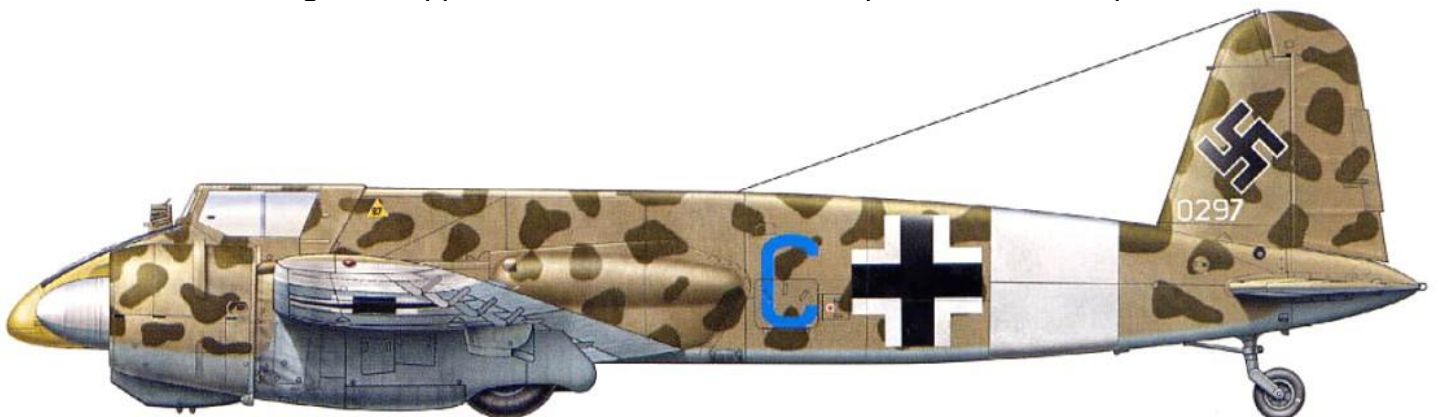


Henschel Hs 129



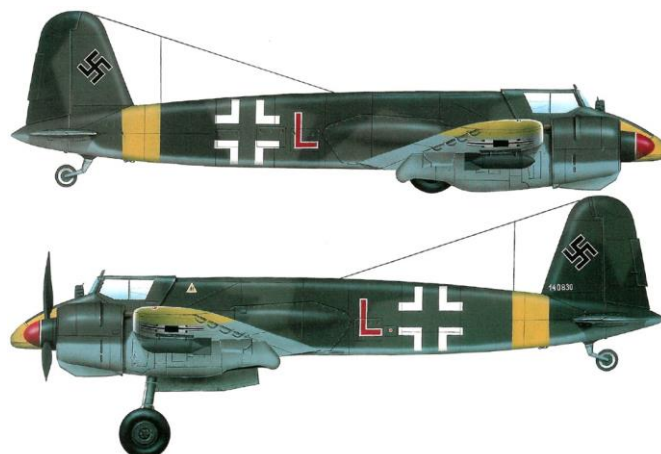
Durant les années 1930, l'aviation européenne connut de grands développements, sur le plan de la conception et de la construction d'avions militaires, mais également d'un point de vue théorique. Les grandes puissances européennes commencèrent à investir de manière croissante pour remplacer les anciens modèles en service, et en prévision de futurs conflits. L'Allemagne prit une part importante à ces développements, grâce à son importante industrie aéronautique. Les aviateurs allemands avaient expérimenté durant la Première Guerre Mondiale les attaques au sol à partir de biplans modifiés, tels que le Halberstadt CL II. Des réflexions qui suivirent naquit l'idée que ce genre d'attaques, si il était risqué, pouvait causer de sérieux dommages aux troupes au sol, pourvu que l'on utilise un armement efficace. La conception de nouveaux canons plus petits et plus performants aptes à être embarqués en vol représenta une solution. En avril 1937, le ministère allemand de l'Air (RLM) s'adressa à plusieurs entreprises allemandes. Les autorités demandaient la réalisation d'un appareil d'attaque bimoteur capable de porter deux canons de 20 mm et doté d'un blindage protégeant l'équipage et les moteurs. Cette demande découlait notamment des enseignements tirés de la participation d'unités allemandes dans la guerre civile espagnole. Les avions allemands s'étaient révélés vulnérables aux armes de l'infanterie adverse, et pas assez armés. Le 1er octobre 1937, deux modèles furent l'objet d'un contrat officiel, le Focke-Wulf Fw 189C et le Henschel 129 (d'abord désigné comme le Henschel P.46). Les deux prototypes posèrent de sérieuses difficultés lors de leur conception, et les essais soulevèrent de nombreuses questions. Le premier Hs-129 effectua son premier vol le 26 mai 1939. Cependant, le RLM finit par désigner l'avionneur Henschel pour équiper la Luftwaffe, à l'automne 1939. Conçu par l'ingénieur Friedrich Nicolaus, le Hs-129 n'était clairement pas un appareil élégant. Il avait un fuselage à revêtement en alliage léger travaillant, présentant une section triangulaire, abritant l'habitacle. Ce dernier, très réduit et très étroit, offrait un champ visuel très limité. La voilure était montée en position médiane sur le fuselage, et supportait les moteurs installés à proximité du cockpit.





[Henschel Hs 129B-1 de la Luftwaffe](#)

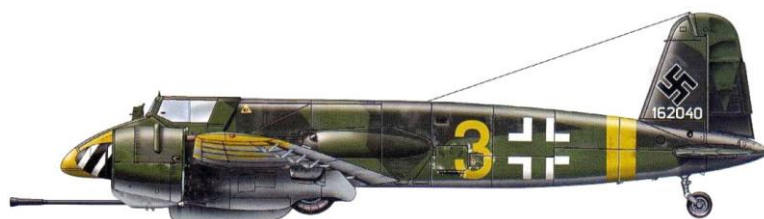
La motorisation fut cause de nombreux soucis pour le Hs-129. Les ingénieurs avaient choisi au départ une paire d'Argus As-410 : ceux-ci, supposés fournir chacun 465 ch de puissance, en fournissaient en réalité 430. Sous-motorisé, le Henschel avait des performances limitées et son comportement en vol s'en ressentait négativement. L'invasion de la France au printemps 1940 offrit une solution inattendue aux ingénieurs, avec la saisie de moteurs Gnôme et Rhône 14M, d'une puissance unitaire de 700 ch. Ces moteurs refroidis par air entraînaient chacun une hélice tripale. Conformément aux demandes du RLM, la protection du Henschel fut sérieusement étudiée. Les composantes essentielles de l'appareil (moteurs, réservoirs de carburant...) reçurent un épais blindage : les plaques les plus épaisses atteignaient 12 mm. Le cockpit fit l'objet de toute l'attention des ingénieurs : outre un pare-brise renforcé, l'équipage était protégé par une section de nez formée d'une épaisse plaque de blindage. L'armement fixe de base était constitué de deux canons MG FF de calibre 20 mm, plus deux mitrailleuses MG 17 de calibre 7,92 mm. Il devait s'alourdir tout au long du conflit : outre les versions officielles, on connaît aussi de nombreuses séries modifiées sur le terrain (désignées avec le suffixe R pour Rüstsatz). Ainsi, pour répondre à l'accroissement des blindages des chars adverses, on monta parfois un canon MK101 de calibre 30 mm sous le fuselage (sur le Hs-129B-1/R2), ou un calibre 37 mm (sur le Hs-129B-2). L'arme la plus lourde installée sur le Hs-129 fut le redoutable canon PAK-40 de calibre 75 mm, monté sous le fuselage de l'appareil (Hs-129B-3/Wa). Cette arme très puissante était cependant fort lourde, peu précise sauf à très courte portée et limitait sensiblement la maniabilité déjà médiocre du Hs-129. Elle fut utilisée sur quelques avions durant l'hiver 1944-1945. Quelques appareils du type Hs 190A-0 rejoignirent à l'automne 1940 l'escadrille 5 Schlacht/LG2 pour évaluation opérationnelle. La Luftwaffe opposa un refus à l'entrée en service actif de l'appareil, jugé trop défectueux. L'arrivée des Gnôme et Rhône donna naissance au Hs 129B-0 de présérie, puis au B1 dont 10 exemplaires furent livrés à partir de la fin 1941. Plus satisfaisants, les Type B entrèrent en production en 1942. Livrés à partir du printemps 1942, les premiers appareils furent engagés sur le front en mai.





[Henschel Hs 129B-2 roumain](#)

A partir de 1943, pour faire face aux formations blindées de l'Armée Rouge, la série B-2 fut lancée dans la guerre. Ils furent dotés d'une nacelle d'armement supplémentaire sous le fuselage. Le B-2/R1 était équipé de deux MG 151/20 de 20 mm et de deux mitrailleuses de 13,2 mm. A la fin 1944, le B-3, construit à 25 exemplaires, fut équipé d'un canon antichar PAK-40 de 75 mm, pouvant tirer 12 obus de 12 kg. Cette arme redoutable, pesant plus d'une tonne, était capable de détruire la quasi-totalité des blindés alliés. Des charges extérieures pouvaient également être emportées sous le fuselage (charge maximale : une bombe de 250 kg) et surtout sous la voilure : un des contenus les plus utilisés consistait en deux conteneurs, contenant chacun 48 bombes anti-personnel SD-2, de 2 kilos chacune. Ces conteneurs pouvaient être remplacés par deux bombes de 50 kg. Les Hs-129 furent surtout engagés sur le front de l'Est. Quelques-uns arrivèrent en Afrique du Nord à partir de novembre 1942, où le climat chaud et sec leur convint très mal. Un exemplaire y fut capturé et transféré aux Etats-Unis pour y être testé (il y reçut l'immatriculation FE-4600, FE pour Foreign Equipment) De manière générale, l'appareil fut une déception pour ses utilisateurs. Sous-motorisé même avec ses nouveaux moteurs français, lent et peu maniable, le Hs-129 souffrit aussi durant toute sa carrière de problèmes de fiabilité et d'un entretien difficile. Les chiffres de production s'en ressentent : on estime à environ 900 le nombre d'appareils produits, qui servirent surtout dans la Luftwaffe. Quelques exemplaires furent fournis aux forces aériennes bulgares et roumaines. La plupart des Hs-129 furent retirés du service actif à partir de 1943, au profit de versions du Focke-Wulf 190 dédiées à l'attaque au sol. La production cessa à l'automne 1944. Les derniers appareils survivants furent souvent victimes de la pénurie d'essence et de pièces détachées qui frappa l'ensemble de l'aviation allemande à partir de 1944 et surtout de 1945. Seule une poignée d'exemplaires volait encore à la fin du conflit.



The **Henschel Hs 129** was a [World War II ground-attack aircraft](#) fielded by the [German *Luftwaffe*](#). The aircraft saw combat in [Tunisia](#) and on the [Eastern Front](#). A key requirement of the original specification was that the aircraft be powered by engines that were not in demand for other designs. Prototypes with low-power German [Argus As 410](#) engines of 465 PS (459 hp; 342 kW) failed acceptance test, a more powerful replacement was found with the French [Gnome-Rhône 14M](#) engine of 700 PS (690 hp; 515 kW). The design was relatively effective when it was first introduced, and saw service on the Eastern Front in a variety of front-line roles. As the war continued and anti-tank support became the main goal, the aircraft was continually up-gunned, eventually mounting a 75 mm anti-tank gun. Only a small number of these B-3 models were produced, late in the war.

Design and development

By the mid-1930s, the German military, as well as its counterparts in other countries, had come to see the main role of ground-attack aircraft as the [interdiction](#) of logistics and [materiel](#), a task in which targets were often poorly protected and less likely to have strong, well-coordinated defences. For high-value, well-protected tactical targets, the [dive bomber](#) was becoming the conventional solution. The experience of the German [Kondor Legion](#) during the [Spanish Civil War](#) (1936–39) refuted this idea. Even though it was equipped with types unsuited to the role, such as the [Henschel Hs 123](#) and [cannon-armed](#) versions of the [Heinkel He 112](#), the *Kondor Legion* proved that ground-attack aircraft were a very effective weapon. This led to support within the *Luftwaffe* for the creation of an aircraft dedicated to this role, and the [Reichsluftfahrtministerium](#) (RLM; "[Reich](#) Air Ministry") requested [tenders](#) for a specialized ground attack aircraft. It was anticipated that the main source of damage to such an aircraft would be [small arms](#) fire from the ground, meaning that the plane had to be well-[armored](#) around its [cockpit](#) and engines. Similar protection was also needed in the [canopy](#), in the form of 75 mm (2.95 in) thick [armored glass](#). The aircraft was expected to be attacking in low-level, head-on [strafing](#) runs, so the cockpit had to be located as close as possible to the nose, in order to maximize the visibility of its targets. Another, non-operational, requirement severely hampered the designs: the RLM insisted that the new design be powered by engines that were not being used in existing aircraft, so that the type would not interfere with the production of established types deemed essential to the war effort. Only four companies were asked to submit tenders; three submissions followed and only two of these were considered worthy of consideration: one derived from an existing [Focke-Wulf](#) reconnaissance type, the [Fw 189](#), the other was Henschel's all-new Hs 129.

Prototypes

The Hs 129 was designed around a single large "bathtub" of steel sheeting that made up the entire nose area of the plane, completely enclosing the [pilot](#) up to head level. Even the canopy was steel, with only tiny windows on the side to see out of and two angled blocks of glass for the windscreen. To improve the armor's ability to deflect bullets, the [fuselage](#) sides were angled in, forming a triangular shape, resulting in almost no room to move at shoulder level. There was so little room in the cockpit that the instrument panel ended up under the nose below the windscreen, where it was almost invisible; some of the engine instruments were moved outside onto the engine nacelles' inboard-facing surfaces and the gunsight was mounted outside on the nose. Henschel's plane came in 12 percent overweight with the engines 8 percent underpowered; understandably, it flew poorly. The [controls](#) proved to be almost inoperable as speed increased and in testing, the V2 prototype flew into the ground from a short dive on 5 January 1940 because the stick forces were too high for the pilot to pull out.^[1] The Focke-Wulf design proved to be no better. Both planes were underpowered with their air-cooled, inverted-V12 [Argus As 410](#) engines and very difficult to fly. The RLM nevertheless felt they should continue with the concept. The only real deciding factor between the two designs was that the Henschel was smaller and cheaper. The Focke-Wulf was put on low priority as a backup and testing continued with the Hs 129 A-0. Improvements resulted in the **Hs 129 A-1** series, armed with two 20 mm [MG 151/20 cannons](#) and two 7.92 mm (.312 in) [MG 17 machine guns](#), along with the ability to carry four 50 kg (110 lb) bombs along the fuselage centreline.

Hs 129 B-1

Even before the A-1s were delivered, the plane was redesigned with [Gnome-Rhône 14M radial engines](#), which were captured in some number when [France fell](#) and continued to be produced under German occupation. This engine supplied 700 PS (690 hp; 515 kW) for takeoff, compared with the Argus at 465 PS (459 hp; 342 kW). The Gnome-Rhone radials were also made in versions with [opposite rotation for the propeller](#), and were installed on the Hs 129 with the port engine rotating clockwise and the starboard rotating counterclockwise, as seen from nose-on, thus eliminating engine [torque](#) problems. The A-1 planes were converted into **Hs 129 B-0s** for testing (although it has been claimed that some As were sold to [Romania](#)) and the pilots were reportedly much happier with the results. Their main complaint was the view from the canopy, so a single larger windscreen and a new canopy with much better vision were added, resulting in the production model **Hs 129 B-1**. B-1 production began in December 1941 but deliveries were slow. In preparation for the new plane, I./[SchIG 1](#) had been formed in January with [Bf 109 E/Bs](#) (fighter-bomber version of Bf 109 E) and Hs 123s and they delivered B-0s and every B-1 that was completed. It was not until April that 12 B-1s were delivered and the 4th *Staffel* (squadron) became ready for action. They moved to the [Eastern Front](#) (to [Crimea](#)) in the middle of May 1942 and in June they received a new weapon, the 30 mm (1.2 in) [MK 101 cannon](#) with armor-piercing ammunition in a centerline [pod](#).

Hs 129 B-2

Deliveries of the new **Hs 129 B-2** model began in May 1942, side by side with the B-1 (of which just 50 planes had been delivered at that point). The only difference between the two were changes to the fuel system – a host of other minor changes could be found almost at random on either model. These changes accumulated in the B-2 production line until they could eventually be told apart at a glance; the main differences being the removal of the mast for the radio antenna, the addition of a [direction-finding radio antenna](#) loop, and shorter exhaust stacks on the engines. In the field, the differences seemed to be more pronounced. The [Rüstsatz](#) field refit kits were renumbered and some were dropped, and in general, the B-2 planes received the upgraded cannon pack using a 30 mm [MK 103 cannon](#) instead of the earlier MK 101. These guns both fired the same ammunition, but the 103 did so at almost twice the rate. By late 1942 reports were coming in about the ineffectiveness of the MK 101 against newer versions of the [Soviet T-34 tanks](#).^{[citation needed](#)} One obvious solution would be to use the larger 3.7 cm (1.46 in) [BK 3,7](#) (*Bordkanone* 3,7), recently adapted from the ground-based [3.7 cm Flak 18](#). These guns had already been converted into underwing pod-mounted weapons for the [Junkers Ju 87G](#) and found to be an effective weapon, despite the fact that only 12 shells per pod could be accommodated. When mounted on the Hs 129, the empty area behind the cockpit could be used for ammunition storage, greatly increasing the supply compared to the Ju. The B-2/R3 package introduced the BK 3.7 cm (1.46 in) automatic cannon, but relatively few aircraft were converted in favour of the B-3, mounting the BK 7.5.

Hs 129 B-3



A closeup of the *Bordkanone* BK 7,5 75 mm cannon.

It was decided that the 7.5 cm (2.95 in) semi-automatic [Rheinmetall PaK 40](#) anti-tank gun, which had already been adapted for use in the [Junkers Ju 88P-1](#), would be further modified for use in the Hs 129. This resulted in the BK 7,5 (*Bordkanone 7,5*), which, even though it weighed 1,200 kg (2,600 lb), was lighter than the PaK 40. Fully automatic, it featured a new, [hydraulic recoil](#)-dampening system and a new, more aerodynamic [muzzle brake](#). An [autoloader](#) system, with 12 rounds in a rotary magazine, was fitted in the empty space behind the cockpit, within the rear half of the wing root area. The gun and its recoil mechanism occupied a substantial gun pod under the fuselage, and a circular port at the rear of the pod allowed rearwards ejection of spent cartridges immediately after firing. While this new variant, the **Hs 129 B-3**, was theoretically capable of destroying any tank in the world, the added weight worsened the aircraft's general performance and it was inferior to previous variants.^[2] The *Bordkanone 7,5* was the heaviest and most powerful forward-firing weapon fitted to a production [military aircraft](#) during World War II. The only other ground-attack aircraft to be factory-equipped with similar-calibre guns were the 1,420 examples of the North American [B-25G and B-25H Mitchell](#), which mounted either a 75 mm (2.95 in) [M4 cannon](#), or lightweight T13E1 or M5 versions of the same gun, both of which required a crew member to manually reload after each shot. From June 1944, only 25 examples of the Hs 129 B-3 arrived at frontline units before the production line was shut down in September (a small number were reportedly also created by converting B-2 aircraft). In the field the B-3 proved effective, but its small numbers had little effect on the war effort.

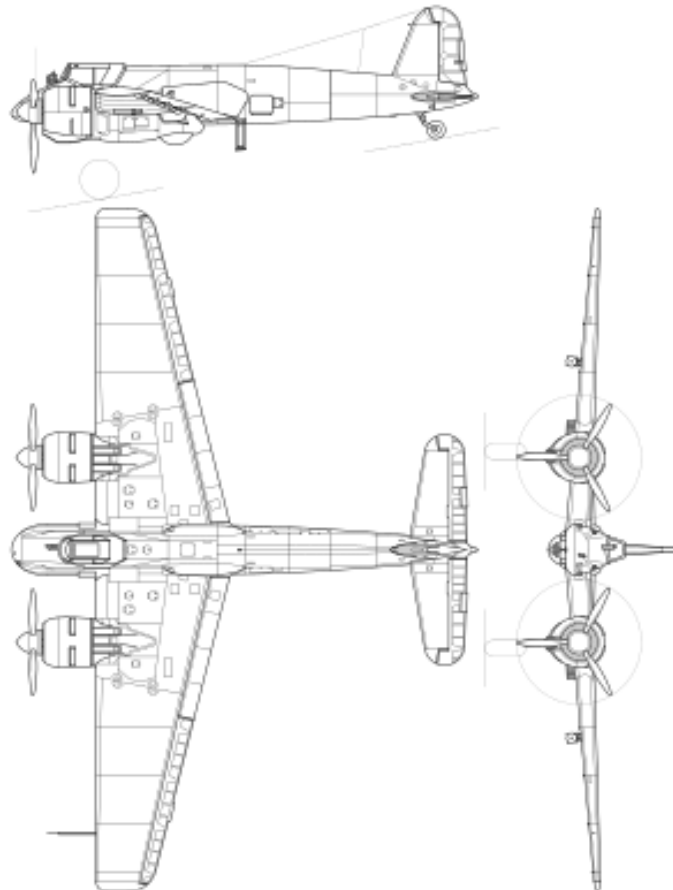
Hs 129 C

To address the poor performance of the aircraft, plans had been under way for some time to fit the plane with newer versions of the [Italian Isotta-Fraschini Delta](#) air-cooled inverted V12 inline engine that delivered 630 kW (850 hp) and weighed some 510 kg (1,111 lb) apiece, providing more power than the [Argus As 411](#) engine of similar configuration and lighter (385 kg) weight. The engine installation ran into a number of delays and was still not ready for production when the plant was overrun by the Allies in 1945.

Hs 129 D

Planned version of the Hs 129. Powered by either two 809 kW (1,085 hp; 1,100 PS) [Junkers Jumo 211](#) or two 1,148 kW (1,539 hp; 1,561 PS) [BMW 801](#) to improve its performance. No prototypes were made.

Specifications (Hs 129B-2)



General characteristics

- **Crew:** 1
- **Length:** 9.75 m (32 ft 0 in)
- **Wingspan:** 14.2 m (46 ft 7 in)
- **Height:** 3.25 m (10 ft 8 in)
- **Wing area:** 29 m² (310 sq ft)
- **Empty weight:** 4,020 kg (8,863 lb)
- **Max takeoff weight:** 5,250 kg (11,574 lb)
- **Powerplant:** 2 × [Gnome-Rhône 14M-4/-5](#) 14-cylinder air-cooled radial engine, 515 kW (691 hp) 700 PS each ^[4] for take-off
- **Propellers:** 3-bladed Ratier constant speed propeller, 2.6 m (8 ft 6 in) diameter ^[5]

Performance

- **Maximum speed:** 407 km/h (253 mph, 220 kn) at 3,830 m (12,570 ft)
- **Cruise speed:** 315 km/h (196 mph, 170 kn) at 3,000 m (9,800 ft)
- **Range:** 690 km (430 mi, 370 nmi)
- **Service ceiling:** 9,000 m (30,000 ft)
- **Rate of climb:** 8.1 m/s (1,590 ft/min)

Armament

- **Guns:** ** 2 × 7.92 mm (0.323 in) [MG 17 machine guns](#), later models from 1943 to 1944 replaced the MG 17s with 2 × 13 mm (.51 in) [MG 131 machine guns](#)
 - 2 × 20 mm [MG 151/20 cannon](#) or
 - a 30 mm (1.181 in) [MK 101 cannon](#) or [MK 103 cannon](#) in a conformally mounted gun pod (B-2/R-2).
- **Bombs:** ** 2 × 50 kg (110 lb) bombs on underwing hardpoints
 - 4 × 50 kg (110 lb) fragmentation bombs on belly racks

