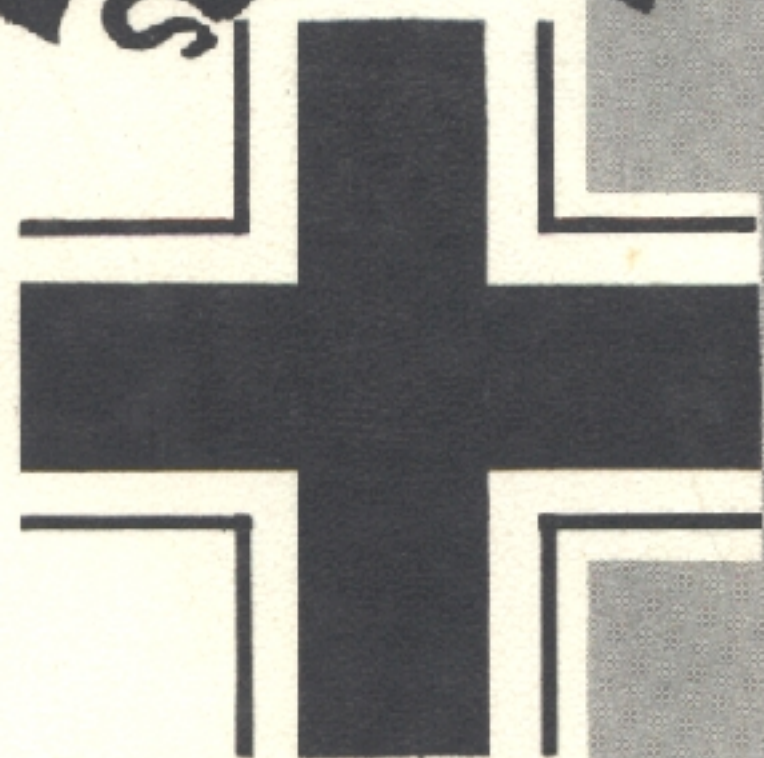
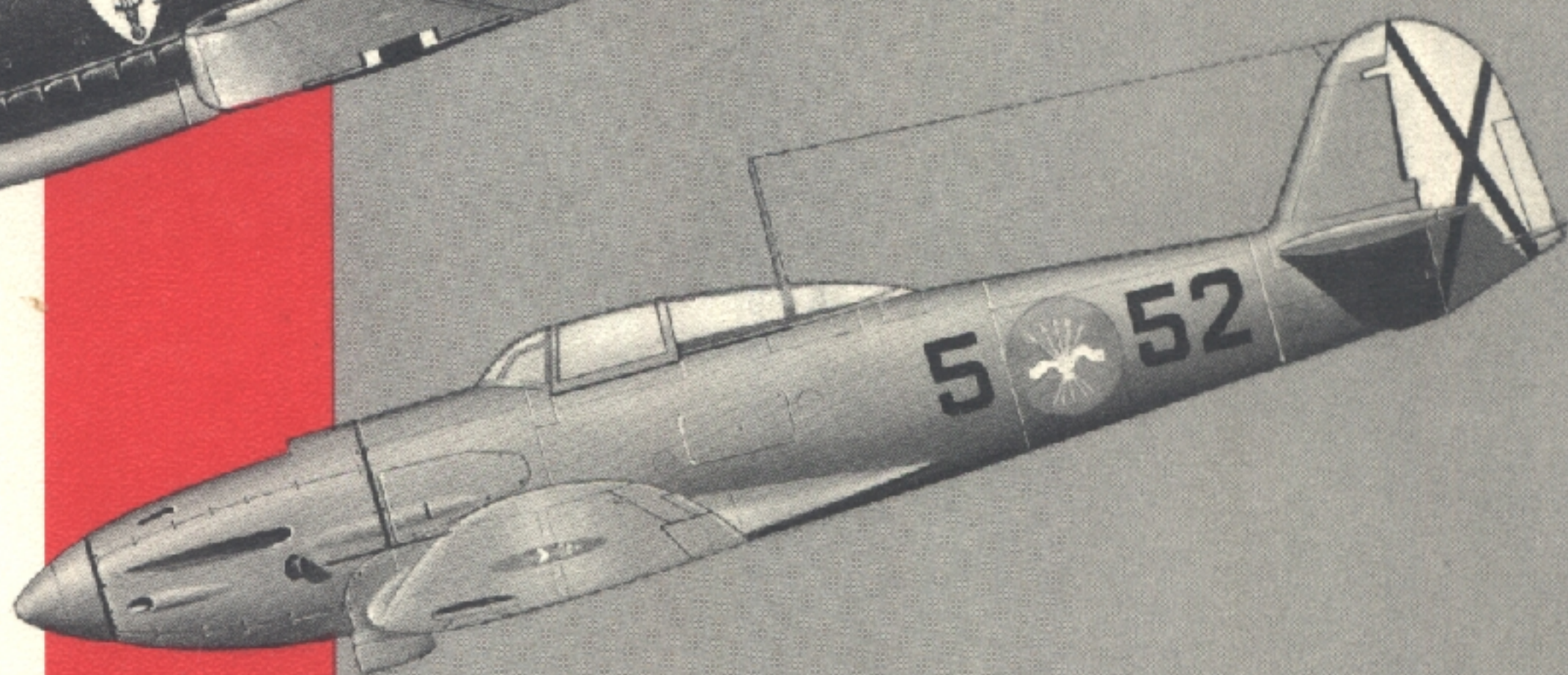
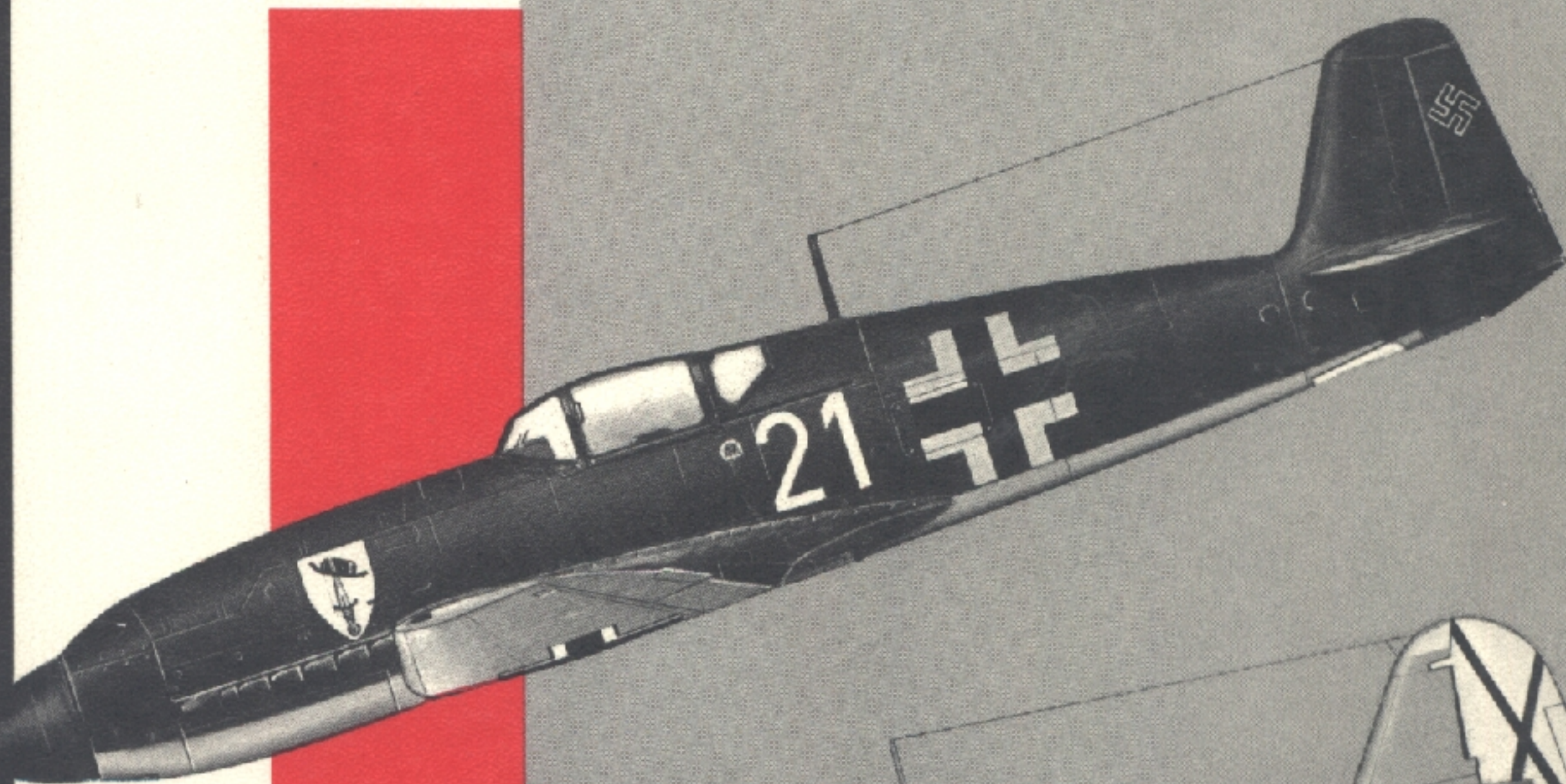


Spínfel



100, 112



Seinfeld

100, 112

by
R. S. Hirsch and Uwe Feist
in cooperation with H. J. Nowarra



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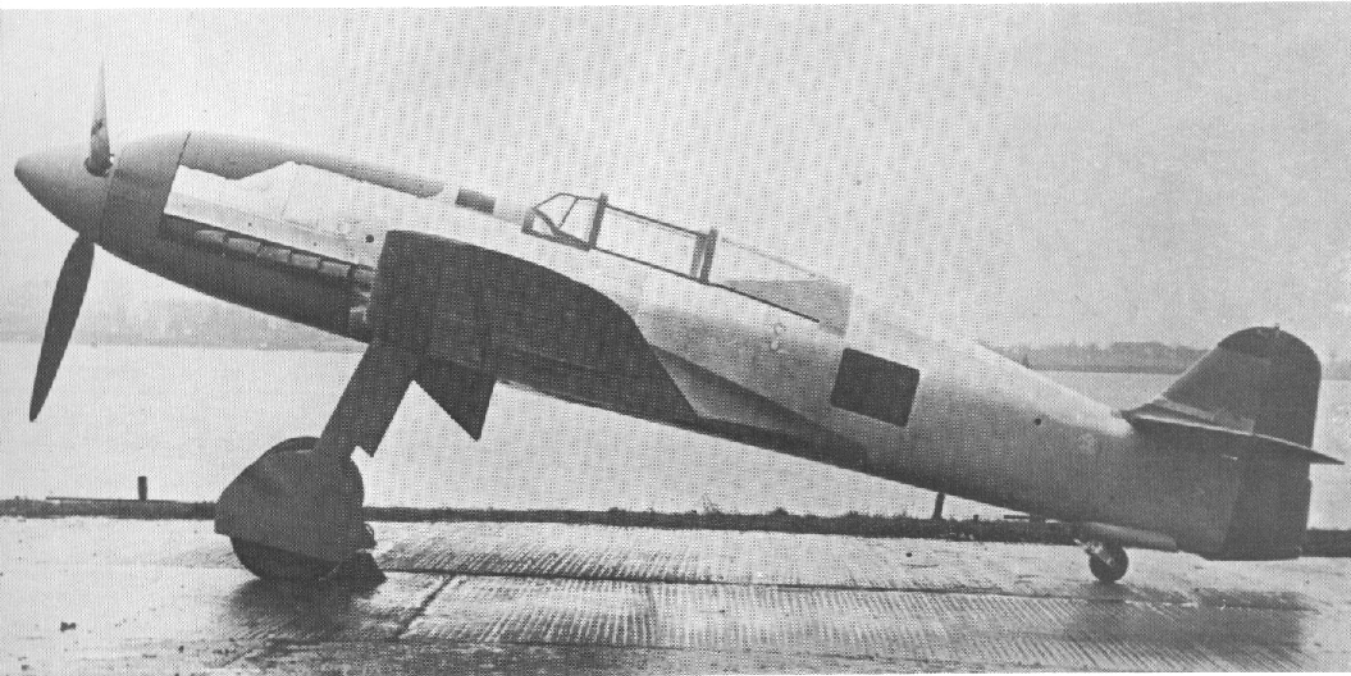
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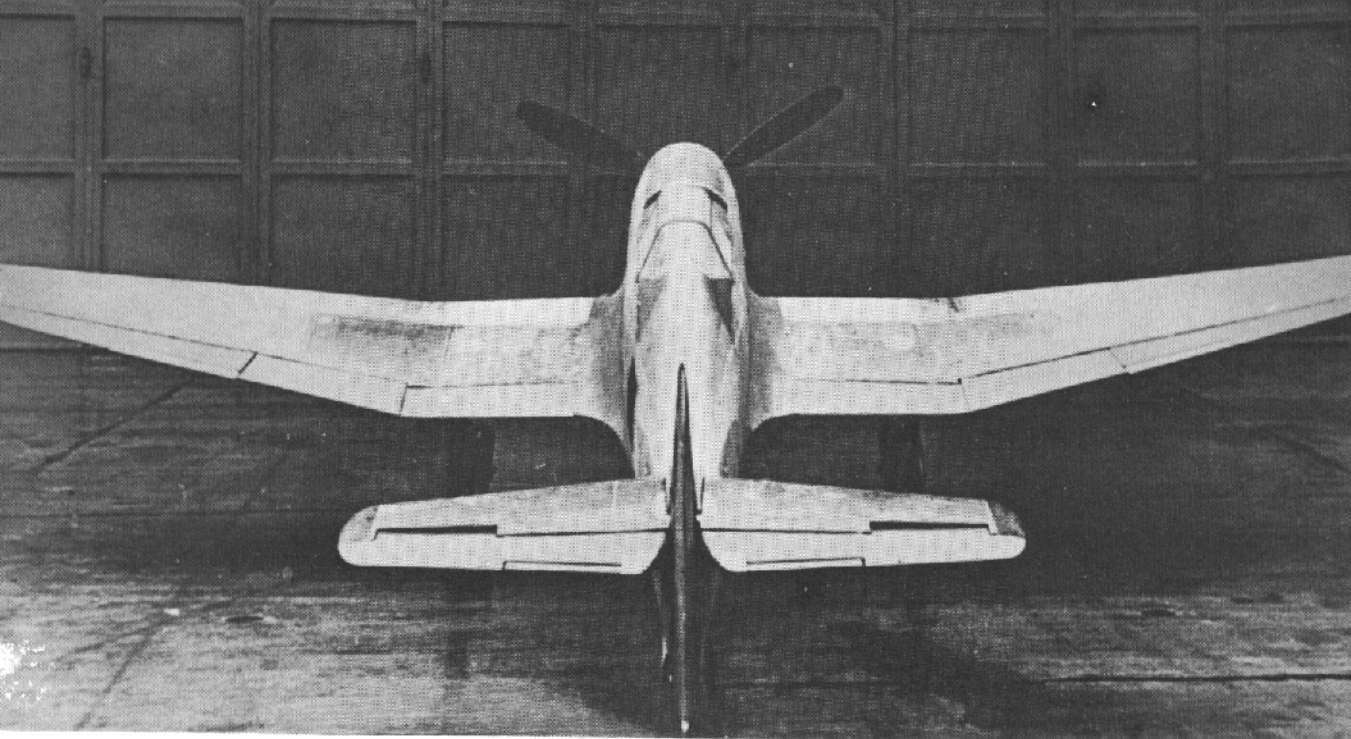
THE HEINKEL HE 100



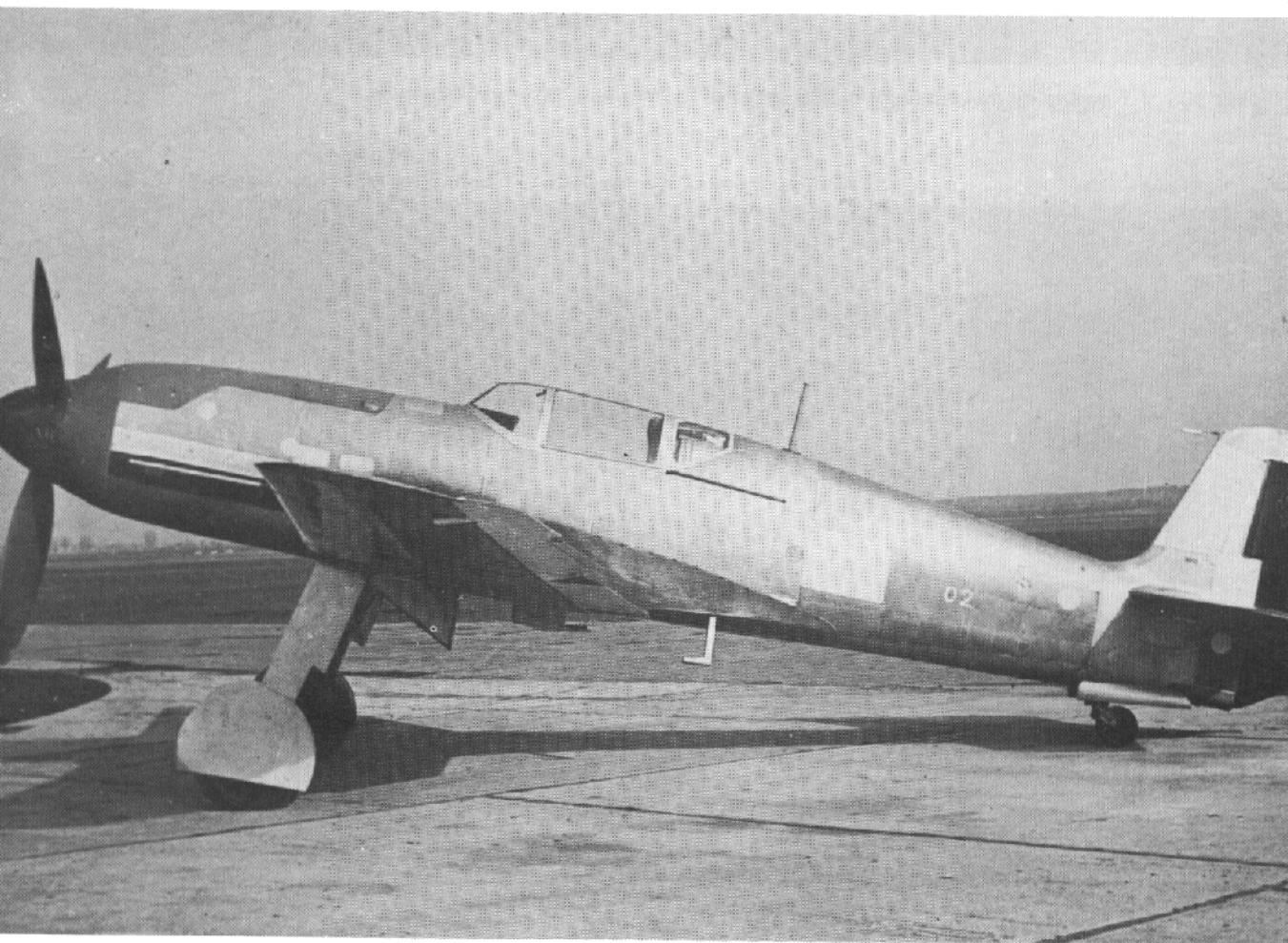
He 100 V-1 awaits its maiden flight on the shore of the Warnow River in Marienehe.

Another view of the He 100 V-1 before its first flight, January 22, 1938.

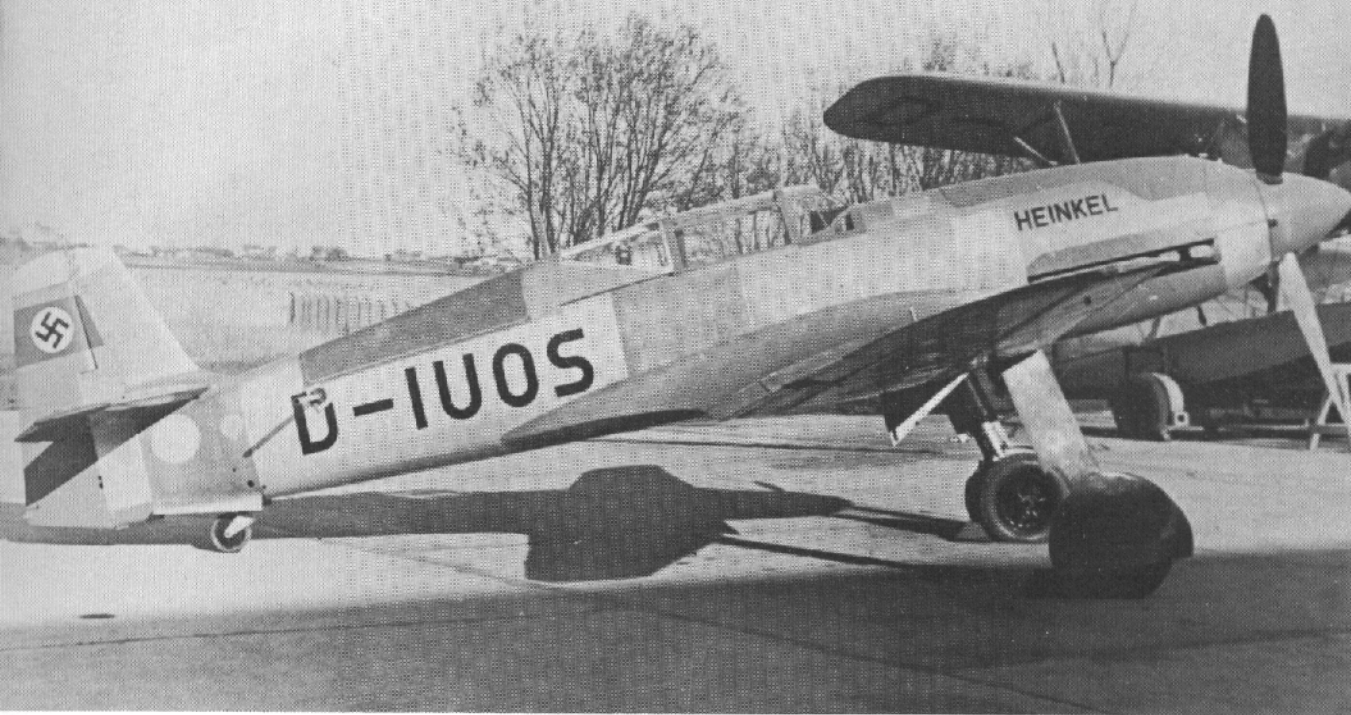




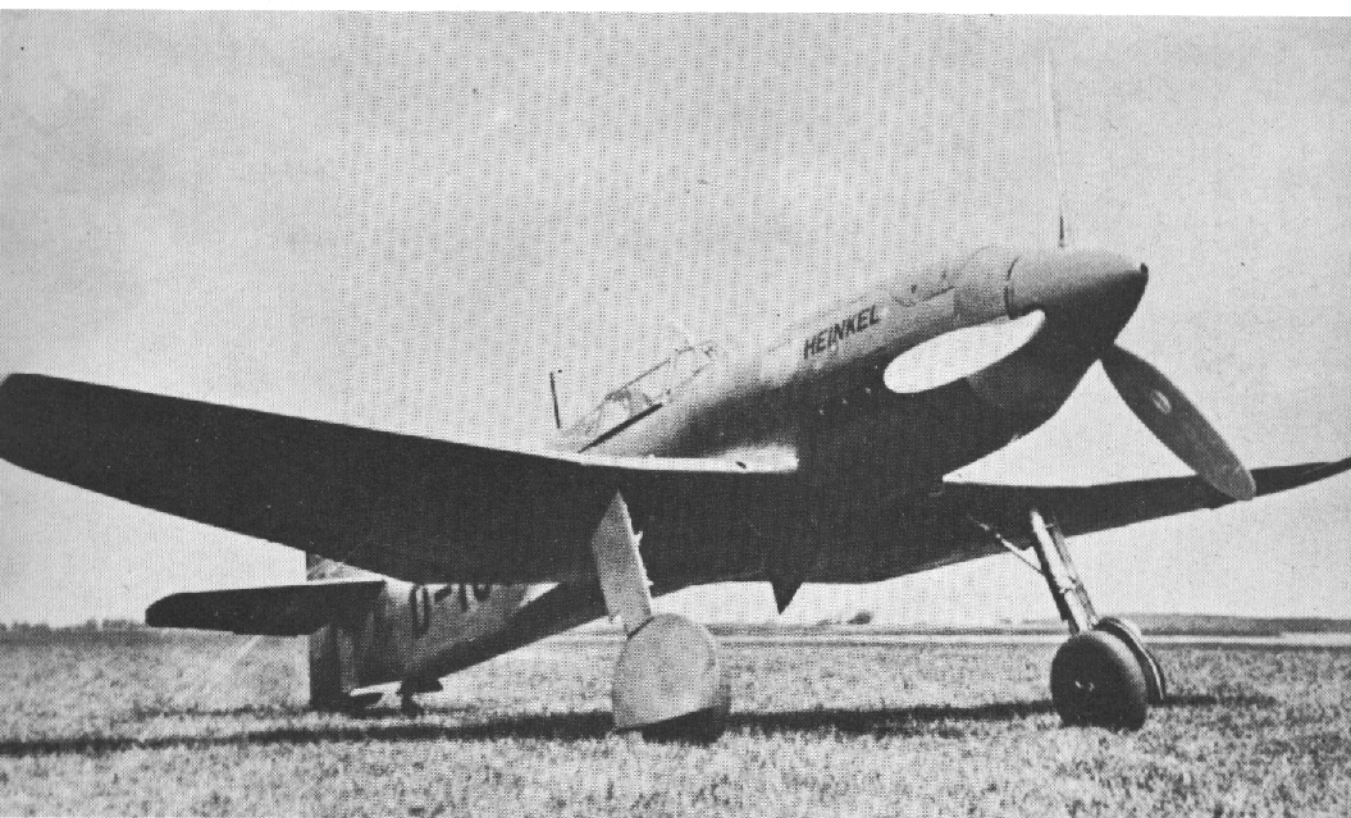
Rear view of the He 100V-1 showing the excellent lines of this experimental fighter.



This photo of the He 100 D-02, just completed, shows the larger modified vertical tail surfaces.



The normal powerplant of a DB 601A equipped the He 100 V-2 on its record flight. At that time it reached a speed of 634.73 km/hr. A He 114 floatplane is in the background.



He 100 V-2 after its maiden flight and before Udet's record flight.



He 100 V-3. Note short wing and sharp curved two-piece windshield.

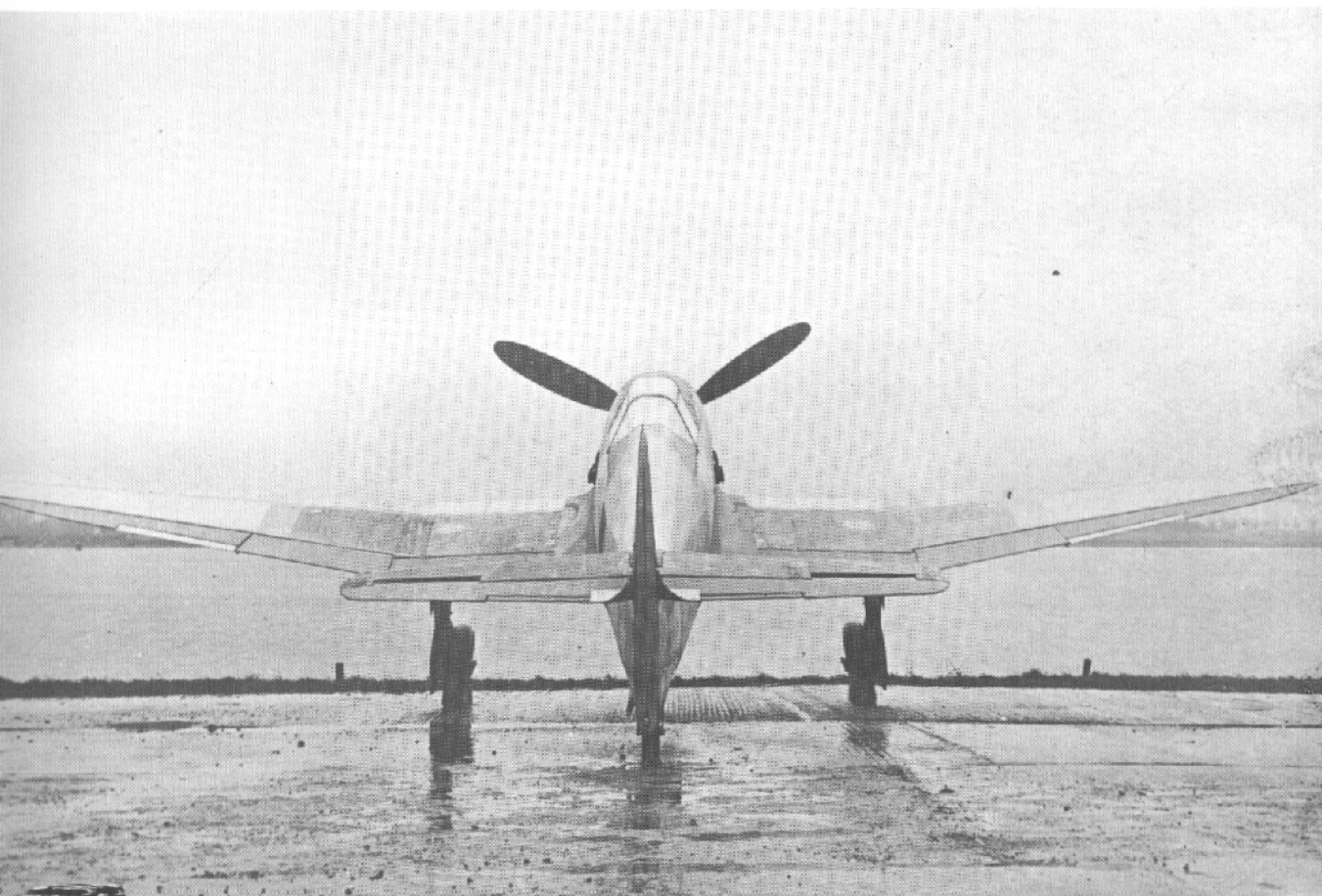
Flight Captain Hans Dieterle, facing right, and his record breaking "He 100V-8 "





The He 100 V-3 shown in original form, subsequently modified for its assault on the absolute world speed record.

The wide track landing gear of the He 100, V-1 shown, prevented mishaps during takeoffs and landings, a problem which continually plagued the Bf 109.





The He 100 V-6, another step in the development of the He 100D

He 100 V-4 warming up.

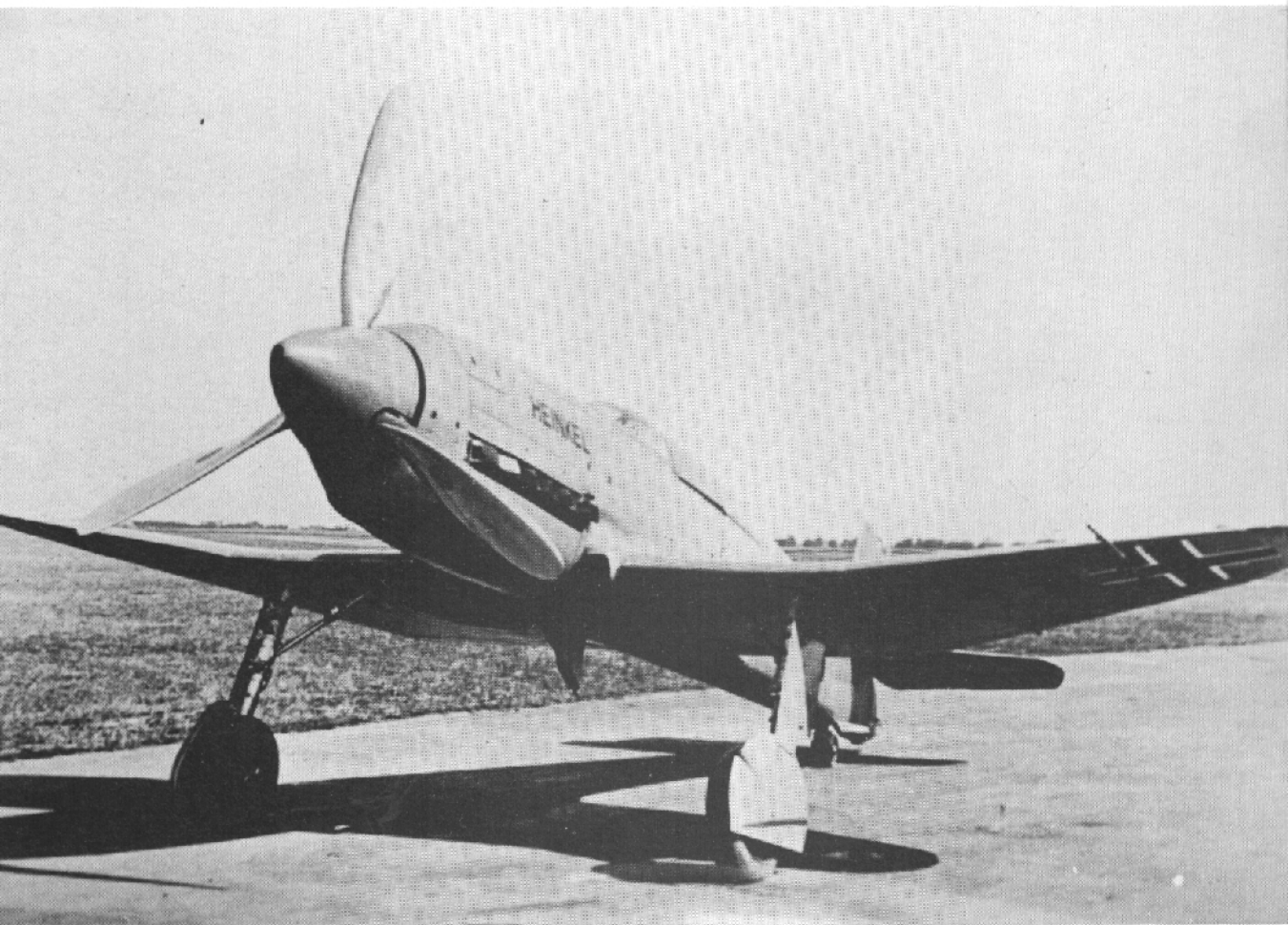




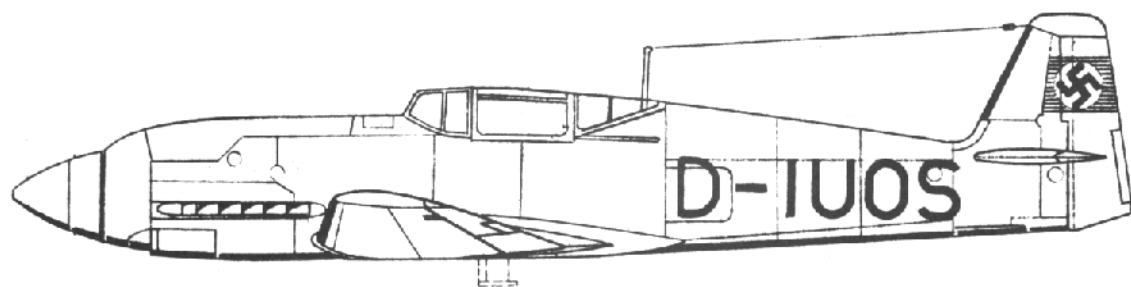
Dieterle in the cockpit of the He 100 V-8, the plane which in fact established the speed record. Compare the windscreen to that of the HE + BE.

More deception, the V-8 appears as just another Luftwaffe fighter in this photo. It can easily be seen that the markings have merely been painted on a paper stripe and glued to the fuselage.

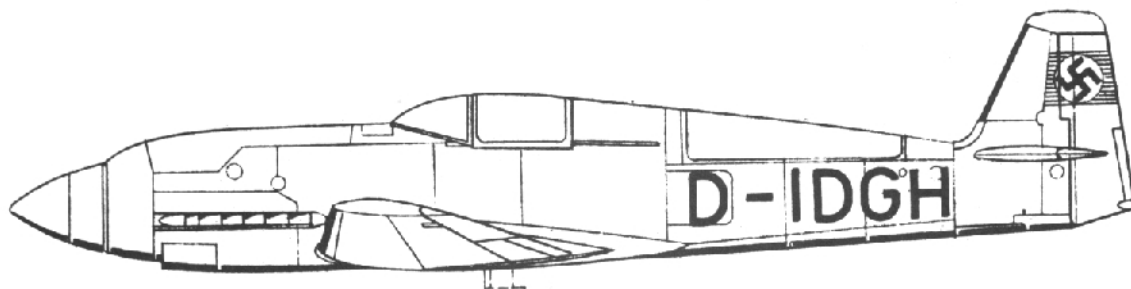




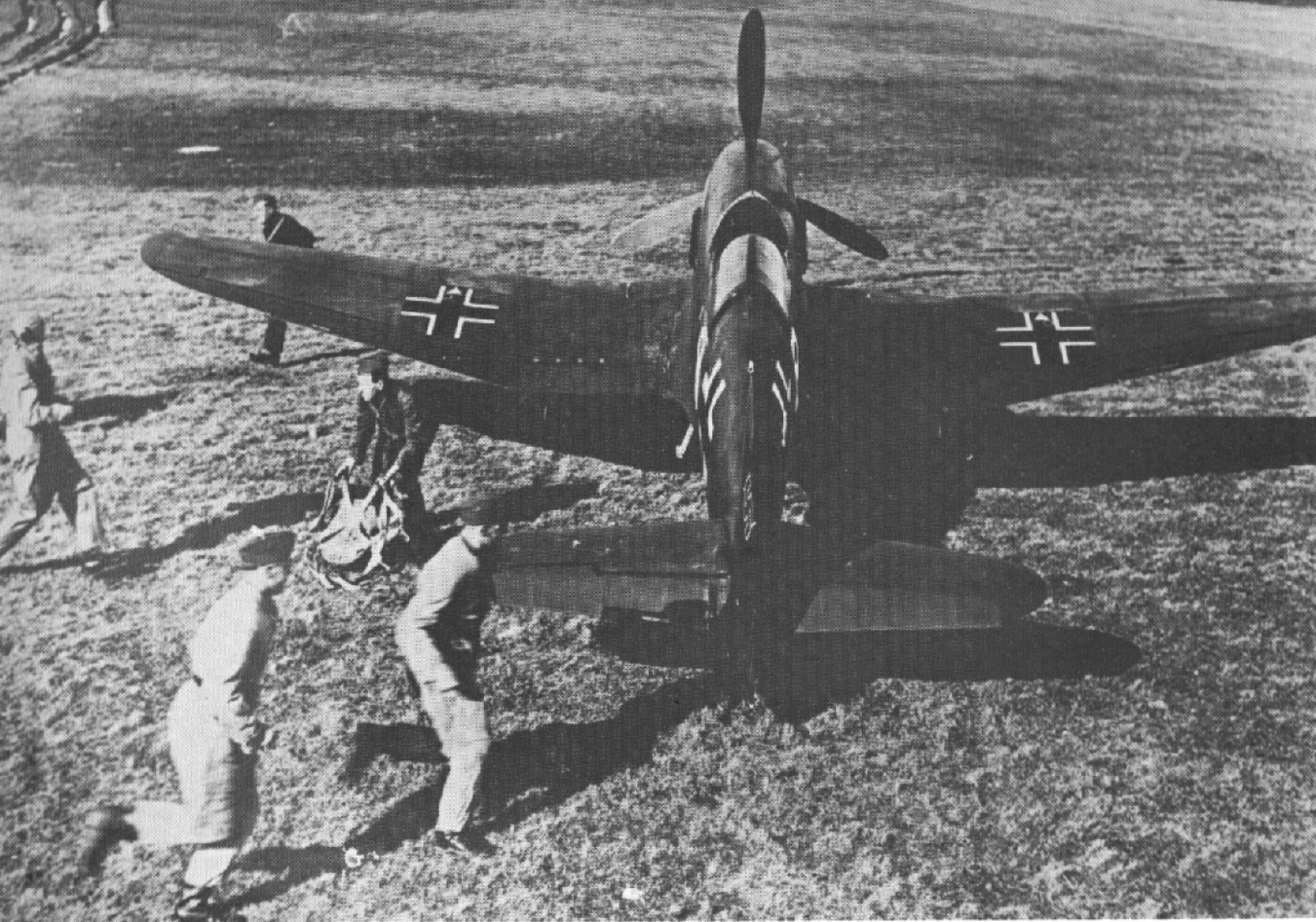
This view of the V-8 shows the reduced wing span.



HEINKEL HE 100 V-2



HEINKEL HE 100 V-8



Scramble at a He 113 field.

The He 100 D-1 often designated He 113, throughout its testing period showed superiority in all aspects over the Bf 109.





Company pilots and mechanics were ordered to act as members of a Luftwaffe fighter squadron equipped with the mysterious "He 113" for this photo.

This top view of a He 113 shows the well streamlined shape of the cockpit canopy.





By changing fictitious unit markings frequently the Germans were able to create a complete air force of fighters using the same planes over and over.

Painted with one of the deceptive unit insignia is this He 100 D-1, alias He 113.





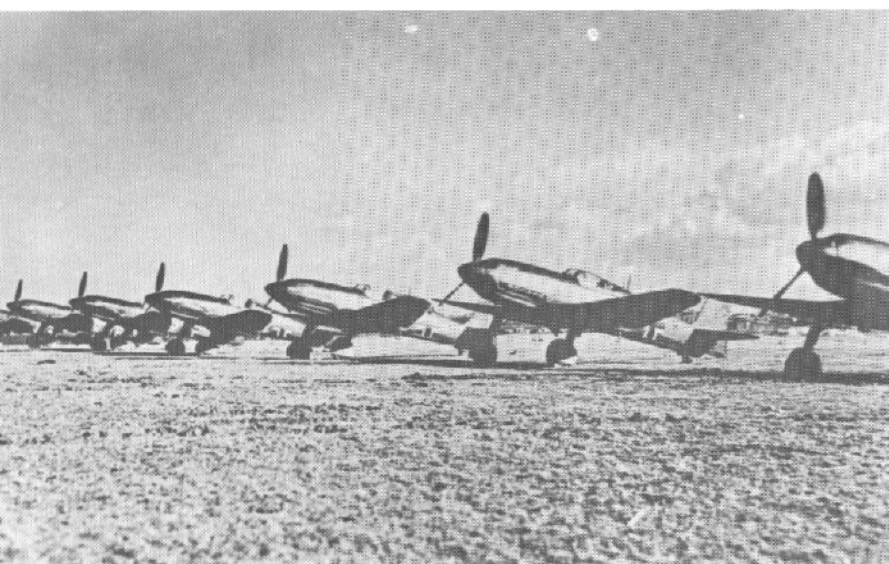
"Another" He 113 equipped fighter unit.



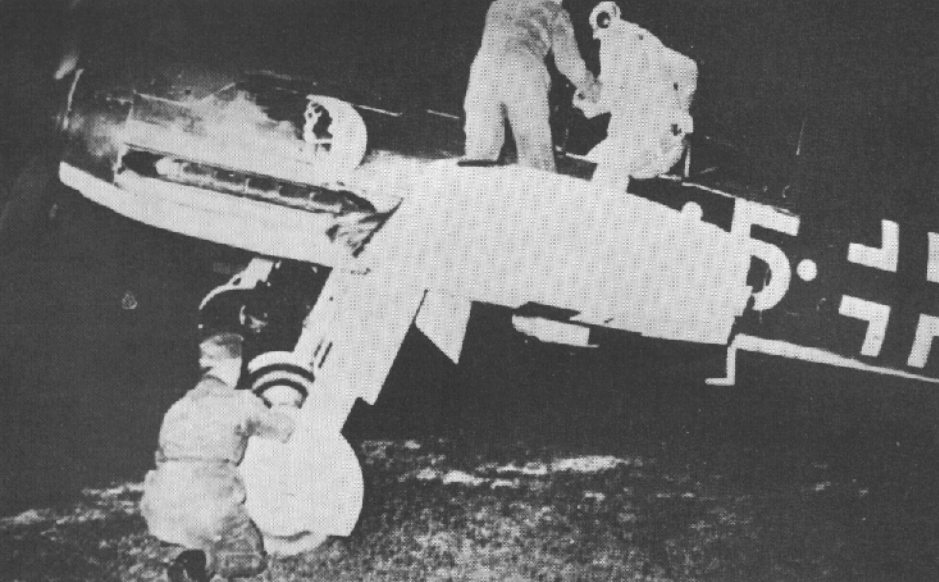


Representing a He 113 Squadron, these unarmed He 100 D-1's were photographed at the edge of the Heinkel airfield.

Operating on his own risk, Heinkel produced a small number of He 100's as the He 100 D-1.



This impressive shot of a "He 113 Squadron" was one of many used to confuse Allied Intelligence into believing that the 113 was a main line fighter of the Luftwaffe.



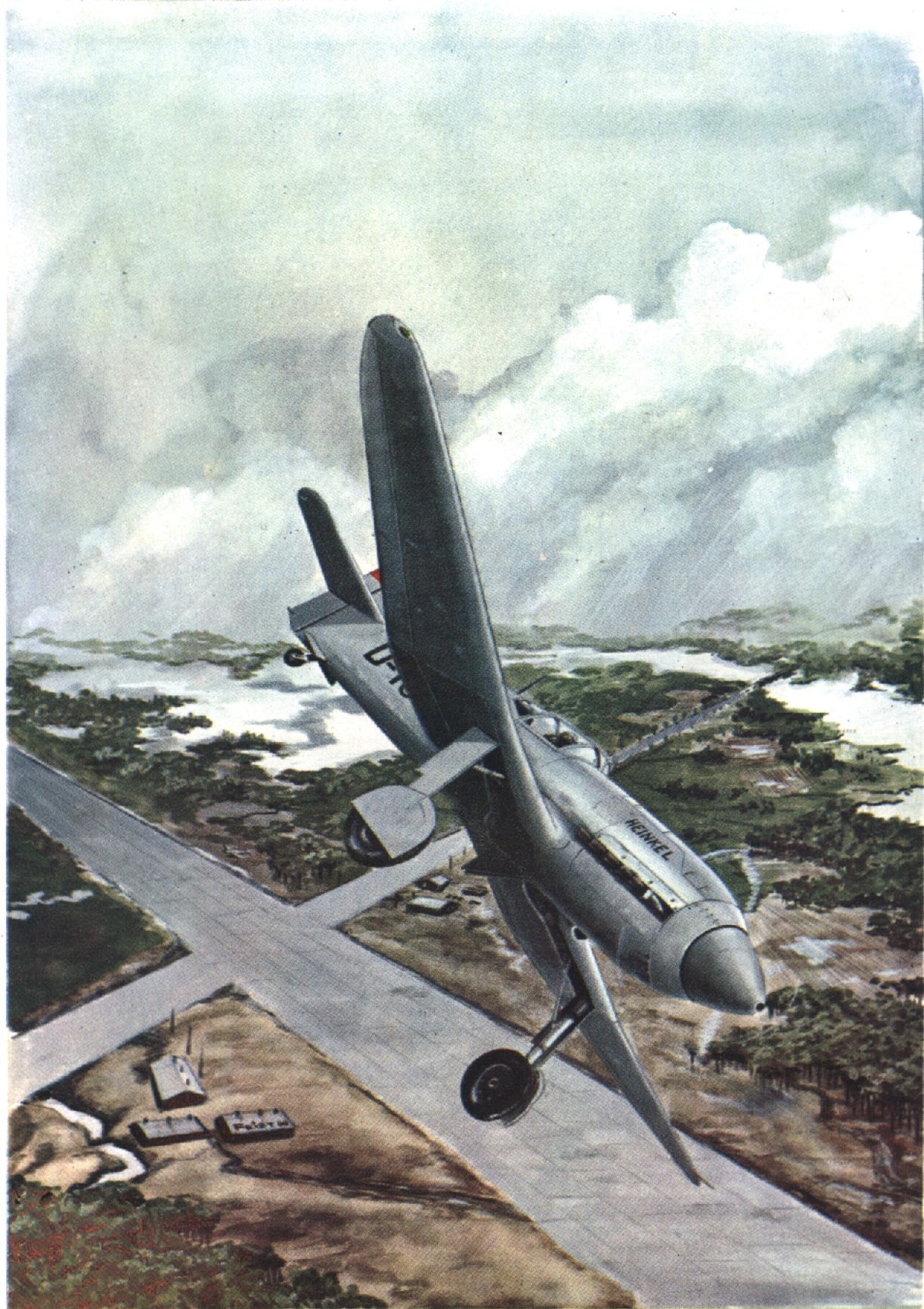
These photos, published in 1940, show the He 100D painted with curious markings depicting a night-fighter unit. Close inspection reveals that the aircraft are not fitted with weapons.



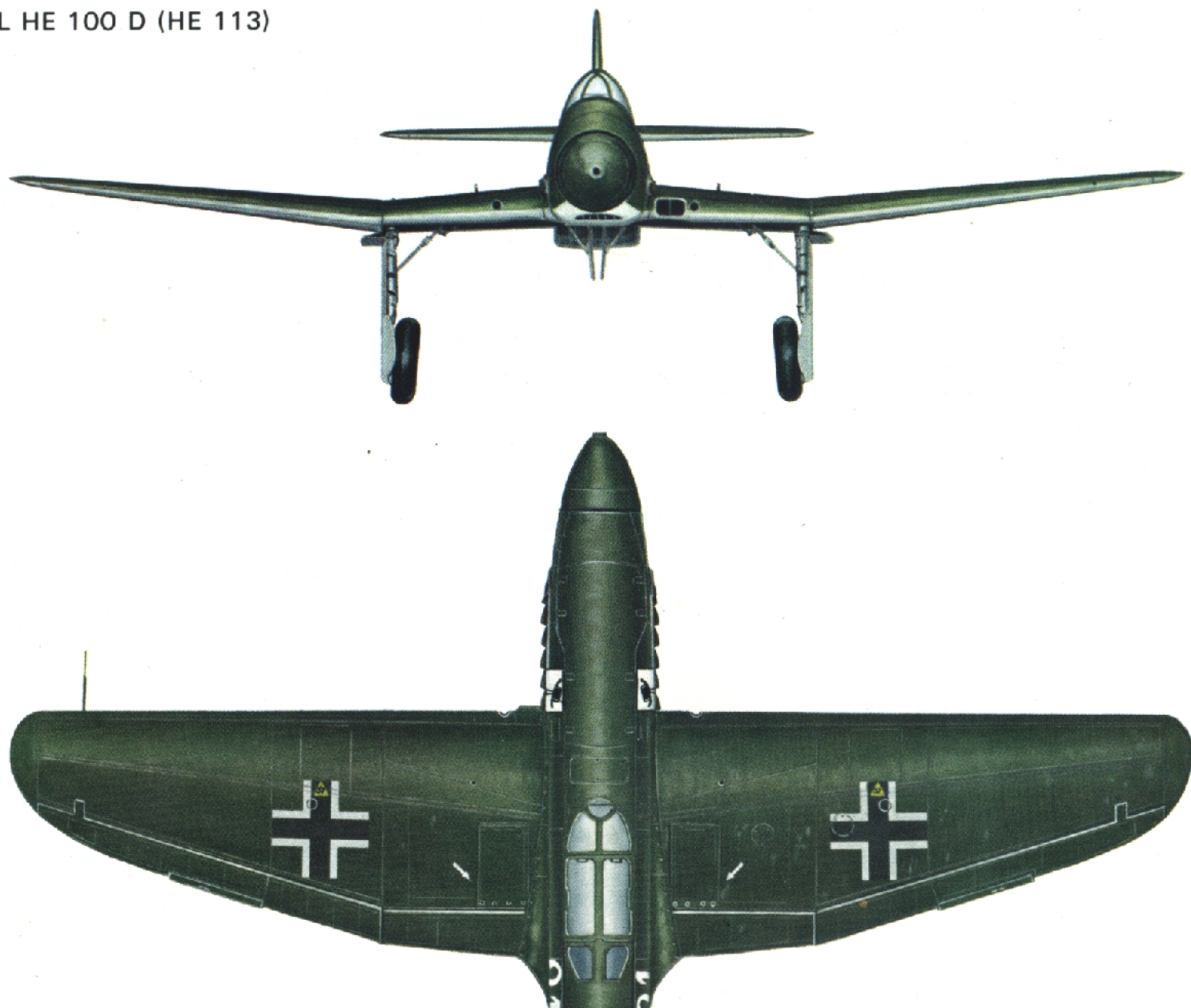
Fitted with a normal DB 601M engine, the He 100 D-1 achieved a maximum speed of 416 m.p.h. as compared to the 354 m.p.h. of the Bf 109 E of 1939/40.



HEINKEL HE 100 V-2



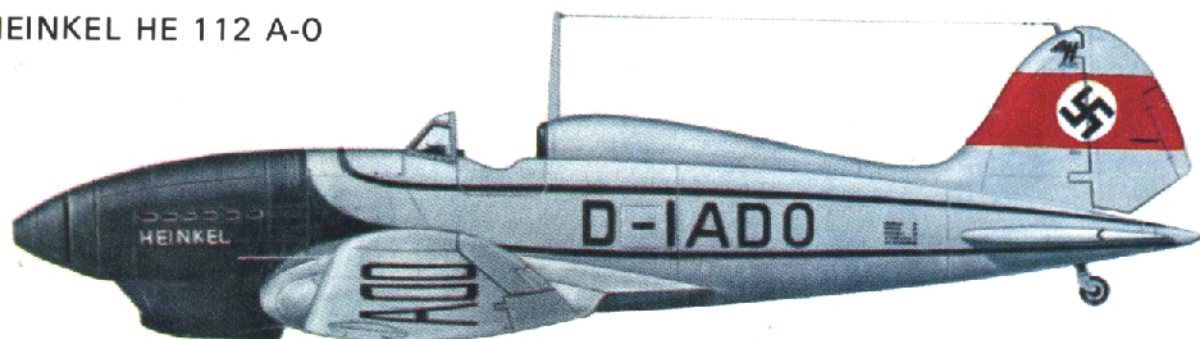
HEINKEL HE 100 D (HE 113)



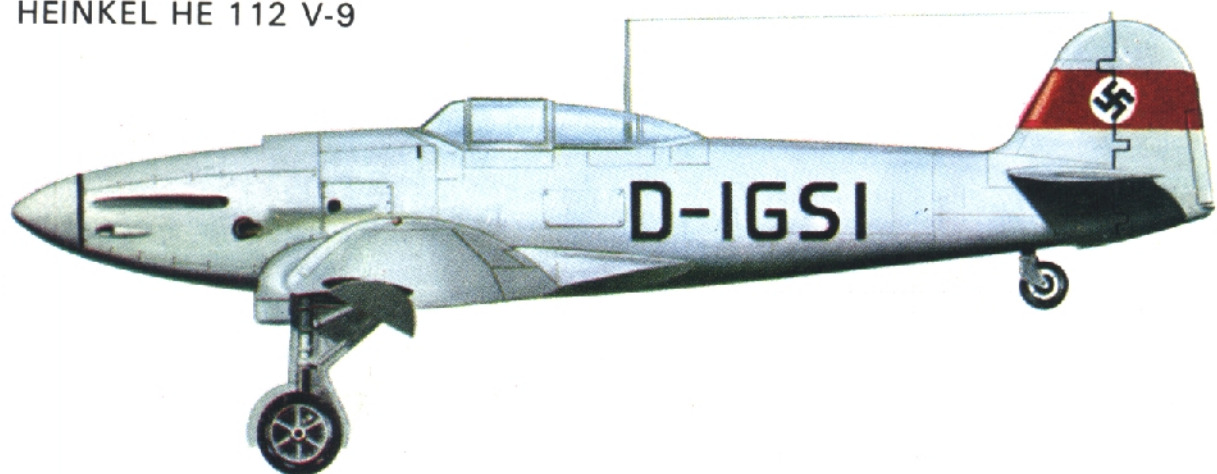


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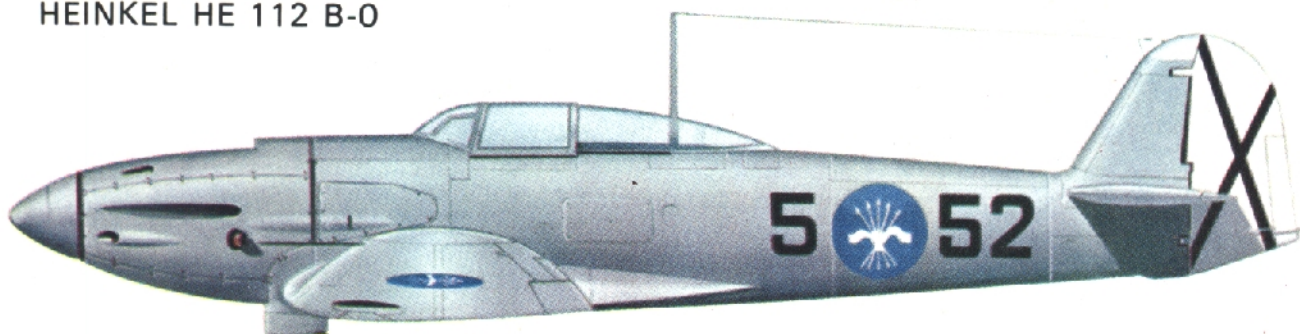
HEINKEL HE 112 A-0



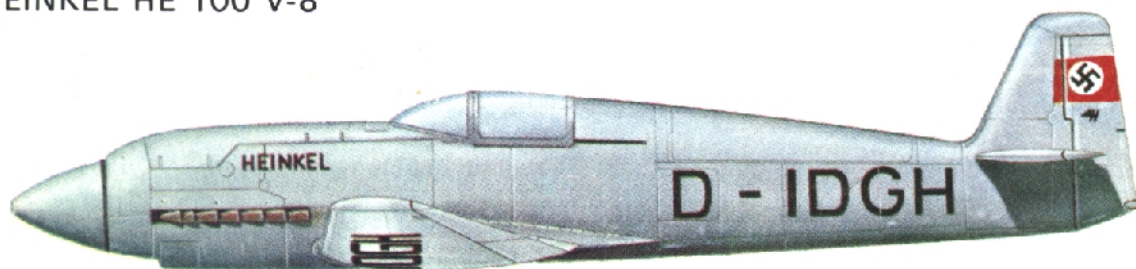
HEINKEL HE 112 V-9

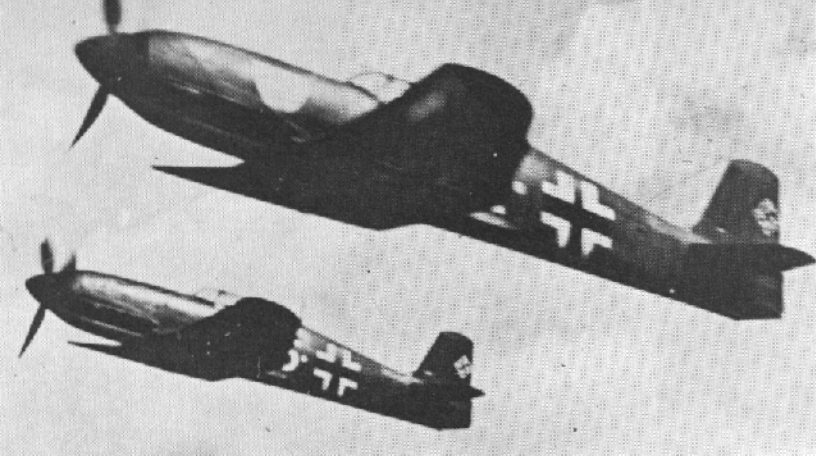


HEINKEL HE 112 B-0



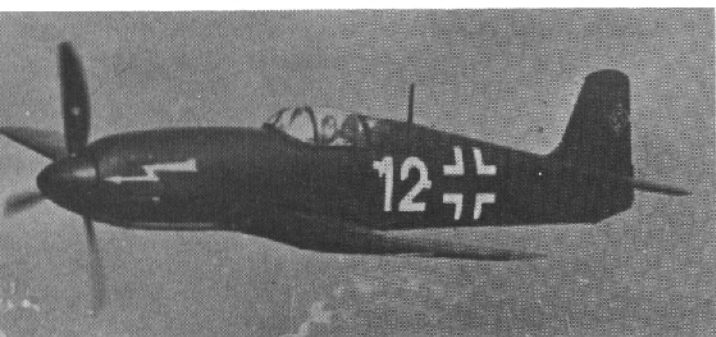
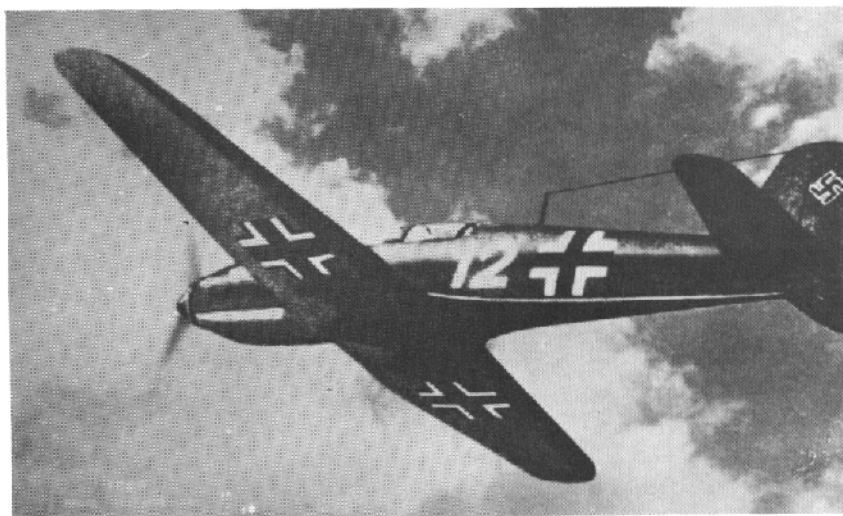
HEINKEL HE 100 V-8





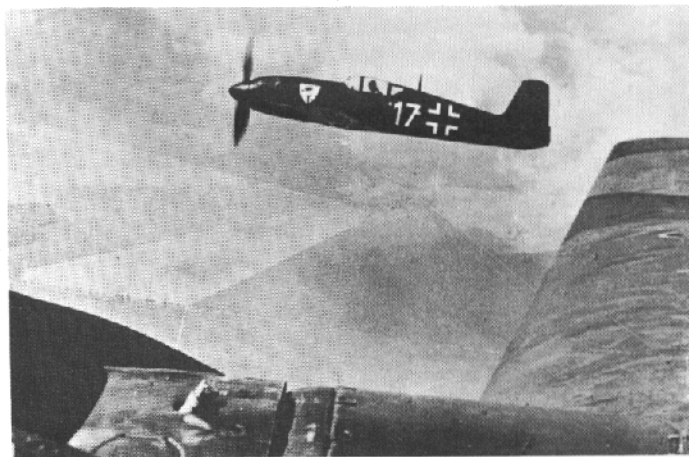
Photos of the He 113 fighter published were actually photographs of the He 100 D-1.

In flight the He 100 D proved itself a most maneuverable aircraft.



A "He 113" flying over the Baltic coast near Rostock-Marienehe.

A "hat and sword" unit He 113 posing as an escort fighter, propaganda photo.





The Heinkel Story

Prof. Dr. Ing. Ernst Heinkel

BEFORE THE FIGHTERS

Like the Lockheed aircraft of the late twenties and early thirties, the Heinkel monoplanes bore a certain resemblance to each other which unmistakably identified them with their manufacturer. And ironically, the first group of single engine monoplanes produced by the Ernst Heinkel Flugzeug Getriebwerk was intended as a local competitor to the Lockheed "Orion", which had recently been purchased by Switzerland and put into passenger service.

The plane was the He 70, but it began before that with the development and manufacture of the He 64, which was a light sport plane using an inverted "Gipsy" air cooled engine. This sport plane was very noticeable at the summer European contests of 1930 and 1931. During the summer of 1931, the Heinkel Company of Warnemunde started work on the He 70 project. It was a single engine four-passenger plane with a crew of two and looked like a hybrid of a Lockheed "Orion" with a Curtiss Conqueror engine installed with the wings and gear of the He 112 fighter later developed. The He 70 was equipped with a BMW VI engine of 640 h.p. which produced a top speed of 226 m.p.h. and a landing speed of 68 m.p.h. At 65 percent power it could cruise at 203 m.p.h. With Heinkel test pilot, Werner Funck, at the controls it promptly set an international 100 km. closed-course speed record for the 500 kg. (1100 lbs.) payload class aircraft with an average speed of 216 m.p.h., beating the one held by a Lockheed "Vega".

The shape of these Heinkel planes was unmistakably the work of the Kark Schwarzler and the Gunter Twins (Siegfried and Walter) design team. The He 112 wing and landing gear was a direct descendant of the He 70 with the wing being full cantilever construction and elliptical in shape with diminishing chord, thickness and curvature and having a slightly negative dihedral (anhedral) at the root giving an inverted gull look.

FIGHTER REQUIREMENTS

As a historical sidenote, it is interesting that by the "Pact of Locarno" between the Republic of Germany and the Soviet Union, Luftwaffe Officers were sent to and received flight and tactical training at Lipetsk. Every gun, gunsight, bomb, apparatus or air weapon which was used in the homeland by the Luftwaffe before 1939 was developed at Lipetsk and was ready for serial production.

The Luftwaffe was officially established in 1935. The Chief of Technical Departments was Col. Wimmer. He was quick to make it plain to the Technical departments of development and research and in a speech to the industry heads that the biplane fighters of today such as the fine He 51, were not sufficient for a superior Luftwaffe. A new breed of monoplane fighters had to be developed with modern ideas and that would guarantee a speed of over 300 m.p.h. (450 km./hr.). From this, resulted a competition program which evolved the Arado Ar 80, the Focke-Wulf Fw 159, the Heinkel He 112 and the Messerschmitt Me Bf 109.



Dir. Karl Schwarzler



Dipl. Ing. Dr. Siegfried Gunter

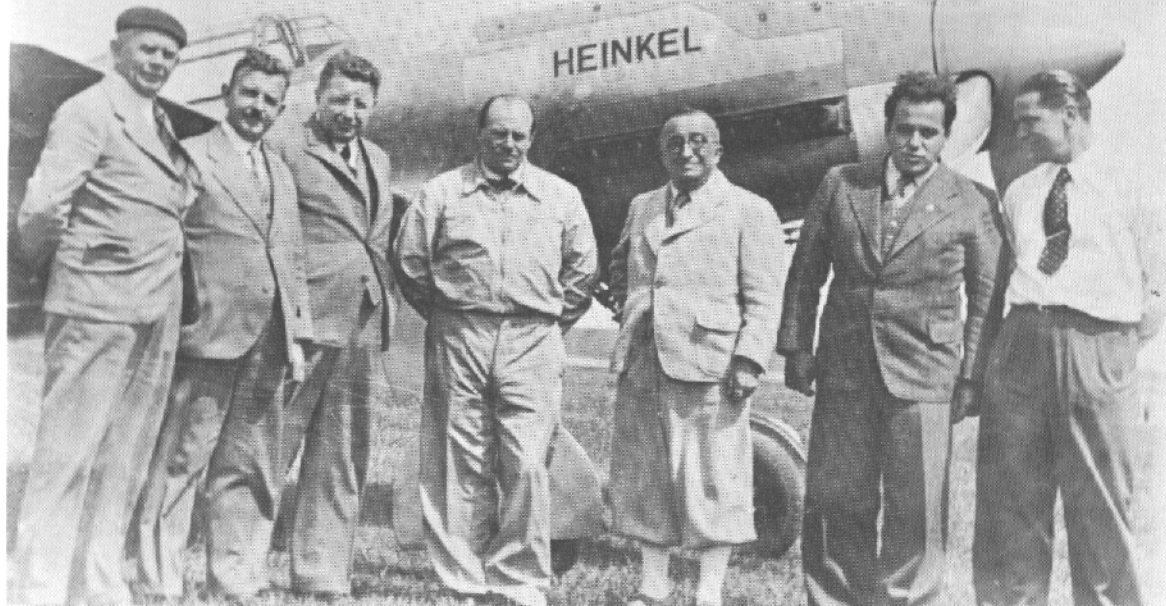
Of the four V-1 prototypes, only the Fw 159 had a German-developed and manufactured engine, the Jumo 210 of 640 hp. The other three used the British Rolls Royce Kestral which produced 695 hp. but weighed less. These power plants were part of a group in a trade pact with England in exchange for some He 70's and the manufacturing rights to it. The competition flight tests were held at Travemunde in October 1935. Considering there was only 6 or 7 months time lapse between Col. Wimmer's guidelines as layed down and until the actual machines were flying in competition, the industry did excellent in their response.

The Fw 159 had gear retracting problems; it was a little heavier and underpowered and so performance was not up to the others. It was dropped from competition. The AR 80 had a fixed gear and too much frontal area drag to produce high performance and so it was also abandoned. The He 112 and the Me 109 remained for further competition. A very extensive series of tests was undertaken and the performance of the two types was almost the same with some favorable traits in both. The climb out of the He 112 was a little better and landing and take off qualities were quite noticeably better than the Me 109. But the Me 109 had that fighter look and development potential. Also there was Party politics at work and so in 1936 it was announced that the Me 109 was to become the standard Luftwaffe fighter configuration and would go into immediate serial production.

HE 112 DEVELOPMENT

This did not stop Ernst Heinkel who felt there should be more than one fighter. So development of the He 112 was to continue until a superior fighter was to evolve. The first prototype that underwent completion was the He 112V-1 and had registration number D-IADO. It had many characteristics of the He 70, especially the wing and landing gear, except that the V-1 had a straighter leading edge and square tip wing with a little more pronounced dihedral. Its maximum speed was almost 500 km./hr. (310.7). The second prototype was the He 112V-2 with registration D-IHGE and was powered by a Jumo 210 engine of 640 hp. It attained a maximum speed of 480 km/ (298.3 mph).

The third prototype, the He 112V-3 carried the registration of D-IDMO and was the first He 112 with armament. It had two 20 mm MG/FF installed in the wings firing outside the propeller arc and two propeller synchronized 7.9 mm MG/17's installed in the fuselage, one on each side of the engine. It was powered by a Daimler Benz DB 600 of 700 hp. and swung a three blade propeller. Although at first it was built with an open cockpit like the V-1 and V-2, it was modified to a closed canopy before undergoing tests. There was a noticeable wing change which had the inverted gull look but elliptical planform much like the He 70 development. This ship was often used by Ernst Udet in demonstrations at field meets throughout Germany, once at Zurich in 1937. It was the first truly fighter plane of the 112 series and was intended as the prototype for the He 112A series which was not ordered into serial production. Since the production project was abandoned, the V-3 was further modified with the tail being lengthened. There also were some cowling changes.



Koehler, Schwarzler, Gunter, Udet, Heinkel, Hertel and Herting, left to right, photographed after Udet's record-breaking flight June 5, 1936.

The fourth prototype was the He 112V-4, registered D-IZMY and like the V-3 was powered by a DB 600 engine. It was generally similar to the V-3 with the same tail and cowling modifications incorporated. It carried no armament but had streamlined fairing bulges for installation of MGs on each side of the fuselage making a slightly different contour to the fuselage. Curious enough, this highly streamlined fighter still had the open cockpit of the V-1 and V-2 prototypes. The fifth prototype was the He 112V-5. This was the same as the V-4 in contour and also was lacking armament, but it did not carry armament fairings. Cowling contours changed since it was powered with the JUMO 210 engine of 640 hp. The V-4 with its light weight and high power-to-weight ratio was a good performance aircraft.

ROCKET AND PLANE EXPERIMENTS

In November 1935 Ernst Heinkel and Werner Von Braun an up and coming engineering and chemical scientist, got together to discuss a project of rocket boost powered planes. The He 112V-1 was given to Von Braun for experimentation in installation of a bi-fueled rocket motor. Tanks for hydrogen peroxide and menthonal were installed in the rear section of the fuselage with the rocket motor and exhaust at the extreme rear. When Heinkel saw the installation in 1936 that Von Braun and his engineers had come up with he was quick to ready two He 112s for the flight experiments and personally supervised the plane modifications for the rocket motor and fuel tanks installation. The two airframes were the V-1 and the V-4. Several ground runs were attempted with the rocket motor alone activated during which course the two He 112 airframes were destroyed. A Heinkel lead project engineer Kunzel and test pilot Warzitz did all of the experimental runs and preparation. Warzitz was blown from the cockpit from one explosion but was not seriously injured.

In March 1937, a third He 112 was readied for flight testing. This was the He 112V-5 airframe but with the enclosed canopy modification of the V-3. The test site was the airfield Neuhardenberg. The take off was by the JUMO 210 engine alone with Flugkapitan Warzitz at the controls. At 1,500 ft. he leveled off and then started up the rocket motor. In a few seconds his speed climbed from 300 km/hr to 400 km/hr. However, troubles started almost immediately when the temperature in the cockpit became almost unbearable and Warzitz was nearly overcome by fumes. He fully expected the flight to cumulate in a violent explosion at any second so he jettisoned the canopy and prepared to bail out. But to his surprise, he discovered he was too low, estimating his altitude to be about 900 ft. He abandoned the bailout and started setting up a landing pattern to the airfield. Here he discovered that the gear uplock/unlocking mechanism was jammed so he came on in gear-up for a clean belly landing. As soon as Warzitz got clear of the plane it caught fire around the tail section. Mr. Kunzel and ground crew came running up with equipment and the flames were extinguished. Repairs were soon made.

More modifications were made to the rocket motor and fuel tanks and some seal off to the cockpit area installed. Some airframe beef up was made to hold the tanks and it was made a little longer to carry more fuel. The He 112V-5 was again ready for the next take off test. This take off was made with the rocket motor being activated while on the roll. The V-5 now climbed at a very steep angle like the modern jet assist take offs. Late in the summer of 1937, Warsitz succeeded in taking off and completing a short pattern by rocket motor alone. So the He 112V-5 really became the first rocket plane to actually fly with a pilot and under full flight control.

THE HEINKEL HE 112



The first prototype of the He 112, He 112 V-1, was equipped with the British Rolls Royce Kestrel V powerplant of 695 HP.

Bearing characteristics of all Siegfried Gunter designs, the He 112 V-1 featured an open cockpit, sign of the times.



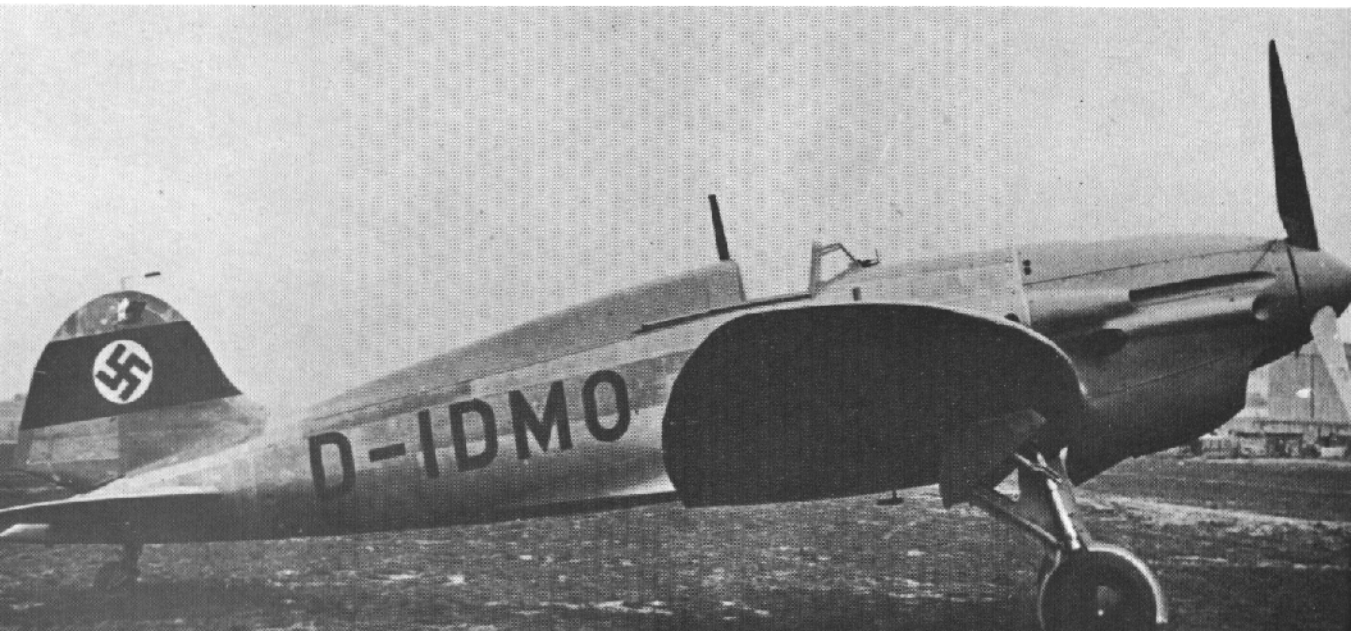


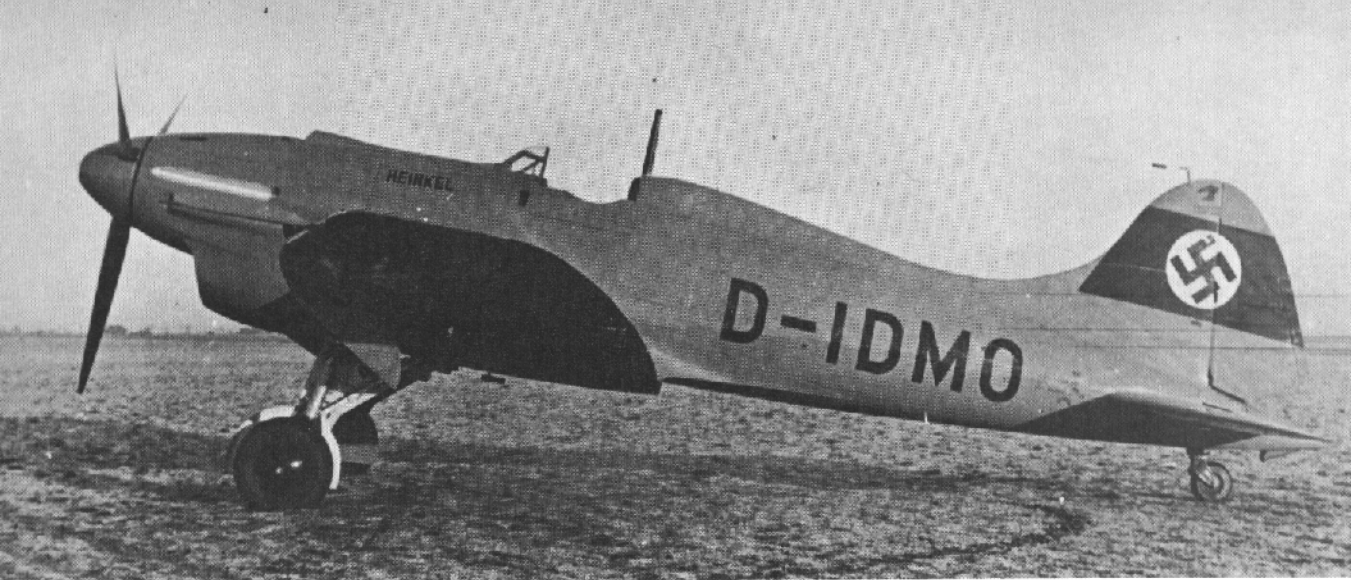
Like its predecessor, the V-1, the He 112 V-2 possessed no armament.



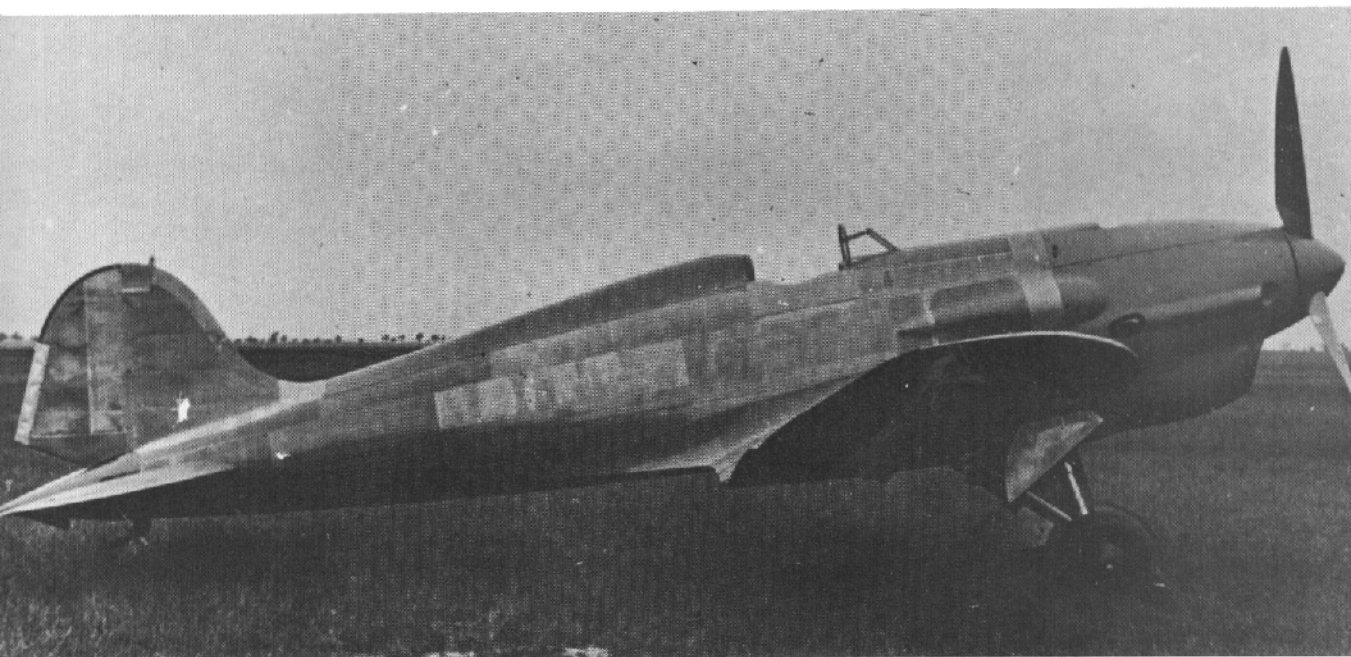
The airframes of the HE 112 V-1 and V-2 were almost identical. Installation of the German Jumo 210 did, however, change the exterior shape.

View of the He 112 V-3 before modification of the tail and revised armament.

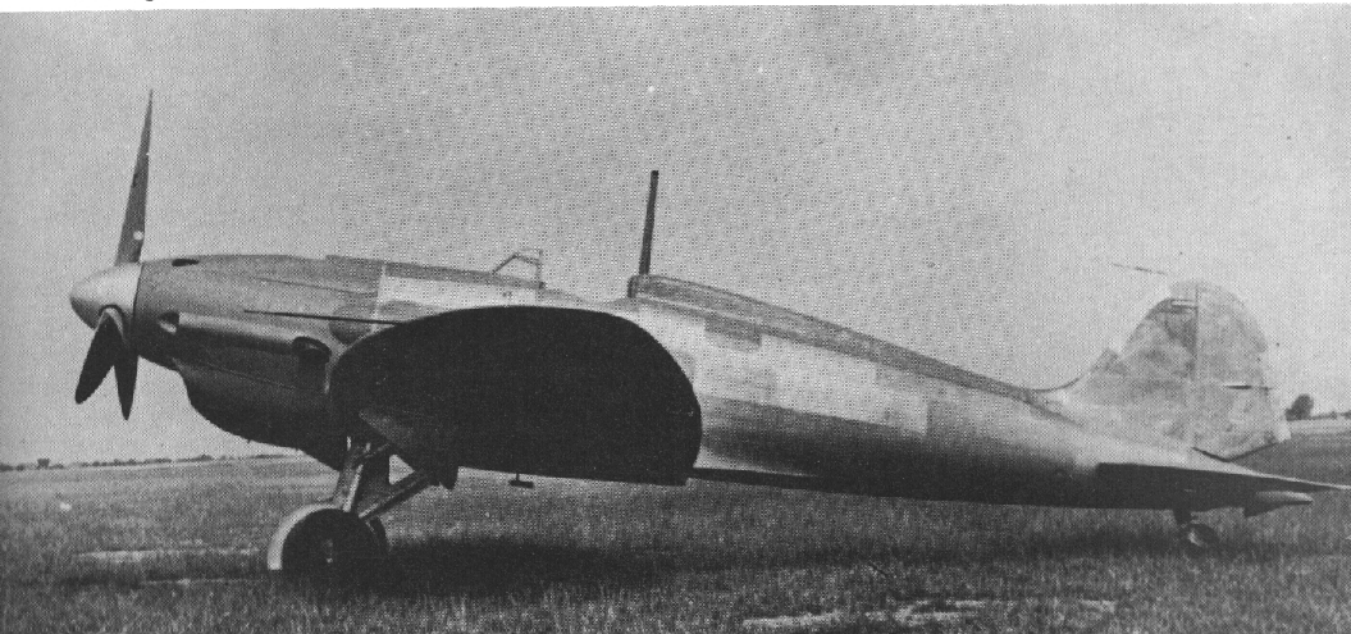


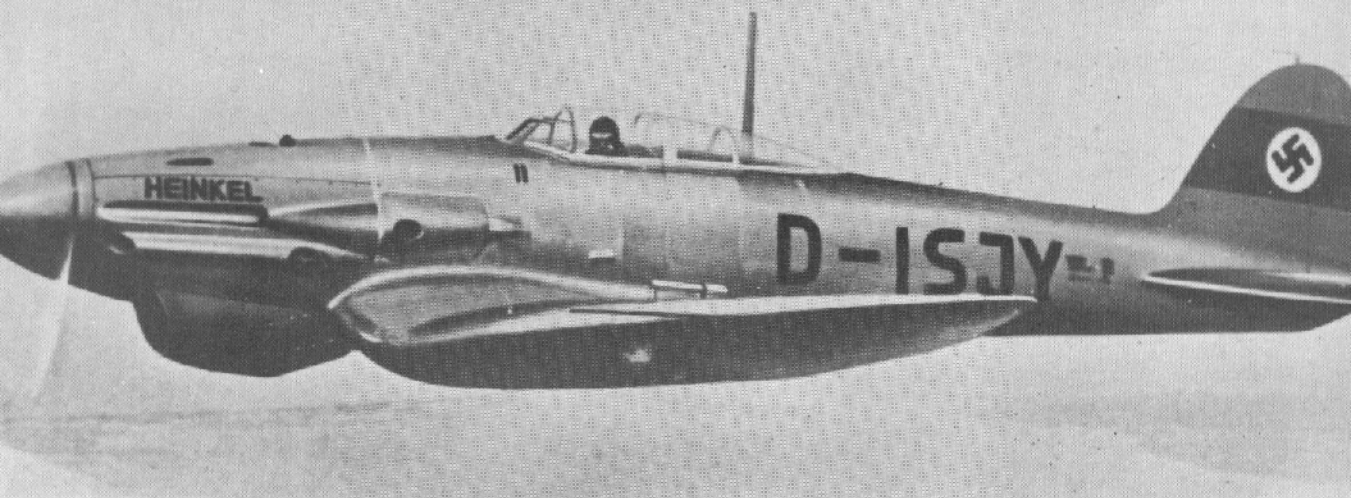


The first proto of the He 112 to be equipped with armament was the V-3. Three MG's were carried, one firing thru the propeller spinner.

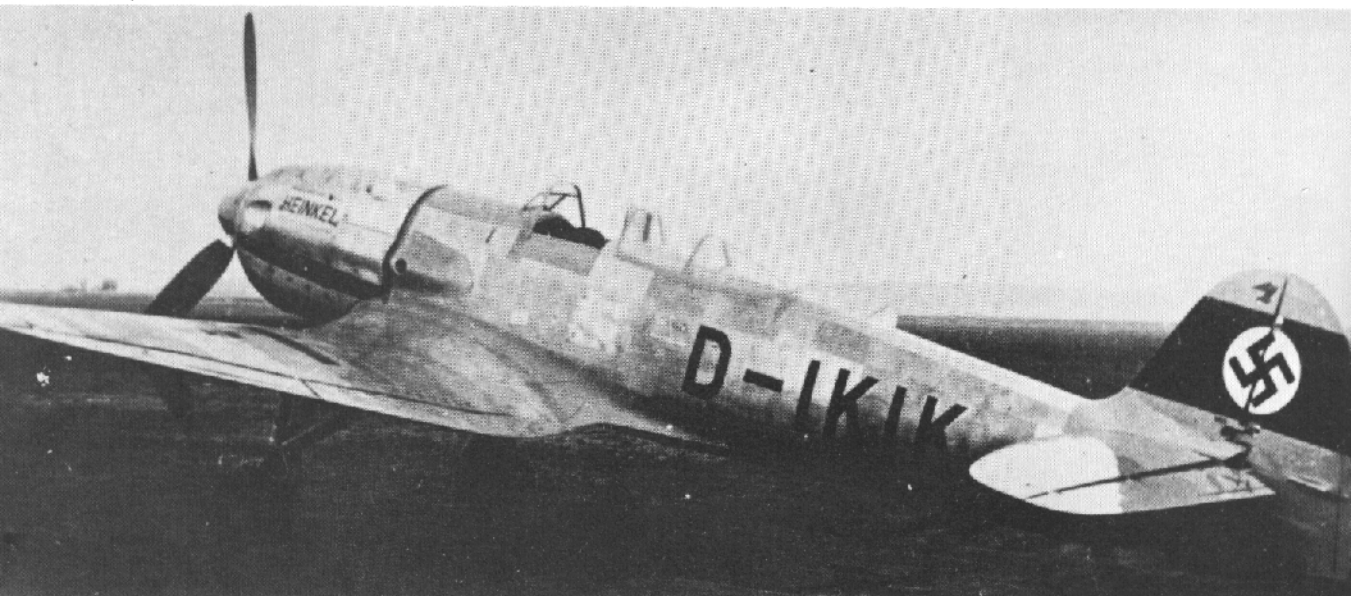


Simplified in construction but with no armament, the He 112 V-4 shown before the application of its civil registration, D-IZMY.





Final form of the projected He 112 A series appeared in the V-6, the first prototype with an enclosed cockpit.



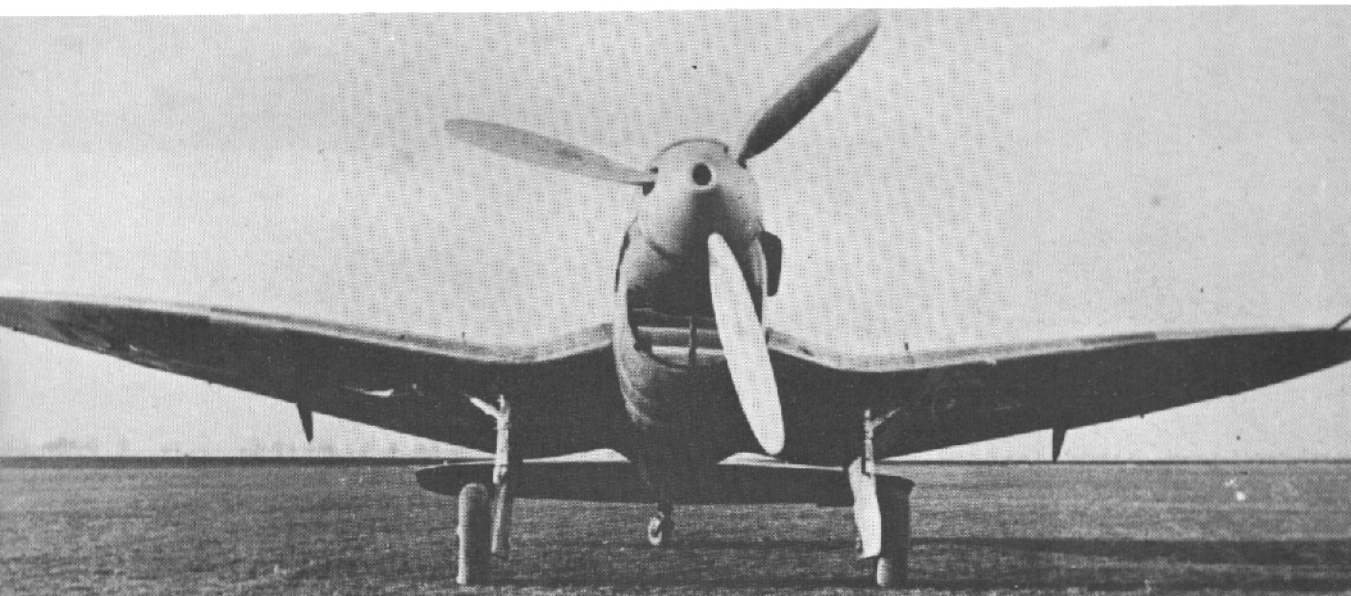
An entirely new airframe for the He 112 V-7 showed the general form for the B series aircraft, built in limited numbers.

Prototypes for the He 112 B series began with the V-7. Prof. Hertel was not completely satisfied with its form and there followed a further series of modified V-planes.





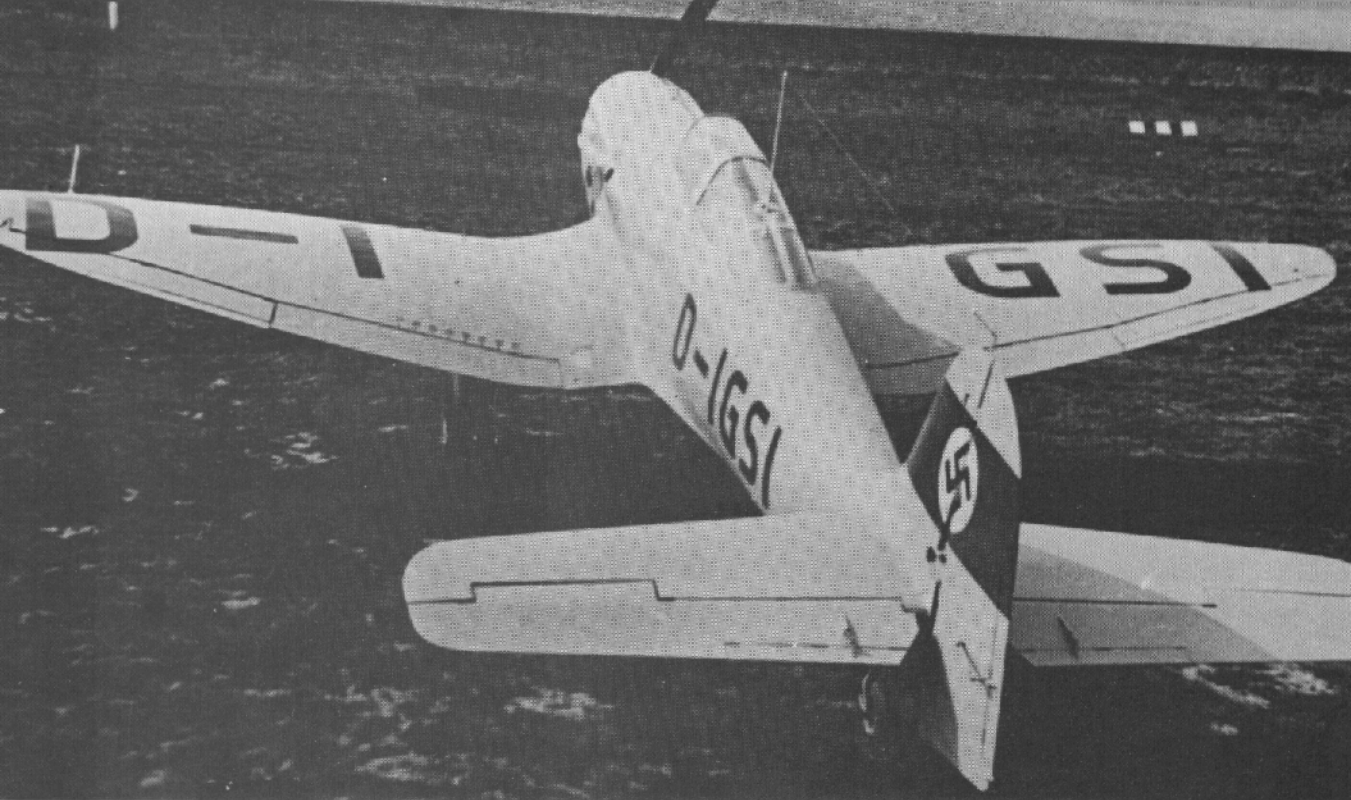
Engine cooling problems developed during tests of the V-3 and V-4 powered by the DB 600.



The He 112 V-8 served for engine tests and featured an enlarged radiator clearly shown in this photo.

Few similarities were left between the V-9 and the old He 112 A series.

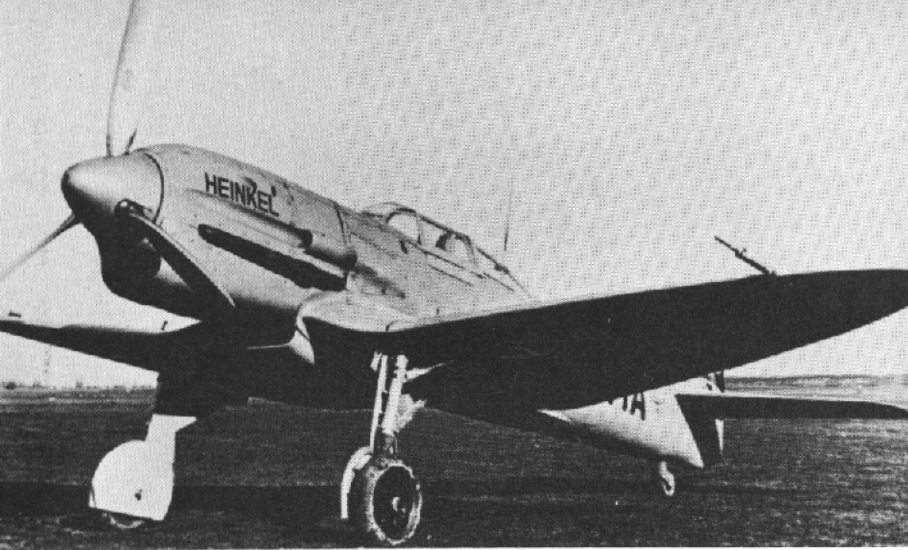




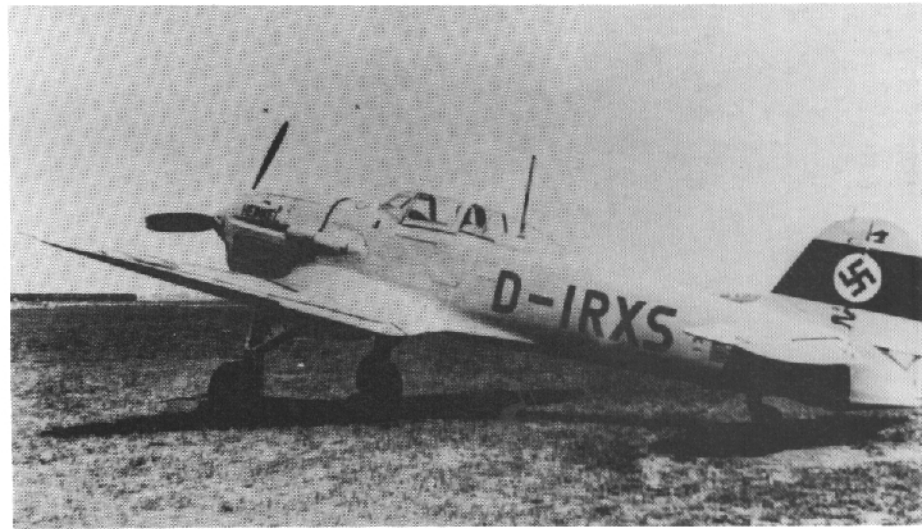
A short production run was made of the He 112B, the actual prototype for this series being the V-9.



Close up of the V-9 shows the retractable radiator and the wide track undercarriage.



Powered by the DB 601 of 1175 HP, the V-10 used the same air-frame as the V-9.



The He 112 V-12 was sold to Japan and operated under the designation A 7He 1. Intensively studied by the Japanese, no production models were built by them.



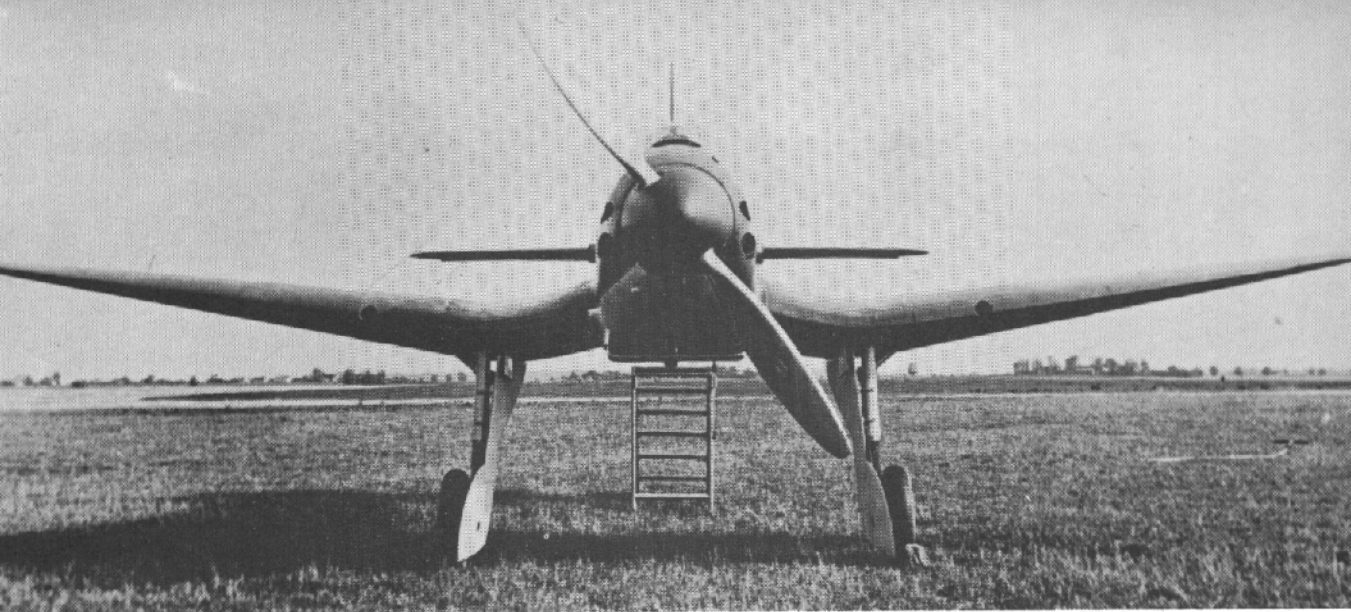
A Heinkel 112 B-0 purchased by the Spanish Air Force.



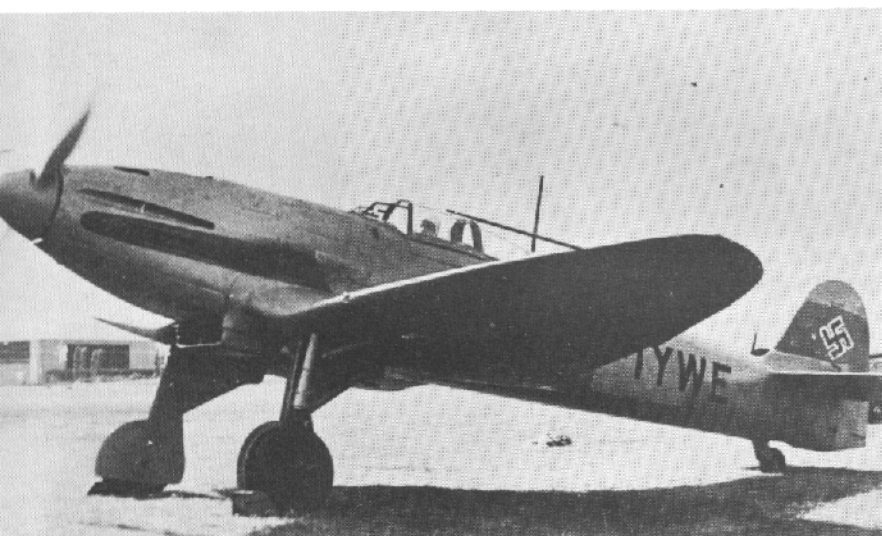
Location of armament in wings and engine cowl and maintenance access panels are illustrated in this photo of He 112 B-O's in Luftwaffe markings.

Built at Heinkel's own risk and expense these He 112 B-O's were later sold to Spain and Rumania.

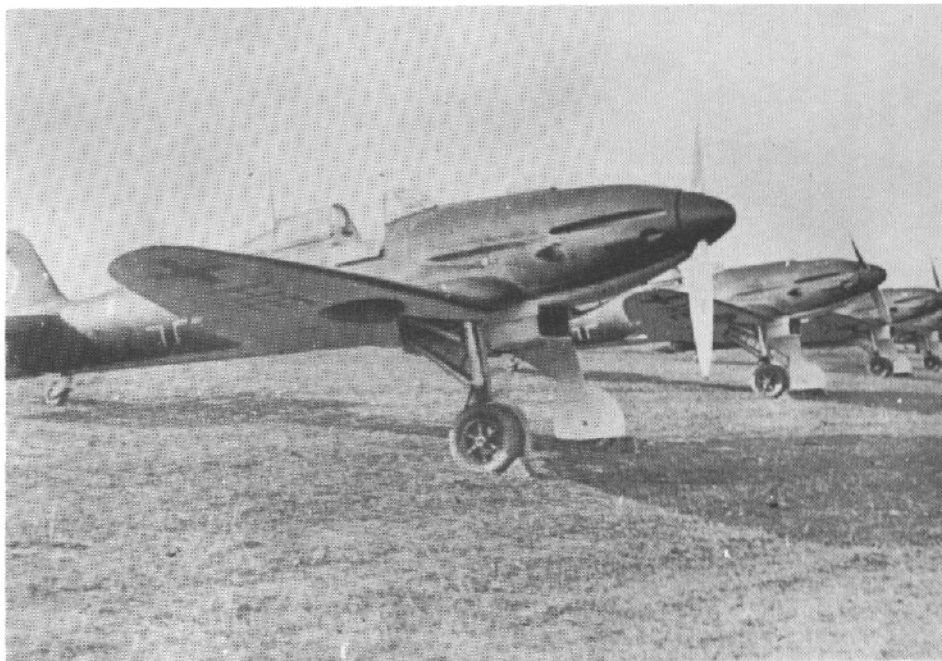




Front view of a He 112 B-1 with the radiator retracted.



Tail markings on this He 112 B-0 are incorrect and have been re-touched. The white outlined black swastika on the red field was never actually used.



Briefly tested by the Luftwaffe, these 112 B-1's were later sold to Rumania.

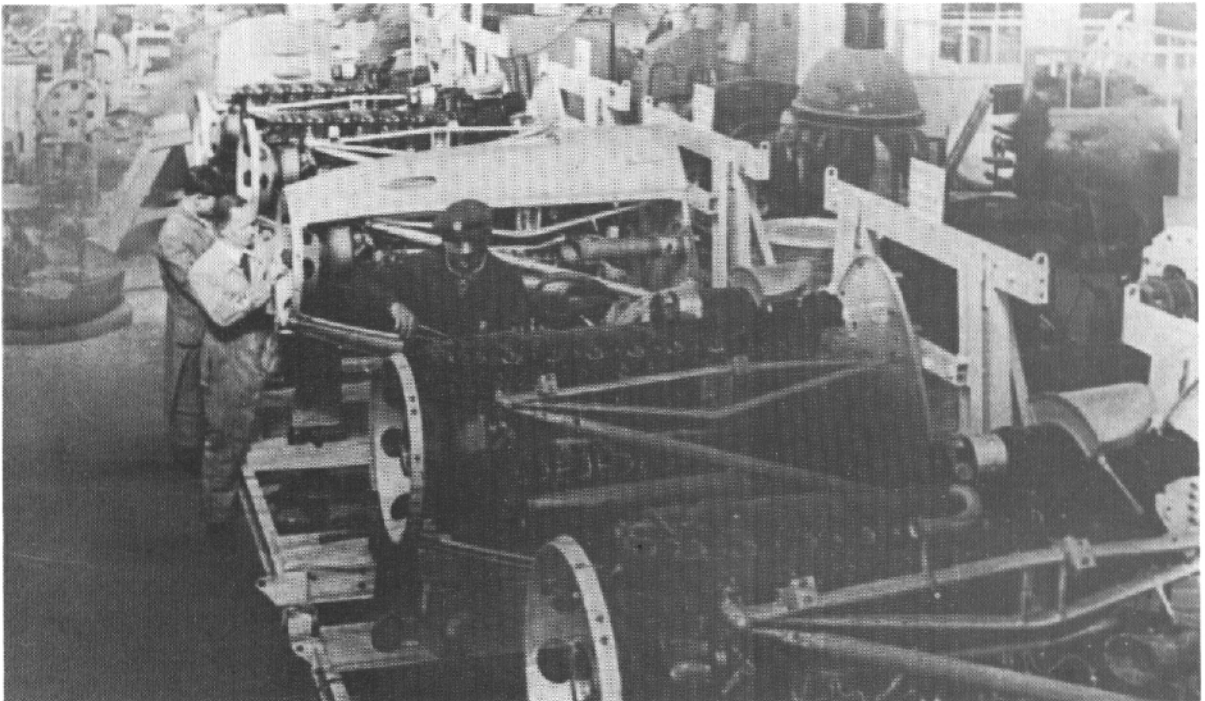


Lack of interest on the part of the Luftwaffe forced Heinkel to offer the He 112 for sale to other nations. Here a 112 B has just landed in Schiphol (Netherlands) on such a sales promotion venture.

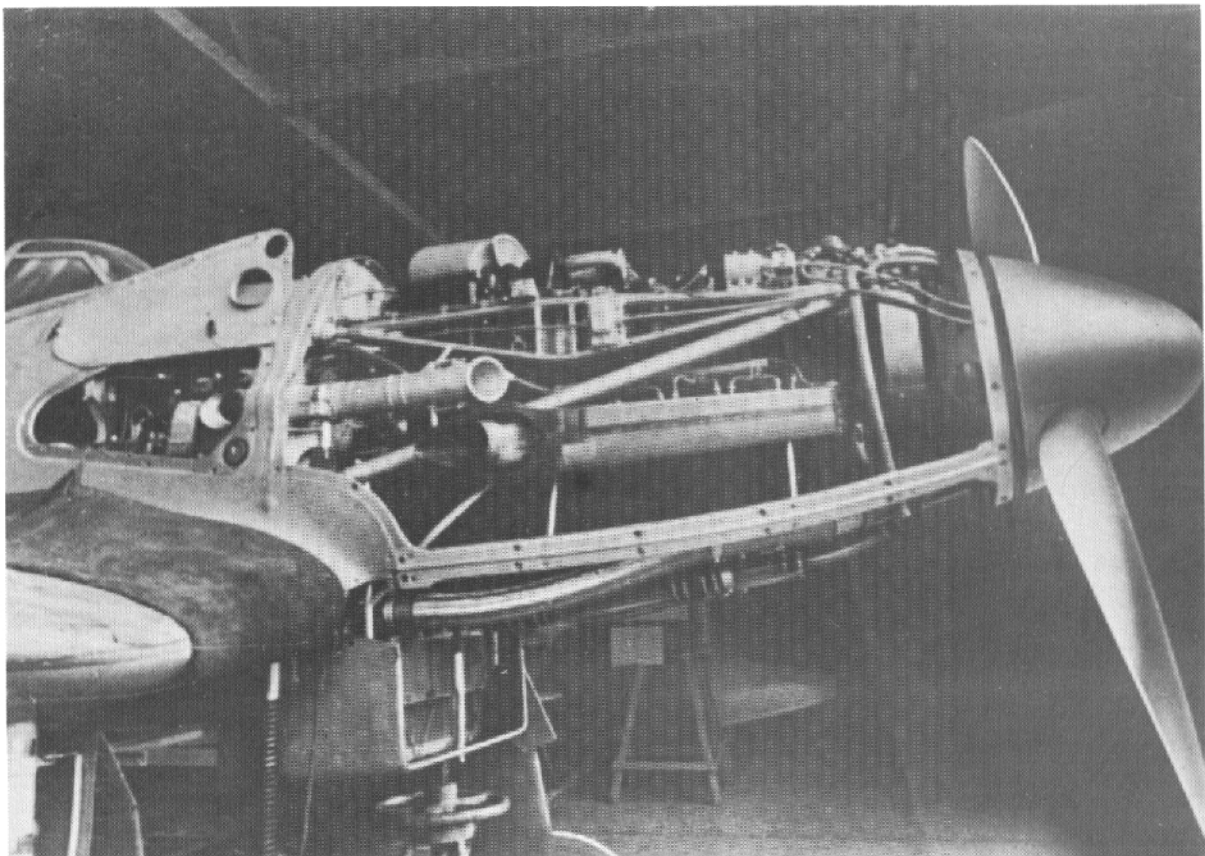


After an unsuccessful attempt to interest the Dutch Air Force in its purchase the He 112 B returns from the Netherlands.

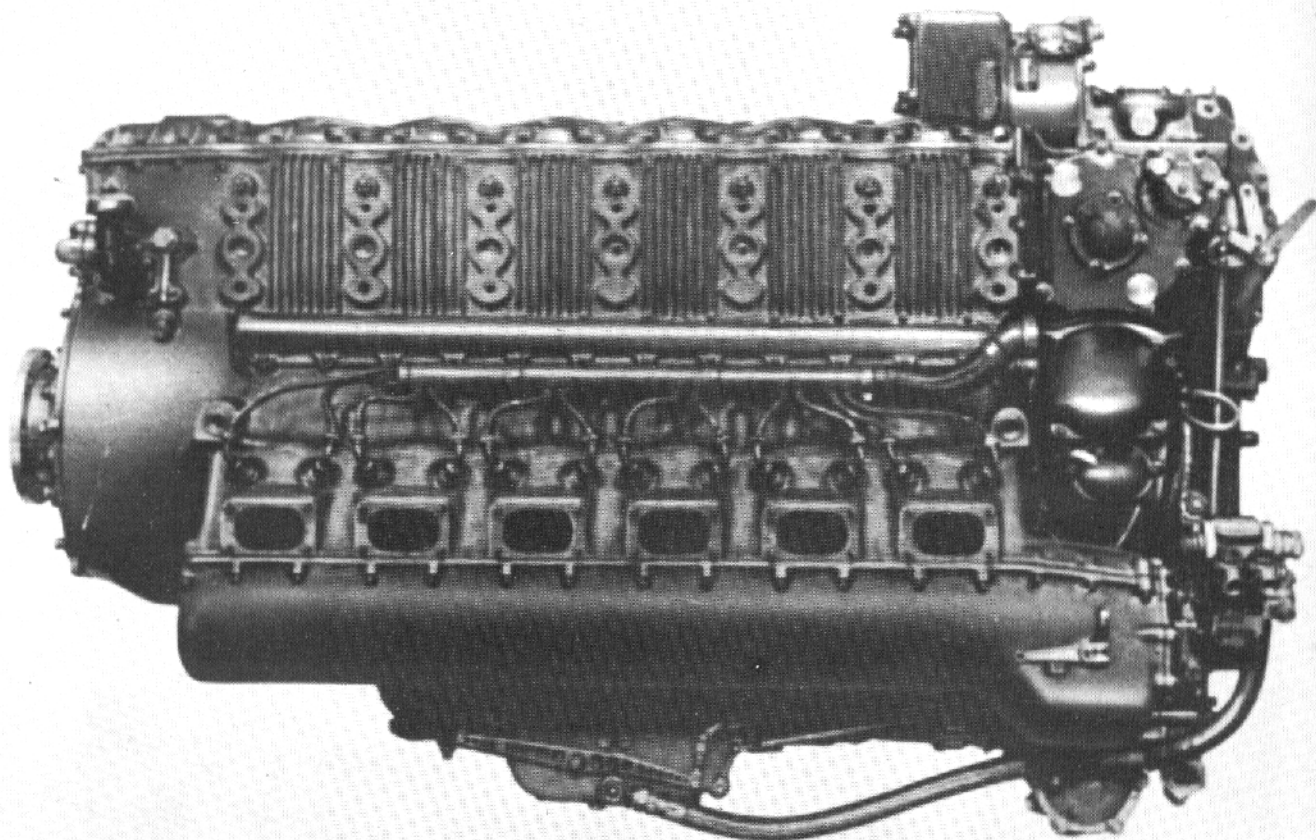
THE HE 112 ON THE ASSEMBLY LINE



Sub-assembly work joins the Jumo 210 and motor support.

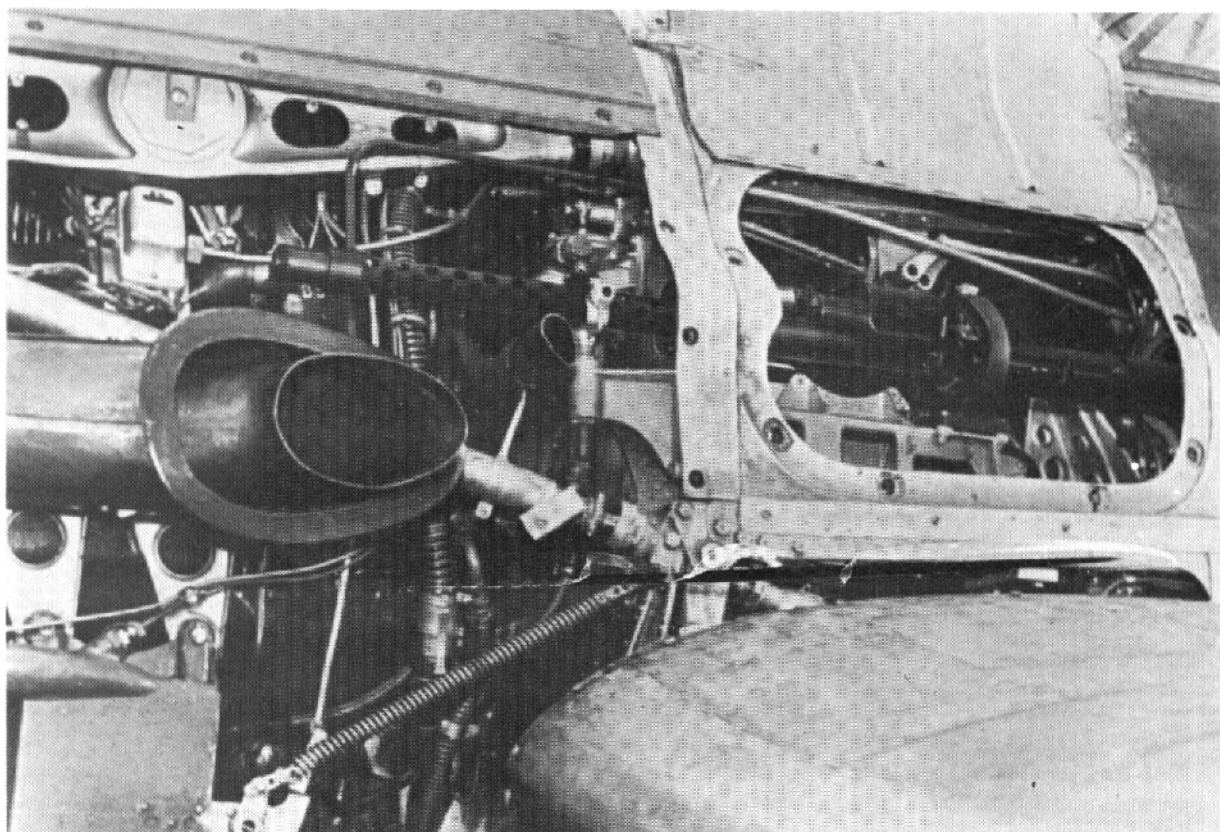


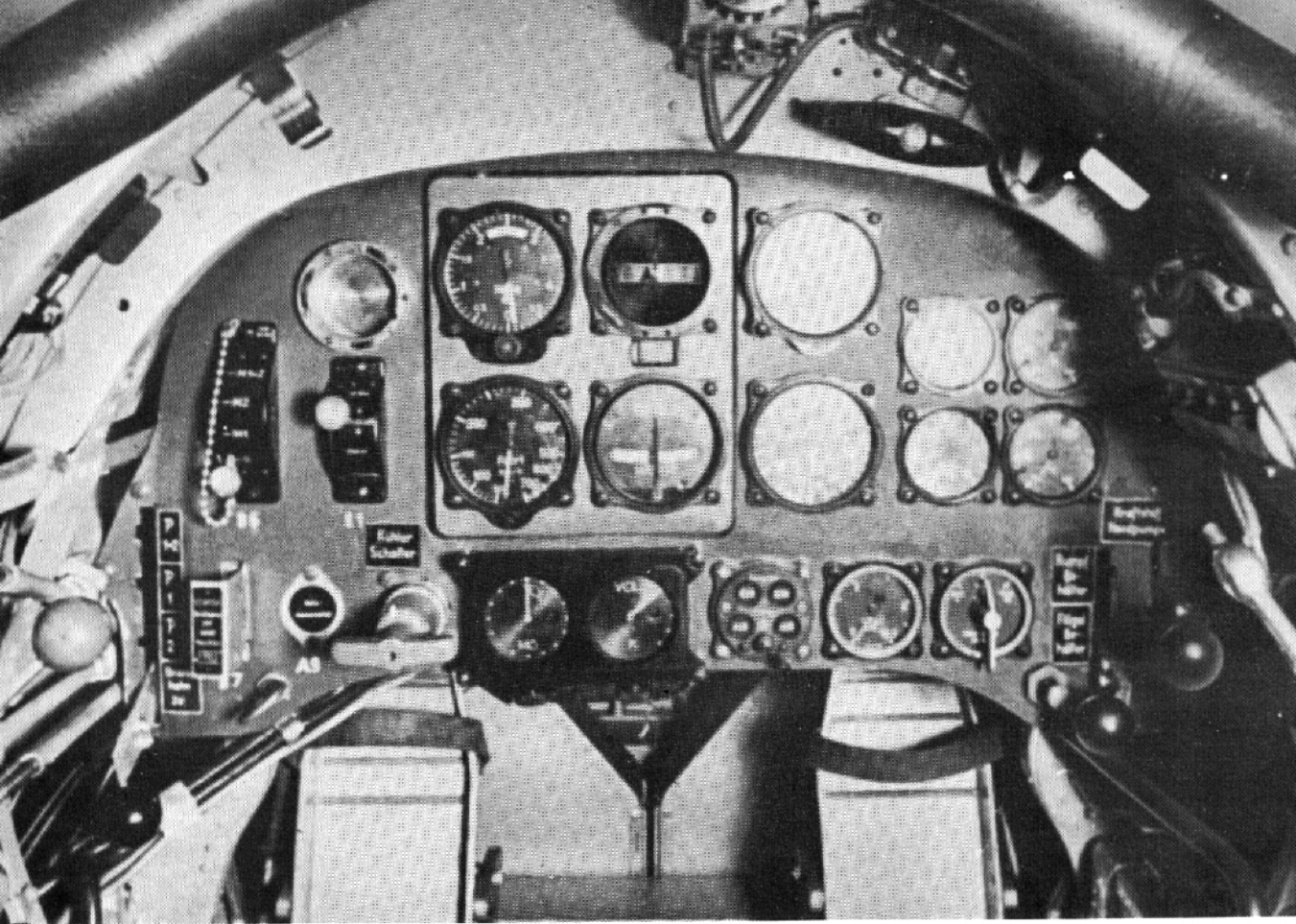
Powerplant assembly joined to the fuselage of the V-7.



The Jumo 210.

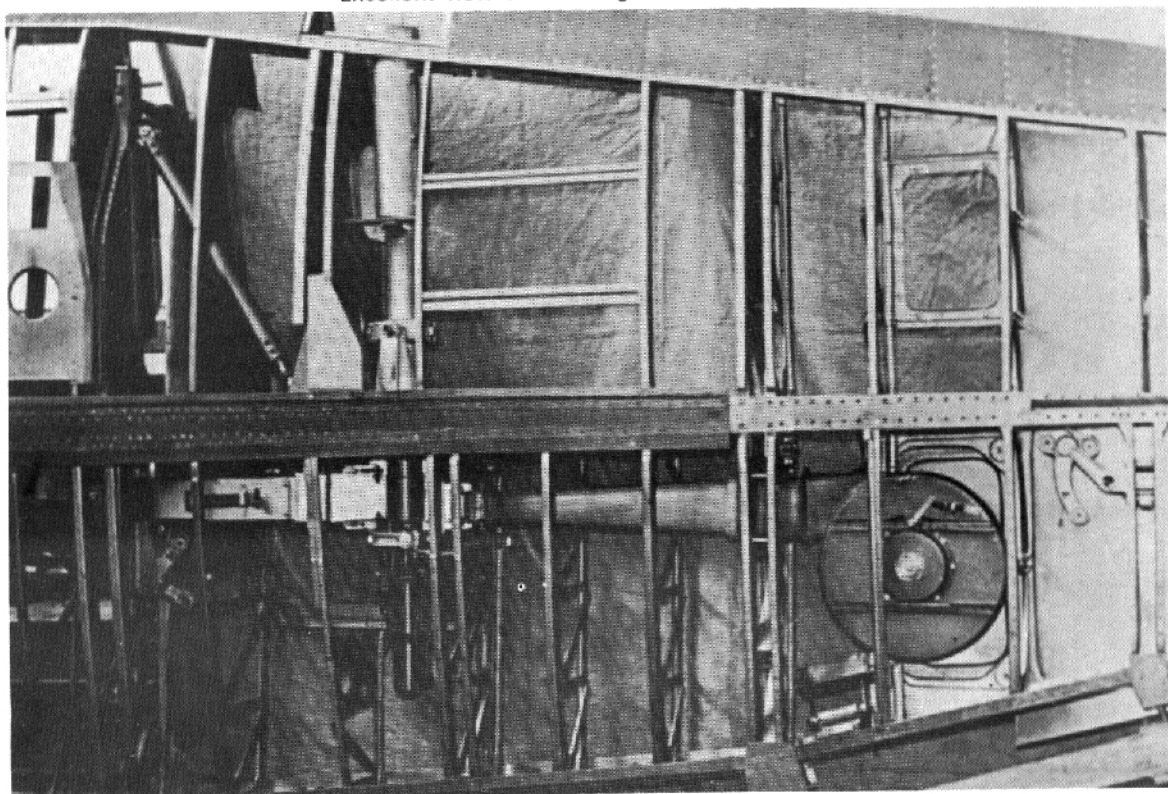
7.92 mm MG installed in the He 112 B motor cowling.





Instrument panel of He 112.

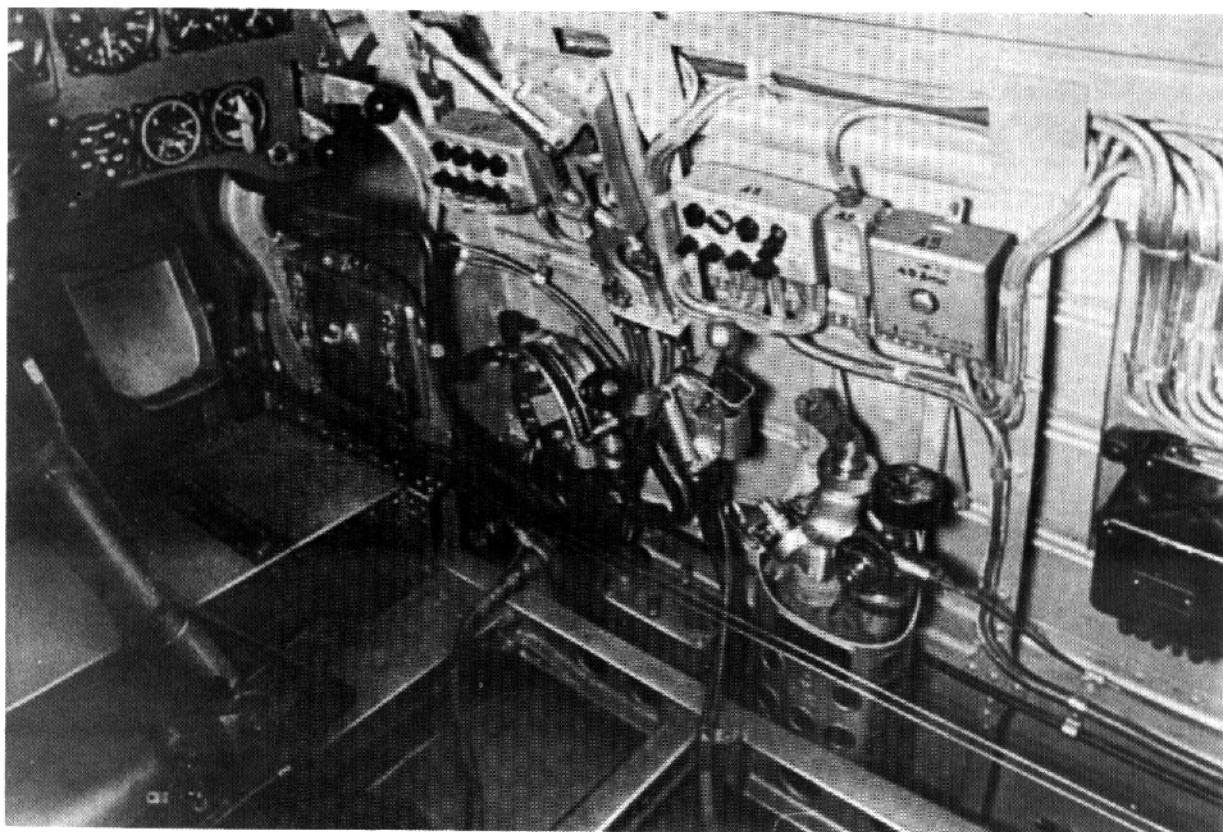
Excellent view of the wing cannon installation.

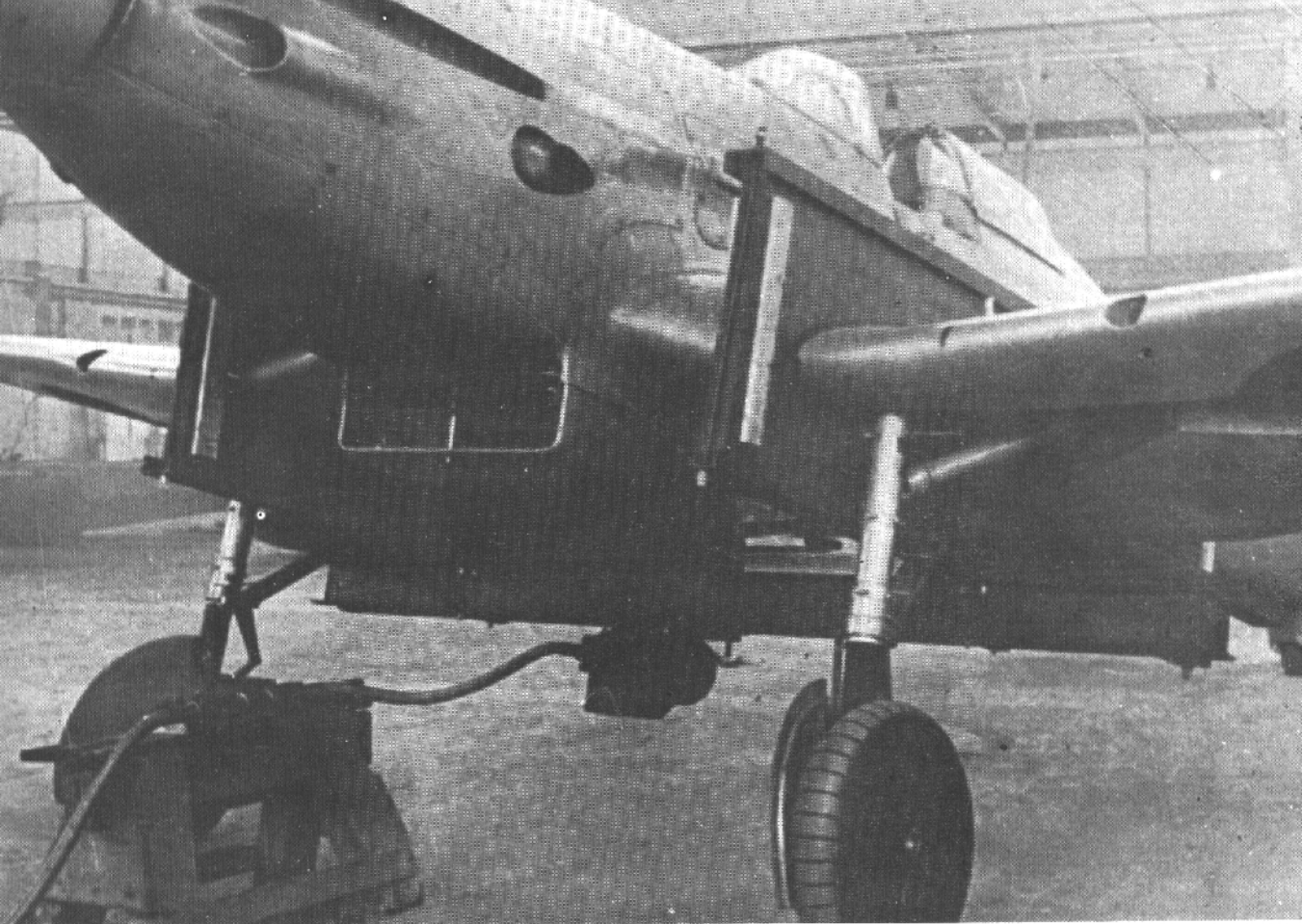


Left side view of the He 112 cockpit.



Right side of cockpit.

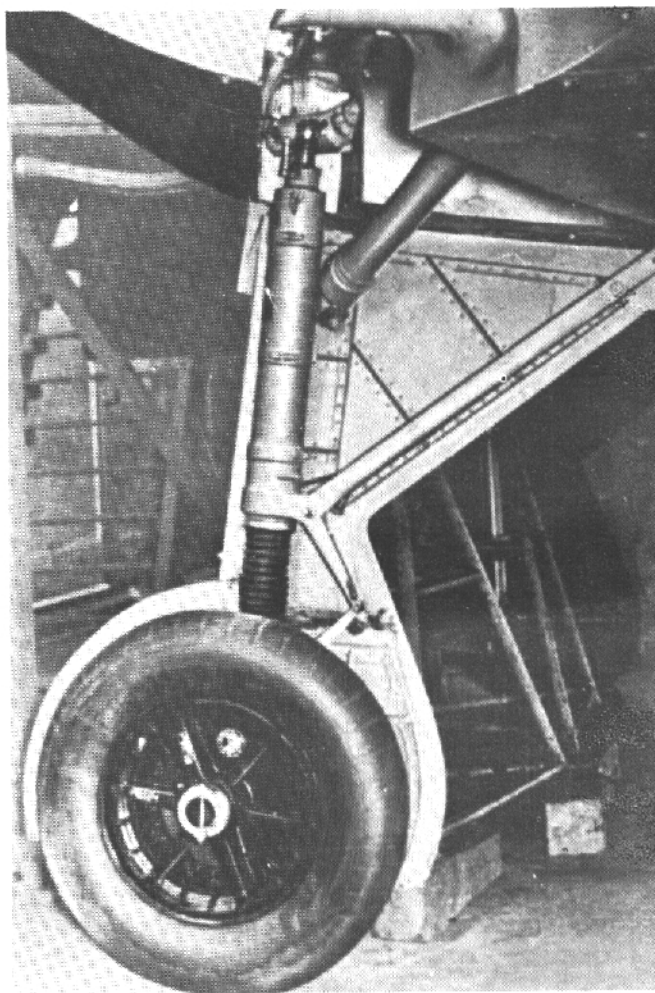
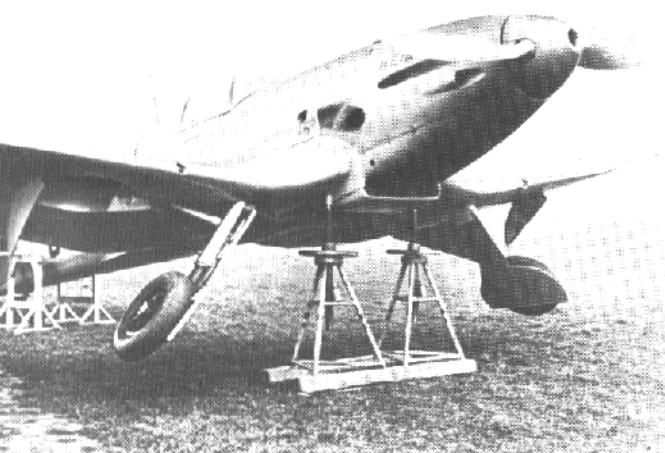


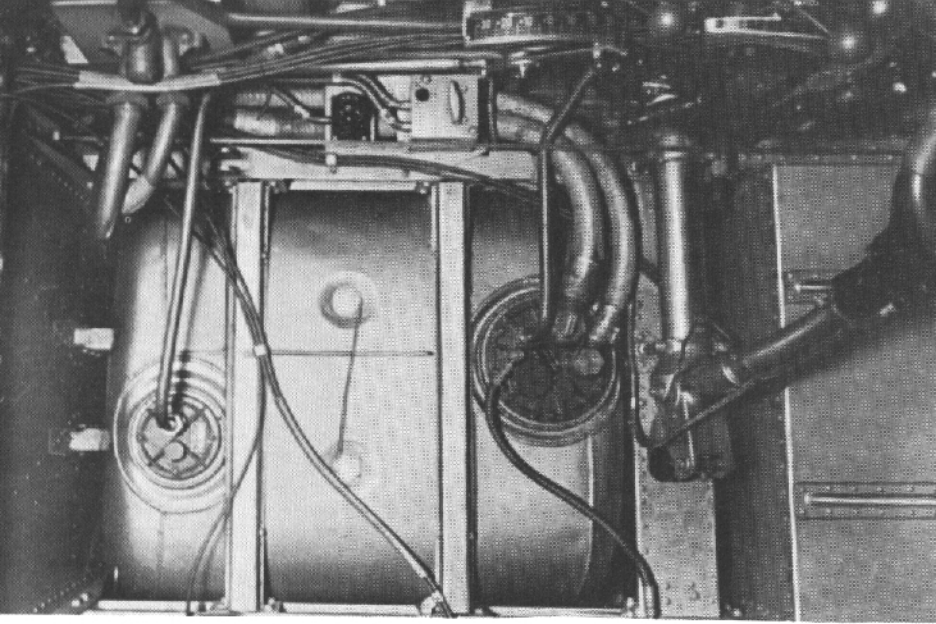


Further testing of the landing gear assembly, vibration tests. Note that the supporting jacks have been removed

Close view of landing gear, down and locked. Jacks, in the background, are supporting the aircraft.

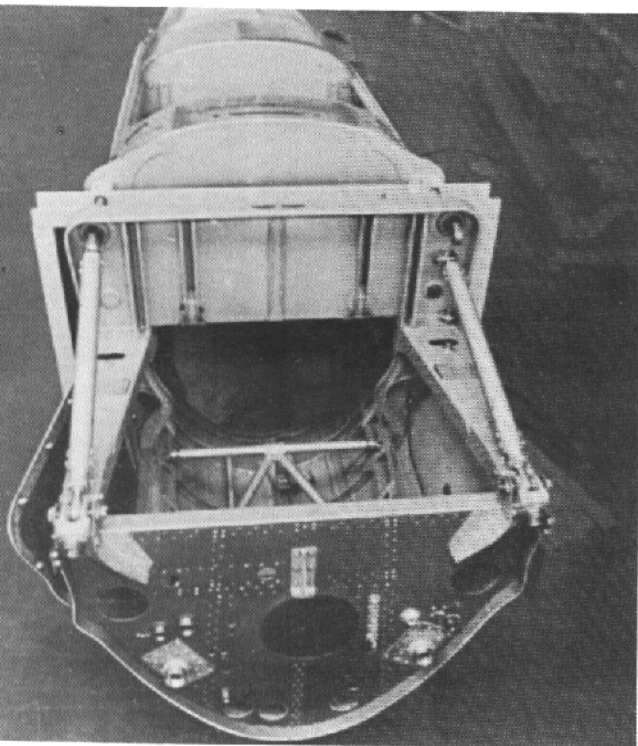
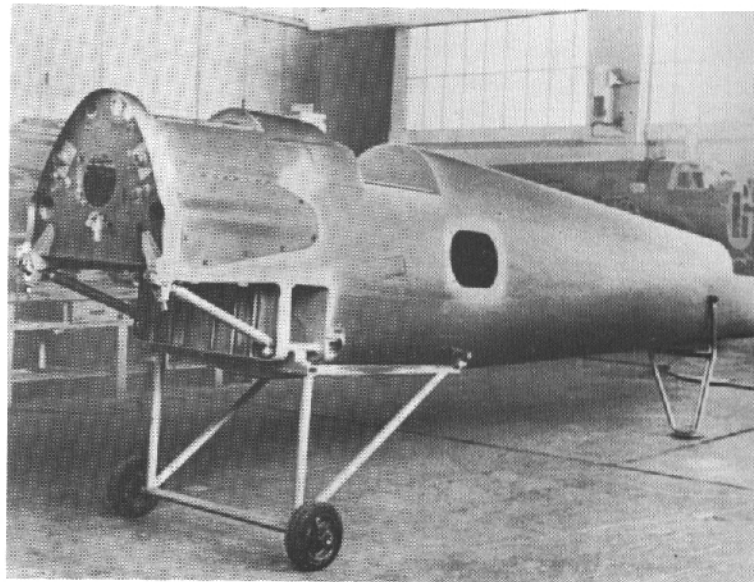
Landing gear coming down during tests.



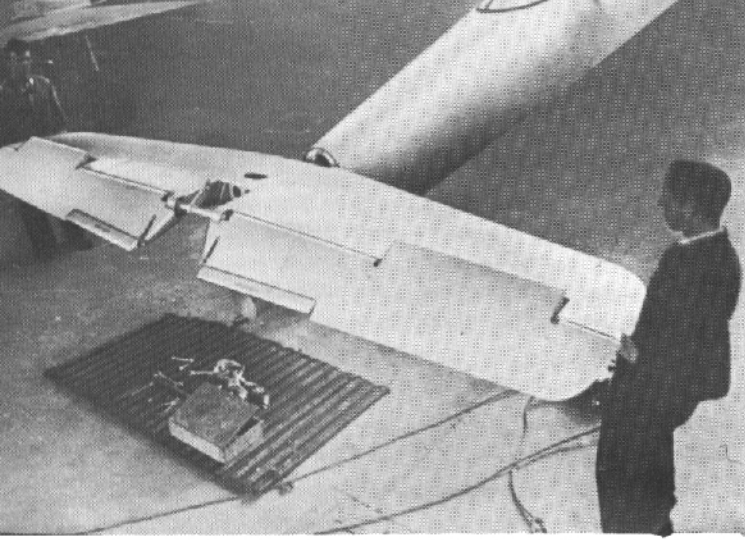


Top view of the cockpit showing fuel tank location directly under the pilot's seat (seat removed). Compare location of control stick to other views.

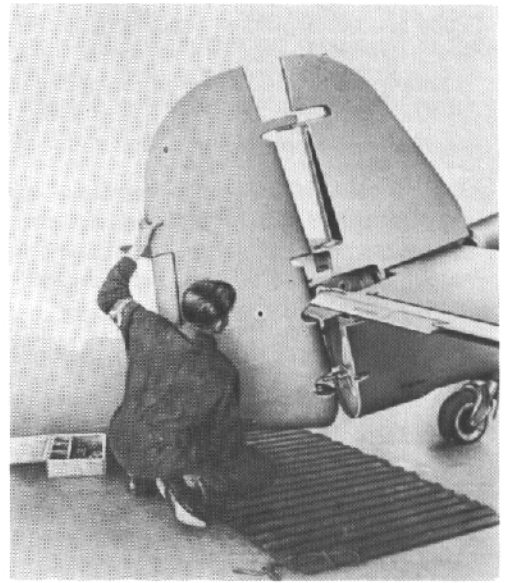
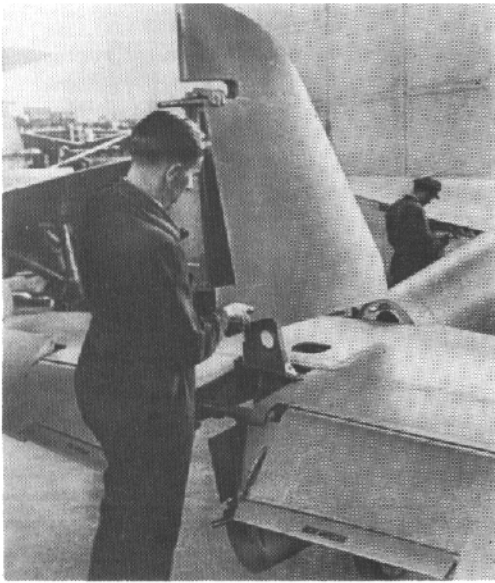
Completed V-7 fuselage.



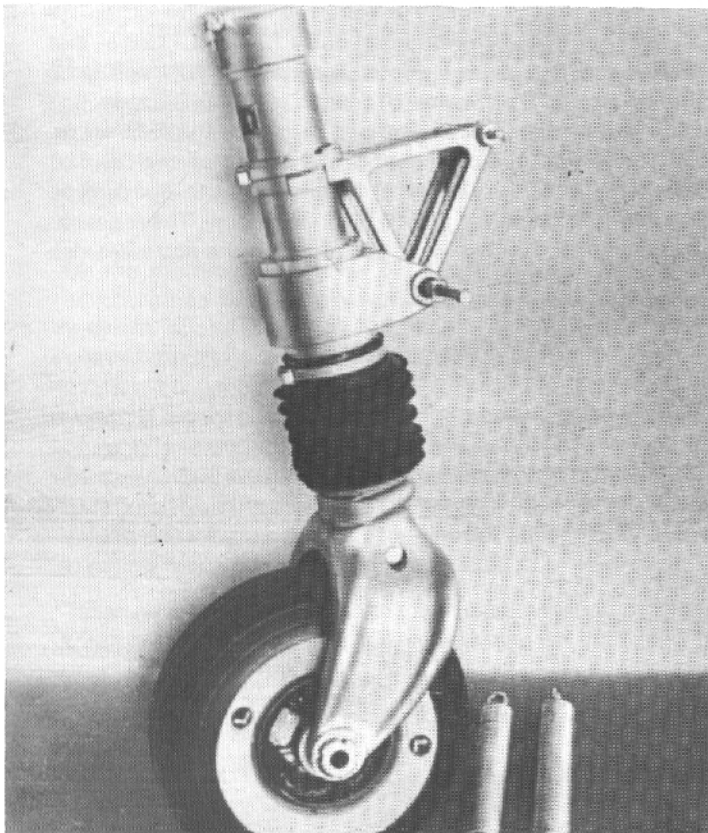
Partially completed fuselage, He 112 V-7, has been inverted so skin may be applied to the undersides.



Elevator being installed on fuselage.



Rudder assemblies on the He 112 (V-7 shown).



Tailwheel of the He 112 V-7.

MORE DEVELOPMENTS OF THE HE 112

The He 112V-6 which carried registration D-ISJY was the last plane which used the early airframe of the pointed tail. It was rebuilt from the V-3 but was powered by the lower powered JUMO 210. It had an armament of one engine mounted M/FFM and two MG/17s, one on each side. It also featured a fully enclosed bubble canopy. It was used extensively at exhibitions and many propaganda photos were released, but all photos were doctored to be careful not to show sufficient details of contour.

The He 112V-7 was a new shaped aft airframe. It had registration number D-IKIK. It also reverted back to the DB 600 engine but experienced considerable cooling problems. The He 112V-8 was the same airframe as the V-7 but had an enlarged radiator to eliminate the cooling problems encountered in the V-7. It was used as an engine test bed so had no armament installed. It carried registration number D-IRXO. The V-7 and V-8 were the first of the He 112s with the squared bottom rudder look.

The He 112V-9 was another step away from the previous in being a complete new airframe design. It had a shorter coupling from the wing center of pressure to the elevator creating a more sensitive lateral stability and better turning characteristics. There was also changes in engine cowling. Here was the first real departure in any resemblance to the He 70, 170 and 270 series which were its predecessors and a greater difference to all the former prototypes of the He 112 from the V-1 through the V-8. It did have much resemblance to the He 112B for which it was the intended prototype. The power plant was the JUMO 210 engine of 645 hp. It carried registration number D-IGSI.

The He 112V-10 was the same type of airframe as the V-9 but had a DB-601 engine of 1100 hp. It carried registration D-IQMA. The cooling system was again enlarged to handle the larger powerplant giving a sort of two step double chin set of radiator intakes. Its armament was one gun on each side of the engine firing through the propeller. This plane showed good fighter performance because of its power-to-weight ratio.

The He 112V-11 was very similar to the V-9, but again, was powered with the lower output JUMO 210. There wasn't much done with this airframe but to try out various innovations. It was registered D-IYWE.

The last of the He 112 prototypes was the V-12 in the long development. Like the V-10, it had the high output engine, this being the DB 601A powerplant of 1175 hp. It carried D-IRXS registration. This airframe was sold to Japan under the export designation of A7 He-1. According to Japanese files, the A-7 He-1 had a powerplant from Daimler Benz DB-601A of 1070 hp. It carried bomb racks for 10 bombs of 6 kg. The Japanese studied it very intensely but did not undertake to serial produce it.

PRODUCTION

It might be noted here that the He 112V-1, V-2, V-3, V-4, V-5 and V-8 were representative of the He 112A which was never produced. The V-7 was a sort of representative of both the 112A and 112B in that it had the long coupling of the A series but engine installation of the B series. The He V-9, V-11 and V-12 that of the He 112B which did receive limited production. There were 10 planes of the B-0 production series made and sold to Romania. The B-1 series had 14 planes manufactured sold with the B-0 series. All 24 planes were delivered in 1939. Some had JUMO 210 GA powerplants and some had the DB 600 engine. These planes saw action in the Black Sea area in 1941-42. The B-2 series went to Spain. Nine were fitted with the DB 601A engine and eight were fitted with the JUMO 210 GA engine. These seventeen fighters made up the Spanish Fighter Group 5G5 under the Command of Garcia Morato and were also active in Spain throughout World War II.

The He 112V-10 was to be the prototype of the "C" series but this did not develop. The "D" series remained in the proposal stage. Ernst Heinkel then made one more series on his own as a business venture with expectation of export sales. It was apparent by now that the Luftwaffe was not invested in production of any He 112 series. The last series to be produced by Heinkel on his own was the "E" series. There were 18 built, 10 of these were actually delivered to the Luftwaffe for photo propaganda purposes. This was to make the Allies believe that squadrons were active with this equipment also. There were eight sold to Japan. These saw action in the Japanese-Chinese war. Japan also purchased some He 112E-2 models which had the weaker JUMO 210 EA engine.

ENTER THE HE 100

It is clear that Ernst Heinkel was very disappointed in that the He 112 had not been accepted after so much development and performance increase. It had several advantages over the Me 109. Heinkel made up

his mind to build a fighter type aircraft next to none and to show the world he would attain a speed of over 450 mph (700 km/hr.). Willy Messerschmitt had very good connections within the Nazi party since 1933 and Heinkel had almost none except through Ernst Udet who had vainly demonstrated his fighter prototypes. But Udet had informed him that the Luftwaffe had already decided that he was to build bombers and Messerschmitt was to build fighters. Since this did not set well with Heinkel he sat down with Siegfried Gunther (Walter had died on May 25, 1937) and in a long intensive study of general lines for a 450 mph plus aircraft, the planform was finally fixed. Heinkel even entertained the thought of capturing the absolute world speed record with a standard fighter type. The project carried the type designation of He 100 and was based on using the powerplant of Daimler Benz new DB 601A of 1070 hp.

The first problem for consideration was the cooling system. For a high speed aircraft such as this, protruding radiators were out of the question. An evaporation and condensation system was to be used; pumping the pressurized coolant through skin radiators was too vulnerable a system for a fighter. The evaporation and condensation system was one where the water is contained under pressure in the engine sufficient to maintain 110°C without boiling. Then as the water leaves the engine it is vented to the lower pressure of the cooling system and immediately turns to steam. A first separator step takes that water which does not vaporize and pumps it through coiled tubes routing back to a by-pass pump and then back to the inlet reservoir. This smaller amount of water is only cooled down to a small degree lower than the engine but below boiling. It would be about 80°C to 90°C perhaps. The steam is pumped by gyro pumps, or blowers, through the area between inner & outer skin and bracing where it is circulated under the outer wing skin surface and becomes cooled and condensed back into water. The water is then caught in troughs which drain into scavenger pumps and then is pumped back into the inlet reservoir where it mixes with the warmer water. Once airborne this system cannot freeze up. The cooler water is then pumped to higher pressures and through the engine inlet valve to be reused. The system was difficult to construct since it required a double layer skin or sandwich construction over most of the forward wing panel surface and some fuselage surface. However since the steam was circulated and condensed at much lower pressures it would be less vulnerable to battle damage than the conventional high pressure radiators being used.

Operational problems with the narrow tread gear of the Me 109 brought out the wide track inward retracting gear for the He 100. This also allowed thinner outer wing panels for more speed. It was intended to use the horizontal and vertical stabilizer surface for oil cooling via heat exchangers using methyl-alcohol as the heat transfer and cooling agent. The hot oil was to be piped into the heat exchanger where at alternate layers the alcohol was to be circulated. The alcohol vapors were then to be pumped to the stabilizer via tubes and gyro pumps, or blowers, where it would condense back to liquid form on cooling and the liquid was drained into a little reservoir and back to a pump which recirculated it back to the heat exchanger. This system, while proving sufficient for the engine coolant, did not work out too well since the alcohol was not such a good pumping and condensing medium. It was abandoned for the conventional oil cooler which had a small retractable ventral air intake fitted at the bottom of the fuselage for temperature control.

The He 100 design philosophy was simplicity of construction for ease of mass production. It was to have all functional design features treated for ease of manufacture without sacrifice to desired performance. As a sample, the comparison of the He 112 with that of the He 100D. The He 112 had 2,885 single parts while the He 100D had only 969. By using explosive rivets to handle inaccessible places, the He 112 had 26,964 rivets as compared to 11,534 of the He 100D. Complete construction time was down to 1,150 hours.

On the morning of January 22, 1938 under a cold gray winter sky, the first prototype, the He 100V-1 which carried no civil registration number, was pushed out of the hangar by the ground crew. The place was Marienehe Flugplatz near Rostock. Professor Ernst Heinkel, his technical director Heinrich Hertel, chief project engineer Siegfried Gunther and a few other key personnel watched Gerhard Nitschke climb into the cockpit, fasten his seat belt and shoulder harness and start checking the controls. Then with a grinding sound of the hand-cranked starter, there came sputtering out of the exhaust some orange spurts of flame and a cough. Then in the numbing cold the engine caught and roared to life. As the engine was smoothed out and revved up to warm up the oil and perform the preflight checks, the sleek and very slim-looking aircraft was straining at the chocks with wheels pushing to climb up the curve. Then the cockpit canopy was slammed shut, the chocks pulled away and two and one half minutes later the plane was climbing away into the grey winter sky.

This new fighter type was of an advanced concept in several respects. It was obvious from the take off and climb out that its performance would be above the expectations and superior to anything now flying.

From the beginning of flight tests it was very noticeable that this new fighter had a very marked advantage

in performance over the Me 109E which was presently in production. The Heinkel team began to lay plans for the 100 km. closed course speed record. They would go for this first, and closely observe performance and systems operation before thinking of any bigger prizes. However, the He 100V-1 was transferred to the flight test center at Rechlin in March 1938 on orders from the Luftwaffe. This torpedoed all record attempts.

By this time, the He 100V-2 was being readied for flight. It carried the civil registration D-IOUS. The vertical stabilizer and rudder was lengthened giving a taller silhouette and to better handle torque. The fairing joined the fuselage at the empennage portion giving the appearance that the horizontal stabilizer was lowered. The windshield and canopy were redesigned to a cleaner more rounded contour for better streamlining. The carburetor air scoop inlet at the left wing root was slightly enlarged to allow for increased airflow. The propeller sported larger blades of wider chord for deeper pitch effect at high speed. The powerplant was the DB 601A-1 which was rated at 1,175 hp.

Now the Heinkel team was again preparing for an attempt for the world record of the 100 km. closed course. Dr. Koehler made all preparations for the record run with the F.I.A. officials and other necessary personnel. Officials assembled at Moritz and Wustrow airfield on the Baltic shores near Muritz. This 50 km. stretch allowed the official witnesses to continually track the plane visually. The complete underside of the plane was painted bright yellow in order to see it against the grey blue sky. In those days, possession of any sort of world record held a great amount of prestige for that country. The record attempt would be made at 18,000 ft. altitude. Captain Hertig was chosen to make the record-breaking flight and all points of the flight plan had been carefully laid out and studied by pilot and the Heinkel project team. The flight was to be in the mid afternoon to take most advantage of the warmer temperature.

Just before noon that day, while crew and officials were awaiting the proper times to take up their posts, a Bf 108 landed at the field and Ernst Udet emerged from the cockpit. This was at Marienehe where the He 100V-2 was poised, ready for the record assault. He wore no uniform. There were the usual greetings and then Udet, Heinkel and Kohler sat talking. Udet abided his time asking idly, "Hey, what's with the new bird?" When it was time to move and put the flight into motion Udet asked Heinkel and Kohler direct, "Is it not possible that I fly the bird?" He had flown the V-1 at Rechlin and so Heinkel and Kohler reluctantly agreed to let him fly the run. Kohler then went to great pains to explain to Udet about the new cooling system. He warned, "Because of this new cooling system design this plane has no temperature instrumentation, only these red lamps will light and they mean danger. Come back in if they light up." Udet had had his pie and was no longer listening but anticipating the record and was all eagerness. Udet stated, "Okay boys, let's go!" Kohler the Muritz and Wustrow officials were alerted and got the ground crew into motion. At 4:27 P.M. Udet took off and disappeared in the direction of the coast. The complete recording and reporting of the flight and the computing of his average speed was done before Udet landed at 4:53 P.M. He had reached a speed of 394.4 m.p.h. (634.32 Km/hr.) on the course that Sunday June 6, 1938. This beat the record previously set by the Italians in a Breda 88 with a Niclot at the controls, by about 50 m.p.h. (80 Km/hr.). Udet was surprised because he thought he was only making a test run and was not really attempting to fly maximum for the record on this particular run. He was all ready to go back up for the real run. His first remark was, "Why did these crazy red lamps burn all the time?" Kohler became very mad at this point and barked orders to the ground crew to put the plane back to the work area. He said, "General, I had explained to you to come back immediately if any of the red lights came on. Now we have to see what damage you have done." So went the 100 km. world record.

At this point, more propaganda and confusion was begun concerning this new plane. The Luftwaffe was anxious to gain acclaim for the He 112 which had been given much photo publicity and propaganda proclaiming active squadrons with the He 112. So they simply announced that the plane breaking the world 100 km. closed course record was the He 112U flown by the famous Ernst Udet. The "U" suffix was added in honor of Udet. Photos of the real plane which would reveal the difference in the two types were withheld from the public. The He 100V-2 was then ordered to be delivered to Rechlin to join the V-1. Again Heinkel was fouled up in a serious attempt to get at a good speed record.

THE BIG RECORD

The Heinkel team, with their sights set on the absolute world speed record for the 3 km. course began investigating means of further improving performance. The Daimler Benz Company promised a souped up version of the DB 601 which became known as the DB 601R and was to produce 1650 hp.

The He 100V-3 was the third of the prototypes and was registered D-ISVR. The wing was different with a span of only 24 feet 11 ½ inches and 118.4 square feet as compared to the 30 feet 10 inches and 155 square foot wing area of the V-1 and V-2. It also incorporated a lower drag cockpit canopy and was hand rubbed to a high gloss finish. But the engine was still the DB 601A-1 of 1,175 hp.

The He 100V-4, V-5 and V-7 were also being completed promptly behind the V-3 and were being delivered to Rechlin Flight Test Center. The V-6 was retained by Heinkel as a back up airframe for the V-3. The He 100V-8 was still in very early stages of construction. While the aircraft were still at Marienehe, Udet was making a tour of the Heinkel plant at Oranienburg with a group of western dignitaries headed by the French general Vuillemin. To show how well German fighters could perform, a flight had been pre-arranged for test pilot Dieterle to fly from Marienehe to Oranienburg and demonstrate the He 100V series. A V-4, V-5 or V-7 was used but it is not known which. The Allies had never seen an aircraft fly so fast on diving speed runs over the field, and zoom ups went right out of sight. When Dieterle landed and started service on the plane for the flight back, Udet allowed the group a close inspection. While the group oggled over the plane they were told it was the newest German fighter already in production. That was on August 20, 1938. The Luftwaffe made many other bluffs and hoaxes with the Heinkel planes including using the V-3 for extra photo confusion by pasting a paper strip on the side of the fuselage, painting it grey like the V-3 and putting new markings on 42 C + 11 on the paper strip. The strip was then torn off and Heinkel readied the ship for the record run.

The aircraft was to undergo a series of flight tests preliminary to and building up to the attempt at the world speed record. Then fell the first disaster to the whole project. On one of the test flights in early September 1938, the He 100V-3 was to have mechanical problems. Pilot Nitschke found himself airborne with one gear stuck down and one stuck up. This was on a preparation speed run. Nitschke elected to bail out but was injured during the bail out when he struck the vertical stabilizer. The loss of the He 100V-3 set back Heinkel's aspirations of a record.

Dieterle, who had observed the whole event had decided that the course at Warnemunde was not suitable for such a record attempt. He talked to Dr. Kohler and Gunter and a decision was reached to move the project to Oranienburg. The He 100V-8 with registration D-IDGH was being made ready for this project. The Daimler Benz DB 601R was delivered to Heinkel as promised and was fitted to the V-8. It was capable of running at 3,000 r.p.m. for short periods and by using methyl alcohol injected with the fuel mixture was rated at 1,800 hp. This is in comparison to the 1,100 hp. at 2,500 r.p.m. for the DB 601A. It had to use a special lubricating oil for high heat dissipation. The engine life was calculated in minutes rather than in hours as are the standard engines.

On March 31, 1939 in the early morning, the He 100V-8 was rolled out at Oranienburg and preparations were started for the big record. The V-8 had the same smaller wing of the V-3 but the windshield had been elongated and cut down for more streamlining. The chin scoop for the oil cooler could be plainly noticed. The horizontal was a small amount lower also. It looked as if this plane was a record maker.

The pilot was to be 23 year old Hans Dieterle and as last minute details were being checked out with FAI, Hans made one last check of the ship and a test hop to check out all systems. He landed and walked away smiling as the ground crew readied the plane for the big flight. Now all was ready with the Heinkel team waiting with great anxiety. Then at 5:15 P.M., Hans climbed into the cockpit and the engine was started soon after. At 5:23 P.M. Dieterle took off. All was ready and he passed the starting timer at 5:25 P.M. At 5:32 P.M. he had passed the course four times. He was airborne just 13 minutes and when he landed at 5:36 P.M., Germany held the absolute world speed record. First estimates were that he reached 445.5 m.p.h. to 453.6 m.p.h. (717 km. to 730 km/hr.) but when the final calculations of the FAI were in, it was established the following morning that the new world record was 463.92 m.p.h. (746.606 km/hr.).

Much publicity was given to the feat. Again there was much confusion in identity. Pictures were made of Dieterle by a production He 100D-1 at a later time with registration HE+BE on the side. Even flight shots were made to claim this plane to be the one on the record run were released by the party propaganda. Close inspection of the differences of the two easily show this not to be so and in later years, Capt. Dieterle acknowledged this.

Meanwhile the Messerschmitt group was busy on a similar project. This was called P-1059 and was started in late 1937. It also was a project aimed at capturing the world record. At first, like the Heinkel team, they had decided to try with the existing powerplants. They also decided that radiator drag could not be tolerated. They would use the surface of the airframe to cool the engine. The two systems, that of the Heinkel He 100 and the Me 209, were similar in some ways but still were different in purpose.

The Me 209V-1 cooling system worked on the same basic principle as the He 100 but it was not quite so refined and was not designed for combat functions. As the water left the engine at high pressures and temperatures, that part that turned to steam was pumped into the wing and fuselage surfaces by blower pumps in a manner like the He 100. But the remaining water was dumped overboard and replaced by water from the engine inlet reservoir. The cool condensed water from the steam was pumped back into the reservoir. With this system, water was consumed at a rate of 1 ½ gals. per minute. There were 50 gals. of water and a tank of methyl alcohol for fuel injection. This allowed about 35 minutes of flying time. A circular oil cooler was behind the propeller and air was ducted through the center of the spinner.

The Me 209V-1 had a span of 25 feet 7 ½ inches and length of 23 feet 7 ¾ inches. On April 26, 1939, over a 3 km. course layed out over a stretch of railroad between Augsburg and Buchloe Haunstetten in Bavaria the Me 209V-1 was piloted by a Capt. Wendel for two runs in each direction which averaged out 469.2 m.p.h. (755 km/hr.) which beat the Heinkel record by 5.28 m.p.h. The course altitude was 1,600 ft. above sea level. Wendel had cooling problems which resulted in engine freeze-up on landing.

The Me 209V-1 bore the civil registration D-INJB and factory serial number 1185. For propaganda purposes and further confusion, the plane was photographed and pictures released. In the picture captions it was called the Me 109R. This was to make the outside world believe that it was a modified standard fighter type which had broken the record. All flight tests with the airframe were made with the standard DB601A-1 but a DB601R was being readied for the record run. The Messerschmitt team had access to spares and a prototype of the DB601R and in test stand runs they found that by overspeeding the engine and operating on the top side of the BMEP curve, the 1,800 hp could be boosted to 2,300 hp for 1 minute at a time and then cut back. This consumed 2 gals. of water per minute which reduced the flight time; but ample time was left for the planned run.

The Heinkel group was surprised to hear the news since they had no inkling of the project. But since the flight broke their record by such a small margin, calculations indicated that their speed would have been 15 km/hr (9.32 m.p.h.) more if they had made the run over the course in Vavaria. The way the Heinkel team saw it, they could do about 478 m.p.h. (769.1 km/hr.) at Letchfeld on the 1,800 hp. they used and more on the 2,300 hp. the Me 209V-1 used. Heinkel set about the project. A new ship would be built and made ready as quickly as possible. However, from Goring through Udet, Heinkel was told in writing to leave well enough alone. The Luftwaffe did not want a grudge fight over the speed record. Germany held the speed records for the 3 km. and 100 km. closed courses and that was that. Heinkel went ahead with his plans anyway and started work on the plane. But before he could achieve sufficient progress, W.W. II broke and ended all competition projects.

Heinkel, Todt, Porsche and Messerschmitt were awarded the National prize for Arts and Sciences for 1938 which was presented by Hitler at Nuremburg during a party rally in April 1939. Bormann, a high party boss, and Hess, one of Hitler's executives attempted to have Heinkel bypassed for this honor. But Udet and Goring argued that while he held both records for Germany it would be obviously a poor move. Hitler had the final say and wished that he be included. This was just prior to the Me 209V-1 record run. The Me 209V-1 had bettered only the 3 km. record.

PRODUCTION

The speed records had brought Heinkel nothing. It was held by a fighter that the Luftwaffe would not order or even admit to its existence except on a very few occasions such as showing off to visiting dignitaries which was spur-of-the-moment prompted. Public announcements were that the records were made by a He 112U.

The He 100V-1 and the V-2 went to Rechlin test center. Udet had set the 100 km. closed course record with the V-2 before it was flown to Rechlin. The V-3 was made originally for an assault on the 3 km. world record but ended up destroyed in a crash. The He 100V-9 was essentially the same airframe as the V-3 except for the standard fighter outer wing panels giving the larger span. It carried registration number D-ITLR. The He 100V-5 was a combination of its' predecessors with little differences in appearance from the V-4.

The He 100V-6 was the first of three prototypes which was to become the He 100C production series. After its initial tests and check-out at Marieneche it was sent to Rechlin on April 25, 1939. This was after the V-3 accident and no further back-up use was required. It was finally used at Rechlin as an engine test bed. The He 100V-7 was similar to the V-6 but featured a new heat exchanger for the oil system. It first flew on May 24, 1939 and was soon transferred to Rechlin.

The He 100V-8 was the special with the elongated canopy and short outer wing panels like that of the V-3. It had the special DB 601R installed. It was publically designated the He 112U by the Nazi propaganda and hung up in a Museum in Munich. It was subsequently destroyed during the war. The He 100V-9 was the last prototype intended as the C series and the first of the He 100's to be fitted with armament. It had two 20 mm MG/FF cannons and four 7.9 mm MG/17 machine guns. It was flown on armament tests at Rechlin but with not too much pilot enthusiasm since the wing load factor had increased appreciably. It was eventually used as a structures test bed, being tested to destruction. The last prototype, the He 100V-10 was intended as a static test frame and the fuselage finally ended up its last days in the Deutsches Museum.

A few further developments resulted in the production series He 100D with an enlarged and redesigned tail section, a small retractable radiator on the belly and the new chin oil cooler inlet. It carried an armament of one 20 mm MG/FF-M cannon firing through the airscrew shaft and two 7.9 mm MG/17 machine guns mounted in the wing roots. There were three pre-production He 100D-0's which were followed by twelve He 100D-1's. These were a private venture of Heinkel's. They were on the production line when hostilities began. The Luftwaffe used them extensively at first for propaganda photos. Each group of photos were made with some new setting and squadron markings. These photos were allowed to fall into Allied hands where the west eventually tacked on the designation of He 113. Just where it started is not known but it was the next logical number step up. This was also carried in publications of the west for lack of better identification. Both designations were used by German publications from time to time; the He 112D and the He 113. Also there were some German correspondence on military letterhead which carried both designations.

From the beginning of W.W. II, there was very little likelihood that the Luftwaffe would adopt the He 100D as a standard fighter. There were several reasons for this. The He 100V-9 armament tests indicated the airframe could not support that much armament. But this was desired as a standard fire power requirement. The He 100D-1 armament was fine as far as plane performance was concerned but it was not up to firepower requirements for the air superiority Hitler wanted. Then also, the production of the DB 601A was not quite keeping pace with airframe requirements of Messerschmitt fighters—the Bf 109 and Me 110. Engines were not going to be available to Heinkel.

The RLM let Heinkel know that it was willing to consider mass production of the He 100 if it could be re-engined with the Junkers JUMO 211. This was not acceptable to the Heinkel firm for several reasons. The problems provided by the evaporation cooling system had finally been solved but this system was matched to the DB 601A-1. The JUMO 211 was not quite suited for this kind of system and this would mean new development of radiators which would affect performance. Then again, the He 100 did not have standard engine mount frames to suit the JUMO 211, or did it have normal load bearers. The DB 601 had been attached directly to the reinforced cowling for some of the loads. The cowling was tailored to the one engine and to switch to the JUMO 211 would mean complete redesign of the cowling and engine load mounts and trusses. This would add weight and affect performance. In effect, the He 100 would be changed from a superior performance aircraft to an inferior performance, probably not up to the He 112. But since

the Luftwaffe had cast the die and geared its fighter product entirely on the Me Bf 109 and Me 110, it was not anxious to introduce a new fighter type at this time. They felt performance of their fighter as adequate and would overwhelm the enemy with masses. It was to be a short war anyway.

On October 30th, 1939, a Soviet commission headed by Col. Gussewand, Col. Shevtshanko to inspect and perhaps purchase the He 100. A member of this team was Alexander Yakoulew who spend much time inspecting the plane carefully. The Soviets purchased three He 100D-1's which served in the USSR for design studies which led to developments of the YAK-3 and YAK-9. A Japanese commission arrived right on the heels of the Soviet commission, thus making negotiations with either a little difficult to arrange. This commission was headed by Navy Capt. Wada and Capt. Kikuoka. The Japanese purchased the three He 100D-0 models and the export designation was the AX-He-1. One can see the direct development of this to the Kawasaki Ki 61 "Tony".

COLOR

The He 100 V-1, V-2, V-4 and V-5 were not painted except for the anti glare area of the prop. The top cowl, spinner and forward under-engine cowling area was painted with a duromate anti corrosion paint like a grey primer. The wing fillet, flaps, ailerons and aft section of the inner wing panel was also painted this way. The surfaces used for cooling were not painted. A single small panel aft of the cockpit on each side of the fuselage was painted a black or rather a charcoal grey. Later a strip of light grey was put on each side of the fuselage from the wing fillet up to the shoulder or back of the fuselage. Then the registration numbers were painted on in black. A red stripe about 12 inches long was painted on the upper rudder which carried a little into the vertical stabilizer. In the center of this was a large white dot with a black swastika in center. The word HEINKEL was painted on the engine cowling in black about 12 inches above the exhausts manifold. The prop was a metal grey with a small white oval insignia 1/3 outward on each blade. Since these were special prototypes handled by special crews, few, if any, instruction-type stencils were present. These could also have received different paint or color coatings at Rechlin during testing but little is known about this. The V-2 was painted a bright yellow on the underside for Udet's record run.

The He 100V-6 was painted in battle dress of dark green and brown with registration numbers D-1 on the upper left wing and TLR on the right upper wing. These and the lettering on the fuselage were yellow. It also had the familiar red stripe, white dot and black swastika. Engine cooling panels of the upper leading edge of the wing were not painted. The upper leading edge and top of the horizontal stabilizer and a patch about 3 feet long on the backbone area of the fuselage behind the cockpit were painted light grey as was the underside.

The He 100V-3 was painted for the record run light grey, hand polished to a high gloss finish. It had the black HEINKEL name on the cowling and registration number in black on the fuselage. Black crosses edged in white were at the extreme tips. It had the regular red stripe and swastika. There were paint changes for propaganda photos where the registration numbers were changed from D-ISVR to HE+ BB with the rudder painted all black with a swastika outlined in white.

The He 100V-8 had no paint job at all when it was used on the record run. It was spot sprayed all over at all intersecting panel joints to fill cracks and to protect it against corrosion. It was then coated with a polish compound and rubbed to a smooth surface. Photos, because of color reflection, would not show the smooth finish but rather would give appearance of being a rough finish. It was later painted a light medium grey slightly darker than the V-3. The paper panels were taped to the fuselage side and registration number 42 C + 11 was painted in black and white. It also carried the red stripe, white dot and swastika on the tail. It underwent a complete color change when it was painted a midnight blue with a blue grey underside with the standard Luftwaffe markings of wings and tail and fuselage. Then it was hung up in the Deutsches Museum in Munich.

The He 100V-9 got the standard dark green paint with grey underside as did the 100D's. These were later spotted with dark brown, and underwent a series of squadron markings and numbers changes for propaganda photos. They were later painted black with a light grey underside for the night squadron photos. The lightning streak was on the dark green aircraft. The "sword through Churchill's hat" insignia was on the green-brown spotted paint job. The black painted planes got the "moon smoking a pipe" insignia which was to symbolize a night fighter squadron.

Technical Data of the HEINKEL HE 100 D

POWER PLANT:

1 × 1,020 h.p. Daimler Benz DB 601 A
12 cylinder inverted Vee liquid-cooled engine

PERFORMANCE:

Maximum speed 416 m.p.h. at 13,120 ft.
Cruising speed 345 m.p.h.
Climb rate 3,288 ft. min.
Service ceiling 32,450 ft.
Range 559 m/s

ARMAMENT:

2 × 7.92 mm MG 17
1 × 20 mm MG FF/M cannon

DIMENSIONS:

Span 30 ft. 10¾ in.
Length 26 ft. 10 in.
Height 8 ft. 2½ in.

WEIGHT:

Empty 4,563 lbs.
Loaded 5,512 lbs.

Technical Data for the HEINKEL HE 112 B-1

POWER PLANT:

1 × 680 hp. Junkers Jumo 210 ea
12 cylinder inverted—Vee liquid-cooled engine

PERFORMANCE:

Maximum speed 317 m.p.h. at 13,120 ft.
Climb rate 1,970 ft. min.
Service ceiling 27,890 ft.
Range 683 m/s

ARMAMENT:

2 × 7.92 mm MG 17
2 × 20 mm MG FF cannon

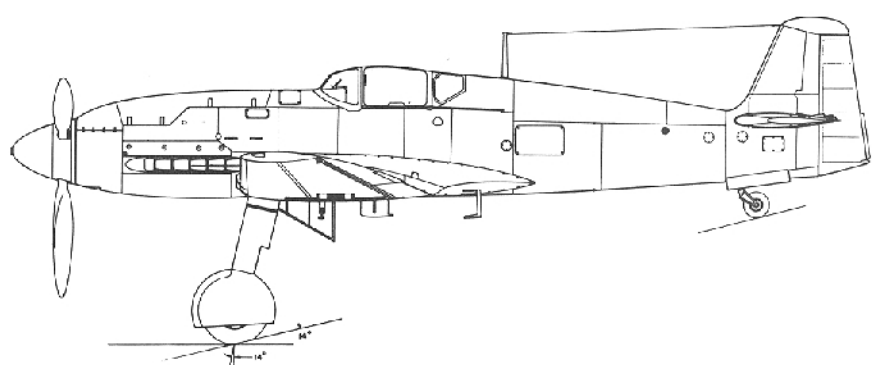
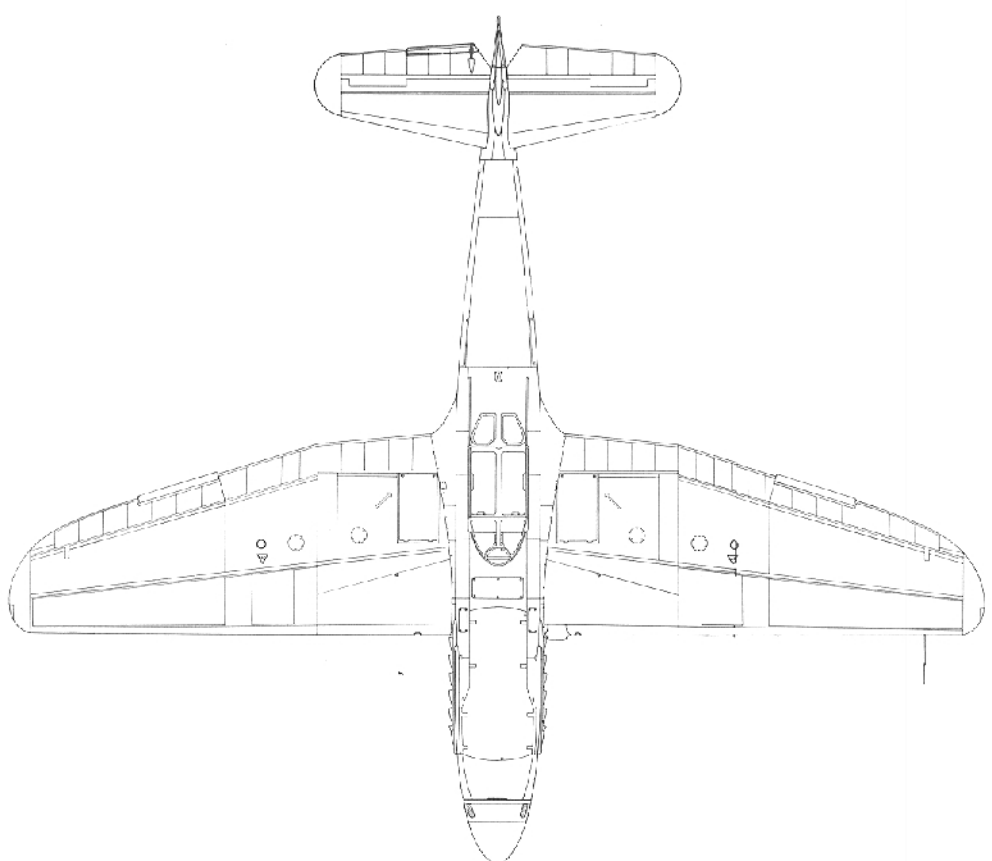
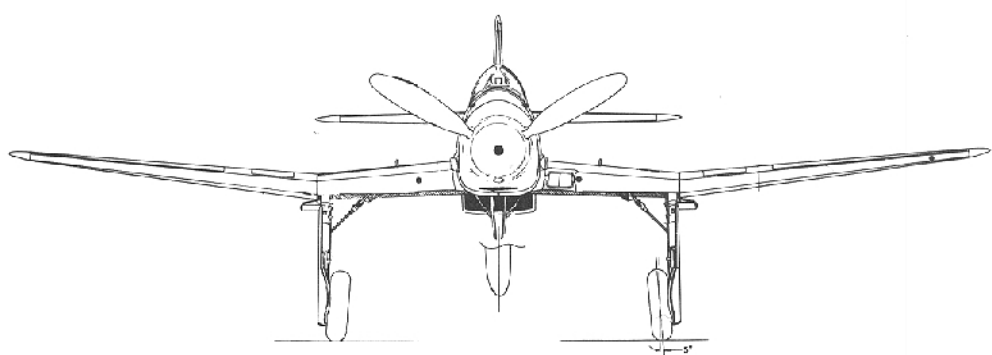
DIMENSIONS:

Span 29 ft. 10 in.
Length 30 ft. 6 in.
Height 12 ft. 7 in.

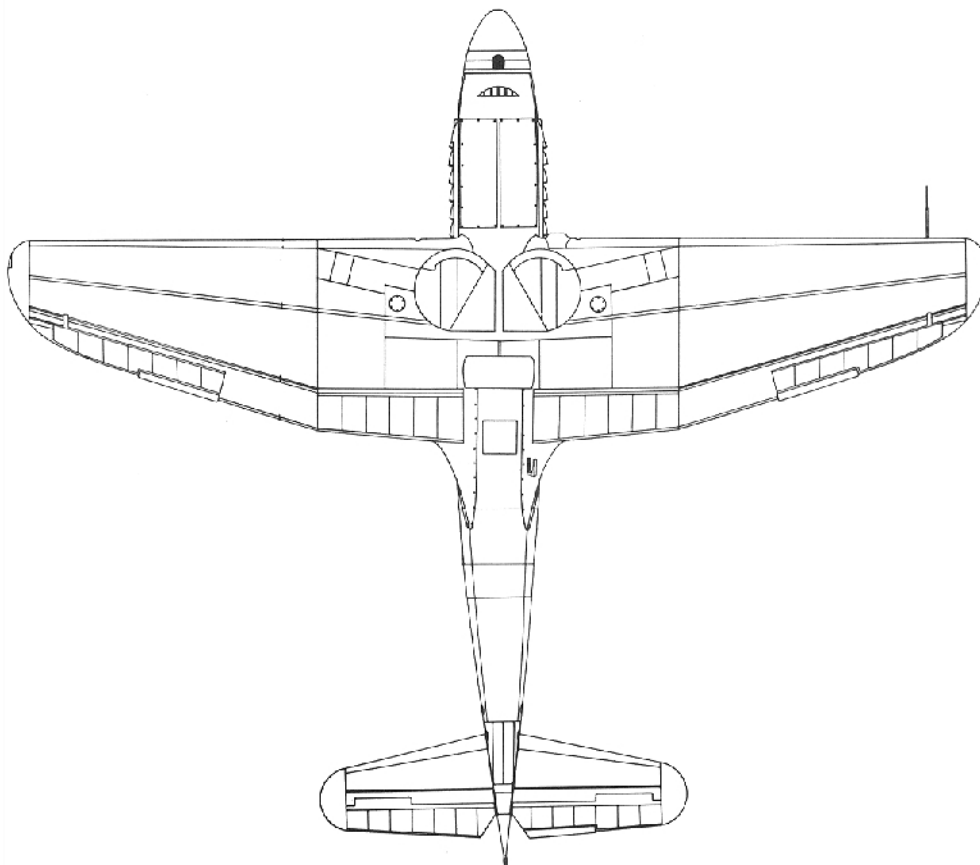
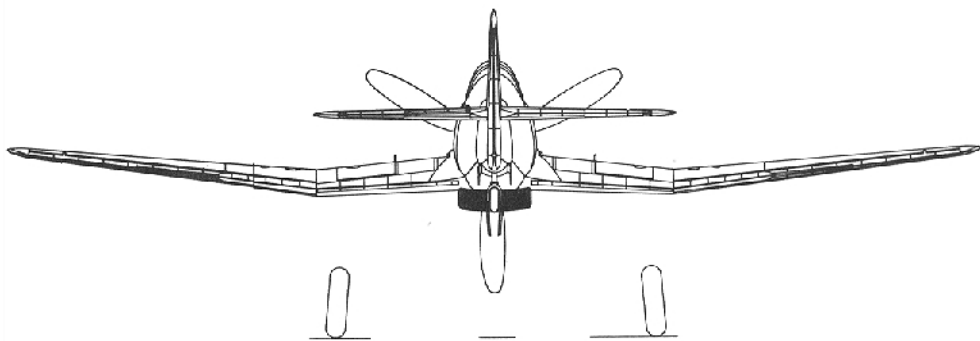
WEIGHT:

Empty 3,571 lbs.
Loaded 4,960 lbs.

HEINKEL HE 100 D



Scale: 1:72



Heinkel He 100 D scale drawing by R. S. Hirsch

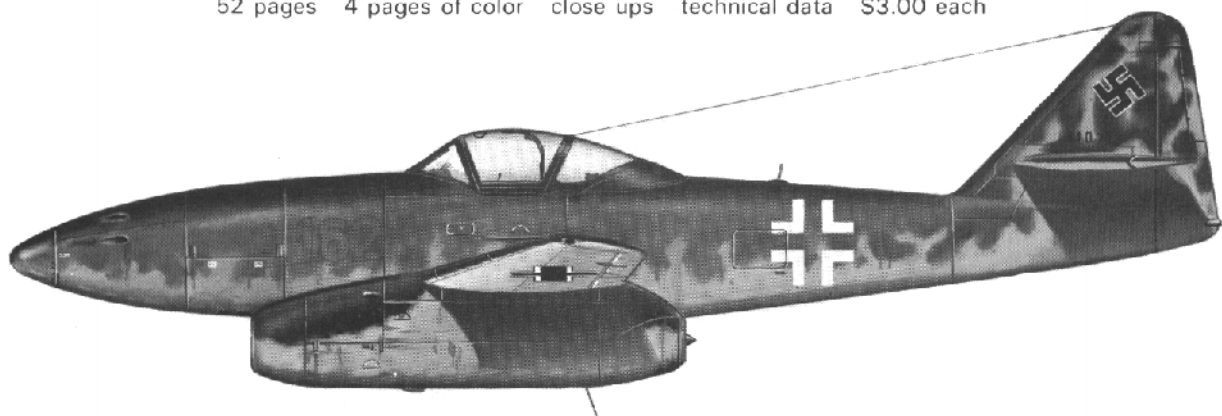
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