

JUNKERS Ju 87

From 1936 to 1945



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HISTOIRE & COLLECTIONS

PLANES and PILOTS

THE JUNKERS

JU-87

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The SYMBOL of the BLITZKRIEG

The 'Stuka' is synonymous with the Junkers Ju-87, the German dive-bomber whose combat efficiency and psychological effect, as much on the military as on the civilian populations, were written in letters of blood in the pages of WWII aviation history. Its name is a contraction of the term 'Sturmkampfflugzeug' which means 'dive-bomber' in German. The creation of this type of plane was directly linked to the very rapid evolution of aerial and military tactics and strategies during the Great War.

The appearance of fragile planes over the battlefields, there to spy on the way operations on the ground were going, then to drop projectiles on the infantry - in a rather haphazard manner - gave birth to fighters, then to bombers and towards the end of the conflict, to machines for so-called 'protection', whose job was to draw the enemy's fire and harass enemy positions.

The planes from the 'CL' family designed by firms in Germany like Hannover Wagon and Halberstadt, who were able to carry a large variety of explosive charges doing a maximum amount of damage on the surface, were of primary importance

Above. A Ju 87B from St.G 1 in flight at the beginning of WWII. The unit's insignia, a diving crow, as painted on both sides of the fuselage. The very close shades of camouflage are difficult to make out here.

(© ECPAD France)



Right.

The siren installed on the undercarriage fairings were part of the 'Stuka's' effect, particularly at the beginning of the war.

With its very characteristic noise, this psychological weapon was intended to increase the effect of panic among the population already caused by the dive bombings.

(© ECPAD France)

because they were multi-purpose; they were also the fore-runners of ground attack aircraft.

Even if the Junkers Ju-87 was truly the descendant of this family, dive-bombing was not however Germany's private domain. Its origins are not easy to date with any certainty, neither can it be attributed to a single pilot or strategist.

It was the pilots from the US Marine Corps however who were the first to take this bombing technique very seriously. They studied the few French trials of this kind, carried out by the doctor-pilot La Burthe at Dunkirk in 1918, and by *Enseigne de Vaisseau* Teste at Toulon and at Saint-Raphaël in 1920.

Starting from the premise that US fleets were vulnerable, that they needed effective aerial protection and accurate ways of countering the enemy fleet, they tried very hard to convince their superiors that these new tactics were necessary by converting a few fighters into dive-bombers and by practising dropping bombs, dummies or real ones, on floating targets during the 1920s.

Among the observers at these rather strange training sessions were the Japanese, who were immediately receptive to the idea of the dive-bomber. But they were not alone.

The famous German ace from the Great War, Ernst Udet, a famous pilot and acrobatics specialist, was also watching the American demonstrations.

He was literally enthralled and managed to persuade the new rulers of Germany and first and foremost, Hermann Goering, to give him the money to import two Curtiss Hawk IIs to demonstrate the advantages of dive-bombing to the leaders of the Third Reich.

Udet's initiative triggered off an initial '*Sturmkampfflugzeug*' programme, then a second '*Sturzbomber-Program*' which produced the Ju-87.

Although it received a lot of opposition at the outset, the Ju-87 managed to get itself accepted because it was strongly built, its design was modern, it was easy to produce and maintain, and it was able to dive almost vertically on its target. These 'qualities' turned it into a formidable weapon when used in conjunction with infantry and armoured units, as when Hitler's troops invaded and occupied Poland, and then the whole of Western Europe.

Everybody, even those who neither experienced nor lived through WWII, knows of the psychological and destructive effects of the '*Blitz-Krieg*' (Lightning War). During the whole of WWII, the Ju-87s were in the middle of the fray and their pilots were considered to have the hardest and most dangerous task to do. But war wears down even those who are winning.

The Allies fighting against Germany rapidly made up the technological advantage that the Luftwaffe had had since before the beginning of the war and relegated the Stuka to less thankless and more appropriate tasks for which it had not been designed, mainly in Russia.

Very few Stuka pilots managed to fight the whole war aboard Ju 87s. Only 23 among them made it beyond one thousand sorties, and only two beyond 500.

The siren installed on the undercarriage fairings were part of the 'Stuka's' effect, particularly at the beginning of the war. With its very characteristic noise, this psychological weapon was intended to increase the effect of panic among the population already caused by the dive bombings.

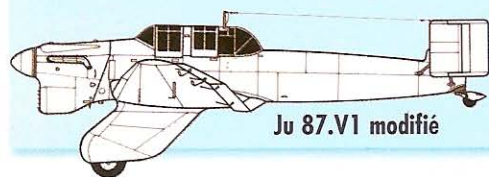
(© ECPAD/France)



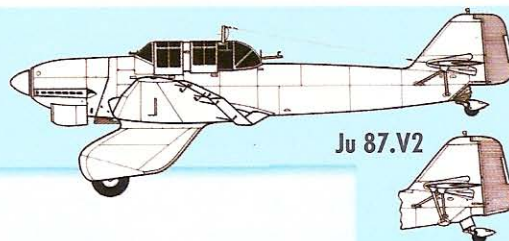
From PROTOTYPES to the JU 87H

Model	Status	type	Engine	Power at Take-off
Ju 87.V1	prototype	dive-bomber	Rolls Royce Kestrel V	525 cv
Ju 87.V2	prototype	dive-bomber	Junkers Jumo 210Aa	610 cv
Ju 87.V3	prototype	dive-bomber	Junkers Jumo 210Aa	610 cv
Ju 87.V4	A - version prototype	dive-bomber	Junkers Jumo 210Ca	600 cv
Ju 87.V5	A - version prototype	dive-bomber	Junkers Jumo 210Da	720 cv
Ju 87A-0	pre-production series	dive-bomber	Junkers Jumo 210Ca	600 cv
Ju 87A-1	production series	dive-bomber	Junkers Jumo 210Ca	600 cv
Ju 87A-2	production series	dive-bomber	Junkers Jumo 210Da	720 cv
Ju 87.V6	B- version prototype	dive-bomber	Junkers Jumo 210A	1000 cv
Ju 87.V7	B- version prototype	dive-bomber	Junkers Jumo 211A	1000 cv
Ju 87.V8	B- version prototype	dive-bomber	Junkers Jumo 211A	1000 cv
Ju 87.V9	B- version prototype	dive-bomber	Junkers Jumo 211A	1000 cv
Ju 87B-0	pre-production series	dive-bomber	Junkers Jumo 211A	1000 cv
Ju 87B-1	production series	dive-bomber	Junkers Jumo 211Da	1200 cv
Ju 87B-2	production series	dive-bomber	Junkers Jumo 211Da	1200 cv
Ju 87.V10	C- version prototype	carrier-borne dive-bomber	Junkers Jumo 211Da	1200 cv
Ju 87.V11	C- version prototype	carrier-borne dive-bomber	Junkers Jumo 211Da	1200 cv
Ju 87C-0	pre-production series	carrier-borne dive-bomber	Junkers Jumo 211Da	1200 cv
Ju 87C-1	short-run series	carrier-borne dive-bomber	Junkers Jumo 211Da	1200 cv
Ju 87.V21	D - version prototype	dive-bomber	Junkers Jumo 211J-1	1400 cv
Ju 87.V22	D - version prototype	dive-bomber	Junkers Jumo 211J-1	1400 cv
Ju 87.V23	D - version prototype	dive-bomber	Junkers Jumo 211J-1	1400 cv
Ju 87.V24	D - version prototype	dive-bomber	Junkers Jumo 211J-1	1400 cv
Ju 87.V25	D - version prototype	dive-bomber	Junkers Jumo 211J-1	1400 cv
Ju 87D-1	production series	dive-bomber/ground attack	Junkers Jumo 211J-1	1400 cv
Ju 87D-1/To	E - version prototype	torpedo bomber	Junkers Jumo 211J-1	1400 cv
Ju 87D-2	production series	dive-bomber/ground attack	Junkers Jumo 211J-1	1400 cv
Ju 87D-3	production series	dive-bomber/ground attack	Junkers Jumo 211J-1	1400 cv
Ju 87D-3A	prototype	special "Spy" transport	Junkers Jumo 211J-1	1400 cv
Ju 87D-4	production series	dive-bomber/ground attack	Junkers Jumo 211J-1	1400 cv
Ju 87D-5	production series	dive-bomber/ground attack	Junkers Jumo 211J-1	1400 cv
Ju 87D-6	project	night ground attack	Junkers Jumo 211P	1500 cv
Ju 87D-7	conversion de D-3	night ground attack	Junkers Jumo 211P	1500 cv
Ju 87D-8	conversion de D-5	night ground attack	Junkers Jumo 211P	1500 cv
Ju 87E-1	project	torpedo bomber	Junkers Jumo 211J-1	1400 cv
Ju 87F	project	dive-bomber	Junkers Jumo 213A	1776 cv
Ju 87G-0	pre-projet	tank buster/ground attack	Junkers Jumo 211J-1	1400 cv
Ju 87G-1	D-3 conversion	tank buster/ground attack	Junkers Jumo 211J-1	1400 cv
Ju 87G-2	D-5 conversion	tank buster/ground attack	Junkers Jumo 211J-1	1400 cv
Ju 87H-1	D-1 conversion	training	Junkers Jumo 211J-1	1400 cv
Ju 87H-3	D-3 conversion	training	Junkers Jumo 211J-1	1400 cv
Ju 87H-5	D-5 conversion	training	Junkers Jumo 211J-1	1400 cv
Ju 87H-7	D-7 conversion	training	Junkers Jumo 211P	1500 cv
Ju 87H-8	D-8 conversion	training	Junkers Jumo 211P	1500 cv
Ju 187	project	dive-bomber	Junkers Jumo 213A	1776 cv
Ju 287	project (1 st of this type)	dive-bomber	Junkers Jumo 213A	1776 cv

The /Trop suffix was used on machines deployed in the Mediterranean and North African theatres and equipped with sand filters.
The 'U' suffix was used on all machines fitted with special equipment.



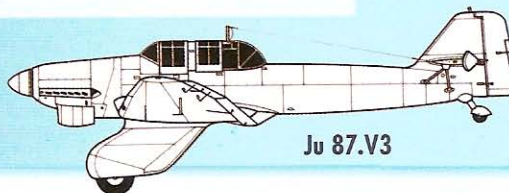
Ju 87.V1 modifié



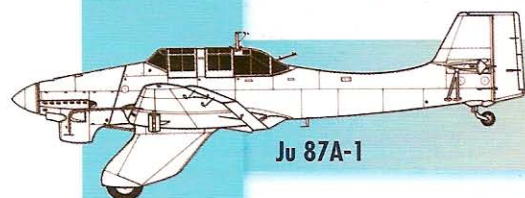
Ju 87.V2



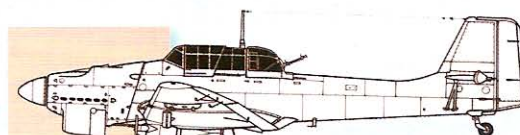
Ju 87.V4



Ju 87.V3

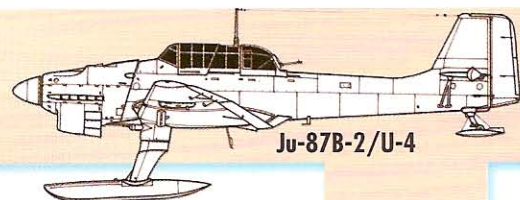


Ju 87A-1



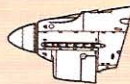
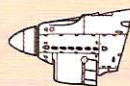
Ju-87B-1
beginning of production series 'and B-2
except for the engine cowling

Ju-87B-1
middle of production run

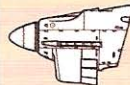


Ju-87B-2/U-4

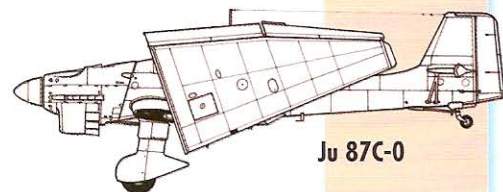
Ju-87B-1
end of production run



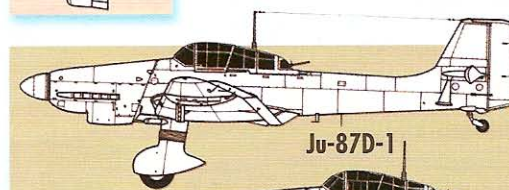
Ju-87B-2



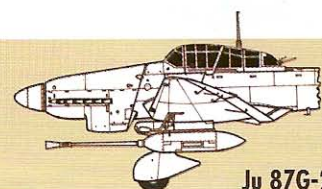
Ju 87R-2



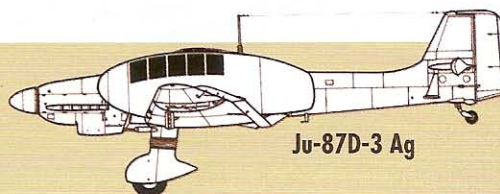
Ju 87C-0



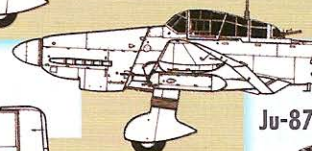
Ju-87D-1



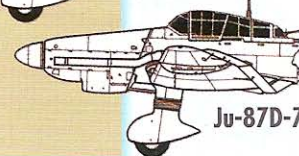
Ju 87G-2



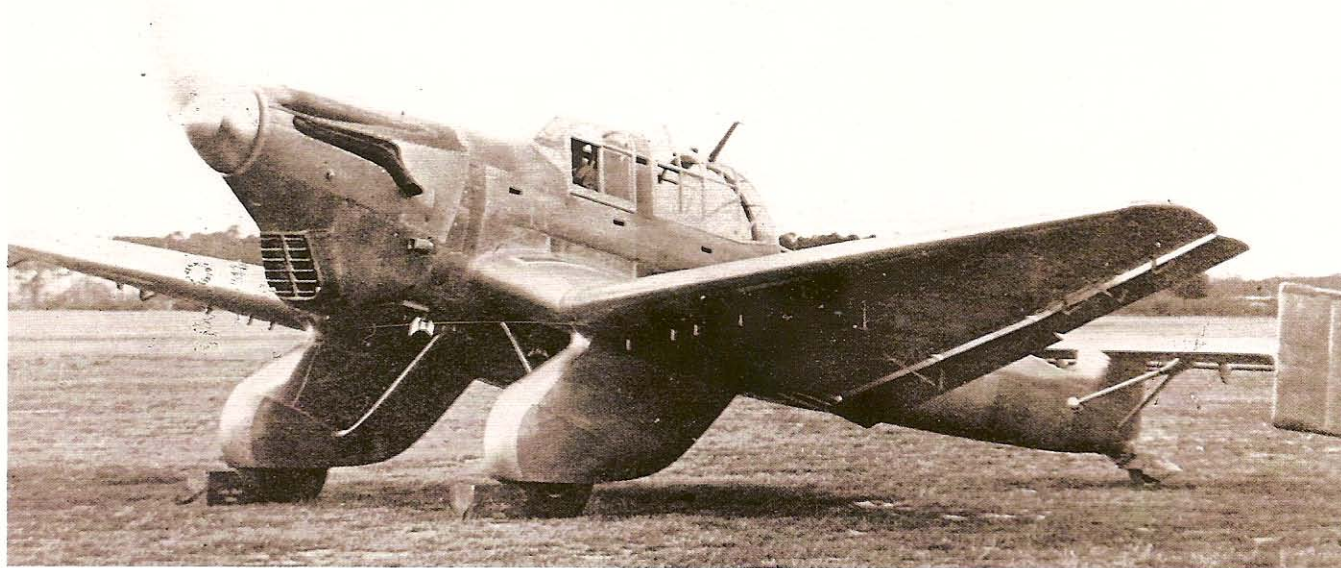
Ju-87D-3 Ag



Ju-87D-5



Ju-87D-7



The FIRST PROTOTYPES

The *Sturzbomber-Programm* was the second step in the development of a dive-bomber for the Luftwaffe -the first had given birth to the Henschel Hs 123 sesquiplane within the *Sofort-Programm* or 'Immediate Programme'. Since the RLM - the *Reichsluftfahrtministerium*, or Air Ministry - had set up a competitive system for all the aircraft specifications issued, the Arado, Junkers and Heinkel companies were asked to develop a model and submit it within two months for the T-Amt (the Technical office) to evaluate. In fact the schedule of conditions officially issued in January 1935, was literally thought around the Junkers programme which was already well ahead of the other two firms, to which the Hamburger Flugzeugbau had added itself on a private basis.

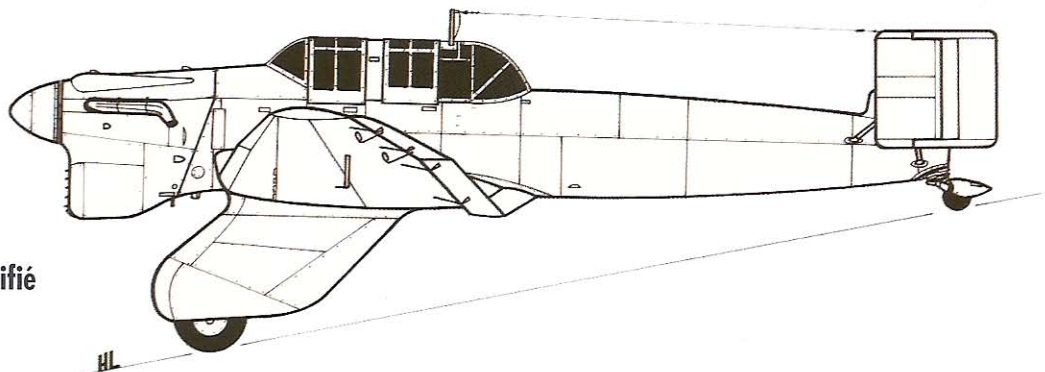
Considering the four machines presented, it is very difficult to imagine them all coming from the same programme. It was true that the T-Amt, run by von Richtofen, had omitted to indi-

Above.
The Ju 87.V1 was frankly an ugly aircraft with its heavy undercarriage fairings, all the different struts supporting the tail and the undercarriage, the two Vee-shaped antennae, the original radiator and the double-wing so characteristic of the Ju 87.

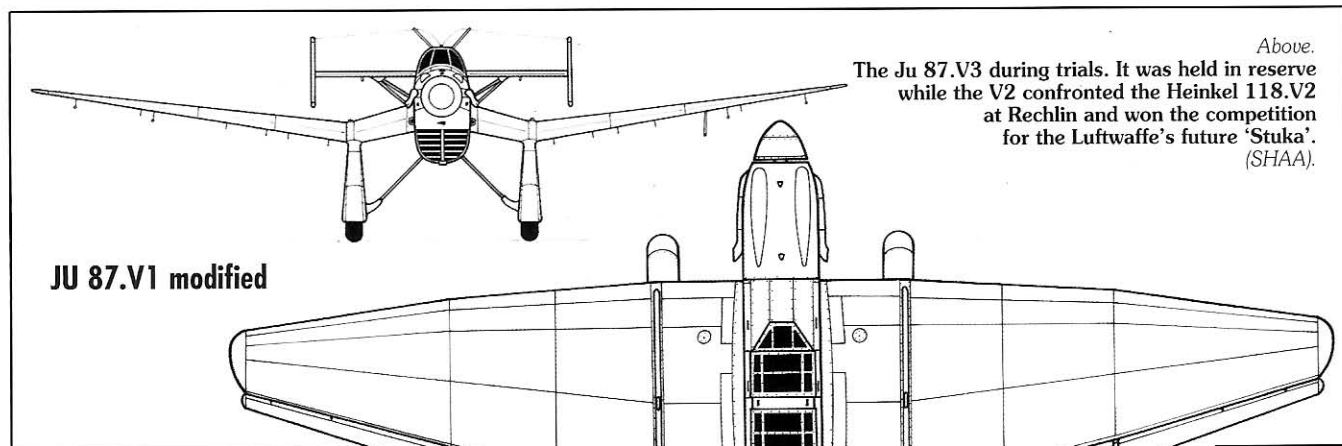
(Coll.H. Leonard)

cate the wing configuration which was to be adopted despite the recommendations of Udet who advocated as compact a monoplane as possible. This omission was without doubt intentional as the programme specifications were based on the Junkers Ju-87, Junkers having started its programme as soon as the new aeronautical programmes were announced in 1933.

The Luftwaffe bosses were however able to make interesting comparisons and evaluations of the projects thus submitted to them: the Arado Ar 81 biplane, the Heinkel He 118 monoplane, the Junkers Ju-87 flattened W-wing monoplane and the



JU 87.V1 modifié

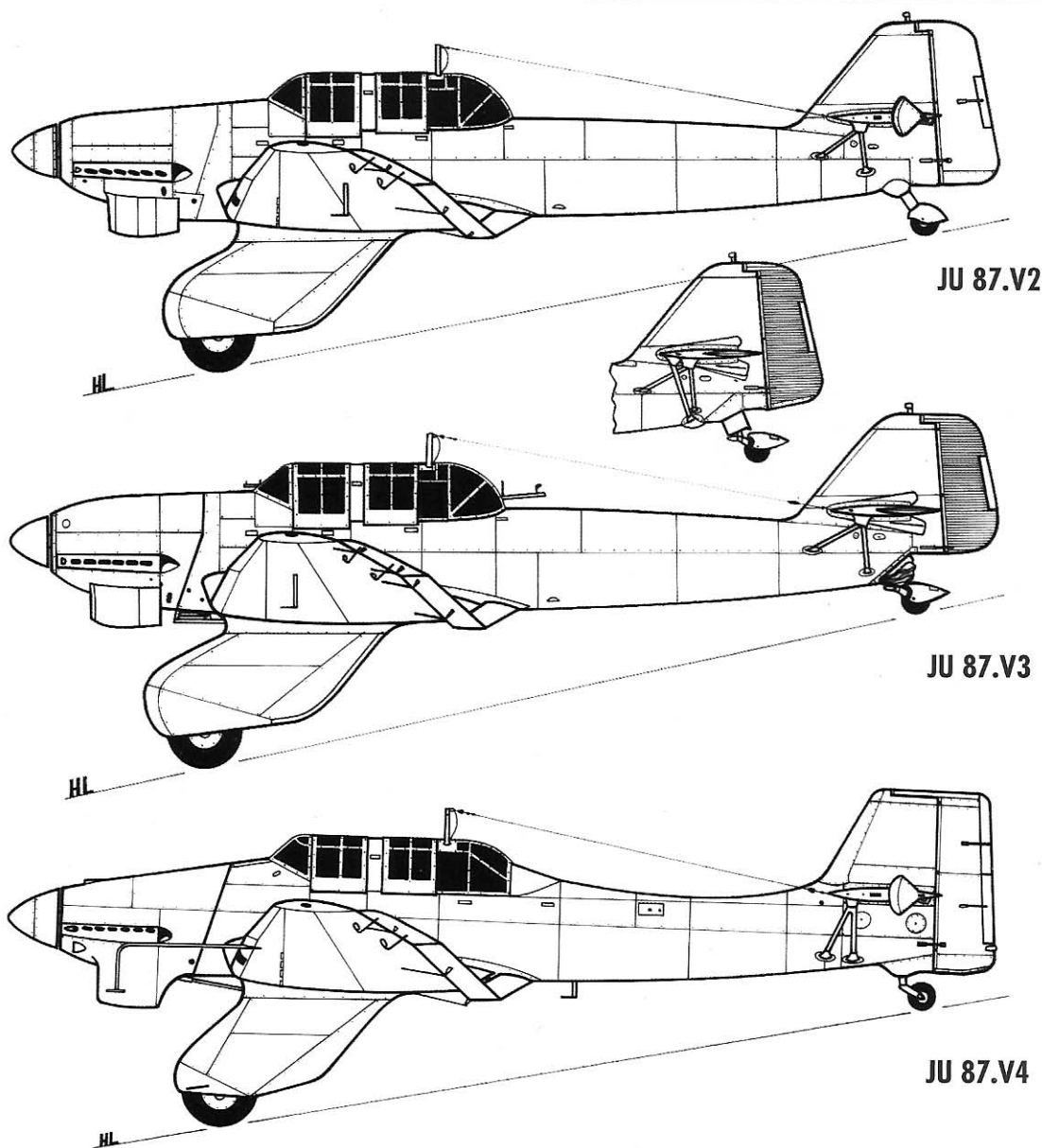


Above.
The Ju 87.V3 during trials. It was held in reserve while the V2 confronted the Heinkel 118.V2 at Rechlin and won the competition for the Luftwaffe's future 'Stuka'. (SHAA).

Hamburger Flugzeugbau Ha 137.

Of the four prototypes tested together at Rechlin from the summer of 1936 onwards, the He 118 was the most modern, the Ar 81 was the most hybrid, the Ha 137 was the slowest and the Ju-87.V1 was the ugliest by far (it was not even registered). Nevertheless it was Junkers that won the competition after the trials. The judges disapproved of its massive appearance, the heaviness of its silhouette and its fixed undercarriage (von Richtofen considered the programme 'suicidal') but ended up approving its robustness, its manoeuvrability, its ease of handling, the ergonomics of its two-seat cockpit, the field of vision offered to the two crew members and its ability to dive almost vertically thanks to its air brakes (von Richtofen was replaced by Udet who managed to convince everybody).

The Ju-87 was made entirely of metal, with a smooth working skin. Its flattened W-shaped wing enabled the undercarriage legs with their enormous spats to be shortened. Two slatted dive brakes were fitted to the undersides of the wings but were not present on the V1. The braced tail-plane had twin vertical tail surfaces. The two back-to-back cockpit seats were sheltered by a long wide canopy with hinged access sections opening to the right. The V1 was powered by a fully-supercharged 525 bhp (392 kW) Rolls-Royce Kestrel 9

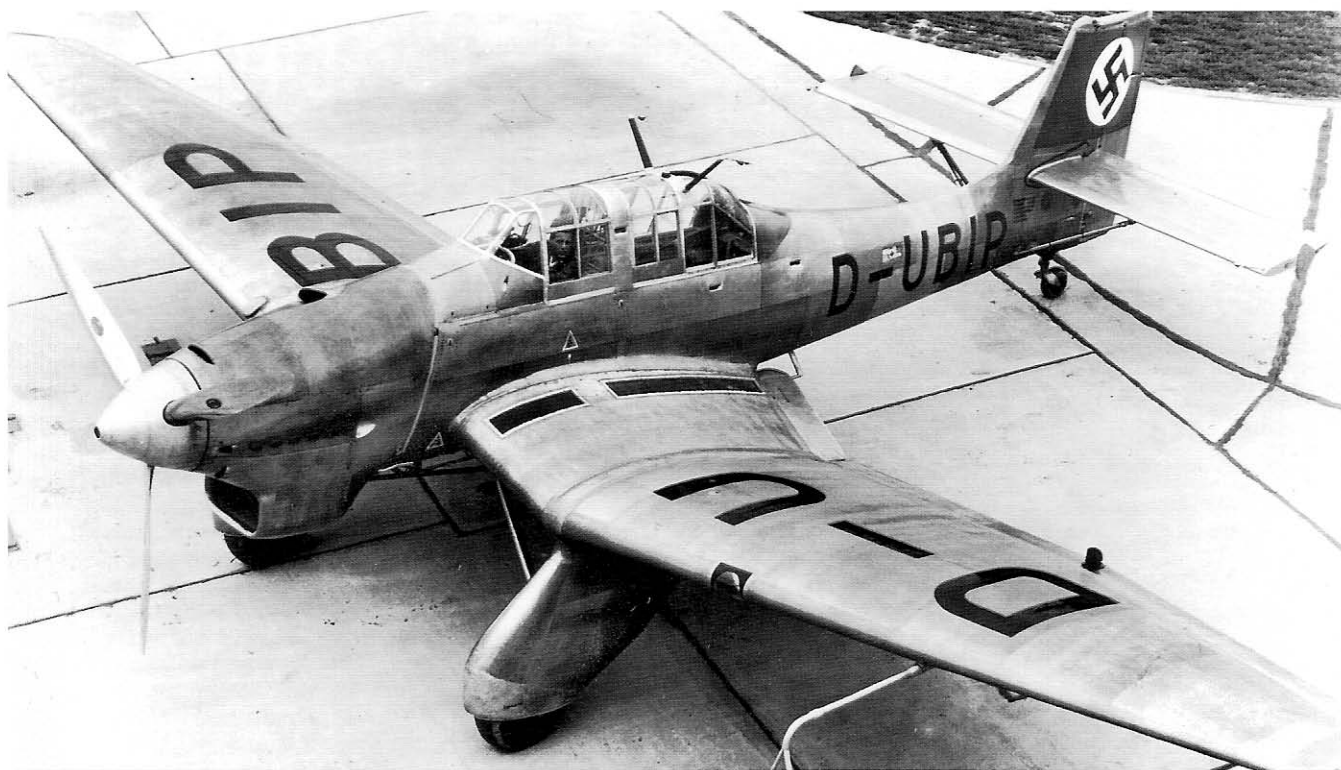


V driving a two-bladed fixed pitch wooden airscrew, pending delivery of the intended Junkers Jumo. It was cooled by an enormous faired chin radiator. Its typical Junkers lift increasing system (their 'double wing' principle) gave it light controls. During the flight trials in September 1935, the engine overheated, so the size of the radiator was increased.

The aircraft was destroyed on 21 January 1936 when the plane was carrying out a medium-angle dive; the tail started to oscillate dangerously, the right-hand tail came off, then the rest of the tail broke off. Totally out of control, the Ju-87.V1 crashed

killing Willi Neuenhofen and his observer. The second prototype, the Ju-87.V2 (D-UHUU), took over the trials. It now had a single tail, with corrugated metal rudder and elevators. It was now powered by a Junkers Jumo 210A rated at 610 bhp (455kW) at 2 600 m driving a three-blade variable-pitch 'Jumo-Hamilton' propeller. This inverted V-12 engine enabled the whole of the front of the fuselage to be more streamlined.

The dive brakes were installed, as was a single 7.9 mm MG 15 machine gun mounted in the rear cockpit. Its maiden flight took place on 25 February 1936 and the trials continued until August.



Above.

The Ju 87.V-4, prototype for the 'Anton' series. The rungs allowing the crew access to the cockpit are clearly visible on the sides of the fuselage. (Coll. H. Leonard)

Below.

On this shot of the Ju 87.V2, the 'corrugated iron' which covered the tail surfaces can be clearly seen. Note the slot in the rear of the canopy for the MG 15 machine gun.

(Coll. H. Leonard)

The Ju 87 V3 (D-UKYQ) took off for the first time on 27 March 1936. It differed from the V2 by its enlarged vertical tail surfaces and its stressed skin, by the straight wing tip chord, by its lower engine position (in order to give better forward visibility) and by certain internal details, but it was not armed.

When the Ju87.V2 took part in competition trials against the Heinkel He 118.V2, the .V3 was held in reserve from May onwards.



The ORGANISATION of STUKA UNITS



1938, a Ju 87's 'Kette' (Patrol) from St.G 165. (H. Léonard).

At the beginning of the war, on 1 September 1939, the Luftwaffe was divided into four *Luftflotten* (Air Fleets or Air Regions) which covered the whole of Greater Germany including Austria and Czechoslovakia. This number rose to seven during the war as a new zone distribution became necessary as more and more new territories were taken over.

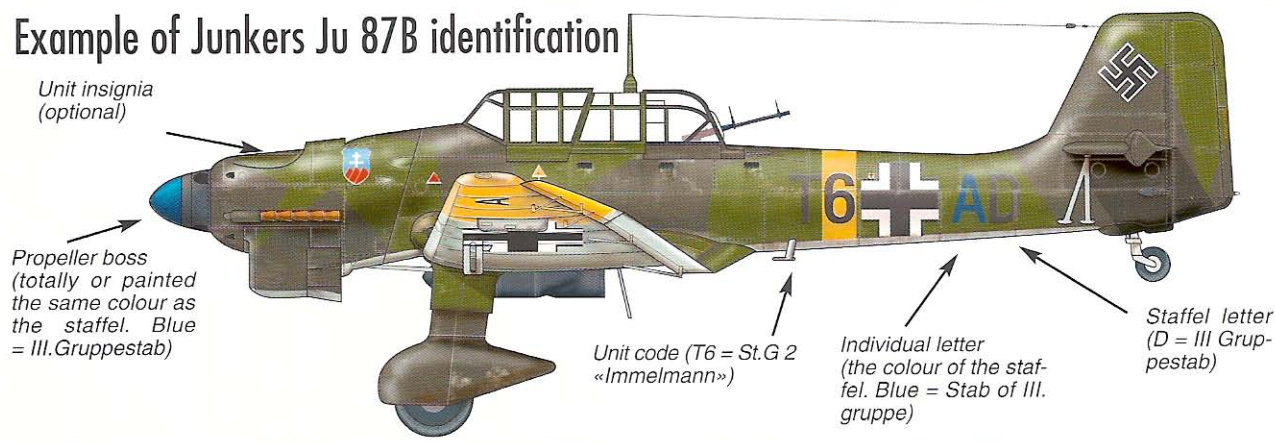
The *Geschwader* (Squadron) was the most important operational unit and was commanded by a *Geschwaderkommodore*, or *Kommodore* having at least the rank of Major. It was originally made up of three *Gruppen* (Groups), each commanded by a *Gruppenkommandeur*, or *Kommandeur*, having at least the rank of Major; this made a total of 90 machines, to which were added the four planes of the *Stab* (Staff - Headquarters).

During the conflict (from 1941 for certain units, and end of 1943 at the latest), a fourth *Gruppe* was added - the *Ergänzungsgruppe* (Training Group), which was supposed initially to train crews operationally before they were sent to the front, but which became an extra operational unit because of the way the war was going and because of the lack of new pilots.

The *Gruppe* were originally made up of three *Staffeln* (Flights) and a *Stab* (Headquarters) and grew to four *Staffeln* during the war, the number of the machines increasing from 37 to 67 (max.).

The *Staffeln* started the war with a strength of nine planes and were reinforced, sometimes reaching 16 planes. Each *Staffel* was commanded by a *Staffelkapitän* with the rank of at least *Hauptmann* (Captain) or *Leutnant* (Lieutenant). Final-

Example of Junkers Ju 87B identification



ly the smallest formation was the *Kette* (Section) which was made up of three machines in the Stuka squadrons. Naturally these figures were purely theoretical, reality in the field being something quite different, depending on the situations and events. Thus certain *Geschwadern* could only muster one single *Gruppe* whereas a *Gruppe* could be reinforced and be made up of five or six *Staffeln*.

Apart from some rare exceptions, the decorations and markings in units operating with Ju 87s were among the most constant.

Indeed, if one excludes the machines operating in the desert or in wintry conditions and specially adapted for special conditions, the standard green-based and pale blue camouflage scheme and consisting of large segmented blotches hardly varied during the whole conflict. Moreover, aircraft markings remained remarkably constant too, only a few variations in shade and size cropping up here and there.

As with other aircraft in the Luftwaffe, except those in fighter or ground attack units, the Stukas bore a code made up of four letters or numbers on the fuselage, in pairs either side of the cross (*Balkenkreuz*).

This code was called the *Verbands-kennzeichen* and must not to be confused with the one put on the aircraft by the builder (the *Stamm-kennzeichen* made up of letters only and normally rubbed off when the plane reached its unit).

The code was made up as follows: to the left of the cross, the first two characters corresponded to the unit to which the aircraft belonged.

ABBREVIATIONS and GLOSSARY

Eins. GR: Einsatzgruppe (Operational combat group)

Erg. Sta: Ergänzungstaffel (Reserve and training Squadron).

Fl. Ziel: Fliegerziel (Target tug).

Gefechtsverband: combat group.

KG: Kampfgeschwader (Bomber Squadron).

KGr: Kampfgruppe (Bomber Group)

LLG: Luftlandgeschwader (Glider towing squadron)

NJG: Nachtjagdgeschwader (Night Fighter squadron)

NSGr: Nachtschlachtgruppe (Night assault group).

Rest Kdo: Restkommando (Rear echelon or special training detachment).

Schleppgruppe: Glider

towing group.

SG: Schlachtgeschwader (Ground attack squadron)

St.G: Stukageschwader (Dive bomber squadron).

Stab: Headquarters. *Störkampfgruppe:* Night assault group.

Tr. G: Trägergeschwader (Carrier-borne squadron)

Thus a Stuka coded T6 was part of *Stukageschwader* (shortened to St.G.) 2 'Immelmann'. This form of identification was not enough so there was a second group, painted after the cross. The first letter was that of the aircraft within its unit, and the second corresponded to the squadron.

For even greater clarity, the individual letter was normally painted the colour of the squadron (it could also be black edged with the distinctive colour) according to a precise and unchanging code

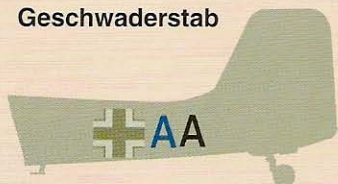
If Ju 87 A5 + FL is taken as an example. The A5 means that it was a Stuka from the St. G. 1; the individual letter (F) being

The LUFTWAFFE UNITS FLYING with Ju 87s

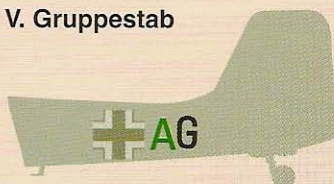
CODE	DÉSIGNATION	CODE	DÉSIGNATION	CODE	DÉSIGNATION
A5	St.G 1 ➔ Became SG 1 in October 1943	L2	LG 2	2B	Eins. Gr/2 Fl. Schule Div.
B1	Rest.Kdo/St.G 1	S1	I./St.G 3 ➔ I./SG 3 from October 1943	4X	NSGr. 7
D3	Störkampfgruppe/Lfl.6. ➔ Became NS Gr. 2 in November 1943	S2	St.G 77 ➔ SG 77 from October 1943	5B	NSGr. 10
E8	NS Gr.9	S7	St.G 3 ➔ SG 3 from October 1943	6G	III./St.G 51 ➔ II./St.G 1 from July 1940 ➔ II./SG 1 from October 1943
F1	I./St.G 76 ➔ Became III./St.G 77 in July 1940	T6	St.G 2 «Immelmann» ➔ SG 2 from October 1943 — III./St.G 6 — Stuka Erg. Sta/VIII. Fliegerkorps — Gefechtsverband Rudel	6J	NSGr. 8
F7	— LLG 2 — Schleppgruppe 1	U5	Gefechtsverband Hallensleben	6Q	Erg. Sta/St.G 2 ➔ II./Stab/St.G 151 from July 1943 ➔ SG 151 from October 1943
H4	— NS Gr. 10	V8	NSGr.1	6Z	Gruppe Herzog (Stab from Stab I./LLG 1)
H5	Unit unknown (at least one Ju 87 had this code)	W7	NJG 100	8M	Schleppgruppe 3
J9	I.Tr.G 186 ➔ Became I./St.G 186 ➔ III./St.G 1 from July 1940	Z8	Kroat KGr. 1	NB. The codes and designations in italics correspond to the units whose principal aircraft was not the Junkers Ju 87, but who may have used the type among others.	
L1	LG 1 ➔ I./St.G 5 ➔ I./St.G 1 from June 1943 ➔ I./SG 1 from October 1943	1K	— Störkampfgruppe/Lfl. 4 — NSGr. 4 from November 1943 to May 1945		

THE LUFTWAFFE'S STUKA UNIT CODE (1939-45)

Geschwaderstab



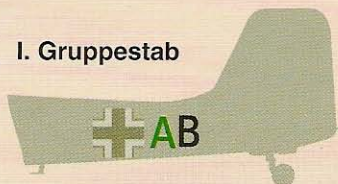
V. Gruppestab



4. Staffel, II. Gruppe



I. Gruppestab



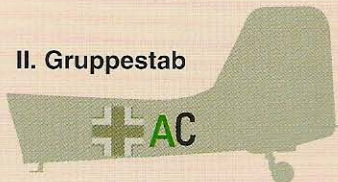
1. Staffel, I. Gruppe



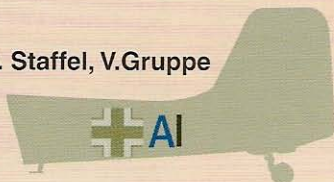
5. Staffel, II. Gruppe



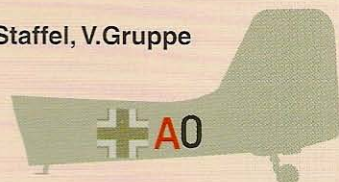
II. Gruppestab



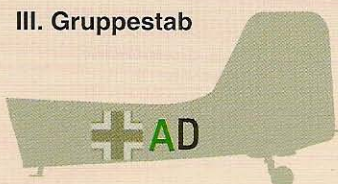
20. Staffel, V. Gruppe



18. Staffel, V. Gruppe



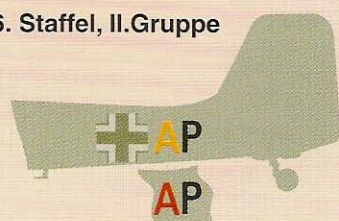
III. Gruppestab



17. Staffel, V. Gruppe



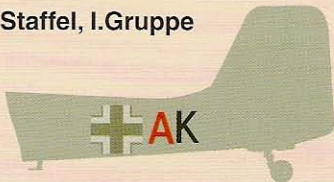
6. Staffel, II. Gruppe



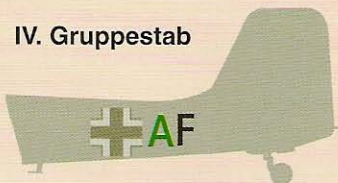
19. Staffel, V. Gruppe



2. Staffel, I. Gruppe



IV. Gruppestab



3. Staffel, I. Gruppe



yellow, this indicates that the plane was from the 3. Staffel in the 1st Gruppe, which is confirmed by the last letter (L).

During the conflict, most Geschwadern increased the number of Gruppen from four to five, the Gruppen being made up of four and no longer three Staffeln.

This reorganisation meant that the colours had to be redistributed (blue, hitherto reserved for Geschwader Headquarters being generalised) and extra letters (Q, J, O, E and I) which originally had not been used in order to avoid confusion started to make an appearance to designate new units (Staffeln 16 to 20).

With the help of the following tables, and on the condition that the registration number is correct, it is therefore very easy to identify any air-

THE LUFTWAFFE'S ALPHABETICAL CODE

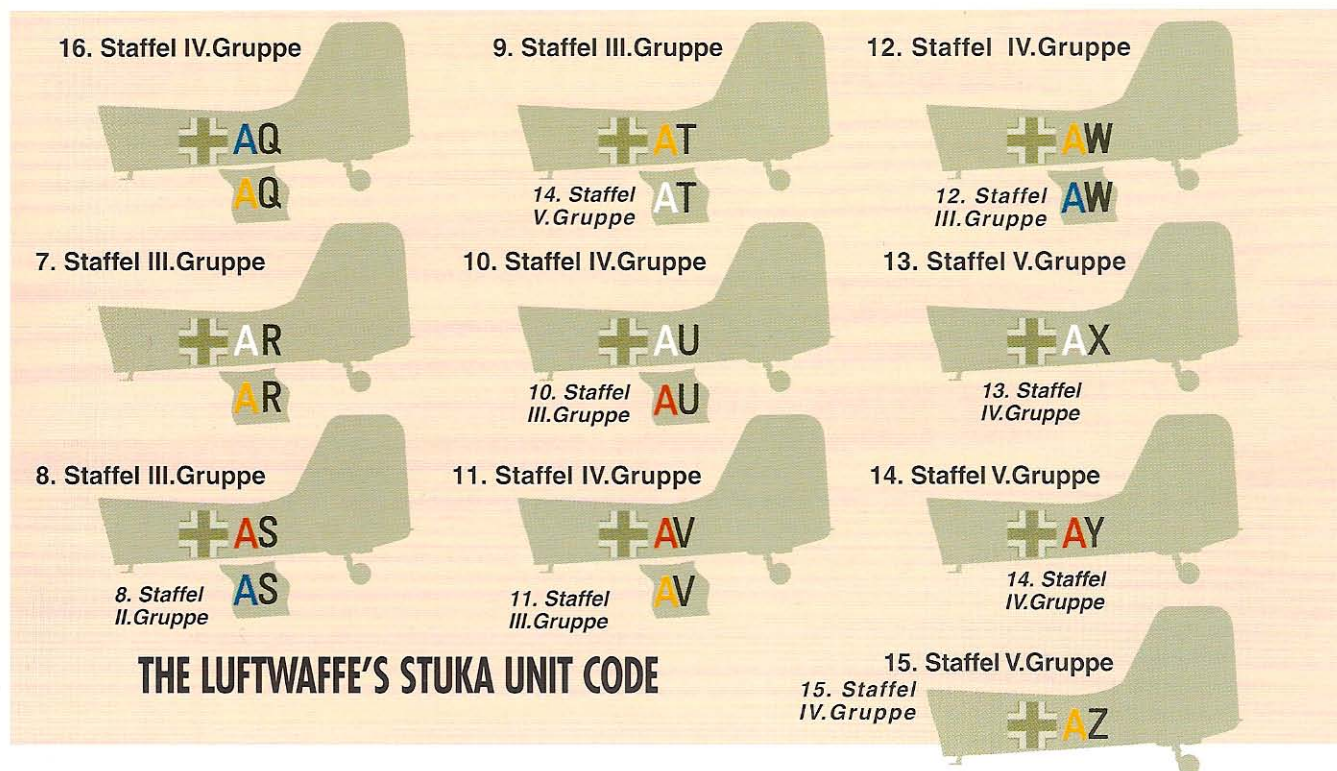
4 th letter	Unit (in 1939)	Unit (after re-organisation)	Colour (third letter in 1939)	Colour third letter (after re-organisation)
A	Geschwader Stab		Blue	
B	I. Gruppe Stab		Green	
C	II. Gruppe Stab		Green	
D	III. Gruppe Stab		Green	
F	IV. Gruppe Stab		Green	
G	V. Gruppe Stab		Green	
H	1. Staffel I. Gruppe		White	
K	2. Staffel I. Gruppe		Red	
L	3. Staffel I. Gruppe		Yellow	
M	4. Staffel II. Gruppe	4. Staffel/ I. Gruppe	White	Blue
N	5. Staffel II. Gruppe		Red	White
P	6. Staffel II. Gruppe		Yellow	Red
R	7. Staffel III. Gruppe	7. Staffel/ II. Gruppe	White	Yellow
S	8. Staffel III. Gruppe	8. Staffel/ II. Gruppe	Red	Blue
T	9. Staffel III. Gruppe		Yellow	White
U	10. Staffel IV. Gruppe	10. Staffel/ III. Gruppe	White	Red
V	11. Staffel IV. Gruppe	11. Staffel/ III. Gruppe	Red	Yellow
W	12. Staffel IV. Gruppe	12. Staffel/ III. Gruppe	Yellow	Blue
X	13. Staffel V. Gruppe	13. Staffel/ IV. Gruppe	White	
Y	14. Staffel V. Gruppe	14. Staffel/ IV. Gruppe	Red	
Z	15. Staffel V. Gruppe	15. Staffel/ IV. Gruppe	Yellow	
Q				Blue
J				White
O				Red
E				Yellow
I				Blue

craft, the exceptions to these regulations being particularly rare.

It is to be noted that during the conflict some units painted the unit code in smaller letters (even leaving it out altogether) leaving the two letters identifying the aircraft within its squadron nonetheless very clear.

Moreover, at the beginning of the war, the original factory registration was painted in groups of two on the underside of the wings in the direction of flight, which explains why on some photographs of aircraft side-on show characters which have nothing to do with the code on the fuselage.

This habit was changed by painting the last letter of the fuselage code (the unit letter) under the tip of each wing.





The JU 87A, or the 'ANTON' SERIES

The Ju.V4 (D-UBIP) was the prototype for the A (or 'Anton') series. It appeared in the autumn of 1936 having being modified after tests carried out on the previous prototypes: the tail fin was larger and squarer; the engine mounting had been lowered again; the cooling radiator was more aerodynamic; the rear fuselage was redesigned; the cockpit canopy was lengthened and streamlined; the size of the undercarriage fairings was reduced; a crutch on swing links was attached to the belly to ensure the 551 lb or 1 102 lb bomb cleared the airscrew arc; and a 7.9 mm MG 17 machine gun was mounted in the starboard wing (the MG 15 in the rear cockpit was not mounted); an armoured window was placed in the floor of the cockpit to make aiming easier, etc.

The Ju 87.V4 was transferred to Rechlin where a great variety of offensive loads was tested, but the aircraft's mass and its lack of engine power limited the load to 1 102 lbs, reducing the aircraft to a single-seater. During the trials, the Jumo 210Aa was replaced by a 210Ca rated at 640bhp (477kW) at 2700.

Two scoops for the oil cooler were installed in the nose; the structure of the wing was simplified and its form redesigned; the rudder was enlarged; the tail struts were reinforced; the tail-wheel fairing was removed.

These modifications were included in the ten Ju 87A-0 (A-01

Above.
A brand new Ju 87A-1 wearing the four-tone segmented camouflage used until 1938 as well as the Nazi flag covering nearly the whole of the tailfin. The Pitot tube, whose ends were in the form of an inverted V, is quite clearly visible as is the landing light fitted into the leading edge of the port wing. The registration number was repeated under the wings.

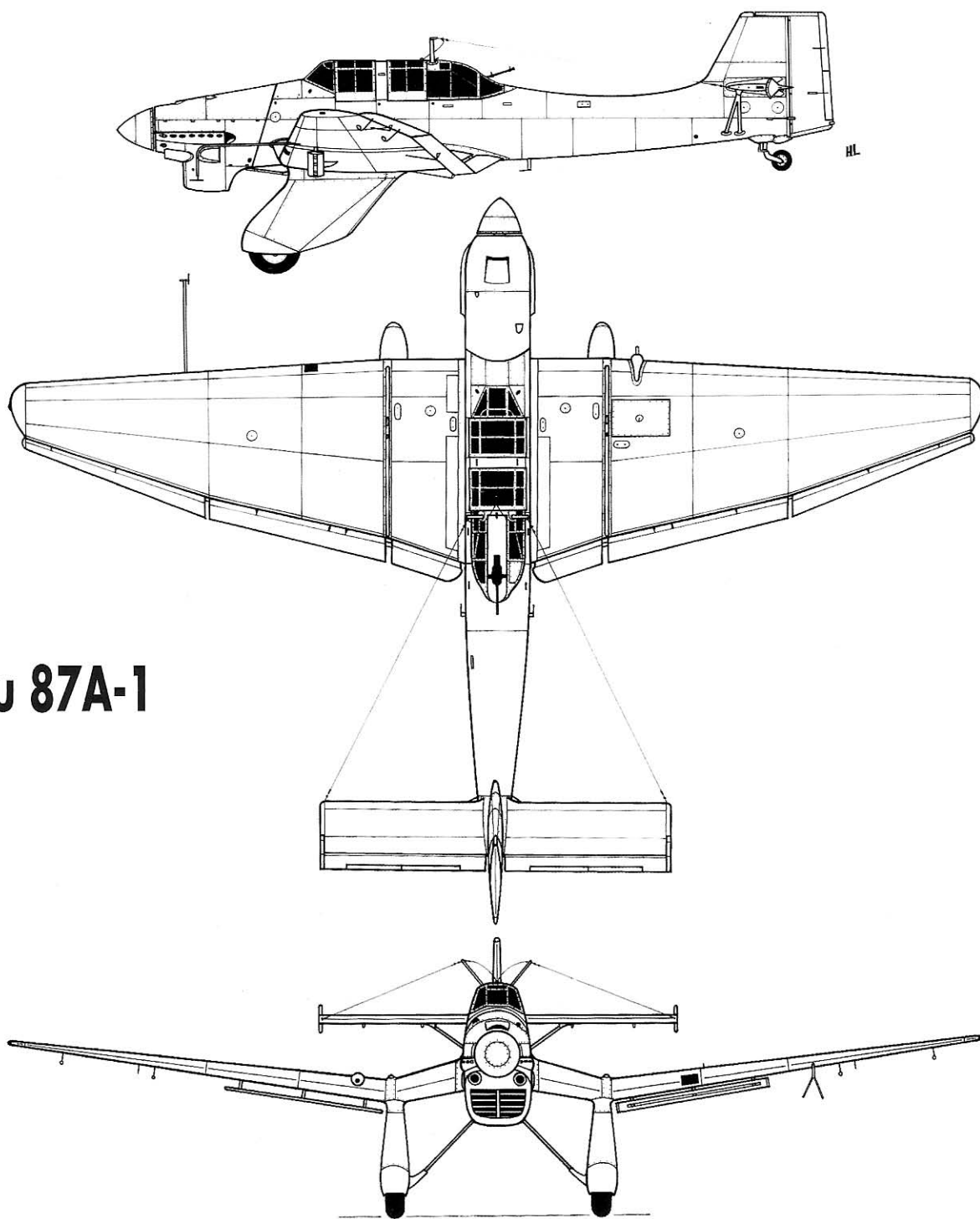
(DR)

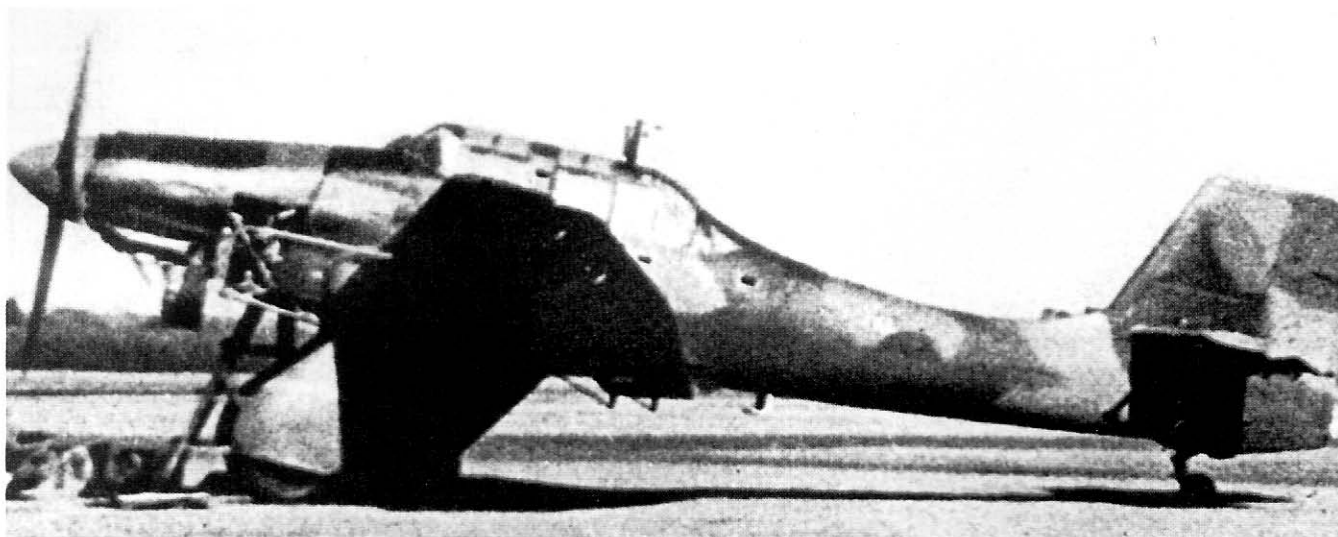
to A-11) pre-production aircraft on the assembly lines since August 1936. They were delivered to I./Stukageschwader 162 'Immelmann' (I./St.G 162) for evaluation. The Ju 87.V5 (no registration) was the prototype for the A-1 series. This was given over to weapon trials and flew for the first time on 14 August 1936 with the new Jumo 210Da rated at 720bhp (537kW) on take-off and which had been intended for the A-2 series. The Ju 87A-1 were supplied to units during the first six months of 1936. They were identical to the A-0, including the engine.

The dive-bomber units already in existence and those forming were gradually equipped with the new 'Stuka'. Three of them were sent very secretly to Spain where they were evaluated operationally by the Condor Legion (even General Franco, the commander of the nationalist troops was not informed).

They took part discreetly in operations on the Teruel front, on

Ju 87A-1

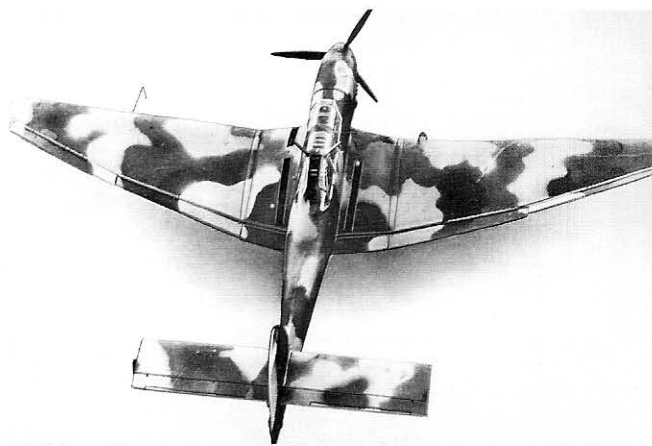




Technical specifications for the Ju 87A-1 (Ju 87A-2 in brackets)

Wingspan: 45 ft
Length: 35 ft 6 in
Height: 12 ft 9 in
Wing area: 347.39 sq. ft
Fuel capacity: 105.5 gallons
Weight (unloaded): 5 903 lb
Max. take-off weight: 7 480 lb
with a 1102-lb bomb
Max. Speed: 200 mph at 13 200 ft
without bomb load.
125 mph (295 kph) at 9 900 ft with
a 551-lb bomb.
(200 mph at sea level).
195 mph (312 kph) at 13 200 ft

Cruising speed: 172 mph at
8 910 ft
Landing speed: 63 mph
Dive speed (max.): 344 mph
(550 kph) with dive brakes.
Climb rate: to 3 300 ft: 3.1 minutes
(6 600 ft in 8 minutes)
Ceiling: 23 100 ft, (31 120 ft).
Range: 625 miles at 162 mph
Armament: One fixed 7.9 mm MG 17
machine gun. One 7.9 mm MG 15
machine gun on a flexible mounting.
Bomb load: One 551-lb (250-kg)
bomb on the underbelly sling.



Although not very good, this shot shows the sole Ju 87A-1 imported by Japan for evaluation, dismantling, study and reassembling. It was then exhibited in the Tokorozawa Museum where it was destroyed by an American air raid.

(Coll. H. Leonard)

the Mediterranean coast, on the Ebra front and during the Francist attack in Catalonia.

At the end of 1937, the A-1 was replaced by the Ju 87A-2 on the Dessau production lines. It differed from its predecessor by being powered by the Jumo 210Da with two-speed supercharger driving a larger-bladed propeller and some other minor details.

None of the three 'Anton' variants was equipped with the automatic pilot first tried out during the dive tests in Sweden carried out on the Ju K-47 before Hitler came to power.

The production series of the 'Anton' was stopped after 262 machines had been produced (192 at the Dessau plant and 70 by the *Weser Flugzeugbau* at Berlin-Templehof).

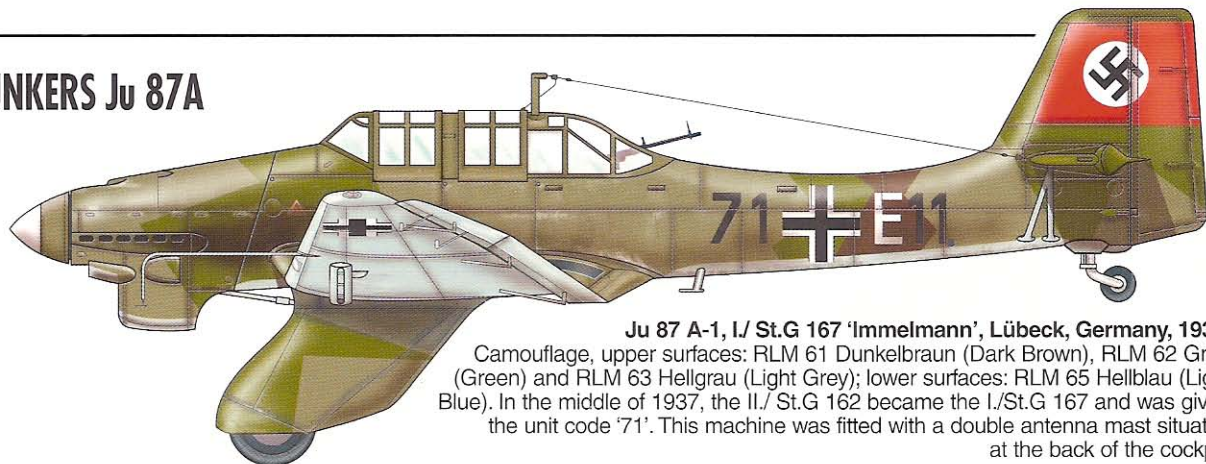
The Japanese military forever interested in German aircraft production, were impressed by the offensive performance of the 'Stukas' during the German invasion of Poland in September 1939; they bought a Ju 87A-1 in 1940. The machine was painted in Japanese colours and production in Japan was considered for a time.

But the Ju 87A-1 was only used as a technological model. It was taken to bits and studied from all possible angles (the Japanese Navy's 'Val' used dive brakes copied entirely from the Ju 87's) before being reassembled and exhibited in the Tokorozawa Museum, near Tokyo. It was subsequently destroyed during an American air raid.

Although touched up, this photograph gives a good idea of one of the first pre-production Ju 87A-O. Its camouflage is unusual and the machine has not yet been given any nationality or unit markings. Note the non-slip areas zones on each side of the fuselage and the single wing-mounted machine gun, on the starboard.

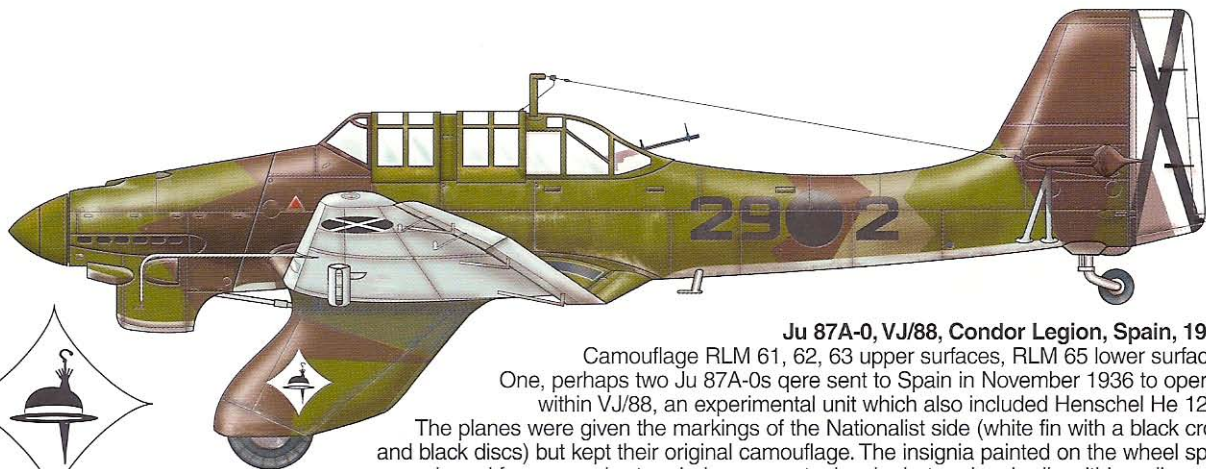
(Coll. H. Leonard)

JUNKERS Ju 87A



Ju 87 A-1, I./ St.G 167 'Immelmann', Lübeck, Germany, 1937.

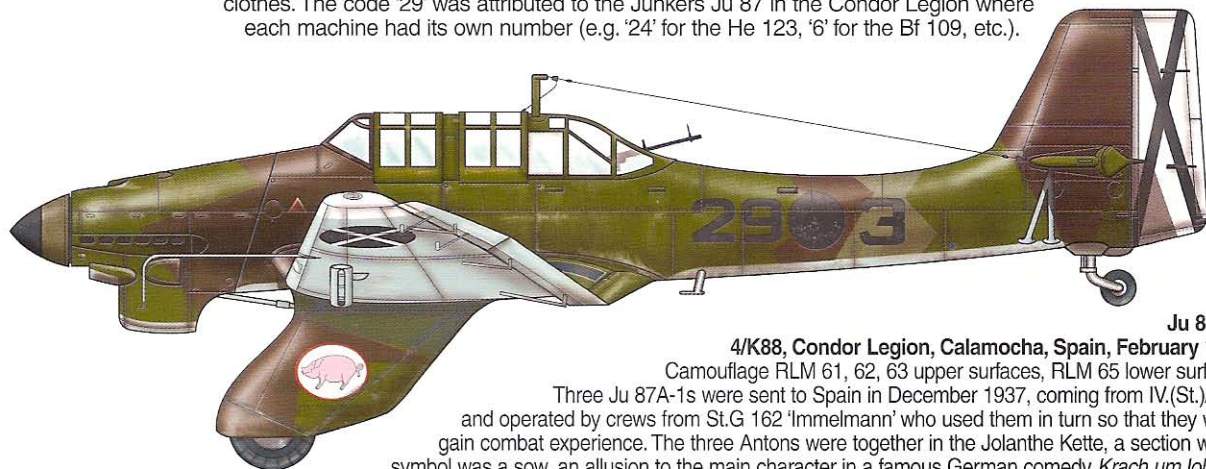
Camouflage, upper surfaces: RLM 61 Dunkelbraun (Dark Brown), RLM 62 Grün (Green) and RLM 63 Hellgrau (Light Grey); lower surfaces: RLM 65 Hellblau (Light Blue). In the middle of 1937, the II./ St.G 162 became the I./St.G 167 and was given the unit code '71'. This machine was fitted with a double antenna mast situated at the back of the cockpit.



Ju 87A-0, VJ/88, Condor Legion, Spain, 1938.

Camouflage RLM 61, 62, 63 upper surfaces, RLM 65 lower surfaces. One, perhaps two Ju 87A-0s were sent to Spain in November 1936 to operate within VJ/88, an experimental unit which also included Henschel He 123s.

The planes were given the markings of the Nationalist side (white fin with a black cross and black discs) but kept their original camouflage. The insignia painted on the wheel spats and used for a very short period, represent a bowler hat and umbrella within a diamond, an allusion to the fact that the crew members had arrived in Spain in civilian clothes. The code '29' was attributed to the Junkers Ju 87 in the Condor Legion where each machine had its own number (e.g. '24' for the He 123, '6' for the Bf 109, etc.).

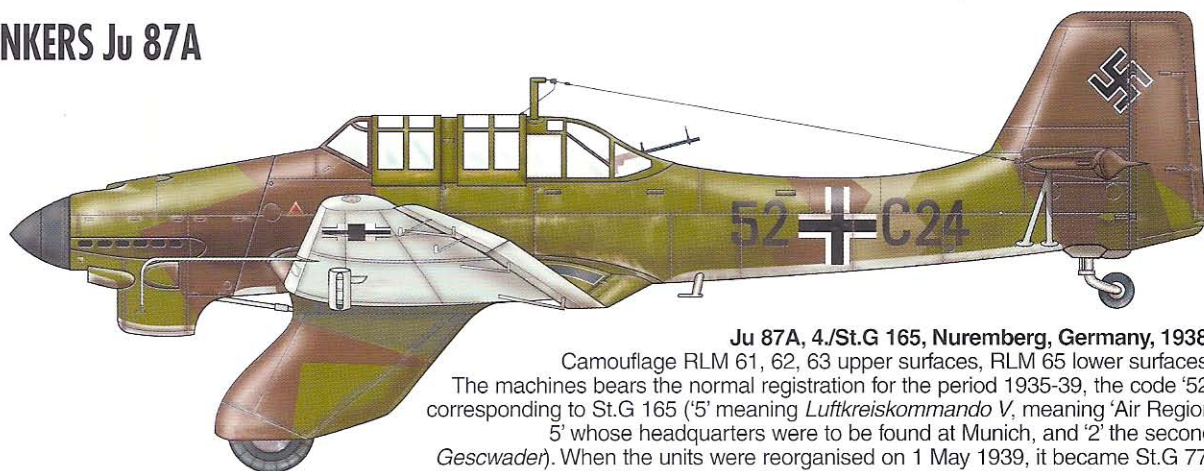


Ju 87A-1,

4/K88, Condor Legion, Calamocha, Spain, February 1938.

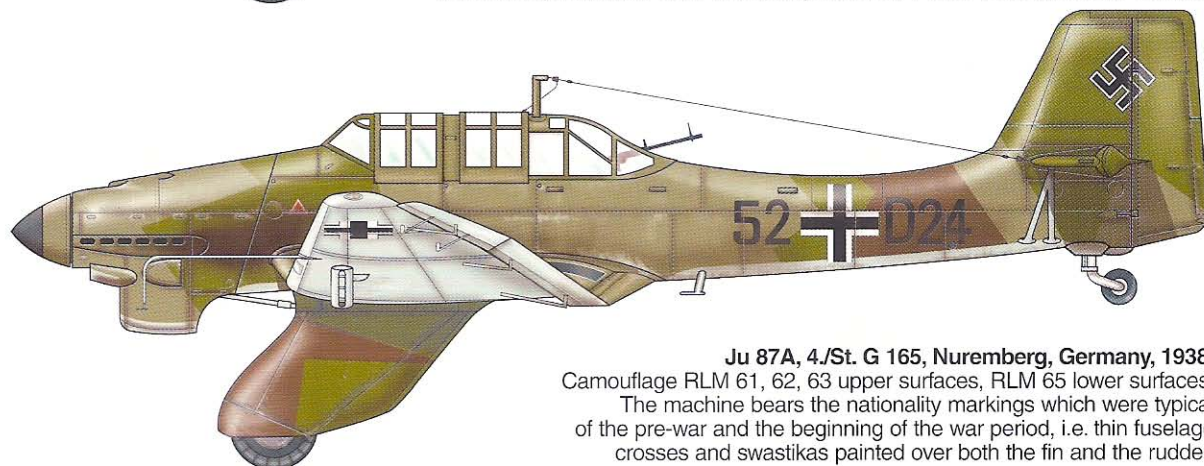
Camouflage RLM 61, 62, 63 upper surfaces, RLM 65 lower surfaces. Three Ju 87A-1s were sent to Spain in December 1937, coming from IV.(St.)LG 1 and operated by crews from St.G 162 'Immelmann' who used them in turn so that they would gain combat experience. The three Antons were together in the Jolanthe Kette, a section whose symbol was a sow, an allusion to the main character in a famous German comedy *Krach um Jolanthe* ('the Problem with Jolanthe'); Jolanthe was the name of the heroine. It was *Oberleutnant Günther Schwarzkopf* who gave the nickname Jolanthe to the Ju 87, a plane whose concept he defended when in command of IV.(St.)LG 1.

JUNKERS Ju 87A



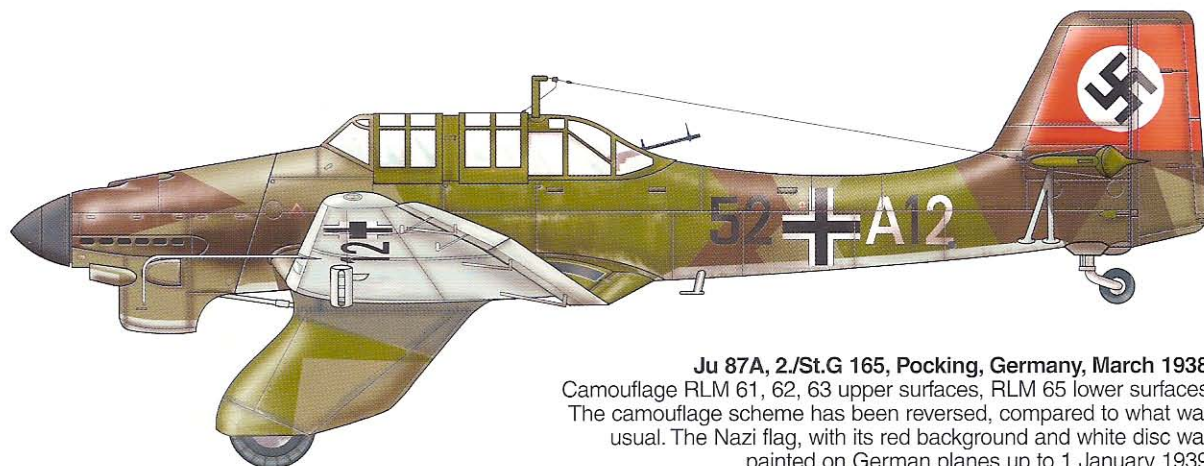
Ju 87A, 4/St.G 165, Nuremberg, Germany, 1938.

Camouflage RLM 61, 62, 63 upper surfaces, RLM 65 lower surfaces. The machine bears the normal registration for the period 1935-39, the code '52' corresponding to St.G 165 ('5' meaning *Luftkreiskommando V*, meaning 'Air Region 5' whose headquarters were to be found at Munich, and '2' the second *Geschwader*). When the units were reorganised on 1 May 1939, it became St.G 77.



Ju 87A, 4/St. G 165, Nuremberg, Germany, 1938.

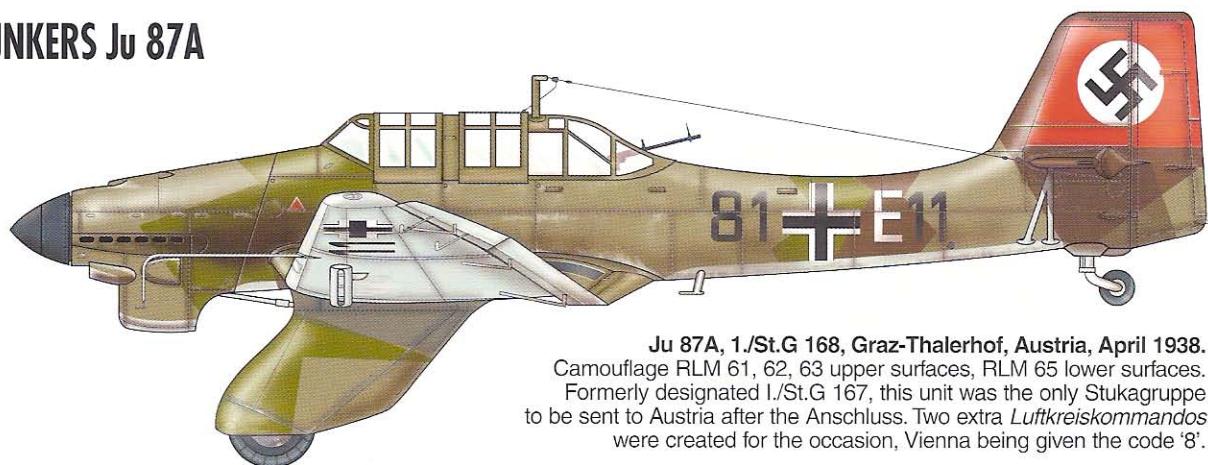
Camouflage RLM 61, 62, 63 upper surfaces, RLM 65 lower surfaces. The machine bears the nationality markings which were typical of the pre-war and the beginning of the war period, i.e. thin fuselage crosses and swastikas painted over both the fin and the rudder.



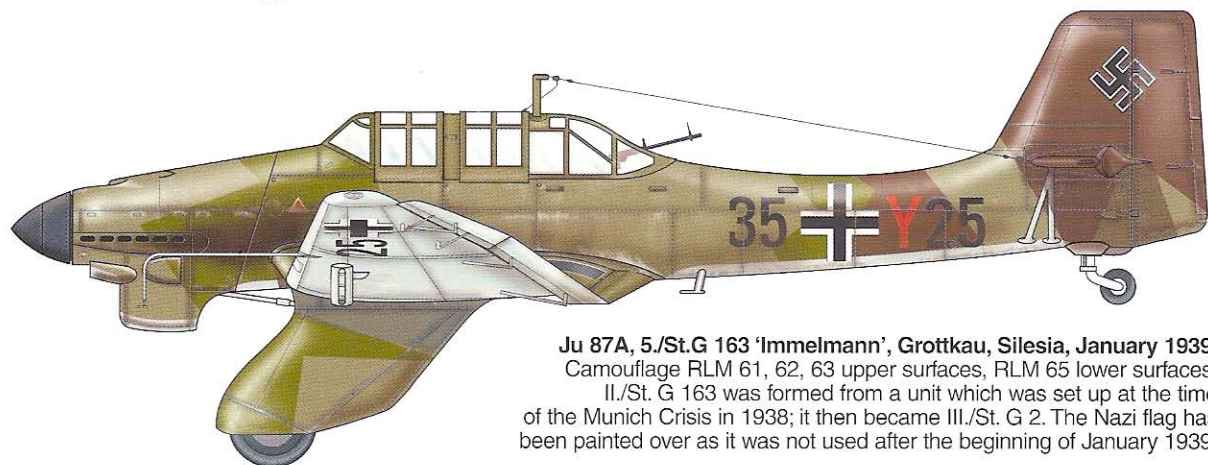
Ju 87A, 2/St.G 165, Pocking, Germany, March 1938.

Camouflage RLM 61, 62, 63 upper surfaces, RLM 65 lower surfaces. The camouflage scheme has been reversed, compared to what was usual. The Nazi flag, with its red background and white disc was painted on German planes up to 1 January 1939.

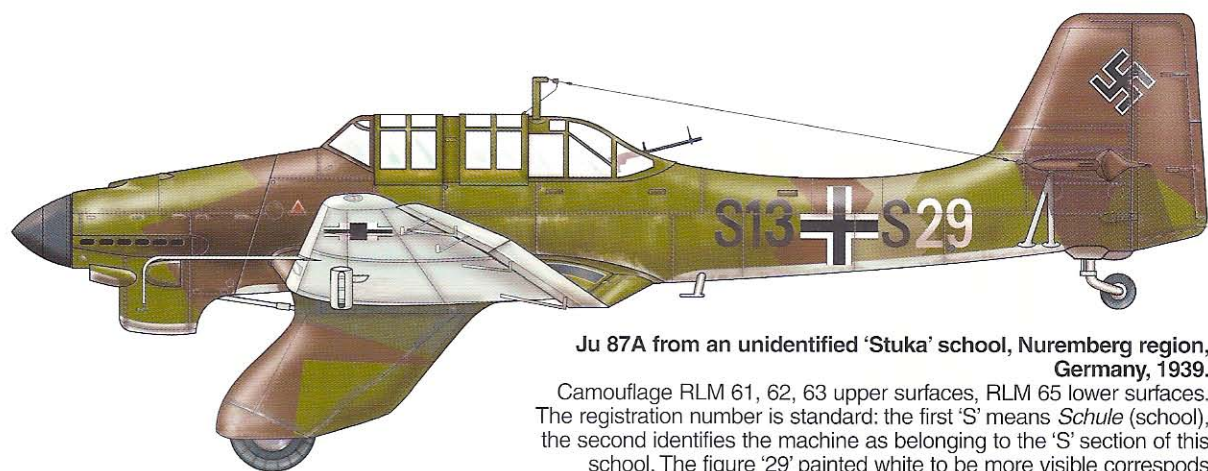
JUNKERS Ju 87A



Ju 87A, 1./St.G 168, Graz-Thalerhof, Austria, April 1938.
Camouflage RLM 61, 62, 63 upper surfaces, RLM 65 lower surfaces.
Formerly designated I./St.G 167, this unit was the only Stukagruppe to be sent to Austria after the Anschluss. Two extra *Luftkreiskommandos* were created for the occasion, Vienna being given the code '8'.

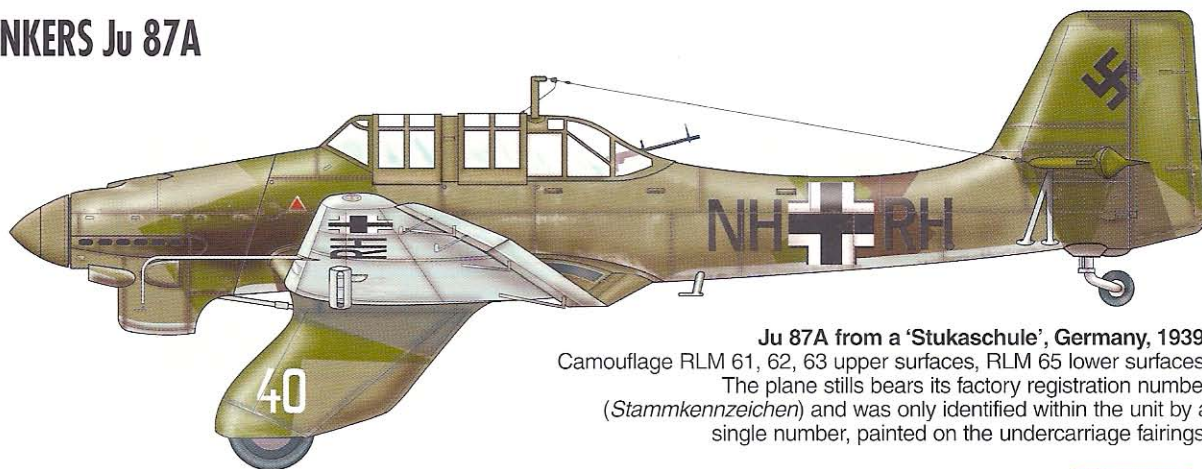


Ju 87A, 5./St.G 163 'Immelmann', Grottkau, Silesia, January 1939.
Camouflage RLM 61, 62, 63 upper surfaces, RLM 65 lower surfaces.
II./St. G 163 was formed from a unit which was set up at the time of the Munich Crisis in 1938; it then became III./St. G 2. The Nazi flag has been painted over as it was not used after the beginning of January 1939.



Ju 87A from an unidentified 'Stuka' school, Nuremberg region, Germany, 1939.
Camouflage RLM 61, 62, 63 upper surfaces, RLM 65 lower surfaces.
The registration number is standard: the first 'S' means *Schule* (school), the second identifies the machine as belonging to the 'S' section of this school. The figure '29' painted white to be more visible corresponds to the *Luftgaukommando*, a subdivision of *Luftkreiskommando XIII*, the air region whose headquarters were based at Nuremberg.

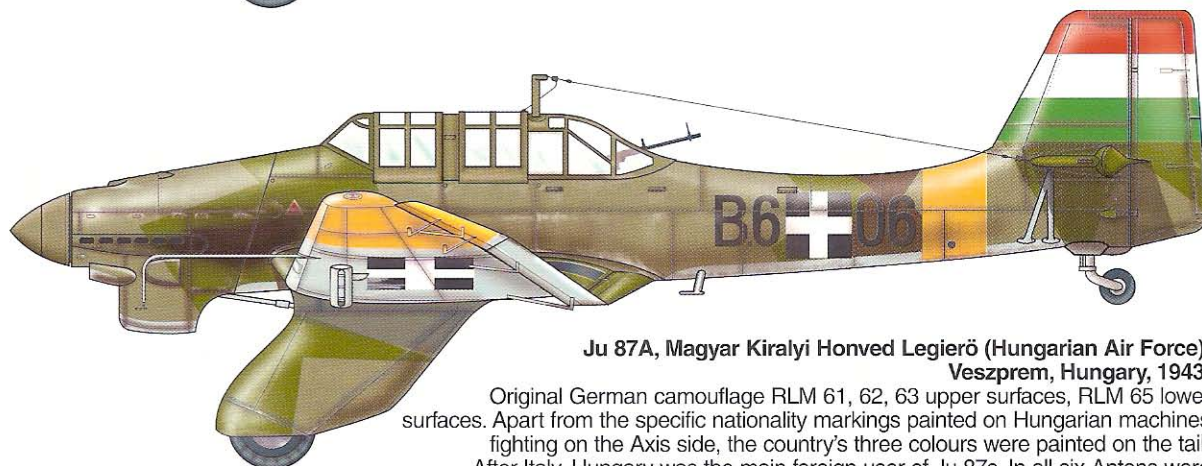
JUNKERS Ju 87A



Ju 87A from a 'Stukaschule', Germany, 1939.

Camouflage RLM 61, 62, 63 upper surfaces, RLM 65 lower surfaces.

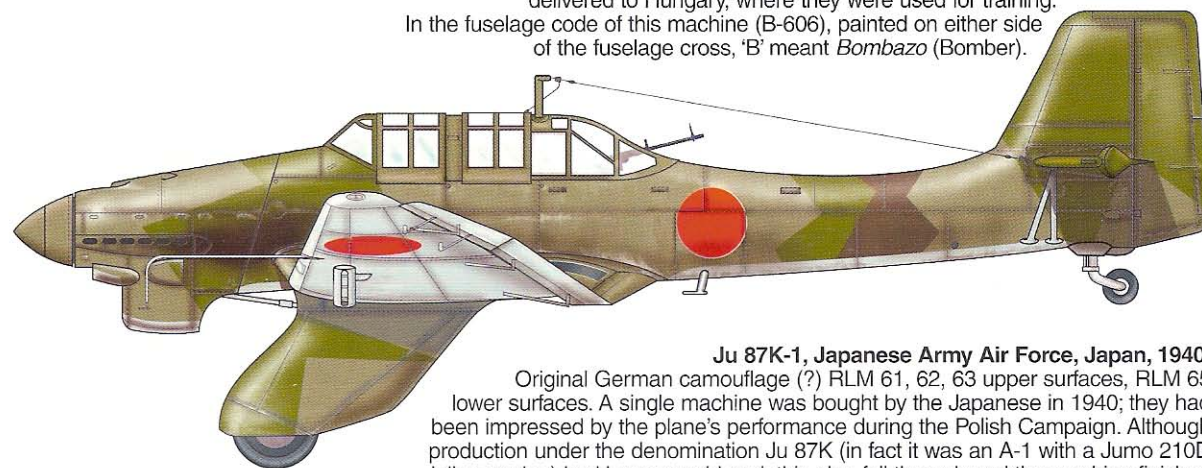
The plane still bears its factory registration number (*Stammkennzeichen*) and was only identified within the unit by a single number, painted on the undercarriage fairings.



Ju 87A, Magyar Kiralyi Honved Legierő (Hungarian Air Force), Veszprem, Hungary, 1943.

Original German camouflage RLM 61, 62, 63 upper surfaces, RLM 65 lower surfaces. Apart from the specific nationality markings painted on Hungarian machines fighting on the Axis side, the country's three colours were painted on the tail. After Italy, Hungary was the main foreign user of Ju 87s. In all six Antons were delivered to Hungary, where they were used for training.

In the fuselage code of this machine (B-606), painted on either side of the fuselage cross, 'B' meant *Bombazo* (Bomber).



Ju 87K-1, Japanese Army Air Force, Japan, 1940.

Original German camouflage (?) RLM 61, 62, 63 upper surfaces, RLM 65 lower surfaces. A single machine was bought by the Japanese in 1940; they had been impressed by the plane's performance during the Polish Campaign. Although production under the denomination Ju 87K (in fact it was an A-1 with a Jumo 210D inline engine) had been considered, this plan fell through and the machine finished in a museum where it was destroyed during an American air raid.



The JU 87B, or the 'BERTHA' SERIES

The 'Bertha' series embodied four main design changes: the engine and its cowling, the cockpit canopy, the rear part of the fuselage and the cumbersome undercarriage fairings. The first prototype was an A-1 airframe taken from the production lines: the Ju 87.V6.

It was powered by a Jumo 211A giving 1000 bhp (746kW) on take off; this was a new engine cowling with an asymmetric air intake in its upper section to house the oil cooler, a large half-moon water radiator with vertical slats under the nose (they were horizontal on the A series), an enlarged air intake for the air compressor transferred to the right side of the cowling (it was on the cowling on the A series).

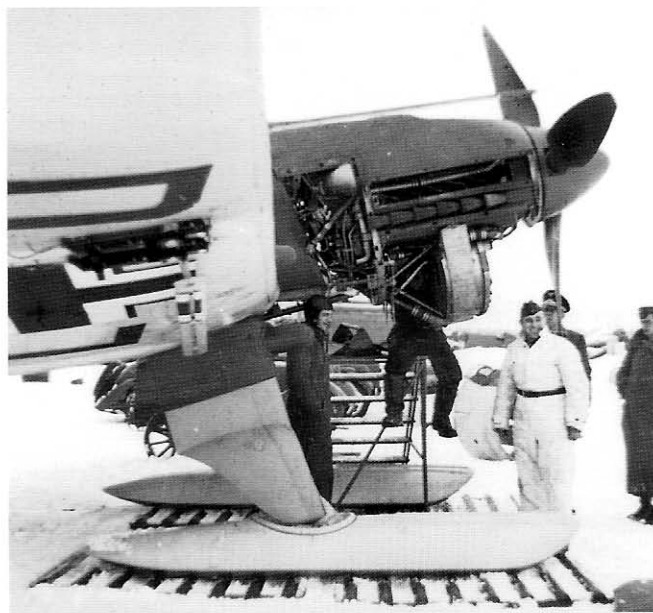
The framer at the rear of the fuselage was thickened and its structure was redesigned. The tail fin surface was again increased.

The braced trousered main wheel undercarriage units were replaced by more aerodynamic two-piece spats, covering part of the wheels and covering the length of the shock absorber stroke. The two-seat cockpit and the canopy were entirely redesigned. The canopy over each position had a sliding portion. The last section was equipped with a ball and socket joint which gave more freedom of movement for the defensive MG 15 machine gun (before it was just a slot).

Internal equipment was improved: the old 'Stuvi' bomb sight was replaced by a 'Revi' C-12C which could be used for both

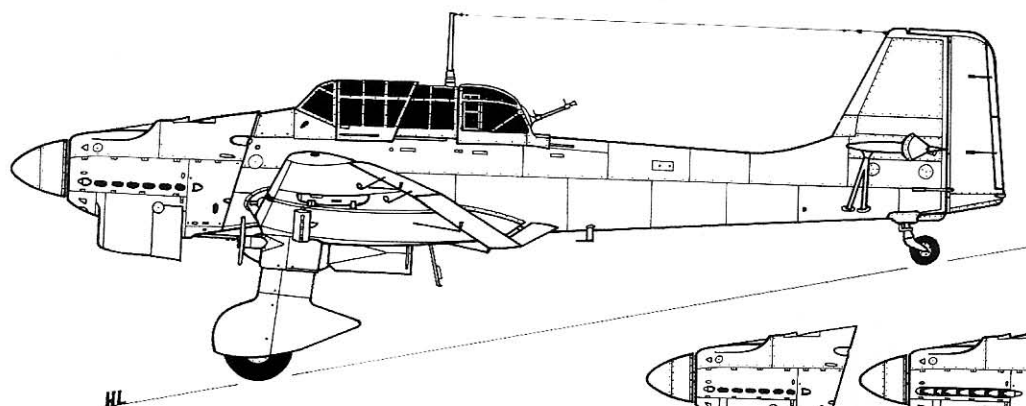
Above.

The Ju 87B-2/Trop (W.Nr. 5763) belonging to Sergente Bartolomasi of the Regia Aeronautica's 209th Squadriglia (Italian Air Force) was captured by British troops in Libya in September 1941. The Lictor's Fasces under the wings are the wrong way round. The Italian Stukas were called 'Pichiatelli' and bore the original German camouflage (two-tone green above and blue underneath) even in the desert. Here the nose and fuselage stripes and the propeller boss are white. (CMPR)

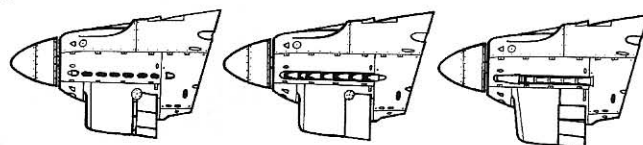


Opposite.
A Ju 87B-1/U4 with skis. Only two Berthas were equipped with skis, including this one, registered as DJ + FU, as the Luftwaffe High Command thought airfields made of packed down snow were unsuitable for landing and taking-off. On the other hand crews were shouting out for warmer clothing to wear on their missions!

(Bundesarchiv)



Ju-87B-1
from the beginning
of production and B-2
(except for
the engine cowling)



Specifications for the Ju 87B-1 (Ju 87B-2 in brackets)

Armament: Two fixed 7.9 mm MG17 machine guns. One 7.9 mm MG 15 machine gun on a flexible mounting in the rear cockpit.

Bomb load: One 1102-lb (500 kg) bomb on underbelly sling or one 551-lb (250-kg)

on the sling and four 110-lb (50 kg) bombs under the wings.

Wingspan: 45 ft 6 in (13.80 m)

Length: 36 ft 7 in (11.10 m)

Height: 13 ft 3 in (4.01 m)

Wing area: 347.39 sq.ft (31.9 m)

Weight (unloaded): 8 162 lb (3 710 kg), (6 050 lb (2 750 kg))

Max. take-off weight: 9 350 lb (4 250 kg)

Max. Speed: 213 mph (340 kph) at sea level.

240 mph (383 kph) at 13 350 ft (4 100 m), (238 mph (380 kph) at 13 350 ft (4 100 m).

Cruising speed: 210 mph (336 kph) at 12 210 ft (3 700 m).

Economic speed: 175 mph (281 kph) at 15 180 ft (4 600 m)

Landing speed: 69 mph (110 kph).

Climb rate: to 3 300 ft (1 000m): 2 minutes

to 6 600 ft (2 000m): 4.3 minutes

to 13 200 ft (4 000m): 12 minutes.

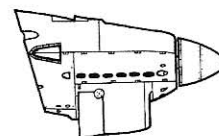
Service Ceiling: 26 400 ft (8 000m).

Range: 375 miles (600 km) with 1102-lb (500-kg) bomb load. 500 miles (800 km) without load

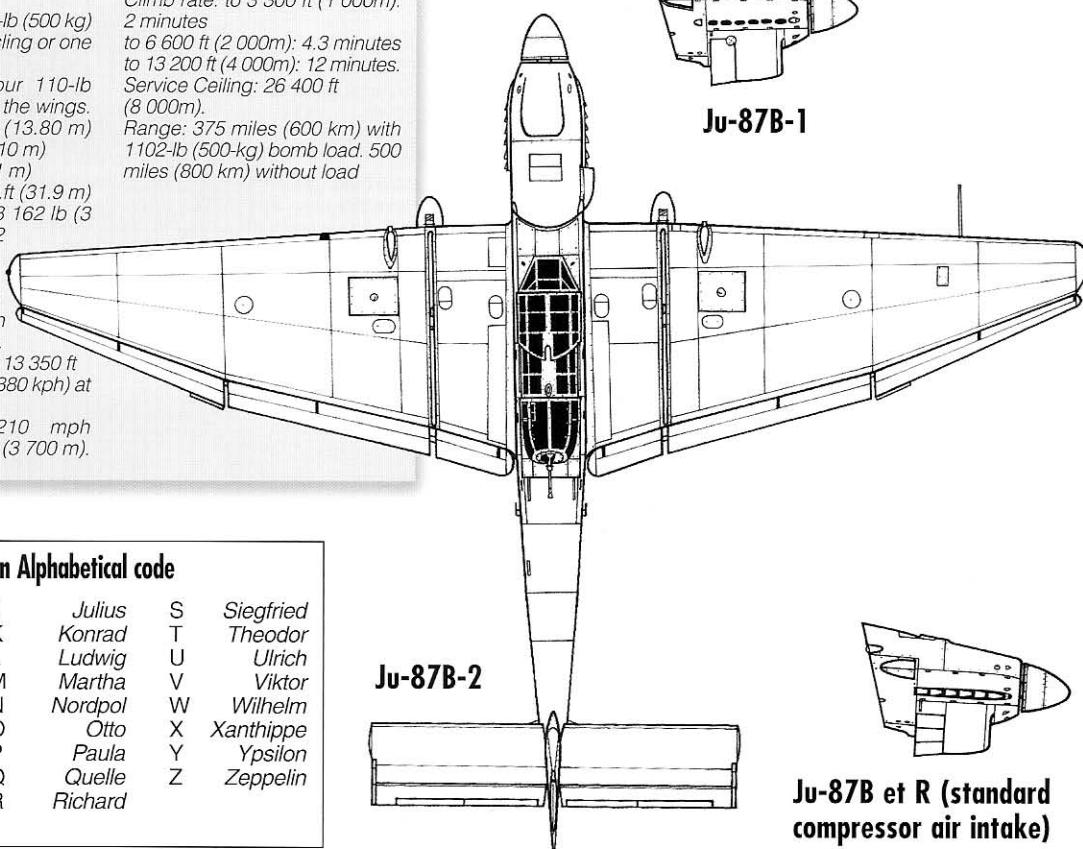
Ju-87B-1 from the middle of production

Ju-87B-1 from the end of production

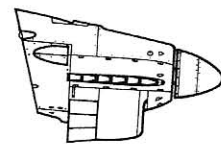
Ju-87B-2



Ju-87B-1



Ju-87B-2



Ju-87B et R (standard compressor air intake)

German Alphabetical code

A	Anton	J	Julius	S	Siegfried
B	Bertha	K	Konrad	T	Theodor
C	Cäsar	L	Ludwig	U	Ulrich
D	Dora	M	Martha	V	Viktor
E	Emil	N	Nordpol	W	Wilhelm
F	Friedrich	O	Otto	X	Xanthippe
G	Gustav	P	Paula	Y	Ypsilon
H	Heinrich	Q	Quelle	Z	Zeppelin
I	Ida	R	Richard		



Above.
A Ju 87B-2/Trop being refuelled before taking part in another mission over the Mediterranean.
 (© ECPAD/France)

bombing and for firing the fixed MG 17 machine gun; the second crew member had a FuG VIIa radio.

The V6 was followed by prototypes Ju 87.V7, V8 and V9, all used to refine the 'Bertha' series and to test the Jumo 211a. 10 Ju 87B-0 pre-production models were built at Dessau for military trials. With 1000 bhp now available on take-off, the 'Stuka' could now carry its second crew member as well as a 1 102-lb bomb on its sling.

Moreover, a second machine gun was installed in the port wing, and four ETC 50 bomb launchers could be installed to carry 110-lb bombs (in this case with a 551-lb bomb on the sling). The new model's speed increased but because of the machine's increased mass, this was at the expense of its range.

It was powered by a Jumo 211A-1 rated at 1 000 bhp at take-off, with direct fuel injection. Five B-1s were sent to Spain to replace the three A-1s in the Condor Legion. They took part in the Catalonia campaign in January and February 1939 with 5.K/88. At the end of the Spanish Civil War, they were dismantled

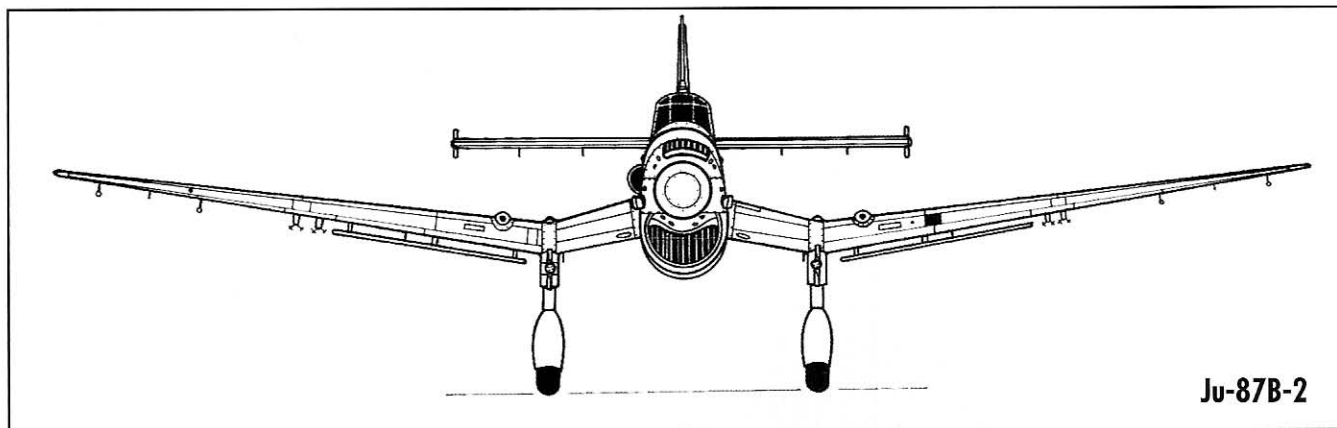
and sent back to Germany. According to some sources one of them was lost in action.

Reports from Spain and military preparations for another European conflict speeded up aircraft production in Germany. A new factory was built at Bremen-Lemwerder.

As production of the Ju 87B-1 proceeded, some modifications were made such as radiator cooling gills and faired exhaust pipes (either one or the other or both, depending on production schedules). Then the gills disappeared but the pipes were still faired; two little sirens were fitted to the undercarriage roots (some B-1s only had one).

The Luftwaffe was able to line up 336 Ju 87B-1s on 1 September 1939, the day when Poland was invaded by Germany. 228 of these were operational. Their co-ordinated action with armoured Wehrmacht units was impressive, terrorising the civilian population as much as the Polish troops, and devastating all the targets they had been set.

The Ju 87B-2 version appeared at the end of 1939 on the production lines at the 'Weserflug'. It was powered by a Jumo 211Da engine rated at 1 000 bhp (895kW). The radiator under the nose was deeper and the trailing edges included the flaps already tried out on the B-1. It had ejector exhaust pipes and first a VSS propeller with wider blades, then a VS11. The engine cowling fitted better.



Ju-87B-2

The undercarriage projected forward more to prevent the aircraft up-ending, which is what happened frequently with the preceding versions. A variety of details were changed: fresh air duct for the crew installed in the leading edge of the port wing; a compartment for a machine gun camera; optional fairings for the wing-mounted machine guns, etc. With a single crew member, the Ju 87B-2 could carry a tonne of bombs.

The Ju 87B-2s only reached their units in the summer of 1940 after Western Europe had been invaded. They were thrown into the Battle of Britain and were literally swatted like flies by the RAF fighters. Unlike the Polish and French Campaigns, there was no element of surprise with the English.

The Ju 87's slow speed and vulnerability made it such an easy prey that the Luftwaffe had them removed very quickly from the front lines.

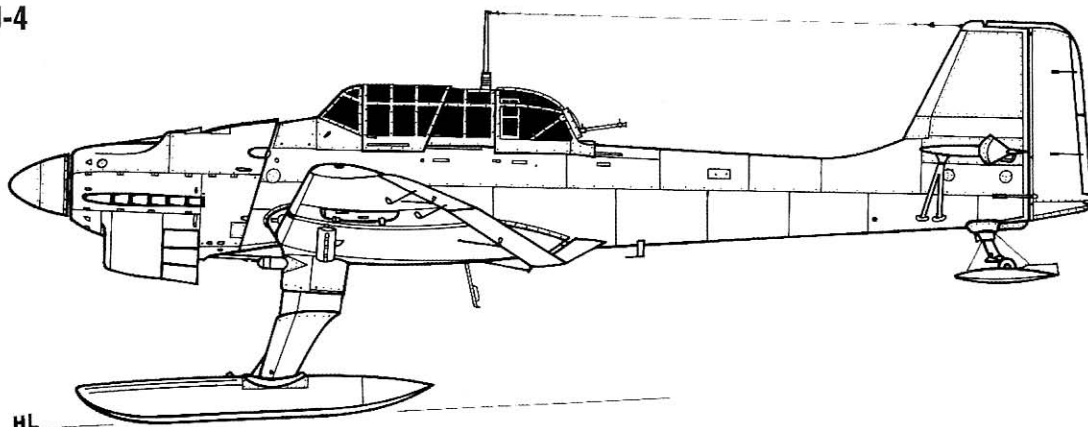
Many of the Luftwaffe's leaders considered the Ju 87 to be totally obsolete, but taking into consideration its feats in Poland, France, Belgium and the Low Countries, with characteristic pig-headedness, Goering increased series production of the model, so much so that Junkers was informed that it would have even to envisage developing better versions.

Sub-denominations were attributed - *Umrüst-Bausätze*, or 'U' - for the equipment of the Ju-87s: U-2 for a more effective radio; U-3 for armoured panel and roll bar in the cockpit; U-4 for skis instead of the wheels and the tailwheel. These sub-denominations were added to the original ones, e.g. Ju 87B-2/U-3.

The Ju 87s which operated in dry areas - the Mediterranean, North Africa, etc. - were equipped with sand filters, especially for the supercharger air intake which was much bigger and squarer. 'Trop' (for *Tropische* - Tropical) was added to the denomination for these machines.

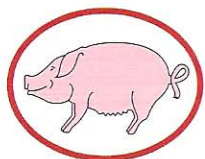
Several dozen Ju 87B-2/Trops were supplied to the Italians fighting in the Balkans and in North Africa. It was also supplied to Germany's other allies of Germany, such as Bulgaria, Romania and Hungary.

Ju-87B-2/U-4

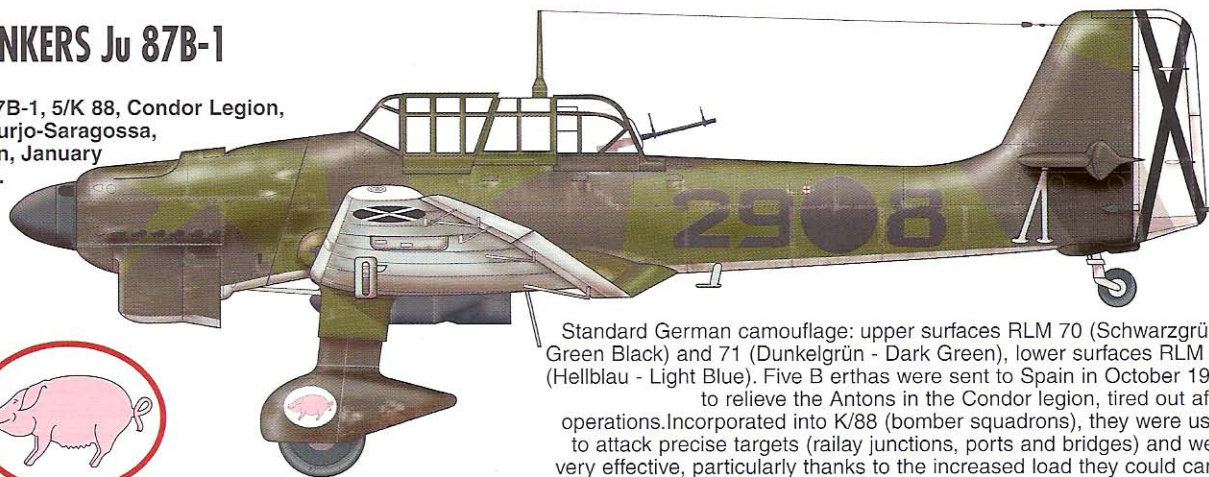


JUNKERS Ju 87B-1

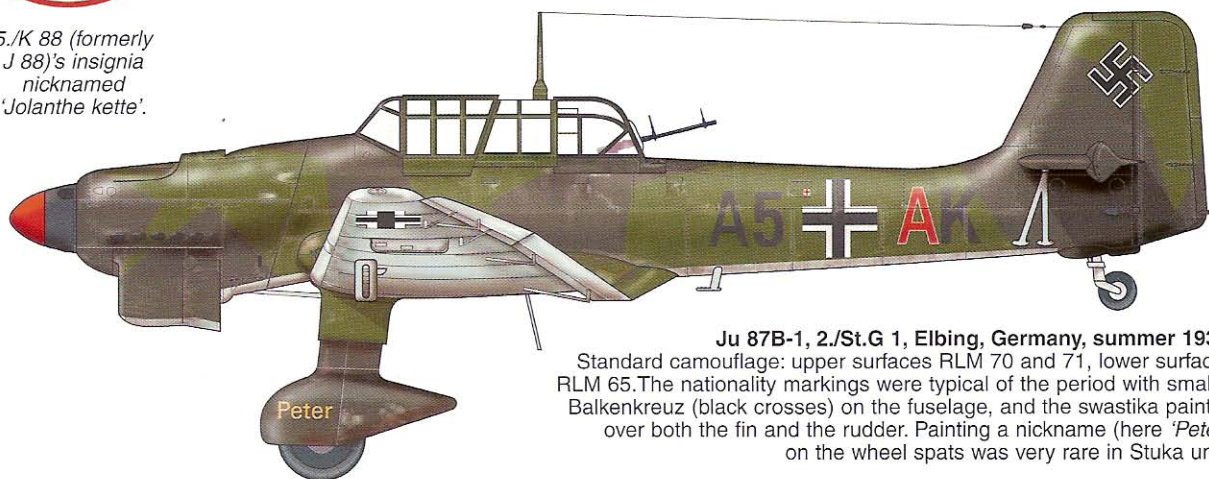
Ju 87B-1, 5/K 88, Condor Legion,
Sanjurjo-Saragossa,
Spain, January
1939.



5./K 88 (formerly
J 88)'s insignia
nicknamed
'Jolanthe kette'.



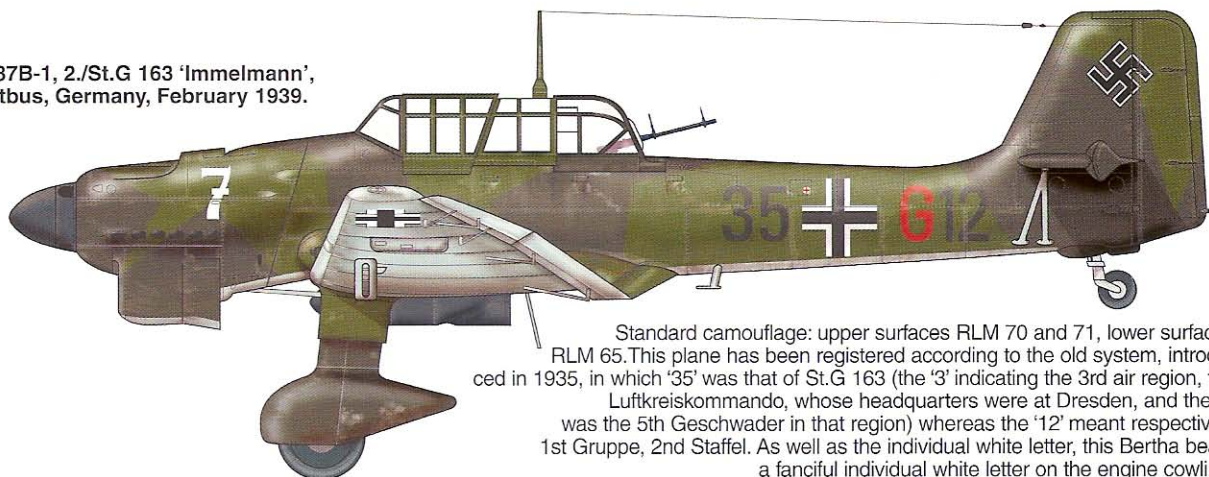
Standard German camouflage: upper surfaces RLM 70 (Schwarzgrün - Green Black) and 71 (Dunkelgrün - Dark Green), lower surfaces RLM 65 (Hellblau - Light Blue). Five Berthas were sent to Spain in October 1938 to relieve the Antons in the Condor legion, tired out after operations. Incorporated into K/88 (bomber squadrons), they were used to attack precise targets (railway junctions, ports and bridges) and were very effective, particularly thanks to the increased load they could carry.



Ju 87B-1, 2./St.G 1, Elbing, Germany, summer 1939.

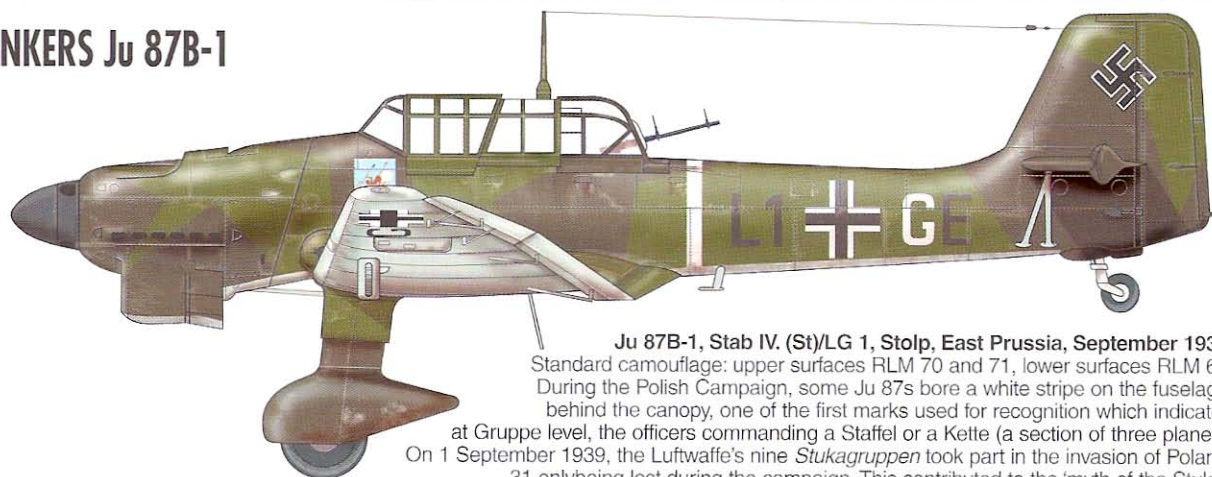
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The nationality markings were typical of the period with smaller Balkenkreuz (black crosses) on the fuselage, and the swastika painted over both the fin and the rudder. Painting a nickname (here 'Peter') on the wheel spats was very rare in Stuka units

Ju 87B-1, 2./St.G 163 'Immelmann',
Cottbus, Germany, February 1939.

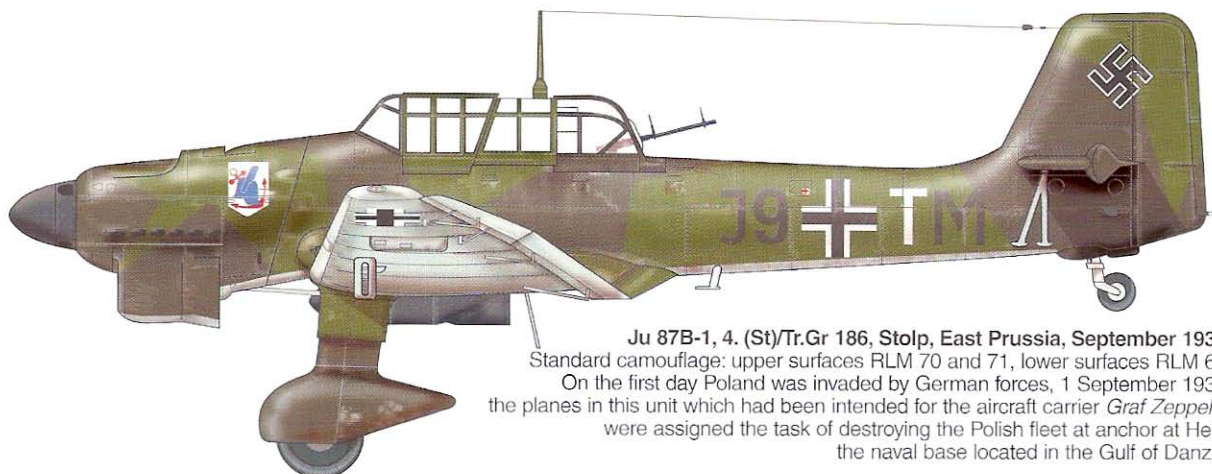


Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. This plane has been registered according to the old system, introduced in 1935, in which '35' was that of St.G 163 (the '3' indicating the 3rd air region, the Luftkreiskommando, whose headquarters were at Dresden, and the '5' was the 5th Geschwader in that region) whereas the '12' meant respectively 1st Gruppe, 2nd Staffel. As well as the individual white letter, this Bertha bears a fanciful individual white letter on the engine cowling.

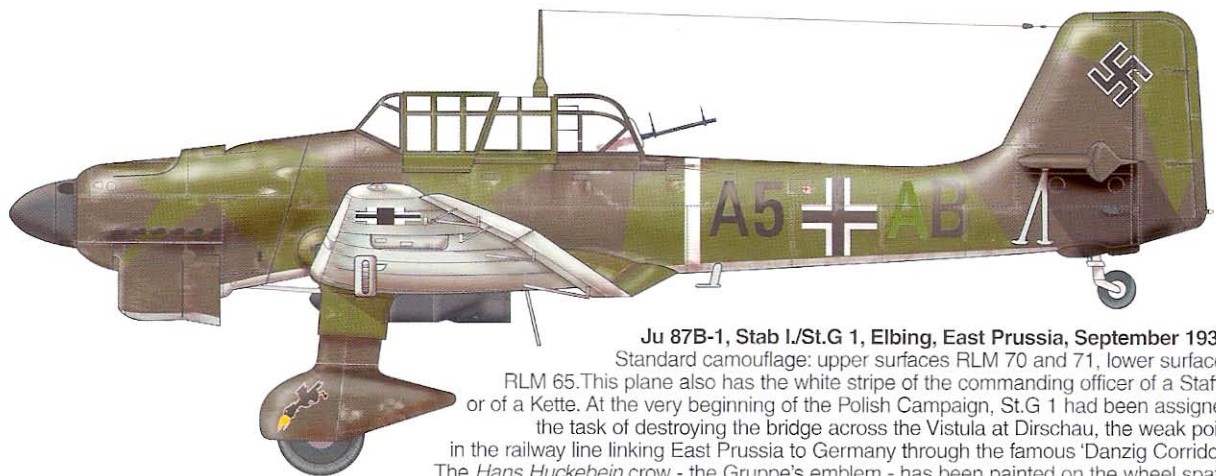
JUNKERS Ju 87B-1



Ju 87B-1, Stab IV. (St)/LG 1, Stolp, East Prussia, September 1939.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. During the Polish Campaign, some Ju 87s bore a white stripe on the fuselage, behind the canopy, one of the first marks used for recognition which indicated at Gruppe level, the officers commanding a Staffel or a Kette (a section of three planes). On 1 September 1939, the Luftwaffe's nine *Stukagruppen* took part in the invasion of Poland, 31 only being lost during the campaign. This contributed to the 'myth of the Stuka'.

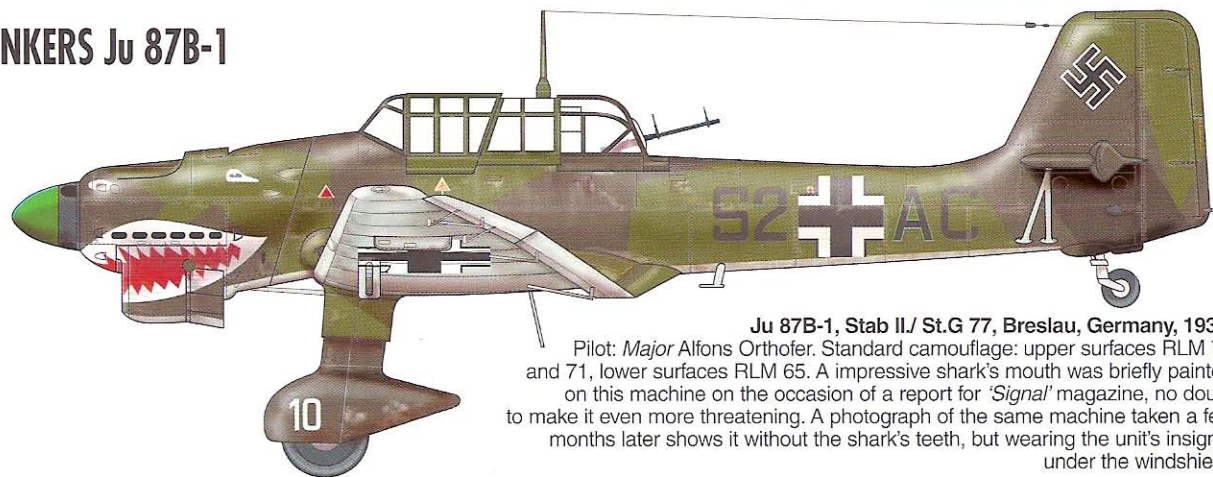


Ju 87B-1, 4. (St)/Tr.Gr 186, Stolp, East Prussia, September 1939.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. On the first day Poland was invaded by German forces, 1 September 1939, the planes in this unit which had been intended for the aircraft carrier *Graf Zeppelin*, were assigned the task of destroying the Polish fleet at anchor at Hela, the naval base located in the Gulf of Danzig.



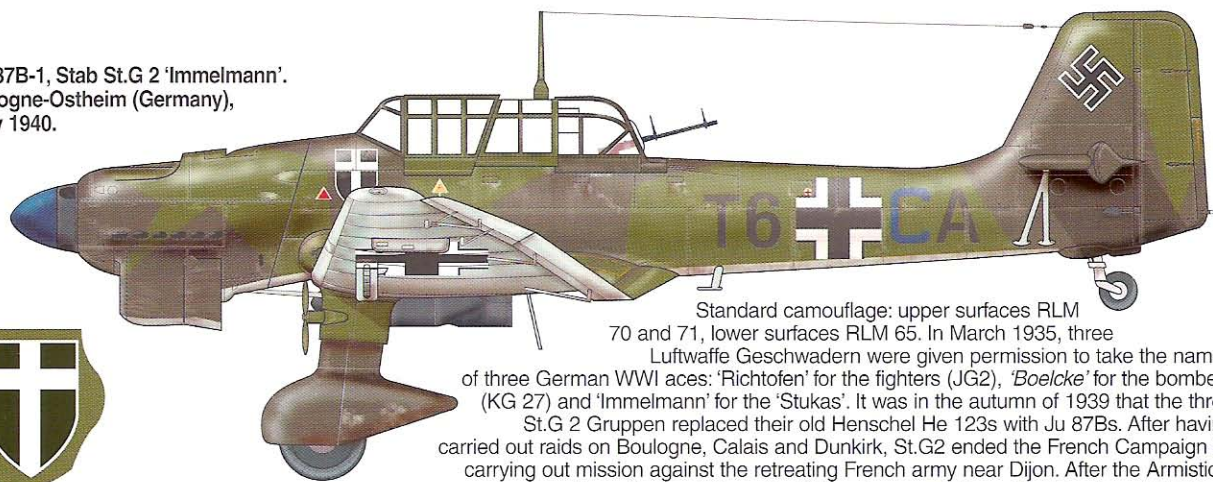
Ju 87B-1, Stab I/St.G 1, Elbing, East Prussia, September 1939.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. This plane also has the white stripe of the commanding officer of a Staffel or of a Kette. At the very beginning of the Polish Campaign, St.G 1 had been assigned the task of destroying the bridge across the Vistula at Dirschau, the weak point in the railway line linking East Prussia to Germany through the famous 'Danzig Corridor'. The *Hans Huckebein* crow - the Gruppe's emblem - has been painted on the wheel spats.

JUNKERS Ju 87B-1



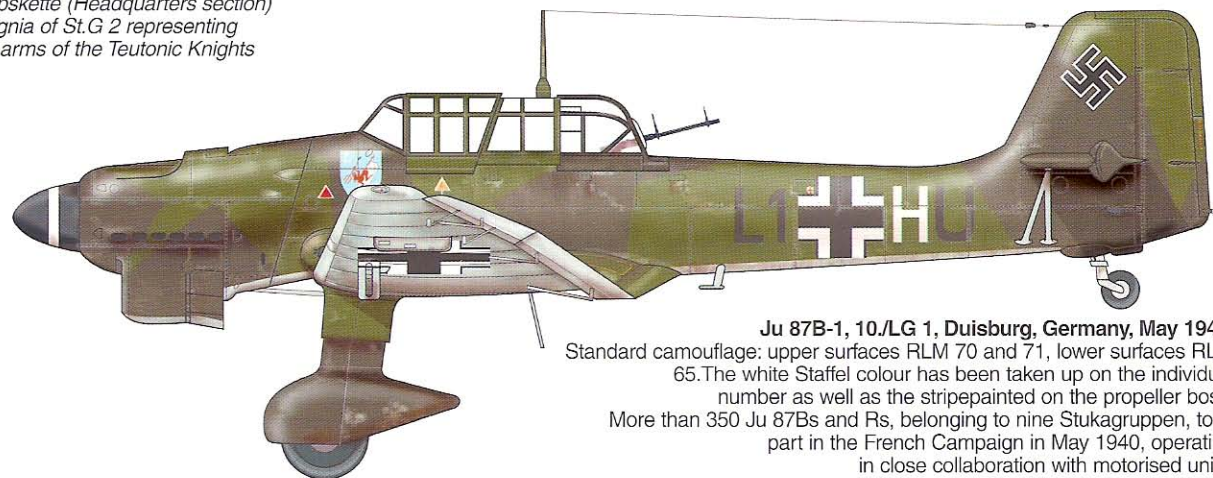
Ju 87B-1, Stab II / St.G 77, Breslau, Germany, 1939.
Pilot: Major Alfons Orthofer. Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. A impressive shark's mouth was briefly painted on this machine on the occasion of a report for 'Signal' magazine, no doubt to make it even more threatening. A photograph of the same machine taken a few months later shows it without the shark's teeth, but wearing the unit's insignia under the windshield.

**Ju 87B-1, Stab St.G 2 'Immelmann',
Cologne-Ostheim (Germany),
May 1940.**



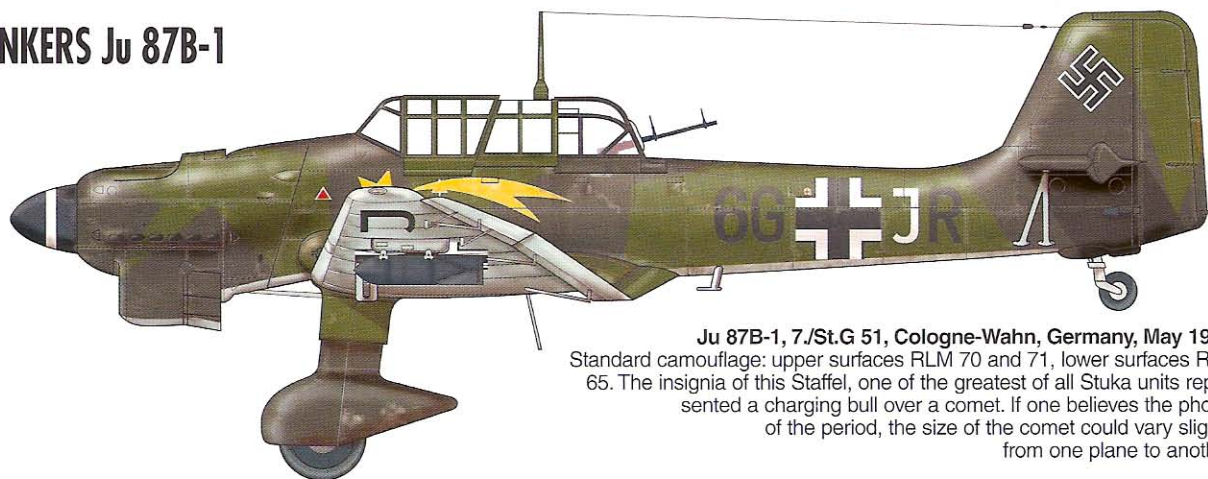
*Stabskette (Headquarters section)
insignia of St.G 2 representing
the arms of the Teutonic Knights*

Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. In March 1935, three Luftwaffe Geschwadern were given permission to take the names of three German WWI aces: 'Richtofen' for the fighters (JG2), 'Boelcke' for the bombers (KG 27) and 'Immelmann' for the 'Stukas'. It was in the autumn of 1939 that the three St.G 2 Gruppen replaced their old Henschel He 123s with Ju 87Bs. After having carried out raids on Boulogne, Calais and Dunkirk, St.G2 ended the French Campaign by carrying out mission against the retreating French army near Dijon. After the Armistice, the unit was stationed in Brittany in expectation of the invasion of England.

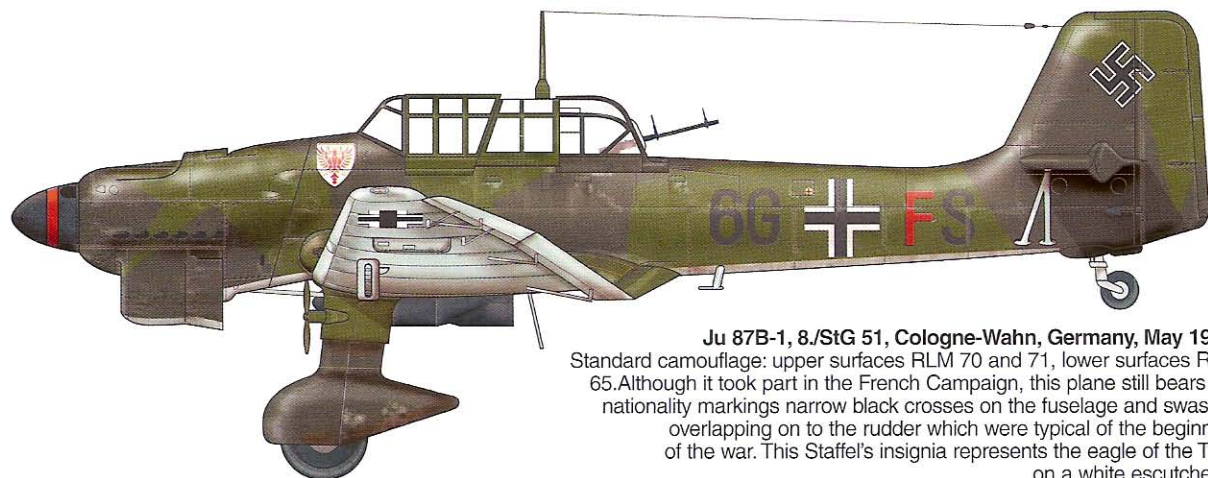


Ju 87B-1, 10/LG 1, Duisburg, Germany, May 1940.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The white Staffel colour has been taken up on the individual number as well as the stripe painted on the propeller boss. More than 350 Ju 87Bs and Rs, belonging to nine Stukagruppen, took part in the French Campaign in May 1940, operating in close collaboration with motorised units.

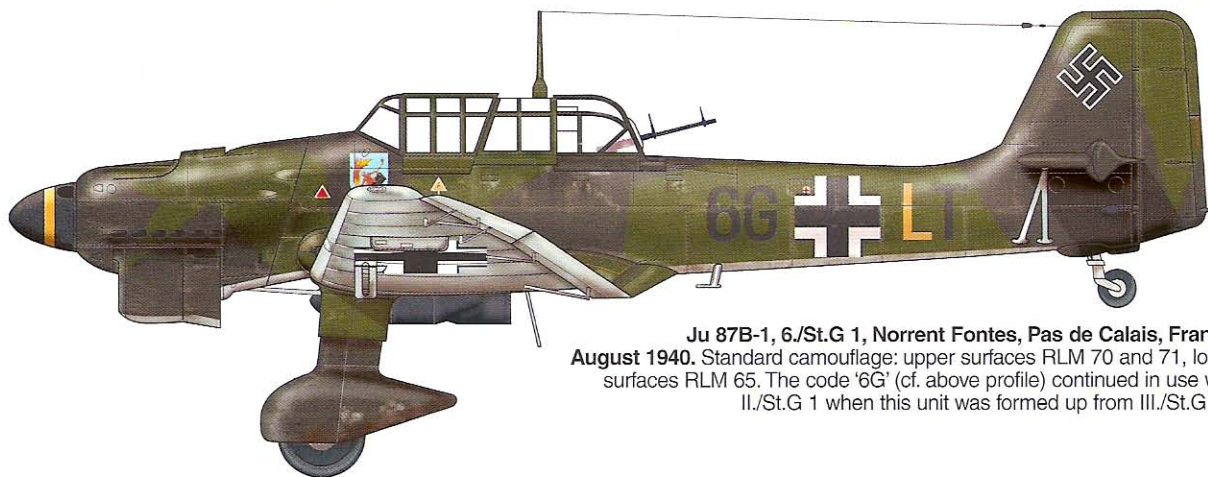
JUNKERS Ju 87B-1



Ju 87B-1, 7/St.G 51, Cologne-Wahn, Germany, May 1940.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The insignia of this Staffel, one of the greatest of all Stuka units represented a charging bull over a comet. If one believes the photos of the period, the size of the comet could vary slightly from one plane to another.



Ju 87B-1, 8/St.G 51, Cologne-Wahn, Germany, May 1940.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. Although it took part in the French Campaign, this plane still bears the nationality markings narrow black crosses on the fuselage and swastika overlapping on to the rudder which were typical of the beginning of the war. This Staffel's insignia represents the eagle of the Tyrol on a white escutcheon.

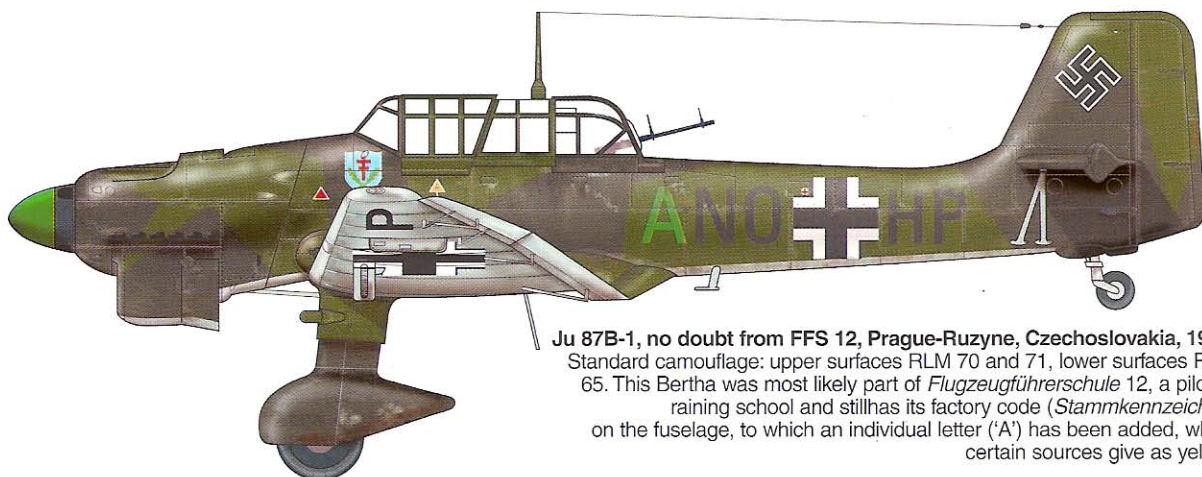


Ju 87B-1, 6/St.G 1, Norrent Fontes, Pas de Calais, France, August 1940. Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The code '6G' (cf. above profile) continued in use with II./St.G 1 when this unit was formed up from III./St.G 51.

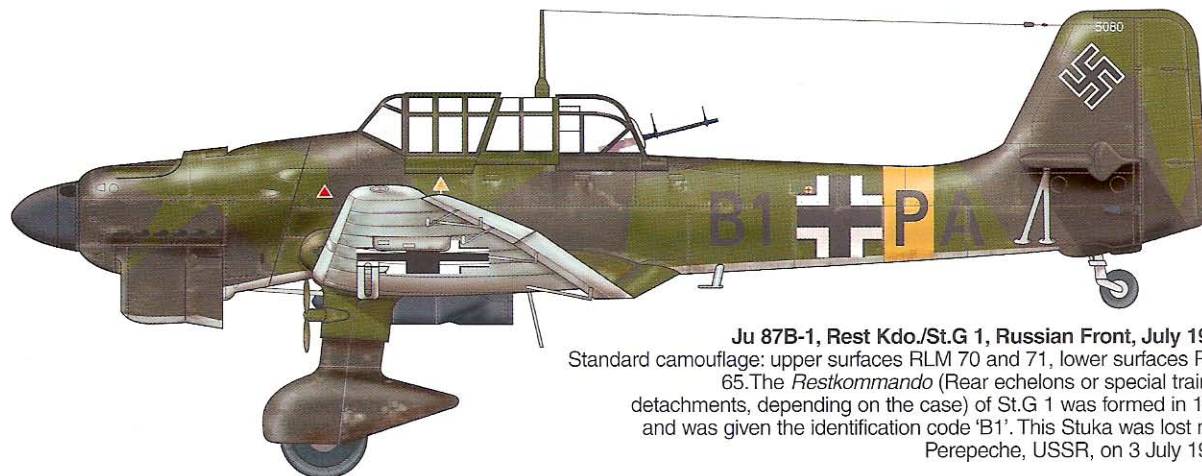
JUNKERS Ju 87B-1



Ju 87B-1, 4./Störkampfgruppe/Luftflotte 4, Russian Front, 1941
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. Yellow (RLM 04) identification stripe. Belonging to a night 'harassment' unit, this plane, which blew up in flight over Russia on 12 July 1942, has had its nationality and undersides painted black. It is possible that the individual letter has also been painted this colour. The usual code for the *Störkampfgruppe* of Luftflotte 4 was 1K, except for Staffel 4 - as here - where it was 'M9', the Staffel's letter being 'A'.

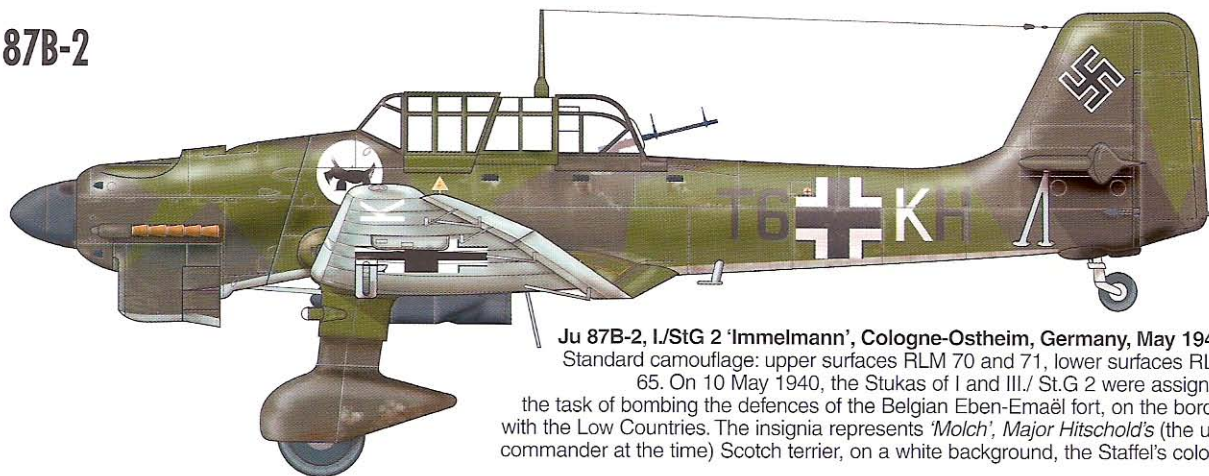


Ju 87B-1, no doubt from FFS 12, Prague-Ruzyně, Czechoslovakia, 1941.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. This Bertha was most likely part of *Flugzeugführerschule* 12, a pilot's training school and still has its factory code (*Stammkennzeichen*) on the fuselage, to which an individual letter ('A') has been added, which certain sources give as yellow.

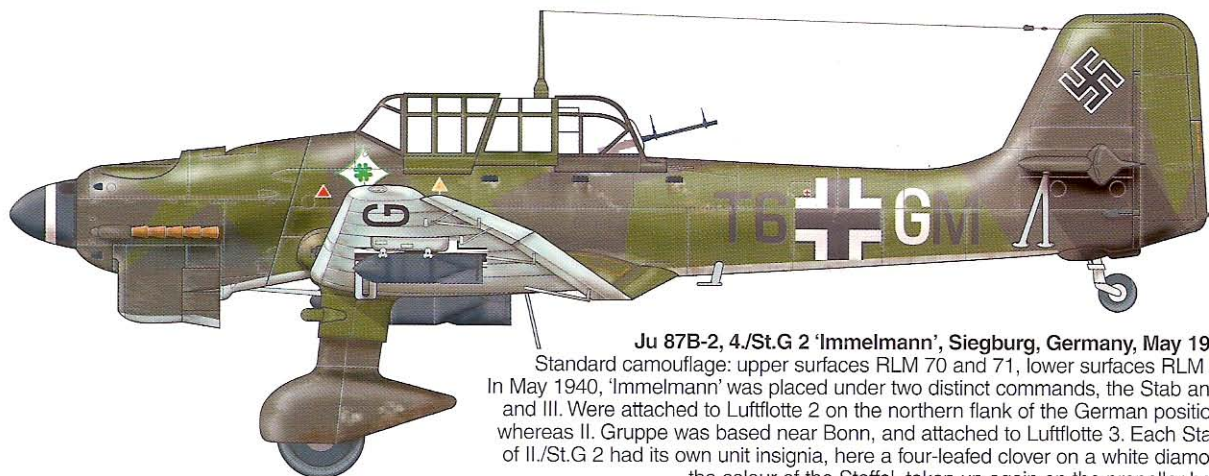


Ju 87B-1, Rest Kdo/St.G 1, Russian Front, July 1942.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The *Restkommando* (Rear echelons or special training detachments, depending on the case) of St.G 1 was formed in 1942 and was given the identification code 'B1'. This Stuka was lost near Perepeche, USSR, on 3 July 1942.

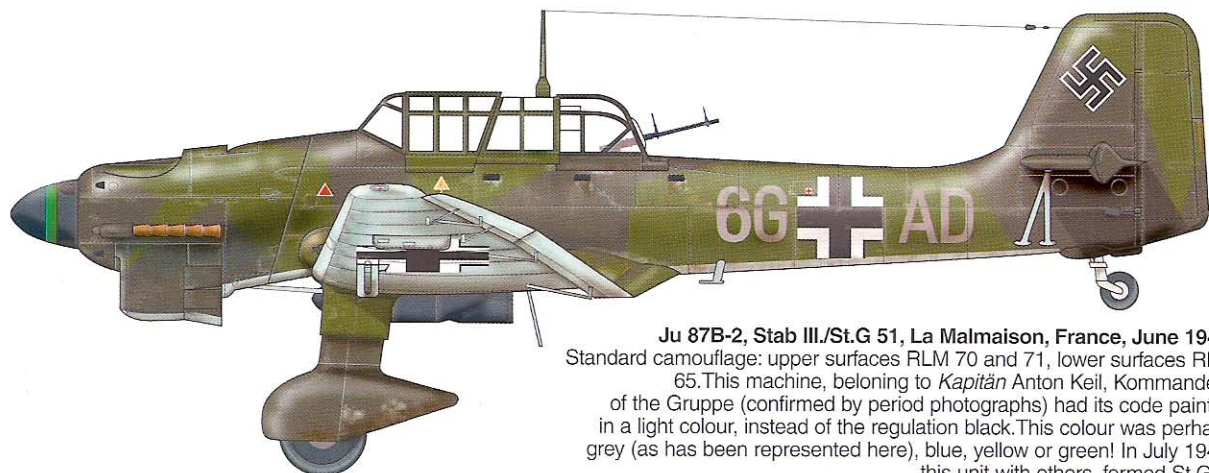
Ju 87B-2



Ju 87B-2, I/StG 2 'Immelmann', Cologne-Ostheim, Germany, May 1940.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. On 10 May 1940, the Stukas of I and III./ St.G 2 were assigned the task of bombing the defences of the Belgian Eben-Emaël fort, on the border with the Low Countries. The insignia represents 'Molch', Major Hitschold's (the unit commander at the time) Scotch terrier, on a white background, the Staffel's colour.

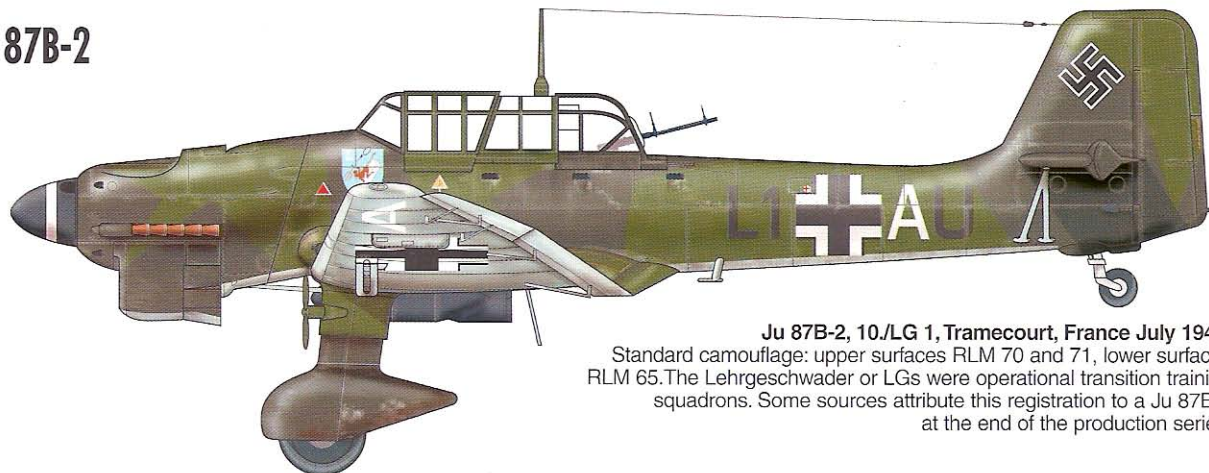


Ju 87B-2, 4/St.G 2 'Immelmann', Siegburg, Germany, May 1940.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. In May 1940, 'Immelmann' was placed under two distinct commands, the Stab and I. and III. Were attached to Luftflotte 2 on the northern flank of the German positions, whereas II. Gruppe was based near Bonn, and attached to Luftflotte 3. Each Staffel of II./St.G 2 had its own unit insignia, here a four-leafed clover on a white diamond, the colour of the Staffel, taken up again on the propeller boss.

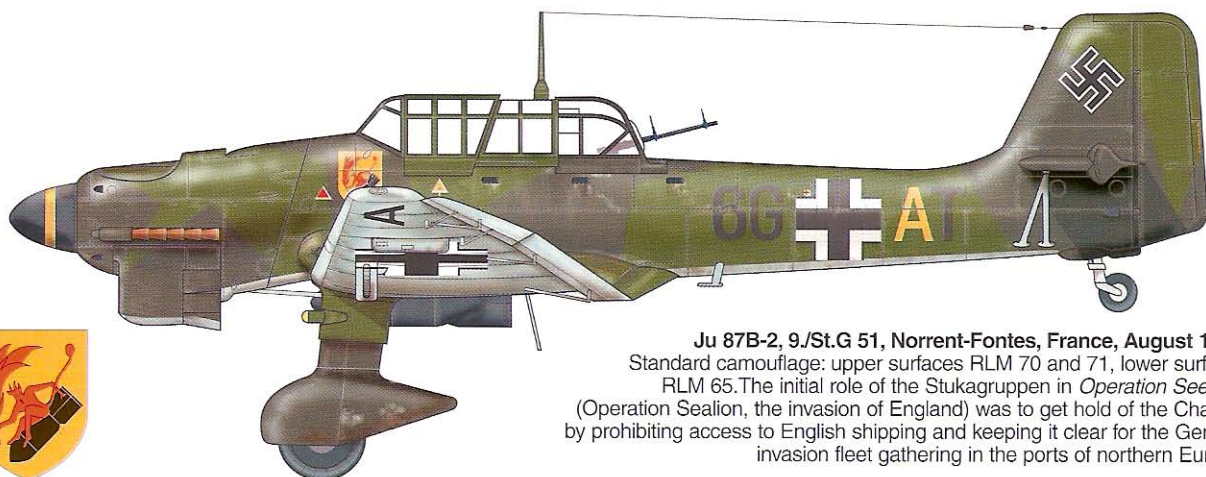


Ju 87B-2, Stab III./St.G 51, La Malmaison, France, June 1940.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. This machine, belonging to Kapitän Anton Keil, Kommandeur of the Gruppe (confirmed by period photographs) had its code painted in a light colour, instead of the regulation black. This colour was perhaps grey (as has been represented here), blue, yellow or green! In July 1940, this unit with others, formed St.G 1.

Ju 87B-2



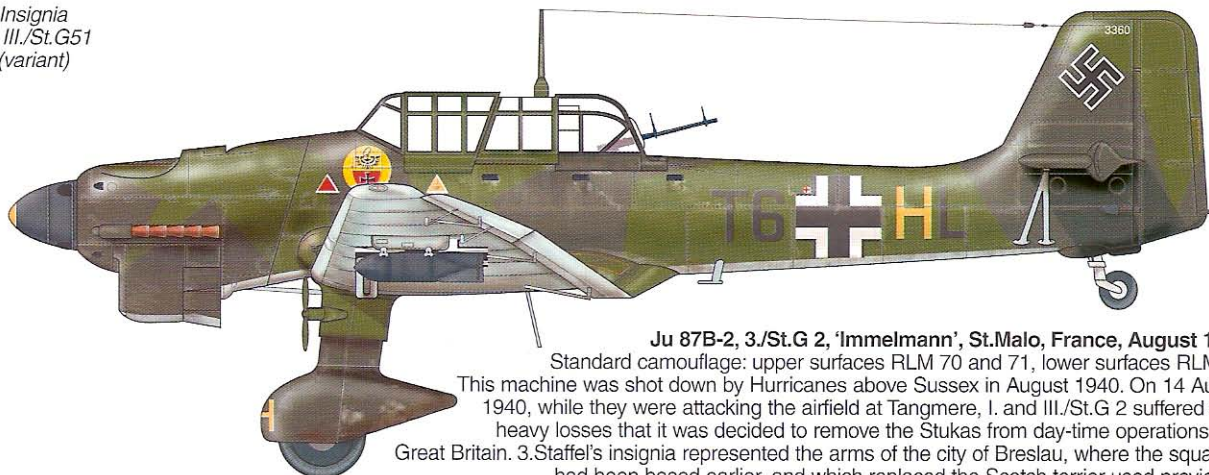
Ju 87B-2, 10/LG 1, Tramecourt, France July 1940.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The Lehrgeschwader or LGs were operational transition training squadrons. Some sources attribute this registration to a Ju 87B-2 at the end of the production series.



Ju 87B-2, 9/St.G 51, Norrent-Fontes, France, August 1940.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The initial role of the Stukagruppen in *Operation Seelöwe* (Operation Sealion, the invasion of England) was to get hold of the Channel by prohibiting access to English shipping and keeping it clear for the German invasion fleet gathering in the ports of northern Europe.

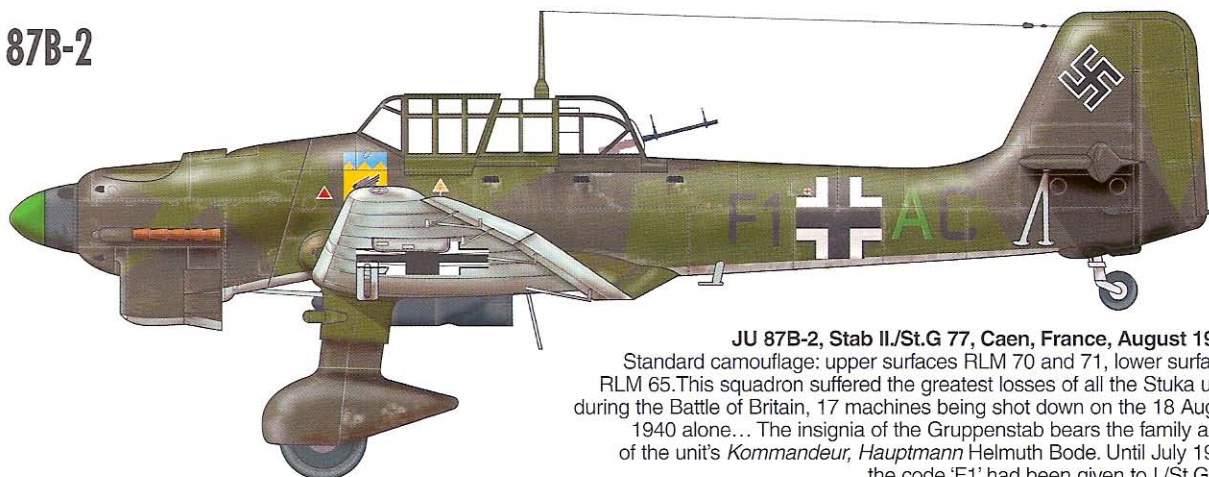


Insignia
of III./St.G 51
(variant)



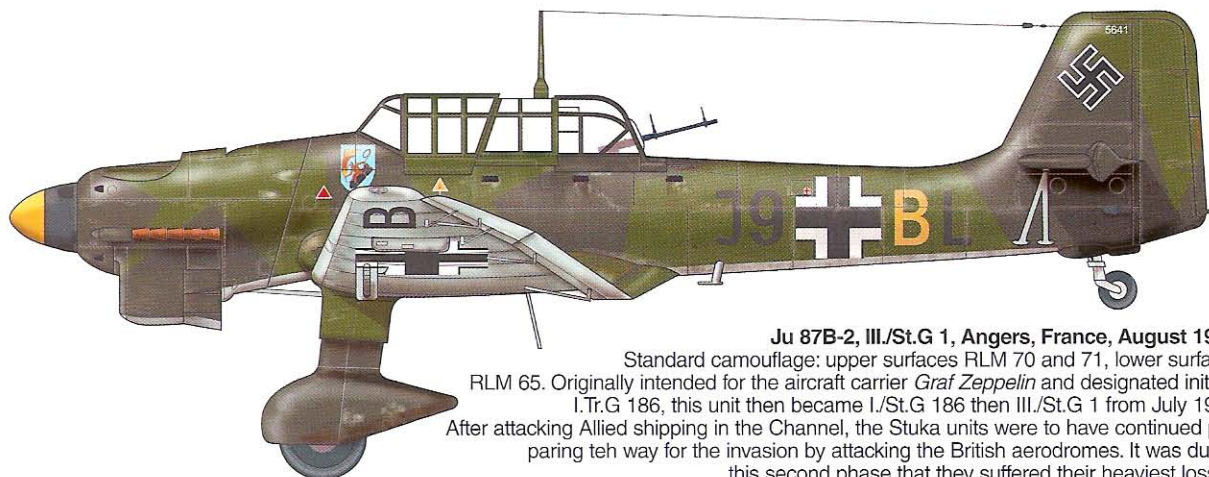
Ju 87B-2, 3/St.G 2, 'Immelmann', St.Malo, France, August 1940.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. This machine was shot down by Hurricanes above Sussex in August 1940. On 14 August 1940, while they were attacking the airfield at Tangmere, I. and III./St.G 2 suffered such heavy losses that it was decided to remove the Stukas from day-time operations over Great Britain. 3.Staffel's insignia represented the arms of the city of Breslau, where the squadron had been based earlier, and which replaced the Scotch terrier used previously.

Ju 87B-2



JU 87B-2, Stab II/St.G 77, Caen, France, August 1944.

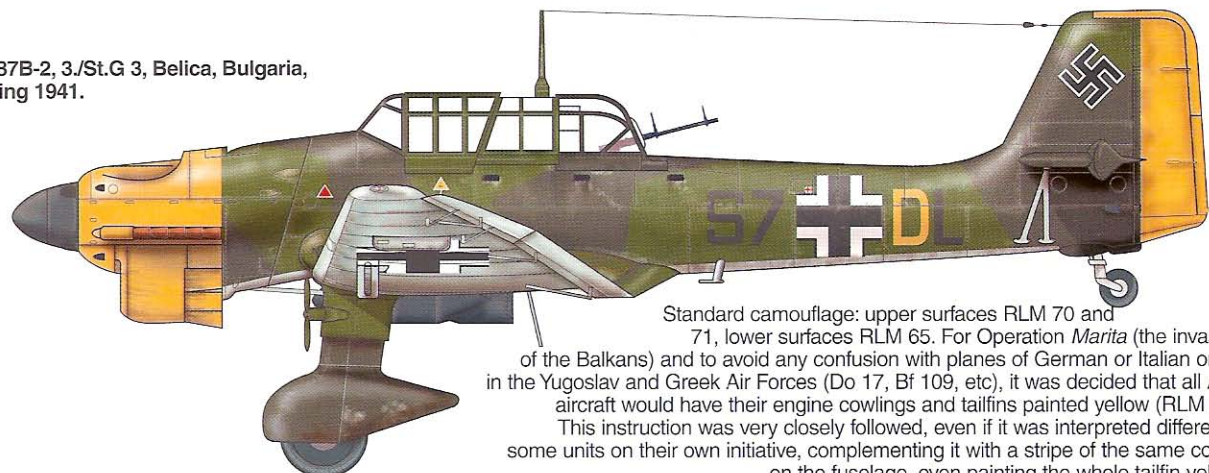
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. This squadron suffered the greatest losses of all the Stuka units during the Battle of Britain, 17 machines being shot down on the 18 August 1940 alone... The insignia of the Gruppenstab bears the family arms of the unit's *Kommandeur*, *Hauptmann* Helmuth Bode. Until July 1940, the code 'F1' had been given to I/St.G 76.



Ju 87B-2, III/St.G 1, Angers, France, August 1940.

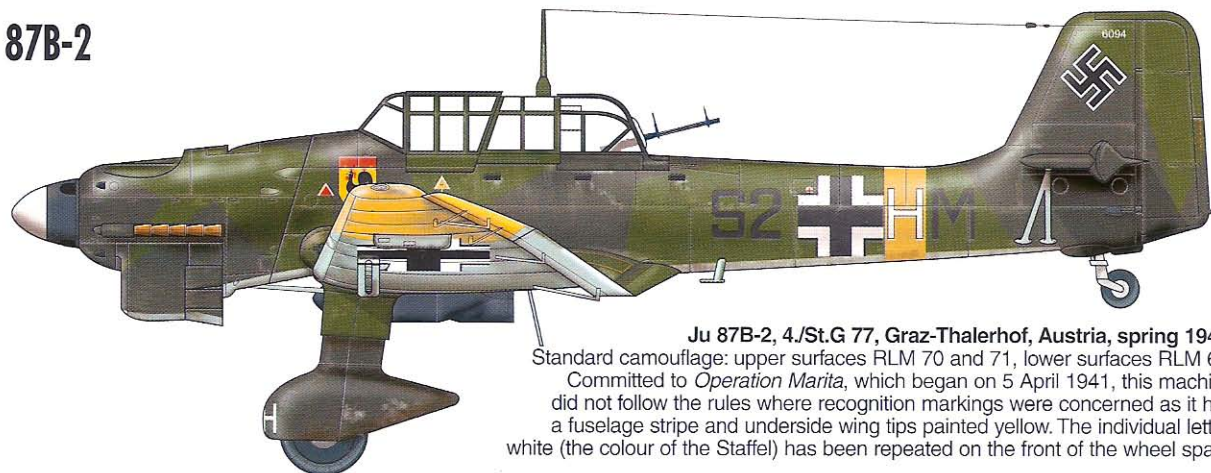
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. Originally intended for the aircraft carrier *Graf Zeppelin* and designated initially I.Tr.G 186, this unit then became I/St.G 186 then III/St.G 1 from July 1940. After attacking Allied shipping in the Channel, the Stuka units were to have continued preparing the way for the invasion by attacking the British aerodromes. It was during this second phase that they suffered their heaviest losses.

Ju 87B-2, 3/St.G 3, Belica, Bulgaria, spring 1941.



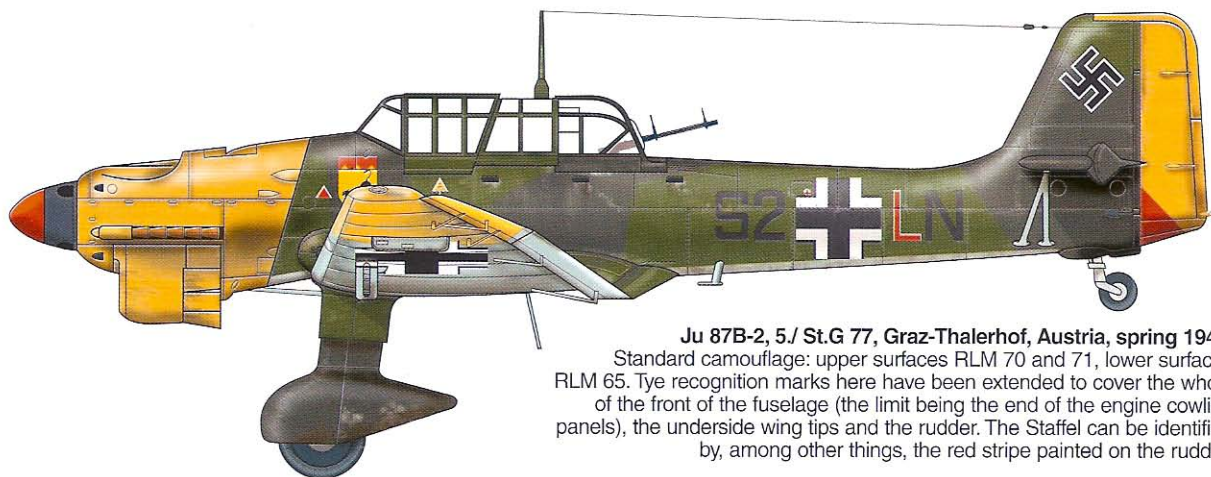
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. For Operation *Marita* (the invasion of the Balkans) and to avoid any confusion with planes of German or Italian origin in the Yugoslav and Greek Air Forces (Do 17, Bf 109, etc), it was decided that all Axis aircraft would have their engine cowlings and tailfins painted yellow (RLM 04). This instruction was very closely followed, even if it was interpreted differently, some units on their own initiative, complementing it with a stripe of the same colour on the fuselage, even painting the whole tailfin yellow.

Ju 87B-2



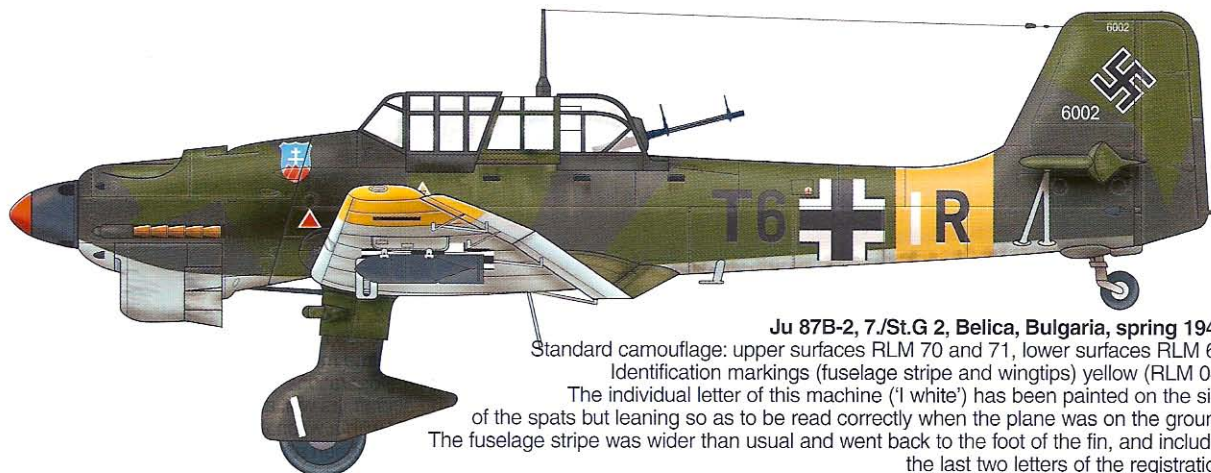
Ju 87B-2, 4/St.G 77, Graz-Thalerhof, Austria, spring 1941.

Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. Committed to *Operation Marita*, which began on 5 April 1941, this machine did not follow the rules where recognition markings were concerned as it has a fuselage stripe and underside wing tips painted yellow. The individual letter, white (the colour of the Staffel) has been repeated on the front of the wheel spats.



Ju 87B-2, 5/St.G 77, Graz-Thalerhof, Austria, spring 1941.

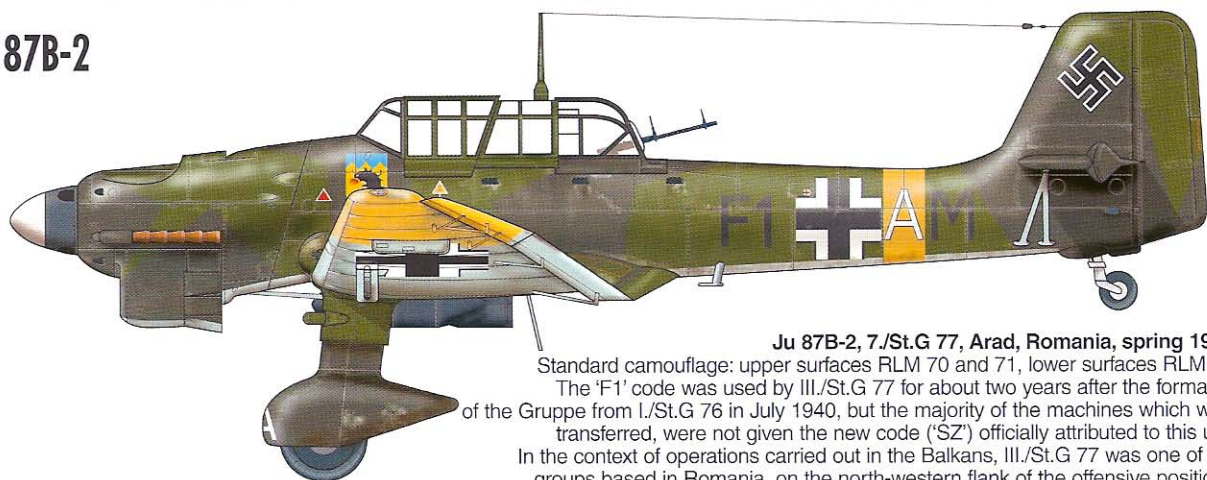
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The recognition marks here have been extended to cover the whole of the front of the fuselage (the limit being the end of the engine cowl panels), the underside wing tips and the rudder. The Staffel can be identified by, among other things, the red stripe painted on the rudder.



Ju 87B-2, 7/St.G 2, Belica, Bulgaria, spring 1941.

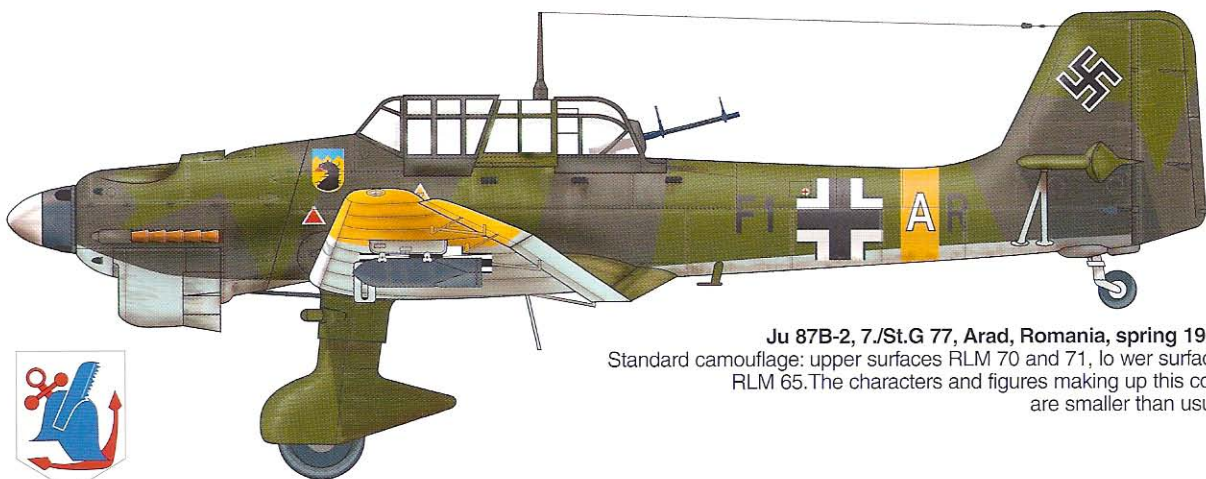
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. Identification markings (fuselage stripe and wingtips) yellow (RLM 04). The individual letter of this machine ('I white') has been painted on the side of the spats but leaning so as to be read correctly when the plane was on the ground. The fuselage stripe was wider than usual and went back to the foot of the fin, and included the last two letters of the registration.

Ju 87B-2



Ju 87B-2, 7./St.G 77, Arad, Romania, spring 1941.

Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The 'F1' code was used by III./St.G 77 for about two years after the formation of the Gruppe from I./St.G 76 in July 1940, but the majority of the machines which were transferred, were not given the new code ('SZ') officially attributed to this unit. In the context of operations carried out in the Balkans, III./St.G 77 was one of two groups based in Romania, on the north-western flank of the offensive positions.

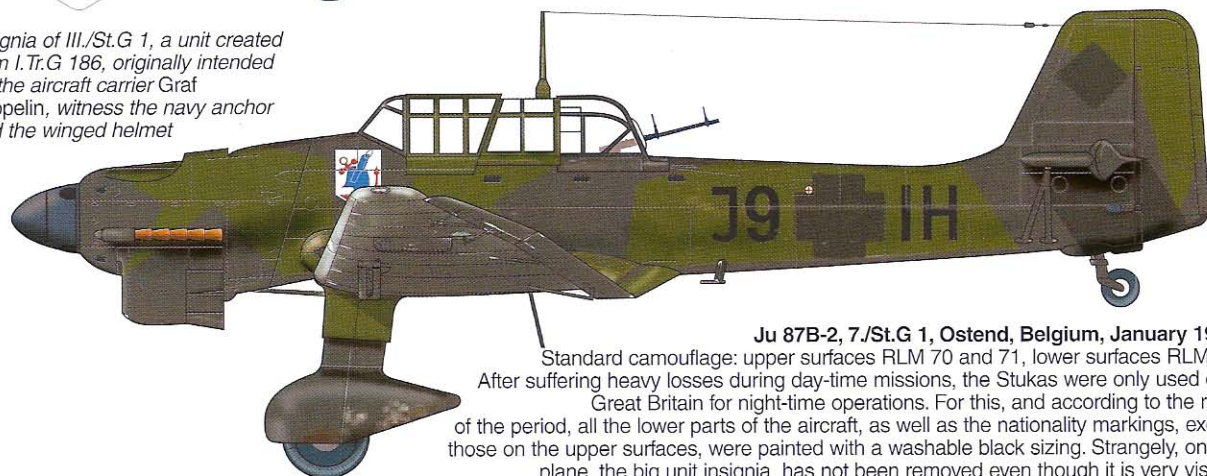


Ju 87B-2, 7./St.G 77, Arad, Romania, spring 1941.

Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The characters and figures making up this code are smaller than usual.



Insignia of III./St.G 1, a unit created from I.Tr.G 186, originally intended for the aircraft carrier Graf Zeppelin, witness the navy anchor and the winged helmet



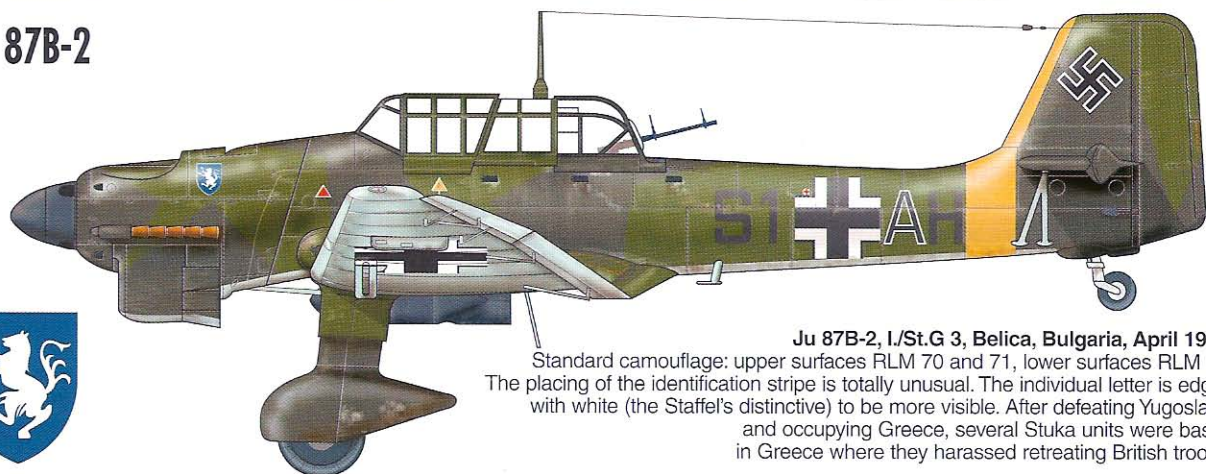
Ju 87B-2, 7./St.G 1, Ostend, Belgium, January 1941.

Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. After suffering heavy losses during day-time missions, the Stukas were only used over Great Britain for night-time operations. For this, and according to the rules of the period, all the lower parts of the aircraft, as well as the nationality markings, except those on the upper surfaces, were painted with a washable black sizing. Strangely, on this plane, the big unit insignia, has not been removed even though it is very visible.

Ju 87B-2



Insignia of
St.G 3
(variant)

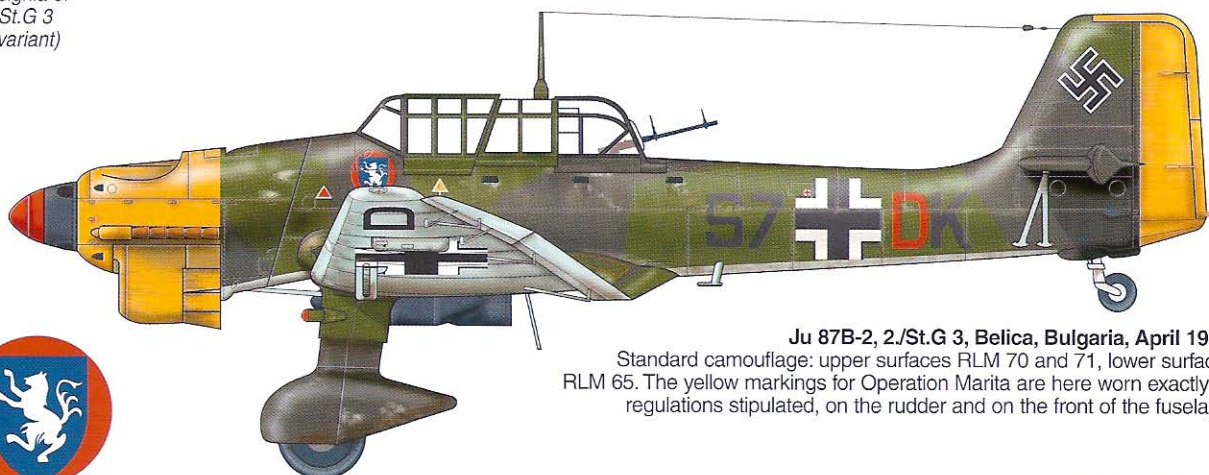


Ju 87B-2, 1/St.G 3, Belica, Bulgaria, April 1941.

Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The placing of the identification stripe is totally unusual. The individual letter is edged with white (the Staffel's distinctive) to be more visible. After defeating Yugoslavia and occupying Greece, several Stuka units were based in Greece where they harassed retreating British troops.



Insignia of
St.G 3 (variant)



Ju 87B-2, 2/St.G 3, Belica, Bulgaria, April 1941.

Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The yellow markings for Operation Marita are here worn exactly as regulations stipulated, on the rudder and on the front of the fuselage.



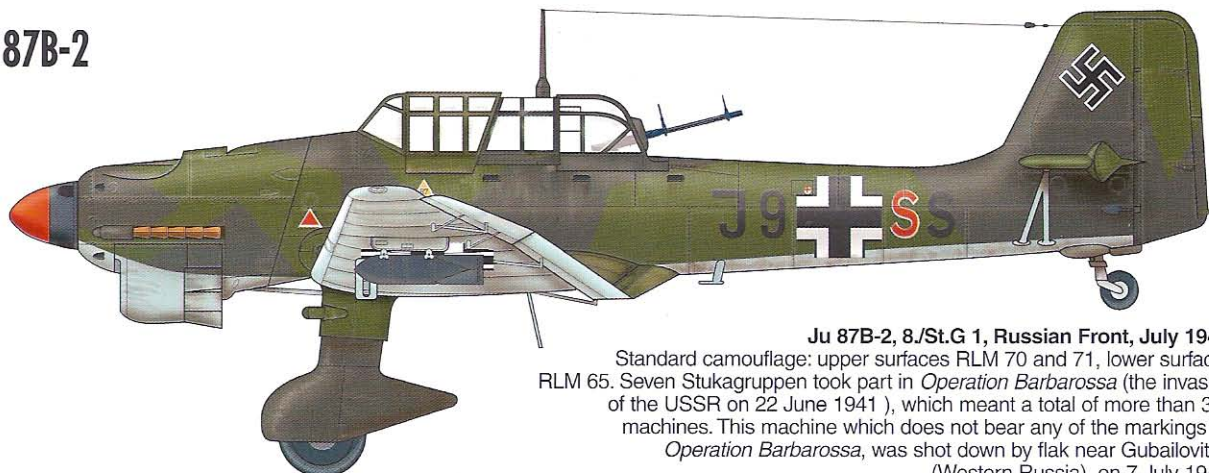
Insignia of
St.G 77
(variant)



Ju 87B-2, Stab (Headquarters), 1/St.G 77, Argos, Greece, May 1944.

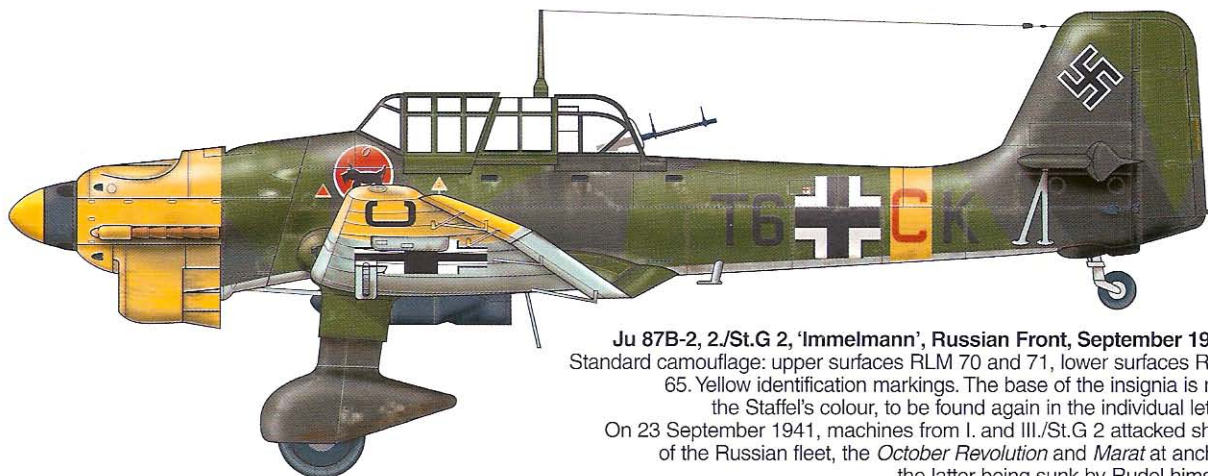
Pilot: *Gruppenkommandeur-Hauptmann* Helmuth Bruck. Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. Although still painted in the colours for Operation Marita, this Bertha was transferred from Yugoslavia to the south of Greece in order to operate against Crete in *Operation Merkur* (Operation Mercury - the invasion of the island of Crete by Axis forces). Here, the Stukas exacted a high price from British shipping trying to evacuate Commonwealth troops from the mainland to the island

Ju 87B-2



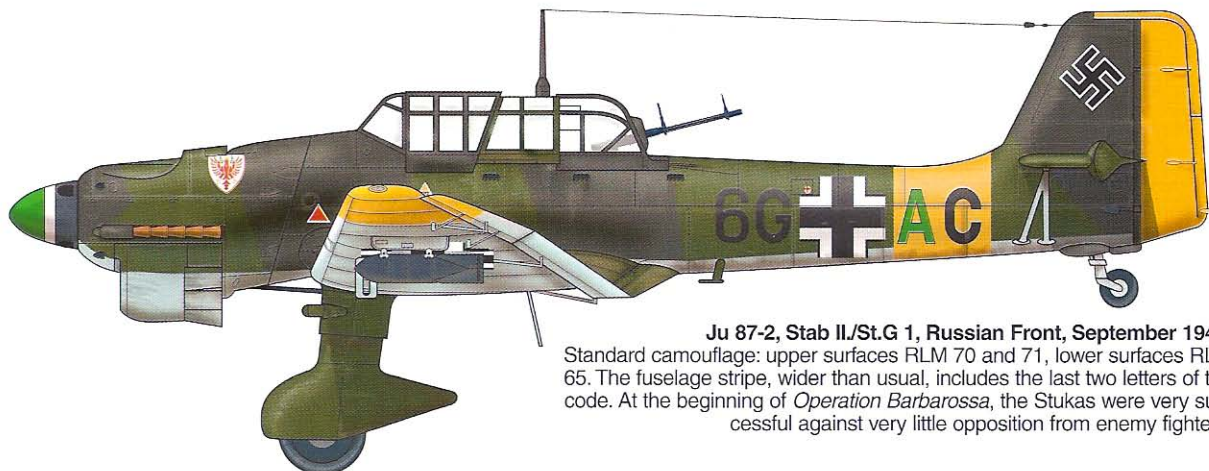
Ju 87B-2, 8/St.G 1, Russian Front, July 1941.

Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. Seven Stukagruppen took part in *Operation Barbarossa* (the invasion of the USSR on 22 June 1941), which meant a total of more than 300 machines. This machine which does not bear any of the markings for *Operation Barbarossa*, was shot down by flak near Gubailovitchi (Western Russia), on 7 July 1941.



Ju 87B-2, 2/St.G 2, 'Immelmann', Russian Front, September 1941.

Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. Yellow identification markings. The base of the insignia is red, the Staffel's colour, to be found again in the individual letter. On 23 September 1941, machines from I. and III./St.G 2 attacked ships of the Russian fleet, the *October Revolution* and *Marat* at anchor, the latter being sunk by Rudel himself.



Ju 87-2, Stab II./St.G 1, Russian Front, September 1941.

Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The fuselage stripe, wider than usual, includes the last two letters of the code. At the beginning of *Operation Barbarossa*, the Stukas were very successful against very little opposition from enemy fighters.

Ju 87B-2



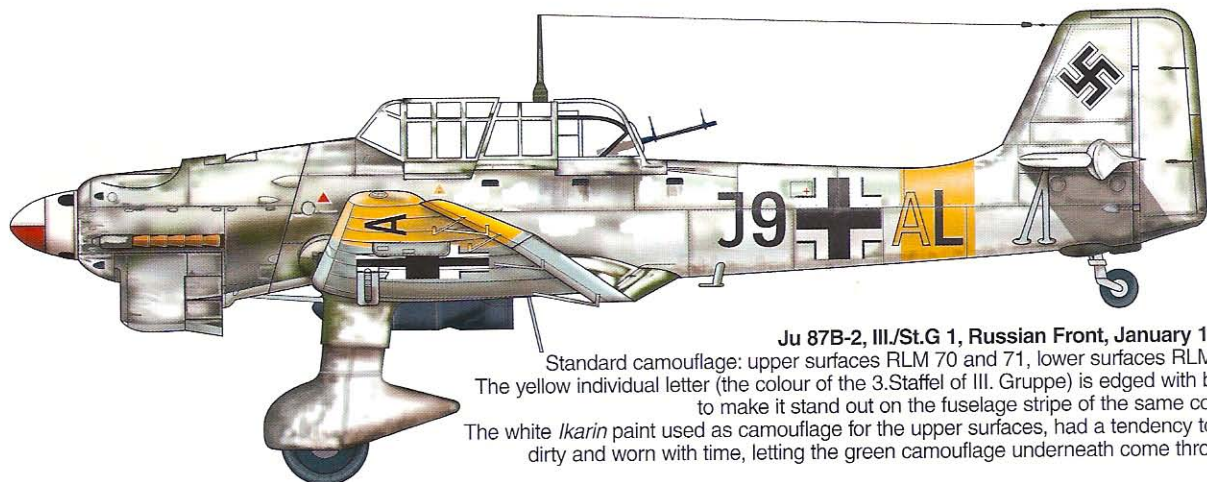
Ju 87B-2, Stab II/St.G 1, Russian Front, December 1941.

The aircraft has been given a layer of white paint over all its upper surfaces, but not the blue undersides, nor all the markings, as the official directives stipulated concerning camouflaging aircraft in snowbound areas during the winter months. This white paint called *Ikarin* could be applied with a brush, with a pistol or even with brooms... the final result (a more or less even shade) depending on the talent of the painter or more likely the amount of time he had to paint in...



Ju 87B-2, stab III/St.G 2 'Immelmann', Russian Front, 1943.

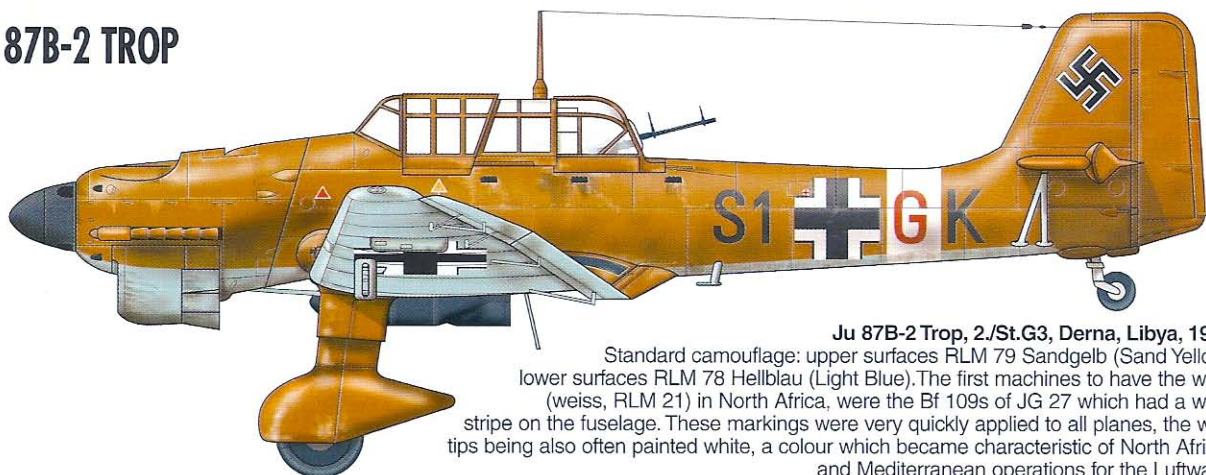
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. This is one of the machines used by the Stuka Ace of Aces, Hans Ulrich Rudel, at the time a Major. The location of the yellow fuselage stripe is quite unusual.



Ju 87B-2, III/St.G 1, Russian Front, January 1943.

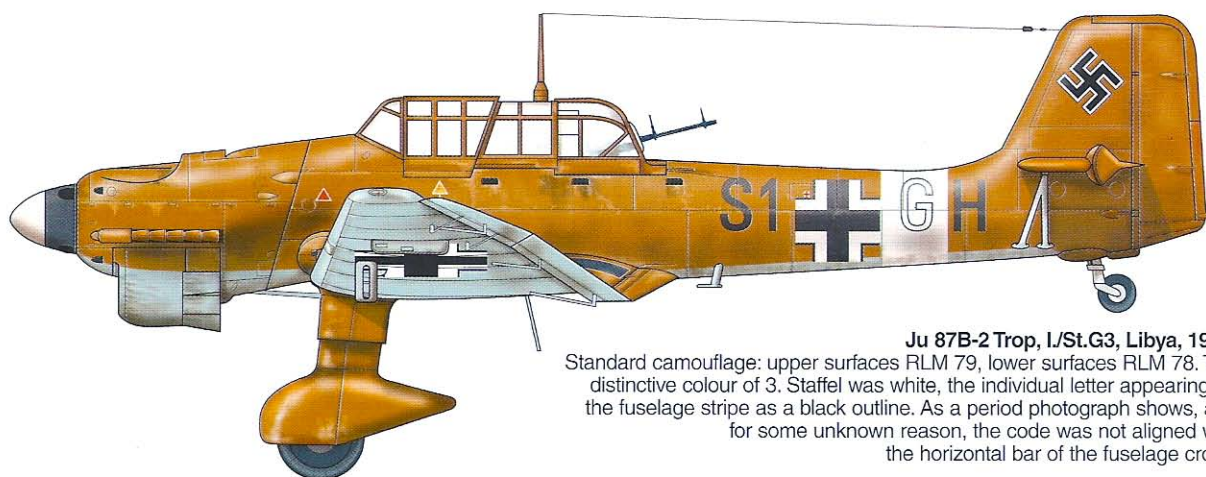
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The yellow individual letter (the colour of the 3.Staffel of III. Gruppe) is edged with black to make it stand out on the fuselage stripe of the same colour. The white *Ikarin* paint used as camouflage for the upper surfaces, had a tendency to get dirty and worn with time, letting the green camouflage underneath come through.

Ju 87B-2 TROP



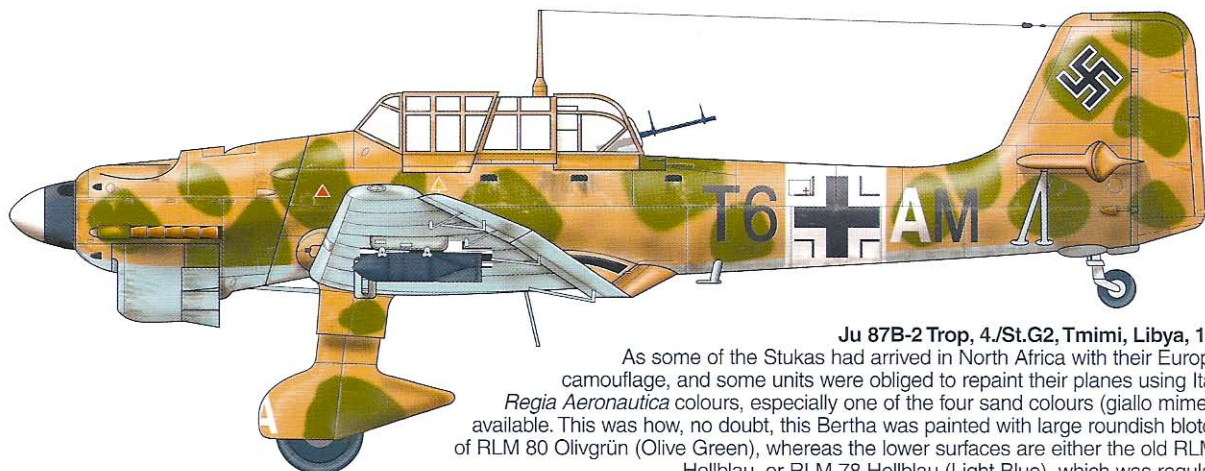
Ju 87B-2 Trop, 2/St.G3, Derna, Libya, 1941.

Standard camouflage: upper surfaces RLM 79 Sandgelb (Sand Yellow), lower surfaces RLM 78 Hellblau (Light Blue). The first machines to have the white (weiss, RLM 21) in North Africa, were the Bf 109s of JG 27 which had a white stripe on the fuselage. These markings were very quickly applied to all planes, the wing tips being also often painted white, a colour which became characteristic of North African and Mediterranean operations for the Luftwaffe.



Ju 87B-2 Trop, 1/St.G3, Libya, 1941.

Standard camouflage: upper surfaces RLM 79, lower surfaces RLM 78. The distinctive colour of 3. Staffel was white, the individual letter appearing on the fuselage stripe as a black outline. As a period photograph shows, and for some unknown reason, the code was not aligned with the horizontal bar of the fuselage cross.

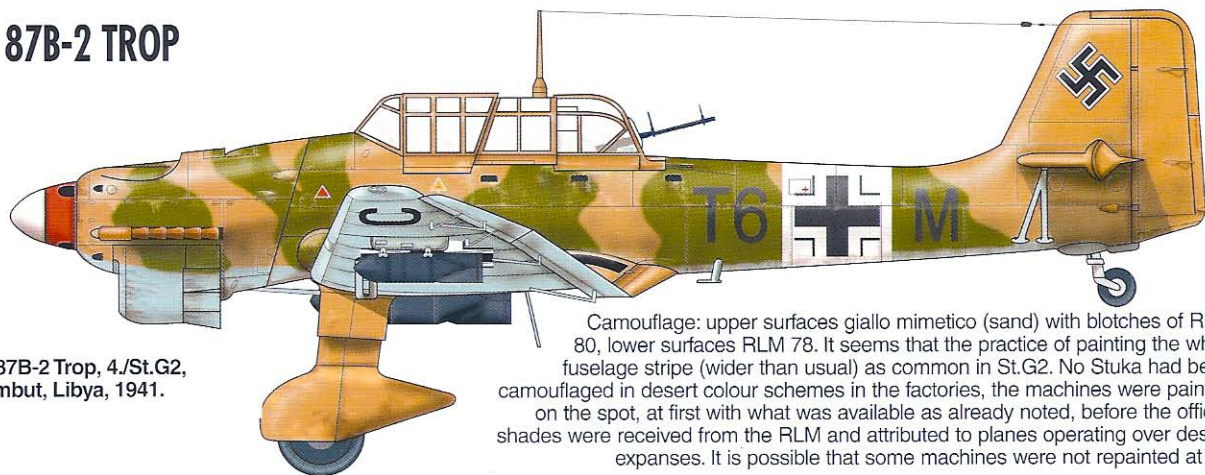


Ju 87B-2 Trop, 4/St.G2, Tmimi, Libya, 1941.

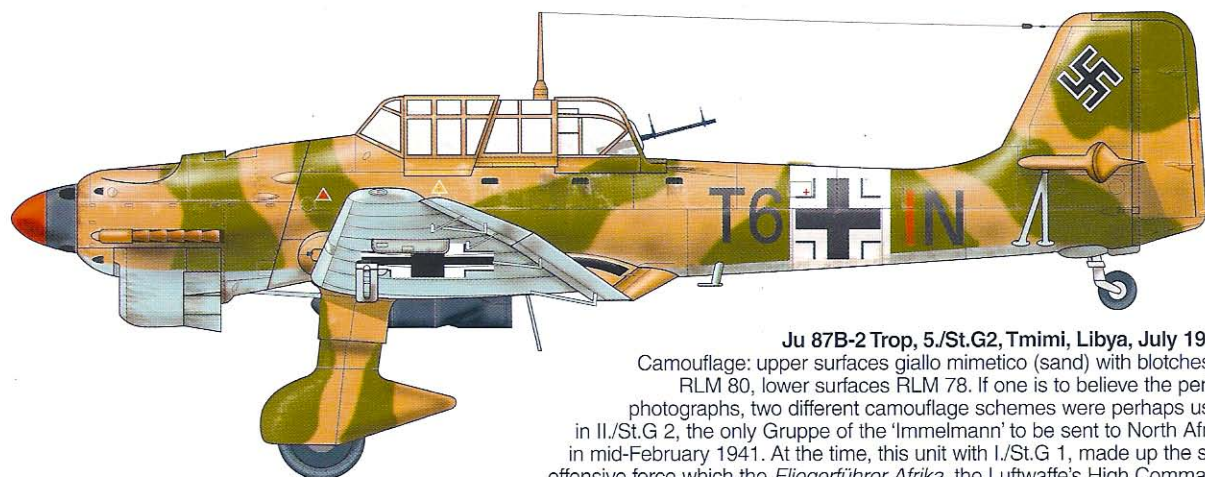
As some of the Stukas had arrived in North Africa with their European camouflage, and some units were obliged to repaint their planes using Italian *Regia Aeronautica* colours, especially one of the four sand colours (giallo mimetico) available. This was how, no doubt, this Bertha was painted with large roundish blotches of RLM 80 Olivgrün (Olive Green), whereas the lower surfaces are either the old RLM 65 Hellblau, or RLM 78 Hellblau (Light Blue), which was regulation in German 'tropical' colour schemes.

Ju 87B-2 TROP

Ju 87B-2 Trop, 4/St.G2, Gambut, Libya, 1941.

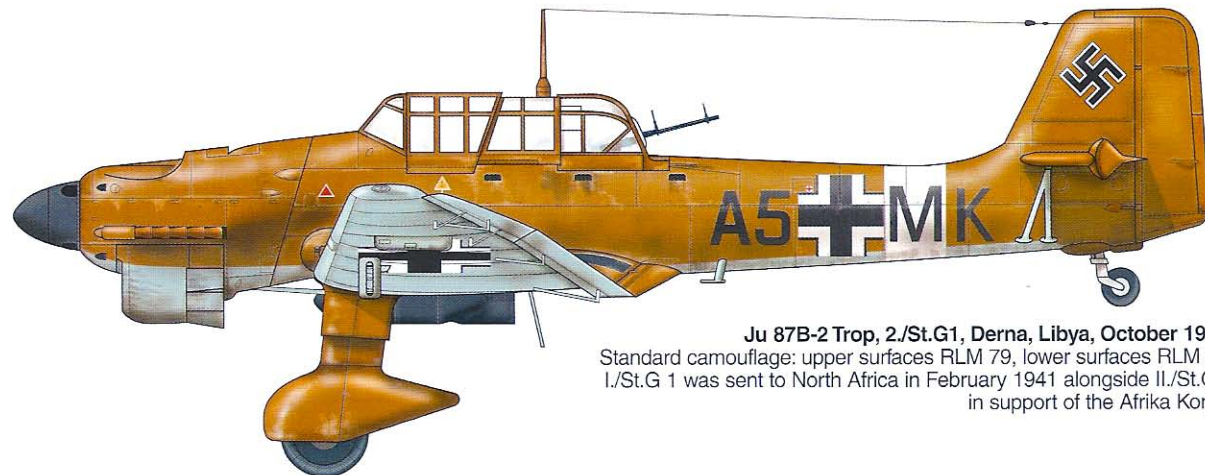


Camouflage: upper surfaces giallo mimetico (sand) with blotches of RLM 80, lower surfaces RLM 78. It seems that the practice of painting the white fuselage stripe (wider than usual) as common in St.G2. No Stuka had been camouflaged in desert colour schemes in the factories, the machines were painted on the spot, at first with what was available as already noted, before the official shades were received from the RLM and attributed to planes operating over desert expanses. It is possible that some machines were not repainted at all.



Ju 87B-2 Trop, 5/St.G2, Tmimi, Libya, July 1941.

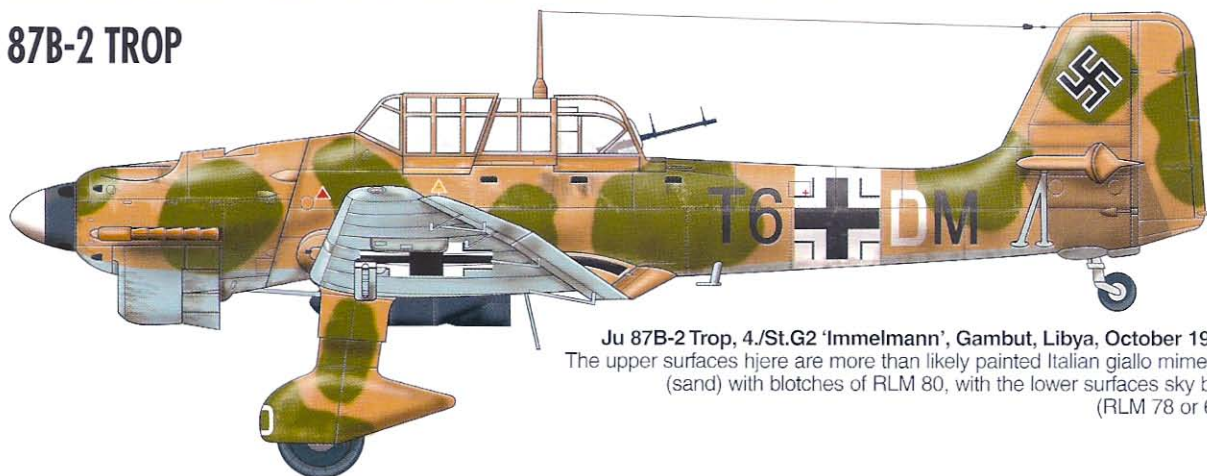
Camouflage: upper surfaces giallo mimetico (sand) with blotches of RLM 80, lower surfaces RLM 78. If one is to believe the period photographs, two different camouflage schemes were perhaps used in II./St.G 2, the only Gruppe of the 'Immelmann' to be sent to North Africa in mid-February 1941. At the time, this unit with I./St.G 1, made up the sole offensive force which the *Fliegerführer Afrika*, the Luftwaffe's High Command.



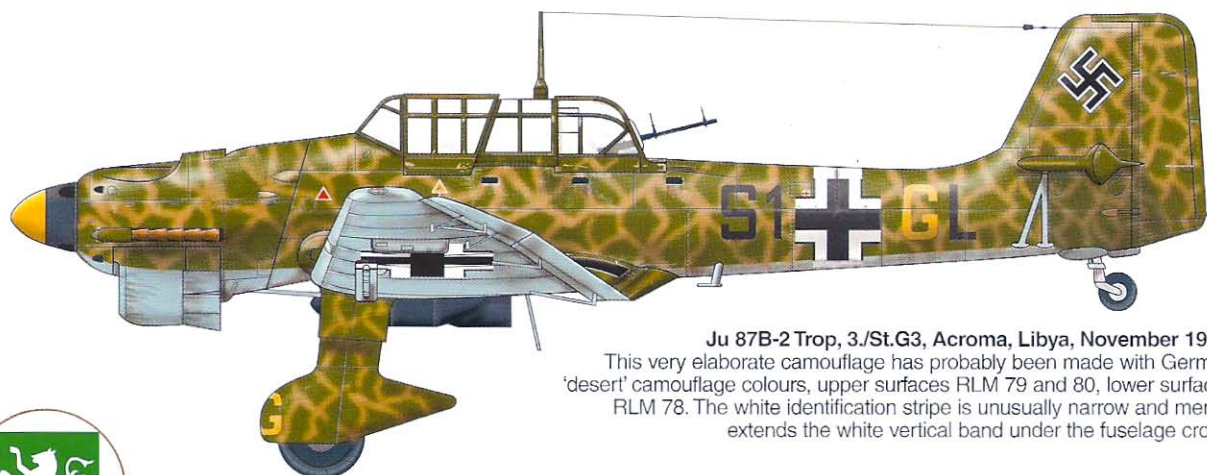
Ju 87B-2 Trop, 2/St.G1, Derna, Libya, October 1941.

Standard camouflage: upper surfaces RLM 79, lower surfaces RLM 78. I./St.G 1 was sent to North Africa in February 1941 alongside II./St.G 2 in support of the Afrika Korps.

Ju 87B-2 TROP



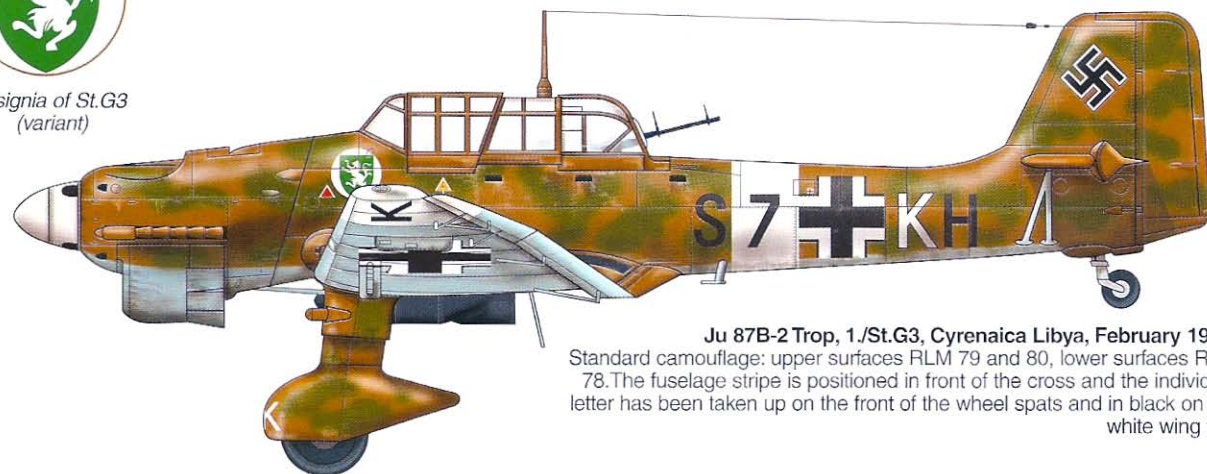
Ju 87B-2 Trop, 4./St.G2 'Immelmann', Gambut, Libya, October 1941.
The upper surfaces here are more than likely painted Italian giallo mimetico (sand) with blotches of RLM 80, with the lower surfaces sky blue (RLM 78 or 65).



Ju 87B-2 Trop, 3./St.G3, Acroma, Libya, November 1941.
This very elaborate camouflage has probably been made with German 'desert' camouflage colours, upper surfaces RLM 79 and 80, lower surfaces RLM 78. The white identification stripe is unusually narrow and merely extends the white vertical band under the fuselage cross.

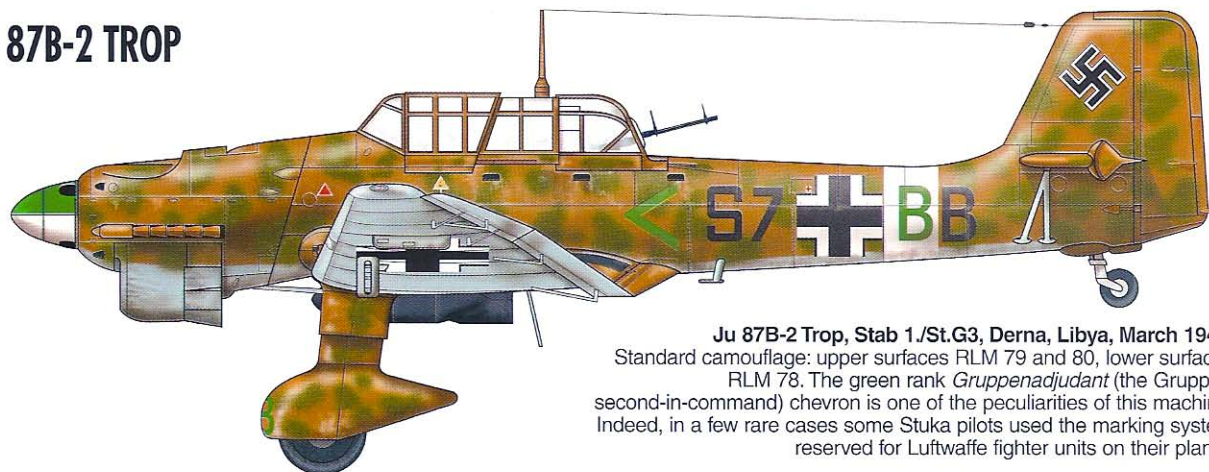


Insignia of St.G3
(variant)



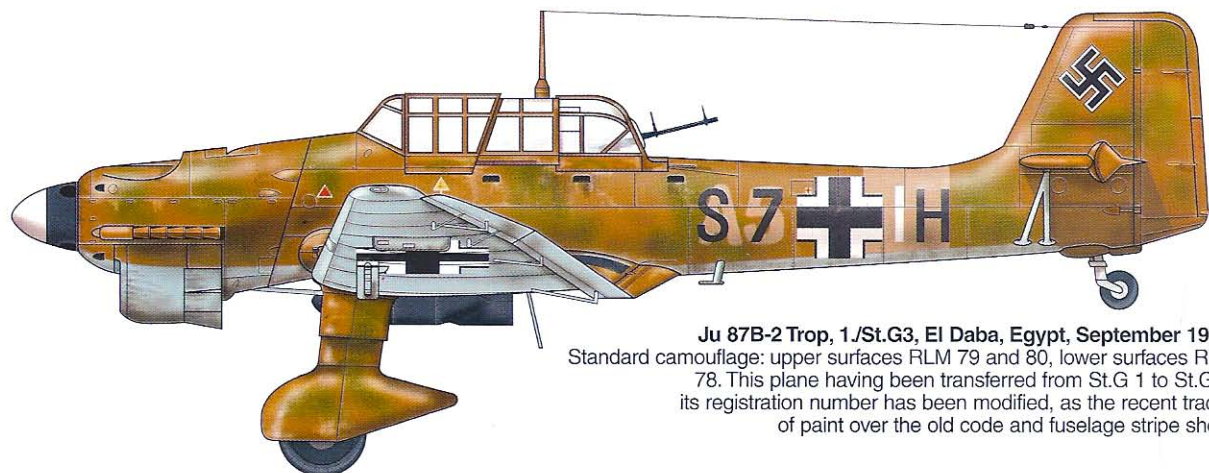
Ju 87B-2 Trop, 1./St.G3, Cyrenaica Libya, February 1941.
Standard camouflage: upper surfaces RLM 79 and 80, lower surfaces RLM 78. The fuselage stripe is positioned in front of the cross and the individual letter has been taken up on the front of the wheel spats and in black on the white wing tips

Ju 87B-2 TROP



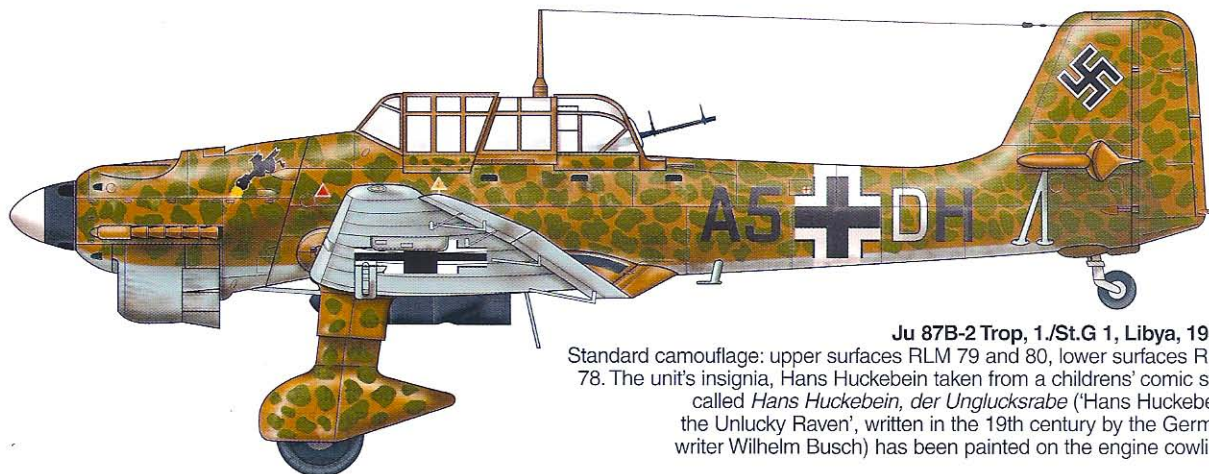
Ju 87B-2 Trop, Stab 1/St.G3, Derna, Libya, March 1942.

Standard camouflage: upper surfaces RLM 79 and 80, lower surfaces RLM 78. The green rank *Gruppenadjutant* (the Gruppe's second-in-command) chevron is one of the peculiarities of this machine. Indeed, in a few rare cases some Stuka pilots used the marking system reserved for Luftwaffe fighter units on their planes



Ju 87B-2 Trop, 1/St.G3, El Daba, Egypt, September 1942.

Standard camouflage: upper surfaces RLM 79 and 80, lower surfaces RLM 78. This plane having been transferred from St.G 1 to St.G 3, its registration number has been modified, as the recent traces of paint over the old code and fuselage stripe show.

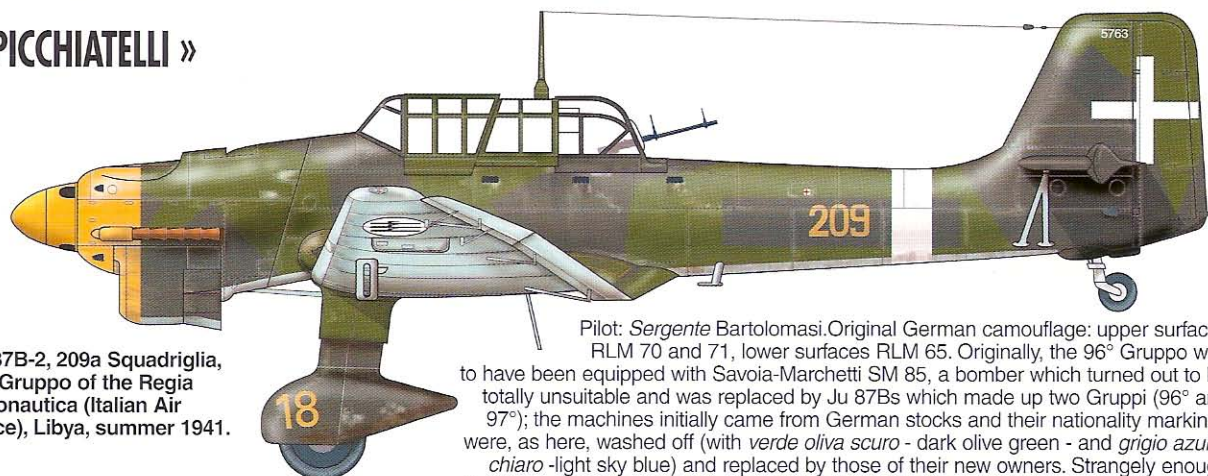


Ju 87B-2 Trop, 1/St.G 1, Libya, 1943.

Standard camouflage: upper surfaces RLM 79 and 80, lower surfaces RLM 78. The unit's insignia, Hans Hucklebein taken from a childrens' comic strip called *Hans Hucklebein, der Unglucksrabe* ('Hans Hucklebein, the Unlucky Raven', written in the 19th century by the German writer Wilhelm Busch) has been painted on the engine cowling.

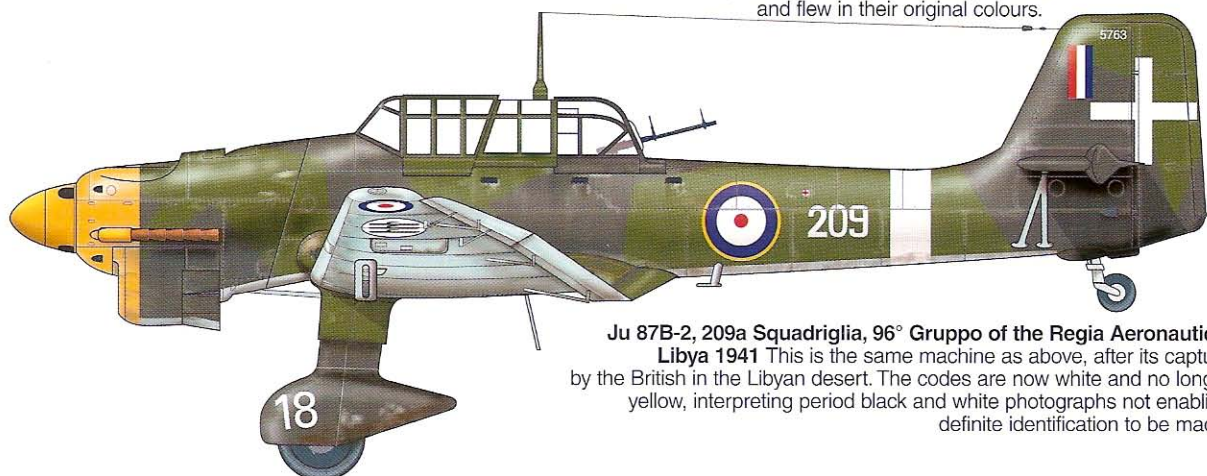
« PICCHIATELLI »

Ju 87B-2, 209a Squadriglia, 96° Gruppo of the Regia Aeronautica (Italian Air Force), Libya, summer 1941.



Pilot: *Sergente* Bartolomasi. Original German camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. Originally, the 96° Gruppo was to have been equipped with Savoia-Marchetti SM 85, a bomber which turned out to be totally unsuitable and was replaced by Ju 87Bs which made up two Gruppi (96° and 97°); the machines initially came from German stocks and their nationality markings were, as here, washed off (with *verde oliva scuro* - dark olive green - and *grigio azzurro chiaro* - light sky blue) and replaced by those of their new owners. Strangely enough the Italian Stukas were never painted in desert camouflage schemes and flew in their original colours.

Ju 87B-2, 209a Squadriglia, 96° Gruppo of the Regia Aeronautica, Libya 1941 This is the same machine as above, after its capture by the British in the Libyan desert. The codes are now white and no longer yellow, interpreting period black and white photographs not enabling definite identification to be made.

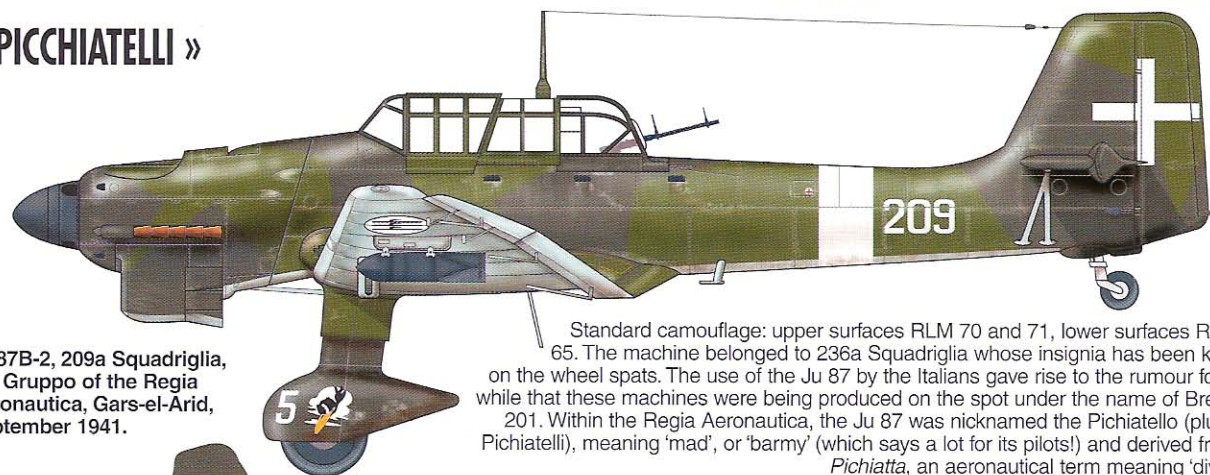


Ju 87B-2, 239a Squadriglia, 97° Gruppo of the Regia Aeronautica, Lecce-Galatina, Italy, Spring 1941. Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. This is *Capitano* Giuseppe Cenni' plane; his rank pennant can be seen on the wheel spat. Cenni was a veteran among the pilots of Italian Ju 87s and, in 1941 against shipping in the Aegean Sea, perfected the original method of delivering his bombs by 'ricochet'. Once the bomb was dropped horizontally after a low altitude dive, under its own momentum, it bounced off the surface of the sea eventually reaching the side of the target ship.

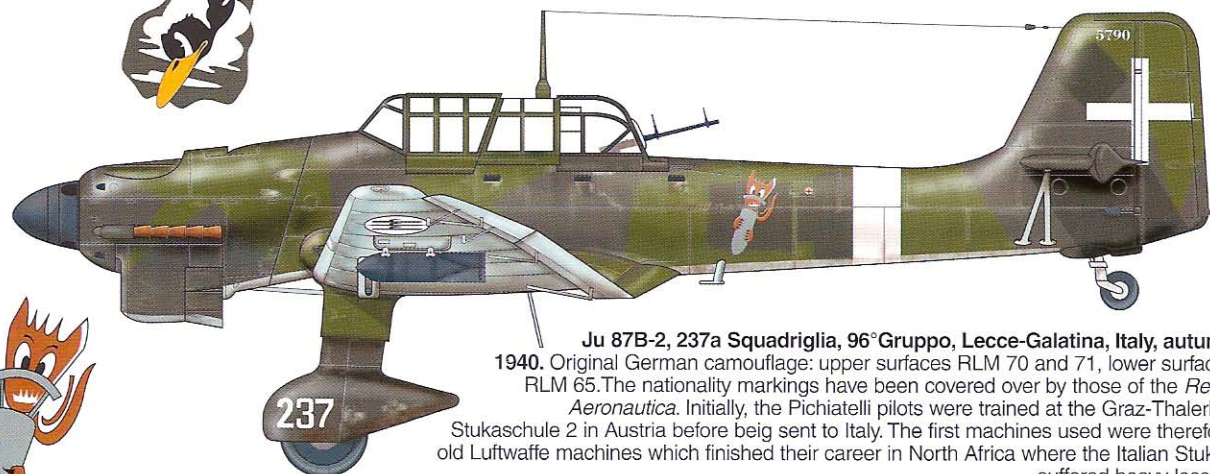
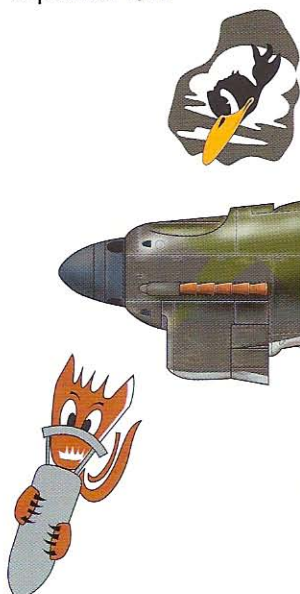


« PICCHIATELLI »

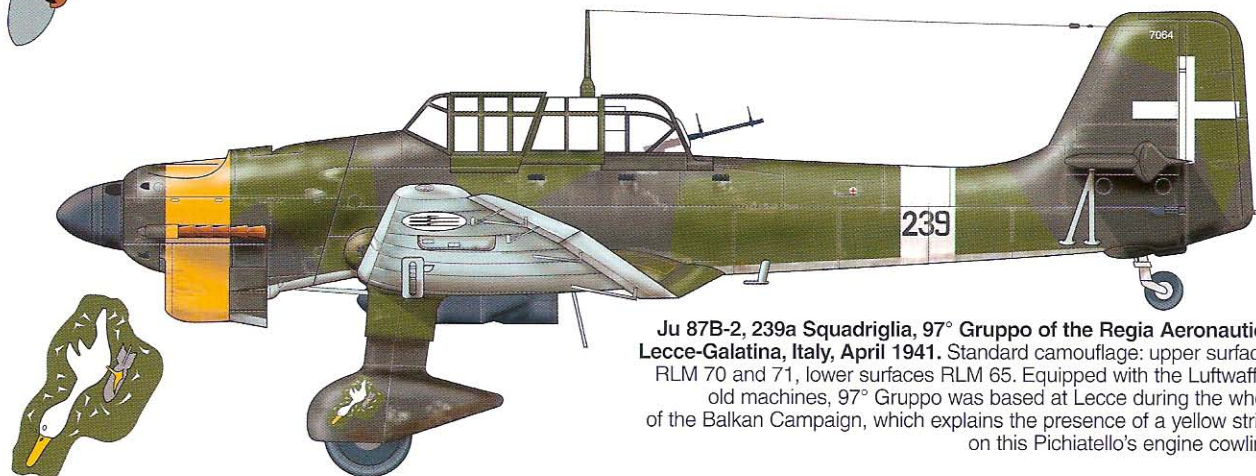
Ju 87B-2, 209a Squadriglia, 96° Gruppo of the Regia Aeronautica, Gars-el-Arid, September 1941.



Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The machine belonged to 236a Squadriglia whose insignia has been kept on the wheel spats. The use of the Ju 87 by the Italians gave rise to the rumour for a while that these machines were being produced on the spot under the name of Breda 201. Within the Regia Aeronautica, the Ju 87 was nicknamed the Pichiattello (plural Pichiattelli), meaning 'mad', or 'barmy' (which says a lot for its pilots!) and derived from *Pichiatta*, an aeronautical term meaning 'dive'.



Ju 87B-2, 237a Squadriglia, 96° Gruppo, Lecce-Galatina, Italy, autumn 1940. Original German camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The nationality markings have been covered over by those of the Regia Aeronautica. Initially, the Pichiattelli pilots were trained at the Graz-Thalerhof Stukaschule 2 in Austria before being sent to Italy. The first machines used were therefore old Luftwaffe machines which finished their career in North Africa where the Italian Stukas suffered heavy losses.



Ju 87B-2, 239a Squadriglia, 97° Gruppo of the Regia Aeronautica, Lecce-Galatina, Italy, April 1941. Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. Equipped with the Luftwaffe's old machines, 97° Gruppo was based at Lecce during the whole of the Balkan Campaign, which explains the presence of a yellow stripe on this Pichiattello's engine cowling.



The LONG-RANGE Ju 87R 'REICHWEITE'

The main fault with the Ju 87B-2 was its insufficient range, 375 miles (600kms), so at the same time, Junkers brought out the Ju 87R (R for *Reichweite* -Range) which had a range of 1 125 miles (1 800 kms) thanks to two extra tanks in the wings and two 66 gallon drop tanks under the outer wings. Apart from this, there was no difference between the B-2 and the R series except for the absence of sirens. This new version was thus able to operate a long way from its base, escort other planes or attack targets on the high seas.

The first version was designated Ju 87R-1 and used the B-1 airframe. It had ejector exhausts; it had a VS5 or VS11 propeller. With its drop tanks it could only carry a single 551-lb bomb under its belly. Its range was normally 875 miles (1 400 km), ideal for patrolling and attacking at sea.

The first unit to be equipped with this type was the I./St.G.1 which took part in the invasion of Norway in April 1940. The Ju 87Rs also took part in the French Campaign and faced the

46 RAF during the Battle of Britain.

Above.

Magnificent in-flight photograph of a Ju 87R-2/Trop (the carburettor intake, with tropical filter is on the other side of the engine cowling) over the Mediterranean. The green camouflage has given way to a new colour scheme which was more appropriate to the new environment, with a sand base (RLM 79 Sandgelb) on the upper surfaces and sky blue (RLM 78 Hellblau) underneath. Note the splatterings of oil on the wheel spats.

(© ECPAD/France)

The Ju 87R-2 corresponded to the B-2; it performed less well than the R-1 because of its greater mass and its normal range was only 785 miles (1 255 kms). Units operating in the Mediterranean out of Sicily were equipped with the type first, at the beginning of 1941, to attack Allied convoys going through the Straits of Gibraltar and heading for Malta and Alexandria.

The Ju 87R-3 was a sub-variant of the R-2 with better radio equipment. In the Mediterranean theatre and in Russia, its greater range meant that it was given a task for which it was

Technical specifications for the Ju 87R-2

Armament: Two 7.9 mm MG 17 machine guns. One flexible MG 15 machine gun in cockpit rear.

Bomb load: Restricted to a maximum of 551 lbs (250 kg).

Wingspan: 44 ft 9 in (13.60 m)

Length: 36 ft 7 in (11.10 m).

Height: 13 ft 3 in (4.01 m).

Wing area: 347.39 sq. ft (31.9 m).

Max. Speed: 213 mph (340 kph) at sea level.

175 mph (280 kph) at

13 200 ft (4 000 m)

Landing speed: 81 mph (130 kph).

Climb rate: to 3 300 ft

(1 000 m): 2 minutes.

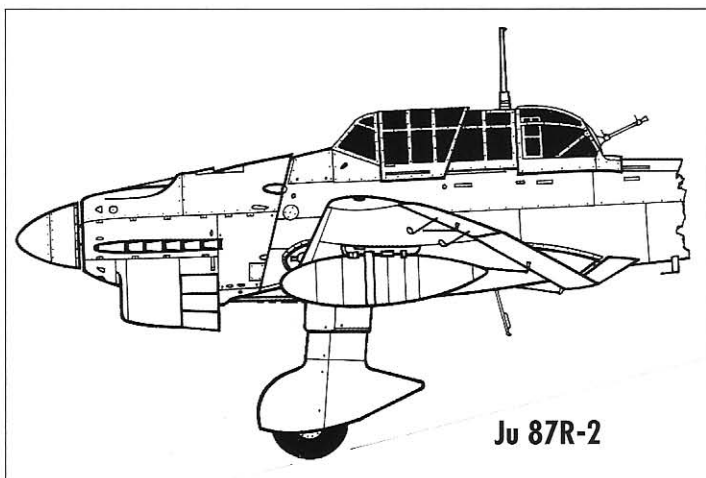
Service Ceiling: 23 100 ft (7 000 m).

Range: from 785 miles to 1 125 miles (1 255 km to 1 800 km) depending on mission.

Weight unload: 5 940 lb (2 700 kg)

Max. take-off weight:

9 570 lb (4 350 kg)



Ju 87R-2

not designed: towing assault or supply gliders thanks to a hook fitted under its tail. Some B-1s did the same task but over a shorter distance.

With special filters and desert survival equipment for missions in North Africa and the Mediterranean area, the R-1s and R-2s were given the 'Trop.' suffix.

The only variant specifically designed in the factory from the outset for dry climates and sandy regions and fitted with all the right equipment was the Ju 87R-4. There was no difference between an R-4 and a B-2/Trop or an R-2/Trop without its drop tanks.

A Ju 87R was tested fitted with a voluminous wooden underbelly container, called 'Dobbas' used for transporting freight or

spare parts when units moved from one field to the next. But this experiment was not followed up.

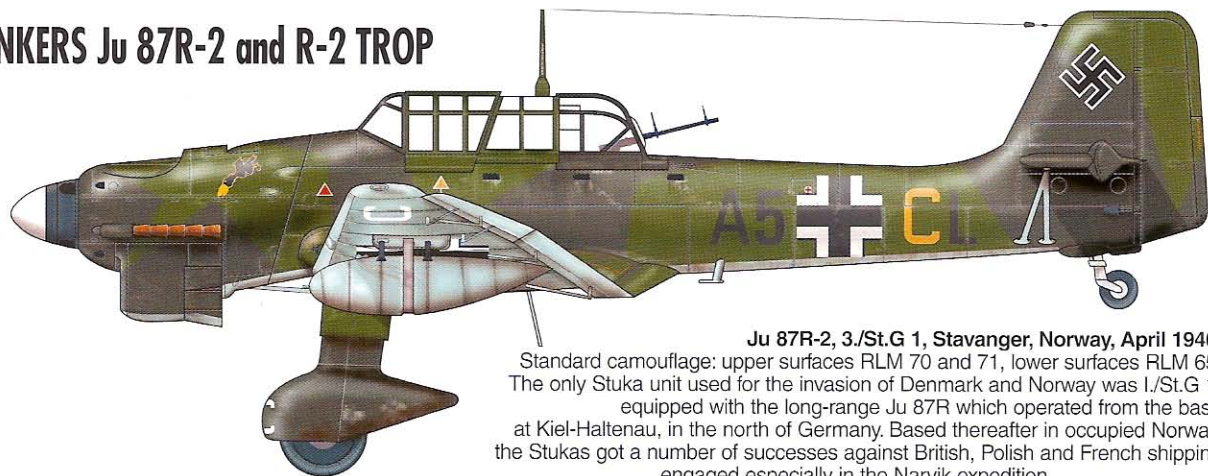
This container was also designed to hold a 75 mm anti-tank canon, but the position of the radiator rendered this impracticable.

Below.

A Ju 87R-1 equipped with its drop tanks under the wings. Apart from this equipment which was intended to increase its otherwise limited range, there was no visible difference with a production Ju 87B from which it was directly derived. (DR)

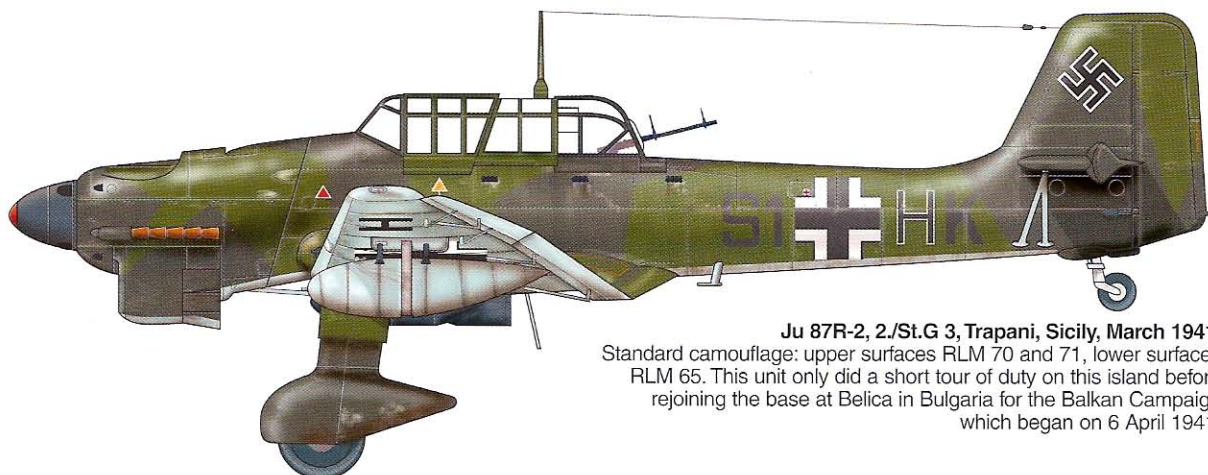


JUNKERS Ju 87R-2 and R-2 TROP



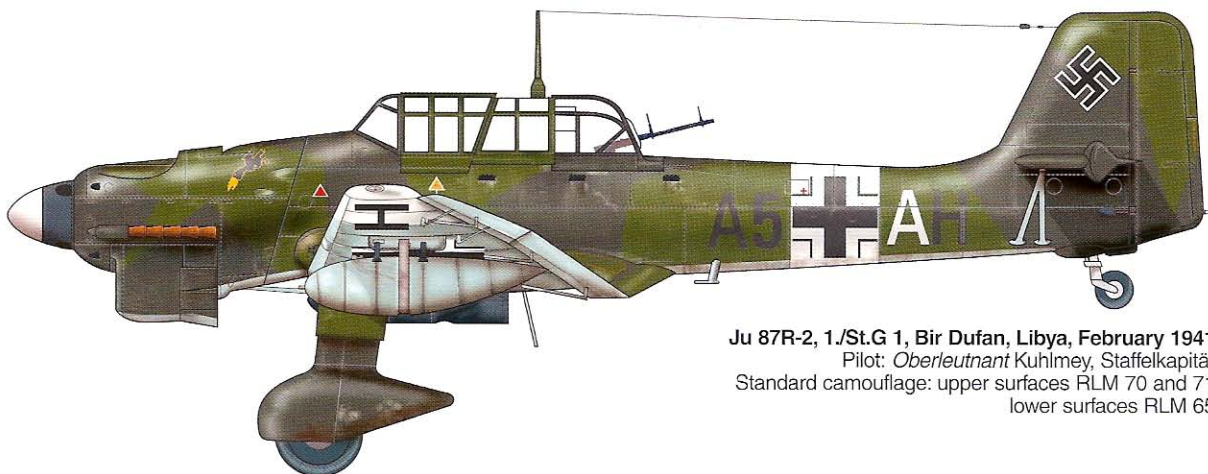
Ju 87R-2, 3./St.G 1, Stavanger, Norway, April 1940.

Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The only Stuka unit used for the invasion of Denmark and Norway was I./St.G 1, equipped with the long-range Ju 87R which operated from the base at Kiel-Haltenau, in the north of Germany. Based thereafter in occupied Norway, the Stukas got a number of successes against British, Polish and French shipping engaged especially in the Narvik expedition.



Ju 87R-2, 2./St.G 3, Trapani, Sicily, March 1941.

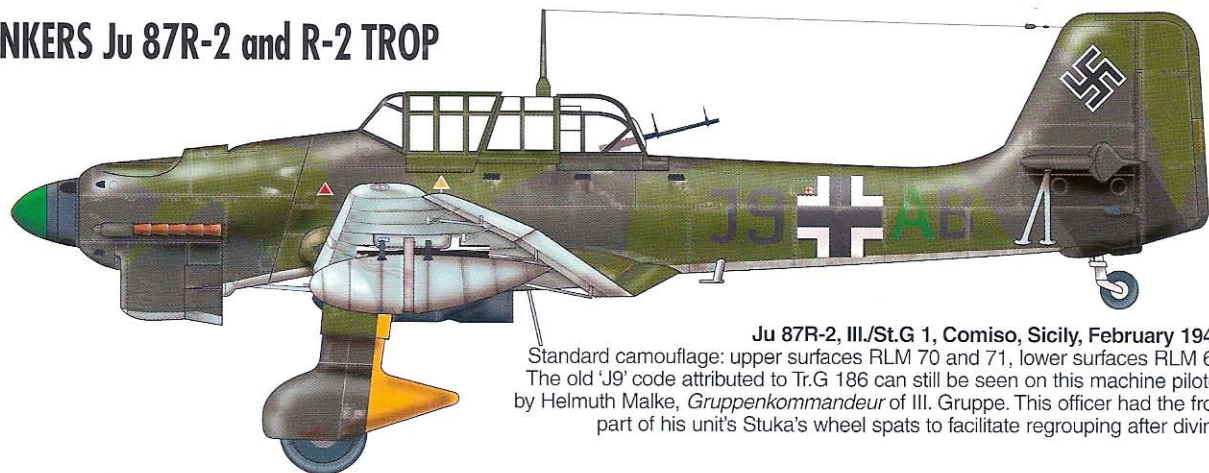
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. This unit only did a short tour of duty on this island before rejoining the base at Belica in Bulgaria for the Balkan Campaign which began on 6 April 1941.



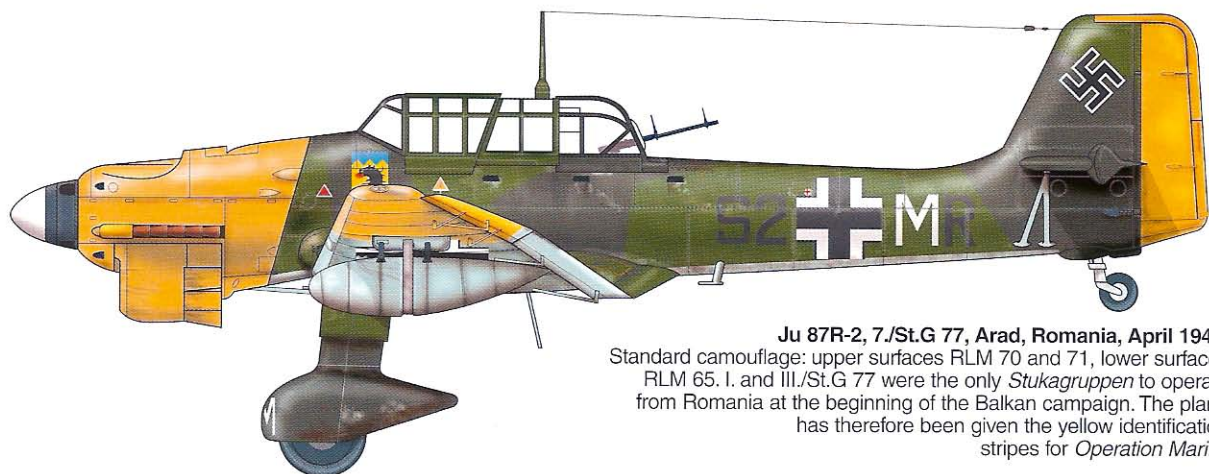
Ju 87R-2, 1./St.G 1, Bir Dufan, Libya, February 1941.

Pilot: *Oberleutnant Kuhlmei, Staffelfkapitän*
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65.

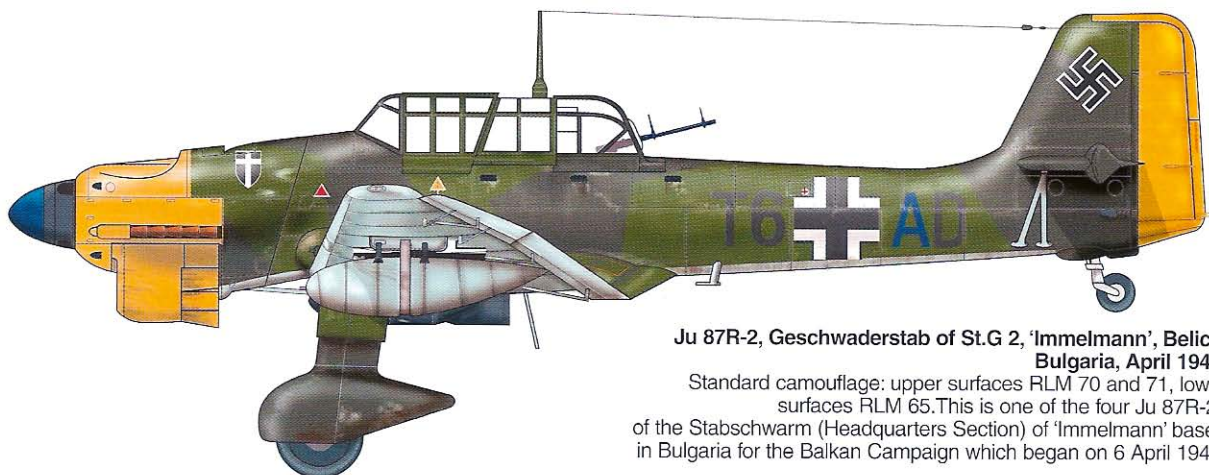
JUNKERS Ju 87R-2 and R-2 TROP



Ju 87R-2, III./St.G 1, Comiso, Sicily, February 1941.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The old 'J9' code attributed to Tr.G 186 can still be seen on this machine piloted by Helmuth Malke, *Gruppenkommandeur* of III. Gruppe. This officer had the front part of his unit's Stuka's wheel spats to facilitate regrouping after diving.

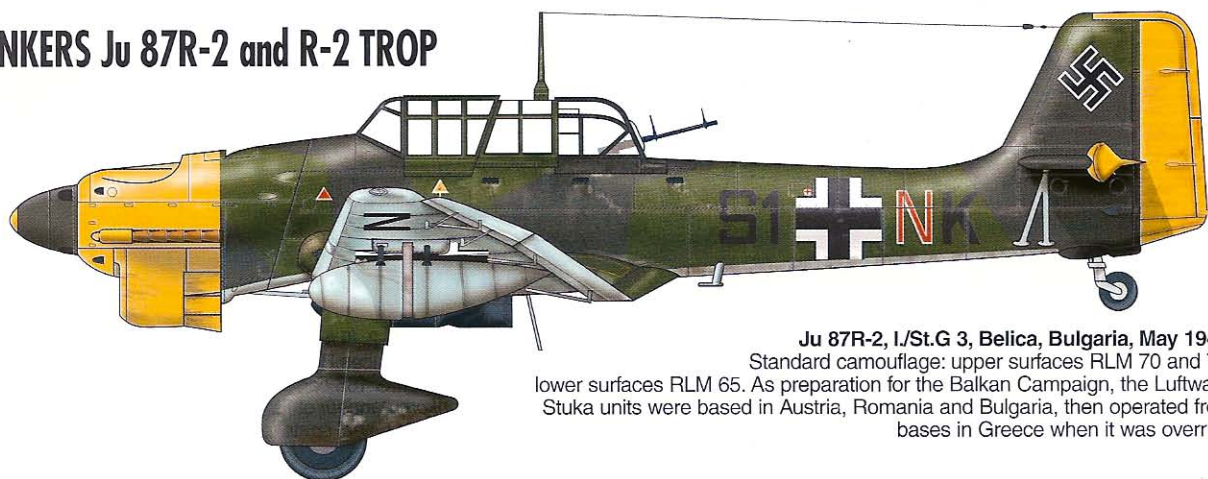


Ju 87R-2, 7./St.G 77, Arad, Romania, April 1941.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. I. and III./St.G 77 were the only *Stukagruppen* to operate from Romania at the beginning of the Balkan campaign. The plane has therefore been given the yellow identification stripes for *Operation Marita*.

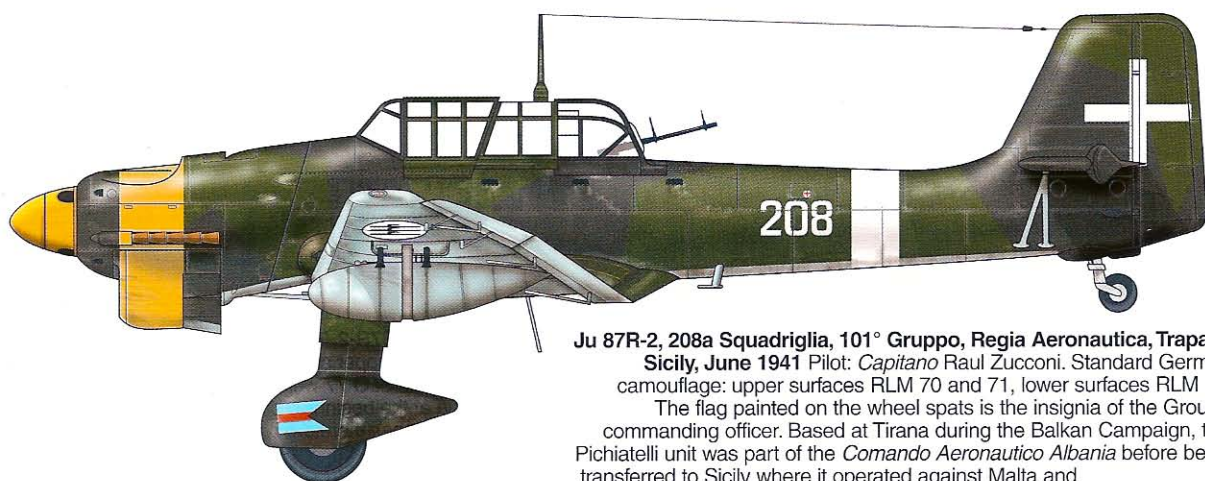


Ju 87R-2, Geschwaderstab of St.G 2, 'Immelmann', Belica, Bulgaria, April 1941.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. This is one of the four Ju 87R-2s of the Stabschwarm (Headquarters Section) of 'Immelmann' based in Bulgaria for the Balkan Campaign which began on 6 April 1941.

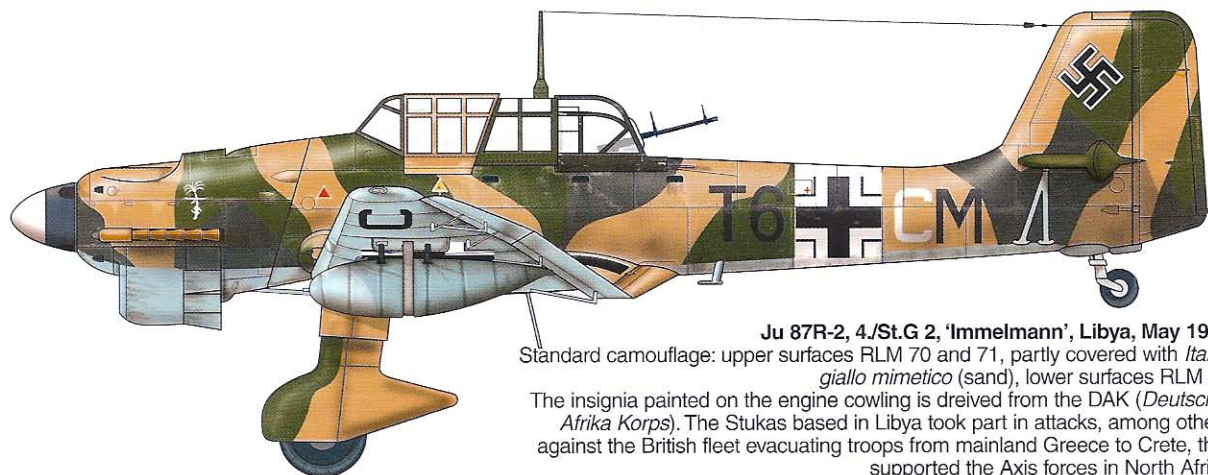
JUNKERS Ju 87R-2 and R-2 TROP



Ju 87R-2, I./St.G 3, Belica, Bulgaria, May 1941.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. As preparation for the Balkan Campaign, the Luftwaffe Stuka units were based in Austria, Romania and Bulgaria, then operated from bases in Greece when it was overrun.

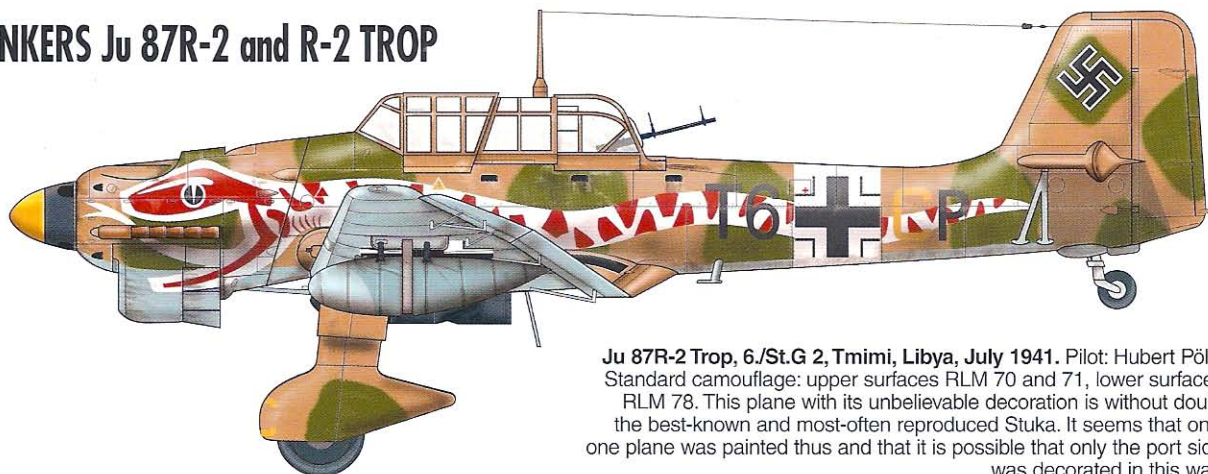


Ju 87R-2, 208a Squadriglia, 101° Gruppo, Regia Aeronautica, Trapani, Sicily, June 1941 Pilot: *Capitano* Raul Zucconi. Standard German camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. The flag painted on the wheel spats is the insignia of the Group's commanding officer. Based at Tirana during the Balkan Campaign, this Pichiattelli unit was part of the *Comando Aeronautico Albania* before being transferred to Sicily where it operated against Malta and

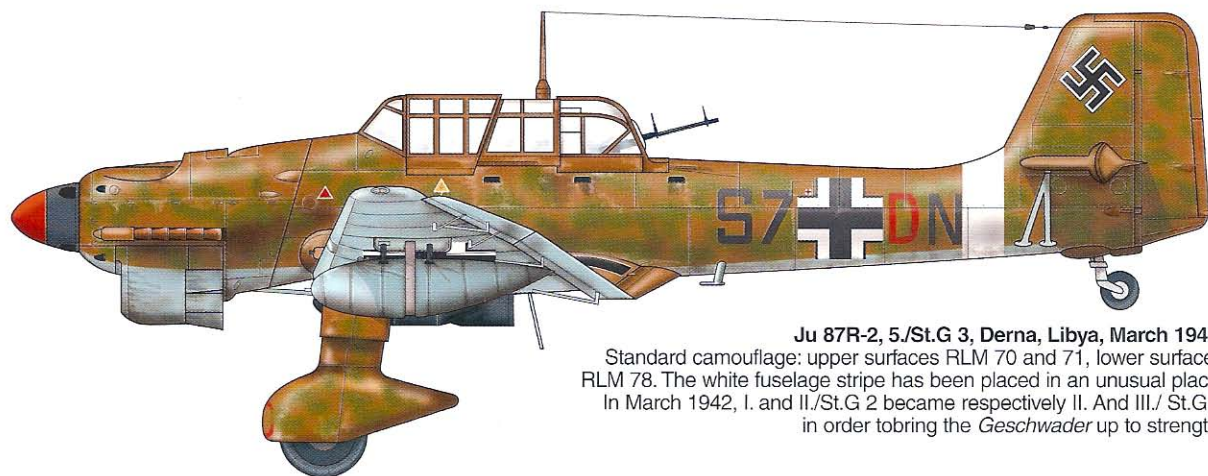


Ju 87R-2, 4./St.G 2, 'Immelmann', Libya, May 1941.
Standard camouflage: upper surfaces RLM 70 and 71, partly covered with *Italian giallo mimetico* (sand), lower surfaces RLM 65. The insignia painted on the engine cowlings is derived from the DAK (*Deutsches Afrika Korps*). The Stukas based in Libya took part in attacks, among others, against the British fleet evacuating troops from mainland Greece to Crete, then supported the Axis forces in North Africa.

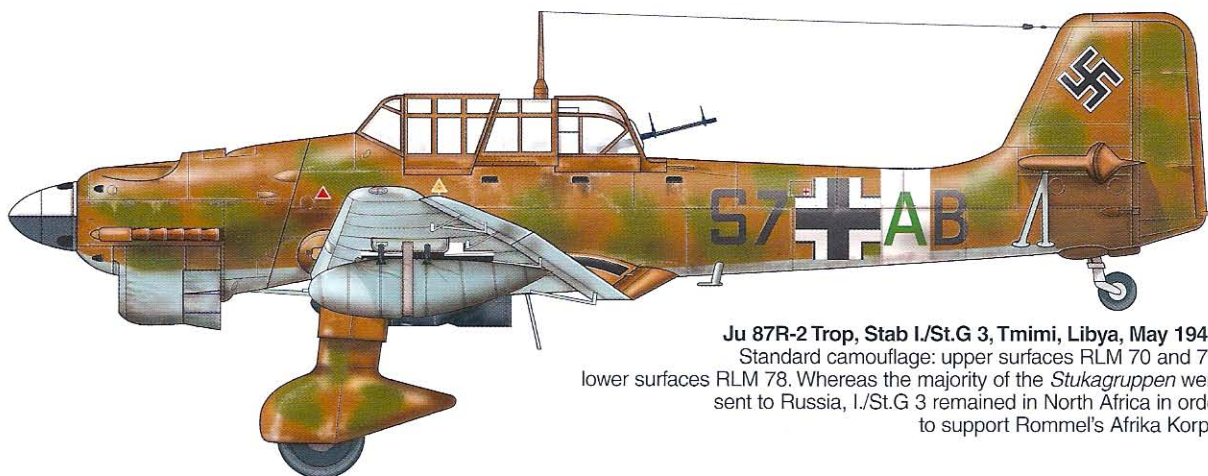
JUNKERS Ju 87R-2 and R-2 TROP



Ju 87R-2 Trop, 6./St.G 2, Tmimi, Libya, July 1941. Pilot: Hubert Pölz.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 78. This plane with its unbelievable decoration is without doubt the best-known and most-often reproduced Stuka. It seems that only one plane was painted thus and that it is possible that only the port side was decorated in this way.



Ju 87R-2, 5./St.G 3, Derna, Libya, March 1942.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 78. The white fuselage stripe has been placed in an unusual place. In March 1942, I. and II./St.G 2 became respectively II. and III./ St.G 3 in order to bring the *Geschwader* up to strength.



Ju 87R-2 Trop, Stab I./St.G 3, Tmimi, Libya, May 1942.
Standard camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 78. Whereas the majority of the *Stukagruppen* were sent to Russia, I./St.G 3 remained in North Africa in order to support Rommel's Afrika Korps.



The Ju 87C or the 'CÄSÄR' (CAESAR) SERIES

In 1938, the *Kriegsmarine* (the IIIrd Reich's Navy) was waiting impatiently for the 'Graf-Zeppelin' aircraft carrier to be launched. It was still in the shipyard in Hamburg.

But after the Polish Campaign in October 1939, when 85% of it was complete, the authorities decided to halt work and not finish it. It was deemed to be useless because it was too vulnerable: it was too easy to pin point in the confined areas of the Baltic, the North Sea and the Channel.

It had been decided that the aircraft carrier would have a squadron of dive-bombers on board. So the Admiralty created a special unit: the 4.(Stuka) der *TrägerGruppe* 186 (4 Squadron (Stuka) of carrier borne force 186, or 4.(St.)/Tr.Gr. 186) based at Kiel-Holtenau; it was initially equipped with the Ju 87A for pilot training.

With the development of the Ju 87B, Junkers began studying a 'naval' version, designated Ju 87C. The project incorporated all the technical specifications and equipment for catapulting from and operating on carriers: reinforced undercarriage, arrestor hook, rearward-folding wings.

Moreover, the undercarriage had to be jettisonable (using

Above.

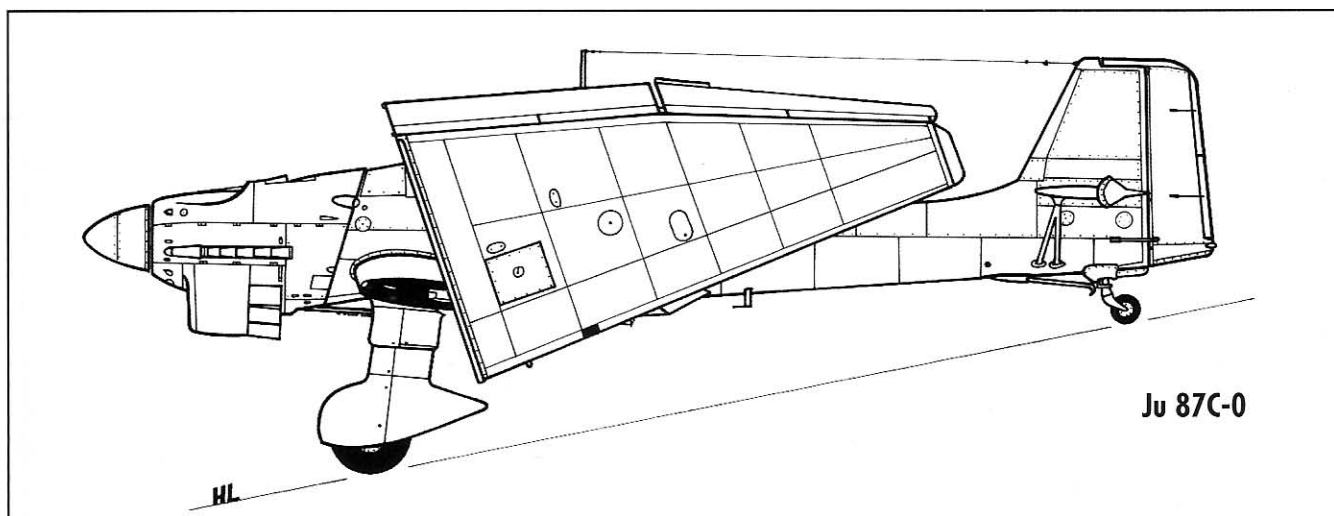
From this rather spectacular position, the special folding wing system of the C version intended to be used on the aircraft carrier *Graf Zeppelin* can be seen perfectly.

(Coll. H. Leonard)

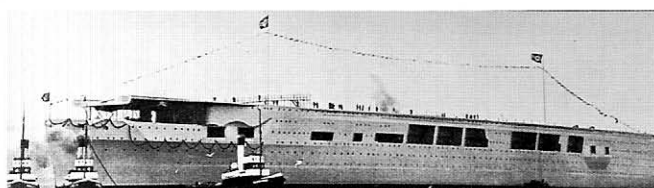
explosive nuts) in case of ditching; water survival equipment for the plane and the crew had to be included.

In March and April 1939, two Ju 87B-1s were taken from the first production series and transformed into naval prototypes. One of them became Ju 87.V11 (D-ILGM, the other being registered as D-IHFH). Ten pre-production Ju 87C-s were built at Tempelhof at the same time. They were 'navalised' and their manually-operated rearward folding wings were reduced from 45 ft. 6ins to 43 ft 6ins (13.8 m to 13.2 m).

They were transferred to 4. (St.)/Tr.Gr. 186 alongside the standard B-1s to be evaluated. As the aircraft carrier was not yet finished, they took part in the invasion of Poland. One of the C-0s was damaged by anti-aircraft fire during the attack on the port of Hel and forced to ditch. The pilot jettisoned the



Ju 87C-0



Above:
The German aircraft carrier 'Graf Zeppelin' photographed before WWII. It was never completed.
(Coll. H. Leonard)

Technical Specifications for the Ju 87C-1

Armament: 2 MG 17 wing-mounted machine guns One flexible MG 15 machine gun in the cockpit.
Bomb load: One 1102-lb (500-kg) or 551-lb (250-kg) bomb on the sling. Four 110-lb (50-kg) bombs on underwing bomb racks.

Wingspan: 43 ft 6 in (13.20 m).
Length: 36 ft 4 in (11 m).
Height: 12 ft 5 in (3.77 m).
Wing area: 340.86 sq. ft (31.3 m²).
Weight (unloaded): 6 380 lb (2 900 kg).

Unloaded equipped weight: 8 800 lb (4 000 kg)

Max. take-off weight: 10 648 lb to 11 748 lb (4 840 kg to 5 340 kg) depending on the bomb load and ammunition carried

Max. Speed: 185 mph (296 kph) at sea level. 193 mph (308 kph) at 3 300 ft (1 000m). 200 mph (321 kph) at 6 600 ft (2 000m). 215 mph (344 kph) at 16 500 ft (5 000m).

Dive speed (max.): 325 mph (520 kph) with dive brakes opened.

Climb rate to 3 300 ft (1 000m): 3 minutes to 6 600 ft (2 000m): 5.8 minutes to 13 200 ft (4 000m): 15.2 minutes.

Service Ceiling: 26 400 ft (8 000m)

Range: 335 miles (535 km) with bomb load. 500 miles (800 km) without load.

Endurance: 1h 55 min.

Two Stuka prototypes, the V-10 and V-11, were 'navalised' for the development of the carrier-borne version. On V-10 (registration number D-1HFFH, then TK + HD) shown on this photo, the wings could not be folded (they could on the V-11), but the catapult and arrestor hook systems were fitted.

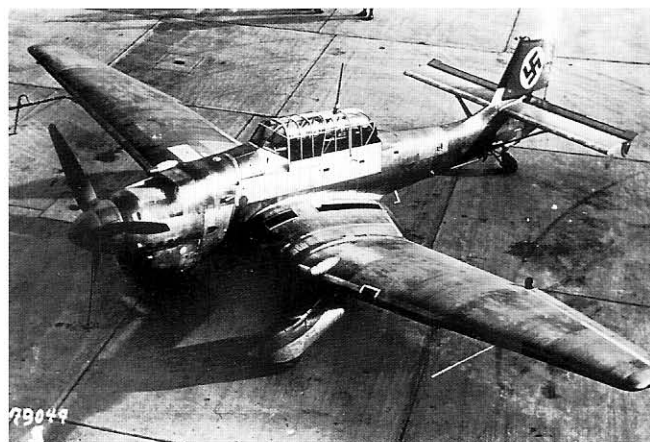
(Coll. A. Pelletier)

undercarriage, but finally managed to stay airborne long enough to reach his base where he did a 'perfect belly landing'.

The fact that the Graf Zeppelin was no longer to be finished sounded the knell for the 'Cäsar' (Caesar) series. The Ju 87Cs were retired from active service. Meanwhile, the Admiralty had ordered 170 machines, Ju 87C-1s based on the B-2, but only five were completed.

They had extra fuel tanks in the wings which were folded electrically and were equipped with hooks for carrying a torpedo under the fuselage.

They were returned to B-2 specification and were used until 1944 for testing various systems for floating and for catapulting from warships, and special weapons designed for naval warfare, including carrying a smooth bore recoil-less 80 mm canon under the belly, with a view to the aircraft carrier being eventually finished.





The Ju 87D or the 'DORA' SERIES

In 1940, Junkers started considering a new version of the Ju 87 which was better adapted to attacking heavily defended or fortified targets: the 'Dora' or Ju 87D. This new model benefited from the more powerful Jumo 211F, a more streamlined airframe, better armour, better armament, and a heavier offensive load including armour-piercing bombs.



Above.

A Ju 87D-5, probably before delivery to its unit and quite unarmed.

(DR)

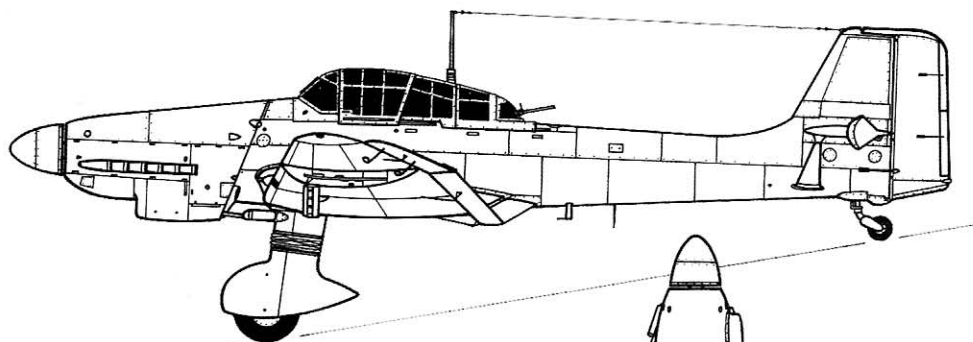
The first of the five prototypes was to have been ready for December 1940, but the unavailability of the Jumo 211F made Junkers use a 211J-1 (1 410 bhp/1 044kW at 4 500 m and a wooden VS11 three bladed propeller) to equip the Ju 87.V21,.V22 (for bombing trials with an offensive load of up to 3 968lbs - 1 800kgs), .V23 (for trials with strengthened undercarriage), .V24 and .V25 (for tropical testing). With this engine, the front of the aircraft was lengthened, the oil radiator was placed in the intake under the nose and two water radiators were placed under the wing centre section.

The exhaust pipes were refined to increase the propulsion effect and the compressor air intake was enlarged and fitted further forward. The canopy was redesigned to reduce drag and included an armoured GSL-K 81 post with two *Zwilling* (Twins) 7.9 mm MG 81Z machine guns (the first examples were fitted with two MG 17s). The pilot was protected by 4- to 10-mm thick armour plating on the floor, the sides, the front and the seats.

Opposite.

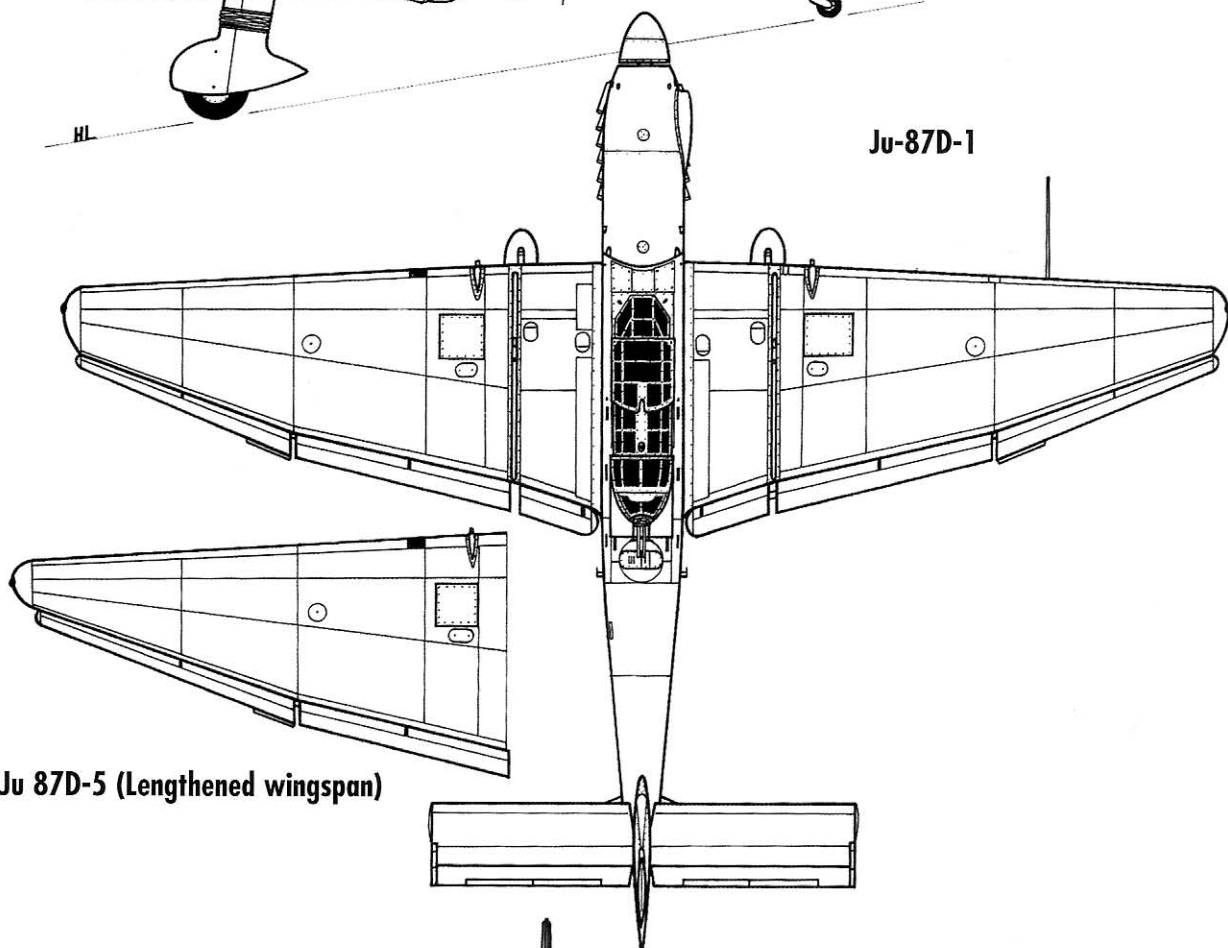
No wheel spats for this Ju 87D-1, but the sirens have been fitted, although they were not used very much. The crank handle placed over the port side dive brake, is the inertia starter for the engine.

(© ECPAD/France)

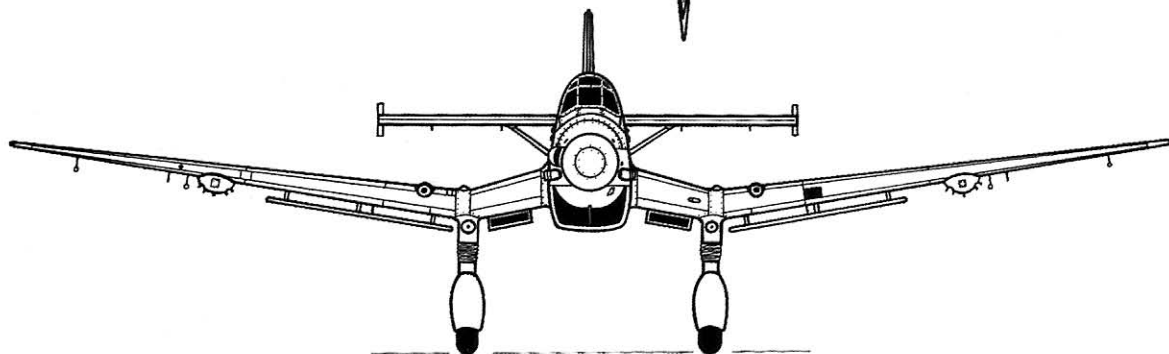


HL

Ju-87D-1



Ju 87D-5 (Lengthened wingspan)





Above.

A Ju 87D-1 from I./St.G2 'Immelmann' (whose insignia is quite clearly visible in front of the windshield) in the middle of a Russian winter. An individual number has been painted on the wheel spats. The scarcely-visible plane in the background has been given winter camouflage.

(© ECPAD/France)

The undercarriage legs were shortened and reinforced to take the additional bomb loads, with leather gaiters covering the length of the shock absorber travel. The V-shaped tailplane struts were replaced by two profiled ones.

The underbelly sling was entirely redesigned to accommodate the increasing variety of loads: one 2 205-lb (1000 kg) fragmentation or one 3 086-lb (1 400-kg) armour-piercing bomb. The same went for the underwing bomb launchers: 110 lb to 1 102 lb bombs. Other loads carried were: incendiary bombs or anti-personnel bombs in containers, *Waffenbehälter* containing three pairs of MG 81Z machine guns firing downwards, smoke-screen or napalm canisters, etc., or two drop tanks; with these the 'Dora' could fly 1 500 kms. It accommodated all the tropical equipment that was available.

The Ju 87D was produced from the end of spring 1941 onwards even though the German authorities had already decided to stop production of the 'Junkers Stuka'. But its potential successors were not ready and at that moment, Hitler decided to change up a gear in his running of WWII by attacking the Soviet Union. From then on, although Junkers' 'Stuka' was showing its age, renewed interest was shown in it and production schedules were speeded up.

56 The first version of the Dora was Ju 87D-1, which concluded

the B-2 series. There were defects in the new undercarriage and the first examples were fitted with B-2 landing gear while waiting for modifications to be carried out. The take-off weight was restricted to 12 760 lb (5 800 kg). The D-1s were sent to North Africa and the Russian Front in January 1942 where they gradually replaced the Ju 87Bs and Rs.

The windshield was armoured (50 mm thick) as were the vital parts around the cockpit. In all 592 machines were built in 1942, and almost all were lost in Russia and North Africa. The Ju 87D-2 was not strictly speaking a true version. It consisted of the last D-1 production models which were adapted to tow gliders. The tail structure was reinforced and the tailwheel was redesigned.

The enemy's new fighters, whether in USSR or in North Africa, devastated the Stuka formations which now had to be escorted at all times. Their vulnerability caused them to be gradually transformed into ground attack aircraft. Junkers brought out the Ju 87D-3 for this task and this was the first Schlachtflugzeug of the series.

It kept the dive brakes and the armour for its engine, radiator, underside and cockpit was reinforced. The sirens were removed after the first D-3s came out and this was the only real outside difference from the D-1 with which it shared the production lines. The machines reached their Luftwaffe units from May 1942 onwards, but also with the Romanian forces in USSR.

Their offensive load was more often than not the wooden container which broke up just after it was dropped, releasing its 92 4.4-lb (2-kg) SC 2 anti-personnel bombs over a very widespread area. The wheel spats were often removed during operations.

In 1944, a Junkers Ju 87 D-3 was tested with two enormous

Technical specifications for the Ju 87D-1

Armament: Two fixed 7.9 mm MG 17 machine guns. Twin 7.9 mm MG 81Z machine guns in rear cockpit.

Optional armament: Two underwing containers holding three MG 81Z machine guns (six machine guns in effect), or two 20 mm MG FF cannons.

Bomb load: One 3 960-lb (1 800 kg) bomb for close range missions, or one 1 102-lb (500-kg) or 551 -lb (250-kg) plus four 110-lb (50-kg) bombs underwing, or two containers holding 92 4.4 lb (2-kg) anti-personnel bombs.

Wingspan: 44 ft 9 in (13.60 m)

Length: 37 ft 11 in (11.50 m)

Height: 12 ft 9 in (3.89 m)

Wing area: 347.39 sq. ft. (31.9 m²)

Weight (unloaded): 8 580 lb (3 900 kg)

Normal Take-off weight: 12 854 lb (5 842 kg).

Max. take-off weight: 4 520 lb (6 600 kg)

Max. Speed: 256 mph (410 kph) with a loaded weight of 12 573 lb (5 715 kg)

Cruising speed: 199 mph (318 kph) at 16 830 ft (5 100 m) with 72% power.

Economic speed: 115 mph (185 kph) with a 3 960-lb (1 800-kg) bomb load.

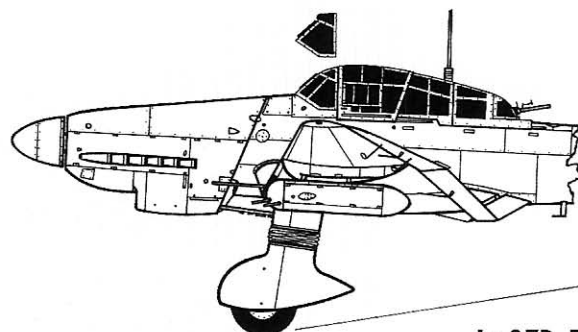
Landing speed: 69 mph (110 kph)

Climb rate to 16 500 ft (5 000m): 19.8 minutes.

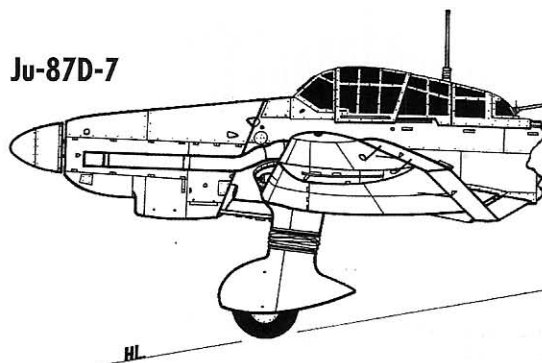
Service Ceiling: 24 090 ft (7 300 m).

Range: 512 miles (820 km) at 13 530 ft (4 100 m) (normal).

960 miles (1 535 km) at 16 830 ft (5 100 m) (maximum).



Ju-87D-5



Ju-87D-7

Below.

A Ju 87D-1 with its upper surfaces daubed entirely white, during a winter on the Russian front.

Only the nationality markings, the yellow fuselage stripe and the tactical code have been kept.

As was required by the regulations, the last two letters of the fuselage have been copied under the wing tips.

(© ECPAD/France)





Above.

A Ju 87D-3 returning from a mission. The lower part of the undercarriage fairings have been taken off; this was frequently done when Stukas operated from improvised airfields to prevent the aircraft nosing over and mud gathering in the spats.
(© ECPAD/France)

Specifications for the Ju 87D-5 (D-8 in brackets)

Armament: Two fixed 20 mm MG 151 cannon.

Twin MG 81Z machine guns in cockpit rear.

Bomb load: Reduced to one 1 102 lb (500-kg) bomb on underbelly sling, plus various containers holding anti-personnel or incendiary bombs.

Wingspan: 49 ft 5 in (14.97 m).

Length: 37 ft 11 in (11.50 m).

Height: 12 ft 9 in (3.89 m).

Wing area: 366.77 sq. ft (33.68 m²).

Unloaded Weight: 8 668 lb (3 940 kg), (8 664 lb (3 938 kg).

Max. take-off weight: 15 070 lb

(6 580 kg), (14 534 lb (6 607 kg).

Max. Speed: 250 mph (400 kph) at 13 530 ft (4 100 m) with a weight of 12 760 lb (5 800 kg), (250 mph (400 kph) at 15 510 ft (4 700 m).

199 mph (318 kph) at 16 500 ft (5 000m), (194 mph (310 kph) at 16 500 ft (5 000m).

Cruising speed: 187 mph (300 kph) at 16 830 ft (5 100 m) at 72% power.

Landing speed: 69 mph (110 kph).

Climb rate to 14 850 ft (4 500 m): 19 minutes.

Service Ceiling: 24 750 ft (7 500 m).

Range: 956 miles (1 530 km) to 1187 miles (1 900 km) (maximum).

partially-glazed streamlined pods which were attached to the upper wing surfaces out board of the undercarriage.

The machine kept only the twin rear-mounted MG 81Z machine guns. Two men sitting in tandem could fit in each of the nacelles which were then dropped in flight and lowered to the ground by parachutes which opened automatically.

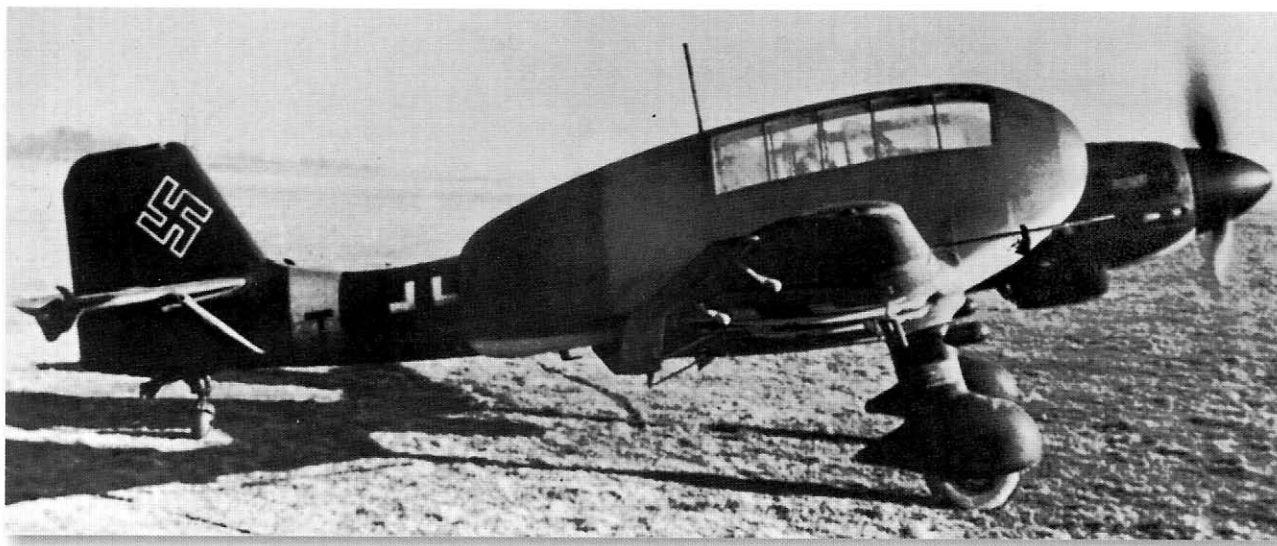
Trials were carried out at Stuttgart but no report mentions the pods being released in flight from the unofficially designated Ju 87-3Ag (Ag for *Agentenflugzeug*, translated as 'Agent plane'); this was no doubt due to the difficulty in releasing the pods simultaneously.

Below.

The Ju 87D-2 was in fact a D-1, modified so that it could tow DFS 230 gliders. A hook was fitted under the tail and the tailwheel was modified a little.

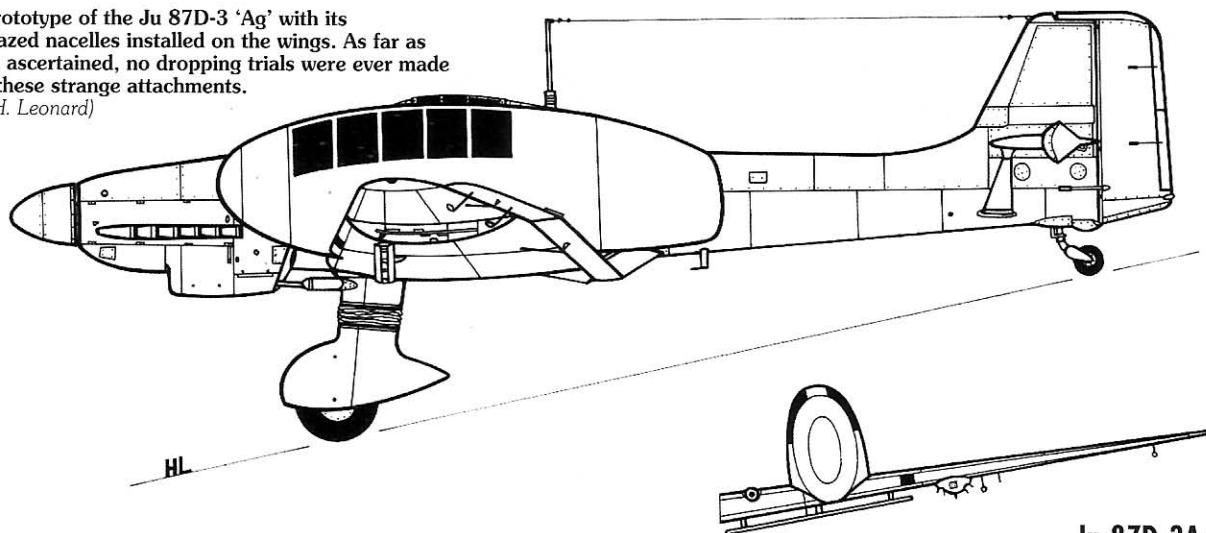
(DR)





The prototype of the Ju 87D-3 'Ag' with its two glazed nacelles installed on the wings. As far as can be ascertained, no dropping trials were ever made using these strange attachments.

(Coll. H. Leonard)



Ju-87D-3Ag

Ju-87D-3Ag

(Front view of the wing nacelle)

In 1942 several Ju 87D-1 and D-3s were modified to carry a 5 973-lb (2 715 kg) LT F5B torpedo on a special sling. Re-designated Ju 87D-4, they underwent trials which were, however, inconclusive and the machines were converted back to their original standards (some sources mention only one example being thus adapted) as their range was too limited and their mass too great.

The airframe of the D-5 was similar to that of the D-3 except for the wingspan and wing surface which had been increased to reduce the loading. The undercarriage was jettisonable in

emergencies and its wing-mounted machine guns were replaced by two Mauser MG 151 long-barrelled cannon. The underbelly sling was modified and the windshield and side panes of the cockpit were flat and armoured. As they were no longer used, the dive brakes were removed. The D-5s appeared on the Russian front in July 1943 during the biggest tank battle in the Kursk salient.

On 5 October the Luftwaffe decided to stop the dive-bombing missions and only use the Stukas for ground-attack. The units were re-christened *Schlachtgeschwadern* (ground attack



Above.

A Ju 87D-7 used for night harassment, as shown by the long flame damper tubes over the exhaust. This plane was captured by the Allies and has a British roundel. The tailwheel is hardly visible.

(DR)

Below.

Two Ju 87D-5s taking off in the middle of a Russian winter. In order to blend into the snowy countryside, great care has been taken with the camouflage: a very tight mottled effect has been painted onto the upper surfaces. The D-5 version can be told from the D-3 by its wing, which was longer and more pointed, and by its two long-barrelled 20-mm MG 151 cannon in the wings.

(ECPA)

squadrons), and were used exclusively in the ground support and in the anti-tank roles.

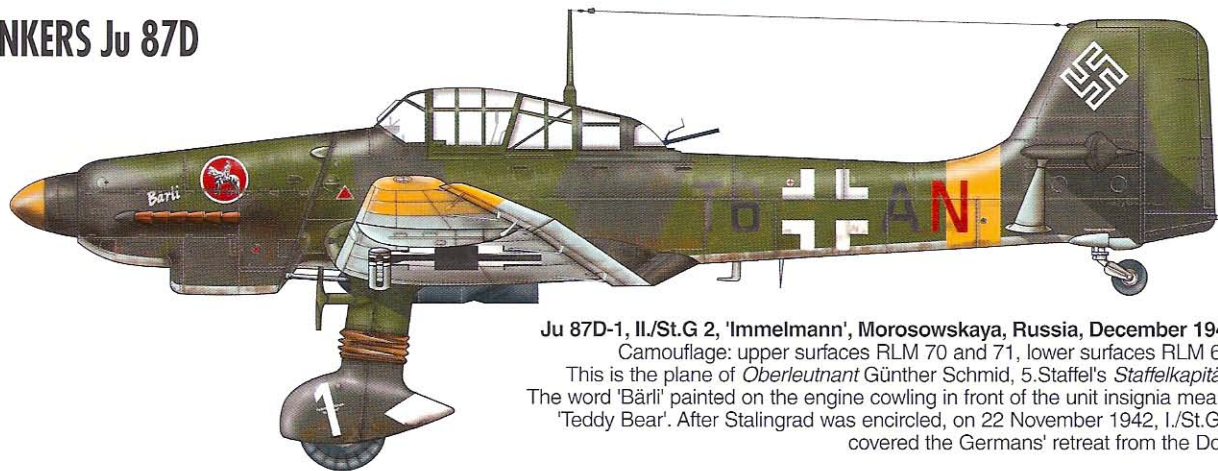
The Ju 87D-5 was the last production dive-bomber version... only to be used as a ground attack aircraft, and in night operations. Thus some 300 D-3s and D-5s were recycled in the Hamburg-Harburg, Metalwerk Niedersachsen, Brinkmann and Mergell-Menibum factories at the end of 1943 and the beginning of 1944.

They were powered by a Jumo 211P rated at 1 500 bhp (1 105 kW) equipped with long flame dampers on the exhaust pipes. The 'recycled' D-3 and D-5s were respectively re-designated Ju 87D-7 and Ju 87D-8, Ju 87D-6 being a project which did not come to anything. They were used by the night assault units in 1944 against the Soviets, in Italy and in the West.

When 'Dora' production ceased in the summer of 1944, 771 out of the 1 178 machines ordered had been produced by the Bremen factory and 'others' by that at Tempelhof (the exact figure is unknown).

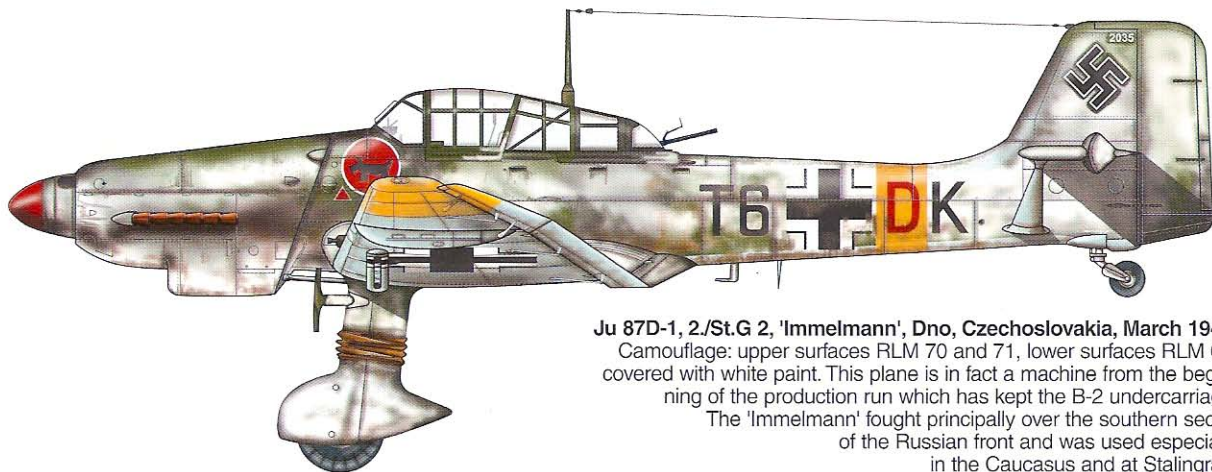


JUNKERS Ju 87D



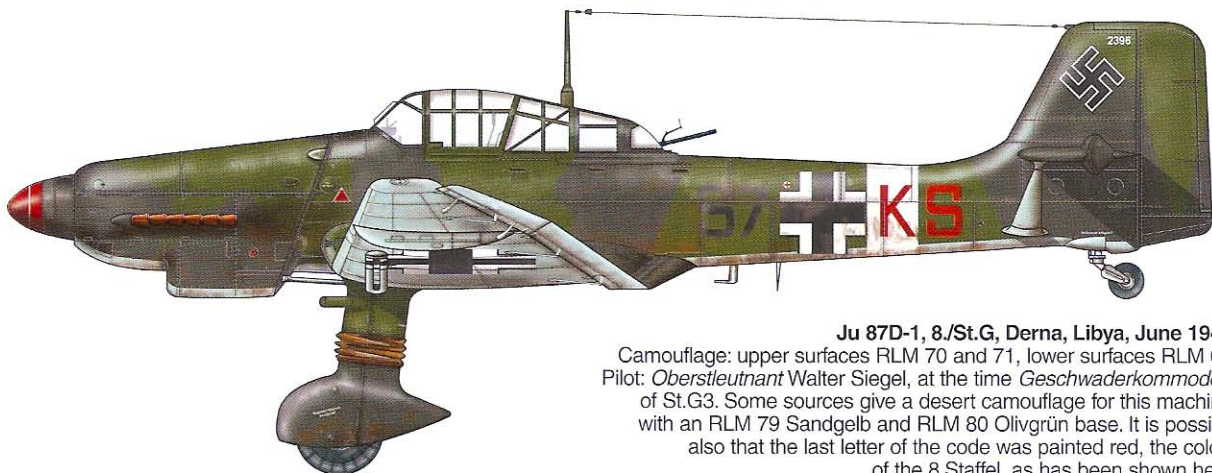
Ju 87D-1, II./St.G 2, 'Immelmann', Morosowskaya, Russia, December 1942

Camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. This is the plane of *Oberleutnant* Günther Schmid, 5.Staffel's *Staffelkapitän*. The word 'Bärli' painted on the engine cowlings in front of the unit insignia means 'Teddy Bear'. After Stalingrad was encircled, on 22 November 1942, I./St.G 2 covered the Germans' retreat from the Don.



Ju 87D-1, 2./St.G 2, 'Immelmann', Dno, Czechoslovakia, March 1942.

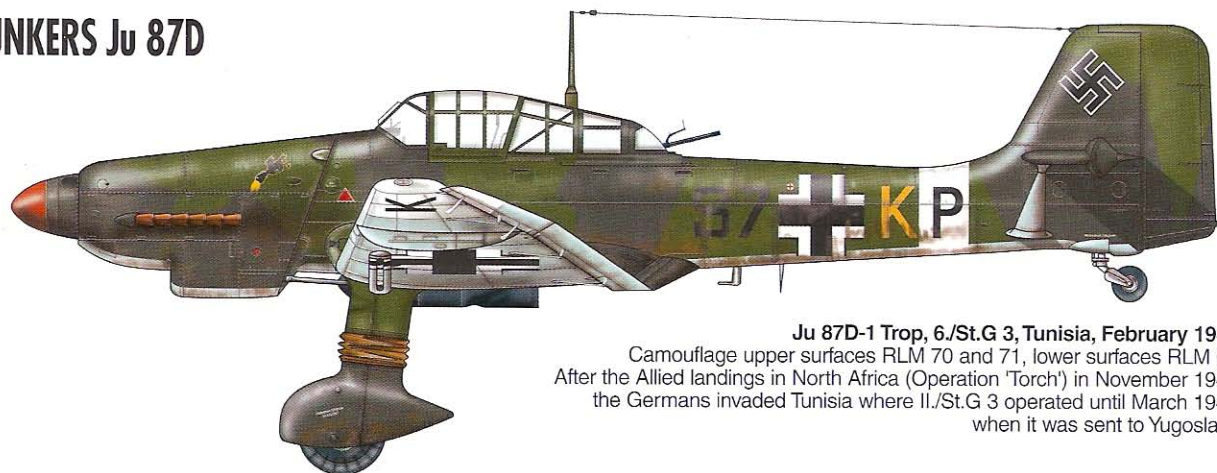
Camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65, covered with white paint. This plane is in fact a machine from the beginning of the production run which has kept the B-2 undercarriage. The 'Immelmann' fought principally over the southern sector of the Russian front and was used especially in the Caucasus and at Stalingrad.



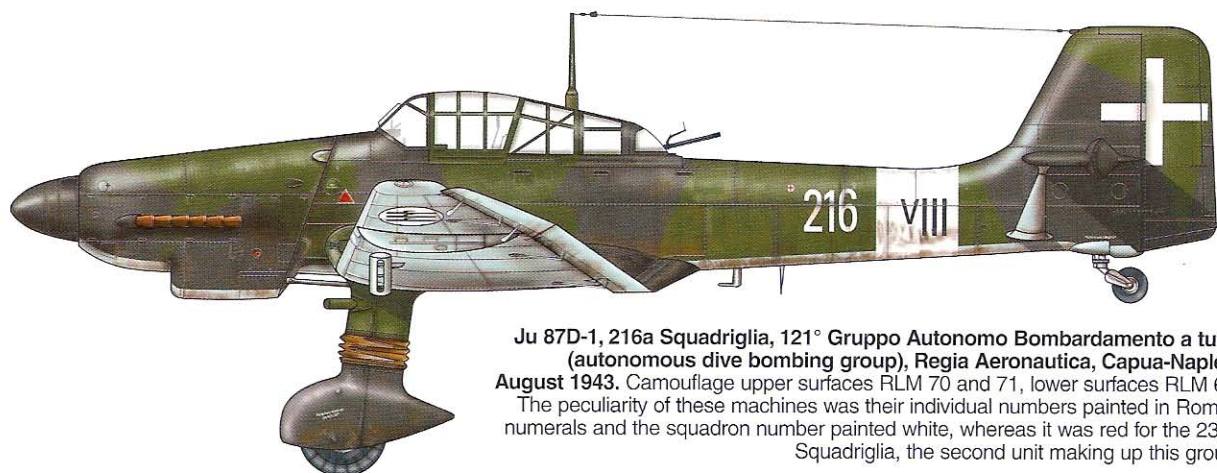
Ju 87D-1, 8./St.G, Derna, Libya, June 1942.

Camouflage: upper surfaces RLM 70 and 71, lower surfaces RLM 65. Pilot: *Oberstleutnant* Walter Siegel, at the time *Geschwaderkommodore* of St.G3. Some sources give a desert camouflage for this machine, with an RLM 79 Sandgelb and RLM 80 Olivgrün base. It is possible also that the last letter of the code was painted red, the colour of the 8.Staffel, as has been shown here.

JUNKERS Ju 87D



Ju 87D-1 Trop, 6/St.G 3, Tunisia, February 1943.
Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65.
After the Allied landings in North Africa (Operation 'Torch') in November 1942, the Germans invaded Tunisia where II./St.G 3 operated until March 1943, when it was sent to Yugoslavia



Ju 87D-1, 216a Squadriglia, 121° Gruppo Autonomo Bombardamento a tuffo (autonomous dive bombing group), Regia Aeronautica, Capua-Naples, August 1943. Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65.
The peculiarity of these machines was their individual numbers painted in Roman numerals and the squadron number painted white, whereas it was red for the 237a Squadriglia, the second unit making up this group.



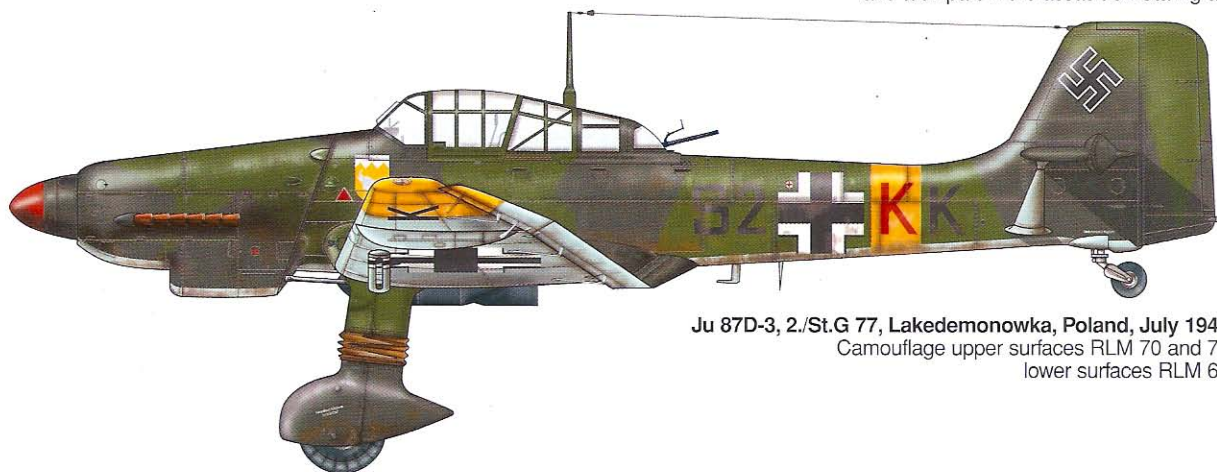
Ju 87D-1, Stab I./St.G 2, 'Immelmann', Nikolayev, Ukraine, January 1943
Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65, covered over with white paint which has rubbed off in some areas.
The undercarriage on this aircraft is that of a B-2.

JUNKERS Ju 87D



Ju 87D-2, Stab I./St.G 2, 'Immelmann', Karpowka-West, Russia, October 1942.

Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. The D-2 was not a real version but merely an end-of-series D-1 intended for towing gliders, with a reinforced tail and modified tailwheel. Note that the bottom of the insignia has been painted green, the colour of the Stab (headquarters), taken up again on the tip of the propeller boss. From the summer of 1942, I./St.G 2 was given the task of backing up the Wehrmacht units in the Voronej-Rostov region and took part in the assault on Stalingrad.



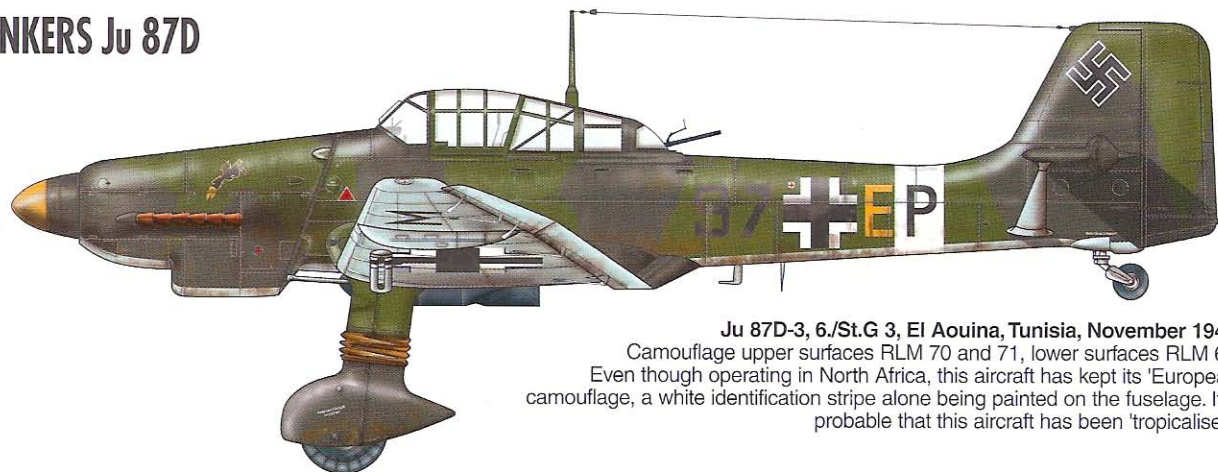
Ju 87D-3, 2./St.G 77, Lakedemonowka, Poland, July 1944.

Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65.



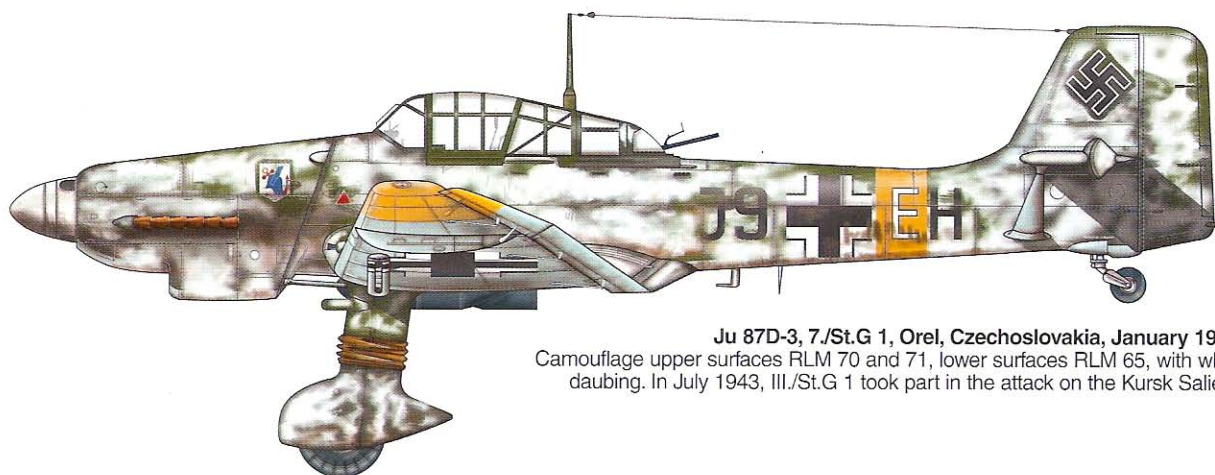
Ju 87D-3, 4./St.G 2, 'Immelmann', Russian Front, autumn 1944. Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. The plane has unusual markings, the fuselage crosses and/or the swastika being outlined in white whereas the individual letter only is painted.

JUNKERS Ju 87D



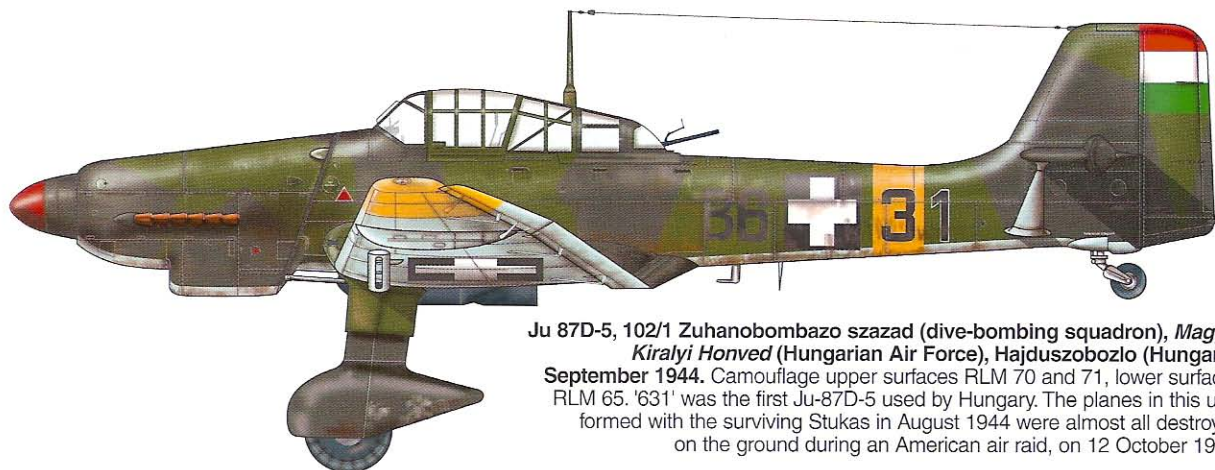
Ju 87D-3, 6./St.G 3, El Aouina, Tunisia, November 1942.

Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. Even though operating in North Africa, this aircraft has kept its 'European' camouflage, a white identification stripe alone being painted on the fuselage. It is probable that this aircraft has been 'tropicalised.'



Ju 87D-3, 7./St.G 1, Orel, Czechoslovakia, January 1943.

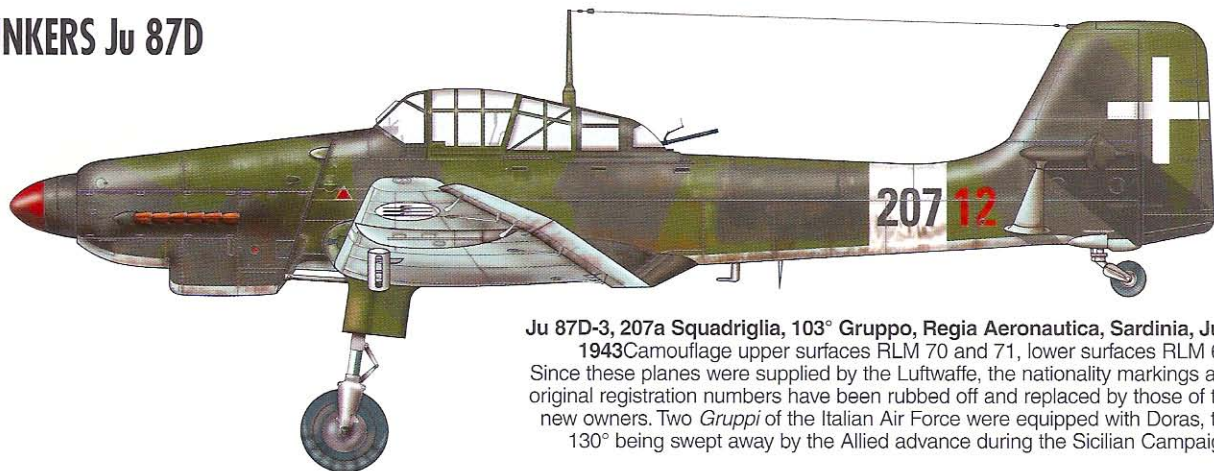
Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65, with white daubing. In July 1943, III./St.G 1 took part in the attack on the Kursk Salient.



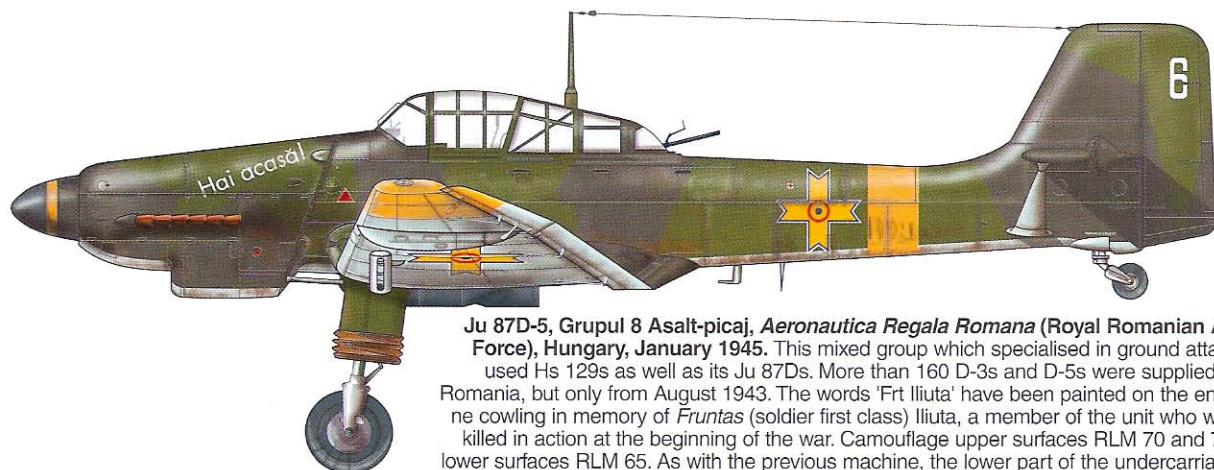
Ju 87D-5, 102/1 Zuhanobombazo szazad (dive-bombing squadron), Magyar Kiralyi Honved (Hungarian Air Force), Hajdusobozlo (Hungary), September 1944.

Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. '631' was the first Ju-87D-5 used by Hungary. The planes in this unit, formed with the surviving Stukas in August 1944 were almost all destroyed on the ground during an American air raid, on 12 October 1944.

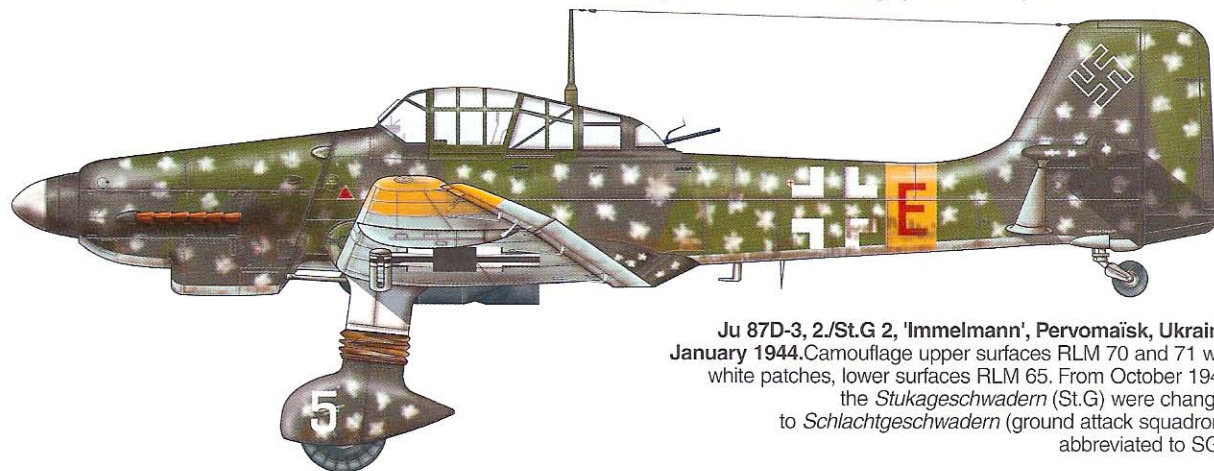
JUNKERS Ju 87D



Ju 87D-3, 207a Squadriglia, 103° Gruppo, Regia Aeronautica, Sardinia, July 1943 Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. Since these planes were supplied by the Luftwaffe, the nationality markings and original registration numbers have been rubbed off and replaced by those of the new owners. Two *Gruppi* of the Italian Air Force were equipped with Doras, the 130° being swept away by the Allied advance during the Sicilian Campaign.

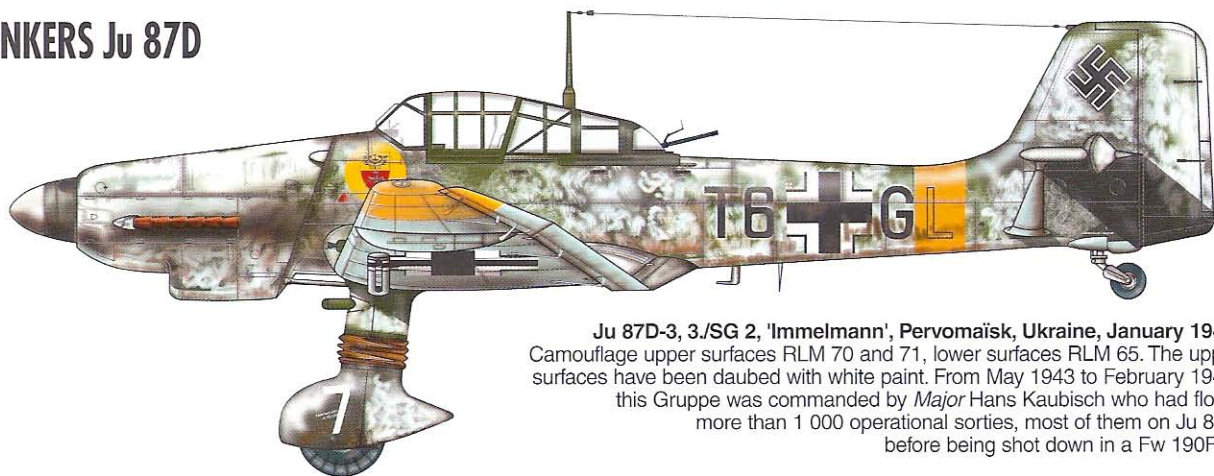


Ju 87D-5, Grupul 8 Asalt-picaj, Aeronautica Regala Romana (Royal Romanian Air Force), Hungary, January 1945. This mixed group which specialised in ground attack used Hs 129s as well as its Ju 87Ds. More than 160 D-3s and D-5s were supplied to Romania, but only from August 1943. The words 'Frt Iliuta' have been painted on the engine cowling in memory of *Frintas* (soldier first class) Iliuta, a member of the unit who was killed in action at the beginning of the war. Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. As with the previous machine, the lower part of the undercarriage has been dismantled to prevent mud from building up inside the spats.

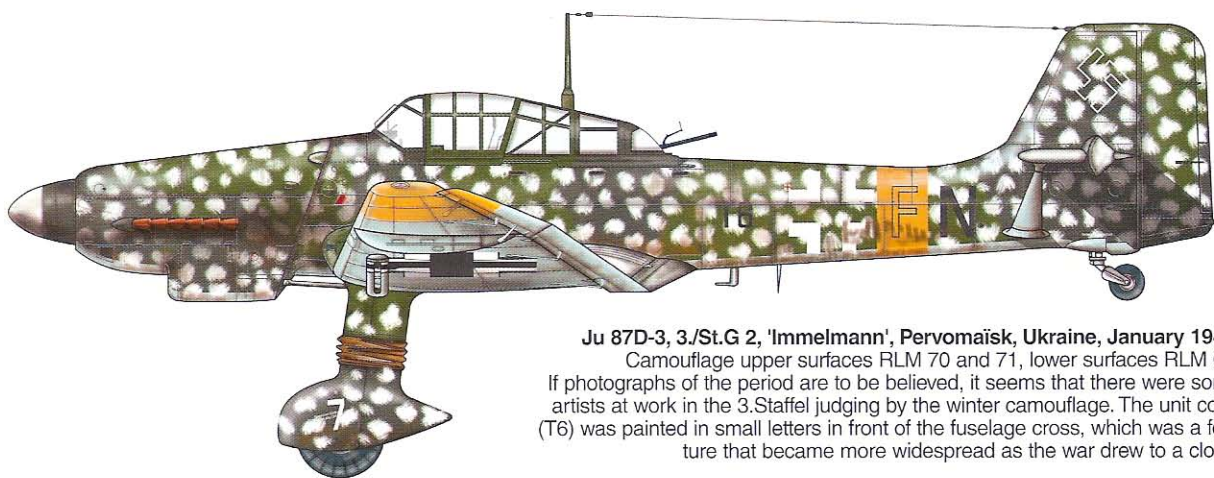


Ju 87D-3, 2./St.G 2, 'Immelmann', Pervomaïsk, Ukraine, January 1944. Camouflage upper surfaces RLM 70 and 71 with white patches, lower surfaces RLM 65. From October 1943, the *Stukageschwadern* (St.G) were changed to *Schlachtgeschwadern* (ground attack squadrons, abbreviated to SG.).

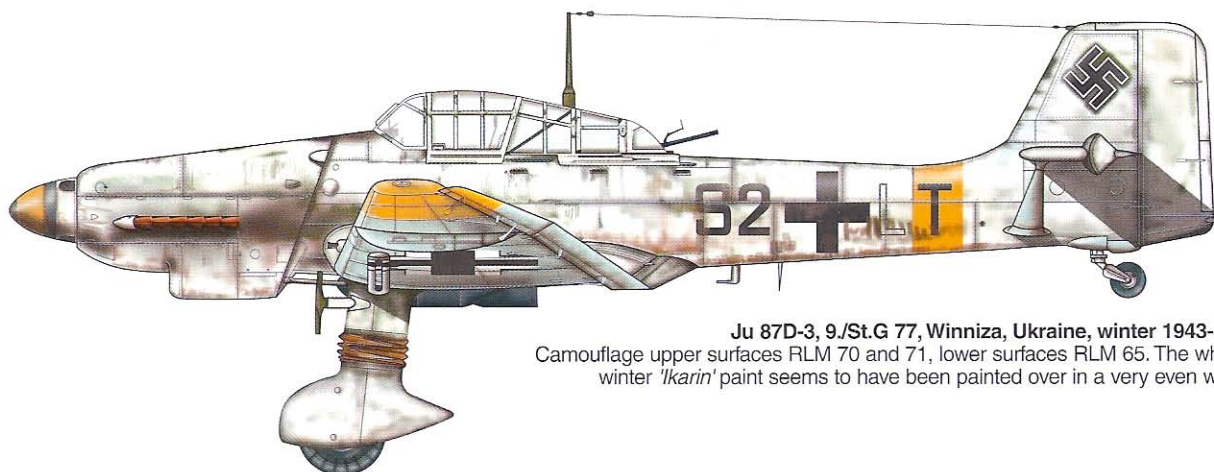
JUNKERS Ju 87D



Ju 87D-3, 3./SG 2, 'Immelmann', Pervomaïsk, Ukraine, January 1944.
Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. The upper surfaces have been daubed with white paint. From May 1943 to February 1945, this Gruppe was commanded by *Major* Hans Kaubisch who had flown more than 1 000 operational sorties, most of them on Ju 87s, before being shot down in a Fw 190F-8.

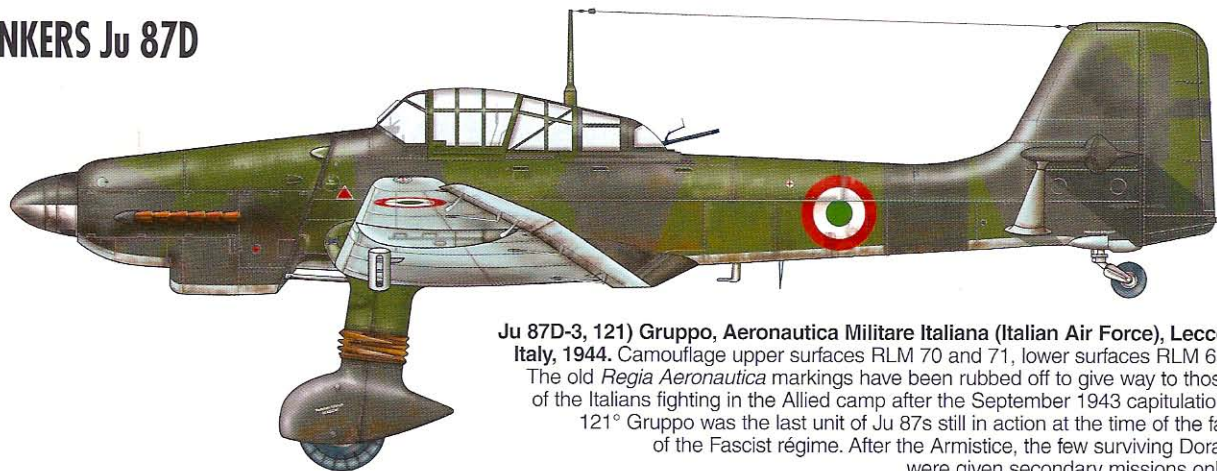


Ju 87D-3, 3./St.G 2, 'Immelmann', Pervomaïsk, Ukraine, January 1944.
Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. If photographs of the period are to be believed, it seems that there were some artists at work in the 3.Staffel judging by the winter camouflage. The unit code (T6) was painted in small letters in front of the fuselage cross, which was a feature that became more widespread as the war drew to a close.

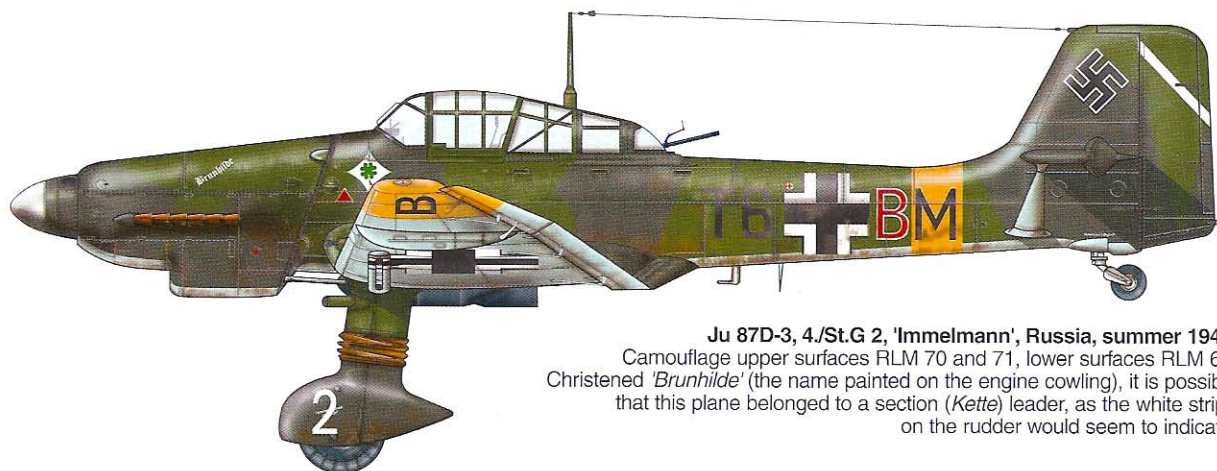


Ju 87D-3, 9./St.G 77, Winniza, Ukraine, winter 1943-44.
Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. The white winter 'Ikarin' paint seems to have been painted over in a very even way.

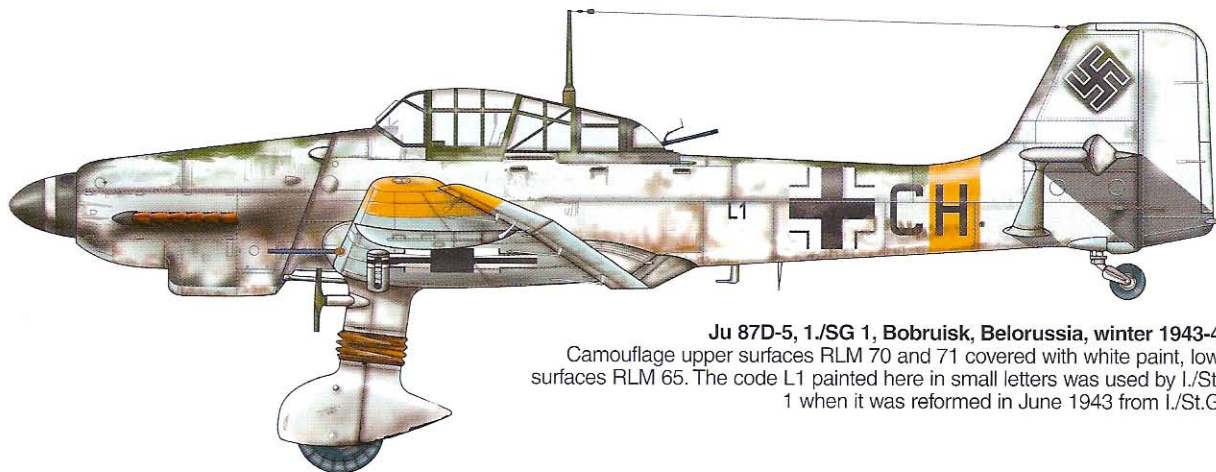
JUNKERS Ju 87D



Ju 87D-3, 121° Gruppo, Aeronautica Militare Italiana (Italian Air Force), Lecce, Italy, 1944. Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. The old *Regia Aeronautica* markings have been rubbed off to give way to those of the Italians fighting in the Allied camp after the September 1943 capitulation. 121° Gruppo was the last unit of Ju 87s still in action at the time of the fall of the Fascist régime. After the Armistice, the few surviving Doras were given secondary missions only.

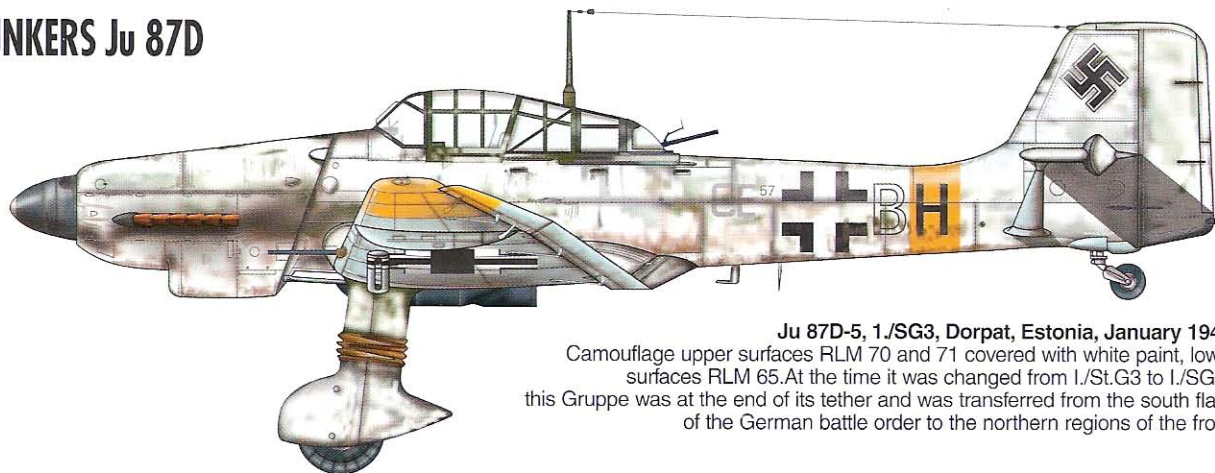


Ju 87D-3, 4./St.G 2, 'Immelmann', Russia, summer 1942. Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. Christened '*Brunhilde*' (the name painted on the engine cowling), it is possible that this plane belonged to a section (*Kette*) leader, as the white stripe on the rudder would seem to indicate.



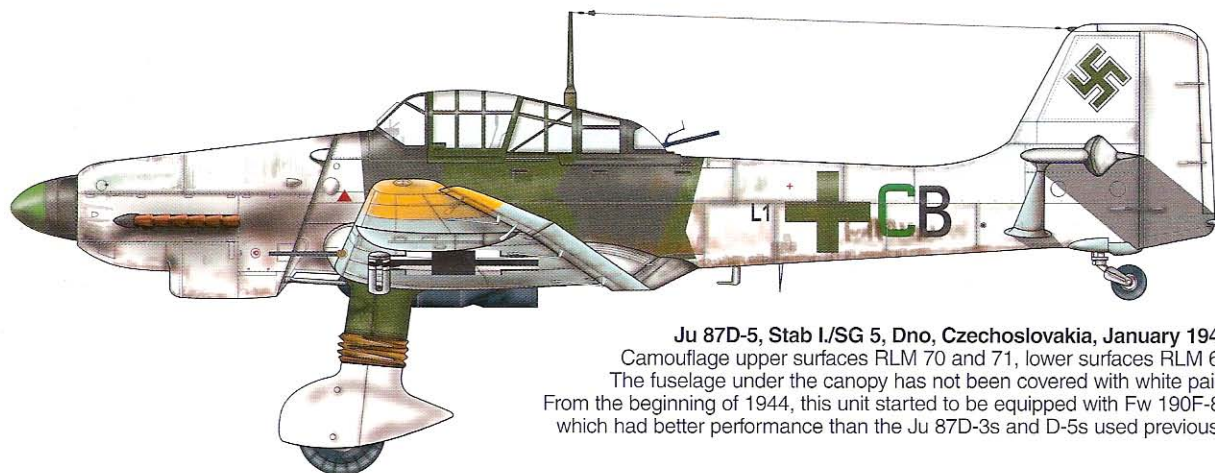
Ju 87D-5, 1./SG 1, Bobruisk, Belorussia, winter 1943-44. Camouflage upper surfaces RLM 70 and 71 covered with white paint, lower surfaces RLM 65. The code L1 painted here in small letters was used by 1./St.G 1 when it was reformed in June 1943 from 1./St.G5.

JUNKERS Ju 87D



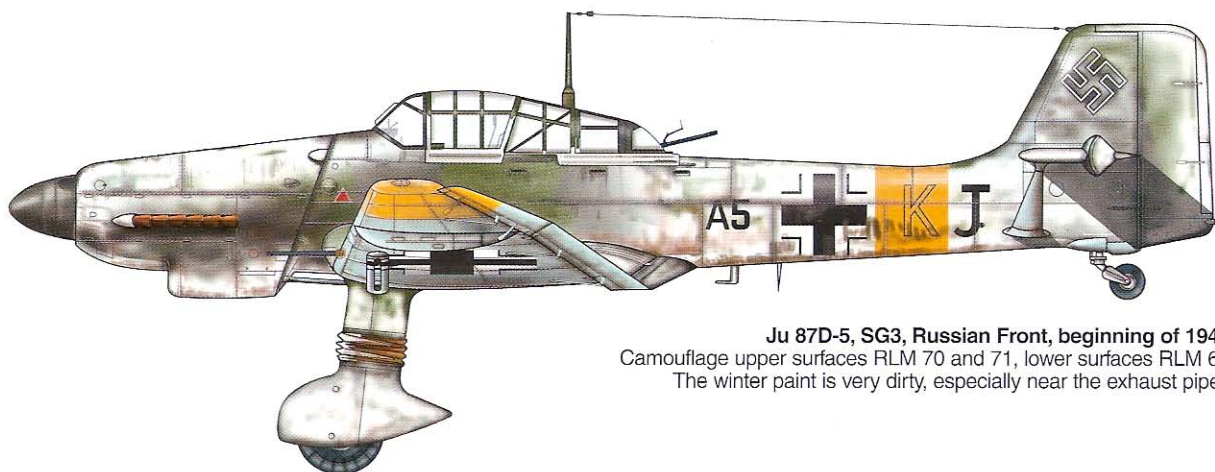
Ju 87D-5, 1/SG3, Dorpat, Estonia, January 1944.

Camouflage upper surfaces RLM 70 and 71 covered with white paint, lower surfaces RLM 65. At the time it was changed from I./St.G3 to I./SG 3, this Gruppe was at the end of its tether and was transferred from the south flank of the German battle order to the northern regions of the front.



Ju 87D-5, Stab I./SG 5, Dno, Czechoslovakia, January 1944.

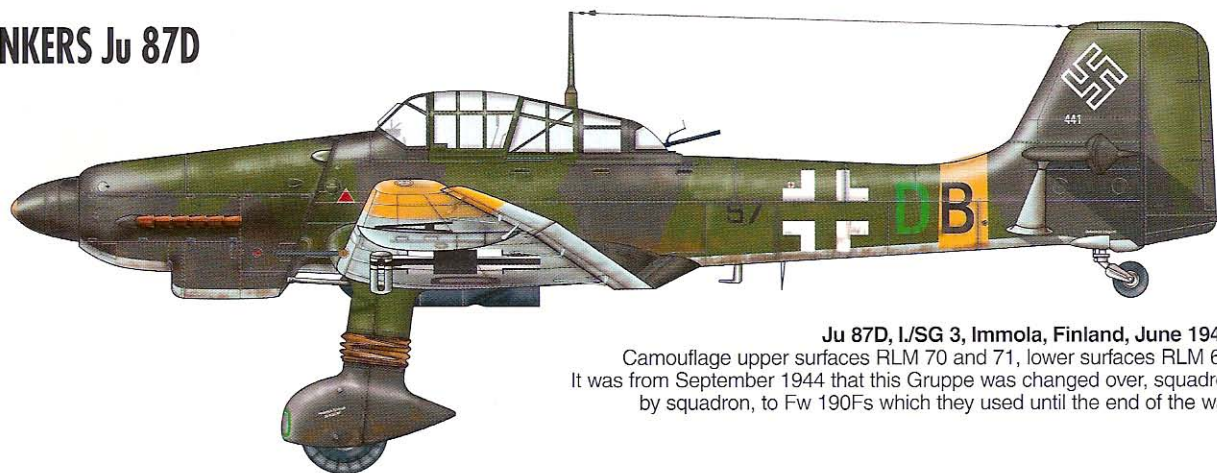
Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. The fuselage under the canopy has not been covered with white paint. From the beginning of 1944, this unit started to be equipped with Fw 190F-8s, which had better performance than the Ju 87D-3s and D-5s used previously.



Ju 87D-5, SG3, Russian Front, beginning of 1944.

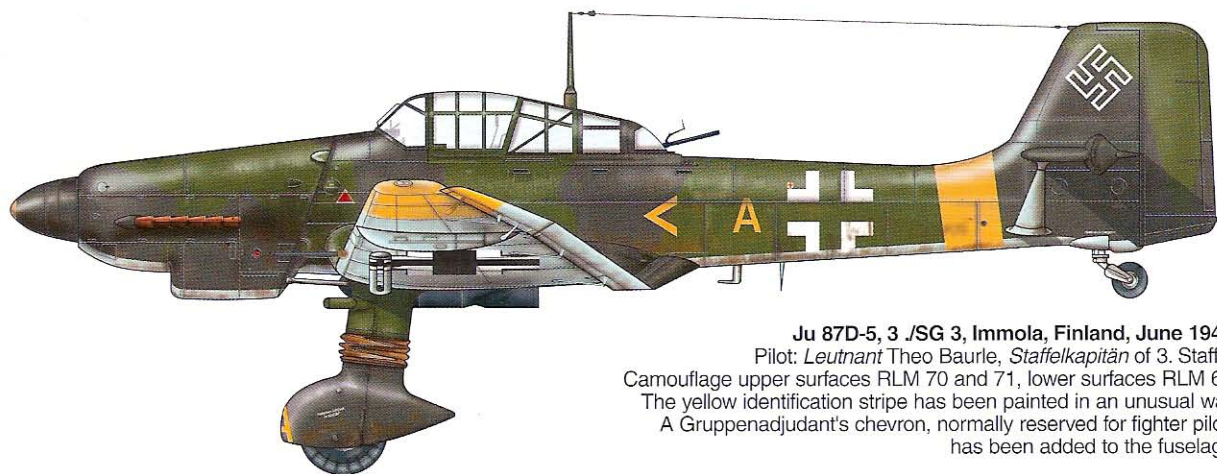
Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. The winter paint is very dirty, especially near the exhaust pipes.

JUNKERS Ju 87D



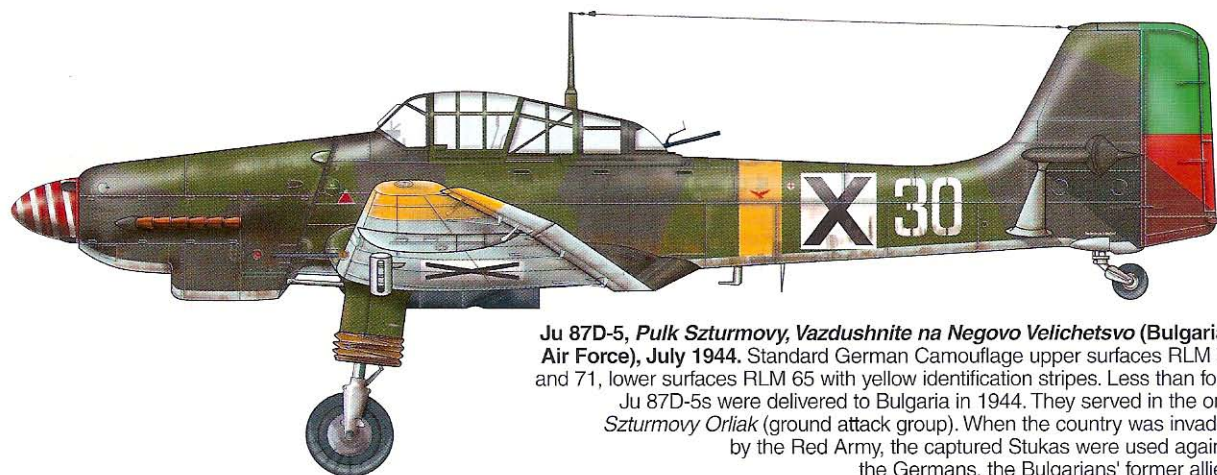
Ju 87D, I/SG 3, Immola, Finland, June 1944.

Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. It was from September 1944 that this Gruppe was changed over, squadron by squadron, to Fw 190Fs which they used until the end of the war.



Ju 87D-5, 3 /SG 3, Immola, Finland, June 1944.

Pilot: *Leutnant* Theo Baurle, *Staffelkapitän* of 3. Staffel. Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. The yellow identification stripe has been painted in an unusual way. A Gruppenadjutant's chevron, normally reserved for fighter pilots has been added to the fuselage.



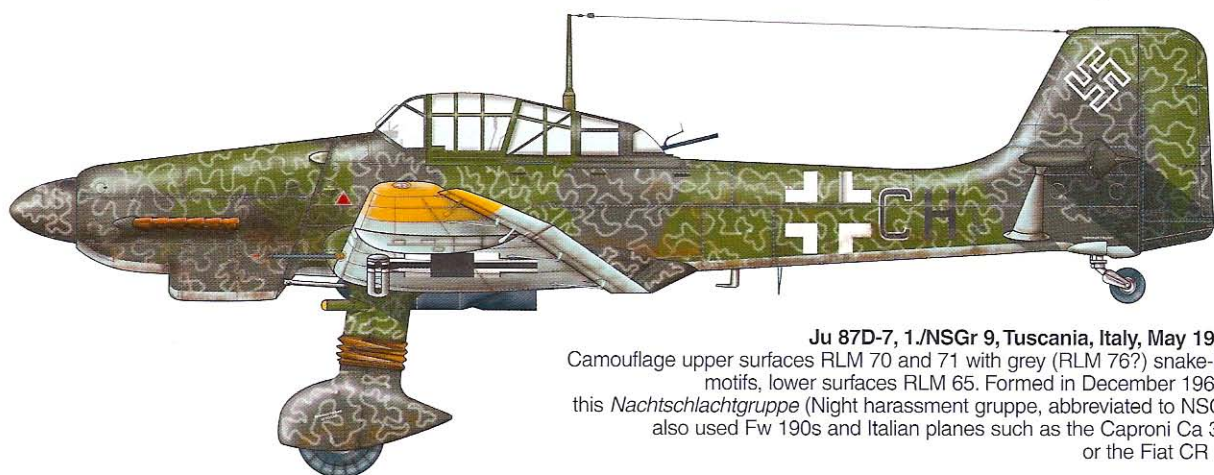
Ju 87D-5, Pulk Szturmovy, Vazdushnite na Negovo Velichetsvo (Bulgarian Air Force), July 1944. Standard German Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65 with yellow identification stripes. Less than forty

Ju 87D-5s were delivered to Bulgaria in 1944. They served in the only *Szturmovy Orliak* (ground attack group). When the country was invaded by the Red Army, the captured Stukas were used against the Germans, the Bulgarians' former allies.

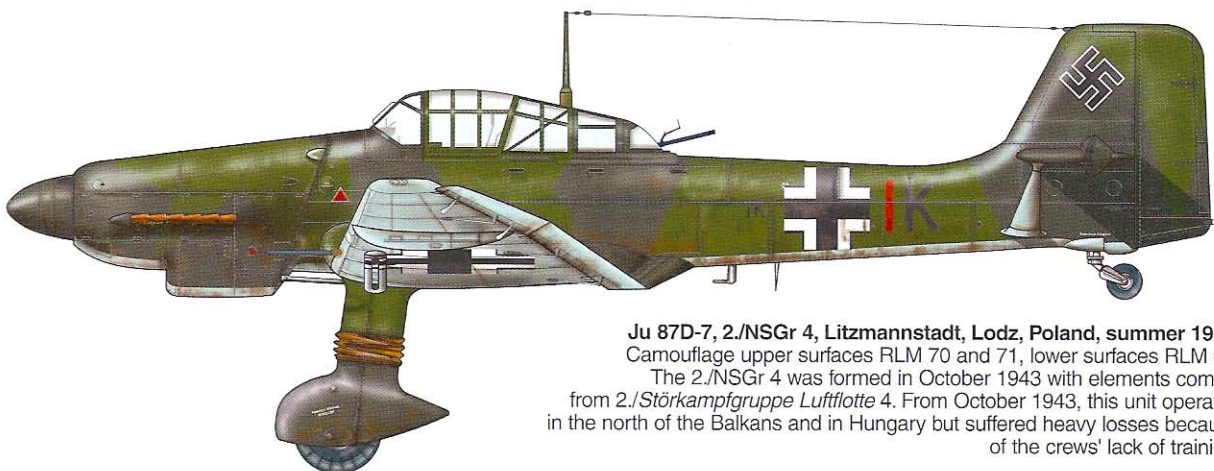
JUNKERS Ju 87D



Ju 87D-5 2/2 Zuhanobombazo szazad (dive bomber squadron).
Magyar Kiralyi Honved, Poltava, Ukraine, September 1943. Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. The top of the rudder and the elevators have been painted in the national colours. The registration numbers of Hungarian planes was much simpler: the first letter indicated the type of aircraft (here B for *Bombazo*) whereas the following numbers, on either side of the fuselage cross, made up the serial number of the plane within the Hungarian Air Force.

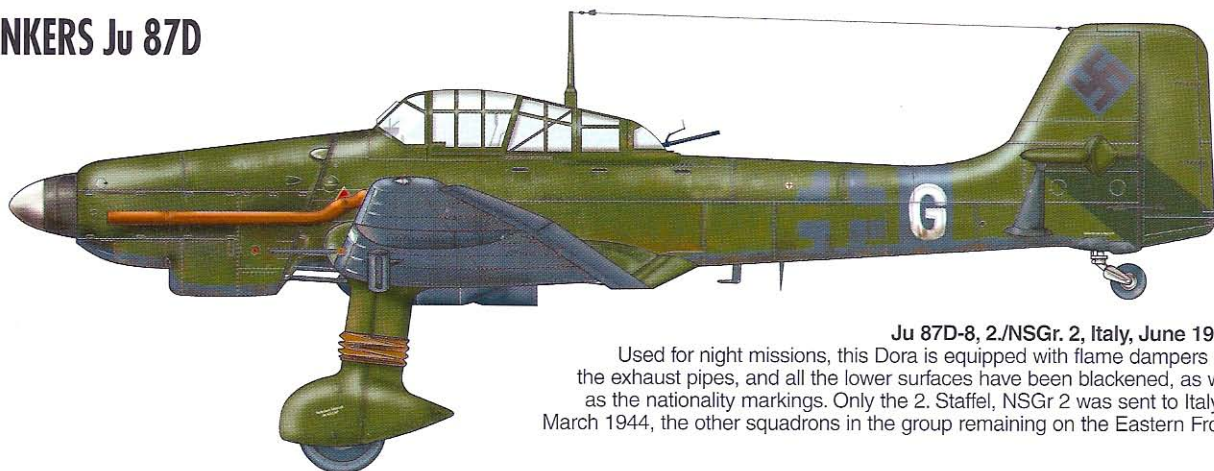


Ju 87D-7, 1./NSGr 9, Tuscania, Italy, May 1944.
 Camouflage upper surfaces RLM 70 and 71 with grey (RLM 76?) snake-like motifs, lower surfaces RLM 65. Formed in December 19643, this *Nachtschlachtgruppe* (Night harassment gruppe, abbreviated to NSGr.) also used Fw 190s and Italian planes such as the Caproni Ca 314 or the Fiat CR 42.



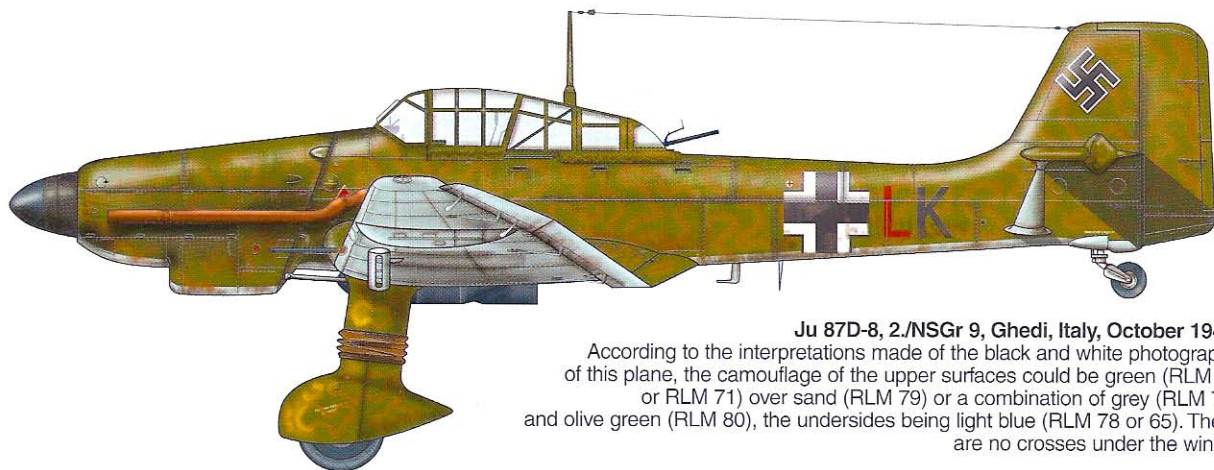
Ju 87D-7, 2./NSGr 4, Litzmannstadt, Lodz, Poland, summer 1944.
 Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65.
 The 2./NSGr 4 was formed in October 1943 with elements coming from 2./*Störkampfgruppe Luftflotte 4*. From October 1943, this unit operated in the north of the Balkans and in Hungary but suffered heavy losses because of the crews' lack of training.

JUNKERS Ju 87D



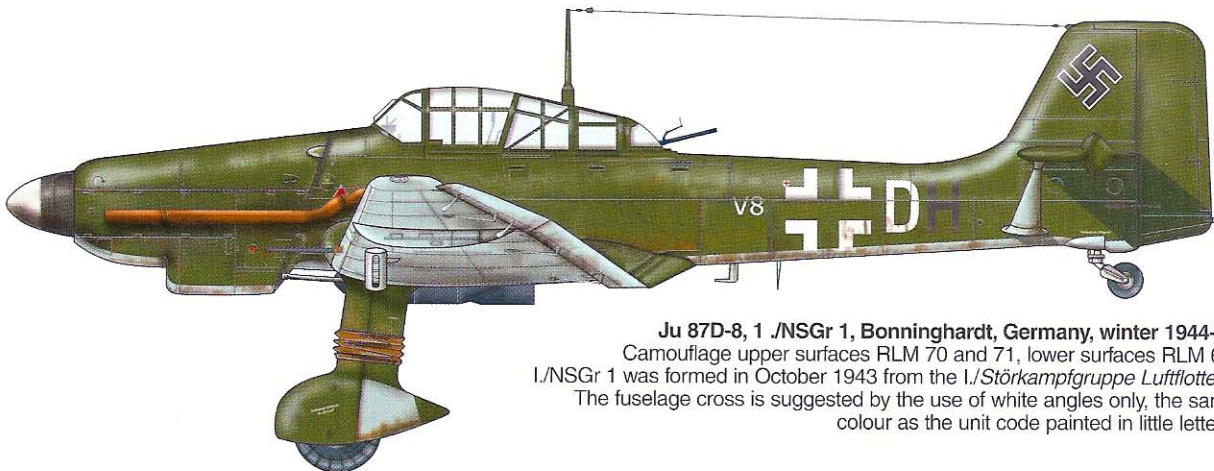
Ju 87D-8, 2./NSGr. 2, Italy, June 1944.

Used for night missions, this Dora is equipped with flame dampers on the exhaust pipes, and all the lower surfaces have been blackened, as well as the nationality markings. Only the 2. Staffel, NSGr 2 was sent to Italy in March 1944, the other squadrons in the group remaining on the Eastern Front.



Ju 87D-8, 2./NSGr 9, Ghedi, Italy, October 1944.

According to the interpretations made of the black and white photographs of this plane, the camouflage of the upper surfaces could be green (RLM 80 or RLM 71) over sand (RLM 79) or a combination of grey (RLM 76) and olive green (RLM 80), the undersides being light blue (RLM 78 or 65). There are no crosses under the wings.



Ju 87D-8, 1./NSGr 1, Bonninghardt, Germany, winter 1944-45

Camouflage upper surfaces RLM 70 and 71, lower surfaces RLM 65. 1./NSGr 1 was formed in October 1943 from the I./Störkampfgruppe Luftflotte 1. The fuselage cross is suggested by the use of white angles only, the same colour as the unit code painted in little letters.

The Ju 87E, Ju 87F, Ju 187 and Ju 287 PROJECTS

Despite the work on the *Graf Zeppelin* aircraft carrier having been stopped, Junkers was told to undertake the development of a new seaborne version based on the Ju 87C-1. In order to do this, a D-1 was taken of the assembly lines to serve as the prototype for the future **Ju 87E** series. It was transformed into a torpedo bomber at the *Erprobungstelle* at Travemünde and redesignated Ju 87D-1/To (To for *Torpedische*, or torpedo bomber). The existing Ju 87C-0 rejoined the prototype to undertake several different evaluations at Travemünde, at Peenemünde-West and at Rechlin. The trials recommended that the catapult and landing systems be improved, and that a powder rocket to assist take-off be installed on the 115 Ju 87E-1 ordered. But those who had foreseen work being resumed on the aircraft carrier were to be disappointed: the Kriegsmarine abandoned work on the project definitively which rather made the **Ju 87E-1** pointless.

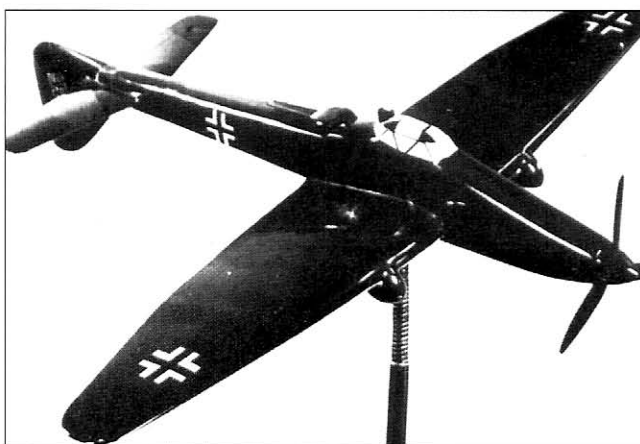
In the middle of 1940 when the Luftwaffe was striving to get the RAF to its knees and Ju 87 losses were getting catastrophic, Junkers put a lot of effort into respecting the schedule of conditions exactly which demanded better-armed, more effective dive-bombers and assault aircraft capable of carrying a bigger offensive load. The first programme was designated **Ju 87F**. It was close to the 'Dora', with reinforced undercarriage, oversize wheels, greater wingspan and the appreciably more powerful Jumo 213A, which was still being perfected. Submitted to evaluation by the T-Amt, the project was turned down because its performances were scarcely higher than those of the Ju 87D-1, which was just about to go into service.

Asked to 'try again', Junkers started another programme: the **Ju 187** with aft-retracting undercarriage, inverted gull wing, simplified structure and a Jumo 213A rated at 1 776 bhp (1 325 kW) at take-off. Its armament was made up of two 20 mm wing-mounted cannon and a remote-controlled dorsal barquette fitted with a 20-mm MG 151 canon and a 13-mm Mg 131 heavy machine

gun. The tail was inverted in order to clear the field of fire for the dorsal barquette. The offensive load consisted of 2 205-lb (1 000-kg) bomb beneath the fuselage and four 551-lb (250-kg) bombs under the wings. The project was presented to the RLM at the beginning of 1943, but the wind tunnel trials on a model showed that the maximum speed did not exceed 250 mph (400 mph) despite the increase of power. Because of this, the project was rejected in the autumn.

Junkers insisted by studying a new version of the 'Stuka' designated **Ju 287**. It resembled the Ju 87 and included the technical innovations of the Ju 187 project (retracting undercarriage, remote-controlled barquette). But its cantilever low wing was straight without dihedral, the sacrosanct principle of the 'double wing' being abandoned in favour of ailerons and conventional flaps (the air brakes were included) and, especially, the rear part of the fuselage with its rectangular frame now ended with the most spectacular innovation, doubtless also the most unique conception in the annals of German aviation: a tail fin able to rotate through 180 degrees to clear the field of fire for the rear remote-controlled barquette, itself equipped with two 20-mm cannon and operated by the second crew member seated back to back to the pilot in the cockpit which had been reduced to a strict necessary minimum. The nose was very profiled and enclosed a Jumo 213A engine driving a three-bladed propeller. The bomb load was carried only under the wings.

A reduced-scale model and a full scale model of the fuselage were built so that the bosses of the RLM and the T-Amt could judge for themselves the very clear aerodynamic and technical improvement of the Ju 287 project. But they were sceptical as to the innovations which the aircraft presented and it was turned down for the same reasons as the Ju 187: the small improvement in performance compared with the Stukas already in service. So the designation Ju 287 was given to another Junkers programme: the four jet-engined aircraft with the forward swept wings EF 122.



STG INSIGNIA (*Sturzkampfgeschwadern*)



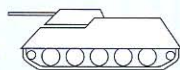
I./St.G 1



II./St.G 1



4./St.G 1
(beginning of the war)



Panzerjägerstaffel
St.G 1



Stabskette St.G 2
«Immelmann»



Stab/St.G 2



Stabskette
St.G 2



Stab St.G 2



Stab I./St.G 2



1./St.G 2



2./St.G 2



3./St.G 2



3./St.G 2
(variant)



Stab II./St.G 2



4./St.G 2



4./St.G 2
(end of the war)



Deutsches Afrika Korps
insignia for the
4./St.G 2 in North Africa



5./St.G 2



6./St.G 2



III./St.G 2



8./St.G 2



19./St.G 2



Stab du St.G 3



3./St.G 3



III./St.G 51
(beginning of the war)



8./St.G 51



9./St.G 51



St.G 77



Stab I./St.G 77



1./St.G 77



2./St.G 77



3./St.G 77



3./St.G 77
(variante)



Stab II./St.G 77



4./St.G 77



5./St.G 77
(beginning of the war)



5./St.G 77
(end of the war)



6./St.G 77



Stab III./St.G 77



7./St.G 77



8./St.G 77



9./St.G 77



Stab IV./St.G 77



10./St.G 77



11./St.G 77

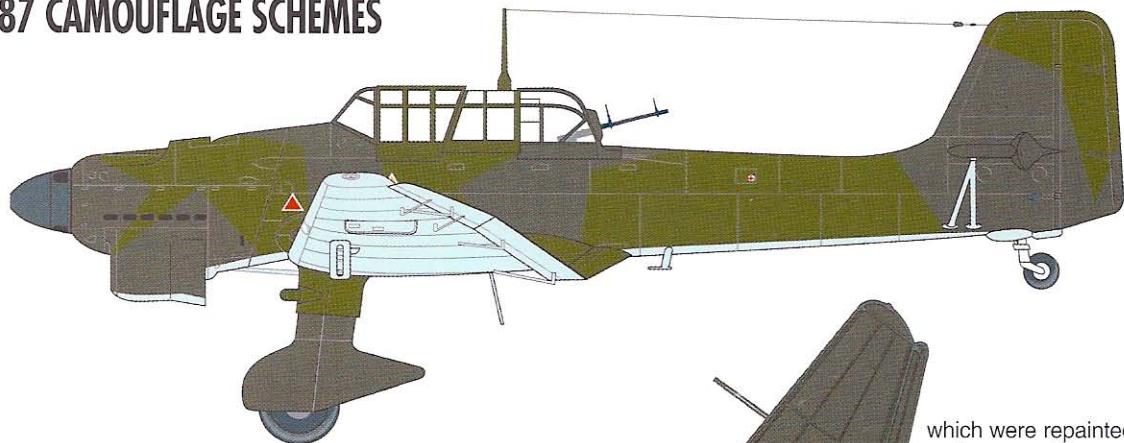


12./St.G 77



IV./LG 1

Ju 87 CAMOUFLAGE SCHEMES

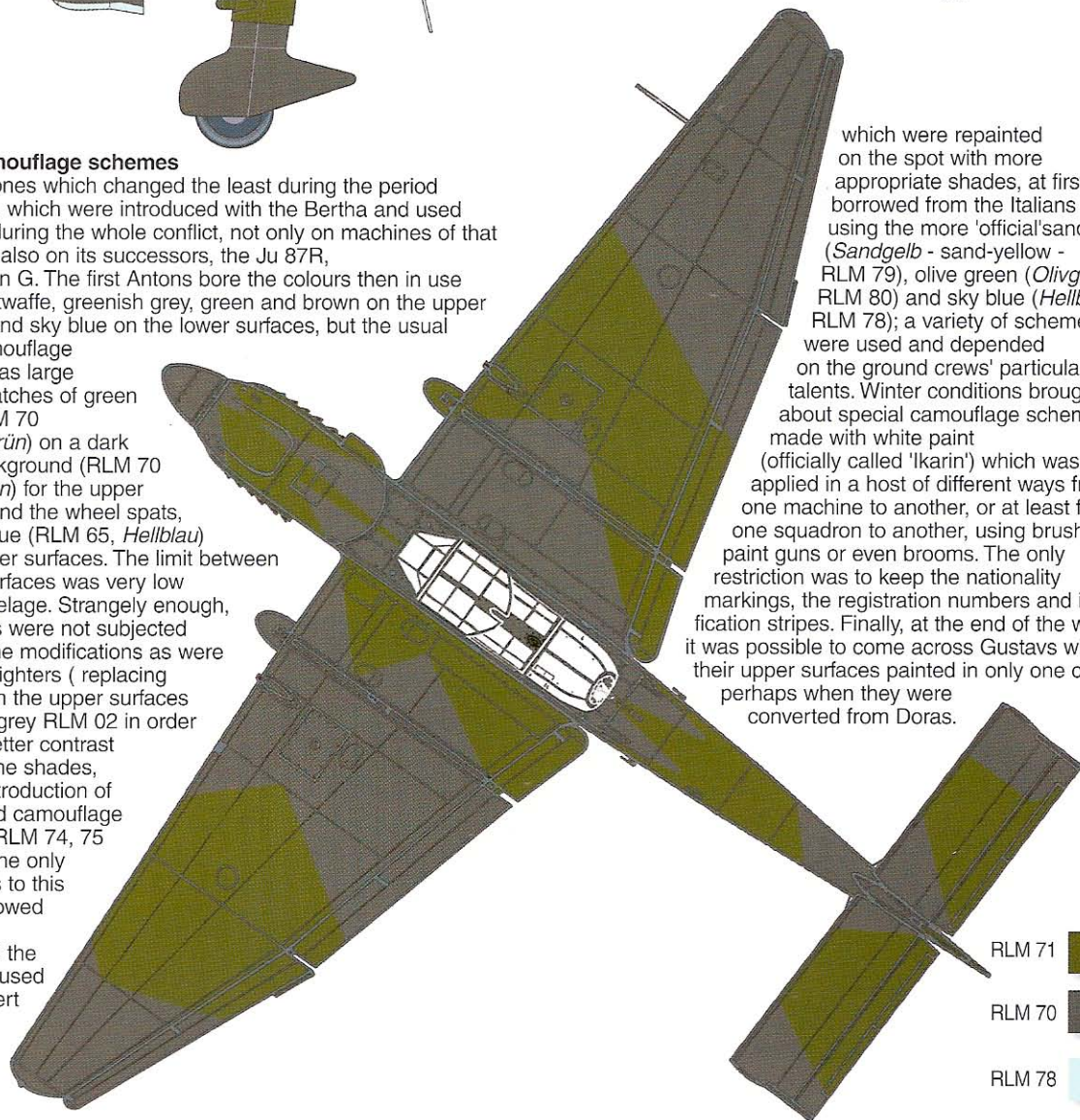


Ju 87 camouflage schemes

were the ones which changed the least during the period of the war, which were introduced with the Bertha and used regularly during the whole conflict, not only on machines of that series but also on its successors, the Ju 87R, D and even G. The first Antons bore the colours then in use by the Luftwaffe, greenish grey, green and brown on the upper surfaces and sky blue on the lower surfaces, but the usual Stuka camouflage scheme was large angular patches of green black (RLM 70

Schwarzgrün) on a dark green background (RLM 70 *Dunkelgrün*) for the upper surfaces and the wheel spats, and sky blue (RLM 65, *Hellblau*) for the lower surfaces. The limit between the two surfaces was very low on the fuselage. Strangely enough, the Stukas were not subjected to the same modifications as were Luftwaffe fighters (replacing RLM 71 on the upper surfaces by Green-grey RLM 02 in order to get a better contrast between the shades, and the introduction of grey-based camouflage schemes RLM 74, 75 and 76). The only exceptions to this strictly followed regulation concerned the machines used in the desert regions of North Africa

which were repainted on the spot with more appropriate shades, at first borrowed from the Italians then using the more 'official' sand (*Sandgelb* - sand-yellow - RLM 79), olive green (*Olivgrün* RLM 80) and sky blue (*Hellblau* RLM 78); a variety of schemes were used and depended on the ground crews' particular talents. Winter conditions brought about special camouflage schemes, made with white paint (officially called 'Ikarin') which was applied in a host of different ways from one machine to another, or at least from one squadron to another, using brushes, paint guns or even brooms. The only restriction was to keep the nationality markings, the registration numbers and identification stripes. Finally, at the end of the war, it was possible to come across Gustavs with their upper surfaces painted in only one colour, perhaps when they were converted from Doras.

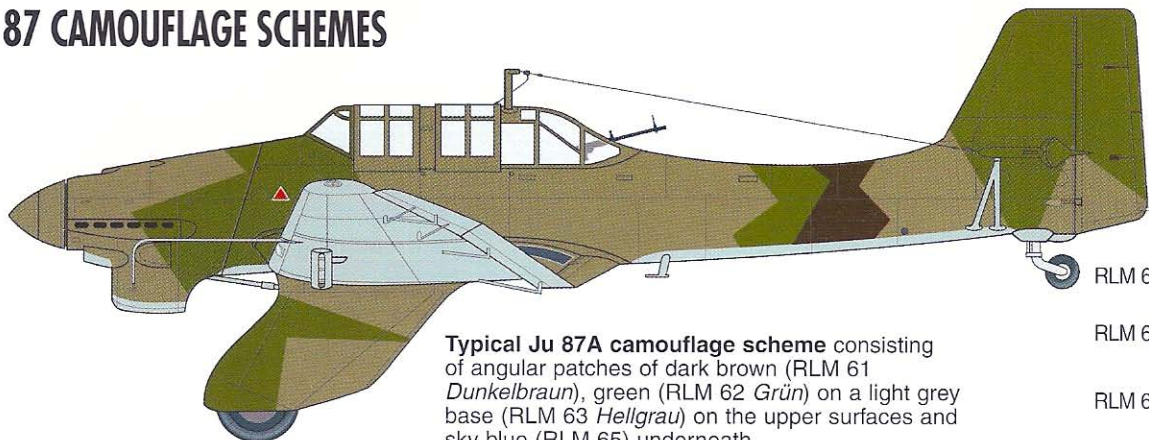


RLM 71

RLM 70

RLM 78

Ju 87 CAMOUFLAGE SCHEMES



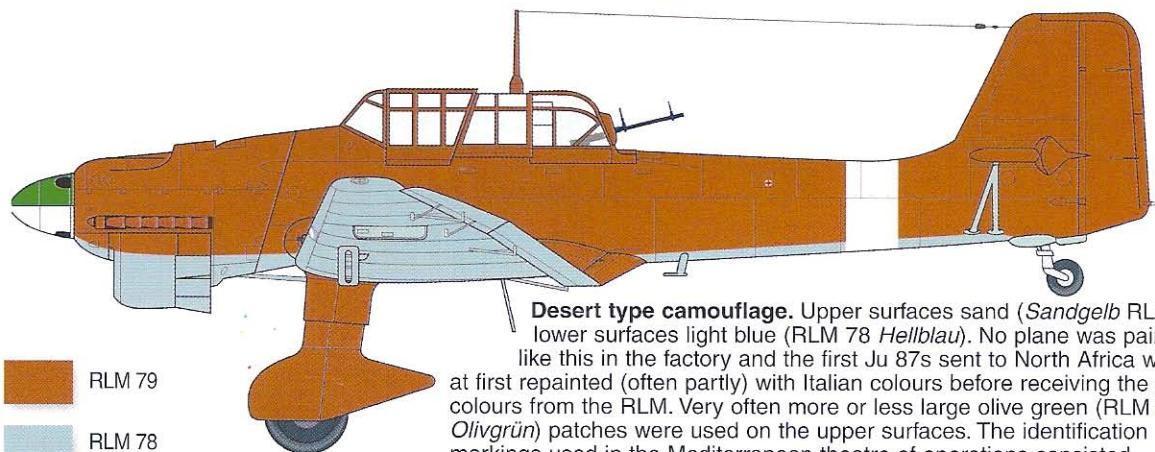
Typical Ju 87A camouflage scheme consisting of angular patches of dark brown (RLM 61 *Dunkelbraun*), green (RLM 62 *Grün*) on a light grey base (RLM 63 *Hellgrau*) on the upper surfaces and sky blue (RLM 65) underneath.

RLM 62

RLM 63

RLM 61

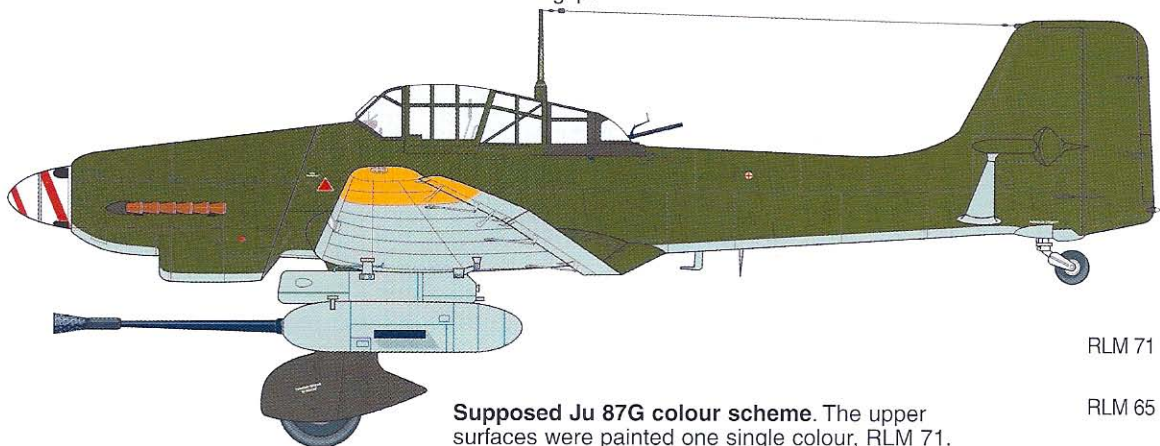
RLM 65



Desert type camouflage. Upper surfaces sand (*Sandgelb* RLM 79), lower surfaces light blue (RLM 78 *Hellblau*). No plane was painted like this in the factory and the first Ju 87s sent to North Africa were at first repainted (often partly) with Italian colours before receiving the official colours from the RLM. Very often more or less large olive green (RLM 80 *Olivgrün*) patches were used on the upper surfaces. The identification markings used in the Mediterranean theatre of operations consisted of a white stripe around the fuselage, and very often the undersides of the wingtips.

RLM 79

RLM 78



Supposed Ju 87G colour scheme. The upper surfaces were painted one single colour, RLM 71.

RLM 71

RLM 65



The Ju 87G or 'GUSTAV' SERIES

With the approaching invasion of Russia, the Ju 87s which were so vulnerable to attack by the RAF were transferred to the East in large numbers. During the first phases of the attack in the East, the Luftwaffe destroyed hundreds of Russian planes and again the Ju 87s demonstrated how effective they could be destructively as well as psychologically. But very quickly things became very clear: the bomb loads carried by the Stukas were not effective against the Russians' wide range of armoured vehicles.

It was only in 1943 that a really effective solution was found to try and halt the arrival of greater and greater numbers of Russian armour on all the different fronts in the East: the Ju 87 'Gustav' (the basic design was the Ju 87G-0) whose job it was to bust tanks. To do this it was equipped with two 37-mm Flak 18 cannon (or Bord Kanone 3.7) in underwing gondolas in pla-

Above.

A Ju 87G-1 (a converted D-3) with its two 37-mm cannon which were very effective against Russian armour. They were in fact adapted from the Flak 18 (BK 3.7) anti-aircraft guns, fed with six-shot magazines, each projectile having an initial velocity of 2 805 feet per second (850 m/s). The Ju 87G-2s were converted D-5 airframes with a lengthened wing and the dive brakes removed.

(DR)

ce of the bomb racks (the cannon were detachable and could be replaced by bomb racks for the ground-attack role).

It was in 1942 that a Ju 87D-1 was adapted in this way in order to serve as a prototype for the Gustav series. Each canon weighed 598 lb (272 kg) with its container and ammunition. Firing tests at Rechlin were so satisfactory that a Ju 87D-3 was in turn modified and tested over Russia operationally by several pilots among which the famous Stuka ace, Hans Ulrich Rudel.

The destructive capability of the new model so pleased everybody, that in February 1943, several Ju 87D-3s were transformed into Ju 87 G-1s and given to an experimental anti-tank unit, the *Panzerjagdkommando Weiss*, made up of very experienced Stuka pilots.

The conclusive results gave rise to a new series of conver-



If the Ju 87G was a real threat to Russian armour, its two cannon carried in underwing nacelles made it ponderous, not very manoeuvrable and a choice prey for enemy fighters.

(BA)

sions: D-3s into G-1s. Then it was the D-5s which were in turn converted into Ju 87G-2s.

The underbelly sling was removed from the majority of the Gustavs and the dive brakes disappeared to. The wing mounted guns were removed, but some pilots had them kept so as to fire tracer in order to aim better.

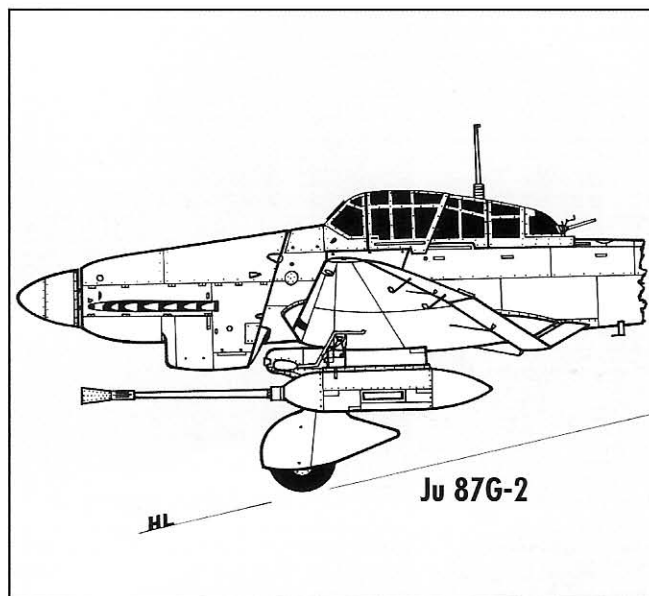
During night operations, the ends of the long 37-mm cannon barrels were fitted with flame dampers. In their tank buster role, the Ju 87Gs turned out to be excellent, particularly in the summer of 1943, in the battle of the Kursk salient. They did however have their faults. Their increased mass made them even slower and more vulnerable and they were noticeably less manoeuvrable.

As with all the versions of the Ju 87, the Gustavs were progressively replaced by the Focke-Wulf Fw 190 for daylight mis-

Below.

Checking the right-hand 37-mm canon on a Ju 87G-2. When armed like that the plane was often called the *Kannonenvogel* (the "gun bird"). The guns were fitted outside the propeller disc and therefore did not need to be synchronised, but they weighed more than 770 lbs each (350 kgs) which reduced not only the plane's air speed but also its manoeuvrability.

(DR)





Technical specifications for the Ju 87G-2

Armament: Two 37 mm BK 37 cannon.

Twin 7.9 mm MG 81Z machine guns.

Two optional 7.9 mm MG 17 machine guns.

Bomb load: Various, in place of the BK 37 underwing cannon (no underbelly sling)

Wingspan: 49 ft 5 in (14.97 m).

Length: 37 ft 11 in (11.50 m)

Height: 12 ft 9 in (3.89 m)

Wing area: 366.77 sq. ft. (33.68 m²).

Weight (unloaded): 8 646 lb (3 930 kg).

Max. take-off weight: 13 112 lb (5 960 kg).

Max. Speed: 247 mph (396 kph) at 13 200 ft (4 000m).

204 mph (326 kph) at 16 500 ft (5 000m).

Landing speed: 75 mph (120 kph).

Service Ceiling: 24 290 ft (7 360 m).

Range: 375 miles (600 km) to 956 miles (1 530 km).

Above.

Hans Ulrich Rudel, seen here celebrating his 2 000th operational sortie on 1 June 1944, was among the first pilots of the I./St.G 2 'Immelmann' to try out a Ju 87D equipped with two Flak 18 cannon which was at the origin of the Ju 87G. This true expert in destroying Russian tanks, fought almost entirely in Stukas until the end of hostilities and finished the war with no less than 519 Soviet tanks destroyed in his tally.

(BA)

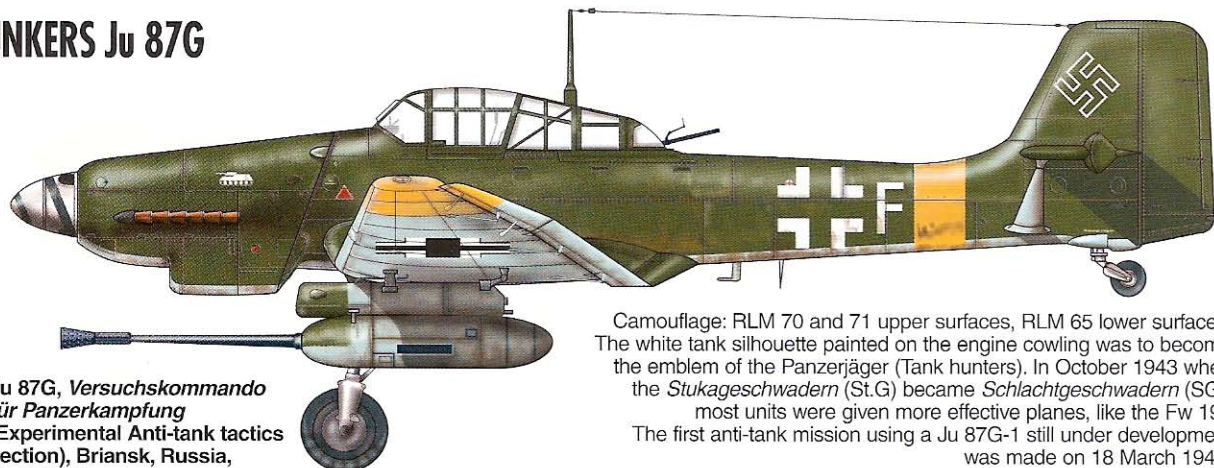
sions. The G-1s and G-2s continued to operate only by night. In the autumn of 1944 only the unit commanded by Rudel (III./SG 2) was still using Ju 87Ds and Gs in the Soviet Union. Some aircraft were transferred to the West at the end of the war. Production of the Stuka finally ceased definitively in October 1944. The figure for total production of Ju 87s, which is generally accepted by everybody as being correct, is 'more than 5 700'.

This Ju 87G from the St. G 1 Panzerjägerstaffel, indicated by the silhouette of a tank, showing the two anti-tank cannon whose feeder system is clearly visible on the weapon's right hand side.

(BA)

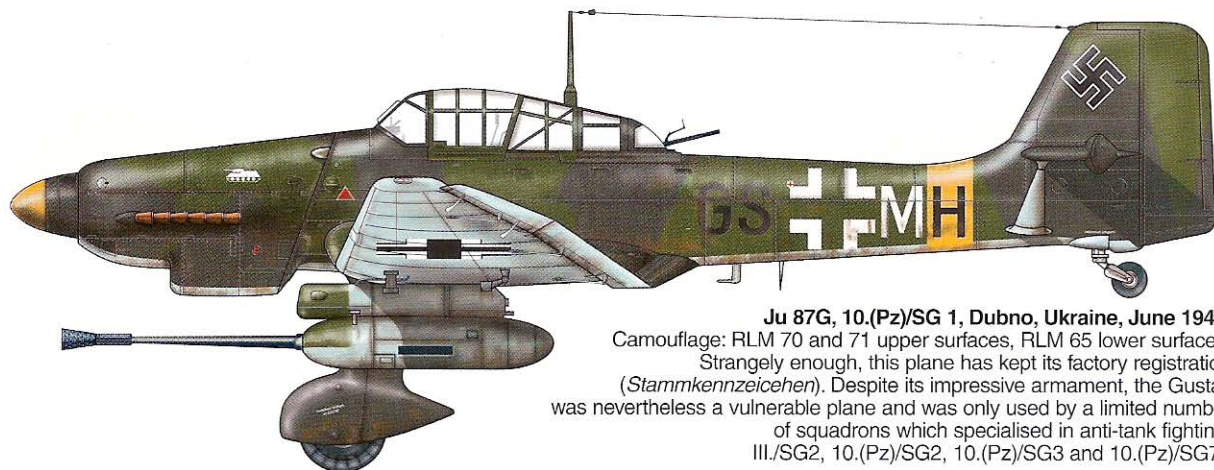


JUNKERS Ju 87G



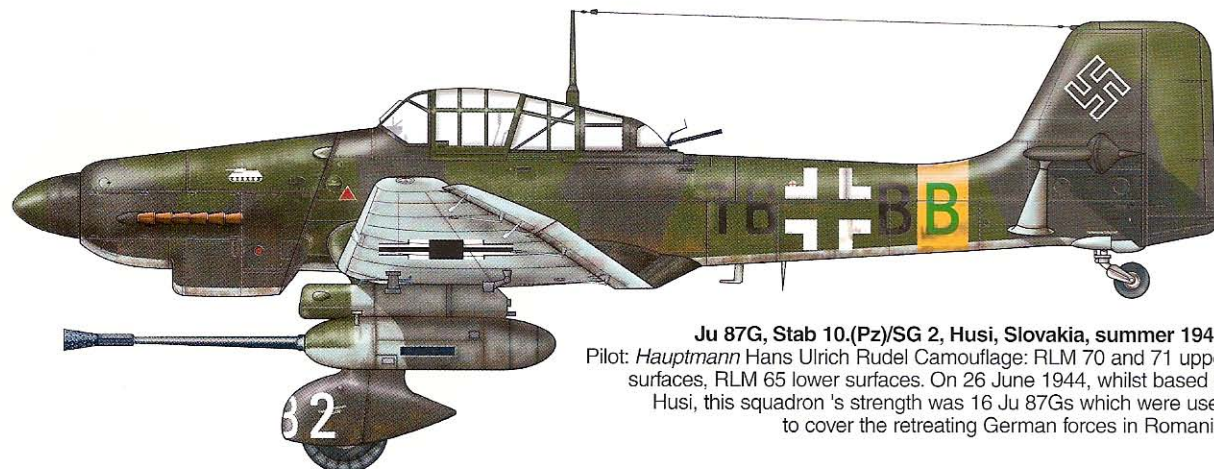
Ju 87G, *Versuchskommando für Panzerkampfung* (Experimental Anti-tank tactics section), Briansk, Russia, April 1943.

Camouflage: RLM 70 and 71 upper surfaces, RLM 65 lower surfaces. The white tank silhouette painted on the engine cowling was to become the emblem of the Panzerjäger (Tank hunters). In October 1943 when the *Stukageschwadern* (St.G) became *Schlachtgeschwadern* (SG), most units were given more effective planes, like the Fw 190. The first anti-tank mission using a Ju 87G-1 still under development was made on 18 March 1943.



Ju 87G, 10.(Pz)/SG 1, Dubno, Ukraine, June 1944.

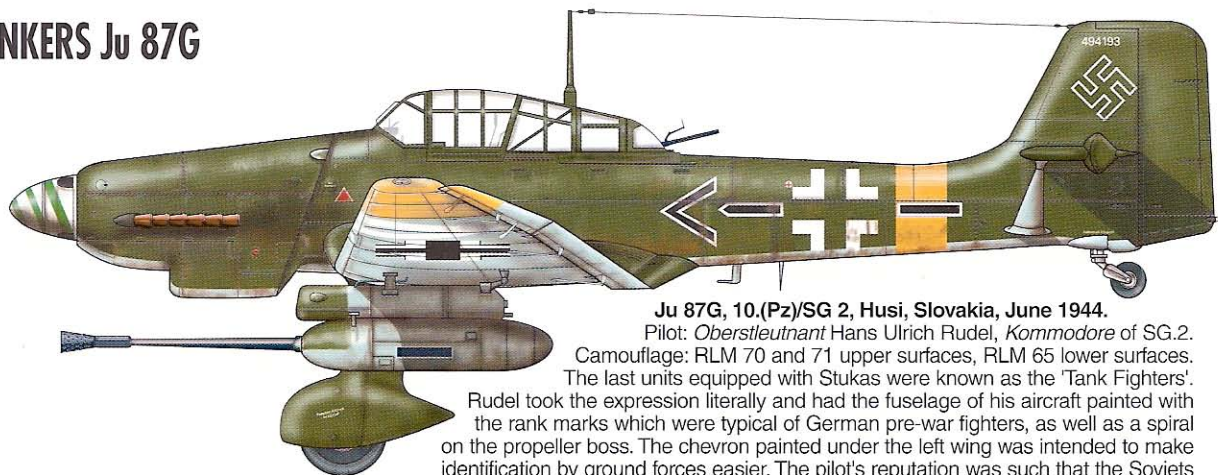
Camouflage: RLM 70 and 71 upper surfaces, RLM 65 lower surfaces. Strangely enough, this plane has kept its factory registration (*Stammkennzeichen*). Despite its impressive armament, the Gustav was nevertheless a vulnerable plane and was only used by a limited number of squadrons which specialised in anti-tank fighting: III./SG2, 10.(Pz)/SG2, 10.(Pz)/SG3 and 10.(Pz)/SG77



Ju 87G, Stab 10.(Pz)/SG 2, Husi, Slovakia, summer 1944.

Pilot: *Hauptmann* Hans Ulrich Rudel. Camouflage: RLM 70 and 71 upper surfaces, RLM 65 lower surfaces. On 26 June 1944, whilst based at Husi, this squadron's strength was 16 Ju 87Gs which were used to cover the retreating German forces in Romania.

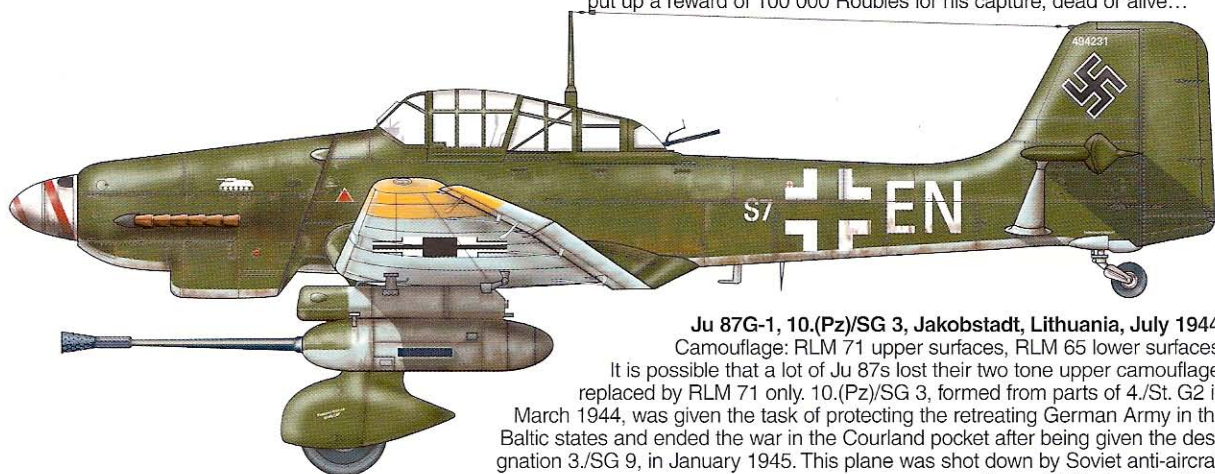
JUNKERS Ju 87G



Ju 87G, 10.(Pz)/SG 2, Husi, Slovakia, June 1944.

Pilot: *Oberstleutnant* Hans Ulrich Rudel, *Kommodore* of SG.2.

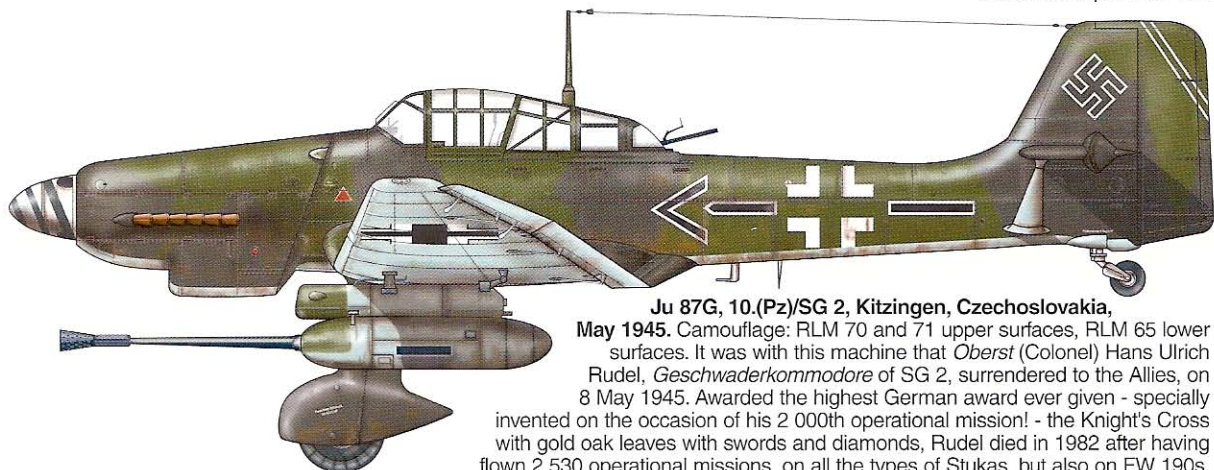
Camouflage: RLM 70 and 71 upper surfaces, RLM 65 lower surfaces. The last units equipped with Stukas were known as the 'Tank Fighters'. Rudel took the expression literally and had the fuselage of his aircraft painted with the rank marks which were typical of German pre-war fighters, as well as a spiral on the propeller boss. The chevron painted under the left wing was intended to make identification by ground forces easier. The pilot's reputation was such that the Soviets put up a reward of 100 000 Roubles for his capture, dead or alive...



Ju 87G-1, 10.(Pz)/SG 3, Jakobstadt, Lithuania, July 1944.

Camouflage: RLM 71 upper surfaces, RLM 65 lower surfaces.

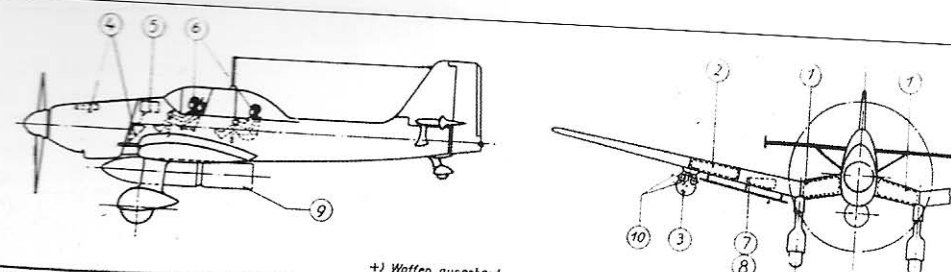
It is possible that a lot of Ju 87s lost their two tone upper camouflage, replaced by RLM 71 only. 10.(Pz)/SG 3, formed from parts of 4./St. G2 in March 1944, was given the task of protecting the retreating German Army in the Baltic states and ended the war in the Courland pocket after being given the designation 3./SG 9, in January 1945. This plane was shot down by Soviet anti-aircraft fire on 19 September 1944.



Ju 87G, 10.(Pz)/SG 2, Kitzingen, Czechoslovakia, May 1945.

Camouflage: RLM 70 and 71 upper surfaces, RLM 65 lower surfaces. It was with this machine that *Oberst* (Colonel) Hans Ulrich Rudel, *Geschwaderkommodore* of SG 2, surrendered to the Allies, on 8 May 1945. Awarded the highest German award ever given - specially invented on the occasion of his 2 000th operational mission! - the Knight's Cross with gold oak leaves with swords and diamonds, Rudel died in 1982 after having flown 2 530 operational missions, on all the types of Stukas, but also on FW 190s.

The only workload
for the Ju 87 H-1
and H-7 training
aircraft.
(DR)



4) Waffen ausgebaut

Verwendungsgruppe: H		Schwerpunktlagen hinter Tm-Vorderkante für:										Rüstgewicht: 0,560...0,590 m	
Beanspruchungsgruppe: 5 (abgemindertes Lastvielfache)		Tm-Vorderkante für:										höchstzul. Vorlage 0,550 m	
Hochstzul. Fluggewicht: 5900 kg												höchstzul. Rücklage: 0,712 m	
Baumuster													
Beladefall		H-1	H-7	H-1	H-7	H-1	H-7	H-1	H-7	H-1	H-7	H-1	H-7
Rüstsatze		1	2	3	4	5	6	7	8	9	10	11	12
Bomben Anzahl und Größe													
		M1		M1, M2		M1		M1, M2		M1, M2, M3		B	
Leergewicht		1x250		1x250 4x65		1x500		1x250 2x250		1x500 1x250		1x500	
Zusätzliche Ausrüstung	kg	3350	3530	3350	3530	3430	3610	3250	3530	3430	3610	3510	3690
Rüstgewicht	kg	190	325	350	325	350	325	350	325	350	325	350	190
1 Kraftstoff	kg	3540	3720	3675	3880	3755	3960	3675	3880	3755	3960	3620	3800
2 in den Tm-Behältern Jnh 480 l	kg	15 ¹⁾ 355										15 ¹⁾ 355	15 ¹⁾ 355
3 in den Tm-Behältern * 300 l	kg	0...225										0 225	0 225
4 in den Tm-Behältern * 590 l	kg	—										0 435	0 435
5 Schmierstoff	kg	13 ¹⁾ 65 ¹⁾										13 ¹⁾ 65 ¹⁾	13 ¹⁾ 65 ¹⁾
6 Besatzung 2 Mann	kg	140...200										140 200	140 200
7 Munition	kg	+	+	0-50	0-70	0-50	0-70	0-50	0-70	0-50	0-70	+	+
8 für MG 17 2000 Schuß (H-1)	kg	—	—	—	—	—	—	—	—	—	—	—	—
9 für MG 151 360 Schuß (H-7)	kg	—	—	—	—	—	—	—	—	—	—	—	—
10 Bomben	kg	—	—	0-250	0-250	0-250	0-500	0-250	0-500	0-250	0-500	—	—
am Rumpf 250 500	kg	—	—	—	—	—	—	—	—	—	—	—	—
ad Tragfl. je 1x250 oder 2 bzw. 4x65	kg	—	—	—	—	—	—	—	—	—	—	—	—
Abfluggewicht													
Sichere Lastvielfache ¹⁾ 2)	kg	4360	4540	4800	5020	5140	5360	5050	5270	5380	5600	5730	5700
	kg	6,0	6,0	6,0	5,75	6,0 (5,95)	5,95 (5,90)	5,70	5,40	6,0 (5,95)	6,0 (5,90)	6,0 (5,45)	6,0 (5,50)

1) Vor Notlandung sind Bomben blind und Kraftstoffzusatzbehälter abzuwerfen.
2) Höchstzulässiges Landegewicht normal 4900 kg, in Ausnahmefällen 5400 kg.
3) Restmenge im Rüstgewicht enthalten.
4) Mit 5 kg Kraftstoff für Kaltstart.
5) Bei Verwendung von 4 x 50 bzw. 8 x 50 kg Bomben verringert sich das Fluggewicht um 60 bzw. 120 kg (Schwerp. hierdurch unveränd.).
6) Beim Abfangen aus dem Sturzflug (H-1) 105 kg.
7) Klammerwerte gelten nach Abwurf der Tm-Behälter.
8) Abwerfbare Zusatzbehälter beim Abfangen...
9) 1/2 gefüllt für Sturzflug zulässig.

The Ju 87H

With the resumption of the Soviet offensive in the second half of the 'Great Patriotic War' (the Russian name for the war against Germany) the Luftwaffe suffered increasingly heavy losses and the lack of crew was severely felt.

Technical specifications for the Ju 87H-1

Type: Single-engined two-seat trainer.

Undercarriage: Normal.

Tail: Normal.

Powerplant: One Jumo 211 J-1

rated at 1 420 bhp at take-off.

Propeller: Three blade VS 11.

Armament: Two 7.9 mm MG 17

machine guns.

Bomb load: None

Wingspan: 49 ft 5 in (14.97 m)

Length: 37 ft 11 in (11.50 m).

Height: 12 ft 9 in (3.89 m)

Wing area: 366.77 sq. ft. (33.68 m²)

Weight (unloaded: 11 000 lb (5 000 kg)

Max. Speed: 256 mph (410

kph) at 13 200 ft (4 000 m)

231 mph (370 kph) at 16 500 ft

(5 000 m)

Climb rate to 9 900 ft (3 000 m):

13.4 minutes.

Service Ceiling: 26 730 ft

(8,100 m).

Range: 625 miles (1 000 km).

In order to speed up the training of new recruits and the transition of new pilots having flown other machines, a number of D-1s and D-3s, D-5s, D-7s and D-8s were changed into trainers and combat training aircraft from the end of 1943. The sling, the bomb racks and the machine guns were removed.

The rear seat given over to the instructor, was fitted with a second set of controls and that part of the cockpit canopy was remodelled and the glass was more curved and protruded so that the instructor had better forward visibility.

These machines were designated Ju 87H-1 D-1 (D-1), H-2 (D-2), H-3 (D-3), H-5 (H-5), H-7 (D-7) and H-8 (D-8).

The Ju 87K

The 'K' version was not really a real version. This was the suffix given to machines supplied, or to be supplied, to Germany's allies during WWII. Thus the Ju 87K-1 was the production version of the A-1 which was to have been exported to Japan, a transaction which was never carried through. The Ju 87K-2 and K-4 versions, based respectively on the Ju 87A-1 and B-1 were those delivered mainly to Hungary.

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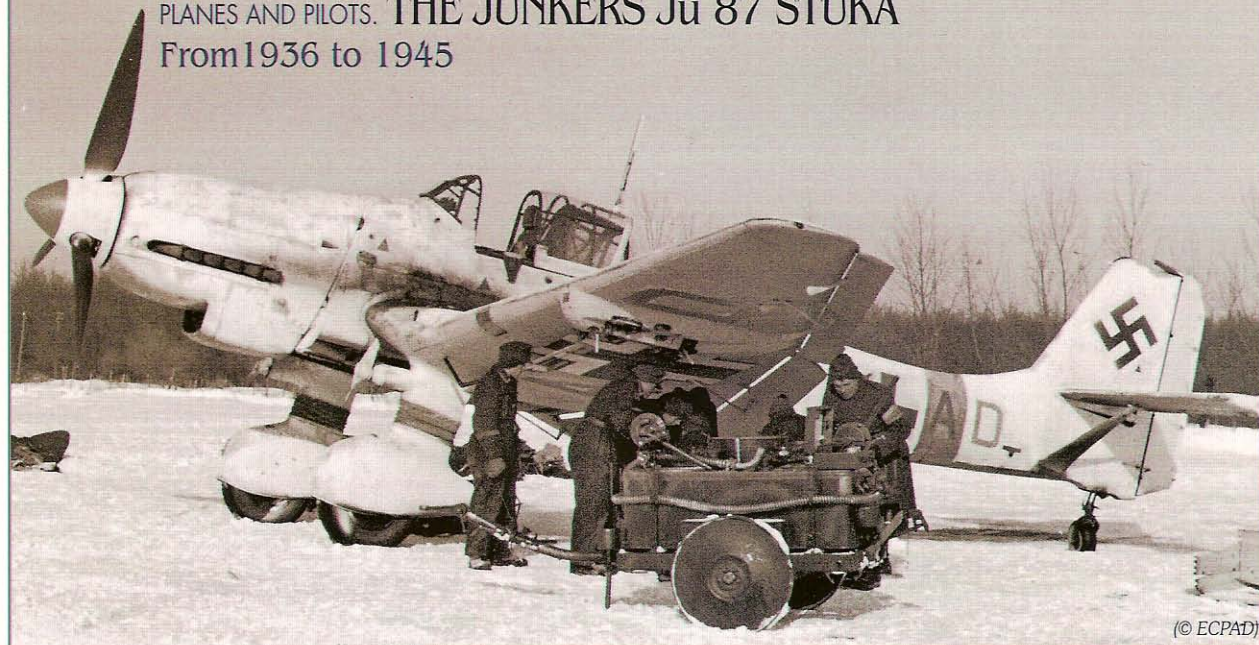
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PLANES AND PILOTS. THE JUNKERS Ju 87 STUKA

From 1936 to 1945



(© ECPAD)

The 'Stuka' is synonymous with the Junkers Ju-87, the German dive-bomber whose combat efficiency and psychological effect, as much on the military as on the civilian populations, were written in letters of blood in the pages of WWII aviation history. Its name is a contraction of the term 'Sturmkampfflugzeug' which means 'dive-bomber' in German. The creation of this type of plane was directly linked to the very rapid evolution of aerial and military tactics and strategies during the Great War.

Although it received a lot of opposition at the outset, the Ju-87 managed to get itself accepted because it was strongly built, its design was modern, it was easy to produce and maintain, and it was able to dive almost vertically on its target. These 'qualities' turned it into a formidable weapon when used in conjunction with infantry and armoured units, as when Hitler's troops invaded and occupied Poland, and then the whole of Western Europe.

Everybody, even those who neither experienced nor lived through WWII, knows of the psychological and destructive effects of the 'Blitz-Krieg' (Lightning War). During the whole of WWII, the Ju-87s were in the middle of the fray and their pilots were considered to have the hardest and most dangerous task to do. But war wears down even those who are winning. The Allies fighting against Germany rapidly made up the technological advantage that the Luftwaffe had had since before the beginning of the war and relegated the Stuka to less thankless and more appropriate tasks for which it had not been designed, mainly in Russia.



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