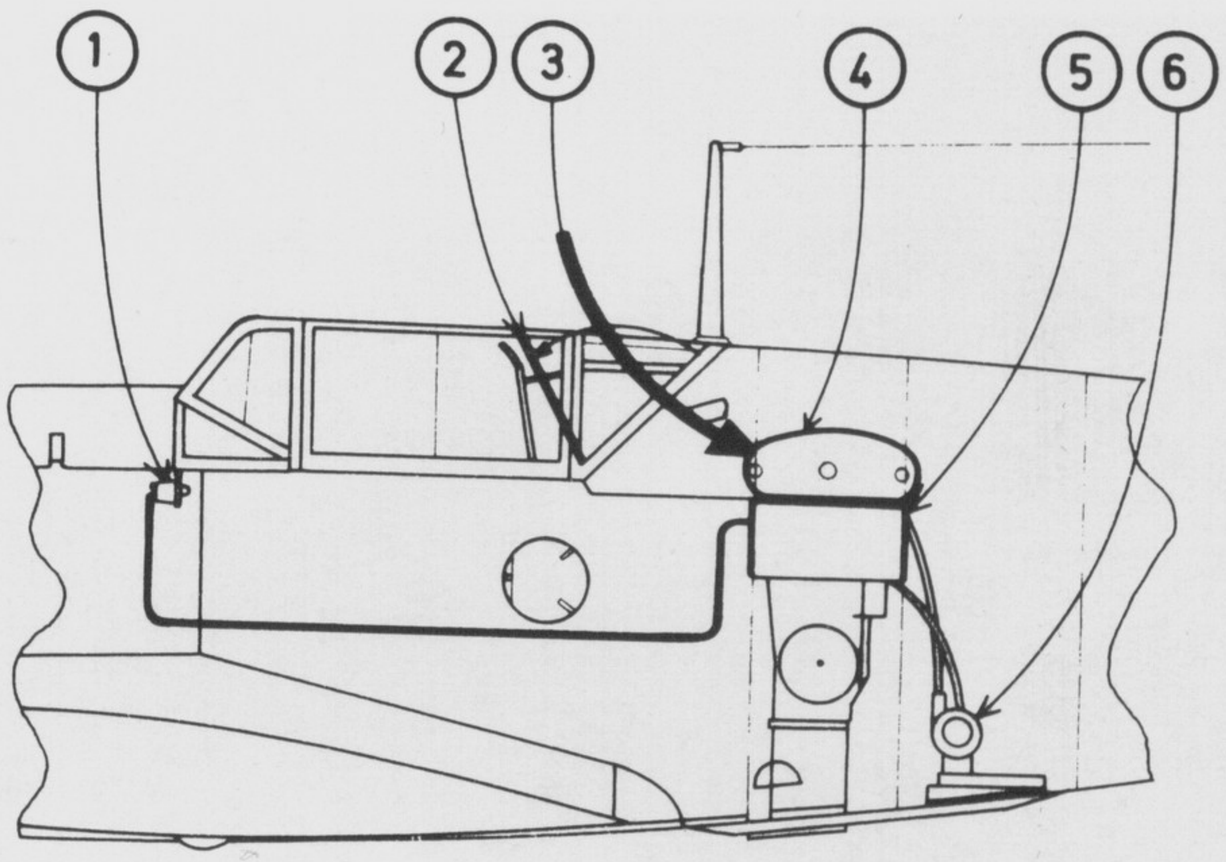
An F-4 trop of 8./JG 27 at El Asaba airfield in North Africa, July 1942. Note the squared-off wheel well, probably an indication that the aircraft received a replacement wing during an earlier repair. (Grote)

The wreck of an F-4 trop as found by British troops on an abandoned German airfield in North Africa. Clearly visible are the deep oil cooler and the propeller with broader blades. (I.W.M.)

"Black 8," an F-4 trop with the Werknummer 10 037, seen here being serviced at a forward Eastern Front airfield, ostensibly Jaruga, in late May 1942. This view illustrates well the Africa-derived color scheme used by I./JG 3 during the early summer of 1942. This aircraft sustained considerable damage in a takeoff accident on June 2 and later found its way to I./SchG 2, where it was destroyed on January 22, 1943. Note that the aircraft's sand filter has been removed. (Lösch)

Another F-4 trop of I./JG 3, photographed on a forward Russian airfield in early summer 1942. In addition to the Gruppe emblem this aircraft carries the Geschwader emblem of JG 3 on the engine cowling. (Lösch)

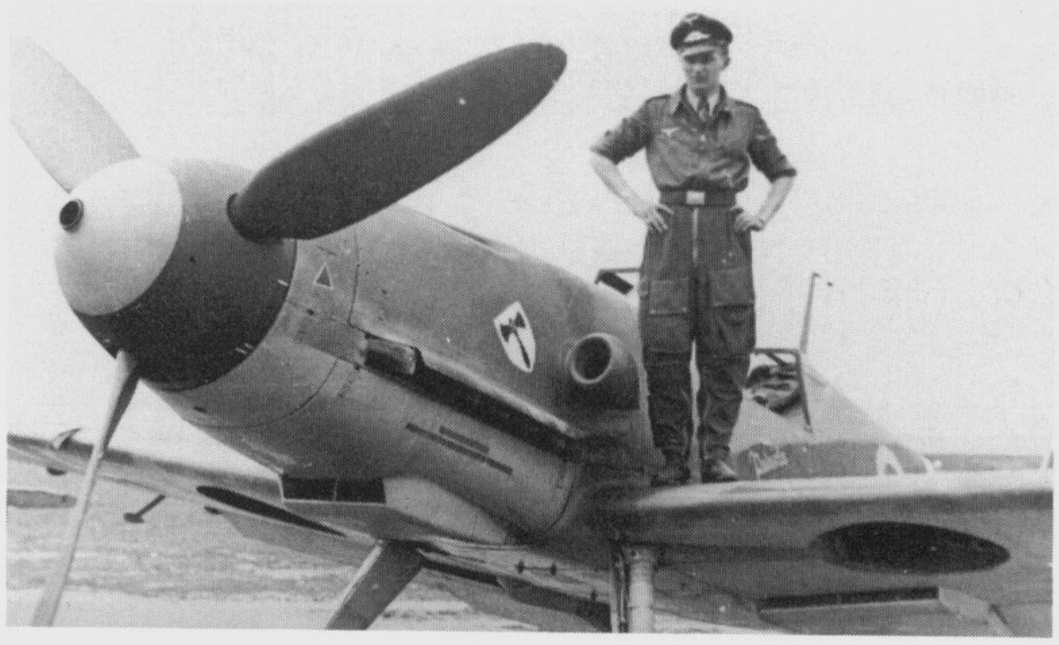
Opposite below:
When the new I./JG 3 was formed in early 1942 the Gruppe was issued the F-4 trop even though it was slated for action in the East. Here are two brand-new F-4 trop fighters, seen at Wiesbaden-Erbenheim, where I./JG 3 was formed, in late April 1942. Both machines wear a noteworthy finish derived from the Africa scheme of the F-4 trop. Large areas – very probably in gray and dark green – were sprayed over the sand-brown upper surfaces, resulting in a three-color segmented scheme. Discernable beneath the windscreen is the emblem of the new I./JG 3, two crossed bayonets. (Kühn)



Rb 50/30 camera installation: (1) display selector/release trigger, (2) baggage compartment hatch (folded forward for installation of film cassette), (3) film cassette (loaded through open baggage hatch), (4) film cassette in installed position, (5) camera housing, (6) camera installation drive motor.

The Gruppe adjutant's aircraft, I./JG 3, in summer 1942 in the East, after sustaining 90% damage in a crash. It is probably F-4 Werknummer 10 202 which crashed while taking off at Tusow on August 26, 1942. The pilot, Lt. Roisch, got away with only a scare. Once again note both the Gruppe and Geschwader emblems. (Dannat)

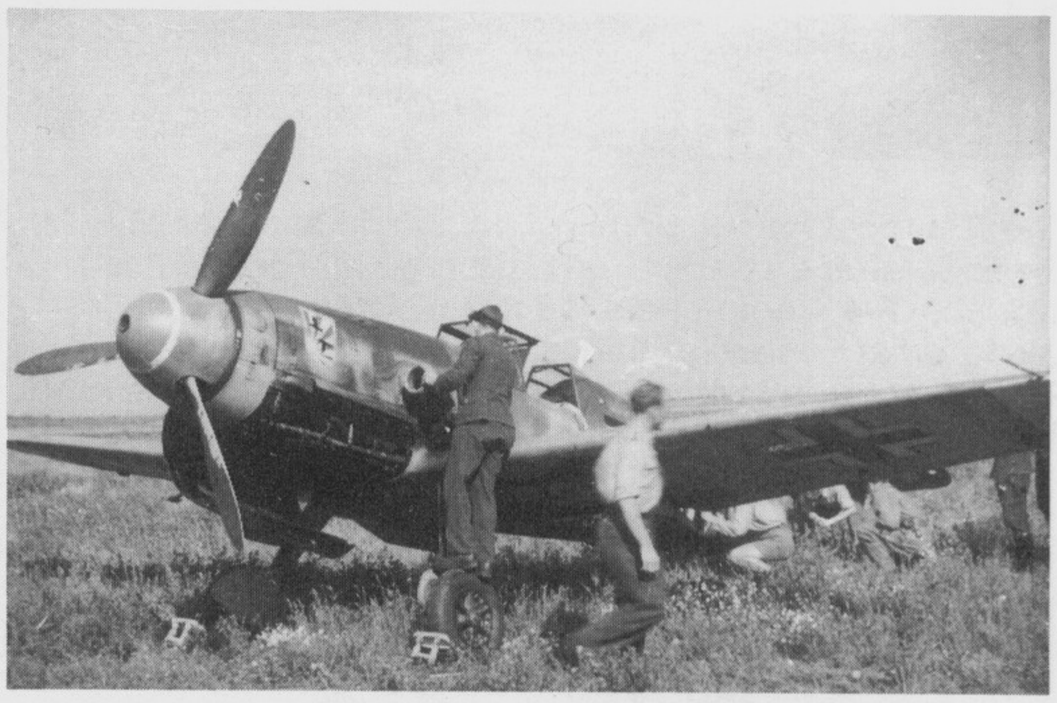
Like I. Gruppe, III./JG 3 also received a full complement of F-4 trop fighters in May 1942 which wore the same converted Africa color scheme. "Yellow 4," an F-4 trop with the Werknummer 13 220, was the machine of Ofw. von Boremski, one of the "Experten" of III./JG 3. Von Boremski, seen here sitting on the cockpit sill, had only recently been transferred from 7. Staffel to 9. Staffel. Standing in the foreground is Ofw. Schentke, another successful pilot of III./JG 3. (Matthiesen)



Left: Ofw. Schentke on the wing of his F-4. Visible are details of the segmented camouflage scheme, the yellow cowling underside, the Gruppe emblem of III./JG 3 on the engine cowling, the deep oil cooler, the broad propeller blades and the enlarged supercharger air intake. The latter has no holes around its opening for the mounting pins of the sand filter, which should have been the case on an F-4 trop. (Matthiesen)

Lt. Diergardt in the cockpit of his aircraft "Yellow 10," an F-4 with the Werknummer 10 237, photographed at Straubing airfield prior to the unit's transfer to the Russian Front. Once again there are no openings around the supercharger intake inlet for mounting the sand filter, although the aircraft's Werknummer identifies it as an F-4 trop. Lt. Diergardt made his last flight in "Yellow 10" on August 11, 1942, when his aircraft sustained engine damage over Russian territory. Diergardt failed to return and was listed as missing in action. (Matthiesen)

A reconnaissance aircraft of (F)/123 being prepared for a sortie. This F-4, which wears the code 4U+TL, is very likely an F-4/R3, equipped with an Rb 50/30 camera. The aircraft exhibits several noteworthy features compared to the standard F-4: as the F-4/R3 was delivered without radio equipment, for which there was no room in the fuselage due to the camera installation, there is no antenna mast or antenna lead-in above the Balkenkreuz. Also note the larger tailwheel, the dark outline of the Balkenkreuz and the rear view mirror over the windscreen. (Bundesarchiv)

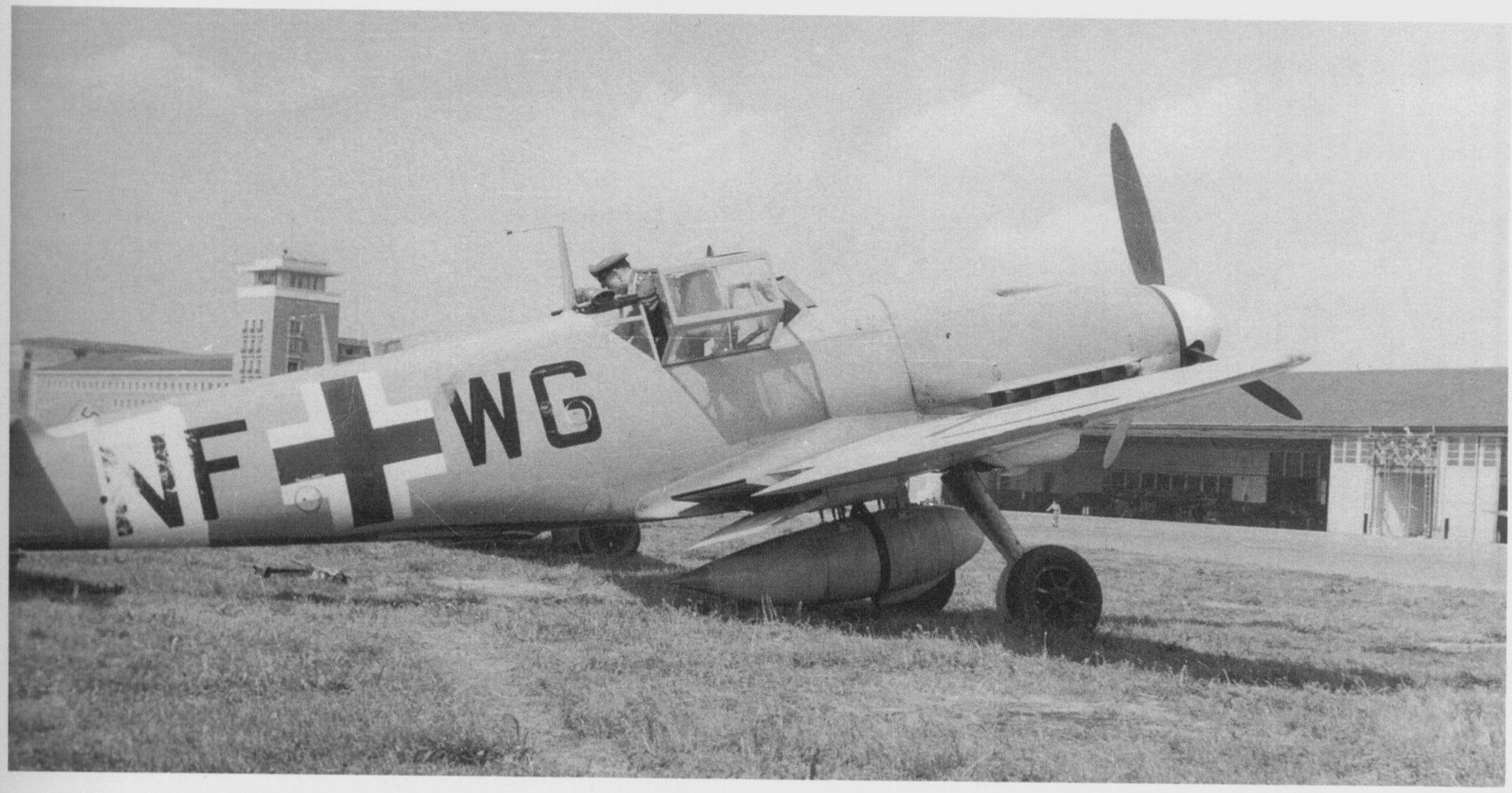


An F-4/R3 of 3.(F)/Ob.d.L in the Kharkov area, summer 1942. Note the absence of an antenna mast. The Gruppe emblem on the engine cowling is noteworthy. (Petrick)

Another F-4 of Aufklärunsgruppe (F) Ob.d.L., also photographed at an airfield in the Kharkov area in the summer of 1942; the aircraft's code is probably T5+TL. Again the antenna mast is missing. Once again the Gruppe emblem is visible on the engine cowling. (Petrick)

Three shots of F-4 trop reconnaissance aircraft taken while they were being ferried into the Mediterranean area. Visible are the bulged camera window beneath the fuselage, external fuel tank mount, sand filter and deep oil cooler. (Ebel)

Forward view of an F-4/R3 of 1.(F)/122, photographed in Sicily in the summer of 1942. Part of the camera window under the fuselage is visible between the radiator flap and landing flap. Clearly visible are the emblem on the engine cowling and the yellow cowling underside. Noteworthy on this F-4 is the antenna mast, indicating the installation of radio equipment. (Schmitt)



Another F-4 trop reconnaissance version with the Stammkennzeichen NF+WG. The machine wears the standard sand brown/light blue Africa scheme with a white fuselage band and propeller spinner. (Ebel)

A Bf 109 F-4 trop, Stammkennzeichen VO+SU, in flight above the Mediterranean. This view well illustrates how the camera window projected from the underside of the fuselage. One noteworthy feature of all three aircraft is that they have obviously been equipped with a complete radio installation, which was supposed to be a feature only of the F-4/R8. Either more aircraft were delivered with this equipment or they were machines which had the equipment installed at front-line modification centers or similar facilities after delivery. (Ebel)

Two F-4s of 1.(F)/122 taxi out for takeoff. The machine in the foreground wears the code F6+WL. While the curved protrusion of the camera window is clearly visible beneath the fuselage, the aircraft also has an antenna mast complete with antenna and lead-in into the fuselage. (Schmitt)

Left: A definitive designation for this Messerschmitt is simply not possible as features of various models are present. The photo was taken in autumn 1944 at a I./KG 77 airfield. The latter unit took on strength several F-4s and G-2s at this time, although for what purpose is not known. In this shot one can see that the fuel tank filler hatch of the F-Series is present below the cockpit as well that of the G-Series on the fuselage spine. The canopy framing is similar to that of a pressurized G-1, having the latter variant's head armor and silicagel pellets in the glazing. (Matthiesen)

Above: A frontal view of the same machine. Here one can see that the engine cowling is that of an early G, while the mainwheels have the disc-type hubs of the later G-Series. The aircraft wears the emblem of KG 77 on both sides below the windscreen. (Matthiesen)

Bf 109 F-5, F-6 and F-8

The C-Amt plan of October 1940 foresaw the production of an F-6 series. A total of 1,281 aircraft were to have been built by Bayerische Flugzeugwerke, Erla, Ago, Arado Warnemünde and the Wiener Neustätder Flugzeugwerke. This plan did not come to fruition however. The same applies to a planned F-8 series, 1,112 machines which were to have been built by the Bayerische Flugzeugwerke, Erla and the Wiener Neustädter Flugzeugwerke between March 1941 and March 1942.

In the past it has been claimed in numerous publications that the F-5 and F-6 series were two essentially-similar reconnaissance versions; such claims are entirely unfounded. It is clear from available records on the F-Series that only a single F-5 was built by WNF, while there is no evidence that an F-6 in fact existed. Not a single loss report is known, in particular none from a reconnaissance unit, for a machine with this designation. As well there is no tangible evidence in handbooks and other such publications for the actual existence of this series.

And finally, the Bf 109 F-6/U was a fantasy designation born at the unit level; concealed behind this designation was Bf 109 F-2, *Werknummer* 6750, which was retrofitted with two wing-mounted MG FF/M cannon at Obstlt. Galland's request.

Notes:

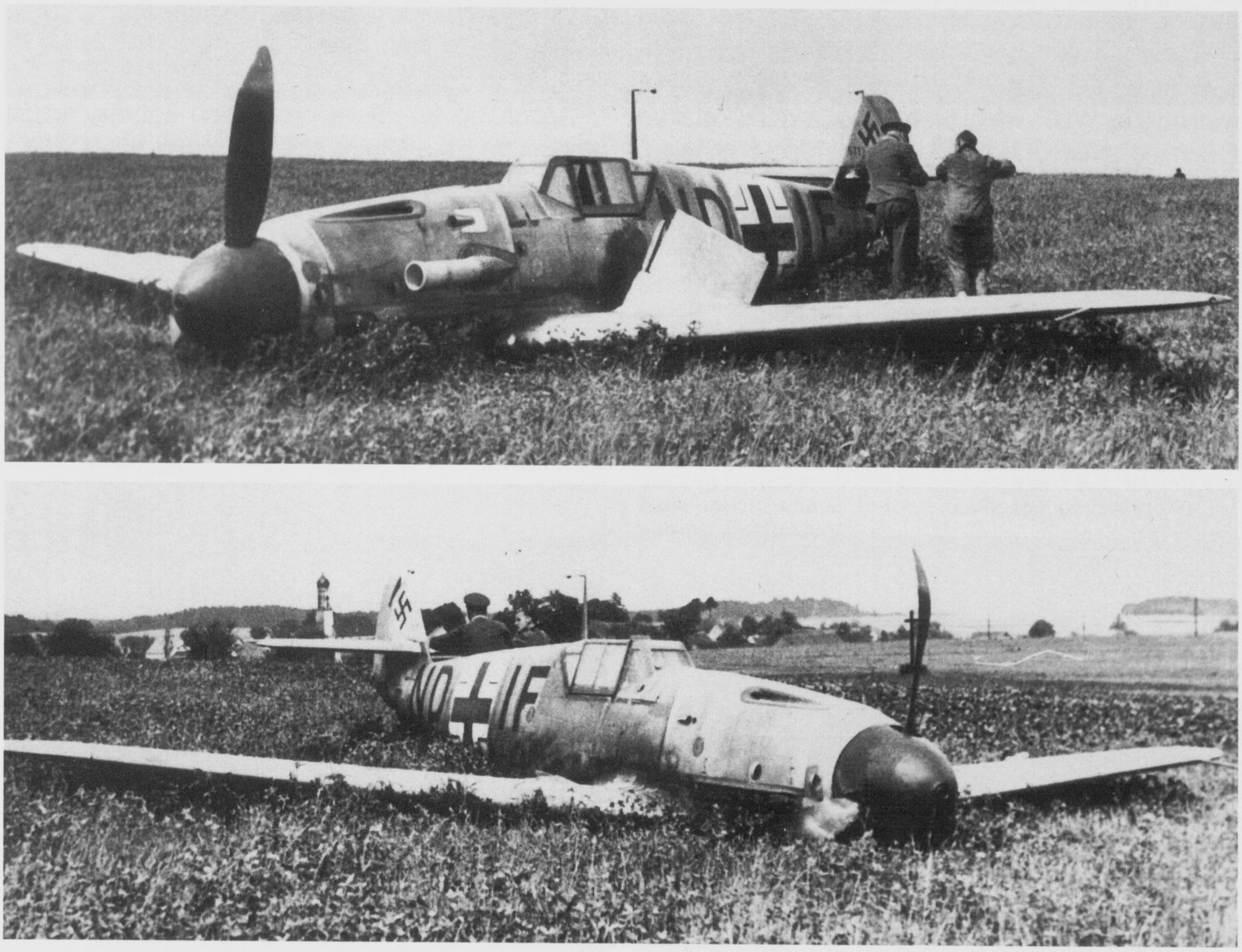
* Key to abbreviations:
Mtt.Reg. = Messerschmitt's Regensburg plant; WNF = Wiener Neustädtler Flugzeugwerke; Erla = Erla Maschinenwerke Leipzig; Ar.War. = Arado's Warnemünde plant.

** According to official production figures, actual production seems to have been much larger.

Bf 109 G Series

Deliveries of the G-Series, which was to be produced in greater numbers than any other version of the Bf 109, began in mid-1942. The G-Series was the subject of continuous development and remained in production until virtually the end of the war.

The major changes from the preceding F-series



Two shots of the V-30, an F-1 (WNr. 5717, Stammkennzeichen ND+IF) converted to test the pressurized cockpit planned for the G-1, following a belly landing. Note the reinforced canopy framing, the horn-shaped scoop for the air compressor on the engine cowling and the unusual lengthened supercharger air intake. Worthy of note are the two ventilation scoops on each side of the engine cowling for cooling the spark-plugs and ejector exhausts. These are similar to those introduced on the G-Series except that the rear scoops have been installed somewhat further aft than was to be the case on later production aircraft. (Petrick)

were the adoption of the Daimler-Benz DB 605 engine, which was to power all versions of the Bf 109 G, and some structural strengthening.

The first three G-Series machines were produced as Bf 109 G-0 at Messerschnitt's Regensburg plant in October 1941; the DB 605 was not yet available, however, and as a result the prototypes were powered by the DB 601E. The three pre-production Bf 109G 's were coded:

WNr. 14001	VJ + WA
WNr. 14002	VJ + WB
WNr. 14003	VJ + WC

A Bf 109 G testing detachment was set up at Rechlin in March 1942 under the command of Hptm. von Holtey. The detachment received six pre-production machines. Personnel were detached from I./JG 1, while several testing engineers and fitters from Daimler Benz supplemented the technical personnel. Following the dispatch of two pre-production Bf 109 G fighters to *EJGr. West* for 100-hour testing at the end of June 1942 and the delivery of the first machines to front-line units soon afterward, the Bf 109 G test detachment was disbanded in early July 1942.

Bf 109 G-1

The first production version of the G-Series was the G-1, which began reaching the front in limited numbers in June 1942. A total of 167 G-1 aircraft were built, the last in July 1942. The production batches received the following *Werknummern*:

10299 - 10318	Erla	20 aircraft	05.42 - 06.42
14004 - 14150	Mtt Reg	147 aircraft	02.42 - 06.42

The first aircraft went to I./JG 2 and newly-formed 11./JG 2, which had been created from elements of 1./JG 2. The latter unit was a special high-altitude *Staffel*. This was a preview of the role specialization which was to employed on an expanded scale in the Defense of the Reich, where the Bf 109 took over the role of high-altitude fighter on account of its superior performance at upper altitudes.

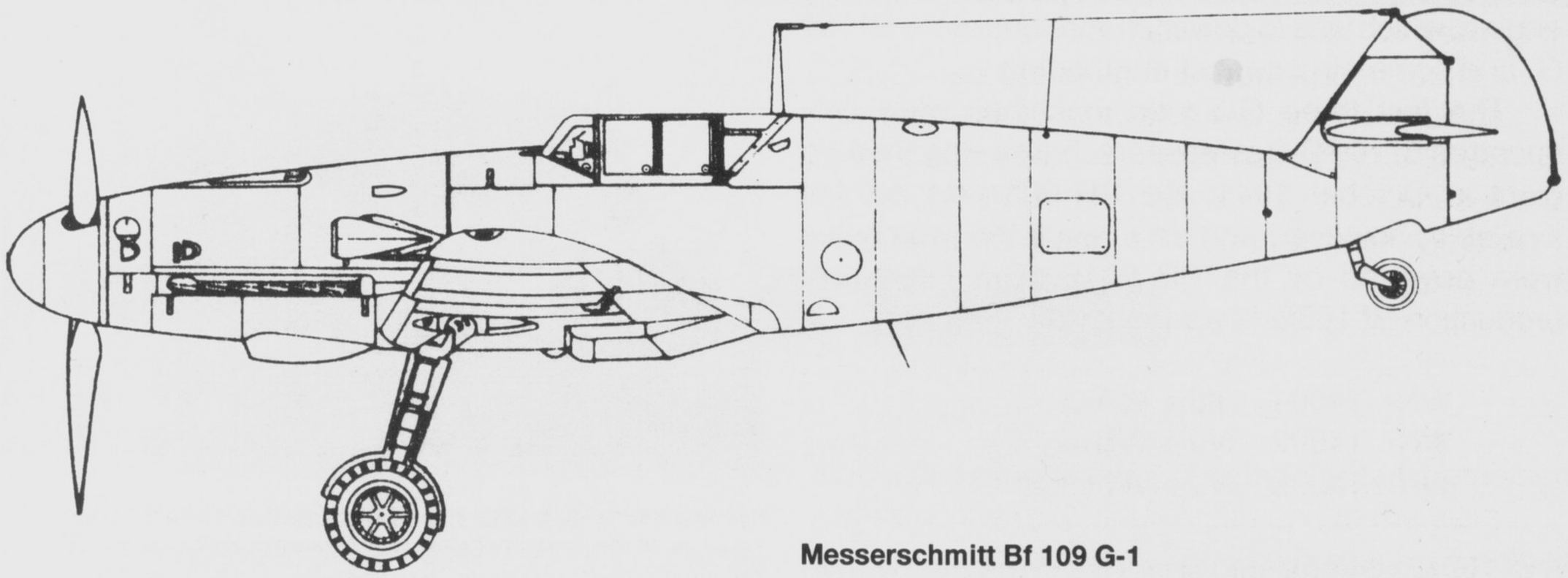
I. and 11./JG 2 soon began operations with the new G-1. One of the first losses was G-1 *Werknummer* 10316 flown by Fw. Baudach of 11./JG 2. Baudach was injured when he force-landed his aircraft on July 19, 1942.

On August 8, 1942, a few weeks after the formation of 11./JG 2, JG 26 also formed a high-altitude *Staffel*. Designated 11./JG 26, it too was formed from the unit's I. *Gruppe*.

Like 11./JG 2, 11./JG 26 was initially equipped with the Bf 109 G-1, including some of the G-1/R2

"White 11," a G-1 with the Werknummer 14 063, was the aircraft of Oblt. Meimberg, the Staffelkapitän of 11./JG 2. This unit was formed in the summer of 1942 as a high-altitude Staffel equipped with the G-1. The identifying characteristics of the pressurized G-1 are clearly visible, namely the inlet for the air compressor on the engine cowling, the vertical head armor which sealed off the rear of the folding hood and the silicagel pellets in the cockpit glazing. (Meimberg)

A mechanic has "submerged" while working in the cockpit of a G-1 of 11./JG 2. This shot provides a good illustration of how the vertical head armor sealed off the rear end of the folding hood. (Meimberg)



Messerschmitt Bf 109 G-1

variant. At the same time I./JG 1, which was based in the area of the German Bight, received a whole series of Bf 109 G-1 fighters. One of the first losses was suffered by 2./JG 1, which reported the loss of WNr. 14052 as the result of a crash on June 21, 1942.

As a result of the transfers of 3./JG 1, 11./JG 2 and 11./JG 26 to the Mediterranean Theater in November 1942, JG 53 and II./JG 51 also received several G-1 aircraft. One such machine was WNr. 10315, which was lost on January 8, 1943 while on strength with 4./JG 51. Individual G-1s later reached

Two shots of the cockpit area of "White 7," another G-1 of 11./JG 2. Above: Here Oblt. Meimberg (sitting on the cockpit sill) explains the instrumentation to a staff officer. Note the silicagel pellet in the triangular windscreen panel. (Meimberg) Left: Visible beneath the triangular windscreen panel on the right side of the aircraft is the ventilation scoop for the pressure relief valve. Note the thin tube of the windscreen washer in front of the windscreen's front panel. (Meimberg)

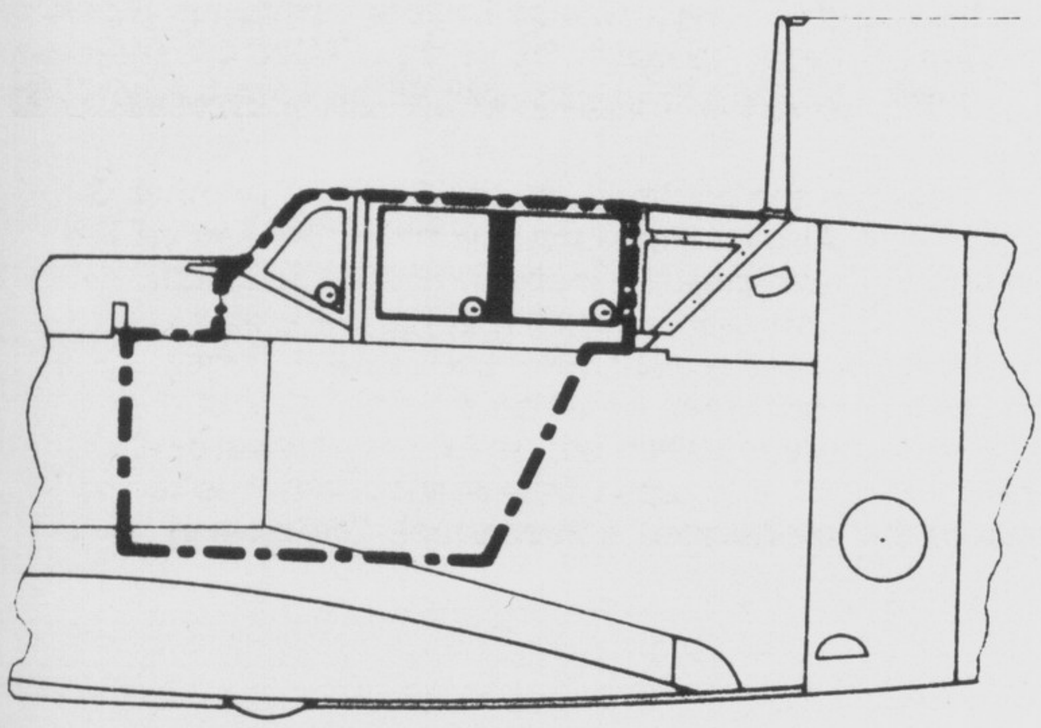
I./JG 5, *EGr. West* and *JGr. Ost*, probably following major repairs in a rear-area repair facility.

Although there were a number of external differences between the G-1 and the F-Series, the early Bf 109 G largely resembled its predecessors from the F-series. The installation of the DB 605 engine resulted in several minor changes in the area of the forward fuselage. While the supercharger air intake was identical to that of the late F-4, the G-Series adopted the larger Fo 870 oil cooler, whose bath was distinctly larger than that of the previously used cooler. Experience with the pre-production series resulted in the addition of two small air intakes on each side of the engine cowling, which served to provide cooling air for the spark plugs and ejector exhausts. These small scoops, which were absent from the pre-production machines, were retained by all subsequent Bf 109s. Propeller disc diameter remained unchanged at 3 meters, but the VDM 9-12087 propeller differed from that of the F-Series in having broader blades and somewhat more rounded tips.

The G-1 was equipped with a pressurized cockpit. Pressurization of the sealed cockpit area, whose dimensions are illustrated in Drawing 10, required an air compressor, which on the G-1 was located on the left upper side of the engine block. The compressor drew outside air through a small, horn-shaped scoop on the upper left side of the engine cowling. Sealing off the cockpit area required changes to the pilot's head and back armor, as this now had to close off the rear end of the folding canopy section. For this reason the armor was installed as a vertical plate, flush-mounted at the rear of the folding hood. Small, triangular armor-glass panels were fitted in the upper corners of the armor plate to improve vision to the rear, but there were machines in which the armor was all-metal. There was a small ventilation scoop on the right side of the fuselage beneath the

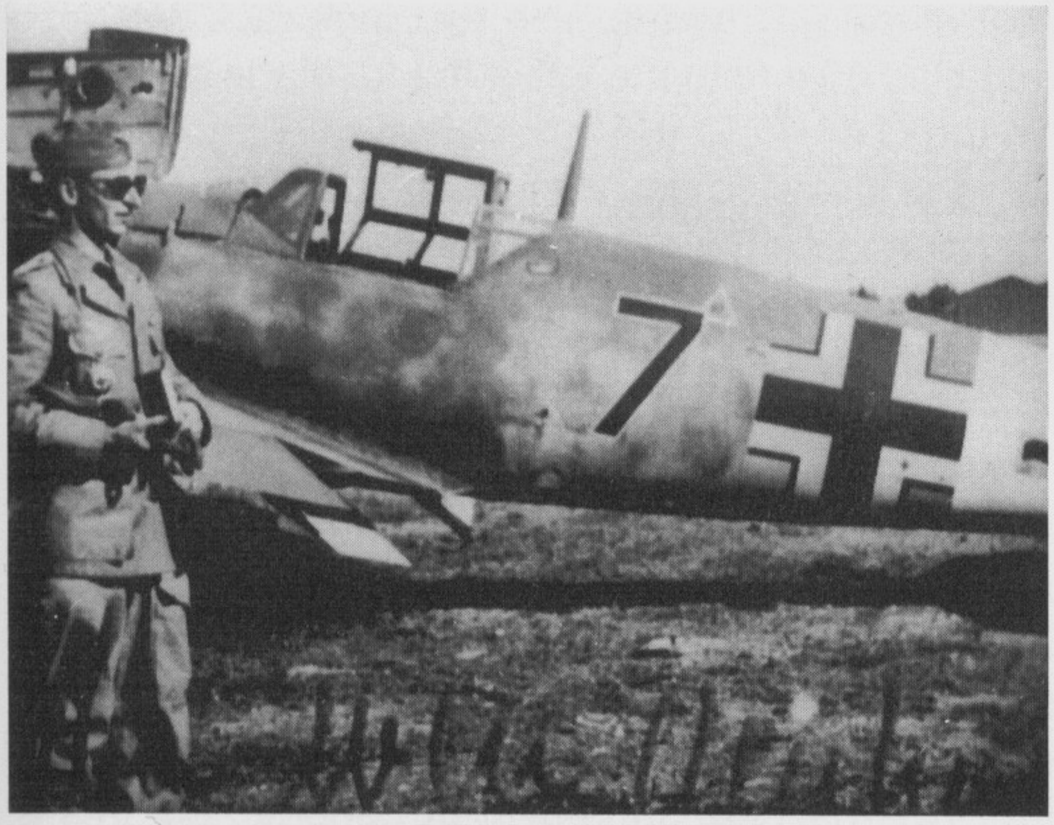
"Black 9," a Bf 109 G-1, belonged to 5./JG 11 and was flown by Fw. Führmann in the early summer of 1943. All the significant features of the pressurized cockpit are also visible in this view: the air intake on the engine cowling, the silicagel pellets in the cockpit glazing and the vertical head armor, which has two small, triangular armor-glass inserts. Note the unit insignia of II/JG 11 which was formerly used by Stab and 1./JG 1, but which had disappeared from the aircraft of I/JG 1 by mid-1941 until it was reintroduced by II/JG 11 when JG 11 was established and I/JG 1 became II/JG 11 in the process. (Biermann)

"Black 1," another G-1 of 5./JG 11, the aircraft of Lt. Heinz Knoke; Beneath the fuselage the aircraft has an ETC 500 IXb for one 250-kg bomb, which was just being loaded when the photo was taken. At the urging of Leutnant Gerhardt and Leutnant Knoke, in early 1943, the then still 5./JG 11 began experimenting with the use of 250-kg bombs fitted with delay fuses to break up formations of American heavy bombers. Note the lower engine cowling, part of which has been painted yellow, and the black finish around the ejector exhausts and in the area of the wing root. (Knoke)

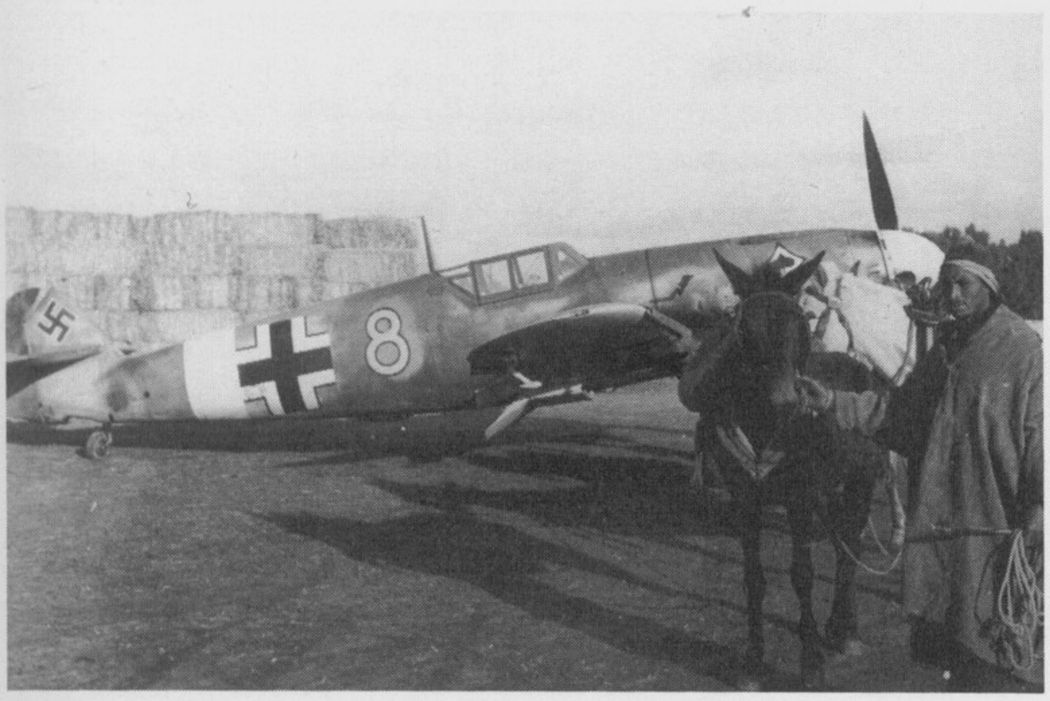


Pressurized cockpit of the G-1. The dotted and dashed line indicates the sealed pressurized area.

Two photographs of "Black 8," a G-1 of 11./JG 26, photographed in November 1942 at Trapani, Sicily, where 11. Staffel was based for a short time prior to its move to North Africa. Here preparations are under way for an engine change. (E.C.P.A.) Below: The aircraft wears the "European" green/gray scheme and has meanwhile received a white fuselage band, carefully sparing 11./JG 26's Staffel marking, the short, wavy line. Note that only the right wingtip is white. (E.C.P.A.)



Fahnenjunker-Feldwebel Babenz in front of "Black 7," another G-1 of 11./JG 26. This photo was probably taken in Tunisia after the Staffel's move to North Africa at the end of 1942. Discernable are details of the pressurized cockpit and the white fuselage band, which once again has left the wavy line marking intact. (Petrick)



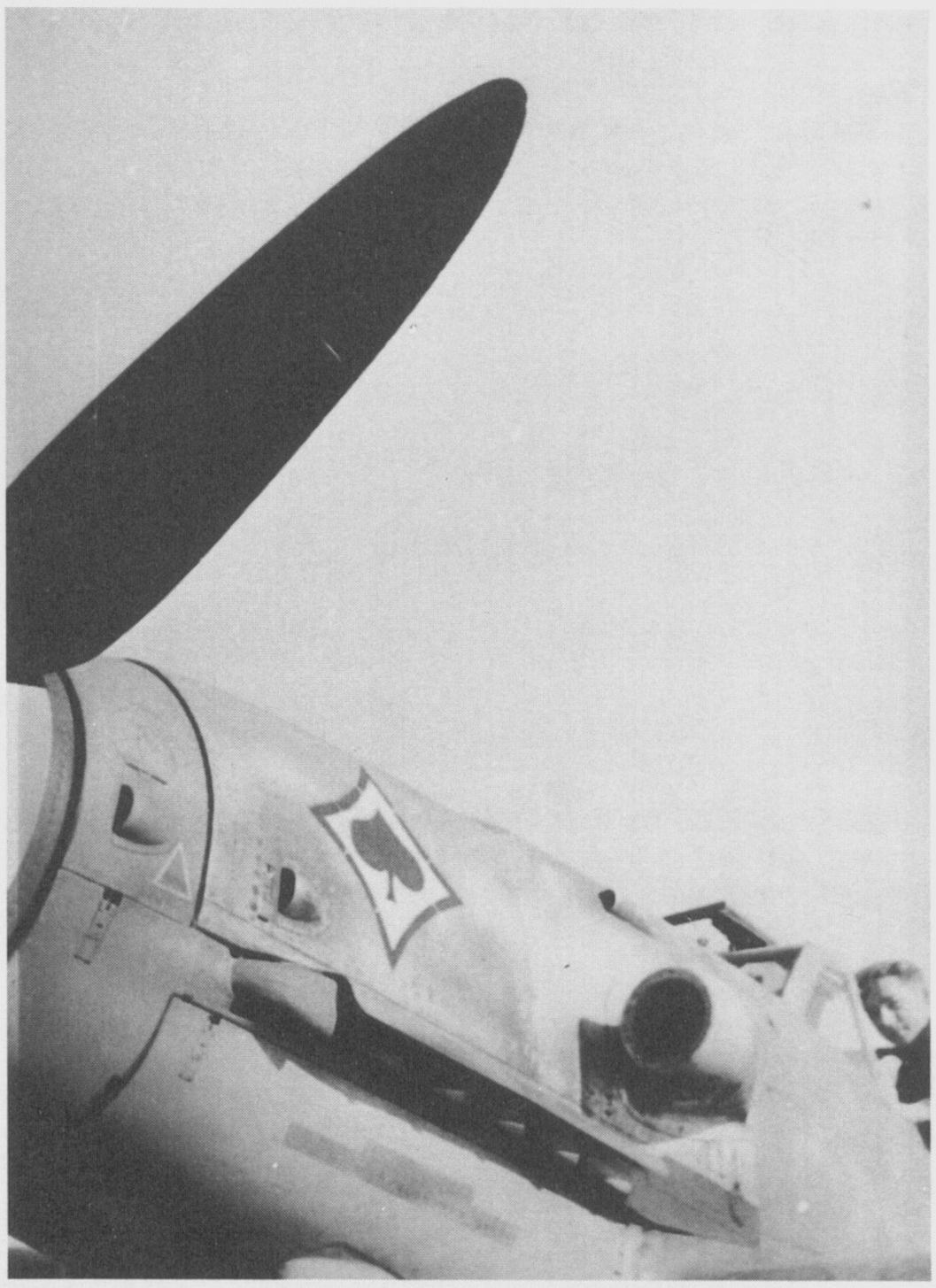
"Yellow 8" of 3./JG 53, one of the few G-1s to find its way to JG 53, photographed in Tunisia in early 1943. The machine may have formerly belonged to 11./JG 2, which was incorporated into JG 53 at this time. (Bundesarchiv)

windscreen in place of the previous triangular pane; hidden beneath the scoop was the pressurized cockpit's negative pressure release valve. Another distinctive feature of the pressurized cockpit was the inclusion of silicagel cartridges in all the panes of the windscreen and folding hood. These were intended to absorb any moisture between the double panels of the cockpit glazing. The cockpit framing was reinforced considerably in order to accept a 60 mm armor glass panel in front of the pilot, eliminating the need for the supplementary armor-glass panel often seen on earlier variants, and the triangular pane on the left side was deleted. In addition, the cockpit framing of the G-Series was of welded construction, replacing the riveted assemblies used previously. A thin pipeline was fitted in front of the windscreen which was supposed to permit the front panel to be cleaned in flight using gasoline.

The fuel filler point was once again relocated to the left side of the fuselage spine between frames 2 and 3. Further minor differences between the F- and G-Series may be seen in the line drawings.

The wings of the G-1 featured the squared-off wheel wells usual on early F-Series aircraft; it was originally planned that wheel well doors should be installed to cover the exposed portions of the mainwheels in flight, however this feature was not adopted for series production.

Like the F-4, the Bf 109 G-1 was armed with an engine-mounted MG 151/20 cannon and two MG 17 machine guns. The radio installation consisted of an



This G-1 belonged to Stab/JG 53 at the turn of the year 1942/43. It too may have come to the "Pik-As" Geschwader via 11./JG 2. The air compressor inlet scoop can be seen on the engine cowling above the super-charger air intake. (Dreifke)

FuG VIIa and an FuG 25, whose antenna was fitted beneath the fuselage on the right side just behind Frame 3.

The last 80 machines built by Messerschmitt were delivered as Bf 109 G-1/R2 lightened high-altitude fighters, the R2 designation signifying *Rüstzustand* 2. In addition to the deletion of the pilot's back armor and the equipment associated with the long-range fuel tank, this included an unprotected metal fuel tank and GM-1 nitrous-oxide injection, which provided a short boost in engine performance. Externally the installation of GM-1 was indicated by a small access hatch over the filler point on the right side of the fuselage between Frames 3 and 4. Use of *Rüstsatz* 3, the 300-liter auxiliary fuel tank and its under-fuselage rack, was common on the rest of the G-1 series. The fuel tank rack was also installed 40 mm to the left of the fuselage centerline on the G-1.

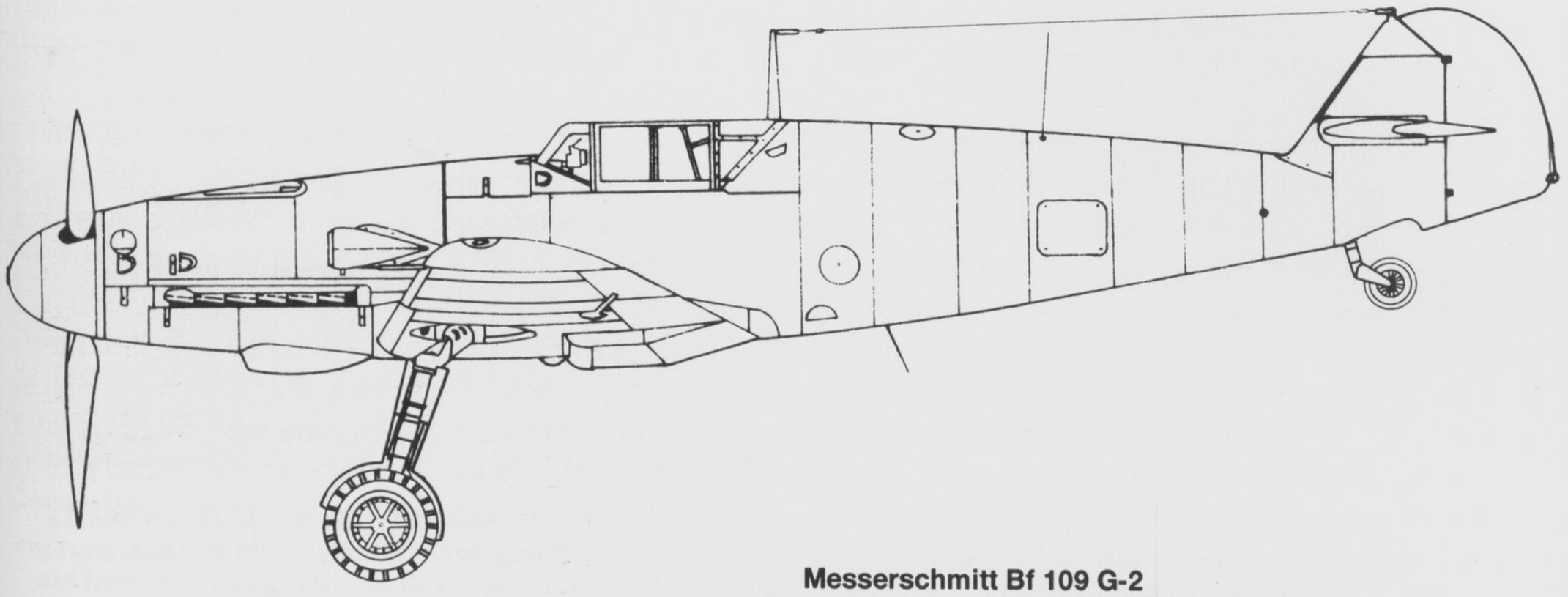
Also possible was the installation of two MG 151/20 cannon as gondola-mounted weapons beneath the wings as *Rüstsatz* 6. So far, however, only a few G-1 fighters of I./JG 1 are known to have been so equipped.

Finally, there was no G-1 trop series. It is however possible, but not proven, that the G-1s which arrived in the Mediterranean area with 3./JG 1, 11./JG 2 and 11./JG 26 may have been retrofitted with a sand filter. Some publications stubbornly persist in maintaining the existence of a G-1 trop armed with 2 MG 131 machine guns over the engine, but this is pure invention, there was no such aircraft.

I./JG 53 received its first G-2s in mid-July 1942. Here "Black 3" of 2. Staffel – possibly WNr. 14 163 – is serviced on a forward airfield in the south of the Eastern Front. The vertical head armor in the folding hood is noteworthy. This style of head armor was standard in the pressurized versions but was also often seen on early G-2s from production batch 14 151. (Weinlich)

Bf 109 G-2

Production of the G-2 commenced at the same time as the G-1 at Erla and Messerschmitt Regensburg. The G-2 was built in far greater numbers, however, and appeared on practically every front. Production of the G-2 by the Wiener Neustädter Flugzeugwerke, Erla and Messerschmitt Regensburg ran from May 1942 to February 1943. At the latter factory the G-2 replaced the G-1 in production in June 1942. It appears that a total of 1,586 G-2s were built, for which the following *Werknummer* blocks are known:



Messerschmitt Bf 109 G-2

10319 - 10479	Erla	160 aircraft G-2	06.42 - 08.42
10480 - 10863	Erla	384 aircraft G-2 trop	07.42 - 12.42
13401 - 14000	WNF	590 aircraft G-2	05.42 - 10.42
		10 aircraft G-2/R1	
14151 - 14268	Mtt Reg	96 aircraft G-2	06.42 - 08.42
		22 aircraft G-2 trop	
14501 - 14850	WNF	350 aircraft G-2	10.42 - 12.42
		G-2/R3*	

(*Note: although numerically 940 G-2's were built by WNF, only 914 were actually completed, thus the overall total G-2 production was 1,586 aircraft.)

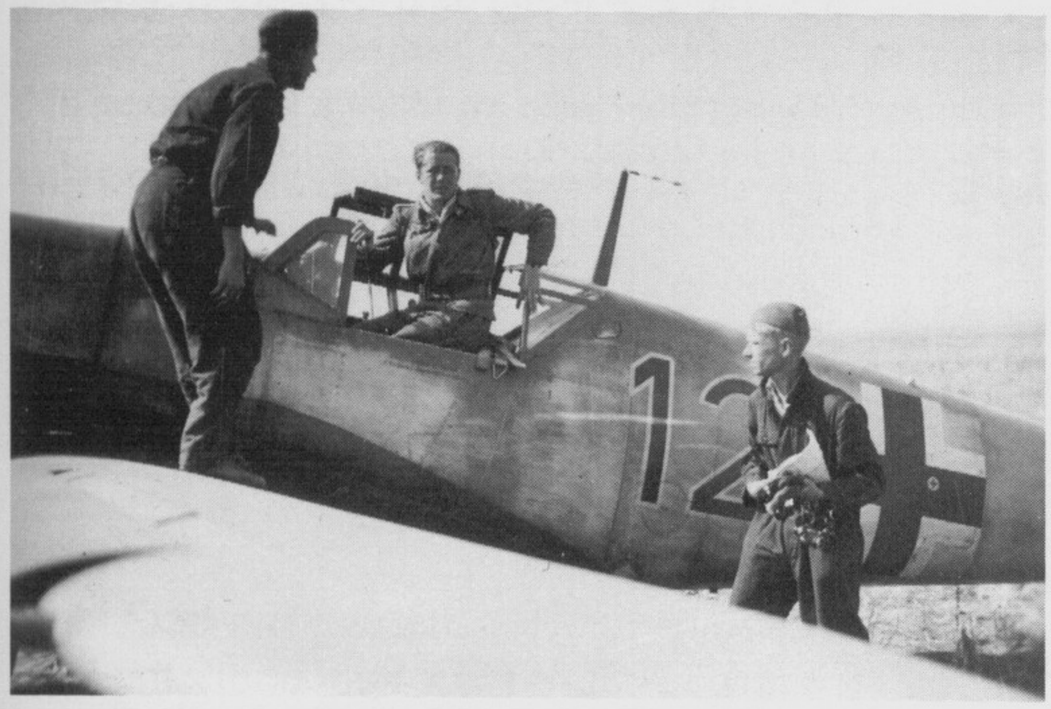
One further machine was built at Györ, Hungary in 1943 as a Ga-2, giving a total of 1,587 aircraft.

Deliveries of the G-2 to the *Jagdgeschwader* began in June 1942. The first mention of a G-2 in loss reports appears on July 7, 1942, when 3./JG 54 reported *Werknummer* 10335 damaged. The first total loss occurred the next day, when Uffz. Krausse of 8./JG 52 crashed while on a transfer flight in *Werknummer* 13402 and was killed.

The following units flew the G-2 in action:

Stab, I., II., III./JG 3, I./JG 4, Stab, I., II., III., IV./JG 5. Stab, I., II., III., IV./JG 27, II./JG 51, Stab, I., II., III./JG 52, Stab, I., II./JG 53, Stab, I., II., III./JG 54, Stab, I., II., III./JG 77, JGr. West, JGr. Ost, JGr. Süd, 4.(H)/12, 2./(H)/14, NAG 2, NAG 4, (F)/122, (F)/123.

Technically the G-2 differed from the G-1 only in the deletion of the latter's pressurized cockpit and the absence of fittings for the installation of GM-1. Exter-



Two shots of "Black 12," another G-2 of 2./JG 53. This machine was flown by Lt. Zellot, one of the "Experten" of I./JG 53, in the summer of 1942. This G-2 also has the vertical head armor, usually a feature of the pressurized variants. (Weinlich)

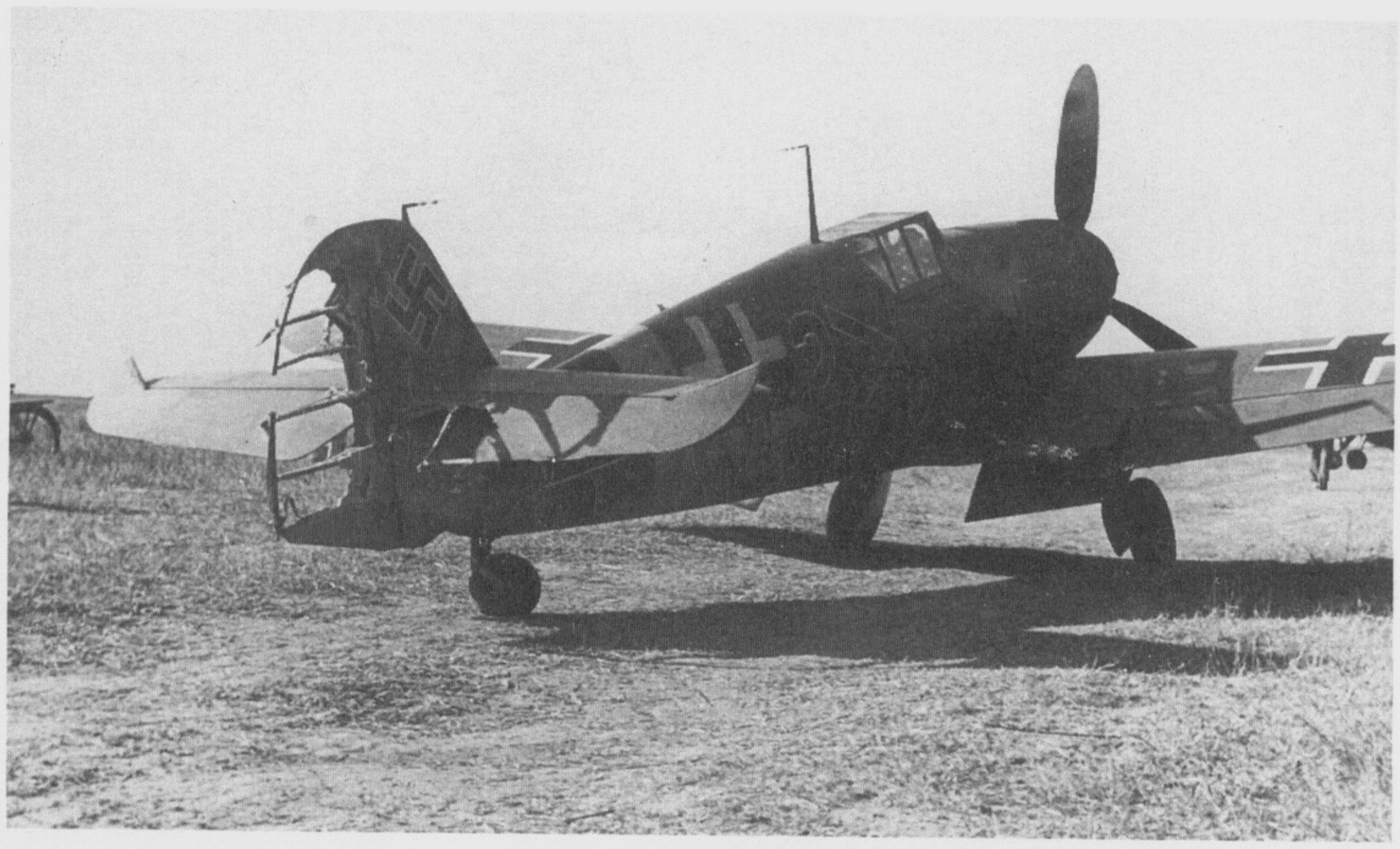
Two mechanics of 2./JG 53 in front of another G-2, photographed on an eastern forward airfield in late summer 1942. This "Gustav" also has the vertical head armor in the folding hood. Clearly visible are the deeper oil cooler of the G-Series and the wider propeller blades, as well as the squared-off wheel wells. (Weinlich)

"Yellow 11" of 9./JG 52, a G-2 with the Werknummer 13 670. This aircraft was occasionally flown by Oblt. Graf in the late summer of 1942 and he – allegedly – scored his 150th kill with it, among others. The aircraft's finish has a dense, light dapple on the fuselage sides. Below the canopy is the Staffel emblem of 9./JG 52 – the "Karaya" Heart – and in front of it is the Gruppe emblem of III./JG 52. (Rossmann)

Oblt. Graf in the cockpit of his "Yellow 11" after returning from a mission. (Rossmann)

Oblt. Graf, Staffelkapitän of 9./JG 52, in front of his "own" aircraft, a G-2 coded "Yellow 1." On the aircraft's rudder may be seen Graf's victory marking with the number 150 in an oak wreath. (Rossmann)

Major Gollob was the Kommodore of JG 77 in the summer of 1942, but from August he flew with JG 52 after the three Gruppen of his Geschwader were widely scattered after the Battle of Sevastopol, seeing action between the central and southern sectors of the Eastern Front as well as in Sicily. Here he stands beside "Chevron 2," a G-2 of the Gruppenstab of III./JG 52, inspecting the consequences of an air battle. (Petrick)



"Chevron 2" of the Gruppenstab of II./JG 52, a G-2 with the Werknummer 13 566. In the late summer of 1942 this aircraft was flown by several pilots, among them Uffz. Waldmann, who flew as Gruppenkommandeur Hptm. Steinhoff's wingman. The aircraft is seen here following its fortunate return from a combat mission on September 18, 1942, when the aircraft was hit in the rudder by anti-aircraft fire over the Caucasus. (Bracke)

The aircraft's original finish consisted of the gray tones usual at that time, but the fuselage sides in the area of the tactical markings were oversprayed at a later date. The spotted finish on the upper engine cowling is also noteworthy – such schemes were occasionally seen on aircraft of II./JG 52 at this time. (Bracke)

nally the unpressurized cockpit could be recognized on most G-2s by the all-metal head armor in the folding hood. Unlike that used with the pressurized cockpit, the armor plate did not seal off the rear end of the hood, rather it was installed obliquely behind the pilot's head as in the F-Series. Among the first G-2s were many aircraft which, in spite of the absence of a pressurized cockpit, were equipped with the vertical head armor characteristic of the G-1. In addition, some G-2s differed from the pressurized G-1 in having openings for cockpit ventilation, of which there could be two on either side of the fuselage. Ventilation scoops could be installed on both sides of the windscreen in place of the deleted triangular panes. These were to be seen on aircraft from production batches 10300 and 13400. Most other G-2s had none at all or only the right ventilation scoop. As well, some G-2s had small, rectangular cockpit ventilation flaps about halfway up the fuselage on both sides of the aircraft. These could be opened and closed from within the cockpit by means of a pushrod. These ventilation flaps were only installed on a few G-2s, for example in the 10300 – 10900 series. Finally, the G-2 also lacked the compressor air intake on the left side of the engine cowling.

A large number of *Rüstsätze* were used with the G-2 series, some installed at the factory. The range-increasing R3 was widely used as was the installation of two MG 151/20 cannon beneath the wings, which was designated R6. Several G-2s were fitted with an ETC 500 IX b bomb rack for one 250 kg bomb, which was designated R1; an ETC 50 VII d

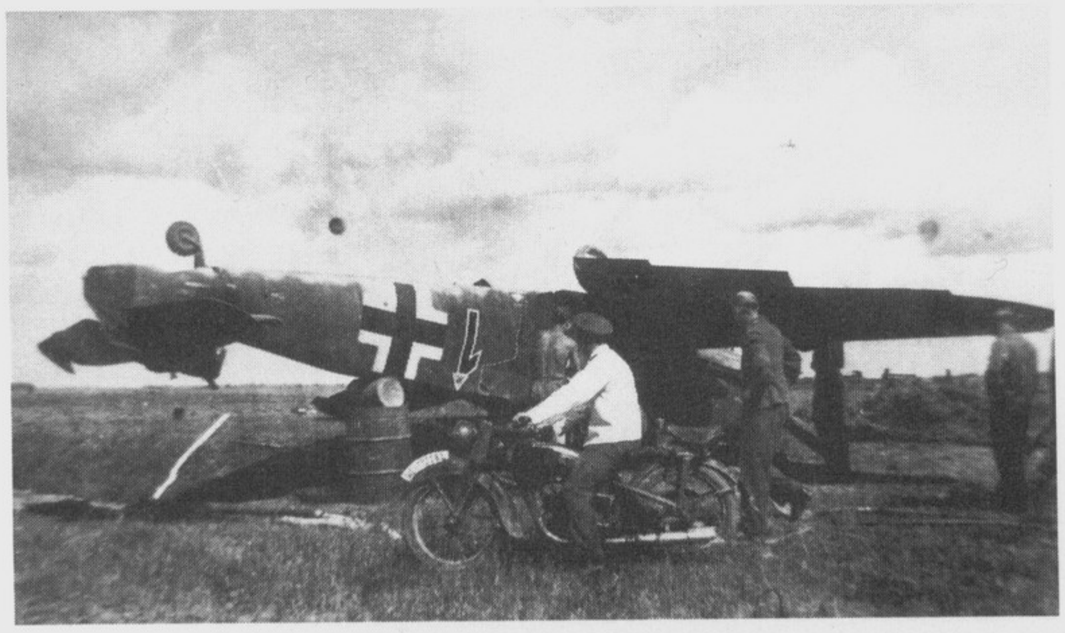
Lt. Krupinski of 6./JG 52 climbs out of his aircraft "Yellow 5," a G-2, following a sortie in autumn 1942. The aircraft wears a gray camouflage scheme with considerable mottling on the fuselage sides. Part of the gondola cannon is visible beneath the wing. (Lipfert)

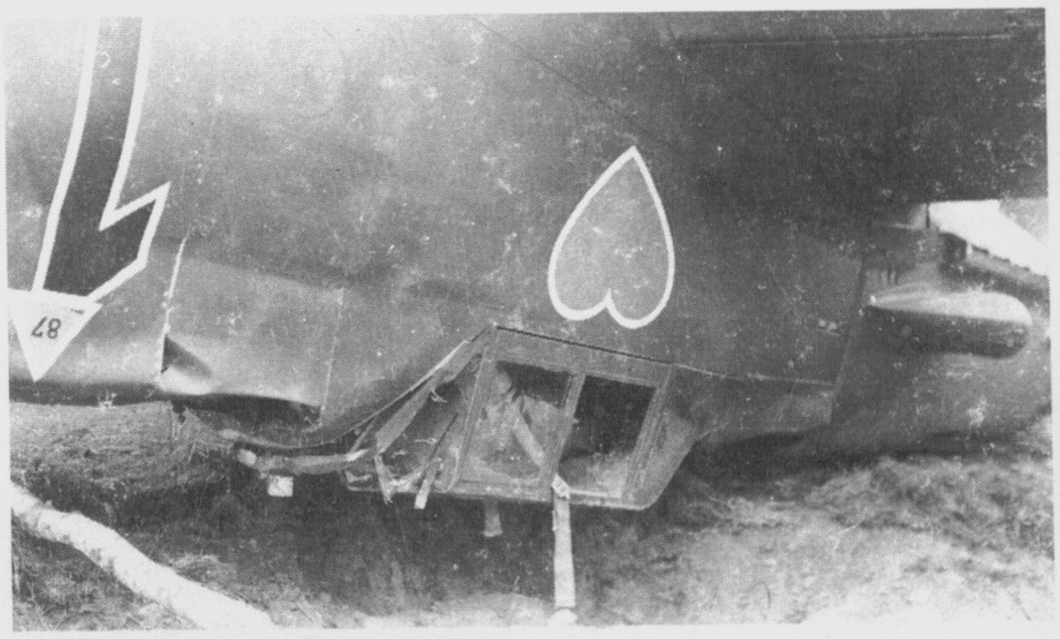
"Yellow 9," another G-2 of 6./JG 52, which was photographed on the same occasion. The aircraft was largely similar to Leutnant Krupinski's "Yellow 5." It can be seen that this G-2 has no ventilation openings in the area of the cockpit. (Lipfert)

Two shots of G-2 "Double Chevron Bar," the aircraft of the Kommodore of JG 54, Major Trautloft, photographed in the northern sector of the Eastern Front in the late summer of 1942. The aircraft wears the segmented camouflage scheme used by JG 54 at that time. Note the pressure-sealing vertical head armor and the Geschwader emblem with the enclosed emblems of all three Gruppen beneath the cockpit. (Matthiesen)

could also be installed as R2. As with the F-Series, the installation of *Rüstsätze* did not result in a change in the aircraft's designation – contrary to what has been claimed in many publications. A G-2 with *Rüstsatz* R1 did not become a G-2/R1. The R-suffix attached to the aircraft's designation referred instead to the *Rüstzustand*, or equipment condition, of the aircraft in question and this was assigned at the factory. Two such *Rüstzustände* were planned for the G-2, namely:

Changing a wheel on a G-2 of II./JG 54. At this time the aircraft of II. Gruppe also wore a very striking segmented scheme, which often featured spots and bands in lighter colors. It is obvious that this G-2 also has the vertical head armor of the pressurized versions. (Lorant)





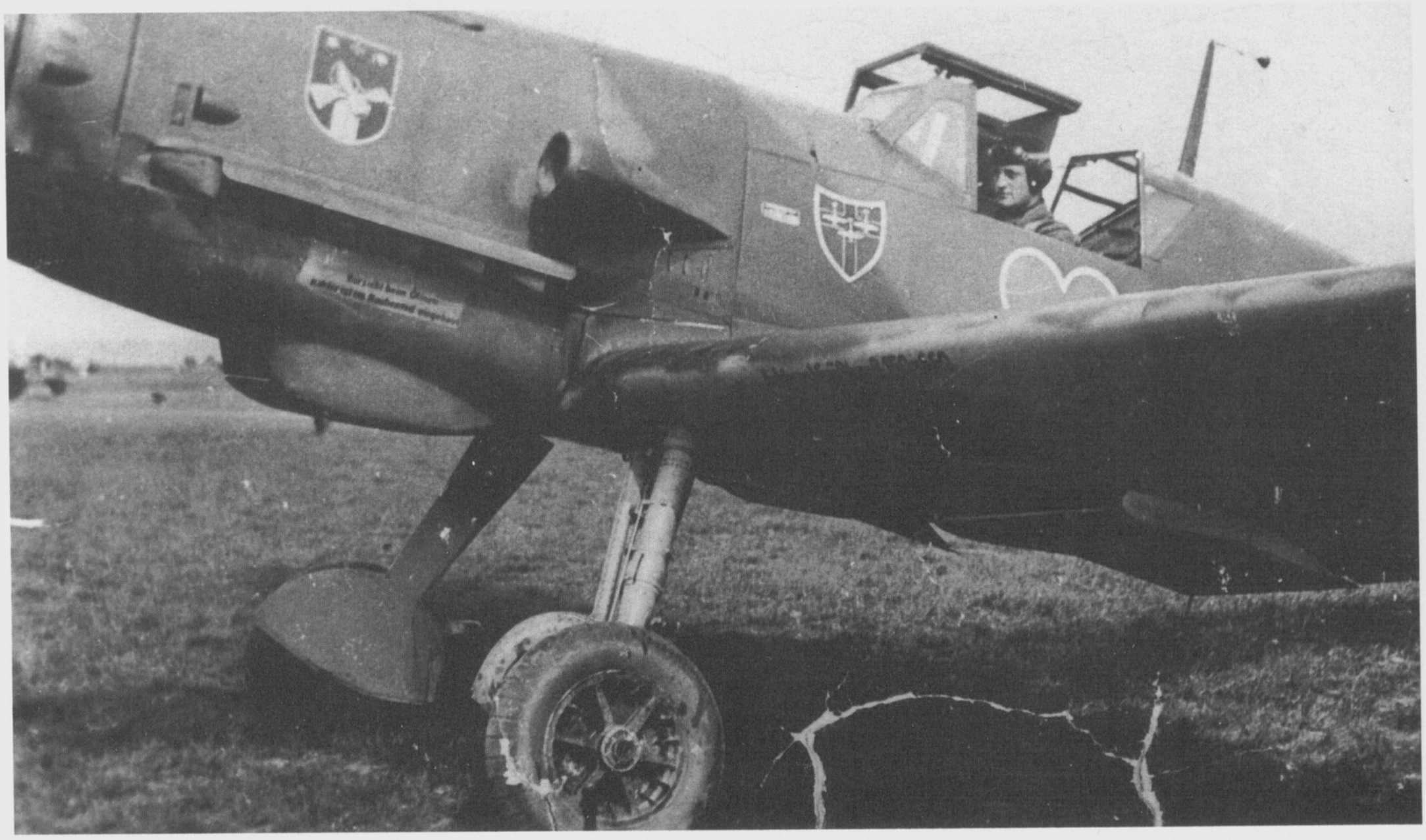
"Black 1," a G-2 with the Werknummer 10 360, after flipping onto its back at Rjelbitzy on August 11, 1942, the result of the aircraft striking an obstacle. Pilot Lt. Nowotny was fortunate and escaped with a few scrapes. (Lorant) Right: Another view of Nowotny's "Black 8" after its accident. Note the dark upper surface finish which extends all the way to the underside of the aircraft. (Lorant)

G-2/R1 — 2 x 300-liter jettisonable fuel tanks beneath the wings, an ETC for one 500 kg bomb and an auxiliary under carriage member beneath the fuselage;

G-2/R2 — reconnaissance aircraft with GM-1 installation and camera equipment (choice of Rb 75 x 30, 50 x 30, 20 x 30 or 12.5/7 x 9).

Finally, there was also one conversion kit (*Umbausatz*) for the G-2; the G-2/U1 was to have been fitted with an Me P6 reversible-pitch propeller.

The final G-2 production batches built by Erla and Messerschmitt Regensburg were equipped for use in the Mediterranean Theater as the G-2 trop. The most obvious feature of the G-Series tropical versions was the sand filter in front of the supercharger air intake, which was installed in the same way as that of the F-series. In addition, all G-2 trop



Another G-2 in a segmented color scheme; the Staffel emblem on the engine cowling identifies it as belonging to 7./ JG 54. (Matthiesen)

This G-2 belonged to 2./JG 52 in the late summer of 1942; on the engine cowling is the emblem of I./JG 52. (Schwientek)

aircraft received two small, teardrop-shaped metal connectors on the left side of the fuselage below the cockpit sill. Installed one above the other, they served as mounts for a sun umbrella. The sun umbrella was intended to provide the pilot with the necessary shade while at cockpit readiness and was delivered with every G-2 trop as a so-called *Sonderwerkzeug* or "Special Tool." Like the F-4 trop, the G-2 trop was supposed to have white sidewalls painted on its mainwheels for protection from the sun's rays, but again such protection was the exception.

G-2 aircraft operating in the Russian Theater could often be observed to have had their FuG 25a removed; this also applied to later versions of the Bf 109 G used in the East.

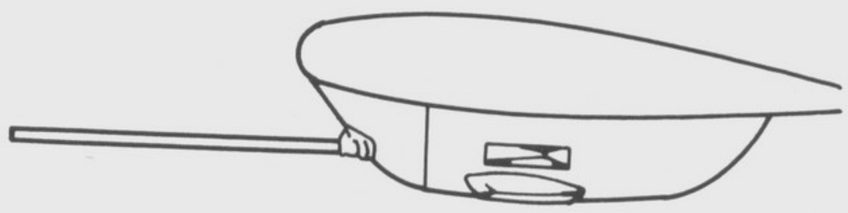
Two shots of "White 2," a G-2 of 4./JG 3 which was forced to make a belly-landing near Waborowna in late summer 1942. The aircraft shows evidence of considerable repainting. Note the Geschwader emblem on the engine cowling and the short black Gruppe bar – it was standard practice in JG 3 at this time that the Gruppe bar was always black, irrespective of the Staffel color. (Wahl)

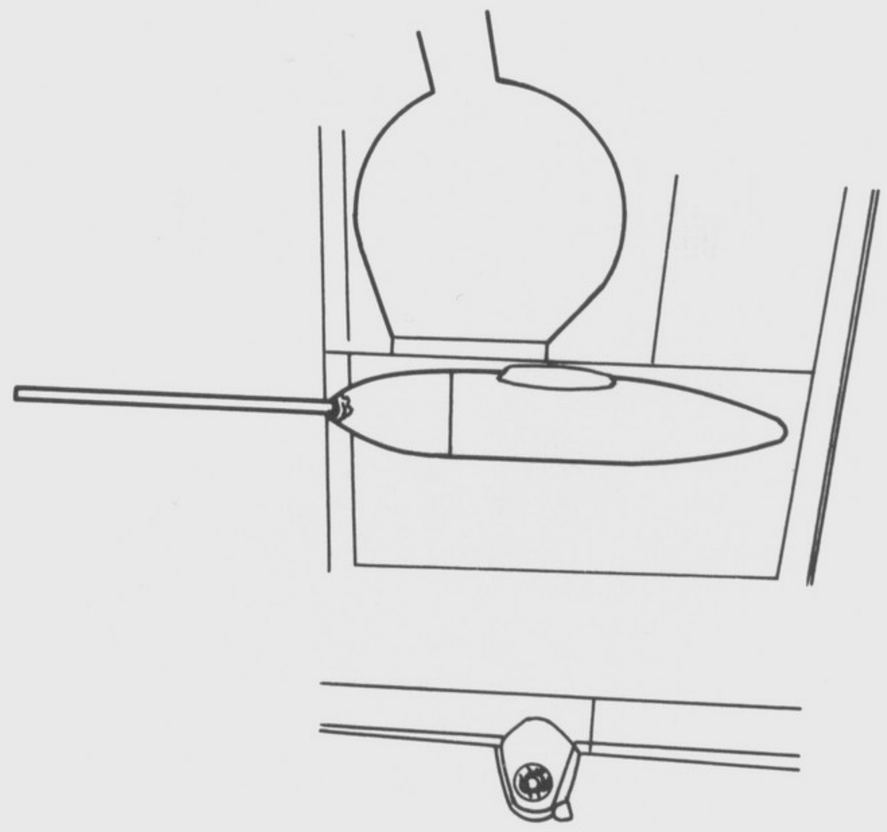
A G-2 of 7./JG 3 being armed with four 50-kg bombs. Clearly visible are details of the ETC 500 VIId, which was designated Rüstsatz 2. (Makowski)

This "gunboat" – a G-2 with gondola-mounted cannon – was taken on strength by I./JG 52 in autumn 1942. This aircraft also wears the second emblem of I./JG 52 on the engine cowling. (Wiese)

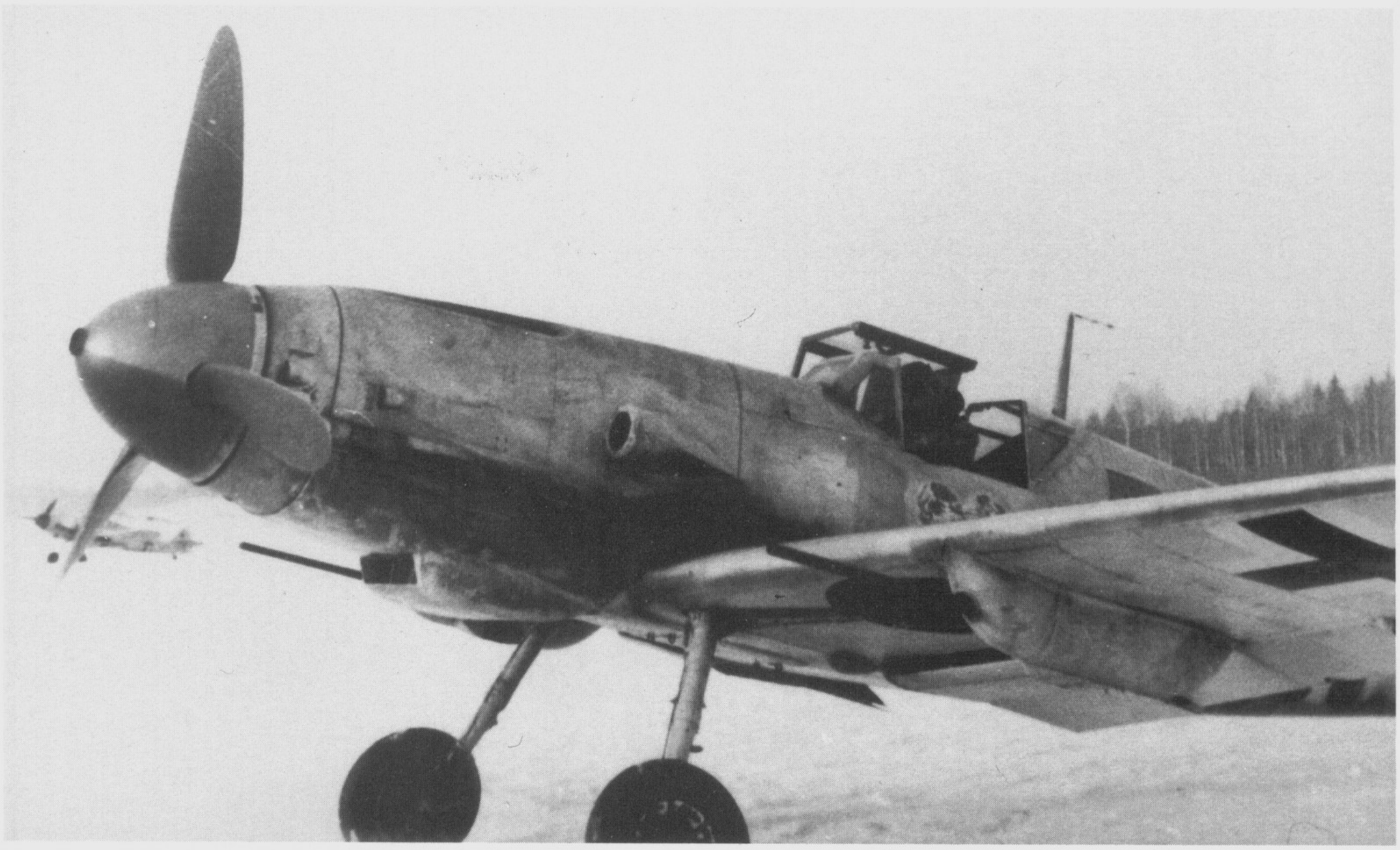
Another of JG 52's "gunboats." This G-2, Werknummer 14 582 Stammkennzeichen RB+KH, was issued to 8./JG 52 at the end of 1942. (Markhoff)

"Yellow 4," another G-2 with gondola-mounted weapons, belonged to 6./JG 54 at the beginning of 1943 and was photographed at Zhitomir. In keeping with the wintry conditions, the aircraft wears a white camouflage finish and the landing gear doors have been removed. (Lorant)





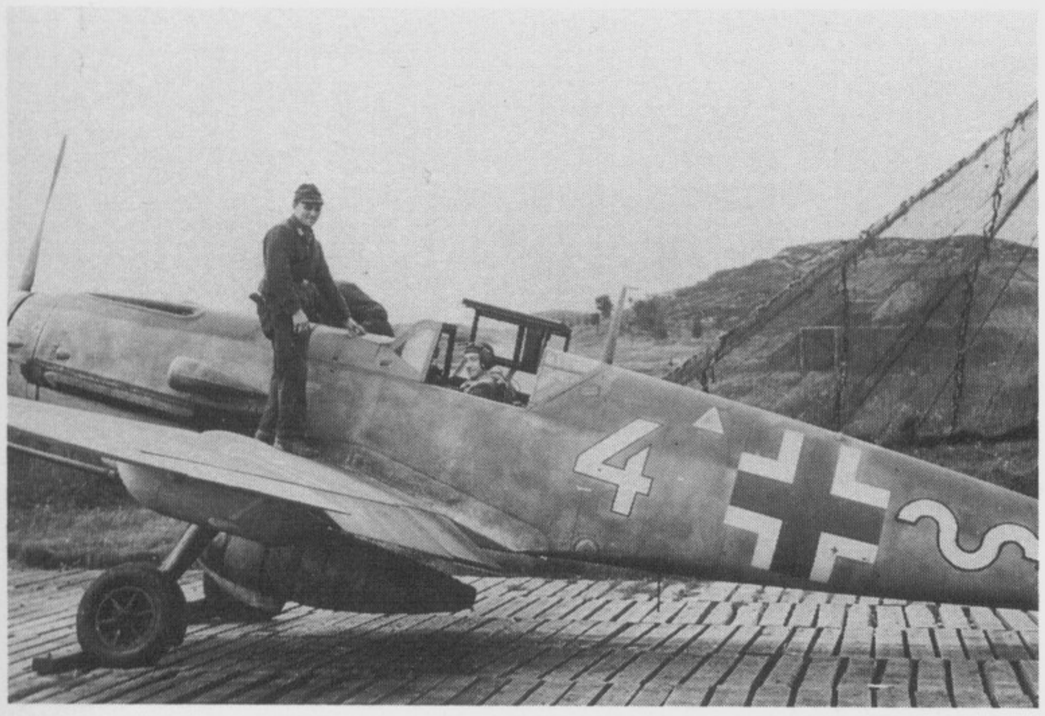
Installation of *Rüstsatz* R6 (gondola-mounted MG 151/20). The two gondolas differed in that their shell casing ejector chutes faced toward the aircraft centerline.



Two shots of "Yellow 5" of 9./JG 54, a G-2 with gondola-mounted weapons, which was flown by Lt. Brock in the winter of 1942/43. This "Gustav" also wears an already somewhat faded-looking white winter finish. (Brock)

"Black 9" of 11./JG 5, a G-2 with a 250-kg bomb on an ETC 500 IXb (Rüstsatz 1) beneath the fuselage, photographed in the winter of 1942/43 in Norway. This aircraft wears a makeshift winter scheme consisting of light-colored spots and lines sprayed over the upper surfaces. The disc behind the Balkenkreuz was the Gruppe symbol of IV./JG 5. (Dölling)

Above: Two views of "Yellow 12," a G-2 of 6./JG 5 which was flown at the beginning of 1943 by Oblt. Ehrler. The aircraft wears the spotted winter scheme commonly worn by aircraft of II./JG 5. (Dölling) Right: Oblt. Ehrler, Staffelkapitän of 6./JG 5, in the cockpit of his aircraft "Yellow 12." Note the circular cover plate beneath the windscreen side panel. (Dölling)

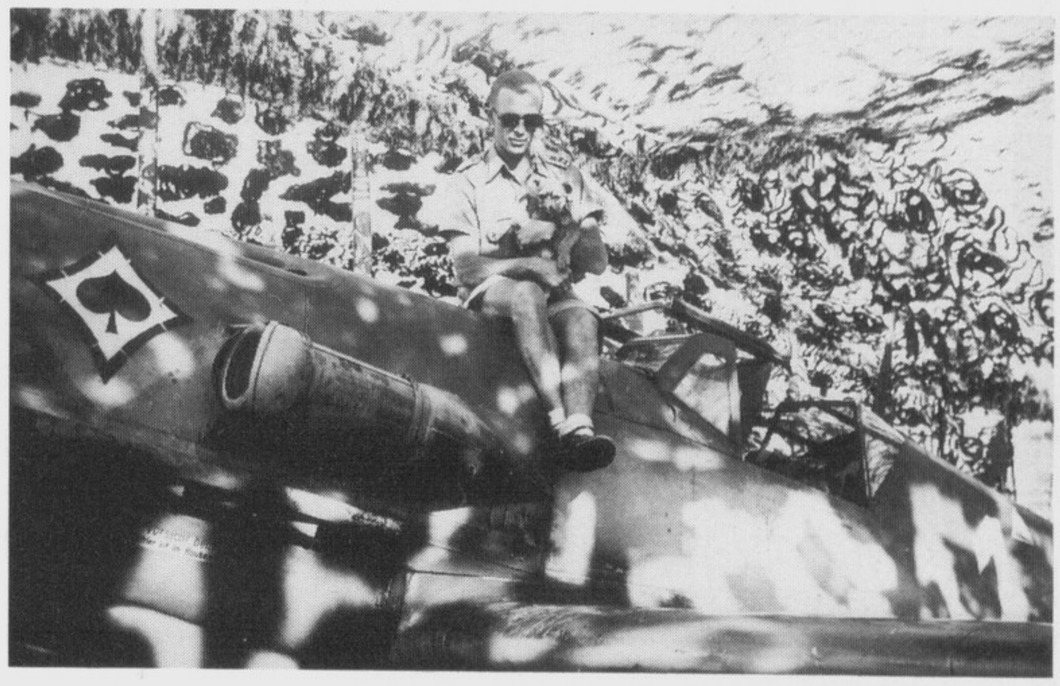


Above: "White 4," a G-2 with underwing cannon, belonged to 7./JG 5 in 1943 and was flown by Lt. Koch. Note the external fuel tank beneath the fuselage, the bulged fairings on the wing surfaces to accept the larger and more vertically-aligned mainwheels, the ventilation scoop beneath the windscreen and the wavy line as Gruppe symbol of III./JG 5. (Petrick)

Mechanics of the maintenance section of Stab/JG 53 with a G-2 trop at Comiso, autumn 1943. The aircraft wears the finish commonly used at that time by the elements of JG 53 based in Sicily, with dark, lightly-mottled upper surfaces and a yellow cowling underside. Visible in this shot are details of the sand filter as well as the area of the cockpit and engine. (Schmitt)

Lt. Ivanic, a pilot of 15.(kroat)/JG 52, in front of "Black 8," a G-2 of JG 52's Croatian Staffel. The aircraft has a yellow engine cowling and wears the Ustascha emblem of 15./JG 52 ahead of the cockpit. (Ivanic)

Above: "Black 1," a G-2 trop of 5./JG 53, at Comiso, Sicily in October 1942. The aircraft wears the scheme used by Stab and II./JG 53 at that time with dark, mottled upper surfaces. (Bundesarchiv)



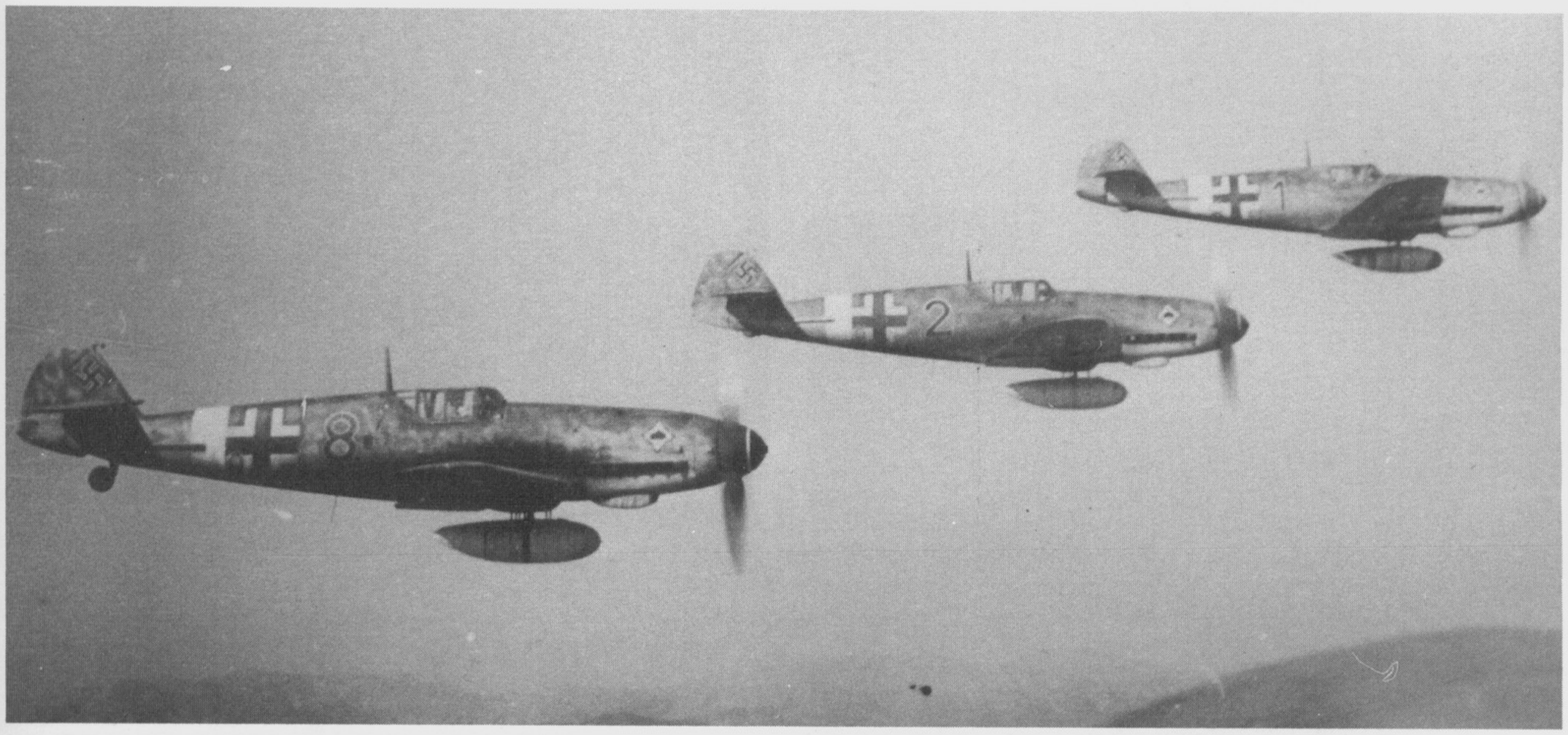
Right: Ofw. Litjens of 4./JG 53 on the engine cowling of "White 1," a G-2 trop. The photo was taken in the "Gustav's blast pen at Comiso in early November 1942. (Litjens)

Lt. Schiess, a pilot in the Geschwaderstab of JG 53, in the cockpit of his G-2 trop, photographed in Sicily, autumn 1942. Visible in this shot are details of the cockpit area, especially of the heavy, coarsely-welded canopy framework. (Schmitt)

Bore-sighting the weapons of "White 2," a G-2 trop of 4./JG 53. The aircraft was probably photographed at Comiso, Sicily in the autumn of 1942. (E.C.P.A.)

Above: "Yellow 13" of 3./JG 53, a Bf 109 G-2/R1 trop with the Werknummer 10 804, was supposed to be assigned to Lt. Crinius, the leading "Experte" of 3./JG 53, in January 1943. However, as he was flying with Stab I./JG 53 at this time, he was unable to fly any sorties in this aircraft before failing to return on January 13, 1943. (Opel) Right: Another view of "Yellow 13." After Lt. Crinius failed to return the aircraft was taken over by Lt. Opel of 11./JG 26, who flew it until March 1943. Noteworthy details of this G-2 trop are the gondola-mounted cannon, the head armor with armor-glass insert, the ventilation openings in the area of the cockpit and the two light-colored spots in front of the supercharger air intake left by the supports for the sand filter, which has been removed. (Opel)

"Black 8," a G-2 trop with gondola-mounted cannon, belonged to 2./JG 53 at the beginning of 1943. Standing on the wing is Lt. Beer. This shot allows many details to be seen – the open sand filter, the underwing cannon and the bulged wing fairings for the aircraft's 150 X 669 mainwheels. (Opel)



Three G-2 trop fighters of 5./JG 53, photographed from the fourth aircraft of the Schwarm, during an escort mission in autumn 1942. Note the retracted tailwheels of the two farthest machines, while "Black 8" is flying with its tailwheel in the down position. (Hammer)

Lt. Hupfeld of the Gruppenstab of I./JG 53 in his aircraft "Chevron Two," a G-2 trop, photographed in late 1942 following I./JG 53's transfer to North Africa. Note the two clip holders for the sun umbrella beneath the cockpit, the ventilation scoop beneath the windscreen and the unusual segmented camouflage scheme. (Hupfeld)

A G-2 trop of 6./JG 51 in the standard Africa scheme of sand brown and light blue. In addition to the fuselage band note the white wingtips and horizontal Gruppe bar in front of the aircraft number, standard practice by II./JG 51. North Africa, winter 1942/43. (Rammelt)

Right: Long after the type was phased out, some G-2s continued to serve in quiet sectors. The following three shots depict G-2s of I./JG 4, which was created from the Ploesti Oil Protection Staffel. Here is "Red 8" of 2./JG 4, a G-2 with gondola-mounted cannon, photographed at Mizil in early 1943. (Petrick)

"Yellow 2," a G-2 with the Werknummer 14 717, belonged to 3./JG 4. In June 1943 the aircraft was flown by Uffz. Leopold from Mamaia, where this photo was taken. (Petrick) Right: Uffz. Leopold on the cockpit sill of "Yellow 2." Note the white outline of the aircraft number and the name "Peterle" below the cockpit; Peterle was the name of Uffz. Leopold's Terrier. (Petrick)

Two photographs of "Black 12" of (F)/123, a Bf 109 G-2 with the Werknummer 14 785, which was based in France in April 1943. Note the open tailwheel well and the absence of wheel bulges on the wing upper surfaces. (Petrick)

Above: Two shots of "Black 14" of 2.(H)/14, a G-2 trop, WNr. 10 605. This aircraft was shot down southwest of Zarzis on February 20, 1943, and forced to make a belly-landing. The pilot, Lt. Wernicke, escaped the incident unhurt. The aircraft had been delivered by Erla on September 30, 1942. (Bopp) Right: Here the bulge beneath the fuselage for the camera installation is clearly visible. Also note the thin tube beside the camera window. There were two of these running along both sides of the camera window beneath the fuselage, probably to catch the oil which constantly ran from the engine and lead it past the camera opening so as not to reduce the quality of the reconnaissance photographs. Also note the sand brown/light blue Africa paint scheme, the white fuselage band and the monogram "Irmgard" in front of the cockpit. The latter was the name of the girlfriend of the ground crew chief, Uffz. Bopp. (Bopp)

Another casualty of 2.(H)/14, "Black 6." On April 7, 1943, Lt. Prior was shot down by flak in this G-2 trop, WNr. 10 544, near Oued-Zarga in Tunisia. Prior escaped unhurt but was taken prisoner. In contrast to the previously illustrated "Black 14," this G-2 wears the standard "European" gray paint scheme. On the engine cowling is the Staffel emblem of 2.(H)/14. (I.W.M.)

Another G-2 trop of 2.(H)/14, "Black 15," photographed at La Marsa airfield in April 1943. This shot also provides a good view of the Staffel emblem of this tactical reconnaissance unit. Note that the aircraft has been retrofitted with disc-type hubs for the mainwheels. (Schlegel)

Two shots of "Chevron Bar" of Stab/NAG 2, a G-2 trop which was photographed at Larissa, Greece in September 1943. The aircraft was flown by Lt. Rau, the Gruppen-Adjutant. Note the emblem of NAG 2 on the engine cowling and the short, wavy line on the yellow fuselage band behind the Balkenkreuz. (Rau)

Left: Lt. Rau on the sand filter of his "Gustav." (Rau)

Bf 109 G-4

The next version, the G-4, entered production in autumn 1942. Like the G-2, the G-4 was built in large numbers; as far as is known a total of 1,242 G-4s were built, divided among the following *Werknummer* blocks:

10864 - 10921	Erla	58 aircraft G-4 trop	01.43 - 01.43
14851 - 15000	WNF	70 aircraft G-4	12.42 - 02.43
		80 aircraft G-4/R3	
15001 - 15204	Erla	204 aircraft G-4 trop	02.43 - 03.43
16001 - 16250	Mtt Reg	173 aircraft G-4 trop	09.42 - 11.42
		77 aircraft G-4	
16301 - 16312	Mtt Reg	12 aircraft G-4	02.43 - 02.43
16651 - 16653	Györ WF	3 aircraft Ga-4	07.43 - 09.43
19093 - 19999	WNF	565 aircraft G-4	02.43 - 05.43

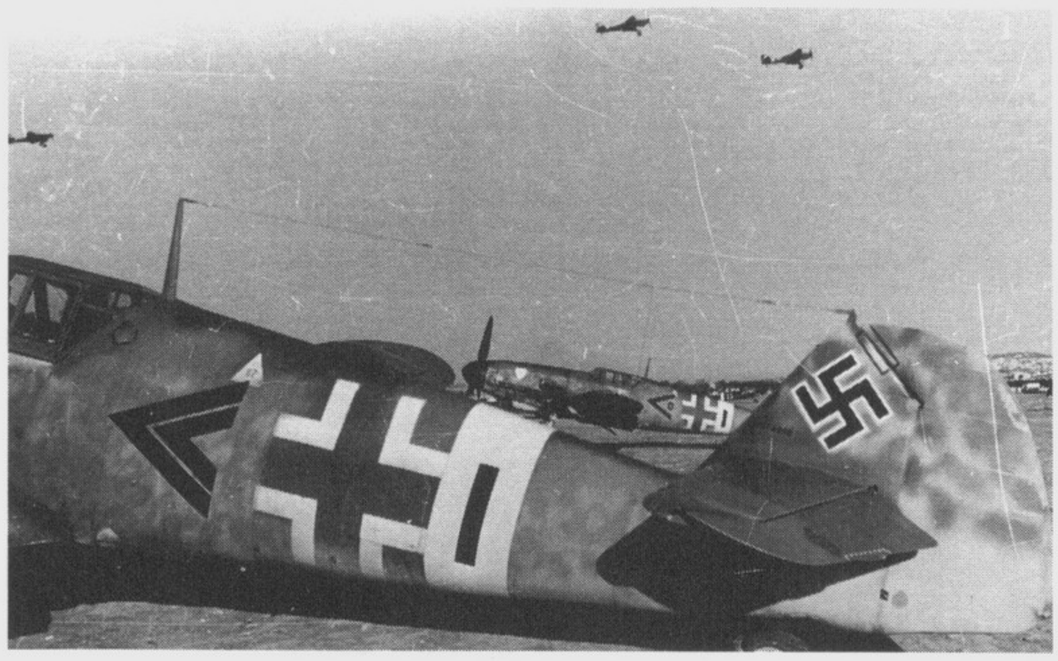
In addition, three aircraft were built at Györ, Hungary as the Ga-4. Production of the G-4 ran from October 1942 until July 1943, with the exception of the aircraft built in Hungary and a single G-4 delivered subsequently by WNF in December 1943.

The first G-4s were delivered over to the front-line units in November 1942. One aircraft, *Werknummer* 16130 coded CD + WZ, crashed on November 9, 1942 while in the hands of the *Überführungsstab Jüterbog Altes Lager*, killing its pilot, Fw. Wilke. Like the G-2, the G-4 saw service in every theater and with nearly every fighter unit of the Luftwaffe. In detail the G-4 was flown by:

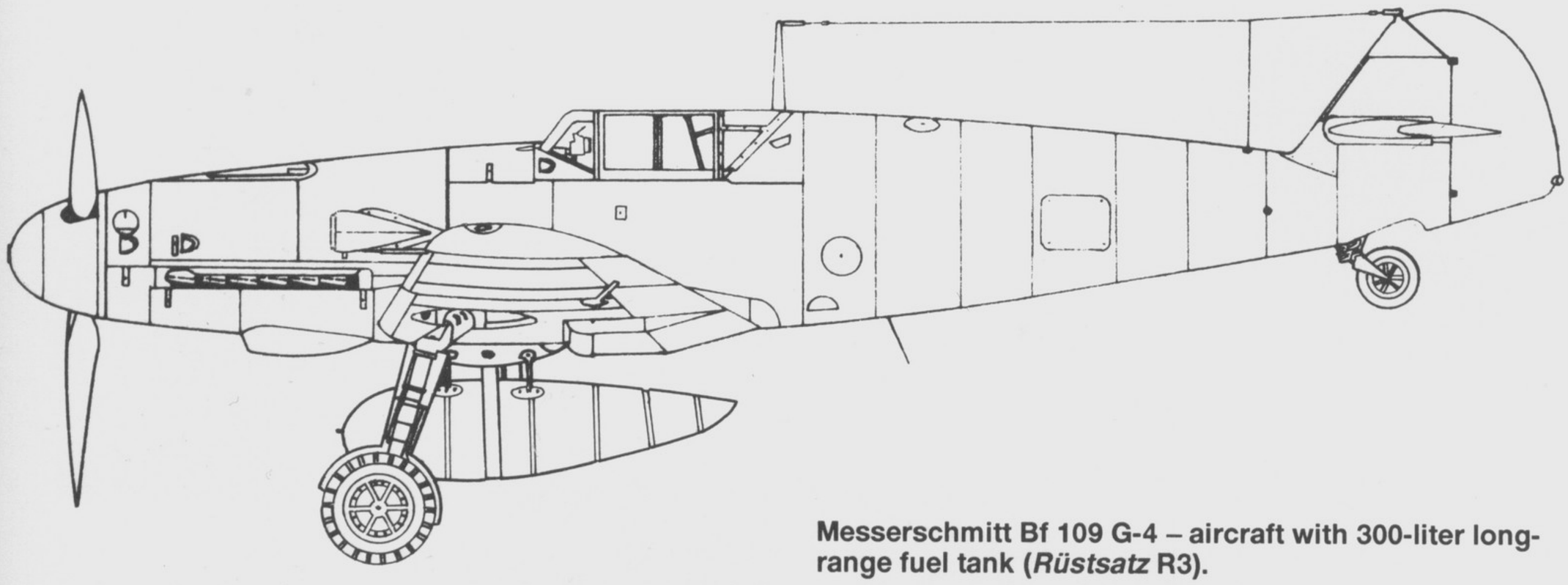
III./JG 1, I., II., 12./JG 2, Stab, I., II., III., IV./JG 3, I./JG 4, II./JG 11, II., III., 11., 12./JG 26, I., II., III./JG 27, II., IV./JG 51, Stab, I., II., III./JG 52, Stab, I., II., III./JG 53, II., III./JG 54, Stab, I., II., III./JG 77, JGr. Süd,

"Double Chevron Bar," a G-4 with the Werknummer 14 859 and the Stammkennzeichen NV+MM, belonged to Stab/JG 3 at the beginning of 1943. In the aircraft's cockpit in both shots is Major Ewald, Kommandeur of III./JG 3. (Ewald)

From this view it is clear that the aircraft had no ventilation inlets in the area of the cockpit. Just visible beneath the wing is part of the cannon gondola. After being heavily damaged in a crash-landing at Kharkov (70% damage) on April 1, 1943, the aircraft was converted into a G-12 in the course of repairs by the aviation industry. (Ewald)



Left: Aircraft of the Gruppenstab of III./JG 3, early 1943. The aircraft in the foreground, "Double Chevron," a G-4 with the Werknummer 14 946, was the former machine of Major Ewald. It was lost on April 20, 1943 together with its pilot, Lt. von Gordon. Also note the Stab marking "Chevron 0" on the machine in the background. (Ewald)

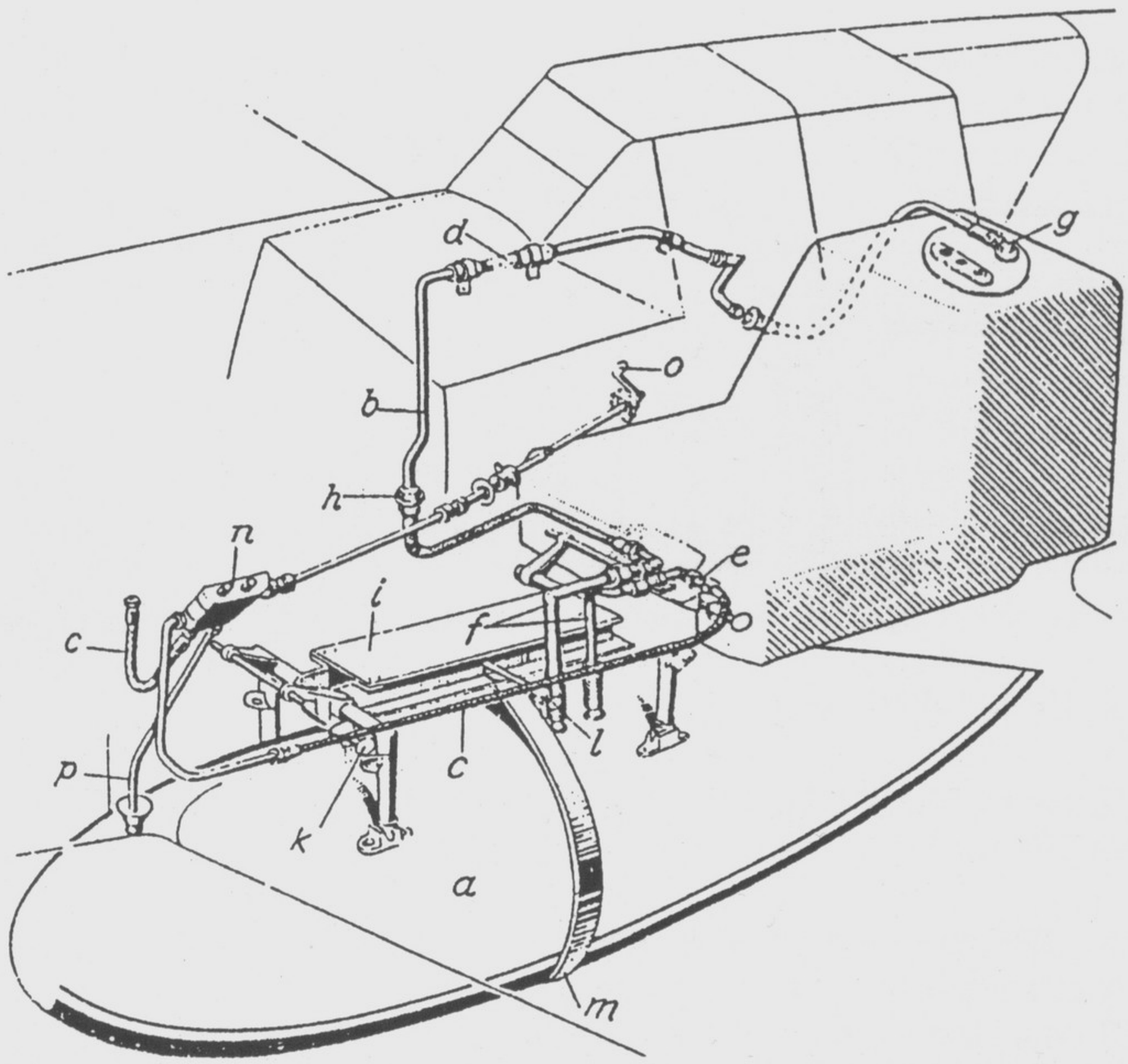


Messerschmitt Bf 109 G-4 – aircraft with 300-liter long-range fuel tank (*Rüstsatz* R3).

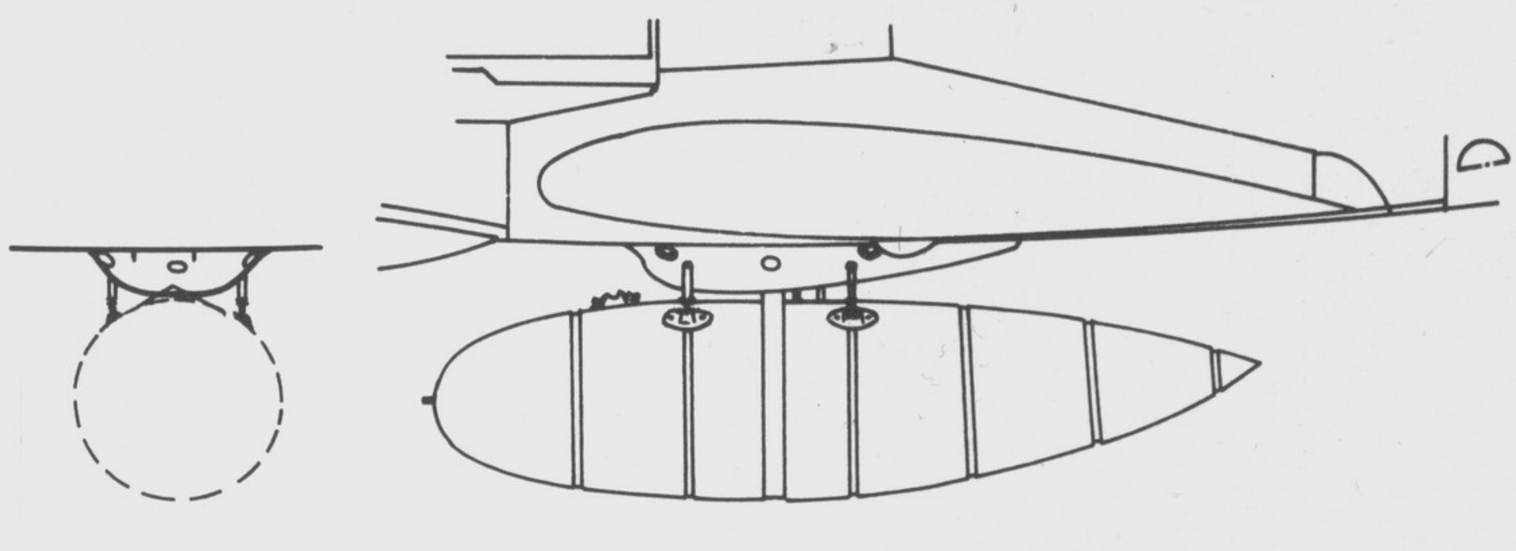
JGr. Ost, 2.(H)/14, (F)/122, (F)/123, (F)/124, NAG 2, NAG 4, NAG 9, NAG 12.

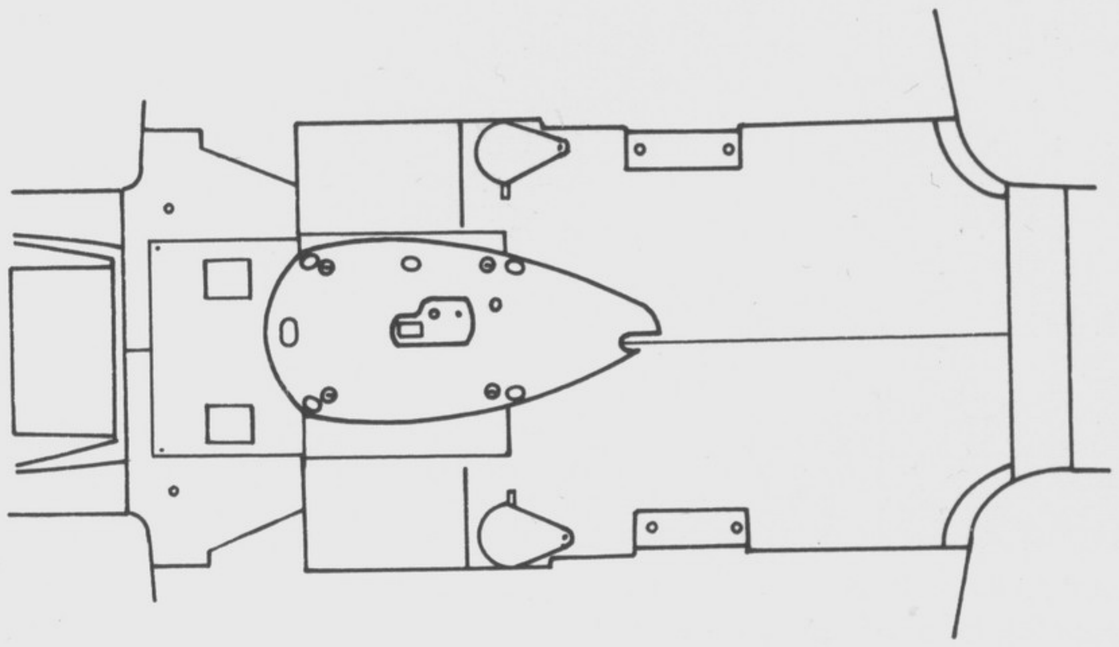
In spite of opinions to the contrary which are expressed now and then, the G-4 was a development of the G-2 designed expressly for the fighter role. Compared to the G-2 the new variant differed only in detail. The FuG VIIa radio of the G-2 was replaced by an FuG 16Z; externally this was recognizable by the position of the fuselage antenna lead-in, which was moved further aft, and the appropriate insulators on the antenna wire. Like the G-2, the G-4 dispensed with the pressurized cockpit, and like the G-2 there were variations in cockpit ventilation. All told, how-

"Black 3," a G-4 with the Werknummer 19 341 and the Stammkennzeichen BK+YS, was flown by Oblt. Rall, the Staffelkapitän of 8./JG 52, in early 1943. It was lost on July 8, 1943, when Oblt. Lüty was shot down over enemy territory and taken prisoner. (Bundesarchiv)

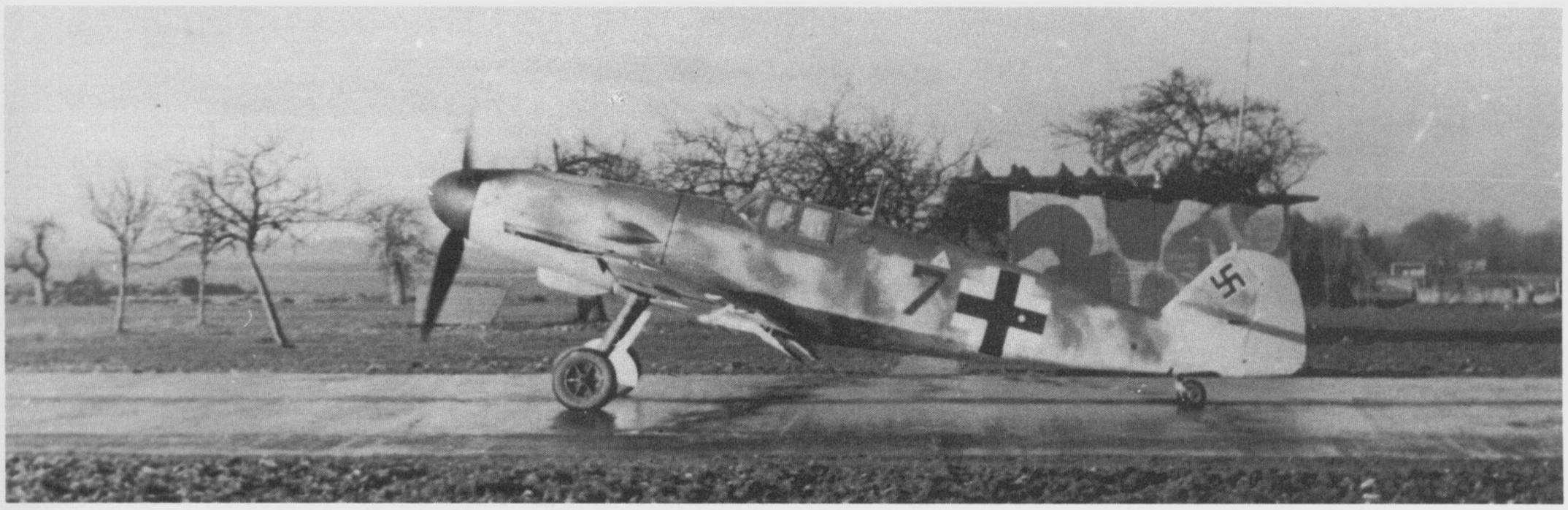


Auxiliary fuel tank installation (from handbook): (a) auxiliary fuel tank, (b) delivery pipe, (c) boost regulator, (d) sight glass, (e) relief valve, (f) transfer elbows, (g) pump limiter, (h) feedthrough, (i) auxiliary tank mount, (k) tank mount attachment bolts, (l) lock attachment bolts, (m) retaining strap, (n) fuel valve system, (o) twist grip, (p) vent line.





Installation of 300-liter long-range tank, *Rüstsatz* R3; this was installed offset 40 mm to the left of the aircraft centerline.



This G-4, "Black 7," belonged to 2./JG 27 and was flown by Uffz. Beckmann at the beginning of 1943. The latter took charge of the aircraft at Le Bourget on January 26, 1943, and then flew it to Evreux, the operational base of I./JG 27, where this photograph was taken. The aircraft wears a gray scheme with large areas of color on the fuselage sides, as well as a yellow rudder and cowling underside. (Beckmann)

Two pilots of 2./JG 27 – left Staffelkapitän Oblt. Jansen, right Lt. Wünsch – in front of a G-4 with gondola cannon. On the cowling the aircraft wears the Gruppe emblem of I./JG 27. (Beckmann)

"Yellow 1," a G-4 of 3./JG 27. This is probably WNr. 14 876, which crashed at Poix on May 25, 1943 as the result of technical trouble. This G-4 also wears the gray scheme with large patches of color on the fuselage sides and a yellow rudder. Note the mainwheel bulges on the upper surface of the wing. (Möller)

Maintenance on another G-4 with gondola weapons. This 1./JG 27 aircraft was photographed in early 1943. Note the dark stripes sprayed on the fuselage sides and the yellow engine cowling underside. (Nagel)

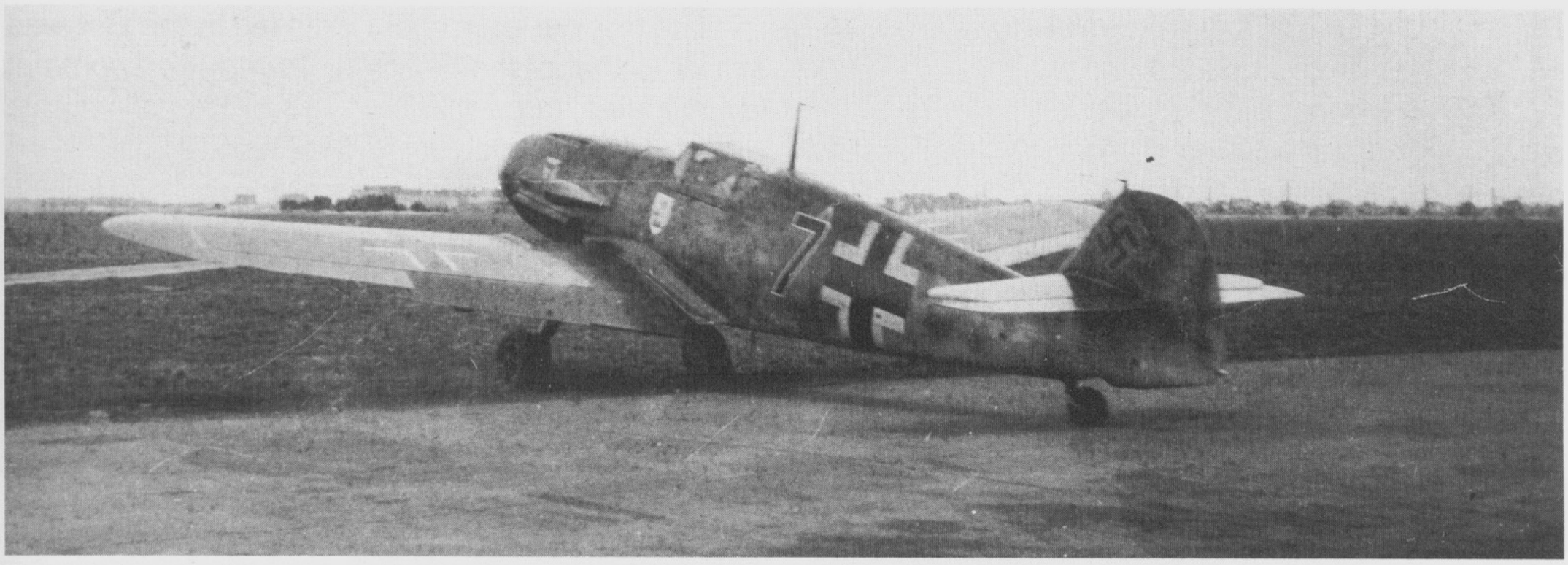
Oblt. Rupp, acting commander of 7./JG 54 in place of Hptm. Wübke from February 1943, in front of his aircraft "White 2," a G-4 with the Werknummer 16 151, photographed at Lille in March 1943. On May 15, 1943, Rupp was shot down and killed in this aircraft near Helgoland. The machine wears the standard grey scheme with large patches of color on the fuselage sides. The monogram "Hannelore" is visible beneath the cockpit. (Petrick)

One of the "Experten" of 9./JG 54, Ofw. Zweigart, sitting on his aircraft "Brown 7," a G-4, photographed in late spring 1943. Note the monogram "Tarzan" in front of the cockpit. (Ungar)

Lt. Brock of 8./JG 54 in front of "Black 7," a G-4 with the Werknummer 16 136. This "Gustav" was lost on May 19, 1943, when, during the course of an air battle, the aircraft was hit in the engine and Lt. Fahrner was forced to bail out. Easily discernable are the standard grey scheme with its large dark patches on the fuselage sides, the gondola-mounted cannon and the yellow cowling underside. (Brock)

ever, the installation of all four inlets was much more common, although there were G-4s without any cockpit ventilation openings at all.

Due to the steadily increasing weight of the Bf 109, in late summer 1942 it was decided to increase the size of the aircraft's mainwheels and tailwheel. Accordingly, it was decided to install 660 x 160 mainwheels on the G-4 instead of the previously used 650 x 150 size. It is obvious that the first G-4s received the smaller mainwheels of the G-2, while conversely the last G-2s were delivered from the factory with the larger tires of the G-4. The larger tires continued to be mounted on spoked rims on the G-4 and even rare examples of the later G-6 were to be seen with these. Along with the enlargement of the mainwheels came a change in the angle at which they were mounted. Instead of being almost parallel to the undercarriage leg, the wheel's vertical axis now approached the vertical. Both changes made necessary the addition of shallow, roughly teardrop-shaped fairings on the upper wing surface above the wheel wells, necessary to accommodate the upper part of the mainwheels which now projected further from the undercarriage leg when retracted. These were the first such external bulges, which resulted in the name "*Beule*" (Bump), a name which was to stick with the Bf 109 throughout the rest of its career. Wings with provision for the larger mainwheels could



Two photos of "Black 7," another G-4 and the aircraft of Oblt. Rohwer, the Staffelkapitän of 2./JG 3, taken in the early summer of 1943 at Mönchen-Gladbach (above). The aircraft still has an open tailwheel recess, but the mainwheel bulges are clearly visible on the upper wing surfaces. (Schlesier)

Left: Oblt. Rohwer in the cockpit of his "Black 7." Beneath the cockpit is Rohwer's personal emblem, the character "Götz von Berlichingen." (Schlesier)

Hptm. Quaet-Faslem, Gruppenkommandeur of I./JG 3, after a sortie in "Double Chevron 1," a G-4 of the Stab of I./JG 3, photographed in early summer 1943 at Mönchen-Gladbach. (Schlesier)

be – and often were, as referred to above – retrofitted to the G-2. A 350 x 135 tailwheel replaced the earlier 290 x 110 one. As the larger tailwheel would not fit into the tailwheel recess, the retraction mechanism was disconnected, although in many cases it was not removed, and the tailwheel was mounted fixed in the down position. There were individual cases where the tailwheel recess was covered with a metal panel. This modification was also applied to some G-2s and even to a few F-Series aircraft.

As with the G-2, *Rüstsätze* R3 (300-liter external fuel tank) and R6 (two underwing MG 151/20) were widely used; rarer were R1 (ETC 500 IX b) and R2 (ETC 50 VII d).

The G-4 was issued to the reconnaissance units in considerable numbers, and here may lie the reason for the widely-held view that the entire G-4 series was built as reconnaissance aircraft. Many of the aircraft issued to reconnaissance units were equipped with methanol-water injection and designated G-2/U3.

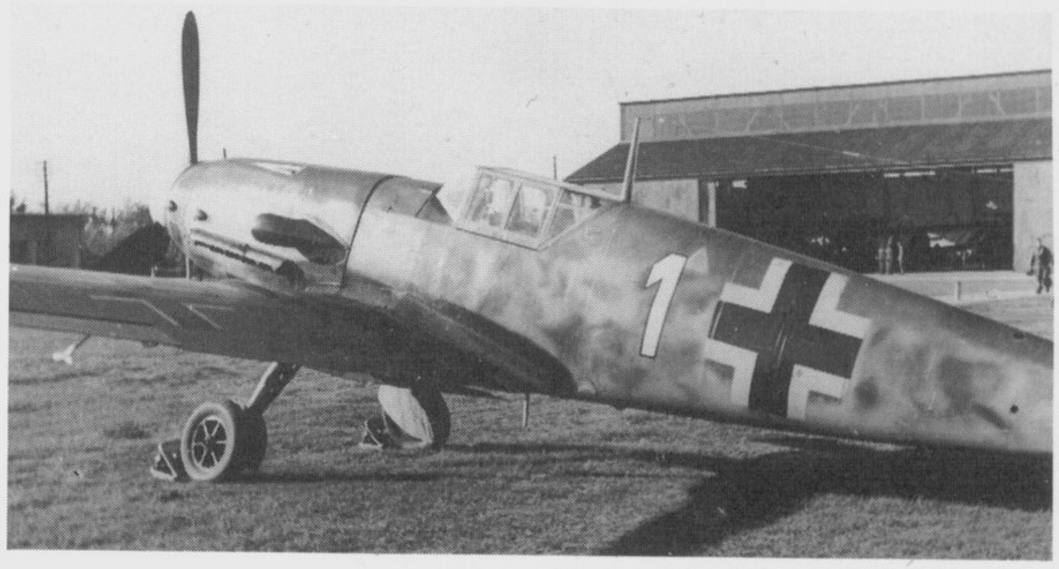
A total of 80 aircraft of the Bf 109 G-4/R3 variant were built by WNF between December 1942 and July 1943. This variant was a long-range reconnaissance aircraft with mountings for two 300-liter fuel tanks beneath the wings and either an Rb 75/30 or

Rb 50/30 camera. Armament was limited to the MG 151/20 engine-mounted cannon, while the two MG 17 machine guns were dispensed with. In some cases the engine cowling gun troughs were faired over.

The tropical equipment installed in the G-4 was similar to that of the G-2 trop. As the *Werknummer* list indicates, large numbers of the tropical version were built for service in the Mediterranean.

Two pilots of 2./JG 3 in front of "Black 2," a G-4, photographed at Mönchen-Gladbach in summer 1943; left is Uffz. Engel and right Uffz. Wenzlik. The wing Balkenkreuz, which is black with a white outline, is unusual. (Chapman)

Uffz. Schriegel, Uffz. Schröder and a mechanic study a map in front of "Black 1," another G-4 of 2./JG 3 equipped with gondola cannon. The aircraft wears the grey scheme with large patches of color on the fuselage sides and a yellow engine cowling underside. (Lösch)



Right: A G-4 of an unidentified unit. Visible beneath the fuselage is the antenna – the so-called "Morane mast" – for the FuG 16 ZY. (Petrick)

Two G-4s of 2./JG 3, photographed at Mönchen-Gladbach in the summer of 1943. Both aircraft are equipped with gondola-mounted cannon beneath the wings. (Lösch)

This G-4 trop of 7./JG 53 may have been among the first machines of the new series received by III./JG 53 following its return from Africa at the end of October 1942. The aircraft wears the color scheme of sand brown with a dark green mottle which was still to be seen on early G-4s, as well as a white fuselage band and propeller spinner and partly yellow engine cowling underside. Note the remnants of the white sidewalls painted on the tires. (Bundesarchiv)

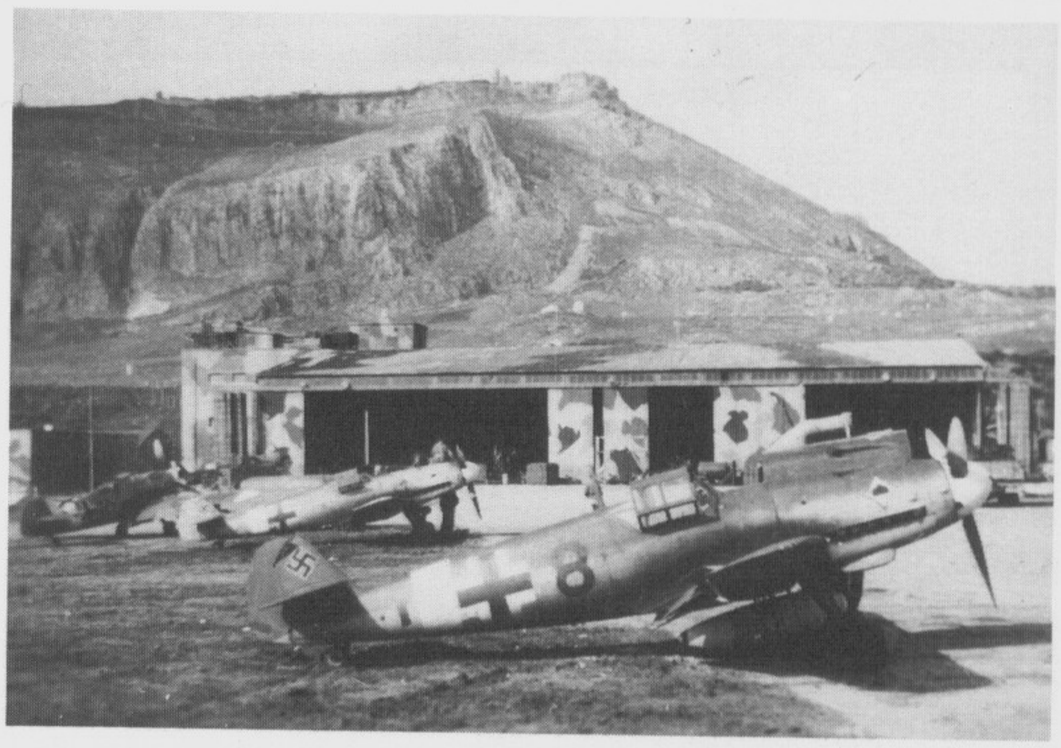
Right: Lt. Ritter of the Gruppenstab of III./JG 53 with his G-4 trop in Sicily at the end of 1942. This machine is finished in the two-color Africa scheme of sand brown and light blue. (Conrad)

Aircraft of I./JG 27 at Fels am Wagram airfield in early 1944. In the foreground is "White 25," a G-4 of 1./JG 27. Noteworthy are the yellow rudder, the Gruppe emblem of I./JG 27 and the gondola cannon. (Rupp)

Above: "Black 1," a G-4 trop with gondola-mounted weapons. This aircraft was flown by Oblt. Schiess, the Staffelkapitän of 8./JG 53, from Sicily at the end of February 1943. This machine also wears the two-color Africa scheme and as well has a yellow engine cowling underside and a white propeller spinner. Note the auxiliary fuel tank and underwing cannon. (Conrad)

Right: The cockpit area of "Black 17," a G-4 trop of 8./JG 53 which was flown from Sicily in early 1943 by Oblt. Nack. Note the windscreen washer, the ventilation scoop beneath the windscreen side panel and the all-metal head armor with leather-upholstered headrest. (Landt)

Here is the cockpit area of another G-4 trop of 8./JG 53 with the code "Black 12." This aircraft was flown by Uffz. Landt in early 1943. Clearly visible are the two small, teardrop-shaped clip holders on the side of the fuselage and just aft of them the rectangular ventilation opening. (Landt)

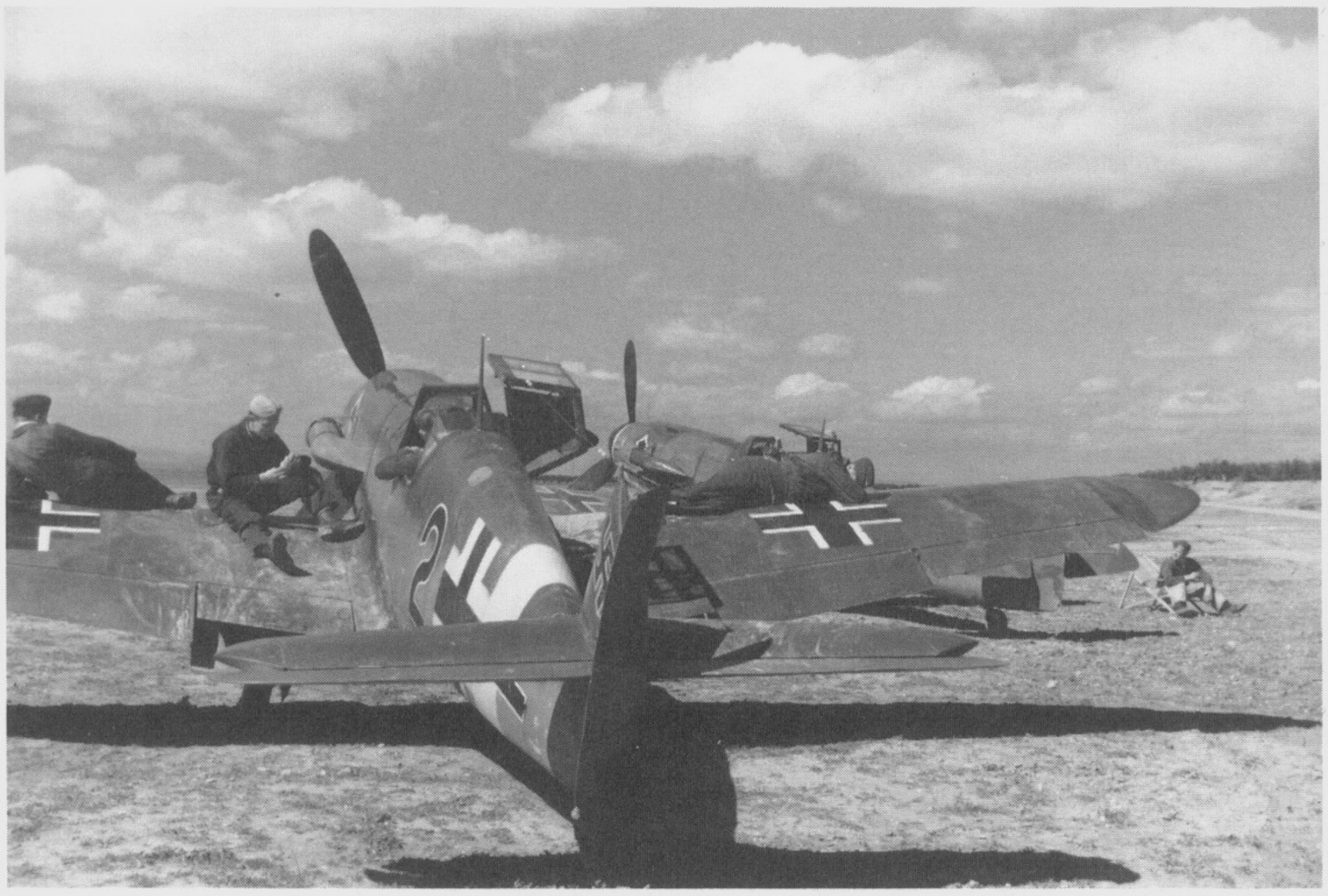


"Black 8," a G-4 trop of 8./JG 53, photographed at Trapani airfield, Sicily, in early 1943. These aircraft also wear the two-tone Africa scheme, but with a rather wavy demarcation line between the brown topside color and the light blue of the fuselage sides. The propeller spinner is white and the underside of the engine cowling appears to be yellow. (von Vacano)

Oblt. Dinger, Staffelkapitän of 4./JG 53, in the cockpit of his G-4 trop, photographed at La Marsa in Tunisia in late February 1943. Note the unusual telescopic sight in the windscreen next to the reflector sight, a very uncommon piece of equipment in a G-Series aircraft. Considering the way it is mounted, it may well have been the result of pure improvisation by II./JG 53. (Schlegel)

"White 8," a G-4 trop, was flown by Flieger Pierer of 4./JG 53 in early 1943. The photograph was taken at La Marsa. The aircraft is finished in a segmented scheme which probably consisted of shades of dark green and brown. (Schlegel)

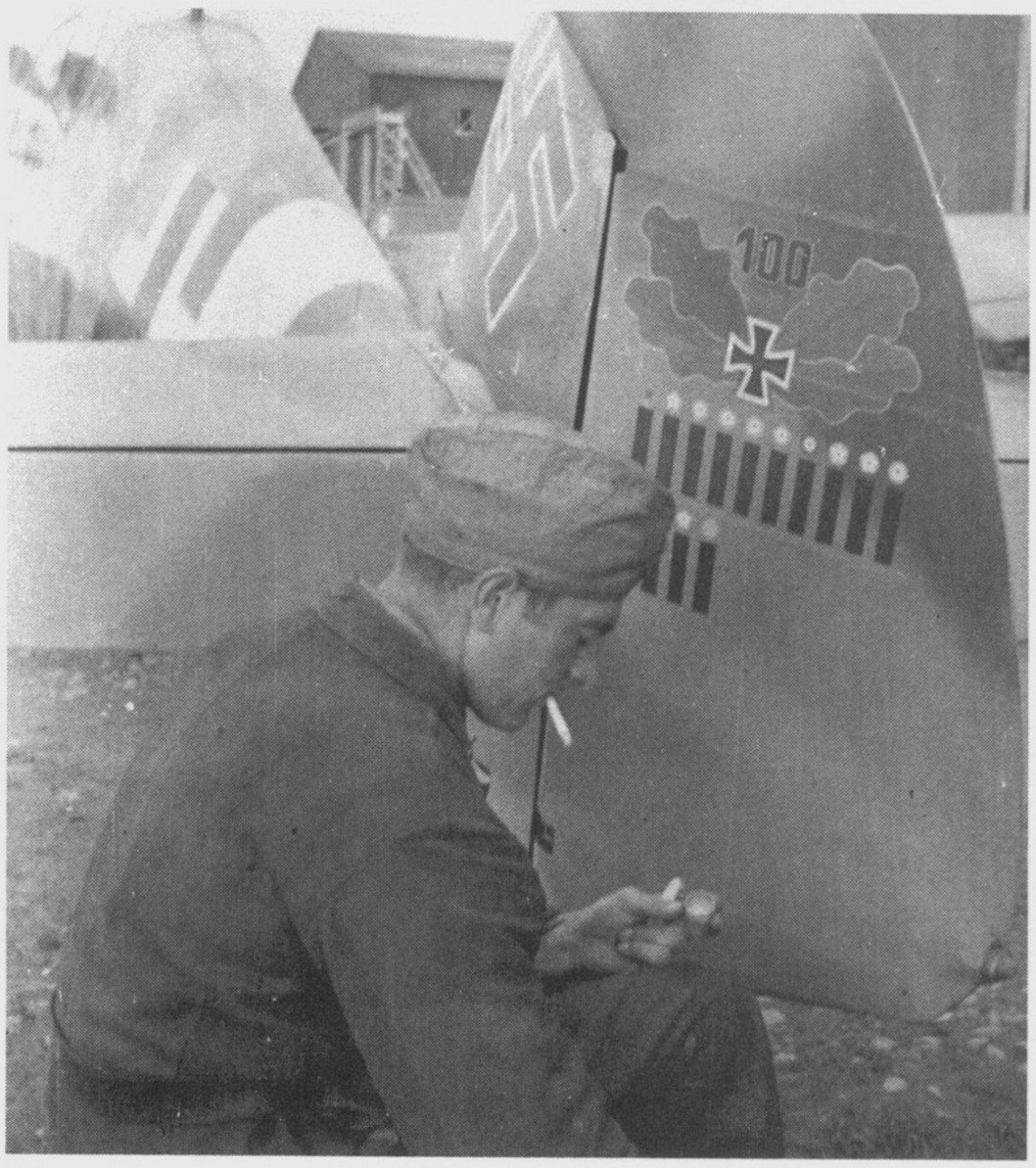
"White 2," a G-4 trop of 4./JG 53, being refuelled at La Marsa, late February 1943. The aircraft's upper surfaces are finished in a clearly segmented color scheme. All the bright markings have been draped with netting to avoid being seen from the air. (Schlegel)



"Black 2," a G-4 trop belonging to 5./JG 53's alert Rotte at La Marsa, was flown by Ofw. Rollwage. The mechanics doze on the wing until the alarm is sounded and the machine's inertia starters have to be cranked up. (E.C.P.A.)

Another G-4 trop of II./JG 53 at readiness. While the two mechanics doze on the wing, the pilot sits in the cockpit, strapped in and waiting for the order to scramble. The aircraft has obviously been repainted, resulting in a scheme of dark green meanderings over a lighter – probably brown – base. The underside of the engine cowling is yellow. Note the closed sand filter. (E.C.P.A.)

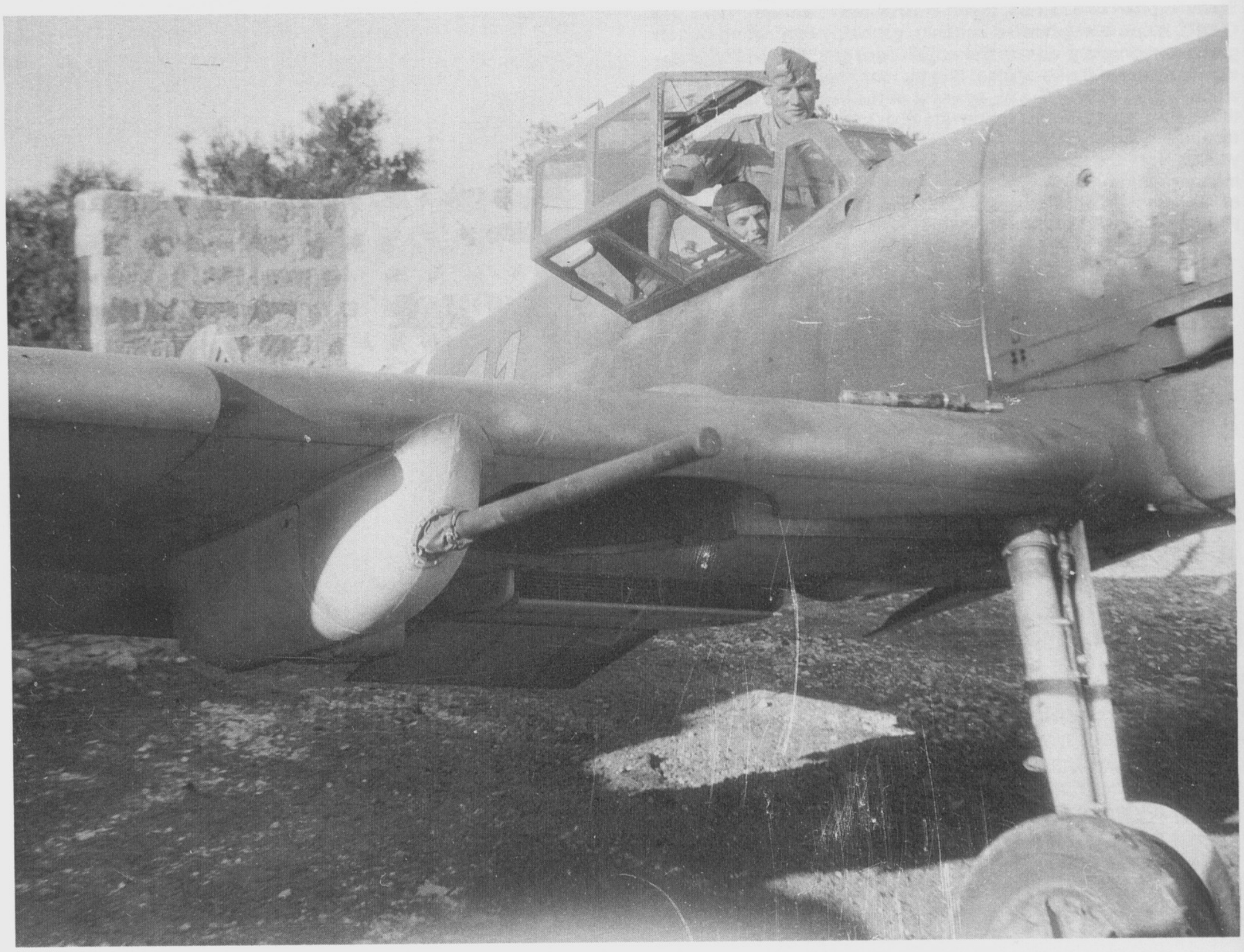
Two shots of "Yellow 7," the aircraft of Oblt. Tonne, Staffelkapitän of 3./JG 53, taken at Bizerta in February 1943. This G-2/R1 wears a segmented scheme, probably consisting of dark green and brown areas on the upper surfaces. Externally, especially from these angles, it is almost impossilbe to discern a late G-2/R1 from a G-4 since most of the technical features of the G-4 were introduced in the late production G-2s. Spinner and fuselage band are white, the underside of the engine cowling yellow. Note the sun umbrella, hooked in place in the prescribed manner. (Löffelmann) Right: 104 victories marked on the rudder of "Yellow 7." Oblt. Tonne achieved his 111th victory on February 25, 1943. (Löffelmann)



Left: Two shots of "White 8" of 1./JG 53, a G-4 trop with the Werknummer 15 006, which was flown by Fw. Fischer in April 1943. Above left: Here the machine is seen at Protville airfield. Note the gondola cannon beneath the wing. (Fischer) Near left: The same aircraft after a crash-landing on April 16, 1943; radiator damage from an air battle with Spitfires west of Teboura compelled Fw. Fischer to make a forced-landing. A piece of rock in the field selected for the emergency landing, invisible from the air, saw to it that the aircraft was a complete write-off. Fw. Fischer escaped with a bruised knee. (Fischer)

Lt. Opel in the cockpit of his aircraft "Black 5," a G-4 trop of 2./JG 53, photographed at Bizerta in early 1943. Discernable are the gondola cannon, the mainwheel bulge on the wing and the monogram "Charlotte" – after Opel's fiancee – below the cockpit. (Opel)

Lt. Harder, Staffelkapitän of 7./JG 53, in his G-4 trop, photographed in Sicily in early 1943. Beneath the cockpit may be seen Harder's two good-luck charms, a four-leaf clover and the name of his fallen older brother Harro. (Harder)

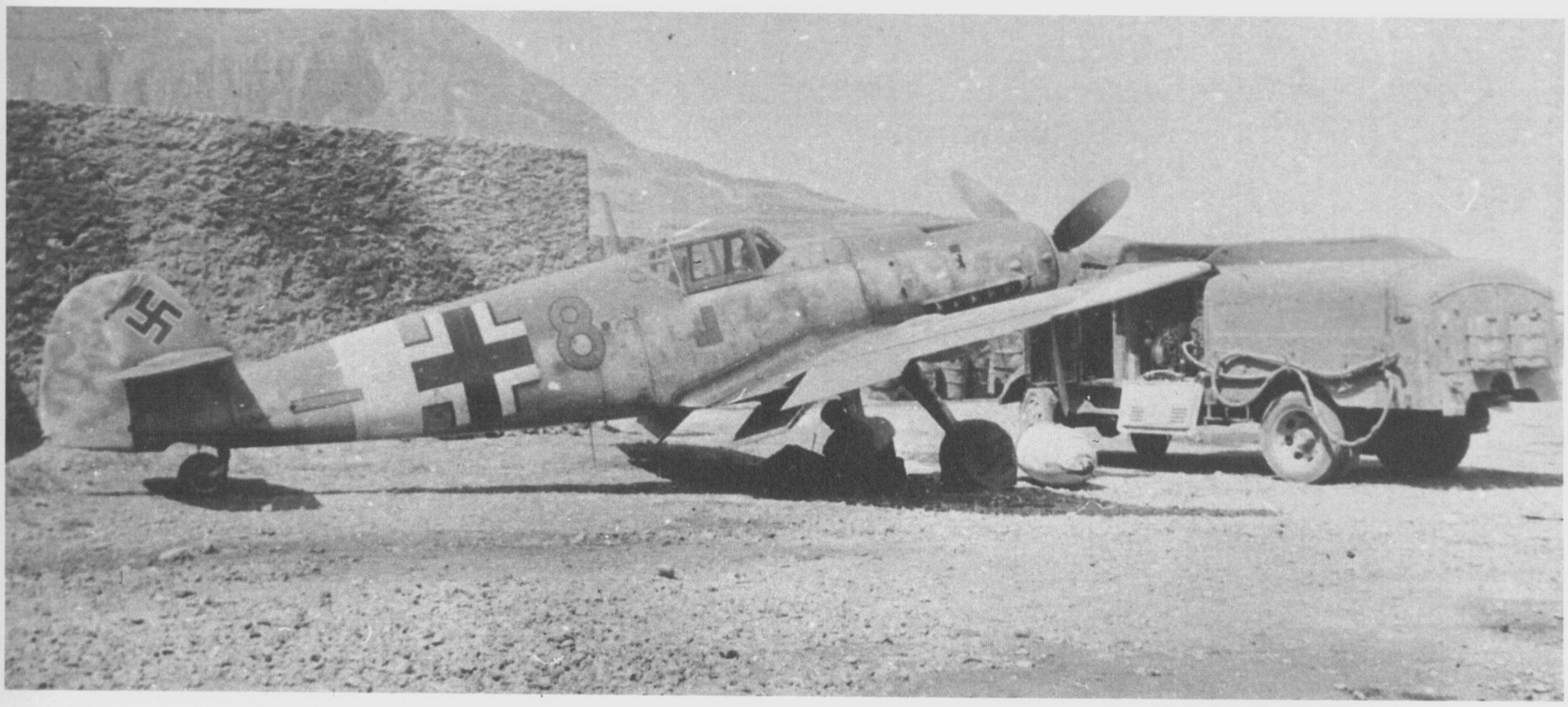


A G-4 trop of 6./JG 27 with the fuselage code "Yellow 11" in its blast pen at San Pietro airfield, Sicily, in May 1943. Note the gondola cannon and the bulged mainwheel fairing on the wing, and as well the old-style spoked mainwheel hub. (Venthur)

Three shots of "Blue 4," a G-4 of 4.(F)/123, photographed in its well-camouflaged forest revetment at a forward airfield in France. Here the ground crew chief is handing the aircraft over to the pilot. Note the unusual broad blades of the propeller, the cut-off second ventilation scoop on the engine cowling, the deep oil cooler and the auxiliary fuel tank. (Bundesarchiv)

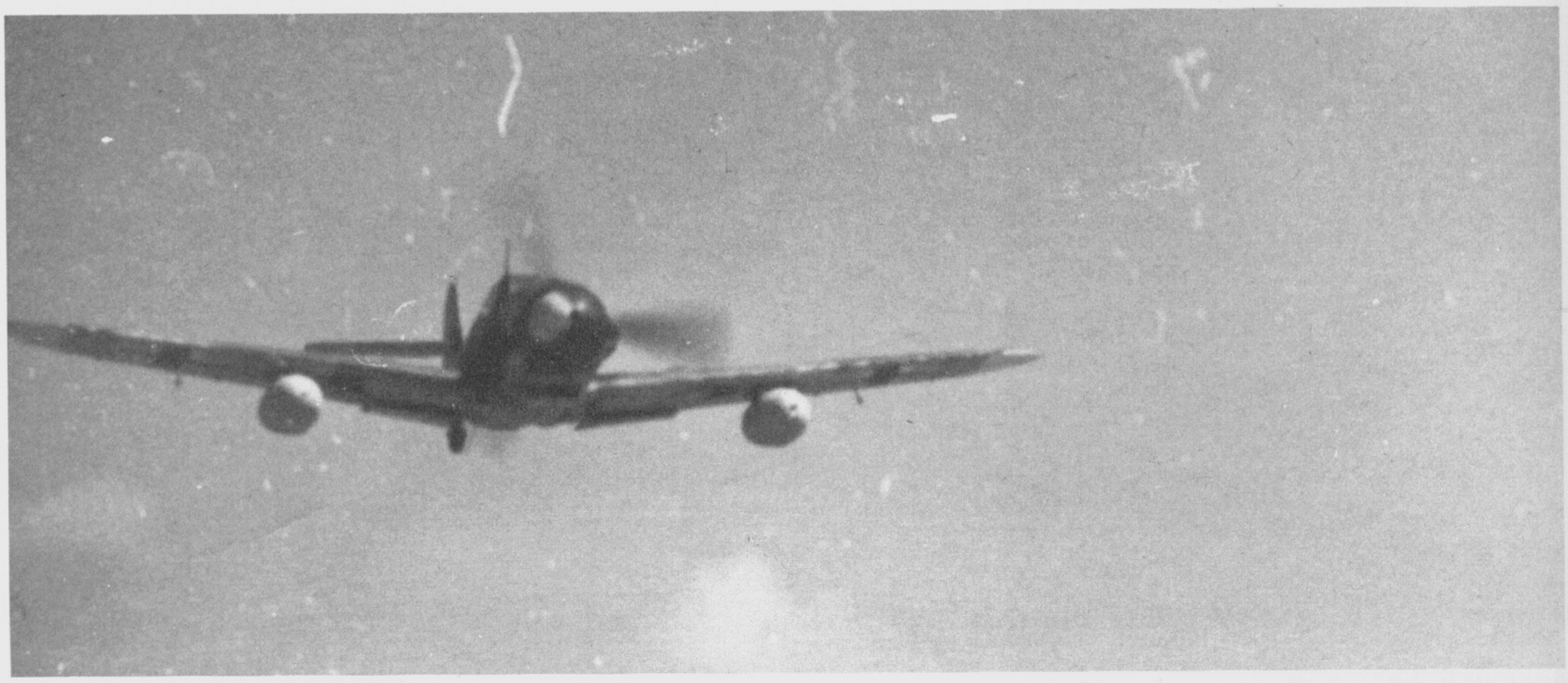
A second mechanic cranks up the inertia starter of "Blue 4." The aircraft already has disc-type mainwheel hubs in place of the usual spiked hubs. (Bundesarchiv)

Right: Loading the film cassette for the Rb 50/30 camera through the rear wall of the cockpit. (Bundesarchiv)



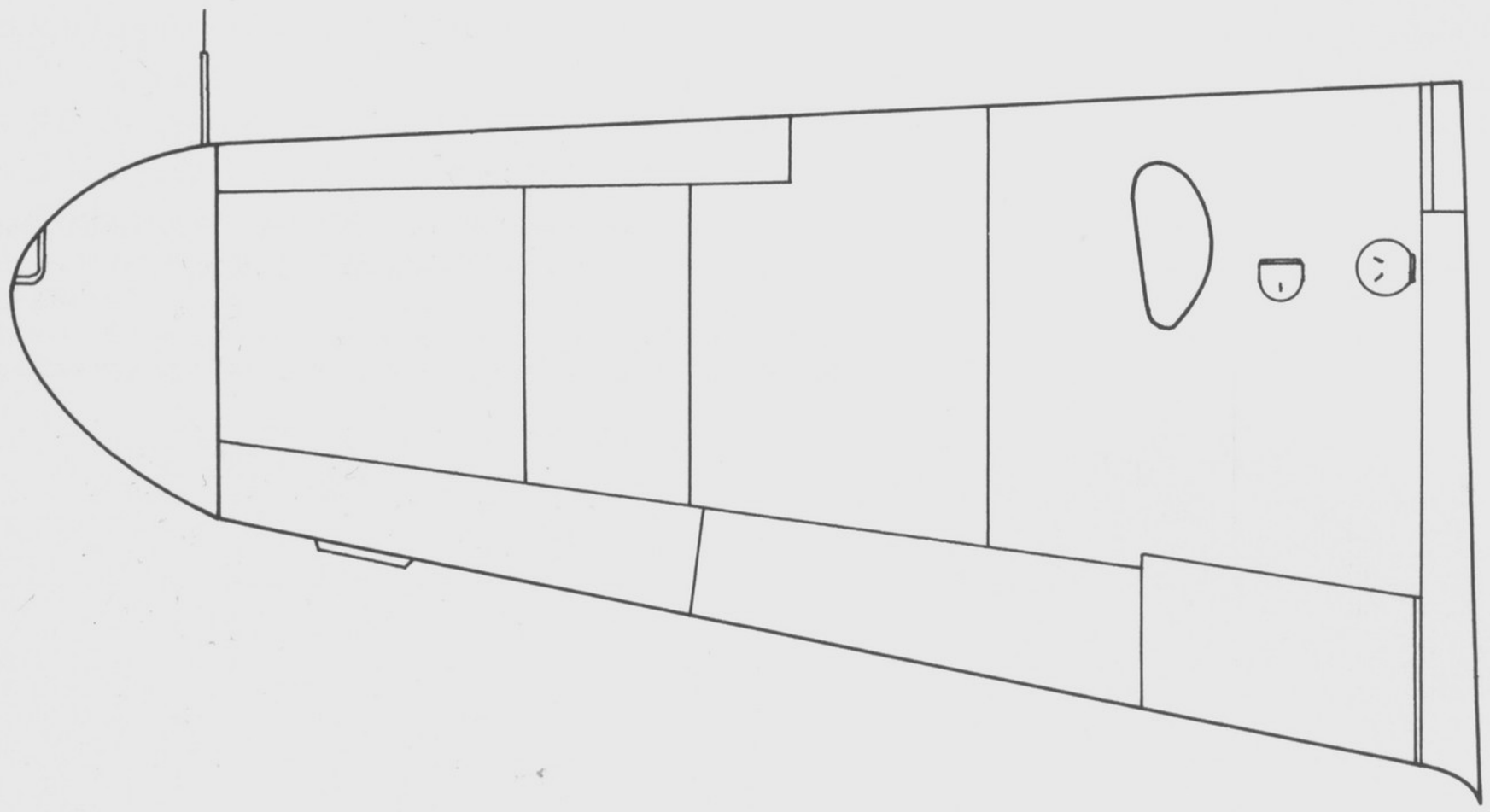
Another G-4 trop of 6./JG 27 at San Pietro in May 1943. "Yellow 8" appears to be wearing a gray scheme together with the usual white spinner and fuselage band. The Gruppe emblem of II./JG 27 is discernable on the engine cowling. (Venthur)

A G-4/R3 of 2./NAG 11, photographed in Italy in 1943. Beneath the wings the aircraft carries two 300-l auxiliary fuel tanks for increased range. Note the emblem of 2./NAG 11 on the cowling and the thin oil leak conductor behind the oil cooler under the engine, which was typical of camera-equipped "Gustavs." (Hefner)



In-flight photo of a G-4/R3 of NAG 11 with auxiliary tanks hung beneath the wings. (Hefner)

Wing upper surface with bulged fairings for larger mainwheels introduced on G-4 series.



Sun umbrella mounting on a Bf 109 G trop.

Bf 109 G-3

In January 1943, some time after the G-4 entered production, Messerschmitt's Regensburg factory laid down a small series of 50 Bf 109 G-3 fighters, whose *Werknummer* block was:

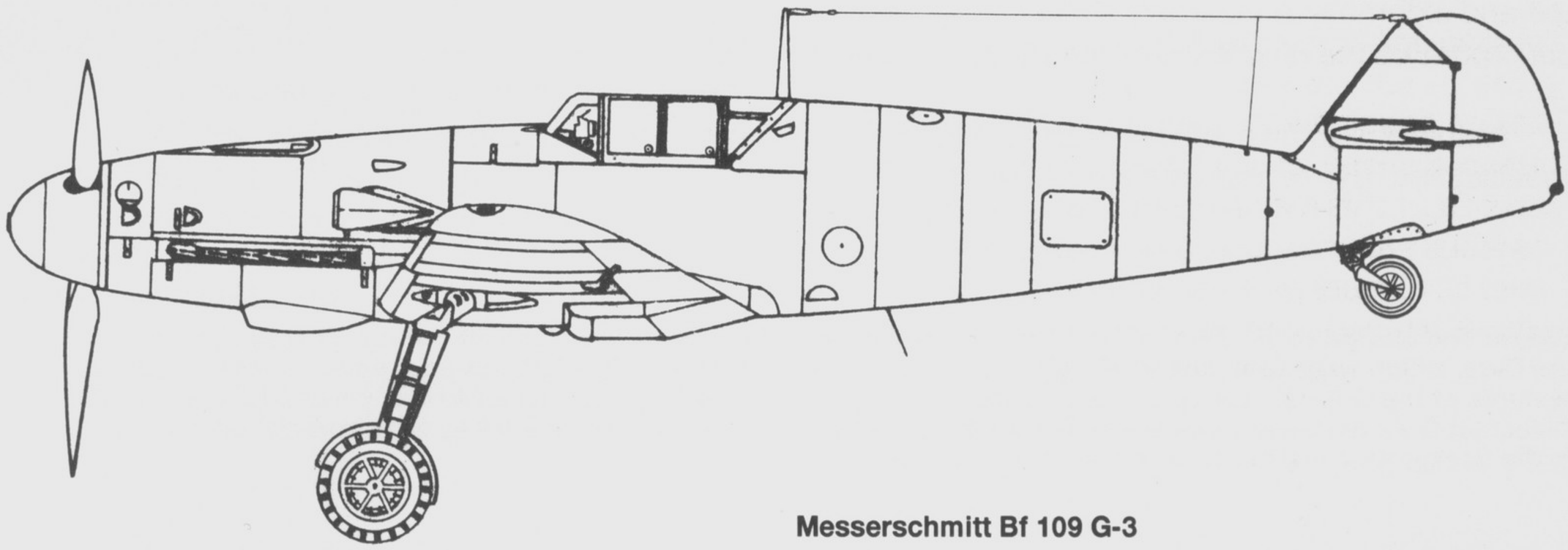
16251 - 16300 Mtt Reg 50 aircraft G-3 01.43 - 02.43

The machines began reaching the front-line units in March 1943. The first recipients were the recently created high-altitude *Staffeln*, 11./JG 2 and 11./JG 26, as well as I./JG 1, which a few days later became II./JG 11. The first loss was reported by 11./JG 2 on March 9, 1943, when *Werknummer* 16252 suffered extensive damage in a crash. Individual G-3s later reached 11./JG 54, another high-altitude *Staffel* deployed in the Western Theater.

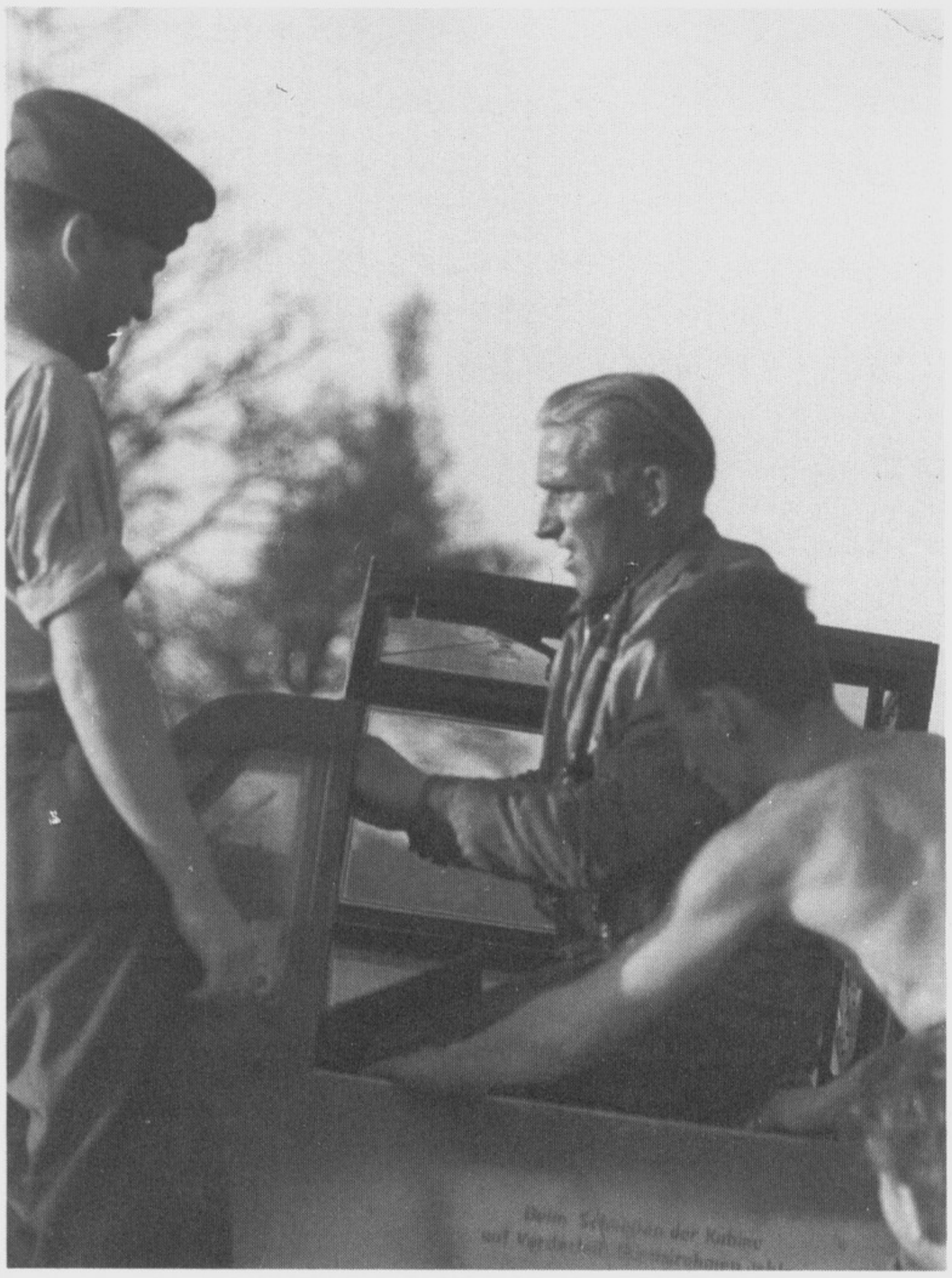
The G-3 was equipped with a pressurized cockpit and externally was largely similar to the G-1 but incorporated the new features introduced by the G-4.

Nothing is known of the actual installation of modification (R) or conversion (U) kits, although theoretically the G-3 could accept the same modifications as the G-1. In addition to the basic G-3, the Bf 109 type list of August 1, 1944 lists a Bf 109 G-3/U2 high-altitude fighter, equipped with a GM-1 installation good for 20 minutes and for which installation of a shortened Me 210 propeller was planned.

Below: The aircraft of 11./JG 2, which was reformed in early 1943, are shown here at Bernay, France. The machines are G-3s, which were assigned to 11./JG 2 from March 1943. "Blue 6" in the foreground displays the characteristic features of the G-3 – air scoop on the engine cowling, pressure sealing head armor and covered tailwheel recess. Discernable on the engine cowling is the Staffel emblem of 11./JG 2, which was taken over from the original 1./JG 2. In the background are Fw 190s of I/JG 2. (Bundesarchiv)



Messerschmitt Bf 109 G-3



Above: Fw. Gratz, with 11./JG 2 since March 1943, in the cockpit of his G-3. The silicagel pellets in the windscreen and the vertical head armor both indicate the installation of a pressurized cockpit. (Bundesarchiv)

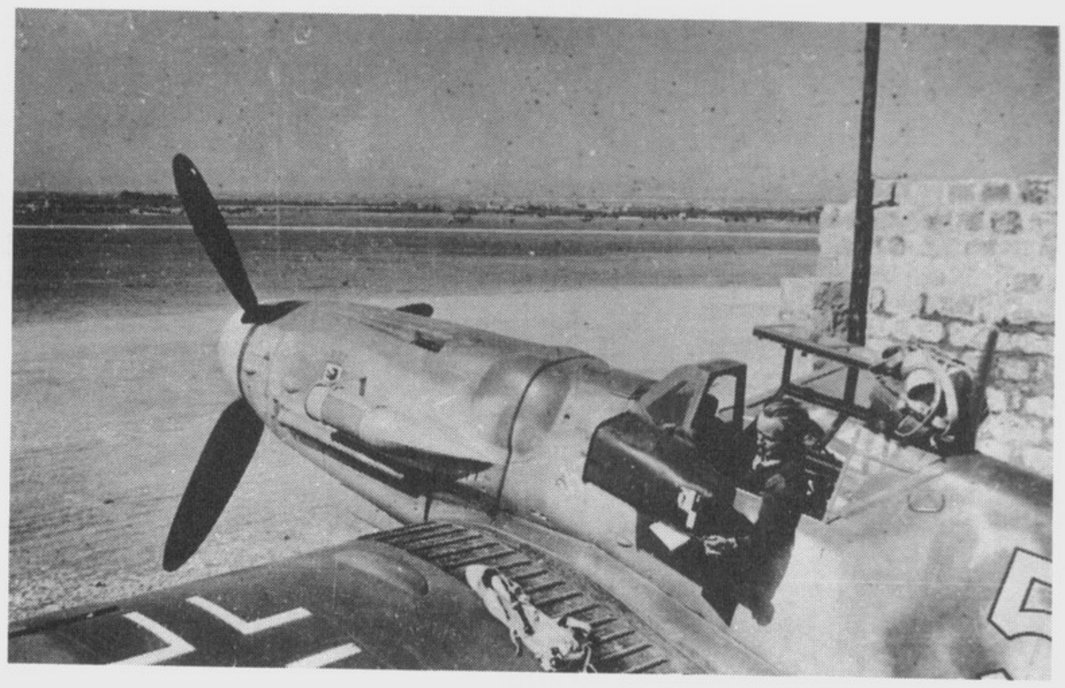
Right: "White 9" seen from the other side. Note the total of four hatch covers and the direction finding loop behind the cockpit. It is not known whether this aircraft was equipped with a camera; in any case there is no visual indication that it had one. (Emmerstorfer)

Two shots of "White 9," a G-3 (probably) of 2./NAG 12, photographed in 1944 in Italy. The aircraft obviously wears a medium grey finish which has been given a striped effect by the shadow from the camouflage netting. Note the overpainted white outline of the Balkenkreuz and the old style Balkenkreuze on the wings. Also noteworthy are the pressure-sealing head armor, the unusually broad propeller blades, the antenna lead-in for the FuG 16 Z in the rear fuselage and the bulged mainwheel fairing on the wing. NOTE: this aircraft might in fact be a Bf 109 G-5/AS since NAG 12 never had any G-3s on strength in 1944, whereas it received a few of the Bf 109G-5/AS. (Emmerstorfer)

Bf 109 G-6

The G-6 began reaching the front-line units in February 1943. Production of the G-6, which was built in greater numbers than any other variant of the Bf 109, was initially supposed to last until about June 1944. Only one production batch, 230,000, was built later, from November/December 1944. According to the last valid procurement program, production of the Ga-6 in Hungary was supposed to continue into early 1945. The series underwent constant modification throughout its production life with no change in designation. As a result the G-6 became an "aircraft of many faces," and the final models of the series were considerably different from those which entered service in early 1943.

It is known from available documents that more than 12,000 G-6s were in fact built, but incomplete and sometimes contradictory factory and RLM records prevent a definitive tally. The known G-6 *Werknummer* blocks are:

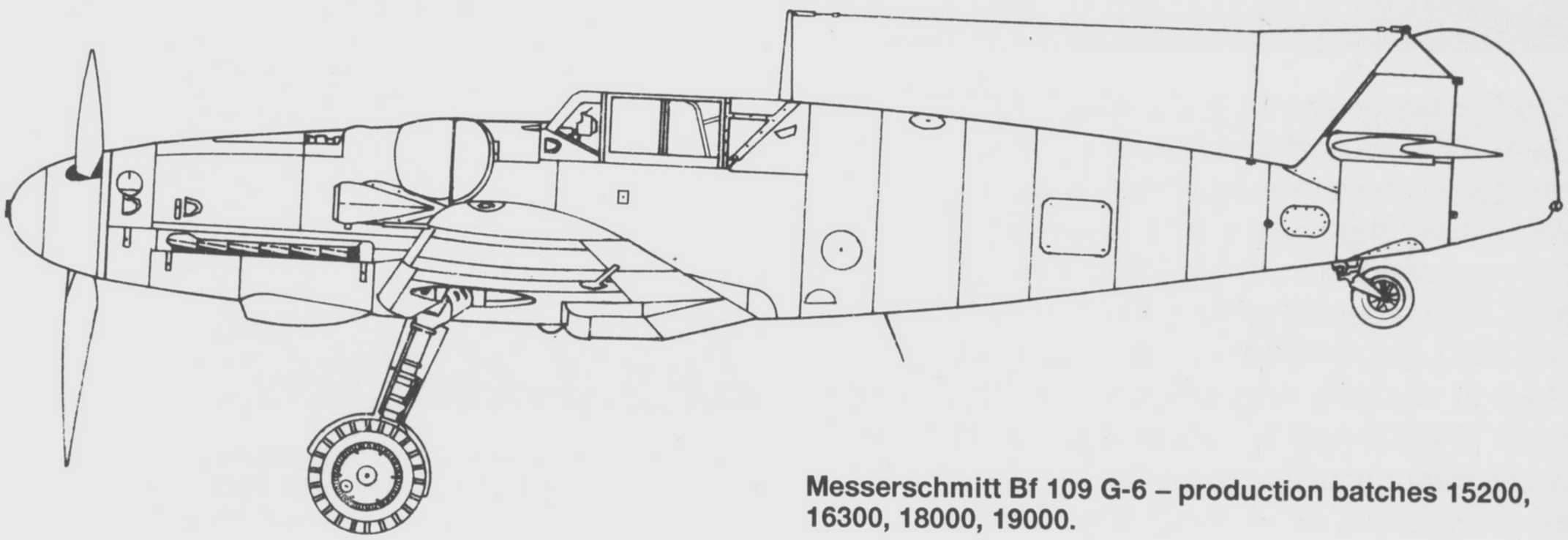


Another G-6 trop of II./JG 27, photographed in its blast pen at San Pietro, Sicily, in May 1943. Part of the Gruppe emblem of II./JG 27 is visible in front of the sand filter. The mechanic in the cockpit is busy with the engine cannon, whose cover he is holding over the cockpit sill. Clearly visible are the bulged fairings over the spent belt feeds at the rear end of the engine cowling, a characteristic feature of the G-6 series. (Venthur)

This G-6 trop, "Yellow 13" of 6./JG 51, was allegedly captured by Allied soldiers in Tunisia in April 1943 after making a forced-landing. It may thus have been one of the first G-6 machines to fall into Allied hands in relatively good condition. The aircraft wears the standard grey scheme with white propeller spinner and fuselage band. As usual with II./JG 51, the horizontal Gruppe bar is positioned in front of the aircraft number. (D'Amico)

15205 - 16000	Erla	also G-5	03.43 - 08.43
16313 - 16675	Mtt Reg		02.43 - 04.43
17000 - 17057			08.43 - 08.43
18000 - 18899	Mtt Reg		04.43 - 07.43
19093 - 19999	WNF	also G-4	02.43 - 06.43
20000 - 20800	WNF	incl. 40 G-6/R3 and about 80 G-6/U4	06.43 - 08.43
26000 - 26135	Erla	also G-5	08.43 - 09.43
27000 - 27185	Erla	also G-5	09.43 - 10.43
32000 – 33000	Erla	(WerkNr. blocks 32,000 up to	
33000 – 34000	Erla	and including 37,000 were	
34000 – 35000	Erla	were subsequently renumbered;	
35000 – 36000	Erla	only a very few machines were	
36000 – 37000	Erla	delivered with these *Werknummern*)	
96000 – 97000	Györ		
110200 – 110500	Erla	(as well as G-5)	
140000 – 140400	WNF		

Left: Two mechanics of 6./JG 27 lean against the horizontal stabilizer of Ofw. Stiegler's G-6 trop, very probably WNr. 16 347. This aircraft crashed on takeoff at Pantelleria on June 3, 1943. 18 victory bars are discernable on the rudder. Stiegler scored his 18th victory on May 17, 1943; according to the claim marking it was a P-38. (Venthur)



Messerschmitt Bf 109 G-6 – production batches 15200, 16300, 18000, 19000.

160000 – 161000	Mtt Reg.	
161000 – 161800	Mtt Reg.	
162000 – 163000	Mtt Reg.	
163000 – 164000	Mtt Reg.	
164900 – 165000	Mtt Reg.	
165000 – 166000	Mtt Reg.	
166000 – 166400	Mtt Reg.	
167200 – 167400	Mtt Reg.	
170000 – 170050		
230000 – 230900		(G-6/R2)
410000 – 411000	Erla	
411000 – 412000	Erla	
412000 – 413000	Erla	
413400 – 413900	Erla	
418700 – 418800		
440000 – 441000	WNF	(G-6/U4)
441000 – 442000	WNF	
442000 – 442100	WNF	
510200 – 510300	WNF	
510600 – 511000	WNF	(as well as G-14)
760000 – 760400	Györ?	

The first G-6 fighters were delivered to *Jagdgruppen* in the Mediterranean area in February 1943 and saw action with JG 53 and JG 77, as well as II./JG 27 and II./JG 51. The first recorded loss of a G-6 occurred on

Uffz. Fröschmann of 8./JG 53 in front of his Bf 109 G-6 trop, photographed at Sciacca, Sicily in May 1943. Prominent in this photo are the large bulges in front of the cockpit which were often graphically referred to as "horses asses." Note the open sand filter, the gondola weapons and the sealed tailwheel recess. (Fröschmann)

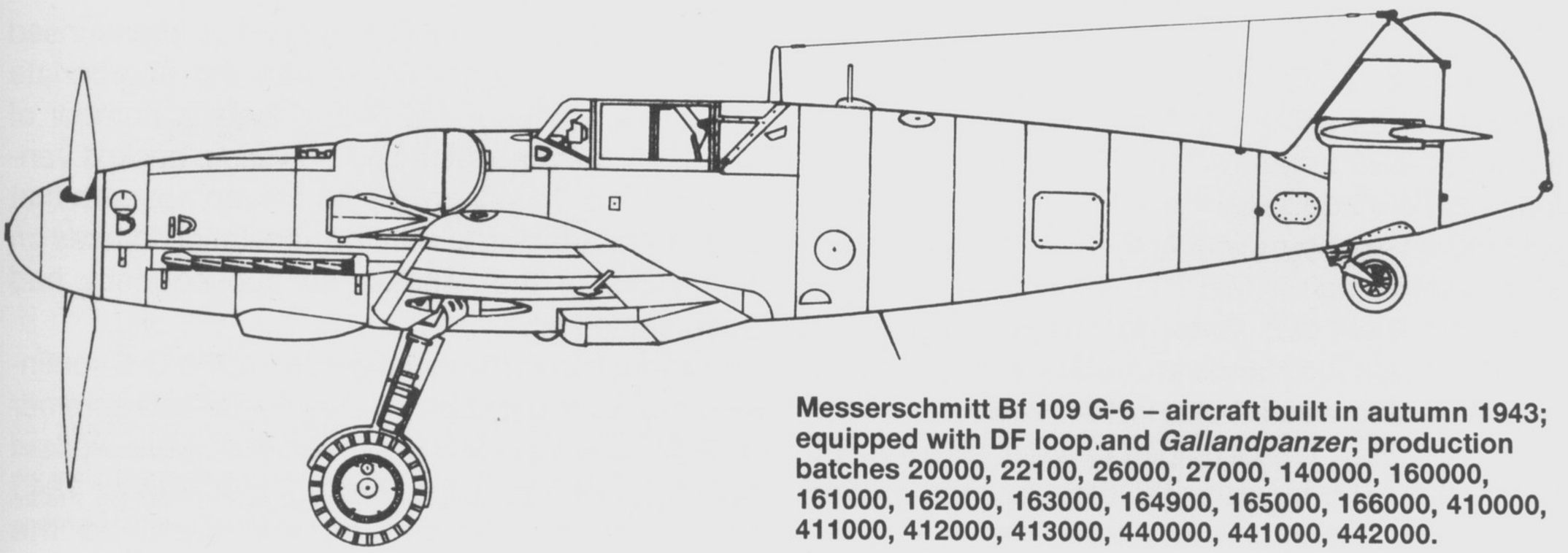
"Chevron 2," a G-6 trop of the Gruppenstab of II./JG 53, was flown by Lt. Hammer in June 1943. Three victory bars are visible on the rudder; Hammer had scored his third claim on June 9, 1943. The camouflage netting over the revetment accounts for the aircraft's apparently heavily-mottled finish; in fact this G-6 trop wears the by then standard finish of three shades of grey. (Hammer)

Uffz. Reinicke of 7./JG 53 in his aircraft "White 2," a G-6 with the Werknummer 16 548. This aircraft was destroyed in a bombing raid on Sciacca airfield on June 15, 1943. As this is not a tropical version the clip holders beneath the cockpit and the sand filter are absent. Uffz. Reinicke obviously had trouble with the engine of his "Gustav" during his sortie as the engine cowling and windscreen are badly oiled. (Reinicke)

March 4, 1943, when Uffz. Opitz of 5./JG 53 was shot down in air combat and forced to bail out of his aircraft, *Werknummer* 16307. The next day JG 77 reported its first loss of a G-6; Uffz. Schmittbittner of 5. *Staffel* lost his life in a takeoff collision in *Werknummer* 16337.

Units based in Germany and the western Europe received their first G-6 aircraft soon after initial deliveries of the new version to the Mediterranean Theater. Finally, the fighter units in the East began receiving the G-6 as quickly as the increasing production rate allowed. The G-6 was flown operationally by III./JG 1, II./JG 2, Stab, I., II., III., IV./JG 3, Stab, I., III., IV./JG 4, Stab, I., II., III., IV./JG 5, III./JG 6, II., III., *Alarmstaffel*/JG 11, JGr. 25, III./JG 26, Stab, I., II., III., IV./JG 27, JGr. 50, Stab, I., II., III., IV./JG 51, Stab, I., II., III./JG 52, Stab, I., II., III./JG 53,

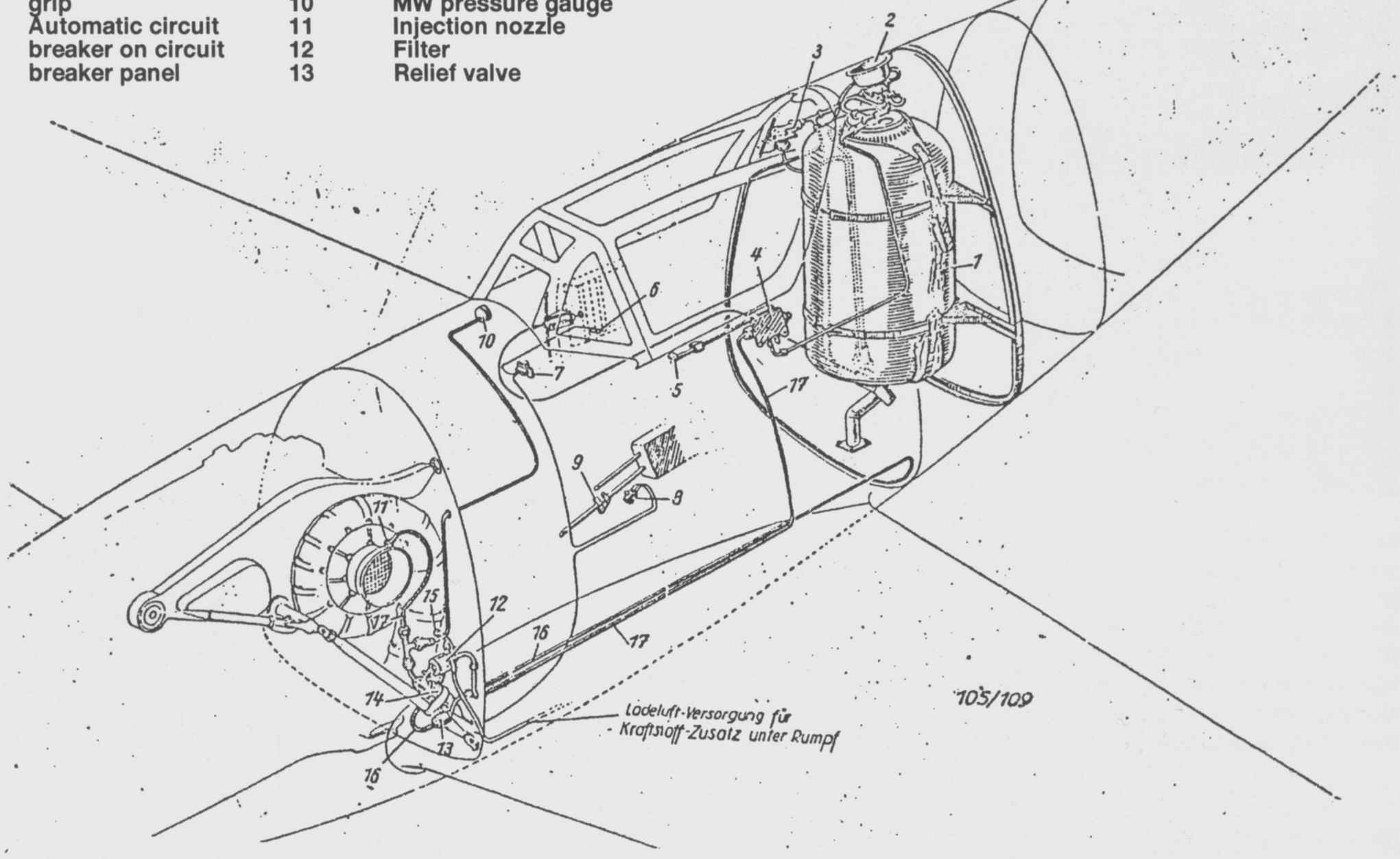
"White 9" of 7./JG 53, a G-6 trop with the Werknummer 18 107, in the sparse shadow of several olive trees, photographed at Sciacca airfield, June 1943. This aircraft was usually flown by Uffz. Amon, whose personal emblem and nickname "Seemann" are visible on the fuselage side behind the cockpit. "White 9" was lost on July 3, 1943, during a combat off Malta, when the aircraft suffered engine damage and Uffz. Reinicke – flying the aircraft on that day – was forced to bail out. The "Gustav" wears the standard grey scheme in the style with large patches of color on the fuselage sides as well as a white fuselage band. (Amon)



Messerschmitt Bf 109 G-6 – aircraft built in autumn 1943; equipped with DF loop and *Gallandpanzer*; production batches 20000, 22100, 26000, 27000, 140000, 160000, 161000, 162000, 163000, 164900, 165000, 166000, 410000, 411000, 412000, 413000, 440000, 441000, 442000.

MW-50 Installation

1 MW tank
2 MW tank filler cap
3 Pressure relief valve
4 Valve system
5 Valve system hand grip
6 Automatic circuit breaker on circuit breaker panel
7 MW-50 toggle switch on instru ment panel (master switch)
8 Push-button switch
9 Cam on throttle rod
10 MW pressure gauge
11 Injection nozzle
12 Filter
13 Relief valve
14 Pilot valve
15 Pressure pipe coupling
16 Pressure pipe
17 Methanol-water pipe



III., IV./JG 54, I., III./JG 76, Stab, I., II., III./JG 77, JG 200, Stab, I., III./JG 300, Stab, I., II., III./JG 301, Stab, I., II., III./JG 302, I./NJG 10, I., II./NJG 11, JGr. Nord, JGr. Süd, JGr. West, JGr. Ost, I., II., III., IV./EJG 1, I./EJG 2, I./KG(J) 6, II./KG(J) 55, *Einsatzstaffel Erla*, 2.(H)/14, NAG 1, NAG 2, NAG 3, NAG 4, NAG 5, NAG 8, NAG 11, NAG 12, NAG 13, NAG 14, NAG 15, (F)/123 and (F)/124.

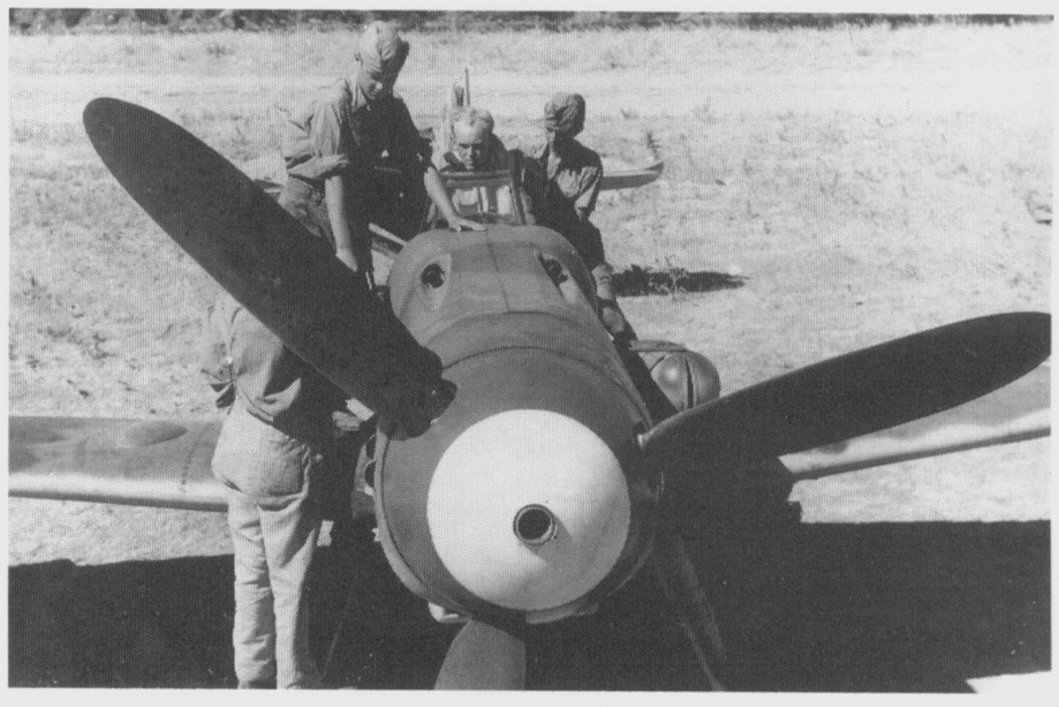
There was only one significant difference between the G-4 and the initial production version of the G-6: the armament of the Bf 109, which had been found to be inadequate since the F-Series of 1941, was increased by replacing the MG 17s above the engine with a pair of MG 131 heavy machine guns. Since the spent belt chutes for the MG 131s would not fit beneath the standard cowling, a large, almost circular fairing was introduced on each side of the engine cowling. These bulged fairings gave the G-6 its characteristic appearance. In addition the cowling machine-gun troughs were altered slightly.

Also introduced on the G-6 was an oval inspection hatch on the left side of the fuselage between Frames 8 and 9. Although its purpose remains unknown, the hatch was a feature of all subsequent Bf 109 G aircraft. The G-6 retained the same size mainwheels, but they were for the most part mounted on disc-type hubs.

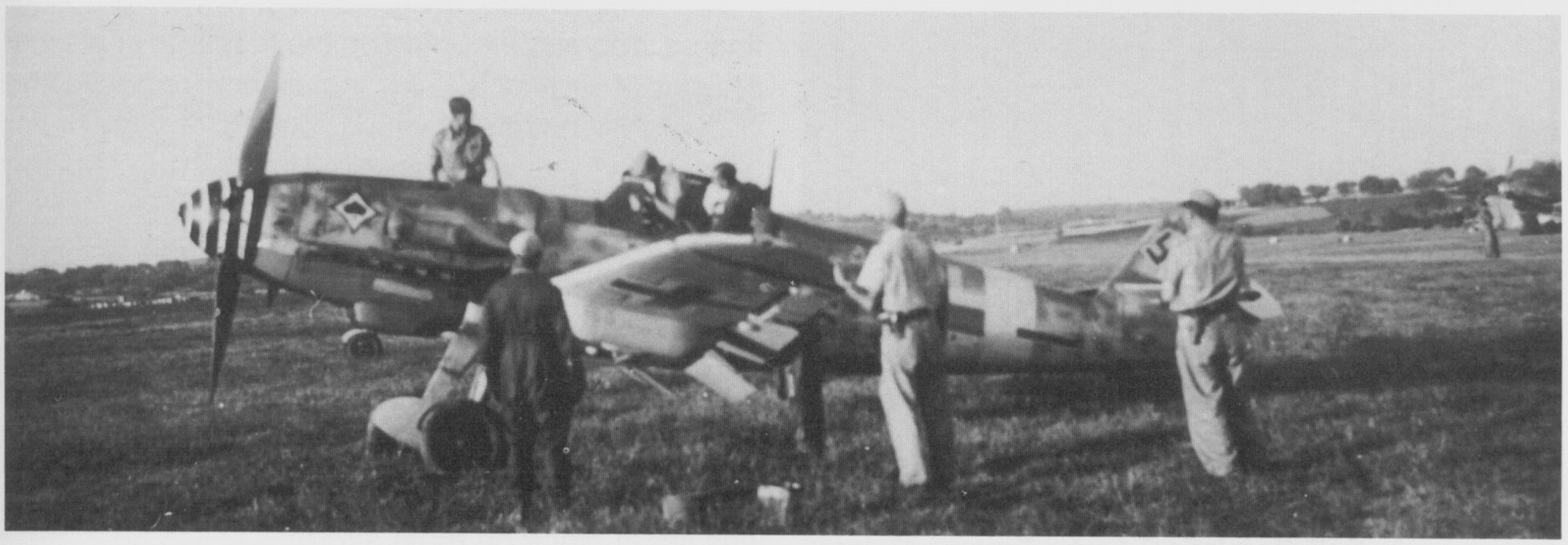
Like the G-4, the G-6 lacked a pressurised cockpit and most were built with the appropriate cockpit ventilation inlets. There were a number of aircraft, however, which had no visible cockpit ventilation inlets. In several cases it even appears that aircraft manufactured with the ventilation intakes on both sides of the windscreen subsequently had these sealed up.

Production of the initial version of the G-6 continued at an ever-increasing rate into the late summer of 1943, when the first improvements were worked into ongoing production. From about August 1943 aircraft on the production line received the

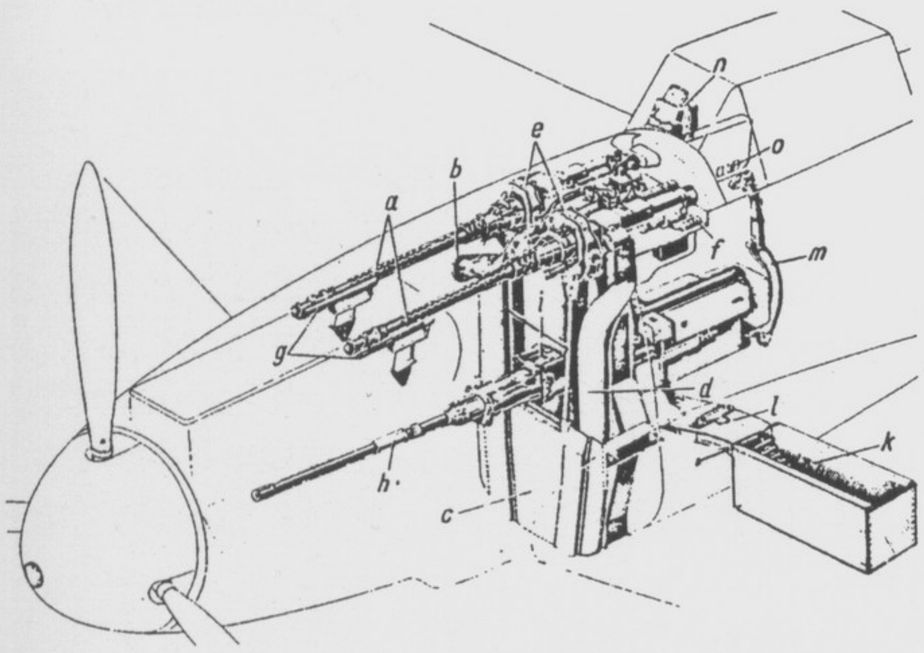
A "gunboat" of II./JG 51 – a G-6 trop with gondola weapons – photographed in the summer of 1943 on a forward airfield in Sardinia, possibly Senorbi. (Bundesarchiv)



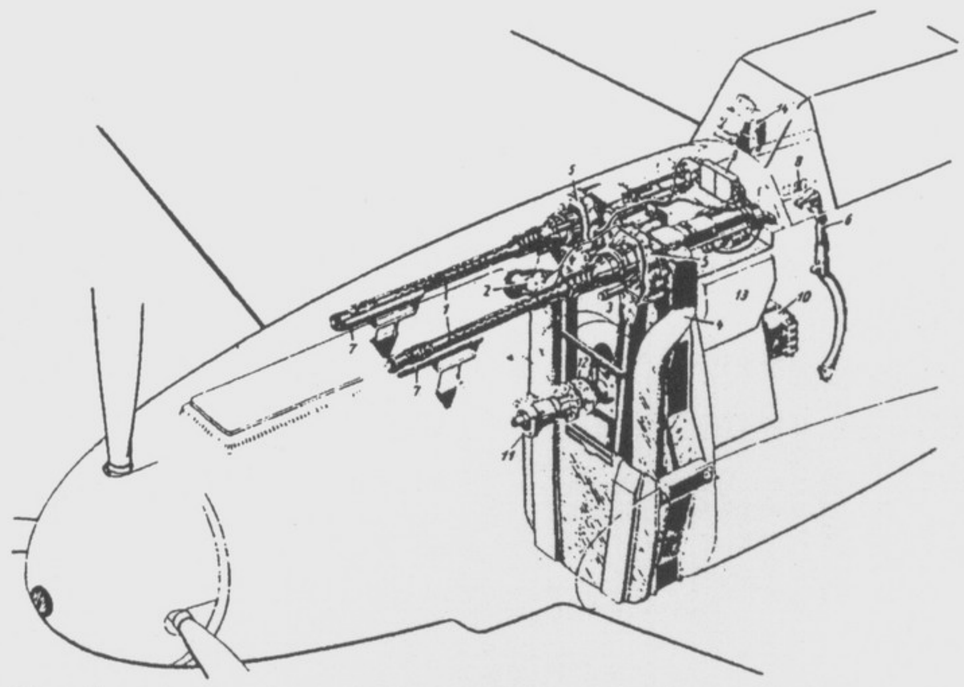
Frontal view of "Yellow 10," a G-6 trop of 6./JG 51, photographed in Sardinia, summer 1943. On the left two mechanics stand ready to crank up the DB 605 A engine. Note the closed sand filter. (Bundesarchiv)



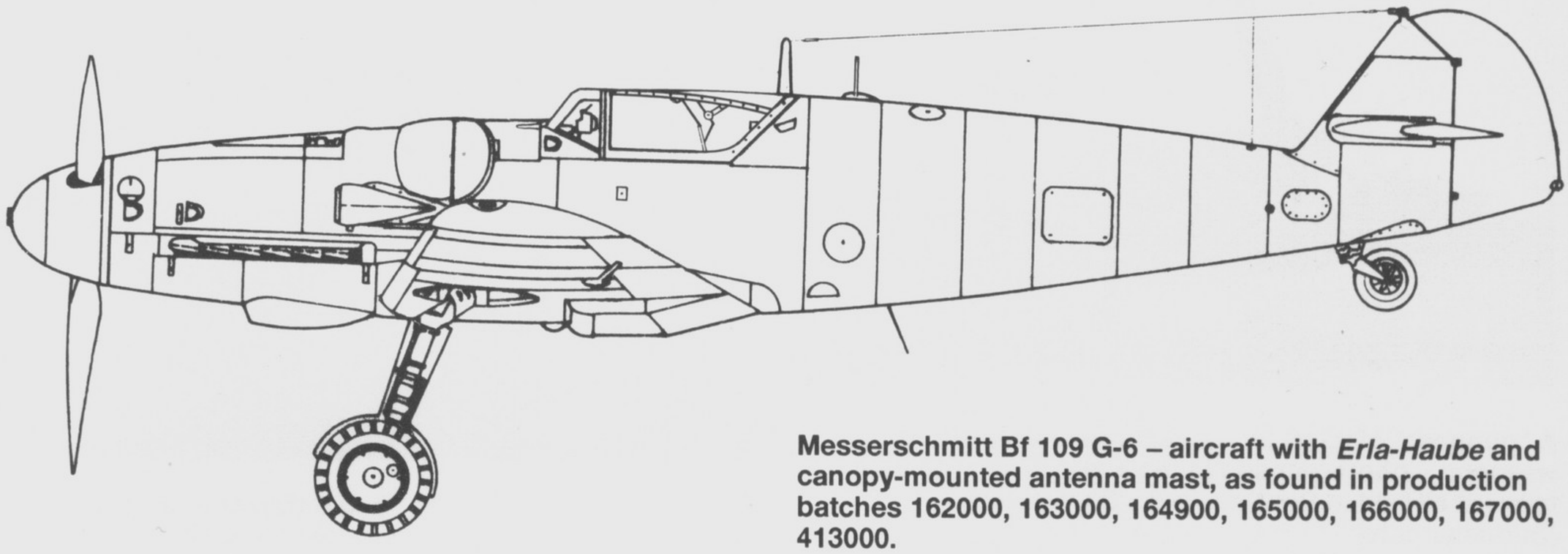
In July 1943 this G-6 trop with gondola-mounted cannon was flown by the Kommodore of JG 53, Oberst von Maltzahn. The photo was probably taken on the airfield at Vibo Valentia. The aircraft wears a grey scheme with quite small patches of color on the fuselage sides and a narrow white spiral on the black propeller spinner. The underside of the engine cowling is yellow. (Hupfeldt)



Handbook drawing of standard G-6 weapons installation: (a) MG 131 machine-guns, (b) synchronizer, (c) MG 131 magazine, (d) spent ammunition belt chute, left, (e) MG 131 mount, (f) electrical coil, (g) cowling slot cover, (h) MG 151, (i) engine cannon mount, (k) MG 151 magazine, (l) ammunition feed, (m) Kg 13 A control column, (n) Revi 16 B, (o) circuit breaker.



Handbook drawing of U4 installation: (1) MG 131, (2) synchronizer, (3) magazine, (4) spent ammunition belt chute, left, (5) MG 131 mount, (6) KG 13 A control column, (7) cowling slot cover, (8) circuit breaker, (9) electrical loading switch box, (10) MK 108, (11) engine cannon mount, (12) connector, (13) MK 108 magazine, (14) Revi C 12 D.

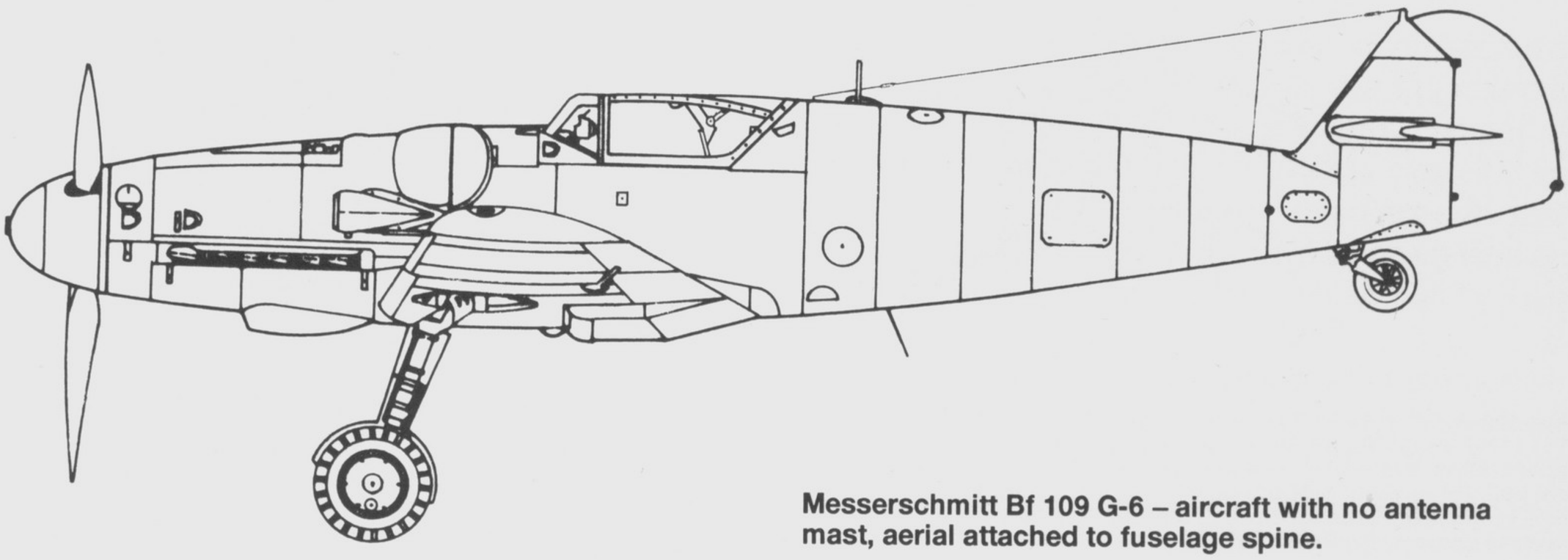


Messerschmitt Bf 109 G-6 – aircraft with *Erla-Haube* and canopy-mounted antenna mast, as found in production batches 162000, 163000, 164900, 165000, 166000, 167000, 413000.

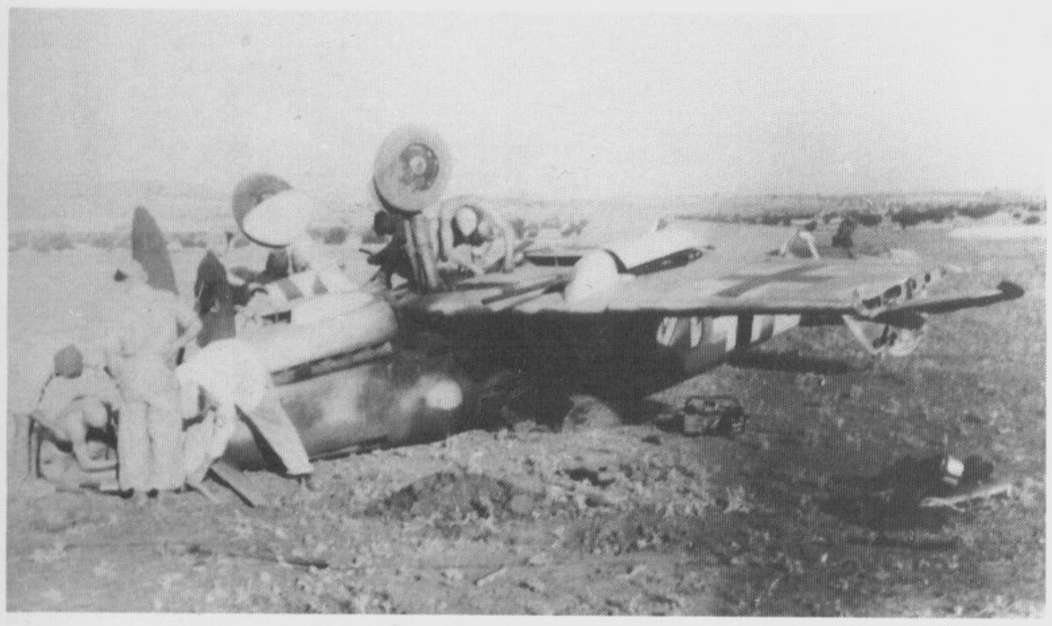
The pilots of 12./JG 27 have gathered round Staffelkapitän Oblt. Boesler's G-6 trop; Tanagra, Greece, summer 1943. Note the two horizontal bars behind the fuselage Balkenkreuz, the first Gruppe symbol used by IV./JG 27, and the round Kapitän symbol on the antenna mast. (Riffert)

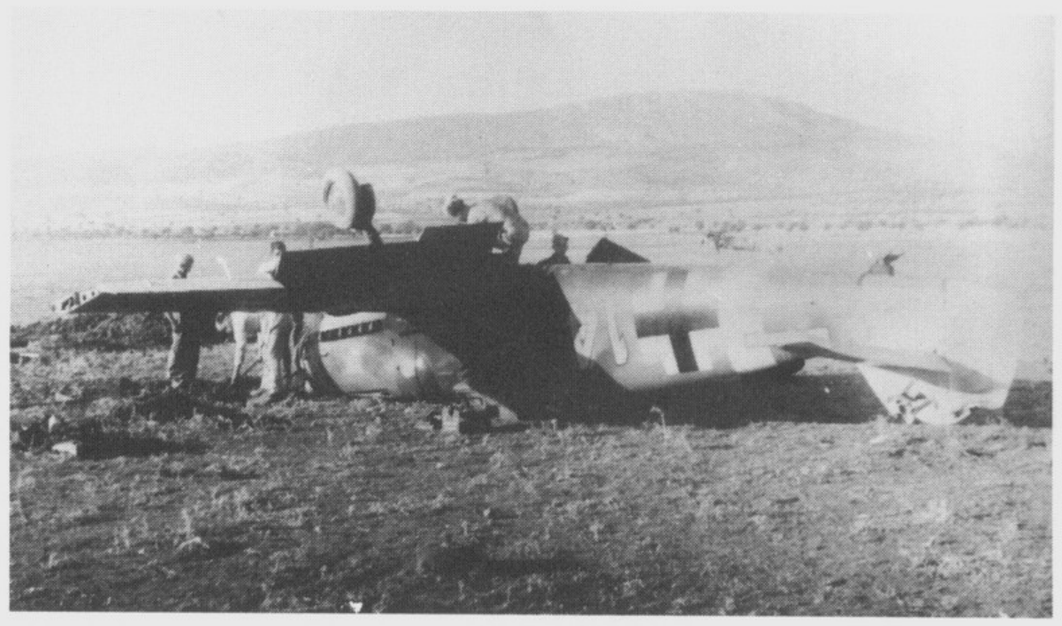
Peilrufanlage radio navigation aid, whose direction-finding loop was mounted on the fuselage spine just in front of Frame 3. This installation received the official designation R7 which, in practice, was never used. The installation at the factory of the *Peilrufanlage* went hand in hand with a shortening of the antenna mast; when the navigation aid was retrofitted to older aircraft it was not uncommon to see the DF loop together with the earlier, tall antenna mast. Conversely, in the East the *Peilrufanlage* was often removed, as was the FuG 25a, so that an entire series of aircraft flew with the short antenna mast but no direction-finding loop, although the base-plate was left in place on most aircraft.

Also introduced in late summer 1943, in an effort to improve all-round vision which was severely restricted by the all-metal head armor, was the so-

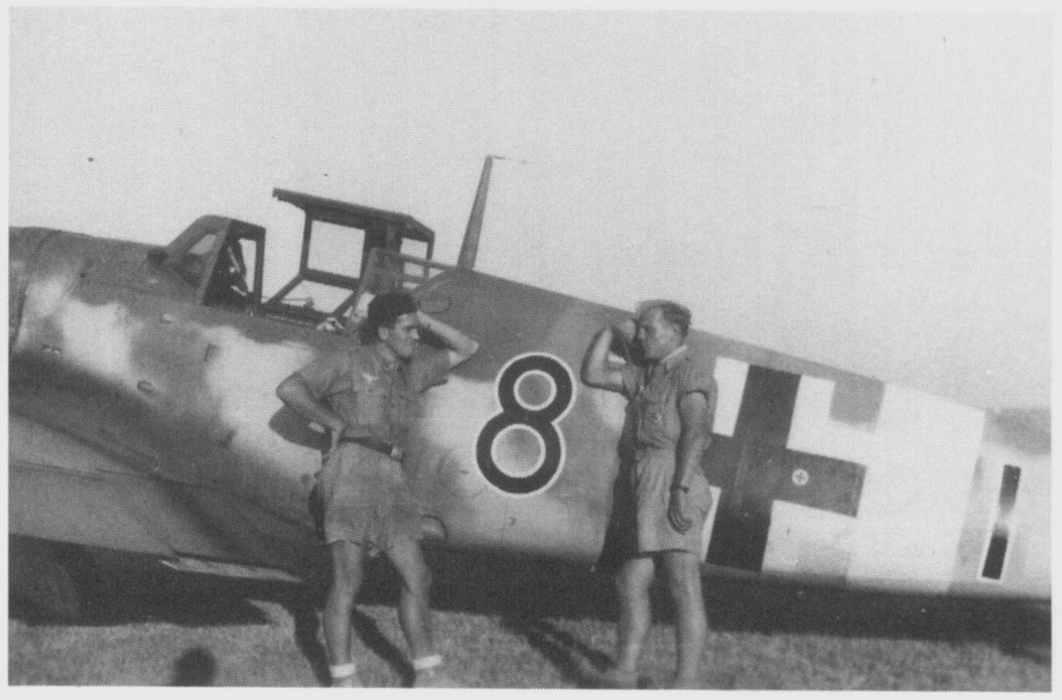


Messerschmitt Bf 109 G-6 – aircraft with no antenna mast, aerial attached to fuselage spine.





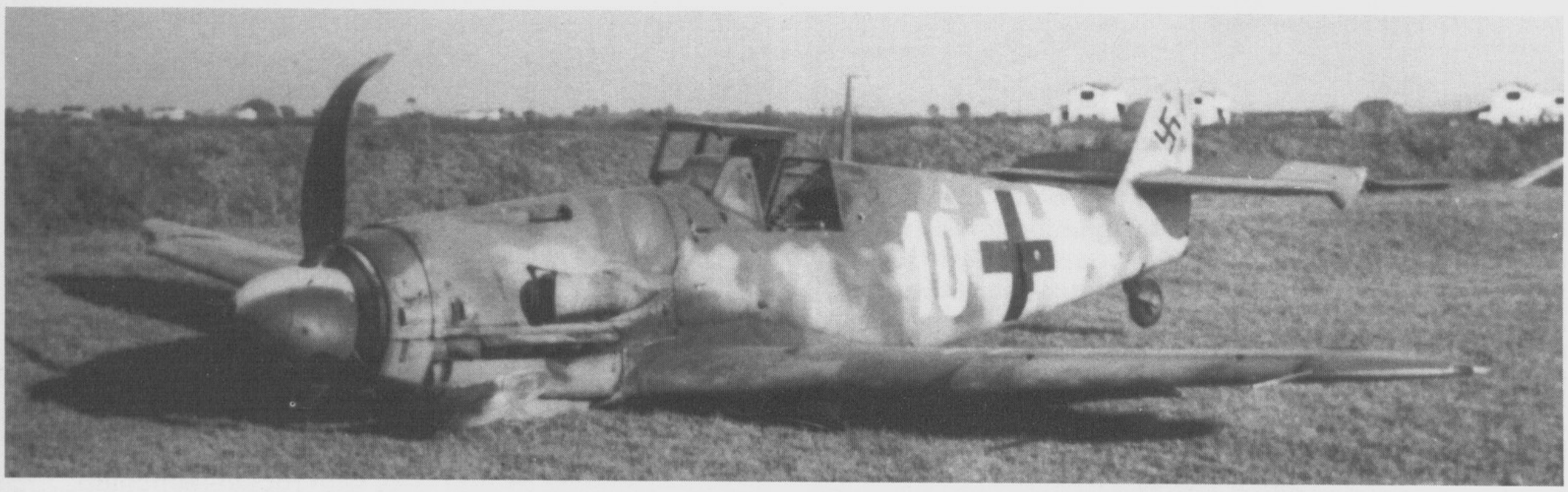
Two shots of "Yellow 14" of 12./JG 27 after it nosed over on Tanagra airfield in the summer of 1943. The two Gruppe bars are also visible on this aircraft. (Riffert)



Two shots of "Black 8," a G-6 trop with the Werknummer 18 676, of 8./JG 53. This aircraft was flown by Ofw. Seidl in August 1943. On August 23, 1943, it crashed as the result of an engine fire; Ofw. Seidl just managed to escape by parachute. (Seidl) Right: Ofw. Seidl (left) and Uffz. Zielke with "Black 8." (Seidl)

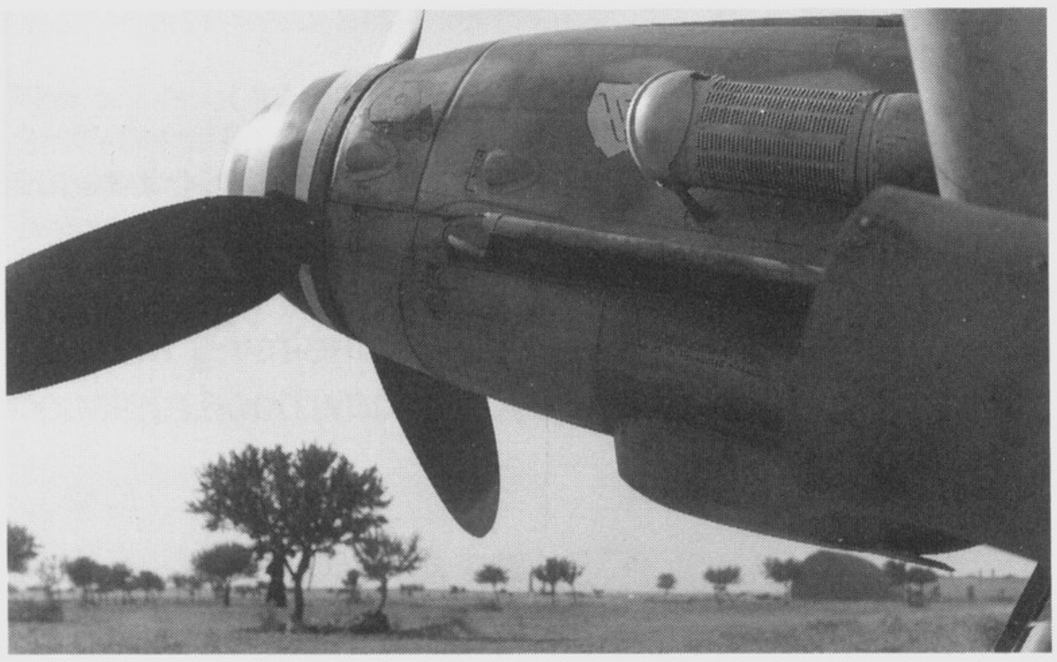
called *Galland-Panzer*, or Galland Armor. The upper section of the new armor was made of bullet-proof glass, which improved the pilot's view to the rear somewhat.

Another improvement was the so-called *Erla-Haube*, or Erla Hood, which was introduced at the end of 1943 and which further improved the pilot's all-round vision. The *Erla-Haube* was retrofitted to many aircraft, however the overwhelming majority were installed at the factory. The new hood replaced



"Yellow 10," a G-6 trop of 6./JG 53, following a belly-landing at Cancello, southern Italy, in August 1943. The aircraft wears the grey scheme with large patches of color on the fuselage sides. The underside of the cowling is yellow and the spinner is black and white. (Waag)

The engine compartment of a G-6 trop of 12./JG 3, photographed at San Severo in southern Italy in August 1943. Visible beneath the wing is a 210-mm rocket tube. In August 1943 12./JG 3 became the first unit in the Mediterranean area to be equipped with the air-to-air rockets. One can clearly see the spent belt chute for the MG 131, which made necessary the characteristic bulges. (Bundesarchiv)

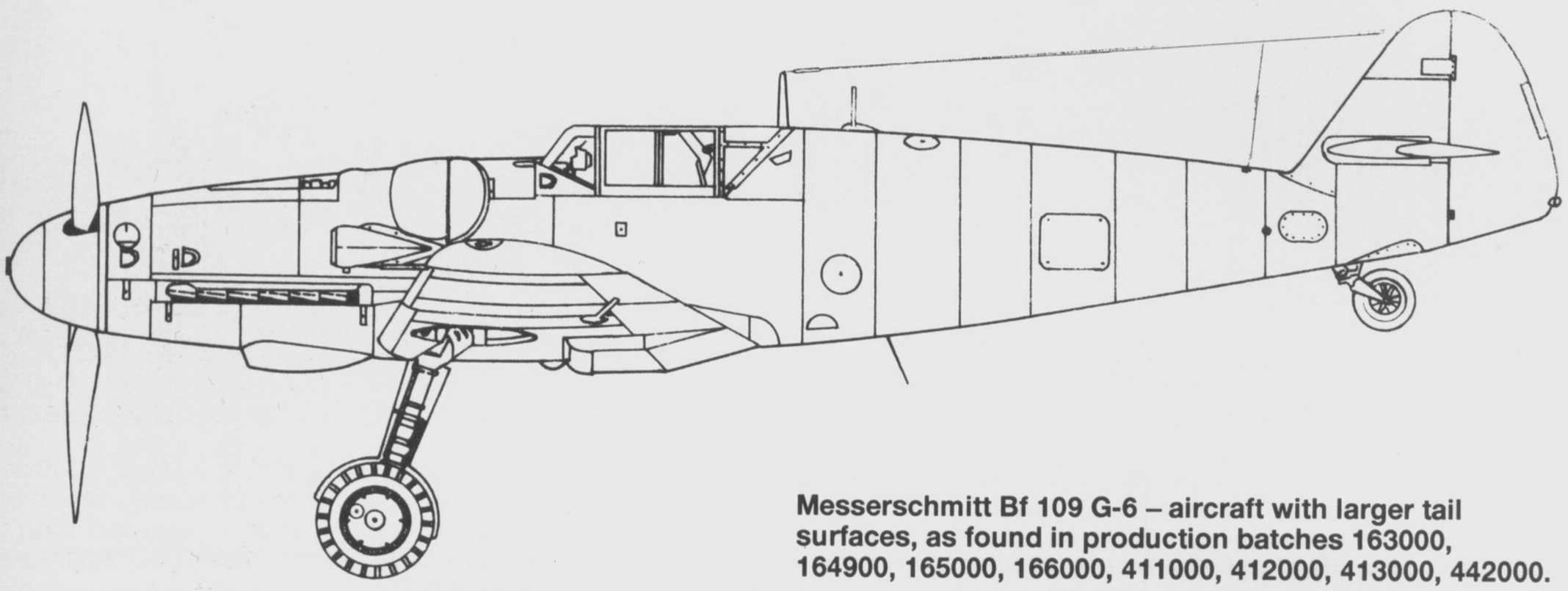


The engine cowling of another G-6 trop of 12./JG 3. As there was no official Rüstsatz designation for the rocket machines, they were sometimes referred to by IV./JG 3 as "G-6/Ws." Note the ribbed sand filter, the white spiral on the propeller spinner and the small JG 3 Geschwader emblem on the cowling, typical of IV. Gruppe. (Bundesarchiv)

frame. The *Galland-Panzer* was installed in most cases; only rarely was the *Erla-Haube* seen with the earlier, all-metal armor. There was no standard installation of the short antenna mast. It was mounted either on the framing at the rear of the *Erla-Haube* and moved with the canopy when it was opened, or on the fuselage spine just behind the cockpit. In the latter case the mast was mounted on a base attached to a metal tube which ran around the rear wall

the folding and fixed rear portions of the earlier canopy and dispensed with the heavy framing of the earlier folding hood. Several types of hood were built, differing only in the curve of the upper canopy

II./JG 53 received its first G-6s with rocket-launching tubes at the end of August 1943. This machine has just been delivered and still wears its Stammkennzeichen, PL+??. (von der Mey)



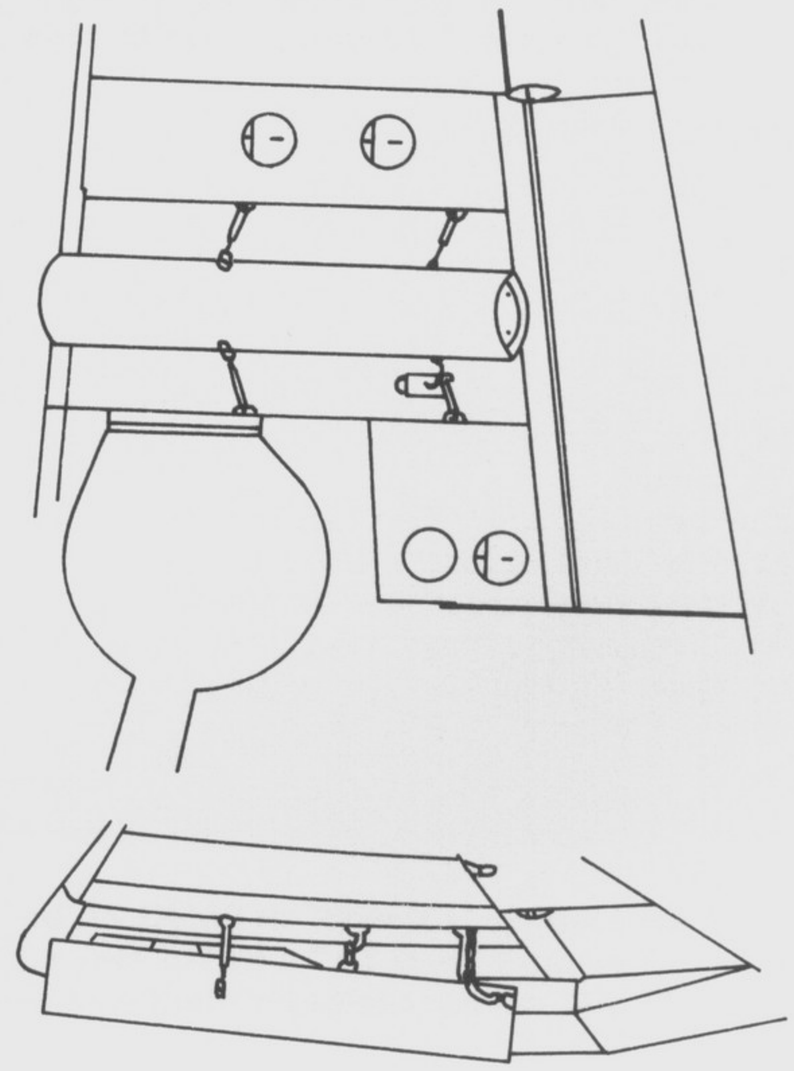
Messerschmitt Bf 109 G-6 – aircraft with larger tail surfaces, as found in production batches 163000, 164900, 165000, 166000, 411000, 412000, 413000, 442000.

A G-6 of 11./JG 27 with an ETC 50 VIId bomb rack, rarely seen on this variant, photographed in the Balkans in autumn 1943. The aircraft has the short antenna mast and behind it the DF loop of the Peilrufanlage navigation aid. (Rieck)

of the cockpit. In a few instances the antenna mast was dispensed with altogether, in which case the antenna wire passed through the loop of the *Peilrufanlage* and was attached to the fuselage spine immediately behind the cockpit.

From early 1944 many G-6s were fitted with a larger fin and rudder at the factory, but a considerable number of aircraft undergoing major repairs at repair facilities also received the new tail unit, which had a straight, vertical rudder line. The rudder featured a Flettner-tab which was controlled via a linkage on the right side. A number of conversion kits were installed in the G-6 series. Use of GM-1 boost was widespread, resulting in the G-6/U2. Externally,

Installation of launch tubes for 210mm air-to-air rockets.



"Yellow 7" of 6./JG 51, a G-6, in a rear-area repair facility in Italy, autumn 1943. This G-6 also has the short antenna mast and DF loop of the Peilrufanlage navigation aid. (Bundesarchiv)

A "gunboat" of 7./JG 53 taxis out for takeoff at Reggio Emilia, autumn 1943. (Amon)

Servicing "Chevron 1" of the Geschwaderstab/JG 53 at Tricesimo, near Udine, in the autumn of 1943. This G-6 wears the standard grey scheme with yellow cowling underside. (Bachmann)

Ofw. Bartels, the leading "Experte" of IV./JG 27, beside the rudder of his aircraft "Red 13," a Bf 109 G-6 with the Werknummer 27 169, photographed at Kalamaki, Greece in October 1943. (Rieck)

the installation of GM-1 was indicated by the presence of a filler hatch on the right side of the fuselage between Frames 3 and 4. Equally common was the retrofitting of MW-50 injection, resulting in the G-6/U3. The only external difference between aircraft equipped with U2 and U3 was the servicing triangle painted beneath the filler hatch, which specified the mixture to be used. Conversion from U2 to U3 was a simple matter.

From the summer of 1943 WNF delivered a considerable number of G-6 aircraft in which the MG 151/20 engine-mounted cannon had been replaced by a 30 mm MK 108; this installation received the designation G-6/U4. It is uncertain to what extent machines with *Umbausatz* 4 were also equipped with two additional MK 108 cannon in underwing gondolas. Minutes of the RLM discussions concerning special measures for the air defense of the Reich held on 9 August 1943 reveal that the Messerschmitt AG had been instructed to begin planning for the earliest possible change-over from the installation of *Rüstsatz* R6 to two MK 108s. This scheme does not appear to have proceeded much beyond the planning stage however, as beyond test machines, no other production aircraft are known to have been so armed. Still, the conversion was listed in an aircraft type sheet of the Chief of Technical Air Armaments dated August 1, 1944 as G6/U6. On the other hand the corresponding conversion of a G-6 equipped with the MG 151/20 engine-mounted cannon resulted in the designation G-6/U5.

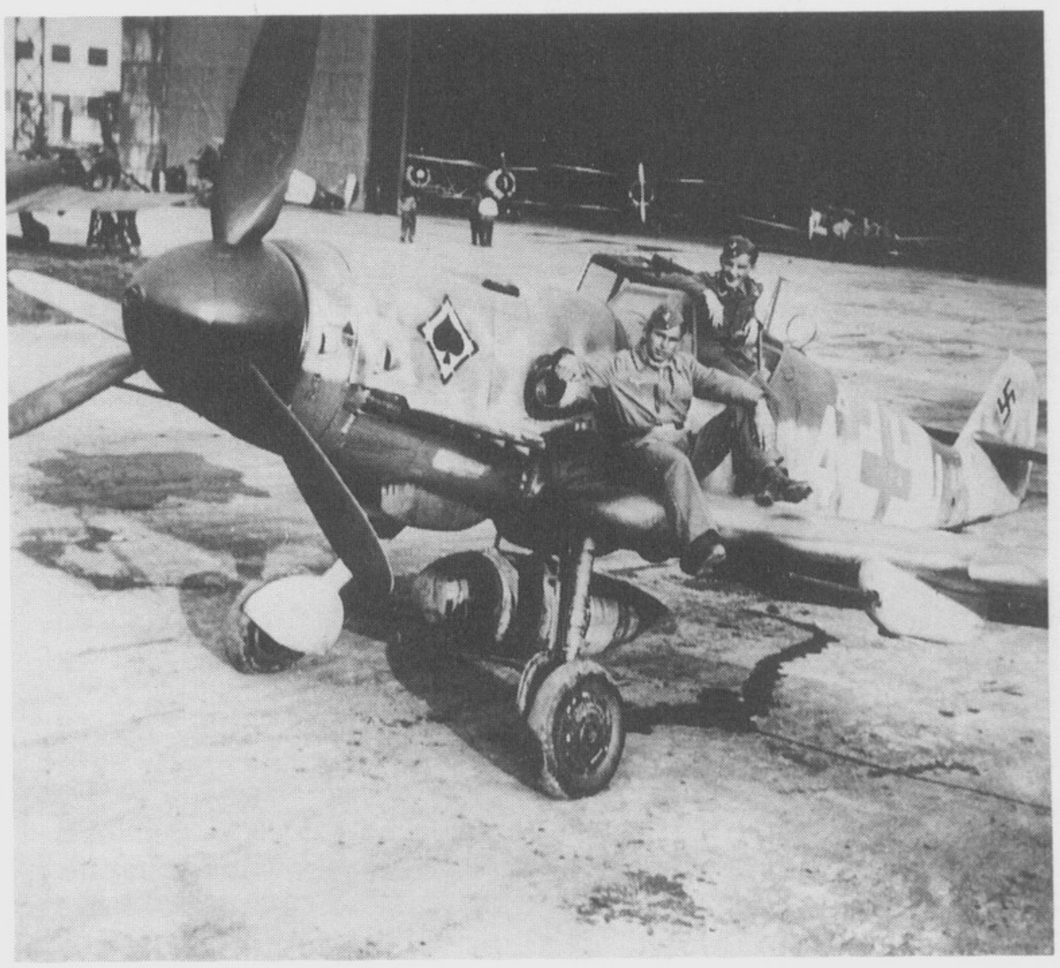
Crash-landing by "White 8" of 7./JG 27, a G-6 trop with the Werknummer 15 508, at Malemes, Crete on December 1, 1943. Damage to the aircraft was later assessed at 15%. Worthy of note are the wing and fuselage Balkenkreuze and the swastika, which consist simply of white outlines. (Bundesarchiv)

The cockpit area of a G-6 trop of 9./JG 27. The significance of the emblem designed by Ofw. Gromotka is so far unknown. Note the short antenna mast, the DF loop and the "Galland" head armor in the cockpit. (Gromotka)

Installed just as frequently as the conversion kits were a series of *Rüstsätzen*, which did not result in any change in the aircraft's designation. The most widely used were R3 (long-range fuel tank) and R6 (gondola-mounted MG 151/20). Use of the ETC 500 IXb bomb rack as R1 was rather less common on the G-6.

From August 1943 a number of G-6s were equipped with two launch tubes for 210 mm rockets beneath the wings of the aircraft. This additional armament, which as far as is known received no designation of its own, was employed primarily against four-engined bombers by units engaged in Reich defense duties. A few aircraft armed with the 210 mm rockets did see service in the Mediterranean and Rumania with IV./JG 3, I., II. and III./JG 53, I. and III./JG 77 and I./JG 5. Moreover, it appears that most *Gruppen* engaged in Reich defense duties had one *Staffel* equipped to carry rockets; known units are 7./JG 3, 5./JG 11, 2./JG 27 and 6./JG 51, as well as JGr. 50. In a few cases – such as II./JG 11 – the launch tubes were installed on older versions of the Bf 109 G still on strength.

"Black 10" of 8./JG 53, a G-6 with the Werknummer 160 607, was the machine of Uffz. Kerscheck in the autumn of 1943. This G-6 carries the grey scheme with large areas of color on the fuselage sides and the usual white fuselage band. Note the fuselage Balkenkreuz, whose center is grey instead of black. (Seidl)



Right: Two pilots of 7./JG 53 on "White 4," a G-6, photographed in November 1943 at Reggio-Emilia. Sitting in the cockpit is Uffz. Kleinert, on the wing is Fw. Leuffen. The aircraft wears the standard, lightly-mottled grey scheme. Clearly visible are the yellow cowling underside and the medium grey fuselage Balkenkreuz. Also note the heavy oiling of the auxiliary fuel tank; it almost appears as if the machine is leaving a trail of oil behind it. (Seeger)

Installation of the 210 mm rocket tubes was not done at the factory. As revealed in the minutes of the RLM discussions mentioned above, a total of 1,500 so-called "modification parts" – the necessary parts for installation of the launch tubes – were to be manufactured. It was foreseen that LZA Erding would begin with the modification of 50 new-production aircraft per month before subsequent modifications were undertaken at the unit level. Like the G-4, the G-6 was issued to the reconnaissance units in significant numbers. Only a portion of these aircraft had cameras installed in the fuselage – as usual between Frames 2 and 3. Installation of the Rb 50/30 resulted in the designation G-6/R2, while use of the Rb 75/30 led to the G-6/R3. Both versions, the G-6/R2 and R3, were built by WNF and were modified there to the appropriate equipment condition. There was allegedly another version with the designation G-6/R3 FI. Presumably this was a further reconnaissance version which, like the G-4/R3, carried two 300-liter long-range fuel tanks beneath the wings. Here, too, proof is lacking that such an aircraft was in fact built.

Tropical versions of the G-6 were delivered throughout the entire production run as the G-6 trop. The tropical equipment fitted was unchanged from that of the G-4. Bf 109 G-6 trop aircraft continued to appear into the late production lots 165,000 and 167,000. In 1944 machines could be seen on every

Two shots of "White 17" of 7./JG 53, a G-6 with rocket tubes, photographed at Villa Orba, Italy in December 1943. Here the aircraft has been jacked up in order to have its weapons bore-sighted. (Seidl)

Fw. Lang, a pilot in 7./JG 53, prepares for the next sortie in front of his G-6. Villa Orba, late 1943. Clearly discernable beneath the wing is a loaded rocket tube. (Seidl)

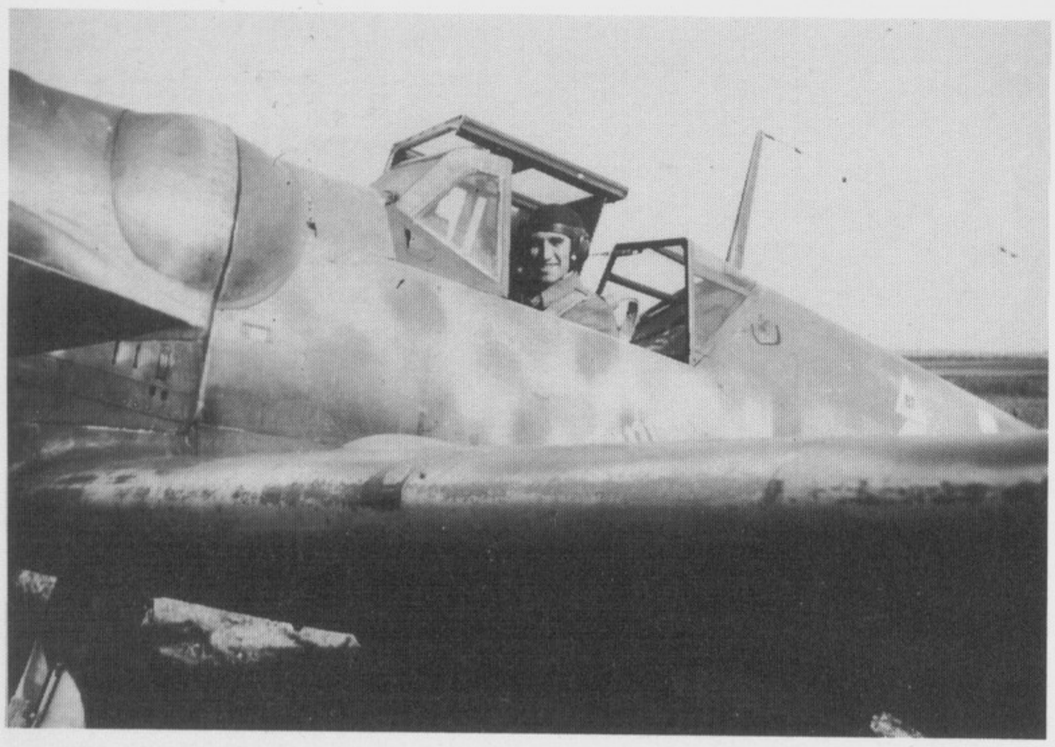
"Yellow 7" of 9./JG 52, a G-6, on approach to land at a forward airfield in the East, autumn 1943. (Bundesarchiv)

front which had been intended to receive tropical equipment but had not because their area of operations made it unnecessary. Such machines were easily identified by the two clip-holders for the sun umbrella below the cockpit sill.

From May 1943 some G-6s had received FuG 16zy radio equipment. This equipment was intended to allow control of a unit by radio and was therefore installed in the aircraft of unit leaders. The antenna mast for the FuG 16ZY was installed beneath the fuselage roughly in line with the wing radiators and to the right of the auxiliary fuel tank. G-6 aircraft so equipped officially received the seldom-used designation G-6 Y. A few aircraft were fitted with the FuG 16ZE, which led to the designation G-6 ZE. One such aircraft was *Werknummer* 19684, which was flown by 7./JG 54 as "White 7."

A very few late-production aircraft – from production batch 167000 – received a longer, non-retractable tailwheel, which could be installed with the early fin and rudder as well as the later, enlarged tail unit. One such G-6, with the *Werknummer* 167238, was flown by Lt. Düttmann of II./JG 52 in the autumn of 1944. No official designation for this modification is known.

The G-6/AS of early 1944 was an attempt to achieve a significant improvement in the high-altitude performance of the Bf 109. The DB 605 A



Lt. Lipfert, a pilot in 6./JG 52, in the cockpit of his aircraft "Yellow 1," a G-6, photographed in the East in late summer 1943. A name is barely visible beneath the cockpit. (Lipfert)

Preparations for takeoff by Lt. Lipfert, here sitting on the cockpit sill of another G-6 coded "Yellow 1." His mechanic is engaged in carefully removing all the mud from his boots, as a dangerous situation could develop during a dogfight if the pilot was hindered by muck from his boots flying about the cockpit. Note the unusual combination – for an aircraft in the East – of DF loop and tall antenna mast. (Lipfert)

The wreck of "Black 7," a G-6 with the Werknummer 15 781. On August 12, 1943 Lt. Müngersdorff of 5./JG 2 was forced to make an emergency landing near Aachen after his machine developed engine trouble. The aircraft sustained 60% damage. (Müngersdorff)

Mechanics of 5./JG 2 roll "Black 12," a G-6 with the Werknummer 27 083, across the apron. This aircraft was lost on October 20, 1943, when Uffz. Hünig was shot down and killed in aerial combat. The aircraft wears a lightly-mottled grey color scheme; the black finish in the area of the wing root is noteworthy. The underside of the engine cowling, rudder and aircraft number outline are yellow. Clearly visible are the short antenna mast in front of the DF loop as well as the "Galland" head armor. (Bundesarchiv)

Refuelling "Black 12." This shot provides an excellent view of the cockpit area. Note the circular cover plate beneath the windscreen and the absence of rectangular ventilation flaps in the fuselage side beneath the cockpit. (Bundesarchiv)

Another "gunboat" of II./JG 2, photographed at Evreux airfield. In the autumn of 1943 this G-6 with the "White 1" was flown by, among others, Uffz. Kolmanitsch, seen here in the foreground sitting between several mechanics. (Voss)

engine was mated with the larger supercharger of the DB 603 and the resulting engine was designated the DB 605 AS. Because of the increased diameter of its supercharger, installation of the new engine required modified engine bearers, which forced another change in the shape of the Bf 109's engine cowling. The G-6/AS featured a completely redesigned forward fuselage with significantly cleaner fairings over the engine bearers and MG 131 ammunition feeds, extending from the cockpit to halfway

along the engine cowling. At the same time the supercharger air intake was enlarged and the VDM 9-12087 propeller was replaced by a VDM 9-12159 which had significantly broader blades. The new propeller was retrofitted to a few G-6s with the standard DB 605 engine.

Installation of the DB 605 AS was always accompanied by the larger fin and rudder. As far as is known, all G-6/AS aircraft had the *Erla-Haube*, although the earlier, three-piece canopy could easily be installed; this may possibly have been the case with the test machines for the DB 605 AS installation.

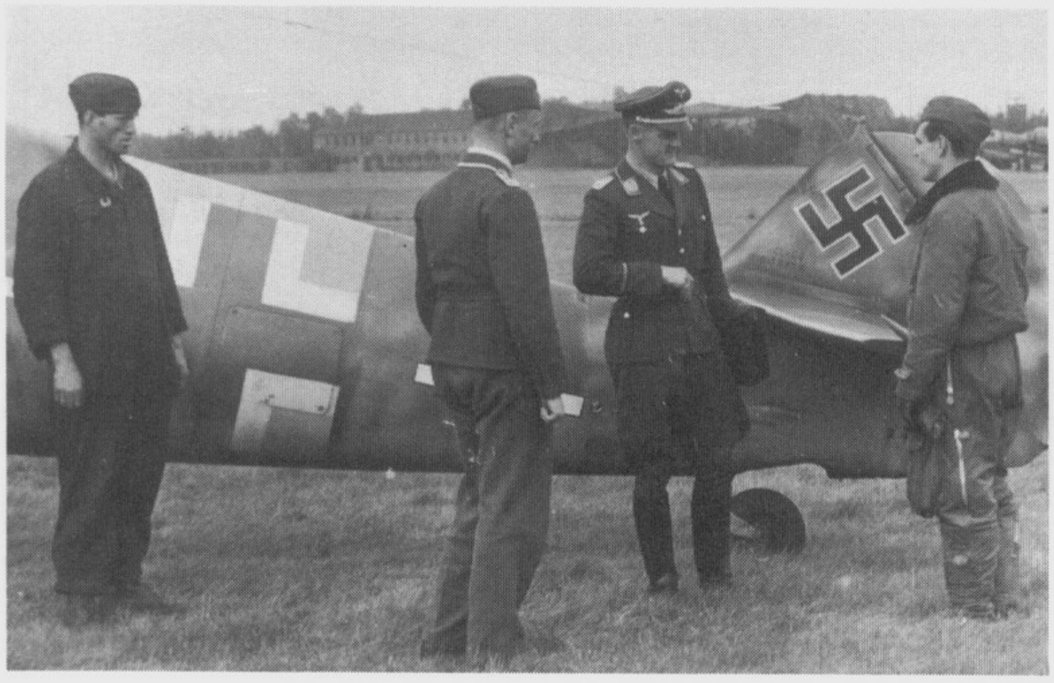
Only some G-6/AS aircraft were new-build machines in series production; in total there were no more than 226 aircraft, built by Messerschmitt Regensburg from May to August 1944. A further 460 machines were conversions of airframes awaiting repairs. Total production of the G-6/AS was thus 686 machines, broken down as follows:

Mtt Reg.	G-6/AS	226 aircraft – new production, batch 165000
Erla Antw.	G-6/AS	11 aircraft – conversion
Erla Antw.	G-6/U4/AS	1 aircraft – conversion
Erla Antw.	G-6/U2/AS	95 aircraft – conversion
Erla Antw.	G-6/U2/R2/AS	23 aircraft – conversion
Mi-Metall	G-6/U4/AS	132 aircraft – conversion
Mi-Metall	G-6/U2/AS	98 aircraft – conversion
Blohm und Voss	G-6/U4/AS	20 aircraft – conversion
Blohm und Voss	G-6/U2/AS	80 aircraft – conversion

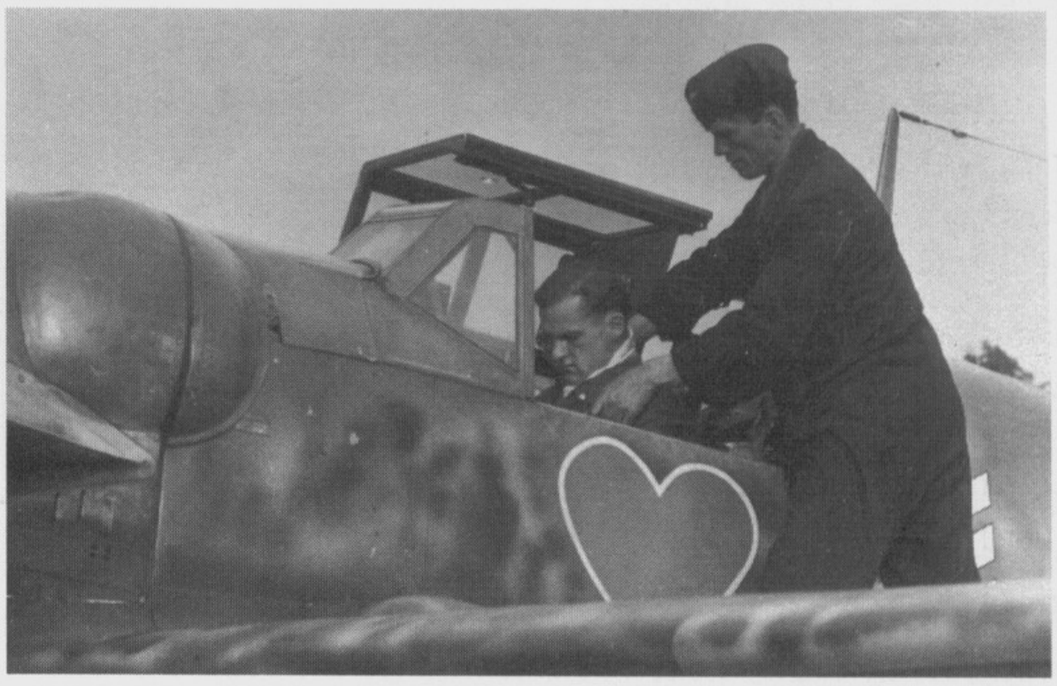
The first G-6/AS fighters were delivered to III./JG 1, I./JG 5 and II./JG 11 in the late spring of 1944. A short time later I./JG 3 and II./JG 27 also received substantial quantities of the G-6/AS. Finally, a few G-6/AS aircraft found their way to 1./NJGr.10. One of the first losses was suffered on 8 May 1944 when Fw.

Oblt. Grislawski, Staffelkapitän of 1./JG 50 (right) and Ofw. Süss in front of "White 10," photographed in September 1943 at Wiesbaden-Erbenheim. This G-6 wears a grey scheme with very light fuselage sides. The white fin and rudder identify it as a unit leader's aircraft, as prescribed in the autumn of 1943. Marked on the rudder are Grislawski's 112 victories. Also noteworthy is the unit emblem beneath the cockpit and the location of the aircraft number behind the Balkenkreuz, a standard practice of JG 50, which consisted of only a single Gruppe. (Petrick)

Karemitz of 8./JG 1 was killed in combat with P-47s while flying *Werknummer* 20629; based on its *Werknummer* this aircraft was a converted G-6, as production block 20600 was delivered from August 1943. *Oberst* Oesau was also killed flying a G-6/AS from this *Werknummer* block. Oesau died in combat with P-38s in the St. Vith area on 11 May 1944 while flying *Werknummer* 20601, "Green 13."



This G-6, which in autumn 1943 was flown by members of the staff of the General der Jagdflieger, including Oberst Lützow, is noteworthy in more than one respect. The aircraft (WNr. 19 456, Stammkennzeichen CL+OQ), was originally a G-4 and as such was flown by 6./JG 27 until it was severely damaged in an air raid on Trapani on May 10, 1943. It was obviously converted to G-6 standard during industry repairs. (Lützow)



Here a mechanic helps Oberst Lützow strap in. The aircraft wears a densely-mottled grey scheme and markings in the style used by Oberst Trautloft – now on the staff of the General der Jagdflieger – when he was Kommodore of JG 54: a white triple chevron with horizontal bars in front of and behind the Balkenkreuz, yellow fuselage band under the Balkenkreuz and the Grünherz emblem below the cockpit. (Lützow)

The Gruppen-Adjutant of III./JG 3, Oblt. von Kap-Herr, in front of his "Gustav," a G-6 with the Stab marking "Black Chevron," photographed at Bad Wörishofen in the autumn of 1943. (Ross)

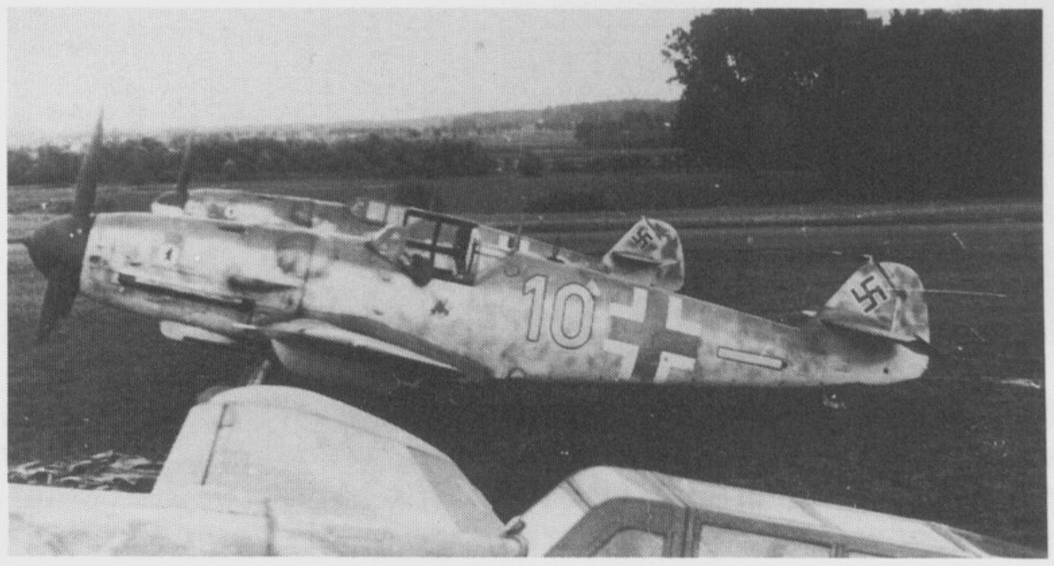
Fw. Draeger, a pilot of 5./JG 3, on the engine cowling of "Black 1," the G-6 of Staffelkapitän Hptm. Kirschner, photographed at Schiphol in October 1943. This G-6 wears a grey finish with a heavy overspray on the fuselage sides aft of the engine cowling. The aircraft number is noteworthy, consisting of only a black outline – standard practice in II./JG 3 at this time – , as is the Geschwader emblem on the engine cowling with a red dot beneath it. Note the open ventilation flap beneath the folding hood. (Wahl)

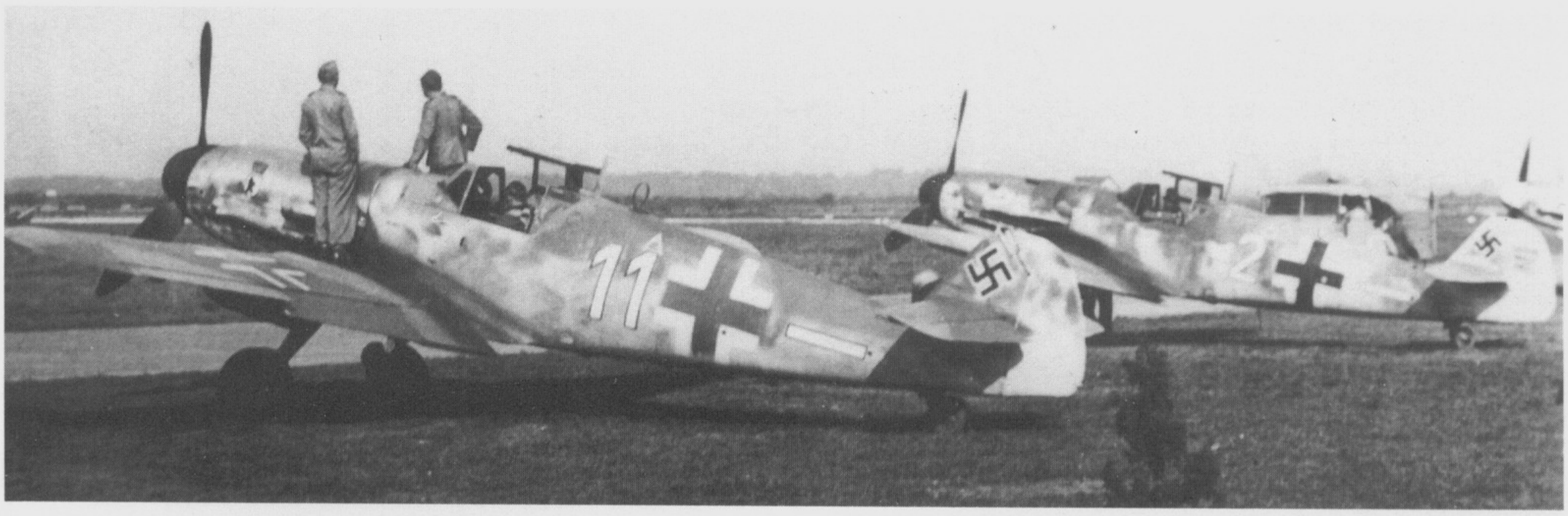
Lt. Bohatsch, a pilot of 5./JG 3, photographed in front of four of his Staffel's "Gustavs" at Schiphol, October 1943. "Black 2" in the foreground is a G-6. All the machines illustrated here wear a heavily-mottled grey paint scheme with no discernable differences. As was customary in II./JG 3 at this time, the Geschwader emblem on the engine cowling appears in a reversed, mirror image form. (Wahl)

Scramble by 8./JG 54, photographed in October 1943; the location is believed to have been Schwerin airfield. "Black 7," a G-6 with the Werknummer 19 821, was flown by Oblt. Brock. It was lost on October 14, 1943, when Fw. von Düsterloh was forced to crash-land the aircraft after it had been damaged in an air battle near Uttweiler, the machine being written off in the process. "Black 7" wore the standard grey scheme with a light mottle on the fuselage sides. The lack of any unit emblem is noteworthy, as is the use of the old wavy line as Gruppe symbol. (Deutsche Wochenschau)

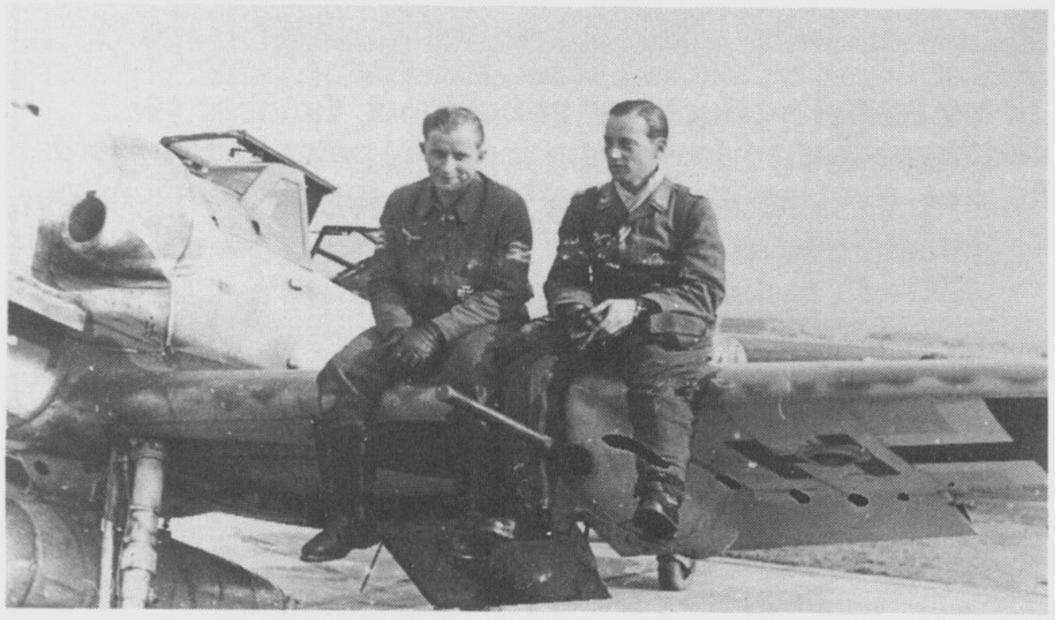
The tail of the Messerschmitt flown by Lt. Kientsch, the Staffel leader of 6./JG 27, photographed in late November 1943 at Wiesbaden-Erbenheim airfield. The aircraft was a G-6 with the Werknummer 20 787. As a Staffel leader's aircraft the aircraft has received a white rudder, on which 42 victories have been marked. Notice that in many of the victory bars the outline of the downed enemy aircraft is visible. (Venthur)

Right: Parked G-6s of 6./JG 27 in autumn 1943, probably photographed at Wiesbaden-Erbenheim. The aircraft in the center, "Yellow 10," wears a relatively lightly-mottled grey color scheme with yellow cowling underside. Note the gondola cannon, the clip holders for the sun umbrella below the cockpit, the II./JG 27 Gruppe emblem on the engine cowling and the seldom-worn Staffel emblem on the fuselage side beneath the cockpit. (Venthur)

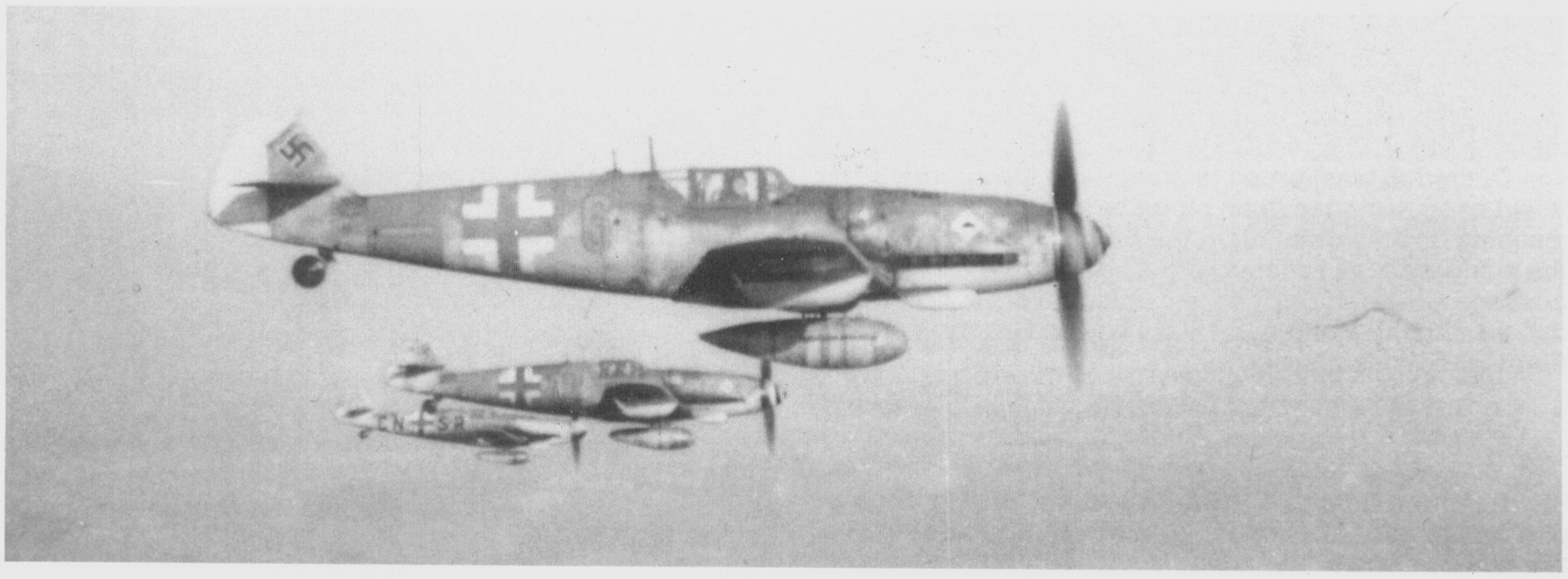




Parked G-6s of 4./JG 27, photographed in the autumn of 1943 at Wiesbaden-Erbenheim. In the foreground is "White 11" and behind it "White 2." One of the gondola cannon is just visible beneath the wing of "White 11." (Venthur)



Two photographs of a 6./JG 27 G-6 with gondola weapons, taken at Wiesbaden-Erbenheim toward the end of 1943. At this time II./JG 27 shared its aircraft with the night fighters of III./JG 301 (renamed III./JG 300 in December 1943), and accordingly the Messerschmitts were modified at the unit level for their dual role. Here one can see a part of the enlarged glare shield over the left exhaust, and within the letter H on the undersurface of the wing, is an as yet unidentified piece of additional equipment, which is believed to be an infra-red lamp. (Venthur) Right: This angle provides a very good view of the enlarged glare shield over the left exhaust. (Venthur)



Near the end of 1943 II./JG 53 also became involved in a sharing arrangement with II./JG 301, a Gruppe of the single-engined night fighters, the so-called "Wilde Sau." Seen here is a Schwarm of G-6s of 6./JG 53 during a training flight over the Vienna area in late 1943. The aircraft in the center of the photo, "Yellow 6," wears a broad red fuselage band, the standard identifying mark of the single-engined night fighters at that time. (Hammer)

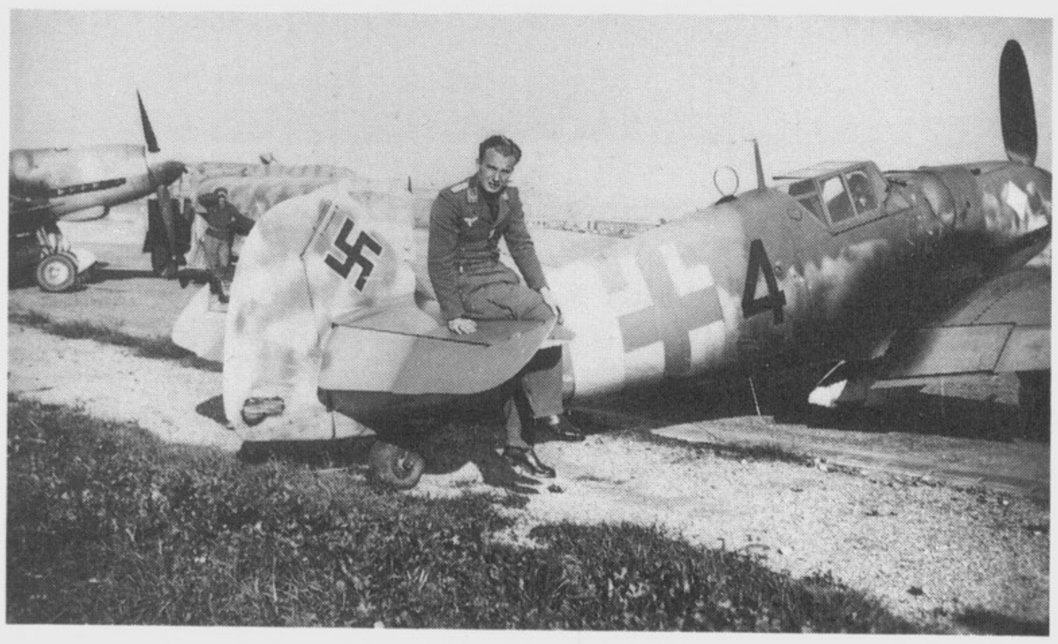
Running up the engine of a G-6 employed in the single-engined night fighter role, possibly by JG 302, at Werneuchen, late 1943. The fuselage sides, including the white surround of the Balkenkreuz, have been oversprayed in a dark color, leaving the aircraft number, "White 7," untouched. Once again note the larger glare shield above the exhaust. (Lorant)

Ofw. Rollwage, one of the "Experten" of II./JG 53, beside the rudder of his aircraft "Black 2," a G-6 with the Werknummer 160 7??. As Schwarm leader, Rollwage flew an aircraft with a white rudder, as regulations called for at that time. 47 victory bars are visible on the white rudder. Rollwage had achieved his 47th victory on July 10, 1943, over Sicily, before being wounded and put out of action for several months. (Weitzel)

Major Götz, Gruppenkommandeur of III./JG 53, while taking off on a sortie in Italy, early 1944. His G-6 "Black Double Chevron" carries an auxiliary fuel tank under the fuselage. (Landt)

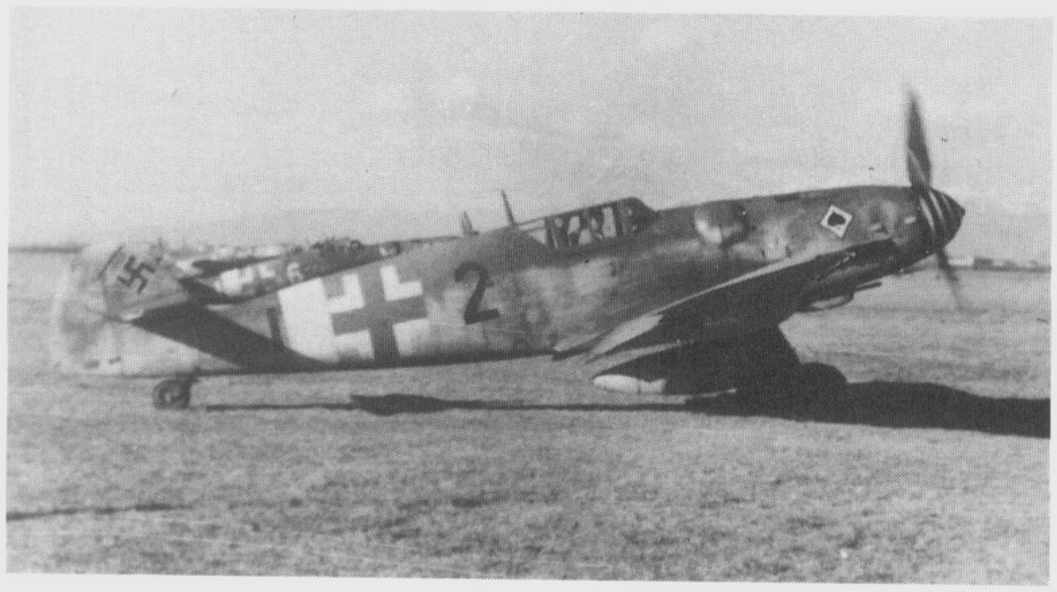
Major Götz climbs out of his "Gustav." As the auxiliary tank is still hanging under the fuselage, there was obviously no contact with the enemy during the just-completed sortie. In contrast to the previous aircraft, this G-6 of the Stab of III./JG 53 has gondola cannon. Italy, early 1944. (Conrad)

Freshly completed G-6s from Erla production in the autumn of 1943. The Werknummer of the machine in the foreground, 33 085, is clearly visible in the fuselage Balkenkreuz. The aircraft has yet to receive its camouflage finish. While the fuselage appears to be still in light blue, the wing upper surfaces have been sprayed dark grey overall. (Preussischer Kulturbesitz)

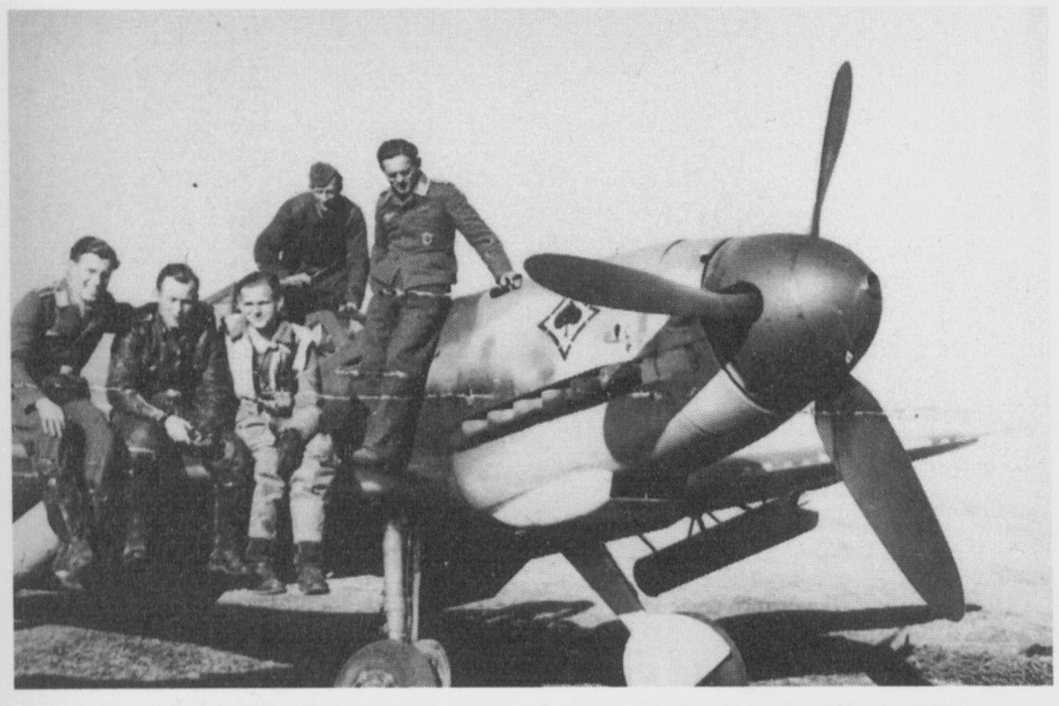


Lt. Ritter, a pilot of 8./JG 53, with his aircraft "Black 4," a G-6 with gondola weapons. The aircraft has the usual grey scheme with a medium grey fuselage Balkenkreuz. The Geschwader emblem is incomplete, consisting of just the white background. (Sabath)

Above: Fahnenjunker-Unteroffizier Vogel of 2./JG 53 standing on the wing of his aircraft "Black 7," a G-6 with the Werknummer 162 313, photographed at Maniago airfield in northern Italy in March 1944. At this time the G-6s of 2./JG 53 had once again been fitted with rocket-launching tubes in order to engage heavy bomber units flying in from Foggia to attack targets in southern Germany and Austria. Clearly discernable here are the right rocket tube and the auxiliary fuel tank. (Vogel)

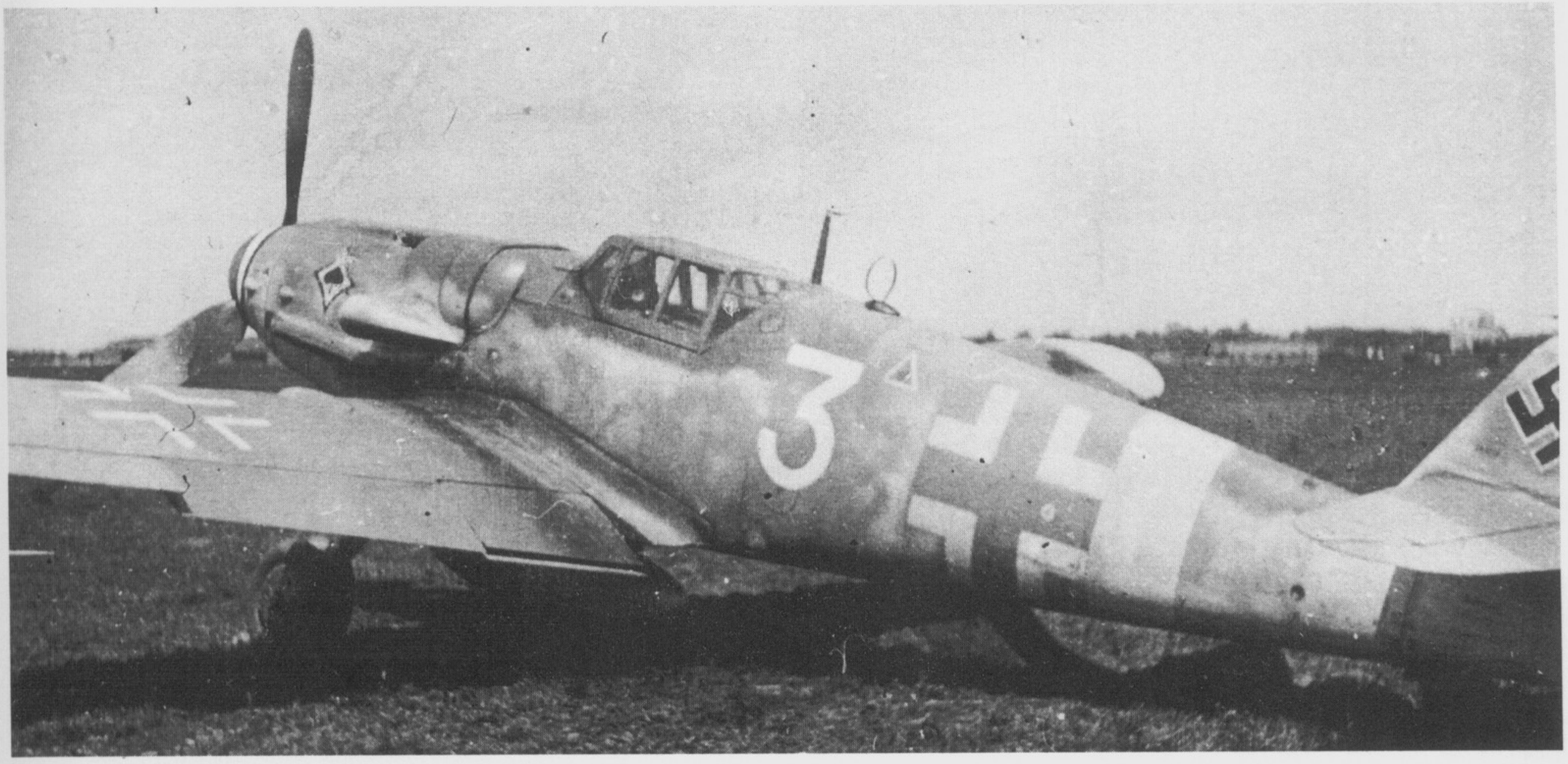


Left: Aircraft of III./JG 53 taxi out for takeoff on a sortie from Villa Orba, January 1944. In the foreground is "Black 2" of 8. Staffel, a G-6 with the Werknummer 160 424. The aircraft was lost on January 16, 1944, when Uffz. Zendler collided with a P-38 shot down by Lt. Seidl and crashed to his death. (Seidl)



Pilots of 2./JG 53 on another G-6 with rocket tubes at Maniago in March 1944. From left: Uffz. Franke, FhjFw. Stockmann, Uffz. Blunk, a mechanic – probably Ogfr. Holzapfel – and Uffz. Kleinschmager. (Vogel)

A port side view of "Chevron Triangle," the aircraft flown by Hptm. Rammelt, Kommandeur of II./JG 51, in early 1944. Beneath the cockpit is Rammelt's personal emblem, a large cudgel. Also note the Geschwader emblem of JG 51 on the engine cowling and the white Gruppe bar in front of the Kommandeur marking. (Rammelt)

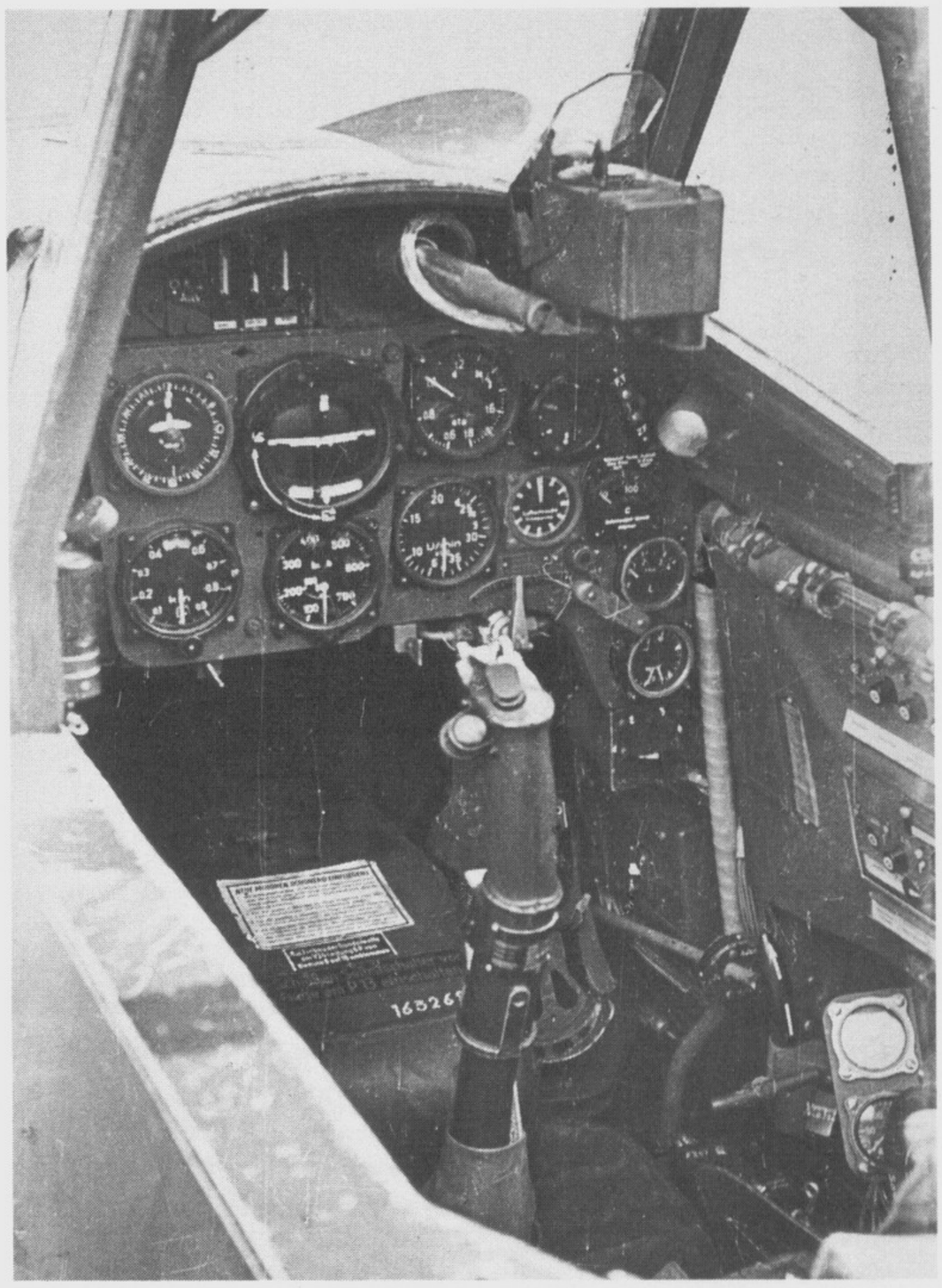


"White 3" of 1./JG 53, a G-6 with the Werknummer 160 083, was flown by Uffz. Tübel at the end of March/beginning of April 1944. The aircraft was lost on April 2, 1944, when Uffz. Tübel, who on his fourth combat mission, was shot down in a dogfight with P-38s over Yugoslavia and forced to bail out. He was subsequently captured by partisans and released in an exchange of prisoners on April 25, 1944. The machine wears the usual grey paint scheme with a narrow white fuselage band; the wingtips are also white. (Tübel)

A Schwarm of rocket-armed G-6 fighters of 2./JG 53 lined up in preparation for takeoff. This photo, too, was taken at Maniago in March 1944. (Vogel)

Two shots of "Yellow 7" of 6./JG 51. In May 1944 this aircraft sustained damage in combat with four-engined bombers while being flown by Ofhr. Sieckenius. Sieckenius made an emergency landing at Nisch in the burning machine, suffering minor injuries as a result. The effects of the fire are obvious. (Kühlein) Right: While the Messerschmitts of II./JG 51 wore the Geschwader emblem on the left side of the engine cowling, they carried the Gruppe emblem on the right side. (Kühlein)

Three shots of "White 7," the aircraft of Ofw. Kühlein of 4./JG 51, a G-6 with the Werknummer 163 269. These photos were taken at Radomir, Bulgaria in June 1944. Noteworthy is the painting of large "eyes" on the machine-gun bulges in front of the cockpit. (Kühlein) Below: "White 7" from the right side. In the center is Ofw. Kühlein, standing between several Bulgarians, who were allowed to inspect II./JG 51 at Radomir on the occasion of an "open house." (Kühlein)



Above: A look into the cockpit of "White 7." Note the numerous printed instructions on the engine cannon cover, the reflector gunsight ("Revi') and the flare port beneath the right windscreen side panel. (Kühlein)

"White 5," a G-6 of 4./JG 51 photographed at Nisch in May 1944, was the machine of Uffz. Reimet, seen here by his aircraft together with a member of the ground crew. (Kühlein)

Another G-6 of II./JG 51 was "Yellow 2" of 6. Staffel, seen here undergoing engine maintenance at Nisch, May 1944. Note the rare combination of tall antenna mast and Peilrufanlage navigation aid; also note that the Peilrufanlage's DF loop has been removed. (Kühlein)

This G-6 with the tactical marking "Chevron 2" belonged to the Gruppenstab of I./JG 52 in early 1944. In spite of the wintry weather the aircraft has retained its standard grey scheme. (Wiese)

Another G-6 of Stab I./JG 52, "Chevron 5 +." This "Gustav" also wears an unmodified grey paint scheme. Note that both aircraft have a DF loop behind the cockpit, unusual for machines serving in the East. (Wiese)

The G-6s of the Gruppenstab of I./JG 51 taxi out for a fighter-bomber sortie in early 1944. In contrast to the JG 52 machines, these "Gustavs" wear a white winter finish, with the underside of the engine cowling, propeller spinner, rudder and fuselage band in yellow. Beneath the fuselage of each aircraft is a 250-kg bomb mounted on an ETC 500 IXb bomb rack – Rüstsatz 1. (Emmert)

Lt. Wolfrum of 5./JG 52, photographed at Gramatikovo in March 1944 in the cockpit of his G-6, WNr. 411 777, "Black 15." This aircraft was lost on April 15, 1944, after being hit in combat with Il-2s. The pilot crash-landed his damaged aircraft at Khersonyes airfield in the Crimea, where it was destroyed by fire. Here too the DF loop is visible behind the cockpit. (Emmert)

Lt. Wolfrum congratulates Lt. Ewald on his return from a successful sortie over the Crimea in March 1944. Beneath the cockpit of this G-6 is Ewald's personal emblem – the 'E-Sau' – and partially visible behind it is the Stab chevron. (Emmert)

Right: "Brown 11," a G-6 of 3./JG 51 with the Werknummer 410 288, during refuelling, photographed during the spring thaw in the East, early 1944. This aircraft also wears a white winter finish with prominent yellow markings; the forward sides of the propeller blades also appear to be yellow. (Emmert)

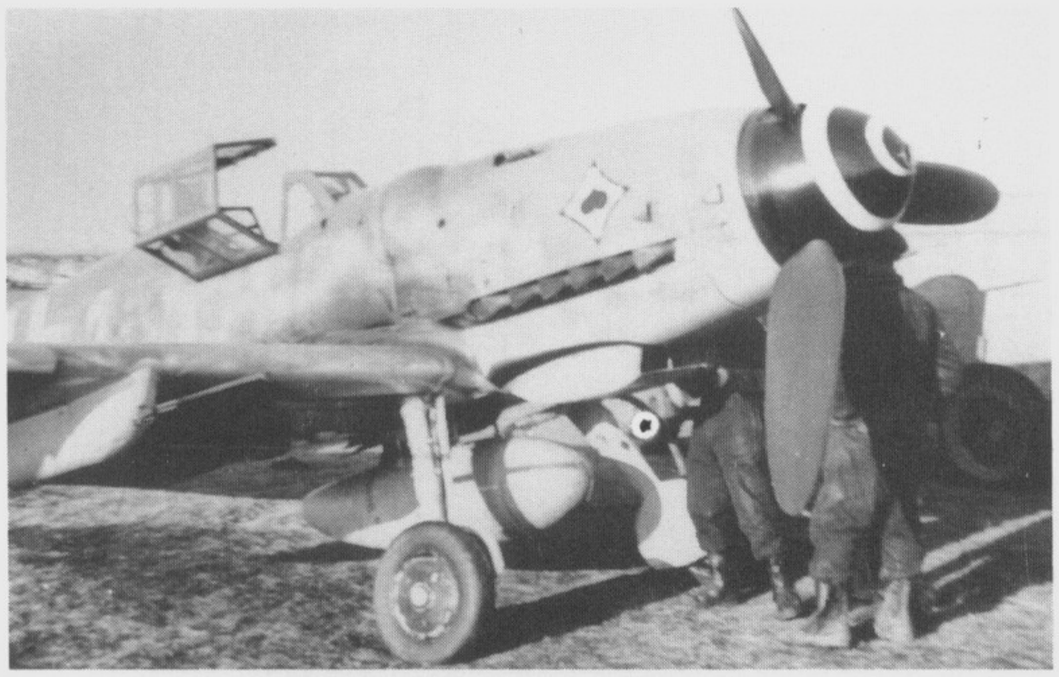
Two G-6s of 8./JG 51 taxi out for takeoff on an airfield in the central sector of the Eastern Front in the summer of 1944. While the aircraft in the foreground, "Black 5," lacks a DF loop, that of the aircraft in the background, "Black 8," is clearly visible. Note the combination of a white Gruppe bar and black aircraft number, a standard practice of JG 51. (Bundesarchiv)

Two shots of "Black 2" of 8./JG 51, a G-6 with gondola weapons, which was photographed parked beneath trees at the edge of a forward airfield in the summer of 1944. This aircraft has been fitted with a clear-view hood, the so-called "Erla-Haube." (Bundesarchiv)

The Staffelkapitän of 8./JG 51, Lt. Hafner, photographed after returning from a mission in the summer of 1944 while still in the cockpit of his aircraft "Black 1," a G-6 with the Werknummer 165 350. This aircraft also has an "Erla-Haube," details of which, in particular the mounting of the antenna mast on the canopy frame, may clearly be seen. (Bundesarchiv)

Lt. Hafner (2nd from left) in front of his aircraft "Black 1.' (Bundesarchiv)

Application of unit markings on WNr. 440 117, a G-6, soon after its delivery to III./JG 3 at Bad Wörishofen in early 1944. The aircraft was issued to 9. Staffel where it became "Yellow 7." On April 12, 1944, the aircraft was damaged in combat with B-24s while being flown by Lt. Stein, Staffelführer of 9./JG 3. Stein attempted an emergency landing at Leobersdorf airfield but the engine seized and he crashed, losing his life. (Makowski)

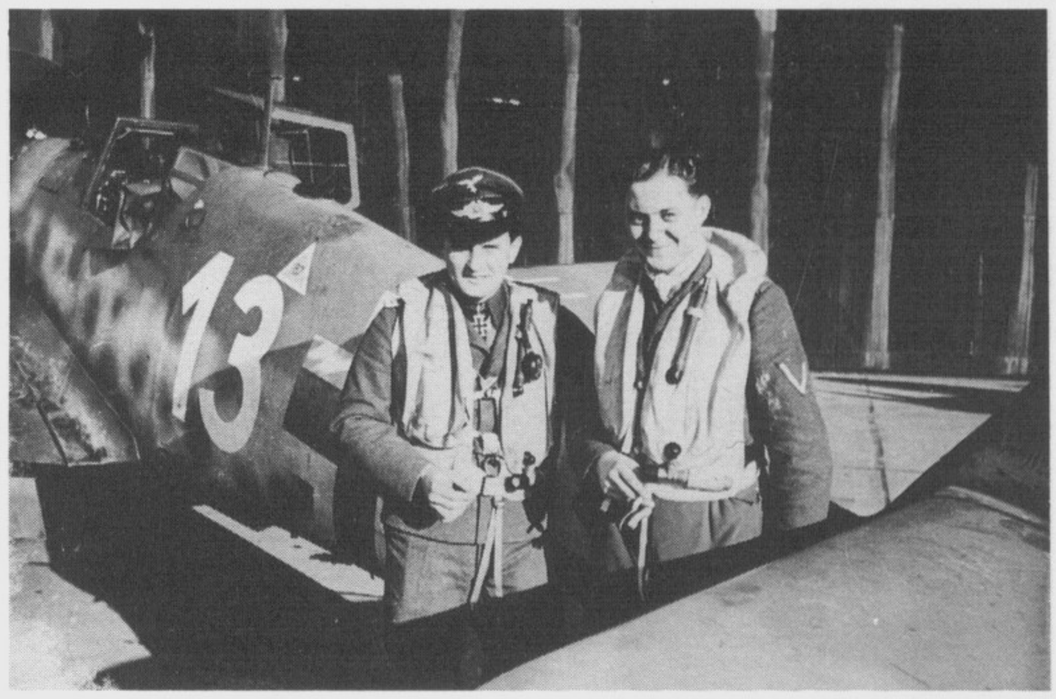


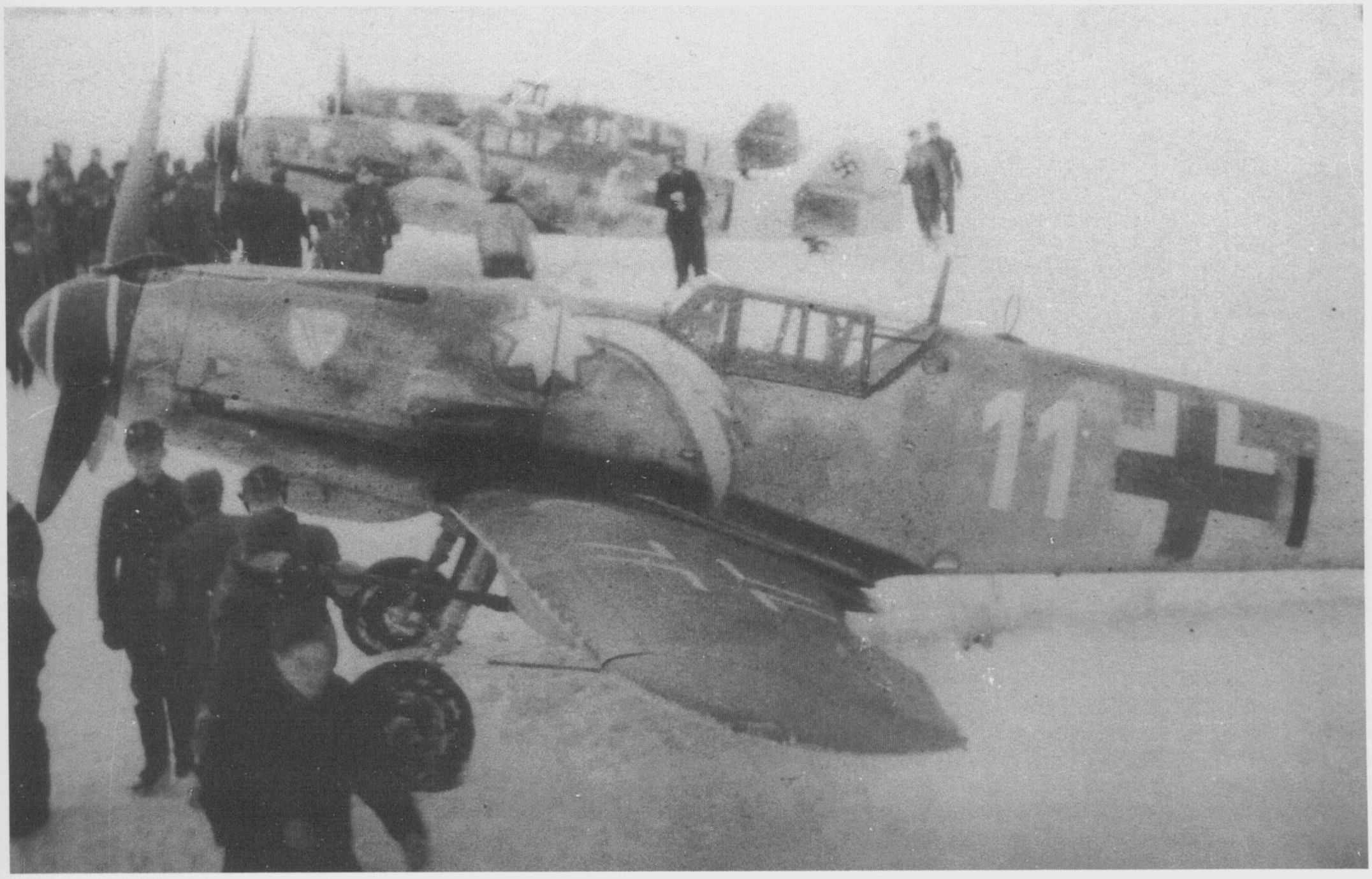
Two photos of "Yellow 1," the aircraft of Lt. Hammer, Staffelführer of 6./JG 53, taken at Vienna-Seyring in January 1944. The aircraft is a G-6 with gondola-mounted cannon, WNr. 440 190. (Hammer) Right: The same machine on February 12, 1944, when Lt. Hammer received a visit from his mother. "Yellow 1" wears a finely-mottled grey finish as well as the red fuselage band standard on the aircraft of II./JG 53 at that time. (Hammer)

Two pilots of 6./JG 53, left Ofw. Feyerlein and right Ofw. Ehrenberger, the latter one of the "Experten" of II./JG 53, photographed in front of a G-6 in February 1944. Note the very unusual antenna lead-in into the fuselage beneath the DF loop and the "halved" head armor, which lacks the usual arched upper section. (Reiterer)

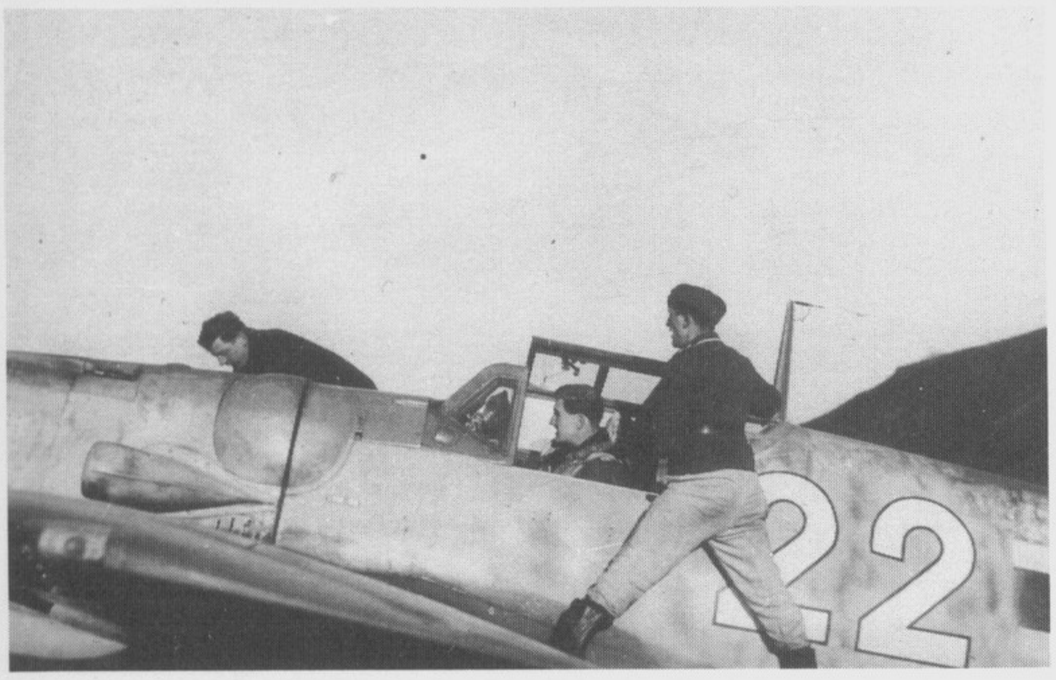
Ofw. Ehrenberger by the tail of his G-6, on which part of the aircraft's Werknummer, 140 ??0, is just visible. 48 victory bars may be seen on the white rudder, which indicates the aircraft of a Schwarmführer. Also note the broad red fuselage band with the yellow Gruppe bar superimposed. (Reiterer)

"White 13" of 4./JG 3, a Bf 109 G-6 with the Werknummer 411 279, photographed in February 1944 at Rotenburg/ Wümme. The machine was lost on February 21, 1944, when Gefr. Kupka was wounded and forced to abandon the aircraft after the engine cannon exploded in the course of an air battle. Seen here on the left is Ofw. Rüffler, one of the "Experten" of II./JG 3, and on the right Gefr. Kupka. (Wahl)



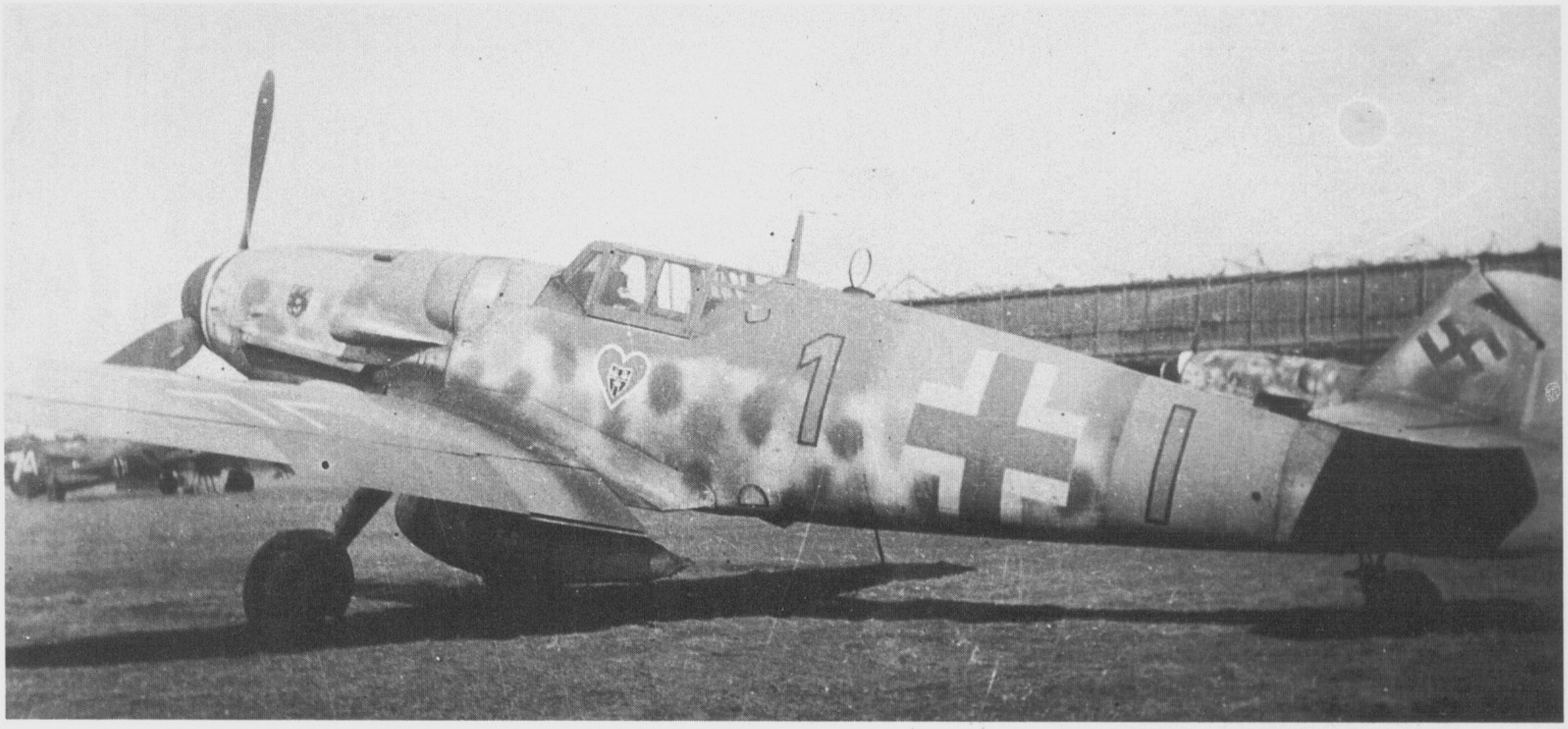


Three G-6s of 7./JG 3, photographed at the beginning of 1944 on snow-covered Bad Wörishofen airfield. All three machines wear the eye-catching design on their machine-gun bulges commonly seen on the aircraft of III./JG 3 at that time, in this case a white comet outlined in black whose tail extends back to beneath the cockpit. Also note the broad, white Reichsverteidigung fuselage band introduced by III./JG 3 in January 1944, the landing gear doors removed on account of the winter conditions and the gondola cannon. (Makowski)

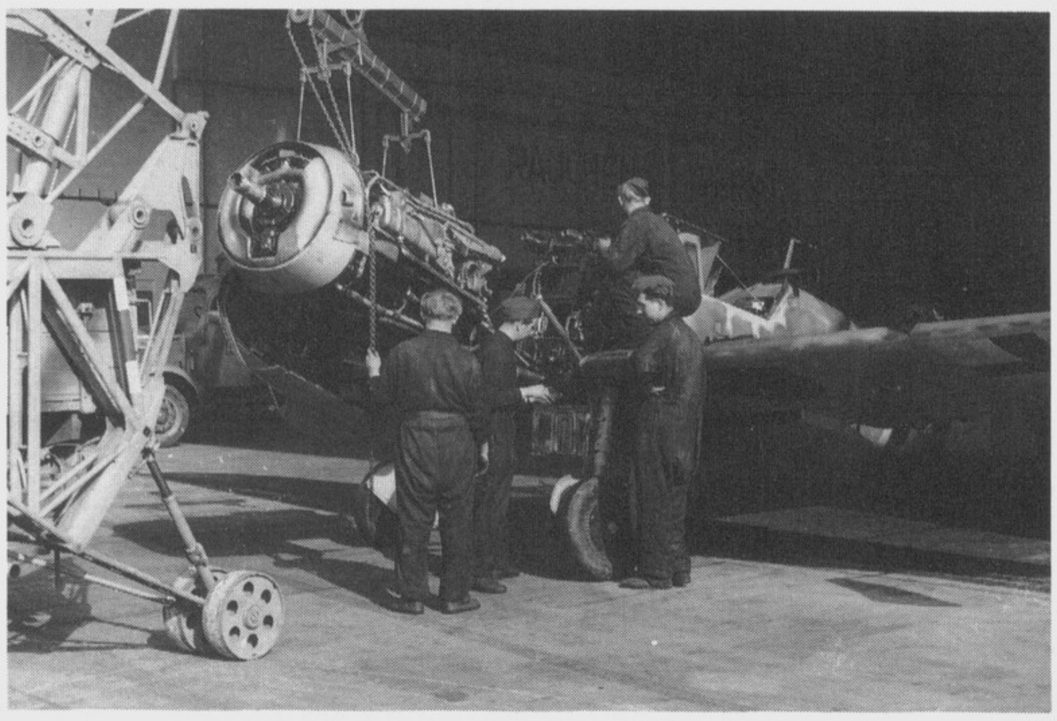


The cockpit section of "White 22," a G-6 of 1./JG 3, photographed somewhere in Germany in early 1944. The aircraft wears an unusual mottled finish, the overall effect of which is quite bright. Note the antenna lead on the tall antenna mast. (Charles)

Another G-6 of 1./JG 3, which was active in the defense of the Reich at the beginning of 1944. The aircraft wears the very unusual code "White 01." Also worthy of note are the white Reichsverteidigung band, which has been oversprayed in gray in the area of the fuselage spine, the combination of the tall antenna mast and DF loop, and the Erla-Haube. (Charles)



"Yellow 1," a G-6 with the Werknummer 440 141, was the machine of Oblt. Schilling, the Staffelkapitän of 9./JG 54. The photograph was taken at Ludwigslust air base in February 1944. This aircraft was lost on February 20, 1944, when Oblt. Schilling was shot down and wounded. "Yellow 1" wears a rather heavily-mottled grey scheme over which several darker – possibly dark green – spots have been added. Behind the Balkenkreuz is the blue Reichsverteidigung band of III./JG 54. Also noteworthy are the emblems carried by the aircraft: on the engine cowling is the devil's head of 9./JG 54 and beneath the cockpit the green heart of JG 54 enclosing the emblem of III./JG 54. (Ungar)

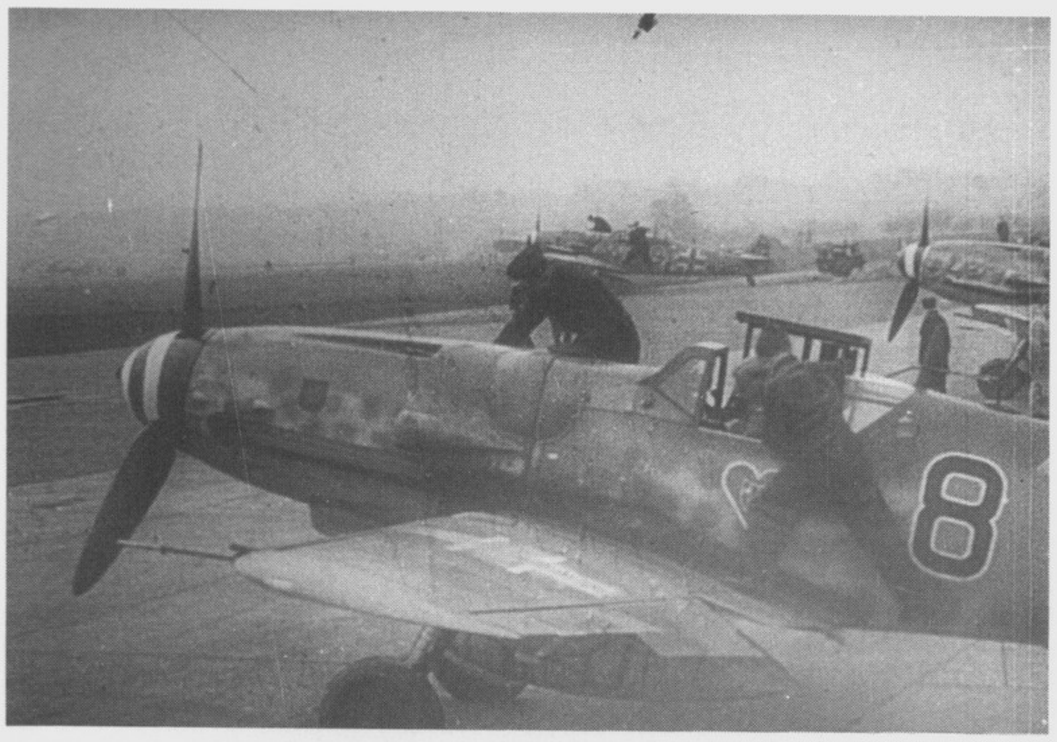


Changing the engine of a G-6 of II./JG 3 in February 1944. Note the unusual dappled finish around the cockpit and the Erla-Haube with the short antenna mast mounted on the fuselage spine. Part of the black Gruppe bar is just visible below the wing. (Wahl)

Photographed on the same occasion was "Yellow 6" of 9./JG 54, flown by Fw. Ungar. The man in the cockpit is a member of the ground crew. Once again the unit emblems are clearly visible. (Ungar)

A view of the air base at Fels am Wagram on which are parked the G-6s of I./JG 27, early 1944. In the foreground is "White 8," a "gunboat" of 1. Staffel. Like the other aircraft, this machine wears the green Reichsverteidigung band introduced by I./JG 27 in January 1944. (Rupp)

Once again the G-6s of I./JG 27 at Fels am Wagram. The greatly varying styles of the grey scheme are noteworthy, as is the additional aircraft number – "Black 1" – on the engine cowling of "White 23" in the right foreground. This aircraft was part of the Verbandsführerlehrgang which was established and operated with I/JG 27 in the spring of 1944. (Rupp)



Two photos of "Black 8," a G-6 of 8./JG 54 with the Werknummer 26 048, photographed at an air base in Germany in early 1944. This aircraft was lost on April 9, 1944, when Uffz. Sahl was shot down and killed in combat over northern Germany. (Deutsche Wochenschau) Right: Noteworthy marking details include the blue fuselage band, the vertical bar which had in the meantime replaced the wavy line as Gruppe symbol in III./JG 54, the Geschwader emblem with enclosed Gruppe emblem, the Staffel emblem of 8./JG 54 on the engine cowling and the yellow cowling underside. (Deutsche Wochenschau)

Two shots of the G-6 of Lt. Stigler of 12./JG 27 at Graz in April 1944. A wavy line has meanwhile replaced the two horizontal bars as the Gruppe symbol. Approximately 24 victory bars are marked on the white rudder, which identifies the machine as that of a Schwarmführer. (Stigler) Right: Visible beneath the cockpit of Lt. Stigler's "Gustav" is his personal emblem, an apple with a snake and his wife's name, Eva. (Stigler)

"White 1" of 7./JG 54, a G-6 with the Werknummer 15 573, was the aircraft of Oblt. Klemm, the Staffelkapitän. Klemm was wounded in this aircraft on April 9, 1944, in an air battle near Kiel. Here too the combination of Geschwader and Gruppe emblems is noticeable, as is the Staffel emblem on the engine cowling. The aircraft has the short antenna mast but the DF loop is absent. Since it was already an "elderly" machine, as indicated by its Werknummer, the short antenna mast may have been the result of a modification, while a DF loop was never planned. (Deutsche Wochenschau)

Four pilots of 6./JG 53, photographed with "Yellow 13," a Bf 109 G-6, at Frankfurt-Eschborn air base at the beginning of April 1944. The aircraft has been retrofitted with an Erla-Haube in which all-metal head armor has obviously been installed, and a tall antenna mast on the fuselage spine behind the cockpit. (Kurz)

Servicing the engine of a G-6 of 3./JG 27 on an airfield in Germany, early 1944. Clearly visible here are details of the retrofitted Erla-Haube, especially of the tubular frame which ran around the rear edge of the cockpit and which held the base for the antenna mast. In the foreground one can see the left gondola cannon. (Rupp)

Major Mietusch, Gruppenkommandeur of III./JG 26, after a sortie in early 1944. Once again details of the retrofitted Erla-Haube may be seen, including the tubular frame on the rear wall of the cockpit and the antenna mast on the fuselage spine. Also note the unusual head armor and the light spot beneath the cockpit, left behind following removal of the sun umbrella clip holder. (Bundesarchiv)

Major Mietusch in another G-6 of the Gruppenstab of III./JG 26 coded "Black 20." Details of the retrofitted Erla-Haube are also visible in this photo. Note the tall antenna mast and absence of a DF loop. (Bundesarchiv)

"White 1," a G-6 of 9./JG 26, taxis on an airfield somewhere in the West in early 1944. This aircraft has the raised tail unit with a yellow rudder. (Bundesarchiv)

Lt. Kempf prepares for another sortie in his aircraft "White 9," a G-6 of 9./JG 26. This aircraft has also been retrofitted with an Erla-Haube, in the course of which the antenna mast has been mounted on the fuselage spine. These photographs were probably taken at Nancy at the end of April 1944. (Bundesarchiv)

A G-6 of 11./JG 26 on the taxiway of a forward airfield in the West, photographed in late spring 1944. The aircraft has an Erla-Haube and clearly displays a yellow cowling underside. (Bundesarchiv)

This "gunboat" – very probably a G-6 – was flown by the Industry Protection Staffel (Industrieschutzstaffel) in 1944. Noteworthy are the small wheel well doors. These were originally planned for the G-Series but were never introduced into series production. (Radinger)

Two shots of "White 1," the G-6 of the Staffelkapitän of 4./JG 5, Oblt. Schwanecke. These photos were taken at Salzwedel on July 19, 1944, following II./JG 5's transfer back to Germany from defensive actions against the Allied invasion in France. The aircraft has a raised tail unit; also note the emblem of II./JG 5 on the engine cowling. (Petrick)

Two photos of "Black 11," a G-6 of 8./JG 53, at Bad Lippspringe airfield at the end of July 1944. The aircraft wears the usual grey camouflage scheme with a yellow rudder and yellow cowling underside. (Girnth)

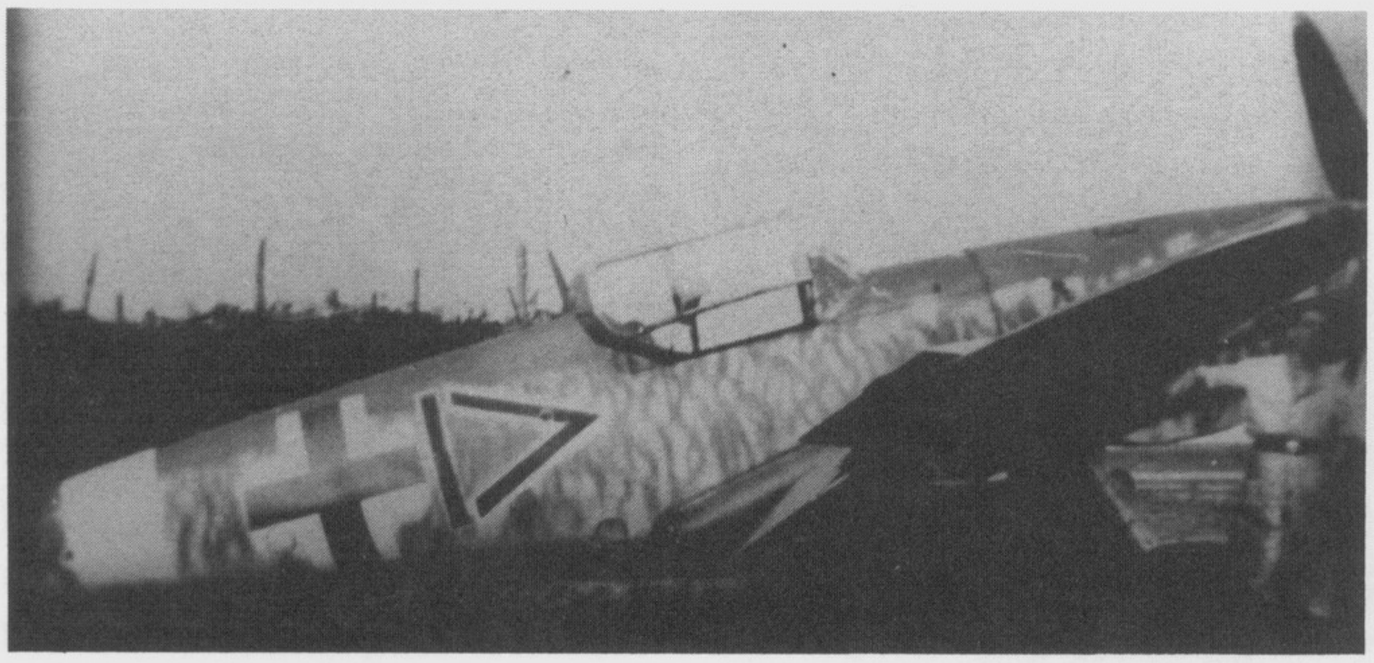
Uffz. Girnth of 9./JG 53 in front of his G-6 at Bad Lippspringe, end of July 1944. Noteworthy details on this machine are the Erla-Haube and especially the Morane antenna for the FuG 16 ZY beneath the left wing. (Girnth)

A G-6 of 4./JG 53, "White 5," photographed in August 1944 at Hustedt, where II./JG 53 was resting and refitting after its defensive actions against the Allied invasion in France. Several days after this photo was taken the aircraft was lost on a practice flight while being flown by Uffz. Ernst. A connecting rod broke which led to an engine fire, and Ernst was forced to bail out. The aircraft wears a lightly-mottled grey scheme with a broad, probably yellow, tail band. (Ernst)

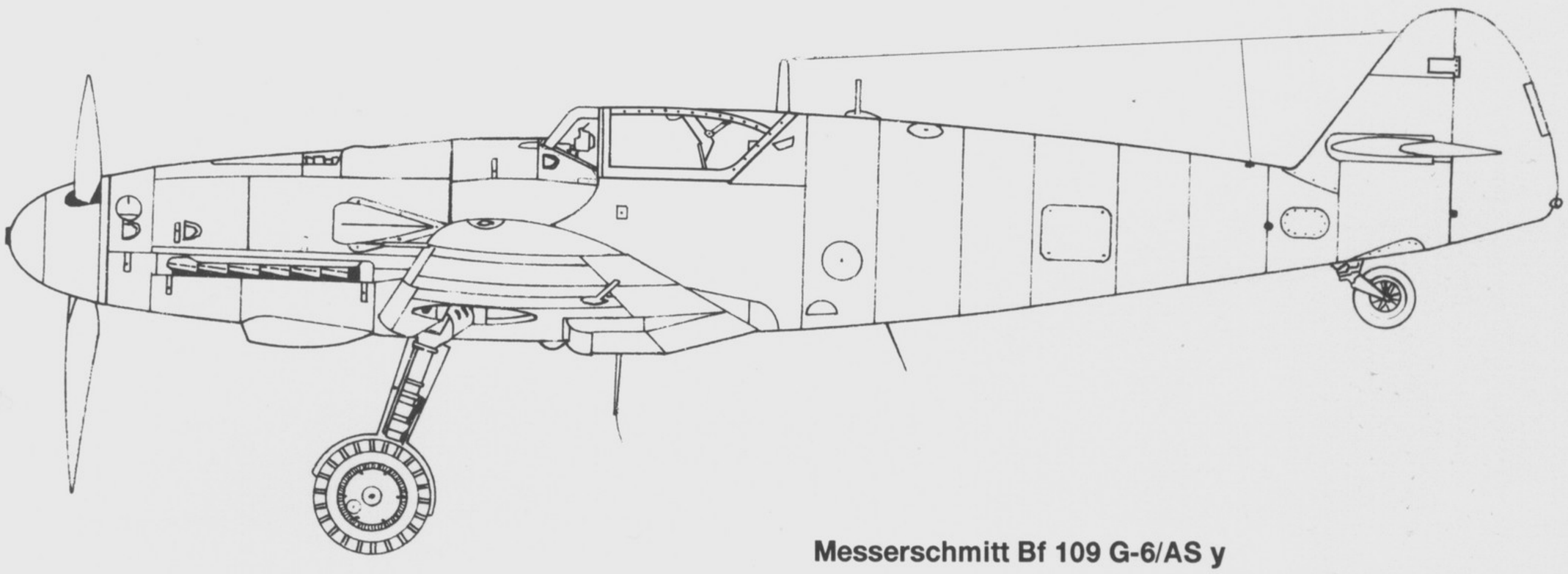
This G-6 with the Werknummer 166 155 was forced to make an emergency landing while being ferried to its designated unit. The incident took place on July 25, 1944 near Wolfring, the ferry-pilot Paul Bergmann remained unhurt. Behind the Balkenkreuz may be seen the last three numbers of the aircraft's Werknummer. The complete Werknummer appears on the lower edge of the rudder, which was standard practice on aircraft from production batch 166 000. (Koos)

This "Gustav" – probably a G-6 – may have belonged to IV./JG 27. The machine has an Erla-Haube and the raised tail unit. Also noteworthy is the old, partly overpainted marking in front of the wavy line; visible there is a short, horizontal bar with the inscription "Margot." (Petrick)

"Black 21," which was found at St. Trond by Allied troops in October 1944, probably belonged to the Gruppenstab of III./JG 26. Like Major Mietusch's machine, which was illustrated earlier, this G-6 has a retrofitted Erla-Haube with the antenna mast on the fuselage spine. (Petrick)



A G-6/AS of the Gruppenstab of I./JG 3, photographed in May/June 1944. The original overall light grey scheme worn by the G-6/AS fighters of III./JG 1 and I./JG 3 has undergone considerable repainting, resulting in a dark grey fuselage spine and dense stripes on the fuselage sides. Note the white Reichsverteidigung band. (Charles)



Messerschmitt Bf 109 G-6/AS y

This aircraft is probably a G-6/AS of 2./JG 3 which was forced to make a belly landing after sustaining battle damage in late spring 1944. "Black 27" wears the light grey finish standard on early G-6/AS machines. (Payne)

Bf 109 G-5

The first G-5 fighters began reaching operational units in the occupied western territories engaged in Reich defense duties in early autumn 1943. Since, at first, only very few examples of the new version were delivered, they served alongside G-6 models within the same units. Among the first recipients of the G-5 were I. and II./JG 3, III./JG 1 and II./JG 11. In November 1943 a few G-5s reached III./JG 54 and JGr. 25. One of the first losses among these early G-5s occurred on 21 September 1943 when Uffz. Scheibe of 5./JG 3 was injured while making an emergency landing in *Werknummer* 15961.

The first G-5s were not built as a homogenous series, rather they were interspersed among G-6s on the production line. Individual G-5s are known within *Werknummer* blocks:

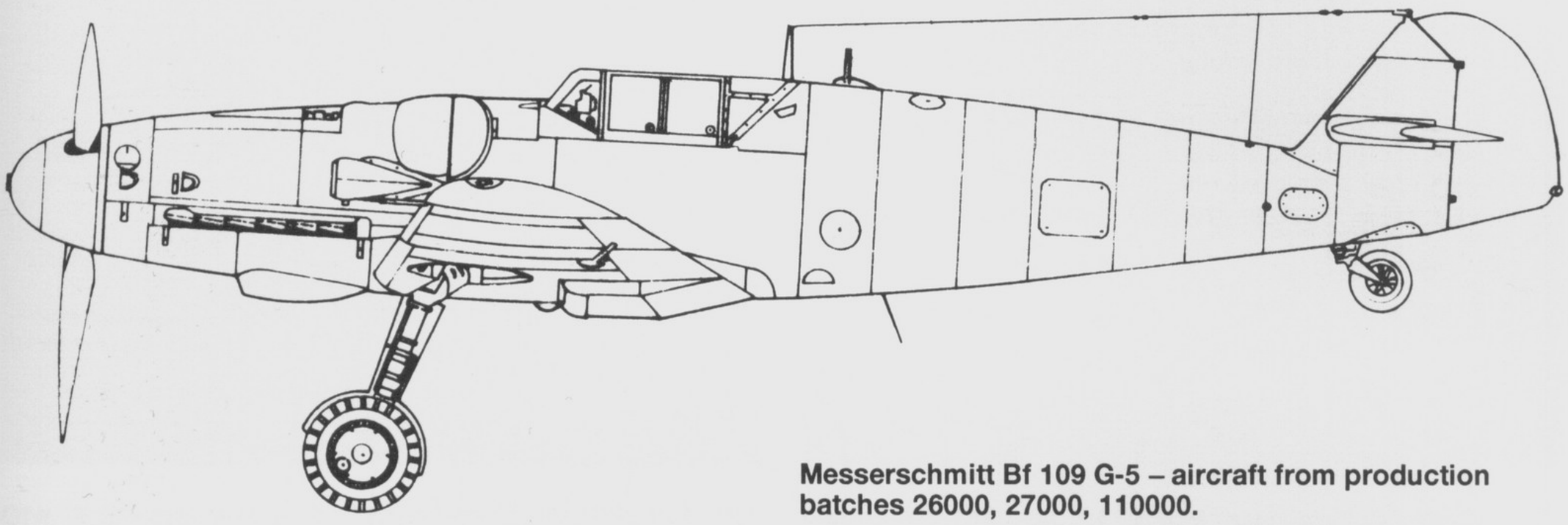
15200 – 16000
26000 – 26400
27000 – 27200

A small G-5 series was laid down in late 1943, which reached the fighter units in the *Reichsverteidigung* and in the West in December 1943. These machines were also built by Erla and were allocated the *Werknummer* block:

110001 - 110576 Erla 11.43 - 06.44

Following numerous changes in the underlying construction program a total of 475 G-5 fighters were built. Monthly production was accordingly low and lasted from May 1943 to August 1944.

The Bf 109 G-5 was flown by III./JG 1, II./JG 2, I., II./JG 3, II./JG 11, III./JG 26, II./JG 27, I./JG 300, I.,



Messerschmitt Bf 109 G-5 – aircraft from production batches 26000, 27000, 110000.

Two pilots of 1./Ekdo.25, left Uffz. Ulrich and right Uffz. Stawinoga, in front of G-5 "White 21," photographed in September 1943 at Achmer. The identifying features of the pressurized G-5 series are clearly visible, namely the vertical head armor and the silicagel pellets in the canopy glazing. (Geyer)

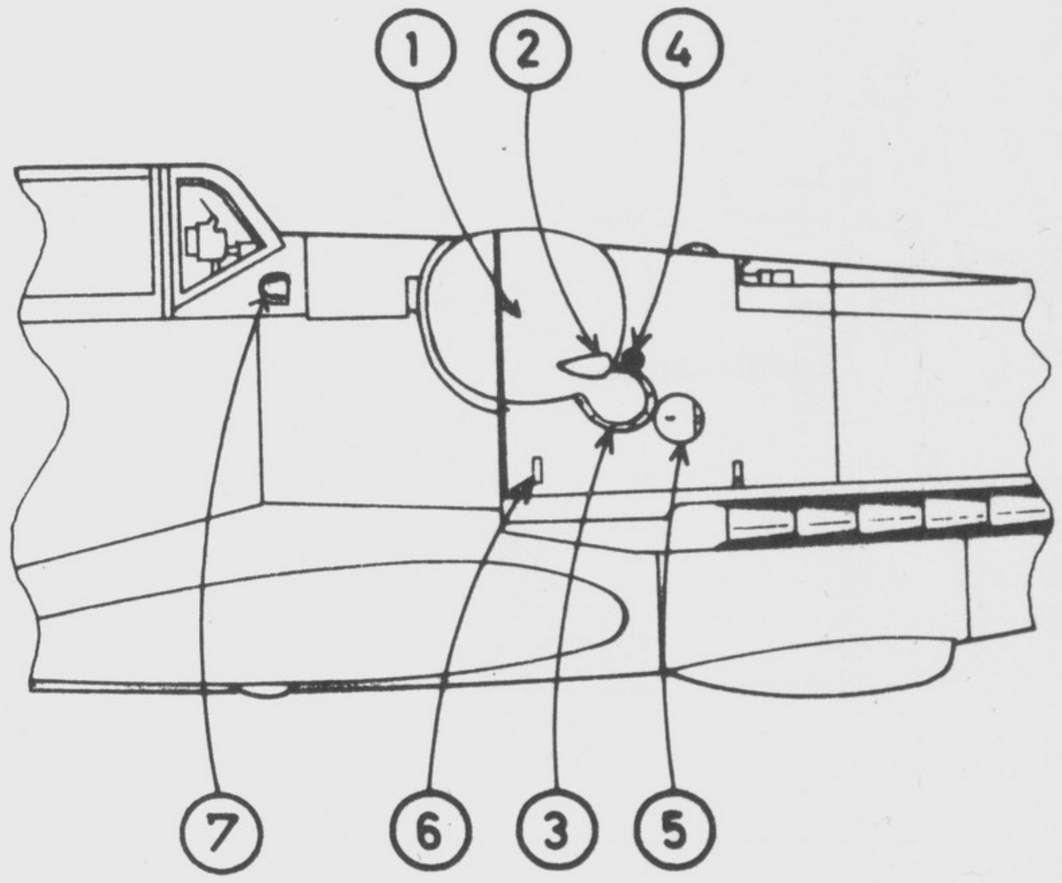
II./JG 302, II./NJG 11, II., III./EJG 1, I./EJG 2, NAG 2, NAG 11, NAG 12, NAG 13, (F)/123.

In general the G-5 resembled the G-6 in all respects except that it had a pressurized cockpit. With the adoption of MG 131 heavy machine-guns in place of the earlier MG 17s there was no longer room for the pressurization compressor on the left, upper side of the engine block. It was therefore relocated to the right side of the engine and was responsible for the small teardrop-shaped fairing (see drawing top of page 136) seen beneath the bulge for the MG 131. The compressor inlet scoop was moved from the left

It is likely that these G-5s, which were photographed at an air base in Germany in October 1943, belonged to 1./JG 50. Noteworthy in addition to the densely-mottled grey finish is the location of the white aircraft numbers, on the rudders of the aircraft. The vertical head armor is clearly visible on aircraft "1" and "2." (Deutsche Wochenschau)

Right side of Bf 109 G-5 fuselage:

(1) Fairing over MG 131 spent belt chute
(2) Compressor intake scoop
(3) Compressor fairing
(4) Access to socket for starter hand crank
(5) Access cover for cold-start equipment external socket
(6) Engine compartment vent
(7) Fairing over negative pressure relief valve



Two shots of "Black 6" of 5./JG 3, a G-5 with the Werknummer 26 090, photographed in October 1943, when II./JG 3 was stationed at Amsterdam-Schipol. Left: Lt. Münster stands in front of his aircraft. Visible beneath the fuselage is the antenna for the FuG 16 ZY. (Wahl) Above: Lt. Münster describes an air battle for a mechanic. In the background once again "Black 6." The overpainted remains of the aircraft's Werknummer are visible in the fuselage Balkenkreuz. Also discernable are the vertical head armor and the silicagel pellets. (Wahl)

side of the cowling to a position above the compressor fairing. Although totally superfluous for non-pressurized machines, the compressor fairing was retained by many later G-6 and G-14 models, often without the inlet scoop, however.

A number of G-5s were retrofitted with the DB 605 AS engine. Erla's Antwerp plant was responsible for the conversions, and a total of 76 G-5/AS and 100 G-5/R2/AS machines were supposed to be built at the facility. By June 30, 1944, only 16 of the latter batch had been delivered, and it is questionable whether the remaining 84 aircraft were completed. At least some of the aircraft converted to take the AS engine lost their cockpit pressurization as a result.

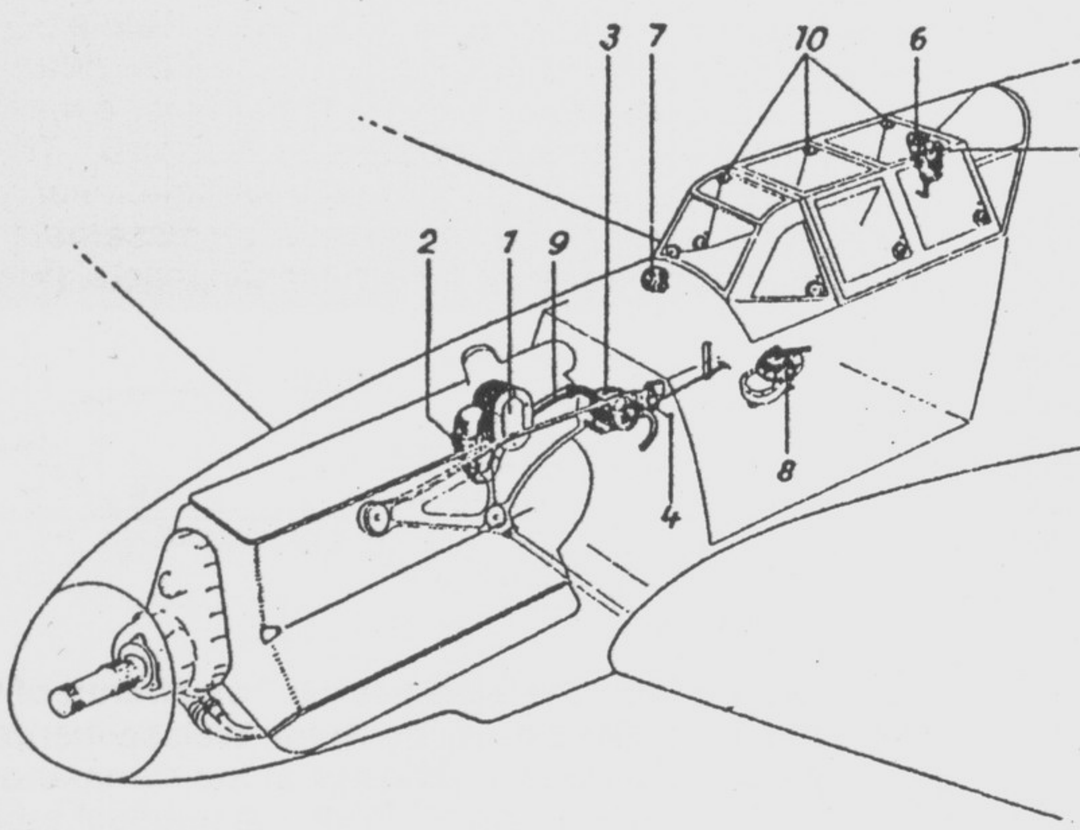
Ofw. Grünberg, one of the "Experten" of II./JG 3, in front of his G-5. Here too the details of the pressurized cockpit may be seen clearly. (Wahl)

A pilot of 5./JG 3 on the engine cowling of his G-5 in October 1943 at Schipol. This G-5 has the tall antenna mast while the DF loop is absent. Also note the Geschwader emblem, which contrary to normal practice in II./JG 3 faces in the "proper" direction, and the red dot beneath it, as well as the aircraft number which consists of a black outline. (Wahl)

Some G-5s were equipped with GM-1 boost as the G-5/U2; unlike the G-6/U2, where the pressure bottles were installed in the rear fuselage, those of the G-5/U2 were located in the right wing.

The G-5 was intended to accept the usual *Rüstsätze*. As was the case with the G-6, a small number of G-5s were fitted with the FuG 16zy and its associated antenna beneath the fuselage, receiving the designation G-5 Y. Finally, the G-5 could also receive the standard tropical equipment, although at this time not a single machine is known to have actually been so equipped.

Apart from six test machines for the proposed Bf 109 H high-altitude fighter variant, the G-5 was the last Bf 109 with a pressurized cockpit; subsequent production series dispensed with this feature completely.



G-5 pressurization equipment (from handbook). In contrast to the G-1, the G-5's air compressor was transferred to the right engine bearer. (1) air compressor with intake scoop on right side of engine cowling, (2) relief valve, (3) respirable air filter, (4) three-way cock, (5) pressurizing valve, (6) high pressure relief valve, (7) negative pressure relief valve, (8) quick-action compensating valve, (9) pressure line, (10) silicagel cartridges.

Left: Fw. Hecker of 9./JG 54 in his aircraft "Yellow 11," a G-5 with the Werknummer 27 119, photographed at Ludwigslust in February 1944. The aircraft was originally flown by Fw. Ungar, who took charge of the machine on November 4, 1943, and flew it regularly until February 10, 1944. WNr. 27 119 was lost on April 8, 1944, when Uffz. Kroll was shot down and wounded in the Lüneburg area. "Yellow 11" wears a very bright, lightly-mottled finish with the blue Reichsverteidigung band of III./JG 54. Propeller spinner and cowling underside are yellow. Note the unit emblems and the gun camera opening in the leading edge of the left wing. (Ungar)

Below: This G-5 was flown by 8./JG 54 as "Black 11" at the beginning of 1944. Note the Staffel emblem on the engine cowling and the vertical head armor. (Hermann)

Above left and left: "Double Chevron," an aircraft of the Gruppenstab of I./JG 5 flown by Hptm. Weissenberger during the Allied invasion of France in the summer of 1944, may have been a G-5/AS. Note the unusual tube on the head armor in the Erla-Haube and the bulged fairing in front of the cockpit. (Lorant, Bundesarchiv)

Bf 109 G-8

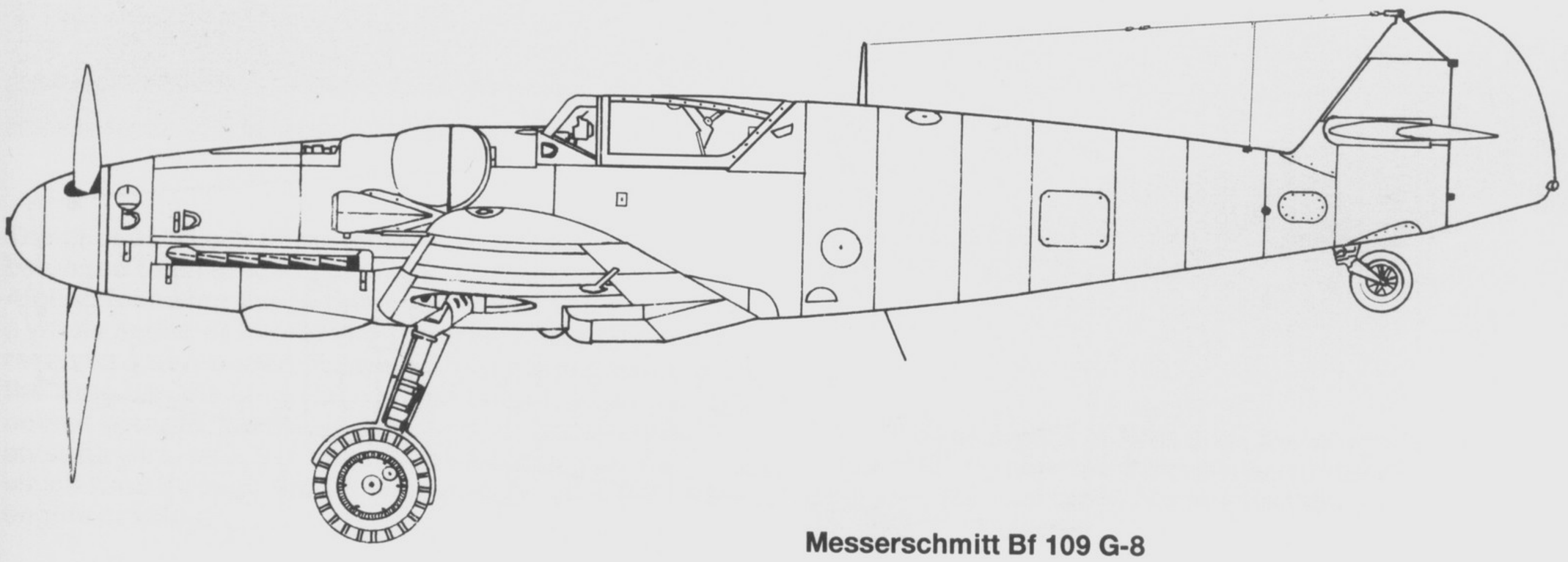
In order to meet an urgent requirement for a fast, single-engined, short-range reconnaissance aircraft, Messerschmitt developed a tactical reconnaissance version of the Bf 109 G-6, which received the designation G-8. Production of the G-8, which was built exclusively by WNF, began in August 1943 and was supposed to continue until early 1945. The following *Werknummer* blocks are known:

200000 – 200800
201000 – 201900
202000 – 202200
710000 – 710300

Several loss reports exist for G-8s in the 230,000 to 230,900 *Werknummer* range. However this may be a case of the incorrect type being listed, as *Werknummer* block 230000 was reserved for a batch of the G-6/R2 variant, production of which began at WNF in autumn 1944.

Lt. Bärwolf, a pilot of 3./NAG 13, taxis out for takeoff in "Yellow 13," a G-8 with the Werknummer 200 046, at the forward airfield of Carné in June 1944. Bärwolf and his wingman, Ogfr. Maurer, were probably the first members of the Luftwaffe over the Normandy invasion site, flying an armed reconnaissance mission over the Allied beachheads on the morning of June 6, 1944. On July 19, 1944, Bärwolf was shot down by flak in this aircraft over the American breakthrough area near Avranches and taken prisoner. (Bärwolf)

Pilots of 3./NAG 2 in front of "Yellow 3," a Bf 109 G-8 with a Werknummer in the 200 000 range. The aircraft wears a densely-mottled grey scheme on which the aircraft number is barely visible. Also note the Erla-Haube with the antenna mast and DF loop behind, as well as the large digits of the Werknummer on the fin. (Petrick)



Messerschmitt Bf 109 G-8

"White 6" of 2./NAG 11 photographed after returning from the 4,000th sortie by this tactical reconnaissance Staffel, Italy 1944. The aircraft may be a G-8/R5, with which NAG 11 was gradually equipped beginning in July 1944. The aircraft wears a grey finish with white fuselage band and a very small code number. Contrary to normal practice, in NAG 11 the aircraft of 1. Staffel used black and 2. Staffel white code numbers. (Bundesarchiv) Right: Congratulations for the pilot of "White 6" and his wingman on the unit's 4,000th sortie. Between the pilots one can see the Staffel emblem of 2./NAG 11. (Bundesarchiv)

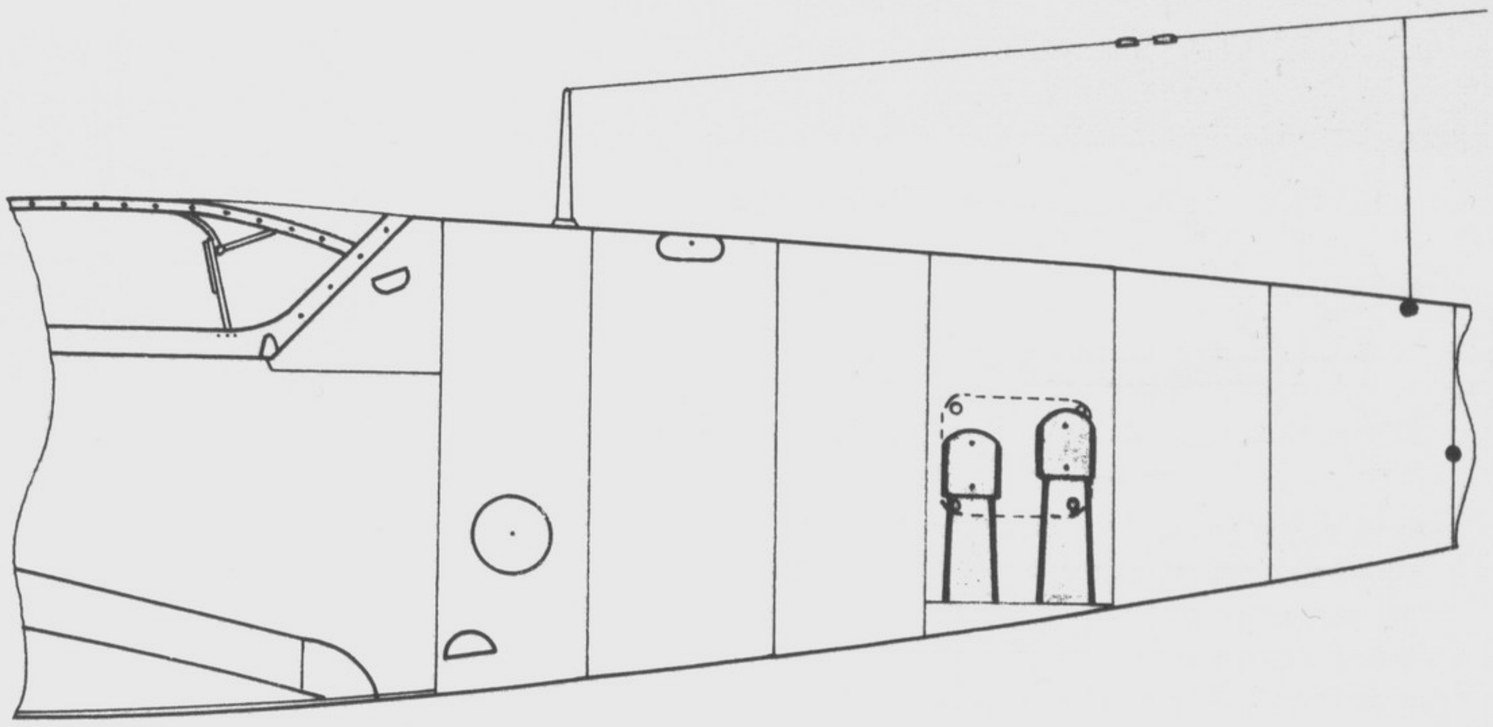
By the time production of the G-8 ended in May 1944, a total of 167 aircraft had been built. As well, 739 of the G-8/R5 variant were completed by December 31, 1945. The number of machines delivered in 1945 is unknown.

The G-8 began appearing at the front in November 1943 and became the standard equipment of most tactical reconnaissance *Gruppen*. In detail, the aircraft was flown by NAG 1, NAG 2, NAG 3, NAG 4, NAG 5, NAG 8, NAG 11, NAG 12, NAG 13, NAG 14, NAG 15 and NAG 32.

As befitted its origins, the G-8 was generally similar to the G-6. Compared to the G-6 the G-8 exhibited the following changes: fuselage frames 5 and 6 were reinforced with cross-members to accept the camera equipment and two apertures for the camera lenses were cut in the fuselage bottom. The photographic equipment installed in the basic G-8 consisted of either two Rb 12.5/7 x 9 cameras or one Rb 32/7 x 9. In addition to the fuselage camera installation, early G-8s had a Robot II camera installed in the leading edge of the left wing. This camera was designed to take photographs from an altitude of 2,000 meters. The cameras did not prove themselves in action and were soon removed at the front and were deleted from later production aircraft.

Other than the camera installation the G-8 differed little from the G-6; the majority of aircraft were delivered with the early fin and rudder. The G-8 initially retained the three-piece canopy but this was supplemented by the *Erla-Haube* as production went on. In place of the FuG 16 of the fighter version the

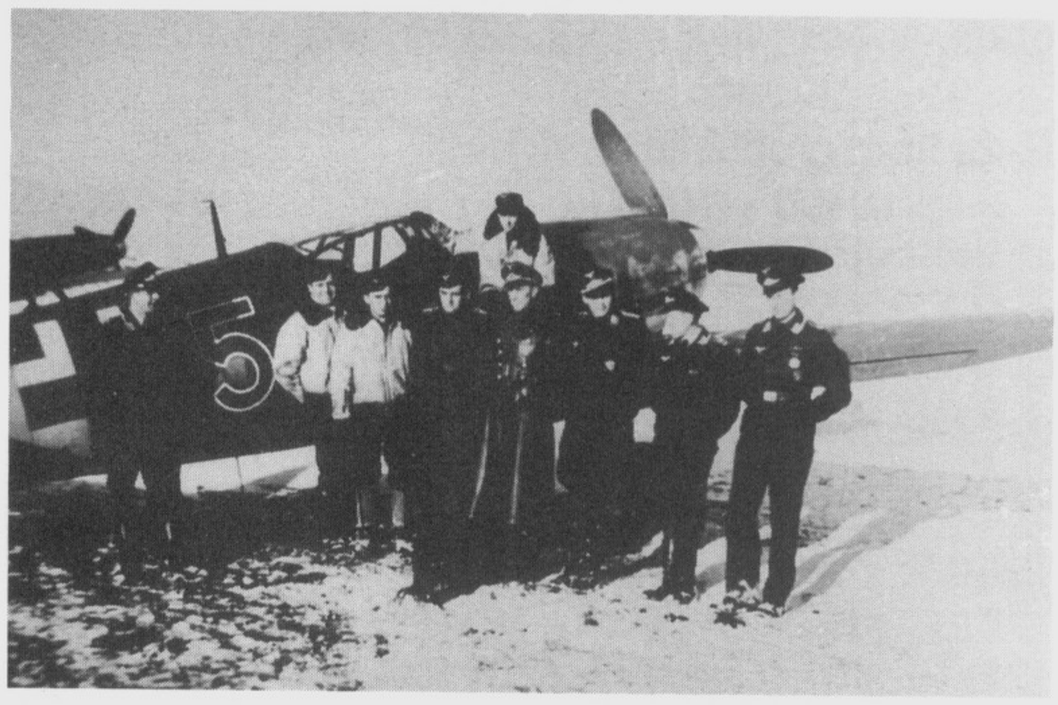
Bf 109 G-8 camera installation.



G-8 was equipped with the FuG 17. The antenna mast was transferred from the rear of the cockpit to the fuselage spine between Frames 3 and 4 on a number of aircraft, apparently in conjunction with the installation of the camera equipment.

Various modification and conversion kits were also planned for the G-8. Aircraft retrofitted with the GM-1 installation were designated G-8/U2, while the addition of MW-50 resulted in the G-8/U3. The external indications of these two *Umrüstsätze* were the same as on the G-6. The G-8/R5 differed from the basic G-8 only in the replacement of the FuG 17 with the FuG 16 ZS. The G-8 could be fitted with *Rüstsätze* R1 (an ETC 500 IX b) or R6 (two gondola-mounted MG 151/20), but it is likely that little use was made of these in action. Furthermore some machines had their engine-mounted cannon removed as a weight saving measure.

Ofw. Aechtner, one of the most experienced pilots of 1./NAG 5, between two mechanics in front of his G-8, photographed at Dünaburg in 1944. This aircraft has an Erla-Haube and a short antenna mast, however the DF loop is absent. (Petrick)



The pilots of 2./NAG 5 with "Black 5," photographed in early 1945 before the unit's transfer to the northern sector of the Eastern Front. Clearly visible is the antenna mast, which has been moved aft on this G-8. (Tetzner)

The pilot of "Black 8" surrendered his G-8, which belonged to an unidentified NAG, to Allied forces at Bad Aibling following the German surrender. The aircraft has a whole series of interesting features: it has obviously received a new undercarriage with larger mainwheels as the wing has the long, large wheel bulges. Also note the octane triangle specifying the use of 87 octane fuel, the antenna wire, which is attached to a hemp rope and which runs through the DF loop, and the yellow forward engine cowling.

Ofhr. Tetzner, a pilot of NAG 5, on the wing of another G-8. Here too the antenna mast is clearly visible, having been repositioned further back along the fuselage spine. (Tetzner)

Bf 109 G-12

In order to satisfy a requirement for a two-seat training version of the Bf 109 G, from early 1944 a small number of early series Bf 109 G fighters – a total of 500 machines was planned – were converted into the G-12 variant. Almost every early version of the Bf 109 G was involved in the conversion program, specifically:

G-2s from production batches
10400 – 10900
13400 – 13500
14200 – 14900

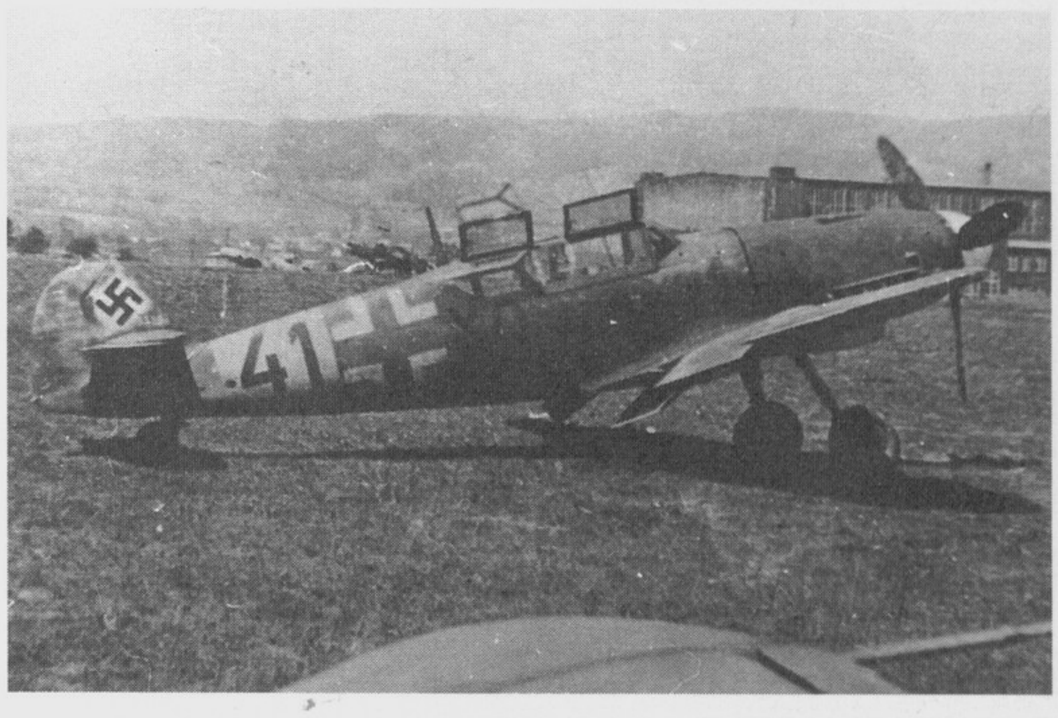
G-3s from production batch
16250 – 16300

G-4s from production batches
14950 – 15000
15000 – 15200
16000 – 16250
19200 – 19800

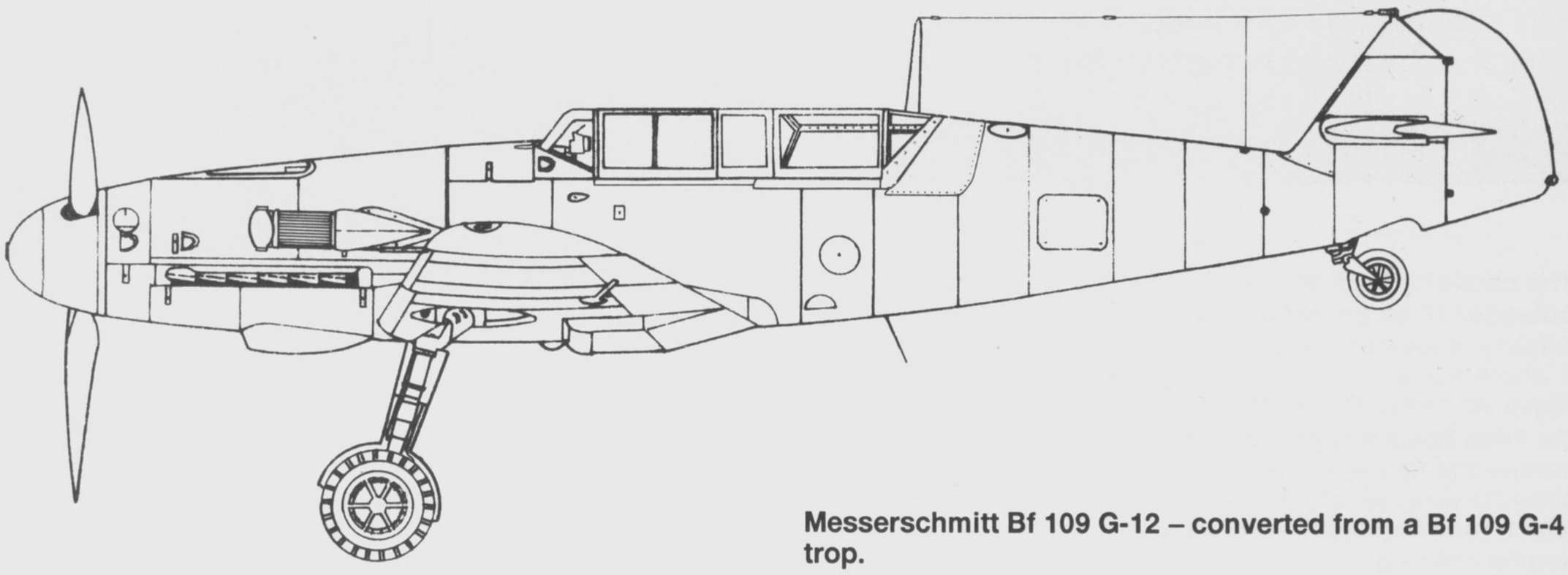
G-6s from production batches
18200 – 18400
19600 – 20000
411000 – 412000
412000 – 413000

The converted machines retained their original *Werknummern*.

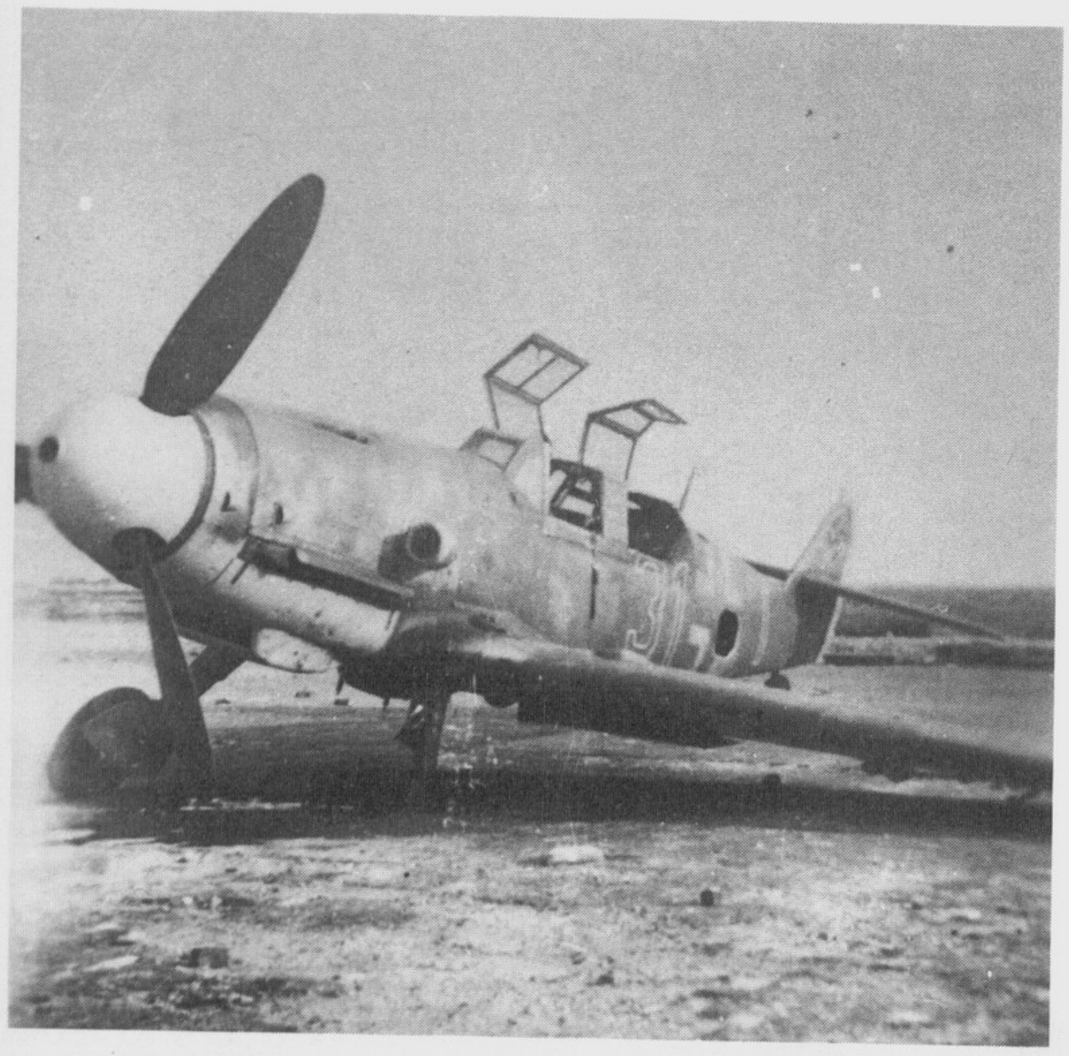
Student fighter pilot and instructor climb into their G-12 of 3./JG 106, which probably originated from a G-4. This photo provides an especially good view of the canopy structure over the two pilot positions. (Petrick)



This G-12 belonged to 5./JG 108 (I./JG 107 until the beginning of June 1944) and was photographed at Börgönd, Hungary in August 1944. This G-12, with its code number "Black 41" on the broad, yellow fuselage band, may also have resulted from the conversion of a G-4. (Sommavilla)



Messerschmitt Bf 109 G-12 – converted from a Bf 109 G-4 trop.



This G-12 of an unidentified training unit was captured by the Allies at the end of the war. (Petrick)

The G-12 was delivered almost exclusively to training units, although individual G-12s found their way to test units and testing stations. One of the first losses of a G-12 occurred on 5 March 1944, when Lt. Pressler of JG 110 was killed in the crash of *Werknummer* 16109 (CD + WE) near Klausa. The aircraft's *Werknummer* indicates that it was a converted G-4.

During conversion to G-12 standards the affected machines were in general unchanged apart from the installation of a second, fully instrumented position behind the normal pilot seat. During normal training use the rear position was occupied by the instructor. However, during instrument training it was occupied by the student, as the blind flying equipment and hood were installed in the rear position.

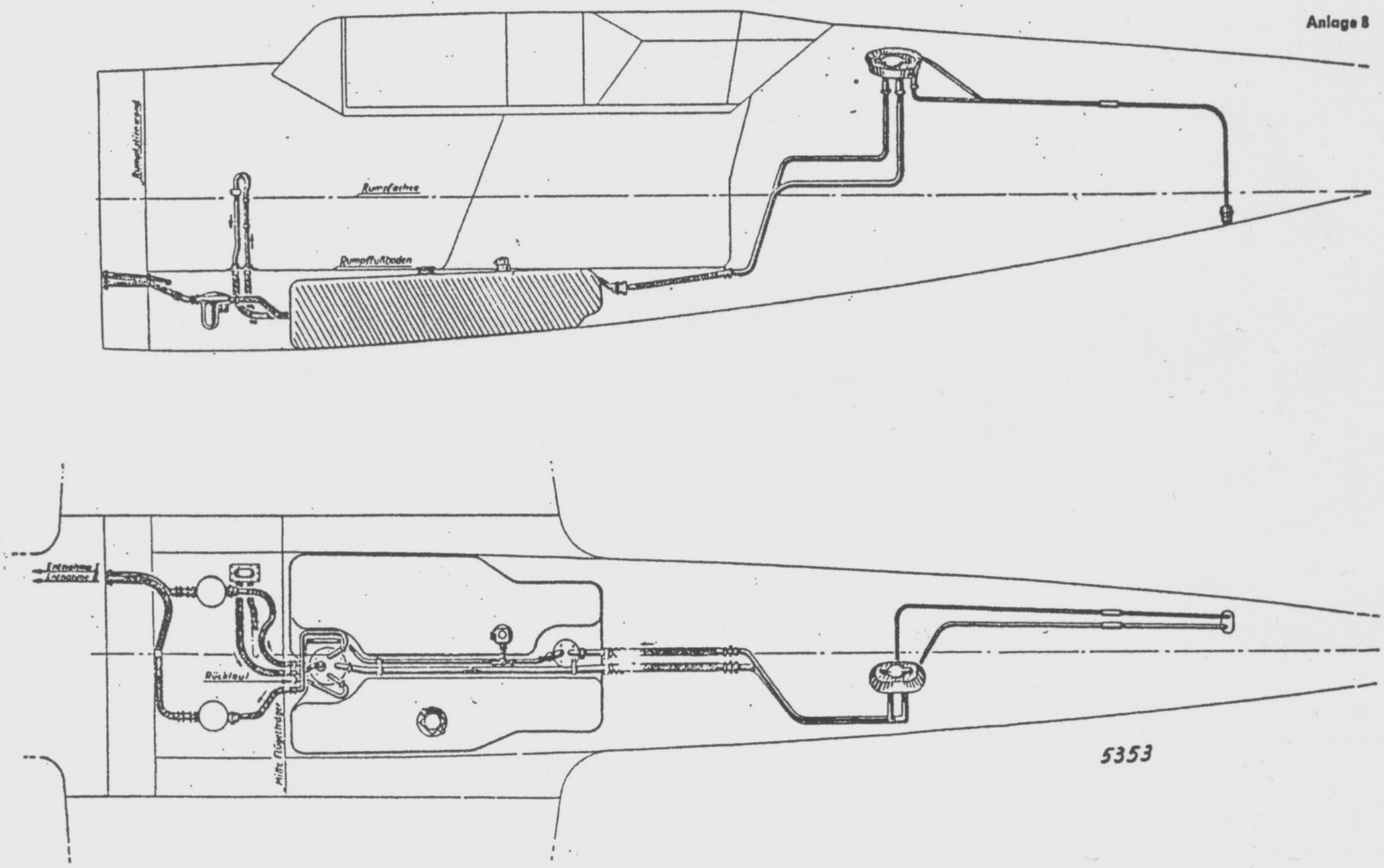
Both positions were covered by a fully-glazed canopy with separate folding sections for both occupants. Unlike the original canopy, the folding sections were hinged to the upper right edge of the glazing, so that only the left side and roof of the canopy folded. The antenna mast was located on the rear section of the canopy glazing.

The addition of a second position for the instructor forced a reduction in the size of the fuselage fuel tank; its capacity was 240 liters compared to the 400 liters of the standard tank. As a result the G-12's endurance was only 35 minutes. It was therefore usual to see the aircraft equipped with the range-increasing R3 with its 300-liter under-fuselage tank. As a result of the insertion of the second seat the fuel filler point was moved aft to a position between Frames 4 and 5.

The G-12 dispensed with the FuG 25a, but was equipped with an RG 10 A intercom system in addition to its FuG 16Z. All weaponry was supposed to be removed, but a number of G-12s are known to have retained one or both fuselage machine-guns.

A G-12 of I./JG 107, photographed in the summer of 1944. Note the spoked mainwheel hubs, and yellow wingtips. The aircraft is most likely carrying the Stammkennzeichen WU+PF, making it WNr.14 956, which was part of the establishment of JG 107 in May 1944. (Giese)

Uffz. Giese, trainee fighter pilot with I./JG 107, in front of his G-12 "White 40." Note that the code number is repeated on the engine cowling. The machine-gun bulges indicate that the aircraft was originally a G-6. Pau, summer 1944. (Giese)



Overview of Bf 109 G-12 fuel system

Bf 109 G-14

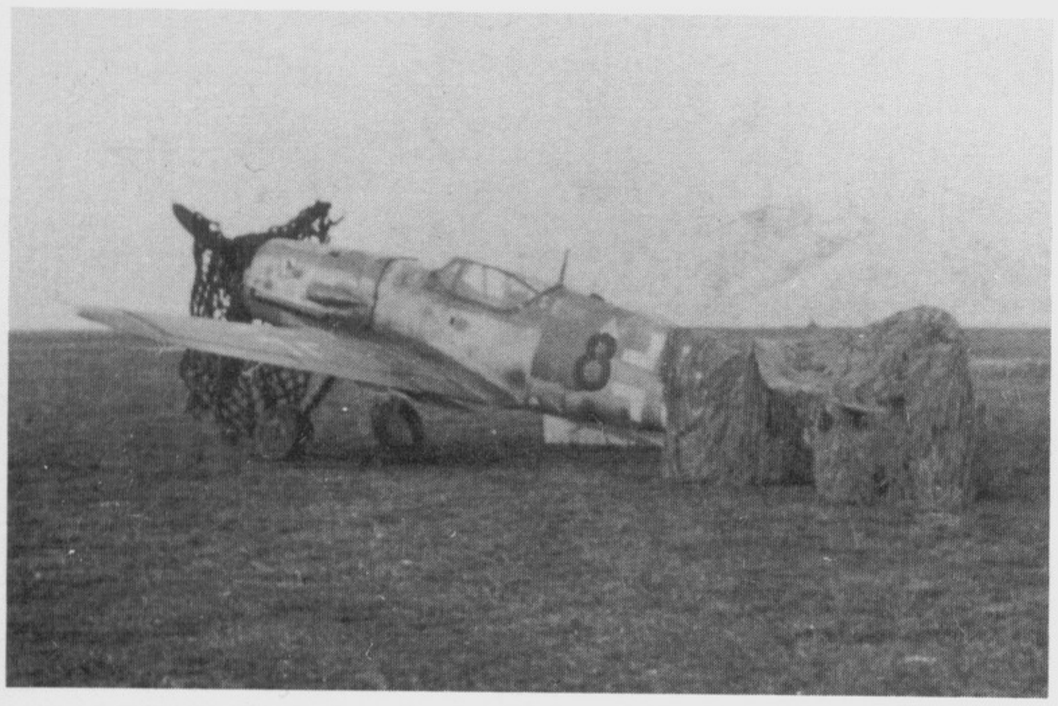
The first G-14 fighters arrived at the invasion front in France in the summer of 1944. The G-14 represented an attempt to create a new, standard type incorporating the many changes which had been introduced during production of the G-6. These changes had led to a plethora of variants, with all the ensuing problems for a decentralized mass production. This attempt was a total failure, however, because from the beginning the G-14 appeared in as many variations as the G-6.

The first G-14s were not built as a homogenous series, rather they were inserted into G-6 production, which was coming to an end. Such aircraft are known in *Werknummer* blocks:

165000 – 166000	Mtt Reg.
166000 – 166400	Mtt Reg.
413000 – 413900	Erla
760000 – 760600	?

At the same time production of homogenous G-14 *Werknummer* blocks was beginning; known are:

415600 – 415700	Erla
460000 – 460700	Erla
461000 – 462000	Erla
462000 – 463000	Erla
463000 – 463300	Erla
464000 – 465000	Erla
465000 – 465400	Erla
510800 – 511000	WNF
511000 – 512000	WNF
512000 – 512700	WNF
780000 – 781000	Mtt Reg.
781000 – 781400	Mtt Reg.
781900 – 782000	Mtt Reg.
782000 – 783000	Mtt Reg.
783800 – 784000	Mtt Reg.
784000 – 785000	Mtt Reg.
785000 – 786000	Mtt Reg.
786000 – 786500	Mtt Reg.
787000 – 787600	Mtt Reg.
788300 – 788500	Mtt Reg.



Two shots of "Black 8," a G-14 of 10./JG 4, which was flown by Oblt. Schlegel, the Kapitän of 10. Staffel, at the end of 1944. The aircraft wears a standard grey camouflage scheme which has been repainted in the area of the aircraft code number. The black-white-black Reichsverteidigung band of JG 4 is obscured by camouflage netting draped over the rear fuselage. Also note the unidentified emblem on the engine cowling. (Schlegel) Right: Visible beneath the left wing is the Morane antenna for the FuG 16 ZY. (Schlegel)

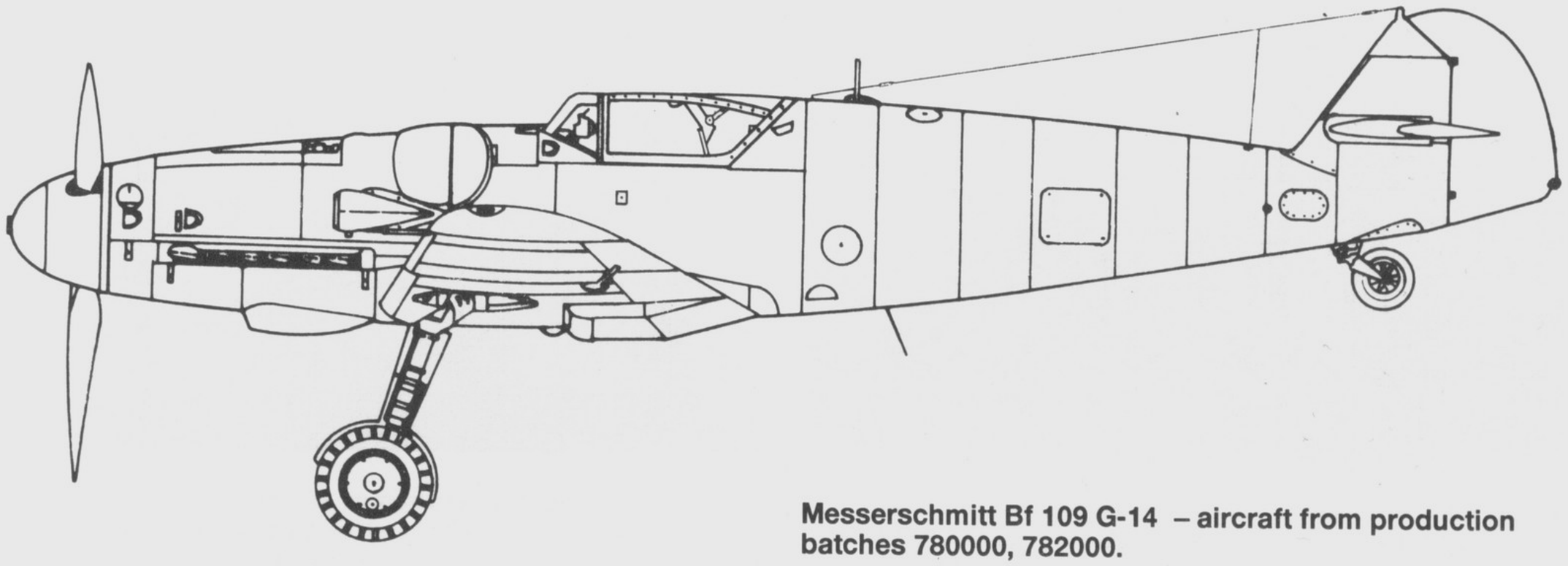
Most of these *Werknummer* blocks were not completely built, on the contrary a majority of the *Werknummern* within the blocks remained unused. Production of the G-14 began in July 1944 and according to the existing construction schedules was to have continued until February 1945. The exact number of aircraft built and delivered will probably never be known with certainty. The frequently-revised RLM construction schedules and the Messerschmitt AG's corresponding delivery plans reveal that it was intended to manufacture about 6,500 machines. A cautious estimate based on the available records suggests that about 5,500 aircraft may have in fact been built.

The G-14 was to remain a standard version of the Bf 109 until the end of the war and was flown by the majority of the front-line units equipped with the Bf 109. Units known to have flown the G-14 are:

III./JG 1, II./JG 2, Stab, I., II., III./JG 3, I., III., IV./JG 4, Stab, I., II., III., IV./JG 5, III./JG 6, II./JG 11, III./JG 26, Stab, I., II., III., IV./JG 27, Stab, I., II., III., IV./JG 51, Stab, I., II., III./JG 52, Stab, I., II., III., IV./JG 53, I., III./JG 76, Stab, I., II., III./JG 77, Stab, I., III., IV./JG 300, I., II., III., IV./EJG 1, I./EJG 2, JGr. Nord, JGr. Ost, JGr. West, I./KG(J) 6, I./KG(J) 27, II./KG(J) 30, I., II./KG(J) 55, II., III./NJG 11, NAG 1, NAG 2, NAG 3, NAG 4, NAG 14.

Since the G-14 initially exhibited no new features, the first G-14s were identical to late G-6s. Most G-14s were still powered by the DB 605 A engine,

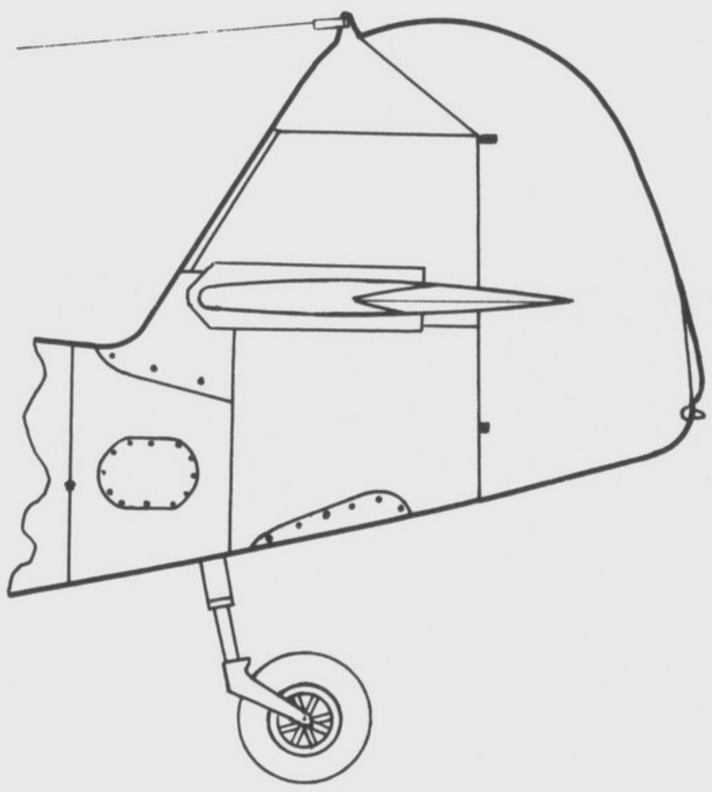
A G-14 with the Werknummer 781 261, of I/JG 300. As usual with aircraft from the 781 000 production batch, this G-14 still has the early, small fin and rudder. Also note the antenna mast for the FuG 16 ZY under the left wing, as well as the short antenna mast on the Erla-Haube. The aircraft apparently wears the usual grey finish with a narrow yellow fuselage band. (Petrick)



Messerschmitt Bf 109 G-14 – aircraft from production batches 780000, 782000.

In 1944/45 many G-14s were delivered to the Hungarian Air Force, which was fighting at the side of the German Luftwaffe. Here is a machine of the Hungarian 101st Fighter Group, G-14 WNr. 782 205. This "Gustav" also has the small fin and rudder, but with a long, non-retractable tailwheel. (Fischer)

Two photos of "White 7," a G-14 of 7./JG 52 which was flown in December 1944 by Lt. Ewald, one of the "Experten" of II./JG 52. Above: Here an unidentified Unteroffizier is seen standing on the aircraft's mainwheel. Note the Staffel emblem of 7./JG 52 and the Morane antenna beneath the left wing. (Petrick) Below: Lt. Ewald (left) with two Unteroffizier pilots of 7./JG 52 beside the tail of his aircraft, "White 7." Part of the Werknummer (51? ???) is visible on the small tail unit's vertical stabilizer. (Petrick)



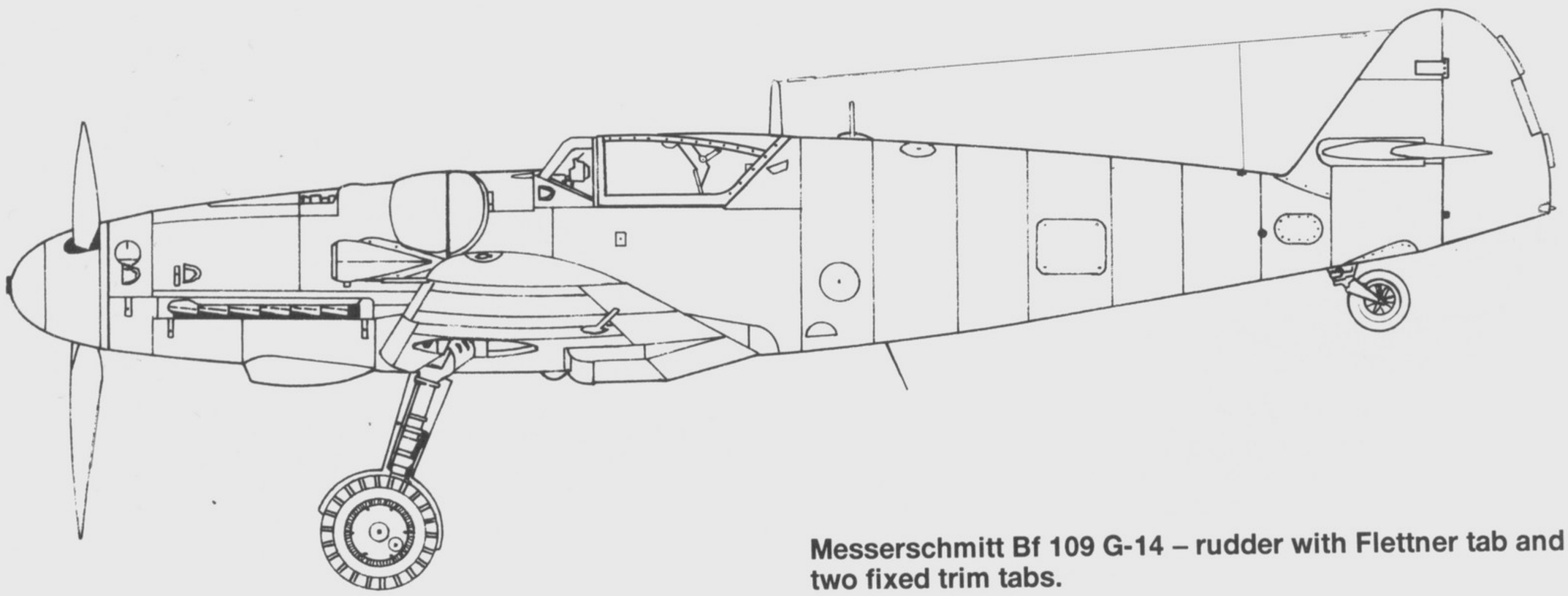
Small tail unit with long tailwheel.

Two views of "Yellow 18," a G-14 of 7./JG 3, photographed at Garz on the Usedom Peninsula in early 1945. Here two pilots are seen in front of the aircraft, left Lt. Berendes and right Uffz. Bolte. Noteworthy is the aircraft's badly worn finish, which has peeled and been retouched in the area of the fuselage panel lines. Also note the octane triangle specifying the use of c3 fuel for the DB 605 AM engine. (Berendes) Right: A group of pilots in front of "Yellow 18." From the left: Lt. Niehaus, Staffelführer Oblt. Mielke, Ofw. Runge and Lt. Berendes. Just visible is the white fuselage band with the superimposed black bar – in this respect marking practices had remained unchanged in the new II./JG 3. (Berendes)

although the version installed was the AM, i.e. with MW-50 injection. Also standard was the installation of the *Erla-Haube* and *Peilrufanlage*. Like the G-6 there was no standard antenna installation, but it was absent altogether more often than on the G-6.

Many G-14s received the small G-6 tail unit. Equally common was the larger fin and rudder also seen on the G-6. On the G-14 this often featured two fixed trim tabs in addition to the usual Flettner tab. Another style of rudder also appeared at this time, whose bottom edge was sloped at a somewhat sharper angle and whose rear corner was somewhat more pointed than the earlier version. The new type rudder was also to be seen with just the Flettner tab, as well as with the Flettner tab and two fixed tabs. The aft part of this style of rudder was covered with fabric instead of the usual plywood. Wooden tail surfaces had been introduced because, in addition to saving raw materials, they cost about 20% less to manufacture.

The successor to the G-6/AS was the G-14/AS, which was apparently built in considerably greater numbers. The G-14/AS was supposed to be improved over the G-6/AS through the adoption of the Fo 987 oil cooler, as the cooling capability of the earlier Fo 870 was considered insufficient. Externally this change was recognizable by a considerably larger, deeper oil cooler bath beneath the engine cowling. In fact the Fo 987 oil cooler was not installed in every case, so that many G-14/AS air-



Messerschmitt Bf 109 G-14 – rudder with Flettner tab and two fixed trim tabs.

Running up the engine of another G-14 of 7./JG 3. This photo was also taken at Garz airfield. Note the tall fin and rudder and the antenna mast for the FuG 16 ZY beneath the left wing. (Berendes)

Uffz. Erler of 16./JG 5, photographed with two mechanics on his aircraft "Blue 11," a G-14. Stavanger-Sola, late 1944. Note the port beneath the windscreen for firing signal ammunition and the sagging antenna wire. (Maesel)

craft retained the Fo 870 oil cooler and were thus externally indistinguishable from the G-6/AS.

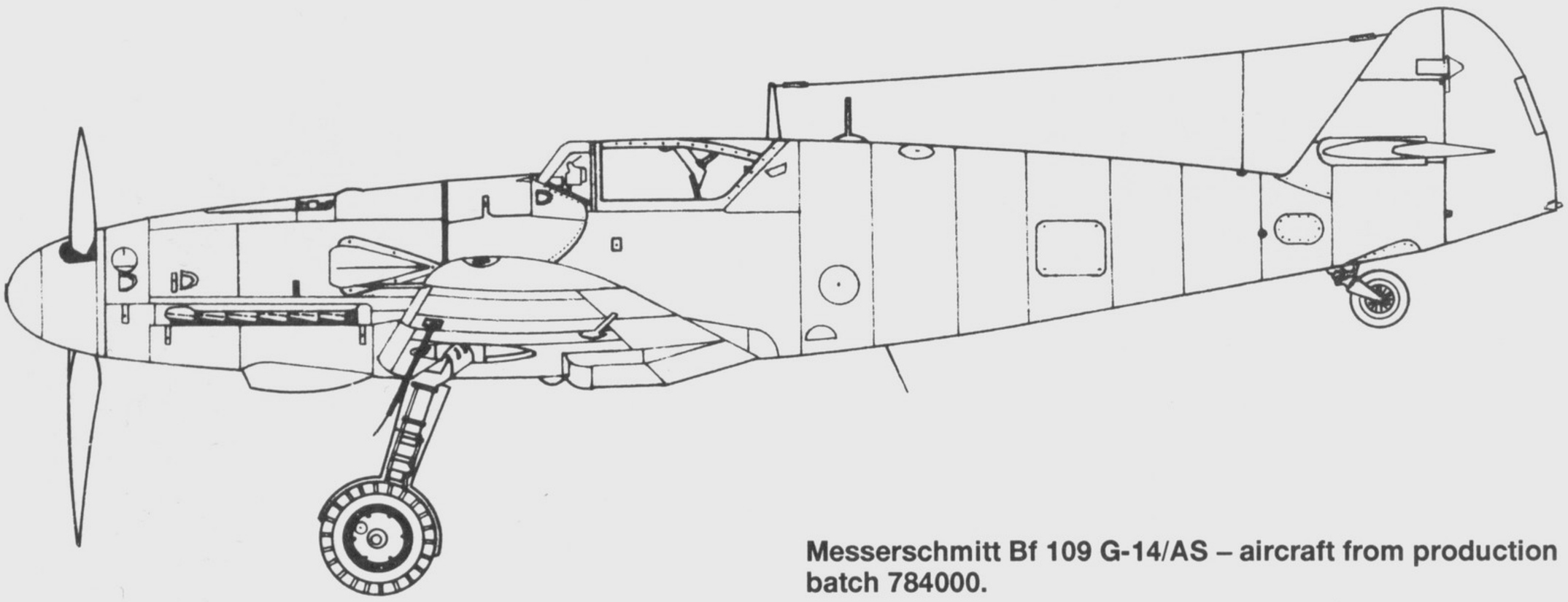
Like the G-6/AS the G-14/AS was not built as a continuous series; G-14/AS machines are found strewn throughout the entire G-14 series, including in *Werknummer* blocks:

165000 – 166000
166000 – 166400
460000 – 460700
461000 – 462000
464000 – 465000
780000 – 781000
781000 – 781400
782000 – 783000
783800 – 784000
785000 – 786000
786000 – 786500
787000 – 787600
788300 – 788500

As far as can be determined the later production batches in the 780000 range may have been built exclusively as the G-14/AS. In total about 1,000 G-14/AS fighters were delivered.

The first noticeable changes were introduced

Two photographs of "White 5" of 7./JG 53, a G-14/AS with the Werknummer 165 756, taken while II./JG 53 was resting and refitting at Hustedt in August 1944. Here Uffz. Völker is seen sitting on the edge of the cockpit. Clearly visible are details of the bulged fairing in front of the cockpit, the octane triangle indicating c3 fuel for the DB 605 ASCM engine as well as the tall fin and rudder with an unusual spotted finish. (Seltner) Right: Gefr. Michaelis in front of the same machine. Michaelis was shot down and killed in this G-14 AS in combat with P-47s over La Fere airfield on August 22, 1944. Note the deep oil cooler, the enlarged supercharger air intake and the antenna mast for the FuG 16 ZY. (Hocke)

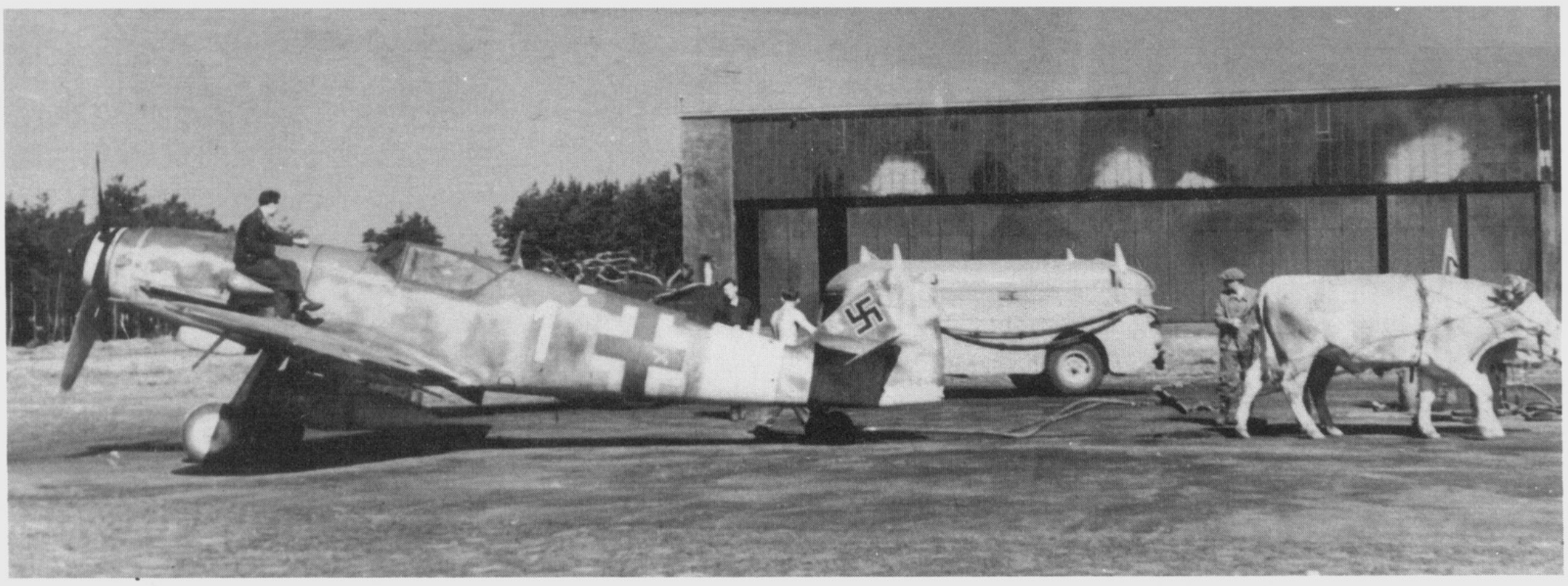


Messerschmitt Bf 109 G-14/AS – aircraft from production batch 784000.

"White 1," another G-14/AS of 7./JG 53, at Hustedt in August 1944. In the cockpit preparing for a practice sortie is Uffz. Lehmann. (Hocke)

into the G-14 series at the end of 1944. With the adoption of larger 660 x 190 mainwheels it was discovered that the teardrop-shaped wing bulges were now too small. They were replaced by larger, rectangular fairings on the wing upper surfaces. Actually the new wing was installed on only a limited number of G-14s; it could also be – and was in individual cases – installed on older G-6 and G-8 aircraft.

Individual G-14 and G-14/AS fighters were fitted with the lengthened tailwheel seen on the last G-6 models. Many G-14s of all variants received the FuG 16ZY with its associated antenna mast, which was installed beneath the left wing outboard of the wheel well rather than under the fuselage as before. Ma-

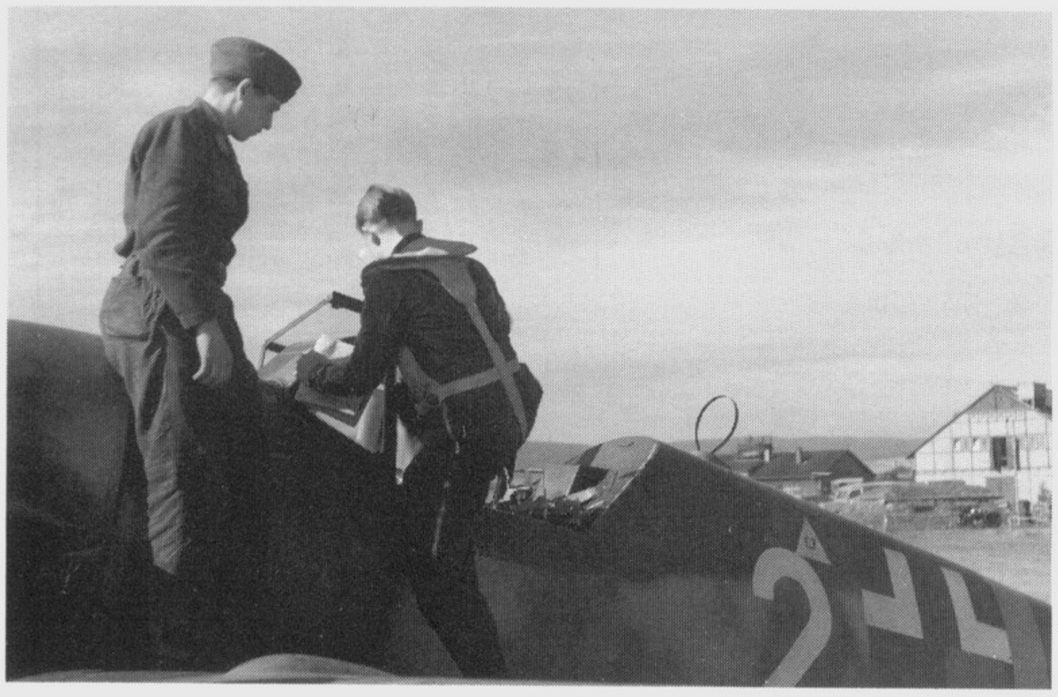


This scene is symbolic of the state of the Luftwaffe in late summer 1944: a team of oxen tows "White 1" of III./JG 300 to its dispersal at Jüterbog air base. This G-14/AS, WNr. 165 ??3, was allegedly transferred to III./JG 300 from another Gruppe. Note the tall rudder in one of the latest variations, the deep oil cooler and the white fuselage band. (Lorant)

chines so equipped were designated G-14 y or G-14/AS y. An example of the latter was *Werknummer* 785 198 "White 11" of II./JG 11 which was lost on 23 January 1945. What is more, JG 11 reported the loss as a G-14 ASM y.

Many G-14s built by WNF had their MG 151/20 engine-mounted cannon replaced by an MK 108, which resulted in the designation G-14/U4. *Rüstsatz* R3 (300-liter long-range tank) was widely used. Also possible was the addition of two gondola-mounted MG 151/20 cannon as R6, but it seems that this was rare. Finally, there were plans to retrofit the aircraft with an autopilot and FuG 125 for bad-weather operations as the G-14/R6.

Other G-14/AS fighters of III./JG 300 at Jüterbog in the summer of 1944. All these aircraft wear a white fuselage band, possibly an indication that they originated from I./JG 3. (Lorant)

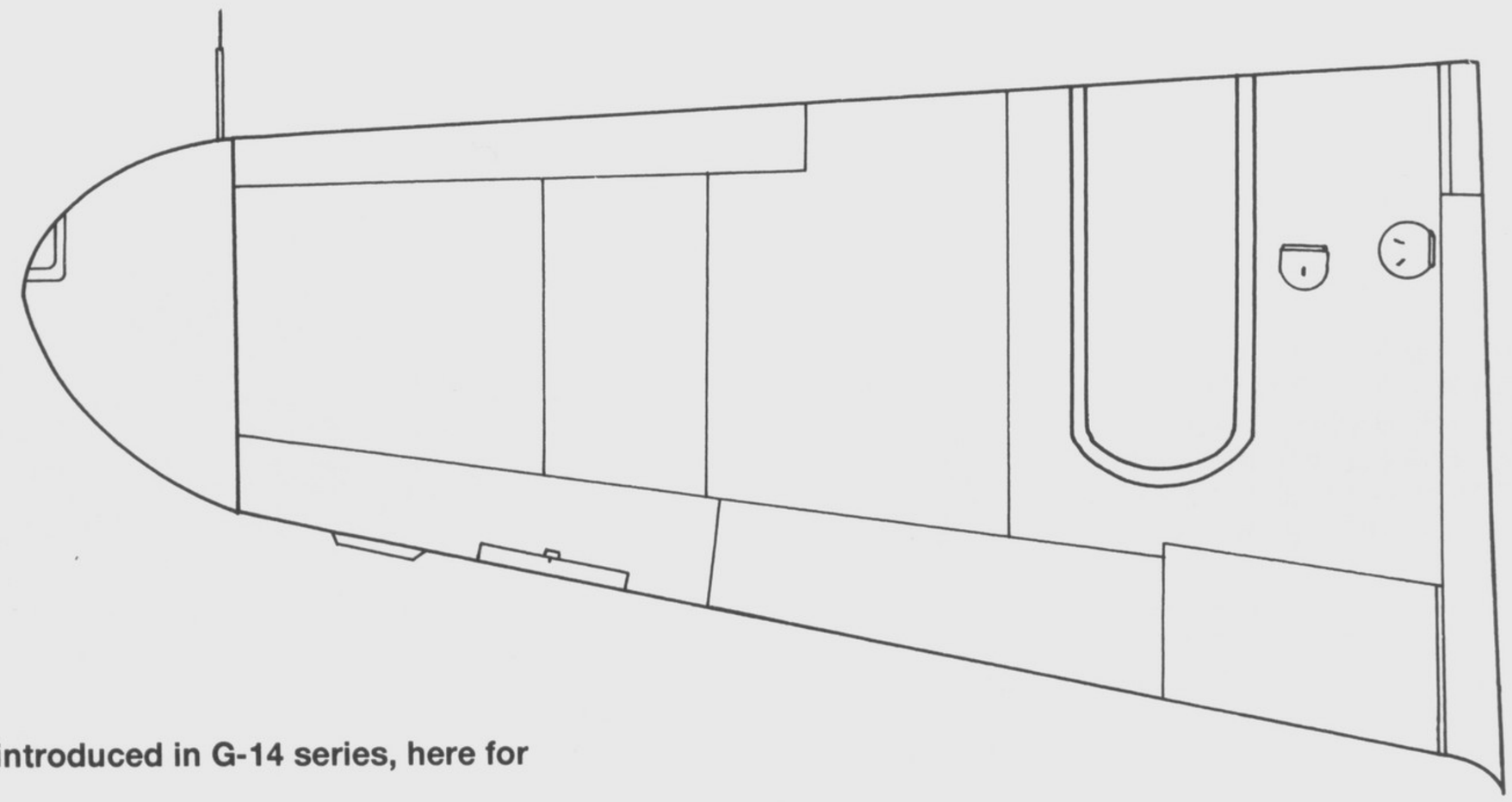


Takeoff preparations by Lt. Torfer of 5./JG 27, photographed at an airfield in Germany in late summer 1944. "White 2" is a G-14, probably from production batch 780 000. Note the octane triangle which specifies c3 fuel for the DB 605 ASCM engine. (Bundesarchiv) Right: The same machine after starting the engine. Clearly visible are the new, deeper oil cooler and the "chin bulges" on the forward edge of the lower engine cowling, which incorrectly are generally associated only with the DB 605 D engine. Also note the enlarged supercharger air intake and the antenna mast for the FuG 16 ZY beneath the wing. (Bundesarchiv)

Fw. Hundsdorfer of 2./JG 300 in the cockpit of his aircraft "Red 10," a G-14/AS, photographed at Borkheide airfield in September 1944. Beneath the cockpit may be seen Hundsdorfer's personal emblem, a Boeing-eating Dachshund. (Lorant)

Four pilots of 2./JG 300 on Fw. Hundsdorfer's G-14/AS – from left: Uffz. Dahmen, Ofhr. Schenk, Fw. Riedel and Fw. Hundsdorfer. The chin bulges and deep oil cooler are clearly visible. (Lorant)

A G-14/AS of Stab/JG 53 parked at the edge of a forest at the forward airfield of Bad Dürrheim in October 1944. The aircraft, which bears the tactical markings "< - + -," appears to wear a faded, standard grey scheme. (Ballewski)

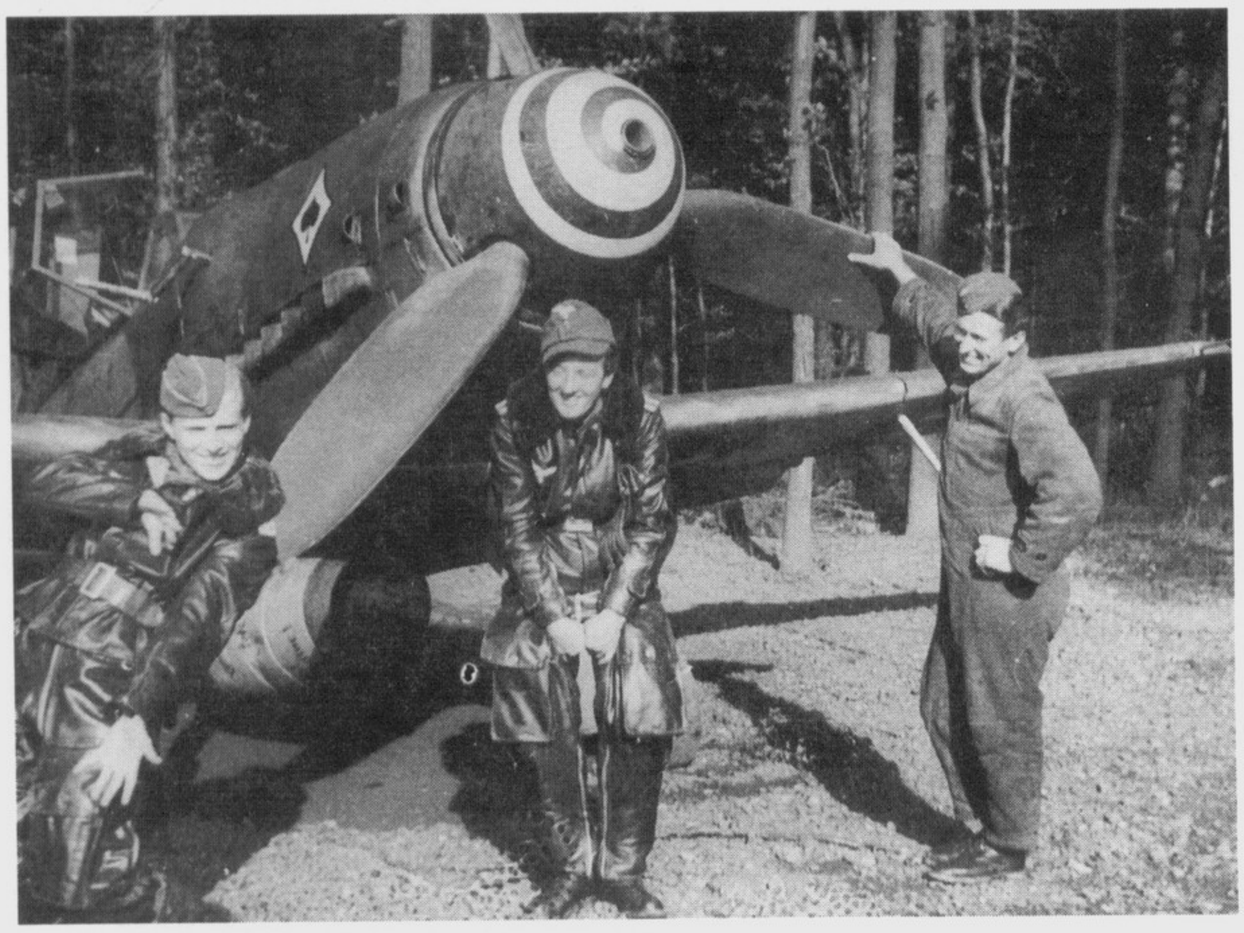


Wing upper surface introduced in G-14 series, here for the K-4.

Fhr. Esser, a pilot in IV./JG 4, photographed in front of his machine, probably a G-14/AS, but also possibly a G-10. Note the deep oil cooler beneath the engine cowling and the large supercharger air intake. (Giese) Right: Fhr. Esser again, seen here with a mechanic. On the engine cowling is the Gruppe emblem of IV./JG 4, formerly II./JG 5. Both photos were taken in autumn 1944 at an airfield in Germany. (Giese)

Uffz. Beck (left) and Uffz. Dittrich in front of "Black 13," the aircraft of Oblt. Scheufele, the Staffelkapitän of 14./JG 4, photographed in October 1944 at Reinsdorf, near Jüterbog. The aircraft is a G-14/AS which wears a spotted grey camouflage scheme. Visible beneath the cockpit is the monogram, "Peterle," Scheufele's personal emblem. (Giese)

Pilots of 7./JG 53 on the engine cowling of one of their G-14/AS fighters, photographed at the end of October 1944 at Malmsheim. From the front: Staffelkapitän Oblt. Seeger, Ofhr. Severin, Ofhr. Ulbrich, Uffz. Iske and Uffz. Gallhofer. Here too note the chin bulges with a DB 605 AS engine. (Reiter)



Ofhr. Ulbrich and Uffz. Gallhofer with a mechanic in front of the same G-14/AS. This aircraft's finish has a very dark appearance. (Reiter)

The four pilots of the Schwarm led by Fw. Becker of 6./JG 53, photographed in front of a G-14/AS at Huchenfeld in December 1944. Once again note the chin bulges and deep oil cooler. From the left are Fw. Nachotzky, Gefr. Hartter, Fw. Becker and Uffz. Ernst. (Ernst)

Two photos of "Yellow 5," a G-14/AS, possibly photographed with 3./JG 300 at the end of 1944. Above: The aircraft wears a very dark finish and a blue/white/blue fuselage band. Not obvious in this photo is the aircraft's tall tailwheel. (Petrick) Right: "Yellow 5" again. Note the flatter shape of the fairing on the right side of the fuselage and the oil cooler, which seems to be an intermediate model between the usual one and the deeper oil cooler of the later variants. Note that there are no chin bulges on the lower engine cowling. (Petrick)

Fw. Hener of 2./JG 3 in the cockpit of his aircraft "Black 16," a G-14/AS, photographed in early December 1944 at Paderborn airfield. Hener took charge of this machine on November 3 and flew it until I./JG 3 was disbanded in March 1945. This "Gustav" therefore had an extremely long life for that stage of the war. This shot provides a detailed look at the bulged fairing in front of the cockpit and the somewhat larger ventilation scoop beneath the windscreen. Also note the name "Lilly" below the cockpit. In this photo the Revi gunsight has been folded away. (Hener)

"White 8," a G-14/AS of 7./JG 53, being prepared for a sortie at Malmsheim airfield in early 1945. It is noteworthy that this aircraft carries no Balkenkreuze or swastikas except beneath the wings. Clearly visible is the black Reichsverteidigung band worn by aircraft of JG 53 with the white Gruppe bar superimposed. Like other units employed in the West at this time, the JG 53 Geschwader emblem has been painted over. (Meimberg)

Ofhr. Sommavilla of the Gruppenstab of I./JG 53 seen in the cockpit of his G-14/AS "Chevron Bar" at Veszprem, Hungary after returning from a sortie on February 4, 1945. This was one of the few aircraft of this type flown by I./JG 53. Note the concave ventilation scoop beneath the windscreen. (Sommavilla)

Bf 109 G-16

In all probability there was no Bf 109 G-16. The Bf 109 type sheet of the Chief of Technical Air Armaments (August 1, 1944) does not include a G-16 series, nor do any other official documents refer to the G-16. Beyond that there are only two unconfirmed loss reports involving G-16s up to the beginning of April 1945. In the first case 2./NJG 11 reported the loss of a "G-16" with the *Werknummer* 87,735 on 24 October 1944; it is most likely that the aircraft involved was really a G-14/AS whose *Werknummer* was recorded incompletely. As well there is a report submitted by 6./Flüg 1 (S), according to which a G-16 with the *Werknummer* 785889 was lost in a crash on January 31, 1945, its pilot, Uffz. Fechner, being killed. Here too it seems most likely that it was a case of a writing or copying error.

Bf 109 G-10

Deliveries of the G-10, which was planned as a supplement to the K-series and which represented a connecting link between it and the G-series, began in the autumn of 1944. The G-10, production of which ran from October 1944 until the end of the war, resulted from conversions of older series, like the G-6 and G-14. As a result it was referred to as a "bastard aircraft" in the Bf 109 type sheet. It was not actually a further development of the G-Series, rather it represented an attempt to bring older, repairable machines up to the standard of the K-4, which was being manufactured in parallel, through a conversion process. The object was to supplement production of the new K-4 with repaired aircraft of almost equal value in the cheapest manner possible.

Planned production figures for the G-10 were changed repeatedly in the course of successive

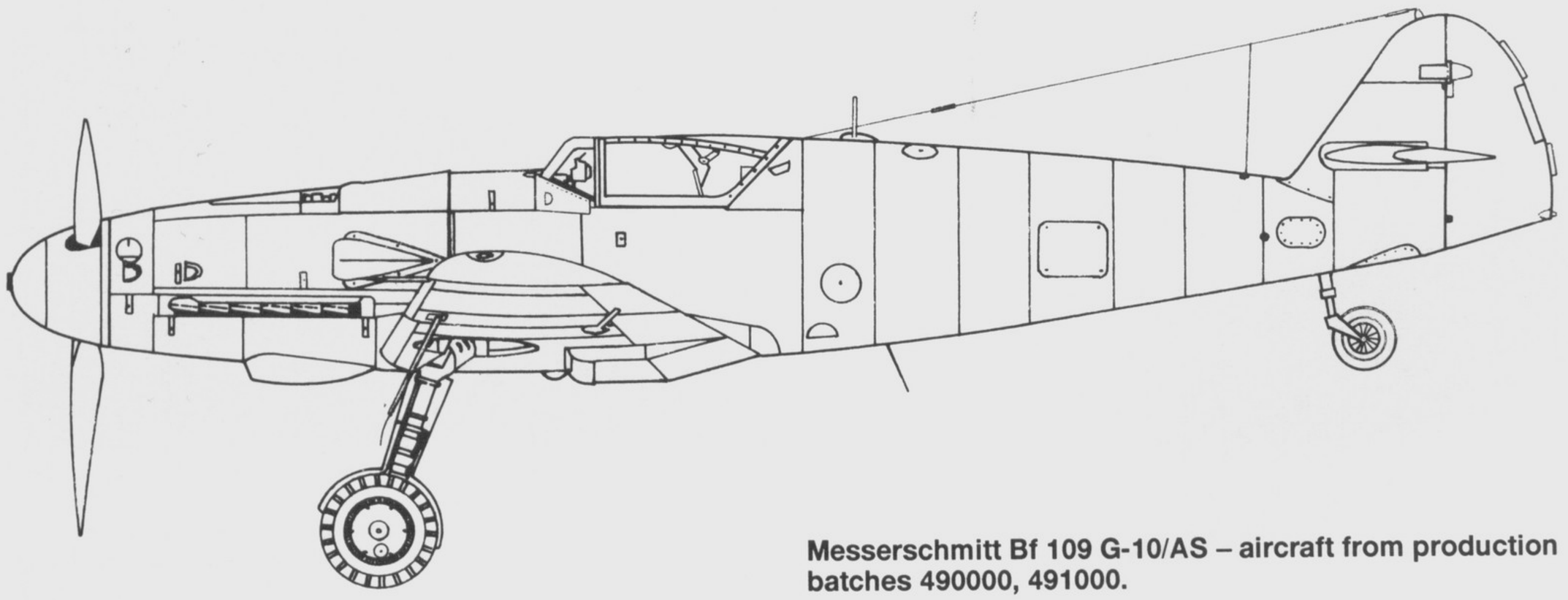
Uffz. Dahmen, a pilot in 2./JG 300, in front of his aircraft "Red 12," a G-10/AS, photographed at Borkheide in October 1944. Note the rectangular shape of the fairing in front of the cockpit, which was characteristic of the G-10/AS series. (Lorant)

Fw. Gzik of 2./JG 300 together with a mechanic on his "Red 2," a G-10 with the Werknummer 490 642, photographed at Borkheide in autumn 1944. The aircraft was lost on January 14, 1945, when Uffz. Tautscher was shot down in air combat near Brandenburg. This G-10 wears a spotted grey finish with the rust-red fuselage band used by JG 300 at that time and a yellow cowling underside. Above the aircraft number appears the name "Rita." (Gzik)

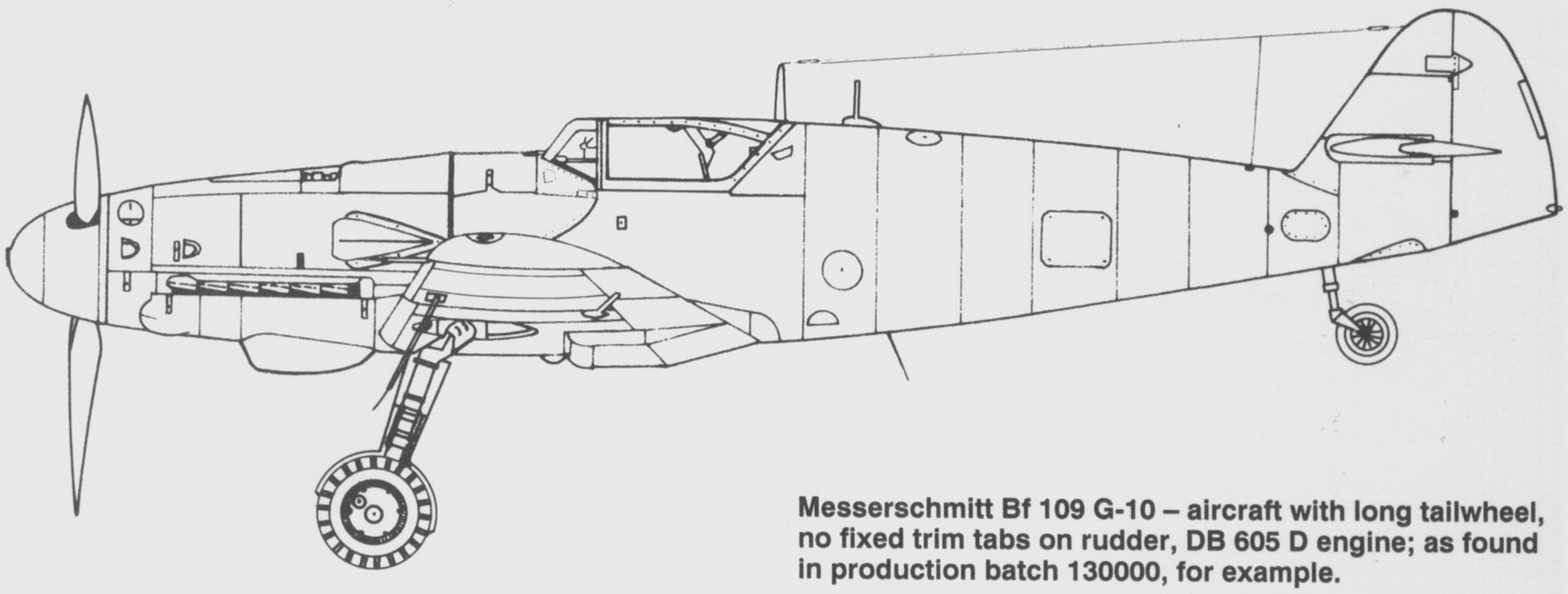
construction schedules; as many as 6,000 G-10s were supposed to have been built between October 1944 and August 1945. The G-10 series was distributed among the following *Werknummer* blocks:

130000 – 130500	Mtt Reg.
150700 – 151000	Erla
151500 – 152000	Erla
490000 – 490800	Erla
491000 – 491600	Erla
610300 – 610600	WNF
610900 – 611000	WNF
611900 – 612000	WNF
612700 – 613000	WNF
613000 – 613300	WNF
770000 – 770400	WNF
770900 – 771000	WNF
771000 – 771200	WNF

The distribution of production planned – at times in any case – the construction of 2,773 machines by WNF (1,938 G-10/U4 and 835 G-10/R2). A further



Messerschmitt Bf 109 G-10/AS – aircraft from production batches 490000, 491000.



Messerschmitt Bf 109 G-10 – aircraft with long tailwheel, no fixed trim tabs on rudder, DB 605 D engine; as found in production batch 130000, for example.

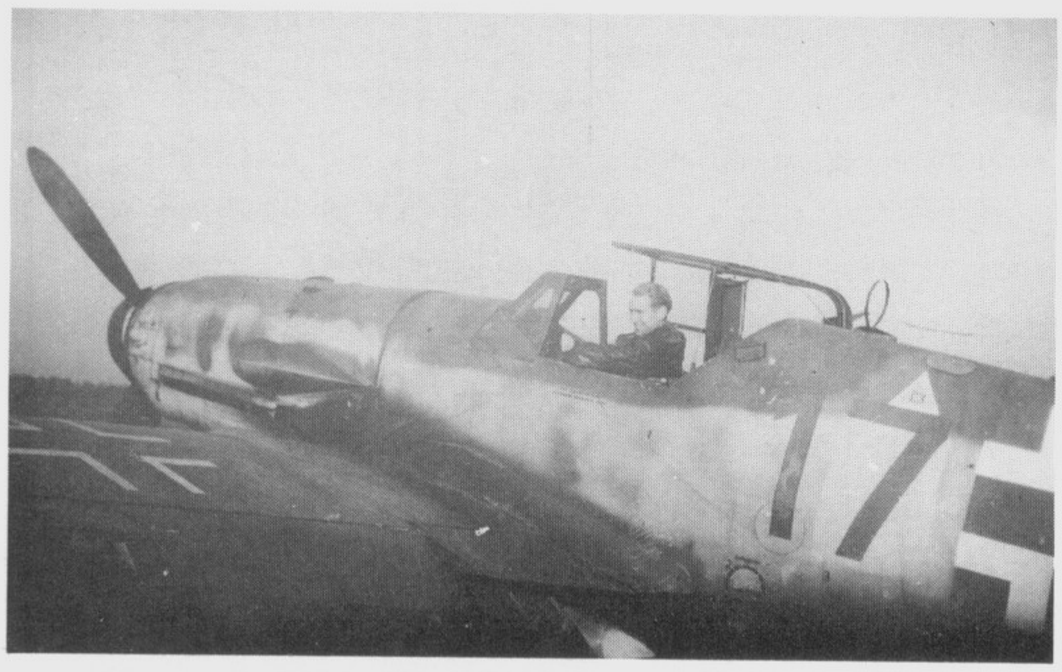
1,709 aircraft were to be delivered by Erla (251 G-10 and 1,458 G-10/R6), another 123 G-10s by Messerschmitt Regensburg and finally 1,350 G-10/U4s by KÖB. The number of G-10s actually delivered is unknown, but it is logical to assume that it was significantly less than in the production programs. Production may have totalled about 2,600 aircraft.

The G-10 served with most front-line units equipped with the Bf 109:

III./JG 1, I., II./JG 3, I., III., IV/JG 4, III./JG 6, I., II., IV./JG 27, II., III./JG 51, II., III./JG 52, I./JG 53, I., II./JG 77, I., III., IV./JG 300, IV./JG 301, I./KG(J) 6, I., II./KG(J) 27, NJG 11, NAG 2, NAG 4, NAG 14, NAG 15.

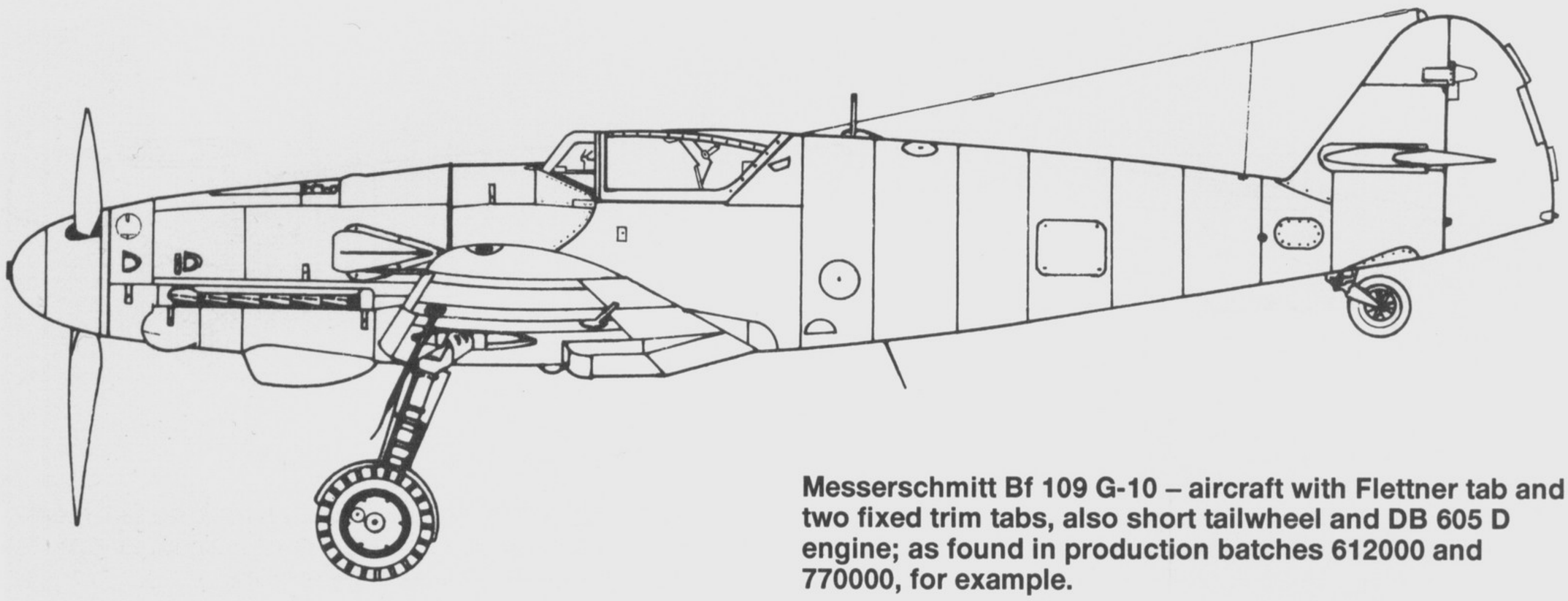
It was obviously intended to carry out the conversions of older airframes in a standard manner. In fact, however, attempts to achieve a standard model G-10 quite obviously failed, because the G-10 appeared in the same plethora of variants as did the G-6 and G-14. An essential component of the modernization was to have been the installation of the DB 605 D engine, which was supposed to enter quantity production in the autumn of 1944. Obviously, however, the engine was not available in sufficient numbers at the beginning of the G-10 program, and many of the first machines from production batches 490000 and 491000 were fitted with the DB 605 AS and were accordingly designated as the G-10/AS.

The G-10/AS was largely identical to the G-14/AS. Many aircraft featured the wing which had become standard with the G-4, with the small, tear-



"Red 17," another G-10 of 2./JG 300, was flown by Lt. Jordan in the autumn of 1944. This aircraft, WNr. 490 383, was also lost in combat on January 14, when Fw. Schleinitz was shot down and wounded. (Gzik)

Four pilots of 9./JG 300 in front of "Yellow 12," a G-10, photographed at Jüterbog in autumn 1944. From left: Ofhr. Heidemann, Uffz. Meyer, Fw. Kranzmacher and Fw. Ehlert. (Lorant)



Messerschmitt Bf 109 G-10 – aircraft with Flettner tab and two fixed trim tabs, also short tailwheel and DB 605 D engine; as found in production batches 612000 and 770000, for example.

drop-shaped wheel bulges on the upper wing surface. The longer, non-retractable tailwheel was more commonly seen than on the G-14/AS. Most G-10/AS aircraft retained the smaller Fo 870 oil cooler, the deeper Fo 987 remaining the exception.

In cases where the G-10 did receive the DB 605 D, which in every instance was installed with MW 50 boost as the DB 605 DM, this led to detail changes in the area of the engine cowling. The enlarged crankcase and the oil return lines which ran in front of it made necessary small fairings on both sides of the engine cowling just in front of the first exhaust stack. These fairings were attached to the hinged lower engine panel. Always installed in conjunction with the DB 605 D was the new Fo 987 oil cooler, whose housing beneath the aircraft's nose was considerably deeper than had previously been the case. Nevertheless, a considerable number of G-10/AS, and even G-14/AS, aircraft are known to have had the deeper oil cooler as well as the "chin bulges." Finally, the oil filler points, which were located on the forward, upper cowling ring, were moved to a somewhat higher position, a feature which was also seen on some AS-machines.

Due to the diverse nature of the aircraft which were converted and the availability of components, many combinations of wings, tail units and tailwheels were to be seen on the G-10. Some aircraft had the older wing with small mainwheel bulges and the short tailwheel of the G-6. On the other hand there was a whole series of machines which had the large, rectangular wing fairings to accommodate the 660 x 190 mainwheels and the longer, non-retractable tailwheel. Such machines are known, for example, in production batch 613000. However, there were also examples of both possible combinations of old and

Hptm. Wienhusen, Gruppenkommandeur of IV./JG 4, at Finsterwalde after a sortie in November 1944. He was shot down by flak in this G-10 (WNr. 130 282) near Aachen on December 3, 1944, and Wienhusen was killed when "White 21" struck the ground. (Petrick)

Uffz. Gerd Hauter (later of II/JG 52) next to "White 41," a Bf 109 G-14/AS of Jagdgruppe Ost, November 1944. This shot allows details of the engine area to be seen very well. Note the heavily oiled auxiliary fuel tank, almost an "identifying mark" for the late DB 605 engine, which in many cases tended to leak heavily. (Petrick) Below: Once again "White 41." A good view of the supercharger air intake, which projected well out from the engine cowling. (Petrick)

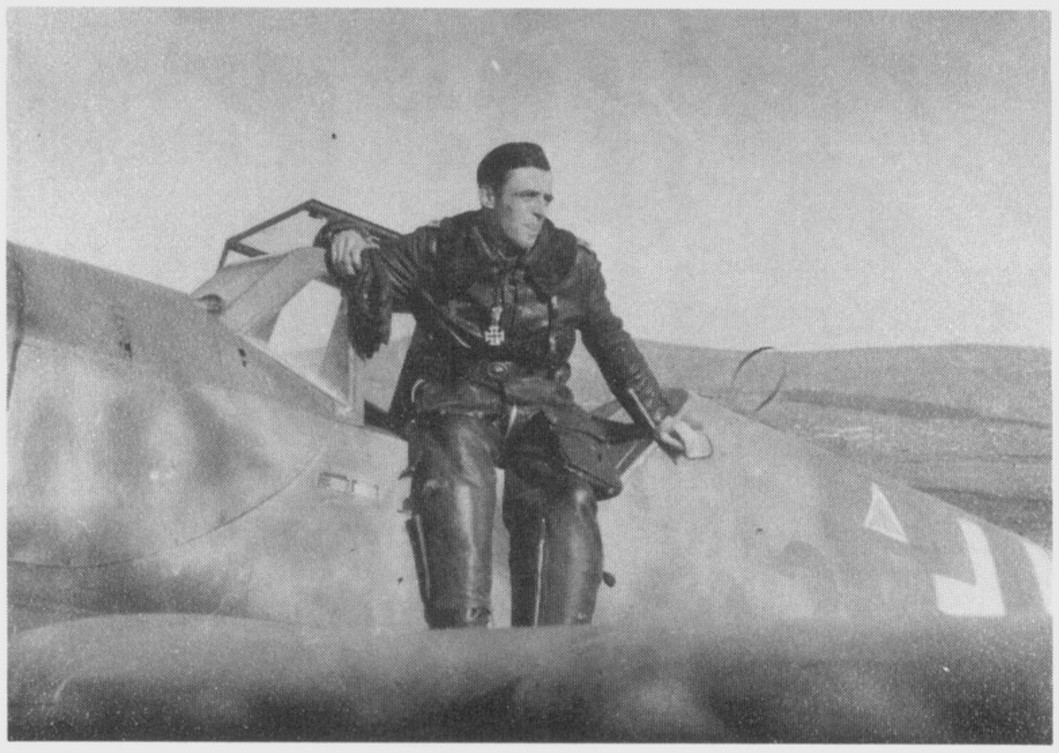
"Black 7" of 2./JG 3, a G-10/AS with the Werknummer 490 708. Uffz. Mörl was shot down in this machine on December 25, 1944, and forced to crash-land near Eupen. Mörl came down on the enemy side of the front and was taken prisoner by the Americans. Note the rectangular fairing panel and the name "Luisl" below the cockpit.

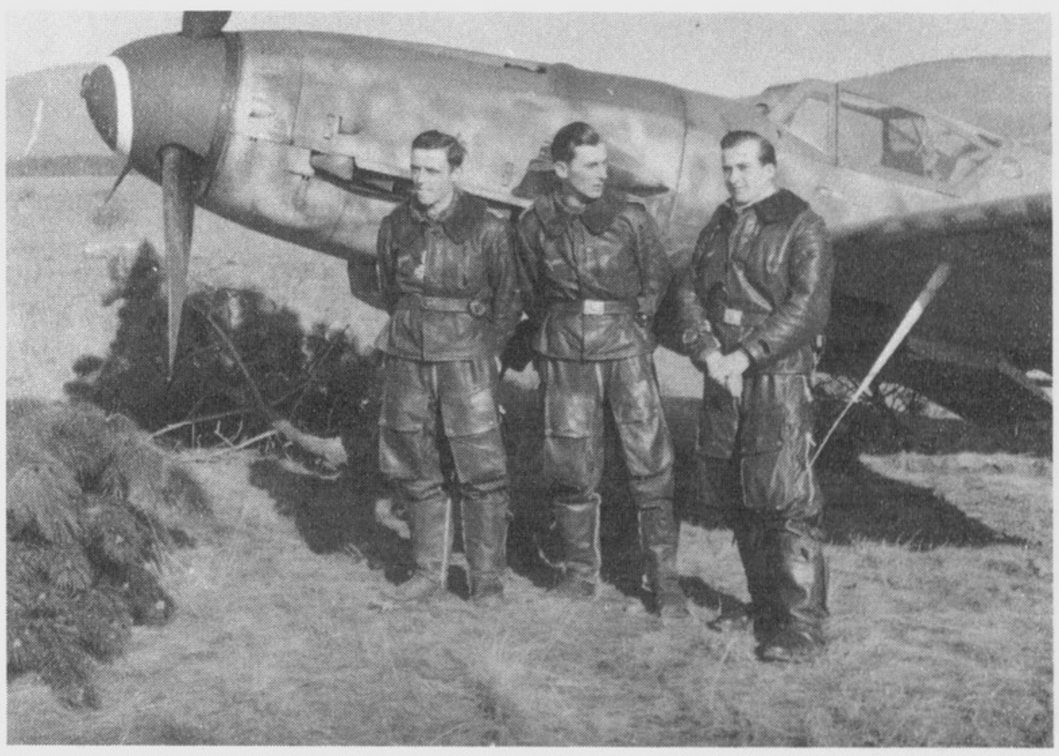
Lt. Ewald, Staffelführer of 7./JG 52, in the cockpit of his aircraft "White 3," a G-10, on January 3, 1945, after returning from a successful sortie in Hungary. In addition to Ewald's personal emblem, note the two identification plates under the cockpit. This was a feature of many G-10s and at the same time an indication that the machine was the result of a converted airframe. (Barbas)

new wings and tailwheels. Aircraft with the old wing and long tailwheel are known in *Werknummer*blocks 130000, 490000 and 491000, while conversely machines with the new wing and short tailwheel are known in *Werknummer* blocks 611000, 612000, 770000 and 771000. This is not meant to suggest, however, that uniformity prevailed within the named production batches. The vast majority of G-10s received the enlarged fin and rudder, however machines are known with the early small tail. The shape of the rudder was still not standardized. There were aircraft whose rudder featured the Flettner tab only, as well as examples with the Flettner tab and two fixed tabs. The shape of the rudder was in no way connected to the type of tailwheel used, so that both types were to be seen with the early tailwheel as well as the later, long version.

Use of the *Erla-Haube* was apparently standard on the G-10. In most cases the antenna mast was mounted on the rear of the canopy frame. There were machines, however, which either dispensed with the antenna mast altogether, or in fewer cases, had it mounted on the fuselage spine behind the cockpit. As the G-10 did not have a pressurized cockpit most machines exhibited the usual cockpit ventilation inlets. Occasionally the cooling scoops located beneath the windscreen side panels were replaced by tapered recessed inlets. On a number of G-10s the ventilation inlets beneath the windscreen

Frontal view of a G-10 of 6./JG 51 flown by Lt. Kühlein, the Staffelführer, in February 1945. The aircraft was photographed at Raab airfield in Hungary. Clearly visible are the chin bulges, the deep oil cooler and the large undercarriage fairings on the upper surfaces of the wings. Also note the wavy paint demarcation line on the wing leading edge. (Kühlein)





Fw. Wimmer of 6./JG 52 on the cockpit sill of his aircraft, which bore the code number "2," after receiving the Iron Cross, Second Class for shooting down his third enemy aircraft, Veszprem, March 1945. This G-10 wears a heavily-mottled grey finish. The large mainwheel fairing may just be seen on the wing. Also note the two identification plates below the cockpit. (Barbas) Right: This is probably Fw. Wimmer's G-10 again. Assembled in front of the aircraft are, from left to right: Fw. Wimmer, Uffz. Hauter and Gefr. Kraus. (Barbas)

Mechanics of II./JG 52 in front of "Black Chevron," a G-10 of the Gruppenstab, Hungary, early 1945. Clearly visible is the deep oil cooler. (Emmert)

were sealed, as had been the case earlier on some G-6 aircraft.

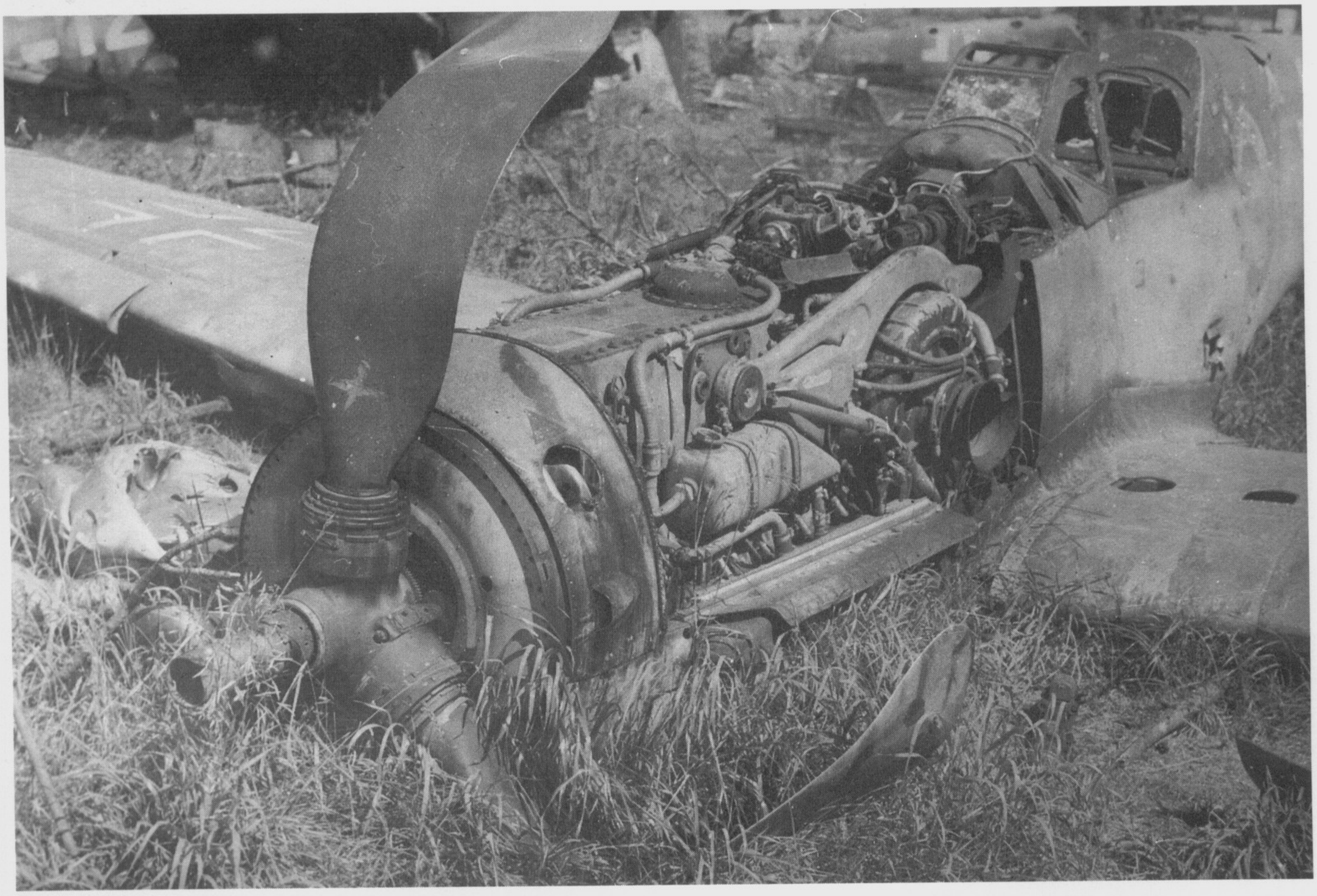
On most G-10s the antenna mast of the FuG 16zy was installed beneath the left wing, as had been the case earlier on some G-14s. The standard engine-mounted MG 151/20 cannon was in many instances replaced by a 30 mm MK 108, the installation receiving the designation U4. Once again these aircraft were built by WNF.

Also widely used by the G-10 was *Rüstsatz* R3 with its 300-liter auxiliary fuel tank beneath the fuselage. The installation of other *Rüstsätze* was planned, such as an ETC 500 IXb as R1, two MG 151 gondola-mounted MG 151/20 as R5, two 210 mm rocket launching tubes as R7 or finally a BSK 16 gun camera in the leading edge of the left wing between Ribs 3 and 4. Concealed behind the designation G-10/R6 was a fighter variant equipped with a semi-autopilot for bad-weather operations, which saw service with I. and IV./JG 300, I./KG(J) 6 and I. and II./KG(J) 27.*

Several of the machines delivered to NJG 11 were fitted with shrouds over their exhaust stacks – presumably installed after reaching the unit. These were of similar shape to the exhaust shield normally fitted on the left side and extended to the lower edge of the exhaust stacks.

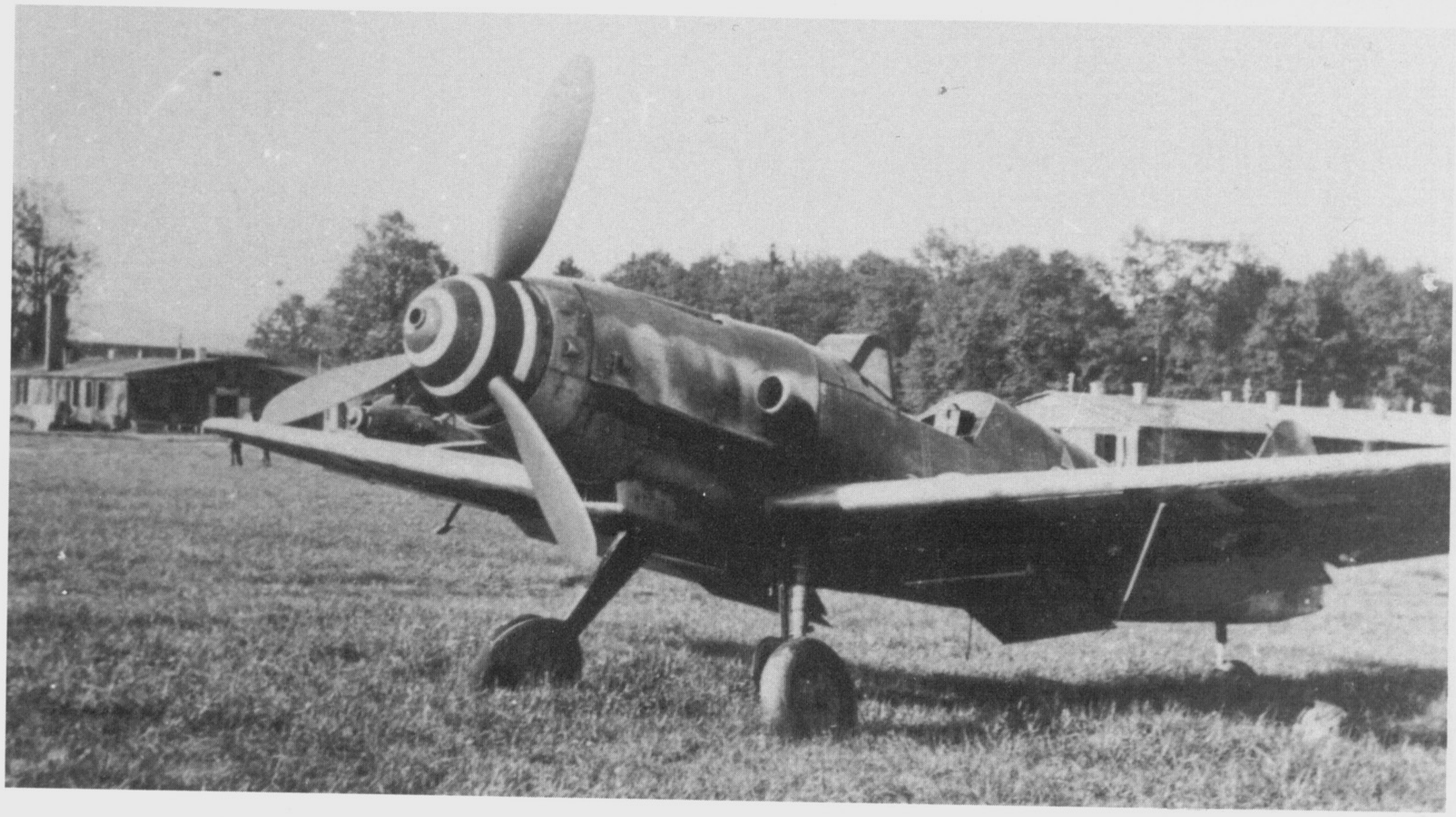
The majority of G-10s from production batches 770000 and 771000 were, as befitted their short-range reconnaissance role, equipped with an Rb 50/30 camera in the fuselage. These machines received the *Rüstzustand* designation R2. As a result of the camera installation the antenna for the FuG 25a had to be moved aft, projecting from the fuselage just in front of Frame 5.

* Rüstsatz R6 comprised a PKS 12 single-axis autopilot which automatically controlled the aircraft's rudder, whereas the elevator and ailerons were operated manually by the pilot.



"Yellow 9," a G-10 belonging to an unknown Gruppe, was abandoned in early 1945 following a belly landing at Bad Lippspringe. Note the letter "D" on the engine block indicating a DB 605 D and the gondola cannon beneath the wing, rarely seen on a G-10. (Petrick)

Two "Gustavs" of II./JG 52, photographed at Neubiberg after the end of the war. II./JG 52 was the only Gruppe of that Geschwader to escape to Neubiberg and thus avoid capture by the Russians. Particularly noteworthy is "Black 7." Although this G-10 exhibits most of the identifying features of the G-10 series, it has the older, small tail unit. (Petrick)



A G-10 which apparently fell into Allied hands undamaged, seen at an airfield near Munich in the summer of 1945. The absence of chin bulges suggests that it may have been a G-10/AS. (Petrick)

Two photographs of "White 10," a G-10/R2, WNr.770 224, of 2./NAG 12 in early 1945. This machine very likely came from production batch 770 000. The bulge of the camera window is just visible beneath the fuselage. (Emmerstorfer) Below: Congratulations for the pilot of "White 10" following a successful mission. Once again note the two identification plates. (Emmerstorfer)

Bf 109 K Series

Deliveries of the K-Series, which was to be the final major production variant of the Bf 109, began in mid-October 1944. The previously-mentioned RLM transcript from August 9, 1943 reveals that the manufacture of 10 pre-production aircraft by WNF was planned for September 1943. Series production of the Bf 109 K-2 was subsequently to begin at Erla, WNF and Messerschmitt Regensburg in February 1944. Further, the Bf 109 K-1 was supposed to replace the G-5 in production at Erla from July 1944 and it was specified that, like the G-5, the K-1 was to be equipped with a pressurized cockpit. Quantity production was also planned of a K-3 series which was to be built as a fighter and, in its K-3/R2 form, as a reconnaissance aircraft with a pressurized cockpit. In March 1944, however, it was decided that in the interests of a standardization of Bf 109 production all other K-Series would be cancelled pending the introduction to production of the K-4 series. Therefore the only variant of the K-Series to reach quantity production was the Bf 109 K-4.

This Bf 109 K-4 with the Werknummer 330 130 was flown by the Messerschmitt factories in various trials in the autumn of 1944. The identifying features of the K-Series are clearly evident: the revised, forward location of the fuel tank filler point and the octane triangle beneath it, the DF loop which was displaced further back along the fuselage spine, the revised equipment hatch door, the tall tailwheel and the tall fin and rudder with two fixed trim tabs. (Radinger)

Bf 109 K-4

While the K-1 to K-3 Series, which got no further than the project level, were to retain the DB 605 A power plant, the K-4 was conceived around the DB 605 D and accordingly differed little from the G-10. In contrast to the G-10, K-Series aircraft were not conversions of older machines, and unlike the G-10 the vast majority of the aircraft delivered were equipped with the DB 605 D engine, although a few exceptions are known among early series aircraft which retained the DB 605 AS engine.

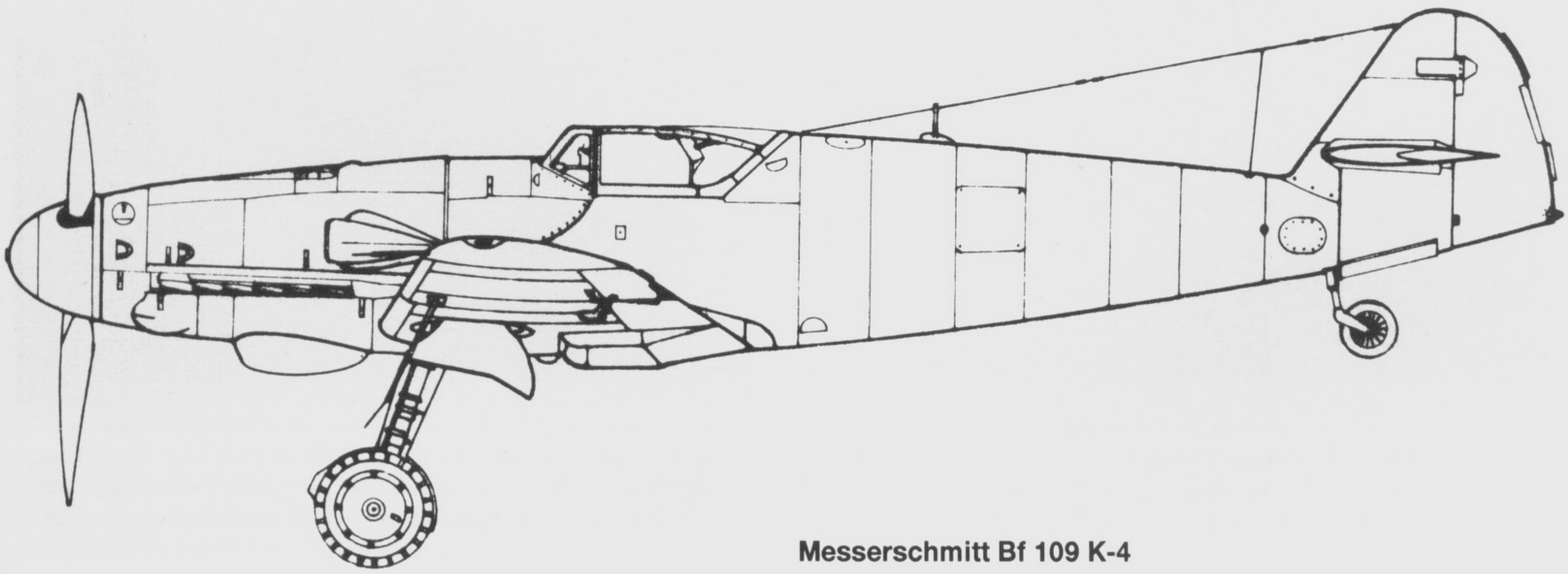
According to the existing production programs, which were also continually revised regarding K-4 production, at one time the construction of over 12,700 K-4s was planned, with production stretching from July 1944 until March 1946. In fact only a fraction of these projected numbers were built and delivered. The actual number of K-4s built is unknown; a total of 534 had been delivered by November 30, 1944, and it may be assumed that at least another 1,200 machines had been built by the time the war ended. The known K-4 *Werknummer* blocks are:

330000 – 331000	Mtt Reg.
331300 – 331500	Mtt Reg.
332000 – 333000	Mtt Reg.
333800 – 334000	Mtt Reg.
334000 – 334300	Mtt Reg.
335000 – 335300	Mtt Reg.
570000 – 571000	Erla

The vast majority of K-4s were built by Messerschmitt, and the company's planned production figure, according to the production program as it stood on November 30, 1944, was 3,598 aircraft, all of which were to be delivered by July 1945. In addition, Erla was to build 2,895 of the K-4/R6 version in the period January-April 1945. Production did in fact begin there, probably in early 1945, but it is not known how many aircraft were built and delivered before Leipzig was occupied by American forces on April 19, 1945. The only known example of an Erla-built K-4/R6 is *Werknummer* 570362, which was accepted by BAL on February 16, 1945. Furthermore, WNF was supposed to construct another 2,820 K-4/R6s from May 1945 to March 1946, while KÖB was to construct 1,000 K-4s in the period March-June 1945 and a further 2,700 of the K-4/R6 version by March 1946. It is not known if production of these planned series began and if so what *Werknummer* blocks they were assigned.

The K-4 began reaching active units assigned to the Reich Defense in mid-October 1944 and those in the East somewhat later. Thus deliveries of the K-4 obviously began some time before those of the G-10. The first known loss of a K-4 occurred on October 19, 1944, when *Werknummer* 330305 crashed while being flown by Uffz. Pospiech of 3./FIÜG 1 (S). The same day the *Sonderkommando OKL* lost a K-4 with the *Werknummer* 330319. The aircraft's pilot, Ofw. Galli, was apparently injured in the incident.

By the end of the war the K-4 had been delivered to the following units:



Messerschmitt Bf 109 K-4

The following photographs were taken in November at Neuruppin, where III./JG 77 was resting and refitting and reequipping with the K-4. Here Hptm. Menzel is seen preparing for a practice sortie in "White 1," a K-4 of 9. Staffel with the Werknummer 330 204. This aircraft was lost on January 1, 1945, while taking part in Operation "Bodenplatte," when Lt. Abendroth was shot down by flak in the Rosendaal area and subsequently taken prisoner. (Buck)

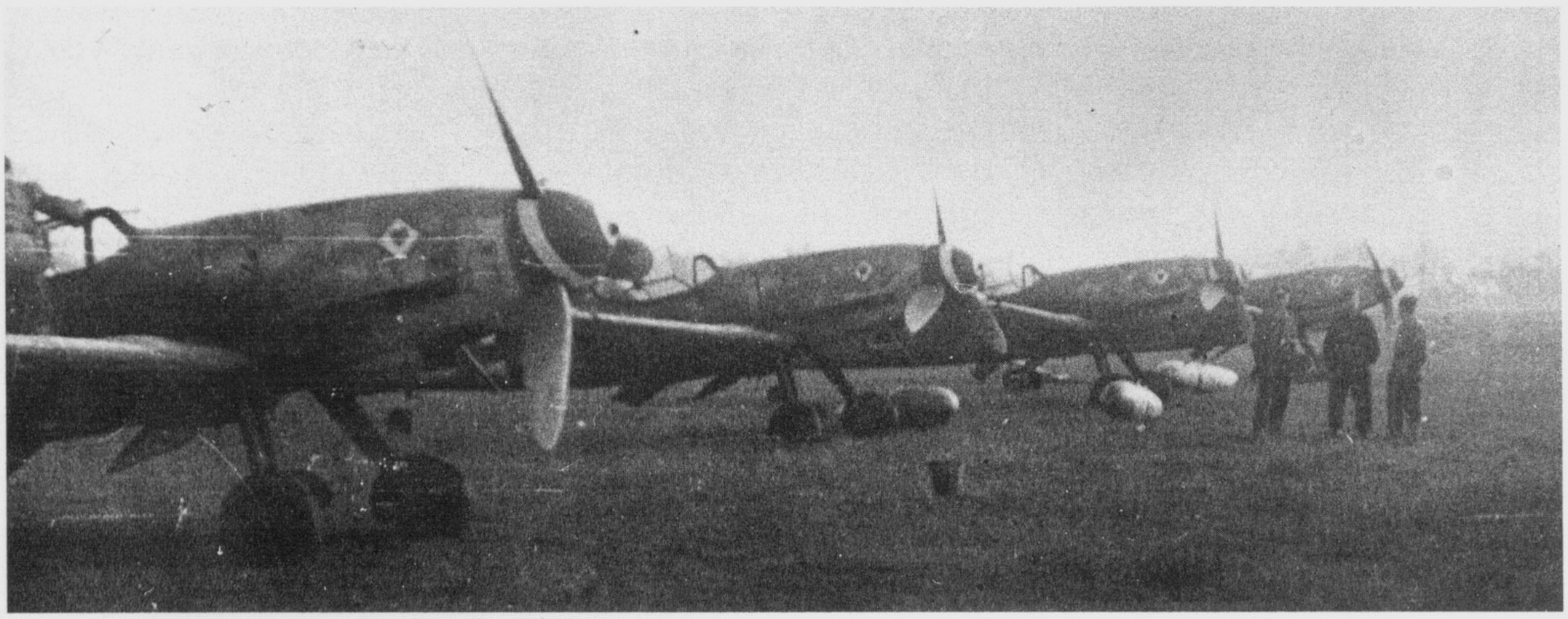
"White 2," another K-4 of 9./JG 77 at Neuruppin in November 1944. (Buck)

A ground collision involving two K-4s of 9./JG 77. Sitting in "White 8," which is just visible beneath "White 3," was Uffz. Schulz. Luckily Schulz escaped serious injury and was able to climb out of his wrecked machine. (Buck)

III./JG 1, II./JG 2, III./JG 3, I., III./JG 4, II./JG 11, III./JG 26, II., III., IV./JG 27, III./JG 51, II., III./JG 52, II., III./JG 53, I., II., III./JG 77, I./NJG 11, II./KG(J) 6 and I. and II./KG(J) 27. Most of these *Gruppen* were only partially equipped with the K-4 and continued to fly numerous G-14s and G-10s as well. Only III./JG 3, III./JG 26, III./JG 53 and III./JG 77 were equipped, at least for a time, solely with the K-4.

Externally, the K-4 differed little from some G-10s. The engine installation of both versions was identical. The K-4 also had the new, wide-bladed VDM 9-12159 propeller and the deeper F0 987 oil cooler, as well the two side fairings to accommodate the larger crankcase of the DB 605 D. Like the G-10, MW-50 power boost was standard equipment on the K-4, and as a result the complete engine designation was DB 605 DM. In addition the K-4 was built with radiator cutoff valves like those which had been retrofitted to limited numbers of F-Series aircraft in 1941.

The cockpit area, too, was virtually unchanged from that of the G-10. The K-4 exhibited the various known styles of the so-called "agglomerations", the riveted-on fairings behind the bulged engine cowling. The K-4 received the *Erla-Haube* as standard equipment and the antenna mast was often dispensed with; in this case the aerial was attached to the fuselage spine in the usual manner. Because of the high attrition in antenna masts and safety springs resulting from the *Erla-Haube* being opened too far,



Four K-4s of 9./JG 77 at Neuruppin airfield on a dreary, foggy November day. All wear the Geschwader emblem of JG 77 on the engine cowling. (Buck)

Two shots of "White 17," a K-4 of 9./JG 77 with the Werknummer 330 230. On January 1, 1945, Uffz. Munninger of 10./JG 77 was shot down and killed by anti-aircraft fire near Tilburg while flying this aircraft. Behind the fuselage one can see Lt. Renzow, the Staffelführer of 10./JG 77. (Buck)

Aircraft of 11./JG 77. In the center is "Yellow 8," a K-4 with the Werknummer 330 176. This aircraft was lost as the result of a mid-air collision near Neuruppin on November 27, 1944, its pilot, Lt. Zieher, losing his life. (Böttner)

a technical directive was issued in November 1944 (TAGL II Bf 109 A2 Nr. 3, 427/44) which contained detailed instructions to the front-line maintenance shops for the replacement of the antenna mast and, if required, conversion of the antenna installation to the current production standard. In the modification process the aerial was simply hooked into a hole in the fuselage spine, led through the DF loop and attached to the fin with a metal lashing. The fixed antenna, with an overall length of 3.5 meters, consisted of impregnated hemp rope (85 cm), an eye, flexible wire (40 cm), the actual antenna between the insulators (167 cm), flexible wire (41 cm) and the safety spring, which was hooked onto the fin. The fuselage antenna lead-in, which was attached 51 cm in front of the rear insulator, sloped forward 74 cm to the fuselage spine.

The filler point for the main fuel tank was moved forward to a location between Frames 2 and 3–as always on the left side of the fuselage. Conversely the DF loop was moved aft and installed between Frames 3 and 4. The round sheet-metal plate over the footrest behind the wing root was deleted on the K-4. The radio equipment access hatch was also moved forward and was located between Frames 4 and 5 in a somewhat higher position than before. The hatch is often depicted with a sloped upper edge, but this was in fact horizontal, while the bottom edge sloped slightly to the front.

The enlarged tail unit was a standard fit on the K-

Uffz. Fröhlich of 11./JG 77 in front of a K-4 of 10./JG 77 with the code "Red 2," photographed at the end of December 1944 at Düsseldorf-Ratingen. It is obvious that this aircraft does not yet carry the white/green fuselage band which was first used by JG 77 in the operations on New Year's Day 1945. (Fröhlich)

K-4s of 11./JG 3 parked and meagerly brish-camouflaged at Pasewalk airfield in February 1945. (Kallerhoff)

Hptm. Strasen, who took over III./JG 4 just before the end of the war, by the tail of his K-4, which wears the black/white/black fuselage band of JG 4. Visible on the fuselage band is the vertical Gruppe bar, which on aircraft of the Gruppenstab of III./JG 4 was red. (Strasen)

4, and in most cases the aircraft's rudder featured the Flettner tab as well as the two fixed tabs; however, there were rare examples which did not receive the fixed tabs. In general all K-4s were supposed to receive the long tailwheel, which was intended to be retractable. The tailwheel size was 350 x 135. A few K-4s were nevertheless fitted with the short tailwheel of the G-6. Those aircraft with the long, retractable tailwheel were fitted with two clamshell doors to cover the tailwheel recess.

The wing of the K-4 had the large, rectangular fairings for the 660 x 190 mainwheels, and externally was almost indistinguishable from that of the G-10 series. There were several differences, however. The ailerons of the K-4 were fitted with small inset adjustable trim tabs. It was also planned to introduce

Above: Lt. Landt, Staffelführer of 11./JG 53, in the cockpit of his aircraft "Yellow 1" at Kirrlach, February 22, 1945. This K-4 may be the same machine – WNr. 332 660 – in which Lt. Landt collided with a Mustang during a dogfight near Bretten a day later. Landt was injured in the incident and was forced to bail out of his damaged aircraft. (Landt) Right: "Yellow 1" again. The black fuselage band worn by aircraft of JG 53 is clearly visible behind the Balkenkreuz. (Landt)

Lt. Potreck, a pilot in the Stab of III./JG 53, seated in his brush-camouflaged K-4 during preparations for a sortie in March 1945. (Landt)

"Yellow 15," a K-4 with the Werknummer 332 956, belonged to 11./JG 53 at Kirrlach in March 1945. On the left is Ofw. Polak and on the right Ofw. Scheer. Note the last four digits of the Werknummer on the aft fuselage. (Scheer)

Two pilots of 11./JG 3 – Gefr. Zitzmann and Uffz. Lehnen – in front of "Yellow 2," a K-4 with the Werknummer 332 506. This aircraft was lost in combat with Yak-9s near Stettin, when Uffz. Günter was shot down and killed. (Suhr)

Uffz. Suhr by the tail of his K-4, on whose rudder the Werknummer 334 210 may be seen. This aircraft has the short tailwheel, but it appears that the tailwheel recess doors for the long tailwheel are nevertheless present. (Suhr)

Three shots of "Yellow 8," a K-4 of 11./JG 3 at Pasewalk in March 1945. The pilots of 11./JG 3 in front of "Yellow 8." Standing, from the left, Uffz. Zimmermann, Uffz. Massing, Gefr. Zitzmann, Lt. Walter, Uffz. Deskau and Uffz. Suhr; sitting, FhjFw. Gogler, a Luftwaffe Female Auxiliary and Uffz. Lehnen. Note the antenna wire which runs through the DF loop and is attached to the fuselage spine. (Suhr)

Above: The open, uncamouflaged placement of the K-4s of 11./JG 3 is noteworthy, because by this time the Russian Air Force was in almost complete command of the skies over eastern Germany. In the foreground the personnel of 11./JG 3 once again; from left Uffz. Massing, Lt. Walter, FhjFw. Gogler, Gefr. Zimmermann and an unidentified pilot. (Suhr)

Left: This aircraft was flown by Lt. Walter, later transferred to IV./JG 3 and here seen in front of his aircraft. Note the octane triangle specifying 87 octane fuel and the name "Mary" beneath the cockpit. (Suhr)

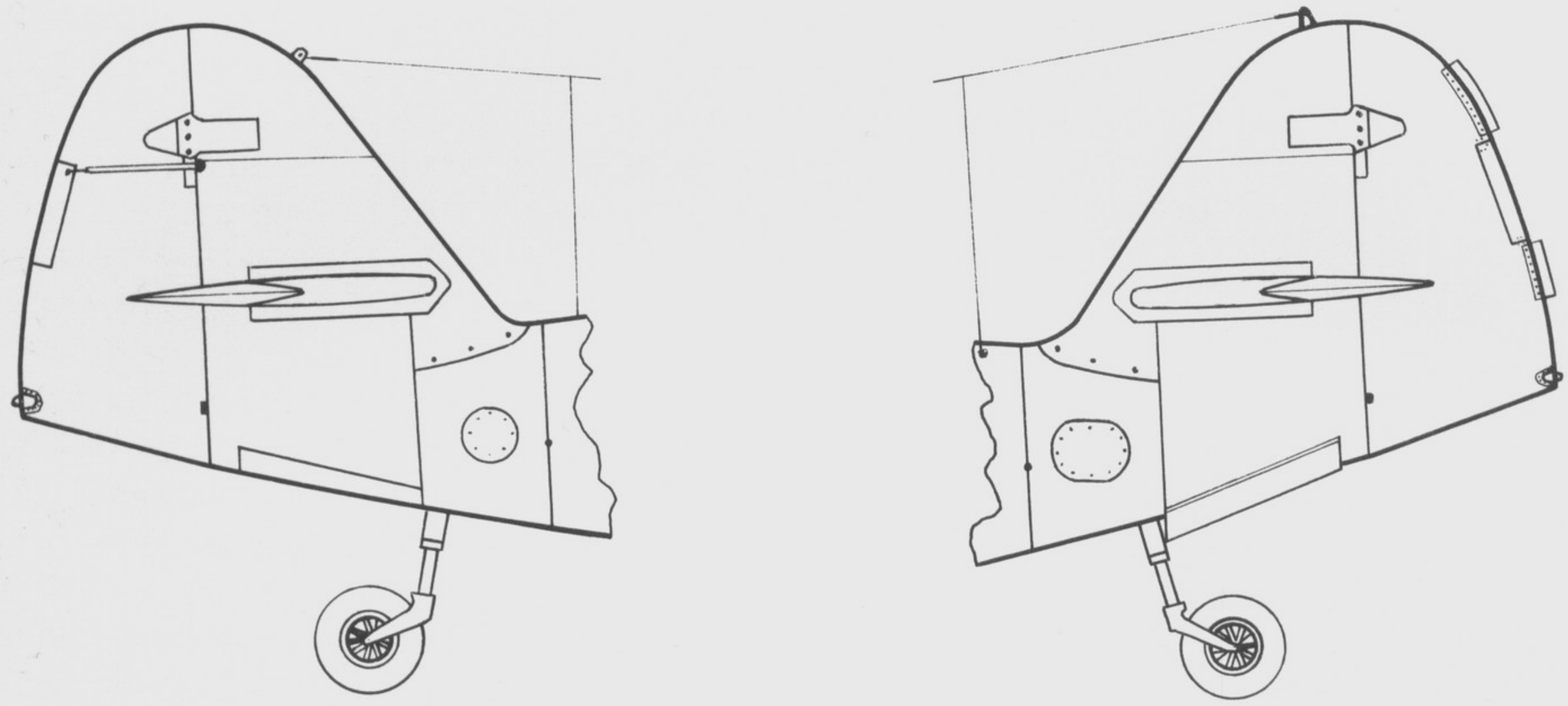
Fw. Strebel of 11./JG 3 in front of his aircraft "Yellow 4," presumably again the K-4 with the Werknummer 334 210. Note the end of the antenna wire behind the fuel tank filler inlet, the octane triangle with the c3 marking and the name "Ingeborg" beneath the cockpit. (Suhr)

the small mainwheel well doors similar to those which had been planned for the earlier Bf 109 G. These well doors were often removed by the front-line units. Installation of the antenna mast for the FuG 16zy below the left wing was standard. One change not externally visible was the relocation of the oxygen bottles from the rear fuselage to the right wing.

Armament of the K-4 consisted of an engine-mounted MK 108 cannon, which by now was installed on the production line, as well as two MG 131 machine-guns above the engine. There were aircraft, however, which were delivered with an MG 151/20 engine-mounted cannon. Radio equipment was similar to that of the G-10, with the FuG 16ZY and 25a as well as the *Peilrufanlage* direction finding (DF) equipment.

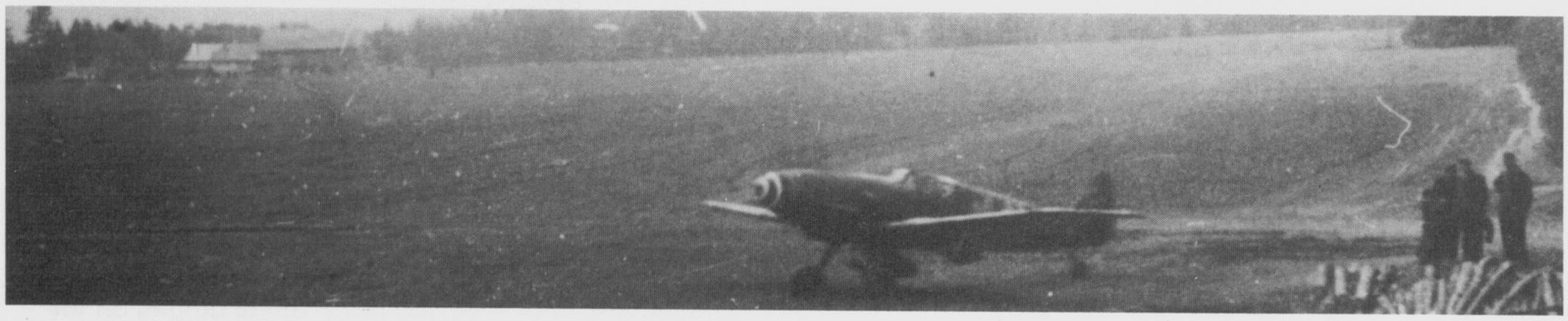
A series of *Rüstsätze* was planned for the K-4, of which only R3, the standard range-increasing modification with 300-liter auxiliary fuel tank, saw large-scale use. R1 was the planned installation of an ETC 500 IXb rack for one 250 kg or 500 kg bomb, R4 two underwing, gondola-mounted 20-mm cannon and R6 the installation of a BSK 16 gun camera in the left wing. Like the G14 and G-10 before it, a bad-weather version of the K-4 was to be built, designated K-4/R6. It has not been confirmed that this version was in fact built in large numbers. And finally there was a reconnaissance version, the K-4/R2, which could be equipped with an Rb 50/30 or Rb 75/30 camera as well as an FuG 16 ZS in place of the FuG 16 ZY. There is likewise no proof that the K-4/R2 was actually built.

A K-4 of III./JG 51 takes off from Junkertroylhof in April 1945. Visible behind the Balkenkreuz are the last three digits of the Werknummer, 334 175. (Aders)

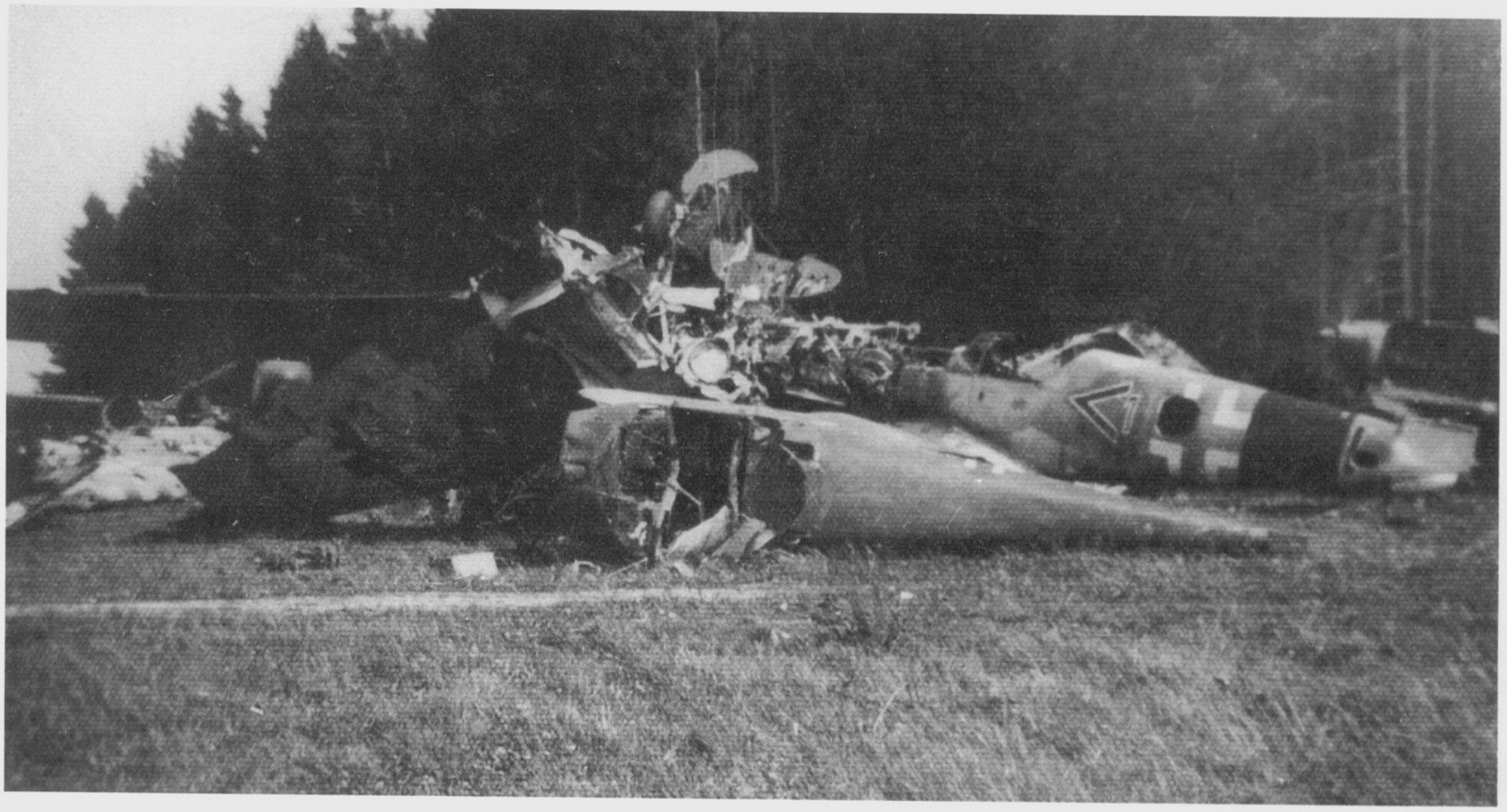


Different styles of attaching the antenna wire to the vertical stabilizer. The tailwheel doors are illustrated in the open and closed positions.

Lt. Landt of 11./JG 53 taxis out for takeoff in "Yellow 14," a K-4, in early 1945. Note the small wheel well doors beneath the wings, while the undercarriage leg fairings are absent. (Landt)



A K-4 of 11./JG 53 taxis out onto the landing field from the cover of the surrounding woods before taking off on a sortie from the forward airfield at Kreuzstrasse in April 1945. (Landt)



Wrecked German aircraft at Kaufbeuren airfield in the summer of 1945. On the right is "Chevron 1," a K-4 of the Gruppenstab of III./JG 53 which Lt. Bernhard had been forced to belly-land at the airfield on April 19, 1945. Note the broad, black fuselage band with the Gruppe bar behind it, as was usual on aircraft of III./JG 53 in February 1945. (Chapman)

The adjutant's aircraft of III./JG 27, a K-4 with the Werknummer 330 255, as found at Wunstorf air base by advancing Allied troops in April 1945. All the characteristic features of the K-4 are clearly visible – the equipment bay door which has been moved forward, the revised locations of the DF loop and fuel tank filler inlet, the large wheel bulges on the wing upper surface and the long tailwheel. Also evident are the large mainwheels and broad propeller blades. (Petrick)

The remains of "White 16," a K-4 of 9./JG 53, as it looked on a forward airfield in southern Germany after the end of the war. Note the broad fuselage band with the Gruppe bar behind it. Clearly visible are the large mainwheels and broad propeller blades. (Petrick)

Bf 109 K-6

The K-6 series was to enter production alongside the K-4 in January 1945. The production of 3,570 machines was planned, 2,070 by Erla and 1,500 by WNF. According to a report by the main department of the OKL (Hauptausschusses) on October 31, 1944, it was planned produce the K-4 and K-6 in a ratio of 2:1. In any case it is not known if the K-6 actually entered production and there is still no known *Werknummer* block for the K-6 series. It is known, however, that at least one K-6 was being tested at Rechlin as early as autumn 1944.

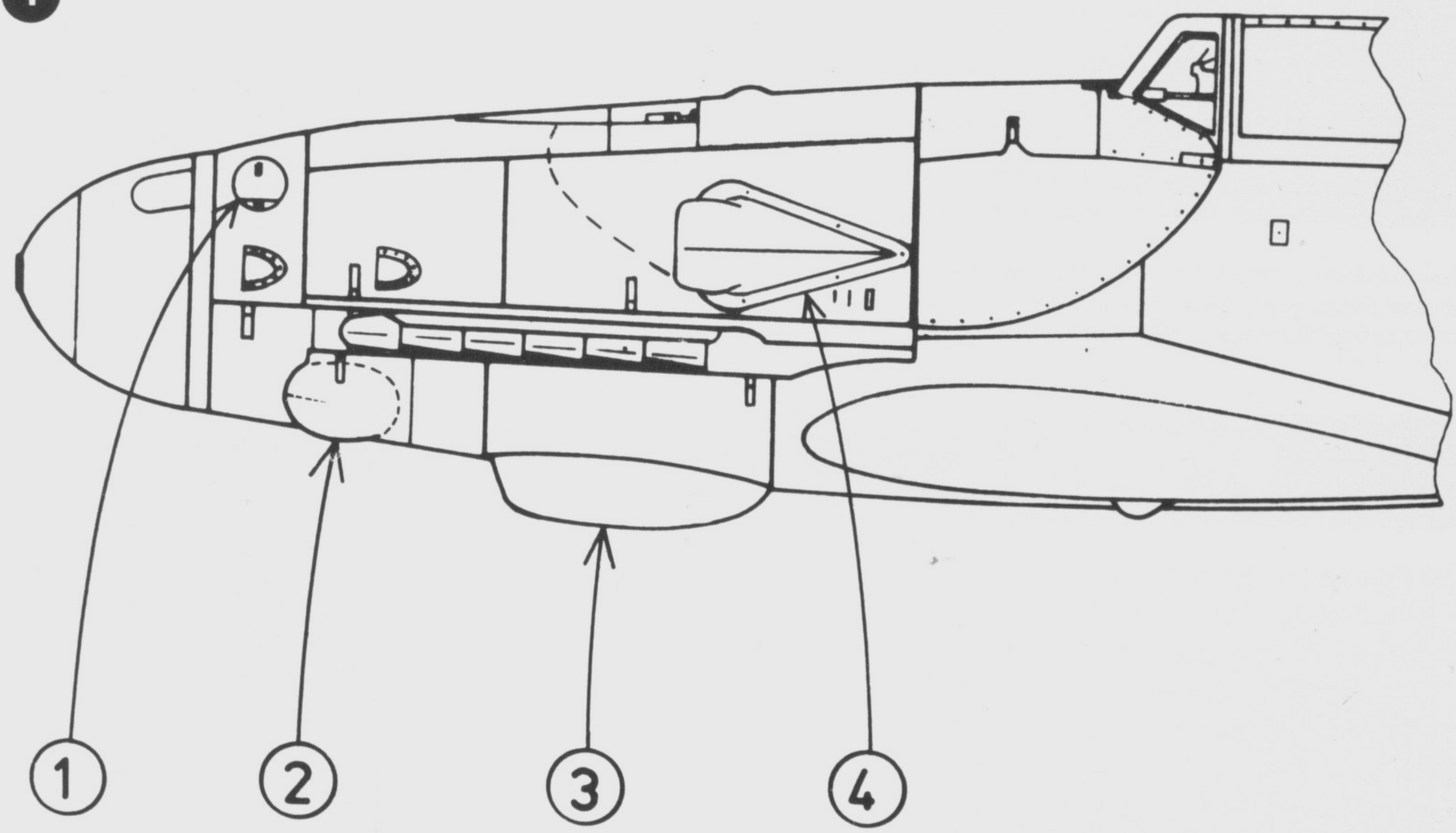
The K-6 was to be largely similar to the K-4; the only difference was to be the installation of two MK 108 in the wings, which is why the K-6 was designated a "heavy fighter."

On the other hand the projected Bf 109 K-10 and K-12 variants progressed no further than the project stage.

"Black 2," another K-4, originally belonged to 14./JG 53. In June 1947 it still lay in a forest at the former forward airfield at Reichenbach. Note the wavy line, used as a Gruppe symbol by IV./JG 53, on the black fuselage band. (Willbold)

Forward Fuselage Line Profiles

1

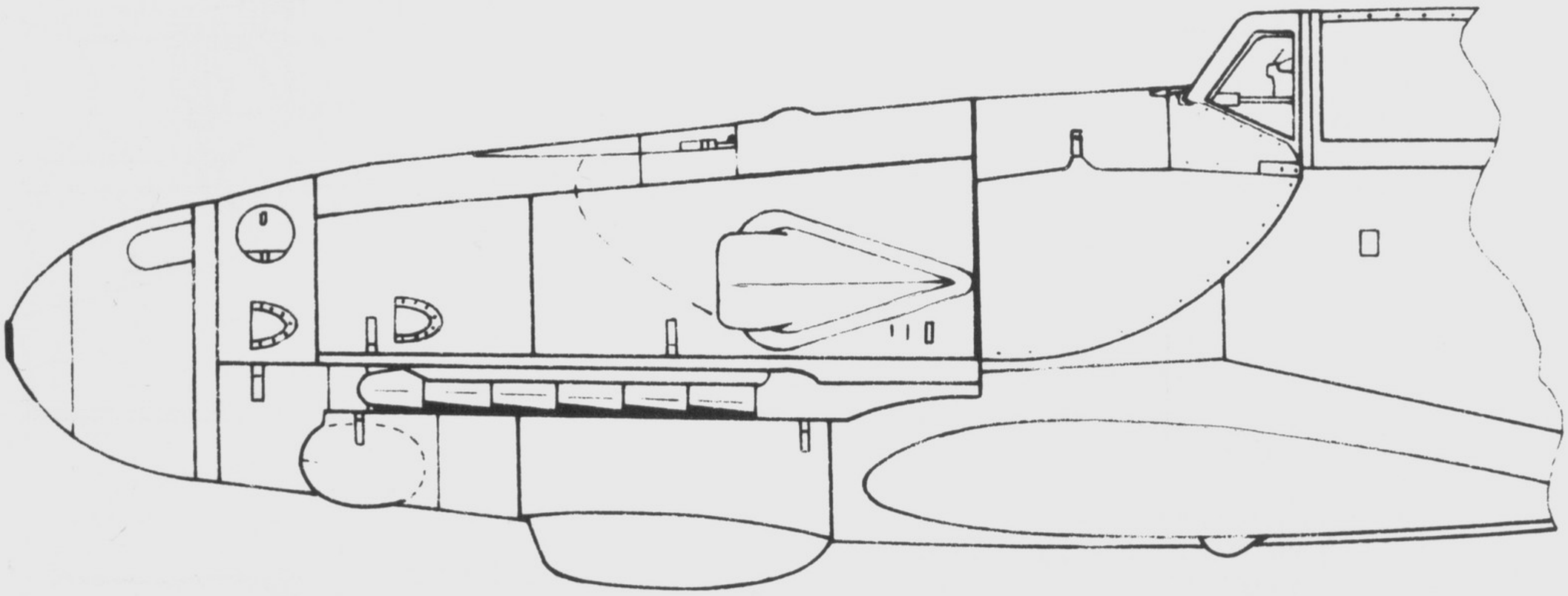


Forward fuselage of aircraft with DB 605 D:

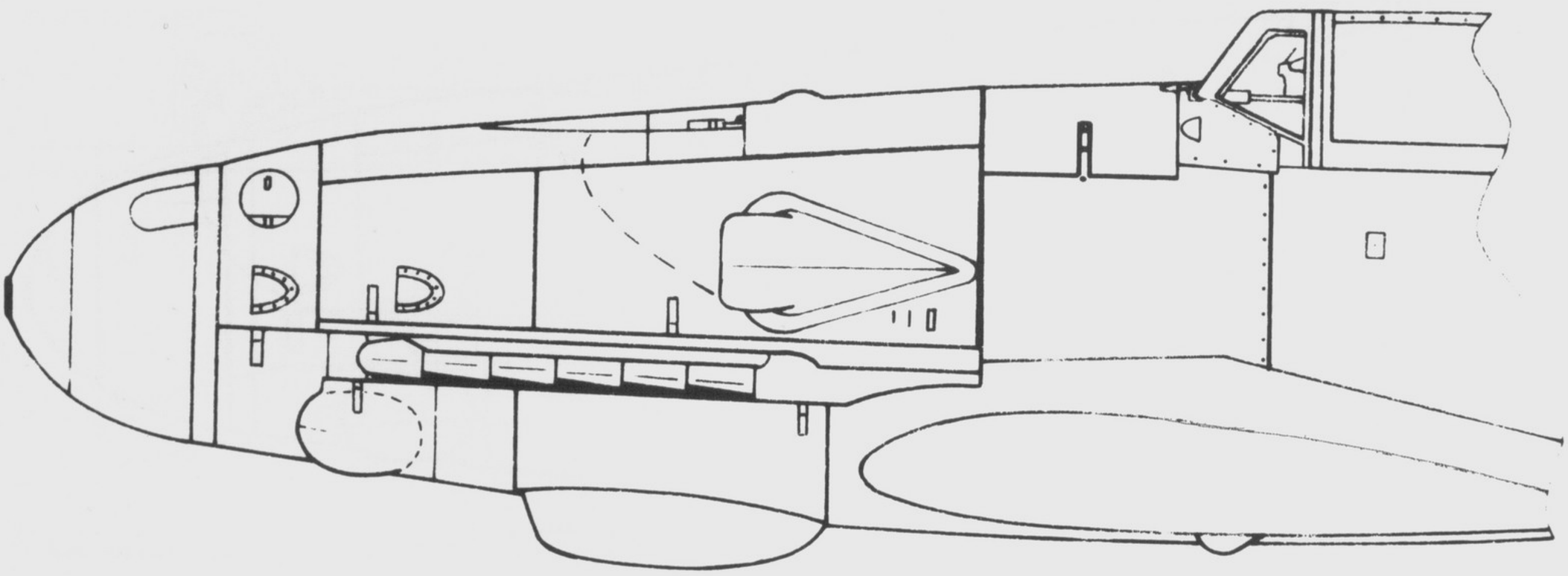
(1) Hatch over oil filler point moved to higher position.
(2) Fairing for oil return lines on both sides.
(3) Enlarged Fo 987 oil cooler.
(4) Enlarged supercharger air intake.

Cowlings for DB 605 AS and D engines with the so-called "agglomerations." Like the fairings over the spent belt chutes of the MG 131 on the G-6, the revised fairings for the AS and D engines were in two sections; the rear section of the fairing – the so-called "agglomeration" – was riveted to the fuselage side, while the forward section was an integral part of the engine cowling. Differences appeared only in the aft section behind the engine cowling. Drawings 2-7 illustrate the different variations of this fairing.

2



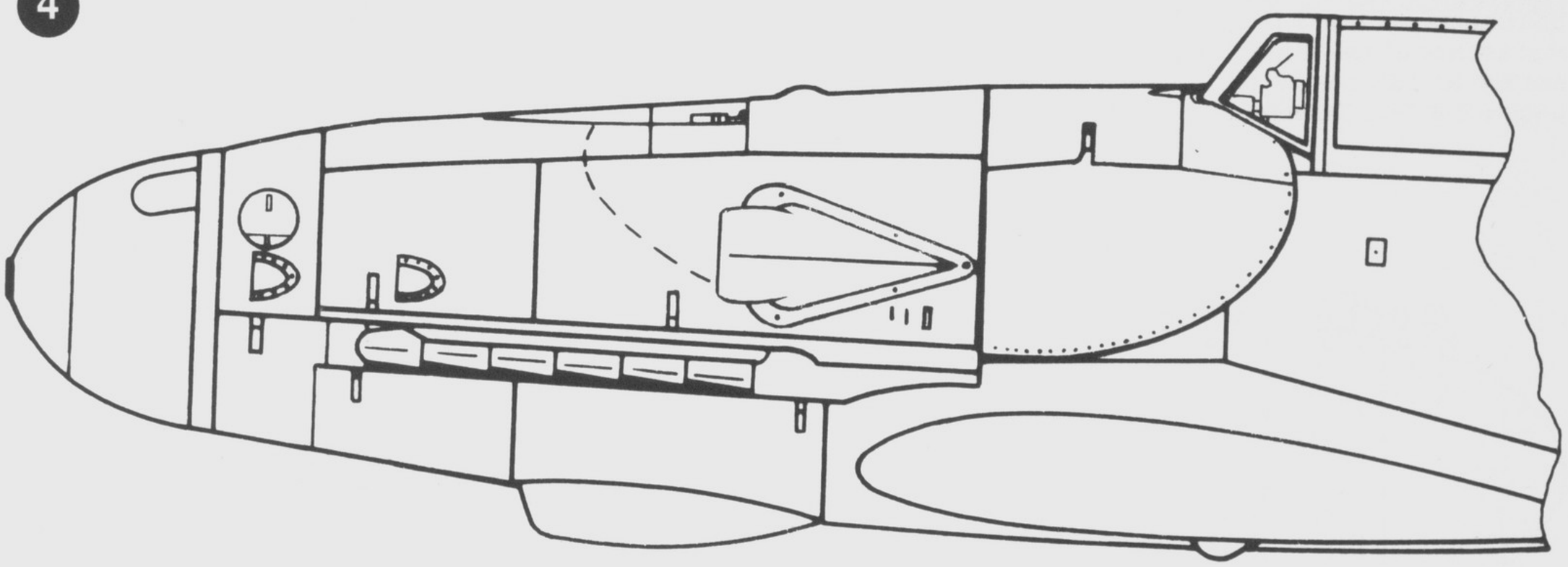
Drawing 2 illustrates one of the two most common styles seen on the G-6/AS, G-14/AS, G-10 and K-4 In this version a curved metal panel was riveted to the fuselage side, extending in an arc from the windscreen to just behind the ejector exhausts. A "cuff" was riveted around the windscreen which was equal to the extended width of the fuselage at that point. The machine-gun cover panel in front of the cuff was widened accordingly.



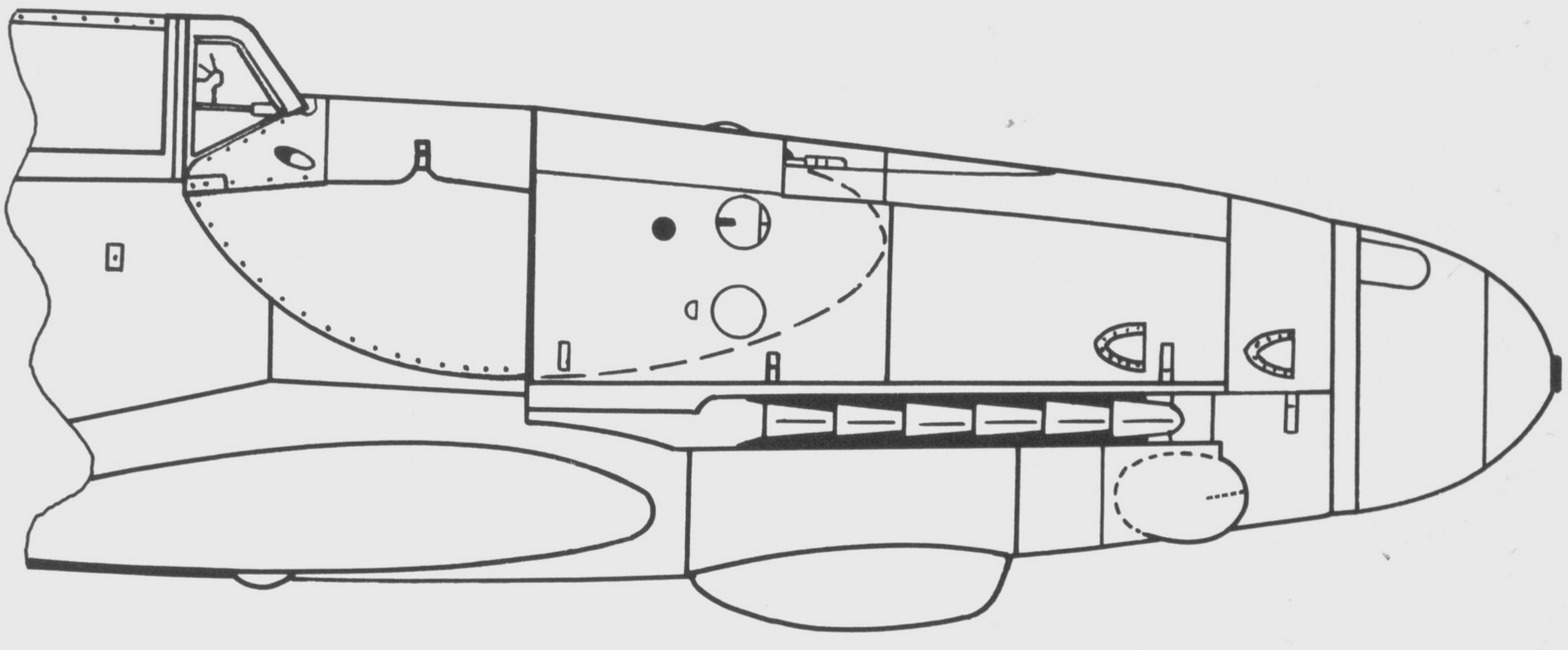
Drawing 3 shows the other frequently-used style of fairing known to have been used on the G-14/AS and G-10/AS. This fairing consisted of a rectangular metal panel attached to the fuselage side. Like the previous version a cuff surrounded the windscreen. This fairing did not always match perfectly with the engine cowling; rather the engine cowling projected slightly on its sides and top, resulting in a visible step (see side view Bf 109 G-10/AS).

3

4



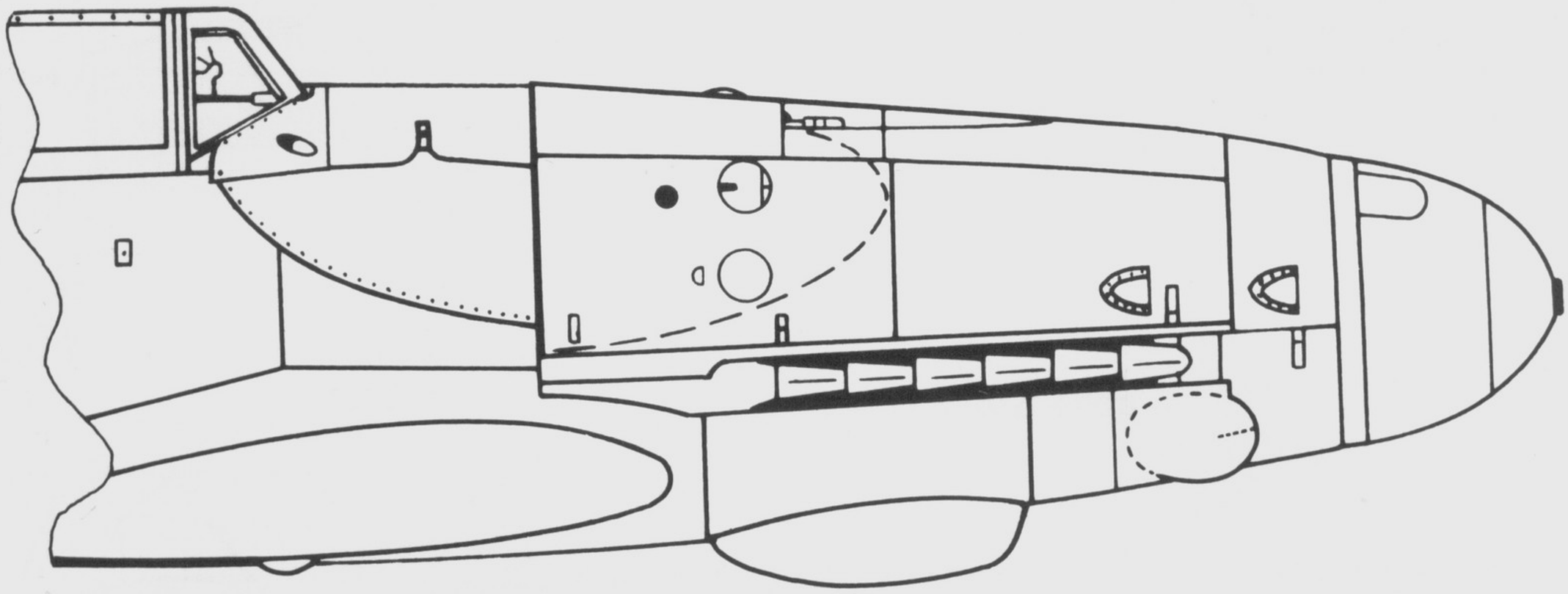
Drawing 4 illustrates a rare version which is so far known on only one G-14/AS and which differs from the fairing in Drawing 2 only in the shape of its curve. It is possible that the cuff around the windscreen was attached to the side panels.

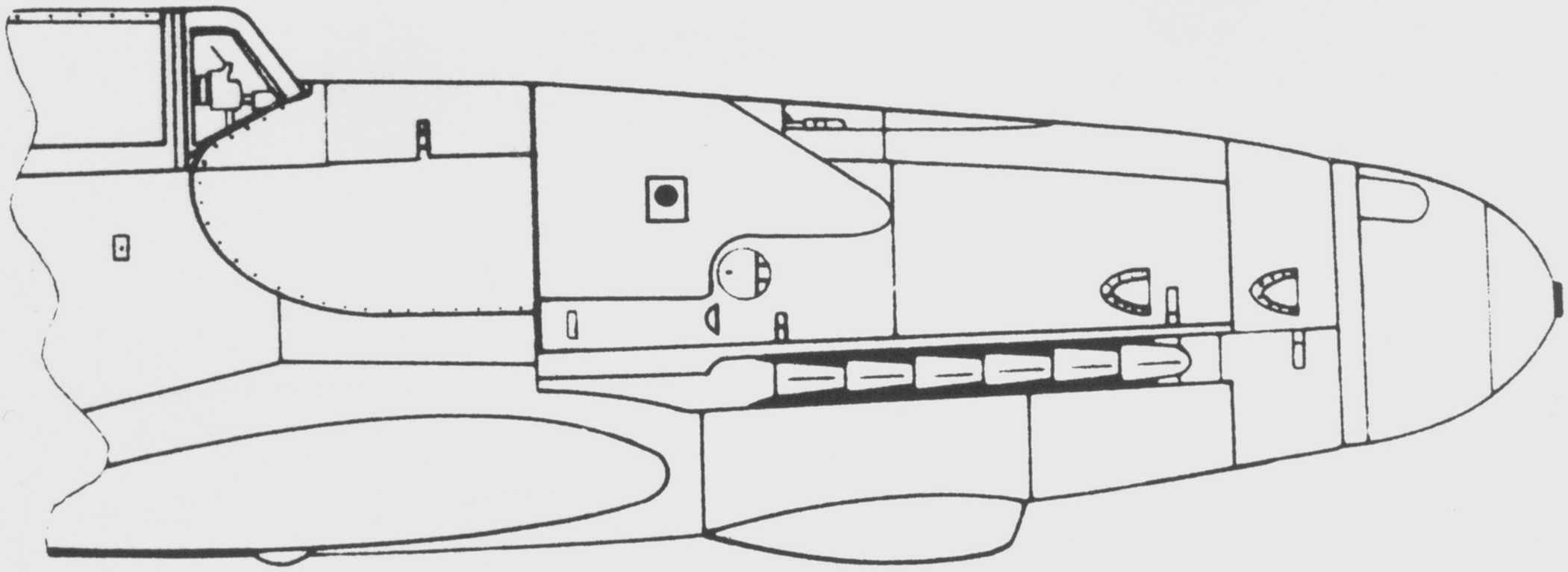


5

Drawings 5, 6 and 7 show the corresponding fairings for the right side of the fuselage; the versions in Drawings 5 and 6 were by far the most widely used. A right side fairing equivalent to the version in Drawing 3 is as yet unknown. Combinations of style 3 with 5, and 2 with 5 or 6 are known, however. Drawing 7 illustrates a rare style of fairing known only to have been used on a G-6/AS.

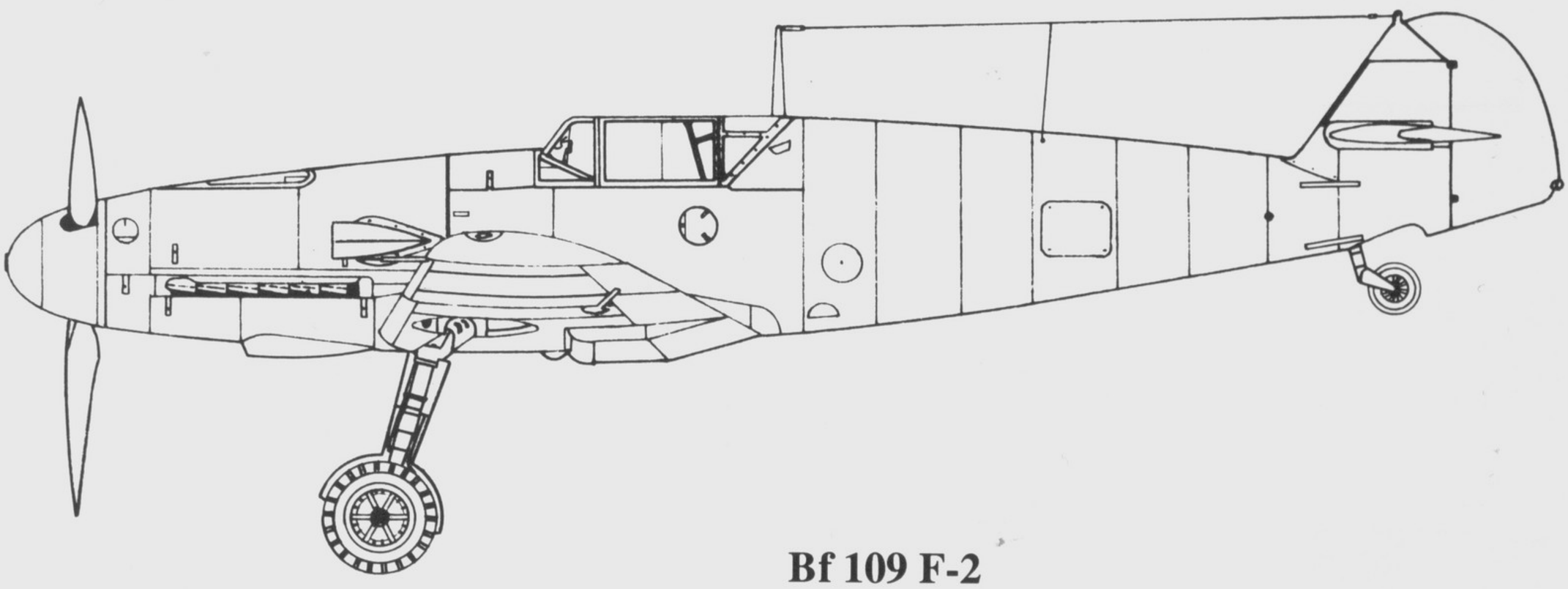
6



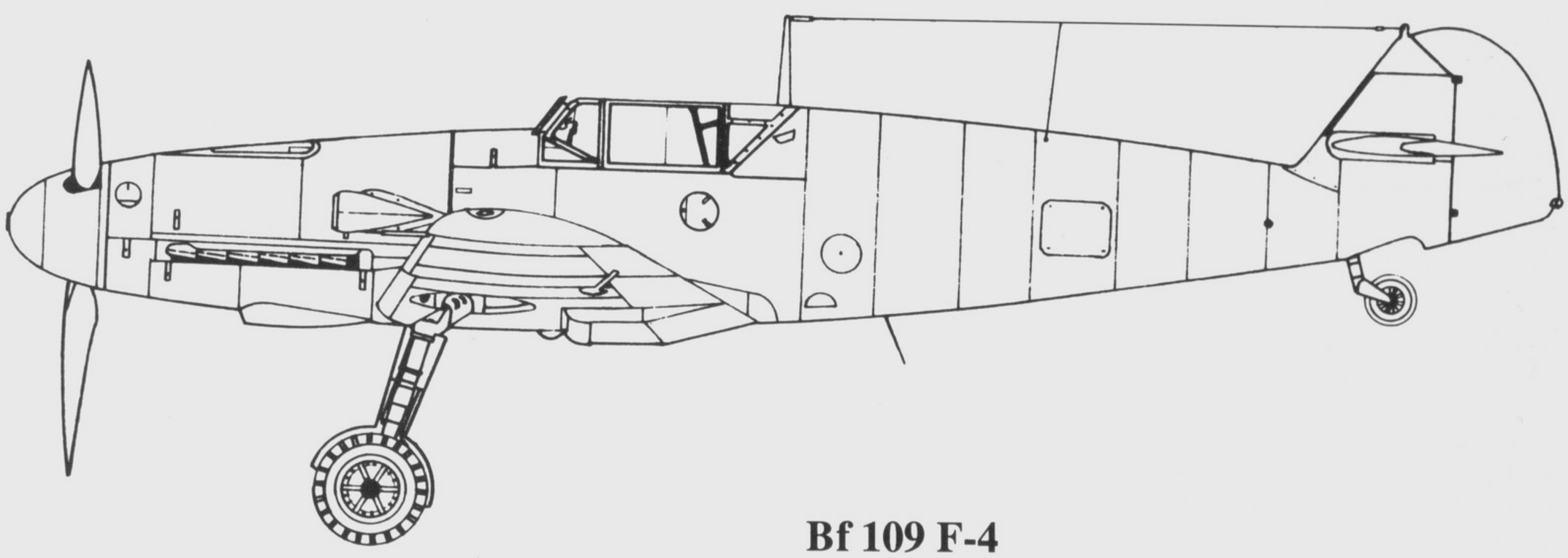


7

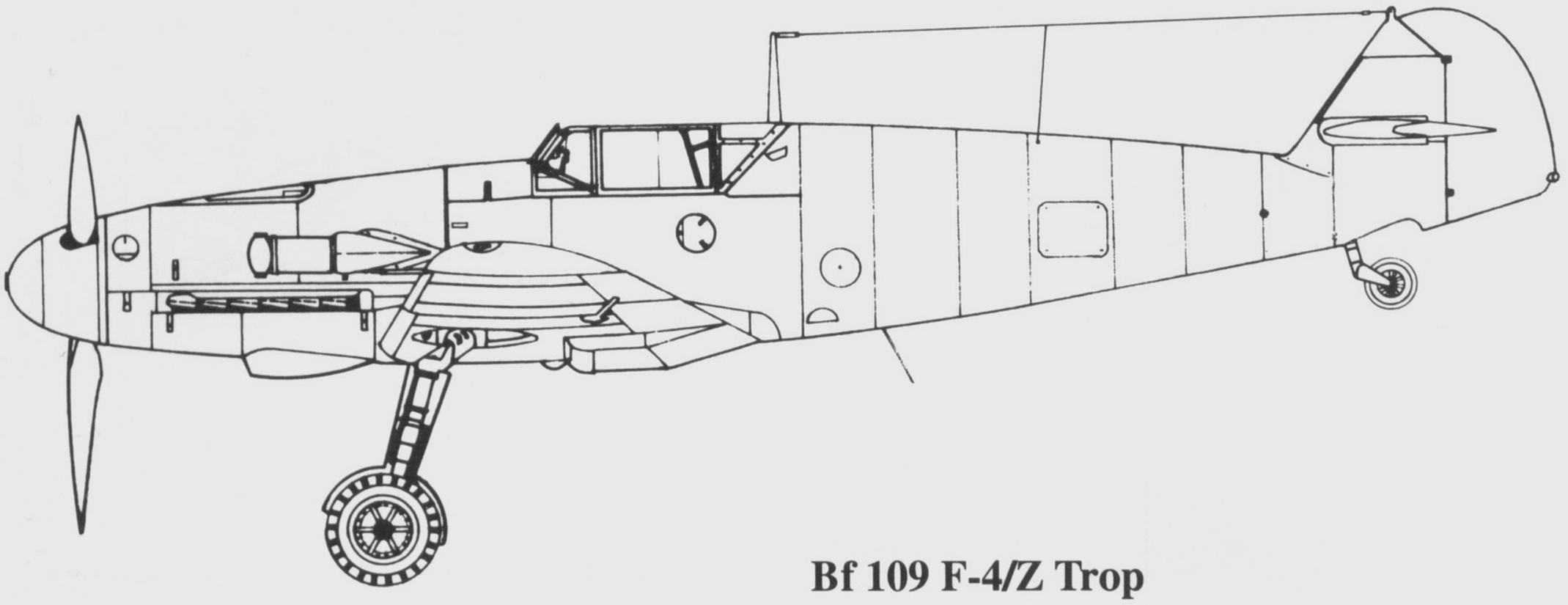
Full Line Profiles



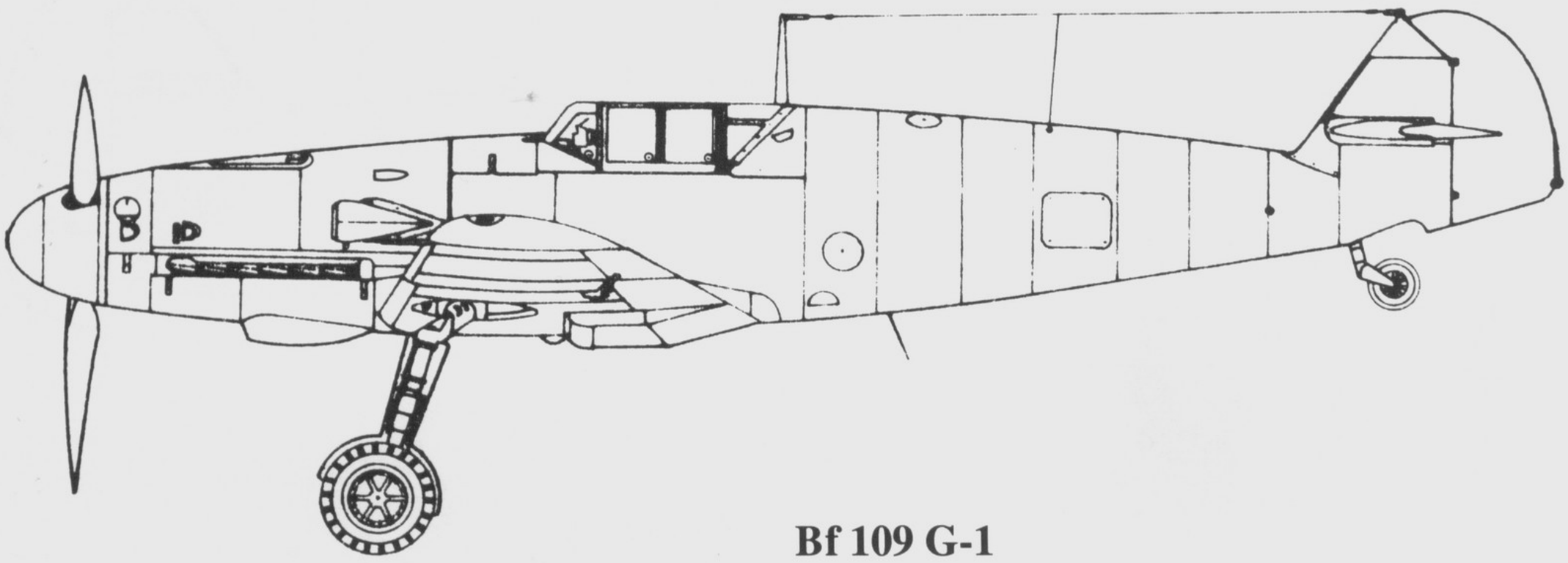
Bf 109 F-2



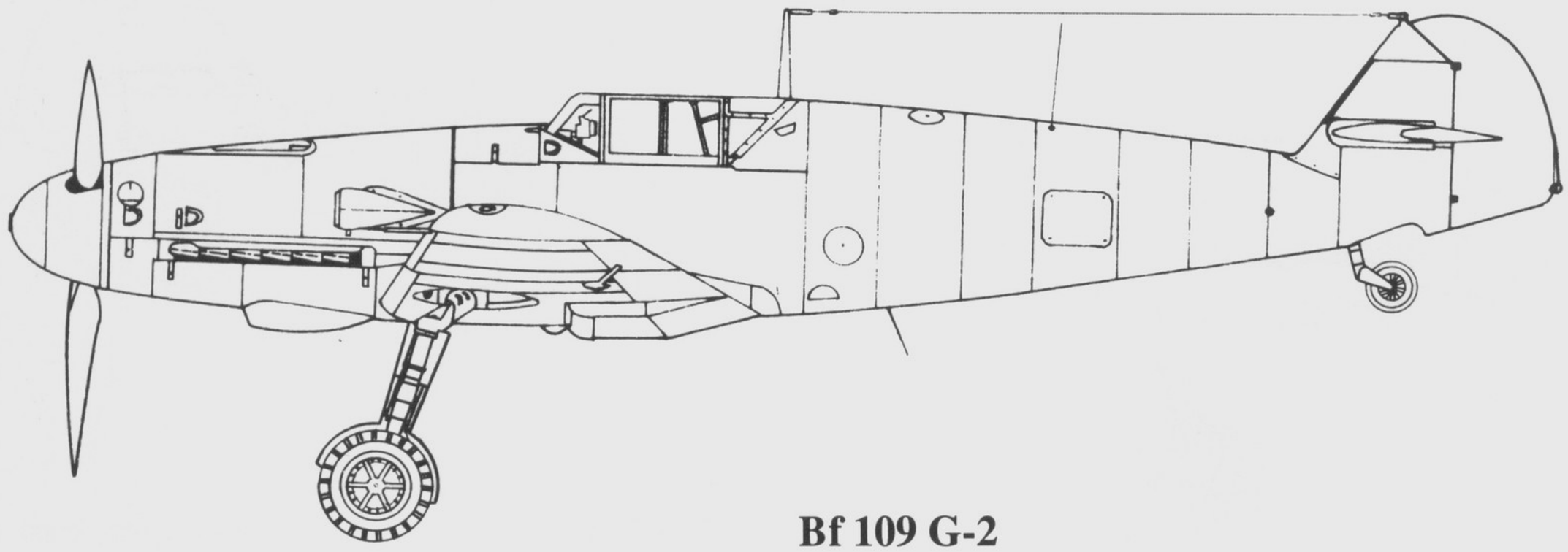
Bf 109 F-4



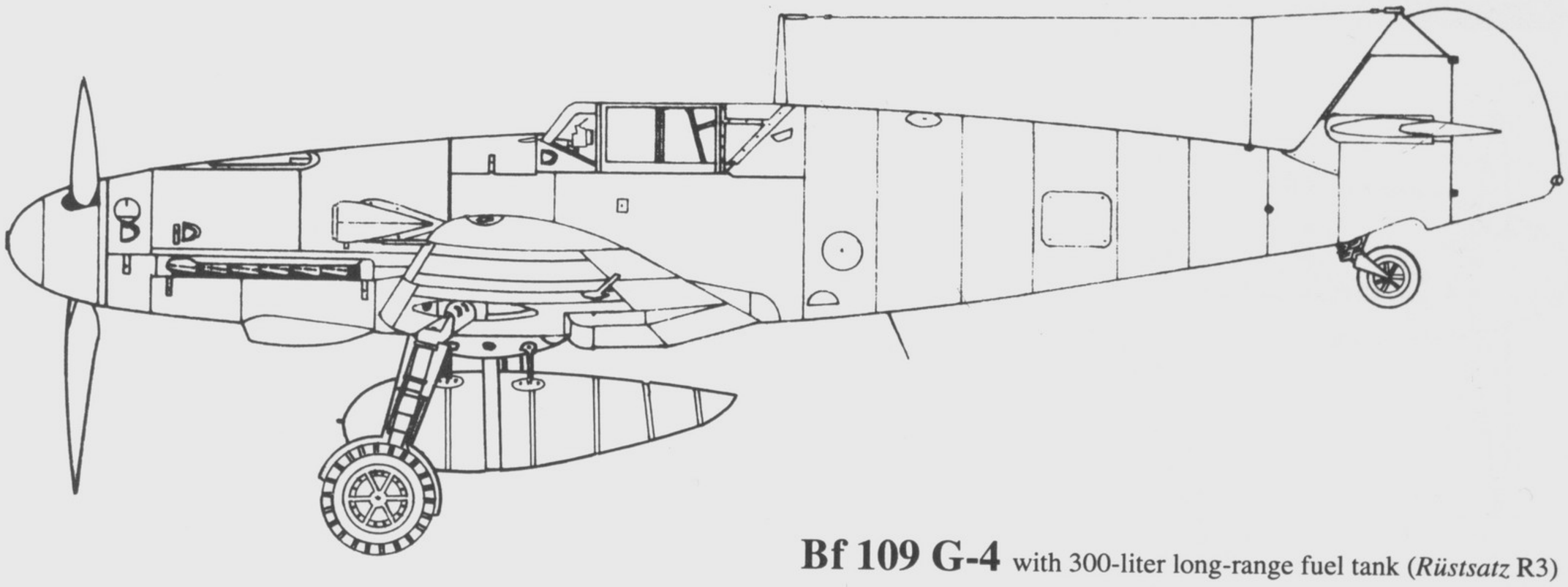
Bf 109 F-4/Z Trop



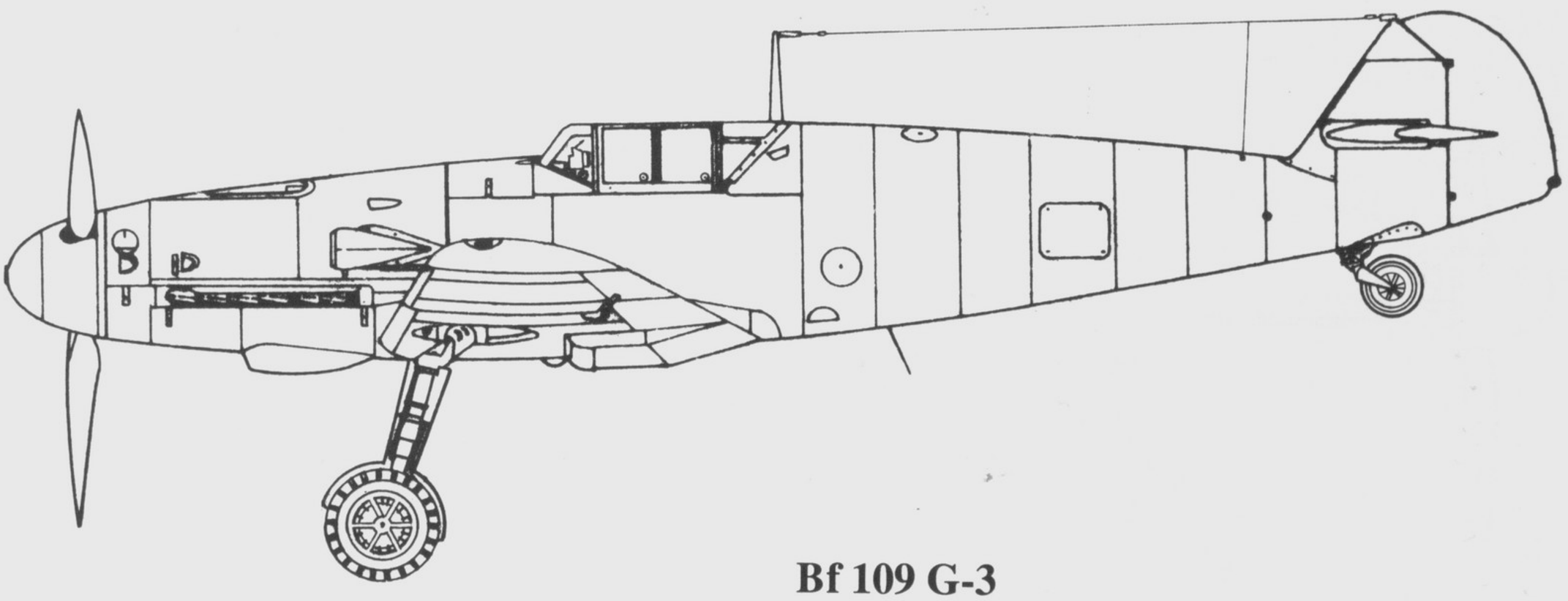
Bf 109 G-1



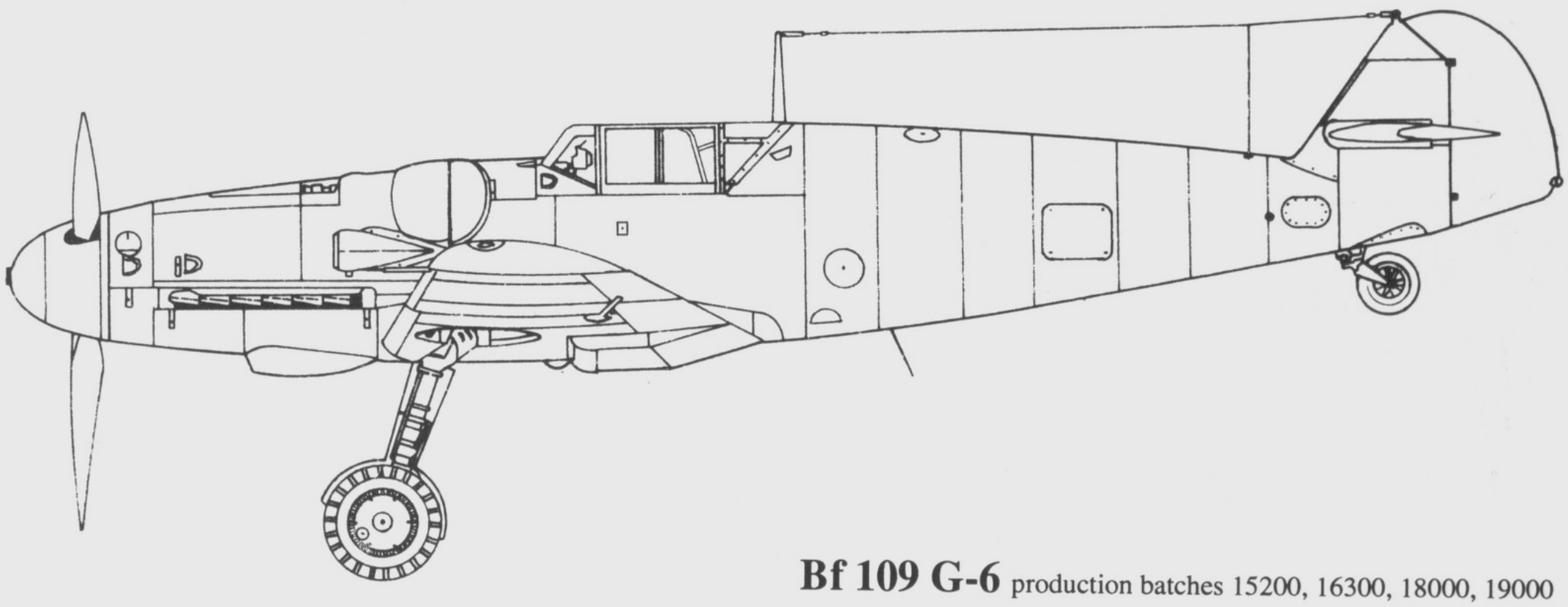
Bf 109 G-2



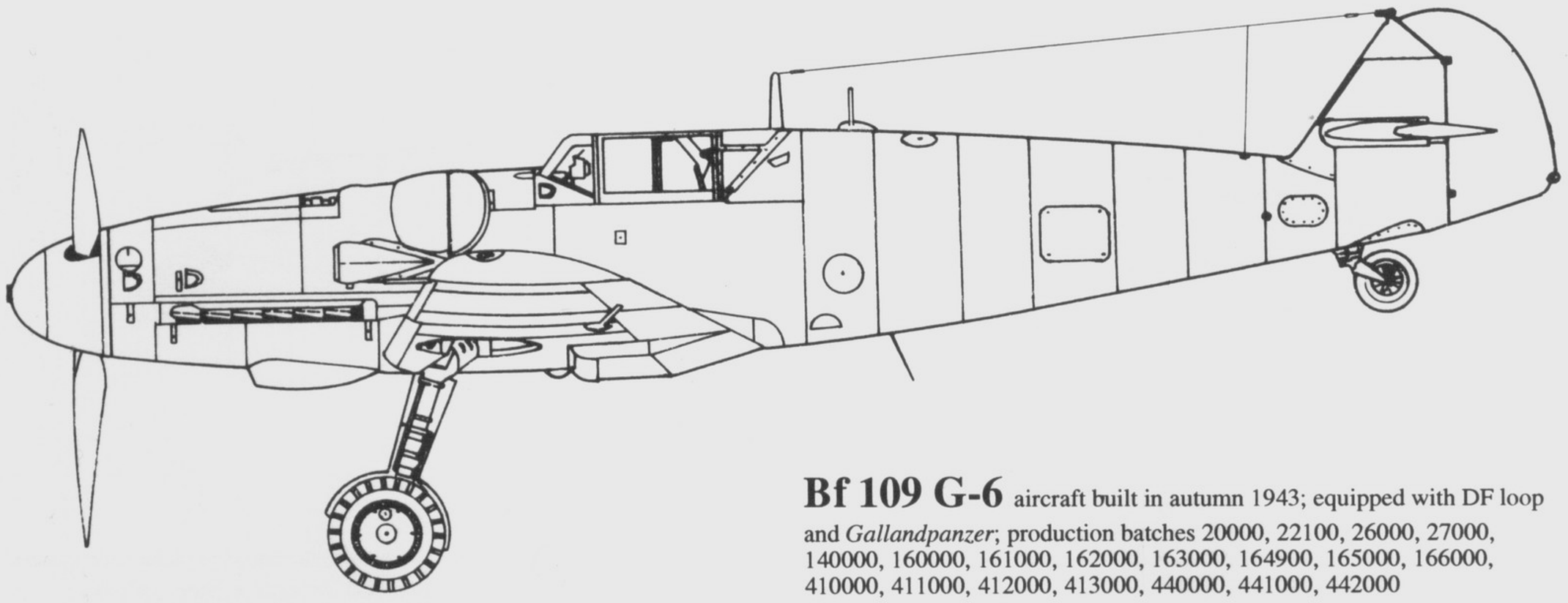
Bf 109 G-4 with 300-liter long-range fuel tank (*Rüstsatz* R3)



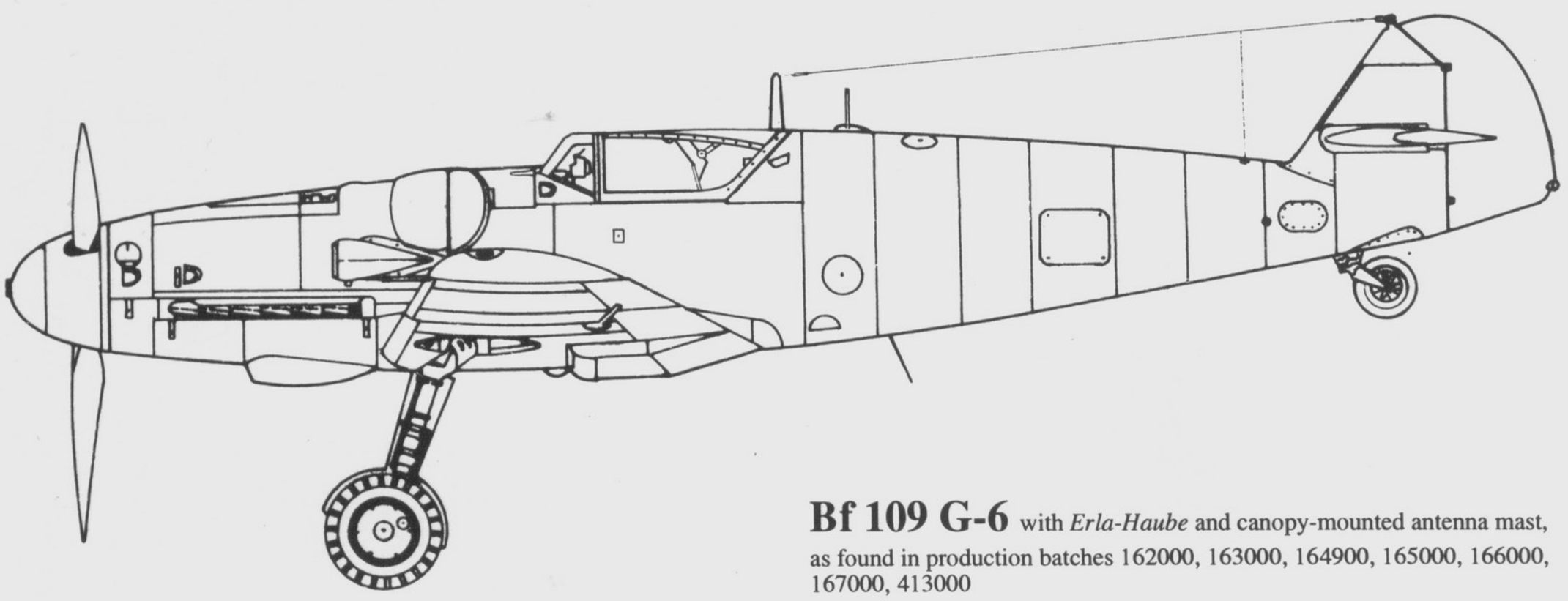
Bf 109 G-3



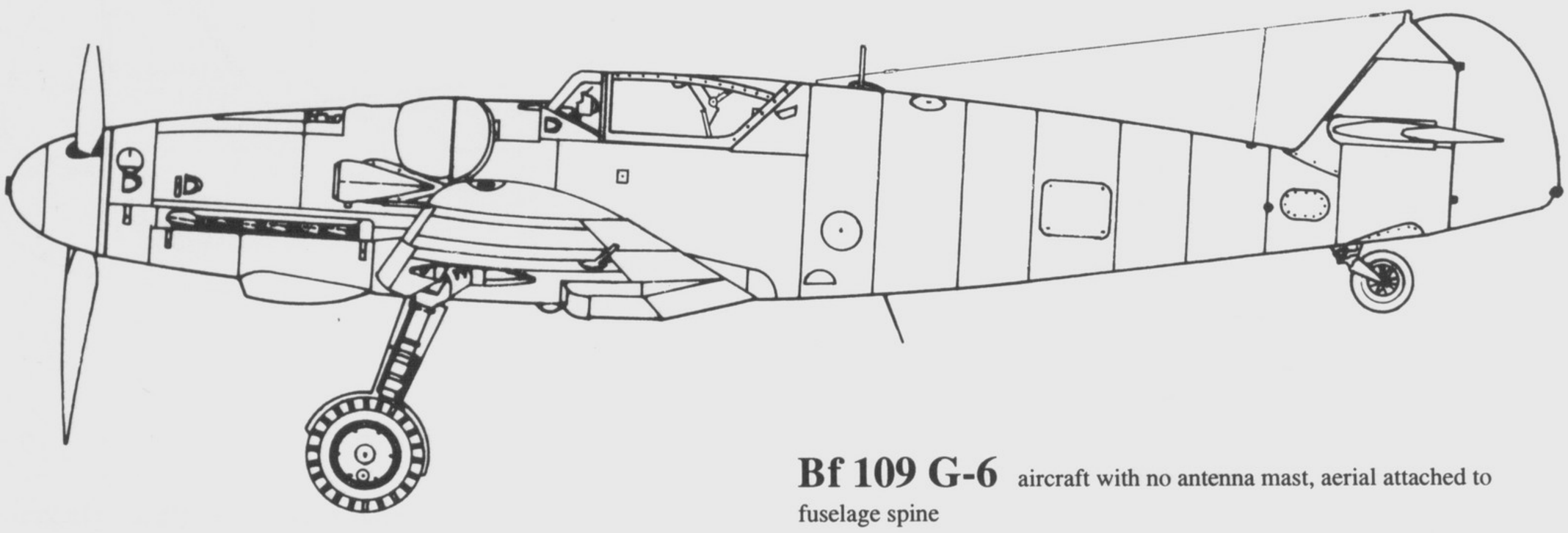
Bf 109 G-6 production batches 15200, 16300, 18000, 19000



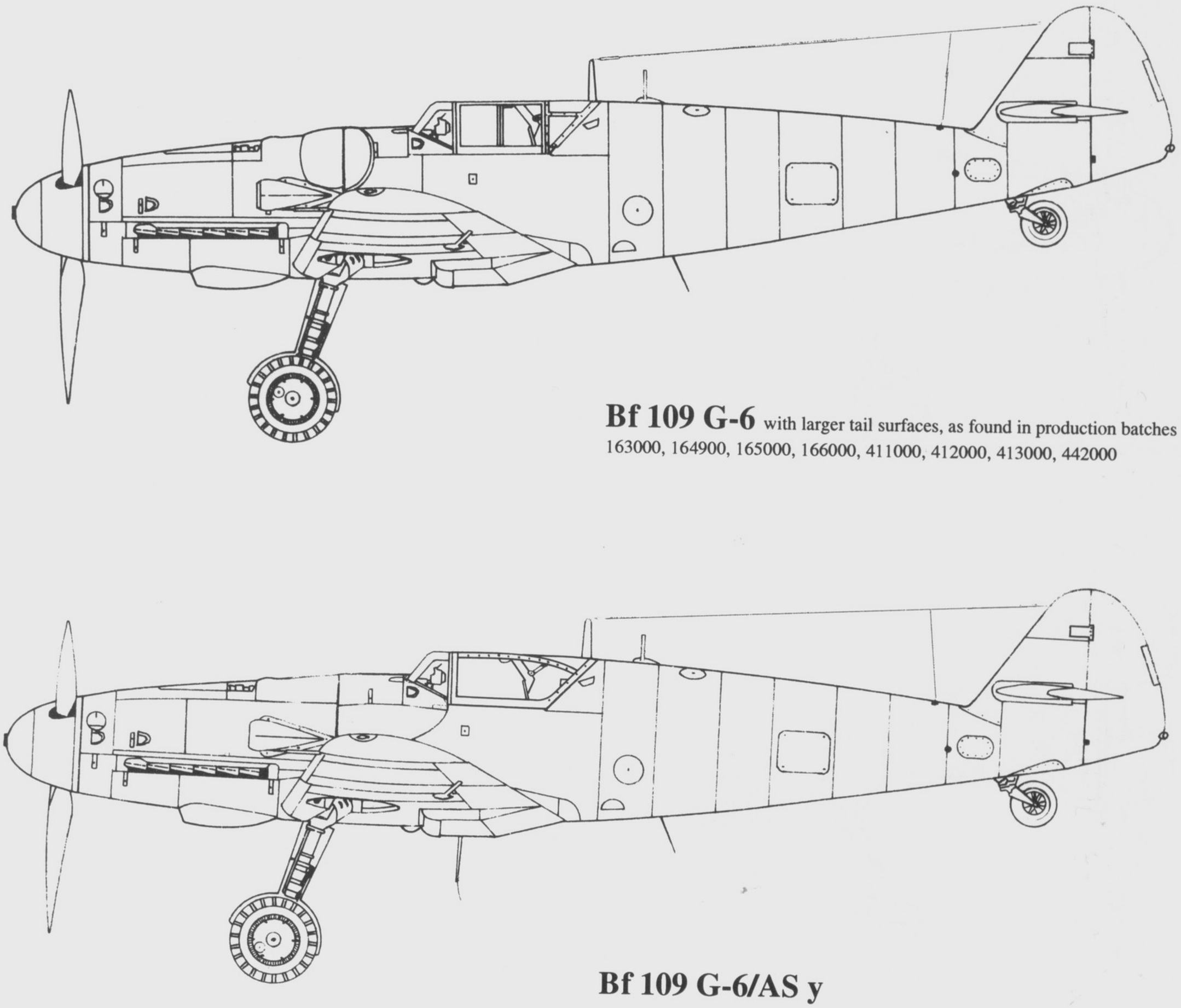
Bf 109 G-6 aircraft built in autumn 1943; equipped with DF loop and *Gallandpanzer*; production batches 20000, 22100, 26000, 27000, 140000, 160000, 161000, 162000, 163000, 164900, 165000, 166000, 410000, 411000, 412000, 413000, 440000, 441000, 442000



Bf 109 G-6 with *Erla-Haube* and canopy-mounted antenna mast, as found in production batches 162000, 163000, 164900, 165000, 166000, 167000, 413000

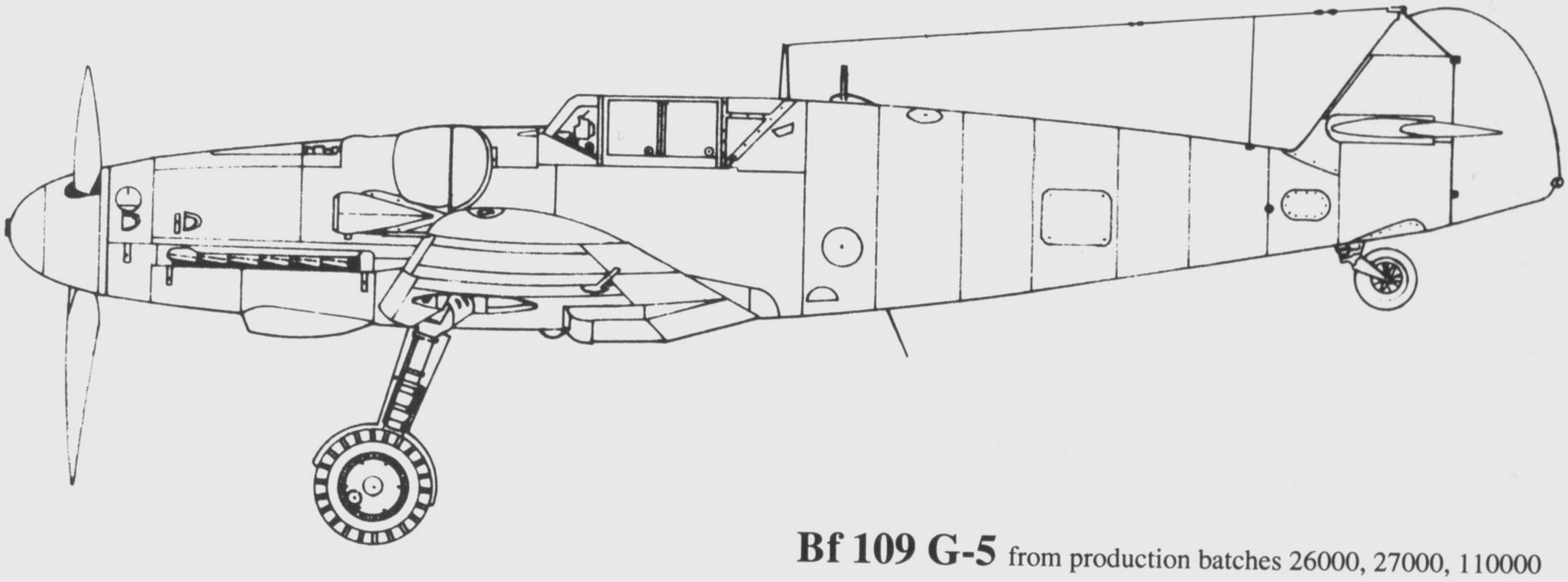


Bf 109 G-6 aircraft with no antenna mast, aerial attached to fuselage spine

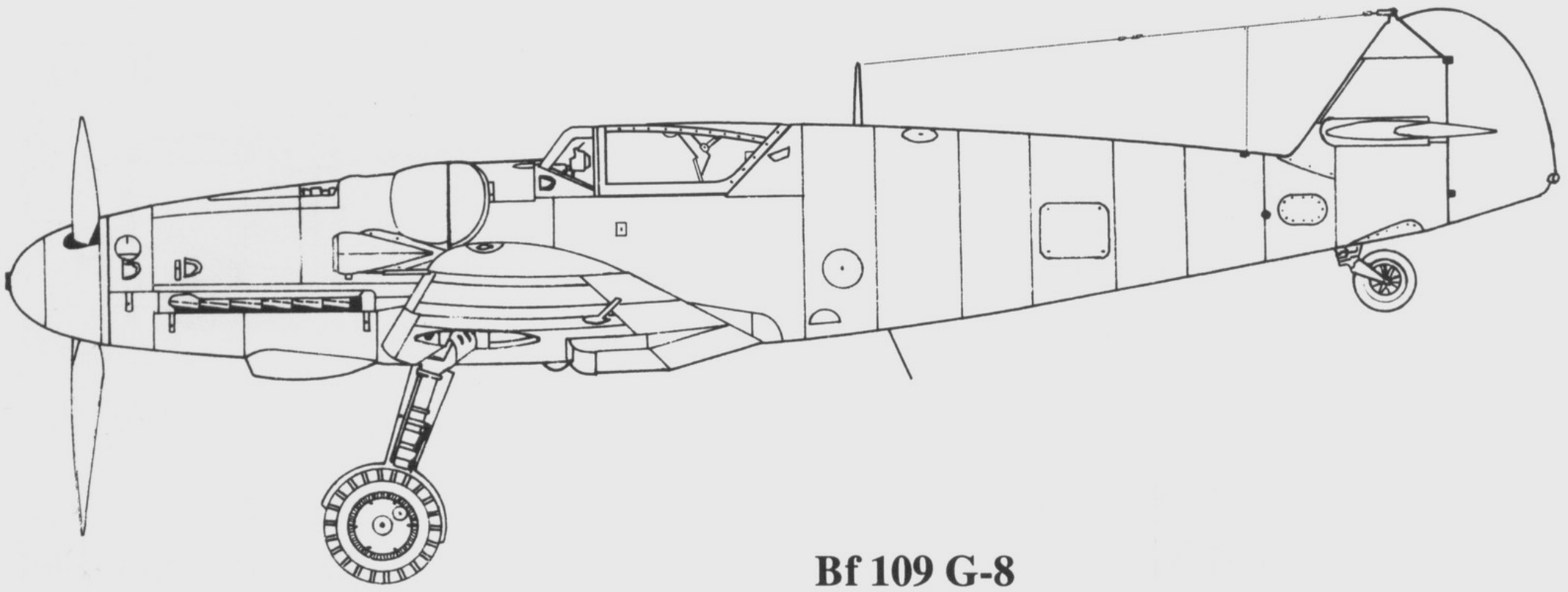


Bf 109 G-6 with larger tail surfaces, as found in production batches 163000, 164900, 165000, 166000, 411000, 412000, 413000, 442000

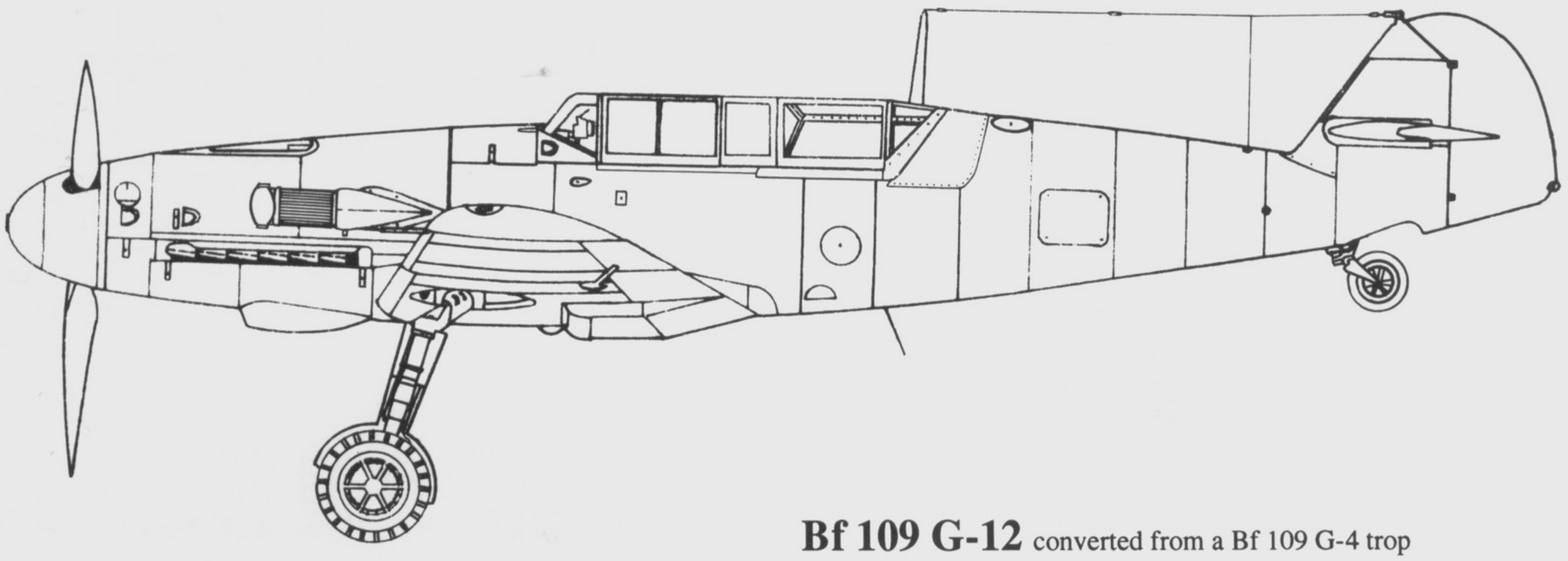
Bf 109 G-6/AS y



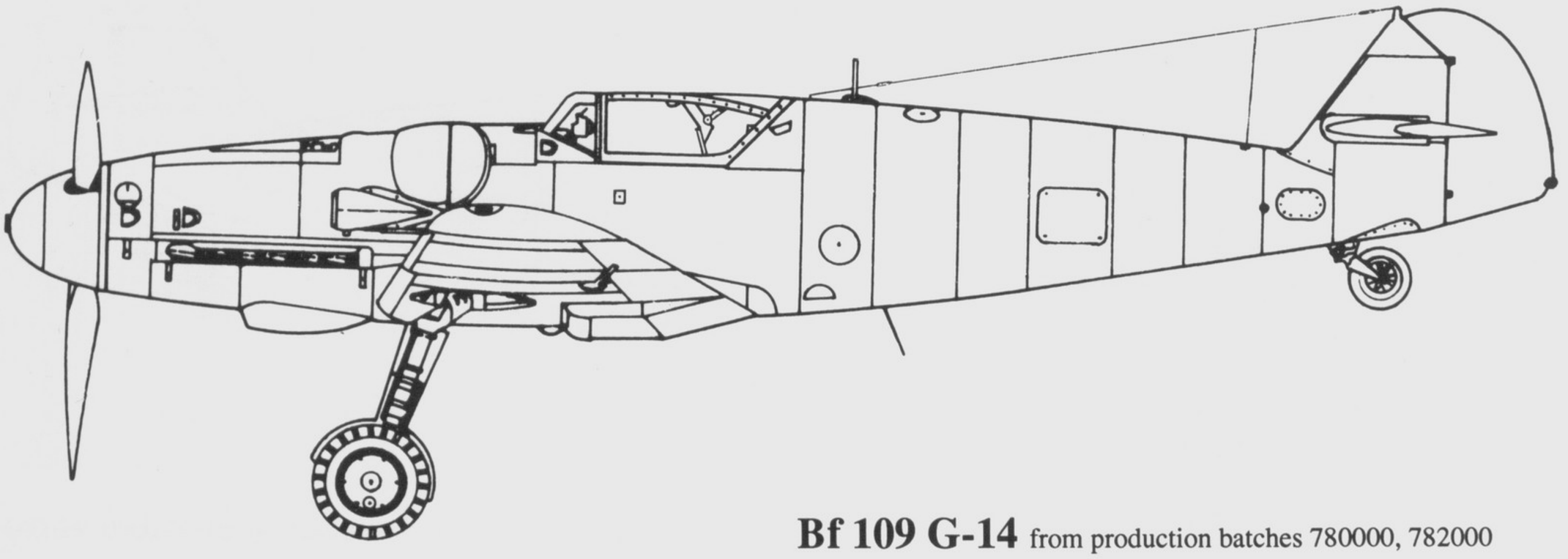
Bf 109 G-5 from production batches 26000, 27000, 110000



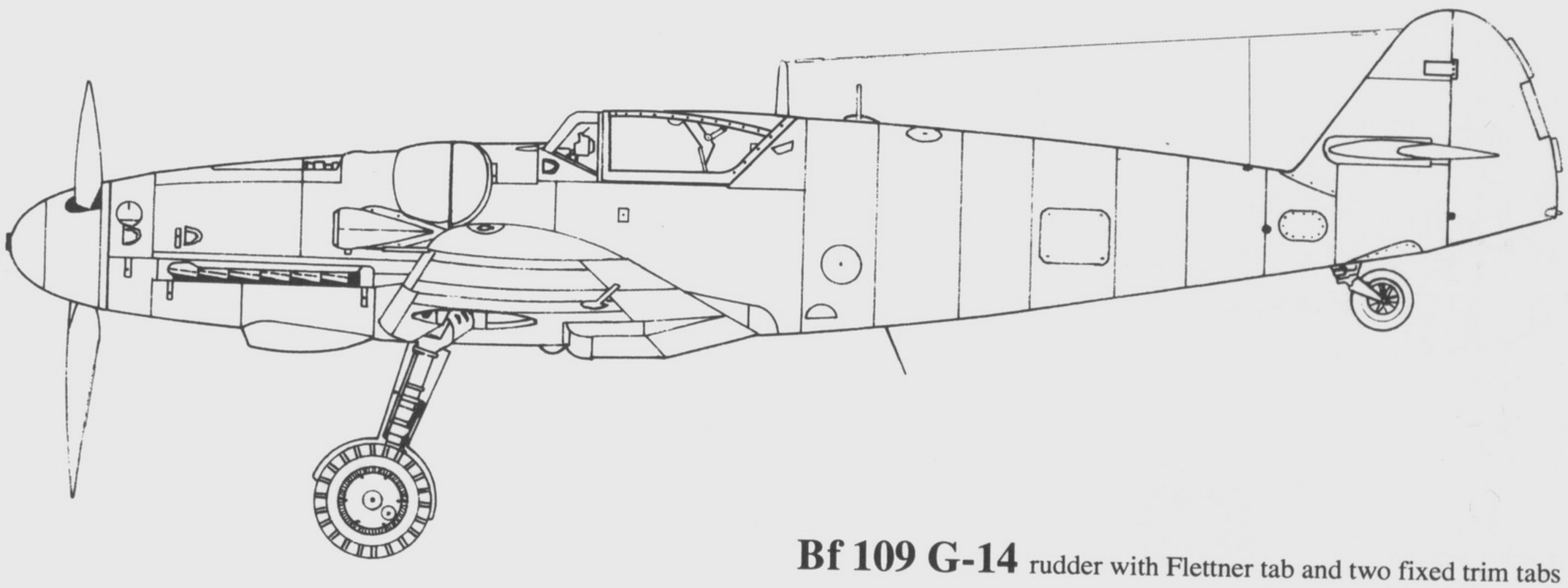
Bf 109 G-8



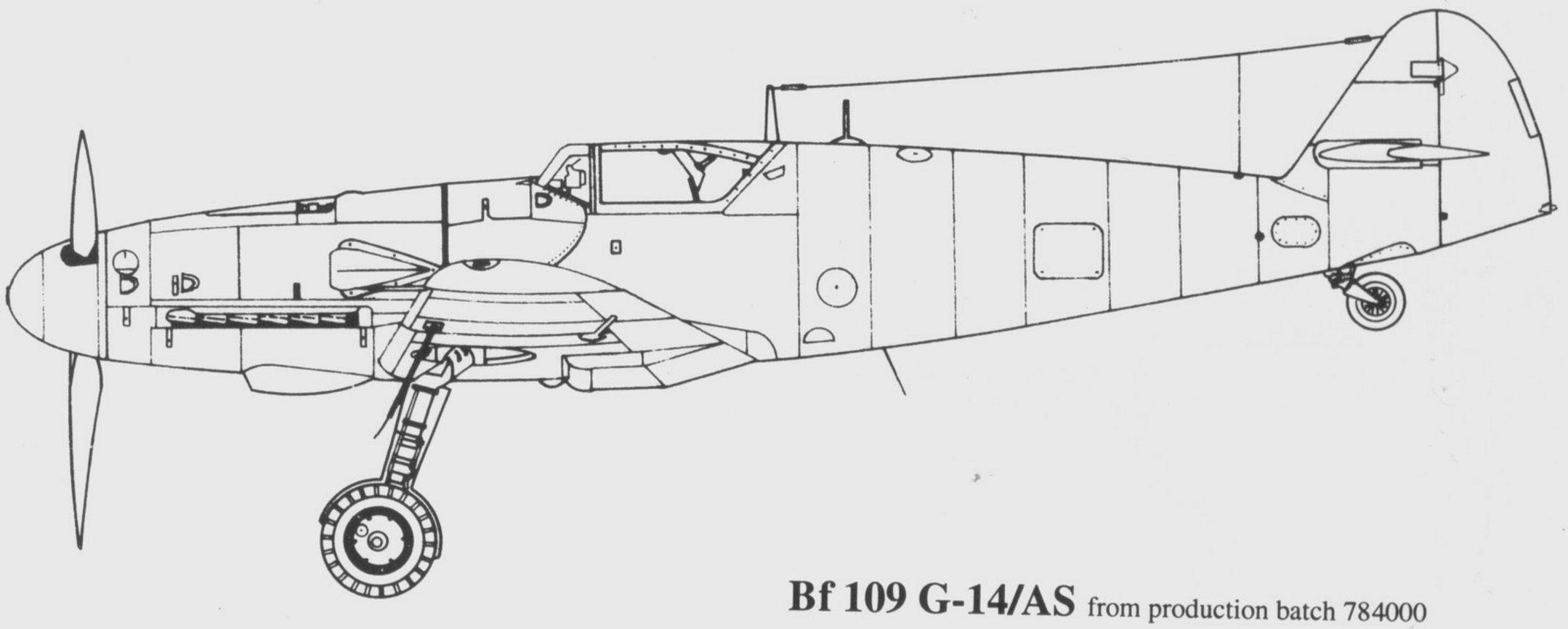
Bf 109 G-12 converted from a Bf 109 G-4 trop



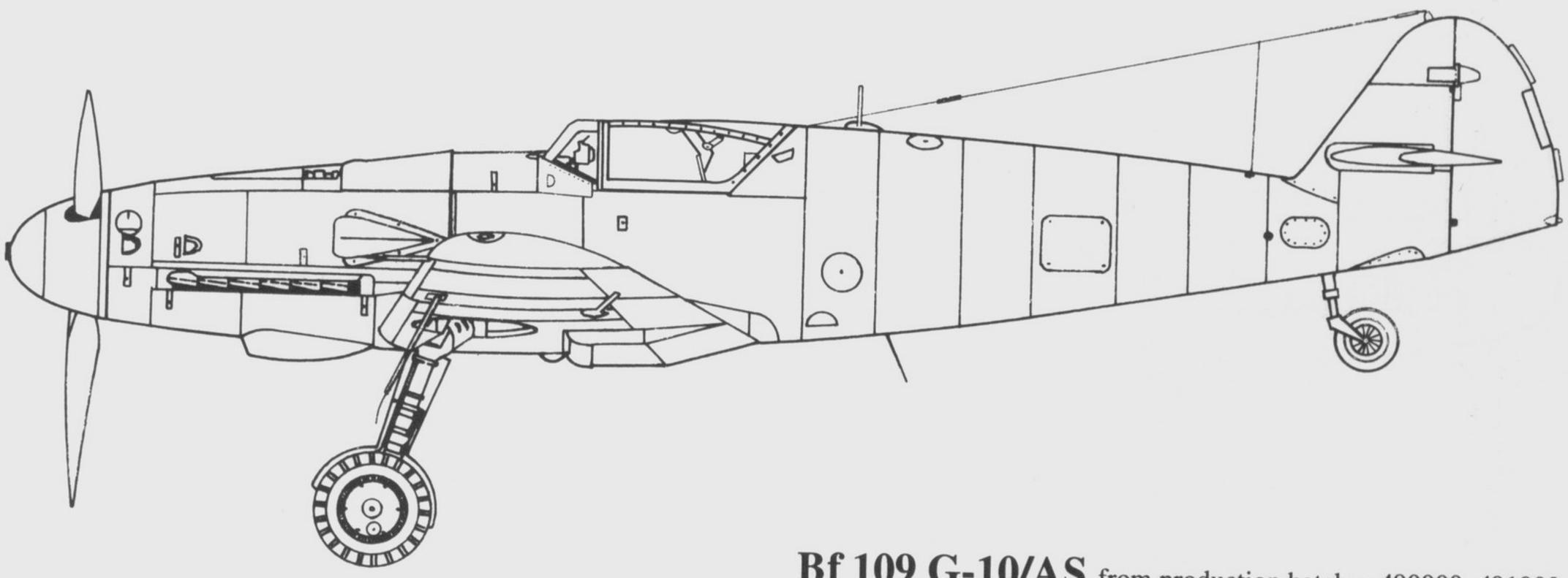
Bf 109 G-14 from production batches 780000, 782000



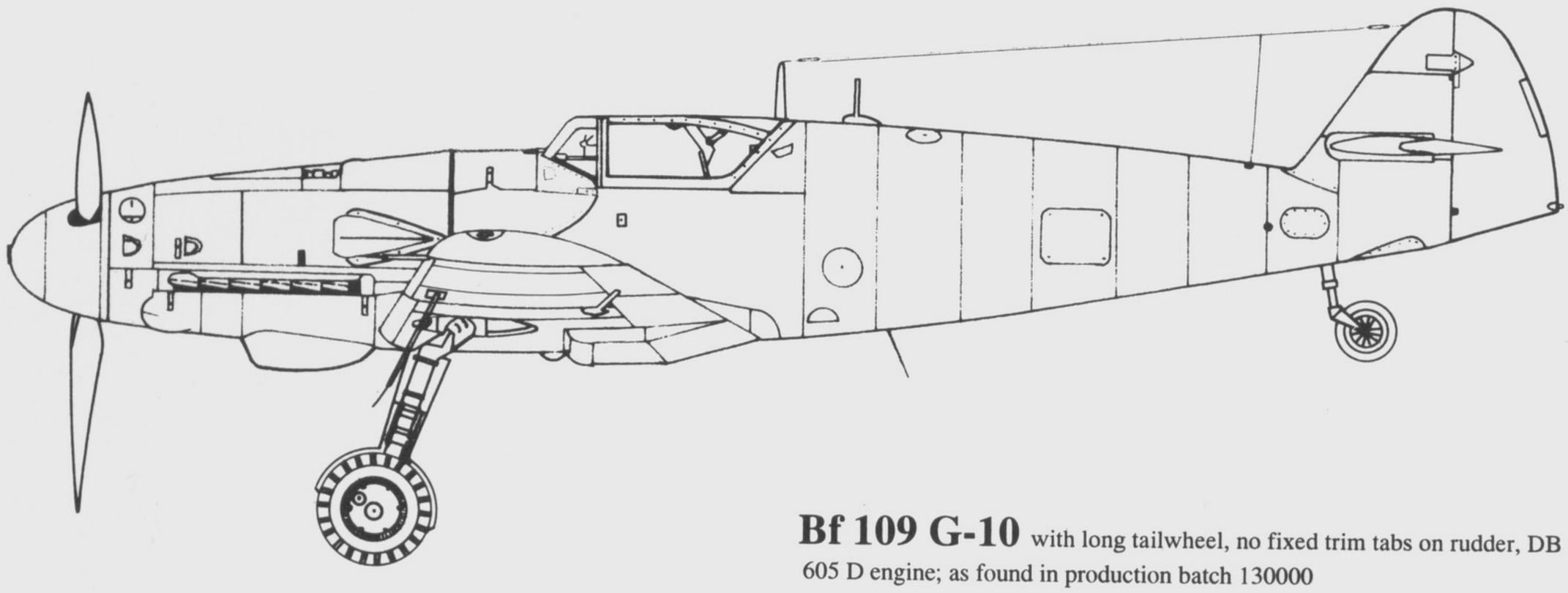
Bf 109 G-14 rudder with Flettner tab and two fixed trim tabs



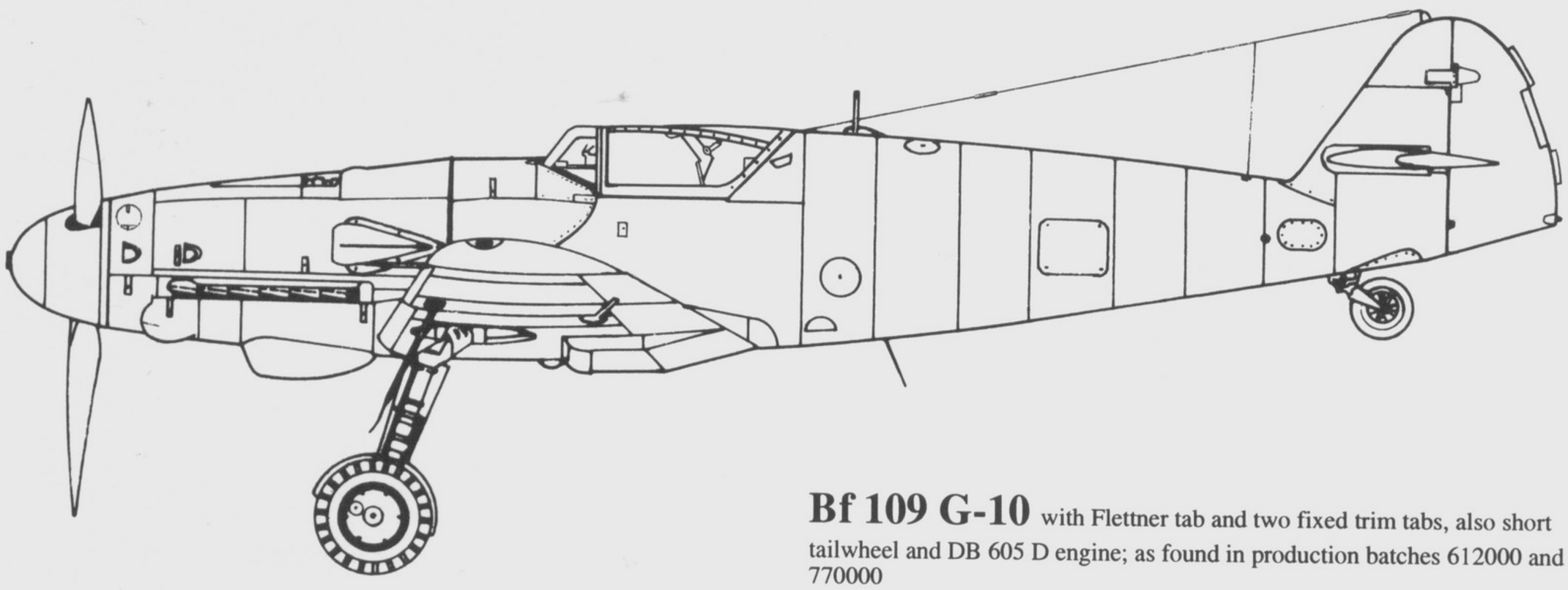
Bf 109 G-14/AS from production batch 784000



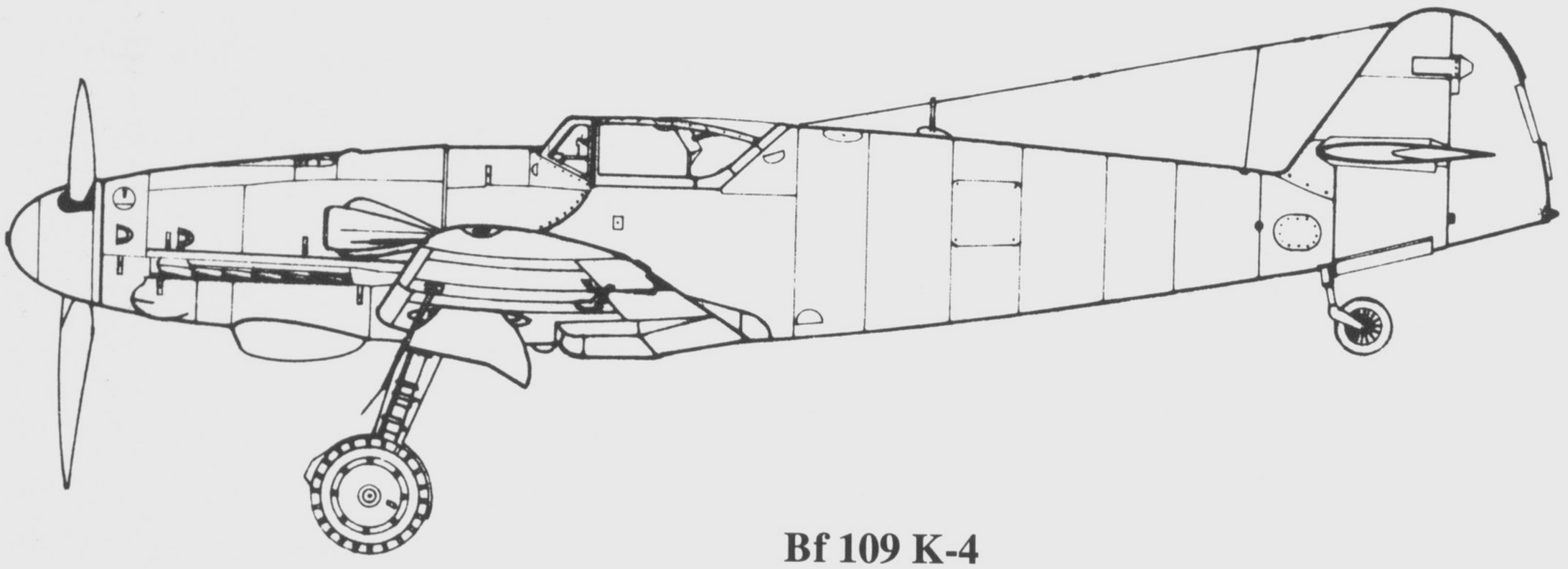
Bf 109 G-10/AS from production batches 490000, 491000



Bf 109 G-10 with long tailwheel, no fixed trim tabs on rudder, DB 605 D engine; as found in production batch 130000



Bf 109 G-10 with Flettner tab and two fixed trim tabs, also short tailwheel and DB 605 D engine; as found in production batches 612000 and 770000



Bf 109 K-4

NOTES

Color Gallery

NOTES

Obstlt. Mölders after returning from a sortie in WNr. 5628. The aircraft still wears the remains of its Stammkennzeichen instead of Stab markings. Also note the octane triangle beneath the cockpit specifying the use of 96/100 octane c-3 fuel for the DB 601 N engine. (Aders)

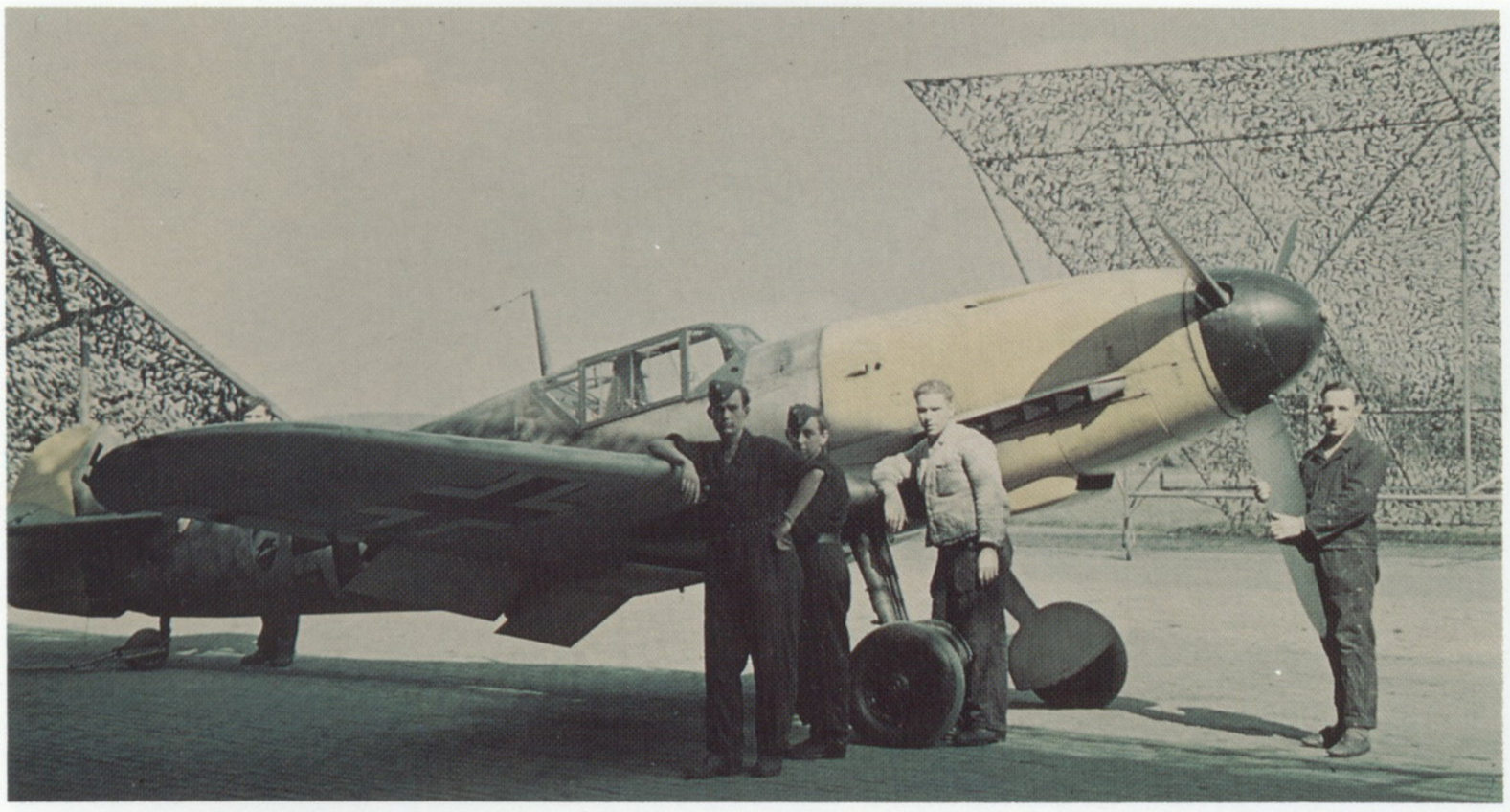
Obstlt. Mölders with several mechanics in front of his F-1 in April 1941. The number of victory bars on the rudder has risen to 65, the last two claims coming on April 16, 1941. This color photo clearly shows the lightly-mottled green/gray finish which was standard on the Bf 109 at that time. (Aders)

Werner Mölders by the tail of his F-1. In the background is a Bf 109 E, with which JG 51 was still partly equipped in early 1941. (Aders)

These color shots of "Yellow 12" of 6./JG 53 taken in April 1941 allow details of the green/gray color scheme, which was standard at that time, to be seen to advantage. Traces of a green mottling may also be seen on the yellow engine cowling. The aircraft, an F-2, was flown by Gefr. Felix Sauer, seen here sitting on the cockpit sill. (Sauer)

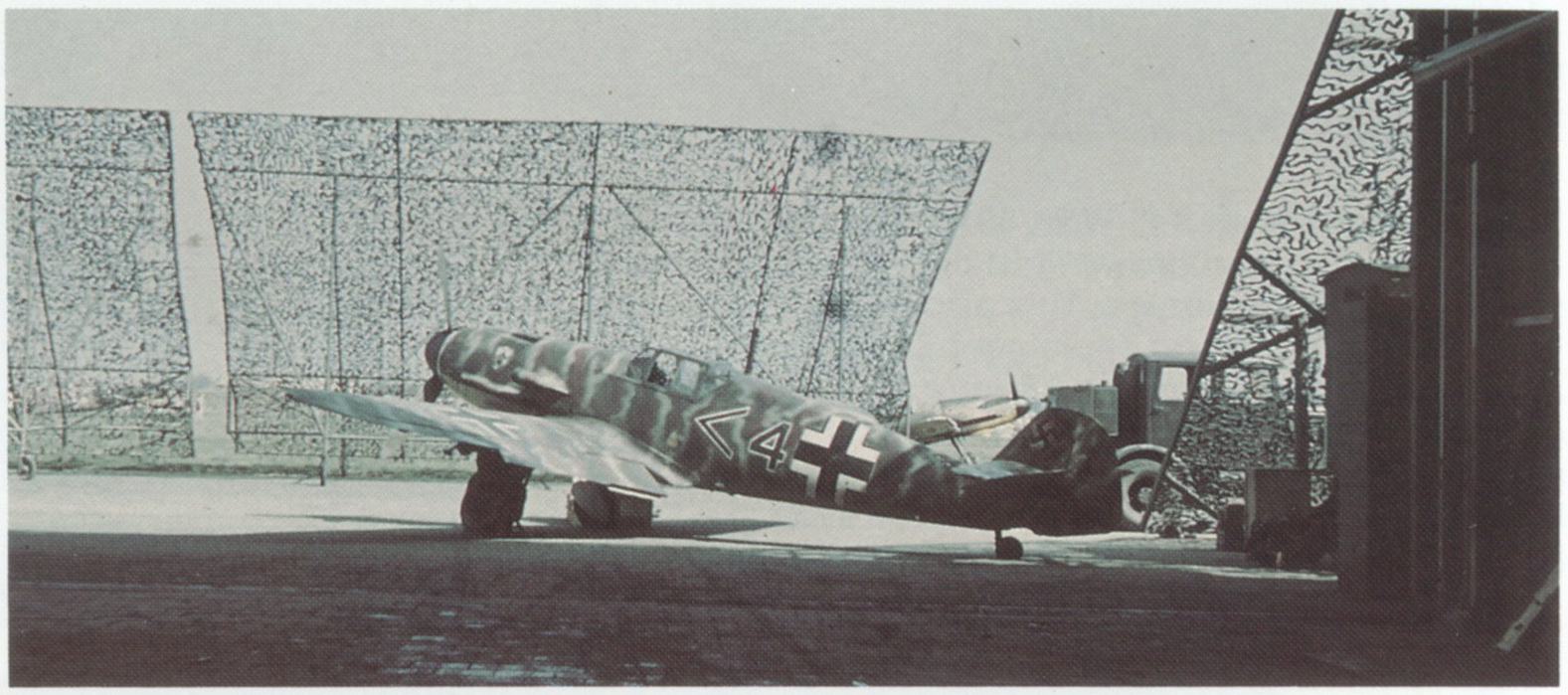
Fw. Peter Gerth in the cockpit of his aircraft "White 8," an F-2 with the Werknummer 9641. This aircraft belonged to the operational Staffel of JFS 5, which was transferred to the channel coast in the summer of 1941 to bolster the German fighter forces there. Marked on the aircraft's yellow rudder are six victories, which were achieved by Peter Gerth between July 14 and September 9, 1941. (Gerth)

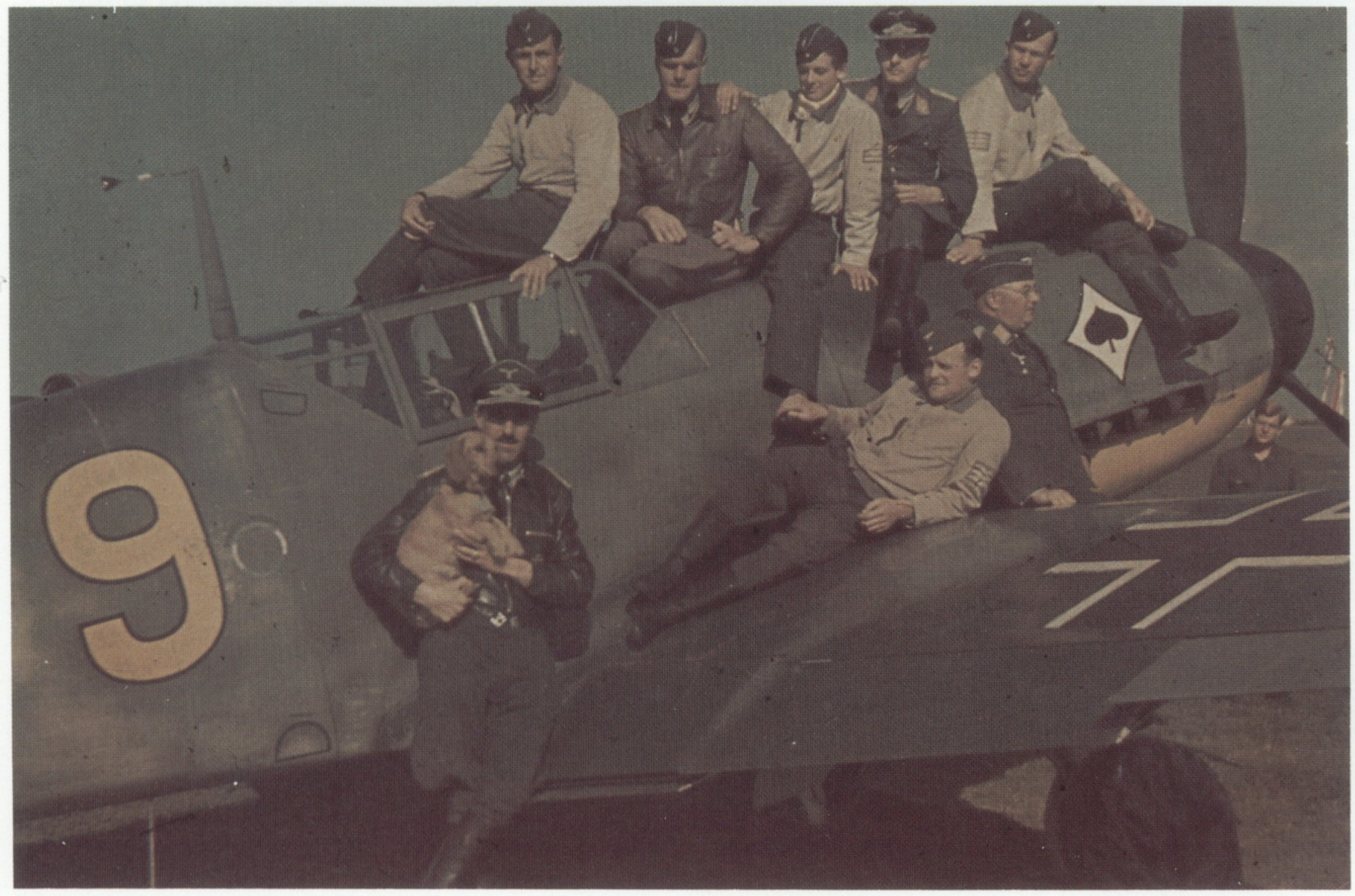
These color shots also allow details of the green/grey scheme standard at this time to be seen to advantage. Here Fw. Gerth (left) is seen with an unidentified pilot of JFS 5. (Gerth)



Left: An F-2 of I./JG 52, photographed in the summer of 1941 at an airfield on Holland's North Sea coast. This aircraft wears a rather light green/ gray scheme with yellow engine cowling and rudder. Visible behind the Balkenkreuz is the Gruppe emblem of I./JG 52, a leaping wild boar. (Petrick)

Right: This F-2 of the Stab of I./JG 52 was photographed on the same occasion. The aircraft wears a very unusual wavy finish in tones of brown and grey, presumably intended for operations over the sea, which were the order of the day for the Gruppe at that time. On the engine cowling is the other Gruppe emblem of I./JG 52, a hand grasping a Spitfire. (Petrick)



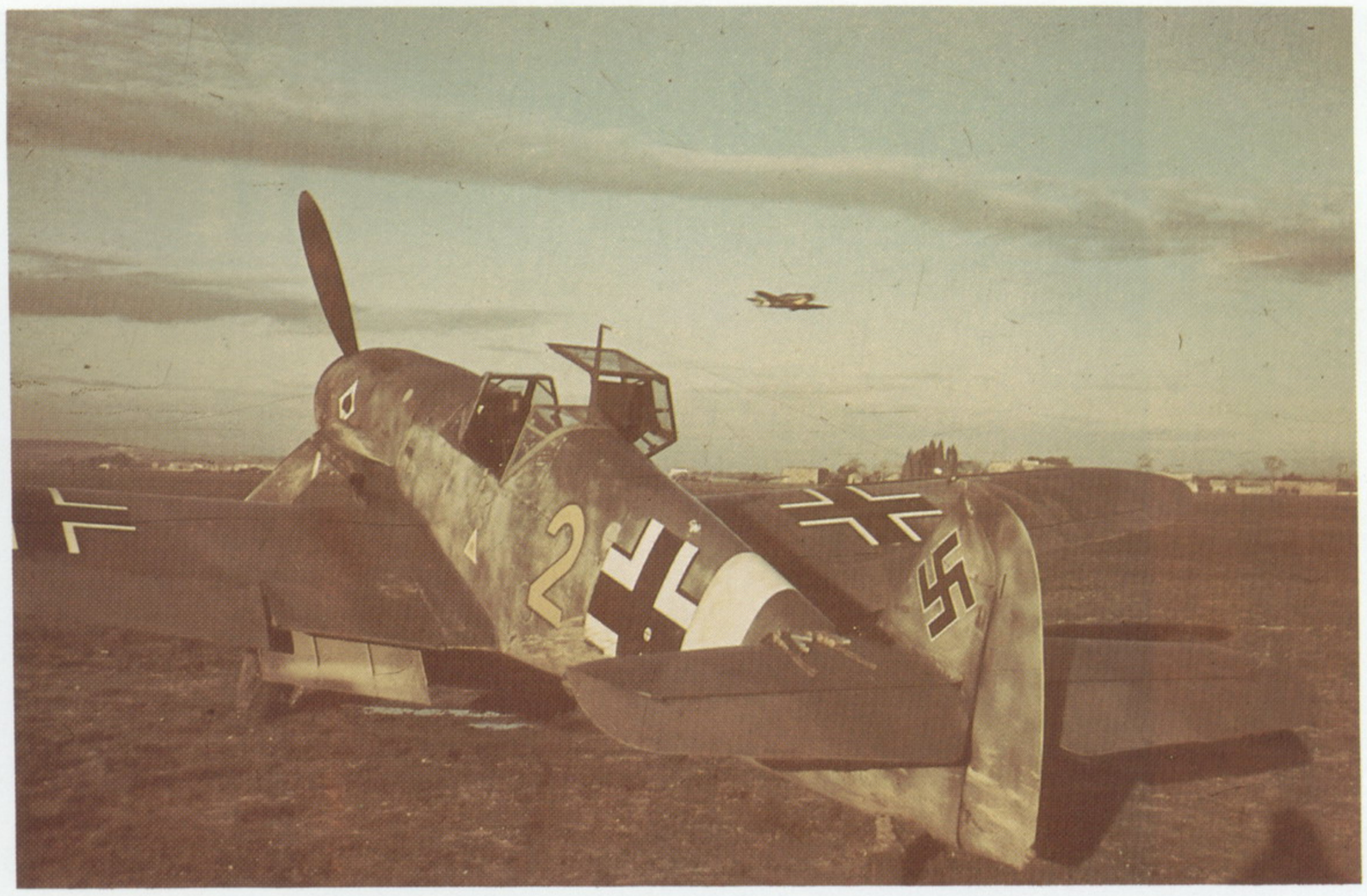


Left: The pilots of 6./JG 53 have assembled around "Yellow 9," an F-2. Westerland, Sylt, August 1941. This shot shows well the lightly-mottled green/grey scheme and the standard yellow engine cowling. (Boehner)

In-flight photo of an F-2 (WNr. 8919, Stammkennzeichen PK+HX), in the sand brown/light blue Africa scheme with yellow cowling underside. This aircraft may have been retrofitted with tropical equipment, in any case it saw action in the Mediterranean Theater and was severely damaged in a bombing raid on Bari, Luftflotte 2's assembly point for forwarding to Africa, on April 26, 1943. Later it went to JGr. West, where it was destroyed in a crash on November 22, 1943. (MBB)

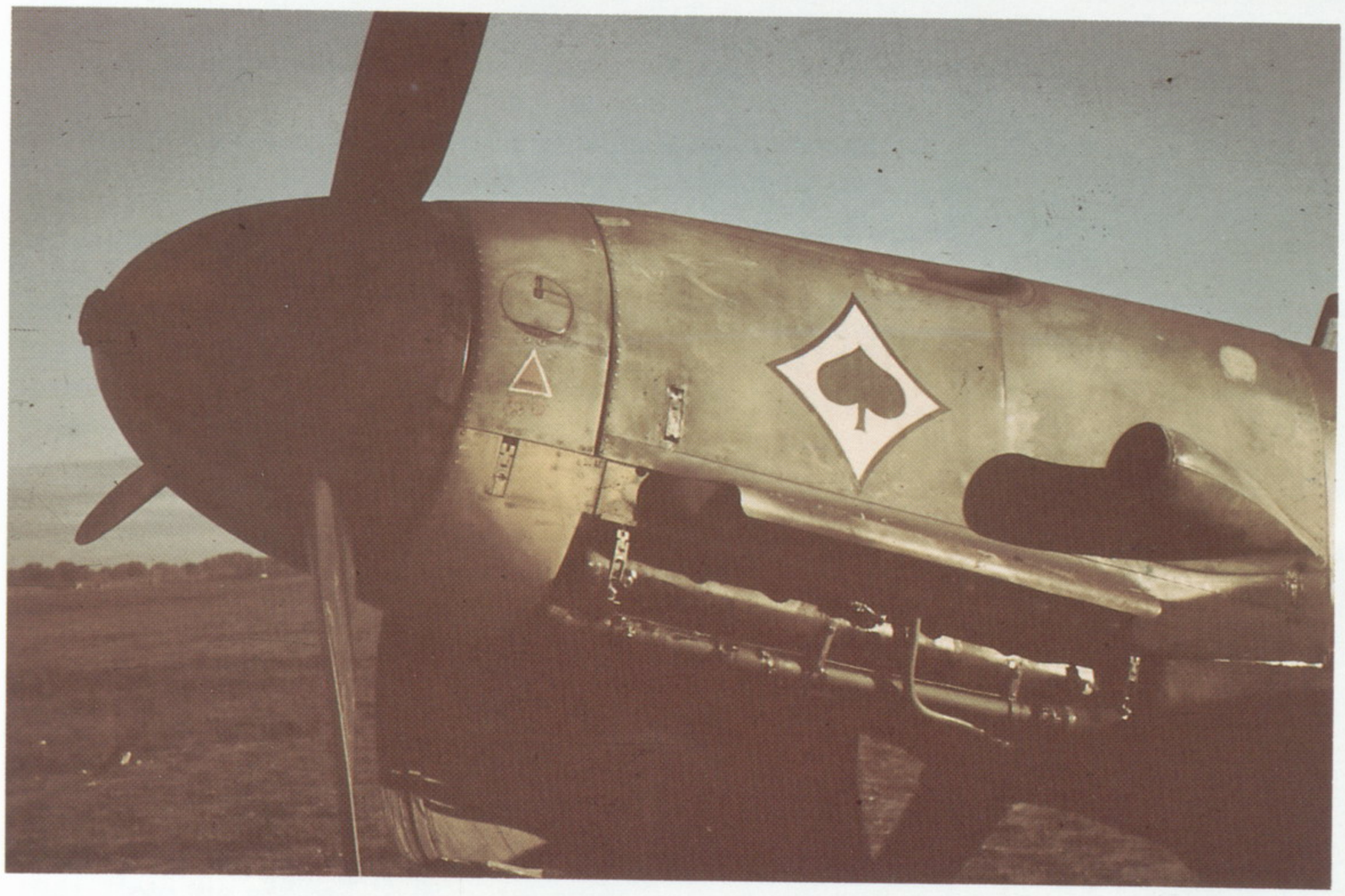
This aircraft's octane triangle (c3) identifies it as an F-1, or more likely an F-2. Clearly visible are details of the aircraft's faded green/grey color scheme. (Punka)

An F-2 of the Gruppenstab of IV./JG 51, photographed on the Eastern Front in 1941. Note the second Balkenkreuz as Gruppe symbol of IV./JG 51 and the Gruppe emblem beneath the cockpit. (Punka)



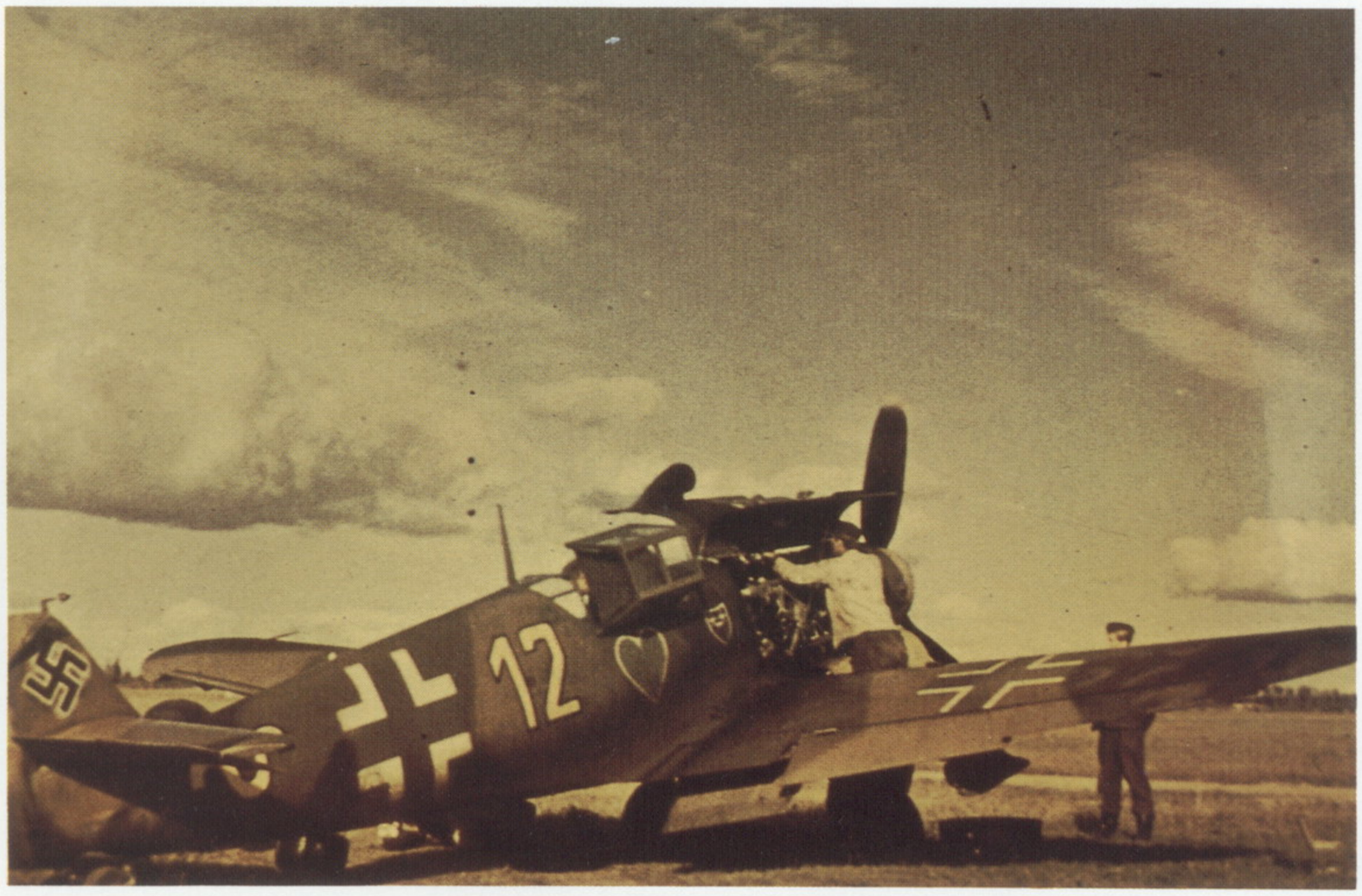
The next four photographs of "Yellow 2" of 6./JG 53, an F-4/Z, at Comiso airfield, Sicily, in January 1942. The aircraft wears the green/grey scheme standard at that time with a white fuselage band and yellow cowling underside. A single black victory bar is marked on the aircraft's rudder. (Petrick)

Right and below: These photos show clearly the narrow supercharger air intake and the stiffening bands over the tail unit attachment point, both frequently seen on early F-4 aircraft. (Petrick)



Right: A view of Comiso airfield and three F-4s of 6./ JG 53, "Yellow 11," "Yellow 5" and once again "Yellow 2." January 1942. (Petrick)

Mechanics service "Black 11," an F-4/Z of 2./JG 53, in Sicily, early 1942. (Punka)



"Yellow 12" of 9./JG 54, a G-2 in the segmented color scheme used by JG 54; here the colors appear to be dark green and earth brown. Note the all-metal head armor and the open fairing for the gondola cannon beneath the wing. The absence of a yellow fuselage band is unusual. (Punka)

Two shots of "Yellow 1," a G-6 trop of 6./JG 53, photographed at Cancello in August 1943. The aircraft wears a lightly dappled grey scheme which has been touched up in the area of the code number, with a yellow cowling underside and a narrow white spiral on the propeller spinner. The gondola cannon is visible beneath the wing of the aircraft. (Kurz)

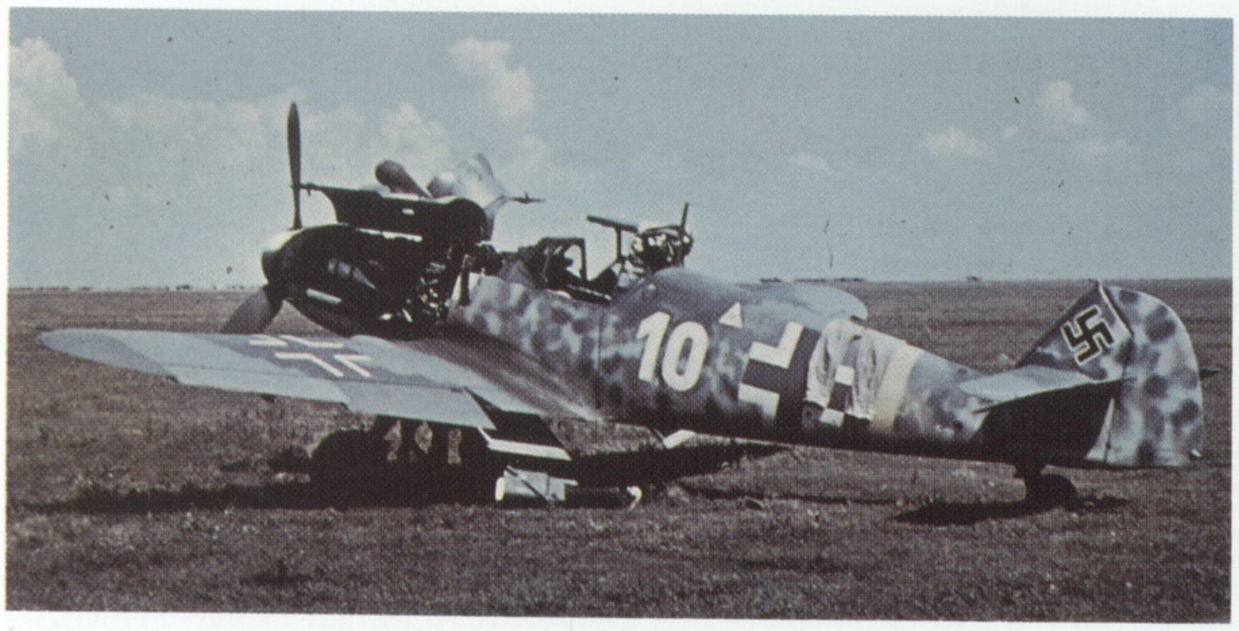
Pilots of 6./JG 53 at Cancello in August 1943. In the background is a recently-delivered G-6 in the lightly dappled grey scheme, still with its Stammkenn-zeichen (PP+??). Behind it is "Yellow 1," possibly the same aircraft as in the previous photos. (Kurz)

In the back-ground the same G-6 once again. (Kurz)

6./JG 53, early morning at Cancello, August 1943. The unit has already been placed at readiness, but the pilots still try to doze a little in the cool of the morning. Left in the photo is Fw. Kurz. In the back-ground are "Yellow 10" and "Yellow 7," two G-6s of 6./JG 53. (Kurz)

Two mechanics at work on "Yellow 13," a G-6 trop of 6./JG 51, Sardinia, summer 1943. The aircraft wears an unmodified grey scheme with large splotches on the fuselage sides. (Aders)

Two partially-cannibalized G-6 trop fighters of II./JG 51 after an air raid on the Gruppe's base in Sardinia in June/July 1943. The aircraft in the foreground, "Yellow 17," also wears the grey scheme with large splotches of color on the fuselage sides. (Aders)



Left & below: Two shots of "White 10" of 1./JG 52, a G-6 in a densely-mottled grey scheme, at Kharkov-Roganj in the summer of 1943. It is very likely that this aircraft is WNr. 19 881. This machine was lost on September 14, 1943, when Lt. Wilmans, the Kommodore's wingman, failed to return following an air battle near Turkenovka and was posted missing. (Wiese)

It may be seen that there is a fourth, rather brownish color on the dappled fuselage sides in addition to the usual three grey tones. (Wiese)

Another G-6 of 1./JG 52, "White 5," photographed on the same occasion at Kharkov-Roganj. The aircraft's finish is very similar to that worn by the previously illustrated "White 10." Note that the engine cowling underside is not in the usual yellow. (Wiese)

Series manufacture of production batches 32 000 and 33 000 by Erla in Leipzig in autumn 1943. The fuselages of these G-6s wear an overall pale blue finish while the tail unit bearers are light grey. (Signal)

"White 4," a G-6 of 1./JG 52, photographed in Russia in the summer of 1943. The aircraft wears a comparatively lightly dappled grey scheme and a yellow fuselage band. Note the open tailwheel recess. (Wiese)

Two damaged and partially cannibalized G-6s of 6./JG 51, photographed in 1944, probably at Nisch. The finish worn by "Yellow 12" in the foreground has undergone considerable repainting and the splotches in unusual brown and violet colors, especially on the horizontal stabilizer are noticeable. The white Mediterranean fuselage band is absent, while the white surrounds of the Balkenkreuze have been overpainted to enhance the camouflage effect. (Aders)

The aircraft of the Kommandeur of II./JG 51, Hptm. Rammelt, from early 1944. This photo was probably also taken at Nisch. II./JG 51 transferred there on April 21, 1944, and except for brief interruptions remained there for several weeks. Here "Chevron Triangle" is getting a thorough going over by the technical staff. Particularly noticeable is the aircraft's finish, which has undergone considerable repainting. (Rammelt)

A row of G-6/AS fighters of II./JG 27 at Fels am Wagram in August 1944. "Yellow 2" in the foreground is Werknummer 412 807, which was lost in air combat near St. Pölten on August 23, 1944. The aircraft's pilot, Uffz. Zimmermann, was killed. The aircraft parked behind it, "White 5," may have been WNr. 412 918, which was shot down near Holzminden on August 16. Pilot Uffz. Salinger, who was wounded in the action, was able to escape by parachute. The wide variation in paint schemes displayed by these aircraft is noteworthy, as are the green Reichsverteidigung bands of II./JG 27 and the red undercarriage legs. The latter were allegedly supposed to remind the ground personnel that the engines of these machines required 100 octane fuel. (Ring)

A "Gustav" – probably a G-14 – of 3./JG 102 is towed along the taxiway at Aalborg with the aid of a captured tracked vehicle, late 1944. This aircraft wears a densely-mottled grey finish completely devoid of markings. Note the tall fin and rudder. (Carlsen)